

Weld Neck Flange — ASME B16.5 Class 1500

ANSI / ASME B16.5 Class 1500 welding neck raised face (WNRF) flanges · NPS ½" to 24" · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316, alloy steel

ASME B16.5 CLASS 1500 WN FLANGE

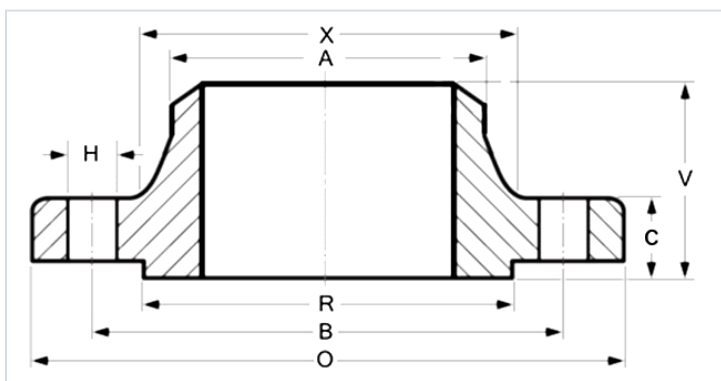
A weld neck flange (welding neck flange, WN or WNRF) is a forged pipe flange with a long tapered hub that is butt-welded to the pipe. The hub transfers stress gradually from flange to pipe, giving the highest strength and fatigue resistance of all ASME B16.5 flange types. Class 1500 is a very-high-pressure class for hydrocracking, HP steam, gas compression, wellhead and injection piping; its NPS ½ – 2½ dimensions are also used for Class 900.

TESCO Steel & Engineering manufactures ASME B16.5 Class 1500 weld neck flanges in Mumbai, India, ½" to 24", RF or RTJ, bored to the pipe schedule.

KEY FEATURES

- **Full ASME B16.5 compliance** — dimensions, tolerances, facing finish and marking to ASME B16.5-2020.
- **Tapered hub, butt-weld end** — 37.5° bevel, 1.6 mm land; preferred for high-stress, cyclic and critical service.
- **Bore to schedule** — STD, XS, Sch 40, 80, 160 or XXS bore to match the mating pipe.
- **Materials and certification** — ASTM A105, A350 LF2, A182 F304/F316/F321, F11/F22/F91, duplex; EN 10204 3.1 / 3.2 certificates.

WELD NECK FLANGE DIMENSIONAL DRAWING



SPECIFICATION SUMMARY

Product	Weld neck flange (welding neck, WN / WNRF), forged
Standard	ASME B16.5 (formerly ANSI B16.5)
Pressure class	Class 1500 (1500 lb / #1500)
Size range	NPS ½" – 24" (DN 15 – DN 600)
Facing	Raised face (RF) 7 mm or ring-type joint (RTJ)
Face finish	Serrated, 125 – 250 µin Ra (3.2 – 6.3 µm) per ASME B16.5
Bore	Specified to pipe schedule (STD / Sch 40 shown in table)
Weld end	37.5° ± 2.5° bevel, 1.6 ± 0.8 mm root face, per ASME B16.25
Materials	ASTM A105 / A105N; A350 LF2; A182 F304/L, F316/L, F321; A182 F11, F22, F91; duplex F51 / F53

O Flange outside diameter	C Flange thickness (excl. 7 mm RF)
X Hub diameter at base	A Hub diameter at bevel (= pipe OD)
R Raised face diameter, 7 mm high	V Length through hub (incl. RF)
B Bolt circle diameter (PCD)	H Bolt hole diameter
Bore To pipe schedule (not dimensioned)	Bevel 37.5° ± 2.5°, 1.6 mm land

Weld Neck Flange ASME B16.5 Class 1500 (WNRF)

Dimension chart in mm · NPS ½ – 24

ASME B16.5 CLASS 1500 WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.5 · CLASS 1500 WELD NECK FLANGE · RAISED FACE · DIMENSIONS IN MM												19 sizes
NPS	O	C	X	A	Bore	R	V	B	Bolting			Weight
inch	OD	Thick.	Hub Ø base	Hub Ø bevel	STD	RF Ø	Length thru hub	Bolt circle	No.	H · Hole Ø	Stud	kg approx.
1/2"	120	22.4	38	21.3	15.8	35	60	82.6	4	22.2	3/4"	2.3
3/4"	130	25.4	44	26.7	20.9	43	70	88.9	4	22.2	3/4"	2.7
1"	150	28.6	52	33.4	26.6	51	73	101.6	4	25.4	7/8"	4.1
1 1/4"	160	28.6	64	42.2	35.1	64	73	111.1	4	25.4	7/8"	4.5
1 1/2"	180	31.8	70	48.3	40.9	73	83	123.8	4	28.6	1"	5.9
2"	215	38.1	105	60.3	52.5	92	102	165.1	8	25.4	7/8"	11.3
2 1/2"	245	41.3	124	73.0	62.7	105	105	190.5	8	28.6	1"	16.3
3"	265	47.7	133	88.9	77.9	127	117	203.2	8	31.8	1 1/8"	21.8
4"	310	54.0	162	114.3	102.3	157	124	241.3	8	35.0	1 1/4"	33.1
5"	375	73.1	197	141.3	128.2	186	156	292.1	8	41.3	1 1/2"	59.0
6"	395	82.6	229	168.3	154.1	216	171	317.5	12	38.1	1 3/8"	74.8
8"	485	92.1	292	219.1	202.7	270	213	393.7	12	44.5	1 5/8"	125
10"	585	108.0	368	273.1	254.5	324	254	482.6	12	50.8	1 7/8"	206
12"	675	123.9	451	323.9	303.2	381	283	571.5	16	54.0	2"	313
14"	750	133.4	495	355.6	336.5	413	298	635.0	16	60.5	2 1/4"	426
16"	825	146.1	552	406.4	387.4	470	311	704.9	16	66.7	2 1/2"	567
18"	915	162.0	597	457.2	438.2	533	327	774.7	16	73.1	2 3/4"	737
20"	985	177.8	641	508.0	489.0	584	356	831.9	16	79.5	3"	930
24"	1170	203.2	762	609.6	590.6	692	406	990.6	16	92.1	3 1/2"	1508

- All dimensions in millimetres per ASME B16.5-2020 Tables 18 and 19 (metric). Thickness C excludes the 7 mm raised face; length through hub V includes it. NPS 3½ and 22 are not covered by Class 1500 in ASME B16.5; NPS ½ – 2½ dimensions are shared with Class 900.
- Bore shown for STD / Schedule 40 pipe; flanges are supplied bored to the schedule specified on the order (XS, Sch 80, 160, XXS).
- Studs per ASME B16.5 Table B1; hole Ø is 3 mm larger than the stud. Hub Ø at bevel A equals pipe OD (ASME B36.10M). Weights approximate, carbon steel, STD bore.

WELD NECK VS OTHER FLANGE TYPES

Weld neck (WN)	Tapered hub, butt weld; highest strength — critical, cyclic and high-temperature lines
Slip-on (SO)	Fillet welded over pipe; lower cost; lower fatigue strength
Socket weld (SW)	Small bore ≤ NPS 2, fillet weld
Blind (BL)	Closes the end of a flanged line

APPLICATIONS

High-pressure refinery and petrochemical units · hydrocracker and hydrotreater piping · high-pressure steam and boiler feed · gas compression and injection · wellhead and flowline manifolds · pump, valve and vessel connections.

Also known as: ANSI B16.5 1500 lb WNRF flange · 1500# welding neck flange · ASME/ANSI 1500 raised face weld neck flange (≈ PN 250).

Weld Neck Flange ASME B16.5 Class 1500 (WNRF)

Materials · Pressure–temperature ratings · Quality · FAQ

WELD NECK FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common); A694 F42 – F70 for pipeline service
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2, LF3
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321, F347, F310
Alloy steel	ASTM A182 F1, F5, F9, F11, F12, F22, F91
Duplex / super duplex	ASTM A182 F51 (UNS S31803 / S32205), F53 (S32750), F55 (S32760)
Nickel & copper alloys	Monel 400, Inconel 600 / 625, Hastelloy C276, Cu-Ni 90/10 & 70/30 — on request
Equivalent EN / DIN grades	P250GH (1.0460), 1.4301, 1.4401, 1.4404, 1.4571 on request

PRESSURE–TEMPERATURE RATINGS

PRESSURE–TEMPERATURE RATING	Class 1500		
	BAR, ASME B16.5 TABLE 2		
Temperature °C	Group 1.1 A105 / A350 LF2	Group 2.1 A182 F304	Group 2.2 A182 F316
–29 to 38	255.3	248.2	248.2
100	233.0	211.0	215.7
150	225.4	192.5	197.5
200	219.0	178.3	183.8
250	209.7	166.8	172.3
300	199.1	158.1	163.2
350	187.8	151.6	156.4
400	173.6	147.2	152.0
450	143.8	143.8	147.0

Working pressure in bar (gauge) from ASME B16.5-2020 Tables 2-1.1, 2-2.1 and 2-2.2. Confirm for the specific material group, bolting and gasket.

QUALITY & DOCUMENTATION

- Forged from certified billets / bars; normalised, quenched-and-tempered or solution-annealed per material specification.
- Manufactured under an ISO 9001:2015 quality management system; marking per ASME B16.5 and MSS SP-25.
- EN 10204 3.1 material test certificates with chemical analysis, mechanical properties and heat-number traceability; 3.2 with third-party endorsement on request.
- Dimensional inspection to ASME B16.5 tolerances; face finish checked per MSS SP-6.
- NDT (UT / MPI / DPT), PMI for stainless and alloy grades, IBR, NACE MR0175 / ISO 15156 and PED compliance on request.

FREQUENTLY ASKED QUESTIONS

What does Class 1500 mean on a weld neck flange?

Class 1500 is the ASME B16.5 pressure–temperature rating class. For carbon steel A105 it allows 255.3 bar at up to 38 °C, falling with temperature (see table). It is often written 1500 lb or 1500#.

Is ANSI B16.5 the same as ASME B16.5?

Yes — ASME B16.5 is the current designation of the former ANSI B16.5 standard; flanges are fully interchangeable. Class 900 flanges NPS ½ – 2½ are dimensionally identical to Class 1500.

What bore should I specify?

Specify the pipe schedule (e.g. Sch 40, Sch 80) or wall thickness so the flange bore and bevel match the pipe for a sound butt weld.

Which gasket and bolts are used with a Class 1500 RF flange?

Spiral wound or ring-type joint (RTJ) gaskets per ASME B16.20; A193 B7 / A194 2H studs and nuts, B8M Class 2 for stainless flanges.

ORDERING INFORMATION

Specify: quantity · size (NPS) · ASME B16.5 Class 1500 weld neck · facing (RF / FF / RTJ) · bore / pipe schedule · material grade · certification (3.1 / 3.2, NACE, IBR, PED) · surface protection (anti-rust oil, paint, galvanising).