MECHANICAL CARBON

gland ring components

MORGAN
INDUSTRIAL CARBON

Morgan Industrial Carbon supply carbon gland rings for all applications.

As carbon has very good self-lubricating properties, carbon makes an ideal material for both non contact and contact types of gland rings. Carbon glands are used in the sealing of liquids and gases, restricting leakage to a minimum.

Carbon gland rings provide an economical simple and effective seal on impulse turbines, water turbines, low-pressure fans and blowers.

Applications include

Water turbines

To seal water turbines as used in the generation of electric power, two main types of carbon rings are used, these being

1. Tenon jointed rings

A gland arrangement using a tenon jointed ring as shown in figure 1. Each segment is mated to it's neighbour by an integral tongue fitted into a recess.

A garter spring holds the segments together and also loads them against the housing, such that a static seal across the radial face of the carbon is obtained.

A small gap is left in each joint permitting self adjustment of the ring. As wear of the carbon takes place, the segments move radially inwards under the action of the water pressure and the garter spring.

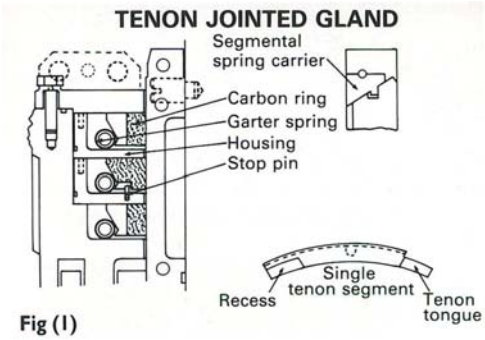

Fig (1)

2. Wedge rings

Carbon wedge rings are sometimes favoured as alternatives to tenon rings on water turbines. A typical wedge ring arrangement is shown in figure 2.

A wedge ring consists of a series of long segments and short wedge pieces. The ends of the segments are angled to present sliding surfaces to the tapered wedge pieces. A garter spring holds the segments and wedge pieces in position and stop pins locate the long segments in the housing.

The rings are fitted in pairs and displaced from each other, so that the long segments of one ring cover the wedge pieces of the adjacent ring In this manner, no direct leakage path through a pair of rings exists.

Axial compression springs are fitted are fitted in recesses in the gland housing to act on each pair of rings, so as to effect a seal across the radial face.

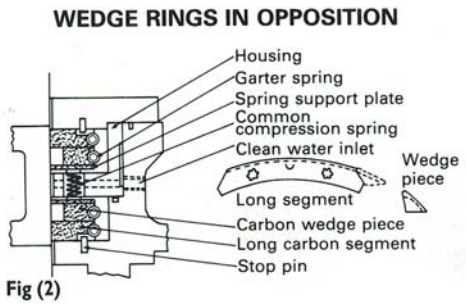

Fig (2)

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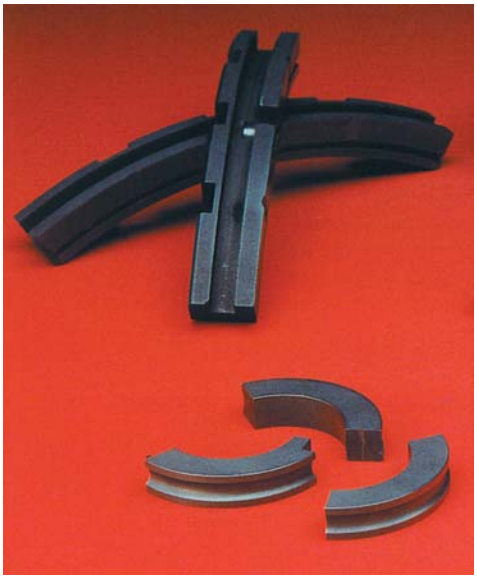

Steam & Gas

For steam and gas applications, non contact gland rings, which seal by throttling are used. With these rings, the bore of the carbon rings is designed to match the shaft diameter at the operating temperature.

For assembly reasons the carbon rings are made in segments and are held in position in L-housings and a stop pin is fitted to each ring to prevent it rotating with the shaft.

Either rectangular section rings or bevel section rings may be used. The segments are usually butt-jointed. A bevel section gland ring is shown in figure 3.

Types of different joints can be seen in figure 4.

Carbon labyrinth glands

Carbon labyrinth glands are similar in function to metal labyrinths, but because much smaller radial clearances can be used, higher pressures, through a shorter axial length can be sealed effectively.

They are used as main shaft seals in gas turbines, auxiliary steam turbines, rotary compressors and blowers.

A typical carbon labyrinth is shown in figure 5.

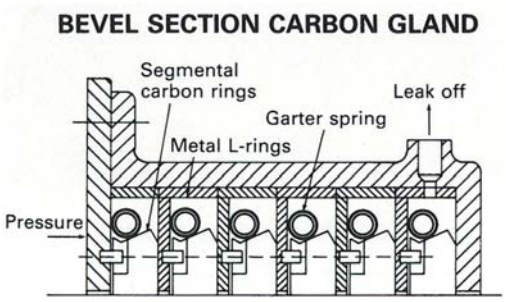

Fig (3)

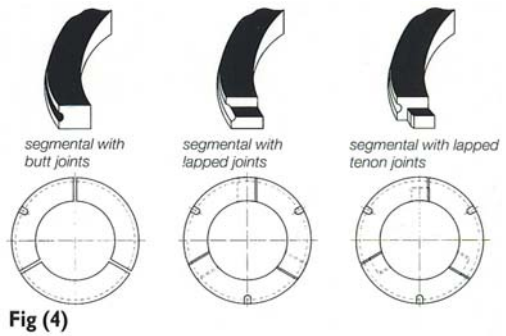

Fig (4)

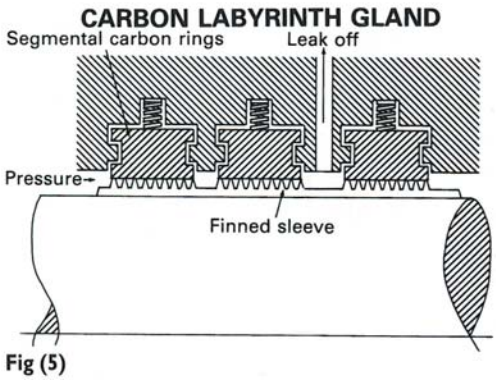

Fig (5)

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