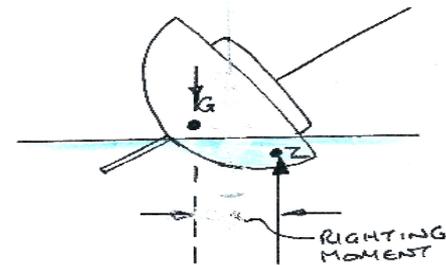
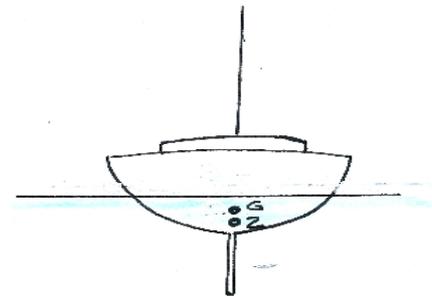


Stability, with Poole Sailing



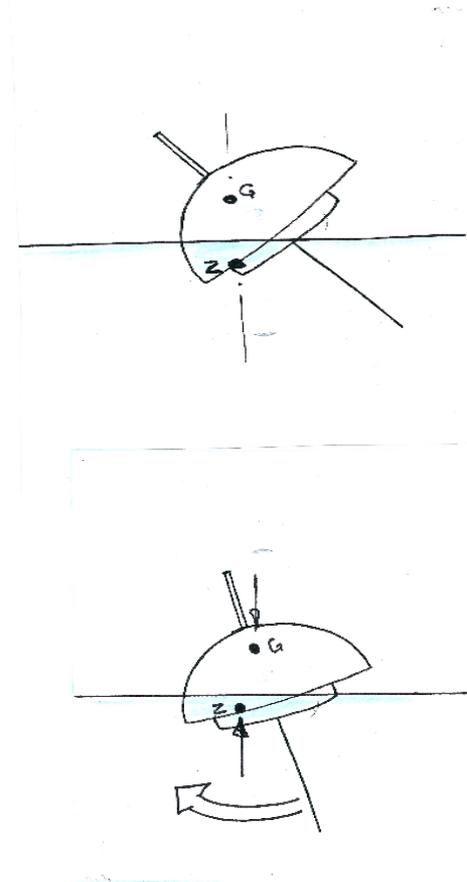
Stability

- Gravity acts through the 'Centre of Gravity' G.
- Buoyancy works through the 'Centre of Buoyancy' Z.
- When upright, G is over Z, the boat will tip easily in either direction.
- As the boat heels, Z moves away from G producing a positive righting moment, making the boat more resistant to further heel

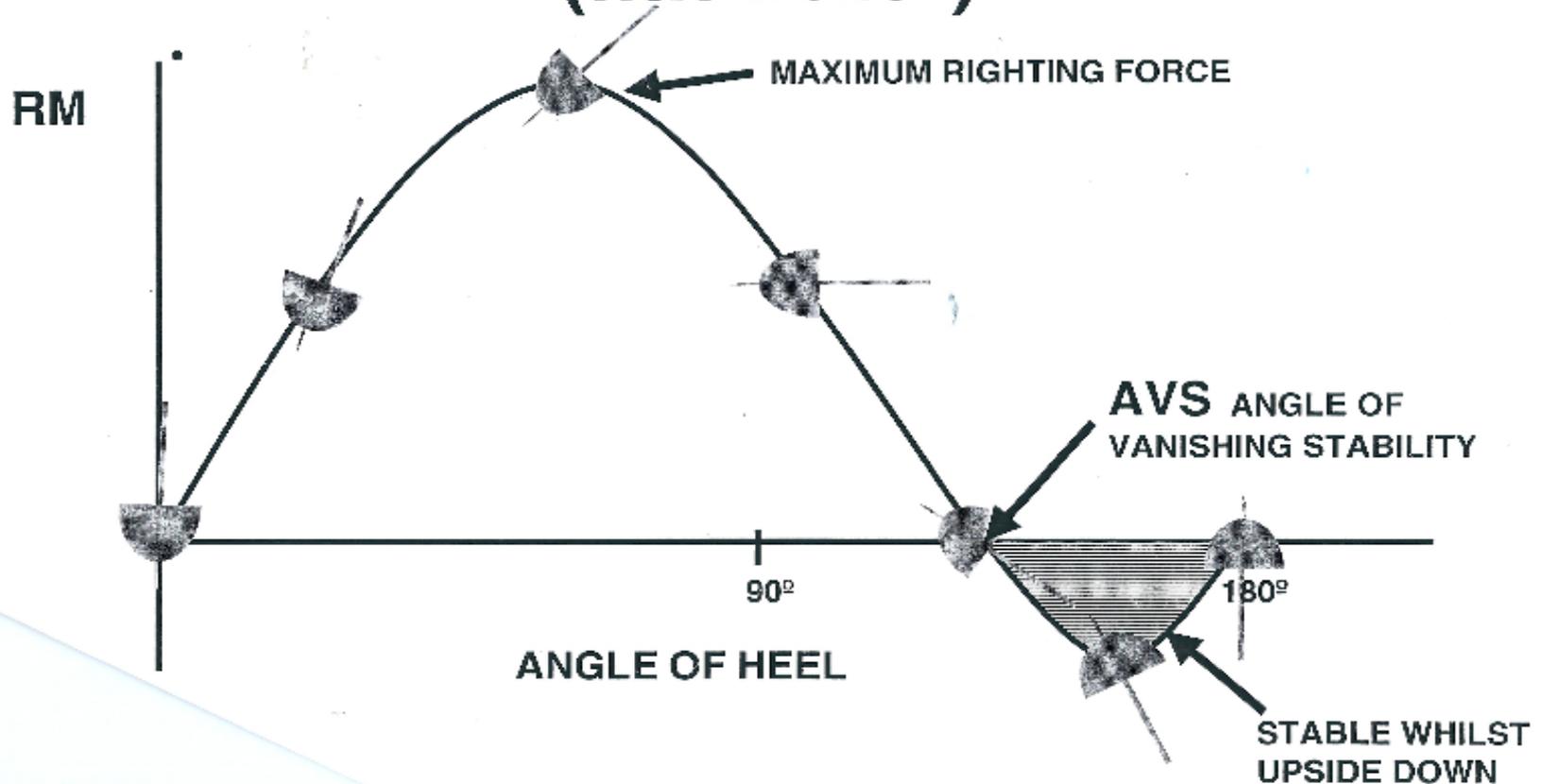


Stability

- As a boat heels beyond the maximum righting moment, Z moves back towards G.
- When G is again over Z, the boat has reached its AVS (angle of vanishing stability).
- At its AVS the boat is just as likely to roll, as it self rights.



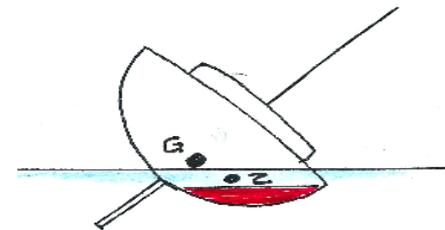
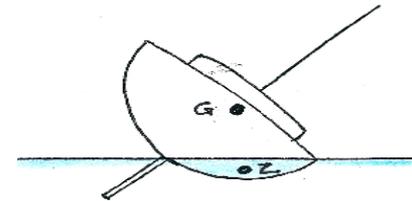
RIGHTING MOMENT CURVE (flat water)



A Righting Moment or GZ curve will be available for all production boats. This typical GZ curve shows that the yacht increases its righting moment, or becomes, increasingly resistant to heel, until it reaches a heel angle of 60 degrees or so. Further the yacht won't reach an 'angle of vanishing stability' until it heels to around 140 degrees from the vertical. So we should be encouraged. Mono-hulled sailing yachts are inherently, incredibly stable, as long as we don't inadvertently spoil the design criteria, or sail in the wrong place.

Adding Gear and Flooding

- Adding weight high on the boat will lift the Centre of Gravity and AVS will be reached at a much lower heel value. So we should avoid adding heavy gear above the designed 'centre of gravity', particularly on 'light displacement' yachts.
- Flooding the buoyant zone will restrict or prevent the development of a righting moment. Again the boat will reach AVS at a much reduced angle of heel. A 'free surface of moving water' inside the hull is a serious problem that should be dealt with as a priority.



Broaching in Breaking Waves!

- A wave is a part of a complete vertical circulation of water.
- A boat caught ‘broadside on’ to a breaking wave with a height greater than the vessel’s beam, is likely to be ‘rolled’ !
- Its important therefore, to avoid carrying too much sail in heavy seas and to avoid areas such as ‘over-falls’, where large breaking waves are likely to be found.

