Slip-On Flange — ASME B16.5 Class 300

ANSI / ASME B16.5 Class 300 slip-on raised face (SORF) flanges · NPS ½" to 24" · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316, alloy steel

ASME B16.5 CLASS 300 SLIP-ON FLANGE

A slip-on flange (SO / SORF) slides over the pipe end and is secured with two fillet welds — one on the hub, one inside at the bore. The bore is slightly larger than the pipe OD, so alignment is easy and no bevel is needed: it is the lowest-cost welded flange for low- and medium-pressure process, water and utility piping.

TESCO Steel & Engineering manufactures ASME B16.5 Class 300 slip-on flanges in Mumbai, India, ½" to 24", RF or FF, bored to suit ASME B36.10M / B36.19M pipe.

KEY FEATURES

- **Full ASME B16.5 compliance** — dimensions, bore, tolerances, facing and marking to B16.5-2020.
- **Easy fit-up** — bore ID = pipe OD + clearance; no bevelling; pipe set back for the internal weld.
- **Two fillet welds** — hub and face welds; lower cost than weld neck, about two-thirds of its strength.
- **Materials and certification** — A105, A350 LF2, A182 F304/F316, F11/F22, duplex; EN 10204 3.1.

INSTALLATION — SLIP-ON WELDING

- Set the pipe end back from the flange face by the wall thickness + 3 mm so the internal weld does not stand proud of the face.
- Weld the hub fillet first (leg ≥ 1.4 × wall), then the internal face fillet; grind flush if it projects beyond the face.
- Not recommended for severe cyclic, high-temperature or hydrogen service — use weld neck flanges there.

SPECIFICATION SUMMARY

Product	Slip-on flange (SO / SORF), forged
Standard	ASME B16.5 (formerly ANSI B16.5)
Pressure class	Class 300 (300 lb / #300)
Size range	NPS ½" – 24" (DN 15 – DN 600)
Facing	Raised face (RF) 2 mm standard; flat face (FF) on request
Face finish	Serrated, 125 – 250 µin Ra (3.2 – 6.3 µm) per ASME B16.5
Bore	ID = pipe OD + clearance per ASME B16.5 (suits all schedules)
Welds	Hub fillet + internal face fillet, ASME B31.3 Fig. 328.5.2B
Materials	ASTM A105 / A105N; A350 LF2; A182 F304/L, F316/L, F321; F11, F22, F91; duplex

APPLICATIONS

Water treatment and distribution · HVAC and chilled-water headers · fire-protection mains · low-pressure process and utility piping · pump, valve and tank nozzle connections · shipbuilding and offshore utility services · air, nitrogen and drain lines.

SLIP-ON VS OTHER FLANGE TYPES

Slip-on (SO)	Pipe through bore, two fillet welds; lowest cost
Weld neck (WN)	Butt weld; highest strength; critical / cyclic service
Socket weld (SW)	Pipe in socket, one fillet weld; NPS ½ – 3

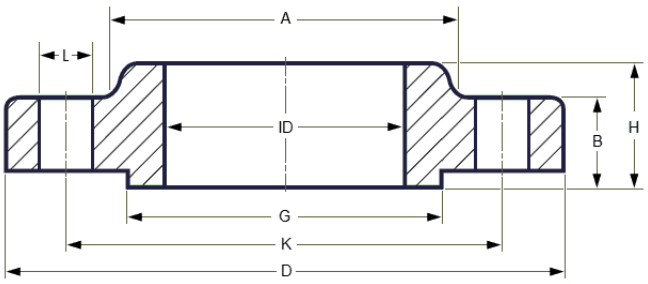
ASME B16.5 CLASS 300 SLIP-ON FLANGE DIMENSIONS (MM)

ASME B16.5 · CLASS **300** SLIP-ON FLANGE · RAISED FACE · DIMENSIONS IN MM — 20 sizes

NPS inch	D OD	B Thick.	A Hub Ø	H Length thru hub	ID Bore	G RF Ø	K Bolt circle	Bolting No.	Bolting L · Hole Ø	Bolting Stud	Weight kg approx.
1/2"	95	14.3	38	23	22.2	35	66.7	4	15.9	1/2"	1.2
3/4"	115	15.9	48	26	27.7	43	82.6	4	19.0	5/8"	1.4
1"	125	17.5	54	27	34.5	51	88.9	4	19.0	5/8"	1.4
1 1/4"	135	19.1	64	27	43.2	64	98.4	4	19.0	5/8"	1.8
1 1/2"	155	20.7	70	31	49.5	73	114.3	4	22.2	3/4"	2.7
2"	165	22.4	84	34	61.9	92	127.0	8	19.0	5/8"	3.2
2 1/2"	190	25.4	100	39	74.6	105	149.2	8	22.2	3/4"	4.6
3"	210	28.6	117	43	90.7	127	168.3	8	22.2	3/4"	5.9
3 1/2"	230	30.2	133	45	103.4	140	184.2	8	22.2	3/4"	7.7
4"	255	31.8	146	48	116.8	157	200.0	8	22.2	3/4"	10
5"	280	35.0	178	51	144.4	186	235.0	8	22.2	3/4"	12.7
6"	320	36.6	206	53	171.4	216	269.9	12	22.2	3/4"	17.7
8"	380	41.3	260	62	222.2	270	330.2	12	25.4	7/8"	26
10"	445	47.7	321	67	277.4	324	387.4	16	28.6	1"	36
12"	520	50.8	375	73	328.2	381	450.8	16	31.8	1 1/8"	52
14"	585	54.0	425	77	360.2	413	514.4	20	31.8	1 1/8"	75
16"	650	57.2	483	83	411.2	470	571.5	20	34.9	1 1/4"	86
18"	710	60.4	533	89	462.3	533	628.6	24	34.9	1 1/4"	113
20"	775	63.5	587	96	514.4	584	685.8	24	34.9	1 1/4"	143
24"	915	69.9	702	107	616	692	812.8	24	41.3	1 1/2"	195

- All dimensions in millimetres per ASME B16.5-2020 Tables 10 and 11 (metric). Thickness B and length through hub H include the 2 mm raised face. Bore ID for NPS 4 and larger is slightly larger than in other classes, as tabulated in ASME B16.5 Table 10.
- Bore ID per ASME B16.5 (pipe OD + clearance) suits any pipe schedule. Studs per ASME B16.5 Table B1; hole Ø L is 3 mm larger than the stud. Weights approximate, carbon steel.

SLIP-ON FLANGE DIMENSIONAL DRAWING



D Flange outside diameter	**B** Flange thickness (incl. 2 mm RF)
A Hub diameter	**H** Length through hub
ID Bore (pipe OD + clearance)	**G** Raised face diameter
K Bolt circle diameter (PCD)	**L** Bolt hole diameter

Selection: about one-third the fatigue life and two-thirds the strength of a weld neck of the same class; the pipe-to-flange crevice makes slip-on flanges less suitable for corrosive or hygienic service. **Also known as:** ANSI B16.5 300 lb SO flange · 300# slip-on raised face flange · SORF Class 300 · slip-on welding flange (≈ PN 50).

SLIP-ON FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common)
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2, LF3
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321, F347
Alloy steel	ASTM A182 F5, F9, F11, F12, F22, F91
Duplex / super duplex	ASTM A182 F51 (UNS S31803 / S32205), F53 (S32750), F55 (S32760)
Nickel & copper alloys	Monel 400, Inconel 600 / 625, Hastelloy C276, Cu-Ni 90/10 — on request
Equivalent EN / DIN grades	P250GH (1.0460), 1.4301, 1.4401, 1.4404, 1.4571 on request

PRESSURE–TEMPERATURE RATINGS

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

Temperature °C	Group 1.1 A105 / A350 LF2	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) from ASME B16.5-2020 Table 2-1.1, 2-2.1 / 2-2.2. Ratings apply to the flange; confirm for the specific material group, bolting, gasket and welds.

QUALITY & DOCUMENTATION

- Forged from certified bars / billets; normalised, quenched-and-tempered or solution-annealed per material specification.
- Manufactured under an ISO 9001:2015 quality management system; marking per ASME B16.5 and MSS SP-25.
- EN 10204 3.1 material test certificates with chemical analysis, mechanical properties and heat-number traceability; 3.2 with third-party endorsement on request.
- Bore gauged 100 %; dimensional inspection to ASME B16.5 tolerances; face finish per MSS SP-6.
- NDT (MPI / DPT), PMI for stainless and alloy grades, IBR, NACE MR0175 / ISO 15156 and PED compliance on request.

FREQUENTLY ASKED QUESTIONS

Do I need to specify the pipe schedule for a slip-on flange?

No — the bore fits the pipe OD, which is the same for every schedule. Specify the schedule only to size the fillet welds.

Slip-on or weld neck?

Slip-on for low- and medium-pressure, non-cyclic service where cost and easy alignment matter; weld neck for high pressure, high temperature, cyclic loading, hydrogen or sour service.

Can a slip-on flange be used with a raised face against cast iron?

Use a flat face with a full-face gasket against Class 125 cast iron (ASME B16.5 §5.3.4) — FF slip-on flanges are available on request.

Which gasket and bolts are used?

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

ORDERING INFORMATION

Specify: quantity · size (NPS) · ASME B16.5 Class 300 slip-on · facing (RF / FF) · material grade · certification (3.1 / 3.2, NACE, IBR, PED) · surface protection (anti-rust oil, paint, galvanising).