

Accessories – Flanged process connector

Description

Not all processes require diaphragm seals, or some process can simply be measured without the use of a diaphragm seal. For this reason Badotherm offers a broad range of flanged process connectors. This is an adapter product from flange to various instrument connections such as threaded, welded, and to compression fittings.

Material of construction

The FPC products can be made from all available materials. Most common is the use of AISI316(L) material. In case of corrosive processes we strongly advice the use of diaphragm seal applications.

Instrument connections

Threaded serie

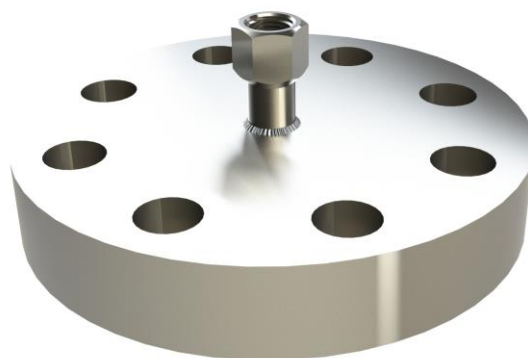
FPC-T products are made from blind flanges on which an adapter nipple is welded to make the flange suitable for mounting of threaded products such as pressure transmitters and pressure gauges. Independently on the flange size and class G, NPT, or metrical nipples can be welded to the flange. The standard sizes of the nipples are

Type	Thread
FPC-TMN12	½" NPT-male
FPC-TFG12	G½ (female)
FPC-TFN12	½" NPT-female
FPC-TFG14	G ¼ (female)

Compression fitting serie

FPC-CF products are made from bar stock which has an integrated compression fitting in the on the process flange. We use only systems from Swagelok or Parker. The standard sizes of the nipples are

Type	Size
FPC-CFI38	3/8" pipe compression fitting
FPC-CFI12	½" pipe compression fitting
FPC-CFM10	10mm pipe compression fitting
FPC-CFM12	12mm pipe compression fitting



Marking

All parts are marked in order to identify the material of construction, or heat number when applicable.

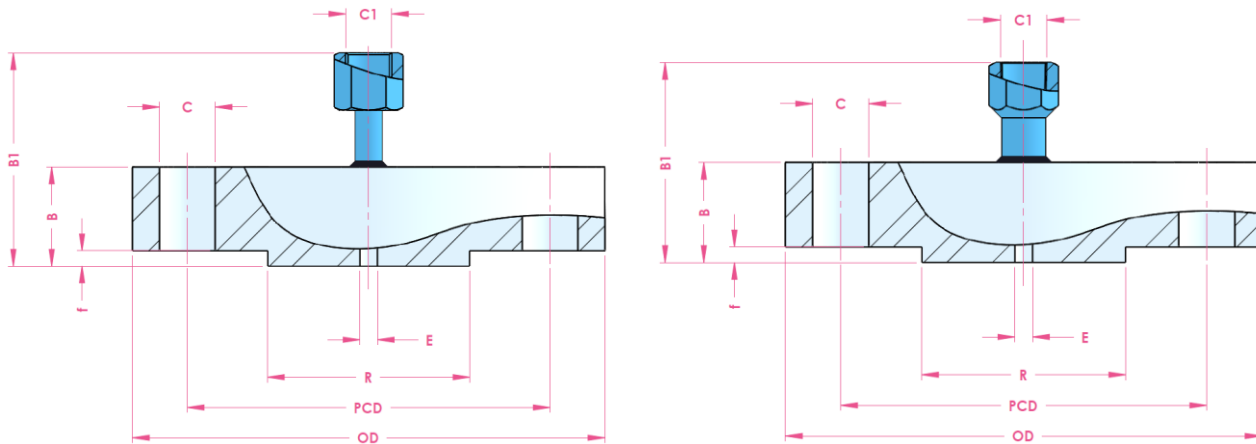
Flange size, rating and facings - ASME B16.5

ASME B16.5			
Size	Rating	Facing	Roughness
0.5" 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

Flange size, rating and facings - EN 1092-1

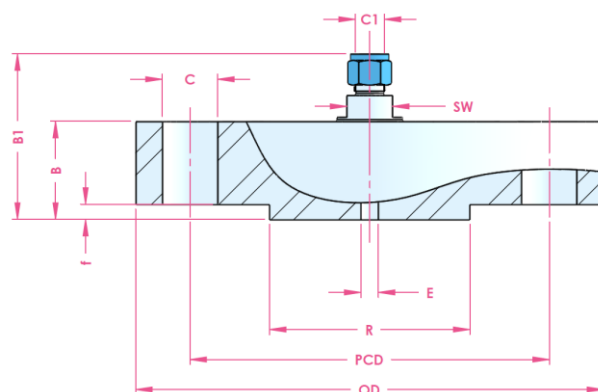
EN 1092-1			
Size	Rating	Type	Roughness
DN15 to DN100	PN10-400	A, B1, E, F	Ra 3.2-12.5 µm
		B2, C, D, G, H	Ra <0.8-3.2 µm

Dimensions table: Threaded connection with ASME B16.5 type RF flange facing



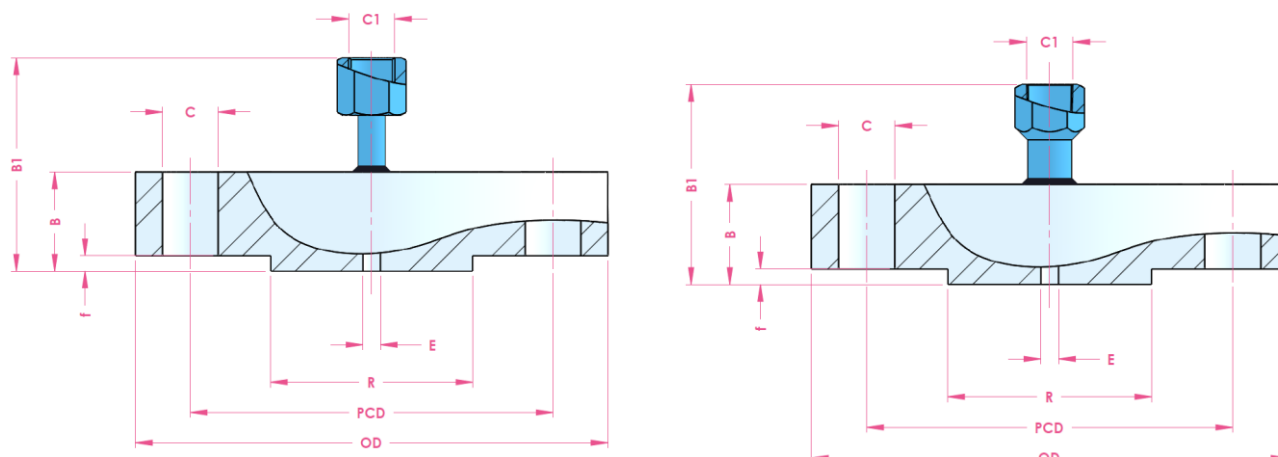
size	rating	OD	B	B1	PCD	C / pcs	E	R	f	weight	
1"	cl. 150	110.0	14.7	54.7	79.4	15.9 / 4x	8.0	50.8	2.0	0.9	
	cl. 300	125.0	17.9	57.9	88.9	19.1 / 4x				1.4	
	cl. 400-600		24.5	64.5	25.4 / 4x				1.6		
	cl. 900-1500		35.6	75.6		101.6			7.0	3.6	
	cl. 2500	160.0	42.0	82	108.0	5.0					
1.25"	cl. 150	115.0	17.9	57.9	88.9	15.9 / 4x		8.0	63.5	2.0	1.2
	cl. 300	135.0	19.5	59.5	98.4	19.1 / 4x					1.8
	cl. 400-600		27.7	67.7	25.4 / 4x					2.2	
	cl. 900-1500		160.0	35.6		75.6				111.1	7.0
	cl. 2500	185.0	45.1	85.1	130.2	28.6 / 4x				7.4	
1.5"	cl. 150	125.0	17.9	57.9	98.4	15.9 / 4x	8.0		73.0	2.0	1.5
	cl. 300	155.0	21.1	61.1	114.3	22.3 / 4x					2.7
	cl. 400-600		29.3	69.3	28.6 / 4x					3.3	
	cl. 900-1500		180.0	38.8		78.8				123.8	7.0
	cl. 2500	205.0	51.5	91.5	146.0	31.8 / 4x				10.4	
2"	cl. 150	150.0	19.5	59.5	120.7	19.1 / 4x		8.0	92.1	2.0	2.4
	cl. 300	165.0	22.7	62.7	127.0	19.1 / 8x					3.2
	cl. 400-600		32.4	72.4	25.4 / 8x					4.2	
	cl. 900-1500		215.0	45.1		85.1				165.1	7.0
	cl. 2500	235.0	57.9	97.9	171.4	28.6 / 8x				15.6	
3"	cl. 150	190.0	24.3	64.3	152.4	19.1 / 4x	8.0		127.0	2.0	4.9
	cl. 300	210.0	29.0	69	168.3	22.3 / 8x					6.8
	cl. 400-600		38.8	78.8	25.4 / 8x					8.4	
	cl. 900		240.0	45.1		85.1				190.5	7.0
	cl. 1500	265.0	54.7	94.7	203.2	31.9 / 8x				19.1	
	cl. 2500	305.0	73.7	113.7	228.6	35.0 / 8x		34.8			
4"	cl. 150	230.0	24.3	64.3	190.5	19.1 / 8x		8.0	157.2	2.0	7.0
	cl. 300	255.0	32.2	72.2	200.0	22.3 / 8x					11.5
	cl. 400		42.0	82	25.5 / 8x					14.8	
	cl. 600		275.0	45.1		85.1				215.9	7.0
	cl. 900	290.0	51.5	91.5	235.0	31.8 / 8x	26.9				
	cl. 1500	310.0	61.0	101	241.3	34.9 / 8x	29.9				
	cl. 2500	355.0	83.2	123.2	273.0	41.3 / 8x	53.9				

Dimensions table: Compression fitting with ASME B16.5 type RF flange facing



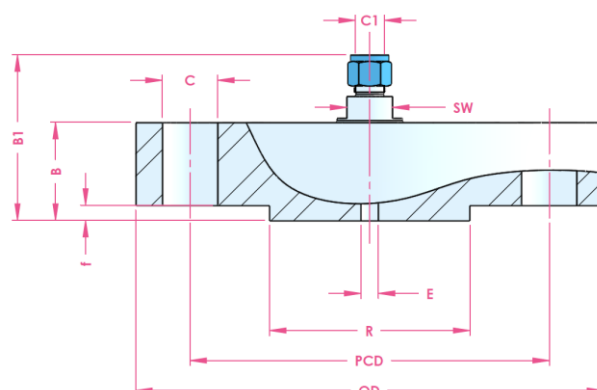
size	rating	OD	B	PCD	C / pcs	dD	R	f	G	weight
1"	cl. 150	110.0	14.7	79.4	15.9 / 4x	23.5	50.8	2.0	31.8	0.9
	cl. 300	125.0	17.9	88.9	19.1 / 4x					1.4
	cl. 400-600		24.5					1.6		
	cl. 900-1500	150.0	35.6	101.6	25.4 / 4x			7.0		3.6
cl. 2500	160.0	42.0	108.0	5.0						
1.25"	cl. 150	115.0	17.9	88.9	15.9 / 4x	32.0	63.5	2.0	41.5	1.2
	cl. 300	135.0	19.5	98.4	19.1 / 4x					1.8
	cl. 400-600		27.7					2.2		
	cl. 900-1500	160.0	35.6	111.1	25.4 / 4x			7.0		4.1
cl. 2500	185.0	45.1	130.2	28.6 / 4x		7.4				
1.5"	cl. 150	125.0	17.9	98.4	15.9 / 4x	44.0	73.0	2.0	52.4	1.5
	cl. 300	155.0	21.1	114.3	22.3 / 4x					2.7
	cl. 400-600		29.3					3.3		
	cl. 900-1500	180.0	38.8	123.8	28.6 / 4x			7.0		5.8
cl. 2500	205.0	51.5	146.0	31.8 / 4x		10.4				
2"	cl. 150	150.0	19.5	120.7	19.1 / 4x	57.0	92.1	2.0	70.2	2.4
	cl. 300	165.0	22.7	127.0	19.1 / 8x					3.2
	cl. 400-600		32.4					4.2		
	cl. 900-1500	215.0	45.1	165.1	25.4 / 8x			7.0		10.1
cl. 2500	235.0	57.9	171.4	28.6 / 8x		15.6				
3"	cl. 150	190.0	24.3	152.4	19.1 / 4x	81.0	127.0	2.0	93.0	4.9
	cl. 300	210.0	29.0	168.3	22.3 / 8x					6.8
	cl. 400-600		38.8					8.4		
	cl. 900	240.0	45.1	190.5	25.4 / 8x			7.0		13.1
	cl. 1500	265.0	54.7	203.2						31.9 / 8x
	cl. 2500	305.0	73.7	228.6	35.0 / 8x			34.8		
4"	cl. 150	230.0	24.3	190.5	19.1 / 8x	81.0	157.2	2.0	93.0	7.0
	cl. 300	255.0	32.2	200.0	22.3 / 8x					11.5
	cl. 400		42.0					14.8		
	cl. 600	275.0	45.1	215.9	25.5 / 8x			7.0		17.3
	cl. 900	290.0	51.5	235.0						31.8 / 8x
	cl. 1500	310.0	61.0	241.3	34.9 / 8x			29.9		
		355.0	83.2	273.0	41.3 / 8x			53.9		

Dimensions table: Threaded connection with EN 1092-1 type B1 flange facing



size	rating	OD	B	B1	PCD	C / pcs	R	f	Weight
DN15	PN10-40	95.0	16.0	46.0	75.0		45.0		1.0
	PN63-100	105.0	20.0	50.0	75.0	14.0 / 4x			2.0
DN20	PN10-40	105.0	18.0	48.0	75.0		58.0		1.0
	PN63-100	130.0	22.0	52.0	90.0	18.0 / 4x			2.0
DN25	PN10-40	115.0	18.0	48.0	85.0	14.0 / 4x	68.0	2.0	1.0
	PN63-100	140.0	24.0	54.0	100.0	18.0 / 4x			2.5
	PN160								2.7
	PN250	150.0	28.0	58.0	105.0	22.0 / 4x			3.6
	PN320	160.0	34.0	64.0	115.0				5.2
DN32	PN400	180.0	38.0	68.0	130.0	26.0 / 4x	78.0		7.5
	PN10-40	140.0	18.0	48.0	100.0	18.0 / 4x			2.0
DN40	PN63-100	155.0	24.0	54.0	110.0	22.0 / 4x	88.0	3.0	3.0
	PN10-40	150.0	18.0	48.0		18.0 / 4x			2.0
	PN63-100	170.0	26.0	56.0	125.0	22.0 / 4x			4.0
	PN160		28.0	58.0					4.4
	PN250	185.0	34.0	64.0	135.0	26.0 / 4x			6.7
	PN320	195.0	38.0	68.0	145.0				8.7
DN50	PN400	220.0	48.0	78.0	165.0	30.0 / 4x	102.0	3.0	14.1
	PN10-40	165.0	20.0	50.0	125.0	18.0 / 4x			3.0
	PN63	180.0	26.0	56.0	135.0	22.0 / 4x			4.5
	PN100	195.0	28.0	58.0	145.0	26.0 / 4x			6.0
	PN160		30.0	60.0					6.4
	PN250	200.0	38.0	68.0	150.0	26.0 / 8x			8.2
DN80	PN320	210.0	42.0	72.0	160.0		138.0	3.0	10.7
	PN400	235.0	52.0	82.0	180.0	30.0 / 8x			16.7
	PN10-40	200.0	24.0	54.0	160.0	18.0 / 8x			5.0
	PN63	215.0	28.0	58.0	170.0	22.0 / 8x			6.5
	PN100	230.0	32.0	62.0	180.0	26.0 / 8x			9.0
	PN160	230.0	36.0	66.0					10.3
	PN250	255.0	46.0	76.0	200.0	30.0 / 8x			16.5
DN100	PN320	275.0	55.0	85.0	220.0		158.0	3.0	25.4
	PN400	305.0	68.0	98.0	240.0	33.0 / 8x			38.4
	PN10-16	220.0	20.0	50.0	180.0	18.0 / 8x			4.5
	PN25-40	235.0	24.0	54.0	190.0	22.0 / 8x			6.5
	PN63	250.0	30.0	60.0	200.0	26.0 / 8x			9.0
	PN100		36.0	66.0	210.0	30.0 / 8x			13.0
	PN160	265.0	40.0	70.0					15.3
	PN250	300.0	54.0	84.0	235.0	33.0 / 8x			27.2
PN320	335.0	65.0	95.0	265.0	36.0 / 8x	42.5			
	PN400	370.0	80.0	110.0	295.0	39.0 / 8x	67.3		

Dimensions table: Compression fitting with EN 1092-1 type B1 flange facing



size	rating	OD	B	PCD	C / pcs	R	f	Weight	
DN15	PN10-40	95.0	16.0	75.0	14.0 / 4x	45.0	2.0	1.0	
	PN63-100	105.0	20.0	75.0		2.0			
DN20	PN10-40	115.0	18.0	85.0	18.0 / 4x	58.0		1.0	
	PN63-100	130.0	22.0	90.0		2.0			
DN25	PN10-40	115.0	18.0	85.0	14.0 / 4x	68.0		1.0	
	PN63-100	140.0	24.0	100.0				2.5	
	PN160							2.7	
	PN250	150.0	28.0	105.0				3.6	
	PN320	160.0	34.0	115.0				5.2	
DN32	PN10-40	140.0	18.0	100.0	18.0 / 4x	78.0		2.0	
	PN63-100	155.0	24.0	110.0				3.0	
DN40	PN10-40	150.0	18.0	110.0	18.0 / 4x	88.0		2.0	
	PN63-100	170.0	26.0	125.0			4.0		
	PN160		28.0				4.4		
	PN250	185.0	34.0	135.0			6.7		
	PN320	195.0	38.0	145.0			8.7		
DN50	PN400	220.0	48.0	165.0	30.0 / 4x	102.0	14.1		
	PN10-40	165.0	20.0	125.0	18.0 / 4x		3.0		
	PN63	180.0	26.0	135.0			4.5		
	PN100	195.0	28.0	145.0			6.0		
	PN160		30.0				6.4		
	PN250	200.0	38.0	150.0			26.0 / 8x	8.2	
DN80	PN320	210.0	42.0	160.0		18.0 / 8x	138.0	10.7	
	PN400	235.0	52.0	180.0	16.7				
	PN10-40	200.0	24.0	160.0	26.0 / 8x			5.0	
	PN63	215.0	28.0	170.0				6.5	
	PN100	230.0	32.0	180.0				9.0	
	PN160	230.0	36.0	200.0				10.3	
	PN250	255.0	46.0	220.0				16.5	
PN320	275.0	55.0	240.0	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	158.0	4.5		
	PN25-40	235.0	24.0	190.0			6.5		
	PN63	250.0	30.0	200.0			9.0		
	PN100	265.0	36.0	210.0			30.0 / 8x	162.0	13.0
	PN160		40.0						15.3
	PN250		54.0						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				

Product code ASME FPC Flanges

Code	
Example code:	FPC A 08 A1 RF S316 N12F W
Standard	ASME B16.5
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	Raised Face ◀ RF Ring Joint Face RJF
Material	AISI 316(L) ◀ S316 Alloy C276 A276 AISI 321 S321 Alloy 400 A400 Alloy 825 A825 254 SMO (F44) DF44 Duplex (F51) DF51 Super Duplex (F53) SF53 Duper Duplex (F55) SF55
Instrument Connection	G1/4 Rotating nut G14R G1/2 Rotating nut G12R G 1/2 ^{*3} G12F 1/4" NPT female ^{*3} N14F 1/2" NPT female ^{*3} N12F 1/2" NPT male (welded) N12M 3/8" tube Compression fitting CI38 1/2" tube Compression fitting CI12 10mm tube Compression fitting CM10 12mm tube Compression fitting CM12
Fitting method	PTFE tape P Grafoil tape G SWAK [®] S Welded W

SWAK[®] is a trademark of Swagelok

*1 For size ≥4"

*2 For size ≥3"

*3 Connections for option "Welded". The 1/2" NPT-male version is always welded).

Product code EN FPC Flanges

Code	
Example code:	FPC E 27 D4 B1 S316 N12F W
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
Material	
AISI 316(L) ◀	S316
Alloy C276	A276
AISI 321	S321
Alloy 400	A400
Alloy 825	A825
254 SMO (F44)	DF44
Duplex (F51)	DF51
Super Duplex (F53)	SF53
Duper Duplex (F55)	SF55
Flush Connection Quantity	
Instrument Connection	
G1/4 Rotating nut	G14R
G1/2 Rotating nut	G12R
G 1/2 ^{*3}	G12F
1/4" NPT female ^{*2}	N14F
1/2" NPT female ^{*2}	N12F
1/2" NPT male (welded)	N12M
3/8" tube Compression fitting	CI38
1/2" tube Compression fitting	CI12
10mm tube Compression fitting	CM10
12mm tube Compression fitting	CM12
Fitting method	
PTFE tape	P
Grafoil tape	G
SWAK®	S
Welded	W

SWAK® is a trademark of Swagelok

*1 For size ≥DN100

*2 Connections for option "Welded". The 1/2" NPT-male version is always welded).

Table 1: Additional Facing

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

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
Position 2 mounted valves	_VP2
3.1 material certificate	_IC31
2.1 Pressure leak test certificate standard pressure* ¹	_LTPS
2.1 Pressure leak test certificate acc PED 2014/68/EU* ¹	_LTCE
2.1 Penetrant test certificate* ²	_PT1
2.2 Positive Material Identification	_PMI
2.2 Welding documents (WPS/PQR)* ²	_WPS

*1: For fitted or welded with and instrument

*2: Only for welded connections

Change log

Date	Change

Holland – Romania – India – Thailand – Dubai – USA

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