

TABLE E. DIMENSIONS OF PLAIN, BOSS, INTEGRALLY CAST OR FORGED, AND WELDING NECK FLANGES
(For ratings see Tables 3, 5 and 6)

Flange size designation (nominal bore of pipe)	Approximate outside diameter of steel pipe*	Diameter of flange	Bolt circle diameter	No. of bolts	Diameter of bolts†	Dimensions of boss (Fig. 4)‡			Dimensions of steel welding necks (Fig. 6)				Thickness of flange					Flange size designation (nominal bore of pipe)			
						Boss length	Diameter at small end of boss	Maximum diameter at root of boss	Diameter at large end of neck	Diameter at small end of neck‡	Total length of neck	Length of taper	Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss or plain (Fig. 3)	Wrought steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Cast steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Forged or cast steel integral (Fig. 5) (for valves only)				
																			A	B	E
in	in	in	in		in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	
3/4	2 1/2	3 3/4	2 3/8	4	3/8	3/8	1 1/8	1 1/8	1 1/8	7/8	7/8	5/8	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
1	1 1/2	4	2 3/8	4	1/2	1/2	1 3/8	1 3/8	1 3/8	1 3/8	7/8	5/8	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
1 1/4	1 3/4	4 1/2	3 3/8	4	3/2	3/2	2 1/8	2 1/8	1 1/2	1 3/8	7/8	5/8	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
1 1/2	1 7/8	4 3/4	3 7/8	4	3/2	3/2	2 3/8	2 3/8	1 3/4	1 3/8	1	5/8	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
2	2 3/4	6	4 3/8	4	5/8	5/8	2 1/2	2 1/2	2 3/8	1 3/4	1 3/4	3/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
2 1/2	3	6 1/2	5	4	5/8	5/8	3 1/8	3 1/8	3 3/8	1 3/4	1 3/4	3/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
3	3 1/2	7 1/4	5 3/4	4	5/8	5/8	4 1/8	4 1/8	4	1 3/4	1 3/4	1	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
3 1/2	4	8	6 3/8	8	5/8	5/8	4 3/8	4 3/8	4 1/2	1 3/4	1 3/4	1	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
4	4 1/2	8 3/4	7	8	5/8	5/8	5 1/4	5 1/4	5 1/2	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
5	5 1/2	10	8 3/4	8	5/8	5/8	6 1/8	6 3/8	6	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
6	6 1/2	11	9 3/4	8	3/4	3/4	7 1/8	7 3/8	7 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
7	7 1/2	12	10 3/4	8	3/4	3/4	8 3/8	8 3/8	8 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
8	8 1/2	13 1/4	11 3/4	8	3/4	3/4	9 1/8	9 1/8	9 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
9	9 1/2	14 1/2	12 3/4	12	3/4	1	10 1/8	10 1/8	10 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
10	10 3/4	16	14	12	3/4	1 1/8	11 3/8	12 3/8	11 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
12	12 3/4	18	16	12	7/8	1 1/2	13 3/8	13 3/8	13 1/4	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
13	14	19 1/4	17 1/4	12	7/8	—	—	—	15	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
14	15 1/2	20 3/4	18 1/4	12	7/8	—	—	—	16	1 3/4	1 3/4	1 1/4	3/4	3/4	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8

* (H) For availability of steel pipe sizes, refer to B.S. 3601, 'Steel pipes and tubes for pressure purposes: carbon steel, ordinary duties' and B.S. 3602, 'Steel pipes and tubes for pressure purposes: carbon steel, high duties'. See B.S. 78, 'Cast iron spigot and socket pipes (vertically cast) and spigot and socket fittings: Part 1. Pipes', B.S. 1211, 'Centrifugally cast (spun) iron pressure pipes for water, gas and sewage', or B.S. 2035, 'Cast iron flanged pipes and flanged fittings', for outside diameters of cast iron pipes. See B.S. 1306: Part 2, 'Seamless copper tubes for steam services', for the sizes of copper pipes for use with copper alloy flanges up to 8 in bore.

† (O) For 3/8 in and 5/8 in bolts, the diameters of the holes shall be 1/2 in larger than the bolts and for 3/4 in bolts and sizes above, the diameters shall be not more than 1/8 in larger than the bolts. For cast iron flanges the diameters of the bolt holes may be 1/8 in larger than the bolts of sizes 5/8 in and above.

‡ (A, B and E) The diameters measured apply to pipes with outside diameter in accordance with the pipes designated by their bores, dimension K shall be such that the difference between the corresponding diameters K and H is maintained.

§ (H) It is recommended that this size for steel pipes should be avoided wherever possible.

¶ (A, B and E) Tapers are not specified but shall be such that the maximum diameters at root of boss are not exceeded.

⌈ (T₁ and T₂) It is impracticable to use thickness less than 1/2 in except for boss flanges or integral flanges.

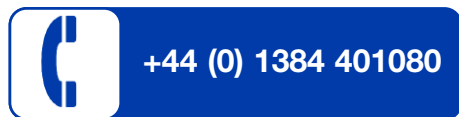


TABLE E (continued)

Flange size designation (nominal bore of pipe)	Approx. outside diameter of steel pipe*	Diameter of flange	Bolt circle diameter	No. of bolts	Diameter of bolts†	Dimensions of boss (Fig. 4)			Dimensions of steel welding necks (Fig. 6)				Thickness of flange					Flange size designation (nominal bore of pipe)
						Boss length	Diameter at small end of boss	Maximum diameter at root of boss	Diameter at large end of neck	Diameter at small end of neck‡	Total length of neck	Length of taper	Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss (Fig. 3)	Wrought steel integral or plain or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Cast steel integral or plain (Fig. 3) or welding neck (Fig. 6) (except for valves)	Forged or cast steel integral (Fig. 5) (for valves only)	
<i>H</i>	<i>D</i>	<i>P</i>	<i>N</i>	<i>O</i>	<i>A</i>	<i>B</i>	<i>E</i>	<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>	<i>T</i> ₁	<i>T</i> ₂	<i>T</i> ₃	<i>T</i> ₄	<i>T</i> ₅		
in	in	in	in	12	in	in	in	in	in	in	in	in	in	in	in	in	in	
15	16	21¾	19¾	12	¾	—	—	—	17	16¾ _e	3	2¾	1¾	1	1¾	1¾	1	15
16	—	22¾	20¾	12	¾	—	—	—	—	—	—	—	1¾	1	1¾	1¾	1	16
17	18	24	21¾	12	¾	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	17
18	—	25¾	23	16	¾	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	18
19	20	26¾	24	16	¾	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	19
20	—	27¾	25¾	16	¾	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	20
21	22	29	26¾	16	1	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	21
22	—	30	27¾	16	1	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	22
23	24	31	28¾	16	1	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	23
24	—	32¾	29¾	16	1¾	—	—	—	—	—	—	—	1¾	1¾	1¾	1¾	1¾	24
27	28	35¾	33¾	20	1¾	—	—	—	—	—	—	—	1¾	—	2	2	1¾	27
29	30	38¾	35¾	20	1¾	—	—	—	—	—	—	—	1¾	—	2½	2½	1¾	29
30	—	39¾	36¾	20	1¾	—	—	—	—	—	—	—	1¾	—	2½	2½	1¾	30
33	34	43	40	20	1¾	—	—	—	—	—	—	—	2	—	2½	2½	2	33
35	36	45	42	24	1¾	—	—	—	—	—	—	—	2	—	2½	2½	2	35
36	—	46¾	43	24	1¾	—	—	—	—	—	—	—	2	—	2½	2½	2	36
39	40	49¾	46¾	24	1¾	—	—	—	—	—	—	—	2½	—	2½	2½	2½	39
42	43	52½	49¾	28	1¾	—	—	—	—	—	—	—	2½	—	2½	2½	2½	42
45	—	55¾	52½	28	1¾	—	—	—	—	—	—	—	2½	—	3	3	2½	45
48	49	58¾	55¾	32	1¾	—	—	—	—	—	—	—	2½	—	3½	3½	2½	48

As altered
Apr. 1966

* (*H*) For availability of steel pipe sizes, refer to B.S. 3601, 'Steel pipes and tubes for pressure purposes: carbon steel, ordinary duties' and B.S. 3602, 'Steel pipes and tubes for pressure purposes: carbon steel, high duties'. See B.S. 78, 'Cast iron spigot and socket pipes (vertically cast) and spigot and socket fittings: Part 1. Pipes', B.S. 1211, 'Centrifugally cast (spun) iron pressure pipes for water, gas and sewage' or B.S. 2035, 'Cast iron flanged pipes and flanged fittings', for outside diameters of cast iron pipes. See B.S. 1306: Part 2, 'Seamless copper tubes for steam services', for the sizes of copper pipes for use with copper alloy flanges up to 8 in bore.

† (*O*) For ¾ in bolts and sizes above, the diameters shall be not more than ¼ in larger than the bolts.

‡ (*K*) The diameters tabulated apply to pipes with outside diameters in accordance with *H*. For pipes designated by their bores, dimension *K* shall be such that the difference between the corresponding diameters *K* and *H* is maintained.



TABLE D. DIMENSIONS OF PLAIN, BOSS, INTEGRALLY CAST OR FORGED AND WELDING NECK FLANGES
(For ratings see tables 3, 5 and 6)

AS altered Jan. 1963	Flange size designation (nominal bore of pipe)	Approx. outside diameter of steel pipe*	Diameter of flange	Bolt circle diameter	No. of bolts	Diameter of bolts†	Dimensions of boss (Fig. 4)‡			Dimensions of neck for cast iron (Fig. 7)		Dimensions of steel welding necks (Fig. 6)				Thickness of flange					Flange size designation (nominal bore of pipe)				
							Boss length	Diameter at small end of boss	Maximum diameter at root of boss	Diameter at large end of neck	Length of taper	Diameter at large end of neck	Diameter at small end of neck	Total length of neck	Length of taper	Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss or plain (Fig. 3)	Wrought steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Cast steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Forged or cast steel integral (Fig. 5) (for valves only)					
																						A	B	E	C
	in	in	in	in		in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	
	½	2½ ₂	3¾	2¾	4	½	¾	1½ _e	1¾	—	—	1½ _e	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	¾	1½ _e	4	2¾	4	½	¾	1¾	1¾	—	—	1½ _e	1¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	1	1½ ₂	4½	3¾	4	½	¾	1¾	2¼ _e	—	—	1½ _e	1¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	1¼	1½ _e	4¾	3¾ _e	4	½	¾	1¾	2¾ _e	—	—	1½ _e	1¾ ₂	1	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	1½	1½ ₂	5¼	3¾	4	½	¾	2¼ _e	2¾	—	—	2½ _e	1½ _e	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	2	2¾	6	4½	4	¾	¾	2½ _e	3¾	—	—	2¾	2½ ₂	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	2½	3	6½	5	4	¾	¾	3¾ _e	3¾ ₂	—	—	3¾	3¾ ₂	1¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	3	3½	7¼	5¾	4	¾	¾	4¾ _e	4¾ ₂	—	—	4	3½ ₂	1¾	1	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	3½	4	8	6½	4	¾	¾	1½ _e	4¾ _e	—	—	4½	4¾ _e	1¾	1	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	4	4½	8½	7	4	¾	¾	¾	5¼	—	—	5¾	4¾ _e	1¾	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	5	5½	10	8¾	8	¾	¾	6¾ _e	6¾	—	—	6	5¾ _e	1¾	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	6	6½	11	9¾	8	¾	¾	¾	7¾ _e	—	—	7¾	6¾ _e	1¾	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	7	7¾	12	10¾	8	¾	¾	¾	8¾ _e	—	—	8¾	7¾ ₂	2	1¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	8	8¾	13¼	11¾	8	¾	¾	¾	9¾ _e	—	—	9¾	8¾ ₂	2	1¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	9	9¾	14¾	12¾	8	¾	¾	1	10¾ _e	—	—	10¾	9¾ _e	2¼	1½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
	10	10¾	16	14	8	¾	¾	1½ _e	11¾ _e	—	—	11¾	10¾ _e	2½	1¾	1	¾	¾	¾	¾	¾	¾	¾	¾	¾
	12	12¾	18	16	12	¾	¾	1¾	13¾ _e	—	—	13¾	12¾ ₂	2¾	2	1	¾	¾	¾	¾	¾	¾	¾	¾	¾
	13	14	19¾	17¾	12	¾	¾	—	—	—	—	15	14¾ ₂	2¾	2½	1	¾	¾	¾	¾	¾	¾	¾	¾	¾
	14	15	20¾	18¾	12	¾	¾	—	—	—	—	16	15¾ ₂	2¾	2½	1½	1	¾	¾	¾	¾	¾	¾	¾	¾
	15	16	21¾	19¾	12	¾	¾	—	—	—	—	17	16¾ _e	3	2¼	1½	1	¾	¾	¾	¾	¾	¾	¾	¾
	16	—	22¾	20¾	12	¾	¾	—	—	—	—	—	—	—	—	—	1½	1	¾	¾	¾	¾	¾	¾	¾

* (H) For availability of steel pipe sizes, refer to B.S. 3601, 'Steel pipes and tubes for pressure purposes: carbon steel, ordinary duties' and B.S. 3602, 'Steel pipes and tubes for pressure purposes: carbon steel, high duties'. See B.S. 78, 'Cast iron spigot and socket pipes (vertically cast) and spigot and socket fittings: Part 1. Pipes', B.S. 1211, 'Centrifugally cast (spun) iron pressure pipes for water, gas and sewage', or B.S. 2035, 'Cast iron flanged pipes and flanged fittings', for outside diameters of cast iron pipes. See B.S. 1306: Part 2, 'Seamless copper tubes for steam services', for the sizes of copper pipes for use with copper alloy flanges up to 8 in bore.
 † (O) For ½ in and ¾ in bolts, the diameters of the holes shall be ¼_e in larger than the bolts and for ¾ in bolts and sizes above, the diameters shall be not more than ½ in larger than the bolts. For cast iron flanges the diameters of the bolt holes may be ½ in larger than the bolts of sizes ¾ in and above.

‡ (K) The diameters tabulated apply to pipes with outside diameters in accordance with H. For pipes designated by their bores, dimension K shall be such that the difference between the corresponding diameters K and H is maintained.
 || (H) It is recommended that this size for steel pipes should be avoided wherever possible.
 § (A, B & E) Tapers are not specified but shall be such that the maximum diameters at root of boss are not exceeded.
 ¶ (T₁ and T₂) It is impracticable to use thickness less than ¼ in except for boss flanges or integral flanges.



TABLE D (continued)

Flange size designation (nominal bore of pipe)	Approx. outside diameter of steel pipe*	Diameter of flange	Bolt circle diameter	No. of bolts	Diameter of bolts†	Dimensions of boss (Fig. 4)			Dimensions of necks for cast iron (Fig. 7)		Dimensions of steel welding necks (Fig. 6)				Thickness of flange					Flange size designation (nominal bore of pipe)		
						Boss length	Diameter at small end of boss	Maximum diameter at root of boss	Diameter at large end of neck	Length of taper	Diameter at large end of neck	Diameter at small end of neck	Total length of neck	Length of taper	Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss or plain (Fig. 3)	Wrought steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 6) (except for valves)	Cast steel integral or plain (Fig. 3) or boss (Fig. 4) or welding neck (Fig. 5) (except for valves)	Forged or cast steel integral (Fig. 5) (for valves only)			
																					A	B
in	in	in	in		in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in
17	18	24	21¼	12	¾	—	—	—	—	—	—	—	—	—	1½	1½	1	1½	1½	1½	17	
18	—	25¼	23	12	¾	—	—	—	—	—	—	—	—	—	1½	1½	1	1½	1½	1½	18	
19	20	26½	24	12	¾	—	—	—	—	—	—	—	—	—	1½	1½	1	1½	1½	1½	19	
20	—	27¼	25¼	16	¾	—	—	—	—	—	—	—	—	—	1½	1½	1½	1½	1½	1½	20	
21	22	29	26½	16	¾	—	—	—	—	—	—	—	—	—	1½	1½	1½	1½	1½	1½	21	
22	—	30	27¼	16	1	—	—	—	—	—	—	—	—	—	1½	1½	1½	1½	1½	1½	22	
23	24	31	28¼	16	1	—	—	—	—	—	—	—	—	—	1½	1½	1½	1½	1½	1½	23	
24	—	32¼	29¾	16	1	—	—	—	—	—	—	—	—	—	1½	1½	1½	1½	1½	1½	24	
27	28	35¾	33¼	20	1	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	27	
29	30	38¼	35½	20	1½	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	29	
30	—	39¼	36½	20	1½	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	30	
33	34	43	40	20	1½	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	33	
35	36	45	42	24	1½	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	35	
36	—	46¼	43	24	1½	—	—	—	—	—	—	—	—	—	1½	—	1½	1½	1½	1½	36	
39	40	49¼	46¼	24	1½	—	—	—	—	—	—	—	—	—	1½	—	2	2	2	2	39	
42	43	52¼	49¼	28	1½	—	—	—	—	—	—	—	—	—	1½	—	2½	2½	2½	2½	42	
45	—	55¼	52¼	28	1½	—	—	—	—	—	—	—	—	—	2	—	2½	2½	2	2	45	
48	49	58¾	55½	32	1½	—	—	—	—	—	—	—	—	—	2	—	2½	2½	2	2	48	
54	55	63¼	60¼	36	1½	—	—	—	—	—	—	—	—	—	2½	—	2½	2½	2½	2½	54	
60	61	70¼	67	40	1½	—	—	—	—	—	—	—	—	—	2½	—	2½	2½	2½	2½	60	
66	67¼	76½	73¼	40	1½	—	—	—	—	—	—	—	—	—	2½	—	2½	2½	2½	2½	66	
72	73¼	83	79¼	44	1½	—	—	—	—	—	—	—	—	—	2½	—	2½	2½	2½	2½	72	
78	—	89¼	86	44	1½	—	—	—	82	2½	—	—	—	—	2½	—	3	—	—	—	78	
84	—	96¼	92¾	44	1½	—	—	—	88¼	2½	—	—	—	—	2½	—	3½	—	—	—	84	
96	—	109¼	105¼	52	1½	—	—	—	100¾	3½	—	—	—	—	3½	—	3½	—	—	—	96	
108	—	121¾	117¾	56	1½	—	—	—	113¼	4¼	—	—	—	—	3½	—	4	—	—	—	108	
120	—	135	130¼	60	2	—	—	—	125¼	4¼	—	—	—	—	3½	—	4½	—	—	—	120	

As altered Apr. 1966

* (H) For availability of steel pipe sizes, refer to B.S. 3601, 'Steel pipes and tubes for pressure purposes: carbon steel, ordinary duties' and B.S. 3602, 'Steel pipes and tubes for pressure purposes: carbon steel, high duties'. See B.S. 78, 'Cast iron spigot and socket pipes (vertically cast) and spigot and socket fittings: Part 1. Pipes'; B.S. 1211, 'Centrifugally cast (spun) iron pressure pipes for water, gas and sewage'; or B.S. 2035, 'Cast iron flanged pipes

and flanged fittings', for outside diameters of cast iron pipes. See B.S. 1506: Part 2, 'Seamless copper tubes for steam services', for the sizes of copper pipes for use with copper alloy flanges up to 8 in bore.
 † (O) For ¾ in bolts and sizes above, the diameters shall be not more than ¼ in larger than the bolts.