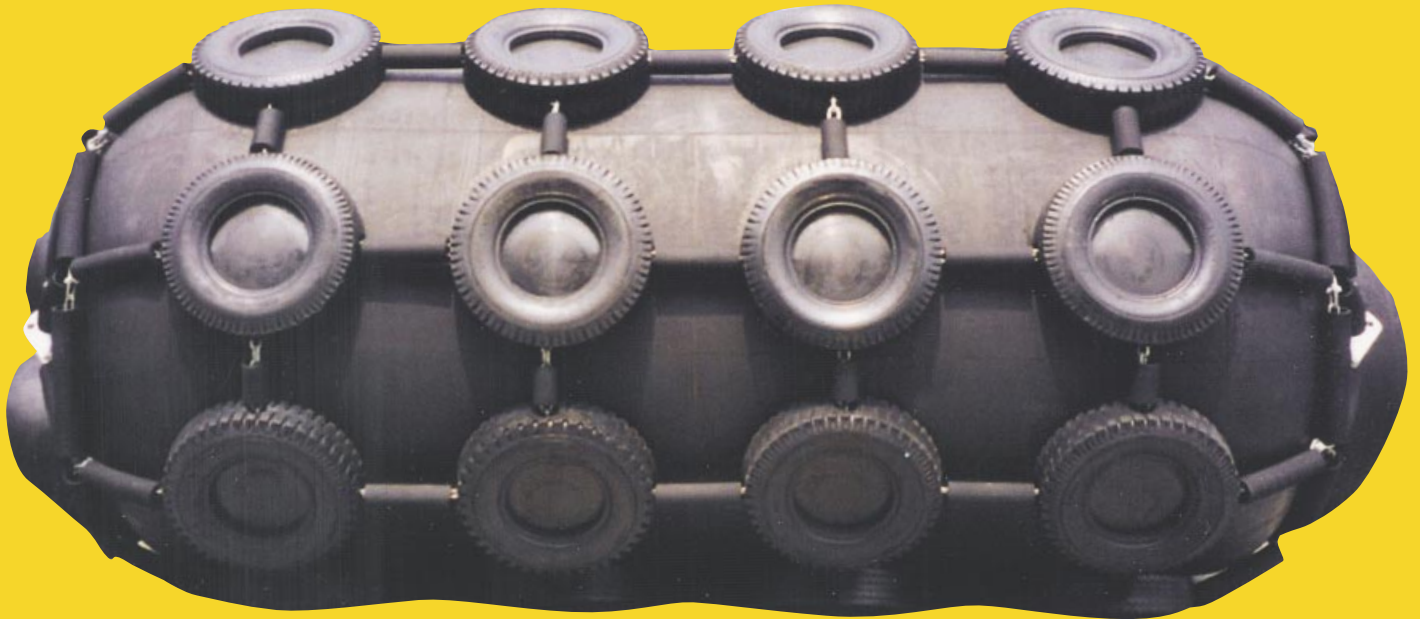




**No. 1**  
in maritime equipment

# Pneumatic Fenders Rubber Fenders Port Fenders



 Kum Nam **D&F**

**NORWEGIAN**  
maritime equipment

MARITIME

OFFSHORE

The worldwide marketplace

# Pneumatic Fenders

## Pneumatic Fenders

Pneumatic fenders can be delivered in various sizes and executions. We normally recommend fenders with tyre and net for protection of fender body but it can also be delivered without. Fenders are manufactured and tested as per ISO 9001 certification. Performance curves will be delivered upon request for the size you want.



### NOTE:

1. «Guaranteed energy absorption» represents the guaranteed energy absorption at 60% deflection.
2. Tolerance of reaction force and deflection at guaranteed energy absorption are as follows:
  - Reaction: +/- 10%
  - Deflection: +/- 5%
3. Each reaction and energy absorption are measured under static condition.
4. Testing pressure rate indicates the testing pressure at factory.
5. Weight of fender body and net may vary +/- 10%.
6. We can manufacture the special size except the below mentioned



Normal Size Diameter x Length (mm)	PRESSURE (kg/cm <sup>2</sup> )	GUARANTEED ENERGY ABSORPTION (E.A.) AND REACTION FORCE (R-F.) (AT 60% DEFLECTION)		APPROX FENDER THICKNESS (mm)	SAFETY VALVE PRESSURE (kg/cm <sup>2</sup> )	TESTING PRESSURE (kg/cm <sup>2</sup> )	WEIGHT		TOTAL WEIGHT (kg)	POSSIBLE CUSTOM LENGTH
		E.A(TON-M)	R.F(TON)				FENDER BODY (kg)	CHAIN AND THE NET (kg)		
300x600	0.5	0.3	4.9	9	-	1.5	15	-	15	
500x1000	0.5	0.6	6.0	12	-	1.5	24	-	24	800L
800x1500	0.5	1.7	13.2	13	-	1.5	84	148	232	
1000x1500	0.5	3.8	16.1	14	-	1.5	97	160	257	
1000x2000	0.5	5.2	23.2	14	-	1.5	158	171	329	
1200x2000	0.5	6.7	28.7	14	-	1.5	170	286	456	2500L
1500x2500	0.5	11.2	41.3	15	-	1.5	280	360	640	
1500x3000	0.5	17.6	51.2	15	-	1.5	340	513	853	3500L
1500x4000	0.5	16.2	62.0	15	-	1.5	480	980	1460	
2000x3500	0.5	33.2	83.4	17	-	1.5	550	990	1540	3800L
2500x4000	0.5	70.2	132.0	18	1.8	2.0	1040	1260	2300	
2500x5500	0.5	102.0	193.8	18	1.8	2.0	1340	1680	3020	
3000x5000	0.5	110.0	205.0	19	1.8	2.5	1970	2500	4470	6000L
3300x4500	0.5	120.5	198.5	20	1.8	2.5	1980	2290	4270	
3300x6500	0.5	192.0	292.0	20	1.8	2.5	2650	2735	5385	8000L
3300x9000	0.5	270.0	437.0	20	1.8	2.5	3080	3440	6520	
3300x10600	0.5	316.5	521.6	20	1.8	2.5	3320	4638	7958	

Performance note

# Pneumatic Fenders



## Features

1. Higher energy absorption with lower reaction force.
2. Performance adjustable by varying initial pressure.
3. Low maintenance.
4. Suitable for areas with large and small tides.
5. Optional chain net & tyres for heavy duty applications.

## Physical property of rubber

		TEST ITEM	OUT-LAYER RUBBER	CORD RUBBER AND INNER LAYER RUBBER
Physical Property test	Before aging	Tensile strength	Over 180 kgf/cm <sup>2</sup>	Over 100 kgf/cm <sup>2</sup>
		Elongation	Over 400%	Over 400%
		Hardness	Under 70°	Under 65°
		Test resistance	Over 40kgf/cm <sup>2</sup>	
	After aging	Tensile strength	Over 80% of the value before aging	
		Elongation	Over 80% of the value before aging	
		Hardness	Under + 80° of the value before aging	

## NOTES

1. The physical test upper mentioned is according to JIS K6301-194. And about the same size, in the case being identify the test method about over the two kind, adopt the under mentioned methods.

- Hardness test: Spring test hardness (A type)
- Aging test: air heating aging test/test temperature - 70 +/- 1°/test time - 96 hours.

# Pneumatic Fenders

## Compression test



0%



30%



60%

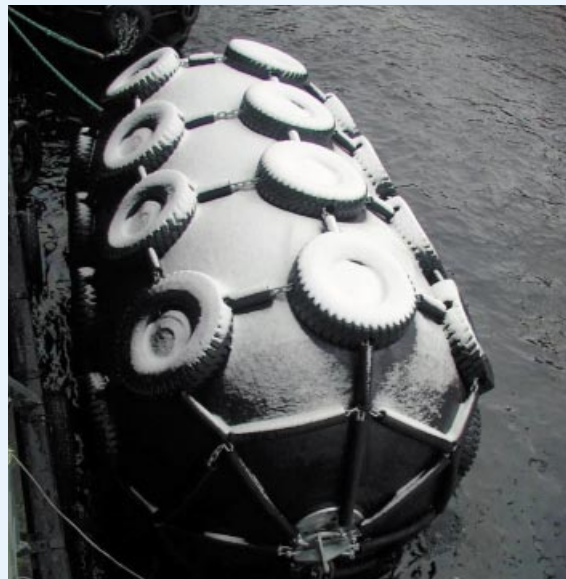
## Testing and quality

Kum Nam D&F is very focused on the quality of their products.

They have invested in the most modern equipment for testing in order to meet the customer's demands for high quality.

The Dolphin fenders are used by customers world wide and they have been tested under rough conditions both in warm and cold climate.

The large amounts of satisfied customers are our best references.

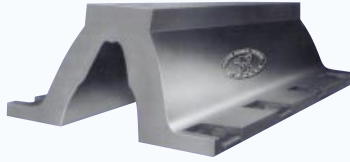


# Rubber Fenders

## Rubber fenders for ports, harbours, wharfs etc.



KOV-TYPE FENDERS



KTV-TYPE FENDERS



KCV-TYPE FENDERS



KH-TYPE FENDERS



KBP-TYPE FENDERS



KDB-TYPE FENDERS



KTR-TYPE FENDERS



CYLINDRICAL FENDERS



SPOOL FENDERS ASSEMBLY



ROLLER (R3) FENDERS



CE-TYPE FENDERS



KGB-TYPE FENDERS

## Ship fenders For work boats, tugs etc. Can also be used for smaller jetties and wharfs.



# Accessories

## All types of fenders can be delivered with various accessories

This is adapted to the actual fender size and has been constructed to meet the forces that the fenders are constructed for. This is an important part of a package delivery for the very best installation.



RESIN PLUG-TYPE ANCHOR BOLTS



CHEMICAL ANCHOR BOLTS



J-TYPE ANCHOR BOLTS



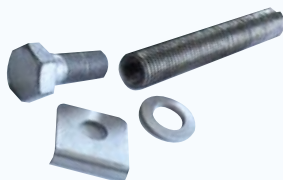
U-ANCHOR



ONE TOUCH-TYPE ANCHOR BOLTS



CHAIN



CHEMICAL ANCHOR BOLTS



SHACKLE



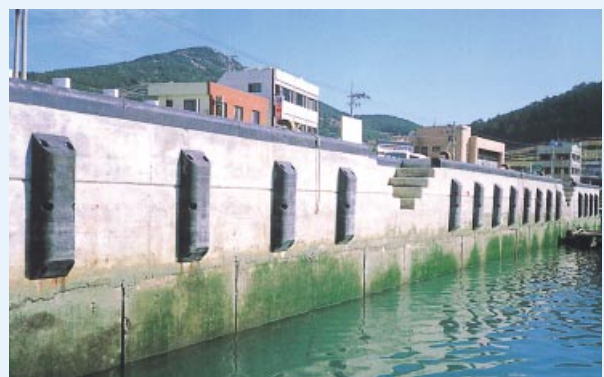
# Accessories

## Port fenders

Port fenders can be delivered in various executions. Please contact us for finding out what type of fender to be used in your project.

Our engineers in Korea are able to assist with drawings and calculations to determine the right size and no. of elements needed.

Portfenders can be delivered with all accessories for the installation work.



# Kum Nam D&F

Norwegian Maritime Equipment AS is the exclusive Distributor of Dolphin fenders for Kum Nam D&F in Korea.

Dolphin fenders are of highest quality for long life.

Our catalogue is only giving a brief view of the products we are able to deliver and we recommend that you contact us for more detailed info.

We do gladly assist you with technical assistance when it comes to choosing the right fender size for your project.



## Safety Equipment

- Lifeboats—totally enclosed / partially enclosed / open • Freefall Lifeboats
- Rescue / Fast Rescue Boats • Davits - ships and rig davits / single arm / liferaft davits

## Deck Equipment

- Deck Cranes • Offshore Cranes • A-frames • Winches - mooring / tugger / hoisting etc.
- Windlasses • Capstans

## Other Equipment

- Anchors • Chains • Reverse Osmosis Plants • Sewage Treatment Plants
- Tunnel thrusters • Accommodation Modules • Firefighting Systems
- Purifiers • Fenders • Various Maritime / Offshore Equipment

Manufacturing and supply  
Installation

Rental  
Service

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