Weld Neck Flange — ASME B16.47 Series B Class 400

ANSI / ASME B16.47 Series B (API 605) Class 400 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 400 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. At NPS 26 – 36 a Series B Class 400 flange is lighter and more compact than its Series A counterpart at the same rating; from NPS 38 upward the two series share identical Class 400 dimensions.

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 400 weld neck flanges in Mumbai, 26" to 60", RF or FF, bored to the customer's pipe wall.

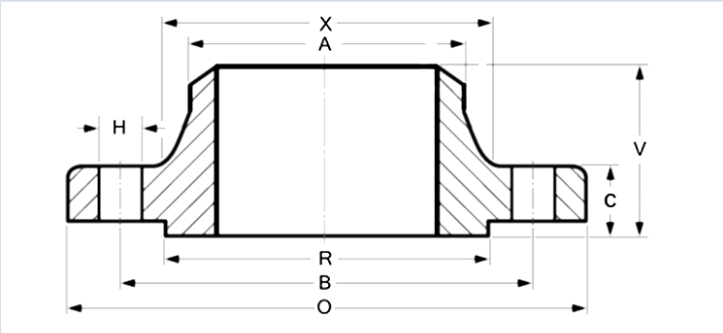
KEY FEATURES

- **Full ASME B16.47 compliance** — Series B dimensions, tolerances, facing and marking to ASME B16.47-2020.
- **Series B compact drilling** — 24 to 36 studs, 1⅜" – 2¾"; smaller OD and lighter than Series A at 26" – 36".
- **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 400 (400 lb / #400)
Size range	NPS 26" – 60" (DN 650 – DN 1500), 18 sizes
Facing	Raised face (RF) 7 mm (¼") standard; RTJ 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 (excl. 7 mm RF)
X Hub diameter at base	**A** Hub diameter at bevel (= pipe OD)
R Raised face Ø, 7 mm high	**V** Length through hub (incl. RF)
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 400 WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.47 SERIES B · CLASS **400** 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"	850	88.9	698	660.4	711	155.4	781.0	28	38.1	1 3/8"	163
28"	915	95.3	740	711.2	762	165.4	838.2	24	41.3	1 1/2"	204
30"	970	101.6	794	762.0	819	176.4	895.4	28	41.3	1 1/2"	240
32"	1035	108.0	845	812.8	873	185.4	952.5	28	44.5	1 5/8"	288
34"	1085	111.2	899	863.6	927	193.4	1003.3	32	44.5	1 5/8"	313
36"	1155	119.1	952	914.4	981	206.4	1066.8	28	47.6	1 3/4"	388
38"	1205	123.9	1003	965.2	1035	212.4	1117.6	32	47.6	1 3/4"	424
40"	1270	130.2	1054	1016.0	1092	222.4	1174.8	32	50.8	1 7/8"	494
42"	1320	133.4	1108	1066.8	1143	230.4	1225.6	32	50.8	1 7/8"	540
44"	1385	139.7	1159	1117.6	1200	239.4	1282.7	32	54.0	2"	624
46"	1440	146.1	1213	1168.4	1257	250.4	1339.8	36	54.0	2"	692
48"	1510	152.4	1267	1219.2	1308	263.4	1403.4	28	60.3	2 1/4"	812
50"	1570	157.2	1321	1270.0	1362	274.4	1460.5	32	60.3	2 1/4"	885
52"	1620	162.0	1372	1320.8	1413	282.4	1511.3	32	60.3	2 1/4"	964
54"	1700	169.9	1426	1371.6	1470	295.4	1581.2	28	66.7	2 1/2"	1163
56"	1755	174.7	1480	1422.4	1527	304.4	1632.0	32	66.7	2 1/2"	1229
58"	1805	177.8	1530	1473.2	1578	312.4	1682.8	32	66.7	2 1/2"	1465
60"	1885	185.8	1584	1524.0	1635	325.4	1752.6	32	73.0	2 3/4"	1733

- All dimensions in millimetres per ASME B16.47-2020 Series B, Class 400 (metric). Thickness C excludes the 7 mm raised face; length through hub V includes it. Hub Ø at bevel A equals pipe OD (ASME B36.10M).
- 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 28 × 1¾", 38" has 32 × 1¾") — always check the mating flange. NPS 38 – 60 are identical to Series A Class 400.

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 400 at NPS 38 – 60

APPLICATIONS

High-pressure gas transmission and compressor stations · refinery and gas-processing headers · offshore topsides and FPSO process lines · large block valves and manifolds · power-plant feedwater and steam · pressure-vessel, separator and heat-exchanger nozzles.

Also known as: ANSI B16.47 Series B 400 lb WNRF flange · API 605 Class 400 weld neck flange · 400# compact large diameter welding neck flange · 26" – 60" WN flange (≈ PN 64).

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 400** 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	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); ASME B16.47 adopts the ASME B16.5 Table 2 ratings for Class 400 (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 400".
- 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 400?
Yes. Both series use the ASME B16.5 Class 400 pressure–temperature ratings. At NPS 26 – 36 Series B is more compact; at NPS 38 – 60 B16.47 gives Series A 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 400 weld neck · facing (RF / RTJ) · pipe OD × wall thickness for bore · material grade · certification (3.1 / 3.2, NACE, PED, IBR) · surface protection (anti-rust oil, paint, galvanising).