

iglidur® M250 | Product range

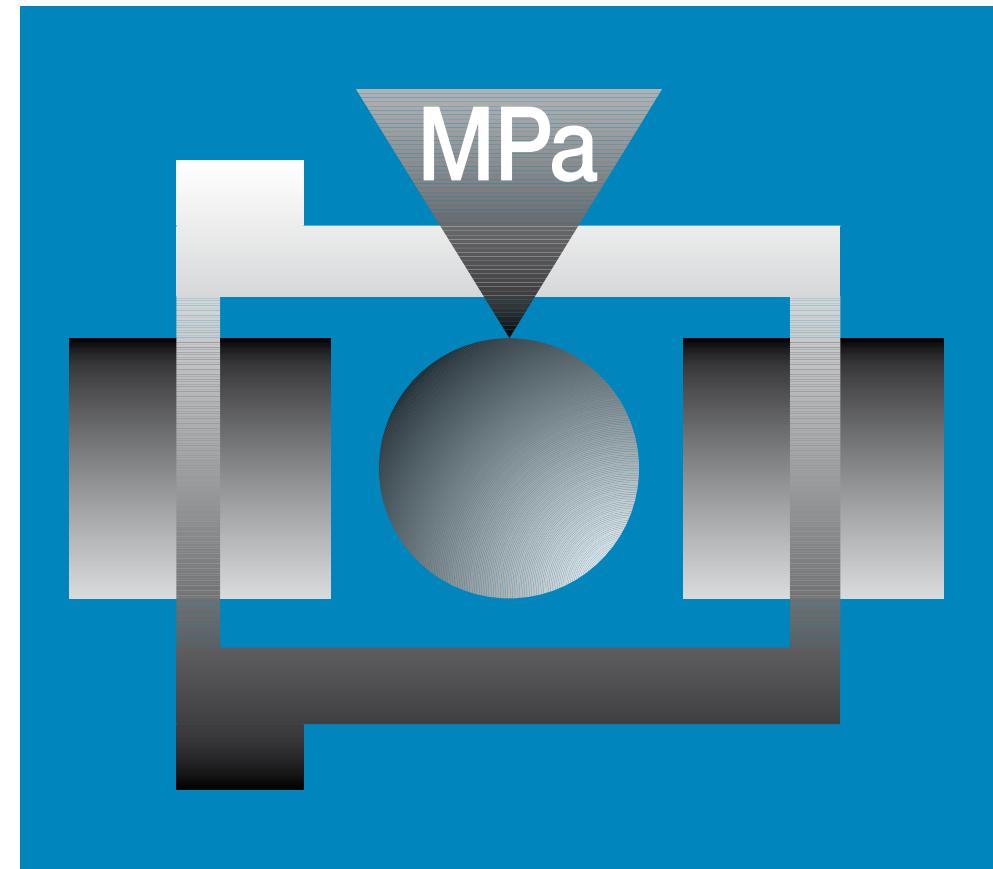
Flange bearing (Form F)

Dimensions [mm]

d1	d1-	d2	d3	b1	b2	Part No.
Tolerance ³⁾						
				h13	-0.14	
12.0		14.0	20.0	7.0	1.0	MFM-1214-07
12.0		14.0	20.0	9.0	1.0	MFM-1214-09
12.0		14.0	20.0	12.0	1.0	MFM-1214-12
12.0		14.0	20.0	17.0	1.0	MFM-1214-17
12.0		16.0	22.0	10.0	2.0	MFM-1216-10
12.0		16.0	22.0	20.0	2.0	MFM-1216-20
12.0		18.0	24.0	8.0	3.0	MFM-1218-08
12.0		18.0	22.0	10.0	3.0	MFM-1218-10
12.0		18.0	24.0	12.0	3.0	MFM-1218-12
12.0		18.0	22.0	15.0	3.0	MFM-1218-15
12.0		18.0	22.0	20.0	3.0	MFM-1218-20
13.0		15.0	20.0	14.0	2.0	MFM-1315-14
13.0		16.0	24.0	8.0	2.0	MFM-131624-08
14.0		16.0	22.0	12.0	1.0	MFM-1416-12
14.0		16.0	22.0	17.0	1.0	MFM-1416-17
14.0		20.0	25.0	7.0	3.0	MFM-1420-07
14.0		20.0	25.0	10.0	3.0	MFM-1420-10
14.0		20.0	25.0	15.0	3.0	MFM-1420-15
14.0		20.0	25.0	20.0	3.0	MFM-1420-20
15.0		17.0	23.0	9.0	1.0	MFM-1517-09
15.0	+0.050	17.0	23.0	12.0	1.0	MFM-1517-12
15.0	+0.160	17.0	23.0	17.0	1.0	MFM-1517-17
15.0		21.0	27.0	10.0	3.0	MFM-1521-10
15.0		21.0	27.0	15.0	3.0	MFM-1521-15
15.0		21.0	27.0	20.0	3.0	MFM-1521-20
15.0		21.0	27.0	25.0	3.0	MFM-1521-25
16.0		18.0	28.0	8.0	2.0	MFM-1618-08/02
16.0		18.0	24.0	12.0	1.0	MFM-1618-12
16.0		18.0	24.0	17.0	1.0	MFM-1618-17
16.0		22.0	28.0	12.0	3.0	MFM-1622-12
16.0		22.0	28.0	15.0	3.0	MFM-1622-15
16.0		22.0	28.0	20.0	3.0	MFM-1622-20
16.0		22.0	28.0	25.0	3.0	MFM-1622-25
18.0		20.0	26.0	12.0	1.0	MFM-1820-12
18.0		20.0	26.0	17.0	1.0	MFM-1820-17
18.0		20.0	26.0	22.0	1.0	MFM-1820-22
18.0		24.0	30.0	8.0	3.0	MFM-1824-08
18.0		24.0	30.0	12.0	3.0	MFM-1824-12
18.0		24.0	30.0	18.0	3.0	MFM-1824-18
18.0		24.0	30.0	20.0	3.0	MFM-1824-20
18.0		24.0	30.0	30.0	3.0	MFM-1824-30
18.0		24.0	26.0	7.8	3.0	MFM-182426-078

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

d1	d1-	d2	d3	b1	b2	Part No.
Tolerance ³⁾						
				h13	-0.14	
19.0		24.0	27.0	12.0	2.0	MFM-192427-12
20.0		23.0	30.0	11.5	1.5	MFM-2023-11
20.0		23.0	30.0	16.5	1.5	MFM-2023-16
20.0		23.0	30.0	21.5	1.5	MFM-2023-21
20.0		26.0	32.0	15.0	3.0	MFM-2026-15
20.0		26.0	32.0	20.0	3.0	MFM-2026-20
20.0		26.0	28.0	12.0	3.0	MFM-202628-12
20.0		26.0	32.0	30.0	3.0	MFM-2026-30
22.0		28.0	34.0	15.0	3.0	MFM-2228-15
22.0		28.0	34.0	20.0	3.0	MFM-2228-20
22.0		28.0	34.0	30.0	3.0	MFM-2228-30
24.0		30.0	36.0	15.0	3.0	MFM-2430-15
24.0		30.0	36.0	20.0	3.0	MFM-2430-20
24.0		30.0	36.0	30.0	3.0	MFM-2430-30
25.0		28.0	35.0	11.5	1.5	MFM-2528-11
25.0		28.0	35.0	16.5	1.5	MFM-2528-16
25.0	+0.065	28.0	35.0	21.5	1.5	MFM-2528-21
25.0	+0.195	32.0	38.0	12.0	4.0	MFM-2532-12
25.0		32.0	38.0	15.0	4.0	MFM-2532-15
25.0		32.0	38.0	20.0	4.0	MFM-2532-20
25.0		32.0	38.0	30.0	4.0	MFM-2532-30
25.0		32.0	38.0	40.0	4.0	MFM-2532-40
27.0		34.0	40.0	20.0	4.0	MFM-2734-20
27.0		34.0	40.0	30.0	4.0	MFM-2734-30
27.0		34.0	40.0	40.0	4.0	MFM-2734-40
28.0		36.0	42.0	20.0	4.0	MFM-2836-20
28.0		36.0	42.0	30.0	4.0	MFM-2836-30
28.0		36.0	42.0	40.0	4.0	MFM-2836-40
30.0		34.0	42.0	16.0	2.0	MFM-3034-16
30.0		34.0	42.0	26.0	2.0	MFM-3034-26
30.0		35.0	44.0	20.0	4.0	MFM-3035-20
30.0		38.0	44.0	20.0	4.0	MFM-3038-20
30.0		38.0	44.0	30.0	4.0	MFM-3038-30
30.0		38.0	44.0	40.0	4.0	MFM-3038-40
32.0		40.0	46.0	20.0	4.0	MFM-3240-20
32.0		40.0	46.0	30.0	4.0	MFM-3240-30
32.0		40.0	46.0	40.0	4.0	MFM-3240-40
35.0	+0.080	39.0	47.0	16.0	2.0	MFM-3539-16
35.0	+0.240	39.0	47.0	26.0	2.0	MFM-3539-26
40.0		44.0	52.0	30.0	2.0	MFM-4044-30
40.0		44.0	52.0	40.0	2.0	MFM-4044-40
45.0		50.0	58.0	50.0	2.0	MFM-4550-50

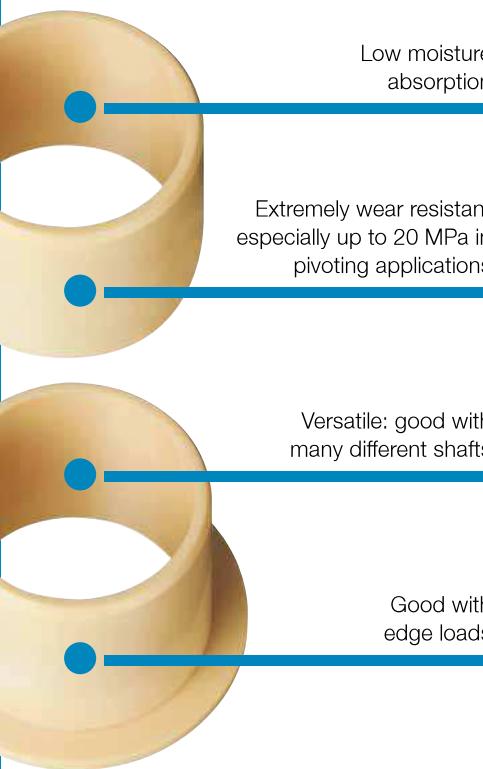


- Specialist for pivoting, rolling applications and more – iglidur® P210**
- Low moisture absorption**
- Extremely wear resistant especially up to 20 MPa in pivoting applications**
- Versatile: performance on many different shafts**
- Good with edge loads**
- Lubrication and maintenance-free**
- Standard range from stock**



iglidur® P210 | Specialist for pivoting, rolling applications and more

Good coefficients of friction and wear on almost every shaft



Low moisture absorption

Extremely wear resistant especially up to 20 MPa in pivoting applications

Versatile: good with many different shafts

Good with edge loads

Available from stock

Detailed information about delivery time online.

Block pricing online

No minimum order value. From batch size 1.

Max. +100 °C Min. -40 °C

Ø 4–50 mm

More dimensions upon request

Imperial dimensions available

► From page 1391

Online product finder

► www.igus.eu/iglidur-finder

iglidur® P210 | Technical data

Material properties

General properties	Unit	iglidur® P210	Testing method
Density	g/cm³	1.40	
Colour		yellow	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.3	DIN 53495
Max. water absorption	% weight	0.5	
Coefficient of sliding friction, dynamic, against steel	μ	0.07–0.19	
pv value, max. (dry)	MPa · m/s	0.4	
Mechanical properties			
Flexural modulus	MPa	2,500	DIN 53457
Flexural strength at +20 °C	MPa	70	DIN 53452
Compressive strength	MPa	50	
Max. recommended surface pressure (+20 °C)	MPa	50	
Shore-D hardness		75	DIN 53505
Physical and thermal properties			
Max. long-term application temperature	°C	+100	
Max. short-term application temperature	°C	+160	
Min. long-term application temperature	°C	-40	
Heat conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K⁻¹ · 10⁻⁵	8	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10¹²	DIN IEC 93
Surface resistance	Ω	> 10¹¹	DIN 53482

Table 01: Material properties table

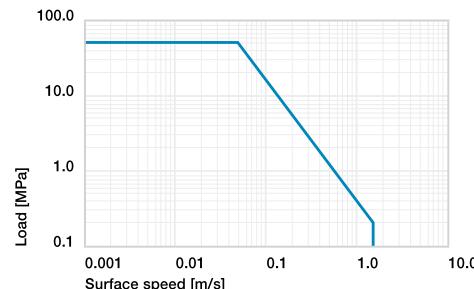


Diagram 01: Permissible pv values for iglidur® P210 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The humidity absorption of iglidur® P210 bearings amounts to about 0.3 % weight in standard climatic conditions. The saturation limit in water is 0.5 % weight. This low moisture absorption is well below the values of iglidur® G.

► Diagram, www.igus.eu/p210-moisture

Vacuum

In a vacuum environment, any existing moisture in iglidur® P210 plain bearings is released as a vapour. Use in vacuum is limited.

Radiation resistance

Plain bearings made from iglidur® P210 have limited use under radioactive radiation. They are resistant to radiation up to an intensity of $3 \cdot 10^5$ Gy.

UV resistance

iglidur® P210 bearings have a good resistance to UV radiation.

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

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 02: Chemical resistance

► Chemical table, page 1478

iglidur® P210 | Technical data

iglidur® P210 plain bearings provide the user with versatile all-round bearings, which have proven to have above average service life, primarily in pivoting applications at medium loads of up to 20 MPa.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® P210 plain bearings decreases. The diagram 02 shows this inverse relationship. The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this.

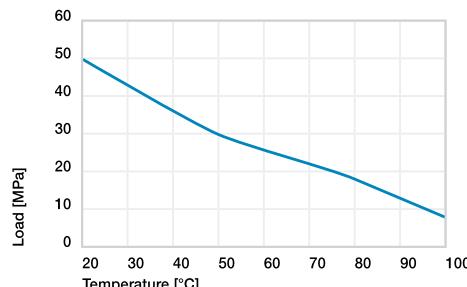


Diagram 02: Permissible maximum surface pressure of iglidur® P210 as a function of temperature (50 MPa at +20 °C)

Diagram 03 shows the elastic deformation of iglidur® P210 as a function of radial pressure. At the permissible maximum surface pressure of 50 MPa the deformation at room temperature is less than 3%.

► Surface pressure, page 41

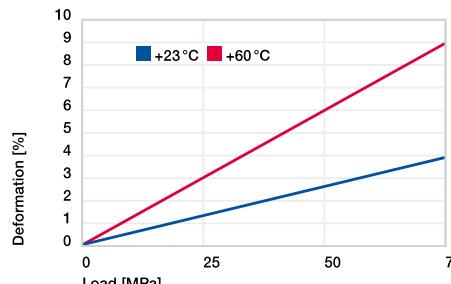


Diagram 03: Deformation under pressure and temperature

iglidur® P210 | Technical data

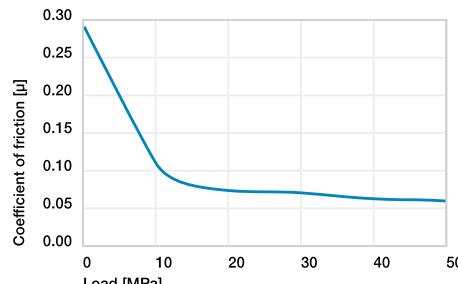


Diagram 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

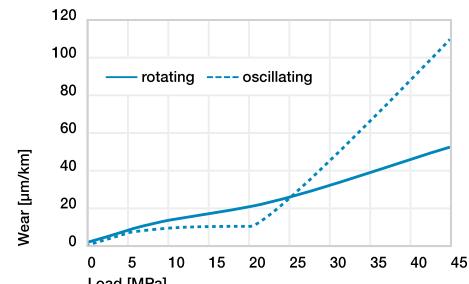


Diagram 07: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Shaft materials

Diagram 06 shows results of testing different shaft materials with plain bearings made from iglidur® P210. For rotating motions at radial loads below 1 MPa, iglidur® P210 has generally very low wear. Wear is only significantly higher in combination with HR carbon steel shafts. Generally, rotational wear will be higher than for a pivoting application of equal load. This is only reversed at loads above 25 MPa (diagram 07).

► Shaft materials, page 52

iglidur® P210	Dry	Greases	Oil	Water
C.o.f. μ	0.07 – 0.19	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

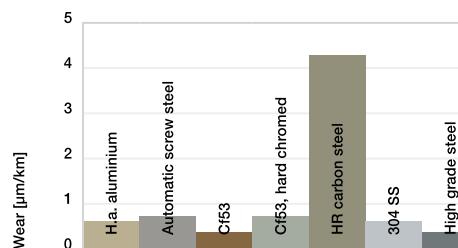


Diagram 06: Wear, rotating with different shaft materials, $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

Installation tolerances

iglidur® P210 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	Shaft	iglidur® P210	Housing
d1 [mm]	h9 [mm]	E10 [mm]	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

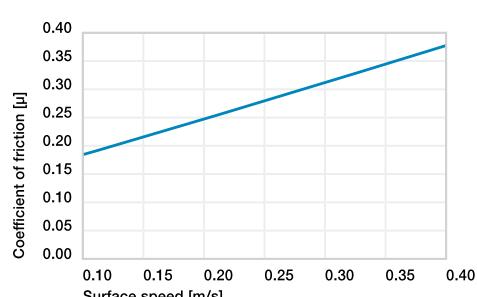
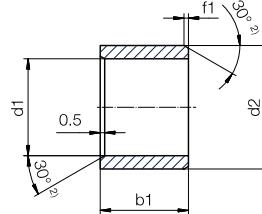


Diagram 04: Coefficient of friction as a function of the surface speed, $p = 1 \text{ MPa}$

iglidur® P210 | 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

Dimensions [mm]

d1	d1- Tolerance ³⁾	d2	b1	Part No.
4.0		5.5	4.0	P210SM-0405-04
4.0		5.5	6.0	P210SM-0405-06
5.0	+0.020	7.0	5.0	P210SM-0507-05
5.0	+0.068	7.0	10.0	P210SM-0507-10
6.0	+0.068	8.0	6.0	P210SM-0608-06
6.0		8.0	8.0	P210SM-0608-08
6.0		8.0	10.0	P210SM-0608-10
8.0		10.0	8.0	P210SM-0810-08
8.0		10.0	10.0	P210SM-0810-10
8.0		10.0	12.0	P210SM-0810-12
10.0	+0.025	12.0	8.0	P210SM-1012-08
10.0	+0.083	12.0	10.0	P210SM-1012-10
10.0		12.0	12.0	P210SM-1012-12
10.0		12.0	15.0	P210SM-1012-15
10.0		12.0	20.0	P210SM-1012-20
12.0		14.0	10.0	P210SM-1214-10
12.0		14.0	12.0	P210SM-1214-12
12.0		14.0	15.0	P210SM-1214-15
12.0		14.0	20.0	P210SM-1214-20
13.0	+0.032	15.0	10.0	P210SM-1315-10
13.0	+0.102	15.0	20.0	P210SM-1315-20
14.0		16.0	15.0	P210SM-1416-15
14.0		16.0	20.0	P210SM-1416-20
14.0		16.0	25.0	P210SM-1416-25
15.0		17.0	15.0	P210SM-1517-15
15.0		17.0	20.0	P210SM-1517-20

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



Order key

Type	Dimensions [mm]					
P210 S M -0405-04	iglidur® material	Form S	Metric	Inner-Ø d1	Outer-Ø d2	Length b1



Dimensions according to ISO 3547-1
and special dimensions



Imperial dimensions available
► From page 1415

iglidur® P210 | Product range

Sleeve bearing (Form S)

Dimensions [mm]

d1	d1- Tolerance ³⁾	d2	b1	Part No.
28.0		32.0	30.0	P210SM-2832-30
30.0	+0.040	34.0	20.0	P210SM-3034-20
30.0	+0.124	34.0	25.0	P210SM-3034-25
30.0		34.0	30.0	P210SM-3034-30
30.0		34.0	40.0	P210SM-3034-40
32.0		36.0	20.0	P210SM-3236-20
32.0		36.0	30.0	P210SM-3236-30
32.0		36.0	40.0	P210SM-3236-40
35.0	+0.050	39.0	20.0	P210SM-3539-20
35.0	+0.150	39.0	30.0	P210SM-3539-30
35.0		39.0	40.0	P210SM-3539-40
35.0		39.0	50.0	P210SM-3539-50
40.0		44.0	20.0	P210SM-4044-20

d1	d1- Tolerance ³⁾	d2	b1	Part No.
40.0		44.0	30.0	P210SM-4044-30
40.0		44.0	40.0	P210SM-4044-40
40.0		44.0	50.0	P210SM-4044-50
45.0		50.0	20.0	P210SM-4550-20
45.0		50.0	30.0	P210SM-4550-30
45.0	+0.050	50.0	40.0	P210SM-4550-40
45.0	+0.150	50.0	50.0	P210SM-4550-50
50.0		55.0	20.0	P210SM-5055-20
50.0		55.0	30.0	P210SM-5055-30
50.0		55.0	40.0	P210SM-5055-40
50.0		55.0	50.0	P210SM-5055-50
50.0		55.0	60.0	P210SM-5055-60

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



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Even more dimensions from stock

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Dimensions sleeve Abmessungen zylindrisch [mm]

Part No.	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

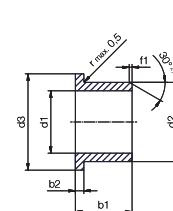
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Dimensions with flange Abmessungen mit Bund [mm]

Part No.	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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