

The correct coupling

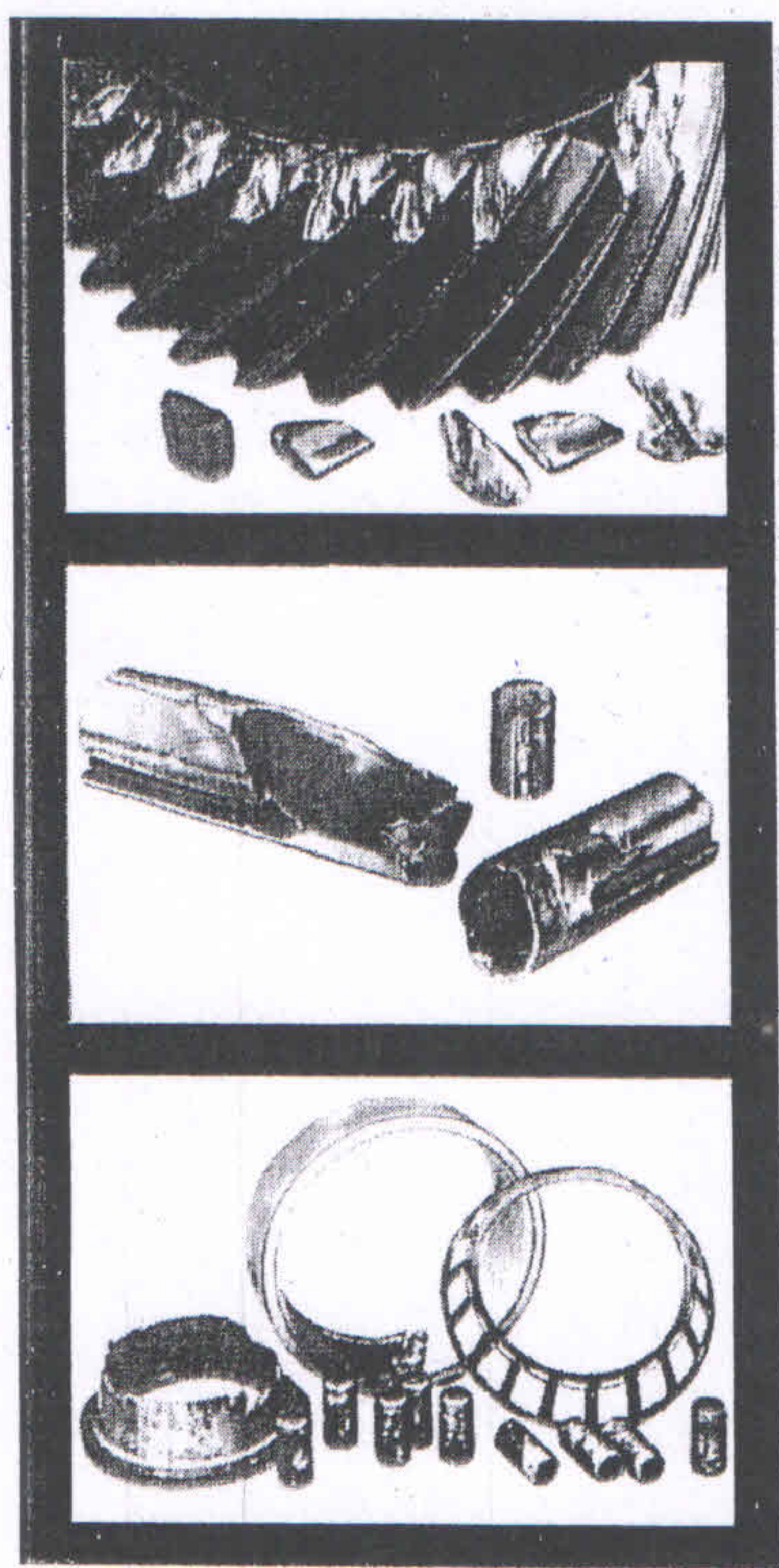
It is dangerous to choose a coupling on the basis of cost alone. The incorrect choice can result in premature failure of the coupling at the minimum and damage to other equipment in the drive train at worst. It's a common problem, however, since there are many stories of disaster that can be attributed to premature coupling and equipment failure. These failures will typically be seen, explains **Rathi Transpower**, as premature failure of bearings, gears, or even stress fractures of shafts, leading to expensive repairs and costly downtime.

As we know, there are many different types of coupling design: gear, grid, chain, pin and bush, metallic disc, and fluid couplings. Each of these types have inherent advantages over the other in some way, whether, for example, it be in their simplicity or their ability to absorb starting and shock loads.

Simplicity

For simplicity and cost, the jaw coupling has found universal acceptance both in industry and in agriculture for a wide variety of applications. It is well suited for application between electric motors and driven machinery where shock loading is light to moderate. It is readily available for

Gears, shafts and bearings all show the effects of poor coupling selection.



powers up to 75 kW, although versions are available to handle 700 kW at 100 rpm.

Versatility

To overcome problems of misalignment and to absorb shock loads and vibration thus reducing transfer to driver or driven machinery, pin and bush and grid couplings offer an ideal solution. They can be used at high and low speed where moderate to heavy shock loads are expected. Grid

couplings are compact and have power ratings ranging from 0.5 – 8900 kW at 100 rpm.

The grid coupling uses a grease lubricated high tensile steel grid that flexes between the two hubs. Correctly selected and using the manufacturers' recommended special grease, significantly extended lubrication intervals can be obtained. Grid couplings also have a substantially longer driving element fatigue life than elastomeric couplings. This all adds up to lower cost in the long run.

Vibration

Where there is vibration shock or impulse loading from petrol or diesel engines, tyre couplings or torsionally soft couplings with a rubber elements are well suited. These are torsionally soft flexible couplings with a high angular misalignment capability of 2 – 3 degrees and moderate parallel misalignment capability. The elements are maintenance-free for their working life but their performance deteriorates at temperatures over 80°C.

Transmission

Where high torque is being transmitted at slow speeds, and misalignment and shock loading is not a problem, then chain, grid or gear couplings are best for strength and compactness. All of these couplings require grease lubrication and are supplied with sealed covers to retain the grease. Chain and gear couplings are torsionally rigid, as are

metallic disc couplings – these however are recommended for high speed and high torque applications. They are backlash & lubrication free.

Soft start

The fluid coupling is used in a drive system where there are high inertial loads, where a smooth gradual start is required or overload protection is required. The fluid coupling has the added advantage of giving the electric motor a low load start, thus reducing starting current and hence electricity charges. This is particularly important on large electric motors where peak power demand must be controlled.

Once running, a fluid coupling gives highly efficient energy transfer, up to 97 – 98 %. They give long service life, as there is no mechanical contact between the transmission elements. Only bearings and seals have to be replaced periodically.

Failures

Spectacular failures are common in industry due to the incorrect selection of couplings. The larger the coupling the greater the potential for significant costly damage. Broken shafts, stripped gears and disintegrated bearings are all signs that the coupling has not been given the attention it was due. ■

CONTACT

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