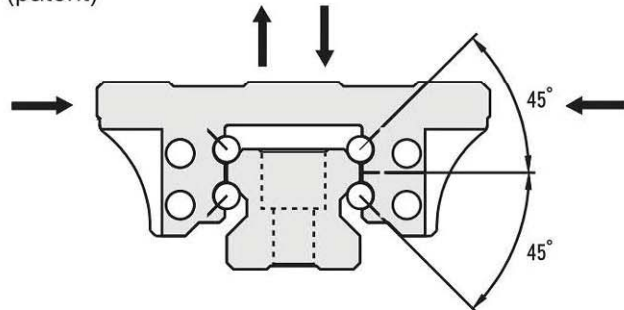


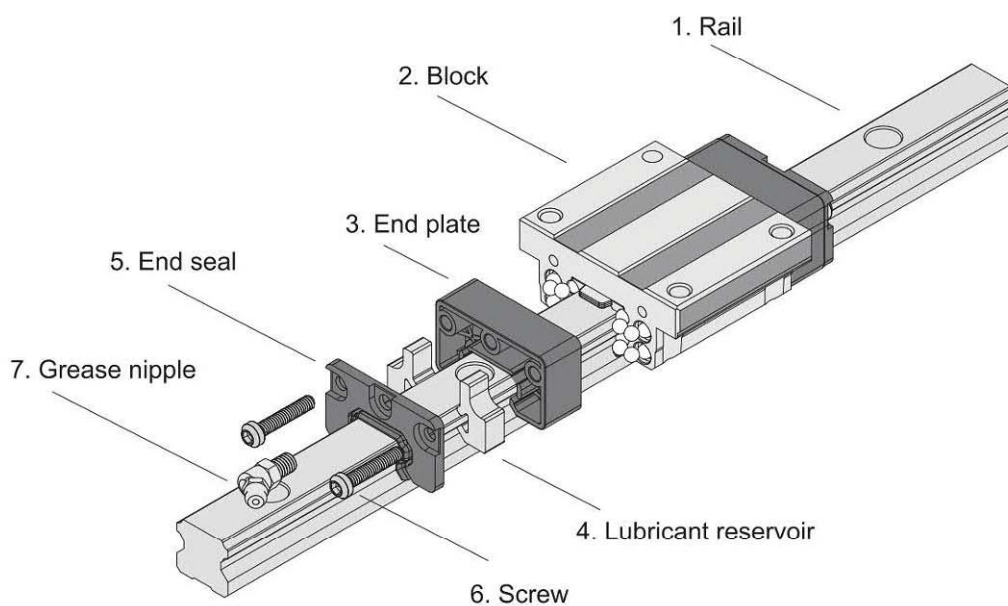
1. Linear Guideway

1.1 Ten Characteristics

- Built-in long life lubrication (patent)
- Equivalent loading capacity in four directions
- Smooth running due to new ball re-circulation (patent)
- High rigidity : 4-row angular contact
- International standard dimension
- High accuracy, low friction, low maintenance
- High speed, low noise
- Integral all-round sealing
- Interchangeability
- Green production



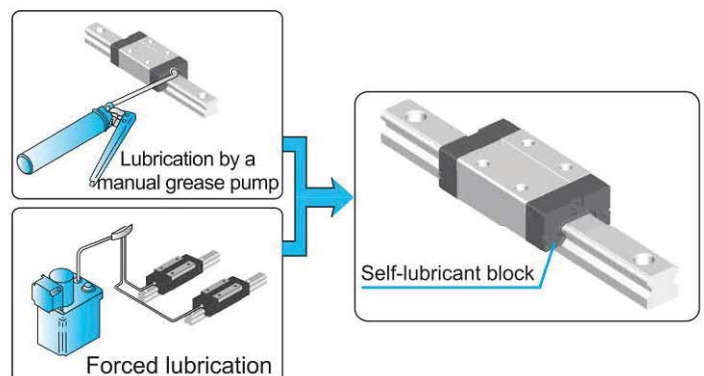
1.2 Construction of Self-Lubricant Linear Guideway



1.3 Four Advantages of Self-Lubricant Block

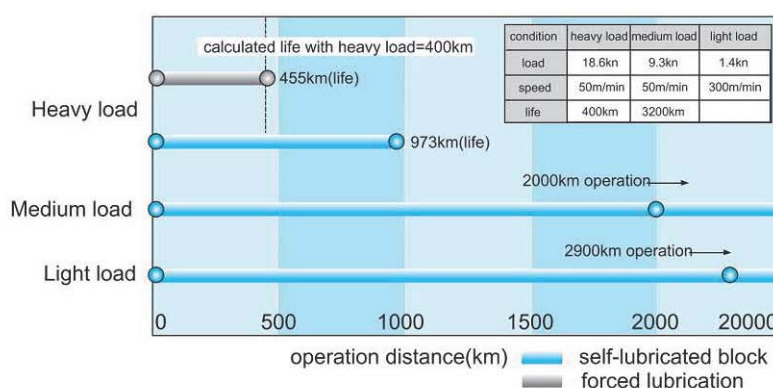
Advantage 1

Maintenance free - No need for frequent periodic lubrication or automatic lubrication systems.



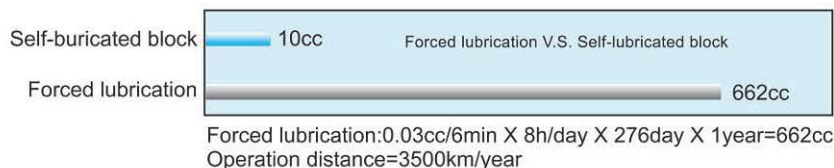
Advantage 2

Extended intervals between maintenance.



Advantage 3

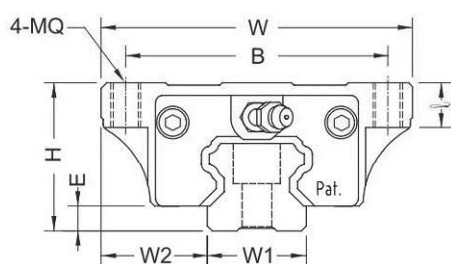
Curtailing lubrication cost.



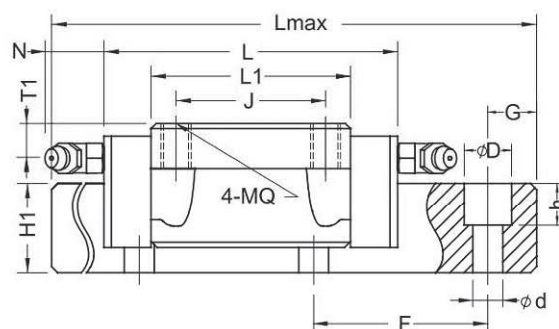
Advantage 4

No oil leakage concern, easy for cleaning.

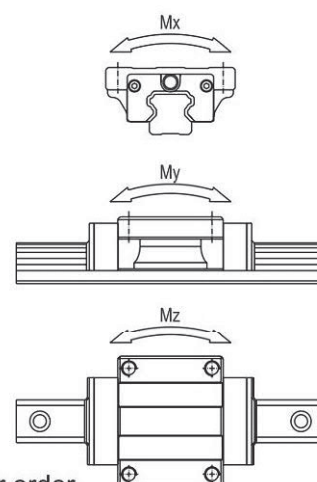
1.4 Interchangeability Notice



BRC-A0



1. Check the mounting height (H)
2. Check the mounting width (W2)
3. Check the block length (L)
4. Check the block's body size (L1)
5. Check the hole diameter and pitches on the block (BxJ)
6. Check the rail width (W1)
7. Check the pitch of the rail (F)
8. Check the hole diameter and rail size (d x D x h)
9. When a specific length is required, please advise the (G) values in your order.



1.5 Accuracy Selection

We have three grades for your selection:
Normal/ High/ Precision

	Application	Accuracy Grade				Application	Accuracy Grade		
		N	H	P			N	H	P
NC Machine tools	Machining Center			○	Industrial Robots	Orthogonal Type	○	○	○
	Lathe			○		Multi-joint Type	○	○	
	Milling Machine			○		Wire Bonder			○
	Boring Machine			○	Semiconductor Machine	Prober			○
	Jig Borer			○		Insert Machine		○	○
	Grinding Machine			○		PCB Driller		○	○
	Electro-discharge Machine			○	Other Machines	Injection Molding Machine	○	○	
	Punching Press Machine		○	○		Measuring Machine			○
	Laser Cutting Machine		○	○		Business Machine	○	○	
	Wood Working Machine	○	○	○		Transporting Machine	○	○	
	NC Drilling Machine		○	○		X-Y Table		○	○
	Milling Center		○	○		Painting Machine	○	○	
	Packaging Machine	○				Welding Machine	○	○	
	ATC	○				Medical Equipment	○	○	
	Wire Cut Machine			○		Digitizer		○	○
	Grinding Wheel Machine			○		Test Equipment			○

1.6 Accuracy Standard

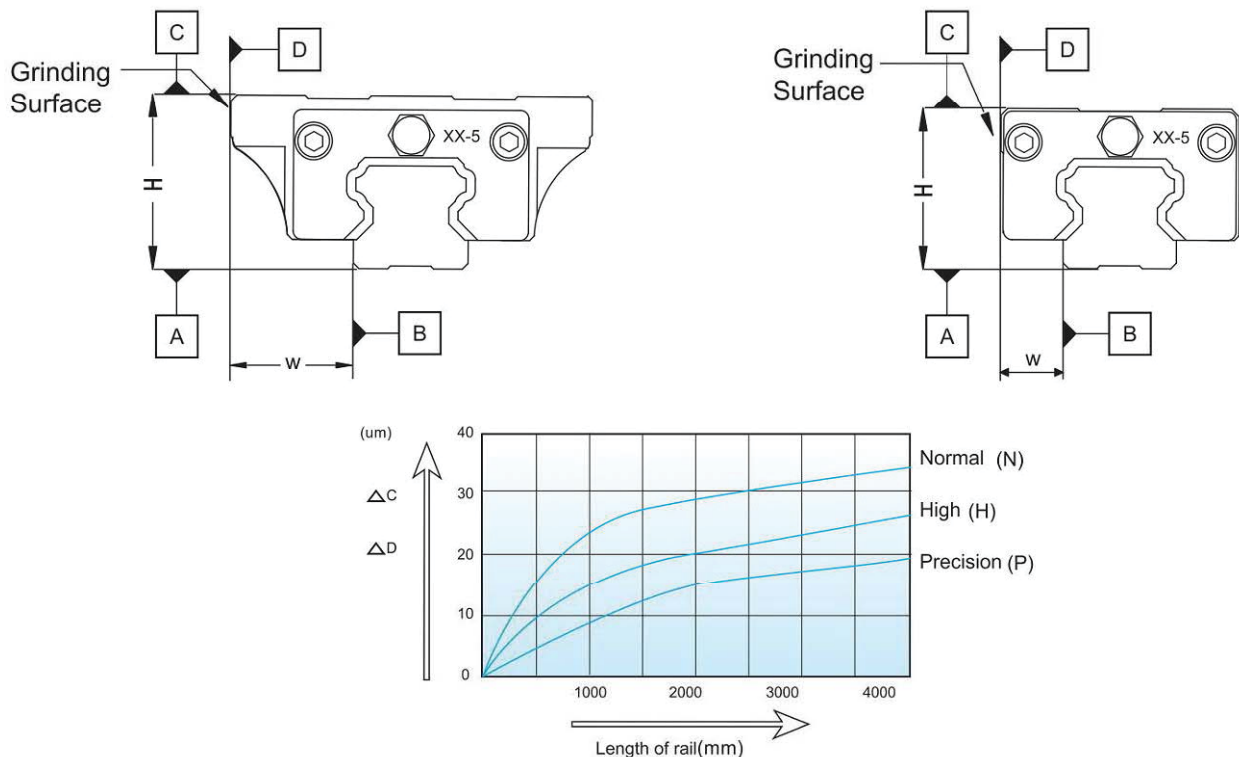


Fig.1.6.1 BR rail length and running parallelism

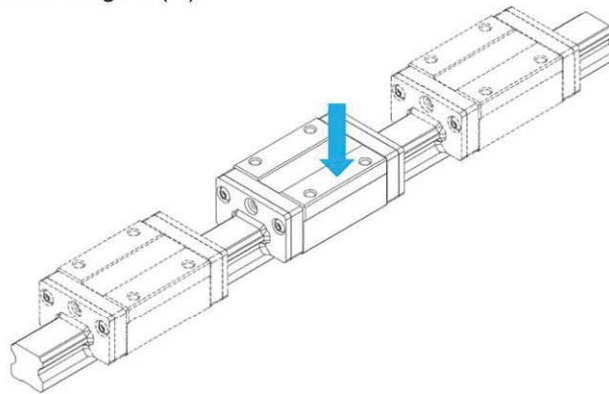
ITEM	GRADE		
	Normal (N)	High (H)	Precision (P)
Tolerance of height (H)	± 0.1	± 0.04	$\begin{matrix} 0 \\ -0.04 \end{matrix}$
Tolerance of width (W)	± 0.1	± 0.04	$\begin{matrix} 0 \\ -0.04 \end{matrix}$
Difference of heights (ΔH)	0.03	0.02	0.01
Difference of widths (ΔW)	0.03	0.02	0.01
Running parallelism of BR Block between surface A & C	ΔC Refer to Fig.1.6.1		
Running parallelism of BR Block between surface B & D	ΔD Refer to Fig.1.6.1		

Unit : mm

1.6.1 Definitions

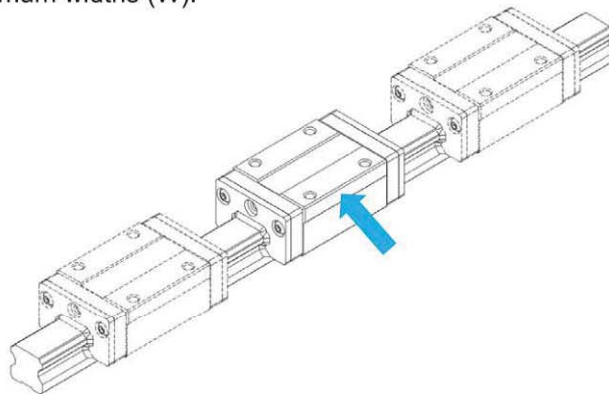
(1) Difference of heights ΔH

The difference is obtained by measuring the different blocks on the same rail position in terms of the difference between the maximum and minimum heights (H).



(2) Difference of widths ΔW

The difference is obtained by measuring the different blocks on the same rail position in terms of the difference between the maximum and minimum widths (W).



(3) Running parallelism

This is refer to the running parallelism tolerance between the two reference planes of rail and block when the block is moved along the entire rail length, the rail being screwed to the reference plane.

1.7 Preload

1.7.1 Preload and rigidity

To adjust a linear guideway to the specific demands of a given application, it is advisable to choose an appropriate preload. This will positively affect the operating behavior of the entire linear guidance system. Preload can enhance the performance of an entire linear guidance system and increase the rigidity of the block under load.

1.7.2 Applying a preload

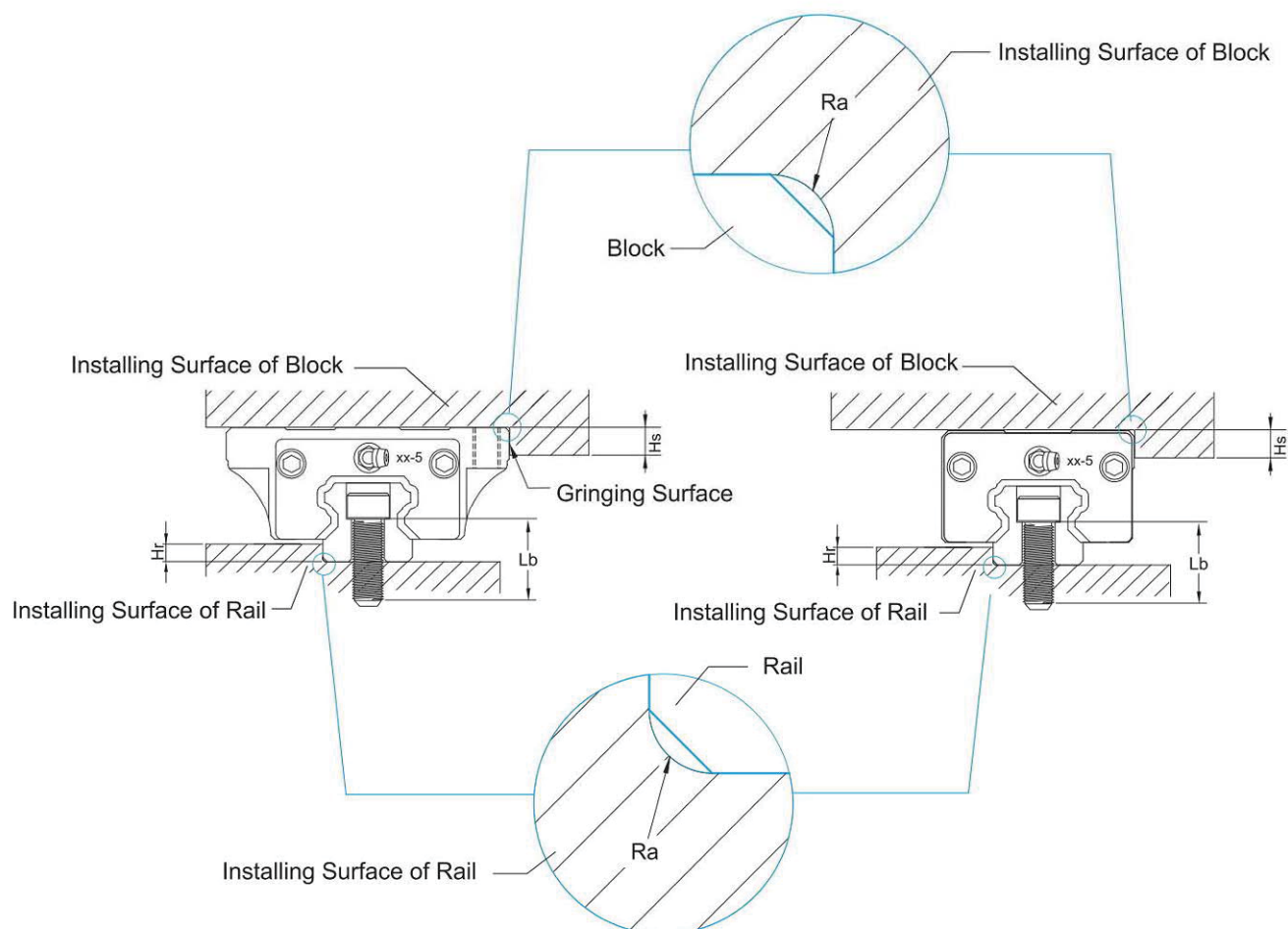
Preload is determined by the diameter of the balls and increases with larger diameter. BR linear guideway are available in five classes. For additional information, refer to table 1.7.1.

Table 1.7.1 Preload class and preload force

Class \ Item	Code	Preload force
Clearance	ZF	0
No Preload	Z0	0
Light Preload	Z1	0~0.02 C
Middle Preload	Z2	0.02C~0.05 C
Heavy Preload	Z3	0.05C~0.07 C

C : Basic dynamic load rating

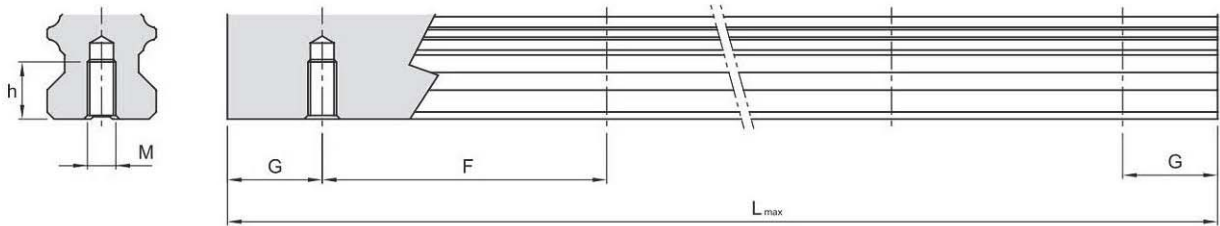
1.8 Suggestion in Assembly



Item	Maximum Fillet (Ra)	Maximum Height (Hr) rail shoulder		Height (Hs) block shoulder		Rail Bolt Length (Lb) suggestion
		Min.	Max.	Min.	Max.	
BR-15	0.8	2.5	3.5	3	4	M4*16
BR-20	0.8	2.5	4	4	5	M5*20
BR-25	1.2	3	5	4	5	M6*25
BR-30	1.2	3	5	4	5	M8*30
BR-35	1.2	3.5	6	5.5	6.5	M8*30
BR-45	1.6	4.5	8	6	8	M12*40

Unit : mm

1.9 Dimension of Blind Hole



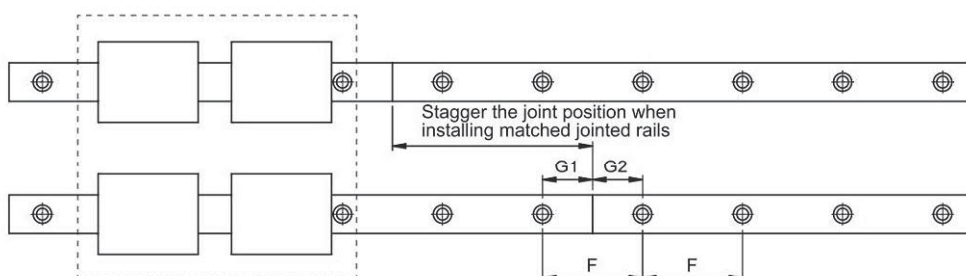
Nominal Size	Screw Size (M)	Screw Thread h (mm)
15	M5	8
20	M6	10
25	M6	12
30	M8	15
35	M8	17
45	M12	24

1.10 Jointed Rail

(1) Jointed rails can be ordered if a rail length is required that exceeds standard and maximum length of rail. Refer to below for markings.



(2) To avoid accuracy problems due to discrepancies between the two rails such as matched pair, butt-joint rails, the jointed positions should be staggered as below.



1.11 Lubrication

The objective of lubrication includes the reduction of friction among the rolling elements as well as between the rolling elements and the raceway, prevention of sintering, reduction of wear, and the prevention of rust by forming a film over the surfaces. To maximize the performance of a linear system, the lubricant type and a lubrication method appropriate for the operating environment should be selected.

1.11.1 Factory pre-lubrication

BR blocks are factory pre-lubricated with Grease No. 2 and the lubricant reservoir is factory pre-lubricated with Grease No. 0. The technical data of grease can be found in table 1.11.2.

A preservative is applied to the BR rails and blocks to protect them during transport, storage and mounting. When using the recommended lubricants, it is not necessary to remove this preservative.

1.11.2 Initial lubrication

Initial lubrication is not required, as BR linear guideway is delivered pre-lubricated and ready to install unless specified otherwise. In cases where a different type of grease is required, the blocks should be thoroughly cleaned and regreased prior to mounting. Please refer to table 1.11.1 for appropriate grease quantity.

This initial lubrication has to be applied according to the steps below:

1. Grease each block according to the quantities listed in table 1.11.1.
2. Move the block three times backwards and forwards with stroke = block length.
3. Repeat steps 1 and 2 again, twice.
4. Check if a lubricating film is visible on the rail.

1.11.3 Grease re-lubrication

Re-lubrication intervals recommendation

- Nominal size 30 and below: per 100km; nominal size 35 and above: per 40km
- Make supplementary periodically per 3 months.

1.11.4 Oil re-lubrication

- First time re-lubrication: apply to whole internal block, please refer to table 1.11.1 for appropriate grease amount.
- Re-lubrication amount: $Q = n/150$ (cm³/hrs)
n: Nominal size of rail (mm)
- Recommended lubrication oil spec. ISO VG32~68; ISO VG68~220

Recommended Re-lubrication Amount						unit : ml
Nominal Size	Amount	Nominal Size	Amount	Nominal Size	Amount	
BRC15A0	2~3	BRC25R0	3~4	BRD35A0	6~8	
BRC15R0		BRC25U0	2~3	BRD35R0		
BRC15U0		BRC25SU		BRD35U0		
BRC15SU	1~2	BRC25LA	4~6	BRD35SU	4~6	
BRC20A0	2~3	BRC25LR		BRD35LA	7~10	
BRC20R0		BRC30A0		BRD35LR		
BRC20U0		BRC30R0		BRD45A0	9~14	
BRC20SU		BRC30U0		BRD45R0		
BRC20LA	3~4	BRC30SU	3~5	BRD45U0	11~17	
BRC20LR		BRC30LA	6~8	BRD45LA		
BRC25A0		BRC30LR		BRD45LR		

Table 1.11.1

1.11.5 Grease Lubrication No. and Spec.

NGLI item	No.0	No.2
Drop point (°C)	205	206
Penetration (60worked, 1/10mm)	378	282
Penetration (1000worked, 1/10mm)	382	288
Appearance	Amber	Amber
Oxidation stability (100hrs, Pressure Drop, psi)	4	3
Oxidation stability (500hrs, Pressure Drop, psi)	8	7
Anti-corrosion Test	Pass	Pass
Copper plate corrosion (100°C, 24hrs)	1a	1a
Soap base	Lithium	Lithium
Rinsing water resistance (79.4°C, %)	N/A	2.5
Viscosity of base oil (cSt, @100°C)	164.5	164.5

Table 1.11.2

1.12 Technical Data

1.12.1 Definition of load rating

Basic static load rating: C_0

We define the basic static load rating C_0 as a static load of constant magnitude acting in one direction under which the sum of the permanent deformations of rolling elements and raceway equals 0.0001 times of the diameter of the rolling elements.

Basic dynamic load rating: C

When each group of identical linear motion system is applied independently under the same condition, basic dynamic load rating C is the load of constant magnitude acting in one direction that results in a nominal life of 50 km.

1.12.2 Static safety coefficient : f_s

Static safety factor f_s is the ratio of the basic static load rating C_0 to the load acting on the linear motion system.

$$f_s = (f_c \cdot C_0) / P \quad \text{or} \quad f_s = (f_c \cdot M_0) / M$$

f_s : static safety factor

f_c : contact factor

C_0 : basic static load rating

M_0 : static permissible moment

P : design load

M : design moment

Reference value of static safety factor f_s shown below :

Operating condition	Load condition	Minimum f_s
Normally stationary	Small impact and deflection	1.0 ~ 1.3
	Impact or twisting load is applied	2.0 ~ 3.0
Normally moving	Small impact or twisting load is applied	1.0 ~ 1.5
	Impact or twisting load is applied	2.5 ~ 5.0

1.12.3 Contact coefficient : f_c

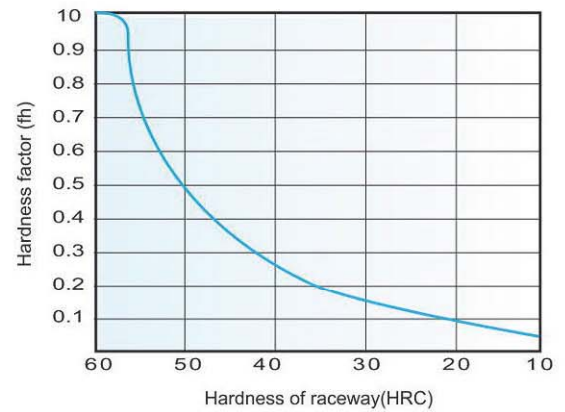
In linear motion system, it is hard to obtain identical load distribution due to moments, errors and other factors on the mounting surfaces. When multiple blocks on a rail are used in close contact, the basic load ratings C and C_0 corresponding with contact coefficients are shown aside.

Number of blocks in close contact	Contact factor
2	0.81
3	0.72
4	0.66
5	0.61
Normal operation	1

1.12.4 Hardness coefficient : f_h

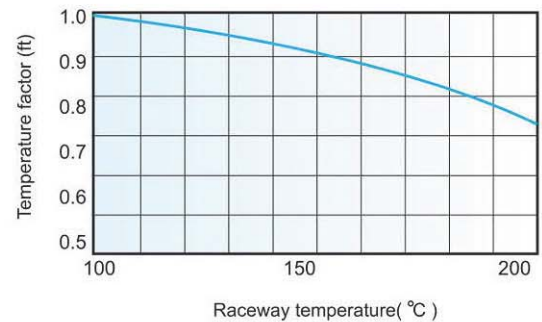
For linear motion system, its optimum load carrying capacity is HRC 58 to 64 hardness on the raceways.

If the hardness is under HRC 58, both the basic dynamic load rating and basic static load rating should be multiplied by hardness coefficient f_h .



1.12.5 Temperature coefficient : f_t

When a linear motion system is subject to temperature above 100°C, the temperature factor should be taken into consideration.



1.12.6 Load coefficient : f_w

Impacts and vibrations	Speed (V)	Measured vibration (G)	f_w
Without external Impacts or Vibrations	At low speed $V \leq 15\text{m/min}$	$G \leq 0.5$	1~1.5
Without significant Impacts or Vibrations	At medium speed $15 < V \leq 60\text{m/min}$	$0.5 < G \leq 1.0$	1.5~2.0
With external Impacts or Vibrations	At high speed $V > 60\text{m/min}$	$1.0 < G \leq 2.0$	2.0~3.5

1.12.7 Formula of nominal life : L

Given the basic dynamic load rating C and the applied load P , the following formula shows the nominal life L of a linear motion system using steel balls.

$$L = \left(\frac{f_h * f_t * f_c}{f_w} * \frac{C}{P} \right)^3 * 50$$

L : Nominal life

C : Basic dynamic load rating

P : Applied load

f_h : Hardness factor

f_t : Temperature factor

f_c : Contact factor

f_w : Load factor

1.13 Friction

$$F = \mu * W + f$$

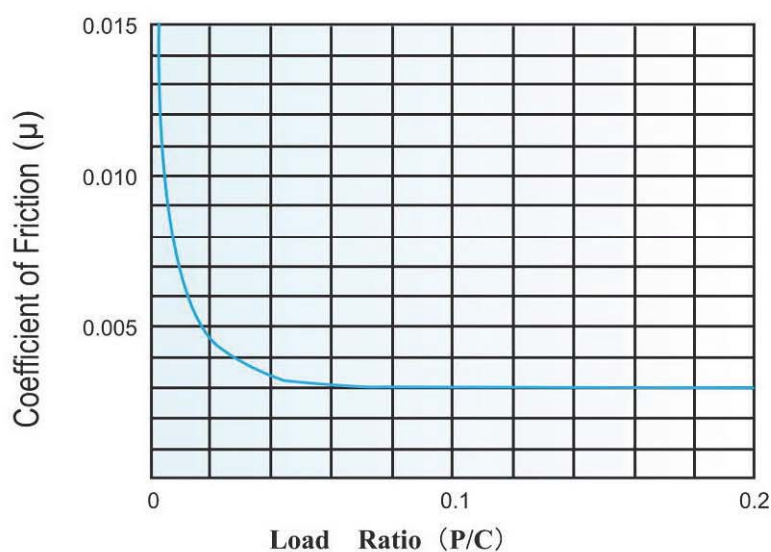
F : Friction (kgf)

W : Normal Loads (kgf)

μ : Coefficient of Friction

f : Friction Resistance of Standard Seal

μ : Coefficient of Friction



P : Load (kgf)

C : Basic Dynamic Load Rating (kgf)

f : Friction Resistance of Standard Seal



Friction Resistance	
Model	Standard Seal
BR15	0.4
BR20	0.5
BR25	0.6
BR30	0.8
BR35	0.95
BR45	1.4

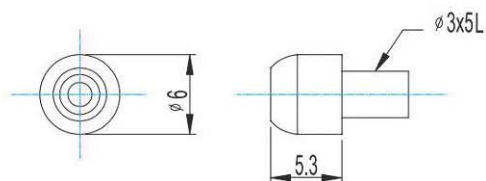
Remark: The value is based on the block with standard seal at both ends and added with Grease No. 2.

1.14 Grease Nipple


1.14.1 Grease Nipple (Standard)

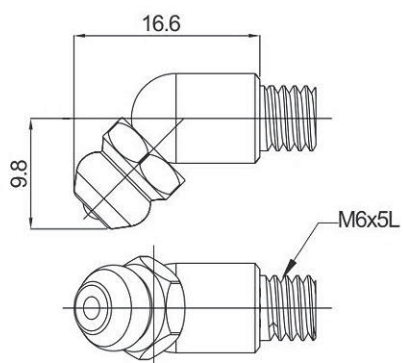
P140129 (NLA01)

Standard block	15		20		25		30		35		45		55	
Standard block + U Type Metal Frame Scraper Plate	15		20		25		30		35		45		55	







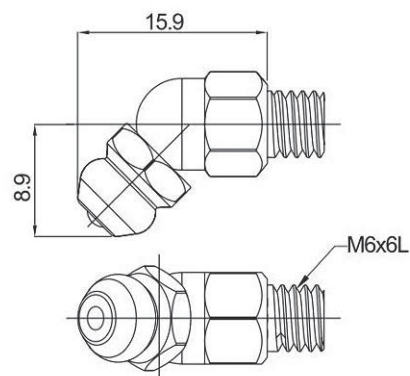
P140880

Standard block	15		20		25		30		35		45		55	
Standard block + U Type Metal Frame Scraper Plate	15		20		25		30		35		45		55	







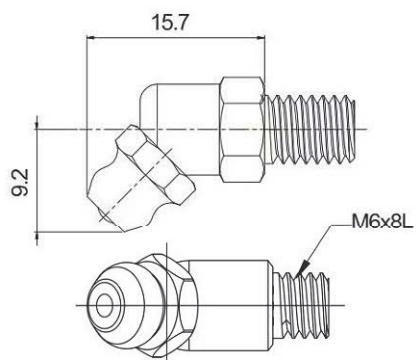
P140135 (NLB02)

Standard block	15		20		25		30		35		45		55	
Standard block + U Type Metal Frame Scraper Plate	15		20		25		30		35		45		55	







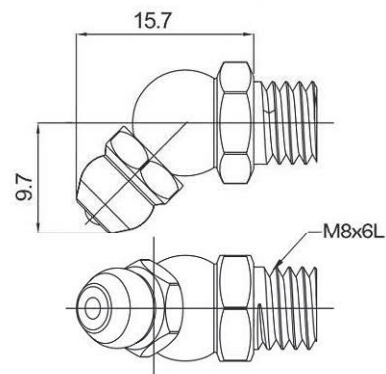
P140137 (NLB03)

Standard block	15		20		25		30		35		45		55	
Standard block + U Type Metal Frame Scraper Plate	15		20		25		30		35		45		55	



P140138 (NLB04)

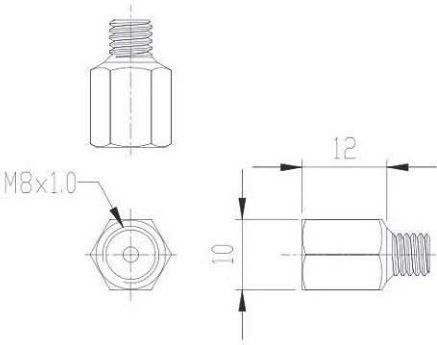
Standard block	15		20		25		30		35		45		55	
Standard block + U Type Metal Frame Scraper Plate	15		20		25		30		35		45		55	



1.14.2 Plumbing Nipple (VN-PA)

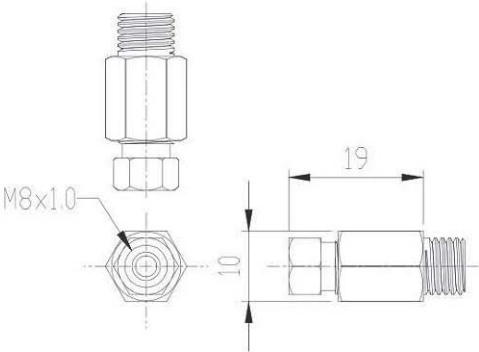
P140142 (NPA01)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



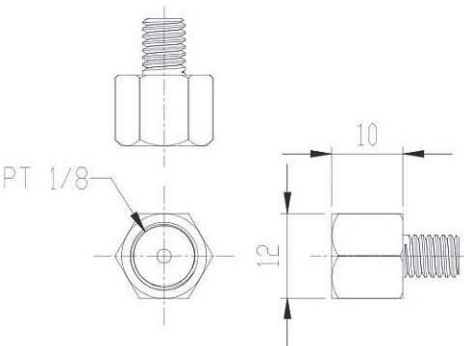
P140143 (NPA02)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



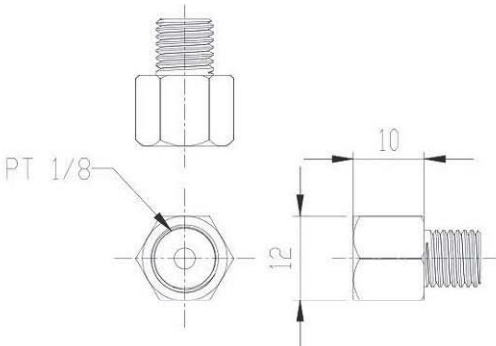
P140144 (NPA03)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



P140145 (NPA04)

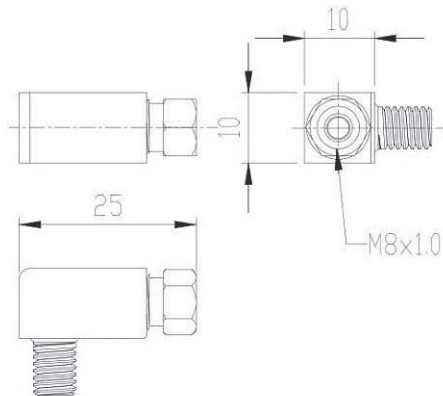
Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



1.14.3 Plumbing Nipple (VN-PC)

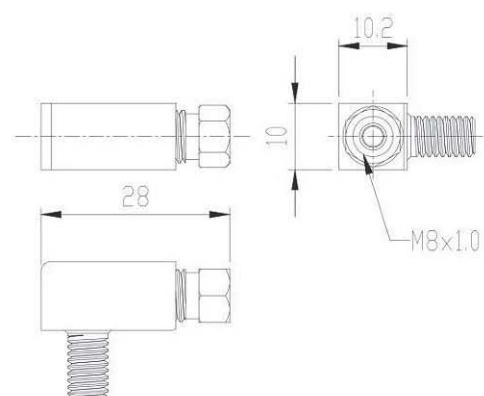
P140147 (NPC02)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



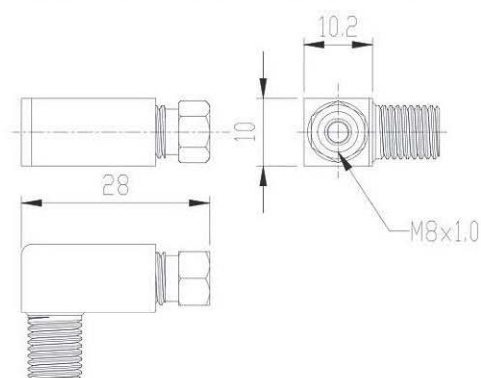
P140148 (NPC03)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



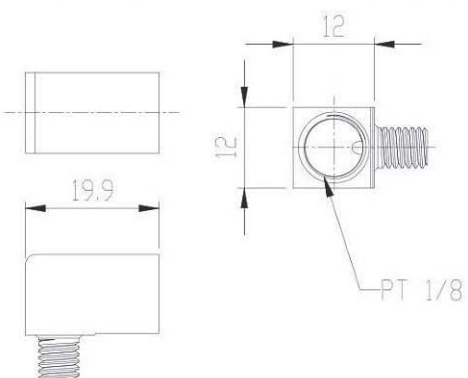
P140150 (NPC05)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



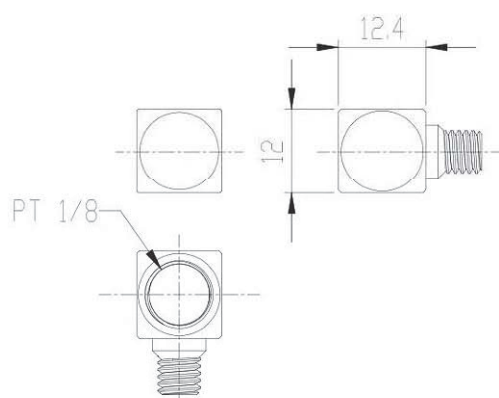
P140153 (NPC08)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



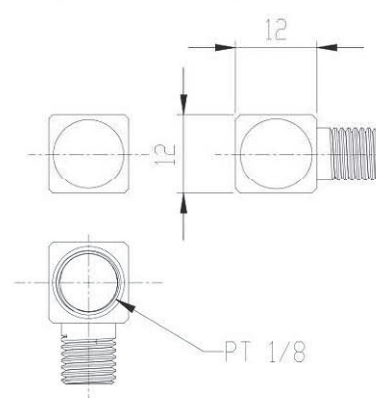
P140146 (NPC01)

Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



P140152 (NPC07)

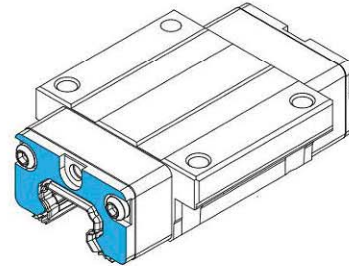
Standard block	15	20	25	30	35	45	55
Standard block + U Type Metal Frame Scraper Plate	15	20	25	30	35	45	55



1.15 Accessories

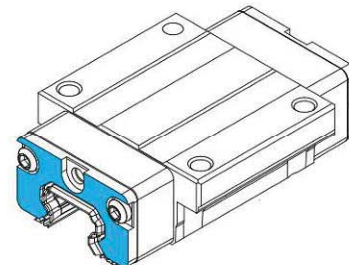
1.15.1 Standard Seal

Standard seal are contact seals that can be attached to the block end faces. Standard seal is suitable for normal environment.



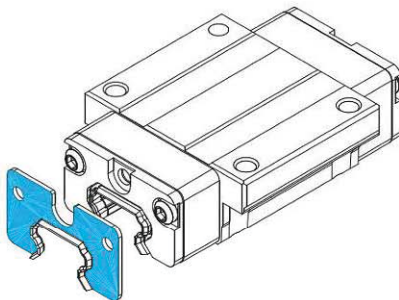
1.15.2 Low Friction Shield

Low friction shields are non-contact seals that can reduce running resistance and replace standard seal. They are suitable for the low pollution environment, for example, cleanroom.



1.15.3 Scraper plate

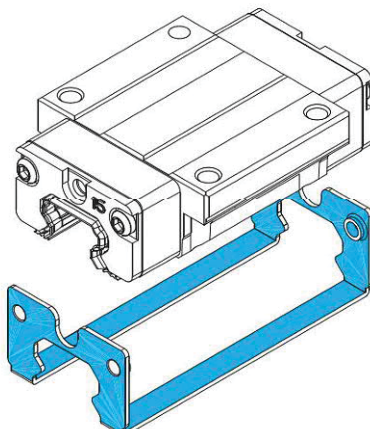
Scraper plates are spring-steel, non-contact components. They protect the standard seal from, for example, coarse contaminants or hot metal chips.



Model	Thickness (mm)
BR15	1
BR20	1
BR25	1.5
BR30	1
BR35	1
BR45	1

1.15.4 U Type Metal Frame

U type metal frames can hold the two side seals and change the block dimension values of L and E as below table. Refer to P38~P41 for definition of L and E.



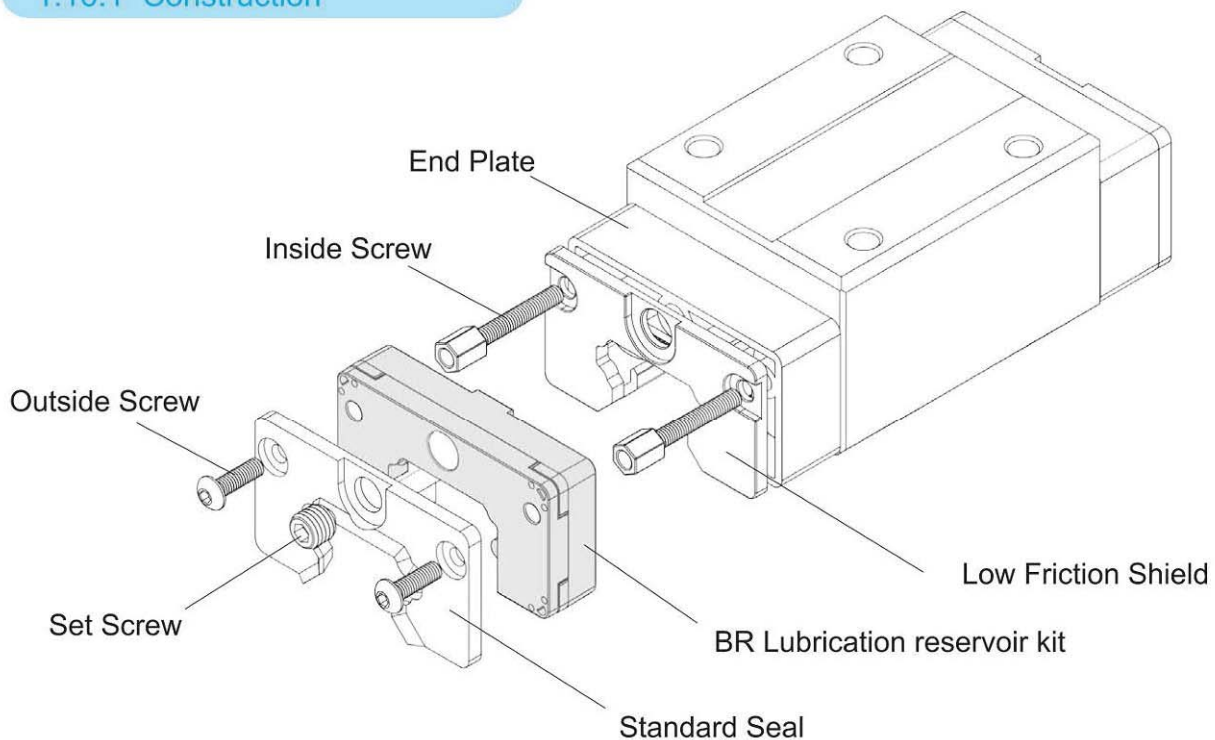
Model	L	E
BR15	68	2.6
BR20	79.8	3
BR25	90	5
BR30	111	7
BR35	111	7.5
BR45	140.2	12

Unit : mm

1.16 BR Lubrication Reservoir Kit

BR lubrication reservoir kit is run by a high oil content of reservoir and optimization of film forming designed to provide adequate and proper amount of lubricant to grooves of rails, thus reaching good effect of environmental protection and extend relubrication intervals.

1.16.1 Construction



1.16.2 Characteristics

(1) Effectively extend the relubrication intervals

- Make supplementary periodically up to 4000km

(2) High reliability and interchangeability

- End-users can install or replace BR lubrication reservoir kit by themselves easily.
- Replace BR lubrication reservoir kit on the rail directly without moving the block out.

(3) Friendly to environment

- Through optimization of the film forming methods to reduce the waste of lubrication oil, thus preventing environmental pollution.

(4) High-performance lubrication oil

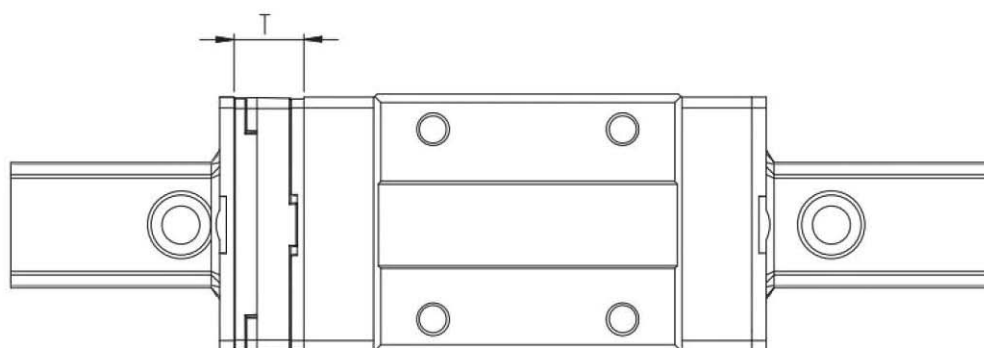
- Using the lubrication oil which is compliance with ISO3448, viscosity grade 680.
 - Perfectly compatible with the lubrication oil of blocks.
- Allowable temperature range: -10~50°C (working continuously) or -10~80°C (working temporarily)

1.16.3 Applicable Scope

- Series : BR Series
- Size : 15/20/25/30
- Block : available for all block types
- End Plate : available for standard end plate only
- Preload : available for all preload classes
- Precision : available for all accuracy classes

1.16.4 Thickness

BR Lubrication reservoir kit will increase the length of block.
Please refer to the below table for thickness T.



Thickness T of BR Lubrication reservoir kit

SIZE	BR lubrication reservoir kit thickness T (mm)
15	13
20	13
25	13
30	10

1.17 Product Overview

BRC-A0

BRD-A0

Flanged block, standard length,
standard height



BRC-R0

BRD-R0

Slim-line block, standard length,
extended height



BRC-U0

BRD-U0

Slim-line block, standard length,
standard height



BRR
profile rail with blind holes



BRR
profile rail with standard holes



BRC-LA

BRD-LA

Flanged block, extended length,
standard height



BRC-LR

BRD-LR

Slim-line block, extended length,
extended height



BRC-SU

BRD-SU

Slim-line block, short length,
standard height

1.18 Ordering Key of System

B R S 1 5 - A 0 C 2 Z 1 - 1 0 8 0 0 N D 0 - A 0 S W 2

Size _____
15, 20, 25, 30, 35, 45

Block Type ¹⁾ _____
 A0 Flanged block, standard length, standard height
 LA Flanged block, extended length, standard height
 SU Slim-line block, short length, standard height
 U0 Slim-line block, standard length, standard height
 R0 Slim-line block, standard length, extended height
 LR Slim-line block, extended length, extended height

End Cap Type ²⁾ _____
 C Standard End Cap (for 15, 20, 25, 30)
 D Short End Cap (for 15, 20, 25, 30, 35, 45)

Number of blocks per rail _____
 1~9 1 ~ 9 blocks per rail
 A~W > 9 blocks per rail (10=A, 11= B, 12=C...)

Preload Class ²⁾ _____
 ZF Clearance
 Z0 No preload
 Z1 Light preload, 0~0.02C
 Z2 Medium preload, 0.02~0.05C
 Z3 Heavy preload, 0.05~0.07C

Rail Length _____
00080~99999 mm (1 mm steps)

Accuracy Class ²⁾ _____
 N Normal
 H High
 P Precision

Rail Hole _____
 D0 Standard hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)
 F0 Standard hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)
 D4 Blind hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)
 F4 Blind hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)
 DX Special machining, customized according to drawing number

Joint Rail Track _____
 A Yes
 O No

Rail Treatment ³⁾ _____
 O Standard (anti-rust oil)
 B Black oxidation plating
 H Hard chromium plating

Sealing _____
 S Standard seal (only end seal)
 O Low friction shield
 1 Standard seal + Scraper plate
 U ¹⁾ Standard seal + Metal frame to hold two side seals
 V Standard seal + BR Lubrication reservoir kit
 W Standard seal + Scraper plate + BR Lubrication reservoir kit

No. of Parallel Rails _____
 00 Single Rail
 W2~W9 Parallel Rails (W2: 2 rails, W3: 3 rails...)

1) Carriage type cross table

●/○ : Block type available

● : Sealing U type, Standard seal + Metal frame to hold two side seals

BRC (Standard End Cap)	A0	LA	SU	U0	R0	LR
15	●		○	●	●	
20	●	○	○	●	●	○
25	●	○	○	●	●	○
30	●	○	○	●	●	○
35						
45						

BRD (Short End Cap)	A0	LA	SU	U0	R0	LR
15	○		○	○	○	
20	○	○	○	○	○	○
25	○	○	○	○	○	○
30	○	○	○	○	○	○
35	●	○	○	●	●	○
45	●	○		●	●	○

2) Refer to following table for limitation

System			
Accuracy	P	H	N
Preload	-	-	ZF
	Z0	Z0	Z0
	Z1	Z1	Z1
	Z2	Z2	Z2
	Z3	Z3	Z3

3) Carriage Surface Treatment

A. Standard: Anti-rust oil

B. Non-Standard: See Drawing

4) Nipple/set screw quantity per block

A. Size 15: 0° nipple(2 pcs)

B. Size 20/25/30/35/45: 45° nipple(1 pcs) + screw(1 pcs)

1.19 Ordering Key of Block

	B	R	C	1	5	-	A	0	Z	1	-	N	0	S
End Cap Type ¹⁾														
C	Standard End Cap (for 15, 20, 25, 30)													
D	Short End Cap (for 15, 20, 25, 30, 35, 45)													
Size	15, 20, 25, 30, 35, 45													
Block Type ¹⁾														
A0	Flanged block, standard length, standard height													
LA	Flanged block, extended length, standard height													
SU	Slim-line block, short length, standard height													
U0	Slim-line block, standard length, standard height													
R0	Slim-line block, standard length, extended height													
LR	Slim-line block, extended length, extended height													
Preload Class														
ZF	Clearance													
Z0	No preload													
Z1	Light preload, 0~0.02C													
Accuracy Class														
N	Normal													
Block Treatment														
O	Standard (anti-rust oil)													
B	Black oxidation plating													
H	Hard chromium plating													
Sealing														
S	Standard seal (only end seal)													
0	Low friction shield													
1	Standard seal + Scraper plate													
U ¹⁾	Standard seal + Metal frame to hold two side seals													

1) Block type cross table

●/○ : Block type available

● : Sealing U type, Standard seal + Metal frame to hold two side seals

BRC (Standard End Cap)	A0	LA	SU	U0	R0	LR
15	●	○	○	●	●	○
20	●	○	○	●	●	○
25	●	○	○	●	●	○
30	●	○	○	●	●	○
35						
45						

BRD (Short End Cap)	A0	LA	SU	U0	R0	LR
15	○		○	○	○	○
20	○	○	○	○	○	○
25	○	○	○	○	○	○
30	○	○	○	○	○	○
35	●	○	○	●	●	○
45	●	○		●	●	○

2) Nipple/set screw quantity per block

A. Size 15: 0° nipple(2 pcs)

B. Size 20/25/30/35/45: 45° nipple(1 pcs) + screw(1 pcs)

1.20 Ordering Key of Rail

B

R

R

1

5

-

1

0

8

0

0

N

D

0

-

A

0

Size

15, 20, 25, 30, 35, 45

Rail Length

00080-99999 mm (1 mm steps)

Accuracy Class

N Normal

Rail Hole

D0

Standard hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)

F0

Standard hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)

D4

Blind hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)

F4

Blind hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)

DX

Special machining, customized according to drawing number

Joint Rail Track

A

Yes

0

No

Rail Treatment

0

Standard (anti-rust oil)

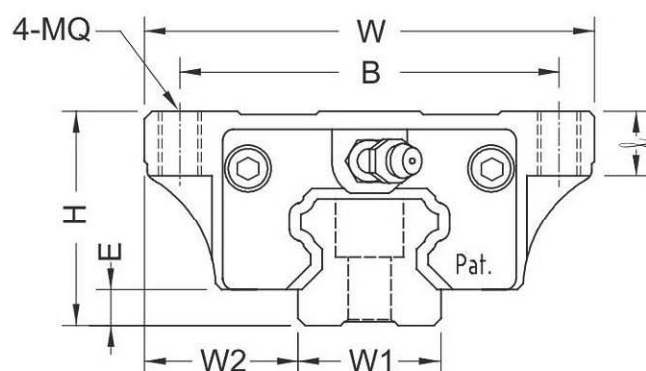
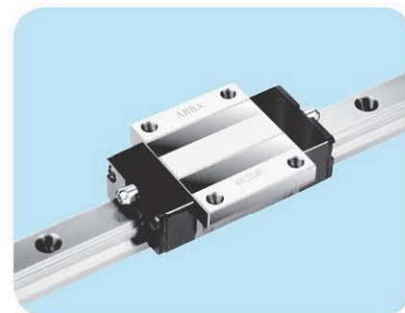
B

Black oxidation plating

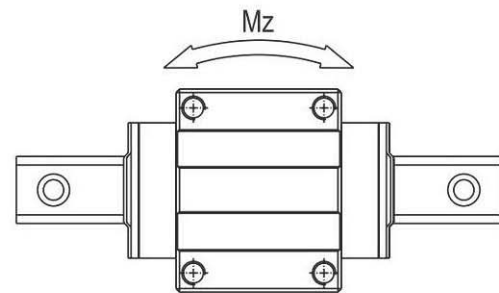
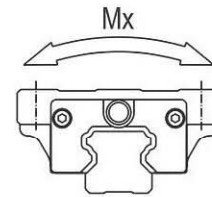
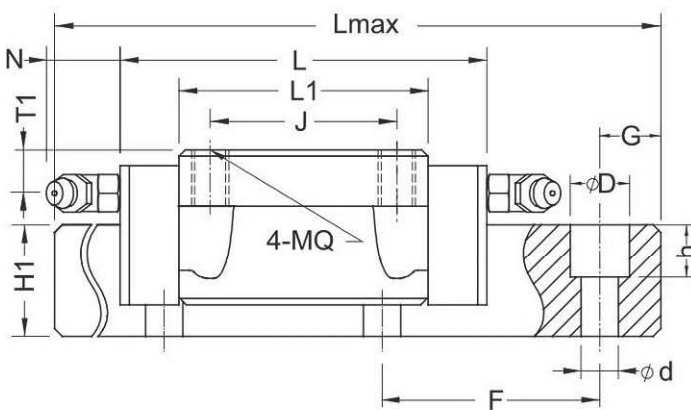
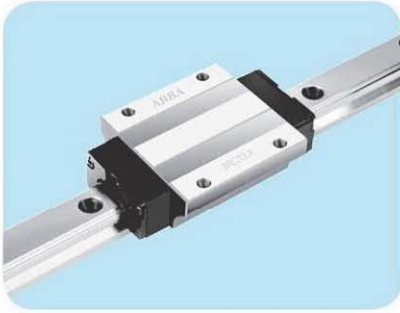
H

Hard chromium plating

1.21 BRC-A0/LA, BRD-A0/LA



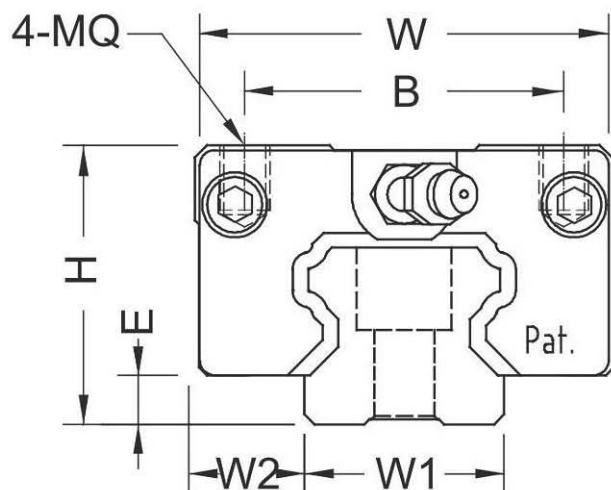
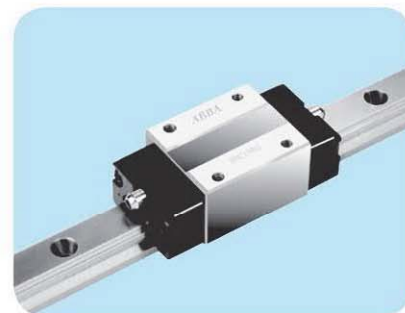
Model No.	Assembly (mm)				BR block (mm)							BR rail (mm)			
	H	W	W2	E	L	BxJ	MQxL	L1	Oil hole	T1	(N)	W1	H1	F	dxDxh
BRC15A0	24	47	16	4.6	66	38x30	M5x8	40	ø 3	4.3	5	15	14	60	4.5x7.5x5.8
BRD15A0					56										
BRC20A0	30	63	21.5	5	77.8	53x40	M6x9	48.8	M6x1	7	15.6	20	18	60	6x9.5x9.0
BRD20A0					67.8			63.4							
BRC20LA					92.4										
BRD20LA					82.4										
BRC25A0	36	70	23.5	7	88	57x45	M8x12	57	M6x1	7.8	15.6	23	22	60	7x11x9.5
BRD25A0					78			79.1							
BRC25LA					110.1										
BRD25LA					100.1										
BRC30A0	42	90	31	9	109	72x52	M10x12	72	M6x1	7	15.6	28	26	80	9x14x12.5
BRD30A0					99			94.3							
BRC30LA					131.3										
BRD30LA					121.3										
BRD35A0	48	100	33	9.5	109	82x62	M10x13	80	M6x1	8	15.6	34	29	80	9x14x12.5
BRD35LA					134.8			105.8							
BRD45A0	60	120	37.5	14	138.2	100x80	M12x15	105	M8x1	8.5	16	45	38	105	14x20x17.5
BRD45LA					163			129.8							



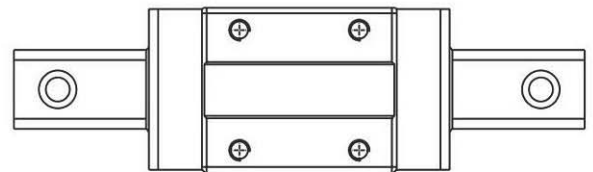
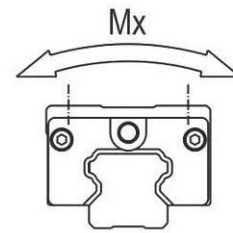
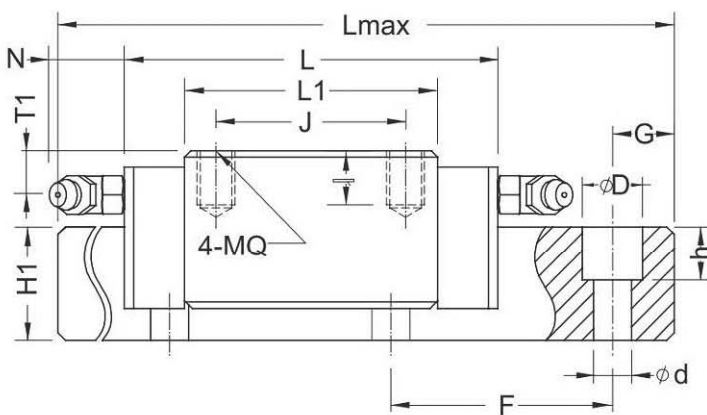
Model No.	Ref.Data (mm)		Basic Load Rating (Kgf)		Static Moment (Kgf*m)			Weight	
	Lmax	G	(C)	(C o)	Mx	My	Mz	Block(Kg)	Rail(Kg/m)
BRC15A0	4000	20	850	1350	10.1	6.8	6.8	0.21	1.4
BRD15A0									
BRC20A0	4000	20	1400	2400	24	14.6	14.6	0.4	2.6
BRD20A0									
BRC20LA			1650	3000	30	23.8	23.8	0.52	
BRD20LA									
BRC25A0	4000	20	1950	3200	36.8	22.8	22.8	0.57	3.6
BRD25A0									
BRC25LA			2600	4600	52.9	45.5	45.5	0.72	
BRD25LA									
BRC30A0	4000	20	2850	4800	67.2	43.2	43.2	1.1	5.2
BRD30A0									
BRC30LA			3600	6400	89.6	75.4	75.4	1.4	
BRD30LA									
BRD35A0	4000	20	3850	6200	105.4	62	62	1.6	7.2
BRD35LA			4800	8300	141.1	109.8	109.8	2	
BRD45A0	4000	22.5	6500	10500	236.3	137.8	137.8	2.7	12.3
BRD45LA			7700	13000	292.5	210.9	210.9	3.6	

Note: BR35 and BR45 are not equipped with self-lubricant parts.

1.22 BRC-R0/LR, BRD-R0/LR



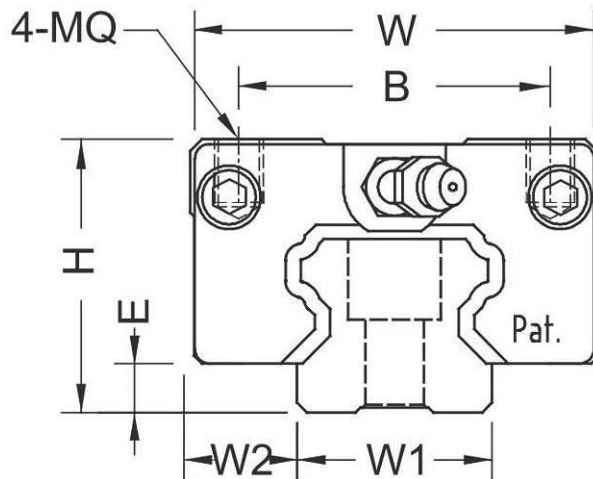
Model No.	Assembly (mm)				BR block (mm)							BR rail (mm)			
	H	W	W2	E	L	BxJ	MQxL	L1	Oil hole	T1	(N)	W1	H1	F	dxDxh
BRC15R0	28	34	9.5	4.6	66	26x26	M4x6	40	∅ 3	8.3	5	15	14	60	4.5x7.5x5.8
BRD15R0					56										
BRC20R0	30	44	12	5	77.8	32x36	M5x8	48.8	M6x1	7	15.6	20	18	60	6x9.5x9.0
BRD20R0					67.8										
BRC20LR					92.4										
BRD20LR					82.4										
BRC25R0	40	48	12.5	7	88	35x35	M6x10	57	M6x1	11.8	15.6	23	22	60	7x11x9.5
BRD25R0					78	35x50									
BRC25LR					110.1										
BRD25LR					100.1										
BRC30R0	45	60	16	9	109	40x40	M8x13	72	M6x1	10	15.6	28	26	80	9x14x12.5
BRD30R0					99	40x60									
BRC30LR					131.3										
BRD30LR					121.3										
BRD35R0	55	70	18	9.5	109	50x50	M8x13	80	M6x1	15	15.6	34	29	80	9x14x12.5
BRD35LR					134.8	50x72		105.8							
BRD45R0	70	86	20.5	14	138.2	60x60	M10x16.5	105	M8x1	18.5	16	45	38	105	14x20x17.5
BRD45LR					163	60x80		129.8							



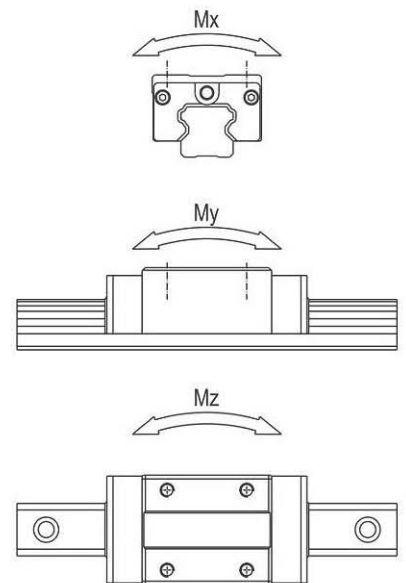
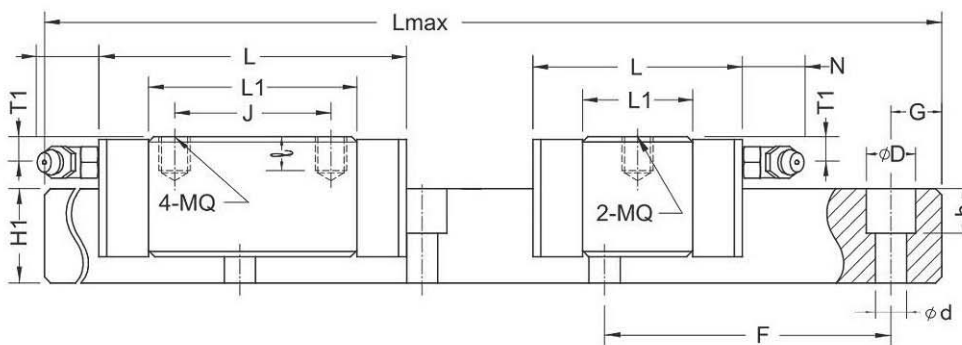
Model No.	Ref.Data (mm)		Basic Load Rating (Kgf)		Static Moment (Kgf*m)			Weight	
	Lmax	G	(C)	(Co)	Mx	My	Mz	Block(Kg)	Rail(Kg/m)
BRC15R0	4000	20	850	1350	10.1	6.8	6.8	0.19	1.4
BRD15R0									
BRC20R0	4000	20	1400	2400	24	14.6	14.6	0.31	2.6
BRD20R0									
BRC20LR			1650	3000	30	23.8	23.8	0.47	
BRD20LR									
BRC25R0	4000	20	1950	3200	36.8	22.8	22.8	0.45	3.6
BRD25R0									
BRC25LR			2600	4600	52.9	45.5	45.5	0.56	
BRD25LR									
BRC30R0	4000	20	2850	4800	67.2	43.2	43.2	0.91	5.2
BRD30R0									
BRC30LR			3600	6400	89.6	75.4	75.4	1.2	
BRD30LR									
BRD35R0	4000	20	3850	6200	105.4	62	62	1.5	7.2
BRD35LR			4800	8300	141.1	109.8	109.8	1.9	
BRD45R0	4000	22.5	6500	10500	236.3	137.8	137.8	2.3	12.3
BRD45LR			7700	13000	292.5	210.9	210.9	2.8	

Note: BR35 and BR45 are not equipped with self-lubricant parts.

1.23 BRC-SU/U0, BRD-SU/U0

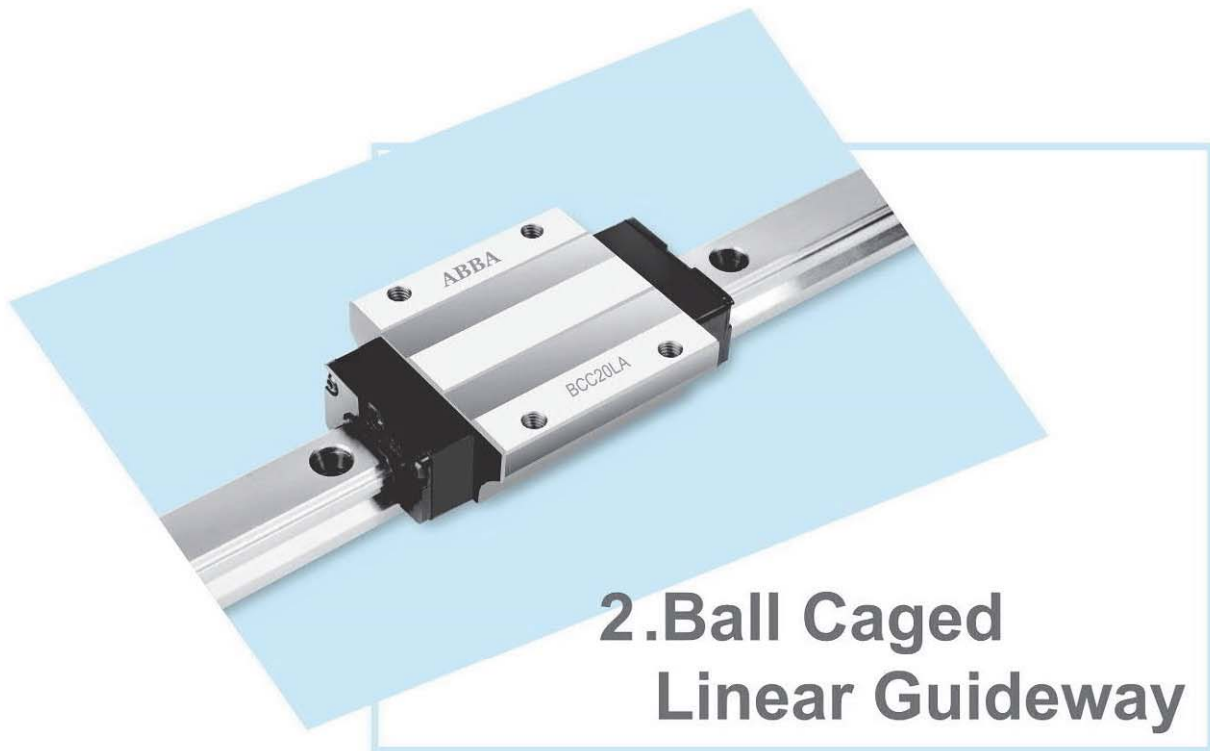


Model No.	Assembly (mm)				BR block (mm)							BR rail (mm)			
	H	W	W2	E	L	BxJ	MQxL	L1	Oil hole	T1	(N)	W1	H1	F	dxDxh
BRC15U0	24	34	9.5	4.6	66	26x26	M4x5.6	40	ø 3	4.3	5	15	14	60	4.5x7.5x5.8
BRD15U0					56			21.6							
BRC15SU					47.6	26x -									
BRD15SU					37.6										
BRC20U0	28	42	11	5	77.8	32x32	M5x6.4	48.8	M6x1	5	15.6	20	18	60	6x9.5x9.0
BRD20U0					67.8			28							
BRC20SU					57	32x -									
BRD20SU					47										
BRC25U0	33	48	12.5	7	88	35x35	M6x8	57	M6x1	4.8	15.6	23	22	60	7x11x9.5
BRD25U0					78			31.5							
BRC25SU					62.5	35x -									
BRD25SU					52.5										
BRC30U0	42	60	16	9	109	40x40	M8x11.5	72	M6x1	7	15.6	28	26	80	9x14x12.5
BRD30U0					99			38.6							
BRC30SU					75.6	40x -									
BRD30SU					65.6										
BRD35U0	48	70	18	9.5	109	50x50	M8x11.2	80	M6x1	8	15.6	34	29	80	9x14x12.5
BRD35SU					74.7	50x -		45.7							
BRD45U0	60	86	20.5	14	138.2	60x60	M10x13	105	M8x1	8.5	16	45	38	105	14x20x17.5



Model No.	Ref.Data (mm)		Basic Load Rating (Kgf)		Static Moment (Kgf*m)			Weight	
	Lmax	G	(C)	(Co)	Mx	My	Mz	Block(Kg)	Rail(Kg/m)
BRC15U0	4000	20	850	1350	10.1	6.8	6.8	0.17	1.4
BRD15U0									
BRC15SU			520	680	5.1	1.8	1.8	0.1	
BRD15SU									
BRC20U0	4000	20	1400	2400	24	14.6	14.6	0.26	2.6
BRD20U0									
BRC20SU			950	1400	7	4.9	4.9	0.17	
BRD20SU									
BRC25U0	4000	20	1950	3200	36.8	22.8	22.8	0.38	3.6
BRD25U0									
BRC25SU			1250	1750	17.5	6.9	6.9	0.21	
BRD25SU									
BRC30U0	4000	20	2850	4800	67.2	43.2	43.2	0.81	5.2
BRD30U0									
BRC30SU			1750	2400	33.6	11.6	11.6	0.48	
BRD30SU									
BRD35U0	4000	20	3850	6200	105.4	62	62	1.2	7.2
BRD35SU			2500	3650	62.1	20.9	20.9	0.8	
BRD45U0	4000	22.5	6500	10500	236.3	137.8	137.8	2.1	12.3

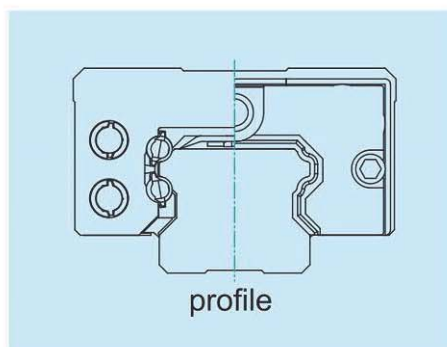
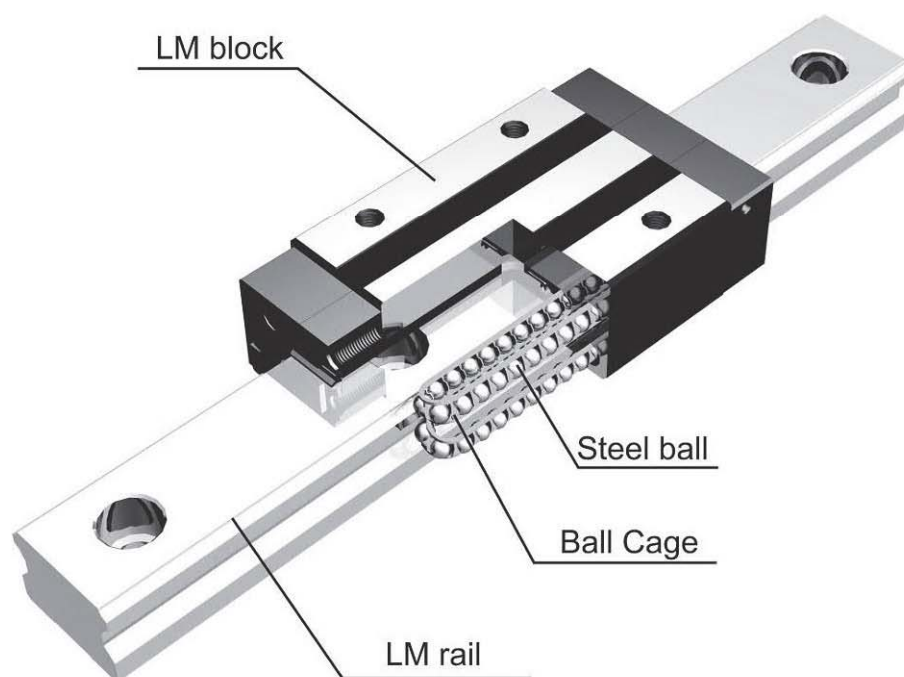
Note: BR35 and BR45 are not equipped with self-lubricant parts.



2.1 Features

- Perfect smoothness, free of maintenance and greasing work.
- Equivalent loading, long service life.
- Equipped with ball cage, lower noise and smoother running.

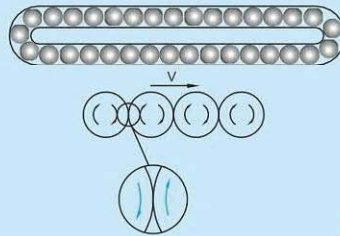
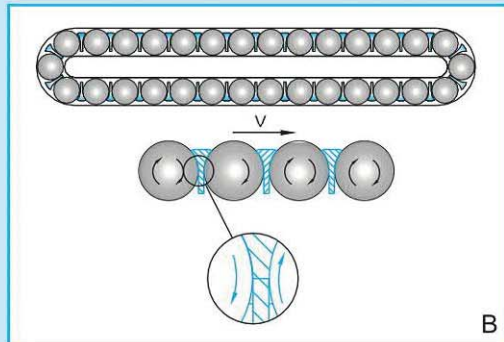
BC Series Component Display



BC series is equipped with **ABBA**'s latest developed Ball Cage, which lowers the noise, and enables high-speed running, longer life time, and outstanding accuracy.

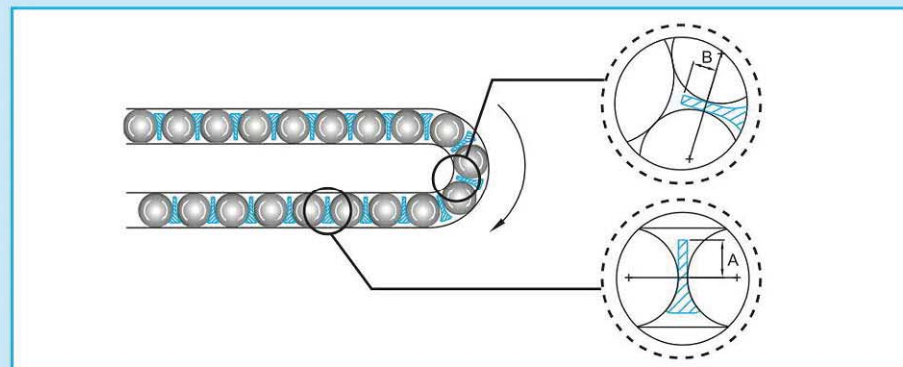
2.2 The Characteristic of BC Series

New (with ball cage)



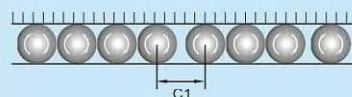
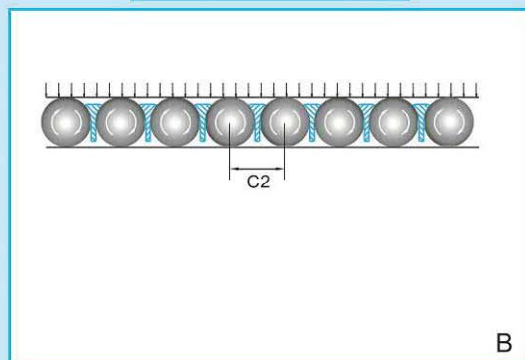
1. Steel balls chafe against each other in drawing A, in which the friction is two times larger than in drawing B, so that the life time in B is longer than in A.

Ball Caged LM

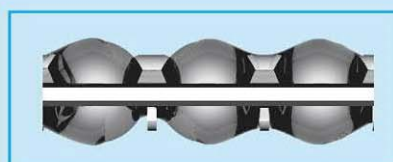
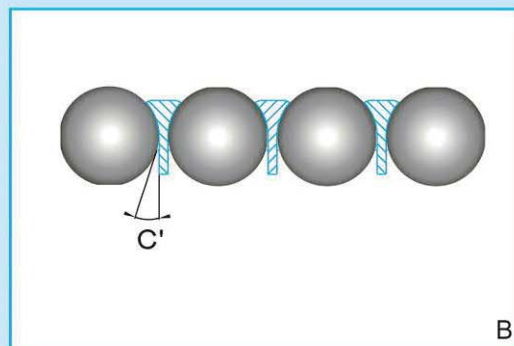


2. The difference between ABBA's ball cage and others' is that there will be no press and intervention from the inner part of the ball cage when it is turning that friction is lowered and life time extends.

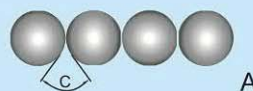
New (with ball cage)



3. It shows in drawing B that due to the ball cage, steel balls are loaded equivalently that their service life could be longer.



Oil membrane adheres easily between the ball cage and steel balls.



4. As demonstrated above, the included angle in drawing A(C) is larger than the one in drawing B(C') with ball cage. Therefore, oil membrane adheres easily in the structure of BC series.

2.3 Product Overview

BCC-A0

Flanged block, standard length,
standard height



BCC-R0

Slim-line block, standard length,
extended height



BCR

profile rail with blind holes



BCR

profile rail with standard holes



BCC-LA

Flanged block, extended length,
standard height



BCC-LR

Slim-line block, extended length,
extended height

2.4 Ordering Key of System

	B	C	S	2	0	-	A	0	C	2	Z	1	-	1	0	8	0	0	N	D	0	-	A	0	S	W	2
Size																											
20, 25, 30, 35, 45, 55																											
Block, Type																											
A0	Flanged block, standard length, standard height																										
LA	Flanged block, extended length, standard height																										
R0	Slim-line block, standard length, extended height																										
LR	Slim-line block, extended length, extended height																										
End Cap Type																											
C	Standard End Cap																										
Number of carriages per rail																											
1~9	1 ~ 9 blockes per rail																										
A~W	> 9 blockes per rail (10=A, 11= B, 12=C...)																										
Preload Class ¹⁾																											
ZF	Clearance																										
Z0	No preload																										
Z1	Light preload, 0~0.02C																										
Rail Length																											
00080~99999 mm (1 mm steps)																											
Accuracy Class ¹⁾																											
N	Normal																										
H	High																										
P	Precision																										
Rail Hole																											
D0	Standard hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)																										
F0	Standard hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)																										
D4	Blind hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.)																										
F4	Blind hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.)																										
DX	Special machining, customized according to drawing number																										
Joint Rail Track																											
A	Yes (Refer to drawing for detail)																										
0	No																										
Rail Treatment ²⁾																											
0	Standard (anti-rust oil)																										
Sealing																											
S	Standard seal (only end seal)																										
1	Standard seal + Scraper plate																										
No. of Parallel Rails																											
00	Single Rail																										
W2~W9	Parallel Rails (W2: 2 rails, W3: 3 rails...)																										

1) Refer to following table for limitation

System			
Accuracy	P	H	N
Preload	-	-	ZF
	Z0	Z0	Z0
	Z1	Z1	Z1
	Z2	Z2	Z2
	Z3	Z3	Z3

2) Block Surface Treatment

- A. Standard: Anti-rust oil
- B. Non-Standard: See Drawing

3) Nipple/set screw type of Standard type

- A. Size 20/25/30/35/45/55: 45° nipple(1 pcs) + screw(1 pcs)

2.5 Ordering Key of Block

	B	C	C	2	0	-	A	0	Z	1	-	N	0	S
Size														
20, 25, 30, 35, 45, 55														
Block Type														
A0 Flanged block, standard length, standard height														
LA Flanged block, extended length, standard height														
R0 Slim-line block, standard length, extended height														
LR Slim-line block, extended length, extended height														
Preload Class														
ZF Clearance														
Z0 No preload														
Z1 Light preload, 0~0.02C														
Accuracy Class														
N Normal														
Block Treatment														
0 Standard (anti-rust oil)														
Sealing														
S Standard seal (only end seal)														
1 Standard seal + Scraper plate														

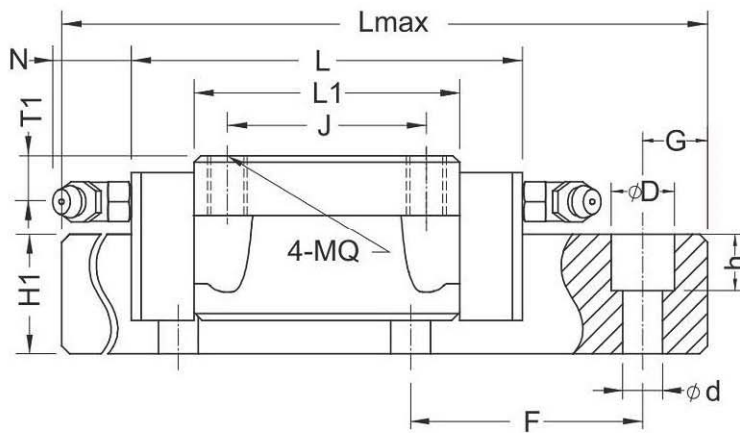
1) Nipple/set screw type of Standard type

A. Size 20/25/30/35/45/55: 45° nipple(1 pcs) + screw(1 pcs)

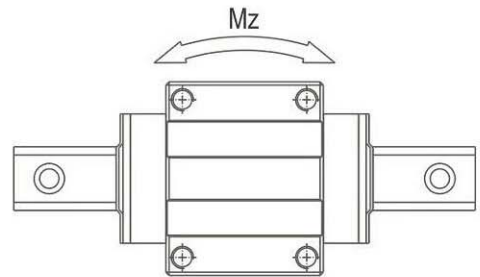
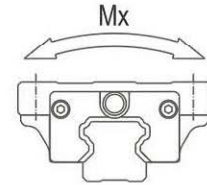
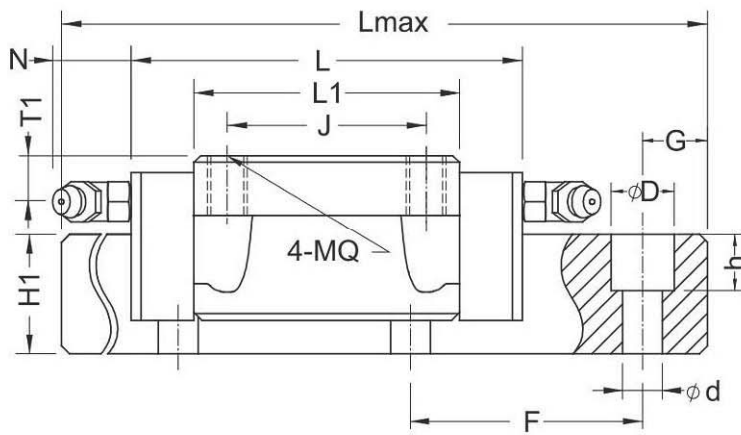
2.6 Ordering Key of Rail

	B	C	R	2	0	-	1	0	8	0	0	N	D	0	-	A	0
Size																	
	20, 25, 30, 35, 45, 55																
Rail Length																	
	00080~99999 mm (1 mm steps)																
Accuracy Class																	
	N Normal																
Rail Hole																	
	D0 Standard hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.) F0 Standard hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.) D4 Blind hole (Standard hole distance. The distance of the first and last attachment holes is produced equidistantly.) F4 Blind hole (Standard hole distance. The distance of the first and last attachment holes is not produced equidistantly.) DX Special machining, customized according to drawing number																
Joint Rail Track																	
	A Yes (Refer to drawing for detail) 0 No																
Rail Treatment																	
	0 Standard (anti-rust oil)																

2.7 BCC - A0 / LA

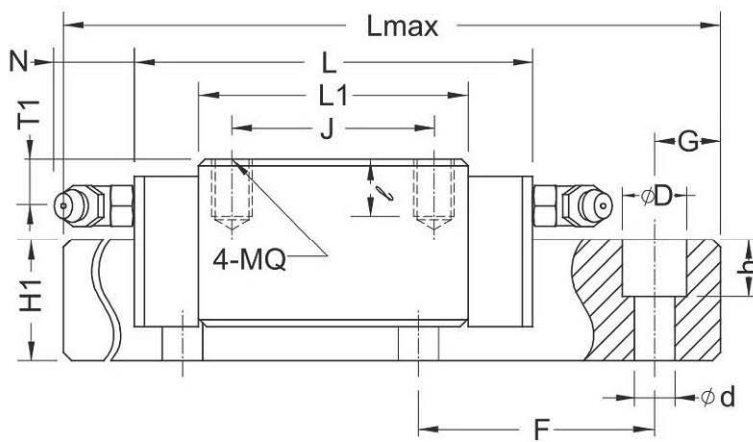
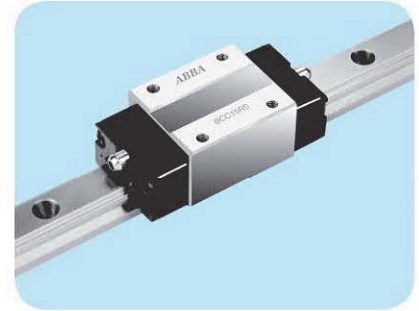


Model No.	Assembly (mm)				BC block (mm)							BC rail (mm)			
	H	W	W2	E	L	BxJ	MQx↓	L1	Oil hole	T1	(N)	W1	H1	F	dxDxh
BCC20A0	30	63	21.5	6	87	53x40	M6x10	59	M6x1	7.5	15.6	20	16.5	60	6x9.5x9.0
BCC20LA					106			78							
BCC25A0	36	70	23.5	6	102	57x45	M8x12	71	M6x1	10	15.6	23	20	60	7x11x9.5
BCC25LA					119			88							
BCC30A0	42	90	31	7	116	72x52	M10x15	80	M6x1	12	15.6	28	23	80	9x14x12.5
BCC30LA					141			105							
BCC35A0	48	100	33	7.5	132	82x62	M10x17	93	M6x1	12	15.6	34	26	80	9x14x12.5
BCC35LA					162			123							
BCC45A0	60	120	37.5	8.9	150	100x80	M12x17	106	M8x1	16	16	45	32	105	14x20x17.5
BCC45LA					184			140							
BCC55A0	70	140	43.5	12.7	181	116x95	M14x21	131	M8x1	20	16	53	38	120	16x23x20.1
BCC55LA					223			173							

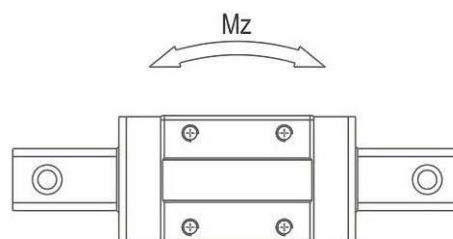
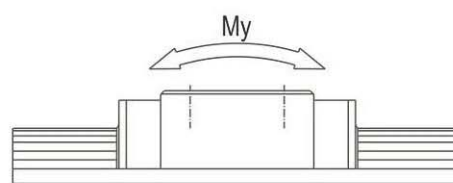
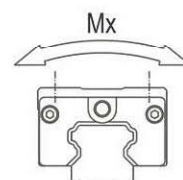
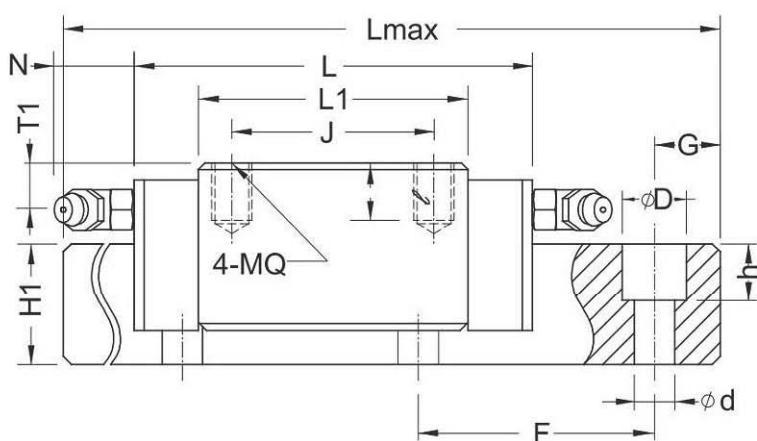


Model No.	Ref.Data (mm)		Basic Load Rating (Kgf)		Static Moment (Kgf*m)			Weight	
	Lmax	G	(C)	(Co)	Mx	My	Mz	Block(Kg)	Rail(Kg/m)
BCC20A0	4000	20	1300	2500	32.9	30.4	30.4	0.45	2.3
BCC20LA			1600	3300	43	52	52	0.62	
BCC25A0	4000	20	1800	3400	51.3	51.8	51.8	0.75	3.2
BCC25LA			2100	4200	63.5	77.2	77.2	0.9	
BCC30A0	4000	20	2500	4600	79	72	72	1.31	4.5
BCC30LA			3100	6100	105	124	124	1.55	
BCC35A0	4000	20	3500	6300	140	126	126	1.9	6.2
BCC35LA			4300	8400	184	214	214	2.55	
BCC45A0	4000	22.5	4700	8200	245	187	187	3.3	10.4
BCC45LA			5800	10900	320	315	315	4.2	
BCC55A0	4000	30	7600	12800	446	355	355	5.4	14.5
BCC55LA			9300	17100	580	600	600	7.1	

2.8 BCC - R0 / LR



Model No.	Assembly (mm)				BC block (mm)							BC rail (mm)			
	H	W	W2	E	L	BxJ	MQxJ	L1	Oil hole	T1	(N)	W1	H1	F	dxDxh
BCC20R0	30	44	12	6	87	32x36	M5x7	59	M6x1	7.5	15.6	20	16.5	60	6x9.5x9.0
BCC20LR					106	32x50		78							
BCC25R0	40	48	12.5	6	102	35x35	M6x10	71	M6x1	14	15.6	23	20	60	7x11x9.5
BCC25LR					119	35x50		88							
BCC30R0	45	60	16	7	116	40x40	M8x12	80	M6x1	15	15.6	28	23	80	9x14x12.5
BCC30LR					141	40x60		105							
BCC35R0	55	70	18	7.5	132	50x50	M8x14	93	M6x1	19	15.6	34	26	80	9x14x12.5
BCC35LR					162	50x72		123							
BCC45R0	70	86	20.5	8.9	150	60x60	M10x16	106	M8x1	26	16	45	32	105	14x20x17.5
BCC45LR					184	60x80		140							
BCC55R0	80	100	23.5	12.7	181	75x75	M12x19	131	M8x1	30	16	53	38	120	16x23x20.1
BCC55LR					223	75x95		173							



Model No.	Ref.Data (mm)		Basic Load Rating (Kgf)		Static Moment (Kgf*m)			Weight	
	Lmax	G	(C)	(Co)	Mx	My	Mz	Block(Kg)	Rail(Kg/m)
BCC20R0	4000	20	1300	2500	32.9	30.4	30.4	0.35	2.3
BCC20LR			1600	3300	43	52	52	0.45	
BCC25R0	4000	20	1800	3400	51.3	51.8	51.8	0.7	3.2
BCC25LR			2100	4200	63.5	77.2	77.2	0.9	
BCC30R0	4000	20	2500	4600	79	72	72	1.1	4.5
BCC30LR			3100	6100	105	124	124	1.4	
BCC35R0	4000	20	3500	6300	140	126	126	1.7	6.2
BCC35LR			4300	8400	184	214	214	2.2	
BCC45R0	4000	22.5	4700	8200	245	187	187	3.1	10.4
BCC45LR			5800	10900	320	315	315	4	
BCC55R0	4000	30	7600	12800	446	355	355	5.2	14.5
BCC55LR			9300	17100	580	600	600	6.7	

