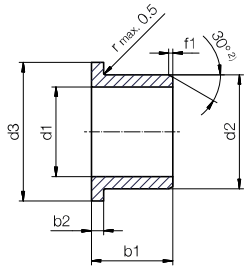
Bearing technology | Plain bearings | iglidur® J3

Flange bearing (form F)



2) Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f [mm]	0.3	0.5	0.8	1.2

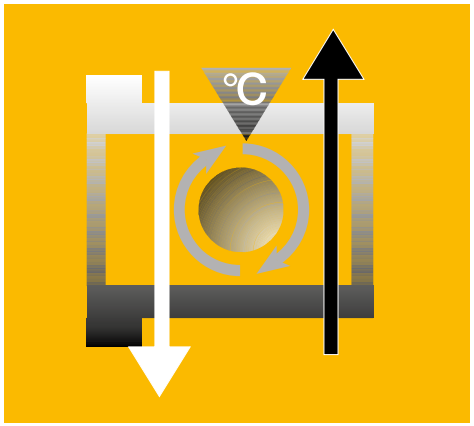
Dimensions according to ISO 3547-1 and special dimensions

Order example: J3FM-0203505-05 - no minimum order quantity.
J3 iglidur® material F Flange bearing M Metric 03 Inner Ø d1 04 Outer Ø d2 05 Total length b1

d1 [mm]	d1 Tolerance3)	d2 [mm]	d3 d13 [mm]	b1 h13 [mm]	b2 –0,14 [mm]	Part No.
2.0	+0.014	3.5	5.0	5.0	0.75	J3FM-0203505-05
3.0	+0.054	4.5	7.5	5.0	0.75	J3FM-0304-05
5.0		7.0	11.0	5.0	1.00	J3FM-0507-05
6.0	+0.020	8.0	12.0	4.0	1.00	J3FM-0608-04
6.0	+0.068	8.0	12.0	6.0	1.00	J3FM-0608-06
6.0		8.0	12.0	8.0	1.00	J3FM-0608-08
8.0		10.0	15.0	5.5	1.00	J3FM-0810-05
8.0		10.0	15.0	7.5	1.00	J3FM-0810-07
8.0		10.0	15.0	9.5	1.00	J3FM-0810-09
8.0		10.0	15.0	10.0	1.00	J3FM-0810-10
10.0	+0.025 +0.083	12.0	18.0	7.0	1.00	J3FM-1012-07
10.0		12.0	18.0	9.0	1.00	J3FM-1012-09
10.0		12.0	18.0	10.0	1.00	J3FM-1012-10
10.0		12.0	18.0	12.0	1.00	J3FM-1012-12
10.0		12.0	18.0	17.0	1.00	J3FM-1012-17
12.0		14.0	20.0	7.0	1.00	J3FM-1214-07
12.0		14.0	20.0	9.0	1.00	J3FM-1214-09
12.0		14.0	20.0	12.0	1.00	J3FM-1214-12
12.0	+0.032 +0.102	14.0	20.0	17.0	1.00	J3FM-1214-17
14.0		16.0	22.0	12.0	1.00	J3FM-1416-12
14.0		16.0	22.0	17.0	1.00	J3FM-1416-17
15.0		17.0	23.0	9.0	1.00	J3FM-1517-09

d1 [mm]	d1 Tolerance3)	d2 [mm]	d3 d13 [mm]	b1 h13 [mm]	b2 –0,14 [mm]	Part No.
15.0		17.0	23.0	12.0	1.00	J3FM-1517-12
15.0	+0.032	17.0	23.0	17.0	1.00	J3FM-1517-17
16.0	+0.102	18.0	24.0	12.0	1.00	J3FM-1618-12
16.0		18.0	24.0	17.0	1.00	J3FM-1618-17
18.0		20.0	26.0	12.0	1.00	J3FM-1820-12
18.0		20.0	26.0	17.0	1.00	J3FM-1820-17
18.0		20.0	26.0	22.0	1.00	J3FM-1820-22
18.0		21.0	25.0	12.0	1.00	J3FM-1821-12
20.0		23.0	30.0	11.5	1.50	J3FM-2023-11
20.0	+0.040	23.0	30.0	16.5	1.50	J3FM-2023-16
20.0	+0.124	23.0	30.0	21.5	1.50	J3FM-2023-21
25.0		28.0	35.0	11.5	1.50	J3FM-2528-11
25.0		28.0	35.0	16.5	1.50	J3FM-2528-16
25.0		28.0	35.0	21.5	1.50	J3FM-2528-21
30.0		34.0	42.0	16.0	2.00	J3FM-3034-16
30.0		34.0	42.0	26.0	2.00	J3FM-3034-26
35.0		39.0	47.0	16.0	2.00	J3FM-3539-16
35.0	+0.050	39.0	47.0	26.0	2.00	J3FM-3539-26
40.0	+0.150	44.0	52.0	30.0	2.00	J3FM-4044-30
40.0		44.0	52.0	40.0	2.00	J3FM-4044-40
45.0		50.0	58.0	50.0	2.00	J3FM-4550-50

3) After press-fit. *Testing methods page 57*



Endurance runner with high dimensional stability at high temperatures

Can be used with many kinds of shafts and loads

iglidur® J350

When to use it?

- When a wear-resistant bearing for rotational movement at medium and high loads is required
- When a cost-effective plain bearing for high temperatures is required
- When press-fit up to +150°C is necessary
- When high wear resistance is required at high loads
- When the bearing is exposed to shock loading

When not to use?

- When continuous operating temperatures are higher than +180°C
  iglidur® X
- When the lowest friction is required
  iglidur® J
- When a cost-effective plain bearing with low friction is required
  iglidur® D, iglidur® R
- For high rotational speeds
  iglidur® J

Bearing technology | Plain bearings | iglidur® J350

Ø 4.0 – 50.0mm

Also available as:

Bar stock, round bar: Page 639

Bar stock, plate: Page 651

tribo-tape liner: Page 657

Piston rings: Page 559

Two hole flange bearing: Page 581

Moulded special parts: Page 602

igubal® spherical balls: Page 783

Endurance runner with high dimensional stability at high temperatures:
Can be used with many kinds of shafts and loads

An outstanding plain bearing for rotating applications - and for a wide range of different shaft materials: with iglidur® J350 plain bearings, the service life can often be increased for applications between 2 and 50MPa. In addition, the high temperature resistance makes it a very versatile material.

- Recommended for steel shafts
- Continuous operating temperatures up to +180°C
- Suitable for medium and high loads
- Suitable for rotating applications
- Lubrication-free
- Maintenance-free

Typical application areas

- Automation
- Mechanical engineering
- Automotive
- Glass industry

Descriptive technical specifications			
Wear resistance at +23°C	–		+
Wear resistance at +90°C	–		+
Wear resistance at +150°C	–		+
Low coefficient of friction	–		+
Low moisture absorption	–		+
Wear resistance under water	–		+
High media resistance	–		+
Resistant to edge pressures	–		+
Suitable for shock and impact loads	–		+
Resistant to dirt	–		+

Online product finder
www.igus.eu/iglidur-finder

Online service life calculation
www.igus.eu/iglidur-expert

iglidur® J350 +180°C 60MPa

Technical data

General properties			Testing method
Density	g/cm³	1.44	
Colour		yellow	
Max. moisture absorption at +23°C and 50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.6	
Coefficient of friction, dynamic, against steel	µ	0.10 – 0.20	
pv value, max. (dry)	MPa · m/s	0.45	
Mechanical properties			
Flexural modulus	MPa	2,000	DIN 53457
Flexural strength at +20°C	MPa	55	DIN 53452
Compressive strength	MPa	60	
Max. recommended surface pressure (+20°C)	MPa	60	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. application temperature long-term	°C	+180	
Max. application temperature short-term	°C	+220	
Min. application temperature	°C	–100	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	$K^{-1} \cdot 10^{-5}$	7	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10^{13}	DIN IEC 93
Surface resistance	Ω	> 10^{10}	DIN 53482

Table 01: Material properties table

–100°C up to +180°C

60MPa

V-0

RoHS-II

ISO 3547-1

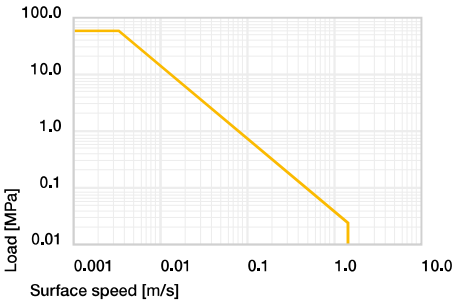


Diagram 01: Permissible pv values for iglidur® J350 plain bearings with a wall thickness of 1mm, dry operation against a steel shaft, at +20°C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® J350 is low and can be ignored when using standard plain bearings. Even when saturated with water, iglidur® J350 does not absorb more than 1.6% weight of water (by weight).

Vacuum

In vacuum, any present moisture is released as vapour. Use in vacuum is only possible with dehumidified iglidur® J350 bearings.

Radiation resistance

Plain bearings made from iglidur® J350 are resistant up to a radiation intensity of 2 · 10^2Gy.

UV resistance

iglidur® J350 plain bearings are partially resistant to UV radiation.

Chemicals	Resistance
Alcohols	+
Hydrocarbons	+ up to 0
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+ up to 0
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant
All information given at room temperature [+20°C]
Table 02: Chemical resistance

Chemical table, page 1542

Bearing technology | Plain bearings | iglidur® J350

iglidur® J350 blends universally good wear resistance, flexibility and temperature resistance into a very versatile iglidur® material with a broad application spectrum.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® J350 plain bearings decreases. Diagram 02 shows this inverse relationship. The maximum recommended surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

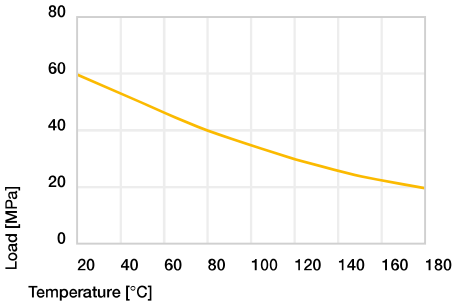


Diagram 02: Maximum recommended surface pressure as a function of temperature (60MPa at +20°C)

iglidur® J350 plain bearings are adequate for medium and high loads. Diagram 03 shows the elastic deformation of iglidur® J350 at radial loads. It shows the material behaviour submitted to a short-term load. The ambient temperatures are only noticeable at 60MPa.

Surface pressure, page 41

Permissible surface speeds

iglidur® J350 plain bearings are suitable for low and medium speeds in rotating and oscillating applications. The wear rates, however, are much better in the case of rotating applications. iglidur® J350 is also excellent for linear movements.

Surface speed, page 44

		rotating	oscillating	linear
long-term	m/s	1.3	1.0	4.0
short-term	m/s	3.0	2.3	8.0

Table 03: Maximum surface speeds

Temperature

The temperatures prevailing in the bearing system also have an influence on the wear. The wear-rate of iglidur® J350 bearings changes very little at high temperatures. In some cases, wear even decreases at +100°C. For temperatures over +140°C an additional securing is required.

Application temperatures, page 49
Additional securing, page 49

Friction and wear

The coefficient of friction of iglidur® J350 in dry operation against steel is very good. They decrease significantly at higher surface speeds. This benefits the service life of the plain bearings in continuous operations with high surface speeds. Diagram 04 illustrates this relationship. Especially with loads higher than 2MPa, the iglidur® J350 plain bearings are clearly superior to other bearings in rotating applications.

Coefficient of friction and surfaces, page 47
Wear resistance, page 50

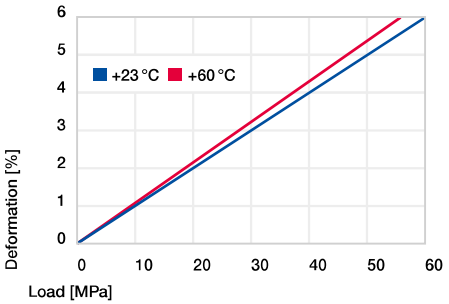


Diagram 03: Deformation under pressure and temperature

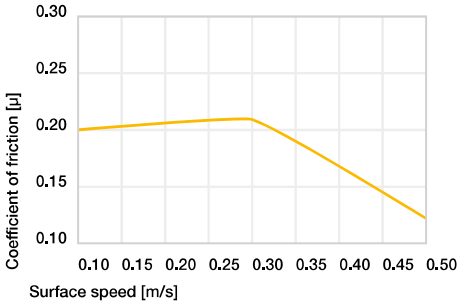


Diagram 04: Coefficient of friction as a function of the surface speed, p = 1MPa

Technical data

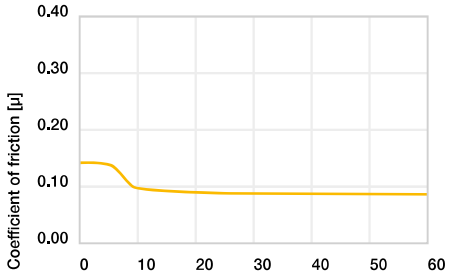


Diagram 05: Coefficient of friction as a function of the load, v = 0.01m/s

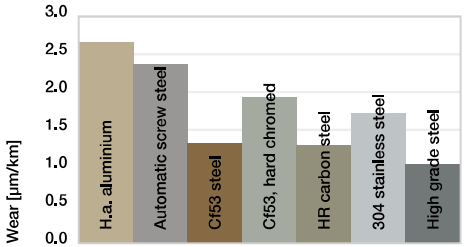


Diagram 07: Wear, rotating with different shaft materials, pressure, p = 1MPa, v = 0.3m/s

Shaft materials

Diagrams 06 and 07 show the test results of iglidur® J350 plain bearings running against various shaft materials. iglidur® J350 plain bearings can be combined with various shaft materials. One shaft - bearing combination stands out when looking at the wear results of the test: iglidur® J350 with soft 304 stainless steel. Not many bearing materials are suitable for use with this rather difficult soft stainless steel material (304 stainless steel) and achieve good wear results. Also, good properties are reached with hard-anodised aluminium shafts. If the shaft material you plan on using is not shown in these test results, please contact us.

Shaft materials, page 52

	Dry	Greases	Oil	Water
Coeff. of friction [µ]	0.10 – 0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1µm, 50HRC)

Installation tolerances

iglidur® J350 plain bearings are standard bearings for shafts with h tolerance (recommended minimum h9). The bearings are designed for press-fit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, in standard cases the inner diameter automatically adjusts to the F10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

Testing methods, page 57

	Housing		Plain bearing		Shaft	
Ø d1 [mm]	H7 [mm]		F10 [mm]		h9 [mm]	
0 – 3	+0.000	+0.010	+0.006	+0.046	–0.025	+0.000
> 3 – 6	+0.000	+0.012	+0.010	+0.058	–0.030	+0.000
> 6 – 10	+0.000	+0.015	+0.013	+0.071	–0.036	+0.000
> 10 – 18	+0.000	+0.018	+0.016	+0.086	–0.043	+0.000
> 18 – 30	+0.000	+0.021	+0.020	+0.104	–0.052	+0.000
> 30 – 50	+0.000	+0.025	+0.025	+0.125	–0.062	+0.000
> 50 – 80	+0.000	+0.030	+0.030	+0.150	–0.074	+0.000
> 80 – 120	+0.000	+0.035	+0.036	+0.176	–0.087	+0.000
> 120 – 180	+0.000	+0.040	+0.043	+0.203	+0.000	+0.100

Table 05: Important tolerances for plain bearings according to ISO 3547-1 after press-fit

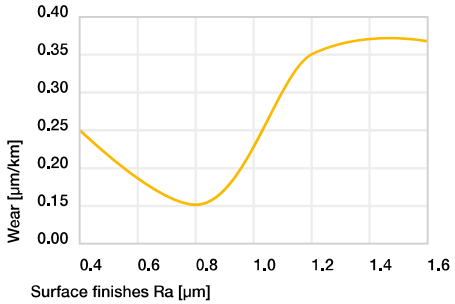
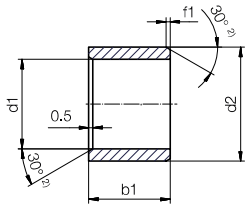


Diagram 06: Coefficient of friction as a function of the shaft surface (Cf53 shaft)

Bearing technology | Plain bearings | iglidur® J350

Sleeve bearing (form S)



2) Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f [mm]	0.3	0.5	0.8	1.2

Dimensions according to ISO 3547-1 and special dimensions

Order example: J350SM-0405-06 - no minimum order quantity.
J350 iglidur® material S Sleeve bearing M Metric 04 Inner Ø d1 05 Outer Ø d2 06 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	b1 h13 [mm]	Part No.
4.0		5.5	4.0	J350SM-0405-04
4.0		5.5	6.0	J350SM-0405-06
5.0		7.0	5.0	J350SM-0507-05
5.0	+0.010 +0.058	7.0	10.0	J350SM-0507-10
6.0		8.0	6.0	J350SM-0608-06
6.0		8.0	8.0	J350SM-0608-08
6.0		8.0	10.0	J350SM-0608-10
8.0		10.0	8.0	J350SM-0810-08
8.0		10.0	10.0	J350SM-0810-10
8.0		10.0	12.0	J350SM-0810-12
10.0	+0.013	12.0	8.0	J350SM-1012-08
10.0	+0.071	12.0	10.0	J350SM-1012-10
10.0		12.0	12.0	J350SM-1012-12
10.0		12.0	15.0	J350SM-1012-15
10.0		12.0	20.0	J350SM-1012-20
12.0		14.0	10.0	J350SM-1214-10
12.0		14.0	12.0	J350SM-1214-12
12.0		14.0	15.0	J350SM-1214-15
12.0		14.0	20.0	J350SM-1214-20
13.0		15.0	10.0	J350SM-1315-10
13.0		15.0	20.0	J350SM-1315-20
14.0	+0.016	16.0	15.0	J350SM-1416-15
14.0	+0.086	16.0	20.0	J350SM-1416-20
14.0		16.0	25.0	J350SM-1416-25
15.0		17.0	15.0	J350SM-1517-15
15.0		17.0	20.0	J350SM-1517-20
15.0		17.0	25.0	J350SM-1517-25
16.0		18.0	4.0	J350SM-1618-04
16.0		18.0	15.0	J350SM-1618-15
16.0		18.0	20.0	J350SM-1618-20
16.0		18.0	25.0	J350SM-1618-25
18.0	+0.016 +0.086	20.0	15.0	J350SM-1820-15
18.0		20.0	20.0	J350SM-1820-20
18.0		20.0	25.0	J350SM-1820-25
20.0		23.0	10.0	J350SM-2023-10
20.0		23.0	15.0	J350SM-2023-15
20.0		23.0	20.0	J350SM-2023-20
20.0		23.0	25.0	J350SM-2023-25
20.0		23.0	30.0	J350SM-2023-30
22.0		25.0	15.0	J350SM-2225-15
22.0		25.0	20.0	J350SM-2225-20
22.0		25.0	25.0	J350SM-2225-25
22.0		25.0	30.0	J350SM-2225-30
24.0		27.0	15.0	J350SM-2427-15
24.0		27.0	20.0	J350SM-2427-20
24.0	+0.020 +0.104	27.0	25.0	J350SM-2427-25
24.0		27.0	30.0	J350SM-2427-30
25.0		28.0	15.0	J350SM-2528-15
25.0		28.0	20.0	J350SM-2528-20
25.0		28.0	25.0	J350SM-2528-25
25.0		28.0	30.0	J350SM-2528-30
25.0		28.0	45.0	J350SM-2528-45
28.0		32.0	20.0	J350SM-2832-20
28.0		32.0	25.0	J350SM-2832-25
28.0		32.0	30.0	J350SM-2832-30
30.0		34.0	20.0	J350SM-3034-20
30.0		34.0	25.0	J350SM-3034-25
30.0		34.0	30.0	J350SM-3034-30

3) After press-fit. *Testing methods page 57*

Product range

d1 [mm]	d1 Tolerance[3]	d2 [mm]	b1 h13 [mm]	Part No.
30.0	+0.020 +0.104	34.0	40.0	J350SM-3034-40
32.0		36.0	20.0	J350SM-3236-20
32.0		36.0	30.0	J350SM-3236-30
32.0		36.0	40.0	J350SM-3236-40
35.0		39.0	20.0	J350SM-3539-20
35.0	+0.025 +0.125	39.0	30.0	J350SM-3539-30
35.0		39.0	40.0	J350SM-3539-40
35.0		39.0	50.0	J350SM-3539-50
40.0		44.0	20.0	J350SM-4044-20
40.0		44.0	30.0	J350SM-4044-30
40.0		44.0	40.0	J350SM-4044-40
40.0		44.0	50.0	J350SM-4044-50
45.0		50.0	20.0	J350SM-4550-20
45.0		50.0	30.0	J350SM-4550-30
45.0		50.0	40.0	J350SM-4550-40
45.0	+0.025 +0.125	50.0	50.0	J350SM-4550-50
50.0		55.0	20.0	J350SM-5055-20
50.0		55.0	30.0	J350SM-5055-30
50.0		55.0	40.0	J350SM-5055-40
50.0		55.0	50.0	J350SM-5055-50
50.0		55.0	60.0	J350SM-5055-60

3) After press-fit. *Testing methods page 57*

Available from stock
Detailed information about delivery time online.
www.igus.eu/24

Online ordering
including delivery times, prices, online tools
www.igus.eu/J350

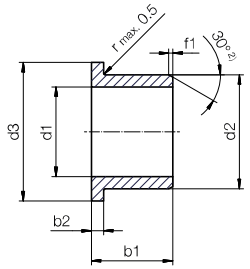
Ordering note
Our prices are scaled according to order quantities, current prices can be found online.

Discount scaling		
1 – 9	50 – 99	500 – 999
10 – 24	100 – 199	1,000 – 2,499
25 – 49	200 – 499	2,500 – 4,999

No minimum order value.
No low-quantity surcharges.
Free shipping within Germany for orders above €150.

Bearing technology | Plain bearings | iglidur® J350

Flange bearing (form F)



2) Thickness < 0.6mm: Chamfer = 20°

Chamfer in relation to d1

d1 [mm]	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f [mm]	0.3	0.5	0.8	1.2

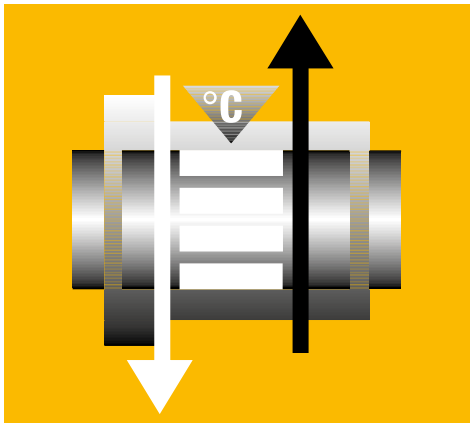
Dimensions according to ISO 3547-1 and special dimensions

Order example: J350FM-0608-04 - no minimum order quantity.
J350 iglidur® material F Flange bearing M Metric 06 Inner Ø d1 08 Outer Ø d2 04 Total length b1

d1 [mm]	d1 Tolerance[3]	d2 [mm]	d3 d13 [mm]	b1 h13 [mm]	b2 –0,14 [mm]	Part No.
6.0	+0.010 +0.058	8.0	12.0	4.0	1.00	J350FM-0608-04
6.0		8.0	12.0	6.0	1.00	J350FM-0608-06
6.0		8.0	12.0	8.0	1.00	J350FM-0608-08
8.0	+0.013 +0.071	10.0	15.0	5.5	1.00	J350FM-0810-05
8.0		10.0	15.0	7.5	1.00	J350FM-0810-07
8.0		10.0	15.0	9.5	1.00	J350FM-0810-09
8.0		10.0	15.0	10.0	1.00	J350FM-0810-10
10.0		12.0	18.0	7.0	1.00	J350FM-1012-07
10.0		12.0	18.0	9.0	1.00	J350FM-1012-09
10.0		12.0	18.0	10.0	1.00	J350FM-1012-10
10.0		12.0	18.0	12.0	1.00	J350FM-1012-12
10.0		12.0	18.0	17.0	1.00	J350FM-1012-17
12.0	+0.016 +0.086	14.0	20.0	7.0	1.00	J350FM-1214-07
12.0		14.0	20.0	9.0	1.00	J350FM-1214-09
12.0		14.0	20.0	12.0	1.00	J350FM-1214-12
12.0		14.0	20.0	17.0	1.00	J350FM-1214-17
14.0		16.0	22.0	12.0	1.00	J350FM-1416-12
14.0		16.0	22.0	17.0	1.00	J350FM-1416-17
15.0		17.0	23.0	9.0	1.00	J350FM-1517-09
15.0		17.0	23.0	12.0	1.00	J350FM-1517-12
15.0		17.0	23.0	17.0	1.00	J350FM-1517-17

d1 [mm]	d1 Tolerance[3]	d2 [mm]	d3 d13 [mm]	b1 h13 [mm]	b2 –0,14 [mm]	Part No.
16.0	+0.016 +0.086	18.0	24.0	12.0	1.00	J350FM-1618-12
16.0		18.0	24.0	17.0	1.00	J350FM-1618-17
18.0		20.0	26.0	12.0	1.00	J350FM-1820-12
18.0		20.0	26.0	17.0	1.00	J350FM-1820-17
18.0		20.0	26.0	22.0	1.00	J350FM-1820-22
20.0	+0.020 +0.104	23.0	30.0	11.5	1.50	J350FM-2023-11
20.0		23.0	30.0	16.5	1.50	J350FM-2023-16
20.0		23.0	30.0	21.5	1.50	J350FM-2023-21
25.0		28.0	35.0	11.5	1.50	J350FM-2528-11
25.0		28.0	35.0	16.5	1.50	J350FM-2528-16
25.0		28.0	35.0	21.5	1.50	J350FM-2528-21
30.0		34.0	42.0	16.0	2.00	J350FM-3034-16
30.0		34.0	42.0	22.0	2.00	J350FM-3034-22
30.0		34.0	42.0	26.0	2.00	J350FM-3034-26
30.0		34.0	42.0	37.0	2.00	J350FM-3034-37
35.0	+0.025 +0.125	39.0	47.0	16.0	2.00	J350FM-3539-16
35.0		39.0	47.0	26.0	2.00	J350FM-3539-26
40.0		44.0	52.0	30.0	2.00	J350FM-4044-30
40.0		44.0	52.0	40.0	2.00	J350FM-4044-40
45.0		50.0	58.0	50.0	2.00	J350FM-4550-50

3) After press-fit. *Testing methods page 57*



Ideal for plastic shafts

Wear-resistant at medium temperatures and loads

iglidur® J260

When to use it?

- When polymer shafts are used
- When the temperature rating of iglidur® J is not sufficient
- When a plain bearing with low coefficient of friction is required
- When high wear resistance is required at medium loads
- When good liquid media resistance is required

When not to use?

- When high surface pressures occur
  iglidur® Z
- When continuous operating temperatures are higher than +120°C
  iglidur® J350
- When universal wear resistance is required
  iglidur® J