

## LIST OF SYMBOLS

<u>Symbol</u>	<u>Description</u>	<u>Units</u>
C	Basic dynamic capacity of a bearing raceway or entire bearing	N (lb)
$d_m$	Pitch diameter	mm (in.)
D	Ball or roller diameter	mm (in.)
$f_{cm}$	Material factor	
$\alpha$	Contact Angle	rad, °

**TABLE CD11.1.** Metric Values for  $f_{cm}$  for Radial- and Angular-Contact Ball Bearings<sup>a</sup>

$\frac{D \cos \alpha}{d_m}$	Single-Row Radial-Contact				
	Groove Ball Bearings; Single and Double-Row Angular-Contact Groove Ball Bearings; Insert Bearings <sup>b</sup>	Filling Slot Ball Bearing	Double-Row Radial-Contact Groove Ball Bearings	Single-Row and Double-Row Self-Aligning Ball Bearings	Single-Row Radial-Contact Separable Ball Bearings
0.01	37.83	32.01	35.75	12.87	12.22
0.02	46.54	39.38	44.07	16.12	15.21
0.03	52.39	44.33	49.66	18.59	17.42
0.04	56.94	48.18	53.95	20.67	19.37
0.05	60.71	51.37	57.46	22.49	21.06
0.06	63.83	54.01	60.45	24.18	22.62
0.07	66.43	56.21	62.92	25.87	24.05
0.08	68.64	58.08	65.00	27.43	25.35
0.09	70.59	59.73	66.82	28.99	26.78
0.10	72.15	61.05	68.38	30.42	27.95
0.11	73.58	62.26	69.68	31.85	29.25
0.12	74.75	63.25	70.85	33.28	30.42
0.13	75.66	64.02	71.76	34.58	31.72
0.14	76.44	64.68	72.41	36.01	32.89
0.15	77.09	65.23	72.93	37.31	34.06
0.16	77.48	65.56	73.45	38.61	35.23
0.17	77.74	65.78	73.71	39.91	36.27
0.18	77.87	65.89	73.84	41.21	37.44
0.19	78.00	66.00	73.84	42.38	38.48
0.20	77.87	65.89	73.84	43.55	39.65
0.21	77.74	65.78	73.58	44.72	40.69
0.22	77.48	65.56	73.45	45.76	41.73
0.23	77.09	65.23	73.06	46.93	43.77
0.24	76.70	64.90	72.67	47.84	43.80
0.25	76.18	64.46	72.15	48.75	44.72
0.26	75.66	64.02	71.63	49.66	45.76
0.27	75.01	63.47	70.98	50.44	46.67
0.28	74.23	62.81	70.33	51.22	47.58
0.29	73.58	62.26	69.68	51.87	48.36
0.30	72.80	61.60	68.90	52.39	49.14
0.31	71.89	60.83	68.12	52.78	49.92
0.32	70.98	60.06	67.34	53.17	50.57
0.33	70.07	59.29	66.43	53.43	51.22
0.34	69.16	58.52	65.52	53.56	51.74
0.35	68.12	57.64	64.61	53.69	52.13
0.36	67.21	56.87	63.57	53.69	52.52
0.37	66.17	55.99	62.66	53.56	52.94
0.38	65.00	55.00	61.62	53.30	53.04
0.39	63.96	54.12	60.58	52.91	53.17
0.40	62.92	53.24	59.54	52.52	53.17

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm. Values of  $f_{cm}$  for intermediate values of  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>b</sup>Insert bearings are not in accordance with ISO 281<sup>c</sup>

<sup>c</sup>International Organization for Standards, *International Standard ISO 281*, "Rolling Bearings-Dynamic Load Ratings and Rating Life" (1990-12-01).

**TABLE CD11.2.** Inch Values for  $f_{cm}$  for Radial- and Angular-Contact Ball Bearings<sup>a</sup>

$\frac{D \cos \alpha}{d_m}$	Single-Row Radial-Contact				
	Groove Ball Bearings; Single and Double-Row Angular-Contact Groove Ball Bearings; Insert Bearings <sup>b</sup>	Filling Slot Ball Bearing	Double-Row Radial-Contact Groove Ball Bearings	Single-Row and Double-Row Self-Aligning Ball Bearings	Single-Row Radial-Contact Separable Ball Bearings
0.01	2875	2433	2717	978	929
0.02	3537	2993	3349	1225	1156
0.03	3982	3369	3774	1413	1324
0.04	4327	3662	4100	1571	1472
0.05	4614	3904	4367	1709	1601
0.06	4851	4105	4594	1838	1719
0.07	5049	4272	4782	1966	1828
0.08	5217	4414	4940	2085	1927
0.09	5365	4539	5078	2203	2035
0.10	5483	4640	5197	2312	2124
0.11	5592	4732	5296	2421	2223
0.12	5681	4807	5385	2529	2312
0.13	5750	4866	5454	2628	2411
0.14	5809	4916	5503	2737	2500
0.15	5859	4983	5543	2836	2589
0.16	5888	4993	5582	2934	2677
0.17	5908	4999	5602	3033	2757
0.18	5918	5008	5612	3132	2845
0.19	5928	5016	5612	3221	2924
0.20	5918	5008	5612	3310	3013
0.21	5908	4999	5592	3399	3092
0.22	5888	4983	5582	3478	3171
0.23	5859	4957	5553	3567	3251
0.24	5829	4932	5523	3636	3330
0.25	5790	4899	5510	3705	3399
0.26	5750	4866	5444	3774	3478
0.27	5701	4824	5394	3833	3547
0.28	5641	4774	5345	3893	3616
0.29	5592	4732	5296	3942	3675
0.30	5528	4678	5236	3982	3735
0.31	5464	4623	5177	4011	3794
0.32	5394	4565	5118	4041	3843
0.33	5325	4506	5049	4061	3893
0.34	5256	4448	4980	4071	3932
0.35	5177	4381	4910	4080	3962
0.36	5108	4322	4831	4080	3992
0.37	5029	4255	4762	4071	4021
0.38	4940	4180	4683	4051	4031
0.39	4861	4113	4604	4021	4041
0.40	4782	4046	4525	3992	4041

<sup>a</sup>Use to obtain C in pounds when D and  $d_m$  are given in inches. Values of  $f_{cm}$  for intermediate values of  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>b</sup>Insert bearings are not in accordance with ISO 281<sup>c</sup>

<sup>c</sup>International Organization for Standards, *International Standard ISO 281*, "Rolling Bearings-Dynamic Load Ratings and Rating Life" (1990-12-01).

**TABLE CD11.3.** Metric Values for  $f_{cm}$  for Thrust Ball Bearings<sup>a</sup>

$D^b$ $d_m$	$f_{cm}$	$D \cos \alpha^b$ $d_m$	$f_{cm}$		
	$\alpha = 90^\circ$		$\alpha = 45^{\circ c}$	$\alpha = 60^\circ$	$\alpha = 75^\circ$
0.01	47.71	0.01	54.73	50.96	48.49
0.02	58.76	0.02	67.21	62.53	59.67
0.03	66.43	0.03	75.66	70.46	67.21
0.04	72.41	0.04	82.29	76.57	72.93
0.05	77.35	0.05	87.49	81.38	77.61
0.06	81.77	0.06	91.91	85.54	81.51
0.07	85.54	0.07	95.55	88.92	84.76
0.08	89.05	0.08	98.67	91.78	87.49
0.09	92.30	0.09	101.40	94.38	89.96
0.10	95.29	0.10	103.61	96.46	91.91
0.11	98.02	0.11	105.43	98.15	---
0.12	100.62	0.12	106.99	99.58	---
0.13	103.09	0.13	108.29	100.75	---
0.14	105.43	0.14	109.33	101.79	---
0.15	107.51	0.15	110.11	102.44	---
0.16	109.72	0.16	110.63	102.96	---
0.17	111.67	0.17	111.02	103.35	---
0.18	113.62	0.18	111.15	103.48	---
0.19	115.44	0.19	111.15	103.48	---
0.20	117.26	0.20	111.02	103.35	---
0.21	118.95	0.21	110.76	---	---
0.22	120.64	0.22	110.37	---	---
0.23	122.33	0.23	109.85	---	---
0.24	123.89	0.24	109.20	---	---
0.25	125.45	0.25	108.42	---	---
0.26	126.88	0.26	107.64	---	---
0.27	128.31	0.27	106.60	---	---
0.28	129.74	0.28	105.69	---	---
0.29	131.04	0.29	104.52	---	---
0.30	132.47	0.30	103.48	---	---
0.31	133.77	---	---	---	---
0.32	135.07	---	---	---	---
0.33	136.24	---	---	---	---
0.34	137.54	---	---	---	---
0.35	138.71	---	---	---	---

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm.

<sup>b</sup>Values of  $f_{cm}$  for  $D/d_m$  or  $D \cos \alpha/d_m$  and/or angles other than those shown are obtained by linear interpolation.

<sup>c</sup>For thrust bearings  $\alpha > 45^\circ$ . Values for  $\alpha = 45^\circ$  permit interpolation of values for  $\alpha$  between  $45^\circ$  and  $60^\circ$ .

**TABLE CD11.4.** Inch Values for  $f_{cm}$  for Thrust Ball Bearings<sup>a</sup>

$D^b$ $d_m$	$f_{cm}$	$D \cos \alpha^b$ $d_m$	$f_{cm}$		
	$\alpha = 90^\circ$		$\alpha = 45^\circ{}^c$	$\alpha = 60^\circ$	$\alpha = 75^\circ$
0.01	3626	0.01	4159	3873	3685
0.02	4466	0.02	5108	4752	4535
0.03	5049	0.03	5750	5355	5108
0.04	5503	0.04	6254	5819	5543
0.05	5879	0.05	6649	6185	5898
0.06	6215	0.06	6985	6501	6195
0.07	6501	0.07	7262	6758	6442
0.08	6768	0.08	7499	6975	6649
0.09	7015	0.09	7706	7173	6837
0.10	7242	0.10	7874	7331	6985
0.11	7450	0.11	8013	7459	---
0.12	7647	0.12	8131	7568	---
0.13	7835	0.13	8230	7657	---
0.14	8013	0.14	8309	7736	---
0.15	8171	0.15	8368	7785	---
0.16	8339	0.16	8408	7825	---
0.17	8487	0.17	8438	7855	---
0.18	8635	0.18	8447	7864	---
0.19	8773	0.19	8447	7864	---
0.20	8912	0.20	8438	7855	---
0.21	9040	0.21	8418	---	---
0.22	9169	0.22	8388	---	---
0.23	9297	0.23	8349	---	---
0.24	9416	0.24	8299	---	---
0.25	9534	0.25	8240	---	---
0.26	9643	0.26	8181	---	---
0.27	9752	0.27	8102	---	---
0.28	9860	0.28	8034	---	---
0.29	9959	0.29	7944	---	---
0.30	10068	0.30	7864	---	---
0.31	10167	---	---	---	---
0.32	10265	---	---	---	---
0.33	10354	---	---	---	---
0.34	10453	---	---	---	---
0.35	10542	---	---	---	---

<sup>a</sup>Use to obtain C in Pounds when D and  $d_m$  are given in inches.

<sup>b</sup>Values of  $f_{cm}$  for  $D/d_m$  or  $D \cos \alpha/d_m$  and/or angles other than those shown are obtained by linear interpolation.

<sup>c</sup>For thrust bearings  $\alpha > 45^\circ$ . Values for  $\alpha = 45^\circ$  permit interpolation of values for  $\alpha$  between  $45^\circ$  and  $60^\circ$ .

**TABLE CD11.5.** Metric Values for  $f_{cm}$  for Radial Roller Bearings<sup>a</sup>

$\frac{D \cos \alpha^b}{d_m}$	Cylindrical Roller Bearings;	Drawn Cup	Spherical Roller Bearings
	Tapered Roller Bearings; Needle Roller Bearings with Machined Rings	Needle Roller Bearings	
0.01	57.310	52.100	59.915
0.02	66.880	60.800	69.920
0.03	73.150	66.500	76.475
0.04	77.770	70.700	81.305
0.05	81.510	74.100	85.215
0.06	84.590	76.900	88.435
0.07	87.120	79.200	91.080
0.08	89.210	81.100	93.265
0.09	91.080	82.800	95.220
0.10	92.620	84.200	96.830
0.11	93.830	85.300	98.095
0.12	95.040	86.400	99.360
0.13	95.810	87.100	100.165
0.14	96.470	87.700	100.855
0.15	97.020	88.200	101.430
0.16	97.350	88.500	101.775
0.17	97.570	88.700	102.005
0.18	97.680	88.800	102.120
0.19	97.680	88.800	102.120
0.20	97.570	88.700	102.005
0.21	97.350	88.500	101.775
0.22	97.020	88.200	101.430
0.23	96.580	87.800	100.970
0.24	96.250	87.500	100.625
0.25	95.590	86.900	99.935
0.26	95.040	86.400	99.360
0.27	94.380	85.800	98.670
0.28	93.720	85.200	97.980
0.29	92.840	84.400	97.060
0.30	92.070	83.700	96.255
0.31	91.300	83.000	95.450
0.32	90.420	82.200	94.530
0.33	89.430	81.300	93.495
0.34	88.440	80.400	92.460
0.35	87.450	79.500	91.425
0.36	86.460	78.600	90.390
0.37	85.360	77.600	89.240
0.38	84.370	76.700	88.205
0.39	83.270	75.700	87.055
0.40	82.060	74.600	85.790
0.41	80.960	73.600	84.640
0.42	79.750	72.500	83.375
0.43	78.540	71.400	82.110
0.44	77.330	70.300	80.845
0.45	76.120	69.200	79.580
0.46	74.910	68.100	78.315
0.47	73.700	67.000	77.050
0.48	72.380	65.800	75.670
0.49	71.060	64.600	74.290
0.50	69.850	63.500	73.025

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D \cos \alpha/d_m$  are obtained by linear interpolation.

**TABLE CD11.6.** Inch Values for  $f_{cm}$  for Radial Roller Bearings<sup>a</sup>

$\frac{D \cos \alpha^b}{d_m}$	Cylindrical Roller Bearings; Tapered Roller Bearings;	Drawn Cup	Spherical
	Needle Roller Bearings with Machined Rings	Needle Roller Bearings	Roller Bearings
0.01	5149	4681	5383
0.02	6009	5463	6282
0.03	6573	5975	6871
0.04	6987	6352	7305
0.05	7324	6658	7657
0.06	7600	6909	7945
0.07	7828	7116	8183
0.08	8016	7287	8380
0.09	8184	7440	8556
0.10	8322	7565	8700
0.11	8431	7665	8814
0.12	8539	7763	8927
0.13	8609	7826	9000
0.14	8668	7880	9062
0.15	8718	7925	9114
0.16	8747	7952	9145
0.17	8767	7970	9166
0.18	8778	7979	9176
0.19	8778	7979	9176
0.20	8767	7970	9166
0.21	8747	7952	9145
0.22	8718	7925	9114
0.23	8678	7889	9073
0.24	8648	7862	9041
0.25	8589	7808	8980
0.26	8539	7763	8927
0.27	8480	7709	8865
0.28	8421	7655	8803
0.29	8342	7584	8721
0.30	8273	7521	8649
0.31	8204	7458	8577
0.32	8125	7386	8494
0.33	8036	7305	8401
0.34	7946	7224	8308
0.35	7857	7143	8214
0.36	7768	7062	8121
0.37	7669	6972	8018
0.38	7580	6891	7925
0.39	7482	6802	7822
0.40	7373	6703	7708
0.41	7274	6613	7604
0.42	7165	6514	7491
0.43	7057	6415	7377
0.44	6948	6316	7263
0.45	6840	6218	7151
0.46	6731	6119	7037
0.47	6622	6020	6923
0.48	6503	5912	6799
0.49	6384	5804	6675
0.50	6276	5705	6561

<sup>a</sup>Use to obtain C in pounds when D and  $d_m$  are given in inches.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D \cos \alpha/d_m$  are obtained by linear interpolation.

**TABLE CD11.7.** Metric Values for  $f_{cm}$  for Tapered Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ{}^c$	$\alpha = 65^\circ{}^d$	$\alpha = 80^\circ{}^e$
0.01	115.94	0.01	120.67	117.81	116.16
0.02	135.19	0.02	140.58	137.17	135.30
0.03	147.95	0.03	153.45	149.82	147.73
0.04	157.74	0.04	163.13	159.17	157.08
0.05	165.77	0.05	170.72	166.65	164.34
0.06	172.59	0.06	176.99	172.70	170.39
0.07	178.64	0.07	182.16	177.76	175.34
0.08	183.92	0.08	186.45	182.05	179.52
0.09	188.87	0.09	190.08	185.57	183.04
0.10	193.27	0.10	193.05	188.54	185.90
0.11	197.45	0.11	195.58	190.96	188.32
0.12	201.30	0.12	197.67	192.94	190.30
0.13	204.93	0.13	199.21	194.48	191.84
0.14	208.34	0.14	200.53	195.69	193.05
0.15	211.53	0.15	201.41	196.68	193.93
0.16	214.61	0.16	202.07	197.23	---
0.17	217.47	0.17	202.40	197.56	---
0.18	220.33	0.18	202.51	197.67	---
0.19	222.97	0.19	202.40	197.56	---
0.20	225.50	0.20	202.07	197.23	---
0.21	227.92	0.21	201.52	---	---
0.22	230.34	0.22	200.86	---	---
0.23	232.65	0.23	199.98	---	---
0.24	234.85	0.24	198.99	---	---
0.25	236.94	0.25	197.78	---	---
0.26	239.03	0.26	196.57	---	---
0.27	241.01	---	---	---	---
0.28	242.99	---	---	---	---
0.29	244.97	---	---	---	---
0.30	246.73	---	---	---	---

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .



**TABLE CD11.8.** Inch Values for  $f_{cm}$  for Tapered Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ$ <sup>c</sup>	$\alpha = 65^\circ$ <sup>d</sup>	$\alpha = 80^\circ$ <sup>e</sup>
0.01	10400	0.01	10824	10568	10420
0.02	12127	0.02	12610	12304	12136
0.03	13271	0.03	13764	13439	13251
0.04	14149	0.04	14633	14278	14090
0.05	14870	0.05	15314	14949	14741
0.06	15481	0.06	15876	15491	15284
0.07	16024	0.07	16340	15945	15728
0.08	16498	0.08	16725	16330	16103
0.09	16942	0.09	17050	16646	16419
0.10	17336	0.10	17317	16912	16675
0.11	17711	0.11	17544	17129	16892
0.12	18057	0.12	17731	17307	17070
0.13	18382	0.13	17869	17445	17208
0.14	18688	0.14	17988	17553	17317
0.15	18974	0.15	18066	17642	17396
0.16	19251	0.16	18126	17692	---
0.17	19507	0.17	18155	17721	---
0.18	19764	0.18	18165	17731	---
0.19	20000	0.19	18155	17721	---
0.20	20227	0.20	18126	17692	---
0.21	20444	0.21	18076	---	---
0.22	20661	0.22	18017	---	---
0.23	20869	0.23	17938	---	---
0.24	21066	0.24	17849	---	---
0.25	21254	0.25	17741	---	---
0.26	21441	0.26	17632	---	---
0.27	21619	---	---	---	---
0.28	21796	---	---	---	---
0.29	21974	---	---	---	---
0.30	22132	---	---	---	---

<sup>a</sup>Use to obtain C in pounds when D and  $d_m$  are given in inches.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .

**TABLE CD11.9.** Metric Values for  $f_{cm}$  for Cylindrical Roller Thrust Bearings and Needle Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ{}^c$	$\alpha = 65^\circ{}^d$	$\alpha = 80^\circ{}^e$
0.01	105.4	0.01	109.7	107.1	105.6
0.02	122.9	0.02	127.8	124.7	123.0
0.03	134.5	0.03	139.5	136.2	134.3
0.04	143.4	0.04	148.3	144.7	142.8
0.05	150.7	0.05	155.2	151.5	149.4
0.06	156.9	0.06	160.9	157.0	154.9
0.07	162.4	0.07	165.6	161.6	159.4
0.08	167.2	0.08	169.5	165.5	163.2
0.09	171.7	0.09	172.8	168.7	166.4
0.10	175.7	0.10	175.5	171.4	169.0
0.11	179.5	0.11	177.8	173.6	171.2
0.12	183.0	0.12	179.7	175.4	173.0
0.13	186.3	0.13	181.1	176.8	174.4
0.14	189.4	0.14	182.3	177.9	175.5
0.15	192.3	0.15	183.1	178.8	176.3
0.16	195.1	0.16	183.7	179.3	---
0.17	197.7	0.17	184.0	179.6	---
0.18	200.3	0.18	184.1	179.7	---
0.19	202.7	0.19	184.0	179.6	---
0.20	205.0	0.20	183.7	179.3	---
0.21	207.2	0.21	183.2	---	---
0.22	209.4	0.22	182.6	---	---
0.23	211.5	0.23	181.8	---	---
0.24	213.5	0.24	180.9	---	---
0.25	215.4	0.25	179.8	---	---
0.26	217.3	0.26	178.7	---	---
0.27	219.1	---	---	---	---
0.28	220.9	---	---	---	---
0.29	222.7	---	---	---	---
0.30	224.3	---	---	---	---

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .

**TABLE CD11.10.** Inch Values for  $f_{cm}$  for Cylindrical Roller Thrust Bearings and Needle Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ{}^c$	$\alpha = 65^\circ{}^d$	$\alpha = 80^\circ{}^e$
0.01	9454	0.01	9840	9607	9472
0.02	11024	0.02	11464	11186	11033
0.03	12065	0.03	12513	12217	12047
0.04	12863	0.04	13303	12980	12809
0.05	13518	0.05	13921	13590	13401
0.06	14074	0.06	14433	14083	13895
0.07	14567	0.07	14854	14496	14298
0.08	14998	0.08	15204	14845	14639
0.09	15401	0.09	15500	15132	14926
0.10	15760	0.10	15742	15375	15159
0.11	16101	0.11	15949	15572	15357
0.12	16415	0.12	16119	15733	15518
0.13	16711	0.13	16245	15859	15644
0.14	16989	0.14	16352	15958	15742
0.15	17249	0.15	16424	16038	15814
0.16	17500	0.16	16478	16083	---
0.17	17734	0.17	16505	16110	---
0.18	17967	0.18	16514	16119	---
0.19	18182	0.19	16505	16110	---
0.20	18389	0.20	16478	16083	---
0.21	18586	0.21	16433	---	---
0.22	18783	0.22	16379	---	---
0.23	18972	0.23	16307	---	---
0.24	19151	0.24	16227	---	---
0.25	19321	0.25	16128	---	---
0.26	19492	0.26	16029	---	---
0.27	19653	---	---	---	---
0.28	19815	---	---	---	---
0.29	19976	---	---	---	---
0.30	20120	---	---	---	---

<sup>a</sup>Use to obtain C in pounds when D and  $d_m$  are given in inches.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .

**TABLE CD11.11.** Metric Values for  $f_{cm}$  for Spherical Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ{}^c$	$\alpha = 65^\circ{}^d$	$\alpha = 80^\circ{}^e$
0.01	121.210	0.01	126.155	123.165	121.440
0.02	141.335	0.02	146.970	143.405	141.450
0.03	154.675	0.03	160.425	156.630	154.445
0.04	164.910	0.04	170.545	166.405	164.220
0.05	173.305	0.05	178.480	174.225	171.810
0.06	180.435	0.06	185.035	180.550	178.135
0.07	186.760	0.07	190.440	185.840	183.310
0.08	192.280	0.08	194.925	190.325	187.680
0.09	197.455	0.09	198.720	194.005	191.360
0.10	202.055	0.10	201.825	197.110	194.350
0.11	206.425	0.11	204.470	199.640	196.880
0.12	210.450	0.12	206.655	201.710	198.950
0.13	214.245	0.13	208.265	203.320	200.560
0.14	217.810	0.14	209.645	204.585	201.825
0.15	221.145	0.15	210.565	205.620	202.745
0.16	224.365	0.16	211.255	206.195	---
0.17	227.355	0.17	211.600	206.540	---
0.18	230.345	0.18	211.715	206.655	---
0.19	233.105	0.19	211.600	206.540	---
0.20	235.750	0.20	211.255	206.195	---
0.21	238.280	0.21	210.680	---	---
0.22	240.810	0.22	209.990	---	---
0.23	243.225	0.23	209.070	---	---
0.24	245.525	0.24	208.035	---	---
0.25	247.710	0.25	206.770	---	---
0.26	249.895	0.26	205.505	---	---
0.27	251.965	---	---	---	---
0.28	254.035	---	---	---	---
0.29	256.105	---	---	---	---
0.30	257.945	---	---	---	---

<sup>a</sup>Use to obtain C in Newtons when D and  $d_m$  are given in mm.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .

**TABLE CD11.12.** Inch Values for  $f_{cm}$  for Spherical Roller Thrust Bearings<sup>a</sup>

$\frac{D^b}{d_m}$	$\alpha = 90^\circ$	$\frac{D \cos \alpha^b}{d_m}$	$\alpha = 50^\circ{}^c$	$\alpha = 65^\circ{}^d$	$\alpha = 80^\circ{}^e$
0.01	10873	0.01	11316	11048	10893
0.02	12678	0.02	13183	12863	12688
0.03	13874	0.03	14390	14050	13854
0.04	14792	0.04	15298	14927	14731
0.05	15545	0.05	16010	15628	15411
0.06	16185	0.06	16598	16195	15979
0.07	16752	0.07	17082	16670	16443
0.08	17248	0.08	17485	17072	16835
0.09	17712	0.09	17825	17402	17165
0.10	18124	0.10	18104	17681	17433
0.11	18516	0.11	18341	17908	17660
0.12	18877	0.12	18537	18093	17846
0.13	19218	0.13	18681	18238	17990
0.14	19538	0.14	18774	18351	18104
0.15	19837	0.15	18888	18444	18186
0.16	20126	0.16	18950	18496	---
0.17	20394	0.17	18981	18527	---
0.18	20662	0.18	18991	18537	---
0.19	20910	0.19	18981	18527	---
0.20	21148	0.20	18950	18496	---
0.21	21374	0.21	18898	---	---
0.22	21601	0.22	18836	---	---
0.23	21817	0.23	18754	---	---
0.24	22024	0.24	18661	---	---
0.25	22220	0.25	18547	---	---
0.26	22416	0.26	18434	---	---
0.27	22601	---	---	---	---
0.28	22787	---	---	---	---
0.29	22973	---	---	---	---
0.30	23138	---	---	---	---

<sup>a</sup>Use to obtain C in pounds when D and  $d_m$  are given in inches.

<sup>b</sup>Values of  $f_{cm}$  for intermediate values of  $D/d_m$  or  $D \cos \alpha/d_m$  are obtained by linear interpolation.

<sup>c</sup>Applicable for  $45^\circ < \alpha < 60^\circ$ .

<sup>d</sup>Applicable for  $60^\circ \leq \alpha < 75^\circ$ .

<sup>e</sup>Applicable for  $75^\circ \leq \alpha < 90^\circ$ .