

Product Portfolio

Tata Metaliks is committed to exceed customers' expectations in product quality, supply and service. The company manufactures ductile iron pipes conforming to widely accepted certifications:

Certification Criterion	Coverage	Certifying Authority
Product Certificate	Certificate of Conformity EN 545:2010; ISO 2531:2009	Bureau Veritas Certification
Product Certificate	Certificate of Conformity EN 598:2007 + A1:2009 ISO 7186:2011	Bureau Veritas Certification
Product Certificate	BIS Standard Mark: IS 8329:2000	Bureau of Indian Standards
Product Certificate	Kite Mark Certificate for BS EN 545	BSI Assurance UK Limited
Product Certificate	Kite Mark Certificate for BS ISO 2531	BSI Assurance UK Limited
Product Certificate	ZIK: Certificate of Constancy of Performance	Quality Superintending Company Ltd. ZAVOD ZA ISPITIVANJE KVALITETE
System Certificate	Quality Management System ISO 9001:2008	Indian Register Quality Systems
System Certificate	Environment Management System ISO 14001:2004	Indian Register Quality Systems
System Certificate	Occupational Health & Safety Assessment Series OHSAS 18001:2007	Indian Register Quality Systems
System Certificate	Certificate of Accreditation for Quality Control Laboratory in accordance with ISO/IEC17025:2005	National Accreditation Board for Testing and Laboratories Calibration (NABL)
Potability Certificate	Concrete, Cement and Mortar - Pressure Pipes	Water Regulations Advisory Scheme (WRAS) England
Potability Certificate	Coating, Paints & Lining	Water Regulations Advisory Scheme (WRAS) England
Potability Certificate	CML Water	TUV South Asia
Award for Excellence	Award for Export Excellence	Export Promotion Council

Table below showing pressure test, thickness class etc.

Thickness Class					Pressure Class		
DN (mm)	Nominal Wall Thickness (e) in mm	Allowable Maximum Operating Pressure including Surge (MOP) in MPa	Nominal Wall Thickness (e) in mm	Allowable Maximum Operating Pressure including Surge (MOP) in MPa	Preferred Class	Nominal Wall Thickness (e) in mm	Allowable Operating Pressure in MPa
	K7		K9		C Class		
80	5.0	1.25	6.0	7.7	C40	4.4	4.0
100	5.0	1.25	6.0	7.7	C40	4.4	4.0
125	5.0	1.25	6.0	7.7	C40	4.5	4.0
150	5.0	1.25	6.0	7.7	C40	4.5	4.0
200	5.0	1.25	6.3	7.4	C40	4.7	4.0
250	5.3	1.25	6.8	6.5	C40	5.5	4.0
300	5.6	1.25	7.2	5.9	C40	6.2	3.0
350	6.0	1.25	7.7	5.4	C30	6.3	3.0
400	6.3	1.25	8.1	5.1	C30	6.5	3.0
450	6.6	1.25	8.6	4.8	C30	6.9	3.0
500	7.0	1.25	9.0	4.6	C30	7.5	3.0
600	7.7	1.25	9.9	4.3	C30	8.7	3.0
700	9.0	1.25	10.8	4.1	C25	8.8	2.5
750	9.7	1.25	11.3	3.9	-	-	-
800	10.4	1.50	11.7	3.8	C25	9.6	2.5

Table below showing nominal diameter, class and standard length

Nominal Diameter	Class	Standard Length (m)
80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800	K7, K9 C40/30/25	5.5, 5.4



Thickness Chart

Rule - Follow this chart for inspection of thickness

Thickness requirements per IS 8329		EN598:2007+A1: 2009		Thickness (mm) requirements per ISO 2531:2009 & EN 545:2010																		
Thickness K9		Thickness K7		Thickness		Note: 1) Table 17 of EN545:2010 shows the minimum wall thickness. Nominal thickness is not given. 2) Table C.1 of ISO2534:2009 shows the Nominal wall thickness. Minimum wall thickness is shown in Table D.1~D.7. 3) Wherever there is a difference, the thickness of EN545:2010 is shown within brackets.																
						Nom.	Min.	Nom.	Min.	Min.	Nom.	C20		C25		C30		C40		C50		C64
(mm)	(mm)		(mm)		(mm)		Nom.	Min.	Nom.	Min.	Nom.	Min.	Nom.	Min.	Nom.	Min.	Nom.	Min.	Nom.	Min.	Nom.	Min.
80	6.0	4.7	5.0	3.7	3.5	4.8	--	--	--	--	--	--	4.4	3.0	4.4	3.0 (3.5)	4.4	3.0 (4.0)	4.8	3.4 (4.7)		
100	6.0	4.7	5.0	3.7	3.5	4.8	--	--	--	--	--	--	4.4	3.0	4.4	3.0 (3.5)	4.4	3.0 (4.0)	5.5	4.1 (4.7)		
125	6.0	4.7	5.0	3.7	--	--	--	--	--	--	--	--	4.5	3.0	--	--	--	--	--	--		
150	6.0	4.7	5.0	3.7	3.5	4.8	--	--	--	--	--	--	4.5	3.0	4.5	3.0 (3.5)	5.3	3.8 (4.0)	7.4	5.9		
200	6.3	4.8	5.0	3.7	3.6	4.9	--	--	--	--	--	--	4.7	3.2 (3.1)	5.4	3.9	6.5	5.0	9.2	7.7		
250	6.8	5.3	5.3	4.0	3.7	5.3	--	--	--	--	--	--	5.5	3.9	6.4	4.8	7.8	6.2 (6.1)	11.1	9.5		
300	7.2	5.6	5.6	4.3	4.0	5.6	--	--	--	--	5.1	3.5	6.2	4.6	7.4	5.8 (5.7)	8.9	7.3	12.9	11.3 (11.2)		
350	7.7	6.1	6.0	4.7	4.3	6.0	--	--	5.1	3.4	6.3	4.6 (4.7)	7.1	5.4 (5.3)	8.4	6.7 (6.6)	10.2	8.5	14.8	13.1 (13.0)		
400	8.1	6.4	6.3	4.6	4.6	6.3	--	--	5.5	3.8	6.5	4.8	7.8	6.1 (6.0)	9.3	7.6 (7.5)	11.3	9.6	16.5	14.8		
450	8.6	6.9	6.6	4.9	4.9	6.7	--	--	6.1	4.3	6.9	5.1	8.6	6.8	10.3	8.5 (8.4)	12.6	10.8 (10.7)	18.4	16.6		
500	9.0	7.2	7.0	5.2	5.2	7.0	--	--	6.5	4.7	7.5	5.7 (5.6)	9.3	7.5	11.2	9.4 (9.3)	13.7	11.9	20.2	18.4 (18.3)		
600	9.9	8.0	7.7	5.8	5.8	7.7	--	--	7.6	5.7	8.7	6.8 (6.7)	10.9	9.0 (8.9)	13.1	11.2 (11.1)	16.1	14.2	23.8	21.9		
700	10.8	8.8	9.0	7.0	7.6	9.6	7.3	5.3	8.8	6.8	9.9	7.9 (7.8)	12.4	10.4	15.0	13.0	18.5	16.5	28	26		
750	11.3	9.3	9.7	7.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
800	11.7	9.6	10.4	8.3	8.3	10.4	8.1	6.0	9.6	7.5	11.1	9.0 (8.9)	14.0	11.9	16.9	14.8	21.0	18.9 (18.8)	--	--		

Preferred Class:

DN 80 to 300 : Class 40
 DN 350 to 600 : Class 30
 DN 700 to 800 : Class 25



Related Products & Variations

COATINGS

INTERNAL COATINGS:

Tata Ductura DI Pipes are internally lined with cement mortar.

The types of cement used are:

- Ordinary portland cement (with or without additives)
- Portland slag cement
- Blast furnace slag cement
- Sulphate-resistant cement
- High alumina content cement
- Cement mortar with seal coat

ADVANTAGES OF CEMENT MORTAR LINING:

Cement mortar protects the internal pipe wall from corrosion by alkaline reaction of cement. It also prevents pitting and tuberculation. Tata Ductura's cement mortar lining is smooth and helps maintain stable flow area and coefficient of friction over a long period of time. It also helps to control leaching of cement into water.

EXTERNAL COATINGS:

To protect the pipe against corrosion and increase durability the pipes are externally coated with Zinc and finished with a coat of bituminous paint or synthetic resin (Epoxy) coating. In special cases, pipes are coated with zinc alloy, which acts as sacrificial corrosion, thereby delaying the corrosion of iron-based material.

POLYETHYLENE SLEEVING:

Encasement of DI Pipes in loose polyethylene sleeves is an effective protection mechanism in corrosive environments. The dielectric capability of the polyethylene sleeve works as a shield between the DI Pipes and the field.



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TOTAL PIPELINE SOLUTIONS

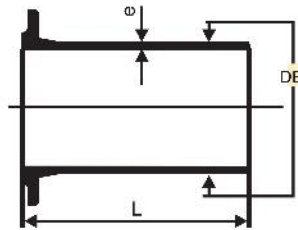
Fittings



Fittings

'KEJRIWAL' Flanged and Socketted Ductile Iron Fittings for Pressure Pipes

Ductile Iron pressure pipe fittings are suitable for use with Ductile Iron pressure pipes having Socket or Flanged ends.



- As per BS-EN-545 / ISO-2531, Tees are K-14 only.
- $e = K(0.5 + 0.001 \text{ DN})$

TABLE - 9

Dimensions of Fittings for Push-on-Joint and Mechanical Joint

Nominal Diameter DN	External Diameter DE		Wall Thickness, e mm		
	Nominal	Tolerance	K12	K14	Tolerance
(1)	(2)	(3)	(4)	(5)	(6)
80	98	+1/-2.7	7.0	8.1	-2.38
100	118	+1/-2.8	7.2	8.4	-2.40
125	144	+1/-2.8	7.5	8.7	-2.42
150	170	+1/-2.9	7.8	9.1	-2.45
200	222	+1/-3.0	8.4	9.5	-2.50
250	274	+1/-3.1	9.0	10.5	-2.55
300	326	+1/-3.3	9.6	11.2	-2.60
350	378	+1/-3.4	10.2	11.9	-2.65
400	429	+1/-3.5	10.8	12.6	-2.70
450	480	+1/-3.6	11.4	13.3	-2.75
500	532	+1/-3.8	12.0	14.0	-2.80
600	635	+1/-4.0	13.2	15.4	-2.90
700	738	+1/-4.3	14.4	16.8	-3.0
750	790	+1/-4.4	15.0	17.5	-3.05
800	842	+1/-4.5	15.6	18.2	-3.10
900	945	+1/-4.8	16.8	19.6	-3.20
1000	1048	+1/-5.0	18.0	21.0	-3.30
1100	1152	+1/-5.4	19.2	21.4	-3.40
1200	1255	+1/-5.8	20.4	23.8	-3.50
1400	1462	+1/-6.6	22.8	26.6	-3.70
1500	1565	+1/-7.0	24.0	28.0	-3.80
1600	1668	+1/-7.4	25.2	29.0	-3.90
1800	1875	+1/-8.2	27.6	32.2	-4.10
2000	2082	+1/-9.0	30.0	35.0	-4.30
2200	2288	+1/-9.3	32.4	37.8	-4.50

All fittings are of **K-12 Class** except Tees which are available in both **K-12 & K-14 Class**

A. Zinc Coating :

Zinc Rich Paint or metallic zinc wire for metallising / spraying should have at least 99% zinc by mass & min. 85% zinc in dry film.

Zinc metallising = Average min. mass 130 gm/m² (local min. 110 gm/m²)

Zinc Rich Paint = Average min. mass 150 gm/m² (local min. 130 gm/m²)

Conversion

gm/m ²	Microns (Approx.)
110	15.4
130	18.2
150	21.0

B. Bitumin Coating :

Local thickness min. 50 μm & mean thickness 70 μm & to withstand 0°C to 65°C temperature.

C. Cement Mortar Lining (CML) :

Cement to Sand Ratio should be min. **1 : 3.5**

Size	CML Thickness (mm)	Tolerance
80 to 300	4 mm	-1.5
350 to 600	5 mm	-2.0
700 to 1200	6 mm	-2.5
1400 to 2000	9 mm	-3.0

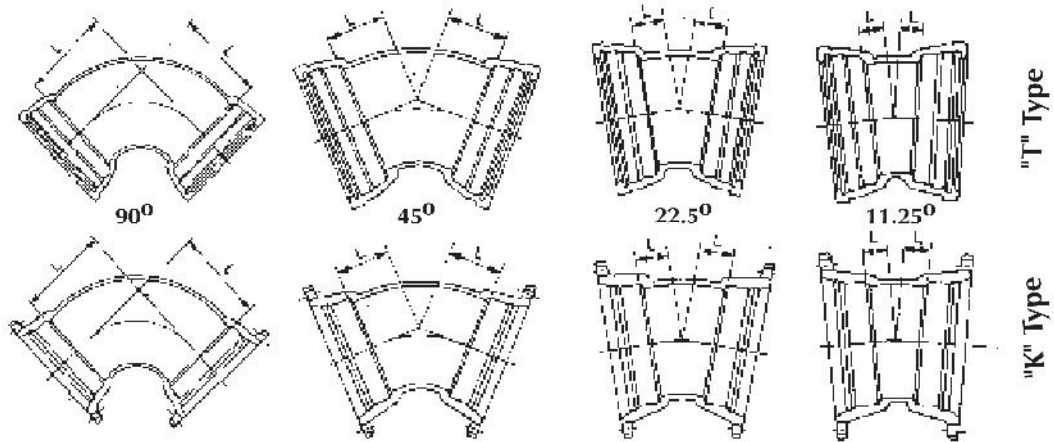
D. Seal Coat :

A seal coat of Bitumen or any other epoxy paint may be given on CML to minimize lime leaching if required specifically.



Fittings

'KEJRIWAL' Double Socket Bends



K - 12

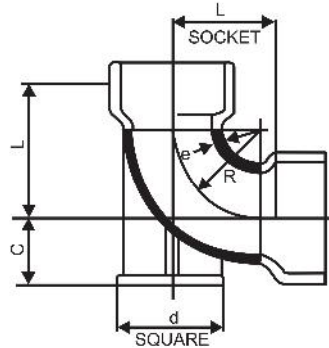
TABLE - 18

Nominal Size	e	90°		45°		22.5°		11.25°	
		L	App Mass	L	App Mass	L	App Mass	L	App Mass
80	7	100	8	55	8	40	7	30	7
100	7.2	120	10	65	9	40	9	30	8
125	7.5	145	15	75	13	50	12	35	11
150	7.8	170	18	85	14	55	13	35	12
200	8.4	220	29	110	24	65	20	40	19
250	9	270	44	130	33	75	28	50	26
300	9.6	320	60	150	47	85	40	55	35
350	10.2	370	85	175	61	95	50	60	40
400	10.8	420	110	195	80	110	62	65	54
450	11.4	470	148	220	104	120	80	70	74
500	12	520	180	240	128	130	102	75	88
600	13.2	620	280	285	198	150	150	85	130
700	14.4	720	405	330	270	175	205	95	170
750	15	770	480	350	330	185	255	100	200
800	15.6	820	550	370	370	195	285	110	234
900	16.8	920	720	415	480	205	350	115	290
1000	18	1020	960	460	640	210	450	120	360
1100	19.2	1130	1350	505	920	220	600	120	530
1200	20.4	1230	1660	550	1120	240	760	130	600
1400	22.8	1430	2430	515	1450	260	1000	130	820
1500	24	1530	3000	540	1750	270	1350	135	1050
1600	25.2	1630	3380	565	1950	280	1600	140	1250
1800	27.6	1830	4400	610	2300	305	1900	155	1390
2000	30.0	--	5500	--	2760	--	2280	--	1600
2200	32.0	--	--	--	--	--	--	--	--



Fittings

'KEJRIWAL' Double Socket Duckfoot 90° Bend



K - 12

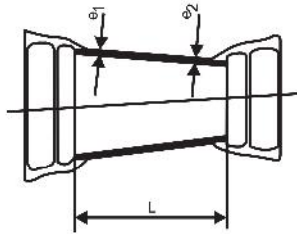
TABLE - 19

Nominal Size	e	L	c	d	App. Mass (kg)
80	7	110	110	180	13
100	7.2	130	125	200	16
125	7.5	155	140	225	22
150	7.8	180	160	250	29
200	8.4	230	190	300	47
250	9	280	225	350	70
300	9.6	325	255	400	100
350	10.2	380	290	450	135
400	10.8	430	320	500	180
450	11.4	480	355	550	230
500	12	530	385	600	290
600	13.2	630	450	700	440
700	14.4	735	515	800	620
750	15	790	545	850	730
800	15.6	830	580	900	840
900	16.8	930	645	1000	1110
1000	18	1035	710	1100	1460
1100	19.2	1130	775	1200	1880
1200	20.4	1230	840	1300	2300
1400	22.8	1430	970	1500	3590
1500	24	1530	1040	1600	4400
1600	25.2	1630	1100	1700	4900
1800	27.6	1830	1230	1900	6800

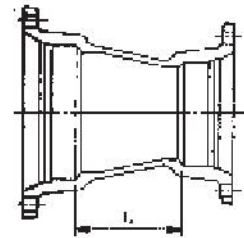


Fittings

'KEJRIWAL' Double Socket Concentric Tapers



"T" TYPE



"K" TYPE

K - 12

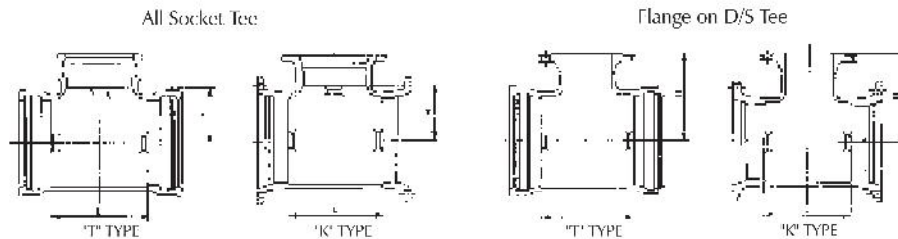
TABLE - 20

Nominal Diameter		e_1	e_2	L	App. Mass (kg)
Larger End	Smaller End				
100	80	7.2	7.0	90	8
125	80	7.5	7.0	140	11
125	100	7.5	7.2	100	11
150	80	7.8	7.0	190	12
150	100	7.8	7.2	150	13
150	125	7.8	7.5	100	14
200	100	8.4	7.2	250	19
200	125	8.4	7.5	200	21
200	150	8.4	7.8	150	21
250	125	9.0	7.5	300	28
250	150	9.0	7.8	250	27
250	200	9.0	8.4	150	26
300	150	9.6	7.8	350	37
300	200	9.6	8.4	250	36
300	250	9.6	9.0	150	34
350	200	10.2	8.4	360	48
350	250	10.2	9.0	260	47
350	300	10.2	9.6	160	46
400	200	10.8	8.4	360	68
400	250	10.8	9.0	360	60
400	300	10.8	9.6	260	59
400	350	10.8	10.2	160	50
450	250	11.4	9.0	260	72
450	300	11.4	9.6	260	74
450	350	11.4	10.2	260	68
450	400	11.4	10.8	160	62



Fittings

'KEJRIWAL' All Socket Tees, Flange on Double Socket Tees



K - 12

TABLE - 21

Nominal Diameter		e	e ₁	L	H		App. Mass (kg)			
DN Body	dn Branch				D/S	B/F	All Socket	D/S B/F		All Socket
								PN 10	PN 16	
80	80	7.0	7.0	170	165	85	13	13	11	
100	80	7.2	7.0	170	175	95	15	15	13	
100	100	7.2	7.2	190	180	95	16	17	14	
125	80	7.5	7.0	170	190	105	18	18	17	
125	100	7.5	7.2	195	195	110	19	20	18	
125	125	7.5	7.5	225	200	110	21	22	20	
150	80	7.8	7.0	170	205	120	21	21	19	
150	100	7.8	7.2	195	210	120	22	23	20	
150	150	7.8	7.8	255	220	125	27	28	23	
200	80	8.4	7.0	175	235	145	28	28	26	
200	100	8.4	7.2	200	240	145	30	31	28	
200	150	8.4	7.8	255	250	150	36	37	32	
200	200	8.4	8.4	315	260	155	42	44	39	
250	80	9.0	7.0	180	265	170	36	36	35	
250	100	9.0	7.2	200	270	170	38	39	37	
250	150	9.0	7.8	260	280	175	44	46	40	
250	200	9.0	8.4	315	290	180	52	54	48	
250	250	9.0	9.0	375	300	190	60	62	54	
300	80	9.6	7.0	180	295	220	48	48	44	
300	100	9.6	7.2	210	300	220	50	51	45	
300	150	9.6	7.8	260	310	220	56	57	54	
300	200	9.6	8.4	325	320	220	63	65	60	
300	250	9.6	9.0	380	330	220	74	76	68	
300	300	9.6	9.6	440	340	220	80	89	74	
350	80	10.2	7.0	185	325	260	58	58	55	
350	100	10.2	7.2	205	330	260	59	60	56	
350	150	10.2	7.8	265	340	265	70	71	64	
350	200	10.2	8.4	325	350	270	75	77	70	
350	250	10.2	9.0	380	360	280	90	92	85	
350	300	10.2	9.6	440	370	285	100	105	95	
350	350	10.2	10.2	495	380	290	110	115	100	
400	80	10.8	7.0	185	355	285	70	70	73	
400	100	10.8	7.2	210	360	285	71	72	72	
400	150	10.8	7.8	270	370	290	80	86	90	
400	200	10.8	8.4	325	380	295	92	94	92	
400	250	10.8	9.0	385	390	305	103	105	100	
400	300	10.8	9.6	440	400	310	114	116	110	
400	400	10.8	10.8	560	420	320	145	150	130	

NOTE : Also available in K-14 as per ISO-2531/BS-EN-545

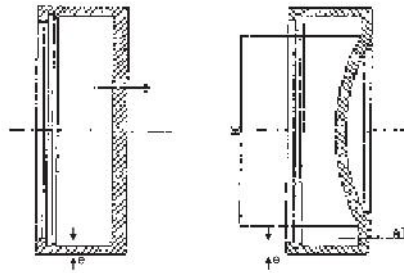
Fittings

'KEJRIWAL' Caps



80 to 300 mm dia

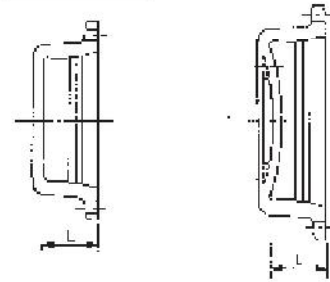
350 to 1200 mm dia



"T" TYPE

80 to 300 mm dia

350 to 1200 mm dia



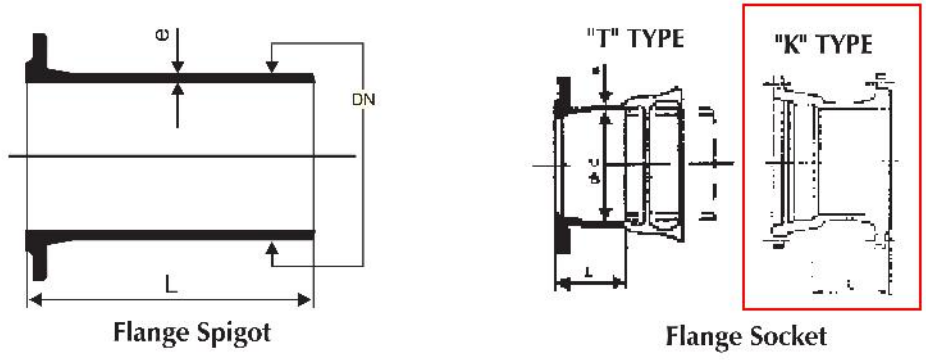
"K" TYPE

K - 12

TABLE - 24

Nominal Diameter DN	e	e ₁	L	App. Mass (Kg)
80	7	9.5	80	4
100	7.2	10.5	80	5
150	7.8	12.5	90	9
200	8.4	13.5	90	16
250	9	14.5	90	19
300	9.6	15.5	110	30
350	10.2	16.5	110	46
400	10.8	17.5	110	60
450	11.4	19	110	76
500	12	20	110	91
600	13.2	21	110	127
700	14.4	23	120	175
750	15	24	120	202
800	15.6	25	120	227
900	16.8	27	120	295
1000	18	28	130	379
1100	19.2	30	130	466
1200	20.4	32	130	567

NOTE : Size & Dimensions in **RED** are non standard as per IS-9523 : 2000.



K - 12

TABLE - 28

Nominal Dia (DN)	DN	e	Flange Spigot			Flange Socket		
			App. Mass (kg)			App. Mass (kg)		
			L	PN 10	PN 16	L	PN 10	PN 16
80	98	7	350	8	8	130	8	8
100	118	7.2	360	10	10	130	9	9
125	144	7.5	370	13	13	135	12	12
150	170	7.8	380	16	16	135	14	14
200	222	8.4	400	23	23	140	20	20
250	274	9	420	32	33	145	26	27
300	326	9.6	440	41	42	150	34	35
350	378	10.2	460	53	56	155	44	47
400	429	10.8	480	65	71	160	54	60
450	480	11.4	500	80	90	165	60	70
500	532	12	520	96	110	170	72	87
600	635	13.2	560	135	155	180	105	125
700	738	14.4	600	180	200	190	148	168
750	790	15	600	210	230	195	180	200
800	842	15.6	600	228	249	200	200	220
900	945	16.8	600	280	300	210	250	275
1000	1048	18	600	340	375	220	320	360
1100	1152	19.2	600	402	437	230	420	460
1200	1255	20.4	600	470	530	240	464	570
1400	1462	22.8	710	690	750	310	760	770
1500	1565	24.0	745	815	910	320	880	910
1600	1668	25.2	780	955	1045	330	1000	1040
1800	1875	27.6	850	1240	1350	350	1250	1220

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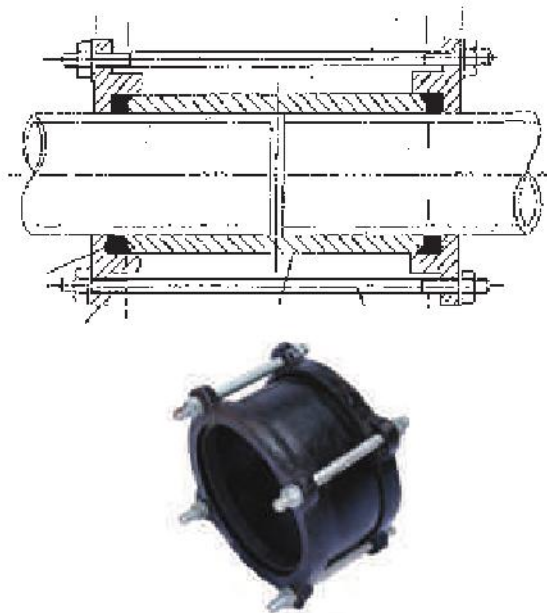


Kejriwal
CASTINGS LIMITED
TOTAL PIPELINE SOLUTIONS

Special



MECHANICAL COUPLING



End Connection

To join two similar plain ends only.

Use

- i) With CI & DI pipes
- ii) can be manufactured specially to suit all other kinds of pipes such as AC, PVC, uPVC, MS, SS etc.

Working

Tightening of bolts draws the two flanges together compressing the sealing ring in the recess between sleeve and flanges on to the pipe thus effecting a leak tight joint.

Size 80mm to 1800mm NB.

Material Used Ductile Iron

Advantages

It can absorb limited expansion, contraction, ground movement and long radius curves.

End Connection

To join one plain end and other flanged end only.

Use

- i) with CI & DI pipes
- ii) can be manufactured specially to suit all other kinds of pipes such as AC, PVC, uPVC, MS, SS etc.

Working

Tightening of bolts draws compression flange towards spigot end of flanged barrel thereby compressing the sealing rubber ring in the recess between compression flange and the spigot end of flange barrel effecting a leak tight joint.

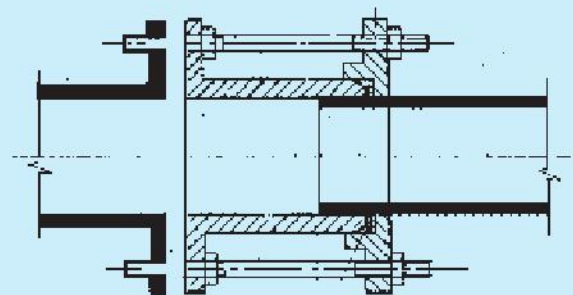
Size 80mm to 1800mm NB.

Material Used Ductile Iron

Advantages

It can absorb limited expansion, contraction, ground movement and long radius curves.

FLANGED MECHANICAL ADAPTERS



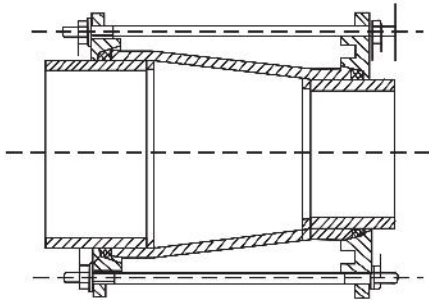


Specials

'KEJRIWAL' Ductile Iron Specialised Mechanical Products



REDUCING MECHANICAL COUPLING



End Connection

To join two dis-similar plain ends having different outside diameters.

Use

with CI, DI, AC, PVC, uPVC, MS, S.S, etc virtually all kinds of rigid pipes.

Working

Tightening of bolts draws the two flanges together compressing the seal ring in the recess between sleeve and flanges on to the pipe thus effecting a leak tight joint.

Size 80mm to 1800mm NB.

Material Used Ductile Iron

Advantages

It can absorb limited expansion, contraction, ground movement and long radius curves.

End Connection

To join two flanged end.

Use

- i) with all kinds of pipes but having flanged ends.
- ii) can be manufactured specially to suit all other kinds of pipes such as AC, PVC, uPVC, MS, SS etc.

Working

A flanged spigot of same nominal bore as that of adjoining pipeline slides inside a flanged spigot barrel of higher diameter to create space in the pipeline upto a maximum of 0 to 100 mm.

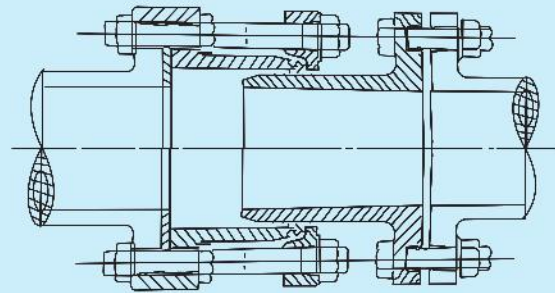
Size 80mm to 1800mm NB.

Material Used Ductile Iron

Advantages

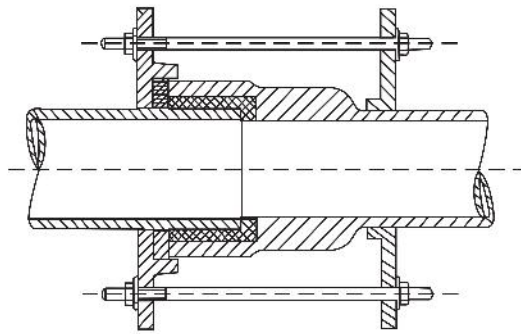
- i) to create gaps/space in flanged pipeline.
- ii) to fill up/adjust gaps/space in flanged pipelines
- iii) can absorb limited vibration/expansion contraction

ADJUSTABLE DISMANTLE JOINTS





SOCKET LEAK REPAIR JOINT CLAMPS



End Connection

To seal the leaking socket joints/ends of pipes having Tyton Rubber Ring Joints or lead caulked Joints.

Use

CI DI socket end pipes (Lead or Tyton Rubber Joints)

Working

Compression Ring, Clamp and Rubber rings are supplied in two parts to be joined with nut bolt and J-hook. The compression Ring is pulled towards socket thereby sealing the gap inbetween the socket and Compression Ring with the help of rubber ring on to the pipe.

Size 80mm to 1800mm

Material Used Ductile Iron

Advantages

Leaking socket ends on Running pipeline can be repaired by digging trenches only near the socket ends.

End Connection

Double flanged end.

Use

To be used as an automatic expansion/contraction absorbing joints between flanged end connections. It can be used on all Rigid pipes like CI, DI, MS, PVC, uPVC, SS but with flanged ends.

Working

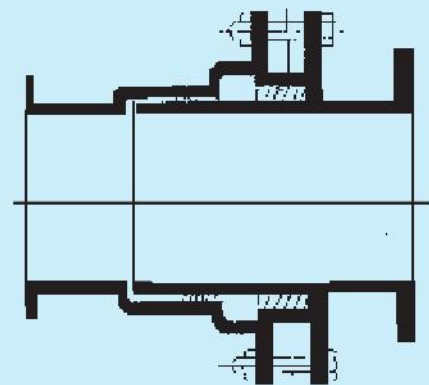
Size 80mm to 1800mm

Material Used Ductile Iron

Advantages

Automatically absorbs expansion/contraction in pipeline thereby prolonging the lifespan of pipeline and reducing chances of bending / zig zag lines.

EXPANSION JOINTS





Specials

'KEJRIWAL' Ductile Iron Specialised Mechanical Products

End Connection

For branch connection of screwed end in small dia of 15 to 65 mm.

Use On C.I./D.I./M.S./U.P.V./P.V.C/A.C/S.S Pipe etc.

Working

Saddle piece is supplied in two parts bolted together. The bottom half has rubber pad for support only. The top half has screwed outlet at the top. It's base has a round flat rubber gasket pasted with a hole drilled in the centre, to seal the opening. This top half sits on the drilled hole of equal diameter on main pipe. When the end flange nut bolts are tightened the pasted rubber pad tightens towards the main pipes barrel O.D. to seal the opening.

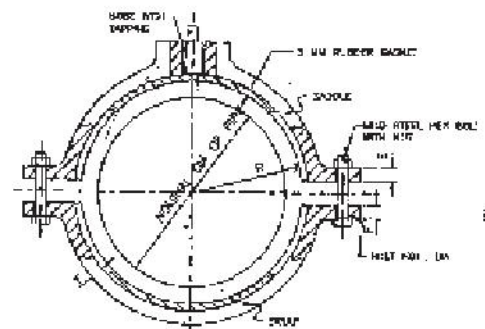
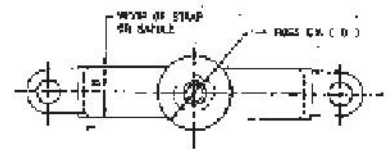
Size Main Pipes : 50 mm to 2000 mm dia
Outlet (Screwed) : 15 mm to 65 mm dia

Material Used Ductile Iron / M.S. Zinc metallised / Stainless Steel

Advantages

A threaded branch connection for fitting an air valve, pressure gauge, meters or branch pipe connection can be taken out from an existing, laid out pipe line without disturbing the main pipe line. A hole of required diameter is drilled by portable drill at site on the pipe & the Saddle piece simply sits on the hole & end nut bolts tightend.

SADDLE PIECES - SCREWED END



End Connection

For branch connection of flanged end in dia of 25 to 200 mm

Use On C.I./D.I./M.S./U.P.V./P.V.C/A.C/S.S Pipe etc.

Working

Saddle piece is supplied in two parts bolted together. The bottom half has rubber pad for support only. The top half has flanged outlet at the top. It's base has a round flat rubber gasket pasted with a hole drilled in the centre, to seal the opening. This top half sits on the drilled hole of equal diameter on main pipe. When the end flange nut bolts are tightened the pasted rubber pad tightens towards the main pipe barrel O.D to seal the opening.

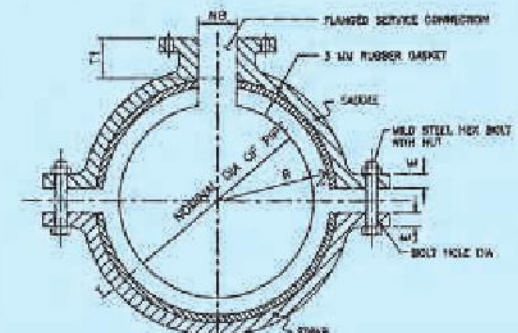
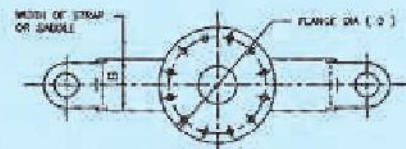
Size Main Pipes : 50 mm to 2000 mm dia
Outlet (Flanged) : 25 mm to 200 mm dia

Material Used Ductile Iron/M.S. Zinc metallised/Stainless Steel.

Advantages

A flanged branch connection for fitting an air valve, pressure gauge, meters or branch pipe connection can be taken out from an existing, laid out pipe line without disturbing the main pipe line. A hole of required diameter is drilled by portable drill at site on the pipe & the Saddle piece simply sits on the hole & end nut bolts tightened.

SADDLE PIECES - FLANGED END





End Connection

To seal small leakages / cracks on pipe body.

Use

CI / DI / MS / AC / PVC / UPVC / SS etc. i.e. Virtually all kinds of Rigid Pipes.

Working

The patch clamp consists of two halves. One half contains three straight patches of rubber for support. The other half contains a rubber pad with a recessed centre to cover the pipe body crack/leak. Tightening the end flange nut bolt tightens the rubber pad on to the crack/leak portion thereby sealing the leak.

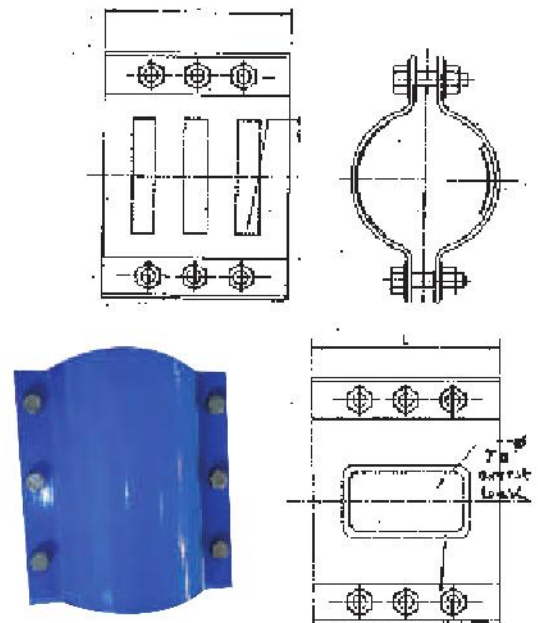
Size 50 mm dia to 2000 mm dia

Material Used Ductile Iron / M.S / S.S

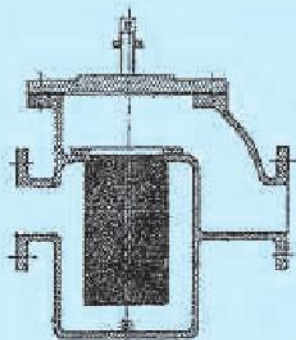
Advantages

Can be used to seal small longitudinal/circumferential cracks/leakages on a running/in use pipeline to arrest leak.

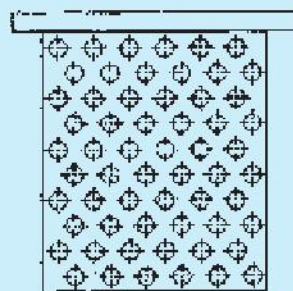
PIPE BODY PATCH CLAMP



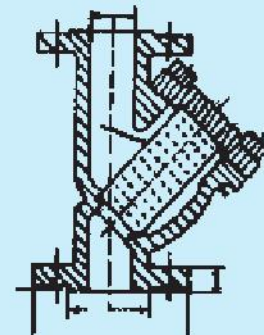
STRAINER



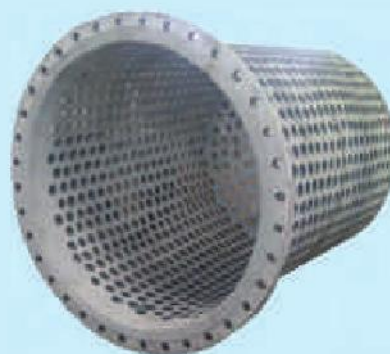
POT STRAINER



BUCKET STRAINER



Y TYPE STRAINER



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Kejriwal
CASTINGS LIMITED

TOTAL PIPELINE SOLUTIONS

Coatings & Linings





Coatings & Linings

EXTERNAL COATINGS

Kejriwal products are available with multi coating options namely :

- **Bituminous Paint & Zinc Primer/Zinc Metallisation**
- **Epoxy Painting**
- **Fusion Bonded Epoxy Powder Coating**
- **Rilsan Coating**
- **Poly Urethane Coating**

Bituminous Paint & Zinc Primer/Zinc Metallisation

As a normal course, all fittings are spray painted with a coat of zinc rich primer/zinc sprayed/metallised and black bituminous paint.

Epoxy Painting

Epoxy spray painting can be done on all items viz. Pipes, Fittings, Valves for superior finish and excellent corrosion resistance against sea water and others.

Fusion Bonded Epoxy Powder Coating (F.B.E.)

Electrostatic fusion bonded epoxy powder coating can be done on all items viz. Pipes, Fittings, Valves for Ultra Superior finish and excellent corrosion resistance against Sea water and mild acid alkaline solutions.

Rilsan Coating

We have capacity and arrangement for Rilsan coating to be done if required by clients on Pipes, Fittings and Valves.

Poly Urathene Coating (P.U.)

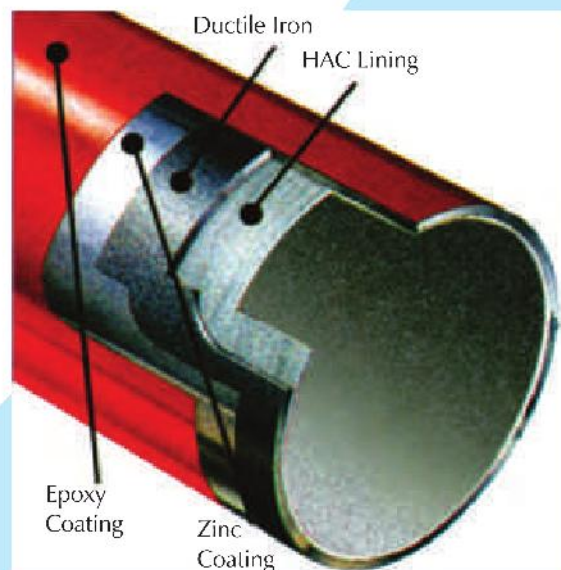
Fittings can be coated with Poly Urathene coating on the outside from 300 to 1000 microns as required.

INTERNAL LININGS

The Ductile Iron products are normally supplied with Cement Mortar lining.

The following linings may be applied depending on the internal conditions of use :

- Portland Cement Mortar
- Blast furnace Slag Cement Mortar
- High Alumina (Calcium Aluminate) Cement Mortar (H.A.C.)
- Sulphite Resistant Cement (SRC) lining
- Bituminous Paint
- Fusion bonded Epoxy Powder Coatings (F.B.E.)
- Poly Urathene Coatings (P.U.).



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CASTINGS LIMITED
TOTAL PIPELINE SOLUTIONS

Joints



Joists

Tyton socket & spigot joints



JOINTING PROCEDURE

Joint Preparation

Ensure the spigot is properly chamfered. If it is a cut pipe it is essential to remake the chamfer and ensure that there is a radius to prevent the spigot from displacing the gasket, see Fig. 1 and Table below. Before cutting ensure that the diameter is within tolerance at the cut position.

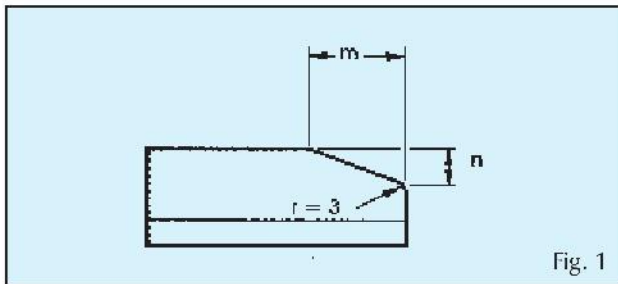


Fig. 1

TABLE - 1

Nominal size DN	m (mm)	n (mm)
80	9 - 12	3 - 4
100	9 - 12	3 - 4
150	9 - 12	3 - 4
200	9 - 12	3 - 4
250	9 - 12	3 - 4
300	9 - 12	3 - 4
350	9 - 12	3 - 4
400	9 - 12	3 - 4
450	9 - 12	3 - 4
500	9 - 12	3 - 4
600	9 - 12	3 - 4
700	15 - 20	5 - 6
800	15 - 20	5 - 6
900	15 - 20	5 - 6
1000	15 - 20	5 - 6
1200	15 - 20	5 - 6
1400	20 - 25	7 - 9
1600	20 - 25	7 - 9
1800	20 - 25	8 - 10

Thoroughly clean the spigot and the interior of the socket.

Clean gasket and insert into socket with the square section gasket heel in the retaining groove and the gasket fish tail towards the back of the socket

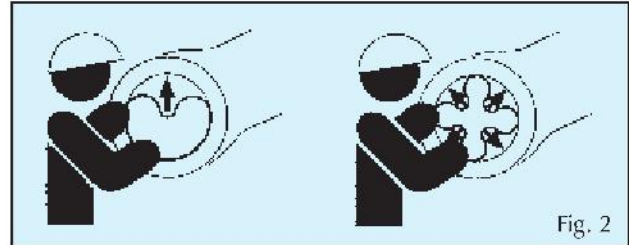


Fig. 2

The insertion of gaskets is facilitated by folding the gasket as shown in Fig. 2 by looping it into a heart shape with the gasket fish tail towards the back of the socket.

For DN 800 - DN 1800 it is preferable to loop the gasket into the shape of a cross for insertion, see Fig. 3.

Apply radial pressure to the gasket at the heart shaped loop (or cross loops) to force it into place.

Check that the gasket is located correctly around its entire circumference with the retaining heel firmly embedded in its seating.

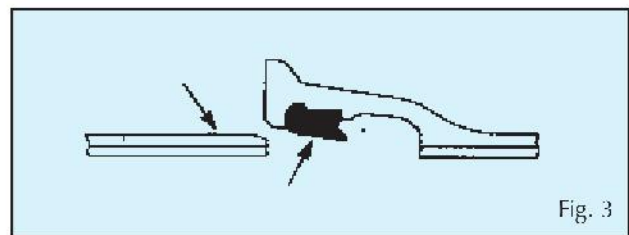


Fig. 3

Where fittings are supplied with pre-fitted gaskets, care should be taken to ensure socket and gasket are clean and free of debris.

Apply a thin film of lubricant to the inside surface of the gasket and to the outside surface of the spigot for a distance of about 50mm for pipe sizes up to and including DN 600 and 120mm for pipe sizes DN 700 and above.

Note : Please follow the Health and Safety guidance specified on the lubricant packaging.

Support the pipe or fitting just clear of the trench bottom and enter spigot into socket until contact is made.

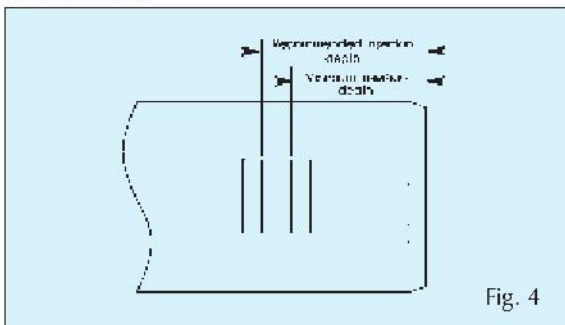
Recommended spigot insertion depths are given in and are also marked on the page.

Complete the joint assembly as described in the following pages for appropriate method being used.



Spigot Insertion Depths

Push-fit joints have the capability of permitting both angular deflection and longitudinal movement within defined limits



Two white lines on the spigot indicate the minimum and recommended insertion depths.

On non-standard lengths or where the pipes are cut to length on site, a mark indicating the desired insertion depth should be made on the spigot end prior to jointing and the pipe entered into the socket by this amount. Should any laid pipe or fitting be subsequently disturbed this mark will also indicate if the joint has withdrawn to any serious degree.

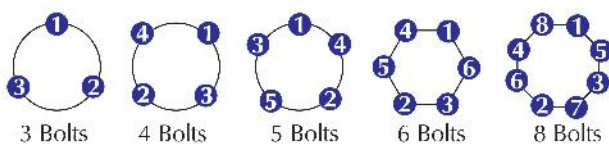
In the event that site requirements necessitate that a joint be deflected after jointing, the minimum insertion depth should also be marked on the spigot end to help ensure that the pipe is not withdrawn beyond its safe limit when this deflection is undertaken.

Note : Insertion of the spigot beyond the maximum recommended insertion depth may result in damage to cement mortar linings. Additionally, the allowable angular deflection will be reduced.

FLANGED JOINTS - Bolt Tightening Sequence

Bolt should be tightened in the correct sequence and a sufficient number of circuits undertaken to ensure that the specified bolt torques are achieved.

Bolt Tightening Sequence 3 to 8 Bolts

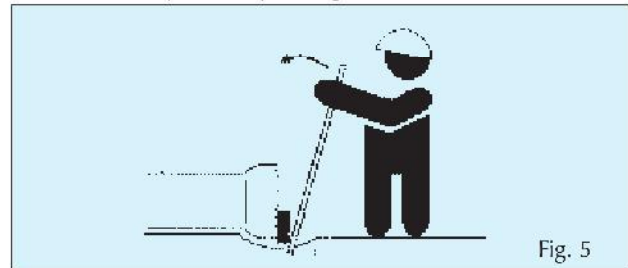


It is recommended that sufficient complete tightening circuits are carried out in sequence to ensure all bolts have attended the specified torque.

Joint Assembly

a) Crowbar DN80 and DN100

Push against the end of the pipe socket face with a crowbar or lever to complete the joint Fig. 5.



b) Digger Bucket DN 80 to DN 1800

Where suitable equipment is available on site joints can be made using the trench digger. This method minimizes the time required to make a joint and is widely used.

Place a wooden batten between the pipe and digger bucket.

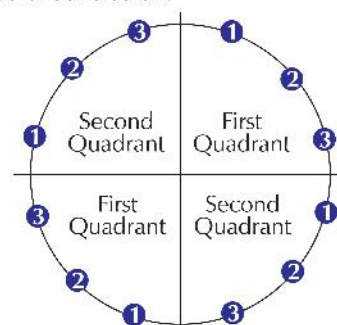
Push slowly and steadily until the joint is made to the correct insertion depth, Fig. 6.



c) Other methods

Rack and lever, Sidelink tackle, Tjirfors and Hydraulic tackle can also be used to joint Integral pipes.

For sizes having 12 or more it is recommended that two jointers work simultaneously on diametrically opposite bolts. Each jointer tightens the first nut in the first quadrant, then the first nut in the second quadrant, returns to the second nut in the first quadrant and so on.



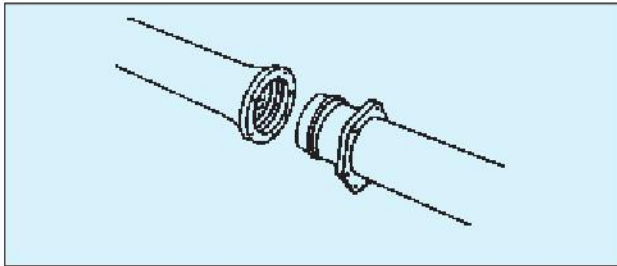


Joints

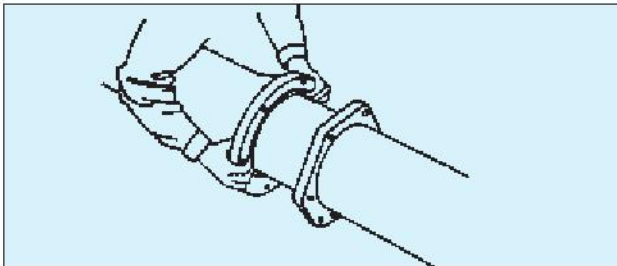
Mechanical Joint Assembly



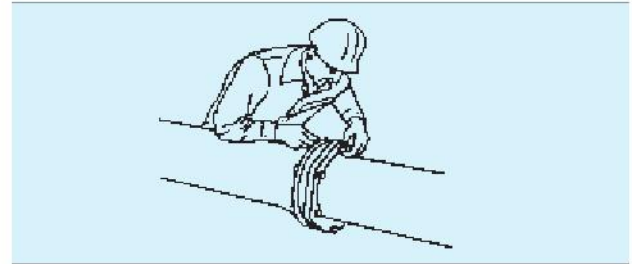
Clean the socket and the plain end. Lubrication and additional cleaning should be provided by brushing both the gasket and plain end with soapy water or an approved pipe lubricant, just prior to slipping the gasket on to the plain end for joint assembly. Place the gland on the plain end with the lip extension toward the plain end, followed by the gasket with the narrow edge of the gasket toward the plain end.



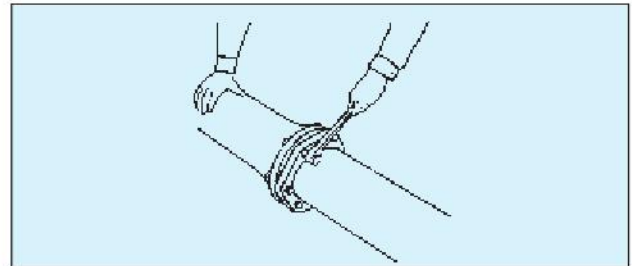
Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during the assembly



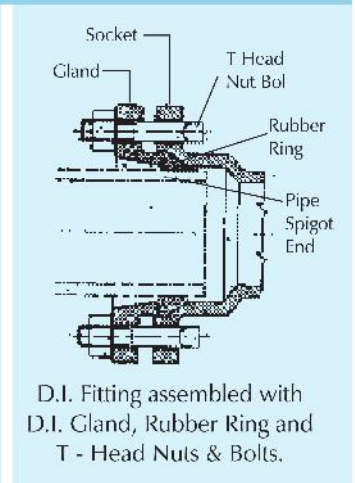
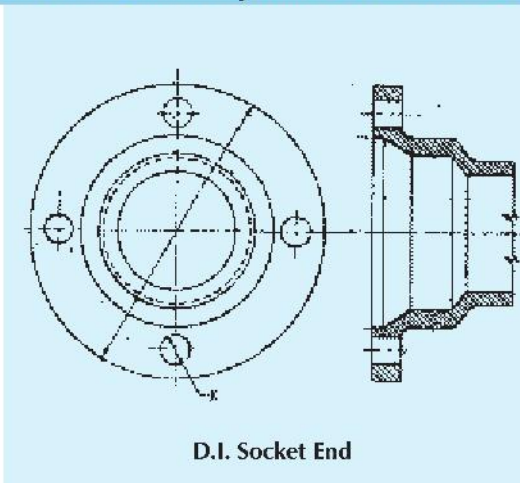
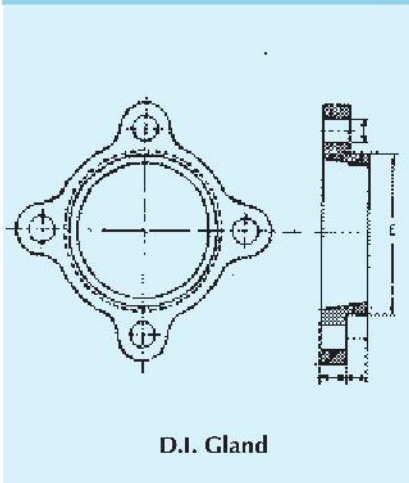
Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert bolts and hand tighten nuts. Make deflection after joint assembly but before tightening bolts.



Tighten the bolts to the normal range of bolt torque as indicated on page 9, while at all times maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This can be accomplished by partially tightening the bottom bolts first, then the top bolt, next the bolts at other side, finally the remaining bolts. The use of a torque - indicating wrench will facilitate this procedure. Repeat the process until all bolts are with in the appropriate range of torque.



Details of Mechanical Joint - Socket Fitment



5. Certificates

TATA

Kitemark™ Certificate

This is to certify that:

Tata Metaliks Limited (DI Pipe Division)
P.O.: Samraipur
P.S. Kharagpur
District: Paschim Midnapur
West Bengal
721 301
India

Holds Certificate Number:

KM 639498

In respect of:

**BS ISO 2531
Ductile iron pipes, fittings, accessories and their joints for water applications**

This issues the right and licence to use the Kitemark in accordance with the Kitemark Terms and Conditions governing the use of the Kitemark, as may be updated from time to time by BSI Assurance UK Ltd (the "Conditions"). All defined terms in this Certificate shall have the same meaning as in the Conditions.

The use of the Kitemark is authorized in respect of the Product(s) detailed on this Certificate provided at or from the above address.

For and on behalf of BSI:

Chris Lewis - Certification Director, Product Certification

First Issued: 2016-04-26

Latest Issue: 2017-10-02

Effective Date: 2017-10-02

Expiry Date: 2020-10-01



Page: 1 of 2

...making excellence a habit.™

Kitemark™ Certificate

No. KM 639498

BS ISO 2531:2009 - Ductile iron pipes, fittings, accessories and their joints for water applications.

Ductile iron pipes

Description	Nominal Size	Length (m)
Pipes with push-in flexible joints	DN 80 – DN 300 Class C 40	5.5
Pipes with push-in flexible joints	DN 350 – DN 600 Class C 30	5.5
Pipes with push-in flexible joints	DN 700 – DN 800 Class C 25	5.5

First Issued: 2016-04-26

Latest Issue: 2017-10-02

Effective Date: 2017-10-02

Expiry Date: 2020-10-01

Page: 2 of 2

This certificate has been issued by and remains the property of BSI Assurance UK Ltd, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP, United Kingdom and should be returned immediately upon request.
To check its validity telephone +44 (0) 345 080 9000. An electronic certificate can be authenticated [online](#).

BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A member of BSI Group of Companies.

BUREAU VERITAS
Certification



Certificate of Conformity

Awarded to:

TATA METALIKS LIMITED

HEAD OFFICE:

Tata Centre, 10th Floor, 43 Jawaharlal Nehru Road, Kolkata 700071 – West Bengal - INDIA

PRODUCTION PLANT

P.O. Samraipur, Gokulpur Kharagpur – Dist. Paschim Mednipur 721301 - West Bengal - INDIA

Bureau Veritas Italia S.p.A. certify that the following products:

Ductile iron pipes for water and sewerage applications

from DN 80 to DN 800

Designed and produced by Tata Metaliks Limited (TML)
have been evaluated and found in conformity against the requirements of the following standard:

EN 545:2010
ISO 2531:2009

Ductile iron pipes, fittings,
accessories and their joints
for water application

EN 598:2007+A1:2009
ISO 7186:2011

Ductile iron pipes, fittings,
accessories and their joints
for sewerage application

Certification according requirements stated in:

RG-01-03 ACCREDIA Rev.01
QHSE-REG-02.TQR Bureau Veritas Rev.02

This certificate has not to be intended as related to Notify Body activity according to
UE Construction Products Regulation CPR 305/2011 neither can be used for the CE marking

Original Emission Date: **23/07/2013**
Last Emission Date: **15/07/2019**
Expiration Date: **20/07/2022**

Subject to the continued satisfactory operation, to check this certificate validity please refer to website: www.bureauveritas.it.
Further clarifications regarding the scope of this certificate and the applicability of standard's requirements may be obtained
by consulting the organisation.

Eng. FRANCESCO SULLERA – Technical Director

Date: **15/07/2019**

Certificate N°: **744/001D**



PRD N° 009B

Member degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

BUREAU VERITAS
Certification



Certificate of Conformity

Awarded to:

TATA METALIKS LIMITED

HEAD OFFICE:

Tata Centre, 10th Floor, 43 Jawaharlal Nehru Road, Kolkata 700071 – West Bengal - INDIA

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EN 545:2006
ISO 2531:1998

Ductile iron pipes, fittings,
accessories and their joints
for water application

EN 598:2007+A1:2009
ISO 7186:2011

Ductile iron pipes, fittings,
accessories and their joints
for sewerage application

Certification according requirements stated in:

RG-01-03 ACCREDIA Rev.01
QHSE-REG-02.TQR Bureau Veritas Rev.02

This certificate has not to be intended as related to Notify Body activity according to
UE Construction Products Regulation CPR 305/2011 neither can be used for the CE marking

Original Emission Date: **23/07/2013**
Last Emission Date: **15/07/2019**
Expiration Date: **20/07/2022**

Subject to the continued satisfactory operation, to check this certificate validity please refer to website: www.bureauveritas.it.
Further clarifications regarding the scope of this certificate and the applicability of standard's requirements may be obtained
by consulting the organisation.

Eng. FRANCESCO SUTERA – Technical Director

Date: **15/07/2019**

Certificate N°: **744/002D**



PRD N° 009B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

BUREAU VERITAS
Certification



Certificate of Conformity

Awarded to:

TATA METALIKS LIMITED

HEAD OFFICE:

Tata Centre, 10th Floor, 43 Jawaharlal Nehru Road, Kolkata 700071 – West Bengal - INDIA

PRODUCTION PLANT

P.O. Samraipur, Gokulpur Kharagpur – Dist. Paschim Mednipur 721301 - West Bengal - INDIA

Bureau Veritas Italia S.p.A. certify that the process of application of coatings for the following products:

Ductile iron pipes for water and sewerage applications
from DN 80 to DN 800

Designed and produced by Tata Metaliks Limited (TML)
have been evaluated and found in conformity against the requirements of the following:

ISO 8179-1:2017

Ductile iron pipes, fittings, accessories and their joints
External zinc-based coating Metallic zinc with finishing layer

External coating of Black Bitumen, Red or Blue Epoxy

EN 545:2006 4.4.2/ ISO 2531:1998 4.4.1 – Including Annex A
EN 545:2010 4.5.2/ ISO 2531:2009 4.4.1 – Including Annex A
EN 598:2007+A1:2009 4.4.2/ ISO 7186:2011 4.5.2 - Including Annex A

Certification according requirements stated in:

QHSE-REG-02.TQR Bureau Veritas Rev.02

Original Emission Date: **20/07/2019**

Last Emission Date: **20/07/2019**

Expiration Date: **19/07/2022**

Subject to the continued satisfactory operation, to check this certificate validity please refer to website: www.bureauveritas.it.
Further clarifications regarding the scope of this certificate and the applicability of standard's requirements may be obtained by consulting the organisation

Eng. FRANCESCO SUTERA – Technical Director

Date: **20/07/2019**

Certificate N°: **1131/001**

CERTIFICATE OF APPROVAL

Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Quality Management Systems of

Organisation: Tata Metaliks Limited
Address: P.O. Samraipur, Kharagpur,
Dist. Midnapore(West),
West Bengal. Pin Code: 721 301

has been assessed and found conforming to the following requirement

Standard: ISO 9001:2015

Scope: Manufacturing & Supply of Pig Iron and
Centrifugally Cast Ductile Iron Pipes
& Accessories

Certificate No.: IRQS/1810845

Original Certification Date : 02/09/2015

Current Date of Granting : 28/06/2018

Expiry Date : 31/08/2021



Shashi Nath Mishra
Head IRQS

This approval is subject to continued satisfactory maintenance of the Quality Management Systems of the organization to the above standard, which will be monitored by IRQS. The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. C071. Condition Overleaf

COA/IRQS/RvA/QMS/Rev 00

Head Office: 52A, Adi Shankaracharya Marg, Opp. Powai Lake, Powai, Mumbai - 400 072, India.

CERTIFICATE OF APPROVAL

Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Environmental Management Systems of

Organisation: Tata Metaliks Limited
Address: P.O. Samraipur, Kharagpur,
Dist. Midnapore(West),
West Bengal. Pin Code: 721 301

has been assessed and found conforming to the following requirement

Standard: ISO 14001:2015

Scope: Manufacturing & Supply of Pig Iron and
Centrifugally Cast Ductile Iron Pipes
& Accessories

Certificate No.: IRQS/1830846

Original Certification Date : 02/09/2015

Current Date of Granting : 28/06/2018

Expiry Date : 31/08/2021



Shashi Nath Mishra
Head IRQS

This approval is subject to continued satisfactory maintenance of the Environmental Management Systems of the organization to the above standard, which will be monitored by IRQS. The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. C071. Condition Overleaf

COA/IRQS/RvA/EMS/Rev 00

Head Office: 52A, Adi Shankaracharya Marg, Opp. Powai Lake, Powai, Mumbai - 400 072, India.

Approval Number: 2001533
Test Report: MA6872/L/1



9th March 2020

Tata Metaliks DI Pipes Ltd.
Tata Centre,
Jawaharial Nehru Road,
Kolkata,
70071,
India

Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
Gwent,
NP11 4EG

WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

COATINGS, PAINTS & LININGS - FACTORY APPLIED PIPE & FITTINGS COATINGS.

5030

'Ramco Ordinary Portland Cement'. Factory applied, grey coloured cement. Mix cement, sand & water in a mass ratio of 1:1.7:0.5. Cure for 4 hours@45°C then cure in open air for 28 days@33-39°C.

For use with water up to 60°C.

This material is only approved for the mixing and curing conditions that appear on the approval. If the mixing and/or curing conditions are varied from those specified on the approval then the material is not covered by the scope of the approval.

APPROVAL NUMBER: 2001533

APPROVAL HOLDER: TATA METALIKS DI PIPES LTD.

The Scheme reserves the right to review approval.
Approval 2001533 is valid between January 2020 and January 2025

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

A handwritten signature in black ink, appearing to read 'Jason Furnival', written in a cursive style.

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

WRAS MATERIAL APPROVAL - MATERIALS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY

The material referred to in this letter is suitable for contact with water for domestic purposes. **Approval of this material does not signify the approval of its mechanical or physical properties for any use.**

Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that; 'the material as listed, having passed the tests of effect on water quality, is suitable for use in contact with wholesome water'

This may be abbreviated to 'Water Regulations Advisory Scheme - Approved Material' or 'WRAS Approved Material'.

The scope of an Approval does not extend to rebranded materials unless otherwise agreed by the Scheme.

Use of the WRAS Approved Material Logo

Approval holders may use the WRAS Approved Material logo and make reference to any approval issued by WRAS Ltd. in respect of a particular material or range of materials provided the approval is, and remains valid.

Approval holders are entitled to use the logo on the packing, promotional literature and point of sale advertising Approved Materials.

Modifications to existing Approvals

It is a condition of WRAS Material Approval that NO changes or modifications to the Approved Material, be made without the Approval Holder first notifying WRAS Ltd. Full details of the proposed changes must be provided to the Scheme. Failure to comply with this condition will immediately invalidate a previously granted Approval.

Re-Approval

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the MA3 application form which will be included with the letter and return to WRAS (via e-mail or post).

Please note it is the responsibility of the Approval Holder to ensure the Approval remains valid. WRAS Ltd. accepts no liability for the delay in granting approval where this is caused by circumstances outside of the Scheme's control.

Approval Number: 1509520



28th September 2015

M/S TATA METALIKS LIMITED
Vill Mahespur PO Samraipur,
Kharagpur,
Paschim Midnapore,
Pin 721301,
West Bengal, India

Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
Gwent,
NP11 4EG

WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

CONCRETE, CEMENT AND MORTAR - PRESSURE PIPES.

5052

TMDIPL Dalmia Sulphate Cement. Pale grey coloured cement, intended to line ductile iron pipes. Cured for 6hrs at 40°C then cure for 666hrs at 35°C. For use with water up to 60°C. This material is only approved for the curing conditions that appear on the approval. If the cure conditions are varied from those specified on the approval then the material is not covered by the scope of the approval.

APPROVAL NUMBER: 1509520

APPROVAL HOLDER: M/S TATA METALIKS LIMITED

The Scheme reserves the right to review approval.
Approval 1509520 is valid between September 2015 and September 2020

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

A handwritten signature in black ink, appearing to read 'Jason Furnival', written in a cursive style.

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

WRAS MATERIAL APPROVAL - MATERIALS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY

The material referred to in this letter is suitable for contact with water for domestic purposes. **Approval of this material does not signify the approval of its mechanical or physical properties for any use.**

Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that; 'the material as listed, having passed the tests of effect on water quality, is suitable for use in contact with wholesome water'

This may be abbreviated to 'Water Regulations Advisory Scheme - Approved Material' or 'WRAS Approved Material'.

The scope of an Approval does not extend to rebranded materials unless otherwise agreed by the Scheme.

Use of the WRAS Approved Material Logo

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Modifications to existing Approvals

It is a condition of WRAS Material Approval that NO changes or modifications to the Approved Material, be made without the Approval Holder first notifying WRAS Ltd. Full details of the proposed changes must be provided to the Scheme. Failure to comply with this condition will immediately invalidate a previously granted Approval.

Re-Approval

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the MA3 application form which will be included with the letter and return to WRAS (via e-mail or post).

Please note it is the responsibility of the Approval Holder to ensure the Approval remains valid. WRAS Ltd. accepts no liability for the delay in granting approval where this is caused by circumstances outside of the Scheme's control.

Approval Number: 1801528
Test Report: M 106477/A & M 106477/B



Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
Gwent,
NP11 4EG

8th February 2018

Andhra Polymers Pvt.Ltd.,
Plot No.2, Phase-V,
IDA, Jeedimetla,
Hyderabad,
500 055,
Telangana,
India

WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

RUBBERS - ETHYLENE PROPYLENE DIENE MONOMER (EPDM) - MATERIAL ONLY.

5365

EWA 12150 (EW48) Rev.1, EWA 12155A (EP55) Rev.1, EWA 12160A (EW 60) Rev.1, EWA 12165 (EW65 2GS) Rev.1, EWA 12170 (WRC 70) Rev.1, EWA 12175 (WRC 75) Rev.1 & EWA 12180 (EW80) Rev.1. Black coloured, compression moulded, EPDM sheet material. Shore hardness between 50 & 80. Tested in-radius size 1.2mm. For use with water up to 85°C.

APPROVAL NUMBER: 1801528

APPROVAL HOLDER: ANDHRA POLYMERS PVT.LTD.,

The Scheme reserves the right to review approval.

Approval 1801528 is valid between January 2018 and January 2023

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

A handwritten signature in black ink, appearing to read 'Jason Furnival', written in a cursive style.

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

WRAS MATERIAL APPROVAL - MATERIALS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY

The material referred to in this letter is suitable for contact with water for domestic purposes. **Approval of this material does not signify the approval of its mechanical or physical properties for any use.**

Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that; 'the material as listed, having passed the tests of effect on water quality, is suitable for use in contact with wholesome water'

This may be abbreviated to 'Water Regulations Advisory Scheme - Approved Material' or 'WRAS Approved Material'.

The scope of an Approval does not extend to rebranded materials unless otherwise agreed by the Scheme.

Use of the WRAS Approved Material Logo

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Approval holders are entitled to use the logo on the packing, promotional literature and point of sale advertising Approved Materials.

Modifications to existing Approvals

It is a condition of WRAS Material Approval that NO changes or modifications to the Approved Material, be made without the Approval Holder first notifying WRAS Ltd. Full details of the proposed changes must be provided to the Scheme. Failure to comply with this condition will immediately invalidate a previously granted Approval.

Re-Approval

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the MA3 application form which will be included with the letter and return to WRAS (via e-mail or post).

Please note it is the responsibility of the Approval Holder to ensure the Approval remains valid. WRAS Ltd. accepts no liability for the delay in granting approval where this is caused by circumstances outside of the Scheme's control.

Approval Number: 1606532
Test Report: MA5598/J



3rd August 2016

M/S TATA METALIKS LIMITED
Vill Mahespur PO Samraipur,
Kharagpur,
Paschim Midnapore,
Pin 721301,
West Bengal, India

Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
Gwent,
NP11 4EG

WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

COATINGS, PAINTS & LININGS - FACTORY APPLIED PIPE & FITTINGS COATINGS.

5030

'TMDIPL Konark'. Factory applied, grey coloured, Portland slag cement. Mix water, sand & cement in a weight ratio of 1:2:3. Pre-cure for 1.5 hours@30°C. Cure for 4 hours@45-55°C and then cure for 28 days@30-35°C. For use with water up to 60°C. This material is only approved for the mixing and curing conditions that appear on the approval. If the mix and/or cure conditions are varied from those specified on the approval then the material is not covered by the scope of the approval.

APPROVAL NUMBER: 1606532

APPROVAL HOLDER: M/S TATA METALIKS LIMITED

The Scheme reserves the right to review approval.
Approval 1606532 is valid between June 2016 and June 2021

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

A handwritten signature in black ink, appearing to read 'Jason Furnival', written in a cursive style.

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

WRAS MATERIAL APPROVAL - MATERIALS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY

The material referred to in this letter is suitable for contact with water for domestic purposes. **Approval of this material does not signify the approval of its mechanical or physical properties for any use.**

Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that; 'the material as listed, having passed the tests of effect on water quality, is suitable for use in contact with wholesome water'

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Modifications to existing Approvals

It is a condition of WRAS Material Approval that NO changes or modifications to the Approved Material, be made without the Approval Holder first notifying WRAS Ltd. Full details of the proposed changes must be provided to the Scheme. Failure to comply with this condition will immediately invalidate a previously granted Approval.

Re-Approval

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the MA3 application form which will be included with the letter and return to WRAS (via e-mail or post).

Please note it is the responsibility of the Approval Holder to ensure the Approval remains valid. WRAS Ltd. accepts no liability for the delay in granting approval where this is caused by circumstances outside of the Scheme's control.

KEJRIWAL CASTING LTD

STATEMENT OF COMPLIANCE

Statement No.:
14523-2019-PC-IND- DNV

Valid from:
17 April, 2019

Valid until:
16 April, 2022

This is to certify that the product(s)

Ductile Iron – Flanged Pipes & Fittings Size – DN 80 To DN 1400

manufactured by

Kejriwal Castings Limited.

Office: Chatterjee International Centre, 33A Chowringhee Road, 11th Floor, Suite No. 11,
Kolkata – 700 071, West Bengal

has been reviewed / assessed with respect to:

the requirements specified in EN 545:2010 & ISO 2531:2009/Cor.1:2010 and found to comply.

Applications/limitations:

See page 1 & 2

This Certificate to be read in full.

Reference to the part of this statement which may lead to misinterpretation is not permissible.

Place and date:
Chennai, 17 April, 2019

For the issuing office:
DNV GL Business Assurance India
Pvt. Ltd.



Hariharan Sundareswara
Manager – T S SC

Certificate No. : 14523-2019-PC-IND-DNV
 Place and date: Chennai, 17 April, 2019
 Revision no. : 0

Certificate history

Revision	Description	Issue Date
0	Original Certificate	17.04.2019

Products covered by this Statement

Product Description	Size	Product Types	Technical File Reference
Ductile Iron – Flanged Pipes and Fittings	DN 80-DN 1400	SCREW ED/W ELDED FLANGE PIPES, DIAMETER : 0100mm – 0600mm, LENGTH : 2m/3m/4m/5m DIAMETER : 0700mm – 1000mm, LENGTH : 2m/3m/4m/6m DIAMETER : 1100mm – 1400mm, LENGTH : 4m/5m/6m/7m	KCPL/TCF/ISO 2531 Rev:5 Date:05.03.2019 KCPL/TCF/EN 545 Rev:7 Date:15.04.2019
		FLANGE socket	
		FLANGE spigot	
		Collars	
		Double socket bends 90 ⁰	
		Double socket bends 45 ⁰	
		Double socket bends 22 ⁰ 30'	
		Double socket bends 11 ⁰ 15'	
		All socket tees	
		Double socket tees with branch flange	
		Double socket taper	
		Double flanged bend 90 ⁰	
		Double flanged bends 45 ⁰	
		Double flanged bend 22 ⁰ 30'	
		Double flanged bends 11 ⁰ 15'	
		Double flanged duck foot 90 ⁰ bends	
		All flanged tees	
		Double flanged taper	
		Blank flange	
		Reducing flange	

Certificate No. : 14523-2019-PC-IND-DNV
 Place and date: Chennai, 17 April, 2019
 Revision no. : 0

Sites covered by this Statement

Site Name	Address
Manufacturing Unit	NH-6 Chamrail, Near- Kona Power Sub Station, Howrah-711 114, West Bengal

Applications/Limitations

1. This Certificate does not exempt the purchaser from his responsibility to ensure that this qualification is valid for his products within the requirements of the EN 545:2010 & ISO 2531:2009/Cor.1:2010.
2. Supply of the products as listed above shall be as per inspection documentation EN 10204 type- 3.1 or 3.2 requirements under the discretion of the Purchaser.
3. The re-qualification process shall be repeated if any essential changes are made to the production route or the manufacturing procedure. E.g. change in the final melting/refining process, a major change of the casting method, a major change of manufacturing equipment, welding procedure & process etc .
4. If production is carried out at different plants/locations, a separate qualification is required for each plant. This applies also for change of in-house to subcontractors or change of subcontractor for essential operations.
5. Welding, where permitted by relevant standard shall be carried out by qualified welders according to qualified procedures.
6. NDT operator qualification shall be as per NS- EN ISO 9712/equivalent based on the purchaser's requirements.
7. Changes to the system/Technical File has to be intimated and approved by DNVGL before implementation.

Terms and conditions

The Certificate is subject to the following terms and conditions:

- Product Liability rests with manufacturer, in case of damages caused by defective products.
- It is only valid for the product(s) listed above
- A visit shall be made to the manufacturer in case of changes to essential processes, or during re-qualification. Manufacturer shall inform the local DNV GL office for any changes made with respect to any design changes or Manufacturing processes.

The following may render this Statement invalid:

- Any deviation to application/limitation listed above.
- Changes or amendments to the referenced standard and Technical File

END OF CERTIFICATE

MANUFACTURER'S LETTER



Date: 15th June 2020

To,
Mr Noel Pereira / Mr Shiju John,
NBTC Group, Kuwait.

Sub: Manufacturing of Ductile Iron Fittings

Dear Sirs,

Tata Metaliks Limited is in the process of setting up a manufacturing unit for Ductile Iron Fittings. The setup is expected to be ready by 3rd Quarter of FY-22. As of date we do not manufacture Ductile Iron Fittings and accessories. However, being compliant with international standards like ISO, BS EN etc, our pipes are compatible with fittings from any manufacturer complying with these standards.

At your request, we can provide you with necessary Type test certificates for demonstrating compatibility between the fitting and our pipes. As a reference, I have attached Type Test done with fittings from Kejriwal Castings Limited.

Best Regards,

A handwritten signature in black ink that reads 'Aniket Harsh'.

Aniket Harsh
Area Sales Manager- MEA
Tata Metaliks Limited

Tata Metaliks Limited

**Regd Office: Tata Centre (10th Floor), 43 Jawaharlal Nehru Road, Kolkata – 700071, India.
Tel - 91 33 66134205; Fax - 91 33 22884372;**