

Accessories, Clamping and Braking Units

Product Description, Accessories, Hydraulic Clamping and Braking Units

Application areas

Clamping



- During installation work and while machine is stopped, **with** power when using KBH
- During installation work and while machine is stopped, **without** power when using KBHS
- Clamping of heavy handling systems
- Clamping of machine tables in heavy duty machining centers

Braking

- Auxiliary brake for linear motors
- Braking of heavy handling systems

Characteristic features

- Very high axial holding forces
- Dynamic and static stabilization in the axis travel direction
- Heavy duty brake with spring energy accumulator

 **Follow the safety notes for Clamping and Braking Units.**  187

Further highlights

- Up to 1 million clamping cycles
- Up to 2,000 emergency braking operations
- Threaded ports on both sides for connection of hydraulic circuit
- Solid, rigid steel housing, catalytically nickel-plated
- High positioning accuracy
- Release pressure 150 bar
- Integrated all-round sealing
- Special pressure diaphragm for high functional reliability without pressure losses or leakage
- Brake shoes with integrated contour-locking, large-surface contact profiles for maximum axial stiffness
- Super heavy duty model

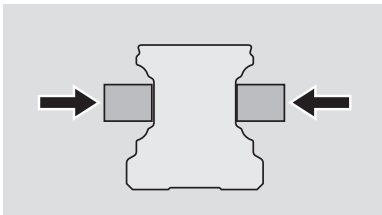
Special features of KBH:

- Low oil displacement volume
- Compact design, compatible with DIN 645

Special features of KBHS:

- Clamping and braking in the event of a power failure
- Clamping and braking in the event of a pressure drop
- Reinforcing the E-Stop function
- Successor model to the KBH series
- To be used for new-build designs

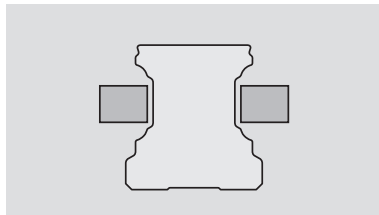
Model overview, Accessories, Hydraulic Clamping and Braking Units

KBH, FLS  184KBH, SLS  185KBHS  186

Hydraulic pressure: 50 - 150 bar (KBH)

Clamping and braking by pressure application

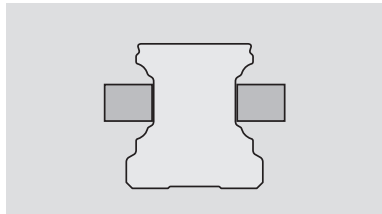
The large-surface clamping profiles are pressed directly against the free surfaces of the ball guide rail by the piston-type action of a hydraulic oil circuit.



Hydraulic pressure: 0 bar (KBH)

Release by spring action

A preloaded return spring provides quick release.

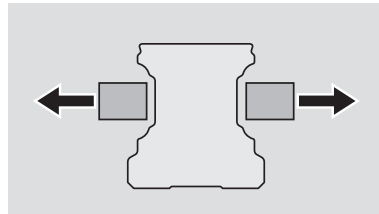


Hydraulic pressure: 0 bar (KBHS)

Clamping and braking by spring action

In the event of a power failure or pressure drop in the 3/2-way directional valve, the pre-tensioned spring plates force the oil out of the piston.

As the pressure drops, the expansion bolts integrated in the sides of the unit pull the brake shoes against the ball guide rail, thus initiating the braking process. A fast-acting 3/2-way directional valve (with spring return) ensures short braking distances.



Hydraulic pressure: 150 bar (KBHS)

Release by pressure application

With an applied pressure of 150 bar, the piston located in the upper part of the unit housing presses the spring plates downwards. This forces the brake shoes away from the guide rail.

Accessories, Clamping and Braking Units

Hydraulic Clamping and Braking Units KBH

FLS
Flanged, long, standard height
R1619 .40 21

Lubrication notes

- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.

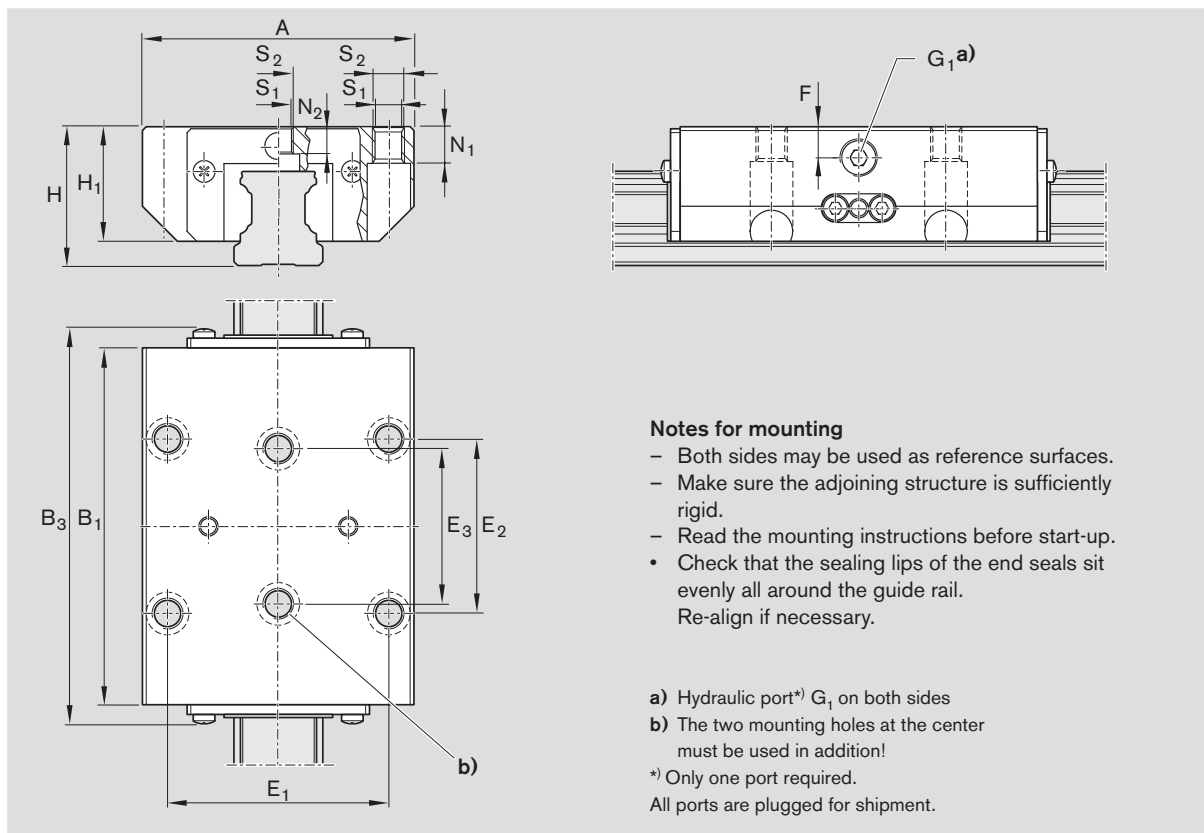
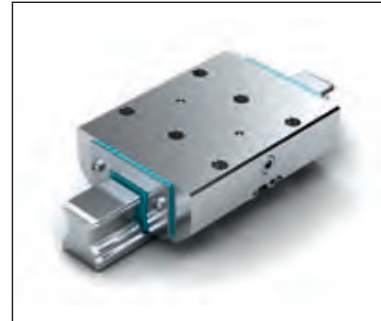
Note

Can be used on all Ball Guide Rails SNS.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187

Clamping and braking by pressure application

- Max. hydraulic operating pressure:
 - Size 25: 100 bar
 - Size 35 - 65: 150 bar
- Operating temperature range t: 0 - 70 °C



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

a) Hydraulic port*) G₁ on both sides

b) The two mounting holes at the center must be used in addition!

*) Only one port required.

All ports are plugged for shipment.

| Size | Part number | Holding force ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | | | | Displacement ⁶⁾ (cm ³) | Weight (kg) |
|------|--------------|---------------------------------|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----------------|----|----------------|------------------------------|------------------------------|----------------|----------------|---|-------------|
| | | | A | B ₁ | B _{3 max} | H | H ₁ | E ₁ | E ₂ | E ₃ | F | G ₁ | N ₁ ⁴⁾ | N ₂ ⁵⁾ | S ₁ | S ₂ | | |
| 25 | R1619 240 21 | 2 200 ²⁾ | 70 | 92.0 | 102.3 | 36 | 29.5 | 57 | 45 | 40 | 8 | 1/8" | 9 | 7.0 | 6.8 | M8 | 0.6 | 1.10 |
| 35 | R1619 340 21 | 5 700 ³⁾ | 100 | 120.5 | 141.0 | 48 | 40.0 | 82 | 62 | 52 | 12 | 1/8" | 12 | 10.2 | 8.6 | M10 | 1.1 | 2.69 |
| 45 | R1619 440 21 | 9 900 ³⁾ | 120 | 155.0 | 178.0 | 60 | 50.0 | 100 | 80 | 60 | 15 | 1/8" | 15 | 12.4 | 10.5 | M12 | 1.8 | 5.20 |
| 55 | R1619 540 21 | 13 700 ³⁾ | 140 | 184.0 | 209.0 | 70 | 57.0 | 116 | 95 | 70 | 16 | 1/8" | 18 | 13.5 | 12.5 | M14 | 2.4 | 8.40 |
| 65 | R1619 640 21 | 22 700 ³⁾ | 170 | 227.0 | 264.0 | 90 | 76.0 | 142 | 110 | 82 | 20 | 1/4" | 23 | 14.0 | 14.5 | M16 | 3.8 | 17.30 |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) At 100 bar

3) At 150 bar

4) For mounting from below with ISO 4762

5) For mounting from below with DIN 7984

6) Per clamping cycle

SLS
Slimline, long, standard height
R1619 .40 20

Note


Can be used on all Ball Guide Rails SNS.

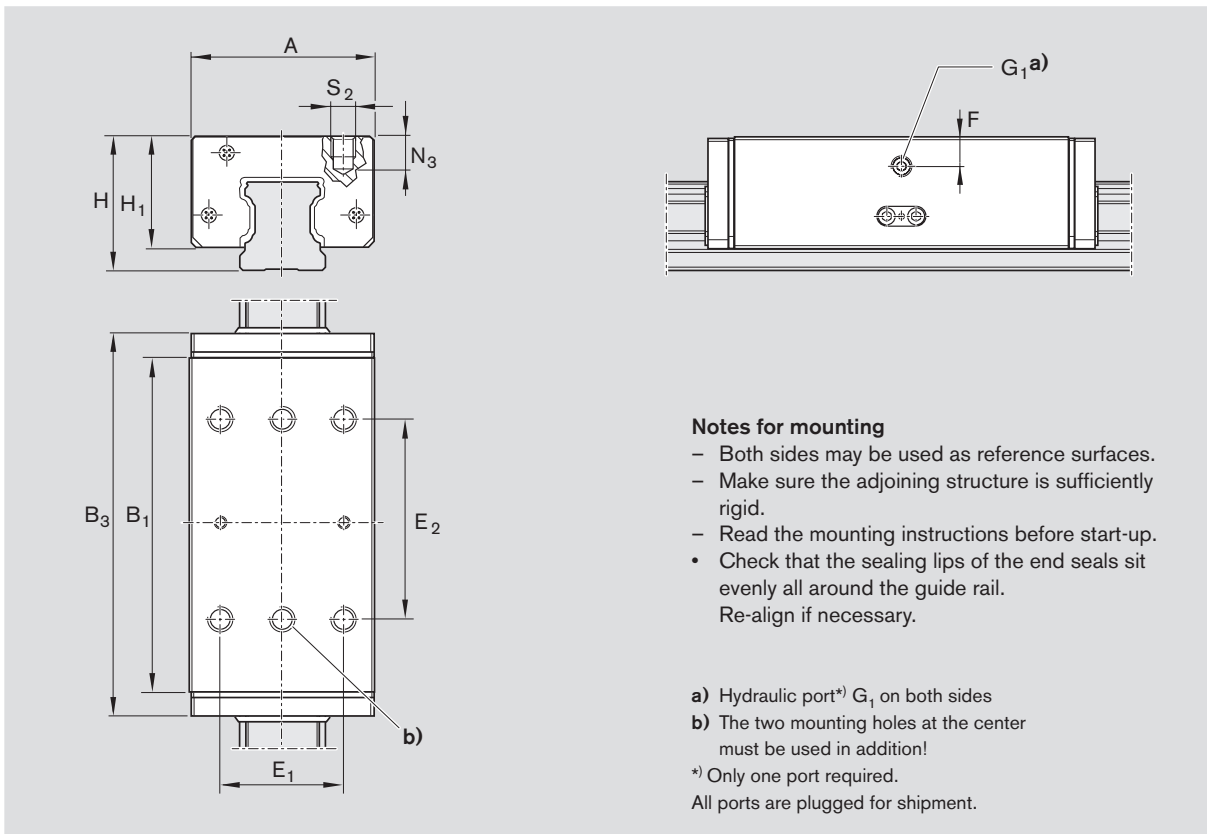
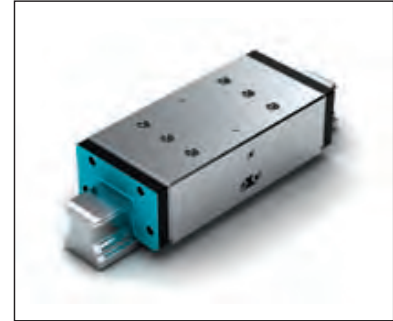
Clamping and braking by pressure application

- Max. hydraulic operating pressure:
 - Size 65: 150 bar
- Operating temperature range t:
 - 0 - 70 °C

Lubrication notes

- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.

⚠ Follow the safety notes for Clamping and Braking Units.  187



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

a) Hydraulic port*) G₁ on both sides

b) The two mounting holes at the center must be used in addition!

*) Only one port required.

All ports are plugged for shipment.

| Size | Part number | Holding force ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | Displacement ³⁾ (cm ³) | Weight (kg) |
|------|--------------|------------------------------------|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----|----------------|----------------|----------------|--|----------------|
| | | | A | B ₁ | B _{3,max} | H | H ₁ | E ₁ | E ₂ | F | G ₁ | N ₃ | S ₂ | | |
| 65 | R1619 640 20 | 22 700 ²⁾ | 126 | 227 | 264 | 90 | 76 | 76 | 120 | 20 | 1/4" | 21 | M16 | 3.8 | 14.40 |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) At 150 bar

3) Per clamping cycle

Accessories, Clamping and Braking Units

Hydraulic Clamping and Braking Units KBHS

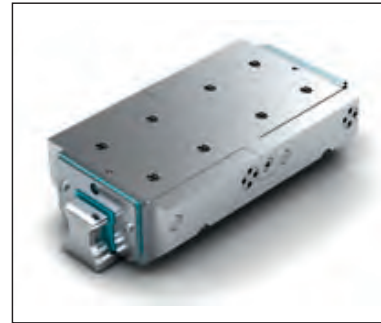
FLS
Flanged, long, standard height
R1619 .42 21

Note

Can be used on all Ball Guide Rails SNS.

Lubrication notes

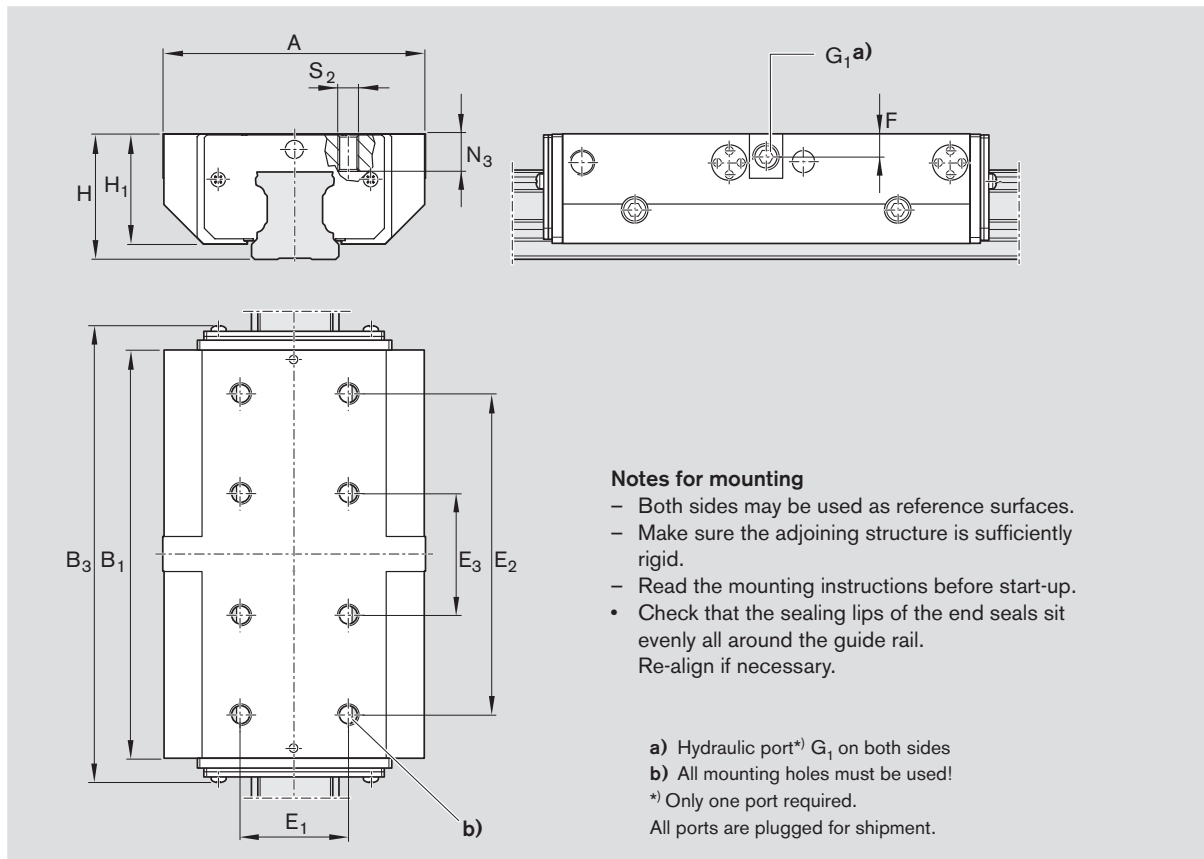
- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.



Pressureless clamping and braking (spring energy)

- Release pressure and max. hydraulic operating pressure:
 - Size 35: 160 bar
- Operating temperature range t: 0 - 70 °C

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

a) Hydraulic port*) G₁ on both sides

b) All mounting holes must be used!

*) Only one port required.

All ports are plugged for shipment.

| Size | Part number | Holding force Spring energy ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | | | Displace- ment ³⁾ (cm ³) | Weight (kg) |
|------------------|--------------|---|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|-----|---|----------------|
| | | | A | B ₁ | B _{3 max} | H | H ₁ | E ₁ | E ₂ | E ₃ | F | G ₁ | N ₃ | S ₂ | | | |
| 35 ⁴⁾ | R1619 342 21 | 7 500 ²⁾ | 100 | 155 | 175.4 | 48 | 42 | 41 | 122 | 46 | 9 | 1/8" | 15 | M8 | 5.0 | 3.80 | |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).


2) At 150 bar


3) Per release cycle


4) In preparation


Notes on Clamping and Braking Units


General safety notes


-  When working with Clamping Units, always follow all applicable mechanical and electrical accident prevention regulations (e.g. UVV, VDE) and safety procedures!


-  For hydraulic Clamping and Braking Units, the return pressure in the tank line must be lower than 1.5 bar!

-  Consider the response times of the Clamping and Braking Units!

-  The Clamping Unit is not intended for securing suspended loads!

-  Do not remove the cover of the safety clamping unit – spring under tension!


-  The transport safety arbor may only be removed when:
 - The hydraulic port has been pressurized with the operating pressure according to instructions.
 - The air port has been pressurized with compressed air to at least 4.5 (MBPS) or 5.5 bar (TKPS, UBPS, MKS, LCPS) according to instructions.The Clamping Unit may only be depressurized when the appropriate guide rail or transport safety arbor is in position between the contact profiles!


-  The use of Clamping and Braking Units is not permitted on guide rails with Integrated Measuring Systems!

Additional notes for Clamping and Braking Units

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

Additional notes for Clamping Units

-  The unit may not be used as a braking unit! For use only when the axis is at a standstill.

-  Pressure may only be applied when the unit is properly mounted on the guide rail!

Accessories, Clamping and Braking Units

Product Description, Accessories, Hydraulic Clamping Units

Application areas

- Clamping of heavy handling systems
- Clamping of machine tables in heavy duty machining centers


Characteristic features

- Very high axial holding forces
- Compact design, compatible with DIN 645
- Dynamic and static stabilization in the axis travel direction

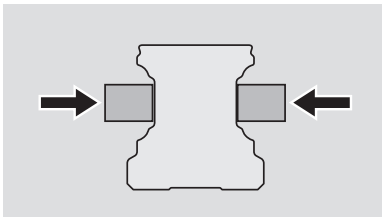
Further highlights

- Threaded ports on both sides for connection of hydraulic circuit
- Solid, rigid steel housing, catalytically nickel-plated
- High positioning accuracy
- Steplessly adjustable pressure from 50 to 150 bar
- Integrated all-round sealing
- Special pressure diaphragm for high functional reliability without pressure losses or leakage
- Integrated contour-locking, large-surface contact profiles for maximum axial stiffness



Follow the safety notes for Clamping and Braking Units.  187

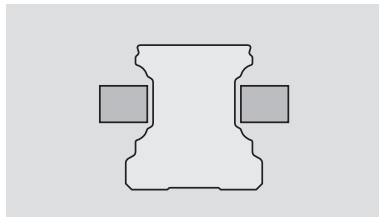
Model overview, Accessories, Hydraulic Clamping Units

KWH, FLS  191KWH, SLS  192KWH, SLH  193

Hydraulic pressure: 50 - 150 bar

Clamping by pressure application

The large-surface clamping profiles are pressed directly against the free surfaces of the ball guide rail by the piston-type action of a hydraulic oil circuit.



Hydraulic pressure: 0 bar

Release by spring action

A preloaded return spring provides quick release.

Accessories, Clamping and Braking Units

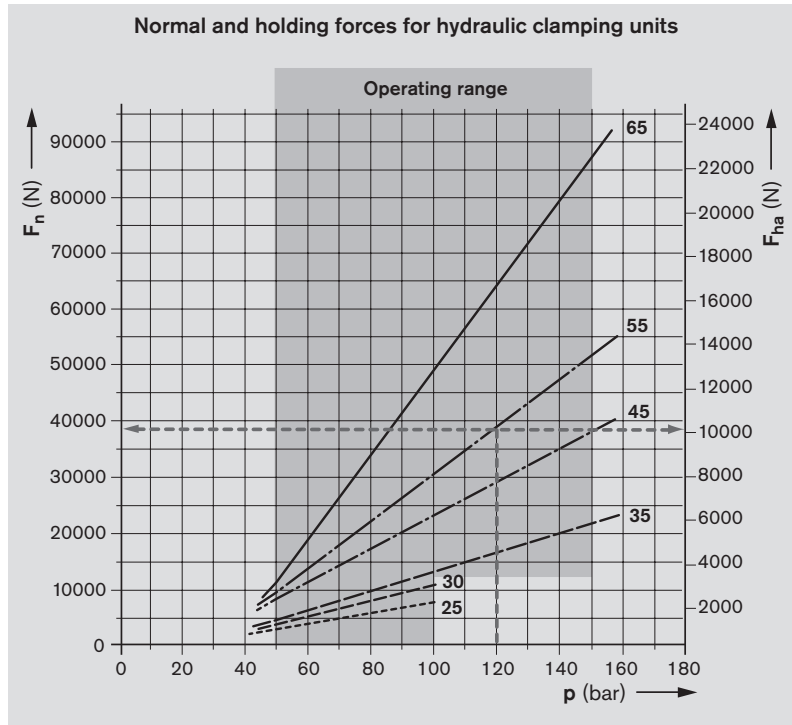
Technical Data and Calculations

Normal forces and holding forces

Measured values for hydraulic Clamping Unit KWH, FLS – flanged, long, standard height, size 25 - 65

Max. hydraulic operating pressure:

- Size 25 - 30: 100 bar
- Size 35 - 65: 150 bar



Calculation of holding force

Holding force for hydraulic clamping units

$$F_{ha} = F_n \cdot 2 \cdot \mu_0$$

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

Calculation example: Clamping Unit KWH size 55

Pressure: $p = 120$ bar
 Normal force: $F_n = 38,500$ N (as per graph)
 Holding force: $F_{ha} = 38,500 \text{ N} \cdot 2 \cdot 0.13 = 10,010$ N

Permissible holding force for hydraulic clamping units

$$F_{ha, perm} = F_{ha} / f_s$$

The safety factor f_s depends on:
 - vibrations
 - force surges
 - application-specific requirements, etc.

Example: Clamping Unit KWH size 55

Holding force: $F_{ha} = 10,010$ N (see calculation example)
 Safety factor: $f_s = 1.25$ (assumed)
 Permissible holding force: $F_{ha, perm} = 10,010 \text{ N} / 1.25 \approx 8,000$ N

- f_s = safety factor (-)
- F_{ha} = holding force (N)
- $F_{ha, perm}$ = permissible holding force (N)
- F_n = normal force (N)
- μ_0 = stiction coefficient (-)
- p = pressure (bar)

Hydraulic Clamping Units KWH

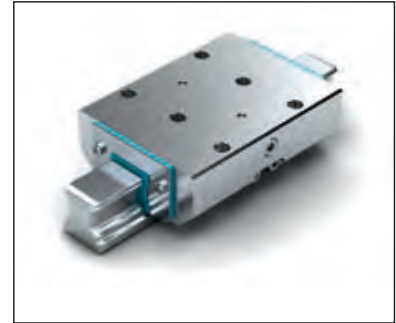
FLS
Flanged, long, standard height
R1619 .42 11

Note

Can be used on all Ball Guide Rails SNS.

Lubrication notes

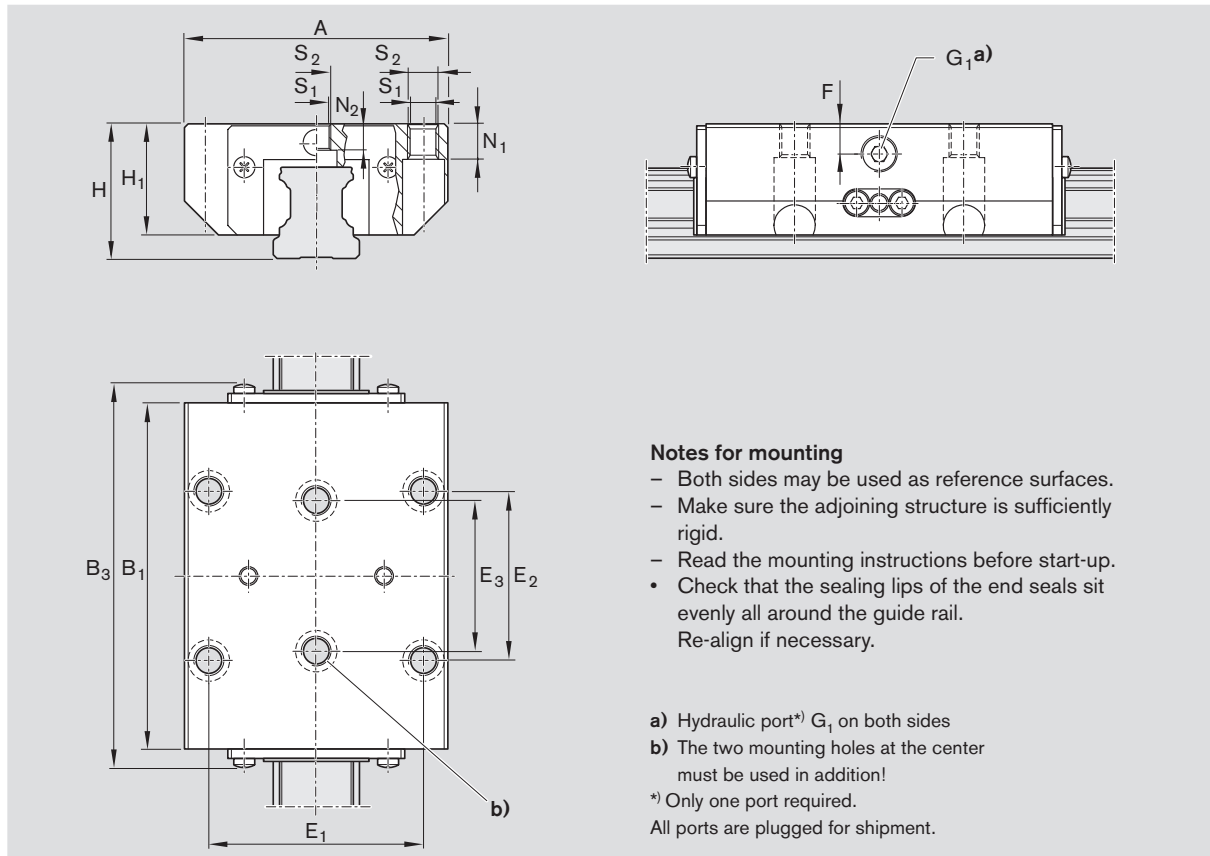
- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.



Clamping by pressure application

- Max. hydraulic operating pressure:
 - Size 25 - 30: 100 bar
 - Size 35 - 65: 150 bar
- Operating temperature range t:
 - 0 - 70 °C

Follow the safety notes for Clamping and Braking Units. 187



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

a) Hydraulic port^{a)} G₁ on both sides

b) The two mounting holes at the center must be used in addition!

^{a)} Only one port required.

All ports are plugged for shipment.

| Size | Part number | Holding force ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | | | | Displacement ⁶⁾ (cm ³) | Weight (kg) |
|------|--------------|---------------------------------|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----------------|------|----------------|------------------------------|------------------------------|----------------|----------------|---|-------------|
| | | | A | B ₁ | B _{3 max} | H | H ₁ | E ₁ | E ₂ | E ₃ | F | G ₁ | N ₁ ⁴⁾ | N ₂ ⁵⁾ | S ₁ | S ₂ | | |
| 25 | R1619 242 11 | 2 200 ²⁾ | 70 | 92.0 | 102.3 | 36 | 29.5 | 57 | 45 | 40 | 8.0 | 1/8" | 9 | 7.0 | 6.8 | M8 | 0.6 | 1.22 |
| 30 | R1619 742 11 | 3 000 ²⁾ | 90 | 103.5 | 115.4 | 42 | 35.0 | 72 | 52 | 44 | 10.5 | 1/8" | 11 | 8.0 | 8.6 | M10 | 0.7 | 2.09 |
| 35 | R1619 342 11 | 5 700 ³⁾ | 100 | 120.5 | 133.0 | 48 | 40.0 | 82 | 62 | 52 | 12.0 | 1/8" | 12 | 10.2 | 8.6 | M10 | 1.1 | 2.69 |
| 45 | R1619 442 11 | 9 900 ³⁾ | 120 | 155.0 | 170.0 | 60 | 50.0 | 100 | 80 | 60 | 15.0 | 1/8" | 15 | 12.4 | 10.5 | M12 | 1.8 | 5.32 |
| 55 | R1619 542 11 | 13 700 ³⁾ | 140 | 184.0 | 201.0 | 70 | 57.0 | 116 | 95 | 70 | 16.0 | 1/8" | 18 | 13.5 | 12.5 | M14 | 2.4 | 8.40 |
| 65 | R1619 642 11 | 22 700 ³⁾ | 170 | 227.0 | 256.0 | 90 | 76.0 | 142 | 110 | 82 | 20.0 | 1/4" | 23 | 14.0 | 14.5 | M16 | 3.8 | 17.30 |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68). Permissible holding force 190

2) At 100 bar

3) At 150 bar

4) For mounting from below with ISO 4762

5) For mounting from below with DIN 7984

6) Per clamping cycle

Accessories, Clamping and Braking Units

Hydraulic Clamping Units KWH

SLS
Slimline, long, standard height
R1619 .42 51

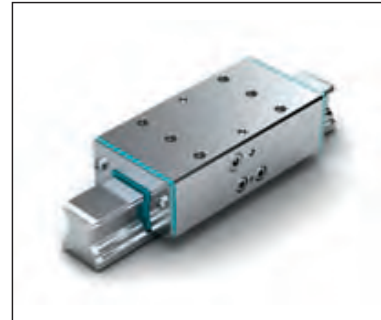
Note

Can be used on all Ball Guide Rails SNS.

Lubrication notes

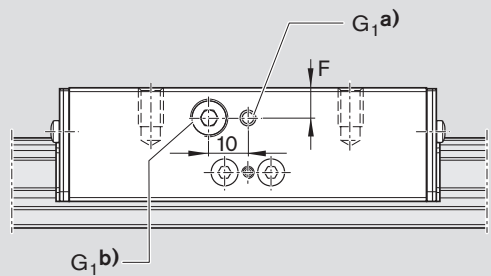
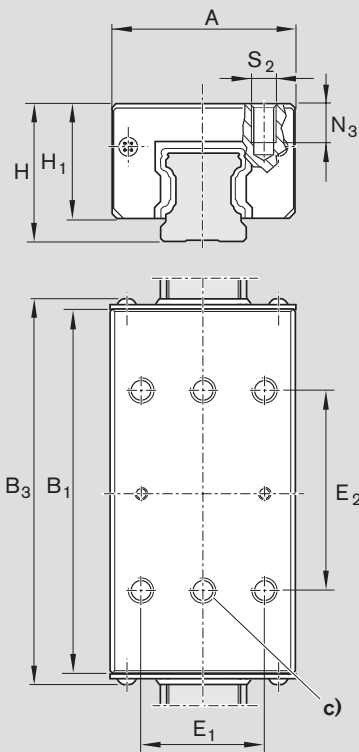
- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187



Clamping by pressure application

- Max. hydraulic operating pressure:
 - Size 25 - 30: 100 bar
 - Size 35, 55, 65: 150 bar
 - Size 45: 110 bar
- Operating temperature range t: 0 - 70 °C



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

- a) Hydraulic port*) G₁ on both sides
 - b) Hydraulic port*) G₁ on both sides in size 25 - 30
 - c) The two mounting holes at the center must be used in addition!
- *) Only one port required.
 All ports are plugged for shipment.

| Size | Part number | Holding force ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | Displacement ⁴⁾ (cm ³) | Weight (kg) |
|------|--------------|---------------------------------|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----|----------------|----------------|----------------|---|-------------|
| | | | A | B ₁ | B _{3 max} | H | H ₁ | E ₁ | E ₂ | F | G ₁ | N ₃ | S ₂ | | |
| 25 | R1619 242 51 | 1 600 ²⁾ | 48 | 92.0 | 102.3 | 36 | 29.5 | 35 | 50 | 8 | 1/8" | 8 | M6 | 0.6 | 1.22 |
| 30 | R1619 742 51 | 3 000 ²⁾ | 60 | 103.5 | 115.4 | 42 | 35.0 | 40 | 60 | 9 | 1/8" | 8 | M8 | 0.7 | 2.09 |
| 35 | R1619 342 51 | 3 500 ²⁾ | 70 | 120.5 | 134.0 | 48 | 40.0 | 50 | 72 | 12 | 1/8" | 13 | M8 | 1.1 | 2.02 |
| 45 | R1619 442 51 | 7 400 ²⁾ | 86 | 155.0 | 170.0 | 60 | 50.0 | 60 | 80 | 15 | 1/8" | 15 | M10 | 1.8 | 4.00 |
| 55 | R1619 542 51 | 13 700 ³⁾ | 100 | 184.0 | 201.0 | 70 | 57.0 | 75 | 95 | 16 | 1/8" | 18 | M12 | 2.4 | 6.10 |
| 65 | R1619 642 51 | 22 700 ³⁾ | 126 | 227.0 | 256.0 | 90 | 76.0 | 76 | 120 | 20 | 1/4" | 21 | M16 | 3.8 | 14.40 |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68). Permissible holding force 📄 190

2) At 100 bar
 3) At 150 bar
 4) Per clamping cycle

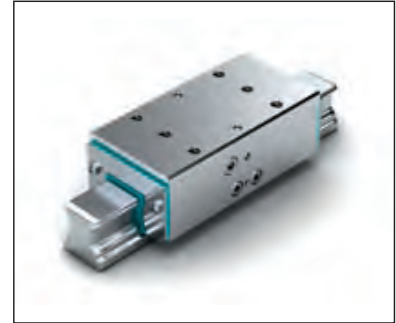
SLH
Slimline, long, high
R1619 .42 31

Note

Can be used on all Ball Guide Rails SNS.

Lubrication notes

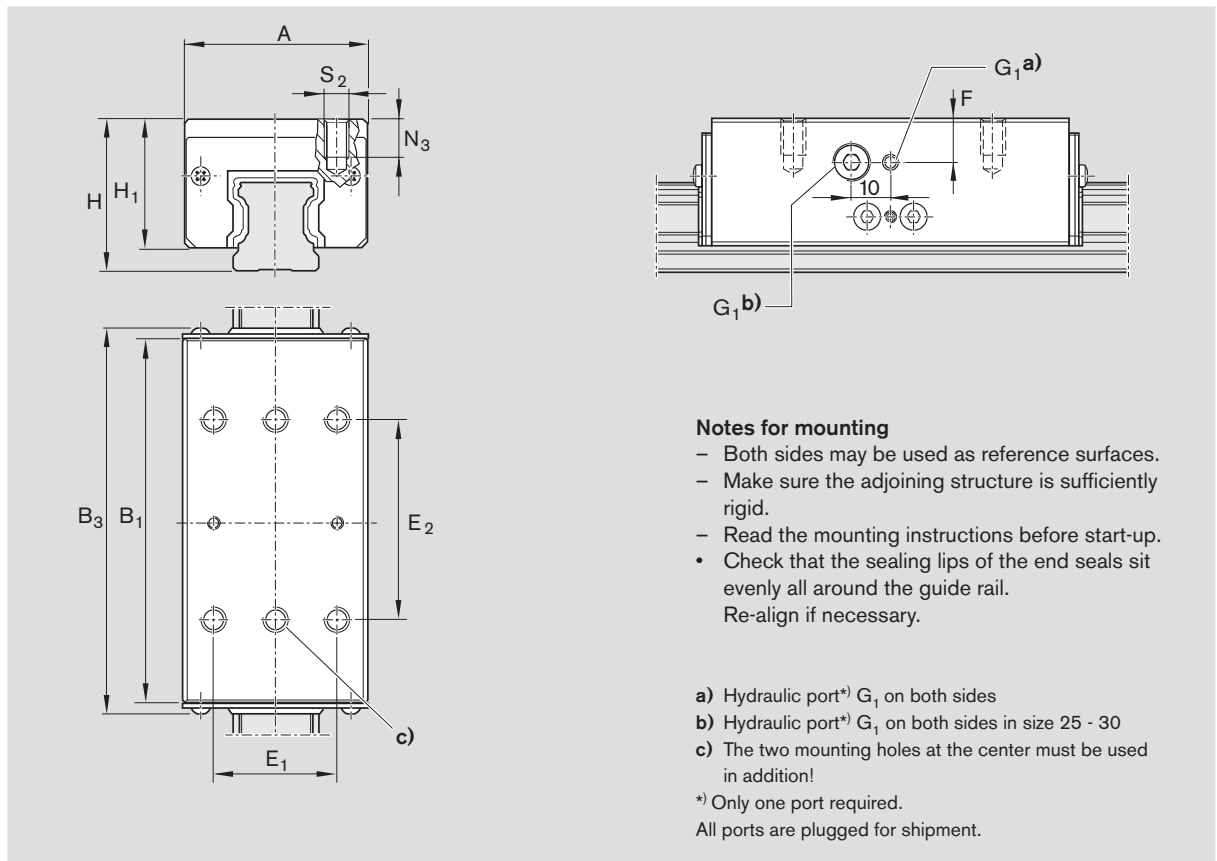
- First filling with hydraulic oil HLP46.
- If other oils are used, check the compatibility.



Clamping by pressure application

- Max. hydraulic operating pressure:
 - Size 25 - 30: 100 bar
 - Size 35, 55, 65: 150 bar
 - Size 45: 110 bar
- Operating temperature range t: 0 - 70 °C

⚠ Follow the safety notes for Clamping and Braking Units. 187



Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

- a) Hydraulic port*) G₁ on both sides
 - b) Hydraulic port*) G₁ on both sides in size 25 - 30
 - c) The two mounting holes at the center must be used in addition!
- *) Only one port required.
 All ports are plugged for shipment.

| Size | Part number | Holding force ¹⁾ (N) | Dimensions (mm) | | | | | | | | | | | | Displacement ⁴⁾ (cm ³) | Weight (kg) |
|------|--------------|---------------------------------|-----------------|----------------|--------------------|----|----------------|----------------|----------------|----|----------------|----------------|----------------|-----|---|-------------|
| | | | A | B ₁ | B _{3 max} | H | H ₁ | E ₁ | E ₂ | F | G ₁ | N ₃ | S ₂ | | | |
| 25 | R1619 242 31 | 1 600 ²⁾ | 48 | 92.0 | 102.3 | 40 | 33.5 | 35 | 50 | 12 | 1/8" | 12 | M6 | 0.6 | 1.10 | |
| 30 | R1619 742 31 | 3 000 ²⁾ | 60 | 103.5 | 115.4 | 45 | 38.0 | 40 | 60 | 12 | 1/8" | 11 | M8 | 0.7 | 1.90 | |
| 35 | R1619 342 31 | 3 500 ²⁾ | 70 | 120.5 | 134.0 | 55 | 47.0 | 50 | 72 | 18 | 1/8" | 13 | M8 | 1.1 | 2.46 | |
| 45 | R1619 442 31 | 7 400 ²⁾ | 86 | 155.0 | 170.0 | 70 | 60.0 | 60 | 80 | 24 | 1/8" | 18 | M10 | 1.8 | 4.95 | |
| 55 | R1619 542 31 | 13 700 ³⁾ | 100 | 184.0 | 201.0 | 80 | 67.0 | 75 | 95 | 26 | 1/8" | 19 | M12 | 2.4 | 7.90 | |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68). Permissible holding force 190

2) At 100 bar

3) At 150 bar

4) Per clamping cycle

Accessories, Clamping and Braking Units

Product Description, Accessories, Pneumatic Clamping and Braking units

Application areas

Clamping

- In the event of a pressure drop
- During installation work and while machine is stopped, without power
- Clamping of axes in machining centers
- Clamping of Z-axes in rest positions

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

Characteristic features

- Clamping and braking by spring energy accumulator
- Integrated contour-locking contact profiles for maximum axial and horizontal stiffness, providing excellent braking action
- Dynamic and static stabilization in the axis travel direction

Further highlights

- Up to 1 million clamping cycles
- Up to 2,000 emergency braking operations
- Integrated all-round sealing
- High continuous performance
- High positioning accuracy
- Tapered valve mechanism
- Solid, rigid steel housing, catalytically nickel-plated
- Low air consumption
- Zero maintenance

Special features of MBPS:

- Clamping and braking unit in compact, short design
- Add-ons with three pistons connected in series combined with strong springs result in holding forces up to 3,800 N at just 4.5 bar release pressure


Special features of TKPS:

- Very high axial holding forces up to 4,800 N at 5.5 bar release pressure due to add-on module and strong spring energy accumulators
- Holding force can be increased to 6,700 N through additional pressurization with compressed air at the air-plus port
- Extremely low air consumption
- Compact design, compatible with DIN 645

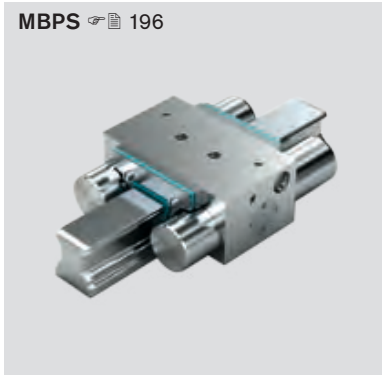
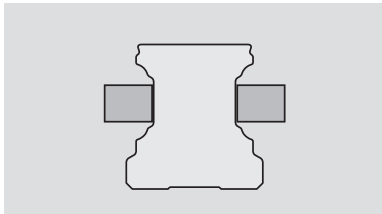
Special features of UBPS:

- Very high axial holding forces up to 2,800 N at 5,5 bar release pressure due to strong spring energy accumulators
- Holding force can be increased to 3,800 N through additional pressurization with compressed air at the air-plus port
- Extremely low air consumption
- Compact design, compatible with DIN 645
- Successor model to the TKPS series
- To be used for new-build designs



Follow the safety notes for Clamping and Braking Units.  187

Model overview, Accessories, Pneumatic Clamping and Braking Units

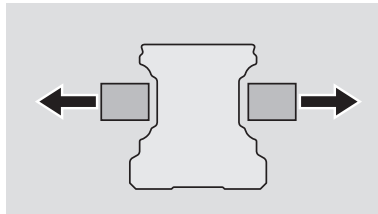
MBPS  196TKPS without adapter plate  198TKPS with adapter plate  200UBPS  202

Air pressure: 0 bar

Clamping and braking by spring action

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 in the MBPS, TKPS, and UBPS models ensures fast response.



Air pressure: 4.5 - 8 bar (MBPS)
5.5 - 8 bar (TKPS)
5.5 - 8 bar (UBPS)

Release by air pressure

The clamping profiles are held apart by compressed air.

- Allows free movement

Accessories, Clamping and Braking Units

Pneumatic Clamping and Braking Units MBPS

R1619 .40 31

Note



Can be used on all Ball Guide Rails SNS.

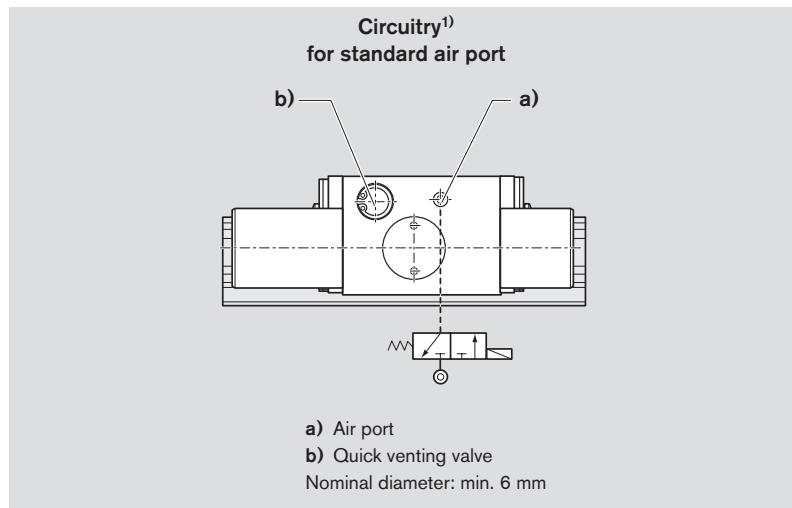
Pressureless clamping and braking (spring energy)

- Release pressure min. 4.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

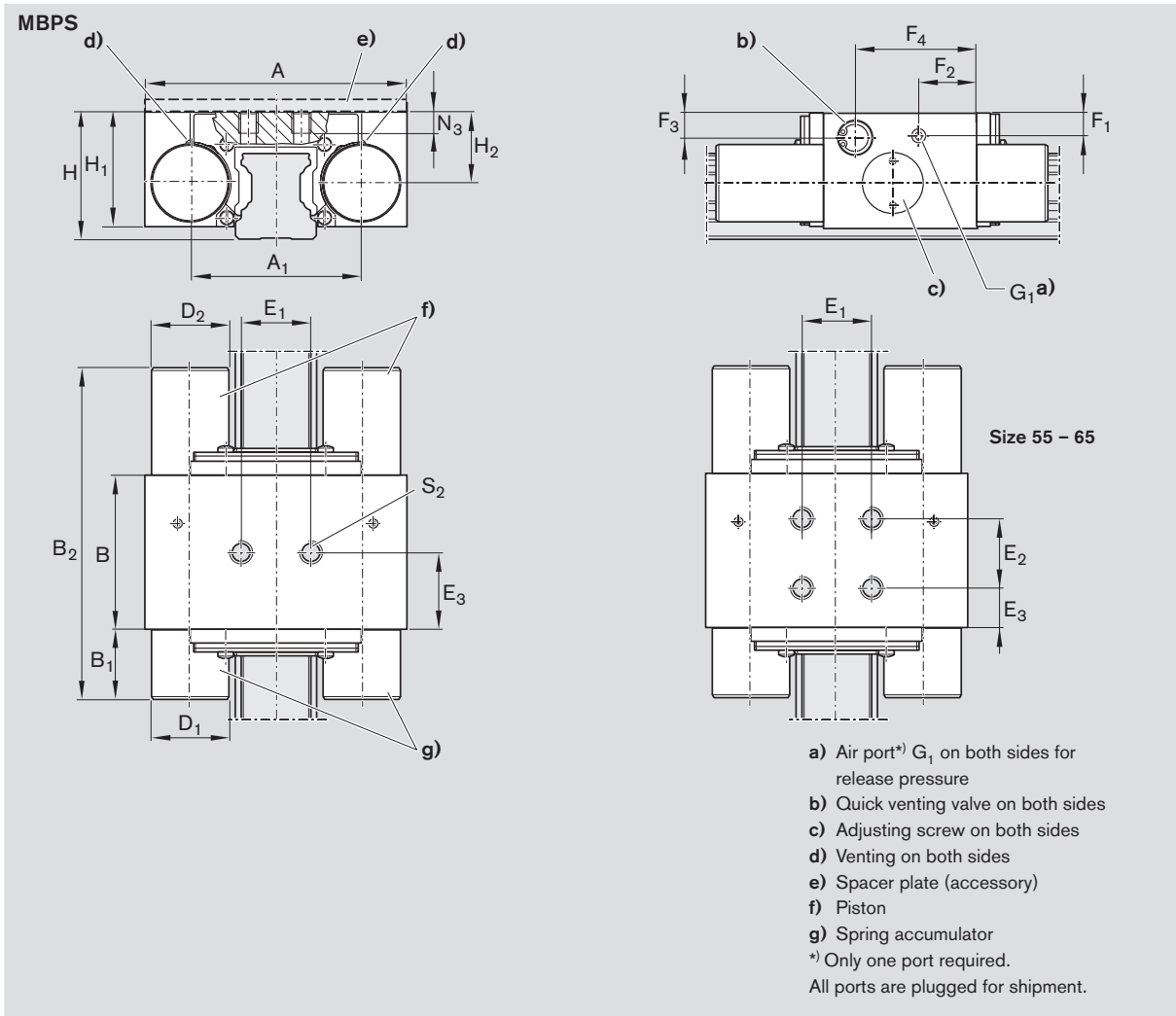
- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

 Follow the safety notes for Clamping and Braking Units.  187



| Size | Part number | Holding force Spring energy ¹⁾ (N) | Air consumption (normalized) Air port (dm ³ /stroke) |
|------|--------------|---|---|
| 20 | R1619 840 31 | 750 | 0.034 |
| 25 | R1619 240 31 | 1 300 | 0.048 |
| 30 | R1619 740 31 | 2 000 | 0.065 |
| 35 | R1619 340 31 | 2 600 | 0.093 |
| 45 | R1619 440 31 | 3 800 | 0.099 |
| 55 | R1619 540 31 | 4 700 | 0.244 |
| 65 | R1619 640 31 | 4 700 | 0.244 |

1) Holding force achieved by spring energy at 6 bar. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).



| Size | Dimensions (mm) | | | | | | | | | | | | | | | | | | | Weight (kg) | |
|------|-----------------|----------------|----|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|------------------------------|----------------|----------------|-------------|----------------|
| | A | A ₁ | B | B ₁ | B _{2 max} | D ₁ | D ₂ | E ₁ | E ₂ | E ₃ | F ₁ | F ₂ | F ₃ | F ₄ | G ₁ | H | H ₁ ¹⁾ | H ₂ | N ₃ | | S ₂ |
| 20 | 66 | 45.7 | 44 | 19.0 | 94.5 | 16 | 18 | 20 | - | 22.0 | 5.5 | 15.5 | 6.0 | 35.5 | M5 | 30 | 25.8 | 16.2 | 8.6 | M6 | 0.7 |
| 25 | 75 | 49.0 | 44 | 20.2 | 95.5 | 22 | 22 | 20 | - | 22.0 | 6.5 | 16.5 | 7.0 | 34.7 | M5 | 36 | 32.5 | 20.0 | 8.0 | M6 | 1.0 |
| 30 | 90 | 58.0 | 47 | 29.0 | 107.5 | 25 | 25 | 22 | - | 23.0 | 7.2 | 30.5 | 7.2 | 40.0 | M5 | 42 | 38.5 | 24.0 | 9.0 | M8 | 1.8 |
| 35 | 100 | 68.0 | 46 | 27.7 | 106.2 | 28 | 28 | 24 | - | 24.5 | 9.0 | 19.0 | 9.5 | 38.0 | G1/8" | 48 | 42.0 | 26.5 | 10.0 | M8 | 1.9 |
| 45 | 120 | 78.8 | 49 | 32.2 | 113.7 | 30 | 30 | 26 | - | 24.5 | 15.0 | 31.1 | 12.2 | 41.6 | G1/8" | 60 | 52.0 | 35.5 | 15.0 | M10 | 2.3 |
| 55 | 140 | 97.0 | 62 | 41.0 | 145.0 | 39 | 39 | 38 | 38 | 12.0 | 11.0 | 23.0 | 11.0 | 40.0 | M5 | 70 | 59.0 | 38.0 | 18.0 | M10 | 3.7 |
| 65 | 150 | 106.0 | 62 | 41.0 | 145.0 | 39 | 38 | 38 | 38 | 12.0 | 16.0 | 23.0 | 16.0 | 40.0 | M5 | 90 | 75.5 | 53.5 | 18.0 | M10 | 4.2 |

1) For Ball Runner Block .H. (... high, ...), a spacer plate is needed. Available on request.

Accessories, Clamping and Braking Units

Pneumatic Clamping and Braking Units TKPS

R1619 .40 11

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

Very high axial holding forces due to add-on module and strong spring energy accumulators; increased holding force thanks to additional pressure through the air-plus port

Note

Can be used on all Ball Guide Rails SNS.

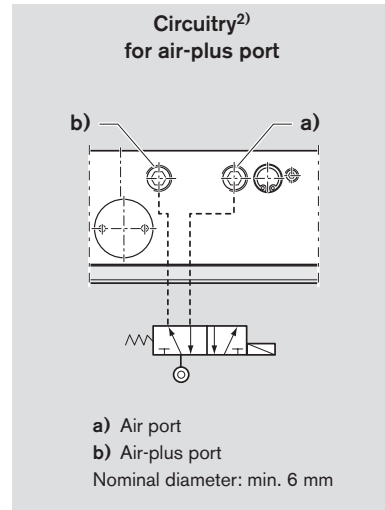
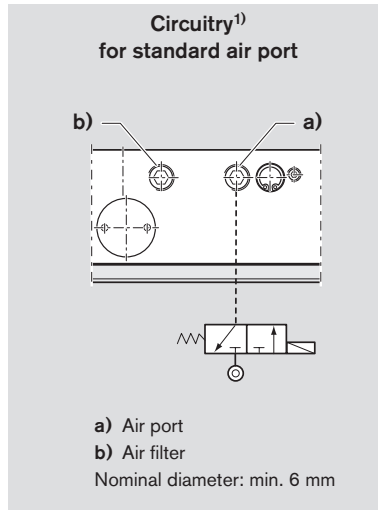
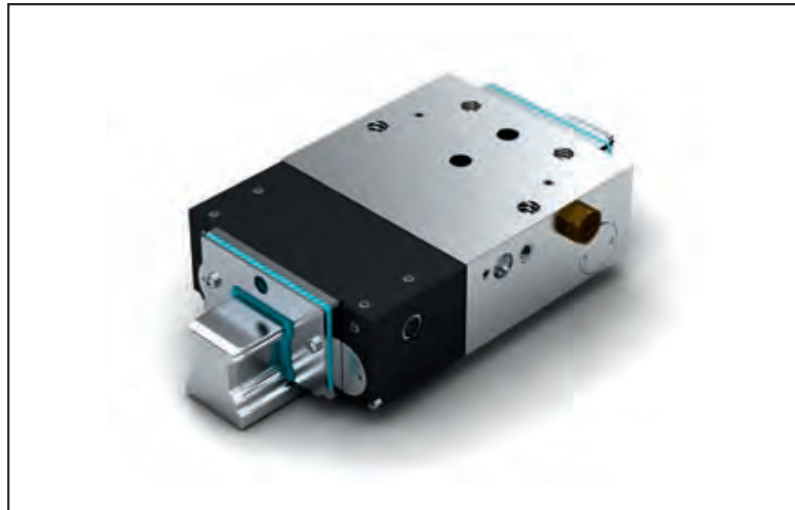
Pressureless clamping and braking (spring energy)

- Release pressure min. 5.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187

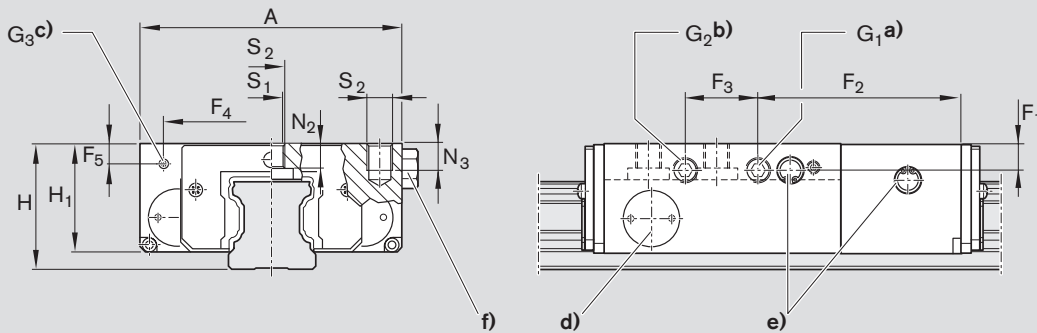


| Size | Part number | Holding force | | Air consumption (normalized) | |
|------|--------------|---------------------------------|--------------------------------------|------------------------------------|---|
| | | Spring energy ¹⁾ (N) | with air-plus port ²⁾ (N) | Air port (dm ³ /stroke) | Air-plus port (dm ³ /stroke) |
| 35 | R1619 340 11 | 2 200 | 3 200 | 0.150 | 0.335 |
| 45 | R1619 440 11 | 3 800 | 5 000 | 0.243 | 0.542 |
| 55 | R1619 540 11 | 4 800 | 6 700 | 0.318 | 1.062 |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Increased holding force through additional pressurization with 5.5 bar compressed air at the air-plus port. Switching via 5/2 or 5/3-way directional control valve.

TKPS with add-on module without adapter plate



- a) Air port**) G₁ on both sides for release pressure
 - b) Connection**) G₂ on both sides for air-plus port or air filter
 - c) Air port**) G₃ for release pressure (not air-plus port). Only on add-on module.
 - d) Adjusting screw on both sides
 - e) Venting on both sides
 - f) Air filter: connection G₂ (at either side)
 - g) The two mounting holes at the center must be used in addition!
- *) SW = width across flats
 **) Only one port required.
 All ports are plugged for shipment.

| Size | Dimensions (mm) | | | | | | | | | | | | |
|------|-----------------|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | A | B ₁ | B _{3 max} | B ₅ | E ₁ | E ₃ | E ₄ | E ₇ | F ₁ | F ₂ | F ₃ | F ₄ | F ₅ |
| 35 | 100 | 136 | 156.4 | 46 | 82 | 5.0 | 31.0 | 88.0 | 10.0 | 77 | 28 | 82 | 8.0 |
| 45 | 120 | 152 | 174.0 | 48 | 100 | 10.0 | 40.0 | 88.0 | 9.0 | 100 | 18 | 96 | 9.0 |
| 55 | 140 | 183 | 208.0 | 48 | 116 | 12.5 | 47.5 | 100.5 | 8.5 | 65 | 70 | 110 | 8.5 |

| Size | Dimensions (mm) | | | | | | | | | | Weight (kg) |
|------|-----------------|----------------|----------------|----|------------------------------|------------------------------|----------------|----------------|----------------|------|-------------|
| | G ₁ | G ₂ | G ₃ | H | H ₁ ¹⁾ | N ₂ ²⁾ | N ₃ | S ₁ | S ₂ | | |
| 35 | G1/8" | G1/8" | M5 | 48 | 42 | 9.5 | 10.0 | 8.6 | M10 | 2.60 | |
| 45 | G1/8" | G1/8" | M5 | 60 | 52 | 12.4 | 15.0 | 10.5 | M12 | 4.65 | |
| 55 | G1/8" | G1/8" | G1/8" | 70 | 59 | 12.5 | 12.5 | 12.2 | M14 | 6.60 | |

1) Consider the height!
 2) For mounting from below with DIN 7984

Accessories, Clamping and Braking Units

Pneumatic Clamping and Braking Units TKPS

R1619 .40 10

With add-on module and adapter plate for mounting from above or below

Very high axial holding forces due to add-on module and strong spring energy accumulators; increased holding force thanks to additional pressure through the air-plus port

Note

Can be used on all Ball Guide Rails SNS.

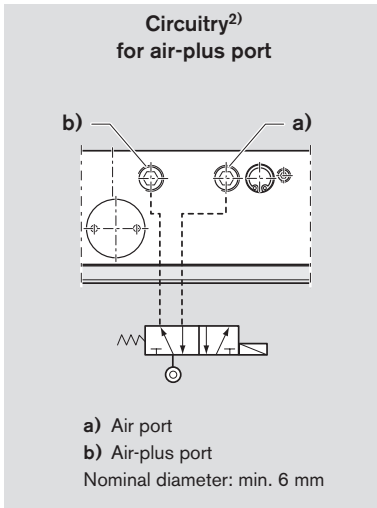
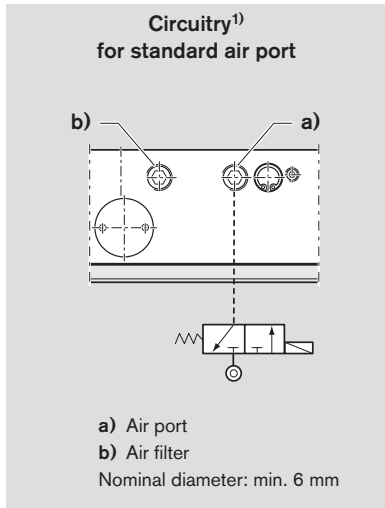
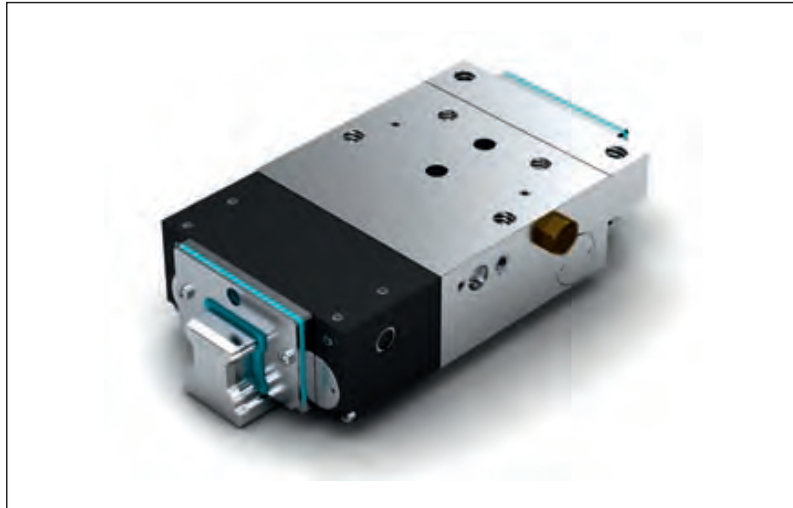
Pressureless clamping and braking (spring energy)

- Release pressure min. 5.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187

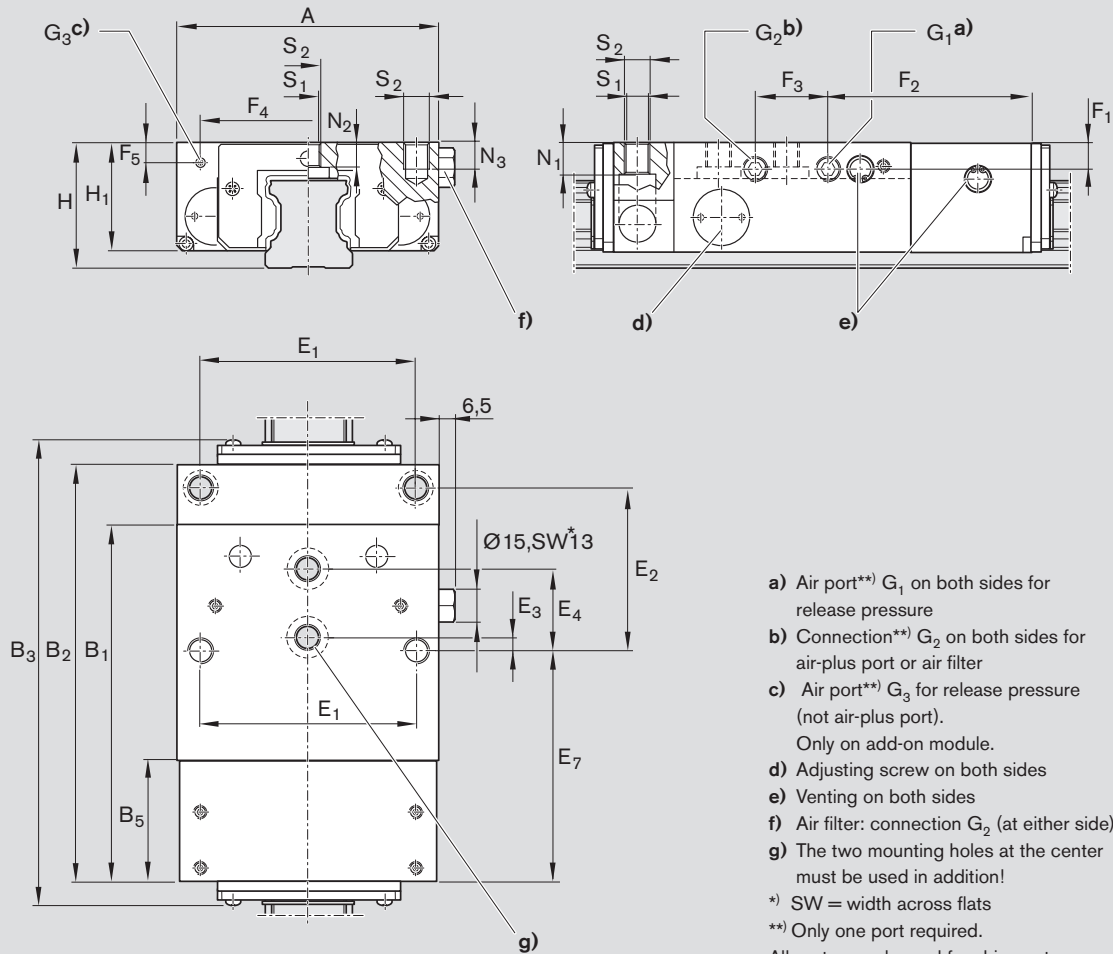


| Size | Part number | Holding force | | Air consumption (normalized) | |
|------|--------------|---------------------------------|--------------------------------------|------------------------------------|---|
| | | Spring energy ¹⁾ (N) | with air-plus port ²⁾ (N) | Air port (dm ³ /stroke) | Air-plus port (dm ³ /stroke) |
| 35 | R1619 340 10 | 2 200 | 3 200 | 0.150 | 0.335 |
| 45 | R1619 440 10 | 3 800 | 5 000 | 0.243 | 0.542 |
| 55 | R1619 540 10 | 4 800 | 6 700 | 0.318 | 1.062 |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Increased holding force through additional pressurization with 5.5 bar compressed air at the air-plus port. Switching via 5/2 or 5/3-way directional control valve.

TKPS with add-on module and adapter plate



- a) Air port** G₁ on both sides for release pressure
 - b) Connection** G₂ on both sides for air-plus port or air filter
 - c) Air port** G₃ for release pressure (not air-plus port). Only on add-on module.
 - d) Adjusting screw on both sides
 - e) Venting on both sides
 - f) Air filter: connection G₂ (at either side)
 - g) The two mounting holes at the center must be used in addition!
- *) SW = width across flats
 **) Only one port required.
 All ports are plugged for shipment.

| Size | Dimensions (mm) | | | | | | | | | | | | | | | |
|------|-----------------|----------------|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| | A | B ₁ | B ₂ | B _{3 max} | B ₅ | E ₁ | E ₂ | E ₃ | E ₄ | E ₇ | F ₁ | F ₂ | F ₃ | F ₄ | F ₅ | |
| 35 | 100 | 136 | 159.0 | 179 | 46 | 82 | 62.0 | 5.0 | 31.0 | 88.0 | 10.0 | 77 | 28 | 82 | 8.0 | |
| 45 | 120 | 152 | 177.5 | 199 | 48 | 100 | 80.0 | 10.0 | 40.0 | 88.0 | 9.0 | 100 | 18 | 96 | 9.0 | |
| 55 | 140 | 183 | 207.5 | 232 | 48 | 116 | 95.0 | 12.5 | 47.5 | 100.5 | 8.5 | 65 | 70 | 110 | 8.5 | |

| Size | Dimensions (mm) | | | | | | | | | | Weight (kg) |
|------|-----------------|----------------|----------------|----|------------------------------|------------------------------|------------------------------|----------------|----------------|----------------|-------------|
| | G ₁ | G ₂ | G ₃ | H | H ₁ ¹⁾ | N ₁ ²⁾ | N ₂ ³⁾ | N ₃ | S ₁ | S ₂ | |
| 35 | G1/8" | G1/8" | M5 | 48 | 42 | 14 | 9.5 | 10.0 | 8.6 | M10 | 2.90 |
| 45 | G1/8" | G1/8" | M5 | 60 | 52 | 18 | 12.4 | 15.0 | 10.5 | M12 | 5.10 |
| 55 | G1/8" | G1/8" | G1/8" | 70 | 59 | 18 | 12.5 | 12.5 | 12.2 | M14 | 7.30 |

1) Consider the height!
 2) For mounting from below with ISO 4762
 3) For mounting from below with DIN 7984

Accessories, Clamping and Braking Units

Pneumatic Clamping and Braking Units UBPS

R1619 .40 51

Very high axial holding forces due to three pistons connected in series combined with strong spring energy accumulator; increased holding force thanks to additional pressure through the air-plus port

Note

Can be used on all Ball Guide Rails SNS.

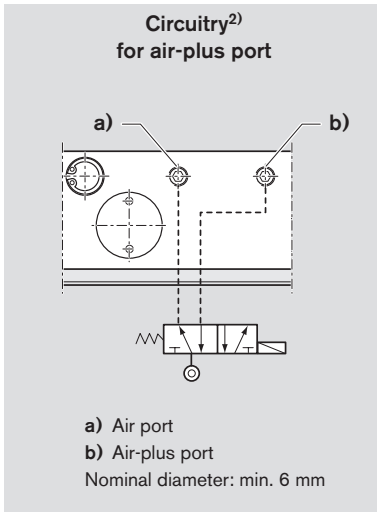
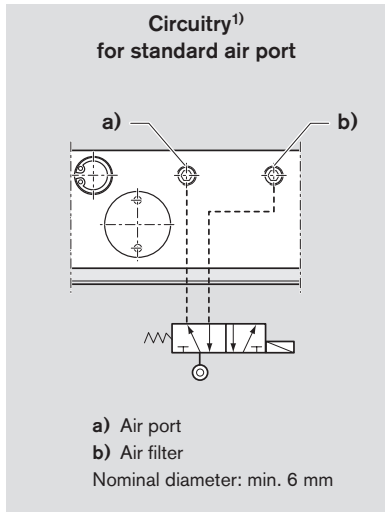
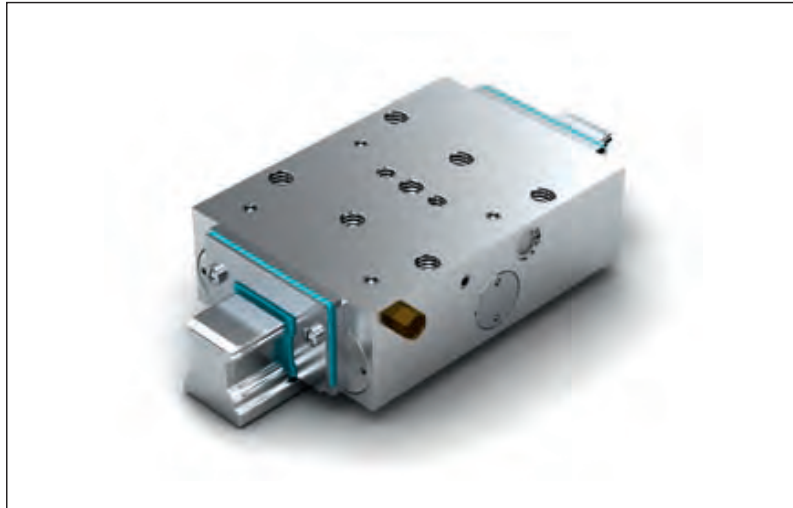
Pressureless clamping and braking (spring energy)

- Release pressure min. 5.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

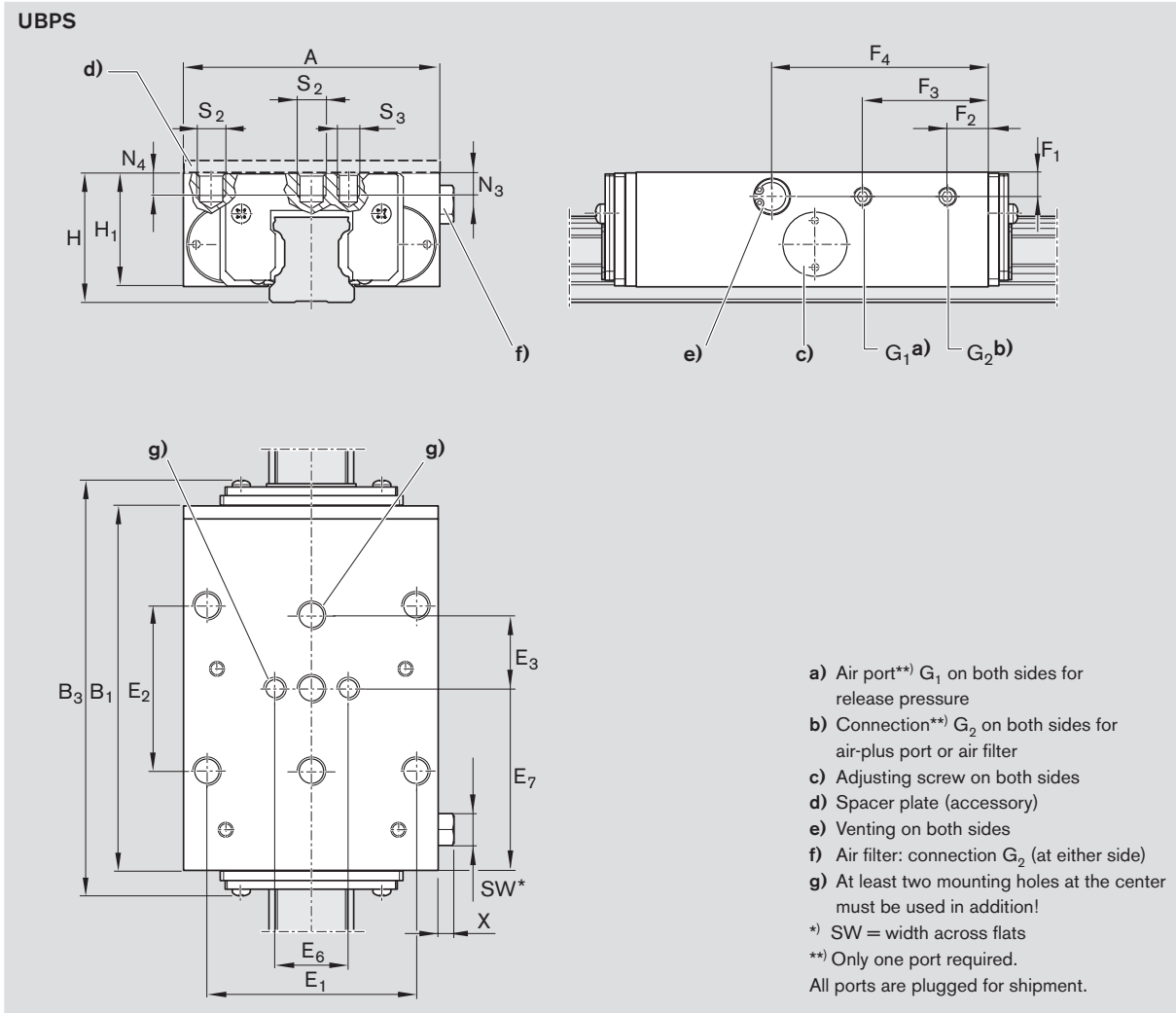
- Both sides may be used as reference surfaces.
- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.
- Check that the sealing lips of the end seals sit evenly all around the guide rail. Re-align if necessary.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187



| Size | Part number | Holding force | | Air consumption (normalized) | |
|------|--------------|---------------------------------|--------------------------------------|------------------------------------|---|
| | | Spring energy ¹⁾ (N) | with air-plus port ²⁾ (N) | Air port (dm ³ /stroke) | Air-plus port (dm ³ /stroke) |
| 25 | R1619 240 51 | 1 850 | 2 650 | 0.080 | 0.165 |
| 30 | R1619 740 51 | 2 500 | 3 300 | 0.111 | 0.274 |
| 35 | R1619 340 51 | 2 800 | 3 800 | 0.139 | 0.303 |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).
 2) Increased holding force through additional pressurization with 6.0 bar compressed air at the air-plus port. Switching via 5/2 or 5/3-way directional control valve.
 3) Type tested according to the EU Machinery Directive 98/37/EC (in force until Dec. 28, 2009) and 2006/42/EC (effective beginning Dec. 29, 2009).



| Size | Dimensions (mm) | | | | | | | | | | | |
|------|-----------------|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | A | B ₁ | B _{3 max} | E ₁ | E ₂ | E ₃ | E ₆ | E ₇ | F ₁ | F ₂ | F ₃ | F ₄ |
| 25 | 70 | 99 | 115.1 | 57 | 45 | 20 | 20 | 49.5 | 6.5 | 11 | 34.3 | 59.0 |
| 30 | 90 | 109 | 128.7 | 72 | 52 | 22 | 22 | 54.5 | 6.5 | 11 | 40.8 | 66.5 |
| 35 | 100 | 109 | 131.0 | 82 | 62 | 26 | 24 | 54.5 | 8.0 | 11 | 40.8 | 66.5 |

| Size | Dimensions (mm) | | | | | | | | | | Weight (kg) |
|------|-----------------|----------------|----|------------------------------|----------------|----------------|----------------|----------------|-----|------------------|-------------|
| | G ₁ | G ₂ | H | H ₁ ¹⁾ | N ₃ | N ₄ | S ₂ | S ₃ | X | SW ²⁾ | |
| 25 | M5 | M5 | 36 | 31 | 7 | 7 | M8 | M6 | 5.5 | Ø8. SW7 | 1.20 |
| 30 | M5 | M5 | 42 | 37 | 8 | 8 | M10 | M8 | 5.5 | Ø8. SW7 | 1.80 |
| 35 | G1/8" | G1/8" | 48 | 42 | 10 | 10 | M10 | M8 | 6.5 | Ø15. SW13 | 2.25 |

1) For Ball Runner Block .H. (... high, ...), a spacer plate is needed. Available on request.
 2) SW = width across flats

Accessories, Clamping and Braking Units

Product Description, Accessories, Pneumatic Clamping Units

Application areas

- Pneumatic clamping of machine axes
- Table crossbars in the woodworking industry
- Positioning of hoists

Characteristic features

- High axial holding forces within a very short span
- Dynamic and static stabilization in the axis travel direction
- Simple mechanical gripping principle in LCP and LCPS with good price/performance ratio

Further highlights

- Easy to mount
- Steel housing, catalytically nickel-plated
- High axial and horizontal stiffness
- Precise positioning

Special features of MK:

- Clamping by pressure (pneumatic) via a dual-action tapered slide valve mechanism.
- Steplessly adjustable pressure from 4 to 8 bar
- Quick release

Special features of MKS:

- Pressureless clamping (by spring action) via the dual-action tapered slide valve mechanism with two spring assemblies
- Release pressure 5.5 - 8 bar (pneumatic)
- Increased holding force through air-plus port


Special features of LCP:

- Clamping by pressure application (pneumatic) through mechanical gripping
- Steplessly adjustable pressure from 5.5 to 8 bar
- Quick release



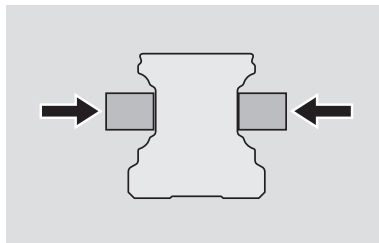
Special features of LCPS:

- Pressureless clamping (by spring action) via mechanical gripping with one spring assembly
- Release pressure 5.5 - 8 bar (pneumatic)
- Increased holding force through air-plus port



Follow the safety notes for Clamping and Braking Units.  187

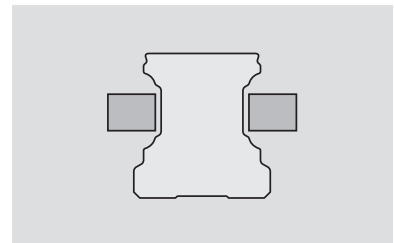
Model overview, Accessories, Pneumatic Clamping Units

MK  206MKS  208LCP  210LCPS  212

**Air pressure: 4.0 - 8 bar (MK)
5.5 - 8 bar (LCP)**

Clamping by air pressure

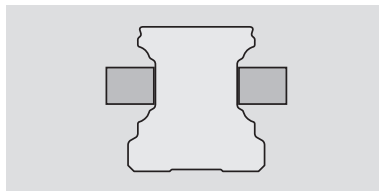
In the MK, the clamping profiles are pressed against the web surfaces of the guide rail by pneumatic pressure acting through a dual-action tapered slide valve mechanism. The LCP achieves its clamping effect through mechanical gripping.



Air pressure: 0 bar (MK/LCP)

Release by spring action

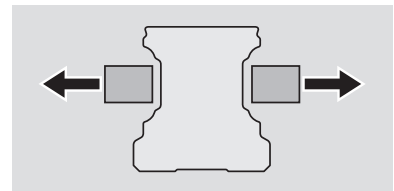
A preloaded return spring provides quick release.



Air pressure: 0 bar (MKS/LCPS)

Clamping by spring action

In the event of a pressure drop, the MKS clamps via a dual-action tapered slide valve mechanism with two spring assemblies (spring energy accumulators). An integrated quick venting valve ensures fast response. The LCPS achieves its clamping effect through mechanical gripping with just one spring assembly (spring energy accumulator).



Air pressure: 5.5 - 8 bar (MKS/ LCPS)

Release by air pressure

The clamping profiles are held apart by compressed air.

- Allows free movement

Accessories, Clamping and Braking Units

Pneumatic Clamping Units MK

R1619 .42 60

Note

Can be used on all Ball Guide Rails SNS.

R1619 .42 62

Note

Can be used on all Ball Guide Rails BNS.

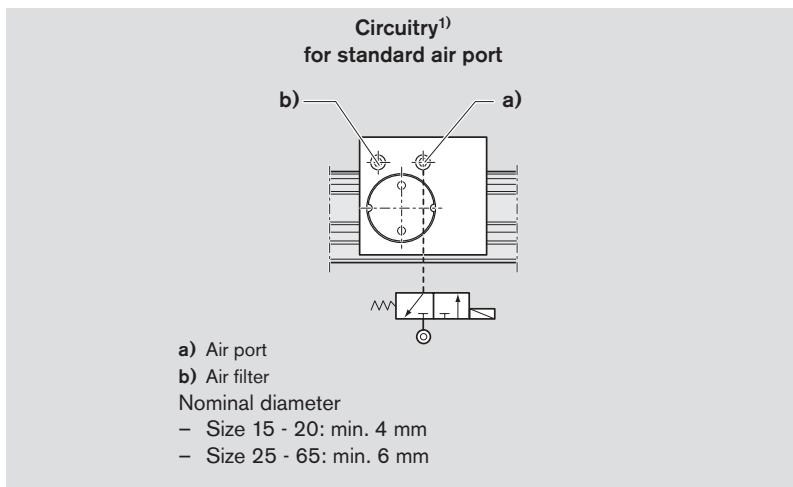
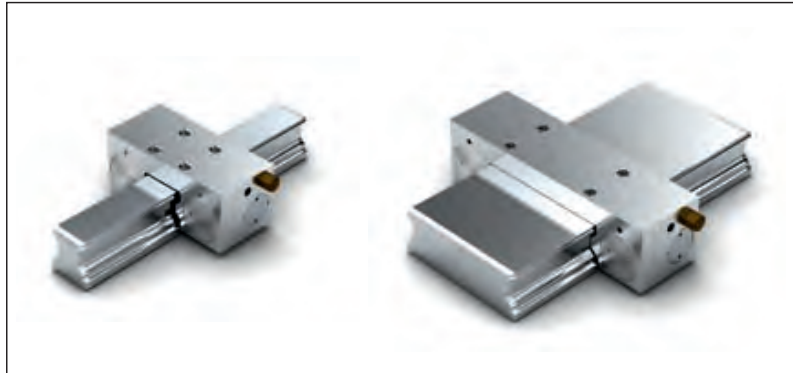
Clamping by pressure application

- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

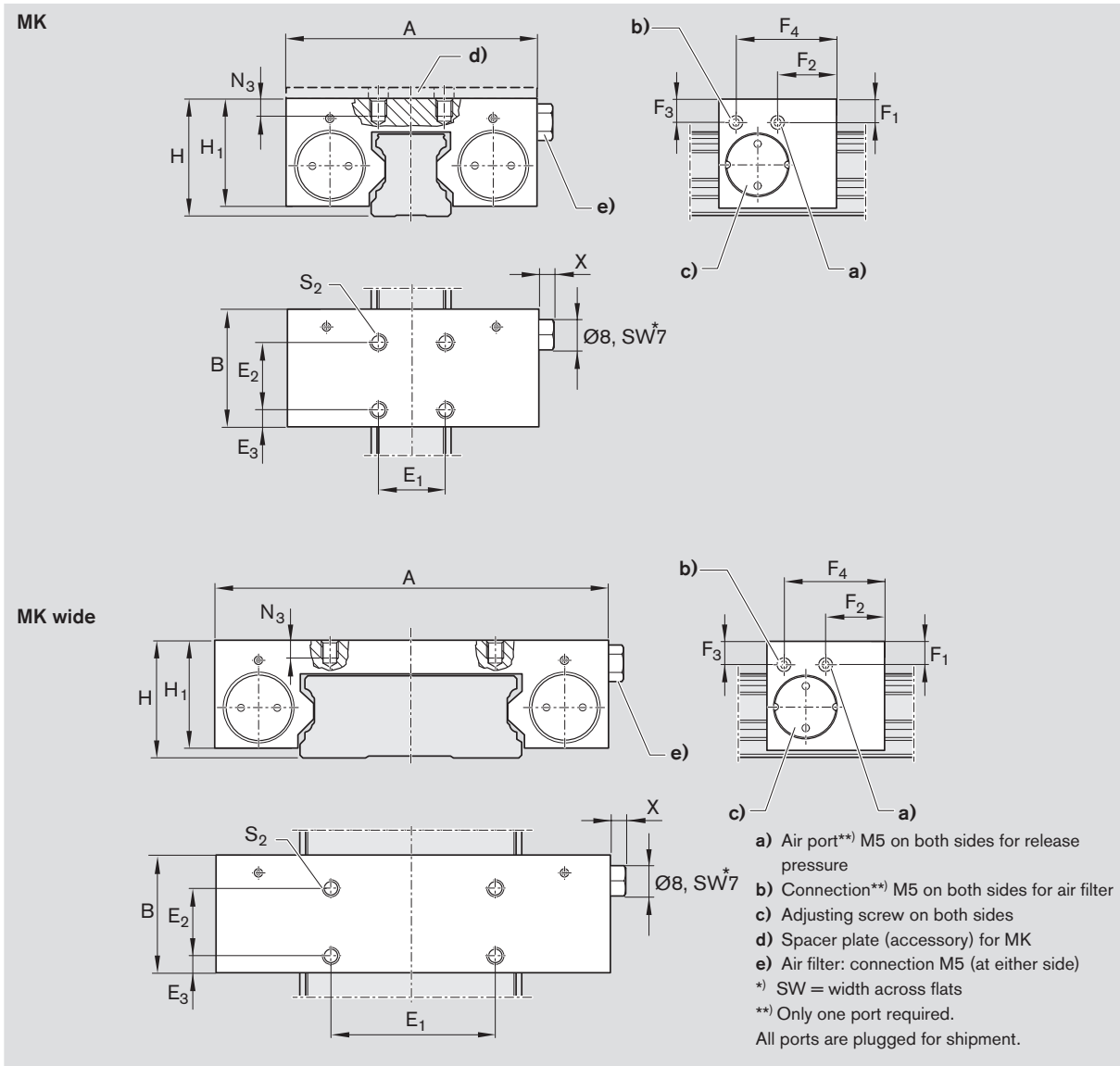
- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187



| Size | Part number | Holding force Pneumatic ¹⁾ (N) | Air consumption (normalized) Air port (dm ³ /stroke) |
|-------|--------------|---|---|
| 15 | R1619 142 60 | 650 | 0.011 |
| 20 | R1619 842 60 | 1 000 | 0.019 |
| 25 | R1619 242 60 | 1 200 | 0.021 |
| 30 | R1619 742 60 | 1 750 | 0.031 |
| 35 | R1619 342 60 | 2 000 | 0.031 |
| 45 | R1619 442 60 | 2 250 | 0.041 |
| 55 | R1619 542 60 | 2 250 | 0.041 |
| 65 | R1619 642 60 | 2 250 | 0.041 |
| 20/40 | R1619 842 62 | 650 | 0.019 |
| 25/70 | R1619 242 62 | 1 200 | 0.021 |
| 35/90 | R1619 342 62 | 2 000 | 0.031 |

1) Holding force at 6 bar. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).



| Size | Dimensions (mm) | | | | | | | | | | | | | | Weight (kg) |
|-------|-----------------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|------------------------------|----------------|----------------|-----|-------------|
| | A | B | E ₁ | E ₂ | E ₃ | F ₁ | F ₂ | F ₃ | F ₄ | H | H ₁ ¹⁾ | N ₃ | S ₂ | X | |
| 15 | 55 | 39 | 15 | 15 | 15.5 | 5.6 | 34.0 | 16.1 | 34.0 | 24 | 20.8 | 4.5 | M4 | 6.5 | 0.25 |
| 20 | 66 | 39 | 20 | 20 | 9.0 | 4.5 | 17.3 | 6.0 | 34.5 | 30 | 27.0 | 6.0 | M6 | 5.5 | 0.36 |
| 25 | 75 | 35 | 20 | 20 | 5.0 | 7.0 | 17.5 | 7.0 | 30.0 | 36 | 32.5 | 8.0 | M6 | 5.5 | 0.45 |
| 30 | 90 | 39 | 22 | 22 | 8.5 | 8.5 | 15.0 | 10.3 | 24.5 | 42 | 38.5 | 9.0 | M8 | 5.5 | 0.72 |
| 35 | 100 | 39 | 24 | 24 | 7.5 | 11.0 | 14.5 | 12.0 | 24.5 | 48 | 44.0 | 10.0 | M8 | 5.5 | 0.88 |
| 45 | 120 | 49 | 26 | 26 | 11.5 | 14.5 | 19.5 | 14.5 | 29.5 | 60 | 52.0 | 15.0 | M10 | 5.5 | 1.70 |
| 55 | 128 | 49 | 30 | 30 | 9.5 | 17.0 | 19.5 | 17.0 | 29.5 | 70 | 57.0 | 15.0 | M10 | 5.5 | 1.95 |
| 65 | 138 | 49 | 30 | 30 | 9.5 | 14.5 | 19.5 | 14.5 | 29.5 | 90 | 73.5 | 20.0 | M10 | 5.5 | 2.68 |
| 20/40 | 80 | 39 | 20 | 20 | 15.5 | 5.0 | 4.5 | 5.0 | 31.0 | 27 | 23.5 | 4.5 | M4 | 5.5 | 0.37 |
| 25/70 | 120 | 35 | 50 | 20 | 5.0 | 7.0 | 17.5 | 9.0 | 30.0 | 35 | 32.5 | 8.0 | M6 | 5.5 | 0.62 |
| 35/90 | 156 | 42 | 60 | 20 | 9.5 | 11.5 | 18.0 | 14.0 | 36.5 | 50 | 45.5 | 10.0 | M10 | 5.5 | 0.88 |

1) For Ball Runner Block .H. (... high, ...), a spacer plate is needed ☞ 217

Accessories, Clamping and Braking Units

Pneumatic Clamping Units MKS

R1619 .40 60

Note

Can be used on all Ball Guide Rails SNS.

R1619 .40 62

Note

Can be used on all Ball Guide Rails BNS.

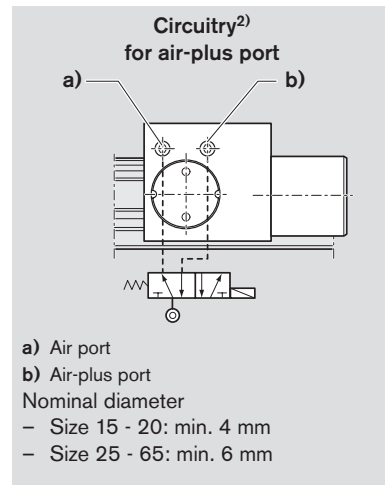
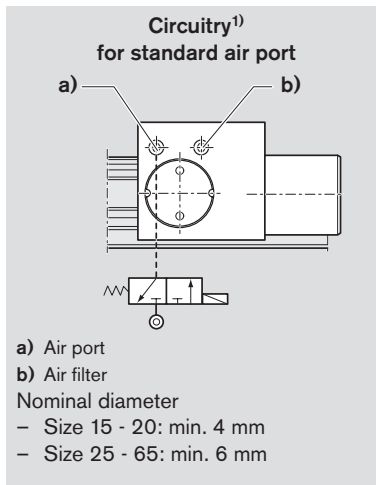
Clamps without pressurization (spring energy)

- Release pressure min. 5.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 70 °C

Notes for mounting

- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.

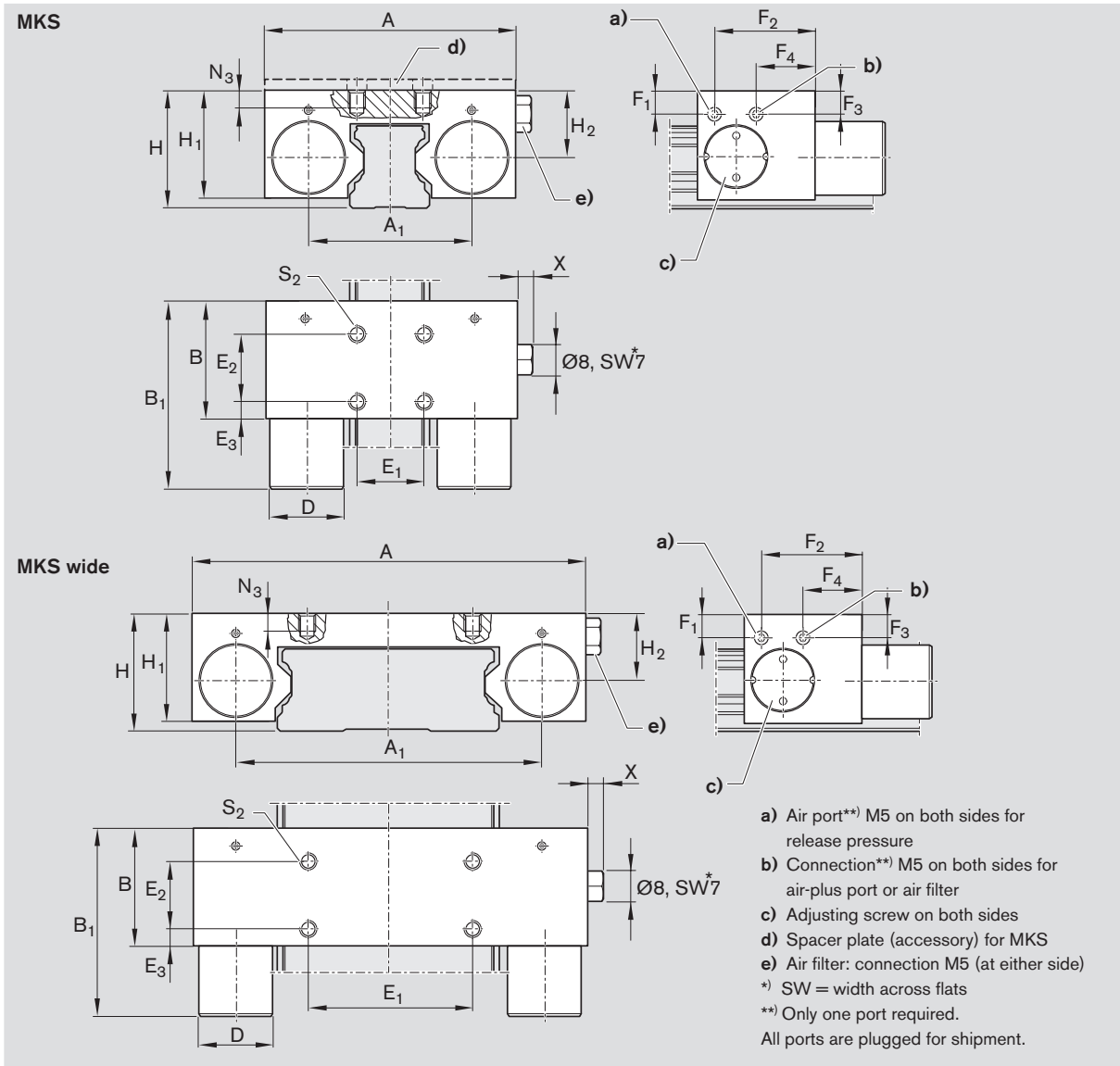
⚠ Follow the safety notes for Clamping and Braking Units. 📄 187



| Size | Part number | Holding force Spring energy ¹⁾ (N) | with air-plus port ²⁾ (N) | Air consumption (normalized) | |
|-------|--------------|---|--|---------------------------------------|--|
| | | | | Air port (dm ³ /stroke) | Air-plus port (dm ³ /stroke) |
| 15 | R1619 140 60 | 400 | 1 050 | 0.011 | 0.035 |
| 20 | R1619 840 60 | 600 | 1 300 | 0.019 | 0.063 |
| 25 | R1619 240 60 | 750 | 1 500 | 0.021 | 0.068 |
| 30 | R1619 740 60 | 1 050 | 2 600 | 0.031 | 0.121 |
| 35 | R1619 340 60 | 1 250 | 3 250 | 0.031 | 0.129 |
| 45 | R1619 440 60 | 1 450 | 3 300 | 0.041 | 0.175 |
| 55 | R1619 540 60 | 1 450 | 3 300 | 0.041 | 0.175 |
| 65 | R1619 640 60 | 1 450 | 3 300 | 0.041 | 0.175 |
| 20/40 | R1619 840 62 | 400 | 1 050 | 0.019 | 0.063 |
| 25/70 | R1619 240 62 | 750 | 1 950 | 0.021 | 0.068 |
| 35/90 | R1619 340 62 | 1 250 | 3 250 | 0.031 | 0.129 |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Increased holding force through additional pressurization with 6.0 bar compressed air at the air-plus port. Switching via 5/2 or 5/3-way directional control valve.



| Size | Dimensions (mm) | | | | | | | | | | | | | | | Weight (kg) | | | |
|-------|-----------------|----------------|----|--------------------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|------------------------------|----------------|-------------|----------------|----------------|------|
| | A | A ₁ | B | B _{1 max} | D | E ₁ | E ₂ | E ₃ | F ₁ | F ₂ | F ₃ | F ₄ | H | H ₁ ¹⁾ | H ₂ | | N ₃ | S ₂ | X |
| 15 | 55 | 34.0 | 39 | 58.5 | 16 | 15 | 15 | 15.5 | 16.1 | 34.0 | 5.6 | 34.0 | 24 | 20.8 | 11.6 | 4.5 | M4 | 6.5 | 0.29 |
| 20 | 66 | 43.0 | 39 | 61.5 | 20 | 20 | 20 | 9.0 | 6.0 | 34.5 | 4.5 | 17.3 | 30 | 27.0 | 15.5 | 6.0 | M6 | 5.5 | 0.41 |
| 25 | 75 | 49.0 | 35 | 56.5 | 22 | 20 | 20 | 5.0 | 7.0 | 30.0 | 7.0 | 17.5 | 36 | 32.5 | 20.0 | 8.0 | M6 | 5.5 | 0.50 |
| 30 | 90 | 58.0 | 39 | 68.5 | 25 | 22 | 22 | 8.5 | 10.3 | 24.5 | 8.5 | 15.0 | 42 | 38.5 | 24.0 | 9.0 | M8 | 5.5 | 0.81 |
| 35 | 100 | 68.0 | 39 | 67.5 | 28 | 24 | 24 | 7.5 | 12.0 | 24.5 | 11.0 | 14.5 | 48 | 44.0 | 28.0 | 10.0 | M8 | 5.5 | 1.00 |
| 45 | 120 | 78.8 | 49 | 82.5 | 30 | 26 | 26 | 11.5 | 14.5 | 29.5 | 14.5 | 19.5 | 60 | 52.0 | 35.5 | 15.0 | M10 | 5.5 | 1.84 |
| 55 | 128 | 86.8 | 49 | 82.5 | 30 | 30 | 30 | 9.5 | 17.0 | 29.5 | 17.0 | 19.5 | 70 | 57.0 | 40.0 | 15.0 | M10 | 5.5 | 2.08 |
| 65 | 138 | 96.8 | 49 | 82.5 | 30 | 30 | 30 | 9.5 | 14.5 | 29.5 | 14.5 | 19.5 | 90 | 73.5 | 55.0 | 20.0 | M10 | 5.5 | 2.86 |
| 20/40 | 80 | 59.0 | 39 | 58.5 | 16 | 20 | 20 | 15.5 | 5.0 | 31.0 | 5.0 | 4.5 | 27 | 23.5 | 14.0 | 4.5 | M4 | 5.5 | 0.39 |
| 25/70 | 120 | 94.0 | 35 | 56.5 | 22 | 50 | 20 | 5.0 | 9.0 | 30.0 | 7.0 | 17.5 | 35 | 32.5 | 20.0 | 8.0 | M6 | 5.5 | 0.68 |
| 35/90 | 156 | 124.0 | 42 | 70.5 | 28 | 60 | 20 | 9.5 | 14.0 | 36.5 | 11.5 | 18.0 | 50 | 45.5 | 30.0 | 10.0 | M10 | 5.5 | 0.89 |

1) For Ball Runner Block .H. (... high, ...), a spacer plate is needed ☞ 217

Accessories, Clamping and Braking Units

Pneumatic Clamping Units LCP

R1619 .42 73

Note



Can be used on all Ball Guide Rails SNS.

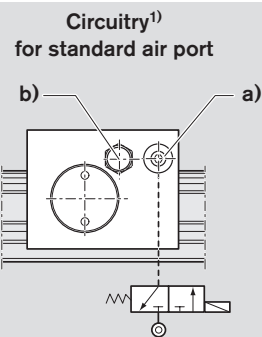
Clamping by pressure application

- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 60 °C

Notes for mounting

- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.

 Follow the safety notes for Clamping and Braking Units.  187

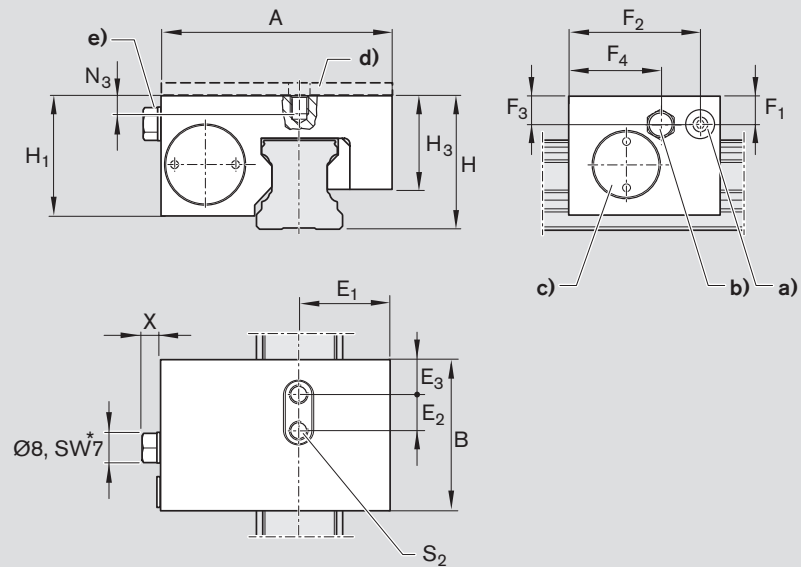


- a) Air port
b) Air filter
Nominal diameter
- Sizes 15 - 20: min. 4 mm
 - Sizes 25 - 65: min. 6 mm

| Size | Part number | Holding force Pneumatic ¹⁾ (N) | Air consumption (normalized) Air port (dm ³ /stroke) |
|------|--------------|---|---|
| 25 | R1619 242 73 | 850 | 0.015 |

1) Holding force at 6 bar. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

LCP



- a) Air port** M5 on both sides for release pressure
 - b) Connection** M5 on both sides for air filter
 - c) Adjusting screw on both sides
 - d) Spacer plate (accessory)
 - e) Air filter: connection M5 (at either side)
- *) SW = width across flats
 **) Only one port required.
 All ports are plugged for shipment.

| Size | Dimensions (mm) | | | | | | | | | | | | | | Weight (kg) | |
|------|-----------------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------------------------------|----------------|----------------|----------------|-------------|------|
| | A | B | E ₁ | E ₂ | E ₃ | F ₁ | F ₂ | F ₃ | F ₄ | H | H ₁ ¹⁾ | H ₃ | N ₃ | S ₂ | | X |
| 25 | 61.4 | 41 | 23.9 | 9.5 | 9.75 | 6.5 | 36.0 | 6.5 | 24.5 | 36.0 | 32.5 | 24.55 | 7.7 | M5 | 6.5 | 0.27 |

1) For Ball Runner Block .H. (... high, ...), a spacer plate is needed. Available on request.

Accessories, Clamping and Braking Units

Pneumatic Clamping Units LCPS

R1619 .40 70

Note

Can be used on all Ball Guide Rails SNS.

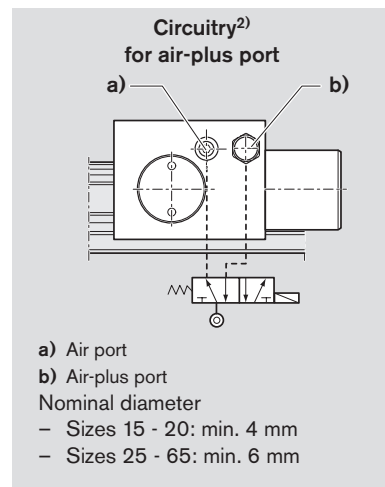
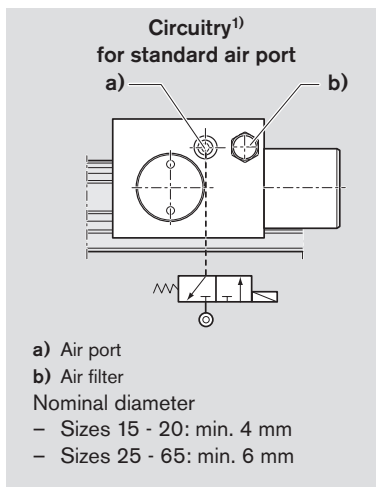
Clamps without pressurization (spring energy)

- Release pressure min. 5.5 bar
- Max. pneumatic operating pressure: 8 bar
- Operating temperature range t: 0 - 60 °C

Notes for mounting

- Make sure the adjoining structure is sufficiently rigid.
- Use only filtered and lubricated air. The specified filter mesh size is 25 µm.
- Read the mounting instructions before start-up.

⚠ Follow the safety notes for Clamping and Braking Units. 📄 187

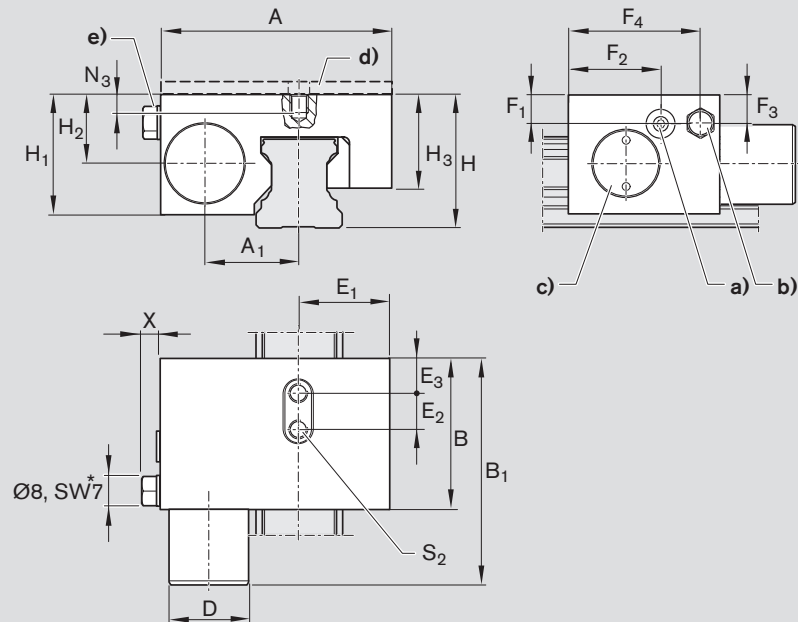


| Size | Part number | Holding force | | Air consumption (normalized) | |
|------|--------------|------------------------------------|---|---------------------------------------|--|
| | | Spring energy ¹⁾ (N) | with air-plus port ²⁾ (N) | Air port (dm ³ /stroke) | Air-plus port (dm ³ /stroke) |
| 25 | R1619 240 70 | 650 | 1 050 | 0.015 | 0.082 |

1) Holding force achieved by spring energy. Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Increased holding force through additional pressurization with 6.0 bar compressed air at the air-plus port. Switching via 5/2 or 5/3-way directional control valve.

LCPS



- a) Air port** M5 on both sides for release pressure
 - b) Connection** M5 on both sides for air-plus port or air filter
 - c) Adjusting screw on both sides
 - d) Spacer plate (accessory)
 - e) Air filter: connection M5 (at either side)
- *) SW = width across flats
 **) Only one port required.
 All ports are plugged for shipment.

| Size | Dimensions (mm) | | | | | | | | | | | | | | | | | Weight (kg) | | |
|------|-----------------|----------------|----|-------------------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|------------------------------|----------------|----------------|----------------|-------------|----------------|------|
| | A | A ₁ | B | B _{1max} | D | E ₁ | E ₂ | E ₃ | F ₁ | F ₂ | F ₃ | F ₄ | H | H ₁ ¹⁾ | H ₂ | H ₃ | N ₃ | | S ₂ | X |
| 25 | 61.4 | 24.5 | 41 | 62.5 | 22 | 23.9 | 9.5 | 9.75 | 6.5 | 24.5 | 6.5 | 36.0 | 36 | 32.5 | 20.0 | 24.55 | 7.7 | M5 | 6.5 | 0.35 |

1) For Ball Runner Block .H. (... , high, ...), a spacer plate is needed. Available on request.

Accessories, Clamping and Braking Units

Product Description, Accessories, Manual Clamping Units, Spacer Plate

Application areas

- Table crossbars and slides
- Width adjustment
- Mechanical stops
- Positioning on optical instruments and measuring tables

Characteristic features

- Simple, reliable construction in compact design
- Manually operated clamping element without auxiliary power

Further highlights

- Freely adjustable hand lever
- Symmetrical force application to ball guide rail via floating contact profile
- Precise positioning
- Holding forces up to 2,000 N

Spacer Plate


For assembly with Ball Runner Blocks, high version, SNH R1621 or SLH R1624.

 Follow the safety notes for Clamping and Braking Units.  187

Model overview, Accessories, Manual Clamping Units, Spacer Plate

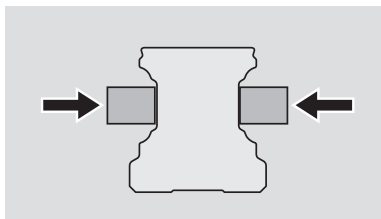
HK  215



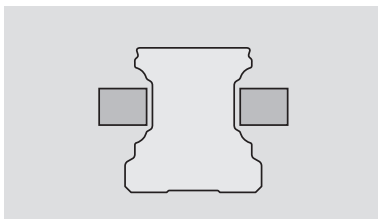
HK  216



Spacer Plate  217



Pressure applied by hand lever



Hand lever disengaged

Clamping by manual pressure

The clamping profiles are pressed against the web surfaces of the guide rail by the action of the hand lever.

Manual Clamping Units HK

R1619 .42 82

Note

Can be used on all Ball Guide Rails SNS.



Manual clamping

- Operating temperature range t:
0 - 70 °C

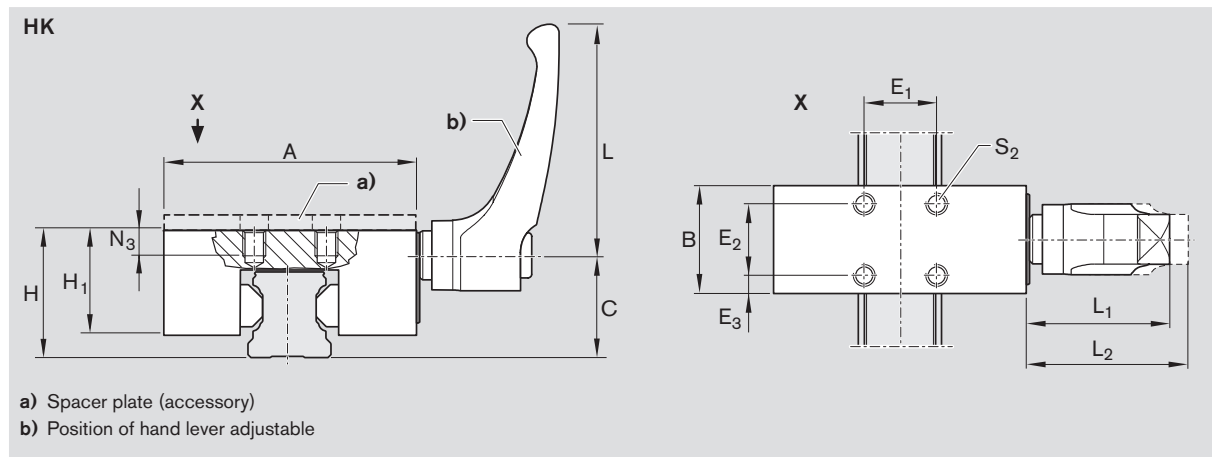
Notes for mounting

- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.



 Follow the safety notes for Clamping and Braking Units.  187


| Size | Part number | Holding force ¹⁾ (N) | Tightening torque (Nm) |
|------|--------------|------------------------------------|---------------------------|
| 15 | R1619 142 82 | 1 200 | 4 |
| 20 | R1619 842 82 | 1 200 | 5 |
| 25 | R1619 242 82 | 1 200 | 7 |
| 30 | R1619 742 82 | 2 000 | 15 |
| 35 | R1619 342 82 | 2 000 | 15 |
| 45 | R1619 442 82 | 2 000 | 15 |
| 55 | R1619 542 82 | 2 000 | 22 |
| 65 | R1619 642 82 | 2 000 | 22 |



| Size | Dimensions (mm) | | | | | | | | | | | | | Weight (kg) |
|------|-----------------|----|------|----------------|----------------|----------------|----|------------------------------|----|----------------|------------------------------|----------------|----------------|----------------|
| | A | B | C | E ₁ | E ₂ | E ₃ | H | H ₁ ³⁾ | L | L ₁ | L ₂ ²⁾ | N ₃ | S ₂ | |
| 15 | 47 | 25 | 19.0 | 17 | 17 | 4.0 | 24 | 19 | 44 | 30.0 | 33.0 | 5 | M4 | 0.16 |
| 20 | 60 | 24 | 24.5 | 15 | 15 | 4.5 | 30 | 23 | 44 | 30.0 | 33.0 | 6 | M5 | 0.23 |
| 25 | 70 | 30 | 29.3 | 20 | 20 | 5.0 | 36 | 29 | 64 | 38.5 | 41.5 | 7 | M6 | 0.43 |
| 30 | 90 | 39 | 34.0 | 22 | 22 | 8.5 | 42 | 33 | 78 | 46.5 | 50.5 | 8 | M6 | 0.82 |
| 35 | 100 | 39 | 38.0 | 24 | 24 | 7.5 | 48 | 41 | 78 | 46.5 | 50.5 | 10 | M8 | 1.08 |
| 45 | 120 | 44 | 47.0 | 26 | 26 | 9.0 | 60 | 48 | 78 | 46.5 | 50.5 | 14 | M10 | 1.64 |
| 55 | 140 | 49 | 56.5 | 30 | 30 | 9.5 | 70 | 51 | 95 | 56.5 | 61.5 | 14 | M14 | 1.71 |
| 65 | 160 | 64 | 69.5 | 35 | 35 | 14.5 | 90 | 66 | 95 | 56.5 | 61.5 | 20 | M16 | 2.84 |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Hand lever disengaged

3) For Ball Runner Block .H. (... , high, ...), a spacer plate is needed  217

Accessories, Clamping and Braking Units

Manual Clamping Units HK

R1619 .42 83

Note

Can be used on all Ball Guide Rails BNS.

Manual clamping

- Operating temperature range t: 0 - 70 °C

Notes for mounting

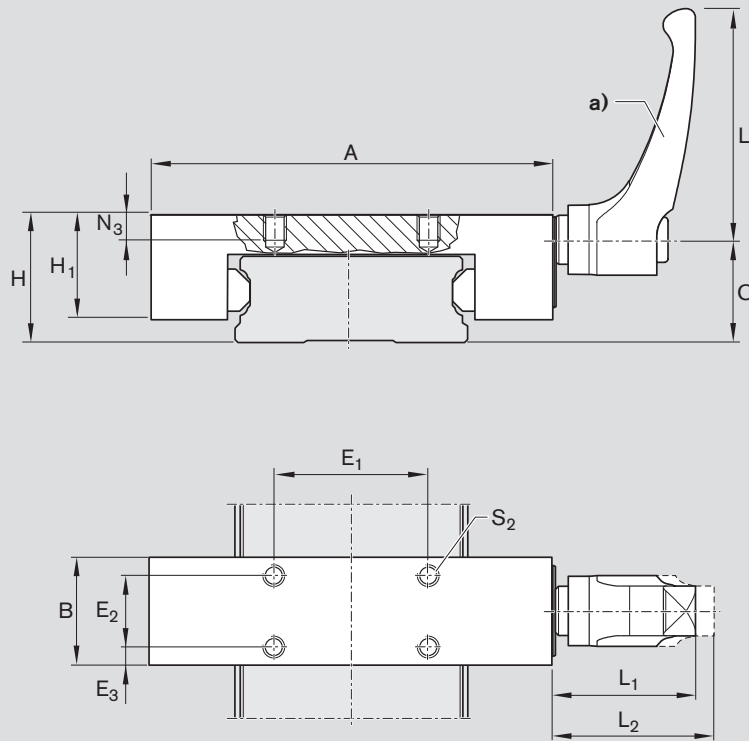
- Make sure the adjoining structure is sufficiently rigid.
- Read the mounting instructions before start-up.



⚠ Follow the safety notes for Clamping and Braking Units. 187

| Size | Part number | Holding force ¹⁾ (N) | Tightening torque (Nm) |
|-------|--------------|---------------------------------|------------------------|
| 25/70 | R1619 242 83 | 1 200 | 7 |
| 35/90 | R1619 342 83 | 2 000 | 15 |

HK wide



a) Position of hand lever adjustable

| Size | Dimensions (mm) | | | | | | | | | | | | | | Weight (kg) |
|-------|-----------------|----|------|----------------|----------------|----------------|----|----------------|----|----------------|------------------------------|----------------|----------------|------|-------------|
| | A | B | C | E ₁ | E ₂ | E ₃ | H | H ₁ | L | L ₁ | L ₂ ²⁾ | N ₃ | S ₂ | | |
| 25/70 | 120 | 39 | 28.2 | 50 | 25 | 7.0 | 35 | 30 | 64 | 38.5 | 41.5 | 11 | M6 | 0.77 | |
| 35/90 | 145 | 39 | 38.0 | 60 | 20 | 9.5 | 50 | 39 | 78 | 46.5 | 50.5 | 11 | M8 | 1.38 | |

1) Testing is performed in the installed condition with a film of lubricating oil (ISO VG 68).

2) Hand lever disengaged

Spacer Plate

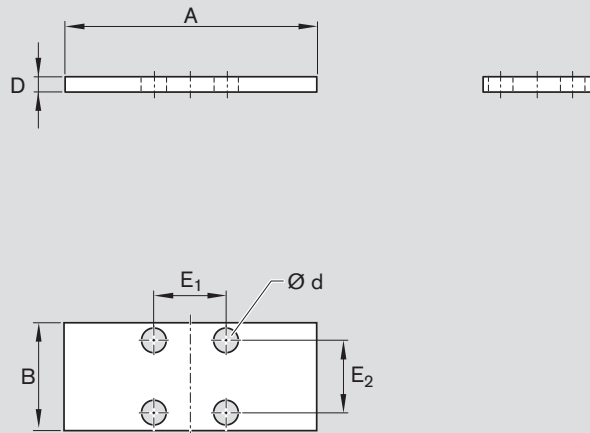
For Clamping Units MK, MKS and HK

Note

For assembly with Ball Runner Blocks, high version, SNH R1621 or SLH R1624.



Spacer Plate



R1619 .40 65

Suitable for Clamping Units:

- R1619 .42 60 (MK)
- R1619 .40 60 (MKS)

| Size | Part number | Dimensions (mm) | | | | | | Weight (kg) |
|------|--------------|-----------------|----|----|------|----------------|----------------|-------------|
| | | A | B | D | d | E ₁ | E ₂ | |
| 15 | R1619 140 65 | 55 | 39 | 4 | 4.5 | 15 | 15 | 0.065 |
| 25 | R1619 240 65 | 75 | 35 | 4 | 6.5 | 20 | 20 | 0.078 |
| 30 | R1619 740 65 | 90 | 39 | 3 | 8.5 | 22 | 22 | 0.077 |
| 35 | R1619 340 65 | 100 | 39 | 7 | 8.5 | 24 | 24 | 0.202 |
| 45 | R1619 440 65 | 120 | 49 | 10 | 10.5 | 26 | 26 | 0.434 |
| 55 | R1619 540 65 | 128 | 49 | 10 | 10.5 | 30 | 30 | 0.465 |

R1619 .42 .5

Suitable for Clamping Units:

- R1619 .42 82 (HK)

| Size | Part number | Dimensions (mm) | | | | | | Weight (kg) |
|------|--------------|-----------------|----|----|------|----------------|----------------|-------------|
| | | A | B | D | d | E ₁ | E ₂ | |
| 15 | R1619 142 85 | 47 | 25 | 4 | 4.5 | 17 | 17 | 0.035 |
| 25 | R1619 242 85 | 70 | 30 | 4 | 6.5 | 20 | 20 | 0.062 |
| 30 | R1619 742 85 | 90 | 39 | 3 | 6.5 | 22 | 22 | 0.080 |
| 35 | R1619 340 65 | 100 | 39 | 7 | 8.5 | 24 | 24 | 0.202 |
| 45 | R1619 442 85 | 120 | 44 | 10 | 10.5 | 26 | 26 | 0.387 |
| 55 | R1619 542 85 | 140 | 49 | 10 | 14.5 | 30 | 30 | 0.511 |