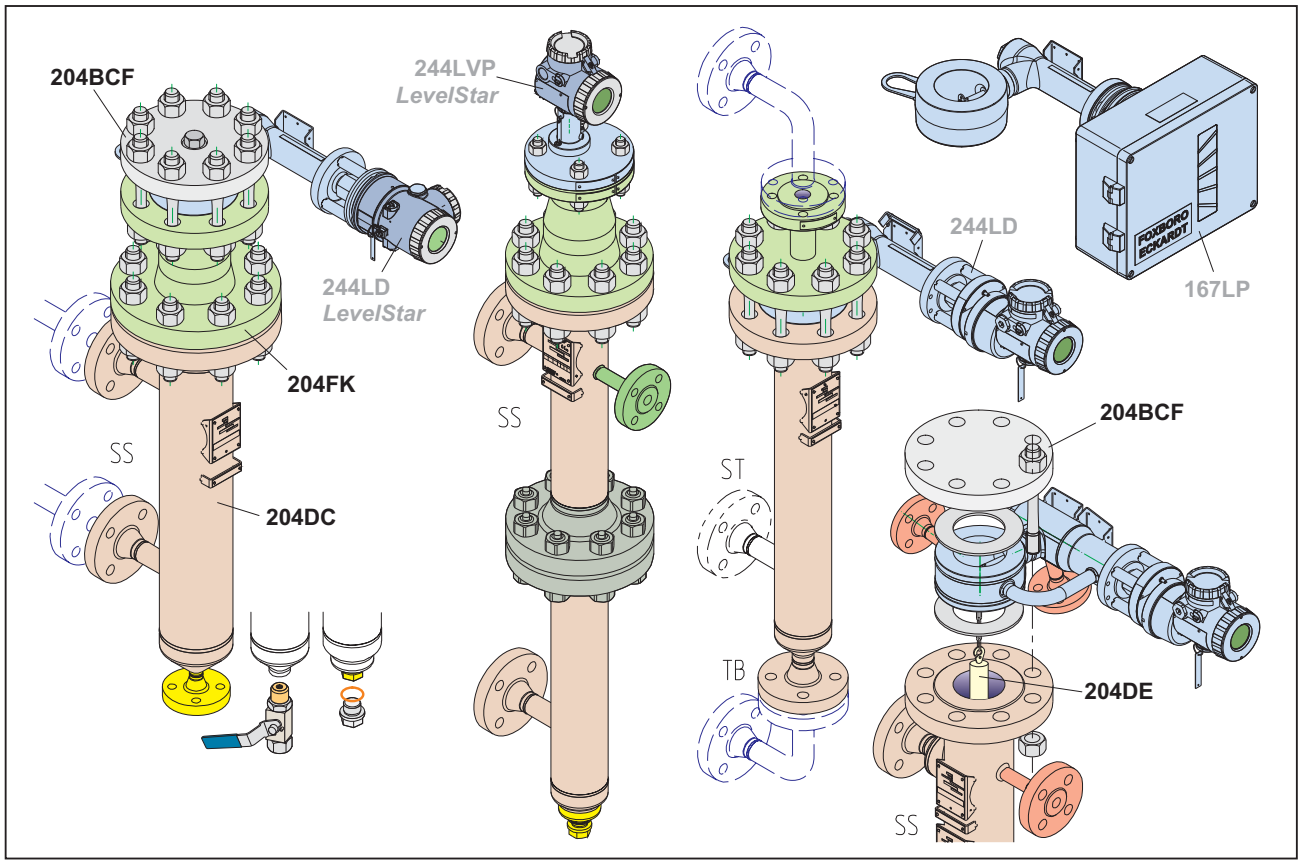
204xx Accessories for Buoyancy Transmitters

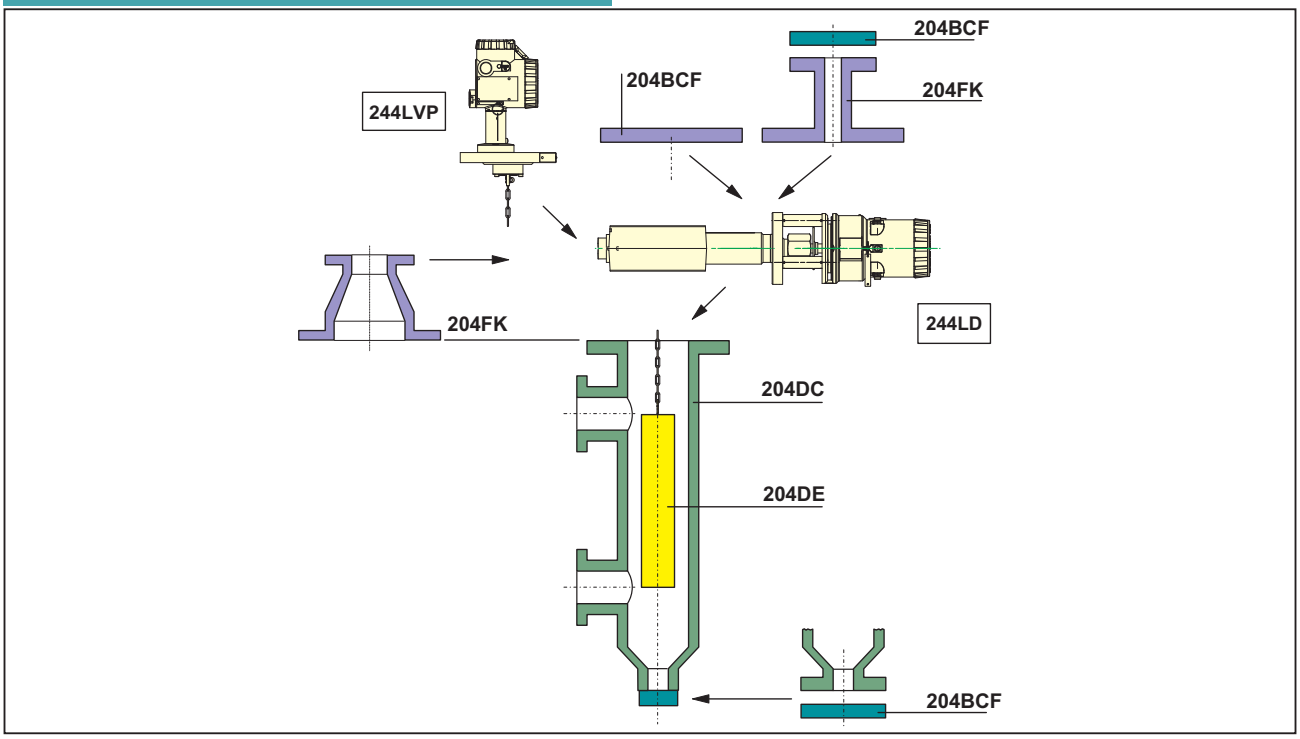


Buoyancy transmitters to measure liquid level, interface and density are used for open or closed vessels or containers. They can be mounted directly on top of the vessel, or if the application requires, on a side mounted cage. Depending on application and vessel design various installation accessories and the applicable displacer have to be selected.

FEATURES

- Universally applicable for all FOXBORO buoyancy transmitters with displacers
- Various connections, dimensions and materials
- Displacers with custom dimensions and material
- Standards according to DIN and ANSI
- Certification according to “Pressure Equipment Direktive” PED
- Certification for use in Zone 0
- Certified as part of an overfill protection according to WHG

ACCESSORIES OVERVIEW



Accessories consisting of:

Selection criteria

The accessories can be used with following types of transmitters:

Type	max. stat. pressure	Accessories			
244LVP	PN 150 / class 900	204 DE	204 DC	204 BCF	204 FK
144LVD	PN 500 / class 2500	204 DE	204 DC	204 BCF	204 FK
244LD 167LP	PN 250 / class 1500	204 DE	204 DC	204 BCF	204 FK

Safety requirements

The accessories dimensions correspond to the appropriate DIN and ANSI standards.

For the accessories only tough materials are used according to the AD instruction sheet series W or the material selection sheets VdTÜV

Application in Zone 0 / as part of an overfill protection (WHG)

If the transmitter and the displacer 204DE are permitted for use in Zone 0, the remaining accessories can be used without any restriction.

Carbon Steel (1.0460): min. thickness of material to be 3 mm (0.12 inch).

Displacer chambers

Calculation, manufactoring and testing corresponding to requirements of AD instruction sheets series B and HP.

Displacer sizing is according to the “Pressure Vessel Regulation”.

Non-standard displacer chambers can be certified by TÜV.

DECLARATION OF CONFORMITY

- ***Directive 97/23/EC (according to Annex VII)***

We herewith declare in sole responsibility, that the products:

Buoyancy Transmitter
Types: 244LD, 167LP and their accessories

comply with the Pressure Equipment Directive 97/23/EC and the
AD 2000-Instructions, TRB

Applied conformity assessment procedures:
Module B and D
EC-Type-Examination and Quality Assurance for Production

For these products the following EC-Certificates are existing:
P-IS-DDB-MAN-12-07-17329989-001
DGR-0036-QS-1021-11

The engaged Notified Body is:
TÜV SÜD Industrie Service GmbH, Dudenstr. 28, D-68167 Mannheim

Application considerations

For all accessories exposed to the process, the following pressure / temperature ranges with references to the selected material are applicable:

Detailed specifications for the materials with respect to chemical composition, temperature, limits of application and kind of certification according to EN 10 204, AD 2000 and EN 13 445.

MATERIAL: 1.4571 / 1.4404 / 1.4541									
NOMINAL PRESSURE		Max. permissible operating pressure in bar for temperatures in °C							
DIN PN	ANSI class	-196 -10	-10 +50	+100	+200	+300	+400	+500	°C
16		16	16	15	13	11	10	10	
40		40	40	37	33	29	26	25	
64		64	64	59	53	46	42	40	
100		100	100	92	83	72	67	63	
160		160	160	147	132	115	107	102	
250		250	250	229	207	179	167	159	
400		400	400	366	331	286	267	254	
500		500	500	458	414	358	334	318	
	150	20	20	18	16	14	13	12	
	300	50	50	45	41	36	33	31	
	600	110	110	100	90	78	73	70	
	900	155	155	141	128	110	102	99	
	1500	260	260	238	214	186	173	166	
	2500	420	420	384	345	300	279	268	

MATERIAL: 1.4462 (DUPLEX)								
NOMINAL PRESSURE		Max. permissible operating pressure in bar for temperatures in °C						
DIN PN	ANSI class	-40 +50	+100	+150	+200	+250	+280	°C
16		16	14	13	12	12	11	
40		40	36	33	31	29	28	
64		64	57	54	49	47	45	
100		100	90	84	77	74	71	
160		160	144	134	124	118	114	
250		250	225	209	194	184	178	
400		400	360	334	310	294	284	
500		500	450	418	388	368	356	
	150	20	18	17	15	14	14	
	300	50	45	42	39	37	35	
	600	110	99	92	85	81	78	
	900	155	139	130	120	114	110	
	1500	260	234	218	201	191	185	
	2500	420	378	352	324	308	298	

Flanges 1.0460 (P250GH)- // -Tubes 1.0345 (P235GH)									
NOM. PRESS.		Max. permissible operating pressure in bar							
DIN PN	ANSI class	-60 -10	-10 +50	+120	+200	+250	+300	+350	+400
16		12	16	14	12	10	9	8	8
40		30	40	34	29	26	23	20	19
64		48	64	54	46	41	36	33	31
100		75	100	85	72	64	56	51	48
160		120	160	135	116	102	90	82	76
250		187	250	211	181	160	140	128	119
400		299	400	337	289	256	224	204	190
500		374	500	422	362	320	280	256	238
	150	15	20	17	15	13	11	10	10
	300	38	50	42	36	32	28	26	24
	600	82	11	93	80	70	62	56	52
	900	116	155	131	112	99	87	79	74
	1500	195	260	219	188	166	146	133	124
	2500	315	420	353	303	268	235	214	200

MATERIAL: 2.4856 (Inconel 625)								
NOM. PRESS.		Max. permissible operating pressure in bar						
DIN PN	ANSI class	-196 +50	+100	+200	+300	+400	+450	°C
16		16	14	13	12	11	11	
40		40	36	33	31	29	28	
64		64	58	53	50	47	45	
100		100	92	84	78	73	71	
160		160	147	134	126	117	113	
250		250	230	210	197	184	177	
	150	20	18	16	15	14	14	
	300	51	47	42	40	37	36	
	600	102	93	85	80	75	72	
	900	153	140	128	120	112	108	
	1500	255	234	214	201	187	181	

MATERIAL: 2.4858 (Inconel 825)									
NOM. PRESS.		Max. permissible operating pressure in bar							
DIN PN	ANSI class		-10 +50	+100	+200	+300	+400	+450	°C
16			16	14	12	11	10	10	
40			40	34	30	28	26	25	
64			64	55	48	45	42	40	
100			100	86	75	70	66	63	
160			160	138	120	112	105	102	
250			250	216	187	176	164	159	
	150		20	17	15	14	13	12	
	300		50	43	37	35	33	32	
	600		110	96	82	77	72	64	
	900		155	134	116	109	105	97	
	1500		260	224	195	183	171	162	

MATERIAL: 2.4610 / 2.4819 (HC)								
NOM. PRESS.		Max. permissible operating pressure in bar						
DIN PN	ANSI class	-196 -10	-10 +50	+100	+200	+300	+400	°C
16		16	16	15	13	13	12	
40		40	40	37	33	32	29	
64		64	64	60	53	51	47	
100		100	100	93	83	80	73	
160		160	160	149	133	128	118	
250		250	250	233	209	200	184	
400		400	400	372	334	320	294	
500		500	500	466	418	400	368	
	150	20	20	18	16	16	15	
	300	50	50	46	42	40	37	
	600	11	110	103	92	88	81	
	900	155	155	145	129	124	114	
	1500	260	260	243	217	209	192	
	2500	420	420	392	350	337	310	

Displacer 204DE

	Displacer	
	204DE-S	204DE-T
Transmitter	typical density ranges [kg/m^3]	
244LD **244LVP**	250 ... 2000	300 ... 600
167LP	550 ... 1500	125 ... 500

Check for use in a displacer chamber

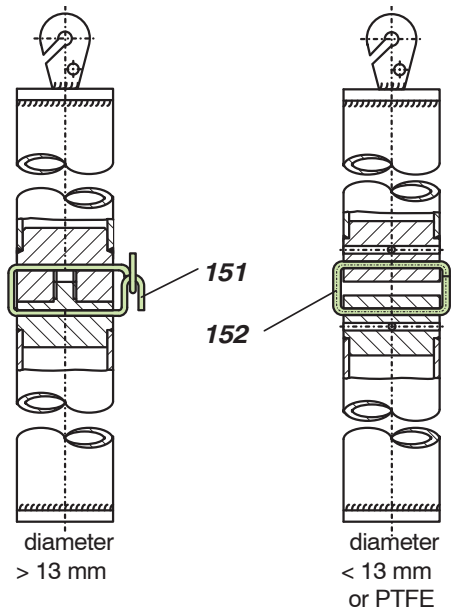
The diameter of displacer must be at least 10 mm smaller than the inside diameter of the displacer chamber!

Pressure Rating

The displacer must be designed for the pressure rating of the vessel – however, at least to the operating pressure – and ordered accordingly. Here the maximum possible temperature must be taken into consideration.
Displacers made of PTFE are made from solid material, and are, therefore, suitable for all pressures (Note the temperature).

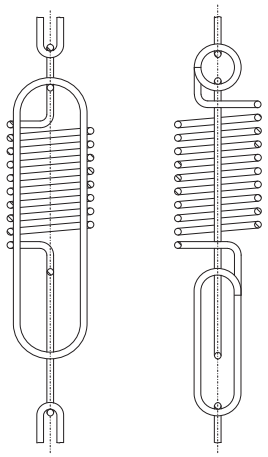
Divided displacers

Displacers with a length of more than 3 m (1 m with PTFE) are divided. The displacer elements are screwed together and secured with the wire clip ***151*** to avoid bending or damage during insertion into the vessel. The elements of displacers with Ø < 13 mm are not screwed together; they are secured with hook and eyelet ***152*** . Additional securing is not necessary [1].
Lengths < 350 mm or > 3000 mm, and density ranges <300 kg/m³ or >2000 kg/m³ on request.



Mechanical vibrations

If the transmitter is exposed to external vibrations by means of the installation, it is recommended to order the displacer with a damping spring (Model Code Option -C or -D) which is attached to the suspension chain.



It is hooked onto the suspension chain of the displacer in place of 7 chain links (105 mm). This spring is specially matched to the resonance frequency of the displacer and is made of stainless steel 1.4310 (max. operating temperature 250 °C) or HC (max. 350°C).

Use in Zone 0 or as Overfill protection acc. to WHG [2]

Mechanics

When used in Zone 0, displacers must be secured against oscillating when
- displacer made of metal, explosion group IIC
- displacer made of metal, explosion group IIB/A, length > 3 m
- displacer made of PTFE+25% carbon, IIC/B/A, length > 3 m

The displacer is to be attached in such a way that it is not in the main filling jet stream.
When used as overfill protection according to WHG, the displacer must always be installed with guidance.
Guidance devices over 3 m long must also be secured against bending.

Potential equalization

When used in Zone 0, only displacers of metal or PTFE +25 % carbon may be used.
A potential equalization line must be mounted as an electrical bypass of the displacer suspension(s) if the residual displacer weight is < 10 N, or if more than 6 contact points are present.
To avoid the danger of electrostatic ignition, a connection to the transmitter with good conductivity must be ensured.
The volume resistance between the lower end of the displacer and ground may not exceed 1 MΩ.

MATERIALS, PRESSURE RATINGS, SUITABLE SIZES

see Model Codes on following pages.

1) When used in Zone 0, the eyelets must also be welded.

2) See corresponding certificates for further details

Standard Dimensions and Weights for Density Ranges $\Delta\rho$ [4]

Material	1.4404 / 1.4435 (316L) [5]													PTFE / PTFE with 25 % C				Hastelloy C [5]			
	-S (PN 100)				-T [6] (PN 40 / 63)					-S (PN 250)				-S (PN 500)				-S (PN 100 / 160)			
	Density Range $\Delta\rho$																				
	250 ... 1500 kg/m³				300 ... 600 kg/m³					400 ... 2000 kg/m³				200 ... 1500 kg/m³				300 ... 1500 kg/m³			
Len. L	**Ø mm**	**Vol. cm³**	**Wei. N**	**PN bar**	**Ø mm**	**Vol. cm³**	**Wei. N**	**PN bar**	**ρ_{min} kg/m³**	**Ø mm**	**Vol. cm³**	**Wei. N**	**PN bar**	**Ø mm**	**Vol. cm³**	**Wei. N**	**PN bar**	**Ø mm**	**Vol. cm³**	**Wei. N**	**PN bar**
mm																					
350	60.3	1000	19	100	101.6	2840	38	40	460	42.4	500	18	250	62	1056	23	500	60.3	1000	18	100
500	48.3	920	17	100	88.9	3100	43	63	580	42.4	710	24	250	51	1021	23	500	48.3	920	19	100
750	42.4	1060	21	100	76.1	3410	44	63	545	33.7	670	21	250	42	1039	24	500	48.3	1370	27	100
1000	33.7	890	17	100	60.3	2855	41	63	545	26.9	570	18	250	35	961	21	500	33.7	890	19	100
1200	33.7	1070	20	100	60.3	3425	48	63	675	26.9	680	22	250	35	1153	25	500	33.7	1070	22	100
1500	26.9	850	16	100	51	3065	39	63	460	21.3	540	17	250	30	1060	24	500	26.9	850	18	160
1800	26.9	1020	19	100	42.4	2540	38	63	495	21.3	640	20	250	28	1107	25	500	26.9	1020	21	160
2000	26.9	1140	21	100	42.4	2825	41	63	565	21.3	710	22	250	25	981	22	500	26.9	1140	23	160
2500	21.3	890	20	100	38	2840	37	63	425	17.2	580	16	250	22.5	993	23	500	21.3	890	23	160
3000	21.3	1070	24	100	38	3400	45	63	575	17.2	700	23	250	20	942	22	500	21.3	1070	27	160
inch																					
14	60.3	1020	20	100	101.6	2885	38	40	455	42.4	510	18	250	62	1074	23	500	60.3	1020	18	100
32	42.4	1150	23	100	76.1	3700	47	63	595	33.7	730	23	250	42	1126	26	500	33.7	720	16	100
48	33.7	1090	20	100	60.3	3480	49	63	680	26.9	690	22	250	35	1171	26	500	33.7	1090	23	100
60	26.9	870	16	100	51	3115	40	63	465	21.3	540	18	250	30	1076	24	500	26.9	870	18	100
72	26.9	1040	19	100	42.4	2580	38	63	505	21.3	650	21	250	28	1124	26	500	26.9	1040	21	160
84	26.9	1210	22	100	42.4	3000	44	63	635	21.3	760	23	250	25	1046	24	500	26.9	1210	25	160
96	21.3	870	20	100	38	2765	37	63	420	17.2	570	16	250	22.5	968	22	500	21.3	870	23	160
120	21.3	1090	25	100	38	3455	46	63	595	17.2	710	24	250	20	957	22	500	21.3	1090	25	160

4) $\Delta\rho = \rho1 - \rho2$ mit $\rho1$ = density of lower medium, $\rho2$ = density of upper medium

5) Displacers made of metal can cause small deviations in diameter, volume and weight

6) For measurement of interface or density, the max. density of the lower medium is 1350 kg/m³

Dimensionioning

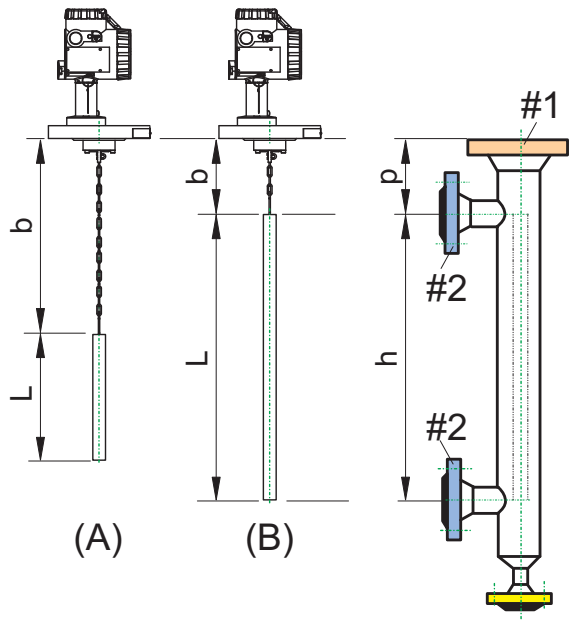
b is the length of the suspension and
L is the length of the displacer = Measuring length (Fig. A).

p is the distance between the upper edge of flange #1 to the center of flange #2,
h is the distance between the two flanges #2 / #2.

In a typical application, b = p and L = h (Fig. B).

When ordering, specify the dimensions L and b as well as the physical data such as pressure, nominal size, etc.

When ordered including displacer chamber (see page 8), dimension b must not be specified when the displacer lenght L is equal to the flange distance h.



MODEL CODES 204DE

Displacer for Buoyancy Transmitters from 2N buoyancy up to 20N 204DE						201016
RANGE OF APPLICATION: (a)						
Liquid Level - Media: Liquid / Gas or Air						
(Density difference = 250 kg/m³ to 2000 kg/m³)						
(= 9x10^{-3} lbm/in^3 to 72.2x10^{-3} lbm/in^3)	-S					
Interface Level / Density - Media: Liquid 1 / Liquid 2						
(Density difference = 300 kg/m³ to 600 kg/m³)						
(= 10.8x10^{-3} lbm/in^3 to 22.7x10-3 lbm/in^3) (g)(h)	-T					
DISPLACER MATERIAL:						
1.4404 (316L)		S				
1.4541 (321)		H				
PTFE (not for applications in Zone 0)		P				
PTFE with 25% Carbon, for Zone 0		O				
Hastelloy C		C				
2.4856 (Inconel 625) (e)		R				
2.4360 (Monel 400) (e)		M				
3.7035 (Titan) (e)		T				
PRESSURE RATING:						
Up to PN 100 / Class 600			D			
Up to PN 160 / Class 900			E			
Up to PN 250 / Class 1500			F			
Up to PN 500 / Class 2500			G			
SUITABLE FOR FLANGE SIZE: (at Top of vessel/chamber)						
DN 50				0		
DN 70				1		
DN 80				2		
DN 100				3		
DN 150				4		
2 inch				5		
3 inch				6		
4 inch				7		
6 inch				8		
DISPLACER LENGTH "L": (inches are approx.)						
for Displacer Material codes P, and O:						
300 mm (12 inch) to 2000 mm (79 inch), with partition > 1000 mm					A	
2001 mm (79 inch) to 4000 mm (157 inch), with partition points					B	
4001 mm (157 inch) to 6000 mm (236 inch), with partition points					C	
6001 mm (236 inch) to 8000 mm (315 inch), with partition points					D	
8001 mm (315 inch) to 10000 mm (394 inch), with partition points					E	
10001 mm (394 in) to 12000 mm (472 in), with partition points					F	
for Displacer Material codes S, H, C, R, M, and T:						
300 mm (12 in) to 3000 mm (118 in) without partitioning					K	
3001 mm (118 in) to 6000 mm (236 in) One partition point					L	
6001 mm (236 in) to 9000 mm (354 in) Two partition points					M	
9001 mm (354 in) to 12000 mm (472 in) Three partition points					N	
12001 mm (472 in) to 15000 mm (591 in) Four partition points					O	
MATERIAL AND LENGTH OF THE SUSPENSION: (Length "b") (d)						
1.4404 (316L) Standard length of Suspension (b)						S1
1.4404 (316L) Customized Suspension Length (c)						S2
1.4541 (321) Standard length of Suspension (b)						H1
1.4541 (321) Customized Suspension Length (c)						H2
Hastelloy C / Standard length of Suspension (b)						C1
Hastelloy C / Customized Suspension Length (c)						C2
2.4856 (Inconel 625) / Standard length of Suspension (b)						I1
2.4856 (Inconel 625) / Customized Suspension Length (c)						I2
2.4360 (Monel 400) / Standard length of Suspension (b)						M1
2.4360 (Monel 400) / Customized Suspension Length (c)						M2
3.7035 (Titan) / Standard length of Suspension (b)						T1
3.7035 (Titan) / Customized Suspension Length (c)						T2

(continued on next page)

MODEL CODES 204DE (continued)

OPTIONS:

For application in Zone 0 (Additional grounding rope) (not available with Displacer Material: P)	-E
Damping Spring (Mat. 1.4310, max. 250 °C (482 °F)) (f)	-D
Damping Spring (Mat. HC, max 350 °C (662 °F)) (f)	-C
Density difference > 300 kg/m^3 (a)	-K
Tag No. Labeling – Stainless Steel Label Fixed With Wire (Text required)	-L
Certificates	
EN 10204-2.1 Certificate Of Compliance	-1
EN 10204-3.1 Inspection Certificate Of Process Wetted Metallic Material (not available with Displacer Material: P and O)	-3
PMI - Test (not available with Displacer Material: P and O)	-5

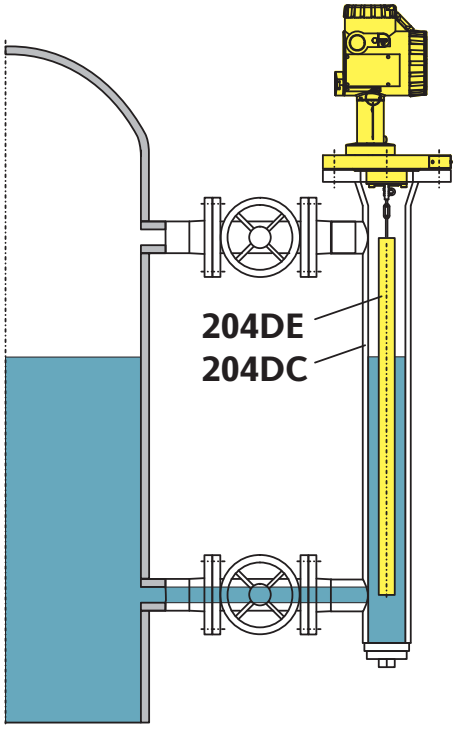
(a) Upper and Lower Medium Density required (at operating temperature)
(b) Only in connection with Modelcode 204DC
(c) Exact length required (Contact face of flange to upper end of displacer)
(d) +/- 8 mm (+/- 0.3 inch)
(e) On ECEP request
(f) Required for 244LD with Option -G
(g) Consult factory if pressure rating is F or G
(h) Option K required

DISPLACER CHAMBER 204DC

A displacer chamber is mounted on the side of the vessel, and the transmitter at its top flange.
Displacer chambers are offered in four vessel mounting arrangements (see illustration right: "Side-Side").
All mounting arrangements are also available with **heating jacket**.
The valves, etc. are to procure on site.

For use as a part of an overfill protection, the same length "L" of displacer and “h” of chamber is required.

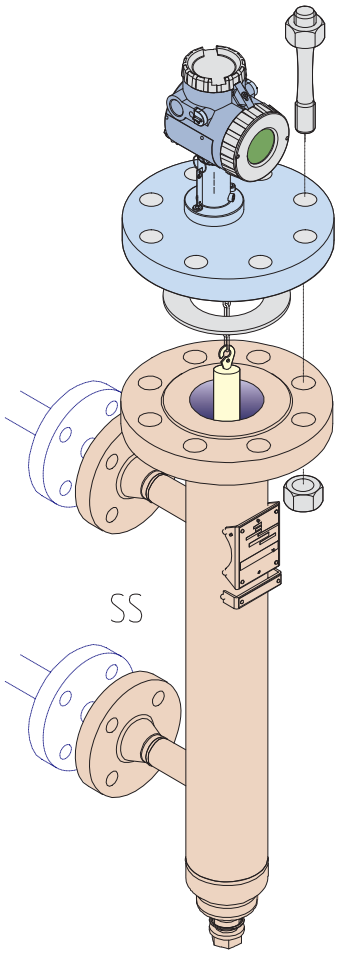
Materials,
Pressure Ratings,
Flange Sizes,
Contact Faces,
Pipe Sizes,
Drain Types: Flange, Screw, Pipe piece for welding
Heating Jacket
see Model Codes on following pages.



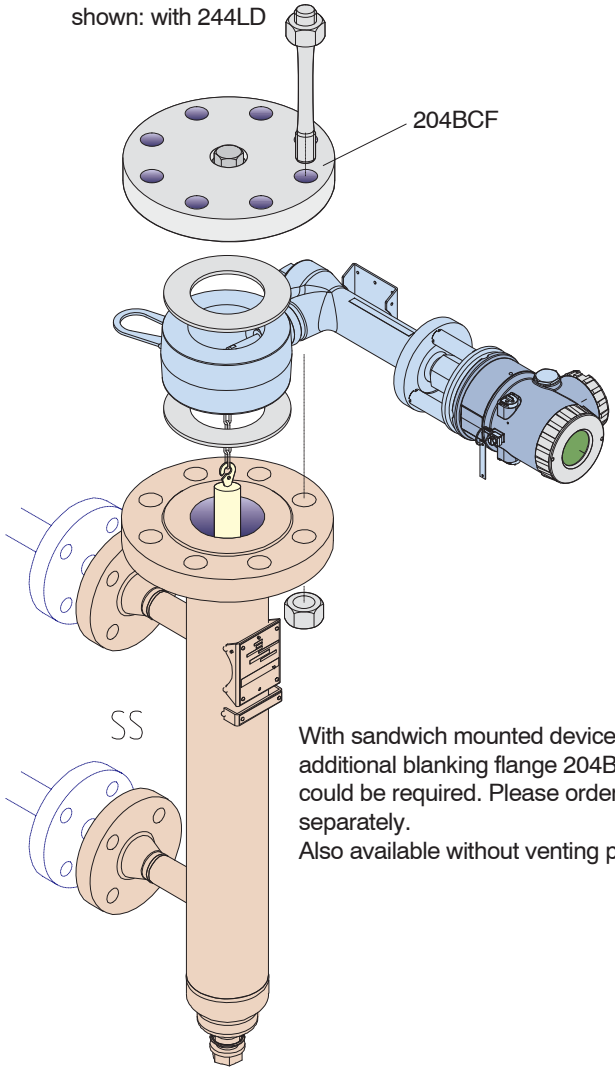
Overview: Types of Transmitters

We offer both Level transmitters for flange mounting and for sandwich assembly, depending on the measurement task.

Flange mounted devices
shown: with 244LVP



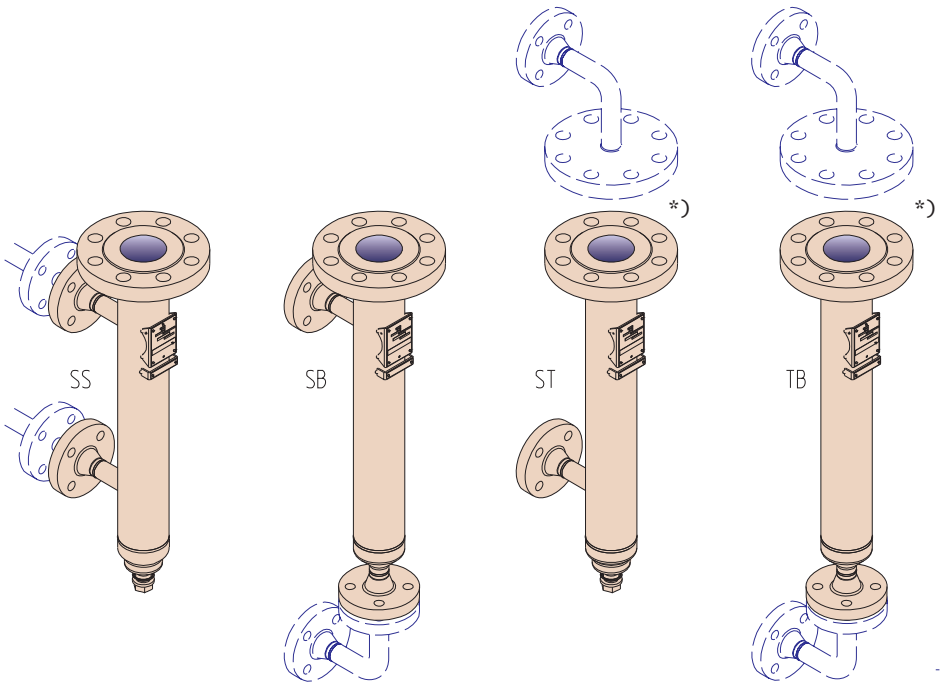
Sandwich mounted devices
shown: with 244LD



With sandwich mounted devices an additional blanking flange 204BCF could be required. Please order separately.
Also available without venting plug.

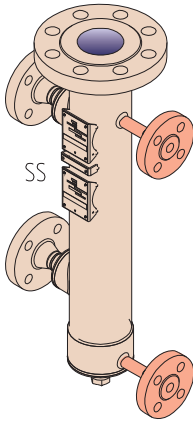
Overview: Mounting arrangements

Side-Side | Side-Bottom | Side-Top | Top-Bottom



All mounting arrangements also available with heating jacket (shown: "Side-Side")

Option:
with drain flange instead of drain screw

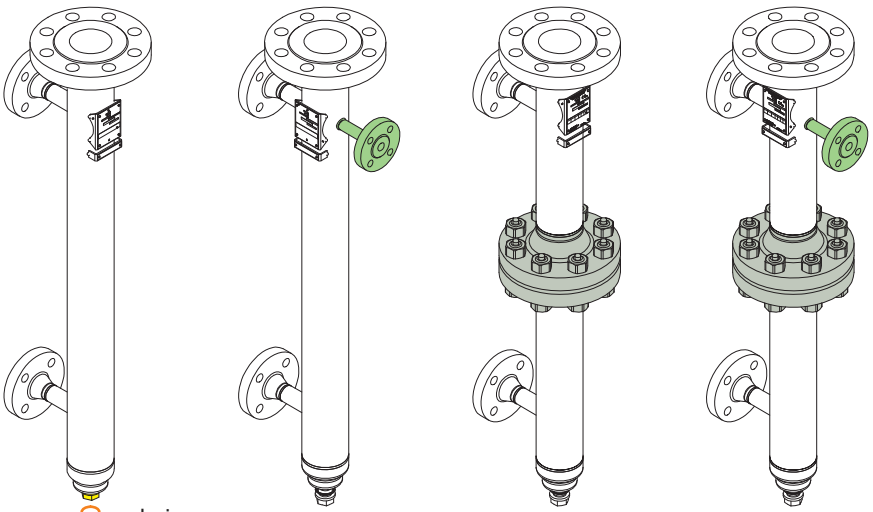


- — — —to procure on site

*) only possible with sandwich mounted devices:
- 244LD
- 167LP

Overview: Versions / Options

Standard | with flushing connector | partitioned (if > 3 m) | partitioned, and with flushing connector



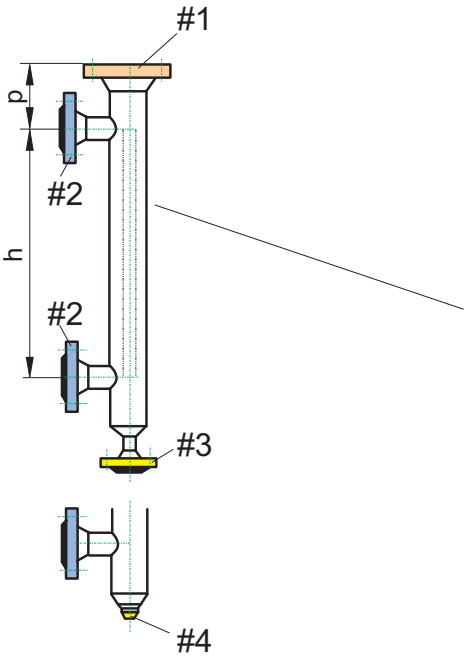
drain screw

drain valve

drain flange

An additional blanking flange 204BCF has to be ordered separately.
(see page 25).

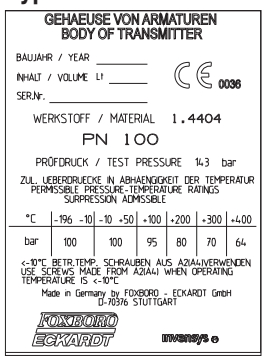
Displacer chamber connections



Example: Displacer chamber “Connection Side-Side”

#1 Connection flange (to transmitter)
#2 Chamber connection flange
#3 Drain flange
#4 Drain plug or Drain valve

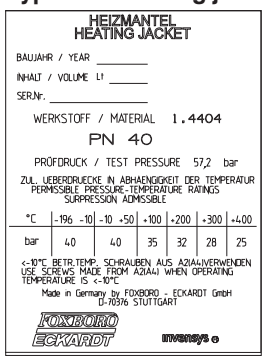
Type label


GEHAEUSE VON ARMATUREN
BODY OF TRANSMITTER
BAUJAHR / YEAR
INHALT / VOLUME Lt
SER.Nr.
CE 0036
WERKSTOFF / MATERIAL 1.4404
PN 100
PRÜFDRUCK / TEST PRESSURE 143 bar
ZUL. UEBERDRUECKE IN ABHAENGIGKEIT DER TEMPERATUR
PERMISSIBLE PRESSURE-TEMPERATURE RATINGS
SURPRESSION ADMISSIBLE

°C	-196	-10	-10	+50	+100	+200	+300	+400
bar	100		100	95	80	70	64	

<-10°C BETR.TEMP. SCHRAUBEN AUS A2/A4/VERWENDEN
USE SCREWS MADE FROM A2/A4/ WHEN OPERATING
TEMPERATURE IS <-10°C
Made in Germany by FOXBORO - ECKARDT GmbH
D-70376 STUTTGART
FOXBORO ECKARDT
invensys

Type label heating jacket


HEIZMANTEL
HEATING JACKET
BAUJAHR / YEAR
INHALT / VOLUME Lt
SER.Nr.
WERKSTOFF / MATERIAL 1.4404
PN 40
PRÜFDRUCK / TEST PRESSURE 57,2 bar
ZUL. UEBERDRUECKE IN ABHAENGIGKEIT DER TEMPERATUR
PERMISSIBLE PRESSURE-TEMPERATURE RATINGS
SURPRESSION ADMISSIBLE

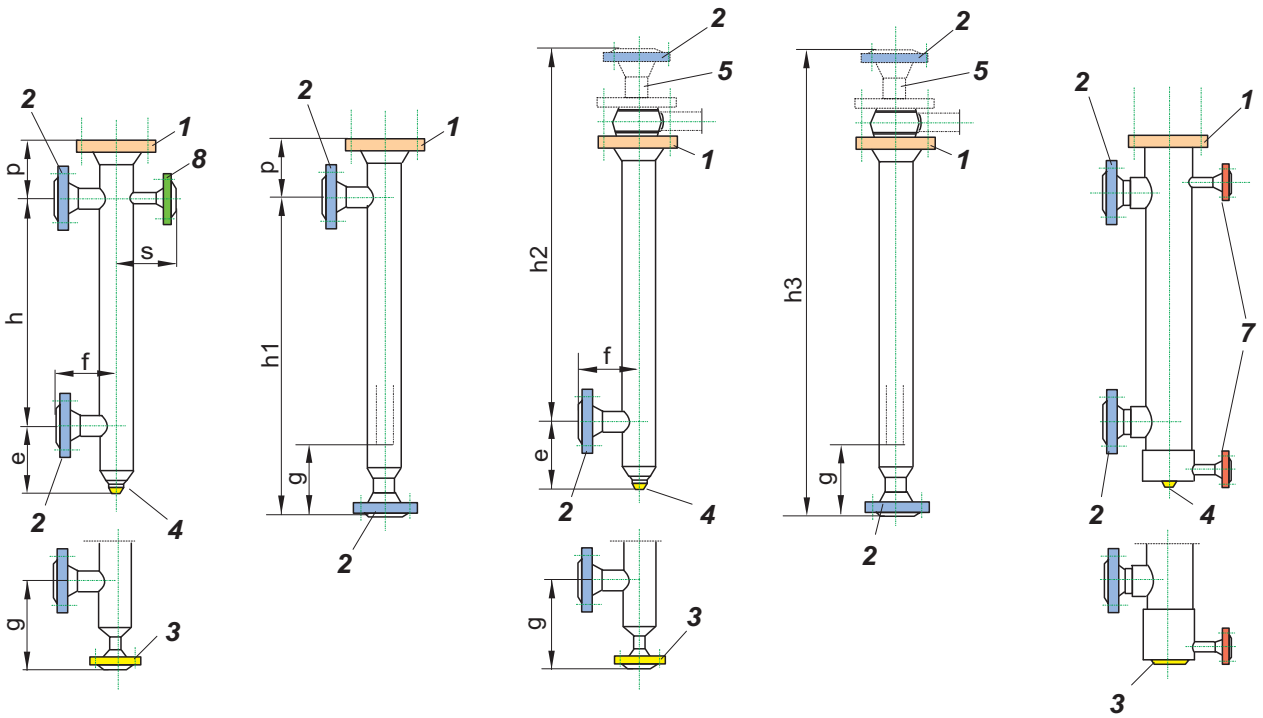
°C	-196	-10	-10	+50	+100	+200	+300	+400
bar	40		40	35	32	28	25	

<-10°C BETR.TEMP. SCHRAUBEN AUS A2/A4/VERWENDEN
USE SCREWS MADE FROM A2/A4/ WHEN OPERATING
TEMPERATURE IS <-10°C
Made in Germany by FOXBORO - ECKARDT GmbH
D-70376 STUTTGART
FOXBORO ECKARDT
invensys

DIMENSIONS Displacer chamber 204DC: Mounting arrangements (Mounting Types)

When ordering, specify the dimension h and physical data such as pressure, nominal size, etc. Therefrom, the dimensions p, e, f and g will be derived, see tables from page 11. Other dimensions of p, e, f, g, as a special version.

without heating jacket				Displacer Chambers with heating jacket on request
Side - Side	Side - Bottom	Side - Top	Top - Bottom	shown: Side - Side



1 Connecting flange #1 to transmitter (See model code: Flange size & pressure rating
2 Process connection flange #2 (See model code: Flanges to vessel)
3 Drain flange #3
4 Drain plug #4
5 Flange combination 204 FK
7 Connection flange for heating jacket
8 Flushing connector

204DC Dimension

DIN EN Displacer chamber and Flange		Process Connection Flange	Drain flange ≙Flush. Connection	Dimensions				
Pressure PN	Flange size DN	Flange size DN	Flange size DN	f≙s mm	f+60 mm	g mm	p mm	e mm
16	50	15	15	128	188	196	135	153
			20			198		
		25	25	130	190	198		
		40	40	135	195	203		
	80	15	15	143	203	196	140	153
			20			198		
		25	25	145	205	198		
		40	40	150	210	203		
		50	50	150	210	193		
	100	15	15	155	215	208	142	161
			20			210		
		25	25	162	222	210		
		40	40	167	227	215		
		50	50	167	227	215		
	150	15	15	182	242	208	145	173
			20			210		
		25	25	190	250	210		
		40	40	195	255	215		
		50	50	195	255	215		
40	50	15	15	128	188	196	138	153
			20			198		
		25	25	130	190	198		
		40	40	135	195	203		
	80	15	15	143	203	196	148	153
			20			198		
		25	25	145	205	198		
		40	40	150	210	203		
		50	50	153	213	196		
	100	15	15	155	215	208	155	161
			20			210		
		25	25	157	217	210		
		40	40	162	222	215		
		50	50	165	225	218		
	150	15	15	182	242	208	165	173
			20			210		
		25	25	184	244	210		
		40	40	189	249	215		
		50	50	192	252	218		
63	50	15	15	135	195	203	152	153
			20			206		
		25	25	148	208	216		
		40	40	152	212	220		
	80	15	15	150	210	203	162	153
			20			206		
		25	25	163	223	216		
		40	40	167	227	220		
		50	50	167	227	210		
	100	15	15	162	222	215	168	161
			20			218		
		25	25	175	235	228		
		40	40	179	239	232		
		50	50	179	239	232		
	150	15	15	189	249	215	185	173
			20			218		
		25	25	202	262	228		
		40	40	206	266	232		
		50	50	206	266	232		

DIN EN		Process Connection Flange	Drain flange ≙Flush. Connection	Dimensions				
Displacer chamber and Flange								
Pressure PN	Flange size DN	Flange size DN	Flange size DN	f≙s mm	f+60 mm	g mm	p mm	e mm
100	50	15	15	135	195	203	158	153
			20			206		
		25	25	148	208	216		
		40	40	152	212	220		
	80	15	15	150	210	203	168	153
			20			206		
		25	25	163	223	216		
		40	40	167	227	220		
		50	50	173	233	215		
	100	15	15	162	222	215	180	161
			20			218		
		25	25	175	235	228		
		40	40	179	239	232		
		50	50	185	245	238		
	150	15	15	189	249	215	205	173
			20			218		
		25	25	202	262	228		
		40	40	206	266	232		
		50	50	212	272	238		
160	50	15	15	135	195	203	165	153
		25	25	148	208	216		
		40	40	154	214	222		
	80	15	15	150	210	203	176	153
		25	25	163	223	216		
		40	40	169	229	222		
		50	50	180	240	228		
	100	15	15	162	222	215	190	161
		25	25	175	235	228		
		40	40	181	241	234		
		50	50	192	252	250		
	150	15	15	189	249	215	218	173
		25	25	202	262	228		
		40	40	208	268	234		
		50	50	219	279	250		
250	50	15	15	150	210	218	175	153
		25	25	155	215	223		
		40	40	170	230	238		
	80	15	15	171	231	218	192	153
		25	25	176	236	223		
		40	40	191	251	238		
		50	50	196	256	238		
	100	15	15	184	244	230	210	161
		25	25	189	249	235		
		40	40	204	264	250		
		50	50	209	269	238		

ANSI Displacer chamber and Flange		Process Connection Flange	Drain flange ≙Flush. Connection	Dimensions				
Pressure class	Flange size DN	Flange size DN " inch"	Flange size DN	f≙s mm	f+60 mm	g mm	p mm	e mm
150	2"	1/2	1/2	138	198	206	154	153
			3/4			211		
		1	1	146	206	214		
		1 1/2	1 1/2	152	212	220		
	3"	1/2	1/2	153	213	206	160	153
			3/4			211		
		1	1	161	221	214		
		1 1/2	1 1/2	167	227	220		
		2	2	169	229	212		
	4"	1/2	1/2	165	225	218	167	161
			3/4		60	223		
		1	1	173	233	226		
		1 1/2	1 1/2	179	239	232		
		2	2	181	241	234		
	6"	1/2	1/2	192	252	218	179	173
			3/4			223		
		1	1	217	277	226		
		1 1/2	1 1/2	222	282	232		
		2	2	222	282	234		
300	2"	1/2	1/2	142	202	210	160	153
			3/4			216		
		1	1	152	212	220		
		1 1/2	1 1/2	159	219	227		
		2	2	190	250	228		
	3"	1/2	1/2	158	218	210	170	153
			3/4			216		
		1	1	163	223	220		
		1 1/2	1 1/2	174	234	227		
		2	2	175	235	218		
	4"	1/2	1/2	170	230	222	176	161
			3/4			228		
		1	1	175	235	232		
		1 1/2	1 1/2	186	246	239		
		2	2	187	247	240		
	6"	1/2	1/2	197	257	222	189	173
			3/4			228		
		1	1	202	262	232		
		1 1/2	1 1/2	215	275	239		
		2	2	246	306	240		
600	2"	1/2	1/2	142	202	210	170	153
			3/4			215		
		1	1	152	212	220		
		1 1/2	1 1/2	160	220	228		
		2	2	163	223	231		
	3"	1/2	1/2	157	217	210	180	153
			3/4			215		
		1	1	162	222	220		
		1 1/2	1 1/2	175	235	228		
		2	2	178	238	221		
	4"	1/2	1/2	169	229	222	199	161
			3/4			227		
		1	1	179	239	232		
		1 1/2	1 1/2	187	247	239		
		2	2	190	250	243		
	6"	1/2	1/2	196	256	222	214	173
			3/4			227		
		1	1	206	266	232		
		1 1/2	1 1/2	214	274	239		
		2	2	217	277	243		

ANSI Displacer chamber and Flange		Process Connection Flange	Drain flange ≙Flush. Connection	Dimensions				
Pressure class	Flange size DN	Flange size DN " inch"	Flange size DN	f≙s mm	f+60 mm	g mm	p mm	e mm
900	2"	1/2	1/2	150	210	218	199	153
			3/4			228		
		1	1	163	223	231		
		1 1/2	1 1/2	173	233	241		
		2	2	192	252	260		
	3"	1/2	1/2	165	225	218	199	153
			3/4			228		
		1	1	178	238	231		
		1 1/2	1 1/2	188	248	241		
		2	2	207	267	250		
	4"	1/2	1/2	177	237	230	211	161
			3/4			240		
		1	1	190	250	243		
		1 1/2	1 1/2	201	261	253		
		2	2	219	279	272		
	6"	1/2	1/2	204	264	230	237	173
			3/4			240		
		1	1	217	277	243		
		1 1/2	1 1/2	227	287	253		
		2	2	246	306	272		
1500	2"	1/2	1/2	150	210	218	199	153
			3/4			228		
		1	1	163	223	231		
		1 1/2	1 1/2	173	233	240		
	3"	1/2	1/2	165	225	218	214	153
			3/4			228		
		1	1	178		231		
		1 1/2	1 1/2	189	249	240		
		2	2	207	267	259		
	4"	1/2	1/2	177	237	230	221	161
			3/4			240		
		1	1	190		243		
		1 1/2	1 1/2	208	268	253		
		2	2	219	279	272		

MODEL CODES 204DC

Displacer Chamber 204DC					201016
MOUNTING TYPE: (Flanges to Vessel)					
Side - Side	-SS				
Side - Bottom	-SB				
Side - Top (not for LVP)	-ST				
Top - Bottom (not for LVP)	-TB				
MATERIAL:					
- Flanges: 1.0460 (Carbon Steel); - Pipes: 1.0345 application from –10 °C to 350°C		K			
1.4571 (316 Ti) application from –60 °C to 400 °C		E			
1.4571 (316 Ti) application from –196 °C to 400 °C		F			
1.4571 (316 Ti) application from –60 °C to 500 °C (only with Option -4)		G			
1.4404 (316 L) application from –60 °C to 400 °C		S			
1.4404 (316 L) application from –196 °C to 400 °C		U			
1.4404 (316 L) application from –60 °C to 500 °C (only with Option -4)		T			
1.4541 (321), application from –60 °C to 400 °C		H			
1.4541 (321), application from –196 °C to 400 °C		Q			
1.4541 (321), application from –60 °C to 500 °C (only with Option -4)		J			
1.4462 (Duplex), application from –10 °C to 280 °C (ae)		N			
2.4856 (Inconel 625), application from –196 °C to 450 °C (ae) (only with Option -4)		R			
2.4858 (Inconel 825), application from –10 °C to 450 °C (ae) (only with Option -4) (b)		I			
Hastelloy C, application from –196 °C to 400 °C (ae) (only with Option -4)		C			
PRESSURE RATING:					
PN 16			A		
PN 40 (PN 25)			B		
PN 63			C		
PN 100			D		
PN 160			E		
PN 250 (aa)			F		
Class 150			I		
Class 300			J		
Class 600			K		
Class 900			L		
Class 1500 (aa)			M		
FLANGE SIZE (to Transmitter)					
DN 80 (d)				1	
DN 100 (d)				2	
DN 150 (c) (e) (af)				3	
3 inch (f)				5	
4 inch (f)				6	
6 inch (c) (g) (af)				7	

(continued on next page)

MODEL CODES 204DC (continued)

CONTACT FACE: (Transmitter Mounting Flange)					
Type B1 acc. to DIN EN 1092-1	(h)	M			
Type B2 acc. to DIN EN 1092-1	(i)	O			
Type C acc. to DIN EN 1092-1	(d)	P			
Type D acc. to DIN EN 1092-1	(d)	Q			
Type L Lens acc. to DIN 2696	(k)	L			
Type RF/SF (RA = 125 µinch) Raised Face acc. to ANSI B16.5	(f)	R			
Type RJF Ring Joint Face acc. to ANSI B16.5	(f)	J			
Type E Spigot acc. to DIN EN 1092-1	(d)	X			
Type F Recess acc. to DIN EN 1092-1	(d)	Y			
Type LM Large Male acc. to ANSI B16.5	(f)	W			
Type LF Large Female acc. to ANSI B16.5	(f)	Z			
Type LT Large Tongue acc. to ANSI B16.5	(f)	A			
Type LG Large Groove acc. to ANSI B16.5	(f)	B			
Type ST Small Tongue acc. to ANSI B16.5	(f)	G			
Type SG Small Groove acc. to ANSI B16.5	(f)	H			
FLANGE SIZE / PIPE SIZE (to Vessel)					
DN 15	(d)		A1		
DN 15 Connection pipe 60 mm extended	(d)		A2		
DN 25	(d)		C1		
DN 25 Connection pipe 60 mm extended	(d)		C2		
DN 40	(d)		D1		
DN 40 Connection pipe 60 mm extended	(d)		D2		
DN 50	(d)(v)		E1		
DN 50 Connection pipe 60 mm extended	(d)(v)		E2		
1/2 inch	(f)		G1		
1/2 inch Connection pipe 60 mm extended	(f)		G2		
1 inch	(f)		H1		
1 inch Connection pipe 60 mm extended	(f)		H2		
1 1/2 inch	(f)		I1		
1 1/2 inch Connection pipe 60 mm extended	(f)		I2		
2 inch	(f)(v)		J1		
2 inch Connection pipe 60 mm extended	(f)(v)		J2		
CONTACT FACE: (Flanges to Vessel)					
Type B1 acc. to DIN EN 1092-1	(h)			M	
Type B2 acc. to DIN EN 1092-1	(i)			O	
Type C acc. to DIN EN 1092-1	(i)			P	
Type D acc. to DIN EN 1092-1	(i)			Q	
Type L Lens acc. to DIN 2696	(k)			L	
Type RF/SF (RA = 125 µinch) Raised Face acc. to ANSI B16.5	(f)			R	
Type RJF Ring Joint Face acc. to ANSI B16.5	(f)			J	
Type E Spigot acc. to DIN EN 1092-1	(i)			X	
Type F Recess acc. to DIN EN 1092-1	(i)			Y	
Type LM Large Male acc. to ANSI B16.5	(f)			W	
Type LF Large Female acc. to ANSI B16.5	(f)			Z	
Type LT Large Tongue acc. to ANSI B16.5	(f)			A	
Type LG Large Groove acc. to ANSI B16.5	(f)			B	
Type ST Small Tongue acc. to ANSI B16.5	(f)			G	
Type SG Small Groove acc. to ANSI B16.5	(f)			H	
Pipe piece for welding				S	
DRAIN : Flange, Screw, Pipe piece for welding					
DN 15	(d)(u)				A
DN 20	(u)(e)				B
DN 25	(d)(u)				C
DN 40	(d)(u)				D
DN 50	(d)(u)				E
1/2 inch	(f)(u)				F
3/4 inch	(f)(u)				G

(continued on next page)

MODEL CODES 204DC (continued)

1 inch	(f)(u)	H	
1 1/2 inch	(f)(u)	I	
2 inch	(f)(u)	J	
G 3/4 female thread	(u)	K	
3/4-14NPT female thread	(u)	L	
without	(t)	U	
DRAIN CONTACT FACE:			
Type B1 acc. to DIN EN 1092-1	(h)(s)(u)	M	
Type B2 acc. to DIN EN 1092-1	(i)(s)(u)	O	
Type C acc. to DIN EN 1092-1	(i)(s)(u)	P	
Type D acc. to DIN EN 1092-1	(i)(s)(u)	Q	
Type L Lens acc. to DIN 2696	(k)(s)(u)	L	
Type RF/SF (RA = 125 µinch) Raised Face according ANSI B16.5	(f)(s)(u)	R	
Type RJF Ring Joint Face acc. to ANSI B16.5	(f)(s)(u)	J	
Type E Spigot acc. to DIN EN 1092-1	(i)(s)(u)	X	
Type F Recess acc. to DIN EN 1092-1	(i)(s)(u)	Y	
Type LM Large Male acc. to ANSI B16.5	(f)(s)(u)	W	
Type LF Large Female acc. to ANSI B16.5	(f)(s)(u)	Z	
Type LT Large Tongue acc. to ANSI B16.5	(f)(s)(u)	A	
Type LG Large Groove acc. to ANSI B16.5	(f)(s)(u)	B	
Type ST Small Tongue acc. to ANSI B16.5	(f)(s)(u)	G	
Type SG Small Groove acc. to ANSI B16.5	(f)(s)(u)	H	
Pipe piece for welding	(m)(u)	S	
With female thread and drain plug	(n)(u)	T	
Without	(t)	U	
TYPE OF ARRANGEMENT			
Standard			X
Additional partition point with Bolts and Nuts, Spiralgasket Steel / Graphite Flange Face (acc. to Transmitter Mounting Flange): Flanges acc. to DIN EN - Form B1 resp. B2 Flanges acc. to ANSI - Form RF/SF	(ab)		A
Additional partition point with Bolts and Nuts, Spiralgasket 1.4571 / Graphite Flange Face (acc. to Transmitter Mounting Flange): Flanges acc. to DIN EN - Form B1 resp. B2 Flanges acc. to ANSI - Form RF/SF	(ab)		C
Additional partition point with Bolts and Nuts, Spiralgasket Hastelloy C / Graphite Flange Face (acc Transmitter Mounting Flange): Flanges acc. to DIN EN - Form B1 resp. B2 Flanges acc. to ANSI - Form RF	(ab)		D

(continued on next page)

MODEL CODES 204DC (continued)

CHAMBER FOR Length of DISPLACER "L": (Indicate exact measure of "L" when ordering)		
For Code -SS - "L" = Distance between center of flanges to Vessel		
For length range		
"L" >300 mm to 1000 mm (>12 inch to 40 inch)		A
"L" >1000 mm to 2000 mm (>40 inch to 79 inch)		B
"L" >2000 mm to 3000 mm (>79 inch to 118,5 inch)		C
"L" >3000 mm to 4000 mm (>118.5 inch to 157.5 inch)	(w)	D
"L" >4000 mm to 5000 mm (>157.5 inch to 197 inch)	(w)	E
"L" >5000 mm to 6000 mm (>197 inch to 236 inch)	(w)	F
OPTIONS:		
Additional flushing connector on top DN 15 or 1/2" (same design as selected drain)		-X
Additional flushing connector on top DN 25 or 1" (same design as selected drain)		-Y
Tag No. Labeling		
Stainless Steel Label fixed with wire		-L
Certificates		
EN 10204-2.1 Certificate of Compliance		-1
EN 10204-3.1 Inspection Certificate of process wetted material		-3
PED 97/23/EC additional unit verification, acc. to Module F/G	(q)	-4
Comply with NACE Standard MR0175 (requires Option -3)	(x)	-6
Material Tests		
X-Ray or Isotope test for weldings		-7
Dye penetrate test		-8
PMI - Test		-5

(a) Pending
(b) Pending
(c) Not with TYPE OF ARRANGEMENT: 6, 7, 8, 9, S, T, U, V
(d) Not with PRESSURE RATING CODE: I, J, K, L, M
(e) Not with PRESSURE RATING CODE: D, E, F, I, J, K, L, M
(f) Not with PRESSURE RATING CODE: A, B, C, D, E, F
(g) Not with PRESSURE RATING CODE: A, B, C, D, E, F, K, L, M
(h) Not with PRESSURE RATING CODE: C, D, E, F, I, J, K, L, M
(i) Not with PRESSURE RATING CODE: A, B, I, J, K, L, M
(k) Not with PRESSURE RATING CODE: A, B, C, D, I, J, K, L, M
(m) Available with DRAIN: A, B, C, F, G, H
(n) Available with DRAIN: K & L
(o) Not available with MATERIAL CODE E, F, G, S, U, T, H, Q, J, N, I, R, C
(p) Available with DRAIN CONTACT FACE S
(q) Restrictions concerning the limit of application for the used materials are considering (NACE Standard MR0175/2003, or ISO 15156)
(r) Available with Mounting Type Code SS, ST and Drain Code B, C, G, H
(s) Not available with DRAIN; K & L
(t) Not with MOUNTING TYPE: -SS, -ST
(u) Not with NOUNTING TYPE: -SB, -TB
(v) Not with FLANGE SIZE (to Transmitter) 0 or 4
(w) With TYPE OF ARRANGEMENT A, C or D
(x) Not with MATERIAL K
(y) With MATERIAL K or L
(z) Price for carbon steel is for amount of one chamber. For more amounts contact factory
(aa) With Material test -7
(ab) With MATERIAL: K, E, F, G, S, U, T, H, Q, J and CONTACT FACE (Transmitter mounting flange): M, O, R
(ac) Only with FLANGE SIZE DN80 and PN63 or PN100 or PN160 or with FLANGE SIZE DN100 and PN16 or PN40 or PN63 or PN100 or PN160
(ad) Only with FLANGE SIZE 3" and class300 or class600 or class900 or with FLANGE SIZE 4" and class150 or class300 or class600
(ae) Delivery time on request
(af) On request

FLANGE COMBINATION 204FK

The flange combination consists of a piece of pipe welded between two flanges.

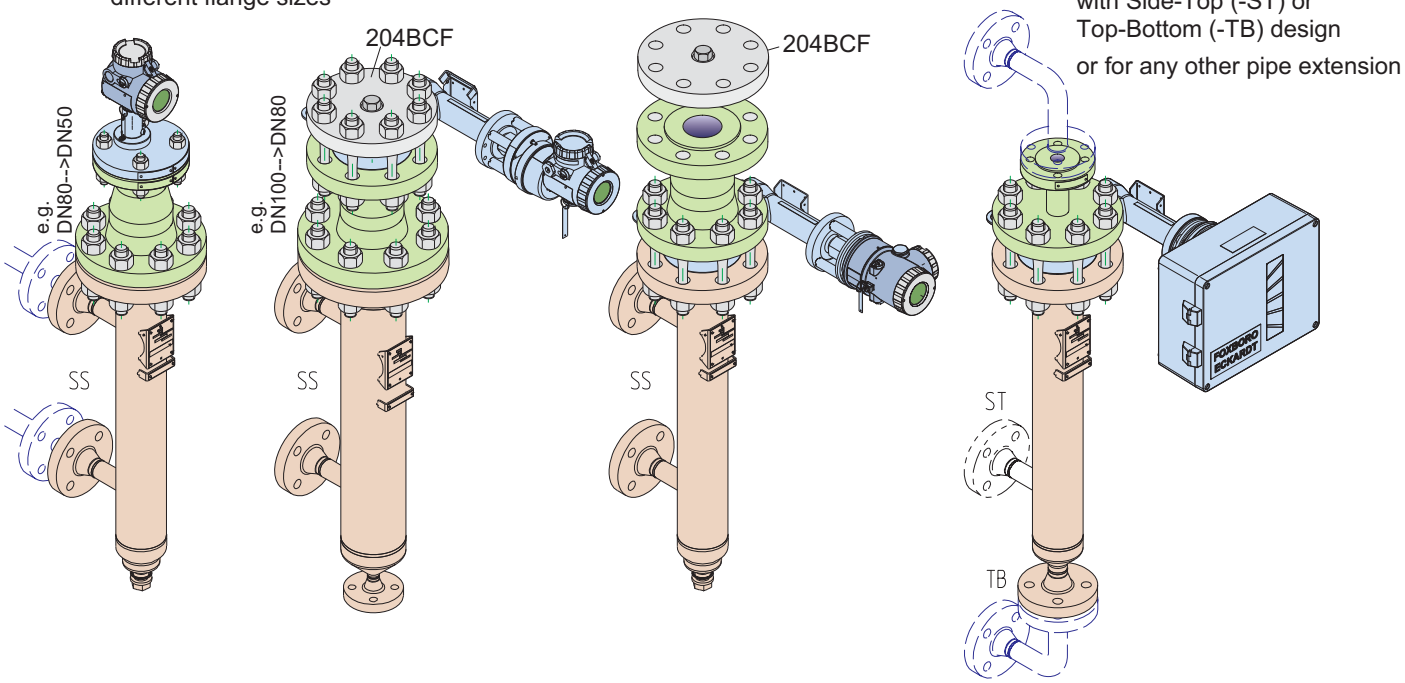
204FK Flange combination...

... for adapting
different flange sizes

... simplified service inspection
without removing the transmitter screws

... Reduction of flange size
with displacer chamber
with Side-Top (-ST) or
Top-Bottom (-TB) design

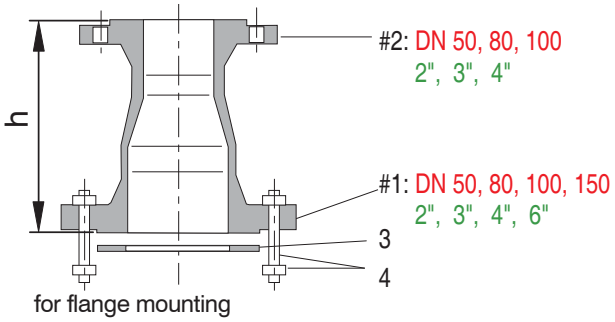
or for any other pipe extension



Materials,
Flange size #1,
Flange size #2,
Static pressure rating,
Contact face

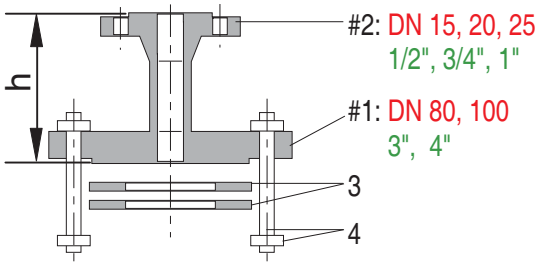
see Model Codes on following pages.

The flange combination will be supplied with gasket(s), bolts and nuts for connection to the transmitter.



for flange mounting

e.g. top mounting on chambers or vessels



for sandwich mounted transmitters
on e.g. Top-Bottom or Top-Side chambers

1 Flange size #1
2 Flange size #2
3 Gaskets
4 Bolts and nuts

204FK Table of Dimensions and weights, acc. to DIN

SANDWICH MOUNTING		DN 80		DN 100	
Flange size #2		Flange size #1		Flange size #1	
DN	PN	"h"	Weight	"h"	Weight
	bar	mm	Kg	mm	Kg
15	16	125	7,5	125	9,0
	40	129	9,5	129	13,0
	63	140	12,0	142	17,0
	100	144	16,0	148	23,0
	160	148	17,0	152	24,0
	250	173	27,0	181	40,0
20	16	127	8,0	127	9,0
	40	131	9,0	131	12,5
	63	143	13,0	145	18,0
	100	147	17,0	151	24,0
25	16	127	8,0	127	9,5
	40	131	9,0	131	13,0
	63	153	13,5	155	19,0
	100	157	17,5	161	24,5
	160	161	19,0	165	26,0
	250	178	28,0	186	41,0

FLANGE MOUNTING		DN 50		DN 80		DN 100		DN 150	
Flange size #2		Flange size #1		Flange size #1		Flange size #1		Flange size #1	
DN	PN	"h"	Weight	"h"	Weight	"h"	Weight	"h"	Weight
	bar	mm	Kg	mm	Kg	mm	Kg	mm	Kg
50	16	92	6,5	186	9,0	198	10,0	241	15,5
	40	98	6,5	197	10,0	214	13,0	264	21,0
	63	126	10,5	225	15,0	241	25,0	298	38,0
	100	138	14,0	237	20,0	259	27,5	324	50,5
	160	152	15,0	252	22,5	276	30,5	344	60,5
	250	172	23,0	289	31,5	334	45,5	387	89,0
80	16	186	8,0	102	9,5	203	11,0	246	16,5
	40	197	9,0	118	11,5	224	15,0	274	23,0
	63	225	13,5	146	16,5	251	27,5	308	40,5
	100	237	18,0	158	22,5	269	30,0	334	53,5
	160	252	20,0	176	25,0	283	34,5	351	61,5
	250	289	31,5	208	40,0	319	54,0	399	97,0
100	16	198	9,0	203	11,0	106	11,0	247	17,5
	40	214	11,0	224	14,0	132	16,0	280	25,0
	63	241	16,5	251	20,5	158	28,5	313	43,0
	100	259	23,0	269	28,0	182	33,0	345	58,0
	160	276	26,0	287	32,0	202	37,5	368	70,0
	250	334	42,0	351	50,5	242	64,5	422	108,0

204FK Table of Dimensions and weights, acc. to ANSI

SANDWICH MOUNTING		3"		4"	
Flange size #2		Flange size #1		Flange size #1	
DN	PN	"h"	Weight	"h"	Weight
	class	mm	Kg	mm	Kg
1/2"	150	139	6,5	139	9,8
	300	149	11,5	152	16,3
	600	165	13,5	171	24,6
	900	179	21,5	186	40,7
	1500	189	33,0	195	47,8
3/4"	150	144	7,0	144	10,1
	300	154	12,0	157	16,8
	600	170	14,0	176	25,2
	900	189	22,5	196	41,4
	1500	199	34,0	205	48,5
1"	150	147	7,5	147	10,4
	300	156	12,5	159	17,1
	600	175	14,5	181	25,6
	900	192	23,5	199	42,7
	1500	202	35,0	208	49,7

FLANGE MOUNTING		2"		3"		4"		6"	
Flange size #2		Flange size #1		Flange size #1		Flange size #1		Flange size #1	
DN	PN	"h"	Weight	"h"	Weight	"h"	Weight	"h"	Weight
	class	mm	Kg	mm	Kg	mm	Kg	mm	Kg
2"	150	130	6,0	225	9,5	243	12,0	295	20,0
	300	142	11,5	241	15,0	258	21,0	311	32,5
	600	162	9,5	261	17,5	291	29,0	346	55,0
	900	220	24,0	309	31,5	332	46,0	398	90,0
	1500	220	24,0	324	43,0	342	58,0	429	123,5
3"	150	225	9,5	142	11,0	249	14,5	301	22,5
	300	241	14,0	162	16,0	268	23,0	321	34,5
	600	261	15,0	182	20,5	301	33,5	356	58,0
	900	309	29,0	220	32,5	332	48,5	398	90,0
	1500	324	35,5	250	50,0	357	67,0	444	132,5
4"	150	243	12,0	249	14,0	156	16,0	308	24,5
	300	258	19,0	268	21,5	174	28,5	327	39,0
	600	291	24,5	301	31,5	220	44,5	375	69,0
	900	332	38,5	332	43,5	244	62,0	410	101,0
	1500	342	47,0	357	63,5	264	80,5	451	142,5

MODEL CODES 204FK

Flange Combination Kit (incl. Gaskets, Nuts and Bolts)	**204FK**											181116
MATERIAL:												
Flanges: 1.0460 (Carbon Steel); Pipes: 1.0345 application from –10 °C to 350 °C	-K											
1.4571 (316 Ti) application from –60 °C to 400 °C	-E											
1.4571 (316 Ti) application from –196 °C to 400 °C	-F											
1.4571 (316 Ti) application from –60 °C to 500 °C (only with Option -4)	-G											
1.4404 (316 L) application from –60 °C to 400 °C	-S											
1.4404 (316 L) application from –196 °C to 400 °C	-U											
1.4404 (316 L) application from –60 °C to 500 °C (only with Option -4)	-T											
1.4541 (321) . application from –60 °C to 400 °C	-H											
1.4541 (321) . application from –196 °C to 400 °C	-Q											
1.4541 (321) . application from –60 °C to 500 °C (only with Option -4)	-J											
1.4462 (Duplex) application from –10 °C to 280 °C. (ae)	-N											
2.4856 (Inconel 625) application from –196 °C to 450 °C (only with Option -4) (ae)	-R											
2.4858 (Inconel 825) application from –10 °C to 450 °C (only with Option -4) (ae)(ac)	-I											
Hastelloy C application from –196 °C to 400 °C (only with Option -4) (ae)	-C											
PRESSURE RATING:												
PN 16		A										
PN 25 / PN 40		B										
PN 63		C										
PN 100		D										
PN 160		E										
PN 250 (f)		F										
Class 150		I										
Class 300		J										
Class 600		K										
Class 900		L										
Class 1500 (f)		M										
FLANGE SIZE #1												
DN 50 (with Pressure Rating: A, B, C, D, E, F)			0									
DN 80 (with Pressure Rating: A, B, C, D, E, F)			1									
DN 100 (with Pressure Rating: A, B, C, D, E, F)			2									
DN 150 (with Pressure Rating: A, B, C, D, E, F) (only with Option -4) (af)			3									
2 inch (with Pressure Rating: I, J, K, L, M)			4									
3 inch (with Pressure Rating: I, J, K, L, M)			5									
4 inch (with Pressure Rating: I, J, K, L, M)			6									
6 inch (with Pressure Rating: I, J, K, L, M) (only with Option -4) (af)			7									
CONTACT FACE #1												
Type B1 acc. to DIN EN 1092-1 (only with Pressure Rating: A, B)				M								
Type B2 acc. to DIN EN 1092-1 (only w. Pressure Rating: A, B, C, D, E, F)				O								
Type C acc. to DIN EN 1092-1 (only w. Pressure Rating: A, B, C, D, E, F)				P								
Type D acc. to DIN EN 1092-1 (only w. Pressure Rating: A, B, C, D, E, F)				Q								
Type E Spigot acc. DIN EN 1092-1 (only w. Pressure Rating: A, B, C, D, E, F)				X								
Type F Recess acc. DIN EN 1092-1 (only w. Pressure Rating: A, B, C, D, E, F)				Y								
Type L Lens acc. to DIN 2696 (only with Pressure Rating: D, E, F)				L								
Type RF/SF (RA=125 µinch) acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M)				R								
Type RJF acc. to ANSI B 16.5 (only with Pressure Rating: I, J, K, L, M)				J								
Type ...												

(continued on next page)

MODEL CODES 204FK (continued)

Type LM Large Male acc. to ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) . W
Type LF Large Female acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) . Z
Type LT Large Tongue acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) . A
Type LG Large Groove acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) B
Type ST Small Tongue acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) G
Type SG Small Groove acc. ANSI B 16.5 (only w. Pressure Rating: I, J, K, L, M) U

FLANGE SIZE #2:

DN 15 (with Flange Size #1: 1, 2) . . . A
DN 20 (with Flange Size #1: 1, 2) not with (Pressure Rating:E, F) . . . B
DN 25 (with Flange Size #1: 1, 2) . . . C
DN 50 (with Flange Size #1: 0, 1, 2, 3) . . . D
DN 80 (with Flange Size #1: 0, 1, 2, 3) . . . E
DN 100 (with Flange Size #1: 0, 1, 2, 3) . . . F
1/2 inch (with Flange Size #1: 5, 6) not with (Press. Rating:I And Cont. Face #1:J) . . . H
3/4 inch (with Flange Size #1: 5, 6) not with (Press. Rating:I And Cont. Face #1:J) . . . I
1 inch (with Flange Size #1: 5, 6) . . . J
2 inch (with Flange Size #1: 4, 5, 6, 7) . . . K
3 inch (with Flange Size #1: 4, 5, 6, 7) . . . L
4 inch (with Flange Size #1: 4, 5, 6, 7) . . . M

CONTACT FACE #2:

Type B1 acc. DIN EN 1092-1 (with Pressure Rating: A, B) . . . M
Type B2 acc. DIN EN 1092-1 (with Pressure Rating: A, B, C, D, E, F) . . . O
Type C acc. DIN EN 1092-1 (with Pressure Rating: A, B, C, D, E, F) . . . P
Type D acc. DIN EN 1092-1 (with Pressure Rating: A, B, C, D, E, F) . . . Q
Type E Spigot acc. DIN EN 1092-1 (with Pressure Rating: A, B, C, D, E, F) . . . X
Type F Recess acc. DIN EN 1092-1 (with Pressure Rating: A, B, C, D, E, F) . . . Y
Type L Lens acc. DIN 2695 (with Pressure Rating: D, E, F). . . . L
Type RF/SF (RA=125μinch) acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . R
Type RJF acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . J
Type LM Large Male acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . W
Type LF Large Female acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . Z
Type LT Large Tongue acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . A
Type LG Large Groove acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . B
Type ST Small Tongue acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . G
Type SG Small Groove acc. ANSI B16.5 (with Pressure Rating: I, J, K, L, M) . . . U

GASKETS: (for FLANGE SIZE #1)

Graphit (with CONTACT FACE #1 P, Q, A, B, G, U) . . . G
Carbon Steel (with MATERIAL K) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . . (b) . . K
1.4571 (316 Ti) (with MATERIAL E) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . . (b) . . E
1.4404 (316 L) (with MATERIAL S) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . . (b) . . S
1.4541 (321) (with MATERIAL H) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . . (b) . . H
1.4462 (DUPLEX) (with MATERIAL N) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . (b) . . N
2.4856 (INCONEL 625) (with MATERIAL R) (not with CONTACT FACE #1 P, Q, A, B, G, U) (b) . . R
2.4858 (INCONEL 825) (with MATERIAL I) (not with CONTACT FACE #1 P, Q, A, B, G, U) (b)(e) . I
Hastelloy C (with MATERIAL C) (not with CONTACT FACE #1 P, Q, A, B, G, U) . . . (b) . . C

BOLTS:

Steel Bolts (long) with reduced shank for sandwich mounting, nuts and 2 gaskets.
Product temperature > –10 °C WITH ((Flange Size #1: 1, 2, 5, 6) And (Flange Size 2: A, B, C, H, I, J)) . . 1
1.4541 Bolts (long) with reduced shank for sandwich mounting, nuts and 2 gaskets.
Product temperature > –196 °C WITH ((Flange Size #1: 1, 2, 5, 6) And (Flange Size 2: A, B, C, H, I, J)) . 2
Steel Bolts (short) with reduced shank for flange mounting, nuts and 1 gasket.
Product temperature > –10 °C WITH (Flange Size #2: D, E, F, K, L, M) . . . 3
1.4541 Bolts (short) with reduced shank for flange mounting, nuts and 1 gasket.
Product temperature > –196 °C WITH (Flange Size #2: D, E, F, K, L, M). . . . 4

(continued on next page)

MODEL CODES 204FK (continued)

OPTIONS:	
Tag No. Labeling - Stainless Steel Label Fixed With Wire	-L
Certificates	
EN 10204-2.1 Certificate Of Compliance	-1
EN 10204-3.1 Inspection Certificate Of Process Wetted Metallic Material	-3
PED 97/23/EC Additional Unit Verification, acc. to Module F/G	-4
Comply With NACE Standard MR0175; not with Material K (Carbon steel)	-6
Material Test	
PMI - Test	-5
X-Ray or Isotope test for weldings	-7
Dye Penetrate Test	-8

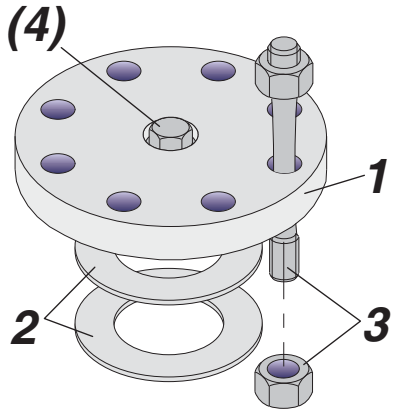
(a) Restrictions concerning the limit of application for the used materials are considering (NACE Standard MR0175/2003, ISO 15156)
(b) Spiral gaskets including Graphite
(d) For PRESSURE RATING I, J, K, D, L, M
(e) Not released
(f) With Material Test -7
(ae) Delivery time on request
(ac) Pending
(af) On request

FLANGE KIT 204BCF

Cover flange kit

The cover flange kit is necessary for the sandwich type torque tube transmitters 244LD and 167LP.

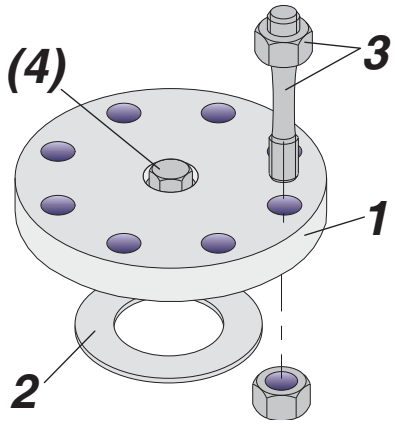
Two seals, studs and nuts are included. Vent plug is optional.



Blind Flange Set

The Blind Flange Kit is required to close both the drain flange and the top mounted flange combination, if no other additionally equipment is connected.

One seal, studs and nuts are included. Vent plug is optional.



MATERIAL,
FLANGE SIZE,
PRESSURE RATING,
CONTACT FACE,
GASKETS,
BOLTS and NUTS

see Model Codes on following pages.

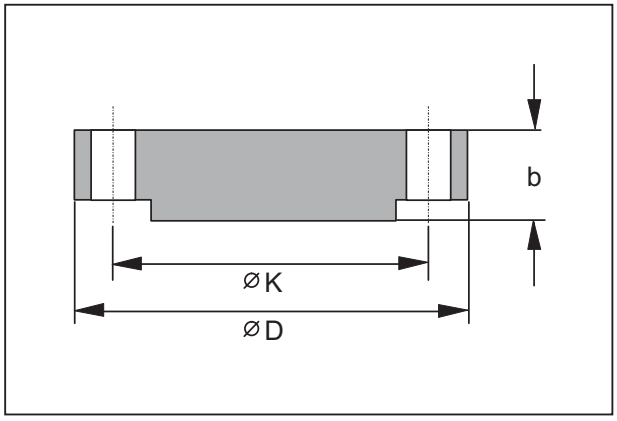
1 Flange
2 Gaskets
3 Bolts and nuts
(4) Venting plug with
G 3/4 A (DIN ISO 228) or 3/4 NPT

204BCF Dimensions for flanges acc. to DIN / ANSI

Dimensions for Blind flange set (Excerpt) acc. to **DIN EN 1092** (> PN100 similar to DIN EN 1092)							**Dimensions for Cover flange set** (Excerpt) acc. to **DIN EN 1092** (> PN100 similar to DIN EN 1092)						
DN	PN	D	K	b	Dm x l	Number	DN	PN	D	K	b	Dm x l	Number
mm	bar	mm	mm	mm	mm		mm	bar	mm	mm	mm	mm	
100	16	220	180	20	M16 x 80	8	100	16	220	180	20	M16 x 150	8
	40	235	190	24	M20 x 95	8		40	235	190	24	M20 x 170	8
	63	250	200	30	M24 x 105	8		63	250	200	30	M24 x 185	8
	100	265	210	36	M27 x 110	8		100	265	210	36	M27 x 200	8
	160	265	210	40	M27 x 140	8		160	265	210	40	M27 x 210	8
	250	300	235	54	M30 x 180	8		250	300	235	54	M30 x 240	8
	400	370	295	80	M36 x 235	8		400	370	295	80	M36 x 305	8
80	16	200	160	20	M16 x 80	8	80	16	200	160	20	M16 x 150	8
	40	200	160	24	M16 x 90	8		40	200	160	24	M16 x 160	8
	63	215	170	28	M20 x 105	8		63	215	170	28	M20 x 170	8
	100	230	180	32	M24 x 120	8		100	230	180	32	M24 x 190	8
	160	230	180	36	M24 x 130	8		160	230	180	36	M24 x 200	8
	250	255	200	46	M27 x 150	8		250	255	200	46	M27 x 220	8
	400	305	240	68	M30 x 200	8		400	305	240	68	M30 x 270	8
50	16/40	165	125	20	M16 x 80	4							
	63	180	135	26	M20 x 105	4							
	100	195	145	28	M24 x 110	4							
	160	195	145	28	M24 x 115	4							
	250	200	150	38	M24 x 120	8							
	400	235	180	52	M27 x 170	8							
25	16/40	115	85	18	M12 x 75	4							
	63/100	140	100	24	M16 x 90	4							
	160	140	100	24	M16 x 90	4							
	250	150	105	28	M20 x 105	4							
	400	180	130	38	M24 x 130	4							
20	16/40	105	75	18	M12 x 70	4							
15	16/40	95	65	16	M12 x 65	4							
	63/100	105	75	20	M12 x 70	4							
	160	105	75	20	M12 x 70	4							
	250	130	90	26	M16 x 90	4							
	400	145	100	30	M20 x 105	4							

Dimensions for Blind flange set (Excerpt) acc. to **ANSI B16.5**							**Dimensions for Cover flange set** (Excerpt) acc. to **ANSI B16.5**						
DN	PN	D	K	b	Dm x l	Number	DN	PN	D	K	b	Dm x l	Number
inch	class	mm	mm	mm	mm		inch	class	mm	mm	mm	mm	
4	150	229	190	24	M16 x 90	8	4	150	229	190	24	M16 x 160	8
	300	254	200	32	M20 x 110	8		300	254	200	32	M20 x 180	8
	600	273	216	44	M24 x 150	8		600	273	216	44	M24 x 215	8
	900	292	235	51	M30 x 170	8		900	292	235	51	M30 x 240	8
	1500	312	241	60	M33 x 200	8		1500	312	241	60	M33 x 270	8
3	150	190	152	24	M16 x 90	4	3	150	190	152	24	M16 x 160	4
	300	210	168	28	M20 x 105	8		300	210	168	28	M20 x 180	8
	600	210	168	38	M20 x 130	8		600	210	168	38	M20 x 195	8
	900	241	190	44	M24 x 150	8		900	241	190	44	M24 x 215	8
	1500	267	203	54	M30 x 180	8		1500	267	203	54	M30 x 245	8
2	150	152	121	19	M16 x 80	4							
	300	165	127	22	M16 x 85	8							
	600	165	127	32	M16 x 105	8							
	900/1500	216	165	44	M24 x 150	8							
1	150	108	79	14	M12 x 65	4							
	300	124	89	18	M16 x 75	4							
	600	124	89	24	M16 x 90	4							
	900/1500	149	102	35	M24 x 130	4							
3/4	150	99	70	13	M12 x 65	4							
	300	117	83	16	M16 x 75	4							
	600	117	83	22	M16 x 85	4							
	900/1500	130	89	31	M20 x 110	4							
1/2	150	89	60	11	M12 x 55	4							
	300	95	67	14	M12 x 65	4							
	600	95	67	21	M12 x 75	4							
	900/1500	121	83	29	M20 x 105	4							

Flanges; dimensions



MODEL CODES 204BCF

Blanking flange kit (flange, gasket, nuts and bolts) 204BCF					181116
MATERIAL					
1.0460 (Carbon Steel) application from –10 °C to 350 °C	(d)	-K			
1.4571 (316 Ti) application from –196 °C to 500 °C (only with Option -4)	(d)	-E			
1.4404 (316 L) (1.4435 with FLANGE SIZE: 15, 16 and CONTACT FACE: H) application from –196 °C to 500 °C (only with Option -4)		-S			
1.4541 (321) application from –196 °C to 500 °C (only with Option -4)	(d)	-H			
1.4462 (Duplex) application from –10 °C to 280 °C	(d)	-N			
2.4856 (Inconel 625) application from –196 °C to 450 °C	(d)	-R			
2.4858 (Inconel 825) application from –10 °C to 450 °C	(d)(m)	-I			
Hastelloy C application from –196 °C to 400 °C	(d)	-C			
FLANGE SIZE					
DN 15	(b)		11		
DN 20 (PN 10 to PN 100)	(b)		12		
DN 25			13		
DN 50			14		
DN 70 (PN 500, Lens, 1.4435)			15		
DN 80			16		
DN 100			17		
1/2 inch	(b)		18		
3/4 inch	(b)		19		
1 inch			20		
2 inch			21		
3 inch			22		
4 inch			23		
PRESSURE RATING					
PN 16 (with flange size -11, -12, -13, -14, -16, -17)				A	
PN 25 / PN 40 (with flange size -11, -12, -13, -14, -16, -17)				B	
PN 63 (with flange size -14, -16, -17)				C	
PN 100 (with flange size -11, -13, -14, -16, -17)				D	
PN 160 (with flange size -11, -13, -14, -16, -17)				E	
PN 250 (with flange size -11, -13, -14, -16, -17)				F	
PN 400 (with flange size -16)	(b)			G	
PN 500 (with flange size -15)	(b)(l)			H	
Class 150 (with flange size -18 to -23)				I	
Class 300 (with flange size -18 to -23)				J	
Class 600 (with flange size -18 to -23)				K	
Class 900 (with flange size -18 to -23)				L	
Class 1500 (with flange size -18 to -23)				M	
CONTACT FACE					
Type B1 acc. to DIN EN 1092-1 (available with pressure rating A, B)					M
Type B2 acc. to DIN EN 1092-1 (available with pressure rating A to G)					O
Type C acc. to DIN EN 1092-1 (available with pressure rating A to G)					P
Type D acc. to DIN EN 1092-1 (available with pressure rating A to G)					Q
Type E Spigot acc. to DIN EN 1092-1 (available with pressure rating A to G)					X
Type F Recess acc. to DIN EN 1092-1 (available with pressure rating A to G)					Y
Type L (available with pressure rating D, E, F, G)					L
Type L Lens High pressure (available with IG- Standard for Pressure Rating H and Lens acc. to DIN 2596 with pressure rating G)	(l)				H
Type RF/SF (available with pressure rating I to M) -- RF Raised Face per ANSI B16.5					R
Type RJF (available with pressure rating I to M) -- RJF Ring Joint Face per ANSI B16.5 (with flange size -18, -19 and pressure rating "I" not with contact face “J”)					J
Type LM Large Male acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)					W
Type LF Large Female acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)					Z
Type LT Large Tongue acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)	(k)				A
Type LG Large Groove acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)	(k)				B
Type ST Small Tongue acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)	(k)				G
Type SG Small Groove acc. to ANSI B16.5 (with PRESSURE RATING I, J, K, L, M)	(k)				U

(continued on next page)

MODEL CODES 204BCF (continued)

GASKETS

Graphit	(with CONTACT FACE Q, P, A, B, G, U) (d)	G
Carbon Steel (with MATERIAL K)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)	K
1.4571 (316 Ti) (with MATERIAL E)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)	E
1.4404 (316 L) (with MATERIAL S)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	S
1.4541 (321) (with MATERIAL H)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	H
1.4462 (Duplex) (with MATERIAL N)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	N
2.4856 (Inconel 625) (with MATERIAL R)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	R
2.4858 (Inconel 825) (with MATERIAL I)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	I
Hastelloy C (with MATERIAL C)	(not with CONTACT FACE P, Q, A, B, G, U) (c)(d)(l)	C
Without gasket, with CONTACT FACE H	(l)	X

BOLTS and NUTS

Steel bolts with reduced shank (long) + nuts for transm. sandwich mounting, a. product temp. > –10 °C (f)	1
1.4541 bolts w. reduced shank (long) + nuts for transm. sandwich mounting, a. product temp. > –196 °C (f)	2
Steel bolts with reduced shank (short) and nuts for flange connection, and product temp. > –10 °C. (h)	3
1.4541 bolts w. reduced shank (short) and nuts for flange connection, and product temp. > –196 °C .(h)	4

OPTIONS

Vent Plug G 3/4	-A
Vent Plug NPT 3/4.	-B
Tag No. Labeling	
Stainless steel label fixed with wire	-L
Certificates	
EN 10204-2.1 Certificate of Compliance	-1
EN 10204-3.1 Inspection Certificate Of Process Wetted Material	-3
Comply with NACE Standard MR0175; not Material K (Carbon steel) . (requires Option -3) (a)	-6

(a) Restrictions concerning the limit of application for the used materials are considering (NACE Standard MR0175/2003, resp. ISO 15156)
(b) Not with OPTION: -A, -B
(c) Spiral gaskets including Graphite
(d) Not CONTACT FACE: H
(f) Only for Flange size -15, -16, -17, -22, -23
(h) Not FLANGE SIZE: 15
(k) Only GASKET: G
(l) FLANGE SIZE: 15 (DN 70) only with PRESSURE RATING: H (PN 500) AND MATERIAL: S (1.4435)
PRESSURE RATING: H (PN 500) only with FLANGE SIZE: 15 (DN 70) AND GASKETS: X (without Gasket)
GASKETS: X only with FLANGE SIZE: 15 (DN 70)
CONTACT FACE: H only with PRESSURE RATING: G OR H
(m) Pending

Accessories are matching for following Transmitters:

244LD	Intelligent Buoyancy Transmitter for Liquid Level, Interface and Density with Displacer and Torque Tube
244LVP	Intelligent Buoyancy Transmitter for Liquid Level, Interface and Density with Displacer
167LP	Pneumatic Buoyancy Transmitter for Liquid Level, Interface and Density with Displacer and Torque Tube

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FD-PSS-L-05-EN 1216