

Chemical Seals for various applications



Advantages / Benefits

- ▶ Separation of medium and measuring device in difficult applications

Design

The Bürkert chemical seal system enables pressure gauges or pressure transducers and transmitters of varying designs to be adapted to the most adverse applications. The chemical seal is intended to separate the pressure instrument from the pressure medium whilst allowing pressure variations to be precisely transmitted to the instruments sensing element.

The pressure applied on the diaphragm of the chemical seal is transmitted to the pressure sensing element by means of a suitable liquid. Chemical seal body and diaphragm are generally made of stainless steel. In addition a wide selection of special materials is available to handle almost any exotic pressure fluid.

Process pressures in a wide range can be handled and accurately measured, even at extreme temperatures and with corrosive or abrasive as well as highly viscous or contaminated process fluids.

Undisturbed performance of the chemical seal under various process conditions requires careful evaluation of all process and environmental data.

Chemical Seals are only available with a pressure instrument as a combined unit!

Application

- ▶ Corrosive medium
- ▶ Highly viscous medium
- ▶ Inhomogenous medium
- ▶ Crystallising medium
- ▶ High temperature medium (e.g. sterilisation)
- ▶ Measuring application with hygienic cleanliness level (e.g. food applications)
- ▶ Toxic or polluted medium

bürkert
Easy Fluid Control Systems

To combine with bourdon tube pressure gauges



Design

Chemical seal to combine with bourdon tube pressure gauges. The chemical seal is suitable for corrosive, contaminated, hot or viscous mediums. There are two process connection types available:

- screwed version
- flanged version

The chemical seal is suitable for many applications in process industry. The diaphragm is internally arranged.

Specifications

Process connection	Screwed or flanged version Flanges DN 15... DN 40 (1/2"... 1 1/2") per DIN ANSI or other standards
Pressure rating	PN 25... PN 250 (class 150... 1500)
Suitable pressure ranges	0... 0.6, ... , 0... 250 bar
Upper body (gauge side)	Stainless steel 1.4571 Gauge connection G 1/2 female EN 837-1
Lower body (process side)	Stainless steel 1.4571
Sealing ring	FPM (Viton), 200 °C maximum
Process connection	
- screwed version	G 1/2 female EN 837-1, Form Z or 1/2 NPT male or female
- flanged version	Flange DIN 2501, Sealing face Form D DIN 2526 or flange ANSI B 16.5 RF. Max. size DN 40
Retainer flanges	Galvanised carbon steel
Bolts/nuts	Galvanised alloy steel, max. 200 °C
Diaphragm	Stainless steel 1.4571, welded with upper body
	Optional
	- PTFE foil (max. 150 °C, 100 bar)
	- PFA coating (max. 260 °C)
	- ECTFE coating (max. 180 °C)
	- Sealing ring PTFE (max. 260 °C)

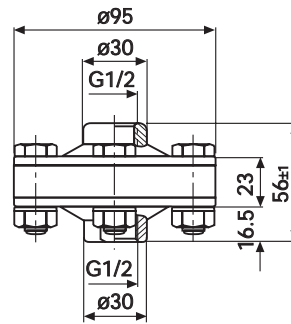
Dimensions

Standard version

Model with screwed process connection

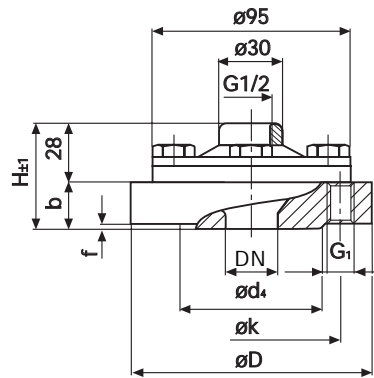
PN [bar]	Weight [kg]
25 (class 150)	1.40
100 (class 300/600)	1.40
250 (class 1500)	3.00

Effective diameter d_M of diaphragm = 52 mm



Dimensions

Model with flanged process connection



Flange per DIN 2501

DN [mm]	PN [bar]	Dimensions [mm]							Weight [kg]
		D	k	d4	b	f	H	G ₁	
15	10/40	95	65	45	28	2	56	4 x M 12	1.56
20	10/40	105	75	58	25	2	53	4 x M 12	1.87
25	10/40	115	85	68	22	2	50	4 x M 12	2.10
40	10/40	150	110	88	22	3	50	4 x M 16	3.14

Effective diameter d_M of diaphragm = 52 mm

Flange per ANSI B 16.5

DN [in.]	PN [class]	Dimensions [mm]							G ₁ (UNC)
		D	k	d4	b	f	H		
1/2	150	95	60.5	35	28	2	56	4 x 1/2"	
	300	95	66.5	35	28	2	56	4 x 1/2"	
3/4	150	100	70.0	43	28	2	56	4 x 1/2"	
	300	120	82.5	43	22	2	50	4 x 5/8"	
1	150	110	79.5	51	22	2	50	4 x 1/2"	
	300	125	89.0	51	22	2	50	4 x 5/8"	
1 1/2	150	130	98.5	73	22	2	50	4 x 1/2"	
	300	155	114.5	73	22	2	50	4 x 3/4"	

Round pipe diaphragm for hygienic applications



Design

This chemical seal is designed for food and biochemical applications especially for rapidly flowing and highly viscous mediums. It is also applied for analytical technology and filling plants.

The stainless steel design has a completely round diaphragm, no corners and no edges, with optimal transition to media line with no dead spaces. It can be

used together with bourdon tube pressure gauges or transmitters.

There are different possibilities for mounting into the process line:

- screwed
- clamped

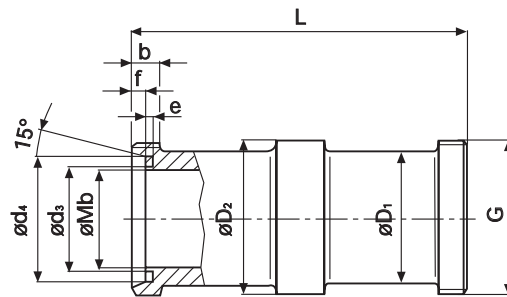
Specifications

Process connection:	Male thread DIN 11 887, DN 15... DN 100 Clamp fitting DN 15 and 1"... 4" pipe size ISO steril-screws, SMS, IDF, APV-RJT	
Pressure rating:	PN 40 (25)	
Material		
- Body:	Stainless steel 1.4435	
- Diaphragm:	Stainless steel 1.4435 welded with body	
Instrument connection:	Welded	
Filling liquid:	Glycerin KN 7 Glycerin/water KN 12 Vegetable oil KN 13 Silicon oil KN 17 Oxygen-/Chlorine application Halocarbon KN 21	Temperature range: +10 °C...230 °C (food compatible) -10 °C...120 °C (food compatible) -10 °C...300 °C (food compatible) -90 °C...200 °C -40 °C...175 °C (P _{max} 160 bar)

Dimensions

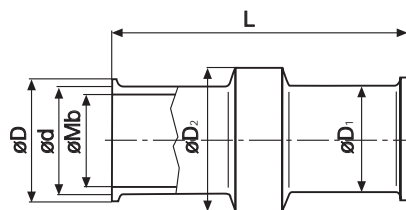
Standard version

Model with male thread DIN 11 887



DN [in.]	PN [class]	Dimensions [mm]									
		G	L	d ₃	d ₄	b	f	e	D ₁	D ₂	Mb
15	40	Rd34 x 1/8	104	18	25.8	12	4	3	28	40	16
25	40	Rd52 x 1/6	128	30	39.5	14	7	3.5	38	52	26
40	40	Rd65 x 1/6	160	42	51.8	14	7	3.5	55	65	38
50	25	Rd78 x 1/6	170	54	63.8	14	7	3.5	68	78	50
65	25	Rd95 x 1/6	182	71	80.8	16	8	3.5	85	95	66
80	25	Rd110 x 1/4	182	85	94.8	20	8	3.5	110	110	81
100	25	Rd130 x 1/4	182	104	113.8	20	10	4	130	130	1

Model with clamp fitting



DN	PN [bar]	Dimensions [mm]					
		L	D	d	D ₁	D ₂	Mb
15 mm	40	96	50.0	43.6	36	50.0	15.0
1"	40	114	50.0	43.6	36	50.0	25.4
1 1/2"	40	146	50.0	43.6	43	55.0	38.0
2"	40	156	64.0	56.3	56	64.0	48.0
2 1/2"	25	156	77.4	70.6	68	77.4	60.0
3"	25	156	91.0	83.5	82	91.0	73.0
3 1/2"	25	156	106.0	97.0	94	106.0	85.0
4"	25	156	119.0	110.0	108	119.0	97.3

Chemical Seals

Flange type for process industry for high quality measurement

Type 8393

To combine with pressure transmitters



Design

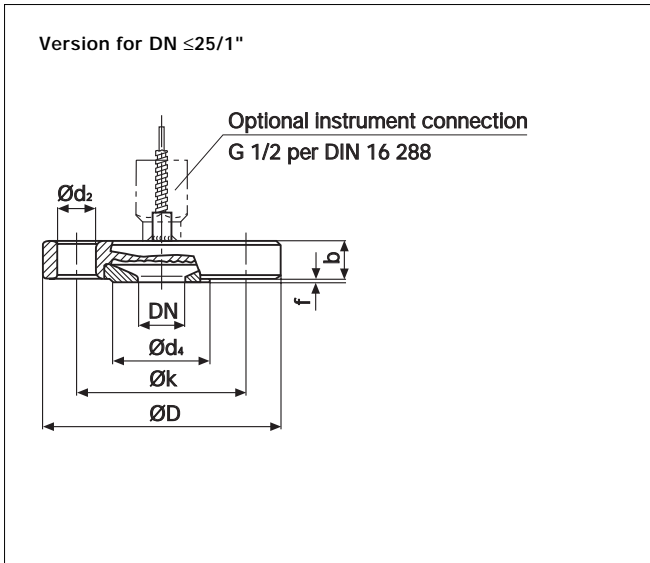
Process industry chemical seal to combine with pressure transmitters. Suitable for corrosive, contaminated, hot or viscous pressure mediums. Connection to pressure transmitter or pressure gauge via capillary extension. Chemical seal is suitable for high requirements regarding installation and application.

Specifications

Construction	DN \leq 25/1": open flange with an internal diaphragm to be sandwiched between stock flanges. DN > 40/1 1/2": body with sealing face and integral diaphragm to be sandwiched between stock flanges
Process connection	Flanges DN 15, 20, 25, 40, 50, 80, 100, 125 DN 1/2", 3/4", 1", 1 1/2", 2", 3", 4", 5" per DIN or ANSI
Pressure rating	see table
Suitable pressure ranges	25 mbar and up, depending on diaphragm size and process conditions
Body (process connection)	Stainless steel 1.4571, Flange DIN 2501, sealing face D DIN 2526, or ANSI B 16.5 RF
Diaphragm	Stainless steel 1.4571, welded with body with - PTFE foil (max. 150 °C, 100 bar) - PFA coating (max. 260 °C) - ECTFE coating (max 150 °C)
Capillary extension	Axial entry capillary of stainless steel 1.4571, welded with body for DN 50/2" and larger: armoured, armour material stainless steel 1.4301 Standard extensions: 1, 1.6, 2.5, 4, 6, 8, 10, 15 m Minimum curve radius: 50 mm Armour material stainless steel 1.4301
Instrument connection	Adaptor G 1/2 female per EN 837-1 form Z, welded with capillary Material stainless steel 1.4571

Dimensions

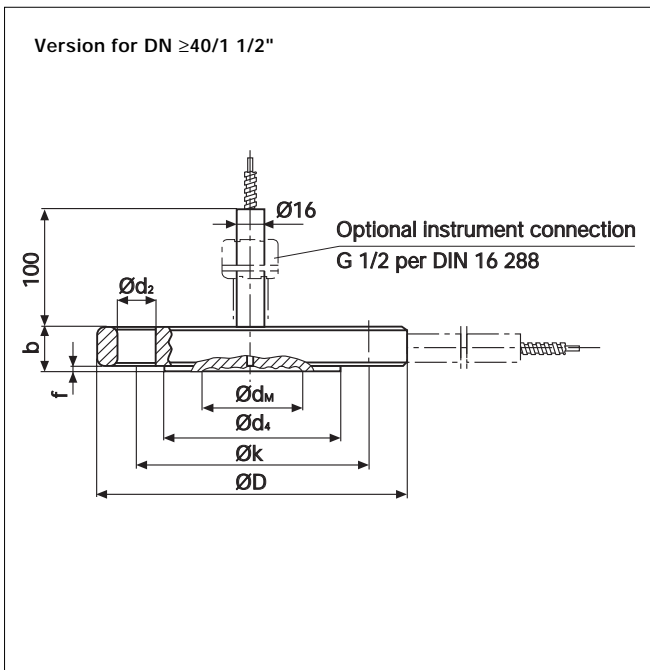
Standard version



Flange per DIN 2501

DN [mm]	PN [bar]	Dimensions [mm]							Weight [kg]	
		d _M	D	b	d ₂	k	Raised portion			
							f	d ₄	x	
15	10/40	40	95	22	14	65	2	45	4	1.00
20	10/40	40	105	22	14	75	2	58	4	1.30
25	10/40	52	115	22	14	85	2	68	4	1.50
40	10/40	48	150	18	18	110	3	88	4	2.10
50	10/40	59	165	20	18	125	3	102	4	3.30
	10/16	89	200	20	18	160	3	138	8	4.90
80	25/40	89	200	24	18	160	3	138	8	5.80
	10/16	89	220	20	18	180	3	158	8	5.90
100	25/40	89	235	24	22	190	3	162	8	8.10
	10/16	124	250	22	18	210	3	188	8	8.40
125	25/40	124	270	26	26	220	3	188	8	11.60

Effective diameter of diaphragm = d_M, Number of drill holes = x



Flange per ANSI B 16.5

DN [mm]	PN [bar]	Dimensions [mm]							Weight [kg]	
		d _M	D	b	d ₂	k	Raised portion			
							f	d ₄	x	
1/2	150	32	95	22	16	60.5	2	35	4	1.00
	300	40	95	22	16	66.5	2	35	4	1.00
3/4	150	40	100	22	16	70.0	2	43	4	1.10
	300	40	120	22	20	82.5	2	43	4	1.60
1	150	52	110	22	16	79.5	2	51	4	1.40
	300	52	125	22	20	89.0	2	51	4	1.70
1 1/2	150	48	130	22	16	98.5	2	73	4	1.60
	300	48	155	22	22	114.5	2	73	4	2.50
2	150	59	150	20	20	120.5	1.6	92	4	2.70
	300	59	165	22.5	20	127.0	1.6	92	8	3.70
3	150	89	190	24	20	152.5	1.6	127	4	5.30
	300	89	210	29	22	168.5	1.6	127	8	7.80
4	150	89	230	24	20	190.5	1.6	158	8	7.70
	300	89	255	32	22	200.0	1.6	158	8	12.70

Effective diameter of diaphragm = d_M, Number of drill holes = x

Chemical Seals

Diaphragm type with hygienic-type process connection

Type 8394

Available with 5 hygienic-type process connections



Model with union nut DIN 11 851

Design

Intended for hygienic processes in the pharmaceutical and food industry. Body and diaphragm is designed for integral female or male hygienic-type connections. This chemical seal is to combine with bourdon tube pressure gauge or transmitters.

Specifications

Process connections	DIN-, SMS-, IDF-, APV-RJT-standard and clamps DN 25... DN 50 resp. DN 1 1/2"... 2"
Pressure rating	PN 40 max., depending on the connection pressure ranges 0...1 to 0...40 bar
Material	
Body and connections	Stainless steel 1.4571
Process connection	Form D-F DIN 11 851 SMS union nut IDF union nut APV-RJT union nut Clamp fitting
Diaphragm	Stainless steel 1.4571, welded with body
Sealing ring	NBR (Buna rubber) or PTFE
Instrument connection	Stainless steel 1.4571 G 1/2 female per EN 837-1, Form Z
Filling liquid	Food-compatible

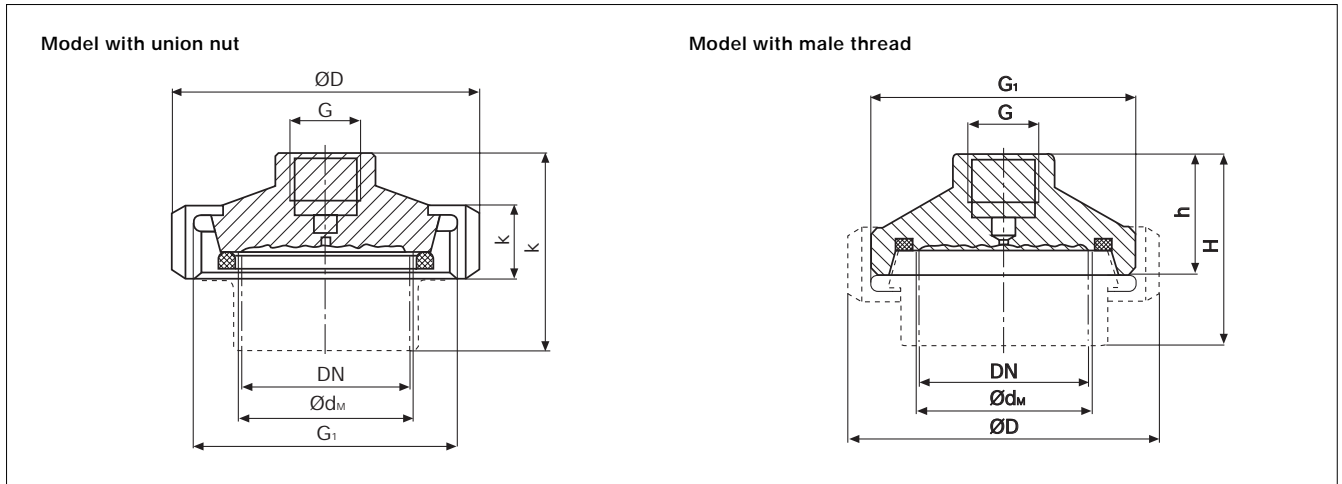
Chemical Seals

Diaphragm type with hygienic-type process connection

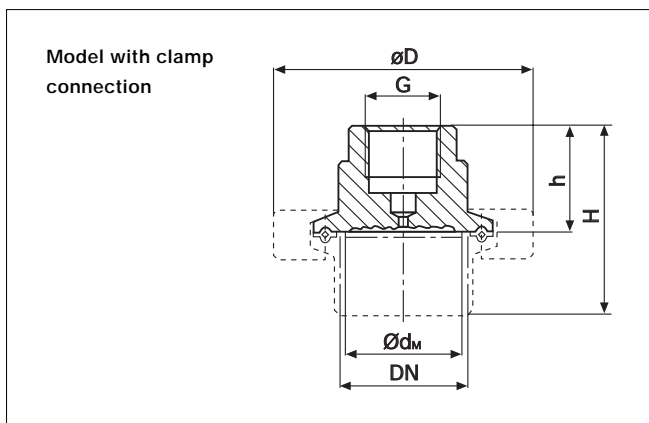
Type 8394

Dimensions

Standard version



Model	DN [mm] or inch	PN [bar]	Dimensions [mm]							Weight [kg]	Design
			d _M	D	H _{ca}	h _{ca}	k	G	G ₁		
Chemical seals with union nut											
DIN 11851	25	40	25	63	60	-	21	G 1/4	Rd 52 x 1/6	0.40	D-F
	32	40	32	70	69	-	21	G 1/2	Rd 58 x 1/6	0.50	D-F
	40	40	40	78	55	-	21	G 1/2	Rd 65 x 1/6	0.75	D-F
	50	25	52	92	59	-	22	G 1/2	Rd 78 x 1/6	0.80	D-F
	80	25	72	127	78	-	29	G 1/2	Rd 110 x 1/4	1.25	
SMS- Standard	1 1/2	40	40	74	51	-	25	G 1/2	Rd 60 x 1/6	0.75	
	2	40	52	84	51	-	26	G 1/2	Rd 70 x 1/6	0.90	
IDF- Standard	1 1/2	40	32	64	53	-	30	G 1/2	1 1/2" IDF	0.70	
	2	40	52	79	53	-	30	G 1/2	2" IDF	0.85	
APV-RJT- Standard	1 1/2	40	32	72	60	-	21	G 1/2	2 5/16 x 8"	0.77	
	2	40	40	86	65	-	22	G 1/2	2 7/8 x 6"	0.86	
Chemical seals with male thread											
DIN	40	40	40	78	55	36	-	G 1/2	Rd 65 x 1/6	0.85	C
11851	50	25	52	92	57	36	-	G 1/2	Rd 78 x 1/6	0.90	C
SMS- Standard	1 1/2	40	40	74	61	38	-	G 1/2	Rd 60 x 1/6	0.90	
	2	40	52	84	61	38	-	G 1/2	Rd 70 x 1/6	1.00	
IDF- Standard	1 1/2	40	32	64	63	40	-	G 1/2	1 1/2" IDF	0.73	
	2	40	52	79	63	40	-	G 1/2	2" IDF	0.88	
APV-RJT- Standard	1 1/2	40	32	72	60	35	-	G 1/2	2 5/16 x 8"	0.85	
	2	40	52	86	65	35	-	G 1/2	2 7/8 x 6"	1.10	



Model	DN [inch]	PN [bar]	Dimensions [mm]					G	Weight [kg]
			d _M	D _{ca}	H _{ca}	h _{ca}	G		
Clamp connection	1 1/2	40	32	60	58	35	G 1/2	0.60	
	2	40	40	75	58	35	G 1/2	0.75	
	2 1/2	25	52	82	65	35	G 1/2	0.95	
	3	25	72	104	65	35	G 1/2	1.30	

d_M = effective diameter of diaphragm

¹⁾ Coupling components indicates by dotted lines area available upon inquiry.

Chemical Seals for chemical process industry (In-line-type)

Type 8395

For direct mounting into the process line



Design

Chemical seal for rapidly flowing, highly viscous and corrosive pressure mediums. Especially designed for the chemical process industry. The chemical seal has a round pipe diaphragm, no corners and edges and no dead space and no cross section construction.

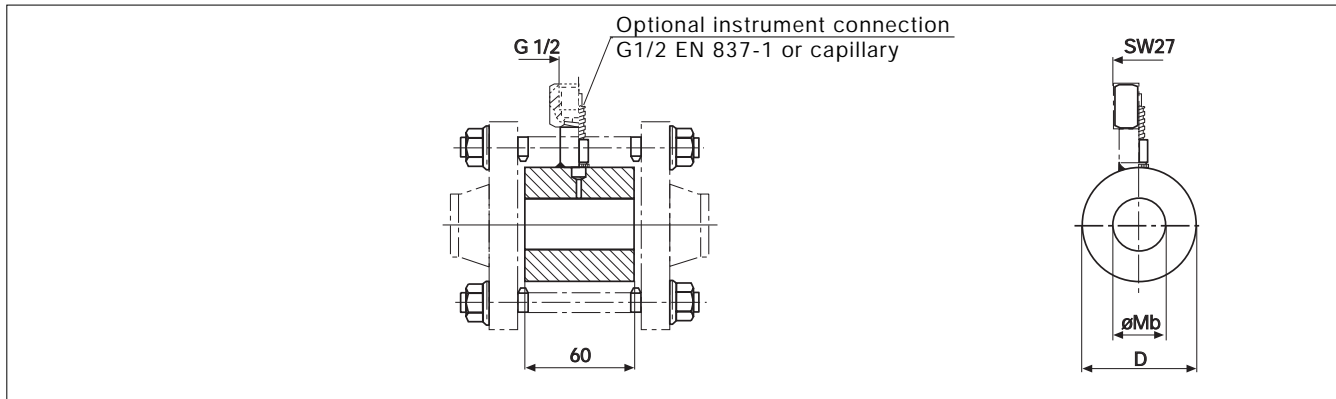
The body is a wafer type and can be mounted directly into the process line by fitting standard flanges.

Specifications

Process connections	Flange according to DIN/ANSI DN 25... 150 per DIN resp. DN 1" ... 6" per/ANSI
Pressure rating	PN 400/class 2500
Materials	
- Body	Stainless steel 1.4571 DIN 2501/ANSI B16.5
- Diaphragm	Stainless steel 1.4571, welded with body optional Hastelloy C22, PFA coating, ECTFE coating
Instrument connection	Adaptor G 1/2 female per EN 837-1 welded with body

Dimensions

Standard version



to fit flange per DIN 2501

DN [mm]	PN [bar]	Dimensions [mm]			Weight [kg]
		D	Mb	L	
25	6... 400	63	28.5	60	1.4
40	6... 400	85	43.0	60	2.2
50	6... 400	95	54.5	60	2.5
80	6... 400	130	82.5	60	4.0
100	6... 400	150	107.0	60	4.7
125	6... 400	195	132.0	60	6.8
150	6... 400	212	159.0	60	9.5

to fit flange per ANSI B 16.5

DN [inch]	PN [bar]	Dimensions [mm]			Weight [kg]
		D	Mb	L	
1	150... 2500	63	28.5	60	1.4
1 1/2	150... 2500	85	43.0	60	2.2
2	150... 2500	95	54.5	60	2.5
3	150... 2500	130	82.5	60	4.0
4	150... 2500	150	107.0	60	4.7
5	150... 2500	186	132.0	60	6.8
6	150... 2500	216	159.0	60	9.5



Design

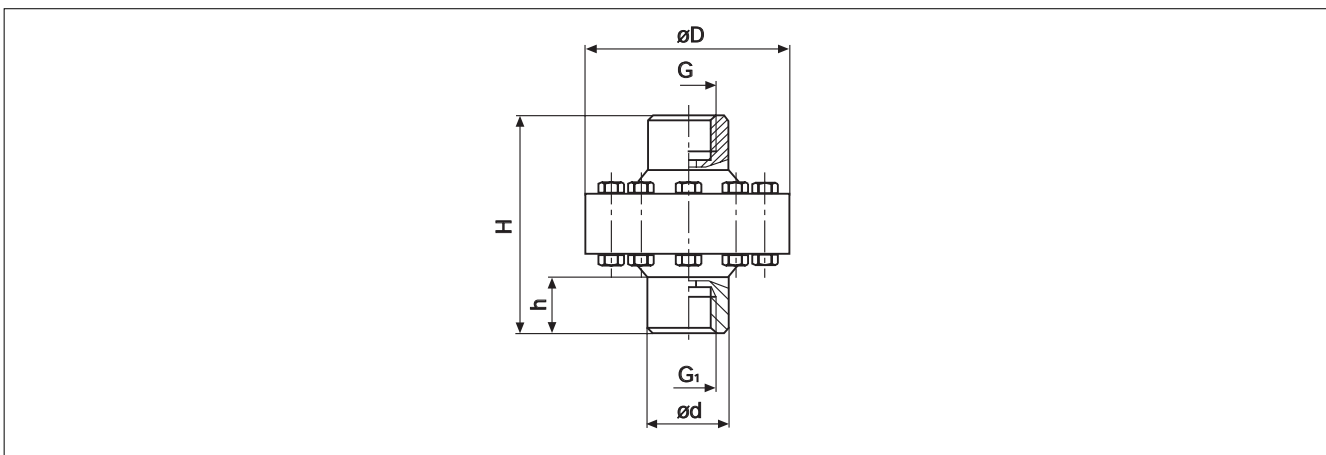
Chemical seal with plastic body especially for application with corrosive and polluted media, e.g. chemical and waste water. The diaphragm of the chemical seal is internally fixed. It is to combine with bourdon tube pressure gauges or transmitters.

Specifications

Process connections	Multipurpose connection
Pressure rating	PN 10 Pressure ranges 0...1 to 0...10 bar
Materials	
- Process connection	PVC, connector per DIN 19532 with adaptations G 1/2 female, DN 25 neck to be bonded and DN 25 welding neck
- Diaphragm	CSM-caoutchouk with PTFE overlay foil or FPMC (Viton)
Instrument connection	Stainless steel 1.4301
Operating temperature	0... 40 °C max.

Dimensions

Standard version



DN	PN [bar]	Dimensions [mm]					Weight [kg]
		D	d	H	h	G / G ₁	
15	10	81	25	87	18	G 1/4	0.25
25	10	81	32	87	22	G 1/2	0.46

Order sheet / Questionnaire for Pressure Instruments and Chemical Seals

Client/Company	Date
Address	
Name	Department
Phone	Fax
Project	
Quantity	Delivery date (wish)

Process details

Max. pressure (bar) / (psi)	if dynamic from.....to..... <input type="checkbox"/> bar / <input type="checkbox"/> psi		
Does vacuum occur? Yes/No	if Yes min. abs. pressure.....mbar at temp..... °C (e.g. during cleaning process)		
Process medium			
Suitable material for wetted parts	Cu-alloy:	SS:	Monel: other:
Medium temperature	min.	max.	
Ambient temperature at pressure instrument	min.	max.	
Ambient temperature at capillary extension (if present)			
Mounting location of the instrument	vertical	horizontal	inclination to horiz.....°
Vibrations in the piping	<input type="checkbox"/> Yes Intensity _____		<input type="checkbox"/> No
Application			
Special situations and requirements			

Pressure gauge / transmitter details

Model	Measuring range	bar
Process connection	<input type="checkbox"/> G 1/2 <input type="checkbox"/> male <input type="checkbox"/> female	<input type="checkbox"/> NPT 1/2 <input type="checkbox"/> male <input type="checkbox"/> female <input type="checkbox"/> flange
Wetted parts material	<input type="checkbox"/> copper-alloy <input type="checkbox"/> stainless steel	
Electric alarm contacts (magnetic)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Electrical output 4... 20 mA	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Optional extras		

Chemical seal

Model	Design to DIN	DN	PN
Process connection	<input type="checkbox"/> Thread <input type="checkbox"/> Flange <input type="checkbox"/> Clamp		
Flange	<input type="checkbox"/> DIN <input type="checkbox"/> ANSI		
	DN	inch	
	PN	Class	
Thread	<input type="checkbox"/> internal <input type="checkbox"/> external	size	
Wetted parts material	<input type="checkbox"/> St.Steel <input type="checkbox"/> Monel <input type="checkbox"/> Titanium <input type="checkbox"/> Hastelloy <input type="checkbox"/> Others _____		
Filling liquid:	<input type="checkbox"/> Silicon oil KN 17 <input type="checkbox"/> Glycerin KN 7 <input type="checkbox"/> Glycerin/Water KN 12 <input type="checkbox"/> Vegetable oil KN 13 <input type="checkbox"/> Halocarbon KN 21		
Optional extras			
Accompanying pressure instrument: see above			

Construction pressure gauge / transmitter and chemical seal

Direct mounting (chemical seal and pressure device are mounted directly together)?	Yes / No
Cooling element between chemical seal and pressure device?	Yes / No
Construction with capillary extension? Yes / No	if Yes m length
Optional extras	

Note! A chemical seal is only available with a pressure instrument as a combined unit.

In case of special application requirements, please consult for advice.

We reserve the right to make technical changes without notice.
801-GB/ 0138