

MULTI-CYLINDER PUMPS

Where more than one cylinder is being driven by one driver, the arrangement is named according to the type and number of cylinders.

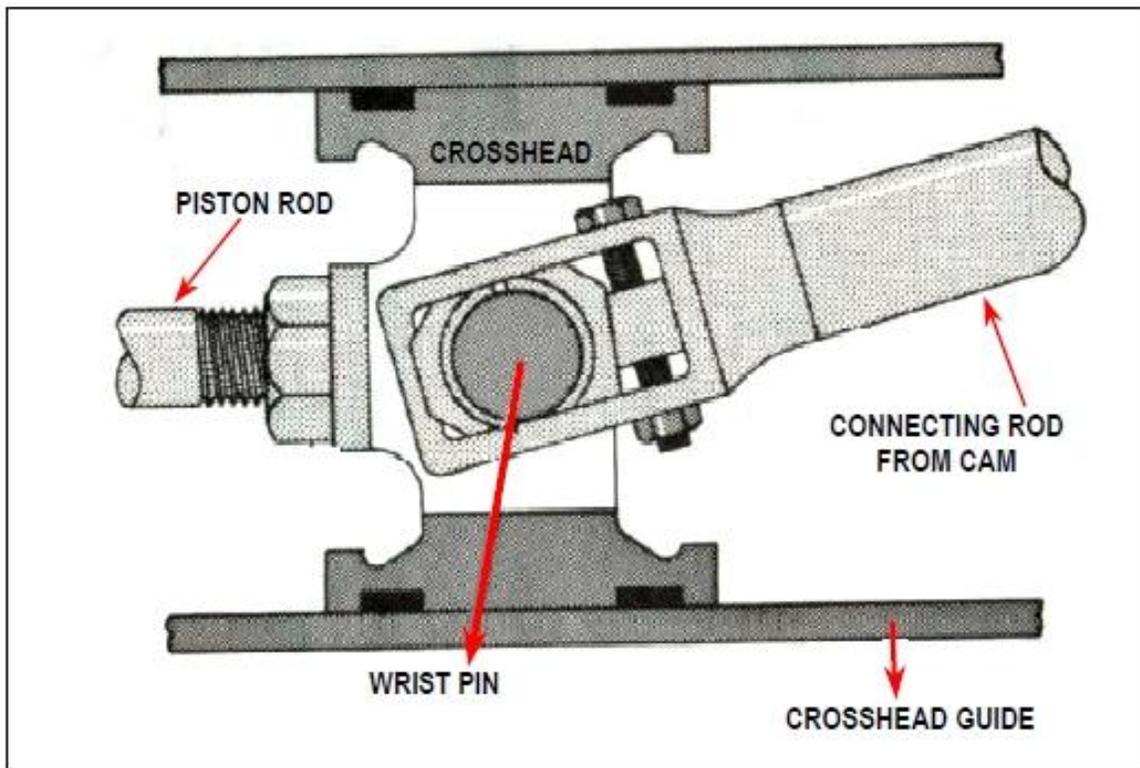
1. A Single-acting Duplex pump has TWO single acting cylinders.
2. A Double-acting Duplex pump has TWO double acting cylinders.
3. A Single-acting Triplex pump has THREE single acting cylinders.
4. A ' Double-acting Triplex ' pump has THREE double acting cylinders.

The more double-acting cylinders in a pump arrangement, driven by a single motor, the smoother and pulsation-free, is the output.

CONVERTING ROTATION INTO RECIPROICATION

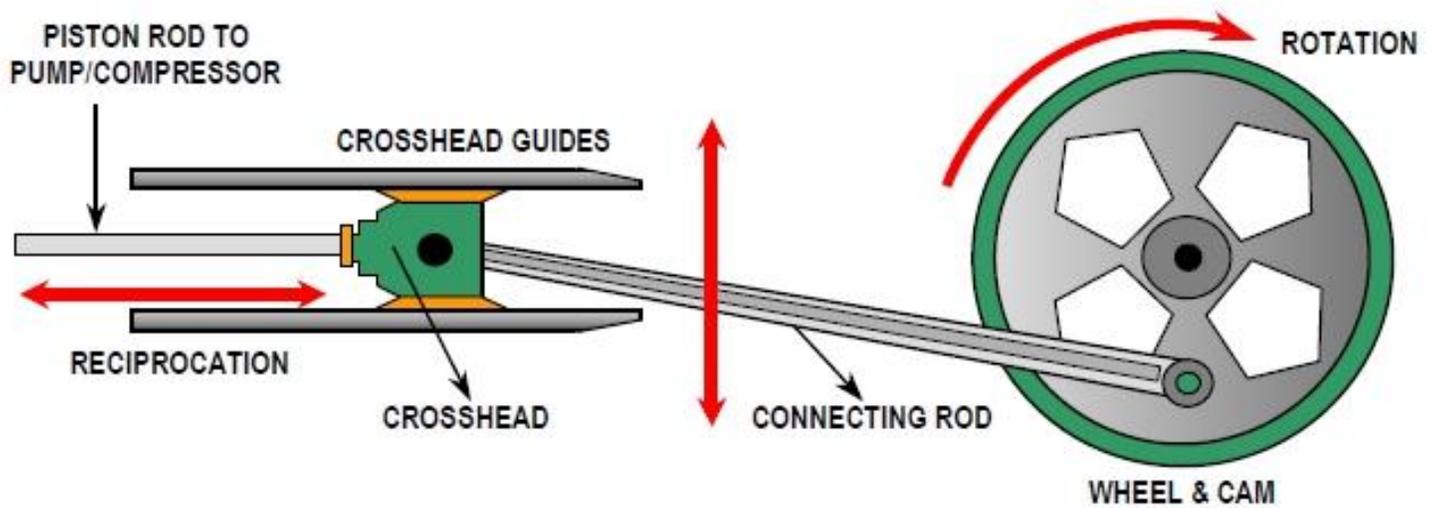
The electric motor drives a fly-wheel or cam-shaft which is connected eccentrically to a connecting rod.

The other end of the connecting rod is coupled to a 'Cross-head Gear' and 'Slide Assembly'. (This arrangement is the basis of the operation of the old Steam Engine drive cylinders and pistons).



As the motor rotates the fly-wheel or cam, the eccentrically mounted connecting rod rotates with it. This causes the rod to move up and down and backwards and forwards. The up and down motion cannot be transmitted to the pump shaft - it would not work. We do however, need the back and forth movement. The connecting rod goes to the cross-head gear which consists of a pivot inserted into the slide assembly. The pivot removes the up and down movement of the rod but allows the pump shaft to move back and forth.

The diagrams will explain the principle much more easily than words.



Comparing 4 Types of PD Pumps

Selection of a positive displacement (PD) rotary pump is not always an easy choice. There are four common types of PD pumps available: internal gear, external gear, timed lobe, and vane. Most PD pumps can be adapted to handle a wide range of applications, but some types are better suited than others for a given set of circumstances.

The first consideration in any application is pumping conditions. Usually the need for a PD pump is already determined, such as a requirement for a given amount of flow regardless of differential pressure, viscosity too high for a centrifugal pump, need for high differential pressure, or other factors.

Inlet conditions, required flow rate, differential pressure, temperature, particle size in the liquid, abrasive characteristics, and corrosiveness of the liquid must be determined before a pump selection is made.

A pump needs proper suction conditions to work well. PD pumps are self-priming, and it is often assumed that suction conditions are not important. But they are. Each PD pump has a minimum inlet pressure requirement to fill individual pump cavities. If these cavities are not completely filled, total pump flow is diminished. Pump manufacturers supply information on minimum inlet conditions required. If high lift or high vacuum inlet conditions exist, special attention must be paid to the suction side of the pump.

Source : <http://nprcet.org/e%20content/mech/FMM.pdf>