

HDC Component Sets

Zero Backlash Cup Type Harmonic Gearing

Features

- Zero backlash
- Offered in metric and English sizes
- Drop in replacements available to meet existing applications requirements
- Single stage ratios from 60:1 to 315:1
- Continuous running torques to 4,000 Nm with peak torque capacities to 8,750 Nm
- High torque-to-weight ratios
- Excellent positional accuracy and repeatability



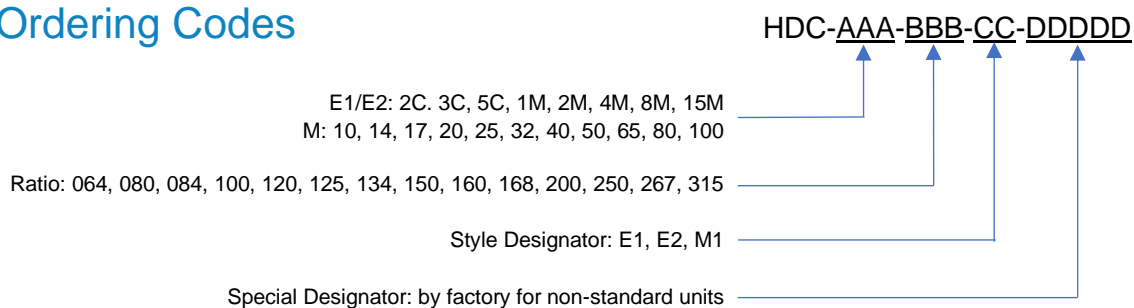
Configurations

Conic Systems offers metric and two versions of English dimensioned styles to meet both new and replacement part requirements. Refer to the dimensional charts or contact Conic Systems for assistance in selecting the proper drive for your application. Custom units to meet specific dimensional needs are also available upon request.

Applications

- Communications antennas
- Medical machinery
- Printing press registration
- Web tension controls
- Packaging machinery
- Space and satellite systems
- Telescopes
- Metal working machinery
- Paper making machinery
- Automation systems

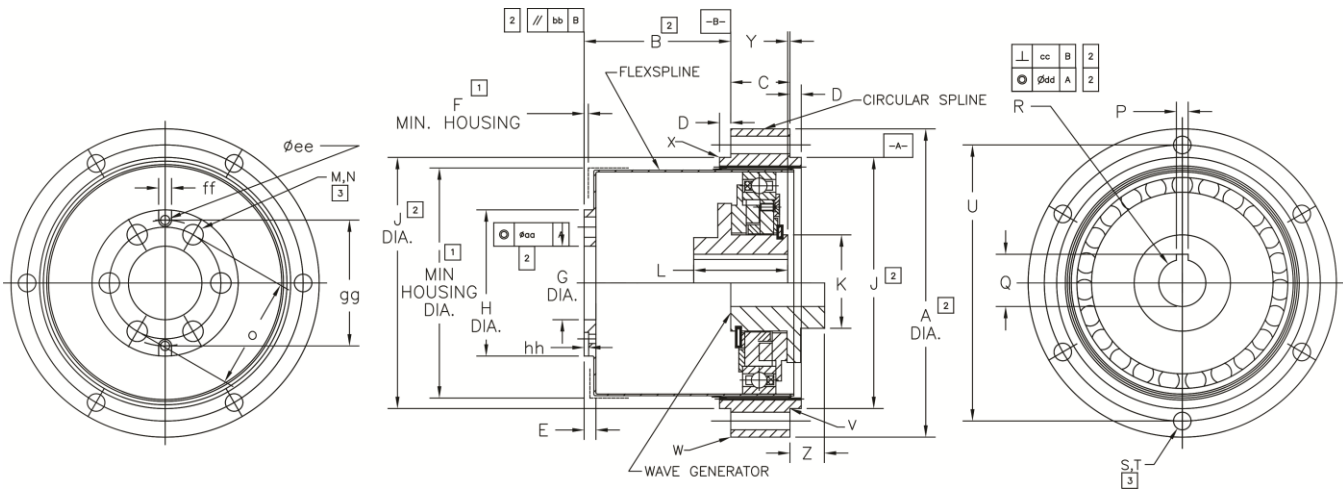
Ordering Codes



Standard Specifications

Size	Ratio	Rated Speed	Torque at Rated Speed		Repeated Torque Limit		Momentary Torque Limit		Maximum Input Speed	
			Nm	in lb	Nm	in lb	Nm	in lb	Oil	Grease
		rpm							rpm	
10	60	3000	3.4	30	6.8	60	8.5	75	15000	7500
	80		4.5	40	9	80	11.3	100		
14 (1C)	64	3000	4.5	40	9	80	11.3	100	12000	6000
	80		5	44	10	89	13	111		
17	80	3000	12	106	24	212	30	266	9000	5600
	100		15	133	30	266	38	332		
20 (3C)	80	3000	25	221	50	443	63	553	9000	5600
	84		25	221	50	443	63	553		
	100		30	266	60	531	75	664		
	125		30	266	60	531	75	664		
25 (5C)	80	3000	40	354	80	708	100	885	4500	4500
	100		50	443	100	885	125	1106		
	120		50	443	100	885	125	1106		
	150		50	443	100	885	125	1106		
	160		50	443	100	885	125	1106		
32(1M)	80	3000	100	885	200	1770	250	2213	7000	3500
	100		120	1062	240	2124	300	2655		
	135		120	1062	240	2124	300	2655		
	160		120	1062	240	2124	300	2655		
	200		120	1062	240	2124	300	2655		
40 (2M)	80	3000	200	1770	400	3540	500	4425	5600	2800
	84		200	1770	400	3540	500	4425		
	100		240	2124	480	4248	600	5310		
	125		240	2124	480	4248	600	5310		
	160		240	2124	480	4248	600	5310		
	168		240	2124	480	4248	600	5310		
	200		240	2124	480	4248	600	5310		
50 (4M)	80	3000	360	3186	720	6373	900	7966	4500	2250
	100		450	3983	900	7966	1125	9957		
	120		450	3983	900	7966	1125	9957		
	150		450	3983	900	7966	1125	9957		
	160		450	3983	900	7966	1125	9957		
	200		450	3983	900	7966	1125	9957		
65 (8M)	80	1500	800	7081	1600	14161	2000	17701	3500	1750
	100		900	7966	1800	15931	2250	19914		
	134		1000	8851	2000	17701	2500	22127		
	160		1000	8851	2000	17701	2500	22127		
	200		1000	8851	2000	17701	2500	22127		
	267		1000	8851	2000	17701	2500	22127		
80 (15M)	80	1500	1500	13276	3000	26552	3750	33190	2800	1400
	100		1800	15931	3600	31863	4500	39828		
	125		2000	17701	4000	35403	5000	44254		
	168		2000	17701	4000	35403	5000	44254		
	200		2000	17701	4000	35403	5000	44254		
	250		2000	17701	4000	35403	5000	44254		
100	80	1500	2500	22127	5000	44254	6250	55317	2250	1125
	100		3500	30978	7000	61955	8750	77444		
	120		3500	30978	7000	61955	8750	77444		
	150		3500	30978	7000	61955	8750	77444		
	160		3500	30978	7000	61955	8750	77444		
	200		3500	30978	7000	61955	8750	77444		
	250		3500	30978	7000	61955	8750	77444		
	315		3500	30978	7000	61955	8750	77444		

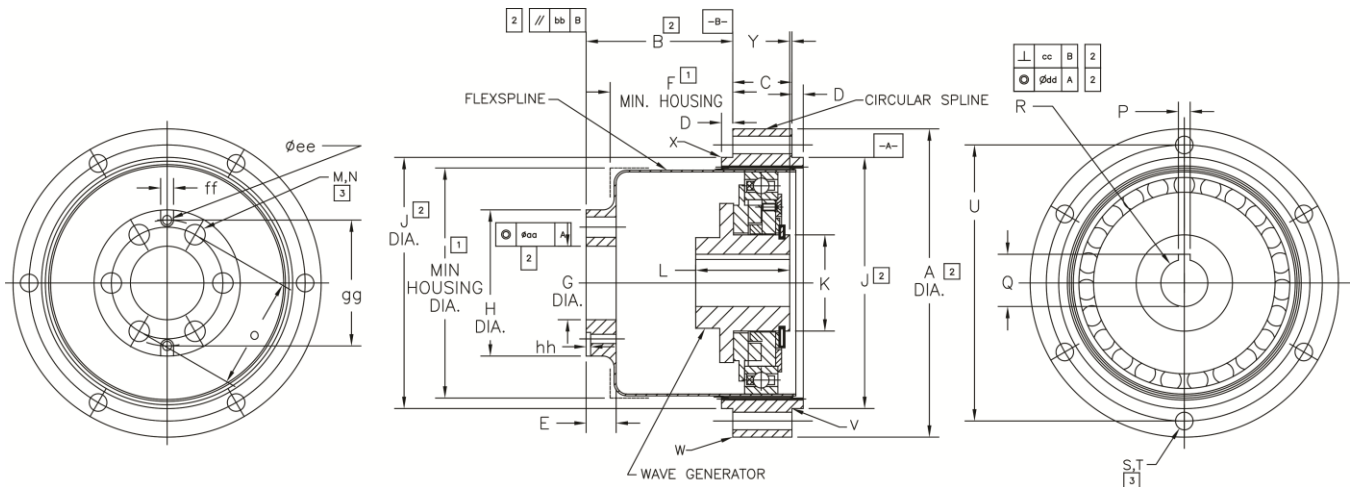
HDC E1 Dimensions



	1C	3C	5C	1M	2M	4M	8M	15M
ØA	2.0	2.625	3.28	4.250	5.25	6.63	8.63	10.63
B	.940 ±.015	1.270 ±.015	1.560 ±.015	2.030 ±.015	2.50 ±.020	3.204 ±.025	4.160 ±.035	5.060 ±.040
C	.38	.50	.63	.81	1.00	1.09	1.44	1.88
D	.09	.11	.12	.13	.14	.16	.19	.25
E	.125	.125	.135	.197	.260	.260	.322	.388
F	.08	.04	.08	.08	.11	.06	.10	.12
ØG	.4375 ^{+0.0007} ₋₀	.6255 ^{+0.0005} ₋₀	.7817 ^{+0.0005} ₋₀	1.0631 ^{+0.0006} ₋₀	.12818 ^{+0.0006} ₋₀	1.6257 ^{+0.0007} ₋₀	2.0945 ^{+0.0008} ₋₀	2.5633 ^{+0.0006} ₋₀
ØH	.830	1.244	1.555	2.000	2.520	3.125	4.055	5.000
ØI	1.47	2.06	2.58	3.33	4.12	5.15	6.67	8.24
ØJ	1.5000 ⁺⁰ _{-0.0012}	2.1410 ⁺⁰ _{-0.0012}	2.6723 ⁺⁰ _{-0.0012}	3.5005 ⁺⁰ _{-0.0012}	4.2818 ⁺⁰ _{-0.0013}	5.3445 ⁺⁰ _{-0.0028}	6.9539 ⁺⁰ _{-0.0029}	8.5634 ⁺⁰ _{-0.0032}
ØK	.551	.826	1.023 ⁺⁰ _{-0.001}	1.023 ⁺⁰ _{-0.001}	1.260 ⁺⁰ _{-0.001}	1.260 ⁺⁰ _{-0.002}	1.890 ⁺⁰ _{-0.002}	2.165 ^{+0.002} _{-0.002}
L	.63	.750 ⁺⁰ _{-0.010}	1.000 ⁺⁰ _{-0.010}	1.000 ⁺⁰ _{-0.010}	1.500 ⁺⁰ _{-0.010}	1.500 ⁺⁰ _{-0.010}	1.875 ⁺⁰ _{-0.010}	2.437 ⁺⁰ _{-0.010}
M	6	6	6	6	6	6	6	6
ØN	.125 ^{+0.010} _{-0.002}	.187 ^{+0.010} _{-0.002}	.218 ^{+0.010} _{-0.002}	.343 ^{+0.010} _{-0.002}	.406 ^{+0.010} _{-0.002}	.406 ^{+0.010} _{-0.002}	.531 ^{+0.010} _{-0.002}	.781 ^{+0.010} _{-0.002}
ØO	.656	.937	1.187	1.531	1.875	2.312	3.062	3.750
P	.062 PIN	.0937 ^{+0.002} ₋₀	.125 ^{+0.002} ₋₀	.125 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.250 ^{+0.002} ₋₀
Q	NA	.415 ^{+0.015} ₋₀	.555 ^{+0.015} ₋₀	.555 ^{+0.015} ₋₀	.710 ^{+0.010} ₋₀	.710 ^{+0.015} ₋₀	.959 ^{+0.015} ₋₀	1.236 ^{+0.015} ₋₀
ØR	.250 ^{+0.001} ₋₀	.3750 ^{+0.0004} ₋₀	.5000 ^{+0.0004} ₋₀	.5000 ^{+0.0004} ₋₀	.6250 ^{+0.0005} ₋₀	.6250 ^{+0.0005} ₋₀	.8750 ^{+0.0005} ₋₀	1.1250 ^{+0.0006} ₋₀
S	6	6	6	6	6	6	6	8
ØT	.125 ^{+0.003} _{-0.002}	.147 ^{+0.003} _{-0.002}	.187 ^{+0.010} _{-0.002}	.218 ^{+0.010} _{-0.002}	.218 ^{+0.010} _{-0.002}	.406 ^{+0.010} _{-0.002}	.468 ^{+0.010} _{-0.002}	.468 ^{+0.010} _{-0.002}
ØU	1.75	2.375	2.937	3.812	4.687	5.875	7.625	9.500
V	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.
W	.016	.016	.015	.015	.015	.015	.015	.015
X	.016	.016	.015	.015	.015	.015	.015	.015
Y	.005 ⁺⁰ _{-0.010}	.028	.067	.099	.075	.047	.105	.088
Z	NA	.242	.361	.211	.569	.448	.562	.787
aa	.002 T.I.R.	.0017 T.I.R.	.0018 T.I.R.	.0019 T.I.R.	.0024 T.I.R.	.0026 T.I.R.	.0027 T.I.R.	.0035 T.I.R.
bb	.001	.0011	.001	.0017	.0019	.0024	.0027	.003
cc	.001	.002	.002	.002	.002	.002	.002	.002
dd	.004 T.I.R.	.0017 T.I.R.	.0018 T.I.R.	.0019 T.I.R.	.0024 T.I.R.	.0026 T.I.R.	.0027 T.I.R.	.0035 T.I.R.
ee	.098	.116	.116	.125	.135	.236	.236	.236
ff	.105	.116	.116	.125	.135	.236	.236	.236
gg	.656	.937	1.343	1.687	2.207	2.312	3.062	3.750
hh	.05	.05	.05	.05	.05	.05	.05	.05

1. DIMENSIONS DENOTE MAXIMUM EXTENT OF ENCROACHMENT ADJOINING STRUCTURE.
2. DIMENSIONS ESTABLISH INTERFACE AND INSTALLATION REQUIREMENTS. MAINTAIN AT ASSEMBLY AND UNDER ALL OPERATING LOAD CONDITIONS.
3. USE ALLOY STEEL SCREWS TORQUED TO MAXIMUM RECOMMENDED VALUE. USE THREAD LOCKER OR OTHER MEANS TO PREVENT LOOSENING.
4. MAINTAINING STANDARD COMPONENTS IN "AS RECEIVED" SETS IS RECOMMENDED.
5. DRAWING IS FOR DIMENSIONAL REVIEW ONLY. **DO NOT SCALE**

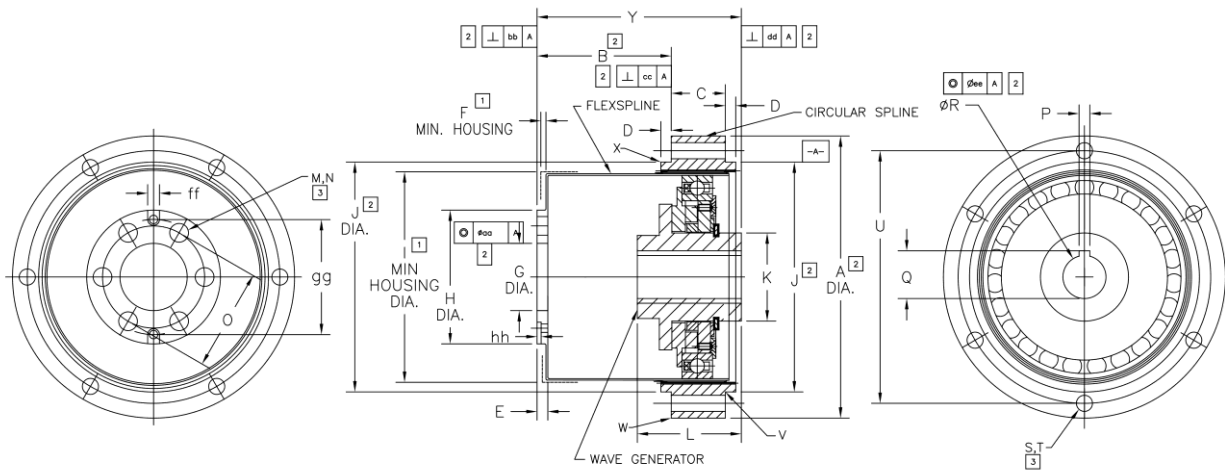
HDC E2 Dimensions



	1C	3C	5C	1M	2M	4M	8M	15M
ØA	2.0	2.630	3.28	4.250	5.25	6.63	8.63	10.63
B	.940 ± .015	1.270 ± 015	1.560 ±.015	2.030 ±.015	2.50 ± 020	3.204 ±.025	4.160 ±.035	5.060 ±.040
C	.38	.50	.63	.81	1.00	1.09	1.44	1.88
D	.09	.11	.12	.12	.14	.16	.19	.25
E	.247	.285	.320	.386	.440	.505	.656	CONSULT
F	.791	1.09	1.34	1.75	2.20	2.85	3.69	CONSULT
ØG	.4375 ^{+0.007} ₋₀	.6255 ^{+0.005} ₋₀	.7817 ^{+0.005} ₋₀	1.0625 ^{+0.008} ₋₀	1.2818 ^{+0.006} ₋₀	1.6250 ^{+0.007} ₋₀	2.0937 ^{+0.008} ₋₀	CONSULT
ØH	.906	1.244	1.555	2.047	2.520	3.110	4.055	5.000
ØI	1.50	2.09	2.56	3.31	4.10	5.12	6.66	8.24
ØJ	1.5000 ⁺⁰ _{.0012}	2.1410 ⁺⁰ _{.0012}	2.6723 ⁺⁰ _{.0025}	3.5005 ⁺⁰ _{.0012}	4.2818 ⁺⁰ _{.0013}	5.3445 ⁺⁰ _{.0028}	6.9539 ⁺⁰ _{.0029}	8.5634 ⁺⁰ _{.0032}
ØK	.551	.827	1.024	1.024	1.260	1.260	1.890	2.165
L	.630	.750	1.000	1.000	1.500	1.500	1.880	2.437
M	6	6	6	6	6	6	6	6
ØN	.125 ^{+0.010} _{-.002}	.187 ^{+0.010} _{-.002}	.218 ^{+0.010} _{-.002}	.343 ^{+0.010} _{-.002}	.406 ^{+0.010} _{-.002}	.406 ^{+0.010} _{-.002}	.531 ^{+0.010} _{-.002}	.781 ^{+0.010} _{-.002}
ØO	.656	.937	1.187	1.531	1.875	2.312	3.062	3.750
P	(2) 4-40 Set Screw	.0937 ^{+0.002} ₋₀	.125 ^{+0.002} ₋₀	.125 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.1875 ^{+0.002} ₋₀	.250 ^{+0.002} ₋₀
Q	NA	.415 ^{+0.015} ₋₀	.555 ^{+0.015} ₋₀	.555 ^{+0.015} ₋₀	.704 ^{+0.015} ₋₀	.704 ^{+0.015} ₋₀	.959 ^{+0.015} ₋₀	1.236 ^{+0.015} ₋₀
ØR	.250 ^{+0.001} ₋₀	.375 ^{+0.001} ₋₀	.500 ^{+0.001} ₋₀	.500 ^{+0.001} ₋₀	.625 ^{+0.001} ₋₀	.625 ^{+0.001} ₋₀	.875 ^{+0.001} ₋₀	1.1250 ^{+0.006} ₋₀
S	6	6	6	6	6	6	6	8
ØT	.125 ^{+0.003} _{-.002}	.147 ^{+0.010} _{-.002}	.187 ^{+0.010} _{-.002}	.218 ^{+0.010} _{-.002}	.218 ^{+0.010} _{-.002}	.406 ^{+0.010} _{-.002}	.468 ^{+0.010} _{-.002}	.468 ^{+0.010} _{-.002}
ØU	1.75	2.375	2.937	3.812	4.687	5.875	7.625	9.500
V	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.	.005R MAX.
W	.016	.016	.015	.015	.015	.015	.015	.015
X	.016	.016	.015	.015	.015	.015	.015	.015
Y	.010 ⁺⁰ _{-.010}	.028	.067	.099	.075	.047	.105	.088
Z	NA	.242	.361	.211	.569	.448	.562	.787
aa	.002 T.I.R.	.002 T.I.R.	.002 T.I.R.	.003 T.I.R.	.004 T.I.R.	.005 T.I.R.	.007 T.I.R.	.007 T.I.R.
bb	.001	.001	.001	.001	.001	.001	.001	.003
cc	.001	.002	.002	.002	.002	.002	.002	.002
dd	.004 T.I.R.	.004 T.I.R.	.005 T.I.R.	.005 T.I.R.	.006 T.I.R.	.006 T.I.R.	.007 T.I.R.	.007 T.I.R.
ee	.098	.116	.116	.125	.135	.236	.236	.236
ff	.105	.116	.116	.125	.135	.236	.236	.236
gg	.656	.937	1.343	1.687	2.207	2.312	3.062	3.750
hh	.05	.05	.05	.05	.05	.05	.05	.05

1. DIMENSIONS DENOTE MAXIMUM EXTENT OF ENCROACHMENT ADJOINING STRUCTURE.
2. DIMENSIONS ESTABLISH INTERFACE AND INSTALLATION REQUIREMENTS. MAINTAIN AT ASSEMBLY AND UNDER ALL OPERATING LOAD CONDITIONS.
3. USE ALLOY STEEL SCREWS TORQUED TO MAXIMUM RECOMMENDED VALUE. USE THREAD LOCKER OR OTHER MEANS TO PREVENT LOOSENING.
4. MAINTAINING STANDARD COMPONENTS IN "AS RECEIVED" SETS IS RECOMMENDED.
5. DRAWING IS FOR DIMENSIONAL REVIEW ONLY. **DO NOT SCALE**

HDC M1 Dimensions



	10	14	20	25	32	40	50	65	80	100
ØA	38 ⁺⁰ _{-.016}	50 ⁺⁰ _{-.016}	70 ⁺⁰ _{-.019}	85 ⁺⁰ _{-.022}	110 ⁺⁰ _{-.022}	135 ⁺⁰ _{-.025}	170 ⁺⁰ _{-.025}	215 ⁺⁰ _{-.029}	265 ⁺⁰ _{-.029}	330 ⁺⁰ _{-.036}
B	15 ± .25	21.2 ± .25	31.3 ± .3	40.3 ± .3	52.3 ± .3	63.3 ± .3	80.3 ± .3	100.3 ± .3	119.3 ± .3	153.5 ± .5
C	7	8	14	16	20	25	30	40	50	60
D	2	2	3	3	3	4	4	5	6	6
E	2.4	2.7	5.4	6.5	8.6	9.5	13.0	16.3	14.6	18
F	1.5	1.5	2	2	2	3	3	4	5	6
ØG	6 ^{+0.010} ₀	11 ^{+0.011} ₀	16 ^{+0.011} ₀	20 ^{+0.013} ₀	26 ^{+0.013} ₀	32 ^{+0.016} ₀	40 ^{+0.016} ₀	52 ^{+0.019} ₀	65 ^{+0.019} ₀	80 ^{+0.019} ₀
ØH	15	23	31.6	39.5	52	64	79	103	126	158
ØI	26.2	37.4	52.3	65	84.6	104.6	131	169.4	209.3	261
ØJ	28 ⁺⁰ _{-.016}	38 ⁺⁰ _{-.016}	54 ⁺⁰ _{-.019}	67 ⁺⁰ _{-.019}	90 ⁺⁰ _{-.022}	110 ⁺⁰ _{-.022}	135 ⁺⁰ _{-.025}	177 ⁺⁰ _{-.025}	218 ⁺⁰ _{-.029}	272 ⁺⁰ _{-.032}
ØK	10	14	21	26	26	32	32	48	55	65
L	16	18	27 ⁺⁰ _{-.1}	32 ⁺⁰ _{-.1}	32 ⁺⁰ _{-.1}	40 ⁺⁰ _{-.1}	40 ⁺⁰ _{-.1}	52 ⁺⁰ _{-.1}	65 ⁺⁰ _{-.1}	70 ⁺⁰ _{-.1}
M	6	6	6	6	6	6	6	6	12	12
ØN	2.4	3.4	4.5	5.5	6.6	9	14	14	11	14
ØO	11	17	24	30	40	50	60	80	104	130
P	—	—	3 ± .0125	4 ± .0150	5 ± .0150	5 ± .0150	6 ± .0150	8 ± .0180	8 ± .0180	8 ± .0180
Q	—	—	10.4	12.8	16.3	16.3	21.8	27.3	31.3	31.3
ØR	5 ^{+0.013} ₀	6 ^{+0.013} ₀	9 ^{+0.015} ₀	11 ^{+0.018} ₀	14 ^{+0.018} ₀	14 ^{+0.018} ₀	19 ^{+0.021} ₀	24 ^{+0.021} ₀	28 ^{+0.021} ₀	28 ^{+0.021} ₀
S	6	6	6	6	6	6	6	6	8	8
ØT	2.9	3.5	3.5	4.5	5.5	6.6	9	11	11	14
ØU	33	44	60	75	100	120	150	195	240	290
V	.13	.13	.3	.3	.3	.3	.3	.3	.3	.3
W	—	—	.4	.4	.4	.4	.4	.4	.4	.4
X	.25	.25	.4	.4	.4	.4	.4	.4	.4	.4
Y	27 ± .3	33.6 ± .4	51.5 ± .5	63.5 ± .5	77.5 ± .6	95.5 ± .6	116.4 ± .7	146.3 ± .7	177.3 ± .7	220.2 ± .7
aa	.040	.040	.044	.047	.050	.063	.066	.070	.090	.110
bb	.020	.028	.028	.036	.044	.050	.060	.070	.080	.090
cc	.010	.011	.031	.033	.035	.045	.047	.049	.064	.080
dd	.020	.020	.025	.036	.036	.048	.048	.048	.054	.060
ee	.040	.040	.044	.047	.050	.063	.066	.070	.090	.110
ff	2	2.66	2.66	2.94	2.94	3.17	3.94	6	6	6
gg	11	17	16.66	23.80	34.11	42.85	56.06	58.72	77.77	95.25
hh	1	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27

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