

Dimensions for Unbaked Flanges, Light Series

Foreword

This foreword is not part of this Standard. This publication specifies practices tentatively approved as standard by the American Vacuum Society for Unbaked Flanges, Light Series. It contains data secured from many sources and represents the best thinking of a number of experts in the field. It is a new standard generated after polling the large users and manufacturers of vacuum flanges in the United States. After several years of use, this standard will be forwarded to the USA Standards Institute with the request that it be used as a basis for a USA Standard. Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American Vacuum Society, 335 East 45th Street, New York, New York 10017.

The AVS Committees which drafted and approved this standard had the following personnel at the time of approval.

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TABLE I. Standard AVS unbaked flange dimensions, light series.

Outside diam (in.)	Max. nominal inside flange diam (in.)	Basic bolt circle diam (in.)	Bolt hole size (in.) + 0.004 - 0.001	No. of holes	Hole separation*
2½	1	1.62500	0.265	4	90°
2½	1½	2.31200	0.265	6	60°
3½	2	2.85000	0.332	8	45°
4½	2½	3.62800	0.332	8	45°
4½	3	4.03000	0.332	10	36°
6	4	5.12800	0.332	16	22°30'
6½	5	5.96900	0.332	18	20°
8	6	7.12800	0.332	20	18°
10	8	9.12800	0.332	24	15°
(cm)	(cm)	(cm)	(cm) + 0.010 - 0.002	No. of holes	Hole separation*
5.398	2.54	4.12750	0.673	4	90°
6.985	3.81	5.87248	0.673	6	60°
8.573	5.08	7.23900	0.843	8	45°
11.430	6.35	9.21512	0.843	8	45°
11.748	7.62	10.23620	0.843	10	36°
15.240	10.16	13.02512	0.843	16	22°30'
17.145	12.70	15.16126	0.843	18	20°
20.320	15.24	18.10512	0.843	20	18°
25.400	20.32	23.18512	0.843	24	15°

* Holes are to be equally spaced at the angles specified. The center of the bolt hole is to lie within a circle of 0.009 in. or 0.229-mm-diam drawn about the true position of the bolt hole. The true position of the bolt hole is defined as the intersection of the basic bolt circle and a radial line drawn at the angles specified. For a discussion of true positioning dimensioning, see for example, Aerospace-Automotive Drawing Standards Society of Automotive Engineers, 485 Lexington Ave., New York, Secs. A8.01-A8.17.

1. Scope

This standard is concerned with the physical configuration of bolted flanges intended for use in small unbaked vacuum systems. They may be used with metallic or elastomer sealing gaskets. Specifically omitted are material and thickness specifications, design of attachment means, and gasket design.

2. Flange Design

The flanges are designed to provide a degree of compatibility with the AVS standard bakeable flanges.

They shall have the dimensions shown in Table I which is an excerpt from AVS standard 3.2. All of the bolt holes specified in Table I may be included for maximum flexibility in mating with AVS bakeable flanges. However, the number of bolt holes may be halved when elastomer seals are to be used.

Flange faces shall be turned or ground flat with concentric tool or grinding wheel pattern on the sealing surface. The surface roughness of the sealing surface shall not exceed 64 μ in. measured radially across the grinding or turning pattern. Bolt holes shall straddle center lines (as in "T's" and valves).