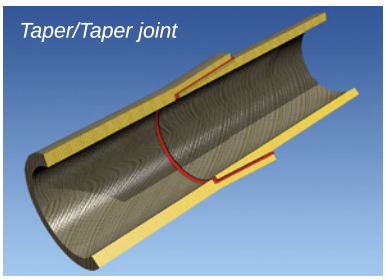


Fittings & Flanges for pipe series 2420 and 3420

using the Taper/Taper adhesive-bonded joint

Description

Bondstrand Taper-Taper fittings & flanges are glassfiber reinforced filament-wound epoxy pipe fittings in diameters 50 through 1000 mm (2-40 inch) designed to be used with Bondstrand pipes. Pipe is standard with integral Taper-Taper spigot and socket ends for adhesive bonding or with integral Key-Lock male and female ends for mechanical joining. Fittings are filament-wound with integral taper socket ends. Pipes and fittings are available in several pressure classes from 10 bar upwards.

Uses and Application

For intended services and performance capabilities refer to product data sheet FP 452 and FP 158 pertaining to Bondstrand Series 2400 and 3400 pipe data.

Design and Installation

For recommendations pertaining to design, installation and use of Bondstrand Pipe, Fittings and Flanges reference is made to the following literature:

FP 564	Assembly Instructions for Taper-Taper adhesive bonded joints.
FP 161	Installation Instructions using the Key-Lock mechanical joint.
FP 453	M86 Pipe Shaver operating instructions for Taper-Taper joints in sizes 50 to 150 mm (2-6 inch).
FP 454	M87 Pipe Shaver operating instructions for Taper-Taper joints in sizes 150 to 400 mm (6-16 inch).
FP 455	M87XL Pipe Shaver operating instructions for Taper-Taper joints in sizes 400 to 600 mm (16-24 inch).
FP 643	M95 Pipe Shaver operating instructions for Taper-Taper joints in sizes 600 to 1000 mm (24-40 inch).
FP 196	Flange Assembly Instructions.
FP 132	Corrosion Guide.

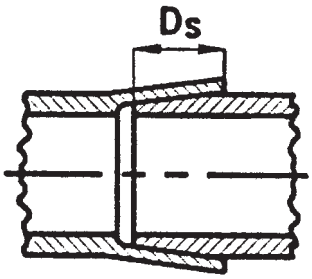
General Bondstrand engineering and installation guides.

How to use this product data sheet

Dimensional data for Taper-Taper adhesive bonded fittings are contained in individual dimensional sheets per pressure class:

FP No.	*Fitting*	*Pipe System*	*Pressure*
549-10	T-10	2410 and 3410	10 bar
549-12	T-12	2412 and 3412	12 bar
549-14	T-14	2414 and 3414	14 bar
549-16	T-16	2416 and 3416	16 bar
549-20	**T-20**	**2420 and 3420**	**20 bar**
549-25	T-25	2425 and 3425	25 bar
549-32	T-32	2432 and 3432	32 bar
549-40	T-40	2440 and 3440	40 bar
549-50	T-50	2450 and 3450	50 bar

Dimensions of the taper-taper joint



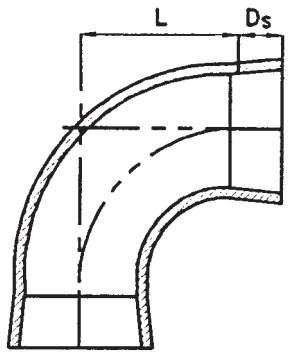
Nominal Pipe Size		Taper Angle	Insertion Depth	Spigot Nose Thickness	Spigot Diameter at Nose
		α	Ds	t	
mm	inch	degrees	mm	mm	mm
50	2	1.75	50	1.0	55.2
80	3	1.75	50	1.0	83.8
100	4	1.75	50	1.0	107.2
150	6	2.50	80	1.0	161.0
200	8	2.50	80	1.0	210.8
250	10	2.50	110	1.0	264.9
300	12	2.50	140	1.0	315.7
350	14	2.50	140	1.5	347.4
400	16	2.50	170	1.5	396.7
450	18	2.50	170	1.5	436.8
500	20	2.50	200	2.0	486.1
600	24	2.50	230	2.5	583.6
700	28	1.75	290	5.5	711.0

Quantity of Adhesive

Nominal Pipe Size		Adhesive Kit Size		Minimum number of adhesive kits per joint
			fluid	
mm	inch	cm^3	ounce	nr.
50	2	89	3	0.2
80	3	89	3	0.2
100	4	89	3	0.4
150	6	89	3	0.8
200	8	177	6	1.0
250	10	177	6	1.0
300	12	177	6	2.0
350	14	177	6	2.0
400	16	177	6	3.0
450	18	177	6	3.0
500	20	177	6	3.0
600	24	177	6	5.0
700	28	177	6	7.0

Note:
Adhesive kits should never be split. If remainder is not used for other joints made at the same time, the surplus must be discarded.

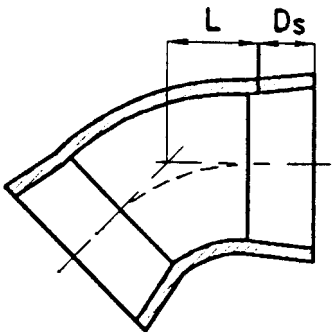
Elbows 90°



Filament-wound 90° elbows with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overall Length OL	Insertion Depth Ds	Weight
mm	inch	mm	mm	mm	kg
50	2	87	137	50	0.6
80	3	126	176	50	1.1
100	4	155	205	50	2.1
150	6	240	320	80	5.8
200	8	315	395	80	12.0
250	10	391	501	110	16.1
300	12	463	603	140	26.0
350	14	364	504	140	37.0
400	16	402	572	170	53.0
450	18	472	642	170	76.0
500	20	523	723	200	125.0
600	24	625	855	230	228.0
700	28	726	1016	290	293.0

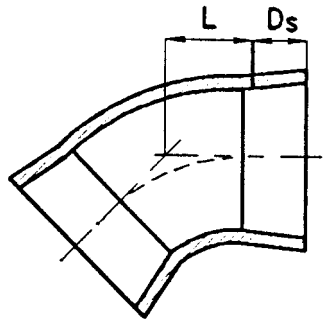
Elbows 45°



Filament-wound 45° elbows with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overall Length OL	Insertion Depth Ds	Weight
mm	inch	mm	mm	mm	kg
50	2	45	95	50	0.5
80	3	61	111	50	0.9
100	4	73	123	50	1.3
150	6	106	186	80	3.9
200	8	137	217	80	7.4
250	10	169	279	110	12.4
300	12	196	336	140	22.0
350	14	125	265	140	29.0
400	16	142	312	170	41.0
450	18	204	374	170	54.0
500	20	225	425	200	75.0
600	24	268	498	230	130.0
700	28	310	600	290	229.0

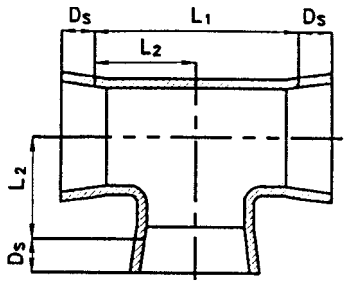
Elbows 22½°



Filament-wound 22½° elbows with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overall Length OL	Insertion Depth Ds	Weight
mm	inch	mm	mm	mm	kg
50	2	29	79	50	0.4
80	3	37	87	50	0.6
100	4	43	93	50	0.9
150	6	60	140	80	2.8
200	8	76	156	80	5.1
250	10	68	178	110	9.7
300	12	77	217	140	15.5
350	14	71	211	140	21.0
400	16	85	255	170	24.0
450	18	106	276	170	39.0
500	20	116	316	200	56.0
600	24	136	366	230	93.0
700	28	157	447	290	173.0

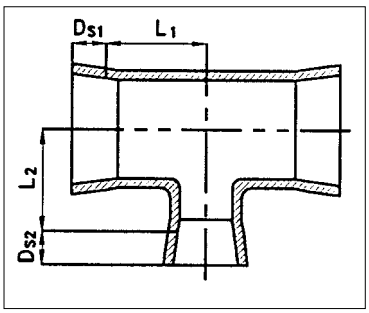
Tees



Filament-wound tees with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length total run L_1	Overall Length total run OL_1	Laying Length branch L_2	Overall Length branch OL_2	Insertion Depth Ds	Weight
mm	inch	mm	mm	mm	mm	mm	kg
50	2	148	248	74	124	50	1.3
80	3	192	292	96	146	50	2.9
100	4	230	330	115	165	50	4.0
150	6	306	466	153	233	80	11.9
200	8	376	536	188	268	80	21.0
250	10	452	672	226	336	110	21.0
300	12	528	808	264	404	140	50.0
350	14	544	824	272	412	140	55.0
400	16	590	930	295	465	170	87.0
450	18	678	1018	339	509	170	103.0
500	20	740	1140	370	570	200	209.0
600	24	868	1328	434	664	230	351.0
700	28	994	1574	497	787	290	599.0

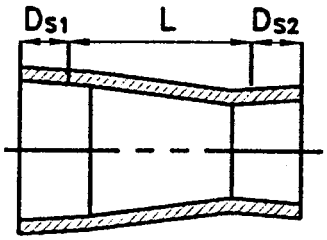
Reducing Tees



Filament-wound reducing tees with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length half run	Overall Length half run	Insertion Depth run	Laying Length branch	Overall Length branch	Insertion Depth branch	Weight
run x run x branch		L_1	OL_1	Ds_1	L_2	OL_2	Ds_2	
mm	inch	mm	mm	mm	mm	mm	mm	kg
80x80x50	3x3x2	96	146	50	86	136	50	2.7
100x100x50	4x4x2	115	165	50	99	149	50	3.8
100x100x80	4x4x3	115	165	50	108	158	50	4.0
150x150x50	6x6x2	153	233	80	124	174	50	10.9
150x150x80	6x6x3	153	233	80	134	184	50	12.0
150x150x100	6x6x4	153	233	80	140	190	50	12.2
200x200x80	8x8x3	188	268	80	159	209	50	16.0
200x200x100	8x8x4	188	268	80	172	222	50	16.7
200x200x150	8x8x6	188	268	80	178	258	80	17.9
250x250x100	10x10x4	226	336	110	194	244	50	29.0
250x250x150	10x10x6	226	336	110	204	284	80	32.0
250x250x200	10x10x8	226	336	110	213	293	80	34.0
300x300x100	12x12x4	264	404	140	216	266	50	43.0
300x300x150	12x12x6	264	404	140	229	309	80	44.0
300x300x200	12x12x8	264	404	140	239	319	80	45.0
300x300x250	12x12x10	264	404	140	251	361	110	51.0
350x350x150	14x14x6	272	412	140	254	334	80	42.0
350x350x200	14x14x8	272	412	140	264	344	80	54.0
350x350x250	14x14x10	272	412	140	277	387	110	62.0
350x350x300	14x14x12	272	412	140	289	429	140	66.0
400x400x150	16x16x6	295	465	170	274	354	80	55.0
400x400x200	16x16x8	295	465	170	283	363	80	56.0
400x400x250	16x16x10	295	465	170	293	403	110	63.0
400x400x300	16x16x12	295	465	170	305	445	140	67.0
400x400x350	16x16x14	295	465	170	315	455	140	71.0
450x450x200	18x18x8	339	509	170	316	396	80	100.0
450x450x250	18x18x10	339	509	170	329	439	110	104.0
450x450x300	18x18x12	339	509	170	329	469	140	107.0
450x450x350	18x18x14	339	509	170	330	470	140	137.0
450x450x400	18x18x16	339	509	170	330	500	170	143.0
500x500x250	20x20x10	370	570	200	355	465	110	180.0
500x500x300	20x20x12	370	570	200	355	495	140	186.0
500x500x350	20x20x14	370	570	200	356	496	140	188.0
500x500x400	20x20x16	370	570	200	356	526	170	195.0
500x500x450	20x20x18	370	570	200	365	535	170	200.0
600x600x300	24x24x12	434	664	230	405	545	140	211.0
600x600x350	24x24x14	434	664	230	406	546	140	281.0
600x600x400	24x24x16	434	664	230	406	576	170	220.0
600x600x450	24x24x18	434	664	230	428	598	170	239.0
600x600x500	24x24x20	434	664	230	428	628	200	279.0
700x700x400	28x28x16	497	787	290	483	653	170	520.0
700x700x450	28x28x18	497	787	290	483	653	170	525.0
700x700x500	28x28x20	497	787	290	491	691	200	539.0
700x700x600	28x28x24	497	787	290	491	721	230	560.0

Concentric Reducers

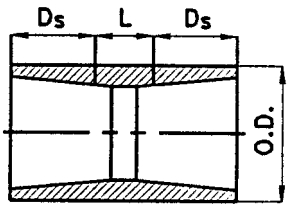


Filament-wound concentric reducers with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overall Length OL	Overall Length Ds_1	Insertion Depth Ds_2	Weight
mm	inch	mm	mm	mm	mm	kg
80x50	3x2	74	174	50	50	0.8
100x50	4x2	96	196	50	50	1.1
100x80	4x3	94	194	50	50	1.3
150x80	6x3	117	247	80	50	2.2
150x100	6x4	124	254	80	50	2.4
200x100	8x4	163	293	80	50	4.3
200x150	8x6	129	289	80	80	5.1
250x150	10x6	148	338	110	80	6.8
250x200	10x8	135	325	110	80	6.9
300x200	12x8	180	400	140	80	9.9
300x250	12x10	167	417	140	110	10.8
350x250	14x10	214	464	140	110	17.0
350x300	14x12	208	488	140	140	16.8
400x300	16x12	195	505	170	140	22.0
400x350	16x14	183	493	170	140	23.0
450x400	18x16	128	468	170	170	27.0
500x400	20x16	249	619	200	170	36.0
500x450	20x18	151	521	200	170	35.0
600x400	24x16	486	886	230	170	70.0
600x450	24x18	388	788	230	170	70.0
600x500	24x20	267	697	230	200	70.0
700x400	28x16	796	1256	290	170	180.0
700x450	28x18	698	1158	290	170	156.0
700x500	28x20	577	1067	290	200	181.0
700x600	28x24	340	860	290	230	132.0

Note: Eccentric Reducers are available on request

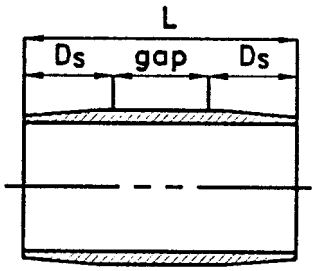
Couplings



Filament-wound couplings with integral Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overall Length OL	Insertion Depth Ds	Outside Diameter OD	Weight
mm	inch	mm	mm	mm	mm	kg
50	2	70	170	50	70	0.4
80	3	70	170	50	100	0.7
100	4	70	170	50	124	0.9
150	6	70	230	80	180	1.9
200	8	70	230	80	230	2.5
250	10	70	290	110	286	4.0
300	12	70	350	140	350	9.8
350	14	70	350	140	381	10.5
400	16	70	410	170	430	13.2
450	18	70	410	170	460	9.0
500	20	70	470	200	524	21.0
600	24	70	530	230	619	24.0
700	28	70	650	290	745	35.0

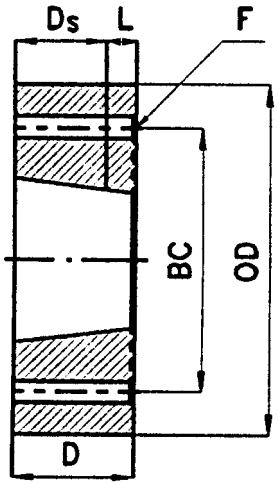
Nipples



Filament-wound pipe nipples with integral Taper-Taper adhesive bonded spigot ends

Nominal Pipe Size		Laying Lenght L	gap	Insertion Depth Ds	Weight
mm	inch	mm	mm	mm	kg
50	2	125	25	50	0.1
80	3	125	25	50	0.1
100	4	125	25	50	0.1
150	6	185	25	80	0.5
200	8	190	30	80	0.7
250	10	250	30	110	1.4
300	12	320	40	140	2.5
350	14	320	40	140	3.1
400	16	380	40	170	4.8
450	18	400	60	170	5.8
500	20	460	60	200	8.7
600	24	520	60	230	13.9
700	28	640	60	290	27.0

Heavy-Duty Flanges



Heavy-Duty filament-wound flanges with Taper-Taper adhesive bonded socket ends

Nominal Pipe Size		Laying Length L	Overal Length D	Insertion Depth Ds	Weight **(1)**
mm	inch	mm	mm	mm	kg
50	2	5	55	50	1.5
80	3	5	55	50	2.2
100	4	5	55	50	2.9
150	6	5	85	80	5.8
200	8	6	86	80	8.4
250	10	6	116	110	14.3
300	12	6	146	140	26.0
350	14	6	146	140	33.0
400	16	6	176	170	46.0
450	18	6	176	170	49.0

Notes:

(1) The weights shown are for ANSI B16.5 Class 150 drilled flanges. Weights for other drilling classes may be different. For more detailed information reference is made to the appropriate product data.

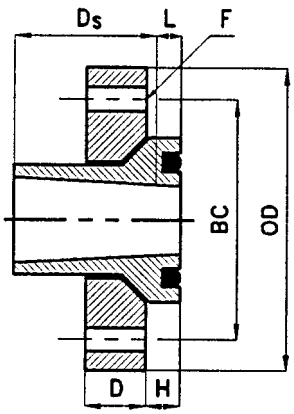
* Heavy Duty Flanges are standard available in drillings according to ANSI and ISO (DIN).

** Full-face elastomeric gaskets may be used, suitable for the service pressure, service temperature and fluid. Shore A durometer hardness of 60 ±5 is recommended and a thickness of 3 mm.
Compressed fibre gaskets, 3 mm thick, compatible with the pressure, temperature and medium, may also be used. The mechanical properties should be in accordance with DIN 3754 (IT 400) or equal.

*** For maximum bolt torque refer to the appropriate Bondstrand literature. Please be aware that excessive torque may result in flange failure and, therefore a torque-wrench is required.

Stub-end Flanges

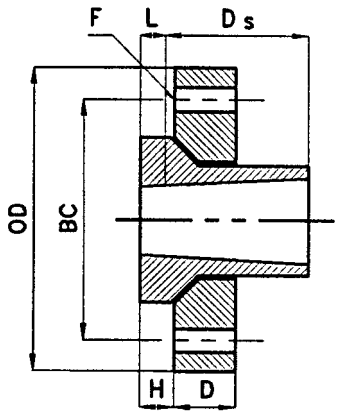
Filament-wound Stub-end flanges with Taper-Taper adhesive bonded socket ends and steel backing rings



Nominal Pipe Size		Laying Length	Overall Length	Insertion Depth	Ring to Face	Weigth GRE stub-end	Weight steel ring **(1)**
		L	OL	Ds	H		
mm	inch	mm	mm	mm	mm	kg	kg
50	2	15	65	50	10	0.2	1.8
80	3	15	65	50	10	0.5	3.2
100	4	15	65	50	12	0.8	4.2
150	6	15	95	80	16	1.8	5.2
200	8	15	95	80	20	2.6	8.5
250	10	15	125	110	23	4.0	13.5
300	12	15	155	140	26	5.9	23.0
350	14	15	155	140	27	5.8	32.0
400	16	20	190	170	32	9.6	42.0
450	18	20	190	170	35	16.1	40.0
500	20	20	220	200	39	19.8	51.0
600	24	20	250	230	47	22	86.0
700	28	20	310	290	51	29	100.0

Notes:

(1) The weight shown is for ANSI B16.5 Class 150 drilled flanges. Weights for other drilling classes may be different. For more detailed information reference is made to the appropriate product data.



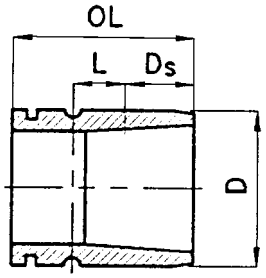
* Stub-End Flange Rings are standard available in drillings according to ANSI and ISO (DIN).

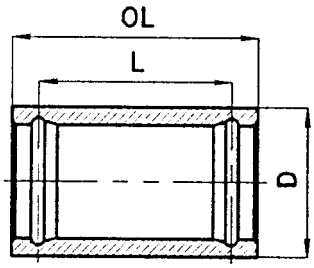
** Stub-End Flanges are available with and without O-ring groove in the face.
Up to 10 bar stub-ends without grooves can be used with flat elastomeric or compressed fibre gaskets.
For pressures 12 bar and above suitable O-ring seals should be used, available on request.

*** Make sure that the O-ring grooved stub-end is compatible with its counter flange, e.g. use a stub-end without groove or another flat surface flange as counter flange.

**** Maximum bolt-torque for use with O-rings seals may be calculated based on pressure, size and number of bolts. If using flat face gaskets (maximum pressure 10 bar) refer to the appropriate Bondstrand literature for hubbed flanges.

Key-lock Adapters & Couplings





Filament around adapters and couplings with Key-lock ends.

Nominal Pipe Size		Qty of Keys	Laying Length L	Overall Length OL	Insertion Depth Ds	Weigth	Laying Length L	Overall Length OL	Weigth
mm	inch		mm	mm	mm	kg	mm	mm	kg
				adapter KLM x TBF				***coupling KLF x KLF***	
50	2	1	5	100	50	0.3	100	140	0.8
80	3	1	5	100	50	0.5	100	140	1.0
100	4	1	5	100	50	0.7	100	140	2.2
150	6	1	4	140	80	1.3	127	181	4.3
200	8	1	2	150	80	1.9	152	225	6.3
250	10	1	3	185	110	3.1	163	242	9.6
300	12	2	60	285	140	6.7	186	386	25.0
350	14	2	73	300	140	10.7	191	403	29.0
400	16	2	80	340	170	10.2	197	426	38.0
450	18	2	61	325	170	16.5	204	392	27.0
500	20	2	83	380	200	21.0	210	409	32.0
600	24	2	98	450	230	33.0	261	519	71.0

Field Testing

Pipe system is designed for field testing with water at 150% of rated pressure.

Surge Pressure

Maximum allowable surge pressure is 150% of rated pressure.

Conversions

1 psi	= 6895 Pa	= 0.07031 kg/cm^2	
1 bar	= 105Pa	= 14.5 psi	= 1.02 kg/cm^2
1 MPa	= 1 N/mm^2	= 145 psi	= 10.2 kg/cm^2
1 inch	= 25.4 mm		
1 Btu.in/ft2h°F	= 0.1442 W/mK		
C	= 5/9 (°F-32)		

Important Notice

This product literature and the recommendations for usage it contains are based on test data reasonably believed to be reliable. It is intended that this literature be used by personnel having specialised training in accordance with currently accepted industry practice and normal operating conditions. Variation in environment, changes in operating procedures, or extrapolation of data may cause unsatisfactory results. We recommend that your engineers verify the suitability of this product for your intended application. Since we have no control over the conditions of service, we expressly disclaim responsibility for the results obtained or for any consequential or incidental damages of any kind incurred.

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