

The USF construction is designed for those applications where the existing process connection is too small to use a flush diaphragm seal. The USF consists of an upper and lower housing. The lower housing creates the transition from the diaphragm size to the actual small process connection. USF is typically used in combination with (differential) pressure transmitters for applications such as level, flow and (absolute) pressure measurement; also the USF is often combined with pressure gauges.


**STANDARD EXECUTION**

DIAPHRAGM	BODY	MOUNTING CONNECTION	
AISI 316(L)	AISI 316(L)	top (axial)	
FACING	FACING TYPE	GASKET	BOLTS
RF	B1	Virgin PTFE	3/8" UNC – A2-70

**FLANGED PROCESS CONNECTIONS**
**ASME B16.5**

size	rating	dD
1/2"	cl. 150 – cl. 1500	50.0mm
3/4"	cl. 150 – cl. 1500	50.0mm
1"	cl. 150 – cl. 1500	50.0mm
1.25"	cl. 150 – cl. 1500	50.0mm
1.5"	cl. 150 – cl. 1500	50.0mm
2"	cl. 150 – cl. 1500	50.0mm

**EN 1092-1**

size	rating	dD
DN15	PN10 – PN250	50.0mm
DN20	PN10 – PN250	50.0mm
DN25	PN10 – PN250	50.0mm
DN32	PN10 – PN250	50.0mm
DN40	PN10 – PN250	50.0mm
DN50	PN10 – PN250	50.0mm

**UPPER AND LOWER PART ASSEMBLY**
**BOLTING**

thread	material	mwp	pcs	rating (ASME)	rating (EN)
3/8" UNC	A2-70	125 bar	4	cl. 150 - cl. 600	PN10 – PN100
3/8" UNC	A2-70	250 bar	8	cl. 900 - cl. 1500	PN160 – PN250
3/8" UNC	8.8	150 bar	4	cl. 150 - cl. 600	PN10 – PN100
3/8" UNC	8.8	300 bar	8	cl. 900 - cl. 1500	PN160 – PN250

Note: MWP (maximum working pressure) at 20 °C with AISI 316(L) body material

**GASKET**

material	operating temperature
Virgin PTFE	-200 / +260°C
Garfite N	-73 / +343°C
Camprofile <sup>1</sup>	-200 / + 500°C

<sup>1</sup> for steam applications

**WETTED PARTS, BODY MATERIALS, AND FACING OPTIONS**

upper part material	lower part material	diaphragm material	facing (ASME B16.5)	facing type (EN 1092-1)
AISI 316(L)	AISI 316(L)	AISI 316(L)	RF Ra 3.2-6.3 µm	B1 Ra 3.2-12.5 µm
		AISI 304(L)	RJF Ra <1.6 µm	A Ra 3.2-12.5 µm
		AISI 316 UG	LMF Ra 3.2-6.3 µm	B2 Ra 0.8-3.2 µm
		AISI 321	SMF Ra <3.2 µm	C Ra 0.8-3.2 µm
		Hastelloy C-276	FF Ra 3.2-6.3 µm	D Ra 0.8-3.2 µm
AISI 316(L)	AISI 310 MoIn	25-22-2 LMN	LTF Ra <3.2 µm	E Ra 3.2-12.5 µm
AISI 316(L)	Duplex F44	254 SMO (6Mo)	STF Ra <3.2 µm	F Ra 3.2-12.5 µm
AISI 316(L)	Duplex F51/F60	Duplex 2205	LGF Ra <3.2 µm	G Ra 0.8-3.2 µm
AISI 316(L)	Duplex F53	Super Duplex 2507	SGF Ra <3.2 µm	H Ra 0.8-3.2 µm
AISI 316(L)	Duplex F55	Super Duplex 2507	LFF Ra 3.2-6.3 µm	
AISI 316(L)	Hastelloy B2	Hastelloy B2	SFF Ra <3.2 µm	
AISI 316(L)	Hastelloy C-276	Hastelloy C-276		
AISI 316(L)	Alloy 20	Alloy 20		
AISI 316(L)	Inconel 600	Inconel 600		
AISI 316(L)	Inconel 625	Inconel 625		
AISI 316(L)	Inconel 825	Inconel 825		
AISI 316(L)	Monel 400	Monel 400		
AISI 316(L)	Nickel 201	Nickel 201		
AISI 316(L)	Tantalum <sup>1</sup>	Tantalum		
Titanium Gr.2	Titanium Gr.2	Titanium Gr.1		

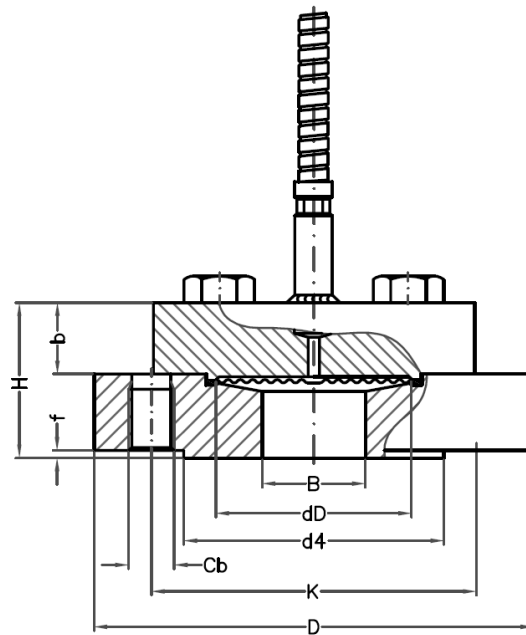
<sup>1</sup> material AISI 316(L) with Tantaline treatment

**COATING AND OTHER OPTIONS****COATINGS**

- gold: 25  $\mu\text{m}$ /40  $\mu\text{m}$  chemical resistance and/or hydrogen permeation protection (facing and/or diaphragm)
- PTFE / ECTFE for anti-stick purpose only (upper part)
- FEP/ PFA (upper part)
- Tantaline lower part
- PTFE lining lower part (not in combination with flush port)

**OTHER OPTIONS**

- heavy duty capillary tube
- TR - temperature reducer
- PTFE sheet for anti-stick purpose only (no vacuum)
- flushing ports in lower part (not in combination with lining)
- degreasing of wetted parts

**DRAWING AND DIMENSIONS STANDARD EXECUTIONS**

**ASME B16.5 - RF FACING**

size	rating	facing	dD	B	b	D	d4	f	H	K	Cb / pcs
1/2"	cl. 150	RF	50.0	15.8	18.5	90.0	34.9	2.0	55.5	60.3	0.5" - 13 UNC / 4x
1/2"	cl. 300	RF	50.0	15.8	18.5	95.0	34.9	2.0	55.5	66.7	0.5" - 13 UNC / 4x
1/2"	cl. 400 - 600	RF	50.0	15.8	18.5	95.0	34.9	7.0	64.5	66.7	0.5" - 13 UNC / 4x
1/2"	cl. 900 - 1500	RF	50.0	15.8	18.5	120.0	34.9	7.0	63.5	82.6	3/4" - 10 UNC / 4x
3/4"	cl. 150	RF	50.0	21.0	18.5	100.0	42.9	2.0	40.5	69.9	0.5" - 13 UNC / 4x
3/4"	cl. 300	RF	50.0	21.0	18.5	115.0	42.9	2.0	43.5	82.6	5/8" - 11 UNC / 4x
3/4"	cl. 400 - 600	RF	50.0	21.0	18.5	115.0	42.9	7.0	48.5	82.6	5/8" - 11 UNC / 4x
3/4"	cl. 900 - 1500	RF	50.0	21.0	18.5	130.0	42.9	7.0	53.5	88.9	3/4" - 10 UNC / 4x
1"	cl. 150	RF	50.0	26.6	18.5	110.0	50.8	2.0	46.5	79.4	0.5" - 13 UNC / 4x
1"	cl. 300	RF	50.0	26.6	18.5	125.0	50.8	2.0	51.5	88.9	5/8" - 11 UNC / 4x
1"	cl. 400 - 600	RF	50.0	26.6	18.5	125.0	50.8	7.0	61.5	88.9	5/8" - 11 UNC / 4x
1"	cl. 900 - 1500	RF	50.0	26.6	18.5	150.0	50.8	7.0	69.5	101.6	7/8" - 9 UNC / 4x
1.25"	cl. 150	RF	50.0	35.1	18.5	115.0	63.5	2.0	43.5	88.9	0.5" - 13 UNC / 4x
1.25"	cl. 300	RF	50.0	35.1	18.5	135.0	63.5	2.0	47.5	98.4	5/8" - 11 UNC / 4x
1.25"	cl. 400 - 600	RF	50.0	35.1	18.5	135.0	63.5	7.0	52.5	98.4	5/8" - 11 UNC / 4x
1.25"	cl. 900 - 1500	RF	50.0	35.1	18.5	160.0	63.5	7.0	58.5	111.1	7/8" - 9 UNC / 4x
1.5"	cl. 150	RF	50.0	40.9	18.5	125.0	73.0	2.0	44.5	98.4	0.5" - 13 UNC / 4x
1.5"	cl. 300	RF	50.0	40.9	18.5	155.0	73.0	2.0	54.5	114.3	3/4" - 10 UNC / 4x
1.5"	cl. 400 - 600	RF	50.0	40.9	18.5	155.0	73.0	7.0	64.5	114.3	3/4" - 10 UNC / 4x
1.5"	cl. 900 - 1500	RF	50.0	40.9	18.5	180.0	73.0	7.0	64.5	123.8	1" - 8 UNC / 4x
2"	cl. 150	RF	50.0	47.0	18.5	150.0	92.1	2.0	44.5	120.7	5/8"-11 UNC / 4x
2"	cl. 300	RF	50.0	47.0	18.5	165.0	92.1	2.0	46.5	127.0	5/8"-11 UNC / 8x
2"	cl. 400 - 600	RF	50.0	47.0	18.5	165.0	92.1	7.0	57.5	127.0	5/8"-11 UNC / 8x
2"	cl. 900 - 1500	RF	50.0	47.0	18.5	215.0	92.1	7.0	65.5	165.1	25.4 / 8x

All dimensions in mm

Note: total height upper part = b + 1.5

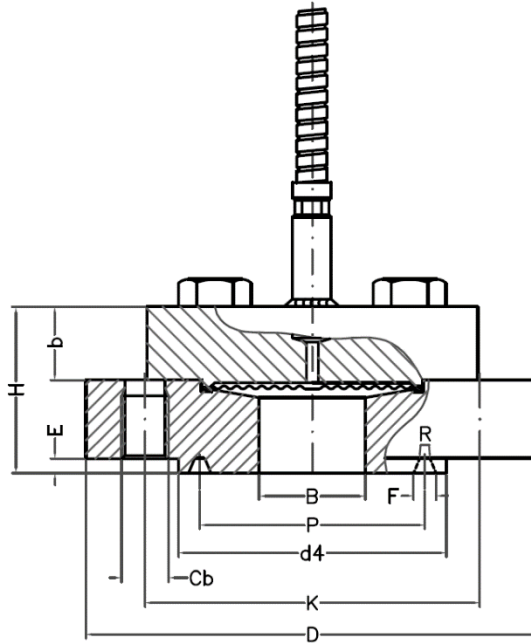
**EN 1092-1 - TYPE B1**

size	rating	type	dD	B	b	D	d4	f	H	K	Cb / pcs
DN15	PN10-40	B1	50.0	17.3	18.5	95.0	45.0	2.0	52.5	65.0	M12 / 4x
DN15	PN63-100	B1	50.0	17.3	18.5	105.0	45.0	2.0	49.5	75.0	M12 / 4x
DN20	PN10-40	B1	50.0	22.3	18.5	105.0	58.0	2.0	40.5	75.0	M12 / 4x
DN20	PN63-100	B1	50.0	21.7	18.5	130.0	58.0	2.0	44.5	90.0	M16 / 4x
DN25	PN10-40	B1	50.0	28.5	18.5	115.0	68.0	2.0	49.5	85.0	M12 / 4x
DN25	PN63-100	B1	50.0	28.5	18.5	140.0	68.0	2.0	55.5	100.0	M16 / 4x
DN32	PN10-40	B1	50.0	37.2	18.5	140.0	78.0	2.0	47.5	100.0	M16 / 4x
DN32	PN63-100	B1	50.0	36.6	18.5	155.0	78.0	2.0	50.5	110.0	M20 / 4x
DN40	PN10-40	B1	50.0	43.1	18.5	150.0	88.0	3.0	45.5	110.0	M16 / 4x
DN40	PN63-100	B1	50.0	42.5	18.5	170.0	88.0	3.0	47.5	125.0	M20 / 4x
DN50	PN10-16	B1	50.0	47.0	18.5	165.0	102.0	3.0	51.5	125.0	M16 / 4x
DN50	PN25-40	B1	50.0	47.0	18.5	165.0	102.0	3.0	51.5	125.0	M16 / 4x
DN50	PN63	B1	50.0	47.0	18.5	180.0	102.0	3.0	51.5	135.0	M20 / 4x
DN50	PN100	B1	50.0	47.0	18.5	195.0	102.0	3.0	49.5	145.0	M24 / 4x

All dimensions in mm

Note: total height upper part = b + 1.5

DRAWING AND DIMENSIONS RJF FACING



ASME B16.5 - RJF FACING

size	rating	facing	dD	B	b	D	d4	E	F	H	K	P	R	Cb / pcs
1/2"	cl. 300	RJF	50.0	15.8	18.5	95.0	34.9	5.5	8.7	59.0	66.7	39.7	0.8	0.5"-13 UNC / 4x
1/2"	cl. 400 - 600	RJF	50.0	15.8	18.5	95.0	34.9	5.5	8.7	63.0	66.7	39.7	0.8	0.5"-13 UNC / 4x
1/2"	cl. 900 - 1500	RJF	50.0	15.8	18.5	120.0	34.9	6.4	8.7	63.9	82.6	39.7	0.8	3/4"-10 UNC / 4x
3/4"	cl. 300	RJF	50.0	21.0	18.5	115.0	42.9	6.4	8.7	48.9	82.6	42.9	0.8	5/8"-11 UNC / 4x
3/4"	cl. 400 - 600	RJF	50.0	21.0	18.5	115.0	42.9	6.4	8.7	48.9	82.6	42.9	0.8	5/8"-11 UNC / 4x
3/4"	cl. 900 - 1500	RJF	50.0	21.0	18.5	130.0	42.9	6.4	8.7	56.9	88.9	44.5	0.8	3/4"-10 UNC / 4x
1"	cl. 150	RJF	50.0	26.6	18.5	110.0	50.8	6.4	8.7	50.9	79.4	47.6	0.8	0.5"-13 UNC / 4x
1"	cl. 300	RJF	50.0	26.6	18.5	125.0	50.8	6.4	8.7	55.9	88.9	50.8	0.8	5/8"-11 UNC / 4x
1"	cl. 400 - 600	RJF	50.0	26.6	18.5	125.0	50.8	6.4	8.7	60.9	88.9	50.8	0.8	5/8"-11 UNC / 4x
1"	cl. 900 - 1500	RJF	50.0	26.6	18.5	150.0	50.8	6.4	8.7	68.9	101.6	50.8	0.8	7/8"-9 UNC / 4x
1.25"	cl. 150	RJF	50.0	35.1	18.5	115.0	63.5	6.4	8.7	47.9	88.9	57.2	0.8	0.5"-13 UNC / 4x
1.25"	cl. 300	RJF	50.0	35.1	18.5	135.0	63.5	6.4	8.7	51.9	98.4	60.3	0.8	5/8"-11 UNC / 4x
1.25"	cl. 400 - 600	RJF	50.0	35.1	18.5	135.0	63.5	6.4	8.7	51.9	98.4	60.3	0.8	5/8"-11 UNC / 4x
1.25"	cl. 900 - 1500	RJF	50.0	35.1	18.5	160.0	63.5	6.4	8.7	59.9	111.1	60.3	0.8	7/8"-9 UNC / 4x
1.5"	cl. 150	RJF	50.0	40.9	18.5	125.0	73.0	6.4	8.7	48.9	98.4	65.1	0.8	0.5"-13 UNC / 4x
1.5"	cl. 300	RJF	50.0	40.9	18.5	155.0	73.0	6.4	8.7	58.9	114.3	68.3	0.8	3/4"-10 UNC / 4x
1.5"	cl. 400 - 600	RJF	50.0	40.9	18.5	155.0	73.0	6.4	8.7	63.9	114.3	68.3	0.8	3/4"-10 UNC / 4x
1.5"	cl. 900 - 1500	RJF	50.0	40.9	18.5	180.0	73.0	6.4	8.7	63.9	123.8	68.3	0.8	1"-8 UNC / 4x
2"	cl. 150	RJF	50.0	47.0	18.5	150.0	92.1	6.4	8.7	48.9	120.7	82.6	0.8	19.1 / 4x
2"	cl. 300	RJF	50.0	47.0	18.5	165.0	92.1	7.9	11.9	53.4	127.0	82.6	0.8	19.1 / 8x
2"	cl. 400 - 600	RJF	50.0	47.0	18.5	165.0	92.1	7.9	11.9	58.4	127.0	82.6	0.8	19.1 / 8x
2"	cl. 900 - 1500	RJF	50.0	47.0	18.5	215.0	92.1	7.9	11.9	64.4	165.1	95.3	0.8	25.4 / 4x

All dimensions in mm

Note: total height upper part = b + 1.5



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