Specification for Wellhead and Tree Equipment

API SPECIFICATION 6A
TWENTY-FIRST EDITION, NOVEMBER 2018

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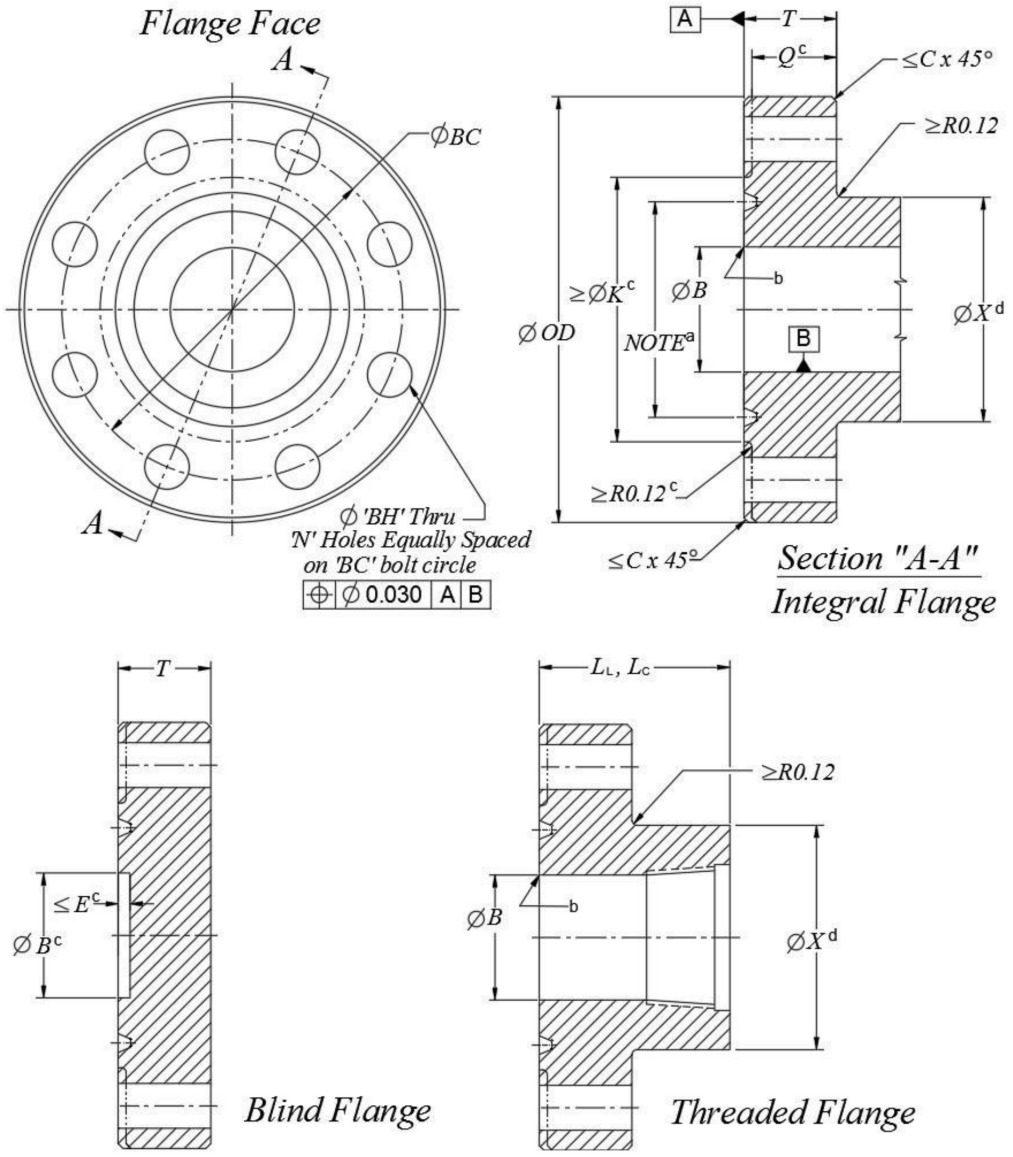
Annex E
(normative)

Dimensional Tables—USC Units

Table E.1—Type 6B Flanges for 2000 psi

Dimensions in inches



FOOTNOTES

a Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.8 for ring groove dimensions.

b Break sharp corner 0.03 in. max.

c Raised face K and counterbore E are optional features.

d Diameter X is a reference dimension.

Table E.1—Type 6B Flanges for 2000 psi *(continued)*

Dimensions in inches

Nominal Size of Flange [a]	Maximum Bore	Outside Diameter of Flange	Max. Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Counter-bore Depth
	B	*OD*	*C*	*K*	*T*	*Q*	*X*	*E*
Tolerance	max.	As noted	max.	min.	+0.12/−0	min.	Reference	+0.02/−0
2 1/16	2.09	6.50 ±0.06	0.12	4.25	1.31	1.00	3.31	0.31
2 9/16	2.59	7.50 ±0.06	0.12	5.00	1.44	1.12	3.94	0.31
3 1/8	3.22	8.25 ±0.06	0.12	5.75	1.56	1.25	4.62	0.31
4 1/16	4.28	10.75 ±0.06	0.12	6.88	1.81	1.50	6.00	0.31
5 1/8	5.16	13.00 ±0.06	0.12	8.25	2.06	1.75	7.44	0.31
7 1/16	7.16	14.00 ±0.12	0.25	9.50	2.19	1.88	8.75	0.31
9	9.03	16.50 ±0.12	0.25	11.88	2.50	2.19	10.75	0.31
11	11.03	20.00 ±0.12	0.25	14.00	2.81	2.50	13.50	0.31
13 5/8	13.66	22.00 ±0.12	0.25	16.25	2.94	2.62	15.75	0.31
16 3/4	16.78	27.00 ±0.12	0.25	20.00	3.31	3.00	19.50	0.31
21 1/4	21.28	32.00 ±0.12	0.25	25.00	3.88	3.50	24.00	0.38

FOOTNOTE

[a] For flange sizes 26 3/4 in. and 30 in., see Table E.7.

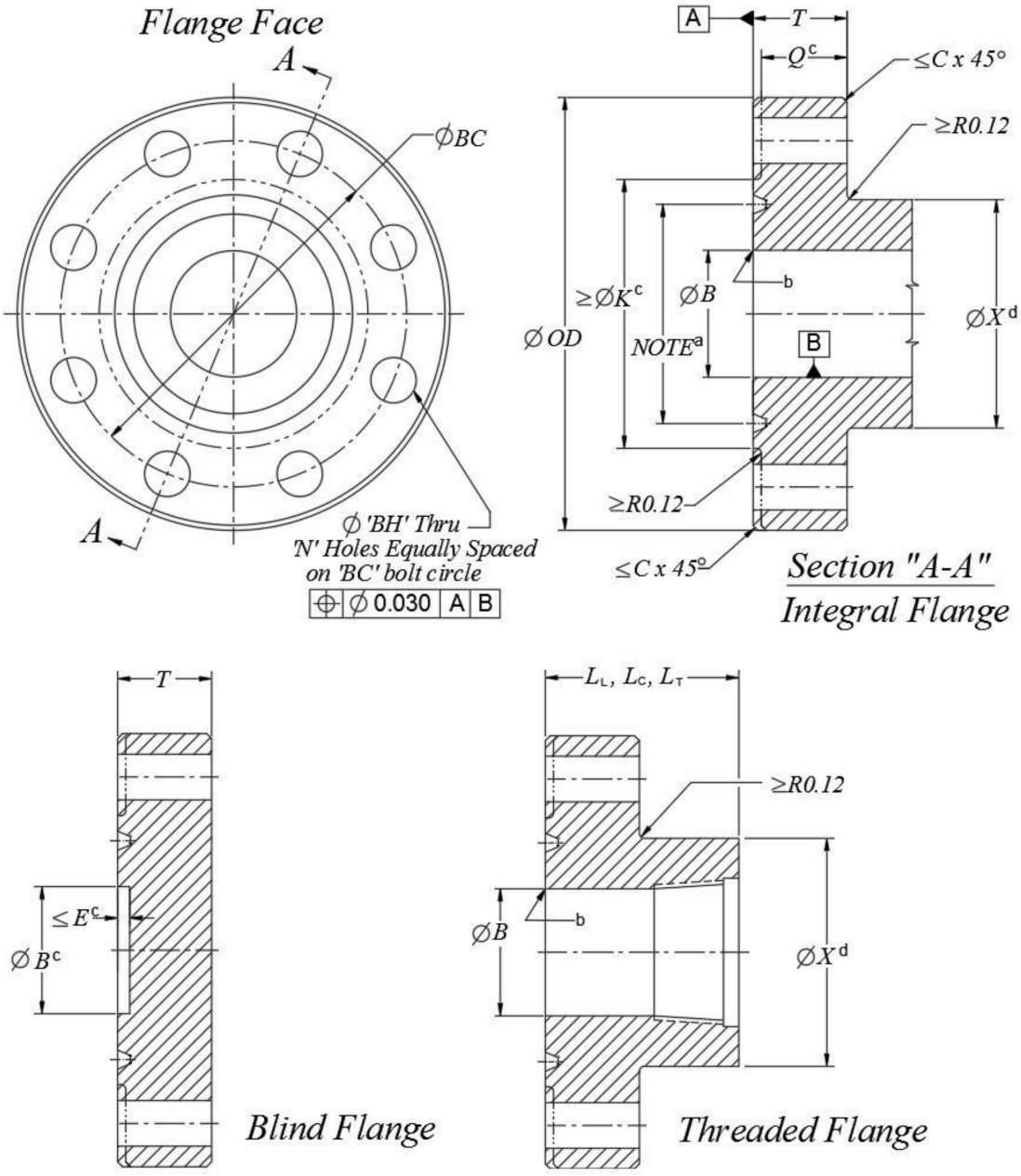
Nominal Size of Flange [a]	Diameter of Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Hub Length, Threaded Flange		Ring Groove Number
						Line Pipe Flange	Casing Flange	
	BC	*N*		*BH*		L_L	L_C	
Tolerance>	See figure for GDT		(Ref.)	Diameter	Tolerance	min.	min.	
2 1/16	5.00	8	5/8-11	0.75	+0.06/−0.02	1.75	—	R 23
2 9/16	5.88	8	3/4-10	0.88	+0.06/−0.02	1.94	—	R 26
3 1/8	6.62	8	3/4-10	0.88	+0.06/−0.02	2.12	—	R 31
4 1/16	8.50	8	7/8-9	1.00	+0.06/−0.02	2.44	3.50	R 37
5 1/8	10.50	8	1-8	1.12	+0.06/−0.02	2.69	4.00	R 41
7 1/16	11.50	12	1-8	1.12	+0.06/−0.02	2.94	4.50	R 45
9	13.75	12	1 1/8-8	1.25	+0.06/−0.02	3.31	5.00	R 49
11	17.00	16	1 1/4-8	1.38	+0.06/−0.02	3.69	5.25	R 53
13 5/8	19.25	20	1 1/4-8	1.38	+0.06/−0.02	3.94	3.94	R 57
16 3/4	23.75	20	1 1/2-8	1.62	+0.09/−0.02	4.50	4.50	R 65
21 1/4	28.50	24	1 5/8-8	1.75	+0.09/−0.02	5.38	5.38	R 73

FOOTNOTE

[a] For flange sizes 26 3/4 in. and 30 in., see Table E.7.

Table E.2—Type 6B Flanges for 3000 psi

Dimensions in inches



FOOTNOTES

a Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.8 for ring groove dimensions.

b Break sharp corner 0.03 in. max.

c Raised face K and counterbore E are optional features.

d Diameter X is a reference dimension.

Table E.2—Type 6B Flanges for 3000 psi *(continued)*

Dimensions in inches

Nominal Size of Flange [a]	Maximum Bore	Outside Diameter of Flange	Max. Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Counter-bore Depth
	B	*OD*	*C*	*K*	*T*	*Q*	*X*	*E*
Tolerance	max.	As noted	max.	min.	+0.12/−0	min.	Reference	+0.02/−0
$2^{1}/_{16}$	2.09	8.50 ±0.06	0.12	4.88	1.81	1.50	4.12	0.31
$2^{9}/_{16}$	2.59	9.62 ±0.06	0.12	5.38	1.94	1.62	4.88	0.31
$3^{1}/_{8}$	3.22	9.50 ±0.06	0.12	6.12	1.81	1.50	5.00	0.31
$4^{1}/_{16}$	4.28	11.50 ±0.06	0.12	7.12	2.06	1.75	6.25	0.31
$5^{1}/_{8}$	5.16	13.75 ±0.06	0.12	8.50	2.31	2.00	7.50	0.31
$7^{1}/_{16}$	7.16	15.00 ±0.12	0.25	9.50	2.50	2.19	9.25	0.31
9	9.03	18.50 ±0.12	0.25	12.12	2.81	2.50	11.75	0.31
11	11.03	21.50 ±0.12	0.25	14.25	3.06	2.75	14.50	0.31
$13^{5}/_{8}$	13.66	24.00 ±0.12	0.25	16.50	3.44	3.12	16.50	0.31
$16^{3}/_{4}$	16.78	27.75 ±0.12	0.25	20.62	3.94	3.50	20.00	0.44
$20^{3}/_{4}$	20.78	33.75 ±0.12	0.25	25.50	4.75	4.25	24.50	0.50

FOOTNOTE

[a] For flange sizes $26^{3}/_{4}$ in. and 30 in., see Table E.7.

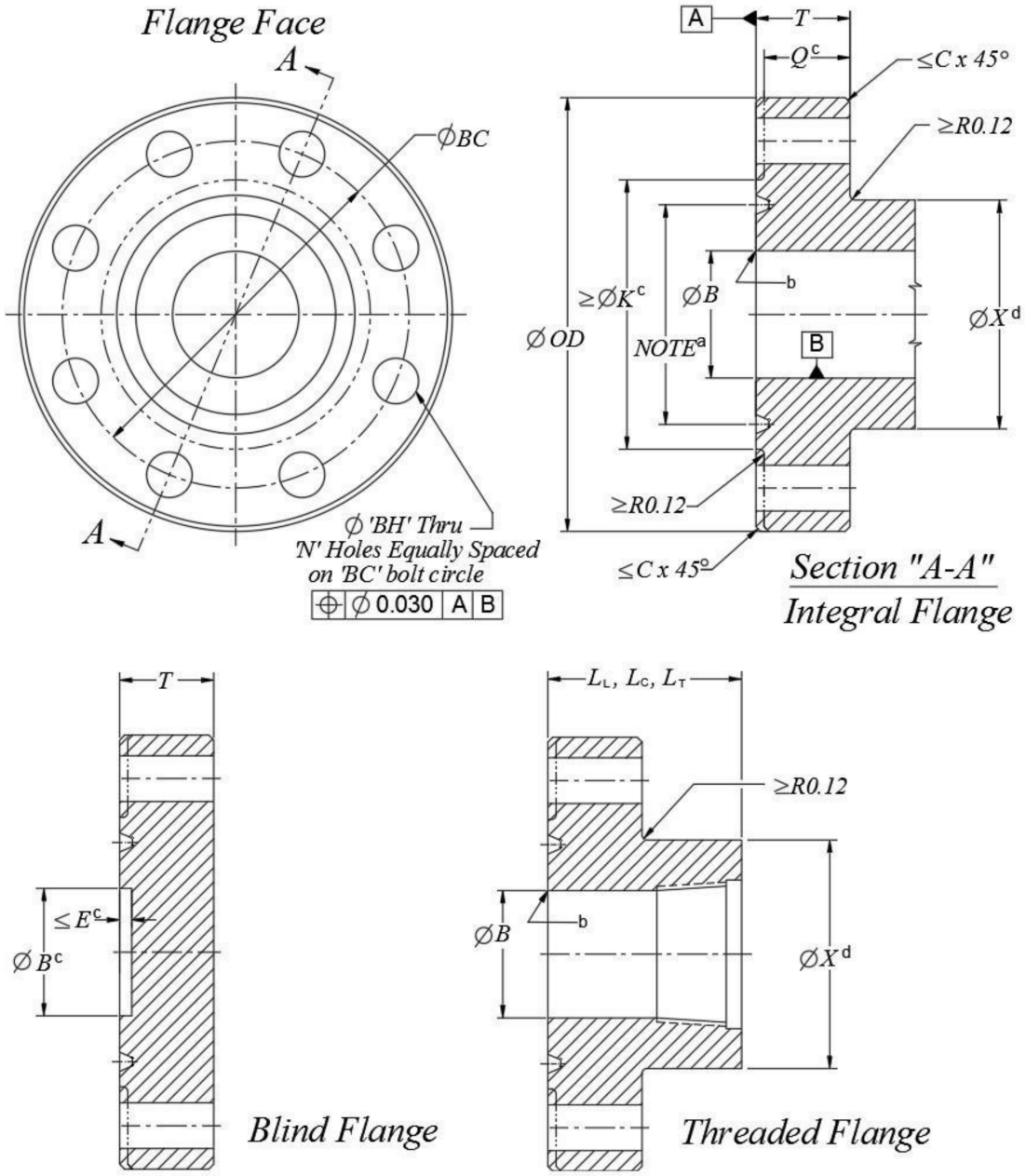
Nominal Size of Flange [a]	Diameter of Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Hub Length, Threaded Flange			Ring Groove
						Line Pipe Flange	Casing Flange	Tubing Flange	
	BC	*N*		*BH*		L_L	L_C	L_T	
Tolerance>	See figure for GDT		(Ref.)	Diameter	Tolerance	min.	min.	min.	
$2^{1}/_{16}$	6.50	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	2.56	—	2.56	R 24
$2^{9}/_{16}$	7.50	8	1-8	1.12	+0.06/−0.02	2.81	—	2.81	R 27
$3^{1}/_{8}$	7.50	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	2.44	—	2.94	R 31
$4^{1}/_{16}$	9.25	8	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	3.06	3.50	3.50	R 37
$5^{1}/_{8}$	11.00	8	$1^{1}/_{4}$-8	1.38	+0.06/−0.02	3.44	4.00	—	R 41
$7^{1}/_{16}$	12.50	12	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	3.69	4.50	—	R 45
9	15.50	12	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	4.31	5.00	—	R 49
11	18.50	16	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	4.56	5.25	—	R 53
$13^{5}/_{8}$	21.00	20	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	4.94	4.94	—	R 57
$16^{3}/_{4}$	24.25	20	$1^{5}/_{8}$-8	1.75	+0.09/−0.02	5.06	5.69	—	R 66
$20^{3}/_{4}$	29.50	20	2-8	2.12	+0.09/−0.02	6.75	6.75	—	R 74

FOOTNOTE

[a] For flange sizes $26^{3}/_{4}$ in. and 30 in., see Table E.7.

Table E.3—Type 6B Flanges for 5000 psi

Dimensions in inches



FOOTNOTES

a Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.8 for ring groove dimensions.

b Break sharp corner 0.03 in. max.

c Raised face K and counterbore E are optional features.

d Diameter X is a reference dimension.

Table E.3—Type 6B Flanges for 5000 psi *(continued)*

Dimensions in inches

Nominal Size of Flange [a]	Maximum Bore	Outside Diameter of Flange	Max. Chamfer	Diameter of Raised Face	Total Thickness of Flange	Basic Thickness of Flange	Diameter of Hub	Counter-bore Depth
	B	*OD*	*C*	*K*	*T*	*Q*	*X*	*E*
Tolerance	max.	As noted	max.	min.	+0.12/−0	min.	Reference	+0.02/−0
$2^{1}/_{16}$	2.09	8.50 ±0.06	0.12	4.88	1.81	1.50	4.12	0.31
$2^{9}/_{16}$	2.59	9.62 ±0.06	0.12	5.38	1.94	1.62	4.88	0.31
$3^{1}/_{8}$	3.22	10.50 ±0.06	0.12	6.62	2.19	1.88	5.25	0.31
$4^{1}/_{16}$	4.28	12.25 ±0.06	0.12	7.62	2.44	2.12	6.38	0.31
$5^{1}/_{8}$	5.16	14.75 ±0.06	0.12	9.00	3.19	2.88	7.75	0.31
$7^{1}/_{16}$	7.16	15.50 ±0.12	0.25	9.75	3.62	3.25	9.00	0.38
9	9.03	19.00 ±0.12	0.25	12.50	4.06	3.62	11.50	0.44
11	11.03	23.00 ±0.12	0.25	14.63	4.69	4.25	14.50	0.44

FOOTNOTE

[a] For flange sizes $13^{5}/_{8}$ in., $16^{3}/_{4}$ in., $18^{3}/_{4}$ in., and $21^{1}/_{4}$ in., see Table E.7.

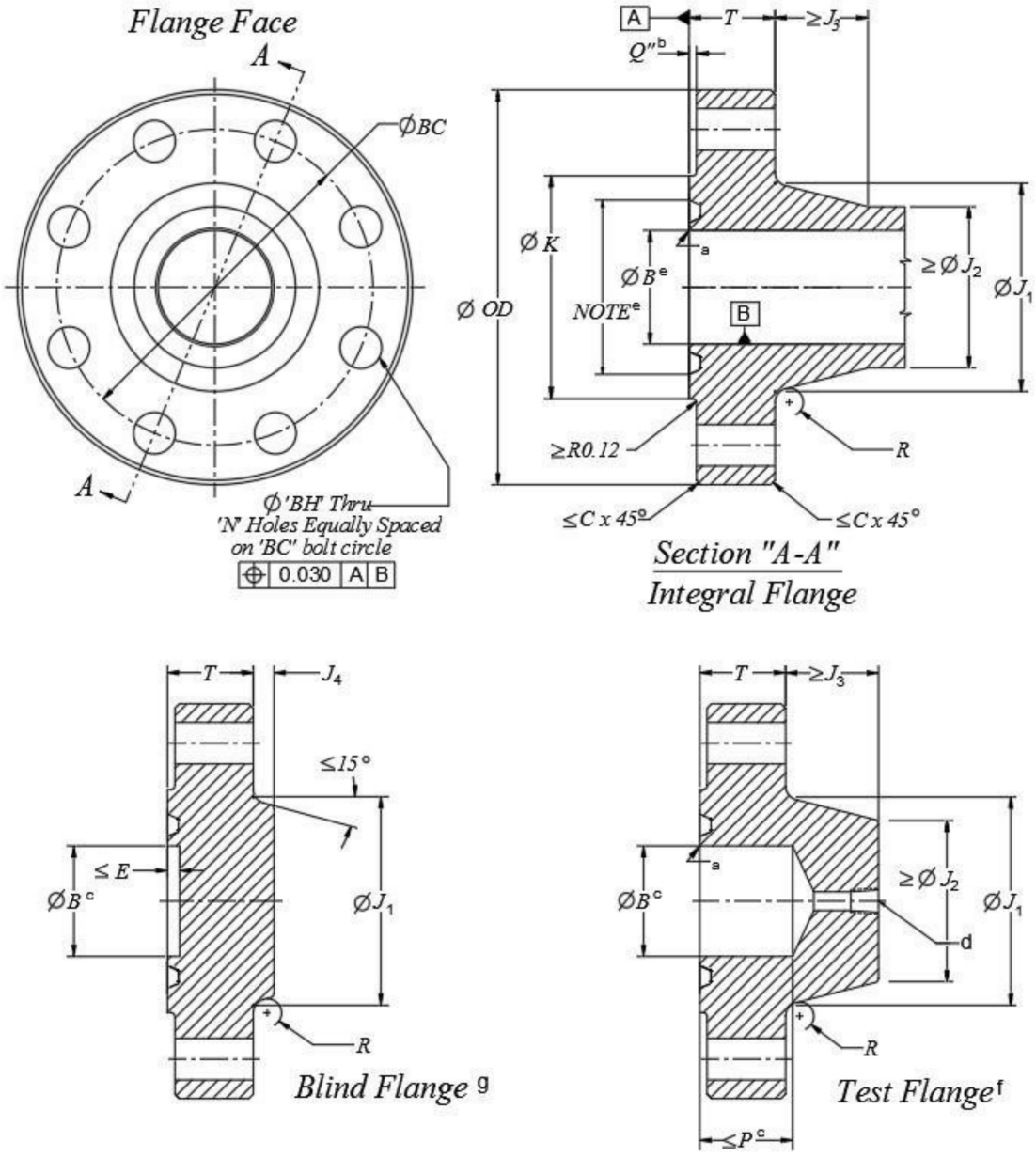
Nominal Size of Flange [a]	Diameter of Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Hub Length, Threaded Flange			Ring Groove
						Line Pipe Flange	Casing Flange	Tubing Flange	
	BC	*N*		*BH*		L_L	L_C	L_T	
Tolerance>	See figure for GDT		(Ref.)	Diameter	Tolerance	min.	min.	min.	
$2^{1}/_{16}$	6.50	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	2.56	—	2.56	R 24
$2^{9}/_{16}$	7.50	8	1-8	1.12	+0.06/−0.02	2.81	—	2.81	R 27
$3^{1}/_{8}$	8.00	8	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	3.19	—	3.19	R 35
$4^{1}/_{16}$	9.50	8	$1^{1}/_{4}$-8	1.38	+0.06/−0.02	3.88	3.88	3.88	R 39
$5^{1}/_{8}$	11.50	8	$1^{1}/_{2}$-8	1.62	+0.06/−0.02	4.44	4.44	—	R 44
$7^{1}/_{16}$	12.50	12	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	5.06	5.06	—	R 46
9	15.50	12	$1^{5}/_{8}$-8	1.75	+0.09/−0.02	6.06	6.06	—	R 50
11	19.00	12	$1^{7}/_{8}$-8	2.00	+0.09/−0.02	6.69	6.69	—	R 54

FOOTNOTE

[a] For flange sizes $13^{5}/_{8}$ in., $16^{3}/_{4}$ in., $18^{3}/_{4}$ in., and $21^{1}/_{4}$ in., see Table E.7.

Table E.4—Type 6BX Flanges for 10,000 psi

Dimensions in inches



FOOTNOTES

a Break sharp corner 0.03 in. max.

b Q'' max. = E; Q'' min. = 0.12 in.

c Optional feature.

d Test connection shall be $^1/_2$ in. NPT or per 9.3 (Figure 5).

e Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.11 for ring groove dimensions.

f Test flange style—applies to sizes $1^{13}/_{16}$ through $5^1/_8$ only.

g Blind flange style—applies to sizes $5^1/_8$ through $21^1/_4$ only.

h If the minimum value of J_3 is exceeded, the maximum depth P of the counterbore may be increased by the same amount or less.

Table E.4—Type 6BX Flanges for 10,000 psi *(continued)*

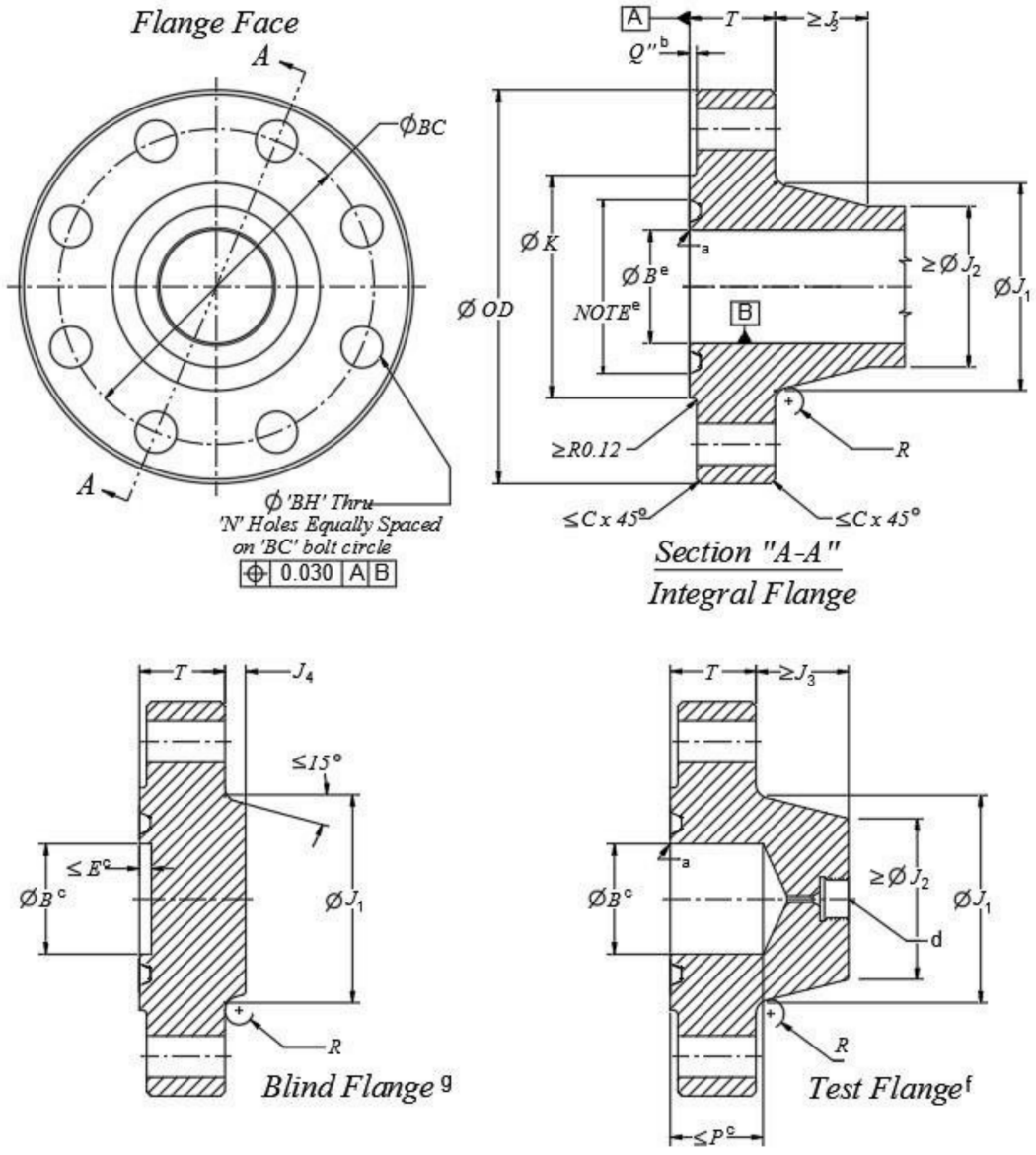
Dimensions in inches

Nominal Size	Maximum Bore	Outside Diameter of Flange	Diameter of Raised Face	Total Thickness	Max. Chamfer	Large Hub Diameter	Small Hub Diameter	Length of Hub	Hub Height
	B	*OD*	*K*	*T*	*C*	J_1	J_2	J_3	J_4
Tolerance	max.	As noted	± 0.06	+0.12/−0	max.	+0/−0.12	min.	min.	min. [h]
$1^{13}/_{16}$	1.84	7.38 ±0.06	4.12	1.66	0.12	3.50	2.56	1.91	—
$2^{1}/_{16}$	2.09	7.88 ±0.06	4.38	1.73	0.12	3.94	2.94	2.03	—
$2^{9}/_{16}$	2.59	9.12 ±0.06	5.19	2.02	0.12	4.75	3.62	2.25	—
$3^{1}/_{16}$	3.09	10.62 ±0.06	6.00	2.30	0.12	5.59	4.34	2.50	—
$4^{1}/_{16}$	4.09	12.44 ±0.06	7.28	2.77	0.12	7.19	5.75	2.88	—
$5^{1}/_{8}$	5.16	14.06 ±0.06	8.69	3.12	0.12	8.81	7.19	3.19	0.25
$7^{1}/_{16}$	7.09	18.88 ±0.12	11.88	4.06	0.25	11.88	10.00	3.75	0.38
9	9.03	21.75 ±0.12	14.12	4.88	0.25	14.75	12.88	3.69	0.38
11	11.03	25.75 ±0.12	16.88	5.56	0.25	17.75	15.75	4.06	0.56
$13^{5}/_{8}$	13.66	30.25 ±0.12	20.38	6.62	0.25	21.75	19.50	4.50	0.69
$16^{3}/_{4}$	16.78	34.31 ±0.12	22.69	6.62	0.25	25.81	23.69	3.00	1.19
$18^{3}/_{4}$	18.78	40.94 ±0.12	27.44	8.78	0.25	29.62	26.56	6.12	1.00
$21^{1}/_{4}$	21.28	45.00 ±0.12	30.75	9.50	0.25	33.38	30.00	6.50	1.25

Nominal Size	Radius of Hub	Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Counterbore Depth		Ring Groove
	R	*BC*	*N*		*BH*		*E*	*P* [h]	
Tolerance	± 0.06	See figure for GDT		(Ref.)	Diameter	Tolerance	max.	max.	
$1^{13}/_{16}$	0.38	5.75	8	$^{3}/_{4}$-10	0.88	+0.06/−0.02	0.240	1.89	BX 151
$2^{1}/_{16}$	0.38	6.25	8	$^{3}/_{4}$-10	0.88	+0.06/−0.02	0.250	2.02	BX 152
$2^{9}/_{16}$	0.38	7.25	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	0.290	2.42	BX 153
$3^{1}/_{16}$	0.38	8.50	8	1-8	1.12	+0.06/−0.02	0.320	2.83	BX 154
$4^{1}/_{16}$	0.38	10.19	8	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	0.350	3.45	BX 155
$5^{1}/_{8}$	038	11.81	12	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	0.375	3.86	BX 169
$7^{1}/_{16}$	0.62	15.88	12	$1^{1}/_{2}$-8	1.62	+0.09/−0.02	0.438	—	BX 156
9	0.62	18.75	16	$1^{1}/_{2}$-8	1.62	+0.09/−0.02	0.500	—	BX 157
11	0.62	22.25	16	$1^{3}/_{4}$-8	1.88	+0.09/−0.02	0.562	—	BX 158
$13^{5}/_{8}$	0.62	26.50	20	$1^{7}/_{8}$-8	2.00	+0.09/−0.02	0.625	—	BX 159
$16^{3}/_{4}$	0.75	30.56	24	$1^{7}/_{8}$-8	2.00	+0.09/−0.02	0.328	—	BX 162
$18^{3}/_{4}$	0.62	36.44	24	$2^{1}/_{4}$-8	2.38	+0.09/−0.02	0.719	—	BX 164
$21^{1}/_{4}$	0.81	40.25	24	$2^{1}/_{2}$-8	2.62	+0.09/−0.02	0.750	—	BX 166

Table E.5—Type 6BX Flanges for 15,000 psi

Dimensions in inches



FOOTNOTES

a Break-sharp corner 0.03 in. max.

b Q'' max. = E; Q'' min. = 0.12 in.

c Optional feature.

d Test connection shall be per 9.3 (Figure 5).

e Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.11 for ring groove dimensions.

f Test flange style—applies to sizes $1^{13}/_{16}$ through $5^{1}/_{8}$ only.

g Blind flange style—applies to sizes $5^{1}/_{8}$ through $18^{3}/_{4}$ only.

h If the minimum value of J_3 is exceeded, the maximum depth P of the counterbore may be increased by the same amount or less.

Table E.5—Type 6BX Flanges for 15,000 psi *(continued)*

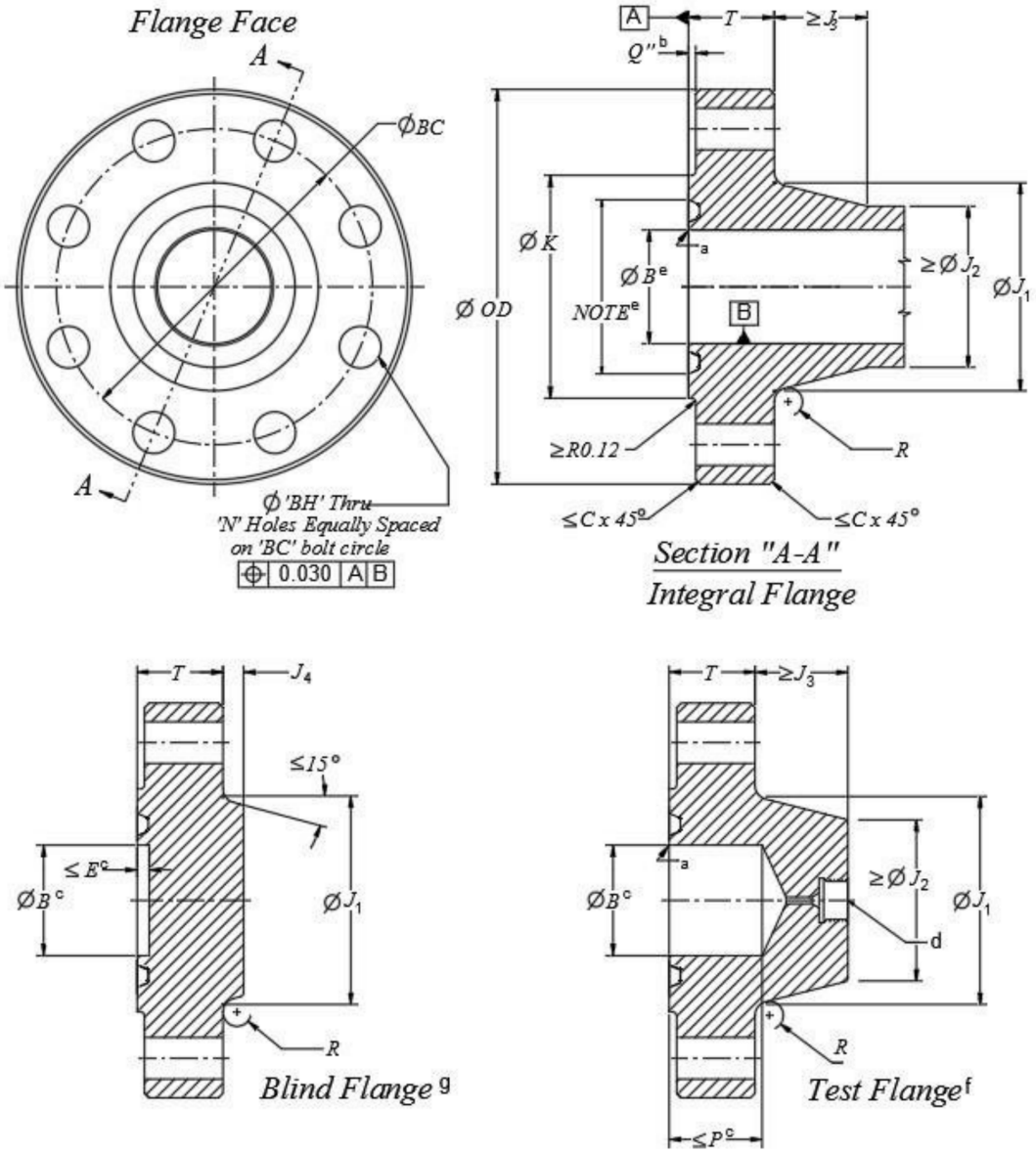
Dimensions in inches

Nominal Size of Flange	Maximum Bore	Outside Diameter of Flange	Diameter of Raised Face	Total Thickness of Flange	Max. Chamfer	Large Hub Diameter	Small Hub Diameter	Hub Length	Test Flange C'bore Depth
	B	*OD*	*K*	*T*	*C*	J_1	J_2	J_3	P [h]
Tolerance	max.	As noted	± 0.06	+0.12/−0	max.	+0/−0.12	min.	min.	max. [h]
$1^{13}/_{16}$	1.84	8.19 ±0.06	4.19	1.78	0.12	3.84	2.81	1.88	1.98
$2^{1}/_{16}$	2.09	8.75 ±0.06	4.50	2.00	0.12	4.38	3.25	2.12	2.38
$2^{9}/_{16}$	2.59	10.00 ±0.06	5.25	2.25	0.12	5.06	3.94	2.25	2.65
$3^{1}/_{16}$	3.09	11.31 ±0.06	6.06	2.53	0.12	6.06	4.81	2.50	3.06
$4^{1}/_{16}$	4.09	14.19 ±0.06	7.62	3.09	0.12	7.69	6.25	2.88	3.77
$5^{1}/_{8}$	5.16	16.50 ±0.06	8.88	3.88	0.12	9.62	7.88	3.22	4.65
$7^{1}/_{16}$	7.09	19.88 ±0.12	12.00	4.69	0.25	12.81	10.88	3.62	—
9	9.03	25.50 ±0.12	15.00	5.75	0.25	17.00	13.75	4.88	—
11	11.03	32.00 ±0.12	17.88	7.38	0.25	23.00	16.81	9.28	—
$13^{5}/_{8}$	13.66	34.88 ±0.12	21.31	8.06	0.25	23.44	20.81	4.50	—
$18^{3}/_{4}$	18.78	45.75 ±0.12	28.44	10.06	0.25	32.00	28.75	6.12	—

Nominal Size of Flange	Radius of Hub	Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Blind Flange		Ring Groove
							Counter-bore Depth	Hub Height	
	R	*BC*	*N*		*BH*		*E*	J_4	
Tolerance	± 0.06	See figure for GDT		(Ref.)	Diameter	Tolerance	max.	min.	
$1^{13}/_{16}$	0.38	6.31	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	—	—	BX 151
$2^{1}/_{16}$	0.38	6.88	8	$^{7}/_{8}$-9	1.00	+0.06/−0.02	—	—	BX 152
$2^{9}/_{16}$	0.38	7.88	8	1-8	1.12	+0.06/−0.02	—	—	BX 153
$3^{1}/_{16}$	0.38	9.06	8	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	—	—	BX 154
$4^{1}/_{16}$	0.38	11.44	8	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	—	—	BX 155
$5^{1}/_{8}$	0.62	13.50	12	$1^{1}/_{2}$-8	1.62	+0.09/−0.02	0.375	0.25	BX 169
$7^{1}/_{16}$	0.62	16.88	16	$1^{1}/_{2}$-8	1.62	+0.09/−0.02	0.438	0.31	BX 156
9	0.62	21.75	16	$1^{7}/_{8}$-8	2.00	+0.09/−0.02	0.500	0.56	BX 157
11	0.62	28.00	20	2-8	2.12	+0.09/−0.02	0.562	0.50	BX 158
$13^{5}/_{8}$	1.00	30.38	20	$2^{1}/_{4}$-8	2.38	+0.09/−0.02	0.625	0.69	BX 159
$18^{3}/_{4}$	1.00	40.00	20	3-8	3.12	+0.12/−0.02	0.719	1.38	BX 164

Table E.6—Type 6BX Flanges for 20,000 psi

Dimensions in inches



FOOTNOTES

a Break sharp corner 0.03 in. max.

b Q'' max. = E; Q'' min. = 0.12 in.

c Optional feature.

d Test connection shall be per 9.3 (Figure 5).

e Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.11 for ring groove dimensions.

f Test flange style—applies to sizes $1^{13}/_{16}$ through $4^{1}/_{16}$ only.

g Blind flange style—applies to sizes $7^{1}/_{16}$ through $18^{3}/_{4}$ only.

h If the minimum value of J_3 is exceeded, the maximum depth P of the counterbore may be increased by the same amount or less.

Table E.6—Type 6BX Flanges for 20,000 psi *(continued)*

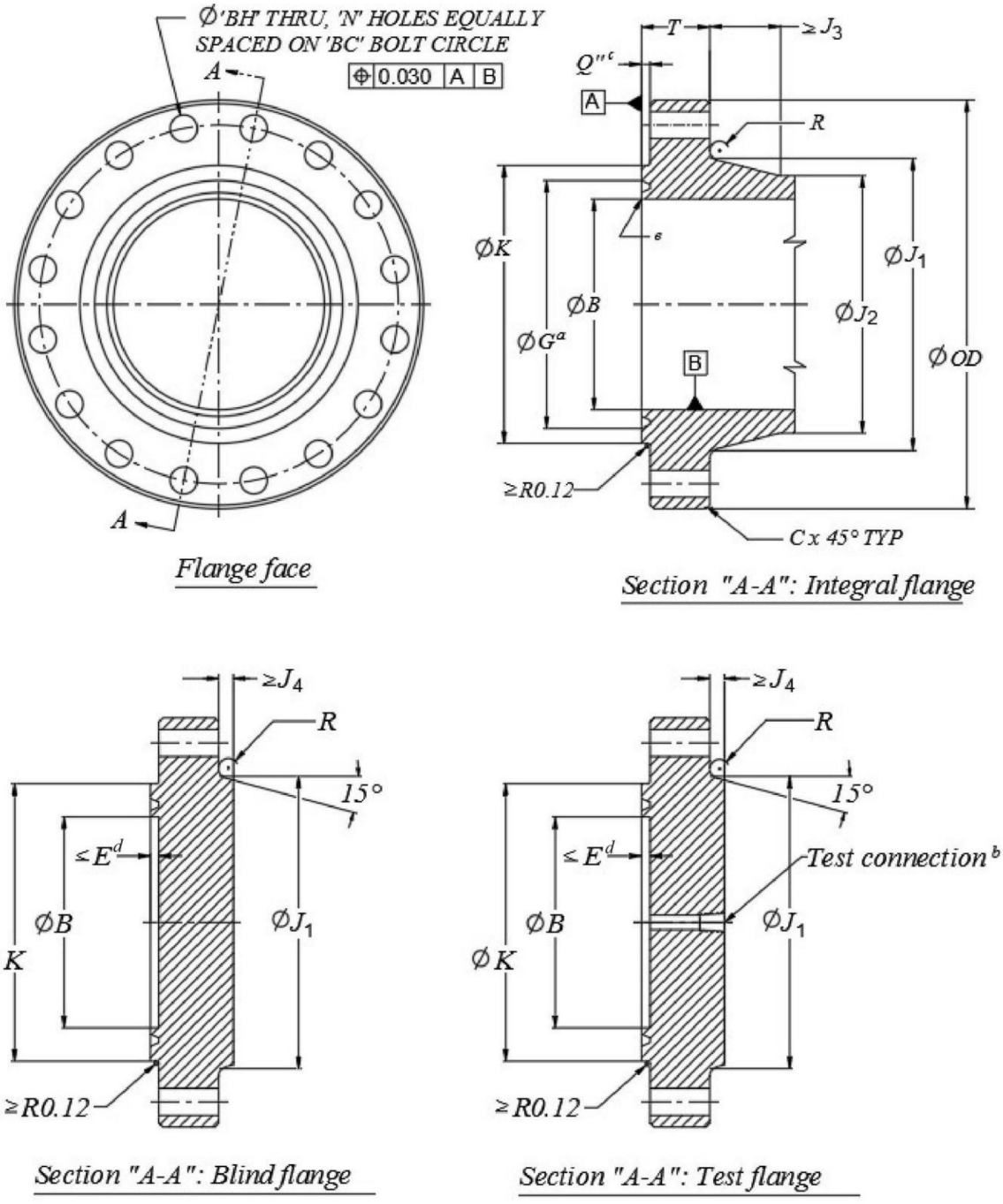
Dimensions in inches

Nominal Size of Flange	Maximum Bore	Outside Diameter of Flange	Diameter of Raised Face	Total Thickness of Flange	Max. Chamfer	Large Hub Diameter	Small Hub Diameter	Hub Length	Test Flange C'bore Depth
	B	*OD*	*K*	*T*	*C*	J_1	J_2	J_3	*P* [h]
Tolerance	max.	As noted	± 0.06	+0.12/−0	max.	+0/−0.12	min.	min.	max. [h]
$1^{13}/_{16}$	1.84	10.12 ±0.06	4.62	2.50	0.12	5.25	4.31	1.94	2.76
$2^{1}/_{16}$	2.09	11.31 ±0.06	5.19	2.81	0.12	6.06	5.00	2.06	3.13
$2^{9}/_{16}$	2.59	12.81 ±0.06	5.94	3.12	0.12	6.81	5.69	2.31	3.58
$3^{1}/_{16}$	3.09	14.06 ±0.06	6.75	3.38	0.12	7.56	6.31	2.50	3.91
$4^{1}/_{16}$	4.09	17.56 ±0.06	8.62	4.19	0.12	9.56	8.12	2.88	4.87
$7^{1}/_{16}$	7.09	25.81 ±0.12	13.88	6.50	0.25	15.19	13.31	3.81	—
9	9.03	31.69 ±0.12	17.38	8.06	0.25	18.94	16.88	4.25	—
11	11.03	34.75 ±0.12	19.88	8.81	0.25	22.31	20.00	4.06	—
$13^{5}/_{8}$	13.66	45.75 ±0.12	24.19	11.50	0.25	27.31	24.75	5.25	—

Nominal Size of Flange	Radius of Hub	Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Holes		Blind Flange		Ring Groove
							C'bore Depth	Hub Height	
	R	*BC*	*N*		*BH*		*E*	J_4	
Tolerance	± 0.60	See figure for GDT		(Ref.)	Diameter	Tolerance	max.	min.	
$1^{13}/_{16}$	0.38	8.00	8	1-8	1.12	+0.06/−0.02	—	—	BX 151
$2^{1}/_{16}$	0.38	9.06	8	$1^{1}/_{8}$-8	1.25	+0.06/−0.02	—	—	BX 152
$2^{9}/_{16}$	0.38	10.31	8	$1^{1}/_{4}$-8	1.38	+0.06/−0.02	—	—	BX 153
$3^{1}/_{16}$	0.38	11.31	8	$1^{3}/_{8}$-8	1.50	+0.06/−0.02	—	—	BX 154
$4^{1}/_{16}$	0.38	14.06	8	$1^{3}/_{4}$-8	1.88	+0.09/−0.02	—	—	BX 155
$7^{1}/_{16}$	0.62	21.81	16	2-8	2.12	+0.09/−0.02	0.438	0.31	BX 156
9	1.00	27.00	16	$2^{1}/_{2}$-8	2.62	+0.09/−0.02	0.500	0.25	BX 157
11	1.00	29.50	16	$2^{3}/_{4}$-8	2.88	+0.09/−0.02	0.562	0.50	BX 158
$13^{5}/_{8}$	1.00	40.00	20	3-8	3.12	+0.12/−0.02	0.625	0.56	BX 159

Table E.7—Type 6BX Large-bore Flanges for 2000 psi, 3000 psi, and 5000 psi

Dimensions in inches



FOOTNOTES

[a] Ring groove shall be concentric with bore B within 0.010 in. diametrical runout. See Table E.11 for ring groove dimensions.

[b] Test connection shall be $^1/_2$ in. NPT or per 9.3 (Figure 5).

[c] Q'' min. = 0.12 in. (may be omitted for studded flanges).

[d] Counterbore E for blind and test flanges is optional.

[e] Break sharp corner 0.03 in. max.

Table E.7—Type 6BX Large-bore Flanges for 2000 psi, 3000 psi, and 5000 psi *(continued)*

Dimensions in inches

Nominal Size	Maximum Bore	Outside Diameter of Flange	Raised Face Depth	Raised Face Diameter	Total Thickness	Large Hub Diameter	Small Hub Diameter	Length of Hub
	B	*OD*	*Q″*	*K*	*T*	J_1	J_2	J_3
Tolerance	max.	As noted	max.	± 0.06	+0.12/−0	+0/−0.12	min.	min.
2000 psi								
$26^3/_4$	26.78	41.00 ±0.12	0.25	31.69	4.97	32.91	29.25	7.31
30	30.03	44.19 ±0.12	0.25	35.75	5.28	36.69	32.80	7.75
3000 psi								
$26^3/_4$	26.78	43.38 ±0.12	0.25	32.75	6.34	34.25	30.56	7.31
30	30.03	46.68 ±0.12	0.25	36.31	6.58	38.19	34.30	7.75
5000 psi								
$13^5/_8$	13.66	26.50 ±0.12	0.25	18.00	4.44	18.94	16.69	4.50
$16^3/_4$	16.78	30.38 ±0.12	0.25	21.06	5.12	21.88	20.75	3.00
$18^3/_4$	18.78	35.62 ±0.12	0.25	24.69	6.53	26.56	23.56	6.00
$21^1/_4$	21.28	39.00 ±0.12	0.25	27.62	7.12	29.88	26.75	6.50

Nominal Size	Radius of Hub	Bolt Circle	Number of Bolts	Bolt Size and TPI	Bolt Hole Diameter	Blind Flange		Ring Groove
						Counter-bore Depth	Hub Height	
	R	*BC*	*N*		*BH*	*E*	J_4	
Tolerance	± 0.06	See figure for GDT		(Ref.)	+0.09/−0.02	max.	min.	
2000 psi								
$26^3/_4$	0.62	37.50	20	$1^3/_4$-8	1.88	0.844	0.38	BX 167
30	0.62	40.94	32	$1^5/_8$-8	1.75	0.906	0.69	BX 303
3000 psi								
$26^3/_4$	0.62	39.38	24	2-8	2.12	0.844	0.00	BX 168
30	0.62	42.94	32	$1^7/_8$-8	2.00	0.906	0.50	BX 303
5000 psi								
$13^5/_8$	0.62	23.25	16	$1^5/_8$-8	1.75	0.562	0.94	BX 160
$16^3/_4$	0.75	26.62	16	$1^7/_8$-8	2.00	0.328	0.69	BX 162
$18^3/_4$	0.62	31.62	20	2-8	2.12	0.719	0.75	BX 163
$21^1/_4$	0.69	34.88	24	2-8	2.12	0.750	0.88	BX 165

Table E.8—Type R Ring Grooves

Dimensions in inches; surface roughness in microinches

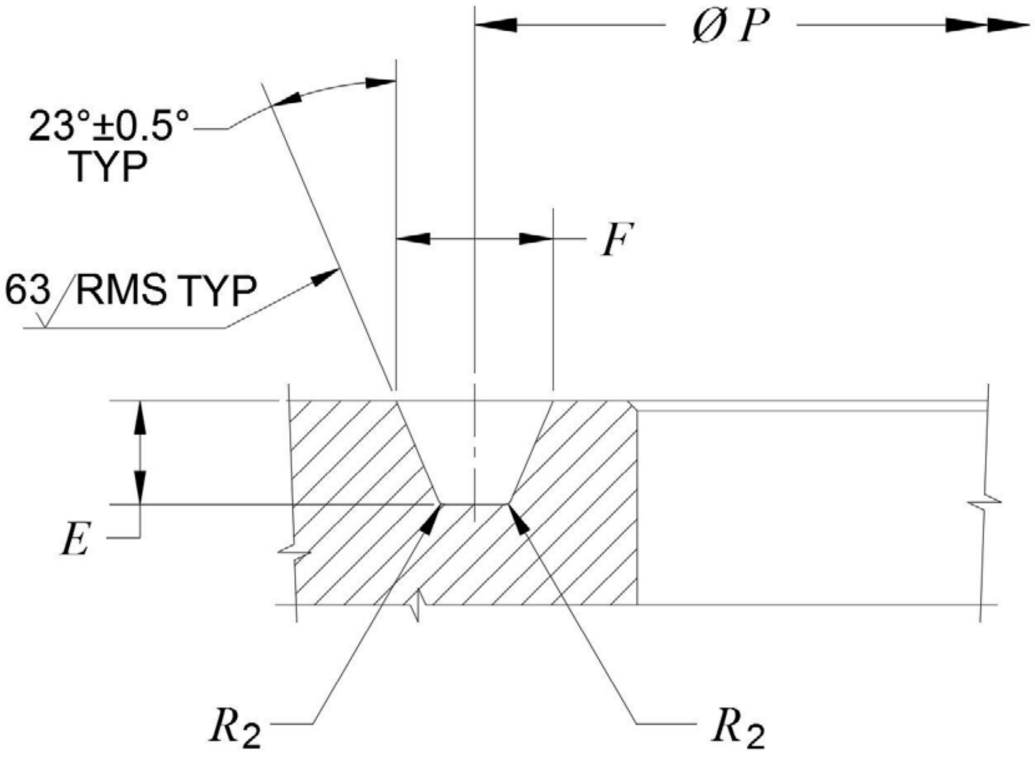


Table E.8—Type R Ring Grooves *(continued)*

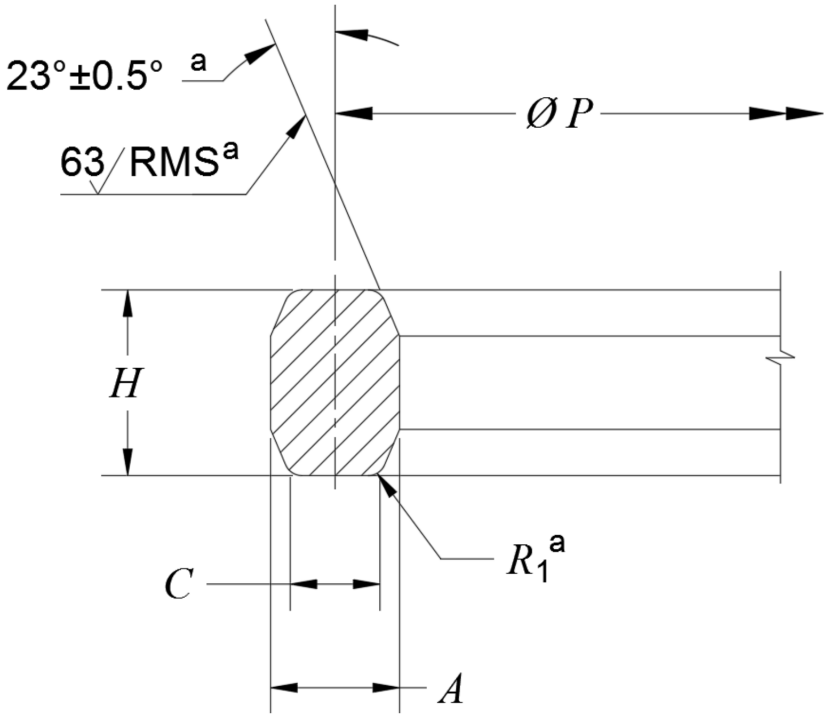
Dimensions in inches

Groove Number	Nominal Size of Flange	Pitch Diameter	Depth of Groove	Width of Groove	Radius in Groove
	in.	P	E	F	R_2
Tolerance>	(Ref.)	± 0.005	+0.02/−0	± 0.008	max.
R 23	$2^1/_{16}$	3.250	0.31	0.469	0.03
R 24	$2^1/_{16}$	3.750	0.31	0.469	0.03
R 26	$2^9/_{16}$	4.000	0.31	0.469	0.03
R 27	$2^9/_{16}$	4.250	0.31	0.469	0.03
R 31	$3^1/_8$	4.875	0.31	0.469	0.03
R 35	$3^1/_8$	5.375	0.31	0.469	0.03
R 37	$4^1/_{16}$	5.875	0.31	0.469	0.03
R 39	$4^1/_{16}$	6.375	0.31	0.469	0.03
R 41	$5^1/_8$	7.125	0.31	0.469	0.03
R 44	$5^1/_8$	7.625	0.31	0.469	0.03
R 45	$7^1/_{16}$	8.313	0.31	0.469	0.03
R 46	$7^1/_{16}$	8.313	0.38	0.531	0.06
R 49	9	10.625	0.31	0.469	0.03
R 50	9	10.625	0.44	0.656	0.06
R 53	11	12.750	0.31	0.469	0.03
R 54	11	12.750	0.44	0.656	0.06
R 57	$13^5/_8$	15.000	0.31	0.469	0.03
R 65	$16^3/_4$	18.500	0.31	0.469	0.03
R 66	$16^3/_4$	18.500	0.44	0.656	0.06
R 73	$21^1/_4$	23.000	0.38	0.531	0.06
R 74	$20^3/_4$	23.000	0.50	0.781	0.06

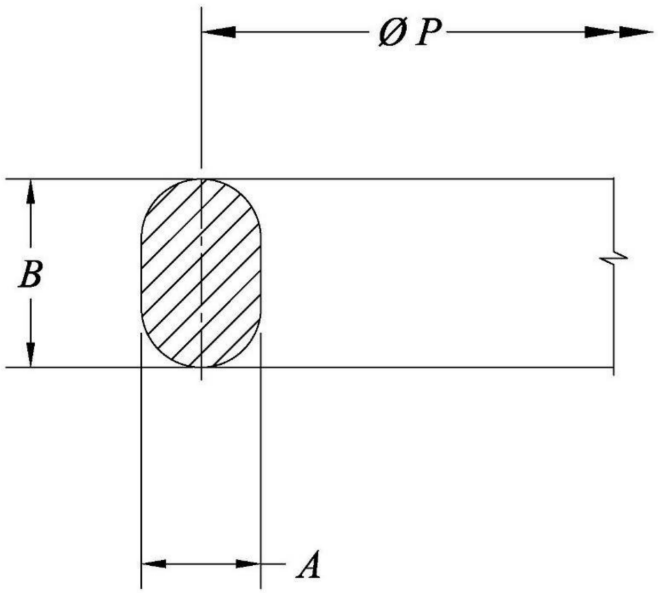
Table E.9—Type R Ring Gaskets

Dimensions in inches; surface roughness in microinches

a) Octagonal gasket style



b) Oval gasket style



FOOTNOTE

[a] Typical four places.

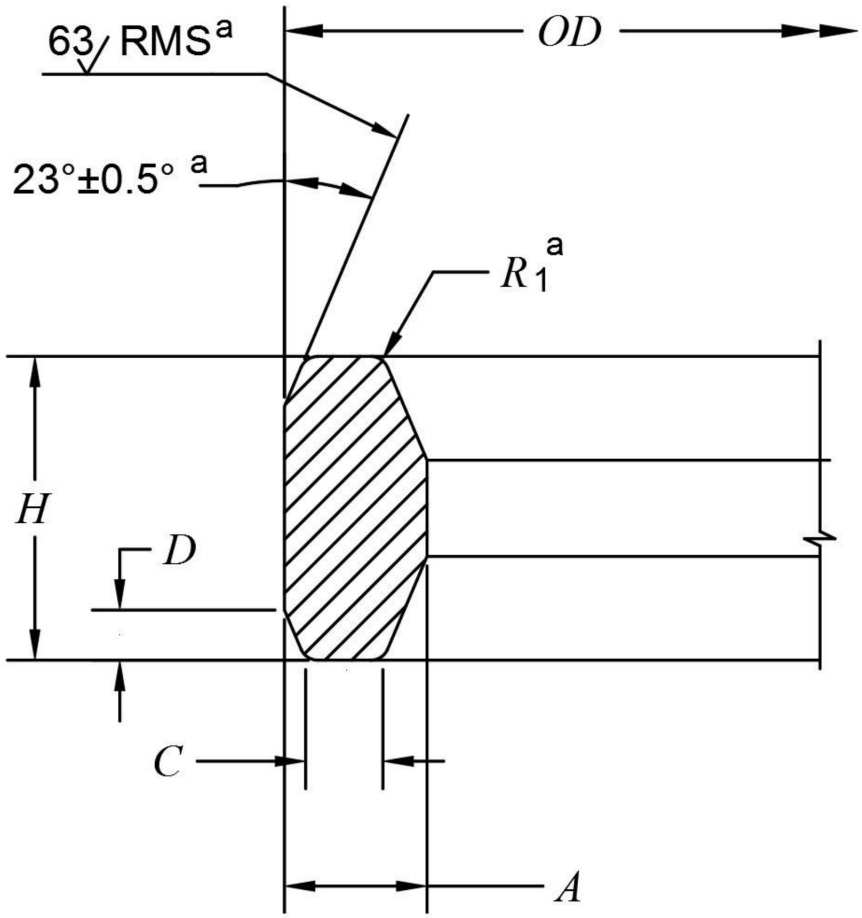
Table E.9—Type R Ring Gaskets *(continued)*

Dimensions in inches

Gasket Number	Pitch Diameter	Width of Ring	Height of Oval Ring	Height of Octagonal Ring	Width of Flat on Octagonal Ring	Radius on Octagonal Ring	Distance between Flanges
	P	*A*	*B*	*H*	*C*	R_1	*S*
Tolerance>	± 0.007	± 0.008	± 0.02	± 0.02	± 0.008	± 0.02	(Approx.)
R 23	3.250	0.438	0.69	0.63	0.305	0.06	0.19
R 24	3.750	0.438	0.69	0.63	0.305	0.06	0.19
R 26	4.000	0.438	0.69	0.63	0.305	0.06	0.19
R 27	4.250	0.438	0.69	0.63	0.305	0.06	0.19
R 31	4.875	0.438	0.69	0.63	0.305	0.06	0.19
R 35	5.375	0.438	0.69	0.63	0.305	0.06	0.19
R 37	5.875	0.438	0.69	0.63	0.305	0.06	0.19
R 39	6.375	0.438	0.69	0.63	0.305	0.06	0.19
R 41	7.125	0.438	0.69	0.63	0.305	0.06	0.19
R 44	7.625	0.438	0.69	0.63	0.305	0.06	0.19
R 45	8.313	0.438	0.69	0.63	0.305	0.06	0.19
R 46	8.313	0.500	0.75	0.69	0.341	0.06	0.19
R 49	10.625	0.438	0.69	0.63	0.305	0.06	0.19
R 50	10.625	0.625	0.88	0.81	0.413	0.06	0.16
R 53	12.750	0.438	0.69	0.63	0.305	0.06	0.19
R 54	12.750	0.625	0.88	0.81	0.413	0.06	0.16
R 57	15.000	0.438	0.69	0.63	0.305	0.06	0.19
R 65	18.500	0.438	0.69	0.63	0.305	0.06	0.19
R 66	18.500	0.625	0.88	0.81	0.413	0.06	0.16
R 73	23.000	0.500	0.75	0.69	0.341	0.06	0.13
R 74	23.000	0.750	1.00	0.94	0.485	0.06	0.19

Table E.10—Type RX Ring Gaskets

Dimensions in inches; surface roughness in microinches



FOOTNOTE

[a] Typical four places.

Table E.10—Type RX Ring Gaskets *(continued)*

Dimensions in inches

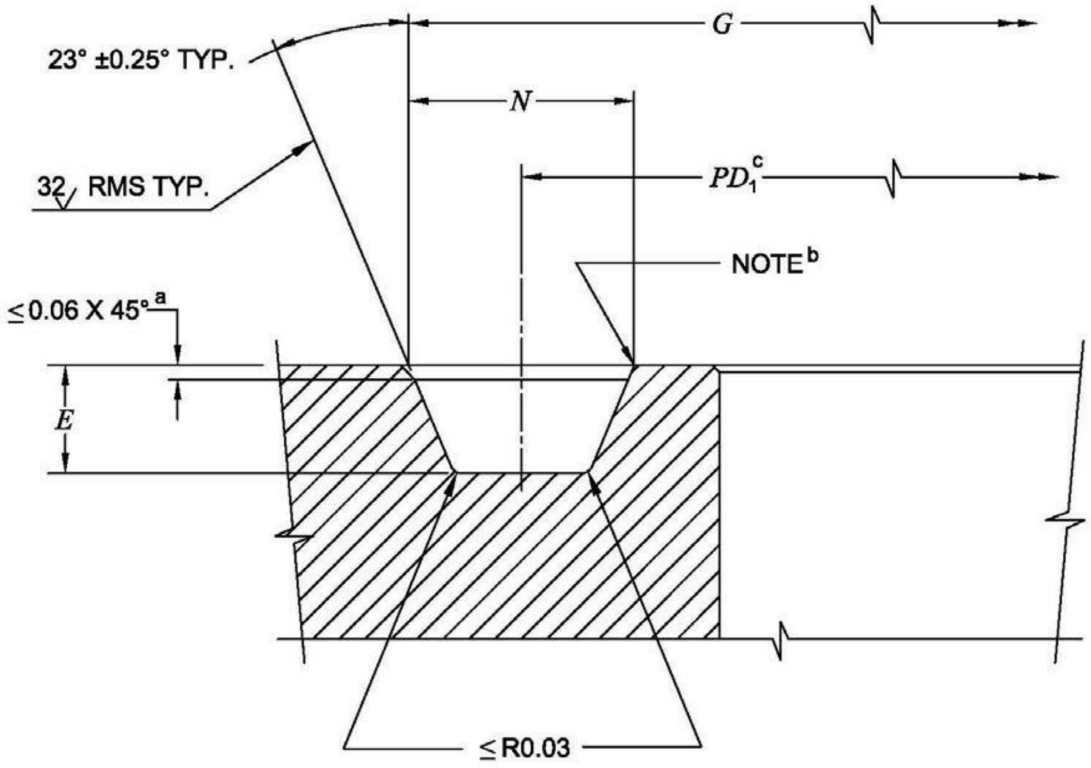
Groove Number	Outside Diameter OD	Width of Ring A [a]	Width of Flat C	Height of Ring H [a]	Height of OD Bevel D	Radius on Ring R_1	Distance between Flanges S
Tolerance>	+0.020/−0	+0.008/−0	+0.006/−0	+0.008/−0	+0/−0.030	± 0.02	(Approx.)
RX 23	3.672	0.469	0.254	1.000	0.167	0.06	0.47
RX 24	4.172	0.469	0.254	1.000	0.167	0.06	0.47
RX 26	4.406	0.469	0.254	1.000	0.167	0.06	0.47
RX 27	4.656	0.469	0.254	1.000	0.167	0.06	0.47
RX 31	5.297	0.469	0.254	1.000	0.167	0.06	0.47
RX 35	5.797	0.469	0.254	1.000	0.167	0.06	0.47
RX 37	6.297	0.469	0.254	1.000	0.167	0.06	0.47
RX 39	6.797	0.469	0.254	1.000	0.167	0.06	0.47
RX 41	7.547	0.469	0.254	1.000	0.167	0.06	0.47
RX 44	8.047	0.469	0.254	1.000	0.167	0.06	0.47
RX 45	8.734	0.469	0.254	1.000	0.167	0.06	0.47
RX 46	8.750	0.531	0.263	1.125	0.188	0.06	0.47
RX 49	11.047	0.469	0.254	1.000	0.167	0.06	0.47
RX 50	11.156	0.656	0.335	1.250	0.208	0.06	0.47
RX 53	13.172	0.469	0.254	1.000	0.167	0.06	0.47
RX 54	13.281	0.656	0.335	1.250	0.208	0.06	0.47
RX 57	15422	0.469	0.254	1.000	0.167	0.06	0.47
RX 65	18.922	0.469	0.254	1.000	0.167	0.06	0.47
RX 66	19.031	0.656	0.335	1.250	0.208	0.06	0.47
RX 73	23.469	0.531	0.263	1.250	0.208	0.06	0.59
RX 74	23.656	0.781	0.407	1.625	0.271	0.09	0.72

FOOTNOTE

[a] The variation in width A or height H of any ring shall not exceed 0.004 in. throughout its entire circumference.

Table E.11—Type BX Ring Grooves

Dimensions in inches; surface roughness in microinches



FOOTNOTES

[a] The 0.06 x 45° chamfer is optional and only applies to the outside (OD) of the groove.

[b] Break sharp corner 0.03 in. maximum at inside (ID) of the groove.

[c] Reference dimension.

Table E.11—Type BX Ring Grooves *(continued)*

Dimensions in inches

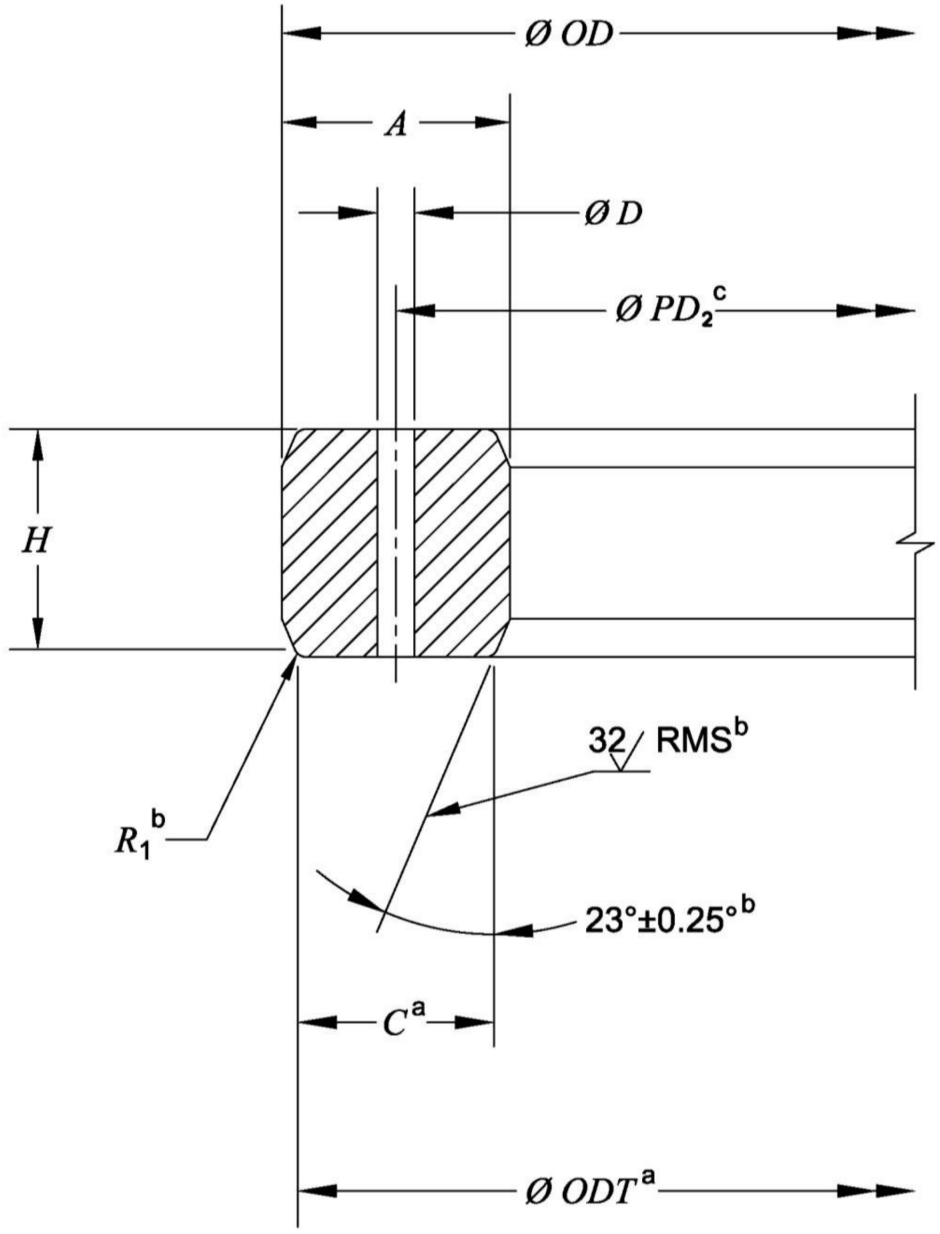
Groove Number	Nominal Size of Flange	Outside Diameter	Depth of Groove	Width of Groove	Pitch Diameter of Groove	Pitch Diameter of Gasket [a]
	in.	G	E	N	PD_1	PD_2
Tolerance>	(Ref.)	+0.004/−0	+0.02/−0	+0.004/−0	(Ref.)	(Ref.)
BX 151	$1^{13}/_{16}$	3.062	0.22	0.466	2.596	2.622
BX 152	$2^{1}/_{16}$	3.395	0.23	0.498	2.897	2.924
BX 153	$2^{9}/_{16}$	4.046	0.27	0.554	3.492	3.519
BX 154	$3^{1}/_{16}$	4.685	0.30	0.606	4.079	4.105
BX 155	$4^{1}/_{16}$	5.930	0.33	0.698	5.232	5.253
BX 156	$7^{1}/_{16}$	9.521	0.44	0.921	8.600	8.627
BX 157	9	11.774	0.50	1.039	10.735	10.760
BX 158	11	14.064	0.56	1.149	12.915	12.942
BX 159	$13^{5}/_{8}$	17.033	0.62	1.279	15.754	15.781
BX 160	$13^{5}/_{8}$	16.063	0.56	0.786	15.277	15.302
BX 161	$16^{3}/_{4}$	19.604	0.67	0.930	18.674	18.702
BX 162	$16^{3}/_{4}$	18.832	0.33	0.705	18.127	18.153
BX 163	$18^{3}/_{4}$	22.185	0.72	1.006	21.179	21.205
BX 164	$18^{3}/_{4}$	22.752	0.72	1.290	21.462	21.488
BX 165	$21^{1}/_{4}$	24.904	0.75	1.071	23.833	23.860
BX 166	$21^{1}/_{4}$	25.507	0.75	1.373	24.134	24.162
BX 167	$26^{3}/_{4}$	30.249	0.84	0.902	29.347	29.373
BX 168	$26^{3}/_{4}$	30.481	0.84	1.018	29.463	29.489
BX 169	$5^{1}/_{8}$	6.955	0.38	0.666	6.289	6.315
BX 170	9	8.696	0.33	0.705	7.991	8.017
BX 171	11	10.641	0.33	0.705	9.936	9.962
BX 172	$13^{5}/_{8}$	13.225	0.33	0.705	12.520	12.546
BX 303	30	33.949	0.89	1.078	32.871	32.898

FOOTNOTE

[a] PD_2 of gaskets provided for comparison purposes. See Table E.12 for ring gasket dimensions. Pitch diameter calculated using dimensions at middle of tolerance range.

Table E.12—Type BX Ring Gaskets

Dimensions in inches; surface roughness in microinches



FOOTNOTES

a Typical two places (top and bottom).

b Typical four places (all corners).

c Reference dimension (see Table E.11 for value).

Table E.12—Type BX Ring Gaskets *(continued)*

Dimensions in inches

Groove Number	Outside Diameter	Width of Ring	Height of Ring	Diameter of Flat	Width of Flat	Hole Size	Radius on Ring	
	OD	*A*	*H*	*ODT*	*C*	*D*	R_1	
Tolerance>	+0 −0.006	+0.008 −0	+0.008 −0	± 0.002	+0.006 −0	± 0.02	min.	max.
BX 151	3.008	0.379	0.379	2.954	0.325	0.06	0.03	0.05
BX 152	3.334	0.403	0.403	3.277	0.346	0.06	0.03	0.05
BX 153	3.974	0.448	0.448	3.910	0.385	0.06	0.04	0.05
BX 154	4.600	0.488	0.488	4.531	0.419	0.06	0.04	0.06
BX 155	5.825	0.560	0.560	5.746	0.481	0.06	0.04	0.07
BX 156	9.367	0.733	0.733	9.263	0.629	0.12	0.06	0.09
BX 157	11.593	0.826	0.826	11.476	0.709	0.12	0.07	0.10
BX 158	13.860	0.911	0.911	13.731	0.782	0.12	0.07	0.11
BX 159	16.800	1.012	1.012	16.657	0.869	0.12	0.08	0.12
BX 160	15.850	0.541	0.938	15.717	0.408	0.12	0.08	0.11
BX 161	19.347	0.638	1.105	19.191	0.482	0.12	0.09	0.13
BX 162	18.720	0.560	0.560	18.641	0.481	0.06	0.04	0.07
BX 163	21.896	0.684	1.185	21.728	0.516	0.12	0.09	0.14
BX 164	22.463	0.968	1.185	22.295	0.800	0.12	0.09	0.14
BX 165	24.595	0.728	1.261	24.417	0.550	0.12	0.10	0.15
BX 166	25.198	1.029	1.261	25.020	0.851	0.12	0.10	0.15
BX 167	29.896	0.516	1.412	29.696	0.316	0.06	0.11	0.17
BX 168	30.128	0.632	1.412	29.928	0.432	0.06	0.11	0.17
BX 169	6.831	0.509	0.624	6.743	0.421	0.06	0.05	0.07
BX 170	8.584	0.560	0.560	8.505	0.481	0.06	0.04	0.07
BX 171	10.529	0.560	0.560	10.450	0.481	0.06	0.04	0.07
BX 172	13.113	0.560	0.560	13.034	0.481	0.06	0.04	0.07
BX 303	33.573	0.668	1.494	33.361	0.457	0.06	0.12	0.18