Weld Neck Flange — ASME B16.47 Series B Class 300

ANSI / ASME B16.47 Series B (API 605) Class 300 large diameter compact welding neck raised face flanges · NPS 26" to 60" · Carbon steel ASTM A105 / A694, stainless steel ASTM A182 F304 / F316, low-temperature A350 LF2

ASME B16.47 SERIES B CLASS 300 WELD NECK FLANGE

ASME B16.47 covers large diameter steel flanges NPS 26 through 60 in two bolting patterns. **Series B** (formerly API 605) is the compact pattern — smaller OD, thinner flange and many smaller bolts on a tight bolt circle. A Series B Class 300 flange is typically 30 – 50 % lighter than its Series A counterpart at the same rating — the economical choice for process plants, tank farms and offshore topsides.

The weld neck type has a tapered hub butt-welded to the pipe, giving the best stress distribution and fatigue life. TESCO Steel & Engineering manufactures B16.47 Series B Class 300 weld neck flanges in Mumbai, 26" to 60", RF or FF, bored to the customer's pipe wall.

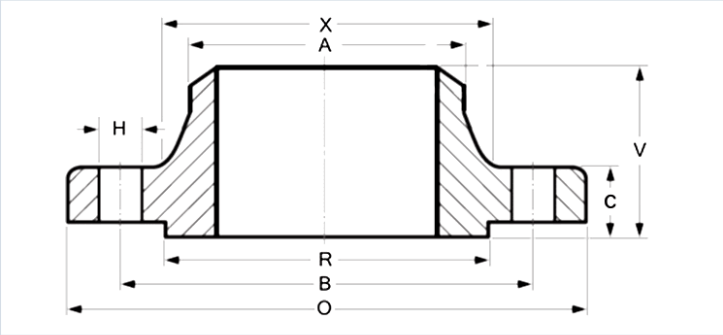
KEY FEATURES

- **Full ASME B16.47 compliance** — Series B dimensions, tolerances, facing and marking to ASME B16.47-2020.
- **Series B compact drilling** — 32 to 48 studs, 1¼" – 2¼"; smaller OD, far lighter than Series A.
- **Tapered hub, butt-weld end** — 37.5° bevel, 1.6 mm land; bored to the specified pipe wall.
- **Materials and certification** — A105, A694 F42 – F65, A350 LF2, A182 F304/F316; EN 10204 3.1 / 3.2.

SPECIFICATION SUMMARY

Product	Weld neck flange (WN / WNRF), forged or rolled-ring forged
Standard	ASME B16.47 Series B (formerly API 605)
Pressure class	Class 300 (300 lb / #300)
Size range	NPS 26" – 60" (DN 650 – DN 1500), 18 sizes
Facing	Raised face (RF) 2 mm standard; RTJ or FF on request
Face finish	Serrated, 125 – 250 µin Ra (3.2 – 6.3 µm)
Bore	To purchaser's pipe OD × wall (not standardised in B16.47)
Weld end	37.5° ± 2.5° bevel, 1.6 ± 0.8 mm root face, ASME B16.25
Materials	ASTM A105 / A105N; A694 F42 – F65; A350 LF2; A182 F304/L, F316/L; F51 duplex

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 diameter	**V** Length through hub
B Bolt circle diameter (PCD)	**H** Bolt hole diameter
Bore To purchaser's pipe (not dimensioned)	**Bevel** 37.5° ± 2.5°, 1.6 mm land

ASME B16.47 SERIES B CLASS 300 WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.47 SERIES B · CLASS **300** WELD NECK FLANGE · RAISED FACE · DIMENSIONS IN MM — 18 sizes

NPS	O	C	X	A	R	V	B	Bolting			Weight
inch	OD	Thick.	Hub Ø base	Hub Ø bevel	RF Ø	Length thru hub	Bolt circle	No.	H · Hole Ø	Stud	kg approx.
26"	865	89.0	702	665.2	737	169.6	803.3	32	34.9	1 1/4"	181
28"	920	89.0	756	716.0	787	149.6	857.2	36	34.9	1 1/4"	204
30"	990	93.7	813	768.4	845	157.6	920.8	36	38.1	1 3/8"	249
32"	1055	103.2	864	819.2	902	168.6	977.9	32	41.3	1 1/2"	311
34"	1110	103.2	918	870.0	953	172.6	1031.9	36	41.3	1 1/2"	340
36"	1170	103.2	965	920.8	1010	180.6	1089.0	32	44.5	1 5/8"	381
38"	1220	111.2	1016	971.6	1060	191.6	1139.8	36	44.5	1 5/8"	415
40"	1275	115.9	1067	1022.4	1114	198.6	1190.6	40	44.5	1 5/8"	449
42"	1335	119.1	1118	1074.7	1168	204.6	1244.6	36	47.6	1 3/4"	515
44"	1385	127.1	1173	1125.5	1219	214.6	1295.4	40	47.6	1 3/4"	560
46"	1460	128.6	1229	1176.3	1270	222.6	1365.2	36	50.8	1 7/8"	667
48"	1510	128.6	1278	1227.1	1327	223.6	1416.0	40	50.8	1 7/8"	714
50"	1560	138.2	1330	1277.9	1378	234.6	1466.8	44	50.8	1 7/8"	776
52"	1615	142.9	1383	1328.7	1429	242.6	1517.6	48	50.8	1 7/8"	835
54"	1675	136.6	1435	1379.5	1480	239.6	1578.0	48	50.8	1 7/8"	898
56"	1765	154.0	1494	1430.3	1537	268.6	1651.0	36	60.3	2 1/4"	1177
58"	1825	154.0	1548	1481.1	1594	274.6	1712.9	40	60.3	2 1/4"	1256
60"	1880	150.9	1599	1557.3	1651	271.6	1763.7	40	60.3	2 1/4"	1302

- All dimensions in millimetres per ASME B16.47-2020 Series B, Class 300 (metric). Thickness C includes the 2 mm raised face. Length through hub V is measured from the raised face. Hub Ø at bevel A is as listed in B16.47 Series B (≈ 1.5 mm above pipe OD); the weld end is machined to match the pipe.
- Bore is not standardised in B16.47 — flanges are bored to the pipe wall thickness stated on the order; please specify pipe OD × wall or schedule.
- Studs per ASME B16.47; hole Ø is 3.2 mm larger than the stud. Weights approximate, carbon steel, bored for STD (9.53 mm) wall pipe. Bolt count and stud size alternate through the range (e.g. 36" has 32 × 1⅛", 38" has 36 × 1⅛") — always check the mating flange.

SERIES B VS SERIES A

Origin	Series B = API 605 · Series A = MSS SP-44
Geometry	B: compact, more / smaller bolts · A: larger OD, thicker, fewer / larger bolts
Classes	B: 75, 150, 300, 400, 600, 900 · A: 150 – 900 (no Class 75)
Interchange	Not interchangeable with Series A at NPS 26 – 36; identical to Series A Class 300 at NPS 38 – 60

APPLICATIONS

Refinery and petrochemical process headers · gas-plant and LNG piping · offshore topsides and FPSO process lines · compressor suction and discharge · large block valves and pump connections · pressure-vessel and heat-exchanger nozzles where weight and space matter.

Also known as: ANSI B16.47 Series B 300 lb WNRF flange · API 605 Class 300 weld neck flange · 300# compact large diameter welding neck flange · 26" – 60" WN flange (≈ PN 50).

WELD NECK FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common); A266 Cl.2 / A350 LF2 for large forgings
High-yield pipeline	ASTM A694 F42, F46, F52, F56, F60, F65 — matched to API 5L X42 – X65 pipe
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2, LF3
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321
Duplex / super duplex	ASTM A182 F51 (UNS S31803 / S32205), F53 (S32750)
Clad / weld overlay	CS flanges with 316L, Inconel 625 or Cu-Ni face overlay — on request
Equivalent EN grades	P250GH, P355NH / L360NB (1.0582), 1.4404 on request

PRESSURE–TEMPERATURE RATINGS

PRESSURE–TEMPERATURE RATING **Class 300** BAR, ASME B16.47 / B16.5 TABLE 2

Temperature °C	Group 1.1 A105 / A350 LF2 / A694	Group 2.1 A182 F304	Group 2.2 A182 F316
–29 to 38	51.1	49.6	49.6
100	46.6	42.2	43.2
150	45.1	38.5	39.5
200	43.8	35.7	36.8
250	41.9	33.4	34.4
300	39.8	31.6	32.6
350	37.6	30.3	31.3
400	34.7	29.4	30.4
450	28.8	28.8	29.4

Working pressure in bar (gauge); ASME B16.47 adopts the ASME B16.5 Table 2 ratings for Class 300 (Table 2-1.1, 2-2.1 / 2-2.2). A694 grades rated per Group 1.1 unless otherwise agreed. Confirm for the specific material group, bolting and gasket.

QUALITY & DOCUMENTATION

- Forged from certified ingots / blooms or rolled-ring forged; normalised, quenched-and-tempered or solution-annealed per material specification.
- Manufactured under an ISO 9001:2015 quality management system; marking per ASME B16.47 and MSS SP-25 including "B16.47 SER. B" and "CL 300".
- EN 10204 3.1 material test certificates with chemical analysis, mechanical properties, heat-number traceability; 3.2 with third-party endorsement on request.
- Dimensional inspection to ASME B16.47 tolerances; face finish per MSS SP-6; UT of forgings per ASTM A388 on request.
- MPI / DPT, PMI, Charpy impact testing, NACE MR0175 / ISO 15156, PED and IBR compliance on request.

FREQUENTLY ASKED QUESTIONS

Series A or Series B — which do I need?
Match the mating equipment. Series B (ex-API 605) is common in refineries, tank farms and offshore; valves, pumps and older MSS SP-44 piping are usually Series A. The two are never interchangeable — check the bolt count and bolt circle.

Is the pressure rating the same as Series A Class 300?
Yes. Both series use the ASME B16.5 Class 300 pressure–temperature ratings; Series B achieves the same rating with a smaller OD and more, smaller bolts on a tighter bolt circle. Note that at NPS 38 – 60 Series A Class 300 already uses the Series B dimensions, so the two coincide there.

Why is the bore not in the table?
B16.47 leaves the bore to the purchaser because large-diameter pipe is ordered by wall thickness, not schedule. State pipe OD × wall on the enquiry.

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

ORDERING INFORMATION

Specify: quantity · size (NPS) · ASME B16.47 Series B Class 300 weld neck · facing (RF / RTJ / FF) · pipe OD × wall thickness for bore · material grade · certification (3.1 / 3.2, NACE, PED, IBR) · surface protection (anti-rust oil, paint, galvanising).