

HFB housed bearing units are completely assembled, ready for installation, bearing units. The housed bearings consist of grey cast iron or steel plate housings in various arrangements with sealed single row ball bearings. The ball bearings have spherical ground outer rings and as a result can align themselves in the spherical housing bores. Mis-alignment errors can be compensated by this.

As a result of their special properties they are mainly used in agricultural machinery, construction machinery, textile machines, conveyor systems, machines for the packaging industry as well as in the engineering industry. These bearing units do not allow any axial movement as a result of which they are not suitable for use as floating bearings.

There are many ranges of ball bearing available for use which vary depending on the manner of their securing on the shaft and different sealing. Three different fixing possibilities are available.

- **Eccentric Collar Fixing**

Ball bearings with eccentric collar fixing should be used for bearings rotating in the same direction. They are available with extended inner ring (series HC) on both sides or, with single extended inner ring (series SA).

- **Grubscrew fixing**

These ball bearing types are suitable for bearings with alternating direction of rotation. These bearings have two grubscrews in the inner ring and are available with either extended inner ring (series UC) on both sides or, single sided extended inner ring (series SB).

- **Adapter sleeve fixing**

The adjustable bearings for adapter sleeve are suitable for higher speeds and changing directions of rotation. When assembling the unit it must be ensured that a small play rests for the bearing (Series UK).

## Seals

All adjustable bearings are sealed both sides and filled with an industrial Lithium soap grease No 2.

The permissible temperature range for seals and lubricant is from -30° C to +100° C. Under normal operating conditions these bearings will run maintenance free. For extreme applications they can be regreased at any time. The seals on the HFB adjustable bearings differ partly in their design. Seals in bearing series SB are made from heat resistant synthetic rubber (similar to 2RS). The seals of the series SA are a pressed steel washer on the inside of which is a bonded synthetic rubber lip seal.

In addition to the standard seals, bearing units UC have sliding discs on the outside. These steel plate slider discs rotate with the inner ring and considerably improve the sealing.

For extreme conditions, series HC-R3 bearings, with a triple steel plate rubber seal secured by the outer ring, are available.

## Tolerances

The inner ring bores of HFB bearings have a plus tolerance which allows them to be pushed easily onto drawn unmachined shafts resulting in easier assembly.

| Nominal Dimension<br>d (mm) |     | Inner tolerance<br>Limits<br>nm |       | Outer tolerance<br>Limits<br>nm |       |
|-----------------------------|-----|---------------------------------|-------|---------------------------------|-------|
| over                        | to  | upper                           | lower | upper                           | lower |
| 10                          | 18  | + 15                            | 0     | -                               | -     |
| 18                          | 30  | + 18                            | 0     | -                               | -     |
| 30                          | 50  | + 21                            | 0     | 0                               | 11    |
| 50                          | 80  | + 24                            | 0     | 0                               | 13    |
| 80                          | 120 | + 28                            | 0     | 0                               | 15    |
| 120                         | 150 | -                               | -     | 0                               | 18    |
| 150                         | 180 | -                               | -     | 0                               | 25    |

## Bearing Clearance

The HFB adjustable bearings series SB, SA, UC and HC are mainly supplied with a C3 bearing clearance. Series UK are supplied with a C4 clearance.

## Materials

For the housings HFB uses grey cast iron quality GG20. For extreme applications housings can also be supplied in GGG40. The various steel housings are produced from pressed steel, quality MR St3 and in zinc plated versions.

The proven bearing steel (100Cr6) is used for ball bearings. The cages are, mainly produced from cold formed steel plate. For certain applications, chrome or zinc plated cast housings are also available.

## Speeds

The permissible speed for these adjustable bearings depends on the type of fixing and seals. Please refer to the listed speed limits in the following table.

### Speeds for adjustable bearings

| Shaft Diameter<br>d | Speeds Rpm<br>with shaft tolerance |      |      |      |      |
|---------------------|------------------------------------|------|------|------|------|
|                     | h 6                                | h 7  | h 8  | h 9  | h 11 |
| 12 -17              | 9500                               | 6000 | 4300 | 1500 | 950  |
| 20                  | 8500                               | 5300 | 3800 | 1300 | 850  |
| 25                  | 7000                               | 4500 | 3200 | 1000 | 700  |
| 30                  | 6300                               | 4000 | 2800 | 900  | 630  |
| 35                  | 5300                               | 3400 | 2200 | 750  | 530  |
| 40                  | 4800                               | 3000 | 1900 | 670  | 480  |
| 45                  | 4300                               | 2600 | 1700 | 600  | 430  |
| 50                  | 4000                               | 2400 | 1600 | 560  | 400  |
| 55                  | 3600                               | 2000 | 1400 | 500  | 360  |
| 60                  | 3400                               | 1900 | 1300 | 480  | 340  |
| 65                  | 3000                               | 1700 | 1100 | 430  | 300  |
| 70                  | 2800                               | 1600 | 1000 | 400  | 280  |
| 75                  | 2600                               | 1500 | 950  | 380  | 260  |
| 80                  | 2400                               | 1400 | 900  | 360  | 240  |
| 90                  | 2000                               | 1200 | 800  | 320  | 200  |
| 100                 | 1900                               | 1100 | 750  | 300  | 190  |
| 120                 | 1800                               | 1000 | 720  | 280  | 180  |

Because of the triple seal these recommended speeds should be substantially reduced for bearing series HC-R3.



## Loads

The cast housings (GG20) can withstand the same dynamic and static loads as the fitted bearings.

Housings from pressed steel cannot be loaded to the same level as the bearing. The axial load of the adjustable bearing is approximately 20% of the dynamic load capacity. This loading is however, strongly dependent on the type of fixing on the shaft and its material.

## Lubrication & Maintenance

Under normal operating conditions the grease packed into the bearing at manufacture will last the lifetime of the bearing. In many situations however, regreasing may be necessary, especially when inclement environmental influences such as moisture or dusty surroundings or increased speeds occur.

For regreasing a Lithium soap grease should be used. The grease should be pumped in slowly whilst running the bearing. Excessive pressure is to be avoided since this could damage the seal.

The greasing intervals are dependent on the operating conditions and are very difficult to determine exactly. It is recommended however, that regreasing be carried out if equipment and machinery are only used periodically (agricultural machines).

The regreasing should be carried out at the end of the operating period.