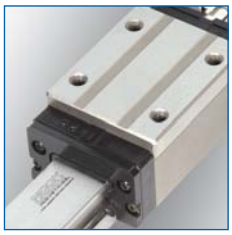
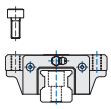
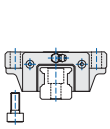
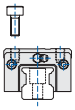
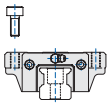
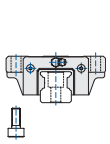
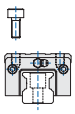
NOOK PRECISION PROFILE RAIL TECHNICAL DATA



HEAVY LOAD TYPE

SELECTION OF ULTRA HEAVY AND HEAVY LOAD TYPE

CLASSIFICATION	ULTRA HEAVY LOAD TYPE			HEAVY LOAD TYPE		
MODEL TYPE	NH-LEA	NH-LEB	NH-LER	NH-EA	NH-EB	NH-ER
Mounting Direction						
Main Features	Ultra heavy load type with long runner blocks			Flange type heavy load type		Narrow width heavy load type
Permissible speed (m/min.)	120	120	120	120	120	120
Accuracy	C001-C7	C001-C7	C001-C7	C001-C7	C001-C7	C001-C7
Preload	T-T3	T-T3	T-T3	T-T3	T-T3	T-T3
Vibration Behavior	○	○	○	○	○	○
Noise	○	○	○	○	○	○

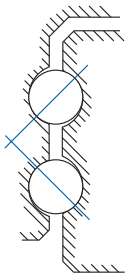
See unit conversion on page 48

○ Low ◉ Very Low

FEATURES

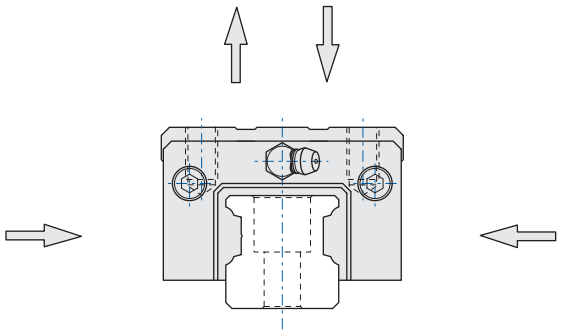
NOOK Profile Rail Design

NOOK Ultra Heavy Load Type Runner Blocks maintain circulation of the balls by a retainer and end cap. The four rows of balls on the inner runner block are arranged in two rows on either side facing each other and contacting at a 45° angle. As the load is transmitted the balls contact the rail at two points at an inclusive angle of 90°. In turn, the contact with the outer track is the same, making a square load force configuration.



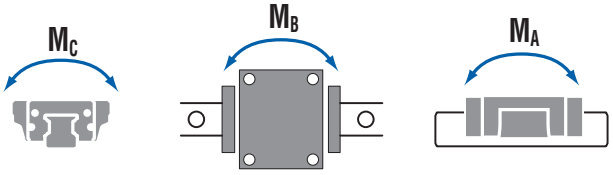
Equal Load in Four Directions

The shape of NOOK runner blocks have an equal rated load capacity in any direction. Equal rigidity is therefore obtained in any of the four loading directions making NOOK runner blocks ideal for single or combination loads.

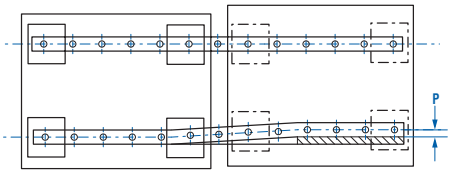


Mounting Error Absorbtion and Rolling Moment Rigidity

NOOK runner blocks are designed to absorb some of the mounting inaccuracies without any significant increase in the sliding friction.



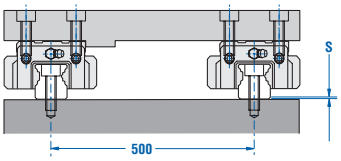
Error Allowance in the Parallelism Between Two Rails—Horizontal Plane



Permissible Tolerance (P) for Parallelism

Model NH	P		unit = µm
Model No.	Clearance T0	Clearance T1	Normal Clearance
15	—	18	25
20	18	20	25
25	20	22	30
30	27	30	40
35	30	35	50
45	35	40	60
55	45	50	70
65	55	60	80

Error Allowance Between Two Rails

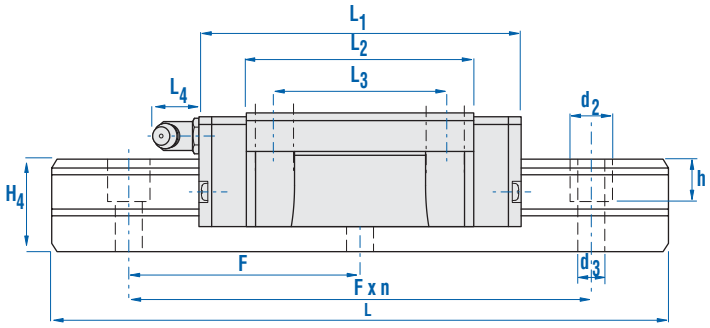


Permissible Tolerance (S) for Two Level

TWO LEVEL OFFSET: The values in the figures show the permissible tolerances for the rail-to-rail distance of 500 mm. The permissible values are proportional to the rail-to-rail distances.

Model NH	S		unit = µm
Model No.	Clearance T0	Clearance T1	Normal Clearance
15	—	85	130
20	50	85	130
25	70	85	130
30	90	110	170
35	120	150	210
45	140	170	250
55	170	210	300
65	200	250	350

NH-EA • NH-LEA series
heavy load • flange-mount
four tapped holes

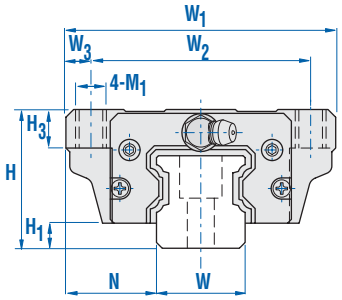


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-EA provides Heavy Load with Flange
- NH-LEA provides Heavy Load with Long Slide Unit
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15, 20, 45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

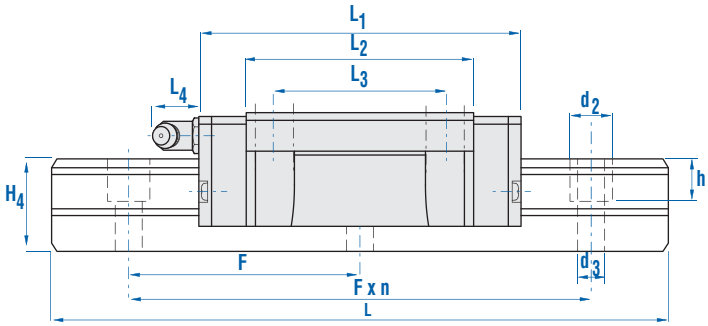
	assembly dimensions			runner block dimensions								grease fitting
	height	width	length									
Model	H	W_1	L_1	W_2	L_3	M_1	L_2	H_3	L_4	W_3	H_1	
NH15EA	24	47	58.5	38	30	M5x7	38.5	7	0	4.5	4.6	NAS516-1A
NH20EA	30	63	73	53	40	M6x1	50	8	0	5	5	NAS516-1A
NH25EA	36	70	83	57	45	M8x10	59	10	12	6.5	6.5	B-M6F
NH25LEA	36	70	107	57	45	M8x10	83	10	12	6.5	6.5	B-M6F
NH30EA	42	90	97	72	52	M10x10	68	13	12	9	7	B-M6F
NH30LEA	42	90	123	72	52	M10x10	94	13	12	9	7	B-M6F
NH35EA	48	100	112	82	62	M10x13	80	13	12	9	8	B-M6F
NH35LEA	48	100	141	82	62	M10x13	109	13	12	9	8	B-M6F
NH45EA	60	120	139	100	80	M12x15	102	15	14	10	11	B-PT 1/8
NH45LEA	60	120	167	100	80	M12x15	130	15	14	10	11	B-PT 1/8
NH55EA	70	140	159	116	95	M14x17	124	17	16	12	14	B-PT 1/8
NH55LEA	70	140	191	116	95	M14x17	156	17	16	12	14	B-PT 1/8
NH65EA	85	170	188	142	110	M16x20	148	20	16	14	14	B-PT 1/8
NH65LEA	85	170	247	142	110	M16x20	207	20	16	14	14	B-PT 1/8

See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	d_3 x d_2 x h	C kN	lbf	C_o kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	16	60	4.5 x 7.5 x 7	**8.43**	1,896	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.19	1.7
21	20	21.5	60	6 x 9.5 x 11	**13.92**	3,130	**23.83**	5,157	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.4	2.8
24	23	23.5	60	7 x 11 x 11	**20.00**	4,496	**34.42**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.69	3.7
24	23	23.5	60	7 x 11 x 11	**27.36**	6,149	**45.89**	10,314	**0.47**	4,166	**0.47**	4,166	**0.64**	5,642	0.97	3.7
28	28	31	80	9 x 14 x 14	**28.24**	6,347	**46.87**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	1.8	5.3
28	28	31	80	9 x 14 x 14	**37.55**	8,441	**62.56**	14,061	**0.73**	6,423	**0.73**	6,423	**0.98**	8,680	1.8	5.3
32	34	33	80	9 x 14 x 15	**37.55**	8,441	**62.56**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.8	7.5
32	34	33	80	9 x 14 x 15	**50.30**	11,306	**81.59**	18,337	**1.13**	9,982	**1.13**	9,982	**1.64**	14,496	2.5	7.5
42	45	37.5	105	14 x 20 x 21	**60.21**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	3.1	12.9
42	45	37.5	105	14 x 20 x 21	**80.61**	18,116	**127.48**	28,651	**2.11**	18,662	**2.11**	18,662	**3.13**	27,689	4.0	12.9
48	53	43.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.16**	37,671	5.1	17.3
48	53	43.5	120	16 x 23 x 24	**119.05**	26,756	**183.09**	41,147	**3.71**	32,810	**3.71**	32,810	**5.31**	47,046	6.5	17.3
58	63	53.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	9.1	24.9
58	63	53.5	150	18 x 26 x 25	**192.11**	43,175	**286.15**	64,310	**7.21**	63,798	**7.21**	63,798	**10.75**	95,133	13.1	24.9

NH-EB • NH-LEB series
heavy load • flange-mount
four through holes

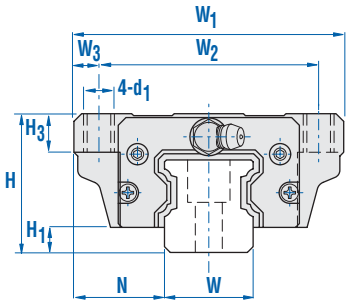


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-EB provides Heavy Load with Flange
- NH-LEB provides Heavy Load with Long Slide Unit
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15, 20, 45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

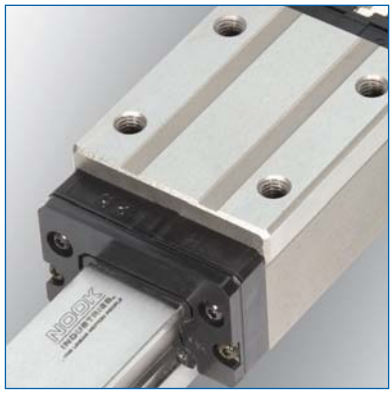
	assembly dimensions			runner block dimensions								grease fitting
	height	width	length									
Model	H	W_1	L_1	W_2	L_3	d_1	L_2	H_3	L_4	W_3	H_1	
NH15EB	24	47	58.5	38	30	4.5	38.5	7	0	4.5	4.6	NAS516-1A
NH20EB	30	63	73	53	40	6	50	8	0	5	5	NAS516-1A
NH25EB	36	70	83	57	45	7	59	10	12	6.5	6.5	B-M6F
NH25LEB	36	70	107	57	45	7	83	10	12	6.5	6.5	B-M6F
NH30EB	42	90	97	72	52	9	68	13	12	9	7	B-M6F
NH30LEB	42	90	123	72	52	9	94	13	12	9	7	B-M6F
NH35EB	48	100	112	82	62	9	80	13	12	9	8	B-M6F
NH35LEB	48	100	141	82	62	9	109	13	12	9	8	B-M6F
NH45EB	60	120	139	100	80	11	102	15	14	10	11	B-PT 1/8
NH45LEB	60	120	167	100	80	11	130	15	14	10	11	B-PT 1/8
NH55EB	70	140	159	116	95	14	124	17	16	12	14	B-PT 1/8
NH55LEB	70	140	191	116	95	14	156	17	16	12	14	B-PT 1/8
NH65EB	85	170	188	142	110	16	148	20	16	14	14	B-PT 1/8
NH65LEB	85	170	247	142	110	16	207	20	16	14	14	B-PT 1/8

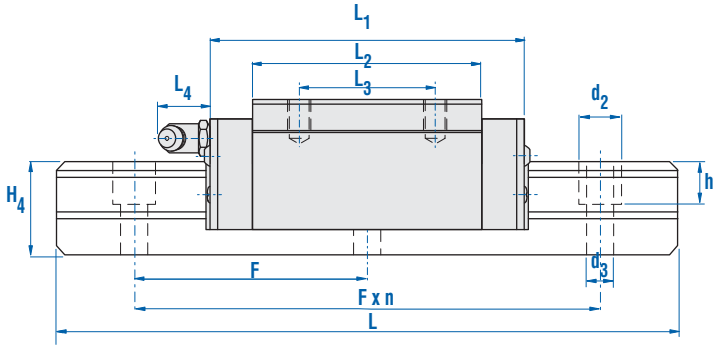
See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	d_3 x d_2 x h	C kN	lbf	C_0 kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	16	60	4.5 x 7.5 x 7	**8.43**	1,895	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.19	1.7
21	20	21.5	60	6 x 9.5 x 11	**13.92**	3,130	**23.83**	5,157	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.4	2.8
24	23	23.5	60	7 x 11 x 11	**20.00**	4,496	**34.42**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.69	3.7
24	23	23.5	60	7 x 11 x 11	**27.36**	6,149	**45.89**	10,314	**0.47**	4,166	**0.47**	4,166	**0.64**	5,642	0.97	3.7
28	28	31	80	9 x 14 x 14	**28.24**	6,347	**46.87**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	1.8	5.3
28	28	31	80	9 x 14 x 14	**37.55**	8,441	**62.56**	14,061	**0.73**	6,423	**0.73**	6,423	**0.98**	8,680	1.8	5.3
32	34	33	80	9 x 14 x 15	**37.55**	8,441	**62.56**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.8	7.5
32	34	33	80	9 x 14 x 15	**50.30**	11,306	**81.59**	18,337	**1.13**	9,982	**1.13**	9,982	**1.64**	14,496	2.5	7.5
42	45	37.5	105	14 x 20 x 21	**60.21**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	3.1	12.9
42	45	37.5	105	14 x 20 x 21	**80.61**	18,116	**127.48**	28,651	**2.11**	18,662	**2.11**	18,662	**3.13**	27,689	4.0	12.9
48	53	43.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.16**	37,671	5.1	17.3
48	53	43.5	120	16 x 23 x 24	**119.05**	26,756	**183.09**	41,147	**3.71**	32,810	**3.71**	32,810	**5.31**	47,046	6.5	17.3
58	63	53.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	9.1	24.9
58	63	53.5	150	18 x 26 x 25	**192.11**	43,175	**286.15**	64,310	**7.21**	63,798	**7.21**	63,798	**10.75**	95,133	13.1	24.9

NH-ER • NH-LER series
heavy load • narrow width
four tapped holes



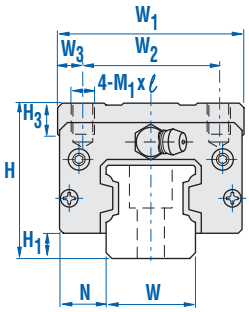


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-ER provides Heavy Load with Narrow Width
- NH-LER provides Heavy Load with Long Slide Unit
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  20,45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

	assembly dimensions			runner block dimensions								grease fitting
Model	height H	width W_1	length L_1	W_2	L_3	$M_1 x \ell$	L_2	H_3	L_4	W_3	H_1	
NH15ER	28	34	59	26	26	M4x5	38.5	6	0	4	4.5	NAS516-1A
NH20ER	30	44	73	32	36	M5x6	50	8	0	6	5	NAS516-1A
NH25ER	40	48	83	35	35	M6x8	59	8	12	6.5	6.5	B-M6F
NH25LER	40	48	107	35	50	M6x8	83	8	12	6.5	6.5	B-M6F
NH30ER	45	60	97	40	40	M8x10	68	8	12	10	7	B-M6F
NH30LER	45	60	123	40	60	M8x10	94	8	12	10	7	B-M6F
NH35ER	55	70	112	50	50	M8x12	80	10	12	10	8	B-M6F
NH35LER	55	70	141	50	72	M8x12	109	10	12	10	8	B-M6F
NH45ER	70	86	139	60	60	M10x17	102	15	16	13	11	B-PT 1/8
NH45LER	70	86	167	60	80	M10x17	130	15	16	13	11	B-PT 1/8
NH55ER	80	100	168	75	75	M12x18	124	18	16	12.5	14	B-PT 1/8
NH55LER	80	100	200	75	95	M12x18	156	18	16	12.5	14	B-PT 1/8
NH65ER	90	126	198	90	70	M16x20	148	23	16	18	14	B-PT 1/8
NH65LER	90	126	257	90	120	M16x20	207	23	16	18	14	B-PT 1/8

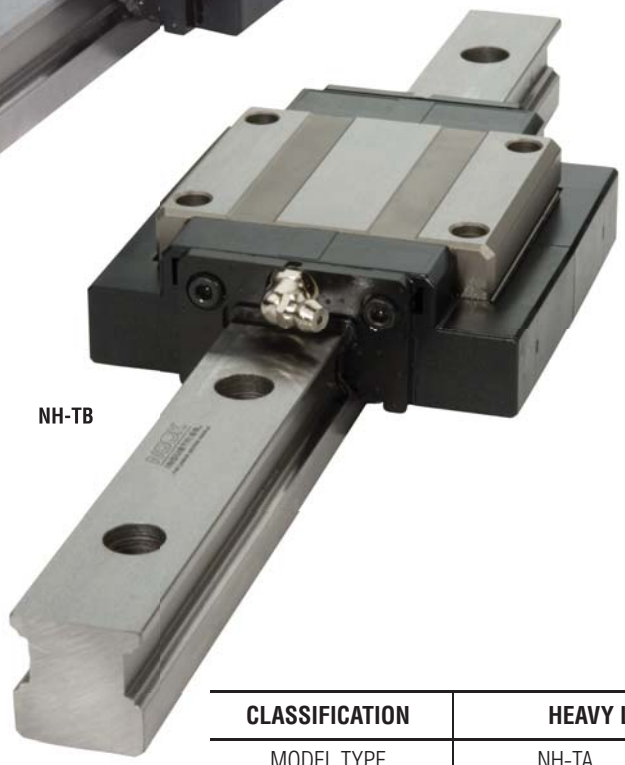
See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	d_3 x d_2 x h	C kN	lbf	C_0 kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	9.5	60	7.5 x 4.5 x 7	**8.82**	1,982	**17.02**	3,826	**0.12**	1,036	**0.12**	1,036	**0.18**	1,523	0.20	1.7
21	20	12	60	6 x 9.5 x 11	**13.92**	3,130	**23.83**	5,157	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.29	2.8
24	23	12.5	60	7 x 11 x 11	**20.00**	4,496	**34.42**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.57	3.7
24	23	12.5	60	7 x 11 x 11	**27.36**	6,149	**45.88**	10,314	**0.47**	4,166	**0.47**	4,166	**0.64**	5,642	0.8	3.7
28	28	16	80	9 x 14 x 14	**28.24**	6,347	**46.87**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	0.99	5.3
28	28	16	80	9 x 14 x 14	**37.55**	8,441	**62.56**	14,061	**0.73**	6,423	**0.73**	6,423	**0.98**	8,680	1.4	5.3
32	34	18	80	9 x 14 x 15	**37.55**	8,441	**62.56**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.6	7.5
32	34	18	80	9 x 14 x 15	**50.30**	11,306	**81.59**	18,337	**1.13**	9,982	**1.13**	9,982	**1.64**	14,496	2.2	7.5
42	45	20.5	105	14 x 20 x 21	**60.20**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	2.9	12.9
42	45	20.5	105	14 x 20 x 21	**80.61**	18,116	**127.48**	28,651	**2.11**	18,662	**2.11**	18,662	**3.13**	27,689	3.7	12.9
48	53	23.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.25**	37,671	4.5	17.3
48	53	23.5	120	16 x 23 x 24	**119.05**	26,756	**183.09**	41,147	**3.71**	32,810	**3.71**	32,810	**5.31**	47,046	5.8	17.3
58	63	31.5	150	18 x 26 x 25	**141.11**	31,714	**215.16**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	7.2	24.9
58	63	31.5	150	18 x 26 x 25	**192.11**	43,175	**286.15**	64,310	**7.21**	63,798	**7.21**	63,798	**10.75**	95,133	10.5	24.9

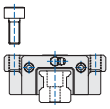
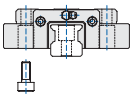
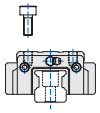
HEAVY LOAD -
HIGH SPEED TYPE

NH-TA



NH-TB

NH-TR

CLASSIFICATION	HEAVY LOAD TYPE-GREATER PERMISSIBLE SPEED		
MODEL TYPE	NH-TA	NH-TB	NH-TR
Mounting Direction			
Main Features	Heavy Load Type-Greater Permissible Speed		
Permissible speed (m/min)	200	200	200
Accuracy	C001-C7	C001-C7	C001-C7
Preload	T-T3	T-T3	T-T3
Vibration Behaviors	◉	◉	◉
Noise	◉	◉	◉

See unit conversion on page 48

○ Low ◉ Very Low

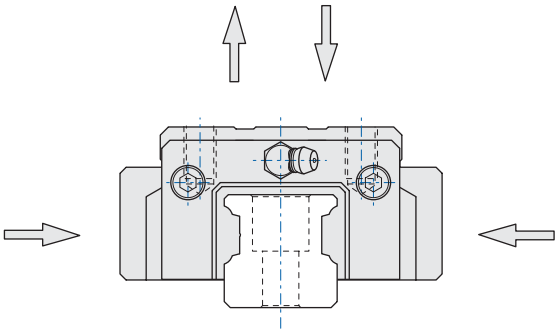
FEATURES

NOOK Profile Rail Design

NOOK Heavy Load and High Speed Type Runner Blocks recirculate the balls via a tube. The four rows of balls on the inner runner block are arranged 2 rows each on either side facing each other and contacting at a 45° angle. As the load is transmitted the balls contact the track at two points at an inclusive angle of 90°. In turn, the contact with the outer track is the same making a square load force configuration.

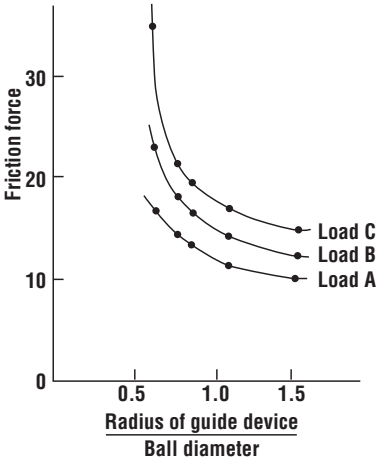
Equal Load in Four Directions

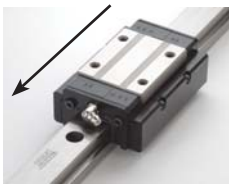
The shape of NOOK runner blocks have an equal rated load capacity in any direction. Equal rigidity is therefore obtained in any of the four loading directions making NOOK runner blocks ideal for single or combination loads.



Ratio Ball Recirculation Method

Experiments have shown that a ratio of the ball diameter to the return curvature radius of 1.5:1 results in reduced friction with lower noise signature and lower vibration and less variation in friction at high speeds when compared to normal return ratios of 0.6:1 to 1.1:1 as found in standard systems. NOOK high-speed runner blocks utilize this ratio.

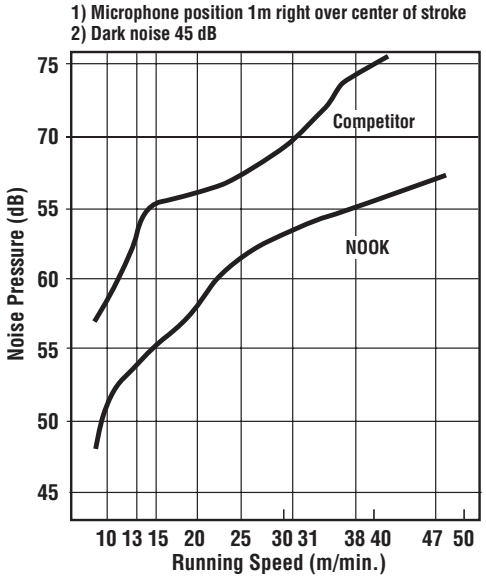




Friction force during steel ball recirculation

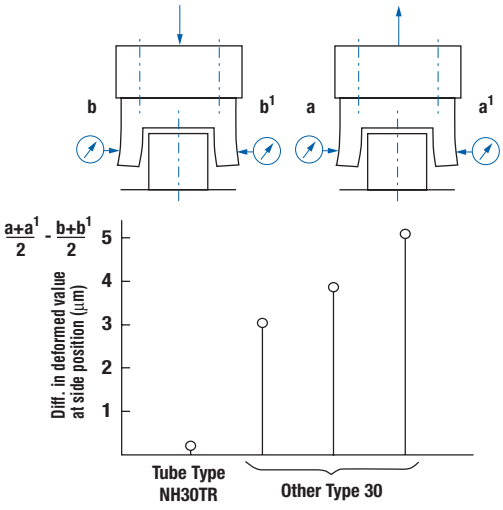
Noise

As a result of the reduction in friction, the noise vibration signature decreases during travel and consequently reduces the audible noise.



Rigidity of Runner Block

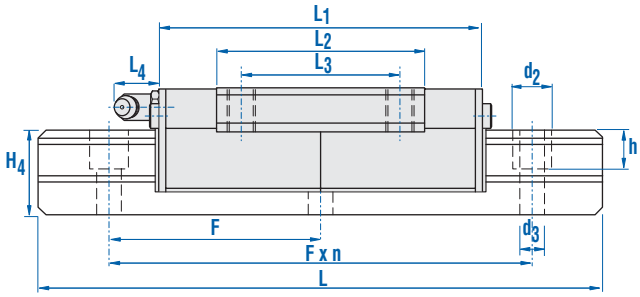
The "Tube" Type NOOK runner block has a solid structure with no return holes for balls as with the conventional runner block. The tube type design offers a stronger construction, giving the advantage of near equal resistance to deformation in both the radial and reverse radial loaded directions at the sides of the runner block.



Consistent Travelling Accuracy

High Speed Type runner blocks have a simple machined form offering continuity of movement at elevated speeds.

NH-TA • NH-TAH series
heavy load • high speed
four tapped holes



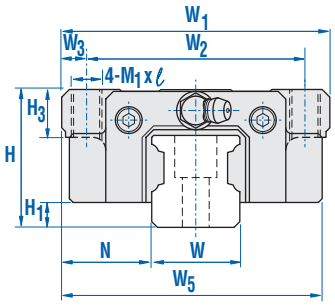
NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-TA provides Heavy Load with Higher Speeds
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15, 20,45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

	assembly dimensions			runner block dimensions									grease fitting
	height	width	length										
Model	H	W_1	L_1	W_2	W_5	L_3	$M_1 x \ell^*$	L_2	H_3	L_4	W_3	H_1	
NH15TA	24	47	71	38	46.5	30	M5x7	38.5	7	0	4.5	4.6	NAS516-1A
NH20TA	30	63	91	53	60	40	M6x10	50	8	0	5	5.0	NAS516-1A
NH25TA	36	70	97	57	66	45	M8x12	59	10	12	6.5	6.5	B-M6F
NH30TA	42	90	111	72	81	52	M10x14	68	13	12	9	7.0	B-M6F
NH35TA	48	100	128	82	92	62	M10x16	80	13	12	9	8.0	B-M6F
NH45TA	60	120	158	100	112	80	M12x19	102	15	14	9	11	B-PT 1/8
NH55TA	70	140	189	116	130	95	M14x23	124	17	16	12	14	B-PT 1/8
NH65TA	85	170	225	142	162	110	M16x29	148	20	16	14	14	B-PT 1/8
NH65TAH	90	170	225	142	162	110	M16x29	148	20	16	14	14	B-PT 1/8

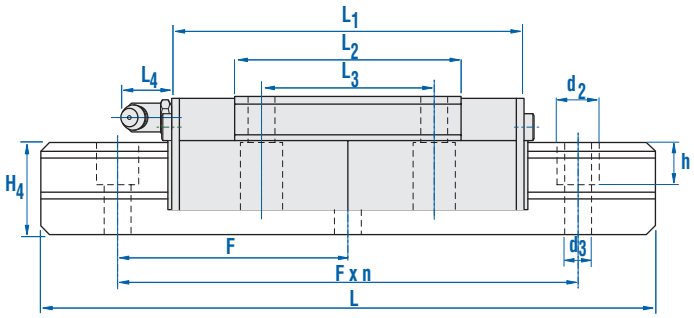
See unit conversion on page 48

*The screw length of mounting bolts shall not exceed the effective length of tapping holes



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height	width		pitch		C		C_0		M_A		M_B		M_C			
H_4	W	N	F	$d_3 \times d_2 \times h$	kN	lbf	kN	lbf	kN-m	lb-in	kN-m	lb-in	kN-m	lb-in	kg	kg/m
17	15	16.0	60	4.5 x 7.5 x 7	**8.43**	1,895	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.21	1.7
21	20	21.5	60	6 x 9.5 x 11	**13.92**	3,130	**23.83**	5,157	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.4	2.8
24	23	23.5	60	7 x 11 x 11	**20.00**	4,496	**34.41**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.64	3.7
28	28	31.0	80	9 x 14 x 14	**28.24**	6,347	**46.86**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	1.0	5.3
32	34	33.0	80	9 x 14 x 15	**37.55**	8,441	**62.55**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.5	7.5
42	45	37.5	105	14 x 20 x 21	**60.20**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	2.7	12.9
48	53	43.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.25**	37,671	4.4	17.3
58	63	53.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	8.4	24.9
58	63	53.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	8.4	24.9

NH-TB series
heavy load • high speed
four through holes

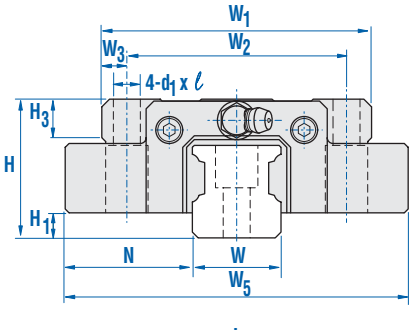


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-TB provides Heavy Load with Higher Speeds
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15, 20, 45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

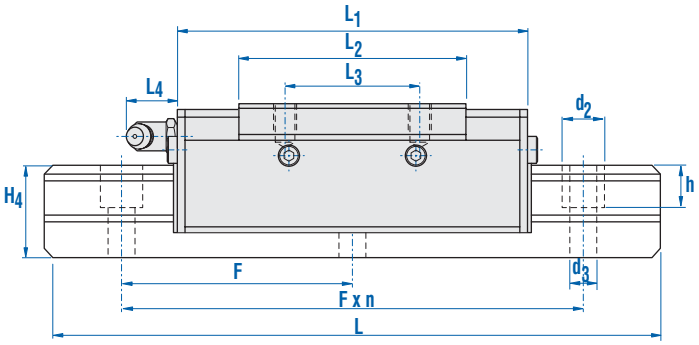
	assembly dimensions			runner block dimensions									grease fitting
	height	width	length										
Model	H	W_1	L_1	W_2	W_5	L_3	$d_1 x \ell$	L_2	H_3	L_4	W_3	H_1	
NH15TB	24	47	71	38	60	30	4.5x7	41	5	0	4.5	4.6	NAS516-1A
NH20TB	30	63	91	53	79	40	6x10	58	8	0	5	5.0	NAS516-1A
NH25TB	36	70	97	57	89	45	7x12	59	10	10	6.5	6.5	B-M6F
NH30TB	42	90	111	72	112	52	9x14	68	11	10	9	7.0	B-M6F
NH35TB	48	100	128	82	123	62	9x16	80	13	10	9	8.0	B-M6F
NH45TB	60	120	158	100	147	80	11x19	102	15	12	9	11	B-PT 1/8
NH55TB	70	140	189	116	171	95	14x23	124	17	12	12	14	B-PT 1/8
NH65TB	85	170	225	142	207	110	16x29	148	20	12	14	14	B-PT 1/8

See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	d_3 x d_2 x h	C kN	lbf	C_0 kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	16.0	60	4.5 x 7.5 x 7	**8.43**	1,896	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.21	1.7
21	20	21.5	60	6 x 9.5 x 11	**13.92**	3,130	**23.83**	5,157	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.4	2.8
24	23	23.5	60	7 x 11 x 11	**20.00**	4,496	**34.41**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.69	3.7
28	28	31.0	80	9 x 14 x 14	**28.24**	6,347	**46.86**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	1.0	5.3
32	34	33.0	80	9 x 14 x 15	**37.55**	8,441	**62.55**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.5	7.5
42	45	37.5	105	14 x 20 x 21	**60.20**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	2.7	12.9
48	53	43.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.25**	37,671	4.4	17.3
58	63	53.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	8.4	24.9

NH-TR series
heavy load • high speed
four tapped holes

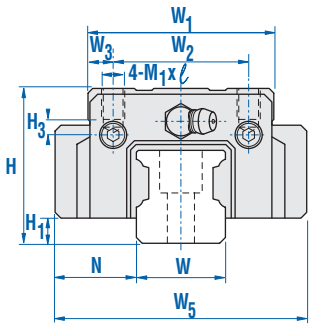


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NH-TR provides Heavy Load with Higher Speeds
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15, 20, 45, 55, 65 - 3000mm
  25, 30, 35 - 4000mm

	assembly dimensions			runner block dimensions									grease fitting
Model	height H	width W_1	length L_1	W_2	W_5	L_3	$M_1 x \ell$	L_2	H_3	L_4	W_3	H_1	
NH15TR	28	34	71	26	48	26	M4x5	41	6	3	4	4.6	PB1021B
NH25TR	40	48	97	35	66	35	M6x8	59	8	10	6.5	6.5	B-M6F
NH30TR	45	60	102	40	81	40	M8x10	59	8	10	10	7.0	B-M6F
NH35TR	55	70	128	50	92	50	M8x12	80	10	10	10	8.0	B-M6F
NH45TR	70	86	158	60	112	60	M10x17	102	15	12	13	11	B-PT 1/8
NH55TR	80	100	189	75	130	75	M12x18	124	18	12	12.5	14	B-PT 1/8
NH65TR	90	126	225	90	162	70	M16x20	148	23	12	18	14	B-PT 1/8

See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	d_3 x d_2 x h	C kN	lbf	C_0 kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	9.5	60	4.5 x 7.5 x 7	**8.43**	1,895	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.19	1.7
24	23	12.5	60	7 x 11 x 11	**20.00**	4,496	**34.41**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.54	3.7
28	28	16	80	9 x 14 x 14	**25.00**	5,620	**39.71**	8,926	**0.31**	2,778	**0.31**	2,778	**0.62**	5,468	0.75	5.3
32	34	18	80	9 x 14 x 15	**37.55**	8,441	**62.55**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.5	7.5
42	45	20.5	105	14 x 20 x 21	**60.20**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	2.8	12.9
48	53	23.5	120	16 x 23 x 24	**90.02**	20,232	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**4.25**	37,671	4.5	17.3
58	63	31.5	150	18 x 26 x 25	**141.11**	31,714	**215.15**	48,354	**4.21**	37,237	**4.21**	37,237	**7.38**	65,360	8.7	24.9

NOOK LINEAR GUIDE
HEAVY LOAD - COMPACT TYPE

NU-ER

NU-SER

CLASSIFICATION	HEAVY LOAD-COMPACT TYPE	
MODEL TYPE	NU-ER	NU-SER
Mounting Direction		
Main Features	Compact and High Rigidity	
Permissible speed (m/min)	120	120
Accuracy	C001-C7	C001-C7
Preload	T-T3	T-T3
Vibration Behavior	○	○
Noise	○	○

See unit conversion on page 48

○ Low ◉ Very Low

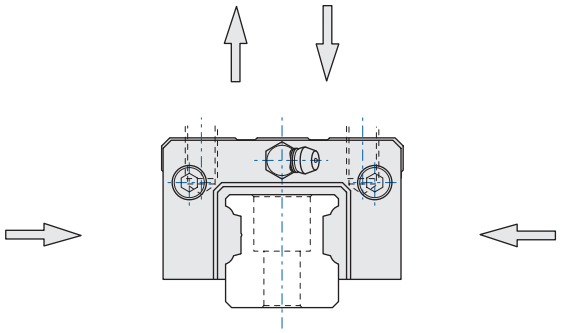
FEATURES

NOOK Profile Rail Design

NOOK Heavy Load and Compact Type Runner Blocks maintain circulation of the balls by a retainer and end cap. The four rows of balls on the inner runner block are arranged in two rows on either side facing each other and contacting at a 45° angle. As the load is transmitted the balls contact the rail at two points at an inclusive angle of 90°. In turn, the contact with the outer track is the same, making a square load force configuration.

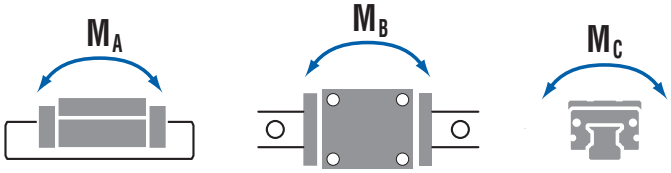
Equal Load in Four Directions

The shape of NOOK runner blocks have an equal rated load capacity in any direction. Equal rigidity is therefore obtained in any of the four loading directions making NOOK runner blocks ideal for single or combination loads.



Mounting Error Absorbtion and Rolling Moment Rigidity

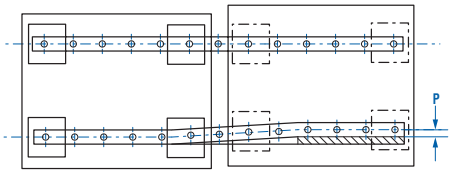
NOOK runner blocks are designed to absorb some of the mounting inaccuracies without any significant increase in the sliding friction.



Excellent Vibration Behavior

NOOK Heavy Load and Compact Type Runner Blocks have improved dynamic stiffness at high oscillation rates. The four-way load construction offers high rigidity and high dynamic stiffness to eliminate resonance with motor, etc.

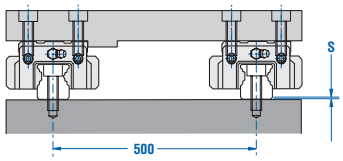
Error Allowance in the Parallelism Between Two Rails—Horizontal Plane



Permissible Tolerance (P) for Parallelism

Model NU	P		unit = µm
Model No.	Clearance T0	Clearance T1	Normal Clearance
15	—	25	35
20	25	30	40
25	30	35	50
30	35	40	60
35	45	50	70
45	55	60	80
55	65	70	100

Error Allowance Between Two Rails

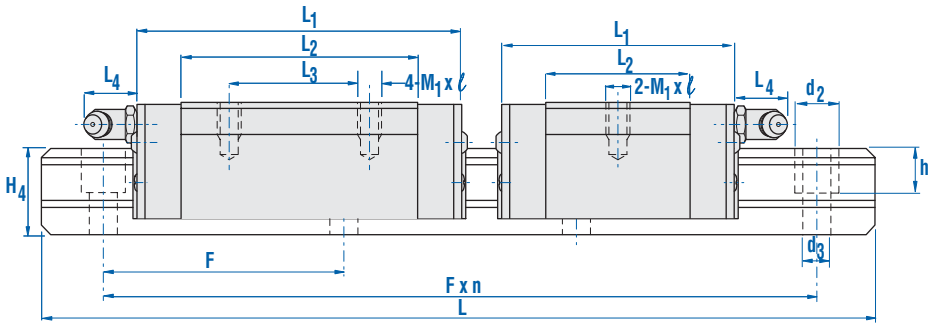


Permissible Tolerance (S) for Two Level

TWO LEVEL OFFSET: The values in the figures show the permissible tolerances for the rail-to-rail distance of 500 mm. The permissible values are proportional to the rail-to-rail distances.

Model NU	S		unit = µm
Model No.	Clearance T0	Clearance T1	Normal Clearance
15	—	100	180
20	80	100	180
25	100	120	200
30	120	150	240
35	170	210	300
45	200	240	360
55	250	300	420

NU-ER • NU-SER series
heavy load • compact
two or four tapped holes

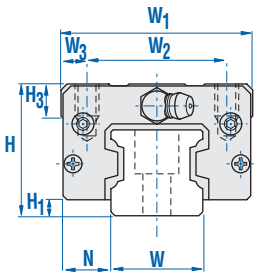


NOOK Precision Profile Rail Systems provide stable and efficient linear motion guidance under variable speeds and high load conditions.

- Interchangeable with other manufacturers
- NU-ER and NU-SER provide Compact Design with High Rigidity
- Precision Class: C0001 - C7
- Preload: T - T3
- Maximum Rail Length:
  15 - 1500mm
  20 thru 55 - 3000mm

	assembly dimensions			runner block dimensions								grease fittings
	height	width	length									
Model	H	W_1	L_1	W_2	L_3	$M_1 x \ell$	L_2	H_3	L_4	W_3	H_1	
NU15ER	24	34	58.5	26	26	M4x5	38.5	6	0	4	4.6	NAS516-1A
NU15SER	24	34	45	26	-	M4x5	25	6	0	4	4.6	NAS516-1A
NU20ER	28	42	72	32	32	M5x7	50	7.5	0	5	4	NAS516-1A
NU20SER	28	42	52	32	-	M5x7	30	7.5	0	5	4	NAS516-1A
NU25ER	33	48	83	35	35	M6x8	59	8	12	6.5	4	B-M6F
NU25SER	33	48	60	35	-	M6x8	36	8	12	6.5	4	B-M6F
NU30ER	42	60	97	40	40	M8x10	68	8	12	10	7	B-M6F
NU30SER	42	60	73	40	-	M8x10	44	8	12	10	7	B-M6F
NU35ER	48	70	112	50	50	M8x12	80	10	12	10	8	B-M6F
NU35SER	48	70	84	50	-	M8x12	52	10	12	10	8	B-M6F
NU45ER	60	86	139	60	60	M10x16	102	15	14	13	11	B-PT 1/8
NU55ER	68	100	168	75	75	M12x18	124	18	14	12.5	12	B-PT 1/8

See unit conversion on page 48



rail dimensions					load ratings										weights	
					basic load ratings				static moment ratings						block	rail
height H_4	width W	N	pitch F	$d_3 \times d_2 \times h$	C kN	lbf	C_0 kN	lbf	M_A kN-m	lb-in	M_B kN-m	lb-in	M_C kN-m	lb-in	kg	kg/m
17	15	9.5	60	3.5 x 6 x 9	**8.43**	1,895	**13.53**	3,041	**0.07**	608	**0.07**	608	**0.13**	1,128	0.13	1.7
17	15	9.5	60	3.5 x 6 x 9	**5.49**	1,234	**7.35**	1,653	**0.03**	260	**0.03**	260	**0.07**	608	0.08	1.7
19.5	20	11	60	6 x 9.5 x 12	**13.92**	3,130	**23.82**	5,356	**0.16**	1,389	**0.16**	1,389	**0.26**	2,344	0.27	2.5
19.5	20	11	60	6 x 9.5 x 12	**9.12**	2,050	**12.94**	2,909	**0.05**	434	**0.05**	434	**0.15**	1,302	0.16	2.5
21.5	23	12.5	60	7 x 11 x 12.5	**20.00**	4,498	**34.41**	7,736	**0.27**	2,430	**0.27**	2,430	**0.44**	3,906	0.41	3.2
21.5	23	12.5	60	7 x 11 x 12.5	**13.14**	2,953	**18.63**	4,187	**0.09**	781	**0.09**	781	**0.23**	1,996	0.25	3.2
28	28	16	80	7 x 11 x 14	**28.24**	6,347	**46.86**	10,535	**0.43**	3,819	**0.43**	3,819	**0.72**	6,336	0.9	5.3
28	28	16	80	7 x 11 x 14	**18.53**	4,165	**25.49**	5,730	**0.14**	1,215	**0.14**	1,215	**0.39**	3,472	0.61	5.3
32	34	18	80	9 x 14 x 15	**37.55**	8,441	**62.55**	14,061	**0.64**	5,642	**0.64**	5,642	**1.13**	9,982	1.3	7.5
32	34	18	80	9 x 14 x 15	**28.92**	6,502	**39.71**	8,926	**0.27**	2,430	**0.27**	2,430	**0.72**	6,336	0.84	7.5
42	45	20.5	105	11 x 17.5 x 20.5	**60.20**	13,532	**95.71**	21,510	**1.30**	11,544	**1.30**	11,544	**2.30**	20,398	2.2	12.9
46	53	26	120	14 x 20 x 25	**89.53**	20,132	**137.09**	30,811	**2.22**	19,617	**2.22**	19,617	**3.95**	34,980	3.3	16.5