

# BLH Linear Guideway Products...

available from



# Linear Guide

Technical information

[www.automation-overstock.com](http://www.automation-overstock.com)

# Selecting Correct Type Linear Guide

---

## Identify the condition

- ◇Type of equipment
- ◇Space limitations
- ◇Accuracy
- ◇Stiffness
- ◇Travel length
- ◇Magnitude and direction of loads
- ◇Moving speed,acceleration
- ◇Duty cycle
- ◇Service life
- ◇Environment

## Selection of series

- ◇BSH Series:Grinding,milling and drilling machine,lathe,machine center
- ◇BSH-M series: Miniature device,semiconductor equipment,medical equipment

## Selection of Accuracy

- ◇Grade:N,H,P depends on the accuracy of equoment

## Selection size &No. of blocks

- ◇Dynamic load condition
- ◇If accompanied with a ballscrew,the size should be similar to the diameter of ballscrew.
- ◇For example,if the diameter of the ballscrew is 20mm,then the model size of linear guide should be BSH20.

## Calculate the max.load of block

- ◇Make reference to load calculation examples,and calculate the max load.
- ◇Be sure that the static safety factor of selected guideway is larger than the rated static safety factor.

## Choosing preload

- ◇Depends on the stiffness requirement and accuracy or mounting surface

## Identify Stiffness

- ◇Calculate the deformation by using the table of stiffness values,choosing heavier preload and larger size linear guideways to enhance the stiffness

## Calculating service life

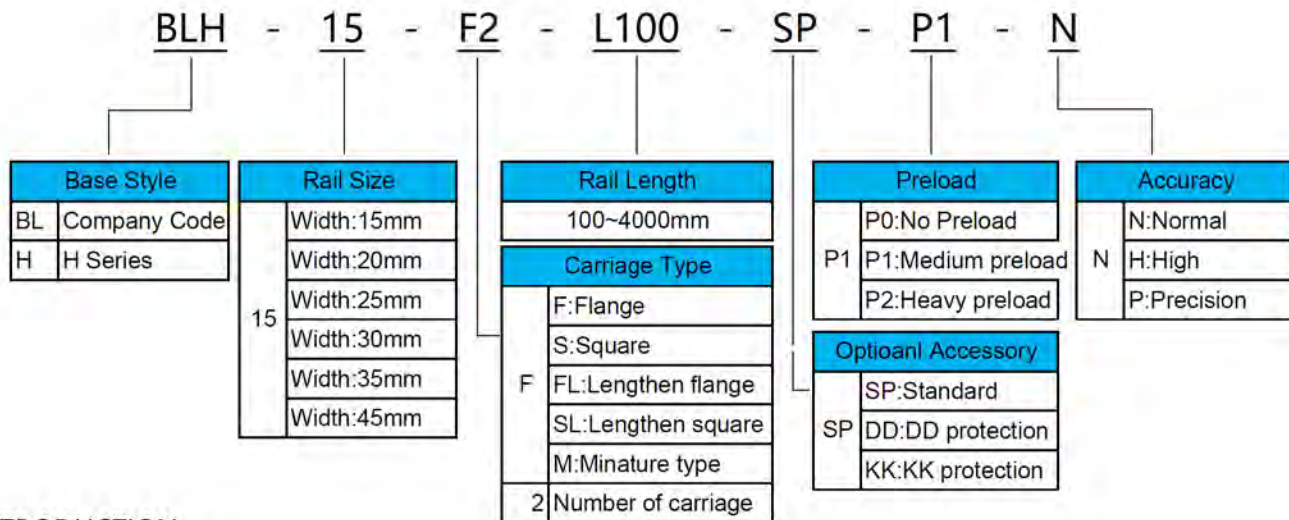
- ◇Calculate the life time requirement by using the moving speed and frequency.
- ◇Make reference to the life calculation example

## Selection of lubrication

- ◇Grease supplied by grease nipple
- ◇Oil supplied by piping joint

# Model-number Code

## BLH Linear Guide



### INTRODUCTION:

The linear guide also know as the linear rail,slide,linear guides,linear rails for reciprocating motion of occasions, has a load bearing higher rated than the straight line,and can assume a certain torque,high loadachieve high precision linear motion is divided into a square ball linear guide,biaxial cores roller linear guide,linear guide of uniaxial core FBT offers multiple linear guideway series and each series features different options for sizes,load capabilities,accuracies and more.

### ADVANTAGES AND FEATURES

#### a)High Accuracy

When a load driven by a linear motion guide,the frictional contact between the load the bed desk is rolling contact, the coeffiend of friction is only 1/50 of tradtional contact,and the difference between the dynamic and the static Coefficient of friction is small.Therefore,there would be no slippage while the load is moving.

#### b)High speed motion is possible with a lower driving force

Because linear guide have little friction resistance,only a small driving force is needed to move a load,this results in greatre power saving,especially in the moving parts of a system,this is especially true for the reciprocating parts.

#### c)Equal loading capacity in all directions

With this special design,there linear gudie can take loads in either the vertical or hirizontal directions,conventional linear carriage can only take small loads in the direction parallel to the contact surface,they are also more likely to become inaccurate when they are subjected to these loads.

#### d)Easy Installation

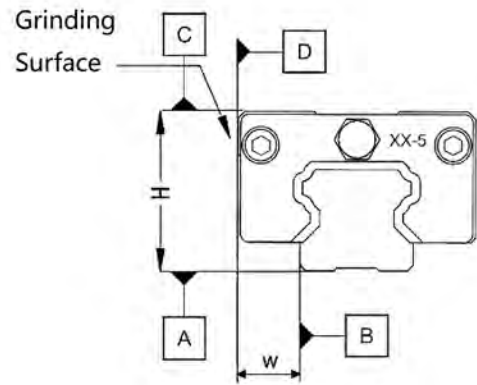
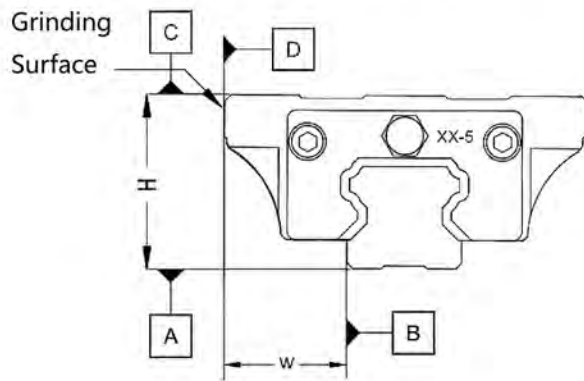
Installing a linear guide is fairly easy.Grinding or milling the machine surface,following the recommended installation procedure,and tightening the bolts to their specified torque can achieve highly accurate linear motion.

#### e)Easy lubrication:

For linear guide,grease can be easily supplied through the grease nipple on the linear carriage.it is also possible to utilize a centralized oil lubrication system by piping the lubrication oil to the piping joint.

# Accuracy Standard

BLH Series linear guide with normal, high and precision accuracy standards. our user can choose according to the accuracy standards of the equipment.



### ◇Difference of heights $\Delta H$

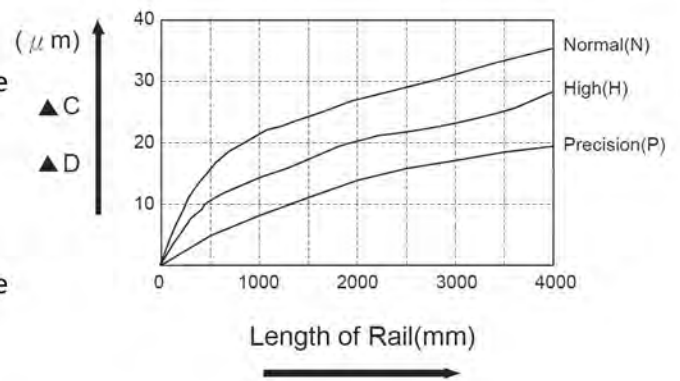
The difference is obtained by measuring the different blocks on the same rail position in terms of the difference between the maximum and minimum heights (H)

### ◇Difference of widths $\Delta W$

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)

### ◇Running parallelism

There 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.

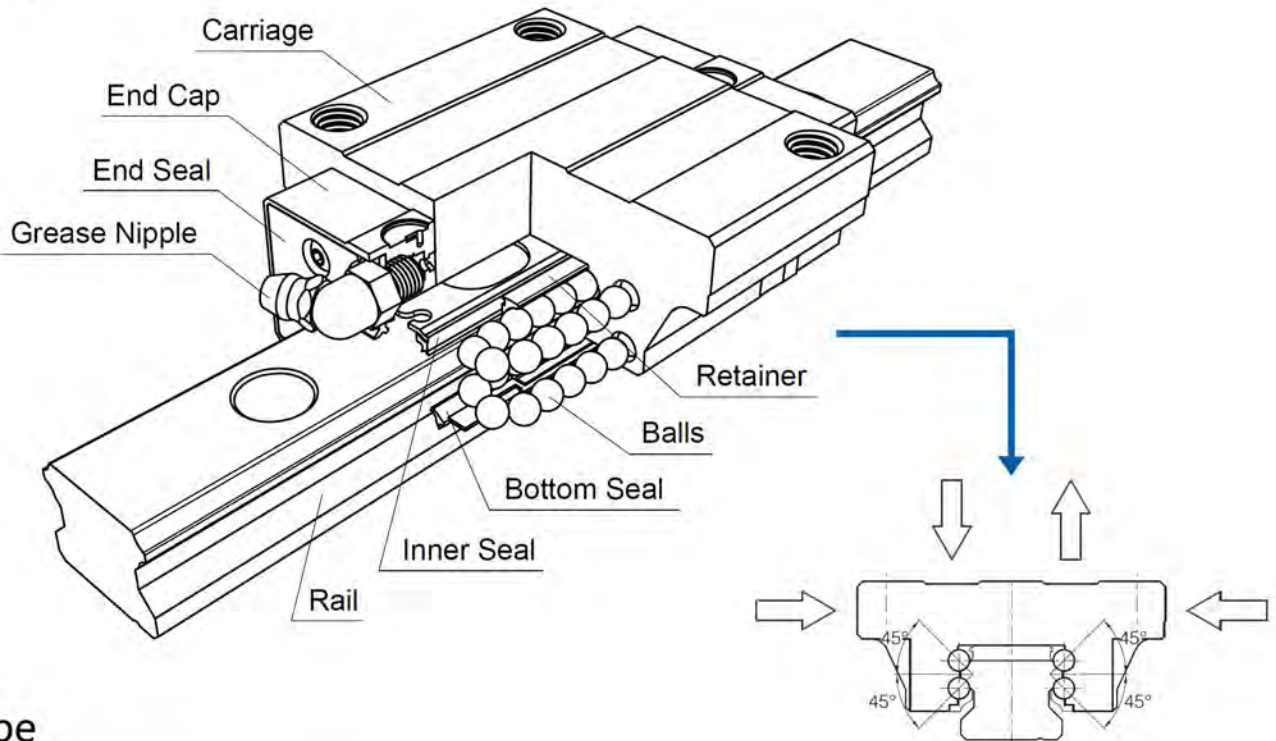


Unit:mm

ITEM	Grade		
	Normal (N)	High (H)	Precision (P)
Tolerance of height(H)	±0.1	±0.04	0-0.04
Tolerance of width(W)	±0.1	±0.04	0-0.04
Difference of heights( $\Delta H$ )	0.03	0.02	0.01
Difference of widths( $\Delta W$ )	0.03	0.02	0.01
Running parallelism of block between surface <b>A</b> & <b>C</b>	$\Delta C$ Refer to Fig 1.1		
Running parallelism of block between surface <b>B</b> & <b>D</b>	$\Delta D$ Refere to Fig 1.1		

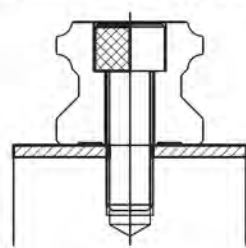
## Construction

The four trains of balls are designed with a contact angle of 45° which enables it not to bear load equally in radial, reversed radial and lateral directions but also can achieve high rigidity and high loading capacity. Therefore, it is suitable for all directional installation. Furthermore, the unique self-alignment function of BLH series can compensate the certain error while assembling, and which results in high precision and smooth motion.

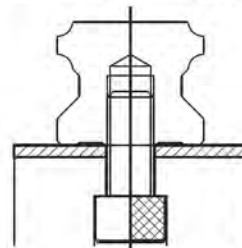


## Rail Type

Besides the standard top mounting type, FBT also offers bottom mounting type rails.



Mounting from above



Mounting from below

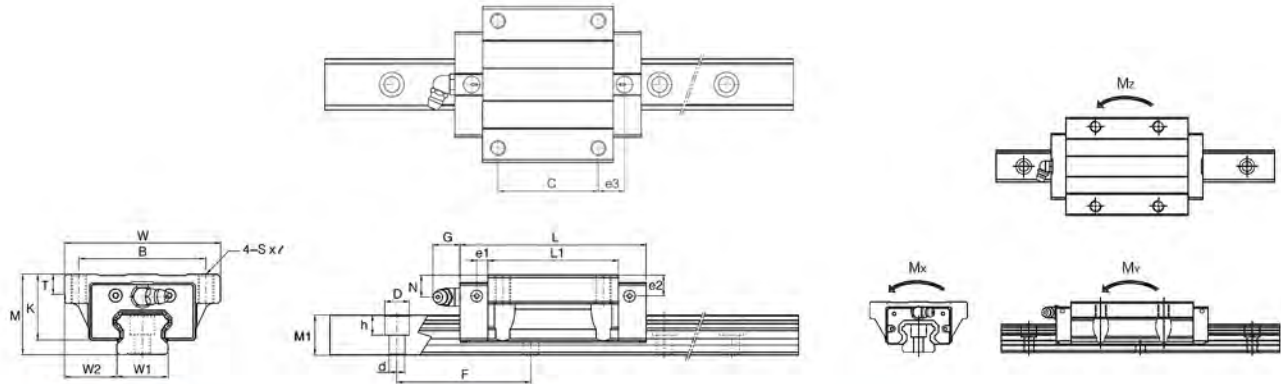
## Preload Classes

offers three classes of standard preload for various applications and conditions

Class	Code	Preload	Condition	Examples of Application
Light Preload	P0	0-0.02C	Certain load direction, lower impact, lower precision required	Transportation devices, auto-packing machines, X-Y axis for general industrial machines, welding machines
Medium Preload	P1	0.05-0.07C	High precision required	Machining centers, Z axis for general industrial machines, EDM, NC lathes, Precision Y-Y tables, measuring equipment
Heavy Preload	P2	0.10-0.12C	High rigidity required, with vibration and impact	Machining centers, grinding machines, NC lathes, horizontal and vertical milling machines, Z axis, Heavy cutting machines

Note: The preload is the percentage of basic dynamic load rating (C).

# BLH-F/FL Linear Guide



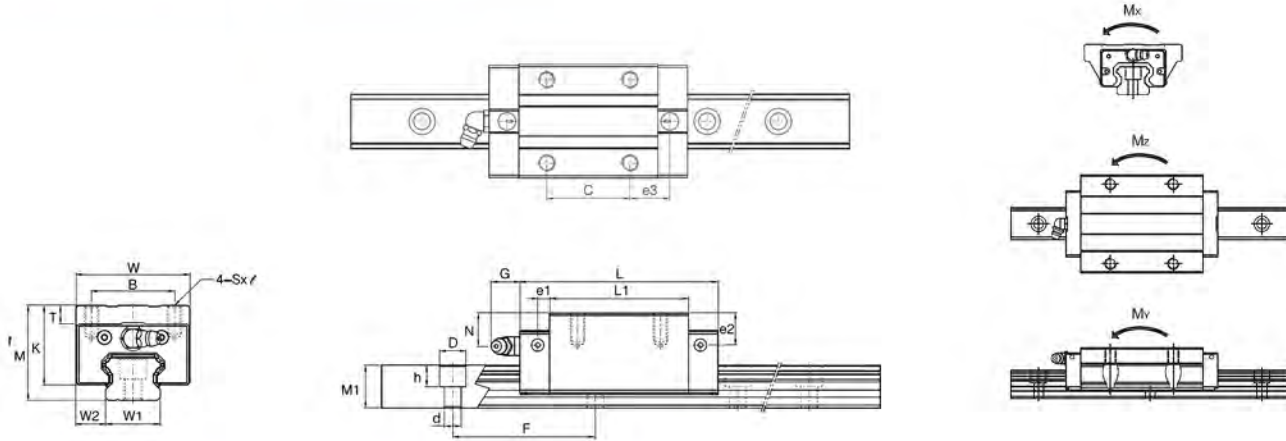
Currently Automation Overstock only inventories the 15mm, 20mm, 25mm and 30mm sizes.

Unit:mm

Model	Assembly			Carriage											
	M	W	L	B	C	SxZ	L1	T	K	N	e1	e2	e3	G	Oil hole
BLH15F	24	47	58.2	38	30	M5*8	39.5	5.5	19.5	5	3.3	4	8.6	7	M4*0.7
BLH20F	30	63	75	53	40	M6*10	52.5	7	25	8.5	4.5	7	10.8	12	M6*0.75
BLH20FL	30	63	88.8	53	40	M6*10	66.3	7	25	8.5	4.5	7	17.7	12	M6*0.75
BLH25F	36	70	83.6	57	45	M8*13	58.6	9	29.5	10	5	9.5	11.8	12	M6*0.75
BLH25FL	36	70	102.6	57	45	M8*13	77.6	9	29.5	10	5	9.5	21.3	12	M6*0.75
BLH30F	42	90	98	72	52	M10*15	69.8	10	33.5	8	5	8	14	12	M6*0.75
BLH30FL	42	90	120.2	72	52	M10*15	92	10	33.5	8	5	8	25.1	12	M6*0.75
BLH35F	48	100	111.2	82	62	M10*15	80.5	10	38.5	8	7.5	8	15.6	12	M6*0.75
BLH35FL	48	100	136.6	82	62	M10*15	105.6	10	38.5	8	7.5	8	28.3	12	M6*0.75
BLH45F	28	120	137.8	100	80	M12*18	102.2	12	49	10	8.5	10	17.6	13.5	PT 1/8
BLH45FL	60	120	169.5	100	80	M12*18	133.9	12	49	10	8.5	10	33.5	13.5	PT 1/8

Model	Rail				Rated Load(Kn)		Mx(KN-m)	My(kgf-mm)		Mz(kgf-mm)		Weight(kg)	
	W1	W2	M1	F	C	Co	Single	Single	Double	Single	Double	Carriage	Rail(kg/m)
BLH15F	15	16	13	60	11.8	18.9	0.15	0.13	0.76	0.13	0.76	0.19	1.3
BLH20F	20	21.5	15	60	20	32	0.33	0.3	1.68	0.3	1.68	0.42	2
BLH20FL	20	21.5	15	60	23.2	39.3	0.41	0.44	2.36	0.44	2.36	0.55	2
BLH25F	23	23.5	18	60	27.9	42.5	0.51	0.44	2.47	0.44	2.47	0.65	2.7
BLH25FL	23	23.5	18	60	34.2	56.6	0.67	0.76	3.99	0.76	3.99	0.85	2.7
BLH30F	28	31	23	80	38.8	57.8	0.83	0.7	3.88	0.7	3.88	1.1	4.5
BLH30FL	28	31	23	80	47.5	77.1	1.11	1.21	6.28	1.21	6.28	1.45	4.5
BLH35F	34	33	26	80	51.7	75.5	1.31	1.04	5.72	1.04	5.72	1.5	6.3
BLH35FL	34	33	26	80	63.2	100.7	1.75	1.81	9.29	1.81	9.29	1.95	6.3
BLH45F	45	37.5	32	105	83.2	118	12.83	2.03	10.89	2.03	10.89	2.8	10.5
BLH45FL	45	37.5	32	105	101.7	157.3	3.62	3.54	17.76	3.54	17.6	3.7	10.5

# BLH-N/NL Linear Guide



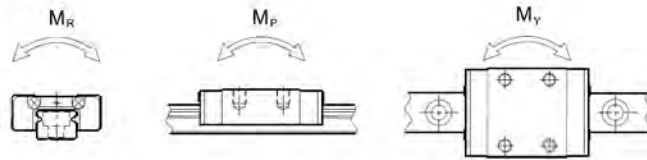
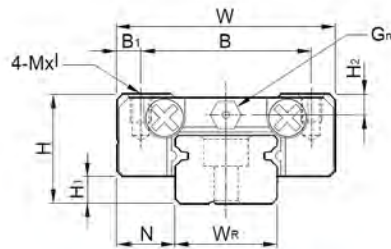
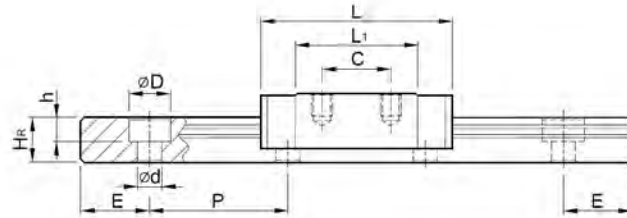
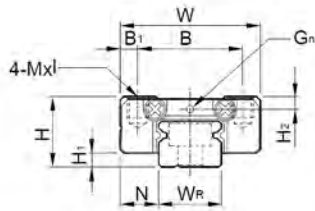
Currently Automation Overstock only inventories 15mm, 20mm, 25mm and 30mm sizes.

Unit:mm

Model	Assembly						Carriage								
	M	W	L	B	C	Sx $\angle$	L1	T	K	N	e1	e2	e3	G	Oil hole
BLH15N	28	34	58.2	26	26	M4*7	39.5	6	23.5	9	3.3	8	10.6	7	M4*0.7
BLH20N	30	44	75	32	36	M5*8	52.5	6	25	8.5	4.5	7	12.8	12	M6*0.75
BLH20NL	30	44	88.8	32	50	M5*8	66.3	6	25	8.5	4.5	7	12.7	12	M6*0.75
BLH25N	40	48	83.6	35	35	M6*12	58.6	8	33.5	14	5	13.5	16.8	12	M6*0.75
BLH25NL	40	48	102.6	35	50	M6*12	77.6	8	33.5	14	5	13.5	18.8	12	M6*0.75
BLH30N	45	60	98	40	40	M8*12	69.8	8	36.5	11	5	11	20	12	M6*0.75
BLH30NL	45	60	120.2	40	60	M8*12	92	8	36.5	11	5	11	21.1	12	M6*0.75
BLH35N	55	70	111.2	50	60	M8*14	80.2	11	45.5	15	7.5	15	21.6	12	M6*0.75
BLH35NL	55	70	136.6	50	72	M8*14	105.6	11	45.5	15	7.5	15	23.3	12	M6*0.75
BLH45N	70	86	137.8	60	60	M10*20	102.2	16	59	20	8.5	20	27.6	13.5	PT 1/8
BLH45NL	70	86	169.5	60	80	M10*20	133.9	16	59	20	8.5	20	33.5	13.5	PT 1/8

Model	Rail				Rated Load(Kn)		Mx(KN-m)	My(kgf-mm)		Mz(kgf-mm)		Weight(kg)	
	W1	W2	M1	F	C	Co	Single	Single	Double	Single	Double	Carriage	Rail(kg/m)
BLH15N	15	9.5	13	60	11.8	18.9	0.15	0.13	0.76	0.13	0.76	0.19	1.3
BLH20N	20	12	15	60	20	32	0.33	0.3	1.68	0.3	1.68	0.33	2
BLH20NL	20	12	15	60	23.2	39.3	0.41	0.44	2.36	0.44	2.36	0.45	2
BLH25N	23	12.5	18	60	27.9	42.5	0.51	0.44	2.47	0.44	2.47	0.55	2.7
BLH25NL	23	12.5	18	60	34.2	56.6	0.67	0.76	3.99	0.76	3.99	0.7	2.7
BLH30N	28	16	23	80	38.8	57.8	0.83	0.7	3.88	0.7	3.88	0.9	4.5
BLH30NL	28	16	23	80	47.5	77.1	1.11	1.21	6.28	1.21	6.28	1.2	4.5
BLH35N	34	18	26	80	51.7	75.5	1.31	1.04	5.72	1.04	5.72	1.44	6.3
BLH35NL	34	18	26	80	63.2	100.7	1.75	1.81	9.29	1.81	9.29	1.9	6.3
BLH45N	45	20.5	32	105	83.2	118	12.83	2.03	10.89	2.03	10.89	2.9	10.5
BLH45NL	45	20.5	32	105	101.7	157.3	3.62	3.54	17.76	3.54	17.6	3.7	10.5

# BLH-M/ML Linear Guide



Unit:mm

Model	H	H1	N	W	B	B1	C	L1	L	MxI	H2	H1	D	h	d	P	E	Ca(kN)	Coa(kN)
BLH7M	8	1.5	5	17	12	2.5	8	13.5	22.5	M2x2.5	1.5	4.8	4.2	2.3	2.4	15	5	0.98	1.24
BLH7ML							13	21.8	30.8									1.37	1.96
BLH9M	10	2	5.5	20	15	2.5	10	18.9	28.9	M3x3	1.8	6.5	6	3.5	3.5	20	7.5	1.86	2.55
BLH9ML							16	29.9	39.9									2.55	4.02
BLH12M	13	3	7.5	27	20	3.5	15	21.7	34.7	M3x3.5	2.5	8	6	4.5	3.5	25	10	2.84	3.92
BLH12ML							20	32.4	45.4									3.72	5.88
BLH15M	16	4	8.5	32	25	3.5	20	26.7	42.1	M3x4	3	10	6	4.5	3.5	40	15	4.61	5.59
BLH15ML							25	43.4	58.8									6.37	9.11

**Currently Automation Overstock offers only stocks the BLH12 sizes of rails and carriages. Other sizes are available per special order.**