Weld Neck Flange — ASME B16.47 Series B Class 600

ANSI / ASME B16.47 Series B (API 605) Class 600 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 600 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 600 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 600 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 600 weld neck flanges in Mumbai, 26" to 60", RF or FF, bored to the customer's pipe wall.

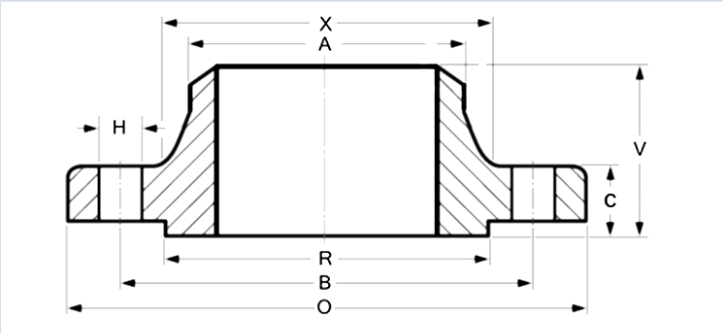
KEY FEATURES

- **Full ASME B16.47 compliance** — Series B dimensions, tolerances, facing and marking to ASME B16.47-2020.
- **Series B compact drilling** — 24 to 32 studs, 1⅝" – 3½"; 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 600 (600 lb / #600)
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 600 WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.47 SERIES B · CLASS 600 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"	890	111.2	698	660.4	727	187.4	806.4	28	44.5	1 5/8"	249
28"	950	115.9	752	711.2	784	196.4	863.6	28	47.6	1 3/4"	295
30"	1020	125.5	806	762.0	841	211.4	927.1	28	50.8	1 7/8"	367
32"	1085	130.2	860	812.8	895	222.4	984.2	28	54.0	2"	431
34"	1160	141.3	914	863.6	953	239.4	1054.1	24	60.3	2 1/4"	547
36"	1215	146.1	968	914.4	1010	249.4	1104.9	28	60.3	2 1/4"	608
38"	1270	152.4	1022	965.2	1054	260.4	1162.0	28	60.3	2 1/4"	667
40"	1320	158.8	1073	1016.0	1111	270.4	1212.8	32	60.3	2 1/4"	739
42"	1405	168.3	1127	1066.8	1168	285.4	1282.7	28	66.7	2 1/2"	921
44"	1455	173.1	1181	1117.6	1226	295.4	1333.5	32	66.7	2 1/2"	980
46"	1510	179.4	1235	1168.4	1276	306.4	1390.6	32	66.7	2 1/2"	1093
48"	1595	189.0	1289	1219.2	1334	322.4	1460.5	32	73.0	2 3/4"	1295
50"	1670	196.9	1343	1270.0	1384	335.4	1524.0	28	79.4	3"	1510
52"	1720	203.2	1394	1320.8	1435	343.4	1574.8	32	79.4	3"	1615
54"	1780	209.6	1448	1371.6	1492	355.4	1632.0	32	79.4	3"	1778
56"	1855	217.4	1502	1422.4	1543	368.4	1695.4	32	85.7	3 1/4"	1941
58"	1905	222.3	1553	1473.2	1600	376.4	1746.2	32	85.7	3 1/4"	2105
60"	1995	233.4	1610	1524.0	1657	395.4	1822.4	28	92.1	3 1/2"	2268

- All dimensions in millimetres per ASME B16.47-2020 Series B, Class 600 (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. 34" has 24 × 2¼", 36" has 28 × 2¼") — always check the mating flange. NPS 38 – 60 are identical to Series A Class 600.

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 600 at NPS 38 – 60

APPLICATIONS

High-pressure gas transmission, compressor and metering stations · refinery hydroprocessing and gas-processing headers · offshore topsides and FPSO process lines · large block valves and manifolds · boiler feedwater and HP steam · separator, scrubber and heat-exchanger nozzles.

Also known as: ANSI B16.47 Series B 600 lb WNRF flange · API 605 Class 600 weld neck flange · 600# compact large diameter welding neck flange · 26" – 60" WN flange (≈ PN 100).

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 600** 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	102.1	99.3	99.3
100	93.2	84.4	86.3
150	90.2	77.0	79.0
200	87.6	71.3	73.3
250	83.9	66.8	68.9
300	79.6	63.2	65.2
350	75.1	60.7	62.6
400	69.4	58.9	60.9
450	57.5	57.5	58.8

Working pressure in bar (gauge); ASME B16.47 adopts the ASME B16.5 Table 2 ratings for Class 600 (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 600".
- 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 600?
Yes. Both series use the ASME B16.5 Class 600 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 600 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).