



BOAT FENDERS

IRM BOAT FENDERS

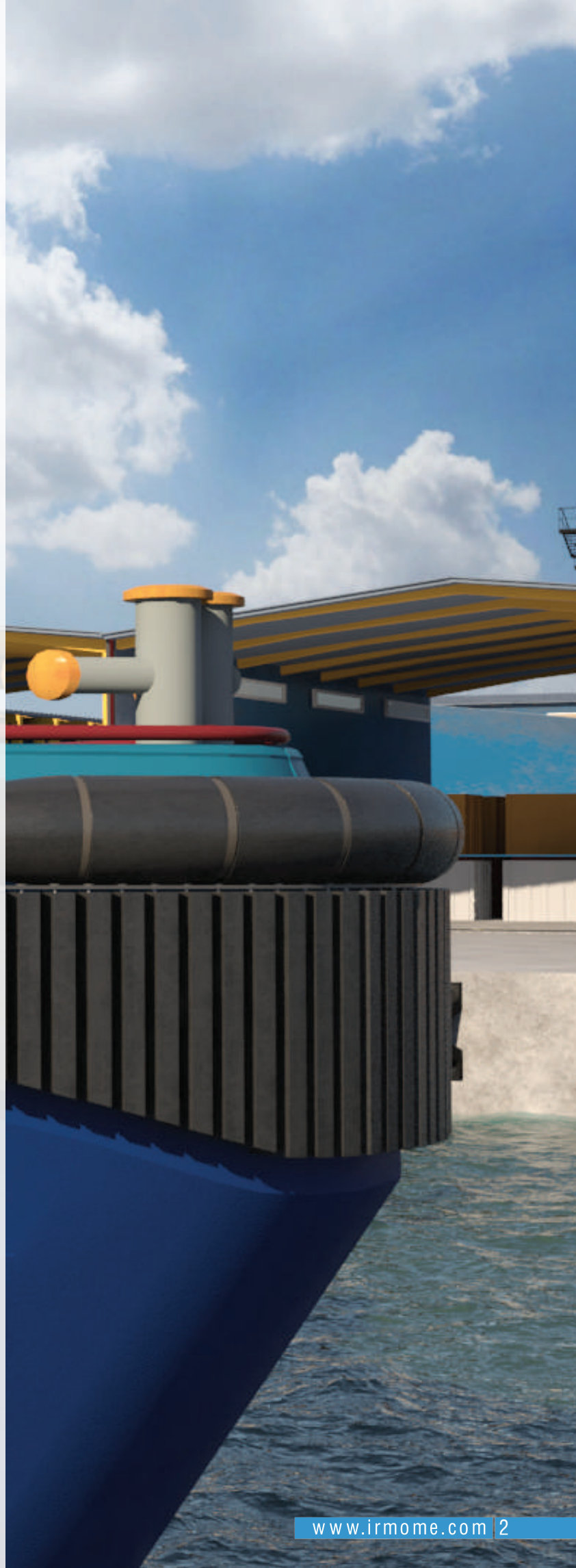
IRM Boat Fenders are unique with a combination of attributes like mechanical strength, resilience and sea water resistance. They are available in different profiles like D, Square, Cylindrical, Wing, Keyhole etc. They can be moulded in predetermined shapes and lengths to suite the hull of the Tugs and Vessels. They are used extensively in Tug Boats, Small Ferries, Naval Speed Boats, Passenger Vessels, Luxury Yachts, Fishing Boats etc. IRM Boat Fenders are available in black colour as well as non staining gray colour. Custom built Fenders in any length, profile and colour can be manufactured as per clients requirement.



GULF SPRING

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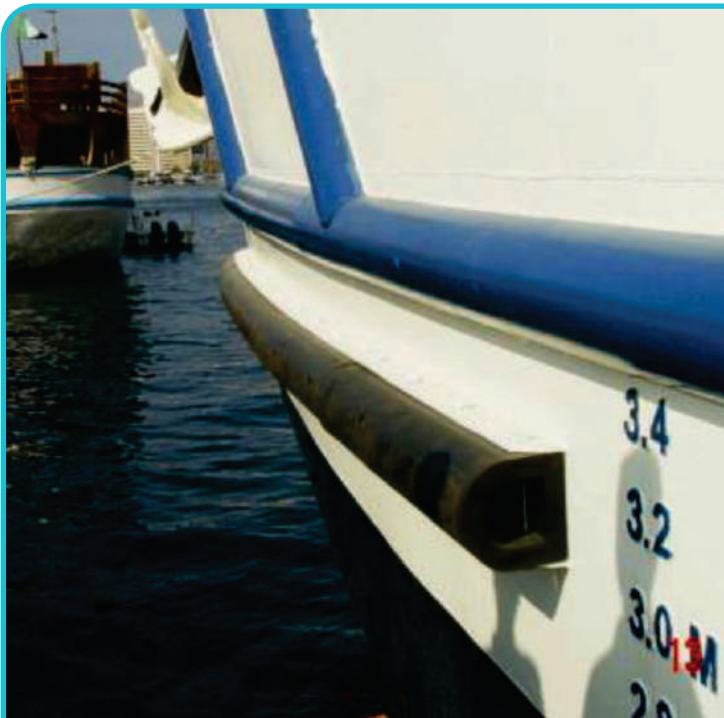
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BOAT FENDERS

IRM offers a range of Boat Fenders for small boats, tugboats, small ferries, naval speed boats, passenger vessels, luxury yachts, fishing boats and more. IRM boat fenders are available in different profiles such as D, Square, Cylindrical, Wing, Keyhole. These fenders can also be moulded in predetermined shapes and lengths to suit the hulls of the tugs and vessels.

Boat Fenders are available in black colour as well as non-staining grey colour. Custom-built fenders in any length, profile, and colour can be manufactured as per the client's requirement. IRM Boat fenders are renowned for their long and trouble-free service life without significant deterioration in their performance and characteristics.

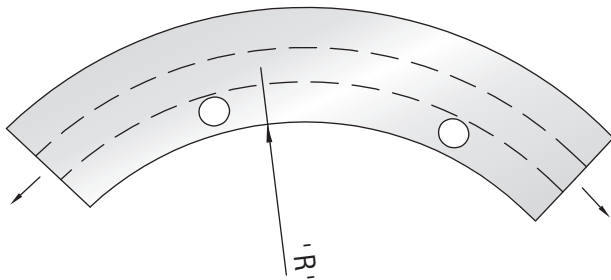


D FENDERS DDA SERIES



D-Type Boat Fenders DDA Series are commonly used on Tugs and similar vessels. These Fenders are also used for extensive application on small jetties, and fishery harbours too.

They are compression moulded with steel inserts if required. These Fenders are offered with different fitting options as per the requirement. These Fenders are easy to install, replace and are designed for excellent seawater resistance, resistance to ozone, and ultraviolet rays, which enhance the life of Fenders under severe working conditions. IRM DDA Series D Type Fenders are available in a wide range in various shapes and lengths as per the client's requirement.



DIMENSION TABLE

| | H | R |
|--|-----|-----|
| | 150 | 350 |
| | 200 | 400 |
| | 250 | 475 |
| | 300 | 600 |
| | 400 | 800 |

Note : Weight values mentioned are approximate.

PERFORMANCE TABLE

| FENDER SIZE | DEFLECTION 45% | | WEIGHT(kg/m) |
|-------------|----------------|--------|--------------|
| | E | R | |
| H X d | | | |
| 150 x 75 | 2.45 | 94.14 | 21 |
| 200 x 100 | 4.31 | 125.53 | 36 |
| 250 x 125 | 6.67 | 156.91 | 56 |
| 300 x 150 | 9.61 | 188.29 | 81 |
| 400 x 200 | 17.06 | 251.05 | 145 |

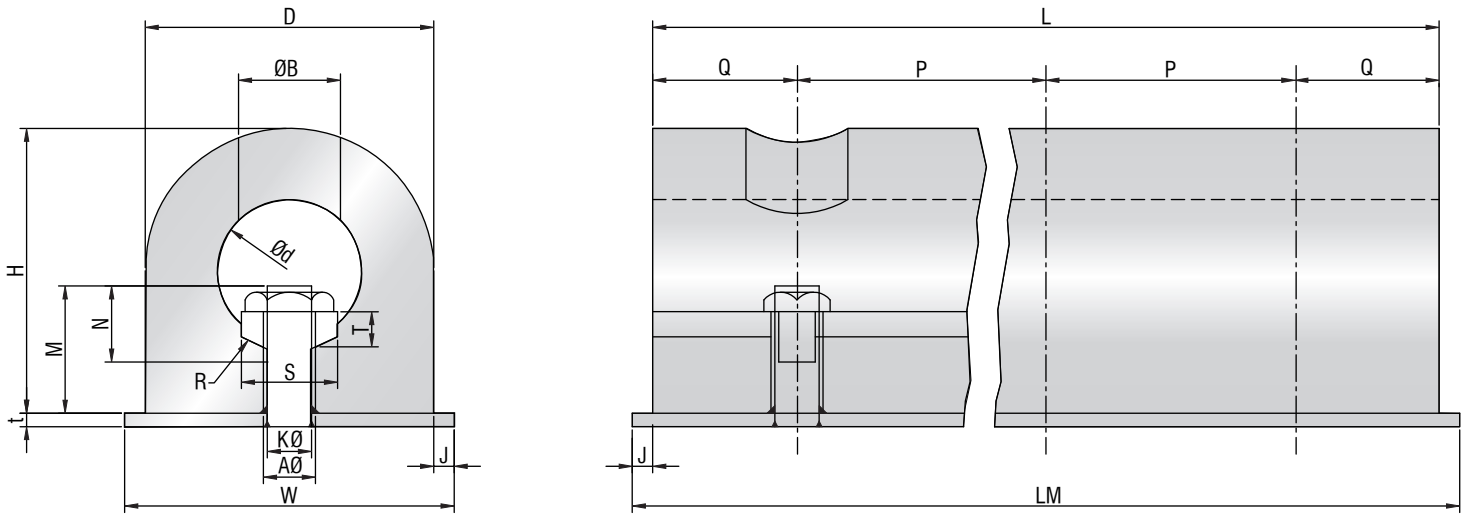
PERFORMANCE VALUES ARE FOR 1000 MM LENGTH

(R : REACTION FORCE (KN), E : ENERGY ABSORPTION (KNM), TOLERANCE \pm 10%)

ALL DIMENSIONS ARE IN MM

D FENDERS DDA SERIES

FENDER INSTALLATION (VERTICAL WITH BACK PLATE)



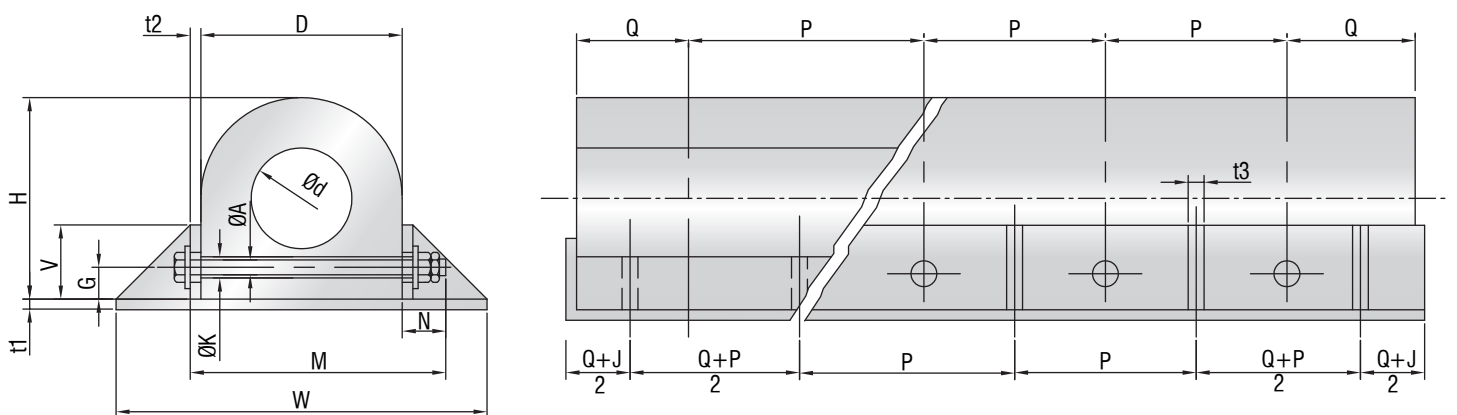
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

| H | D | Ød | ØA | B | J | ØK | LM | M | N | P | Q | R | S | T | t | W |
|-----|-----|-----|----|----|----|----|------|-----|----|---------|---------|-----|-----|----|----|-----|
| 150 | 150 | 75 | 22 | 53 | 10 | 19 | L+20 | 67 | 40 | 250-300 | 125-150 | 38 | 50 | 16 | 10 | 170 |
| 200 | 200 | 100 | 25 | 60 | 10 | 22 | L+20 | 85 | 50 | 250-300 | 125-150 | 50 | 65 | 19 | 10 | 220 |
| 250 | 250 | 125 | 29 | 65 | 15 | 25 | L+30 | 100 | 55 | 250-300 | 125-150 | 63 | 80 | 22 | 12 | 280 |
| 300 | 300 | 150 | 29 | 65 | 15 | 25 | L+30 | 120 | 70 | 250-300 | 125-150 | 75 | 100 | 25 | 12 | 330 |
| 400 | 400 | 200 | 32 | 75 | 15 | 28 | L+30 | 150 | 80 | 250-300 | 125-150 | 100 | 120 | 28 | 16 | 430 |

Note : Weight values mentioned are approximate.

FENDER INSTALLATION (HORIZONTAL WITH PARALLEL BOLTS)



DIMENSION TABLE

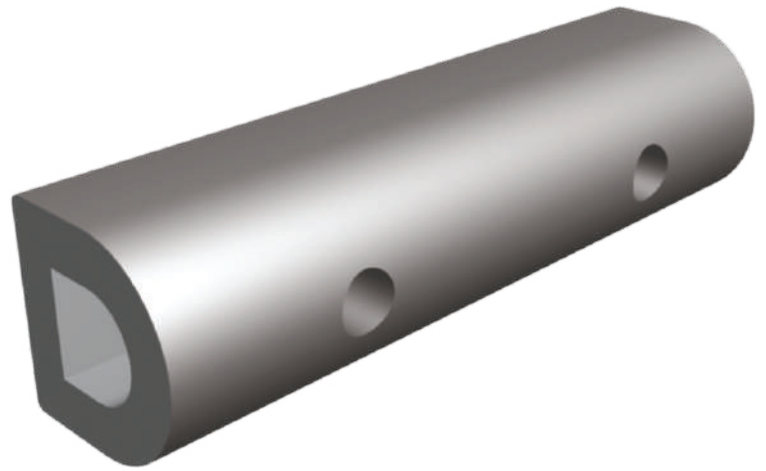
ALL DIMENSIONS ARE IN MM

| H | D | Ød | ØA | G | J | ØK | LM | M | N | P | Q | t1 | t2 | t3 | V | W |
|-----|-----|-----|----|----|----|----|------|-----|-----|---------|---------|----|----|----|-----|-----|
| 150 | 150 | 75 | 22 | 26 | 10 | 19 | L+20 | 232 | 70 | 250-300 | 125-150 | 10 | 12 | 10 | 60 | 280 |
| 200 | 200 | 100 | 25 | 35 | 10 | 22 | L+20 | 292 | 80 | 250-300 | 125-150 | 10 | 12 | 10 | 75 | 370 |
| 250 | 250 | 125 | 29 | 43 | 15 | 25 | L+30 | 352 | 90 | 250-300 | 125-150 | 12 | 12 | 12 | 100 | 470 |
| 300 | 300 | 150 | 29 | 52 | 15 | 25 | L+30 | 412 | 100 | 250-300 | 125-150 | 12 | 16 | 12 | 125 | 580 |
| 400 | 400 | 200 | 32 | 70 | 15 | 28 | L+30 | 516 | 100 | 250-300 | 125-150 | 16 | 16 | 16 | 150 | 730 |

D FENDERS DDB SERIES

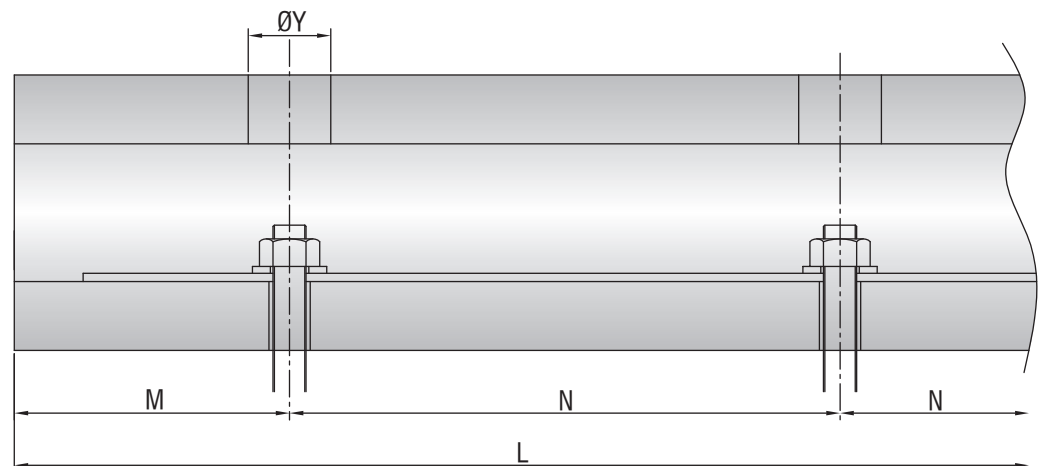
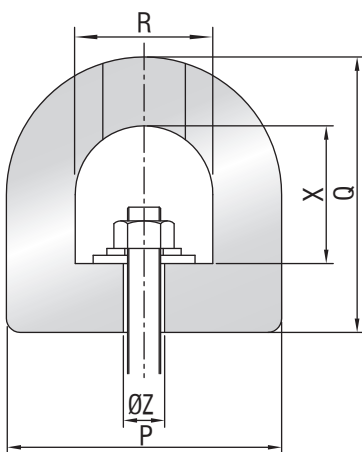
PERFORMANCE TABLE

| SIZE | DEFLECTION 50% | |
|------|----------------|-------|
| | E | R |
| 100 | 1.3 | 75.5 |
| 150 | 3.1 | 113.7 |
| 200 | 5.5 | 152.0 |
| 250 | 8.7 | 188.2 |
| 300 | 12.7 | 223.5 |
| 350 | 17.4 | 260.8 |
| 400 | 22.5 | 298.1 |
| 500 | 35.3 | 374.6 |



(R: REACTION FORCE (KN), E: ENERGY ABSORPTION (KNM), TOLERANCE $\pm 10\%$)

PERFORMANCE VALUES ARE FOR 1000 MM LENGTH
LENGTH AVAILABLE AS PER REQUIREMENT



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

| P | Q | R | X | ØY | ØZ | M | N | FLAT BAR | BOLT | WEIGHT Kg/MT |
|-----|-----|-----|-----|----|----|-----------|-----------|----------|------|--------------|
| 80 | 70 | 45 | 30 | 30 | 15 | 90 ~ 130 | 200 ~ 300 | 35 X 5 | M12 | 4.7 |
| 100 | 100 | 50 | 45 | 30 | 15 | 90 ~ 130 | 200 ~ 300 | 40 X 5 | M12 | 8.3 |
| 125 | 125 | 60 | 60 | 40 | 20 | 110 ~ 150 | 250 ~ 350 | 50 X 6 | M16 | 13 |
| 150 | 150 | 75 | 75 | 40 | 20 | 110 ~ 150 | 250 ~ 350 | 60 X 8 | M16 | 18.8 |
| 200 | 150 | 100 | 80 | 50 | 25 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 23.4 |
| 200 | 200 | 100 | 100 | 50 | 25 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 33.4 |
| 250 | 200 | 125 | 100 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 90 X 12 | M24 | 40.6 |
| 250 | 250 | 125 | 125 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 90 X 12 | M24 | 52.2 |
| 300 | 300 | 150 | 150 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 110 X 12 | M24 | 75.3 |
| 350 | 350 | 175 | 175 | 75 | 35 | 140 ~ 200 | 350 ~ 450 | 130 X 15 | M30 | 102.4 |
| 380 | 380 | 190 | 190 | 75 | 35 | 140 ~ 200 | 350 ~ 450 | 140 X 15 | M30 | 120.8 |
| 400 | 300 | 175 | 150 | 75 | 35 | 140 ~ 200 | 350 ~ 450 | 130 X 15 | M30 | 99.7 |
| 400 | 400 | 200 | 200 | 75 | 35 | 140 ~ 200 | 350 ~ 450 | 150 X 15 | M30 | 133.8 |
| 500 | 500 | 250 | 250 | 90 | 45 | 160 ~ 230 | 400 ~ 500 | 180 X 20 | M36 | 209.2 |

Note : Weight values mentioned are approximate.

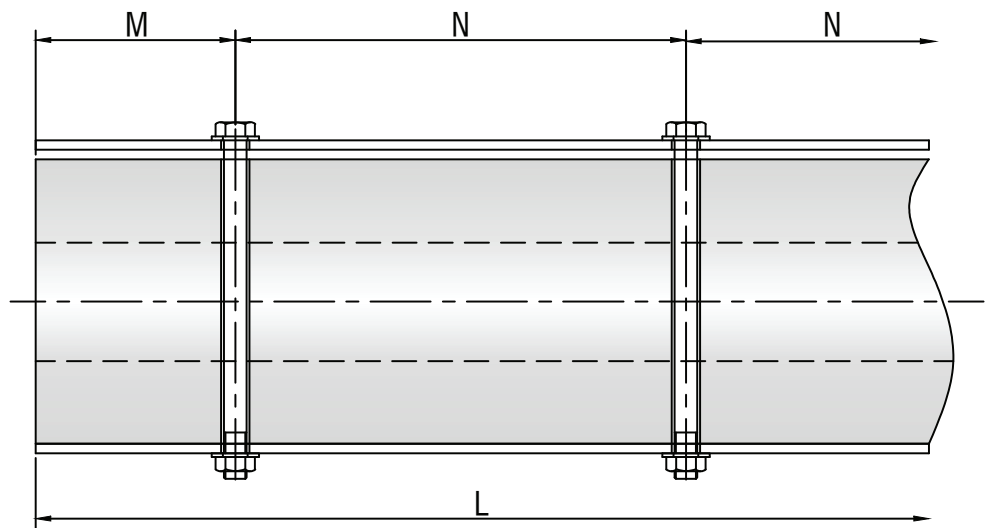
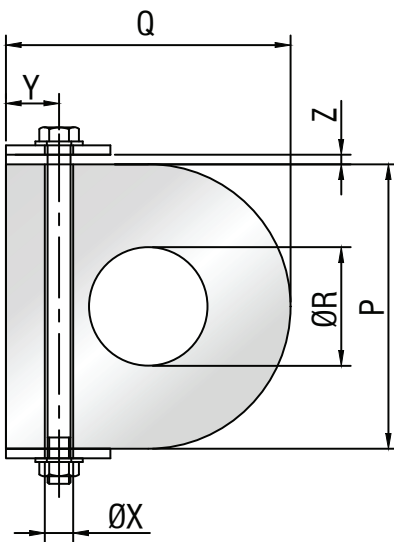
D FENDERS DDC SERIES

PERFORMANCE TABLE

| SIZE | DEFLECTION 50% | |
|------|----------------|-------|
| | E | R |
| 100 | 1.9 | 154.9 |
| 150 | 4.2 | 230.4 |
| 200 | 7.3 | 308.9 |
| 250 | 11.7 | 384.4 |
| 300 | 16.6 | 461.8 |
| 350 | 22.5 | 538.3 |
| 400 | 28.9 | 615.8 |
| 500 | 45.1 | 769.8 |



(R: REACTION FORCE (KN), E: ENERGY ABSORPTION (KNM), TOLERANCE $\pm 10\%$)
 PERFORMANCE VALUES ARE FOR 1000 MM LENGTH
 LENGTH AVAILABLE AS PER REQUIREMENT



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

| P | Q | ØR | ØX | Y | Z | M | N | FLAT BAR | BOLT | WEIGHT Kg/MT |
|-----|-----|-----|----|----|----|----------|----------|----------|------|--------------|
| 100 | 100 | 30 | 15 | 25 | 10 | 90 ~130 | 200 ~300 | 50 X 6 | M12 | 10.2 |
| 150 | 150 | 65 | 20 | 30 | 12 | 110 ~150 | 250 ~350 | 60 X 8 | M16 | 20.9 |
| 200 | 200 | 75 | 25 | 45 | 15 | 130 ~180 | 300 ~400 | 80 X 10 | M20 | 39 |
| 250 | 250 | 100 | 30 | 50 | 20 | 140 ~200 | 350 ~450 | 100 X 10 | M24 | 59.8 |
| 300 | 300 | 125 | 30 | 60 | 25 | 140 ~200 | 350 ~450 | 110 X 12 | M24 | 85 |
| 350 | 350 | 150 | 35 | 70 | 25 | 140 ~200 | 350 ~450 | 120 X 12 | M30 | 114.5 |
| 400 | 400 | 175 | 35 | 80 | 30 | 140 ~200 | 350 ~450 | 130 X 15 | M30 | 148.4 |
| 400 | 400 | 200 | 35 | 80 | 30 | 140 ~200 | 350 ~450 | 130 X 15 | M30 | 139.2 |
| 500 | 500 | 250 | 45 | 90 | 40 | 150 ~230 | 400 ~500 | 150 X 20 | M36 | 217.6 |

Note : Weight values mentioned are approximate.

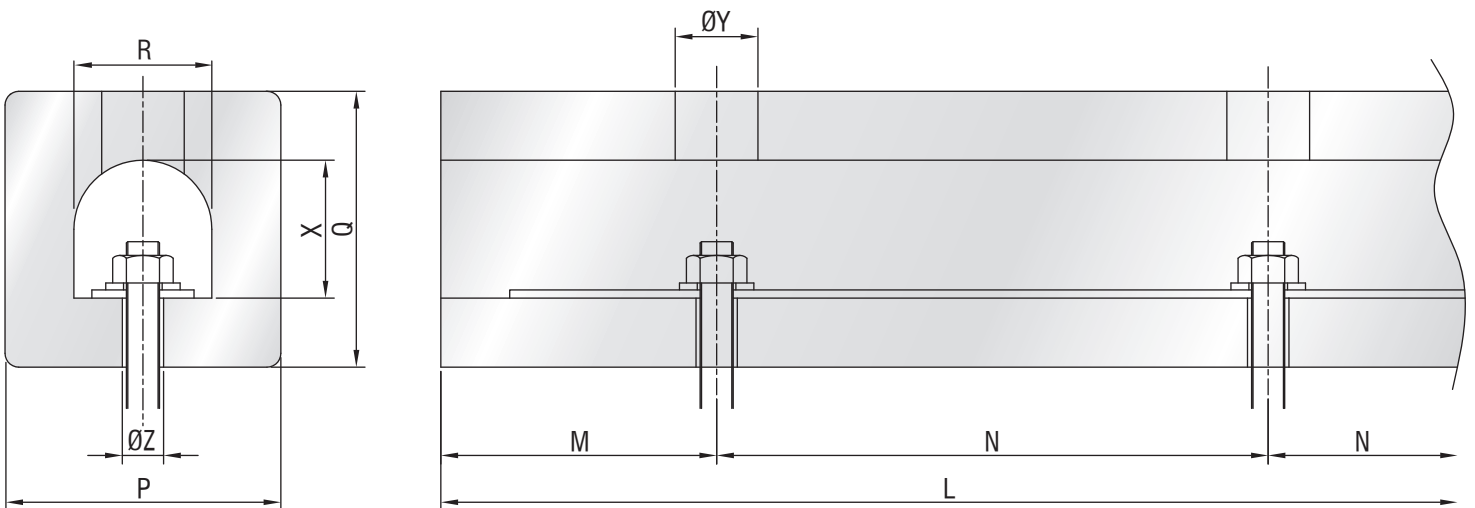
SQUARE FENDERS DSQ - A SERIES

PERFORMANCE TABLE

| SIZE | DEFLECTION 50% | |
|------|----------------|-------|
| | E | R |
| 100 | 2.6 | 133.3 |
| 150 | 6.2 | 202.0 |
| 200 | 11.0 | 269.6 |
| 250 | 17.2 | 338.3 |
| 300 | 25.0 | 402.0 |
| 350 | 33.7 | 465.8 |
| 400 | 44.1 | 577.6 |
| 500 | 69.1 | 720.7 |



(R: REACTION FORCE (KN), E: ENERGY ABSORPTION (KNM), TOLERANCE $\pm 10\%$)
 PERFORMANCE VALUES ARE FOR 1000 MM LENGTH
 LENGTH AVAILABLE AS PER REQUIREMENT



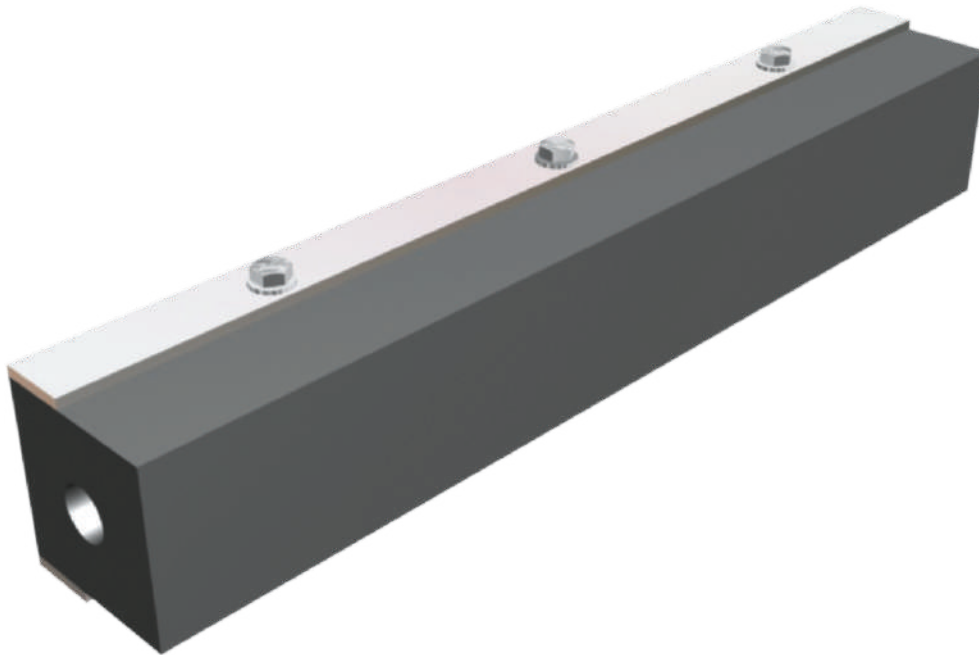
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

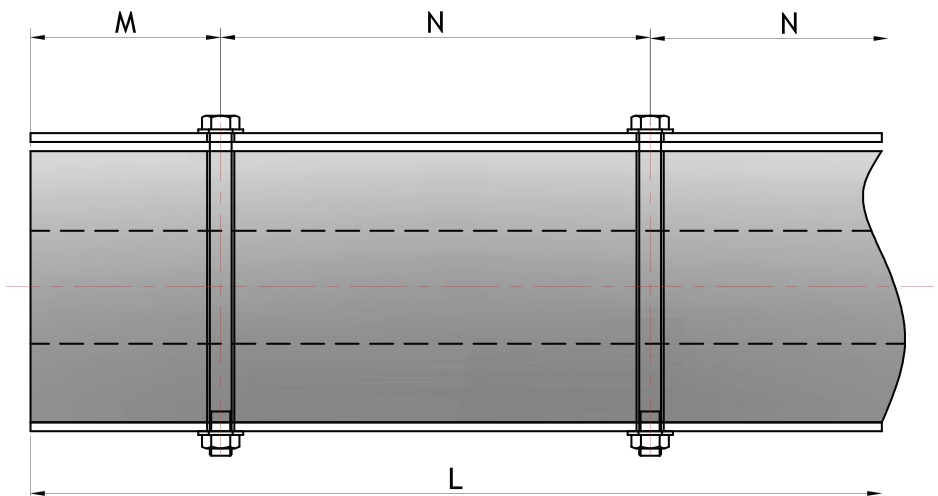
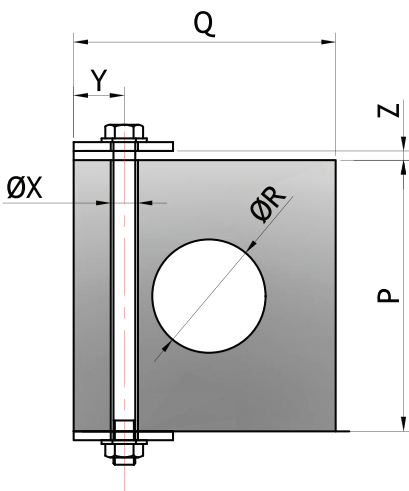
| P | Q | R | X | ØY | ØZ | M | N | FLAT BAR | BOLT | WEIGHT Kg/MT |
|-----|-----|-----|-----|----|----|-----------|-----------|----------|------|--------------|
| 100 | 100 | 50 | 45 | 30 | 15 | 90 ~ 130 | 200 ~ 300 | 40 X 5 | M12 | 10 |
| 150 | 150 | 70 | 65 | 40 | 20 | 110 ~ 150 | 250 ~ 350 | 50 X 8 | M16 | 23.1 |
| 165 | 125 | 80 | 60 | 40 | 20 | 110 ~ 150 | 250 ~ 350 | 60 X 8 | M16 | 20.6 |
| 200 | 150 | 90 | 65 | 50 | 25 | 130 ~ 180 | 300 ~ 400 | 70 X 10 | M20 | 31.2 |
| 200 | 200 | 90 | 85 | 50 | 25 | 130 ~ 180 | 300 ~ 400 | 70 X 10 | M20 | 41.5 |
| 250 | 200 | 120 | 115 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 90 X 12 | M24 | 47.2 |
| 250 | 250 | 120 | 120 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 90 X 12 | M24 | 62 |
| 300 | 250 | 140 | 115 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 100 X 12 | M24 | 76.3 |
| 300 | 300 | 125 | 135 | 60 | 30 | 140 ~ 200 | 350 ~ 450 | 100 X 12 | M24 | 93.5 |
| 400 | 400 | 200 | 200 | 75 | 35 | 140 ~ 200 | 350 ~ 450 | 150 X 15 | M30 | 155.5 |
| 500 | 500 | 250 | 250 | 90 | 45 | 160 ~ 230 | 400 ~ 500 | 180 X 20 | M36 | 243 |

Note : Weight values mentioned are approximate.

SQUARE FENDERS DSQ - B SERIES



DSQ-B SERIES



DIMENSION TABLE

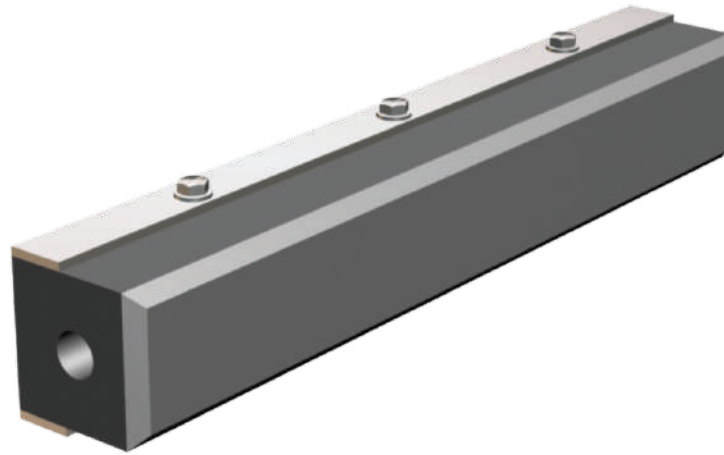
ALL DIMENSIONS ARE IN MM

| P | Q | ØR | ØX | Y | Z | M | N | FLAT BAR | BOLT | WEIGHT Kg/MT |
|-----|-----|-----|----|----|----|-----------|-----------|----------|------|--------------|
| 100 | 100 | 30 | 15 | 25 | 10 | 90 ~ 130 | 200 ~ 300 | 50 X 6 | M12 | 11.6 |
| 150 | 150 | 65 | 20 | 30 | 12 | 110 ~ 150 | 250 ~ 350 | 60 X 8 | M16 | 24 |
| 165 | 125 | 65 | 20 | 30 | 15 | 110 ~ 150 | 300 ~ 400 | 60 X 8 | M16 | 21.6 |
| 200 | 200 | 75 | 25 | 45 | 15 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 44.5 |
| 200 | 200 | 100 | 25 | 40 | 15 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 40.2 |
| 250 | 200 | 100 | 30 | 45 | 20 | 140 ~ 200 | 350 ~ 450 | 90 X 10 | M24 | 56.2 |
| 250 | 250 | 100 | 30 | 50 | 20 | 140 ~ 200 | 350 ~ 450 | 100 X 10 | M24 | 68.3 |
| 300 | 250 | 100 | 30 | 50 | 25 | 140 ~ 200 | 350 ~ 450 | 100 X 10 | M24 | 84 |
| 300 | 300 | 125 | 30 | 60 | 25 | 140 ~ 200 | 350 ~ 450 | 110 X 12 | M24 | 97.2 |
| 350 | 350 | 175 | 35 | 70 | 25 | 140 ~ 200 | 350 ~ 450 | 120 X 12 | M30 | 123 |
| 400 | 400 | 200 | 35 | 80 | 30 | 140 ~ 200 | 350 ~ 450 | 130 X 15 | M30 | 160.8 |
| 500 | 500 | 250 | 45 | 90 | 40 | 150 ~ 230 | 400 ~ 500 | 150 X 20 | M36 | 251.3 |

Note : Weight values mentioned are approximate.

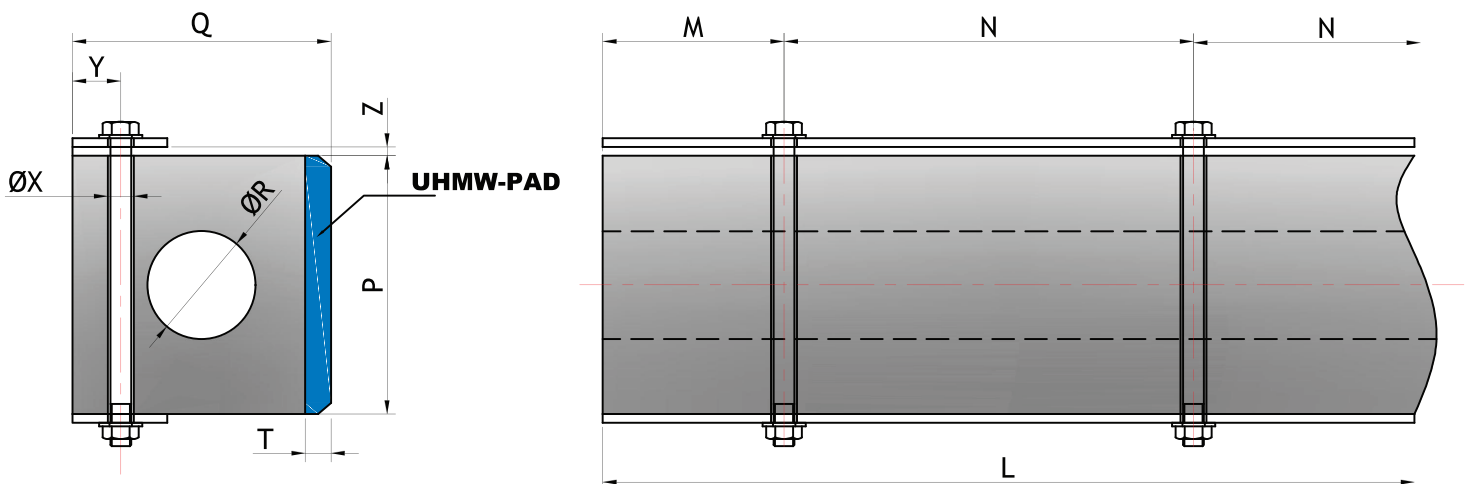
SQUARE FENDERS DSQ - C SERIES

FITTED WITH ANTI-FRICTION SYNTHETIC RESIN PADS



VARIOUS LENGTHS ARE AVAILABLE ON SPECIFIC REQUIREMENT

DSQ-C SERIES



DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

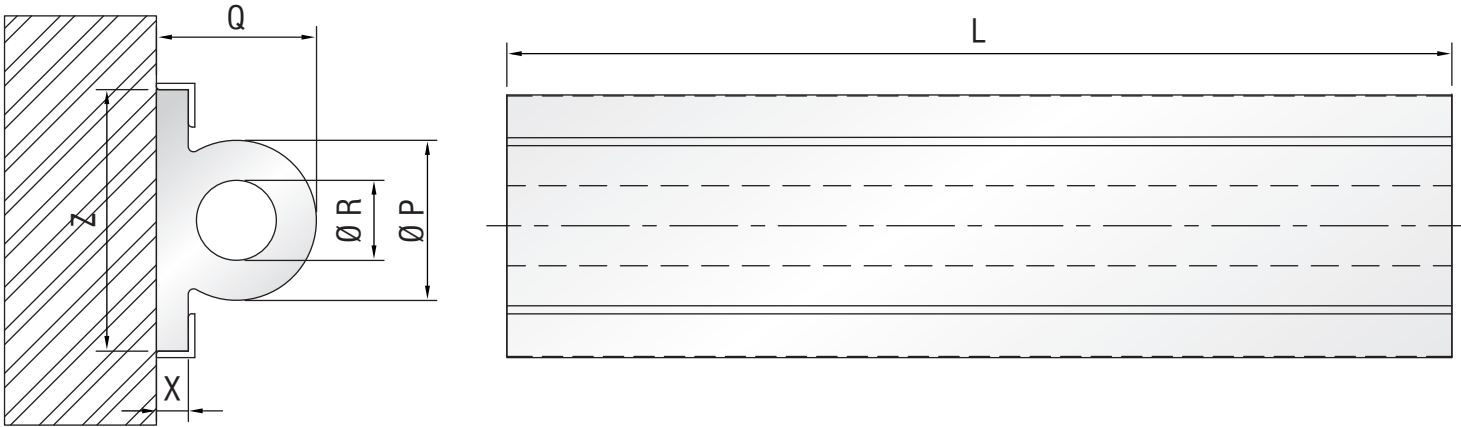
| P | Q | T | ØR | ØX | Y | Z | M | N | FLAT BAR | BOLT | WEIGHT Kg/MT |
|-----|-----|----|-----|----|----|----|-----------|-----------|----------|------|--------------|
| 100 | 100 | 20 | 30 | 15 | 25 | 10 | 90 ~ 130 | 200 ~ 300 | 50 X 6 | M12 | 13.6 |
| 150 | 150 | 20 | 65 | 20 | 30 | 12 | 110 ~ 150 | 250 ~ 350 | 60 X 8 | M16 | 27.0 |
| 165 | 125 | 20 | 65 | 20 | 30 | 15 | 110 ~ 150 | 300 ~ 400 | 60 X 8 | M16 | 24.9 |
| 200 | 200 | 25 | 75 | 25 | 45 | 15 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 49.5 |
| 200 | 200 | 25 | 100 | 25 | 40 | 15 | 130 ~ 180 | 300 ~ 400 | 80 X 10 | M20 | 45.2 |
| 250 | 200 | 30 | 100 | 30 | 45 | 20 | 140 ~ 200 | 350 ~ 450 | 90 X 10 | M24 | 63.8 |
| 250 | 250 | 30 | 100 | 30 | 50 | 20 | 140 ~ 200 | 350 ~ 450 | 100 X 10 | M24 | 75.9 |
| 300 | 250 | 30 | 100 | 30 | 50 | 25 | 140 ~ 200 | 350 ~ 450 | 100 X 10 | M24 | 93.0 |
| 300 | 300 | 30 | 125 | 30 | 60 | 25 | 140 ~ 200 | 350 ~ 450 | 110 X 12 | M24 | 106.2 |
| 350 | 350 | 40 | 175 | 35 | 70 | 25 | 140 ~ 200 | 350 ~ 450 | 120 X 12 | M30 | 137.0 |
| 400 | 400 | 40 | 200 | 35 | 80 | 30 | 140 ~ 200 | 350 ~ 450 | 130 X 15 | M30 | 176.8 |
| 500 | 500 | 40 | 250 | 45 | 90 | 40 | 150 ~ 230 | 400 ~ 500 | 150 X 20 | M36 | 271.3 |

Note : Weight values mentioned are approximate.

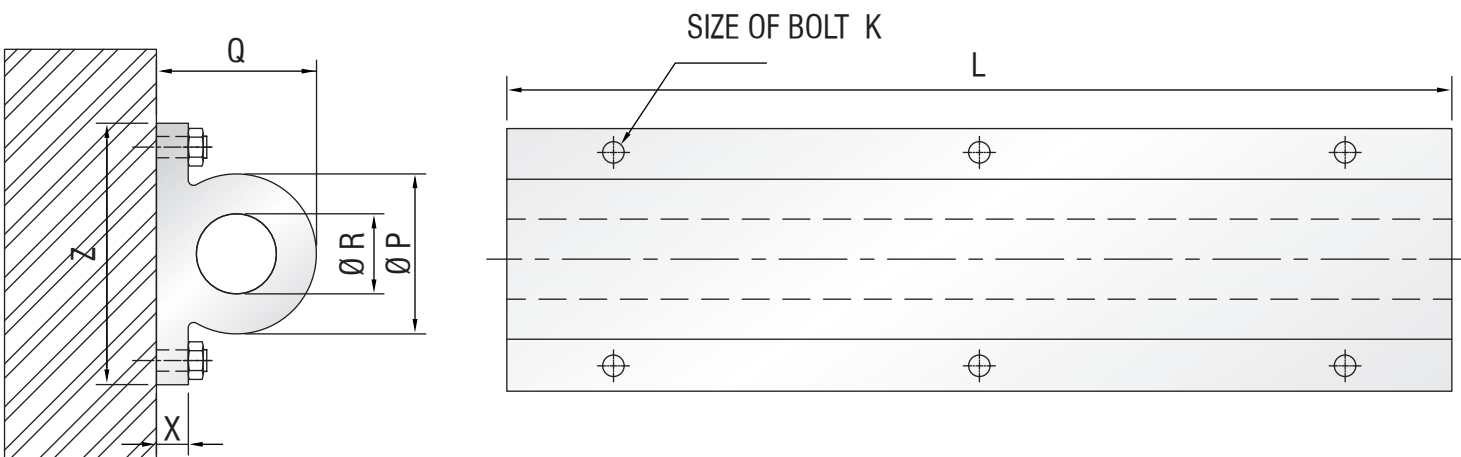
WING FENDERS

Wing fenders are used on small jetties and fishery harbours. They are compression moulded fenders easy to install and replace.

OPTION 1 : SLIDING ARRANGEMENT



OPTION 2 : BOLTING ARRANGEMENT



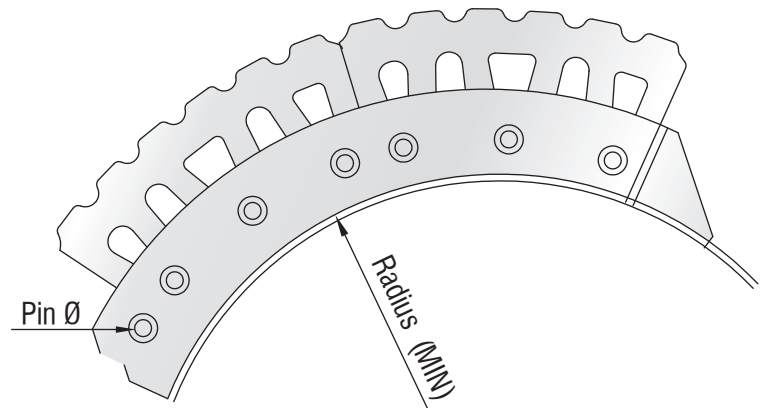
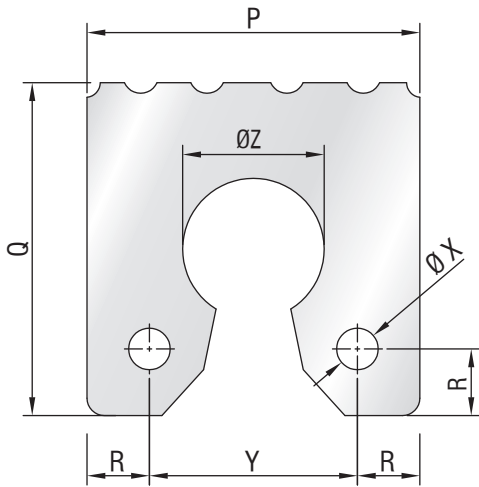
DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

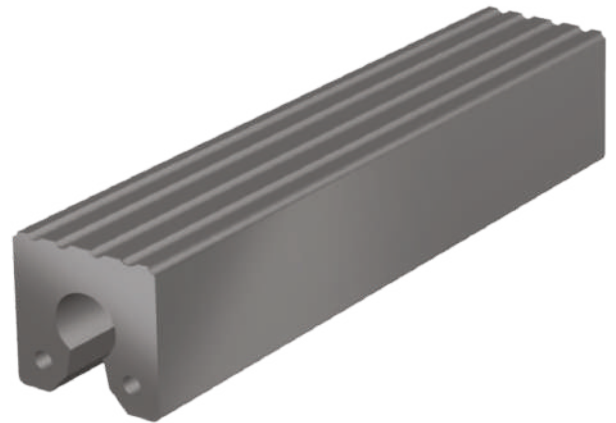
| Z | ØP | Q | ØR | X | K | L ANGLE | WEIGHT Kg/Mt. |
|-----|-----|-----|-----|----|-----|-------------|---------------|
| 180 | 100 | 100 | 50 | 25 | M12 | 40 X 40 X 6 | 11 |
| 215 | 150 | 150 | 75 | 30 | M16 | 40 X 40 X 6 | 21 |
| 245 | 150 | 150 | 75 | 30 | M16 | 40 X 40 X 8 | 22 |
| 280 | 200 | 200 | 100 | 40 | M20 | 50 X 50 X 8 | 36.5 |
| 320 | 200 | 200 | 100 | 40 | M20 | 50 X 50 X 8 | 38.5 |
| 370 | 250 | 250 | 125 | 50 | M24 | 60 X 60 X 8 | 58 |
| 410 | 250 | 250 | 125 | 50 | M24 | 60 X 60 X 8 | 60 |

Note : Weight values mentioned are approximate.

KEY HOLE FENDERS KH SERIES



KH series Key Hole Fenders are the most versatile bow & stern fenders used on Tugboats, small Port Craft, and Ferries. They offer maximum protection to the Tugs and Ferries with the typical profile and load absorbing capabilities. These are very easy to install and replace, thus making them maintenance hassle-free. These Fenders are manufactured with high abrasion resistance rubber with good resilience properties. IRM KH series Key Hole type Fenders are available in various heights and lengths as per customer's requirement.



DIMENSION TABLE

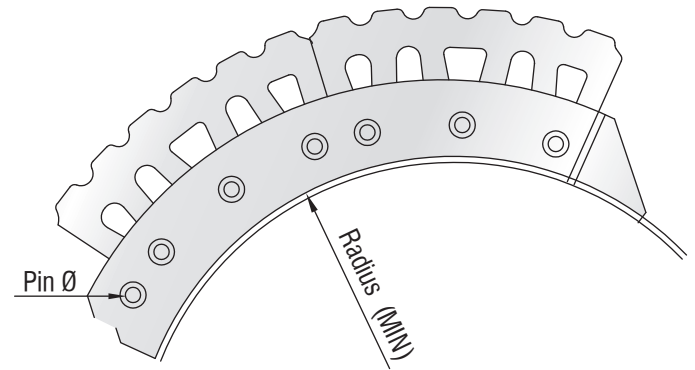
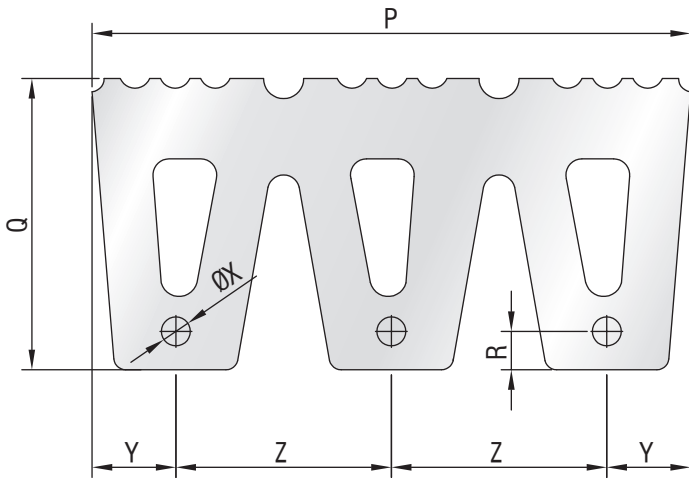
ALL DIMENSIONS ARE IN MM

| P | Q | R | ØX | Y | ØZ | PIN Ø | L | Radius(MIN) | WEIGHT (kg/Mt.) |
|-----|-----|----|----|-----|-----|-------|------|-------------|-----------------|
| 200 | 200 | 35 | 28 | 130 | 90 | 25 | 2000 | 450 | 33 |
| 250 | 250 | 50 | 33 | 150 | 100 | 30 | 2000 | 600 | 54 |
| 300 | 300 | 60 | 33 | 180 | 115 | 30 | 1750 | 800 | 80 |
| 350 | 350 | 70 | 33 | 210 | 125 | 30 | 2000 | 1000 | 114 |

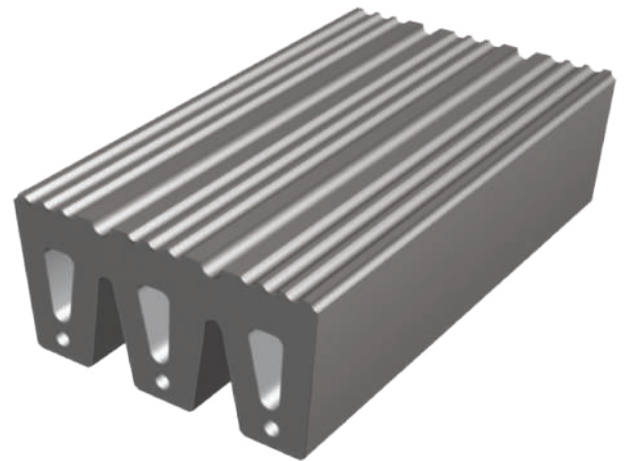
Note : Weight values mentioned are approximate.

NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

W TYPE FENDERS - BW SERIES



BW Series Boat Fenders are the most versatile bow & stern fenders used on Tug Boats, small Port Craft, and Ferries. They offer maximum protection to the Tugs and Ferries with the typical profile and load absorbing capabilities. These are very easy to install and replace, thus making them maintenance hassle-free. These Fenders are made of high abrasion resistance rubber with good resilience properties. IRM BW Series Boat Fenders are available in various heights and lengths as per customer's requirement.

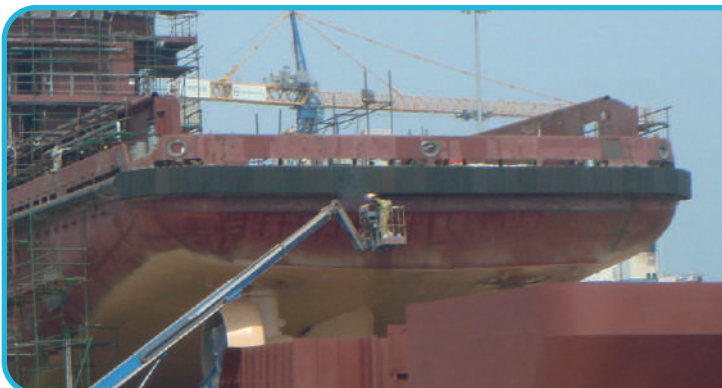


DIMENSION TABLE

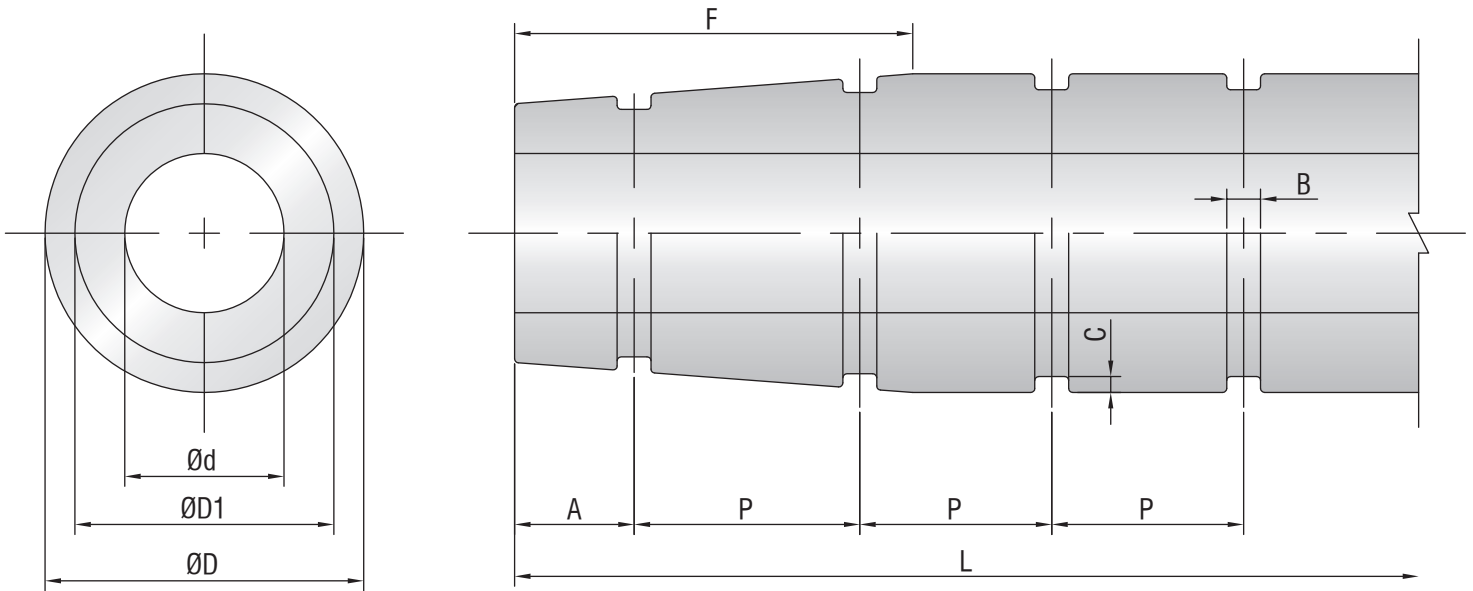
ALL DIMENSIONS ARE IN MM

| P | Q | R | ØX | Y | Z | PIN Ø | L | Radius (MIN) | WEIGHT Kg/Mt. |
|-----|-----|----|----|----|-----|-------|------|--------------|---------------|
| 300 | 200 | 40 | 23 | 30 | 120 | 20 | 2000 | 425 | 54 |
| 400 | 200 | 40 | 23 | 50 | 150 | 20 | 2000 | 450 | 58 |
| 500 | 250 | 50 | 27 | 60 | 190 | 24 | 2000 | 550 | 90 |
| 600 | 300 | 60 | 33 | 70 | 230 | 30 | 2000 | 650 | 133 |

Note : Weight values mentioned are approximate.



TUG BOAT FENDERS TF - A SERIES



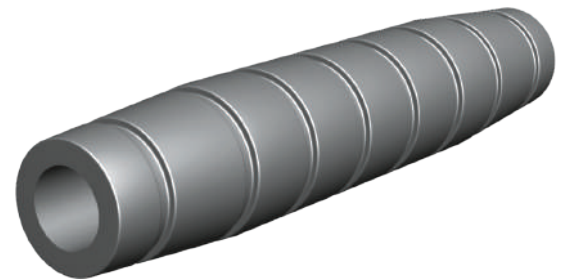
TF-A series Tug Boat Fenders are available in different sizes & shapes. These Fenders are manufactured with high abrasion resistance rubber with good resilience properties for the required application. Tug Boat Fenders are available in TF-A type, TF-B type and TF-C type.

These Fenders are easy to install and dismantle using user-friendly tools & tackle with a chain running through the centre of the fender and straps or chains fitted into the grooves around the outside diameter of the fender. These Fenders are compression moulded and do have excellent seawater resistance. These Fenders also have excellent resistance to ozone ageing and UV rays, enhancing the fender life under severe working conditions. TF series Tug Boat Fenders are available in a wide range and various lengths as per the client's requirements.

DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

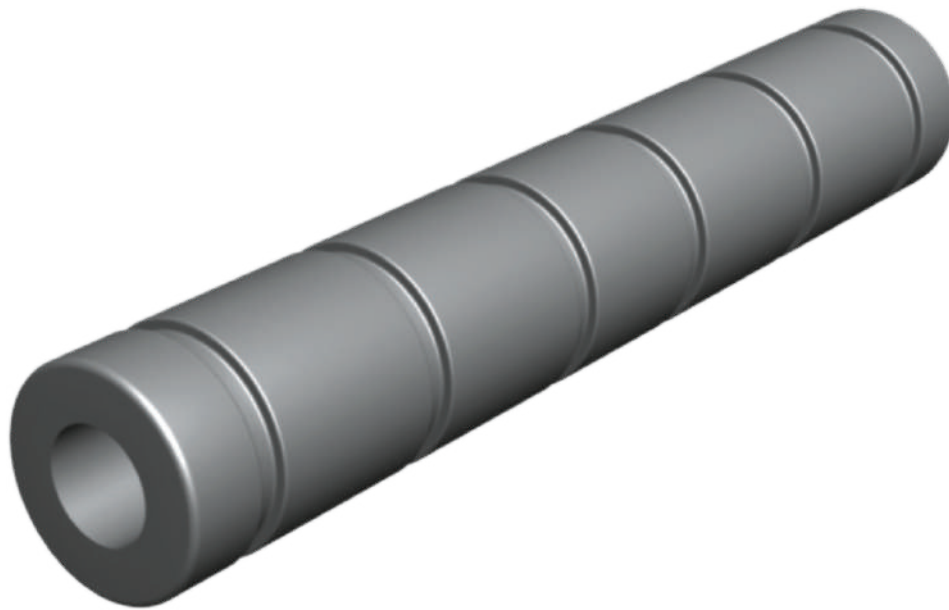
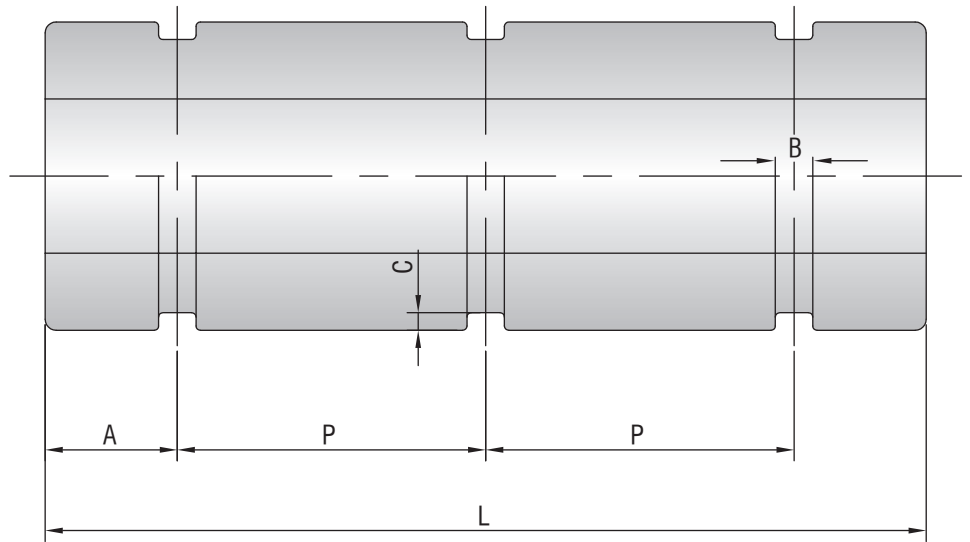
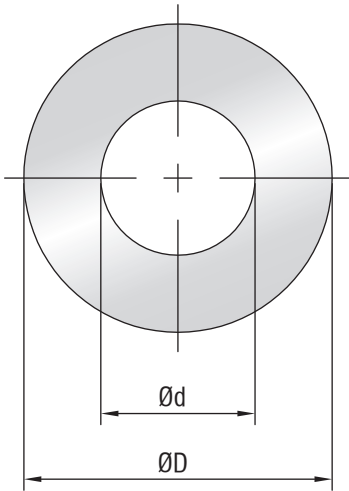
| ØD | ØD1 | Ød | A | F | B | C |
|-----|-----|-----|-----|------|----|----|
| 200 | 150 | 75 | 150 | 500 | 75 | 10 |
| 250 | 190 | 100 | 200 | 500 | 75 | 20 |
| 300 | 225 | 125 | 225 | 700 | 75 | 20 |
| 350 | 260 | 150 | 250 | 800 | 75 | 20 |
| 400 | 300 | 200 | 250 | 850 | 75 | 20 |
| 500 | 375 | 250 | 300 | 900 | 75 | 20 |
| 600 | 450 | 300 | 300 | 900 | 85 | 40 |
| 700 | 525 | 350 | 300 | 1000 | 85 | 40 |
| 800 | 650 | 400 | 300 | 1000 | 85 | 40 |



| ØD | L | P | | | | | | | | | | | | | |
|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| | | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 | 11000 | 12000 |
| 200 | 567 | 733 | 900 | 640 | 740 | 840 | 940 | 814 | 957 | 856 | 967 | 882 | 973 | 975 | |
| 250 | 533 | 700 | 867 | 620 | 720 | 820 | 920 | 800 | 943 | 844 | 956 | 873 | 964 | 967 | |
| 300 | 517 | 683 | 850 | 610 | 710 | 810 | 910 | 793 | 936 | 839 | 950 | 868 | 959 | 963 | |
| 350 | 500 | 667 | 833 | 1000 | 700 | 800 | 900 | 786 | 929 | 833 | 944 | 864 | 955 | 958 | |
| 400 | 500 | 667 | 833 | 1000 | 700 | 800 | 900 | 786 | 929 | 833 | 944 | 864 | 955 | 958 | |
| 500 | 700 | 633 | 800 | 967 | 680 | 780 | 880 | 771 | 915 | 822 | 933 | 855 | 945 | 954 | |
| 600 | 700 | 633 | 800 | 967 | 680 | 780 | 880 | 771 | 914 | 822 | 933 | 855 | 945 | 950 | |
| 700 | 700 | 633 | 800 | 967 | 680 | 780 | 880 | 771 | 914 | 822 | 933 | 855 | 945 | 950 | |
| 800 | 700 | 633 | 800 | 967 | 680 | 780 | 880 | 771 | 914 | 822 | 933 | 855 | 945 | 950 | |

NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF - B SERIES



DIMENSION TABLE

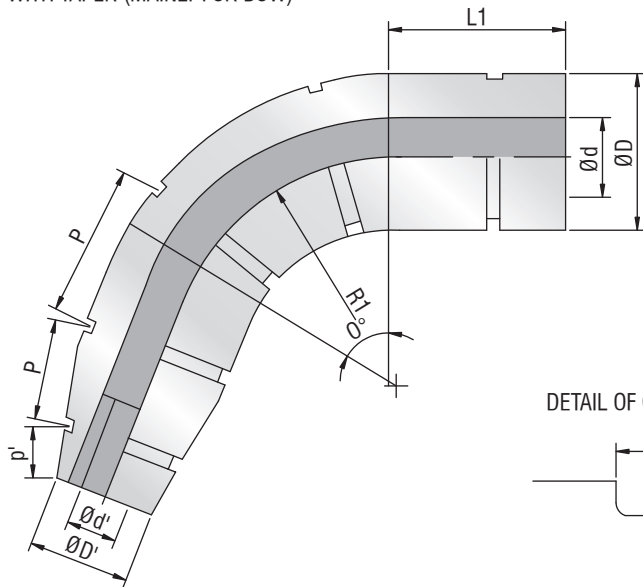
ALL DIMENSIONS ARE IN MM

| ØD | Ød | A | B | C | P | | | | | | | | | |
|-----|-----|-----|----|----|------|------|------|------|------|------|------|------|------|------|
| | | | | | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 6000 |
| 100 | 50 | 150 | 75 | 10 | 700 | 600 | 850 | 733 | 900 | 800 | 740 | 840 | 940 | 814 |
| 150 | 75 | 150 | 75 | 10 | 700 | 600 | 850 | 733 | 900 | 800 | 740 | 840 | 940 | 814 |
| 200 | 100 | 150 | 75 | 10 | 700 | 600 | 850 | 733 | 900 | 800 | 740 | 840 | 940 | 814 |
| 250 | 125 | 200 | 75 | 20 | 600 | 550 | 800 | 700 | 867 | 775 | 900 | 820 | 767 | 800 |
| 300 | 150 | 225 | 75 | 20 | 550 | 525 | 775 | 683 | 850 | 763 | 888 | 810 | 910 | 925 |
| 350 | 175 | 250 | 75 | 20 | 500 | 500 | 750 | 1000 | 833 | 1000 | 875 | 1000 | 900 | 917 |
| 400 | 200 | 250 | 75 | 20 | 500 | 500 | 750 | 1000 | 833 | 1000 | 875 | 1000 | 900 | 917 |
| 500 | 250 | 300 | 75 | 20 | 400 | 450 | 700 | 950 | 800 | 967 | 850 | 974 | 880 | 900 |
| 600 | 300 | 300 | 85 | 40 | 400 | 450 | 700 | 950 | 800 | 967 | 850 | 975 | 880 | 900 |
| 700 | 350 | 300 | 85 | 40 | 400 | 450 | 700 | 950 | 800 | 967 | 850 | 975 | 880 | 900 |
| 800 | 400 | 300 | 85 | 40 | 400 | 450 | 700 | 950 | 800 | 967 | 850 | 975 | 880 | 900 |

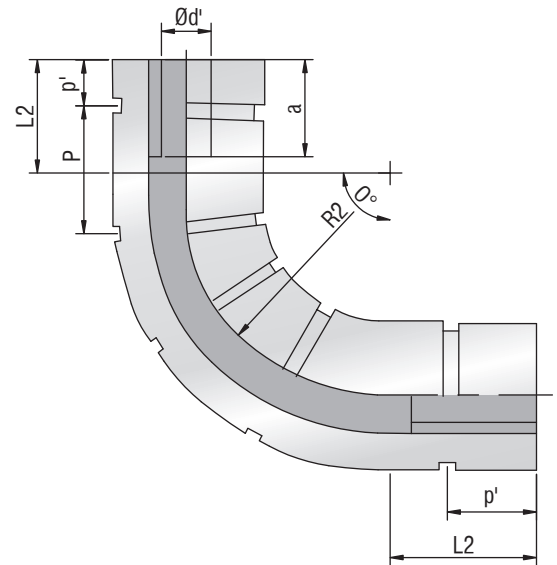
NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TUG BOAT FENDERS TF - C SERIES

WITH TAPER (MAINLY FOR BOW)



WITHOUT TAPER (MAINLY FOR STERN)



Tug boat fenders are available in different sizes and shapes. They are compression moulded and have excellent seawater resistance. They also offer superior resistance to ozone ageing and ultraviolet rays. These fenders are easy to install.



* SHOULD BE DECIDED WITHIN THE RANGE OF 500 TO 1000 MM CONSIDER THE LENGTH OF THE FENDER

DIMENSION TABLE

ALL DIMENSIONS ARE IN MM

| ØD | ØD' | Ød | Ød' | p | b | c | a | p' |
|-----|-----|-----|-----|------|----|----|-----|-----|
| 500 | 375 | 250 | 125 | 900 | 75 | 20 | 400 | 300 |
| 600 | 450 | 300 | 150 | 900 | 85 | 40 | 400 | 300 |
| 700 | 525 | 360 | 175 | 1000 | 85 | 40 | 400 | 300 |
| 800 | 650 | 400 | 200 | 1000 | 85 | 40 | 400 | 300 |
| 850 | 700 | 425 | 200 | 1100 | 85 | 40 | 400 | 300 |

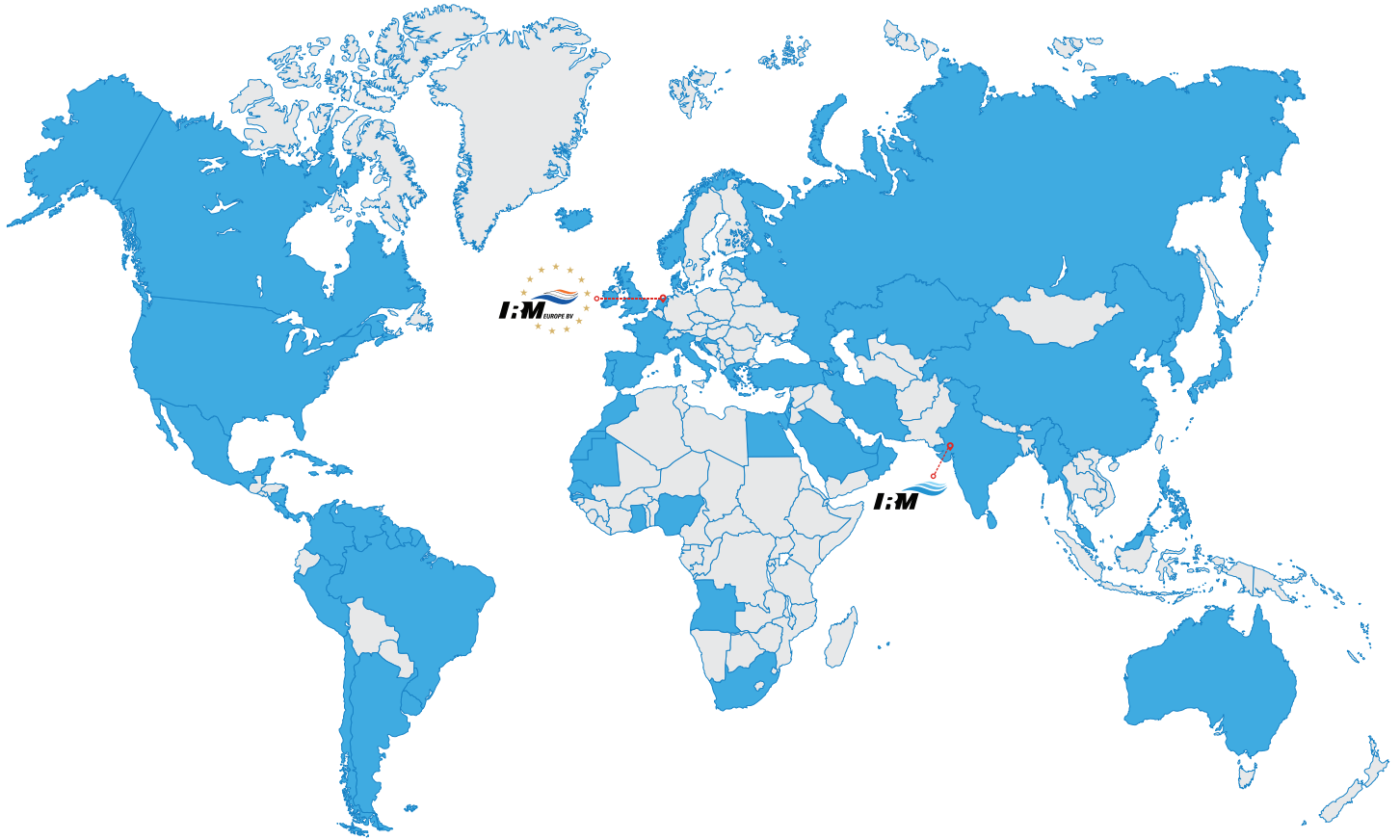
NON STANDARD SIZES AND LENGTHS ARE AVAILABLE AS PER SPECIFIC REQUIREMENTS

TECHNICAL SPECIFICATION OF RUBBER

| | PROPERTY | UNIT | REQUIREMENT | RELEVANT TESTING STANDARDS AND CONDITIONS |
|--------------|-----------------------------|--------------------|-------------------------------------|--|
| BEFORE AGING | TENSILE STRENGTH | Kg/Cm ² | MIN. 160 | (ASTM D412 DIE C/BS 903 A.Z.) JIS K 6301 ITEM 3 DUMBELL NO. 3 |
| | ELONGATION | % | MIN. 350 | |
| | HARDNESS | Deg. | MAX. 77 | (ASTM D2240 SHORE A DUROMETER/BS 903 A.Z.) JIS K 6301 ITEM 5 A TYPE TESTER |
| AFTER AGING | CHANGES IN TENSILE STRENGTH | % | NOT LESS THAN 80% OF ORIGINAL VALUE | AGING THROUGH AIR HEATING (ASTM D573 DIE C/BS 903 A.Z.) JIS K 6301 ITEM 6 DUMBELL NO. 3 70°C X 96 HRS. |
| | CHANGES IN ELONGATION | % | NOT LESS THAN 80% OF ORIGINAL VALUE | |
| | HARDNESS | Deg. | ORIGINAL VALUE +8° MAX. | (ASTM D2240 SHORE A DUROMETER/BS 903 A.Z.) JIS K 6301 ITEM 5 A TYPE TESTER |
| | TEAR RESISTANCE | Kg/Cm ² | MIN. 70 | (ASTM D624 DIE B/BS 903 A.3.) JIS K 6301 ITEM 9 TEST PIECE TYPE A |
| | COMPRESSION SET | % | MAX. 30 | 70°C X 22 HRS. HEAT TREATMENT (ASTM D395/BS 903 A 6A) JIS K 6301 ITEM 9 TEST PIECE TYPE A |
| | ABRASION RESISTANCE | Cc | MAX. 1.5 | BRITISH STANDARD BS903 A9 METHOD-A |
| | OZONE RESISTANCE | | NO CRACKS | ASTM D 1171 |

All above tests for Rubber compound will be provided in our laboratory or any Reputed Test Laboratories.

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