epco

PIPE SYSTEMS

ABS

PVC IMPERIAL

PVC METRIC

POLYPROPYLENE

ISO 9001
BUREAU VERITAS
Certification

UKAS

PRODUCT CATALOGUE – 2019 EDITION

epco
PIPE SYSTEMS

PP COMPRESSION FITTINGS & CLAMP SADDLES

COUPLING

SIZE	PART NO	PN	Box
16	072.019.016	16	240
20	072.019.020	16	140
25	072.019.025	16	160
32	072.019.032	16	100
40	072.019.040	16	55
50	072.019.050	16	30
63	072.019.063	16	20
75	072.019.075	10	10
90	072.019.090	10	7
110	072.019.110	10	6

MALE THREAD ADAPTOR

SIZE	PART NO	PN	Box
16 x 1/2"	073.209.01602	16	400
16 x 3/4"	073.209.01603	16	380
20 x 1/2"	073.209.02002	16	240
20 x 3/4"	073.209.02003	16	220
25 x 1/2"	073.209.02502	16	280
25 x 3/4"	073.209.02503	16	280
25 x 1"	073.209.02504	16	260
32 x 3/4"	073.209.03203	16	180
32 x 1"	073.209.03204	16	160
32 x 1 1/4"	073.209.03205	16	160
40 x 1"	073.209.04004	16	90
40 x 1 1/4"	073.209.04005	16	90
40 x 1 1/2"	073.209.04006	16	90
50 x 1 1/2"	073.209.05006	16	60
50 x 2"	073.209.05007	16	50
63 x 1 1/2"	073.209.06306	16	30
63 x 2"	073.209.06307	16	30
63 x 2 1/2"	073.209.06308	16	30
75 x 2"	073.209.07507	10	18
75 x 2 1/2"	073.209.07508	10	8
75 x 3"	073.209.07509	10	15
90 x 2"	073.209.09007	10	12
90 x 2 1/2"	073.209.09008	10	12
90 x 3"	073.209.09009	10	12
90 x 4"	073.209.09010	10	12
110 x 3"	073.209.11009	10	6
110 x 4"	073.209.11010	10	6

REDUCING COUPLING

SIZE	PART NO	PN	Box
20 x 16	072.609.020016	16	160
25 x 16	072.609.025016	16	200
25 x 20	072.609.025020	16	200
32 x 25	072.609.032025	16	120
50 x 40	072.609.050040	16	40
63 x 25	072.609.063025	16	30
63 x 32	072.609.063032	16	30
63 x 40	072.609.063040	16	30
63 x 50	072.609.063050	16	25
75 x 50	072.609.075050	10	15
75 x 63	072.609.075063	10	15
90 x 63	072.609.090063	10	8
90 x 75	072.609.090075	10	8
110 x 63	072.609.110063	10	6
110 x 75	072.609.110075	10	6
110 x 90	072.609.110090	10	6

FEMALE THREAD ADAPTOR

SIZE	PART NO	PN	Box
16 x 1/2"	073.219.01602	16	340
16 x 3/4"	073.219.01603	16	300
20 x 1/2"	073.219.02002	16	220
20 x 3/4"	073.219.02003	16	200
25 x 1/2"	073.219.02502	16	260
25 x 3/4"	073.219.02503	16	260
25 x 1"	073.219.02504	16	240
32 x 3/4"	073.219.03203	16	180
32 x 1"	073.219.03204	16	160
40 x 1"	073.219.04004	16	90
40 x 1 1/4"	073.219.04005	16	90
40 x 1 1/2"	073.219.04006	16	90
50 x 1 1/2"	073.219.05006	16	55
50 x 2"	073.219.05007	16	50
63 x 1 1/2"	073.219.06306	16	30
63 x 2"	073.219.06307	16	30
75 x 2"	073.219.07507	10	18
75 x 2 1/2"	073.219.07508	10	18
75 x 3"	073.219.07509	10	18
90 x 3"	073.219.09009	10	12
110 x 3"	073.219.11009	10	6
110 x 4"	073.219.11010	10	4

90° ELBOW

SIZE	PART NO	PN	Box
16	072.039.016	16	240
20	072.039.020	16	120
25	072.039.025	16	140
32	072.039.032	16	80
40	072.039.040	16	50
50	072.039.050	16	25
63	072.039.063	16	15
75	072.039.075	10	8
90	072.039.090	10	5
110	072.039.110	10	4

90° FEMALE THREAD ELBOW

SIZE	PART NO	PN	Box
16 x 1/2"	073.189.01602	16	300
16 x 3/4"	073.189.01603	16	240
20 x 1/2"	073.189.02002	16	180
20 x 3/4"	073.189.02003	16	80
25 x 1/2"	073.189.02502	16	220
25 x 3/4"	073.189.02503	16	220
25 x 1"	073.189.02504	16	180
32 x 3/4"	073.189.03203	16	140
32 x 1"	073.189.03204	16	140
40 x 1"	073.189.04004	16	70
40 x 1 1/4"	073.189.04005	16	70
50 x 1 1/2"	073.189.05006	16	40
50 x 2"	073.189.05007	16	35
63 x 2"	073.189.06307	16	20
75 x 2"	073.189.07507	10	12
75 x 2 1/2"	073.189.07508	10	12
90 x 2 1/2"	073.189.09008	10	8
90 x 3"	073.189.09009	10	8
110 x 3"	073.189.11009	10	6
110 x 4"	073.189.11010	10	6

90° MALE THREAD ELBOW

SIZE	PART NO	PN	Box
16 x 1/2"	073.549.01602	16	320
16 x 3/4"	073.549.01603	16	320
20 x 1/2"	073.549.02002	16	200
20 x 3/4"	073.549.02003	16	180
25 x 1/2"	073.549.02502	16	240
25 x 3/4"	073.549.02503	16	240
25 x 1"	073.549.02504	16	220
32 x 3/4"	073.549.03203	16	160
32 x 1"	073.549.03204	16	140
32 x 1 1/4"	073.549.03205	16	140
40 x 1"	073.549.04004	16	80
40 x 1 1/4"	073.549.04005	16	80
40 x 1 1/2"	073.549.04006	16	70
40 x 2"	073.549.04007	16	70
50 x 1 1/4"	073.549.05005	16	40
50 x 1 1/2"	073.549.05006	16	40
50 x 2"	073.549.05007	16	40
63 x 1 1/2"	073.549.06306	16	25
63 x 2"	073.549.06307	16	25
63 x 2 1/2"	073.549.06308	16	25
75 x 2"	073.549.07507	10	14
75 x 2 1/2"	073.549.07508	10	14
75 x 3"	073.549.07509	10	12
90 x 3"	073.549.09009	10	8
90 x 4"	073.549.09010	10	8
110 x 4"	073.549.11010	10	6

90° TEE

SIZE	PART NO	PN	Box
16	072.069.016	16	140
20	072.069.020	16	80
25	072.069.025	16	80
32	072.069.032	16	50
40	072.069.040	16	35
50	072.069.050	16	15
63	072.069.063	16	12
75	072.069.075	10	5
90	072.069.090	10	3
110	072.069.110	10	2

90° REDUCING TEE

SIZE	PART NO	PN	Box
20 x 25 x 20	072.089.020025	10	80
25 x 20 x 25	072.089.025020	10	80
32 x 20 x 32	072.089.032020	10	50
32 x 25 x 32	072.089.032025	10	50
40 x 25 x 40	072.089.040025	10	35
40 x 32 x 40	072.089.040032	10	15
50 x 25 x 50	072.089.050025	10	15
50 x 32 x 50	072.089.050032	10	15
50 x 40 x 50	072.089.050040	10	15
63 x 25 x 63	072.089.063025	10	12
63 x 32 x 63	072.089.063032	10	12
63 x 40 x 63	072.089.063040	10	12
63 x 50 x 63	072.089.063050	10	12
75 x 63 x 75	072.089.075063	10	5
90 x 75 x 90	072.089.090075	10	3
110 x 63 x 110	072.089.110063	10	2
110 x 90 x 110	072.089.110090	10	2

90° MALE THREAD TEE

SIZE	PART NO	PN	Box
16 x 1/2"	073.559.01602	16	160
16 x 3/4"	073.559.01603	16	160
20 x 1/2"	073.559.02002	16	100
20 x 3/4"	073.559.02003	16	100
25 x 3/4"	073.559.02503	16	120
25 x 1"	073.559.02504	16	100
32 x 3/4"	073.559.03203	16	70
32 x 1"	073.559.03204	16	70
40 x 1"	073.559.04004	16	35
40 x 1 1/4"	073.559.04005	16	35
40 x 1 1/2"	073.559.04006	16	35
50 x 1 1/2"	073.559.05006	16	20
50 x 2"	073.559.05007	16	20
63 x 2"	073.559.06307	16	12
63 x 2 1/2"	073.559.06308	10	8
75 x 2"	073.559.07507	10	8
75 x 2 1/2"	073.559.07508	10	8
75 x 3"	073.559.07509	10	7
90 x 3"	073.559.09009	10	4
90 x 4"	073.559.09010	10	4
110 x 3"	073.559.11009	10	2
110 x 4"	073.559.11010	10	2

90° FEMALE THREAD TEE

SIZE	PART NO	PN	Box
16 x 1/2"	073.109.01602	16	160
16 x 3/4"	073.109.01603	16	160
20 x 1/2"	073.109.02002	16	100
20 x 3/4"	073.109.02003	16	80
25 x 1/2"	073.109.02502	16	120
25 x 3/4"	073.109.02503	16	110
25 x 1"	073.109.02504	16	100
32 x 3/4"	073.109.03203	16	70
32 x 1"	073.109.03204	16	60
40 x 1"	073.109.04004	16	35
40 x 1 1/4"	073.109.04005	16	35
40 x 1 1/2"	073.109.04006	16	35
50 x 1 1/4"	073.109.05005	16	25
50 x 1 1/2"	073.109.05006	16	20
63 x 2"	073.109.06307	16	12
75 x 2"	073.109.07507	10	7
75 x 2 1/2"	073.109.07508	10	7
75 x 3"	073.109.07509	10	7
90 x 3"	073.109.09009	10	4
90 x 4"	073.109.09010	10	4
110 x 3"	073.109.11009	10	2
110 x 4"	073.109.11010	10	2

CAP

SIZE	PART NO	PN	Box
16	072.229.016	16	500
20	072.229.020	16	260
25	072.229.025	16	300
32	072.229.032	16	200
40	072.229.040	16	100
50	072.229.050	16	65
63	072.229.063	16	35
75	072.229.075	10	20
90	072.229.090	10	12
110	072.229.110	10	6

PIPE LINER

SIZE	PART NO	Box
20	072.LINER.020	10
25	072.LINER.025	10
32	072.LINER.032	10

FLANGED ADAPTOR

SIZE	PART NO
50 x 1 1/2"	073.2039.05006
50 x 2"	073.2039.05007
63 x 2"	073.2039.06307
75 x 2 1/2"	073.2039.07508
75 x 3"	073.2039.07509
90 x 3"	073.2039.09009
90 x 4"	073.2039.09010
110 x 4"	073.2039.11010

BALL VALVE – COMPRESSION ENDS

SIZE	PART NO
20	072.661.020
25	072.661.025
32	072.661.032
40	072.661.040
50	072.661.050
63	072.661.063

PP COMPRESSION FITTING SPARES

SPARE NUT

SIZE	PART NO
16	00910.016
20	00910.020
25	00910.025
32	00910.032
40	00910.040
50	00910.050
63	00910.063
75	00910.075
90	00910.090
110	00910.110

SPARE THRUST RING

SIZE	PART NO
16	00920.016
20	00920.020
25	00920.025
32	00920.032
40	00920.040
50	00920.050
63	00920.063
75	00920.075
90	00920.090
110	00920.110

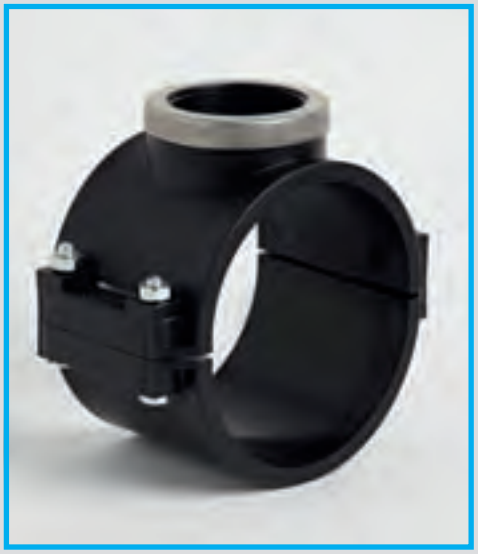
SPARE CLINCHING RING

SIZE	PART NO
16	00915.016
20	00915.020
25	00915.025
32	00915.032
40	00915.040
50	00915.050
63	00915.063
75	00915.075
90	00915.090
110	00915.110

SPARE O RING GASKET

SIZE	PART NO
16	00925.016
20	00925.020
25	00925.025
32	00925.032
40	00925.040
50	00925.050
63	00925.063
75	00925.075
90	00925.090
110	00925.110

SINGLE CLAMP SADDLE – WITH REINFORCED RING*



CLAMP SADDLES WITHOUT REINFORCED RING AVAILABLE, PLEASE CONTACT SALES OFFICE FOR DETAILS

SIZE	PART NO
25 x 1/2"	073.2083.02502
25 x 3/4"	073.2083.02503
32 x 1/2"	073.2083.03202
32 x 3/4"	073.2083.03203
40 x 1/2"	073.2083.04002
40 x 3/4"	073.2083.04003
50 x 1/2"	073.2083.05002
50 x 3/4"	073.2083.05003
50 x 1"	073.2083.05004
63 x 1/2"	073.2083.06302
63 x 3/4"	073.2083.06303
63 x 1"	073.2083.06304
63 x 1 1/4"	073.2083.06305
75 x 1/2"	073.2083.07502
75 x 3/4"	073.2083.07503
75 x 1"	073.2083.07504
75 x 1 1/4"	073.2083.07505
75 x 1 1/2"	073.2083.07506
90 x 1/2"	073.2083.09002
90 x 3/4"	073.2083.09003
90 x 1"	073.2083.09004
90 x 1 1/4"	073.2083.09005
90 x 1 1/2"	073.2083.09006
90 x 2"	073.2083.09007
110 x 1/2"	073.2083.11002
110 x 3/4"	073.2083.11003
110 x 1"	073.2083.11004
110 x 1 1/4"	073.2083.11005
110 x 1 1/2"	073.2083.11006
110 x 2"	073.2083.11007
110 x 2 1/2"	073.2083.11008
110 x 3"	073.2083.11009
125 x 3/4"	073.2083.12503
125 x 1"	073.2083.12504
125 x 1 1/4"	073.2083.12505
125 x 1 1/2"	073.2083.12506
125 x 2"	073.2083.12507
140 x 1"	073.2083.14004
140 x 1 1/4"	073.2083.14005
140 x 1 1/2"	073.2083.14006

SIZE	PART NO
140 x 2"	073.2083.14007
140 x 3"	073.2083.14009
160 x 1/2"	073.2083.16002
160 x 3/4"	073.2083.16003
160 x 1"	073.2083.16004
160 x 1 1/4"	073.2083.16005
160 x 1 1/2"	073.2083.16006
160 x 2"	073.2083.16007
160 x 3"	073.2083.16009
160 x 4"	073.2083.16010
200 x 3/4"	073.2083.20003
200 x 1"	073.2083.20004
200 x 1 1/4"	073.2083.20005
200 x 1 1/2"	073.2083.20006
200 x 2"	073.2083.20007
200 x 3"	073.2083.20009
200 x 4"	073.2083.20010
225 x 1/2"	073.2083.22502
225 x 3/4"	073.2083.22503
225 x 1"	073.2083.22504
225 x 1 1/4"	073.2083.22505
225 x 1 1/2"	073.2083.22506
225 x 2"	073.2083.22507
225 x 3"	073.2083.22509
225 x 4"	073.2083.22510
250 x 3/4"	073.2083.25003
250 x 1"	073.2083.25004
250 x 1 1/4"	073.2083.25005
250 x 1 1/2"	073.2083.25006
250 x 2"	073.2083.25007
250 x 3"	073.2083.25009
250 x 4"	073.2083.25010
315 x 1"	073.2083.31504
315 x 1 1/4"	073.2083.31505
315 x 1 1/2"	073.2083.31506
315 x 2"	073.2083.31507
315 x 3"	073.2083.31509
315 x 4"	073.2083.31510
315 x 4"	073.2083.31510
315 x 4"	073.2083.31510

PVC SINGLE CLAMP SADDLE – INCH SIZES

SIZE	PART NO
3" x 1/2"	021.2061.0902
3" x 3/4"	021.2061.0903
3" x 1"	021.2061.0904
3" x 1 1/4"	021.2061.0905
3" x 1 1/2"	021.2061.0906
3" x 2"	021.2061.0907
4" x 1/2"	021.2061.1002
4" x 3/4"	021.2061.1003
4" x 1"	021.2061.1004
4" x 1 1/4"	021.2061.1005
4" x 1 1/2"	021.2061.1006
4" x 2"	021.2061.1007
4" x 3"	021.2061.1009
6" x 1/2"	021.2061.1202
6" x 3/4"	021.2061.1203
6" x 1"	021.2061.1204

SIZE	PART NO
6" x 1 1/4"	021.2061.1205
6" x 1 1/2"	021.2061.1206
6" x 2"	021.2061.1207
6" x 3"	021.2061.1209
6" x 4"	021.2061.1210
8" x 1/2"	021.2061.1302
8" x 3/4"	021.2061.1303
8" x 1"	021.2061.1304
8" x 1 1/4"	021.2061.1305
8" x 1 1/2"	021.2061.1306
8" x 2"	021.2061.1307
8" x 3"	021.2061.1309
8" x 4"	021.2061.1310
8" x 6"	021.2061.1312
10" x 4"	021.2061.1410
10" x 6"	021.2061.1412

The following notes are for guidance only and should be used in conjunction with the installation guidelines published at the start of the relevant section in this price list.

It is easy to mistake PVC-U and ABS pipework systems as two almost identical products. Both product ranges offer a very similar range of pipes and fittings, with dimensions being very similar if not identical in many instances. Both systems are also predominantly joined by solvent cementing the pipe into the fitting.

This is where the similarity stops as these are two distinctly different systems in their own right offering different features which can be briefly summarised as follows:-

PVC-U – is an abbreviation for Unplasticised Polyvinyl Chloride. The outstanding feature of this product is its excellent chemical resistance which makes it suitable for a wide range of acids, alkalis and chemicals. PVC-U is suitable for operating temperatures between 5°C to 60°C.

ABS – is an abbreviation for Acrylonitrile Butadiene Styrene, a product which is renowned for its excellent impact strength and wide operating temperature range from -40°C to 70°C making it an ideal system for applications such as chilled water*, transportation of foodstuffs and slurries etc.

* care should be taken when using ABS for chilled water applications as the product has differing levels of resistance to different types of glycol. It is important to check & confirm suitability prior to using for this application.

The fracture mode of the two materials is also significantly different. PVC-U is a more brittle material and can tend to fracture into splinters of material, particularly at low temperatures, which can be dangerous. ABS is by nature a very ductile material and tends to crease and tear when ruptured meaning the damage to the system is far less dramatic and potentially less dangerous.

PVC-U and ABS pipes are around half the weight of copper pipe and one-sixth the weight of steel systems. Coupled with the ease of installation of these products and exceptionally smooth bore, they are an excellent alternative to these traditional materials.

Whilst PVC-U and ABS pipework systems are relatively simple to install, as with all pipework systems, it is important that certain rules are followed and consideration given to a number of important factors. With this in mind we have produced the following basic guidelines which may be useful in the installation of these systems:-

1) Dimensions & tolerances of pipes and fittings

(i) Inch/Metric sizing systems

The most commonly used and recognised pipework sizing system in the UK for many generations has been the imperial (or "inch") system, where the pipework size is designated by the nominal bore of the pipe. The change to the use of the metric system of units to bring the UK into line with the rest of Europe, whilst accepted in many areas of commerce and industry, has proved to be a slower process in the pipework industry to such an extent that it has still not been fully accepted, thus resulting in both inch and metric systems being readily available in the UK. This serves to confuse matters even more as, contrary to the imperial method of pipework sizing, metric pipes are sized in millimetres, the figure relating to the outside diameter of the pipe as opposed to the bore size.

NOMINAL BORE SYSTEM		IMPERIAL / INCH SYSTEM (Outside diameter)	CORRESPONDING METRIC / MM SYSTEM (Outside Diameter)
(Inches)	(mm)		
3/8"	10mm	17.1mm	16mm
1/2"	15mm	21.4mm	20mm
3/4"	20mm	26.7mm	25mm
1"	25mm	33.4mm	32mm
1 1/4"	32mm	42.2mm	40mm
1 1/2"	40mm	48.3mm	50mm
2"	50mm	60.3mm	63mm
2 1/2"	65mm	75.0mm	75mm
3"	80mm	88.9mm	90mm
4"	100mm	114.3mm	110mm
			125mm
5"	125mm	140.0mm	140mm
6"	150mm	168.3mm	160mm
			200mm
8"	200mm	219.1mm	225mm
10"	250mm	273.0mm	280mm
12"	300mm	323.9mm	315mm
14"	350mm	355.6mm	355mm
16"	400mm	406.4mm	400mm

With both these sizing systems the critical dimension is the outside diameter of the pipe itself (along with the socket dimensions of the fittings) and this is the only dimension that remains constant irrespective of the pressure rating of the pipe. For this reason, even though imperial pipe sizes are designated by the bore size, this is not always an exact figure as the differing wall thicknesses – depending on the pressure rating – do cause a variation. Contrary to this metric sizes always relate to the actual outside diameter of the pipe itself.

The previous table shows a comparison of imperial PVC-U and ABS dimensions in inch and metric. The two sizing systems are completely different and can only joined together by using flanges, unions or adaptors. The exceptions to this are sizes 2 1/2" and 5", which match their corresponding sizes of 75mm and 140mm exactly.

Irrespective of the pressure rating of the pipe the corresponding fittings are generally manufactured to the highest pressure rating, which means that the same fittings of any particular size can be used in conjunction with all the pressure classes of pipe.

(ii) Tolerances of pipes and fittings

All our products are manufactured in accordance with strict relevant international dimensional standards. In simplistic terms the dimensional standards dictate that the pipes must be produced within a tolerance band i.e. the outside diameter of the pipe has to fall between the "minimum" and "maximum" dimensions set by the standard (the outside diameters quoted in the table on the previous page tend to be the "average" of these two dimensions). The same applies to the fittings but for all fittings that contain socket connections, the critical dimension is the inside diameter of the socket.

The general method of joining these pipework systems is by solvent cement. The solvent cement chemically attacks the outer surface of the pipe or spigot and also the socket of the fitting, softening up the two surfaces and allowing the two surfaces to chemically bond together once the joint has dried.

It is generally accepted that PVC-U product can be dry fitted prior to solvent cement jointing taking place. This is because PVC-U solvent cement possesses gap filling properties which means that it is possible in many instances to insert the pipe fully home into the socket of the fitting in its "dry" state. With ABS however, this is not generally the case. Although some manufacturers now produce thixotropic ABS solvent cement, this product does not possess the same levels of gap filling properties as its PVC-U counterpart. For this reason the tolerances for ABS pipes and fittings are generally tighter meaning that in many instances it is not possible to dry fit these products – an ABS fitting that cannot be pushed onto the corresponding pipe in its dry state is therefore not necessarily faulty and this is a common misconception.

There are of course exceptions to this rule – pipes and fittings are rarely produced by the same manufacturer and it not uncommon for a pipe to be at the "top end" of tolerance and the fittings at "bottom end", which would result in a particularly tight fit in the dry state.

It is important to remember that in both these instances once the solvent cement has been applied and providing the joint has been carried out correctly and in accordance with the published jointing procedures, the joint itself should still be perfectly satisfactory providing that the products are within the correct tolerances.

It is also important to remember that pipe is an extruded product so the dimensional tolerances can vary slightly along its length, which is acceptable as long as those dimensions remain within the levels quoted by the standard.

2) Product compatibility with liquids and gases

All our PVC-U and ABS products are suitable for conveying liquids under pressure – providing that this is done within the constraints of the pressure, temperature and chemical resistance capabilities of the product. The standard pressure ratings of plastic pressure pipework systems are always quoted at 20°C. It is a fundamental principle of these systems that as the temperature increases, the pressure rating of the product decreases. Please refer to the technical information in this price list for details of the pressure/temperature relationship.

PVC-U and ABS pipework systems are generally not recommended for carrying gases. A slight contradiction to this is in the case of ABS, which can be used for carrying compressed air – however there are many factors which can deem the product as being unsuitable. One of these is the fact that ABS has a limited or nil resistance to some brands (although not all) of compressor oil which can ultimately result in total system failure. In this respect we do not recommend ABS as being an ideal product for the conveyance of compressed air and at the very least extensive checks should be made prior to purchase of compatibility of the product for such applications (polyethylene is by far a more suitable product for this application). PVC-U is certainly not suitable for carrying compressed air – the nature of fracture of UPVC (as explained in the introductory section) makes this a potentially lethal cocktail/combination.

We are happy to provide technical advice as to the suitability of our pipework systems with individual chemicals subject to details of the chemical name, concentration, pressure and temperature being supplied to us.

3) Pipework installation – above ground

(i) Bracketing

It is important that PVC-U and ABS pipework systems are correctly bracketed to prevent various problems occurring, resulting in system failure. These supports must afford free lateral movement (to allow pipe movement when expanding and contracting) and lateral restraint. Our industrial range of pipe clips are ideal for this application. Fabricated metal saddle clips are also suitable but must be designed in such a way that there is a small clearance between the pipe and the clip.

Rubber lined pipe clips can also be used but it is important to ensure that the pipe is free to move within the clip. Also that the grade of rubber used in the clip is suitable for contact with the pipework (rubber lined pipe clips can cause chemical attack to the pipe itself if the incorrect grade of rubber is used). Pipe brackets such as 'U' bolts are not suitable as they do not provide an adequate level of lateral support to the pipe.

Information regarding pipe support centres/distances can be found in the technical notes at the start of each section in this price list.

(ii) Heavy items

Heavy equipment contained within the pipework installation (i.e. metal valves) must be independently supported to prevent undue stress being caused to the system. Fabricated metal brackets or valve support plates (used in lieu of backing rings) are ideal for this use.

(iii) Provision for expansion & contraction

Whilst it is extremely important to bracket pipework adequately it is equally important to ensure that the system is designed in such a way that sufficient changes in direction occur to accommodate contraction and expansion of the system.

Sufficient bracketing will prevent snaking of the pipework. This alone will not prevent system failure occurring if sufficient provisions have not been made to accommodate pipework movement as a result of temperature change in the pipe wall, caused by changes in the internal and external temperatures. Whilst pipe bracketing is important care should be taken to ensure that clips are not placed too close to these changes of direction. This will restrict the natural movement of the pipe.

If it is not possible to accommodate natural changes of direction, these can be achieved by introducing expansion loops into the system. Another more expensive way of accommodating this movement is by the inclusion of expansion bellows.

4) Pipe Insulation

There will be occasions where it is necessary to insulate plastic pipes to protect the contents against freezing. It is important with normal pipe insulation to check its compatibility with the pipework material itself as certain types of insulation can have a detrimental effect on the pipework and potentially cause chemical attack.

Similarly some brands and types of trace heating can contain materials that can have a negative effect on the pipework. Suitability should be confirmed prior to use.

5) Flange & threaded connections

(i) Flanged connections

We recommend the use of galvanised mild steel or UPVC backing rings in conjunction with both stub and full face flanges. This prevents undue stress being put on the flange when the bolts are tightened, potentially resulting in fracture of the fittings. Care should be taken to apply the correct level of torque when tightening the flange bolts. Bolts diagonally opposite each other should be tightened in turn to ensure an even level of torque.

(ii) Plastic to plastic threaded connections

We recommend the use of PTFE tape only as a sealant when used in conjunction with PVC-U and ABS threaded joints. Most jointing pastes are known to contain ingredients that cause chemical attack and ultimate failure to these products. The majority of moulded fittings have parallel threads in both male and female. This is designed to limit the amount of stress caused to the female thread. The exception to this is fittings which are machined from pipe, such as barrel nipples, that are manufactured with taper threads. Tank connectors also have parallel threads to allow the backnuts to easily be screwed onto the fitting.

(iii) Plastic to metal threaded connections

Every effort should be made to avoid the connection of plastic pipework systems directly to metal ones using threads where the joint is likely to experience a temperature change of more than +/- 5°C. Plastic and metals expand and contract at differing rates and this practice may result in leaks and/or product failure. Composite unions are an ideal solution to this problem as well as flanges.

6) Pressure testing

It is essential that all the solvent weld joints in the system have been allowed to fully dry (normally for at least 24 hours, dependant on the size) before the following test procedure is carried out.

The installation should be divided into convenient sections for ease of testing.

The system should be filled with cold water at a low point with bleed points situated at the highest level to ensure that the system is completely full of water with no air pockets remaining. Do not pressurise yet.

Inspect the system for leaks at this stage. If none are apparent carry out another check to ensure that no air remains in the system.

Increase the pressure in the system to 3 bar only and leave for 10 minutes. If the pressure in the system drops during this time, inspect for leaks and rectify. If the pressure remains constant slowly increase the pressure to 1½ times the nominal pressure*.

* The maximum pressure the system can be tested at is 11/2 times the rating of the lowest pressure rated component in the system (e.g. if the system contains class C pipe and 100% solvent weld fittings, it can only be tested to 13.5 bar even though the fittings are rated at 15 bar, thus preventing fractures occurring to the pipe itself).

Leave the system under pressure for 1 hour. During this time the system pressure should not change if it is leak free.

7) Common problems

Problems occasionally occur with installations and it is easy in the first instance to blame faulty product as the root cause. In reality this is rarely the case and we have listed below some of the more common reasons for potential failure in a system. Although not exhaustive, this list has been prepared as a guide and is based on our experience:-

a) Poor quality joints

A lack of solvent cement applied to the joint or surfaces that have been badly prepared will almost certainly mean that the whole surface of the pipe and fitting have not bonded together. This will almost certainly result in leaks occurring between the two surfaces.

Equally an excess of solvent cement can cause major problems but for different reasons. It should be remembered that solvent cement is a chemical that attacks and softens the surfaces of the pipe and fitting, allowing them to be bonded together when the cement dries. An excess of solvent cement either around the outside surfaces of the pipes and fittings, or inside – known as pooling – actually continues to chemically attack the wall of the product long after is has been applied. This can cause eventual weakening of the wall and ultimate failure where product breaks altogether or fracture lines occur, resulting in leaks. It is essential to ensure that sufficient solvent cement is applied to carry out an effective joint, but not too much, and any excess should certainly not be left on the outside of the product, or allowed to 'pool' inside.

Details of the correct jointing procedures to be followed can be found at the front of the ABS and PVC-U sections of this price list.

b) Chemical attack

It is essential to ensure that the media being carried through the system is suitable for contact with PVC-U and ABS pipework systems, as well as the seals in valves etc. The pressure and temperature should also be checked and confirmed as well as the concentration levels of any chemical being conveyed. It should not be presumed that one chemical with a similar function and/or or similar types and names is automatically suitable just because the other is – this is not always the case. An example of this is in ABS pipework systems, which are regularly used in chilled water applications and as a result are known to carry levels of glycol (anti-freeze). It is known that ABS is generally fine for carrying Mono-propylene Glycol (subject to checks regarding the concentration), but that Poly-propylene Glycol, which is used for the same reason and has a very similar name, is certainly not suitable for use with ABS, as it causes chemical attack and ultimate failure of the system.

There are some chemicals that are suitable for use with the pipework material itself, where the actual solvent cement has limited resistance. An example of this is hydrochloric acid at concentrations of 25% and above. Whilst PVC-U pipework is deemed as suitable (subject to its temperature), standard solvent cement only has limited resistance to this chemical. In this instance a specially formulated solvent cement should be used.

c) Inadequate bracketing

As explained in previous sections of this publication, it is essential to ensure that plastic pipework systems are adequately bracketed at the correct centres (details available at the start of each product section in the price list), with provisions made for expansion and contraction and the support of heavy pieces of equipment. Brackets should allow for linear movement of the pipe.

d) Vibration & water hammer

Plastic pipework systems have a limited resistance to vibration and every effort should be made to protect the installation from this.

This is regularly prevalent where the product is connected directly to a pump or other items of machinery. It is essential in these instances to ensure that provision is made to limit the amount of vibration being transferred to the pipework as much as possible. Anti-vibration bellows are an ideal way of achieving this.

Pressure surges and water hammer – normally caused at pump start up – can also cause great stress to a pipework system, particularly at weak points such as changes of direction etc., and steps should be taken to limit this.

e) Expansion & contraction

As explained in previous sections, provision should be made for expansion and contraction. The lack of these provisions is known to put undue stress on the pipes and fittings causing fractures at the weakest points.