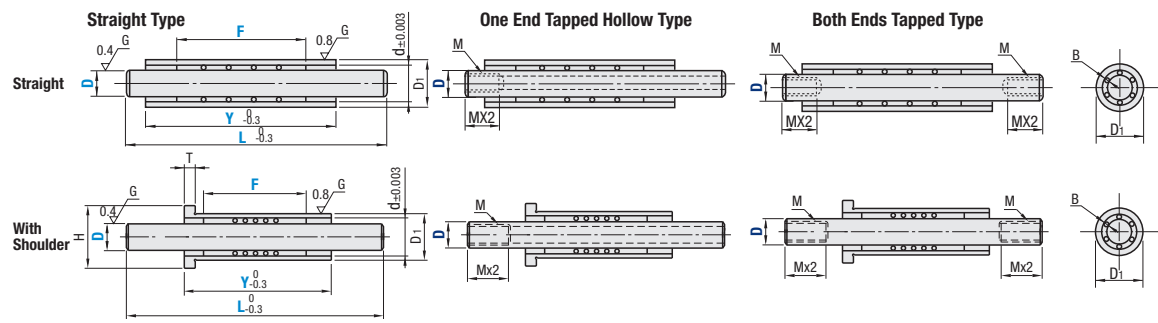


Miniature Ball Bearing Guide Sets

Compact Type

Miniature Ball Bearing Guide Sets – Compact Type	Type			Material			Hardness	
	Shafts			Shafts Bushing	Steel Balls Retainer	Steel Balls	Shafts Bushing	Steel Balls
	Straight	One End Tapped Hollow	Both Ends Tapped					
Straight Type	BYZ	BYA	BYY	52100 Bearing Steel	JIS C3604 Equivalent (Applicable to RoHS)	52100 Bearing Steel	58 HRC min.	58 HRC min.
With Shoulder Type	BYHZ	BYHA	BYHY	52100 Bearing Steel	JIS C3604 Equivalent (Applicable to RoHS)	52100 Bearing Steel	58 HRC min.	58 HRC min.

Compact: Basic load ratings are lower than Standard Type for shaft diameter D8 or smaller. See Basic Load below. Accuracy P.434



Part Number		D	Shaft Dia. Tol.	L		Y	F	D ₁		T	H	d	M (Coarse Thread)	B
Type	One End Tapped Hollow			Both Ends Tapped	Outer Dia. Tol.			Outer Dia. Tol.						
Straight	One End Tapped Hollow	(2)	0 -0.005	30-50	—	10 15 20	10 15 20	5	0	2.5	7	3.2	—	0.6
L Dimension Configurable		(3)		40-70		10 20 30	10 15 20	6	-0.006		8	4.2	—	
BYZ	BYA	(4)		40-90		40 50 60 70 80 90	20 30 40	15 20 30	7		9	5.2	—	
BYHZ	BYHA	5							8		10	6.2	M3	
L Dimension Configurable		6							9		11	7.2	M3	
L Dimension Configurable		8							11		13	9.2	M4	
L Dimension Configurable		10							14		16	12	M5	
L Dimension Configurable		12							16		18	14	M6	

Sizes in () are applicable to BYZ, BYHZ, SSBYZ and SSBYHZ only.
Ball retainer travels 1/2 the distance of the bushing (or the shaft) stroke.

Features of Compact Type

- The O.D. is 1–2 mm smaller compared to the Standard Type using the same diameter shaft, contributing to space savings.
- Basic load ratings are lower than Standard Type for shaft diameter D8 or smaller. Refer to Basic Load Rating List below.

Part Number Example

Part Number	L	Y	F
BYZ5	72	20	15

Basic Load Rating List

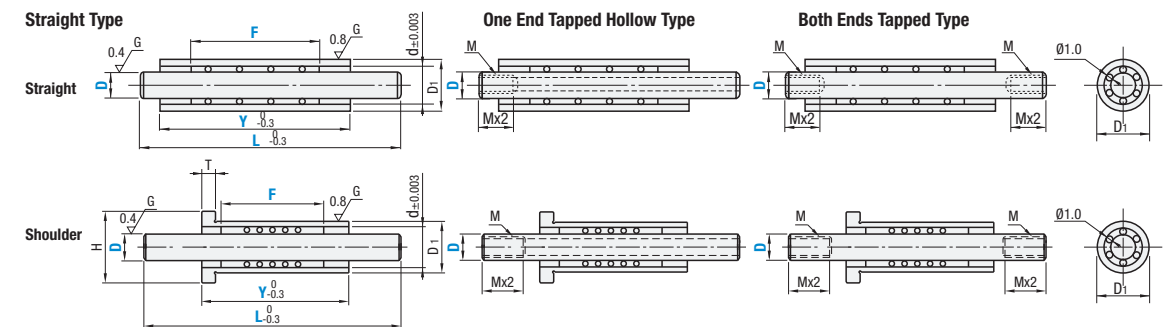
D	F	Basic Load Rating	
		Co (Static) N	
2	10	15.0	
	15	24.4	
	20	33.7	
3	10	16.3	
	15	26.5	
	20	36.7	
4	10	21.1	
	15	34.3	
	20	47.5	
5	10	26.1	
	15	42.4	
	20	58.7	
6	15	43.2	
	20	59.8	
	30	83.1	
8	15	59.0	
	20	81.6	
	30	113.4	
10	20	147.7	
	30	221.5	
	40	307.7	
12	20	187.4	
	30	281.1	
	40	390.5	

Miniature Ball Bearing Guide Sets

Standard Type

Miniature Ball Bearing Guide Sets – Standard Type	Type			Material			Hardness		
	Shafts			Shafts Bushing	Ball Retainer	Balls	Shafts Bushing	Steel Balls	
	Straight	One End Tapped Hollow	Both Ends Tapped						
Standard	Straight Type	BGZ	BGA	BGY	52100 Bearing Steel	JIS C3604 Equivalent (RoHS Compliant)	52100 Bearing Steel	58 HRC min.	58 HRC min.
		SSBGZ	SSBGA	SSBGY	440C Stainless Steel Equivalent		440C Stainless Steel Equivalent	56 HRC min.	56 HRC min.
	Shoulder Type	BGHZ	BGHA	BGHY	52100 Bearing Steel		52100 Bearing Steel	58 HRC min.	58 HRC min.
		SSBGHZ	SSBGHA	SSBGHY	440C Stainless Steel Equivalent		440C Stainless Steel Equivalent	56 HRC min.	56 HRC min.

Compact: Basic load ratings are lower than Standard Type for shaft diameter D8 or smaller. See Basic Load below. Accuracy P.434



Standard

Part Number		D	Shaft Dia. Tol.	L		Y	F	D ₁		T	H	d	M (Coarse Thread)	B
Type	One End Tapped Hollow			Both Ends Tapped	Outer Dia. Tol.			Outer Dia. Tol.						
Straight	One End Tapped Hollow	(3)	0 -0.005	40-70	—	10 20 30	10 15 20	7	0	3	9	5	—	1.0
L Dimension Configurable		(4)		40-90		20 30 40	15 20 30	8	-0.006		10	6	—	
BGZ	BGA	5						11	7.2		M3			
BGHZ	BGHA	6						12	8		—			
L Dimension Configurable		8						13	9.2		M4			
L Dimension Configurable		10						16	12		M5			
L Dimension Configurable		12						18	14		M6			

- When designing, it is recommended to position the bushing to prevent the ball slider from falling out therefrom.
- Calculate the stroke as "(Y-F) x 2". The stroke of bushing or shaft is twice as much as the travel distance of ball slider (Y-F).
- Sizes in () only apply to BGZ, BGHZ, SSBGZ, and SSBGHZ.

Part Number Example

Part Number	L	Y	F
BGZ5	72	20	15
BGY5	70	20	15
BGA5	72	20	15

Basic Load Rating List

D	F	Basic Load Rating	
		Co (Static) N	
		Standard	Compact
5	10	50.7	26.1
	15	84.5	42.4
	20	109.9	58.7
6	15	101.5	43.2
	20	113.2	59.8
	30	182.9	83.1
8	15	105.1	59.0
	20	126.1	81.6
	30	189.2	113.4
10	20	147.7	147.7
	30	221.5	221.5
	40	307.7	307.7
12	20	187.4	187.4
	30	281.1	281.1
	40	390.5	390.5