

DYNAMIC LOAD RATINGS AND LIFE CALCULATIONS

DYNAMIC EQUIVALENT LOAD

Table 3-Values of X and Y for radial ball bearings

Bearing type	"Relative axial load" ^{1), 2)}		Single row bearings				Double row bearings				e	
			$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$		$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$			
			X	Y	X	Y	X	Y	X	Y		
Radial contact groove ball bearings	$f_0 F_a^{(3)}$	Fa										
	Cor	$i Z D_w^2$										
	0.172	0.172				2.30				2.30	0.19	
	0.345	0.345				1.99				1.99	0.22	
	0.689	0.689				1.71				1.71	0.26	
	1.03	1.03				1.55				1.55	0.28	
	1.38	1.38	1	0	0.56	1.45	1	0	0.56	1.45	0.30	
	2.07	2.07				1.31				1.31	0.34	
	3.45	3.45				1.15				1.15	0.38	
5.17	5.17				1.04				1.04	0.42		
6.89	6.89				1.00				1.00	0.44		
Angular contact groove ball bearings	$f_0 F_a^{(3)}$	Fa										
	Cor	$Z D_w^2$										
	$\alpha = 15^\circ$	0.178	0.172				1.47		1.65		2.39	0.38
		0.357	0.345				1.40		1.57		2.28	0.40
		0.714	0.689				1.30		1.46		2.11	0.43
		1.07	1.03				1.23		1.38		2.00	0.46
		1.43	0.38	1	0	0.44	1.19	1	1.34	0.72	1.93	0.47
		2.14	2.07				1.12		1.26		1.82	0.50
		3.57	3.45				1.02		1.14		1.66	0.55
		5.35	5.17				1.00		1.12		1.63	0.56
	7.14	6.89				1.00		1.12		1.63	0.56	
	$\alpha = 25^\circ$	-	-				0.41	0.87		0.92	0.67	1.41
$\alpha = 40^\circ$	-	-				0.35	0.57		0.55	0.57	0.93	1.14

Note: ¹⁾ Permissible maximum value depends on the bearing design (internal clearance and raceway groove depth). Use the first or second column depending on available information.

²⁾ Values of X, Y and e for intermediate "relative axial loads" and/or contact angles are obtained by linear interpolation.

³⁾ For values of f_0 see ISO 76.