

## STAR – Ball and Roller Rail Systems

Hydraulic Clamping Units

Pneumatic Braking and Clamping Units

Manual Clamping Units

# STAR – Linear Motion Technology

## Ball Rail Systems

Standard Ball Rail Systems  
Ball Rail Systems with Aluminum Runner Blocks  
Super Ball Rail Systems  
Wide Ball Rail Systems  
Accessories

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Miniature Ball Rail Systems  
Cam Roller Guides

## Roller Rail Systems

### Linear Bushings and Shafts

Linear Bushings  
Linear Sets  
Shafts  
Shaft Support Rails  
Shaft Support Blocks

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Ball Transfer Units  
Other Engineering Components

## Screw Drives

### Linear Motion Systems

Linear Motion Slides

- Ball Screw Drive
- Toothed Belt Drive

Linear Modules

- Ball Screw Drive
- Toothed Belt Drive
- Rack and Pinion Drive
- Pneumatic Drive
- Linear Motor

Compact Modules

- Ball Screw Drive

Precision Modules

- Ball Screw Drive

Ball Rail Tables

- Ball Screw Drive
- Linear Motor

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ALU-STAR Profile System  
Controllers, Motors, Electrical Accessories  
Linear Actuators

# STAR – Ball and Roller Rail Systems

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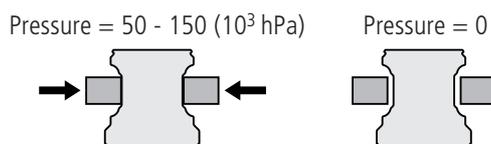
# STAR – Ball and Roller Rail Systems

## Product Overview – Hydraulic Clamping Units

The hydraulic clamping units were specifically designed for:

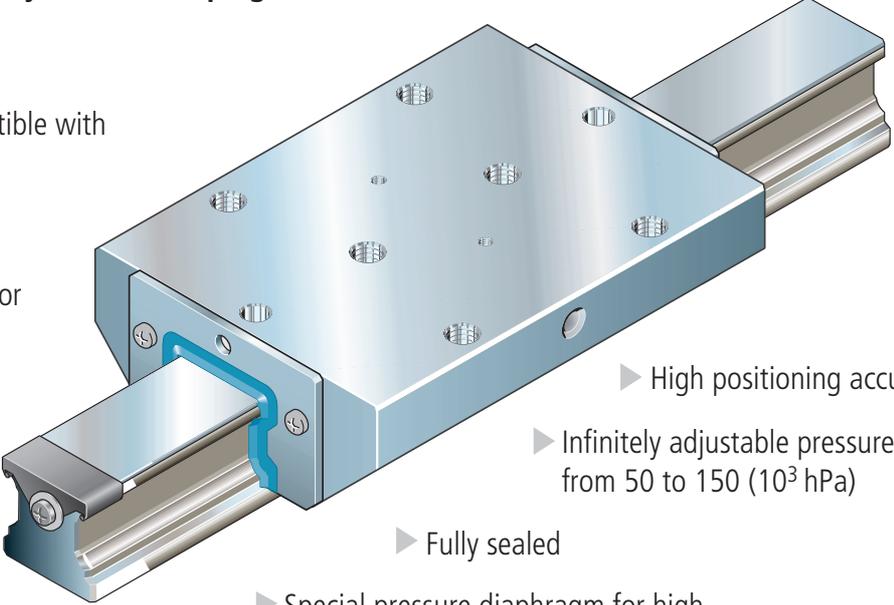
- Very high axial holding forces
- Clamping of heavy handling systems
- Clamping of machine axes
- Dynamic and static stabilization in the axis travel direction

Function principle:



**Pressure clamping:** The large-surface clamping profiles are pressed directly against the free surfaces of the rail system by the piston-type action of a hydraulic oil circuit. A preloaded return spring provides quick release.

### STAR – Hydraulic Clamping Unit

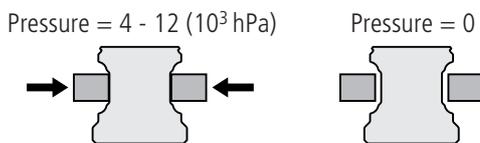
- 
- ▶ Compact design, compatible with DIN 645
  - ▶ Threaded ports on both sides for connection of hydraulic circuit
  - ▶ High positioning accuracy
  - ▶ Infinitely adjustable pressure from 50 to 150 ( $10^3$  hPa)
  - ▶ Fully sealed
  - ▶ Solid, rigid steel housing, catalytically nickel-plated
  - ▶ Special pressure diaphragm for high functional reliability without pressure losses or leakage
  - ▶ Provided with contour-locking, large-surface contact profiles for maximum axial stiffness
  - ▶ Designs and sizes compatible with the associated STAR runner blocks and rails

# Product Overview – Pneumatic Clamping Units, Manual Clamping Units

The pneumatic brake units were specifically designed for:

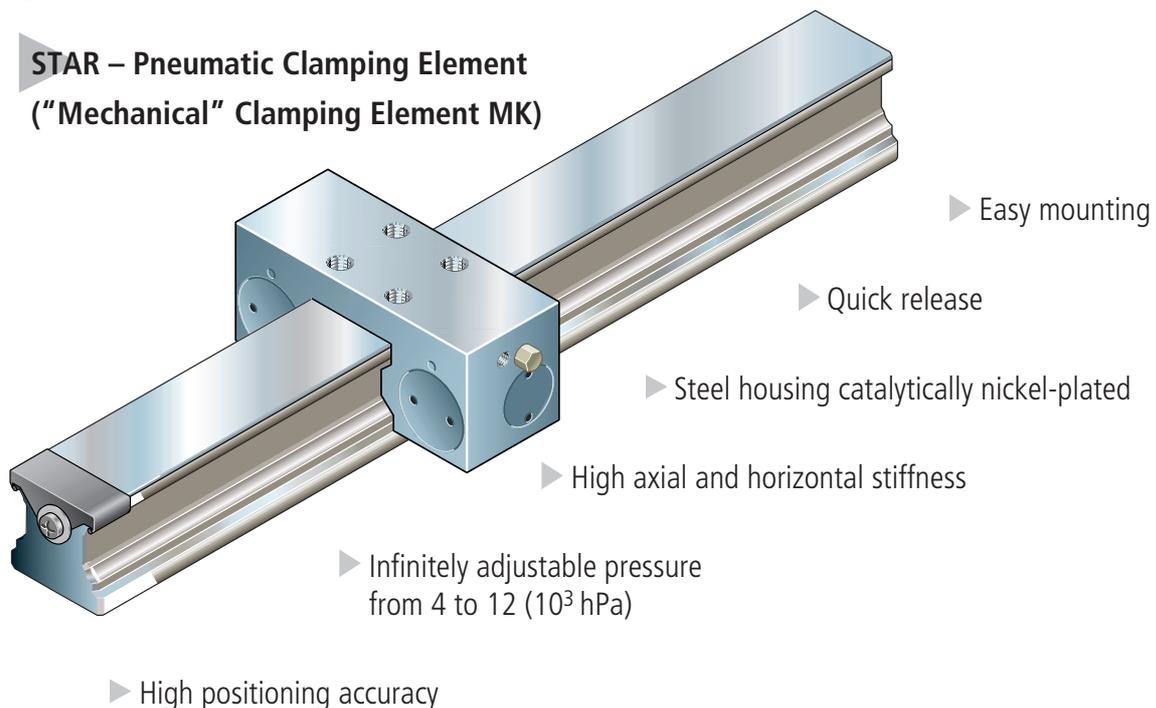
- High axial holding forces within a very short span
- Pneumatic clamping of machine axes
- Table end blocks in the wood processing industry
- Positioning of hoists
- Dynamic and static stabilization in the axis travel direction

Function principle:



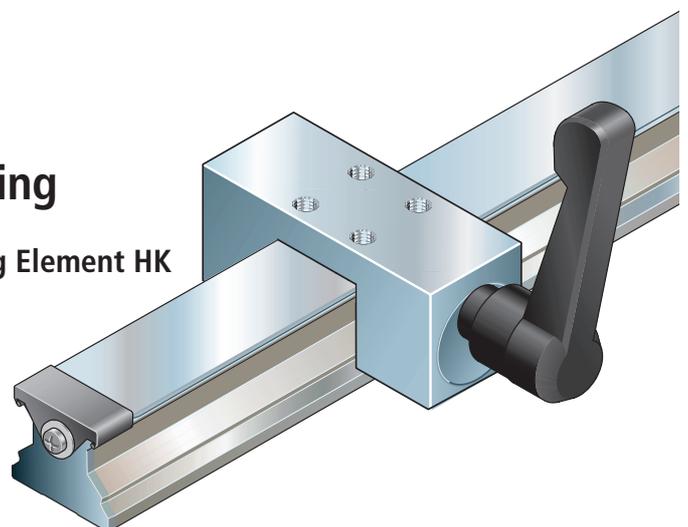
Pressure clamping: The clamping profiles are pressed against the web surfaces of the guide rail by a dual-action tapered slide valve mechanism.

## STAR – Pneumatic Clamping Element ("Mechanical" Clamping Element MK)



## Manual Clamping

### STAR – Manual Clamping Element HK



# STAR – Ball and Roller Rail Systems

## Product Overview – Pneumatic Braking and Clamping Elements

Pneumatic braking and clamping units were specifically designed for:

Braking:

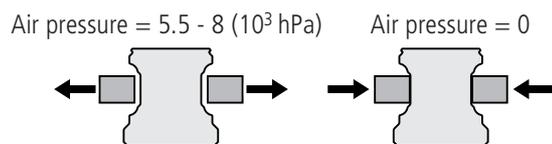
- in the event of a power failure
- in the event of a pressure drop
- reinforcing the E-Stop function
- auxiliary brake for linear motors

Clamping:

- during installation work and for immobilization of machines after power has been shut down
- of machine axes
- with very high axial holding forces
- dynamic and static stabilization in the axis travel direction

 Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

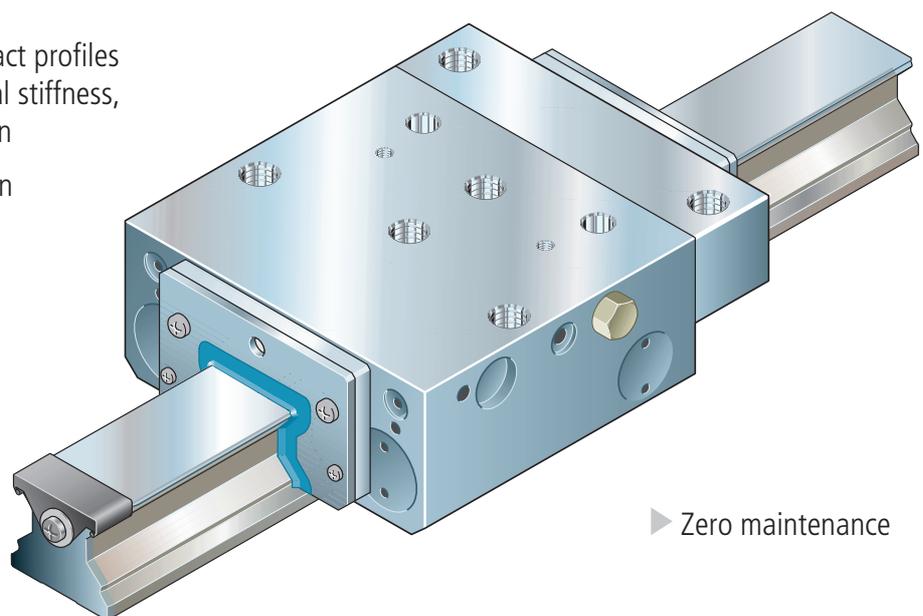
### Function principle of Pneumatic Braking/Clamping Units:



**Pressureless braking:** The clamping profiles are held apart by compressed air, thus permitting free travel. In the event of a pressure drop, braking or clamping is achieved by a dual-action tapered slide valve mechanism with two spring assemblies (spring energy accumulators). An integrated quick venting valve ensures fast response.

### STAR – Pneumatic Braking and Clamping Unit BWPS

- ▶ Contour-locking integrated contact profiles for maximum axial and horizontal stiffness, providing excellent braking action
- ▶ Dynamic and static stabilization in the axis travel direction
- ▶ Up to 2000 emergency braking operations
- ▶ Up to 1 million clamping cycles
- ▶ High axial forces
- ▶ Fully sealed
- ▶ High continuous performance
- ▶ High positioning accuracy
- ▶ Tapered valve mechanism
- ▶ Solid, rigid steel housing, catalytically nickel-plated



▶ Zero maintenance

▶ Extremely low air consumption

# Clamping by spring energy accumulator

## STAR – Pneumatic Braking and Clamping Unit TKPS

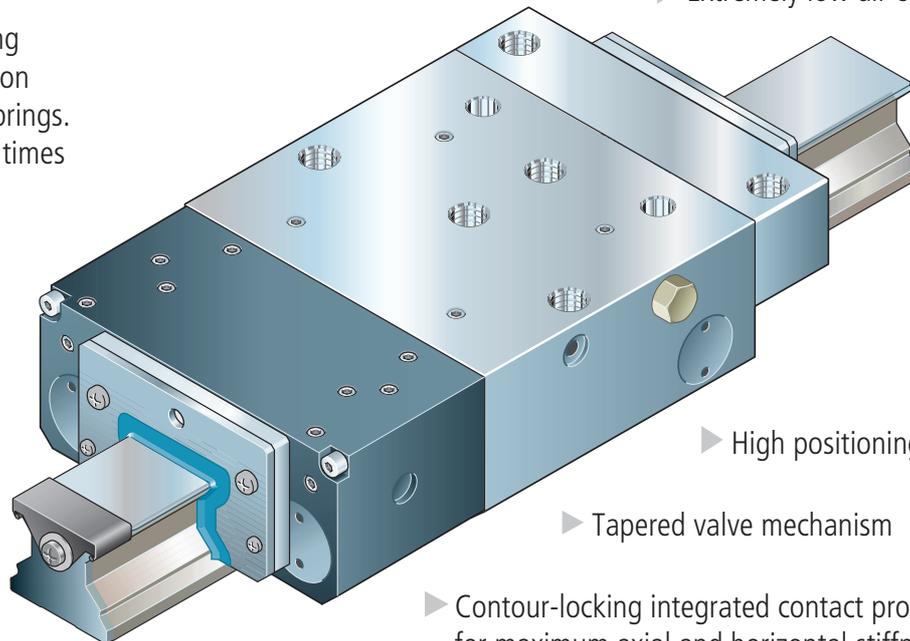
- ▶ Very high axial holding forces thanks to add-on module and strong springs. Holding force 2-2.45 times that of BWPS.

- ▶ High continuous performance
- ▶ Zero maintenance

- ▶ Up to 2000 emergency braking operations
- ▶ Up to 1 million clamping cycles
  - ▶ Fully sealed

▶ Solid, rigid steel housing, catalytically nickel-plated

▶ Extremely low air consumption



▶ High positioning accuracy

▶ Tapered valve mechanism

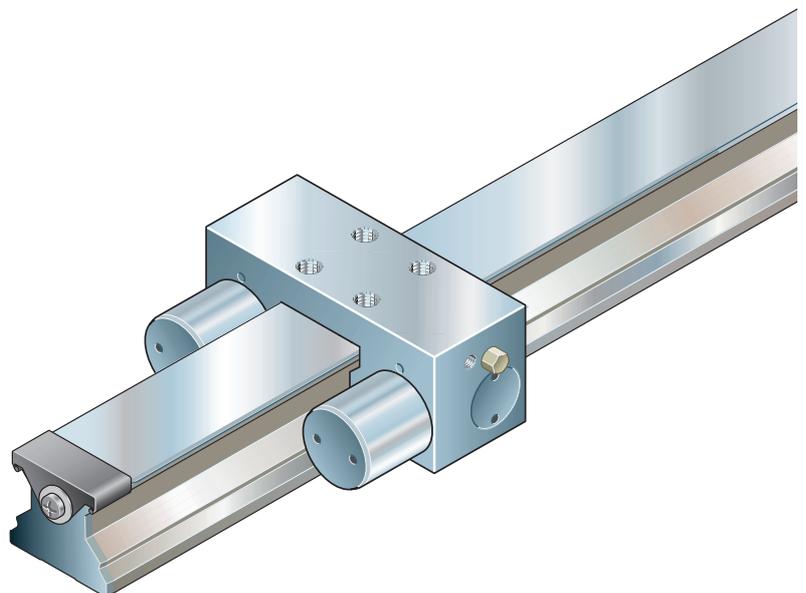
▶ Contour-locking integrated contact profiles for maximum axial and horizontal stiffness, providing excellent braking action

▶ Dynamic and static stabilization in the axis travel direction

## STAR – Mechanical Clamping Unit MKS

⚠ No braking function!

- ▶ Easy mounting
- ▶ Steel housing catalytically nickel-plated
- ▶ High axial and horizontal stiffness
- ▶ Precise positioning
- ▶ Release pressure 5.5 to 8 bar, pneumatic
- ▶ High holding force thanks to air-plus port



# STAR – Ball and Roller Rail Systems

## Technical Data – Hydraulic Clamping Units

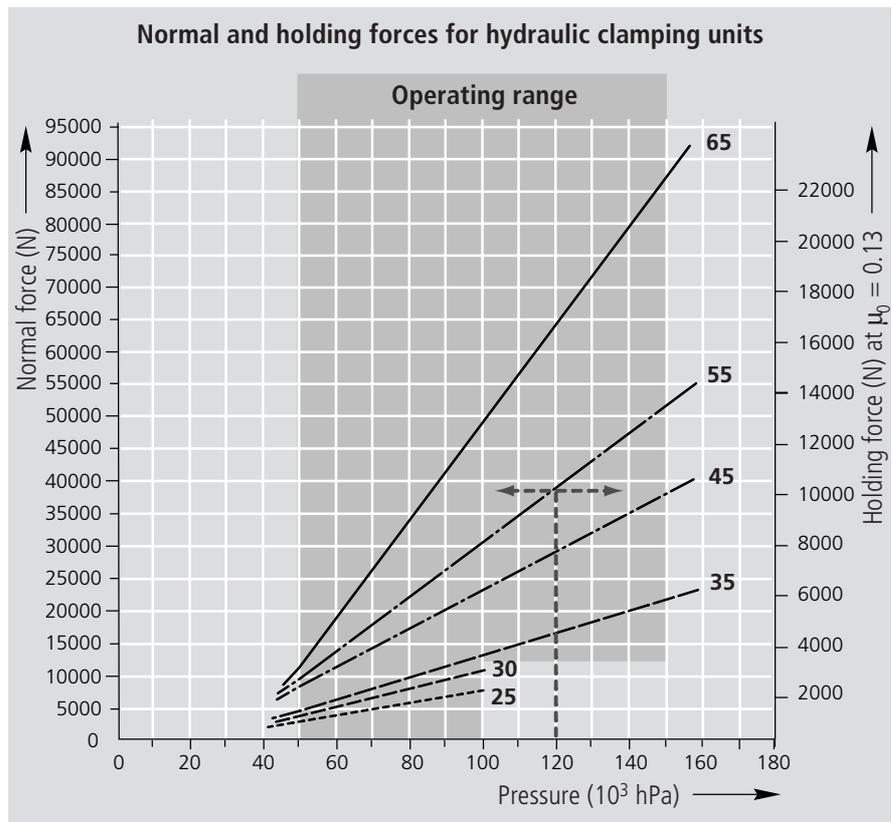
### Normal forces and holding forces

Measured values for Clamping Unit version standard, long, sizes 25, 30, 35, 45, 55, 65.

 Max. hydraulic pressure:

Size 25-30: 100 (10<sup>3</sup> hPa)

Size 35-65: 150 (10<sup>3</sup> hPa)



### Definition of holding force for hydraulic clamping units

$$\text{Holding force} = \text{normal force} \cdot 2 \cdot \text{stiction coefficient}$$

Normal force (measured): see graph.  
 Stiction coefficient  $\mu_0$ : approx. 0.13 for steel/steel, oiled, referred to guide rail

Example: Clamping Unit size 55

Pressure : 120 (10<sup>3</sup> hPa)  
 Normal force : 38500 N (as per graph)  
 Holding force = 38500 N · 2 · 0.13  
 = 10010 N

$$\text{Permissible holding force} = \text{holding force} / \text{safety factor}$$

The safety factor depends on:

- vibrations
- force surges
- application-specific requirements
- etc.

Example: Clamping Unit size 55

Holding force = 10010 N (from previous example)  
 Safety factor = 1.25 (assumed)  
 Permissible holding force = 10010 N / 1.25  
 ≈ 8000 N

# Hydraulic Clamping Units

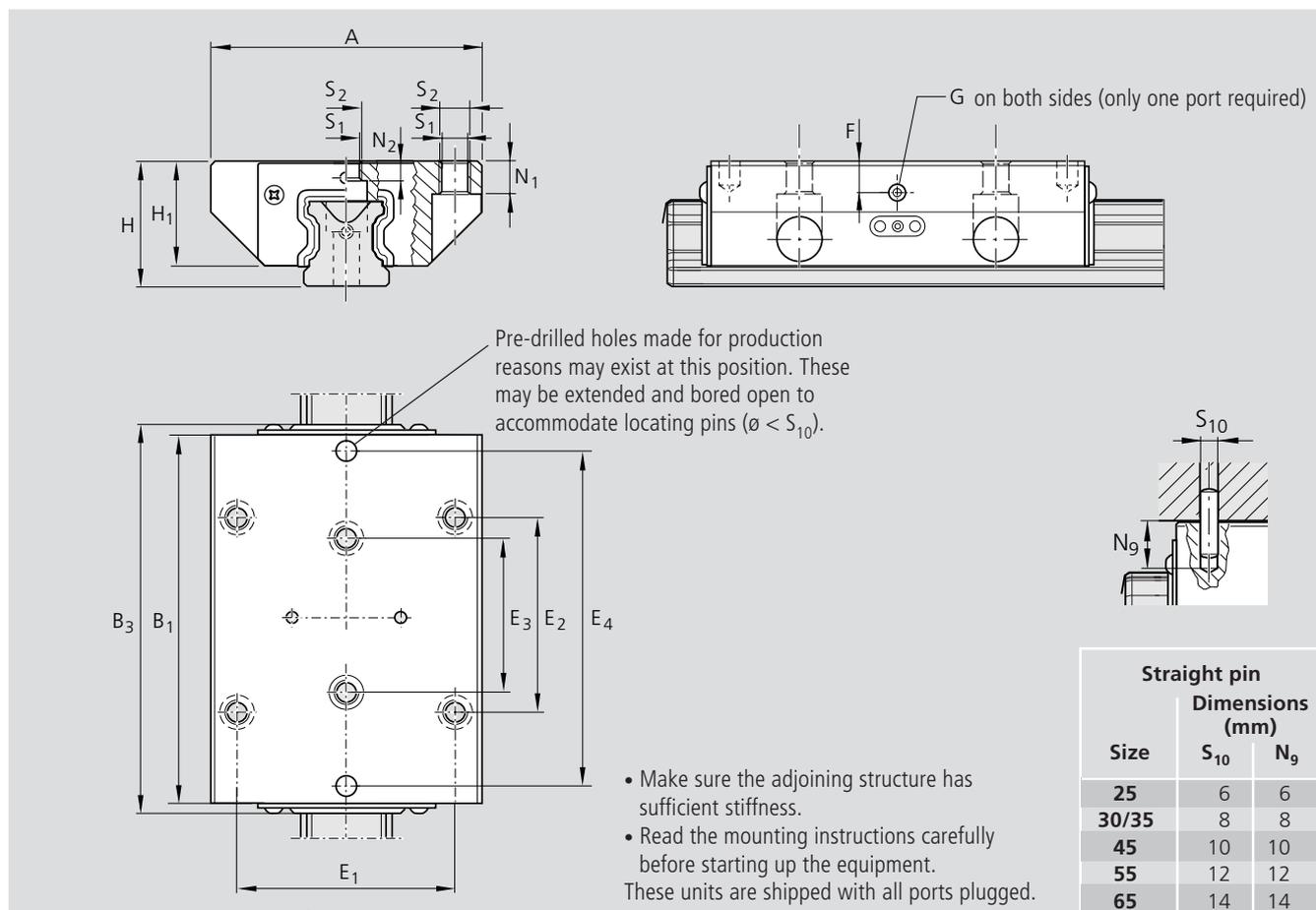
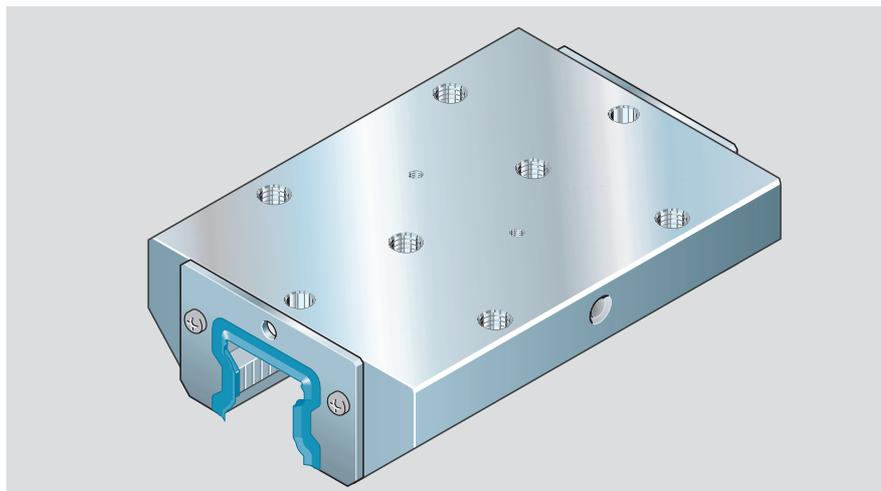
## Clamping units for Ball Rail Systems

Standard width, long  
(similar to runner block 1653-)

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

### Notes

- Max. hydraulic pressure:  
Size 25-30: 100 (10<sup>3</sup> hPa)  
Size 35-65: 150 (10<sup>3</sup> hPa)  
**Caution:** Apply pressure only when the unit is mounted on the rail.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



Size	Part numbers	Holding force (N)	Dimensions (mm)												Displacement <sup>5)</sup> (cm <sup>3</sup> )			
			A	B <sub>1</sub>	B <sub>3</sub>	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	F	G	N <sub>1</sub> <sup>3)</sup>		N <sub>2</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
25	1619-242-11	2200 <sup>1)</sup>	70	92.0	103	36	29.5	57	45	40	70	8	1/8"	9.0	7.0	6.8	M8	0.6
30	1619-742-11	3000 <sup>1)</sup>	90	103.5	116	42	35.0	72	52	44	80	10.5	1/8"	11.0	8.0	8.6	M10	0.7
35	1619-342-11	5700 <sup>2)</sup>	100	120.5	133	48	40.0	82	62	52	100	12	1/8"	12.0	10.2	8.6	M10	1.1
45	1619-442-11	9900 <sup>2)</sup>	120	155.0	170	60	50.0	100	80	60	130	15	1/8"	15.0	12.4	10.5	M12	1.8
55	1619-542-11	13400 <sup>2)</sup>	140	184.0	208	70	57.0	116	95	70	160	16	1/8"	18.0	13.5	12.5	M14	2.4
65	1619-642-11	22700 <sup>2)</sup>	170	227.0	255	90	76.0	142	110	82	200	20	1/4"	23.0	14.0	14.5	M16	3.8

For permissible holding force, see "Definition of holding force".

1) At 100 (10<sup>3</sup> hPa) (bar)

2) At 150 (10<sup>3</sup> hPa) (bar)

3) Mounting from below using ISO 4762 screws

4) Mounting from below using ISO 6912 screws

5) Per clamping cycle

# STAR – Ball and Roller Rail Systems

## Hydraulic Clamping Units

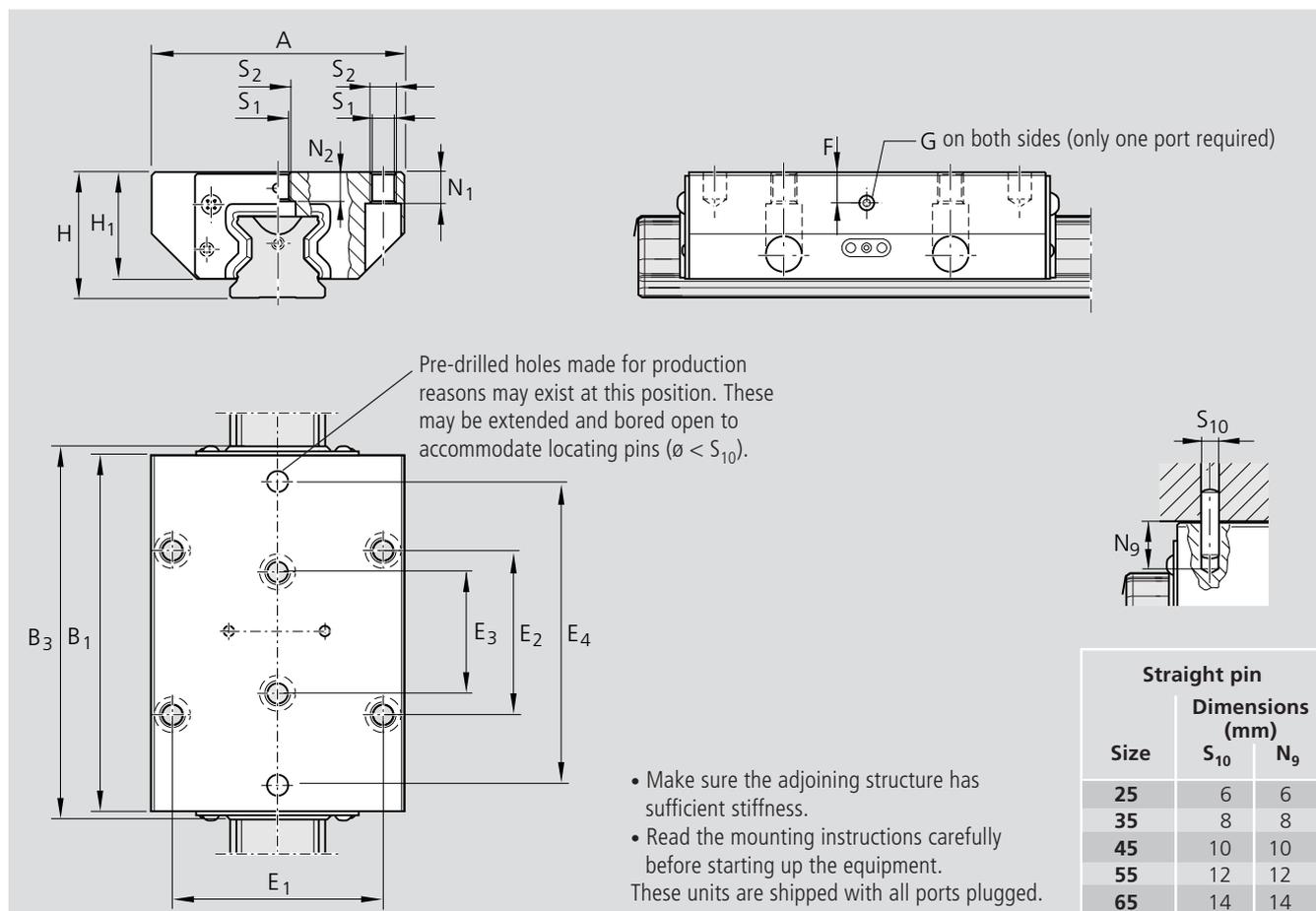
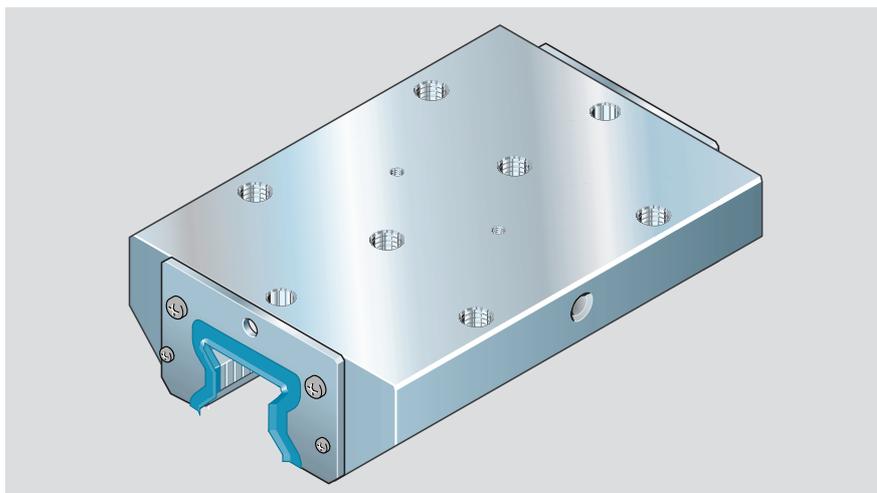
### Clamping units for Roller Rail Systems

Standard width, long  
(similar to runner block 1853-)

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

#### Notes

- Max. hydraulic pressure:  
Size 25-30: 100 (10<sup>3</sup> hPa)  
Size 35-65: 150 (10<sup>3</sup> hPa)  
**Caution:** Apply pressure only when the unit is mounted on the rail.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



Size	Part numbers	Holding force (N)	Dimensions (mm)														Displacement <sup>5)</sup> (cm <sup>3</sup> )	
			A	B <sub>1</sub>	B <sub>3</sub>	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	F	G	N <sub>1</sub> <sup>3)</sup>	N <sub>2</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>	
25	1810-242-11	2200 <sup>1)</sup>	70	92.0	100	36	30.0	57	45	40	70	9.5	1/8"	9.0	7.3	6.8	M8	0.6
35	1810-342-11	5700 <sup>2)</sup>	100	120.5	129	48	41.0	82	62	52	100	12.0	1/8"	12.0	11.0	8.6	M10	1.1
45	1810-442-11	9900 <sup>2)</sup>	120	155.0	166	60	51.0	100	80	60	130	15.0	1/8"	15.0	13.5	10.5	M12	1.8
55	1810-542-11	13400 <sup>2)</sup>	140	184.0	196	70	58.0	116	95	70	160	16.0	1/8"	18.0	13.7	12.5	M14	2.4
65	1810-642-11	22700 <sup>2)</sup>	170	227.0	238	90	76.0	142	110	82	200	20.0	1/4"	23.0	21.5	14.5	M16	3.8

For permissible holding force, see "Definition of holding force".

<sup>1)</sup> At 100 (10<sup>3</sup> hPa) (bar)  
<sup>2)</sup> At 150 (10<sup>3</sup> hPa) (bar)

<sup>3)</sup> Mounting from below using ISO 4762 screws  
<sup>4)</sup> Mounting from below using ISO 6912 screws  
<sup>5)</sup> Per clamping cycle

# Hydraulic Clamping Units

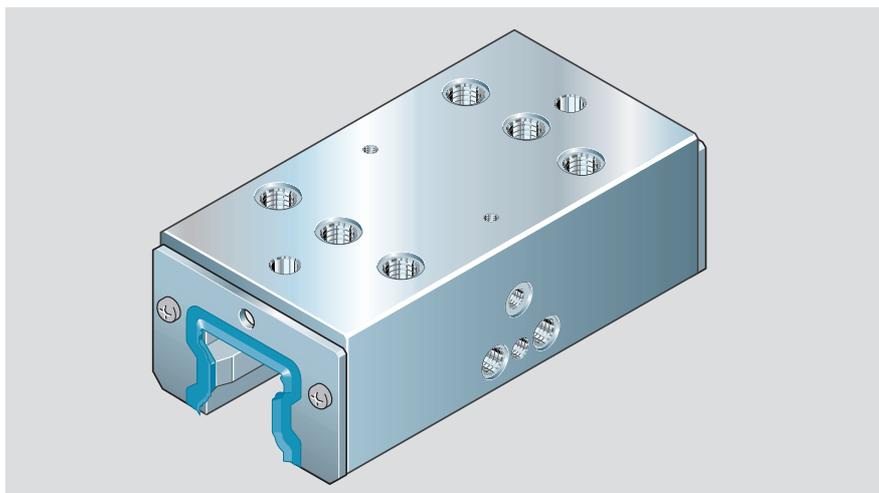
## Clamping units for Ball Rail Systems

Slimline, high, long  
(similar to runner block 1624-)

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

### Notes

- Max. hydraulic pressure:  
Size 25-30: 100 (10<sup>3</sup> hPa)  
Size 35-65: 150 (10<sup>3</sup> hPa)  
**Caution:** Apply pressure only when the unit is mounted on the rail.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



Pre-drilled holes made for production reasons may exist at this position. These may be extended and bored open to accommodate locating pins ( $\varnothing < S_{10}$ ).

G on both sides (only one port required)  
For size 25<sup>1)</sup> and 30

Straight pin		
Size	Dimensions (mm)	
	S <sub>10</sub>	N <sub>9</sub>
25 <sup>1)</sup>	6	6
30	8	8
35	8	8
45	10	10
55	12	12

- Make sure the adjoining structure has sufficient stiffness.
- Read the mounting instructions carefully before starting up the equipment. These units are shipped with all ports plugged.

Size	Part numbers	Holding force (N)	Dimensions (mm)												Displacement <sup>5)</sup> (cm <sup>3</sup> )
			A	B <sub>1</sub>	B <sub>3</sub>	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>4</sub>	F	G	N <sub>3</sub>	S <sub>2</sub> <sup>4)</sup>	
25 <sup>1)</sup>	1619-242-31		48	92.0	103	40	33.5	35	50	70	12	1/8"	9	M6	
30	1619-742-31	3000 <sup>2)</sup>	60	103.5	116	45	38.0	40	60	80	12	1/8"	11	M8	0.7
35	1619-342-31	5700 <sup>3)</sup>	70	120.5	133	55	47.0	50	72	100	18	1/8"	13	M8	1.1
45	1619-442-31	9900 <sup>3)</sup>	86	155.0	170	70	60.0	60	80	130	24	1/8"	18	M10	1.8
55	1619-542-31	13400 <sup>3)</sup>	100	184.0	208	80	67.0	75	95	160	26	1/8"	19	M12	2.4

For permissible holding force, see "Definition of holding force".

- 1) In preparation  
2) At 100 (10<sup>3</sup> hPa) (bar)  
3) At 150 (10<sup>3</sup> hPa) (bar)

- 4) Depth of thread checked with screw  
5) Per clamping cycle

# STAR – Ball and Roller Rail Systems

## Hydraulic Clamping Units

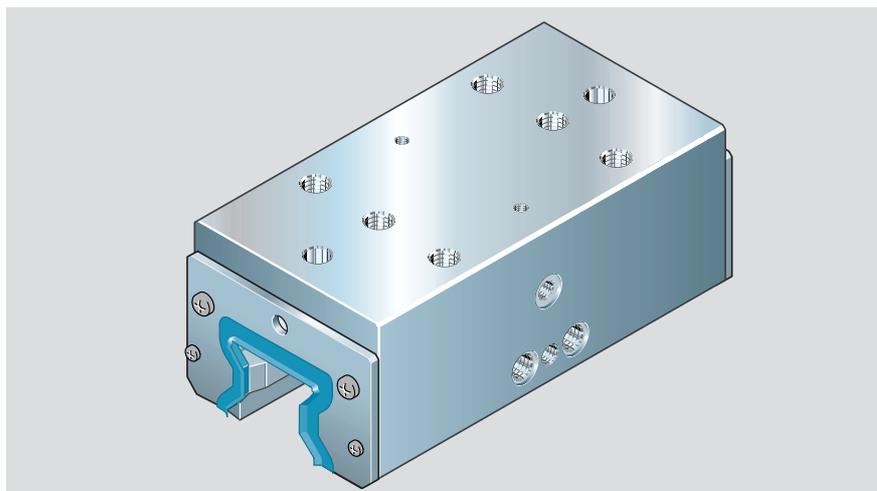
### Clamping units for Roller Rail Systems

Slimline, high, long  
(similar to runner block 1824-)

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

#### Notes

- Max. hydraulic pressure:  
Size 25-30: 100 ( $10^3$  hPa)  
Size 35-65: 150 ( $10^3$  hPa)  
**Caution:** Apply pressure only when the unit is mounted on the rail.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



Pre-drilled holes made for production reasons may exist at this position. These may be extended and bored open to accommodate locating pins ( $\varnothing < S_{10}$ ).

• Make sure the adjoining structure has sufficient stiffness.  
• Read the mounting instructions carefully before starting up the equipment.  
These units are shipped with all ports plugged.

Straight pin		Dimensions (mm)	
Size	$S_{10}$	$N_9$	
25 <sup>1)</sup>	6	6	
35	8	8	
45	10	10	
55	12	12	
65	14	14	

Size	Part numbers	Holding force <sup>2)</sup> (N)	Dimensions (mm)											Displacement <sup>4)</sup> (cm <sup>3</sup> )	
			A	B <sub>1</sub>	B <sub>3</sub>	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>4</sub>	F	G	N <sub>3</sub>		S <sub>2</sub> <sup>3)</sup>
25 <sup>1)</sup>	1810-242-31		48	92.0	100	40	34.0	35	50	70	12	1/8"	9	M6	
35	1810-342-31	5700	70	120.5	129	55	48.0	50	72	100	18	1/8"	13	M8	1.1
45	1810-442-31	9900	86	155.0	166	70	61.0	60	80	130	24	1/8"	18	M10	1.8
55	1810-542-31	13400	100	184.0	196	80	68.0	75	95	160	26	1/8"	19	M12	2.4
65	1810-642-31	22700	126	227.0	238	90	76.0	76	120	200	24	1/4"	21	M16	3.8

For permissible holding force, see "Definition of holding force".

<sup>1)</sup> In preparation

<sup>2)</sup> At 150 ( $10^3$  hPa) (bar)

<sup>3)</sup> Depth of thread checked with screw

<sup>4)</sup> Per clamping cycle

# Hydraulic Clamping Units

## Clamping units for Ball Rail Systems

Slimline, long

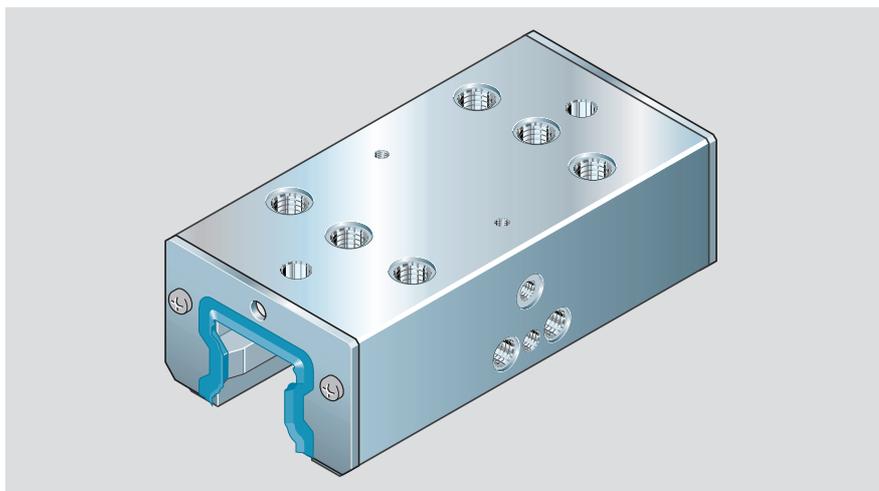
(similar to runner block 1623-)

Matching guide rails:

1605-, 1606-, 1607-, 1645-, 1647-

### Notes

- Max. hydraulic pressure:  
Size 25-30: 100 (10<sup>3</sup> hPa)  
Size 35-65: 150 (10<sup>3</sup> hPa)  
**Caution:** Apply pressure only when the unit is mounted on the rail.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



Pre-drilled holes made for production reasons may exist at this position. These may be extended and bored open to accommodate locating pins ( $\varnothing < S_{10}$ ).

G on both sides (only one port required)

For size 25<sup>1)</sup> and 30

Straight pin		
Dimensions (mm)		
Size	S <sub>10</sub>	N <sub>9</sub>
25 <sup>1)</sup>	6	6
30/35	8	8
45	10	10
55	12	12
65	14	14

- Make sure the adjoining structure has sufficient stiffness.
- Read the mounting instructions carefully before starting up the equipment.

These units are shipped with all ports plugged.

Size	Part numbers	Holding force (N)	Dimensions (mm)											Displacement <sup>5)</sup> (cm <sup>3</sup> )	
			A	B <sub>1</sub>	B <sub>3</sub>	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>4</sub>	F	G	N <sub>3</sub>		S <sub>2</sub> <sup>4)</sup>
25 <sup>1)</sup>	1619-242-51		48	92.0	103	36	29.5	35	50	70	8	1/8"	8	M6	
30	1619-742-51	3000 <sup>2)</sup>	60	103.5	116	42	35.0	40	60	80	9	1/8"	8	M8	0.7
35	1619-342-51	5700 <sup>3)</sup>	70	120.5	133	48	40.0	50	72	100	12	1/8"	13	M8	1.1
45	1619-442-51	9900 <sup>3)</sup>	86	155.0	170	60	50.0	60	80	130	15	1/8"	15	M10	1.8
55	1619-542-51	13400 <sup>3)</sup>	100	184.0	208	70	57.0	75	95	160	16	1/8"	19	M12	2.4
65	1619-642-51	22700 <sup>3)</sup>	126	227.0	255	90	76.0	76	120		20	1/4"	21	M16	3.8

For permissible holding force, see "Definition of holding force".

<sup>1)</sup> In preparation

<sup>2)</sup> At 100 (10<sup>3</sup> hPa) (bar)

<sup>3)</sup> At 150 (10<sup>3</sup> hPa) (bar)

<sup>4)</sup> Depth of thread checked with screw

<sup>5)</sup> Per clamping cycle

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit BWPS for Ball Rail Systems

with adapter plate for mounting  
from below/above

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

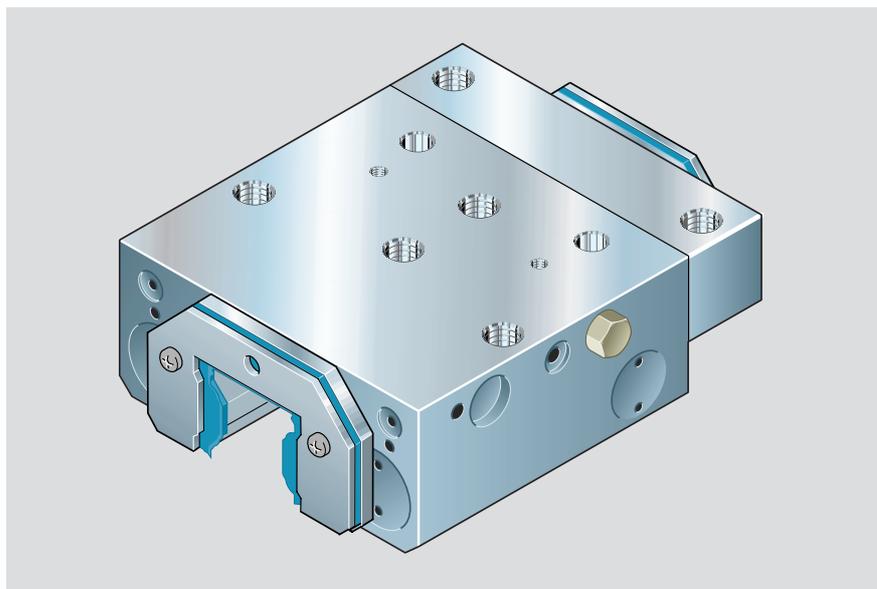
Pressureless clamping (spring energy)  
- release pressure min. 5.5 (10<sup>3</sup> hPa)  
- max. pneumatic operating pressure 8  
(10<sup>3</sup> hPa)

#### Notes

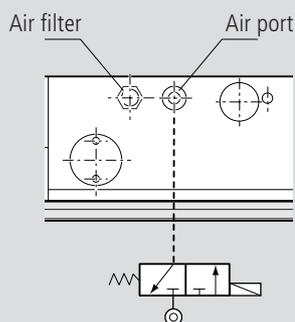
**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

For sizes 35 to 45, the Braking and Clamping Unit TKPS is preferred.

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.

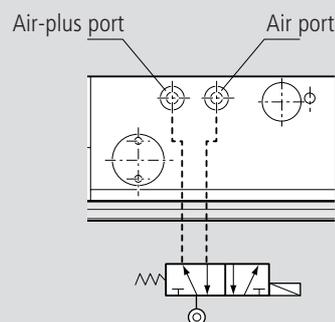


Circuitry<sup>1)</sup> for standard air port



Nominal diameter min. 6 mm

Circuitry<sup>2)</sup> for air-plus port



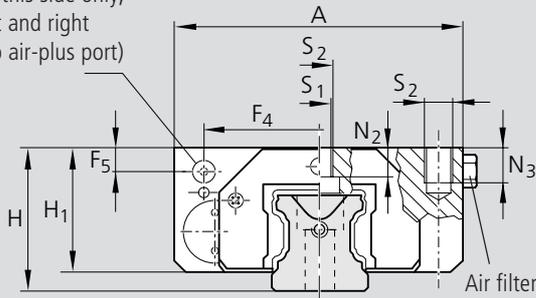
Nominal diameter min. 6 mm

Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1619-340-00	900	2300	0.050	0.335
45	1619-440-00	1800	4000	0.081	0.542
55	1619-540-00	2800	5000	0.106	1.062
65	1619-640-00	3000	6000	0.166	1.935

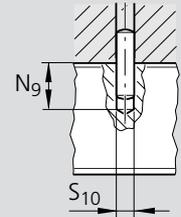
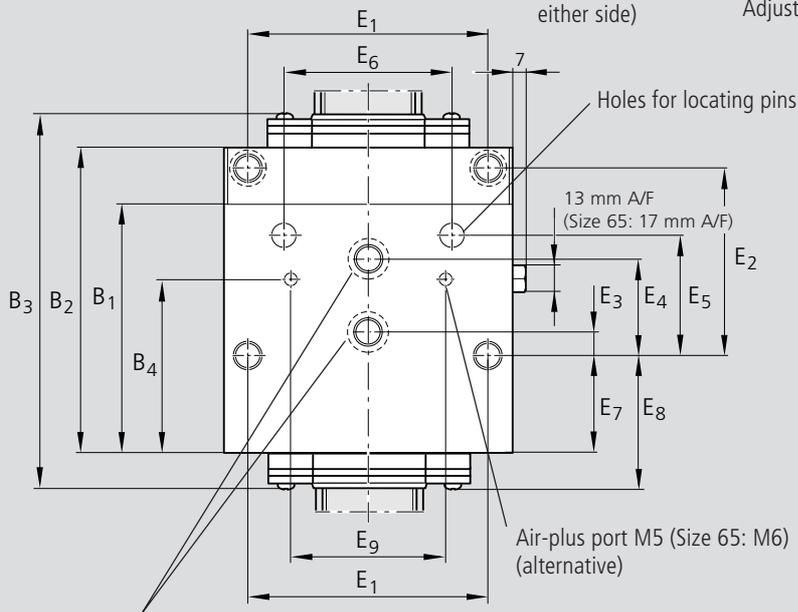
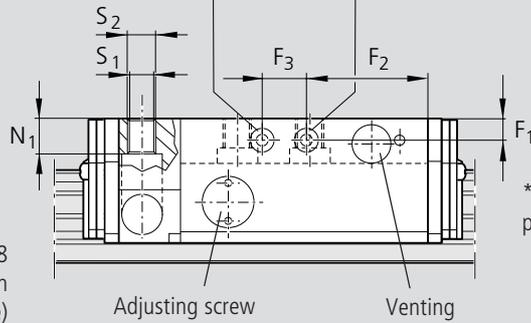
<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



G<sub>2</sub> on both sides, air-plus port\*) or air filter  
G<sub>1</sub> on both sides, air port\*) for release pressure



Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55	12	12
65	14	12

The two central mounting holes must always be used as well when mounting the unit!

These units are shipped with all ports plugged.

Size	Dimensions (mm)																		
	A	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub> max.	B <sub>4</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	E <sub>9</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>
35	100	90	113.0	133	59	82	62	5.0	31.0	36.0	52	42.0	52.0	70.8	10.0	31	28	82	8.0
45	120	104	129.5	152	70	100	80	10.0	40.0	50.0	70	40.0	51.3	62.0	9.0	52	18	96	9.0
55	140	135	159.5	192	87	116	95	12.5	47.5	57.5	80	52.5	68.8	80.0	8.5	17	70	112	8.5
65	170	150	179.5	216	95 <sup>5)</sup>	142	110	14.0	55.0	64.0	100	56.0	74.3	123.0	20.0	20	75	123	12.0

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	G1/8	60	52	18	12.5	12.5	10.5	M12
55	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14
65	G1/4	G1/4	G1/4	90	76	22	20.0	20.0	14.2	M16

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) Also for 20 mm

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit BWPS for Roller Rail Systems

with adapter plate for mounting  
from below/above

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

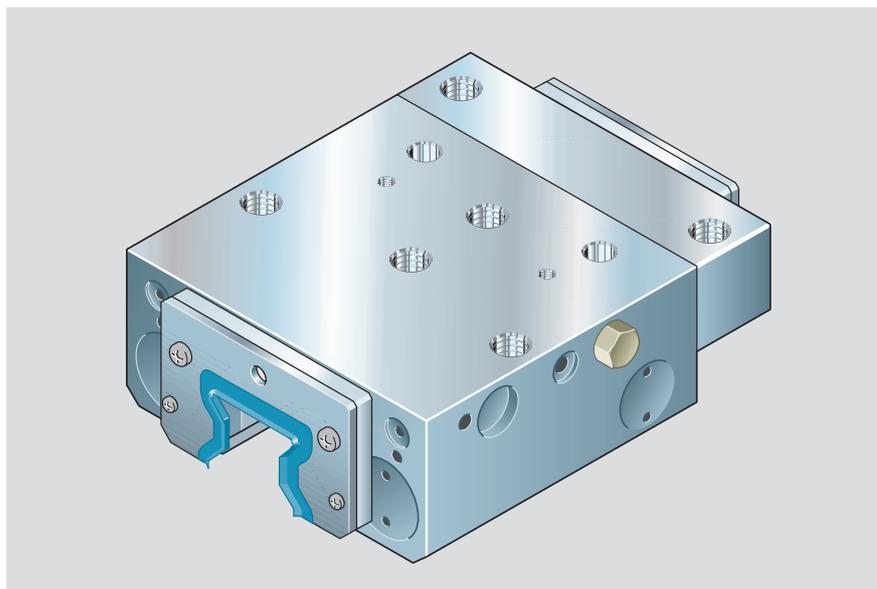
Pressureless clamping (spring energy)  
- release pressure min. 5.5 (10<sup>3</sup> hPa)  
- max. pneumatic operating pressure 8  
(10<sup>3</sup> hPa)

#### Notes

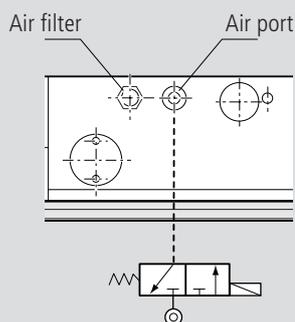
**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

For sizes 35 to 45, the Braking and Clamping Unit TKPS is preferred.

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.

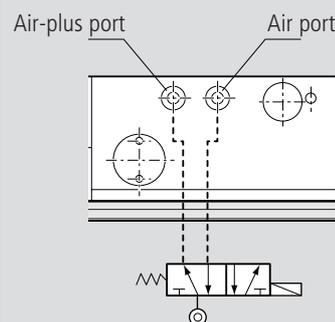


#### Circuitry<sup>1)</sup> for standard air port



Nominal diameter min. 6 mm

#### Circuitry<sup>2)</sup> for air-plus port



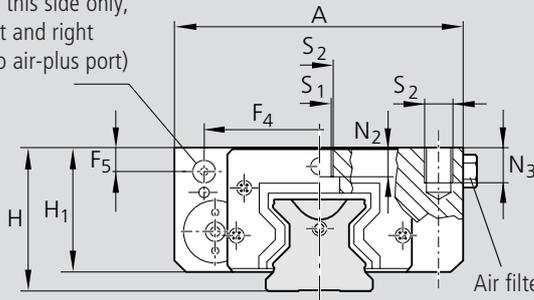
Nominal diameter min. 6 mm

Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1810-340-00	900	2300	0.050	0.335
45	1810-440-00	1800	4000	0.081	0.542
55	1810-540-00	2800	5000	0.106	1.062
65	1810-640-00	3000	6000	0.166	1.935

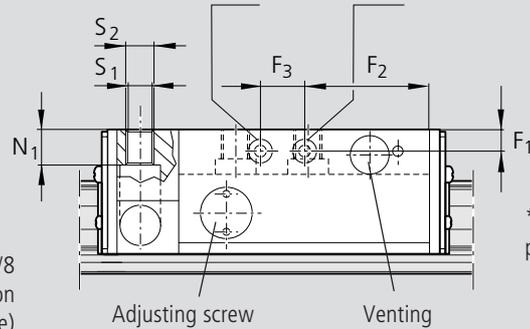
<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

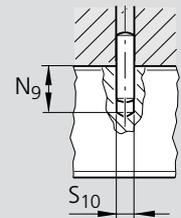
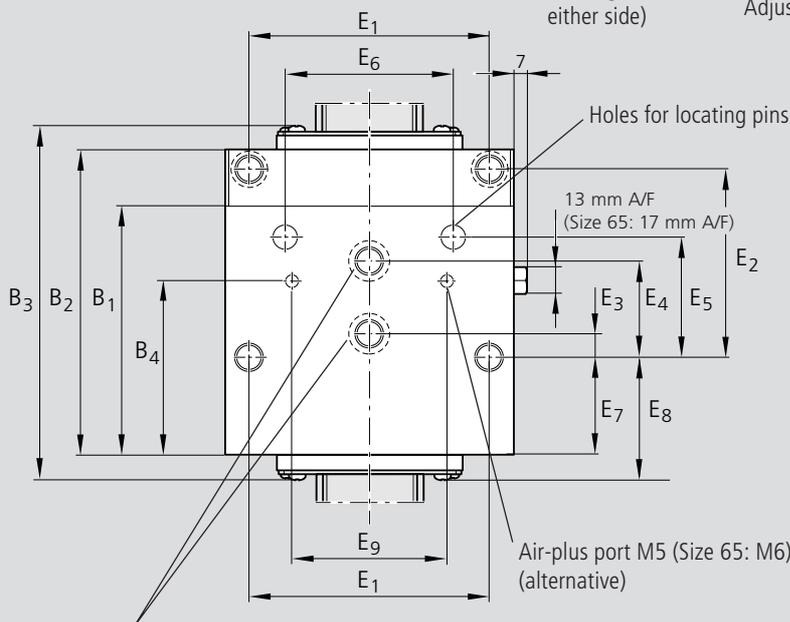
G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



G<sub>2</sub> on both sides, air-plus port\*) or air filter  
G<sub>1</sub> on both sides, air port\*) for release pressure



\*) Only one air port required



Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55	12	12
65	14	12

The two central mounting holes must always be used as well when mounting the unit!

These units are shipped with all ports plugged.

Size	Dimensions (mm)																		
	A	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub> max.	B <sub>4</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	E <sub>9</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>
35	100	90	113.0	129	59	82	62	5.0	31.0	36.0	52	42.0	50.0	70.8	10.0	31	28	82	8.0
45	120	104	129.5	148	70	100	80	10.0	40.0	50.0	70	40.0	49.3	62.0	9.0	52	18	96	9.0
55	140	135	159.5	180	87	116	95	12.5	47.1	57.5	80	52.5	62.8	80.0	8.5	17	70	112	8.5
65	170	150	179.5	199	95 <sup>5)</sup>	142	110	14.0	55.0	64.0	100	56.0	65.8	123.0	20.0	20	75	123	12.0

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	G1/8	60	52	18	12.5	12.5	10.5	M12
55	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14
65	G1/4	G1/4	G1/4	90	76	22	20.0	20.0	14.2	M16

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) Also for 20 mm

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit BWPS for Ball Rail Systems

without adapter plate for mounting  
from above

Matching guide rails:

1605-, 1606-, 1607-, 1645-, 1647-

Pressureless clamping (spring energy)

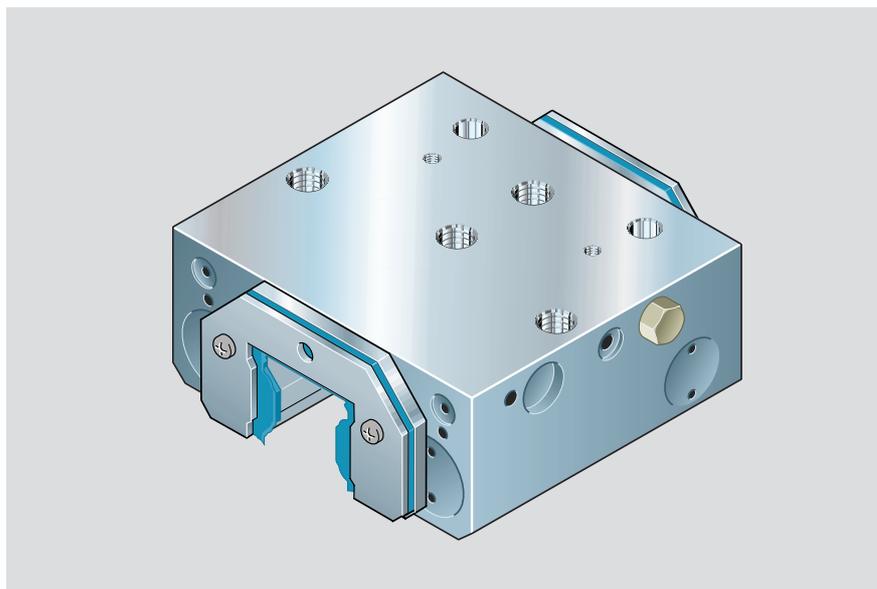
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)

### Notes

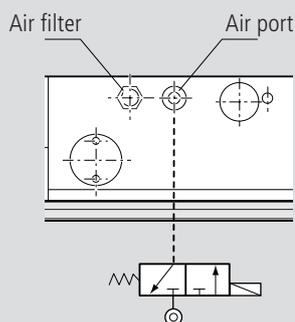
**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

For sizes 35 to 45, the Braking and Clamping Unit TKPS is preferred.

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.

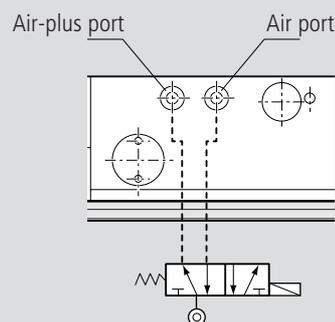


Circuitry<sup>1)</sup> for standard air port



Nominal diameter min. 6 mm

Circuitry<sup>2)</sup> for air-plus port



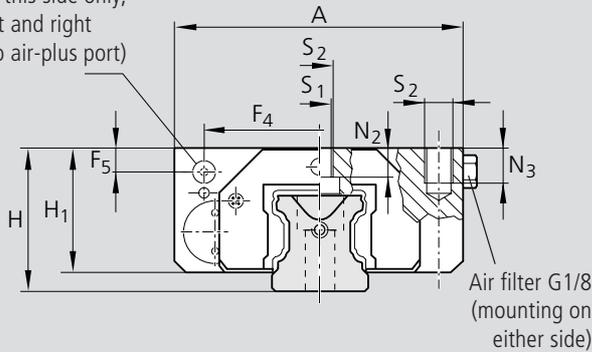
Nominal diameter min. 6 mm

Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1619-340-01	900	2300	0.050	0.335
45	1619-440-01	1800	4000	0.081	0.542
55	1619-540-01	2800	5000	0.106	1.062
65	1619-640-01	3000	6000	0.166	1.935

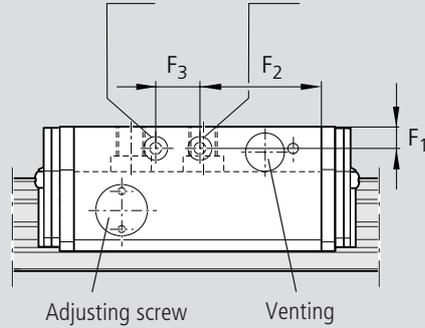
<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

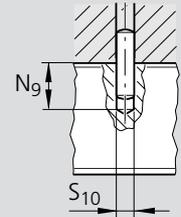
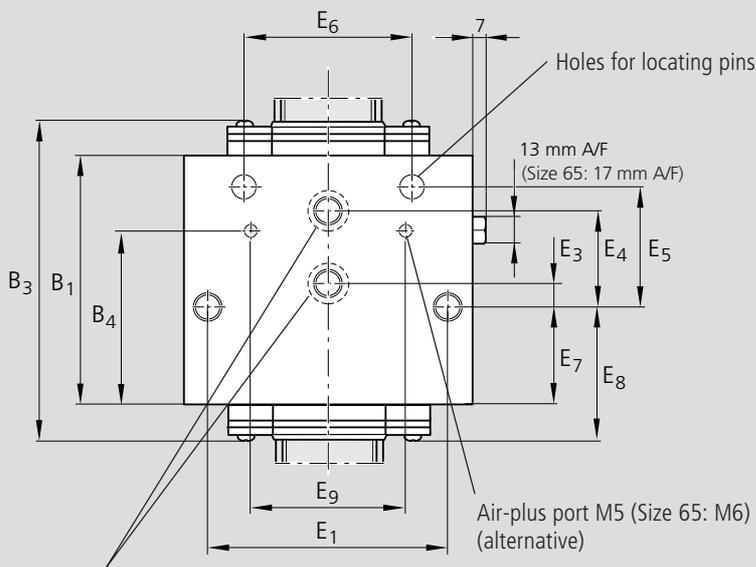
G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



G<sub>2</sub> on both sides, air-plus port\*) or air filter  
G<sub>1</sub> on both sides, air port\*) for release pressure



\*) Only one air port required



The two central mounting holes must always be used as well when mounting the unit!

These units are shipped with all ports plugged.

Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55	12	12
65	14	12

Size	Dimensions (mm)																	
	A	B <sub>1</sub>	B <sub>3</sub> max.	B <sub>4</sub>	E <sub>1</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	E <sub>9</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	
35	100	90	110	59	82	5.0	31.0	36.0	52	42.0	52.0	70.8	10.0	31	28	82	8.0	
45	120	104	127	70	100	10.0	40.0	50.0	70	40.0	51.3	62.0	9.0	52	18	96	9.0	
55	140	135	167	87	116	12.5	47.5	57.5	80	52.5	68.8	80.0	8.5	17	70	112	8.5	
65	170	150	186	95 <sup>5)</sup>	142	14.0	55.0	64.0	100	56.0	74.3	123.0	20.0	20	75	123	12.0	

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	G1/8	60	52	18	12.5	12.5	10.5	M12
55	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14
65	G1/4	G1/4	G1/4	90	76	22	20.0	20.0	14.2	M16

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) Also for 20 mm

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit BWPS for Roller Rail Systems

without adapter plate for mounting  
from above

Matching guide rails:

1805-, 1806-, 1807-, 1845-, 1847-

Pressureless clamping (spring energy)

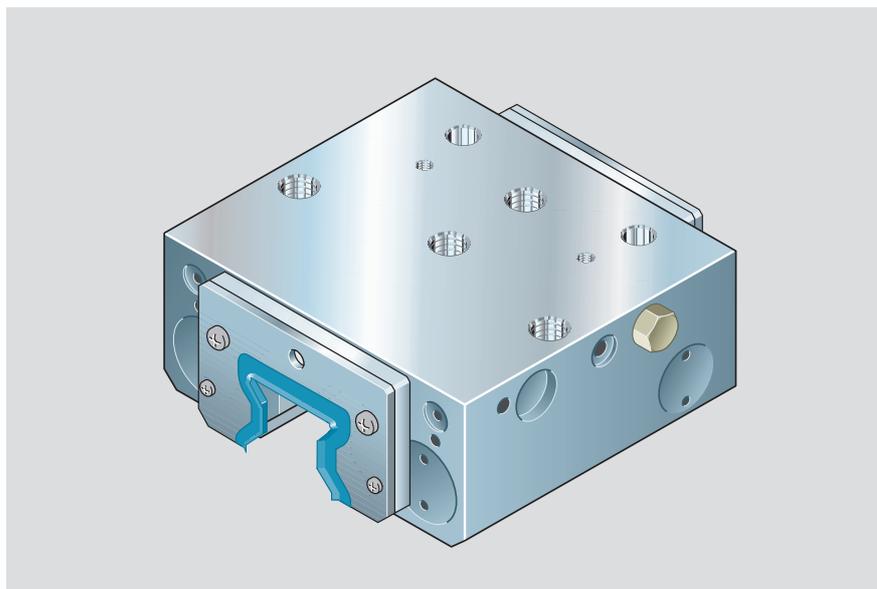
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)

#### Notes

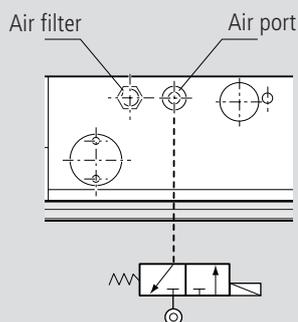
**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

For sizes 35 to 45, the Braking and Clamping Unit TKPS is preferred.

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 μm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.

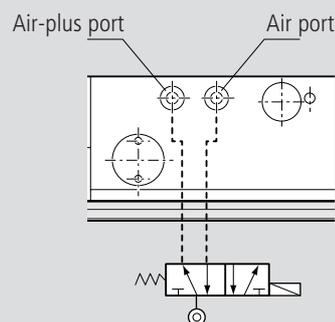


Circuitry<sup>1)</sup> for standard air port



Nominal diameter min. 6 mm

Circuitry<sup>2)</sup> for air-plus port



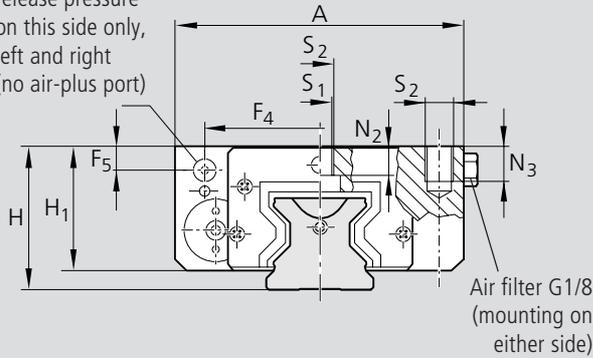
Nominal diameter min. 6 mm

Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1810-340-01	900	2300	0.050	0.335
45	1810-440-01	1800	4000	0.081	0.542
55	1810-540-01	2800	5000	0.106	1.062
65	1810-640-01	3000	6000	0.166	1.935

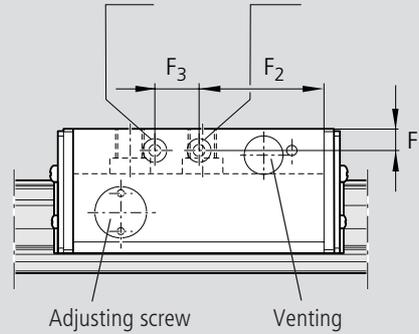
<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

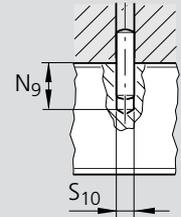
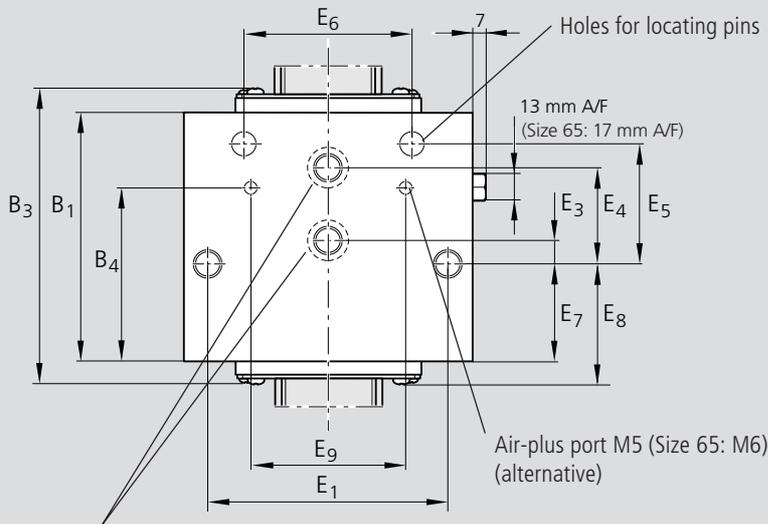
G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



G<sub>2</sub> on both sides, air-plus port\*) or air filter  
G<sub>1</sub> on both sides, air port\*) for release pressure



\*) Only one air port required



Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55	12	12
65	14	12

The two central mounting holes must always be used as well when mounting the unit!

These units are shipped with all ports plugged.

Size	Dimensions (mm)																	
	A	B <sub>1</sub>	B <sub>3</sub> max.	B <sub>4</sub>	E <sub>1</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	E <sub>9</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	
35	100	90	106	59	82	5.0	31.0	36.0	70	42.0	50.0	70.8	10.0	31	28	82	8.0	
45	120	104	123	70	100	10.0	40.0	50.0	70	40.0	49.5	62.0	9.0	52	18	96	9.0	
55	140	135	155	87	116	12.5	47.5	57.5	80	52.5	62.5	80.0	8.5	17	70	112	8.5	
65	170	150	169	95 <sup>5)</sup>	142	14.0	55.0	64.0	100	56.0	65.5	123.0	20.0	20	75	123	12.0	

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	G1/8	60	52	18	12.5	12.5	10.5	M12
55	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14
65	G1/4	G1/4	G1/4	90	76	22	20.0	20.0	14.2	M16

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) Also for 20 mm

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit TKPS for Ball Rail Systems

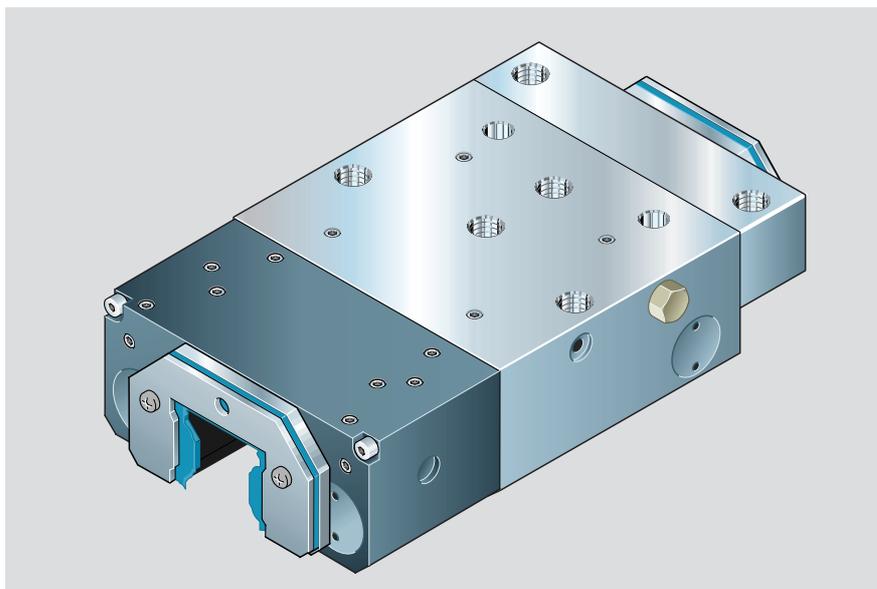
with add-on module and adapter  
plate for mounting from below/  
above

Very high axial holding forces thanks  
to add-on module and strong springs.  
Holding force 2-2.45 times that of  
BWPS.

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

Pressureless clamping (spring energy)

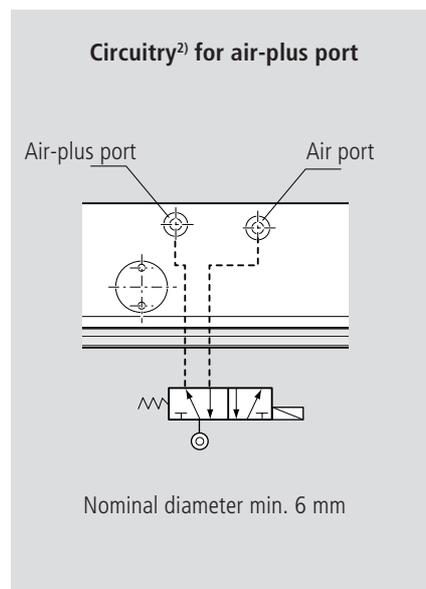
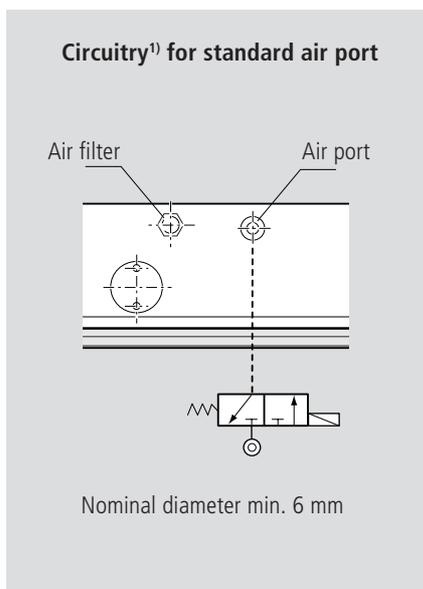
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)



### Notes

**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 μm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



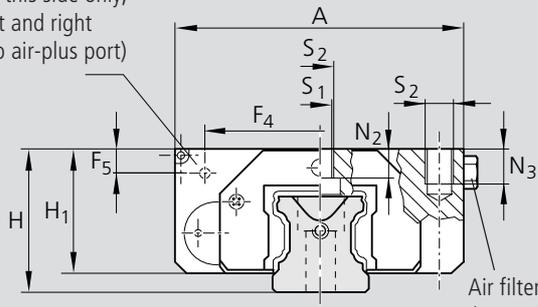
Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1619-340-10	2200	3200	0.150	0.335
45	1619-440-10	3800	5000	0.243	0.542
55 <sup>3)</sup>	1619-540-10	5700	7000	0.318	1.062

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

<sup>3)</sup> In preparation

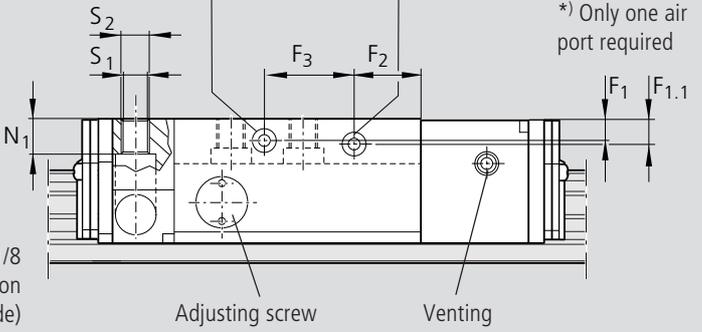
G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



G<sub>2</sub> on both sides, air-plus port\*) or air filter

G<sub>1</sub> on both sides, air port\*) for release pressure

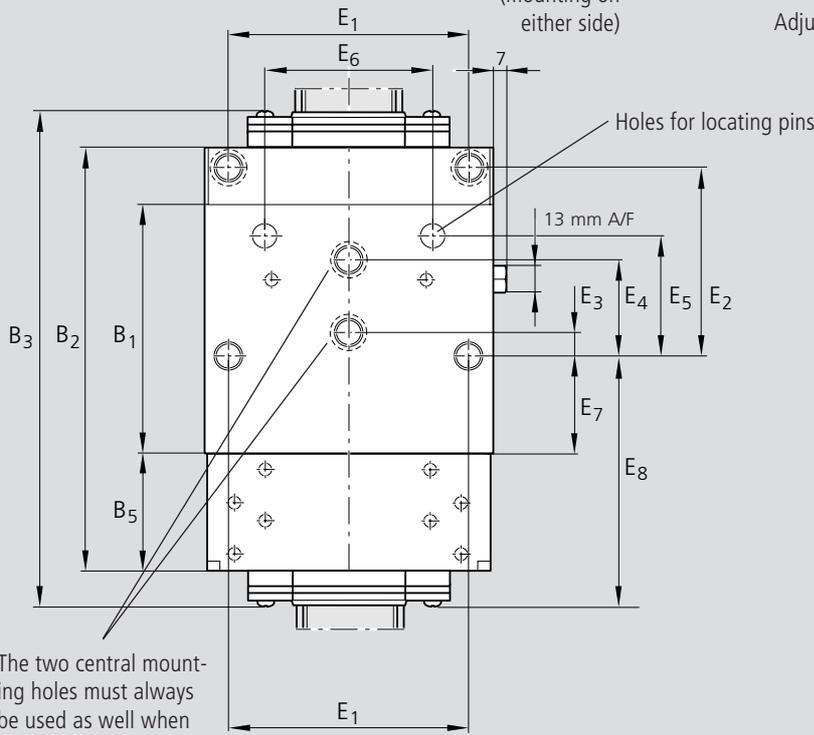
\*) Only one air port required



Air filter G1/8 (mounting on either side)

Adjusting screw

Venting



These units are shipped with all ports plugged.

Holes for locating pins		
Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55 <sup>5)</sup>	12	12

Size	Dimensions (mm)																		
	A	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub> max.	B <sub>5</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	F <sub>1</sub>	F <sub>1.1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>
35	100	90	159.0	180.0	46	82	62.0	5.0	31.0	36.0	52	42.0	98.5	8.5	–	23	36	80	8.5
45	120	104	177.5	201.0	48	100	80.0	10.0	40.0	50.0	70	40.0	99.5	9.0	10	27	38	96	10.0
55 <sup>5)</sup>	140	135	207.5	239.5	48	116	95.0	12.5	47.5	57.5	80	52.5	116.5	8.5	–	17	70	110	8.5

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	M5	60	52	18	12.5	12.5	10.5	M12
55 <sup>5)</sup>	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) In preparation



# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit TKPS for Roller Rail Systems

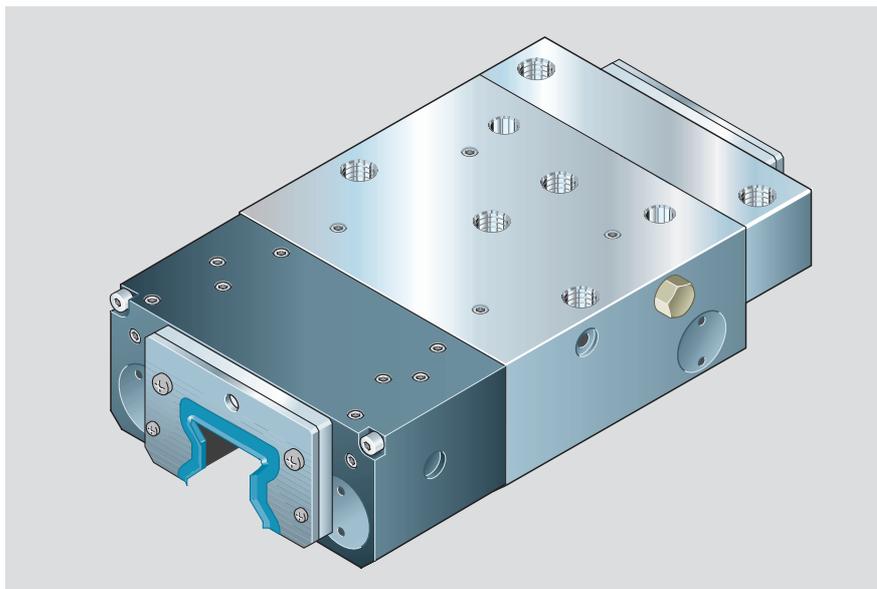
with add-on module and adapter  
plate for mounting from below/  
above

Very high axial holding forces thanks  
to add-on module and strong springs.  
Holding force 2-2.45 times that of  
BWPS.

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

Pressureless clamping (spring energy)

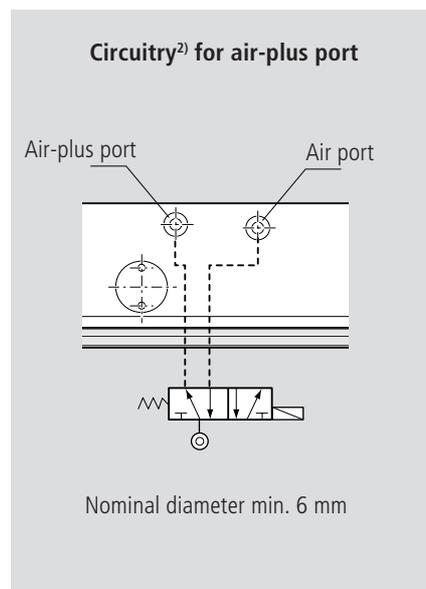
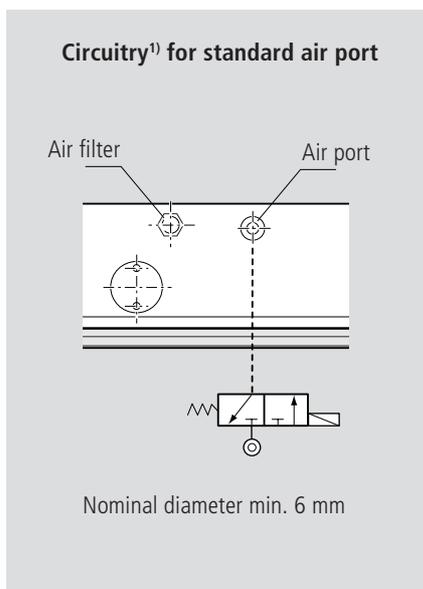
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)



### Notes

**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



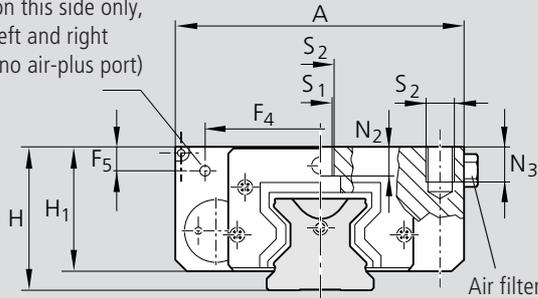
Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1810-340-10	2200	3200	0.150	0.335
45	1810-440-10	3800	5000	0.243	0.542
55 <sup>3)</sup>	1810-540-10	5700	7000	0.318	1.062

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

<sup>3)</sup> In preparation

G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)

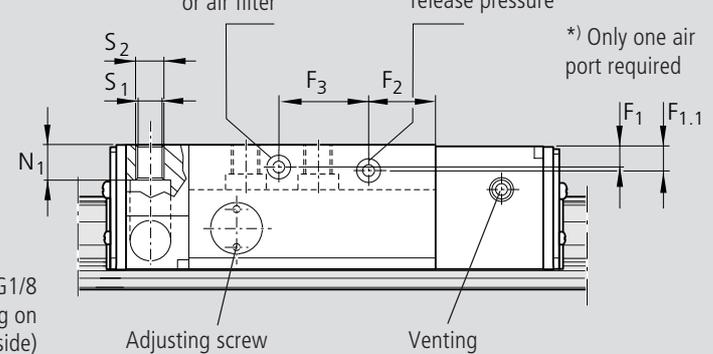


Air filter G1/8 (mounting on either side)

G<sub>2</sub> on both sides, air-plus port\*) or air filter

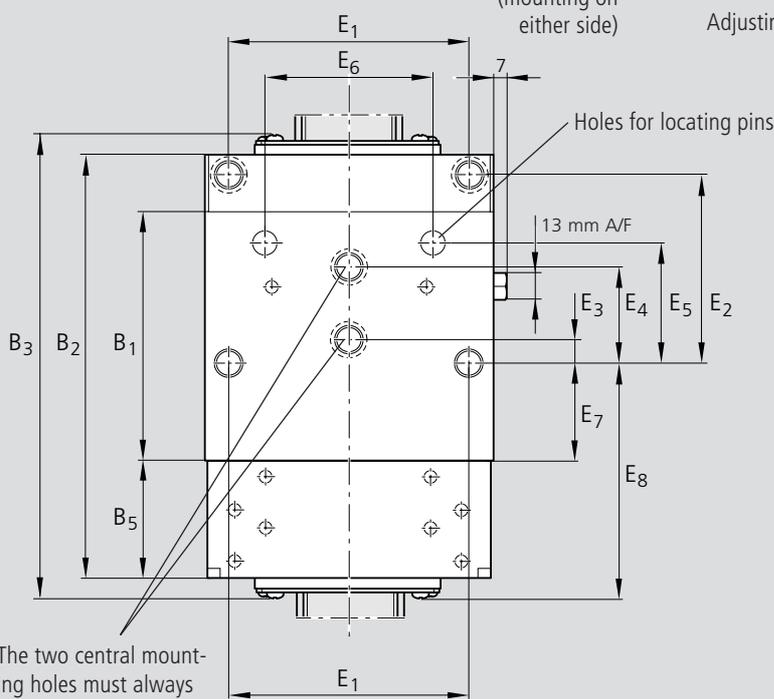
G<sub>1</sub> on both sides, air port\*) for release pressure

\*) Only one air port required



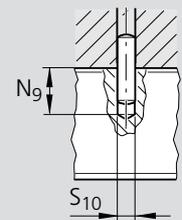
Adjusting screw

Venting



Holes for locating pins

13 mm A/F



The two central mounting holes must always be used as well when mounting the unit!

These units are shipped with all ports plugged.

Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55 <sup>5)</sup>	12	12

Size	Dimensions (mm)																		
	A	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub> max.	B <sub>5</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	F <sub>1</sub>	F <sub>1.1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>
35	100	90	159.0	175.0	46	82	62.0	5.0	31.0	36.0	52	42.0	96.0	8.5	–	23	36	80	8.5
45	120	104	177.5	196.5	48	100	80.0	10.0	40.0	50.0	70	40.0	97.5	9.0	10	27	38	96	10.0
55 <sup>5)</sup>	140	135	207.5	227.5	48	116	95.0	12.5	47.5	57.5	80	52.5	110.5	8.5	–	17	70	110	8.5

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	M5	60	52	18	12.5	12.5	10.5	M12
55 <sup>5)</sup>	G1/8	G1/8	G 1/8	70	59	18	12.5	12.5	12.2	M14

1) Observe the height!

2) Mounting from below using ISO 4762 screws

3) Mounting from below using ISO 6912 screws

4) Depth of thread checked with screw

5) In preparation

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit TKPS for Ball Rail Systems

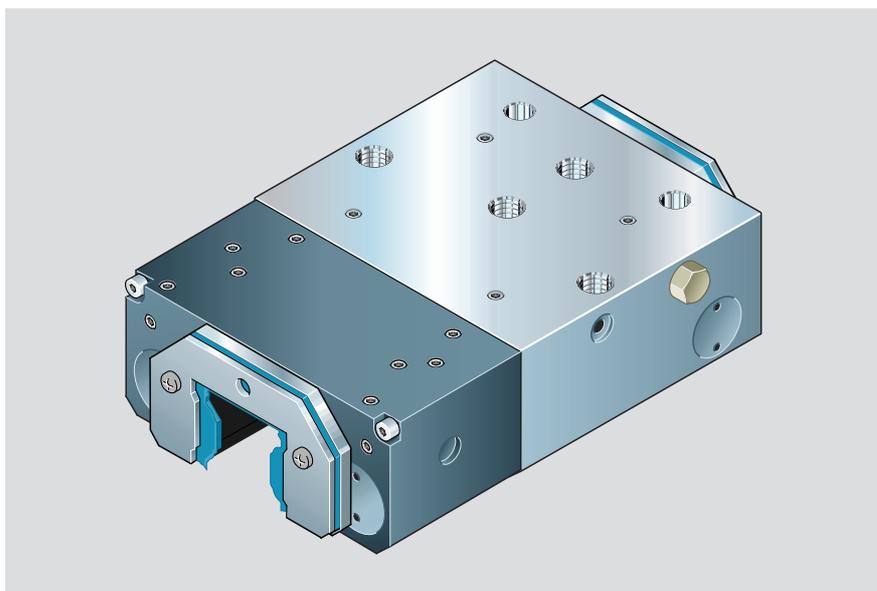
with add-on module without adapter plate for mounting from above

Very high axial holding forces thanks to add-on module and strong springs.  
Holding force 2-2.45 times that of BWPS.

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

Pressureless clamping (spring energy)

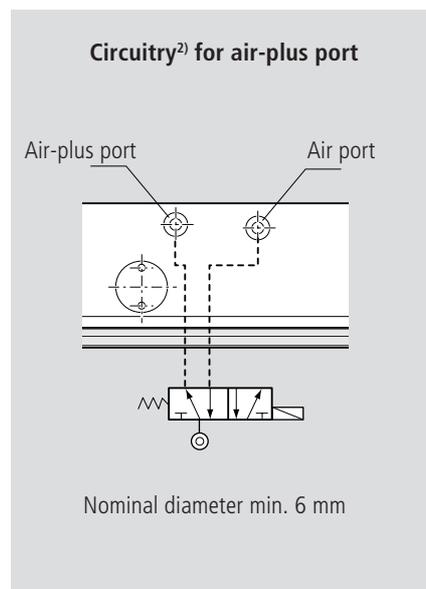
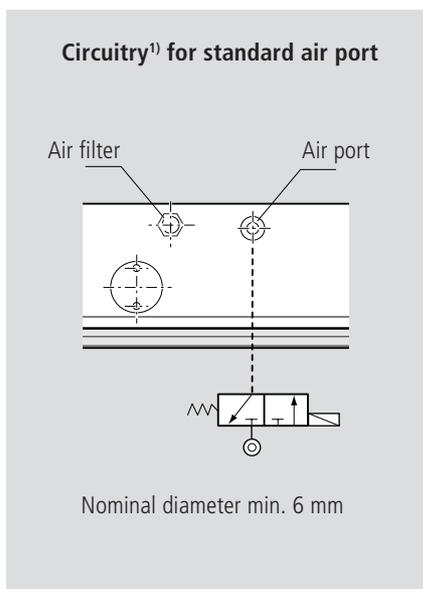
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)



### Notes

**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



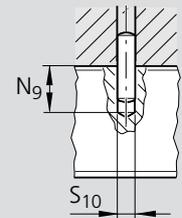
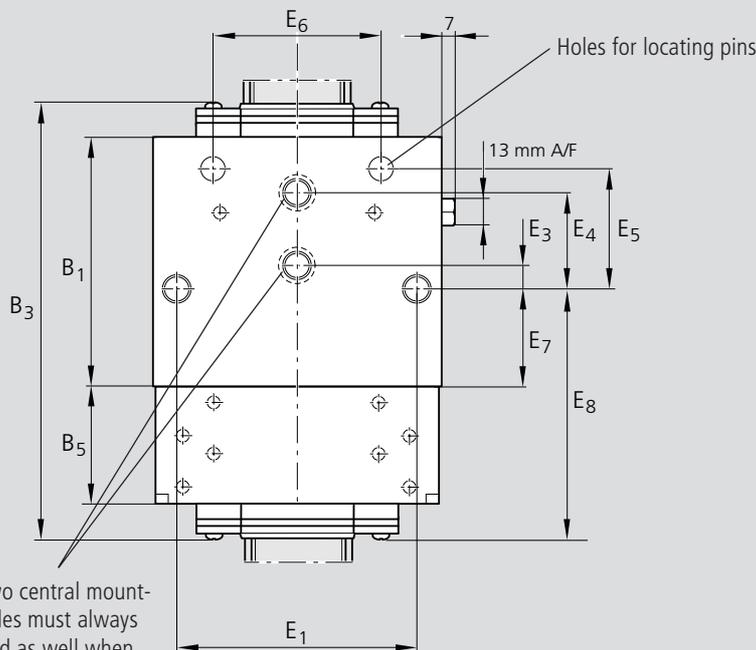
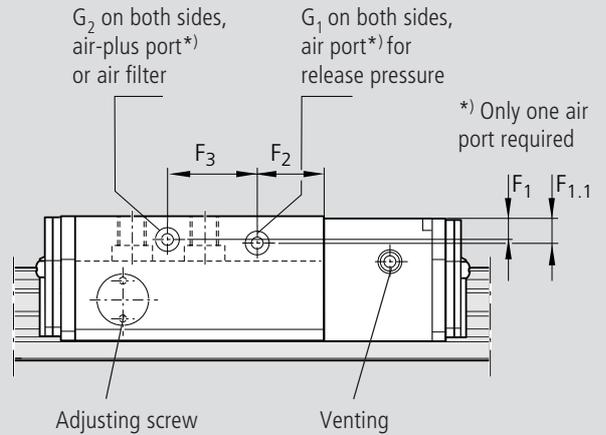
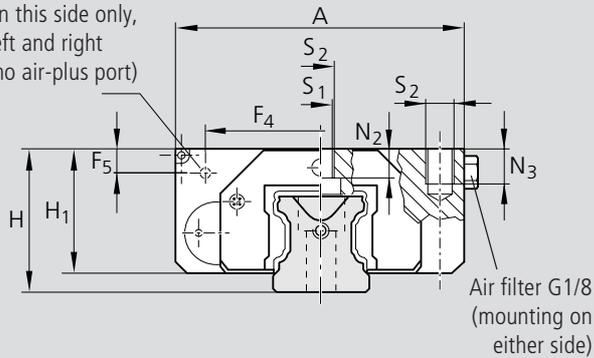
Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1619-340-11	2200	3200	0.150	0.335
45	1619-440-11	3800	5000	0.243	0.542
55 <sup>3)</sup>	1619-540-11	5700	7000	0.318	1.062

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

<sup>3)</sup> In preparation

G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



Holes for locating pins		
Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55 <sup>5)</sup>	12	12

These units are shipped with all ports plugged.

Size	Dimensions (mm)																	
	A	B <sub>1</sub>	B <sub>3</sub> max.	B <sub>5</sub>	E <sub>1</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	F <sub>1</sub>	F <sub>1.1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	
35	100	90	157.0	46	82	5.0	31.0	36.0	52	42.0	98.5	8.5	–	23	36	80	8.5	
45	120	104	175.0	48	100	10.0	40.0	50.0	70	40.0	99.5	9.0	10	27	38	96	10.0	
55 <sup>5)</sup>	140	135	215.0	48	116	12.5	47.5	57.5	80	52.5	116.5	8.5	–	17	70	110	8.5	

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	M5	60	52	18	12.5	12.5	10.5	M12
55 <sup>5)</sup>	G1/8	G1/8	G1/8	70	59	18	12.5	12.5	12.2	M14

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) In preparation

# STAR – Ball and Roller Rail Systems

## Pneumatic Braking and Clamping Units

### Braking and clamping unit TKPS for Roller Rail Systems

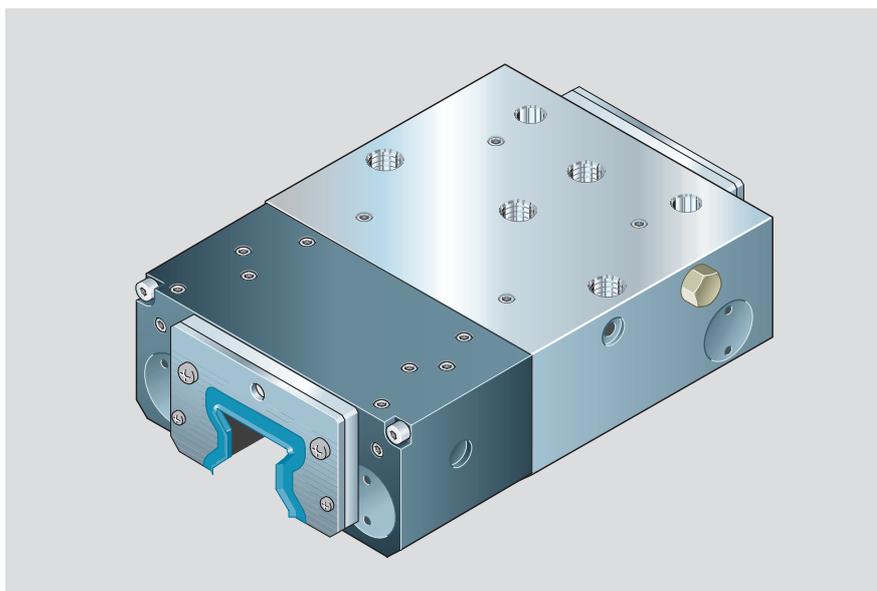
with add-on module without adapter plate for mounting from above

Very high axial holding forces thanks to add-on module and strong springs.  
Holding force 2-2.45 times that of BWPS.

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

Pressureless clamping (spring energy)

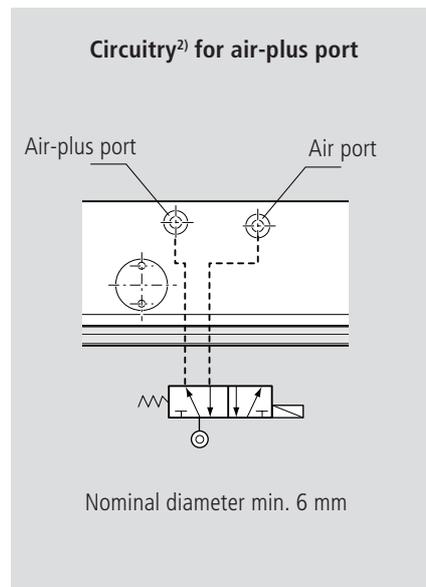
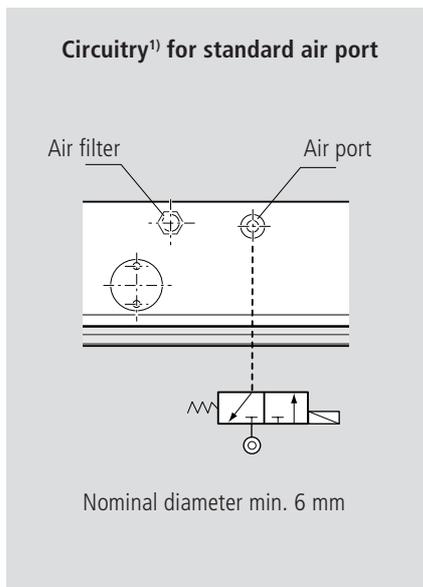
- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)



### Notes

**⚠** Use as a safety device only after testing and certification by authorized experts examining the machine as a whole!

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.
- Check that the sealing lips of the front seals sit evenly all around the guide rail. Re-align if necessary.



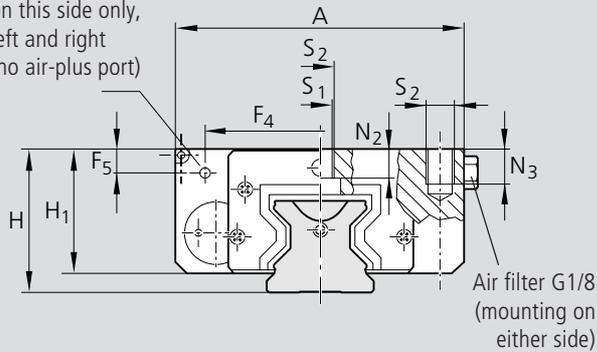
Size	Part numbers	Holding force <sup>1)</sup>	Holding force <sup>2)</sup>	Air consumption (normalized)	
		(spring energy)	(with air-plus port)	(air port)	(air-plus port)
		(N)	(N)	(dm <sup>3</sup> /stroke)	(dm <sup>3</sup> /stroke)
35	1810-340-11	2200	3200	0.150	0.335
45	1810-440-11	3800	5000	0.243	0.542
55 <sup>3)</sup>	1810-540-11	5700	7000	0.318	1.062

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

<sup>3)</sup> In preparation

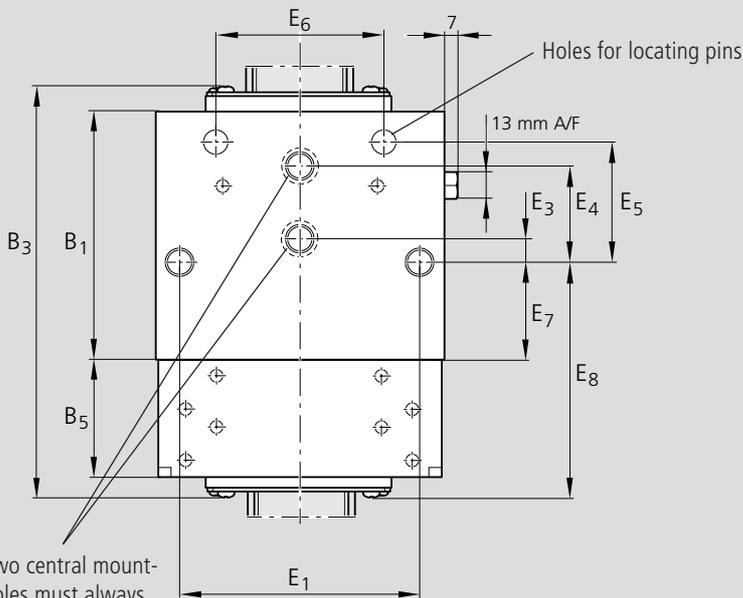
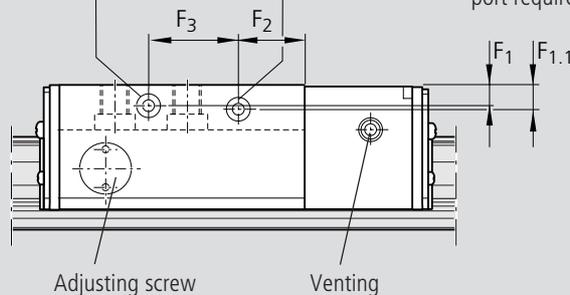
G<sub>3</sub> air port\*) for release pressure on this side only, left and right (no air-plus port)



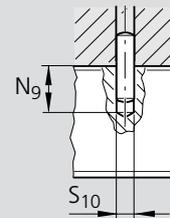
G<sub>2</sub> on both sides, air-plus port\*) or air filter

G<sub>1</sub> on both sides, air port\*) for release pressure

\*) Only one air port required



The two central mounting holes must always be used as well when mounting the unit!



Holes for locating pins

Size	Dimensions (mm)	
	S <sub>10</sub> <sup>H7</sup>	N <sub>9</sub>
35	8	8
45	10	10
55 <sup>5)</sup>	12	12

These units are shipped with all ports plugged.

Size	Dimensions (mm)																	
	A	B <sub>1</sub>	B <sub>3</sub> max.	B <sub>5</sub>	E <sub>1</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>	E <sub>7</sub>	E <sub>8</sub> max.	F <sub>1</sub>	F <sub>1.1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	
35	100	90	152	46	82	5.0	31.0	36.0	52	42.0	96.0	8.5	–	23	36	80	8.5	
45	120	104	171	48	100	10.0	40.0	50.0	70	40.0	97.5	9.0	10	27	38	96	10.0	
55 <sup>5)</sup>	140	135	203	48	116	12.5	47.5	57.5	80	52.5	110.5	8.5	–	17	70	110	8.5	

Size	Dimensions (mm)									
	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>1</sub> <sup>2)</sup>	N <sub>2</sub> <sup>3)</sup>	N <sub>3</sub> <sup>4)</sup>	S <sub>1</sub>	S <sub>2</sub>
35	G1/8	G1/8	M5	48	42	14	10.1	10.0	8.6	M10
45	G1/8	G1/8	M5	60	52	18	12.5	12.5	10.5	M12
55 <sup>5)</sup>	G1/8	G1/8	G 1/8	70	59	18	12.5	12.5	12.2	M14

- 1) Observe the height!
- 2) Mounting from below using ISO 4762 screws
- 3) Mounting from below using ISO 6912 screws
- 4) Depth of thread checked with screw
- 5) In preparation

# STAR – Ball and Roller Rail Systems

## Mechanical Clamping Units

### Mechanical clamping units MK

#### for Ball Rail Systems (KSF)

1619-.42-60

Matching guide rails:

1605-, 1606-, 1607-, 1645-, 1647-

#### for Roller Rail Systems (RSF)

1810-.42-60

Matching guide rails:

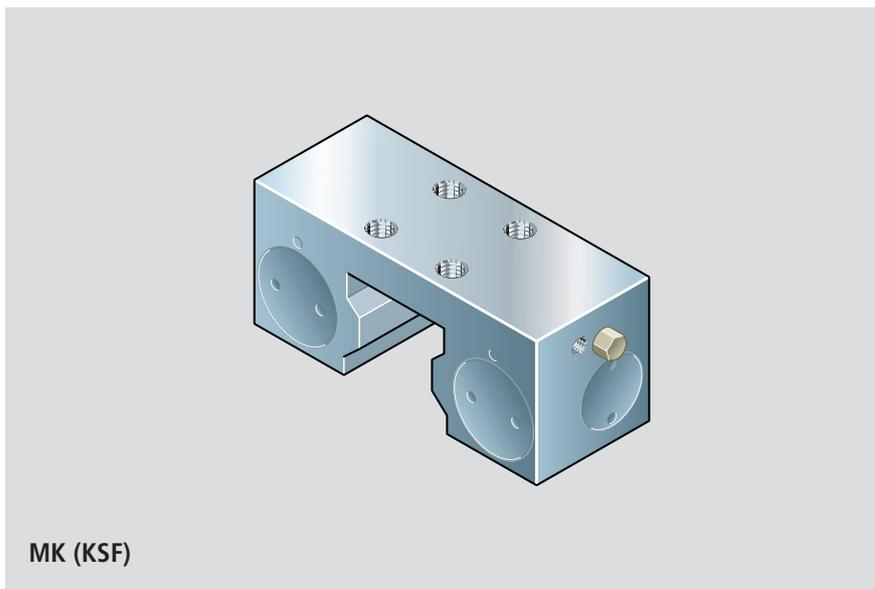
1805-, 1806-, 1807-, 1845-, 1847-

#### Pressure clamping (pneumatic)

Max. operating pressure 12 (10<sup>3</sup> hPa)

For high runner blocks 1621-, 1624-, 1821-, 1824- in sizes 15, 25, 30, 35, 45 and 55, spacer plates are required.

(Available as accessories: part numbers 1619-.40-65)

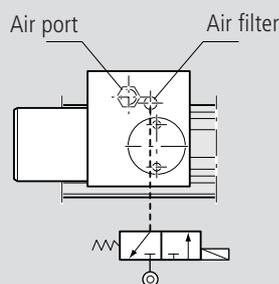


### Notes

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.

Since the design and dimensions of KSFs and RSFs are largely identical, only the KSF version is shown in the drawings.

### Circuitry<sup>1)</sup> for standard air port

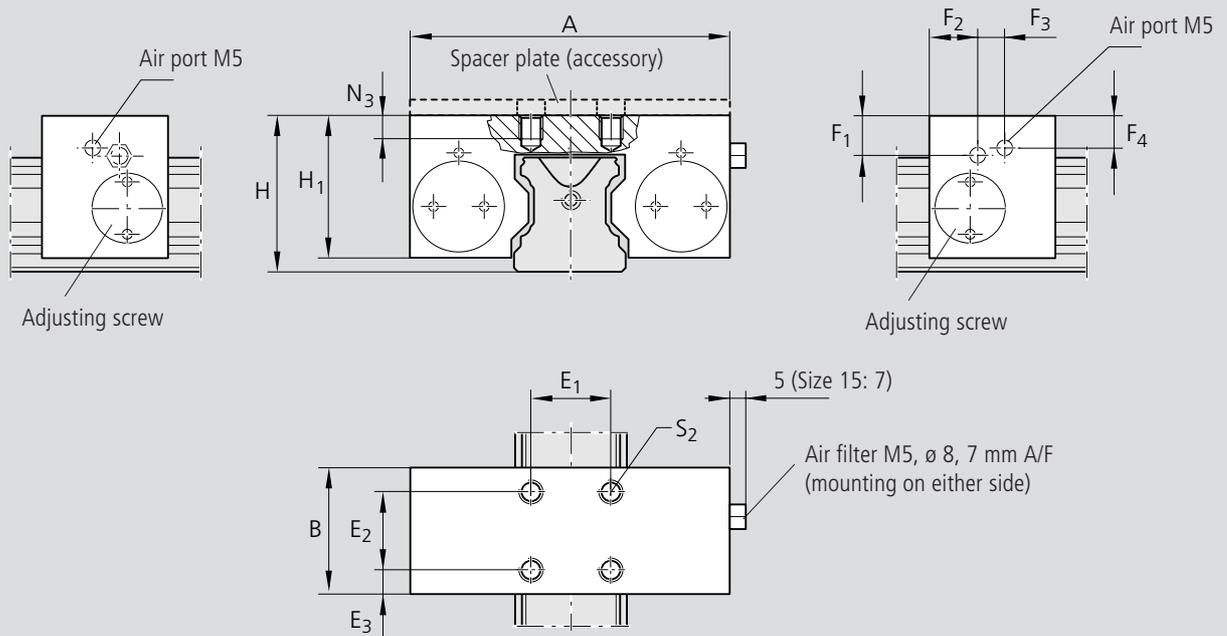


Nominal diameter min. 6 mm  
for size 15 and 20, min. 4 mm

Size	Part numbers		Holding force <sup>1)</sup> (air pressure) (N)
	KSF	RSF	
15	1619-142-60	–	650
20	1619-842-60	–	1000
25	1619-242-60	1810-242-60	1200
30	1619-742-60	–	1750
35	1619-342-60	1810-342-60	2000
45	1619-442-60	1810-442-60	2250
55	1619-542-60	1810-542-60	3000
65	1619-642-60	1810-642-60	3000

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

## MK (KSF)



These units are shipped with all ports plugged.

Size	Dimensions (mm)												
	A	B	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	H	H <sub>1</sub> <sup>1)</sup>	N <sub>3</sub> <sup>2)</sup>	S <sub>2</sub>
15	55	39	15	15	15.5	16.1	5.0	0.0	5.6	24	20.8	4.5	M4
20	66	39	20	20	9.0	6.0	4.5	17.2	4.5	30	27.0	6.0	M6
25	75	35	20	20	5.0	9.0	5.0	12.5	7.0	36	32.5	8.0	M6
30	90	39	22	22	8.5	10.3	14.5	9.5	8.5	42	38.5	9.0	M8
35	100	39	24	24	7.5	12.2	15.0	8.5	10.0	48	44.0	10.0	M8
45	120	49	26	26	11.5	14.5	19.5	9.5	14.5	60	52.0	15.0	M10
55	128	49	30	30	9.5	17.0	19.5	10.0	17.0	70	57.0	15.0	M10
65	138	49	30	30	9.5	14.5	19.5	10.0	14.5	90	73.5	20.0	M10

<sup>1)</sup> Observe the height!

<sup>2)</sup> Depth of thread checked with screw

# STAR – Ball and Roller Rail Systems

## Mechanical Clamping Units

### Mechanical clamping units MKS

#### for Ball Rail Systems (KSF)

**1619-.40-60**

Matching guide rails:  
1605-, 1606-, 1607-, 1645-, 1647-

#### for Roller Rail Systems (RSF)

**1810-.40-60**

Matching guide rails:  
1805-, 1806-, 1807-, 1845-, 1847-

#### Pressureless clamping (spring energy)

- release pressure min. 5.5 (10<sup>3</sup> hPa)
- max. pneumatic operating pressure 8 (10<sup>3</sup> hPa)

For high runner blocks 1621-, 1624-, 1821-, 1824- in sizes 15, 25, 30, 35, 45 and 55, spacer plates are required.  
(Available as accessories: part numbers 1619-.40-65)

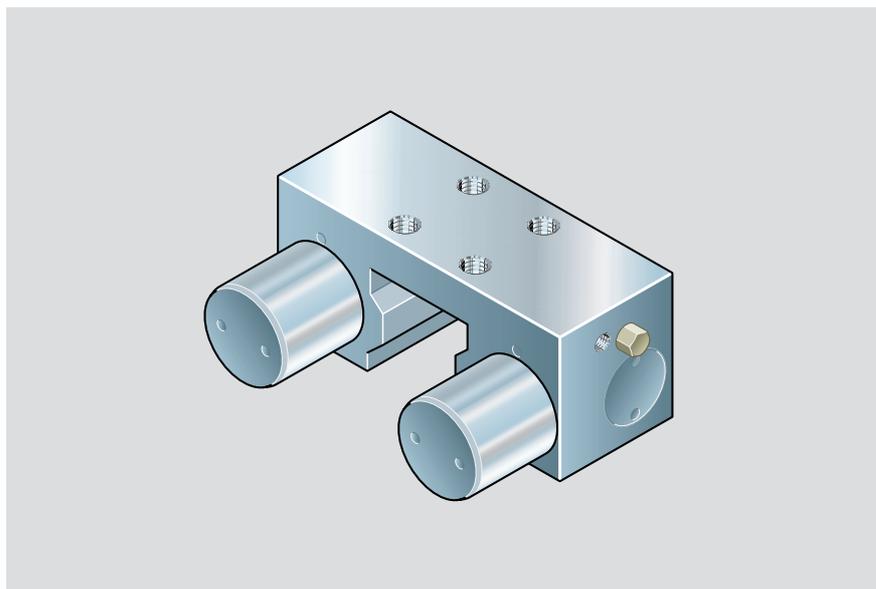
#### Notes

**⚠ Do not use this unit as a braking unit!**

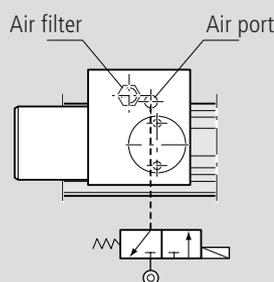
It is intended only for use when the axis is not moving.

- Make sure the adjoining structure has sufficient stiffness.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions carefully before starting up the equipment.

Since the design and dimensions of KSFs and RSFs are largely identical, only the KSF version is shown in the drawings.

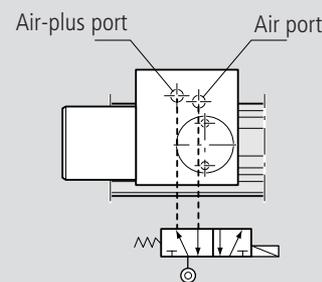


#### Circuitry<sup>1)</sup> for standard air port



Nominal diameter min. 6 mm for size 15 and 20, min. 4 mm

#### Circuitry<sup>2)</sup> for air-plus port



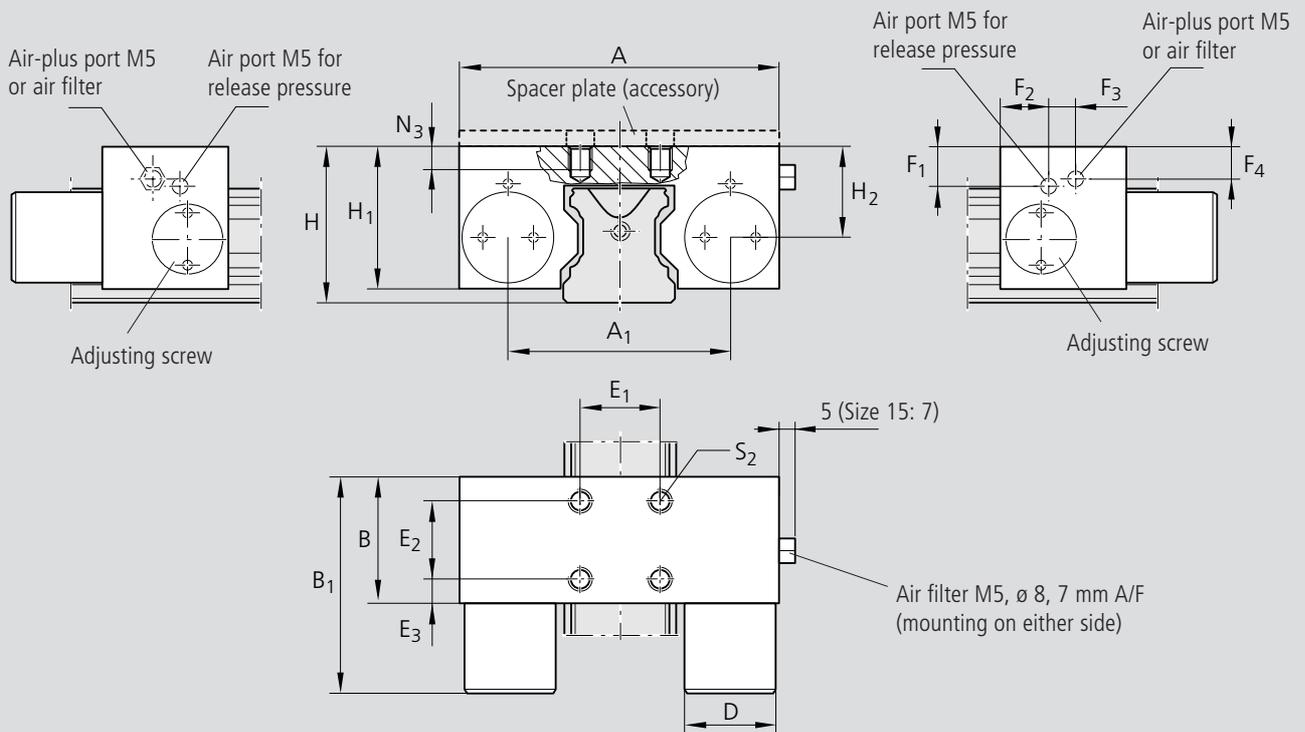
Nominal diameter min. 6 mm for size 15 and 20, min. 4 mm

Size	Part numbers		Holding force <sup>1)</sup> (spring energy) (N)	Holding force <sup>2)</sup> (with air-plus port) (N)
	KSF	RSF		
15	1619-140-60	–	400	1250
20	1619-840-60	–	600	1600
25	1619-240-60	1810-240-60	750	1950
30	1619-740-60	–	1050	2800
35	1619-340-60	1810-340-60	1250	3250
45	1619-440-60	1810-440-60	1450	3700
55	1619-540-60	1810-540-60	2000	5000
65	1619-640-60	1810-640-60	2000	5000

<sup>1)</sup> Holding force achieved by spring energy. Check this with the unit mounted and with a film of oil lubricant (ISO VG 68).

<sup>2)</sup> Increased holding force thanks to additional pressure of 5.5 (10<sup>3</sup> hPa) through the air-plus port. Sequencing by 5/2 or 5/3 directional control valve.

MKS (KSF)



These units are shipped with all ports plugged.

Size	Dimensions (mm)																
	A	A <sub>1</sub>	B	B <sub>1</sub>	D	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	H	H <sub>1</sub> <sup>1)</sup>	H <sub>2</sub>	N <sub>3</sub> <sup>2)</sup>	S <sub>2</sub>
15	55	34.0	39	58	16	15	15	15.5	16.1	5.0	0.0	5.6	24	20.8	11.6	4.5	M4
20	66	43.0	39	61	20	20	20	9.0	6.0	4.5	17.2	4.5	30	27.0	15.5	6.0	M6
25	75	49.0	35	56	22	20	20	5.0	9.0	5.0	12.5	7.0	36	32.5	20.0	8.0	M6
30	90	58.0	39	68	25	22	22	8.5	10.3	14.5	9.5	8.5	42	38.5	24.0	9.0	M8
35	100	68.0	39	67	28	24	24	7.5	12.2	15.0	8.5	10.0	48	44.0	28.0	10.0	M8
45	120	78.8	49	82	30	26	26	11.5	14.5	19.5	9.5	14.5	60	52.0	35.5	15.0	M10
55	128	86.8	49	82	30	30	30	9.5	17.0	19.5	10.0	17.0	70	57.0	40.0	15.0	M10
65	138	98.8	49	82	30	30	30	9.5	14.5	19.5	10.0	14.5	90	73.5	55.0	20.0	M14

<sup>1)</sup> Observe the height!

<sup>2)</sup> Depth of thread checked with screw

# STAR – Ball and Roller Rail Systems

## Manual Clamping Units

### Manual clamping unit HK for Ball and Roller Rail Systems

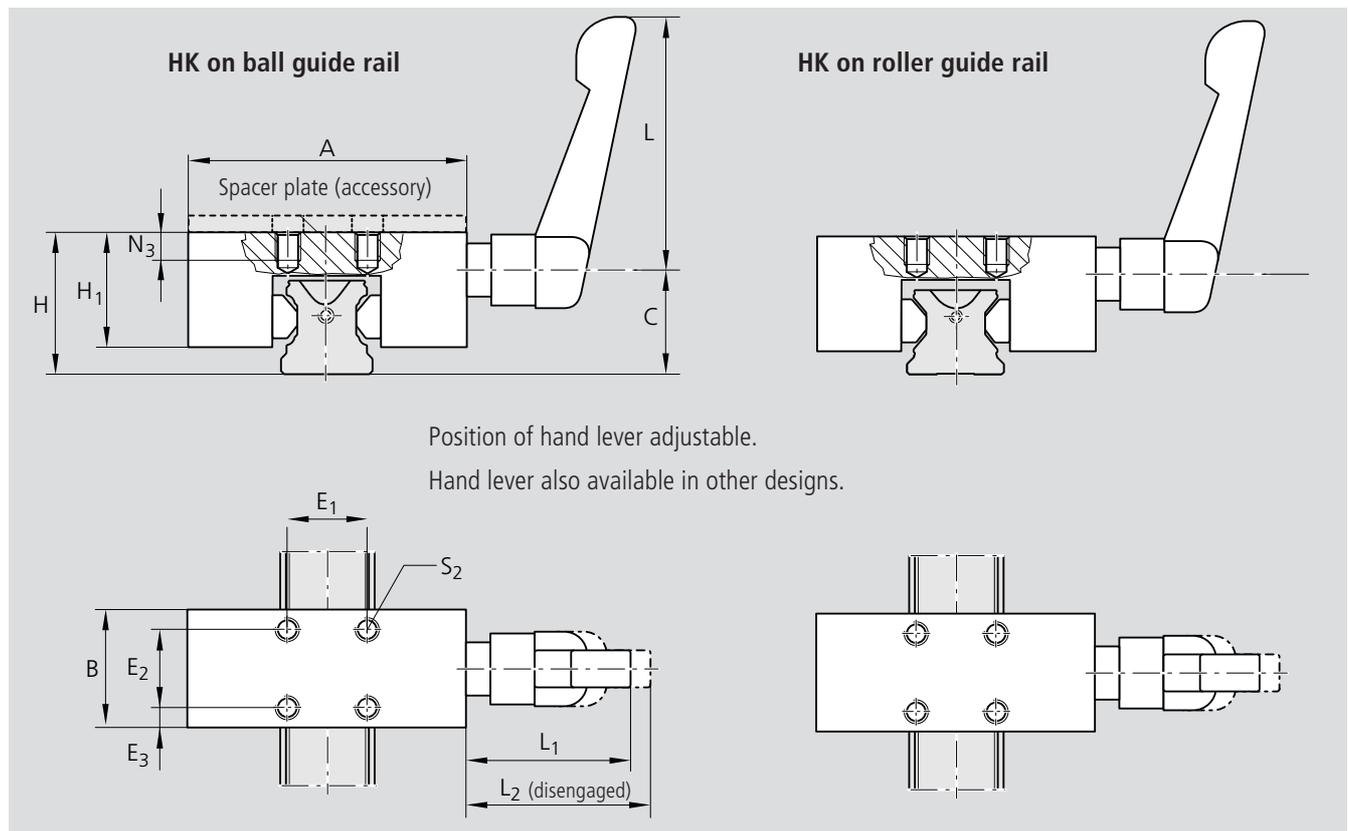
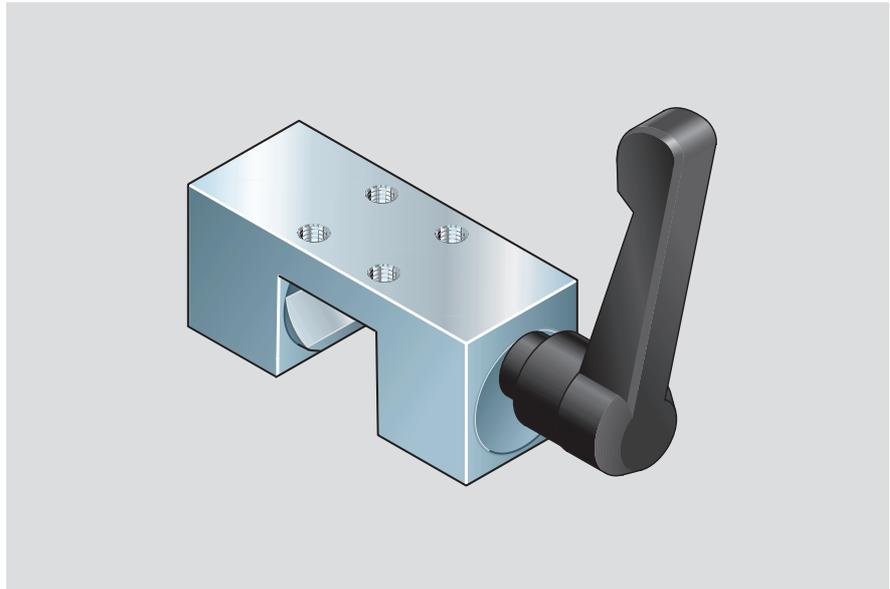
1619-...-82

#### Matching guide rails:

1605-, 1606-, 1607-, 1645-, 1647-, 1805-, 1806-, 1807-, 1845-, 1847-

The manual clamping units can be used on either Ball Rail Systems or Roller Rail Systems.

For high runner blocks 1621-, 1624-, 1821-, 1824- in sizes 25, 30, 35, 45 and 55, spacer plates are required. (Available as accessories: part numbers 1619-.42-85)



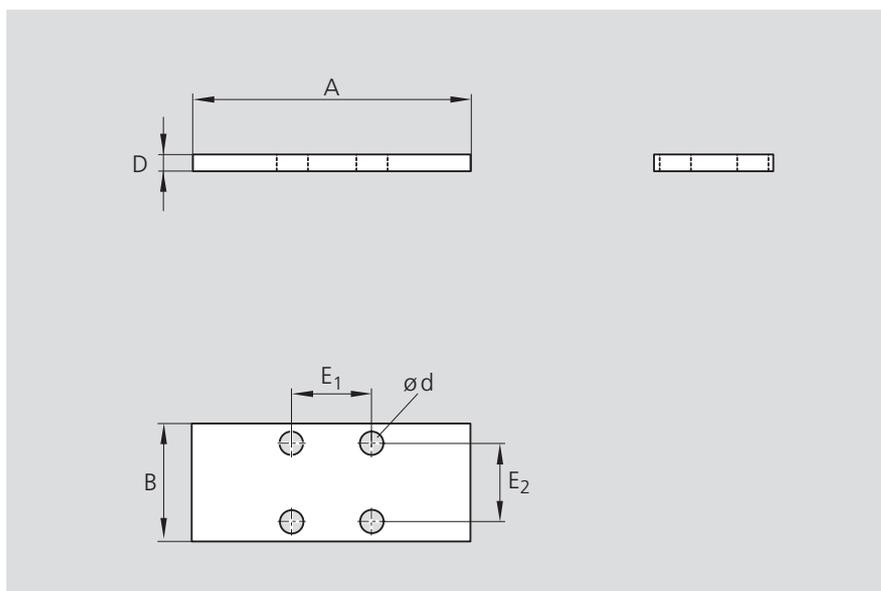
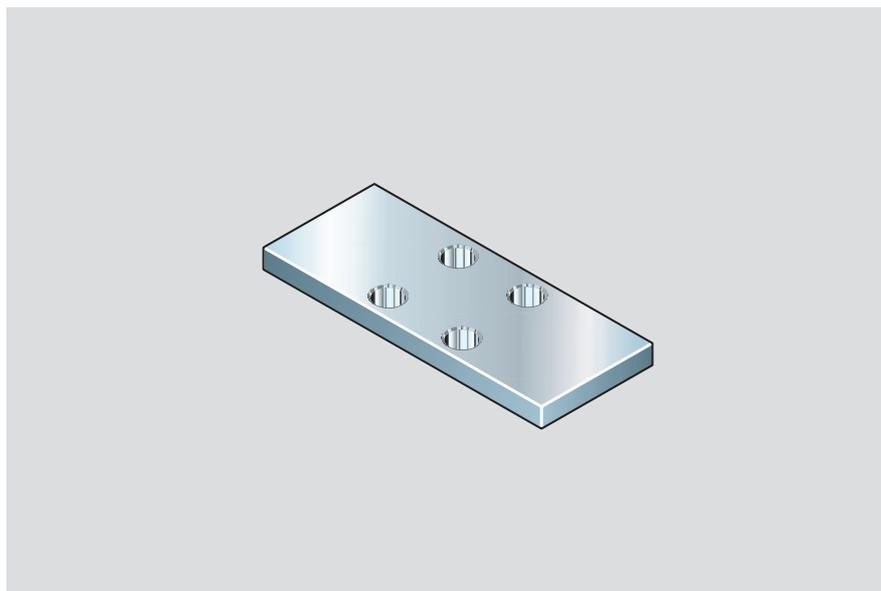
Size	Part numbers	Holding force	Dimensions (mm)												
			A	B	C	H	H <sub>1</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	L	L <sub>1</sub>	L <sub>2</sub>	N <sub>3</sub> <sup>1)</sup>	S <sub>2</sub>
15	1619-142-82	1200 N / 4 Nm	47	25	19.3	24	19	17	17	4.0	40	31	35	5	M4
20	1619-842-82	1200 N / 5 Nm	60	24	24.5	30	23	15	15	4.5	40	31	35	6	M5
25	1619-242-82	1200 N / 5 Nm	70	30	28.9	36	29	20	20	5.0	65	43	47	7	M6
30	1619-742-82	2000 N / 15 Nm	90	39	34.0	42	33	22	22	8.5	80	55	59	8	M6
35	1619-342-82	2000 N / 15 Nm	100	39	38.0	48	41	24	24	7.5	80	55	59	10	M8
45	1619-442-82	2000 N / 15 Nm	120	44	47.0	60	48	26	26	9.0	80	55	59	14	M10
55	1619-542-82	2000 N / 22 Nm	140	49	56.5	70	51	30	30	9.5	95	64	68	14	M14
65	1619-642-82	3000 N / 22 Nm	160	64	69.5	90	66	35	35	14.5	95	64	68	20	M16

<sup>1)</sup> Depth of thread checked with screw

# Spacer Plate

## Spacer plate for MK, MKS and HK for Ball and Roller Rail Systems

For connection to high runner blocks 1621-, 1624-, 1821-, 1824- in sizes 15, 25, 30, 35, 45 and 55.



Size	Part numbers	Dimensions (mm)					
		MK/MKS	A	B	D	E <sub>1</sub>	E <sub>2</sub>
15	1619-140-65	55	39	4	15	15	4.5
25	1619-240-65	75	35	4	20	20	6.5
30	1619-740-65	90	39	3	22	22	8.5
35	1619-340-65	100	39	7	24	24	8.5
45	1619-440-65	120	49	10	26	26	10.5
55	1619-540-65	128	49	10	30	30	10.5

Size	Part numbers	Dimensions (mm)					
		HK	A	B	D	E <sub>1</sub>	E <sub>2</sub>
15	1619-142-85	47	25	4	17	17	4.5
25	1619-242-85	70	30	4	20	20	6.5
30	1619-742-85	90	39	3	22	22	8.5
35	1619-342-85	100	39	7	24	24	8.5
45	1619-442-85	120	44	10	26	26	10.5
55	1619-542-85	140	49	10	30	30	10.5

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