Ship measurement

Displacement

Gross Register Tonnage

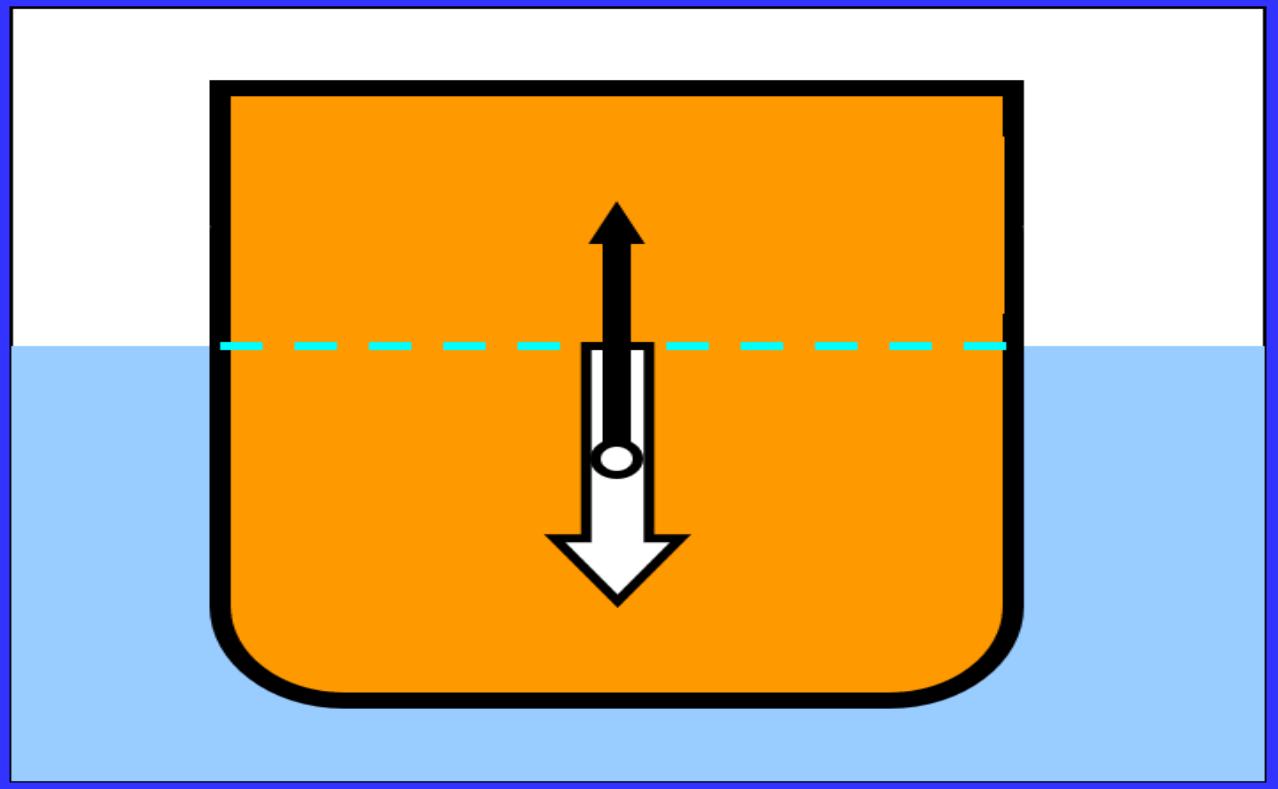
Net Tonnage

Deadweight Tonnage

Length and Breadth

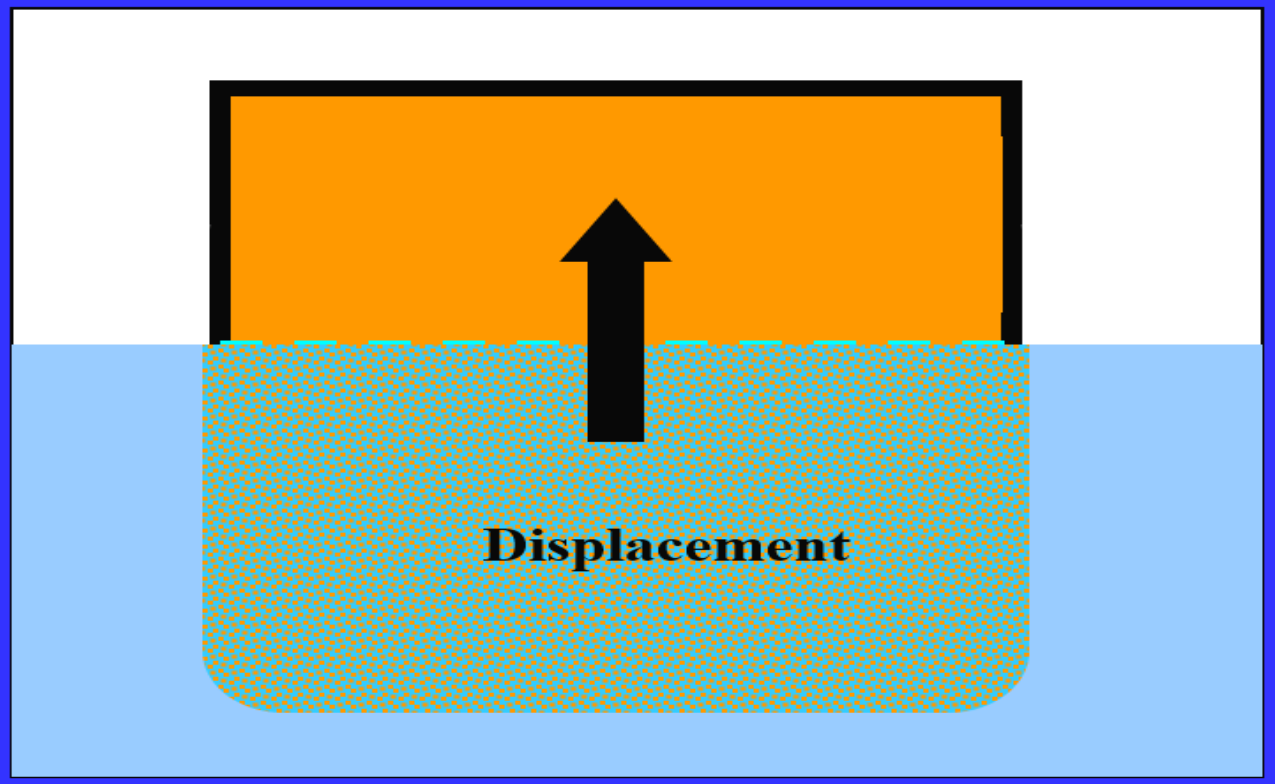
Height and Draft

Archimedes' principle



"A ship displaces
a weight of water that is
equal to its own weight."

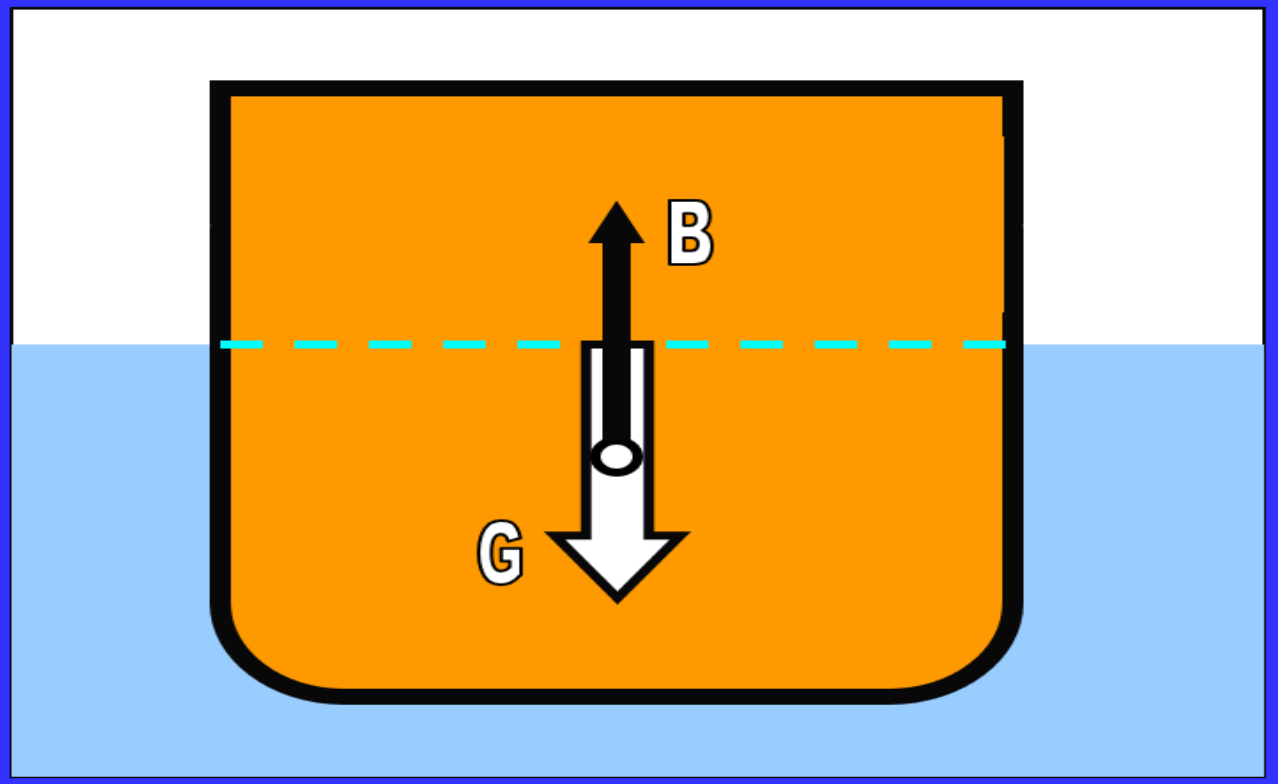
Archimedes' principle



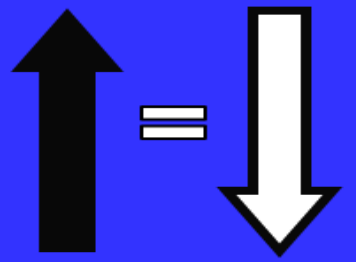
Therefore .....

a vessel will experience an *upthrust* that is equal to the *weight* of the *displaced water.*

Buoyancy and gravity



When Buoyancy (B) is equal to Gravity (G) the vessel will float.



Displacement

The *weight* of a vessel and her *contents*,

or

the *weight* of the displaced watermass.

Gross tonnage

- **Gross tonnage equals the entire volume of the *enclosed spaces* of the ship.**

Net tonnage

- **Net tonnage can be calculated by *deducting* the spaces that are *not* used for *cargo* from the *gross tonnage*.**

Net tonnage

- ***Harbour dues*** **that must be paid are often calculated according to the net tonnage.**

Deadweight

- By *deadweight* is understood the weight of the vessel's contents:
- *cargo* –
  bunkers – (fuel / lubricating oil / ballast water / fresh water/ potable water)
  equipment –
  stores.

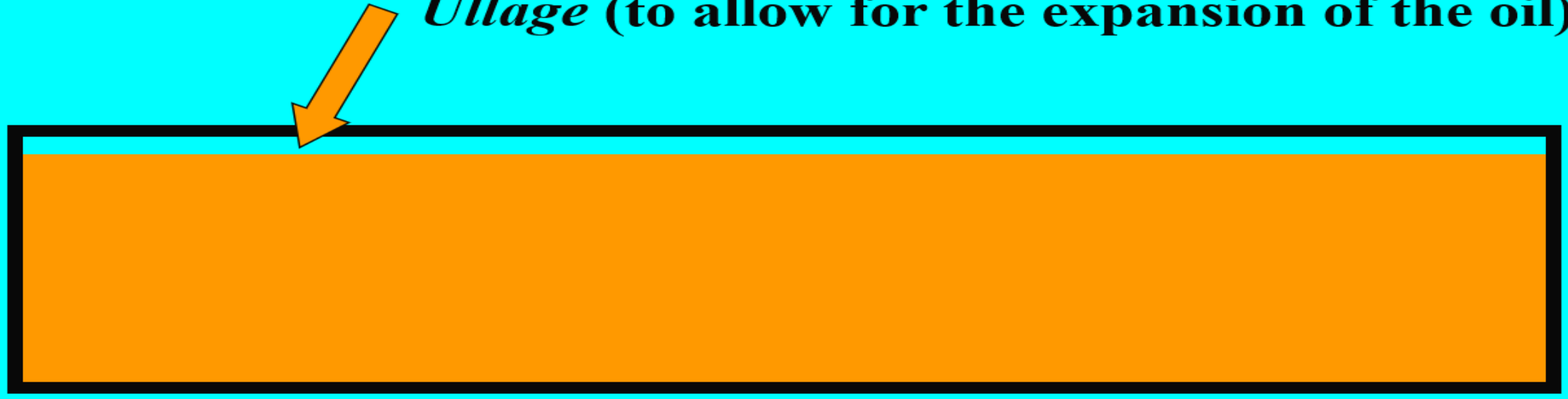

Cargo Carrying Capacity
By *bale space* is meant
the volume of the cargo holds
that can be used for *general cargo.*

Cargo Carrying Capacity

By *grain space* is meant the volume of the cargo holds that can be used for bulk cargo.

Cargo Carrying Capacity

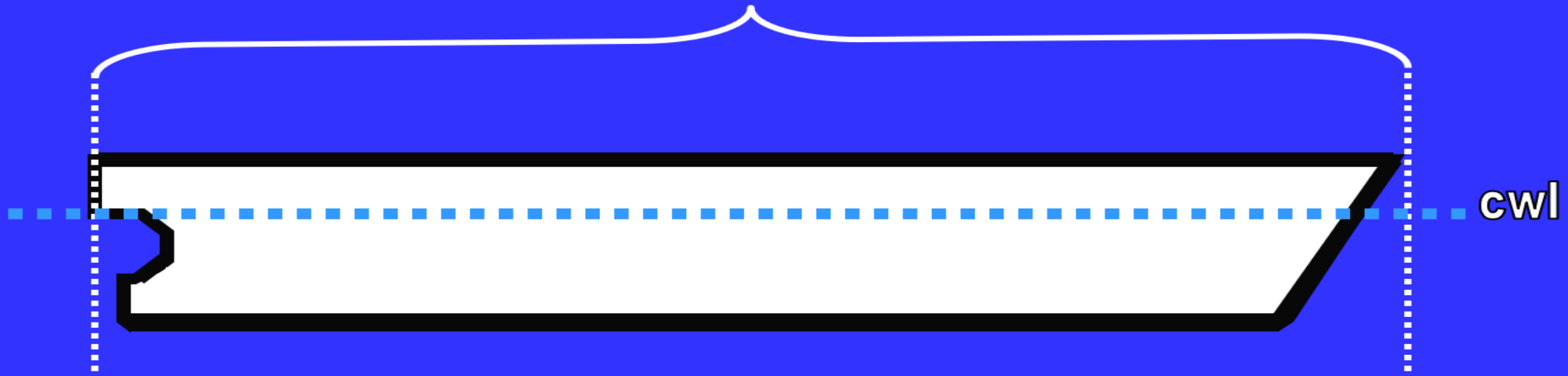
Ullage **(to allow for the expansion of the oil).**



By *Oil Space* is understood 98% of the total volume of the wet bulk tanks.

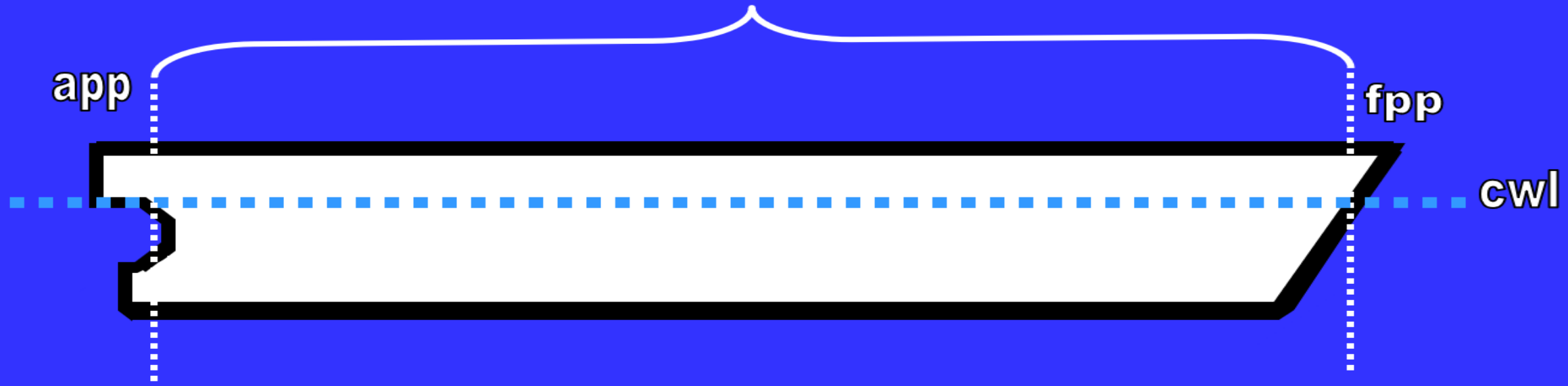
Length over all

"Length over all" (L.O.A.)
is the *total length* of the vessel.



Length Between Perpendiculars

Length Between Perpendiculars (LPP)
is measured between the *fore perpendicular* (fpp)
and the *aft perpendicular* (app).



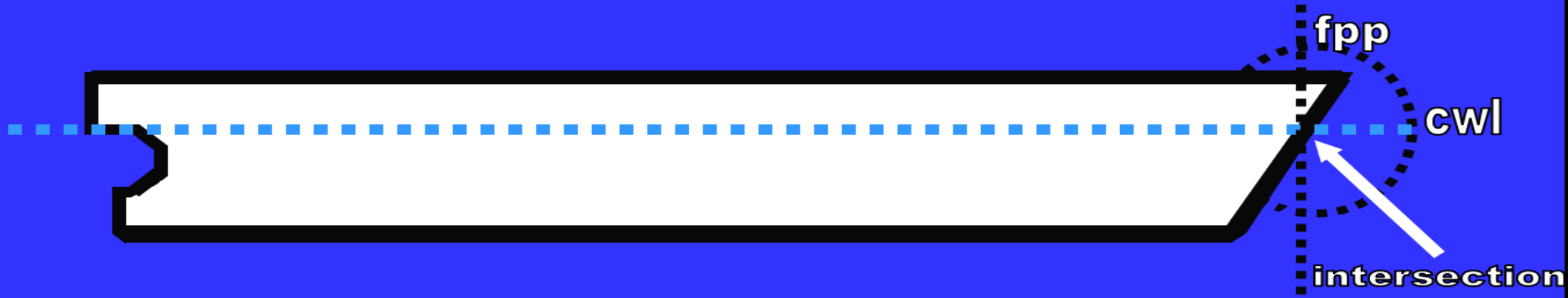
Construction waterline

The *Construction Waterline (CWL)* or *Summer Loadline* is the line to which the ship may be loaded in summer.

Ship's dimensions

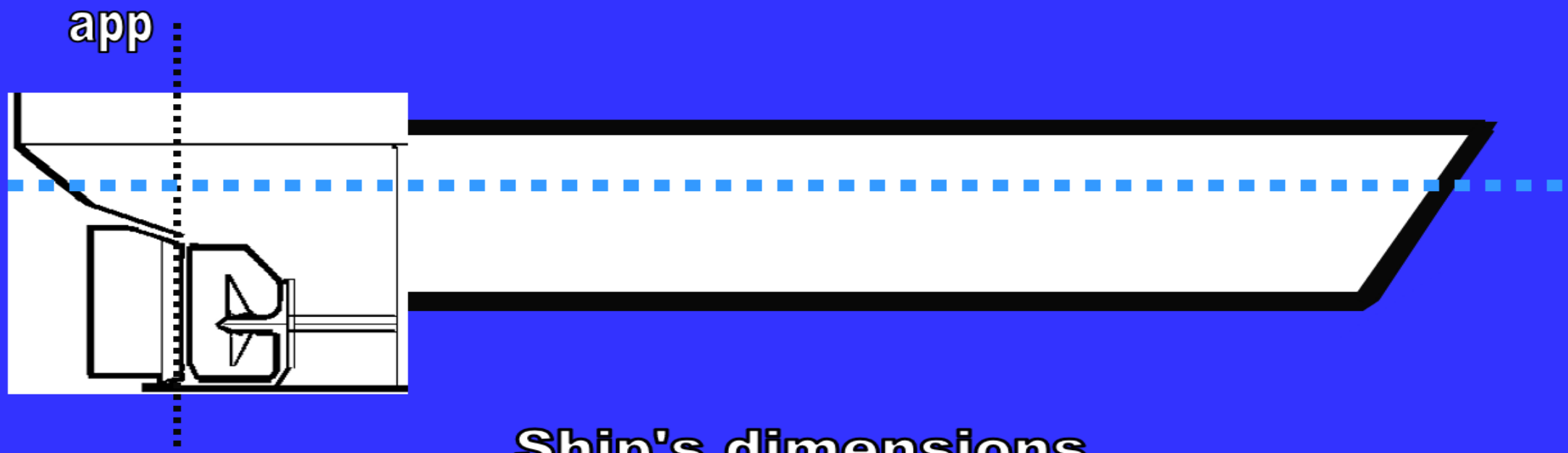
Fore perpendicular

The *fore perpendicular* is the vertical line through the *intersection* of the CWL and the *stem*.

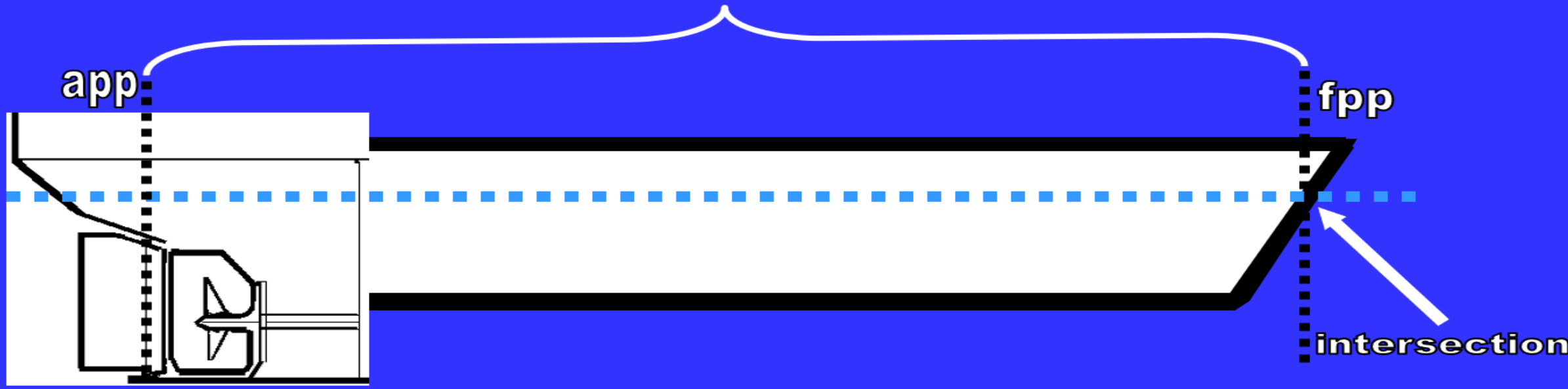


Aft perpendicular

The *aft perpendicular* goes through the *rudderstock.*

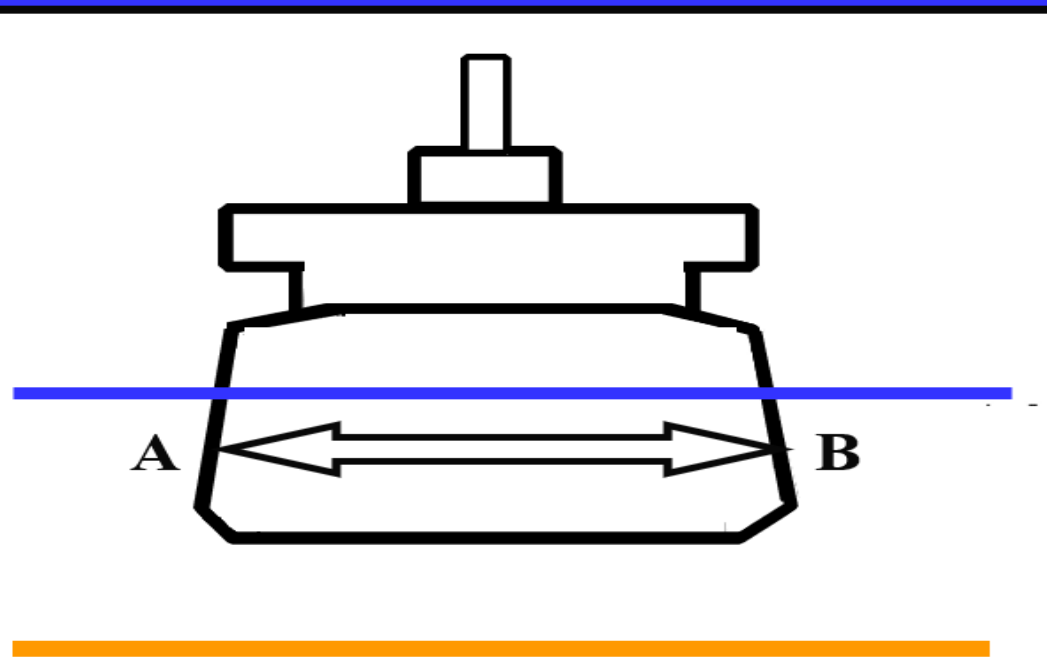


LPP



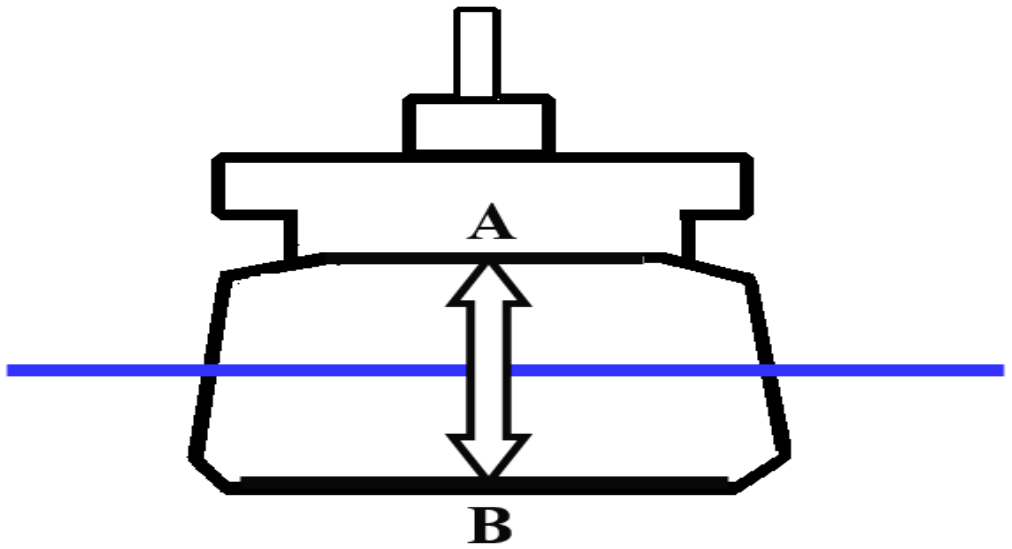
Ship's dimensions

Moulded breadth



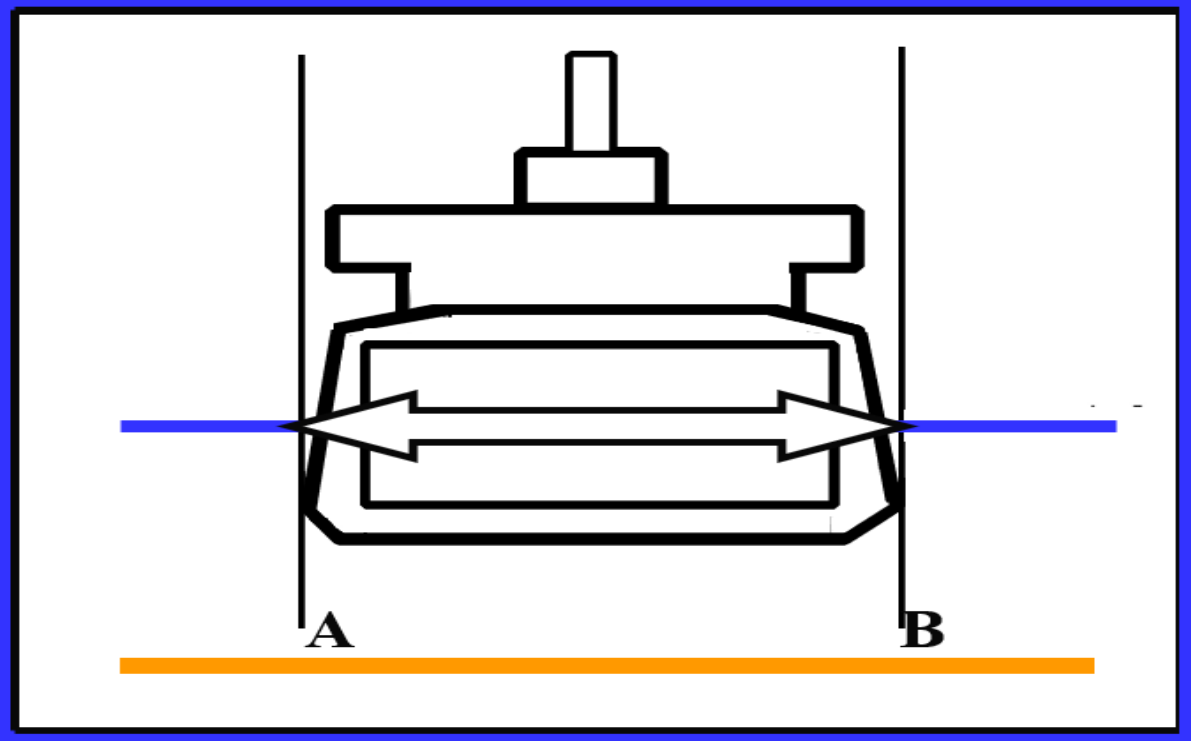
- **Horizontal distance between the insides of the *moulds* (A-B).**

Moulded depth



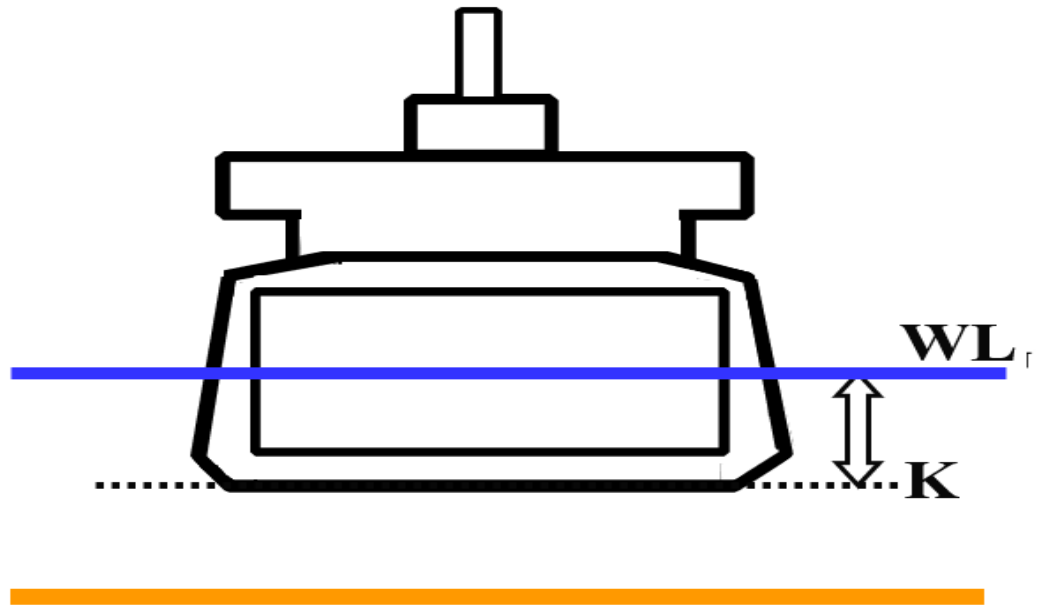
Vertical distance between the insides of the moulds (A-B).

Beam



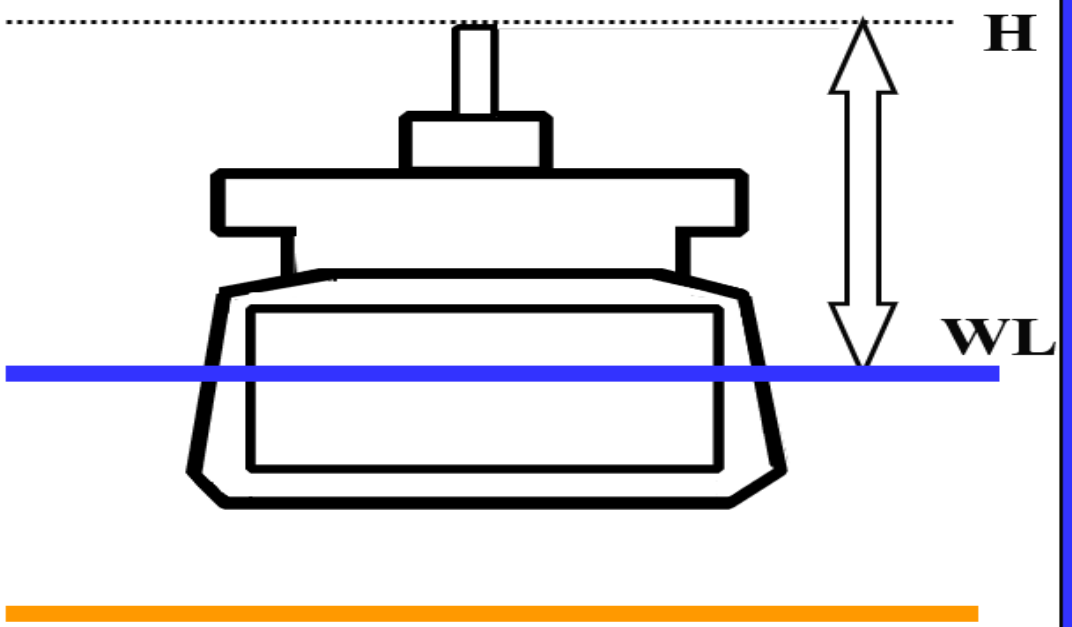
- By *beam* is meant the *extreme breadth* of the vessel (A-B).

Draft



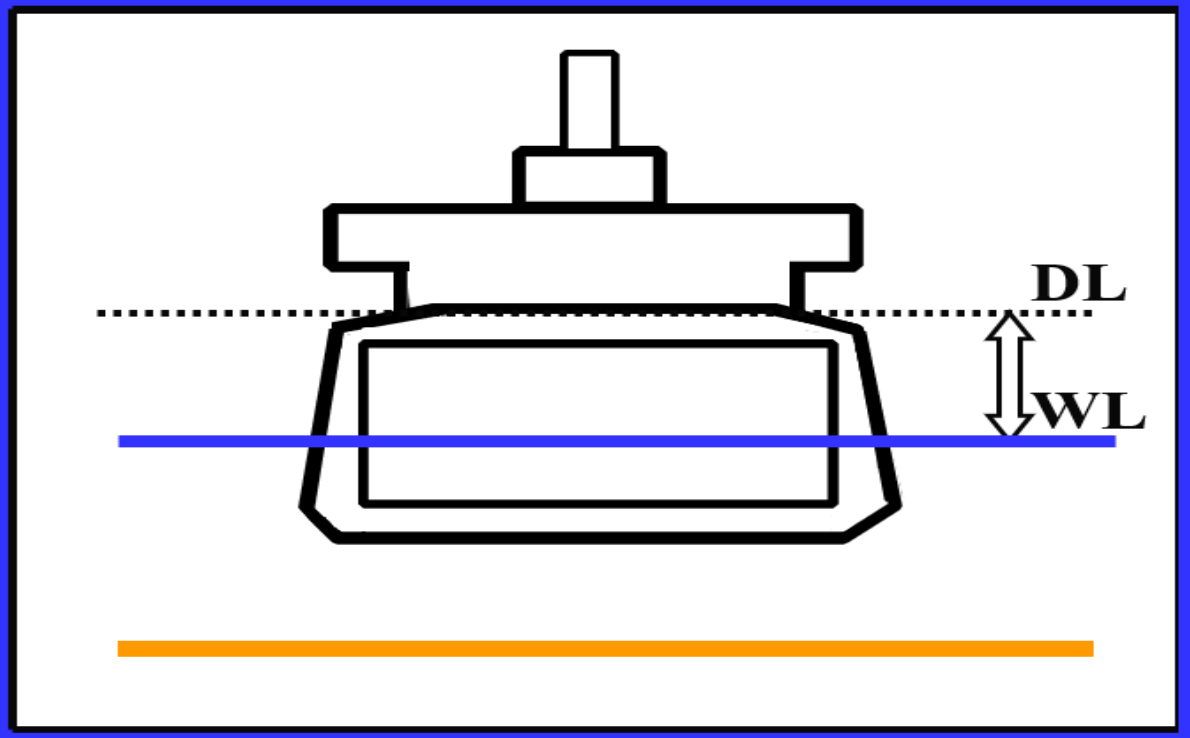
- **Distance from the *bottom* of the *keel* to the *surface* of the water (WL - K).**

Air draft



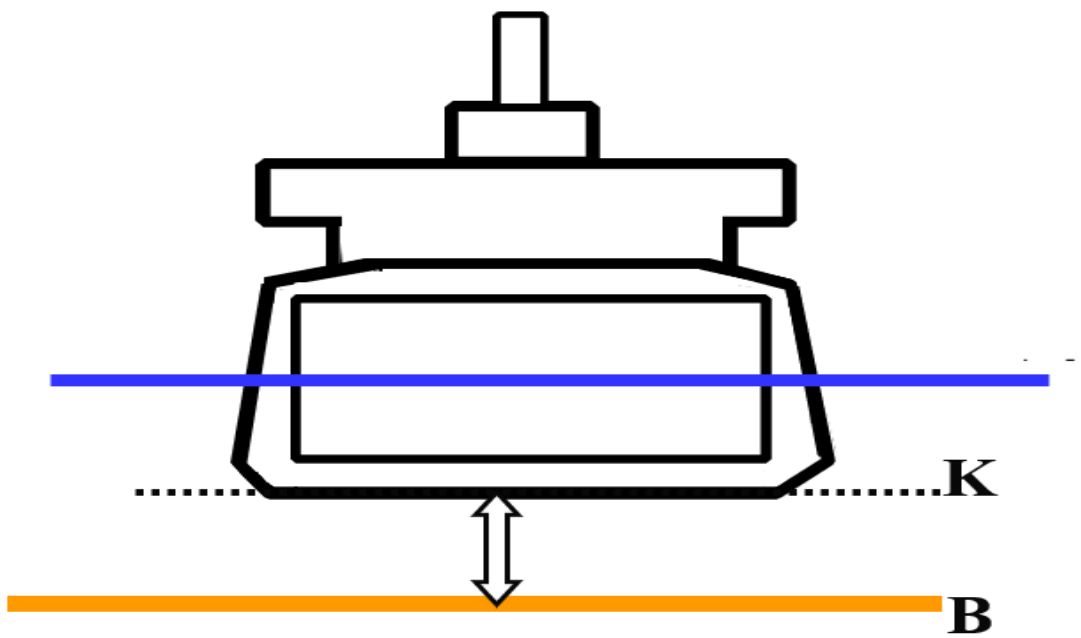
- **Distance from the waterline to the highest point of the vessel (WL - H).**

Freeboard



- **Distance between deckline and waterline (DL – WL).**

Underkeel clearance (UKC)



- **Distance between keel and sea-bed (K - B).**