Weld Neck Flange — ASME B16.1 Class 125

Forged steel welding neck flanges, flat face, drilled to ANSI / ASME B16.1 Class 125 (cast iron) bolt pattern · NPS 1" – 24" and 30" – 60" · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316

ASME B16.1 CLASS 125 WELD NECK FLANGE

ASME B16.1 is the standard for grey cast iron pipe flanges and fittings (Classes 25, 125, 250). Cast iron cannot be butt-welded, so a **"B16.1 Class 125 weld neck flange"** is a forged steel welding neck flange with a flat face and the Class 125 bolt pattern — connecting steel pipe directly to cast-iron valves, pumps, strainers, fittings and AWWA C207 Class D piping.

For NPS 1 – 24 the B16.1 Class 125 drilling is identical to ASME B16.5 Class 150; for NPS 30 – 60 it matches ASME B16.47 Series A (MSS SP-44) Class 150. Manufactured by TESCO Steel & Engineering, Mumbai, bored to the customer's pipe schedule.

> **Mating with cast iron:** use **flat face (FF)** with a full-face gasket — a raised face bends and can crack a cast-iron flange (ASME B16.5 §5.3.4). The joint rating is that of the cast-iron component (page 3), not of the steel flange.

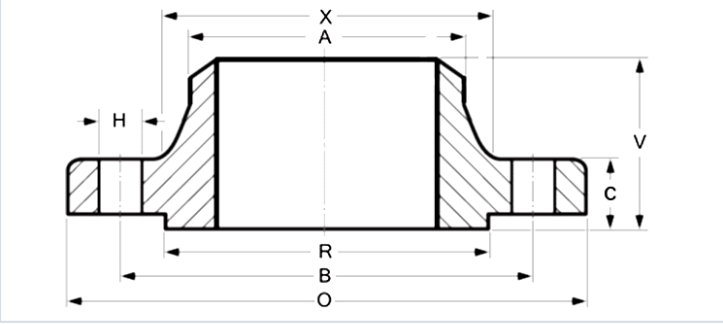
KEY FEATURES

- **B16.1 Class 125 drilling** — bolt circle, hole count and size match cast-iron Class 125 flanges, 1" – 60".
- **Flat face, serrated finish** — for full-face gaskets against cast iron; RF available where mating steel.
- **Tapered hub, butt-weld end** — 37.5° bevel, 1.6 mm land; bored to pipe schedule.
- **Materials and certification** — ASTM A105, A350 LF2, A182 F304/F316, duplex; EN 10204 3.1 certificates.

SPECIFICATION SUMMARY

Product	Weld neck flange (WN), forged steel, flat face
Drilling	ASME B16.1 Class 125 (ANSI B16.1 125 lb) cast-iron flange pattern
Body	NPS 1 – 24: ASME B16.5 Cl. 150 WN · NPS 30 – 60: B16.47 Ser. A Cl. 150 WN
Size range	NPS 1" – 24"; 30", 36", 42", 48", 54", 60" (72" – 96" on request)
Facing	Flat face (FF) standard; RF 2 mm on request
Bore	To pipe schedule (STD shown in table)
Weld end	37.5° bevel, 1.6 mm root face, ASME B16.25
Materials	ASTM A105 / A105N; A350 LF2; A182 F304/L, F316/L; duplex F51 / F53
Bolting	A307 Gr. B or A193 B7 with full-face gasket (A307 Gr. B only if RF)

WELD NECK FLANGE DIMENSIONAL DRAWING



O Flange outside diameter	**C** Flange thickness
X Hub diameter at base	**A** Hub diameter at bevel (= pipe OD)
R Raised face Ø (RF option)	**V** Length through hub
B Bolt circle Ø (B16.1 Cl. 125)	**H** Bolt hole Ø (B16.1 Cl. 125)
Face Flat face standard (no R)	**Bevel** 37.5° ± 2.5°, 1.6 mm land

WELD NECK FLANGE DIMENSIONS — ASME B16.1 CLASS 125 DRILLING (MM)

TABLE 1 · NPS 1 – 24 **B16.1 Cl.125 drilling = B16.5 Cl.150** BODY ASME B16.5 · MM — 18 sizes

NPS inch	O	C	X	A	Bore	V	B	Bolting — B16.1 Class 125			Weight
	OD	Thick.	Hub Ø base	Hub Ø bevel	STD	Length thru hub	Bolt circle	No.	H · Hole Ø	Bolt	kg approx.
1"	110	14.3	49	33.4	26.6	56	79.4	4	15.9	1/2"	1.4
1 1/4"	115	15.9	59	42.2	35.1	57	88.9	4	15.9	1/2"	1.6
1 1/2"	125	17.5	65	48.3	40.9	62	98.4	4	15.9	1/2"	2.0
2"	150	19.1	78	60.3	52.5	64	120.7	4	19.1	5/8"	2.7
2 1/2"	180	22.4	90	73.0	62.7	70	139.7	4	19.1	5/8"	3.9
3"	190	23.9	108	88.9	77.9	70	152.4	4	19.1	5/8"	4.5
3 1/2"	215	23.9	122	101.6	90.1	71	177.8	8	19.1	5/8"	5.5
4"	230	23.9	135	114.3	102.3	76	190.5	8	19.1	5/8"	6.8
5"	255	23.9	164	141.3	128.2	89	215.9	8	22.2	3/4"	8.6
6"	280	25.4	192	168.3	154.1	89	241.3	8	22.2	3/4"	10.9
8"	345	28.6	246	219.1	202.7	102	298.5	8	22.2	3/4"	17.7
10"	405	30.2	305	273.1	254.5	102	362.0	12	25.4	7/8"	23.6
12"	485	31.8	365	323.9	303.2	114	431.8	12	25.4	7/8"	36.3
14"	535	35.0	400	355.6	336.5	127	476.3	12	28.6	1"	49.9
16"	595	36.6	457	406.4	387.4	127	539.8	16	28.6	1"	63.5
18"	635	39.7	505	457.2	438.2	140	577.9	16	31.8	1 1/8"	68.0
20"	700	42.9	559	508.0	489.0	145	635.0	20	31.8	1 1/8"	81.6
24"	815	47.7	663	609.6	590.6	152	749.3	20	35.0	1 1/4"	118

TABLE 2 · NPS 30 – 60 **B16.1 Cl.125 drilling = B16.47 A Cl.150** BODY B16.47 A (MSS SP-44) · MM — 6 sizes

NPS inch	O	C	X	A	V	B	Bolting — B16.1 Class 125			Weight
	OD	Thick.	Hub Ø base	Hub Ø bevel	Length thru hub	Bolt circle	No.	H · Hole Ø	Bolt	kg approx.
30"	985	74.7	781	762.0	136.6	914.4	28	34.9	1 1/4"	181
36"	1170	90.5	933	914.4	157.6	1085.8	32	41.3	1 1/2"	290
42"	1345	96.9	1092	1066.8	171.6	1257.3	36	41.3	1 1/2"	404
48"	1510	108.0	1248	1219.2	192.6	1422.4	44	41.3	1 1/2"	538
54"	1685	120.7	1403	1371.6	215.6	1593.8	44	47.6 †	1 3/4"	719
60"	1855	131.8	1559	1524.0	239.6	1759.0	52	47.6 †	1 3/4"	928

- Bolt circle B, hole count and hole Ø H per ASME B16.1 Class 125, which coincides with ASME B16.5 Class 150 (NPS 1 – 24) and B16.47 Series A / MSS SP-44 Class 150 (NPS 30 – 60). O, C, X, A, V per those steel-flange standards, listed as published for raised face — the **flat-face flange is 2 mm thinner** in C and V.
- † NPS 54 / 60: ASME B16.1 specifies 2" (50.8 mm) holes for 1¾" bolts; B16.47 Series A uses 47.6 mm — drilled 47.6 mm unless the B16.1 hole is specified.
- NPS 26, 28, 32 – 46, 50 – 58 are not B16.1 sizes; supplied to B16.47 Series A Class 150. Bore shown for STD pipe; supplied to the schedule ordered. Weights approximate, carbon steel.

Where used: cast-iron valves, pump casings, strainers and expansion joints · AWWA C207 Class D / C110 ductile-iron fittings · fire-water, HVAC, cooling-water and effluent lines. **Also known as:** ANSI B16.1 125 lb FF weld neck · Class 125 FF WN · steel flange with CI drilling · 125# WNFF.

WELD NECK FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common); A694 F42 – F65 for pipeline service
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321
Duplex / super duplex	ASTM A182 F51 (UNS S31803 / S32205), F53 (S32750)
Copper-nickel	Cu-Ni 90/10 (C70600) composite or solid flanges for seawater — on request
Equivalent EN grades	P250GH (1.0460), 1.4301, 1.4404 on request

PRESSURE–TEMPERATURE RATINGS

MATING CAST-IRON RATING **B16.1 Class 125** PSIG (BAR) · ASTM A126 CLASS B

Temperature °C	NPS 1 – 12	NPS 14 – 24	NPS 30 – 48
−29 to 66 (−20 to 150 °F)	200 (13.8)	150 (10.3)	150 (10.3)
93 (200 °F)	190 (13.1)	135 (9.3)	115 (7.9)
121 (250 °F)	175 (12.1)	125 (8.6)	85 (5.9)
149 (300 °F)	165 (11.4)	110 (7.6)	50 (3.4)
177 (350 °F)	150 (10.3)	100 (6.9)	—
204 (400 °F)	140 (9.7)	—	—
232 (450 °F)	125 (8.6)	—	—

Ratings of the cast-iron mating flange / fitting per ASME B16.1 Class 125, ASTM A126 Class B material (Class A material is rated lower — see B16.1 Table 1). The steel weld neck flange itself is rated per ASME B16.5 / B16.47 Class 150 (e.g. A105: 19.6 bar at 38 °C); the assembled joint is limited to the lower cast-iron rating. Sizes above NPS 48: refer to ASME B16.1.

QUALITY & DOCUMENTATION

- Forged from certified billets / bars; normalised or solution-annealed per material specification.
- ISO 9001:2015 quality management system; marking per MSS SP-25 including "B16.1 CL125 DRILLING" and "FF".
- EN 10204 3.1 material test certificates with heat-number traceability; 3.2 third-party endorsement on request.
- Dimensional inspection to B16.5 / B16.47 tolerances; drilling template-checked against B16.1 Class 125; face finish per MSS SP-6.
- NDT (UT / MPI / DPT), PMI for stainless grades, NACE MR0175 and galvanising / coating on request.

FREQUENTLY ASKED QUESTIONS

Is a B16.1 Class 125 flange the same as a B16.5 Class 150 flange?

The bolt pattern is the same for NPS 1 – 24, so they bolt together. B16.1 covers cast iron with a flat face and lower ratings; B16.5 covers steel, normally raised face. A steel Class 150 FF flange is therefore the usual "Class 125" weld neck.

Why flat face and a full-face gasket?

Cast iron is brittle. A full-face gasket spreads bolt load over the whole flange face so the cast-iron flange is not bent by the bolting moment.

Which bolts should be used?

With FF and a full-face gasket, ASTM A307 Gr. B or A193 B7 bolting may be used. If a raised face must be used against cast iron, ASME B16.5 restricts bolting to low-strength A307 Gr. B with a ring gasket ≤ 1.6 mm thick.

Can you supply NPS 26 or 72 – 96?

Yes — NPS 26 – 60 non-B16.1 sizes to B16.47 Series A Class 150; NPS 72 – 96 to B16.1 Class 125 or AWWA C207 Class D drilling, against a drawing.

ORDERING INFORMATION

Specify: quantity · size (NPS) · weld neck, ASME B16.1 Class 125 drilling · facing (FF standard / RF) · bore / pipe schedule · material grade · hole size for NPS 54 – 60 · certification (3.1 / 3.2, NACE) · surface protection (anti-rust oil, paint, galvanising).