

DIN EN 1591-1:2011-08 (E)

Flanges and their joints - Design rules for gasketed circular flange connections - Part 1: Calculation method (includes Amendment A1:2009 + Corrigendum AC:2011)

Contents

Page

Foreword	3
1 Scope	6
1.1 General	6
1.2 Requirement for use of the Calculation method	6
1.3 Validity	6
2 Normative references	8
3 Notation	9
3.1 Use of figures	9
3.2 Subscripts and special marks	9
3.3 Symbols	10
3.4 Terminology	14
4 Calculation parameters	24
4.1 Flange parameters	25
4.2 Bolt parameters	29
4.3 Gasket parameters	29
5 Internal forces (in the joint)	32
5.1 Applied loads	32
5.2 Compliance of the joint	33
5.3 Minimum forces necessary for the gasket	33
5.4 Internal forces in assembly condition ($I = 0$)	34
5.5 Internal forces in subsequent conditions ($I = 1, 2, \dots$)	36
6 Checking of the admissibility of the load ratio	36
6.1 General	36
6.2 Bolts	37
6.3 Gasket	38
6.4 Integral flange and collar	38
6.5 Blank flange	39
6.6 Loose flange with collar	40
Annex A (informative) Requirement for limitation of non-uniformity of gasket stress	41
Annex B (informative) Dimensions of standard metric bolts	42
Annex C (informative) Scatter of bolting-up methods	43
Annex D (informative) Assembly using torque wrench	44
Annex E (informative) Flange rotations	46
E.1 General	46
E.2 Use of flange rotation	46
E.3 Calculation of flange rotations	46
Annex F (informative) Diagram of calculation sequence	48

Annex G (informative) Joints with spacer-seated flanges	50
G.1 Introduction	50
G.2 Behaviour of spacer-seated gaskets	50
G.3 Simplified treatment	50
Annex H (normative) Use of the former creep factor σ_C	55
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC	56
Bibliography	57