



Durapipe  
**superFLO**  
chilled and cold water pipework

# Durapipe superFLO

chilled and cold water pipework

**Durapipe superFLO offers tremendous advantages for chilled water/air conditioning and cold water services in buildings:**

- Fully integrated range of pipes, fittings and valves (manual and actuated)
- 50 year design life
- Installed costs reduced
- Non corrodible
- Low maintenance
- Robust and reliable
- Lightweight
- Tough and durable
- Ductile down to minus 40°C
- Exceptionally smooth bore
- No scaling
- Reduced noise compared to metal
- Fast and reliable jointing
- Low thermal conductivity

When considering environment control systems, cooling medium distribution pipework is of prime importance.

The reliable containment and efficient movement of fluid in pipes is essential to every air conditioning system, from a self contained packaged unit to a full scale central plant scheme.

## Installation cost

As well as influencing system performance, pipework accounts for a large proportion of the total installation cost, making the right choice of pipes and pipe fittings vital. Durapipe superFLO can help reduce installation costs.

Growing environmental concerns have led to the adoption of 'indirect cooling' practices by the environment control industry as well as manufacturers and installers of packaged air conditioning equipment.



## Corrosion resistance

The inherent susceptibility to corrosion and thermal properties of metal piping materials such as copper and steel are often not suited to these arduous applications.

The corrosion resistance of the piping material is as important since the aqueous solutions used by such systems may be of a corrosive nature. These have highlighted the benefit of the corrosion resistance of Durapipe superFLO piping systems. Growing economical and environmental pressures have also made Durapipe superFLO piping the right choice.

## Sustainable manufacture

The energy used to make Durapipe superFLO thermoplastic pipe from raw material compares favourably with, for example, steel

pipe manufacture because lower conversion temperatures are needed. Furthermore our processes are clean with low process emissions.

Durapipe superFLO pipe and fittings are cheaper and easier to transport because they are lighter in weight than the equivalent metal pipes. They can be recycled at the end of life into other products, and scrap during the manufacturing process can also be recycled and re-used. This minimises the need for any thermoplastic pipe scrap entering the waste stream.

Durapipe UK operates an environmental management system that has been successfully assessed against the BS EN ISO 14001 environmental management system standard.



# superFLO

Durapipe superFLO is manufactured from ABS, a copolymer of Acrylonitrile, Butadiene and Styrene, blended to give unrivalled properties, and offering benefits over traditional materials for significant water pipework.

Acrylonitrile imparts chemical resistance ensuring the pipework does not corrode or scale. The Butadiene content endows the material with impact strength and toughness particularly at low temperatures, while the Styrene content contributes to lustre, hence extremely smooth bores, and also ensures the strength of the material.

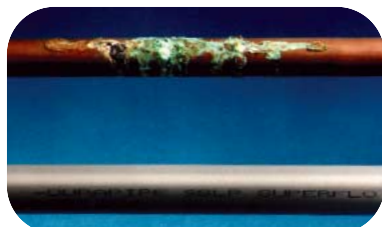
Durapipe UK is the most experienced and successful ABS pipework systems manufacturer in the world. The outstanding advantages of Durapipe superFLO make it the market leader.

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# Durapipe superFLO

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Durapipe **superFLO**, unlike copper or steel, is free from corrosion.



**superFLO**

PVC-U



Smooth bore, uninhibited flow

## Corrosion resistance

No material deterioration means no costly pipe and fittings system repair or replacement.

## Low installed costs

The ease of handling and speed of jointing of Durapipe **superFLO** will generally result in the total installed cost being lower than for threaded, welded, or soldered metal systems.

## Wide temperature range

A major advantage of Durapipe **superFLO** over other plastic systems is its ability to perform over a wide temperature range from  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .

(Note: usual precautions must be taken to prevent contents freezing.)

## Quality approved

Durapipe **superFLO** has a wide range of International approvals.

## Quality control

Our commitment to quality is reflected by our operation of an independently assessed quality management system registered under BS EN ISO 9001.

Durapipe **superFLO** undergoes a rigorous testing programme to assure its performance in service.

Durapipe **superFLO** offers consistency, reliability and complete reassurance to designer, installer and end-user.

## Non toxic

Materials used are selected for their toxicological properties, and suitability for conveying cold potable water.

## Impact resistant

Durapipe **superFLO** is a ductile material, and remains ductile down to minus  $40^{\circ}\text{C}$ . Impact damage is usually confined to scuffs or dents. In severe cases there may be ductile tearing of the material.

In contrast, PVC-U and PVC-C are much less ductile, particularly at temperatures below  $+5^{\circ}\text{C}$ . A sufficiently hard impact can cause them to fragment.



## Fast, simple, high integrity jointing

Solvent welding is a simple process which produces a permanent joint of strength equal to, or exceeding, the pipe itself. No special tools, equipment or hot works permits, are required.

- No electricity required
- No flame or combustible gas bottles required on site
- No site down-time due to electricity shut down
- No hot works permits or need for site segregation
- Permanent, secure jointing
- No special tools needed
- Easy transition to other systems
- Reduced installation time
- Reduced installation costs
- Light and easy to handle

## Superior flow

Low fluid friction allows higher flow velocities than metal pipes, and also inhibits the formation of scale, with consequent savings in pump energy consumption, and reduced pressure drops.



Durapipe **superFLO** resists the limescale build-up common in most metal pipe materials as shown in the picture above.

## Tough and durable

The Butadiene constituent of **superFLO** affords exceptional resistance to accidental damage, a benefit which it retains, even at sub-zero temperatures.



Visual white bead indicator.

## White solvent cement

A bead of white solvent cement around the end of the fittings provides a visual indication that the joint has been made.



Certificate No. FM 34819



## Innovative M&E installation



Traditional approach - steel.



Innovative approach - superFLO.

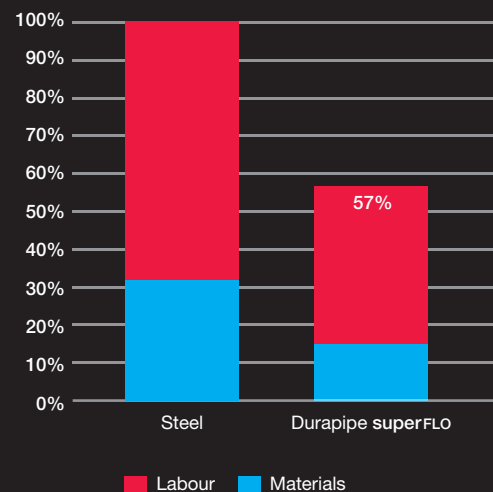
### Why you should use Durapipe superFLO

- Simplified installation technique
- Installation cost reduction of 43% over traditional methods\*
- Installation labour reduction of 60% over traditional methods
- Free product training by manufacturer
- Health and safety risk reduced by:
  - No hot works or threading machinery
  - Lightweight
- 50 year design life - no corrosion
- Reduced hydraulic system resistance
- Reduced insulation thickness requirement

\*BSRIA data sheet 5.3  
Act 5/2000

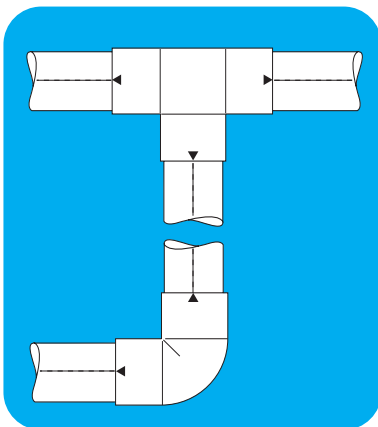
This example is based upon the labour and material cost to install a 6m length of 32mm chilled water pipework including 3 fittings and supports using thermoplastic pipework compared to traditional screwed steel pipework.  
The innovative installation shows a 43% cost saving over traditional methods.

#### Total installed cost comparison



#### Lightweight

At one-sixth the weight of steel pipes, Durapipe **superFLO** is much easier to handle, especially during installation at site.



Aligning pipes and fittings.

#### Metal threaded fittings

**superFLO** ABS/brass ended fittings provide reliable connections between pipework and ancillary equipment across a range of building services applications.



#### Flexible braided hoses.

**superFLO** ABS flexible hoses are designed to allow direct connection from **superFLO** ABS pipework to operating equipment.



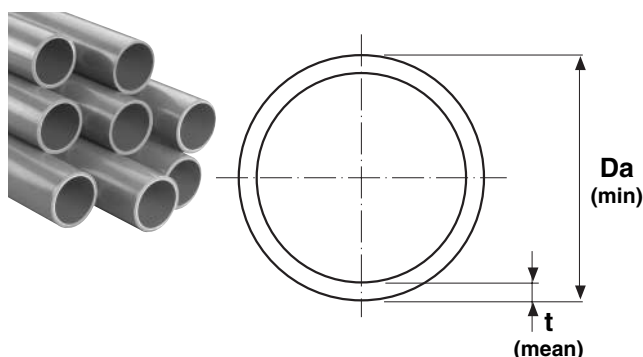
#### Aligning pipes and fittings

Pipe markings and 90° markings on fittings help to align pipes and fittings to achieve perfect 90° or 180° location of fittings.

#### Design life

Durapipe **superFLO** has a 50 year design life with a residual safety factor of 2:1

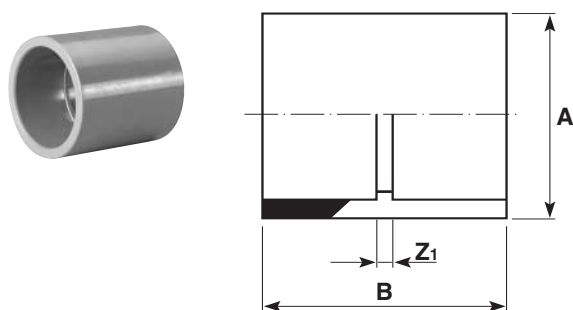
metric pipe system plain PN10



Size Da	Thickness t mm	Weight kg/m	Length m	Code
16	1.5	0.07	3	11 565 305
20	1.6	0.10	3	11 565 306
25	1.9	0.14	3	11 565 307
32	2.1	0.21	3	11 565 308
16	1.5	0.07	6	11 551 305
20	1.6	0.10	6	11 551 306
25	1.9	0.14	6	11 551 307
32	2.1	0.21	6	11 551 308
40	2.7	0.33	6	11 551 309
50	3.4	0.52	6	11 551 310
63	4.2	0.81	6	11 551 311
75	5.0	1.14	6	11 551 312
90	6.0	1.65	6	11 551 313
110	7.3	2.45	6	11 551 314
125	8.2	3.13	6	11 551 315
140	9.3	3.97	6	11 551 316
160	10.5	5.13	6	11 551 317
200	13.2	8.06	6	11 551 318
225	14.8	10.17	6	11 551 319
250	16.1	12.31	6	11 551 320
*315	20.8	20.00	6	11 551 323

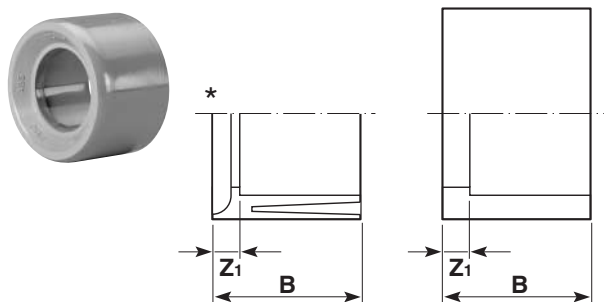
\*315mm is PN8 rated

sockets



Size	PN	A	B	Z <sub>1</sub>	gms	Code
16	10	21	31	3	5	11 100 305
20	10	25	37	3	7	11 100 306
25	10	31	42	2	12	11 100 307
32	10	41	49	3	25	11 100 308
40	10	50	58	4	45	11 100 309
50	10	62	68	4	77	11 100 310
63	10	78	81	4	154	11 100 311
75	10	88	93	3	230	11 100 312
90	10	107	108	4	380	11 100 313
110	10	126	131	7	690	11 100 314
125	10	146	149	7	1040	11 100 315
140	10	171	163	7	1390	11 100 316
160	10	182	184	8	1660	11 100 317
200	10	223	220	8	2390	11 100 318
225	10	260	250	11	3470	11 100 319
250	10	286	272	10	5760	11 100 320
315	8	355	339	11	9780	11 100 323

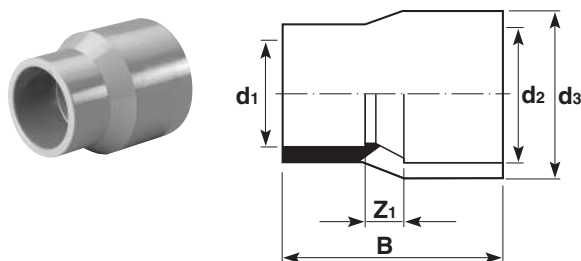
## reducing bushes



Size	PN	B	Z <sub>1</sub>	gms	Code
20 x 16	10	17	3	2	11 109 412
25 x 20	10	19	3	4	11 109 415
32 x 16	10	23	9	5	11 109 417
32 x 25	10	23	8	6	11 109 419
40 x 32	10	28	6	13	11 109 423
50 x 20*	10	33	17	32	11 109 424
50 x 25*	10	33	13	29	11 109 425
50 x 32*	10	32	11	19	11 109 426
50 x 40	10	32	5	25	11 109 427
63 x 25*	10	39	20	60	11 109 429
63 x 32*	10	39	16	36	11 109 430
63 x 50	10	39	7	47	11 109 432
75 x 63	10	46	7	65	11 109 438
90 x 50*	10	54	23	200	11 109 442
90 x 63*	10	54	15	224	11 109 443
90 x 75	10	55	9	110	11 109 444
110 x 63*	10	64	25	252	11 109 449
110 x 90	10	64	10	200	11 109 451
125 x 110	10	72	9	220	11 109 459
140 x 125	10	79	8	260	11 109 467
160 x 90	10	89	35	320	11 109 473
160 x 110*	10	89	27	405	11 109 474
160 x 140	10	89	10	460	11 109 476
200 x 160	10	110	21	109	11 109 487
225 x 160*	10	122	33	1600	11 109 495
225 x 200*	10	122	13	1250	11 109 496
250 x 225*	10	132	12	2230	11 109 499
315 x 250*	8	165	33	5080	11 109 503

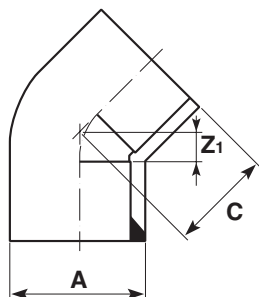
\*Configuration shown in inset

## reducers



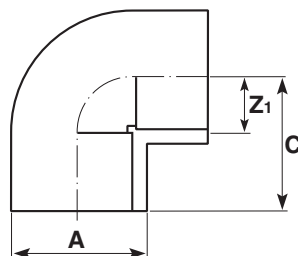
PN	d <sub>3</sub>	d <sub>2</sub>	d <sub>1</sub>	B	Z <sub>1</sub>	gms	Code
10	25	20	16	37	6	6	11 114 412
10	32	25	20	42	6	12	11 114 415
10	40	32	25	50	8	22	11 114 419
10	50	40	32	60	11	39	11 114 423
10	63	50	40	71	11	80	11 114 427
10	75	63	50	85	14	108	11 114 432
10	90	75	63	98	13	190	11 114 438
10	110	90	75	115	16	350	11 114 444
10	125	110	90	140	21	480	11 114 451
10	140	125	110	156	20	690	11 114 459
10	160	140	125	170	20	1000	11 114 467
10	200	160	140	193	23	2180	11 114 476
10	225	200	160	237	41	2530	11 114 487

### elbows 45°



Size	PN	A	C	Z <sub>1</sub>	gms	Code
16	10	21	20	5	5	11 119 305
20	10	25	22	5	7	11 119 306
25	10	31	26	7	14	11 119 307
32	10	40	31	8	27	11 119 308
40	10	50	37	10	54	11 119 309
50	10	62	45	13	100	11 119 310
63	10	82	54	16	180	11 119 311
75	10	90	63	17	300	11 119 312
90	10	112	70	18	550	11 119 313
110	10	137	90	27	950	11 119 314
125	10	155	103	31	1350	11 119 315
140	10	173	115	37	1980	11 119 316
160	10	190	125	35	2920	11 119 317
200	10	230	152	44	3460	11 119 318
225	10	260	174	51	4920	11 119 319
250	10	286	189	58	5900	11 119 320
315	8	359	230	66	11880	11 119 323

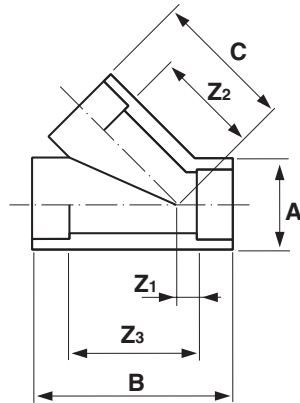
### elbows 90°



Size	PN	A	C	Z <sub>1</sub>	gms	Code
16	10	20	24	10	6	11 115 305
20	10	25	28	11	10	11 115 306
25	10	31	34	15	17	11 115 307
32	10	40	41	18	35	11 115 308
40	10	50	47	20	68	11 115 309
50	10	62	59	26	129	11 115 310
63	10	78	71	31	230	11 115 311
75	10	90	83	38	385	11 115 312
90	10	112	100	49	690	11 115 313
110	10	136	125	63	1220	11 115 314
125	10	155	140	63	1720	11 115 315
140	10	173	153	76	2390	11 115 316
160	10	190	172	79	3600	11 115 317
200	10	231	219	110	4300	11 115 318
225	10	260	240	119	6550	11 115 319
250	10	286	319	188	9560	11 115 320
315	8	359	400	236	17910	11 115 323

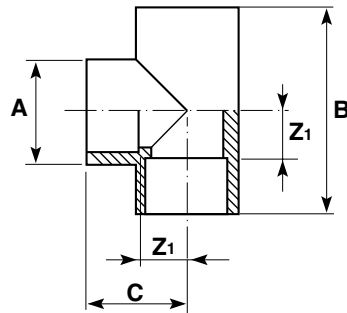


## tees 45° plain



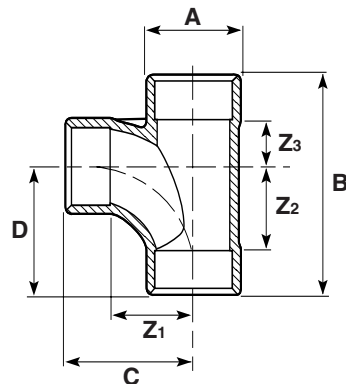
Size	PN	A	B	C	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	gms	Code
20	10	28	68	43	6	26	34	30	11 418 306
25	10	33	81	52	7	29	55	45	11 418 307
32	10	41	98	65	9	42	52	80	11 418 308
40	10	50	117	77	11	51	65	135	11 418 309
50	10	60	140	95	12	63	78	195	11 418 310
63	10	74	169	114	13	76	93	410	11 418 311

## tees 90° equal



Size	PN	A	B	C	Z <sub>1</sub>	gms	Code
16	10	21	47	25	10	7	11 122 305
20	10	25	57	30	12	12	11 122 306
25	10	31	67	34	15	24	11 122 307
32	10	40	81	43	18	48	11 122 308
40	10	50	99	50	23	87	11 122 309
50	10	62	119	62	28	160	11 122 310
63	10	78	146	70	34	300	11 122 311
75	10	90	172	87	36	510	11 122 312
90	10	112	205	104	46	900	11 122 313
110	10	132	248	128	60	1650	11 122 314
125	10	154	276	143	67	2300	11 122 315
140	10	172	307	153	72	3200	11 122 316
160	10	190	350	176	87	4800	11 122 317
200	10	231	430	214	106	5800	11 122 318
225	10	259	480	239	120	7700	11 122 319
250	10	286	518	259	128	10160	11 122 320
315	8	360	652	326	162	19390	11 122 323

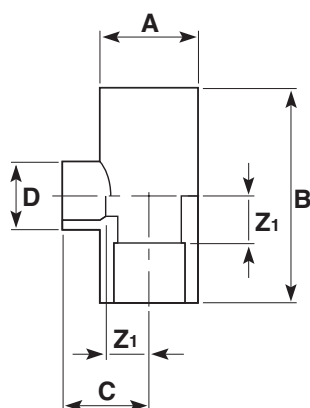
## tees 90° swept



Size	PN	A	B	C	D	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	gms	Code
32	10	41	115	79	79	57	57	14	90	11 148 308
50	10	62	160	105	105	74	74	24	259	11 148 310
63	10	78	195	125	125	87	87	32	480	11 148 311
75	10	92	210	125	125	81	81	41	601	11 148 312
110	10	139	315	190	190	127	127	62	2235	11 148 314

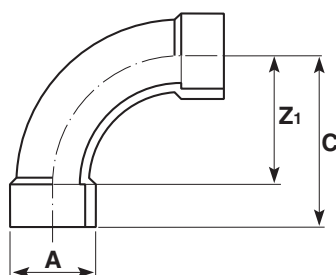
# Durapipe superFLO

## tees 90° reducing



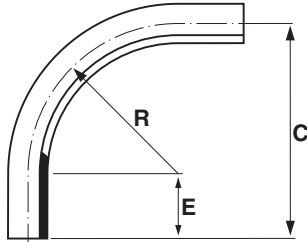
Size	PN	A	B	C	D	Z <sub>1</sub>	gms	Code
25 x 20	10	31	67	31	25	14	22	11 124 415
32 x 20	10	40	81	35	25	18	40	11 124 418
32 x 25	10	40	81	37	31	18	41	11 124 419
40 x 20	10	50	98	39	25	22	72	11 124 421
40 x 25	10	50	98	41	31	22	72	11 124 422
50 x 20	10	62	119	44	29	27	104	11 124 424
50 x 25	10	62	119	46	31	27	140	11 124 425
50 x 32	10	62	119	50	40	27	140	11 124 426
63 x 25	10	78	146	53	31	34	250	11 124 429
63 x 32	10	78	146	57	40	34	250	11 124 430
75 x 32	10	91	168	62	41	40	391	11 124 435
75 x 40	10	91	168	66	50	40	398	11 124 436
75 x 50	10	91	168	71	61	40	406	11 124 437
75 x 63	10	91	168	78	76	40	428	11 124 438
90 x 40	10	109	198	74	50	48	642	11 124 441
90 x 50	10	109	198	79	61	48	649	11 124 442
90 x 63	10	109	198	86	76	48	664	11 124 443
90 x 75	10	109	198	92	91	48	693	11 124 444
110 x 50	10	133	244	92	61	61	1165	11 124 448
110 x 63	10	133	244	99	76	61	1173	11 124 449
110 x 75	10	133	244	105	91	61	1188	11 124 450
110 x 90	10	133	244	112	109	61	1210	11 124 451

## bends 90°



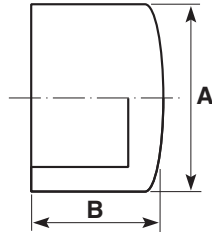
Size	PN	A	C	Z <sub>1</sub>	gms	Code
20	10	26	57	40	18	11 118 306
25	10	33	69	50	38	11 118 307
32	10	41	87	64	75	11 118 308
40	10	51	107	80	135	11 118 309
50	10	62	132	100	245	11 118 310
63	10	78	165	126	470	11 118 311
75	10	93	195	150	810	11 118 312
90	10	111	234	180	1350	11 118 313
110	10	140	284	220	2570	11 118 314

### fabricated bends 90° plain



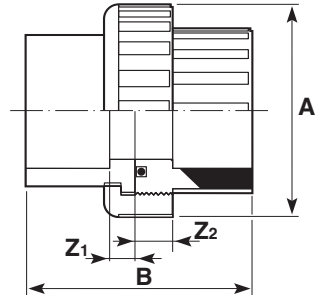
Size	C	E	R	gms	Code
125	750	250	500	4790	11 309 315
140	840	280	560	6700	11 309 316
160	960	320	640	10040	11 309 317
200	1200	400	800	19480	11 309 318
225	1350	450	900	27850	11 309 319

### caps plain



Size	PN	A	B	Weight gms	Code
16	10	21	16	3	11 149 305
20	10	25	21	5	11 149 306
25	10	31	24	8	11 149 307
32	10	41	30	19	11 149 308
40	10	50	35	30	11 149 309
50	10	62	41	53	11 149 310
63	10	78	50	106	11 149 311
75	10	94	59	180	11 149 312
90	10	112	70	300	11 149 313
110	10	136	84	570	11 149 314

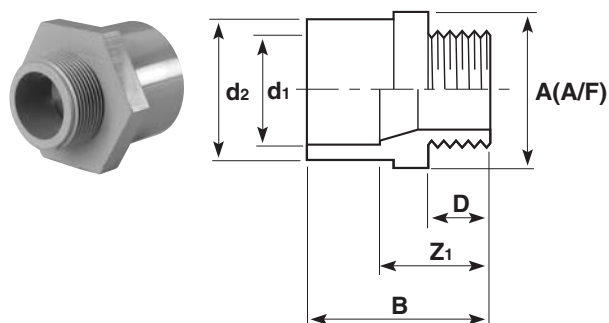
### socket unions



Size	PN	A	B	Z <sub>1</sub>	Z <sub>2</sub>	Weight gms	Code
16	10	34	42	3	10	19	11 205 305
20	10	40	47	3	10	29	11 205 306
25	10	50	53	3	10	46	11 205 307
32	10	57	64	8	11	70	11 205 308
40	10	73	78	10	13	140	11 205 309
50	10	80	92	13	15	154	11 205 310
63	10	102	111	14	20	270	11 205 311
75	10	135	107	8	13	720	11 205 312
90	10	157	115	7	4	750	11 205 313
110	10	183	138	8	7	1115	11 205 314

EPDM seal as standard

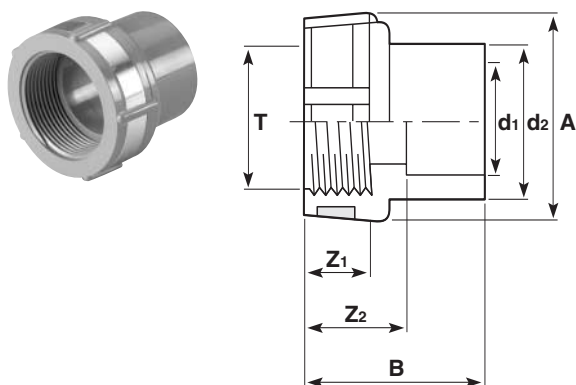
### male threaded adaptors BSP taper male thread



Size	d <sub>2</sub>	d <sub>1</sub>	PN	T*	A	B	D	Z <sub>1</sub>	Weight gms	Code
16-	12-	10	3/8	19	35	11	22	7	11 151	331
20-	16-	10	3/8	24	38	12	24	7	11 151	332
20-	16-	10	1/2	24	42	15	28	7	11 151	333
20-	16-	10	3/4	30	46	16	28	8	11 151	327
25-	20-	10	1/2	30	46	15	28	13	11 151	334
25-	20-	10	3/4	30	48	16	31	14	11 151	335
32-	25-	10	1/2	36	51	15	32	23	11 151	352
32-	25-	10	3/4	36	52	16	33	23	11 151	336
32-	25-	10	1	36	55	19	36	23	11 151	337
40-	32-	10	1	46	58	20	36	36	11 151	338
40-	32-	10	1 1/4	46	60	21	37	38	11 151	339
50-	40-	10	1 1/4	55	66	22	39	70	11 151	340
50-	40-	10	1 1/2	55	66	21	39	70	11 151	341
63-	50-	10	1 1/2	72	73	22	41	115	11 151	342
63-	50-	10	2	72	78	26	46	123	11 151	343
75-	63-	10	2	80	84	26	46	150	11 151	345

\*Thread size designation

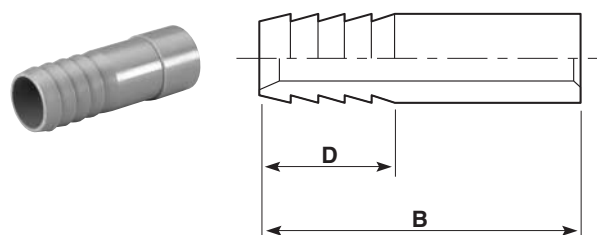
### female threaded adaptors BSP taper female threaded reinforced



Size	d <sub>2</sub>	d <sub>1</sub>	PN	T*	A	B	Z <sub>1</sub>	Z <sub>2</sub>	Weight gms	Code
16-	12-	10	3/8	24	28	11	16	7	11 153 331	
20-	16-	10	1/2	30	35	15	21	14	11 153 333	
25-	20-	10	3/4	38	39	16	22	21	11 153 335	
32-	25-	10	1	45	45	18	26	42	11 153 337	
40-	32-	10	1 1/4	56	54	21	31	69	11 153 339	
50-	40-	10	1 1/2	64	60	21	33	108	11 153 341	
63-	50-	10	2	78	72	25	41	169	11 153 343	

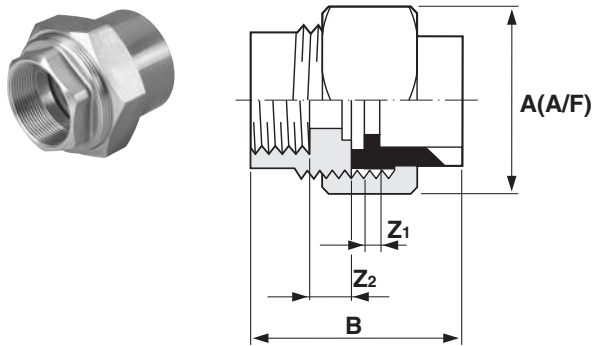
\*Thread size designation

### hose adaptors spigot end



Size	PN	B	D	Weight gms	Code
16	10	60	25	8	11 158 305
20	10	75	30	13	11 158 306
25	10	80	35	20	11 158 307
32	10	90	40	32	11 158 308

### female composite unions ABS/Brass, BSP parallel female

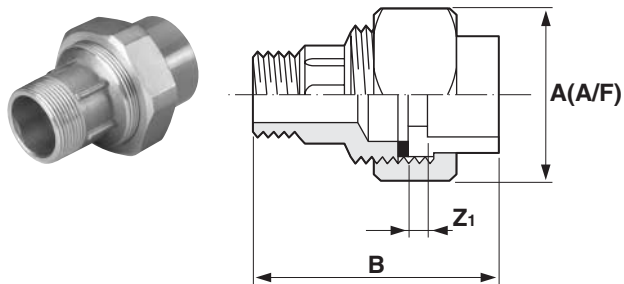


Size	PN	A	B	Z <sub>1</sub>	Z <sub>2</sub>	Weight gms	Code
16 x 3/8*	10	32	37	3	7	105	11 216 305
20 x 1/2*	10	40	43	3	7	175	11 216 306
25 x 3/4*	10	48	47	3	7	320	11 216 307
32 x 1*	10	55	59	8	9	420	11 216 308
40 x 1 1/4*	10	65	68	10	8	620	11 216 309
50 x 1 1/2*	10	78	76	12	9	1000	11 216 310
63 x 2*	10	88	89	12	11	1200	11 216 311

\*Thread sizes designation

Fitted with brass retaining nut and EPDM rubber seal  
Brass material to BS2872, WRAS approved

### male composite unions ABS/Brass, BSP taper male thread



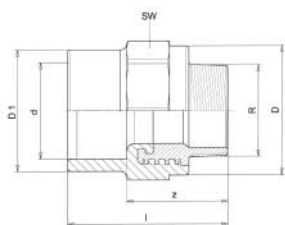
Size	PN	A	B	Z <sub>1</sub>	Z <sub>2</sub>	Weight gms	Code
16 x 3/8*	10	32	48	3	9	100	11 217 305
20 x 1/2*	10	40	54	3	9	165	11 217 306
25 x 1/4*	10	48	74	3	10	250	11 217 307
32 x 1*	10	55	86	8	11	310	11 217 308
40 x 1 1/4*	10	65	94	10	11	450	11 217 309
50 x 1 1/2*	10	78	108	12	12	800	11 217 310
63 x 2*	10	88	126	12	14	950	11 217 311

\*Thread sizes designation

Fitted with brass retaining nut and EPDM rubber seal  
Brass material to BS2872, WRAS approved

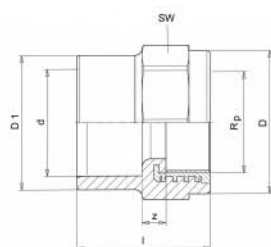


### ABS/male brass threaded fittings BSP



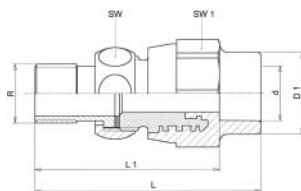
Size	PN	D	D <sub>1</sub>	L	Z	SW	Code
20 x 1/2"	10	35	29	55	40	36	11 228 306
25 x 3/4"	10	43	34	58	42	44	11 228 307
32 x 1"	10	50	43	66	48	51	11 228 308
40 x 1 1/4"	10	62	52	74	53	63	11 228 309
50 x 1 1/2"	10	69	64	77	54	70	11 228 310
63 x 2"	10	84	79	92	65	85	11 228 311

### ABS/female brass threaded fittings BSP



Size	PN	D	D <sub>1</sub>	L	Z	SW	Code
20 x 1/2"	10	35	29	40	11	36	11 229 306
25 x 3/4"	10	43	34	42	11	44	11 229 307
32 x 1"	10	50	43	48	12	51	11 229 308
40 x 1 1/4"	10	62	55	54	13	63	11 229 309
50 x 1 1/2"	10	69	64	57	14	70	11 229 310
63 x 2"	10	84	79	68	19	85	11 229 311

### ABS/half face unions BSP



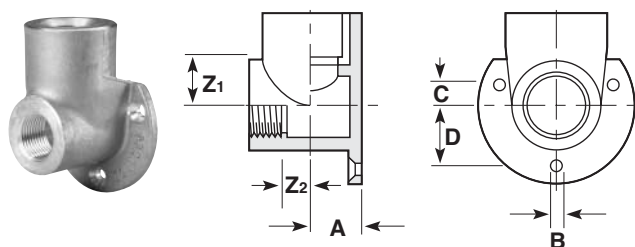
Size	PN	D	D <sub>1</sub>	L	Z	SW	Code
20 x 1/2"	10	29	79	65	36	30	11 230 306
25 x 3/4"	10	34	88	72	44	37	11 230 307
32 x 1"	10	43	98	80	51	46	11 230 308
40 x 1 1/4"	10	52	113	92	63	52	11 230 309
50 x 1 1/2"	10	64	119	96	70	59	11 230 310
63 x 2"	10	79	137	109	85	74	11 230 311

### ABS flexible braided hoses plain spigot x BSP



Size	Description	Code
20	ABS Flexible hose 300mm long x 20 x 1/2"	11 450 306
25	ABS Flexible hose 300mm long x 25 x 3/4"	11 450 307
32	ABS Flexible hose 300mm long x 32 x 1"	11 450 308
20	ABS Flexible hose 600mm long x 20 x 1/2"	11 451 306
25	ABS Flexible hose 600mm long x 25 x 3/4"	11 451 307
32	ABS Flexible hose 600mm long x 32 x 1"	11 451 308

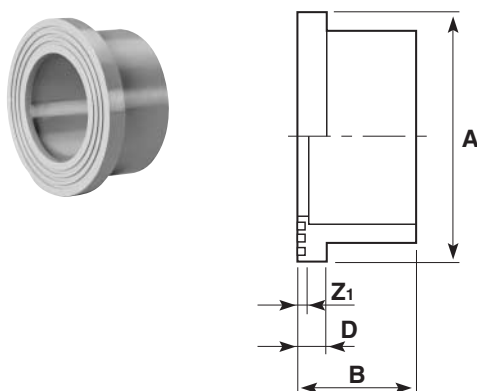
### wall brackets ABS/brass body



Size	PN	A	B	C	D	Z <sub>1</sub>	Z <sub>2</sub>	Weight gms	Code
16 - 3/8"	10	15	4.5	6	19	17	9	180	31 422 326
20 - 1/2"	10	16.5	4.5	6	19	18	9	185	31 422 327
25 - 1/2"	10	20	4.5	5	24	19	11	215	31 422 328
25 - 3/4"	10	20	4.5	5	24	19	11	200	31 422 329

\*Thread sizes designation

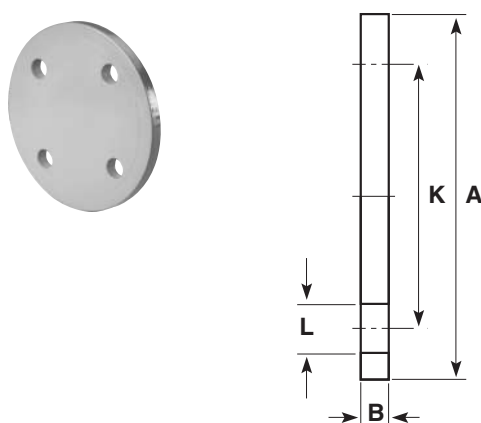
### stub flanges serrated face



Size	PN	A	B	D	Z <sub>1</sub>	gms	Code
16	10	29	17	6	3	5	11 135 305
20	10	34	20	6	3	8	11 135 306
25	10	41	22	7	3	13	11 135 307
32	10	50	26	7	3	19	11 135 308
40	10	61	30	8	3	36	11 135 309
50	10	73	35	8	3	60	11 135 310
63	10	90	42	9	4	100	11 135 311
75	10	106	49	10	4	150	11 135 312
90	10	125	59	11	6	240	11 135 313
110	10	149	68	12	6	370	11 135 314
125	10	165	76	13	5	520	11 135 315
140	10	180	83	14	7	680	11 135 316
160	10	205	93	16	5	930	11 135 317
200*	10	252	114	17	6	1520	11 135 318
225	10	273	126	24	6	1360	11 135 319
250	10	306	140	20	9	2140	11 135 320
315	10	375	180	32	14	5000	11 135 323

\*The 200mm (NW175) stub flange supplied by Durapipe when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) valves and fittings (295mm)

### blank flanges

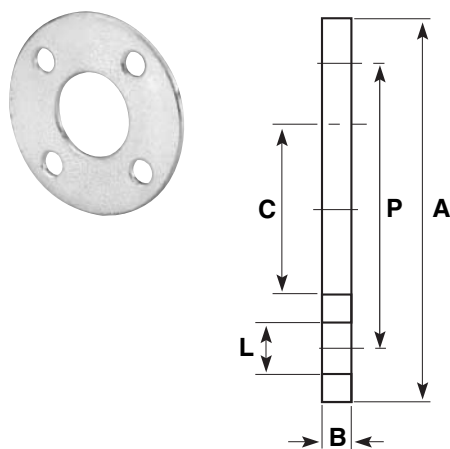


DIN 2501 16 bar/PN16

Size	PN	A	B	K	L	No. holes	Weight gms	Code
32	10	116	13	85	14	4	139	11 323 308
40	10	141	13	100	18	4	204	11 323 309
50	10	153	13	110	18.5	4	237	11 323 310
63	10	166	19	124	18	4	447	11 323 311
75	10	186	19	145	18.5	4	568	11 323 312
90	10	201	19	159	18	8	645	11 323 313
110	10	221	26	180	18	8	715	11 323 314
125	10	251	26	210	18	8	1338	11 323 315
140	10	251	26	210	18	8	1338	11 323 316
160	10	286	27	240	23	8	1720	11 323 317

Note: Durapipe backing rings must be used in conjunction with blank flanges.

**backing rings** galvanised mild steel



**Drilled to DIN 2501 (BS4504) PN10/PN16**

Size	A	B	C	P	L	No. holes	Weight gms	Code
16	90	7	23	61	14	4	240	13 421 305
20	96	6	28	65	14	4	300	13 421 306
25	106	7	34	75	14	4	320	13 421 307
32	116	7	42	85	14	4	350	13 421 308
40	142	7	51	100	18	4	420	13 421 309
50	152	7	62	110	18	4	710	13 421 310
63	165	8	78	125	18	4	1010	13 421 311
75	186	9	92	145	18	4	1280	13 421 312
90	201	9	110	160	18	8	1380	13 421 313
110	220	9	133	180	18	8	1430	13 421 314
125	253	8	150	210	18	8	1960	13 421 315
140	251	11	167	210	18	8	2060	13 421 316
160	286	11	190	240	22	8	2700	13 421 317

**Drilled to DIN 2501 (BS4504) PN10**

Size	A	B	C	P	L	No. holes	Weight gms	Code
200	340	11	235	295	22	8	3830	13 421 318
225	340	11	249	295	22	8	3190	13 421 319
250	396	20	278	350	22	12	9450	13 421 320
315	448	20	355	402	22	12	8400	13 421 323

**Drilled to DIN 2501 (BS4504) PN16**

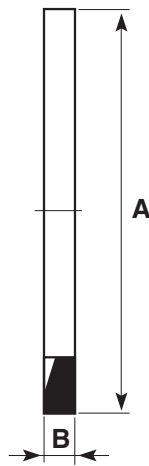
Size	A	B	C	P	L	No. holes	Weight gms	Code
200	340	11	235	295	22	12	3830	13 420 318
225	340	11	249	295	22	12	3190	13 420 319
250	405	20	278	355	26	12	9450	13 420 320
315	460	20	349	410	26	12	8400	13 420 323

**Drilled to ANSI CLASS 150**

Size	A	B	C	P	L	No. holes	Weight gms	Code
20	90	8	28	61	16	4	300	13 448 306
25	100	8	34	70	16	4	380	13 448 307
32	110	9	42	79	16	4	480	13 448 308
40	118	8	51	90	16	4	530	13 448 309
50	129	8	63	99	16	4	590	13 448 310
63	154	10	78	121	19	4	1050	13 448 311
90	192	11	110	153	19	4	1470	13 448 313
110	230	11	133	190	19	8	2080	13 448 314

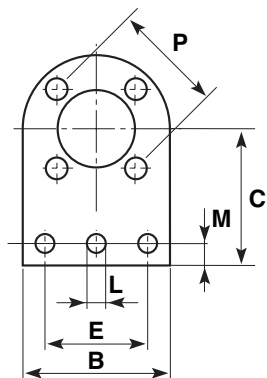
\*The 200mm (NW175) stub flange supplied by Durapipe when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) valves and fittings (295mm)

## flat gaskets/stub flanges



Size	A	B	Weight gms	EPDM Code
16	29	3.0	2	13 411 305
20	34	3.5	2	13 411 306
25	41	3.5	3	13 411 307
32	50	3.0	4	13 411 308
40	60	3.0	4	13 411 309
50	72	3.3	5	13 411 310
63	90	4.0	10	13 411 311
75	106	3.0	20	13 411 312
90	125	3.1	30	13 411 313
110	150	4.0	40	13 411 314
125	166	4.0	50	13 411 315
140	180	4.0	60	13 411 316
160	205	4.0	70	13 411 317
200	253	4.0	120	13 411 318
225	274	3.8	165	13 411 319
250	306	4.0	170	13 411 320
280	330	4.0	190	13 411 321
315	379	4.2	220	13 411 323

## valve support plates galvanised mild steel

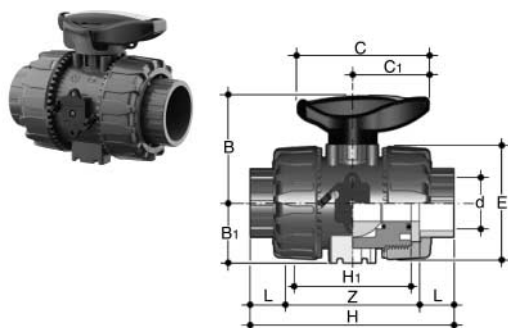


DIN 2501 16 bar/PN16

Size	B	C	E	L	M	N	P	No. holes	Weight gms	Code
16	91	84	50	14	16	2	61	4	370	31 459 305
20	97	86	49	14	16	2	65	4	640	31 459 306
25	105	89	76	14	16	2	75	4	750	31 459 307
32	114	96	77	14	12	2	85	4	860	31 459 308
50	150	125	100	14	22	2	110	4	1480	31 459 310
63	160	134	100	14	24	2	125	4	2100	31 459 311
75	185	144	125	14	22	2	145	4	2500	31 459 312
90	203	150	127	14	23	2	160	8	2660	31 459 313
110	214	160	150	14	22	3	179	8	2960	31 459 314

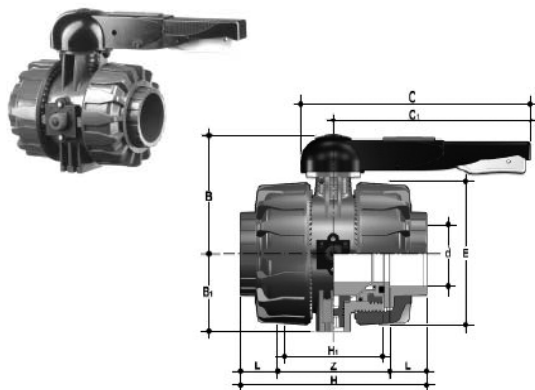
N = No. of holes in base

### VKD double union ball valves manual - EPDM seals



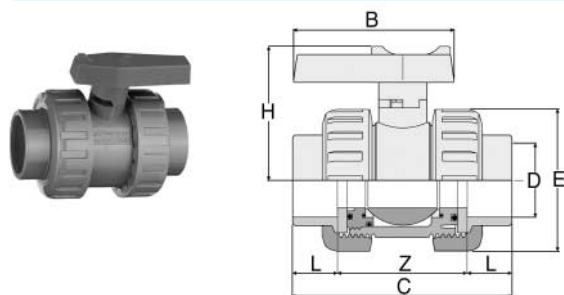
d	DN	PN	L	Z	H	E	B	C	gms	Code
16	10	10	14	75	103	55	49	66	200	H0 DKA 305
20	15	10	16	71	103	55	49	66	195	H0 DKA 306
25	20	10	19	77	115	66	59	75	310	H0 DKA 307
32	25	10	22	84	128	75	66	85	440	H0 DKA 308
40	32	10	26	94	146	87	75	97	645	H0 DKA 309
50	40	10	31	102	164	100	87	110	880	H0 DKA 310
63	50	10	38	123	199	122	101	134	1490	H0 DKA 311

### VKD double union ball valves manual - EPDM seals



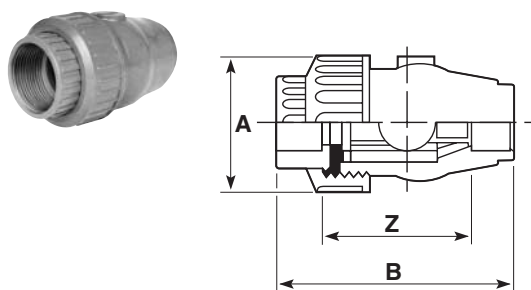
d	DN	PN	Z	L	H	H <sub>1</sub>	E	B	B <sub>1</sub>	C	C <sub>1</sub>	gms	Code
75	65	10	147	44	235	133	164	164	87	225	175	4380	H0 DKA 312
90	80	10	168	51	270	149	203	177	105	327	272	7200	H0 DKA 313
110	100	10	186	61	308	167	238	195	129	385	330	11141	H0 DKA 314

### EV double union ball valves manual - EPDM seals



d	DN	PN	L	Z	C	E	H	B	gms	Code
20	15	10	17	47	81	50	50	57	95	H0 EVA 306
25	20	10	19	51	95	59	55	66	156	H0 EVA 307
32	25	10	22	61	105	68	66.5	75	228	H0 EVA 308
40	32	10	31	84	146	96	93	103	540	H0 EVA 309
50	40	10	31	84	146	96	93	103	540	H0 EVA 310
63	50	10	38	96	172	116	107	121	844	H0 EVA 311

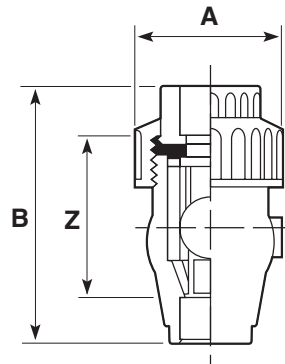
### SR single union ball check valves plain ends - EPDM seals



Size	PN	Z	A	B	gms	Code
16	10	62	48	95	109	H0 SRA 305
20	10	62	48	95	100	H0 SRA 306
25	10	73	59	112	165	H0 SRA 307
32	10	79	69	124	250	H0 SRA 308
40	10	94	96	148	610	H0 SRA 309
50	10	88	96	148	575	H0 SRA 310
63	10	105	103	177	798	H0 SRA 311
90	10	114	178	215	2757	H0 SRA 313

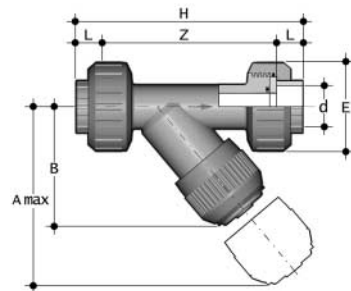


### VA air release valves plain ends - FPM seals



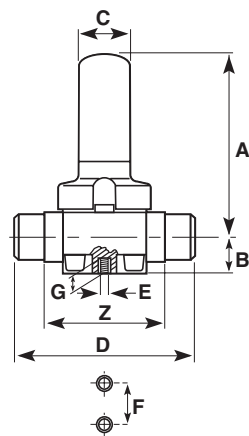
Size	PN	Z	A	B	gms	Code
16	10	62	48	95	109	HO VAB 305
20	10	62	48	95	100	HO VAB 306
25	10	73	59	112	165	HO VAB 307
32	10	79	69	124	250	HO VAB 308
40	10	94	96	148	610	HO VAB 309
50	10	88	96	148	575	HO VAB 310
63	10	105	103	177	798	HO VAB 311

### RV Y Type strainers plain ends - EDPM seals



D	DN	PN	A	B	E	L	Z	H	Fig.	gms	Code
			Grey Max								
20	15	10	125	72	55	16	103	135	A	211	HO UVA 306
25	20	10	145	84	66	19	120	158	A	358	HO UVA 307
32	25	10	165	95	75	22	132	176	A	256	HO UVA 308
40	32	10	190	111	87	26	155	207	A	733	HO UVA 309
50	40	10	210	120	100	31	181	243	A	1095	HO UVA 310
63	50	10	240	139	120	38	222	298	A	1843	HO UVA 311

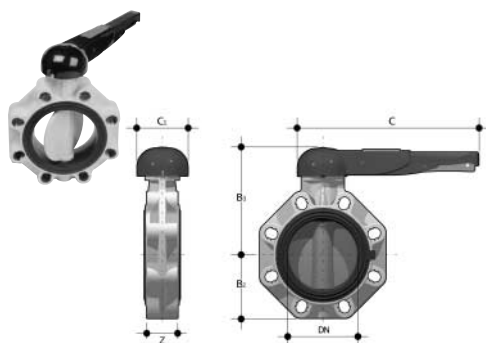
### PR pressure relief valves EPDM seals



Size	PN	Z	A	B	C	D	E	F	G	gms	Code
20	10	92	143	20.5	35	124	M6	25	12	700	HO PRA 406
25	10	106	143	20.5	35	144	M6	25	12	700	HO PRA 407
32	10	108	143	25.0	35	154	M6	25	12	700	HO PRA 408
40	10	120	204	36.0	50	174	M8	44.5	16	1500	HO PRA 409
50	10	130	204	39.5	50	194	M8	44.5	16	1500	HO PRA 410
63	10	146	219	49.0	50	224	M8	44.5	16	2400	HO PRA 411

Valves can be supplied as electrically or pneumatically actuated.

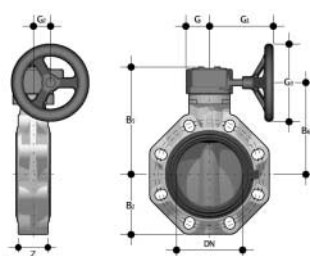
### FK butterfly valves glass reinforced polypropylene with ABS disc



#### Lever operated

d	DN	PN	B <sub>2</sub>	B <sub>3</sub>	C	C <sub>1</sub>	gms	U	Z	Code
50	40	16	60	137	175	100	900	4	33	H0 FKA 106
63	50	16	70	143	175	100	1080	4	43	H0 FKA 107
75	65	10	80	164	272	110	1470	4	46	H0 FKA 108
90	80	10	93	178	272	110	1870	8	49	H0 FKA 109
110	100	10	107	192	272	110	2220	8	56	H0 FKA 110
140	125	10	120	212	330	110	3100	8	64	H0 FKA 111
160	150	10	134	225	330	110	3850	8	70	H0 FKA 112
225	200	10	161	272	420	122	6750	8	71	H0 FKA 113

U = No. holes



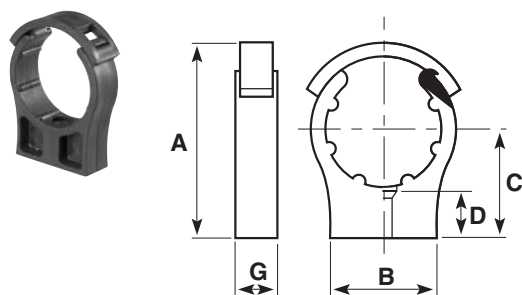
#### with gear box

Size	DN	PN	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	G	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	gms	U	Z	Code
75	65	10	80	174	146	48	135	39	125	2400	4	46	HV FKA 108
90	80	10	93	188	160	48	135	39	125	2800	8	49	HV FKA 109
110	100	10	107	202	174	48	135	39	125	3150	8	56	HV FKA 110
140	125	10	120	222	194	48	144	39	200	4450	8	64	HV FKA 111
160	150	10	134	235	207	48	144	39	200	5200	8	70	HV FKA 112
225	200	10	161	287	256	65	204	60	200	9300	8	71	HV FKA 113
250	250	10	210	317	281	88	236	76	250	18600	12	114	HV FKA 114
315	300	8	245	374	338	88	236	76	250	25600	12	114	HV FKA 115

Note: Lugged versions available to special order.

Please refer to our Valve Department for further details.

### cobra pipe clips



Size	A	B	C	D	G	Bolt/screw	gms	Code
*12	—	24	25	15	16	M4/3BA/No 8	5	13 434 304
*16	—	35	25	17	16	M4/3BA/No 8	7	13 434 305
*20	—	35	30	14	16	M5/1BA/No 10	8	13 434 306
*25	—	35	35	16	17	M5/1BA/No 10	11	13 434 307
32	65	45	40	17	17	M5/1BA/No 10	14	13 434 308
40	75	45	45	20	20	M5/1BA/No 10	21	13 434 309
50	85	50	50	22	21	M6/0BA/No 10	30	13 434 310
63	102	60	60	19	21	M6/0BA/No 10	42	13 434 311
75	122	70	70	27	31	M8	94	13 434 312
90	148	80	90	39	31	M8	121	13 434 313
110	171	90	96	36	35	M8	184	13 434 314
125	204	144	132	40	40	M8	237	13 434 315
140	211	156	132	40	40	M8	252	13 434 316
160	243	170	150	40	40	M8	330	13 434 317

\*Without retaining clips. Bolts/screws not supplied

## rubber lined pipe clips



Size	Thread	Code
16mm	M8	FT PC 1600
20mm	M8	FT PC 2000
25mm	M8	FT PC 2500
32mm	M8	FT PC 3200
40mm	M8	FT PC 4000
50mm	M8	FT PC 5000
63mm	M8	FT PC 6300
75mm	M8	FT PC 7500
90mm	M10	FT PC 9000
110mm	M10	FT PC 1100
160mm	M10	FT PC 1601

## pipe trays



Pipe diameter (mm)	Standard length (m)	Standard pack quantity (m)	Code
16	3	90	FT 55 50 04
20	3	60	FT 55 50 06
25	3	36	FT 55 50 08
32	3	27	FT 55 50 11

## chamfering and de-burring tools



Description	Code
E 16-25mm pipe inner and outer milling cutter tool	FT 55 72 90
E 16-63mm pipe inner and outer milling cutter tool	FT 55 65 12
32-160mm chamfering tool	FT 55 05 10

## wheel cutters



Description	Code
16-63mm pipe cutter	FT 80 00 01
50-125mm pipe cutter	FT 80 00 03
16-63mm spare cutter wheel	FT 80 00 02
50-125mm spare cutter wheel	FT 80 00 04

## superFLO white one-step solvent cement & cleaner

**NEW**

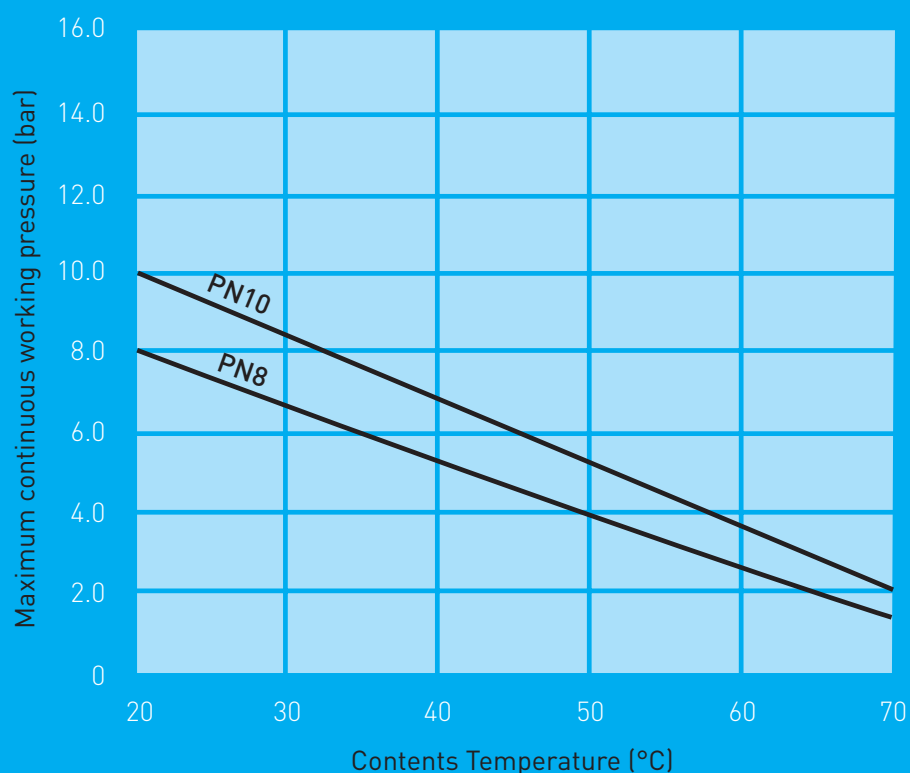


Description	Code
500ml superFLO white one-step cement	80 464 392
1 litre superFLO white one-step cement	80 462 396
500ml eco cleaner	03 457 395

## system design and installation

### Maximum pressure/temperature relationship

When temperature of contents exceeds 20°C the working pressure of the system must be reduced accordingly (see table below).



### Flow calculations

Pressure drop due to friction in pipes conveying water can be determined using the Flow Nomogram on page 23.

The pressure drop at a given flow rate can be determined as follows:

1. Obtain the internal diameter of the pipe to be used by referring to the dimension table below:
2. Mark this diameter on Scale A.
3. Mark the required flow rate in litres per second on Scale B.
4. Draw a straight line connecting the points on Scales A and B and extend this to Scales C and D.
5. The velocity of flow in metres per second is determined from the intersection with Scale C.
6. The frictional head loss in metres per 100 metres of pipe can then be read off Scale D.

### Fittings

The calculation of pressure drop in fittings is more complex but calculations can be made for equivalent lengths of straight pipe using the formula  $E = F \times D$  where:

E= equivalent pipe length (metres)

F= fittings constant

(see table below)

D= fitting internal diameter (mm)

To calculate the total pressure drop in the system, the equivalent straight pipe lengths for fittings is then added to the total straight pipe length to obtain the total drop.

### Fittings Constant

90° elbow 0.03

45° elbow 0.01

90° tee - straight through 0.01

90° tee - side branch 0.06

90° bend - 0.01

45° bend - 0.01

Reducing bush (per size reduction)  
0.015

Butterfly valves 0.13

Diaphragm valves 0.23

Check valves 0.05

The values are included as a guide to aid calculation of overall system performance and should not be used in isolation.

### Table of Pipe Internal Diameters

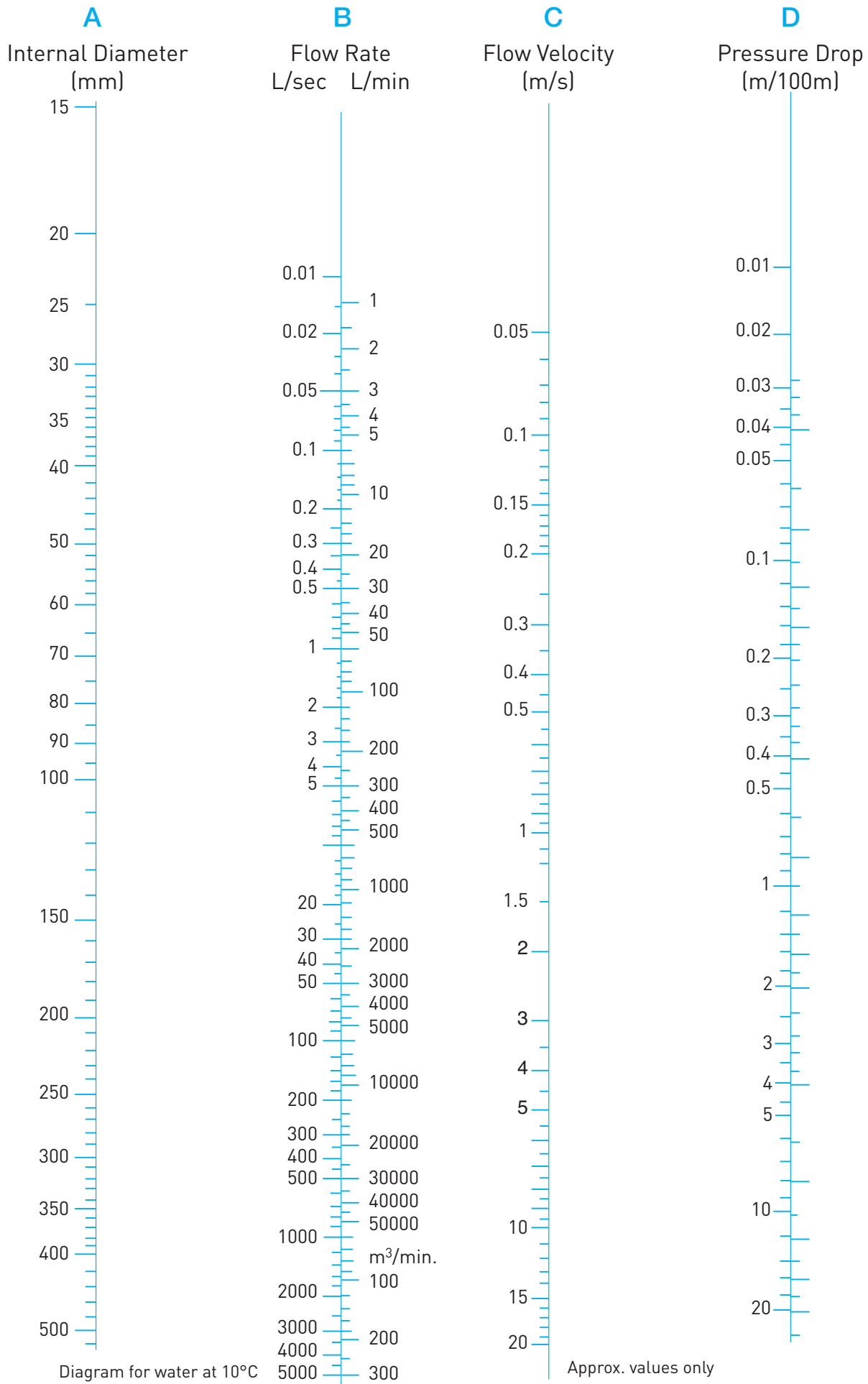
In accordance with ISO 161.

Metric	10bar
16	13.0
20	16.8
25	21.2
32	27.8
40	34.6
50	43.2
63	54.6
75	65.0
90	78.0
110	95.4
125	108.6
140	121.4
160	139.0
200	173.6
225	195.4
250	217.8
315*	273.4

315mm is PN8 rated

### Note

Higher pressure rated Imperial pipe and fittings are available on request. For further details contact the Technical Support Department on **+44(0)1543 272446**.





## system design and installation

### Thermal expansion and contraction

Thermoplastic materials have a greater co-efficient of thermal expansion compared with metals. There will, therefore, be a greater change in length of the pipe run for any given temperature change.

Expansion and contraction can often be accommodated by using the natural flexibility of thermoplastic material, ie. at 90° changes in direction, thus overcoming the problem with little or no additional expense (right).

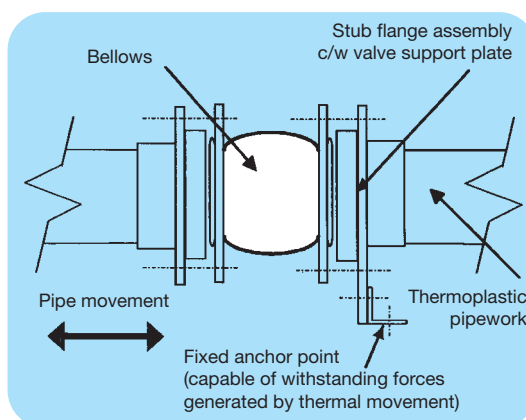
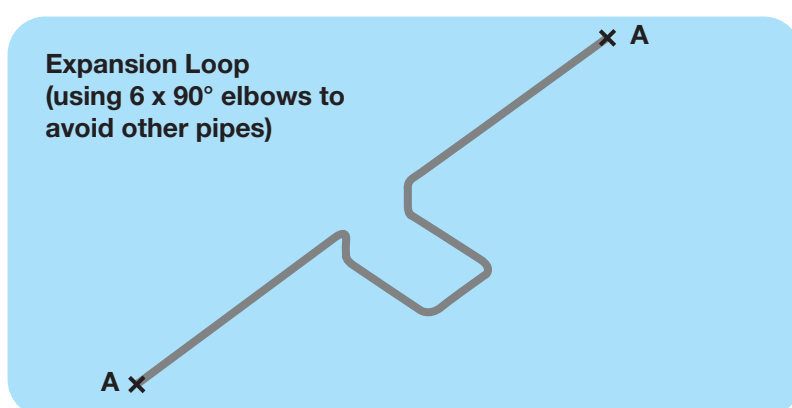
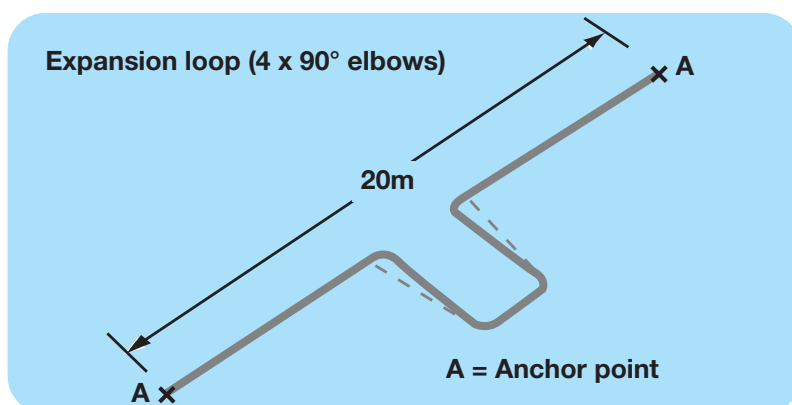
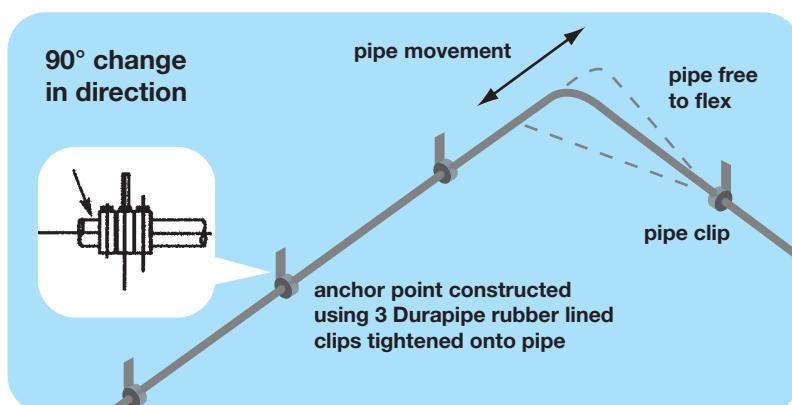
### Pipe anchors

The direction of pipe movement can be controlled by the use of anchor points at strategic positions, as shown opposite.

Where there are no changes in direction (eg. a straight run along a corridor) it may be necessary to incorporate expansion loops (see right).

### Expansion bellows

If there is insufficient room for expansion loops it will be necessary to incorporate expansion bellows (see below). These must be of a suitable design to ensure correct operation with **superFLO** pipework. Most manufacturers of these units will have products in their range designed for use with plastic pipework. Their advice on the correct selection and installation must be followed.



### Calculating thermal movement

**superFLO** pipe expands/contracts by 1mm/metre/10°C change in pipe temperature.

On chilled water and boosted cold water pipework, the greatest single change in temperature is generally that which occurs when the pipework is put into service, particularly when this is done during spring or summer.

#### Example:

What is the anticipated change in length of a 20 metre run of **superFLO** conveying chilled water? The system is in the UK and is expected to be ready for commissioning during July or August. The CHW flow will run at 6°C and will return at 12°C. It will be insulated after pressure testing and commissioning is completed.

#### Calculation:

Ambient temperature indoors will probably be in the range of 20°C to 30°C. Assume pipe temperature prior to commissioning as (worse case) = 30°C.

Maximum change in pipe temperature will occur in CHW flow pipe, ie.  $30 - 6 = 24^\circ\text{C}$ .

The change in length, therefore, (using "1mm/metre/10°C") is 2.4mm/metre.

The change in length of a 20 metre run will be  $2.4 \times 20 = 48\text{mm}$ .

#### Answer:

As the pipe cools from 30°C to 6°C it will contract by 48mm.

### Calculating free leg length

The length of unrestrained pipe at a 90° change in direction required to accommodate expansion or the leg length of an expansion loop can be calculated from the graph to the right. The example given below shows how to calculate leg length of an extension loop.

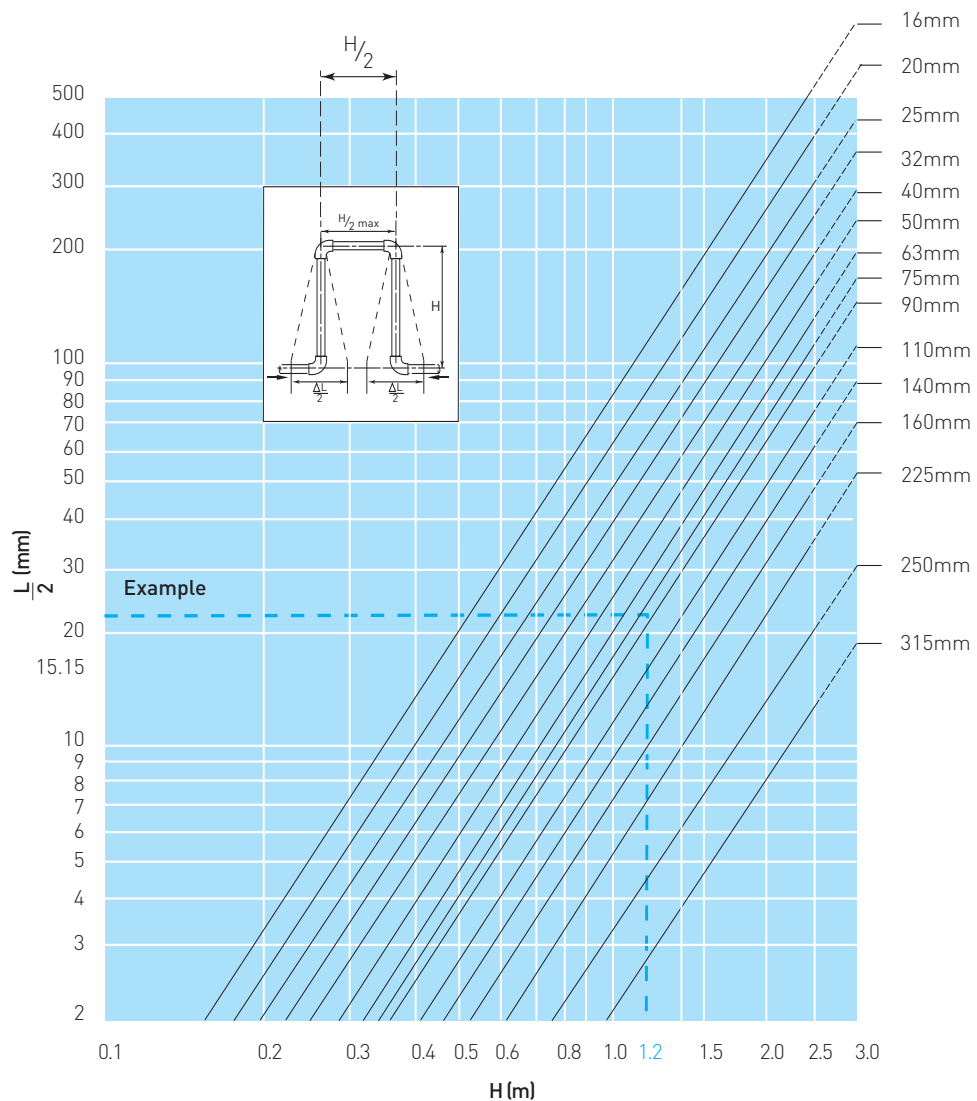
#### Example:

Calculate the size of expansion loop required for a 90mm diameter pipe contracting by a length = 48mm.

Draw a horizontal line from the vertical section to meet the 90mm pipe gradient line.

Drop a perpendicular from the intersection point to the horizontal scale. The figure obtained is the free leg length of the loop required.

Hence, in this instance a loop measuring 1200mm long x 600mm wide will cater for movement.



## system design and installation - jointing guide

Durapipe **superFLO** pipes and fittings are designed for an interference fit. Although Durapipe **superFLO** solvent cement has good gap filling properties no attempt should be made to increase the clearance between the pipes and fittings.

Solvent cement welding offers a simple and quick means of constructing high integrity, leak-free joints.

The solvent cement operates by chemically softening the joint surfaces. Joint integrity will be greatly reduced if these surfaces are not clean and properly prepared.

Durapipe **superFLO** solvent cement must be used.

The jointing procedure detailed here **must** be followed.

This relates to the new “one-step” solvent cement. With this cement it is not necessary to abrade pipe or fitting.

An indication of the number of joints to be made per litre of cement is as follows:

size (mm)	recommended container size	joints per litre
16 - 32	0.5 litre	400
40 - 63	0.5 litre	200
75 - 110	0.5 litre	70
125 - 140	1 litre	20
160 - 225	1 litre	10
250 - 315	1 litre	5



### Stage 1

The pipe must be cut clean and square. A suitable wheel cutter will eliminate swarf.



### Stage 2

Chamfer the end of the pipe using a coarse file or suitable chamfering tool. The chamfer should be approximately 45° by 3mm to 5mm depending on the pipe size.



### Stage 3

Mark the pipe a known distance from the end and clear of the area to be cleaned. This mark should be used to confirm full insertion of pipe into socket of fitting.



### Stage 4

Clean surfaces thoroughly with Durapipe Eco-cleaner using lint free cloth/paper towel.

## Drying Times

The drying times will vary with fit, amount of solvent cement applied, ambient temperature and working pressure. It is recommended that, wherever possible, joints of sizes up to 225mm are allowed to dry for at least 24 hours. Sizes 250 mm and 315mm require a minimum of 48 hours.

These guidelines are based on an ambient temperature of between

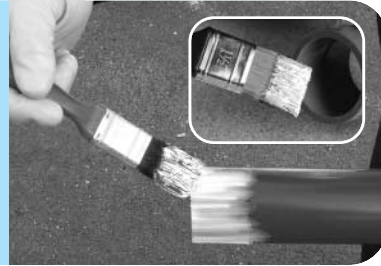
10°C to 40°C. Longer drying times will be required at lower and higher ambient temperatures.

It is recognised that there will be occasions when the system will need to be put into service within a few hours of being made. A rough but safe working guide where the ambient temperature is between 10°C to 40°C and the contents temperature does not exceed 20°C is as follows:

Size range	Up to 75mm	90mm to 125mm	140mm & 160mm	200mm & 225mm	250mm & 315mm
Drying time	0.5 hour/bar	1.0 hour/bar	1.5 hour/bar	2.0 hours/bar	48hrs min

**Stage 5**

Using a clean brush apply cement to the pipe and fitting. The joint surfaces should be completely covered by cement. For larger pipe sizes, cement should be applied using an appropriate size brush and tin of cement. It is important to apply cement quickly to enable assembly without excessive force being required.

**Stage 6**

Immediately after applications of cement, push pipe fully home into the fitting. Do not twist. Hold the pipe and the fitting for times varying from a few seconds on size 16mm up to 1 minute on size 315mm. Application of the correct amount of cement will result in a neat bead of cement at the edge of the fitting and at the edge of the pipe.

**The bead of white cement between the pipe and fitting now provides a visual indicator that the joint has been made.**

**Stage 7**

Wipe off excess cement from the outside of the joint. Using the mark previously made, check that the pipe has been fully inserted. Do not disturb a joint for least 10 minutes. On larger sizes do not subject the joint to bending or twisting forces for at least 4 hours (see below). When making subsequent joints, which can be done without waiting, take care not to transmit forces to freshly made joints in the system.

**Important information**

1. The integrity of Durapipe **superFLO** systems may be affected if Durapipe **superFLO** one-step Thixotropic Solvent cement and Durapipe Eco-cleaner is not used. Durapipe UK disclaims responsibility for any Durapipe **superFLO** system constructed with any other cement or not fabricated in accordance with the instructions herein.

2. Use the appropriate size of solvent cement tin/container and method of application for the size of pipe and fitting to be assembled.
3. To achieve the correct speed of application on sizes 140mm and above, cement should be applied simultaneously to pipe and fitting, by two people.

**Jointing precautions**

Durapipe **superFLO** solvents cement and Eco-cleaner are hazardous, flammable, substances. Read instructions on labels, follow instructions, and take appropriate measures to reduce hazards. Always wear appropriate personal protective equipment.

- DO NOT** use near naked flames
- DO NOT** smoke in the working area
- DO NOT** use in confined spaces
- DO NOT** joint in the rain or wet conditions
- DO NOT** use dirty brushes
- DO NOT** use dirty or oily cleaning cloths
- DO NOT** use the same brush for different cements
- DO NOT** dilute or decant Durapipe **superFLO** solvent cement

## system design and installation

### Design of pipe supports and clips

Pipe supports (eg. drop rods) should be sufficiently rigid to provide lateral restraint to the pipework, otherwise the pipes may 'snake'. This will prevent the expansion loop from working correctly, and may even reduce the service life of the pipework.

Pipe clips must allow free, unrestricted, axial movement. The pipe clips shown on page 20 and 21 meet these requirements.

### Pipe clips

Some rubber lined clips contain harmful substances which can reduce the service life of the pipework. We recommend the use of pipe clips as shown on page 20 and 21.

### Support centres

The recommended distance between supports for **superFLO** pipes filled with water is given in the table above. This table is based on the thinnest wall pipe in each size. The details shown are for horizontal pipes. For vertical pipes, support centres may be increased by 50%.

Size (mm/imperial)	support distance (m at 20°C)
16mm	0.8
20mm	0.9
25mm	1.0
32mm	1.1
40mm	1.2
50mm	1.3
63mm	1.4
75mm	1.5
90mm	1.6
110mm	1.8
125mm	1.9
140mm	2.0
160mm	2.1
200mm	2.2
225mm	2.3
250mm	2.5
315mm	2.9

Pipe trays are available for sizes 16mm, 20mm, 25mm and 32mm. These allow support distances to be increased to 2.0 metres

### Anchor blocks below ground

For wholly solvent welded systems the pipework is pressure balanced and anchor thrust blocks are not required.

### Support of heavy equipment

Large valves, strainers and other heavy equipment should always be independently supported to prevent undue loading onto the **superFLO** system. Durapipe valve support plates have been designed for this purpose and may be used in place of flange backing rings.





## flexible hoses and metal threaded fittings

### superFLO ABS flexible hoses

**superFLO** Flexible Hoses have been introduced in response to customer demand and are specially designed to allow direct connection from Durapipe **superFLO** pipework to operating equipment.

If pipework is either short of a connection or at a higher or lower level to ancillary equipment, the braided flexible hoses can be solvent welded to **superFLO** pipework and then connected to operating equipment using a female threaded connection, forming a durable, leak-free fusion.

Manufactured in 300mm and 600mm lengths as standard, with additional sizes available on request, **superFLO** Flexible Hoses come in a choice of 20mm, 25mm and 32mm diameters. With an internal hose made from EPDM rubber, **superFLO** Flexible Hoses are also compliant with BSRIA Flexible Hose Standard BG4/2004.



### superFLO ABS metal threaded fittings

A series of brass ended fittings offer the ultimate in performance capabilities and provide a highly reliable connection between pipework and ancillary equipment across a range of building services applications.

These fittings have been specifically developed to offer increased customer options in the threaded fittings range. The fittings allow direct metal to metal connection and the ability to be solvent welded to pipework also ensures the fittings provide a durable connection to operational equipment.

Available in metric sizes up to 63mm the latest addition offers male and female connection options, providing specifiers with increased flexibility when selecting fittings for a variety of uses within the building services market.

Manufactured in the same sizes, a new half-faced union is also available in the Durapipe **superFLO** range. In ABS material, the new product can be connected to metal valves and easily removed and replaced with no cutting required. The half-faced union provides a male threaded adaptor for female ends.

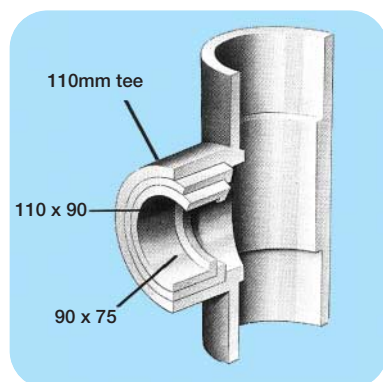


## using bushes, reducers, threaded adaptors and flanges

### Reducing bushes

Reducing bushes offer a neat and simple method of reducing socket size in the minimum of space.

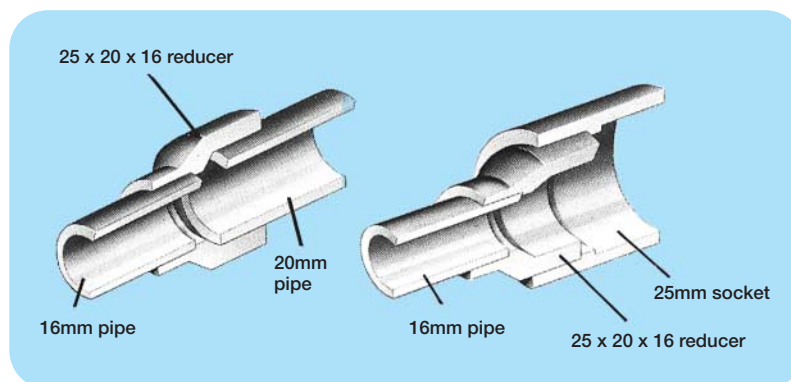
Care must be taken to properly prepare all jointing surfaces as recommended earlier, with the end of the bush being chamfered (unless a moulded chamfer is included).



Example in the use of reducing bushes

### The use of reducers

All fittings have female ends, dimensionally controlled for cold fusion jointing. In addition, reducing sockets in the Metric series have controlled outside diameter at the larger end. This allows use as a male or female component, as illustrated.



Example in the use of reducers

### Connections - Plastics to metal

There are several recommended methods to connect metal and plastic systems:

- Composite unions
- Flanges
- Male threaded fittings
- Female threaded fittings

Plastics expand or contract more than metals for any given change in temperature. The practice of connecting plastic threaded fittings to metal threads is not recommended where the joint is likely to experience a temperature change of more than  $\pm 5^{\circ}\text{C}$ , otherwise leaks may occur.

### superFLO threaded adaptors

Female and male threaded adaptors have controlled inside and outside diameters on the plain end. They can therefore be used as a male or female component.

### PTFE

It is recommended that PTFE tape be used when making plastic threaded joints/connections.

Any other sealing compound must be confirmed by Durapipe as being suitable.

### Unions and transitions

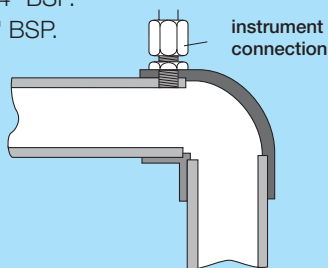
Available in sizes from 16-63mm with brass male or female BSP threads (see page 13, 14 and 29).

### Connection to instrumentation

Instrumentation connections can be made by drilling through pipe and socket where the material is at its thickest and tapping the hole to receive a threaded fitting, as shown below:

Pipe size	Connection size
16mm-63mm	Use tees, reducing bushes and threaded fittings
75mm-110mm	Max. tapping 1/2" BSP.
125mm-140mm	Max. tapping 3/4" BSP.
160mm & above	Max. tapping 1" BSP.

Such connections, if correctly drilled and tapped with full thread form will have full PN10 pressure rating.



### Tightening torques for flange bolts in superFLO ABS piping systems

#### Recommended Torque Values (Nm)

Size	Torque
16	15
20	15
25	15
32	15
40	20
50	30
63	35
75	40
90	40
110	40
125	50
140	50
160	60
200	70
225	70
250	80
315	100

The tolerance on torque is +/- 10%

### Flanged joints

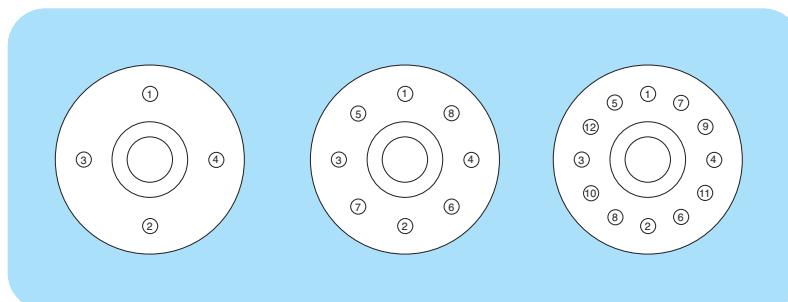
Stub flanges are available from 16mm to 315mm.

The correct galvanised mild steel backing ring and rubber gasket must be used with both types.

### Flange bolting procedure

The following procedure is recommended for installing Durapipe **superFLO** flanges:

1. Inspect flange faces and ensure that they are clean and undamaged.
2. Check that the correct backing ring and rubber gaskets have been supplied. Durapipe supplies a matched system of flanges and backing rings.
3. Loosely assemble flanges. Ensure that flanges and bolt holes align and that the flange faces are parallel. Ensure that the gasket is correctly positioned between the flanges.
4. Ensure that the appropriate sized washers are placed under both bolt heads and nuts.
5. Tighten the nuts and bolts in a diagonally opposite sequence (see below) to ensure even loading around the flange to avoid distortion. It is recommended that the nuts and bolts be tightened as uniformly as possible progressively from a finger tight start.
6. Repeat as necessary until tightness of all bolts is achieved.



## additional important information

### • Thermal insulation and trace heating

Whilst Durapipe **superFLO** piping systems have low thermal conductivity, situations may arise when trace heating and/or thermal insulation will be required. Some insulation products can contain substances capable of having a detrimental effect on thermoplastic pipework. It is recommended therefore that suitability be checked with Durapipe prior to use.

Recommended insulation - A list of some of the common types of insulation materials known to be suitable with **superFLO** pipework are as follows;  
Fibre wool, such as 'Rockwool'

Armaflex Class 1 HT

Koolphen K Phenolic foam

Polystyrene

Note - the above list is not exhaustive – please contact our Technical Support Department if further assistance is required.

Certain types of foam rubber insulations can cause pipes to fail where the **superFLO** is conveying liquids at temperatures above 30°C. Some adhesives can also be detrimental. Do not bond insulation to **superFLO**. (This comment also applies to any tapes, adhesives, or other substances used to secure the heating tape to the pipework.)

Recommended heating tapes - the selection of heating tapes with silicone rubber, woven wire, or woven polyester outer sheaths will eliminate the risk of plasticiser migration. These tapes are therefore preferred for use on thermoplastic systems.

### Intumescent mastic and mastic sealants

Certain mastic sealants are formulated with phthalates. Phthalates are known to be extremely aggressive toward **superFLO** materials, and therefore confirmation of the suitability of any mastic sealant should be determined before being used in conjunction with **superFLO** pipework.

### • Contact with synthetic oils

Some synthetic oils are unsuitable for use with thermoplastic pipe systems. The main types of synthetic oils identified as being incompatible with thermoplastic pipe systems includes Esters, Polyalkylene Glycols, and Organic Phosphates.

It should be noted that some metal coil manufacturers utilise these oils in their manufacturing process and that some residue can remain within the coil after production.

### • Freezing conditions

Precautions should be taken to prevent contents freezing, as this can cause pipework to split.

### • Contact with fluxes

Some fluxes can be detrimental to **superFLO**. Care should be taken when soldering copper pipework directly above, or close to, **superFLO** pipework. If in doubt contact Durapipe technical support.

### • Pipe contents identification

Do not put self-adhesive labels directly on to pipe surfaces as this may be detrimental to the pipes performance. It is recommended that some sort of barrier, such as aluminium foil, is placed between pipe and identification label.

Mechanical, Physical, & Electrical Data	Test Method	Value
Mechanical		
Tensile strength at yield (23°C)	ASTM D635	45MN/m <sup>2</sup>
Tensile modulus of elasticity	ASTM D635	2200MN/m <sup>2</sup>
Poissons ratio	-	0.35
Izod impact strength at 23°C (notched)	ASTM D256 (1/8")	35kJ/m <sup>2</sup>
Charpy impact strength at 23°C (notched)	-	20kJ/m <sup>2</sup>
Physical		
Specific gravity	ASTM D792	1.04
Softening point (BS2782:Part 1 Method120B:1976)	ISO R 306 (5kg) (heating rate unknown)	99°C
Linear co-efficient of thermal expansion	-	10.1 x 10 <sup>-5</sup> /°C
ISO75 HDT/Ae 1.8Mpa	ASTM D648 (unannealed, 1/4", 18.56 Kgf/cm <sup>2</sup> )	78°C
Thermal conductivity	-	0.157W/m°C
Specific heat	-	2.1kJ/kg.K
Self ignition temperature	-	540°C
Electrical		
Dielectric constant	-	2.9 at 10 <sup>3</sup> Hz 2.8 at 10 <sup>6</sup> Hz
Volume resistivity IEC 93	-	>1.E <sup>14</sup> ohm m

## Handling and Storage

The high impact strength of Durapipe **superFLO** systems provides some protection against damage but care should be taken at all stages of handling, transportation and storage.

Pipe must be transported by a suitable vehicle and properly loaded and unloaded, e.g., wherever possible moved by hand or mechanical lifting equipment. It must not be dragged across the ground.

The storage should be flat, level and free from sharp stones.

## Lengths

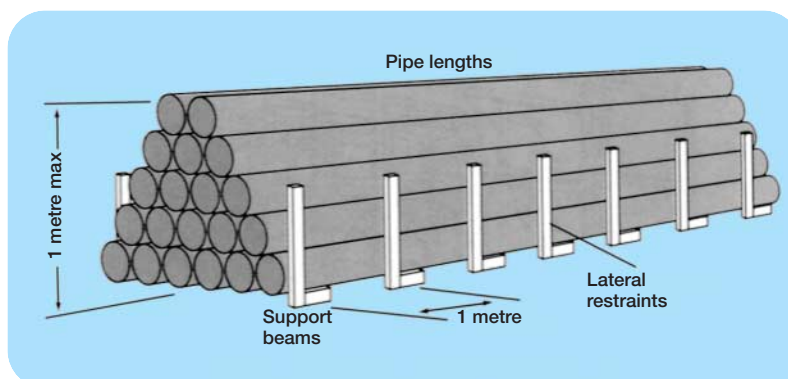
Pipe lengths stored individually should be stacked in a pyramid not more than one metre high, with the bottom layer fully restrained by wedges. Where possible, the bottom layer of pipes should be laid on timber battens at one-metre centres. On site, pipes may be laid out individually in strings. (Where appropriate, protective barriers should be placed with adequate warning signs and lamps.)

## Bundles

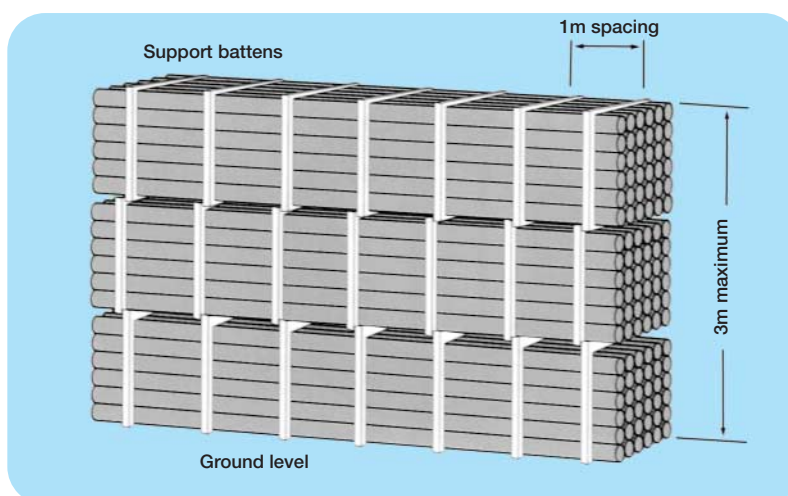
Bundled packs of pipe should be stored on clear, level ground with the battens supported from the outside by timbers or concrete blocks. For safety, bundled packs should not be stacked more than three metres high.

Smaller pipes may be nested inside larger pipes. Side bracing should be provided to prevent stack collapse.

Similar precautions should be taken with fittings and these should be kept in protective wrappings until required for use.



Storage of loose pipes



Storage of bundles

## Health and Safety at Work Act and COSHH Regulations

Attention is drawn to the requirements in the UK of this Act and to the 1988 Control of Substances Hazardous to Health (COSHH) Regulations. Durapipe cannot accept responsibility for accidents arising from the misuse of its products because of bad installation or incorrect application.

## Material safety data

Material Safety Data sheets are available on our website.

## Handling **superFLO** pipes and fittings

Always adopt good storage and handling practice. Advice is available upon request.

## Jointing and installation

Durapipe **superFLO** solvent cement must be used exclusively for fabrication of the **superFLO** ABS system. Performance guarantees are null and void if other solvent cements are used.

## Storage and installation outdoors

Care should be taken to avoid exposure to sunlight during storage. This may cause discolouration and deterioration of the **superFLO** material. Whilst this is a surface effect only, it is recommended that precautions be taken to prevent this happening (other sources of UV light can have a similar effect).

If **superFLO** is installed outdoors we recommend that it is protected from the effects of sunlight.



## additional important information

### Filling and flushing

When purchasing chemicals for either flushing or long-term system use, suppliers should be advised that this is for **superFLO** material. Guidance on the suitability of various system flushing or filling fluids with **superFLO** can be found in the Durapipe Chemical Data catalogue.

### Testing

It is suggested that the following test procedure be followed, after joints have been allowed to dry for the appropriate minimum time (at least 24 hours up to 225mm, sizes 250mm and 315mm require a minimum of 48 hours at 20°C).

The system should be divided conveniently into test sections.

Fill section with cold water making sure that no air pockets remain. Do not pressurise at this stage.

Check system for leaks. If none are apparent, check for and remove any remaining air. Increase pressure up to 3bar. Do not pressurise further at this stage.

Leave section pressurised for 10 minutes. If pressure decays, inspect for leaks and rectify as necessary. If pressure remains constant, slowly increase the hydrostatic pressure to 1 1/2 times nominal operating pressure.

Leave section pressurised for a period not exceeding 1 hour. During this time pressure should not change.

### Colour

Durapipe **superFLO** products are a mid-grey colour, generally in accordance with BS5252, colour ref. 18 B 21 and RAL 7001.

The Durapipe **superFLO** Metric System is manufactured generally in accordance with the relevant international standards as shown below:

ISO 15493

KIWA 49 and 549

DIN 8062 and 8063

Threaded fittings conform to the requirements of BS 21/DIN 2999/ISO7. Socket dimensions of Durapipe fittings for solvent welding comply with ISO/DIS 727-1.

### Materials

Durapipe **superFLO** material is UK Water Regulations Advisory Scheme approved for cold water services and is listed in the Water Fittings and Materials Directory.

Durapipe **superFLO** formulation does not contain any harmful metallic stabilizers.

### Gaskets and seals

Gaskets and O Ring seals are made from EPDM except where stated otherwise.

### Pressure surges

Durapipe **superFLO** pipework can withstand pressure surges within the limitations detailed within CP312 Part 2:1973 and its amendment dated 1977.

On no account should pressure surges be allowed to exceed the maximum continuous working pressure calculated using the graph on page 22.

### Caution

Personnel must stand well clear when pressure testing systems. Similarly, under no circumstances should pressure tests be carried out using pressurised gases. Such a test could be extremely dangerous and serves no useful purpose.

Note: If extended times are required to achieve hydrostatic pressure, either leakage has occurred or air remains in the line. Inspect for leakage and if none is apparent, reduce pressure and check for trapped air. This must be removed before further pressurisation commences.

## Other building services pipe systems from Durapipe UK



### FRIATHERM

- Pipework made easy
- Hot and cold water system
- Easy and quick installation
- WRAS approved



### FRIAPHON

- Sound attenuated drainage system
- Ideal for hospitals, hotels, office suites - wherever the invasive sounds of drainage are unwelcome



### VULCATHENE

- Safe chemical drainage
- Two easy jointing methods - Mechanical or Enfuson
- Ideal for schools, universities and colleges, hospitals and clinics, pharmaceutical and research organisations



### WEFATHERM

- PP-R plumbing system for CWS, HWS and LTHW



### AKATHERM

- HDPE drainage system
- Jointed by electrofusion or butt welding
- High impact resistance

## DURAPIPE UK CONDITIONS OF SALE

1. **DEFINITIONS:**  
'Seller' shall mean Durapipe UK, registered in England under number 1698059. 'Buyer' shall mean any company, organisation or individual to whom a quotation is offered, or whose order is accepted by the Seller.
2. **CONDITIONS:**  
All offers, quotations, estimates, acceptances and contracts are subject to these Conditions of Business and any terms or conditions which any other person shall seek to impose or make part of any contract shall, so far as is inconsistent with these Conditions of Business, not apply unless expressly agreed by the Seller in writing. The headings in these conditions are for convenience only and shall not affect their interpretation.
3. **QUOTATIONS AND PRICE VARIATION:**
  - a) Any quotation given by the Seller is an invitation to the Buyer to make an offer only and no order of the Buyer placed with the Seller in pursuance of a quotation or otherwise shall be binding on the Seller unless and until it is accepted in writing by the Seller.
  - b) Unless stated otherwise, all quotations and published price lists are ex works, exclusive of VAT and shall remain valid for 30 days or such a period as may be quoted but nevertheless the Seller may amend or withdraw any quotation by written or oral notice. Quotations may be varied if the Buyer makes variations in his specifications.
4. **STATEMENTS OR REPRESENTATIONS TO THE BUYER:**  
If any statement or representation has been made to the Buyer upon which the Buyer relies other than in the documents enclosed with the Seller's quotation, the Buyer must set out that statement or representation in a document to be attached to or endorsed on the order in which case the Seller may submit a new quotation.
5. **DELIVERY - TIME:**
  - a) Any period for delivery given at any time and in any manner by the Seller is an estimate only and is not binding on the Seller. Delivery periods are normally calculated from the later of:
    - i) acceptance of order; or
    - ii) where applicable, the receipt by the Seller of a detailed specification or drawings.
  - b) Time shall not be deemed to be of the essence of the contract. Failure by the Seller to meet any quoted delivery period for any part or the whole of the order shall not entitle the Buyer to rescind the contract or to claim damages of any nature.
  - c) The Seller will endeavour to comply with reasonable requests by the Buyer for postponement of delivery but shall be under no obligation to do so. Where delivery is postponed otherwise than due to default by the Seller the Buyer shall pay all costs and expenses including a reasonable charge for storage and transportation occasioned thereby and an extra charge for split delivery if applicable.
  - d) The Buyer will receive delivery of any consignment between the hours of 8.0am and 4.0pm Monday to Friday inclusive, unless otherwise agreed in writing. Cost incurred by the Seller arising from the Buyer's refusal to accept consignments within the agreed hours shall be borne by the Buyer.
6. **DELIVERY AND RISK:**
  - a) Except where stated to the contrary in the contract, delivery shall be made as follows:
    - i) where the Buyer provides the transport, delivery shall be made ex the Seller's works;
    - ii) where the Seller provides the transport, delivery shall be made to the premises of the Buyer, or the premises of the Buyer's customer or works site if the Buyer has requested delivery to be so made but where the Buyer has made such a request the Seller will make a first delivery to the Buyer's customer or works site as so much of the goods as is available for that delivery but subsequent deliveries will be made to the premises of the Buyer.
  - b) The Seller may at its discretion make partial delivery of orders and invoice the same.
  - c) Risk in the goods shall pass on delivery.
  - d) Where goods are sent FOB the Seller's responsibility shall cease when the goods are placed on board ship or aircraft without the need for the Seller to give notice to the Buyer and the provisions of Section 32(3) of the Sale of Goods Act 1979 shall not apply.
7. **OWNERSHIP OF GOODS:**
  - a) The goods shall remain the sole and absolute property of the Seller as legal and equitable owner until such time as the Buyer shall have paid to the Seller the contract price together with the full price of any other goods the subject of any contract between the Seller and the Buyer.
  - b) The Buyer acknowledges that until such time as the property in the goods passes to the Buyer he is in possession of the goods as a bailee and fiduciary agent for the Seller and the Purchaser shall store the goods in such a manner that they are clearly identifiable as the property of the Seller.
  - c) Until payment due under all contracts between the Buyer and the Seller had been made in full, in the event of sale of the goods by the Buyer:
    - i) the Seller shall be entitled to trace all proceeds of sale received by the Buyer through any bank or other account maintained by the Buyer; and
    - ii) the Buyer shall if requested by the Seller in writing to so assign its rights to recover the selling price of the goods from the third parties concerned. Such monies to be held separately by the Buyer as agent on behalf of the Seller.
  - d) The Seller may for the purpose of recovery of its goods enter upon any premises where they are stored or where they are reasonably thought to be stored and may repossess the same.
8. **TERMS OF PAYMENT:**  
In the event of default in payment according to the agreed payment terms between the Seller and the Buyer -ie: by the end of the month following the month of despatch of the goods the Seller shall be entitled without prejudice to any other right or remedy to suspend all further deliveries and to charge interest on any amount outstanding at the rate of 2% per month until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest).
9. **SHORTAGES AND DEFECTS APPARENT ON DELIVERY:**
  - a) It shall be the responsibility of the Buyer to inspect or arrange for an inspection of the goods on delivery whether the goods are delivered to the Buyer's premises or to the premises of the Buyer's customer or to a works site. If no such inspection is made the Buyer shall be deemed to have accepted the goods.
  - b) The Buyer shall have no claim for shortages or defects apparent on inspection unless:
    - i) a written complaint is made to the Seller within three days of receipt of the goods specifying the shortage or defect; and
    - ii) the Seller is within seven days of receipt of the complaint given an opportunity to inspect the goods and investigate the complaint before any use is made of the goods.
  - c) If a complaint is not made to the Seller as herein provided then in respect of such shortages or defects the goods shall be deemed to be in all respects in accordance with the contract and the Buyer shall be bound to pay for the same accordingly.
10. **CLAIMS FOR DEFECTS NOT APPARENT ON INSPECTION:**
  - a) The Buyer shall have no claim for defects not apparent on inspection unless the Buyer is notified of defective workmanship or materials within twelve months from delivery of the goods. Provided that the goods have been installed and applied in accordance with any relevant recommendations made by the Seller, the Seller will at its option replace the goods or refund the net invoiced price in respect of the goods which have been shown to be defective. If the Seller does so supply substitute goods the Buyer shall be bound to accept such substituted goods in full satisfaction of the obligations of the Seller under the contract.
  - b) The Buyer shall in any event have no claim or set-off in respect of defects unless a written complaint is sent to the Seller as soon as the defect is noticed and no use is made of the goods thereafter or alteration made thereto by the Buyer before the Seller is given an opportunity to inspect the goods.
  - c) The Buyer is responsible for ensuring that the goods are fit for any particular purpose, and no warranty or condition of fitness for any particular purpose is to be implied into the contract.
11. **LIABILITY:**  
Save as stated in Conditions 9 and 10 (and save in respect of death or personal injury resulting from the negligence of the Seller its servants or agents) the Seller shall not be liable for any claim or claims for direct or indirect consequential or incidental injury loss or damage made by the Buyer against the Seller whether in contract or in tort (including negligence on the part of the Seller its servants or agents) arising out of or in connection with any defect in the goods or their fitness or otherwise for any particular purpose or any act omission neglect or default of the Seller its servants or agents in the performance of the contract.
12. **FORCE MAJEURE:**  
Notwithstanding anything herein contained neither the Buyer nor the Seller is to be held liable for any delay or failure to carry out the contract due wholly or in part to an act of God action by any Government whether British or foreign civil war strikes and/or lockouts wheresoever occurring fire trade disputes floods or unfavourable weather or any material becoming unavailable or irreplaceable (whether at all or at commercially acceptable prices) or any other circumstances beyond the control of the Seller.
13. **SUB-CONTRACTING:**  
The Seller reserves the right to sub-contract the fulfilment of any order or any part thereof.
14. **INSOLVENCY AND BREACH OF CONTRACT:**  
In the event that:
  - a) the Buyer commits any breach of the contract and fails to remedy such breach (if capable of remedy) within a period of thirty days from receipt of a notice in writing from the Seller requesting such remedy; or
  - b) any distress or execution is levied upon any of the goods or property of the Buyer; or
  - c) the Buyer offers to make any arrangements with or for the benefit of its creditors or (if an individual) becomes subject to a petition for a bankruptcy order or (being a limited company) has a receiver appointed of the whole or any part of its undertaking property or assets; or
  - d) an order is made or a resolution is passed or analogous proceedings are taken for the winding up of the Buyer (save for the purpose of reconstruction or amalgamation with insolvency and previously approved in writing by the Seller) the Seller shall thereupon be entitled without prejudice to its other rights hereunder forthwith to suspend all further deliveries until the default has been made good or to determine the contract and any unfulfilled part thereof or at the Seller's option to make partial deliveries. Notwithstanding any such termination the Buyer shall pay to the Seller at the contract rate for all the goods delivered up to and including the date of termination.
15. **INDUSTRIAL PROPERTY RIGHTS:**  
If goods supplied by the Seller to the Buyer's design or specifications infringe or are alleged to infringe any patent or registered design right or copyright the Buyer will indemnify the Seller against all damages, costs and expenses incurred by the Seller as a result of the infringement or allegation. The Buyer will give the Seller all possible help in meeting any infringement claim brought against the Seller.
16. **BUYER'S ERROR IN ORDERING:**  
In the event the Buyer orders incorrectly the Seller will be under no obligation to the Buyer to rectify or assist in rectifying the error.
17. **LAW AND JURISDICTION:**  
The contract shall be subject in all respects to English Law and to the jurisdiction of the English Courts.





Durapipe  
**superFLO**  
chilled and cold water pipework

For further information on all products and services contact our Customer Service Team.

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04900010 February 2007