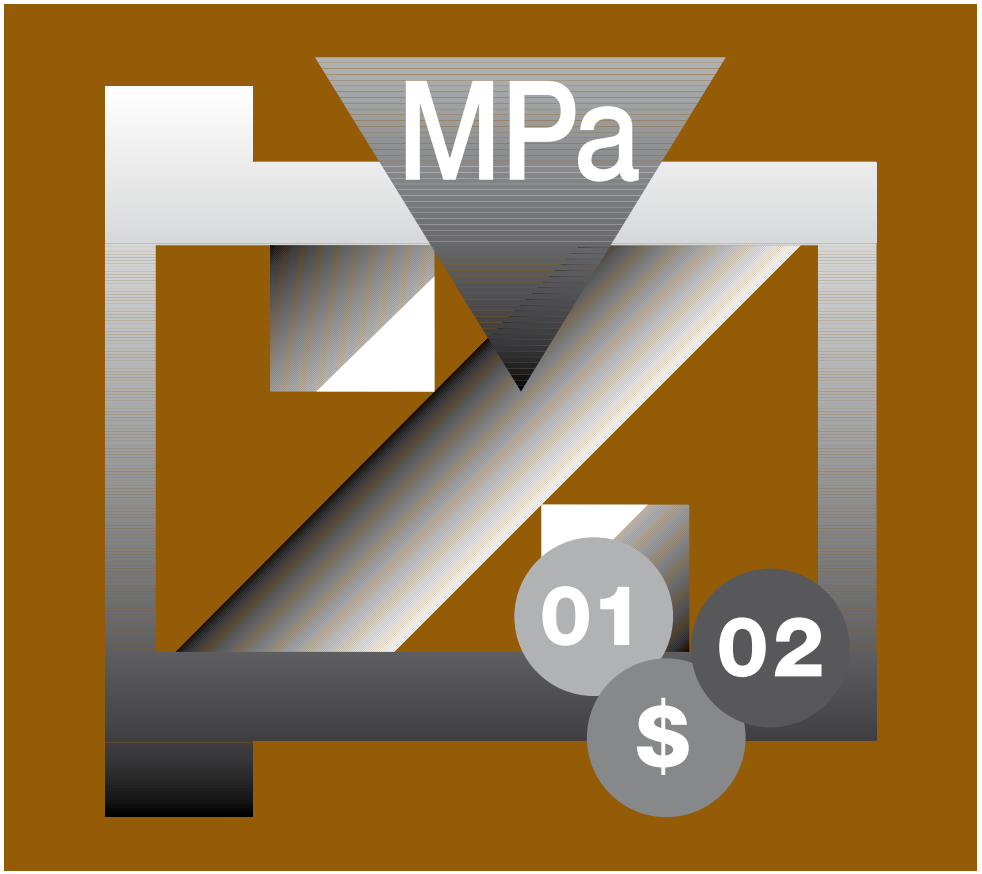


The durable heavy-duty bearing – iglidur® Q2

Wear resistant and dimensionally stable at high loads

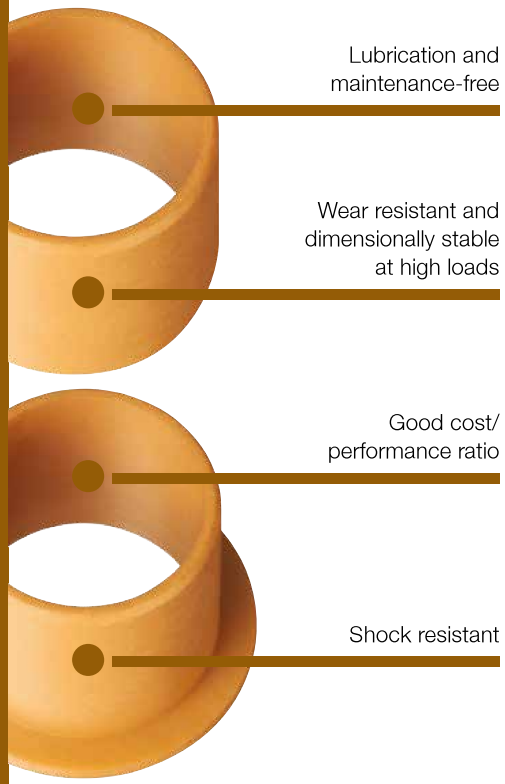
Good price/performance ratio

Lubrication and maintenance-free

Standard range from stock

iglidur® Q2 | The durable heavy-duty bearing

Combined wear resistance and compressive strength at high loads



Where previous iglidur® bearing solutions within the scope of extreme loads and strong impact forces, the iglidur® Q2 starts. Made for heavy-duty pivoting applications under extreme conditions.

When to use it?

- When high dynamic loads occur
- When impacts, shocks and contamination occur in addition to high loads
- For highly load pivoting motions

When not to use it?

- When only static loads occur
  - ▶ iglidur® X, page 245
  - ▶ iglidur® H2, page 329
- When high pv values occur in conjunction with high speeds
  - ▶ iglidur® Z, page 255
- When you need a low cost all-round bearing
  - ▶ iglidur® G, page 79
- When soft shafts are in use
  - ▶ iglidur® W300, page 153

Typical application areas

- Agricultural machines
- Utility and construction vehicles
- Machine building

Available from stock
Detailed information about delivery time online.

Block pricing online
No minimum order value. From batch size 1.

Max. +130 °C
Min. –40 °C

Ø 4–120 mm
More dimensions upon request

Imperial dimensions available
▶ From page 1391

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

iglidur® Q2 | Technical data

Material properties

General properties	Unit	iglidur® Q2	Testing method
Density	g/cm³	1.46	
Colour		beige-brown	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	1.1	DIN 53495
Max. water absorption	% weight	4.6	
Coefficient of sliding friction, dynamic, against steel	µ	0.22–0.42	
pv value, max. (dry)	MPa · m/s	0.7	
Mechanical properties			
Flexural modulus	MPa	8,370	DIN 53457
Flexural strength at +20 °C	MPa	240	DIN 53452
Compressive strength	MPa	130	
Max. recommended surface pressure (+20 °C)	MPa	120	
Shore-D hardness		80	DIN 53505
Physical and thermal properties			
Max. long-term application temperature	°C	+130	
Max. short-term application temperature	°C	+200	
Min. long-term application temperature	°C	–40	
Heat conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	$K^{-1} \cdot 10^{-5}$	8	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10^{13}	DIN IEC 93
Surface resistance	Ω	> 10^{11}	DIN 53482

Table 01: Material properties table

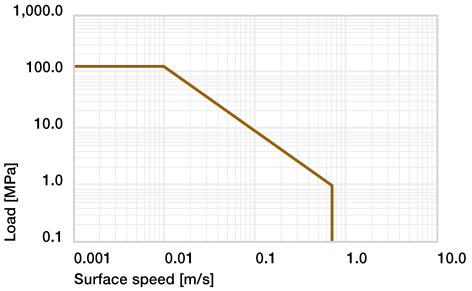


Diagram 01: Permissible pv values for iglidur® Q2 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® Q2 bearings amounts to about 1.1 % weight in standard climatic conditions. The saturation limit in water is 4.6 % weight. This must be taken into account for these types of applications.

▶ Diagram, www.igus.eu/q2-moisture

Vacuum

In a vacuum, any moisture content will outgas. Applications under vacuum conditions are possible to a limited extent.

Radiation resistance

Plain bearings made from iglidur® Q2 are resistant to radiation up to an intensity of 3 · 10^2 Gy.

UV resistance

iglidur® Q2 are permanently resistant to UV radiation.

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

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

▶ Chemical table, **page 1478**

iglidur® Q2 plain bearings represent high load capacities and good abrasion resistance at high loads. The price-performance ratio is outstanding. Solid lubricants reduce the coefficient of friction and improve the resistance to wear, which was markedly improved as compared to other iglidur® plain bearings, especially for highly loaded pivot applications.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® Q2 plain bearings decreases. The diagram 02 shows this inverse relationship. With the long-term permitted application temperature of +130 °C, the permitted surface pressure still amounts to 20 MPa. The permissible maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

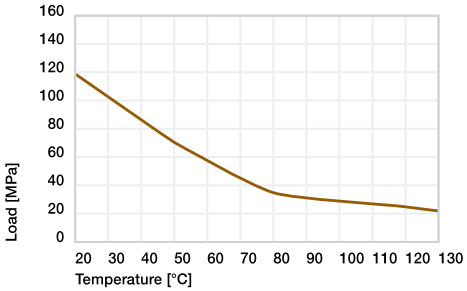


Diagram 02: Permissible maximum surface pressure of as a function of temperature (120 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® Q2 at radial loads.

▶ Surface pressure, **page 41**

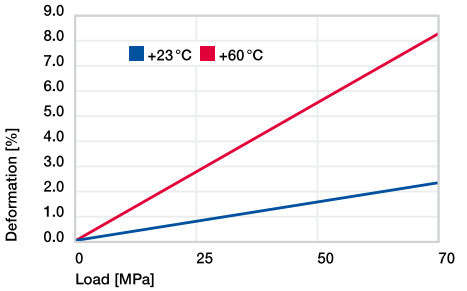


Diagram 03: Deformation under pressure and temperature

Permissible surface speeds

The typical applications for iglidur® Q2 plain bearings are highly loaded pivoting motions at comparatively low speeds. However, relatively high speeds are still attainable. The speeds shown in table 03 are threshold values for minimal bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

▶ Surface speed, **page 44**

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	4
Short-term	2	1.4	5

Table 03: Maximum surface speeds

Temperatures

iglidur® Q2 is a very temperature resistant material. The long-term upper temperature limit of +130 °C permits the broad use in applications typical for the agricultural, utility vehicle or construction equipment sectors. However, the pressure resistance of iglidur® Q2 plain bearings declines as temperatures increase. At temperatures over +70 °C an additional securing is required. When considering temperatures, the additional frictional heat in the bearing system must be taken into account.

▶ Application temperatures, **page 49**
▶ Additional securing, **page 49**

Friction and wear

iglidur® Q2 has a low coefficient of friction. Please note that a sliding surface with a rough surface finish will increase the friction. The highest coefficients of friction occur at Ra = 1 µm. We recommend shaft surface finishes (Ra) of 0.1 to a maximum of 0.4 µm. Furthermore, the coefficient of friction of iglidur® Q2 plain bearings largely depends on the speed and load. The coefficient of friction also quickly increases as speeds increase. However, as the load is reduced, the coefficient of friction initially drops significantly, then moderately.

▶ Coefficients of friction and surfaces, **page 47**
▶ Wear resistance, **page 50**

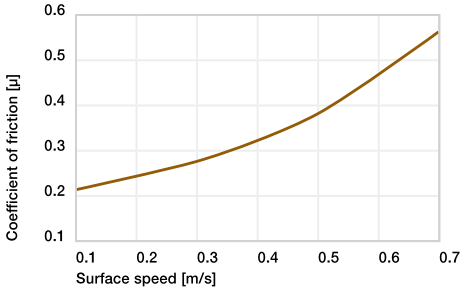


Diagram 04: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

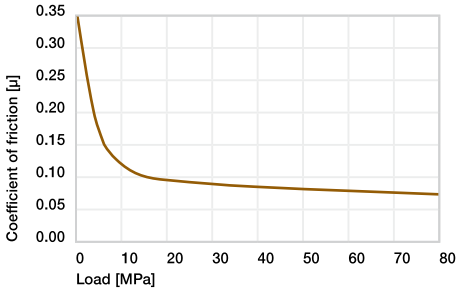


Diagram 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Generally speaking, we recommend the use of hardened shafts for highly loaded applications. Furthermore, even at low to medium loads, iglidur® Q2 will give increased service life with "hard" shafts as compared to "soft" shafts. But for low load applications, the results are outstanding with free cutting steel as well. For high loads, the wear in pivoting applications is much lower than for rotations. If the shaft material you plan on using is not shown in these test results, please contact us.

▶ Shaft materials, **page 52**

iglidur® Q2	Dry	Greases	Oil	Water
C. o. f. µ	0.22–0.42	0.09	0.04	0.04

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

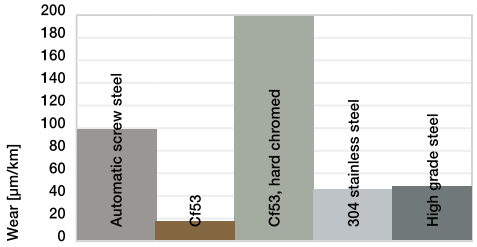


Diagram 06: Wear, pivoting with different shaft materials, pressure p = 45 MPa, v = 0.01 m/s

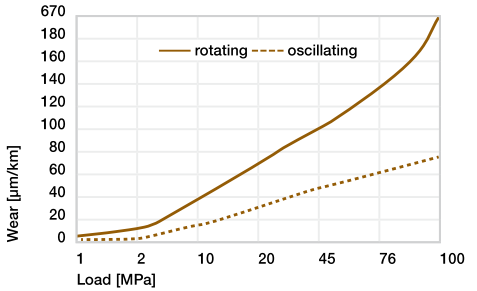


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Installation tolerances

iglidur® Q2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter automatically adjusts to the E10 tolerances. For particular dimensions the tolerance differs depending on the wall thickness (please see product range table).

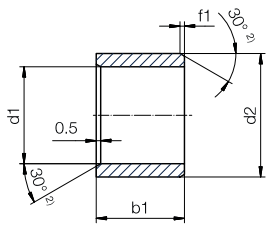
▶ Testing methods, **page 57**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® Q2 E10 [mm]	Housing H7 [mm]
up to 3	0–0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0–0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0–0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0–0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0–0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0–0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0–0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0–0.087	+0.072 +0.212	0 +0.035
>120 to 180	0–0.100	+0.085 +0.245	0 +0.040

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

iglidur® Q2 | Product range

Sleeve bearing (Form S)



2) Thickness < 1 mm: chamfer = 20°

Chamfer in relation to the d1

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

Order key

Type	Dimensions [mm]					
Q2	S	M	-04	05	-04	
		iglidur® material		Inner-Ø d1	Outer-Ø d2	Length b1
		Form S				
		Metric				

Dimensions according to ISO 3547-1 and special dimensions

Imperial dimensions available
▶ From page 1417

Dimensions [mm]

d1	d1-Tolerance[3]	d2	b1 h13	Part No.
4.0	+0.020 +0.068	5.5	4.0	Q2SM-0405-04
4.0		5.5	6.0	Q2SM-0405-06
5.0		7.0	5.0	Q2SM-0507-05
5.0		7.0	10.0	Q2SM-0507-10
6.0		8.0	6.0	Q2SM-0608-06
6.0		8.0	8.0	Q2SM-0608-08
6.0		8.0	10.0	Q2SM-0608-10
8.0	+0.025 +0.083	10.0	8.0	Q2SM-0810-08
8.0		10.0	10.0	Q2SM-0810-10
8.0		10.0	12.0	Q2SM-0810-12
10.0		12.0	8.0	Q2SM-1012-08
10.0		12.0	10.0	Q2SM-1012-10
10.0		12.0	12.0	Q2SM-1012-12
10.0		12.0	15.0	Q2SM-1012-15
10.0		12.0	20.0	Q2SM-1012-20
12.0	+0.032 +0.102	14.0	10.0	Q2SM-1214-10
12.0		14.0	12.0	Q2SM-1214-12
12.0		14.0	15.0	Q2SM-1214-15
12.0		14.0	20.0	Q2SM-1214-20
13.0		15.0	10.0	Q2SM-1315-10
13.0		15.0	20.0	Q2SM-1315-20
14.0		16.0	15.0	Q2SM-1416-15
14.0		16.0	20.0	Q2SM-1416-20
14.0		16.0	25.0	Q2SM-1416-25
15.0		17.0	15.0	Q2SM-1517-15
15.0		17.0	20.0	Q2SM-1517-20
15.0		17.0	25.0	Q2SM-1517-25
16.0		18.0	15.0	Q2SM-1618-15
16.0		18.0	20.0	Q2SM-1618-20
16.0	+0.032 +0.102	18.0	25.0	Q2SM-1618-25
18.0		20.0	15.0	Q2SM-1820-15
18.0		20.0	20.0	Q2SM-1820-20
18.0		20.0	25.0	Q2SM-1820-25
20.0	+0.040 +0.124	23.0	10.0	Q2SM-2023-10
20.0		23.0	15.0	Q2SM-2023-15
20.0		23.0	20.0	Q2SM-2023-20
20.0		23.0	25.0	Q2SM-2023-25
20.0		23.0	30.0	Q2SM-2023-30
22.0		25.0	15.0	Q2SM-2225-15
22.0		25.0	20.0	Q2SM-2225-20
22.0		25.0	25.0	Q2SM-2225-25
22.0		25.0	30.0	Q2SM-2225-30
24.0		27.0	15.0	Q2SM-2427-15
24.0		27.0	20.0	Q2SM-2427-20
24.0		27.0	25.0	Q2SM-2427-25
24.0		27.0	30.0	Q2SM-2427-30
25.0		28.0	15.0	Q2SM-2528-15
25.0		28.0	20.0	Q2SM-2528-20
25.0		28.0	25.0	Q2SM-2528-25
25.0		28.0	20.0	Q2SM-2528-20
25.0		28.0	25.0	Q2SM-2528-25
25.0		28.0	30.0	Q2SM-2528-30
28.0		32.0	30.0	Q2SM-2832-30
30.0		34.0	20.0	Q2SM-3034-20
30.0		34.0	25.0	Q2SM-3034-25
30.0		34.0	30.0	Q2SM-3034-30

3) After press-fit. Testing methods ▶ Page 57

iglidur® Q2 | Product range

Sleeve bearing (Form S)

Dimensions [mm]

d1	d1-Tolerance[3]	d2	b1 h13	Part No.
30.0	+0.040 +0.124	34.0	40.0	Q2SM-3034-40
30.0		35.0	40.0	Q2SM-3035-40
32.0	+0.050 +0.150	36.0	20.0	Q2SM-3236-20
32.0		36.0	30.0	Q2SM-3236-30
32.0		36.0	40.0	Q2SM-3236-40
32.0		40.0	40.0	Q2SM-3240-40
35.0		39.0	20.0	Q2SM-3539-20
35.0		39.0	30.0	Q2SM-3539-30
35.0		39.0	40.0	Q2SM-3539-40
35.0		39.0	50.0	Q2SM-3539-50
40.0		44.0	20.0	Q2SM-4044-20
40.0		44.0	30.0	Q2SM-4044-30
40.0		44.0	40.0	Q2SM-4044-40
40.0		44.0	50.0	Q2SM-4044-50
45.0	+0.050 +0.150	50.0	20.0	Q2SM-4550-20
45.0		50.0	30.0	Q2SM-4550-30
45.0		50.0	40.0	Q2SM-4550-40
45.0		50.0	50.0	Q2SM-4550-50
50.0		55.0	20.0	Q2SM-5055-20
50.0		55.0	30.0	Q2SM-5055-30
50.0		55.0	40.0	Q2SM-5055-40
50.0		55.0	50.0	Q2SM-5055-50
50.0		55.0	60.0	Q2SM-5055-60
60.0	+0.060 +0.180	65.0	60.0	Q2SM-6065-60
65.0		70.0	60.0	Q2SM-6570-60
70.0		75.0	60.0	Q2SM-7075-60
75.0		80.0	40.0	Q2SM-7580-40

3) After press-fit. Testing methods ▶ Page 57

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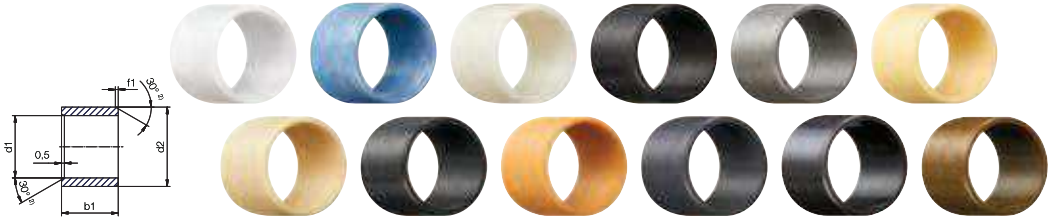

Dimensions sleeve Abmessungen zylindrisch [mm]

Part No. Art.-Nr.	d1	d1 tolerance d1-Toleranz	d2	b1 h13
A180SM-0810-15	8.0	+0.025 +0.083	10.0	15.0
A350SM-1416-12	14.0	+0.016 +0.068	16.0	12.0
C500SM-3034-30	30.0	+0.020 +0.104	34.0	30.0
F2SM-1214-15	12.0	+0.032 +0.102	14.0	15.0
F2SM-1618-20	16.0	+0.032 +0.102	18.0	20.0
GSM-0406-06	4.0	+0.020 +0.068	6.0	6.0
GSM-0810-36	8.0	+0.025 +0.083	10.0	36.0
GSM-120125-78	120.0	+0.072 +0.212	125.0	78.0
GSM-1214-45	12.0	+0.032 +0.102	14.0	45.0
GSM-1820-30	18.0	+0.032 +0.102	20.0	30.0
GSM-1822-15	18.0	+0.032 +0.102	22.0	15.0
GSM-2021-095	20.0	+0.020 +0.072	21.0	9.5
JSM-0814-08	8.0	+0.040 +0.130	14.0	8.0
JSM-1216-06	12.0	+0.050 +0.0160	16.0	6.0
JSM-1218-10	12.0	+0.050 +0.0160	18.0	10.0
JSM-1315-06	13.0	+0.050 +0.0160	15.0	6.0
JSM-1620-20	16.0	+0.050 +0.0160	20.0	20.0
JSM-6065-100	60.0	+0.060 +0.180	65.0	100.0
MSM-1620-10	16.0	+0.050 +0.0160	20.0	10.0
P210SM-1214-04	12.0	+0.032 +0.102	14.0	4.0
PSM-0608-05	6.0	+0.020 +0.068	8.0	5.0
PSM-0812-10	8.0	+0.040 +0.130	12.0	10.0
PSM-3236-15	32.0	+0.050 +0.150	36.0	15.0
Q2SM-1012-04	10.0	+0.025 +0.083	12.0	4.0
Q2SM-4246-52	42.0	+0.050 +0.150	46.0	52.0
X6SM-1416-22	14.0	+0.016 +0.086	16.0	22.0
X6SM-1618-12	16.0	+0.016 +0.086	18.0	12.0
X6SM-2023-15	20.0	+0.020 +0.104	23.0	15.0
ZSM-2225-35	22.0	+0.020 +0.104	25.0	35.0
ZSM-6065-25	60.0	+0.030 +0.150	65.0	25.0
ZSM-9095-100	90.0	+0.036 +0.176	95.0	100.0

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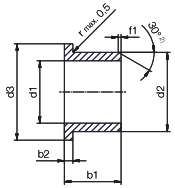

Dimensions with flange Abmessungen mit Bund [mm]

Part No. Art.-Nr.	d1	d1 tolerance d1-Toleranz	d2	d3	b1 h13	b2
GFM-060710-06	6.0	+0.010 +0.040	7.0	10.0	6.0	0.5
GFM-0812-16	8.0	+0.040 +0.130	12.0	16.0	16.0	2.0
GFM-101115-03	10.0	+0.013 +0.046	11.0	15.0	3.0	1.0
GFM-1012-11	10.0	+0.025 +0.083	12.0	18.0	11.0	1.0
GFM-1012-25	10.0	+0.025 +0.083	12.0	18.0	25.0	1.0
GFM-1719-07	17.0	+0.032 +0.102	19.0	25.0	7.0	1.0
GFM-2527-12	25.0	+0.040 +0.124	27.0	32.0	12.0	1.0
GFM-2527-15	25.0	+0.040 +0.124	27.0	32.0	15.0	1.0
GFM-3034-12	30.0	+0.040 +0.124	34.0	42.0	12.0	2.0
GFM-303440-07	30.0	+0.040 +0.124	34.0	40.0	7.0	2.0
H1FM-0405-06	4.0	+0.010 +0.058	5.5	9.5	6.0	0.8
J350FM-6065-50	60.0	+0.030 +0.150	65.0	73.0	50.0	2.0
J3FM-081418-15	8.0	+0.025 +0.083	14.0	18.0	15.0	2.0
JFM-040810-15	4.0	+0.020 +0.068	8.0	10.0	15.0	2.0
JFM-0810-03	8.0	+0.025 +0.083	10.0	15.0	3.0	1.0
JFM-121419-06	12.0	+0.032 +0.102	14.0	19.0	6.0	1.0
JFM-121622-20	12.0	+0.050 +0.0160	16.0	22.0	20.0	2.0
JFM-2023-07	20.0	+0.040 +0.124	23.0	30.0	7.0	1.5
PFM-1214-08	12.0	+0.032 +0.102	14.0	8.0	20.0	1.0
PFM-1618-08	16.0	+0.032 +0.102	18.0	8.0	24.0	1.0
P210FM-0405-06	4.0	+0.020 +0.068	5.5	9.5	6.0	0.8
Q290FM-8085-100	80.0	+0.060 +0.180	85.0	93.0	100.0	2.5
Q2FM-101219-13	10.0	+0.025 +0.083	12.0	19.0	13.0	1.0
Q2FM-1013-05	10.0	+0.025 +0.083	13.0	20.0	5.0	1.0
Q2FM-2023-07	20.0	+0.040 +0.124	23.0	30.0	7.0	1.5
QFM-101215-04	10.0	+0.025 +0.083	12.0	15.0	4.0	1.0
QFM-121418-06	12.0	+0.032 +0.102	14.0	18.0	6.0	1.0
WFM-2023-08	20.0	+0.040 +0.124	23.0	30.0	8.0	1.5
XFM-1214-50	12.0	+0.016 +0.086	14.0	50.0	20.0	1.0
X6FM-0608-04	6.0	+0.010 +0.058	8.0	12.0	4.0	1.0
ZFM-1012-25	10.0	+0.013 +0.071	12.0	18.0	25.0	1.0
ZFM-2023-075	20.0	+0.020 +0.104	23.0	30.0	7.5	1.5

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