



Ductile Iron Fittings and Accessories

for pressure pipelines

1st issue





INTRODUCTION

Tawakol Metal Industries is Egypt's main manufacturer of Grey and Ductile Cast Iron products since 1975. TMI's reputation of high quality is evident in its diverse products ranging from grey cast iron sewer pipes, fittings, manhole covers and ductile cast iron fittings, to lighting accessories and decorative furniture.

Our success has been mainly due to our expertise in the foundry technology and specifically in our state of the art pattern production and advanced experience in the cast iron metallurgy field, that is enhanced by the most modern electric furnaces and computerized laboratory.

PRODUCTS

Main Products:

- Ductile Iron Pipe Fittings
- Dismantling Piece
- Manhole and Inspection Covers
- Tree Grates
- Water Grates
- Penstocks
- Hubless and Non- Hubless Soil Fittings

Decoration products

- Lighting accessories
- Decorative street and landscaping accessories
- Decorative Furniture

Engineering Products

- Cast Iron Tables
- Fire Hydrants
- Floor Drains
- Roof Drains
- Diesel Motors
- Water Pumps for irrigation
- Automotive brake drums and discs

All of our production is produced according to International Standard (ISO), German Standards (DIN) and the Egyptian standards (ES).



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Ductile Cast Iron Products Specifications

All Pipes, fitting, and accessories are produced according to the ISO 2531 and ES .

1. **Marking** - All products are marked with:
 - " Name and mark of manufacturer(marking may be cast on, painted, or cold stamped)
 - " An indication that the casting is made of Ductile Iron
 - " An indication of its nominal size(DN)
2. **Coating** - All products are coated with epoxy and bituminous paint. Alternative coating is available according to the customer's needs.

Why Epoxy coating:

- " Minimum coating thickness is 25 microm
- " Zero porosity
- " High adhesion to metal
- " No cracking
- " Smooth surface
- " High impact resistance

3. **Inspection** - All products are tested and examined at our factory.
The following inspections are made for each product:
 - " Visual Inspection
 - " Dimensional check
 - " Quantity check
 - " Hydro Test witness
4. **Terms of Delivery**
Loading and latching could be arranged at our factory.
Customer is to arrange transportation. We do not deliver.



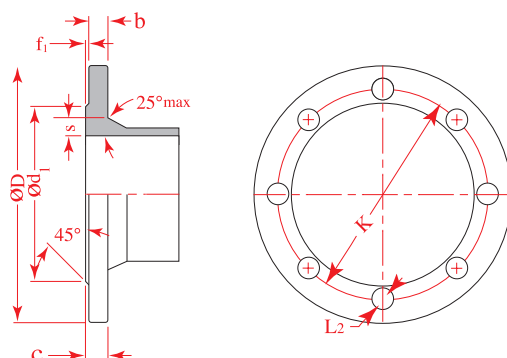
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Spigot and Socket Pipes

We deliver socket and spigot pipes of Ductile Cast Iron according to the ISO 2531. Socket and Spigot Pipes are manufactured for the use of operation pressures. The thickness of the pipes is defined as a function of their diameter. In case of certain requirements, other pipe ranges, having a smaller or greater wall thickness, may be primed.

Flanges Specifications

- PN16 flanges are supplied as standard on pipes and fittings for working pressures up to and including 16 bars.
- PN10 flanges are supplied on request for pipes and fittings for working pressures up to and including 10 bars.
- PN25 flanges are supplied to special order for pipes and fittings for working pressures over 16 bars and up to and including 25 bars.
- PN40 flanges are supplied to special order for pipes and fittings for working pressures over 25 bars and up to and including 40 bars.
- Working pressures are applicable within the temperature range -10°C to 120°C
- Ductile Iron flanges may be either solid or hollow back.
- The flanges could have machined raised face and drilled holes.
- Flanges can be cast integral with the corresponding casting or with other means like screwing and welding.
- Fixed and Loose Flanges can be fixed or removed according to the needs of service they will provide.
- A Loose flange is comprised of a ring, in one or several parts bolted together, which bears on an end joint collar, the ring can be freely rotated around the pipe axis and can be positioned for alignment with the bolt holes.
- The external diameter and the drilling details are the same for fixed and loose flanges.



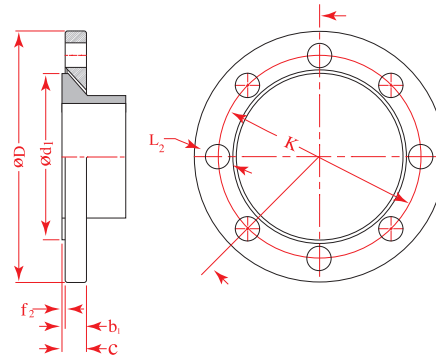
Nominal Size - DN	D	d_1	C	b	f_1	s	Flange Mass (hatched part)	k	Holes		Bolts Nominal Diameter
									Number	Diameter L_2	
40	150	84	19	16	3	15	1.7	110	4	19	M16
50	165	99	19	16	3	15	2.1	125	4	19	M16
60	175	108	19	16	3	15	2.2	135	4	19	M16
65	185	118	19	16	3	15	2.5	145	4	19	M16
80	200	132	19	16	3	15	2.9	160	8 ¹⁾	19	M16
100	220	156	19	16	3	15	3.3	180	8	19	M16
125	250	184	19	16	3	15	4	210	8	19	M16
150	285	211	19	16	3	15	4.9	240	8	23	M20
200	340	266	20	17	3	16	6.8	295	8	23	M20
250	400	319	22	19	3	17.5	9.6	350	12	23	M20
300	455	370	24.5	20.5	4	19.5	12.8	400	12	23	M20
350	505	429	24.5	20.5	4	19.5	14.1	460	16	23	M20
400	565	480	24.5	20.5	4	19.5	16.3	515	16	28	M24
500	670	582	26.5	22.5	4	21	21.8	620	20	28	M24
600	780	682	30	25	5	24	30.8	725	20	31	M27
700	895	794	32.5	27.5	5	23	40.5	840	24	31	M27
800	1015	901	35	30	5	24.5	54.8	950	24	34	M30
900	1115	1001	37.5	32.5	5	26.5	64.3	1050	28	34	M30
1000	1230	1112	40	35	5	28	81.4	1160	28	37	M33
1200	1455	1328	45	40	5	31.5	120.9	1380	32	40	M36
1400	1675	1530	46	41	5	32	147.8	1590	36	43	M39
1600	1915	1750	49	44	5	34.5	206.4	1820	40	49	M45
1800	2115	1950	52	47	5	36.5	236.3	2020	44	49	M45
2000	2325	2150	55	50	5	38.5	279.4	2230	48	49	M45
2200	2550	2370	59	53	6	41.5	345.6	2440	52	56	M52
2400	2760	2570	62	56	6	43.5	398.8	2650	56	56	M52
2600	2960	2780	65	59	6	45.5	436.9	2850	60	56	M52

Dimensions in millimeters

Masses in kilograms (approximated)

Loose Flange PN 10

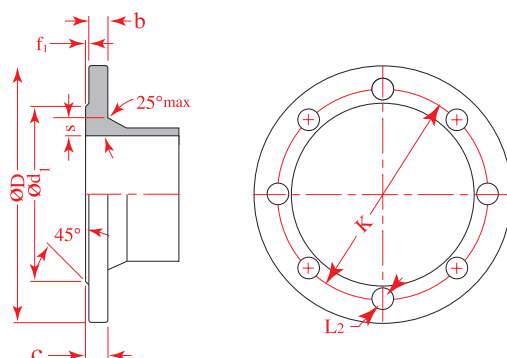
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Nominal Size - DN	D	d_1	C_1	b_1	f_2	Flange Mass (hatched part)
40	150	84	22	19	3	1.8
50	165	99	22	19	3	2.1
60	175	108	22	19	3	2.3
65	185	118	22	19	3	2.8
80	200	132	22	19	3	2.9
100	220	156	23	20	3	3.4
125	250	184	24.5	21.5	3	4.4
150	285	211	26	23	3	5.7
200	340	266	29	26	3	8.2
250	400	319	32	29	3	11.7
300	455	370	36	32	4	15.3
350	505	429	39	35	4	19.5
400	565	480	42	38	4	22.1
500	670	582	48	44	4	33
600	780	682	55	50	5	43.9

Dimensions in millimeters

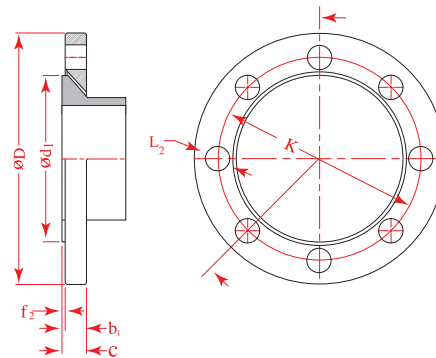
Masses in kilograms (approximated)



Nominal Size - DN	D	d_1	C	b	f_1	s	Flange Mass (hatched part)	k	Holes		Bolts Nominal Diameter
									Number	Diameter L_2	
40	150	84	19	16	3	15	1.7	110	4	19	M16
50	165	99	19	16	3	15	2.1	125	4	19	M16
60	175	108	19	16	3	15	2.2	135	4	19	M16
65	185	118	19	16	3	15	2.5	145	4	19	M16
80	200	132	19	16	3	15	2.9	160	8	19	M16
100	220	156	19	16	3	15	3.3	180	8	19	M16
125	250	184	19	16	3	15	4	210	8	19	M16
150	285	211	19	16	3	15	4.9	240	8	23	M20
200	340	266	20	17	3	16	6.6	295	12	23	M20
250	400	319	22	19	3	17.5	9.2	355	12	28	M24
300	455	370	24.5	20.5	4	19.5	12.4	410	12	28	M24
350	520	429	26.5	22.5	4	21	17.2	470	16	28	M24
400	580	480	28	24	4	22.5	21.9	525	16	31	M27
500	715	609	31.5	27.5	4	25	37	650	20	34	M30
600	840	720	36	31	5	29	57.3	770	20	37	M33
700	910	794	39.5	34.5	5	27.5	55.6	840	24	37	M33
800	1025	901	43	38	5	30	74	950	24	40	M36
900	1125	1001	46.5	41.5	5	32.5	88.2	1050	28	40	M36
1000	1255	1112	50	45	5	35	122.9	1170	28	43	M39
1200	1485	1328	57	52	5	40	185.2	1390	32	49	M45
1400	1685	1530	60	55	5	42	215.9	1590	36	49	M45
1600	1930	1750	65	60	5	45.5	308.4	1820	40	56	M52
1800	2130	1950	70	65	5	49	362.2	2020	44	56	M52
2000	2345	2150	75	70	5	52.5	432.2	2230	48	62	M56
2200	2555	2370	81	75	6	56.5	512.3	2440	52	62	M56
2400	2765	2570	86	80	6	60	601	2650	56	62	M56
2600	2965	2780	91	85	6	63.5	672	2850	60	62	M56

Dimensions in millimeters

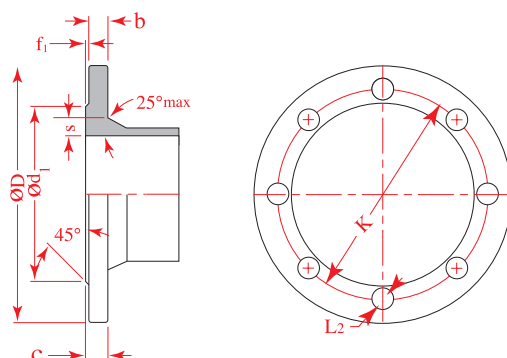
Masses in kilograms (approximated)



Nominal Size - DN	D	d_1	C_1	b_1	f_2	Flange Mass (hatched part)
40	150	84	22	19	3	1.8
50	165	99	22	19	3	2.1
60	175	108	22	19	3	2.3
65	185	118	22	19	3	2.8
80	200	132	22	19	3	2.9
100	220	156	23	20	3	3.4
125	250	184	24.5	21.5	3	4.4
150	285	211	26	23	3	5.7
200	340	266	29	26	3	8.1
250	400	319	32	29	3	11.3
300	455	370	36	32	4	14.6
350	520	429	39	35	4	20.3
400	580	482	42	38	4	26.6
500	715	609	48	44	4	46
600	840	720	55	50	5	68.9

Dimensions in millimeters

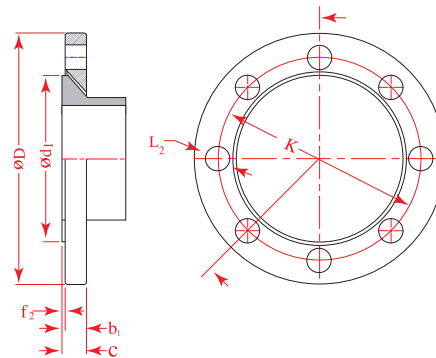
Masses in kilograms (approximated)



Nominal Size - DN	D	d_1	C	b	f_1	s	Flange Mass (hatched part)	k	Holes		Bolts Nominal Diameter
									Number	Diameter L_2	
40	150	84	19	16	3	15	1.7	110	4	19	M16
50	165	99	19	16	3	15	2.1	125	4	19	M16
60	175	108	19	16	3	15	2.1	135	8	19	M16
65	185	118	19	16	3	15	2.4	145	8	19	M16
80	200	132	19	16	3	15	2.9	160	8	19	M16
100	235	156	19	16	3	15	3.8	190	8	23	M20
125	270	184	19	16	3	15	4.6	220	8	28	M24
150	300	211	20	17	3	16	5.9	250	8	28	M24
200	360	274	22	19	3	17.5	8.7	310	12	28	M24
250	425	330	24.5	21.5	3	19.5	13.1	370	12	31	M27
300	485	389	27.5	23.5	4	22	18	430	16	31	M27
350	555	448	30	26	4	24	25.5	490	16	34	M30
400	620	503	32	28	4	25.5	33.2	550	16	37	M33
500	730	609	36.5	32.5	4	29	48.7	660	20	37	M33
600	845	720	42	37	5	33.5	71.5	770	20	40	M36
700	960	820	46.5	41.5	5	32.5	90.3	875	24	43	M39
800	1085	928	51	46	5	35.5	123.2	990	24	49	M45
900	1185	1028	55.5	50.5	5	39	148.6	1090	28	49	M45
1000	1320	1140	60	55	5	42	200.7	1210	28	56	M52
1200	1530	1350	69	64	5	48.5	284.7	1420	32	56	M52
1400	1755	1560	74	69	5	52	368.1	1640	36	62	M56
1600	1975	1780	81	76	5	56.5	485.5	1860	40	62	M56
1800	2195	1985	88	83	5	61.5	601.9	2070	44	70	M64
2000	2425	2210	95	90	5	66.5	784.9	2300	48	70	M64

Dimensions in millimeters

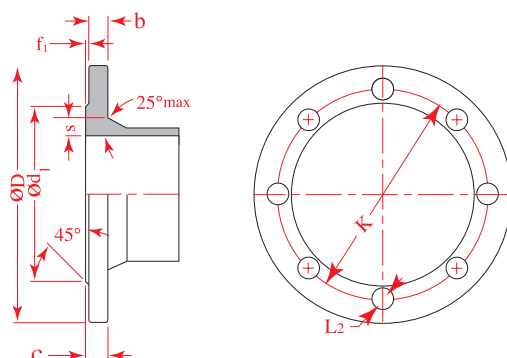
Masses in kilograms (approximated)



Nominal Size - DN	D	d_1	C	b_1	f_2	Flange Mass (hatched part)
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60	175	108	22	19	3	1.9
65	185	118	22	19	3	2.9
80	200	132	22	19	3	3
100	235	156	23	20	3	3.9
125	270	184	24.5	21.5	3	5.3
150	300	211	26	23	3	6.7
200	360	274	29	26	3	9.2
250	425	330	32	29	3	14.2
300	485	389	36	32	4	18.2
350	555	448	39	35	4	26.4
400	620	503	42	38	4	36.6
500	730	609	48	44	4	52
600	845	720	55	50	5	71.9

Dimensions in millimeters

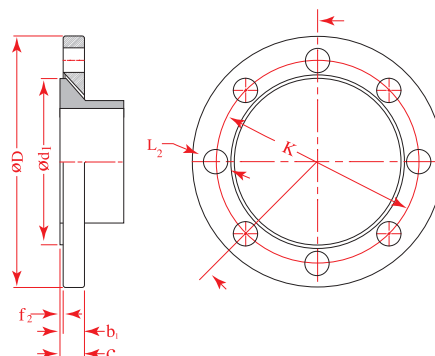
Masses in kilograms (approximated)



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									Number	Diameter L_2	
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50	165	99	19	16	3	15	2.1	125	4	19	M16
60	175	108	19	16	3	15	2.1	135	8	19	M16
65	185	118	19	16	3	15	2.4	145	8	19	M16
80	200	132	19	16	3	15	2.9	160	8	19	M16
100	235	156	19	16	3	15	3.8	190	8	23	M20
125	270	184	23.5	20.5	3	16.5	5.9	220	8	28	M24
150	300	211	26	23	3	18	8	250	8	28	M24
200	375	284	30	27	3	21	14	320	12	31	M27
250	450	345	34.5	31.5	3	24	23.2	385	12	34	M30
300	515	409	39.5	35.5	4	27.5	33.5	450	16	34	M30
350	580	465	44	40	4	31	46.7	510	16	37	M33
400	660	535	48	44	4	33.5	66.9	585	16	40	M36
500	755	615	52	48	4	36.5	82.3	670	20	43	M39
600	890	735	58	53	5	40.5	124.1	795	20	49	M45

Dimensions in millimeters

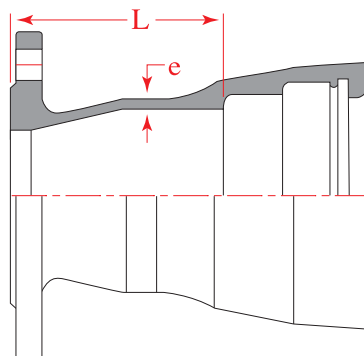
Masses in kilograms (approximated)



Nominal Size - DN	D	d_1	C	b_1	f_2	Flange Mass (hatched part)
40	150	84	22	19	3	1.8
50	165	99	22	19	3	2.1
60	175	108	22	19	3	1.9
65	185	118	22	19	3	2.9
80	200	132	22	19	3	3
100	235	156	23	20	3	3.9
125	270	184	24.5	21.5	3	5.3
150	300	211	26	23	3	6.7
200	375	284	33	30	3	11.4
250	450	345	37	34	3	22.9
300	515	409	42	38	4	31.3
350	580	465	46	42	4	43.2

Dimensions in millimeters

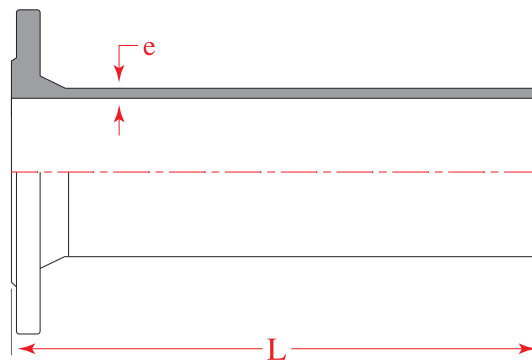
Masses in kilograms (approximated)



Nominal Size - DN	e	d	L	Mass with Flange			
				PN 10	PN 16	PN 25	PN 40
40	7	67	125	4.5	4.5	4.5	4.5
50	7	78	125	5.4	5.4	5.4	5.4
60	7	88	125	6	6	5.9	5.9
65	7	93	125	6.4	6.4	6.3	6.3
80	7	109	130	7.4	7.4	7.4	7.4
100	7.2	130	130	9	9	9.5	9.5
125	7.5	156	135	11.5	11.5	12.1	13.4
150	7.8	183	135	14.2	14.2	15.2	17.3
200	8.4	235	140	20.5	20	22	27.5
250	9	288	145	28	27.5	31.5	41.5
300	9.6	340	150	37	36.5	42	57.5
350	10.2	393	155	45	48	56	—
400	10.8	445	160	55	60	71	—
500	12	550	170	78	93	104	—
600	13.2	655	180	108	135	149	—
700	14.4	760	190	144	159	—	—
800	15.6	865	200	189	208	—	—
900	16.8	970	210	235	258	—	—
1000	18	1075	220	293	324	—	—
1200	20.4	1285	240	456	521	—	—
1400	22.8	1477	310	654	723	—	—
1600	25.2	1683	330	887	989	—	—
1800	27.6	1889	350	1125	1251	—	—
2000	30	2095	370	1414	1567	—	—
2200	32.4	2301	390	1767	1934	—	—
2400	34.8	2507	410	2150	2352	—	—
2600	37.2	2713	480	2563	2798	—	—

Dimensions in millimeters

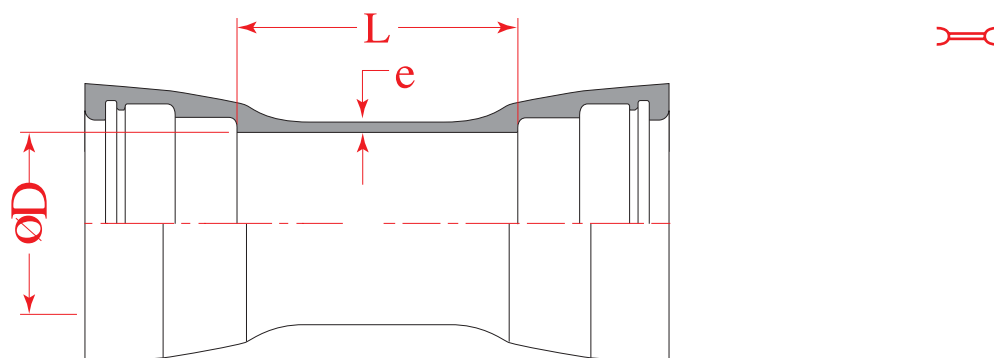
Masses in kilograms (approximated)



Nominal Size - DN	e	L	Mass with Flange			
			PN 10	PN 16	PN 25	PN 40
40	7	335	4.2	4.2	4.2	4.2
50	7	340	5.2	5.2	5.2	5.2
60	7	345	5.8	5.8	5.7	5.7
65	7	345	6.5	6.5	6.4	6.4
80	7	350	7.8	7.8	7.8	7.8
100	7.2	360	9.6	9.6	10.2	10.2
125	7.5	370	12.4	12.4	13	14.3
150	7.8	380	15.6	15.6	16.6	18.7
200	8.4	400	22.5	22.5	24.5	30
250	9	420	32	31.5	35.5	45.5
300	9.6	440	43	42.5	47.5	63
350	10.2	460	52	55	64	—
400	10.8	480	64	70	81	—
500	12	520	94	109	121	—
600	13.2	560	133	159	173	—
700	14.4	600	179	194	—	—
800	15.6	600	226	245	—	—
900	16.8	600	272	295	—	—
1000	18	600	328	369	—	—
1200	20.4	600	456	520	—	—
1400	22.8	710	664	732	—	—
1600	25.2	780	922	1024	—	—
1800	27.6	850	1196	1322	—	—
2000	30	920	1534	1687	—	—
2200	32.4	990	1948	2115	—	—
2400	34.8	1060	2409	2611	—	—
2600	37.2	1130	2918	3153	—	—

Dimensions in millimeters

Masses in kilograms (approximated)



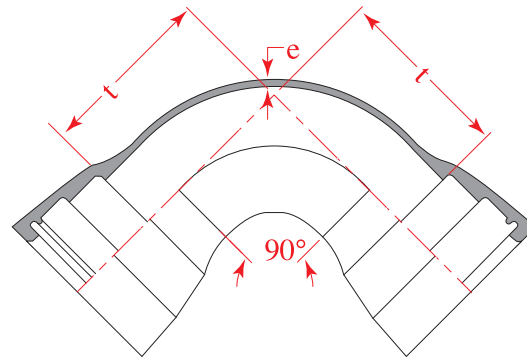
Nominal Size - DN	e	d	L	Mass
40	7	67	155	4.6
50	7	78	155	5.4
60	7	88	155	6.3
65	7	93	155	6.6
80	7	109	160	7.9
100	7.2	130	160	9.9
125	7.5	156	165	12.9
150	7.8	183	165	15.9
200	8.4	235	170	23
250	9	288	175	31.5
300	9.6	340	180	41
350	10.2	393	185	52
400	10.8	445	190	64
500	12	550	200	93
600	13.2	655	210	129
700	14.4	760	220	172
800	15.6	865	230	223
900	16.8	970	240	282
1000	18	1075	250	349
1200	20.4	1285	270	560
1400	22.8	1477	340	816
1600	25.2	1683	360	1094
1800	27.6	1889	380	1427
2000	30	2095	400	1818
2200	32.4	2301	420	2272
2400	34.8	2507	440	2794
2600	37.2	2713	460	3390

Dimensions in millimeters

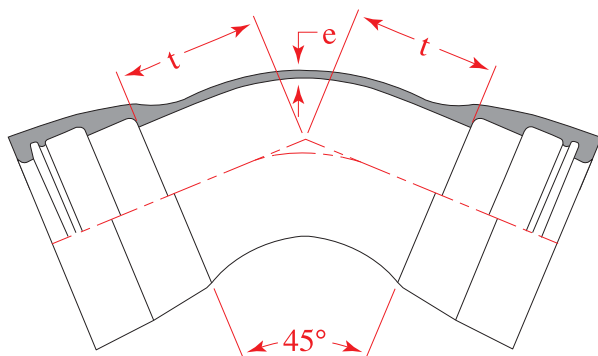
Masses in kilograms (approximated)

Double-Socket 1/4 Bend

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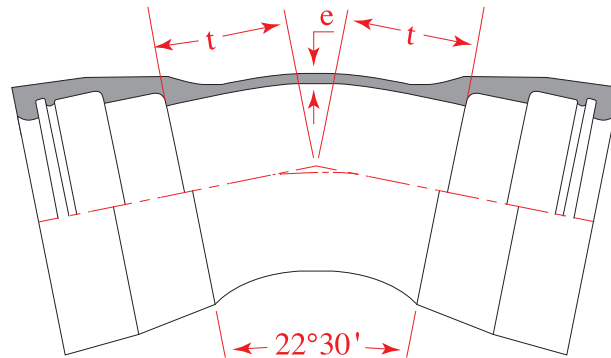
Nominal Size - DN	e	t	Mass
40	7	60	4.2
50	7	70	5.3
60	7	80	6.3
65	7	85	6.9
80	7	100	8.6
100	7.2	120	11.4
125	7.5	145	15.7
150	7.8	170	20.5
200	8.4	220	33
250	9	270	48.5
300	9.6	320	68
<i>Dimensions in millimeters</i>		<i>Masses in kilograms (approximated)</i>	



Nominal Size - DN	e	t	Mass
40	7	40	4
50	7	40	5
60	7	45	5.3
65	7	50	6.3
80	7	55	7.7
100	7.2	65	10.1
125	7.5	75	13.6
150	7.8	85	17.4
200	8.4	110	27
250	9	130	38.5
300	9.6	150	53
350	10.2	175	70
400	10.8	195	89
500	12	240	139
600	13.2	285	202
700	14.4	330	282
800	15.6	370	378
900	16.8	415	496
1000	18	460	635
1200	20.4	550	986
1400	22.8	515	1273
1600	25.2	565	1740
1800	27.6	610	2296
2000	30	660	2970
2200	32.4	710	3762
2400	34.8	755	4665
2600	37.2	805	5721

Dimensions in millimeters

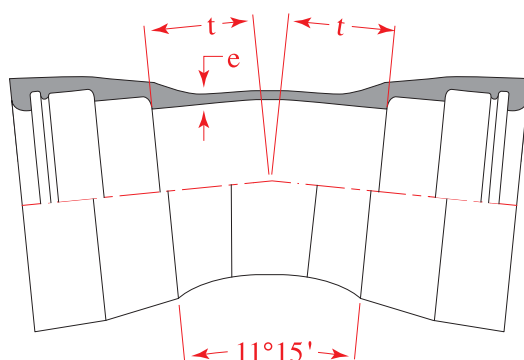
Masses in kilograms (approximated)



Nominal Size - DN	e	t	Mass
40	7	30	3.8
50	7	30	4.8
60	7	35	5.5
65	7	35	6
80	7	40	7.3
100	7.2	40	9.3
125	7.5	50	12.6
150	7.8	55	15.9
200	8.4	65	24
250	9	75	33.5
300	9.6	85	44.5
350	10.2	95	58
400	10.8	110	74
500	12	130	111
600	13.2	150	157
700	14.4	175	217
800	15.6	195	287
900	16.8	220	373
1000	18	240	470
1200	20.4	285	716
1400	22.8	260	933
1600	25.2	280	1259
1800	27.5	305	1663
2000	30	330	2144
2200	32.4	355	2707
2400	34.8	380	3359
2600	37.2	400	4087

Dimensions in millimeters

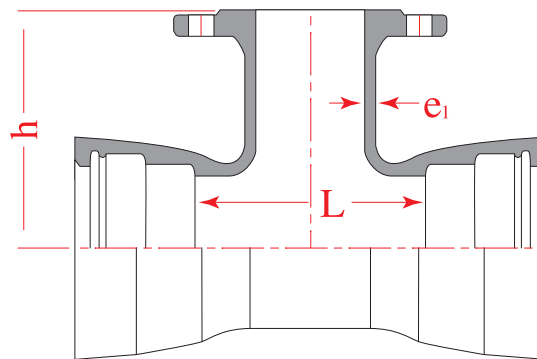
Masses in kilograms (approximated)



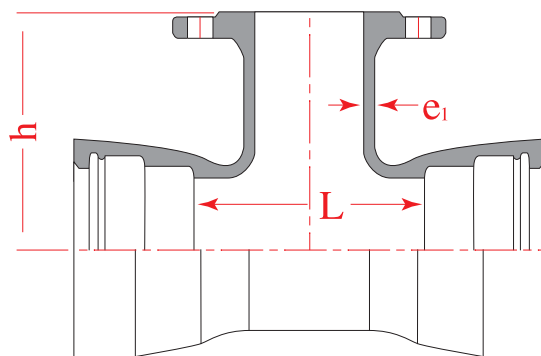
Nominal Size - DN	e	t	Mass
40	7	25	3.7
50	7	25	4.7
60	7	25	5.4
65	7	25	5.9
80	7	30	7.1
100	7.2	30	8.9
125	7.5	35	11.9
150	7.8	35	14.8
200	8.4	40	22
250	9	50	30.5
300	9.6	55	40.5
350	10.2	60	52
400	10.8	65	65
500	12	75	96
600	13.2	85	134
700	14.4	95	181
800	15.6	110	239
900	16.8	120	305
1000	18	130	381
1200	20.4	150	568
1400	22.8	130	747
1600	25.2	140	1007
1800	27.6	155	1331
2000	30	165	1702
2200	32.4	190	2183
2400	34.8	205	2709
2600	37.2	215	3290

Dimensions in millimeters

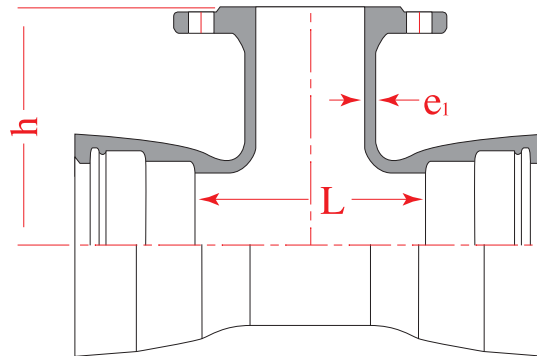
Masses in kilograms (approximated)



Body			Branch			Mass with Flange			
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25	PN 40
40	7.6	120	40	7.6	130	6.9	6.9	6.9	6.9
50	7.7	130	50	7.7	140	8.6	8.6	8.5	8.5
60	7.8	145	60	7.8	150	10	10	9.9	9.9
65	7.9	150	65	7.9	150	10.9	10.9	10.8	10.8
80	8.1	170	80	8.1	165	13.5	13.5	13.5	13.5
100	8.4	170	80	8.1	175	15.8	15.8	15.8	15.8
	8.4	190	100	8.4	180	17.2	17.2	17.7	17.7
125	8.8	170	80	8.1	190	19.4	19.4	19.4	19.4
	8.8	195	100	8.4	195	21	21	21.5	21.5
	8.8	225	125	8.8	200	23	23	24	25.5
150	9.1	170	80	8.1	205	23	23	23	23
	9.1	195	100	8.4	210	24.5	24.5	25	25
	9.1	255	150	9.1	220	29.5	29.5	30.5	32.5
200	9.8	175	80	8.1	235	31.5	31.5	31.5	31.5
	9.8	200	100	8.4	240	33.5	33.5	34	34
	9.8	255	150	9.1	250	39	39	40	42
	9.8	315	200	9.8	260	45.6	46	47.5	53
Dimensions in millimeters						Masses in kilograms (approximated)			

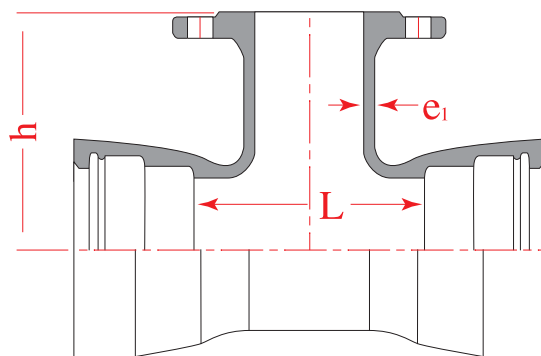


Body			Branch			Mass with Flange			
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25	PN 40
250	10.5	200	100	8.4	270	43.5	43.5	44	44
	10.5	315	200	9.8	290	57	57	59	64.5
	10.5	375	250	10.5	300	65	66	69	79
300	11.2	205	100	8.4	300	55	55	56	56
	11.2	320	200	9.8	320	71	70	73	73
	11.2	435	300	11.2	340	89	91	95	110
350	11.9	205	100	8.4	330	68	68	68	—
	11.9	325	200	9.8	350	86	86	88	—
	11.9	495	350	11.9	380	117	120	129	—
400	12.6	210	100	8.4	360	83	83	83	—
	12.6	325	200	9.8	380	103	102	104	—
	12.6	560	400	12.6	420	150	156	167	—
500	14	215	100	8.4	420	116	116	117	—
	14	330	200	9.8	440	142	141	143	—
	14	565	400	12.6	480	199	205	216	—
	14	680	500	14	500	232	247	259	—
600	15.4	340	200	9.8	500	189	189	191	—
	15.4	570	400	12.6	540	258	263	274	—
	15.4	800	600	15.4	580	340	366	380	—
Dimensions in millimeters					Masses in kilograms (approximated)				



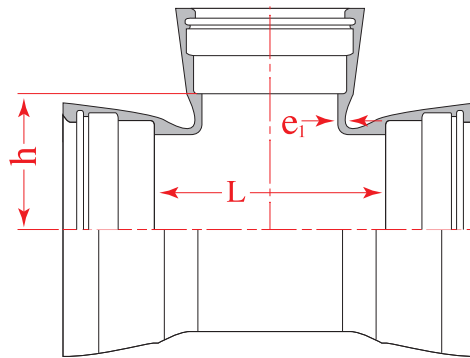
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Body			Branch			Mass with Flange	
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16
700	16.8	345	200	9.8	525	242	242
	16.8	575	400	12.6	555	320	325
	16.8	925	700	16.8	600	460	475
800	18.2	350	200	9.8	585	306	306
	18.2	580	400	12.6	615	398	403
	18.2	1045	600	15.4	645	579	605
	18.2	1045	800	18.2	675	623	642
900	19.6	355	200	9.8	645	379	379
	19.6	590	400	12.6	675	490	495
	19.6	1170	600	15.4	705	748	774
	19.6	1170	900	19.6	750	814	838
1000	21	360	200	9.8	705	462	462
	21	595	400	12.6	735	591	596
	21	1290	600	15.4	765	947	973
	21	1290	1000	21	825	1044	1086
1200	23.8	840	600	15.4	885	1000	1027
	23.8	1070	800	18.2	915	1190	1210
	23.8	1300	1000	21	945	1406	1448
Dimensions in millimeters			Masses in kilograms (approximated)				



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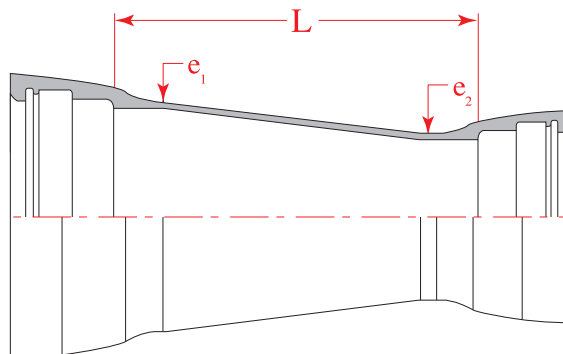
Body			Branch			Mass with Flange	
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16
1400	26.6	1030	600	15.4	980	1478	1505
	26.6	1260	800	18.2	1010	1709	1728
	26.6	1495	1000	21	1040	1955	1996
1600	29.4	1040	600	15.4	1090	1908	1934
	29.4	1275	800	18.2	1120	2192	2211
	29.4	1505	1000	21	1150	2480	2522
	29.4	1740	1200	23.8	1180	2799	2863
1800	32.2	1055	600	15.4	1200	2414	2440
	32.2	1285	800	18.2	1230	2748	2767
	32.2	1520	1000	21	1260	3095	3137
	32.2	1750	1200	23.8	1290	3460	2524
2000	35	1065	600	15.4	1310	2988	3015
	35	1530	1000	21	1370	3790	3832
	35	1995	1400	26.6	1430	4645	4713
2200	37.8	1080	600	15.4	1420	3647	3674
	37.8	1775	1200	23.8	1510	5056	5119
	37.8	2470	1800	32.2	1600	6579	6705
2400	40.6	1090	600	15.4	1530	4383	4409
	40.6	1785	1200	23.8	1620	6005	6069
	40.6	2480	1800	32.2	1710	7734	7860
2600	43.4	1100	600	15.4	1640	5205	5231
	43.4	2030	1400	26.5	1750	7704	7772
	43.4	2725	2000	35	1850	9713	9866
Dimensions in millimeters				Masses in kilograms (approximated)			



Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	Mass
40	7.6	120	40	7.6	60	4.5
50	7.7	130	50	7.7	65	5.6
60	7.8	145	60	7.8	70	6.9
65	7.9	150	65	7.9	75	7.5
80	8.1	120	40	8.1	80	10.2
	8.1	170	80	8.1	85	12.4
100	8.4	120	40	8.4	90	12.3
	8.4	145	60	8.4	90	13.8
	8.4	170	80	8.4	95	14.8
	8.4	190	100	8.4	95	16.1
125	8.8	125	40	8.8	100	15.3
	8.8	225	125	8.8	110	22
150	9.1	125	40	9.1	115	18.7
	9.1	170	80	9.1	120	21.5
	9.1	195	100	9.1	120	23.5
	9.1	255	150	9.1	125	28
200	9.8	130	40	9.8	140	26.4
	9.8	175	80	9.8	145	30
	9.8	200	100	9.8	145	32
	9.8	255	150	9.8	150	37
	9.8	315	200	9.8	155	43

Dimensions in millimeters

Masses in kilograms (approximated)



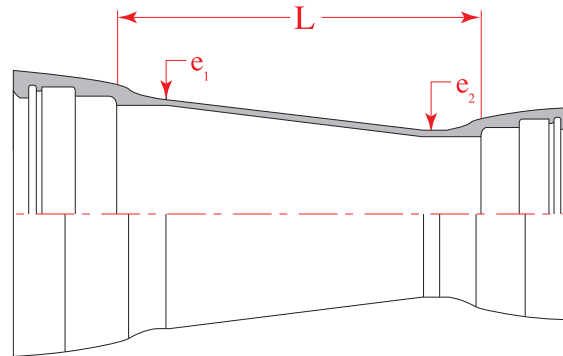
Nominal Size - DN	e_1	Nominal Size - DN	e_2	L	Mass
50	7	40	7	70	4.2
60	7	50	7	70	5.2
65	7	50	7	80	5.7
80	7	60	7	90	7.1
	7	65	7	80	6.6
100	7.2	80	7	90	8.5
125	7.5	80	7	140	10.8
	7.5	100	7.2	100	11.1
150	7.8	80	7	190	13.5
	7.8	100	7.2	150	13.8
	7.8	125	7.5	100	14.1
200	8.4	100	7.2	250	20.5
	8.4	125	7.5	200	20.5
	8.4	150	7.8	150	21
250	9	125	7.5	300	29
	9	150	7.8	250	29
	9	200	8.4	150	29
300	9.6	150	7.8	350	39.5
	9.6	200	8.4	250	39.5
	9.6	250	9	150	38.5
350	10.2	200	8.4	360	52
	10.2	250	9	260	51
	10.2	300	9.6	160	49.5
400	10.8	250	9	360	66
	10.8	300	9.6	260	64
	10.8	350	10.2	160	62
500	12	350	10.2	360	98
	12	400	10.8	260	94

300Dimensions in millimeters

Masses in kilograms (approximated)

Double-Socket Taper DN 600 - DN 2600

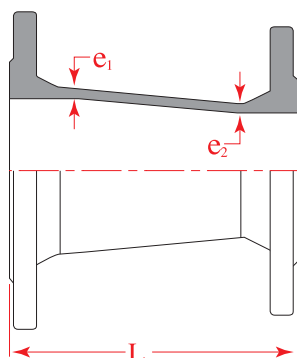
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Nominal Size - DN	e_1	Nominal Size - DN	e_2	L	Mass
600	13.2	400	10.8	460	142
	13.2	500	12	260	131
700	14.4	500	12	480	194
	14.4	600	13.2	280	178
800	15.6	600	13.2	480	252
	15.6	700	14.4	280	229
900	16.8	700	14.4	480	318
	16.8	800	15.6	280	288
1000	18	800	15.6	480	392
	18	900	16.8	280	354
1200	20.4	1000	18	480	570
1400	22.8	1200	20.4	360	711
1600	25.2	1400	22.8	360	951
1800	27.6	1600	25.2	360	1235
2000	30	1800	27.6	360	1566
2200	32.4	2000	30	360	1948
2400	34.8	2200	32.4	360	2374
2600	37.2	2400	34.8	360	2877

300Dimensions in millimeters

Masses in kilograms (approximated)



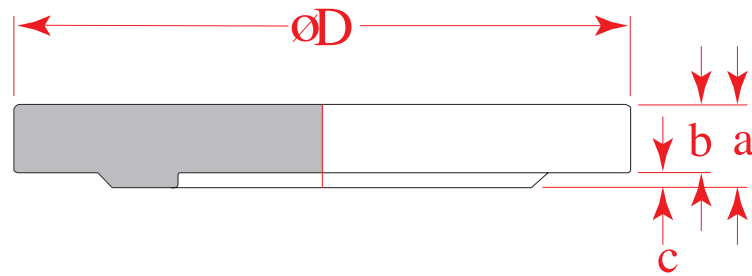
Large Diameter		Smaller Diameter			Mass with Flange			
Nominal Size - DN	e ₁	Nominal Size - DN	e ₂	L	PN 10	PN 16	PN 25	PN 40
50	7	40	7	150	5.1	5.1	5.1	5.1
60	7	50	7	160	5.8	5.8	5.7	5.7
65	7	50	7	200	6.7	6.7	6.6	6.6
80	7	60	7	200	7.5	7.5	7.4	7.4
80	7	65	7	200	7.9	7.9	7.8	7.8
100	7.2	80	7	200	9.3	9.3	9.8	9.8
125	7.5	100	7.2	200	11.3	11.3	12.5	13.8
150	7.8	125	7.5	200	14	14	15.5	18.9
200	8.4	150	7.3	300	22	21.5	25	31.5
250	9	200	8.4	300	30	29.5	35.5	51
300	9.6	250	9	300	40.5	39.5	49	74.5
350	10.2	300	9.6	300	49.5	52	66	—
400	10.8	350	10.2	300	58	67	86	—
500	12	400	10.3	600	110	130	153	—
600	13.2	500	12	600	149	190	216	—
700	14.4	600	13.2	600	195	236	—	—
800	15.6	700	14.4	600	250	285	—	—
900	16.8	800	15.6	600	308	352	—	—
1000	18	900	16.8	600	373	438	—	—
1200	20.4	1000	18	790	586	692	—	—
1400	22.8	1200	20.4	850	814	947	—	—
1600	25.2	1400	22.8	910	1103	1273	—	—
1800	27.6	1600	25.2	970	1436	1664	—	—
2000	30	1800	27.6	1030	1800	2079	—	—
2200	32.4	2000	30	1090	2250	2570	—	—
2400	34.8	2200	32.4	1150	2765	3134	—	—
2600	37.2	2400	34.8	1210	3311	3748	—	—

Dimensions in millimeters

Masses in kilograms (approximated)

Blank Flange PN 10

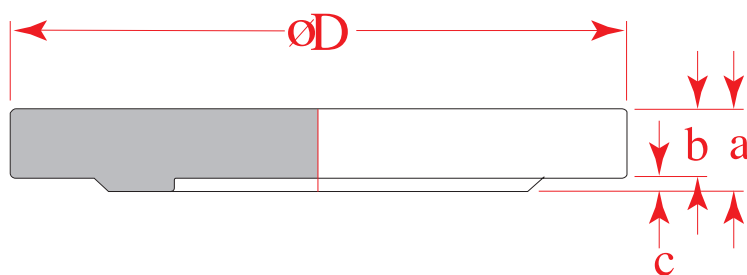
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Nominal Size - DN	D	a	b	c	Mass
40	150	19	16	3	2
50	165	19	16	3	2.4
60	175	19	16	3	2.7
65	185	19	16	3	3.1
80	200	19	16	3	3.5
100	220	19	16	3	4.3
125	250	19	16	3	5.6
150	285	19	16	3	7.2
200	340	20	17	3	11
250	400	22	19	3	16.9
300	455	24.5	20.5	4	24
350	505	24.5	20.5	4	29.5
400	565	24.5	20.5	4	36.5
500	670	26.5	22.5	4	56
600	780	30	25	5	85
700	895	32.5	27.5	5	123
800	1015	35	30	5	172
900	1115	37.5	32.5	5	224
1000	1230	40	35	5	293
1200	1455	45	40	5	575
1400	1675	46	41	5	739
1600	1915	49	44	5	1239
1800	2115	52	47	5	1717
2000	2325	55	50	5	2272
2200	2550	59	53	6	2253
2400	2760	62	56	6	2781
2600	2960	65	59	6	3365

300Dimensions in millimeters

Masses in kilograms (approximated)



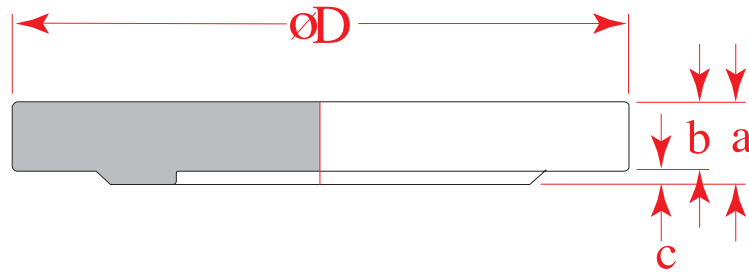
Nominal Size - DN	D	a	b	c	Mass
40	150	19	16	3	2
50	165	19	16	3	2.4
60	175	19	16	3	2.7
65	185	19	16	3	3.1
80	200	19	16	3	3.5
100	220	19	16	3	4.3
125	250	19	16	3	5.6
150	285	19	16	3	7.2
200	340	20	17	3	10.8
250	400	22	19	3	16.6
300	455	24.5	20.5	4	23.5
350	520	26.5	22.5	4	33.5
400	580	28	24	4	44.5
500	715	31.5	27.5	4	77
600	840	36	31	5	121
700	910	39.5	34.5	5	156
800	1025	43	38	5	218
900	1125	46.5	41.5	5	286
1000	1255	50	45	5	387
1200	1485	57	52	5	662
1400	1685	60	55	5	994
1600	1930	65	60	5	1409
1800	2130	70	65	5	1858
2000	2345	75	70	5	2407
2200	2555	81	75	6	3097
2400	2765	86	80	6	3863
2600	2965	91	85	6	4716

300Dimensions in millimeters

Masses in kilograms (approximated)

Blank Flange PN 25

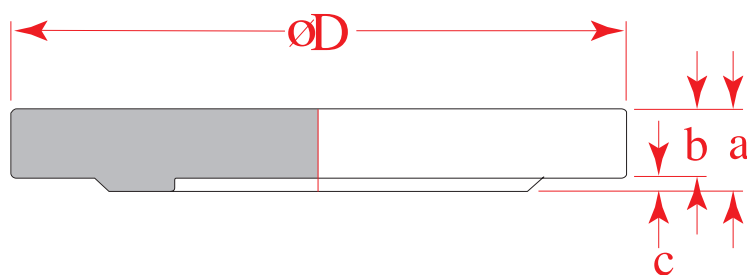
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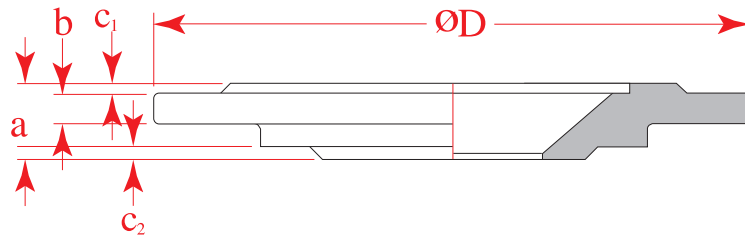
Nominal Size - DN	D	a	b	c	Mass
40	150	19	16	3	2
50	165	19	16	3	2.4
60	175	19	16	3	2.6
65	185	19	16	3	2.9
80	200	19	16	3	3.5
100	235	19	16	3	4.8
125	270	19	16	3	6.2
150	300	20	17	3	8.3
200	360	22	19	3	13.3
250	425	24.5	21.5	3	21
300	485	27.5	23.5	4	30
350	555	30	25	4	43.5
400	620	32	28	4	58
500	730	36.5	32.5	4	94
600	845	42	37	5	144

300Dimensions in millimeters

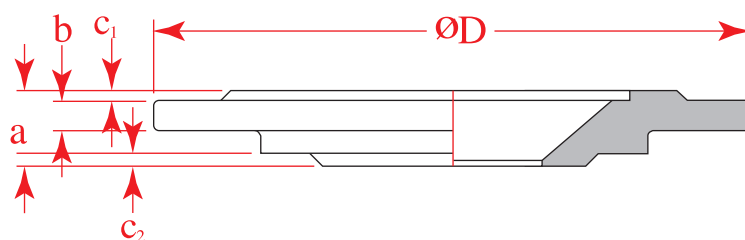
Masses in kilograms (approximated)



Nominal Size - DN	D	a	b	c	Mass
40	150	19	16	3	2
50	165	19	16	3	2.4
60	175	19	16	3	2.6
65	185	19	16	3	2.9
80	200	19	16	3	3.7
100	235	19	16	3	5.1
125	270	23.5	20.5	3	8.3
150	300	26	23	3	11.4
200	375	30	27	3	20.5
250	450	34.5	31.5	3	34.5
300	515	39.5	35.5	4	51
300Dimensions in millimeters			Masses in kilograms (approximated)		



Larger Diameter				Smaller Diameter		a	Mass
Nominal Size - DN	D	b	c ₁	Nominal Size - DN	c ₂		
200	340	17	3	80	3	40	13.3
	340	17	3	100	3	40	13.2
	340	17	3	125	3	40	13.5
350	505	20.5	4	250	3	48	32
400	565	20.5	4	250	3	48	39
	565	20.5	4	300	4	49	38
700	895	27.5	5	500	4	56	102
900	1115	32.5	5	700	5	63	165
1000	1230	35	5	700	5	63	222
	1230	35	5	800	5	68	209
Dimensions in millimeters				Masses in kilograms (approximated)			



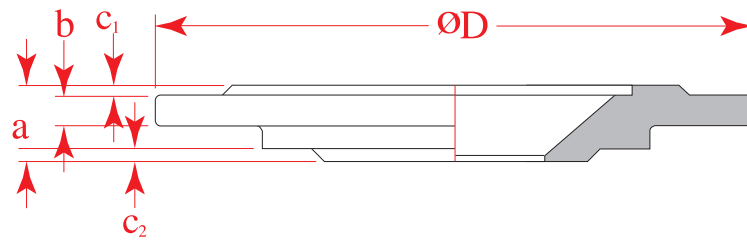
Larger Diameter				Smaller Diameter		a	Mass
Nominal Size - DN	D	b	c ₁	Nominal Size - DN	c ₂		
200	340	17	3	80	3	40	13
	340	17	3	100	3	40	13
	340	17	3	125	3	40	13.3
350	520	22.5	4	250	3	54	36.5
400	580	24	4	250	3	54	45
700	580	24	4	300	4	55	44.5
900	910	34.5	5	500	4	67	134
1000	1125	41.5	5	700	5	73	200
	1255	45	5	700	5	73	285
	1255	45	5	800	5	77	260

Dimensions in millimeters

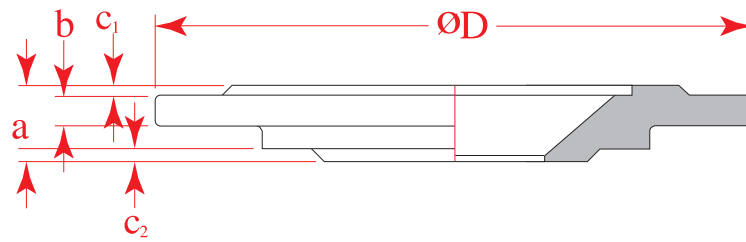
Masses in kilograms (approximated)

Reducing Flange PN 25

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Tawakol Metal Industries



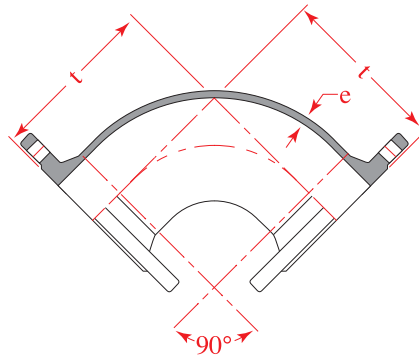
Larger Diameter				Smaller Diameter		a	Mass
Nominal Size - DN	D	b	c ₁	Nominal Size - DN	c ₂		
200	360	19	3	80	3	40	15
	360	19	3	100	3	47	16.8
	360	19	3	125	3	53	18.8
350	555	26	4	250	3	60	48.5
400	620	28	4	250	3	60	61
	620	28	4	300	4	61	60
Dimensions in millimeters				Masses in kilograms (approximated)			



Larger Diameter				Smaller Diameter		a	Mass
Nominal Size - DN	D	b	c ₁	Nominal Size - DN	c ₂		
200	375	27	3	80	3	40	20.5
	375	27	3	100	3	47	21.5
	375	27	3	125	3	53	22.5
Dimensions in millimeters				Masses in kilograms (approximated)			

Double-Flanged 1/4 Bend

توكول للصناعات المعدنية
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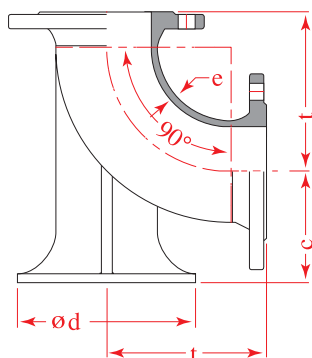


Nominal Size - DN	e	t	Mass with Flange			
			PN 10	PN 16	PN 25	PN 40
40	7	140	5.2	5.2	5.2	5.2
50	7	150	6.5	6.5	6.5	6.5
60	7	160	7.3	7.3	7.1	7.1
65	7	165	8.2	8.2	8	8
80	7	165	9.6	9.6	9.6	9.8
100	7.2	180	11.9	11.9	12.9	13
125	7.5	200	15.6	15.6	16.9	19.5
150	7.8	220	20	20	22	26.5
200	8.4	260	31	30.5	34.5	45
250	9	350	50	49.5	57	77
300	9.6	400	70	70	81	111
350	10.2	450	90	96	113	—
400	10.8	500	116	127	149	—
500	12	600	181	211	235	—
600	13.2	700	272	325	353	—
700	14.4	800	386	416	—	—
800	15.6	900	533	572	—	—
900	16.8	1000	698	745	—	—
1000	18	1100	907	990	—	—

Dimensions in millimeters

Masses in kilograms (approximated)

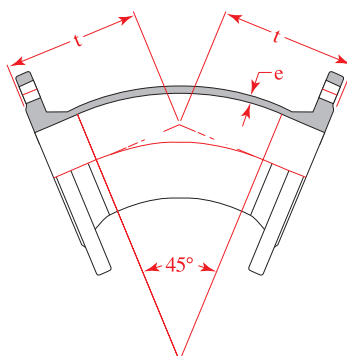
Double-Flanged 1/4 Duckfoot Bend



Nominal Size - DN	e	t	c	d	Mass with Flange			
					PN 10	PN 16	PN 25	PN 40
40								
50	7	150	95	150	9.1	9.1	9.1	9.1
60	7	160	100	160	10.3	10.3	10.1	10.1
65	7	165	100	165	11.5	11.5	11.3	11.3
80	7	165	110	180	14.1	14.1	14.1	14.2
100	7.2	180	125	200	17.3	17.8	18.8	18.8
125	7.5	200	140	225	23.5	23.5	24.5	27.5
150	7.3	220	160	250	30	30	32	36.5
200	8.4	250	190	300	46.5	46	50.5	61
250	9	350	225	350	75	75	82	102
300	9.6	400	255	400	106	105	116	146
350	10.2	450	290	450	139	145	162	—
400	10.8	500	320	500	178	189	212	—
500	12	600	385	600	283	313	337	—
600	13.2	700	450	700	428	481	509	—
Dimensions in millimeters					Masses in kilograms (approximated)			

Double-Flanged 1/8 Bend

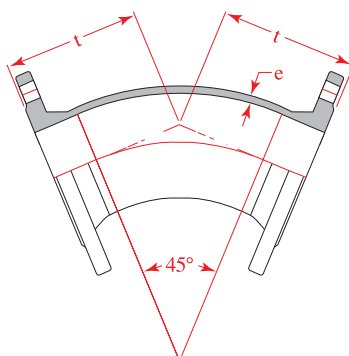
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Tawakol Metal Industries



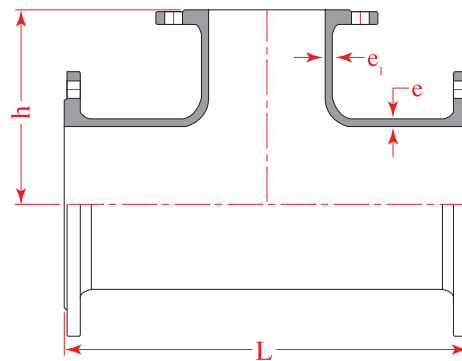
Nominal Size - DN	e	t	Mass with Flange			
			PN 10	PN 16	PN 25	PN 40
40	7	140	4.5	4.5	4.5	4.5
50	7	150	5.6	5.6	5.6	5.6
60	7	160	6.1	6.1	5.9	5.9
65	7	165	6.9	6.9	6.7	6.7
80	7	130	9.3	9.3	9.3	9.3
100	7.2	140	11.3	11.3	12.4	12.4
125	7.5	150	14.6	14.6	15.9	18.5
150	7.8	160	18.5	18.5	20.5	24.5
200	8.4	180	27.5	27	31	41.5
250	9	350	55	54	62	82
300	9.6	400	78	77	88	118
350	10.2	298	76	83	89	—
400	10.8	324	96	107	129	—
500	12	375	145	175	198	—
600	13.2	426	212	266	294	—
700	14.4	478	296	326	—	—
800	15.6	529	403	442	—	—
900	16.8	581	519	567	—	—
1000	18	632	668	751	—	—
1200	20.4	750	1050	1178	—	—
1400	22.8	775	1388	1524	—	—
1600	25.2	845	1915	2119	—	—
1800	27.6	910	2465	2717	—	—
2000	30	980	3149	3455	—	—
2200	32.4	880	3446	3804	—	—
2400	34.8	945	4277	4719	—	—
2600	37.2	1005	5175	5695	—	—

Dimensions in millimeters

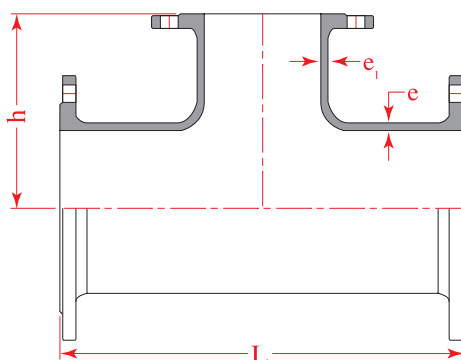
Masses in kilograms (approximated)



Nominal Size - DN	e	t	Mass with Flange			
			PN 10	PN 16	PN 25	PN 40
250	9	243	44	44	51	71
300	9.6	274	62	61	72	102
350	10.2	306	78	84	101	—
400	10.8	337	98	109	132	—
500	12	400	151	182	205	—
600	13.2	463	225	278	307	—
Dimensions in millimeters			Masses in kilograms (approximated)			



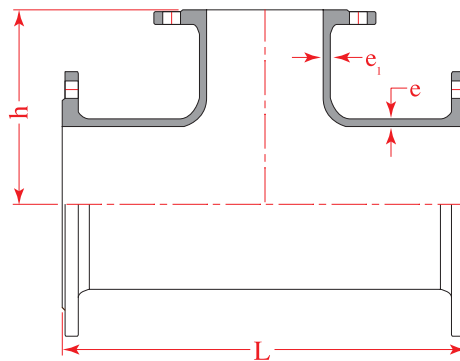
Body			Branch			Mass with Flange			
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25	PN 40
40	7.6	280	40	7.6	140	8.2	8.2	8.2	8.2
50	7.7	300	50	7.7	150	10.4	10.4	10.4	10.4
60	7.8	320	60	7.8	160	11.8	11.8	11.5	11.5
65	7.9	330	65	7.9	165	13.3	13.3	13	13
80	8.1	330	80	8.1	165	15.6	15.6	15.6	15.6
100	8.4	360	80	8.1	175	18.4	18.4	19.5	19.5
	8.4	360	100	8.4	180	19.4	19.4	21	21
125	8.8	400	80	8.1	190	23	23	24.5	27
	8.8	400	100	8.4	195	24	24	26	28.5
	8.8	400	125	8.8	200	25.5	25.5	27.5	31.5
150	9.1	440	80	8.1	205	28.5	28.5	31	36
	9.1	440	100	8.4	210	29.5	29.5	32	36.5
	9.1	440	150	9.1	220	32.5	32.5	36	42
200	9.8	520	80	8.1	235	42	41.5	46	57
	9.8	520	100	8.4	240	43	42	47.5	58
	9.8	520	150	9.1	250	46	45.5	51	64
	9.8	520	200	9.8	260	49.5	49	56	71
Dimensions in millimeters						Masses in kilograms (approximated)			



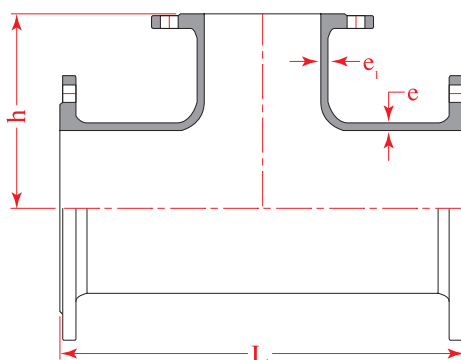
Body			Brach			Mass with Flange			
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25	PN 40
250	10.5	700	100	8.4	275	68	67	75	96
	10.5	700	200	9.8	325	76	75	85	110
	10.5	700	250	10.5	350	82	81	93	123
300	11.2	800	100	8.4	300	94	93	105	136
	11.2	800	200	9.8	350	102	101	114	150
	11.2	800	300	11.2	400	116	115	131	178
350	11.9	850	100	8.4	325	116	122	139	—
	11.9	850	200	9.8	325	121	128	146	—
	11.9	850	350	11.9	425	142	151	176	—
400	12.6	900	100	8.4	350	143	154	177	—
	12.6	900	200	9.8	350	148	159	184	—
	12.6	900	400	12.6	450	174	191	225	—
500	14	1000	100	8.4	400	210	241	265	—
	14	1000	200	9.8	400	215	245	271	—
	14	1000	400	12.6	500	242	276	311	—
	14	1000	500	14	500	252	297	332	—
600	15.4	1100	200	9.8	450	305	358	388	—
	15.4	1100	400	12.6	550	329	387	427	—
	15.4	1100	600	15.4	550	355	434	477	—
Dimensions in millimeters					Masses in kilograms (approximated)				

All-Flanged Tee DN 700 - DN 1000

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Body			Branch			Mass with Flange		
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25
700	16.8	650	200	9.8	525	258	298	—
	16.8	870	400	12.6	555	343	379	—
	16.8	1200	700	16.8	600	477	523	—
800	18.2	690	200	9.8	585	352	390	—
	18.2	910	400	12.6	615	441	484	—
	18.2	1350	600	15.4	645	613	678	—
	18.2	1350	800	18.2	675	657	715	—
900	19.6	730	200	9.8	645	436	484	—
	19.6	950	400	12.6	675	541	594	—
	19.6	1500	600	15.4	705	787	860	—
	19.6	1500	900	19.6	750	853	924	—
1000	21	770	200	9.8	705	546	629	—
	21	990	400	12.6	735	668	755	—
	21	1650	600	15.4	765	1007	1116	—
	21	1650	1000	21	825	1105	1229	—
Dimensions in millimeters			Masses in kilograms (approximated)					

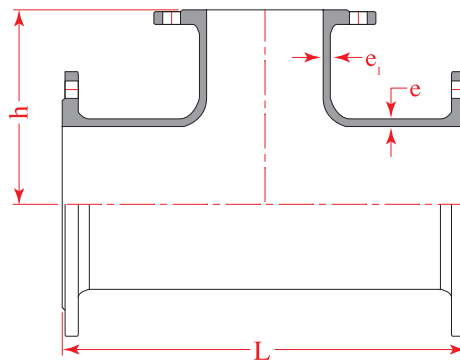


Body			Branch			Mass with Flange		
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25
1200	23.8	1240	600	15.4	885	1101	1256	—
	23.8	1470	800	18.2	915	1291	1439	—
	23.8	1700	1000	21	945	1494	1664	—
1400	26.6	1550	600	15.4	980	1555	1818	—
	26.6	1760	800	18.2	1010	1886	2041	—
	26.6	2015	1000	21	1040	2131	2309	—
1600	29.4	1600	600	15.4	1090	2167	2398	—
	29.4	1835	800	18.2	1120	2452	2675	—
	29.4	2065	1000	21	1150	2740	2986	—
	29.4	2300	1200	23.8	1180	3058	3327	—
1800	32.2	1655	600	15.4	1200	2694	2972	—
	32.2	1885	800	18.2	1230	3023	3299	—
	32.2	2120	1000	21	1260	3375	3669	—
	32.2	2350	1200	23.8	1290	3740	4056	—
2000	35	1705	600	15.4	1310	3309	3642	—
	35	2170	1000	21	1370	4112	4459	—
	35	2635	1400	26.6	1430	4966	5340	—
Dimensions in millimeters			Masses in kilograms (approximated)					

All-Flanged Tee

DN 2200 - DN 2600

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Body			Branch			Mass with Flange		
Nominal Size - DN	e	L	Nominal Size - DN	e ₁	h	PN 10	PN 16	PN 25
2200	37.8	1560	600	15.4	1420	3675	4034	—
	37.8	2220	1200	23.8	1510	5026	5413	—
	37.8	2880	1800	32.2	1600	6474	6934	—
2400	40.6	1620	600	15.4	1530	4418	4849	—
	40.6	2280	1200	23.8	1620	5963	6432	—
	40.6	2940	1800	32.2	1710	7614	8145	—
2600	43.4	1680	600	15.4	1640	5214	5711	—
	43.4	2560	1400	26.6	1760	7585	8123	—
	43.4	3220	2000	35	1850	9505	10128	—
Dimensions in millimeters			Masses in kilograms (approximated)					



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