

## MINIRAIL Size 5

High-precision miniature guideways  
with impeccable running characteristics



# 1923

## SCHNEEBERGER - “Essential for the Best”

### ALWAYS ONE STEP AHEAD

With the first linear guideways conceived and developed by SCHNEEBERGER over 90 years ago, the foundation was established for the worldwide linear technology of today.

Our original guidelines for the construction of linear guideways defined the criteria for load bearing capacity, reliability and economy. These SCHNEEBERGER guidelines quickly became industrial standards which are still valid today. Our success is

based on a spirit of innovation, uncompromising pursuit of quality and the ambition to continually provide our customers with new, technically and economically superior products.

SCHNEEBERGER is unique in the global linear motion technology market. We are an independent, medium-sized company which forms the basis for a dynamic, customer-oriented and correspondingly successful business strategy.

## ECOLOGICAL

### FOURFOLD APPROACH TO ENERGY REDUCTION

#### (BLUE COMPETENCE®)

Our linear roller bearings generate minimal friction loss, which enables our customers to feed less power to the drive systems and to design those as small as possible.

We manufacture our mineral casting products in a cold casting process, without applying heat. Thus, less power is consumed which improves the CO<sub>2</sub> balance overall.

Our gear racks allow for direct drive systems that compared to other drive types, like ball screws or hydraulic cylinders, release the maximum power for linear movement with minimal heat, friction and other energy losses.

Our AMS measuring system makes it possible to take highly precise measurements in factory settings without using energy-intensive air purging equipment.

## Application

### MINIRAIL 5 - Optimized for your application

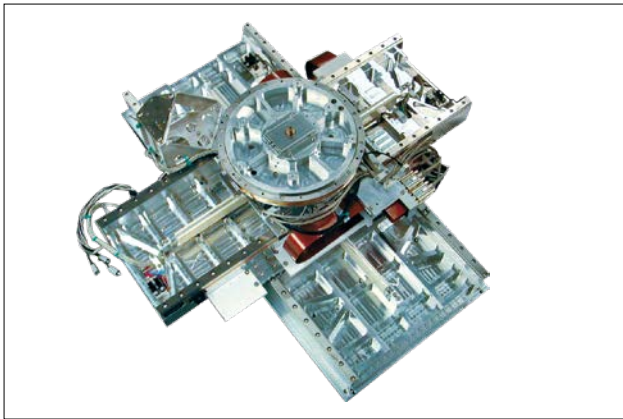


#### New patented deflection

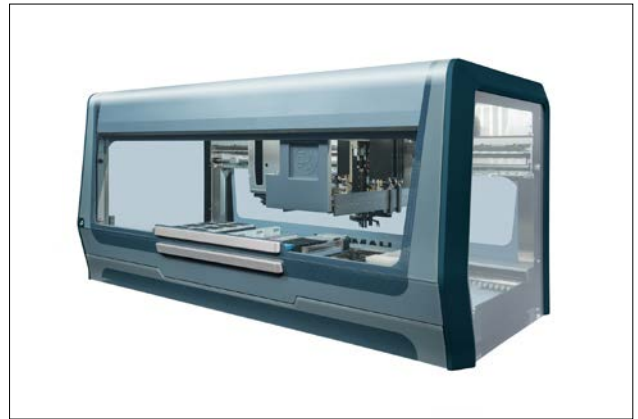
This innovative, with our patented ball deflection guarantees flawless running behaviour for speeds up to 3 m/s and accelerations up to 250 m/s<sup>2</sup>.



### New SCHNEEBERGER precision miniature profiled guideways for industrial and laboratory automation



Micropositioning



Medical



Measuring system



Liquid Handling

#### Benefits

- Best running properties, high load carrying capacity and rigidity
- Patented deflection guarantees safe and smooth running characteristics
- Robust, reliable and compact design
- Tailor-made and customer-optimized solutions
- RoHs and REACH compliant

## Ordering Information

### MINIRAIL

Carriages and guideways should be ordered separately

Carriages	100	MNN		5-				G1-		VD-	HA-	KB-	US-	VA-	AS
Guideways	50		MN	5-	160-	5-	5-	G1-	V1-						
Quantity															
Carriage type	MNN														
Rail type	MN														
Size	5														
Rail length $L_3$	in mm														
Start hole spacing $L_5^{(C)}$	in mm														
End hole spacing $L_{10}^{(C)}$	in mm														
Accuracy class	G1 or G3														
Preload class	V0 or V1														
Defined push force <sup>(A)</sup>	VD														
Height-matched carriages <sup>(A)</sup>	HA														
Customer-specific lubrication	KB														
Ultrasonically cleaned	US														
Vacuum packed	VA														
Wipers <sup>(D)</sup>	AS														



Very low



Low



Very accurate



Standard

### Performance Parameters

<b>Max. acceleration</b>	250 m/s <sup>2</sup>
<b>Max. speed</b>	3 m/s
<b>Preload classes</b>	V0 slightly play up to 0.01 C (C = dynamic load capacity)
	V1 preload 0 up to 0.03 C (C = dynamic load capacity)
<b>Accuracy classes</b>	G1 and G3
<b>Materials</b>	
- guideways, carriages, ball bearings	Stainless steel, through-hardened
- wipers <sup>(2)</sup>	TPC
- ball recirculation	POM
<b>Areas of application</b>	
- temperature range <sup>(1)</sup>	-40 °C bis +80 °C (-40 °F bis +176 °F)
- vacuum <sup>(2)</sup>	vacuum max. 10 <sup>-7</sup> mbar without wipers
- humidity	10 % - 70 % (non-condensing)
- cleanroom	Cleanroom classISO 7 (in accordance with ISO 14644-1)

### Preload classes

The roller guideways are preloaded to enable them to work free of play under different load conditions. Basically, while preloading increases the rigidity of the guideway, it also affects operational life and increases the push force. SCHNEEBERGER guideways are available in various preload classes to address specific application requirements. The preload classes are dependent on the dynamic loading capacity C.

### Available options for MINIRAIL

#### Accuracy



Very accurate



Standard

#### Preload



Very low

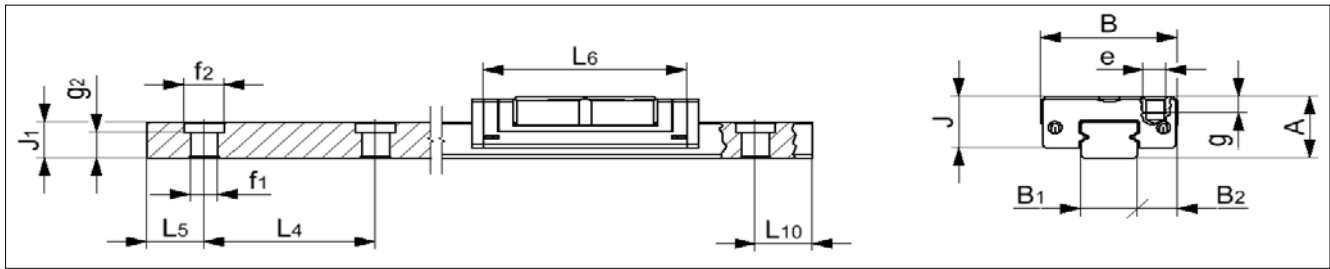


Low

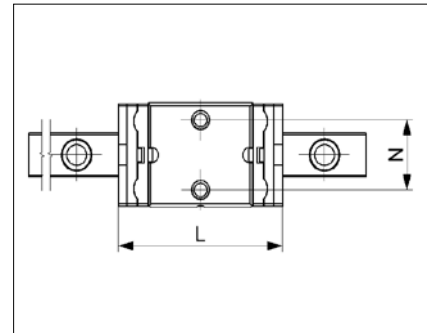
Customer-specific push forces on request (-Option **VD**)

# Product Overview

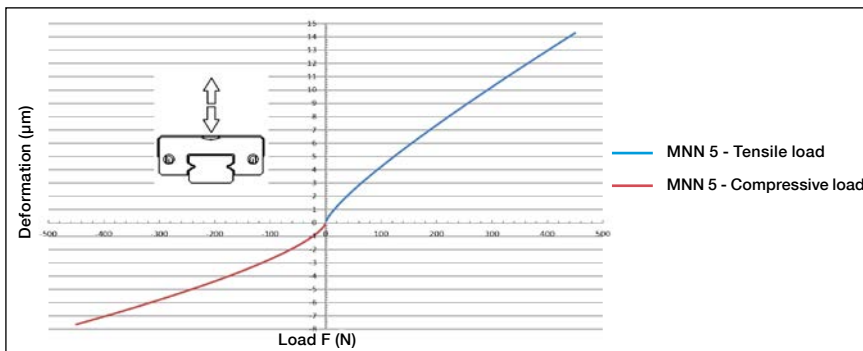
## Dimension Tables and Load Capacities



Name		Size 5	
		Guideway	Carriage
Dimensions (mm)	A	System height	6
	B	System width	12
	B <sub>1</sub>	Rail width	5
	B <sub>2</sub>	Distance between reference surfaces	3.5
	J	Carriage height	5
	J <sub>1</sub>	Rail height	3.5
	L	Carriage length with wipers	19.8
	L <sub>4</sub>	Spacing of attachment holes	15
	L <sub>5</sub> /L <sub>10</sub>	Position of first and last attachment hole	5
	L <sub>6</sub>	Carriage length	17.8
	N	Lateral attachment hole spacing	8
	e	Thread	M2
	f <sub>1</sub>	Hole diameter	2.4
	f <sub>2</sub>	Countersink diameter	3.5
	g	Thread depth	1.6
	g <sub>2</sub>	Step drilling height	2.5
Weight guideway (g/m), carriage (g)		120	3.4



## MINIRAIL Rigidity diagram



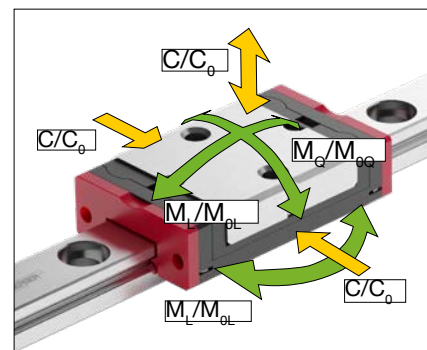
## Moment Loads

### Torque (Nm)

- Permissible lateral static torque  $M_{OQ}$  = 2.343 Nm
- Permissible longitudinal static torque  $M_{OL}$  = 2.102 Nm
- Permissible lateral dynamic torque  $M_Q$  = 1.160 Nm
- Permissible longitudinal dynamic torque  $M_L$  = 1.041 Nm

### Load capacity (N)

- Dynamic load capacity  $C_{100}$  = 446 N
- Static load capacity  $C_0$  = 901 N



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**PROSPECTUSES**

- COMPANY BROCHURE
- CUSTOMIZED BEARINGS
- GEAR RACKS
- LINEAR BEARINGS AND RECIRCULATING UNITS
- MINERAL CASTING SCHNEEBERGER
- MINISLIDE MSQSCALE
- MINI-X MINIRAIL / MINISCALE PLUS / MINISLIDE
- MONORAIL AND AMS PROFILED LINEAR GUIDEWAYS WITH INTEGRATED MEASURING SYSTEM
- MONORAIL AND AMS APPLICATION CATALOG
- POSITIONING SYSTEMS
- SLIDES

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