



QLH®
Linear Motion Technology



QLH has made a vital contribution to the growth and achievement of various machinery industries throughout its history. As a comprehensive bearing manufacturer, QLH responds to the needs of a wide variety of fields.

The corporate philosophy defines the ideal image of QLH in the 21st century and outlines management efforts and employee actions necessary to realize this ideal. The philosophy consists of a mission statement, management principles, corporate message and slogans.

Mission Statement

QLH aims to contribute to the well-being and safety of society and to protect the global environment through its innovative technology integrating Motion & Control. We are guided by our vision of **QLH** as a truly international enterprise, and are working across national boundaries to improve relationships between people throughout the world.

Management Principles

To serve our customers through innovative and responsive solutions, taking advantage of our world leading technologies. To provide challenges and opportunities to our employees, channeling their skills and fostering their creativity and individuality. To identify the needs of the times and of the future and to use all of **QLH's** resources to meet those needs by being versatile, responsive and dynamic.

To work together with our employees and contribute to the communities in which we operate. To manage our business from an international, perspective and to develop a strong presence throughout the world.

"Responsive" expresses **QLH** ability to react effectively to new opportunities and customer needs while maintaining a sense of harmony with societies and the global environment. More specifically, "Responsive" embodies five concepts: **Resilience / Smoothness / Tenacity and perseverance / Flexibility / Technology**

"Creative" reflects our commitment to finding new ways to enhance our products and services as we work to realize the full potential of **QLH** and society. The corporate message communicates **QLH** ideas to clients and the general public and seeks to gain their understanding and support. The message's intent is to express the Corporation's spheres of activities and its future image.

Corporate slogans encapsulate the attitudes and actions required to realize the ideas in our mission statement. These ideas enhance **QLH** corporate culture, foster personal development and provide direction for its corporate development.

- Beyond Limits, Beyond Today -



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Structure and Features

- The QLH liner motion bearing consists of an outer cylinder, ball retainer, balls and two end rings. The ball retainer which holds the balls in the recirculating trucks in held inside the outer cylinder by end rings.
- Those parts are assembled to optimize their required functions.
- The outer cylinder is maintained sufficient hardness by heat treatment, therefore it ensures the bushings projected travel life and satisfactory durability.
- The ball retainer is made from steel or resin. The steel retainer has high rigidity obtained by heat treatment. The user can select the optimum type for meeting the users service conditions

1. High Precision and Rigidity

The QLH linear motion bearing is produced from a solid steel outer cylinder. Also the linear motion bearing incorporates either a patented all steel hardend seamless ball retainer or an industrial strength resin ratainen.

2. Ease of Assembly

The standard type of **QLH** linear motion bearing can be loaded from any directions. Precision control is possible using only the shaft supporter, and the mounting surface can be machined easily. **QLH** also provides a verily of housings for all types of slide bushings, offering convenience of design and assembly.

3. Ease of Replacement

QLH liner motion bearing of each type are completely interchangeable because of their standardized dimensions and strict precision control.

Replacement because of wear or damage is therefore easy and accurate.

4. Variety of Types

QLH offers a full line of linear motion bearing: the standard, integral single-retainer closed type, the clearance adjustable type and the open, double-retainer, and flanged types. The user wn choose from among these according to the application requirements to be met.

Linear Motion Bearing

QLH®
Linear Motion Technology

QLH
Linear motion
Ball Bearings

LM/LME/LMB



LM...AJ/LME...AJ/LMB...AJ



LM-OP/LME-OP/LMB-OP



LM...L/LME...L/LMB...L



ST



QLH
Pressing Bush
Bearings

KH



QLH
Flanged
Linear Motion
Ball Bearing

LMF/LMEF/LMBF



LMK/LMEK/LMBK



LMH



LMFP



LMKP



LMHP



LMK..L/LMEK...L/LMBK...L



LMH...L



LMFP...L



LMKP...L



LMHP...L



**LMFM...L/LMEFM...L/
LMBFM...L**



**LMKM...L/LMKM...L/
LMBKM...L**



LMHM...L



Linear Motion Bearing

QLH®
Linear Motion Technology

QLH
Linear motion
Ball Bearing
Slide Units

SC/SCE



SC...L/SCE...L



SC...S/SCE...S



SCAJ



QLH
Support Rail
Units

SC...UUOP



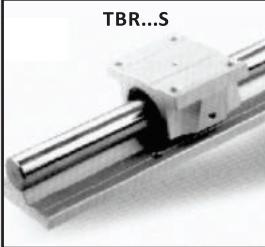
TBR



SBR...S



TBR...S



SBR



QLH
Shaft Support

SK



SHF



QLH
Shafts

QCS

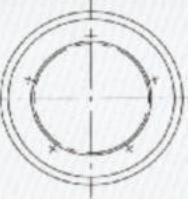
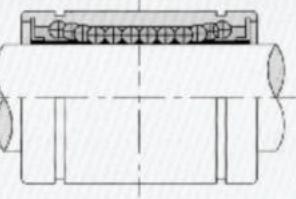
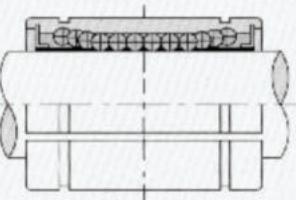
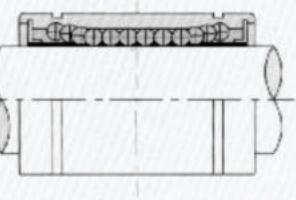
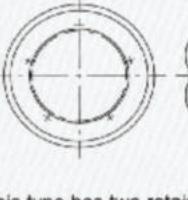
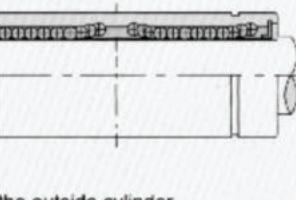
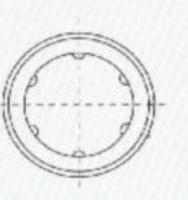
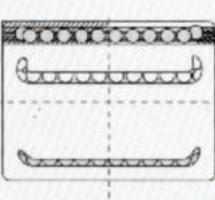


QLH
O B Series



QLH
Super Standard



Type	Description	Material	
		Outer cylinder	Retainer
Standard Type	  	Steel	Steel
Closed type outside cylinder		Resin	
Adjustable Type	  	Steel	Resin
This type has a slot in the outside cylinder. This design allows for clearance adjustment.		Steel	Resin
Open Type	  	Steel	Resin
One ball circuit is removed to allow an opening slot to fit over rail supports.		Steel	Resin
Double-Wide Type	  	Steel	Resin
This type has two retainers in the outside cylinder. This structure is useful when moment loads are applied to the slide bush.		Steel	Resin
Pressing Outer Race Type	  	Steel	Resin
Outer race is pressing			

Type Number Format

Metric dimension series
most widely used in Asia

Metric dimension series
generally used in Europe

Inch dimension series
used mainly in America

Nominal Shaft Diameter

Double type

Symbol	Specification
No entry	Standard type
L	Double type

LM

25

L

UU

AJ

Symbol	Specification
No entry	Standard type
AJ	Adjustable type
OP	Open type

Seal	Specification
No entry	No seal
U	Seals on one side
UU	Seals on both sides

Tolerance

- The MYT linear motion ball bearing are divided into higher class and precision class, indicated in the dimension tables. Note that precision of inscribed circle diameters and outside diameters for the clearance adjustable type (....AJ) and the open type (....OP) indicates the value 1 obtained before the corresponding type is subjected to cutting Process.

Load Rating and Life Expectancy

- The rated life (L) of a slide bush can be obtained from the following equation with the basic dynamic load rating and the load applied to the slide bush:

$$L = \left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P} \right)^3 \cdot 50 \quad (1)$$

L : Rated life (km)

fH : Hardness factor

ft : Temperature coefficient

C : Basic dynamic load rating (N)

fc : Contact coefficient

P: Working load (N)

fw : Load coefficient

- The lifespan (L_h) of a slide bush in hours can be obtained by calculating the traveling distance per unit time.

- The lifespan can be obtained from the following equation if the stroke length and the number of strokes are constant:

$$L_h = \left(\frac{L \cdot 10^3}{2 \cdot L_s \cdot n_1 \cdot 60} \right) \quad (2)$$

L_h : Lifespan(hr)

L: Rated life(km)

L_s : Stroke length(m)

n1 : Number of strokes per minute(CPM)

Flanged Linear Motion Ball Bearings Type Number Format

LM Type Metric dimension series
most widely used in Asia

LME Metric dimension series
generally used in Europe

LMB Inch dimension series
used mainly in America

LM

F

25

L

UU

Seal	Specification
U	No seal
UU	Seals on one side

Flanged type

Symbol	Specification
F	Round Flange
K	Square Flange
FM	Centered round Flange
KM	Centered round Flange
H	Two side cut Flanged
HM	Two side cut centered flange
FP	Pilot round type
KP	Plot Square flange
HP	Pilot two side cut flange

Double Type

Nominal Shaft Diameter

Linear Motion Bearing

QLH®
Linear Motion Technology

LM

This type is a metric dimension series
Widly used in Asia & Other Countries

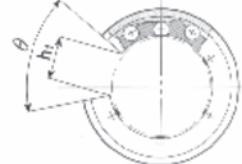
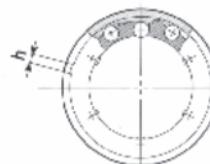
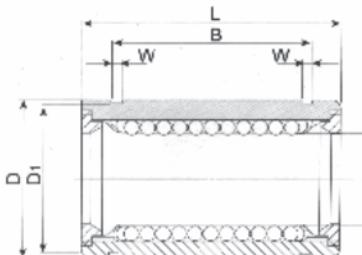
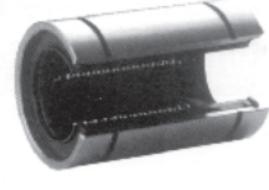
Standard Type



AJ - Type



OP Type



LM

LM...AJ

LM...OP

Nominal Shaft Diameter mm	Model No.					Main dimensions and tolerance										Eccentricity μm	Radial clearance (max) μm	Basic Load Rating dynamic C(kgf) static Co(kgf)				
	LM LM...UU	Ball circuit	LM...AJ LM...UU-AJ	Ball circuit	LM...OP LM...UU-OP	Ball circuit	d mm	Tolerances μm	D mm	Tolerances μm	L mm	Tolerances μm	B mm	Tolerances μm	W mm	D ₁ mm	h mm	h ₁ mm	θ			
3	LM 3	4	-	-	-	-	3		7		10		-		-	-	-	-				
4	LM 4	4	-	-	-	-	4	0 -8	8	0 -9	12	0 -12	-	-	-	-	-		8			
5	LM 5 LM 5UU	4	-	-	-	-	5		10		15		10.2		1.1	9.6	-	-	-			
6	LM 6 LM 6UU	4	LM 6AJ LM 6UU-AJ	4	-	-	6		12		19		13.5		1.1	11.5	1	-	-			
8	LM 85 LM 85UU	4	LM 85AJ LM85UU-AJ	4	-	-	8		15	° -11	17		11.5		1.1	14.3	1	-	-			
8	LM 8 LM 8UU	4	LM 8AJ LM8UU-AJ	4	-	-	8		15		24		17.5	0 -0.2	1.1	14.3	1	-	-			
10	LM 10 LM 10UU	4	LM10AJ LM10UU-AJ	4	LM10 OP LM10UU-OP	3	10	0 -9	19		29		22		1.3	18	1	6.8	80°		12	
12	LM 12 LM 12UU	4	LM12AJ LM12UU-AJ	4	LM12 OP LM12UU-OP	3	12		21	° -20	30		23		1.3	20	1.5	8	80°			
13	LM 13 LM 13UU	4	LM13AJ LM13UU-AJ	4	LM13 OP LM13UU-OP	3	13		23	° -13	32		23		1.3	22	1.5	9	80°			
16	LM 16 LM 16UU	5	LM16AJ LM16UU-AJ	5	LM16 OP LM16UU-OP	4	16		28		37		26.5		1.6	27	1.5	11	80°			
20	LM 20 LM 20UU	5	LM20AJ LM20UU-AJ	5	LM20 OP LM20UU-OP	4	20		32		42		30.5		1.6	30.5	1.5	11	60°			
25	LM 25 LM 25UU	6	LM25AJ LM25UU-AJ	6	LM25 OP LM25UU-OP	5	25	0 -10	40	° -16	59		41		1.85	38	2	12	50°	15		
30	LM 30 LM 30UU	6	LM30AJ LM30UU-AJ	6	LM30 OP LM30UU-OP	5	30		45		64		44.5		1.85	43	2.5	15	50°			
35	LM 35 LM 35UU	6	LM35AJ LM35UU-AJ	6	LM35 OP LM35UU-OP	5	35		52		70	0	49.5	0	2.1	49	2.5	17	50°			
40	LM 40 LM 40UU	6	LM40AJ LM40UU-AJ	6	LM40 OP LM40UU-OP	5	40	0 -12	60	° -19	80		60.5		2.1	57	3	20	50°	20		
50	LM 50 LM 50UU	6	LM50AJ LM50UU-AJ	6	LM50 OP LM50UU-OP	5	50		80		100		74		2.6	76.5	3	25	50°			
60	LM 60 LM 60UU	6	LM60AJ LM60UU-AJ	6	LM60 OP LM60UU-OP	5	60	0	90	0	110		85		3.15	86.5	3	30	50°		25	
80	LM 80 LM 80UU	6	LM80AJ LM80UU-AJ	6	LM80 OP LM80UU-OP	5	80	-15	120	0 -22	140	0 -40	105.5	0 -40	4.15	116	3	40	50°			

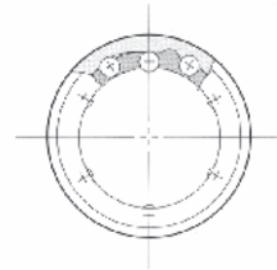
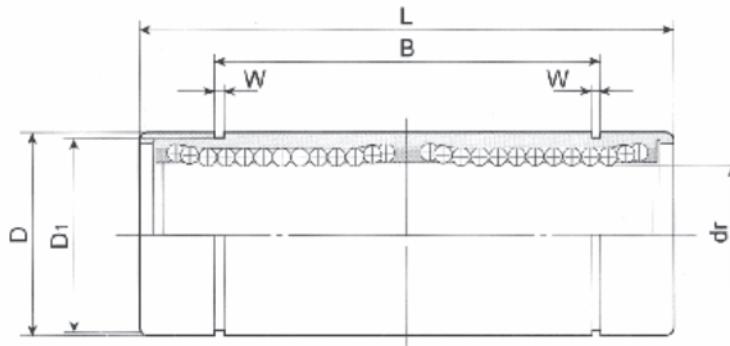
LM20 UU

No Entry	No seals
U	Seal on one side
UU	Seal on both sides

LM...L / LM...LUU (Resin Retainer)



This type is a metric dimension series. Long Type Series
(Metric Dimension Series widely used in Asia)



Nominal Shaft Diameter mm	Model No. LM...L LM...LUU	Ball Circuit	Weight g	Main Dimensions and tolerance									Eccentricity μm	Basic Load rating	
				dr mm Tolerance μm		D mm Tolerance μm		L mm Tolerance μm		B mm Tolerance μm		W mm	D1 mm	C(kgf)	Co(kgf)
6	LM6L LM6LUU	4	16	6	0 -10	12	0 -13	35	0 -0.3	27	0 -0.3	1.1	11.5	15	33 44 60 83 83 125 143 159 254 270
8	LM8L LM8LUU	4	31	8		15	.	45		35		1.1	14.3		80 112 160 160
10	LM10L LM10LUU	4	62	10		19	.	55		44		1.3	18		
12	LM12L LM12LUU	4	80	12		21	.	57		46		1.3	20		
13	LM13L LM13LUU	4	90	13		23	.	61		46		1.3	22		
16	LM16L LM16LUU	5	145	16		28	.	70		53		1.6	27		
20	LM20L LM20LUU	5	180	20		32	0 -19	80		61		1.6	30.5		
25	LM25L LM25LUU	6	440	25		40	0 -19	112		82		1.85	38		
30	LM30L LM30LUU	6	480	30		45	.	123		89		1.85	43		
35	LM35L LM35LUU	6	795	35	0 -15	52	.	135	0 -0.4	99	0 -0.4	2.1	49	25	640 820
40	LM40L LM40LUU	6	1,170	40		60	0 -22	151		121		2.1	57		
50	LM50L LM50LUU	6	3,100	50		80	.	192		148		2.6	76.5		
60	LM60L LM60LUU	6	3,500	60	0 -20	90	0 -25	209		170		3.15	86.5	30	770 1,620 2,040

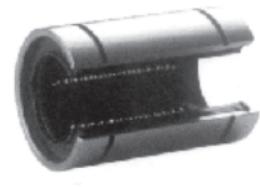
LME - Metric Dimension series generally used in Europe



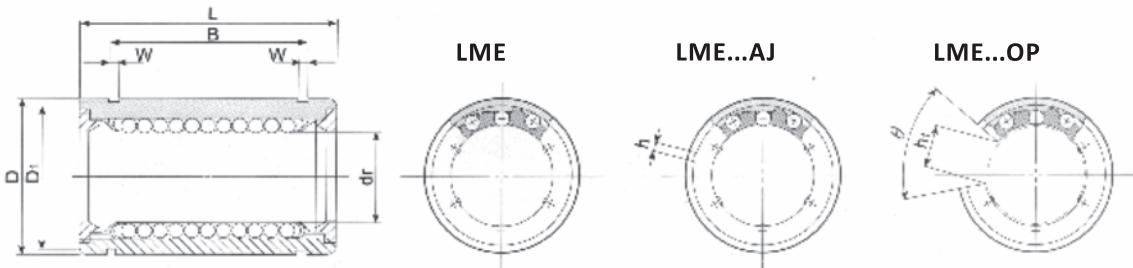
Standard type



AJ type



OP type

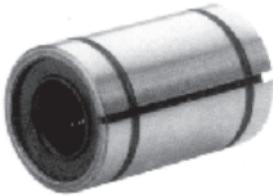


Nominal Shaft Diameter mm	Model No.						Main dimensions and tolerance										Eccentricity μm	Radial clearance (max) μm	Basic Load Rating									
	LME		Ball circuit		LME...AJ		Ball circuit		LM...OP		Ball circuit		dr mm	Tolerances μm	D mm	Tolerances μm	L mm	Tolerances μm	B		W mm	D_i mm	h mm	h_1 mm	θ	dynamic C(kgf)	static C0(kgf)	
	LME...UU	LME5 LME 5UU	LME8 LME 8UU	LME12 LME 12UU	LME16 LME 16UU	LME20 LME 20UU	LME25 LME 25UU	LME30 LME 30UU	LME40 LME 40UU	LME50 LME 50UU	LME60 LME 60UU	LME5AJ LME5UU-AJ	LME8AJ LME8UU-AJ	LME12AJ LME12UU-AJ	LME16AJ LME16UU-AJ	LME20AJ LME20UU-AJ	LME25AJ LME25UU-AJ	LME30AJ LME30UU-AJ	LME40AJ LME40UU-AJ	LME50AJ LME50UU-AJ	LME60AJ LME60UU-AJ							
5	LME 5 LME 5UU	4	LME5AJ LME5UU-AJ	4	-	-	5	+8 -0	12	0	22	0 -0.2	14.5	16.5	1.1	11.5	1	-	-	-	-	-	-	-	-	-		
8	LME 8 LME 8UU	4	LME8AJ LME8UU-AJ	4	-	-	8	+8 -0	16	-8	25																	
12	LME 12 LME 12UU	4	LME12AJ LME12UU-AJ	4	LME12 OP LME12UU-OP	3	12	+9 -1	22	0	32	0 -0.2	22.9	24.9	1.3	21	1.5	7.5	78°	1.6	30.3	2	10	78°	-	-	-	-
16	LME 16 LME 16UU	5	LME16AJ LME16UU-AJ	5	LME16 OP LME16UU-OP	4	16	+9 -1	26	-9	36																	
20	LME 20 LME 20UU	5	LME20AJ LME20UU-AJ	5	LME20 OP LME20UU-OP	4	20	+1 -1	32	-1	45	0 -0.3	31.5	44.1	1.85	37.5	2	12.5	60°	1.6	30.3	2	10	60°	-	-	-	-
25	LME 25 LME 25UU	6	LME25AJ LME25UU-AJ	6	LME25 OP LME25UU-OP	5	25	+11 -1	40	0	58																	
30	LME 30 LME 30UU	6	LME30AJ LME30UU-AJ	6	LME30 OP LME30UU-OP	5	30	+1 -1	47	-11	68	0 -0.3	52.1	56.6	1.85	44.5	2	12.5	50°	1.85	44.5	2	12.5	50°	-	-	-	-
40	LME 40 LME 40UU	6	LME40AJ LME40UU-AJ	6	LME40 OP LME40UU-OP	5	40	+13 -2	62	0	80																	
50	LME 50 LME 50UU	6	LME50AJ LME50UU-AJ	6	LME50 OP LME50UU-OP	5	50	+13 -2	75	-13	100	0 -0.3	77.6	80.6	2.12	59	3	16.8	50°	2.65	72	3	21	50°	-	-	-	-
60	LME 60 LME 60UU	6	LME60AJ LME60UU-AJ	6	LME60 OP LME60UU-OP	5	60	+13 -2	90	0	125																	

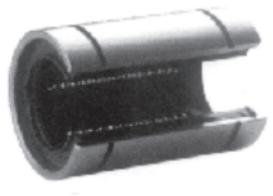
LMB Inch Dimension series mainly used in USA



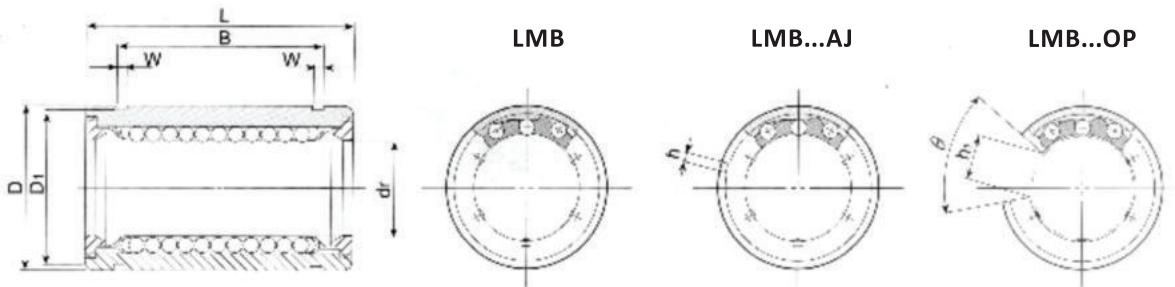
Standard type



AJ type



OP type



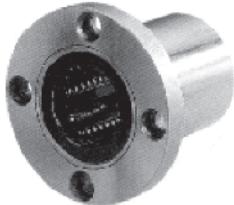
Nominal Shaft Diameter mm / Inches	Model No.						Main dimensions and tolerance										Eccentricity μm	Radial clearance (max) μm	Basic Load Rating			
	LMB	Ball circuit	LM...AJ	Ball circuit	LMB...OP	Ball circuit	dr mm	Tolerances μm	D mm	Tolerances μm	L mm	Tolerances μm	B mm	Tolerances μm	W mm	D_1 mm	h mm	h_1 mm	θ			
			LMB...UU		LME...UU-AJ																	
6.350 1/4"	LMB 4 LMB 4UU	4	LMB4AJ LMB4UU-AJ	4	-	-	6.350	-9	12.700	^o -11	19.050	-200	12.98	-200	0.992	11.906	1	-	-	12	-3	21 27
9.525 3/8"	LMB 6 LMB 6UU	4	LMB6SAJ LMB6SUU-AJ	4	-	-	9.525		15.875	^o -13	22.225		16.15		0.992	14.935	1	-	-		-4	23 32
12.700 1/2"	LMB 8 LMB 8UU	4	LMB8AJ LMB8UU-AJ	4	LMB8 OP LMB8UU-OP	3	12.700	-10	22.225	^o -16	31.750	-300	24.46	-300	1.168	20.853	1.5	7.9375	80°	52 59	-4	79 120
15.875 5/8"	LMB 10 LMB 10UU	5	LMB10AJ LMB10UU-AJ	5	LMB10 OP LMB10UU-OP	4	15.875		28.575	^o -19	38.100		28.04		1.422	26.899	1.5	9.525	80°			88 100
19.050 3/4"	LMB 12 LMB 12UU	5	LMB12AJ LMB12UU-AJ	5	LMB12 OP LMB12UU-OP	4	19.050	-12	31.750	^o -20	41.275	-300	29.61	-300	1.422	29.870	1.5	11.113	60°	15	-6	140 160
25.400 1"	LMB 16 LMB 16UU	6	LMB16AJ LMB16UU-AJ	6	LMB16 OP LMB16UU-OP	5	25.400		39.688	^o -19	57.150		44.57		1.727	37.306	1.5	14.2875	50°			160 222
31.750 1 1/4"	LMB 20 LMB 20UU	6	LMB20AJ LMB20UU-AJ	6	LMB20 OP LMB20UU-OP	5	31.750	-12	50.800	^o -19	66.675	-300	50.92	-300	1.727	47.904	2.5	15.875	50°	20	-8	280 410
38.100 1 1/2"	LMB 24 LMB 24UU	6	LMB24AJ LMB24UU-AJ	6	LMB24 OP LMB24UU-OP	5	38.100		60.325	^o -19	76.200		61.26		2.184	56.870	3	19.050	50°			410 500
50.800 2"	LMB 32 LMB 32UU	6	LMB32AJ LMB32UU-AJ	6	LMB32 OP LMB32UU-OP	5	50.800	-19	76.200	^o -19	101.600	-300	81.07	-300	2.616	72.085	3	25.400	50°	25	-13	390 500

Structure	Mounting example	Flange type	Length
Standard Flanged type		LMF LMEF LMBF LMK LMEK LMBK LMH	Single
Double - Wide Flanged type		LMF···L LMEF···L LMBF···L LMK···L LMEK···L LMBK···L LMH···L	Double
Pilot Flanged type		LMFP LMKP LMHP	Single
Double - Wide - Position - Pilot Flanged type		LMFP···L LMKP···L LMHP···L	Double
Double - Wide - Middle Flanged type		LMFM···L LMEFM···L LMBFM···L LMKM···L LMEKM···L LMBKM···L LMHM···L	Double

LMF / LMK (...UU) (Resin retainer)

This type is a metric dimension series

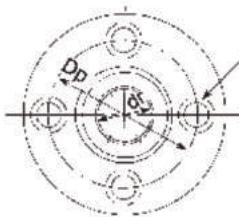
Widely used in Asia and other Countries



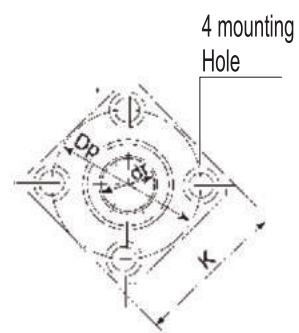
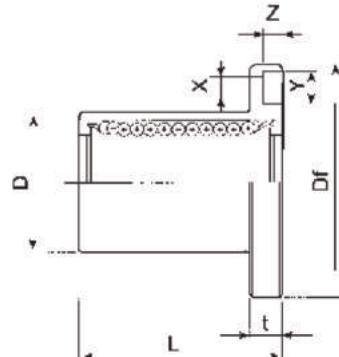
LMF



LMK



LMF



LMK

Nominal Shaft Diameter mm	Model No.				Main dimensions and tolerance											Eccentricity μm	Squareness μm	Basic Load Rating dynamic C _d (kgf) static C _s (kgf)		
	LMF		LMK		dr mm	Tolerances μm	D mm	Tolerances μm	L mm	Tolerances μm	Flange									
	Model No.	Model No.	Model No.	Model No.							Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm			
6	LMF 6	LMF 6UU	LMK 6	LMK 6UU	6	0 -9	12	0 -11	19	0 -200	28	22	5	20	3.5	6	3.1	12	12	21 27
8	LMF 8S	LMF 8SUU	LMK 8S	LMK 8SUU	8		15	17	32		32	25	5	24	3.5	6	3.1			18 22
8	LMF 8	LMF 8UU	LMK 8	LMK 8UU	8		15	24	32		40	30	6	29	4.5	7.5	4.1			28 40
10	LMF 10	LMF 10UU	LMK 10	LMK 10UU	10		19	29	42		42	32	6	32	4.5	7.5	4.1			38 56
12	LMF 12	LMF 12UU	LMK 12	LMK 12UU	12		21	30	43		43	34	6	33	4.5	7.5	4.1			52 61
13	LMF 13	LMF 13UU	LMK 13	LMK 13UU	13		23	32	48		48	37	6	38	4.5	7.5	4.1			52 80
16	LMF 16	LMF 16UU	LMK 16	LMK 16UU	16		28	37	54		54	42	8	43	5.5	9	5.1			79 120
20	LMF 20	LMF 20UU	LMK 20	LMK 20UU	20	0 -10	32	0 -19	42	0 -300	62	50	8	51	5.5	9	5.1	15	15	90 140
25	LMF 25	LMF 25UU	LMK 25	LMK 25UU	25		40	59	74		74	58	10	60	6.6	11	6.1			100 160
30	LMF 30	LMF 30UU	LMK 30	LMK 30UU	30		45	64	82		82	64	10	67	6.6	11	6.1			160 280
35	LMF 35	LMF 35UU	LMK 35	LMK 35UU	35		52	70	96		96	75	13	78	9	14	8.1			170 320
40	LMF 40	LMF 40UU	LMK 40	LMK 40UU	40	0 -12	60	80	100		116	92	13	98	9	14	8.1	20	20	220 410
50	LMF 50	LMF 50UU	LMK 50	LMK 50UU	50	-15	80	110	134		134	106	18	112	11	17	11.1			390 810
60	LMF 60	LMF 60UU	LMK 60	LMK 60UU	60	0	90	0 -22	120		164	136	18	142	11	17	11.1			480 1020
80	LMF 80	LMF 80UU	LMK 80	LMK 80UU	80	-15	120	140	175	0 -400	164	136	18	142	11	17	11.1			750 1630
100	LMF 100	LMF 100UU	LMK 100	LMK 100UU	100	-20	150	0 -25	175	200	170	20	175	14	20	13	30	30	1,440 3550	

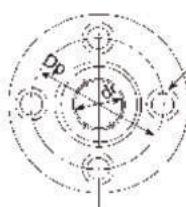
LMF / LMK (...LUU) (Resin retainer)
This type is a metric dimension series
Widely used in Asia and other Countries



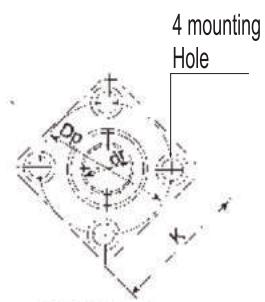
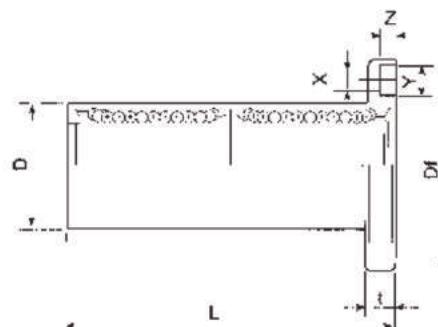
LMF...L



LMK...L



LMF...L



LMK...L

Nominal Shaft Diameter mm	Model No.				Main dimensions and tolerance										Eccentricity μm	Squareness μm	Basic Load Rating dynamic C(kgf) static C0(kgf)				
	LMF-L		LMK-L		dr Tolerances mm μm	D Tolerances mm μm	L Tolerances mm μm	Flange													
	LMF	LMK	LMF	LMK				Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm							
6	LMF 6L	LMF 6LUU	LMK 6L	LMK 6LUU	6	12	35	28	22	5	20	3.5	6	3.1	15	15	33 54				
8	LMF 8L	LMF 8LUU	LMK 8L	LMK 8LUU	8	15	45	32	25	5	24	3.5	6	3.1	15	15	44 80				
10	LMF 10L	LMF 10LUU	LMK 10L	LMK 10LUU	10	0	19	40	30	6	29	4.5	7.5	4.1	15	15	60 112				
12	LMF 12L	LMF 12LUU	LMK 12L	LMK 12LUU	12	-10	21	57	42	32	6	32	4.5	7.5	4.1	15	15	67 122			
13	LMF 13L	LMF 13LUU	LMK 13L	LMK 13LUU	13		23	61	43	34	6	33	4.5	7.5	4.1	15	15	83 160			
16	LMF 16L	LMF 16LUU	LMK 16L	LMK 16LUU	16		28	70	48	37	6	38	4.5	7.5	4.1	15	15	125 240			
20	LMF 20L	LMF 20LUU	LMK 20L	LMK 20LUU	20	0	32	80	54	42	8	43	5.5	9	5.1	20	20	143 280			
25	LMF 25L	LMF 25LUU	LMK 25L	LMK 25LUU	25	-12	40	112	62	50	8	51	5.5	9	5.1	20	20	159 320			
30	LMF 30L	LMF 30LUU	LMK 30L	LMK 30LUU	30		45	123	74	58	10	60	6.6	11	6.1	20	20	254 560			
35	LMF 35L	LMF 35LUU	LMK 35L	LMK 35LUU	35	0	52	135	82	64	10	67	6.6	11	6.1	25	25	270 640			
40	LMF 40L	LMF 40LUU	LMK 40L	LMK 40LUU	40	-15	60	151	96	75	13	78	9	14	8.1	25	25	350 820			
50	LMF 50L	LMF 50LUU	LMK 50L	LMK 50LUU	50		80	192	116	92	13	98	9	14	8.1	25	25	620 1620			
60	LMF 60L	LMF 60LUU	LMK 60L	LMK 60LUU	60	0	90	209	134	106	18	112	11	17	11.1	30	30	770 2040			
						-20	0	-25													

LMD(K)M...LUU (Resin Retainer)

This type is a metric dimension series

Widely used in Asia and other Countries

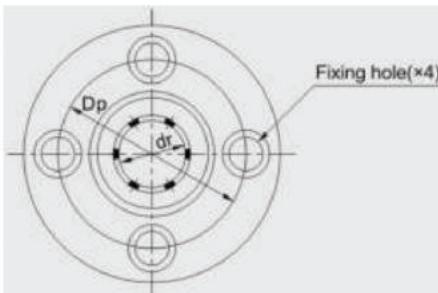
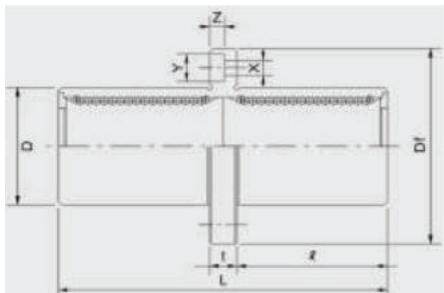
LMFM-LUU



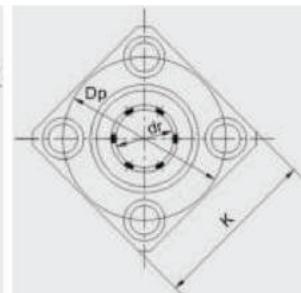
LMKM-LUU



LMFM-LUU



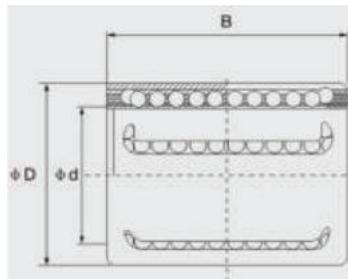
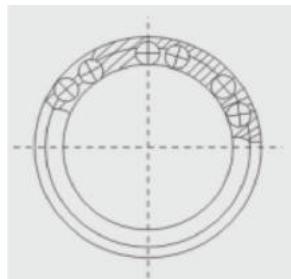
LMKM-LUU



Nominal shaft dia. mm	LMFM...LUU	Weight (gf)	Major dimensions and tolerance												Eccentricity μm	Squareness μm	Basic load rating			
			dr		D		L		Flange								Dynamic CN	Static CoN		
			mm	Tolerance μm	mm	Tolerance μm	mm	Tolerance μm	I mm	Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm				
6	LMFM6LUU	31	6	0 - 10	12	0 - 13	35	±300	15	28	22	5	20	3.5	6	3.1	15	15	323	529
8	LMFM8LUU	51	8		15		45		20	32	25	5	24	3.5	6	3.1			431	784
10	LMFM10LUU	98	10		19		55		25	40	30	6	29	4.5	8	4.1			588	1,100
12	LMFM12LUU	110	12		21	0 - 16	57	0 - 300	26	42	32	6	32	4.5	8	4.1			813	1,570
13	LMFM13LUU	130	13		23		61		28	43	34	6	33	4.5	8	4.1			813	1,570
16	LMFM16LUU	190	16		28		70		32	48	37	6	38	4.5	8	4.1			1,230	2,350
20	LMFM20LUU	260	20		32	0 - 19	80	0 - 400	36	54	42	8	43	5.5	9	5.1			1,400	2,740
25	LMFM25LUU	540	25		40		112		52	62	50	8	51	5.5	9	5.1			1,560	3,140
30	LMFM30LUU	680	30		45		123		57	74	58	10	60	6.6	11	6.1			2,490	5,490
35	LMFM35LUU	1,020	35	0 - 15	52	0 - 22	135		63	82	64	10	67	6.6	11	6.1	25	25	2,650	6,270
40	LMFM40LUU	1,570	40		60		151		69	96	75	13	18	9	14	8.1			3,430	8,040
50	LMFM50LUU	3,600	50		80		192		90	116	92	13	98	9	14	8.1			6,080	15,900
60	LMFM60LUU	4,500	60		90	0 - 20	209		96	134	106	18	112	11	17	11			7,550	20,000

Nominal shaft dia. mm	Centered square flange long type LMKM...LUU	Weight (gf)	Eccen- tricity μm	Squaren- ess μm	Major dimensions and tolerance												Basic load rating			
					dr		D		L		Flange						Dynamic CN	Static CoN		
					mm	Tolerance μm	mm	Tolerance μm	mm	Tolerance μm	I mm	Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm		
6	LMKM6LUU	25	15	15	6		12		35	±300	15	28	22	5	20	3.5	6	3.1	323	529
8	LMKM8LUU	43			8		15	0 - 13	45		20	32	25	5	24	3.5	6	3.1	431	784
10	LMKM10LUU	78			10		19		55		24.5	40	30	6	29	4.5	7.5	4.1	588	1,100
12	LMKM12LUU	90			12		21		57	0.3	25.5	42	32	6	32	4.5	7.5	4.1	813	1,570
13	LMKM13LUU	108			13		23	0 - 16	61		27.5	43	34	6	33	4.5	7.5	4.1	813	1,570
16	LMKM16LUU	165			16		28		70		32	48	37	6	38	4.5	7.5	4.1	1,230	2,350
20	LMKM20LUU	225			20		32		80	0.4	36	54	42	8	43	5.5	9	5.1	1,400	2,740
25	LMKM25LUU	500			25	0 - 12	40		112		52	62	50	8	51	5.5	9	5.1	1,560	3,140
30	LMKM30LUU	590			30		45		123		56.5	74	58	10	60	6.6	11	6.1	2,490	5,490
35	LMKM35LUU	930			35		52		135		63	82	64	10	67	6.6	11	6.1	2,650	6,270
40	LMKM40LUU	1,380	25	25	40	0 - 15	60	0 - 22	151		69	96	75	13	18	9	14	8.1	3,430	8,040
50	LMKM50LUU	3,400			50		80		192		90	116	92	13	98	9	14	8.1	6,080	15,900
60	LMKM60LUU	4,060	30	30	60	0 - 20	90	0 - 25	209		96	134	106	18	112	11	17	11.1	7,550	20,000

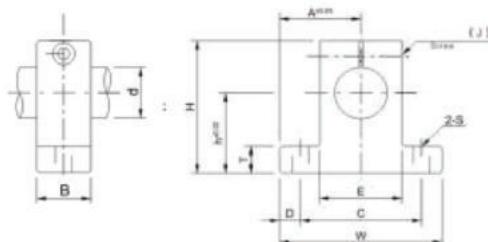
KH : Pressing Bush Bearing



Designation	Major dimensions(mm)			Basic load rating		Weight (gf)
	Φd	ΦD	B	Dynamic C N	Static Co N	
KH0622	6	12	22	400	239	7
KH0824	8	15	24	435	280	12
KH1026	10	17	26	500	370	14.5
KH1228	12	19	28	620	510	18.5
KH1428	14	21	28	620	520	20.5
KH1630	16	24	30	800	620	27.5
KH2030	20	28	30	950	790	32.5
KH2540	25	35	40	1990	1,670	66
KH3050	30	40	50	2800	2,700	95
KH4060	40	52	60	4400	4,450	182
KH5070	50	62	70	5500	6,300	252

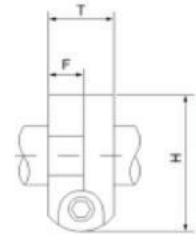
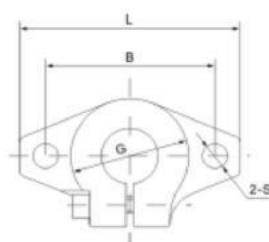
SK...A

(Shaft End Support)



SHF

(Shaft End Support)



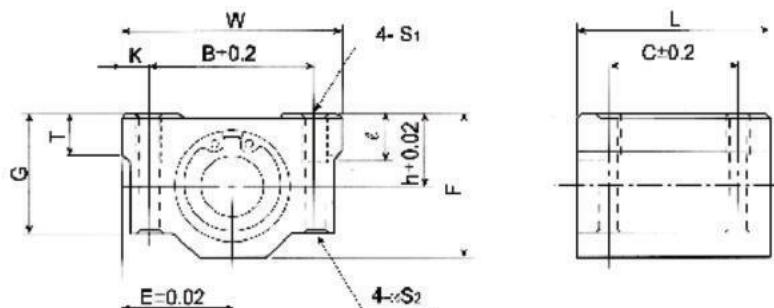
model	Shaft Diameter	Dimensions(mm)										Weight (g)	
		h	A	W	H	T	E	D	C	B	S	J	
SK8	$\varphi 8$	20	21	42	32.8	6	18	5	32	14	$\varphi 5.5$	M4	24
SK10	$\varphi 10$	20	21	42	32.8	6	18	5	32	14	$\varphi 5.5$	M4	24
SK12	$\varphi 12$	23	21	42	37.5	6	20	5	32	14	$\varphi 5.5$	M4	30
SK13	$\varphi 13$	23	21	42	37.5	6	20	5	32	14	$\varphi 5.5$	M4	30
SK16	$\varphi 16$	27	24	46	44	8	25	5	38	16	$\varphi 5.5$	M4	40
SK20	$\varphi 20$	31	30	60	51	10	30	7.5	45	20	$\varphi 6.6$	M5	70
SK25	$\varphi 25$	35	35	70	60	12	38	7	56	24	$\varphi 6.6$	M6	130
SK30	$\varphi 30$	42	42	84	70	12	44	10	64	28	$\varphi 9$	M6	180
SK35	$\varphi 35$	50	49	98	82	15	50	12	74	32	$\varphi 11$	M8	270
SK40	$\varphi 40$	60	57	114	98	15	60	12	90	36	$\varphi 11$	M8	420
SK50	$\varphi 50$	70	63	126	120	18	74	13	100	40	$\varphi 14$	M12	750
SK60	$\varphi 60$	80	74	148	136	18	90	14	120	45	$\varphi 14$	M12	1,100

model	Shaft Diameter	Dimensions(mm)							Mounting bolt designation	Clamping bolt designation	Weight (g)
		L	T	F	B	G	H	S			
SHF10	$\varphi 10$	43	10	5	32	20	24	5.5	M5	M4	13
SHF12	$\varphi 12$	47	13	7	36	25	28	5.5	M5	M4	20
SHF13	$\varphi 13$	47	13	7	36	25	28	5.5	M5	M4	20
SHF16	$\varphi 16$	50	16	8	40	28	31	5.5	M5	M4	27
SHF20	$\varphi 20$	60	20	8	48	34	37	7	M6	M5	40
SHF25	$\varphi 25$	70	25	10	56	40	42	7	M6	M5	60
SHF30	$\varphi 30$	80	30	12	64	46	50	9	M8	M6	110
SHF35	$\varphi 35$	92	35	14	72	50	58	12	M10	M8	380
SHF40	$\varphi 40$	102	40	16	80	56	67	12	M10	M10	510
SHF50	$\varphi 50$	122	50	19	96	70	83	14	M12	M12	890
SHF60	$\varphi 60$	140	60	23	112	82	95	14	M12	M12	1500

Linear Motion Bearing Slide Units

QLH®
Linear Motion Technology

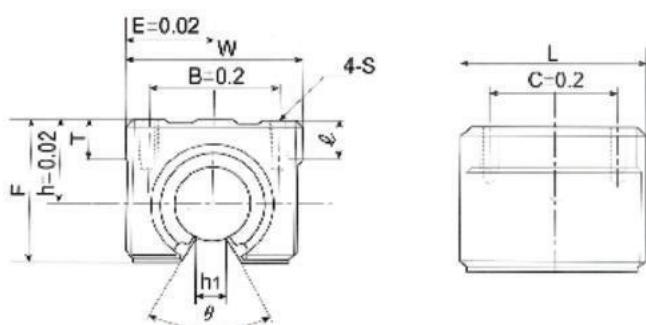
SC...UU



Model no.	Nominal Shaft Diameter mm	Main dimensions							Mounting dimensions							Linear ball bearing			Weight g
		h	E	W	L	F	G	T	B	C	K	S ₁	S ₂	I	Model No.	Dynamic C(kgf)	static Co(kgf)		
SC 3 UU	3	5	8	16	13	10	8	-	11	8	2.5	M2	-	-	LM3	7	10.7	5	
SC 4 UU	4	5.5	8.5	17	15	11	9	-	12	10	2.5	M3	-	-	LM4	9	13	7	
SC 5 UU	5	7	11	22	18	14	11	-	16	12	3	M3	-	-	LM5	17	21	14	
SC 6 UU	6	9	15	30	25	18	15	6	20	15	5	M4	3.4	8	LM6UU	21	27	34	
SC 8 UU	8	11	17	34	30	22	18	6	24	18	5	M4	3.4	8	LM8UU	28	40	52	
SC 10 UU	10	13	20	40	35	26	21	8	28	21	6	M5	4.3	12	LM10UU	38	56	92	
SC 12 UU	12	15	21	42	36	28	24	8	30.5	26	5.75	M5	4.3	12	LM12UU	52	80	102	
SC 13 UU	13	15	22	44	39	30	24.5	8	33	26	5.5	M5	4.3	12	LM13UU	52	80	120	
SC 16 UU	16	19	25	50	44	38.5	32.5	9	36	34	7	M5	4.3	12	LM16UU	79	120	200	
SC 20 UU	20	21	27	54	50	41	35	11	40	40	7	M6	5.2	12	LM20UU	90	140	255	
SC 25 UU	25	26	38	76	67	51.5	42	12	54	50	11	M8	7	18	LM25UU	100	160	600	
SC 30 UU	30	30	39	78	72	59.5	49	15	58	58	10	M8	7	18	LM30UU	160	280	735	
SC 35 UU	35	34	45	90	80	68	54	18	70	60	10	M8	7	18	LM35UU	170	320	1100	
SC 40 UU	40	40	51	102	90	78	62	20	80	60	11	M10	8.7	25	LM40UU	220	410	1590	
SC 50 UU	50	52	61	122	110	102	80	25	100	80	11	M10	8.7	25	LM50UU	390	810	3340	
SC 60 UU	60	58	66	132	122	114	94	30	108	90	12	M12	10.7	25	LM60UU	482	1020	4270	

SC...UUOP

Open Type Linear Block

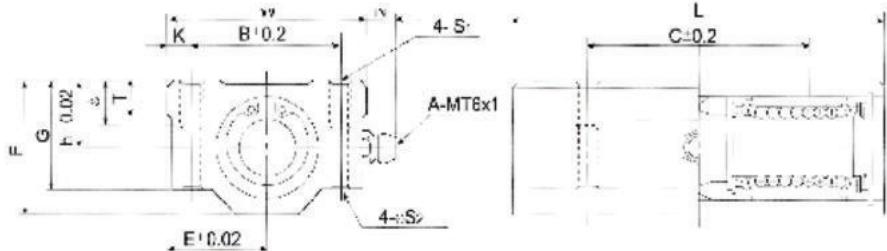
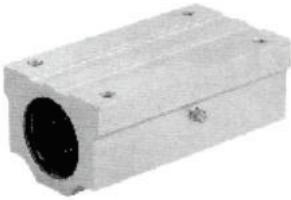


Model no.	Shaft Diameter	Main dimensions							Mounting dimensions							Linear ball bearing			Weight g
		h	E	W	L	F	T	h1	θ	B	C	S	Q	Model No.	Dynamic C(kgf)	static Co(kgf)			
SC 12 UUOP	12	15	18	36	34	24	7	8	80°	26	24	M5	10	LM12UU.OP	42	61	65		
SC 16 UUOP	16	20	22.5	45	45	33	9	10	80°	32	30	M5	12	LM16UU.OP	79	120	150		
SC 20 UUOP	20	23	24	48	50	39	11	10	60°	35	35	M6	12	LM20UU.OP	90	140	200		
SC 25 UUOP	25	27	30	60	65	47	14	11.5	50°	40	40	M6	12	LM25UU.OP	100	160	450		
SC 30 UUOP	30	33	35	70	70	56	15	14	50°	50	50	M8	18	LM30UU.OP	160	280	630		
SC 40 UUOP	40	42	45	90	90	72	20	19	50°	65	65	M10	20	LM40UU.OP	220	410	1330		
SC 50 UUOP	50	53	60	120	110	92	25	23	50°	94	80	M10	20	LM50UU.OP	390	810	3000		

Linear Motion Bearing Slide Units

QLH®
Linear Motion Technology

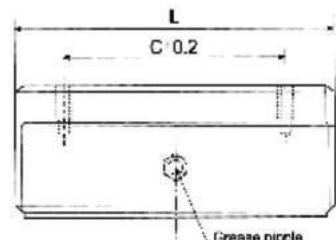
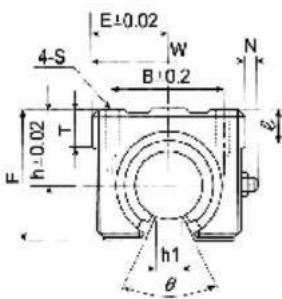
SC...LUU



Unit : mm

Model No.	Nominal Shaft Diameter mm	Main dimensions							Main dimensions					Linear ball bearing			Weight g		
		h	E	W	L	F	G	T	N	B	C	K	S ₁	S ₂	I	Model No.	Dynamic C(kgf)	Static C(kgf)	
SC 6 LUU	6	9	15	30	48	18	15	6	7	20	36	5	M4	3.4	8	LM6UX2	33	54	63
SC 8 LUU	8	11	17	34	58	22	18	6	7	24	42	5	M4	3.4	8	LM8UX2	44	80	102
SC 10 LUU	10	13	20	40	68	26	21	8	7	28	46	6	M5	4.3	12	LM10UX2	60	112	180
SC 12 LUU	12	15	21	42	70	28	24	8	6.5	30.5	50	5.75	M5	4.3	12	LM12UX2	67	120	205
SC 13 LUU	13	15	22	44	75	30	24.5	8	6.5	33	50	5.5	M5	4.3	12	LM13UX2	83	160	240
SC 16 LUU	16	19	25	50	85	38.5	32.5	9	6	36	60	7	M5	4.3	12	LM16UX2	125	240	400
SC 20 LUU	20	21	27	54	96	41	35	11	7	40	70	7	M6	5.2	12	LM20UX2	144	280	570
SC 25 LUU	25	26	38	76	130	51.5	42	12	4	54	100	11	M8	7	18	LM25UX2	164	320	1,200
SC 30 LUU	30	30	39	78	140	59.5	49	15	5	58	110	10	M8	7	18	LM30UX2	250	560	1,480
SC 35 LUU	35	34	45	90	155	68	54	18	5.5	70	120	10	M8	7	18	LM35UX2	270	640	2,200
SC 40 LUU	40	40	51	102	175	78	62	20	5	80	140	11	M10	8.7	25	LM40UX2	350	820	3,200
SC 50 LUU	50	52	61	122	215	102	80	25	5	100	160	11	M10	8.7	25	LM50UX2	620	1,620	6,700
SC 60 LUU	60	58	66	132	240	114	94	30	5	108	180	12	M12	10.7	25	LM60UX2	770	2,040	8,560

SC...LUUOP



Model No.	Shaft Diameter	h	E	W	L	F	T	N	h1	θ	B	C	S	I	Linear Ball bearing No.	Basic Dynamic load rating C(kgf)	Basic Static load rating Co(kgf)	Weight g
SC 16 LUUOP	16	20	22.5	45	85	33	9	8	10	80°	32	60	M5	12	LM16UU OPX2	158	240	300
SC 20 LUUOP	20	23	24	48	96	39	11	8	10	60°	35	70	M6	12	LM20UU OPX2	180	280	400
SC 25 LUUOP	25	27	30	60	130	47	14	8	11.5	50°	40	100	M6	12	LM25UU OPX2	200	320	900
SC 30 LUUOP	30	33	35	70	140	56	15	8	14	50°	50	110	M8	18	LM30UU OPX2	320	560	1,260
SC 40 LUUOP	40	42	45	90	175	72	20	8	19	50°	65	140	M10	20	LM40UU OPX2	440	820	2480

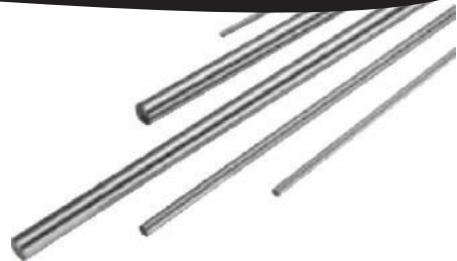
QCS

part number structure

example **QCS | 25 | h5 x 576**

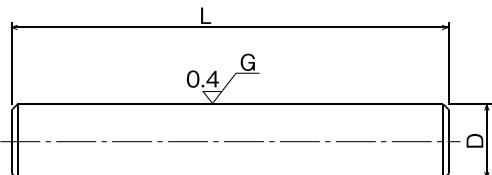
QCS type
outer diameter (D)

length (L)
outer diameter tolerance
g6 when blank

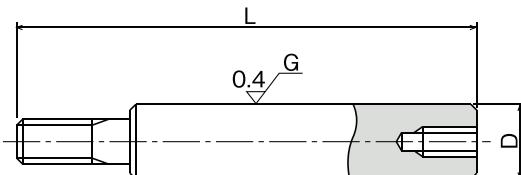


Size	: Ø8 mm To Ø120 mm
Material Grade	: EN - 8 / Ck45
Hard Chrome Plating thickness	: 20 microns +
Hard Chrome Plating Hardness	: 60 To 65 RC / 850 to 1000 HV
Surface Roughness	: Better than RA0.3 microns
Tolerance	: n8, f7, f8
Straightness	: 0.1 mm/meter

straight



machined (example)



part number	outer diameter D mm	outer diameter tolerance g6 μm	length L mm	mass Kg/m
QCS 3	3	-2/-8	50 ← → 300	0.06
QCS 4	4	— 4	100 ← → 400	0.10
QCS 5	5	-12	100 ← → 500	0.16
QCS 6	6	— 5	100 ← → 600	0.22
QCS 8	8	— 5	200 ← → 1000	0.39
QCS 10	10	-14	200 ← → 1500	0.61
QCS 12	12	— 6	200 ← → 2500	0.88
QCS 13	13	-17	200 ← → 3000	1.03
QCS 16	16	— 7	300 ← → 4000	1.56
QCS 20	20	— 7	300 ← → 5000	2.43
QCS 25	25	— 20	300 ← → 6000	3.80
QCS 30	30	— 9	300 ← → 6000	5.48
QCS 35	35	— 9	400 ← → 6000	7.46
QCS 40	40	— 25	400 ← → 6000	9.75
QCS 50	50	— 10	500 ← → 6000	15.2
QCS 60	60	— 10	600 ← → 6000	21.9
QCS 80	80	— 29	800 ← → 6000	39.0
QCS 100	100	-12/-34	1000 ← → 6000	60.9

material: martensite stainless steel (equivalent to SUS440C)

hardness: 56HRC (HV613) or more

The maximum length of hardening is up to 4500mm for shafts with diameter over 80mm.

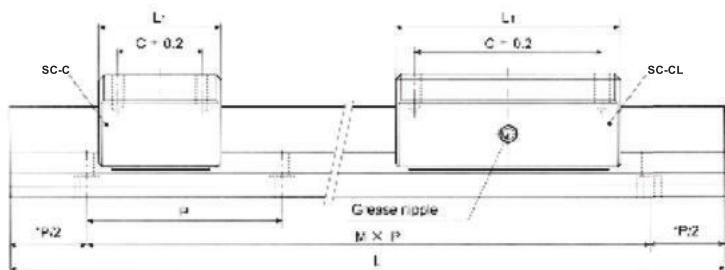
Tolerances other than g6 are available upon request.

Linear Shaft With Bottom Support

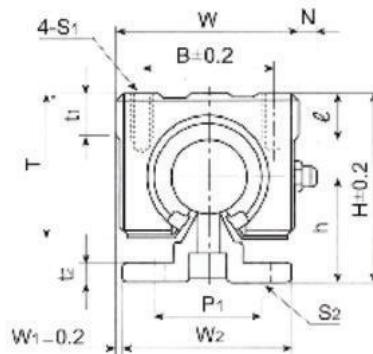
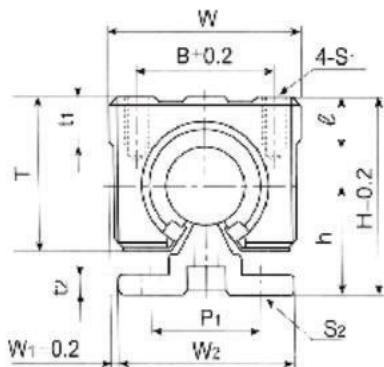
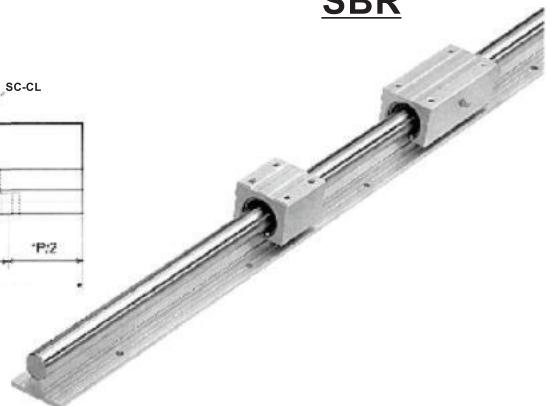
QLH®
Linear Motion Technology

SC-C

SC-CL



SBR



SC-C
SC-C16~SC-C40

SC-CL
(Long Type)
SC-CL16~SC-CL30

Model No.	Shaft Dia	Dimensions of assembly				Dimensions of Block								Dimensions of track rail							Basic dynamic load rating C(kgf)	Basic static load rating C0(kgf)
		H	h	W1	W	L1	B	C	t1	ℓ	S1	T	N	W2	P1	t2	P	S2	L(max)			
SC-C16	16	45	25	2.5	45	45	32	30	9	12	M5	33	-	40	30	5	150	5.5	3600	79	120	
SC-CL 16	16	45	25	2.5	45	85	32	60	9	12	M5	33	8	40	30	5	150	5.5	3600	158	240	
SC-C 20	20	50	27	1.5	48	50	35	35	11	12	M6	39	-	45	30	5	150	5.5	4200	90	140	
SC-CL 20	20	50	27	1.5	48	96	35	70	11	12	M6	39	8	45	30	5	150	5.5	4200	180	280	
SC-C 25	25	60	33	2.5	60	65	40	40	14	12	M6	47	-	55	35	6	200	6.5	4200	100	160	
SC-CL 25	25	60	33	2.5	60	130	40	100	14	12	M6	47	8	55	35	6	200	6.5	4200	200	320	
SC-C 30	30	70	37	5	70	70	50	50	15	18	M8	56	-	60	40	7	200	6.5	4200	160	280	
SC-CL 30	30	70	37	5	70	140	50	110	15	18	M8	56	8	60	40	7	200	6.5	4200	320	560	
SC-C 40	40	90	48	7.5	90	90	65	65	20	20	M10	72	-	75	55	9	300	9	4200	220	410	
SC-CL 40	40	90	48	7.5	90	175	65	140	20	20	M10	72	8	75	55	9	300	9	4200	440	820	
SC-C 50	50	115	62	12.5	120	110	94	80	25	20	M10	92	-	95	70	11	300	11	4200	390	810	

Example of identification number :

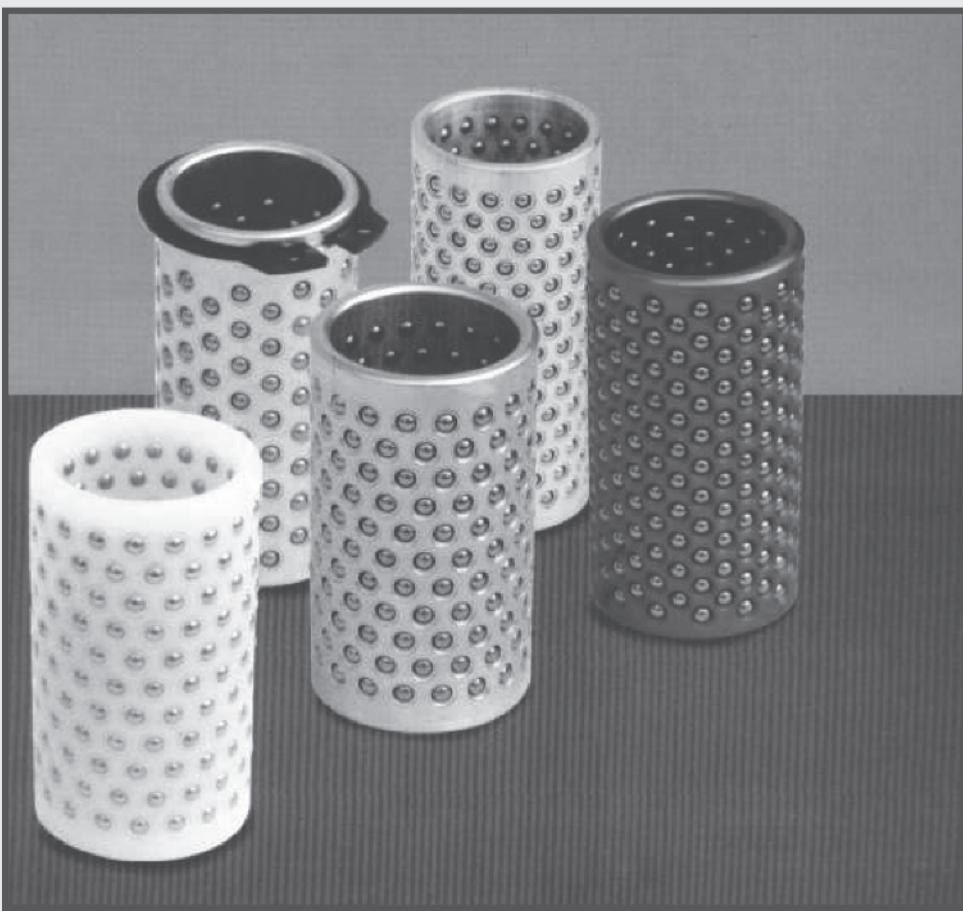
- ① Model No. : SC-C, SC-CL
- ② Shaft Diameter : Shaft L Hardness (HRC52± 2) ground & chromium plated
- ③ Number of blocks per track rail : B1 : 1 Block B2 : 2 Blocks B3 : 3 Blocks
- ④ Length of track rail : (2400mm)

SC-C25-B2-2400

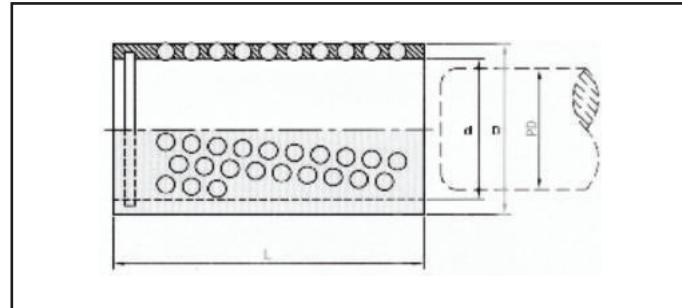
① ② ③ ④

Ball Cage

QLH®
Linear Motion Technology



Ball Cage Retainer bush Bearing (Brass)

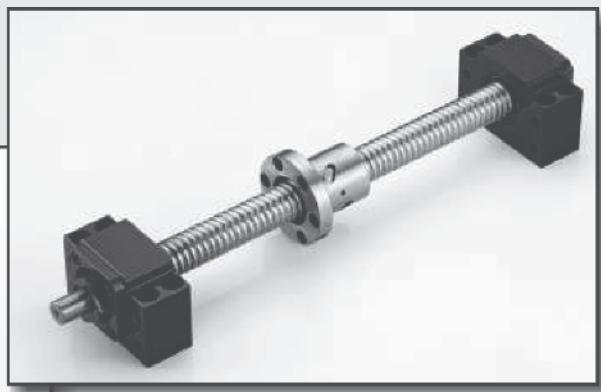
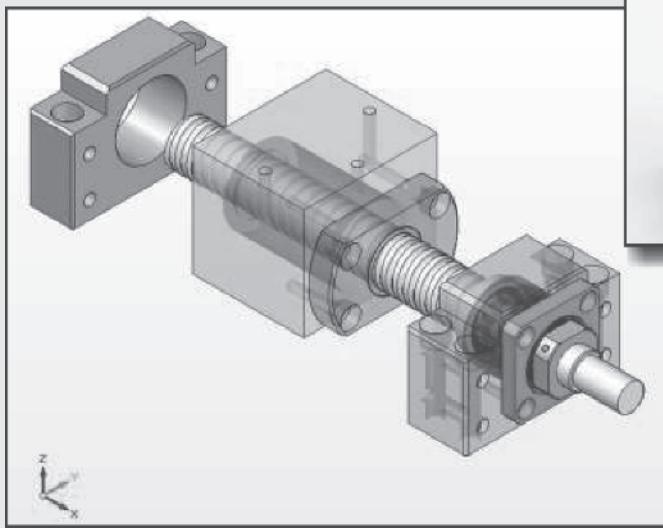


Model	d	D	L	Steel Ball No.	Weight Kg.
QLH.012.020	12	16	20	72	35
QLH.012.028			28	108	52.5
QLH.012.036			36	132	64.1
QLH.012.042			42	156	75.8
QLH.012.051			51	192	93.3
QLH.015.035	15	21	35	84	86.8
QLH.015.042			42	108	111.6
QLH.015.052			52	132	136.4
QLH.015.065			65	180	186
QLH.016.024	16	22	24	48	50.6
QLH.016.035			35	84	88.6
QLH.016.042			42	108	114
QLH.016.052			52	132	139.3
QLH.016.065			65	180	189.9
QLH.019.035	19	25	35	112	93.2
QLH.019.043			43	144	119.9
QLH.019.050			50	176	146.5
QLH.019.057			57	208	173.1
QLH.019.065			65	240	199.8
QLH.019.082			82	304	253
QLH.020.035	20	26	35	112	148.2
QLH.020.045			43	144	190.6
QLH.025.050			50	176	233
QLH.020.057			57	208	275.3
QLH.020.065			65	240	317.7
QLH.020.072			72	272	360
QLH.020.082			82	304	402.4
QLH.024.043	24	30	43	162	238.1
QLH.024.052			53	198	291
QLH.024.060			60	252	370.3
QLH.024.067			67	270	396.8
QLH.024.077			77	324	476.1
QLH.024.084			84	360	529
QLH.024.100			100	432	634.8
QLH.024.108			108	468	687.7
QLH.025.043	25	31	43	162	240.2
QLH.025.052			52	198	293.6
QLH.025.060			60	252	373.6
QLH.025.067			67	270	400.3
QLH.025.077			77	324	480.4
QLH.025.084			84	360	533.8
QLH.025.100			100	432	640.5
QLH.025.108			108	468	693.9
QLH.030.052	30	38	52	162	417

Model	d	D	L	Steel Ball No.	Weight Kg.
QLH.030.065	30	38	65	216	556
QLH.030.074			74	252	648.7
QLH.030.080			80	270	695
QLH.030.100			100	342	880.4
QLH.030.121			121	414	1065.7
QLH.032.052	32	40	52	162	423.2
QLH.032.065			65	216	564.3
QLH.032.074			74	252	658.3
QLH.032.080			80	270	705.4
QLH.032.090			90	306	799.4
QLH.032.100	38	46	100	342	893.5
QLH.032.121			121	414	1081.6
QLH.038.060			60	220	626.8
QLH.038.085			85	320	911.7
QLH.038.100			100	380	1082.7
QLH.040.055	40	48	55	200	575.3
QLH.040.060			60	220	632.8
QLH.040.065			65	240	690.3
7,611.040.075			75	280	805.4
QLH.040.080			80	300	862.9
QLH.040.085	48	56	85	320	920.5
QLH.040.100			100	380	1093
QLH.040.115			115	440	1265.6
QLH.040.125			125	480	1380.7
QLH.040.134			134	520	1495.7
QLH.040.150			150	580	1668.3
QLH.048.067	48	56	67	288	927.3
QLH.048.082			82	360	1159.1
QLH.048.094			94	432'	1391
QLH.048.100			100	456	1468.2
QLH.048.110			110	504	1622.8
QLH.048.125			125	576	1854.6
QLH.048.136			136	624	2009.32
QLH.050.067	50	58	67	288	933
QLH.050.082			82	360	1166.3
QLH.050.094			94	432	1399.6
QLH.050.100			100	456	1477.3
QLH.050.110			110	504	1632.8
QLH.050.125	58	71	125	576	1866.1
QLH.050.136			136	624	2021.6
QLH.050.147			147	672	2177.1
QLH.063.100	63	71	100	608	2275.1
QLH.063.125			125	768	2873.8
QLH.063.155			155	960	3592.8



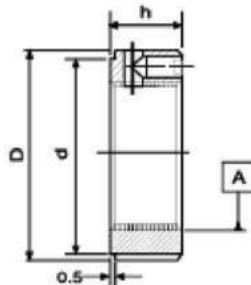
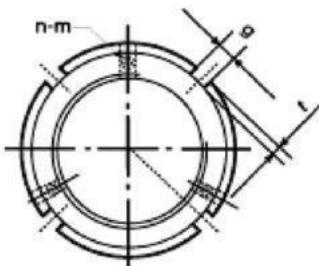
Ballscrew Support Unit



Precision Locknut

QLH®
Linear Motion Technology

QLH-A series : Axial Locking



Locking Mold : axial (horizontal),
three-point of cooper screws locking

Material : JIS G4105 (SCM440),
DIN 17204 (42CrMo4)

Hardness : HRC 30 ±2

Thread Tolerance : ISO 4H

Notes : apply for high rigidity interchangeable with F series

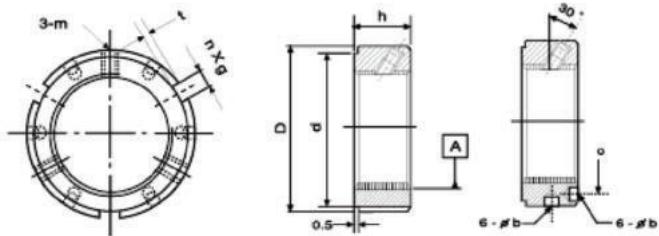
thread	D	h	g	t	d	n- M	Max. Nm
QLHA M14x1.5							
QLHA M15x1	30	14			25		
QLHA M16x1.5						2-M4	3.5
QLHA M17x1	32		4	2	27		
QLHA M18x1.5							
QLHA M20x1		16					
QLHA M20x1.5							
QLHA M22x1.5	38				33		
QLHA M24x1.5						3-M4	4.5
QLHA M25x1.5							
QLHA M27x1.5	40				35		
QLHA M30x1.5	45				40		
QLHA M33x1.5	50				45		
QLHA M35x1.5					47		
QLHA M36x1.5	52						
QLHA M39x1.5							
QLHA M40x1.5	58				52		
QLHA M42x1.5	62				56		
QLHA M45x1.5	65				59		
A M48x1.5	70				64		
QLHA M50x1.5						3-M6	8.0
QLHA M52x1.5	73						
QLHA M55x2	75				68		
QLHA M56x2							
QLHA M60x2	80		7	3	73		
QLHA M64x2	85				78		
QLHA M68x2	92				84		
QLHA M70x2					86		
QLHA M72x2	94				90		
QLHA M75x2					96		
QLHA M76x2	98		8	3.5	102		
QLHA M80x2	105				108		
QLHA M85x2	110				113		
QLHA M90x2	120				118		
QLHA M95x2	125	26	10	4			
QLHA M100x2	130						

thread	D	h	g	t	d	n- M	Max. Nm
QLHA M105x2	140				125		
QLHA M110x2	145	28			132		
QLHA M115x2	150				137		
QLHA M120x2	155				142		
QLHA M125x2	160	30			147		
QLHA M130x2	165				152		
QLHA M135x2	175				160		
QLHA M140x2	180		32	14	6	165	
QLHA M145x2	190				175		
QLHA M150x2	195				180		
QLHA M155x3	200				180		
QLHA M160x3	210		34	16	7	190	
QLHA M165x3	210				190		
QLHA M170x3	220				200		
QLHA M180x3	230				205		
QLHA M190x3	240		36		215		
QLHA M200x3	250	38			225		

Precision Locknut

QLH®
Linear Motion Technology

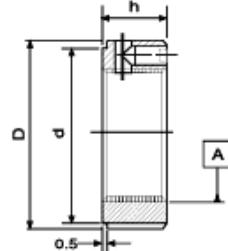
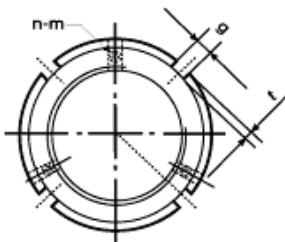
QLH-F series : Flank Locking



F series: Flank Locking
 Locking Mold: flank 30°
 three-point of cooper screws locking
 Material: JIS G4105 (SCM440),
 DIN 17204 (42CrMo4)
 Hardness: HRC 30 ±2
 Thread Tolerance: ISO 4H
 Notes: apply for high rigidity interchangeable with A series

thread	D	h	d	tn x g/b	t/c	M	Max. Nm
QLHF M14x1.5					2 -	M5	4.5
QLHF M15x1	30	14	25		2 -		
QLHF M16x1.5					2 -		
QLHF M17x1	32		27		2 -		
QLHF M18x1.5					2 -		
QLHF M20x1		16			2 -		
QLHF M20x1.5					2 -		
QLHF M22x1.5	38		33		2 -		
QLHF M24x1.5					2 -		
QLHF M25x1.5					2 -		
QLHF M27x1.5	40		35		2 -	M6	8.0
QLHF M30x1.5	45	18	40		2 -		
QLHF M33x1.5	50		45		2 -		
QLHF M35x1.5	52		47		2 -		
QLHF M36x1.5					2 -		
QLHF M39x1.5	58		52		2.5 -		
QLHF M40x1.5					2.5 -		
QLHF M42x1.5	62	20	56		2.5 -		
QLHF M45x1.5	65		59		2.5 -		
QLHF M48x1.5	70		64		2.5 -		
QLHF M50x1.5					2.5 -		
QLHF M52x1.5	73				63	M8	18.0
QLHF M55x1.5	75		68		65		
QLHF M56x2		22			65		
QLHF M60x2	80		73		70		
QLHF M56x2					75		
QLHF M65x2	85		78		75		
QLHF M68x2	92		84		81		
QLHF M70x2					81		
QLHF M72x2	94		86		83		
QLHF M75x2	98	24	90		3.5 87		
QLHF M76x2					87		
QLHF M80x2	105		96	3x8/07	93		
QLHF M85x2	110		102	6x8/07	98		
QLHF M90x2	120	26	108	6x10/07	105		
QLHF M95x2	125		113		110		

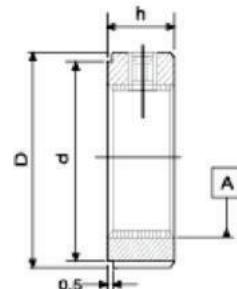
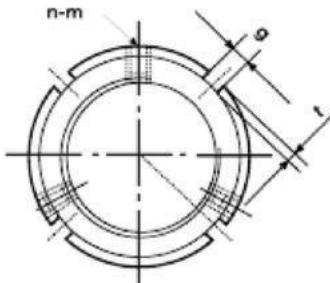
QLH-C series : Clasp Axial Locking



C series: Clasp Axial Locking
Locking Mold: clasp axial (horizontal), multi-points of locking
Material: JIS G4105 (SCM440), DIN 17204 (42CrMo4)
Hardness: HRC 30 ±2 Thread
Tolerance: ISO 6H
Notes: apply for heavy loading

Thread	D	h	g	n M x L	n	b	c	Max.Nm	Thread	D	h	g	n M x L	n	b	c	Max.Nm	
QLHC M16x1.5	34		29				24		QLHC M80x2	110		103				95		
QLHC M17x1	37		32				26		QLHC M85x2	115		108				100		
QLHC M18x1.5	38		33				28		QLHC M90x2	120		113				105		
QLHC M20x1	40	18	35	4M4x12		4	30		QLHC M95x2	125	32	118	6M6x22				110	
QLHC M20x1.5	40		35				32		QLHC M100x2	130		123				115		
QLHC M22x1.5	42		37				34		QLHC M105x2	135		128		6	8	120		
QLHC M24x1.5	44		39						QLHC M110x2	140		133				125		
QLHC M25x1.5	45		40		4	35			QLHC M115x2	145	34	137				130	8	
QLHC M26x1.5	45	20	43	4M4x14		37			QLHC M120x2	155		146				136		
QLHC M28x1.5	46		45			39		3.5	QLHC M125x2	160	36	150	6M6x25				140	
QLHC M30x1.5	48				5	41			QLHC M130x2	165		155				148		
QLHC M32x1.5	50		47			44			QLHC M135x2	170		160				153		
QLHC M35x1.5	53		50			47			QLHC M140x2	180		168	8M6x25				160	
QLHC M38x1.5	56	22	53	4M4x16		49			QLHC M145x2	185	38	173				165		
QLHC M40x1.5	58		55			51			QLHC M150x2	190		178				170		
QLHC M42x1.5	60								QLHC M155x3	195		183				175		
QLHC M45x1.5	68		63				57		QLHC M160x3	205		190				178		
QLHC M48x1.5	69		65				58		QLHC M165x3	210		195	8	10		188		
QLHC M50x1.5	70		66		25	68	60		QLHC M170x3	215		200				193		
QLHC M52x1.5	72						62		QLHC M175x3	220		205	8M8x30				198	
QLHC M55x1.5	75		71				65		QLHC M180x3	230	40	213				205	18	
QLHC M55x2									QLHC M185x3	235		218				210		
QLHC M58x1.5	82	26	77			6	70		QLHC M190x3	240		223				215		
QLHC M60x1.5	84		79				72		QLHC M195x3	240		223				219		
QLHC M60x2					6				QLHC M200x3	245		230				223		
QLHC M62x1.5	86		82				75											
QLHC M65x1.5	88		84				77											
QLHC M65x2																		
QLHC M68x1.5	93		87				80											
QLHC M70x1.5	95	28	89				82											
QLHC M70x2																		
QLHC M72x1.5	97		91			7	84											
QLHC M75x1.5																		
QLHC M75x2	100		94				87											

QLH-R series : Radial Locking



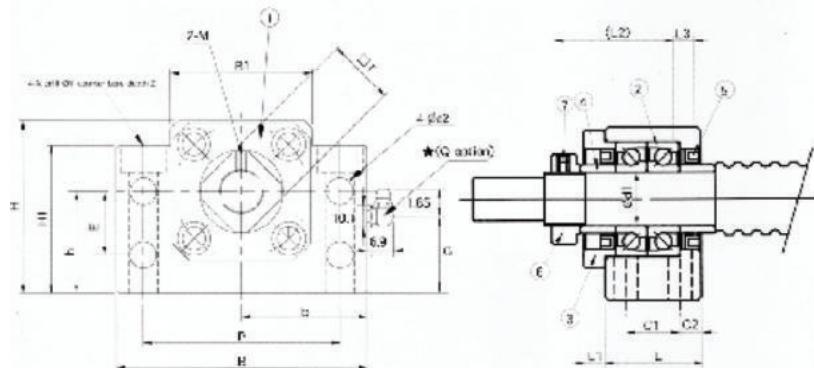
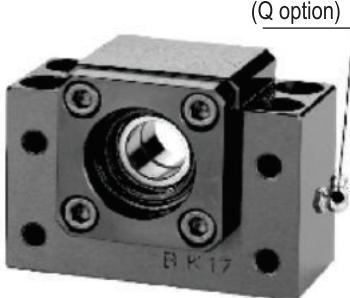
R series: Radial Locking
Locking Mold: radial (ver?cal)
three-point of cooper screws
lockingMaterial: JIS G4105 (SCM440),
DIN 17204 (42CrMo4)
Hardness: HRC 30 ±2Thread
Tolerance: ISO 4H
Notes: apply for limit space

thread	D	h	g	t	d	n-M	Max. Nm	thread	D	h	g	t	d	n-M	Max. Nm
QLHR M6x0.5	16	8	3	2	11	2-M4	3.5	QLHR M52x1.5	73	16	7	3	66	3-M8	18.0
QLHR M8x0.75					13			QLHR M55x2	75				68		
QLHR M10x0.75	18				16			QLHR M56x2	77				70		
QLHR M10x1					21			QLHR M60x2	80				73		
QLHR M12x1	20				23	2-M5	4.5	QLHR M64x2	85				78		
QLHR M12x1.25					25			QLHR M65x2							
QLHR M14x1.5	25				27	3-M5		QLHR M68x2	92	18	8	3.5	84		
QLHR M15x1					30			QLHR M70x2							
QLHR M16x1.5	28	10	4		33	3-M6	8.0	QLHR M72x2	95				86		
QLHsR M17x1					37			QLHR M75x2	98				90		
QLHR M18x1.5	30				40			QLHR M76x2	100				92		
QLHR M20x1	32				45			QLHR M80x2	105				96		
QLHR M20x1.5					47			QLHR M85x2	110				102		
QLHR M22x1.5	35				49			QLHR M90x2	120	20	10	4	108		
QLHR M24x1.5	38	12	5		52			QLHR M95x2	125				113		
QLHR M25x1.5					56			QLHR M100x2	130				118		
QLHR M27x1.5	42				59			QLHR M105x2	140	22	12	5	125		
QLHR M30x1.5	45				62			QLHR M110x2	145				132		
QLHR M33x1.5	52				64			QLHR M115x2	150				137		
QLHR M35x1.5								QLHR M120x2	155	24			142		
QLHR M36x1.5	55	14	6	2.5				QLHR M125x2	160				147		
QLHR M39x1.5	58							QLHR M130x2	165				152		
QLHR M40x1.5								QLHR M135x2	175	26	14	6	160	3-M1 0	35.0
QLHR M42x1.5	62							QLHR M140x2	180				165		
QLHR M45x1.5	65							QLHR M145x2	190				175		
QLHR M48x1.5	68							QLHR M150x2	195				180		
QLHR M50x1.5	70							QLHR M155x3	200	28	16	7	180		
								QLHR M160x3	210				190		
								QLHR M165x3	210				190		
								QLHR M170x3	220				200		
								QLHR M180x3	230	30	18	8	205	3-M1 2	60.0
								QLHR M190x3	240				215		
								QLHR M200x3	250	32			225		

Ballscrew Support Unit

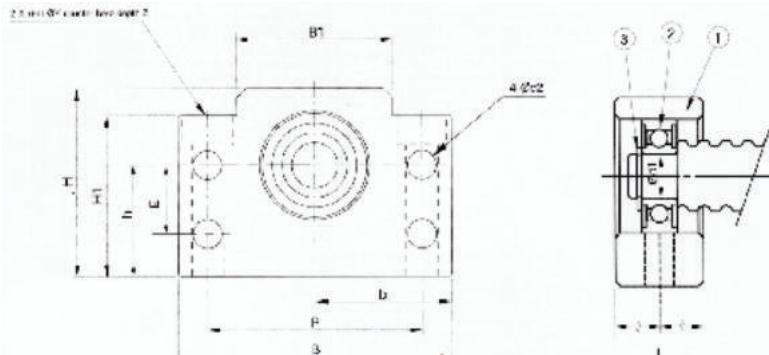
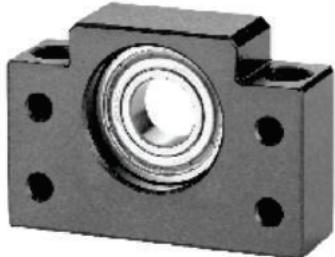
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BK TYPE



Model No.	Shaft Diameter d_1	L	L1	L2	L3	B	H	b ± 0.02	h ± 0.02	B1	H1	E	P	C1	C2	d2	X	Y	Z	M	T	G	Q
BK10	10	25	5	29	5	60	39	30	22	34	32.5	15	46	13	6	5.5	6.6	10.8	5	M3	16	-	-
BK12	12	25	5	29	5	60	43	30	25	34	32.5	18	46	13	6	5.5	6.6	10.8	1.5	M4	19	-	-
BK15	15	27	6	32	6	70	48	35	28	40	38	18	54	15	6	5.5	6.6	11	6.5	M4	22	-	-
BK17	17	35	9	44	7	86	64	43	39	50	55	28	68	19	8	6.6	9	14	8.5	M4	24	-	-
BK20	20	35	8	43	8	88	60	44	34	52	50	22	70	19	8	6.6	9	14	8.5	M4	30	26.7	M6
BK25	25	42	12	54	9	106	80	53	48	64	70	33	85	22	10	9	11	17	11	M5	35	39.5	M6
BK30	30	45	14	61	9	128	89	64	51	76	78	33	102	23	11	11	14	20	13	M6	40	41.5	M6
BK35	35	50	14	67	12	140	96	70	52	88	79	35	114	26	12	11	14	20	13	M8	50	42.5	M6
BK40	40	61	18	76	15	160	110	80	60	100	90	37	130	33	14	14	18	26	17.5	M8	50	42.5	M6

BF TYPE



Model No.	Shaft diameter d_1	L	B	H	b ± 0.02	h ± 0.02	B1	H1	E	P	d2	X	Y	Z	Bearing	C Snap Ring
BF 10	8	20	60	39	30	22	34	32.5	15	46	5.5	6.6	10.8	5	608ZZ	S 08
BF 12	10	20	60	43	30	25	34	32.5	18	46	5.5	6.6	10.8	1.5	6000ZZ	S 10
BF 15	15	20	70	48	35	28	40	38	18	54	5.5	6.6	11	6.5	6002ZZ	S 15
BF 17	17	23	86	64	43	39	50	55	28	68	6.6	9	14	8.5	6203ZZ	S 17
BF 20	20	26	88	60	44	34	52	50	22	70	6.6	9	14	8.5	6004ZZ	S 20
BF 25	25	30	106	80	53	48	64	70	33	85	9	11	17	11	6205ZZ	S 25
BF 30	30	32	128	89	64	51	76	78	33	102	11	14	20	13	6206ZZ	S 30
BF 35	35	32	140	96	70	52	88	79	35	114	11	14	20	13	6207ZZ	S 35
BF 40	40	37	160	110	80	60	100	90	37	130	14	18	26	17.5	6208ZZ	S 40

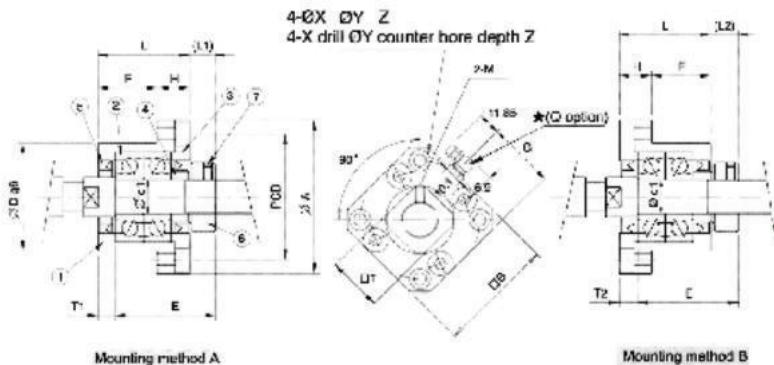
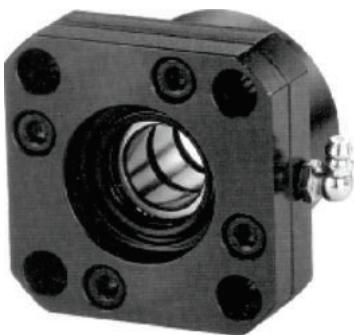
BK PART LIST		
Part No.	Part Name	Qty.
1	Housing	1
2	Bearing	1set
3	holding lid	1
4	Collar	2
5	Seal	2
6	Lock Nut	1set
7	Hexagon socket-head Screws (with set piece)	2

BK PART LIST		
Part No.	Part Name	Qty.
1	Housing	1
2	Bearing	1set
3	Snap ring	1

Ballscrew Support Unit

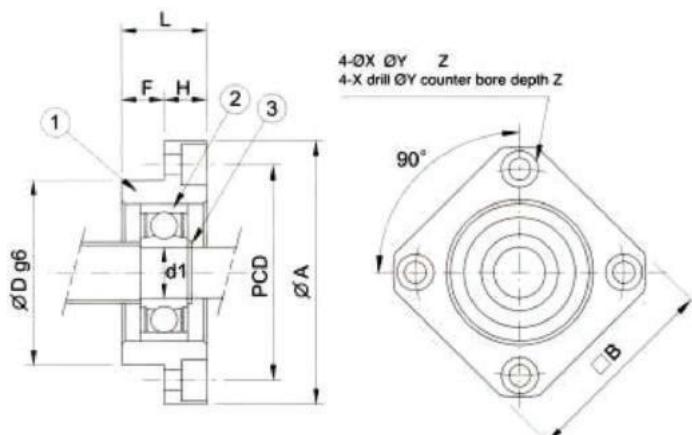
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FK TYPE



Model No.	Shaft diameter d1	L	H	F	E	Dg6	A	PCD	B	Mounting Method A		Mounting Method B		X	Y	Z	M	T	G	Q
										L1	T1	L2	T2							
FK 10	10	27	10	17	29.5	34 -0.009 -0.025	52	42	42	7.5	5	8.5	6	4.5	8	4	M3	16	-	M6
FK 12	12	27	10	17	29.5	36 -0.009 -0.025	54	44	44	7.5	5	8.5	6	4.5	8	4	M4	19	-	M6
FK 15	15	32	15	17	36	40 -0.009 -0.025	63	50	52	10	6	12	8	5.5	9.5	6	M4	22	26	M6
FK 17	17	45	22	23	47	50 -0.009 -0.025	77	62	61	11	9	14	12	6.6	11	10	M4	24	30.5	M6
FK 20	20	52	22	30	50	57 -0.010 -0.029	85	70	68	8	10	12	14	6.6	11	10	M4	30	34	M6
FK 25	25	57	27	30	60	63 -0.010 -0.029	98	80	79	13	10	20	17	9	15	13	M5	35	39	M6
FK 30	30	62	30	32	61	75 -0.010 -0.029	117	95	93	11	12	17	18	11	17.5	15	M6	40	46	M6

FF TYPE



Model No.	Shaft Diameter d1	L	H	F	Dg6	A	PCD	B	X	Y	Z	Bearing	Snap ring
FF 06	6	10	6	4	22 -0.007 -0.02	36	28	28	3.4	6.5	4	606ZZ	S 06
FF 10	8	12	7	5	28 -0.007 -0.02	43	35	35	3.4	6.5	4	608ZZ	S 08
FF 12	10	15	7	8	34 -0.009 -0.025	52	42	42	4.5	8	4	6000ZZ	S 10
FF 15	15	17	9	8	40 -0.009 -0.025	63	50	52	5.5	9.5	5.5	6002ZZ	S 15
FF 17	17	20	11	9	50 -0.009 -0.025	77	62	61	6.6	11	6.5	6203ZZ	S 17
FF 20	20	20	11	9	57 -0.010 -0.029	85	70	68	6.6	11	6.5	6204ZZ	S 20
FF 25	25	24	14	10	63 -0.010 -0.029	98	80	79	9	14	8.5	6205ZZ	S 25
FF 30	30	27	18	9	75 -0.010 -0.029	117	95	93	11	17	11	6206ZZ	S 30

FK PART LIST		
NO	PART NAME	Q'ty
1	Housing	1
2	Bearing	1Set
3	Holding lid	1
4	Collar	2
5	Seal	2
6	Lock nut	1Set
7	Hexagon socket - head setscrew(with set piece)	2

FF PART LIST		
NO	PART NAME	Q'ty
1	Housing	1
2	Bearing	1Set
3	Snap Ring	1

Self Lubricating Sliding DU Bushes

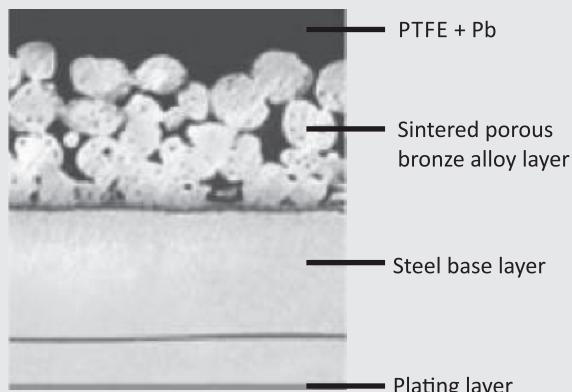
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Smooth, Oilless Operation

The Dry Bushing (DU bushing) is the ultimate in oilless bearing design, using lead and tetrafluoroethylene (Teflon) having excellent wear resistance which optimizes metal properties such as strength and dimensional stability.

Coefficients of static and dynamic friction are so small that the bearing surfaces run smoothly without lubrication, while at the same time eliminating sticking and slipping. Unlike regular bearings which require constant lubrication, the MB type does away with the need for costly maintenance. It is also possible to combine them with parts totally submerged in a lubricant.



FEATURES

1. The bearing surfaces have such low coefficients of static and dynamic friction that they require no lubrication. QHmet bushing can also be used in lubricants.
2. The operating temperature range extends from - 200°C to 280°C.
3. QHmet bushing operate smoothly under loads which exert high levels of resistance, impact, intermittent motion, and thrust.
4. QHmet bushing are free from electrostatic induction. When installed, each MB bearing has an electrical resistance of 1Ω to 10Ω per 1 cm² wide contact area.
5. QHmet bushing surface is highly resistant to most industrial chemicals and solvents including gas, oil, and alcohol.
6. The mating surface (mounting shaft) is wear resistant.
7. Service life is extended.
8. QHmet bushing are light and thin (up to 3 mm thick), requiring little space and permit compact equipment design.
9. QHmet bushing minimize operating noise.
10. Standard QHmet bushings are available for quick delivery. Non-standard QHmet bushings can be made to order.

Physical and Mechanical Performance

Performance Index		Data	Performance Index		Data
Max Load	Static Load	250 N/mm ²	Friction Coefficient	Grease Lubrication	0.08~0.20
	Dynamic Load	140 N/mm ²		Oil Lubrication	0.02~0.07
Max Load	Oscillation Load	60 N/mm ²	Mating Axis	Hardness	> 120 HB
	Grease Lubrication	2.5 N/mm ²		Roughness	Ra=0.4~1.25
Max Load	Oil Lubrication	5m/s	Working Temperature		-200~+280°C
	Grease Lubrication	3.6 N/mm ² m/s	Heat conducting Coefficient		40W/(m · k)
Max Load	Oil Lubrication	50 N/mm ² m/s	Heat Expansion Coefficient (Axial)		11 x 10 ⁻⁶ k ⁻¹



Physical and Mechanical Performance

Normally, the surface polymer of QHMET is of chemical-erosion resistant quality. However it can be eroded by fused alkali metal and high temperature fluorine compounds. Therefore its erosion-prevention quality is primarily decided by the quality of the steel back and its plating layer. Air-erosion could be effectively prevented if the steel back is bronze or tin-plated. If the bush is to be used in corrosive environment, the steel back needs to be plated with lead, zinc, nickel or nickel-chrome alloy, etc.

Friction Characteristics

QHMET is of much lower friction coefficient. Friction coefficient may relatively become smaller under heavier load. When the load pressure is more than 7Mpa, its friction coefficient may reduce to 0.05 or smaller. In addition, friction coefficient will also become smaller with lower linear velocity and higher temperature.

Anti-abrasion Performance

QHMET is of excellent anti-abrasion performance, mainly due to die particular molecule structure of PTFE. The abrasion process can be generally divided into three phases, so there are three kinds of friction coefficient. See the right graph:

1. "Running-in" phrase: PTFE compound on the bush is transferred to its mating surface and forms a lubricating film. At this phase, the friction coefficient is bigger, thus the abrasion pace is very quick, See the curve showed in area I of the graph.
- "Running-in" phrase: PTFE compound on the bush is transferred to its mating surface and forms a lubricating film. At this phase, the friction coefficient is bigger, thus the abrasion pace is very quick, See the curve showed in area I of the graph.
2. 'Stabilization*' abrasion phrase: After the 'Running-in phase', the friction happens between PTFE and PTFE, thus the friction coefficient is smaller and keeps steady. As a result, the wear rate is low and steady, bee the curve showed in area II of the graph.
3. "Slurp" abrasion phrase: As PTFE in the porous layer is slowly consumed up, not enough lubricant can be supplied to the gliding media. Friction coefficient .UK! wear rate will rapidly rise. When 70% of the bronze surface is exposed, service life of QHMET closes to its end. See the curve showed in area III of the graph.

The Advantages of Self-Lubricating Bushings

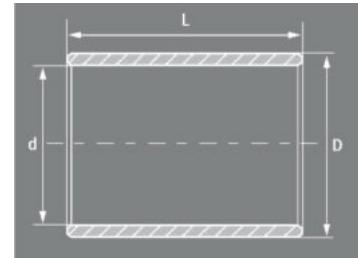
- Elimination Of Oil Holes And Grooves - Cost for machining oil holes and oil grooves is unnecessary. Self-lubricating eliminates the need for the extra oiling system.
- Reduction Of The Machinery Running Cost - With maintenance free features, the lubricant oil is dramatically reduced; machinery running cost will also be decreased.
- Maintenance Free Operation - Self-lubricating bushings solve the problem of oiling operation and oiling devices, also saving bearing maintenance costs.
- Simplified Mechanical Design And Manufacture - With above advantages, thin wall thickness, higher load, and excellent wear resistance, mechanical designs can be simplified and made more economical.
- The Environment Is Protected - The self-lubricating bearing materials work without oil and meet the ROHS directive.

Self Lubricating Sliding DU Bushes

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QLHMC / QLHDX / P-20

Cylindrical Bushing

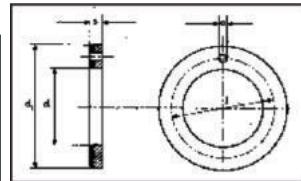


List of our standard dimensions in mm.

| Description dxDxL |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 03x4.5x03 | 16x18x10 | 32x36x30 | 70x75x40 | 135x140x100 |
| 03x4.5x04 | 16x18x12 | 32x36x40 | 70x75x50 | 140x145x60 |
| 03x4.5x05 | 16x18x15 | 35x39x20 | 70x75x60 | 140x145x100 |
| 03x4.5x06 | 16x18x20 | 35x39x30 | 70x75x70 | 145x150x60 |
| 04x5.5x03 | 16x18x25 | 35x39x35 | 75x80x40 | 145x150x100 |
| 04x5.5x04 | 18x20x10 | 35x39x40 | 75x80x50 | 150x155x60 |
| 04x5.5x06 | 18x20x15 | 35x39x50 | 75x80x60 | 150x155x80 |
| 04x5.5x10 | 18x20x20 | 36x40x20 | 75x80x70 | 150x155x100 |
| 05x07x05 | 18x20x25 | 36x40x30 | 75x80x80 | 155x160x60 |
| 05x07x08 | 20x22x10 | 36x40x40 | 80x85x60 | 155x160x100 |
| 05x07x10 | 20x22x15 | 37x41x20 | 80x85x80 | 160x165x60 |
| 06x08x04 | 20x22x20 | 40x44x20 | 80x85x100 | 160x165x80 |
| 06x08x06 | 20x23x10 | 40x44x30 | 85x90x30 | 160165100 |
| 06x08x08 | 20x23x15 | 40x44x40 | 85x90x60 | 165x170x60 |
| 07x08x10 | 20x23x20 | 40x44x45 | 85x90x100 | 165x170x100 |
| 07x08x12 | 20x23x25 | 40x44x50 | 90x95x60 | 170x175x60 |
| 08x10x06 | 20x23x30 | 45x50x20 | 90x95x100 | 170x175x100 |
| 08x10x08 | 22x25x15 | 45x50x30 | 95x100x60 | 175x180x60 |
| 08x10x10 | 22x25x20 | 45x50x40 | 95x100x100 | 175x180x100 |
| 08x10x12 | 22x25x25 | 45x50x45 | 100x105x50 | 180x185x60 |
| 0x12x08 | 22x25x30 | 45x50x50 | 100x105x60 | 180x185x80 |
| 10x12x10 | 24x27x15 | 50x55x20 | 100x105x70 | 180x185x100 |
| 10x12x12 | 24x27x20 | 50x55x25 | 100x105x80 | 190x195x60 |
| 10x12x15 | 24x27x25 | 50x55x30 | 100x105x100 | 190x195x100 |
| 10x12x20 | 24x27x30 | 50x55x40 | 100x105x115 | 200x205x60 |
| 12x14x08 | 25x28x12 | 50x55x50 | 105x110x60 | 200x205x100 |
| 12x14x10 | 25x28x15 | 50x55x60 | 105x110x100 | 205x210x60 |
| 12x14x12 | 25x28x20 | 55x60x20 | 105x110x115 | 205x210x100 |
| 12x14x15 | 25x28x25 | 55x60x25 | 110x115x60 | 210x215x60 |
| 12x14x20 | 25x28x30 | 55x60x30 | 110x115x100 | 210x215x100 |
| 12x14x25 | 25x28x40 | 55x60x40 | 110x115x115 | 215x220x60 |
| 13x15x10 | 25x28x50 | 55x60x50 | 115x120x50 | 215x220x100 |
| 13x15x20 | 28x32x15 | 55x60x55 | 115x120x60 | 220x225x60 |
| 14x16x05 | 28x32x20 | 55x60x60 | 115x120x70 | 220x225x100 |
| 14x16x10 | 28x32x25 | 60x65x20 | 115x120x115 | 230x235x60 |
| 14x16x12 | 28x32x30 | 60x65x30 | 120x125x50 | 230x235x100 |
| 14x16x15 | 30x34x10 | 60x65x40 | 120x125x60 | 240x245x60 |
| 14x16x20 | 30x34x15 | 60x65x50 | 120x125x100 | 240x245x100 |
| 14x16x25 | 30x34x20 | 60x65x60 | 125x130x60 | 250x255x60 |
| 15x17x10 | 30x34x25 | 60x65x70 | 125x130x100 | 250x255x100 |
| 15x17x12 | 30x34x30 | 65x70x30 | 130x135x60 | 280x285x60 |
| 15x17x15 | 30x34x40 | 65x70x40 | 130x135x100 | 280x285x100 |
| 15x17x20 | 30x34x50 | 65x70x50 | 135x140x60 | 300x305x60 |
| 15x17x25 | 32x36x20 | 65x70x70 | 135x140x80 | 300x305x100 |

QLHMW

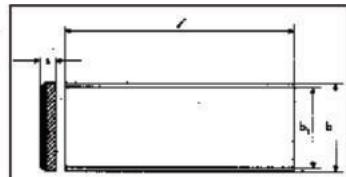
Thrust washer



CODE	Measures in mm. (Tolerance)				
	d ₁ (+0.25)	d ₂ (+0.25)	s (+0.05)	j (0.12)	a (+0.4+0.1)
QHMW10	10	20	1.5	15	1.5
QHMW12	12	24	1.5	18	1.5
QHMW14	14	26	1.5	20	2
QHMW16	16	30	1.5	22	2
QHMW18	18	32	1.5	25	2
QHMW20	20	36	1.5	28	3
QHMW22	22	38	1.5	30	3
QHMW26	26	44	1.5	35	3
QHMW28	28	48	1.5	38	4
QHMW32	32	54	1.5	43	4
QHMW38	38	62	1.5	50	4
QHMW42	42	66	1.5	54	4
QHMW48	48	74	2	61	4
QHMW52	52	78	2	65	4
QHMW62	62	90	2	76	4

QLHMS

Strips

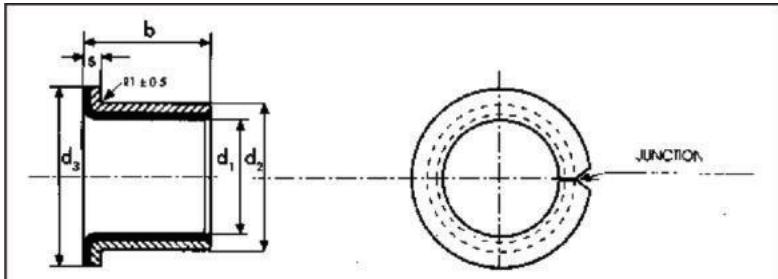


CODE	Measures in mm. (Tolerance)			
	S (-0.04)	B	B1	L (+3)
QHMS 07120	0.75	120	108	1000
QHMS 10160	1.0	160	148	1000
QHMS 15160	1.5	160	148	1000
QHMS 20160	2.0	160	148	1000
QHMS 25160	2.5	160	148	1000
QHMS 30160	3.05	160	148	1000
QHMS 07300	0.75	300	288	1000
QHMS 10300	1.0	300	288	1000
QHMS 15300	1.5	300	288	1000
QHMS 20300	2.0	300	288	1000
QHMS 25300	2.5	300	288	1000
QHMS 30300	3.05	300	288	1000

Self Lubricating Sliding DU Bushes

QLH®
Linear Motion Technology

QLH-MF Flanged Bushing



CODE	Measure in mm.(tolerance)				
	d ₁	d ₂	D ₃ (±0.5)	B (0.25)	s (-0.2)
QHMF 0604	6	8	12	4	1
QHMF 0607	6	8	12	7	1
QHMF 0608	6	8	12	8	1
QHMF 0805	8	10	15	5.5	1
QHMF 0807	8	10	15	7.5	1
QHMF 0809	8	10	15	9.5	1
QHMF 1007	10	12	18	7	1
QHMF 1009	10	12	18	9	1
QHMF 1012	10	12	18	12	1
QHMF 1017	10	12	18	17	1
QHMF 1207	12	14	20	7	1
QHMF 1209	12	14	20	9	1
QHMF 1212	12	14	20	12	1
QHMF 1217	12	14	20	17	1
QHMF 1412	14	16	22	12	1
QHMF 1417	14	16	22	17	1
QHMF 1509	15	17	23	9	1
QHMF 1512	15	17	23	12	1

CODE	Measure in mm.(tolerance)				
	d ₁	d ₂	D ₃ (±0.5)	B (0.25)	s (-0.2)
QHMF 1517	15	17	23	17	1
QHMF 1612	16	18	24	12	1
QHMF 1617	16	18	24	17	1
QHMF 1812	18	20	26	12.	1
QHMF 1817	18	20	26	17	1
QHMF 1822	18	20	26	22	1
QHMF 2011	20	23	30	11.5	1.5
QHMF 2016	20	23	30	16.5	1.5
QHMF 2021	20	23	30	21.5	1.5
QHMF 2511	25	28	35	11.5	1.5
QHMF 2516	25	28	35	16.5	1.5
QHMF 2521	25	28	35	21.5	1.5
QHMF 3016	30	34	42	16	2
QHMF 3026	30	34	42	26	2
QHMF 3516	35	39	47	16	2
QHMF 3526	35	39	47	26	2
QHMF 4026	40	44	53	26	2

Self Lubricating Bushes with solid Lubricants



FEATURE

- Maintenance-free.
- excellent wear resistance in such places where an oil film is difficult to be formed due to reciprocating. Oscillating motions and frequently intermittent operations.
- Remarkable Resistance To Corrosion And Resistance To Chemical Attack.
- Exhibits In Comparable Performance Under A High Load, Low Speed Operation.
- No Impurity Through Discharge Of Lubrication.



Lubrication conditions	Dry	Periodic lubrication
Service temperature range °C	-40 to +300	-40 to +150
Allowable max. contact pressure P N/mm ² {kgf/cm ² }	29(98) {296(1,000)}	
Allowable max. velocity V m/s {m/min}	0.50{30}	1.00{60}
Allowable max. PV value N/mm ² m/s {kgf/cm ² m/min}	1.65{1,010}	3.25{1,990}



Mechanical Properties

Density	g/cm ³	7.8
Tensile strength	N/mm ² {kgf/mm ² }	755{77}
Tensile elongation at breQH	%	12
Yield stress (0.1%)	N/mm ² {kgf/MM ² }	345{35}
Impact strength	J/cm ² {kgfm/cm ² }	19{1.9}
Hardness	—	HB210
Modulus of longitudinal elasticity	N/mm ² {kgf/mm ² }	105,000{10,700}
Co-efficient of linear expansion	X10-5 OC-1	2.2
Thermal conductivity	W/mt {cal/sec OCcm}	0.009{0.21}

Chemical Compositions

Product No.	Chemical Compositions									
	Cu	Zn	Al	Fe	Mn	Si	Ni	Sn	Pb	
	60~65	22~28	5.0~8.0	2.0~4.0	2.5~5.0	<0.1	<0.5	<0.2	<0.2	

Graphite Plug : Graphite : 85%. MoS₂ : 3%. Resin : 7%. Balance : 3-5%

For Hydro Application : ASTM (B505C86300) with PTFE Plug (White Color)

Chemical Composition : Cu (60.0-66.0), Zn(22.0-28.0), Fe (2.0-4.0), Al (5.0-7.5), Mn (2.5-5.0). Other

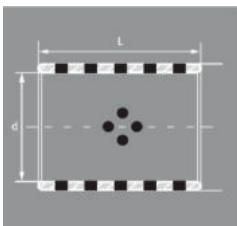
PTFE Plug : 100% Natural Pure PTFE.

Oil Less graphite Bushes

QLH®
Linear Motion Technology

QHLC = Cylindrical bushing

List of our standard dimensions in mm.



QLH Description dxDxL
QHLC 8x12x8
QHLC 8x12x10
QHLC 8x12x12
QHLC 8x12x15
QHLC 10x14x8
QHLC 10x14x10
QHLC 10x14x12
QHLC 10x14x15
QHLC 10x14x20
QHLC 12x18x10
QHLC 12x18x12
QHLC 12x18x15
QHLC 12x18x16
QHLC 12x18x20
QHLC 12x18x25
QHLC 12x18x30
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QHLC 18x24x35
QHLC 18x24x40
QHLC 18x24x45
QHLC 18x24x50
QHLC 18x24x60

QLH Description dxDxL
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QHLC 20x28x12
QHLC 20x28x15
QHLC 20x28x16
QHLC 20x28x20
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QHLC 20x25x30
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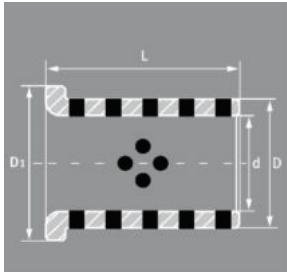
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Oil Less graphite Bushes

QLH®
Linear Motion Technology



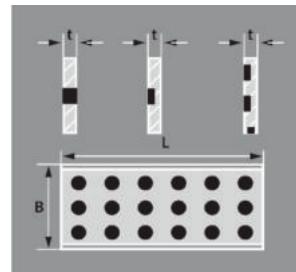
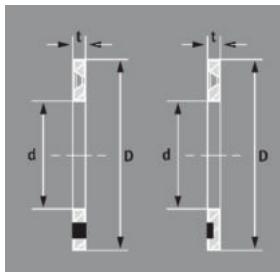
QHLF
Flanged bushing



QHLW
Thrust washer



QHLS
Strips

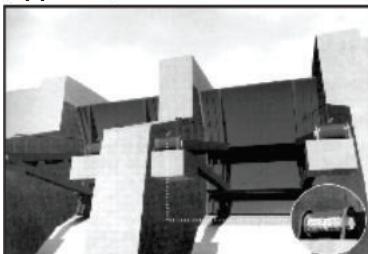


QLH Description dxDxDxL	QLH Description dxDxDxL
QHLF 10x14x22x15	QHLF 50x60x75x30
QHLF 10x14x22x20	QHLF 50x60x75x40
QHLF 12x18x25x15	QHLF 50x60x75x50
QHLF 12x18x25x20	QHLF 50x60x75x60
QHLF 13x19x26x15	QHLF 55x65x80x40
QHLF 13x19x26x20	QHLF 55x65x80x60
QHLF 14x30x27x15	QHLF 60x75x90x40
QHLF 14x30x27x20	QHLF 60x75x90x50
QHLF 15x21x28x15	QHLF 60x75x90x80
QHLF 15x21x28x20	QHLF 70x85x105x50
QHLF 15x21x28x25	QHLF 70x85x105x80
QHLF 15x21x28x30	QHLF 80x100x120x60
QHLF 16x22x29x15	QHLF 80x100x120x80
QHLF 16x22x29x20	QHLF 80x100x120x100
QHLF 16x22x29x25	QHLF 90x110x130x60
QHLF 16x22x29x30	QHLF 90x110x130x80
QHLF 18x24x32x20	QHLF 100x120x150x80
QHLF 18x24x32x30	QHLF 100x120x150x100
QHLF 20x30x40x15	QHLF 120x140x170x80
QHLF 20x30x40x20	QHLF 120x140x170x100
QHLF 20x30x40x25	
QHLF 20x30x40x30	
QHLF 20x30x40x40	
QHLF 25x35x45x15	
QHLF 25x35x45x20	
QHLF 25x35x45x25	
QHLF 25x35x45x30	
QHLF 25x35x45x40	
QHLF 30x40x50x20	
QHLF 30x40x50x25	
QHLF 30x40x50x30	
QHLF 30x40x50x35	
QHLF 30x40x50x40	
QHLF 30x40x50x50	
QHLF 35x45x60x20	
QHLF 35x45x60x30	
QHLF 35x45x60x40	
QHLF 35x45x60x50	
QHLF 40x50x65x20	
QHLF 40x50x65x30	
QHLF 40x50x65x40	
QHLF 40x50x65x50	
QHLF 45x55x30x30	
QHLF 45x55x30x40	
QHLF 45x55x30x50	
QHLF 45x55x30x60	

QLH Description	dxDxT
QHLW-10	10.2x30x3
QHLW-12	12.2x40x3
QHLW-13	13.2x40x3
QHLW-14	14.2x40x3
QHLW-15	15.2x50x3
QHLW-16	16.2x50x3
QHLW-18	18.2x50x3
QHLW-18	20.2x50x5
QHLW-20	25.2x55x5
QHLW-25	30.2x60x5
QHLW-30	30.2x60x5
QHLW-35	35.2x70x5
QHLW-40	40.2x80x7
QHLW-45	45.2x90x7
QHLW-50	50.3x100x8
QHLW-55	55.3x110x8
QHLW-60	60.3x120x8
QHLW-65	65.3x125x8
QHLW-70	70.3x130x10
QHLW-75	75.3x140x10
QHLW-80	80.3x150x10
QHLW-90	90.5x170x10
QHLW-100	100.5x190x10
QHLW-120	120.5x200x10

QLH Description	B x L x t
QHLS-1875	18x75x10
QHLS-18100	18x100x10
QHLS-18125	18x125x10
QHLS-18150	18x150x10
QHLS-2875	28x75x10
QHLS-28100	28x100x10
QHLS-28125	28x125x10
QHLS-35100	35x100x10
QHLS-35150	35x150x10
QHLS-35200	35x200x10
QHLS-35250	35x250x10
QHLS-35300	35x300x10
QHLS-35350	35x350x10
QHLS-3875	38x75x10
QHLS-38100	38x100x10
QHLS-38125	38x125x10
QHLS-38150	38x150x10
QHLS-4875	48x75x10
QHLS-48100	48x100x10
QHLS-48125	48x125x10
QHLS-48150	48x150x10
QHLS-50100	50x100x10
QHLS-50150	50x150x10
QHLS-50200	50x200x10
QHLS-50250	50x250x10
QHLS-50300	50x300x10
QHLS-50350	50x350x10
QHLS-50400	50x400x10
QHLS-75150	75x150x10
QHLS-75200	75x200x10
QHLS-75250	75x250x10
QHLS-75300	75x300x10
QHLS-75400	75x400x10
QHLS-75500	75x500x10

Application



Rod End - Cam Follower - Spherical Bearing

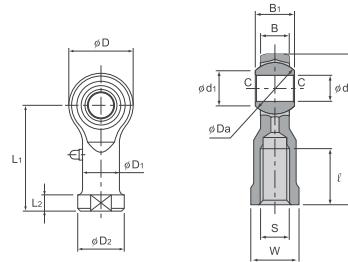
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Rod End

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Model PHS (Female Type)



Model No.	Outer dimensions			Threaded	Holder Dimensions						Grease nipple	Spherical inner ring dimensions				Permissible tilt angles			Static applied load Radial C _s	Mass N g
	Length L	Diameter D	Width B ₀ -0.1		S ₁	W	D ₁	D ₂	B	L ₁		d	Ball diameter Da mm (inch)	d ₁	C	α ₁ °	α ₂ °	α ₃ °		
	JIS Class 2	0 -0.2			0	9	11	6	27	4		5	11.112(1/4)	7.7	0.3	8	13	30	5590	16.5
PHS 5/5L	35	16	8	M5×0.8	9	9	11	6	27	4	14	6	12.7(1/4)	9	0.3	8	13	30	6660	25
PHS 6	39	18	9	M6×1	11	10	13	6.75	30	5	14	8	15.875(1/4)	10.4	0.5	8	14	25	9800	43
PHS 8	47	22	12	M8×1.25	14	12.5	16	9	36	5	17	10	19.05(1/4)	12.9	0.5	8	14	25	13200	72
PHS 10	56	26	14	M10×1.5	17	15	19	10.5	43	6.5	21	10-1	19.05(1/4)	12.9	0.5	8	14	25	13200	72
PHS 10-1	56	26	14	M10×1.25	17	15	19	10.5	43	6.5	21	12	22.225(1/4)	15.4	0.5	8	13	25	16700	107
PHS 12	65	30	16	M12×1.75	19	17.5	22	12	50	6.5	24	12-1	22.225(1/4)	15.4	0.5	8	13	25	16700	107
PHS 12-1	65	30	16	M12×1.25	19	17.5	22	12	50	6.5	24	14	25.4(1)	16.9	0.7	10	16	24	20600	160
PHS 14	74	34	19	M14×2	22	20	25	13.5	57	8	27	14-1	25.4(1)	16.9	0.7	10	16	24	20600	160
PHS 14-1	74	34	19	M14×1.5	22	20	25	13.5	57	8	27	16	28.575(1/4)	19.4	0.7	9	15	24	25000	210
PHS 16	83	38	21	M16×2	22	22	27	15	64	8	33	16-1	28.575(1/4)	19.4	0.7	9	15	24	25000	210
PHS 16-1	83	38	21	M16×1.5	22	22	27	15	64	8	33	18	31.75(1/4)	21.9	0.7	9	15	24	29400	295
PHS 18	92	42	23	M18×1.5	27	25	31	16.5	71	10	36	20	34.925(1/4)	24.4	0.7	9	15	24	34300	380
PHS 20	100	46	25	M20×1.5	30	27.5	34	18	77	10	40	22	38.1(1/4)	25.8	0.7	10	15	23	41200	490
PHS 22	109	50	28	M22×1.5	32	30	37	20	84	12	43	25	42.862(1/4)	29.6	0.8	9	15	23	72500	750
PHS 25	124	60	31	M24×2	36	33.5	42	22	94	12	48	30	50.8(2)	34.8	0.8	10	17	23	92200	1130
PHS 30	145	70	37	M30×2	41	40	50	25	110	15	56									

[Material]

Holder : S35C (Chromate treatment)
Spherical inner ring : SUJ2, 58 HRC or higher

(Hard chrome plated except for the inner surface of the inner ring)

Bush : Special copper alloy

[Fitting with the Shaft]

Condition	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

[Clearance]

Radial clearance	0.035 or less
Axial clearance	0.1 or less

[Lubrication]

Apply lubricant before using the product. The holder has a greasing hole and an oil groove; they allow grease to be replenished through the grease nipple as necessary.

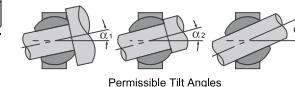
[Identification of Left-hand Thread]

If the female threading is left-hand, symbol "L" is added. The actual product is marked with symbol "L" on the holder.

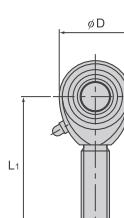
Model number coding

PHS10 L

Model number Left-hand thread



Model POS (Male Type)



Unit: mm

Model No.	Outer dimensions			Threaded	Holder Dimensions						Grease nipple	Spherical inner ring dimensions				Permissible tilt angles			Static applied load Radial C _s	Mass N g
	Length L	Diameter D	Width B ₀ -0.1		S ₁	W	D ₁	D ₂	B	L ₁		d	Ball diameter Da mm (inch)	d ₁	C	α ₁ °	α ₂ °	α ₃ °		
	JIS Class 2	0 -0.2			0	9	11	6	27	4		5	11.112(1/4)	7.7	0.3	8	13	30	5590	16.5
POS 5/5L	35	16	8	M5×0.8	9	9	11	6	27	4	14	6	12.7(1/4)	9	0.3	8	13	30	6660	25
POS 6	39	18	9	M6×1	11	10	13	6.75	30	5	14	8	15.875(1/4)	10.4	0.5	8	14	25	9800	43
POS 8	47	22	12	M8×1.25	14	12.5	16	9	36	5	17	10	19.05(1/4)	12.9	0.5	8	14	25	13200	72
POS 10	56	26	14	M10×1.5	17	15	19	10.5	43	6.5	21	10-1	19.05(1/4)	12.9	0.5	8	14	25	13200	72
POS 10-1	56	26	14	M10×1.25	17	15	19	10.5	43	6.5	21	12	22.225(1/4)	15.4	0.5	8	13	25	16700	107
POS 12	65	30	16	M12×1.75	19	17.5	22	12	50	6.5	24	12-1	22.225(1/4)	15.4	0.5	8	13	25	16700	107
POS 12-1	65	30	16	M12×1.25	19	17.5	22	12	50	6.5	24	14	25.4(1)	16.9	0.7	10	16	24	20600	160
POS 14	74	34	19	M14×2	22	20	25	13.5	57	8	27	14-1	25.4(1)	16.9	0.7	10	16	24	20600	160
POS 14-1	74	34	19	M14×1.5	22	20	25	13.5	57	8	27	16	28.575(1/4)	19.4	0.7	9	15	24	25000	210
POS 16	83	38	21	M16×2	22	22	27	15	64	8	33	16-1	28.575(1/4)	19.4	0.7	9	15	24	25000	210
POS 16-1	83	38	21	M16×1.5	22	22	27	15	64	8	33	18	31.75(1/4)	21.9	0.7	9	15	24	29400	295
POS 18	92	42	23	M18×1.5	27	25	31	16.5	71	10	36	20	34.925(1/4)	24.4	0.7	9	15	24	34300	380
POS 20	100	46	25	M20×1.5	30	27.5	34	18	77	10	40	22	38.1(1/4)	25.8	0.7	10	15	23	41200	490
POS 22	109	50	28	M22×1.5	32	30	37	20	84	12	43	25	42.862(1/4)	29.6	0.8	9	15	23	72500	750
POS 25	124	60	31	M24×2	36	33.5	42	22	94	12	48	30	50.8(2)	34.8	0.8	10	17	23	92200	1130
POS 30	145	70	37	M30×2	41	40	50	25	110	15	56									

[Material]

Holder : S35C (Chromate treatment)
Spherical inner ring : SUJ2, 58 HRC or higher

(Hard chrome plated except for the inner surface of the inner ring)

Bush : Special copper alloy

[Fitting with the Shaft]

Condition	Dimensional tolerance of the shaft
Normal load	h7
Indeterminate load	p6

[Clearance]

Radial clearance	0.035 or less
Axial clearance	0.1 or less

[Lubrication]

Apply lubricant before using the product. The holder has a greasing hole and an oil groove; they allow grease to be replenished through the grease nipple as necessary. To replenish grease, remove the outer cover and replenish grease from the holder greasing hole for models POS5 and 6, or from the grease nipple for other models.

[Identification of Left-hand Thread]

If the male thread is left-hand, symbol "L" is added. The actual product is marked with symbol "L" on the holder.

Model number coding

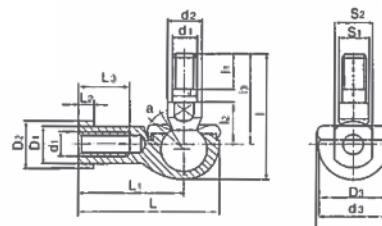
POS10 L

Model number Left-hand thread

Rod End

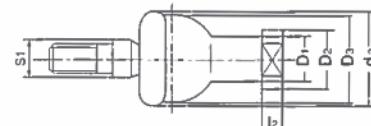
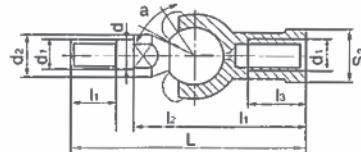
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SQ / RBL / LHSAs



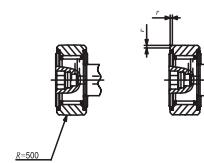
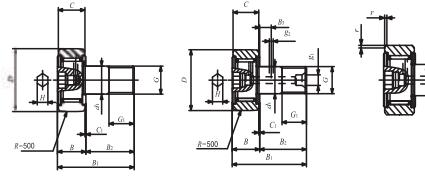
Number	Dimensions (mm)																KN Load Ratings	Weight kg		
	d	d ₁	d ₂ min	d ₃ max	l ₁ max	l ₁ min	l ₂	l ₃ max	S ₁	L _{max}	L ₁	L ₂ max	L ₃ min	D ₁ max	D ₂ max	D ₃ max	S ₂	a		
SQ 5-RS	5	M5x0.8	9	19	29	8	10	21	7	35	27	4	14	9	11	16	9	25	2.2	0.026
SQ 6-RS	6	M6x1	10	20	35.5	11	11	26	8	40	30	5	14	10	13	19	11	25	3.5	0.039
SQ 8-RS	8	M8x1.25	12	24	42.5	12	14	31	10	48	36	5	17	12.5	16	23	14	25	6.6	0.068
SQ 10-RS	10	M10x1.25	14	30	50.5	15	17	37	11	57	43	6.5	21	15	19	27	17	25	10	0.112
SQ 10-RS-1	10	M10x1.5	14	30	56.5	21	17	43	11	57	43	6.5	21	15	19	27	17	25	10	0.112
SQ 12-RS	12	M12x1.75	17	32	57.5	17	19	42	15	66	50	6.5	25	17.5	22	31	19	25	16	0.164
SQ 12-RS-1	12	M12x1.25	17	32	64.5	24	19	49	15	66	50	6.5	25	17.5	22	31	19	25	16	0.254
SQ 14-RS	14	M14x2	19	38	73.5	22	21.5	56	17	75	57	8	26	20	25	35	22	25	19	0.336
SQ 14-RS-1	14	M14x1.5	19	38	79.5	28	21.5	62	17	75	57	8	26	20	25	35	22	25	19	0.336
SQ 16-RS	16	M16x2	22	44	79.5	23	23.5	60	19	84	64	8	32	22	27	39	22	20	26	0.464
SQ 16-RS-1	16	M16x1.5	22	44	85.5	29	23.5	66	19	84	64	8	32	22	27	39	22	20	26	0.538
SQ 18-RS	18	M18x1.5	23	45	90	25	26.5	68	20	93	71	10	34	25	31	44	27	20	33	0.713
SQ 20-RS	20	M20x1.5	27	50	90	25	27	68	24	99	77	10	35	27.5	34	44	30	20	45	
SQ 22-RS	22	M22x1.5	27	52	95	26	28	70	24	109	84	12	41	30	37	50	32	16	48	

SQZ / RBI



Number	Dimensions (mm)																KN Load Ratings	Weight kg
	d	d ₁	d ₂ min	d ₃ max	l ₁ min	l ₂	S ₁	L _{max}	L	L ₂ max	l ₃ max	D ₁ max	D ₂ max	D ₃ max	S ₂	a		
SQZ 5-RS	5	M5x0.8	9	20	8	11	7	46	24	4	12	9	11	17	9	15	2.8	0.025
SQZ 6-RS	6	M6x1	10	20	11	12.2	8	55.2	28	5	15	10	13	20	11	15	3.7	0.041
SQZ 8-RS	8	M8x1.25	12	24	12	16	10	6.5	32	5	16	12.5	16	24	14	15	5.8	0.075
SQZ 10-RS	10	M10x1.5	14	30	15	19.5	11	74.5	35	6.5	18	15	19	28	17	15	8.4	0.12
SQZ 10-RS-1	10	M10x1.25	14	30	21	19.5	11	80.5	35	6.5	18	15	19	28	17	15	8.4	0.12
SQZ 12-RS	12	M12x1.75	17	32	17	21	15	84	40	6.5	20	17.5	22	32	19	15	11	0.18
SQZ 12-RS-1	12	M12x1.25	17	32	24	21	15	91	40	6.5	20	17.5	22	32	19	15	11	0.18
SQZ 14-RS	14	M14x2	19	38	22	23.5	17	103	45	8	25	20	25	36	22	11	15	0.27
SQZ 14-RS-1	14	M14x1.5	19	38	28	23.5	17	109	45	8	25	20	25	36	22	11	15	0.27
SQZ 16-RS	16	M16x2	22	44	23	25.5	19	112	50	8	27	22	27	40	22	11	15	0.36
SQZ 16-RS-1	16	M16x1.5	22	44	29	25.5	19	118	50	8	27	22	27	40	22	11	15	0.36
SQZ 18-RS	18	M18x1.5	23	45	25	31	20	130.5	58	10	32	25	31	45	27	11	19	0.54
SQZ 20-RS	20	M20x1.5	27	50	25	29	24	133	63	10	38	27.5	34	45	30	7.5	19	0.57
SQZ 22-RS	22	M22x1.5	27	52	26	33	24	145	70	12	43	30	37	50	32	7.5	23	0.76

Standard Type Cam Followers With Cage/With Hexagon Hole



Stud dia. 3–30mm

CF…BR
Stud dia d_1 : 3–10mm

CF…BR
Stud dia d_1 : 12–30mm

CF…B

CF…BUU

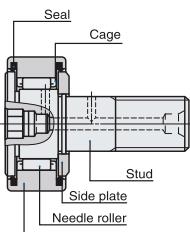
CF…BUU

Stud dia. mm	Identification number				Mass (Ref.) g	Boundary dimensions mm										Mounting dimension f Min. mm	Maximum tightening torque N·m	Basic dynamic load rating C N	Basic static load rating C_0 N	Maximum allowable static load N				
	Shield type With crowned outer ring	With cylindrical outer ring	Sealed type With crowned outer ring	With cylindrical outer ring		D	C	d_1	G	G_1	B	B_1	B_2	B_3	C_1	g_1	g_2	H	$r_{s\ min}^{(1)}$					
3	CF 3 BR	CF 3 B	CF 3 BUUR	CF 3 BUU	4.3	10	7	3	M 3×0.5	5	8	17	9	—	0.5	—	—	2	0.2	6.8	0.34	1500	1020	384
4	CF 4 BR	CF 4 B	CF 4 BUUR	CF 4 BUU	7.4	12	8	4	M 4×0.7	6	9	20	11	—	0.5	—	—	2.5	0.3	8.3	0.78	2070	1590	834
5	CF 5 BR	CF 5 B	CF 5 BUUR	CF 5 BUU	10.3	13	9	5	M 5×0.8	7.5	10	23	13	—	0.5	—	—	3	0.3	9.3	1.6	2520	2140	1260
6	CF 6 BR	CF 6 B	CF 6 BUUR	CF 6 BUU	18.5	16	11	6	M 6×1	8	12.2max	28.2max	16	—	0.6	—	—	3	0.3	11	2.7	3660	3650	1950
8	CF 8 BR	CF 8 B	CF 8 BUUR	CF 8 BUU	28.5	19	11	8	M 8×1.25	10	12.2max	32.2max	20	—	0.6	—	—	4	0.3	13	6.5	4250	4740	4620
	CF 8 BRM	CF 8 BM	CF 8 BUURM	CF 8 BUUM	28.5	19	11	8	M 8×1	10	12.2max	32.2max	20	—	0.6	—	—	4	0.3	13	7.1	4250	4740	4620
10	CF 10 BR	CF 10 B	CF 10 BUUR	CF 10 BUU	45	22	12	10	M10×1.25	12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	13.8	5430	6890	6890
	CF 10 BRM	CF 10 BM	CF 10 BUURM	CF 10 BUUM	45	22	12	10	M10×1	12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	14.7	5430	6890	6890
	CF 10-1 BR	CF 10-1 B	CF 10-1 BUUR	CF 10-1 BUU	60	26	12	10	M10×1.25	12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	13.8	5430	6890	6890
	CF 10-1 BRM	CF 10-1 BM	CF 10-1 BUURM	CF 10-1 BUUM	60	26	12	10	M10×1	12	13.2max	36.2max	23	—	0.6	—	—	4	0.3	16	14.7	5430	6890	6890
12	CF 12 BR	CF 12 B	CF 12 BUUR	CF 12 BUU	95	30	14	12	M12×1.5	13	15.2max	40.2max	25	6	0.6	4	3	6	0.6	21	21.9	7910	9790	9790
	CF 12-1 BR	CF 12-1 B	CF 12-1 BUUR	CF 12-1 BUU	105	32	14	12	M12×1.5	13	15.2max	40.2max	25	6	0.6	4	3	6	0.6	21	21.9	7910	9790	9790
16	CF 16 BR	CF 16 B	CF 16 BUUR	CF 16 BUU	170	35	18	16	M16×1.5	17	19.6max	52.1max	32.5	8	0.8	4	3	6	0.6	26	58.5	12000	18300	18300
18	CF 18 BR	CF 18 B	CF 18 BUUR	CF 18 BUU	250	40	20	18	M18×1.5	19	21.6max	58.1max	36.5	8	0.8	6	3	8	1	29	86.2	14800	25200	25200
20	CF 20 BR	CF 20 B	CF 20 BUUR	CF 20 BUU	460	52	24	20	M20×1.5	21	25.6max	66.1max	40.5	9	0.8	6	4	8	1	34	119	20700	34600	34600
	CF 20-1 BR	CF 20-1 B	CF 20-1 BUUR	CF 20-1 BUU	385	47	24	20	M20×1.5	21	25.6max	66.1max	40.5	9	0.8	6	4	8	1	34	119	20700	34600	34600
24	CF 24 BR	CF 24 B	CF 24 BUUR	CF 24 BUU	815	62	29	24	M24×1.5	25	30.6max	80.1max	49.5	11	0.8	6	4	12	1	40	215	30500	52600	52600
	CF 24-1 BR	CF 24-1 B	CF 24-1 BUUR	CF 24-1 BUU	1140	72	29	24	M24×1.5	25	30.6max	80.1max	49.5	11	0.8	6	4	12	1	40	215	30500	52600	52600
30	CF 30 BR	CF 30 B	CF 30 BUUR	CF 30 BUU	1870	80	35	30	M30×1.5	32	37 max	100 max	63	15	1	6	4	17	1	49	438	45400	85100	85100
	CF 30-1 BR	CF 30-1 B	CF 30-1 BUUR	CF 30-1 BUU	2030	85	35	30	M30×1.5	32	37 max	100 max	63	15	1	6	4	17	1	49	438	45400	85100	85100
	CF 30-2 BR	CF 30-2 B	CF 30-2 BUUR	CF 30-2 BUU	2220	90	35	30	M30×1.5	32	37 max	100 max	63	15	1	6	4	17	1	49	438	45400	85100	85100

Structure of Cam Followers

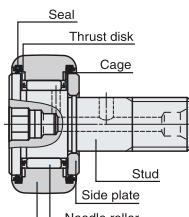
Standard Type Cam Follower⁽¹⁾

CF…BUU



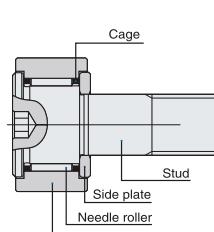
Thrust Disk Type Cam Follower⁽¹⁾

CF…WBUUR



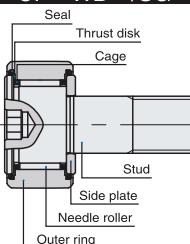
Cam Follower G⁽²⁾

CF…G



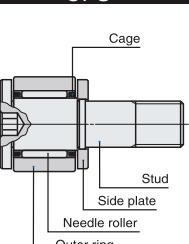
C-Lube Cam Follower⁽³⁾

CF…WB…SG



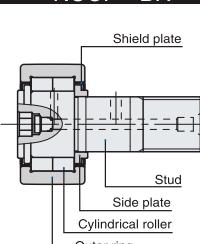
Miniature Type Cam Follower

CFS



Cylindrical Roller Cam Follower

NUCF…BR



Note(1) Minimum allowable value of chamfer dimension r

Remarks

1. Models with a stud diameter d_1 of 4 mm or less have no oil hole. For models with a stud dia. 5 to 10mm, oil hole (re-greasing fitting) is provided at the head. Other models are provided with an oil hole (grease nipple) at the head and an oil hole each on the outside surface and end surface of the stud.

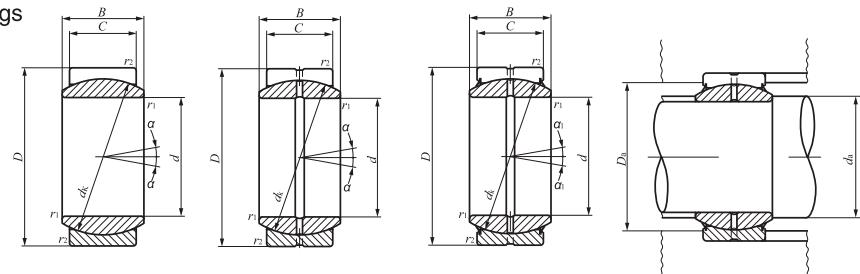
2. Shield type models with a stud diameter d_1 of 10mm or less and the sealed type models are provided with prepacked grease. Other models are not provided with prepacked grease. Perform proper lubrication for use.

Other models are not provided with prepacked grease. Perform proper lubrication for use.

Spherical Plain Bearing

QLH®
Linear Motion Technology

Steel-on-steel Spherical Bushings



Shaft dia. 4—300mm

Shaft dia. mm	Identification number		Mass (Ref.) kg	Boundary dimensions mm							Permissible tilting angle degree		Mounting dimensions mm				Dynamic load capacity C_d N	Static load capacity C_s N
	Without seals	With seals		d	D	B	C	d_k	$r_{1s \min}^{(1)}$	$r_{2s \min}^{(1)}$	α	α_1	d_a Min.	d_a Max. ⁽²⁾	D_a Max.	D_a Min.		
4	GE 4E	—	0.003	4	12	5	3	8	0.3	0.3	16	—	6	6	9.5	8	2 350	14 100
5	GE 5E	—	0.004	5	14	6	4	10	0.3	0.3	13	—	7.5	8	11.5	10	3 920	23 500
6	GE 6E	—	0.004	6	14	6	4	10	0.3	0.3	13	—	8	8	11.5	10	3 920	23 500
8	GE 8E	—	0.008	8	16	8	5	13	0.3	0.3	15	—	10	10	13.5	13	6 370	38 200
10	GE 10E	—	0.012	10	19	9	6	16	0.3	0.3	12	—	12.5	13	16.5	15.5	9 410	56 500
12	GE 12E	—	0.017	12	22	10	7	18	0.3	0.3	11	—	14.5	15	19.5	17	12 400	74 100
15	GE 15ES	GE 15ES-2RS	0.032	15	26	12	9	22	0.3	0.3	8	5	17.5	18	23.5	22.5	19 400	117 000
17	GE 17ES	GE 17ES-2RS	0.049	17	30	14	10	25	0.3	0.3	10	7	19.5	20.5	27.5	26	24 500	147 000
20	GE 20ES	GE 20ES-2RS	0.065	20	35	16	12	29	0.3	0.3	9	6	22.5	24	32.5	30.5	34 100	205 000
25	GE 25ES	GE 25ES-2RS	0.115	25	42	20	16	35.5	0.6	0.6	7	4	29	29	37.5	37	55 700	334 000
30	GE 30ES	GE 30ES-2RS	0.160	30	47	22	18	40.7	0.6	0.6	6	4	34	34	42.5	41.5	71 800	431 000
35	GE 35ES	GE 35ES-2RS	0.258	35	55	25	20	47	0.6	1	6	4	39.5	39.5	49.5	48	92 200	553 000
40	GE 40ES	GE 40ES-2RS	0.315	40	62	28	22	53	0.6	1	7	4	44.5	45	56.5	54.5	114 000	686 000
45	GE 45ES	GE 45ES-2RS	0.413	45	68	32	25	60	0.6	1	7	4	49.5	50.5	62.5	60	147 000	883 000
50	GE 50ES	GE 50ES-2RS	0.560	50	75	35	28	66	0.6	1	6	4	54.5	56	69.5	66	181 000	1 090 000
60	GE 60ES	GE 60ES-2RS	1.10	60	90	44	36	80	1	1	6	3	65.5	66.5	84.5	79	282 000	1 690 000
70	GE 70ES	GE 70ES-2RS	1.54	70	105	49	40	92	1	1	6	4	75.5	77.5	99.5	91	361 000	2 170 000
80	GE 80ES	GE 80ES-2RS	2.29	80	120	55	45	105	1	1	6	4	85.5	89	114.5	103	463 000	2 780 000
90	GE 90ES	GE 90ES-2RS	2.82	90	130	60	50	115	1	1	5	3	95.5	98	124.5	112	564 000	3 380 000
100	GE 100ES	GE 100ES-2RS	4.43	100	150	70	55	130	1	1	7	5	105.5	109.5	144.5	127	701 000	4 210 000
110	GE 110ES	GE 110ES-2RS	4.94	110	160	70	55	140	1	1	6	4	115.5	121	154.5	138	755 000	4 530 000
120	GE 120ES	GE 120ES-2RS	8.12	120	180	85	70	160	1	1	6	4	125.5	135.5	174.5	154	1 100 000	6 590 000
140	GE 140ES	GE 140ES-2RS	11.4	140	210	90	70	180	1	1	7	5	145.5	155.5	204.5	176	1 240 000	7 410 000
160	GE 160ES	GE 160ES-2RS	14.4	160	230	105	80	200	1	1	8	6	165.5	170	224.5	195	1 570 000	9 410 000
180	GE 180ES	GE 180ES-2RS	18.9	180	260	105	80	225	1.1	1.1	6	5	187	199	253	221	1 770 000	10 600 000
200	GE 200ES	GE 200ES-2RS	28.1	200	290	130	100	250	1.1	1.1	7	6	207	213.5	283	244	2 450 000	14 700 000
220	GE 220ES	GE 220ES-2RS	36.1	220	320	135	100	275	1.1	1.1	8	6	227	239.5	313	269	2 700 000	16 200 000
240	GE 240ES	GE 240ES-2RS	40.4	240	340	140	100	300	1.1	1.1	8	6	247	265	333	296	2 940 000	17 700 000
260	GE 260ES	GE 260ES-2RS	52.0	260	370	150	110	325	1.1	1.1	7	6	267	288	363	320	3 510 000	21 000 000
280	GE 280ES	GE 280ES-2RS	66.0	280	400	155	120	350	1.1	1.1	6	5	287	313.5	393	345	4 120 000	24 700 000
300	GE 300ES	GE 300ES-2RS	76.0	300	430	165	120	375	1.1	1.1	7	6	307	336.5	423	371	4 410 000	26 500 000

Notes⁽¹⁾ Minimum allowable value of chamfer dimensions r_1 and r_2 .

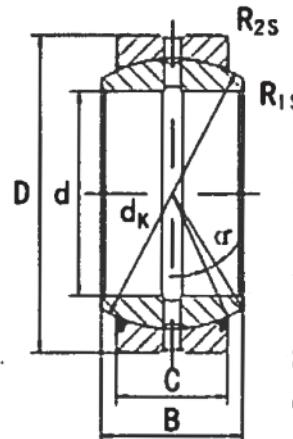
⁽²⁾ When Spherical Bushings are used with full tilting angle, the shaft shoulder dimension must be less than the maximum value of d_a .

Remarks1. GE...E has no oil hole. Others are provided with an oil groove and two oil holes on the inner ring and outer ring, respectively.

2. No grease is prepacked. Perform proper lubrication.

Radial spherical plain bearings GEG..E(S), GEG..ES 2RS

- Outer ring with single split in axial direction.
- Lubricating grooves and holes in the outer and inner rings of type ES.
- Outer ring of type 2RS with lip seals in both sides.
- Both outer and inner rings are properly phosphate treated.



INA=GE....FO
 GE....FO 2Rs
 IKO=GE....GS
 GE....GS 2Rs
 SKF=GEH....ES
 GEH....ES 2Rs

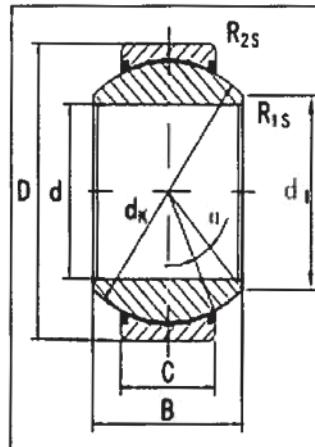
Part NO	Dimensions mm								Load ratings kN		Weight kg
	d	D	B	C	dk	R _{js} mm	R _{2s} min	\approx	dyn C	stat C ₀	
GE6FO	6	16	9	5	13	0.3	0.3	21	5.50	27.5	0.008
GE8FO	8	19	11	6	16	0.3	0.3	21	8.15	40.5	0.014
GE10FO	10	22	12	7	18	0.3	0.3	18	10.8	54.0	0.020
GE12FO	12	26	15	9	22	0.3	0.3	18	17.0	85.0	0.034
GE15FO GE15FO2RS	15	30	16	10	25	0.3	0.3	16	21.2	106	0.046
GE17FO GE17FO2RS	17	35	20	12	29	0.3	0.3	19	30.0	146	0.077
GE20FO GE20FO2RS	20	42	25	16	35.5	0.6	0.6	17	48.0	240	0.150
GE25FO GE25FO2RS	25	47	28	18	40.7	0.6	0.6	17	62.0	310	0.190
GE30FO GE30FO2RS	30	55	32	20	47	0.6	1.0	17	80.0	400	0.290
GE35FO GE35FO2RS	35	62	35	22	53	0.6	1.0	16	100	500	0.38
GE40FO GE40FO2RS	40	68	40	25	60	0.6	1.0	17	127	640	0.54
GE45FO GE45FO2RS	45	75	43	28	66	0.6	1.0	15	156	780	0.680
GE50FO GE50FO2RS	50	90	56	36	80	0.6	1.0	17	245	1220	1.40
GE60FO GE60FO2RS	60	105	63	40	92	1.0	1.0	17	315	1560	2.00
GE70FO GE70FO2RS	70	120	70	45	105	1.0	1.0	16	400	2000	2.90
GE80FO GE80FO2RS	80	130	75	50	115	1.0	1.0	14	490	2450	3.50
GE90FO GE90FO2RS	90	150	85	55	130	1.0	1.0	15	610	3050	5.40
GE100FO GE100FO2RS	100	160	85	55	140	1.0	1.0	14	655	3250	5.90
GE110FO GE110FO2RS	110	180	100	70	160	1.0	1.0	12	950	4750	9.6
GE120FO GE120FO2RS	120	210	115	70	180	1.0	1.0	16	1080	5400	15.1
GE140FO GE140FO2RS	140	230	130	80	200	1.0	1.0	16	1360	6800	19.01
GE160FO GE160FO2RS	160	260	135	80	225	1.0	1.1	16	1530	7650	24.70
GE180FO GE180FO2RS	180	290	155	100	250	1.1	1.1	14	2120	10600	35.4
GE200FO GE200FO2RS	200	320	165	100	270	1.1	1.1	15	2320	11600	45.28
GE220FO GE220FO2RS	220	340	175	100	300	1.1	1.1	16	2550	12700	51.12
GE240FO GE240FO2RS	240	370	190	110	325	1.1	1.1	15	3030	15190	65.12
GE260FO GE260FO2RS	260	400	205	120	350	1.1	1.1	15	3570	17850	82.44
GE280FO GE280FO2RS	280	430	210	120	375	1.1	1.1	15	3800	19100	97.21

Spherical Plain Bearing

QLH®
Linear Motion Technology

Radial spherical plain bearings GE..UK 2RS

- Outer ring with single split in axial direction.
- Outer race lined with PTFE fabric.
- Outer ring with lip seals in both sides.
- Spherical surface of inner ring chromium plated.
- Outer ring properly phosphate treated.



Part NO	Dimensions mm								Load ratings kN			Weight kg
	d	D	B	C	d _{ls} mm	d _k	R _{ls} mm	R _{2s} mm	α	dyn C	stat C ₀	
GE15UK2RS	15	26	12	9	18	22	0.3	0.3	9	26	52	0.035
GE17UK2RS	17	30	14	10	20	25	0.3	0.3	10	48.7	81.2	0.041
GE20UK2RS	20	35	16	12	24	29	0.3	0.3	9	67.5	112	0.066
GE25UK2RS	25	42	20	16	29	35.5	0.6	0.6	7	127	212	0.119
GE30UK2RS	30	47	22	18	34	40.7	0.6	0.6	6	165	275	0.153
GE35UK2RS	35	55	25	20	39	47	0.6	1.0	6	210	350	0.233
GE40UK2RS	40	62	28	22	45	53	0.6	1.0	7	277	462	0.306
GE45UK2RS	45	68	32	25	50	60	0.6	1.0	7	360	600	0.427
GE50UK2RS	50	75	35	28	55	66	0.6	1.0	6	442	737	0.546
GE60UK2RS	60	90	44	36	66	80	1.0	1.0	6	690	1150	1.04
GE70UK2RS	70	105	49	40	77	92	1.0	1.0	6	885	1475	1.55
GE80UK2RS	80	120	55	45	88	105	1.0	1.0	6	1125	1875	2.31
GE90UK2RS	90	130	60	50	98	115	1.0	1.0	5	1283	2300	2.75
GE100UK2RS	100	150	70	55	109	130	1.0	1.0	7	1717	2862	4.45
GE110UK2RS	110	160	70	55	121	140	1.0	1.0	6	1845	3075	4.82
GE120UK2RS	120	180	85	70	135	160	1.0	1.0	6	2685	4475	8.05
GE140UK2RS	140	210	90	70	155	180	1.0	1.0	7	3015	5025	11.02
GE160UK2RS	160	230	105	80	170	200	1.0	1.0	8	3840	6400	14.01
GE180UK2RS	180	260	105	80	199	225	1.1	1.1	6	4320	7200	18.65
GE200UK2RS	200	290	130	100	213	250	1.1	1.1	7	6000	10000	28.03
GE220UK2RS	220	320	135	100	239	275	1.1	1.1	8	6600	11000	35.51
GE240UK2RS	240	340	140	100	265	300	1.1	1.1	8	7200	12000	39.91
GE260UK2RS	260	370	150	110	288	325	1.1	1.1	7	8550	14250	51.54
GE280UK2RS	280	400	155	120	313	350	1.1	1.1	6	10050	16750	65.06
GE300UK2RS	300	430	165	120	336	375	1.1	1.1	7	10800	18000	78.07



(1) High reliability

QLH has accumulated many years experience in production managing. It covers the whole production sequence, from receiving the order, designing, material preparation, machining, heat treating, grinding, assembling, inspection, packaging and delivery. The systemized managing ensures high reliability of **QLH** Ballscrews.

(2) High accuracy

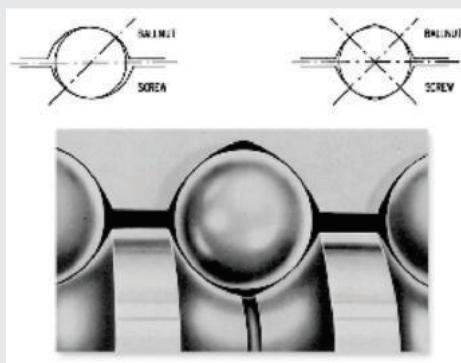
QLH Ballscrews are machined, ground, assembled and Q.C. inspected under the constant temperature control (20°C) to ensure high precision of Ballscrews.

(4) High working efficiency

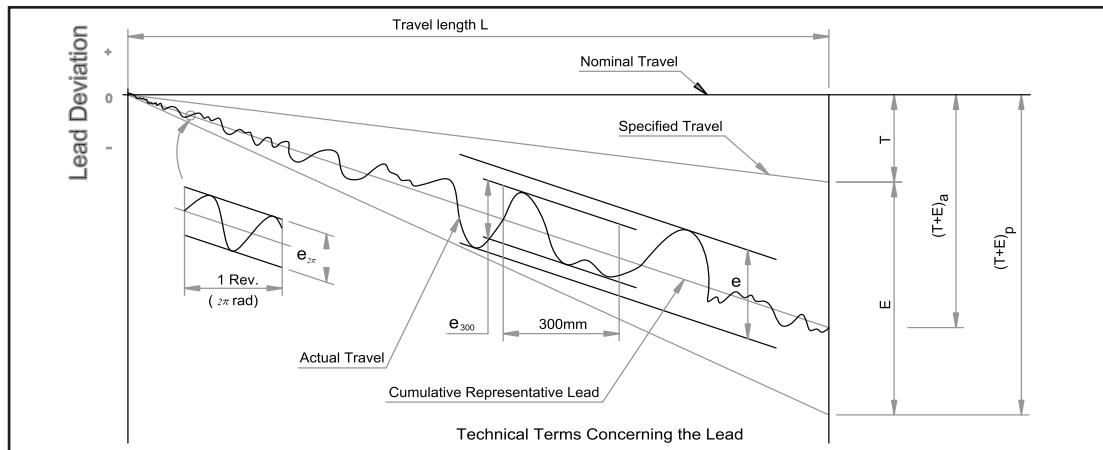
Balls are rotating inside the Ballscrew nut to offer high working efficiency. Comparing with the traditional ACME screws, which work by friction sliding between the nut and screw, the Ballscrews needs only 1/3 of driving torque. It is easy to transmit linear motion into rotation motion.

(5) No backlash and with high rigidity

The Gothic profile is applied by **QLH** Ballscrews. It offers best contact between balls and the grooves. If suitable preload is exerted on Ballscrew hence to eliminate clearance between the ball nut and screw and to reduce elastic deformation, the ballscrew shall get much better rigidity and accuracy.



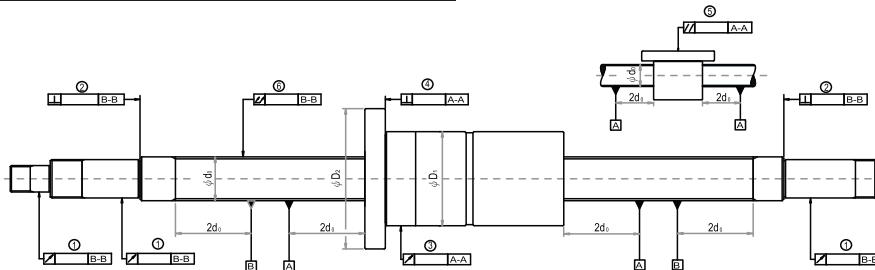
Lead Accuracy : Precision ground Ballscrews are controlled in accordance with JIS B 1192.
The permissible values and each part of definitions are shown below.



TERMS

T + E	Cumulative representative lead A straight line representing the tendency of the cumulative actual lead. This is obtained by least square method and measured by laser system.
P	Permissible value.
a	Actual value.
T	Specified travel. This value is determined by customer and maker as it depends on different application requirements.
E	Accumulated reference lead deviation. This is allowable deviation of specified travel. It is decided by both of the accuracy grade and effective thread length.
e	Total relative lead deviation. Maximum width of variation over the travel length.
e₃₀₀	Lead deviation in random 300 mm.
e_{2π}	Lead deviation in random 1 revolution 2π rad.

Tolerances on Various Areas of Ballscrew



Those on above are samples of accuracy of tolerance on various areas of PMM Ballscrew.

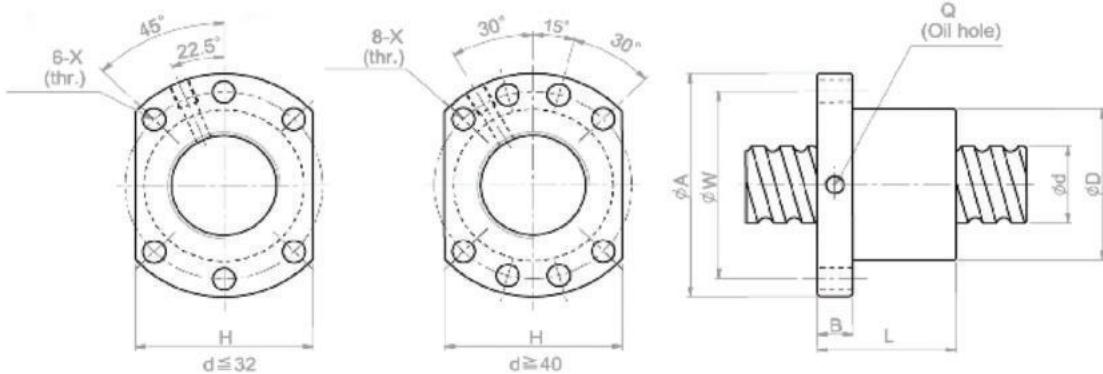
± : Perpendicularity ↗ : Radial runout // : Parallel □ : Reference

Accuracy on various areas of Ballscrew has to measure items:

1. Radial run-out of the circumference of the screw shaft supported portion in respect to the B-B' line.
2. Perpendicularity of the screw shaft supported portion end face to the B-B' line.
3. Radial run-out of the nut circumference in respect to the A-A' line.
4. Perpendicularity of the flange mounting surface to the A-A' line.
5. Parallelism between the nut circumference to the A-A' line.
6. Overall radial run-out to the A-A' line.

Note: The mounting surface of the Ballscrew is finished to the accuracy specied in JIS B 1192 - 1997

TYPE SFU

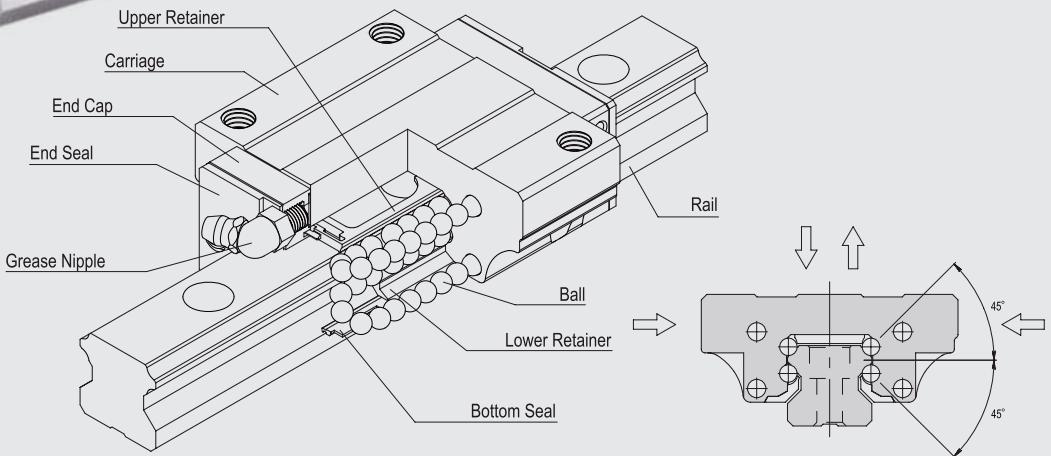


I:Lead Da:EM1 Ball Dia. n:Number of Circuits K: Stiffness (Kgf/μm)
 Ca: Basic Dynamic Rating Load (Kgf) Coa: Basic Static Rating Load(Kgf)

(Unit) : mm

Model No.	Dimensions														
	d	I	Da	D	A	B	L	W	X	H	Q	n	Ca	Coa	K
SFU01204-4	12	4	2.5	24	40	10	40	32	4.5	30		1x4	902	1884	26
SFU01604-4		4	2.381	28	48	10	40	38	5.5	40	M6	1x4	973	2406	32
SFU01605-4	16	5	3.175	28	48	10	50	38	5.5	40	M6	1x4	1380	3052	32
SFU01610-3		10	3.175	28	48	10	57	38	5.5	40	M6	1x3	1103	2401	26
SFU02004-4	20	4	2.381	36	58	10	42	47	6.6	44	M6	1x4	1066	2987	38
SFU02005-4		5	3.175	36	58	10	51	47	6.6	44	M6	1x4	1551	3875	39
SFU02504-4		4	2.381	40	62	10	42	51	6.6	48	M6	1x4	1180	3795	43
SFU02505-4		5	3.175	40	62	10	51	51	6.6	48	M6	1x4	1724	4904	45
SFU02506-4	25	6	3.969	40	62	10	54	51	6.6	48	M6	1x4	2318	6057	47
SFU02508-4		8	4.762	40	62	10	63	51	6.6	48	M6	1x4	2963	7313	49
SFU02510-4		10	4.762	40	62	12	85	51	6.6	48	M6	1x4	2954	7295	50
SFU03204-4		4	2.381	50	80	12	44	65	9	62	M6	1x4	1296	4838	51
SFU03205-4		5	3.175	50	80	12	52	65	9	62	M6	1x4	1922	6343	54
SFU03206-4	32	6	3.969	50	80	12	57	65	9	62	M6	1x4	2632	7979	57
SFU03208-4		8	4.762	50	80	12	65	65	9	62	M6	1x4	3387	9622	60
SFU03210-4		10	6.35	50	80	12	90	65	9	62	M6	1x4	4805	12208	61
SFU04005-4		5	3.175	63	93	14	55	78	9	70	M8	1x4	2110	7988	63
SFU04006-4	40	6	3.969	63	93	14	60	78	9	70	M6	1x4	2873	9913	66
SFU04008-4		8	4.762	63	93	14	67	78	9	70	M6	1x4	3712	11947	70
SFU04010-4		10	6.35	63	93	14	93	78	9	70	M8	1x4	5399	15500	73
SFU05010-4	50	10	6.35	75	110	16	93	93	11	85	M8	1x4	6004	19614	85
SFU05020-4		20	7.144	75	110	16	138	93	11	85	M8	1x4	7142	22588	94
SFU06310-4	63	10	6.35	90	125	18	98	108	11	95	M8	1x4	6719	25358	99
SFU06320-4		20	9.525	95	135	20	149	115	13.5	100	M8	1x4	11444	36653	112
SFU08010-4	80	10	6.35	105	145	20	98	125	13.5	110	M8	1x4	7346	31953	109
SFU08020-4		20	9.525	125	165	25	154	145	13.5	130	M8	1x4	12911	47747	138
SFU10020-4	100	20	9.525	150	202	30	180	170	17.5	155	M8	1x4	14303	60698	162

Construction & Characteristics



Characteristics

The tracks of balls are designed to a contact angle of 45° which enables it to bear an equal load in radial, reversed radial and lateral directions. Therefore, it can be applied in any installation direction. Furthermore, JAH series can achieve a well balanced preload for increasing rigidity in four directions while keeping a low frictional resistance. This is especially suit to high precision and high rigidity required motion.

The patent design of lubrication route mQHes the lubricant evenly distribute in each circulation loop. Therefore, the optimum lubrication can be achieved in any installation direction, and this promotes the performance in running accuracy, service life, and reliability.

High Rigidity, Four-way Equal Load

The four tracks of balls are allocated to a circular contact angle at 45°, thus each track of balls can tQHe up an equal rated load in all four directions. Moreover, a sufficient preload can be achieved to increase rigidity, and this mQHes it suitable for any kind of installation.

Self Alignment Capability

The self adjustment is performed spontaneously as the design of face-to-face (DF) circular arc groove. Therefore, the installation error could be compensated even under a preload, and which results in precise and smooth linear motion.

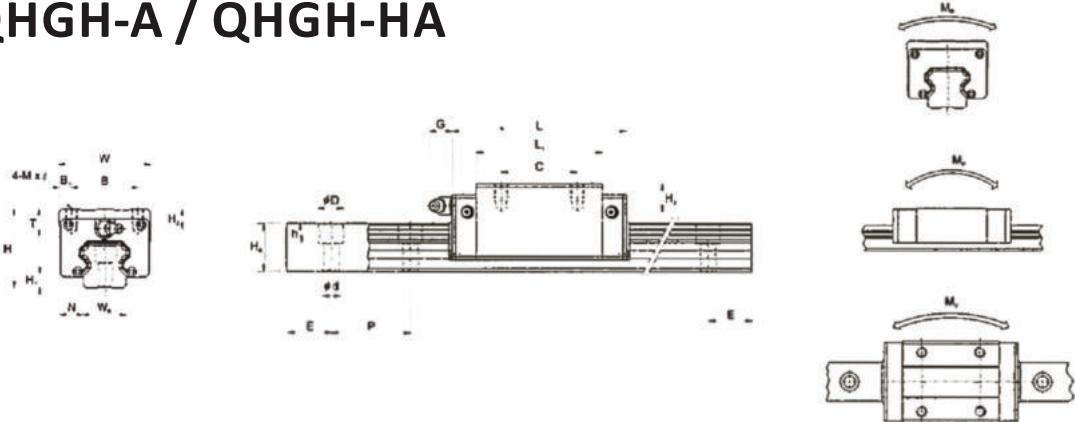
Smooth Movement with Low Noise

The simplified design of circulating system with strengthened synthetic resin accessories mQHes the movement smooth and quiet.

Interchangeability

For interchangeable type of linear guideways, the dimensional tolerances are strictly maintained within a reasonable range, and this has made the random matching of the same size of rails and carriages possible. Therefore, the similar preload and accuracy can be obtained even under the random matching condition. As a result of this advantage, the linear guideway can be stocked as standard parts, the installation and maintenance become more convenient. Moreover, this is also beneficial for shortening the delivery time.

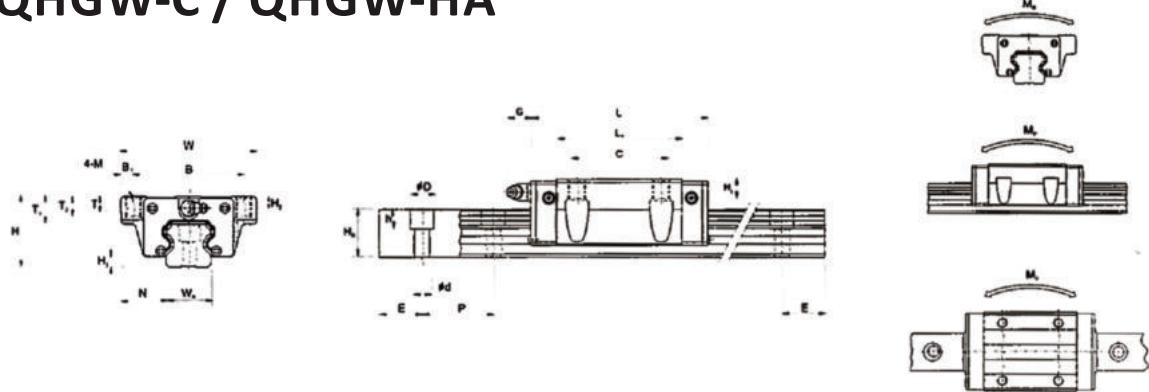
QHGH-A / QHGH-HA



Model No.	Dimensions Of Assembly (mm)			Dimensions Of Block (mm)										
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	MX!	T	H ₂	H
QHGH 15A	26	4.3	9.5	34	26	4	26	39.4	61.4	5.3	M4X5	6	8.5	9.5
QHGH 20A QHGH 20HA	30	4.6	12	44	32	6	36 50	50.5 65.2	75.6 90.3	12	M5X6	8	6	7
QHGH 25A QHGH 25HA	40	5.5	12.5	48	35	6.5	35 50	58 78.6	83 103.6	12	M6X6	8	10	13
QHGH 30A QHGH 30HA	45	6	16	60	40	10	40 60	70 93	97.4 120.4	12	M8X10	8.5	9.5	13.8
QHGH 35A QHGH 35HA	55	7.5	18	70	50	10	50 72	80 105.8	112.4 138.2	12	M8X12	10.2	16	19.6
QHGH 45A QHGH 45HA	70	9.5	20.5	86	60	13	60 80	97 128.8	138 169.8	12.9	M10X17	16	18.5	30.5
QHGH 55A QHGH 55HA	80	13	23.5	100	75	12.5	75 95	117.7 155.8	165.7 203.8	12.9	M12X18	17.5	22	29
QHGH 65A QHGH 65HA	90	15	31.5	126	76	25	70 120	144.2 203.6	198.2 257.6	12.9	M16X20	25	15	15

Dimensions of Rail (mm)							Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(kN)	Basic Stalk Load Rating C _s (kN)	Static Rotated Moment			Weight	
W,	H,	D	h	d	P	E				M _R (kN-m)	M _x (kN-m)	M _y (kN-m)	Block (kg)	Rail (kg/m)
15	15	7.5	5.3	4.5	60	20	M4X16	11.38	25.31	0.17	0.15	0.15	0.18	1.45
20	17.5	9.5	8.5	6	60	20	M5X16	17.75 21.18	37.84 48.84	0.38 0.48	0.27 0.47	0.27 0.47	0.30 0.39	2.21
23	22	11	9	7	60	20	M6X20	26.48 32.75	56.19 76.00	0.64 0.87	0.51 0.88	0.51 0.88	0.51 0.69	3.21
28	26	14	12	9	80	20	M8X25	38.74 47.27	83.06 110.13	1.06 1.40	0.85 1.47	0.85 1.47	0.88 1.16	4.47
34	29	14	12	9	80	20	M8X25	49.52 60.21	102.87 136.31	1.73 2.29	1.20 2.08	1.20 2.08	1.45 1.92	6.30
45	38	20	17	14	105	22.5	M12X35	77.57 94.54	155.93 207.12	3.01 4.00	2.35 4.07	2.35 4.07	2.73 3.61	10.41
53	44	23	20	16	120	30	M14X45	114.44 139.35	227.81 301.26	5.66 7.49	4.06 7.01	4.06 7.01	4.17 5.49	15.08
63	53	26	22	18	150	35	M16X50	163.63 208.36	324.71 457.15	10.02 14.15	6.44 11.12	6.44 11.12	7.00 9.82	21.18

QHGW-C / QHGW-HA



Model No.	Dimensions of Assembly (mm)							Dimensions of Block (mm)									
QHGW 15C	24	4.3	16	47	38	4.5	30	39.4	61.4	5.3	M5	6	8.9	6.95	4.5	5.5	
QHGW 20C QHGW 20HA	30	4.6	21.5	63	53	5	40	50.5 65.2	75.6 90.3	12	M6	8	10	9.5	6	7	
QHGW 25C QHGW 25HA	36	5.5	23.5	70	57	6.5	45	58 78.6	83 103.6	12	M8	8	14	10	6	9	
QHGW 30C QHGW 30HA	42	6	31	90	72	9	52	70 93	97.4 120.4	12	M10	8.5	16	10	6.5	10.8	
QHGW 35C QHGW 35HA	48	7.5	33	100	82	9	62	80 105.8	112.4 138.2	12	M10	10.1	18	13	9	12.6	
QHGW 45C QHGW 45HA	60	9.5	37.5	120	100	10	80	97 128.8	138 169.8	12.9	M12	15.1	22	15	8.5	20.5	
QHGW 55C QHGW 55HA	70	13	43.5	140	116	12	95	117.7 155.8	165.7 203.8	12.9	M14	17.5	26.5	17	12	19	
QHGW 65C QHGW 65HA	90	15	53.5	170	142	14	110	144.2 203.6	198.2 257.6	12.9	M16	25	37.5	23	15	15	

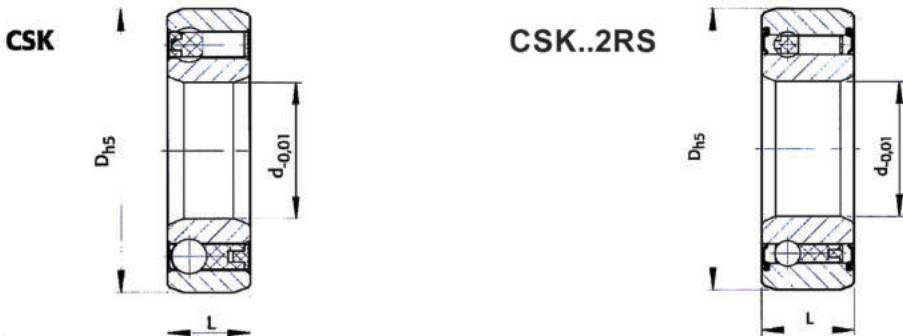
Dimensions of Rail (mm)							Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(kN)	Basic Stalk Load Rating C _s (kN)	Static Rotated Moment			Weight	
W	H	D	h	d	P	E				M _r (kN-m)	M _x (kN-m)	M _y (kN-m)	Block (kg)	Rail (kg/m)
15	15	7.5	5.3	4.5	60	20	M4X16	11.38	25.31	0.17	0.15	0.15	0.17	1.45
20	17.5	9.5	8.5	6	60	20	M5X16	17.75 21.18	37.84 48.84	0.38 0.48	0.27 0.47	0.27 0.47	0.40 0.52	2.21
23	22	11	9	7	60	20	M6X20	26.48 32.75	56.19 76.00	0.64 0.87	0.51 0.88	0.51 0.88	0.59 0.80	3.21
28	26	14	12	9	80	20	M8X25	38.74 47.27	83.06 110.13	1.06 1.40	0.85 1.47	0.85 1.47	1.09 1.44	4.47
34	29	14	12	9	80	20	M8X25	49.52 60.21	102.87 136.31	1.73 2.29	1.20 2.08	1.20 2.08	1.56 2.06	6.30
45	38	20	17	14	105	22.5	M12X35	77.57 94.54	155.93 207.12	3.01 4.00	2.35 4.07	2.35 4.07	2.79 3.69	10.41
53	44	23	20	16	120	30	M14X45	114.44 139.35	227.81 301.26	5.66 7.49	4.06 7.01	4.06 7.01	4.52 5.96	15.08
63	53	26	22	18	150	35	M16X50	163.63 208.36	324.71 457.15	10.02 14.15	6.44 11.12	6.44 11.12	9.17 12.89	21.18

One Way Clutch Bearing

QLH®
Linear Motion Technology



CSK, CSK..2RS



Type	Size	Bearing series	Bearing loads				Weight	Resistance torque		
	d [mm]	T _{KN1)} [Nm]	n _{max.} [min ⁻¹]	D [mm]	L [mm]	C [kN]	C _o [kN]	[kg]	T _R [Ncm]	
CSK (KK)	8*	–	2,5	15000	22	9	3,28	0,86	0,015	0,5
	12	6201	9,3	10000	32	10	6,1	2,77	0,04	0,7
	15	6202	16,90	8400	35	11	7,4	3,42	0,06	0,9
	17	6203	30,60	7350	40	12	7,9	3,8	0,070	1,1
	20	6204	50	6000	47	14	9,4	4,46	0,110	1,3
	25	6205	85	5200	52	15	10,7	5,46	0,140	2,0
	30	6206	138	4200	62	16	11,7	6,45	0,210	4,4
	35	6207	175	3600	72	17	12,6	7,28	0,300	5,8
	40	–	325	3000	80	22	15,54	12,25	0,5	7,0
CSK..2RS	8**	–	2,5	15000	22	9	3,28	0,86	0,015	0,8
	12	–	9,3	10000	32	14	6,1	2,77	0,05	3,0
	15	–	16,9	8400	35	16	7,4	3,42	0,070	4,0
	17	–	30,6	7350	40	17	7,9	3,8	0,09	5,6
	20	–	50	6000	47	19	9,4	4,46	0,145	6,0
	25	–	85	5200	52	20	10,7	5,46	0,175	6,0
	30	–	138	4200	62	21	11,7	6,45	0,270	7,5
	35	–	175	3600	72	22	12,6	7,28	0,400	8,2
	40	–	325	3000	80	27	15,54	12,25	0,6	10

GB Notes

1) T_{max} = 2 x T_{KN}

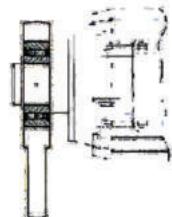
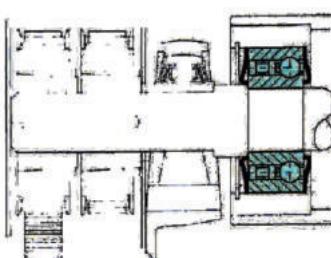
Refer to Selection page 14 to 21

*) One Z seal on the bearing side only. Looking from this side, the outer race runs free in the counterclockwise direction

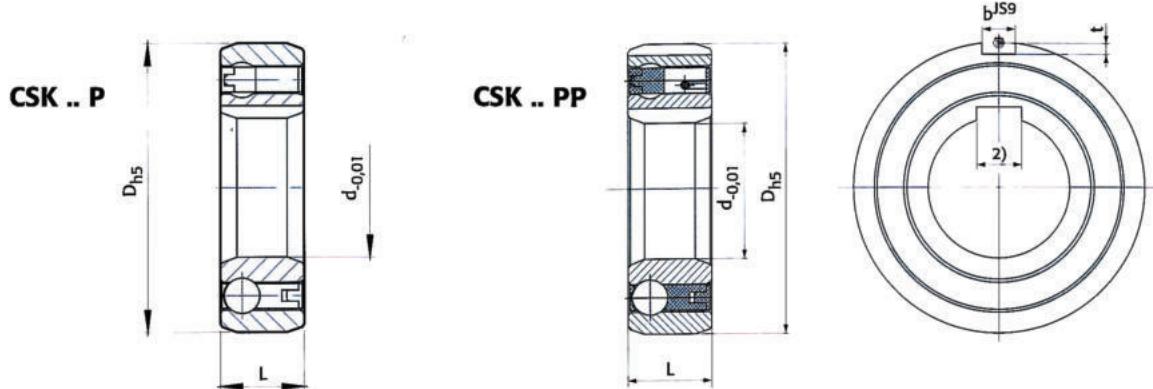
**) Only one RS seal on the ball bearing side. looking from this side, the outer race runs free in the counterclockwise direction

Refer to mounting and maintenance instructions page 22 to 25

Mounting examples



CSK..P, CSK..PP, CSK..P-2RS



Type	Size	Bearing series	Bearing loads						Weight	Resistance torque	
					dyn.		stat.				
CSK..P ²⁾	d [mm]	T _{KN} ¹⁾	n _{max.} [N·m]	D [mm]	L [mm]	b [mm]	t [mm]	C [kN]	C ₀ [kN]	[kg]	T _R [Nm]
	12	6201	9,3	10000	32	10		6,1	2,77	0,04	0,7
	15	6202	16,9	8400	35	11		1,1	3,42	0,06	0,9
	17	6203	30,60	7350	40	12		7,9	3,8	0,070	1,1
	20	6204	50	6000	47	14		9,4	4,46	0,110	1,3
	25	6205	85	5200	52	15		10,7	5,46	0,140	2,0
	30	6206	138	4200	62	16		11,7	6,45	0,210	4,4
CSK..PP ²⁾	35	6207	175	3600	72	17		12,6	7,28	0,300	5,8
	40	-	325	3000	80	22		15,54	12,25	0,5	7,0
	15	6202	16,9	8400	35	11	2	0,6	7,4	3,42	0,06
	17	6203	30,6	7350	40	12	2	1,0	7,9	3,8	0,070
	20	6204	50	6000	47	14	3	1,5	9,4	4,46	0,110
	25	6205	85	5200	52	15	6	2,0	10,7	5,46	0,140
CSK..P-2RS ²⁾	30	6206	138	4200	62	16	6	2,0	11,7	6,45	0,210
	35	6207	175	3600	72	17	8	2,5	12,6	7,28	0,300
	40	-	325	3000	80	22	10	3,0	15,54	12,25	0,5

(GB) Notes

Mounting examples

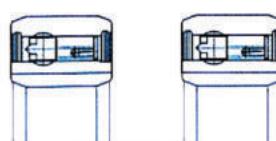
1) T_{max} = 2 x T_{KN}

Refer to Selection page 14 to 21

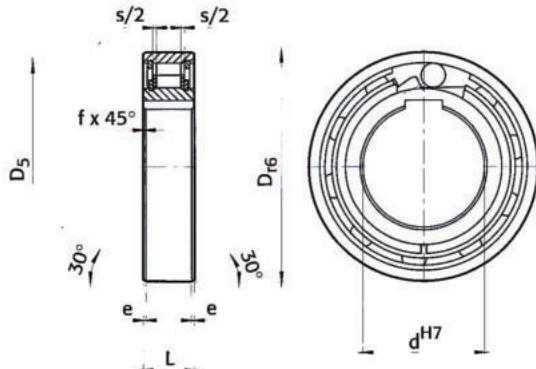
2) Keyway to DIN 6885.3

Size 40 keyway to DIN 6885.1

Refer to mounting and maintenance instructions page 22 to 25



TYPE, NSS



Type	Size	Overrunning speeds										Weight	Resistance torque
(NSS)	dH7 [mm]	T _{KN1)} [Nm]	n _{i,max} 2) [min ⁻¹]	n _{a,max} 3) [min ⁻¹]	D _{r6} [mm]	D ₅ [mm]	L [mm]	s [mm]	e [mm]	f [mm]	[kg]	T _R [Ncm]	
	6	2,10	5000	7500	19	15,8	6	0,3	0,6	0,3	0,01	0,18	
	8	3,8	4300	6500	24	20	8	1,3	0,6	0,6	0,02	0,24	
	10	6,8	3500	5200	30	25,9	9	1,3	0,6	0,6	0,03	0,36	
	12	13	3200	4800	32	28	10	1,3	0,6	0,6	0,04	0,48	
	15	14	2800	4300	35	31	11	1,4	0,6	0,6	0,05	0,70	
	20	40	2200	3300	47	40	14	2,4	0,8	0,8	0,12	1,4	
	25	56	1900	2900	52	45,9	15	2,4	0,8	0,8	0,14	2,4	
	30	90	1600	2400	62	55	16	2,4	0,8	1	0,22	7,8	
	35	143	1300	2000	72	64	17	2,5	0,8	1	0,31	9,0	
	40	185	1200	1800	80	72	18	2,5	0,8	1	0,39	10	
	45	218	1000	1600	85	77	19	2,5	1,2	1	0,44	11	
	50	230	950	1500	90	82	20	2,5	1,2	1	0,49	13	
	55	308	800	1300	100	90	21	2,5	1,2	1	0,66	14	
	60	508	700	1100	110	100	22	2,5	1,2	1,5	0,81	26	
	80	1063	600	900	140	128	26	2,5	1,2	1,5	1,41	58	

GB Notes

AS6 without keyway. $\phi D = \overset{+0.0}{-0.009}$
AS8-12 keyway to DIN 6885.1.

Other sizes to DIN 6885.3

1) $T_{max} = 2 \times T_{KN}$

Refer to Selection page 14 to 21

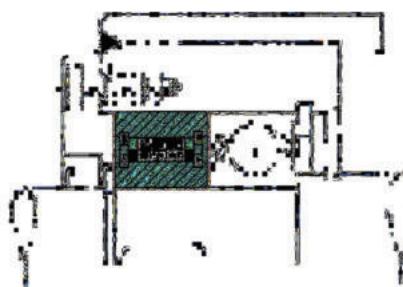
2) Inner race overruns

3) Outer race overruns

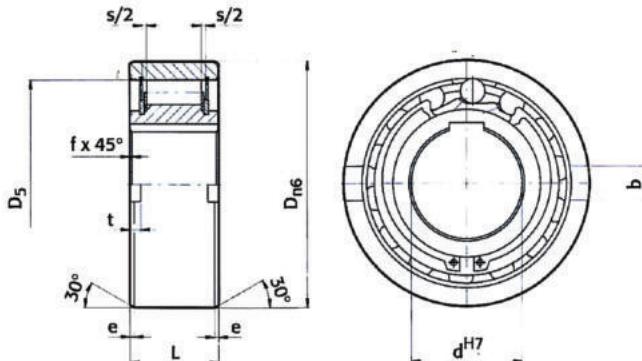
Mounting dimensions are identical to ball bearings series 62..

Refer to mounting and maintenance instructions page 22 to 25

Mounting examples



TYPE, NFS



Type	Size	Overrunning speeds											Weight [kg]	Resistance torque [Ncm]
		dH7 [mm]	T _{KN} ¹⁾ [Nm]	n _{imax} ²⁾ [min ⁻¹]	n _{amax} ³⁾ [min ⁻¹]	D _{n6} [mm]	L [mm]	D ₅ [mm]	b [mm]	t [mm]	s [mm]	e [mm]	f [mm]	
(NFS)	8	12	3300	5000	35	13	28	4	1,4	2,4	0,6	0,3	0,07	1,6
	12	12	3300	5000	35	13	28	4	1,4	2,4	0,6	0,3	0,06	1,6
	15	30	2400	3600	42	18	37	5	1,8	2,4	0,8	0,3	0,11	1,9
	17	49	2300	3400	47	19	40	5	2,3	2,4	1,2	0,8	0,15	1,9
	20	78	2100	3100	52	21	42	6	2,3	2,4	1,2	0,8	0,19	1,9
	25	125	1700	2600	62	24	51	8	2,8	2,4	1,2	0,8	0,38	5,6
	30	255	1400	2200	72	27	60	10	2,5	2,4	1,8	1	0,54	14
	35	383	1200	1900	80	31	70	12	3,5	2,4	1,8	1	0,74	16
	40	538	1100	1700	90	33	78	12	4,1	2,5	1,8	1	0,92	38
	45	780	1000	1600	100	36	85	14	4,6	2,5	1,8	1	1,31	43
	50	1013	850	1350	110	40	92	14	5,6	2,5	1,8	1	1,74	55
	60	1825	750	1050	130	46	110	18	5,5	3,6	2,6	1,5	2,77	110
	70	2300	600	950	150	51	125	20	6,9	3,6	2,6	1,5	4,16	140
	80	3275	550	850	170	58	140	20	7,5	3,6	2,6	1,5	6,09	180
	90	5325	500	750	190	64	160	20	8,0	3,6	2,6	2	8,2	230
	100	7250	450	680	215	73	175	24	8,5	3,6	2,6	2	12,6	380
	120	13500	370	550	260	86	215	28	10	3,6	2,6	2,5	22	650
	150	26625	300	460	320	108	260	32	12	3,6	2,5	42	1000	
	200	44500	230	350	420	138	350	45	16	7,6	3,6	3	93	2000

GB Notes

ASNU8-12, ASNU200 keyway to DIN 6885.1,
other sizes to DIN 6885.3

1) $T_{max} = 2 \times T_{KN}$

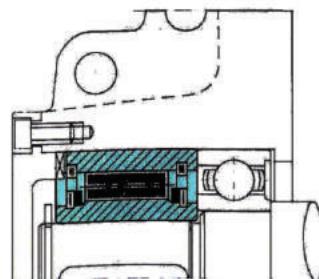
Refer to Selection page 14 to 21

2) Inner race overruns

3) Outer race overruns

Refer to mounting and maintenance instructions
page 22 to 25

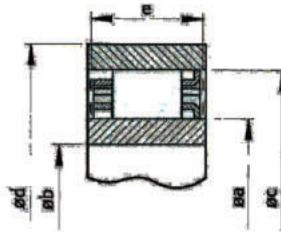
Mounting examples



One Way Clutch Bearing

QLH®
Linear Motion Technology

TYPE, DC



Type	Bearing series					Sprag space			Number of clips	Number of sprags	Weight [kg]
	$T_{KN}^1)$	$n_{max}^2)$	$n_{max}^3)$	$\phi_d^{+0,008}$	$\phi_D^{-0,013}$	a_{min}	a_d_{min}	a_D_{max}			
DC2222G	63	8600	4300	22,225	38,885	8,33 $\pm 0,1$	10,0	50	15	-	0,030
DC2776	118	6900	3400	27,762	44,422	8,33 $\pm 0,1$	13,5	58	18	-	0,055
DC3034	124	6300	3100	30,340	47,000	8,33 $\pm 0,1$	13,5	62	20	-	0,060
DC3175(3C)	158	6000	3000	31,750	48,410	8,33 $\pm 0,1$	13,5	63	21	3	0,060
DC3809A	275	5000	2500	38,092	54,752	8,33 $\pm 0,1$	16,0	71	25	-	0,085
DC4127(3C)	224	4600	2300	41,275	57,935	8,33 $\pm 0,1$	13,5	75	27	3	0,090
DC4445A	363	4300	2100	44,450	61,110	8,33 $\pm 0,1$	16,0	79	29	-	0,095
DC4972(4C)	306	3800	1800	49,721	66,381	8,33 $\pm 0,1$	13,5	86	33	4	0,100
DC5476A	525	3500	1700	54,765	71,425	8,33 $\pm 0,1$	16,0	92	36	-	0,110
DC5476A(4C)	525	3500	1700	54,765	71,425	8,33 $\pm 0,1$	16,0	92	36	4	0,130
DC5476B(4C)	769	3500	1700	54,765	71,425	8,33 $\pm 0,1$	21,0	92	36	4	0,180
DC5476C(4C)	990	3500	1700	54,765	71,425	8,33 $\pm 0,1$	25,4	92	36	4	0,200
DC5776A	604	3300	1600	57,760	74,420	8,33 $\pm 0,1$	16,0	98	38	-	0,110
DC6334B	806	3000	1500	63,340	80,000	8,33 $\pm 0,1$	21,0	104	42	-	0,175
DC7221(5C)	675	2600	1300	72,217	88,877	8,33 $\pm 0,1$	13,5	115	48	5	0,140
DC7221B	1279	2600	1300	72,217	88,877	8,33 $\pm 0,1$	21,0	115	48	-	0,185
DC7221B(5C)	1279	2600	1300	72,217	88,877	8,33 $\pm 0,1$	21,0	115	48	5	0,210
DC7969C(5C)	2038	2400	1200	79,698	96,358	8,33 $\pm 0,1$	25,4	124	53	5	0,280
DC8334C	2055	2300	1100	83,340	100,000	8,33 $\pm 0,1$	25,4	132	55	-	0,270
DC8729A	1250	2200	1100	87,290	103,960	8,33 $\pm 0,1$	16,0	134	58	-	0,165
DC10323A(3C)*	1612	1800	900	103,231**	119,891	8,33 $\pm 0,1$	16,0	155	68	3	0,205
DC12334C*	4800	1500	750	123,340**	140,000	8,33 $\pm 0,1$	25,4	184	80	-	0,400
DC12388C(11C)	4875	1500	750	123,881	142,880	9,50 $\pm 0,10$	25,4	186	80	11	0,400

GB Notes

1) $T_{max} = 2 \times T_{KN}$

Refer to Selection page 14 to 21

2) Inner race overruns

3) Outer race overruns

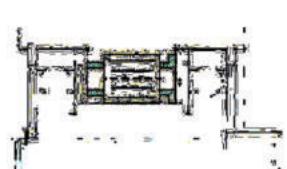
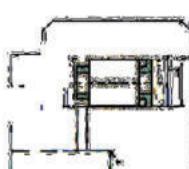
*) The inner cage centering flange is on the opposite side

**) Extension of tolerance to $\pm 0,013$ permissible

Other dimensions on request

Refer to mounting and maintenance instructions
page 22 to 25

Mounting examples



Needle Roller Bearing

QLH®
Linear Motion Technology



Combined radial/ axial bearings



Needle roller/angular contact ball
bearing NKIA, single direction



Needle roller/angular contact ball
bearing NKIB, double direction

Combined INA needle roller bearings are radial needle roller bearings with a bearing component which can be axially loaded. They form locating or semi-locating bearings with an extremely small radial section height.

The needle roller bearing component has a lubrication groove with a lubrication hole.

Combined needle roller bearings are used mainly in transmission engineering and machine tools to support drilling spindles, multi-spindle drilling units, drill bushes, centring spindles, worm gear shafts, spindles of die heads and in similar applications.

Needle roller/angular contact ball bearings, series NKIA

The needle roller/angular contact ball bearing series NKIA is a combination of a needle roller bearing with a single direction angular contact ball bearing. This is a particularly space-saving design of rolling bearing for taking heavy radial and light axial loads. The radial load is taken by the needle rollers and the axial load must not exceed 25% of the radial load.

Two single direction needle roller/angular contact ball bearings can be mounted opposite each other to support axial forces from both directions. Potential thermal expansion should be counteracted by suitable design measures (e.g. smaller distance between bearings or spring-mounting the bearings).

Needle roller/angular contact ball bearings, series NKIB

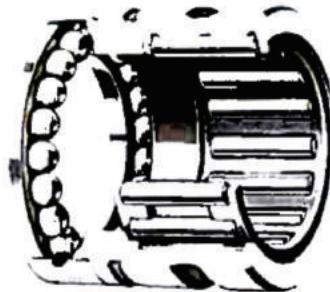
The needle roller/angular contact ball bearing series NKIB is a combination of a needle roller bearing with a double direction angular contact ball bearing. It can take heavy radial and light axial loads in both directions and permits axial shaft location with an axial clearance of 0.08 mm to 0.25 mm. As with series NKIA bearings, the axial load must not exceed 25 % of the radial load.

The inner ring is in two parts for easier fitting and dismantling. For assembly reasons, the narrower part of the inner ring is manufactured with a larger diameter so that if a shaft with a k5 tolerance zone is selected, the result is an interference fit. The rings are not interchangeable and both rings must be axially clamped together.

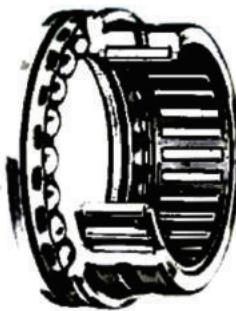
Range · Combined INA needle roller bearings are available in the following designs:

Series	Description
NKIA	Combination of a needle roller bearing with a single direction angular contact ball bearing, DIN 5429, for low axial loads
NKIB	Combination of a needle roller bearing with a double direction angular contact ball bearing, for low axial loads
NX NX..Z	Combination of a needle roller bearing with a full complement axial ball bearing, with retaining cap, for medium axial loads
NKX ¹⁾ NKO ¹⁾ NKO..Z ¹⁾	Combination of a needle roller bearing with a full complement axial ball bearing, without or with retaining cap, DIN 5429, for heavy axial loads
NKXR ¹⁾ NKR ¹⁾ NKR..Z ¹⁾	Combination of a needle roller bearing with an axial cylindrical roller bearing, without or with retaining cap, DIN 5429, for very heavy axial loads

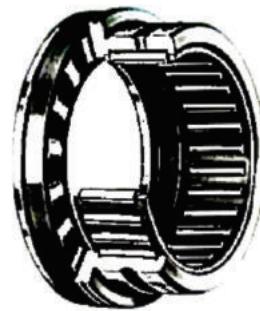
¹⁾ See dimension table for designation to DIN 5429.



Needle roller/axial ball bearing NX



Needle roller/axial ball bearing NKX



Needle roller/axial cylindrical roller bearing NKXR

Needle roller/axial ball bearings, series NX and NX..Z

The needle roller/axial ball bearing series NX is a combination of a needle roller bearing with a full complement axial ball bearing with retarding cap. It can take heavy radial loads and medium axial loads in one direction through the full complement ball set.

Bearings of this series are supplied without an inner ring. This allows even smaller shaft centre distances to be used than with bearings of the series NKIA and NKIB but with the same shaft diameter. However, the raceways on the shaft must be hardened and ground.

Bearings of series NX have holes in the retaining cap (see dimension figure) and can be used with oil lubrication. Grease lubrication can be used for bearings of series NX..Z.

The retaining cap and shaft locating washer form a gap seal.

Needle roller/axial ball bearings, series NKX and NKX..Z

The needle roller/axial ball bearing series NKX is a combination of a needle roller bearing with an axial ball bearing. It can take heavy radial loads as well as heavy axial loads in one direction.

Bearings of this series are supplied without an inner ring.

Bearings of series NKX..Z have a retaining cap and are used with grease lubrication. The retaining cap and shaft locating washer form a gap seal.

Needle roller/axial cylindrical roller bearings, series NKXR and NKXR..Z

The needle roller/axial cylindrical roller bearings series NKXR are a combination of a needle roller bearing with an axial cylindrical roller bearing. They have a higher axial load carrying capacity than bearings of series NKX.

Bearings of this series are supplied without an inner ring.

Bearings of series NKXR..Z have a retaining cap and are used with grease lubrication. The retaining cap and shaft locating washer form a gap seal.

Accuracy

Combined needle roller bearings are supplied with dimensional and geometrical accuracy to tolerance class PN to DIN 620. Exceptions to this are the bore of the narrow inner ring part on series NKIB bearings and the width of both inner ring parts. Further exceptions are the diameters "D₁" and "D₂" on series NKX and NKXR bearings (see dimension tables).

All bearings with inner ring (NKIA, NKIB) have a normal internal clearance CN to DIN 620. The enveloping circle diameter for bearings without inner ring (NX, NKX, NKXR) before mounting is within the tolerance zone F6.

INA combined needle roller bearings are available, on request, in a special execution:

with increased accuracy
(suffix P5 or P6)

with radial internal clearance other than normal
(NKIA and NKIB only)
(suffix C2 or C3 only).

Combined radial/axial bearings

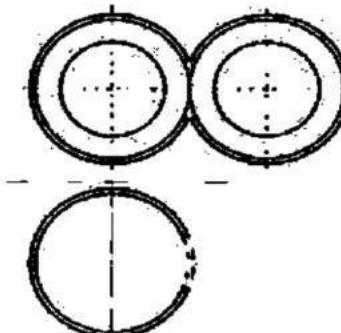


Figure 1 · Shortened snap rings

Design of bearing arrangements

Bearings of series NX, NKX and NKXR are supplied without inner ring. The raceways on the shaft must therefore be hardened and ground. If the shafts are not hardened, inner rings can be used (see dimension tables for recommended inner rings).

If two needle roller/axial ball bearings are mounted so that they oppose each other, then axial loads acting in both directions can be supported. It is recommended that the unloaded bearing is axially preloaded by additional springs. Spring preload allows for thermal expansion and contributes to quiet running.

At speeds of more than $0.2 n_G$, this preload should be 1% to 2% of the axial dynamic load rating C.

If bearings of series NX are to take axial loads they can be supported by a snap ring in the groove provided in the outer ring, by a housing shoulder or by a snap ring in the housing bore.

When two bearings are arranged at the minimum shaft distance, the distance between the snap ring abutment faces must be carefully controlled to ensure they do not touch (see Figure 1).

See dimension tables for mounting tolerances.

See Table 1 for shaft and bore tolerances.

Lubrication

Bearings of series NX, NKX and NKXR are designed for oil lubrication.

Bearings of series NX..Z, NKX..Z and NKXR..Z have a retaining cap and can be used with grease lubrication.

The axial part in bearings of series NX..Z, NKX..Z and NKXR..Z must be greased with a grease KP2K-30 (DIN 51 825) as initial greasing before installation is difficult.

Before being put into use, the radial part must be greased with a compatible grease of similarly high quality.

The operating life of these bearings is determined by the operating life of the grease in the axial part.

Table 1 · Mounting tolerances

Series	Shaft tolerance without inner ring	Shaft tolerance with inner ring	Bore tolerance
Needle roller/angular contact ball bearing NKIA	-	k5 ²⁾	M6 ²⁾
Needle roller/angular contact ball bearing NKIB	-	-	-
Needle roller/axial ball bearing NX	k5	k5	k6
Needle roller/axial ball bearing NKX ¹⁾	-	-	M6 (for rigid bearing arrangements)
Needle roller/axial cylindrical roller bearing NKXR ¹⁾	-	-	-

¹⁾ A recess in the housing for the axial bearing part must be at least 0.5 mm larger than the nominal diameter D₁ or D₂ in order to avoid double location.

²⁾ For functional reasons, no fits tighter than those obtained with a k5 shaft and an M6 bore may be used.

Ordering example

Needle roller/axial ball bearing bearing of series NKX with a retaining cap for grease lubrication:
shaft diameter: 20 mm.

Additional feature:
particularly high dimensional and geometrical accuracy to tolerance class P5 (suffix P5).

Ordering designation	NKX 20 Z	P5
Designation		
Suffix for special execution		

Further technical details:

The information in the following sections must be taken into consideration:

- The basic principles of rolling bearing technology*
- Lubrication*

Ordering suffixes for special executions:
in section *Ordering designations*

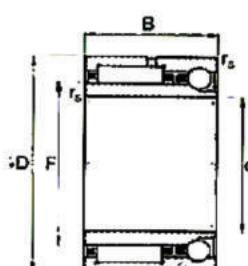
Needle Roller Bearing

QLH®
Linear Motion Technology

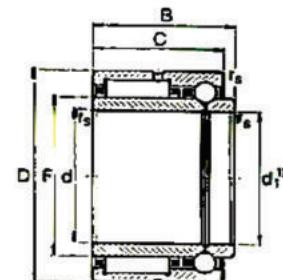
Needle roller/ angular contact ball bearings

single direction
Series NKIA

double direction
Series NKIB



NKIA



NKIB

Dimension table · Dimensions in mm

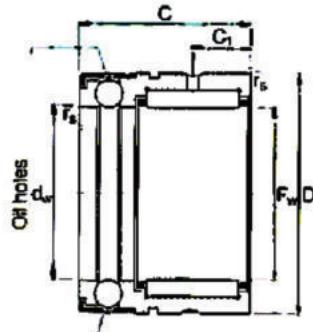
Shaft diam- eter	Designation	Mass	Dimensions					Basic load ratings				Limiting speed n_G	Reference speed ²⁾ n_B	
			d	F	D	B	C	r_s	radial dyn. C kN	stat. C_0 kN	axial dyn. C kN	stat. C_0 kN		
		g						r_s					min ⁻¹	min ⁻¹
12	NKIA 5901	40	12	16	24	16	—	0.3	7.6	8.3	2.16	2.25	24 000	17 000
	NKIB 5901	43	12	16	24	17.5	16	0.3	7.6	8.3	2.16	2.25	24 000	17 000
15	NKIA 5902	50	15	20	28	18	—	0.3	10.6	13.6	2.34	2.75	22 000	15 000
	NKIB 5902	52	15	20	28	20	18	0.3	10.6	13.6	2.34	2.75	22 000	15 000
17	NKIA 5903	56	17	22	30	18	—	0.3	11	14.6	2.5	3.2	21 000	13 000
	NKIB 5903	58	17	22	30	20	18	0.3	11	14.6	2.5	3.2	21 000	13 000
20	NKIA 5904	103	20	25	37	23	—	0.3	21	25.5	3.95	4.85	17 000	12 000
	NKIB 5904	107	20	25	37	25	23	0.3	21	25.5	3.95	4.85	17 000	12 000
22	NKIA 59/22	118	22	28	39	23	—	0.3	22.8	29.5	4.25	5.6	16 000	11 000
	NKIB 59/22	122	22	28	39	25	23	0.3	22.8	29.5	4.25	5.6	16 000	11 000
25	NKIA 5905	130	25	30	42	23	—	0.3	23.6	31.5	4.35	6.1	15 000	9 500
	NKIB 5905	134	25	30	42	25	23	0.3	23.6	31.5	4.35	6.1	15 000	9 500
30	NKIA 5906	147	30	35	47	23	—	0.3	25	35.5	4.75	7.3	13 000	8 000
	NKIB 5906	151	30	35	47	25	23	0.3	25	35.5	4.75	7.3	13 000	8 000
35	NKIA 5907	243	35	42	55	27	—	0.6	31.5	50	6	9.8	11 000	7 500
	NKIB 5907	247	35	42	55	30	27	0.6	31.5	50	6	9.8	11 000	7 500
40	NKIA 5908	315	40	48	62	30	—	0.6	43	67	7.4	12.7	9 500	6 500
	NKIB 5908	320	40	48	62	34	30	0.6	43	67	7.4	12.7	9 500	6 500
45	NKIA 5909	375	45	52	68	30	—	0.6	45	73	7.7	14	8 500	6 000
	NKIB 5909	380	45	52	68	34	30	0.6	45	73	7.7	14	8 500	6 000
50	NKIA 5910	380	50	58	72	30	—	0.6	47	80	8.1	15.9	8 000	5 500
	NKIB 5910	385	50	58	72	34	30	0.6	47	80	8.1	15.9	8 000	5 500
55	NKIA 5911	550	55	63	80	34	—	1	58	100	9.7	19.2	7 500	5 000
	NKIB 5911	555	55	63	80	38	34	1	58	100	9.7	19.2	7 500	5 000
60	NKIA 5912	590	60	68	85	34	—	1	60	108	10	20.8	7 000	4 600
	NKIB 5912	595	60	68	85	38	34	1	60	108	10	20.8	7 000	4 600
65	NKIA 5913	635	65	72	90	34	—	1	61	112	10.3	22.3	6 500	4 300
	NKIB 5913	640	65	72	90	38	34	1	61	112	10.3	22.3	6 500	4 300
70	NKIA 5914	980	70	80	100	40	—	1	84	156	13.5	29	5 000	4 100
	NKIB 5914	985	70	80	100	45	40	1	84	156	13.5	29	5 000	4 100

The ball cages are made of plastic, permissible operating temperature: 120 °C (continuous operation).

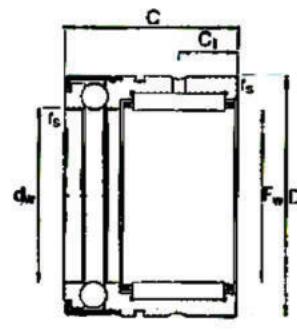
¹⁾ Diameter d_1 deviates from DIN 620.

²⁾ Treat as radial bearings when calculating the permissible speed.

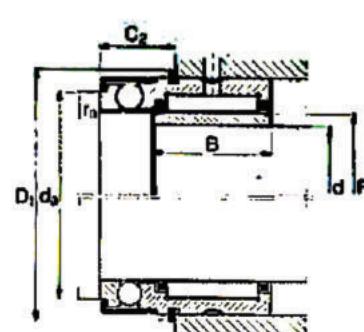
Needle roller/axial ball bearings



NX (for oil lubrication)



NX.Z (for grease lubrication)



Mounting dimensions
Snap ring in outer ring

Dimension table · Dimensions in mm

Shaft diameter	Designation		Dimensions						
	for oil lubrication	for grease lubrication	Mass g	F_w	D	C	C1	d_w	r_s
7	NX 7 TN¹⁾	NX 7 Z TN¹⁾	14	7	14	18	4,7	7	0,3
10	NX 10	NX 10 Z	25	10	19	18	4,7	10	0,3
12	NX 12	NX 12 Z	28	12	21	18	4,7	12	0,3
15	NX 15	NX 15 Z	48	15	24	28	8	15	0,3
17	NX 17	NX 17 Z	53	17	26	28	8	17	0,3
20	NX 20	NX 20 Z	68	20	30	28	8	20	0,3
25	NX 25	NX 25 Z	115	25	37	30	8	25	0,3
30	NX 30	NX 30 Z	130	30	42	30	10	30	0,3
35	NX 35	NX 35 Z	160	35	47	30	10	35	0,3

¹⁾ TN = plastic cage, permissible operating temperature: 120 °C (continuous operation).
With closing ring on one side.

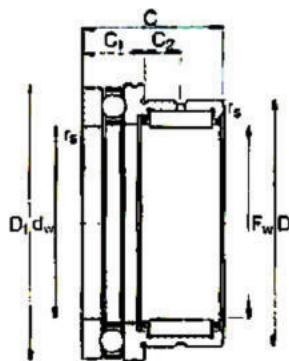
¹⁾ Minimum axial load $F_a = 1\% \text{ to } 2\%$ of the axial dynamic load rating C.

²⁾) Limiting speed for oil lubrication.
With grease lubrication, 60% of the values given in the table is permissible.

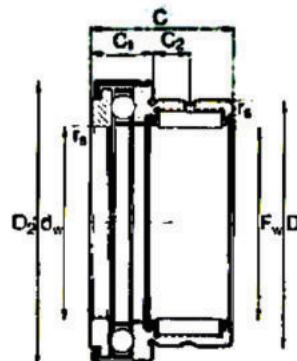
³⁾) Inner rings and snap rings must be ordered separately,
for further details, see pages 138 and 247.

Needle roller/axial ball bearings

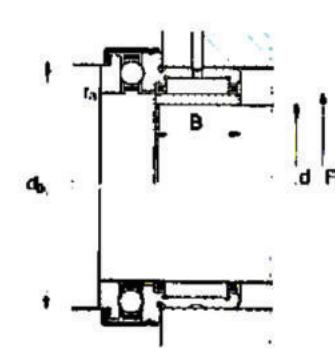
without or with retaining cap
Series NKX, NKX..Z



NKX



NKX..Z



Mounting dimensions

Dimension table Dimensions in mm

Shaft diameter	Designation	Designation to DIN 5429	Mass	Bearing with retaining cap Designation	Designation to DIN 5429	Mass	Dimensions						
							F_{z_1}	D	D ₁	D ₂	C	C ₁	C ₂
10	NKX 10 TN¹⁾	NAXK 10 TN ¹⁾	34	NKX 10 Z TN¹⁾	NAXK 10 Z TN ¹⁾	36	10	19	24,1	25,2	23	9	6,5
12	NKX 12	NAXK 12	38	NKX 12 Z	NAXK 12 Z	40	12	21	26,1	27,2	23	9	6,5
15	NKX 15	NAXK 15	44	NKX 15 Z	NAXK 15 Z	47	15	24	28,1	29,2	23	9	6,5
17	NKX 17	NAXK 17	53	NKX 17 Z	NAXK 17 Z	55	17	26	30,1	31,2	25	9	8
20	NKX 20	NAXK 20	83	NKX 20 Z	NAXK 20 Z	90	20	30	35,1	36,2	30	10	10,5
25	NKX 25	NAXK 25	125	NKX 25 Z	NAXK 25 Z	132	25	37	42,1	43,2	30	11	9,5
30	NKX 30	NAXK 30	141	NKX 30 Z	NAXK 30 Z	148	30	42	47,1	48,2	30	11	9,5
35	NKX 35	NAXK 35	163	NKX 35 Z	NAXK 35 Z	168	35	47	52,1	53,2	30	12	9
40	NKX 40	NAXK 40	200	NKX 40 Z	NAXK 40 Z	208	40	52	60,1	61,2	32	13	10
45	NKX 45	NAXK 45	252	NKX 45 Z	NAXK 45 Z	265	45	58	65,2	66,5	32	14	9
50	NKX 50	NAXK 50	280	NKX 50 Z	NAXK 50 Z	300	50	62	70,2	71,5	35	14	10
60	NKX 60	NAXK 60	360	NKX 60 Z	NAXK 60 Z	380	60	72	85,2	86,5	40	17	12
70	NKX 70	NAXK 70	500	NKX 70 Z	NAXK 70 Z	520	70	85	95,2	96,5	40	18	11

¹⁾ TN = plastic cage, permissible operating temperature: 120 °C (continuous operation).

With closing ring on one side.

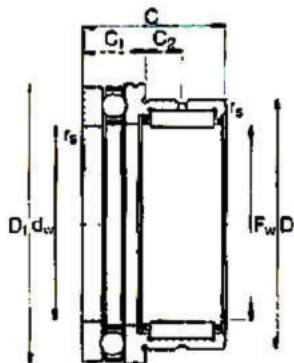
¹⁾ Minimum axial load $F_{z_1} = 1\% \text{ to } 2\% \text{ of the axial dynamic load rating } C$.

²⁾ Limiting speed for oil lubrication.

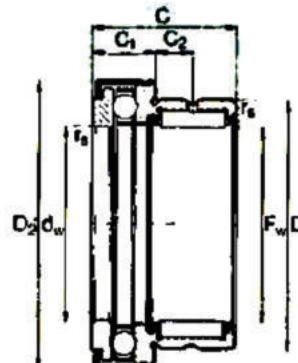
With grease lubrication, 60% of the values given in the table is permissible.

Needle roller/axial cylindrical roller bearings

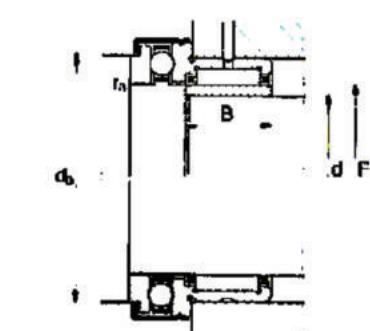
without or with retaining cap
Series NKXR, NKXR.Z



NKXR



NKXR-Z



Mounting dimensions

Dimension table · Dimensions in mm

Shaft diameter	Designation	Designation to DIN 5429	Mass	Bearing with retaining cap Designation	Designation to DIN 5429	Mass	Dimensions						
							F_w	D	D_1	D_2	C	C_1	C_2
15	NKXR 15	NAXR 15	42	NKXR 15 Z	NAXR 15 Z	45	15	24	28,1	29,2	23	9	6,5
17	NKXR 17	NAXR 17	50	NKXR 17 Z	NAXR 17 Z	53	17	26	30,1	31,2	25	9	8
20	NKXR 20	NAXR 20	80	NKXR 20 Z	NAXR 20 Z	84	20	30	35,1	36,2	30	10	10,5
25	NKXR 25	NAXR 25	120	NKXR 25 Z	NAXR 25 Z	125	25	37	42,1	43,2	30	11	9,5
30	NKXR 30	NAXR 30	135	NKXR 30 Z	NAXR 30 Z	141	30	42	47,1	48,2	30	11	9,5
35	NKXR 35	NAXR 35	157	NKXR 35 Z	NAXR 35 Z	165	35	47	52,1	53,2	30	12	9
40	NKXR 40	NAXR 40	204	NKXR 40 Z	NAXR 40 Z	214	40	52	60,1	61,2	32	13	10
45	NKXR 45	NAXR 45	244	NKXR 45 Z	NAXR 45 Z	260	45	58	65,2	66,5	32	14	9
50	NKXR 50	NAXR 50	268	NKXR 50 Z	NAXR 50 Z	288	50	62	70,2	71,5	35	14	10

The axial cages are made of plastic, permissible operating temperature: 120 °C (continuous operation).

¹⁾ Minimum axial load $F_w = 1\% \text{ to } 2\%$ of the axial dynamic load rating C .

²⁾ Limiting speed for oil lubrication.

With grease lubrication, 25% of the values given in the table is permissible.

³⁾ Treat as axial bearings when calculating the permissible speed.

⁴⁾ Inner rings must be ordered separately.

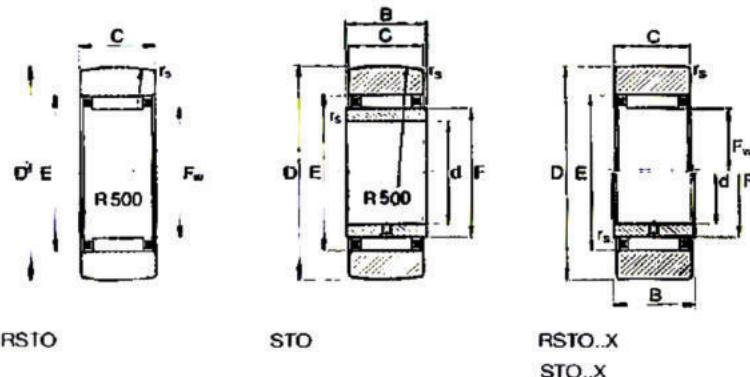
For further details, see page 138.

Needle Roller Bearing

QLH®
Linear Motion Technology

Yoke type track rollers

without axial guidance
Series RSTO,
RSTO..X,
STO,
STO..X



Dimension table - Dimensions in mm

Outside diameter	Without inner ring Designation	Mass	With inner ring Designation	Mass	Dimensions						Basic load ratings ²⁾						Limiting speed ³⁾ nG
					D	d	F ¹⁾ F _w	B	C	E	r _s	dyn. C	stat. C ₀	Track roller dyn. C _w	stat. C _{ow}	kN	min ⁻¹
		g		g							min.						
16	RSTO 5 TN	8,5	—	—	16	—	7	—	7,8	10	0,3	2,85	2,65	2,55	2,56	23 000	
	RSTO 5 X TN	8,5	—	—	16	—	7	—	7,8	10	0,3	2,85	2,65	2,55	2,55	23 000	
19	RSTO 6 TN	12,5	STO 6 TN	17	19	6	10	10	9,8	13	0,3	4,75	5,5	3,75	4,5	20 000	
	RSTO 6 X TN	12,5	STO 6 X TN	17	19	6	10	10	9,8	13	0,3	4,75	5,5	3,75	4,5	20 000	
24	RSTO 8 TN	21	STO 8 TN	26	24	8	12	10	9,8	15	0,3	4,9	6,1	4,2	5,5	16 000	
	RSTO 8 X TN	21	STO 8 X TN	26	24	8	12	10	9,8	15	0,3	4,9	6,1	4,2	5,5	16 000	
30	RSTO 10	42	STO 10	49	30	10	14	12	11,8	20	0,3	10,3	10,6	8,4	9,2	11 000	
	RSTO 10 X	42	STO 10 X	49	30	10	14	12	11,8	20	0,3	10,3	10,6	8,4	9,2	11 000	
32	RSTO 12	49	STO 12	57	32	12	16	12	11,8	22	0,3	11,5	12,5	8,9	10,1	9 000	
	RSTO 12 X	49	STO 12 X	57	32	12	16	12	11,8	22	0,3	11,5	12,5	8,9	10,1	9 000	
35	RSTO 15	50	STO 15	63	35	15	20	12	11,8	26	0,3	13,4	16,2	9,1	10,7	6 500	
	RSTO 15 X	50	STO 15 X	63	35	15	20	12	11,8	26	0,3	13,4	16,2	9,1	10,7	6 500	
40	RSTO 17	88	STO 17	107	40	17	22	16	15,8	29	0,3	20	25,5	14,3	17,7	5 500	
	RSTO 17 X	88	STO 17 X	107	40	17	22	16	15,8	29	0,3	20	25,5	14,3	17,7	5 500	
47	RSTO 20	130	STO 20	152	47	20	25	16	15,8	32	0,3	21	28	16,2	21,5	4 700	
	RSTO 20 X	130	STO 20 X	152	47	20	25	16	15,8	32	0,3	21	28	16,2	21,5	4 700	
52	RSTO 25	150	STO 25	177	52	25	30	16	15,8	37	0,3	23,1	33,5	16,5	22,9	3 600	
	RSTO 25 X	150	STO 25 X	177	52	25	30	16	15,8	37	0,3	23,1	33,5	16,5	22,9	3 600	
62	RSTO 30	255	STO 30	308	62	30	38	20	19,8	46	0,6	35,5	57	23,3	35	2 500	
	RSTO 30 X	255	STO 30 X	308	62	30	38	20	19,8	46	0,6	35,5	57	23,3	35	2 500	
72	RSTO 35	375	STO 35	441	72	35	42	20	19,8	50	0,6	36	59	26	41	2 200	
	RSTO 35 X	375	STO 35 X	441	72	35	42	20	19,8	50	0,6	36	59	26	41	2 200	
80	RSTO 40	420	STO 40	530	80	40	50	20	19,8	58	1	35,5	62	24	39	1 700	
	RSTO 40 X	420	STO 40 X	530	80	40	50	20	19,8	58	1	35,5	62	24	39	1 700	
85	RSTO 45	453	STO 45	576	85	45	55	20	19,8	63	1	40	74	25,5	43	1 500	
	RSTO 45 X	453	STO 45 X	576	85	45	55	20	19,8	63	1	40	74	25,5	43	1 500	
90	RSTO 50	481	STO 50	617	90	50	60	20	19,8	68	1	43,5	85	26	46,5	1 300	
	RSTO 50 X	481	STO 50 X	617	90	50	60	20	19,8	68	1	43,5	85	26	46,5	1 300	

TN = plastic cage, permissible operating temperature: +120 °C (continuous operation)

•) F = raceway diameter of inner ring.

F_w = needle roller enveloping circle in the tolerance zone $F6$.

The basic load ratings C and C_0 apply if the bearing outer ring (with cylindrical outside surface) is mounted in a housing bore with the normal rolling bearing fit;

When used as a track roller, the load ratings C_w and C_{ow} apply.

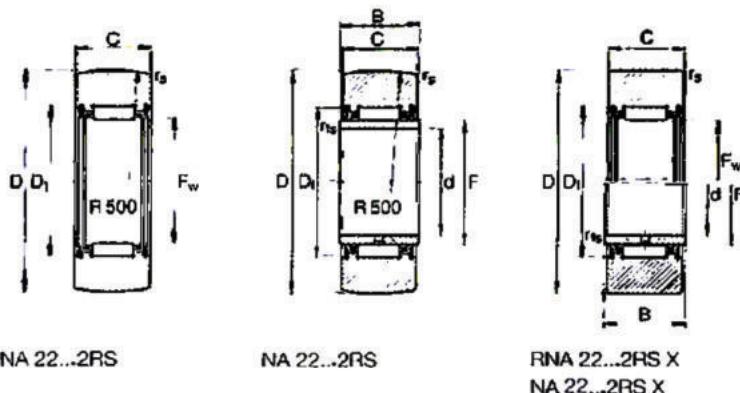
Limiting speed for grease lubrication.

With oil lubrication, the speed can be increased by approximately 30%.

Yoke type track rollers

without axial guidance,
sealed

Series RNA 22...2RS,
RNA 22...2RS X,
NA 22...2RS,
NA 22...2RS X



Out-side diam- eter	Without inner ring Designation	Mass	With inner ring Designation	Mass	Dimensions							Basic load ratings ²⁾						Limiting speed ³⁾ n_g
					D	d	F ¹⁾ F_w	B	C	r _S	r _{IS}	D ₁	dyn. C kN	stat. C ₀ kN	dyn. C _w kN	stat. C _{0w} kN		
19	RNA 226.2RS	18	NA 226.2RS	22	19	6	10	12	11,8	0,3	0,3	16	5,3	4,65	3,9	3,7	18 000	
	RNA 226.2RS X	18	NA 226.2RS X	22	19	6	10	12	11,8	0,3	0,3	16	5,3	4,65	3,9	3,7	18 000	
24	RNA 228.2RS	29	NA 228.2RS	34	24	8	12	12	11,8	0,3	0,3	18	5,7	5,4	4,8	4,8	14 000	
	RNA 228.2RS X	29	NA 228.2RS X	34	24	8	12	12	11,8	0,3	0,3	18	5,7	5,4	4,8	4,8	14 000	
30	RNA 2200.2RS	52	NA 2200.2RS	60	30	10	14	14	13,8	0,6	0,3	20	7,8	8,3	7	8	11 000	
	RNA 2200.2RS X	52	NA 2200.2RS X	60	30	10	14	14	13,8	0,6	0,3	20	7,8	8,3	7	8	11 000	
32	RNA 2201.2RS	57	NA 2201.2RS	67	32	12	16	14	13,8	0,6	0,3	22	8,7	9,9	7,5	9	9 500	
	RNA 2201.2RS X	57	NA 2201.2RS X	67	32	12	16	14	13,8	0,6	0,3	22	8,7	9,9	7,5	9	9 500	
35	RNA 2202.2RS	60	NA 2202.2RS	75	35	15	20	14	13,8	0,6	0,3	26	9,8	12,3	7,6	9,6	7 000	
	RNA 2202.2RS X	60	NA 2202.2RS X	75	35	15	20	14	13,8	0,6	0,3	26	9,8	12,3	7,6	9,6	7 000	
40	RNA 2203.2RS	94	NA 2203.2RS	112	40	17	22	16	15,8	1	0,3	28	12,2	16,7	9,9	13,8	6 000	
	RNA 2203.2RS X	94	NA 2203.2RS X	112	40	17	22	16	15,8	1	0,3	28	12,2	16,7	9,9	13,8	6 000	
47	RNA 2204.2RS	152	NA 2204.2RS	177	47	20	25	18	17,8	1	0,3	33	18,9	22,3	15,2	18,3	4 600	
	RNA 2204.2RS X	152	NA 2204.2RS X	177	47	20	25	18	17,8	1	0,3	33	18,9	22,3	15,2	18,3	4 600	
52	RNA 2205.2RS	179	NA 2205.2RS	209	52	25	30	18	17,8	1	0,3	38	21,1	27	15,7	20	3 500	
	RNA 2205.2RS X	179	NA 2205.2RS X	209	52	25	30	18	17,8	1	0,3	38	21,1	27	15,7	20	3 500	
62	RNA 2206.2RS	284	NA 2206.2RS	324	62	30	35	20	19,8	1	0,3	43	23,3	32	18,3	25,5	2 800	
	RNA 2206.2RS X	284	NA 2206.2RS X	324	62	30	35	20	19,8	1	0,3	43	23,3	32	18,3	25,5	2 800	
72	RNA 2207.2RS	432	NA 2207.2RS	505	72	35	42	23	22,7	1,1	0,6	50	30	46,5	23	35,5	2 200	
	RNA 2207.2RS X	432	NA 2207.2RS X	505	72	35	42	23	22,7	1,1	0,6	50	30	46,5	23	35,5	2 200	
80	RNA 2208.2RS	530	NA 2208.2RS	628	80	40	48	23	22,7	1,1	0,6	57	38,5	58	27,5	40,5	1 700	
	RNA 2208.2RS X	530	NA 2208.2RS X	628	80	40	48	23	22,7	1,1	0,6	57	38,5	58	27,5	40,5	1 700	
85	RNA 2209.2RS	545	NA 2209.2RS	655	85	45	52	23	22,7	1,1	0,6	62	40,5	64	28,5	43	1 600	
	RNA 2209.2RS X	545	NA 2209.2RS X	655	85	45	52	23	22,7	1,1	0,6	62	40,5	64	28,5	43	1 600	
90	RNA 2210.2RS	563	NA 2210.2RS	690	90	50	58	23	22,7	1,1	0,6	68	42,5	70	28	42,5	1 300	
	RNA 2210.2RS X	563	NA 2210.2RS X	690	90	50	58	23	22,7	1,1	0,6	68	42,5	70	28	42,5	1 300	

¹⁾ F - raceway diameter of inner ring.

F_w = needle roller enveloping circle in the tolerance zone F6.

²⁾ The basic load ratings C and C₀ apply if the bearing outer ring (with cylindrical outside surface) is mounted in a housing bore with the normal rolling bearing fit, when used as a track roller, the load ratings C_w and C_{0w} apply.

³⁾ Limiting speed for grease lubrication.

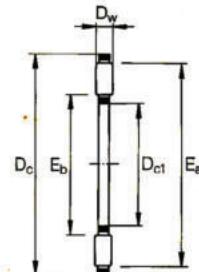
With oil lubrication, the speed can be increased by approximately 30%.

Axial needle roller and cage assemblies

Series AXK

Axial bearing washers

Series AS, LS, GS 811, WS 811



AXK

Dimension table · Dimensions in mm

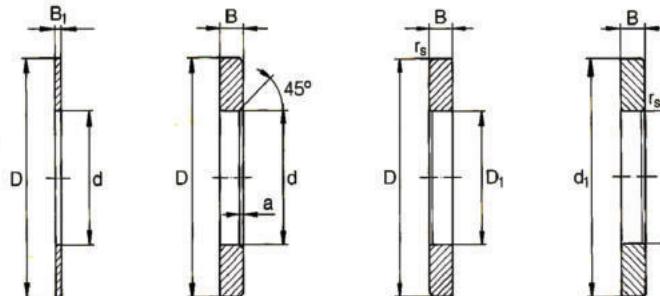
Shaft diameter	Axial needle roller and cage assemblies			Axial bearing washers				
	Designation	Mass g	Bearing washer Designation	Mass g	Bearing washer Designation	Housing locating washer Designation	Shaft locating washer Designation	Mass g
4	AXK 0414 TN	0,7	AS 0414	1	-	-	-	-
5	AXK 0515 TN	0,8	AS 0515	1	-	-	-	-
6	AXK 0619 TN	1	AS 0619	2	LS 0619	-	-	4
8	AXK 0821 TN	2	AS 0821	2	LS 0821	-	-	4
10	AXK 1024	3	AS 1024	3	LS 1024	-	-	7
12	AXK 1226	3	AS 1226	3	LS 1226	-	-	8
15	AXK 1528	4	AS 1528	3	LS 1528	GS 81102	WS 81102	9
17	AXK 1730	4	AS 1730	4	LS 1730	GS 81103	WS 81103	9
20	AXK 2035	5	AS 2035	5	LS 2035	GS 81104	WS 81104	13
25	AXK 2542	7	AS 2542	7	LS 2542	GS 81105	WS 81105	19
30	AXK 3047	8	AS 3047	8	LS 3047	GS 81106	WS 81106	22
35	AXK 3552	10	AS 3552	9	LS 3552	GS 81107	WS 81107	29
40	AXK 4060	16	AS 4060	12	LS 4060	GS 81108	WS 81108	40
45	AXK 4565	18	AS 4565	13	LS 4565	GS 81109	WS 81109	50
50	AXK 5070	20	AS 5070	14	LS 5070	GS 81110	WS 81110	55
55	AXK 5578	28	AS 5578	18	LS 5578	GS 81111	WS 81111	88
60	AXK 6085	33	AS 6085	22	LS 6085	GS 81112	WS 81112	97
65	AXK 6590	35	AS 6590	24	LS 6590	GS 81113	WS 81113	115
70	AXK 7095	60	AS 7095	25	LS 7095	GS 81114	WS 81114	123
75	AXK 75100	61	AS 75100	27	LS 75100	GS 81115	WS 81115	142
80	AXK 80105	63	AS 80105	28	LS 80105	GS 81116	WS 81116	151
85	AXK 85110	67	AS 85110	29	LS 85110	GS 81117	WS 81117	159
90	AXK 90120	86	AS 90120	39	LS 90120	GS 81118	WS 81118	234
100	AXK 100135	104	AS 100135	50	LS 100135	GS 81120	WS 81120	350
110	AXK 110145	122	AS 110145	55	LS 110145	GS 81122	WS 81122	385
120	AXK 120155	131	AS 120155	59	LS 120155	GS 81124	WS 81124	415
130	AXK 130170	205	AS 130170	65	LS 130170	GS 81126	WS 81126	663
140	AXK 140180	219	AS 140180	79	LS 140180	GS 81128	WS 81128	749
150	AXK 150190	232	AS 150190	84	LS 150190	GS 81130	WS 81130	796
160	AXK 160200	246	AS 160200	89	LS 160200	GS 81132	WS 81132	842

TN = plastic cage, permissible operating temperature: 120 °C (continuous operation).

- 1) Limiting speed for oil lubrication.
For grease lubrication, 25% of the values given in the table is permissible.

Needle Roller Bearing

QLH®
Linear Motion Technology



AS

LS

GS 811

WS 811

**Axial needle roller and cage assemblies
Axial cylindrical roller and cage assemblies
Axial bearing washers
Axial bearings**

Dimensions								Raceway dimensions		Basic load ratings		Limiting speed ¹⁾	Reference speed n _B	Shaft diameter
D _{c1} d	D ₁	D _c D	d ₁	D _w	B ₁	B	a r _s min.	E _b	E _a	dyn. C kN	stat. C ₀ kN	n _G min ⁻¹	n _B min ⁻¹	
4	—	14	—	2	1	—	—	5	13	4,45	8	21 000	13 000	4
5	—	15	—	2	1	—	—	6	14	4,75	9,2	21 000	11 000	5
6	—	19	—	2	1	2,75	0,3	7	18	6,8	15,5	19 000	9 000	6
8	—	21	—	2	1	2,75	0,3	9	20	7,8	19,4	18 000	7 000	8
10	—	24	—	2	1	2,75	0,3	12	23	9,2	25,5	17 000	6 000	10
12	—	26	—	2	1	2,75	0,3	14	25	9,9	29	15 000	5 000	12
15	16	28	28	2	1	2,75	0,3	17	27	11,3	36	13 000	4 000	15
17	18	30	30	2	1	2,75	0,3	19	29	11,9	39,5	12 000	3 600	17
20	21	35	35	2	1	2,75	0,3	22	34	13,1	46,5	10 500	3 500	20
25	26	42	42	2	1	3	0,6	29	41	14,7	58	8 500	3 200	25
30	32	47	47	2	1	3	0,6	34	46	16,3	70	7 500	2 600	30
35	37	52	52	2	1	3,5	0,6	39	51	17,8	81	6 500	2 300	35
40	42	60	60	3	1	3,5	0,6	45	58	28	114	6 000	1 900	40
45	47	65	65	3	1	4	0,6	50	63	30	128	5 000	1 700	45
50	52	70	70	3	1	4	0,6	55	68	32	143	4 800	1 500	50
55	57	78	78	3	1	5	0,6	60	76	38	186	4 300	1 400	55
60	62	85	85	3	1	4,75	1	65	83	44,5	234	4 000	1 200	60
65	67	90	90	3	1	5,25	1	70	88	46,5	255	3 700	1 100	65
70	72	95	95	4	1	5,25	1	74	93	54	255	3 500	1 100	70
75	77	100	100	4	1	5,75	1	79	98	55	265	3 300	1 000	75
80	82	105	105	4	1	5,75	1	84	103	56	280	3 100	1 000	80
85	87	110	110	4	1	5,75	1	89	108	58	290	3 000	950	85
90	92	120	120	4	1	6,5	1	94	118	73	405	2 700	850	90
100	102	135	135	4	1	7	1	105	133	91	560	2 500	700	100
110	112	145	145	4	1	7	1	115	143	97	620	2 300	650	110
120	122	155	155	4	1	7	1	125	153	102	680	2 100	600	120
130	132	170	170	5	1	9	1	136	167	133	840	1 900	550	130
140	142	180	178	5	1	9,5	1	146	177	138	900	1 800	500	140
150	152	190	188	5	1	9,5	1	156	187	143	960	1 700	480	150
160	162	200	198	5	1	9,5	1	166	197	148	1020	1 600	450	160

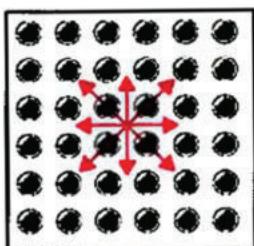
Ball Transfer Unit

QLH®
Linear Motion Technology

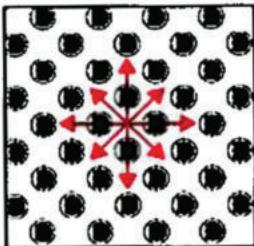


Ball Transfer Unit

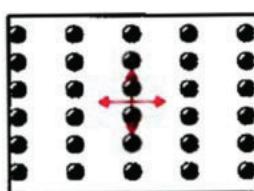
- Typical ball transfer units arranging ways



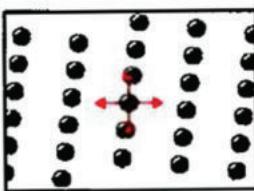
Square arranging



Diamond arranging

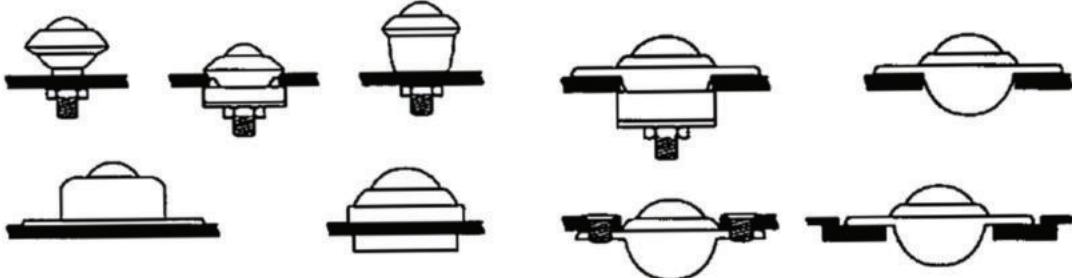


Long Column



Diagonal Column

- Different installation ways



- Material Code

CS/CS	Full carbon steel ball
PL/CS	Plastic ball, Carbon steel housing
SS/CS	Stainless steel ball, Carbon steel housing
CS/SS	Carbon steel ball, Stainless steel housing
SS/SS	Full stainless steel
PL/PL	Full plastic
SS/PL	Stainless steel ball, Plastic housing
PI/AL	Plastic ball, Aluminum alloy housing

- Ordering

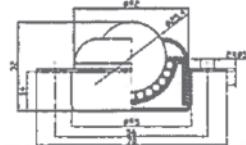
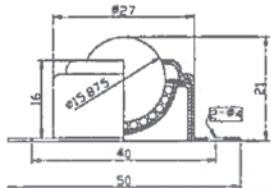
Model - Material Code x Quantity

Ball Transfer Unit

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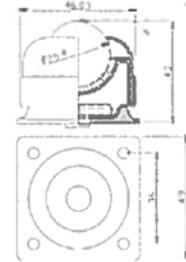
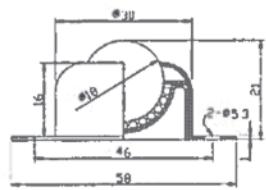
Pressed Metal Series

Available materials: CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



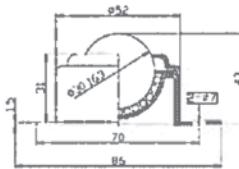
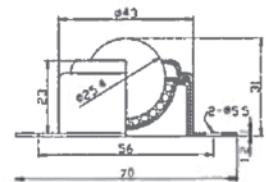
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-15A	10	15	0.038

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25E	20	25	0.048



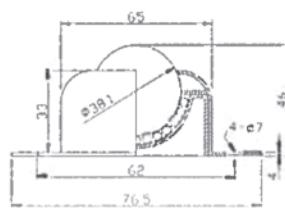
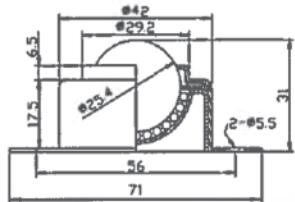
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-18A	20	25	0.048

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25FE	25	30	0.130



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25A	25	30	0.130

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-30A	40	50	0.240



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25A2	25	30	0.130

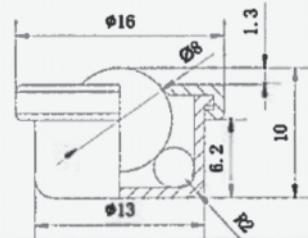
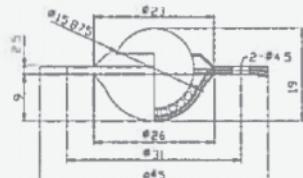
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-38A	60	80	0.460

Ball Transfer Unit

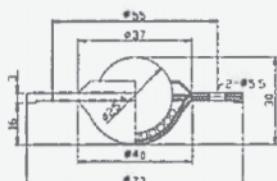
QLH®
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Pressed Metal Series

Available materials: CS/CS,SS/CS,SS/SS,PL/CS,PL/SS

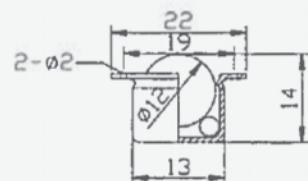


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-16B	10	15	0.040

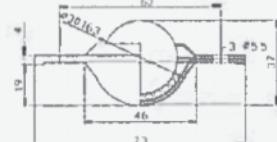


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-25B	25	30	0.150

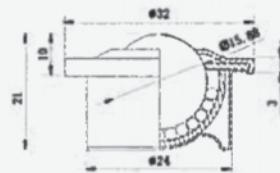
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-8H	3	5	0.005



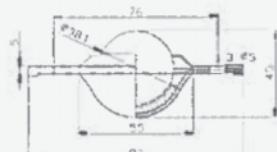
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-12H	5	8	0.010



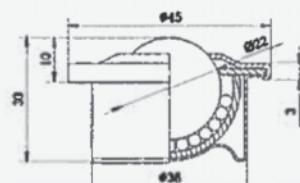
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-30B	35	45	0.220



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-15H	15	25	0.044



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-38B	45	55	0.430



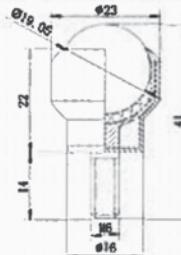
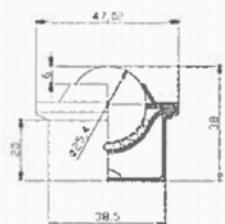
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-22H	40	55	0.120

Ball Transfer Unit

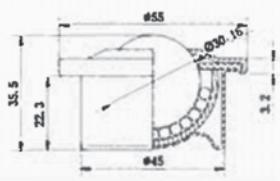
QLH®
Linear Motion Technology

Pressed Metal Series

Available materials: CS/CS,SS/CS,SS/SS,PL/CS,PL/SS

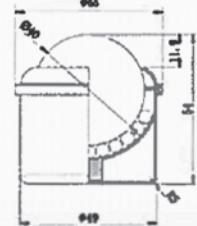


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-25H	25	30	0.145



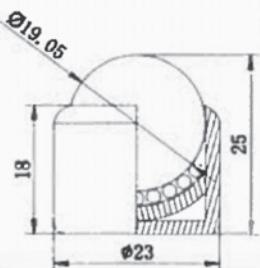
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-19D	20	25	0.050

Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-30H	70	85	0.220

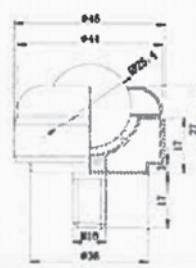


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-25D	30	40	0.130

Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-40H	40	50	0.450



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-19F	15	20	0.100



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-19C	20	30	0.045

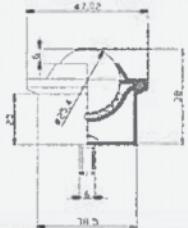
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QCY-25F	30	40	0.170

Ball Transfer Unit

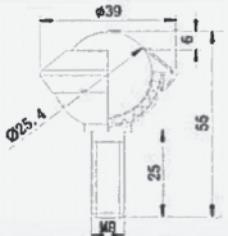
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Pressed Metal Series

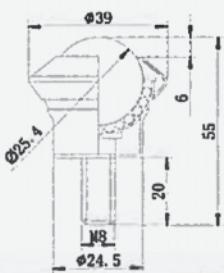
Available materials: CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



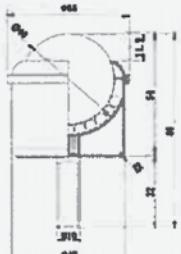
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25HF	25	30	0.150



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25FL	15	20	0.120



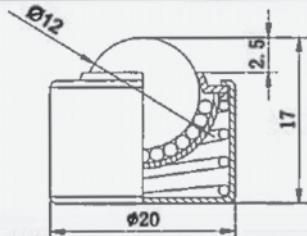
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25FLB	25	30	0.130



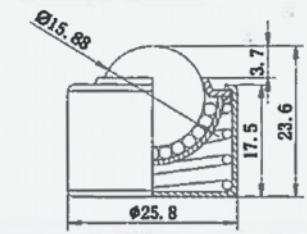
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-40F	40	50	0.460

Pressed Metal Spring Load Series

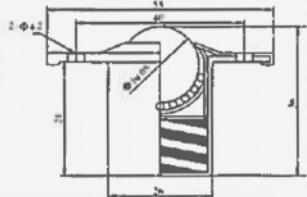
Inner Spring Shock Absorption



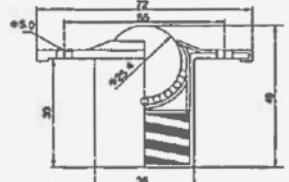
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-12T	5	7	0.020



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-15T	8	11	0.035



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-19TB	20	25	0.050



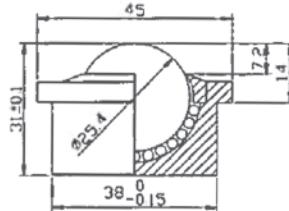
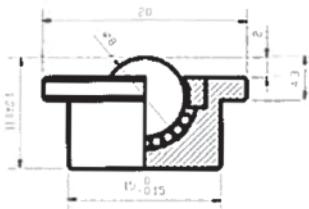
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QCY-25TB	30	40	0.130

Ball Transfer Unit

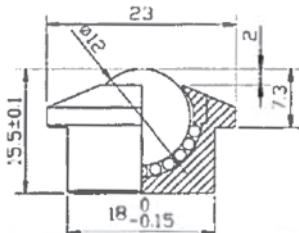
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Press Mount Heavy Duty Series

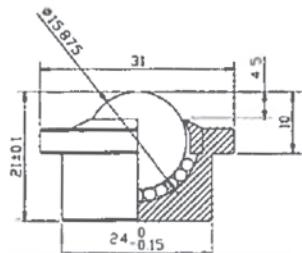
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



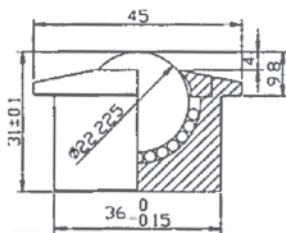
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-8	8	15	0.015



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-12	25	30	0.030

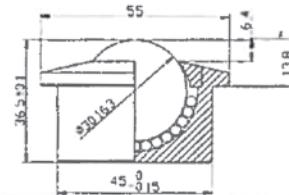


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-15	40	50	0.060

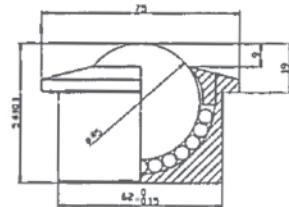


Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-22	140	160	0.185

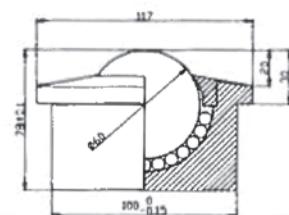
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-25	180	200	0.190



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-30	250	300	0.380



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-45	450	500	1.100



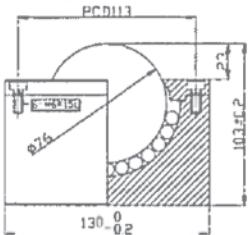
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-60	800	1200	3.800

Ball Transfer Unit

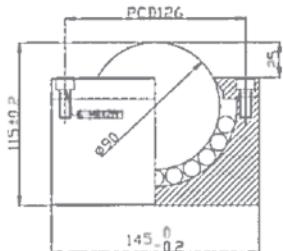
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Press Mount Heavy Duty Series

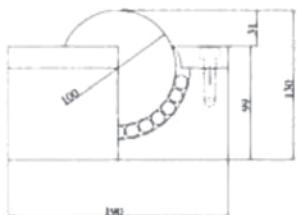
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



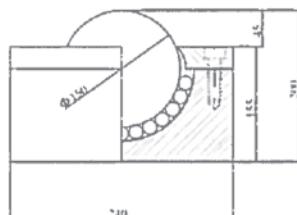
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-76	2000	2500	10.000



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-90	3000	3500	12.000



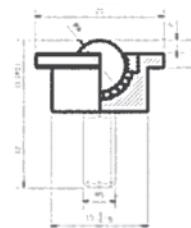
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-100	4500	5000	20.000



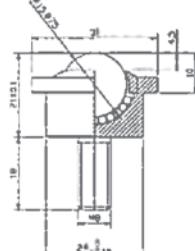
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-150	6000	6500	25.000

Bolt Fix Heavy Duty Series

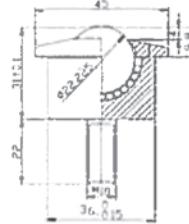
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



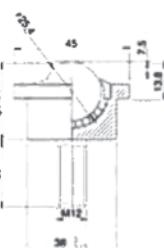
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-8FL	8	15	0.020



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-15FL	40	45	0.085



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-22FL	140	160	0.250



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-25FL	180	200	0.280

Ball Transfer Unit

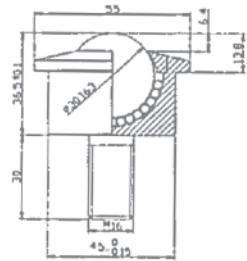
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Bolt Fix Heavy Duty Series

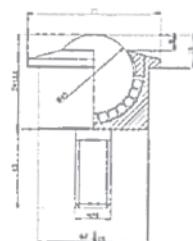
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



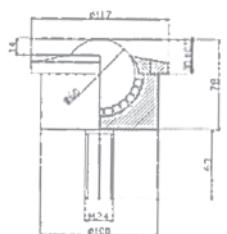
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-25FK	150	200	0.250



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-30FL	200	250	0.410



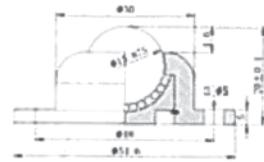
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-45FL	400	450	1.150



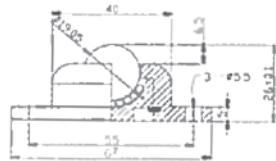
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QSP-60FL	800	1200	4.000

Flange Mount Machined Series

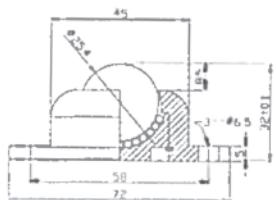
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



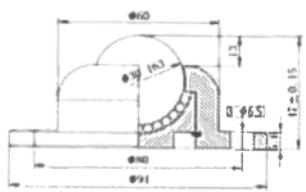
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIA-15	40	50	0.120



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIA-19	80	100	0.220



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIA-25	130	150	0.320



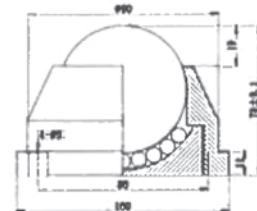
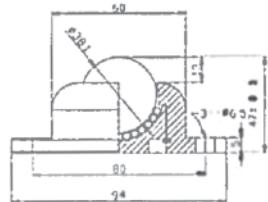
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIA-30	200	250	0.380

Ball Transfer Unit

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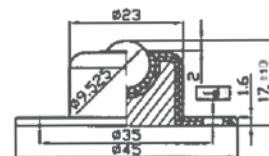
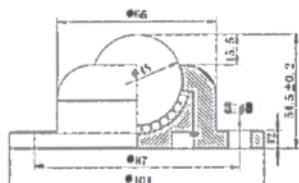
Flange Mount Machined Series

Available materials: CS/CS,SS/CS,SS/SS,PL/AL



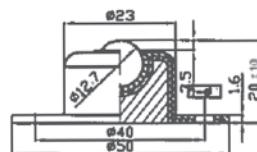
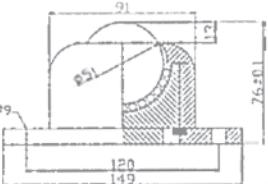
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIA-38	250	300	0.810

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIA-FB026	600	800	2.500



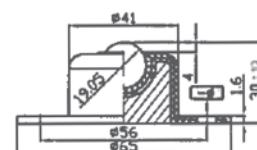
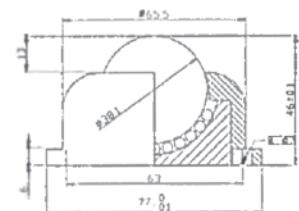
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIA-45	350	450	1.500

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIS-10	35	40	0.060



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIA-51	450	500	4.000

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIS-13	45	50	0.090



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIA-FB028	400	450	0.890

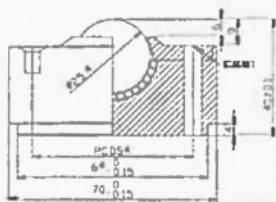
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QIS-19	90	100	0.250

Ball Transfer Unit

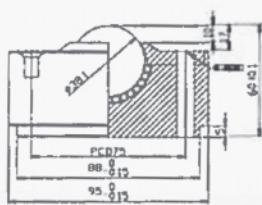
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Base Mount Machined Series

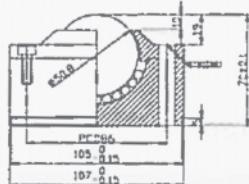
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



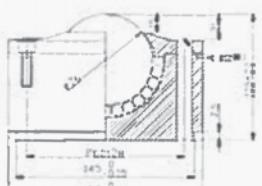
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIS-25	120	150	0.900



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIS-38	200	250	2.300



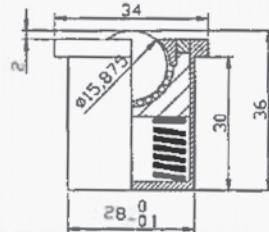
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIS-51	250	300	4.500



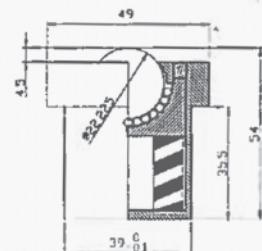
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QIS-76	400	450	10.500

Inner Spring Shock Load Series

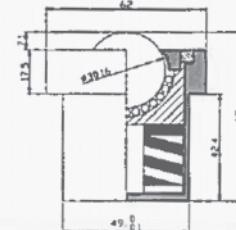
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



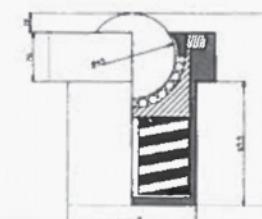
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSF-15	40/50	60	0.130



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSF-22	60/70	80	0.350



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSF-30	100/120	150	0.768



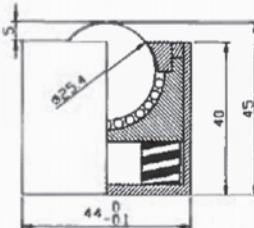
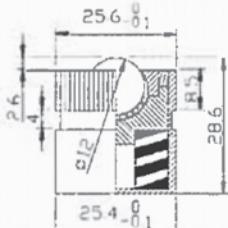
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSF-45	200/250	280	2.120

Ball Transfer Unit

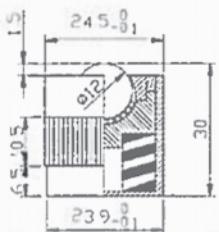
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Inner Spring Shock Load Series

Available materials: CS/CS,SS/CS,SS/SS,PL/AL

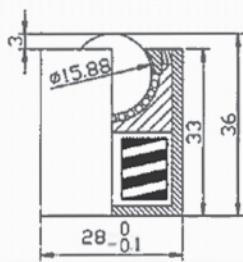


Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKST-12	30/30	50	0.180



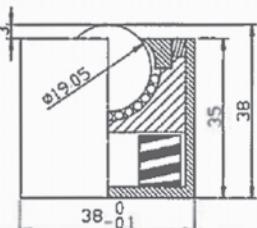
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSH-30	100/100	150	0.390

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSE-12	30/30	50	0.160



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSF-19B	60/70	80	0.260

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSH-15	40/50	60	0.120



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSF-25B	100/120	150	0.400

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSH-20	70/70	100	0.280

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSF-30B	150/200	250	1.100

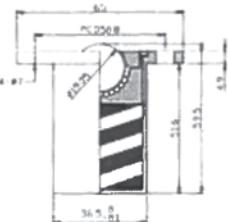
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKSF-30B	150/200	250	1.100

Ball Transfer Unit

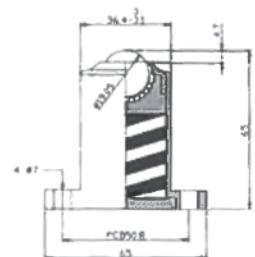
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Inner Spring Shock Load Series

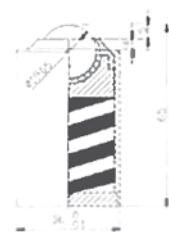
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



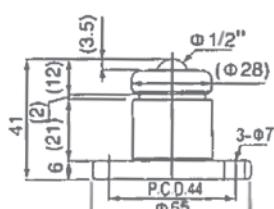
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSFT-19	40/40	60	0.450



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSFN-19	40/40	60	0.430



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKSFH-19	50/50	70	0.350



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKS-15	30/30	40	0.450

External Spring Shock Load Series

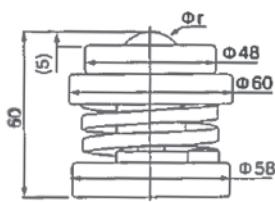
Available materials: CS/CS,SS/CS,SS/SS,PL/AL



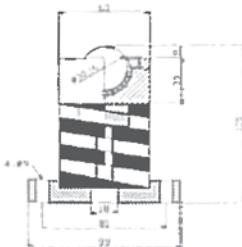
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKS-19	40/60	60	0.480



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKS-19H	50/50	60	0.450



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKS-20	40/40	60	0.260



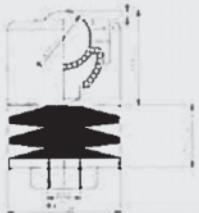
Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QKS-30	80/80	100	1.100

Ball Transfer Unit

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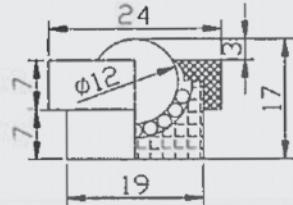
External Spring Ball-Down Series

Available materials: CS/CS,SS/CS,SS/SS,PL/AL

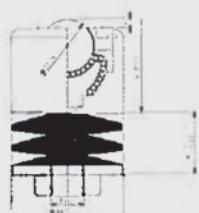


Plastic/Nylon Series

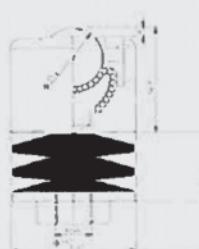
Available materials: PL/PL,Nylon/Nylon



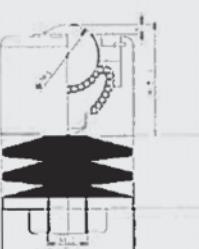
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKS-01	30/30	40	0.300



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKS-02	50/50	60	0.350

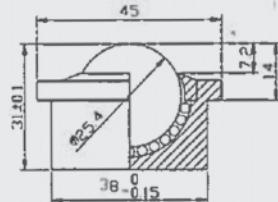


Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKS-03	60/60	80	0.450

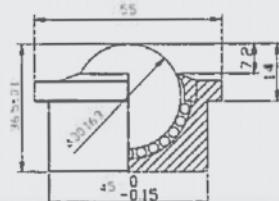


Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QKS-04	100/100	120	1.100

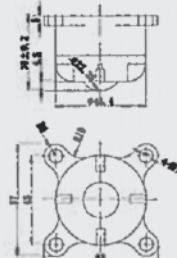
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-12	5	10	0.020



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-25	20	30	0.100



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-30	30	40	0.180



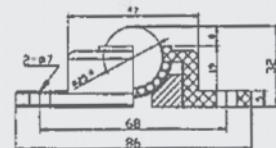
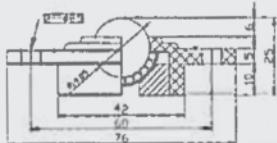
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-22AA	5	10	0.050

Ball Transfer Unit

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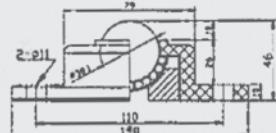
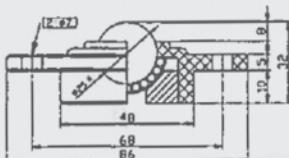
Plastic/Nylon Series

Available materials: PL/PL,Nylon/Nylon



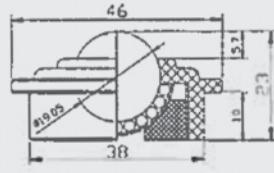
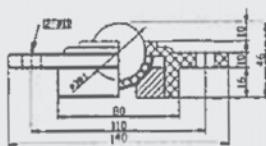
Model	Maximum Loading(kg)		Net Weight (kg)
	Suggested	Breaking	
QNL-19A	10	15	0.055

Model	Maximum Loading(kg)	Net Weight (kg)
	Suggested	Breaking
QNL-25B	20	0.120



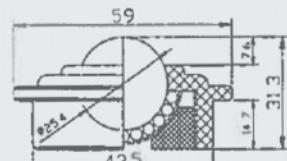
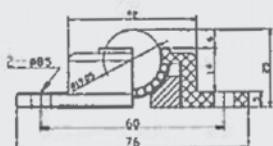
Model	Maximum Loading(kg)		Net Weight (kg)
	Suggested	Breaking	
QNL-25A	20	25	0.120

Model	Maximum Loading(kg)		Net Weight (kg)
	Suggested	Breaking	
QNL-38B	25	35	0.410



Model	Maximum Loading(kg) Suggested	Net Weight Breaking	(kg)
QNL-38A	25	35	0.410

Model	Maximum Loading(kg)		Net Weight (kg)
	Suggested	Breaking	
QNL-19C	10	15	0.050



Model	Maximum Loading(kg) Suggested	Maximum Loading(kg) Breaking	Net Weight (kg)
QNL-19B	10	15	0.055

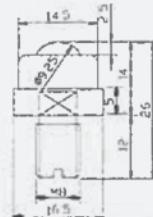
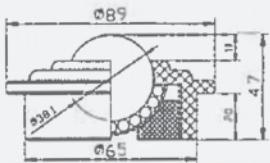
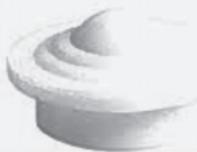
Model	Maximum Loading(kg) Suggested	Net Weight Breaking	(kg)
QNL-25C	20	25	0.110

Ball Transfer Unit

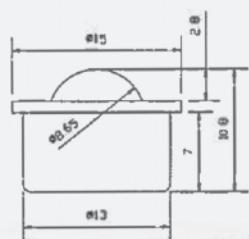
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Plastic/Nylon Series

Available materials: PL/PL,Nylon/Nylon

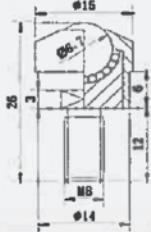


Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-38C	25	35	0.400



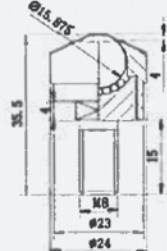
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-10M	4	5	0.015

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-8H	2	3	0.003



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-15M	6	8	0.040

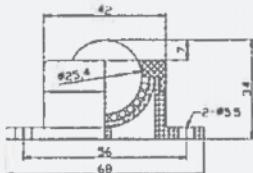
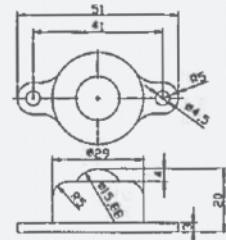
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-8N	2	3	0.012



Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-16AA	8	10	0.035

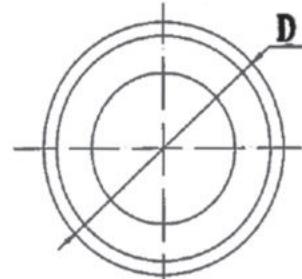
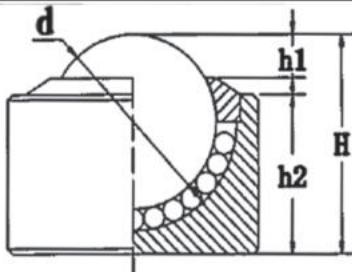
Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-15N	6	7	0.032

Model	Maximum Loading(kg) Suggested	Breaking	Net Weight (kg)
QNL-25AA	15	20	0.050



QKSM Pressed Mount Series

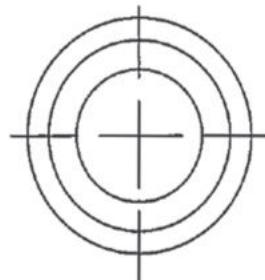
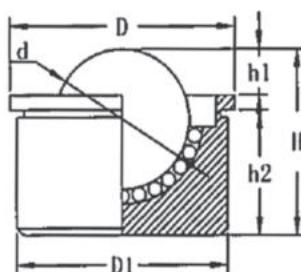
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D	H	h1	h2	Maximum Loading(kg)		Net weight (kg)
						Suggested	Breaking	
QKSM-8	8	12 _{-0.1}	10.3±0.1	2.3	8.0	5	8	0.006
QKSM-10	10	16 _{-0.1}	12.5±0.1	2.5	8.50	15	20	0.028
QKSM-12	12	18 _{-0.1}	15.5±0.1	2.0	14.0	25	30	0.035
QKSM-15	15	24 _{-0.1}	20.0±0.1	4.0	20.0	40	45	0.050
QKSM-22	22	36 _{-0.1}	31.0±0.1	6.0	23.0	80	100	0.190
QKSM-25	25	37 _{-0.1}	32.0±0.15	6.5	24.0	120	150	0.250
QKSM-30	30	45 _{-0.2}	38.0±0.15	8.0	27.0	180	200	0.340
QKSM-38	38	55 _{-0.2}	48.0±0.2	9.5	33.5	250	300	0.560
QKSM-45	45	62 _{-0.2}	53.4±0.2	11.0	37.6	400	450	0.900
QKSM-60	60	100 _{-0.2}	77.5±0.2	20.0	47.5	550	600	2.100

QMMSM QBCHA Pressed & Circlip Mount Series

Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



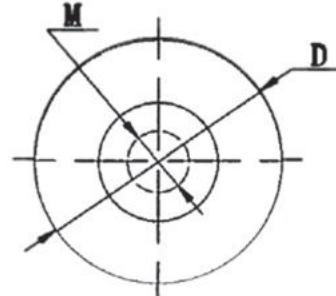
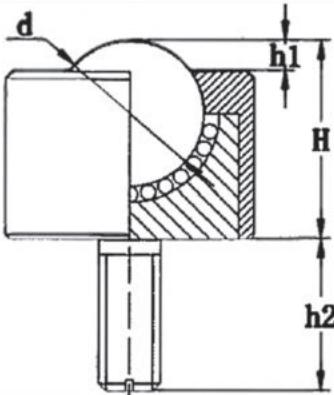
Model	d	D	D1	H	h1	h2	Maximum Loading(kg)		Net weight (kg)
							Suggested	Breaking	
QBCHA-5	5.56(7/32")	13 _{-0.1}	11	8.5±0.1	1.5	6	4	5	0.010
QBCHA-8	8.73(11/32")	17 _{-0.1}	15	12.5±0.1	2.5	9	5.5	7	0.015
QBCHA-10	10.32(13/32")	20 _{-0.1}	18	14.5±0.1	3.5	10	6	8	0.035
QBCHA-15	15.88(5/8")	26 _{-0.1}	24	20.8±0.1	5.3	14	35	40	0.080
QBCHA-19	19.05(3/4")	32 _{-0.1}	30	25.3±0.1	6.3	17	40	45	0.190

Ball Transfer Unit

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QD-H Mini Bolt Mount Series

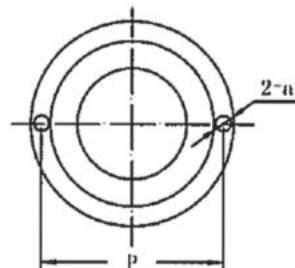
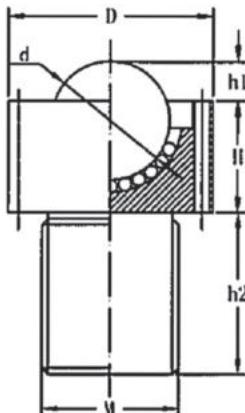
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D	H	h1	h2	M	Maximum Loading(kg)		Net weight (kg)
							Suggested	Breaking	
QD-6H	6.35(1/4")	12	9.0±0.1	1.5	12.0	M6	5	6	0.035
QD-9H	9.53(3/8")	15	15.0±0.1	1.5	12.0	M6	7	8	0.042
QD-12H	12.70(1/2")	20	18.0±0.1	3.0	12.0	M8	8	10	0.055
QD-15H	15.88(5/8")	24	20.5±0.1	4.0	12.0	M8	15	20	0.120
QD-19H	19.05(3/4")	32	26.0±0.1	4.0	12.0	M8	40	50	0.250

QMSM QBCHM Bolt & Hole Mount Series

Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



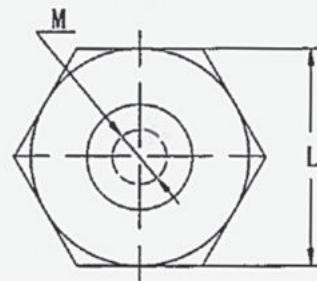
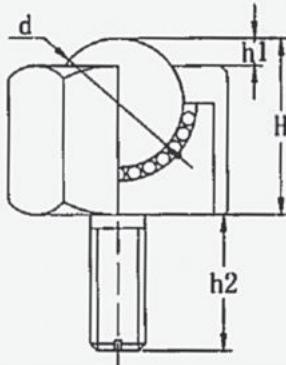
Model	d	D	H	h1	h2	P	a	M	Maximum Loading(kg)		Net weight (kg)
									Suggested	Breaking	
QBCHM-8	8.73(11/32")	18.5	10.0±0.1	2.5	12.0	15.0	2.0	M10	5.5	7	0.042
QBCHM-10	10.30(13/32")	22.0	11.0±0.1	3.5	15.0	18.5	2.0	M12	6	8	0.065
QBCHM-15	15.88(5/8")	27.0	15.0±0.1	5.3	20.0	24.0	2.5	M16	35	40	0.140
QBCHM-19	19.05(3/4")	33.0	18.0±0.1	6.3	25.0	29.6	2.5	M20	42	47	0.250

Ball Transfer Unit

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QNJ Hex Body & Bolt Mount Series

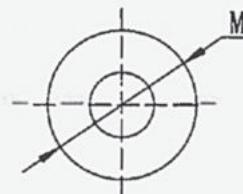
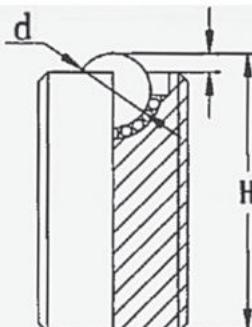
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	L	H	h1	h2	M	Maximum Loading(kg)		Net weight (kg)
							Suggested	Breaking	
QNJ-12	11.90(15/32")	18	13.0±0.1	3	12	M12	5	6	0.025
QNJ-16	15.88(5/8")	24	18.0±0.1	4	18	M12	10	15	0.150
QNJ-25	25.40(1")	36	33.0±0.1	6	27	M12	60	80	0.210
QNJ-30	30.16(1-3/16")	45	35.0±0.1	7	30	M14	150	200	0.230
QNJ-38	38.10(1-1/2")	55	51.0±0.1	9	40	M16	250	300	0.460
QNJ-45	45.24(1-25/32")	75	51.0±0.1	9	40	M16	350	400	1.800

QLW Full Thread Body Mount Series

Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



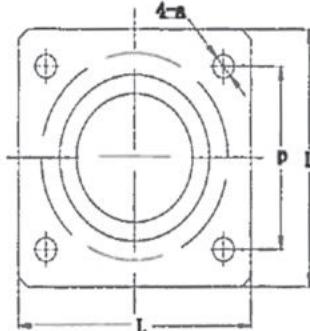
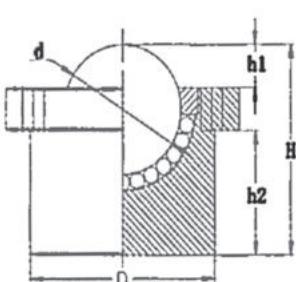
Model	d	H	h1	M	Maximum Loading(kg)		Net weight (kg)
					Suggested	Breaking	
QLW-6	6.35(71/4")	20.0±0.1	1.5	M12	3	5	0.010
QLW-8	7.93(5/16")	30.0±0.1	2.0	M16	5	8	0.020
QLW-12	11.90(15/32")	45.0±0.15	3.5	M24	12	15	0.029
QLW-16	15.88(5/8")	60.0±0.2	4.0	M30	20	25	0.038
QLW-19	19.05(3/4")	70.0±0.2	5.0	M40	25	30	0.160
QLW-22	22.22(7/8")	82.0±0.2	5.5	M44	40	45	0.280

Ball Transfer Unit

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Top Flange Mount QSI Series

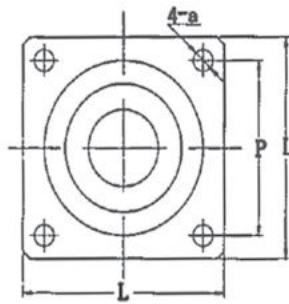
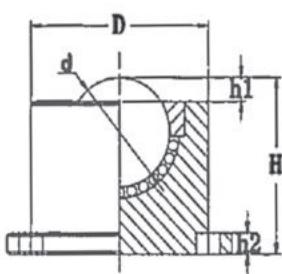
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D	H	h1	h2	P	L	a	Maximum Loading(kg)		Net weight (kg)
									Suggested	Breaking	
QSI-12	12.0	24	24	3.0	17.0	35	45	4.0	15	20	0.100
QSI-25	25.4	45	42	5.6	31.7	45	57	6.0	150	200	0.490
QSI-30	30.2	54	50	6.5	37.5	54	68	6.5	250	300	1.100
QSI-38	38.1	60	62	12.7	36.6	58	76	7.0	350	400	1.400
QSI-51	51.0	102	98	14.3	64.7	102	127	11.0	600	700	6.400

Bottom Flange Mount QSD Series

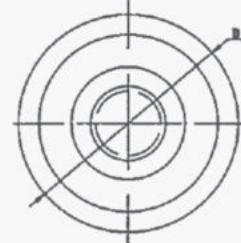
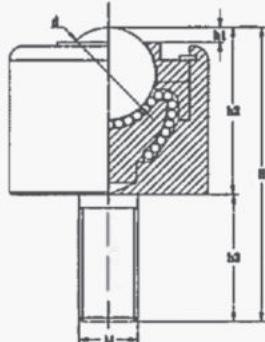
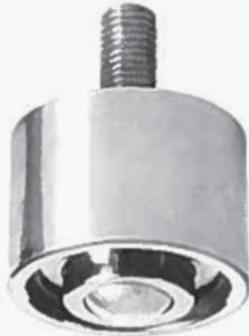
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D	H	h1	h2	P	L	a	Maximum Loading(kg)		Net weight (kg)
									Suggested	Breaking	
QSD-12	12.0	24	23	3.5	3	35	45	3.6	15	20	0.180
QSD-12	25.4	45	41	5.6	5	45	57	5.6	150	200	0.490
QSD-12	30.2	54	49	6.5	6	54	68	6.5	250	300	1.200
QSD-12	38.1	60	62	13.0	13	58	76	7.1	350	400	1.800
QSD-12	51.0	100	98	14.3	9.6	102	127	11	600	700	5.600

Ball downward Bolt Mount QIK-N Series

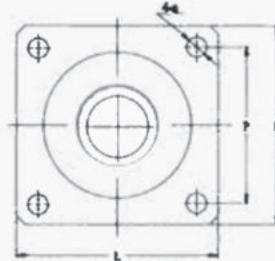
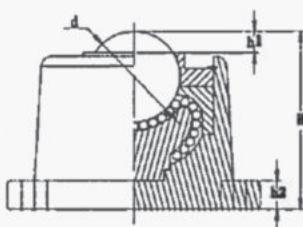
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D	H	h1	h2	h3	M	Maximum Loading(kg)		Net weight (kg)
								Suggested	Breaking	
QIK-19N	19.0	42	58	3.0	33	25	M12	50	60	0.250
QIK-22N	22.0	48	70	3.0	40	30	M12	75	90	0.380
QIK-25N	25.4	55	81	4.0	46	35	M16	100	150	0.700
QIK-38N	38.1	80	115	8.0	70	45	M22	150	200	2.100
QIK-51N	51.0	100	145	12.0	95	50	M24	400	450	4.400

Ball downward Flange Mount QIK-B Series

Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



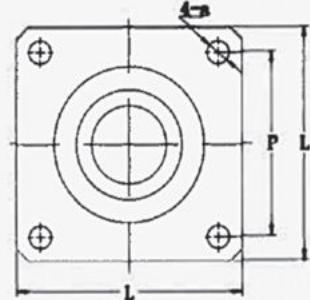
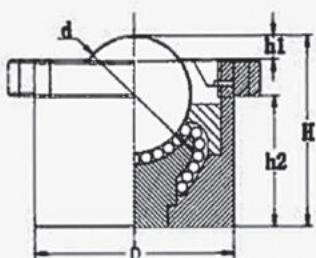
Model	d	L	H	h1	h2	P	a	Maximum Loading(kg)		Net weight (kg)
								Suggested	Breaking	
QIK-19B	19.1	53	38	3.5	6.0	41	5.2	50	60	0.370
QIK-25B	25.4	70	50	6.0	8.0	55	7.0	100	120	0.900
QIK-38B	38.1	100	75	9.7	10.0	80	9.0	200	250	2.600
QIK-51B	51.0	130	100	13.0	12.0	102	11.0	300	350	5.300
QIK-76B	76.2	200	150	16.5	20.0	160	18.0	500	550	19.600

Ball Transfer Unit

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Ball downward Flange Mount QUK Series

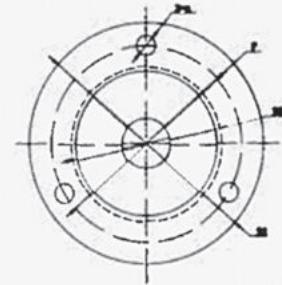
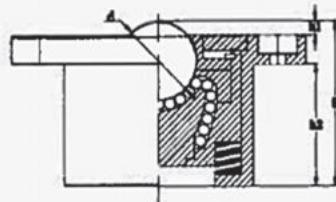
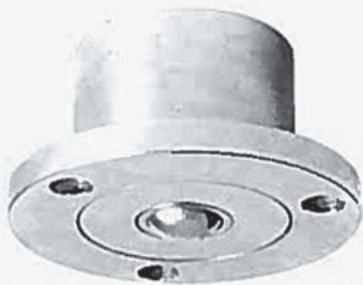
Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Modell	d	D	H	h1	h2	L	P	a	Maximum Loading(kg)		Net weight (kg)
									Suggested	Breaking	
QUK-12	12.7(1/2")	24	24	3.0	17.0	45	35	4.0	8	15	0.180
QUK-25	25.4(1")	45	42	5.3	31.7	57	45	5.6	100	120	0.460
QUK-38	38.1(1-1/2")	60	62	12.0	37.0	76	58	7.0	200	250	2.900
QUK-51	50.8(2")	102	98	14.3	64.7	127	102	11.0	300	350	5.500
QUK-76	76.2(3")	135	125	15.0	95.0	170	135	16.5	500	550	19.800

Ball downward Spring Shock Loading QUK-T Series

Available materials : CS/CS,SS/CS,SS/SS,PL/CS,PL/SS



Model	d	D1	D2	H	h1	h2	P	a	Maximum Loading(kg)		Net weight (kg)
									Suggested	Breaking	
QUK-19T	19.1	74	48	40.5	3.5	30.0	60	6.0	50	80	3.000
QUK-30T	30.2	117	75	64.0	5.5	47.5	95	8.0	150	200	3.200
QUK-38T	38.1	148	95	81.0	7.0	60.0	120	10.0	200	250	4.500
QUK-45T	45.0	175	110	96.0	8.5	71.0	142	12.0	250	300	8.000
QUK-50T	50.0	195	125	106.0	9.5	78.0	158	14.0	300	350	15.000

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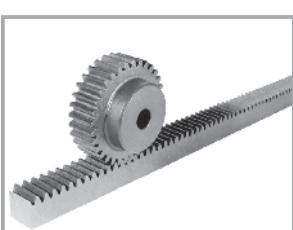
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