



Parallel Motion Fenders

Parallel Motion Fender technology can reduce reaction forces by up to 60% compared with traditional designs.

The panel on this marine fender always remains vertical but can cope with large berthing angles – even at 20° there is usually no loss in energy absorption.

Features

- Ultra-low reaction
- Non-tilt frontal panel
- No performance loss at large berthing angles
- Easy and fast to install
- Minimal maintenance

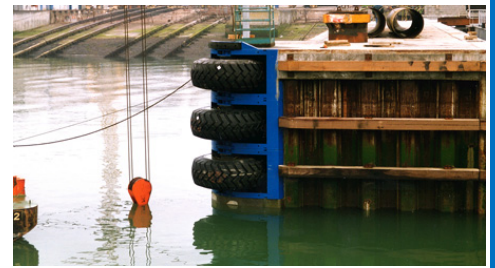
Applications

- RoRo and fast ferry berths
- LNG and tanker terminals
- Naval facilities
- High tidal zones
- Monopile or 'soft' structures

Increasing energy, reducing reaction

By using two Super Cones back-to-back, the deflection and energy both increase whilst reaction forces stay low. Reduced loads compared to conventional fenders mean less stress in the structure, allowing smaller piles and less concrete to be used.

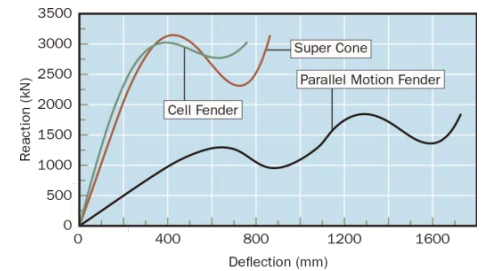
As Parallel Motion Fenders are mostly preassembled in the factory, installation is simple and fast. Maintenance is minimal too – contributing to the low service life cost of Parallel Motion technology.



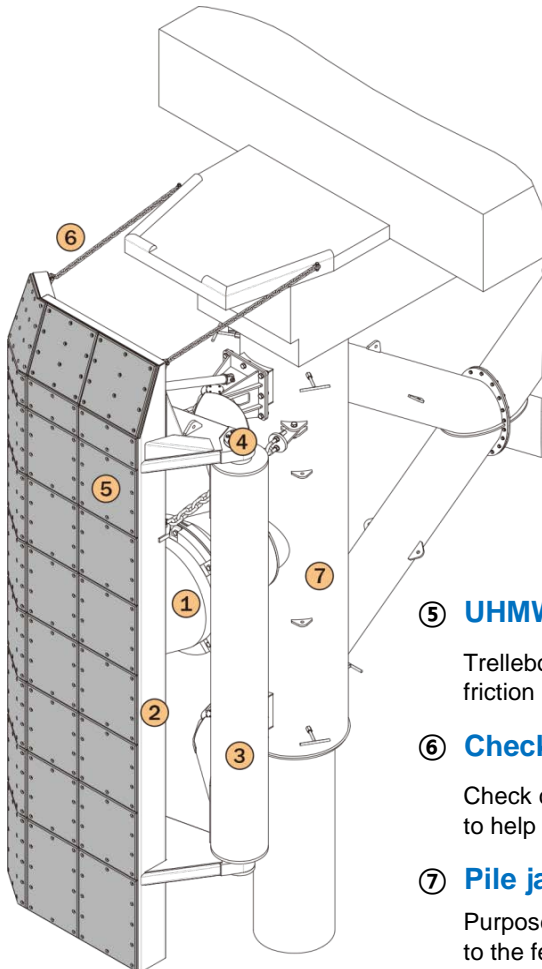
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Comparison of PMF and conventional fenders

Type	E(kNm)			R(kN)	
	0°	10°	20°	RPD	ϵ_{20}
Parallel Motion Fender PMF1200 (E3.1 & E1.9)	1957	1957	1957	1848	100%
Super Cone 2 x SCN1200 (E2.7)	1958	1958	1449	3147	43%
Cell Fender 2 x SCK1450 (E2.9)	1930	1704	1258	3032	39%



ϵ_{20} = Relative Efficiency at 20° angle compared to PMF



① Rubber fender units

Shown here are two Super Cones mounted in a back-to-back 'Twin-Series' configuration.

② Closed box panel (frame)

Fully sealed, pressure tested design. Shown with optional lead-in bevels which are designed to suit each case.

③ Torsion tube and arm assembly

Also closed-box construction, the tube and arms keep the panel vertical whatever level impact loads are applied.

④ Hinge units

The maintenance-free stainless steel pins and spherical Trelleborg Orkot® bearings allow free rotation to accommodate berthing angles, also eliminating moments in the hinge pin.

⑤ UHMW-PE face pads

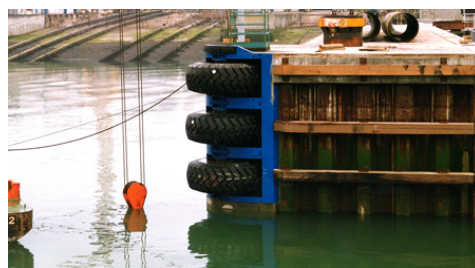
Trelleborg 'Double Sintered' UHMW-PE face pads are standard to minimise friction and maximise service intervals.

⑥ Check chains

Check chains (optional) act as rope defl ectors to stop ropes from snagging, and to help with some large angle berthings.

⑦ Pile jackets (optional)

Purpose designed for every project, pile jackets are factory built for a perfect fit to the fender on-site. They can strengthen the structure and double as a corrosion barrier in the vulnerable splash zone. Jackets are also available for monopile systems.



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Twin-Series Super Cone

	E (kNm)	R (kN)
SCN 400	47–65	149–204
SCN 500	92–127	233–318
SCN 550	122–169	283–385
SCN 600	156–220	324–440
SCN 700	286–387	462–627
SCN 800	423–581	606–820
SCN 900	602–822	765–1040
SCN 1000	826–1131	945–1282
SCN 1050	957–1309	1042–1414
SCN 1100	1102–1507	1145–1551
SCN 1200	1432–1957	1361–1848
SCN 1300	1816–2486	1597–2167
SCN 1400	2268–3104	1853–2514
SCN 1600	3385–4367	2418–3278
SCN 1800	4817–6599	3060–4153
SCN 2000	6609–9044	3778–5126

Twin-Series Super Cone

	E (kNm)	R (kN)
SCN 400	19–38	104–204
SCN 500	36–74	164–318
SCN 550	49–99	198–385
SCN 600	63–132	225–440
SCN 700	117–226	320–627
SCN 800	171–341	419–820
SCN 900	248–484	527–1040
SCN 1000	338–666	653–1282
SCN 1050	392–770	720–1414
SCN 1100	450–886	788–1551
SCN 1200	585–1150	971–1848
SCN 1300	743–1463	1103–2167
SCN 1400	927–1826	1278–2514
SCN 1600	1382–2728	1670–3278
SCN 1800	1967–3883	2115–4253
SCN 2000	2700–5324	2610–5216

MV and MI Element PMF

	E (kNm)	R (kN)
MV 400	52–75	284–406
MV 500	82–117	356–508
MV 550	99–141	391–558
MV 600	118–168	427–610
MV 750	183–262	533–762
MV 800	210–300	568–812
MV 1000	328–468	711–1016
MV 1250	511–730	889–1270
MV 1450	687–982	1030–1472
MV 1600	837–1196	1138–1626
MI 2000	1295–1850	1295–1850

MV and MI Elements are not PIANC Type Approved. Performances are based on a pair of 1000mm long elements. Pro-rata for more elements or different lengths.