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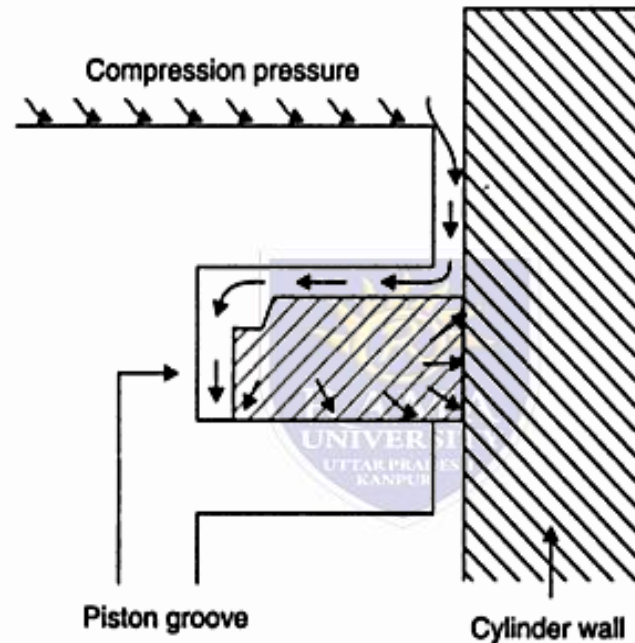


Fig. 2.11. Working of a piston ring.

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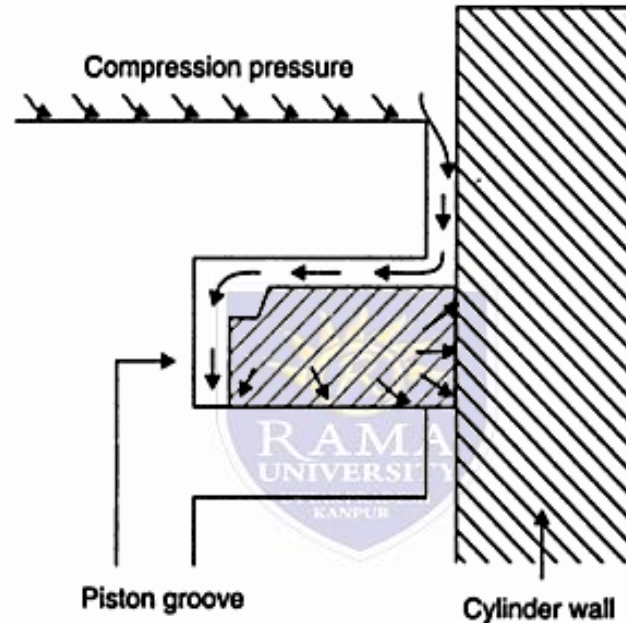


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5. Gudgeon pin (or wrist pin or piston pin) :

These are *hardened steel parallel spindles* fitted through the piston bosses and the small end bushes or eyes to allow the connecting rods to swivel. Gudgeon pins are a press fit in the piston bosses of light alloy pistons when cold. For removal or fitting, the piston should be dipped in hot water or hot oil, this expands the bosses and the pins can be removed or fitted freely without damage.

It is made hollow for lightness since it is a reciprocating part.

6. Connecting rod :

Refer to Fig. 2.14. The connecting rod transmits the piston load to the crank, causing the latter to turn, thus converting the reciprocating motion of the piston into a rotary motion of the crankshaft. The lower or "big end" of the connecting rod turns on "crank pins".

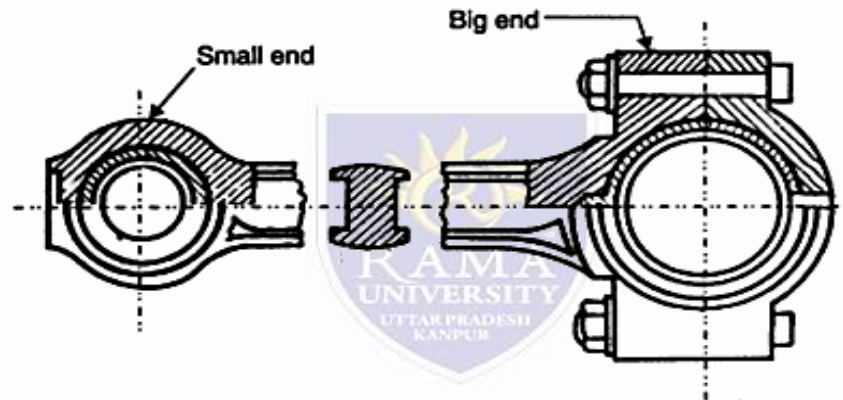


Fig. 2.14. Connecting rod.

The connecting rods are made of nickle, chrome and chrome vandum steels. For small engines the material may be aluminium.

7. Crank :

The piston moves up and down in the cylinder. This up and down motion is called *reciprocating motion*. The piston moves in a straight line. The straight line motion must be changed to rotary, or turning motion, in most machines, before it can do any good. That is rotary motion is required to make wheels turn, a cutting blade spin or a pulley rotate. To change the reciprocating motion to rotary motion a crank and connecting rod are used. (Figs. 2.15 and 2.16). The connecting rod connects the piston to the crank.

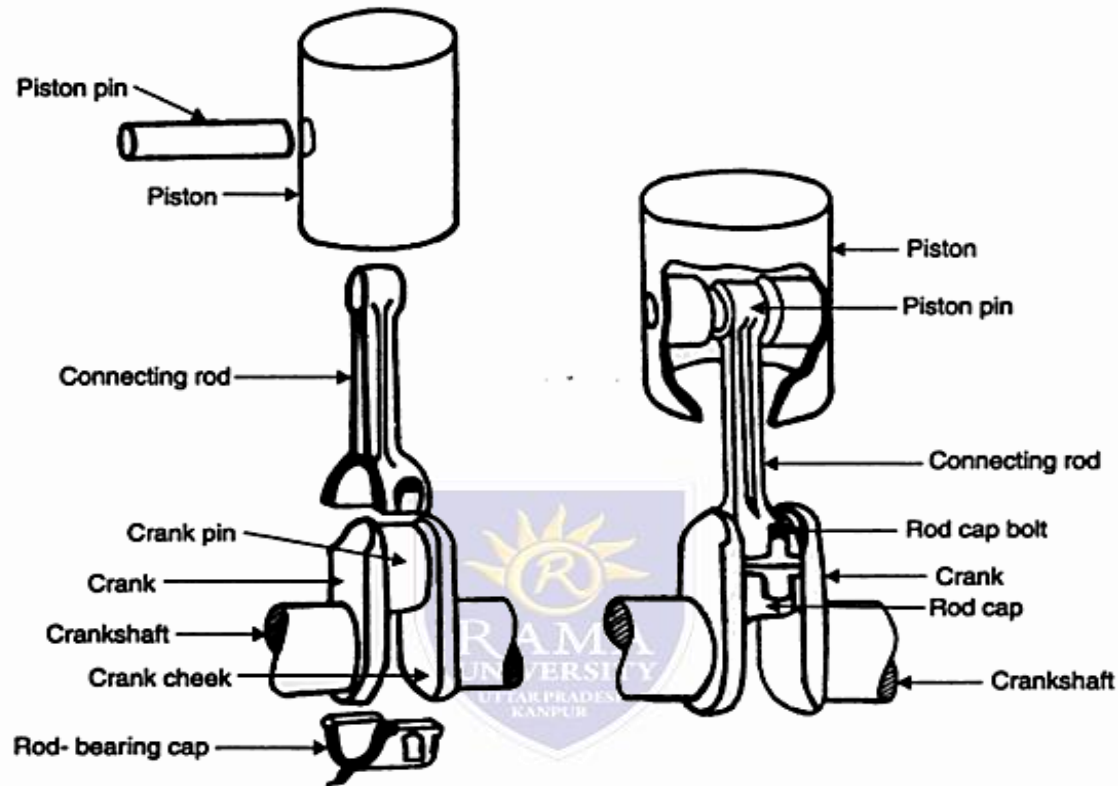


Fig. 2.15

Fig. 2.16

Note. The crank end of the connecting rod is called rod "*big end*". The piston end of the connecting rod is called the rod "*small end*".

8. Crankshaft :

The crank is part of the crankshaft. The crankshaft of an internal combustion engine receives via its cranks the efforts supplied by the pistons to the connecting rods. All the engines auxiliary mechanisms with mechanical transmission are geared in one way or the another to the crankshaft. It is usually a steel forging, but some makers use special types of cast-iron such as spheroidal graphitic or nickel alloy castings which are cheaper to produce and have good service

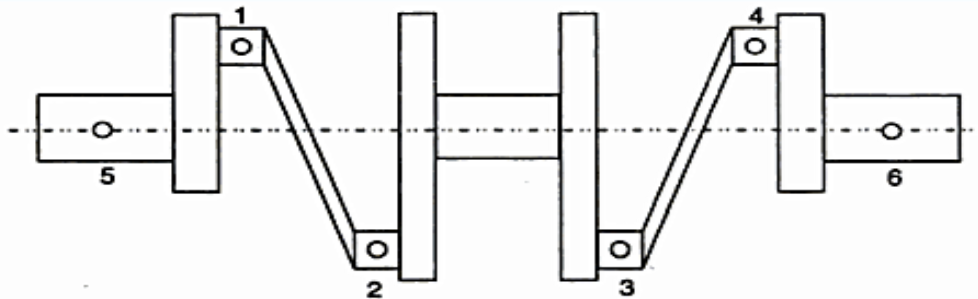


Fig. 2.18. Typical crankshaft layout.

9. Engine bearing :

The crankshaft is supported by bearing. The connecting rod big end is attached to the crank pin on the crank of the crankshaft by a bearing. A piston pin at the rod small end is used to attach the rod to the piston. The piston pin rides in bearings. Everywhere there is rotary action in the engine, bearings are used to support the moving parts. The purpose of bearing is to reduce the friction and allow the parts to move easily. Bearings are lubricated with oil to make the relative motion easier.

Bearings used in engines are of two types : *sliding* or *rolling* (Fig. 2.19).

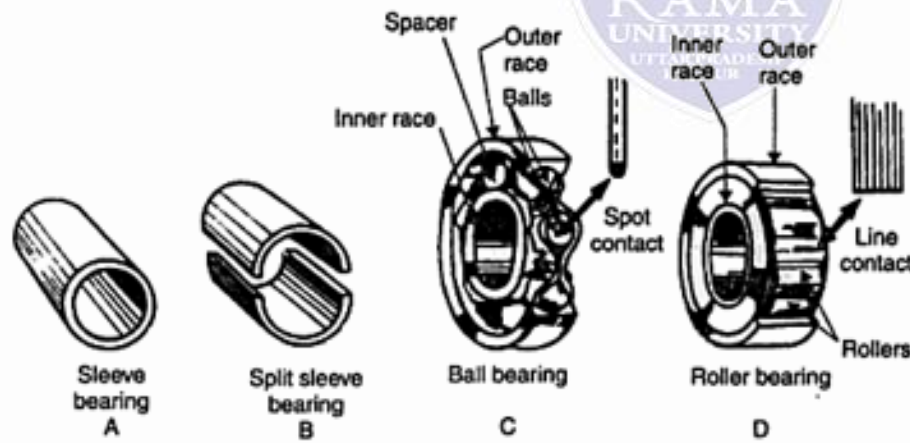


Fig. 2.19. Bearings.