

shaft dimension. In this method, the bearing inner diameter makes 1:12 taper and the corresponding tapered adapter sleeve is applied, followed by nut tightening:

Therefore, a slight difference in shaft diameter does not cause much trouble.

**Dimensional accuracy of the shaft to be used in cylindrical bore insert bearing(Tight fits case).**

**Dimensional accuracy of the shaft to be used in the taper bore insert bearing.**

Table30  
unit = 0.001mm

Table31  
unit = 0.001mm

Shaft Diameter (mm)		Deviation of tolerance in shafting								Deviation of tolerance in shafting					
		for higher speed		for rather heavy load		for highest speed		for heavy load		Shaft Diameter (mm)		for short shaft		for long shaft	
		symbol m6		symbol m7		symbol n6		symbol n7				symbol h 9		symbol h 10	
over	incl.	max.	min.	max.	min.	max.	min.	max.	min.	over	incl.	max.	min.	max	min.
10	18	+18	+7	+25	+7	+23	+12	+30	+12	10	18	0	-43	0	-70
18	30	+21	+8	+29	+8	+28	+15	+36	+15	18	30	0	-52	0	-84
30	50	+25	+9	+34	+9	+33	+17	+42	+17	30	50	0	-62	0	-100
50	80	+30	+11	+41	+11	+39	+20	+50	+20	50	80	0	-74	0	-120
80	120	+35	+13	+48	+13	+45	+23	+58	+23	80	120	0	-87	0	-140
120	180	+40	+15	+55	+15	+52	+27	+67	+27	120	180	0	-100	0	-160

**8.4 Limiting speed**

The limiting speed of ball bearing units are mainly determined by the fit between the bearings and the shafts. Normally, clearance fit is used between setscrews type and eccentric collar type bearing units and shafts, then h7 shaft tolerance is selected. h8 or h9 tolerance is applied for light load and slow speed application. And tighter j7 tolerance is applied for heavy load and high speed. The shaft applied to the adapter sleeve bearing is h9 with IT5 class tolerances.

The speed ratings for insert bearing of CS200-2RS series are the same as deep groove ball bearings which are shown in following table.

The limiting speeds for the ball bearing units with different fits are shown in following table.

Table32  
r/m

d (mm)	200 Series				300 Series				CS200-2RS
	Shaft tolerance				Shaft tolerance				
	JS7(h9/IT5)	h7	h8	h9	JS7(h9/IT5)	h7	h8	h9	
12	6700	5300	3800	1400	--	--	--	--	--
15	6700	5300	3800	1400	--	--	--	--	11000
17	6700	5300	3800	1400	--	--	--	--	10000
20	6000	4800	3400	1200	--	--	--	--	9000
25	5600	4000	3000	1000	5000	3600	2600	900	8000
30	4500	3400	2400	850	4300	3000	2200	800	6700
35	4000	3000	2000	750	3800	2800	2000	700	6000
40	3600	2600	1900	670	3400	2400	1700	630	5600
45	3200	2400	1700	600	3000	2200	1500	560	5000
50	3000	2200	1600	560	2600	2000	1400	500	4800
55	2600	2000	1400	500	2400	1800	1300	450	--
60	2400	1800	1200	450	2200	1700	1100	430	--

Table33

d (mm)	200 Series				300 Series				CS200-2RS
	Shaft tolerance				Shaft tolerance				
	JS7(h9/IT5)	h7	h8	h9	JS7(h9/IT5)	h7	h8	h9	
65	2200	1700	1100	430	2000	1500	1100	400	--
70	2200	1600	1100	400	1900	1400	1000	360	--
75	2000	1500	1000	380	1800	1300	900	340	--
80	1900	1400	950	340	1700	1200	850	320	--
85	1800	1300	900	320	1600	1100	800	300	--
90	1700	1200	800	300	1500	1100	750	280	--
95	--	--	--	--	1400	1000	700	260	--
100	--	--	--	--	1300	950	670	240	--
105	--	--	--	--	1200	900	630	220	--
110	--	--	--	--	1200	800	600	200	--
120	--	--	--	--	1100	750	530	190	--
130	--	--	--	--	1000	670	480	180	--
140	--	--	--	--	900	600	430	160	--

Note: 1. The JS7(h9/IT5) column fit for adapter sleeve type ball bearing units, and the rest j7 ~ h9 column fit for the setscrews type and eccentric locking collar type ball bearing units.  
 2. Above table data is reference for J type seal, H type seal, SL type dual seal, F type seal products only.

## 9 MOUNTING OF BALL BEARING UNITS

### 9.1 Setscrew method

This method is to mount the bearing unit to the shaft with two set screws located at two places on one side of wide inner ring which make 120° each other.

**FK** setscrews are of self-locking knurled cup point types. This self-locking knurled cup point type setscrew has peculiar edge points as shown in the figure and counter-clockwise knurl to prevent loosening back. The material is special alloyed steel (Nickel chromium molybdenum steels) which has high tensile and shear strength. The hexagon hollow of setscrew is deeper than before and hence enough tightening force can be applied. The head is never broken nor deformed.

Installation to the shaft can be sufficiently made, if the grub screws are tightened by application of the tightening torque as shown in the following table.