



INTER BOAT MARINAS

System Breakwaters



The breakwaters are fabricated from high quality concrete with hot-dip galvanized steel reinforcement and are of heavy duty construction. They have good wave attenuation properties ideal for use in sheltered coastal areas, rivers and inland waters. The breakwaters have low maintenance requirements.

Standard units: Breakwaters can be supplied in four standard widths.

Breakwaters type 2700 (concrete width 2,4 meter)

- M2716: 16,1 x 2,6 x 1 meter - 17,4 ton
- M2720: 19,9 x 2,6 x 1 meter - 21,8 ton

Breakwaters type 3300 (concrete width 3,0 meter)

- M3316: 16,1 x 3,2 x 1 meter - 20,8 ton
- M3320: 19,9 x 3,2 x 1 meter - 25,9 ton

Breakwaters type 3800 (concrete width 3,5 meter)

- M3816: 16,1 x 3,7 x 1,2 meter - 31,5 ton
- M3820: 19,9 x 3,7 x 1,2 meter - 39,3 ton

Breakwaters type 4300K - with twin keels (concrete width 4,0 meter)

- M4316K: 16,1 x 4,2 x 1,8 meter - 33,6 ton
- M4320K: 19,9 x 4,2 x 1,8 meter - 41,2 ton

Other types / sizes on request.

INTER BOAT MARINAS

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Technical information

Loading

The standard vertical bearing capacity of our breakwaters is:

- Type M2700: 530 kg/m²
(over the full concrete width of 2,4 meter);
- Type M3300: 550 kg/m²
(over the full concrete width of 3,0 meter);
- Type M3800: 610 kg/m²
(over the full concrete width of 3,5 meter);
- Type M4300K: 600 kg/m²
(over the full concrete width of 4,0 meter).

Structure

The breakwaters are manufactured with K40 watertight concrete and reinforced with hot-dip galvanized steel.

All steel fittings are hot-dip galvanized steel or stainless steel (AISI A4) quality.

Fenders

Both sides of the breakwater are provided as standard with Angelim Vermelho hardwood fenders, size 95 x 145 mm and spaced 10 mm off the concrete.

Connections

The units are connected with heavy semi-flexible rubber bolted joints.

Service ducts

Plastic service ducts can be incorporated in the concrete units during manufacturing. Water and electricity modules can be connected to the ducts by drilling holes through the deck.

Anchors

With pile guides or chains or Seaflex with concrete anchors.

Freeboard

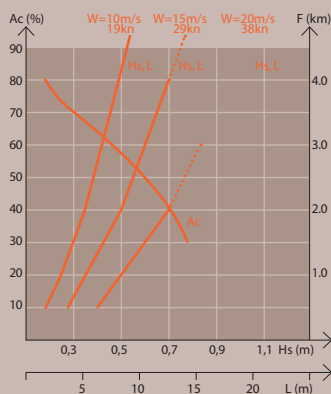
The breakwater systems have a standard minimum unladen freeboard of:

- Type M2700: approx. 530 mm;
- Type M3300: approx. 550 mm;
- Type M3800: approx. 610 mm;
- Type M4300K: approx. 600 mm.

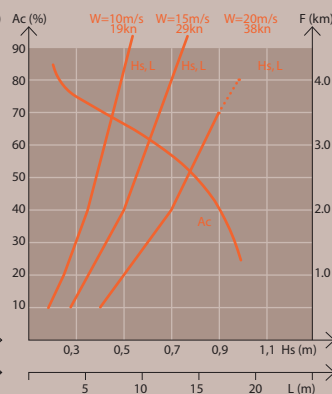
Wave attenuation capacity

Sheltered sea conditions

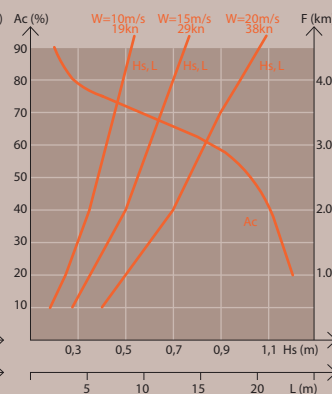
Type 2700



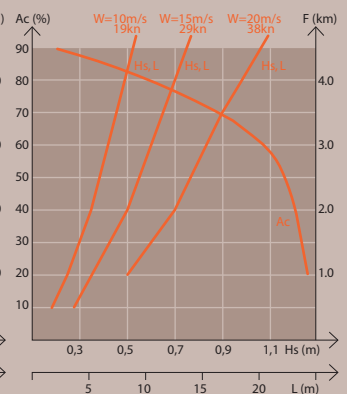
Type 3300



Type 3800



Type 4300K



- F - Effective fetch length
- W - Wind velocity
- L - Wave length
- Hs - Significant wave height
- Ac - Wave attenuation capacity

More detailed technical information and calculations made by an independent consultancy, are available on request.