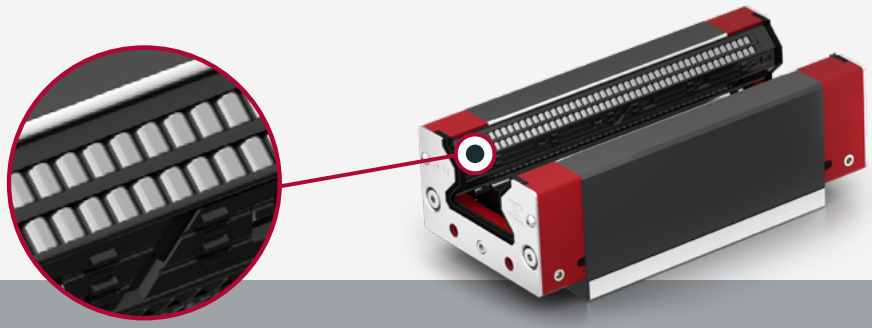
PULSE PRO

MONORAIL PULSE PRO

Profile Rail Guide with Minimal Stroke Pulsation

Brochure



MONORAIL PULSE PRO Product Overview

Product Description

MONORAIL PULSE PRO is a guide system designed for applications with high demands on precision, repeatability, and rigidity. The integration of eight independent roller circuits results in smooth, reproducible linear motion with very low stroke pulsation. Depending on the application, this can lead to significantly improved accuracy and surface finish in the final product.

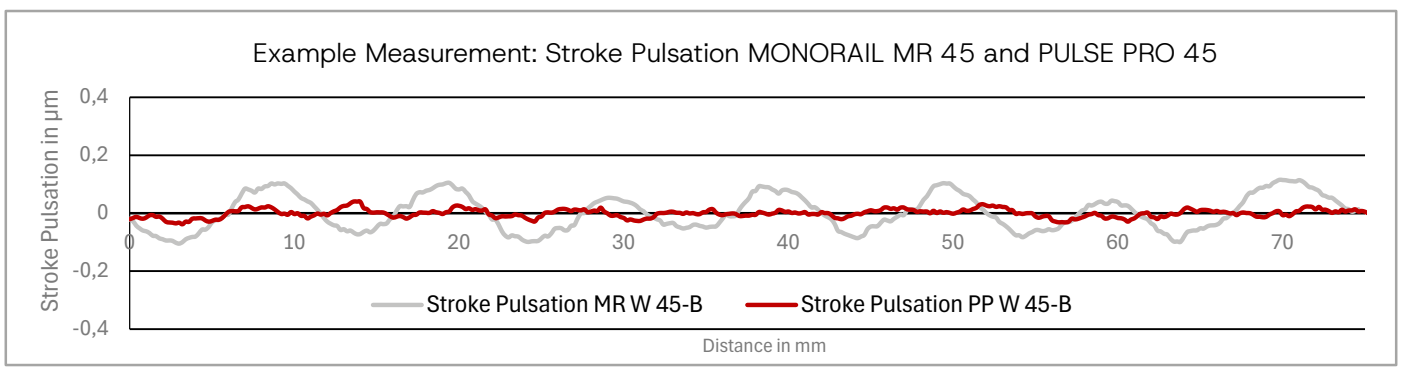
Features and Function

The PULSE PRO roller guide is characterized by high rigidity and exceptionally smooth operation.
Thanks to its innovative, patented operating principle with significantly reduced stroke pulsation, PULSE PRO offers optimal conditions for use in demanding applications.
The system complies with the dimensional specifications of ISO 12090 and can therefore be used as an application-specific alternative to the MONORAIL MR. Compared with the long-version MONORAIL MR carriage, stroke pulsation is reduced by a factor of 2, while stiffness is increased by 15%. Through this targeted approach, with features designed for high-precision applications, PULSE PRO is also particularly well-suited for further developments or variations of existing machine designs. Examples of applications include:

- EDM machines
- Surface grinders
- Optical grinding/milling machines
- Tool/gear grinding and honing applications
- Measuring machines
- Hydrostatic alternatives

Stroke Pulsation

Stroke pulsation refers to movements of the guide carriage caused by the rolling elements periodically entering and exiting the load-bearing zone. This causes the number and location of the load-bearing rolling elements per raceway to vary, resulting in pulsating movements within the guide carriage body.
PULSE PRO features eight rows of rolling elements and thus a significantly higher number of load-bearing rolling elements in the load range compared to the standard MONORAIL MR carriage (four rows of rolling elements). The following diagram shows a comparison of stroke pulsation between MONORAIL MR 45 and PULSE PRO 45 based on actual measurement data. The measurements were taken on individual carriages under otherwise identical test conditions.



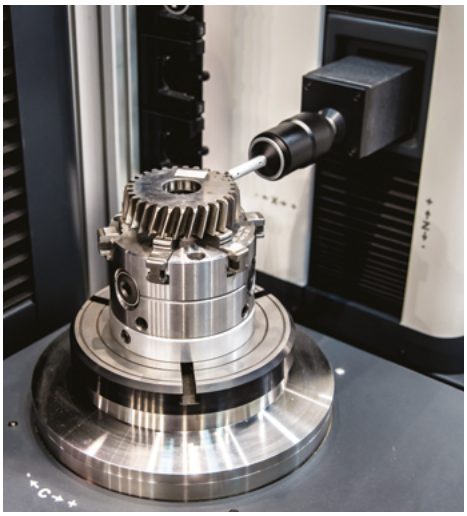
Technical Data and Options

Maximum speed	1 m/s
Maximum acceleration	20 m/s²
Operating temperature	–40 °C to 80 °C
Stock temperature	–40 °C to 80 °C
Running accuracy	Comparable to G0
Lubricant	Oil CGLP per DIN 51517 with viscosity class ISO VG 220*

*Significant deviations in viscosity are not recommended

Design of the Mounting Structure

The dimensional and positional accuracy of the mounting surfaces corresponds to the MONORAIL MR carriages in the long version, accuracy class G0, preload V3, as specified in the MONORAIL and AMS Application Catalog, Chapter 4.12.5. The intended load conditions and tolerances must be verified on a case-by-case basis. Replacing existing systems with PULSE PRO requires an individual assessment of tolerance and loads.



Product Overview PP Rails

	N standard
Sizes / Carriage types	
Size 45	PP S 45-N

Available options PP Rails

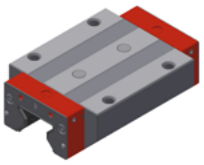
Reference side

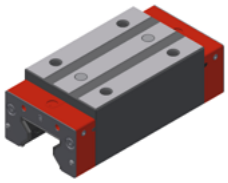
R1 Ref. at bottom

R2 Ref. on top

Available accessories for PP Rails

Plugs, assembly tools





Product Overview PP Carriages

	B standard, long	**D** compact, high, long
Sizes / Carriage types		
Size 45	PP W 45-B	PP W 45-D

Available Options PP Carriages

Reference side

R1 Reference at bottom

R2 Reference on top

Lube connections

S10 Left Center

S20 Right center

S11 Top left

S21 Top right

S12 Lower left side

S22 Lower right side

S13 Upper left side

S23 Upper right side

S32 Left side

S42 Right side

S99 S10+S12+S13+S20+S22+S23 locked using threaded pins

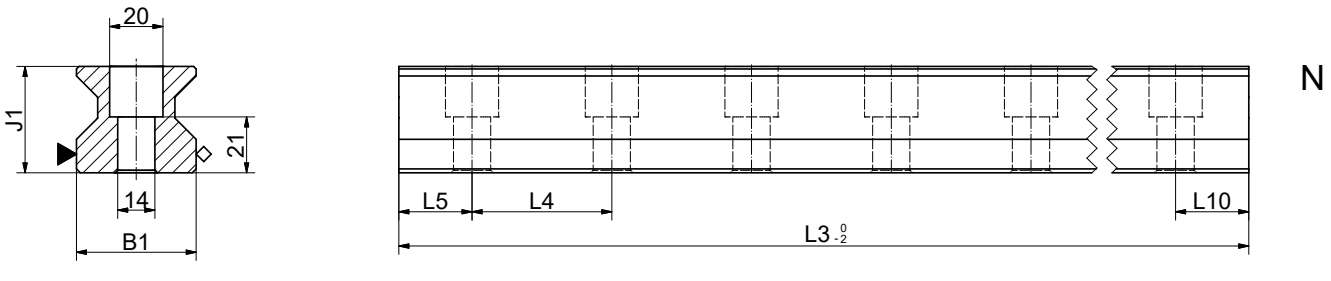
S98 S32+S33+S42+S43 locked using threaded pins

Available Accessories for PP Carriages

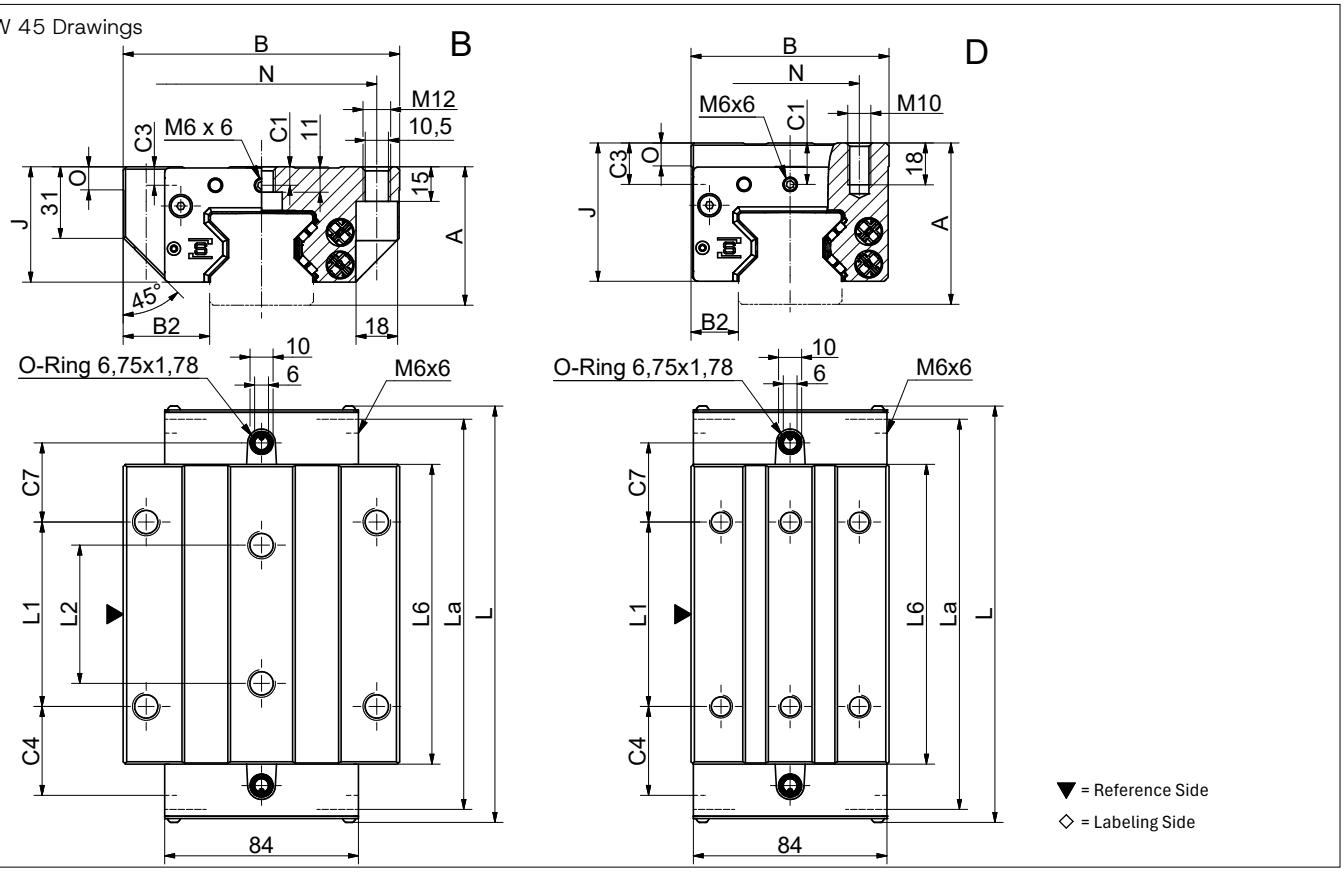
Additional wipers, sheet metal scrapers, bellows, mounting rails, lubrication adapters, lubrication plates

PP Size 45

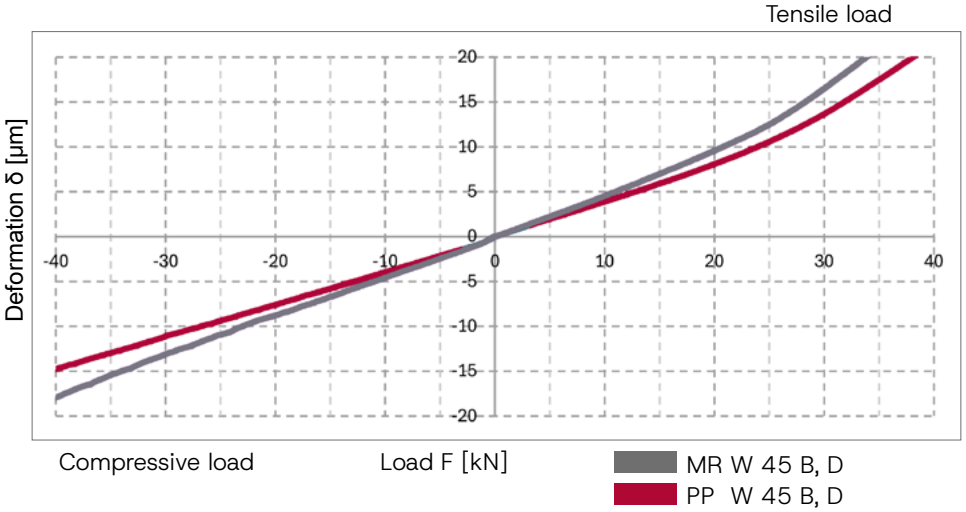
PP S 45 Drawings



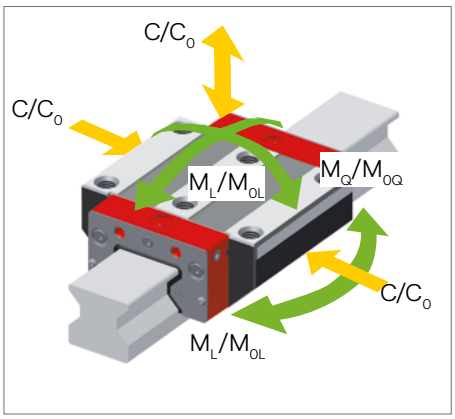
PP W 45 Drawings



PP W 45 Rigidity diagram



PP W 45 Load rating

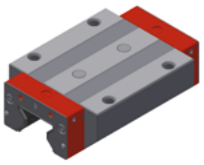


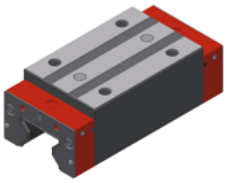
PP 45 Dimensions and capacities

		PP S 45-N
B1:	Rail width	45
J1:	Rail height	40
L3:	Rail length max	3000
L4:	Spacing of fixing holes	52.5
L5/L10:	Position of first/last fixing hole	25
Rail weight, specific (kg/m)		10.8

Available options for PP S 45

R1 R2

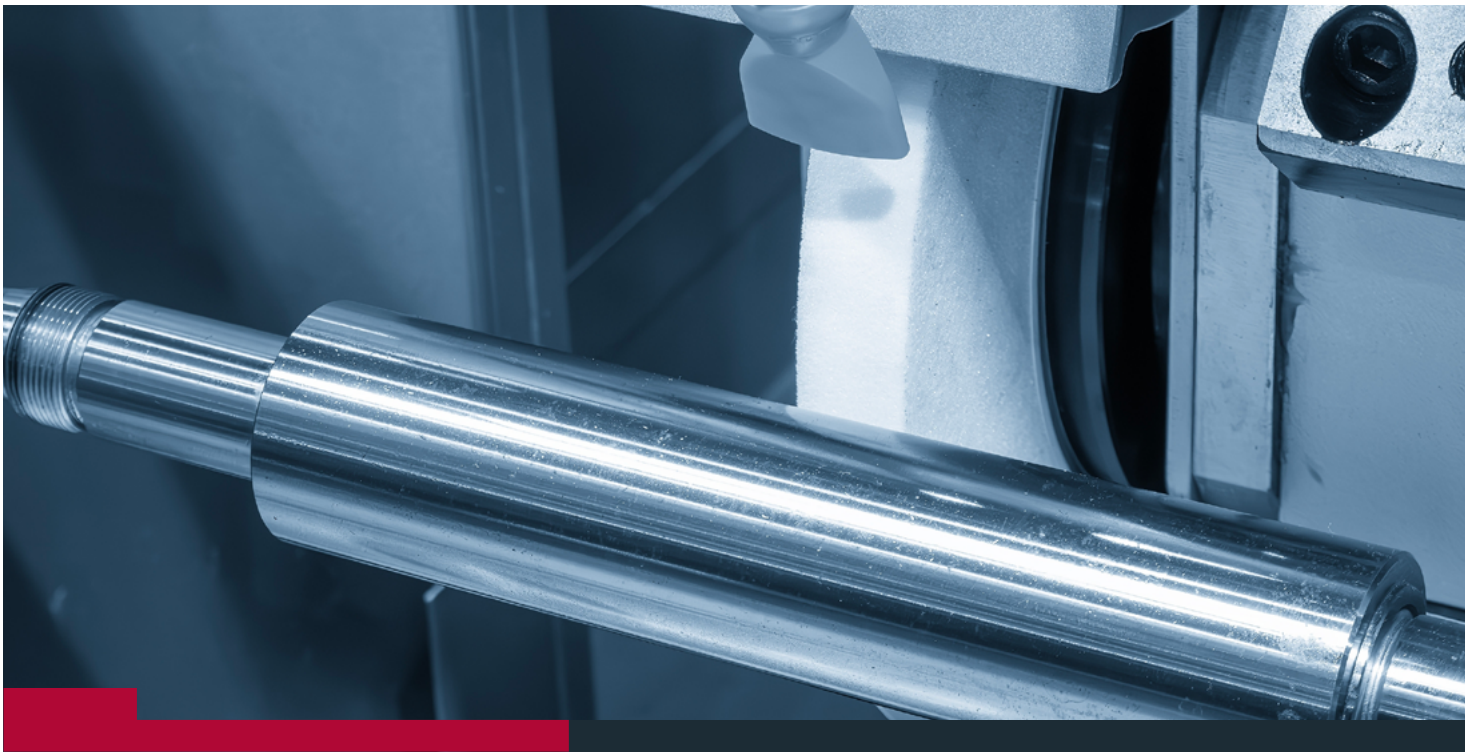


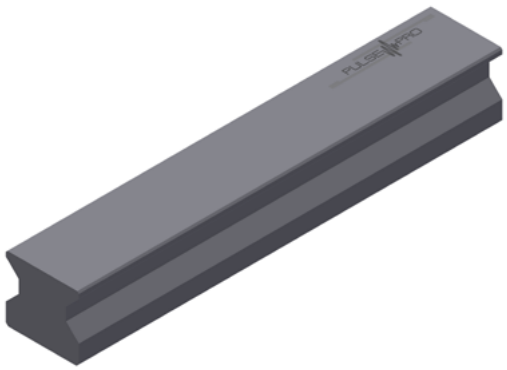


		PP W 45-B	PP W 45-D
A:	System height	60	70
B:	Carriage width	120	86
B2:	Distance between locating faces	37.5	20.5
C1:	Position of center front lube hole	8	18
C3:	Position of lateral lube hole	8	18
C4:	Position of lateral lube hole	38.75	38.75
C7:	Position of top lube hole	34.5	34.5
J:	Carriage height	50	60
L:	Carriage length	180	180
La:	Cross wiper spacing	175	175
L1:	Exterior fixing hole spacing	80	80
L2:	Interior fixing hole spacing	60	–
L6:	Steel body length	130	130
N:	Lateral fixing hole spacing	100	60
O:	Reference face height	10	10
Capacities and weights			
C0:	Static load capacitiy (N)	227500	227500
C100:	Dynamic load capacity (N)	60000	60000
Fj:	Perm. effective force (N)	10000	10000
M0Q:	Static cross moment capacity (Nm)	–	–
M0L:	Static longitud. moment capacity (Nm)	–	–
MQ:	Dyn. cross moment capacity (Nm)	–	–
ML:	Dyn. longitud. moment capacity (Nm)	–	–
Carriage weight (kg)		4.0	3.7

Available options for PP S 45

R1 R2 S10 S20 S11 S21 S12 S22 S13 S23 S32 S42 S98 S99





PULSE PRO Mounting Rail

The PULSE PRO MPM mounting rail is required if the carriage needs be removed from the rail and repositioned during installation of the MONORAIL PP guide. The MR mounting rail (MRM) is not compatible with PULSE PRO.
The PULSE PRO carriage must always be mounted on the MPM mounting rail or the PULSE PRO rail (to prevent the rollers from becoming dislodged)
Upon delivery, the PP carriages are mounted on the PP rails.

Order code: MPM 45

Order example: 1 × MPM 45

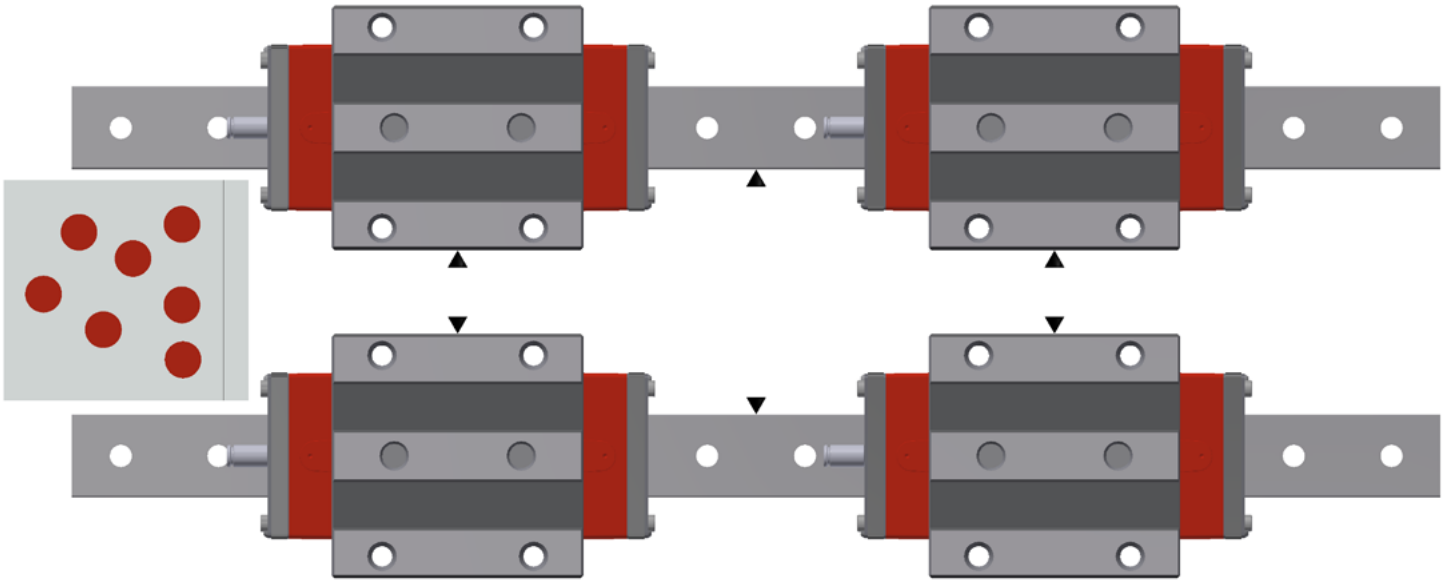
Order code for PP Rails

	2x	PP S	45	-N	-R1	-0942	-24,75	-24,75
Quantity								
Rail								
Size								
Type								
Reference side								
Rail length L3								
Position of first fixing hole L5								
Position of last fixing hole L10								

Order code for PP Carriages

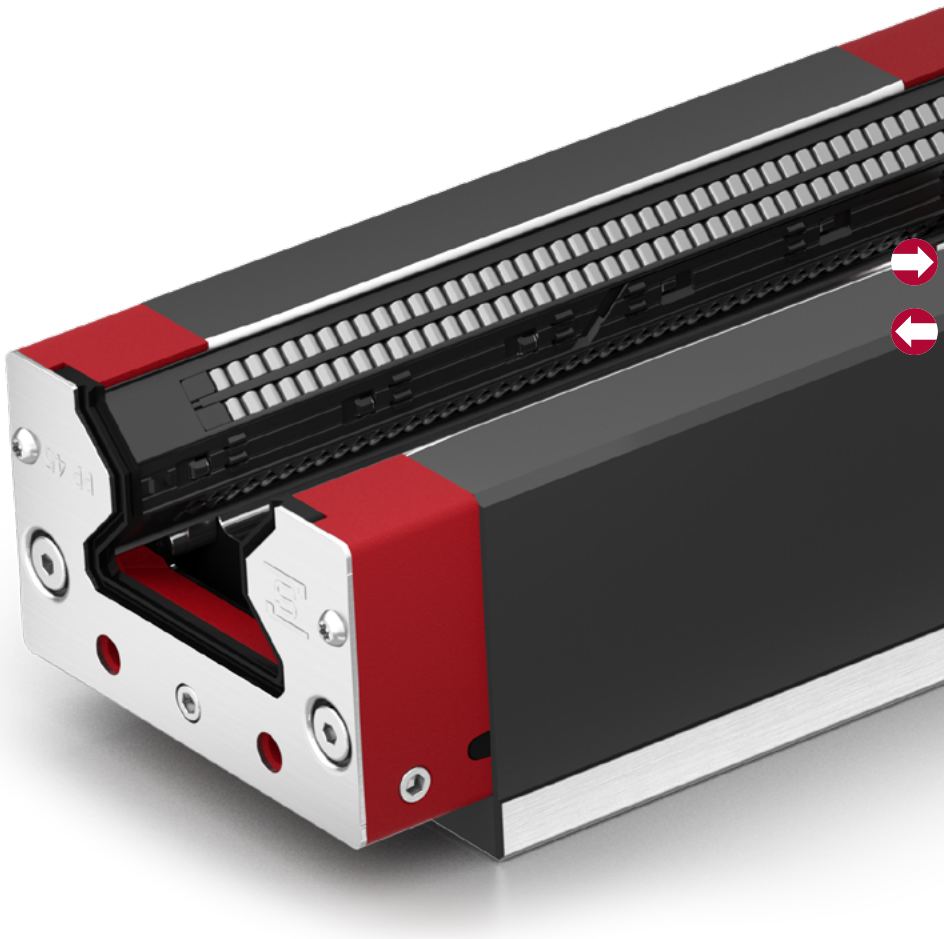
	4x	PP W	45	-B	-R1	S99
Quantity						
Carriage						
Size						
Type						
Reference side						
Lube connection						

Further options available on request.



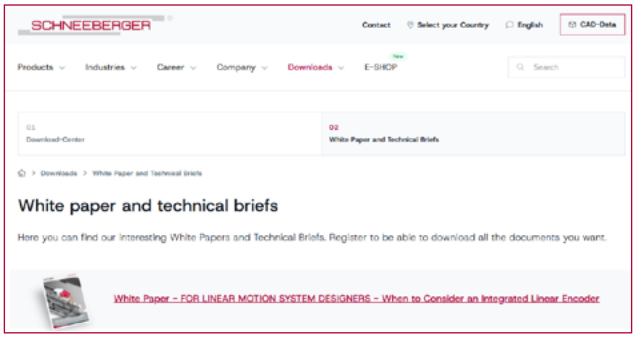
Set consisting of

/ 1 × PP S 45-N-R1-0942-24,75-24,75
/ 2 × PP W 45-B-R1-S10
/ 1 × PP S 45-N -R2-0942-24,75-24,75
/ 2 × PP W 45-B-R2-S10
/ 2 × MRK 45 (50 pcs)
/ 8 × ZCV 45
/ 4 × SA 6-D4-RD
/ 1 × MPM 45 (not shown)



Support

The Pulse Pro system is suitable for applications with moderate loads and low alternating loads.
The system's basic suitability can be assessed based on the axis and machining loads. Our application engineering team will be happy to assist you in selecting the appropriate guide system.
MONORAIL PULSE PRO is available only as a complete set consisting of rails and carriages.



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