HFB housed bearing units are completely assembled bearing units, ready for installation. 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 can therefore align themselves in the spherical housing bores. Misalignment 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 and are therefore not suitable for being used as floating bearings.

There are many ranges of ball bearings available which vary depending on how they are secured on the shaft and on the different types of 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 an extended inner ring (series HC) on both sides or, with a single extended inner ring (series SA).

- **Grubscrew fixing**

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

- **Adapter sleeve fixing**

  The adjustable bearings with 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 at 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 consist a pressed steel washer which has a bonded synthetic rubber lip seal on the inside.

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 and 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 which makes the assembly much easier.

Inner tolerance				Outer tolerance	
Nominal Dimension d (mm)		Limits µm		Limits µm	
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 they 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 plates. 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	Speeds Rpm with shaft tolerance				
d	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 which is filled in from the supplier will last the lifetime of the bearing. In many situations however, regreasing may be necessary, especially when inclement environmental influences such as moisture, 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 is 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.

Tightening torgue of the scrub screws:

Shaft diameter mm do	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	100	120
Tightening torguet Nm	4	5	6	12	12	12	23	23	23	23	23	23	23	23	23	23	23
Wrench opening mm	3	3	3	4	4	4	5	5	5	5	5	5	5	6	6	6	6
Axial load Fa kN	2	3	4	5	6	8	9	10	12	14	14	15	15	16	16	16	16

High temperatures units

For high temperatures operating conditions we can offer inserts for a operating temperature up to 250°C. The inserts are manufactured with clearance C4.