Superseded by AS 2129-1994 DUP

Corrigenda - May 1982
See also AS 2525 for bolts etc
Amendment 1 - Dec 1987

AS 2129—1982
UDC 621.643.412:621.882

Australian Standard 2129—1982

FLANGES FOR PIPES, VALVES AND FITTINGS

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(NSC: 4730)]

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Aluminium Development Council
Australasian Institute of Metals
Australian Chamber of Commerce
Australian Compressed Air Institute
Australian Institute of Energy
Australian Institute of Non-destructive Testing
Australian Institute of Petroleum Limited
Australian Liquefied Petroleum Gas Association
Australian Mines and Metals Association
Australian Society of Sugar Cane Technologists
Australian Valve Manufacturers Association
Australian Welding Institute
Australian Welding Research Association
Boiler and Pressure Vessel Manufacturers Association of A'stra'a
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Department of the Capital Territory
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Department of Industrial Affairs and Em,'oy'.it, S.A.
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R. 'wa. s of Australia Committee
Socie. of Mechanical Engineers of Australia

'is standard, prepared by Committee ME/1, Boilers and Unfired Pressure Vessels, was approved on behalf of the Council of the Standards Association of Australia on 19 January 1982, and was published on 22 March 1982.

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This standard was issued in draft form for comment as DR 81189.

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AMENDMENT No 1
to
AS 2129—1982
FLANGES FOR PIPES, VALVES AND FITTINGS

CORRECTIONS

SUMMARY: These corrections apply to Tables D and H.

Published on 2 December 1983.

Page 20. Table D. AMDT No 1 DEC. 1983

Delete existing diameter of flange reference D, 1355, nomin. size 1050 and *substitute* 1335.

Page 27. Table H. AMDT No 1 DEC. 1983

Delete existing values 413 and 385 for nominal size 1050 in columns J and K and *substitute*: 387 and 360.

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10 MAY 1982

May 1982

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CORRIGENDA
to
AS 2129—1982
FLANGES FOR PIPES, VALVES AND FITTINGS

SUMMARY: These corrections apply to Tables A, C, D, E, [illegible] and K.

Published on 3 May 1982.

AUSTRALIAN STANDARD

FLANGES FOR PIPES, VALVES AND FITTINGS

AS 2129—1982

First published (as AS B52) (endorsement of BS10, Parts 1, 2 and 3) 1931
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PREFACE

This edition of this standard was prepared by the Association's Committee on Boilers and Unfired Pressure Vessels to supersede AS 2129—1978.

This edition includes details of 225, 375, 525 and 1050 nominal size flanges which are in current use by water supply authorities. The dimensions of these flanges, the diameter of the raised face for flanges to Tables A, C, D, E and F, the thickness of spheroidal or nodular graphite iron flanges, and revised dimensions of the taper neck in cast iron flanges have been included in the tables showing the dimensions of flanges.

Structural plate has been included as a suitable material for certain flanges.

Manufacturing details of bolting for flanges are now given in AS 2528, Bolts, Stud Bolts and Nuts for Flanges and Other High and Low Temperature Applications, which recognizes the difficulties in obtaining metric series bolting, particularly in the larger diameters and also in material suitable for low and high temperatures; consequently it lists inch series stud bolts for these applications. Flange bolting in this standard is detailed by reference; however, this standard contains an appendix (C) in which guidance is given on the selection of bolting, and another appendix (D) provides information on the assembly of flanged joints.

This standard requires reference to a number of other standards, details of which are given in Appendices F and G; the names and addresses of organizations from which copies of these standards may be obtained are given in Appendix H.

The format of this edition differs considerably from that of the former edition. The requirements for the manufacture of flanges have been separated from the requirements and limitations on their use. The opportunity has been taken also to simplify the standard by rationalizing the presentation of tabular information to facilitate information retrieval.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for FLANGES FOR PIPES, VALVES AND FITTINGS

FOREWORD

The majority of flanges in this country are used by the chemical industry, the electrical power generating industry, the gas industry, the petroleum industry and the water supply industry. In general, the electrical power generation industry, the gas industry and the water supply industry use flanges which comply with this standard or its British equivalent BS 10, Flanges and Bolting for Pipes, Valves and Fittings, while the petroleum and chemical industries use flanges which comply with the American standard ANSI B16.5, Steel Pipe Flanges, Flanged Valves and Fittings, or its British equivalent BS 1560, Steel Pipe Flanges and Flanged Fittings (Nominal Sizes 1/2 to 24 in) for the petroleum industry. Very few flanges used in this country comply with other overseas national standards, e.g. the German DIN (Deutsches Institut fur Normung e.V.) standard or its British equivalent BS 4504, Flanges and Bolting for Pipes, Valves and Fittings—Metric Series.

In 1971 the British Standards Institution announced that 'BS 10 would not be metricated and eventually all standard flanges will be designed to BS 4504 or BS 1560. However, it is realized that BS 10 must remain in existence for many years to come'. In 1981, the demand for flanges to BS 10 was still very high.

ISO (International Organization for Standardization) and CEN (European Committee for Standardization) have set up working groups to produce a universally acceptable standard for flanges. The proposal favours the use of BS 4504 for pressures up to 4 MPa and for all sizes, and ISO 2229 for pressures over 4 MPa and for sizes up to 24 in.

ISO 2229, Equipment for the Petroleum and Natural Gas Industries—Steel Pipe Flanges, Nominal sizes 1/2 to 24 in—Metric Dimensions, which is equivalent to ANSI B16.5 and BS 1560, specifies steel flanges 1/2 in to 24 in; above this size MSS SP-44, Steel Pipe Line Flanges, is used. ISO 2229 flanges are screwed to American pipe threads and are joined with inch-sized bolting. These standards are nominated in Australian pipeline and pressure piping standards.

BS 4504 is basically the British equivalent to the DIN range in which flanges are screwed to British pipe threads and are joined with metric-sized bolting. While BS 4504 does not comply with any ISO standard, it is related to ISO 2084, Pipeline Flanges for General Use—Metric Series—Mating Dimensions, and ISO 2441, Pipeline Flanges for General Use—Shapes and Dimensions of Pressure-tight Surfaces, which specify mating dimensions and shapes and dimensions of pressure-tight surfaces respectively. In other words, these ISO standards specify only some aspects of flanges, whereas BS 4504 specifies all the requirements for a flange.

Before AS B52 was metricated (to become AS 2129—1978) a conference was convened to determine the action to be taken in Australia to avoid unnecessary proliferation of flanges to differing standards. It was agreed that AS B52 be soft-metricated, metric bolting be specified, and flanges to Table C be reintroduced. Because flanges of the larger nominal sizes tended to leak, it was agreed that flanges with O-ring grooves be introduced. It was also agreed that the introduction of the BS 4504 flange and the DIN flange be resisted.

Bolting has been included by reference to AS 2528. Calculations have been made to ensure that the strength of the flanged joint has not been impaired and that the clearance between the heads of bolts and nuts and the pipe or the body of the valve or fitting was maintained. The pitch circle diameters have been adjusted to facilitate the use of inch series bolting as well as metric series bolting and to ensure that flanges manufactured to this standard can be bolted to flanges manufactured to AS B52.

Flanges specified in this standard can be used on pipes and fittings having diameters shown in the following standards:

AS 1074	Steel Tubes and Tubulars Threaded or Suitable for Threading with Pipe Threads of Whitworth Form
AS 1432	Copper Tubes for Water, Gas and Sanitation
AS 1488	Cast Grey Iron Fittings for Pressure Pipes (Excluding Bolted Gland Joints)
AS 1579	Arc Welded Steel Pipes for Water and Gas
AS 1723	Centrifugally Cast Grey Iron Pressure Pipes (Excluding Pipes with Bolted Gland Joints)
AS 1836	Welded Steel Tubes for Pressure Purposes
AS 2280	Centrifugally Cast Ductile Iron Pressure Pipes

For further details, see Appendix E.

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SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for circular flanges of nominal sizes between 15 and 3000 and their bolting for use on pipes, valves and fittings and other pressure-retaining equipment containing fluid at pressures up to 19 300 kPa and at temperatures in the range − 200°C to + 525°C.

These flanges are manufactured from carbon steel, carbon-manganese steel, alloy steel, grey iron, malleable iron, spheroidal or nodular graphite iron*, or copper alloy.

NOTES:

1. Flowcharts that can be used to assist in the selection and manufacture of flanges are given in Appendix A.
2. Limitations on the use of flanges are given in Appendix B.
3. Guidance on the selection of bolting is given in Appendix C.
4. The requirements for the assembly of flanged joints are given in Appendix D.

1.2 TYPES OF FLANGES.

1.2.1 Basic Types (See Fig. 1.1). The basic types of flange shall be as follows:

(a) Blank.

(b) Plate.

(c) Boss.

(d) Welding neck.

(e) Integral.

1.2.2 Flange Faces (See Fig. 1.2). Each of the basic types may have any one of the following faces (see Clause 1.5.1), subject to the limitations shown in Table 4.1:

(a) Full face.

(b) Raised face.

(c) Full face with O-ring.

1.3 APPLICATION.

1.3.1 Flanges. Flanges shall comply with the relevant requirements of this Section and with the specific requirements of the following Sections, as appropriate:

Section 2 —Temperature/Pressure Ratings
Section 3 —Materials
Section 4 —Manufacturing Requirements and Dimensions
Section 5 —Marking and Material Certificates.

1.3.2 Bolting. Bolting for flanges shall comply with the requirements of Section 6—Bolting.

1.3.3 Assembly. The assembly of flanged joints shall comply with the requirements of Section 7—Assembly of Flanged Joints.

1.4 DESIGNATION AND IDENTIFICATION. Each flange shall be designated and identified as follows:

(a) The number of the Australian standard, i.e. AS 2129.

(b) The nominal size.

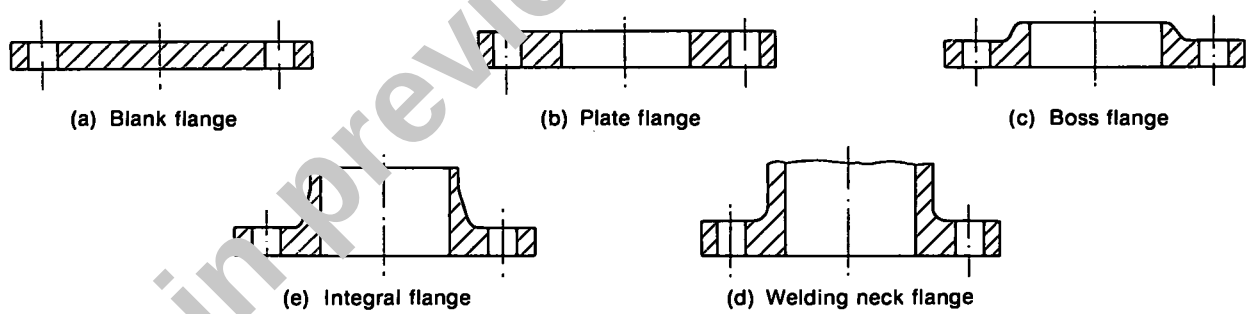
(c) The flange table.

Example: A flange of nominal size 400 to Table E would be designated AS 2129/400/E.

1.5 DEFINITIONS. For the purposes of this standard, the following definitions apply:

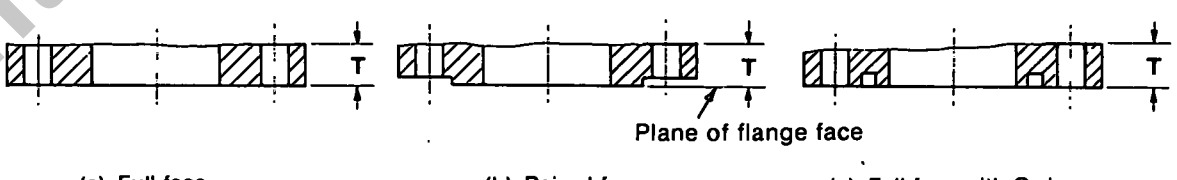
1.5.1 Flange face—the reference plane which is perpendicular to the axis of the flange and coincident with the front of the flange from which is measured the thickness of the flange and also the height of the

*Alternative names for this material are 'SG iron' and 'ductile iron'.



NOTE: For convenience, only the full face variant of each type has been illustrated.

Fig. 1.1. FLANGE TYPES



NOTE: T = flange thickness.

Fig. 1.2. FLANGE FACE AND FLANGE THICKNESS

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