HSR Range Horizontal Bearing Assemblies

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GB Bearings (Pty) Ltd
operates from a network of facilities
situated in Durban, Johannesburg and Cape Town.

GB Bearings has always been in the forefront of technological advancement in the design and manufacture of plain bearings and bearing materials for a wide variety of industrial applications. Our facilities are equipped to manufacture and repair bearings ranging in size up to bore diameters of 5500mm.

Contents

Date of Publication: April 2018

Introduction

GB Bearings HSR bearing assemblies are a range of plain bearings, for shaft sizes from 60mm to 315mm, ready for fitting to electric motors, generators, horizontal water turbines, fans, blowers, pumps, and any other machinery where free standing or flange mounted bearings are required.

They incorporate the latest in GB Bearings' wide experience in designing bearings for rotating plant as well as plain, profile and tilting pad bearings for which they are well known throughout the world.

General Description
The standard GB Bearings HSR assembly contains a horizontal, plain journal bearing of split construction, with plain thrust faces for shaft location. The bearing is air cooled, lubricated with an oil pick-up ring dipping into a built in oil sump. The HSR casing is fitted with floating labyrinth seals at each end.

The assembly may be base mounted, or supported on an end flange or centre flange.

The following features may be incorporated into a customer's design to meet their particular requirements:

Water cooling
Where safe limits for air cooling are exceeded.

External pressure lubrication
For higher speeds and loads.

Hydrostatic jacking
For heavy loads at start-up.

Tilting pad journals
For low vibration levels in higher speed machinery. Lemon bore and four lobe profiles are also available to deal with such requirements.

Axial thrust features
For most installations plain or taper land thrust faces are adequate. For higher thrust levels, or where a greater safety margin is required, GB Bearings standard tilting thrust pads can be incorporated.

Instrumentation
e.g. temperature recording instruments with alarm contacts as a further option.

Insulation
Insulation is provided by P.T.F.E. bonded to the bearing housing.

Shaft Size
Shaft sizes less than 60mm and greater than 315mm may be accommodated by special order.

Additional sealing
Standard assemblies are supplied with SS type seals to IP44 protection (see page 6). Alternative sealing arrangements to IP55 and IP56 are available. Additional machine seal for the end flange mounted HSR can be supplied.

The standard materials used in the various components are:

Casing
Grey iron to BS1452-1977.
Grade 220 (Equivalent: DIN 1691-1967 GG20/25).

Bearing
Steel to BS4360 Grade 43A or S.G.
iron grade 420/12 to BS 2789-1985.

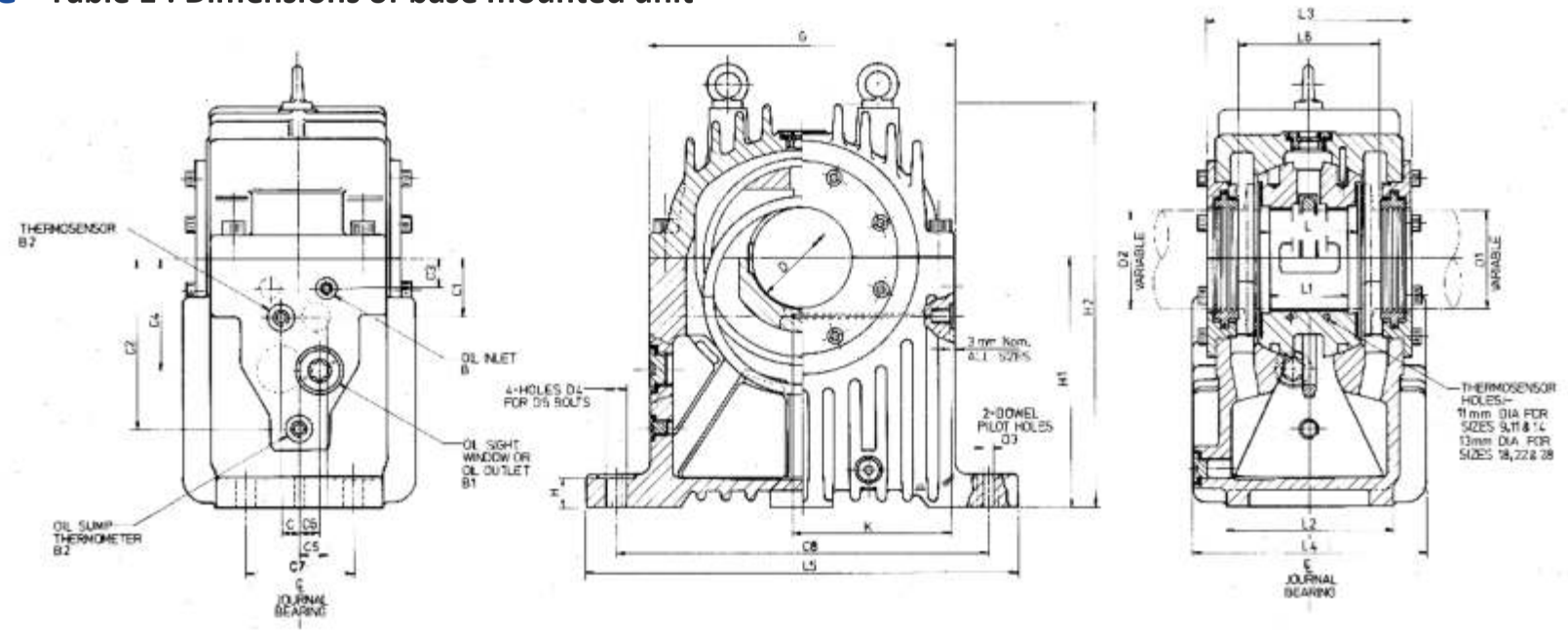
Bearing lining
GB Bearings uses a lead-free high tin based whitemetal alloy.

Labyrinth Seals
Thermoplastic material/phenolic resin.

When ordering, standard assemblies are identified by a combined bearing and seal code (see page 16). Options such as instrumentation are not coded and should be specified as an addition.

Right: HSR Base Mount with top cover removed showing optional tilting thrust pad arrangement

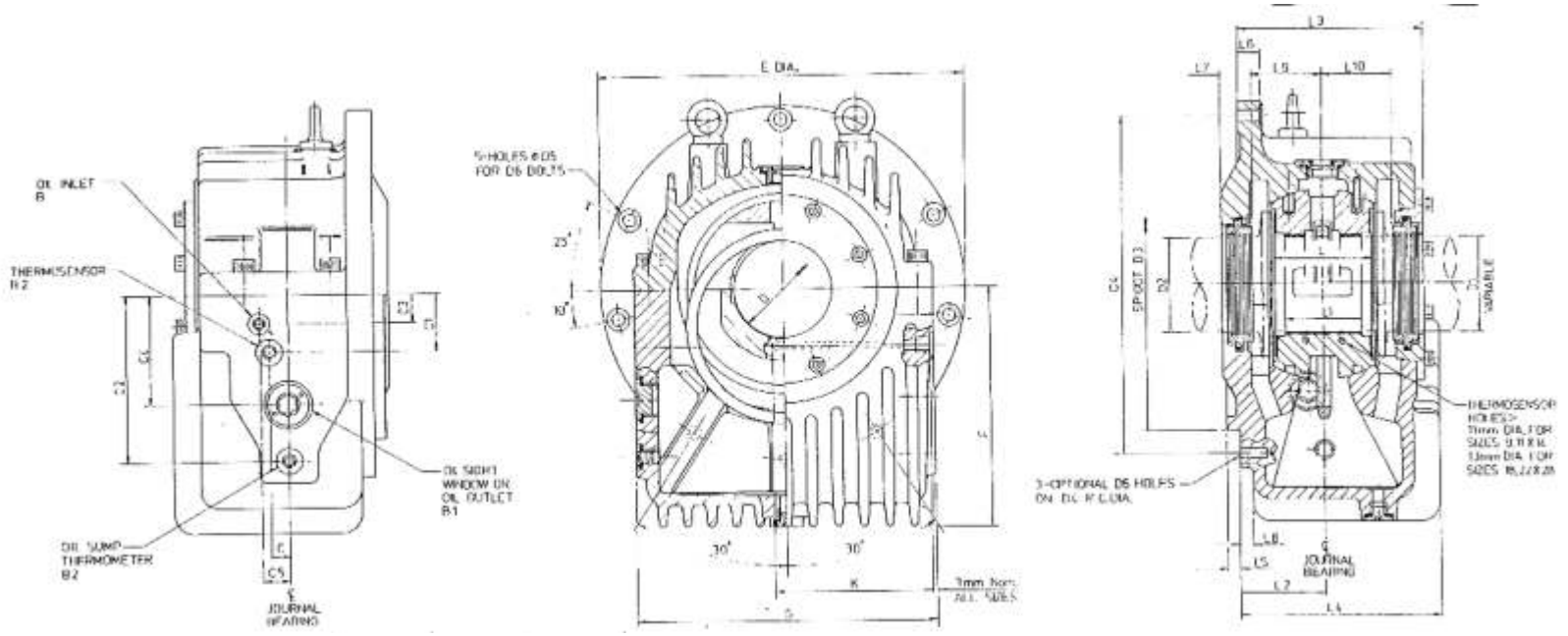
Size Table - Table 1 : Dimensions of base mounted unit



Frame size	For shafts Dia. D	D1 variable	D2 variable	D3	D4 <	D5	B <=	B1 <=	B2 <=	C	C1	C2	C3	C4	C5	C6	C7	C8	G	H	HI	H2	K ±3	L	L1	L2	L3	L4	L5	L6	Oil Capacity (litres)	Approx Weight kgs
9	80 90	80	80	10.4	22	M16	Rp⅜	Rp1¼	Rp½	20	55	137	28	95	35	23	90	300	265	35	190	318	112	80	64	145	186	186	355	118	1.6	55
		90	90																													
		100	100																													
		110	110																													
11	100 110	100	100	10.4	26	M20	Rp⅜	Rp1¼	Rp½	23	65	150	38	100	40	23	100	375	315	48	225	368	134	100	80	165	216	216	450	148	3.5	80
		110	110																													
		125	125																													
		140	140																													
14	125 140 160	125	125	10.4	30	M24	Rp⅜	Rp1½	Rp½	29	90	180	50	130	50	29	125	450	370	60	265	450	164	125	105	205	256	256	540	188	4.8	140
		140	140																													
		160	160																													
		180	180																													
18	160 180 200	160	160	15.5	40	M30	Rp½	Rp1½	Rp½	34	112	215	75	155	65	34	150	560	440	70	315	555	199	160	135	245	296	300	660	228	8.2	240
		180	180																													
		200	200																													
		225	225																													
22	200 225 250	200	200	15.5	46	M36	Rp¾	Rp2	Rp½	40	137	245	88	180	80	40	200	670	560	80	375	670	267	200	170	310	380	380	800	306	15.6	420
		225	225																													
		250	250																													
		280	280																													
28	250 280 300 315	250	250	20.6	55	M42	Rp¾	Rp2½	Rp½	50	155	310	95	220	106	50	250	800	690	90	450	820	324 290	250	215	370	442	450	950	350	25.5	780
		280	280																													
		315	315																													
		355	355																													

Notes:
① Tapped features also in opposite side of unit identically positioned to refs C to C6 inclusive relative to journal bearing centre lines.
② Rp = BSP
③ Standard clearance holes for bolts D5
④ All dimensions in mm with the exception of B, B1 & B2

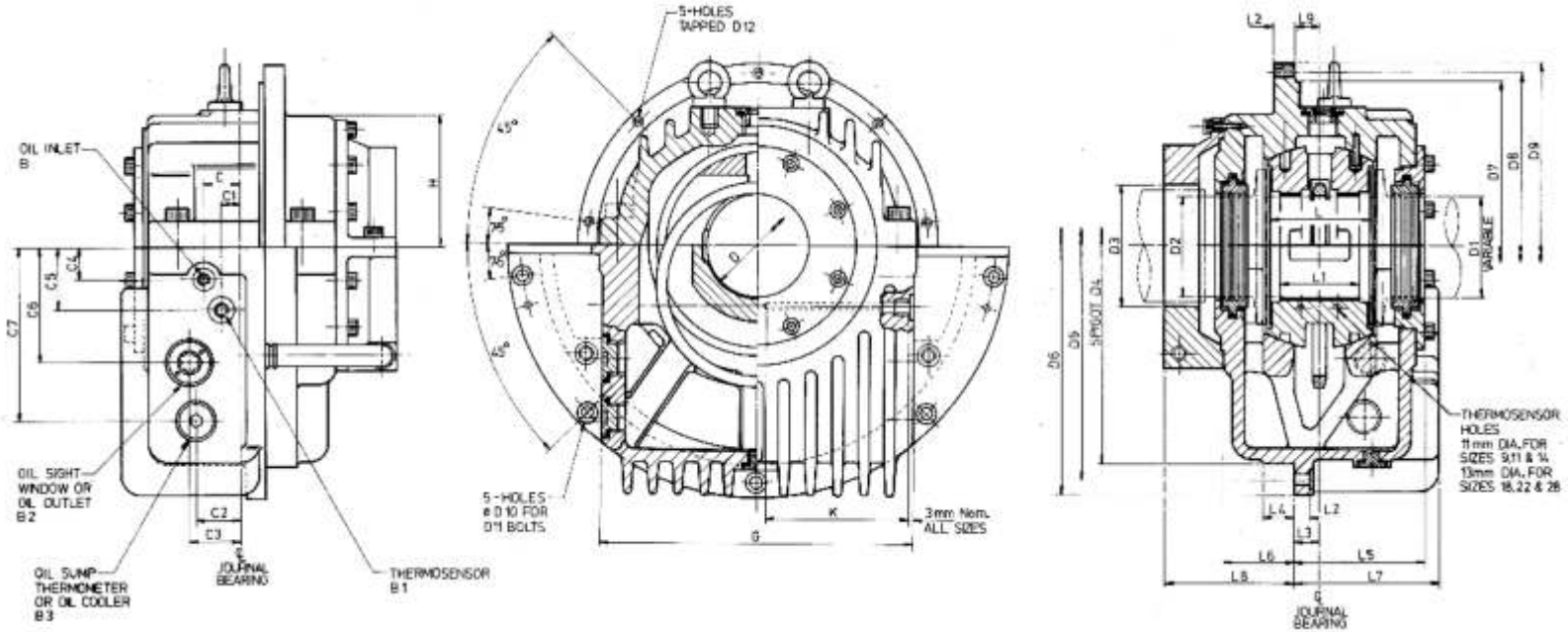
Size Table - Table 2 : Dimensions of end flange mounted unit



Frame size	For shafts Dia. D	D1 variable	D2	D3	D4	D5	D6	B <=	B1 <=	B2 <=	C	C1	C2	C3	C4	C5	E	F	G	K ±3	L	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	Oil Capacity (litres)	Approx Weight kgs
9	80 90	80 90 100 110	100	280	310	14	M12	Rp¾	Rp1¼	Rp½	20	55	175	28	95	35	340	240	265	112	80	64	70	163	163	10	13	21	10	59	59	2.5	60
11	100 110	100 110 125 140	125	315	350	14	M12	Rp¾	Rp1¼	Rp½	23	65	195	38	105	40	380	270	310	134	100	80	80	188	188	12	17	26	12	74	74	4	90
14	125 140 160	125 140 160 180	160	355	415	18	M16	Rp¾	Rp1½	Rp½	29	90	240	50	130	50	460	330	365	162	125	105	100	228	235	14	23	23	12	90	94	7.3	140
18	160 180 200	160 180 200 225	200	400	490	22	M20	Rp½	Rp1½	Rp½	34	112	260	75	155	65	540	380	440	199	160	135	116	264	266	17	25	29	15	110	114	11.7	220
22	200 225 250	200 225 250 280	250	500	620	26	M24	Rp¾	Rp2	Rp½	40	137	340	88	180	80	680	430	550	260	200	170	150	340	340	28	37	28	15	142	153	21	430
28	250 280 300 315	250 280 315 355	315	600	770	33	M30	Rp¾	Rp2½	Rp½	50	155	390	95	220	106	850	485	690	324 290	250	215	170	385	395	26	42	41	15	175	184	30.5	790

Notes: ① Tapped features also in opposite side of unit identically positioned to refs C to C6 inclusive relative to journal bearing centre lines. ② Rp = BSP ③ All dimensions in mm with the exception of B, B1 & B2

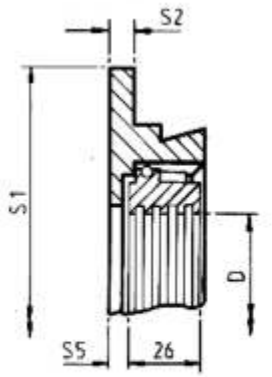
Size Table - Table 3 : Dimensions of centre flange mounted unit



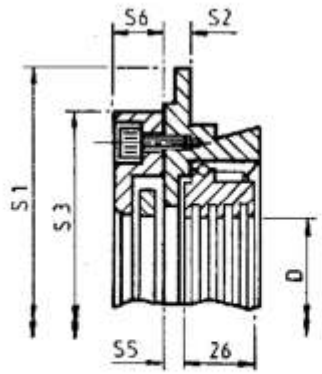
Frame size	For shafts Dia. D	D1 variable	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	B <=	B1 <=	B2 <=	B3 <=	C	C1	C2	C3	C4	C5	C6	C7	G	H	K ±3	L	L1	L2	L3	L4	L5	L6	L7	L8	L9	Oil Capacity (litres)	Approx Weight kgs
9	80 90	80 90 100 110	100	121.5	375	400	426	270	285	300	11	M10	M6	Rp⅜	Rp½	Rp1¼	Rp1¼	35	20	50	50	28	55	95	150	255	105	110	80	64	17	20	30	122	60	122	125	20	2.2	55
11	100 110	100 110 125 140	125	151.5	450	475	500	320	340	356	14	M12	M6	Rp¾	Rp½	Rp¼	Rp1¼	40	23	55	65	38	65	100	165	300	130	130	100	80	17	20	30	137	75	137	140	20	3.9	85
14	125 140 160	125 140 160 180	160	191.5	530	560	600	380	400	426	18	M16	M6	Rp¾	Rp½	Rp2	Rp1¼	50	29	70	75	50	90	130	200	356	160	162	125	105	22	25	30	158	87	158	160	25	5.8	140
18	160 180 200	160 180 200 225	200	241.5	630	670	710	450	475	500	22	M20	M8	Rp½	Rp½	Rp2	Rp1¼	65	34	80	80	75	112	155	240	420	190	195	160	135	22	25	30	180	107	180	185	25	8.6	230
22	200 225 250	200 225 250 280	250	291.5	800	850	900	570	600	630	26	M24	M10	Rp¾	Rp½	Rp2	Rp1¼	80	40	100	100	88	137	180	310	530	235	260	200	170	27	30	30	230	138	230	215	30	22.4	425
28	250 280 300 315	250 280 315 355	315	356.5	1000	1060	1120	730	765	800	33	M30	M12	Rp¾	Rp½	Rp2½	Rp1¼	106	50	130	130	95	155	220	385	675	300	324 290	250	215	27	35	35	265	182	265	270	30	40.8	860

Notes: ① Tapped features also in opposite side of unit identically positioned to refs C to C7 inclusive relative to journal bearing centre lines. ② Rp = BSP ③ All dimensions in mm with the exception of B, B1, B2 and B3.

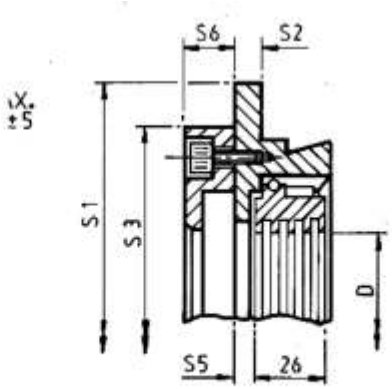
Size Table - Table 4 : Dimensions of standard seals



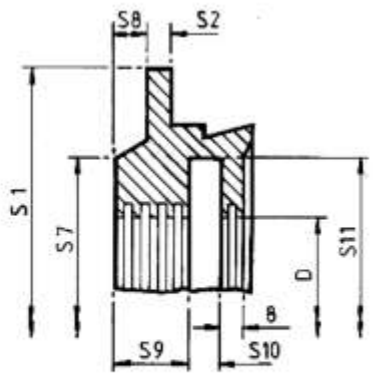
FLOATING LABYRINTH SEAL
- TYPE SS
PROTECTION TO IP44



FLOATING LABYRINTH SEAL
WITH BAFFLE - TYPE SZ
PROTECTION TO IP56



FLOATING LABYRINTH SEAL
WITH BAFFLE - TYPE SB
PROTECTION TO IP55



RIGID LABYRINTH SEAL
[DUAL SYSTEM] - TYPE SD
PROTECTION TO IP 44

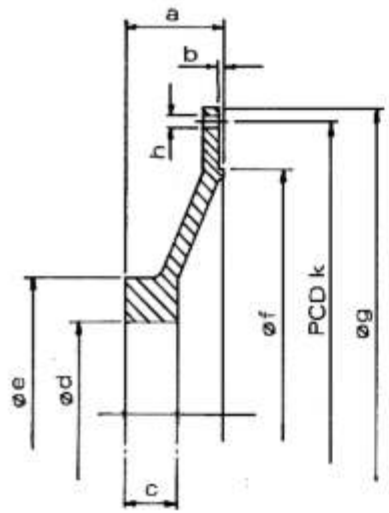
Frame size	Nominal Bore - D	S1	S2	S3	S5	S6	S9	S10	S11
9	80 90 100 110	195	12	162	8	30	27	14	140
11	100 110 125 140	226	12	194	8	30	27	16	170
14	125 140 160 180	270	12	234	8	30	27	18	212
18	160 180 200 225	320	16	281	8	30	27	21	260
22	200 225 250 280	388	22	338	11	30	27	24	316
28	250 280 315 355	465	22	413	11	30	27	27	390

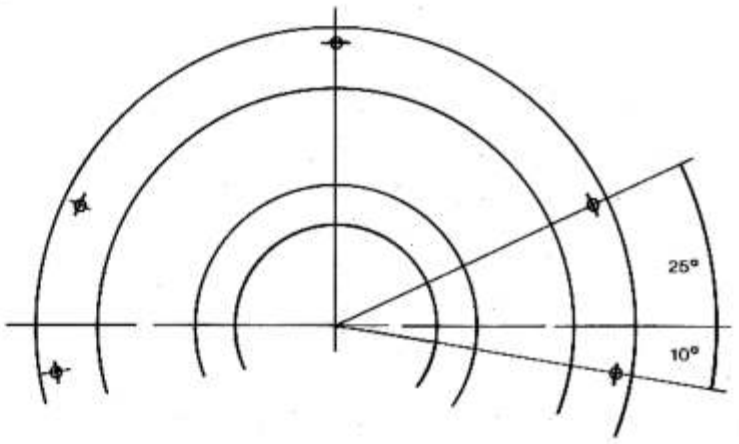
Notes: Protections to IP44, IP55 and IP56 in accordance wth BS 4999: Part 20 1972

All dimensions in mm

Machine Seals

Table 5: Due to the low absolute air pressures which occur in the vicinity of the shaft ends on electrical motors, it is recommended that a vented baffle zone is provided adjacent to the inner seals to ensure that oil vapour is not extracted into the motor casing. A standard range of machine seals for each frame size of HSR (end mounted) bearing is offered as an accessory.

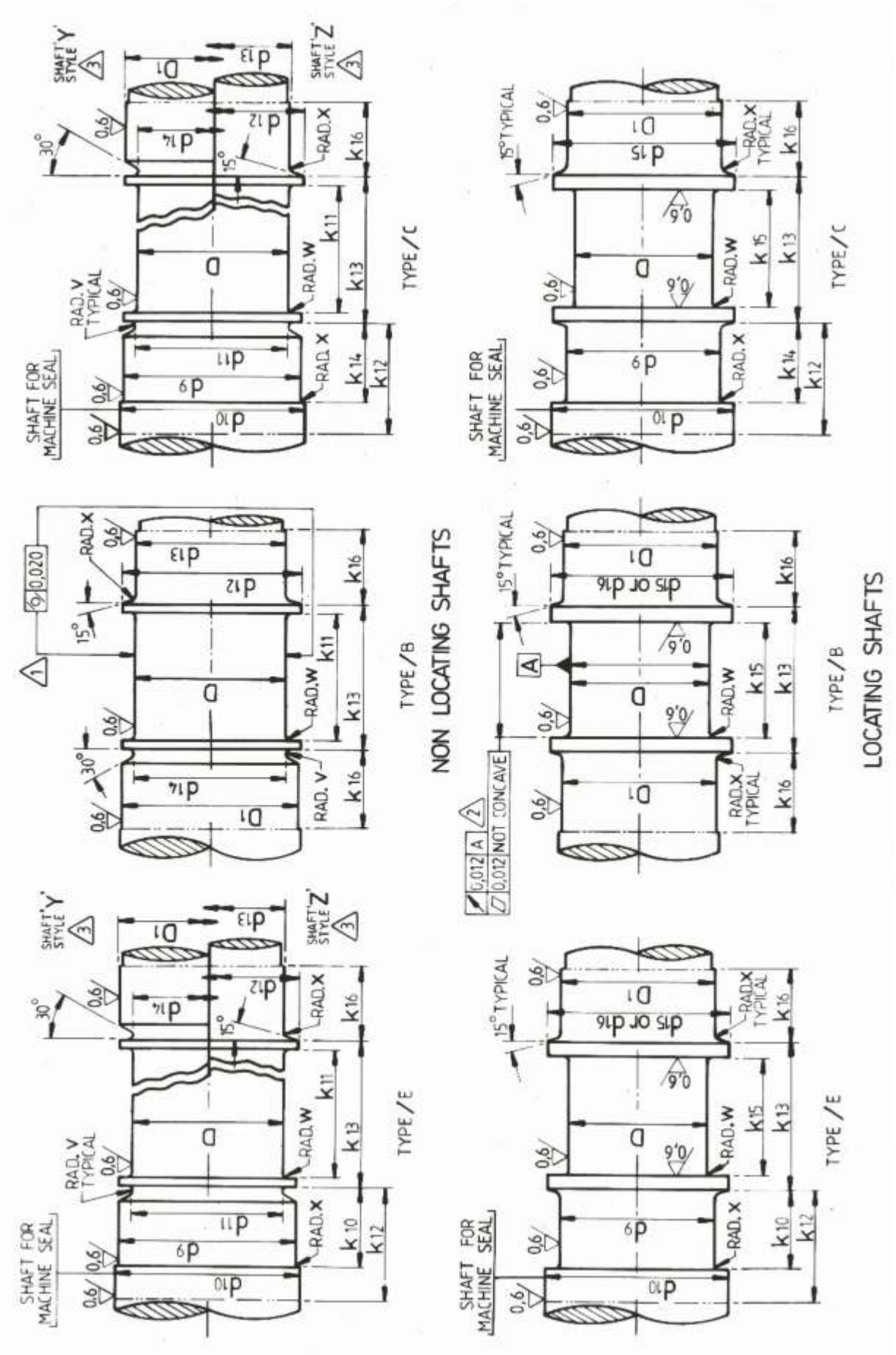




Frame size	a	b	c	Ød*			Øe	Øf	Øg	h	P.C.D.k
				Min.	Max.	Std.					
9	60	5	35	110	130	121.5	160	280	380	6.6 for 6 x M6	360
11	65	5	35	145	160	151.5	180	315	420	6.6 for 6 x M6	400
14	70	5	35	190	207	191.5	230	355	395	6.6 for 6 x M6	375
18	75	5	40	210	257	241.5	290	400	460	9 for 6 x M8	430
22	80	5	40	290	322	291.5	360	500	570	9 for 6 x M8	535
28	85	5	50	355	382	356.5	440	600	680	9 for 6 x M8	640

*Ød can be machined to customer requirements

Shaft Dimensions



Shaft Dimensions - Table 6 : Shaft dimensions

Frame Size	D	D1 (e8)	D9 (e8)	d10	d11	d12	d13 (e8)	d14 (width D1)	d15 @	d16 @	k10	k11	k12	k13	k14	k15 0,1	k16 Type SS Seal	k16 Type SD Seal	v	w	x
9	80	80 90 100 110	80 90 100 110	120	90	90	80	80 (90) 90 (100) 100 (110)	110	Refer to GB Bearings (Pty) Ltd	50	90	100	100	58	80.4	55	75	1.6	2.5	4
	90					100	90 or less		120												
11	100	80 90 100 110	80 90 100 110	150	110	110	100	100 (110) 110 (125) 125 (140)	135		55	110	105	120	63	100.4	60	80	1.6	2.5	4
	110					125	110 or less		150												
14	125	125 140 160 180	125 140 160 180	190	140	140	125	125 (140) 140 (160) 160 (180)	170		60	140	115	150	73	125.4	65	85	2.5	4	6
	140					160	145 or less		190												
	160					180	160 or less		200												
18	160	160 180 200 225	160 180 200 225	240	180	180	160	160 (180) 180 (200) 200 (210)	215		65	180	125	190	74	160.4	65	90	2.5	4	6
	180					200	180 or less		240												
	200					225	200 or less		250												
22	200	200 225 250 280	200 225 250 280	290	225	225	200	200 (225) 225 (250) 250 (280)	265		70	220	140	240	80	200.4	75	105	4	6	10
	225					250	225 or less		290												
	250					280	250 or less		315												
28	250	250 280 315 355	250 280 315 355	355	280	280	250	250 (280) 280 (315) 315 (355)	325		75	280	155	300	85	250.4	90 /C 80 /E & /B	120 /C 110 /E & /B	6	6	10
	280					315	280 or less		355												
	300 320 315				315	355	315 or less		375												

① Geometric tolerance features applicable to all locating and non-locating shafts

② Geometric tolerance features applicable to all locating shafts only

③ Shaft style Y or Z at customer's choice

④ d15 collar is for use with plain or taper land thrust bearings
d16 collar is for use with GB Bearings tilting pad thrust bearings

⑤ Surface finish in micrometers Ra
All dimensions in mm

Bearing Selection

By following the sequence laid down in the succeeding sections, and making technical choices at each stage, someone new to specifying GB Bearings HSR bearings can rapidly make a final selection.

Load Capacity

The initial selection is dependent on the load to be carried. As the bearing is normally limited to a maximum specific load (equivalent to bearing pressure) of 2.5Mpa, this dictates the shaft diameter and the bearing frame size. Figure 1 shows the maximum normal running load in Newtons for bearings in the standard range of HSR frame sizes and shaft diameters.

In certain circumstances it may be possible to increase the maximum allowable specific load, and GB Bearings should be consulted if this is required.

Figure 1 also shows maximum loads at start-up. These are lower than those for normal running because, at low speeds, the rotation of the shaft will not maintain a film of oil adequate for supporting a high load. Where machinery is to be started frequently, and start-up loads exceed these values, an oil jacking system should be specified if excessive wear is to be avoided.

Where specific loads in excess of 2 Mpa are to be carried by bearing assemblies of frame size 22 and 28, careful selection of bearing clearance and oil type may be required to maintain adequate oil film thickness.

GB Bearings can, at all times, assist clients with this very important selection process through the use of GB's specialised computer design programme.

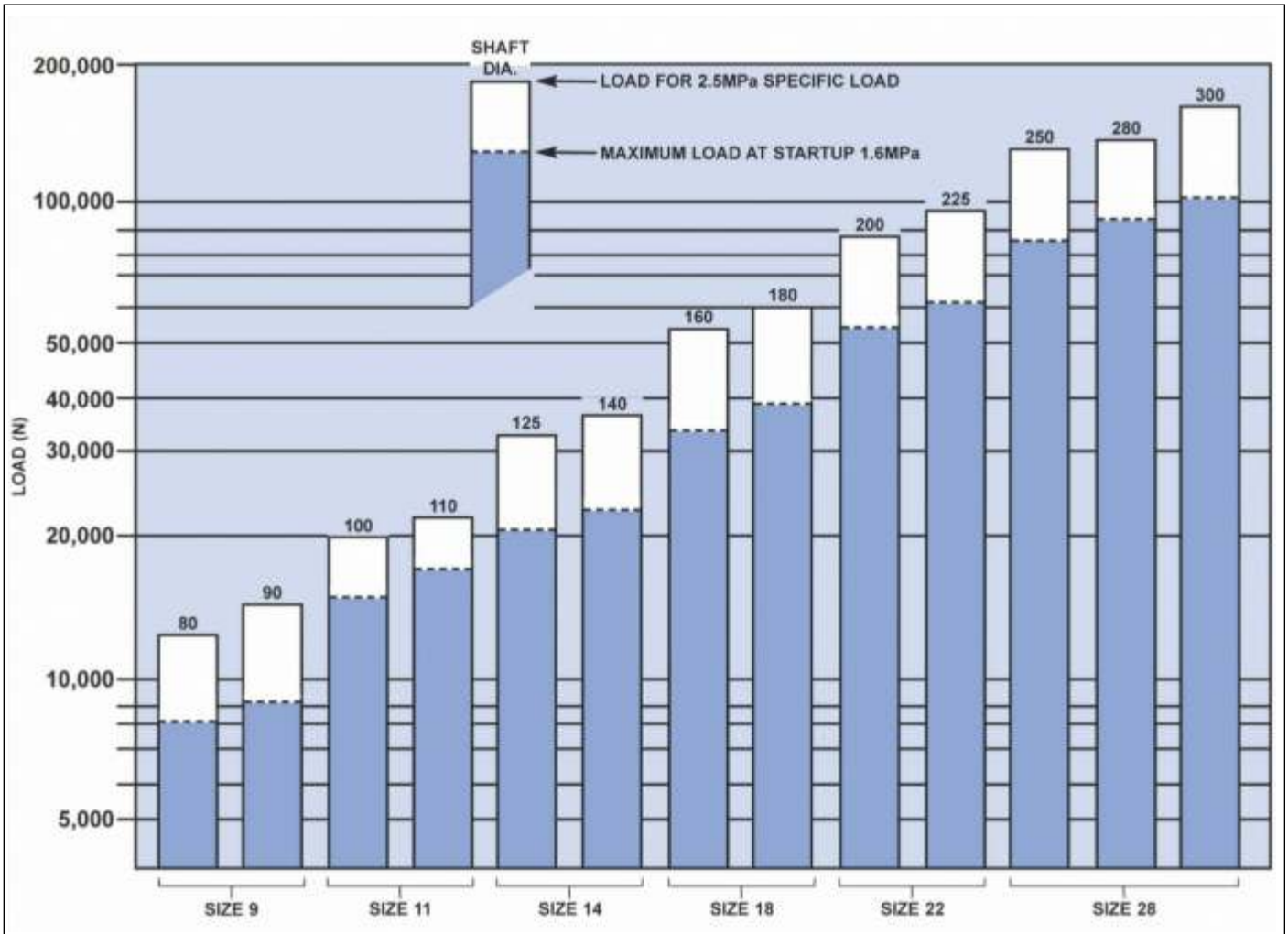


Figure 1: Journal bearing load capacity

Bearing Selection

Speeds and Clearances
For speeds below 500 rev/min the load carrying capacity of the bearing is limited and GB Bearings should be consulted for information on bearing clearance and oil for such applications.

The maximum allowable surface velocity for ring lubrication is 20m/s. This upper limit has been related to shaft diameter and shaft speed in Figure 2.

Where greater speeds are required, an external oil supply should be specified.

Figure 2 also shows, for each shaft diameter, the minimum diametral clearances for oil ring lubrication over a range of maximum continuous operating speeds. However, this is for guidance only, as the choice of bearing clearance is influenced by many other factors including:

- load
- ambient conditions
- choice of lubricant
- site environment
- method of cooling

Shaft Diameter
The manufacturing diameters of the shaft with the upper and lower limits, may be obtained from the information in Figure 2 and Table 7, and calculated as follows:

Shaft max. dia. = nominal shaft diameter – min. diametral clearance

Shaft min. dia. = shaft max dia – shaft diametral tolerance.

Example:
For a 100mm shaft operating at 3000 rev/min
D max. = 100 – 0.140 = 99.860
D min. = 99.860 – 0.022 = 99.838

Table 7: Manufacturing tolerances

Frame Size	Shaft Diameter (mm)	Shaft tolerances Shaft dimateral tolerance
9	80	0.019
	90	0.022
11	100	0.022
	110	0.022
14	125	0.025
	140	0.025
18	160	0.025
	180	0.025
22	200	0.029
	225	0.029
28	250	0.029
	280	0.032
	300	0.032
	315	0.032

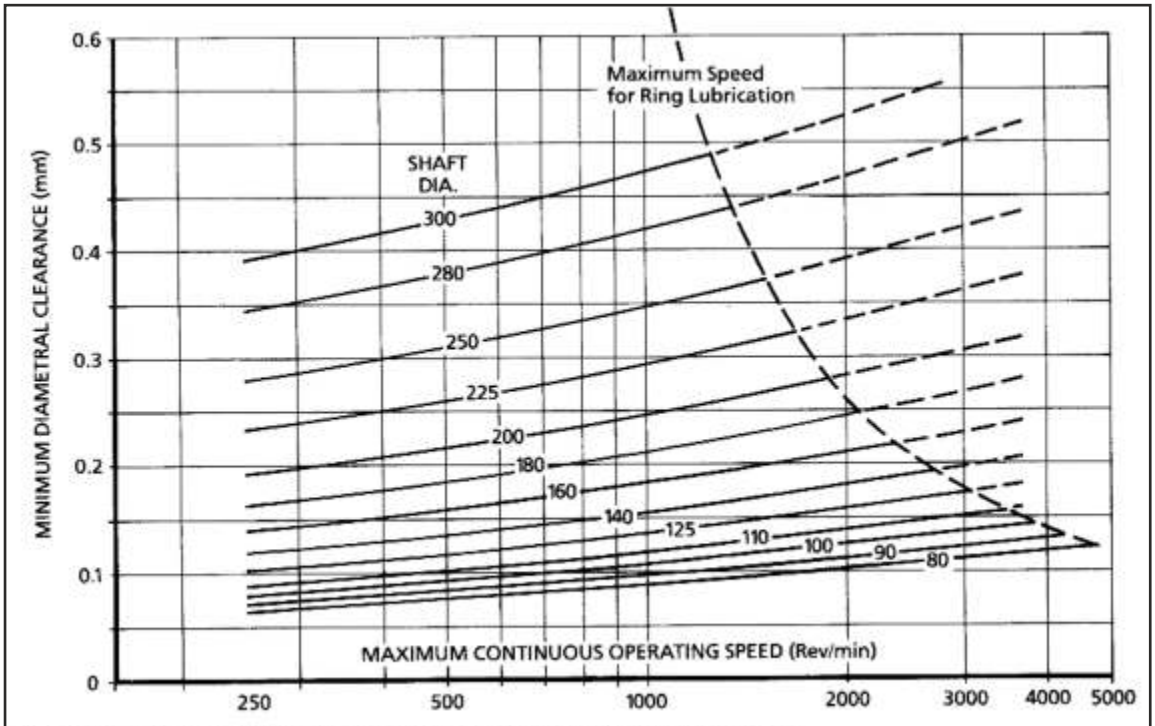


Figure 2: Recommended Diametral Clearance for Oil Ring Lubrication

Bearing Selection

Limits of Natural Cooling

The operating temperature of the journal bearing is limited by the maximum allowable bearing metal temperature and the temperature of the oil in the sump. Figure 3 and 4 show the maximum speeds for the natural cooling related to specific load and shaft diameter for oils ISO VG 32 and ISO VG 46 respectively.

The upper and lower limits of natural cooling, defining the shaded areas on Figures 3 and 4, apply to minimum and maximum bearing clearance respectively. The operating temperature is significantly affected by the bearing clearance and the clearances used for those curves were taken from Figure 2 and Table 7 at the maximum allowable speed for ring lubrication or 3600 rev./min., whichever was the lower speed. For applications where the combination of load, speed and shaft diameter falls below the relevant shaded area in Figures 3 and 4, natural cooling should be satisfactory. For applications where this combination falls above the shaded area, water cooling and/or external oil supply may be required.

Applications falling within the shaded area require careful choice of bearing clearance and should be referred to GB Bearings for confirmation. A number of other factors may result in different limiting speeds for natural cooling. These are:

a. The type of casing. The data in Figure 3 and 4 apply to base mounted assemblies run with no electrical Insulation. Other arrangements may have different characteristics.

b. Combinations of load, speed, ambient temperatures and bearing clearance different to those in Figure 3 and 4.

c. A steady axial load will require significantly more energy to be dissipated, such applications should always be referred to GB Bearings.

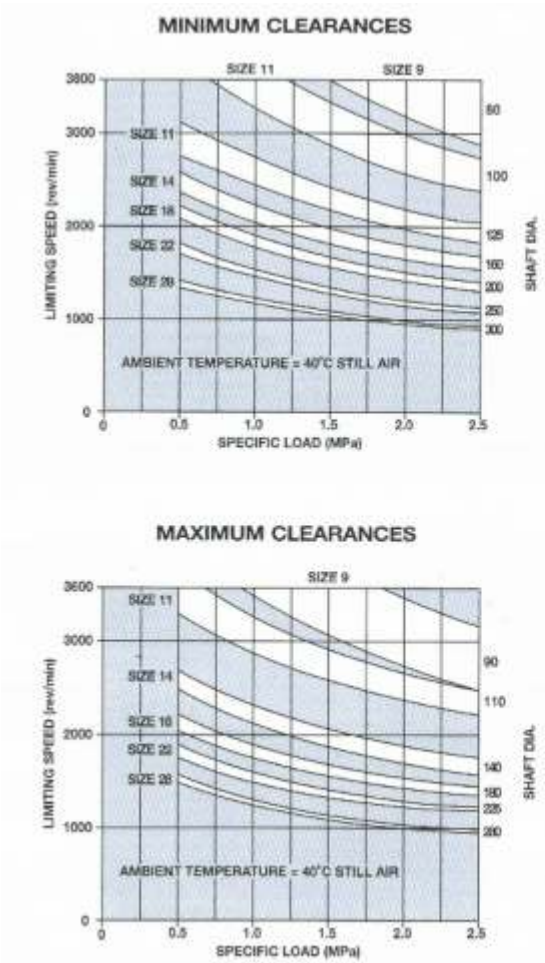


Figure 3: Limiting Speed for Air Cooling with ISO VG32 Oil

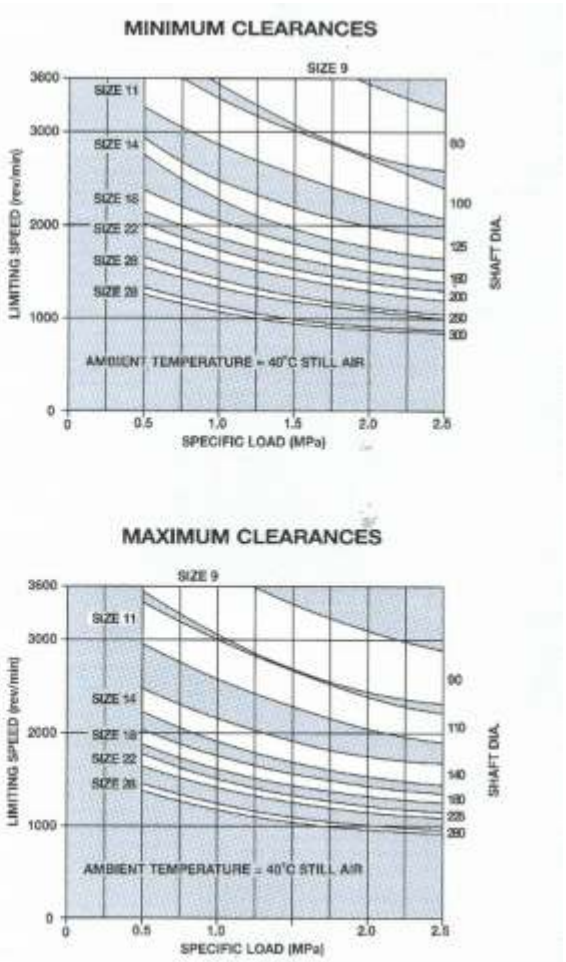


Figure 4: Limiting Speed for Air Cooling with ISO VG46 Oil

Bearing Selection

Thrust Loading
Standard HSR bearing assemblies have lined,plain thrust faces and will act as either locating or non-locating bearings. The plain thrust face can carry some axial load (see Table 8) but in cases where an increased thrust capacity is required, alternative thrust faces should be specified.

For most applications, taper land thrust faces will be sufficient. Their load capacity is usually limited by the minimum allowable oil film thickness, and a detailed calculation must be undertaken by GB Bearings to ensure safe operation.

However, **Table 8 gives some guidance only** on their specified axial load capacity.

For greater axial loads, tilting pad thrust bearings should be used. All HSR assemblies can be fitted with thrust pads from the standard range of GB Bearings Tilting Pad Thrust bearings. Details available on request.

In addition, where higher thrust capacity is required, we recommend that the HSS range of assemblies be considered. The HSS range of assemblies consist of an oil disc which transfers oil from the sump, through an oil scraper, directly into the bearing shell, thus creating a positive oil feed system. These units are usually water-cooled and do not require external lub oil systems. For more information, please contact GB Bearings.

Frame Size	Shaft Diameter (mm)	Plain Thrust load (N)	Taper thrust Load (N)
9	80	1 100	2 500
	90	1 200	3 000
11	100	1 550	3 800
	110	2 000	5 000
14	125	2 550	6 250
	140	3 200	8 000
18	160	3 900	10 000
	180	4 900	12 000
22	200	5 750	14 500
	225	6 350	16 500
28	250	8 250	20 500
	280	9 050	23 000
	300	9 600	25 000
	315	9 600	25 000

Table 8: Maximum thrust (axial) loads at optimum speeds
FOR GUIDANCE ONLY

Confirmation of Selection
Even where the selection of a bearing appears to fall within all the design criteria, GB Bearings recommends that customers confirm their selection by completing the ordering details given in page 17 of this handbook. GB Bearings bearing design computer program will then be used to predict the operating conditions of the bearing, and the customer will be supplied with this data including stiffness and damping coefficients for the journal bearing.

Special Designs

Manufactured to Customer Requirements
GB Bearings offers a range of assembly bearings and a service which is among the most comprehensive and versatile world-wide.

GB Bearings is able to meet virtually any specification. Our standard designs can be readily adapted or we can manufacture bearings to customer designs.

Our customers enjoy the benefits of close liaison and expertise at every stage and the quality of our technical assistance is well known.

Optional features

Water Cooling
Where bearing selection tables indicate that power losses exceed the heat dissipation characteristics of air cooled units, water cooling tubes can be fitted in the oil sump. GB Bearings will advise on their specification and the connections required on receipt of information on the expected operating conditions.

External Pressure Lubrication
Pressure lubrication is likely to be specified for applications with high or low speeds, where water cooling is insufficient, or where tilting pad thrust bearings are used. The external circulation/cooling system will need to be designed for each application, according to the calculated power losses.
GB Bearings will be pleased to advise.

Oil inlet and outlet sizes are shown in the size tables. Where oil is fed to the bearing from an external source, the oil level in the sump is controlled by a weir plate in the oil outlet. The oil pick-up ring may be retained to ensure that oil still reaches the bearing in the event of a failure in the external supply, or during run-down.

For all cases, GB Bearings will advise on oil flows and pressures.

Hydrostatic Jacking
Where the specific load (bearing pressure) on start-up exceeds values indicated on Page 10, a hydrostatic jacking system should be incorporated. GB Bearings will recommend the necessary oil supply pressure and flow rate required on receipt of information on the expected start-up conditions.

Profile Bore Journal Bearings
Profiled bores provide improved shaft damping and greater oil film stability than the standard cylindrical bearing in higher speed applications. For these situations, HSR bearings fitted with lemon bore, offset halves, or 3 and 4 lobe bore profiles can be supplied.

Tilting Pad Journal Bearings
For higher speed machines, and where vibration levels need to be reduced, tilting pad journal bearings offer the most stable running conditions under a wide range of loads and speeds. As they can accept loads from any radial direction, tilting pad journal bearings offer special advantages for electric motors where the influence of magnetic fields may not be precisely known.

All HSR assemblies can be fitted with tilting pad journal bearings, using journal pads from GB Bearings (in HSR assemblies, the length/diameter ratio of these bearings will normally be 0.7). Details available on request.

Instrumentation
Whatever instrumentation may be needed by a customer, it should be discussed with GB Bearings as early as possible. Many of these are proprietary items, so where a customer has a particular preference, he should state it. Typical specification requirements are given as follows:

Temperature sensors

Type of sensor:	thermocouple resistance temperature detector (RTD) others
Materials:	copper/constantan pair for thermocouple or platinum 100 ohm resistance at 0 C for RTD
Cable material:	e.g. Teflon covered, stainless steel sheath, etc.
Cable length:	3m

Proximity Probes

Type of Sensor:	e.g. inductive probe
Cable material:	e.g. Teflon covered, stainless steel sheath, etc.
Number and position of probes in unit:	e.g. two probes at 90 degrees on the outboard seal housing

Insulation
Where the shaft needs to be insulated electrically from the bearing mounting, HSR assemblies can be fitted with insulating material between the bearing and the casing.

Materials
The casing and bearing housing can be made from special materials when this is required. However, price and delivery may be affected.

Rotor Dynamics

A Valuable Analysis Service
Excessive rotor vibration can damage machinery, and shorten its life. Therefore, GB Bearings operates a rotor dynamics analysis service so that a machine's rotor dynamics can be evaluated at the design stage.

This includes detailed interactive computer studies of complete shaft systems to avoid costly rotor dynamic problems.

Techniques employed to investigate the dynamic interaction between journal bearings and rotor include:

- undamped natural frequency analysis
- damped natural frequency (stability) analysis
- synchronous response to unbalanced analysis

Computer studies of entire shaft systems are carried out at agreed fees. Alternatively, GB Bearings will supply bearing operating data and dynamic coefficients as part of its normal service to enable customers to conduct their own analysis.

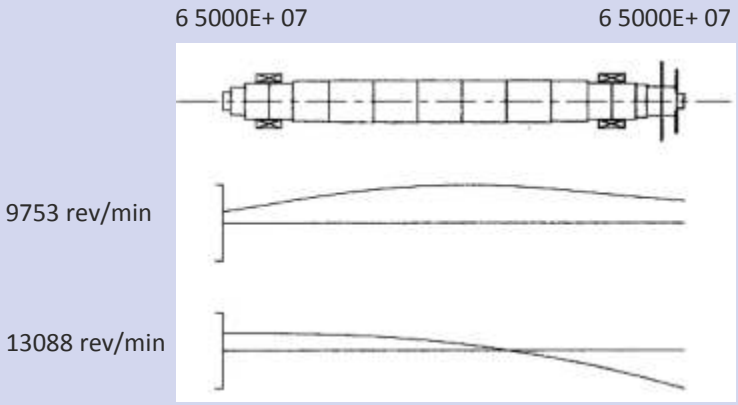
Exchange/Repair Service

GB Bearings also provides a bearing repair service with many standard sizes available ex-stock on a service exchange basis.

In addition, standard spares, such as standard floating labyrinth seals and oil pick-up rings are readily available.

GB Bearings is also able to provide a breakdown and prompt re-metalling repair service on all HSR bearing sleeves.

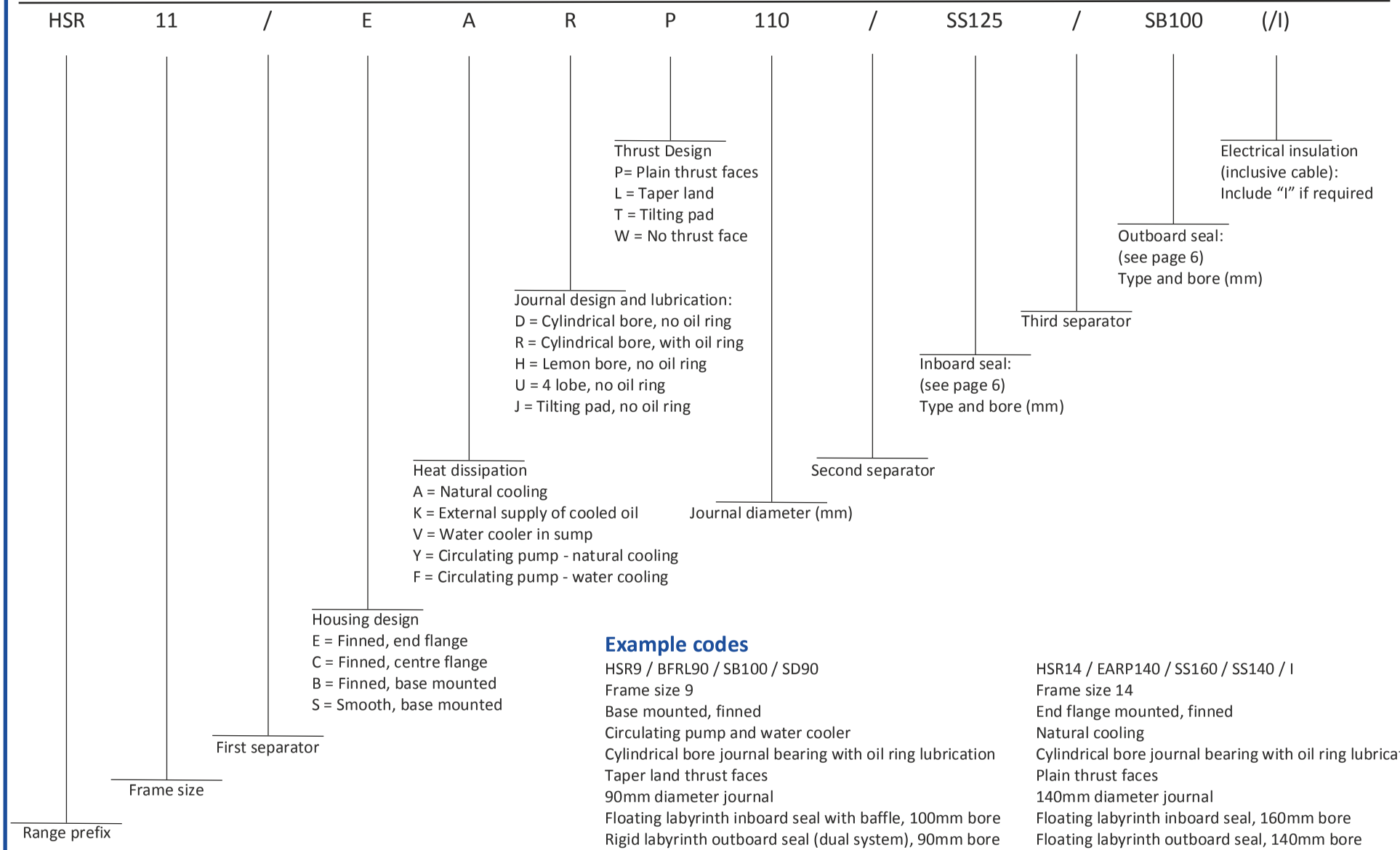
GB Bearings
Undamped natural frequency analysis
Bearing stiffness 6 5OE+07 N/m



Rotor length = 1 250.00
Added mass = 10.00
Total mass = 96.24

Reference Codes

Assembly Order Codes



Example codes

HSR9 / BFRL90 / SB100 / SD90
Frame size 9
Base mounted, finned
Circulating pump and water cooler
Cylindrical bore journal bearing with oil ring lubrication
Taper land thrust faces
90mm diameter journal
Floating labyrinth inboard seal with baffle, 100mm bore
Rigid labyrinth outboard seal (dual system), 90mm bore

HSR14 / EARP140 / SS160 / SS140 / I
Frame size 14
End flange mounted, finned
Natural cooling
Cylindrical bore journal bearing with oil ring lubrication
Plain thrust faces
140mm diameter journal
Floating labyrinth inboard seal, 160mm bore
Floating labyrinth outboard seal, 140mm bore
Electrical insulation required

Ordering Details

Please complete this page, photocopy and return to GB Bearings by post or fax. Alternatively, you can complete and submit a form from our website.

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info@gbbearings.co.za

HSR enquiry data sheet

Customer:

Contact Person:

Telephone No:

Fax No:

Mobile No:

Email address:

Customer Reference No:

Site Location:

Application:
Motor ☐ Alt/Gen ☐ Other ☐

State:

Number of assemblies required:

Delivery required:

The following information is required:

1. Reference code of HSR selected from Page 16 of this handbook is:
   HSR

2. Shaft speed
   - Normal: rev/min
   - Overspeed: rev/min
   - Maximum: rev/min

3. Radial load
   - Normal: N
   - Maximum: N
   - Start-up: N
   - Load direction:
   - Steady ☐ Rotating ☐
   - Vertically downwards:
   - Yes ☐ No ☐

4. Axial (Thrust) Load (Main direction)
   - Normal: N
   - Maximum: N
   - Start-up: N
   - Axial (Thrust) Load (Reverse direction)
   - Normal: N
   - Maximum: N
   - Start-up: N

5. Oil grade to be used:

6. Shaft diameter: mm
   (with tolerance if not IT6)

7. Ambient air temperature
   Normal: °C Max: °C

8. External air velocity
   Normal: m/s Max: m/s

Additional information required to describe optional features (page 14)

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