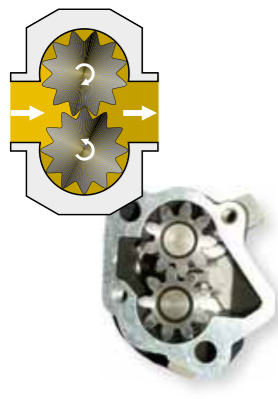


GUNT-FEMLine Oil pump training

Oil pumps are driven machines. The selection of the correct oil pump mainly depends on the viscosity or, its inverse, the fluidity of the oil. In refineries centrifugal pumps are used to deliver large volumes of thin or low viscosity oils, such as petroleum. Oils with a higher viscosity are transported with positive displacement pumps. Moreover, oil pumps are used to perform mechanical

work and for lubrication and cooling purposes. In hydraulic systems, oil is used to transmit forces. The pumps that are needed for this purpose must be able to achieve high pressures in order to generate large lifting or forming forces. They are, for example, used in lifting platforms or metal presses.

This training course deals with oil pumps that transport oil with the help of enclosed volumes according to the positive displacement principle. Depending on requirements and demand, different oil pump designs are used. The most commonly used oil pumps are **gear pumps**. Essentially, gear pumps consist of the following components: a housing with an inlet and outlet for the oil and two gears, one of which powers the other one. Depending on their internal design, gear pumps are categorised as follows:

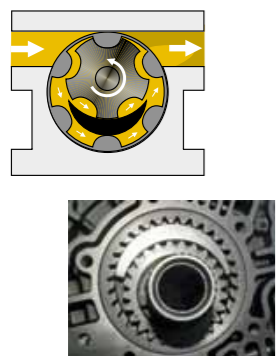


External gear pump

In an external gear pump, two gears rotate in opposite directions in a housing. The pumping medium is transported between the gears and the housing. Due to their simple, robust setup these pumps are relatively cost-efficient. External gear pumps are very common in the automobile industry.



HM 365.22
External gear pump



Internal gear pump

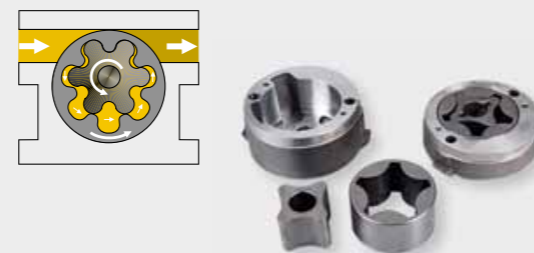
Internal gear pumps are also known as crescent pumps. They are characterised by their low pulsation, high efficiency, low level of noise and medium-high operating pressures. An internal gear drives an external toothed ring. Since the driving gear is mounted on an eccentric bearing, clearances result in the gaps between the gear and the toothed ring. These clearances form the delivery volume. A crescent-shaped seal between the gear and the ring forms the enclosed volume that is necessary to reach the required pressure.



HM 365.24
Internal gear pump

Toothed ring pump

Toothed ring pumps are also known as Eaton pumps or gerotor pumps. The internal gear runs eccentrically along the internal gearing of the toothed ring and powers this ring. The volume of the displacement chamber between the gaps changes, and thereby allows the pumping medium to be transported.

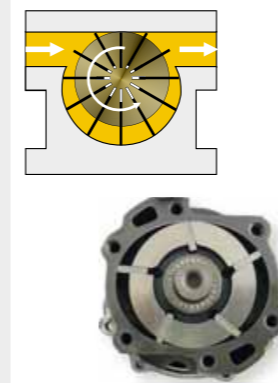


Screw pump

Screw pumps are able to provide continuous delivery of even viscous media without pulsation or turbulence. Their pump housing contains two or more rotors that rotate in opposite directions, with an external screw thread profile. As the threads of the screws engage, the fluid is transported. Depending on the thread pitch, very high pressures can be achieved. Screw pumps run very smoothly, which is why they are often used in lifts and as fuel pumps in oil burners.



HM 365.21
Screw pump



Vane pump

Vane pumps are also known as rotary vane pumps. They can be used for both liquid and gaseous media. In some vane pumps, the displacement volume is adjustable. These pumps consist of a housing, in which an eccentrically installed cylinder rotates (rotor). Rotary vanes are spring-mounted to radial guides inside the rotor. During operation, the spring-force ensures that the rotary vanes run along the inner wall of the housing and an enclosed space is formed between them. The pumping medium is transported between the rotary vanes and the housing wall.



HM 365.23
Vane pump

Sectional models and assembly training



HM 700.22 Cutaway model: gear pump

To complete the oil pump training, GUNT offers **sectional models and assembly and maintenance training** for different positive displacement pumps: Please refer to catalogue 4 for more information on these devices.



MT 186 Assembly & maintenance exercise: gear pump