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

ANSI / ASME B16.47 Series A (MSS SP-44) Class 300 large diameter 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 A CLASS 300 WELD NECK FLANGE

ASME B16.47 covers large diameter steel flanges NPS 26 through 60 in two bolting patterns. **Series A** (formerly MSS SP-44) is the heavier pattern — larger OD, thicker flange and fewer, larger bolts than Series B (formerly API 605) — and is the usual choice for pipelines, valves, pumps and vessel nozzles. Note that for Class 300 the two series converge: from NPS 38 upward B16.47 Series A Class 300 dimensions are identical to Series B.

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

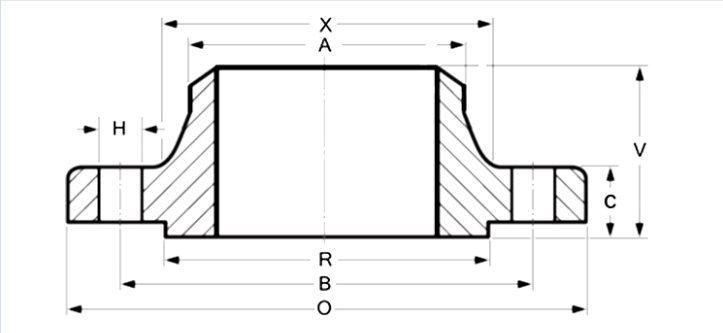
KEY FEATURES

- **Full ASME B16.47 compliance** — Series A dimensions, tolerances, facing and marking to ASME B16.47-2020.
- **Series A drilling** — 28 to 32 studs, 1½" – 2¼"; matches MSS SP-44 and B16.1 Class 250 (30", 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 A (formerly MSS SP-44)
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

TESCO Steel & Engineering — large diameter weld neck flange manufacturer & exporter · 9-A, 52-A, Sindhi Lane, Mumbai – 400004, India · +91 22 6659 5662 · sales@tescosteel.com · www.tescosteel.com
Dimensions per ASME B16.47-2020 Series A (NPS 26 – 60); weights approximate; bore per purchaser's pipe; P–T ratings per ASME B16.5 Table 2 — verify for material group and service.

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

ASME B16.47 SERIES A · 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"	970	79.4	721	660.4	749	184.6	876.3	28	44.5	1 5/8"	274
28"	1035	85.8	775	711.2	800	196.6	939.8	28	44.5	1 5/8"	338
30"	1090	92.1	827	762.0	857	209.6	997.0	28	47.6	1 3/4"	395
32"	1150	98.5	881	812.8	914	222.6	1054.1	28	50.8	1 7/8"	456
34"	1205	101.7	937	863.6	965	231.6	1104.9	28	50.8	1 7/8"	519
36"	1270	104.8	991	914.4	1022	241.6	1168.4	32	54.0	2"	578
38"†	1170	108.0	994	965.2	1029	180.6	1092.2	32	41.3	1 1/2"	315
40"†	1240	114.4	1048	1016.0	1086	193.6	1155.7	32	44.5	1 5/8"	381
42"†	1290	119.1	1099	1066.8	1137	199.6	1206.5	32	44.5	1 5/8"	431
44"†	1355	123.9	1149	1117.6	1194	206.6	1263.6	32	47.6	1 3/4"	479
46"†	1415	128.6	1203	1168.4	1245	215.6	1320.8	28	50.8	1 7/8"	560
48"†	1465	133.4	1254	1219.2	1302	223.6	1371.6	32	50.8	1 7/8"	626
50"†	1530	139.8	1305	1270.0	1359	231.6	1428.8	32	54.0	2"	694
52"†	1580	144.5	1356	1320.8	1410	238.6	1479.6	32	54.0	2"	753
54"†	1660	152.5	1410	1371.6	1467	252.6	1549.4	28	60.3	2 1/4"	930
56"†	1710	154.0	1464	1422.4	1518	260.6	1600.2	28	60.3	2 1/4"	977
58"†	1760	158.8	1514	1473.2	1575	266.6	1651.0	32	60.3	2 1/4"	1030
60"†	1810	163.6	1564	1524.0	1626	272.6	1701.8	32	60.3	2 1/4"	1120

- All dimensions in millimetres per ASME B16.47-2020 Series A, 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 equals pipe OD (ASME B36.10M).
- † NPS 38 – 60: Series A Class 300 dimensions are identical to Series B (API 605 pattern) — note the step change in OD, bolt circle and bolting between NPS 36 and 38.
- Bore is not standardised in B16.47 — 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, STD (9.53 mm) wall bore.

SERIES A VS SERIES B

Origin	Series A = MSS SP-44 · Series B = API 605
Geometry	A: larger OD, thicker, fewer / larger bolts · B: compact, more / smaller bolts
Interchange	Differ at NPS 26 – 36; identical (Class 300) at NPS 38 – 60. Series A mates with MSS SP-44
Typical use	A: pipelines, valves, pumps, vessels · B: tanks, low-pressure process

APPLICATIONS

Oil & gas transmission pipelines and compressor stations · pig launchers and receivers · large block valves and pump discharge · refinery and petrochemical process headers · power-plant steam and feedwater · pressure-vessel and heat-exchanger nozzles.

Also known as: ANSI B16.47 Series A 300 lb WNRF flange · MSS SP-44 Class 300 weld neck flange · large diameter 300# 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. A".
- 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. Valves, pumps and older MSS SP-44 piping are usually Series A; API 605 / Series B appears on tanks and some process plants. Check the bolt count and bolt circle in the table.

Why do the dimensions jump at NPS 38?
B16.47 defines Series A Class 300 for NPS 38 – 60 with the Series B dimensions, so the flanges become smaller and lighter than the 36" size. Always confirm the mating flange's bolt circle and count in this range.

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 A 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).