Table 4.1. Bearing dimensions.

Bearing Basic Number	d [mm]	Ball Bearings					Roller Bearings				
		d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]	d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]
L00	10	26	8	0.30	12.7	23.4					
200	10	30	9	0.64	13.8	26.7					
300	10	35	11	0.64	14.8	31.2					
L01	12	28	8	0.30	14.5	25.4					
201	12	32	10	0.64	16.2	28.4					
301	12	37	12	1.02	17.7	32.0					
L02	15	32	9	0.30	17.5	29.2					
202	15	35	11	0.64	19.0	31.2					
302	15	42	13	1.02	21.2	36.6					
L03	17	35	10	0.30	19.8	32.3	35	10	0.64	20.8	32.0
203	17	40	12	0.64	22.4	34.8	40	12	0.64	20.8	36.3
303	17	47	14	1.02	23.6	41.1	47	14	1.02	22.9	41.4
L04	20	42	12	0.64	23.9	38.1	42	12	0.64	24.4	36.8
204	20	47	14	1.02	25.9	41.7	47	14	1.02	25.9	42.7
304	20	52	15	1.02	27.7	45.2	52	15	1.02	25.9	46.2
L05	25	47	12	0.64	29.0	42.9	47	12	0.64	29.2	43.4
205	25	52	15	1.02	30.5	46.7	52	15	1.02	30.5	47.0
305	25	62	17	1.02	33.0	54.9	62	17	1.02	31.5	55.9
L06	30	55	13	1.02	34.8	49.3	47	9	0.38	33.3	43.9
206	30	62	16	1.02	36.8	55.4	62	16	1.02	36.1	56.4
306	30	72	19	1.02	38.4	64.8	72	19	1.52	37.8	64.0
L07	35	62	14	1.02	40.1	56.1	55	10	0.64	39.4	50.8
207	35	72	17	1.02	42.4	65.0	72	17	1.02	41.7	65.3
307	35	80	21	1.52	45.2	70.4	80	21	1.52	43.7	71.4
L08	40	68	15	1.02	45.2	62.0	68	15	1.02	45.7	62.7
208	40	80	18	1.02	48.0	72.4	80	18	1.52	47.2	72.9
308	40	90	23	1.52	50.8	80.0	90	23	1.52	49.0	81.3

Table 4.1. Bearing dimensions (*continued*).

Bearing Basic Number	d [mm]	Ball Bearings d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]	Roller Bearings d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]
L09	45	75	16	1.02	50.8	68.6	75	16	1.02	50.8	69.3
209	45	85	19	1.02	52.8	77.5	85	19	1.52	52.8	78.2
309	45	100	25	1.52	57.2	88.9	100	25	2.03	55.9	90.4
L10	50	80	16	1.02	55.6	73.7	72	12	0.64	54.1	68.1
210	50	90	20	1.02	57.7	82.3	90	20	1.52	57.7	82.8
310	50	110	27	2.03	64.3	96.5	110	27	2.03	61.0	99.1
L11	55	90	18	1.02	61.7	83.1	90	18	1.52	62.0	83.6
211	55	100	21	1.52	65.0	90.2	100	21	2.03	64.0	91.4
311	55	120	29	2.03	69.8	106.2	120	29	2.03	66.5	108.7
L12	60	95	18	1.02	66.8	87.9	95	18	1.52	67.1	88.6
212	60	110	22	1.52	70.6	99.3	110	22	2.03	69.3	101.3
312	60	130	31	2.03	75.4	115.6	130	31	2.54	72.9	117.9
L13	65	100	18	1.02	71.9	92.7	100	18	1.52	72.1	93.7
213	65	120	23	1.52	76.5	108.7	120	23	2.54	77.0	110.0
313	65	140	33	2.03	81.3	125.0	140	33	2.54	78.7	127.0
L14	70	110	20	1.02	77.7	102.1	110	20			
214	70	125	24	1.52	81.0	114.0	125	24	2.54	81.8	115.6
314	70	150	35	2.03	86.9	134.4	150	35	3.18	84.3	135.6
L15	75	115	20	1.02	82.3	107.2	115	20			
215	75	130	25	1.52	86.1	118.9	130	25	2.54	85.6	120.1
315	75	160	37	2.03	92.7	143.8	160	37	3.18	90.4	145.8
L16	80	125	22	1.02	88.1	116.3	125	22	2.03	88.4	117.6
216	80	140	26	2.03	93.2	126.7	140	26	2.54	91.2	129.3
316	80	170	39	2.03	98.6	152.9	170	39	3.18	96.0	154.4
L17	85	130	22	1.02	93.2	121.4	130	22	2.03	93.5	122.7
217	85	150	28	2.03	99.1	135.6	150	28	3.18	98.0	139.2
317	85	180	41	2.54	105.7	160.8	180	41	3.96	102.9	164.3

Table 4.1. Bearing dimensions (*continued*).

Bearing Basic Number	d [mm]	Ball Bearings d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]	Roller Bearings d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]
L18	85	140	24	1.02	99.6	129.0	140	24			
218	85	160	30	2.03	104.4	145.5	160	30	3.18	103.1	147.6
318	85	190	43	2.54	111.3	170.2	190	43	3.96	108.2	172.7
L19	90	145	24	1.52	104.4	134.1	145	24			
219	90	170	32	2.03	110.2	154.9	170	32	3.18	109.0	157.0
319	90	200	45	2.54	117.3	179.3	200	45	3.96	115.1	181.9
L20	95	150	24	1.52	109.5	139.2	150	24	2.54	109.5	141.7
220	95	180	34	2.03	116.1	164.1	180	34	3.96	116.1	167.1
320	95	215	47	2.54	122.9	194.1	215	47	4.75	122.4	194.6
L21	100	160	26	2.03	116.1	146.8	160	26			
221	100	190	36	2.03	121.9	173.5	190	36	3.96	121.4	175.3
321	100	225	49	2.54	128.8	203.5	225	49	4.75	128.0	203.5
L22	105	170	28	2.03	122.7	156.5	170	28	2.54	121.9	159.3
222	105	200	38	2.03	127.8	182.6	200	38	3.96	127.3	183.9
322	105	240	50	2.54	134.4	218.2	240	50	4.75	135.9	217.2
L24	120	180	28	2.03	132.6	166.6	180	28			
224	120	215	40	2.03	138.2	197.1	215	40	4.75	139.2	198.9
324	120						260	55	6.35	147.8	235.2
L26	130	200	33	2.03	143.8	185.4	200	33	3.18	143.0	188.2
226	130	230	40	2.54	149.9	210.1	230	40	4.75	149.1	213.9
326	130	280	58	3.05	160.0	253.0	280	58	6.35	160.3	254.5
L28	140	210	33	2.03	153.7	195.3	210	33			
228	140	250	42	2.54	161.5	228.6	250	42	4.75	161.5	232.4
328	140						300	62	7.92	172.0	271.3
L30	150	225	35	2.03	164.3	209.8	225	35	3.96	164.3	212.3
230	150	270	45	2.54	173.0	247.6	270	45	6.35	174.2	251.0
L32	160	240	38	2.03	175.8	223.0	240	38			
232	160						290	48	6.35	185.7	269.5

Table 4.1. Bearing dimensions (*continued*).

Bearing Basic Number	d [mm]	Ball Bearings					Roller Bearings				
		d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]	d_0 [mm]	w [mm]	r [mm]	d_S [mm]	d_H [mm]
L36	180	280	46	2.03	196.8	261.6	280	46	4.75	199.6	262.9
236	180						320	52	6.35	207.5	298.2
L40	200						310	51			
240	200						360	58	7.92	232.4	334.5
L44	220						340	56			
244	220						400	65	9.52	256.0	372.1
L48	240						360	56			
248	240						440	72	9.52	279.4	408.4

Source: R. C. Juvinall and K. M. Marshek, *Fundamentals of Machine Component Design*, John Wiley & Sons, New York, 1991.

Table 4.2.
Bearing rated capacities, C, for 90×10^6 revolution Life (L_R) with 90 % reliability.

	Radial Ball, $\alpha = 0°$			Angular Ball, $\alpha = 25°$			Roller		
	L00	200	300	L00	200	300	1000	1200	1300
d	xlt	lt	med	xlt	lt	med	xlt	lt	med
[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
10	1.02	1.42	1.90	1.02	1.10	1.88			
12	1.12	1.42	2.46	1.10	1.54	2.05			
15	1.22	1.56	3.05	1.28	1.66	2.85			
17	1.32	2.70	3.75	1.36	2.20	3.55	2.12	3.80	4.90
20	2.25	3.35	5.30	2.20	3.05	5.80	3.30	4.40	6.20
25	2.45	3.65	5.90	2.65	3.25	7.20	3.70	5.50	8.50
30	3.35	5.40	8.80	3.60	6.00	8.80		8.30	10.0
35	4.20	8.50	10.6	4.75	8.20	11.0		9.30	13.1
40	4.50	9.40	12.6	4.95	9.90	13.2	7.20	11.1	16.5
45	5.80	9.10	14.8	6.30	10.4	16.4	7.40	12.2	20.9
50	6.10	9.70	15.8	6.60	11.0	19.2		12.5	24.5
55	8.20	12.0	18.0	9.00	13.6	21.5	11.3	14.9	27.1
60	8.70	13.6	20.0	9.70	16.4	24.0	12.0	18.9	32.5
65	9.10	16.0	22.0	10.2	19.2	26.5	12.2	21.1	38.3
70	11.6	17.0	24.5	13.4	19.2	29.5		23.6	44.0
75	12.2	17.0	25.5	13.8	20.0	32.5		23.6	45.4
80	14.2	18.4	28.0	16.6	22.5	35.5	17.3	26.2	51.6
85	15.0	22.5	30.0	17.2	26.5	38.5	18.0	30.7	55.2
90	17.2	25.0	32.5	20.0	28.0	41.5		37.4	65.8
95	18.0	27.5	38.0	21.0	31.0	45.5		44.0	65.8
100	18.0	30.5	40.5	21.5	34.5		20.9	48.0	72.9
105	21.0	32.0	43.5	24.5	37.5			49.8	84.5
110	23.5	35.0	46.0	27.5	41.0	55.0	29.4	54.3	85.4
120	24.5	37.5		28.5	44.5			61.4	100.1
130	29.5	41.0		33.5	48.0	71.0	48.9	69.4	120.1
140	30.5	47.5		35.0	56.0			77.4	131.2
150	34.5			39.0	62.0		58.7	83.6	
160								113.4	
180	47.0			54.0			97.9	140.1	
200								162.4	
220								211.3	
240								258.0	

Source: New Departure-Hyatt Bearing Division, General Motors Corporation.

Table 4.3. Application Factors K_a.

Type of Application	Ball Bearing	Roller Bearing
Uniform force, no impact	1.0	1.0
Gearing	1.0-1.3	1.0
Light impact	1.2-1.5	1.0-1.1
Moderate impact	1.5-2.0	1.1-1.5
Heavy impact	2.0-3.0	1.5-2.0

Source: R. C. Juvinall and K. M. Marshek, *Fundamentals of Machine Component Design*, John Wiley & Sons, New York, 1991.

Table 4.4. Representative bearing design lives.

Type of application	Design life k h (thousands of hours)
Instruments and apparatus for infrequent use	0.1-0.5
Aircraft engines	0.5-2.0
Machines used intermittently, where service interruption is of minor importance	4-8
Machines intermittently used, where reliability is of great importance	8-14
Machines for 8-hour service, but not every day	14-20
Machines for 8-hour service, every working day	20-30
Machines for continuous 24-hour service	50-60
Machines for continuous 24-hour service where reliability is of extreme importance	100-200

Source: R. C. Juvinall and K. M. Marshek, *Fundamentals of Machine Component Design*, John Wiley & Sons, New York, 1991.