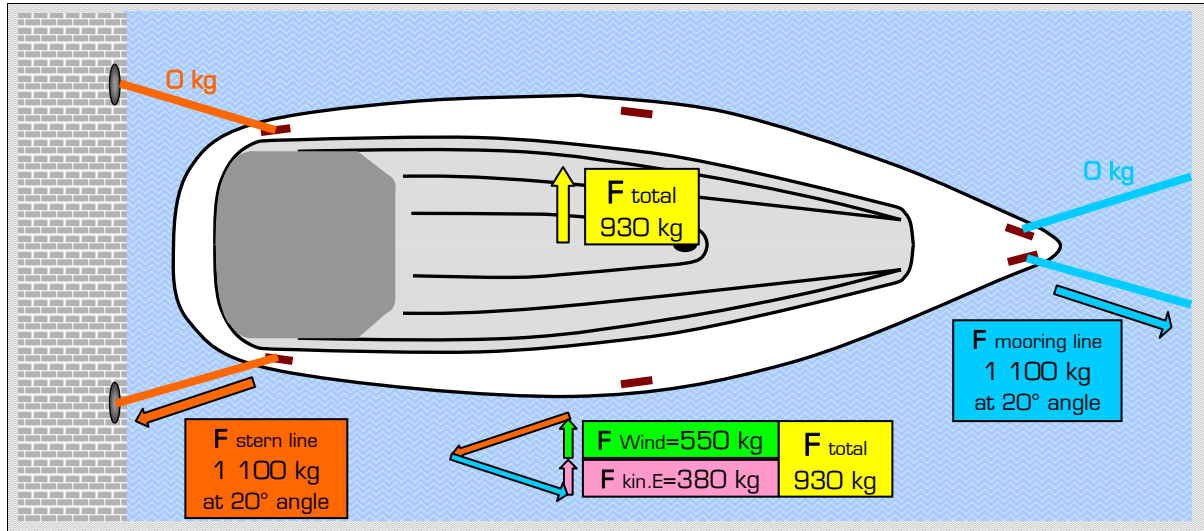


1.) 2 Stern lines & 2 Mooring/bow lines:



Yacht: 50 foot, 15 m² surface area exposed to wind, 10 tons of weight

Wind speed 45 knots; resulting in a wind pressure/force of 550 kg.

The yacht is swinging between the lines. The swinging speed is 0,1 m/s.

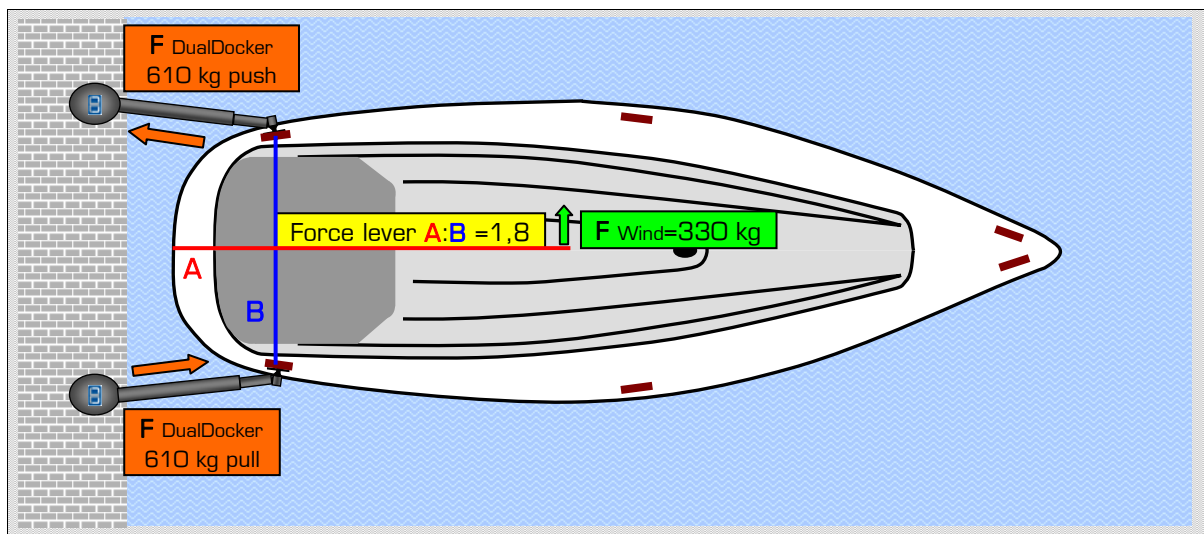
Calculation of kinetic energy: $E_{kin} = mv^2 / 2 = 98\ 100N * 0,01 / 2 = 490,5$ Joule.

Calculation of braking force: $E_{kin} [490,5J] / \text{braking distance} [0,132m] = 380$ kg.

The principal of resulting forces in a triangle increases the forces in the lines.

More information about these calculations on www.dualdoker.com

2.) DualDocker "without securing lines" (ideal angle...~15°/side) :

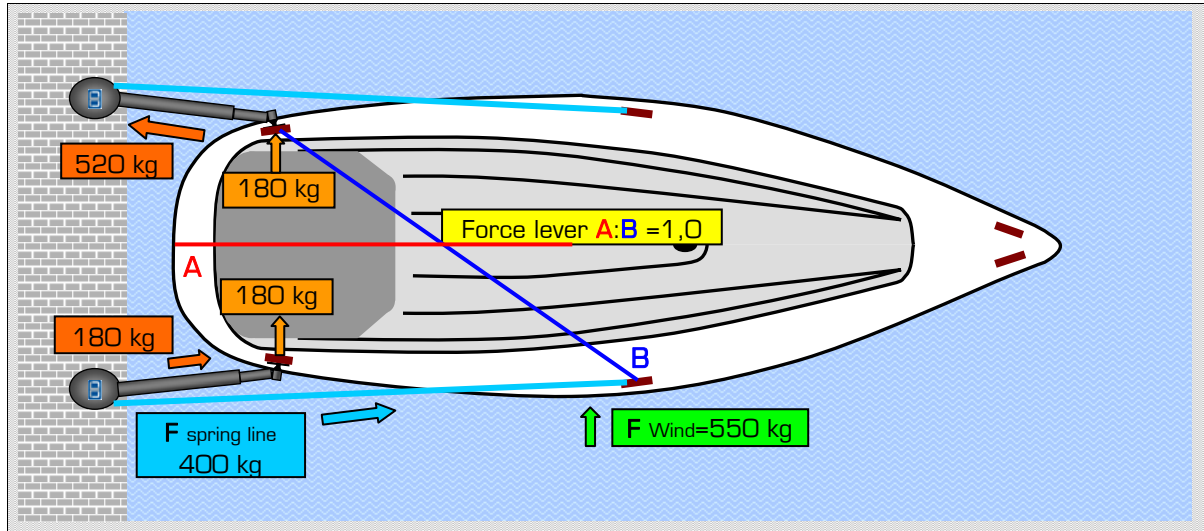


Wind speed 35 knots; resulting in a wind pressure/force of 330 kg.

The yacht lies calm in the wind without swinging. Braking force is effectively 'ZERO'.

Length:width ratio = 3,6. Force lever **A:B** is half that figure = **1,8**

3.) DualDocker "with flat spring lines" (medium angle...~8°/side) :



Yacht: 50 foot, 15 m² surface area exposed to wind, 10 tons of weight

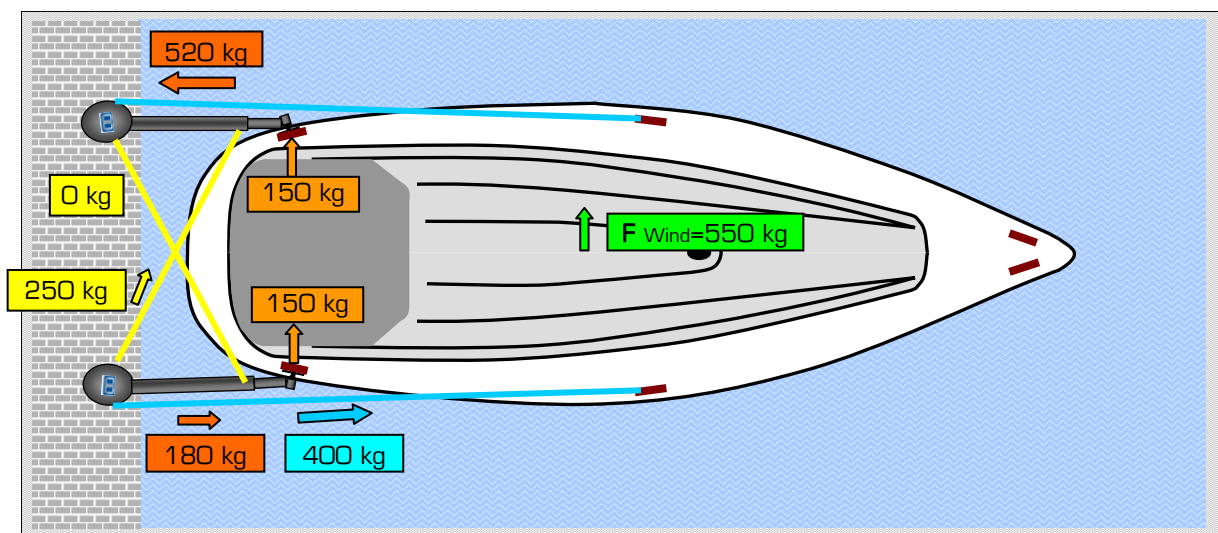
Wind speed 45 knots; resulting in a wind pressure/force of 550 kg.

The yacht lies calm in the wind without swinging. Braking force is effectively 'ZERO'.

Length:width ratio = 3,6. Force lever **A:B** is only 1,0 now.

The **spring line** cuts the force lever in half & reduces thereby the forces on the cleats substantially.

4.) DualDocker with spring lines and diagonal lines (parallel...0°/side) :



The yacht lies calm in the wind without swinging. Braking force is effectively 'ZERO'.

Length:width ratio = 3,6. Force lever **A:B** is only 1,0 now.

Parallel installation of DualDocker arms takes up a minimum of space.

The diagonal stern lines protect the arms from excessive lateral forces.

DualDocker & securing lines have also got a very high damping capacity.