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ASME B16.48-2020
(Revision of ASME B16.48-2015)

# Line Blanks

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AN AMERICAN NATIONAL STANDARD

The American Society of
Mechanical Engineers

# ASME B16.48-2020
(Revision of ASME B16.48-2015)

# Line Blanks

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers
Two Park Avenue • New York, NY • 10016 USA

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# FOREWORD

In July 1993, the ASME B16 Committee gave to its Subcommittee C the assignment to convert the API 590 Steel Line Blanks Standard into an ASME standard. The American Petroleum Institute no longer publishes the API 590 Standard.

These line blanks were designed in accordance with the rules of the ASME B31.3-2002 edition. Materials and relevant footnotes have been added following the ASME format.

Significant additions were made to the 2005 edition that included reference to the use of all materials listed in ASME B16.5, Table 1A plus Metric units. The added materials of construction included additions to classes of alloy steels, stainless steels, and nickel alloys. The 2005 edition was also metricated over previous editions to include both U.S. Customary units (in parentheses) and Metric units in the text, Metric units in dimensional tables in the body, and U.S. Customary units in dimensional tables in Nonmandatory Appendix A.

Following the approval of the Standards Committee and ASME, approval for the 2005 edition was granted by the American National Standards Institute (ANSI) on September 19, 2005.

The 2010 edition included revisions to paragraph numbering and adjustments of appendices. In addition to renumbering of main text, updates were made to the Materials section and Marking Method. Illustrations for the figure-8 blanks for raised face flange joints were revised. Finally, the tables for male ring-joint facing figure-8 blanks were revised to support both oval and octagonal ring shapes.

The 2015 edition included revisions to paragraph numbering, and updates to the Materials and Thickness Tolerances sections. Tables for class 300 male oval ring-joint figure-8 blanks were updated for thickness.

The B16 Committee operates under procedures accredited by ANSI. Following approval by the Standards Committee and ASME, the 2015 edition was approved as an American National Standard by ANSI on September 18, 2015, with the designation ASME B16.48-2015.

In ASME B16.48-2020, the U.S. Customary tables in former Mandatory Appendix I have been merged with the SI tables in the main text. The tables and figures have been redesignated, former Mandatory Appendix I has been deleted, and the subsequent Mandatory Appendix has been redesignated. Cross-references have been updated accordingly. In addition, this edition includes revisions to former Tables 1, 7, and 14. Following approval by the ASME B16 Standards Committee, this revision to the 2015 edition was approved as an American National Standard by ANSI on November 13, 2020, with the designation ASME B16.48-2020.



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# Standardization of Valves, Flanges, Fittings, and Gaskets

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The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

**Proposing a Case.** Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

**Interpretations.** Upon request, the B16 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B16 Standards Committee.

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If the Inquirer is unable to use the online form, he/she may e-mail the request to the Secretary of the B16 Standards Committee at SecretaryB16@asme.org, or mail it to the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

| | |
|---|---|
| Subject: | Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words. |
| Edition: | Cite the applicable edition of the Standard for which the interpretation is being requested. |
| Question: | Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable. |
| Proposed Reply(ies): | Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies. |
| Background Information: | Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information. |



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Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

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# ASME B16.48-2020
# SUMMARY OF CHANGES

Following approval by the ASME B16 Standards Committee and ASME, and after public review, ASME B16.48-2020 was approved by the American National Standards Institute on November 13, 2020.

In ASME B16.48-2020, the U.S. Customary tables in former Mandatory Appendix I have been merged with the SI tables in the main text. The tables and figures have been redesignated, former Mandatory Appendix I has been deleted, and subsequent Mandatory Appendix has been redesignated. Cross-references have been updated accordingly. In addition, this edition includes the following changes identified by a margin note, **(20)**. The Record Numbers listed below are explained in more detail in the "List of Changes in Record Number Order" following this Summary of Changes.

| *Page* | *Location* | *Change (Record Number)* |
|---|---|---|
| 4 | Table 4.3.1-1 | Formerly Table 1; outside diameter revised for NPS $2\frac{1}{2}$ and NPS 4 *(17-3164, 18-2075)* |
| 10 | Table 5.1-1 | Formerly Table 7; outside diameter revised for NPS 4 and NPS 14 *(18-807)* |
| 17 | Table 5.1-8 | Formerly Table 14; centerline dimension revised for NPS 14 *(18-109)* |



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# LIST OF CHANGES IN RECORD NUMBER ORDER

| Record Number | Change |
|---|---|
| 17-3164 | Revised NPS 2½ for "Outside Diameter, *O*" in Table 4.3.1-1 (former Table 1), Dimensions of Class 150 Blanks for Use With Raised Face Flanges |
| 18-109 | Revised NPS 14 for "Centerline Dimension, *A*" in Table 5.1-8 (former Table 14), Dimensions of Class 300 Male Ring-Joint Facing Figure-8 Blanks |
| 18-807 | Revised NPS 4 and NPS 14 for "Outside Diameter, *O*" in Table 5.1-1 (former Table 7), Dimensions of Class 150 Female Ring-Joint Facing Figure-8 Blanks |
| 18-2075 | Revised NPS 4 for "Outside Diameter, *O*" in Table 4.3.1-1 (former Table 1), Dimensions of Class 150 Blanks for Use With Raised Face Flanges |



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# LINE BLANKS

## 1 SCOPE

This Standard covers pressure–temperature ratings, materials, dimensions, tolerances, marking, and testing for operating line blanks in sizes NPS ½ through NPS 24 for installation between ASME B16.5 flanges in the 150, 300, 600, 900, 1500, and 2500 pressure classes.

## 2 GENERAL

### 2.1 Definitions

**2.1.1 Figure-8 Blank.** A figure-8 blank (also called a spectacle blank) is a pressure-retaining plate with one solid end and one open end connected with a web or tie bar (see Figure 2.1.1-1).

**2.1.2 Paddle Blank.** A paddle blank is similar to the solid end of a figure-8 blank. It has a plain radial handle. It is generally used in conjunction with a paddle spacer in large sizes.

**2.1.3 Paddle Spacer.** A paddle spacer is similar to the open end of a figure-8 blank. It has a plain radial handle. It is generally used in conjunction with a paddle blank.

### 2.2 References

Codes, standards, and specifications, containing provisions to the extent referenced herein, constitute requirements of this Standard. These reference documents are listed in Mandatory Appendix I.

### 2.3 Quality Systems

Nonmandatory requirements relating to the product manufacturer's Quality System Program are described in Nonmandatory Appendix A.

### 2.4 Relevant Units

This Standard states values in both SI (Metric) and U.S. Customary units. These systems of units are to be regarded separately as standard. Within the text, the U.S. Customary units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, it is required that each system of units be used independently of the other. Combining values from the two systems constitutes nonconformance with the Standard.

### 2.5 Convention

For determining conformance with this Standard, the convention for fixing significant digits where limits (maximum and minimum values) are specified shall be as defined in ASTM E29. This requires that an observed or calculated value be rounded off to the nearest unit in the last right-hand digit used for expressing the limit. Decimal values and tolerances do not imply a particular method of measurement.

### 2.6 Size

NPS, followed by a dimensionless number, is the designation for nominal blank size. NPS is related to the reference nominal diameter, DN, as defined in ISO 6708. The relationship is typically as follows:

| NPS | DN |
|---|---|
| ½ | 15 |
| ¾ | 20 |
| 1 | 25 |
| 1¼ | 32 |
| 1½ | 40 |
| 2 | 50 |
| 2½ | 65 |
| 3 | 80 |
| 4 | 100 |

GENERAL NOTE: For NPS ≥ 4, the related DN = 25 multiplied by the NPS number.

### 2.7 Service Conditions

Criteria for selection of materials suitable for particular fluid service are not within the scope of this Standard.

## 3 PRESSURE–TEMPERATURE RATINGS

### 3.1 Pressure Classes

Line blanks covered by this Standard are for the following pressure classes: 150, 300, 600, 900, 1500, and 2500 as listed in ASME B16.5.

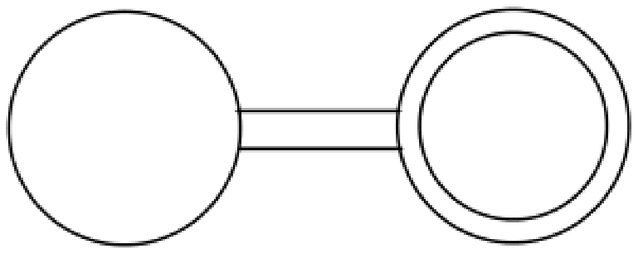
### 3.2 Pressure–Temperature Ratings

**3.2.1 Ratings.** Ratings are the maximum allowable working gage pressure at the temperature shown in ASME B16.5, Tables 2 and 2C for the appropriate material

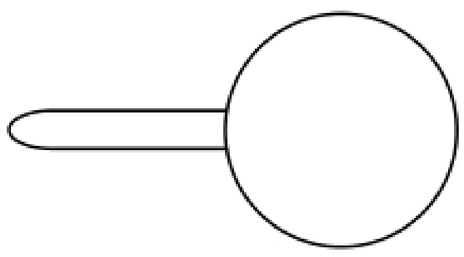


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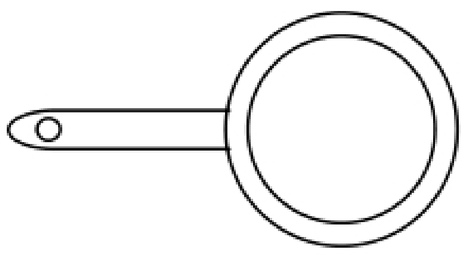
**Figure 2.1.1-1 Line Blanks**



(a) Figure-8 Blank



(b) Paddle Blank



(c) Paddle Spacer

and pressure class. For intermediate temperatures, linear interpolation between temperatures within a pressure class is permitted by ASME B16.5.

**3.2.2 System Pressure Testing.** Line blanks may be subjected to system tests at a pressure not to exceed 1.5 times the 38°C (100°F) rating rounded off to the next higher 1 bar (25 psi) increment. Testing at any higher pressure is the responsibility of the user, taking into account the requirements of the applicable code or regulation.

**3.2.3 Mixed Material Joints.** Should either the two flanges or the line blank in a flanged line blank assembly not have the same pressure–temperature rating, the rating of the assembled joint at any temperature shall be the lower of the flange or line blank rating at that temperature.

## 4 DESIGN

### 4.1 Handle

The handle or web (tie bar) may be integral or attached to the line blank or spacer. The web and its attachment shall be capable of supporting the weight of the blank or spacer in all orientations without permanent deformation to the web.

### 4.2 Edge Preparation

In addition to machining, flame, plasma, saw cutting, and press punching are acceptable methods for forming the inside and outside diameters of line blanks. Surfaces shall be free of projections that would interfere with gasket seating.

### 4.3 Facing

**4.3.1 Raised Face Joint Blanks.** The gasket-seating surface and dimensions for line blanks used with raised face flanges shall be in accordance with ASME B16.5. A raised face may be specified for these blanks at the option of the purchaser. The height of the raised faces shall be in addition to the thicknesses, *t*, listed in Tables 4.3.1-1 through 4.3.1-6.

**4.3.2 Female Ring-Joint Blanks.** Female ring-joint grooves shall be shaped with the groove side wall surface finish not exceeding 1.6 μm (63 μin.) Ra roughness. The finish of the gasket contact faces shall be judged by visual comparison with Ra standards (see ASME B46.1) and not by instruments having stylus tracers and electronic amplification.

**4.3.3 Male Ring-Joint Blanks.** The gasket shape (ring) for male ring-joint blanks shall not exceed 1.6 μm (63 μin.) Ra roughness. The finish of the gasket contact faces shall be judged by visual comparison with Ra standards (see ASME B46.1) and not by instruments having stylus tracers and electronic amplification.

## 5 DIMENSIONS

### 5.1 General

Dimensions shall be in accordance with Tables 4.3.1-1 through 4.3.1-6 and 5.1–1 through 5.1-12.

### 5.2 Tolerances

**5.2.1 Facing Tolerances.** Tolerances for facings shall be in accordance with ASME B16.5.

**5.2.2 Thickness Tolerances.** Thickness tolerances are

| Size | Tolerance, mm (in.) |
|---|---|
| NPS ≤ 18 | +3.0, −0.0 (+0.12, −0.00) |
| NPS ≥ 20 | +4.8, −0.0 (+0.19, −0.00) |

### 5.3 Openings

*(a)* For NPS ½, NPS ¾, and NPS 1 blanks in all raised face classes, the inside diameter is equal to standard weight welding neck flange bore.

*(b)* For NPS 1¼ and larger blanks in Classes 150 and 300 raised face, the inside diameter is equal to the pipe outside diameter.



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*(c)* For NPS 1¼ and larger blanks in Classes 600 and 900 raised face, the inside diameter is equal to Schedule 10S welding neck flange bore.

*(d)* For Class 1500 raised face blanks, the inside diameter is equal to Schedule 40 welding neck flange bore.

*(e)* For Class 2500 raised face blanks, the inside diameter is equal to Schedule 40 through NPS 6, Schedule 60 for NPS 8 and NPS 10, and Schedule 80 for NPS 12.

*(f)* For all ring-joint blanks, the inside diameter is equal to the pipe outside diameter.

*(g)* Dimensions are based on concentric installation of spiral wound gaskets with inner rings as required by ASME B16.20 and conform to the maximum permitted bore of ASME B16.5 welding neck flanges described in ASME B16.20, Table SW-2.5-3.

### 5.4 Facing Finish

Facing finish shall be in accordance with ASME B16.5, para. 6.4.5.

## 6 MATERIALS

### 6.1 General

*(a)* Materials for line blanks shall be in accordance with ASME B16.5, Table 1A and shall include material restrictions cited in notes to ASME B16.5, Tables 2 and 2C. The blank and spacer portions of line blanks shall be manufactured as one piece in accordance with the applicable material specification. Assembly of multiple pieces into a blank or spacer portion by welding or other means is not permitted by this Standard. Attachment of the handle or web (tie bar) to a blank or spacer portion by welding or other means is permitted.

*(b)* Recommended bolting materials for flange-blank assemblies are listed in ASME B16.5, Table 1B.

*(c)* For materials manufactured to editions of the material specification other than those listed in ASME B16.5, Mandatory Appendix II, refer to para. 6.2.

*(d)* Criteria for the selection of materials are not within the scope of this Standard.

### 6.2 Materials Manufactured to Other Editions

Materials may meet the requirements of material specification editions other than those listed in ASME B16.5, Appendix II, provided

*(a)* the materials are the same specification, grade, type, class, alloy, and heat-treated condition, as applicable

*(b)* the line blank manufacturer certifies that the requirements of the edition of the specification listed in ASME B16.5, Mandatory Appendix II have been met

## 7 MARKING

### 7.1 General

*(a)* Line blanks shall be marked as follows:
- *(1)* manufacturer's name or trademark
- *(2)* material, specification, and grade or class
- *(3)* pressure class
- *(4)* B16
- *(5)* size (NPS)
- *(6)* ring number (if applicable)

*(b)* Where space does not permit all of the above markings, they may be omitted in the reverse order given in (a).

*(c)* The B16 designation may be applied only when the line blank has been manufactured in full conformance with this Standard.

### 7.2 Marking Method

The marking shall be applied by steel stamping or other marking device that leaves a legible imprint. When marking on the blind portion of the blanks, low stress marking shall be used and shall not impinge on the gasket seating surface.

## 8 PADDLE BLANK AND SPACER IDENTIFICATION

### 8.1 Paddle Handles

In order to differentiate between an installed paddle spacer and a paddle blank, it is required that there be an externally visible distinction between the two as required by paras. 8.2 and 8.3.

### 8.2 Paddle Blank Handles

Handles for paddle blanks shall be solid with no openings.

### 8.3 Paddle Spacer Handles

Handles for paddle spacers shall have a single through indicator hole located near the end of the handle. The hole diameter shall not be less than 12 mm (½ in.).

## 9 TESTING

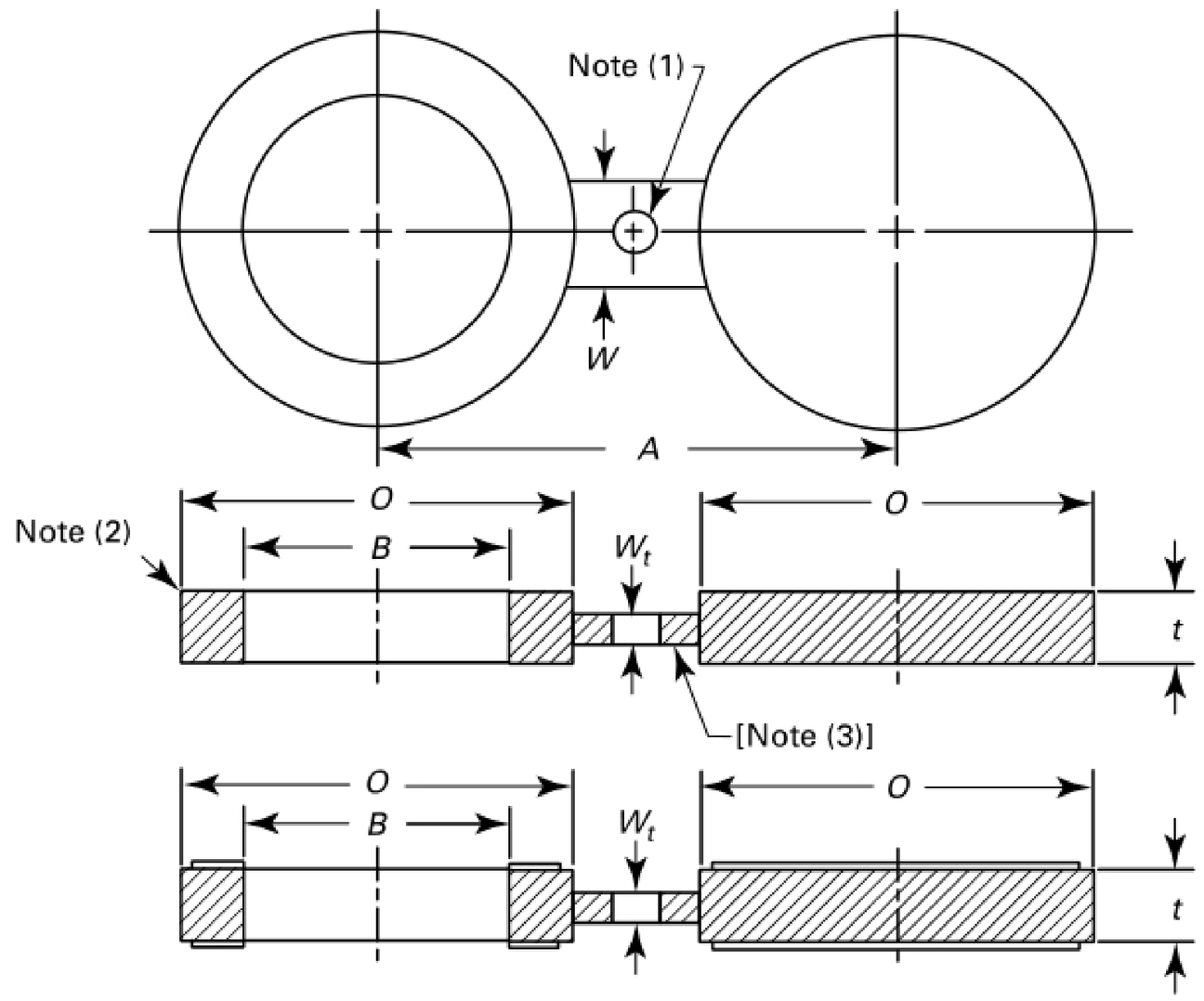
Line blanks are not required to be pressure tested.



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(20)

## Table 4.3.1-1 Dimensions of Class 150 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

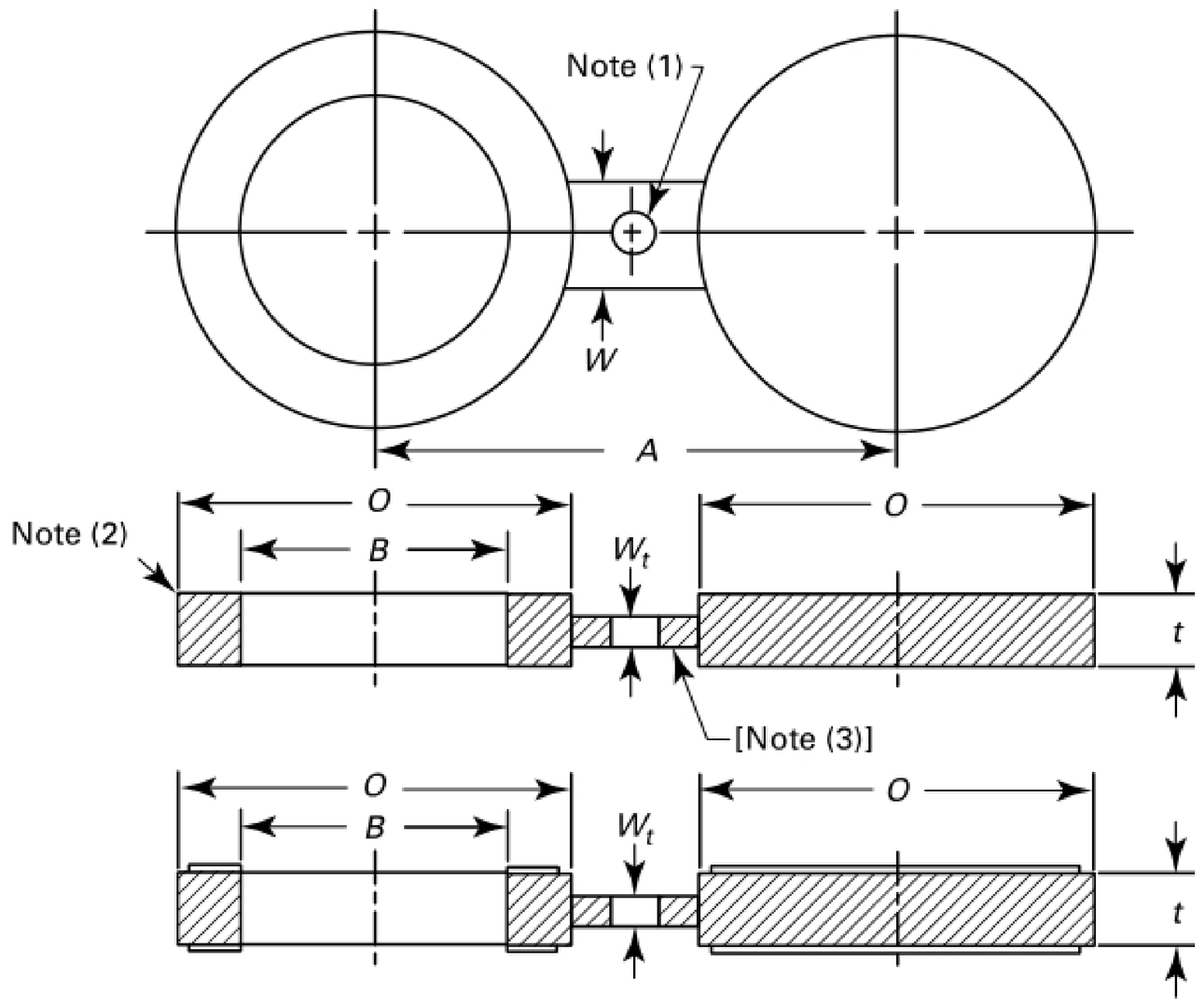
| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 45 (1.75) | 60 (2.38) | 3.0 (0.12) | 38 (1.50) |
| ¾ | 21 (0.82) | 54 (2.12) | 70 (2.75) | 3.0 (0.12) | 38 (1.50) |
| 1 | 27 (1.05) | 64 (2.50) | 80 (3.12) | 3.0 (0.12) | 38 (1.50) |
| 1¼ | 42 (1.66) | 73 (2.88) | 90 (3.50) | 6.4 (0.25) | 38 (1.50) |
| 1½ | 48 (1.90) | 83 (3.25) | 100 (3.88) | 6.4 (0.25) | 38 (1.50) |
| 2 | 61 (2.38) | 102 (4.00) | 120 (4.75) | 6.4 (0.25) | 51 (2.00) |
| 2½ | 73 (2.88) | 121 (4.75) | 140 (5.50) | 6.4 (0.25) | 51 (2.00) |
| 3 | 89 (3.50) | 133 (5.25) | 150 (6.00) | 6.4 (0.25) | 64 (2.50) |
| 3½ | 102 (4.00) | 159 (6.25) | 175 (7.00) | 9.7 (0.38) | 64 (2.50) |
| 4 | 114 (4.50) | 171 (6.75) | 190 (7.50) | 9.7 (0.38) | 64 (2.50) |
| 5 | 141 (5.56) | 194 (7.62) | 215 (8.50) | 9.7 (0.38) | 76 (3.00) |
| 6 | 168 (6.62) | 219 (8.62) | 240 (9.50) | 12.7 (0.50) | 76 (3.00) |
| 8 | 219 (8.62) | 276 (10.88) | 300 (11.75) | 12.7 (0.50) | 76 (3.00) |
| 10 | 273 (10.75) | 337 (13.25) | 360 (14.25) | 15.7 (0.62) | 102 (4.00) |
| 12 | 324 (12.75) | 406 (16.00) | 430 (17.00) | 19.1 (0.75) | 102 (4.00) |
| 14 | 356 (14.00) | 448 (17.62) | 475 (18.75) | 19.1 (0.75) | 108 (4.25) |
| 16 | 406 (16.00) | 511 (20.12) | 540 (21.25) | 22.4 (0.88) | 108 (4.25) |
| 18 | 457 (18.00) | 546 (21.50) | 580 (22.75) | 25.4 (1.00) | 114 (4.50) |
| 20 | 508 (20.00) | 603 (23.75) | 635 (25.00) | 28.4 (1.12) | 121 (4.75) |
| 24 | 610 (24.00) | 714 (28.12) | 750 (29.50) | 31.8 (1.25) | 140 (5.50) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 4.3.1-2 Dimensions of Class 300 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

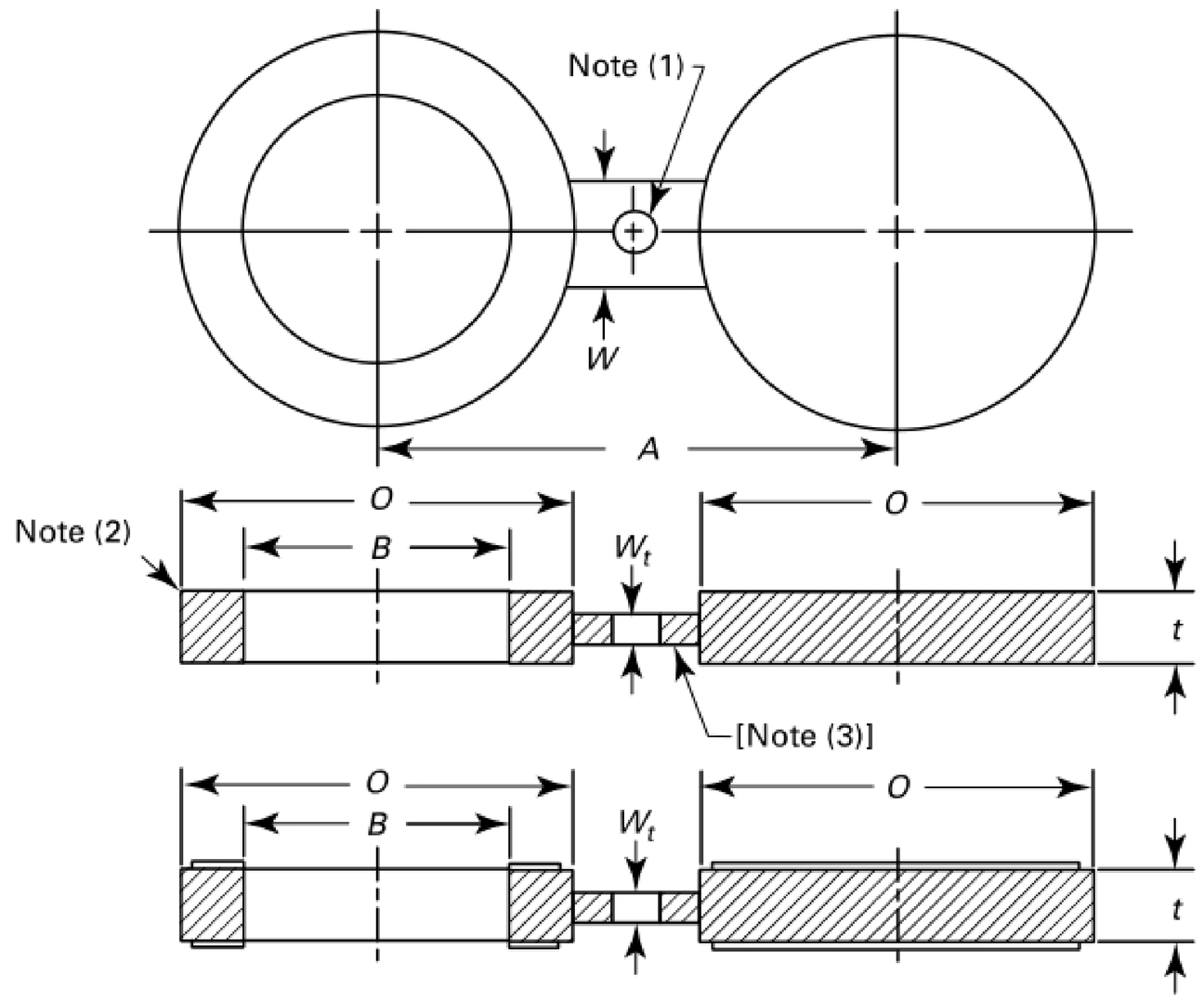
| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 51 (2.00) | 65 (2.62) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 21 (0.82) | 64 (2.50) | 80 (3.25) | 6.4 (0.25) | 38 (1.50) |
| 1 | 27 (1.05) | 70 (2.75) | 90 (3.50) | 6.4 (0.25) | 38 (1.50) |
| 1¼ | 42 (1.66) | 79 (3.12) | 100 (3.88) | 6.4 (0.25) | 38 (1.50) |
| 1½ | 48 (1.90) | 92 (3.62) | 115 (4.50) | 6.4 (0.25) | 38 (1.50) |
| 2 | 61 (2.38) | 108 (4.25) | 125 (5.00) | 9.7 (0.38) | 51 (2.00) |
| 2½ | 73 (2.88) | 127 (5.00) | 150 (5.88) | 9.7 (0.38) | 51 (2.00) |
| 3 | 89 (3.50) | 146 (5.75) | 170 (6.62) | 9.7 (0.38) | 64 (2.50) |
| 3½ | 102 (4.00) | 162 (6.38) | 185 (7.25) | 12.7 (0.50) | 64 (2.50) |
| 4 | 114 (4.50) | 178 (7.00) | 200 (7.88) | 12.7 (0.50) | 64 (2.50) |
| 5 | 141 (5.56) | 213 (8.38) | 235 (9.25) | 15.7 (0.62) | 76 (3.00) |
| 6 | 168 (6.62) | 248 (9.75) | 270 (10.62) | 15.7 (0.62) | 76 (3.00) |
| 8 | 219 (8.62) | 305 (12.00) | 330 (13.00) | 22.4 (0.88) | 76 (3.00) |
| 10 | 273 (10.75) | 359 (14.12) | 385 (15.25) | 25.4 (1.00) | 102 (4.00) |
| 12 | 324 (12.75) | 419 (16.50) | 450 (17.75) | 28.4 (1.12) | 102 (4.00) |
| 14 | 356 (14.00) | 483 (19.00) | 515 (20.25) | 31.8 (1.25) | 108 (4.25) |
| 16 | 406 (16.00) | 536 (21.12) | 570 (22.50) | 38.1 (1.50) | 108 (4.25) |
| 18 | 457 (18.00) | 594 (23.38) | 630 (24.75) | 41.1 (1.62) | 114 (4.50) |
| 20 | 508 (20.00) | 651 (25.62) | 685 (27.00) | 44.5 (1.75) | 121 (4.75) |
| 24 | 610 (24.00) | 772 (30.38) | 810 (32.00) | 50.8 (2.00) | 140 (5.50) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 4.3.1-3 Dimensions of Class 600 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

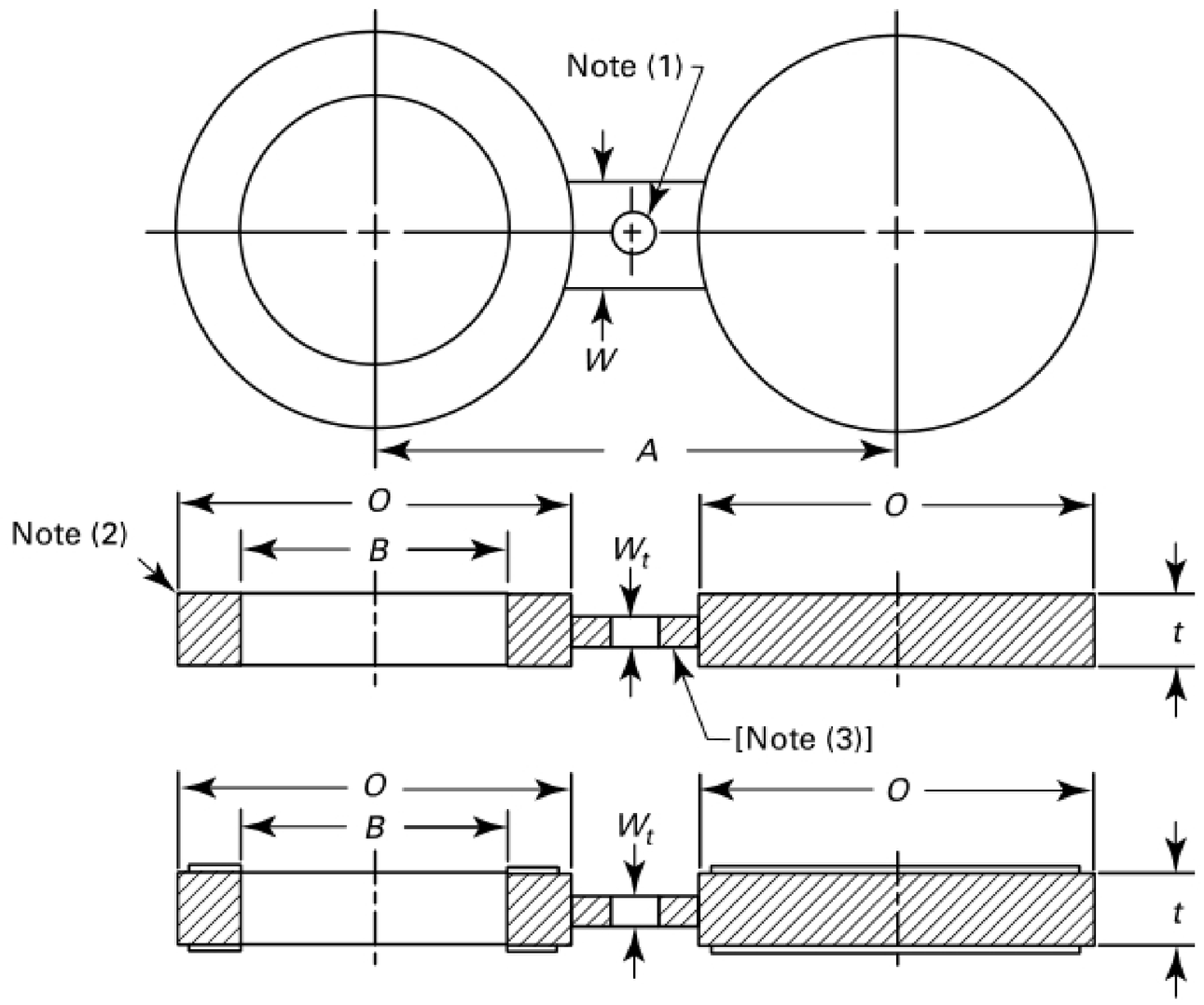
| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 51 (2.00) | 65 (2.62) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 21 (0.82) | 64 (2.50) | 80 (3.25) | 6.4 (0.25) | 38 (1.50) |
| 1 | 27 (1.05) | 70 (2.75) | 90 (3.50) | 6.4 (0.25) | 57 (2.25) |
| 1¼ | 37 (1.44) | 79 (3.12) | 100 (3.88) | 9.7 (0.38) | 57 (2.25) |
| 1½ | 43 (1.68) | 92 (3.62) | 115 (4.50) | 9.7 (0.38) | 67 (2.62) |
| 2 | 55 (2.16) | 108 (4.25) | 125 (5.00) | 9.7 (0.38) | 57 (2.25) |
| 2½ | 67 (2.64) | 127 (5.00) | 150 (5.88) | 12.7 (0.50) | 67 (2.62) |
| 3 | 83 (3.26) | 146 (5.75) | 170 (6.62) | 12.7 (0.50) | 67 (2.62) |
| 3½ | 96 (3.76) | 159 (6.25) | 185 (7.25) | 15.7 (0.62) | 76 (3.00) |
| 4 | 108 (4.26) | 191 (7.50) | 215 (8.50) | 15.7 (0.62) | 76 (3.00) |
| 5 | 135 (5.30) | 238 (9.38) | 265 (10.50) | 19.1 (0.75) | 86 (3.38) |
| 6 | 162 (6.36) | 264 (10.38) | 290 (11.50) | 22.4 (0.88) | 86 (3.38) |
| 8 | 212 (8.33) | 318 (12.50) | 350 (13.75) | 28.4 (1.12) | 95 (3.75) |
| 10 | 265 (10.42) | 397 (15.62) | 430 (17.00) | 35.1 (1.38) | 105 (4.12) |
| 12 | 315 (12.39) | 454 (17.88) | 490 (19.25) | 41.1 (1.62) | 105 (4.12) |
| 14 | 346 (13.62) | 489 (19.25) | 525 (20.75) | 44.5 (1.75) | 114 (4.50) |
| 16 | 397 (15.62) | 562 (22.12) | 605 (23.75) | 50.8 (2.00) | 124 (4.88) |
| 18 | 448 (17.62) | 610 (24.00) | 655 (25.75) | 53.8 (2.12) | 133 (5.25) |
| 20 | 497 (19.56) | 679 (26.75) | 725 (28.50) | 63.5 (2.50) | 133 (5.25) |
| 24 | 597 (23.50) | 787 (31.00) | 840 (33.00) | 73.2 (2.88) | 152 (6.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 4.3.1-4 Dimensions of Class 900 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

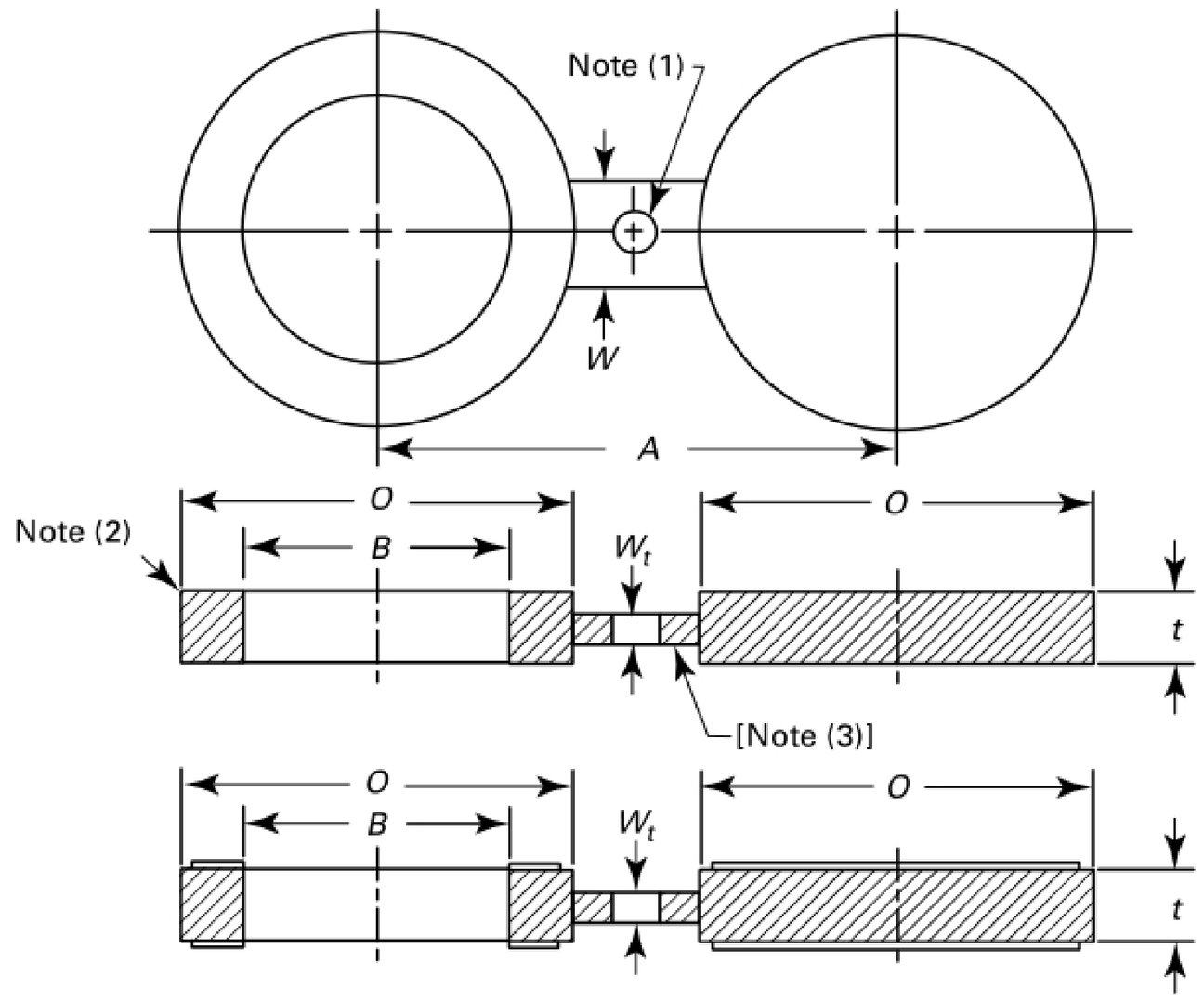
| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 60 (2.38) | 80 (3.25) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 21 (0.82) | 67 (2.62) | 90 (3.50) | 6.4 (0.25) | 41 (1.62) |
| 1 | 27 (1.05) | 76 (3.00) | 100 (4.00) | 6.4 (0.25) | 57 (2.25) |
| 1¼ | 37 (1.44) | 86 (3.38) | 110 (4.38) | 9.7 (0.38) | 57 (2.25) |
| 1½ | 43 (1.68) | 95 (3.75) | 125 (4.88) | 9.7 (0.38) | 67 (2.62) |
| 2 | 55 (2.16) | 140 (5.50) | 165 (6.50) | 12.7 (0.50) | 57 (2.25) |
| 2½ | 67 (2.64) | 162 (6.38) | 190 (7.50) | 12.7 (0.50) | 67 (2.62) |
| 3 | 83 (3.26) | 165 (6.50) | 190 (7.50) | 15.7 (0.62) | 67 (2.62) |
| 4 | 108 (4.26) | 203 (8.00) | 235 (9.25) | 19.1 (0.75) | 76 (3.00) |
| 5 | 135 (5.30) | 244 (9.62) | 280 (11.00) | 22.4 (0.88) | 86 (3.38) |
| 6 | 162 (6.36) | 286 (11.25) | 320 (12.50) | 25.4 (1.00) | 86 (3.38) |
| 8 | 212 (8.33) | 356 (14.00) | 395 (15.50) | 35.1 (1.38) | 95 (3.75) |
| 10 | 265 (10.42) | 432 (17.00) | 470 (18.50) | 41.1 (1.62) | 105 (4.12) |
| 12 | 315 (12.39) | 495 (19.50) | 535 (21.00) | 47.8 (1.88) | 105 (4.12) |
| 14 | 346 (13.62) | 518 (20.38) | 560 (22.00) | 53.8 (2.12) | 114 (4.50) |
| 16 | 397 (15.62) | 572 (22.50) | 615 (24.25) | 60.5 (2.38) | 124 (4.88) |
| 18 | 448 (17.62) | 635 (25.00) | 685 (27.00) | 66.5 (2.62) | 133 (5.25) |
| 20 | 497 (19.56) | 696 (27.38) | 750 (29.50) | 73.2 (2.88) | 133 (5.25) |
| 24 | 597 (23.50) | 835 (32.88) | 900 (35.50) | 88.9 (3.50) | 152 (6.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 4.3.1-5 Dimensions of Class 1500 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

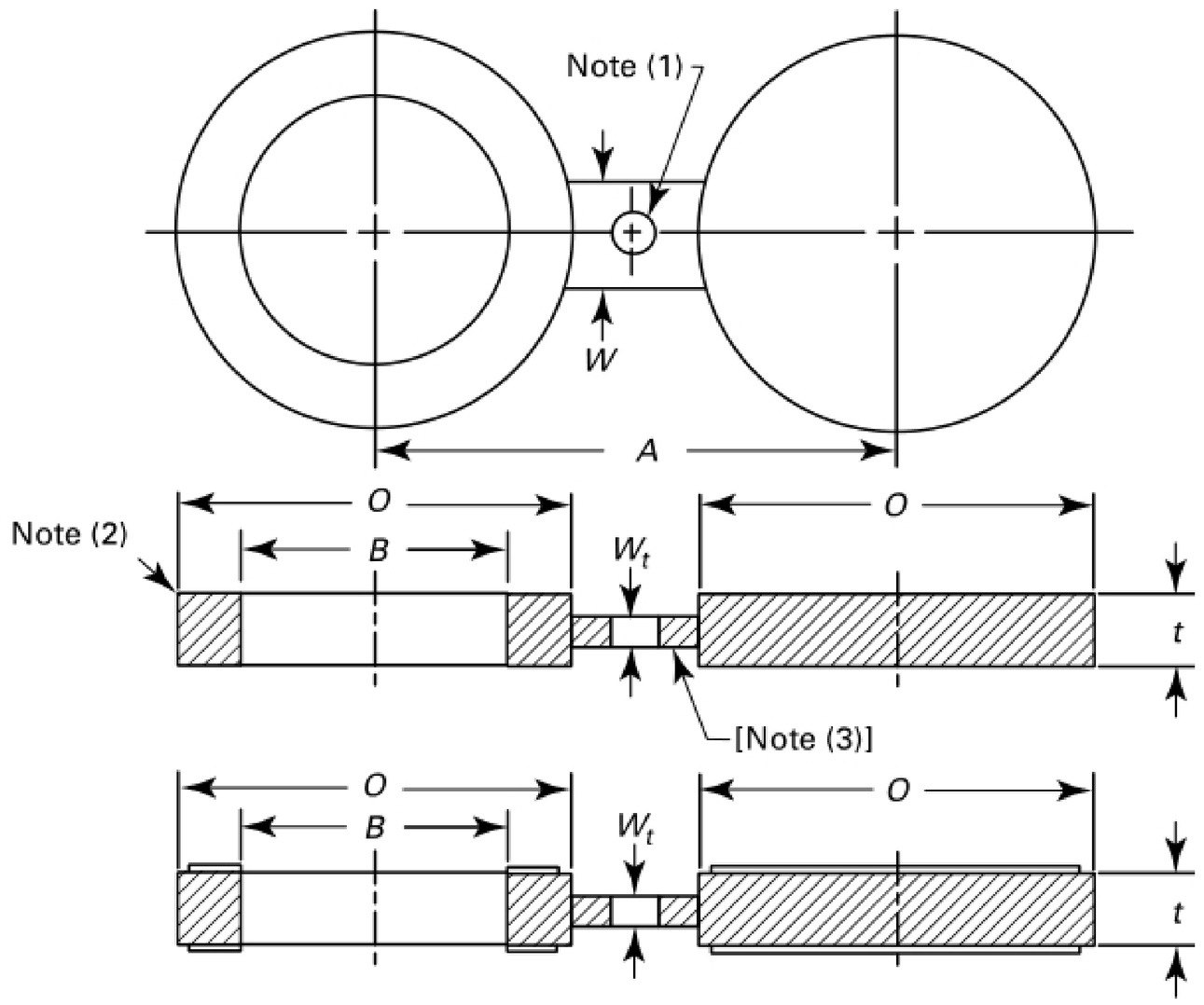
| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 61 (2.38) | 80 (3.25) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 21 (0.82) | 67 (2.62) | 90 (3.50) | 9.7 (0.38) | 41 (1.62) |
| 1 | 27 (1.05) | 76 (3.00) | 100 (4.00) | 9.7 (0.38) | 64 (2.20) |
| 1¼ | 35 (1.38) | 86 (3.38) | 110 (4.38) | 9.7 (0.38) | 64 (2.50) |
| 1½ | 41 (1.61) | 95 (3.75) | 125 (4.88) | 12.7 (0.50) | 70 (2.75) |
| 2 | 53 (2.07) | 140 (5.50) | 165 (6.50) | 12.7 (0.50) | 70 (2.75) |
| 2½ | 63 (2.47) | 162 (6.38) | 190 (7.50) | 15.7 (0.62) | 76 (3.00) |
| 3 | 78 (3.07) | 172 (6.75) | 205 (8.00) | 19.1 (0.75) | 76 (3.00) |
| 4 | 102 (4.03) | 206 (8.12) | 240 (9.50) | 22.4 (0.88) | 89 (3.50) |
| 5 | 128 (5.05) | 251 (9.88) | 290 (11.50) | 28.4 (1.12) | 89 (3.50) |
| 6 | 154 (6.06) | 279 (11.00) | 320 (12.50) | 35.1 (1.38) | 89 (3.50) |
| 8 | 203 (7.98) | 349 (13.75) | 395 (15.50) | 41.1 (1.62) | 102 (4.00) |
| 10 | 255 (10.02) | 432 (17.00) | 480 (19.00) | 50.8 (2.00) | 114 (4.50) |
| 12 | 303 (11.94) | 518 (20.38) | 570 (22.50) | 60.5 (2.38) | 114 (4.50) |
| 14 | 333 (13.12) | 575 (22.62) | 635 (25.00) | 66.5 (2.62) | 127 (5.00) |
| 16 | 381 (15.00) | 638 (25.12) | 705 (27.75) | 76.2 (3.00) | 133 (5.25) |
| 18 | 429 (16.88) | 702 (27.62) | 775 (30.50) | 85.9 (3.38) | 146 (5.75) |
| 20 | 478 (18.81) | 752 (29.62) | 830 (32.75) | 95.3 (3.75) | 152 (6.00) |
| 24 | 575 (22.62) | 899 (35.38) | 990 (39.00) | 111.3 (4.38) | 178 (7.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 4.3.1-6 Dimensions of Class 2500 Blanks for Use With Raised Face Flanges




Optional Raised Face
[Note (2)]

| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 16 (0.62) | 67 (2.62) | 90 (3.50) | 9.7 (0.38) | 38 (1.50) |
| ¾ | 21 (0.82) | 73 (2.88) | 95 (3.75) | 9.7 (0.38) | 41 (1.62) |
| 1 | 27 (1.05) | 83 (3.25) | 110 (4.25) | 9.7 (0.38) | 64 (2.50) |
| 1¼ | 35 (1.38) | 102 (4.00) | 130 (5.12) | 12.7 (0.50) | 64 (2.50) |
| 1½ | 41 (1.61) | 114 (4.50) | 145 (5.75) | 15.7 (0.62) | 70 (2.75) |
| 2 | 53 (2.07) | 143 (5.62) | 170 (6.75) | 15.7 (0.62) | 70 (2.75) |
| 2½ | 63 (2.47) | 165 (6.50) | 195 (7.75) | 19.1 (0.75) | 76 (3.00) |
| 3 | 78 (3.07) | 194 (7.62) | 230 (9.00) | 22.4 (0.88) | 76 (3.00) |
| 4 | 102 (4.03) | 232 (9.12) | 275 (10.75) | 28.4 (1.12) | 89 (3.50) |
| 5 | 128 (5.05) | 276 (10.88) | 325 (12.75) | 35.1 (1.38) | 89 (3.50) |
| 6 | 154 (6.06) | 314 (12.38) | 370 (14.50) | 41.1 (1.62) | 89 (3.50) |
| 8 | 198 (7.81) | 384 (15.12) | 440 (17.25) | 53.8 (2.12) | 102 (4.00) |
| 10 | 248 (9.75) | 473 (18.62) | 540 (21.25) | 66.5 (2.62) | 114 (4.50) |
| 12 | 289 (11.37) | 546 (21.50) | 620 (24.38) | 79.2 (3.12) | 114 (4.50) |

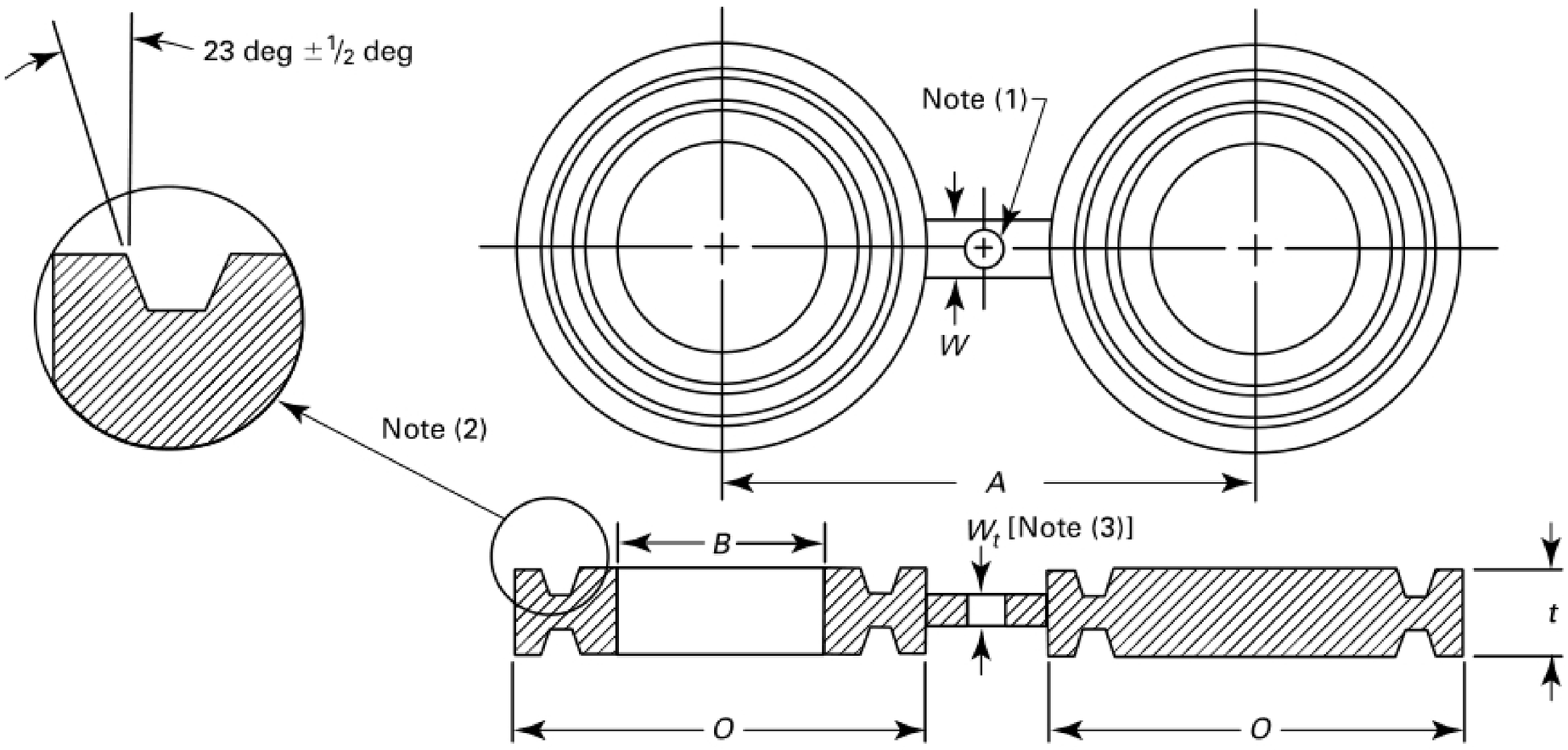
NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Optional raised face. Refer to para. 4.3.1.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-1 Dimensions of Class 150 Female Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| 1 | 34 (1.32) | 64 (2.50) | 80 (3.12) | 19.1 (0.75) | 51 (2.00) |
| 1¼ | 42 (1.66) | 73 (2.88) | 90 (3.50) | 19.1 (0.75) | 51 (2.00) |
| 1½ | 48 (1.90) | 83 (3.25) | 100 (3.88) | 19.1 (0.75) | 57 (2.25) |
| 2 | 61 (2.38) | 102 (4.00) | 120 (4.75) | 19.1 (0.75) | 57 (2.25) |
| 2½ | 73 (2.88) | 121 (4.75) | 140 (5.50) | 22.4 (0.88) | 57 (2.25) |
| 3 | 89 (3.50) | 133 (5.25) | 150 (6.00) | 22.4 (0.88) | 57 (2.25) |
| 3½ | 102 (4.00) | 154 (6.06) | 175 (7.00) | 22.4 (0.88) | 64 (2.50) |
| 4 | 114 (4.50) | 171 (6.75) | 190 (7.50) | 22.4 (0.88) | 64 (2.50) |
| 5 | 141 (5.56) | 194 (7.62) | 215 (8.50) | 25.4 (1.00) | 70 (2.75) |
| 6 | 168 (6.62) | 219 (8.62) | 240 (9.50) | 25.4 (1.00) | 83 (3.25) |
| 8 | 219 (8.62) | 273 (10.75) | 300 (11.75) | 28.4 (1.12) | 95 (3.75) |
| 10 | 273 (10.75) | 330 (13.00) | 360 (14.25) | 31.8 (1.25) | 102 (4.00) |
| 12 | 324 (12.75) | 406 (16.00) | 430 (17.00) | 35.1 (1.38) | 121 (4.75) |
| 14 | 356 (14.00) | 425 (16.75) | 475 (18.75) | 35.1 (1.38) | 127 (5.00) |
| 16 | 406 (16.00) | 483 (19.00) | 540 (21.25) | 38.1 (1.50) | 127 (5.00) |
| 18 | 457 (18.00) | 546 (21.50) | 580 (22.75) | 41.1 (1.62) | 127 (5.00) |
| 20 | 508 (20.00) | 597 (23.50) | 635 (25.00) | 41.1 (1.62) | 127 (5.00) |
| 24 | 610 (24.00) | 711 (28.00) | 750 (29.50) | 47.8 (1.88) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

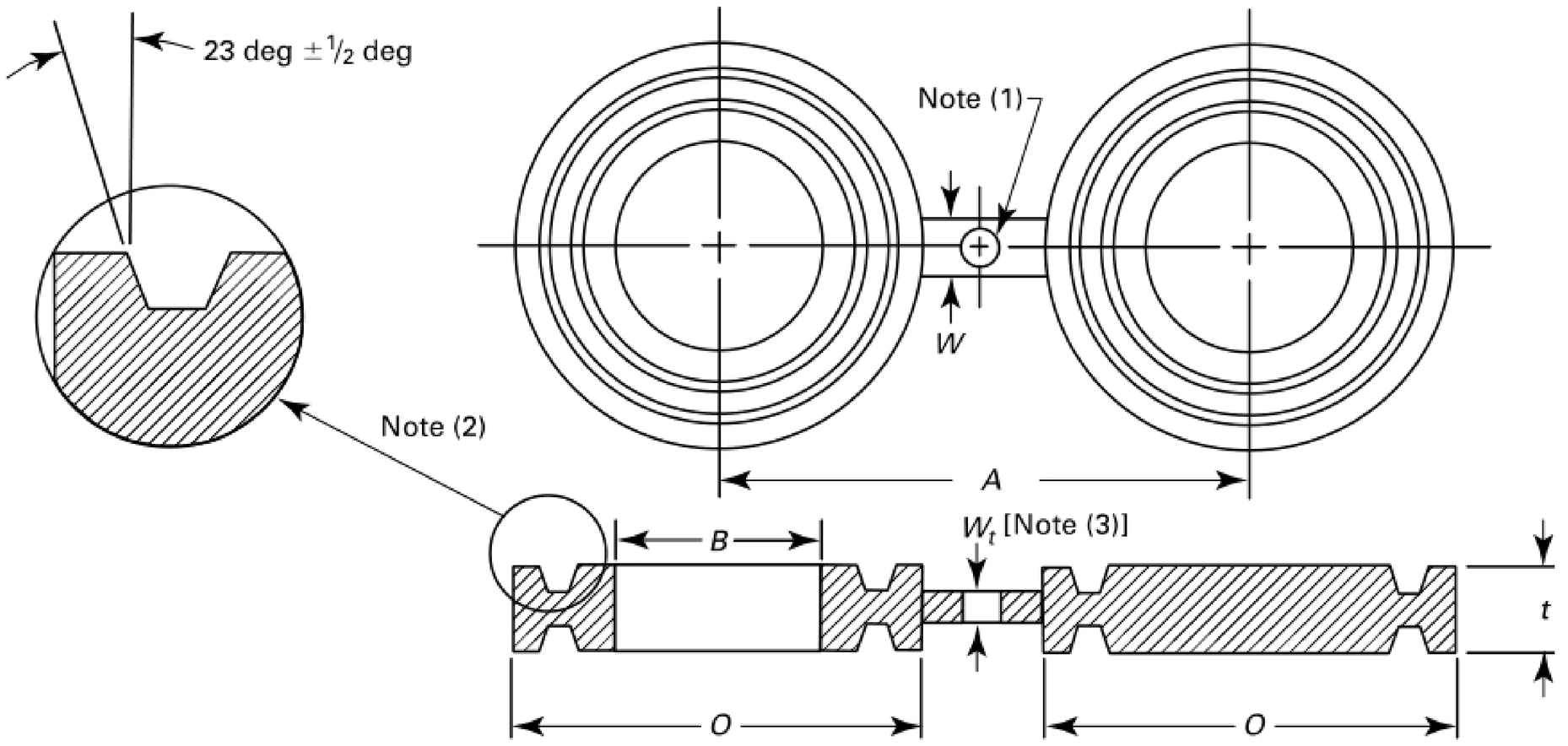
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-2 Dimensions of Class 300 Female Ring-Joint Facing Figure-8 Blanks



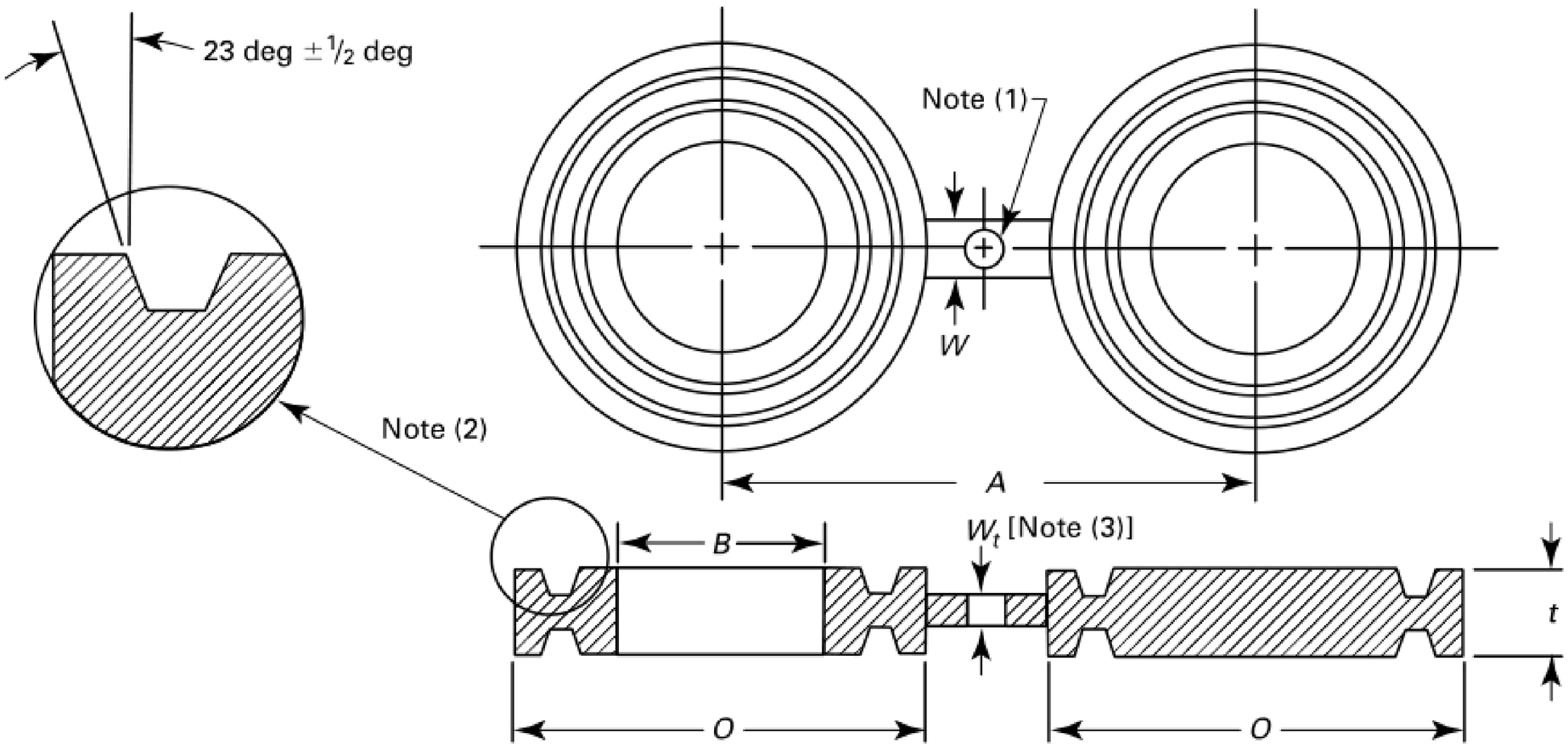

| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 21 (0.84) | 51 (2.00) | 65 (2.62) | 15.7 (0.62) | 38 (1.50) |
| ¾ | 27 (1.05) | 64 (2.50) | 80 (3.25) | 19.1 (0.75) | 45 (1.75) |
| 1 | 34 (1.32) | 70 (2.75) | 90 (3.50) | 19.1 (0.75) | 51 (2.00) |
| 1¼ | 42 (1.66) | 79 (3.12) | 100 (3.88) | 22.4 (0.88) | 51 (2.00) |
| 1½ | 48 (1.90) | 90 (3.56) | 115 (4.50) | 22.4 (0.88) | 57 (2.25) |
| 2 | 61 (2.38) | 108 (4.25) | 125 (5.00) | 25.4 (1.00) | 57 (2.25) |
| 2½ | 73 (2.88) | 127 (5.00) | 150 (5.88) | 28.4 (1.12) | 57 (2.25) |
| 3 | 89 (3.50) | 146 (5.75) | 170 (6.62) | 28.4 (1.12) | 57 (2.25) |
| 3½ | 102 (4.00) | 159 (6.25) | 185 (7.25) | 28.4 (1.12) | 64 (2.50) |
| 4 | 114 (4.50) | 175 (6.88) | 200 (7.88) | 31.8 (1.25) | 64 (2.50) |
| 5 | 141 (5.56) | 210 (8.25) | 235 (9.25) | 35.1 (1.38) | 70 (2.75) |
| 6 | 168 (6.62) | 241 (9.50) | 270 (10.62) | 35.1 (1.38) | 83 (3.25) |
| 8 | 219 (8.62) | 302 (11.88) | 330 (13.00) | 41.1 (1.62) | 95 (3.75) |
| 10 | 273 (10.75) | 356 (14.00) | 385 (15.25) | 44.5 (1.75) | 102 (4.00) |
| 12 | 324 (12.75) | 413 (16.25) | 450 (17.75) | 50.8 (2.00) | 121 (4.75) |
| 14 | 356 (14.00) | 457 (18.00) | 515 (20.25) | 53.8 (2.12) | 127 (5.00) |
| 16 | 406 (16.00) | 508 (20.00) | 570 (22.50) | 57.2 (2.25) | 127 (5.00) |
| 18 | 457 (18.00) | 575 (22.62) | 630 (24.75) | 60.5 (2.38) | 127 (5.00) |
| 20 | 508 (20.00) | 635 (25.00) | 685 (27.00) | 69.9 (2.75) | 127 (5.00) |
| 24 | 610 (24.00) | 749 (29.50) | 810 (32.00) | 79.2 (3.12) | 152 (6.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-3 Dimensions of Class 600 Female Ring-Joint Facing Figure-8 Blanks



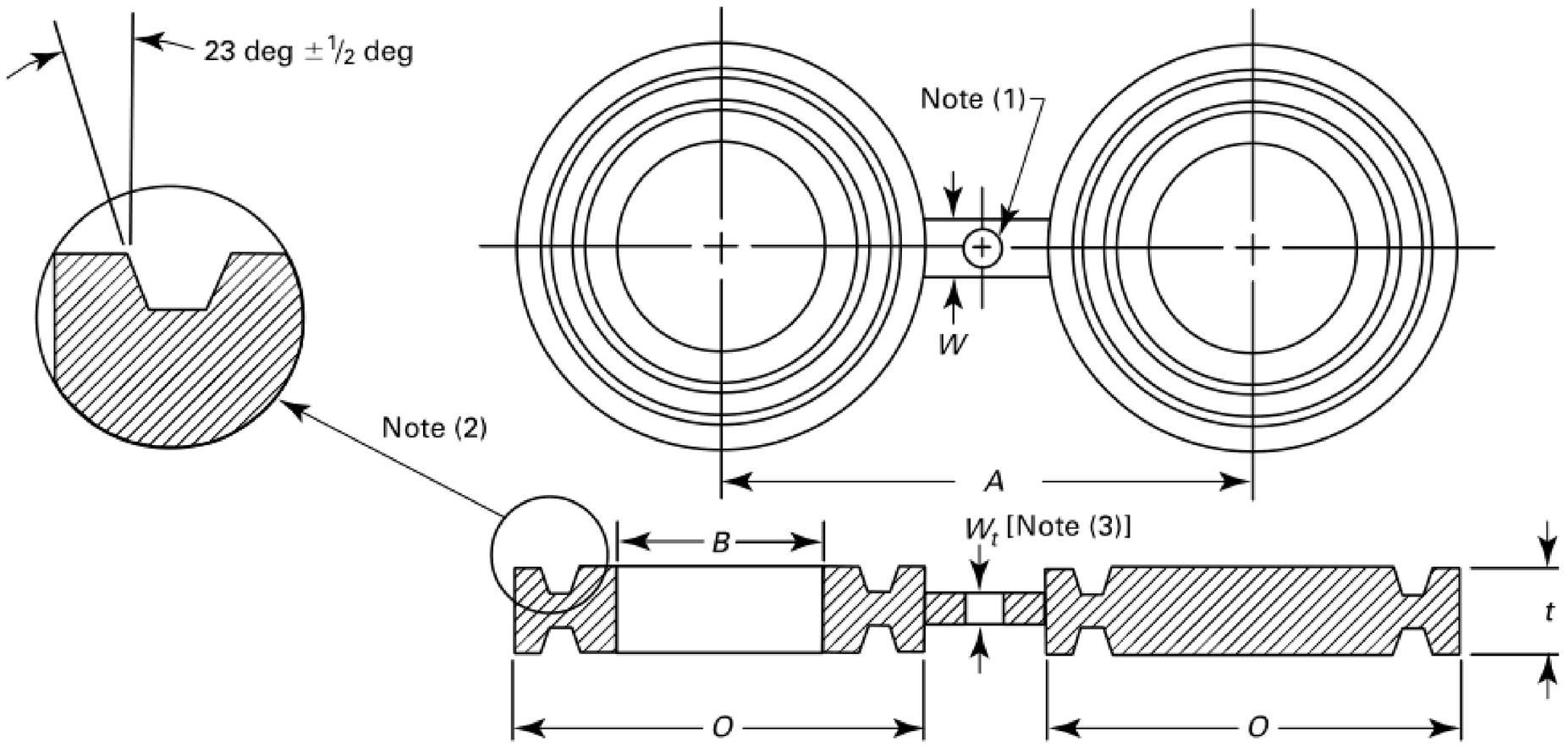

| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 21 (0.84) | 51 (2.00) | 65 (2.62) | 19.1 (0.75) | 38 (1.50) |
| ¾ | 27 (1.05) | 64 (2.50) | 80 (3.25) | 22.4 (0.88) | 45 (1.75) |
| 1 | 34 (1.32) | 70 (2.75) | 90 (3.50) | 22.4 (0.88) | 51 (2.00) |
| 1¼ | 42 (1.66) | 79 (3.12) | 100 (3.88) | 22.4 (0.88) | 51 (2.00) |
| 1½ | 48 (1.90) | 90 (3.56) | 115 (4.50) | 22.4 (0.88) | 57 (2.25) |
| 2 | 61 (2.38) | 108 (4.25) | 125 (5.00) | 28.4 (1.12) | 57 (2.25) |
| 2½ | 73 (2.88) | 127 (5.00) | 150 (5.88) | 31.8 (1.25) | 57 (2.25) |
| 3 | 89 (3.50) | 146 (5.75) | 170 (6.62) | 31.8 (1.25) | 57 (2.25) |
| 3½ | 102 (4.00) | 159 (6.25) | 185 (7.25) | 35.1 (1.38) | 64 (2.50) |
| 4 | 114 (4.50) | 175 (6.88) | 215 (8.50) | 35.1 (1.38) | 64 (2.50) |
| 5 | 141 (5.56) | 210 (8.25) | 265 (10.50) | 38.1 (1.50) | 70 (2.75) |
| 6 | 168 (6.62) | 241 (9.50) | 290 (11.50) | 44.5 (1.75) | 83 (3.25) |
| 8 | 219 (8.62) | 302 (11.88) | 350 (13.75) | 50.8 (2.00) | 95 (3.75) |
| 10 | 273 (10.75) | 356 (14.00) | 430 (17.00) | 57.2 (2.25) | 102 (4.00) |
| 12 | 324 (12.75) | 413 (16.25) | 490 (19.25) | 63.5 (2.50) | 121 (4.75) |
| 14 | 356 (14.00) | 457 (18.00) | 525 (20.75) | 66.5 (2.62) | 127 (5.00) |
| 16 | 406 (16.00) | 508 (20.00) | 605 (23.75) | 73.2 (2.88) | 127 (5.00) |
| 18 | 457 (18.00) | 575 (22.62) | 655 (25.75) | 79.2 (3.12) | 127 (5.00) |
| 20 | 508 (20.00) | 635 (25.00) | 725 (28.50) | 88.9 (3.50) | 127 (5.00) |
| 24 | 610 (24.00) | 749 (29.50) | 840 (33.00) | 104.6 (4.12) | 152 (6.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-4 Dimensions of Class 900 Female Ring-Joint Facing Figure-8 Blanks



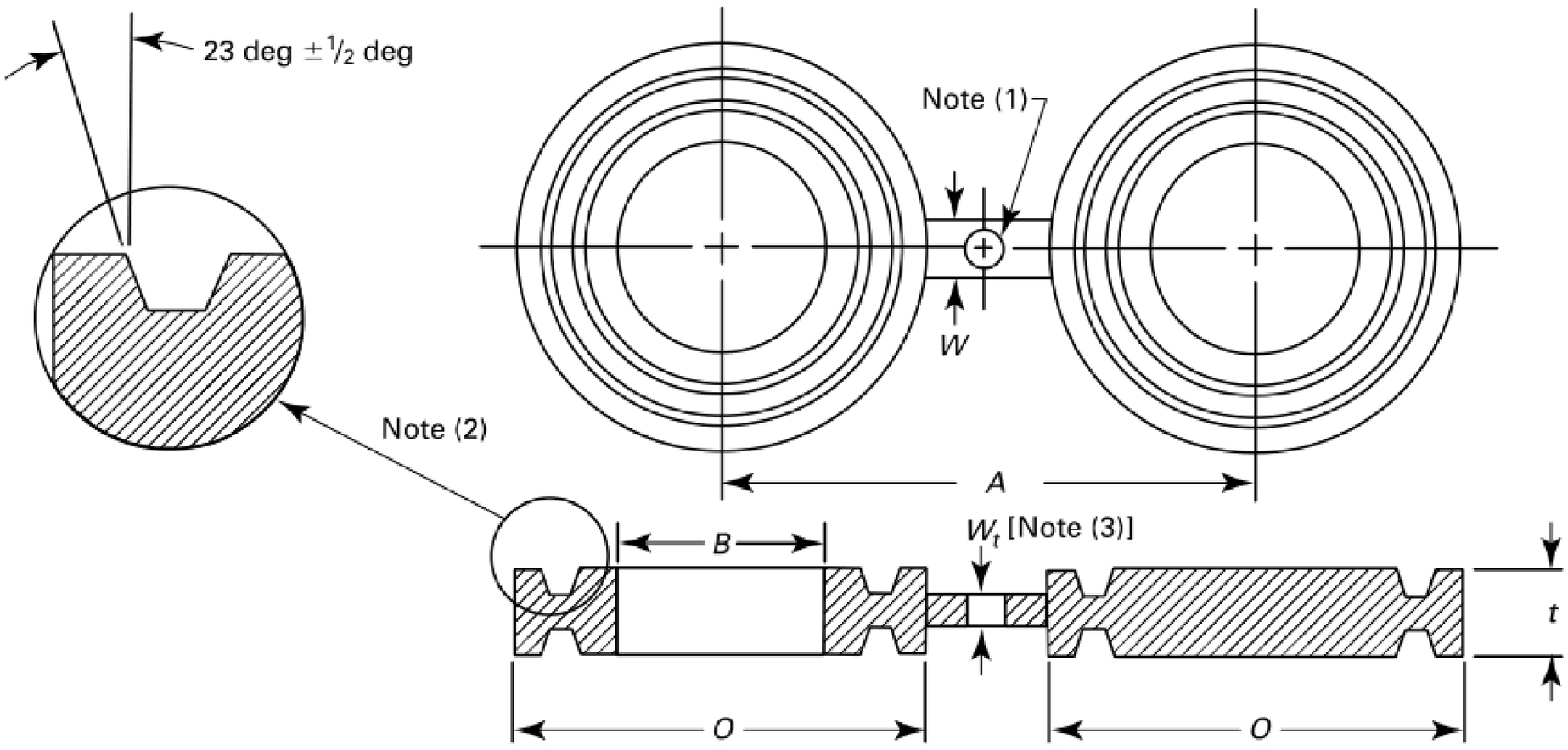

| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 21 (0.84) | 61 (2.38) | 80 (3.25) | 22.4 (0.88) | 38 (1.50) |
| ¾ | 27 (1.05) | 67 (2.62) | 90 (3.50) | 22.4 (0.88) | 45 (1.75) |
| 1 | 34 (1.32) | 71 (2.81) | 100 (4.00) | 22.4 (0.88) | 51 (2.00) |
| 1¼ | 42 (1.66) | 81 (3.19) | 110 (4.38) | 25.4 (1.00) | 51 (2.00) |
| 1½ | 48 (1.90) | 92 (3.62) | 125 (4.88) | 25.4 (1.00) | 64 (2.50) |
| 2 | 61 (2.38) | 124 (4.88) | 165 (6.50) | 31.8 (1.25) | 51 (2.00) |
| 2½ | 73 (2.88) | 137 (5.38) | 190 (7.50) | 35.1 (1.38) | 67 (2.62) |
| 3 | 89 (3.50) | 155 (6.12) | 190 (7.50) | 35.1 (1.38) | 67 (2.62) |
| 4 | 114 (4.50) | 181 (7.12) | 235 (9.25) | 41.1 (1.62) | 73 (2.88) |
| 5 | 141 (5.56) | 216 (8.50) | 280 (11.00) | 44.5 (1.75) | 73 (2.88) |
| 6 | 168 (6.62) | 241 (9.50) | 315 (12.50) | 47.8 (1.88) | 73 (2.88) |
| 8 | 219 (8.62) | 308 (12.12) | 395 (15.50) | 57.2 (2.25) | 80 (3.12) |
| 10 | 273 (10.75) | 362 (14.25) | 470 (18.50) | 63.5 (2.50) | 121 (4.75) |
| 12 | 324 (12.75) | 419 (16.50) | 535 (21.00) | 73.2 (2.88) | 121 (4.75) |
| 14 | 356 (14.00) | 467 (18.38) | 560 (22.00) | 82.6 (3.25) | 121 (4.75) |
| 16 | 406 (16.00) | 524 (20.62) | 615 (24.25) | 91.9 (3.62) | 127 (5.00) |
| 18 | 457 (18.00) | 594 (23.38) | 685 (27.00) | 101.6 (4.00) | 133 (5.25) |
| 20 | 508 (20.00) | 648 (25.50) | 750 (29.50) | 111.3 (4.38) | 127 (5.00) |
| 24 | 610 (24.00) | 772 (30.38) | 900 (35.50) | 133.4 (5.25) | 140 (5.50) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-5 Dimensions of Class 1500 Female Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| ½ | 21 (0.84) | 61 (2.38) | 80 (3.25) | 22.4 (0.88) | 38 (1.50) |
| ¾ | 27 (1.05) | 67 (2.62) | 90 (3.50) | 25.4 (1.00) | 45 (1.75) |
| 1 | 34 (1.32) | 71 (2.81) | 100 (4.00) | 25.4 (1.00) | 54 (2.12) |
| 1¼ | 42 (1.66) | 81 (3.19) | 110 (4.38) | 25.4 (1.00) | 54 (2.12) |
| 1½ | 48 (1.90) | 92 (3.62) | 125 (4.88) | 28.4 (1.12) | 57 (2.25) |
| 2 | 61 (2.38) | 124 (4.88) | 165 (6.50) | 35.1 (1.38) | 54 (2.12) |
| 2½ | 73 (2.88) | 137 (5.38) | 190 (7.50) | 38.1 (1.50) | 57 (2.25) |
| 3 | 89 (3.50) | 168 (6.62) | 205 (8.00) | 44.5 (1.75) | 73 (2.88) |
| 4 | 114 (4.50) | 194 (7.62) | 240 (9.50) | 47.8 (1.88) | 76 (3.00) |
| 5 | 141 (5.56) | 229 (9.00) | 290 (11.50) | 53.8 (2.12) | 76 (3.00) |
| 6 | 168 (6.62) | 248 (9.75) | 315 (12.50) | 60.5 (2.38) | 79 (3.12) |
| 8 | 219 (8.62) | 318 (12.50) | 395 (15.50) | 73.2 (2.88) | 86 (3.38) |
| 10 | 273 (10.75) | 371 (14.62) | 480 (19.00) | 82.5 (3.25) | 133 (5.25) |
| 12 | 324 (12.75) | 438 (17.25) | 570 (22.50) | 101.6 (4.00) | 133 (5.25) |
| 14 | 356 (14.00) | 489 (19.25) | 635 (25.00) | 111.3 (4.38) | 140 (5.50) |
| 16 | 406 (16.00) | 546 (21.50) | 705 (27.75) | 124.0 (4.88) | 146 (5.75) |
| 18 | 457 (18.00) | 613 (24.12) | 775 (30.50) | 133.0 (5.25) | 152 (6.00) |
| 20 | 508 (20.00) | 673 (26.50) | 830 (32.75) | 142.7 (5.62) | 165 (6.50) |
| 24 | 610 (24.00) | 794 (31.25) | 990 (39.00) | 168.1 (6.62) | 178 (7.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

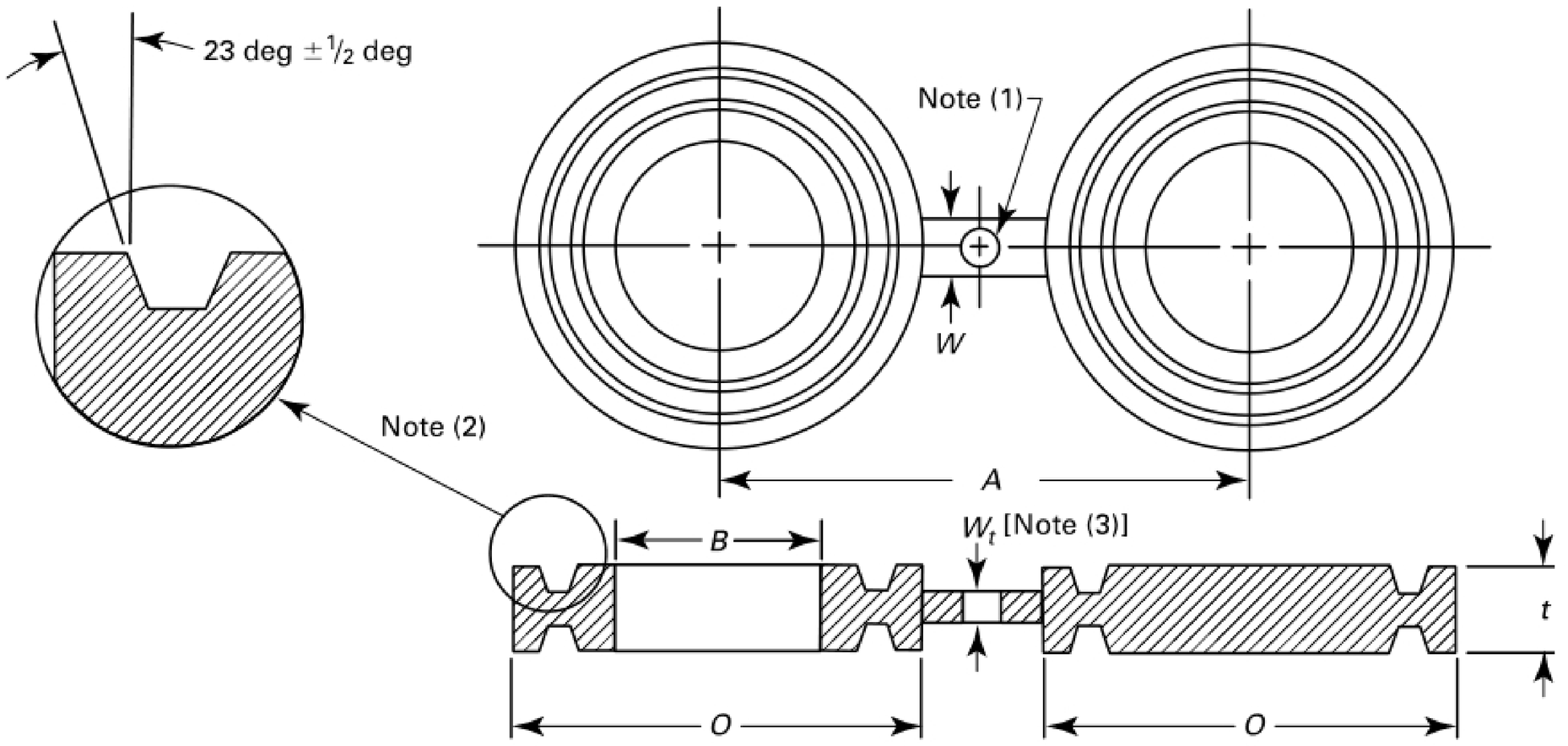
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-6 Dimensions of Class 2500 Female Ring-Joint Facing Figure-8 Blanks



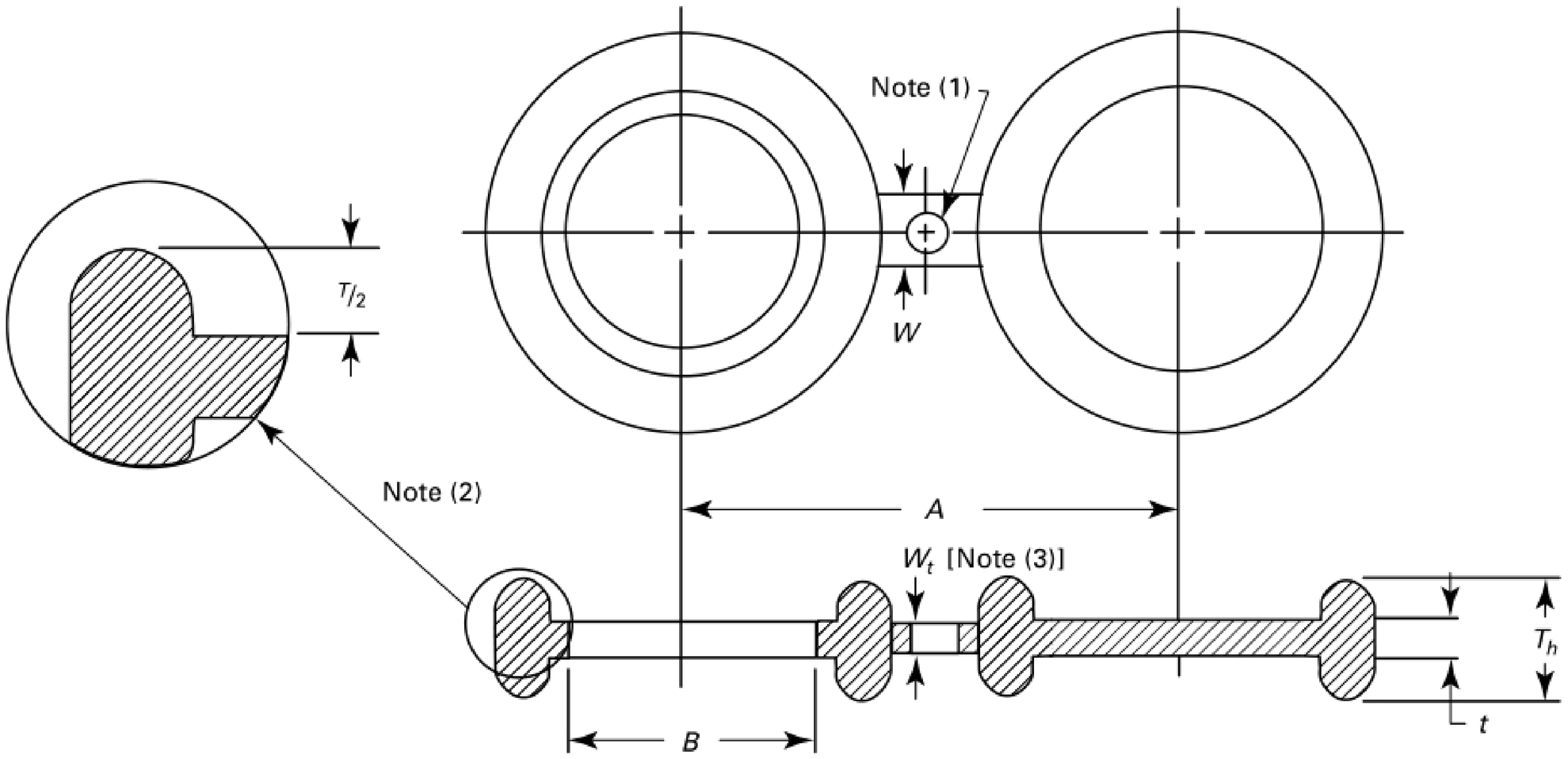

| NPS | Inside Diameter, *B*, mm (in.) | Outside Diameter, *O*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|---|
| 1/2 | 21 (0.84) | 65 (2.56) | 90 (3.50) | 25.4 (1.00) | 38 (1.50) |
| 3/4 | 27 (1.05) | 73 (2.88) | 95 (3.75) | 28.4 (1.12) | 45 (1.75) |
| 1 | 34 (1.32) | 83 (3.25) | 110 (4.25) | 28.4 (1.12) | 54 (2.12) |
| 1 1/4 | 42 (1.66) | 102 (4.00) | 130 (5.12) | 35.1 (1.38) | 54 (2.12) |
| 1 1/2 | 48 (1.90) | 114 (4.50) | 145 (5.75) | 38.1 (1.50) | 61 (2.38) |
| 2 | 61 (2.38) | 133 (5.25) | 170 (6.75) | 41.1 (1.62) | 57 (2.25) |
| 2 1/2 | 73 (2.88) | 149 (5.88) | 195 (7.75) | 47.8 (1.88) | 61 (2.38) |
| 3 | 89 (3.50) | 168 (6.62) | 230 (9.00) | 50.8 (2.00) | 76 (3.00) |
| 4 | 114 (4.50) | 203 (8.00) | 270 (10.75) | 63.5 (2.50) | 83 (3.25) |
| 5 | 141 (5.56) | 241 (9.50) | 325 (12.75) | 73.2 (2.88) | 89 (3.50) |
| 6 | 168 (6.62) | 279 (11.00) | 370 (14.50) | 82.6 (3.25) | 95 (3.75) |
| 8 | 219 (8.62) | 340 (13.38) | 440 (17.25) | 98.6 (3.88) | 95 (3.75) |
| 10 | 273 (10.75) | 425 (16.75) | 540 (21.25) | 117.3 (4.62) | 91 (3.58) |
| 12 | 324 (12.75) | 495 (19.50) | 620 (24.38) | 133.4 (5.25) | 152 (6.00) |

NOTES:
(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
(2) Female ring-joint groove dimensions shall be in accordance with ASME B16.5.
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-7 Dimensions of Class 150 Male Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| 1 | 34 (1.32) | 80 (3.12) | 6.4 (0.25) | 51 (2.00) |
| 1¼ | 42 (1.66) | 90 (3.50) | 6.4 (0.25) | 51 (2.00) |
| 1½ | 48 (1.90) | 100 (3.88) | 6.4 (0.25) | 57 (2.25) |
| 2 | 61 (2.38) | 120 (4.75) | 6.4 (0.25) | 57 (2.25) |
| 2½ | 73 (2.88) | 140 (5.50) | 9.7 (0.38) | 57 (2.25) |
| 3 | 89 (3.50) | 150 (6.00) | 9.7 (0.38) | 57 (2.25) |
| 3½ | 102 (4.00) | 175 (7.00) | 9.7 (0.38) | 64 (2.50) |
| 4 | 114 (4.50) | 190 (7.50) | 9.7 (0.38) | 64 (2.50) |
| 5 | 141 (5.56) | 215 (8.50) | 12.7 (0.50) | 76 (3.00) |
| 6 | 168 (6.62) | 240 (9.50) | 12.7 (0.50) | 83 (3.25) |
| 8 | 219 (8.62) | 300 (11.75) | 15.7 (0.62) | 95 (3.75) |
| 10 | 273 (10.75) | 362 (14.25) | 19.1 (0.75) | 102 (4.00) |
| 12 | 324 (12.75) | 432 (17.00) | 22.4 (0.88) | 121 (4.75) |
| 14 | 356 (14.00) | 476 (18.75) | 22.4 (0.88) | 127 (5.00) |
| 16 | 406 (16.00) | 540 (21.25) | 25.4 (1.00) | 127 (5.00) |
| 18 | 457 (18.00) | 578 (22.75) | 28.4 (1.12) | 127 (5.00) |
| 20 | 508 (20.00) | 635 (25.00) | 28.4 (1.12) | 127 (5.00) |
| 24 | 610 (24.00) | 749 (29.50) | 35.1 (1.38) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

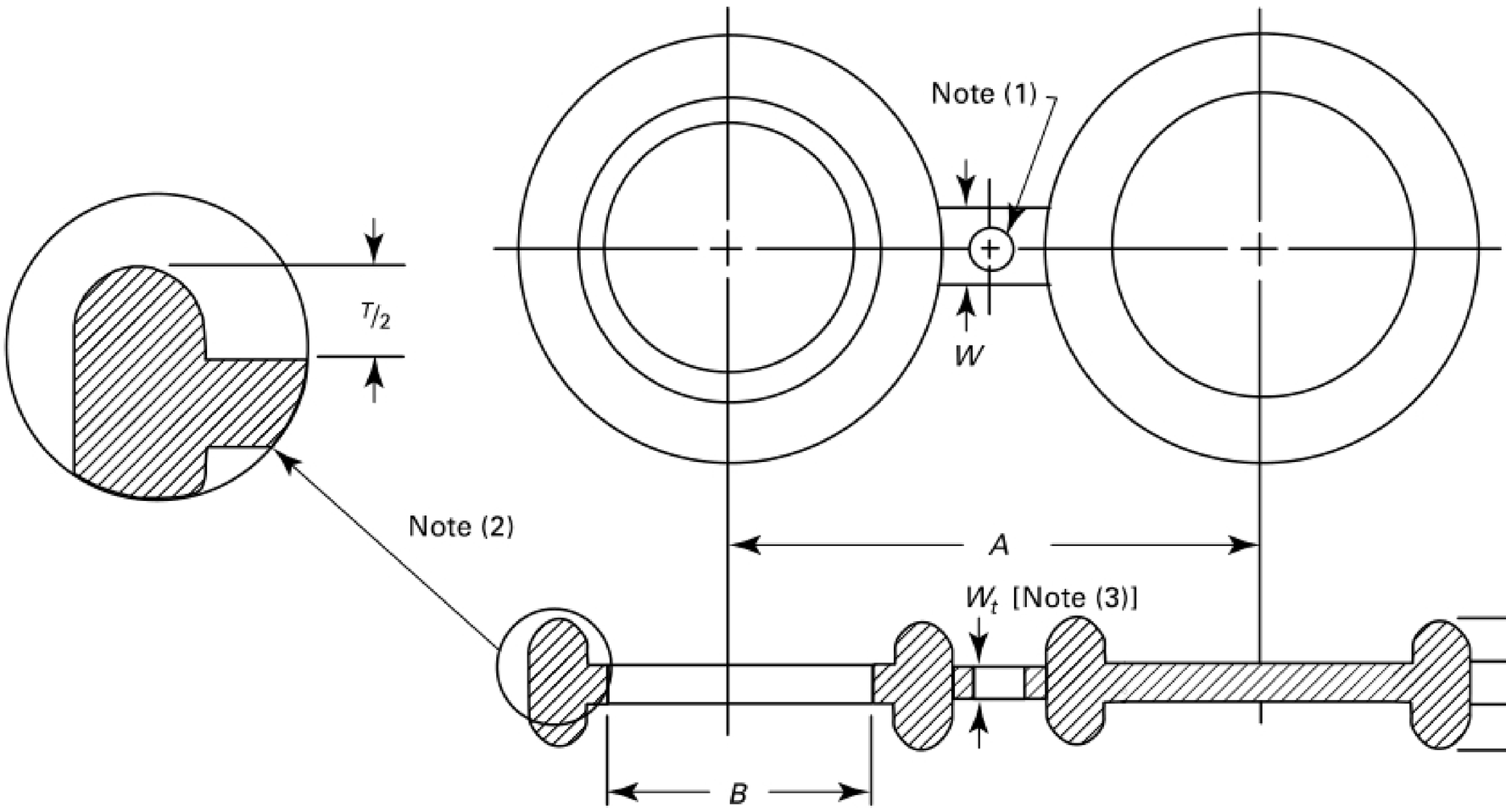
(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-8 Dimensions of Class 300 Male Ring-Joint Facing Figure-8 Blanks

(20)




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| ½ | 21 (0.84) | 65 (2.62) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 27 (1.05) | 80 (3.25) | 9.7 (0.38) | 45 (1.75) |
| 1 | 34 (1.32) | 90 (3.50) | 9.7 (0.38) | 51 (2.00) |
| 1¼ | 42 (1.66) | 100 (3.88) | 9.7 (0.38) | 51 (2.00) |
| 1½ | 48 (1.90) | 115 (4.50) | 9.7 (0.38) | 57 (2.25) |
| 2 | 61 (2.38) | 125 (5.00) | 12.7 (0.50) | 57 (2.25) |
| 2½ | 73 (2.88) | 150 (5.88) | 15.7 (0.62) | 57 (2.25) |
| 3 | 89 (3.50) | 170 (6.62) | 15.7 (0.62) | 57 (2.25) |
| 3½ | 102 (4.00) | 180 (7.25) | 15.7 (0.62) | 64 (2.50) |
| 4 | 114 (4.50) | 200 (7.88) | 15.7 (0.62) | 64 (2.50) |
| 5 | 141 (5.56) | 235 (9.25) | 19.1 (0.75) | 76 (3.00) |
| 6 | 168 (6.62) | 270 (10.62) | 22.4 (0.88) | 83 (3.25) |
| 8 | 219 (8.62) | 330 (13.00) | 25.4 (1.00) | 95 (3.75) |
| 10 | 273 (10.75) | 390 (15.25) | 28.4 (1.12) | 102 (4.00) |
| 12 | 324 (12.75) | 450 (17.75) | 35.1 (1.38) | 121 (4.75) |
| 14 | 356 (14.00) | 515 (20.25) | 38.1 (1.50) | 127 (5.00) |
| 16 | 406 (16.00) | 570 (22.50) | 41.1 (1.62) | 127 (5.00) |
| 18 | 457 (18.00) | 630 (24.75) | 44.5 (1.75) | 127 (5.00) |
| 20 | 508 (20.00) | 685 (27.00) | 50.8 (2.00) | 127 (5.00) |
| 24 | 610 (24.00) | 810 (32.00) | 57.2 (2.25) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

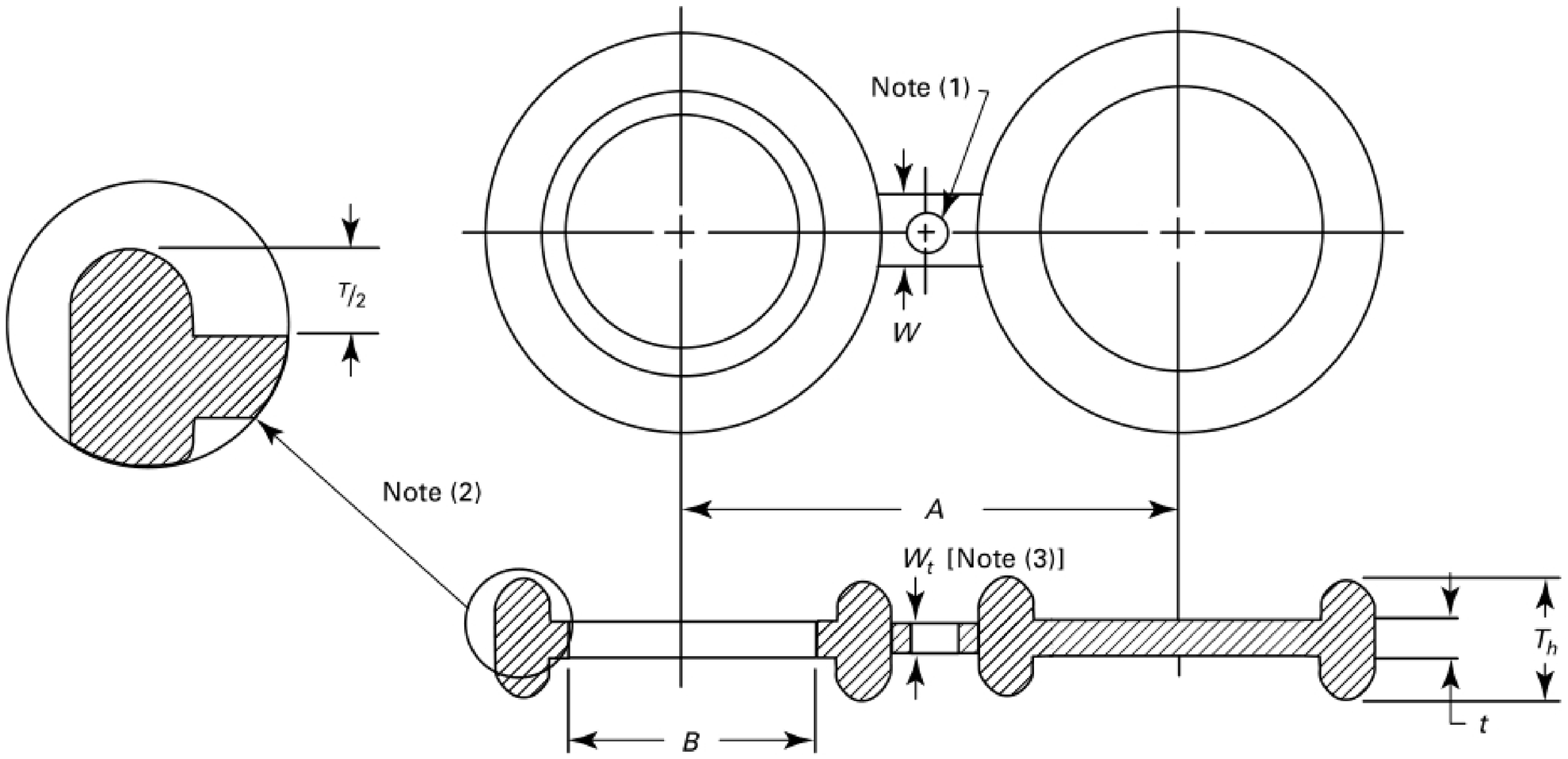
(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-9 Dimensions of Class 600 Male Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| ½ | 21 (0.84) | 65 (2.62) | 6.4 (0.25) | 38 (1.50) |
| ¾ | 27 (1.05) | 80 (3.25) | 9.7 (0.38) | 45 (1.75) |
| 1 | 34 (1.32) | 90 (3.50) | 9.7 (0.38) | 51 (2.00) |
| 1¼ | 42 (1.66) | 100 (3.88) | 9.7 (0.38) | 57 (2.25) |
| 1½ | 48 (1.90) | 115 (4.50) | 9.7 (0.38) | 57 (2.25) |
| 2 | 61 (2.38) | 125 (5.00) | 12.7 (0.50) | 51 (2.00) |
| 2½ | 73 (2.88) | 150 (5.88) | 15.7 (0.62) | 57 (2.25) |
| 3 | 89 (3.50) | 170 (6.62) | 15.7 (0.62) | 67 (2.62) |
| 3½ | 102 (4.00) | 180 (7.25) | 19.1 (0.75) | 67 (2.62) |
| 4 | 114 (4.50) | 215 (8.50) | 19.1 (0.75) | 73 (2.88) |
| 5 | 141 (5.56) | 265 (10.50) | 22.4 (0.88) | 73 (2.88) |
| 6 | 168 (6.62) | 290 (11.50) | 28.4 (1.12) | 73 (2.88) |
| 8 | 219 (8.62) | 350 (13.75) | 35.1 (1.38) | 83 (3.25) |
| 10 | 273 (10.75) | 430 (17.00) | 41.1 (1.62) | 121 (4.75) |
| 12 | 324 (12.75) | 490 (19.25) | 47.8 (1.88) | 121 (4.75) |
| 14 | 356 (14.00) | 525 (20.75) | 50.8 (2.00) | 121 (4.75) |
| 16 | 406 (16.00) | 605 (23.75) | 57.2 (2.25) | 127 (5.00) |
| 18 | 457 (18.00) | 650 (25.75) | 63.5 (2.50) | 133 (5.25) |
| 20 | 508 (20.00) | 720 (28.50) | 69.9 (2.75) | 127 (5.00) |
| 24 | 610 (24.00) | 840 (33.00) | 82.6 (3.25) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

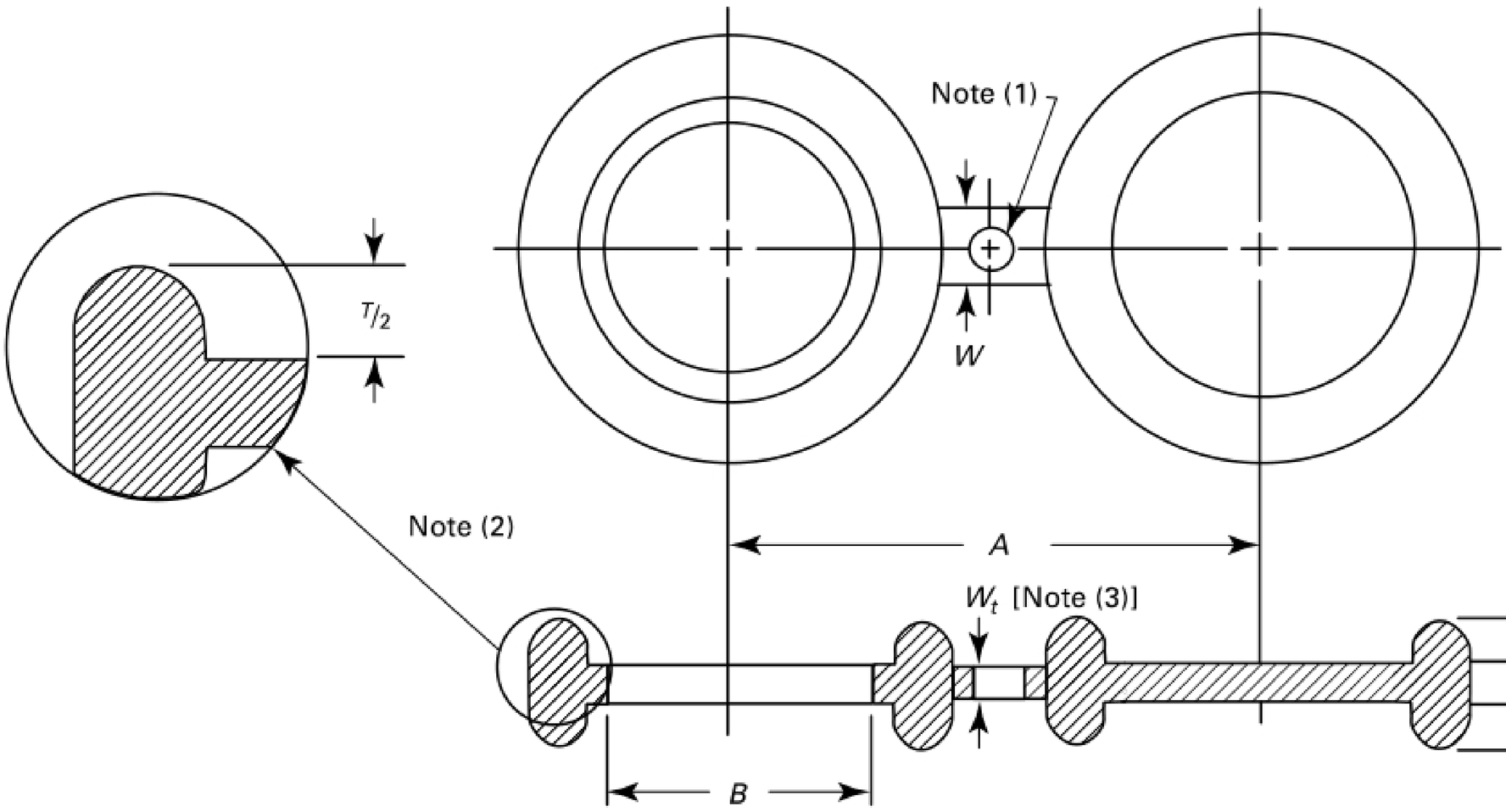
(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-10 Dimensions of Class 900 Male Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| ½ | 21 (0.84) | 80 (3.25) | 9.7 (0.38) | 38 (1.50) |
| ¾ | 27 (1.05) | 90 (3.50) | 9.7 (0.38) | 45 (1.75) |
| 1 | 34 (1.32) | 100 (4.00) | 9.7 (0.38) | 51 (2.00) |
| 1¼ | 42 (1.66) | 110 (4.38) | 12.7 (0.50) | 54 (2.12) |
| 1½ | 48 (1.90) | 125 (4.88) | 12.7 (0.50) | 54 (2.12) |
| 2 | 61 (2.38) | 165 (6.50) | 15.7 (0.62) | 51 (2.00) |
| 2½ | 73 (2.88) | 190 (7.50) | 19.1 (0.75) | 54 (2.12) |
| 3 | 89 (3.50) | 190 (7.50) | 19.1 (0.75) | 67 (2.62) |
| 4 | 114 (4.50) | 235 (9.25) | 25.4 (1.00) | 73 (2.88) |
| 5 | 141 (5.56) | 280 (11.00) | 28.4 (1.12) | 73 (2.88) |
| 6 | 168 (6.62) | 315 (12.50) | 31.8 (1.25) | 73 (2.88) |
| 8 | 219 (8.62) | 395 (15.50) | 41.1 (1.62) | 79 (3.12) |
| 10 | 273 (10.75) | 470 (18.50) | 47.8 (1.88) | 121 (4.75) |
| 12 | 324 (12.75) | 535 (21.00) | 57.2 (2.25) | 121 (4.75) |
| 14 | 356 (14.00) | 560 (22.00) | 60.5 (2.38) | 121 (4.75) |
| 16 | 406 (16.00) | 615 (24.25) | 69.9 (2.75) | 127 (5.00) |
| 18 | 457 (18.00) | 685 (27.00) | 76.2 (3.00) | 133 (5.25) |
| 20 | 508 (20.00) | 750 (29.50) | 85.9 (3.38) | 127 (5.00) |
| 24 | 610 (24.00) | 900 (35.50) | 98.6 (3.88) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

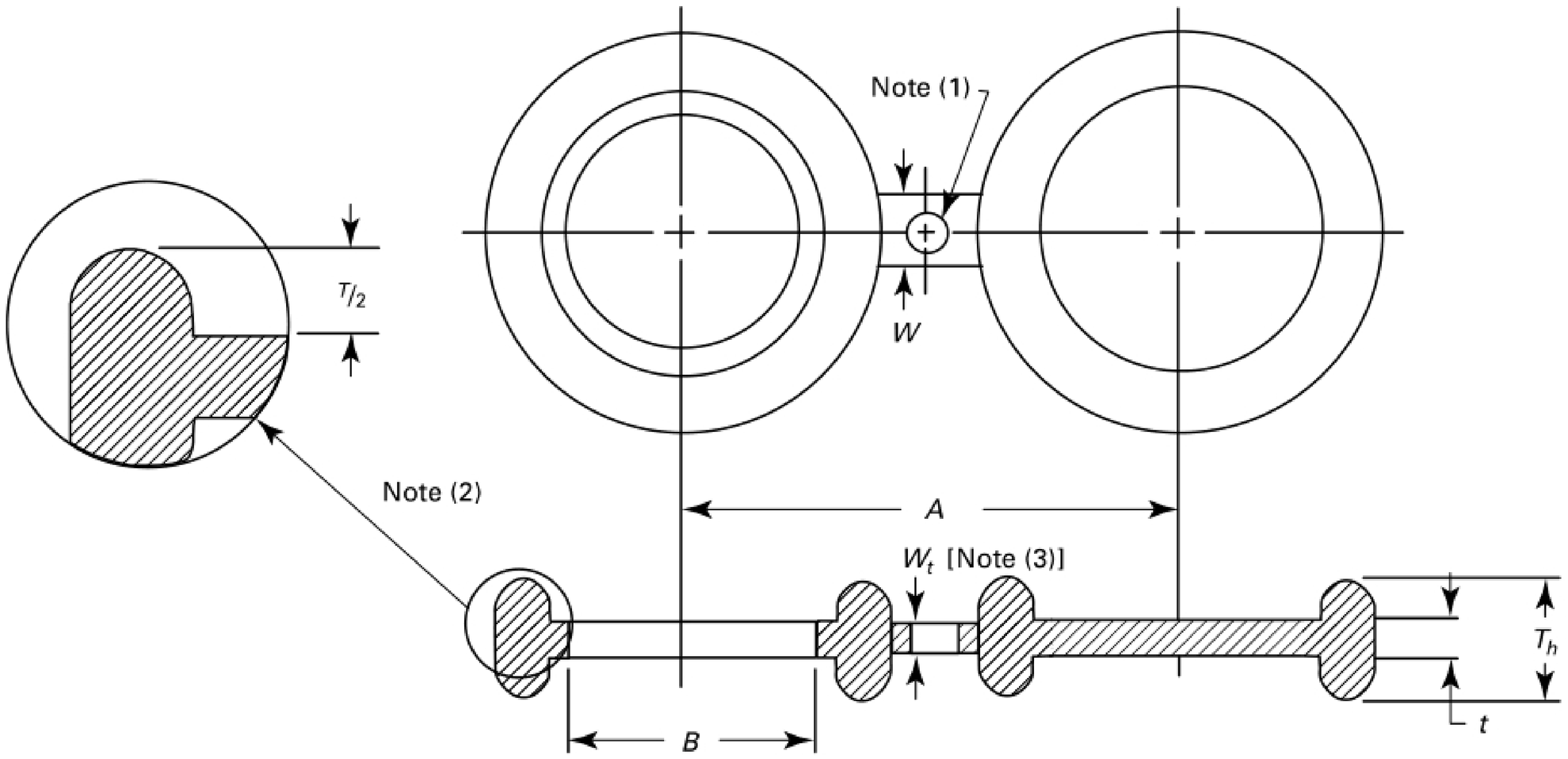
(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-11 Dimensions of Class 1500 Male Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| ½ | 21 (0.84) | 83 (3.25) | 9.7 (0.38) | 38 (1.50) |
| ¾ | 27 (1.05) | 89 (3.50) | 9.7 (0.38) | 45 (1.75) |
| 1 | 34 (1.32) | 102 (4.00) | 12.7 (0.50) | 54 (2.12) |
| 1¼ | 42 (1.66) | 111 (4.38) | 12.7 (0.50) | 54 (2.12) |
| 1½ | 48 (1.90) | 124 (4.88) | 15.7 (0.62) | 57 (2.25) |
| 2 | 61 (2.38) | 165 (6.50) | 19.1 (0.75) | 54 (2.12) |
| 2½ | 73 (2.88) | 191 (7.50) | 22.4 (0.88) | 57 (2.25) |
| 3 | 89 (3.50) | 203 (8.00) | 28.4 (1.12) | 73 (2.88) |
| 4 | 114 (4.50) | 241 (9.50) | 31.8 (1.25) | 76 (3.00) |
| 5 | 141 (5.56) | 292 (11.50) | 38.1 (1.50) | 76 (3.00) |
| 6 | 168 (6.62) | 318 (12.50) | 41.1 (1.62) | 79 (3.12) |
| 8 | 219 (8.62) | 394 (15.50) | 50.8 (2.00) | 86 (3.38) |
| 10 | 273 (10.75) | 483 (19.00) | 63.5 (2.50) | 133 (5.25) |
| 12 | 324 (12.75) | 572 (22.50) | 73.2 (2.88) | 133 (5.25) |
| 14 | 356 (14.00) | 635 (25.00) | 79.2 (3.12) | 140 (5.50) |
| 16 | 406 (16.00) | 705 (27.75) | 88.9 (3.50) | 146 (5.75) |
| 18 | 457 (18.00) | 775 (30.50) | 98.6 (3.88) | 152 (6.00) |
| 20 | 508 (20.00) | 832 (32.75) | 108.0 (4.25) | 165 (6.50) |
| 24 | 610 (24.00) | 991 (39.00) | 127.0 (5.00) | 178 (7.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

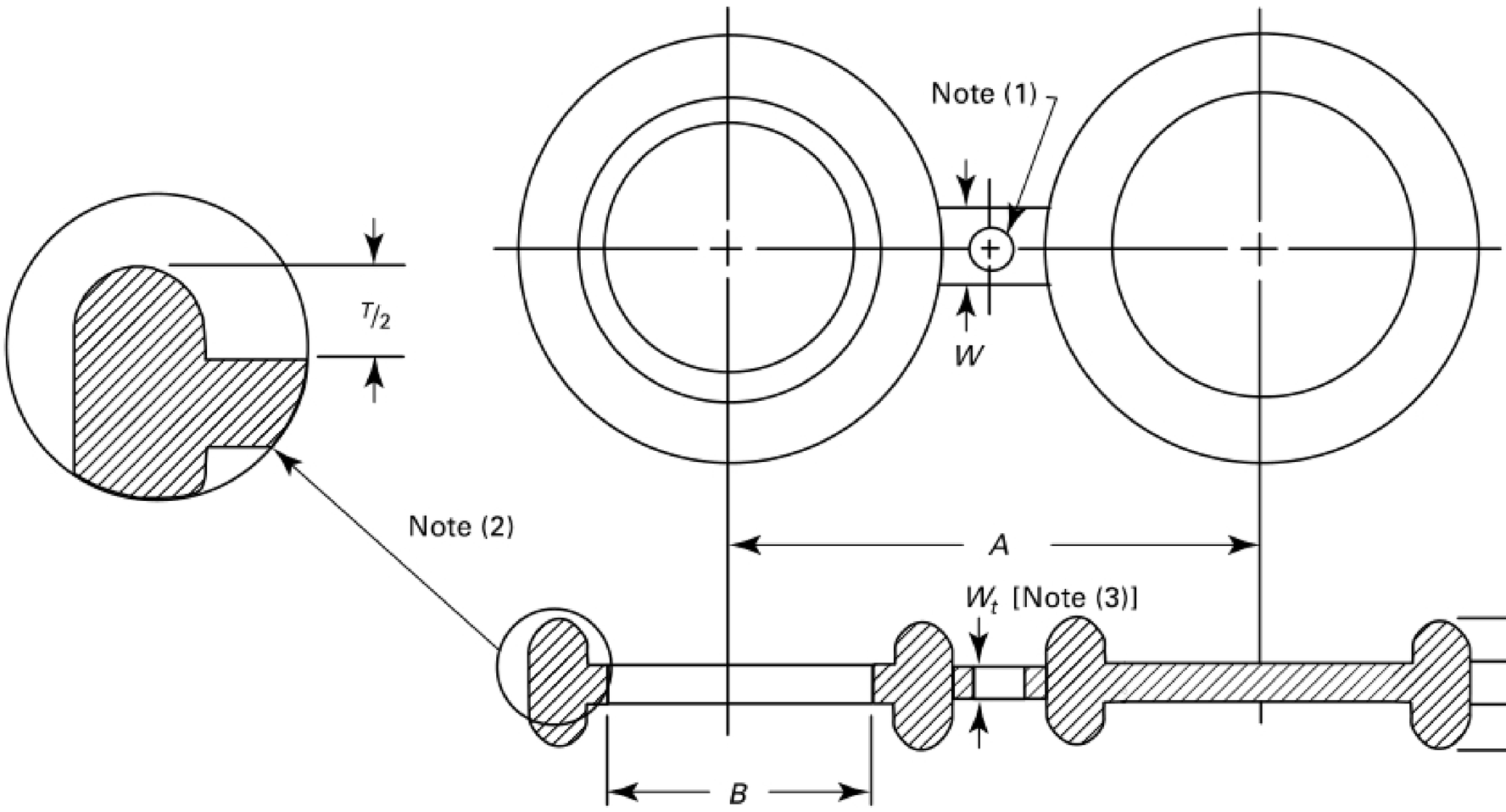
(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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## Table 5.1-12 Dimensions of Class 2500 Male Ring-Joint Facing Figure-8 Blanks




| NPS | Inside Diameter, *B*, mm (in.) | Centerline Dimension, *A*, mm (in.) | Thickness, *t*, mm (in.) | Web Width, *W*, mm (in.) |
|---|---|---|---|---|
| ½ | 21 (0.84) | 90 (3.50) | 12.7 (0.50) | 41 (1.62) |
| ¾ | 27 (1.05) | 95 (3.75) | 15.7 (0.62) | 48 (1.88) |
| 1 | 34 (1.32) | 110 (4.25) | 15.7 (0.62) | 54 (2.12) |
| 1¼ | 42 (1.66) | 130 (5.12) | 19.1 (0.75) | 54 (2.12) |
| 1½ | 48 (1.90) | 145 (5.75) | 22.4 (0.88) | 61 (2.38) |
| 2 | 61 (2.38) | 170 (6.75) | 25.4 (1.00) | 57 (2.25) |
| 2½ | 73 (2.88) | 195 (7.75) | 28.4 (1.12) | 61 (2.38) |
| 3 | 89 (3.50) | 230 (9.00) | 31.8 (1.25) | 76 (3.00) |
| 4 | 114 (4.50) | 270 (10.75) | 38.1 (1.50) | 83 (3.25) |
| 5 | 141 (5.56) | 325 (12.75) | 47.8 (1.88) | 89 (3.50) |
| 6 | 168 (6.62) | 370 (14.50) | 57.2 (2.25) | 95 (3.75) |
| 8 | 219 (8.62) | 440 (17.25) | 69.9 (2.75) | 95 (3.75) |
| 10 | 273 (10.75) | 540 (21.25) | 82.6 (3.25) | 95 (3.75) |
| 12 | 324 (12.75) | 620 (24.38) | 98.6 (3.88) | 152 (6.00) |

NOTES:

(1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.

(2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except $T_h = T + t$, where $T$ is the ring height specified in ASME B16.20.

(3) The thickness of the web (or tie bar) dimension, $W_t$, shall be as determined by para. 4.1.



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# MANDATORY APPENDIX I
# REFERENCES

The following is a list of publications referenced in this Standard. The latest editions of ASME publications are to be used.

ASME B16.5, Pipe Flanges and Flanged Fittings
ASME B16.20, Metallic Gaskets for Pipe Flanges
ASME B46.1, Surface Texture (Surface Roughness, Waviness, and Lay)
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

ASTM E29-13, Standard Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications[1]
Publisher: American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

ISO 6708:1995, Pipework components — Definition and selection of DN (nominal size)[1]
ISO 9000:2005, Quality management systems — Fundamentals and vocabulary[1]
ISO 9001:2008, Quality management systems — Requirements[1]
ISO 9004:2000, Quality management systems — Guidelines for performance improvements[1]
Publisher: International Organization for Standardization (ISO), Central Secretariat, Chemin de Blandonnet 8, Case Postale 401, 1214 Vernier, Geneva, Switzerland (www.iso.org)

[1] May also be obtained from the American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036.



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# NONMANDATORY APPENDIX A
# QUALITY SYSTEM PROGRAM

The products manufactured in accordance with this Standard shall be produced under a quality system program following the principles of an appropriate standard from the IS0 9000 series.[1] A determination of the need for registration and/or certification of the product manufacturer's quality system program by an independent organization shall be the responsibility of the manufacturer. The detailed documentation demonstrating program compliance shall be available to the purchaser at the manufacturer's facility. A written summary description of the program used by the product manufacturer shall be available to the purchaser upon request. The product manufacturer is defined as the entity whose name or trademark appears on the product in accordance with the marking or identification requirements of this Standard.

[1] The series is also available from the American National Standards Institute (ANSI) and the American Society for Quality (ASQ) as American National Standards that are identified by the prefix "Q," replacing the prefix "ISO." Each standard of the series is listed in Mandatory Appendix I.



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# B16 AMERICAN NATIONAL STANDARDS FOR PIPING, PIPE FLANGES, FITTINGS, AND VALVES

| | |
|---|---|
| B16.1-2020 | Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250 |
| B16.3-2016 | Malleable Iron Threaded Fittings: Classes 150 and 300 |
| B16.4-2016 | Gray Iron Threaded Fittings: Classes 125 and 250 |
| B16.5-2020 | Pipe Flanges and Flanged Fittings: NPS ½ Through NPS 24 Metric/Inch Standard |
| B16.9-2018 | Factory-Made Wrought Buttwelding Fittings |
| B16.10-2017 | Face-to-Face and End-to-End Dimensions of Valves |
| B16.11-2016 | Forged Fittings, Socket-Welding and Threaded |
| B16.12-2019 | Cast Iron Threaded Drainage Fittings |
| B16.14-2018 | Ferrous Pipe Plugs, Bushings, and Locknuts With Pipe Threads |
| B16.15-2018 | Cast Copper Alloy Threaded Fittings |
| B16.18-2018 | Cast Copper Alloy Solder Joint Pressure Fittings |
| B16.20-2017 | Metallic Gaskets for Pipe Flanges |
| B16.21-2016 | Nonmetallic Flat Gaskets for Pipe Flanges |
| B16.22-2018 | Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings |
| B16.23-2016 | Cast Copper Alloy Solder Joint Drainage Fittings: DWV |
| B16.24-2016 | Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves: Classes 150, 300, 600, 900, 1500, and 2500 |
| B16.25-2017 | Buttwelding Ends |
| B16.26-2018 | Cast Copper Alloy Fittings for Flared Copper Tubes |
| B16.29-2017 | Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings — DWV |
| B16.33-2012 (R2017) | Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 175 psi (Sizes NPS ½ Through NPS 2) |
| B16.34-2020 | Valves — Flanged, Threaded, and Welding End |
| B16.36-2020 | Orifice Flanges |
| B16.38-2012 (R2017) | Large Metallic Valves for Gas Distribution: Manually Operated, NPS 2½ (DN 65) to NPS 12 (DN 300), 125 psig (8.6 bar) Maximum |
| B16.39-2019 | Malleable Iron Threaded Pipe Unions: Classes 150, 250, and 300 |
| B16.40-2019 | Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems |
| B16.42-2016 | Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300 |
| B16.44-2012 (R2017) | Manually Operated Metallic Gas Valves for Use in Aboveground Piping Systems Up to 5 psi |
| B16.47-2020 | Large Diameter Steel Flanges: NPS 26 Through NPS 60 Metric/Inch Standard |
| B16.48-2020 | Line Blanks |
| B16.49-2017 | Factory-Made, Wrought Steel, Buttwelding Induction Bends for Transportation and Distribution Systems |
| B16.50-2018 | Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings |
| B16.51-2018 | Copper and Copper Alloy Press-Connect Pressure Fittings |
| B16.52-2018 | Forged Nonferrous Fittings, Socket-Welding and Threaded (Titanium, Titanium Alloys, Aluminum, and Aluminum Alloys) |

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# ASME B16.48-2020

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