JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 2290 : 1998

(ISO 1609 : 1986)

Vacuum technology—Flange dimensions

ICS 23.160

Descriptors : flanges, pipes, vacuum devices, collars (mechanical components), rotating flanges, clamping flanges, bolting

Reference number : **JIS B 2290 : 1998 (E)**

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently **JIS B 2290** : 1968 is replaced with **JIS B 2290** : 1998.

Date of Establishment: 1957-03-29

Date of Revision: 1998-04-20

Date of Public Notice in Official Gazette: 1998-04-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on General Machinery

JIS B 2290:1998, First English edition published in 2000-04

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents, the original JIS is to be the final authority.

Printed in Japan

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(ISO 1609 : 1986)

Vacuum technology—Flange dimensions

Introduction This Japanese Industrial Standard has been prepared based on **ISO 1609**, *Vacuum technology—Flange dimensions* issued in 1986 as the first edition without modifying the technical contents, but "Flanges for maintenance" not specified in the corresponding International Standard is added in the Annex (informative) to this Standard.

1 Scope This Standard specifies the dimensions for flanges and collars used in vacuum technology. The dimensions ensure interchangeability between bolted, clamped and rotatable flanges,

a) whether the assembly be homogeneous (for example, bolted flanges or clamped flanges) or heterogeneous (for example, bolted flanges assembled with clamped flanges either by means of bolts or clamps or by means of bolts and rotatable flanges);

b) whether the sealing rings used with the flanges be elastomer O-rings or metal sealing rings, provided that they are compatible with the linear sealing loads given in **4**.

2 Normative references The following standards contain provisions which through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards indicated below shall be applied.

JIS B 1256 *Plain washers*

JIS B 8365 *Dimensions of clamped-type vacuum couplings*

JIS Z 8601 *Preferred numbers*

ISO 273 *Fasteners—Clearance holes for bolts and screws*

ISO 1127 *Stainless steel tubes—Dimensions, tolerances and conventional masses per unit length*

ISO 4200 *Plain end steel tubes, welded and seamless—General tables of dimensions and masses per unit length*

3 Dimensions

3.1 General

3.1.1 The dimensions of the flanges or collars shall conform to those specified in tables 1 to 3. These dimensions are for finished products and do not include allowance for machining. Flanges or collars with nominal bores of 10 to 40 inclusive, given in tables 1 to 3, accept the corresponding quick-release couplings specified in **JIS B 8365**. Relevant dimensions and tolerances are specified in **5**.

3.1.2 The selection of materials shall be compatible with the requirements for flanges and collars used in vacuum technology and with the dimensions given in tables 1 to 3.

3.1.3 In order to ensure the interchangeability of vacuum components, the flanges shall be aligned so that the bolt holes are spaced equidistantly about and off the symmetrical plane of the component.

3.2 Nominal bore

3.2.1 The tables 1 to 3 provide a series of values of nominal bores intended to identify the flanges or collars.

3.2.2 These values follow the progression of the R10 series of preferred numbers (see **JIS Z 8601**) from which only the term 12.5 has been eliminated.

3.2.3 The values of nominal bore belonging to the R5 series of preferred numbers are as follows:

10, 16, 25, 40, 63, 100, 160, 250, 400, 630, 1 000

3.2.4 The nominal bores 63 and 160 given in tables 1 to 3 correspond to practical diameters of 70 mm (or 65 mm) and 153 mm respectively.

3.3 Diameter of bolt holes, *C* The values for the diameter of bolt holes, C, are derived from the bolt diameters, D, in accordance with **ISO 273**—medium series.

3.4 Bolt diameter, *D* For a flange of given nominal bore, the bolt diameter, D, is the same for both bolted and rotatable flanges.

3.5 Mating face

3.5.1 Definition The mating face of the flange is the area in the form of a ring, the surface finish and the flatness of which make the sealing of the joint possible.

3.5.2 Limits The minimum mating face is defined by diameter E in table 1 and S in table 2, and by diameter F in tables 1 and 2.

3.5.3 Profile The flange sealing face shall be flat and no part of the flange shall project in relation to this plane.

3.6 Width of the collar onto which the clamp hooks, *G* The value for the width depends on the system of clamps used and should not be greater than 2.5 mm.

3.7 Outside diameter of bolted and rotatable flanges, *H* The dimensions given for the outside diameter are compatible with the requirement that the bolt washers (**JIS B 1256**) shall not project beyond the outer circumference of the flange.

3.8 Number of bolt holes, *n* The linear sealing loads tabulated in table 4 of 4 for a given bolt stress are derived from the values of the number of bolt holes, n.

3.9 Inner diameter for the contact area of clamps, *U* So as to take into account the diversity of the clamping systems which may be used, for example on collars with welding necks, the maximum inner diameter of the annulus reserved for contact with the clamps is defined by diameter U.