



Balls and Rollers

balls

Balls

LYC can produce many kinds of bearing steel balls and stainless steel balls ranged from 3.175mm to 152mm with the accuracy grade from G5 to G100. The vibration value of single ball is from Z1 to Z5. The balls are suitable to be applied in various industries of manufacture, wind power, mining, metallurgy, transportation and aviation etc.

Symbols, definitions

D_w nominal ball diameter

D_{ws} single ball diameter

V_{Dws} ball diameter variation

V_{DwL} variation of ball lot diameter

R_s surface roughness

Table 1 Hardness of Carbon Chromium Steel balls

D_w		Hardness
over	incl.	
mm		HRC
-	30	61~66
30	50	59~64
50	-	58~64

Table 2 Spherical Deviation and Surface Roughness

Grade	V_{Dws}	Spherical Deviation	R_s
	max	max	max
	μm	μm	μm
G3	0.08	0.08	0.010
G5	0.13	0.13	0.014
G10	0.25	0.25	0.020
G16	0.4	0.4	0.025
G20	0.5	0.5	0.032
G24	0.6	0.6	0.040
G28	0.7	0.7	0.050
G40	1	1	0.060
G60	1.5	1.5	0.080
G100	2.5	2.5	0.100
G200	5	5	0.150

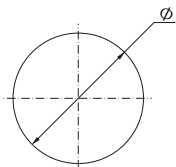
Table 3 Tolerances of Hardened Carbon Chromium Steel Balls

Grade	V_{DwL}	Gauge Interval	Gauge		Subgauge Interval	Subgauge			
	max								
	μm	μm	μm		μm	μm			
G3	0.13	0.5	-0.5...0.5	0	+0.5...+5	0.1	-0.2,-0.1	0	+0.1,+0.2
G5	0.25	1	-5...-1	0	+1...+5	0.2	-0.4,-0.2	0	+0.2,+0.4
G10	0.5	1	-9...-1	0	+1...+9	0.2	-0.4,-0.2	0	+0.2,+0.4
G16	0.8	2	-10...-2	0	+2...+10	0.4	-0.8,-0.4	0	+0.4,+0.8
G20	1	2	-10...-2	0	+2...+10	0.4	-0.8,-0.4	0	+0.4,+0.8
G24	1.2	2	-12...-2	0	+2...+12	0.4	-0.8,-0.4	0	+0.4,+0.8
G28	1.4	2	-12...-2	0	+2...+12	0.4	-0.8,-0.4	0	+0.4,+0.8
G40	2	4	-16...-4	0	+4...+16	0.8	-1.6,-0.8	0	+0.8,+1.6
G60	3	6	-18...-6	0	+6...+18	1.2	-2.4,-1.2	0	+1.2,+2.4
G100	5	10	-40...-10	0	+10...+40	2	-4,-2	0	+2,+4
G200	10	15	-60...-15	0	+15...+60	3	-6,-3	0	+3,+6

Table 4 Material for LYC balls

Material		Chemical Composition (%)			
Chinese Standard	Equivalent	C	Si	Mn	P
GCr15	AISI E52100	0.95~1.05	0.15~0.35	0.25~0.45	0.025max
GCr15SiMn	DIN 100CrMn6	0.95~1.05	0.40~0.65	0.95~1.25	0.025max
9Cr18Mo	AISI440C	0.95~1.10	0.80max	0.80max	0.035max
9Cr18	AISI440C	0.90~1.00	0.80max	0.80max	0.035max

Chemical Composition (%) (continue)					Standard
S	Ni	Cr	Mo	Cu	
0.025max	0.30max	1.40~1.65	0.10max	0.25max	GB/T18254—2002
0.025max		1.40~1.65			GB/T18254—2002
0.030max		16.00~18.00	0.40~0.70	GB/T1220-1992	
0.030max		17.00~19.00		GB 3086-82	



Nominal Diameter

The sizes of LYC balls

Nominal Dia.(φ)		Nominal Dia.(φ)		Nominal Dia.(φ)	
inch	metric	inch	metric	inch	metric
1/8	3.1750		10.5000	13/16	20.6375
	3.5000		11.0000		22.0000
5/32	3.9688	7/16	11.1125	7/8	22.2250
	4.0000	29/64	11.5094	29/32	23.0188
	4.5000	15/32	11.9062	15/16	23.8125
3/16	4.7625		12.0000		24.0000
	5.0000	31/64	12.3031		24.5000
	5.5000	1/2	12.7000		25.0000
7/32	5.5562		13.0000	1	25.4000
15/64	5.9531	17/32	13.4938		25.4000
	6.0000		14.0000		26.0000
1/4	6.3500	9/16	14.2875		26.5000
	6.5000		14.5000	1 1/16	26.9875
17/64	6.7469		15.0000		27.5000
	7.0000	19/32	15.0812		28.0000
9/32	7.1438	5/8	15.8750	1 1/8	28.5750
	7.5000		16.0000		29.0000
5/16	7.9375	21/32	16.6688		29.5000
	8.0000		17.0000		30.0000
	8.5000	11/16	17.4625	1 3/16	30.1625
11/32	8.7312		18.0000		30.5000
	9.0000	23/32	18.2562		31.0000
3/8	9.5250		18.5000		31.5000
	10.0000	3/4	19.0500	1 1/4	31.7500
13/32	10.3188	25/32	19.8438		32.0000

Nominal Dia.(φ)		Nominal Dia.(φ)	
inch	metric	inch	metric
	33.3375		90.0000
1 5/16	33.3375		100.0000
1 3/8	34.9250	4	101.6000
1 7/16	36.5125		102.0000
1 1/2	38.1000		103.0000
1 9/16	39.6875		104.0000
	40.0000		110.0000
1 5/8	41.2750		127.0000
1 11/16	42.8625	5	127.0000
1 3/4	44.4450	6	152.4000
	45.0000		
1 7/8	47.6250		
2	50.8000		
2 1/8	53.9750		
	55.0000		
2 1/4	57.1500		
	60.0000		
2 3/8	60.3250		
2 1/2	63.5000		
	65.0000		
2 3/4	69.8500		
	70.0000		
	69.8500		
	75.0000		
3	76.2000		
	80.0000		
3 1/2	88.9000		