isel Germany

engineering to the point

PSF linear guides

Move safely and precisely

aalberts advanced mechatronics

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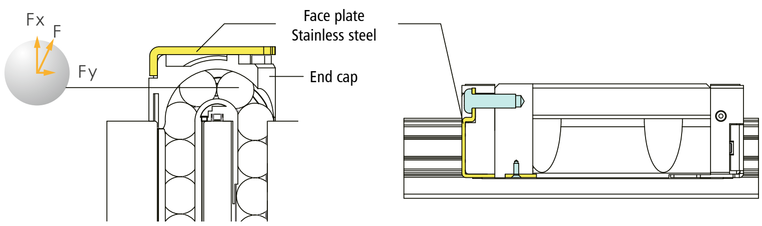
Stand: April 2025

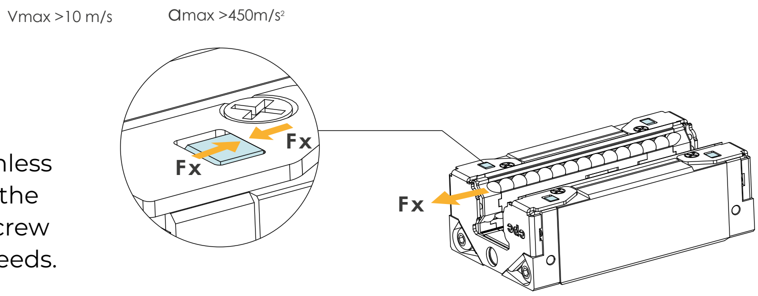
Content

ProfileTrackGuide - PSF Special Features



Reinforced stainless steel face plate

The L-shaped stainless steel end plates are fastened to the guide carriage with screws at the end and from below. The stainless steel end plates reinforce the ball deflection, protect the plastic deflection from damage and also serve as scrapers for coarse chips. The gap between the guide rail and the face plate is < 0.3 mm.



Patented face plate makes high speeds possible

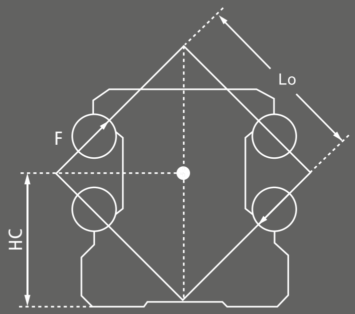
The positive connection of the stainless steel end plate to the underside of the guide carriage, in addition to the screw connection, allows higher travel speeds.

PSF – Profiled rail guide

Linear guides are designed with four raceways in O - arrangement. The precision steel balls transmit introduced forces at a contact angle of 45 degrees (see following sketch). The O-arrangement gives a high torsional rigidity.

To achieve an optimum at load capacity and stiffness the maximum number of steel balls were used, despite the limited space. As a result, high static and dynamic torque loads are possible. The same load ratings apply to all load directions with a compact design.

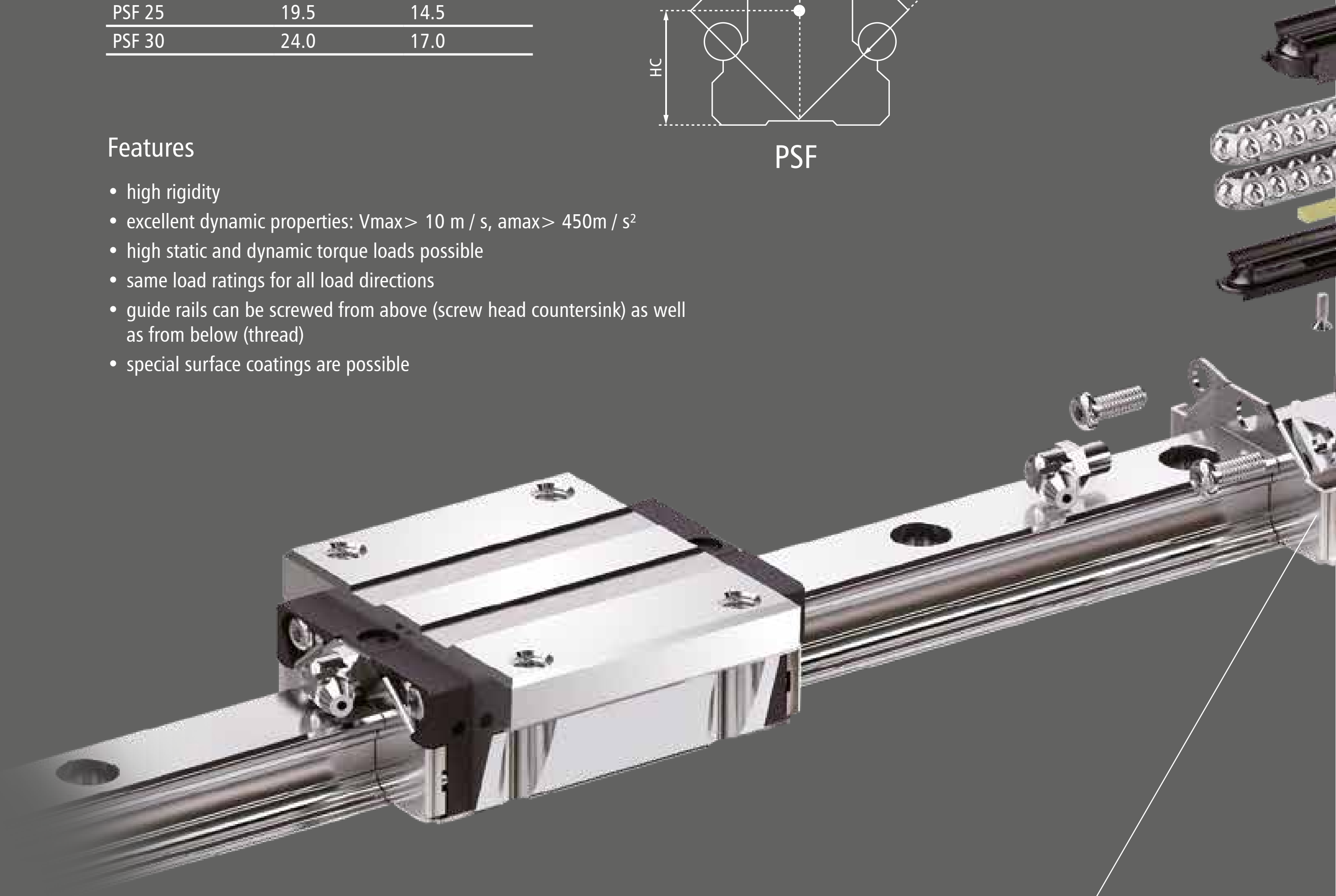
Frame size	Lo [mm]	Hc [mm]
PSF 15	12.4	9.35
PSF 20	16.4	12.5
PSF 25	19.5	14.5
PSF 30	24.0	17.0



PSF

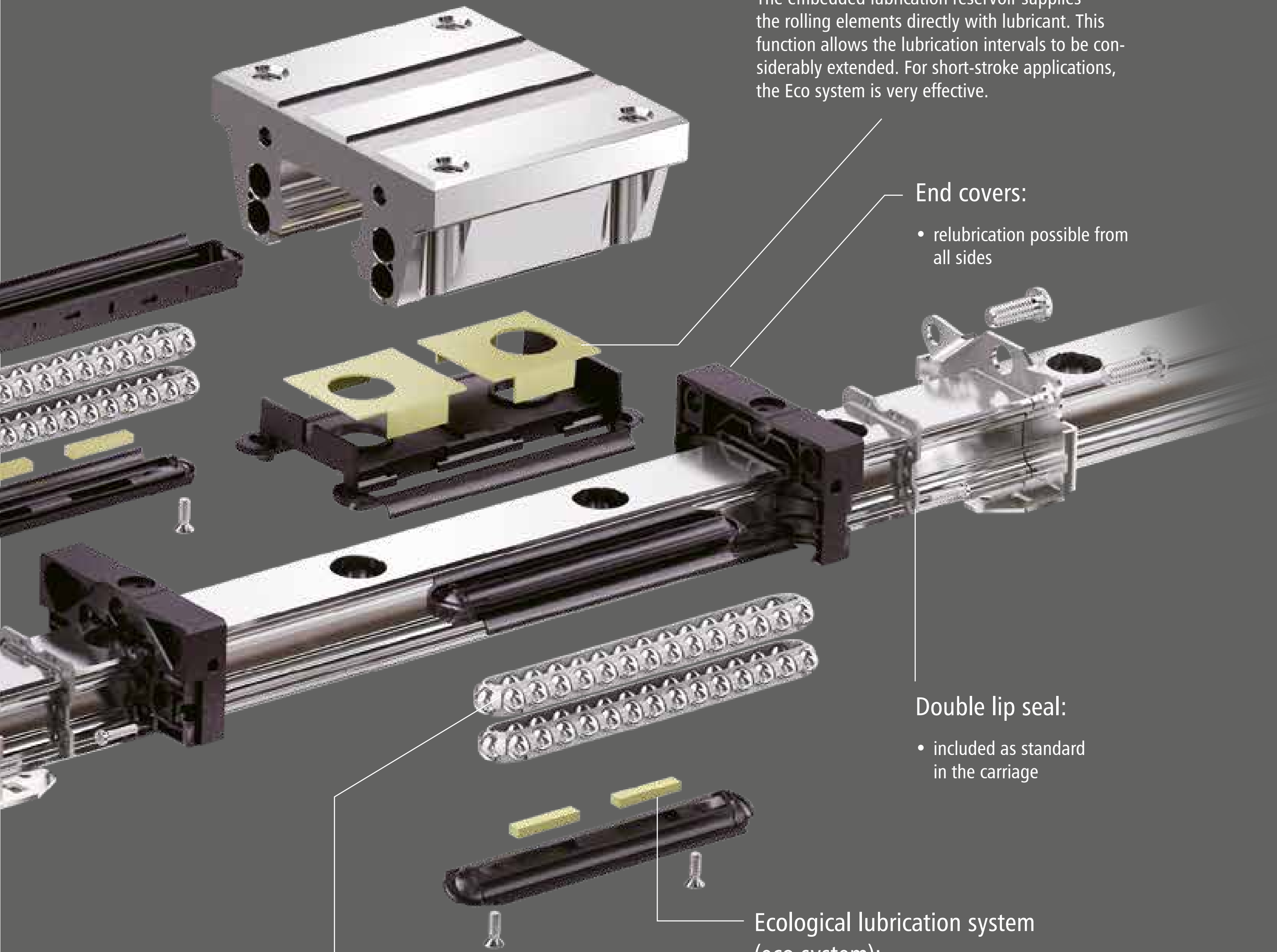
Features

- high rigidity
- excellent dynamic properties: Vmax> 10 m / s, amax> 450m / s^2
- high static and dynamic torque loads possible
- same load ratings for all load directions
- guide rails can be screwed from above (screw head countersink) as well as from below (thread)
- special surface coatings are possible



Reinforced stainless steel front plate to increase the carriage characteristics

- standard reinforced steel covers on the front sides
- increasing the stiffness in X-axis direction



Ecological lubrication system (eco system):

The embedded lubrication reservoir supplies the rolling elements directly with lubricant. This function allows the lubrication intervals to be considerably extended. For short-stroke applications, the Eco system is very effective.

End covers:

- relubrication possible from all sides

Double lip seal:

- included as standard in the carriage

Ball Chain:

- patented design
- very quiet
- quiet process

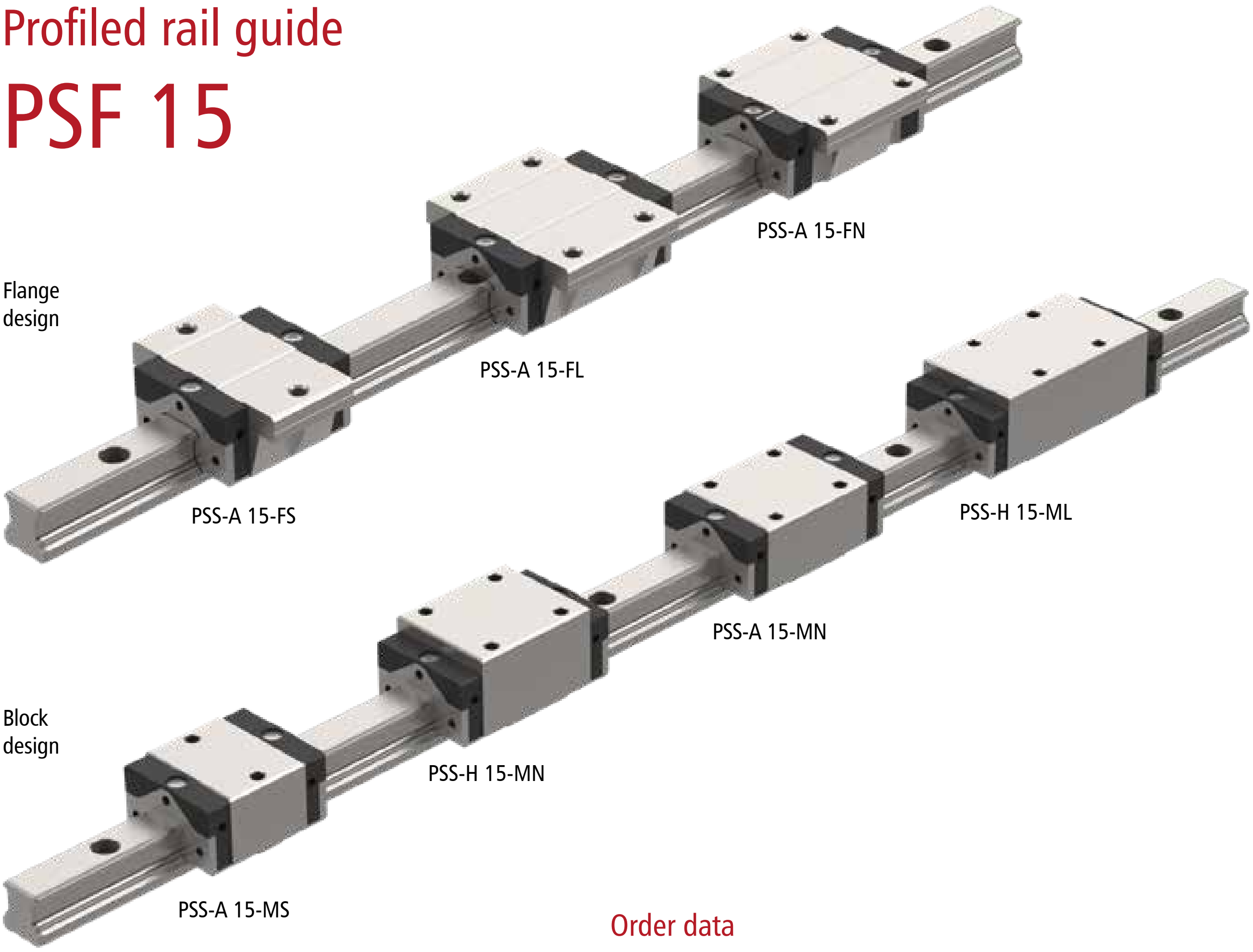
Ecological lubrication system (eco system):

The embedded lubrication reservoir supplies the rolling elements directly with lubricant. This function allows the lubrication intervals to be considerably extended.

For short-stroke applications, the Eco system is very effective.

Profiled rail guide

PSF 15



Order data

Profiled rail guide		item number
PSF 15	4000 mm long	223516 4000

Guide carriage		item number
flange design	PSS-A 15-FS	223509 2100
	PSS-A 15-FN	223509 2000
	PSS-H 15-FN	223509
block design	PSS-A 15-MS	223509 3100
	PSS-A 15-MN	223509 3000
	PSS-H 15-MN	223509 1000
	PSS-H 15-ML	223509 1100

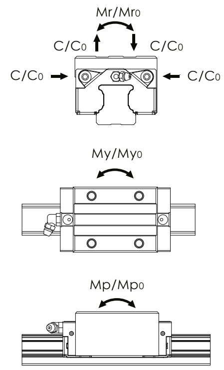
Carriage description

PSS-X 15-XX

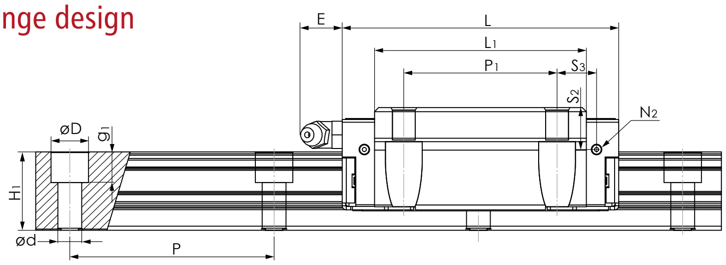
frame size	design	carriage length
A = compact	F = flange	S = short
H = tall	M = block	N = normal
		L = long

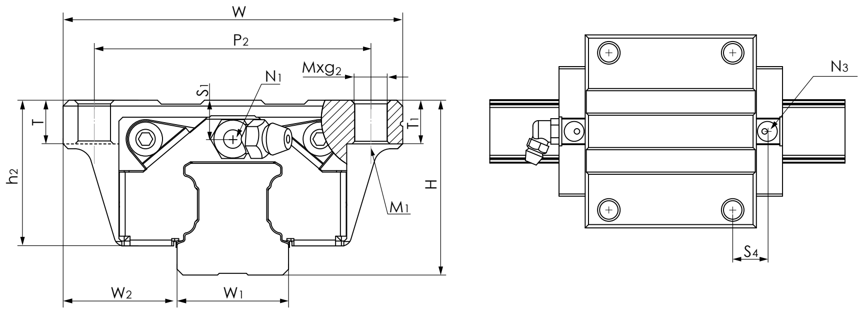
Load data

PSF 15 with guide carriage	Load rating [KN]		Static moments [Nm]			Weights	
	C	C_0	Mr_0	Mp_0	My_0	carriage [g]	rail [g/m]
PSS-A 15-FS	7.7	12.1	100	50	50	132	1290
PSS-A 15-FN	9.9	17.5	140	105	105	200	1290
PSS-H 15-FN	9.9	17.5	140	105	105	190	1290
PSS-A 15-MS	7.7	12.1	100	50	50	106	1290
PSS-A 15-MN	9.9	17.5	140	105	105	158	1290
PSS-H 15-MN	9.9	17.5	140	105	105	200	1290
PSS-H 15-ML	13.4	26.9	215	235	235	300	1290



Flange design





Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
15	15	60	7.5x4.5x5.3

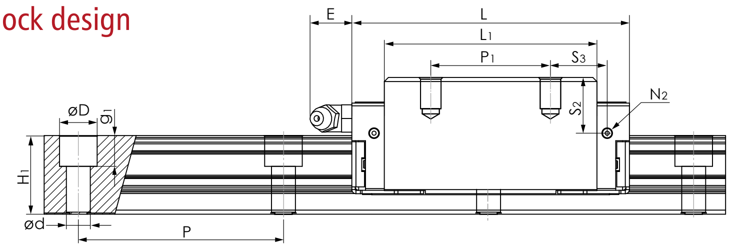
Assembling dimensions [mm]

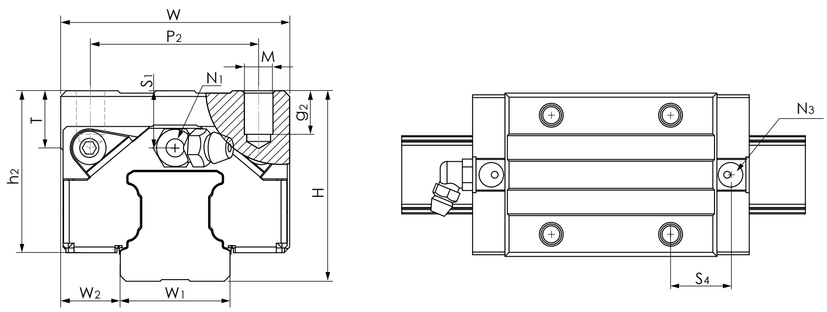
PSF 15 with	H	W_2
PSS-A 15-FS	24	18.5
PSS-A 15-FN	24	18.5
PSS-H 15-FN	24	16

Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 15-FS	52	41.2	26	20.7	-	41	M5x7	M4	7	7	M3x6.5	M3x6	P3	3.5	4.5	7.5	15.6	16.7
PSS-A 15-FN	52	55.5	40.3	20.7	26	41	M5x7	M4	7	7	M3x6.5	M3x6	P3	3.5	4.5	7.5	8.9	10.9
PSS-H 15-FN	47	55.5	40.3	20.7	30	38	M5x7	M4	7	7	M3x6.5	M3x6	P3	3.5	4.5	7.5	7.8	8.9

Block design





Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
15	15	60	7.5x4.5x5.3

Assembling dimensions [mm]

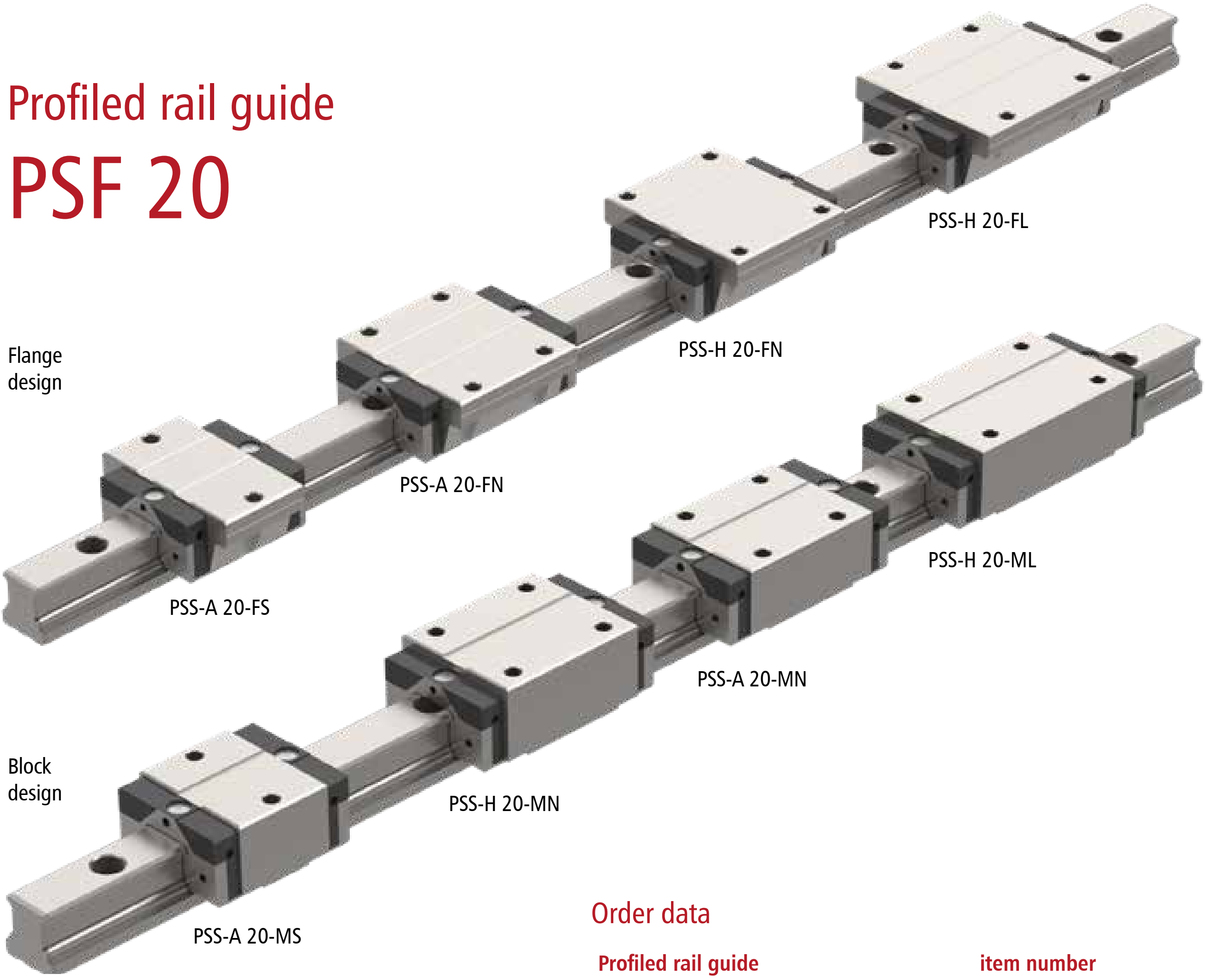
PSF 15 with	H	W_2
PSS-A 15-MS	24	9,5
PSS-A 15-MN	24	9,5
PSS-H 15-MN	28	9,5
PSS-H 15-ML	28	9,5

Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 15-MS	34	41.2	26	20.7	-	26	M4x7	-	6	-	M3x6.5	M3x6	P3	3.5	4.5	7.5	15.6	16.7
PSS-A 15-MN	34	55.5	40.3	20.7	26	26	M4x7	-	6	-	M3x6.5	M3x6	P3	3.5	4.5	7.5	9.8	10.9
PSS-H 15-MN	34	55.5	40.3	24.7	26	26	M4x7	-	6	-	M3x6.5	M3x6	P3	3.5	8.5	11.5	9.8	10.9
PSS-H 15-ML	34	76.2	61	24.7	26	26	M4x7	-	6	-	M3x6.5	M3x6	P3	3.5	8.5	11.5	20.1	21.2

Profiled rail guide

PSF 20



Carriage description

PSS-X 20-XX

frame size	design	carriage length
A = compact	F = flange	S = short
H = tall	M = block	N = normal
		L = long

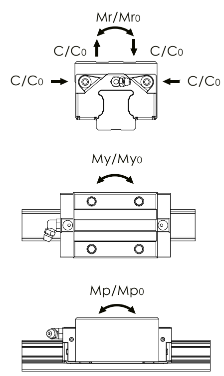
Order data

Profiled rail guide		item number
PSF 20	4000 mm long	223521 4000

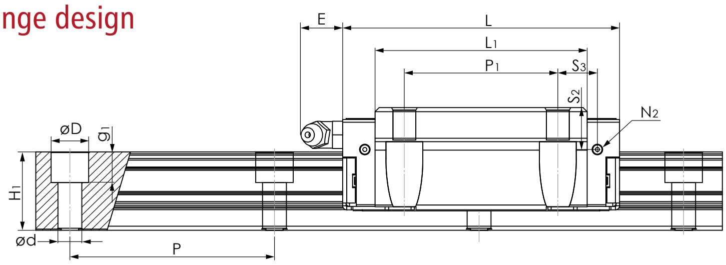
Guide carriage		item number
flange design	PSS-A 20-FS	223510 2100
	PSS-A 20-FN	223510 2000
	PSS-H 20-FN	223510
	PSS-H 20-FL	223510 0100
block design	PSS-A 20-MS	223510 3100
	PSS-A 20-MN	223510 3000
	PSS-H 20-MN	223510 1000
	PSS-H 20-ML	223510 1100

Load data

PSF 20 with guide carriage	Load rating [KN] C	Load rating [KN] C_0	Static moments [Nm] M_{r0}	Static moments [Nm] M_{p0}	Static moments [Nm] M_{y0}	Weights carriage [g]	Weights rail [g/m]
PSS-A 20-FS	12.5	19.3	205	100	100	210	2280
PSS-A 20-FN	17.1	30.0	325	230	230	336	2280
PSS-H 20-FN	17.1	30.0	325	230	230	396	2280
PSS-H 20-FL	20.4	38.5	415	390	390	504	2280
PSS-A 20-MS	12.5	19.3	205	100	100	170	2280
PSS-A 20-MN	17.1	30.0	325	230	230	266	2280
PSS-H 20-MN	17.1	30.0	325	230	230	318	2280
PSS-H 20-ML	20.4	38.5	415	390	390	400	2280



Flange design

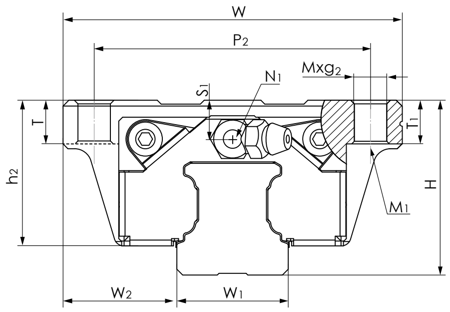


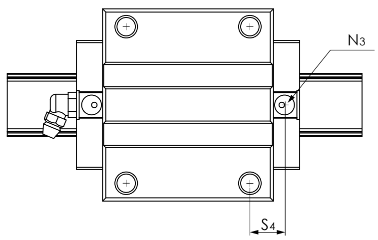
Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
20	20	60	9.5x6x8.5

Assembling dimensions [mm]

PSF 20 with	H	W_2
PSS-A 20-FS	28	19.5
PSS-A 20-FN	28	19.5
PSS-H 20-FN	30	21.5
PSS-H 20-FL	30	21.5

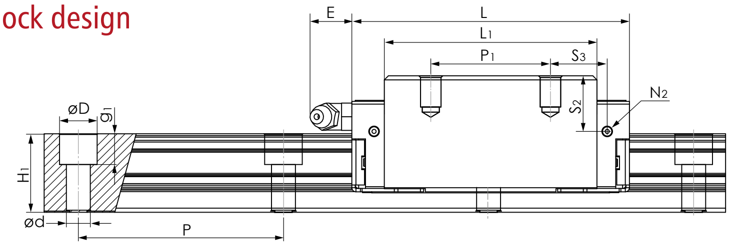




Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 20-FS	59	49.2	32.2	23	-	49	M6x10	M5	10	10	M3x7.5	M3x5.5	P4	10	4	7.4	19.1	19.8
PSS-A 20-FN	59	69	52	23	32	49	M6x10	M5	10	10	M3x7.5	M3x5.5	P4	10	4	7.4	13	13.7
PSS-H 20-FN	63	69	52	25	40	53	M6x10	M5	10	10	M3x7.5	M3x5.5	P4	10	6	9.4	9	9.7
PSS-H 20-FL	63	87.2	70.2	25	40	53	M6x10	M5	7	7	M3x7.5	M3x5.5	P4	10	6	9.4	18.1	18.8

Block design

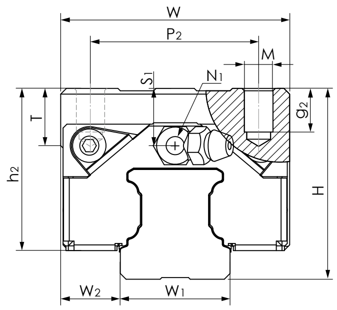


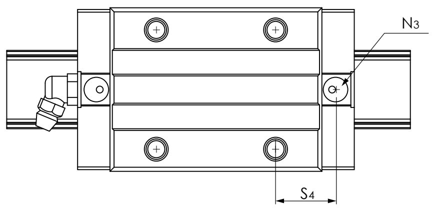
Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
20	20	60	9.5x6x8.5

Assembling dimensions [mm]

PSF 20 with	H	W_2
PSS-A 20-MS	28	11
PSS-A 20-MN	28	11
PSS-H 20-MN	30	12
PSS-H 20-ML	30	12

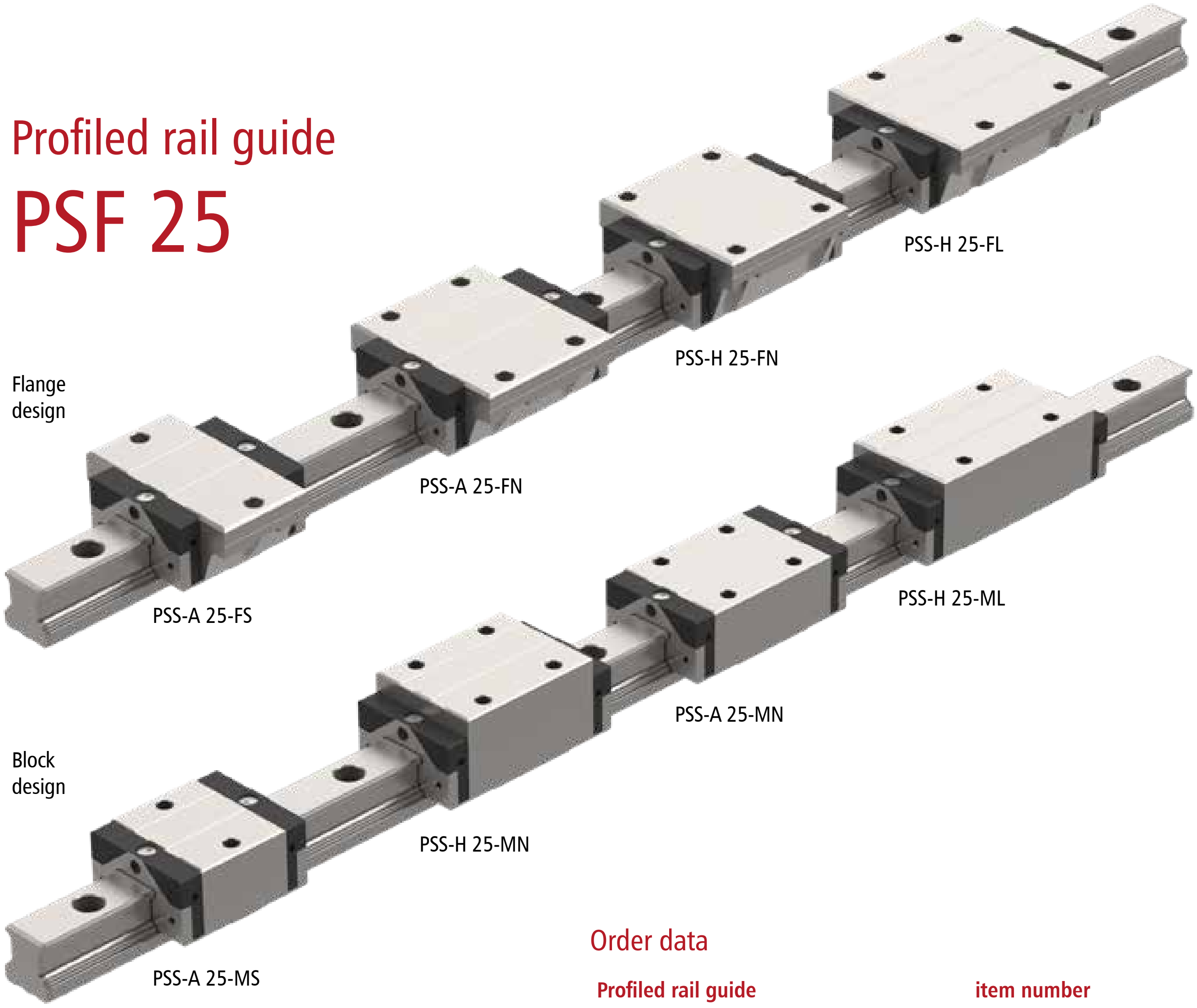




Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 20-MS	42	49.2	32.2	23	-	32	M5x7	-	8	-	M3x7.5	M3x5.5	P4	10	4	7.4	19.1	19.8
PSS-A 20-MN	42	69	52	23	32	32	M5x7	-	8	-	M3x7.5	M3x5.5	P4	10	4	7.4	13	13.7
PSS-H 20-MN	44	69	52	25	36	32	M5x8.5	-	8	-	M3x7.5	M3x5.5	P4	10	6	9.4	11	11.7
PSS-H 20-ML	44	87.2	70.2	25	50	32	M5x8.5	-	8	-	M3x7.5	M3x5.5	P4	10	6	9.4	13.1	13.8

Profiled rail guide
PSF 25



Carriage description

PSS-X 25-XX

frame size	design	carriage length
A = compact	F = flange	S = short
H = tall	M = block	N = normal
		L = long

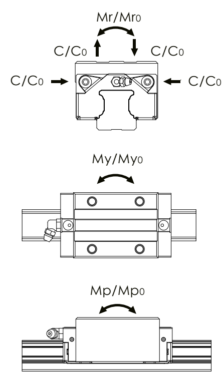
Order data

Profiled rail guide		item number
PSF 25	4000 mm long	223526 4000

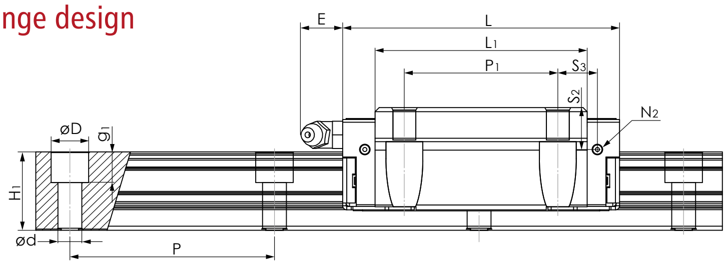
Guide carriage		item number
flange design	PSS-A 25-FS	223511 2100
	PSS-A 25-FN	223511 2000
	PSS-H 25-FN	223511
	PSS-H 25-FL	223511 0100
block design	PSS-A 25-MS	223511 3100
	PSS-A 25-MN	223511 3000
	PSS-H 25-MN	223511 1000
	PSS-H 25-ML	223511 1100

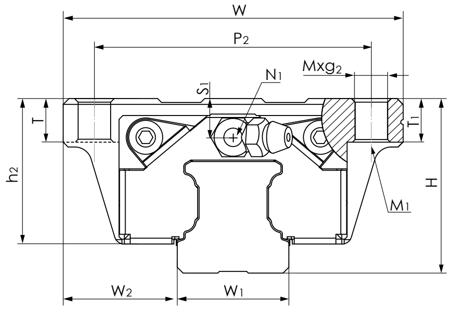
Load data

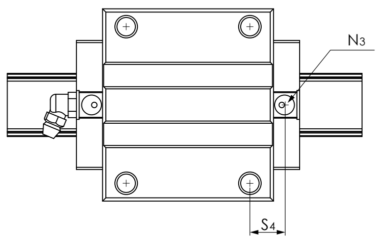
PSF 25 with guide carriage	Load rating [KN] C	C_0	Static moments [Nm] Mr_0	Mp_0	My_0	Weights carriage [g]	rail [g/m]
PSS-A 25-FS	18.2	27.3	350	160	160	345	3020
PSS-A 25-FN	24.8	42.5	540	385	385	524	3020
PSS-H 25-FN	24.8	42.5	540	385	385	626	3020
PSS-H 25-FL	30.7	57.5	735	710	710	870	3020
PSS-A 25-MS	18.2	27.3	350	160	160	300	3020
PSS-A 25-MN	24.8	42.5	540	385	385	420	3020
PSS-H 25-MN	24.8	42.5	540	385	385	578	3020
PSS-H 25-ML	30.7	57.7	735	710	710	685	3020



Flange design







Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
23	23	60	11x7x9

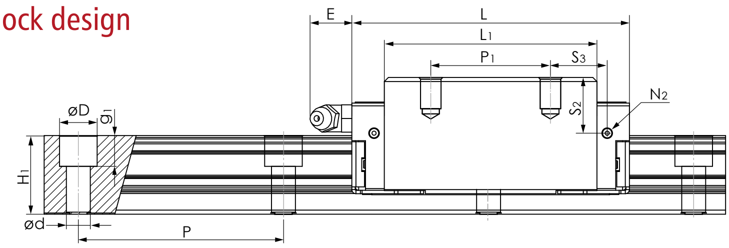
Assembling dimensions [mm]

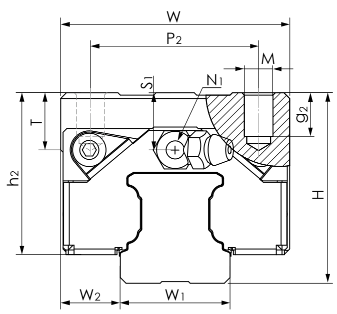
PSF 25 with	H	W_2
PSS-A 25-FS	33	25
PSS-A 25-FN	33	25
PSS-H 25-FN	36	23,5
PSS-H 25-FL	36	23,5

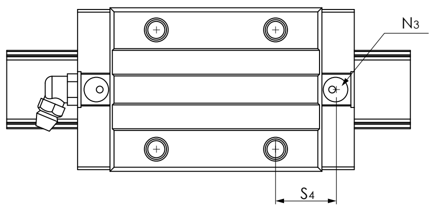
Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 25-FS	73	57.4	38.4	27	-	60	M8x12	M6	12	12	M6x7.5	M3x6.5	P4	12	5	9.3	22.2	23.2
PSS-A 25-FN	73	81.2	62.2	27	35	60	M8x12	M6	12	12	M6x7.5	M3x6.5	P4	12	5	9.3	16.6	17.6
PSS-H 25-FN	70	81.2	62.2	30	45	57	M8x12	M6	12	12	M6x7.5	M3x6.5	P4	12	8	12.3	11.6	12.6
PSS-H 25-FL	70	105	86	30	45	57	M8x12	M6	10	10	M6x7.5	M3x6.5	P4	12	8	12.3	23.5	24.5

Block design







Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
23	23	60	11x7x9

Assembling dimensions [mm]

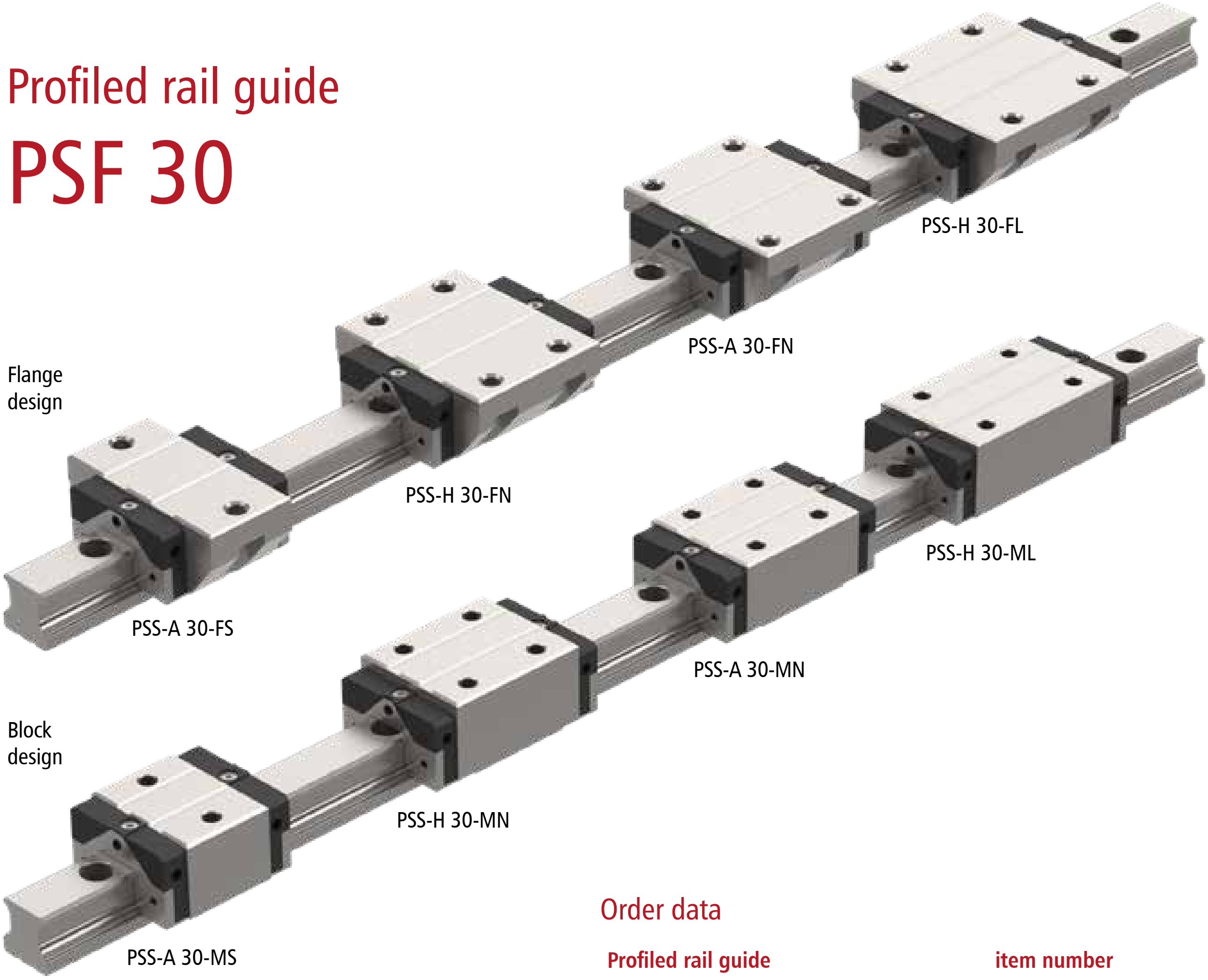
PSF 25 with	H	W_2
PSS-A 25-MS	33	12.5
PSS-A 25-MN	33	12.5
PSS-H 25-MN	40	12.5
PSS-H 25-ML	40	12.5

Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 25-MS	48	57.4	38.4	27	-	35	M6x9	-	8	-	M6x7.5	M3x6.5	P4	12	5	9.3	22.2	23.2
PSS-A 25-MN	48	81.2	62.2	27	35	35	M6x9	-	8	-	M6x7.5	M3x6.5	P4	12	5	9.3	16.6	17.6
PSS-H 25-MN	48	81.2	62.2	34	35	35	M6x9	-	12	-	M6x7.5	M3x6.5	P4	12	12	16.3	16.6	17.6
PSS-H 25-ML	48	105	86	34	50	35	M6x9	-	12	-	M6x7.5	M3x6.5	P4	12	12	16.3	21	22

Profiled rail guide

PSF 30



Order data

Profiled rail guide		item number
PSF 30	4000 mm long	223531 4000

Guide carriage		item number
Flansch-ausführung	PSS-A 30-FS	223512 2100
	PSS-A 30-FN	223512 2000
	PSS-H 30-FN	223512
	PSS-H 30-FL	223512 0100
Block-ausführung	PSS-A 30-MS	223512 3100
	PSS-A 30-MN	223512 3000
	PSS-H 30-MN	223512 1000
	PSS-H 30-ML	223512 1100

Carriage description

PSS-X 30-XX

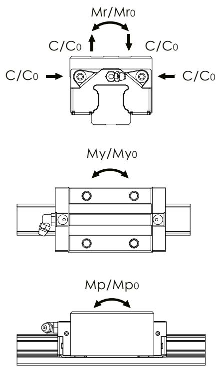
frame size
A = compact
H = tall

design
F = flange
M = block

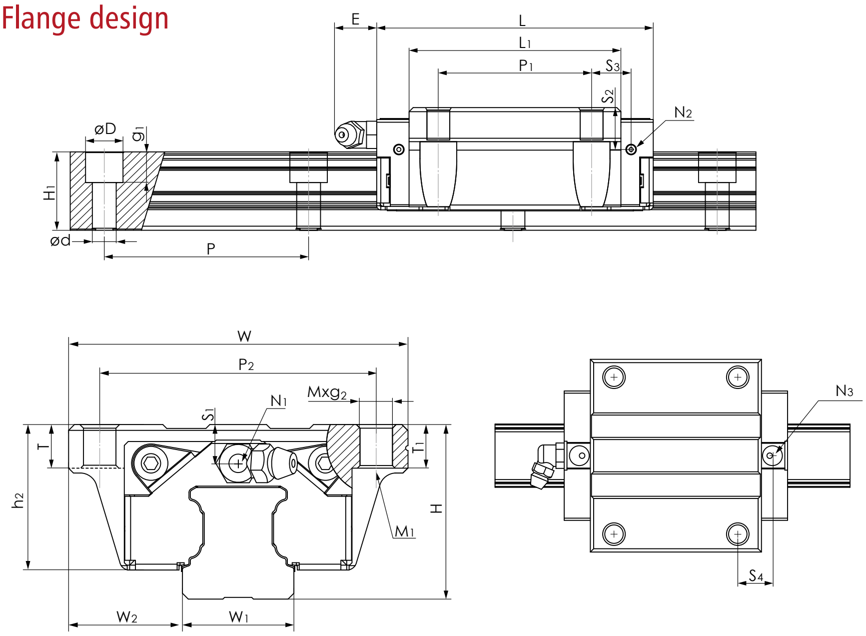
carriage length
S = short
N = normal
L = long

Load data

PSF 30 with guide carriage	Load rating [KN] C	Load rating [KN] C_0	Static moments [Nm] Mr_0	Static moments [Nm] Mp_0	Static moments [Nm] My_0	Weights carriage [g]	Weights rail [g/m]
PSS-A 30-FS	23.3	33.1	520	230	230	750	4380
PSS-A 30-FN	32.8	53.7	845	565	565	1200	4380
PSS-H 30-FN	32.8	53.7	845	565	565	1110	4380
PSS-H 30-FL	39.6	70.2	1105	950	950	1385	4380
PSS-A 30-MS	23.3	33.1	520	230	230	560	4380
PSS-A 30-MN	32.8	53.7	845	565	565	800	4380
PSS-H 30-MN	32.8	53.7	845	565	565	896	4380
PSS-H 30-ML	39.6	70.2	1105	950	950	1150	4380



Flange design



Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
28	27	80	14x9x12

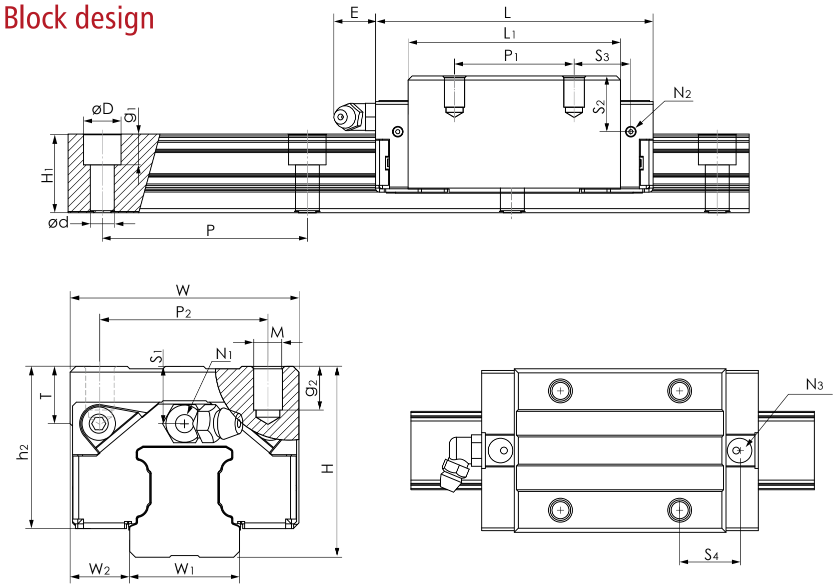
Assembling dimensions [mm]

PSF 30 with	H	W_2
PSS-A 30-FS	42	31
PSS-A 30-FN	42	31
PSS-H 30-FN	42	31
PSS-H 30-FL	42	31

Carriage dimensions [mm]

	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 30-FS	90	68	44	35.2	-	72	M10x12	M8	12	12	M6x8.5	M6x5	P5	12	7.5	12	27	26.8
PSS-A 30-FN	90	95.5	71.5	35.2	40	72	M10x12	M8	12	12	M6x8.5	M6x5	P5	12	7.5	12	20.8	20.5
PSS-H 30-FN	90	95.5	71.5	35.2	52	72	M10x12	M8	12	12	M6x8.5	M6x5	P5	12	7.5	12	14.8	14.5
PSS-H 30-FL	90	118	94	35.2	52	72	M10x12	M8	12	12	M6x8.5	M6x5	P5	12	7.5	12	25.7	25.8

Block design



Rail dimensions [mm]

W_1	H_1	P	D x d x g_1
28	27	80	14x9x12

Assembling dimensions [mm]

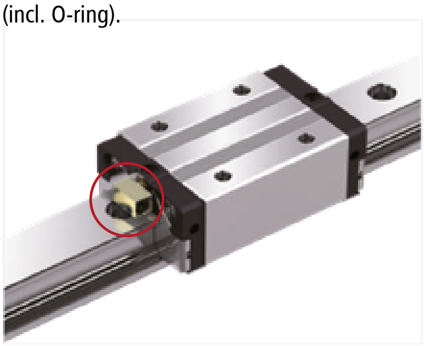
PSF 30 with	H	W_2
PSS-A 30-MS	42	16
PSS-A 30-MN	42	16
PSS-H 30-MN	45	16
PSS-H 30-ML	45	16

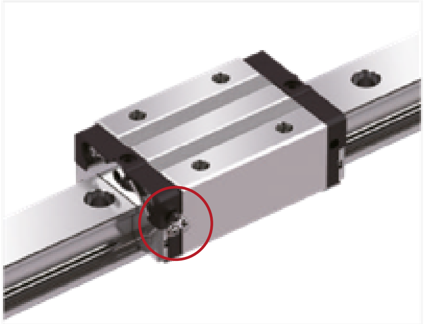
Carriage dimensions [mm]

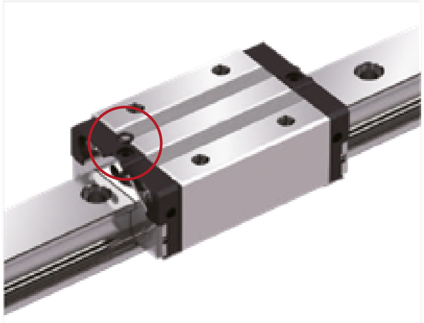
	W	L	L_1	h_2	P_1	P_2	M x g_2	M_1	T	T_1	N_1	N_2	N_3	E	S_1	S_2	S_3	S_4
PSS-A 30-MS	60	68	44	35.2	-	40	M8x10	-	12	-	M6x8.5	M6x5	P5	12	7.5	12	27	26.7
PSS-A 30-MN	60	95.5	71.5	35.2	40	40	M8x10	-	12	-	M6x8.5	M6x5	P5	12	7.5	12	20.8	20.5
PSS-H 30-MN	60	95.5	71.5	38.4	40	40	M8x12	-	12	-	M6x8.5	M6x5	P5	12	10.5	15	20.8	20.5
PSS-H 30-ML	60	118	94	38.4	60	40	M8x12	-	12	-	M6x8.5	M6x5	P5	12	10.5	15	21.7	21.8

Lubrication

Here is an overview of the three options for relubricating the slides. Shown on the left is the standard variant „Lubrication on the face“, in the middle you can see the variant „Lubrication on the side“, on the right picture you can see the alternative „Lubrication from above“ (incl. O-ring).

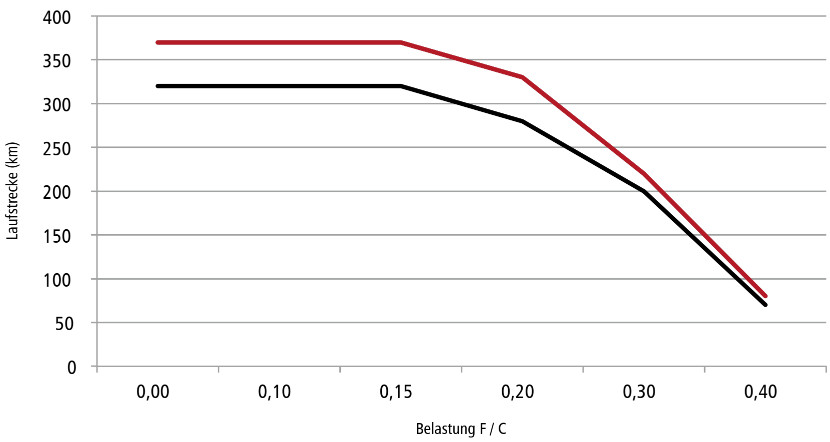






Lubrication intervals

Relubrication intervals for standard ball guideway (without lubrication unit)



Relubrication quantities for standard carriages

Standard - Carriage

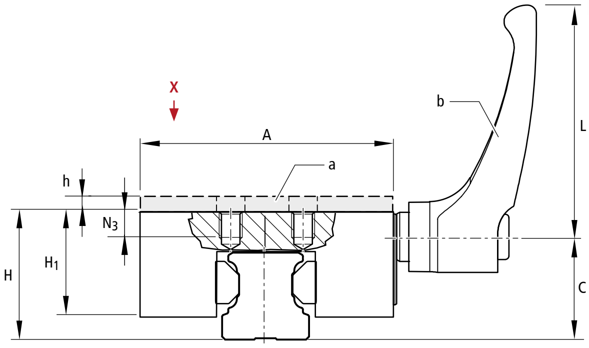
Size	Relubrication quantity in mm³		
	Type FS / MS	Type FN / MN	Type FL / ML
15	1500	1750	2000
20	1500	1750	2000
25	1800	2200	2600
30	2000	2500	3000

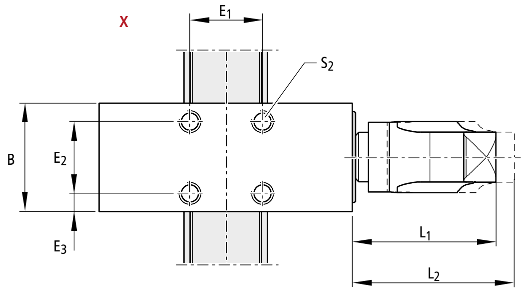
The carriages are supplied with basic greasing to ensure emergency running.
The carriages must be regreased when they are put into operation.

Hand-clamp element

Note:
Can be used for ball bearing guide rails.
Mounting instruction:
Temperature application range 0 - 70 °C
Ensure rigid adjacent construction.

Dimensioned drawing





a) Spacer plate (accessories)
b) Position of the hand lever can be changed.

Size	Dimensions [mm]														Weight [Kg]
	A	B	C	E_1	E_2	E_3	H3)	H_1	h	L	L_1	$L_2$2)	N_3	S_2	
15	37	24	19.5	17	17	3.5	24	19	4	44	33	30	5	M4	0.1
20	60	24	24.5	15	15	4.5	28	23	2	44	33	30	6	M5	0.2
25	68	28	28	20	20	4	33	26	3 / 7	64	38	41	8	M6	0.28
30	70	39	34	22	22	8.5	42	33	3	64	38	41.5	8	M6	0.64

1) Test performed with oily guide rail.
2) Hand lever disengaged
3) Height compensation with spacer plate (h) depending on carriage height

Article description	Size	Holding force [N]	Tightening torque [Nm]	Item number
HKE 15	15	1200	4	223509 0001
HKE 20	20	1200	5	on request
HKE 25	25	1200	7	
HKE 30	30	1200	7	

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