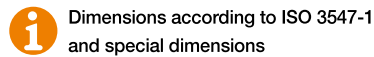
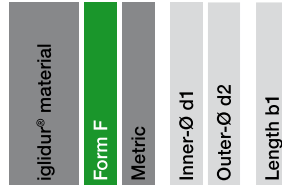


Order key

Type Dimensions [mm]

A500 F M-0405-04



Dimensions according to ISO 3547-1 and special dimensions



Imperial dimensions available

► From page 1427

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	d3	b1	b2	Part No.
		d13	d13	h13	-0.14	
4.0		5.5	9.5	4.0	0.75	A500FM-0405-04
4.0	+0.010	8.0	12.0	6.0	2.0	A500FM-0408-06
6.0	+0.058	8.0	12.0	4.0	1.0	A500FM-0608-04
6.0		8.0	12.0	6.0	1.0	A500FM-0608-06
6.0		8.0	12.0	8.0	1.0	A500FM-0608-08
8.0		10.0	15.0	5.5	1.0	A500FM-0810-05
8.0		10.0	15.0	7.5	1.0	A500FM-0810-07
8.0		10.0	15.0	9.5	1.0	A500FM-0810-09
8.0	+0.013	10.0	15.0	10.0	1.0	A500FM-0810-10
10.0	+0.071	12.0	18.0	7.0	1.0	A500FM-1012-07
10.0		12.0	18.0	9.0	1.0	A500FM-1012-09
10.0		12.0	18.0	12.0	1.0	A500FM-1012-12
10.0		12.0	18.0	15.0	1.0	A500FM-1012-15
10.0		12.0	18.0	17.0	1.0	A500FM-1012-17
12.0		14.0	20.0	7.0	1.0	A500FM-1214-07
12.0		14.0	20.0	9.0	1.0	A500FM-1214-09
12.0		14.0	20.0	12.0	1.0	A500FM-1214-12
12.0	+0.016	14.0	20.0	13.0	1.0	A500FM-1214-13
12.0	+0.086	14.0	20.0	15.0	1.0	A500FM-1214-15
12.0		14.0	20.0	17.0	1.0	A500FM-1214-17
14.0		16.0	22.0	12.0	1.0	A500FM-1416-12
14.0		16.0	22.0	17.0	1.0	A500FM-1416-17
15.0		17.0	23.0	9.0	1.0	A500FM-1517-09

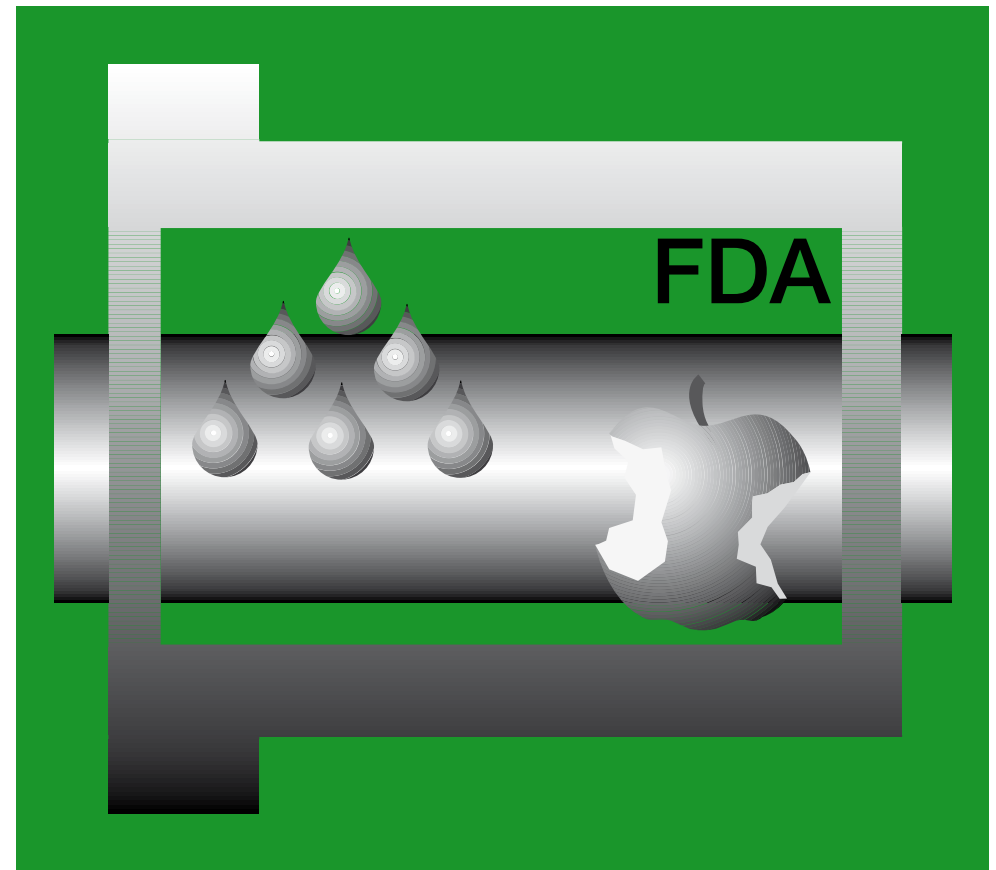
d1	d1- Tolerance ³⁾	d2	d3	b1	b2	Part No.
		d13	d13	h13	-0.14	
15.0		17.0	23.0	12.0	1.0	A500FM-1517-12
15.0		17.0	23.0	17.0	1.0	A500FM-1517-17
16.0		18.0	24.0	12.0	1.0	A500FM-1618-12
16.0	+0.016	18.0	24.0	17.0	1.0	A500FM-1618-17
18.0	+0.086	20.0	26.0	12.0	1.0	A500FM-1820-12
18.0		20.0	26.0	17.0	1.0	A500FM-1820-17
18.0		20.0	26.0	22.0	1.0	A500FM-1820-22
20.0		23.0	30.0	11.5	1.5	A500FM-2023-11
20.0		23.0	30.0	16.5	1.5	A500FM-2023-16
25.0		28.0	35.0	11.5	1.5	A500FM-2528-11
25.0	+0.020	28.0	35.0	16.5	1.5	A500FM-2528-16
25.0	+0.104	28.0	35.0	21.5	1.5	A500FM-2528-21
20.0		23.0	30.0	21.5	1.5	A500FM-2023-21
30.0		34.0	42.0	16.0	2.0	A500FM-3034-16
30.0		34.0	42.0	26.0	2.0	A500FM-3034-26
30.0		34.0	42.0	40.0	2.0	A500FM-3034-40
35.0		39.0	47.0	16.0	2.0	A500FM-3539-16
35.0		39.0	47.0	26.0	2.0	A500FM-3539-26
35.0	+0.025	39.0	47.0	40.0	2.0	A500FM-3539-40
40.0	+0.125	44.0	52.0	30.0	2.0	A500FM-4044-30
40.0		44.0	52.0	40.0	2.0	A500FM-4044-40
45.0		50.0	58.0	50.0	2.0	A500FM-4550-50

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



Couldn't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution very quickly.



The food all-rounder – iglidur® A180

The iglidur® A180 material complies with food and drug administration (FDA) regulations for repeated contact with food

Good media-resistance

For wet environments

Good wear-resistance

Lubrication and maintenance-free

Standard range from stock



Complies with FDA regulations for repeated contact with food

FDA-compliant material for applications with low to medium loads in immediate environs of (or contact with) food or drugs, as well as humidity.



When to use it?

- If the bearings have direct contact with food
- When FDA-compliance is required
- If low noise level is required
- If low moisture absorption is requested



When not to use it?

- When the maximum abrasion resistance is necessary
 - ▶ iglidur® J, page 141
- When temperatures are continuously higher than +80 °C
 - ▶ iglidur® A350, page 347
 - ▶ iglidur® A500, page 355
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 79
 - ▶ iglidur® P, page 113

Typical application areas

- Food industry
- Beverage technology
- Medical technology

Good media resistance

For wet environments

Good wear-resistance



Available from stock

Detailed information about delivery time online.



Block pricing online

No minimum order value. From batch size 1.



Max. +90 °C
Min. -50 °C



Ø 6–30 mm

More dimensions upon request



Online product finder

▶ www.igus.eu/iglidur-finder



iglidur® A180 material complies with the requirements of the FDA (Food and Drug Administration) specifications for repeated contact with food.

Material properties

General properties	Unit	iglidur® A180	Testing method
Density	g/cm³	1.46	
Colour		white	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	DIN 53495
Max. water absorption	% weight	1.3	
Coefficient of sliding friction, dynamic, against steel	μ	0.05–0.23	
pv value, max. (dry)	MPa · m/s	0.31	
Mechanical properties			
Flexural modulus	MPa	2,300	DIN 53457
Flexural strength at +20 °C	MPa	88	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20 °C)	MPa	28	
Shore-D hardness		76	DIN 53505
Physical and thermal properties			
Max. long-term application temperature	°C	+90	
Max. short-term application temperature	°C	+110	
Min. long-term application temperature	°C	-50	
Heat conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁶	11	DIN 53752
Electrical properties			
Specific contact resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material properties table

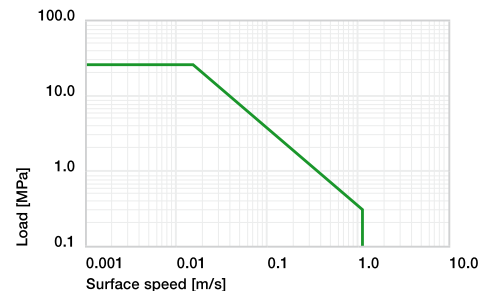


Diagram 01: Permissible pv values for iglidur® A180 bearings with a wall thickness of 1 mm dry running against a steel shaft, at +20 °C, mounted in a steel housing

Moisture absorption

The moisture absorption of iglidur® A180 plain bearings is approximately 0.2% weight in standard climatic conditions. The saturation limit submerged in water is 1.3% weight. This must be taken into account for these types of applications.

▶ Diagram, www.igus.eu/a180-moisture

Vacuum

When used in vacuum, the iglidur® A180 plain bearings release moisture as a vapour. Only dehumidified bearings are suitable in vacuum.

Radiation resistance

Plain bearings made from iglidur® A180 are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV resistance

iglidur® A180 bearings are resistant to UV radiation, but the tribological properties deteriorate with continuous exposure.

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

+ resistant 0 conditionally resistant – not resistant

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

Table 02: Chemical resistance

▶ Chemical table, page 1478

Bearings made from iglidur® A180 are suitable for application in direct contact with foodstuffs. Hence they are the ideal solution for bearing positions on machines for the food and packaging industries, the medical equipment manufacturing, for small equipment for households, etc. The iglidur® A180 distinguishes itself also in wet cleaning or where process-dependent contact with wet media is the business of the day by its extremely low humidity absorption.

Mechanical properties

With increasing temperatures, the compressive strength of iglidur® A180 plain bearings decreases. The diagram O2 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.

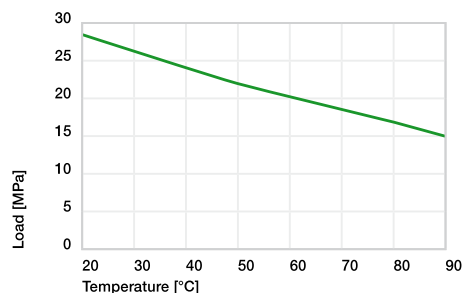


Diagram O2: Permissible maximum surface pressure of as a function of temperature (28 MPa at +20 °C)

Diagram O3 shows the elastic deformation of iglidur® A180 at radial load. At the recommended maximum surface pressure of 20 MPa the deformation is less than 2.5%. Plastic deformation is minimal up to this radial load. However, it is also dependent on the service time.

► Surface pressure, page 41

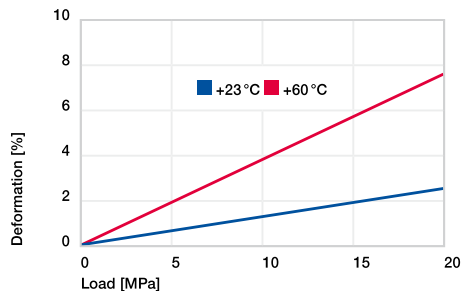


Diagram O3: Deformation under pressure and temperature

Permissible surface speeds

iglidur® A180 is developed for low surface speeds. The given values in table O3 indicate the limits at which an increase up to the continuous permissible temperature occurs. In practice these limit values are not always reached due to interactions.

- Surface speed, page 44
- pv value and lubrication, page 86

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	3.5
Short-term	1.2	1	5

Table O3: Maximum surface speeds

Temperatures

The short-term maximum application temperature is +110 °C. With increasing temperatures, the compressive strength of iglidur® A180 plain bearings decreases. The diagram O2 shows this inverse relationship. The temperatures prevailing in the bearing system also have an influence on the bearing wear. At temperatures over +60 °C an additional securing is required.

- Application temperatures, page 49
- Additional securing, page 49

Friction and wear

Coefficient of friction and wear alter with the application parameters. With increasing load, the coefficient of friction however sinks markedly (diagrams O4 and O5).

- Coefficients of friction and surfaces, page 47
- Wear resistance, page 50

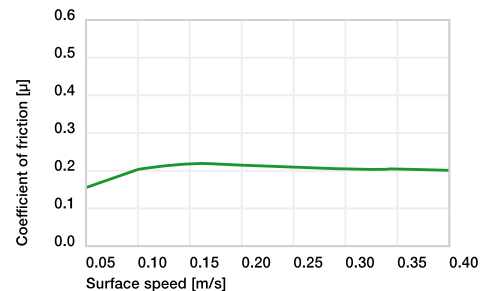


Diagram O4: Coefficient of friction as a function of the surface speed, p = 0.75 MPa

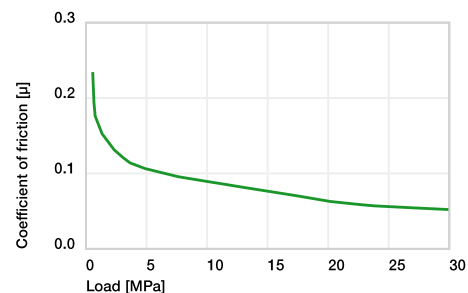


Diagram O5: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft materials

Diagram O6 shows the test results of iglidur® A180 bearings running against various shaft materials.

The combination "iglidur® A180/hard-anodised aluminium" clearly stands out. It attains good to excellent wear rates also with other shafts. With Cf53 shafts, the higher wear in pivoting applications is exemplary compared to rotating applications (diagram O7).

- Shaft materials, page 52

iglidur® A180	Dry	Greases	Oil	Water
C.o.f. μ	0.05–0.23	0.09	0.04	0.04

Table O4: Coefficient of friction against steel (Ra = 1 μm, 50 HRC)

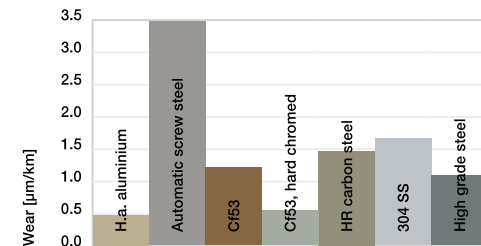


Diagram O6: Wear, rotating with different shaft materials, pressure, p = 1 MPa, v = 0.3 m/s

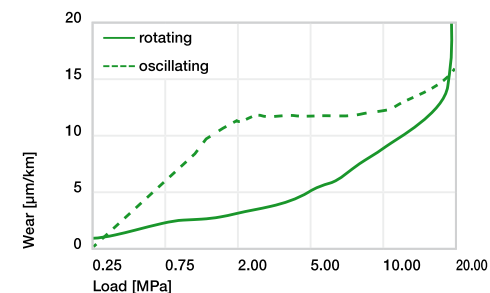


Diagram O7: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

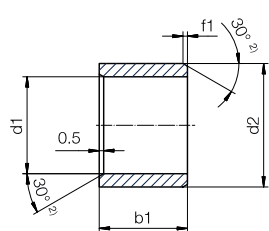
Installation tolerances

iglidur® A180 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, in standard cases 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

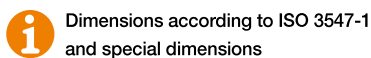
Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A180 E10 [mm]	Housing H7 [mm]
up to 3	0–0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0–0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0–0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0–0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0–0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0–0.062	+0.050 +0.150	0 +0.025

Table O5: Important tolerances for plain bearings according to ISO 3547-1 after pressfit



Order key

Type	Dimensions [mm]
A180 S M-0608-10	
iglidur® material	
Form S	
Metric	
Inner-Ø d1	
Outer-Ø d2	
Length b1	



Dimensions according to ISO 3547-1 and special dimensions

²⁾ Thickness < 1 mm: chamfer = 20°

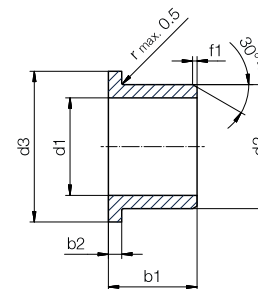
Chamfer in relation to the d1

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]

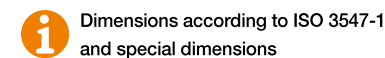
d1	d1-Tolerance ³⁾	d2	b1 h13	Part No.
6.0	+0.020 +0.068	8.0	10.0	A180SM-0608-10
8.0	+0.025 +0.083	10.0	10.0	A180SM-0810-10
10.0	+0.025 +0.083	12.0	10.0	A180SM-1012-10
12.0	+0.032 +0.102	14.0	15.0	A180SM-1214-15
16.0	+0.032 +0.102	18.0	15.0	A180SM-1618-15
20.0	+0.040 +0.124	23.0	20.0	A180SM-2023-20
25.0	+0.040 +0.124	28.0	30.0	A180SM-2528-30
30.0	+0.040 +0.124	34.0	20.0	A180SM-3034-20

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



Order key

Type	Dimensions [mm]
A180 F M-0608-06	
iglidur® material	
Form F	
Metric	
Inner-Ø d1	
Outer-Ø d2	
Length b1	



Dimensions according to ISO 3547-1 and special dimensions

²⁾ Thickness < 1 mm: chamfer = 20°

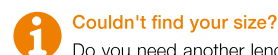
Chamfer in relation to the d1

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]

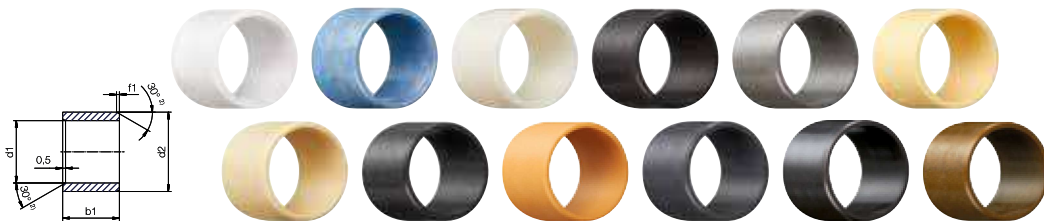
d1	d1-Tolerance ³⁾	d2	d3 d13	b1 h13	b2 -0.14	Part No.
6.0	+0.020 +0.068	8.0	12.0	6.0	1.0	A180FM-0608-06
8.0	+0.025 +0.083	10.0	15.0	10.0	1.0	A180FM-0810-10
10.0	+0.025 +0.083	12.0	18.0	10.0	1.0	A180FM-1012-10
12.0	+0.032 +0.102	14.0	20.0	15.0	1.0	A180FM-1214-15
16.0	+0.032 +0.102	18.0	24.0	17.0	1.0	A180FM-1618-17
20.0	+0.040 +0.124	23.0	30.0	21.5	1.5	A180FM-2023-21
25.0	+0.040 +0.124	28.0	35.0	21.5	1.5	A180FM-2528-21
30.0	+0.040 +0.124	34.0	42.0	26.0	2.0	A180FM-3034-26

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



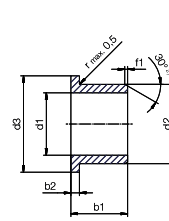
Couldn't find your size?

Do you need another length, other dimensions or tolerances? You need a particular design or alternative for your application? Please call us. igus® listens to your needs and provides you a solution very quickly.



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



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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