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मानक

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IS 7876 (1975): Gauge allowances and manufacturing tolerances for plain gauges for outside measurements for ISO fit sizes (nominal size up to 500 mm) [PGD 25: Engineering Metrology]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

GAUGE ALLOWANCES AND MANUFACTURING
TOLERANCES FOR PLAIN GAUGES FOR OUTSIDE
MEASUREMENTS FOR ISO FIT SIZES
(NOMINAL SIZE UP TO 500 mm)

1. Scope — Lays down the gauge allowances and manufacturing tolerances for plain snap gauges, ring gauges and reference discs for gap gauges for outside measurements (shafts) for ISO fit sizes up to 500 mm nominal size.

2. Symbols — Following symbols are used in this standard (see also Fig. 1):

A_{gn} = Gauge allowance for GO member, new;

A_{ng} = Gauge allowance for NO GO member;

A_{gw} = Wear allowance for GO member, worn out;

y_1 = Margin, outside the GO workpiece limit, of the wear limit of gauges for shafts;

Note — For grades 9 and above, $y_1 = 0$.

z_1 = Distance between the centre of tolerance zone of new GO gauges for shafts and GO workpiece limit;

Note — For values of y_1 and z_1 , see Table 3 of IS : 3455-1971 'Gauging practice for plain workpieces (first revision)'.

α_1 = Safety zone provided for compensating measuring uncertainties of gauges for shafts of nominal diameter above 180 mm;

H_1 = Tolerance on gauges for shafts (other than reference discs for gap gauges);

H_p = Tolerance on reference discs for gap gauges;

N = Nominal size of the workpiece;

T = Tolerance of the workpiece;

G = Upper deviation of the workpiece; and

K = Lower deviation of the workpiece.

3. Formulae for Determining Gauge Dimensions

Gauge Member	Formulae	Examples for Calculation		
		Snap Gauges and Ring Gauges		Reference Disc for Gap Gauges
		25 e8	100 h9	200 r6
GO member, new	$(N + A_{gn}) \pm \frac{H_1^*}{2}$	$(25 - 0.045) \pm 0.003$ = 24.955 \pm 0.003	$(100 - 0.015) \pm 0.005$ = 99.985 \pm 0.005	$(200 + 0.099) \pm 0.002$ 25 = 200.099 \pm 0.002 25
NO GO member	$(N + A_{ng}) \pm \frac{H_1^*}{2}$	$(25 - 0.073) \pm 0.003$ = 24.927 \pm 0.003	$(100 - 0.087) \pm 0.005$ = 99.913 \pm 0.005	$(200 + 0.079) \pm 0.002$ 25 = 200.079 \pm 0.002 25
GO member, worn out	$N + A_{gw}$	25 - 0.036 = 24.964	100 - 0 = 100	200 + 0.109 = 200.109

$\frac{*H_p}{2}$ should be substituted for $\frac{H_1^*}{2}$ in the formulae for reference discs for gap gauges.

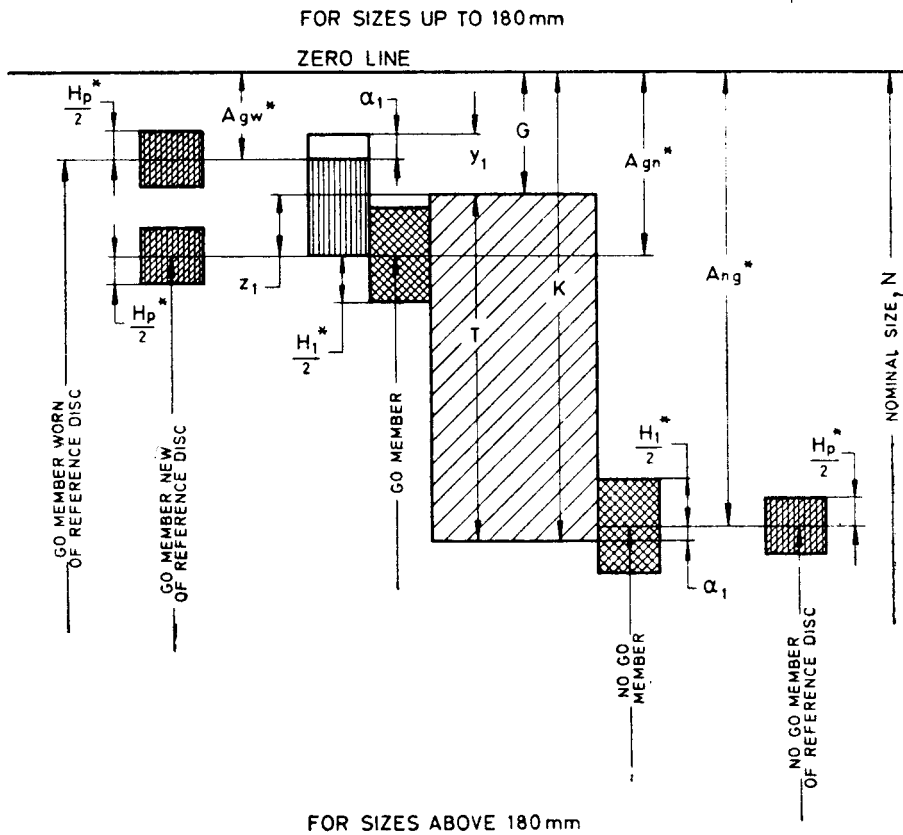
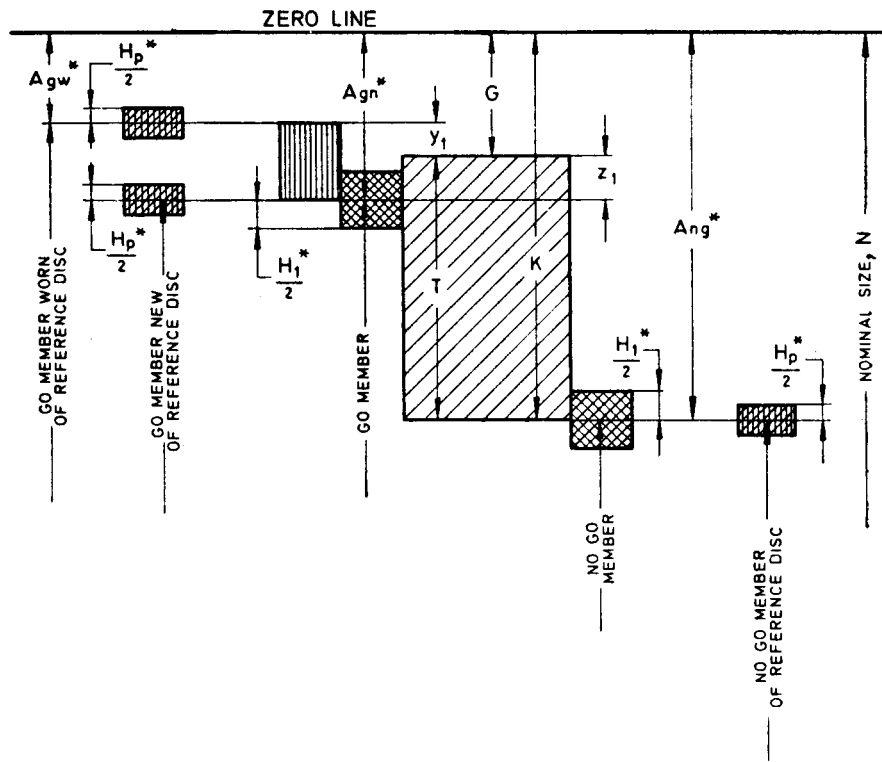
4. Disposition of Tolerance for Snap Gauges, Ring Gauges and Reference Discs for Gap Gauges — Figure 1 shows the disposition of tolerance for the snap gauges, ring gauges and reference discs for gap gauges with relation to workpiece tolerance.

5. Calculated Values — Calculated values (in μm) of the gauge allowances for snap gauges, ring gauges and reference discs for gap gauges for a few selected ISO-tolerance zones are given in Table 1 under A.

Adopted 10 October 1975

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*For values in μm , see Table 1.

FIG. 1 DISPOSITION OF TOLERANCES

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS

(Clause 5)

All values in μm .

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		a11			b11			c11		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw Agn Ang	-270 -280 -330	— 2 2	0.6	-140 -150 -200	— 2 2	0.6	-80 -70 -120	— 2 2	0.6
3	6	Agw Agn Ang	-270 -282 -345	— 2.5 2.5	0.75	-140 -152 -215	— 2.5 2.5	0.75	-70 -82 -145	— 2.5 2.5	0.75
6	10	Agw Agn Ang	-280 -294 -370	— 3 3	0.75	-150 -164 -240	— 3 3	0.75	-80 -94 -170	— 3 3	0.75
10	18	Agw Agn Ang	-290 -306 -400	— 4 4	1	-150 -166 -260	— 4 4	1	-95 -111 -205	— 4 4	1
18	30	Agw Agn Ang	-300 -319 -430	— 4.5 4.5	1.25	-160 -179 -290	— 4.5 4.5	1.25	-110 -129 -240	— 4.5 4.5	1.25
30	40	Agw Agn Ang	-310 -332 -470	— 5.5 5.5	1.25	-170 -192 -330	— 5.5 5.5	1.25	-120 -142 -280	— 5.5 5.5	1.25
40	50	Agw Agn Ang	-320 -342 -480	— 5.5 5.5	1.25	-180 -202 -340	— 5.5 5.5	1.25	-130 -152 -290	— 5.5 5.5	1.25
50	65	Agw Agn Ang	-340 -365 -530	— 6.5 6.5	1.5	-190 -215 -380	— 6.5 6.5	1.5	-140 -165 -330	— 6.5 6.5	1.5
65	80	Agw Agn Ang	-360 -385 -550	— 6.5 6.5	1.5	-200 -225 -390	— 6.5 6.5	1.5	-150 -175 -340	— 6.5 6.5	1.5
80	100	Agw Agn Ang	-380 -408 -600	— 7.5 7.5	2	-220 -248 -440	— 7.5 7.5	2	-170 -198 -390	— 7.5 7.5	2
100	120	Agw Agn Ang	-410 -438 -630	— 7.5 7.5	2	-240 -268 -460	— 7.5 7.5	2	-180 -208 -400	— 7.5 7.5	2
120	140	Agw Agn Ang	-460 -492 -710	— 9 9	2.5	-260 -292 -510	— 9 9	2.5	-200 -232 -450	— 9 9	2.5
140	160	Agw Agn Ang	-520 -552 -770	— 9 9	2.5	-280 -312 -530	— 9 9	2.5	-210 -242 -460	— 9 9	2.5
160	180	Agw Agn Ang	-580 -612 -830	— 9 9	2.5	-310 -342 -560	— 9 9	2.5	-230 -262 -480	— 9 9	2.5
180	200	Agw Agn Ang	-670 -700 -940	— 10 10	3.5	-350 -380 -620	— 10 10	3.5	-250 -280 -520	— 10 10	3.5
200	225	Agw Agn Ang	-750 -780 -1020	— 10 10	3.5	-390 -420 -660	— 10 10	3.5	-270 -300 -540	— 10 10	3.5
225	250	Agw Agn Ang	-830 -860 -1100	— 10 10	3.5	-430 -460 -700	— 10 10	3.5	-290 -320 -560	— 10 10	3.5
250	280	Agw Agn Ang	-935 -965 -1225	— 11.5 11.5	4	-495 -525 -785	— 11.5 11.5	4	-315 -345 -605	— 11.5 11.5	4
280	315	Agw Agn Ang	-1065 -1095 -1355	— 11.5 11.5	4	-555 -585 -845	— 11.5 11.5	4	-345 -375 -635	— 11.5 11.5	4
315	355	Agw Agn Ang	-1215 -1250 -1545	— 12.5 12.5	4.5	-615 -650 -945	— 12.5 12.5	4.5	-375 -410 -705	— 12.5 12.5	4.5
355	400	Agw Agn Ang	-1365 -1400 -1695	— 12.5 12.5	4.5	-695 -730 -1025	— 12.5 12.5	4.5	-415 -450 -745	— 12.5 12.5	4.5
400	450	Agw Agn Ang	-1520 -1555 -1880	— 13.5 13.5	5	-780 -815 -1140	— 13.5 13.5	5	-460 -495 -820	— 13.5 13.5	5
450	500	Agw Agn Ang	-1670 -1705 -2030	— 13.5 13.5	5	-860 -895 -1220	— 13.5 13.5	5	-500 -535 -860	— 13.5 13.5	5

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		d8			d9			d10		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	- 17	—	—	- 20	—	—	- 20	—	—
		Ag _n	- 22	1.5	0.6	- 25	1.5	0.6	- 25	1.5	0.6
		Ang	- 34	1.5	—	- 45	1.5	—	- 60	1.5	—
3	6	Agw	- 27	—	—	- 30	—	—	- 30	—	—
		Ag _n	- 33	2	0.75	- 36	2	0.75	- 36	2	0.75
		Ang	- 48	2	—	- 60	2	—	- 78	2	—
6	10	Agw	- 37	—	—	- 40	—	—	- 40	—	—
		Ag _n	- 43	2	0.75	- 47	2	0.75	- 47	2	0.75
		Ang	- 62	2	—	- 76	2	—	- 98	2	—
10	18	Agw	- 46	—	—	- 50	—	—	- 50	—	—
		Ag _n	- 54	2.5	1	- 58	2.5	1	- 58	2.5	1
		Ang	- 77	2.5	—	- 93	2.5	—	- 120	2.5	—
18	30	Agw	- 61	—	—	- 65	—	—	- 65	—	—
		Ag _n	- 70	3	1.25	- 74	3	1.25	- 74	3	1.25
		Ang	- 98	3	—	- 117	3	—	- 149	3	—
30	50	Agw	- 75	—	—	- 80	—	—	- 80	—	—
		Ag _n	- 86	3.5	1.25	- 91	3.5	1.25	- 91	3.5	1.25
		Ang	- 119	3.5	—	- 142	3.5	—	- 180	3.5	—
50	80	Agw	- 95	—	—	- 100	—	—	- 100	—	—
		Ag _n	- 107	4	1.5	- 113	4	1.5	- 113	4	1.5
		Ang	- 146	4	—	- 174	4	—	- 220	4	—
80	120	Agw	- 114	—	—	- 120	—	—	- 120	—	—
		Ag _n	- 128	5	2	- 135	5	2	- 135	5	2
		Ang	- 174	5	—	- 207	5	—	- 260	5	—
120	180	Agw	- 139	—	—	- 145	—	—	- 145	—	—
		Ag _n	- 154	6	2.5	- 163	6	2.5	- 163	6	2.5
		Ang	- 208	6	—	- 245	6	—	- 305	6	—
180	250	Agw	- 167	—	—	- 174	—	—	- 177	—	—
		Ag _n	- 182	7	3.5	- 191	7	3.5	- 194	7	3.5
		Ang	- 238	7	—	- 281	7	—	- 348	7	—
250	315	Agw	- 187	—	—	- 196	—	—	- 199	—	—
		Ag _n	- 204	8	4	- 214	8	4	- 217	8	4
		Ang	- 265	8	—	- 314	8	—	- 391	8	—
315	400	Agw	- 208	—	—	- 217	—	—	- 221	—	—
		Ag _n	- 226	9	4.5	- 238	9	4.5	- 242	9	4.5
		Ang	- 292	9	—	- 343	9	—	- 429	9	—
400	500	Agw	- 228	—	—	- 239	—	—	- 244	—	—
		Ag _n	- 248	10	5	- 262	10	5	- 267	10	5
		Ang	- 318	10	—	- 376	10	—	- 466	10	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		e7			e8			e9		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	-12.5	—	—	-11	—	—	-14	—	—
		Agn	-15.5	1	0.4	-16	1.5	0.6	-19	1.5	0.6
		Ang	-24	1	—	-28	1.5	—	-39	1.5	—
3	6	Agw	-18.5	—	—	-17	—	—	-20	—	—
		Agn	-22	1.25	0.5	-23	2	0.75	-26	2	0.75
		Ang	-32	1.25	—	-38	2	—	-50	2	—
6	10	Agw	-23.5	—	—	-22	—	—	-25	—	—
		Agn	-27	1.25	0.5	-28	2	0.75	-32	2	0.75
		Ang	-40	1.25	—	-47	2	—	-61	2	—
10	18	Agw	-30	—	—	-28	—	—	-32	—	—
		Agn	-34.5	1.5	0.6	-36	2.5	1	-40	2.5	1
		Ang	-50	1.5	—	-59	2.5	—	-75	2.5	—
18	30	Agw	-37	—	—	-36	—	—	-40	—	—
		Agn	-43	2	0.75	-45	3	1.25	-49	3	1.25
		Ang	-61	2	—	-73	3	—	-92	3	—
30	50	Agw	-47	—	—	-45	—	—	-50	—	—
		Agn	-53.5	2	0.75	-56	3.5	1.25	-61	3.5	1.25
		Ang	-75	2	—	-89	3.5	—	-112	3.5	—
50	80	Agw	-57	—	—	-55	—	—	-60	—	—
		Agn	-64	2.5	1	-67	4	1.5	-73	4	1.5
		Ang	-90	2.5	—	-106	4	—	-134	4	—
80	120	Agw	-68	—	—	-66	—	—	-72	—	—
		Agn	-77	3	1.25	-80	5	2	-87	5	2
		Ang	-107	3	—	-126	5	—	-159	5	—
120	180	Agw	-81	—	—	-79	—	—	-85	—	—
		Agn	-91	4	1.75	-94	6	2.5	-103	6	2.5
		Ang	-125	4	—	-148	6	—	-185	6	—
180	250	Agw	-97	—	—	-97	—	—	-104	—	—
		Agn	-107	5	2.25	-112	7	3.5	-121	7	3.5
		Ang	-143	5	—	-168	7	—	-211	7	—
250	315	Agw	-107	—	—	-107	—	—	-116	—	—
		Agn	-118	6	3	-124	8	4	-134	8	4
		Ang	-158	6	—	-185	8	—	-234	8	—
315	400	Agw	-123	—	—	-123	—	—	-132	—	—
		Agn	-135	6.5	3.5	-141	9	4.5	-153	9	4.5
		Ang	-176	6.5	—	-207	9	—	-258	9	—
400	500	Agw	-133	—	—	-133	—	—	-144	—	—
		Agn	-146	7.5	4	-153	10	5	-167	10	5
		Ang	-191	7.5	—	-223	10	—	-281	10	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		f6			f7			f8		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_D}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_D}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_D}{2}$
—	3	Agw	- 4.5	—	—	- 4.5	—	—	- 3	—	—
		Agn	- 7.5	1	0.4	- 7.5	1	0.4	- 8	1.5	0.6
		Ang	- 12	1	—	- 16	1	—	- 20	1.5	—
3	6	Agw	- 8.5	—	—	- 8.5	—	—	- 7	—	—
		Agn	- 12	1.25	0.5	- 12	1.25	0.5	- 13	2	0.75
		Ang	- 18	1.25	—	- 22	1.25	—	- 28	2	—
6	10	Agw	- 11.5	—	—	- 11.5	—	—	- 10	—	—
		Agn	- 15	1.25	0.5	- 15	1.25	0.5	- 16	2	0.75
		Ang	- 22	1.25	—	- 28	1.25	—	- 35	2	—
10	18	Agw	- 14	—	—	- 14	—	—	- 12	—	—
		Agn	- 18.5	1.5	0.6	- 18.5	1.5	0.6	- 20	2.5	1
		Ang	- 27	1.5	—	- 34	1.5	—	- 43	2.5	—
18	30	Agw	- 17	—	—	- 17	—	—	- 16	—	—
		Agn	- 23	2	0.75	- 23	2	0.75	- 25	3	1.25
		Ang	- 33	2	—	- 41	2	—	- 53	3	—
30	50	Agw	- 22	—	—	- 22	—	—	- 20	—	—
		Agn	- 28.5	2	0.75	- 28.5	2	0.75	- 31	3.5	1.25
		Ang	- 41	2	—	- 50	2	—	- 64	3.5	—
50	80	Agw	- 27	—	—	- 27	—	—	- 25	—	—
		Agn	- 34	2.5	1	- 34	2.5	1	- 37	4	1.5
		Ang	- 49	2.5	—	- 60	2.5	—	- 76	4	—
80	120	Agw	- 32	—	—	- 32	—	—	- 30	—	—
		Agn	- 41	3	1.25	- 41	3	1.25	- 44	5	2
		Ang	- 58	3	—	- 71	3	—	- 90	5	—
120	180	Agw	- 39	—	—	- 39	—	—	- 37	—	—
		Agn	- 49	4	1.75	- 49	4	1.75	- 52	6	2.5
		Ang	- 68	4	—	- 83	4	—	- 108	6	—
180	250	Agw	- 47	—	—	- 47	—	—	- 47	—	—
		Agn	- 57	5	2.25	- 57	5	2.25	- 62	7	3.5
		Ang	- 77	5	—	- 93	5	—	- 118	7	—
250	315	Agw	- 53	—	—	- 53	—	—	- 53	—	—
		Agn	- 64	6	3	- 64	6	3	- 70	8	4
		Ang	- 85	6	—	- 104	6	—	- 131	8	—
315	400	Agw	- 60	—	—	- 60	—	—	- 60	—	—
		Agn	- 72	6.5	3.5	- 72	6.5	3.5	- 78	9	4.5
		Ang	- 94	6.5	—	- 113	6.5	—	- 144	9	—
400	500	Agw	- 66	—	—	- 66	—	—	- 66	—	—
		Agn	- 79	7.5	4	- 79	7.5	4	- 86	10	5
		Ang	- 103	7.5	—	- 124	7.5	—	- 156	10	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS					
OVER	UP TO AND INCLUDING		95			96		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	- 1	—	—	- 0.5	—	—
		Agn	- 3	0.6	0.4	- 3.5	1	0.4
		Ang	- 6	0.6	—	- 8	1	—
3	6	Agw	- 3	—	—	- 2.5	—	—
		Agn	- 5	0.75	0.5	- 6	1.25	0.5
		Ang	- 9	0.75	—	- 12	1.25	—
6	10	Agw	- 4	—	—	- 3.5	—	—
		Agn	- 6	0.75	0.5	- 7	1.25	0.5
		Ang	- 11	0.75	—	- 14	1.25	—
10	18	Agw	- 4.5	—	—	- 4	—	—
		Agn	- 7.5	1	0.6	- 8.5	1.5	0.6
		Ang	- 14	1	—	- 17	1.5	—
18	30	Agw	- 5	—	—	- 4	—	—
		Agn	- 8.5	1.25	0.75	- 10	2	0.75
		Ang	- 16	1.25	—	- 20	2	—
30	50	Agw	- 7	—	—	- 6	—	—
		Agn	- 11	1.25	0.75	- 12.5	2	0.75
		Ang	- 20	1.25	—	- 25	2	—
50	80	Agw	- 8	—	—	- 7	—	—
		Agn	- 12	1.5	1	- 14	2.5	1
		Ang	- 23	1.5	—	- 29	2.5	—
80	120	Agw	- 9	—	—	- 8	—	—
		Agn	- 14.5	2	1.25	- 17	3	1.25
		Ang	- 27	2	—	- 34	3	—
120	180	Agw	- 11	—	—	- 10	—	—
		Agn	- 17	2.5	1.75	- 20	4	1.75
		Ang	- 32	2.5	—	- 39	4	—
180	250	Agw	- 13	—	—	- 12	—	—
		Agn	- 19	3.5	2.25	- 22	5	2.25
		Ang	- 34	3.5	—	- 42	5	—
250	315	Agw	- 15.5	—	—	- 14	—	—
		Agn	- 22	4	3	- 25	6	3
		Ang	- 38.5	4	—	- 46	6	—
315	400	Agw	- 16.5	—	—	- 16	—	—
		Agn	- 24	4.5	3.5	- 28	6.5	3.5
		Ang	- 40.5	4.5	—	- 50	6.5	—
400	500	Agw	- 19	—	—	- 18	—	—
		Agn	- 27	5	4	- 31	7.5	4
		Ang	- 44	5	—	- 55	7.5	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		h5			h6			h7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	+ 1	—	—	+ 1.5	—	—	+ 1.5	—	—
		Agn	- 1	0.6	0.4	- 1.5	1	0.4	- 1.5	1	0.4
		Ang	- 4	0.6	—	- 6	1	—	- 10	1	—
3	6	Agw	+ 1	—	—	+ 1.5	—	—	+ 1.5	—	—
		Agn	- 1	0.75	0.5	- 2	1.25	0.5	- 2	1.25	0.5
		Ang	- 5	0.75	—	- 8	1.25	—	- 12	1.25	—
6	10	Agw	+ 1	—	—	+ 1.5	—	—	+ 1.5	—	—
		Agn	- 1	0.75	0.5	- 2	1.25	0.5	- 2	1.25	0.5
		Ang	- 6	0.75	—	- 9	1.25	—	- 15	1.25	—
10	18	Agw	+ 1.5	—	—	+ 2	—	—	+ 2	—	—
		Agn	- 1.5	1	0.6	- 2.5	1.5	0.6	- 2.5	1.5	0.6
		Ang	- 8	1	—	- 11	1.5	—	- 18	1.5	—
18	30	Agw	+ 2	—	—	+ 3	—	—	+ 3	—	—
		Agn	- 1.5	1.25	0.75	- 3	2	0.75	- 3	2	0.75
		Ang	- 9	1.25	—	- 13	2	—	- 21	2	—
30	50	Agw	+ 2	—	—	+ 3	—	—	+ 3	—	—
		Agn	- 2	1.25	0.75	- 3.5	2	0.75	- 3.5	2	0.75
		Ang	- 11	1.25	—	- 16	2	—	- 25	2	—
50	80	Agw	+ 2	—	—	+ 3	—	—	+ 3	—	—
		Agn	- 2	1.5	1	- 4	2.5	1	- 4	2.5	1
		Ang	- 13	1.5	—	- 19	2.5	—	- 30	2.5	—
80	120	Agw	+ 3	—	—	+ 4	—	—	+ 4	—	—
		Agn	- 2.5	2	1.25	- 5	3	1.25	- 5	3	1.25
		Ang	- 15	2	—	- 22	3	—	- 35	3	—
120	180	Agw	+ 3	—	—	+ 4	—	—	+ 4	—	—
		Agn	- 3	2.5	1.75	- 6	4	1.75	- 6	4	1.75
		Ang	- 18	2.5	—	- 25	4	—	- 40	4	—
180	250	Agw	+ 2	—	—	+ 3	—	—	+ 3	—	—
		Agn	- 4	3.5	2.25	- 7	5	2.25	- 7	5	2.25
		Ang	- 19	3.5	—	- 27	5	—	- 43	5	—
250	315	Agw	+ 1.5	—	—	+ 3	—	—	+ 3	—	—
		Agn	- 5	4	3	- 8	6	3	- 8	6	3
		Ang	- 21.5	4	—	- 29	6	—	- 48	6	—
315	400	Agw	+ 1.5	—	—	+ 2	—	—	+ 2	—	—
		Agn	- 6	4.5	3.5	- 10	6.5	3.5	- 10	6.5	3.5
		Ang	- 22.5	4.5	—	- 32	6.5	—	- 51	6.5	—
400	500	Agw	+ 1	—	—	+ 2	—	—	+ 2	—	—
		Agn	- 7	5	4	- 11	7.5	4	- 11	7.5	4
		Ang	- 24	5	—	- 35	7.5	—	- 56	7.5	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		h8			h9			h11		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw Agn Ang	+ 3 - 2 - 14	— 1.5 1.5	0.6	0 - 5 - 25	— 1.5 1.5	0.6	0 - 10 - 60	— 2 2	0.6
3	6	Agw Agn Ang	+ 3 - 3 - 18	— 2 2	0.75	0 - 6 - 30	— 2 2	0.75	0 - 12 - 75	— 2.5 2.5	0.75
6	10	Agw Agn Ang	+ 3 - 3 - 22	— 2 2	0.75	0 - 7 - 36	— 2 2	0.75	0 - 14 - 90	— 3 3	0.75
10	18	Agw Agn Ang	+ 4 - 4 - 27	— 2.5 2.5	1	0 - 8 - 43	— 2.5 2.5	1	0 - 16 - 110	— 4 4	1
18	30	Agw Agn Ang	+ 4 - 5 - 33	— 3 3	1.25	0 - 9 - 52	— 3 3	1.25	0 - 19 - 130	— 4.5 4.5	1.25
30	50	Agw Agn Ang	+ 5 - 6 - 39	— 3.5 3.5	1.25	0 - 11 - 62	— 3.5 3.5	1.25	0 - 22 - 160	— 5.5 5.5	1.25
50	80	Agw Agn Ang	+ 5 - 7 - 46	— 4 4	1.5	0 - 13 - 74	— 4 4	1.5	0 - 25 - 190	— 6.5 6.5	1.5
80	120	Agw Agn Ang	+ 6 - 8 - 54	— 5 5	2	0 - 15 - 87	— 5 5	2	0 - 28 - 220	— 7.5 7.5	2
120	180	Agw Agn Ang	+ 6 - 9 - 63	— 6 6	2.5	0 - 18 - 100	— 6 6	2.5	0 - 32 - 250	— 9 9	2.5
180	250	Agw Agn Ang	+ 3 - 12 - 68	— 7 7	3.5	- 4 - 21 - 111	— 7 7	3.5	- 10 - 40 - 280	— 10 10	3.5
250	315	Agw Agn Ang	+ 3 - 14 - 75	— 8 8	4	- 6 - 24 - 124	— 8 8	4	- 15 - 45 - 305	— 11.5 11.5	4
315	400	Agw Agn Ang	+ 2 - 16 - 82	— 9 9	4.5	- 7 - 28 - 133	— 9 9	4.5	- 15 - 50 - 345	— 12.5 12.5	4.5
400	500	Agw Agn Ang	+ 2 - 18 - 88	— 10 10	5	- 9 - 32 - 146	— 10 10	5	- 20 - 55 - 380	— 13.5 13.5	5

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		js5			js6			js7		
			A	$\frac{+H_1}{2}$	$\frac{+H_p}{2}$	A	$\frac{+H_1}{2}$	$\frac{+H_p}{2}$	A	$\frac{+H_1}{2}$	$\frac{+H_p}{2}$
—	3	Agw Agn Ang	+ 3 + 1 - 2	— 0.6 0.6	0.4	+ 4.5 + 1.5 - 3	— 1 1	0.4	+ 6.5 + 3.5 - 5	— 1 1	0.4
3	6	Agw Agn Ang	+ 3.5 + 1.5 - 2.5	— 0.75 0.75	0.5	+ 5.5 + 2 - 4	— 1.25 1.25	0.5	+ 7.5 + 4 - 6	— 1.25 1.25	0.5
6	10	Agw Agn Ang	+ 4 + 2 - 3	— 0.75 0.75	0.5	+ 6 + 2.5 - 4.5	— 1.25 1.25	0.5	+ 9 + 5.5 - 7.5	— 1.25 1.25	0.5
10	18	Agw Agn Ang	+ 5.5 + 2.5 - 4	— 1 1	0.6	+ 7.5 + 3 - 5.5	— 1.5 1.5	0.6	+ 11 + 6.5 - 9	— 1.5 1.5	0.6
18	30	Agw Agn Ang	+ 6.5 + 3 - 4.5	— 1.25 1.25	0.75	+ 9.5 + 3.5 - 6.5	— 2 2	0.75	+ 13.5 + 7.5 - 10.5	— 2 2	0.75
30	50	Agw Agn Ang	+ 7.5 + 3.5 - 5.5	— 1.25 1.25	0.75	+ 11 + 4.5 - 8	— 2 2	0.75	+ 15.5 + 9 - 12.5	— 2 2	0.75
50	80	Agw Agn Ang	+ 8.5 + 4.5 - 6.5	— 1.5 1.5	1	+ 12.5 + 5.5 - 9.5	— 2.5 2.5	1	+ 18 + 11 - 15	— 2.5 2.5	1
80	120	Agw Agn Ang	+ 10.5 + 5 - 7.5	— 2 2	1.25	+ 15 + 6 - 11	— 3 3	1.25	+ 21.5 + 12.5 - 17.5	— 3 3	1.25
120	180	Agw Agn Ang	+ 12 + 6 - 9	— 2.5 2.5	1.75	+ 16.5 + 6.5 - 12.5	— 4 4	1.75	+ 24 + 14 - 20	— 4 4	1.75
180	250	Agw Agn Ang	+ 12 + 6 - 9	— 3.5 3.5	2.25	+ 17.5 + 7.5 - 12.5	— 5 5	2.25	+ 26 + 16 - 20	— 5 5	2.25
250	315	Agw Agn Ang	+ 13 + 6.5 - 10	— 4 4	3	+ 19 + 8 - 13	— 6 6	3	+ 29 + 18 - 22	— 6 6	3
315	400	Agw Agn Ang	+ 14 + 6.5 - 10	— 4.5 4.5	3.5	+ 20 + 8 - 14	— 6.5 6.5	3.5	+ 30.5 + 18.5 - 22.5	— 6.5 6.5	3.5
400	500	Agw Agn Ang	+ 14.5 + 6.5 - 10.5	— 5 5	4	+ 22 + 9 - 15	— 7.5 7.5	4	+ 33.5 + 20.5 - 24.5	— 7.5 7.5	4

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UPTO AND INCLUDING		k5			k6			k7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_2}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_2}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_2}{2}$
—	3	Agw Agn Ang	+ 5 + 3 0	— 0.6 0.6	0.4	+ 7.5 + 4.5 0	— 1 1	0.4	+ 11.5 + 8.5 0	— 1 1	0.4
3	6	Agw Agn Ang	+ 7 + 5 + 1	— 0.75 0.75	0.5	+ 10.5 + 7 + 1	— 1.25 1.25	0.5	+ 14.5 + 11 + 1	— 1.25 1.25	0.5
6	10	Agw Agn Ang	+ 8 + 6 + 1	— 0.75 0.75	0.5	+ 11.5 + 8 + 1	— 1.25 1.25	0.5	+ 17.5 + 14 + 1	— 1.25 1.25	0.5
10	18	Agw Agn Ang	+ 10.5 + 7.5 + 1	— 1 1	0.6	+ 14 + 9.5 + 1	— 1.5 1.5	0.6	+ 21 + 16.5 + 1	— 1.5 1.5	0.6
18	30	Agw Agn Ang	+ 13 + 9.5 + 2	— 1.25 1.25	0.75	+ 18 + 12 + 2	— 2 2	0.75	+ 26 + 20 + 2	— 2 2	0.75
30	50	Agw Agn Ang	+ 15 + 11 + 2	— 1.25 1.25	0.75	+ 21 + 14.5 + 2	— 2 2	0.75	+ 30 + 23.5 + 2	— 2 2	0.75
50	80	Agw Agn Ang	+ 17 + 13 + 2	— 1.5 1.5	1	+ 24 + 17 + 2	— 2.5 2.5	1	+ 35 + 28 + 2	— 2.5 2.5	1
80	120	Agw Agn Ang	+ 21 + 15.5 + 3	— 2 2	1.25	+ 29 + 20 + 3	— 3 3	1.25	+ 42 + 33 + 3	— 3 3	1.25
120	180	Agw Agn Ang	+ 24 + 18 + 3	— 2.5 2.5	1.75	+ 32 + 22 + 3	— 4 4	1.75	+ 47 + 37 + 3	— 4 4	1.75
180	250	Agw Agn Ang	+ 26 + 20 + 5	— 3.5 3.5	2.25	+ 36 + 26 + 6	— 5 5	2.25	+ 53 + 43 + 7	— 5 5	2.25
250	315	Agw Agn Ang	+ 28.5 + 22 + 5.5	— 4 4	3	+ 39 + 28 + 7	— 6 6	3	+ 59 + 48 + 8	— 6 6	3
315	400	Agw Agn Ang	+ 30.5 + 23 + 6.5	— 4.5 4.5	3.5	+ 42 + 30 + 8	— 6.5 6.5	3.5	+ 63 + 51 + 10	— 6.5 6.5	3.5
400	500	Agw Agn Ang	+ 33 + 25 + 8	— 5 5	4	+ 47 + 34 + 10	— 7.5 7.5	4	+ 70 + 57 + 12	— 7.5 7.5	4

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		m5			m6			m7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw Agn Ang	+ 7 + 5 + 2	— 0.6 0.6	— 0.4	+ 9.5 + 6.5 + 2	— 1 1	— 0.4	— — —	— 1 1	— — 0.4
3	6	Agw Agn Ang	+ 10 + 8 + 4	— 0.75 0.75	— 0.5	+ 13.5 + 10 + 4	— 1.25 1.25	— 0.5	+ 17.5 + 14 + 4	— 1.25 1.25	— 0.5
6	10	Agw Agn Ang	+ 13 + 11 + 6	— 0.75 0.75	— 0.5	+ 16.5 + 13 + 6	— 1.25 1.25	— 0.5	+ 22.5 + 19 + 6	— 1.25 1.25	— 0.5
10	18	Agw Agn Ang	+ 16.5 + 13.5 + 7	— 1 1	— 0.6	+ 20 + 15.5 + 7	— 1.5 1.5	— 0.6	+ 27 + 22.5 + 7	— 1.5 1.5	— 0.6
18	30	Agw Agn Ang	+ 19 + 15.5 + 8	— 1.25 1.25	— 0.75	+ 24 + 18 + 8	— 2 2	— 0.75	+ 32 + 26 + 8	— 2 2	— 0.75
30	50	Agw Agn Ang	+ 22 + 18 + 9	— 1.25 1.25	— 0.75	+ 28 + 21.5 + 9	— 2 2	— 0.75	+ 37 + 30.5 + 9	— 2 2	— 0.75
50	80	Agw Agn Ang	+ 26 + 22 + 11	— 1.5 1.5	— 1	+ 33 + 26 + 11	— 2.5 2.5	— 1	+ 44 + 37 + 11	— 2.5 2.5	— 1
80	120	Agw Agn Ang	+ 31 + 25.5 + 13	— 2 2	— 1.25	+ 39 + 30 + 13	— 3 3	— 1.25	+ 52 + 43 + 13	— 3 3	— 1.25
120	180	Agw Agn Ang	+ 36 + 30 + 15	— 2.5 2.5	— 1.75	+ 44 + 34 + 15	— 4 4	— 1.75	+ 59 + 49 + 15	— 4 4	— 1.75
180	250	Agw Agn Ang	+ 39 + 33 + 18	— 3.5 3.5	— 2.25	+ 49 + 39 + 19	— 5 5	— 2.25	+ 66 + 56 + 20	— 5 5	— 2.25
250	315	Agw Agn Ang	+ 44.5 + 38 + 21.5	— 4 4	— 3	+ 55 + 44 + 23	— 6 6	— 3	+ 75 + 64 + 24	— 6 6	— 3
315	400	Agw Agn Ang	+ 47.5 + 40 + 23.5	— 4.5 4.5	— 3.5	+ 59 + 47 + 25	— 6.5 6.5	— 3.5	+ 80 + 68 + 27	— 6.5 6.5	— 3.5
400	500	Agw Agn Ang	+ 51 + 43 + 26	— 5 5	— 4	+ 65 + 52 + 28	— 7.5 7.5	— 4	+ 88 + 75 + 30	— 7.5 7.5	— 4

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		n5			n6			n7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw Agn Ang	+ 9 + 7 + 4	— 0.6 0.6	0.4	+ 11.5 + 8.5 + 4	— 1 1	0.4	+ 15.5 + 12.5 + 4	— 1 1	0.4
3	6	Agw Agn Ang	+ 14 + 12 + 8	— 0.75 0.75	0.5	+ 17.5 + 14 + 8	— 1.25 1.25	0.5	+ 21.5 + 18 + 8	— 1.25 1.25	0.5
6	10	Agw Agn Ang	+ 17 + 15 + 10	— 0.75 0.75	0.5	+ 20.5 + 17 + 10	— 1.25 1.25	0.5	+ 26.5 + 23 + 10	— 1.25 1.25	0.5
10	18	Agw Agn Ang	+ 21.5 + 18.5 + 12	— 1 1	0.6	+ 25 + 20.5 + 12	— 1.5 1.5	0.6	+ 32 + 27.5 + 12	— 1.5 1.5	0.6
18	30	Agw Agn Ang	+ 26 + 22.5 + 15	— 1.25 1.25	0.75	+ 31 + 25 + 15	— 2 2	0.75	+ 39 + 33 + 15	— 2 2	0.75
30	50	Agw Agn Ang	+ 30 + 26 + 17	— 1.25 1.25	0.75	+ 36 + 29.5 + 17	— 2 2	0.75	+ 45 + 38.5 + 17	— 2 2	0.75
50	80	Agw Agn Ang	+ 35 + 31 + 20	— 1.5 1.5	1	+ 42 + 35 + 20	— 2.5 2.5	1	+ 53 + 46 + 20	— 2.5 2.5	1
80	120	Agw Agn Ang	+ 41 + 35.5 + 23	— 2 2	1.25	+ 49 + 40 + 23	— 3 3	1.25	+ 62 + 53 + 23	— 3 3	1.25
120	180	Agw Agn Ang	+ 48 + 42 + 27	— 2.5 2.5	1.75	+ 56 + 46 + 27	— 4 4	1.75	+ 71 + 61 + 27	— 4 4	1.75
180	250	Agw Agn Ang	+ 53 + 47 + 32	— 3.5 3.5	2.25	+ 63 + 53 + 33	— 5 5	2.25	+ 80 + 70 + 34	— 5 5	2.25
250	315	Agw Agn Ang	+ 58.5 + 52 + 35.5	— 4 4	3	+ 69 + 58 + 37	— 6 6	3	+ 89 + 78 + 38	— 6 6	3
315	400	Agw Agn Ang	+ 63.5 + 56 + 39.5	— 4.5 4.5	3.5	+ 75 + 63 + 41	— 6.5 6.5	3.5	+ 96 + 84 + 43	— 6.5 6.5	3.5
400	500	Agw Agn Ang	+ 68 + 60 + 43	— 5 5	4	+ 82 + 69 + 45	— 7.5 7.5	4	+ 105 + 92 + 47	— 7.5 7.5	4

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE m m		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		P5			P6			P7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_P}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_P}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_P}{2}$
—	3	Agw	+ 11	—	—	+ 13.5	—	—	+ 17.5	—	—
		Agn	+ 9	0.6	0.4	+ 10.5	1	0.4	+ 14.5	1	0.4
		Ang	+ 6	0.6	—	+ 6	1	—	+ 6	1	—
3	6	Agw	+ 18	—	—	+ 21.5	—	—	+ 25.5	—	—
		Agn	+ 16	0.75	0.5	+ 18	1.25	0.5	+ 22	1.25	0.5
		Ang	+ 12	0.75	—	+ 12	1.25	—	+ 12	1.25	—
6	10	Agw	+ 22	—	—	+ 25.5	—	—	+ 31.5	—	—
		Agn	+ 20	0.75	0.5	+ 22	1.25	0.5	+ 28	1.25	0.5
		Ang	+ 15	0.75	—	+ 15	1.25	—	+ 15	1.25	—
10	18	Agw	+ 27.5	—	—	+ 31	—	—	+ 38	—	—
		Agn	+ 24.5	1	0.6	+ 26.5	1.5	0.6	+ 33.5	1.5	0.6
		Ang	+ 18	1	—	+ 18	1.5	—	+ 18	1.5	—
18	30	Agw	+ 33	—	—	+ 38	—	—	+ 46	—	—
		Agn	+ 29.5	1.25	0.75	+ 32	2	0.75	+ 40	2	0.75
		Ang	+ 22	1.25	—	+ 22	2	—	+ 22	2	—
30	50	Agw	+ 39	—	—	+ 45	—	—	+ 54	—	—
		Agn	+ 35	1.25	0.75	+ 38.5	2	0.75	+ 47.5	2	0.75
		Ang	+ 26	1.25	—	+ 26	2	—	+ 26	2	—
50	80	Agw	+ 47	—	—	+ 54	—	—	+ 65	—	—
		Agn	+ 43	1.5	1	+ 47	2.5	1	+ 58	2.5	1
		Ang	+ 32	1.5	—	+ 32	2.5	—	+ 32	2.5	—
80	120	Agw	+ 55	—	—	+ 63	—	—	+ 76	—	—
		Agn	+ 49.5	2	1.25	+ 54	3	1.25	+ 67	3	1.25
		Ang	+ 37	2	—	+ 37	3	—	+ 37	3	—
120	180	Agw	+ 64	—	—	+ 72	—	—	+ 87	—	—
		Agn	+ 58	2.5	1.75	+ 62	4	1.75	+ 77	4	1.75
		Ang	+ 43	2.5	—	+ 43	4	—	+ 43	4	—
180	250	Agw	+ 72	—	—	+ 82	—	—	+ 99	—	—
		Agn	+ 66	3.5	2.25	+ 72	5	2.25	+ 89	5	2.25
		Ang	+ 51	3.5	—	+ 52	5	—	+ 53	5	—
250	315	Agw	+ 80.5	—	—	+ 91	—	—	+ 111	—	—
		Agn	+ 74	4	3	+ 80	6	3	+ 100	6	3
		Ang	+ 57.5	4	—	+ 59	6	—	+ 60	6	—
315	400	Agw	+ 88.5	—	—	+ 100	—	—	+ 121	—	—
		Agn	+ 81	4.5	3.5	+ 88	6.5	3.5	+ 109	6.5	3.5
		Ang	+ 64.5	4.5	—	+ 66	6.5	—	+ 68	6.5	—
400	500	Agw	+ 96	—	—	+ 110	—	—	+ 133	—	—
		Agn	+ 88	5	4	+ 97	7.5	4	+ 120	7.5	4
		Ang	+ 71	5	—	+ 73	7.5	—	+ 75	7.5	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — Contd

NOMINAL SIZE		GAUGE	TOLERANCE CLASS								
mm			r5			r6			r7		
OVER	UP TO AND INCLUDING		A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	+ 15	—	0.4	+ 17.5	—	0.4	+ 21.5	—	0.4
		Agn	+ 13	0.6	—	+ 14.5	1	—	+ 18.5	1	—
		Ang	+ 10	0.6	—	+ 10	1	—	+ 10	1	—
3	6	Agw	+ 21	—	0.5	+ 24.5	—	0.5	+ 28.5	—	0.5
		Agn	+ 19	0.75	—	+ 21	1.25	—	+ 25	1.25	—
		Ang	+ 15	0.75	—	+ 15	1.25	—	+ 15	1.25	—
6	10	Agw	+ 26	—	0.5	+ 29.5	—	0.5	+ 35.5	—	0.5
		Agn	+ 24	0.75	—	+ 26	1.25	—	+ 32	1.25	—
		Ang	+ 19	0.75	—	+ 19	1.25	—	+ 19	1.25	—
10	18	Agw	+ 32.5	—	0.6	+ 36	—	0.6	+ 43	—	0.6
		Agn	+ 29.5	1	—	+ 31.5	1.5	—	+ 38.5	1.5	—
		Ang	+ 23	1	—	+ 23	1.5	—	+ 23	1.5	—
18	30	Agw	+ 39	—	0.75	+ 44	—	0.75	+ 52	—	0.75
		Agn	+ 35.5	1.25	—	+ 38	2	—	+ 46	2	—
		Ang	+ 28	1.25	—	+ 28	2	—	+ 28	2	—
30	50	Agw	+ 47	—	0.75	+ 53	—	0.75	+ 62	—	0.75
		Agn	+ 43	1.25	—	+ 46.5	2	—	+ 55.5	2	—
		Ang	+ 34	1.25	—	+ 34	2	—	+ 34	2	—
50	65	Agw	+ 56	—	1	+ 63	—	1	+ 74	—	1
		Agn	+ 52	1.5	—	+ 56	2.5	—	+ 67	2.5	—
		Ang	+ 41	1.5	—	+ 41	2.5	—	+ 41	2.5	—
65	80	Agw	+ 58	—	1	+ 65	—	1	+ 76	—	1
		Agn	+ 54	1.5	—	+ 58	2.5	—	+ 69	2.5	—
		Ang	+ 43	1.5	—	+ 43	2.5	—	+ 43	2.5	—
80	100	Agw	+ 69	—	1.25	+ 77	—	1.25	+ 90	—	1.25
		Agn	+ 63.5	2	—	+ 68	3	—	+ 81	3	—
		Ang	+ 51	2	—	+ 51	3	—	+ 51	3	—
100	120	Agw	+ 72	—	1.25	+ 80	—	1.25	+ 93	—	1.25
		Agn	+ 66.5	2	—	+ 71	3	—	+ 84	3	—
		Ang	+ 54	2	—	+ 54	3	—	+ 54	3	—
120	140	Agw	+ 84	—	1.75	+ 92	—	1.75	+ 107	—	1.75
		Agn	+ 78	2.5	—	+ 82	4	—	+ 97	4	—
		Ang	+ 63	2.5	—	+ 63	4	—	+ 63	4	—
140	160	Agw	+ 86	—	1.75	+ 94	—	1.75	+ 109	—	1.75
		Agn	+ 80	2.5	—	+ 84	4	—	+ 99	4	—
		Ang	+ 65	2.5	—	+ 65	4	—	+ 65	4	—
160	180	Agw	+ 89	—	1.75	+ 97	—	1.75	+ 112	—	1.75
		Agn	+ 83	2.5	—	+ 87	4	—	+ 102	4	—
		Ang	+ 68	2.5	—	+ 68	4	—	+ 68	4	—
180	200	Agw	+ 99	—	2.25	+ 109	—	2.25	+ 126	—	2.25
		Agn	+ 93	3.5	—	+ 99	5	—	+ 116	5	—
		Ang	+ 78	3.5	—	+ 79	5	—	+ 80	5	—
200	225	Agw	+ 102	—	2.25	+ 112	—	2.25	+ 129	—	2.25
		Agn	+ 96	3.5	—	+ 102	5	—	+ 119	5	—
		Ang	+ 81	3.5	—	+ 82	5	—	+ 83	5	—
225	250	Agw	+ 106	—	2.25	+ 116	—	2.25	+ 133	—	2.25
		Agn	+ 100	3.5	—	+ 106	5	—	+ 123	5	—
		Ang	+ 85	3.5	—	+ 86	5	—	+ 87	5	—
250	280	Agw	+ 118.5	—	3	+ 129	—	3	+ 149	—	3
		Agn	+ 112	4	—	+ 118	6	—	+ 138	6	—
		Ang	+ 95.5	4	—	+ 97	6	—	+ 98	6	—
280	315	Agw	+ 122.5	—	3	+ 133	—	3	+ 153	—	3
		Agn	+ 116	4	—	+ 122	6	—	+ 142	6	—
		Ang	+ 99.5	4	—	+ 101	6	—	+ 102	6	—
315	355	Agw	+ 134.5	—	3.5	+ 146	—	3.5	+ 167	—	3.5
		Agn	+ 127	4.5	—	+ 134	6.5	—	+ 155	6.5	—
		Ang	+ 110.5	4.5	—	+ 112	6.5	—	+ 114	6.5	—
355	400	Agw	+ 140.5	—	3.5	+ 152	—	3.5	+ 173	—	3.5
		Agn	+ 133	4.5	—	+ 140	6.5	—	+ 161	6.5	—
		Ang	+ 116.5	4.5	—	+ 118	6.5	—	+ 120	6.5	—
400	450	Agw	+ 154	—	4	+ 168	—	4	+ 191	—	4
		Agn	+ 146	5	—	+ 155	7.5	—	+ 178	7.5	—
		Ang	+ 129	5	—	+ 131	7.5	—	+ 133	7.5	—
450	500	Agw	+ 160	—	4	+ 174	—	4	+ 197	—	4
		Agn	+ 152	5	—	+ 161	7.5	—	+ 184	7.5	—
		Ang	+ 135	5	—	+ 137	7.5	—	+ 139	7.5	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS								
OVER	UP TO AND INCLUDING		s5			s6			s7		
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$
—	3	Agw	+ 19	—	—	+ 21.5	—	—	+ 25.5	—	—
		Agn	+ 17	0.6	0.4	+ 18.5	1	0.4	+ 22.5	1	0.4
		Ang	+ 14	0.6	—	+ 14	1	—	+ 14	1	—
3	6	Agw	+ 25	—	—	+ 28.5	—	—	+ 32.5	—	—
		Agn	+ 23	0.75	0.5	+ 25	1.25	0.5	+ 29	1.25	0.5
		Ang	+ 19	0.75	—	+ 19	1.25	—	+ 19	1.25	—
6	10	Agw	+ 30	—	—	+ 33.5	—	—	+ 39.5	—	—
		Agn	+ 28	0.75	0.5	+ 30	1.25	0.5	+ 36	1.25	0.5
		Ang	+ 23	0.75	—	+ 23	1.25	—	+ 23	1.25	—
10	18	Agw	+ 37.5	—	—	+ 41	—	—	+ 48	—	—
		Agn	+ 34.5	1	0.6	+ 36.5	1.5	0.6	+ 43.5	1.5	0.6
		Ang	+ 28	1	—	+ 28	1.5	—	+ 28	1.5	—
18	30	Agw	+ 46	—	—	+ 51	—	—	+ 59	—	—
		Agn	+ 42.5	1.25	0.75	+ 45	2	0.75	+ 53	2	0.75
		Ang	+ 35	1.25	—	+ 35	2	—	+ 35	2	—
30	50	Agw	+ 56	—	—	+ 62	—	—	+ 71	—	—
		Agn	+ 52	1.25	0.75	+ 55.5	2	0.75	+ 64.5	2	0.75
		Ang	+ 43	1.25	—	+ 43	2	—	+ 43	2	—
50	65	Agw	+ 68	—	—	+ 75	—	—	+ 86	—	—
		Agn	+ 64	1.5	1	+ 68	2.5	1	+ 79	2.5	1
		Ang	+ 53	1.5	—	+ 53	2.5	—	+ 53	2.5	—
65	80	Agw	+ 74	—	—	+ 81	—	—	+ 92	—	—
		Agn	+ 70	1.5	1	+ 74	2.5	1	+ 85	2.5	1
		Ang	+ 59	1.5	—	+ 59	2.5	—	+ 59	2.5	—
80	100	Agw	+ 89	—	—	+ 97	—	—	+ 110	—	—
		Agn	+ 83.5	2	1.25	+ 88	3	1.25	+ 101	3	1.25
		Ang	+ 71	2	—	+ 71	3	—	+ 71	3	—
100	120	Agw	+ 97	—	—	+ 105	—	—	+ 118	—	—
		Agn	+ 91.5	2	1.25	+ 96	3	1.25	+ 109	3	1.25
		Ang	+ 79	2	—	+ 79	3	—	+ 79	3	—
120	140	Agw	+ 113	—	—	+ 121	—	—	+ 136	—	—
		Agn	+ 107	2.5	1.75	+ 111	4	1.75	+ 126	4	1.75
		Ang	+ 92	2.5	—	+ 92	4	—	+ 92	4	—
140	160	Agw	+ 121	—	—	+ 129	—	—	+ 144	—	—
		Agn	+ 115	2.5	1.75	+ 119	4	1.75	+ 134	4	1.75
		Ang	+ 100	2.5	—	+ 100	4	—	+ 100	4	—
160	180	Agw	+ 129	—	—	+ 137	—	—	+ 152	—	—
		Agn	+ 123	2.5	1.75	+ 127	4	1.75	+ 142	4	1.75
		Ang	+ 108	2.5	—	+ 108	4	—	+ 108	4	—
180	200	Agw	+ 144	—	—	+ 154	—	—	+ 171	—	—
		Agn	+ 138	3.5	2.25	+ 144	5	2.25	+ 161	5	2.25
		Ang	+ 123	3.5	—	+ 124	5	—	+ 125	5	—
200	225	Agw	+ 152	—	—	+ 162	—	—	+ 179	—	—
		Agn	+ 146	3.5	2.25	+ 152	5	2.25	+ 169	5	2.25
		Ang	+ 131	3.5	—	+ 132	5	—	+ 133	5	—
225	250	Agw	+ 162	—	—	+ 172	—	—	+ 189	—	—
		Agn	+ 156	3.5	2.25	+ 162	5	2.25	+ 179	5	2.25
		Ang	+ 141	3.5	—	+ 142	5	—	+ 143	5	—
250	280	Agw	+ 182.5	—	—	+ 193	—	—	+ 217	—	—
		Agn	+ 176	4	3	+ 182	6	3	+ 202	6	3
		Ang	+ 159.5	4	—	+ 161	6	—	+ 162	6	—
280	315	Agw	+ 194.5	—	—	+ 205	—	—	+ 225	—	—
		Agn	+ 188	4	3	+ 194	6	3	+ 214	6	3
		Ang	+ 171.5	4	—	+ 173	6	—	+ 174	6	—
315	355	Agw	+ 216.5	—	—	+ 228	—	—	+ 249	—	—
		Agn	+ 209	4.5	3.5	+ 216	6.5	3.5	+ 237	6.5	3.5
		Ang	+ 192.5	4.5	—	+ 194	6.5	—	+ 196	6.5	—
355	400	Agw	+ 234.5	—	—	+ 246	—	—	+ 267	—	—
		Agn	+ 227	4.5	3.5	+ 234	6.5	3.5	+ 255	6.5	3.5
		Ang	+ 210.5	4.5	—	+ 212	6.5	—	+ 214	6.5	—
400	450	Agw	+ 260	—	—	+ 274	—	—	+ 297	—	—
		Agn	+ 252	5	4	+ 261	7.5	4	+ 284	7.5	4
		Ang	+ 235	5	—	+ 237	7.5	—	+ 239	7.5	—
450	500	Agw	+ 280	—	—	+ 294	—	—	+ 317	—	—
		Agn	+ 272	5	4	+ 281	7.5	4	+ 304	7.5	4
		Ang	+ 255	5	—	+ 257	7.5	—	+ 259	7.5	—

(Continued)

TABLE 1 GAUGE ALLOWANCES AND MANUFACTURING TOLERANCES FOR OUTSIDE MEASUREMENTS — *Contd*

NOMINAL SIZE mm		GAUGE	TOLERANCE CLASS												
OVER	UP TO AND INCLUDING		t5			t6			t7			u7			
			A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	A	$\pm \frac{H_1}{2}$	$\pm \frac{H_p}{2}$	
—	3	Agw Agn Ang	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	+ 29.5 + 26.5 + 18	— 1 1	— — —	0.4
3	6	Agw Agn Ang	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	+ 36.5 + 33 + 23	— — —	1.25 1.25	0.5
6	10	Agw Agn Ang	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	+ 44.5 + 41 + 28	— — —	1.25 1.25	0.5
10	18	Agw Agn Ang	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	+ 53 + 48.5 + 33	— — —	1.5 1.5	0.6
18	24	Agw Agn Ang	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	+ 65 + 59 + 41	— — —	2 2	0.75
24	30	Agw Agn Ang	+ 52 + 48.5 + 41	— 1.25 1.25	0.75	+ 57 + 51 + 41	— 2 2	0.75	+ 65 + 59 + 41	— 2 2	0.75	+ 72 + 66 + 48	— 2 2	— — —	0.75
30	40	Agw Agn Ang	+ 61 + 57 + 48	— 1.25 1.25	0.75	+ 67 + 60.5 + 48	— 2 2	0.75	+ 76 + 69.5 + 48	— 2 2	0.75	+ 88 + 81.5 + 60	— 2 2	— — —	0.75
40	50	Agw Agn Ang	+ 67 + 63 + 54	— 1.25 1.25	0.75	+ 73 + 66.5 + 54	— 2 2	0.75	+ 82 + 75.5 + 54	— 2 2	0.75	+ 98 + 91.5 + 70	— 2 2	— — —	0.75
50	65	Agw Agn Ang	+ 81 + 77 + 66	— 1.5 1.5	1	+ 88 + 81 + 66	— 2.5 2.5	1	+ 99 + 92 + 66	— 2.5 2.5	1	+ 120 + 113 + 87	— 2.5 2.5	— — —	1
65	80	Agw Agn Ang	+ 90 + 86 + 75	— 1.5 1.5	1	+ 97 + 90 + 75	— 2.5 2.5	1	+ 108 + 101 + 75	— 2.5 2.5	1	+ 135 + 128 + 102	— 2.5 2.5	— — —	1
80	100	Agw Agn Ang	+ 109 + 103.5 + 91	— 2 2	1.25	+ 117 + 108 + 91	— 3 3	1.25	+ 130 + 121 + 91	— 3 3	1.25	+ 163 + 154 + 124	— 3 3	— — —	1.25
100	120	Agw Agn Ang	+ 122 + 116.5 + 104	— 2 2	1.25	+ 130 + 121 + 104	— 3 3	1.25	+ 143 + 134 + 104	— 3 3	1.25	+ 183 + 174 + 144	— 3 3	— — —	1.25
120	140	Agw Agn Ang	+ 143 + 137 + 122	— 2.5 2.5	1.75	+ 151 + 141 + 122	— 4 4	1.75	+ 166 + 156 + 122	— 4 4	1.75	+ 214 + 204 + 170	— 4 4	— — —	1.75
140	160	Agw Agn Ang	+ 155 + 149 + 134	— 2.5 2.5	1.75	+ 163 + 153 + 134	— 4 4	1.75	+ 178 + 168 + 134	— 4 4	1.75	+ 234 + 224 + 190	— 4 4	— — —	1.75
160	180	Agw Agn Ang	+ 167 + 161 + 146	— 2.5 2.5	1.75	+ 175 + 165 + 146	— 4 4	1.75	+ 190 + 180 + 146	— 4 4	1.75	+ 254 + 244 + 210	— 4 4	— — —	1.75
180	200	Agw Agn Ang	+ 188 + 182 + 167	— 3.5 3.5	2.25	+ 198 + 188 + 168	— 5 5	2.25	+ 215 + 205 + 169	— 5 5	2.25	+ 285 + 275 + 239	— 5 5	— — —	2.25
200	225	Agw Agn Ang	+ 202 + 196 + 181	— 3.5 3.5	2.25	+ 212 + 202 + 182	— 5 5	2.25	+ 229 + 219 + 183	— 5 5	2.25	+ 307 + 297 + 261	— 5 5	— — —	2.25
225	250	Agw Agn Ang	+ 218 + 212 + 197	— 3.5 3.5	2.25	+ 228 + 218 + 198	— 5 5	2.25	+ 245 + 235 + 199	— 5 5	2.25	+ 333 + 323 + 287	— 5 5	— — —	2.25
250	280	Agw Agn Ang	+ 242.5 + 236 + 219.5	— 4 4	3	+ 253 + 242 + 221	— 6 6	3	+ 273 + 262 + 222	— 6 6	3	+ 370 + 359 + 319	— 6 6	— — —	3
280	315	Agw Agn Ang	+ 264.5 + 258 + 241.5	— 4 4	3	+ 275 + 264 + 243	— 6 6	3	+ 295 + 284 + 244	— 6 6	3	+ 405 + 394 + 354	— 6 6	— — —	3
315	355	Agw Agn Ang	+ 294.5 + 287 + 270.5	— 4.5 4.5	3.5	+ 306 + 294 + 272	— 6.5 6.5	3.5	+ 327 + 315 + 274	— 6.5 6.5	3.5	+ 449 + 437 + 396	— 6.5 6.5	— — —	3.5
355	400	Agw Agn Ang	+ 320.5 + 313 + 296.5	— 4.5 4.5	3.5	+ 332 + 320 + 298	— 6.5 6.5	3.5	+ 353 + 341 + 300	— 6.5 6.5	3.5	+ 494 + 482 + 441	— 6.5 6.5	— — —	3.5
400	450	Agw Agn Ang	+ 358 + 350 + 333	— 5 5	4	+ 372 + 359 + 335	— 7.5 7.5	4	+ 395 + 382 + 337	— 7.5 7.5	4	+ 555 + 542 + 497	— 7.5 7.5	— — —	4
450	500	Agw Agn Ang	+ 388 + 380 + 363	— 5 5	4	+ 402 + 389 + 365	— 7.5 7.5	4	+ 425 + 412 + 367	— 7.5 7.5	4	+ 605 + 592 + 547	— 7.5 7.5	— — —	4

EXPLANATORY NOTE

IS: 3455-1971 'Gauging practice for plain workpieces (*first revision*)' specifies the dimensions for different types of plug, ring and gap gauges. This standard gives in a tabulated form the calculated values of the gauge allowances and manufacturing tolerances for snap gauges, ring gauges and reference discs for gap gauges of nominal sizes up to 500 mm for selected ISO-tolerance zones as recommended in ISO/R 1829-1970 'Selection of tolerance zones for general purposes'. This standard supplements the details given in IS: 3455-1971. For individual gauges reference should be made to the following standards:

- a) IS: 3485-1972 'GO' plain ring gauges (size range 1 to 315 mm) (*first revision*)
- b) IS: 6633-1972 'NO GO' plain ring gauges (size range 1 to 315 mm)
- c) IS: 7018-1973 Technical supply conditions for gauges

In the preparation of this standard assistance has been derived from DIN 7163-1966 'Arbeitsrachenlehren und Prüflöhren für ISO-Passmasse von 1 bis 500 mm Nennmass Lehrenmasse und Herstelltoleranzen (Workshop snap gauges and reference gauges for ISO-fit sizes from 1 up to 500 mm nominal size; deviations and tolerances for gauges)' issued by DIN Deutsches Institut für Normung.