



# KEY

Epoxy Cast Iron Drainage System

**EN 877**

**EPOXY CAST IRON PIPES & FITTINGS  
FOR DRAINAGE SYSTEM**

## Feature

### Pipes and Fittings

**KEY** high strength cast iron pipes and fittings provide excellent resistance to impact and do not deform.

**KEY** exceptional resistance to corrosion is provided by internal epoxy coating on pipes and fittings further enhancing the proven durability of cast iron. The smooth internal surface ensures long term, high efficient flow characteristics.

**KEY** pipes and fittings, when tested separately, can withstand a maximum static accidental water pressure of 5 bars.

### Couplings

**KEY's** Hubless couplings conform to all the mechanical requirement of BS 6087. These couplings are composed of SUS 304 or SUS 316 stainless steel shield, clamp assembly and an elastomeric sealing sleeve conforming to the requirement of BS EN 681-1 and also can resist the normal domestic effluents with thermal effects up to 70°C temperature. This elastomeric material was made by well balanced formula with the combination of outstanding properties in resisting abrasion, oil, grease, chemicals, ultraviolet, heat and cold conditions. This elastomeric sleeve also provides a cushioning element in the coupling to avoid shock, vibration and ensure a noiseless drainage system.

The stainless steel was selected for the clamp and shield assemblies because it possesses high corrosion resistance characteristics.

### Electrical Continuity

Couplings are incorporated with this feature to provide safety and suit different designs

### Design Consideration

Small angular deflection can be accommodated by couplings with a maximum 3° and 0.5 bar water pressure. However, pipelines should be designed and installed with proper alignment and sufficient supports. For deflection angle other than the listed fittings, a combination of two or more is recommended.

For horizontal pipeline, maximum span between hangers is 2m while maximum distance apart from coupling and hanger is 750mm. The distance should reduce to 500mm for fittings in order to provide necessary support to the system and minimize the overstress condition. The couplings would be damaged by improper design or/and installation; hence, the operation of the pipeline and the system are also affected

Pressure test is recommended for pipelines to be built-in or installed in locations where access with difficulty before completion.

## Applications

**KEY** cast iron socketless pipes and fittings are used in above ground gravity drainage system for waste, soil and rainwater. It is also applicable for ventilation purpose and drainage of aggressive effluents and below ground network.

## Standards

The pipes and fittings conform to the Standard: BS EN 877:1999.

### Lengths of Pipes

**KEY** pipes are manufactured in the length of 3m (other lengths may offer subjected to customer's order). Standard supply of our pipes is shown below and details of various fittings is found on the following pages.

### Nominal Sizes, Dimensions & Mass

Nominal Diameter	External Diameter	Tolerance on External Diameter	Mass per Length
40	48	+2 to -1	12.0
50	58	+2 to -1	13.0
75	83	+2 to -1	19.0
100	110	+2 to -1	25.5
125*	135	+2 to -2	35.4
150	160	+2 to -2	42.2
200	210	+2.5 to -2.5	69.5
250	274	+2.5 to -2.5	99.8
300	326	+2.5 to -2.5	133
400	429	+2 to -3	190
500*	532	+2 to -3.5	--
600*	635	+2 to -4	--

(\*) Special Size subjected to customer's order.

Dimensions in mm and applicable to ALL pipes and fittings.

### Wall Thickness

Nominal Diameter	Nominal Thickness	Minimum Thickness
40*	3.0	2.5
50	3.5	3.0
75	3.5	3.0
100	3.5	3.0
125*	4.0	3.5
150	4.0	3.5
200	5.0	4.0
250	5.5	4.5
300	6.0	5.0
400*	6.3	5.0
500*	7.0	5.2
600*	7.7	5.8

(\*) Special Size subjected to customer's order.

Dimensions in mm and applicable to ALL pipes and fittings.

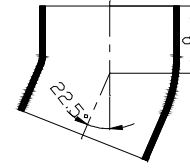
### Coating on Pipes and Fittings

All pipes and fittings are protected by Tar Free Epoxy internally and externally with minimum thickness 80 microns. Anti-corrosive red primer external coatings or other protections are also available.

# Bends

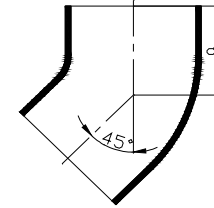
## 22.5° Bend

DN (mm)	a (mm)	Mass (kg)
50	65	0.50
75	58	0.90
100	60	1.25
150	70	2.35
200	100	5.60
250	120	9.50
300	140	12.0



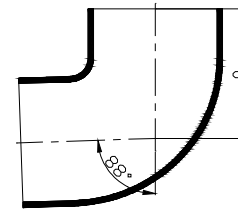
## 45° Bend

DN (mm)	a (mm)	Mass (kg)
50	50	0.57
75	70	1.00
100	75	1.65
150	95	3.60
200	113	5.90
250	145	10.2
300	155	14.0



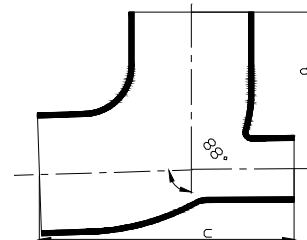
## 88° Bend

DN (mm)	a (mm)	Mass (kg)
40	75	0.60
50	75	0.79
75	95	1.32
100	110	2.40
150	145	4.30
200	175	7.60
250	220	16.5
300	260	22.0



## 88° Bend with Hell Opening

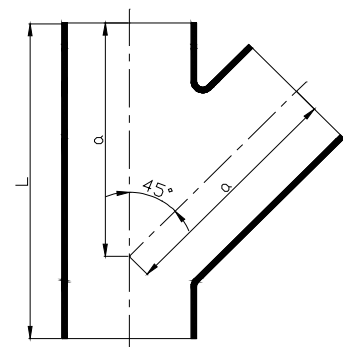
DN (mm)	dn (mm)	a (mm)	c (mm)	Mass (kg)
100	50	140	225	3.14



# Branches

## 45° Single Branch

DN (mm)	a (mm)	L (mm)	Mass (kg)
50	125	171	1.12
75	155	215	2.40
100	185	255	3.65
150	270	350	9.00
200	342	458	14.7
250	425	556	21.0
300	496	650	27.5

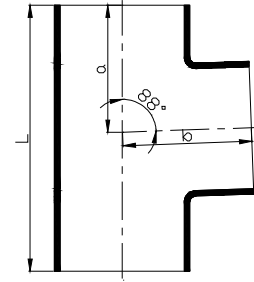


Remark: 15% lower derivation on mass and ±2 degree in angle for fittings are allowed

# Branches

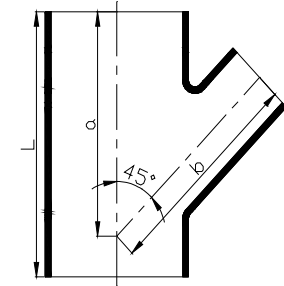
## 88° Single Branch

DN (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
50	67	80	147	1.12
75	94	94	180	1.95
100	113	113	220	3.10
150	151	151	300	7.40
200	180	180	360	10.8
250	225	225	450	19.7
300	275	265	530	26.1



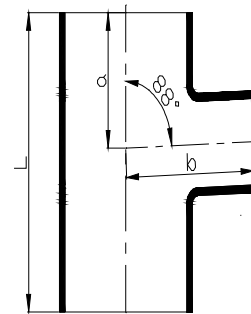
## 45° Single Reducing Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
75	50	133	132	178	1.65
100	50	155	155	183	2.75
100	75	170	170	220	3.10
150	75	227	240	278	5.43
150	100	225	230	278	6.90
200	100	260	260	303	8.50
200	150	302	302	380	12.3
250	150	340	340	386	15.5
300	150	385	383	435	29.7



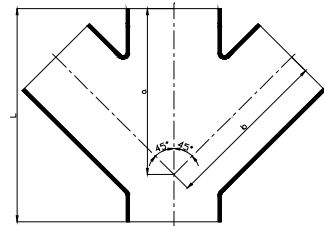
## 88° Single Reducing Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
75	40	91	83	138	1.46
75	50	75	92	160	1.46
100	50	77	105	170	2.15
100	75	93	110	194	2.60
150	75	105	140	221	4.60
150	100	125	158	225	5.44
200	100	129	180	298	8.00
200	150	156	183	302	8.85
250	150	161	228	335	14.0
300	150	173	267	352	19.0



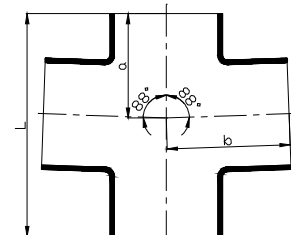
## 45° Double Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
150	150	280	280	360	12.1



## 88° Double Reducing Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
100	100	110	120	220	3.85
150	100	132	140	265	5.70
250	100	157	212	334	18.0
250	150	160	227	339	19.0

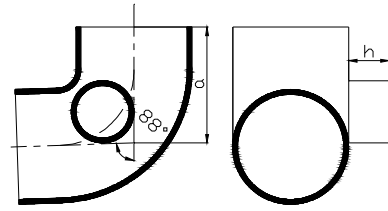


Remark: 15% lower derivation on mass and ±2 degree in angle for fittings are allowed

# Special Fittings

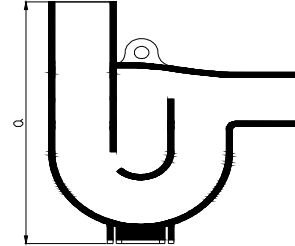
## Vent Bend

DN (mm)	dn (mm)	a (mm)	h (mm)	Mass (kg)
100	50	110	40	2.50



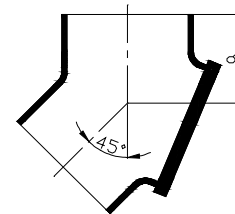
## Anti-siphon P-trap

DN (mm)	a (mm)	Mass (kg)
50	255	5.20
75	350	11.0
100	470	19.8
150	525	34.2



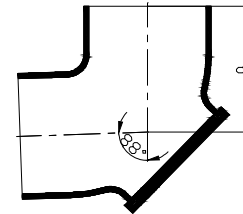
## 45° Bend with Access Door

DN (mm)	a (mm)	Mass (kg)
75	83	1.50
100	75	2.10
150	90	4.45
200	118	7.90
250	145	11.5



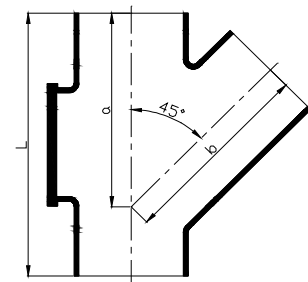
## 88° Bend with Access Door

DN (mm)	a (mm)	Mass (kg)
75	95	1.80
100	110	2.85
150	145	5.90
200	175	9.60
250	258	16.8



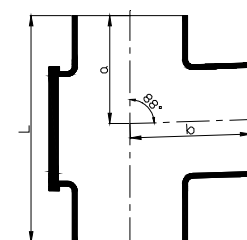
## 45° Inspection Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
75	75	170	170	235	4.00
100	75	198	195	258	4.53
100	100	190	190	258	5.20
150	100	235	228	280	8.17
150	150	265	265	340	10.3



## 88° Inspection Branch

DN (mm)	dn (mm)	a (mm)	b (mm)	L (mm)	Mass (kg)
75	75	90	95	180	2.30
100	100	115	115	220	3.80
150	100	128	158	257	6.53
150	150	147	155	302	8.10
200	150	163	183	330	9.97

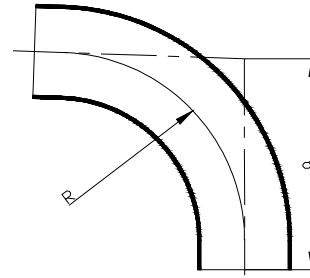


Remark: 15% lower derivation on mass and ±2 degree in angle for fittings are allowed

# Special Fittings

## Long Radius Bend

DN (mm)	a (mm)	R (mm)	Mass (kg)
75	285	250	17.0
100	340	300	25.0
150	400	350	30.0



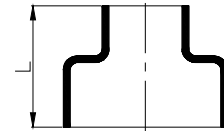
## Plug

DN (mm)	L (mm)	Mass (kg)
50	40	0.30
75	45	0.55
100	50	0.92
150	60	1.75
200	70	2.80
250	80	3.80
300	90	4.50



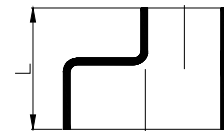
## Reducer (Concentric)

DN (mm)	dn (mm)	L (mm)	Mass (kg)
75	50	90	0.68
100	50	100	1.10
100	75	92	0.94
150	75	105	1.75
150	100	108	1.70
200	100	120	3.10
200	150	125	2.93
250	150	138	5.40
250	200	145	5.40
300	150	156	7.30
300	200	166	7.60
300	250	176	7.50



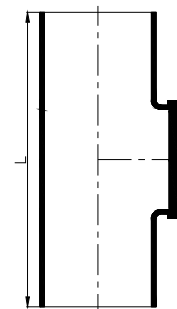
## Reducer (Eccentric)

DN (mm)	dn (mm)	L (mm)	Mass (kg)
75	50	90	0.68
100	50	100	1.10
100	75	92	0.94
150	75	105	1.75
150	100	108	1.70
200	100	120	3.10
200	150	125	2.93
250	150	138	5.40
250	200	145	5.40
300	150	156	7.30
300	200	166	7.60
300	250	176	7.50



## Inspection Short Pipe

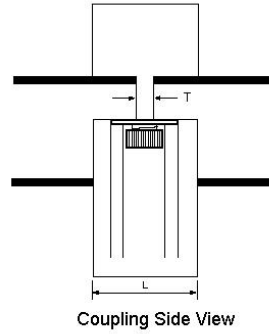
DN (mm)	L (mm)	Mass (kg)
50	250	1.60
75	250	2.50
100	300	4.50
150	300	6.70
200	300	8.00
250	300	8.45
300	300	15.00



# Coupling

## Single Screw Type (for up to DN 200)

DN (mm)	Width of Coupling – L (mm)	Length of Clearance for End to End – T (mm)
40	41	3
50x40	41	3
50	41	3
75	46	3
100	46	4
150	54	4
200	66	4



## Multi screw type (for DN 250 and DN 300)

DN (mm)	Width of Coupling – L (mm)	Length of Clearance for End to End – T (mm)	Number of Bolts
250	140	4	8
300	140	4	8



# Special Coupling

Multi Screw Type (for all size) is also available as per the design requirement of the customer in order.



Multi screw type (two bolts)



Multi screw type (four bolts)

**All couplings are made from Stainless Steel Grade 316 Casing with Grade 304 Fixing Bolt, EPDM Gasket & Build-In Electrical Continuity Clip.**

Remark : The following stainless steel grade for couplings are also available upon request :

1. Stainless Steel Grade 304 Casing with Grade 304 Fixing Bolt.
2. Stainless Steel Grade 316 Casing with Grade 316 Fixing Bolt.

Remark: 15% lower derivation on mass and  $\pm 2$  degree in angle for fittings are allowed