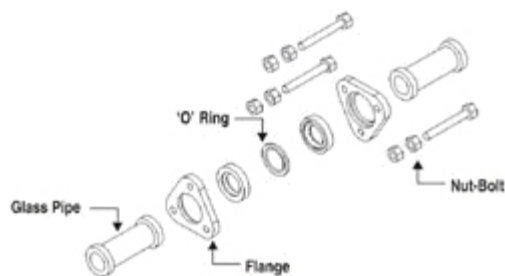




Introduction



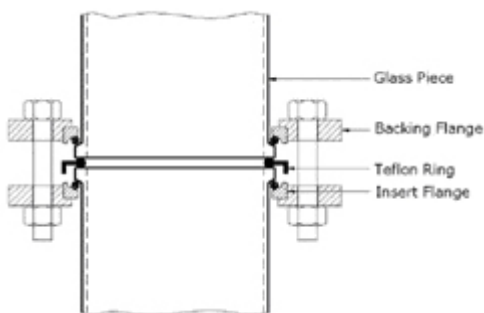
Assembly of standard joint - flat buttress end to flat buttress end.

The couplings designed for use with our glass process plant and pipeline components are of major importance from two main points of view.

- They must ensure that the bolt load applied to the joint is sufficient to make an effective seal whilst not inducing undue DKStress in the glass.
- They must be totally reliable in all service conditions on the inner walls.

This chapter of the catalogue covers not only the necessary couplings to join glass equipments and pipeline components together but also the couplings needed to join glass to another materials. For glass plants installed in relatively corrosive environments and added advantage is the availability of couplings conDKSucted from various materials including stainless steel and plastic.

COMPLETE COUPLINGS



DN	Flanges	Inserts	Nuts & bolts	Cat. Ref.
25	2xCF1	2xCN1	3x5/16j±x70	DCT1
40	2xCF1.5	2xCN1.5	3x5/16j±x80	DCT1.5
50	2xCF2	2xCN2	3x5/16j±x90	DCT2
80	2xCF3	2xCN3	6x5/16j±x100	DCT3
100	2xCF4	2xCN4	6x5/16j±x110	DCT4
150	2xCF6	2xCN6	6x3/8j±x120	DCT6
225	2xCF9	2xCN9	8x3/8j±x130	DCT9
300	2xCF12	2xCN12	12x3/8j±x140	DCT12
450	2xCF450	2xCN450	12x1/2j±x200	DCT 18
600	2xCF600	2xCN600	12x1/2j±x200	DCT 24

Complete coupling consists of two flanges, two inserts and the appropriate number of nuts, bolts, PTFE 'O' ring. Generally flanges are made of cast iron powder coated / SS, nuts, bolts, springs

QUICK RELEASE COUPLINGS

Quick release coupling are used in applications where there is need to open or to close couplings as quickly without using tools. Charging materials to reaction or extraction vessels or replacing measurement indicators are typical

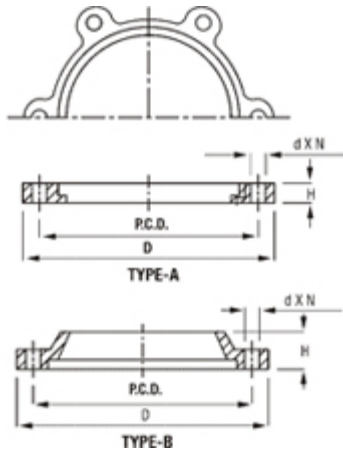
examples

of

this.

Upper flange with slotted bolt -holes, hinged quick release bolts and a lower backing flange, which is fixed on the glass and are separated by means of hinged quick release bolts and wing nuts. Depending upon the frequency of opening.

BACKING FLANGES



DN	D	H	P.C.D	D x N	TYPE	CAT. REF
25	90	10	70	9 x 3	A	DCF 1
40	105	10	86	9 x 3	A	DCF 1.5
50	120	11	98	9 x 3	A	DCF 2
80	155	12	133	9 x 6	A	DCF 3
100	200	14	178	9 x 6	A	DCF 4
150	280	15	254	11 x 6	A	DCF 6
225	335	29	310	11 x 8	B	DCF 9
300	420	35	394	11 x 12	B	DCF 12
400	525	22	495	12 x 12	A	DCF 16
450	630	38	585	14 x 12	B	DCF 18
600	745	48	710	14 x 12	B	DCF 24

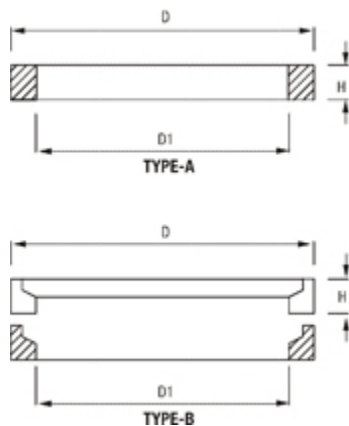
Backing flanges form an internal part of the complete coupling detailed earlier in this chapter. Up to and including DN 450 they are one -piece unit and for DN-600 it is available in two pieces. Backing flanges are used to couple to glass end or to a bellow.

Backing flanges are made of cast iron and are used with inserts.

* Stainless steel (S.S.) flanges can be made on request basis.

Note : H may vary ± 2 mm up to DN 150 and ± 3 mm from Dn 200 to Dn 600mm

INSERTS



DN	D	D1	H	TYPE	CAT. REF
25	50	36	8	A	DCN 1
40	65	50	8	A	DCN 1.5
50	79	62	8	A	DCN 2
80	110	92	8	A	DCN 3
100	146	122	8	A	DCN 4
150	197	174	10	A	DCN 6
225	275	240	10	A	DCN 9
300	359	322	10	A	DCN 12
400	474	431	12	A	DCN 16
450	555	500	18	A	DCN 18

Spilt ring type insert are used with backing flanges. This are made of cast iron asbestos rope. Non asbestos PTFE

impregnated rope can be supplied on request. Insert from rubber material can also be supplied on request.

Note : H may vary ± 2 mm up to DN 150 and ± 3 mm from Dn 200 to Dn 600mm
DN is the nominal size of the coupling.



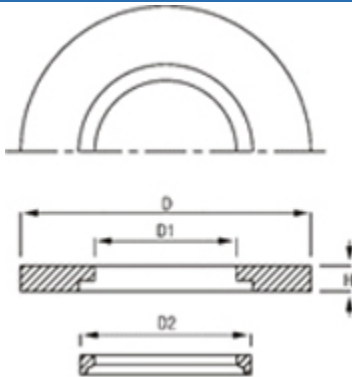
ADAPTOR BACKING FLANGE

These flanges are made of cast iron and are supplied with a split ring.

Aluminum flanges can also be supplied on request. Please mention Cat.Ref. DCFA for cast iron and SACFA for aluminum flanges.

Adaptor backing flanges are generally supplied undrilled. However, if specified, these can be supplied drilled as per "Table E", "Table F" and "ASA 150" standards.

UNDRILLING FLANGES



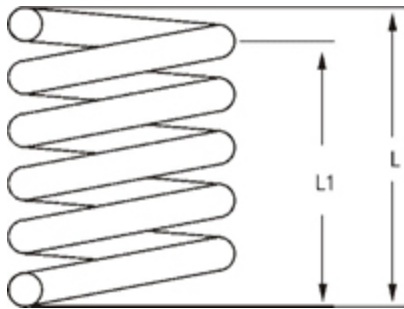
DN	D	D1	D2	H	CAT. REF
25	115	43	51	10	DCFA 1
40	150	58	66	10	DCFA 1.5
50	165	70	81	12	DCFA 2
80	200	101	112	12	DCFA 3
100	220	134	148	12	DCFA 4
150	285	186	196	15	DCFA 6
225	395	260	282	15	DCFA9

Drilled to Table E			Drilled to Table F			Drilled to ASA 150		
CAT. REF.	PCD	n x dØ	CAT. REF.	PCD	n x dØ	CAT. REF.	PCD	n x dØ
DCFA 1/E	82	4 x 12Ø	DCFA 1/F	87	4 x 16Ø	DCFA 1/A	79	4 x 12Ø
DCFA 1.5/E	98	4 x 12Ø	DCFA 1.5/F	105	4 x 16Ø	DCFA 1.5/A	98	4 x 12Ø
DCFA 2/E	114	4 x 16Ø	DCFA 2/F	127	4x 16Ø	DCFA 2/A	121	4 x 16Ø
DCFA 3/E	146	4 x 16Ø	DCFA 3/ F	165	8x 16Ø	DCFA 3/A	152	4 x 16Ø
DCFA 4/E	178	8 x 16Ø	DCFA 4/F	190	8 x 16Ø	DCFA 4/A	190	8 x 16Ø
DCFA 6/E	235	8 x 19Ø	DCFA 6/F	260	12x 19Ø	DCFA 6/A	241	8 x 19Ø
DCFA 9/E	324	12 x 19Ø	DCFA 9/F	356	12 x 23Ø	DCFA 9/A	298	8 x 19Ø

BELLOW FLANGES

DBFA 1/E	82	4 x 12Ø	DBFA 1/F	87	4 x 16Ø	DBFA 1/A	79	4 x 12Ø
DBFA 1.5/E	98	4 x 12Ø	DBFA 1.5/F	105	4 x 16Ø	DBFA 1.5/A	98	4 x 12Ø
DBFA 2/E	114	4 x 16Ø	DBFA 2/F	127	4x 16Ø	DBFA 2/A	121	4 x 16Ø
DBFA 3/E	146	4 x 16Ø	DBFA 3/ F	165	8x 16Ø	DBFA 3/A	152	4 x 16Ø
DBFA 4/E	178	8 x 16Ø	DBFA 4/F	190	8 x 16Ø	DBFA 4/A	190	8 x 16Ø
DBFA 6/E	235	8 x 19Ø	DBFA 6/F	260	12x 19Ø	DBFA 6/A	241	8 x 19Ø
DBFA 9/E	324	12 x 19Ø	DBFA 9/F	356	12 x 23Ø	DBFA 9/A	298	8 x 19Ø

COMPRESSION SPRINGS

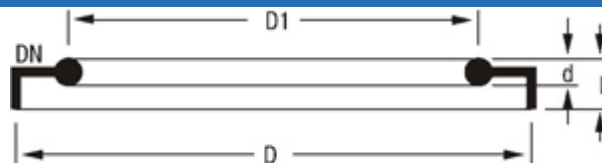


DN	FREE L	INSTALLED L1	CAT. REF.
25 - 100	14.5	11.0	DDF 8.5
150 - 300	22.0	18.0	DDF 10.5

Compression rings are used to set and maintain the correct bolts load on standard glass couplings.

Standard compression springs have a corrosion resistant coating and are also available in SS.

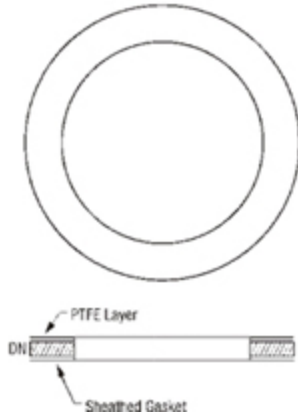
PTFE 'O' RINGS



PTFE 'O' rings are the most widely used gaskets in glass fittings. These are provided with a locking collar, which help to lock the two glass surface correctly. They are manufactured from quality grade of PTFE.

DN	D	D1	d	L	CAT. REF
25	115	43	51	10	DKS1
40	150	58	66	10	DKS1.5
50	165	70	81	12	DKS 2
80	200	101	112	12	DKS 3
100	220	134	148	12	DKS 4
150	285	186	196	15	DKS 6
225	395	260	282	15	DKS9
300	342	318	4	7	DKS 12
450	537	490	6	7	DKS 18

PTEF SHEATED GASKETS



DN	CAT . REF.
25	DTMP 1
40	DTMP 1.5
50	DTMP 2
80	DTMP 3
100	DTMP 4
150	DTMP 6
225	DTMP 9
300	DTMP 12
450	DTMP 18

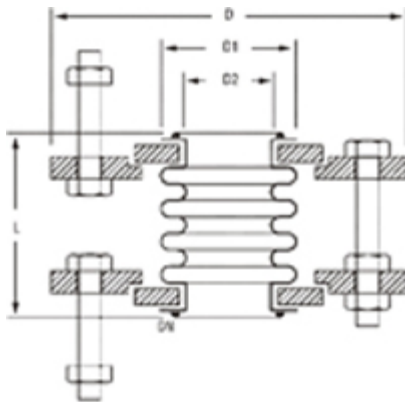
These gaskets take form of a PTFE sheath fitted over a compressed asbestos fiber gaskets. When using this type of gasket, a higher bolting force is required for DN 450 and above.

Please consult our Technical Department for further information.



PTFE bellows are an important aid in the construction of glass plant and pipeline.

They can be used to compensate for different thermal movement between glass and associated equipment, absorb vibrations from associated equipment or foundations. In particular, bellows can be used for connecting glass to other materials. When bellows are used, the support and restraint of the glass should be such that the force resulting from pressure/vacuum in the pipeline and forces resulting from movement of the bellows do not result in undue stresses in the glass. The maximum operating temperature for PTFE bellows is 180°C. Bellows DN 80 and above should not be used under vacuum.



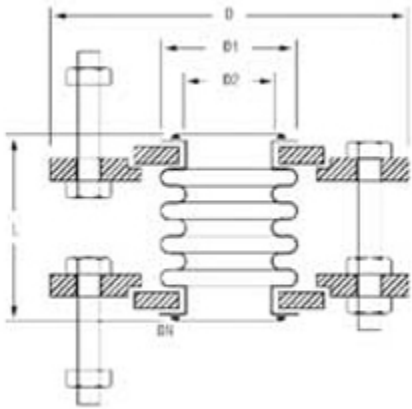
DN	20°C	100°C	160°C	200°C
15	-1/+4	-1/+3	-1/+ 1.5	
25	-1/+4	-1/+3	-1/+ 1.5	
40	-1/+4	-1/+3	-1/+ 1.5	
50	-1/+4	-1/+2	-1/+1	Unpressurised
80	-1/+3	-1/+2	-1/+1	
100	-1/+2	-1/+2	-1/+1	
150	-1/+2	-1/+ 1.5	-1/+ 0,7	
200	-1/+1	-1/+1	-1/+ 0,5	

Permissible operating conditions
Permissible operating pressure (bar g)

conditions for DBFN bellows

PTFE BELLOWS

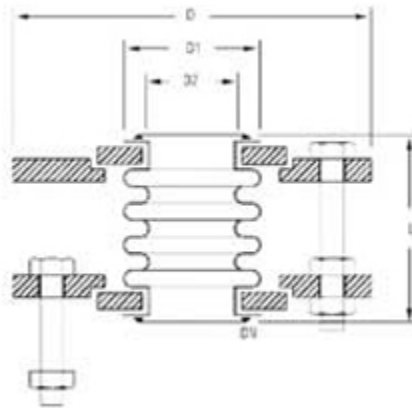
GLASS TO GLASS (LINE BELLOW)



DN	D	D1	D2	L	CAT. REF
25	90	41	31	60	DFBN 1
40	105	56	43	60	DFBN 1.5
50	121	69	55	60	DFBN 2
80	155	98	82	65	DFBN 3
100	200	132	111	65	DFBN 4
150	274	184	162	65	DFBN 6
225	340	258	230	65	DFBN 9

PTFE BELLOWS GLASS TO

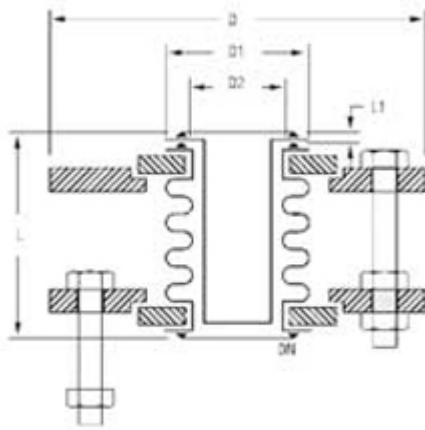
OTHER MATERIALS (LINE BELLOW)



DN	D	D1	D2	L	CAT. REF
25	90	41	31	60	DFBF 1
40	105	56	43	60	DFBF 1.5
50	121	69	55	60	DFBF 2
80	155	98	82	65	DFBF 3
100	200	132	111	65	DFBF 4
150	274	184	162	65	DFBF 6
225	340	258	230	65	DFBN 9

PTFE VACUUM BELLOWS

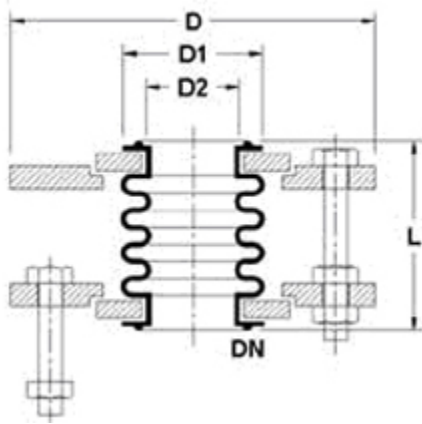
GLASS TO GLASS (VACUUM BELLOW)



DN	D	D1	D2	L	L1	CAT. REF
80	155	98	82	70	5	DVBN 3
100	200	132	111	70	5	DVBN 4
150	274	184	162	70	5	DVBN 6
225	340	258	230	70	5	DVBN 9

PTFE VACUUM BELLOWS

GLASS TO OTHER MATERIALS (VACUUM BELLOW)

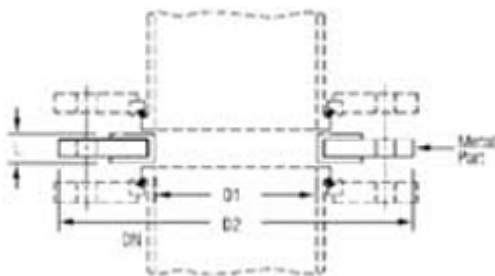


DN	D	D1	D2	L	L1	CAT. REF
80	155	98	82	70	5	DVBF 3
100	200	132	111	70	5	DVBF 4
150	274	184	162	70	5	DVBF 6
225	350	258	230	70	5	DVBF 9
300	425	340	308	70	5	DVBF 12

Bellows can be supplied with undrilled adaptor flanges. However, if specified, these can be supplied drilled as per "Table E", "Table F" and "ASA 150" standards.

Tolerances for above bellows in length is $\pm 3\text{mm}$ and diameter as per glass buttress

ADAPTOR PLATE FOR REACTORS



DN	DN1	DN2	L	CAT. REF
25	25	60	10	DEMP 1
40	37	80	10	DEMP 1.5
50	50	100	10	DEMP 2
80	75	120	12	DEMP 3
100	100	155	12	DEMP 4
150	150	210	12	DEMP 6
225	200	260	15	DEMP 9

These components are used as interface spacers when connecting glass flat buttress end components to other process plant and pipeline equipment and glass-lined reaction vessels. A combination of steel, rubber and PTFE provide an ideal sealing surface with only PTFE coming into contact with the process fluids to maintain resistance to corrosion.



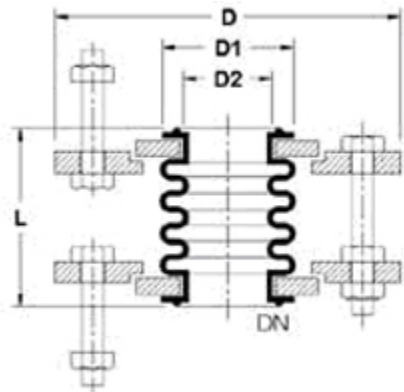
PTFE Bellows

PTFE bellows are an important aid in the construction of glass plant and pipeline. They can be used to compensate for different thermal movement between glass and associated equipment, absorb vibrations from associated equipment or foundations. In particular, bellows can be used for connecting glass to other materials. When bellows are used, the support and restraint of the glass should be such that the force resulting from pressure/vacuum in the pipeline and forces resulting from movement of the bellows do not result in undue stresses in the glass. If any doubt, please consult our Technical Department.

All bellows are delivered complete with an appropriate flange assembly as detailed in the diagram and tables. It is essential that the limiting screws are not removed.

The maximum operating temperature for PTFE bellows is 200°C. Bellows DN 80 and above should not be used under vacuum. For such application we recommend the use of vacuum bellows as detailed on the following page.

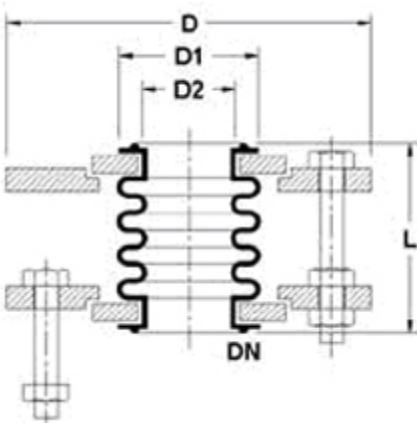
PTFE Bellows for connecting Glass to Glass



DN	La	Lb	Max. operating pressure up to 100°C (bar.g)	Cat. Ref.
25	45	60	3	DFBN 1
40	50	60	3	DFBN 1.5
50	50	60	2	DFBN 2
80	65	65	2	DFBN 3
100	70	65	2	DFBN 4
150	70	65	1.5	DFBN 6
225	70	70	1	DFBN 9
300	70	70	0.7	DFBN 12

La = As per international standards.
 Lb = As per our standards.
 Tolerance $\pm 3\text{mm}$

PTFE Bellows for Connecting Glass to Other Materials



DN	D	La	Lb	Max. operating pressure up to 100°C (bar.g)	Cat. Ref.
25	115	45	60	3	DFBF 1
40	150	50	60	3	DFBF 1.5
50	165	50	60	2	DFBF 2
80	200	65	65	2	DFBF 3
100	220	70	65	2	DFBF 4
150	285	70	65	1.5	DFBF 6
225	395	70	70	1	DFBF 9
300	480	70	70	0.7	DFBF 12

La = As per international standards.
 Lb = As per our standards.
 Tolerance $\pm 3\text{mm}$

The adaptor flange in this assembly is drilled to suit mating flanges as per "Table E", "Table F", "Table D", "ASA 150", if specified.

Bellows can be supplied with undrilled adaptor flanges.