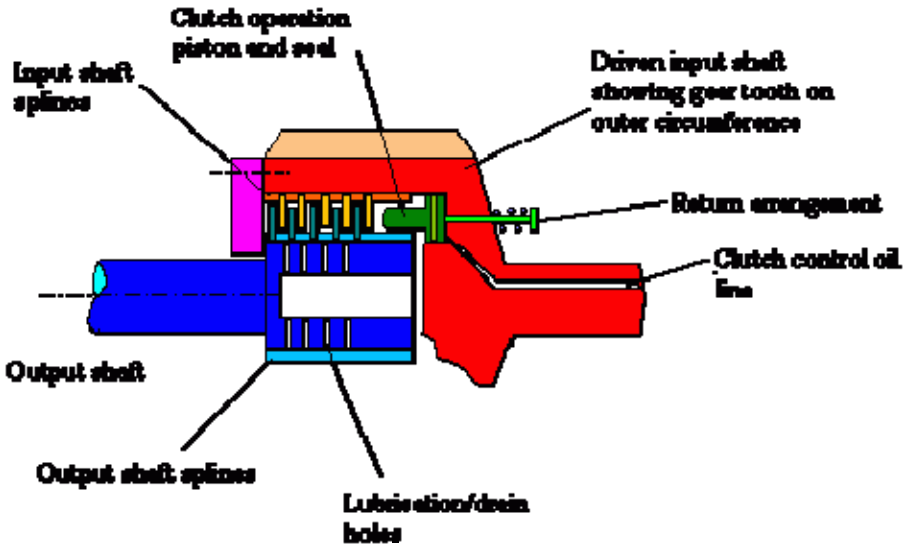
Clutches

Excerpt from: www.marineengineering.org.uk

Clutches are generally designed to engage at minimum load and engine speed. Operation above this can lead to excessive gearbox and clutch loading and can shorten life or lead to catastrophic failure

Friction Plate



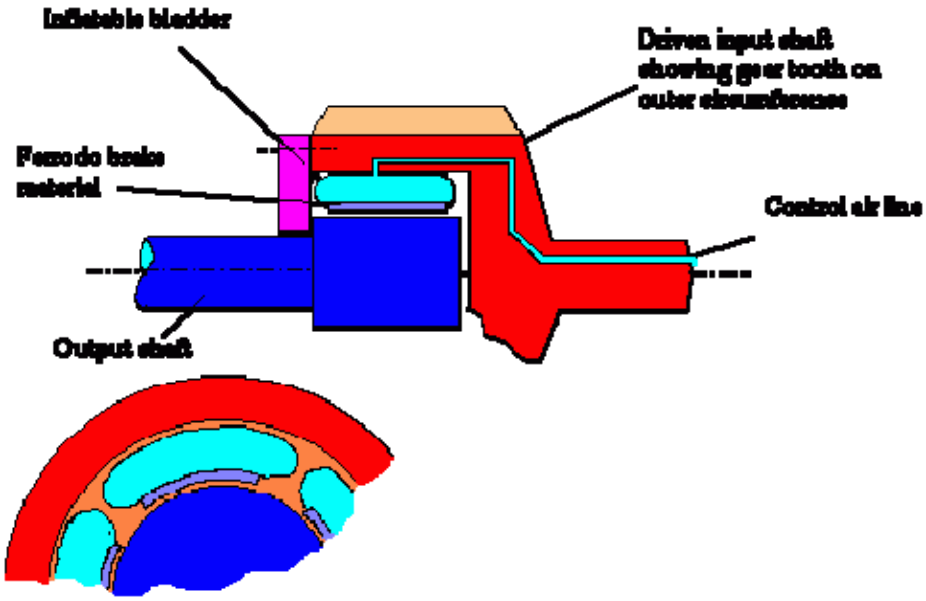
Oil forces the friction plates, generally made from a suitable steel alloy material or leaded bronze, together. These loose plates are alternately splined to drive or driven shaft.

The oil is supplied under a controlled flow via an accumulator so allowing a gradual engagement over a short period. The oil is generally supplied via a solenoid valve from the gearbox lube oil system

Emergency drive is allowed by fittings screws which jack the plates firmly together

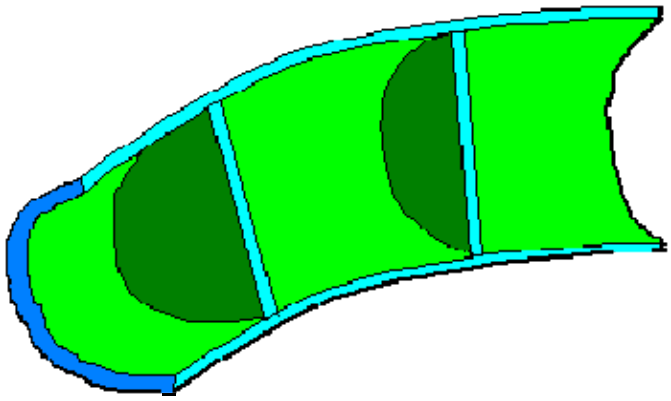
Pneumatic clutches

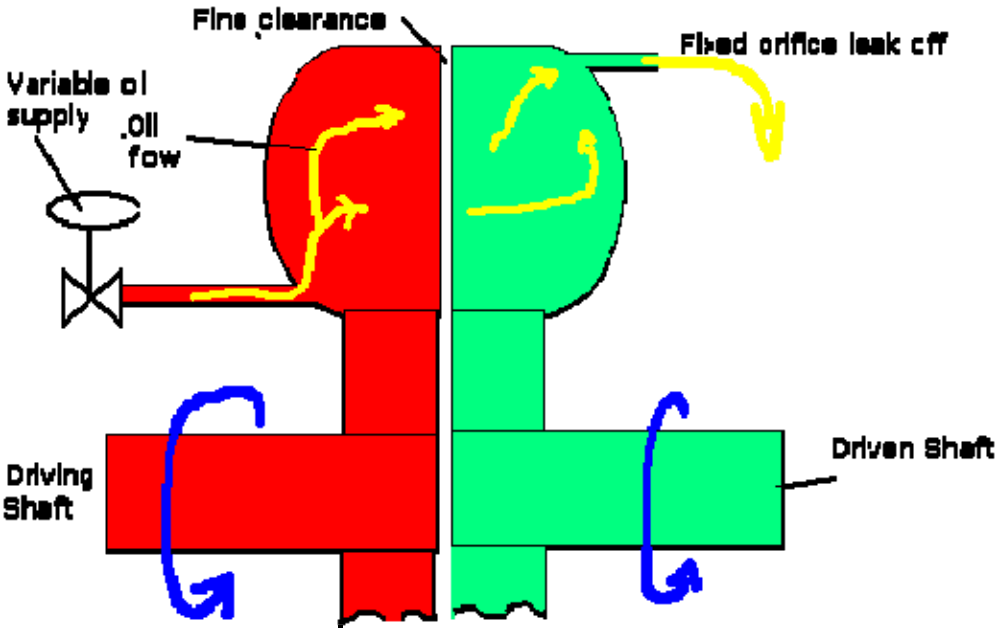
Takes the form of an inflatable tyre on which is mounted ferrodo clutch lining. Air is supplied via a slipper arrangement to the tyre segments which inflate forcing the clutch material into contact with the driven inner circumference.



Emergency drive is via though bolts which pass radially though drive and driven wheel circumferences

Fluid friction clutches





Operate using the shear resistance of the clutch fluid. For marine use this is generally a fine grade mineral oil although synthetics may be used.

A pumped control flow is delivered to the drive assembly and allowed to flow to the driven assembly. As the flow increases so more of the assemblies become available for driving and slippage reduces eventually reaching a maximum.