Weld Neck Flange — ASME B16.47 Series A Class 900

ANSI / ASME B16.47 Series A (MSS SP-44) Class 900 large diameter welding neck raised face flanges · NPS 26" to 48" · Carbon steel ASTM A105 / A694, stainless steel ASTM A182 F304 / F316, low-temperature A350 LF2

ASME B16.47 SERIES A CLASS 900 WELD NECK FLANGE

ASME B16.47 covers large diameter steel flanges NPS 26 through 60 in two bolting patterns (Class 900 to NPS 48). **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. For Class 900 the two series converge: from NPS 38 upward B16.47 Series A Class 900 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 900 weld neck flanges in Mumbai, 26" to 48", RF or RTJ, bored to the customer's pipe wall.

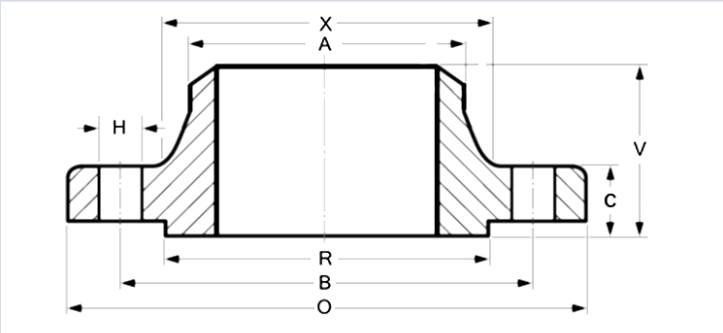
KEY FEATURES

- **Full ASME B16.47 compliance** — Series A dimensions, tolerances, facing and marking to ASME B16.47-2020.
- **Series A drilling** — 20 to 24 studs, 2¾" – 4"; matches MSS SP-44 Class 900.
- **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 900 (900 lb / #900)
Size range	NPS 26" – 48" (DN 650 – DN 1200), 12 sizes — B16.47 Class 900 stops at NPS 48
Facing	Raised face (RF) 7 mm (¼") or ring type joint (RTJ)
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

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Dimensions per ASME B16.47-2020 Series A (NPS 26 – 48); 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 900 WELD NECK FLANGE DIMENSIONS (MM)

ASME B16.47 SERIES A · CLASS 900 WELD NECK FLANGE · RAISED FACE · DIMENSIONS IN MM — 12 sizes

NPS inch	O	C	X	A	R	V	B	Bolting			Weight
	OD	Thick.	Hub Ø base	Hub Ø bevel	RF Ø	Length thru hub	Bolt circle	No.	H · Hole Ø	Stud	kg approx.
26"	1085	139.7	775	660.4	749	292.4	952.5	20	73.0	2 3/4"	692
28"	1170	142.9	832	711.2	800	304.4	1022.4	20	79.4	3"	821
30"	1230	149.3	889	762.0	857	317.4	1085.8	20	79.4	3"	962
32"	1315	158.8	946	812.8	914	336.4	1155.7	20	85.7	3 1/4"	1154
34"	1395	165.1	1006	863.6	965	355.4	1225.6	20	92.1	3 1/2"	1347
36"	1460	171.5	1064	914.4	1022	368.4	1289.0	20	92.1	3 1/2"	1540
38"†	1460	190.5	1073	965.2	1099	358.4	1289.0	20	92.1	3 1/2"	1535
40"†	1510	196.9	1127	1016.0	1162	370.4	1339.8	24	92.1	3 1/2"	1642
42"†	1560	206.4	1176	1066.8	1213	377.4	1390.6	24	92.1	3 1/2"	1796
44"†	1650	214.4	1235	1117.6	1270	397.4	1463.7	24	98.4	3 3/4"	1950
46"†	1735	225.6	1292	1168.4	1334	417.4	1536.7	24	104.8	4"	2105
48"†	1785	233.4	1343	1219.2	1384	425.4	1587.5	24	104.8	4"	2259

- All dimensions in millimetres per ASME B16.47-2020 Series A, Class 900 (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).
- † NPS 38 – 48: Series A Class 900 dimensions are identical to Series B (API 605 pattern) — note the change in thickness, hub and bolting pattern between NPS 36 and 38 (both have OD 1460 and bolt circle 1289).
- 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 900) at NPS 38 – 48. Series A mates with MSS SP-44
Typical use	A: pipelines, valves, pumps, vessels · B: tanks, low-pressure process

APPLICATIONS

High-pressure gas transmission and injection · compressor discharge headers and manifolds · pig launchers and receivers · gas-processing, hydrocracker and ammonia / methanol synthesis loops · HP boiler feedwater and main steam · slug catchers, separators and heat-exchanger nozzles.

Also known as: ANSI B16.47 Series A 900 lb WNRF flange · MSS SP-44 Class 900 weld neck flange · large diameter 900# welding neck flange · 26" – 48" WN flange (≈ PN 160).

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 900** 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	153.2	148.9	148.9
100	139.8	126.6	129.4
150	135.2	115.5	118.5
200	131.4	107.0	110.3
250	125.8	100.1	103.4
300	119.5	94.9	97.9
350	112.7	91.0	93.8
400	104.2	88.3	91.2
450	86.3	86.3	88.2

Working pressure in bar (gauge); ASME B16.47 adopts the ASME B16.5 Table 2 ratings for Class 900 (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 900 for NPS 38 – 48 with the Series B dimensions, so 38" shares the 36" OD and bolt circle but has a thicker flange and different hub. 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 900 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).