V.B. meccanica

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DI BELOTTI A. & C. S.N.C.

TECHNICAL DATA

RESISTANCE TO WEAR

Important prerequisite for smooth operation is a high level of wear resistance. It should be pointed out that the relationship between hardness and wear is purely indicative. Generally speaking, the harder materials with homogeneous structure are, the more resistant they are to wear. This cannot be said, however, in the case of cast iron. Here, hardness tests can never be used to provide more than a rough idea of wear resistance and must be considered as merely useful first checks.
The problem of selecting the most suitable material must therefore be solved using a different method such as chemical and, in particular, metallographic analysis of material structure to estimate the quality of structural components such as graphite, the pearlitic matrix and phosphorous eutecticdistribution, etc.
Graphite distribution is an important factor governing resistance to wear. It should appear in the form of fine, short laminae with no dendritic shapes for self-lubrication and lubricant absorption.
Another important advantage of this type of graphite distribution is that it improves the mechanical features of the material.
For maximum resistance to wear, the matrix must be pearlitic with no cementite or ferrite content. The first, which is extremely hard, could damage the cylinder while the second, which is very soft, could jeopardize the wear resistance of the ring or, worse still, cause seizing. The mechanical strength of the pearlite structure prevents the microscopic roughness inevitably left on the surface of the ring from being deformed or broken when it penetrates the depressions on the surface of the cylinder.
This prevents the formation of highly abrasive metal dust. Needless to say, the impact rings are subjected to as a result of changes in pressure and high-speed back-and-forth motion is withstood much better by material with this type of structure. A grid-like distribution of the phosphorous eutectic content has been found to be the suitable as far as wear resistance is concerned.

PISTON RING DIMENSIONS

The dimensions and tolerances for piston rings can be found in the DIN Standards. There is a DIN Standard for each application. Where we thought fit, we have completed the DIN Standards with our own engineering standards.
If practical requirements make it necessary to deviate from the above standards, just contact us for assistance in selecting the right type and size for your use.

CUTTING OF PISTON RINGS

Piston rings in general, and especially those used on engines, tend to expand during operation more that the surrounding cylinder, as a result of the combined effect of the heat produced by the liquid in the cylinder and the friction caused by the rubbing of the which cannot be cooled.
For this reason, the width of the cut must be calculated to prevent the tips from coming into contact. This cutting width is covered by our standards unless otherwise requested by the customer.

SHAPES AND TYPES

As we have already said, the main job of a piston ring is to guarantee maximum sealing. This is done using various types of compression rings, standard, chamfered, slitted, graduated, etc. which have a scaping effect on the oil which is sent back into circulation through the slits or holes in the concave seats.

TYPES OF CUT

Straight or sloping cuts are the most commonly used. Rings with overlapping cuts are also used with good sealing results on low-power machines. Piston rings with special "gasseal" cuts can be used on air or gas compressors.

I dati tecnici, tabelle, disegni e riferimenti normativi sono stati approvati dall'ente tecnico V.B. Meccanica, che è responsabile del loro aggiornamento (Rev.0 Giugno 2005)

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One step ahead

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