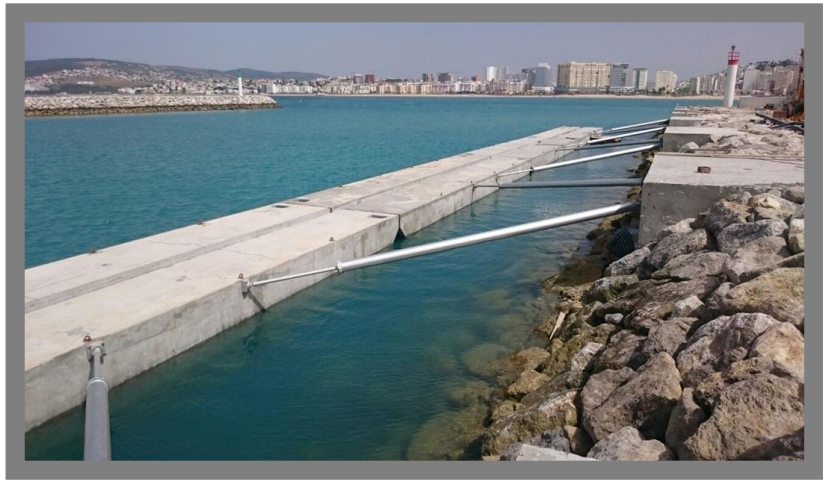
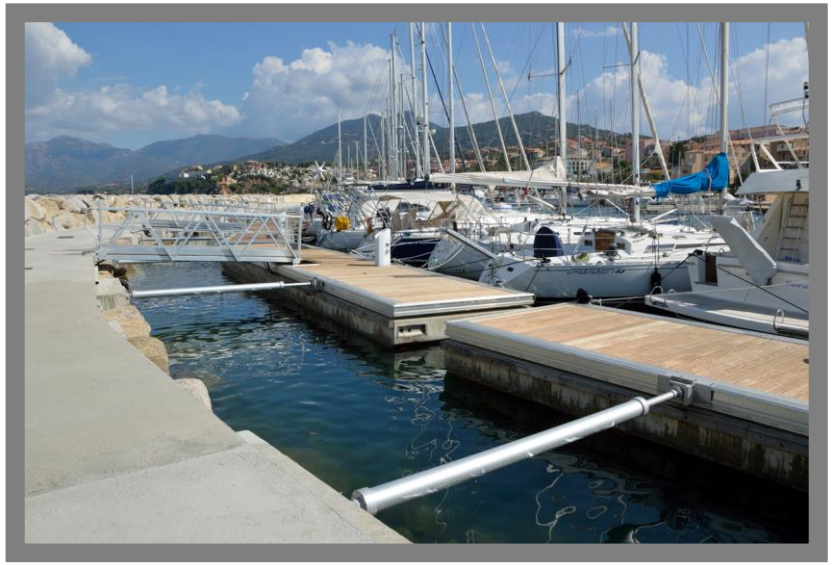
DualDocker®

Docking securely

FLOATING PONTOONS

Mooring Solutions for Floating Pontoons





DualDocker is technology leader in mooring floating pontoons

- **DualDocker** is a purely **mechanical mooring solution**; based on the principle of avoiding kinetic **damped** and **without play**, regardenergy and the resulting braking forces.
- **Highly** less of water level.
- That's the reason for the **force reduction up to 90 % !**
- **DualDocker** offers highest level of **convenience and safety** in storms & waves.
  - Problem solver in challenging conditions (High water depth, heavy duty projects)
  - **Jerk-free,** minimum level of motion
  - **Utmost safety** during a storm
  - **Maintenance free**
  - **Zero impact on underwater world**

Conventional Solutions

Stiff mooring booms

- No damping capacity
- High retention forces

Piles

- Visual Impact
- Limited damping capacity
- Jerking
- Noise

Stiff mooring booms

- No damping capacity
- Jerking & Movement

Disadvantages

- High retention forces
- Inconvenience
- Discomfort
- Damage
- Safe enough?

DualDocker reduces the forces by 90%

A **30m yacht** with **100 tons** of weight **collides with the floating pontoon during docking maneuver:**

Conventional

Pontoon moored with conventional systems (limited damping capacity):

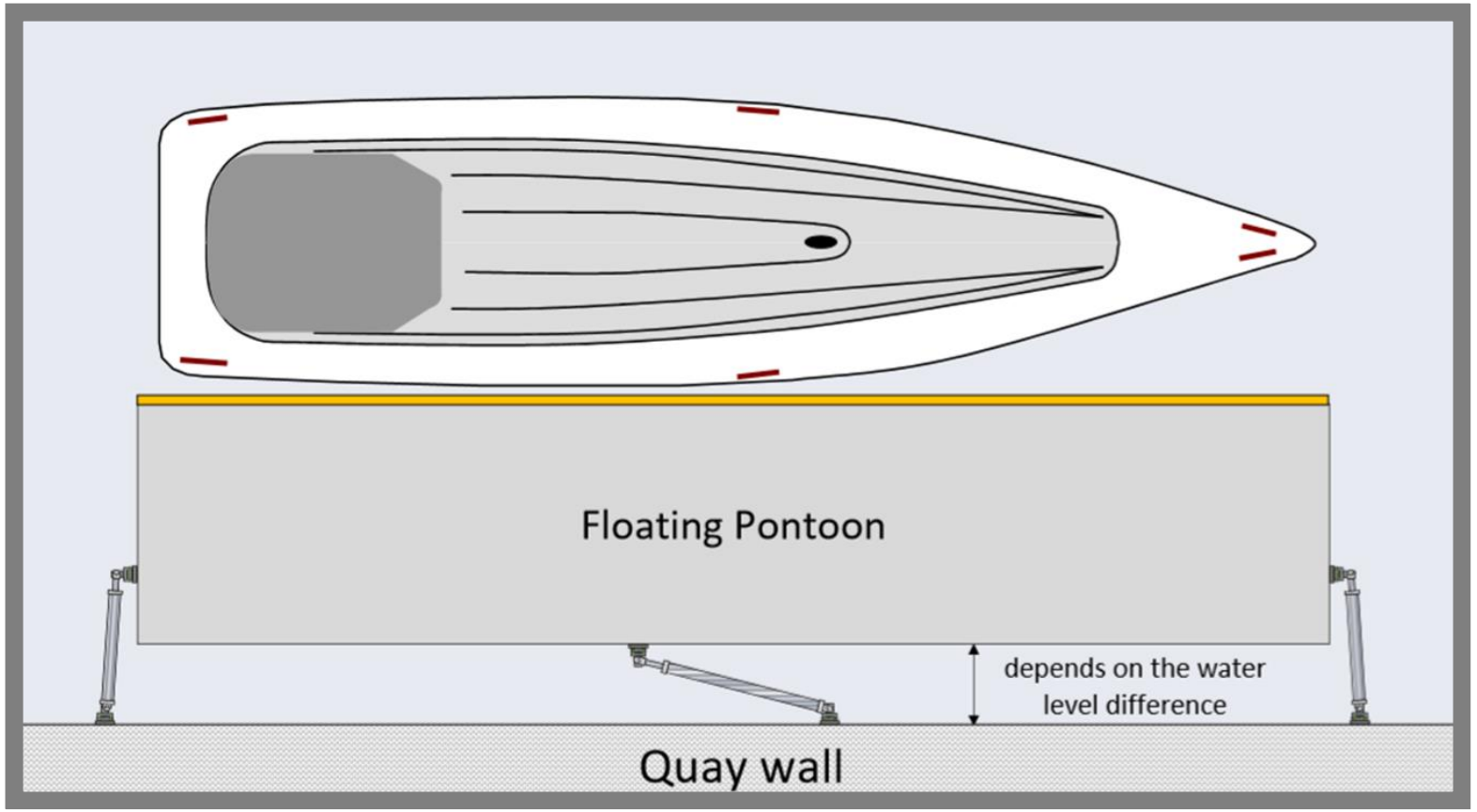
Colliding speed 0.1 m/s (0.2 kn) results in **20 tons of braking force**

Innovation

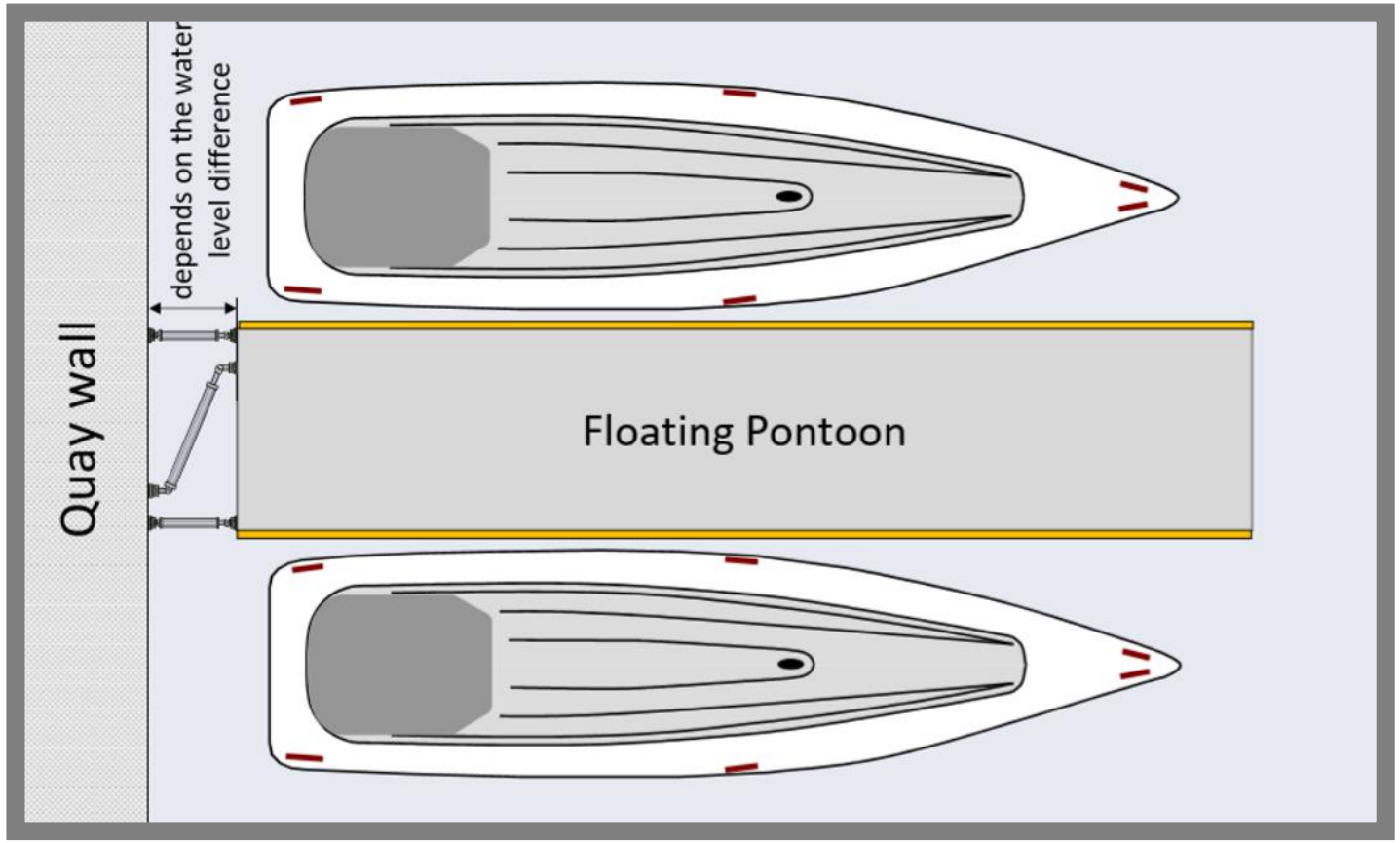
Pontoon moored with DualDocker (highly damped):

Colliding speed 0.1 m/s (0.2 kn) results in **2 tons of braking force**

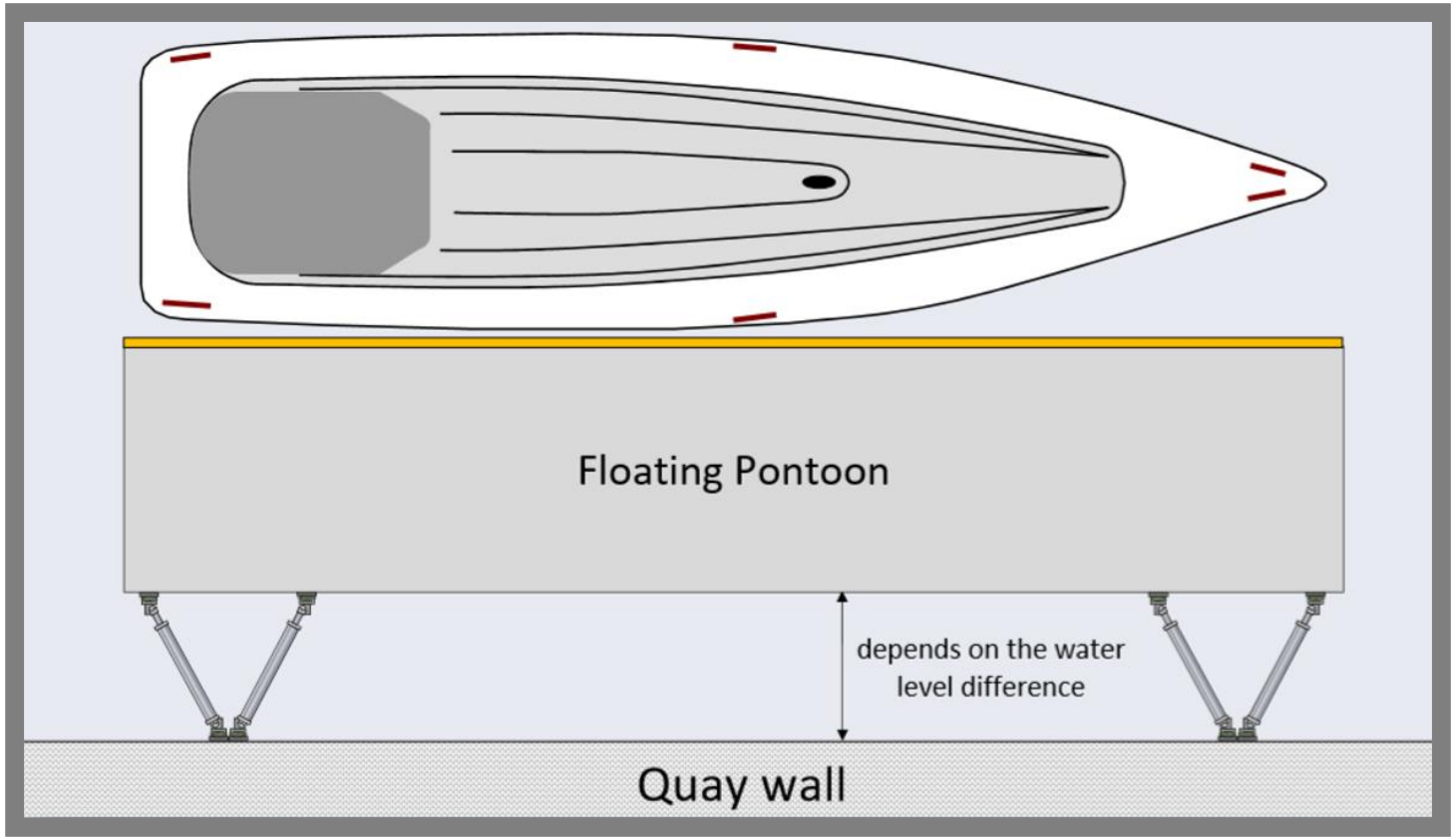
TriDocker for Floating Pontoons



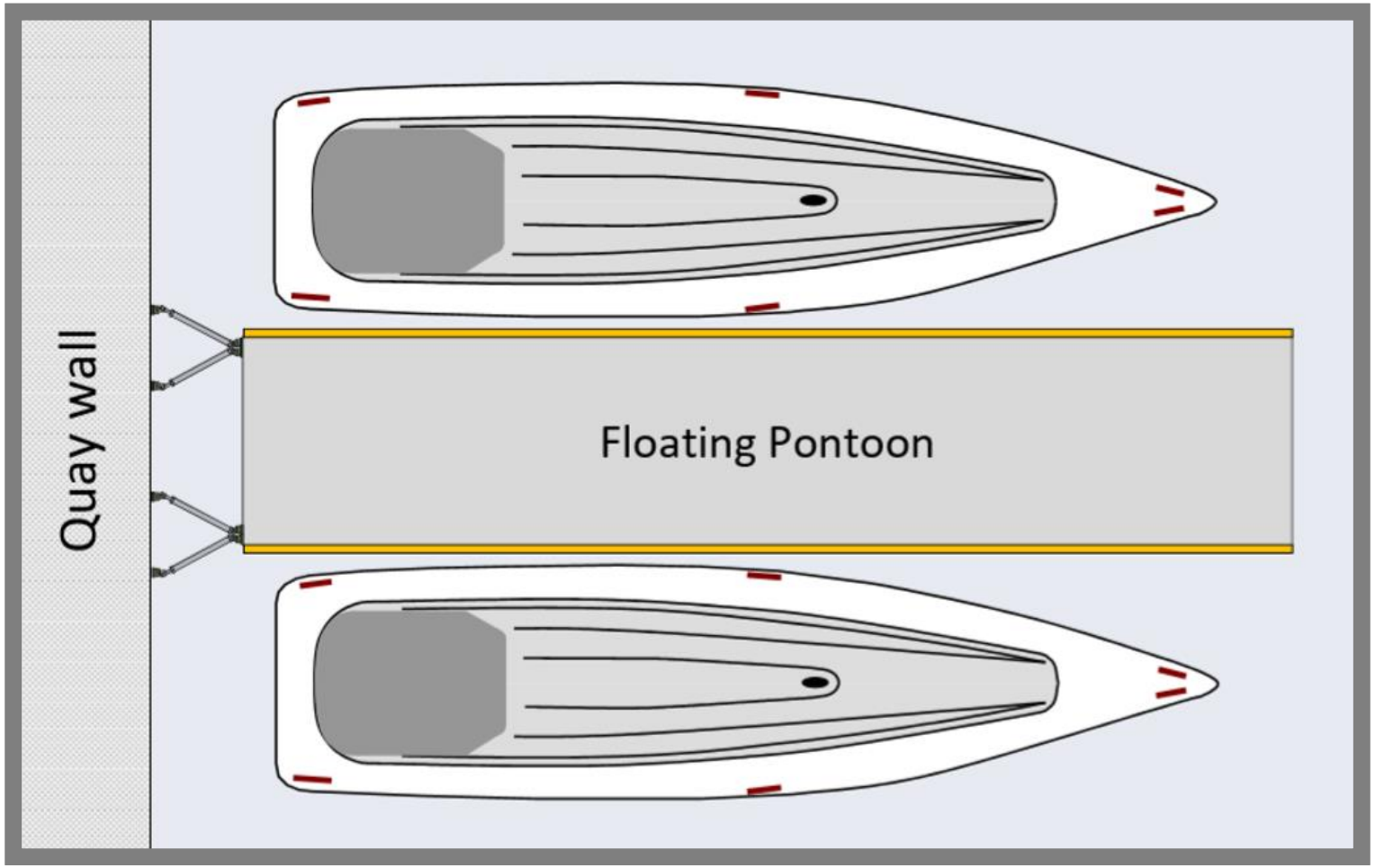
TriDocker for Floating Pontoons



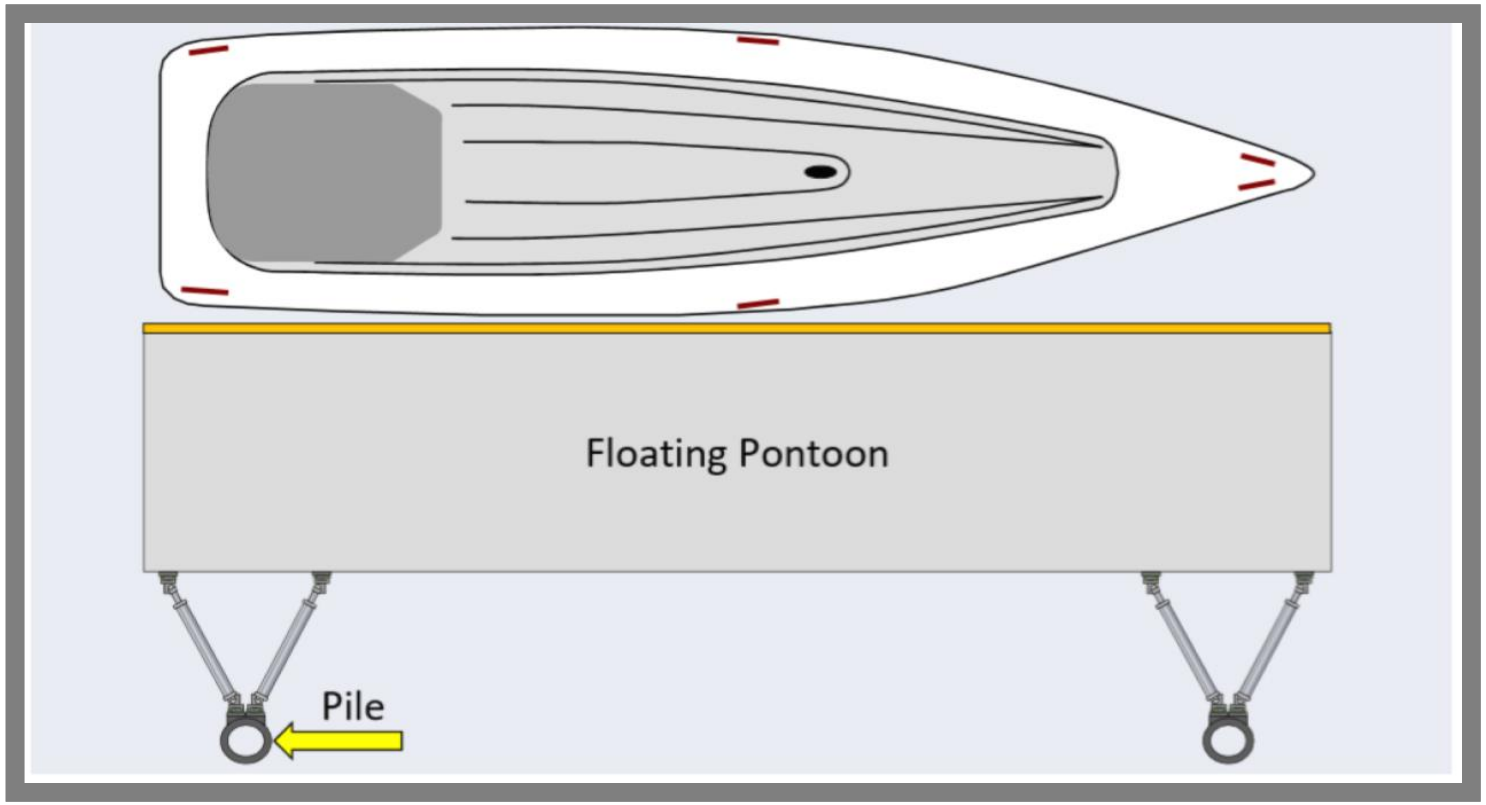
V-Setup for Floating Pontoons



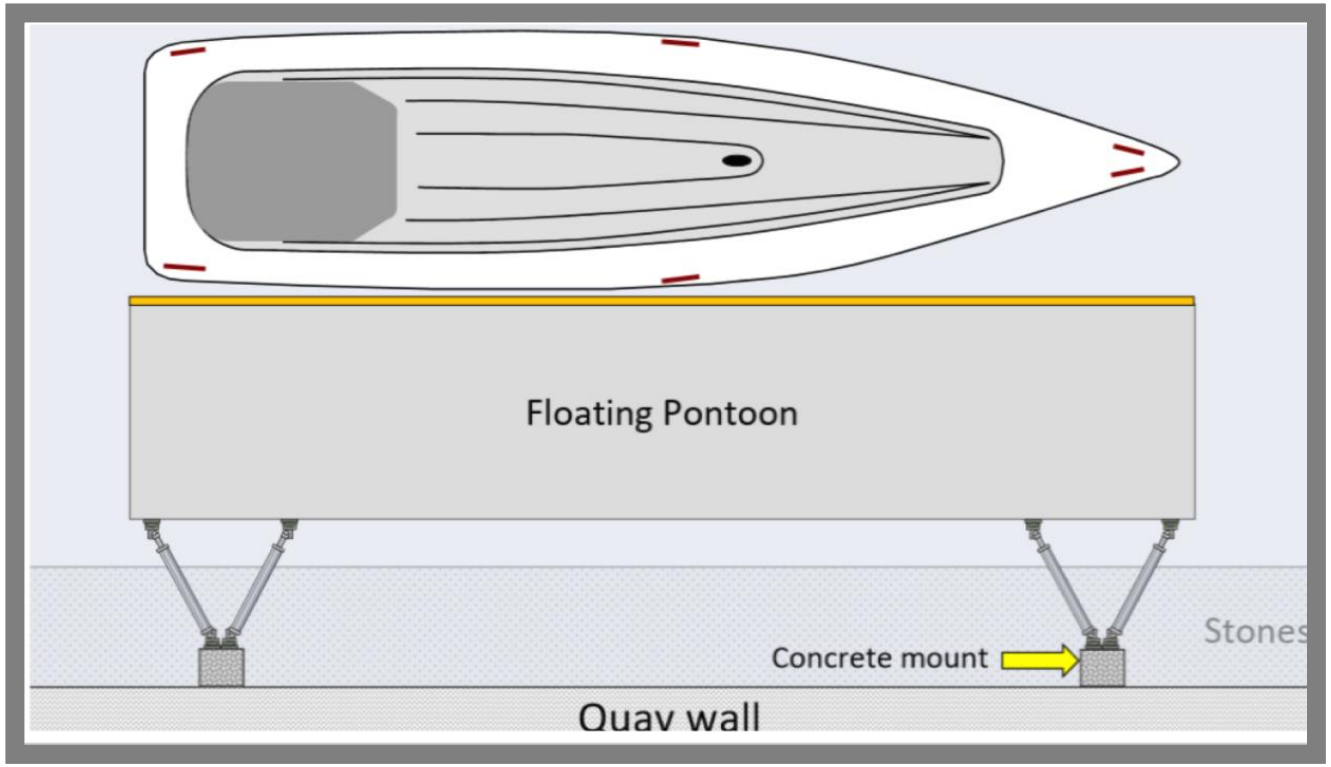
V-Setup for Floating Pontoons



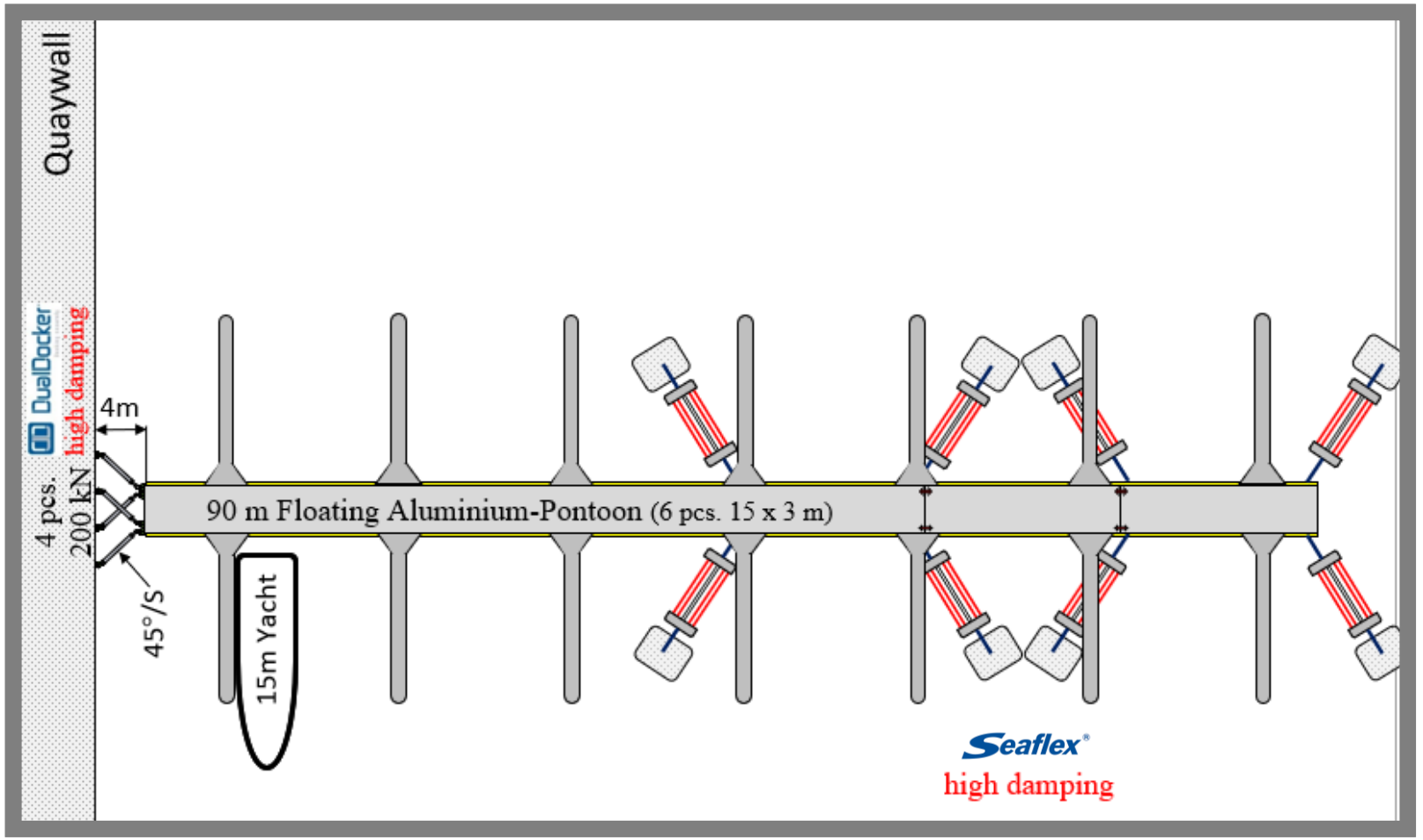
V-Setup on piles



V-Setup on concrete mounts

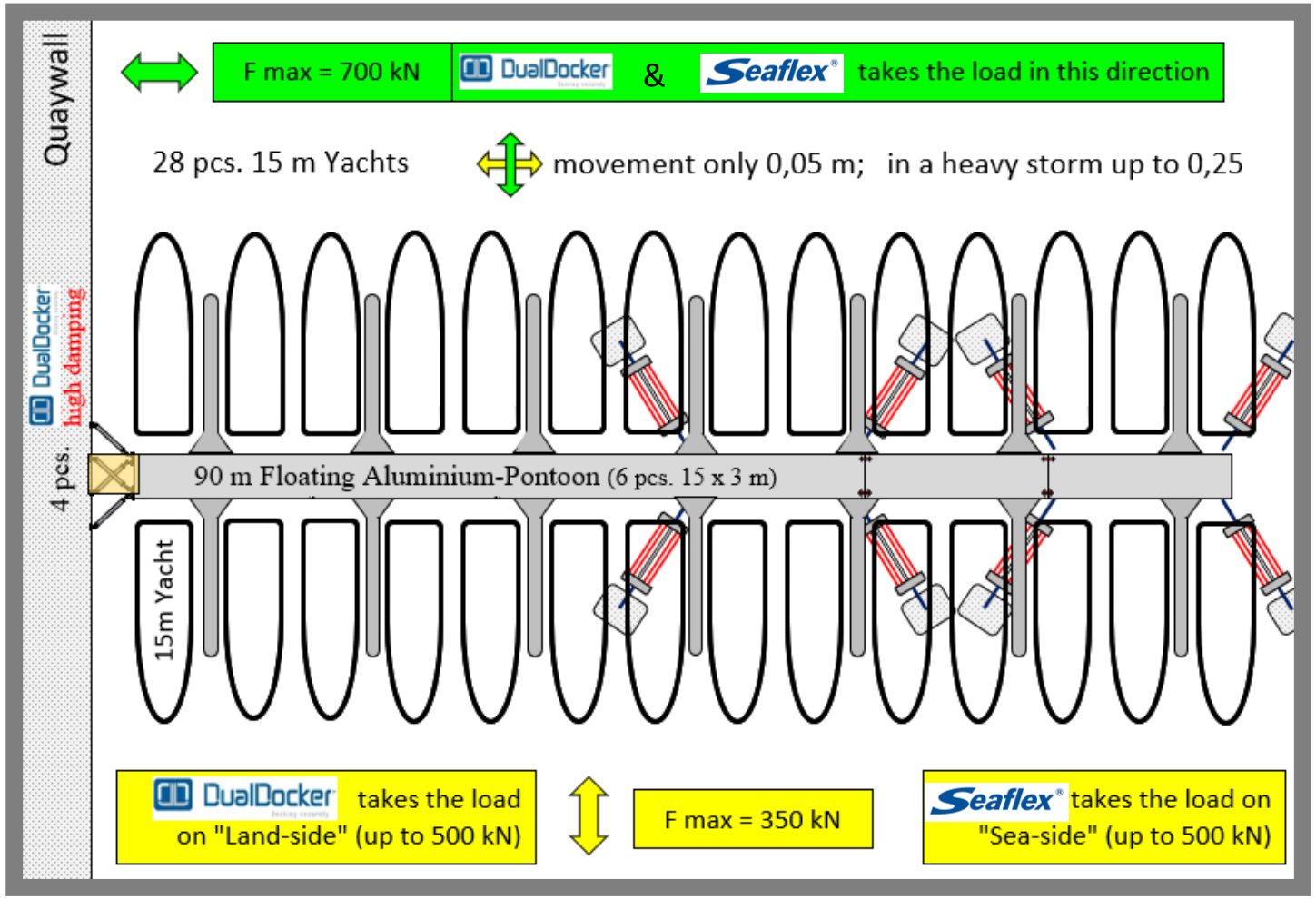


90m floating pontoon



Waterlevel Difference 2,0 m • Max. Windspeed 40 m/s • Max. Current 1,0 m/s • Max. Wave 0,7 m

90m floating pontoon



Waterlevel Difference 2,0 m • Max. Windspeed 40 m/s • Max. Current 1,0 m/s • Max. Wave 0,7 m

References

"The best mooring solution we could offer our customer" says Francisco Sarrias, Managing Director MSI, DualDocker's distribution partners for France, Spain and Algeria.

"Secure, reliable, neat, eco-friendly – that's just what a modern marina needs"

Floating Concrete Pontoon in Tanger, Morocco

No breakwater • Max. Windspeed 35 m/s • Max. water level difference 3 m • 12 DualDocker arms

120 m pontoon, Corsica

16 DualDocker arms • Model 5 t • 300 mm damping way (push & pull)

90t Floating Pontoon in Stockholm, Sweden

No breakwater • Max. Windspeed 35 m/s • 4 DualDocker 100 kn arms wih extensions (10,2 m)

Floating maintenance platform in London

Project Manager Petar Lovric from river cruise operator *City Cruises*, London: *“We were looking for the **safest possible option capable of handling harsh Thames conditions**.*
*Since we had decided for a 'drive-on air-assisted' modular pontoon the mooring solution had to be both, **flexible and strong**, ideally with a lot of **damping capacity**. DualDocker perfectly meets all these requirements.”*

Charly, helming the powerful RIB says: *"The first time the crew set foot on the platform we were **amazed and impressed how stable** it was. 6 months along the line we are very happy and **wouldn’t want to change it for the world** !”*

Floating maintenance platform in London

Max. Windspeed 35 m/s • Max. weight 5 t • Max. wave height 0.5 m • 10 DualDocker arms

Recreational platform at Lake Brombach

Mr Harald Nehmeier / Zweckverband Brombachsee:

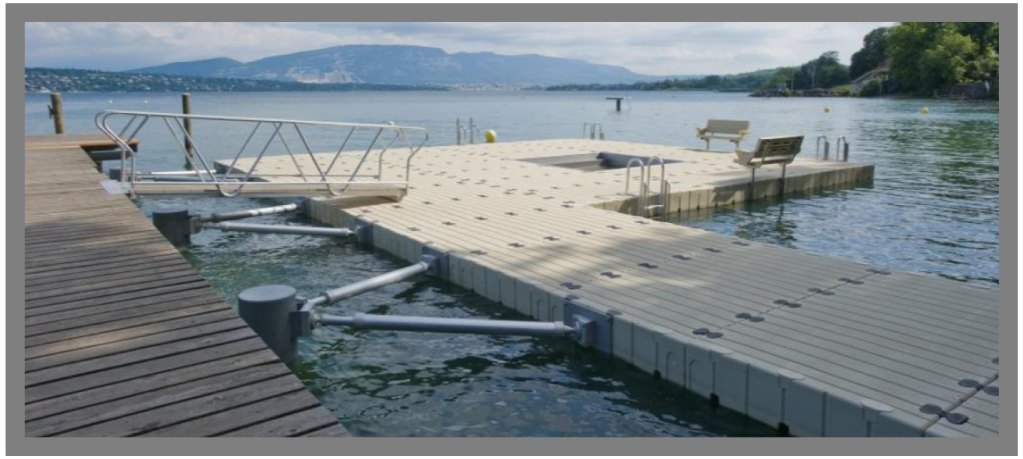
__Safety of guests__, ease of installation and __eco friendliness__ were our main criteria when looking for a mooring solution for this __heavy concrete platform__ facing __35 m/s gusts and up to 1m water level fluctuations__.

Cooperation with DualDocker was __smooth and effective__, simply brilliant, the installation very straight forward. __The platform has become a customer magnet within days__. We are very happy."

Recreational platform at Lake Brombach

Max. Windspeed 35 m/s • Max. weight 5 t • Max. wave height 0.2 m • 4 DualDocker arms

Recreational platform at Lake Geneva



Christian Solterer / The Nautic Company – DualDocker's distribution partner in Switzerland - states:

*"We have set a **new standard** in Switzerland. **Zero impact on the sensitive underwater world**, a high level of **safety for communal projects** and the fact that DualDocker is **easily removable** after the summer season makes it **ideal** for various applications on **Lake Geneva**. " .*

Recreational platform at Lake Geneva

Max. Windspeed 35 m/s • Max. wave height 0.5 m • 8 DualDocker arms

Damping is crucial!

- **Damping reduces force impact** and **grants ‚safety'**!
- **Damping protects** human **lifes!**
- **Damping avoids** economical **damage!**

DualDocker reduces retention force!

WHY?

Energy created by **wind & waves, flotsam or collisions must be absorbed.**

Degradation of energy follows a simply physical principle **(force x distance)**

High damping (DualDocker): Long damping travel, low forces (like a crash barrier)

Minimal damping (chains, piles): **short distance, high forces** (like a concrete wall)

Kinetic energy:

$$E_{kin} = m\ v^2 / 2$$

Braking force:

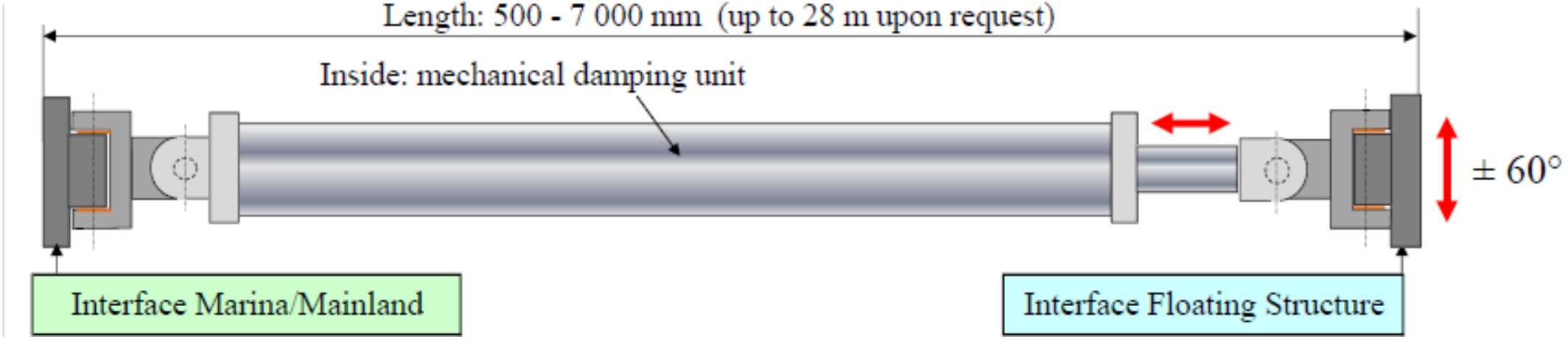
$$F = 2(E_{kin} / \text{distance})$$

Ekin…Kinetic energy [Joule]
m … mass [N]; 1 kg = 9.81 N
V … speed [m/s]
F … braking force [N]; 1 kg=.,81 N
Distance… braking distance [m]

Weight: **10 t**		
v [m/s]	Damp. Travel [m]	Retention force [kg]
0.1 m/s	0.5 m	0,2 t
	0.3 m	0,3 t
	0.1 m	1,0 t
0.3 m/s	0.5 m	1,8 t
	0.3 m	3,0 t
	0.1 m	9,0 t
0.5 m/s	0.5 m	5,0 t
	0.3 m	8,3 t
	0.1 m	25,0 t

Weight: **500 t**		
v [m/s]	Damp. Travel [m]	Retention force [kg]
0.1 m/s	0.5 m	10 t
	0.3 m	17 t
	0.1 m	50 t
0.3 m/s	0.5 m	90 t
	0.3 m	150 t
	0.1 m	450 t
0.5 m/s	0.5 m	250 t
	0.3 m	417 t
	0.1 m	1 250 t

Product Description



Product Description

DualDocker Technology:

- Docking system with high damping capacity, without play, regardless of water level
- High damping capacity
- Full instant damping capacity without time delay
- Fully mechanical, no energy source needed (no hydraulics, no oil, no gas, no pneumatics !)

Convenience & safety:

DualDocker offers high level of convenience and safety

- Minimum level of motion
- Utmost safety during a storm

Construction guidelines:

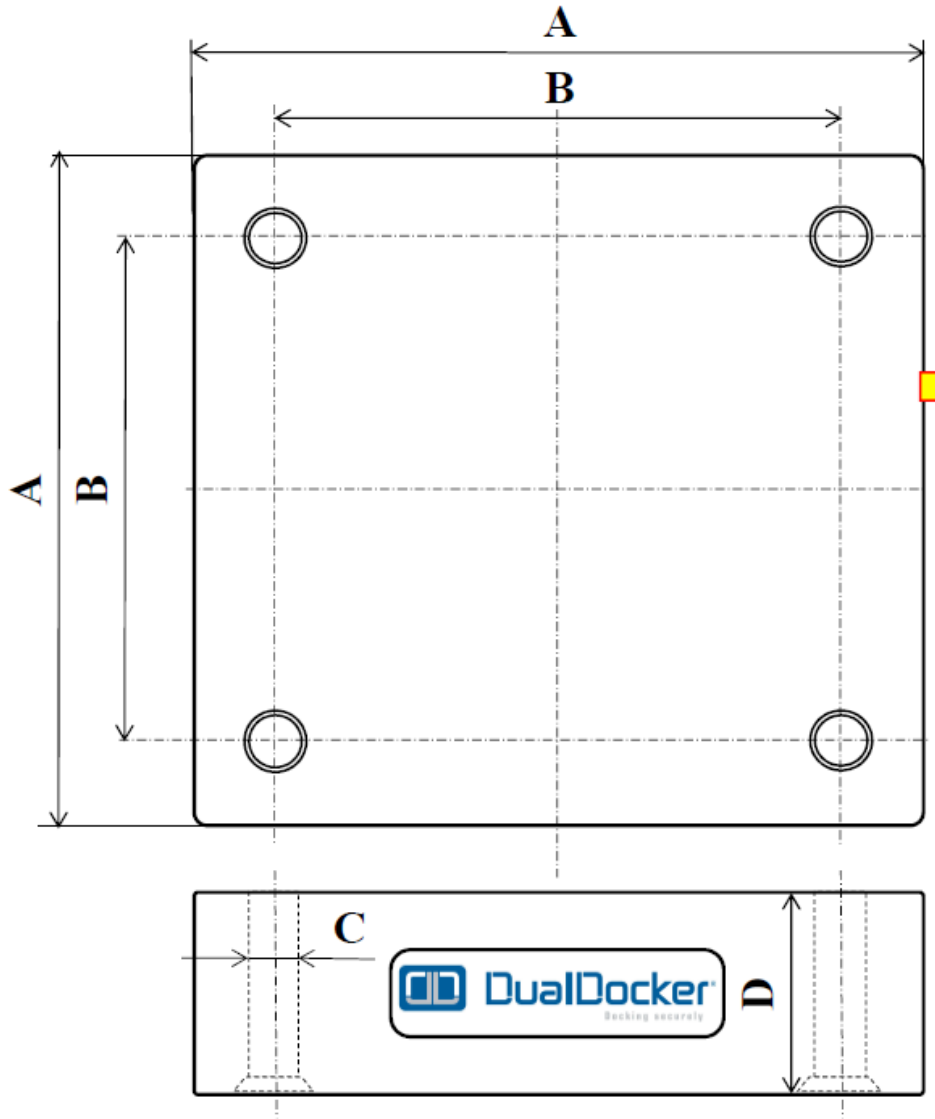
- Operational reliability: the construction is simple, safe and sound.
- Maintenance free & durable (choice of material , dimensioning in elastic range,surface)

Choice of material: Durability and resistance regarding salt water and UV impact

Dimensioning: Max. tolerated force impact + min. 100 % 'reserve' must lie within the **elastic** range
That means handling of max. tolerated force/stress is guaranteed over a long period of time without problems

Surface: We have had excellent experince with saltwater resistent (hard) anodised aluminium alloy
The surface is hard-wearing, saltwater and UV resistent and looks good

Connection Dimensions



Dimensions in "mm"					
Model	**A**	**B**	**C**		**D**
10 kN	**200**	**150**	**Ø 18**	M16	**30**
20 kN	**200**	**150**	**Ø 18**	M16	**30**
50 kN	**200**	**150**	**Ø 18**	M16	**30**
100 kN	**200**	**150**	**Ø 22**	M20	**30**
150 kN	**260**	**200**	**Ø 26**	M24	**30**
200 kN	**320**	**260**	**Ø 26**	M24	**35**

Forces transmitted via DualDocker adapter into the pier/quay/pontoon:		
	tolerated forces:	**breaking** forces:
Pull forces :	50 kN	100 kN
Push forces :	50 kN	100 kN
Side forces :	50 kN	100 kN

Protecting our precious environment
Respecting fauna & flora
Complying with strict regulations

Innovative Mooring Solutions & Berthing Stabilisers

Damped, Secure & Eco-Friendly

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