

BF type seal – Blind flange, flush diaphragm

Design description

The BF construction has a seal body that is made of a (forged) blind flange. The weld of the diaphragm to the seal body is a wetted part and therefore diaphragm materials are mostly chosen the same as the flange material. The BF is typically used in combination with (differential) pressure transmitters for applications such as level, flow and (absolute) pressure measurement.

Flange diaphragm combinations

The diaphragm is TIG-welded to the flange and is designed to have the best performance for the specific size. This means that the flexibility and shape is carefully tested and measured. The standard thickness of diaphragm foil is 0.075mm.



Flange standard, size, rating and facings

ASME B16.5 - 2020			
Size	Rating	Facing	Roughness
1" to 4"	cl. 150 - cl. 2500	RF, LMF, FF, SGF	Ra 3.2-6.3 µm
		RJF, SFF	Ra <1.6 µm
		SMF, LTF, STF, LGF, LFF	Ra <3.2 µm

EN 1092-1 - 2018			
Size	Rating	Type	Roughness
DN20 to DN100	PN10-400	A, B1, E, F	Ra 3.2-12.5 µm
		B2, C, D, G, H	Ra <0.8-3.2 µm

API ISO 10423 - 2010			
Size	Rating	Facing	Roughness
1-13/16" to 3-1/16"	69 – 138 MPa	6BX – RJF	Ra <1.6 µm
2-1/16" to 3-1/8"	13.8 – 34.5 MPa	6B-RJF	Ra <1.6 µm

JIS B2220 – 2012			
Size	Rating	Type	Roughness
DN25 to DN100	10-20K	RF	Ra 3.2-12.5 µm

GOST 33259 - 2015			
Size	Rating	Type	Roughness
DN20 to DN100	PN10-250	A, B, C, D E, F	Ra 3.2-12.5 µm
		L, M	Ra <0.8-3.2 µm
		J	Ra <1.6 µm

Flange Material	Diaphragm material		
	General name	UNS	Wst.
AISI 316(L)	AISI 316L	S31603	1.4404
	AISI 304L	S30400	1.4306
	AISI 321	S32100	1.4541
	AISI 316 UG	S31603	1.4435
	Alloy C276	N27600	2.4810
AISI 304L	AISI 304L	S30400	1.4306
AISI 310 MoLn	25-22-2 LMN	S31050	1.4466
AISI 316 UG	AISI 316 UG	S31600	1.4435
AISI 321	AISI 321	S32100	1.4541
AISI 904(L)	AISI 904L	N08904	1.4539
Alloy 20	Alloy 20	N08020	2.4660
Alloy 400	Alloy 400	N04400	2.4360
Alloy 600	Alloy 600	N06600	2.4816
Alloy 625	Alloy 625	N06625	2.4856
Alloy 825	Alloy 825	N08825	2.4858
Alloy B2	Alloy B2	N10665	2.4617
Alloy C-22	Alloy C-22	N06022	2.4602
Alloy C-276	Alloy C-276	N10276	2.4810
Duplex F44	254 SMO (6Mo)	S31254	1.4547
Duplex F51/F60	Duplex 2205	S32205	1.4462
Duplex F53	Super Duplex 2507	S32750	1.4410
Duplex F55	Super Duplex 2507	S32750	1.4410
Nickel 201	Nickel 201	N02201	2.4068
Titanium Gr. 2	Titanium Gr. 1	R50250	2.7025
Zirconium 702	Zirconium 702	R60702	-

Gold coatings

Several types of gold coating can be applied on the seals. The selection possibilities are:

- 25 µm chemical resistance (diaphragm+ facing)
- 40 µm chemical resistance (diaphragm+ facing)
- 25 µm Hydrogen protection (diaphragm only)
- 40 µm Hydrogen protection (diaphragm only)

-> See datasheet "Gold coatings"

Polymer coatings

Polymer coatings come in several types. The technical data on thickness and temperature limitation can be found in datasheet "polymer solutions" The applicable selection on BF seals are:

- PTFE coating
- ECTFE (Halar®) coating
- PFA coating
- FEP coating
- PTFE sheet

-> See datasheet "Polymer solutions"

Capillary tube and armor (protection)

The standard capillary mounting position is top side (axial) of the seal. Alternatively, the capillary can be placed at the side of the seal (radial). The standard tube material is TP316 (316SS), optionally available in Alloy 400. There are three options in ID of the capillary; 2mm, 1mm, and 0.7mm. Badotherm capillaries are always protected against mechanical forces by armor. This doubled shielded armor consist is standard AISI 304, and optionally AISI 316. Additionally, the armor could be protected with a PVC sleeve in white, black, optionally with ATEX114 approval to protect against dust and water ingress and possibly corrosive ambient atmosphere.

-> See datasheet "Capillary lines"

Flush rings and flush flanges

Badotherm offers matching flush rings or flush flanges to their diaphragm seal. On request equipped with blind plugs, vent plug and or flushing / draining needle valves, which can be fitted or welded to the complete construction.

-> See datasheet flush rings

-> See datasheet flush flanges

Cooling options

There are several ways to protect the instrument from elevated temperatures, such as the extended direct mount (EDM), a temperature reducer (TR) or by means of capillary.

-> See datasheet "cooling devices"

Lifting handles

Larger sizes and ratings of diaphragm seals can weigh up to 50 kg. Handling and installation can become a challenge. As from 15kg it is recommended to apply a set of lifting handles, welded on the sides of the flange of the seal. This can be used to handle it easier and install it in a safer way or have attach lifting tools to it.

-> See datasheet "diaphragm seal accessories"

Material Certification

Material traceability and related certification are applicable for all process wetted parts. Material certification possibilities depend on the type of seal, the assembly construction and the materials used. Material certification is in accordance with EN10204 3.1.

Additional material certification and testing can be provided on request, such as Positive Material Identification (PMI), Intergranular corrosion (IGC) testing, material certification in accordance with EN10204 3.2, NACE conformity for ISO-15156 (MR-0175) and/or ISO-17945 (MR-0103), NORSOK M-630 and many more.

-> Please note that the responsibility for material selection always rests with the user.

Flange Marking & Traceability

All flanges are marked by the forging shop with heat number, material designation, size, and rating. Badotherm adds a Badotherm reference number and the manufacturers name to the flange for traceability purposes.

Flanges and origin

The seal parts are made from forged materials according to the applicable standards. The standard sourcing of flanges is of international origin. Optionally regional preference can be requested, for example materials from EU origin.

Testing

All seals are helium tested according the ISO 20485 test procedure A.3 up to 10⁻⁹ mbar l/s before used on a diaphragm seal application.

-> See datasheet "Diaphragm Seal testing"

Cleanliness of the wetted parts

All parts are standard cleaned from excessive oil and grease. When additional requirements are needed, the parts can be cleaned according customer requirements and cleaning specifications.

Gaskets

Sizes of the diaphragm area are designed to match the gaskets used between the process and seal or flush ring. For the ASME B16.5 RF flanges the ASME B16.20 is used for dimension restriction to ensure both (!) the spiral and grooved gaskets are fully supported by the serrated area. For the EN type B1 flanges the gasket dimensions are matching the sizes of the EN 1514-2. The size "G" in the tables refer to the start of the gasket surface.

(!) Excluding the 1" BF series with 23.5mm diaphragm

Example performance calculation - Basecal

Whether a diaphragm seal can be used for a specific measurement, depends on the size of the diaphragm. That size is restricted by the size of the diaphragm seal.

For pressure transmitters, Badotherm offers an online performance calculation tool to calculate its performance and to ensure that the diaphragm size is suitable for your measurement.

The table below presents the minimum span of the respective diaphragm sizes with standard process conditions. As rule of thumb, a TPE of max 5% is often considered acceptable, but it depends per situation.

Minimum span table

dD	AP/GP	DP
23.5mm	17.5 bar	na
32mm	11 bar	1850 mbar
44mm	1575 mbar	255 mbar
57mm	415 mbar	70 mbar
72mm	155 mbar	30 mbar
81mm	110 mbar	20 mbar

Pressure transmitter; ambient temperature -10...+30°C; process temperature 100°C with BSO 22 fill fluid; 3 meter capillary; ID 1mm, DP both sides mounted with seal

See the general overview of all diaphragm sizes with several standard situations and in combination with Badotherm pressure gauges.

Standards used

Design Standards

Standard	Description
ASME B16.5 - 2020	Pipe flanges and flanged fittings
ASME B16.20 - 2017	Metalic gaskets for flanges
EN 1092-1 - 2018	Circular flanges for pipes
EN 1514-2 - 2021	Dimensions of gaskets
API ISO 10423 (API 6A) - 2010	International Standard for Petroleum and Natural Gas Industries
JIS B2220 - 2012	Japanese Flange Standard
GOST 33259 - 2015	Russian Flange Standard

Test Standards

Standard	Description
ISO 20485 - 2018	Non-destructive testing - Leak testing - Tracer gas method

Material Standards

Standard	Description
NACE MR0175/MR0103	use in H ₂ S-containing environments in oil and gas production
ISO 15156 - 2020	
NORSOK M-630 - 2010	specification for use in pipelines
ASTM standards	Material specific standards

Certification Standards

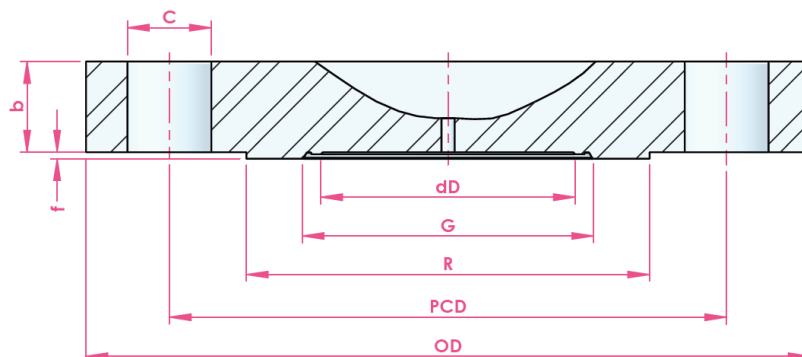
Standard	Description
EN 10204 - 2017	Inspection documents
ASME IX	Welding, Brazing, and Fusing Qualifications
ISO 15610	Specification and qualification of welding procedures for metallic materials

Roughness conversion

The specific flange norm all relate to specific roughness value for surface finish and flange finish. Below table can be used for conversion between the average roughness (Ra) in micrometers (µm) and microinch (µin)

µm	µin
0.8	32
1.6	63
3.2	125
6.3	250

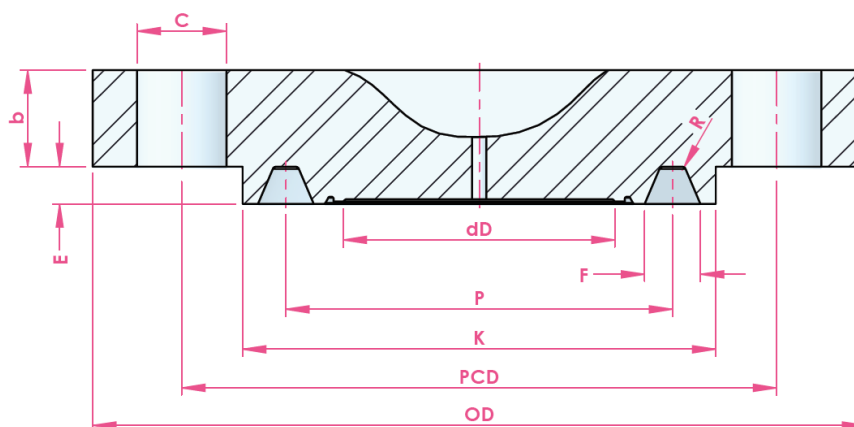
Dimensions table: ASME 16.5 RF facing



size	rating	OD	b	PCD	C / pcs	dD	R	f	G	weight
1"	cl. 150	108.0	12.7	79.2	15.9 / 4x	23.5 ^{*1}	50.8	1.5	31.7	0.9
	cl. 300	124.0	15.7	88.9	19.1 / 4x			6.4		1.4
	cl. 400-600		17.5							1.6
	cl. 900-1500		149.0							28.4
	cl. 2500	159.0	35.1	108.0	5.0					
1.25"	cl. 150	117.0	14.2	88.9	15.9 / 4x	32.0	63.5	1.5	40.1	1.2
	cl. 300	133.0	17.5	98.6	19.1 / 4x			6.4		1.8
	cl. 400-600		20.6							2.2
	cl. 900-1500		159.0						28.4	111.1
	cl. 2500	184.0	38.1	130.0	28.6 / 4x			7.4		
1.5"	cl. 150	127.0	15.9	98.6	15.9 / 4x	44.0	73.0	1.5	46.2	1.5
	cl. 300	155.0	19.0	114.3	22.3 / 4x			6.4		2.7
	cl. 400-600		22.4			3.3				
	cl. 900-1500		178.0			31.8			124.0	28.6 / 4x
	cl. 2500	203.0	44.4	146.0	31.8 / 4x	10.4				
2"	cl. 150	152.0	17.5	120.6	19.1 / 4x	57.0	91.9	1.5	66.4	2.4
	cl. 300	165.0	20.6	127.0	19.1 / 8x			6.4		3.2
	cl. 400-600		25.4			4.2				
	cl. 900-1500		216.0			38.1			165.1	25.4 / 8x
	cl. 2500	235.0	50.8	171.4	28.6 / 8x	15.6				
3"	cl. 150	190.0	22.4	152.4	19.1 / 4x	81.0	127.0	1.5	89.2	4.9
	cl. 300	210.0	26.9	168.1	22.3 / 8x			6.4		6.8
	cl. 400-600		31.8							8.4
	cl. 900		241.0							38.1
	cl. 1500	267.0	24.8	203.2	31.9 / 8x			19.1		
cl. 2500	305.0	66.5	228.6	35.0 / 8x	34.8					
4"	cl. 150	229.0	22.4	190.5	19.1 / 8x		157.2	6.4	7.0	
	cl. 300	254.0	30.2	200.2	22.3 / 8x	11.5				
	cl. 400		35.1			14.8				
	cl. 600		273.0			38.1			215.9	25.5 / 8x
	cl. 900	292.0	44.5	235.0	31.8 / 8x	26.9				
	cl. 1500	311.0	53.8	241.3	34.9 / 8x	29.9				
	cl. 2500	356.0	76.2	273.0	41.3 / 8x			53.9		

All dimensions in mm, weight in kg

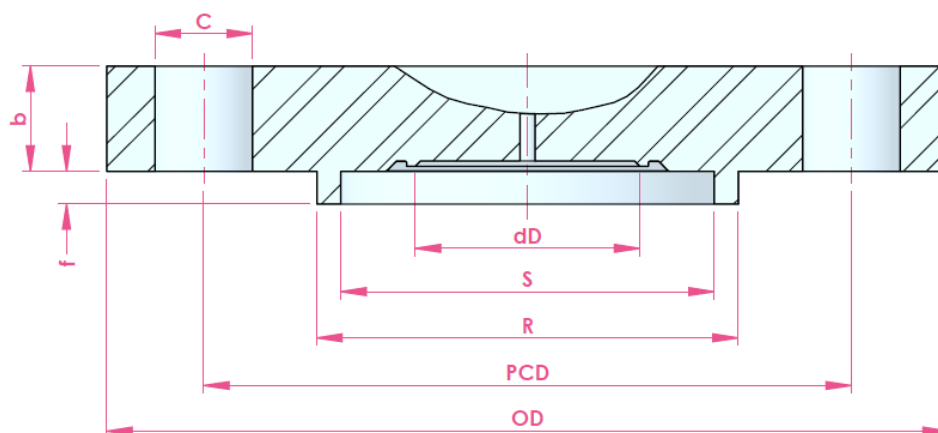
*Note 1: Only in combination with grooved gasket ASME B16.20, not with spiral wound gasket ASME B16.20

Dimensions table: ASME 16.5 RJF facing


size	rating	OD	b	PCD	C/pcs	dD	K	E	F	P	R	Ring #	Weight
1"	cl. 150	108.0	12.7	79.2	15.9 / 4x	32.0	63.5	6.35	8.74	47.62	0.8	15	0.9
	cl. 300	124.0	15.7	88.9	19.1 / 4x		69.8			50.80		16	1.4
	cl. 400-600	149.0	17.5	101.6	25.4 / 4x		71.4			60.33		18	5.0
	cl. 900-1500	159.0	35.1	108.0	25.4 / 4x		82.6			57.15		17	1.2
1.25"	cl. 150	117.0	14.2	88.9	15.9 / 4x	44.0	73..2	7.92	11.91	60.33		18	1.8
	cl. 300	133.0	17.5	98.6	19.1 / 4x		79.2			60.33		18	2.2
	cl. 400-600	159.0	20.6	111.1	25.4 / 4x		81.0			72.24		21	7.4
	cl. 900-1500	184.0	28.4	130.0	28.6 / 4x		102.0			65.07		19	1.5
1.5"	cl. 150	127.0	15.9	98.6	15.9 / 4x	57.0	82.6	6.35	8.74	68.28		20	2.7
	cl. 300	155.0	19.0	114.3	22.3 / 4x		90.4			82.55		23	3.2
	cl. 400-600	178.0	22.4	124.0	28.6 / 4x		91.9			95.25		24	10.1
	cl. 900-1500	203.0	31.8	146.0	31.8 / 4x		114.0			101.60		26	15.6
2"	cl. 150	152.0	17.5	120.6	19.1 / 8x	81.0	102.0	6.35	8.74	114.30	1.5	29	4.9
	cl. 300	165.0	20.6	127.0	19.1 / 8x		108.0			123.82		31	6.8
	cl. 400-600	216.0	25.4	165.1	25.4 / 8x		124.0			136.52		35	19.1
	cl. 900-1500	235.0	38.1	171.4	28.6 / 8x		133.0			127.00		32	34.8
3"	cl. 150	190.0	22.4	152.4	19.1 / 4x	171.0	146.0	7.92	11.91	149.22	0.8	36	7.0
	cl. 300	210.0	26.9	168.1	22.3 / 8x		156.0			161.92		37	11.5
	cl. 400-600	241.0	31.8	190.5	25.4 / 8x		168.0			161.92		39	29.9
	cl. 900	267.0	24.8	203.2	31.8 / 8x		181.0			157.18		38	53.9
4"	cl. 1500	305.0	66.5	228.6	34.9 / 8x	175.0	171.0	6.35	8.74	149.22	0.8	37	11.5
	cl. 2500	356.0	76.2	273.0	41.3 / 8x		175.0			149.22		37	14.8
	cl. 150	229.0	22.4	190.5	19.1 / 8x		181.0			161.92		39	29.9
	cl. 300	254.0	30.2	200.2	22.3 / 8x		194.0			157.18		38	53.9

All dimensions in mm, weight in kg

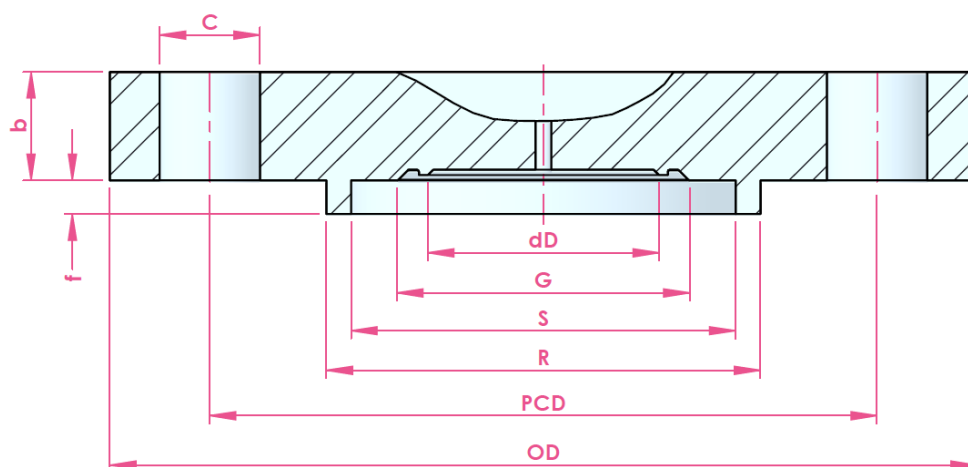
Dimensions table: ASME 16.5 STF facing



size	rating	OD	b	PCD	C / pcs	dD	S	R	f	weight
1"	cl. 150	108.0	12.7	79.2	15.9 / 4x	23.5	38.1	47.8	6.4	0.9
	cl. 300	124.0	15.7	88.9	19.1 / 4x					1.4
	cl. 400-600		17.5							1.6
	cl. 900-1500		28.4							101.6
	cl. 2500	159.0	35.1	108.0	32.0					47.8
1.25"	cl. 150	117.0	14.2	88.9		15.9 / 4x	1.2			
	cl. 300	133.0	17.5	98.6		19.1 / 4x	1.8			
	cl. 400-600		20.6				2.2			
	cl. 900-1500		159.0				28.4	111.1		
	cl. 2500	184.0	38.1	130.0	28.6 / 4x	7.4				
1.5"	cl. 150	127.0	15.9	98.6	15.9 / 4x	53.8	63.5	1.5		
	cl. 300	155.0	19.0	114.3	22.3 / 4x			2.7		
	cl. 400-600		22.4					3.3		
	cl. 900-1500		178.0					31.8		124.0
	cl. 2500	203.0	44.4	146.0	31.8 / 4x			10.4		
2"	cl. 150	152.0	17.5	120.6	19.1 / 4x	44.0	73.2	82.6		2.4
	cl. 300	165.0	20.6	127.0	19.1 / 8x					3.2
	cl. 400-600		25.4							4.2
	cl. 900-1500		216.0							38.1
	cl. 2500	235.0	50.8	171.4	28.6 / 8x					15.6
3"	cl. 150	190.0	22.4	152.4	19.1 / 4x	81.0	108.0	117.3		4.9
	cl. 300	210.0	26.9	168.1	22.3 / 8x					6.8
	cl. 400-600		31.8							8.4
	cl. 900		241.0							38.1
	cl. 1500	267.0	24.8	203.2	31.9 / 8x					19.1
4"	cl. 2500	305.0	66.5	228.6	35.0 / 8x		131.8	144.5		34.8
	cl. 150	229.0	22.4	190.5	19.1 / 8x					7.0
	cl. 300	254.0	30.2	200.2	22.3 / 8x					11.5
	cl. 400		35.1							14.8
	cl. 600		273.0							38.1
	cl. 900	292.0	44.5	235.0	31.8 / 8x					26.9
	cl. 1500	311.0	53.8	241.3	34.9 / 8x					29.9
	cl. 2500	356.0	76.2	273.0	41.3 / 8x					53.9

All dimensions in mm, weight in kg

Dimensions table: ASME 16.5 LTF facing

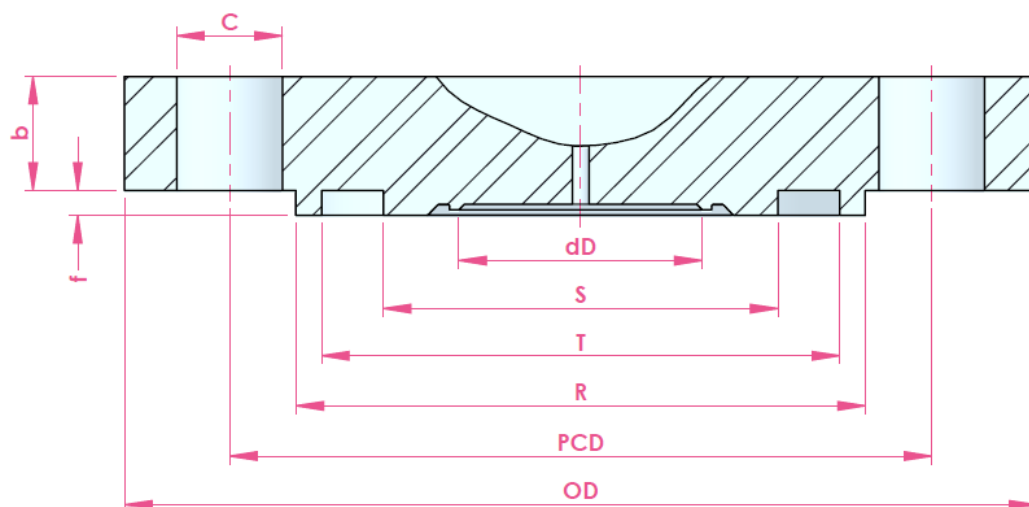


size	rating	OD	b	PCD	C / pcs	dD	S	R	f	weight
1"	cl. 300	124.0	15.7	88.9	19.1 / 4x	23.5	38.1	50.8	6.4	1.4
	cl. 400-600		17.5							1.6
	cl. 900-1500	149.0	28.4	101.6	25.4 / 4x					3.6
	cl. 2500	159.0	35.1	108.0						5.0
1.25"	cl. 300	133.0	17.5	98.6	19.1 / 4x	32.0	47.8	63.5		1.8
	cl. 400-600		20.6							2.2
	cl. 900-1500	159.0	28.4	111.1	25.4 / 4x					4.1
	cl. 2500	184.0	38.1	130.0	28.6 / 4x					7.4
1.5"	cl. 300	155.0	19.0	114.3	22.3 / 4x	44.0	53.8	73.0		2.7
	cl. 400-600		22.4							3.3
	cl. 900-1500	178.0	31.8	124.0	28.6 / 4x					5.8
	cl. 2500	203.0	44.4	146.0	31.8 / 4x					10.4
2"	cl. 300	165.0	20.6	127.0	19.1 / 8x	57.0	73..2	91.9	3.2	
	cl. 400-600		25.4						4.2	
	cl. 900-1500	216.0	38.1	165.1	25.4 / 8x				10.1	
	cl. 2500	235.0	50.8	171.4	28.6 / 8x				15.6	
3"	cl. 300	210.0	26.9	168.1	22.3 / 8x	81.0	108.0	127.0	6.8	
	cl. 400-600		31.8						8.4	
	cl. 900	241.0	38.1	190.5	25.4 / 8x				13.1	
	cl. 1500	267.0	24.8	203.2	31.9 / 8x				19.1	
4"	cl. 2500	305.0	66.5	228.6	35.0 / 8x		34.8			
	cl. 300	254.0	30.2	200.2	22.3 / 8x		131.8	157.2	11.5	
	cl. 400		35.1		25.5 / 8x				14.8	
	cl. 600	273.0	38.1	215.9	31.8 / 8x				17.3	
	cl. 900	292.0	44.5	235.0		26.9				
	cl. 1500	311.0	53.8	241.3		34.9 / 8x			29.9	
cl. 2500	356.0	76.2	273.0	41.3 / 8x		53.9				

All dimensions in mm, weight in kg

Large tongue faces are not applicable to Class 150 because of potential dimensional conflicts.

Dimensions table: ASME 16.5 LGF facing

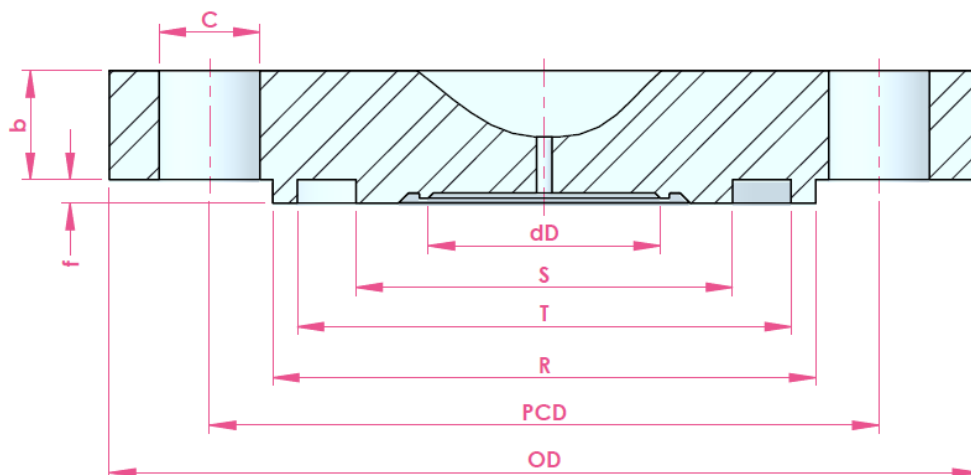


size	rating	OD	b	PCD	C / pcs	dD	S	T	R	f	weight
1"	cl. 300	124.0	15.7	88.9	19.1 / 4x	23.5	36.6	52.3	62.0	4.5	1.4
	cl. 400-600		17.5		25.4 / 4x						1.6
	cl. 900-1500	149.0	101.6	2.7							
	cl. 2500	159.0	108.0	5.0							
1.25"	cl. 300	133.0	17.5	98.6	19.1 / 4x	32.0	46.0	65.1	75.0		1.8
	cl. 400-600		20.6		25.4 / 4x						2.2
	cl. 900-1500	159.0	111.1	28.6 / 4x	4.1						
	cl. 2500	184.0	130.0	7.4							
1.5"	cl. 300	155.0	19.0	114.3	22.3 / 4x	44.0	52.3	74.7	84.0		2.7
	cl. 400-600		22.4		28.6 / 4x						3.3
	cl. 900-1500	178.0	124.0	31.8 / 4x	5.8						
	cl. 2500	203.0	146.0	10.4							
2"	cl. 300	165.0	20.6	127.0	19.1 / 8x	57.0	71.4	93.7	103.0		3.2
	cl. 400-600		25.4		25.4 / 8x						4.2
	cl. 900-1500	216.0	165.1	28.6 / 8x	10.1						
	cl. 2500	235.0	171.4	15.6							
3"	cl. 300	210.0	26.9	168.1	22.3 / 8x	81.0	106.4	128.5	138.0		6.8
	cl. 400-600		31.8		25.4 / 8x						8.4
	cl. 900	241.0	190.5	31.9 / 8x	13.1						
	cl. 1500	267.0	203.2	35.0 / 8x	19.1						
4"	cl. 2500	305.0	228.6	41.3 / 8x	34.8						
	cl. 300	254.0	30.2	200.2	22.3 / 8x		11.5				
	cl. 400		35.1		25.5 / 8x		14.8				
	cl. 600	273.0	215.9	130.0	158.8		168.0	17.3			
	cl. 900	292.0	235.0					26.9			
	cl. 1500	311.0	241.3					29.9			
cl. 2500	356.0	273.0	53.9								

All dimensions in mm, weight in kg

Large groove faces are not applicable to Class 150 because of potential dimensional conflicts.

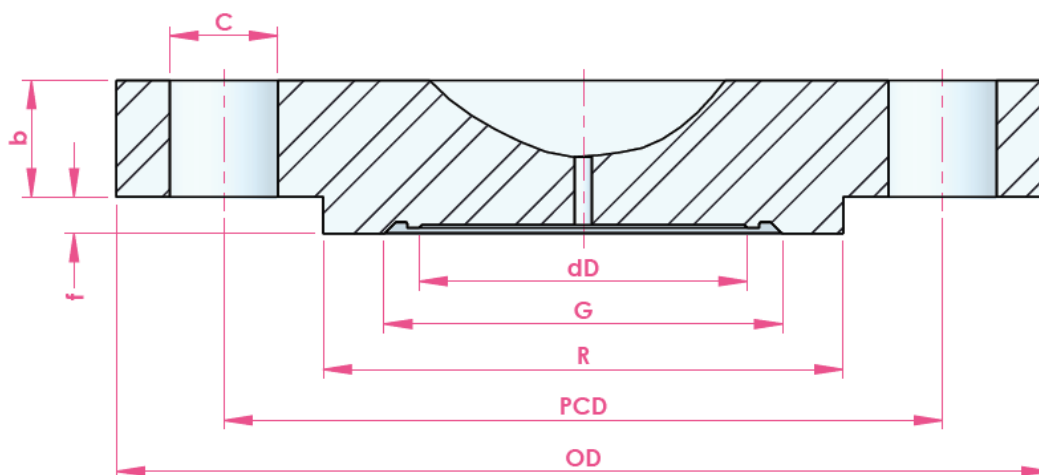
Dimensions table: ASME 16.5 SGF facing



size	rating	OD	b	PCD	C / pcs	dD	S	T	R	f	weight
1"	cl. 150	108.0	12.7	79.2	15.9 / 4x	23.5	36.6	49.3	57.0	4.5	0.9
	cl. 300	124.0	15.7	88.9	19.1 / 4x						1.4
	cl. 400-600		17.5								1.6
	cl. 900-1500		149.0								28.4
	cl. 2500	159.0	35.1	108.0							5.0
1.25"	cl. 150	117.0	14.2	88.9	15.9 / 4x	32.0	46.0	58.7	67.0		1.2
	cl. 300	133.0	17.5	98.6	19.1 / 4x						1.8
	cl. 400-600		20.6								2.2
	cl. 900-1500		159.0								28.4
	cl. 2500	184.0	38.1	130.0	28.6 / 4x						7.4
1.5"	cl. 150	127.0	15.9	98.6	15.9 / 4x	32.0	52.3	65.0	73.0		1.5
	cl. 300	155.0	19.0	114.3	22.3 / 4x						2.7
	cl. 400-600		22.4								3.3
	cl. 900-1500		178.0								31.8
	cl. 2500	203.0	44.4	146.0	31.8 / 4x						10.4
2"	cl. 150	152.0	17.5	120.6	19.1 / 4x	44.0	71.4	84.1	92.0	2.4	
	cl. 300	165.0	20.6	127.0	19.1 / 8x					3.2	
	cl. 400-600		25.4							4.2	
	cl. 900-1500		216.0							38.1	165.1
	cl. 2500	235.0	50.8	171.4	28.6 / 8x					15.6	
3"	cl. 150	190.0	22.4	152.4	19.1 / 4x	81.0	106.4	119.1	127.0	4.9	
	cl. 300	210.0	26.9	168.1	22.3 / 8x					6.8	
	cl. 400-600		31.8							8.4	
	cl. 900		241.0							38.1	190.5
	cl. 1500	267.0	24.8	203.2	31.9 / 8x					19.1	
cl. 2500	305.0	66.5	228.6	35.0 / 8x	34.8						
4"	cl. 150	229.0	22.4	190.5	19.1 / 8x		81.0	130.0	146.0	157.0	7.0
	cl. 300	254.0	30.2	200.2	25.5 / 8x						11.5
	cl. 400		35.1								14.8
	cl. 600		273.0								38.1
	cl. 900	292.0	44.5	235.0	31.8 / 8x						26.9
	cl. 1500	311.0	53.8	241.3	34.9 / 8x						29.9
	cl. 2500	356.0	76.2	273.0	41.3 / 8x						53.9

All dimensions in mm, weight in kg

Dimensions table: ASME 16.5 LMF facing

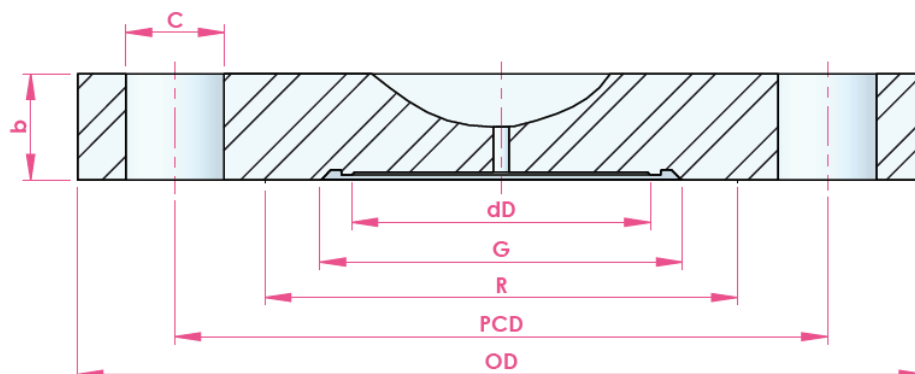


size	rating	OD	b	PCD	C / pcs	dD	G	R	f	weight	
1"	cl. 300	124.0	15.7	88.9	19.1 / 4x	23.5	31.7	50.8	6.4	1.4	
	cl. 400-600		17.5							1.6	
	cl. 900-1500	149.0	28.4	101.6	25.4 / 4x					3.6	
	cl. 2500	159.0	35.1	108.0						5.0	
1.25"	cl. 300	133.0	17.5	98.6	19.1 / 4x	32.0	40.1	63.5		1.8	
	cl. 400-600		20.6							2.2	
	cl. 900-1500	159.0	28.4	111.1	25.4 / 4x		39.8			4.1	
	cl. 2500	184.0	38.1	130.0	28.6 / 4x					7.4	
1.5"	cl. 300	155.0	19.0	114.3	22.3 / 4x	44.0	51.6	73.0		2.7	
	cl. 400-600		22.4							3.3	
	cl. 900-1500	178.0	31.8	124.0	28.6 / 4x	32.0	40.1			5.8	
	cl. 2500	203.0	44.4	146.0	31.8 / 4x					10.4	
2"	cl. 300	165.0	20.6	127.0	19.1 / 8x	57.0	66.4	91.9	3.2		
	cl. 400-600		25.4						4.2		
	cl. 900-1500	216.0	38.1	165.1	25.4 / 8x	44.0	51.6		10.1		
	cl. 2500	235.0	50.8	171.4	28.6 / 8x				15.6		
3"	cl. 300	210.0	26.9	168.1	22.3 / 8x	81.0	89.2	127.0	6.8		
	cl. 400-600		31.8						8.4		
	cl. 900	241.0	38.1	190.5	25.4 / 8x				13.1		
	cl. 1500	267.0	24.8	203.2	31.9 / 8x				19.1		
	cl. 2500	305.0	66.5	228.6	35.0 / 8x				34.8		
4"	cl. 300	254.0	30.2	200.2	22.3 / 8x			81.0	89.2	157.2	11.5
	cl. 400		35.1								25.5 / 8x
	cl. 600	273.0	38.1	215.9	26.9						
	cl. 900	292.0	44.5	235.0	31.8 / 8x						29.9
	cl. 1500	311.0	53.8	241.3	34.9 / 8x						53.9
	cl. 2500	356.0	76.2	273.0	41.3 / 8x						

All dimensions in mm, weight in kg

Large male faces are not applicable to Class 150 because of potential dimensional conflicts.

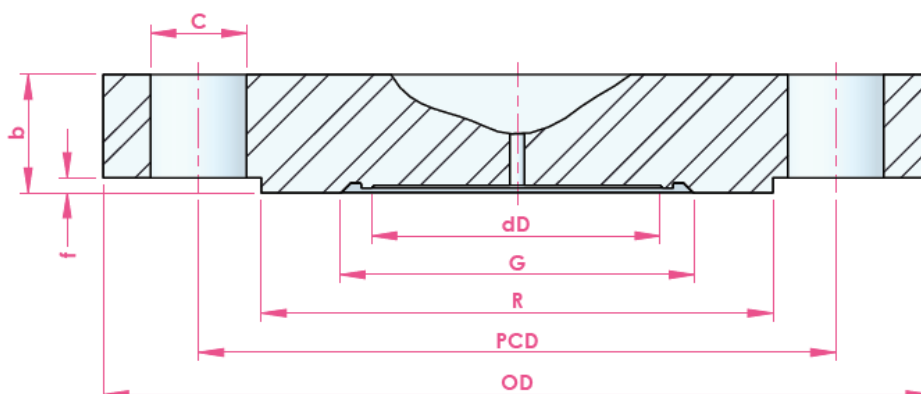
Dimensions table: ASME 16.5 FF facing



size	rating	OD	b	PCD	C / pcs	dD	G	R ¹	G	weight
1"	cl. 150	108.0	12.7	79.2	15.9 / 4x	23.5	31.7	50.8	31.8	0.9
	cl. 300	124.0	15.7	88.9	19.1 / 4x					1.4
	cl. 400-600		17.5							1.6
	cl. 900-1500		149.0							28.4
	cl. 2500	159.0	35.1	108.0	5.0					
1.25"	cl. 150	117.0	14.2	88.9	15.9 / 4x	32.0	40.1	63.5	41.5	1.2
	cl. 300	133.0	17.5	98.6	19.1 / 4x					1.8
	cl. 400-600		20.6							2.2
	cl. 900-1500	159.0	28.4	111.1	25.4 / 4x				39.8	4.1
	cl. 2500	184.0	38.1	130.0	28.6 / 4x					7.4
1.5"	cl. 150	127.0	15.9	98.6	15.9 / 4x	44.0	51.6	73.0	52.4	1.5
	cl. 300	155.0	19.0	114.3	22.3 / 4x					2.7
	cl. 400-600		22.4			32.0	40.1		41.5	3.3
	cl. 900-1500	178.0	31.8	124.0	28.6 / 4x					5.8
	cl. 2500	203.0	44.4	146.0	31.8 / 4x					10.4
2"	cl. 150	152.0	17.5	120.6	19.1 / 4x	57.0	66.4	91.9	70.2	2.4
	cl. 300	165.0	20.6	127.0	19.1 / 8x					3.2
	cl. 400-600		25.4			44.0	51.6		55.4	4.2
	cl. 900-1500	216.0	38.1	165.1	25.4 / 8x					10.1
	cl. 2500	235.0	50.8	171.4	28.6 / 8x					15.6
3"	cl. 150	190.0	22.4	152.4	19.1 / 4x	81.0	89.2	127.0	93.0	4.9
	cl. 300	210.0	26.9	168.1	22.3 / 8x					6.8
	cl. 400-600		31.8							8.4
	cl. 900	241.0	38.1	190.5	25.4 / 8x					13.1
	cl. 1500	267.0	24.8	203.2	31.9 / 8x					19.1
4"	cl. 2500	305.0	66.5	228.6	35.0 / 8x				157.2	34.8
	cl. 150	229.0	22.4	190.5	19.1 / 8x					7.0
	cl. 300	254.0	30.2	200.2	22.3 / 8x					11.5
	cl. 400		35.1							14.8
	cl. 600	273.0	38.1	215.9	25.5 / 8x					17.3
	cl. 900	292.0	44.5	235.0	31.8 / 8x	26.9				
	cl. 1500	311.0	53.8	241.3	34.9 / 8x	29.9				
	cl. 2500	356.0	76.2	273.0	41.3 / 8x	53.9				

All dimensions in mm, weight in kg

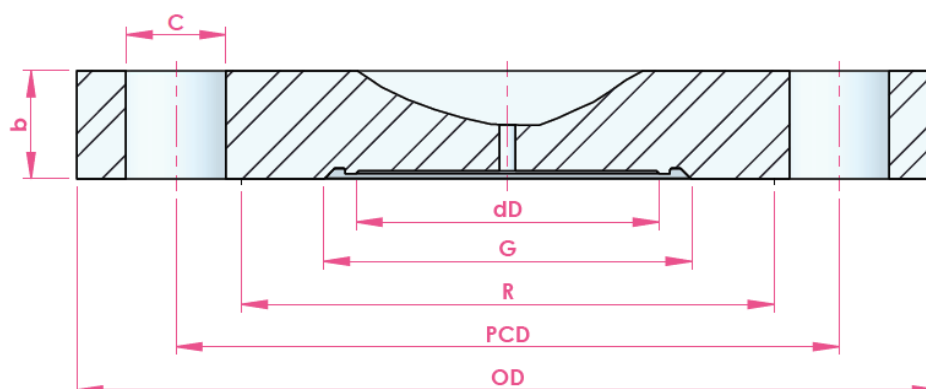
*1: Dimension R is the end of the gasket roughness area

Dimensions table: EN 1092-1 type B1/B2: Raised face


size	rating	OD	b	PCD	C / pcs	dD	R	f	G	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	58.0	2.0	31.7	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x					2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	68.0	2.0	40.1	1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x					2.5
	PN160		22.0 / 4x	2.7						
	PN250	150.0		28.0	105.0					3.6
	PN320	160.0	34.0	115.0	5.2					
	PN400	180.0	38.0	130.0	26.0 / 4x					7.5
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	78.0				2.0
	PN63-100	155.0	24.0	110.0	22.0 / 4x					3.0
DN40	PN10-40	150.0	18.0			18.0 / 4x	44.0	88.0		51.6
	PN63-100	170.0	26.0	125.0	22.0 / 4x	4.0				
	PN160		28.0			4.4				
	PN250	185.0	34.0	135.0	26.0 / 4x	6.7				
	PN320	195.0	38.0	145.0		8.7				
	PN400	220.0	48.0	165.0	30.0 / 4x	14.1				
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	102.0		66.4	3.0
	PN63	180.0	26.0	135.0	22.0 / 4x					4.5
	PN100	195.0	28.0	145.0	26.0 / 4x					6.0
	PN160		30.0							6.4
	PN250	200.0	38.0	150.0	26.0 / 8x					8.2
	PN320	210.0	42.0	160.0	30.0 / 8x					10.7
	PN400	235.0	52.0	180.0	30.0 / 8x					16.7
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x	81.0	138.0	3.0		5.0
	PN63	215.0	28.0	170.0	22.0 / 8x					6.5
	PN100	230.0	32.0	180.0	26.0 / 8x					9.0
	PN160	230.0	36.0							10.3
	PN250	255.0	46.0	200.0	30.0 / 8x					16.5
	PN320	275.0	55.0	220.0						25.4
	PN400	305.0	68.0	240.0	33.0 / 8x					38.4
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	162.0	158.0		89.2	4.5
	PN25-40	235.0	24.0	190.0	22.0 / 8x					6.5
	PN63	250.0	30.0	200.0	26.0 / 8x					9.0
	PN100	265.0	36.0	210.0	30.0 / 8x					13.0
	PN160		40.0							15.3
	PN250	300.0	54.0	235.0	33.0 / 8x					27.2
	PN320	335.0	65.0	265.0	36.0 / 8x					42.5
	PN400	370.0	80.0	295.0	39.0 / 8x					67.3

All dimensions in mm, weight in kg

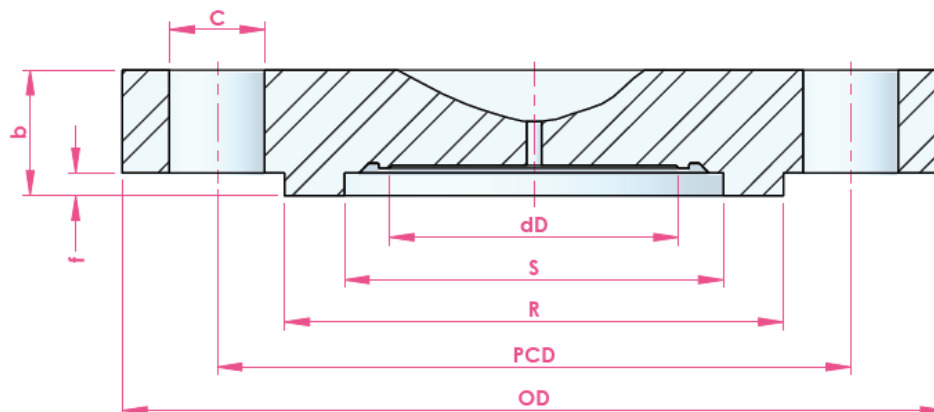
Dimensions table: EN 1092-1 type A: Flat Face



size	rating	OD	b	PCD	C / pcs	dD	R	G	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	58.0	31.7	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x				2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	68.0	40.1	1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x				2.5
	PN160								2.7
	PN250	150.0	28.0	105.0	22.0 / 4x				3.6
	PN320	160.0	34.0	115.0					5.2
	PN400	180.0	38.0	130.0	26.0 / 4x				7.5
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	78.0			2.0
	PN63-100	155.0	24.0	110.0	22.0 / 4x				3.0
DN40	PN10-40	150.0	18.0			18.0 / 4x	44.0	88.0	51.6
	PN63-100	170.0	26.0	125.0	22.0 / 4x	4.0			
	PN160		28.0			4.4			
	PN250	185.0	34.0	135.0	26.0 / 4x	6.7			
	PN320	195.0	38.0	145.0		8.7			
	PN400	220.0	48.0	165.0	30.0 / 4x	14.1			
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	102.0	66.4	3.0
	PN63	180.0	26.0	135.0	22.0 / 4x				4.5
	PN100	195.0	28.0	145.0	26.0 / 4x				6.0
	PN160		30.0						6.4
	PN250	200.0	38.0	150.0	26.0 / 8x				8.2
	PN320	210.0	42.0	160.0					10.7
	PN400	235.0	52.0	180.0					30.0 / 8x
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x		138.0		5.0
	PN63	215.0	28.0	170.0	22.0 / 8x				6.5
	PN100	230.0	32.0	180.0	26.0 / 8x				9.0
	PN160	230.0	36.0						10.3
	PN250	255.0	46.0	200.0	30.0 / 8x				16.5
	PN320	275.0	55.0	220.0					25.4
	PN400	305.0	68.0	240.0					33.0 / 8x
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	81.0	158.0	89.2	4.5
	PN25-40	235.0	24.0	190.0	22.0 / 8x		162.0		6.5
	PN63	250.0	30.0	200.0	26.0 / 8x				9.0
	PN100	265.0	36.0	210.0	30.0 / 8x				13.0
	PN160		40.0						15.3
	PN250	300.0	54.0	235.0	33.0 / 8x				27.2
	PN320	335.0	65.0	265.0	36.0 / 8x				42.5
	PN400	370.0	80.0	295.0	39.0 / 8x				67.3

All dimensions in mm, weight in kg

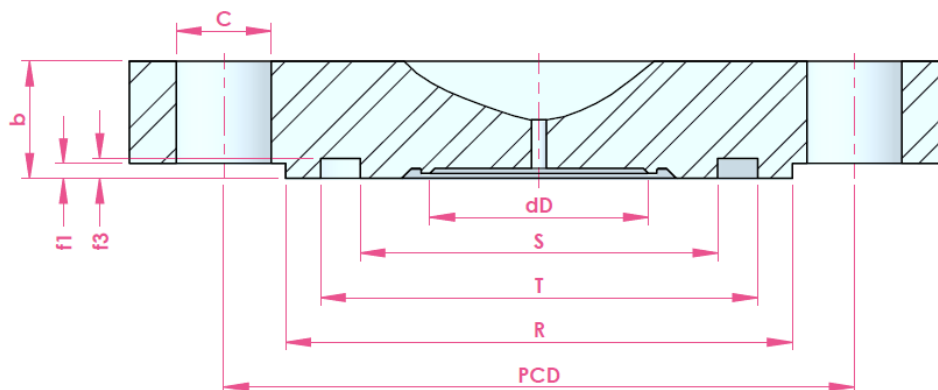
Dimensions table: EN 1092-1 type C: Tongue



size	rating	OD	b	PCD	C / pcs	dD	S	R	R	f	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	36.0	50.0	58.0	4.5	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x						2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	43.0	57.0	68.0		1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x						2.5
	PN160										2.7
	PN250	150.0	28.0	105.0	22.0 / 4x						3.6
	PN320	160.0	34.0	115.0							5.2
	PN400	180.0	38.0	130.0	26.0 / 4x						7.5
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	51.0	65.0	78.0	2.0		
	PN63-100	155.0	24.0	110.0	22.0 / 4x				3.0		
DN40	PN10-40	150.0	18.0		125.0	18.0 / 4x	44.0	61.0	75.0		88.0
	PN63-100	170.0	26.0	22.0 / 4x		4.0					
	PN160		28.0	135.0	26.0 / 4x	4.4					
	PN250	185.0	34.0			145.0					
	PN320	195.0	38.0	165.0	30.0 / 4x	8.7					
	PN400	220.0	48.0	180.0	30.0 / 8x	14.1					
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	73.0	87.0	102.0		3.0
	PN63	180.0	26.0	135.0	22.0 / 4x						4.5
	PN100	195.0	28.0	145.0	26.0 / 4x						6.0
	PN160		30.0								6.4
	PN250	200.0	38.0	150.0	26.0 / 8x						8.2
	PN320	210.0	42.0	160.0	30.0 / 8x						10.7
	PN400	235.0	52.0	180.0	30.0 / 8x						16.7
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x	81.0	106.0	120.0	138.0	5.0	
	PN63	215.0	28.0	170.0	22.0 / 8x					6.5	
	PN100	230.0	32.0	180.0	26.0 / 8x					9.0	
	PN160	230.0	36.0							10.3	
	PN250	255.0	46.0	200.0	30.0 / 8x					16.5	
	PN320	275.0	55.0	220.0	33.0 / 8x					25.4	
	PN400	305.0	68.0	240.0	33.0 / 8x					38.4	
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	129.0	149.0	158.0	5.0	4.5	
	PN25-40	235.0	24.0	190.0	22.0 / 8x			6.5			
	PN63	250.0	30.0	200.0	26.0 / 8x			9.0			
	PN100	265.0	36.0	210.0	30.0 / 8x			13.0			
	PN160		40.0					15.3			
	PN250	300.0	54.0	235.0	33.0 / 8x			27.2			
	PN320	335.0	65.0	265.0	36.0 / 8x			42.5			
	PN400	370.0	80.0	295.0	39.0 / 8x			67.3			

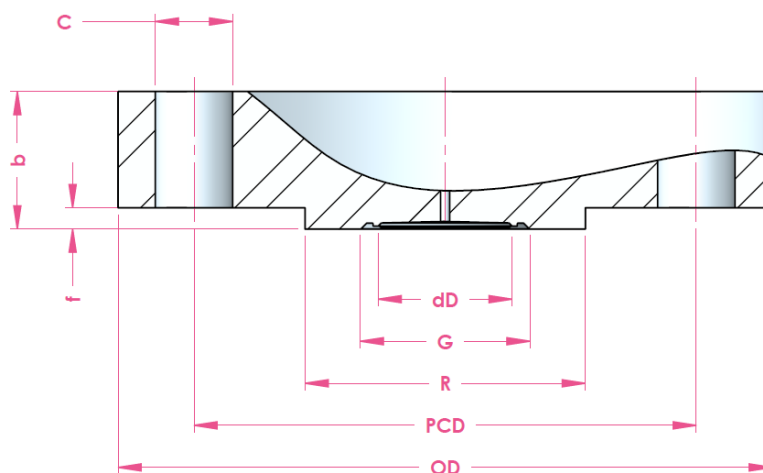
All dimensions in mm, weight in kg

Dimensions table: EN 1092-1 type D: Groove



size	rating	OD	b	PCD	C / pcs	dD	S	T	R	f1	f3	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	35.0	51.0	58.0	2.0	4.0	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x							2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	42.0	58.0	68.0	2.0		1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x							2.5
	PN160		28.0	105.0	22.0 / 4x							2.7
	PN250	150.0	28.0	105.0	22.0 / 4x							3.6
	PN320	160.0	34.0	115.0								5.2
	PN400	180.0	38.0	130.0								26.0 / 4x
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	32.0	50.0	66.0	78.0	2.0		2.0
	PN63-100	155.0	24.0	110.0	22.0 / 4x							3.0
DN40	PN10-40	150.0	18.0			18.0 / 4x	44.0	60.0	76.0	88.0	3.0	2.0
	PN63-100	170.0	26.0	125.0	22.0 / 4x	4.0						
	PN160		28.0		26.0 / 4x	4.4						
	PN250	185.0	34.0	135.0	26.0 / 4x	6.7						
	PN320	195.0	38.0	145.0		8.7						
	PN400	220.0	48.0	165.0		30.0 / 4x						14.1
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	72.0	88.0	102.0	3.0	3.0	
	PN63	180.0	26.0	135.0	22.0 / 4x						4.5	
	PN100	195.0	28.0	145.0	26.0 / 4x						6.0	
	PN160		30.0		26.0 / 8x						6.4	
	PN250	200.0	38.0	150.0	26.0 / 8x						8.2	
	PN320	210.0	42.0	160.0	30.0 / 8x						10.7	
	PN400	235.0	52.0	180.0	30.0 / 8x						16.7	
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x	81.0	105.0	121.0	138.0	3.0	5.0	
	PN63	215.0	28.0	170.0	22.0 / 8x						6.5	
	PN100	230.0	32.0	180.0	26.0 / 8x						9.0	
	PN160	230.0	36.0		30.0 / 8x						10.3	
	PN250	255.0	46.0	200.0	30.0 / 8x						16.5	
	PN320	275.0	55.0	220.0	33.0 / 8x						25.4	
	PN400	305.0	68.0	240.0	33.0 / 8x						38.4	
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	81.0	128.0	150.0	158.0	3.0	4.5	4.5
	PN25-40	235.0	24.0	190.0	22.0 / 8x				162.0			6.5
	PN63	250.0	30.0	200.0	26.0 / 8x							9.0
	PN100	265.0	36.0	210.0	30.0 / 8x							13.0
	PN160		40.0		15.3							
	PN250	300.0	54.0	235.0	33.0 / 8x							27.2
	PN320	335.0	65.0	265.0	36.0 / 8x							42.5
	PN400	370.0	80.0	295.0	39.0 / 8x							67.3

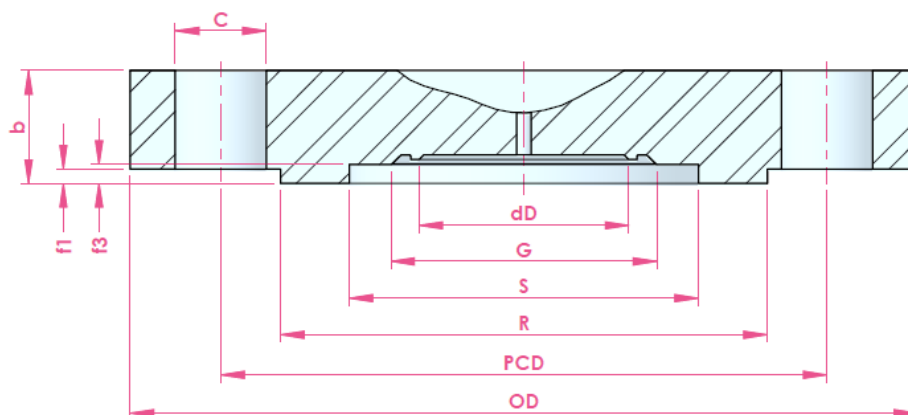
All dimensions in mm, weight in kg

Dimensions table: EN 1092-1 type E: Spigot


size	rating	OD	b	PCD	C / pcs	dD	R	f	G	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	50.0	2.0	31.2	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x					2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	57.0		40.1	1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x					2.5
	PN160									2.7
	PN250	150.0	28.0	105.0	22.0 / 4x					3.6
	PN320	160.0	34.0	115.0						5.2
	PN400	180.0	38.0	130.0	26.0 / 4x					7.5
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	65.0			2.0	
	PN63-100	155.0	24.0	110.0	22.0 / 4x				3.0	
DN40	PN10-40	150.0	18.0		125.0	18.0 / 4x	44.0	75.0	51.6	2.0
	PN63-100	170.0	26.0	22.0 / 4x		4.0				
	PN160		28.0			4.4				
	PN250	185.0	34.0	135.0	26.0 / 4x	6.7				
	PN320	195.0	38.0	145.0		8.7				
	PN400	220.0	48.0	165.0		30.0 / 4x				14.1
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	87.0	66.4		3.0
	PN63	180.0	26.0	135.0	22.0 / 4x					4.5
	PN100	195.0	28.0	145.0	26.0 / 4x					6.0
	PN160		30.0							6.4
	PN250	200.0	38.0	150.0	26.0 / 8x				8.2	
	PN320	210.0	42.0	160.0					10.7	
	PN400	235.0	52.0	180.0					30.0 / 8x	16.7
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x	81.0	120.0	3.0	89.2	5.0
	PN63	215.0	28.0	170.0	22.0 / 8x					6.5
	PN100	230.0	32.0	180.0	26.0 / 8x					9.0
	PN160	230.0	36.0							10.3
	PN250	255.0	46.0	200.0	30.0 / 8x					16.5
	PN320	275.0	55.0	220.0						25.4
	PN400	305.0	68.0	240.0						33.0 / 8x
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	149.0			4.5	
	PN25-40	235.0	24.0	190.0	22.0 / 8x				6.5	
	PN63	250.0	30.0	200.0	26.0 / 8x				9.0	
	PN100	265.0	36.0	210.0	30.0 / 8x			13.0		
	PN160		40.0					15.3		
	PN250	300.0	54.0	235.0	33.0 / 8x			27.2		
	PN320	335.0	65.0	265.0	36.0 / 8x			42.5		
	PN400	370.0	80.0	295.0	39.0 / 8x			67.3		

All dimensions in mm, weight in kg

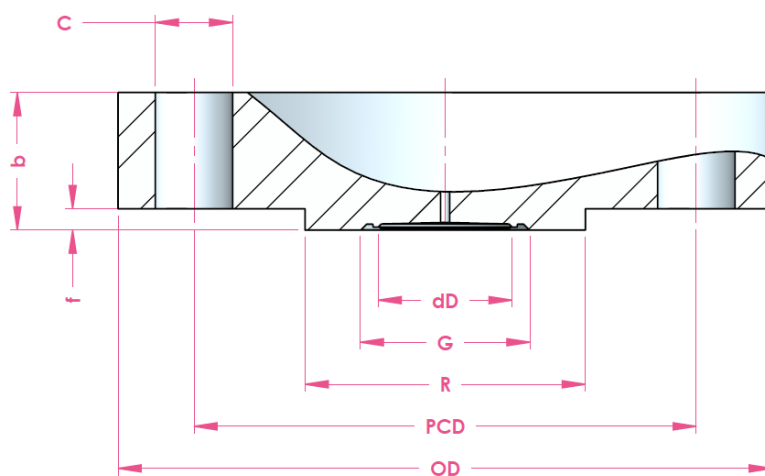
Dimensions table: EN 1092-1 type F: Recess



size	rating	OD	b	PCD	C / pcs	dD	S	R	f1	f3	G	Weight						
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	51.0	58.0			31.2	1.0						
	PN63-100	130.0	22.0	90.0	18.0 / 4x							2.0						
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	58.0	68.0	2.0		40.1	1.0						
	PN63-100	140.0	24.0	100.0	18.0 / 4x							2.5						
	PN160											2.7						
	PN250	150.0	28.0	105.0	22.0 / 4x							3.6						
	PN320	160.0	34.0	115.0								5.2						
	PN400	180.0	38.0	130.0	26.0 / 4x		7.5											
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x		66.0	78.0				2.0						
	PN63-100	155.0	24.0	110.0	22.0 / 4x							3.0						
DN40	PN10-40	150.0	18.0		18.0 / 4x	44.0	76.0	88.0	3.0	4.0	51.6	2.0						
	PN63-100	170.0	26.0									125.0	22.0 / 4x	4.0				
	PN160		28.0	135.0	26.0 / 4x							4.4						
	PN250	185.0	34.0									6.7						
	PN320	195.0	38.0									8.7						
	PN400	220.0	48.0									165.0	30.0 / 4x	14.1				
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	88.0	102.0	3.0		66.4	3.0						
	PN63	180.0	26.0	135.0	22.0 / 4x							4.5						
	PN100	195.0	28.0	145.0	26.0 / 4x							6.0						
			30.0									6.4						
	PN250	200.0	38.0	150.0	26.0 / 8x							8.2						
	PN320	210.0	42.0	160.0								10.7						
	PN400	235.0	52.0	180.0								30.0 / 8x	16.7					
DN80	PN10-40	200.0	24.0	160.0	18.0 / 8x		121.0	138.0	3.0			5.0						
	PN63	215.0	28.0	170.0	22.0 / 8x							6.5						
	PN100	230.0	32.0	180.0	26.0 / 8x							9.0						
	PN160	230.0	36.0									10.3						
	PN250	255.0	46.0	200.0	30.0 / 8x							16.5						
	PN320	275.0	55.0	220.0								25.4						
	PN400	305.0	68.0	240.0								33.0 / 8x	38.4					
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	81.0		158.0	3.0	4.5	89.2	4.5						
	PN25-40	235.0	24.0	190.0	22.0 / 8x							6.5						
	PN63	250.0	30.0	200.0	26.0 / 8x							9.0						
	PN100	265.0	36.0	210.0	30.0 / 8x		150.0	162.0				13.0						
			40.0									15.3						
	PN250	300.0	54.0	235.0	33.0 / 8x							27.2						
	PN320	335.0	65.0	265.0	36.0 / 8x							42.5						
	PN400	370.0	80.0	295.0	39.0 / 8x							67.3						

All dimensions in mm, weight in kg

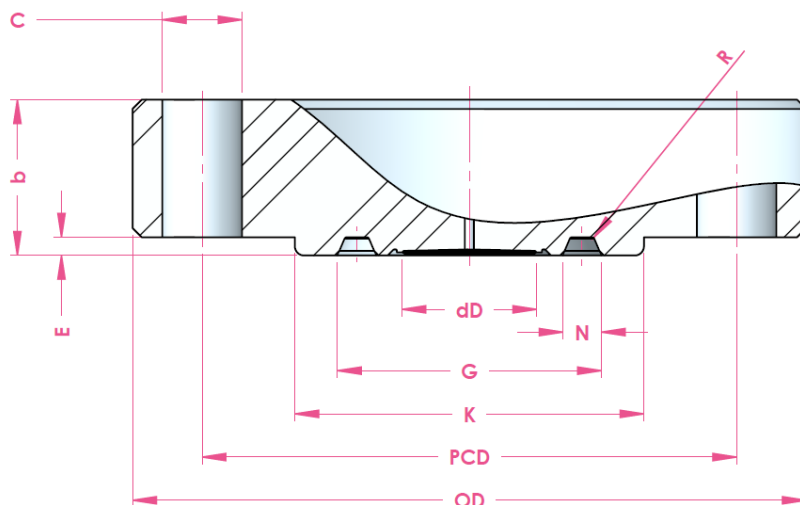
Dimensions table: JIS 2220 RF



Size	rating	OD	dD	b	PCD	C / pcs	R	f	G	Weight		
25	10K	125.0	32.0	14.0	90.0	19.0 / 4x	67.0	1.0	40.0	1.2		
	16K			1.3								
	20K			1.4								
32	10K	135.0	44.0	16.0	100.0		76.0	2.0	50.6	1.7		
	16K			1.7								
	20K			1.7								
40	10K	140.0		16.0	105.0		81.0		51.6	1.8		
	16K			1.8								
	20K			1.9								
50	10K	155.0		57.0	16.0	120.0	96.0			66.4	2.2	
	16K				2.2							
	20K				2.2							
80	10K	185.0	81.0		18.0	150.0	126.0	89.2			3.5	
	16K	200.0			20.0	160.0	23.0 / 8x				132.0	4.4
	20K				22.0							4.6
90	10K	195.0			18.0	170.0	19.0 / 8x		136.0		3.9	
	16K	210.0			20.0		23.0 / 8x		145.0		4.9	
	20K				24.0		5.7					
100	10K	225.0		18.0	175.0	19.0 / 8x	151.0		4.6			
	16K			22.0	185.0	23.0 / 8x	160.0		6.3			
	20K			24.0					6.6			

All dimensions in mm, weight in kg

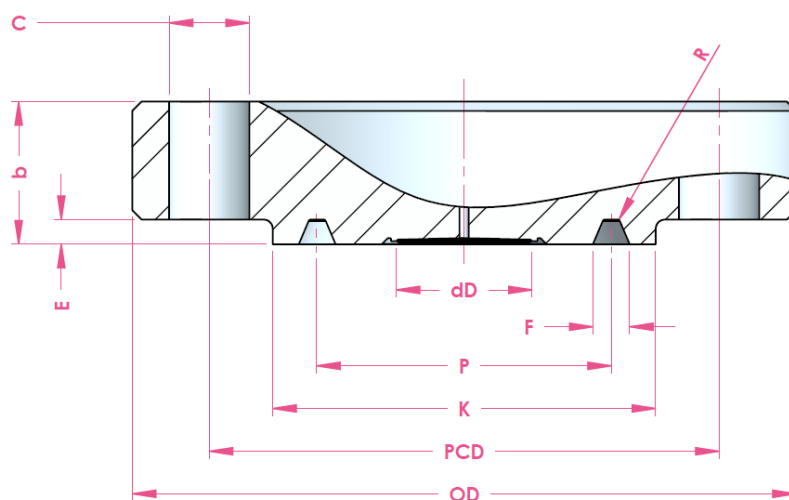
Dimensions table: API 10423 – Type 6BX



size	rating	OD	b	PCD	C / pcs	dD	K	E	N	G	ring	Weight
1-13/16"	69MPa	185.0	42.1	146.1	23.0 / 8x	32.0	105.0	5.6	11.8	77.7	BX-151	9.0
	103,5MPa	210.0	45.3	160.3	26.0 / 8x		106.0					12.5
	138MPa	255.0	63.5	203.2	29.0 / 8x		117.0					25.5
2-1/16"	69MPa	200.0	44.1	158.8	23.0 / 8x	44.0	111.0	5.9	12.7	86.2	BX-152	11.0
	103,5MPa	220.0	50.8	174.6	26.0 / 8x		114.0					15.2
	138MPa	285.0	71.5	230.2	32.0 / 8x		132.0					35.7
2-9/16"	69MPa	230.0	51.2	184.2	26.0 / 8x	57.0	132.0	6.8	14.1	102.7	BX-153	16.8
	103,5MPa	255.0	57.2	200.0	29.0 / 8x		133.0					23.2
	138MPa	325.0	79.4	261.9	35.0 / 8x		151.0					52.3
3-1/16"	69MPa	270.0	58.4	215.9	29.0 / 8x	72.0	152.0	7.5	15.4	119.0	BX-154	27.5
	103,5MPa	290.0	64.3	230.2	32.0 / 8x		154.0					33.6
	138MPa	355.0	85.8	287.3	39.0 / 8x		171.0					65.4

All dimensions in mm, weight in kg

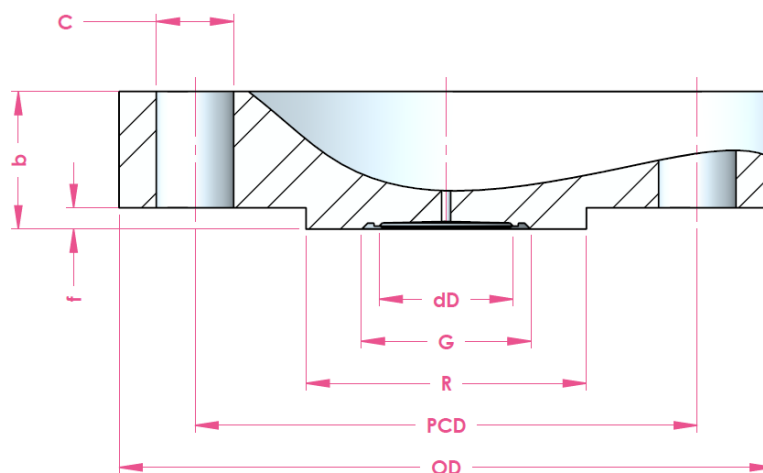
Dimension s table: API 6A 10423 – Type 6B



size	rating	OD	b	PCD	C / pcs	dD	K	E	F	P	ring	Weight
2-1/16"	13.8MPa	165.0	33.4	127.0	20.0 / 8x	44.0	108.0	7.9	11.9	82.6	R or RX-23	5.6
	20.7MPa	215.0	46.1	165.1	26.0 / 8x		124.0			95.2	R or RX-24	13.3
	34.5MPa											
2-9/16"	13.8MPa	190.0	36.6	149.2	23.0 / 8x	72.0	127.0			101.6	R or RX-26	8.1
	20.7MPa	245.0	49.3	190.5	29.0 / 8x		137.0			107.9	R or RX-27	18.4
	34.5MPa	245.0	49.3	190.5								18.4
3-1/8"	13.8MPa	210.0	39.7	168.3	23.0 / 8x	81.0	146.0			123.8	R or RX-31	10.8
	20.7Mpa	240.0	46.1	190.5	26.0 / 8x		156.0					16.5
	34.5MPa	265.0	55.6	203.2	32.0 / 8x		168.0					136.5

All dimensions in mm, weight in kg

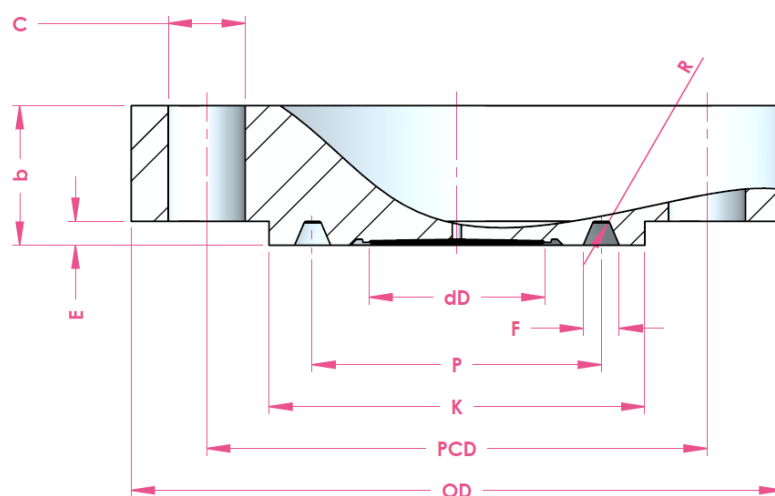
Dimensions table: GOST 33259 type B



size	rating	OD	b	PCD	C / pcs	dD	R	f	G	Weight
DN20	PN10-40	105.0	18.0	75.0	14.0 / 4x	23.0	58.0	2.0	31.7	1.0
	PN63-100	130.0	22.0	90.0	18.0 / 4x					2.0
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	32.0	68.0	2.0	40.1	1.0
	PN63-100	140.0	24.0	100.0	18.0 / 4x					2.5
	PN160									2.7
	PN250	150.0	28.0	105.0	22.0 / 4x					3.6
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	44.0	78.0	3.0	51.6	2.0
	PN63-100	155.0	24.0	110.0	22.0 / 4x					3.0
DN40	PN10-40	150.0	18.0	125.0	18.0 / 4x	44.0	88.0	3.0	51.6	2.0
	PN63-100	170.0	26.0		22.0 / 4x					4.0
	PN160		28.0	125.0	22.0 / 4x					4.4
	PN250	185.0	34.0	135.0	26.0 / 4x					6.7
DN50	PN10-40	165.0	20.0	125.0	18.0 / 4x	57.0	102.0	3.0	66.4	3.0
	PN63	180.0	26.0	135.0	22.0 / 4x					4.5
	PN100	195.0	28.0	145.0	26.0 / 4x					6.0
	PN160		30.0							6.4
	PN250	200.0	38.0	150.0	26.0 / 8x					8.2
DN80	PN10-40	215.0	24.0	160.0	18.0 / 8x	81.0	138.0	3.0	89.2	5.0
	PN63		28.0	170.0	22.0 / 8x					6.5
	PN100	230.0	32.0	180.0	26.0 / 8x					9.0
	PN160	230.0	36.0							10.3
	PN250	255.0	46.0	200.0	30.0 / 8x					16.5
DN100	PN10-16	220.0	20.0	180.0	18.0 / 8x	158.0	158.0	3.0	89.2	4.5
	PN25-40	235.0	24.0	190.0	22.0 / 8x					6.5
	PN63	250.0	30.0	200.0	26.0 / 8x					9.0
	PN100	265.0	36.0	210.0	30.0 / 8x					13.0
	PN160		40.0							15.3
	PN250	300.0	54.0	235.0	33.0 / 8x					27.2

All dimensions in mm, weight in kg

Dimensions table: GOST 33259 type J



size	rating	OD	b	PCD	C / pcs	K	P	E	F	dD	Weight	
DN20	PN63	125.0	20.0	90.0	18.0 / 4x	58	45	6.5	9	23.0	2.0	
	PN100-160		22.0		22.0 / 4x						2.2	
	PN200	130.0	28.0								2.3	
DN25	PN63	135.0	22.0	100.0	18.0 / 4x	68.0	50.0			32.0	2.5	
	PN100-160		24.0		2.6							
	PN200	150.0	30.0		102.0						26.0 / 4x	
DN32	PN63		110.0	22.0 / 4x	78.0	65.0	44.0			3.0		
	PN100									24.0	3.1	
	PN160									3.6		
	PN200	160.0	32.0	115.0						26.0 / 4x	4.0	
DN40	PN63	165.0	24.0	125.0	22.0 / 4x	88.0				75.0	4.2	
	PN100		26.0		4.4							
	PN160		28.0		6.7							
	PN200	170.0	34.0	124.0	26.0 / 4x						91.0	
DN50	PN63	180.0	26.0	135.0	22.0 / 4x	102.0	85.0	8.0	12.0	57.0	4.5	
	PN100	195.0	28.0	145.0	26.0 / 4x		115.0				95.0	6.0
	PN160		30.0		160.0	26.0 / 8x						129.0
	PN200	200.0	40.0	160.0	26.0 / 8x	133.0	8.2					
DN80	PN63	210.0	30.0	170.0	22.0 / 8x	150.0	115.0			81.0	6.5	
	PN100	230.0	34.0	180.0	26.0 / 8x		130.0				9.0	
	PN160		36.0								10.3	
	PN200		290.0	54.0	230.0		33.0 / 8x				190.0	160.0
DN100	PN63	250.0	32.0	200.0	26.0 / 8x	170.0	145.0				9.0	
	PN100	265.0	38.0	210.0	30.0 / 8x						175.0	13.0
	PN160		40.0									15.3
	PN200	360.0	66.0	235.0	39.0 / 8x						245.0	190.0

All dimensions in mm, weight in kg

Product code ASME B16.5 BF seals

Code								
Example code:	BF A	08	A1	RF	CATA	S316	C25H	
Standard								
ASME B16.5	A							
Size								
1"	02							
1.5"	04							
2"	05							
3"	08							
4"	10							
Class								
cl. 150	A1							
cl. 300	A2							
cl. 400 ^{*1}	A3							
cl. 600	A4							
cl. 900 ^{*2}	A5							
cl. 1500	A6							
cl. 2500	A7							
Facing^{*2}								
Raised Face ◀	RF							
Ring Joint Face	RJF							
Capillary connection								
Capillary top (axial) ◀	CATA							
Capillary side (radial)	CASR							
Material								
AISI 316(L)	S316							
AISI 316(L) with Alloy C276 diaphragm ^{*3}	S316N							
AISI 304L	S304							
AISI 310 MoLn	S310							
AISI 316 UG	U316							
AISI 321	S321							
AISI 904(L)	S904							
Alloy 20	A020							
Alloy 400	A400							
Alloy 600	A600							
Alloy 625	A625							
Alloy 825	A825							
Alloy B2	AB02							
Alloy C-22	AC22							
Alloy C-276	A276							
Duplex F44	DF44							
Duplex F51/F60	DF51							
Duplex F53	DF53							
Duplex F55	DF55							
Nickel 201	N201							
Titanium Gr. 2	TG02							
Zirconium 702	Z702							
Options								
See tables 2 and 3 ◀								

*1: For size ≥3"

*2: Other facings then RF/ RJF, fill in facing code from table 1.

*3: Dissimilar materials as wetted parts are outside warranty on process compatibility.

Product code EN 1092-1 BF seals

Code							
Example code:	BF E	27	D4	B1	CATA	S316	C25H
Standard							
EN 1092-1	E						
Size							
DN25	24						
DN40	26						
DN50	27						
DN80	29						
DN100	30						
Class							
PN 10-16 ^{*1}	D2						
PN 25-40 ^{*1}	D3						
PN 10-40	D4						
PN 63	D5						
PN 100	D6						
PN 250	D7						
PN 400	D8						
Facing ^{*2}							
Raised Face ◀	B1						
Capillary connection							
Capillary top (axial) ◀	CATA						
Capillary side (radial)	CASR						
Material							
AISI 316(L)	S316						
AISI 316(L) with Alloy C276 diaphragm ^{*3}	S316N						
AISI 304L	S304						
AISI 310 MoLn	S310						
AISI 316 UG	U316						
AISI 321	S321						
AISI 904(L)	S904						
Alloy 20	A020						
Alloy 400	A400						
Alloy 600	A600						
Alloy 625	A625						
Alloy 825	A825						
Alloy B2	AB02						
Alloy C-22	AC22						
Alloy C-276	A276						
Duplex F44	DF44						
Duplex F51/F60	DF51						
Duplex F53	DF53						
Duplex F55	DF55						
Nickel 201	N201						
Titanium Gr. 2	TG02						
Zirconium 702	Z702						
Options							
See tables 2 and 3 ◀							

*1: For size ≥DN100

*2: Other facings then B1, fill in facing code from table 2.

*3: Dissimilar materials as wetted parts are outside warranty on process compatibility.

Product code JIS B2220 BF seals

Code							
Example code:	BF J	27	J1	RF	CATA	S316	C25H
Standard							
JIS B2220	J						
Size							
DN25	24						
DN40	26						
DN50	27						
DN80	29						
DN90	31						
DN100	30						
Class							
10k	J1						
16K	J2						
25K	J3						
Facing							
Raised Face ◀	RF						
Capillary connection							
Capillary top (axial) ◀	CATA						
Capillary side (radial)	CASR						
Material							
AISI 316(L)	S316						
Options							
See tables 2 and 3 ◀							

*1: For other materials contact sales department

Product code API 10423 BF seals

Code								
Example code:	BF P	32	P1	6B-RJF	CATA	S316	C25H	
Standard								
API 10423	P							
Size								
1-13/16"	32							
2-1/16"	33							
2-9/16"	34							
3-1/8"	35							
Class								
13.8MPa (6B)	P1							
20.7MPa (6B)	P2							
34.5MPa (6B)	P3							
69MPa (6BX)	P4							
103,5MPa (6BX)	P5							
138MPa (6BX)	P6							
Facing								
Ring Joint Type 6B ◀	6B-RJF							
Ring Joint Type 6BX ◀	6BX-RJF							
Capillary connection								
Capillary top (axial) ◀	CATA							
Capillary side (radial)	CASR							
Material								
AISI 316(L)	S316							
AISI 316(L) with Alloy C276 diaphragm*1	S316N							
AISI 304L	S304							
AISI 310 MoLn	S310							
AISI 316 UG	U316							
AISI 321	S321							
AISI 904(L)	S904							
Alloy 20	A020							
Alloy 400	A400							
Alloy 600	A600							
Alloy 625	A625							
Alloy 825	A825							
Alloy B2	AB02							
Alloy C-22	AC22							
Alloy C-276	A276							
Duplex F44	DF44							
Duplex F51/F60	DF51							
Duplex F53	DF53							
Duplex F55	DF55							
Options								
See tables 2 and 3 ◀								

*1: Dissimilar materials as wetted parts are outside warranty on process compatibility

Product code GOST 33259 BF seals

Code							
Example code:	BF G3	27	D4	B	CATA	S316	C25H
Standard							
GOST 33259	G3						
Size							
DN20	23						
DN25	24						
DN32	25						
DN40	26						
DN50	27						
DN80	29						
DN100	30						
Class							
PN 10-40	D4						
PN 63	D5						
PN 100	D6						
PN 160	D10						
PN 250	D7						
Facing							
Raised Face ◀	B						
Ring Joint Type	J						
Capillary connection							
Capillary top (axial) ◀	CATA						
Capillary side (radial)	CASR						
Material^{*1}							
AISI 316(L)	S316						
Options							
See tables 2 and 3 ◀							

*1: For other materials contact sales department

Table 1: Additional Facing*ASME B16.5*

Description	code
Large Male Face	LMF
Small Male Face	SMF
Flat Face	FF
Large Tongue Face	LTF
Small Tongue Face	STF
Large Groove Face	LGF
Small Groove Face	SGF
Large Female Face	LFF
Small Female Face	SFF

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Description	code
Flat Face	A
Raised face (smooth finish)	B2
Tongue	C
Groove	D
Spigot	E
Recess	F

For the Groove and Tongue Facings the instrument and process and side are the opposites
(eg Instrument side is LTF then Process side is LGF)

Table 2: Options

Option (start options with X_)	code
Cleaned from Oil and Grease	_K1
NACE ISO 15156 (MR 01 75)	_N75
3.1 material certificate	_IC31
2.2 Positive Material Identification	_PMI
2.2 Welding documents (WPS/PQR)* ²	_WPS

*1: For fitted and welded accessory

*2: Only for welded accessory

Table 3: Options

Option (start options with X_)	code
PTFE Coating 40 µm	CPT4
PTFE Coating 80 µm	CPT8
PFA Coating 40 µm	CPF4
PFA Coating 80 µm	CPF8
PFA Coating 60 µm enhanced version	CPF6
Halar Coating (ECTFE)	CHAL
FEP Coating	CFEP
Gold coating diaphragm 25 µm	C25H
Gold coating diaphragm 40 µm	C40H
Gold coating diaphragm 25 µm	C25H
Gold coating all wetted parts 40 µm	C40W
Silver coating all wetted parts 40 µm	CS4W

Change log

Date	Change
30-3-2020	1.5" cl 2500 dimension "P" in RJF changed.
15-4-2020	New dimension tables added for ASME B16.5 facing STF, LTF, LGF, SGF, LMF, FF
	New dimension tables added for EN 1092-1 type B2, A, C, D, E, F.
	Coding tables for all flange standards
28-5-2020	DN80 PN10-40 size D changed for all facings
7-9-2020	LGF facing table sizes S and T are revised.
5-3-2021	All ASME dimension tables updated according ASME B16.5:2020
	Added a standard reference table to the datasheet.
	Added a roughness conversion table
21-7-2021	Small changes made in coding tables.
3-12-2021	Added a note for 23.5mm diaphragm 1" seals.
16-5-2022	Size b noted differently in relation to drawing for all ASME sizes and facings

Authorised Distributor:



**NATIONWIDE
OIL & GAS**

46, Jalan SS 22/21, Damansara Jaya,
47400 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.

Email: nog@nog.com.my

Website: www.nog.com.my

DSS 7001 – 16th of May 2022

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