

Standard Ball Runner Blocks made of steel

## FLS – Flanged, long, standard height

### R1653 ... 2.

#### Dynamic characteristics

Travel speed:  $v_{\max} = 5 \text{ m/s}$





Acceleration:  $a_{\max} = 500 \text{ m/s}^2$

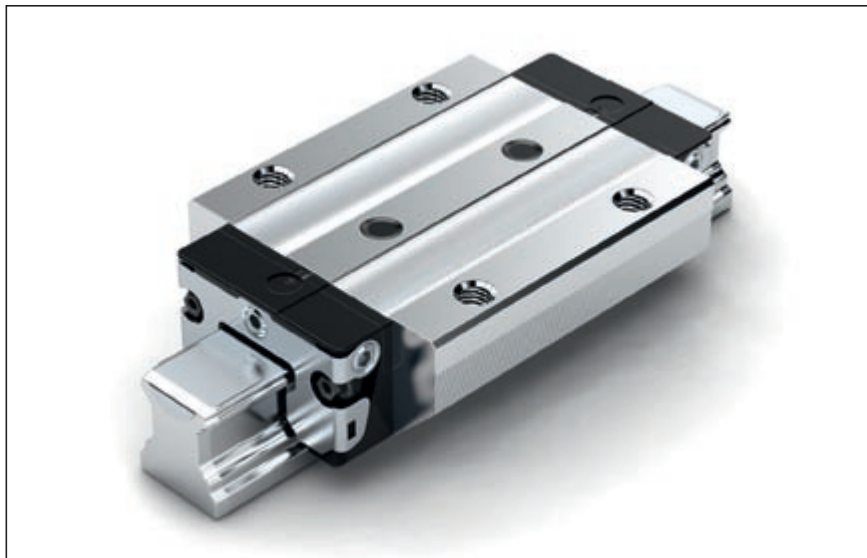
(If  $F_{\text{comb}} > 2.8 \cdot F_{\text{pr}}$ :  $a_{\max} = 50 \text{ m/s}^2$ )

#### Note on lubrication

- Pre-lubricated

#### Further Ball Runner Blocks FLS

- Heavy Duty Ball Runner Blocks made of steel, size 55 and 65  62
- High Precision Ball Runner Blocks made of steel  72
- Corrosion-resistant Ball Runner Blocks  
Resist NR  100  
Resist CR  108



#### Note

Can be used on all Ball Guide Rails SNS.

#### Options and part numbers

Size	Ball runner block with size	Preload class			Accuracy class			Seal for ball runner block					
		C0	C1	C2	N	H	P	without ball chain			with ball chain		
								SS	LS <sup>1)</sup>	DS	SS	LS <sup>1)</sup>	DS
15	R1653 1	9	1	2	4	3	–	20	21	–	22	23	–
					4	3	2	20	21	–	22	23	–
					–	3	2	20	–	–	22	–	–
20	R1653 8	9	1	2	4	3	–	20	21	–	22	23	–
					4	3	2	20	21	2Z	22	23	2Y
					–	3	2	20	–	2Z	22	–	2Y
25	R1653 2	9	1	2	4	3	–	20	21	–	22	23	–
					4	3	2	20	21	2Z	22	23	2Y
					–	3	2	20	–	2Z	22	–	2Y
30	R1653 7	9	1	2	4	3	–	20	21	–	22	23	–
					4	3	2	20	21	2Z	22	23	2Y
					–	3	2	20	–	2Z	22	–	2Y
35	R1653 3	9	1	2	4	3	–	20	21	–	22	23	–
					4	3	2	20	21	2Z	22	23	2Y
					–	3	2	20	–	2Z	22	–	2Y
45	R1653 4	9	1	2	4	3	–	20	–	–	22	–	–
					4	3	2	20	–	2Z	22	–	2Y
					–	3	2	20	–	2Z	22	–	2Y

e.g. R1653 7 | 1 | 3 | 20

1) Only with accuracy classes N and H

#### Ordering example

Options:

- Ball Runner Block FLS
- Size 30
- Preload class C1
- Accuracy class H
- With standard seal, without ball chain

Part number: R1653 713 20

#### Preload classes

C0 = without preload

C1 = preload 2% C

C2 = preload 8% C

#### Seals

SS = standard seal

LS = low-friction seal

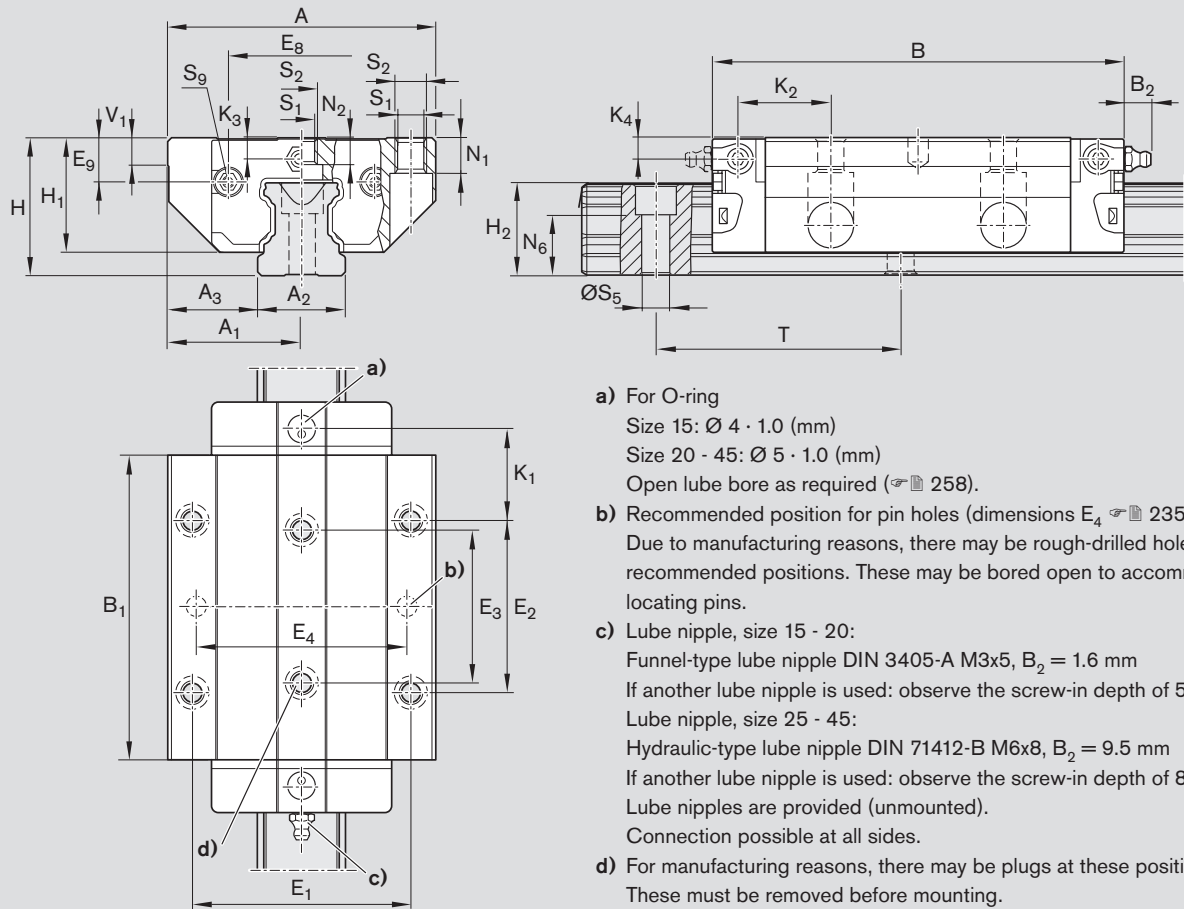
DS = double-lipped seal

#### Key to table

Gray numbers

= version/combination not preferred  
(longer delivery times in some cases)

**Ball Runner Blocks FLS**



- a) For O-ring  
 Size 15: Ø 4 · 1.0 (mm)  
 Size 20 - 45: Ø 5 · 1.0 (mm)  
 Open lube bore as required (☞ 258).
- b) Recommended position for pin holes (dimensions E<sub>4</sub> ☞ 235).  
 Due to manufacturing reasons, there may be rough-drilled holes at the recommended positions. These may be bored open to accommodate the locating pins.
- c) Lube nipple, size 15 - 20:  
 Funnel-type lube nipple DIN 3405-A M3x5, B<sub>2</sub> = 1.6 mm  
 If another lube nipple is used: observe the screw-in depth of 5 mm!  
 Lube nipple, size 25 - 45:  
 Hydraulic-type lube nipple DIN 71412-B M6x8, B<sub>2</sub> = 9.5 mm  
 If another lube nipple is used: observe the screw-in depth of 8 mm!  
 Lube nipples are provided (unmounted).  
 Connection possible at all sides.
- d) For manufacturing reasons, there may be plugs at these positions.  
 These must be removed before mounting.

Size	Dimensions (mm)																		
	A	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	B	B <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>8</sub>	E <sub>9</sub>	H	H <sub>1</sub>	H <sub>2</sub> <sup>1)</sup>	H <sub>2</sub> <sup>2)</sup>	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>
15	47	23.5	15	16.0	72.6	53.6	38	30	26	24.55	6.70	24	19.90	16.30	16.20	15.20	16.80	3.20	3.20
20	63	31.5	20	21.5	91.0	65.6	53	40	35	32.50	7.30	30	25.35	20.75	20.55	19.80	19.80	3.35	3.35
25	70	35.0	23	23.5	107.9	79.5	57	45	40	38.30	11.50	36	29.90	24.45	24.25	23.30	24.45	5.50	5.50
30	90	45.0	28	31.0	119.7	89.4	72	52	44	48.40	14.60	42	35.35	28.55	28.35	25.00	26.70	6.05	6.05
35	100	50.0	34	33.0	139.0	105.5	82	62	52	58.00	17.35	48	40.40	32.15	31.85	28.75	30.25	6.90	6.90
45	120	60.0	45	37.5	174.1	133.5	100	80	60	69.80	20.90	60	50.30	40.15	39.85	35.50	37.50	8.20	8.20

Size	Dimensions (mm)										Weight (kg)	Load capacities <sup>3)</sup> (N)		Load moments <sup>3)</sup> (Nm)			
	N <sub>1</sub>	N <sub>2</sub>	N <sub>6</sub> <sup>±0.5</sup>	S <sub>1</sub>	S <sub>2</sub>	S <sub>5</sub>	S <sub>9</sub>	T	V <sub>1</sub>	C		C <sub>0</sub>	M <sub>t</sub>	M <sub>t0</sub>	M <sub>L</sub>	M <sub>L0</sub>	
15	5.2	4.40	10.3	4.3	M5	4.4	M2.5x3.5	60	5.0	0.30	10 000	20 200	96	190	75	150	
20	7.7	5.20	13.2	5.3	M6	6.0	M3x5	60	6.0	0.55	24 400	35 200	310	450	225	330	
25	9.3	7.00	15.2	6.7	M8	7.0	M3x5	60	7.5	0.90	30 400	45 500	430	650	345	510	
30	11.0	7.90	17.0	8.5	M10	9.0	M3x5	80	7.0	1.50	40 000	57 800	690	1 000	495	715	
35	12.0	10.15	20.5	8.5	M10	9.0	M3x5	80	8.0	2.25	55 600	81 000	1 200	1 740	830	1 215	
45	15.0	12.40	23.5	10.4	M12	14.0	M4x7	105	10.0	4.30	90 400	128 500	2 440	3 470	1 700	2 425	

- 1) Dimension H<sub>2</sub> with cover strip
- 2) Dimension H<sub>2</sub> without cover strip
- 3) Load capacities and moments for Ball Runner Block **without** ball chain. Load capacities and moments for Ball Runner Block **with** ball chain ☞ 8. Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m per ISO 14728-1. Often only 50,000 m are actually stipulated. For comparison: Multiply values C, M<sub>t</sub> and M<sub>L</sub> from the table by 1.26.