

Anchor Flange Design & Dimension Data Sheet

C&N has a range of standard Anchor Flanges that match ASME B16.5 pressure classes and comply with design rules and regulations of ASME VIII Division 1 Appendix 2 & ASME II Part D. Detailed below on Page 1 are the design principles used for the standard Anchor Flange design and on Pages 2 to 4 are outline dimensions sufficient to give an external envelope size.

Anchor Flange Design Principles

1) Anchor flange is considered to be symmetrical, constant angle hubs and no bolt holes (if bolt holes are included then it's considered to be a Hanger Flange - see different W Maass UK Data Sheet).

2) To generate the standard sizes shown in Page 2, Material Group No. 1.1 as per ASME B16.5 is considered (typically A105, LF2). Materials of other Group Numbers are also acceptable subject to review by W Maass UK Ltd.

3) The range of Anchor Flanges shown on Pages 2 & 3 correspond to ASME B16.5 pressure classes. Maximum Allowable Operating Pressure is per ASME B16.5 for Material Group No. 1.1 at temperature -29°C to +38°C. Other Operating Pressures & Temperatures are also acceptable subject to review by C&N.

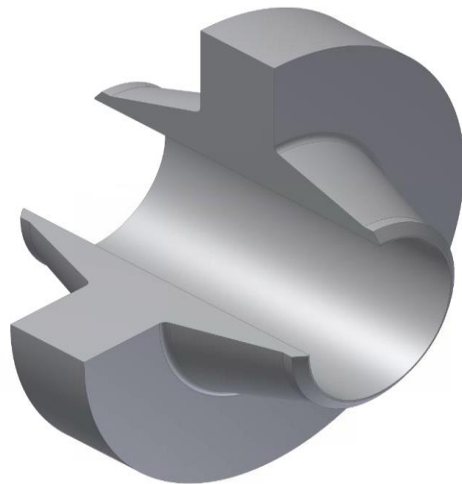
4) Allowable flange stress is derived from ASME II Part D Table 1A for ASTM A105 material at temperature -29°C to +38°C for all Anchor Flanges except those suffixed with (F65). For these Anchor Flanges, it is necessary to use allowable stresses according to ASTM A694 F65 to achieve a practical flange design.

5) Bearing Stress of the anchor flange face at full Thrust Load is limited to 12MPa maximum. This is typical for most concrete embedded applications but should be checked for each application.

6) The bore size shown on Pages 2 & 3 is indicative only, used for generating the Anchor Flange design. The corresponding wall thickness maintains pipe hoop stress below 50% SMYS.

7) The Thrust Load used to develop the standard Anchor Flange designs correspond to the Maximum Allowable Operating Pressure applied to the bore area of the flange. Other Thrust Loads are also acceptable subject to review by C&N.

Note: The design approach used in this Data Sheet is the most conservative available. There are options available to refine the Anchor Flange designs to reduce size and weight. Contact C&N for more information.



Anchor Flange Design & Dimension Data Sheet

The following dimensional data is provided as indicative information only suitable for use to establish an external envelope size of the Anchor Flange. Contact W Maass UK Ltd for further information.

ASME B16.5 Class: 150lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	Use 600lb							
3								
4	Use 300lb							
5								
6								
8								
10								
12								

ASME B16.5 Class: 300lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	Use 600lb							
3								
4	5.1	48,162	114.3	109.6	150.0	60.2	10.0	1.2
5	5.1	73,792	141.3	135.6	185.0	62.9	12.0	1.9
6	5.1	104,687	168.3	161.5	220.0	80.8	14.0	3.6
8	5.1	177,423	219.1	210.3	280.0	86.3	18.0	6.3
10	5.1	275,455	273.0	262.0	346.0	90.0	20.0	10.0
12	5.1	402,025	323.8	310.7	415.0	110.6	24.0	18.0

ASME B16.5 Class: 600lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	10.2	24,622	60.3	55.4	90.0	45.3	10.0	0.5
3	10.2	53,465	88.9	81.7	125.0	49.1	12.0	1.0
4	10.2	88,836	114.3	105.3	165.0	67.5	14.0	2.3
5	10.2	135,762	141.3	130.1	200.0	73.1	18.0	3.8
6	10.2	192,603	168.3	155.0	240.0	91.8	20.0	6.7
8	10.2	326,423	219.1	201.8	310.0	100.9	26.0	13.0
10	10.2	506,783	273.0	251.4	380.0	110.1	32.0	22.2
12	10.2	712,934	323.8	298.2	450.0	134.2	38.0	37.8

MAOP = Maximum Allowable Operating Pressure

Anchor Flange Design & Dimension Data Sheet

The following dimensional data is provided as indicative information only suitable for use to establish an external envelope size of the Anchor Flange. Contact W Maass UK Ltd for further information.

ASME B16.5 Class: 900lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	15.3	33,905	60.3	53.1	95.0	47.1	10.0	0.6
3	15.3	73,622	88.9	78.2	135.0	53.7	14.0	1.5
4	15.3	122,650	114.3	101.0	175.0	74.8	18.0	3.4
5	15.3	187,439	141.3	124.8	215.0	81.2	22.0	5.9
6	15.3	265,916	168.3	148.7	260.0	102.6	26.0	10.8
8	15.3	450,673	219.1	193.5	330.0	115.1	34.0	20.7
10	15.3	699,685	273.0	241.1	410.0	126.0	40.0	36.0
12	15.3	984,308	323.8	286.0	490.0	163.5	58.0	72.3

ASME B16.5 Class: 1500lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	25.5	47,442	60.3	48.6	100.0	54.5	14.0	1.0
3	25.5	103,015	88.9	71.7	145.0	62.8	18.0	2.5
4	25.5	172,571	114.3	92.8	190.0	87.2	24.0	5.9
5	25.5	263,730	141.3	114.7	235.0	97.0	30.0	10.5
6	25.5	374,148	168.3	136.6	280.0	119.9	34.0	17.8
8 _(F65)	25.5	760,366	219.1	195.6	375.0	123.6	44.0	33.1
10 _(F65)	25.5	1,188,703	273.0	243.4	465.0	142.2	58.0	64.4
12 _(F65)	25.5	1,672,253	323.8	288.8	560.0	169.4	66.0	108.4

ASME B16.5 Class: 2500lb

Nom Size	MAOP (MPa)	Thrust (kN)	Pipe OD (d) (mm)	Bore (b) (mm)	Flange OD (D) (mm)	Flange Lnth (L) (mm)	Flange Thk (T) (mm)	Weight (kg)
2	42.6	58,104	60.3	41.7	108.0	61.8	16.0	1.5
3	42.6	126,167	88.9	61.4	155.0	74.6	22.0	3.9
4	42.6	213,656	114.3	80.0	205.0	102.9	30.0	9.3
5	42.6	326,519	141.3	98.9	250.0	112.5	36.0	15.9
6	42.6	463,225	168.3	117.7	300.0	134.9	42.0	27.2
8 _(F65)	42.6	1,092,228	219.1	180.8	420.0	146.8	56.0	49.1
10 _(F65)	42.6	1,695,719	273.0	225.3	520.0	162.4	70.0	107.2
12 _(F65)	42.6	2,385,517	323.8	267.2	620.0	193.0	84.0	183.4

MAOP = Maximum Allowable Operating Pressure

Anchor Flange Design & Dimension Data Sheet

Figure 1 below shows the W Maass UK Ltd Anchor Flange standard geometry and information relating to the dimensions.

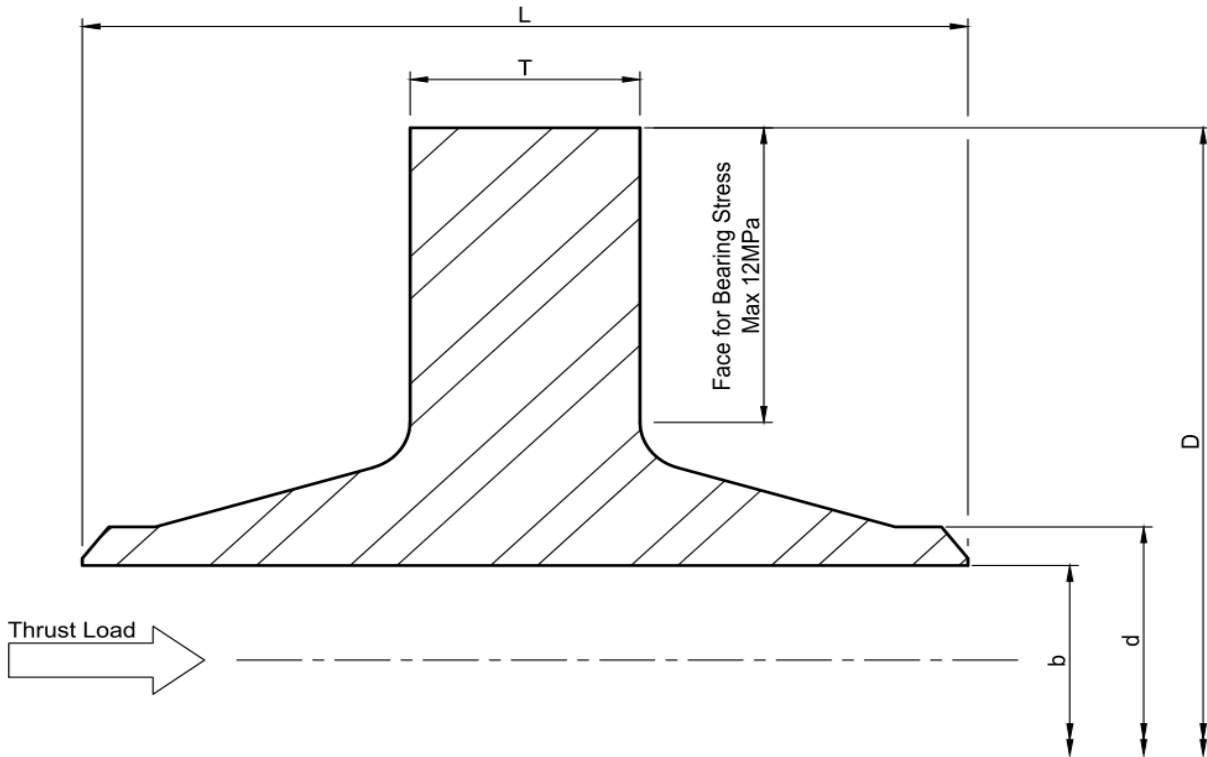


Figure 1 - W Maass UK Ltd standard Anchor Flange Geometry

Notes

- 1) Calculated flange stresses are compliant to ASME VIII Div 1 rules. Also, flange thickness (t) complies with ASME VIII Div 1 Appendix 2 Section 2-14 Rigidity Check.
- 2) Thrust Load is calculated by: $MAOP * b^2 * \pi / 4$