Weld Neck Flange — ASME B16.1 Class 250

Forged steel welding neck flanges, raised face, drilled to ANSI / ASME B16.1 Class 250 (cast iron) bolt pattern · NPS 1" – 24", 30" and 36" · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316

ASME B16.1 CLASS 250 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 250 weld neck flange"** is a forged steel welding neck flange with a raised face and the Class 250 bolt pattern — connecting steel pipe directly to Class 250 cast-iron valves, pumps, strainers and fittings.

For NPS 1 – 24 the B16.1 Class 250 drilling is identical to ASME B16.5 Class 300; for NPS 30 and 36 it matches ASME B16.47 Series A Class 300. Made by TESCO Steel & Engineering, Mumbai, bored to the customer's pipe schedule.

Mating with cast iron: Class 250 cast iron has a 1.6 mm raised face. Per ASME B16.5 §5.3.4 use a ring gasket ≤ 1.6 mm thick with low-strength A307 Gr. B bolting (or FF + full-face gasket for B7 studs). The joint rating is that of the cast-iron part (page 3), not of the steel flange.

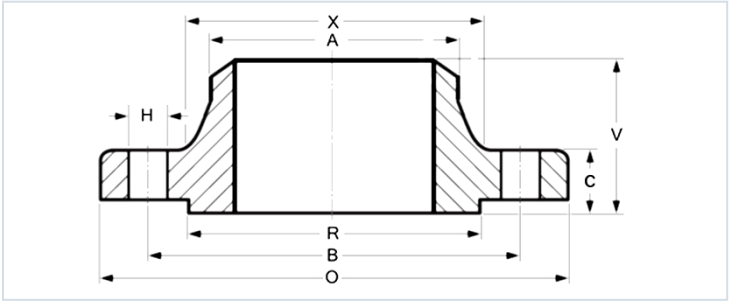
KEY FEATURES

- **B16.1 Class 250 drilling** — bolt circle, hole count and size match cast-iron Class 250 flanges, 1" – 36".
- **Raised face 2 mm, serrated** — mates with the 1.6 mm RF of Class 250 cast iron; FF on request.
- **Tapered hub, butt-weld end** — 37.5° bevel, 1.6 mm land; bored to pipe schedule.
- **Materials and certification** — A105, A350 LF2, A182 F304/F316, duplex; EN 10204 3.1.

SPECIFICATION SUMMARY

Product	Weld neck flange (WN), forged steel, raised face
Drilling	ASME B16.1 Class 250 (ANSI B16.1 250 lb) cast-iron flange pattern
Body	NPS 1 – 24: ASME B16.5 Cl. 300 WN · NPS 30, 36: B16.47 Ser. A Cl. 300 WN
Size range	NPS 1" – 24"; 30", 36" (42", 48" on request)
Facing	Raised face (RF) 2 mm standard; flat face 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
Bolting	A307 Gr. B with RF + ring gasket; A193 B7 with FF + full-face gasket

WELD NECK FLANGE DIMENSIONAL DRAWING



O Flange outside diameter	**C** Flange thickness (incl. 2 mm RF)
X Hub diameter at base	**A** Hub diameter at bevel (= pipe OD)
R Raised face Ø (2 mm high)	**V** Length through hub
B Bolt circle Ø (B16.1 Cl. 250)	**H** Bolt hole Ø (B16.1 Cl. 250)
Bore To pipe schedule (not dimensioned)	**Bevel** 37.5° ± 2.5°, 1.6 mm land

WELD NECK FLANGE DIMENSIONS — ASME B16.1 CLASS 250 DRILLING (MM)

TABLE 1 · NPS 1 – 24 **B16.1 Cl.250 drilling = B16.5 Cl.300** BODY ASME B16.5 · MM — 18 sizes

NPS inch	O	C	X	A	Bore	V	B	Bolting — B16.1 Class 250			Weight
	OD	Thick.	Hub Ø base	Hub Ø bevel	STD	Length thru hub	Bolt circle	No.	H · Hole Ø	Bolt	kg approx.
1"	125	17.5	54	33.4	26.6	62	88.9	4	19.1	5/8"	1.8
1 1/4"	135	19.1	64	42.2	35.1	65	98.4	4	19.1	5/8"	2.3
1 1/2"	155	20.7	70	48.3	40.9	68	114.3	4	22.2	3/4"	3.2
2"	165	22.4	84	60.3	52.5	70	127.0	8	19.1	5/8"	4.1
2 1/2"	190	25.4	100	73.0	62.7	76	149.2	8	22.2	3/4"	5.4
3"	210	28.6	117	88.9	77.9	79	168.3	8	22.2	3/4"	6.8
3 1/2"	230	30.2	133	101.6	90.1	81	184.2	8	22.2	3/4"	8.2
4"	255	31.8	146	114.3	102.3	86	200.0	8	22.2	3/4"	11.3
5"	280	35.0	178	141.3	128.2	98	235.0	8	22.2	3/4"	14.5
6"	320	36.6	206	168.3	154.1	98	269.9	12	22.2	3/4"	19.1
8"	380	41.3	260	219.1	202.7	111	330.2	12	25.4	7/8"	30.4
10"	445	47.7	321	273.1	254.5	117	387.4	16	28.6	1"	41.3
12"	520	50.8	375	323.9	303.2	130	450.8	16	31.8	1 1/8"	63.5
14"	585	54.0	425	355.6	336.5	143	514.4	20	31.8	1 1/8"	81.6
16"	650	57.2	483	406.4	387.4	146	571.5	20	35.0	1 1/4"	113
18"	710	60.4	533	457.2	438.2	159	628.6	24	35.0	1 1/4"	145
20"	775	63.5	587	508.0	489.0	162	685.8	24	35.0	1 1/4"	181
24"	915	69.9	702	609.6	590.6	168	812.8	24	41.3	1 1/2"	263

TABLE 2 · NPS 30 – 36 **B16.1 Cl.250 drilling = B16.47 A Cl.300** BODY B16.47 A (MSS SP-44) · MM — 2 sizes

NPS inch	O	C	X	A	V	B	Bolting — B16.1 Class 250			Weight
	OD	Thick.	Hub Ø base	Hub Ø bevel	Length thru hub	Bolt circle	No.	H · Hole Ø	Bolt	kg approx.
30"	1090	92.1	827	762.0	209.6	997.0	28	47.6 †	1 3/4"	395
36"	1270	104.8	991	914.4	241.6	1168.4	32	54.0 †	2"	578

- Bolt circle B, hole count and hole Ø H per ASME B16.1 Class 250, which coincides with ASME B16.5 Class 300 (NPS 1 – 24) and B16.47 Series A / MSS SP-44 Class 300 (NPS 30, 36). O, C, X, A, V per those steel-flange standards; C and V include the 2 mm raised face. Raised face Ø R per B16.5 / B16.47 (e.g. 24": 692 mm; 30": 857 mm; 36": 1022 mm).
- † ASME B16.1 Class 250 specifies 2" (50.8 mm) holes at NPS 30 and 2¼" (57.2 mm) at NPS 36; B16.47 Series A uses 47.6 / 54.0 mm for the same bolts — drilled per B16.47 unless the B16.1 hole is specified.
- NPS 42 and 48 Class 250 (B16.1: 36 × 2" on 1340 mm BC; 40 × 2" on 1543 mm BC) have no matching steel-flange standard and are made to drawing. Bore shown for STD pipe; supplied to the schedule ordered. Weights approximate, carbon steel.

Where used: Class 250 cast-iron gate, globe, check and butterfly valves · cast-iron pump casings, strainers and expansion joints · AWWA C207 Class E / F and C110 250 psi ductile-iron fittings · high-pressure fire-water, HVAC, cooling-water and process-water lines. **Also known as:** ANSI B16.1 250 lb RF weld neck flange · Class 250 WN · steel flange with Class 250 CI drilling · 250# WNRF.

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 250** PSIG (BAR) · ASTM A126 CLASS B

Temperature °C	NPS 1 – 12	NPS 14 – 24 *
−29 to 66 (−20 to 150 °F)	500 (34.5)	300 (20.7)
93 (200 °F)	460 (31.7)	280 (19.3)
121 (250 °F)	415 (28.6)	260 (17.9)
149 (300 °F)	375 (25.9)	240 (16.5)
177 (350 °F)	335 (23.1)	220 (15.2)
204 (400 °F)	290 (20.0)	200 (13.8)
232 (450 °F)	250 (17.2)	—

Ratings of the cast-iron mating flange / fitting per ASME B16.1 Class 250, ASTM A126 Class B material. * NPS 14 – 24: liquid service, flanges only. The steel weld neck flange itself is rated per ASME B16.5 / B16.47 Class 300 (e.g. A105: 51.1 bar at 38 °C); the assembled joint is limited to the lower cast-iron rating. NPS 30 – 48: refer to ASME B16.1 Table 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 CL250 DRILLING".
- 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 250; 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 250 flange the same as a B16.5 Class 300 flange?

The bolt pattern is the same for NPS 1 – 24, so they bolt together. B16.1 Class 250 covers cast iron with a 1.6 mm raised face and lower ratings; B16.5 Class 300 covers steel with a 2 mm raised face. A steel Class 300 weld neck is therefore the usual "Class 250" weld neck.

Why limit the bolting against cast iron?

Cast iron is brittle. With raised faces, over-torqued high-strength studs bend and can crack the cast-iron flange, so B16.5 restricts RF-to-RF joints to low-strength bolting.

Which bolts and gasket should be used?

RF to RF: ring gasket ≤ 1.6 mm thick extending to the bolt holes, ASTM A307 Gr. B bolts. If A193 B7 studs are required, order the steel flange flat-faced and use a full-face gasket against a flat-faced cast-iron flange.

Can you supply NPS 26 – 28 or 42 – 48?

Yes — NPS 26, 28 to B16.47 Series A Class 300 (same drilling family); NPS 42 and 48 to the B16.1 Class 250 pattern against a drawing, as no steel-flange standard covers them.

ORDERING INFORMATION

Specify: quantity · size (NPS) · weld neck, ASME B16.1 Class 250 drilling · facing (RF standard / FF) · bore / pipe schedule · material grade · hole size for NPS 30 – 36 · certification (3.1 / 3.2, NACE) · surface protection (anti-rust oil, paint, galvanising).