Long Weld Neck Flange — ASME B16.5 Class 400

ANSI / ASME B16.5 Class 400 long welding neck (LWN) raised face flanges · NPS ½" to 24" · standard, heavy barrel and equal barrel necks · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316, alloy steel

ASME B16.5 CLASS 400 LONG WELD NECK FLANGE

A long weld neck flange (LWN) is a weld neck flange with an extended straight neck that acts as the nozzle itself: the flange bolts to the piping and the neck end is welded directly into a vessel, column, drum or exchanger shell. One forging and one weld replace a pipe stub plus weld neck flange — a stronger, more fatigue-resistant nozzle with full traceability.

The flange ring (OD, thickness, facing, drilling) is per ASME B16.5 Class 400; neck OD, bore and length are not standardised and follow industry practice or the vessel drawing. TESCO Steel & Engineering manufactures LWN flanges in Mumbai, ½" to 24", in any length and bore.

KEY FEATURES

- **Flange per ASME B16.5** — ring dimensions, tolerances, facing and marking to B16.5-2020; rated as a B16.5 flange.
- **Three neck styles** — standard LWN, heavy barrel (HB, thicker neck for reinforcement) and equal barrel (E, pipe-size bore).
- **Made to order** — any length (std. 229 / 305 / 406 mm), bore to schedule, bevel or plain end, RF / FF / RTJ, nut stops.
- **Materials and certification** — A105, A350 LF2, A182 F304/F316, F11/F22, duplex; EN 10204 3.1.

SPECIFICATION SUMMARY

Product	Long weld neck flange (LWN / nozzle flange), one-piece forged
Standard	Flange per ASME B16.5; neck per industry standard / drawing
Pressure class	Class 400 (400 lb / #400)
Size range	NPS ½" – 24" (DN 15 – DN 600)
Facing	Raised face (RF) 7 mm standard; FF or RTJ on request
Face finish	Serrated, 125 – 250 µin Ra (3.2 – 6.3 µm) per ASME B16.5
Neck / bore	Standard: neck OD per table, bore = nominal size; HB / E barrels or schedule bore on request
Neck end	Plain (square cut) for nozzle welds; 37.5° bevel on request
Materials	ASTM A105 / A105N; A350 LF2; A182 F304/L, F316/L, F321; F11, F22, F91; duplex

SPECIFYING AN LWN FLANGE

- State length H (face to neck end), barrel type (standard / HB / E) and bore D — or send the nozzle drawing; standard lengths are 229, 305 and 406 mm.
- Heavy barrel necks give nozzle reinforcement per ASME VIII UG-37 without a repad; equal barrel necks suit butt welding to pipe.
- Specify the neck-end preparation (plain for shell welds, bevelled for butt welds) and any nut stop or relief.

APPLICATIONS

Pressure-vessel, column and drum nozzles · heat-exchanger shell and channel nozzles · boiler and HRSG drums · instrument, level-gauge and thermowell nozzles · reactor and separator inlets · tank and sphere connections · refinery, petrochemical, fertiliser, power and offshore equipment.

LWN NECK STYLES

Standard	Neck OD per table, bore = nominal size
Heavy barrel	Thicker neck; integral vessel reinforcement
Equal barrel	Pipe-schedule bore; butt-weld to pipe

TESCO Steel & Engineering — long weld neck flange manufacturer & exporter · 9-A, 52-A, Sindhi Lane, Mumbai – 400004, India · +91 22 6659 5662 · sales@tescosteel.com · www.tescosteel.com

Flange per ASME B16.5-2020 Tables 12 and 13 (NPS ½ – 24); neck OD, bore and length are industry-standard (not covered by B16.5) and are made to order; weights approximate at standard length; P–T ratings per ASME B16.5 Table 2.

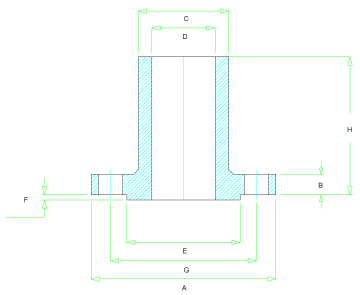
ASME B16.5 CLASS 400 LONG WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.5 · CLASS **400** LONG WELD NECK FLANGE · RAISED FACE · DIMENSIONS IN MM — 20 sizes

NPS inch	A OD	B Thick.	C Neck OD	D Bore	E RF Ø	G Bolt circle	H Length std.	Bolting No.	Bolting Hole Ø	Bolting Stud	Weight kg approx.
1/2"	95	14.3	38.1	12.7	35	66.7	229	4	15.9	1/2"	2
3/4"	115	15.9	47.8	19.0	43	82.6	229	4	19.1	5/8"	4
1"	125	17.5	53.8	25.4	51	88.9	229	4	19.1	5/8"	4
1 1/4"	135	20.7	63.5	31.8	64	98.4	229	4	19.1	5/8"	6
1 1/2"	155	22.4	69.8	38.1	73	114.3	229	4	22.2	3/4"	7
2"	165	25.4	84.1	50.8	92	127.0	229	8	19.1	5/8"	9
2 1/2"	190	28.6	100.1	63.5	105	149.2	229	8	22.2	3/4"	12
3"	210	31.8	117.3	76.2	127	168.3	229	8	22.2	3/4"	16
3 1/2"	230	35.0	133.3	88.9	140	184.2	229	8	25.4	7/8"	20
4"	255	35.0	146.0	101.6	157	200.0	305	8	25.4	7/8"	29
5"	280	38.1	177.8	127.0	186	235.0	305	8	25.4	7/8"	40
6"	320	41.3	206.2	152.4	216	269.9	305	12	25.4	7/8"	50
8"	380	47.7	260.3	203.2	270	330.2	305	12	28.6	1"	70
10"	445	54.0	320.5	254.0	324	387.4	305	16	31.8	1 1/8"	99
12"	520	57.2	374.6	304.8	381	450.8	305	16	35.0	1 1/4"	129
14"	585	60.4	425.4	355.6	413	514.4	305	20	35.0	1 1/4"	152
16"	650	63.5	482.6	406.4	470	571.5	305	20	38.1	1 3/8"	190
18"	710	66.7	533.4	457.2	533	628.6	305	24	38.1	1 3/8"	219
20"	775	69.9	587.2	508.0	584	685.8	305	24	41.3	1 1/2"	258
24"	915	76.2	701.5	609.6	692	812.8	305	24	47.7	1 3/4"	365

- All dimensions in millimetres per ASME B16.5-2020 Tables 12 and 13 (metric). Thickness B excludes the 7 mm raised face (F); length H is overall, from raised face to neck end. NPS ½ – 3½ Class 400 flanges use the Class 600 flange dimensions per ASME B16.5.
- Neck OD C, bore D and length H are industry-standard values for the standard LWN (bore = nominal size), not part of ASME B16.5; other lengths, HB / E necks and schedule bores to order. Studs per B16.5 Table B1; hole Ø = stud + 3 mm. Weights approximate, carbon steel, at the length shown.

LONG WELD NECK FLANGE DIMENSIONAL DRAWING



A Flange outside diameter

B Flange thickness (excl. 7 mm RF)

C Neck outside diameter

D Bore (standard = nominal size)

E Raised face diameter

F Raised face height, 7 mm

G Bolt circle diameter (PCD)

H Overall length (standard 229 / 305 / 406)

Selection: rated as an ASME B16.5 Class 400 flange; the neck is designed as a nozzle (ASME VIII UG-37 / UG-45). **Also known as:** ANSI B16.5 400 lb LWN flange · 400# long welding neck · nozzle flange · LWNRF Class 400 (≈ PN 64).

LONG WELD NECK FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common); SA-105 for ASME VIII vessels
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2, LF3; A266 Cl.2 for large necks
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321, F347
Alloy steel	ASTM A182 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 — 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 400** — 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	68.1	66.2	66.2
100	62.1	56.3	57.6
150	60.1	51.3	52.7
200	58.4	47.6	49.0
250	55.9	44.5	45.9
300	53.1	42.2	43.5
350	50.1	40.4	41.7
400	46.3	39.2	40.6
450	38.4	38.4	39.2

Working pressure in bar (gauge) from ASME B16.5-2020 Table 2-1.1, 2-2.1 / 2-2.2. Ratings apply to the flange; confirm for the specific material group, bolting, gasket and welds.

QUALITY & DOCUMENTATION

- Forged from certified bars / billets; 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 of flange to ASME B16.5 and of neck to drawing; face finish per MSS SP-6; UT of forgings per ASTM A388 / SA-388 on request.
- MPI / DPT, PMI, Charpy impact tests, HIC / NACE MR0175, IBR, PED and ASME VIII (U-stamp vessel) documentation on request.

FREQUENTLY ASKED QUESTIONS

Does ASME B16.5 cover long weld neck flanges?
Only the flange portion — OD, thickness, facing, drilling and rating. Neck OD, bore and length follow industry convention (this sheet) or the vessel drawing, and the neck is designed as a nozzle under the vessel code.

Standard, heavy barrel or equal barrel?
Standard for general nozzles; heavy barrel where the opening needs integral reinforcement; equal barrel where the neck will be butt-welded to pipe of the same size and schedule.

What length should I order?
Standard lengths are 229, 305 and 406 mm; any length can be supplied. Specify the overall length H from the raised face to the neck end.

Which gasket and bolts are used?
Spiral wound (ASME B16.20) or non-metallic (ASME B16.21) gaskets with A193 B7 / A194 2H studs and nuts; B8M Cl.2 for stainless flanges.

ORDERING INFORMATION

Specify: quantity · size (NPS) · ASME B16.5 Class 400 long weld neck · neck style (standard / HB / E) · length H · bore D or pipe schedule · neck end (plain / bevel) · facing (RF / FF / RTJ) · material grade · certification (3.1 / 3.2, NACE, IBR, PED) · surface protection (anti-rust oil, paint, galvanising).