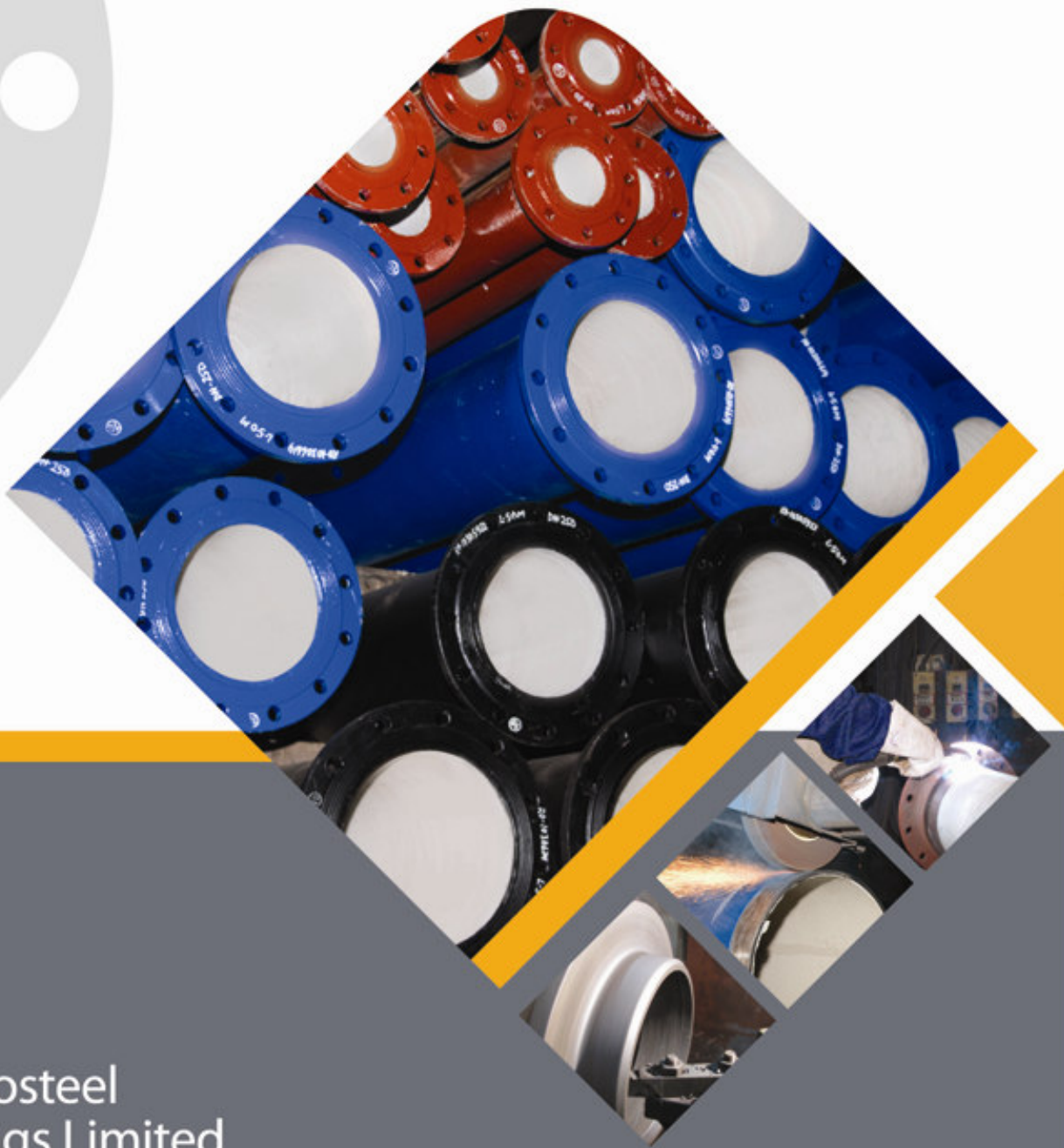


# Ductile Iron Flanged Pipes



Electrosteel  
Castings Limited

# About Electrosteel

Electrosteel is the largest manufacturer of Ductile Iron pipes and fittings in India. With operations spread in Europe, Africa, Middle East Asia, South East Asia and South Asia, Electrosteel caters to a wide variety of requirements and customer segments. It has a modern Plant at Khardah, near Kolkata, in West Bengal for manufacturing Ductile Iron Pipes & Fittings. The plant having its own Blast Furnace and captive power plant employs state-of-the-art technology and management concepts. Electrosteel is backed by a workforce of more than 2000 skilled professionals and a large marketing network.

# Flanged Pipes from Electrosteel

We manufacture Flanged Pipes using all three methods, that is, Welded Flanged Pipes, Screwed Flanged Pipes and Cast Flanged Pipes.



Flanged Pipe type	Diameter Range	Available Pressure Ratings
<b>Welded Flanged Pipes</b>		
Flanges are welded on either side of a barrel pipe	Dia. - 80 to 1000 mm Length - upto 5.4 metres	PN 10, PN 16 ( & PN 25 on request)
<b>Screwed Flanged Pipes</b>		
Flanged are screwed-fit on either side of a barrel pipe.	Dia. - 80 to 300 mm Length - upto 5.4 metres	PN 10
<b>Cast Flanged Pipes</b>		
Cast as a single unit using our advanced Lost Foam method.	Dia. - 80 to 600 mm Length - 0.8, 1.0 & 1.2 metres	PN 10, PN 16, PN25

Note : For product improvement, the dimensions and specification may be changed without prior notice.

# Application

## As Restrained Joint

Flanged Joints are rigid but can act as a restrained joint, reducing the requirement of thrust blocks and external restraining devices.

## Over-ground and Exposed Installations

Ideal for over-ground pipelines and crossovers ( such as on pillars, over a canal or other water bodies, roads, bridges etc.)

## Vertical pipelines

Any vertical pipelines used in treatment plants, pump houses, Elevated / Overhead Service Reservoirs.

## Interconnection and connection for accessories

In Pump house, Water and Sewage Treatment Plants where various units and accessories are inter-connected.

## Temporary Installations

Applications where pipelines need to be disengaged or transferred from one location to the other.

# Please note that Flanged pipes are not meant for underground installation. Due to the risk of excessive bending moments being imposed, it is recommended that flanged pipeline is NOT buried.

# Advantages

Ductile Flanged Pipes made by us have several advantages over other flange pipes available. Some of these are highlighted below:  
**Stronger** : Ductile Iron Flanged Pipes are much stronger due to the higher tensile strength and better impact resistance .

**Higher factor of Safety** : It offers higher factor of safety against pressure fluctuations, water hammer and outside impacts.

**Lighter to use** : DI Flange Pipes are lighter, reducing handling and transportation cost.

**Negligible Breakages in transit and during handling** : Do not break in sudden impacts. Loss due to transportation and handling are minimized.

**Reduced Pumping costs** : Centrifugally Cement Mortar Lined pipes resulting in a smooth inside surface that also reduces friction loss.

**Longer life and Excellent Corrosion Resistance** : Inside cement mortar lining does not allow corrosion of inside surface. The external Zinc/Bitumen coating offers extra protection against external corrosion.

**Better casting process** : Centrifugal casting of Pipe barrel ensures compact casting and eliminates casting defects like blowholes, pinholes, slag inclusion and core displacement.

**Dimensional accuracy & better finish** : Centrifugal casting ensures uniform wall thickness and excellent surface finish. In green sand casting uniform thickness cannot be achieved due to floating, shifting or deformation of the core.

Quality approvals



UK



BSI, KITEMARK



UK



UK



USA



Underwriters Laboratories Inc.

USA



USA

# Coatings and Linings

Electrosteel offer a variety of linings and coatings for use with various types of fluids and for different applications. The most commonly used combinations of corrosion protection with recommended usage are :

Typical Use	Internal Lining	External Coating
Standard product for water transmission	Cement Mortar Lining	Bitumen coating over Zinc coating
Highly Corrosive environment	Cement Mortar Lining	Blue epoxy coating over Zinc coating
Sewerage applications	High Alumina Cement Mortar Lining	Red epoxy coating over Zinc coating

DI DF Pipes are available with Fusion Bonded Epoxy (FBE) coating upto 2.0 mtr. length. Customized coatings and linings can also be developed for special applications.



# Accessories for Flanged Pipes

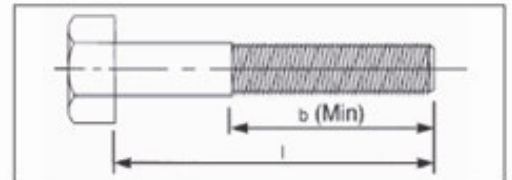
## Gaskets

For Flanged pipe jointing, Flat rubber gaskets as per IS 638 are used. These gaskets are made of synthetic rubber like Styrene Butadiene Rubber ( SBR ) or Ethylene Propylene Diemethyle Monomer (EPDM). Use of poor quality gaskets made of Natural rubber is not recommended.



## Nuts & Bolts for the Joint

Nuts and bolts : Properly galvanized Nuts and bolts made of Mild Steel as per IS 1367 and the Material Grade is 4.6. The bolt Dimension should be as per IS:1364. High Tension bolts may be used where high axial load is anticipated.



# Bolt Dimension

Nom. Dia. (mm)	PN 10		PN 16		PN 25		PN 40	
	No. of bolts.	Bolt size / length / Thread length (mm)	No. of bolts.	Bolt size / length / Thread length (mm)	No. of bolts.	Bolt size / length / Thread length (mm)	No. of bolts.	Bolt size / length / Thread length (mm)
80	4#, 8	M16 x 70/38	8	M16 x 70/38	8	M16 x 70/38	8	M16 x 70/38
100	8	M16 x 70/38	8	M16 x 70/38	8	M20 x 80/46	8	M20x 80/46
125	8	M16 x 70/38	8	M16 x 70/38	8	M24 x 80/54	8	M24x 90/54
150	8	M20 x 80/46	8	M20 x 80/46	8	M24 x 90/54	8	M24x 100/54
200	8	M20 x 80/46	12	M20 x 80/46	12	M24 x 90/54	12	M27x 100/60
250	12	M20 x 80/46	12	M24 x 90/54	12	M27 x 100/60	12	M30x 120/66
300	12	M20 x 90/46	12	M24 x 90/54	16	M27 x 100/60	16	M30x 130/72
350	16	M20 x 90/46	16	M24 x 90/54	16	M30 x 110/66	16	M33x 140/78*
400	16	M24 x 90/54	16	M27x100/60	16	M33 x 120/78	16	M36x150/84*
450	20	M24 x 90/54	20	M27x 100/60	20	M33 x 120/78	20	M36x150/84*
500	20	M24 x 100/54	20	M30 x 110/66	20	M33 x 120/78	20	M39x160/90*
600	20	M27 x 100/60	20	M33 x 120/78	20	M36 x 140/84	20	M45x180/102*
700	24	M27 x 110/60	24	M33 x 130/78	24	M39 x 150/90	-	-
750	24	M27 x 110/60	24	M33 x 130/78	24	M39 x 160/90	-	-
800	24	M30 x 120/66	24	M36 x 140/84	24	M45 x 180/102	-	-
900	28	M30 x 120/66	28	M36 x 150/84	28	M45 x 180/102	-	-
1000	28	M33 x 130/78	28	M39x 160/103	28	M52 x 200/116	-	-



INDIA



GERMANY



FRANCE



ISO : 9001-14001

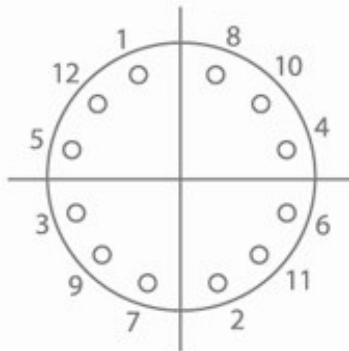


MALAYSIA



PSB Singapore SINGAPORE

# Jointing Procedure



Bolt Tightening sequence

## Jointing Procedure for DI Flange Pipes:

- Clean the faces of the flanges.
- Inspect the gasket for any damage or manufacturing defect.
- Align the pipes properly and position the gasket between the flanges.
- Put the bolts into the flange holes one by one maintaining the alignment.
- Keep the gap between the flanges approximately uniform while tightening.
- Tighten four location bolts in order to roughly secure the adjoining flange.
- Bolts to be tightened in the correct sequence and to the appropriate torque.
- Tighten nuts to finger tight.
- Check alignment of flange faces and gasket.
- Insert remaining bolts and tighten nuts to finger tight.
- Finish with one final pass by providing torque in a clockwise direction.
- Tighten to 100% of estimated torque using the same sequence.

# Prescribed Torque for Tightening

Summary of Minimum Tightening Torque for Flanged joints

DN	PN 10			PN 16			PN 25			PN 40		
	Bolt size M	No. of Bolts	Tight. Torque N.m	Bolt size M	No. of Bolts	Tight. Torque N.m	Bolt size M	No. of Bolts	Tight. Torque N.m	Bolt size M	No. of Bolts	Tight. Torque N.m
80	16	8	7.8	16	8	7.8	16	8	16.6	16	8	16.6
100	16	8	11.9	16	8	11.9	20	8	20.5	20	8	31.1
125	16	8	18.5	16	8	18.5	24	8	37.9	24	8	57.4
150	20	8	32.7	20	8	32.7	24	8	54.4	24	8	82.4
200	20	8	39.4	20	12	38.6	24	12	64.3	27	12	110.6
250	20	12	40.7	24	12	71.2	27	12	113.4	30	12	188.8
300	20	12	58.4	24	12	102.2	27	16	121.9	30	16	203.0
350	20	16	59.4	24	16	103.8	30	16	181.7	33	16	300.2
400	24	16	91.6	27	16	153.0	33	16	257.1	36	16	428.3
450	24	20	92.2	27	20	154.1	33	20	258.9	36	20	431.2
500	24	20	113.7	30	20	209.0	33	20	319.2	39	20	580.0
600	27	20	185.8	33	20	327.9	36	20	504.9	45	20	950.0
700	27	24	209.4	33	24	369.5	39	24	620.8			
750	27	24	240.3	33	24	424.1	39	24	712.4			
800	30	24	300.8	36	24	530.9	45	24	923.4			
900	30	28	325.6	36	28	574.6	45	28	999.5			
1000	33	28	437.8	39	28	772.6	52	28	1427.1			

## Precautions during installation of Flanged pipes

- Flanged pipes are mainly for overground installation. Buried installation of flanged pipe is not recommended.
- Flanged joint being a rigid joint, perfect alignment of the flange faces during jointing and bolt tightening is absolutely vital.
- Use of duckfoot bend at bottom of vertical flange pipe line is necessary
- For high pressure application, even flanged pipeline (both horizontal and vertical) needs thrust block / support at bends/tees.
- Flange pipe laying from one side; if from both sides, put flex. Coupling or MJC, in between & avoid pulling the flanged pipes flanges from both ends.



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