



PRODUCT CATALOG
2026

INDUSTRIAL PIPING SOLUTIONS

BUTT WELD PIPE FITTINGS

Seamless & Welded Pipe Fittings
for Oil, Gas, Petrochemical
and Industrial Piping Systems

ELBOWS

TEES

REDUCERS

STUB ENDS

CAPS

IRAN ETASAL ASIA

Manufacturer & Supplier of Steel Butt-Weld Pipe Fittings

iranetetal.com

TECHNICAL
CATALOG

02 • COMPANY PROFILE

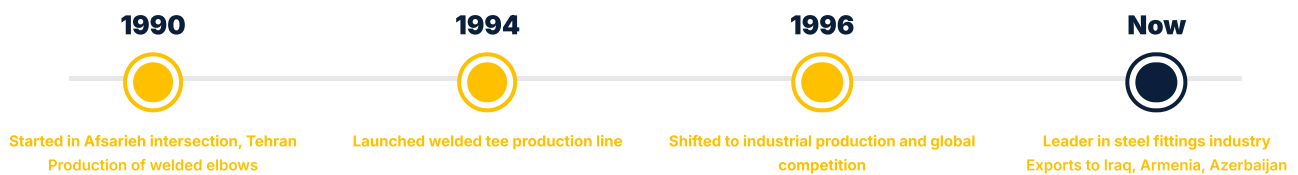
IRAN ETASAL ASIA

Manufacturer & Supplier of Steel Butt-Weld Pipe Fittings

From a small workshop in Afsarieh, Tehran to a leading manufacturer and exporter of butt weld pipe fittings across Iran and beyond. Over three decades of commitment to quality, trust, and craftsmanship.



OUR JOURNEY



OUR STORY

What started as a small workshop...

What started as a small workshop grew through decades of experience, continuous learning, and a commitment to doing things right.

At **Iran Etasal Asia**, our history is not simply a collection of dates. It is the story of how experience became expertise, how expertise became manufacturing capability, and how consistent quality earned the trust of customers across industries and beyond borders.

From our first welded fittings to a growing portfolio of steel pipe fittings, we have continued to develop our products around the needs of real projects — where dimensional accuracy, material integrity, and dependable performance matter.

Today, our products serve projects across **oil, gas, petrochemical, construction**, and other industrial sectors, both in Iran and international markets.

Decades have changed our scale. **They have not changed what we stand for.**

Standard in Manufacturing. Confidence in Every Connection.

03

PRODUCT OVERVIEW

Iran Etasal Asia supplies butt weld pipe fittings for demanding industrial piping applications. Our product range includes elbows, tees, reducers, stub ends and caps in various sizes, materials and schedules. We manufacture fittings from **1/2" up to 48"** in both seamless and welded constructions.

01

ELBOW

Elbows

45°, 90° and 180° elbows, long radius and short radius.

[VIEW TECHNICAL DATA →](#)

02

TEE

Tees

Equal and reducing tees for butt weld piping systems.

[VIEW TECHNICAL DATA →](#)

03

REDUCER

Reducers

Concentric and eccentric reducers for industrial piping.

[VIEW TECHNICAL DATA →](#)

04

STUB END

Stub Ends

Butt weld stub ends for flanged piping systems.

[VIEW TECHNICAL DATA →](#)

05

CAP

Caps

Seamless and welded pipe caps for industrial applications.

[VIEW TECHNICAL DATA →](#)

TECHNICAL COVERAGE

Dimensions · Weight · Material · Schedule · Standards · Applications

ASME
B16.9

ASTM
A234 / A403

MSS
SP-25 / SP-43

MANUFACTURING CAPACITY

1/2" – 48" NPS



04 · BUTT WELD FITTINGS

ELBOWS

Butt Weld Pipe Elbows

Premium butt weld pipe elbows available in 45°, 90° and 180° configurations, with long radius, short radius and 3D options. Manufactured to ASME B16.9 from high-quality carbon, stainless and alloy steels.

TECHNICAL SPECIFICATIONS

STANDARD
ASME B16.9

MATERIAL
A234 WPB / A403

SIZE RANGE
1/2" – 48" NPS

MANUFACTURING
Seamless / Welded

ENDS
Beveled

SCHEDULES
SCH 40 / 80 / 160

AVAILABLE DIMENSIONS

45° / 90° LR / 3D

O.D.: 21.3 – 1219 mm · CTE: 16 – 1829 mm

[VIEW →](#)

90° SR (Short Radius)

O.D.: 33.4 – 610 mm · CTE: 25 – 610 mm

[VIEW →](#)

180° LR / SR

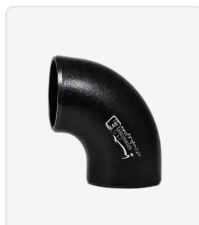
O.D.: 21.3 – 610 mm · CTE: 76 – 1219 mm

[VIEW →](#)

90° LR Reducing

Size: 1/2" – 24" NPS · CTE: per size

[VIEW →](#)





05 · BUTT WELD FITTINGS

TEES

Butt Weld Pipe Tees

Premium butt weld pipe tees available in equal and reducing configurations. Engineered for reliable performance in high-pressure piping systems. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.

TECHNICAL SPECIFICATIONS

STANDARD
ASME B16.9

MATERIAL
A234 WPB / A403

SIZE RANGE
1/2" – 48" NPS

MANUFACTURING
Seamless / Welded

ENDS
Beveled

SCHEDULES
SCH 40 / 80 / 160

AVAILABLE DIMENSIONS

Equal Tee

O.D.: 21.3 – 1219 mm · Run = Branch

[VIEW →](#)

Reducing Tee

O.D.: 21.3 – 1219 mm · Run > Branch

[VIEW →](#)

06 · BUTT WELD FITTINGS

REDUCERS

Butt Weld Pipe Reducers

Premium butt weld pipe reducers available in concentric and eccentric designs. Ideal for transitioning between different pipe sizes in industrial piping systems. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.

TECHNICAL SPECIFICATIONS

STANDARD
ASME B16.9

MATERIAL
A234 WPB / A403

SIZE RANGE
3/4" – 48" NPS

MANUFACTURING
Seamless / Welded

ENDS
Beveled

SCHEDULES
SCH 40 / 80 / 160

AVAILABLE DIMENSIONS

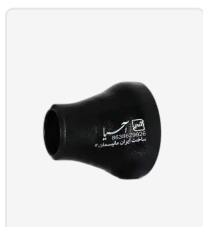
Concentric Reducer

O.D.: 26.7 – 1016 mm · Length (H): 38 – 610 mm

[VIEW →](#)

Eccentric Reducer

O.D.: 26.7 – 1016 mm · Length (H): 38 – 610 mm

[VIEW →](#)

07 · BUTT WELD FITTINGS

STUB ENDS

Butt Weld Pipe Stub Ends

Premium butt weld stub ends for flanged piping systems. Available in Type A, B and C configurations to meet various industry requirements. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.

TECHNICAL SPECIFICATIONS

STANDARD
ASME B16.9

MATERIAL
A234 WPB / A403

SIZE RANGE
1/2" – 24" NPS

MANUFACTURING
Seamless / Welded

ENDS
Beveled

LAP THICKNESS
Per Type

AVAILABLE DIMENSIONS

Type A — Long Barrel

O.D.: 21.3 – 610 mm · Standard Lap

[VIEW →](#)

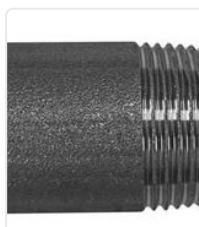
Type B — Short Barrel

O.D.: 21.3 – 610 mm · Short Lap

[VIEW →](#)

Type C — Without Hub

O.D.: 21.3 – 610 mm · No Hub

[VIEW →](#)



08 · BUTT WELD FITTINGS

CAPS

Butt Weld Pipe Caps

Premium butt weld pipe caps for sealing pipe ends in industrial systems. Available in seamless and welded constructions for various applications. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.

TECHNICAL SPECIFICATIONS

STANDARD
ASME B16.9

MATERIAL
A234 WPB / A403

SIZE RANGE
1/2" – 48" NPS

MANUFACTURING
Seamless / Welded

ENDS
Beveled

SCHEDULES
SCH 40 / 80 / 160

AVAILABLE DIMENSIONS

Seamless Cap

[VIEW →](#)

O.D.: 21.3 – 1219 mm · Length (E): 25 – 610 mm

Welded Cap

[VIEW →](#)

O.D.: 21.3 – 1219 mm · Length (E): 25 – 610 mm



09 • REFERENCE SECTION

STANDARDS & DIMENSIONS

ASME B16.9 • ASTM A234 • ASTM A403 • MSS SP-43

REFERENCE
STANDARDS

Select a product category below to view detailed dimensional tables, tolerances, material specifications and applicable standards for each type of butt weld fitting.



01 • STANDARDS

ELBOWS

45° / 90° / 180° • LR / SR / 3D

[VIEW STANDARDS →](#)

02 • STANDARDS

TEES

Equal / Reducing / Barred

[VIEW STANDARDS →](#)

03 • STANDARDS

REDUCERS

Concentric / Eccentric

[VIEW STANDARDS →](#)

04 • STANDARDS

STUB ENDS

Type A / B / C

[VIEW STANDARDS →](#)

05 • STANDARDS

CAPS

Seamless / Welded

[VIEW STANDARDS →](#)

B16.9

ASME STANDARD

06 • REFERENCE

GENERAL

Standards • Materials • Notes

[VIEW REFERENCE →](#)

ABOUT THIS SECTION

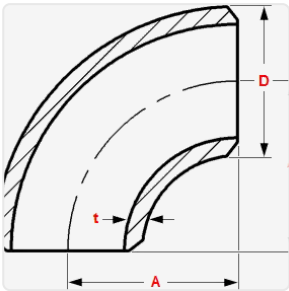
All dimensional tables and tolerances in this catalog are based on **ASME B16.9** (Factory-Made Wrought Butt welding Fittings) unless otherwise stated. Material specifications follow **ASTM A234** (carbon & alloy steel) and **ASTM A403** (stainless steel).

10.1

ELBOWS 45° / 90° LR / 3D

BUTT WELD · ASME B16.9

Long radius 45° and 90° elbows, plus 3D series, manufactured to ASME B16.9 from carbon, stainless and alloy steels. Available in seamless and welded constructions from 1/2" to 48" NPS.



NPS	O.D. (D)	LR		3D	
		90° (A)	45° (B)	90° (A)	45° (B)
1/2	21.3	38	16	—	—
3/4	26.7	38	19	57	24
1	33.4	38	22	76	31
1¼	42.2	48	25	95	39
1½	48.3	57	29	114	47
2	60.3	76	35	152	63
2½	73.0	95	44	190	79
3	88.9	114	51	229	95
3½	101.6	133	57	267	111
4	114.3	152	64	305	127
5	141.3	190	79	381	157
6	168.3	229	95	457	189
8	219.1	305	127	610	252
10	273.0	381	159	762	316
12	323.8	457	190	914	378

NPS	O.D. (D)	LR		3D	
		90° (A)	45° (B)	90° (A)	45° (B)
14	355.6	533	222	1067	441
16	406.4	610	254	1219	505
18	457.0	686	286	1372	568
20	508.0	762	318	1524	632
22	559.0	838	343	1676	694
24	610.0	914	381	1829	757
26	660.0	991	406	1981	821
28	711.0	1067	438	2134	883
30	762.0	1143	470	2286	946
32	813.0	1219	502	2438	1010
34	864.0	1295	533	2591	1073
36	914.0	1372	565	2743	1135
38	965.0	1448	600	2896	1200
40	1016.0	1524	632	3048	1264
42	1067.0	1600	660	3200	1326
44	1118.0	1676	695	3353	1389
46	1168.0	1753	727	3505	1453
48	1219.0	1829	759	3658	1516

NOTES

Dimensions in mm. Wall thickness (t) per customer spec. A & B = Center to End.

STANDARD

ASME B16.9 · ASTM A234 WPB / A403 · MSS SP-43.

RANGE

Size: 1/2" – 48" NPS. Other schedules available on request.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

90° LR Reducing

10.2

DIMENSIONAL TOLERANCES

ELBOWS 45° & 90° LR & 3D · ASME B16.9

The following tolerances apply to butt weld elbows 45° and 90° LR and 3D, manufactured to ASME B16.9. All tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

GROUP 1 — NPS 1/2 TO 8					mm
Item	1/2 to 2½	3 to 3½	4	5 to 8	
Outside Diameter at Bevel (D)	+ 1.6 / – 0.8	1.6	1.6	+ 2.4 / – 1.6	
Inside Diameter at End	0.8	1.6	1.6	1.6	
Center to End LR (A/B)	2	2	2	2	
Center to End 3D (A/B)	3	3	3	3	

GROUP 2 — NPS 10 TO 48					mm
Item	10 to 18	20 to 24	26 to 30	32 to 48	
Outside Diameter at Bevel (D)	+ 4 / – 3.2	+ 6.4 / – 4.8	+ 6.4 / – 4.8	+ 6.4 / – 4.8	
Inside Diameter at End	3.2	4.8	+ 6.4 / – 4.8	+ 6.4 / – 4.8	
Center to End LR (A/B)	2	2	3	5	
Center to End 3D (A/B)	3	3	6	6	
Wall Thickness (t)	Not less than 87.5% of Nominal Wall Thickness				

NOTES

- 1. Dimensional tolerances are in millimeters unless otherwise indicated.
- 2. All tolerances are equal ± except as noted.
- 3. Wall thickness (t) must be specified by customer.
- 4. Center to End LR (A/B) refers to the distance from the centerline of the fitting to the end of the fitting.
- 5. For other sizes or special requirements, please contact our technical department.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

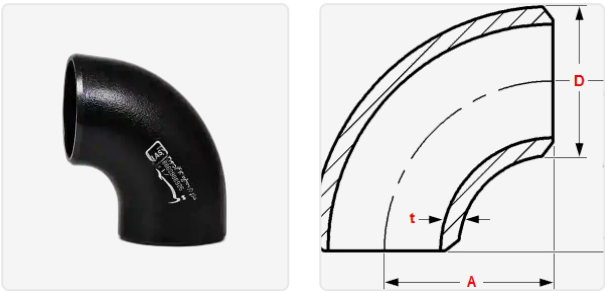
90° LR Reducing

10.3

SHORT RADIUS ELBOWS 90°

BUTT WELD · ASME B16.9

Short radius 90° elbows for compact piping layouts where space is limited. Manufactured to ASME B16.9 from carbon, stainless and alloy steels. Available from 1" to 24" NPS.



NPS	O.D. (D)	CTE (A)	NPS	O.D. (D)	CTE (A)
1	33.4	25	8	219.1	203
1¼	42.2	32	10	273.0	254
1½	48.3	38	12	323.8	305
2	60.3	51	14	355.6	356
2½	73.0	64	16	406.4	406
3	88.9	76	18	457.0	457
3½	101.6	89	20	508.0	508
4	114.3	102	22	559.0	559
5	141.3	127	24	610.0	610
6	168.3	152	—	—	—

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer. *CTE = Center To End dimensions.

DIMENSIONAL TOLERANCES — 90° SR					ASME B16.9 · mm
NPS	1/2 to 2½	3 to 3½	4	5 to 8	
Outside Diameter at Bevel (D)	+ 1.6 / - 0.8	1.6	1.6	+ 2.4 / - 1.6	
Inside Diameter at End	0.8	1.6	1.6	1.6	
CTE (A)	2	2	2	2	
NPS	10 to 18	20 to 24	26 to 30	32 to 48	
Outside Diameter at Bevel (D)	+ 4 / - 3.2	+ 6.4 / - 4.8	+ 6.4 / - 4.8	+ 6.4 / - 4.8	
Inside Diameter at End	3.2	4.8	+ 6.4 / - 4.8	+ 6.4 / - 4.8	
CTE (A)	2	2	3	5	
Wall Thickness (t)	Not less than 87.5% of Nominal Wall Thickness				

Dimensional tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

90° LR Reducing

10.4

180° RETURN BENDS

LONG RADIUS & SHORT RADIUS · ASME B16.9

180° return bends available in both long radius and short radius configurations. Used for reversing flow direction in piping systems. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS	O.D. (D)	180° LR		180° SR	
		C to C (O)	B to F (K)	C to C (O)	B to F (K)
1/2	21.3	76	48	—	—
3/4	26.7	76	51	—	—
1	33.4	76	56	51	41
1¼	42.2	95	70	64	52
1½	48.3	114	83	76	62
2	60.3	152	106	102	81
2½	73.0	190	132	127	100
3	88.9	229	159	152	121
3½	101.6	267	184	178	140
4	114.3	305	210	203	159
5	141.3	381	262	254	197
6	168.3	457	313	305	237
8	219.1	610	414	406	313
10	273.0	762	518	508	391

NPS	O.D. (D)	180° LR		180° SR	
		C to C (O)	B to F (K)	C to C (O)	B to F (K)
12	323.8	914	619	610	467
14	355.6	1067	711	711	533
16	406.4	1219	813	813	610
18	457.0	1372	914	914	686
20	508.0	1524	1016	1016	762
22	559.0	1676	1118	1118	838
24	610.0	1829	1219	1219	914

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer. *C to C = Center to Center · B to F = Back to Face.

180° LR

Long radius return bends. Center to Center (O) and Back to Face (K).

180° SR

Short radius return bends. Available from 1" NPS.

STANDARD

ASME B16.9 · ASTM A234 WPB / A403 · MSS SP-43.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

90° LR Reducing

10.5

DIMENSIONAL TOLERANCES

ELBOWS 180° LR & SR · ASME B16.9

The following tolerances apply to butt weld return bends 180° long radius and short radius, manufactured to ASME B16.9. All tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

GROUP 1 — NPS 1/2 TO 8					mm
Item	1/2 to 2½	3 to 3½	4	5 to 8	
Outside Diameter at Bevel (D)	+ 1.6 / – 0.8	1.6	1.6	+ 2.4 / – 1.6	
Inside Diameter at End	0.8	1.6	1.6	1.6	
Center to Center (O)	6	6	6	6	
Back to Face (K)	6	6	6	6	

GROUP 2 — NPS 10 TO 24			mm
Item	10 to 18	20 to 24	
Outside Diameter at Bevel (D)	+ 4 / – 3.2	+ 6.4 / – 4.8	
Inside Diameter at End	3.2	4.8	
Center to Center (O)	10	10	
Back to Face (K)	6	6	
Wall Thickness (t)	Not less than 87.5% of Nominal Wall Thickness		

NOTES

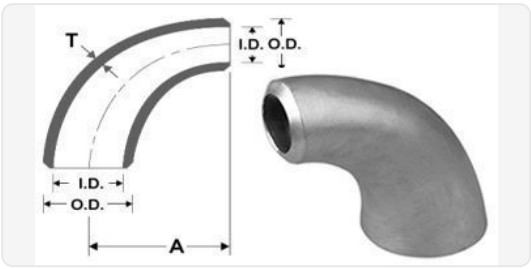
- 1. Dimensional tolerances are in millimeters unless otherwise indicated.
- 2. All tolerances are equal ± except as noted.
- 3. Wall thickness (t) must be specified by customer.
- 4. Center to Center (O) refers to the distance between the two end faces of the return bend.
- 5. Back to Face (K) refers to the distance from the back of the bend to the end face.
- 6. MSS SP-43 only covers stainless steel butt weld fittings made for use with Schedule 5S and 10S pipe and Stub Ends suitable for use with Schedule 40S pipe, as defined in ASME B36.19. The dimensions and dimensional tolerances defined in MSS SP-43 are substantially the same as those in ASME B16.9 specifications from NPS 1/2 – NPS 24, except with regard to the outside diameter at the bevel.

10.6

90° LR REDUCING ELBOWS

BUTT WELD · ASME B16.9

Reducing 90° long radius elbows that change both direction and pipe size in one fitting. Used where piping layout requires a combined turn and reduction. Available from 4"×3" to 24"×12" NPS.



NPS RED. × RUN	O.D. LARGE	O.D. SMALL	CTE (A)
4 × 3	114.3	88.9	152
4 × 2½	114.3	73.0	152
4 × 2	114.3	60.3	152
5 × 4	141.3	114.3	190
5 × 3½	141.3	101.6	190
5 × 3	141.3	88.9	190
5 × 2½	141.3	73.0	190
6 × 5	168.3	141.3	229
6 × 4	168.3	114.3	229
6 × 3½	168.3	101.6	229
6 × 3	168.3	88.9	229
8 × 6	219.1	168.3	305
8 × 5	219.1	141.3	305
8 × 4	219.1	114.3	305
10 × 8	273.0	219.1	381
10 × 6	273.0	168.3	381
10 × 5	273.0	141.3	381
12 × 10	323.8	273.0	457
12 × 8	323.8	219.1	457
12 × 6	323.8	168.3	457
14 × 12	355.6	323.8	533
14 × 10	355.6	273.0	533
14 × 8	355.6	219.1	533

NPS RED. × RUN	O.D. LARGE	O.D. SMALL	CTE (A)
16 × 14	406.4	355.6	610
16 × 12	406.4	323.8	610
16 × 10	406.4	273.0	610
18 × 16	457.0	406.4	686
18 × 14	457.0	355.6	686
18 × 12	457.0	323.8	686
18 × 10	457.0	273.0	686
20 × 18	508.0	457.0	762
20 × 16	508.0	406.4	762
20 × 14	508.0	355.6	762
20 × 12	508.0	323.8	762
20 × 10	508.0	273.0	762
24 × 22	610.0	559.0	914
24 × 20	610.0	508.0	914
24 × 18	610.0	457.0	914
24 × 16	610.0	406.4	914
24 × 14	610.0	355.6	914
24 × 12	610.0	323.8	914

All dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

REDUCING ELBOW

Combines direction change and pipe size reduction in one fitting.

CTE (A)

Center to End measured from the large end of the fitting.

STANDARD

ASME B16.9 · ASTM A234 WPB / A403 · MSS SP-43.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

90° LR Reducing

10.7

DIMENSIONAL TOLERANCES

REDUCING ELBOWS 90° LR · ASME B16.9

The following tolerances apply to butt weld reducing elbows 90° long radius, manufactured to ASME B16.9. All tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

GROUP 1 — NPS 1/2 TO 8					mm
Item	1/2 to 2½	3 to 3½	4	5 to 8	
Outside Diameter at Bevel (D)	+ 1.6 / - 0.8	1.6	1.6	+ 2.4 / - 1.6	
Inside Diameter at End	0.8	1.6	1.6	1.6	
Center to End LR (A)	2	2	2	2	

GROUP 2 — NPS 10 TO 24			mm
Item	10 to 18	20 to 24	
Outside Diameter at Bevel (D)	+ 4 / - 3.2	+ 6.4 / - 4.8	
Inside Diameter at End	3.2	4.8	
Center to End LR (A)	2	2	
Wall Thickness (t)	Not less than 87.5% of Nominal Wall Thickness		

NOTES

- 1. Dimensional tolerances are in millimeters unless otherwise indicated.
- 2. All tolerances are equal ± except as noted.
- 3. Wall thickness (t) must be specified by customer.
- 4. Center to End LR (A) refers to the distance from the centerline of the fitting to the end of the fitting.
- 5. For reducing elbows, dimensions apply to the large end unless otherwise specified.

OTHER ELBOW DIMENSIONS:

45° / 90° LR / 3D

90° SR

180° LR / SR

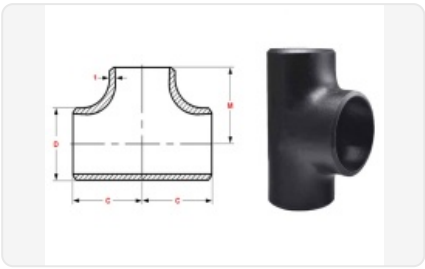
90° LR Reducing

11.1

STRAIGHT TEES

BUTT WELD · ASME B16.9

Equal (straight) tees with equal run and branch dimensions. Used to branch a piping system at 90° with equal pipe sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels. Available from 1/2" to 48" NPS.



NPS	O.D. (D)	CTE (C)	CTE (M)
1/2	21.3	25	25
3/4	26.7	29	29
1	33.4	38	38
1¼	42.2	48	48
1½	48.3	57	57
2	60.3	64	64
2½	73.0	76	76
3	88.9	86	86
3½	101.6	95	95
4	114.3	105	105
5	141.3	124	124
6	168.3	143	143
8	219.1	178	178
10	273.0	216	216
12	323.8	254	254
14	355.6	279	279
16	406.4	305	305
18	457.0	343	343
20	508.0	381	381

NPS	O.D. (D)	CTE (C)	CTE (M)
22	559.0	419	419
24	610.0	432	432
26	660.0	495	495
28	711.0	521	521
30	762.0	559	559
32	813.0	597	597
34	864.0	635	635
36	914.0	673	673
38	965.0	711	711
40	1016.0	749	749
42	1067.0	762	711
44	1118.0	813	762
46	1168.0	851	800
48	1219.0	889	838

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer. Outlet dimension (M) for NPS 26 and larger is recommended but not required.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

ASME B16.9 · ASTM A234 WPB / A403 · MSS SP-43.

OTHER TEE DIMENSIONS:

Straight Tee

Reducing Tee

11.2

DIMENSIONAL TOLERANCES

STRAIGHT TEES · ASME B16.9

The following tolerances apply to butt weld straight tees, manufactured to ASME B16.9. All tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

DIMENSIONAL TOLERANCES								mm
NPS	1/2 to 2½	3 to 3½	4	5 to 8	10 to 18	20 to 24	26 to 30	32 to 48
Outside Dia at Bevel (D)	+1.6 / -0.8	1.6	1.6	+2.4 / -1.6	+4 / -3.2	+6.4 / -4.8	+6.4 / -4.8	+6.4 / -4.8
Inside Dia at End	0.8	1.6	1.6	1.6	3.2	4.8	+6.4 / -4.8	+6.4 / -4.8
Center to End (C / M)	2	2	2	2	2	2	3	5
Wall Thk (t)	Not less than 87.5% of Nominal Wall Thickness							

NOTES

- 1. Dimensional tolerances are in millimeters unless otherwise indicated.
- 2. All tolerances are equal ± except as noted.
- 3. Wall thickness (t) must be specified by customer.
- 4. Center to End (C/M) applies to both the run (C) and branch (M) of the tee.
- 5. MSS SP-43 only covers stainless steel buttweld fittings made for use with Schedule 5S and 10S pipe and Stub Ends suitable for use with Schedule 40S pipe, as defined in ASME B36.19. The dimensions and dimensional tolerances defined in MSS SP-43 are substantially the same as those in ASME B16.9 specifications from NPS 1/2 – NPS 24, except with regard to the outside diameter at the bevel.

OTHER TEE DIMENSIONS:

Straight Tee

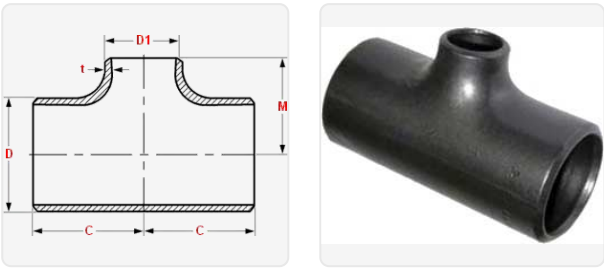
Reducing Tee

11.3

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 1/2 – 4

Reducing tees with different run and branch pipe sizes. Used to branch a piping system where the branch size is smaller than the run. Manufactured to ASME B16.9.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
3/4×1/2	26.7	21.3	29	29
1×1/2	33.4	21.3	38	38
1×3/4	33.4	26.7	38	38
1¼×1/2	42.2	21.3	48	48
1¼×3/4	42.2	26.7	48	48
1¼×1	42.2	33.4	48	48
1½×1/2	48.3	21.3	57	57
1½×3/4	48.3	26.7	57	57
1½×1	48.3	33.4	57	57
1½×1¼	48.3	42.2	57	57
2×3/4	60.3	26.7	64	44
2×1	60.3	33.4	64	51
2×1¼	60.3	42.2	64	57
2×1½	60.3	48.3	64	60
2½×1	73.0	33.4	76	57

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
2½×1¼	73.0	42.2	76	64
2½×1½	73.0	48.3	76	67
2½×2	73.0	60.3	76	70
3×1¼	88.9	42.2	86	70
3×1½	88.9	48.3	86	73
3×2	88.9	60.3	86	76
3×2½	88.9	73.0	86	83
3½×1½	101.6	48.3	95	79
3½×2	101.6	60.3	95	83
3½×2½	101.6	73.0	95	89
3½×3	101.6	88.9	95	92
4×1½	114.3	48.3	105	86
4×2	114.3	60.3	105	89
4×2½	114.3	73.0	105	95
4×3	114.3	88.9	105	98
4×3½	114.3	101.6	105	102

- NPS
- ½–4
- 5–16
- 18–26
- 28–32
- 34–38
- 40–42
- 44–48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

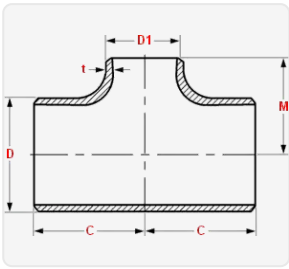
ASME B16.9 · ASTM A234 / A403.

11.4

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 5 – 16

Reducing tees for run sizes 5" through 16" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
5 × 2	141.3	60.3	124	105
5 × 2½	141.3	73.0	124	108
5 × 3	141.3	88.9	124	111
5 × 3½	141.3	101.6	124	114
5 × 4	141.3	114.3	124	117
6 × 2½	168.3	73.0	143	121
6 × 3	168.3	88.9	143	124
6 × 3½	168.3	101.6	143	127
6 × 4	168.3	114.3	143	130
6 × 5	168.3	141.3	143	137

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
8 × 3½	219.1	101.6	178	152
8 × 4	219.1	114.3	178	156
8 × 5	219.1	141.3	178	162
8 × 6	219.1	168.3	178	168
10 × 4	273.0	114.3	216	184
10 × 5	273.0	141.3	216	191
10 × 6	273.0	168.3	216	194
10 × 8	273.0	219.1	216	203
12 × 5	323.8	141.3	254	216
12 × 6	323.8	168.3	254	219
12 × 8	323.8	219.1	254	229
12 × 10	323.8	273.0	254	241
14 × 6	355.6	168.3	279	238
14 × 8	355.6	219.1	279	248
14 × 10	355.6	273.0	279	257
14 × 12	355.6	323.8	279	270
16 × 6	406.4	168.3	305	264
16 × 8	406.4	219.1	305	273
16 × 10	406.4	273.0	305	283
16 × 12	406.4	323.8	305	295
16 × 14	406.4	355.6	305	305

- NPS
- ½–4
- 5–16
- 18–26
- 28–32
- 34–38
- 40–42
- 44–48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

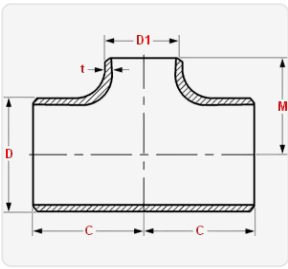
CTE (C) Center to End of the run pipe.	CTE (M) Center to End of the branch pipe.	STANDARD ASME B16.9 · ASTM A234 / A403.
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11.5

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 18 – 26

Reducing tees for run sizes 18" through 26" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
18 × 8	457.0	219.1	343	298
18 × 10	457.0	273.0	343	308
18 × 12	457.0	323.8	343	321
18 × 14	457.0	355.6	343	330
18 × 16	457.0	406.4	343	330
20 × 8	508.0	219.1	381	324
20 × 10	508.0	273.0	381	333
20 × 12	508.0	323.8	381	346
20 × 14	508.0	355.6	381	356
20 × 16	508.0	406.4	381	356
20 × 18	508.0	457.0	381	368
22 × 10	559.0	273.0	419	359
22 × 12	559.0	323.8	419	371
22 × 14	559.0	355.6	419	381
22 × 16	559.0	406.4	419	381

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
22 × 18	559.0	457.0	419	394
22 × 20	559.0	508.0	419	406
24 × 10	610.0	273.0	432	384
24 × 12	610.0	323.8	432	397
24 × 14	610.0	355.6	432	406
24 × 16	610.0	406.4	432	406
24 × 18	610.0	457.0	432	419
24 × 20	610.0	508.0	432	432
24 × 22	610.0	559.0	432	432
26 × 12	660.0	323.8	495	422
26 × 14	660.0	355.6	495	432
26 × 16	660.0	406.4	495	432
26 × 18	660.0	457.0	495	444
26 × 20	660.0	508.0	495	457
26 × 22	660.0	559.0	495	470
26 × 24	660.0	610.0	495	483

NPS

- 1/2-4
- 5-16
- 18-26
- 28-32
- 34-38
- 40-42
- 44-48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

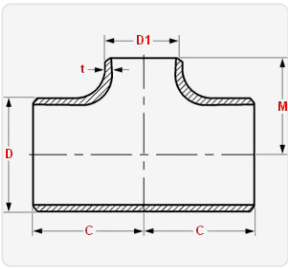
ASME B16.9 · ASTM A234 / A403.

11.6

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 28 – 32

Reducing tees for run sizes 28" through 32" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
28 × 12	711.0	323.8	521	448
28 × 14	711.0	355.6	521	457
28 × 16	711.0	406.4	521	457
28 × 18	711.0	457.0	521	470
28 × 20	711.0	508.0	521	483
28 × 22	711.0	559.0	521	495
28 × 24	711.0	610.0	521	508
28 × 26	711.0	660.0	521	521
30 × 10	762.0	273.0	559	460
30 × 12	762.0	323.8	559	473
30 × 14	762.0	355.6	559	483
30 × 16	762.0	406.4	559	483
30 × 18	762.0	457.0	559	495

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
30 × 20	762.0	508.0	559	508
30 × 22	762.0	559.0	559	521
30 × 24	762.0	610.0	559	533
30 × 26	762.0	660.0	559	546
30 × 28	762.0	711.0	559	546
32 × 14	813.0	355.6	597	508
32 × 16	813.0	406.4	597	508
32 × 18	813.0	457.0	597	521
32 × 20	813.0	508.0	597	533
32 × 22	813.0	559.0	597	546
32 × 24	813.0	610.0	597	559
32 × 26	813.0	660.0	597	572
32 × 28	813.0	711.0	597	572
32 × 30	813.0	762.0	597	584

NPS

- 1/2-4
- 5-16
- 18-26
- 28-32
- 34-38
- 40-42
- 44-48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

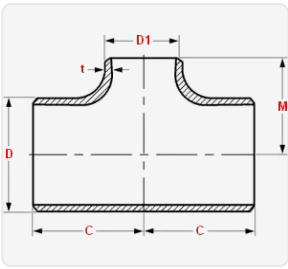
ASME B16.9 · ASTM A234 / A403.

11.7

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 34 – 38

Reducing tees for run sizes 34" through 38" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
34 × 16	864.0	406.4	635	533
34 × 18	864.0	457.0	635	546
34 × 20	864.0	508.0	635	559
34 × 22	864.0	559.0	635	572
34 × 24	864.0	610.0	635	584
34 × 26	864.0	660.0	635	597
34 × 28	864.0	711.0	635	597
34 × 30	864.0	762.0	635	610
34 × 32	864.0	813.0	635	622
36 × 16	914.0	406.4	673	559
36 × 18	914.0	457.0	673	572

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
36 × 20	914.0	508.0	673	584
36 × 22	914.0	559.0	673	597
36 × 24	914.0	610.0	673	610
36 × 26	914.0	660.0	673	622
36 × 28	914.0	711.0	673	622
36 × 30	914.0	762.0	673	635
36 × 32	914.0	813.0	673	648
36 × 34	914.0	864.0	673	660
38 × 18	965.0	457.0	711	597
38 × 20	965.0	508.0	711	610
38 × 22	965.0	559.0	711	622
38 × 24	965.0	610.0	711	635
38 × 26	965.0	660.0	711	648
38 × 28	965.0	711.0	711	648
38 × 30	965.0	762.0	711	673
38 × 32	965.0	813.0	711	686
38 × 34	965.0	864.0	711	698
38 × 36	965.0	914.0	711	711

NPS

- 1/2-4
- 5-16
- 18-26
- 28-32
- 34-38
- 40-42
- 44-48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

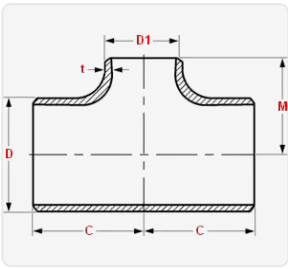
ASME B16.9 · ASTM A234 / A403.

11.8

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 40 – 42

Reducing tees for run sizes 40" through 42" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
40 × 18	1016.0	457.0	749	622
40 × 20	1016.0	508.0	749	635
40 × 22	1016.0	559.0	749	648
40 × 24	1016.0	610.0	749	660
40 × 26	1016.0	660.0	749	673
40 × 28	1016.0	711.0	749	673
40 × 30	1016.0	762.0	749	698
40 × 32	1016.0	813.0	749	711
40 × 34	1016.0	864.0	749	724
40 × 36	1016.0	914.0	749	737
40 × 38	1016.0	965.0	749	749
42 × 16	1067.0	406.4	762	635
42 × 18	1067.0	457.0	762	648
42 × 20	1067.0	508.0	762	660

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
42 × 22	1067.0	559.0	762	660
42 × 24	1067.0	610.0	762	660
42 × 26	1067.0	660.0	762	698
42 × 28	1067.0	711.0	762	698
42 × 30	1067.0	762.0	762	711
42 × 32	1067.0	813.0	762	711
42 × 34	1067.0	864.0	762	711
42 × 36	1067.0	914.0	762	711
42 × 38	1067.0	965.0	762	711
42 × 40	1067.0	1016.0	762	711

NPS

- 1/2-4
- 5-16
- 18-26
- 28-32
- 34-38
- 40-42
- 44-48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

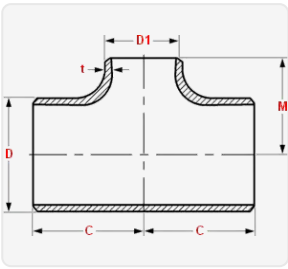
ASME B16.9 · ASTM A234 / A403.

11.9

REDUCING TEES

BUTT WELD · ASME B16.9 · NPS 44 – 48

Reducing tees for run sizes 44" through 48" with various branch sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
44 × 20	1118	508	813	686
44 × 22	1118	559	813	686
44 × 24	1118	610	813	698
44 × 26	1118	660	813	698
44 × 28	1118	711	813	698
44 × 30	1118	762	813	711
44 × 32	1118	813	813	711
44 × 34	1118	864	813	724
44 × 36	1118	914	813	724
44 × 38	1118	965	813	737
44 × 40	1118	1016	813	749
44 × 42	1118	1067	813	762
46 × 22	1168	559	851	724
46 × 24	1168	610	851	724
46 × 26	1168	660	851	737
46 × 28	1168	711	851	737
46 × 30	1168	762	851	737
46 × 32	1168	813	851	749
46 × 34	1168	864	851	749
46 × 36	1168	914	851	762
46 × 38	1168	965	851	762

NPS RED × RUN	O.D. (D)	O.D. (D1)	CTE (C)	CTE (M)
46 × 40	1168	1016	851	775
46 × 42	1168	1067	851	787
46 × 44	1168	1118	851	800
48 × 22	1219	559	889	737
48 × 24	1219	610	889	737
48 × 26	1219	660	889	762
48 × 28	1219	711	889	762
48 × 30	1219	762	889	762
48 × 32	1219	813	889	787
48 × 34	1219	864	889	787
48 × 36	1219	914	889	787
48 × 38	1219	965	889	813
48 × 40	1219	1016	889	813
48 × 42	1219	1067	889	813
48 × 44	1219	1118	889	838
48 × 46	1219	1168	889	838

NPS

- 1/2-4
- 5-16
- 18-26
- 28-32
- 34-38
- 40-42
- 44-48

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

CTE (C)

Center to End of the run pipe.

CTE (M)

Center to End of the branch pipe.

STANDARD

ASME B16.9 · ASTM A234 / A403.

OTHER TEE DIMENSIONS:

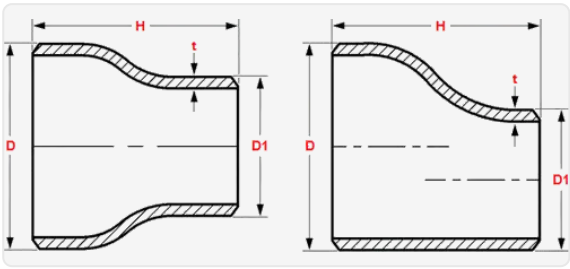
Straight Tee

Reducing Tee

12.1
REDUCERS

CONCENTRIC & ECCENTRIC · BUTT WELD · ASME B16.9

Concentric and eccentric reducers from NPS ¾ through 12, with various reduced sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	LENGTH (H)
¾ × ½	26.7	21.3	38
1 × ½	33.4	21.3	51
1 × ¾	33.4	26.7	51
1¼ × ½	42.2	21.3	51
1¼ × ¾	42.2	26.7	51
1¼ × 1	42.2	33.4	51
1½ × ½	48.3	21.3	64
1½ × ¾	48.3	26.7	64
1½ × 1	48.3	33.4	64
1½ × 1¼	48.3	42.2	64
2 × ¾	60.3	26.7	76
2 × 1	60.3	33.4	76
2 × 1¼	60.3	42.2	76
2 × 1½	60.3	48.3	76
2½ × 1	73	33.4	89
2½ × 1¼	73	42.2	89
2½ × 1½	73	48.3	89
2½ × 2	73	60.3	89
3 × 1¼	88.9	42.2	89
3 × 1½	88.9	48.3	89
3 × 2	88.9	60.3	89
3 × 2½	88.9	73	89
3½ × 1¼	101.6	42.2	102
3½ × 1½	101.6	48.3	102
3½ × 2	101.6	60.3	102
3½ × 2½	101.6	73	102
3½ × 3	101.6	88.9	102

NPS RED × RUN	O.D. (D)	O.D. (D1)	LENGTH (H)
4 × 1½	114.3	48.3	102
4 × 2	114.3	60.3	102
4 × 2½	114.3	73	102
4 × 3	114.3	88.9	102
4 × 3½	114.3	101.6	102
5 × 2	141.3	60.3	127
5 × 2½	141.3	73	127
5 × 3	141.3	88.9	127
5 × 3½	141.3	101.6	127
5 × 4	141.3	114.3	127
6 × 2½	168.3	73	140
6 × 3	168.3	88.9	140
6 × 3½	168.3	101.6	140
6 × 4	168.3	114.3	140
6 × 5	168.3	141.3	140
8 × 3½	219.1	101.6	152
8 × 4	219.1	114.3	152
8 × 5	219.1	141.3	152
8 × 6	219.1	168.3	152
10 × 4	273	114.3	178
10 × 5	273	141.3	178
10 × 6	273	168.3	178
10 × 8	273	219.1	178
12 × 5	323.9	141.3	203
12 × 6	323.9	168.3	203
12 × 8	323.9	219.1	203
12 × 10	323.9	273	203

NPS

¾–12

14–40

Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

O.D. (D)

Outside diameter of large end.

O.D. (D1)

Outside diameter of small end.

STANDARD

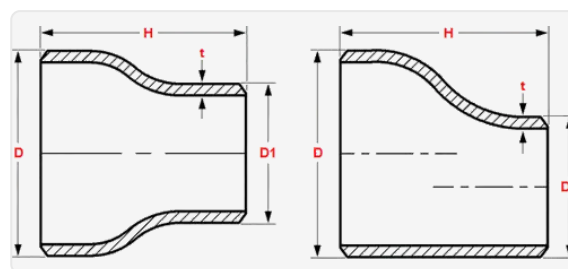
ASME B16.9 · ASTM A234 / A403.

12.2

REDUCERS

CONCENTRIC & ECCENTRIC · BUTT WELD · ASME B16.9

Concentric and eccentric reducers from NPS 14 through 40, with various reduced sizes. Manufactured to ASME B16.9 from carbon, stainless and alloy steels.



NPS RED × RUN	O.D. (D)	O.D. (D1)	LENGTH (H)
14 × 6	355.6	168.3	330
14 × 8	355.6	219.1	330
14 × 10	355.6	273	330
14 × 12	355.6	323.9	330
16 × 8	406.4	219	356
16 × 10	406.4	273	356
16 × 12	406.4	323.9	356
16 × 14	406.4	355.6	356
18 × 10	457	273	381
18 × 12	457	323.9	381
18 × 14	457	355.6	381
18 × 16	457	406.4	381
20 × 12	508	323.9	508
20 × 14	508	355.6	508
20 × 16	508	406.4	508
20 × 18	508	457	508
22 × 14	559	355.6	508
22 × 16	559	406.4	508
22 × 18	559	457	508
22 × 20	559	508	508
24 × 16	610	406.4	508
24 × 18	610	457	508
24 × 20	610	508	508
24 × 22	610	559	508
26 × 18	660	457	610
26 × 20	660	508	610
26 × 22	660	559	610
26 × 24	660	610	610
28 × 18	711	457	610
28 × 20	711	508	610

NPS RED × RUN	O.D. (D)	O.D. (D1)	LENGTH (H)
28 × 24	711	610	610
28 × 26	711	660	610
30 × 20	762	508	610
30 × 24	762	610	610
30 × 26	762	660	610
30 × 28	762	711	610
32 × 24	813	610	610
32 × 26	813	660	610
32 × 28	813	711	610
32 × 30	813	762	610
34 × 24	864	610	610
34 × 26	864	660	610
34 × 30	864	762	610
34 × 32	864	813	610
36 × 24	914	610	610
36 × 26	914	660	610
36 × 30	914	762	610
36 × 32	914	813	610
36 × 34	914	864	610
38 × 26	965	660	610
38 × 28	965	711	610
38 × 30	965	762	610
38 × 32	965	813	610
38 × 34	965	864	610
38 × 36	965	914	610
40 × 30	1016	762	610
40 × 32	1016	813	610
40 × 34	1016	864	610
40 × 36	1016	914	610
40 × 38	1016	965	610

NPS

¾-12

14-40

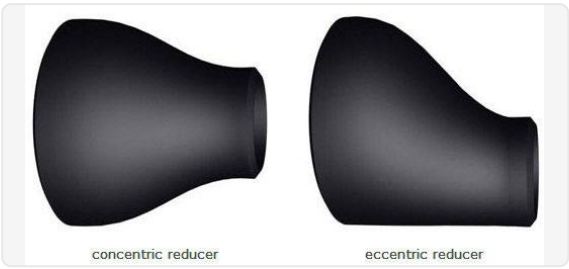
Dimensions are in millimeters unless otherwise indicated. Wall thickness (t) must be specified by customer.

12.3

REDUCERS — TOLERANCES

CONCENTRIC & ECCENTRIC · BUTT WELD · ASME B16.9

Dimensional tolerances for concentric and eccentric reducers according to ASME B16.9. Tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.



NOMINAL PIPE SIZE	O.D. AT BEVEL (D)	I.D. AT END	OVERALL LENGTH (H)
½ to 2½	+ 1.6 – 0.8	0.8	2
3 to 3½	1.6	1.6	2
4	1.6	1.6	2
5 to 8	+ 2.4 – 1.6	1.6	2

NOMINAL PIPE SIZE	O.D. AT BEVEL (D)	I.D. AT END	OVERALL LENGTH (H)
10 to 18	+ 4 – 3.2	3.2	2
20 to 24	+ 6.4 – 4.8	4.8	2
26 to 30	+ 6.4 – 4.8	+ 6.4 – 4.8	5
32 to 48	+ 6.4 – 4.8	+ 6.4 – 4.8	5

NPS

¾–12

14–40

TOL.

WALL THICKNESS (t)

Not less than 87.5% of Nominal Wall Thickness.

Dimensional tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

NOTE

MSS SP-43 only covers stainless steel buttweld fittings made for use with Schedule 5S and 10S pipe and Stub Ends suitable for use with Schedule 40S pipe, as defined in ASME B36.19. The dimensions and dimensional tolerances defined in MSS SP-43 are substantially the same as those in ASME B16.9 specifications from NPS ½ – NPS 24, except with regard to the outside diameter at the bevel.

O.D. (D)
Outside diameter at bevel.

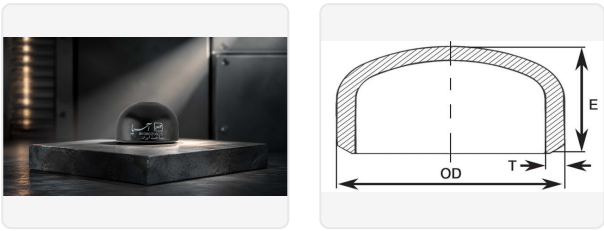
I.D. at End
Inside diameter at end.

STANDARD
ASME B16.9 · ASTM A234 / A403.

13.1
CAPS

BUTT WELD · ASME B16.9

Butt weld pipe caps for run sizes from ½" through 48". Ellipsoidal shape conforming to ASME Boiler and Pressure Vessel Code requirements.



NPS	O.D. (D)	LENGTH (H)	LENGTH (H1)	WT (MIN)
½	21.3	25	25	4.57
¾	26.7	25	25	3.81
1	33.4	38	38	4.57
1¼	42.2	38	38	4.83
1½	48.3	38	38	5.08
2	60.3	38	44	5.59
2½	73	38	51	7.11
3	88.9	51	64	7.62
3½	101.6	64	76	8.13
4	114.3	64	76	8.64
5	141.3	76	89	9.65
6	168.3	89	102	10.92
8	219.1	102	127	12.70
10	273	127	152	12.70
12	323.8	152	178	12.70
14	355.6	165	191	12.70
16	406.4	178	203	12.70
18	457	203	229	12.70
20	508	229	254	12.70
22	559	254	254	12.70
24	610	267	305	12.70

NPS	O.D. (D)	LENGTH (H)	LENGTH (H1)	WT (MIN)
26	660	267	—	...
28	711	267	—	...
30	762	267	—	...
32	813	267	—	...
34	864	237	—	...
36	914	267	—	...
38	965	305	—	...
40	1016	305	—	...
42	1067	305	—	...
44	1118	343	—	...
46	1168	343	—	...
48	1219	343	—	...

GENERAL NOTES

- Dimensions are in millimeters unless otherwise indicated.
- Wall thickness (t) must be specified by customer.
- The shape shall be ellipsoidal and shall conform to the requirements given in the ASME Boiler and Pressure Vessel Code.
- Length (H) applies for thickness not exceeding that given in column (WT) — Wall Thickness for Length (H).
- Length (H1) applies for thickness greater than that given in column (WT) for NPS 24 and smaller. For NPS 26 and larger, length (H1) shall be by agreement between the manufacturer and purchaser.

O.D. (D)

Outside diameter at bevel.

LENGTH (H / H1)

H for standard WT · H1 for heavy WT.

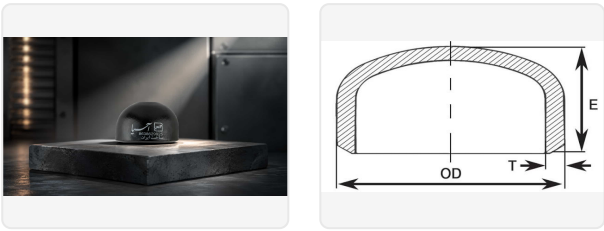
STANDARD

ASME B16.9 · ASTM A234 / A403.

13.2
CAPS — TOLERANCES

BUTT WELD · ASME B16.9

Dimensional tolerances for butt weld pipe caps according to ASME B16.9. Tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.



TOLERANCES — NPS ½ TO 8

NOMINAL PIPE SIZE	OUTSIDE DIAMETER AT BEVEL (D)	INSIDE DIAMETER AT END	OVERALL LENGTH (H)
½ to 2½	+ 1.6 – 0.8	0.8	3
3 to 3½	1.6	1.6	3
4	1.6	1.6	3
5 to 8	+ 2.4 – 1.6	1.6	6

SECTION

DIM.

TOL.

TOLERANCES — NPS 10 TO 48

NOMINAL PIPE SIZE	OUTSIDE DIAMETER AT BEVEL (D)	INSIDE DIAMETER AT END	OVERALL LENGTH (H)
10 to 18	+ 4 – 3.2	3.2	6
20 to 24	+ 6.4 – 4.8	4.8	6
26 to 30	+ 6.4 – 4.8	+ 6.4 – 4.8	10
32 to 48	+ 6.4 – 4.8	+ 6.4 – 4.8	10

WALL THICKNESS (t)

Not less than 87.5% of Nominal Wall Thickness.

Dimensional tolerances are in millimeters unless otherwise indicated and are equal ± except as noted.

NOTE

MSS SP-43 only covers stainless steel butt weld fittings made for use with Schedule 5S and 10S pipe and Stub Ends suitable for use with Schedule 40S pipe, as defined in ASME B36.19. The dimensions and dimensional tolerances defined in MSS SP-43 are substantially the same as those in ASME B16.9 specifications from NPS ½ – NPS 24, except with regard to the outside diameter at the bevel.

O.D. (D)

Outside diameter at bevel.

I.D. at End

Inside diameter at end.

STANDARD

ASME B16.9 · ASTM A234 / A403.

GENERAL STANDARDS

APPLICABLE STANDARDS

ASME B16.9 Factory-Made Wrought Buttwelding Fittings
ASTM A234 Wrought Carbon Steel & Alloy Steel Fittings
ASTM A403 Wrought Austenitic Stainless Steel Fittings
MSS SP-43 Wrought Stainless Steel Butt-Welding Fittings
ISO 9001:2015 Quality Management System

MATERIAL GRADES

GRADE	STANDARD	TYPE
WPB	A234	Carbon Steel
WPC	A234	Carbon Steel
WP11 / WP22	A234	Alloy Steel
WP304 / WP316	A403	Stainless Steel
WPL6	A420	Low Temp Steel

DIMENSIONAL TOLERANCES

Item	≤2½"	3-3½"	4-8"
O.D. at Bevel (D)	+1.6/-0.8	1.6	+2.4/-1.6
I.D. at End	0.8	1.6	1.6
CTE (A/B/C)	2	2	2
Wall Thickness (t)	Not less than 87.5% of Nominal Wall Thickness		

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QUALITY & CERTIFICATIONS

Iran Etasal Asia is committed to delivering products that meet international quality standards. Our manufacturing processes, materials and finished products are tested and certified according to recognized industry specifications.

ASME

B16.9 — Factory-Made Wrought Buttwelding Fittings
B16.11 — Forged Fittings, Socket-Welding and Threaded
B16.5 — Pipe Flanges and Flanged Fittings

ASTM

A234 WPB — Carbon Steel
A403 — Stainless Steel
A420 — Low Temperature Steel
A234 — Alloy Steel

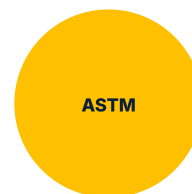
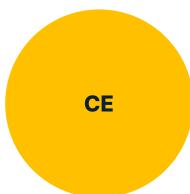
MSS

SP-25 — Standard Marking System
SP-43 — Wrought Stainless Steel Fittings

ISO

ISO 9001:2015 — Quality Management
ISO 14001:2015 — Environmental Management

CERTIFICATION MARKS



 MANUFACTURING CAPABILITY

Seamless & Welded — 1/2" to 48" NPS

All products are supplied with mill test certificates upon request. Additional testing (radiographic, ultrasonic, hydrostatic) and third-party inspection services are available. Please contact our technical department for further details.

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