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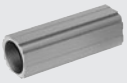
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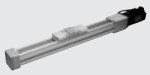

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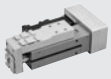

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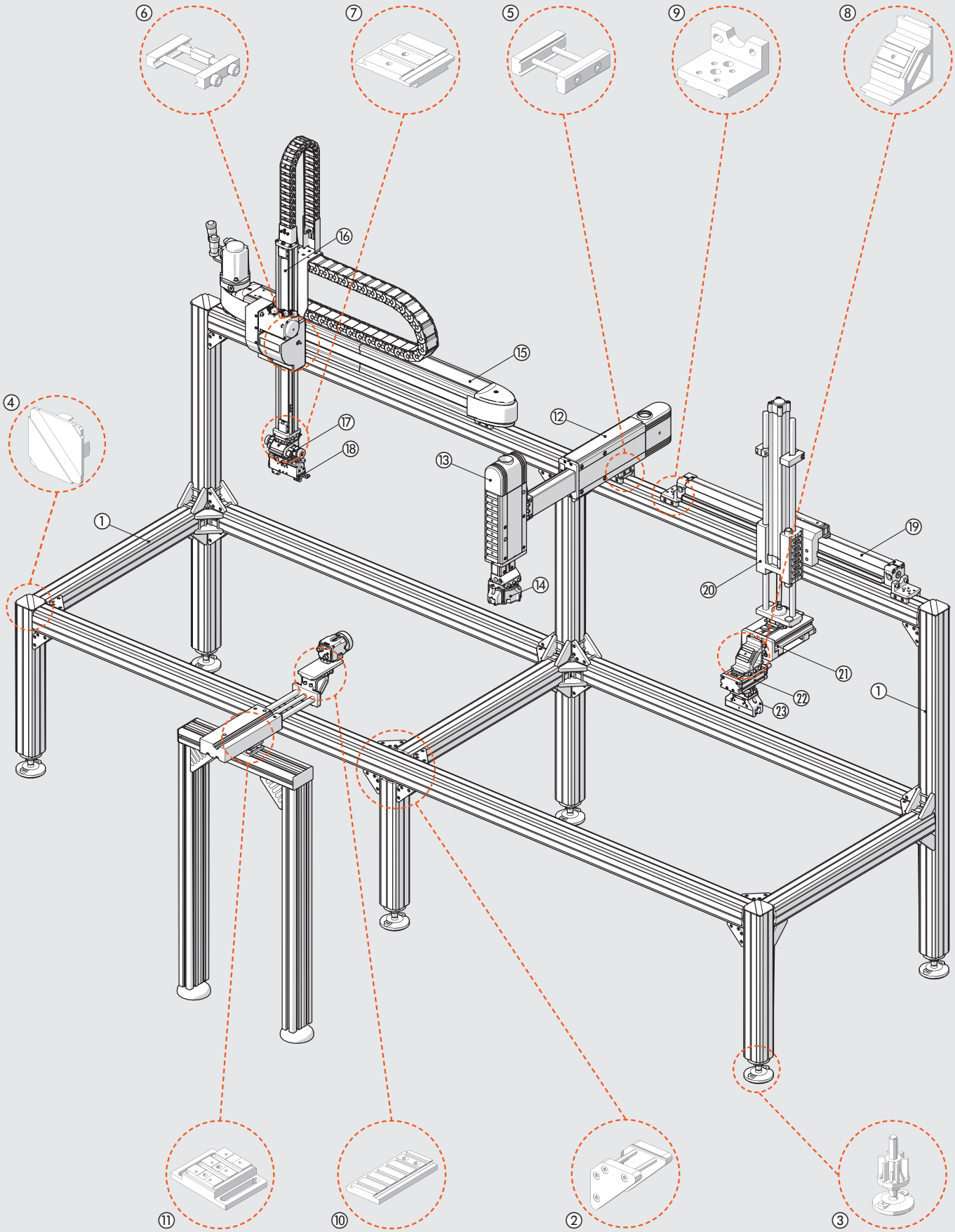
V-Lock GENERAL INTRODUCTION

THE V-Lock WORLD

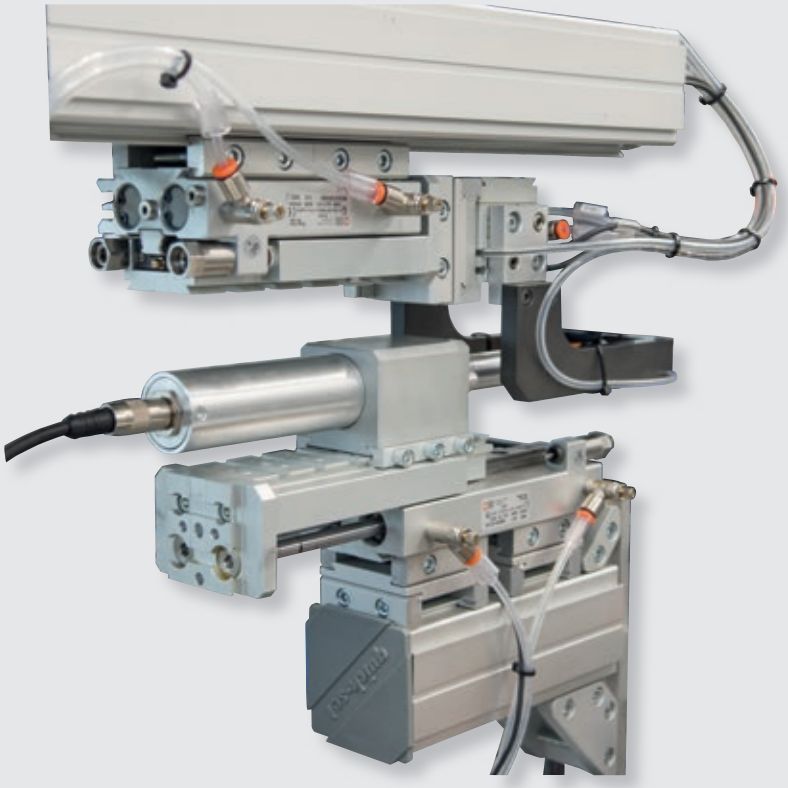


The V-Lock system can be used to create pneumatic and/or electrical automation systems for a wide range of applications, from simple to more complex ones.

① Quick-Set dovetail fixing PROFILES, which can be cut up using a standard die-cutter and do no required any particular machining; no threaded holes or pinholes are required. Dovetail fixing elements can withstand greater loads than those with T-grooves.
② BRACKETS for fixing Quick-set profiles.
③ Articulated FOOTS with 90mm adjustment length.
④ Plastic CAP for profiles.
⑤ QS FIXING ELEMENTS for the coupling of V-Lock profiles and/or components (no need for V-Lock transverse grooves).
⑥ K FIXING ELEMENTS for V-Lock couplings, using the transverse grooves of V-Lock components. They feature high precision, repeatability and space saving.
⑦ Parallel or crosswise ADAPTORS for the coupling of V-Lock components, e.g. rotated by 90 degrees.
⑧ BRACKETS for fixing at a 45° or 90° angle, longitudinal, transversal, cross.
⑨ Various V-Lock fixing ACCESSORIES: foots, flanges, etc.
⑩ V-Lock TRANSFORMERS fixed to any component (a video camera in the photo) converts it into a V-Lock component.
⑪ PROFILE ADAPTORS to secure any types of profile (Bosch®, Item® ecc.) available from the trade into V-Lock components.
⑫ Pneumatically-controlled LINEAR UNITS SERIES LEPK, featuring high precision and rigidity, long life, adjustable strokes, cushioned end stop, 2 or 3 positions.
⑬ LINEAR UNITS SERIES LEPK FOR VERTICAL MOUNTING, featuring weight balance of the slide and the applied mass.
⑭ 3-JAW GRIPPERS.
⑮ ELECTRIC AXES SERIES ELEKTRO with a toothed belt, a ball circulation screw, various guide and drive systems. The figure shows an electric axis in the Elektro SHAK 340 series.
⑯ ELECTRIC AXIS FOR VERTICAL APPLICATIONS. The figure shows an electric axis in the Elektro SVAK series.
⑰ Pneumatically-controlled PRECISION ROTARY ACTUATORS. The figure shows a DAPK actuator with 2 adjustable angles.
⑱ PRECISION GRIPPERS. The figure shows a parallel long-stroke two-jaw gripper in the GPLK series.
⑲ RODLESS CYLINDERS with a V-Lock ball circulation guide.
⑳ V-Lock GUIDE UNIT for ISO 15552 pneumatic cylinders or Elektro ISO 15552 electric cylinders.
㉑ SLIDES. The figure shows an S14K compact precision slide.
㉒ R3K pneumatic ROTARY ACTUATORS, with an adjustable angle, mechanical stop or hydraulic internal or external shock-absorbers.
㉓ GRIPPERS with two parallel jaws, two hinged jaws, toggle joint and three jaws.

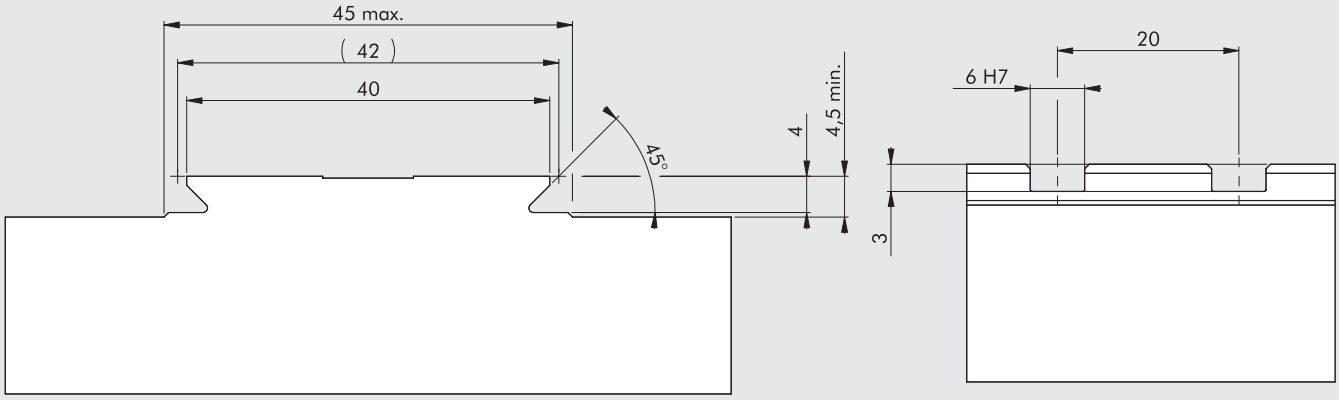
EXAMPLES OF APPLICATION

METAL WORK PNEUMATIC

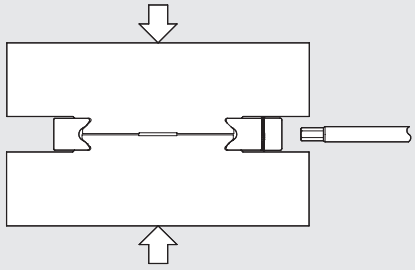


The V-Lock system is a range of components for automation, fixing elements and accessories featuring a standard modular connecting system, easy assembly, rapid configuration, and the option of either precise repeatable connections or an adjustable mounting position.

Unlike the other components used with machinery and equipment, all V-Lock components have a 40 mm-wide dovetail in the coupling surfaces that extends the entire length of the component. There are precision-cut transversal grooves in the component that are 6^{H7} wide and have a 20 mm pitch.

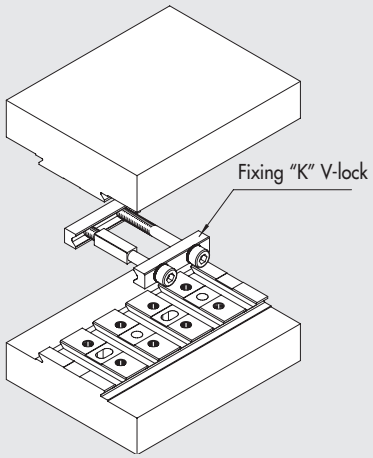


To connect two components, merely bring them into contact and tighten the M5 screws in the fixing elements, transversal to the body of the component. This system makes the assembly, disassembly and reconfiguration of numerous multiple components very quick and easy. Despite this, the parts are connected in a perfectly stable and precise manner.

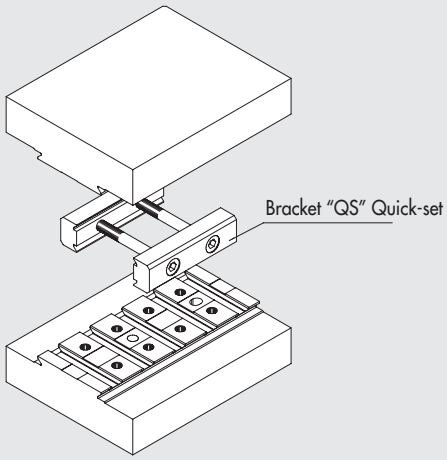


There are two types of fixing element for connecting V-Lock components, type K for highly compact, precise and repeatable fixing, and type QS to give a flexible system that can be regulated at the mounting stage.

When using K elements, insert the hollow square key (6^{f8}) in one of the transversal grooves (6^{H7}) and the M5 screw in the adjacent free-passage slot. This means the components will always be in the original position when the coupling is disassembled or reassembled.

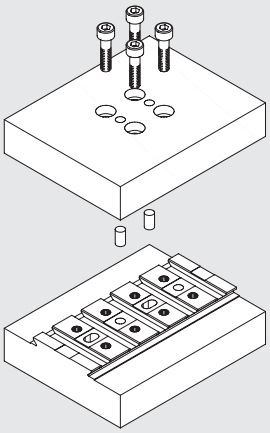


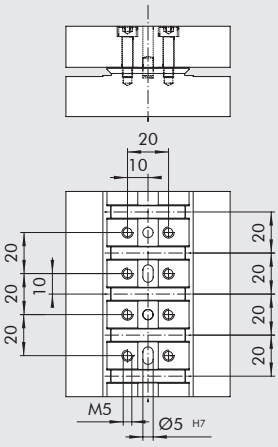
If you require mechanical adjustment of the position at the assembly stage, it is preferable to use QS elements, which form part of the Montech® Quick-set system.
The distance between components allows free passage of the M5 screws, which do not affect the relative position of the components, which remain apart. The assembly position must be regulated whenever the components are disassembled.



The V-Lock system comes with a series of modules and accessories designed to allow free spatial positioning of the components. The range includes cross adaptors, 45° and 90° squares, which are described in detail in the catalogue.
V-Lock components can be connected to Quick-set profiles by Montech® using QS fixing elements because the dovetails in the two systems are the same.
V-Lock components can also be connected to all the main extruded profiles with a slot centre distance of 40 mm or 45 mm. There is also a universal adaptor for the longitudinal assembly of V-Lock components and one for transversal assembly.

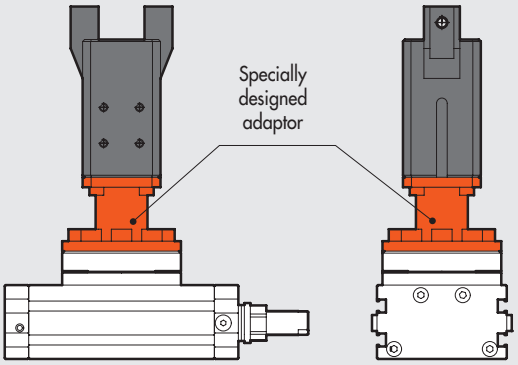
Where physically possible, all the faces of V-Lock components have a series of M5 threaded holes, pitch 20 x 20 mm, and holes for Ø 5 pins to allow standard mounting of external elements on V-Lock components.





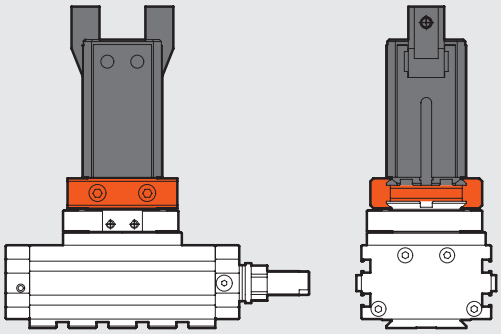
This standard and universal modular system makes the designer's work easier because it is not necessary to design adaptors, flanges, brackets and so on, and he can concentrate on the heart of the problem, namely the design of the machine.
Likewise, the person who assembles the components is provided with a complete kit that is quick and easy to use, so the machine can be assembled, set up and reconfigured in a very short time.
In short, with the V-Lock system you can:
- connect anything to anything: grippers, slides, rotary actuators or guide units, or even aluminium structures of any make
- have any spatial orientation
- make a simple quick-to-lock connection that is accessible from all sides
- avoid adaptor plates between components
- obtain an extremely robust connection that can withstand high loads and vibration
- construct a system with precision to the hundredth of a millimetre and repeatable, so that when a component is removed for maintenance, it can be repositioned accurately.

NON-MODULAR SYSTEM



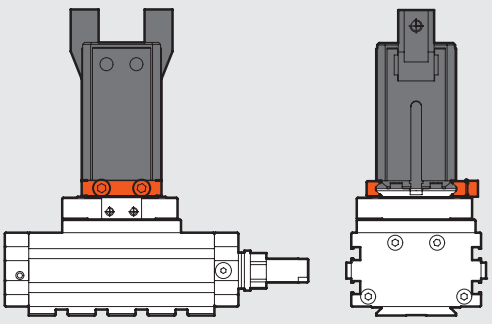
Adaptors have to be designed, produced and assembled.

Quick-set SYSTEM (Montech®)



① ✓ No adaptors required
② ✓ High rigidity
③ ✓ Longitudinally adjustable position
④ /
⑤ /
⑥ /
⑦ ✓ Rapid assembly
⑧ ✓ Easy access to fastening screws

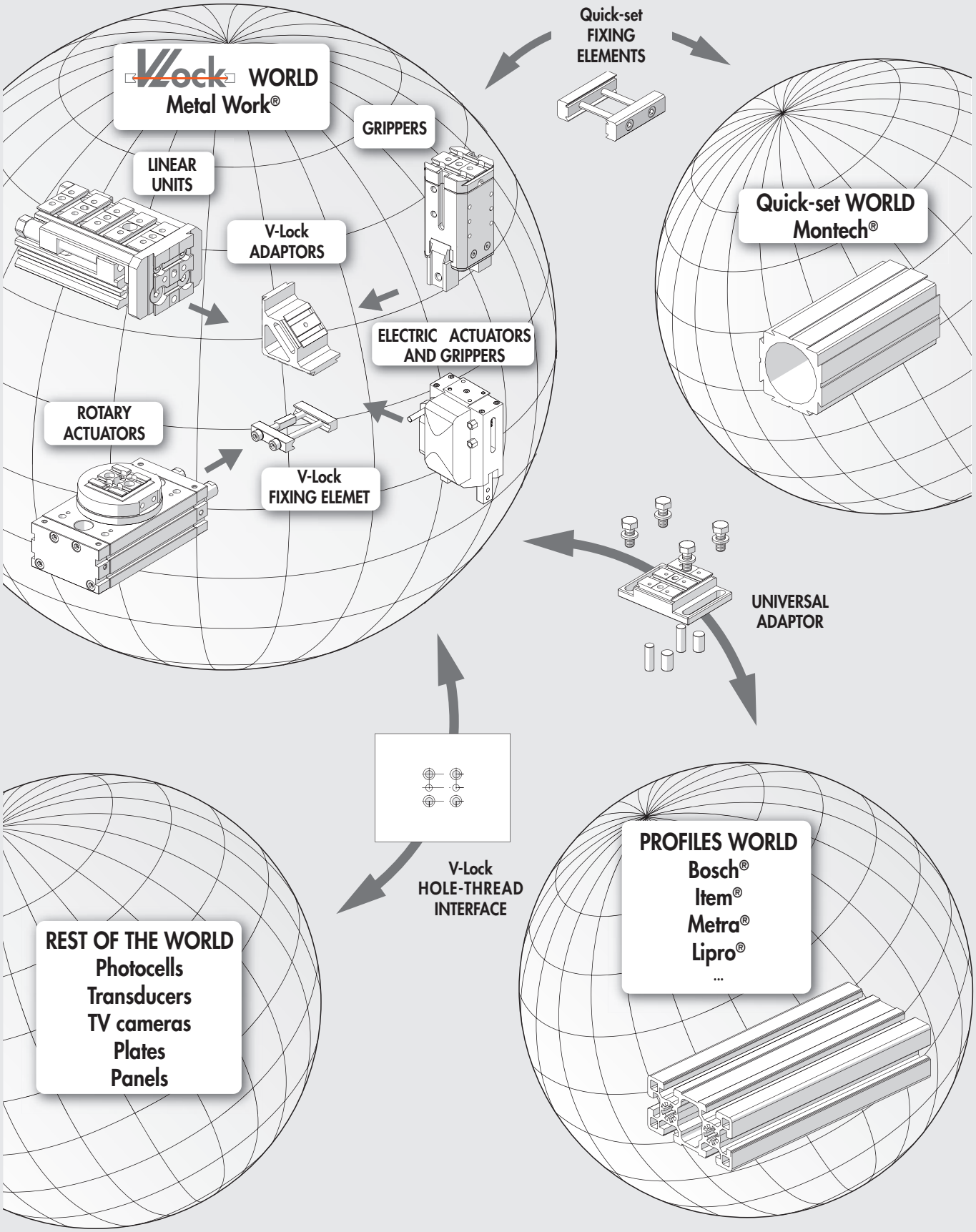
V-Lock System (Metal Work®)



① ✓ No adaptors required
② ✓ Improved rigidity
③ /
④ ✓ Accurate positioning using a key
⑤ ✓ Positioning repeatability after disassembly
⑥ ✓ Reduced overall dimensions
⑦ ✓ Rapid assembly
⑧ ✓ Easy access to fastening screws

METAL WORK PNEUMATIC

THE V-Lock WORLD CAN BE COMBINED WITH OTHER WORLDS OF AUTOMATION



V-Lock FIXING ELEMENTS

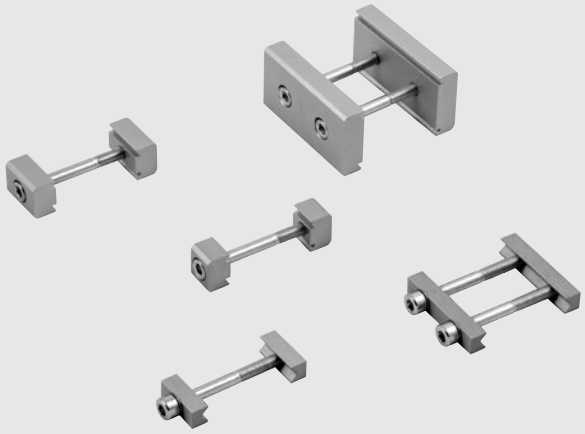
Metal Work products in the V-Lock series can be connected using either type K fixing system or QS fixing system, by Montech® Quick-Set.

Both modular systems are complementary and interchangeable.

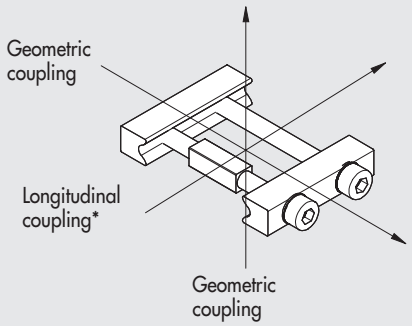
The V-Lock system guarantees accurate and repeatable positioning, even longitudinally. A hollow key can be inserted in the transverse grooves in the dovetails in the components (f8/H7 coupling).
Components connected using K elements are slightly detached from each other (minimum 0.4 mm distance between the adjacent surfaces of two components) to allow self-centring during assembly.

QS fixing elements allow longitudinal adjustment during assembly, without limiting the fitter to a particular position Here, too, the components are detached, but by more compared to the K system - 8 mm or 22 mm, depending on the connecting element chosen.

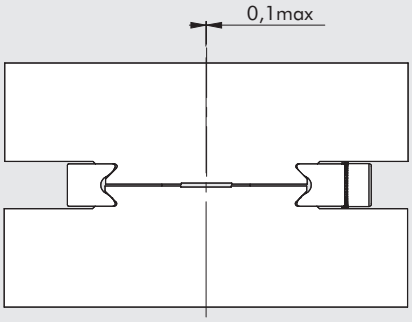
Both systems give rapid and accurate couplings that are very sturdy and vibration-resistant due to the dovetail joint and do not require specially designed adaptors.
The screws all remain accessible, so the components are easy to disassemble.



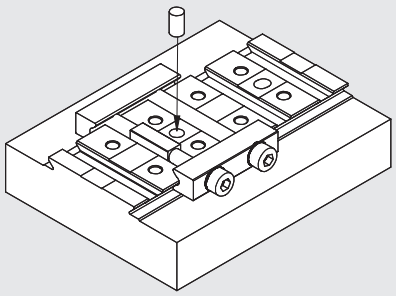
For very high loads there is a 6 mm solid square key with f8 tolerance (see accessories) that can be positioned between the free grooves in adjacent V-Lock elements.



* Resistance to the reciprocal displacement of two components with a 6 Nm screw torque.
Tests conducted with intact and undamaged elements.



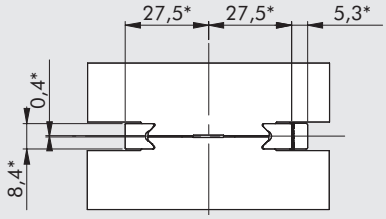
The V-Lock system allows transversal self-centring of the components. If the K blocks are mounted correctly, the alignment error is less than 0.1 mm.



If greater precision is required, one or two Ø 5 pins can be inserted in the slots provided.

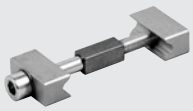
K FIXING ELEMENT

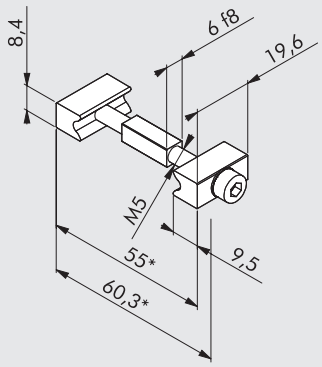
STANDARD TRANSVERSE DIMENSIONS



*dimensions with element fixed

K FIXING ELEMENT WITH ONE SCREW, CODE W0950005051K



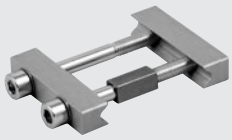


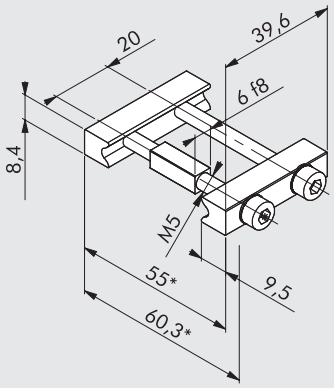
Short fixing element for low stress.

Resistance to longitudinal displacement	750 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.020 kg

*dimensions with element fixed

K FIXING ELEMENT WITH TWO SCREWS, CODE W0950005052K



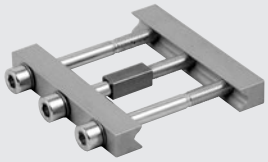


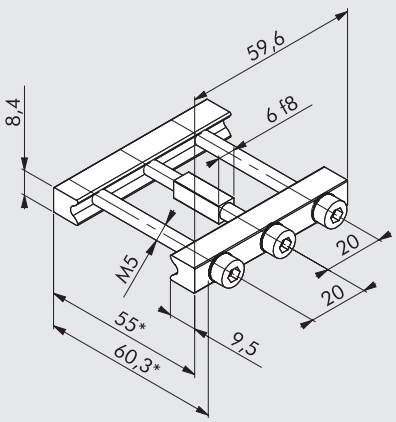
Fixing element for high stress.

Resistance to longitudinal displacement	3000 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.037 kg

*dimensions with element fixed

K FIXING ELEMENT WITH THREE SCREWS, CODE W0950005053K



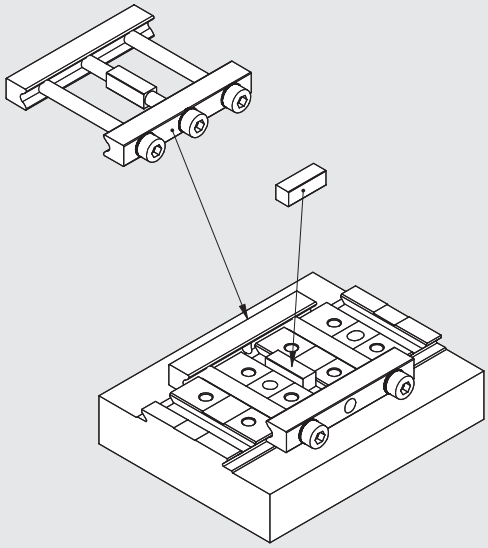


Fixing element for very high stress.

Resistance to longitudinal displacement	5000 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.055 kg

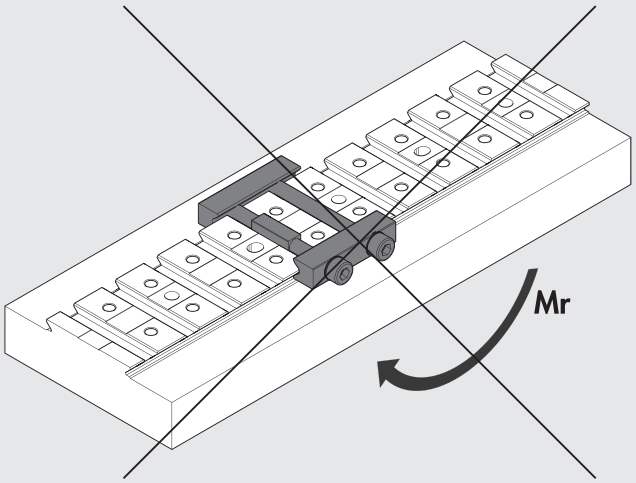
*dimensions with element fixed

For applications with high impacts, accelerations and masses, the resistance of the coupling system can be increased by inserting a solid key (code W0950005151K) instead of a screw and hollow key.

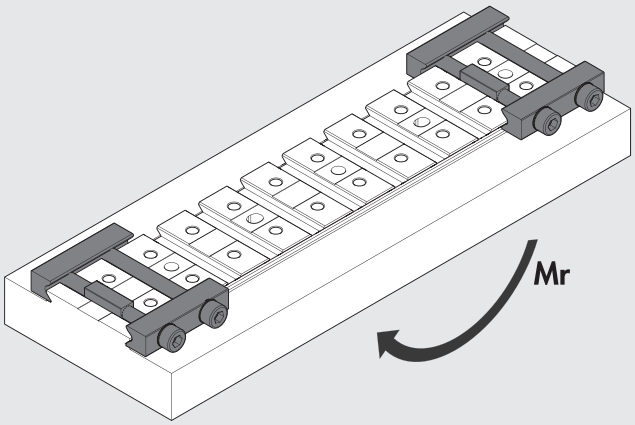


The number and size of fixing elements depend on the specific application. Under operating conditions of high speed, pressure and load, we recommend installing two elements with two screws as spaced as possible from each other.

NO

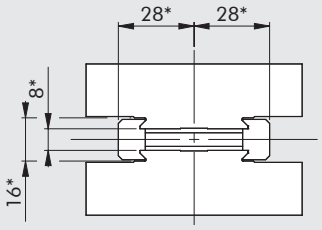


YES



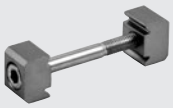
FIXING ELEMENT QS

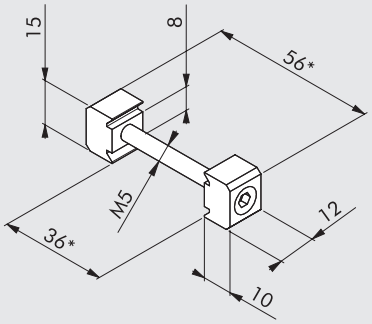
QS HEIGHT 8 mm: STANDARD TRANSVERSE DIMENSIONS



*dimensions with element fixed

QS 12-8 (SLL-12-40) FIXING ELEMENT, CODE W0950005000K



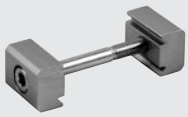


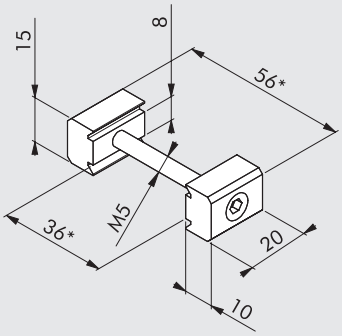
Short fixing element for low stress.

Resistance to longitudinal displacement	750 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.016 kg

*dimensions with element fixed

QS 20-8 (SLL-20-40) FIXING ELEMENT, CODE W0950005001K



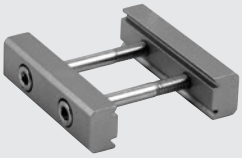


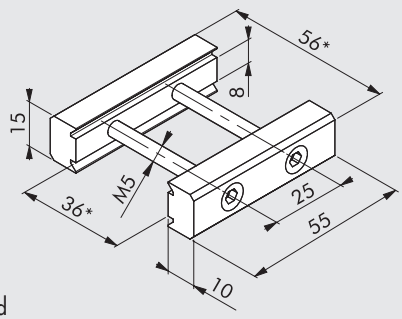
Short fixing element for medium stress.

Resistance to longitudinal displacement	1350 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.020 kg

*dimensions with element fixed

QS 55-8 (SLL-55-40) FIXING ELEMENT, CODE W0950005003K



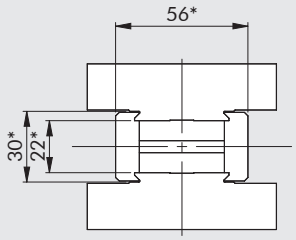


Fixing element for high stress.

Resistance to longitudinal displacement	3000 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.055 kg

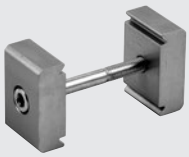
*dimensions with element fixed

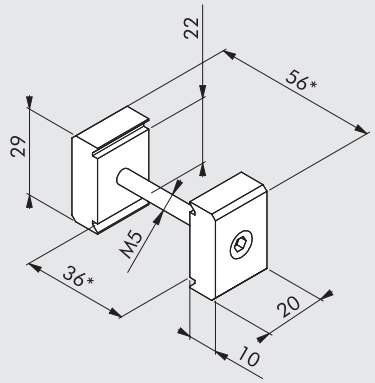
QS HEIGHT 22 mm: STANDARD TRANSVERSE DIMENSIONS



*dimensions with element fixed

QS 20-22 (SLL-20/22-40) FIXING ELEMENT, CODE W0950005002K



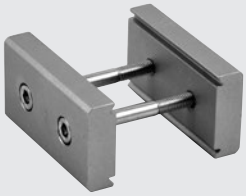


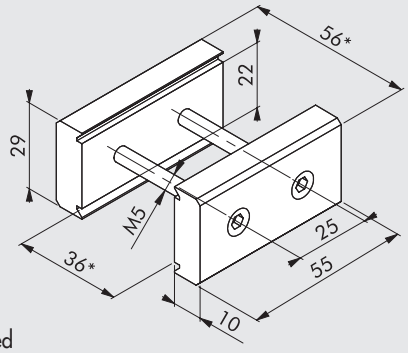
Short fixing element for medium stress and greater distances.

Resistance to longitudinal displacement	1350 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.022 kg

*dimensions with element fixed

QS 55-22 (SLL-55/22-40) FIXING ELEMENT, CODE W0950005004K





Short fixing element for high stress and greater distances.

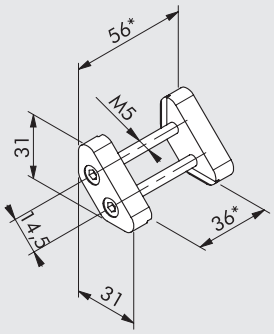
Resistance to longitudinal displacement	3000 N
Recommended screw torque	6 Nm
Parallelism of locked surfaces	±0.02 mm
Material	Anodized aluminium
Weight	0.096 kg

*dimensions with element fixed

NOTES

FIXING BRACKETS FOR PROFILES

EV-2-40 FIXING BRACKET, CODE W0950005811K

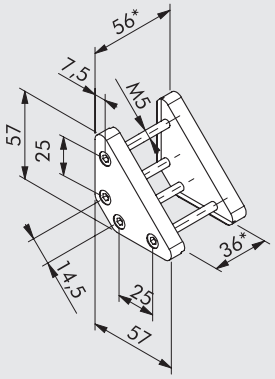


Angled attachment for 90° connections for use in reduced load applications.

Resistance to longitudinal displacement	1800 N
Recommended screw torque	6 Nm
Locking groove orthogonality (referred to a 19 mm length)	±0.02 mm
Material	Anodized aluminium
Weight	0.050 kg

*dimensions with element fixed

EV-3-40 FIXING BRACKET, CODE W0950005812K

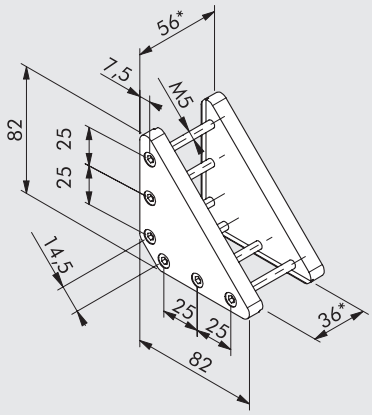


Angled attachment for 90° connections for use in medium load applications.

Resistance to longitudinal displacement	3000 N
Recommended screw torque	6 Nm
Locking groove orthogonality (referred to a 45 mm length)	±0.03 mm
Material	Anodized aluminium
Weight	0.130 kg

*dimensions with element fixed

EV-4-40 FIXING BRACKET, CODE W0950005813K



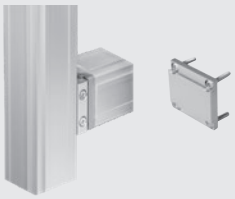
Angled attachment for 90° connections in high load applications.

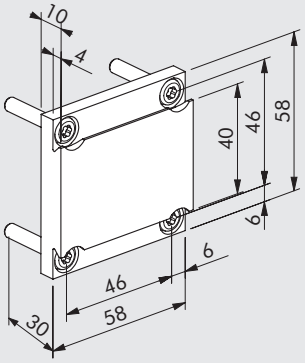
Resistance to longitudinal displacement	4500 N
Recommended screw torque	6 Nm
Locking groove orthogonality (referred to a 70 mm length)	±0.04 mm
Material	Anodized aluminium
Weight	0.250 kg

*dimensions with element fixed

FRONT ADAPTER FOR LIGHTWEIGHT PROFILE PROFILE

FRONT ADAPTER SA-58-40, CODE W0950005816K





Adapter for front fixing obtained from DIN 17615 profile profiles (precision profiles)

Recommended screw torque	6 Nm
Material	Anodized aluminium heat set
Weight	0.060 kg

Note: Adapter for lightweight profile LP-66-40-3M, code W0950005801K

NOTES

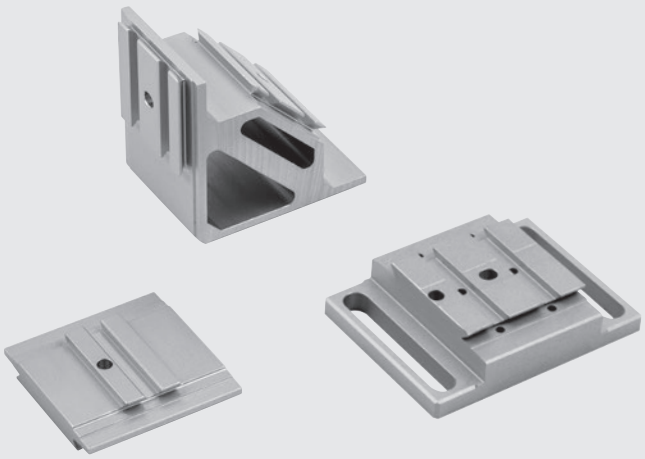
V-Lock ADAPTORS

METAL WORK PNEUMATIC

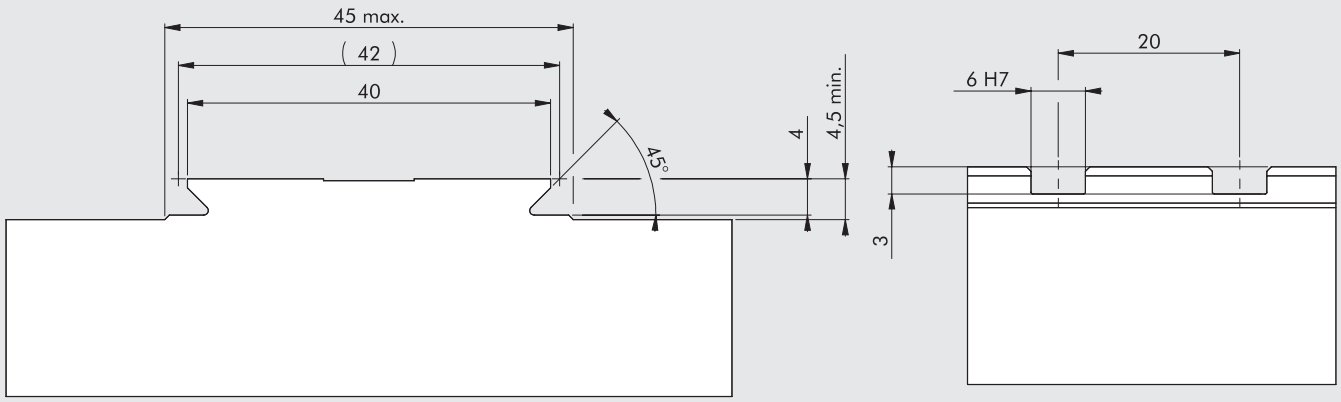
V-Lock adaptors can be used to connect various components quickly and securely when you require a rotated fixing or you need to adapt single-groove elements to multiple-groove elements.

All these adaptors have a 45° dovetail for connection using K and QS fixing elements.

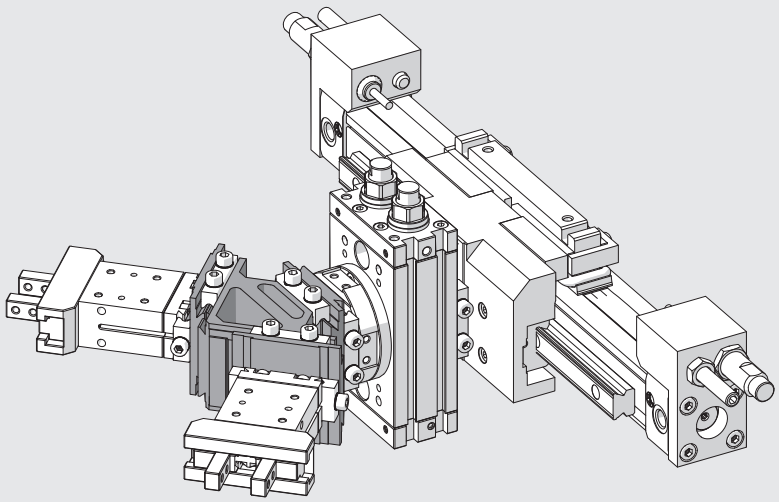
Where possible, pinholes have been drilled in the surfaces for interfacing with other components.



DIMENSIONS OF V-Lock DOVETAIL

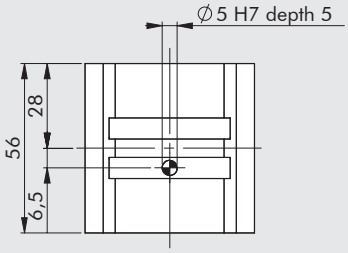


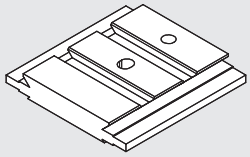
GENERAL APPLICATION OF V-Lock ADAPTORS

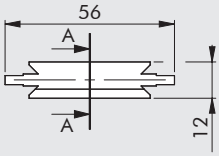


2-1 PARALLEL ADAPTOR, CODE W0950005100K

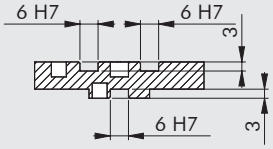
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

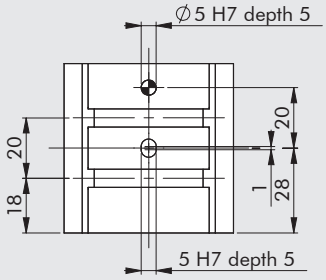






A-A

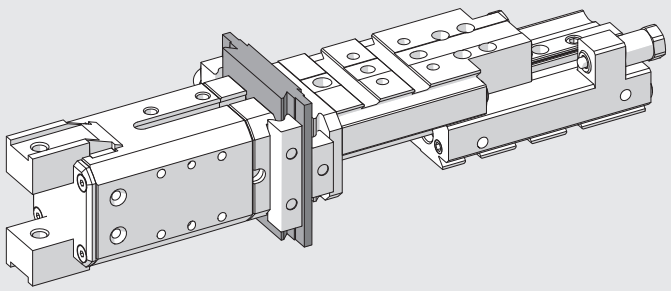




Adaptor suitable for parallel coupling of two V-Lock components, one with at least two grooves and the other with one groove only.

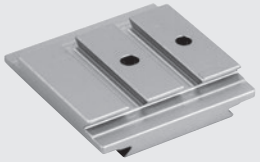
Material	Anodized aluminium
Weight	0.060 kg

EXAMPLE OF APPLICATION

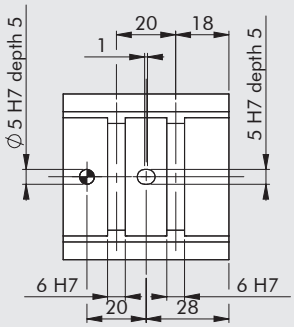


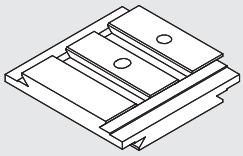
METAL WORK PNEUMATIC

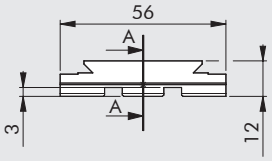
2-2 CROSS ADAPTOR, CODE W0950005110K



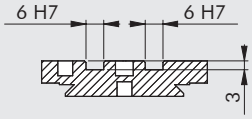
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

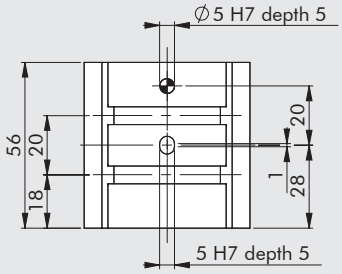






A-A

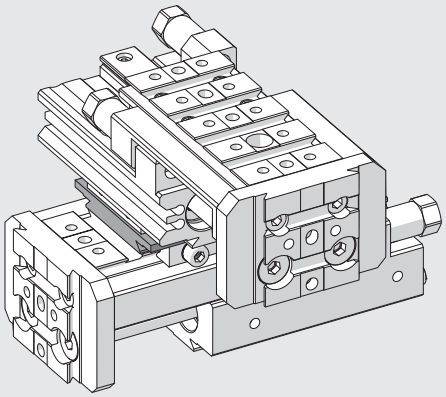




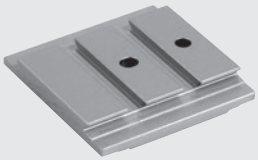
Adaptor suitable for cross-coupling two V-Lock components, both with at least two grooves.

Material	Anodized aluminium
Weight	0.069 kg

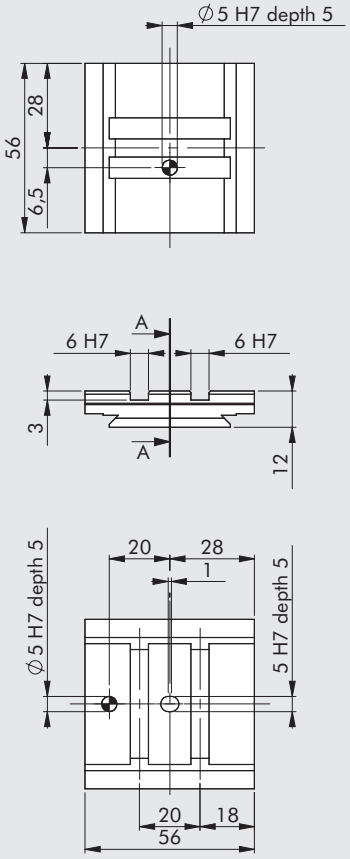
EXAMPLE OF APPLICATION

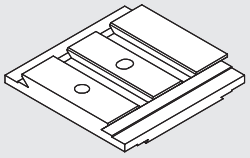


2-1 CROSS ADAPTOR, CODE W0950005120K



NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

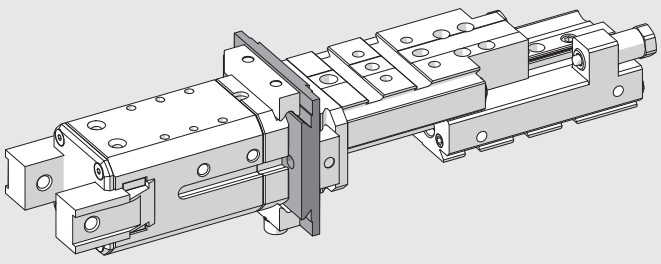




Adaptor suitable for cross-coupling of two V-Lock components, one with at least two grooves and the other with one groove only.

Material	Anodized aluminium
Weight	0.060 kg

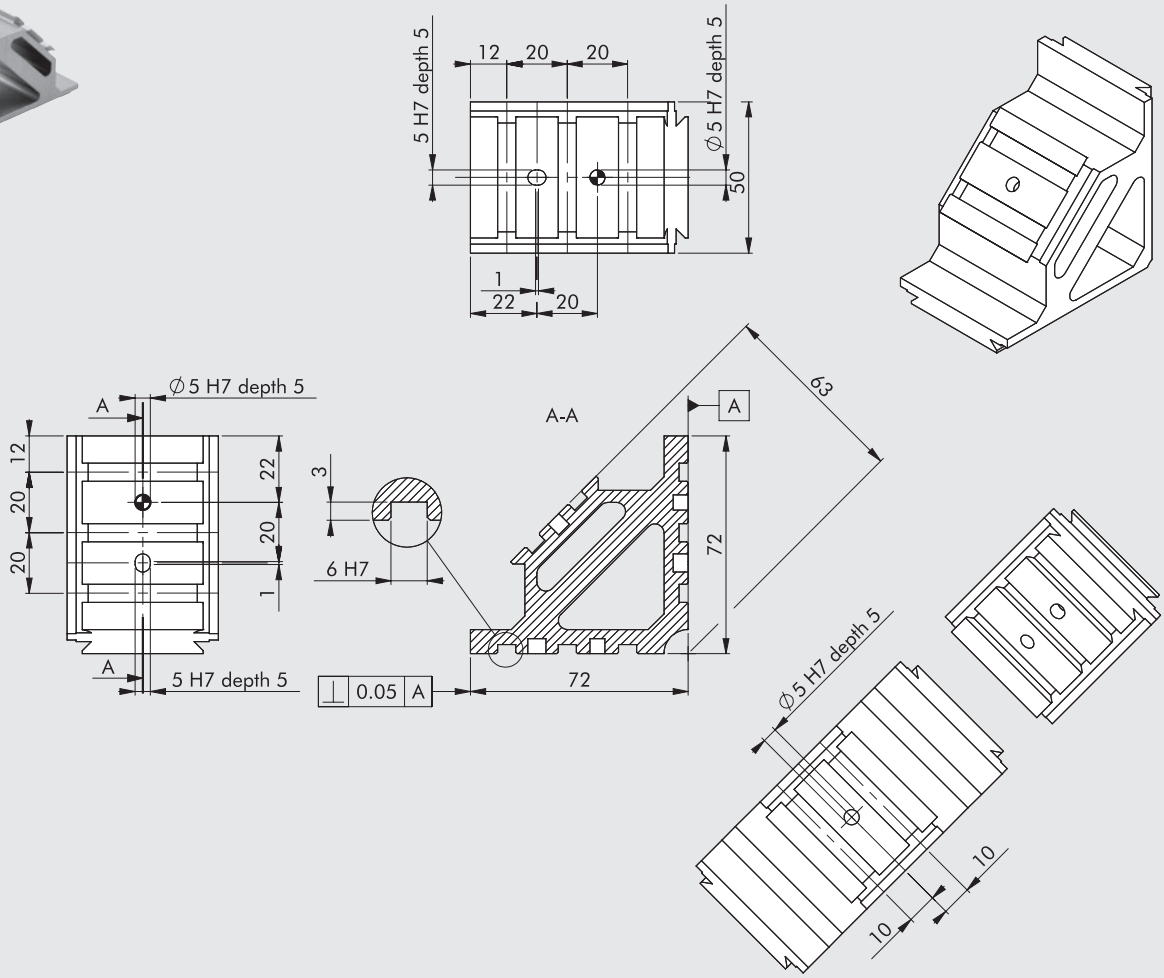
EXAMPLE OF APPLICATION



METAL WORK PNEUMATIC

LONGITUDINAL BRACKET, CODE W0950005200K

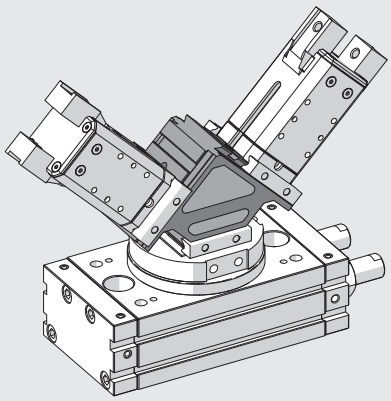
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.



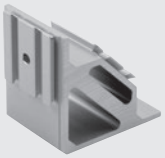
Adaptor suitable for the rotated coupling of two or three V-Lock components, with two right-angle supporting surfaces and parallel grooves.
The third surface is at 45° angle and the grooves are parallel to those in the other two faces.

Material	Anodized aluminium
Weight	0.235 kg

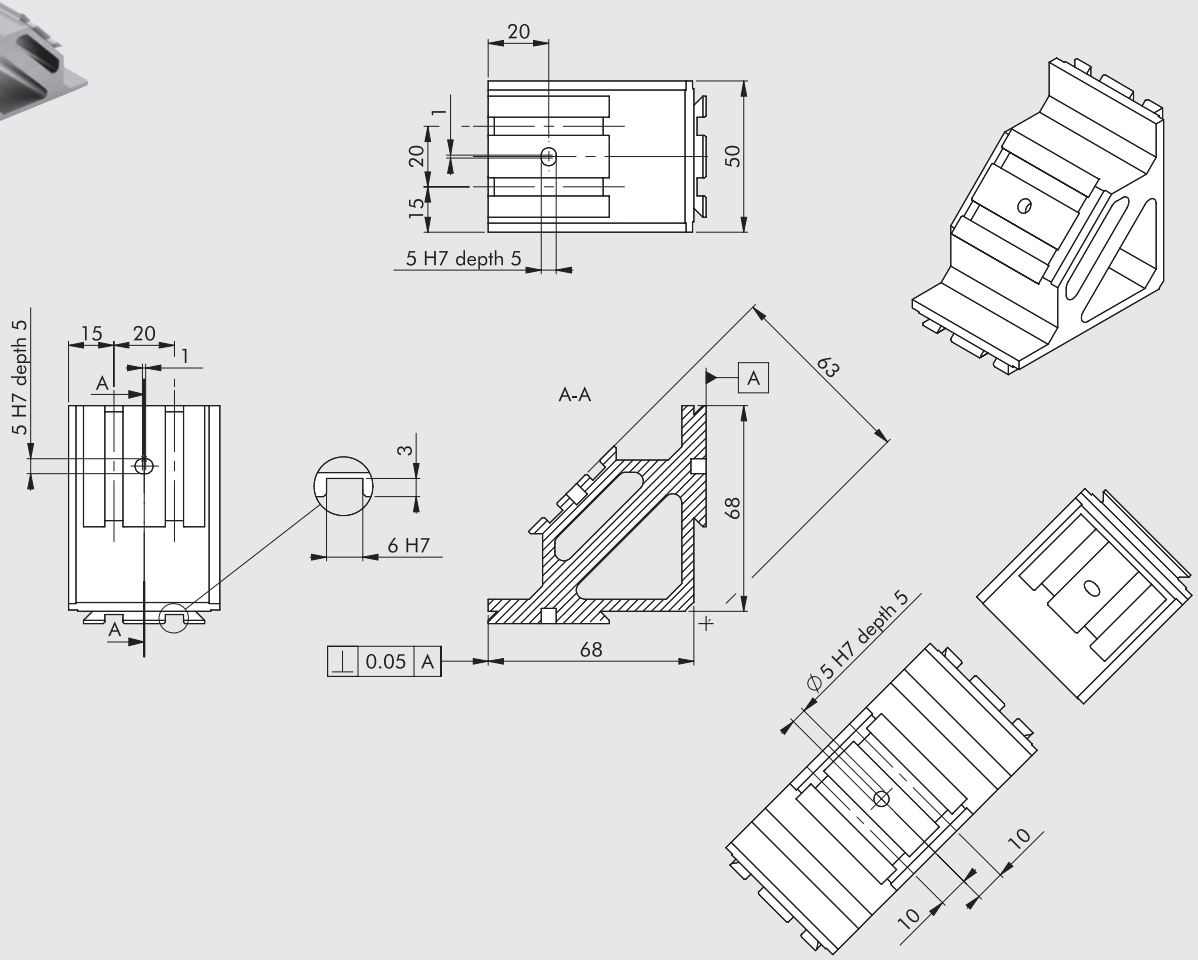
EXAMPLE OF APPLICATION



TRANSVERSAL BRACKET, CODE W0950005201K



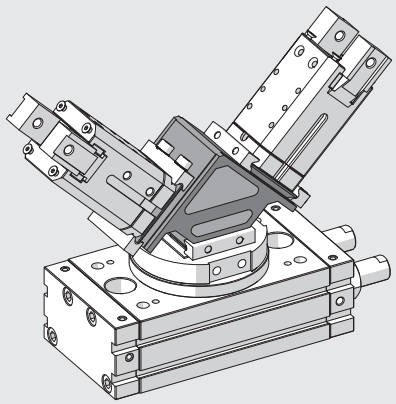
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.



Adaptor suitable for the rotated coupling of two or three V-Lock components, with two supporting surfaces at right angles. The third surface is at 45° angle. All the grooves are parallel.

Material	Anodized aluminium
Weight	0.218 kg

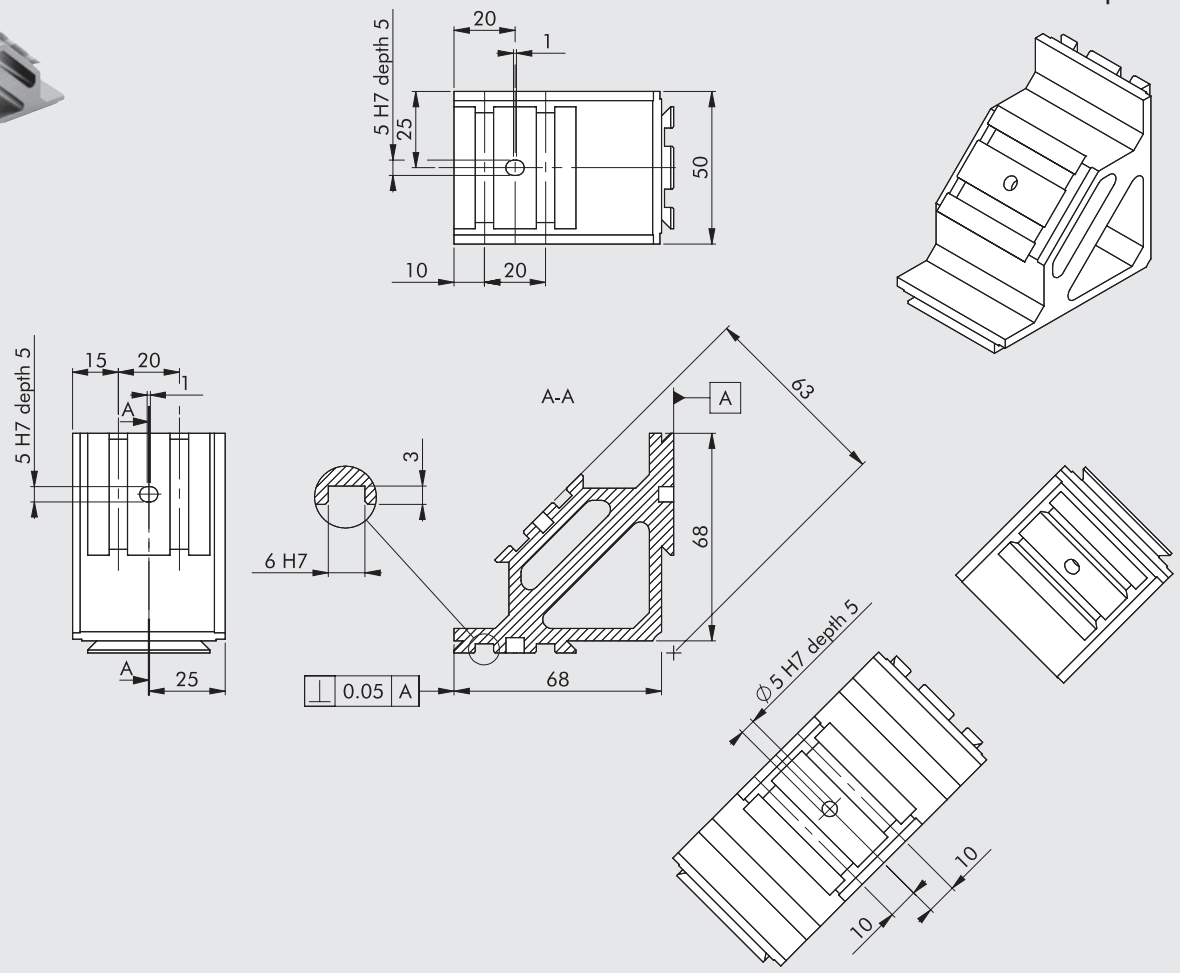
EXAMPLE OF APPLICATION



METAL WORK PNEUMATIC

CROSS BRACKET, CODE W0950005202K

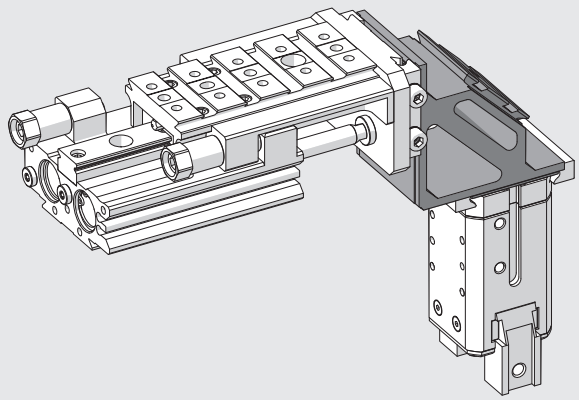
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.



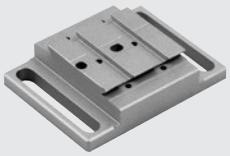
Adaptor suitable for the rotated coupling of two or three V-Lock components, with two right-angled supporting surfaces and grooves at right angles.
The third surface is at 45° angle.

Material	Anodized aluminium
Weight	0.218 kg

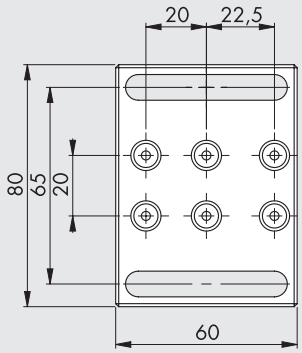
EXAMPLE OF APPLICATION

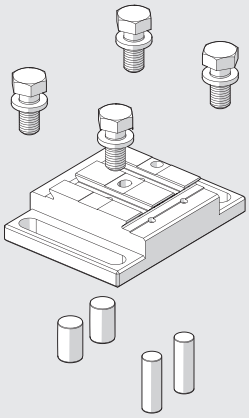


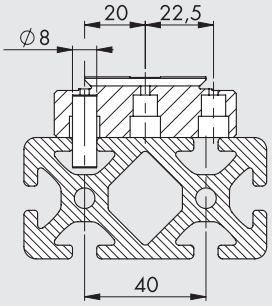
LONGITUDINAL ADAPTOR, CODE 0950008001K

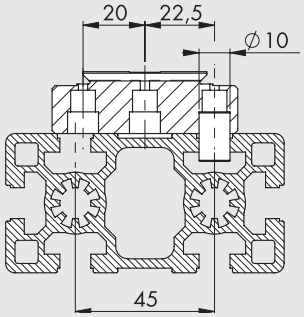


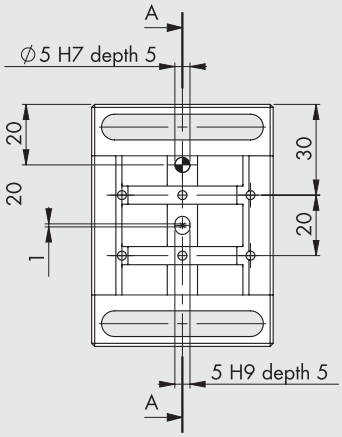
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

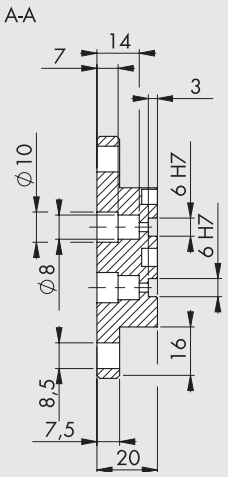








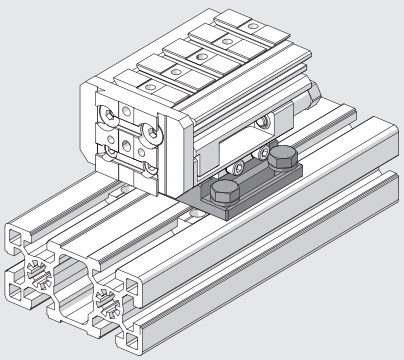




An adaptor for fixing V-Lock components longitudinally onto extruded profiles, with slots with 40 or 45 mm centre distance or 8 or 10 mm width.
If the slots have a 40 mm centre distance, insert two pins in the slots 20 mm from the axis of the adaptor and use them as an alignment reference.
If the slots have a 45 mm centre distance, use the 22.5 mm pin slots.

Kit contents:		
1 longitudinal adaptor	Material	Anodized aluminium
	Weight	0.164 kg
2 cylindrical pins Ø 10 x 16		
2 cylindrical pins Ø 8 x 24		
4 zinc-plated M8 x 16 screws		

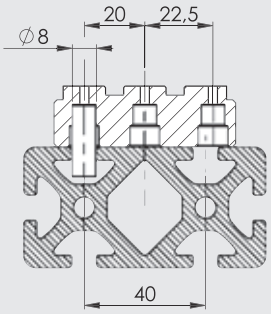
EXAMPLE OF APPLICATION

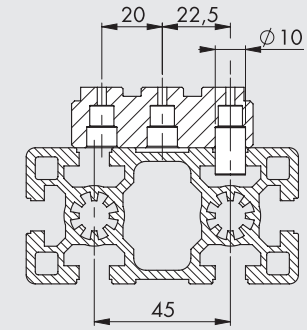


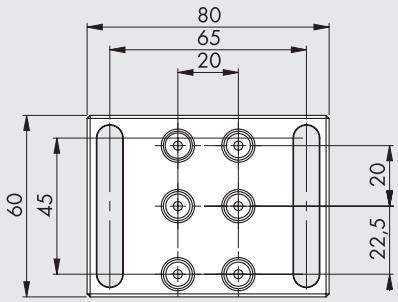
METAL WORK PNEUMATIC

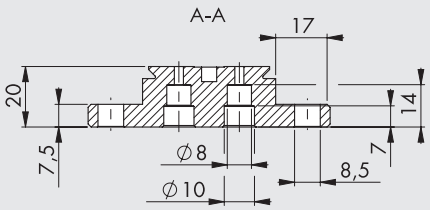
TRANSVERSAL ADAPTOR, CODE 0950008002K

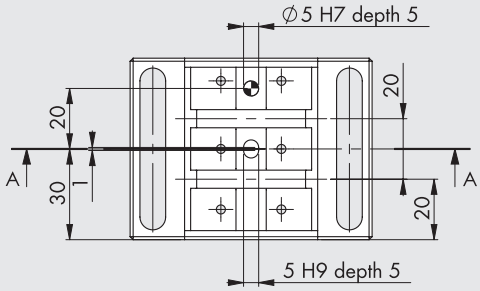
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

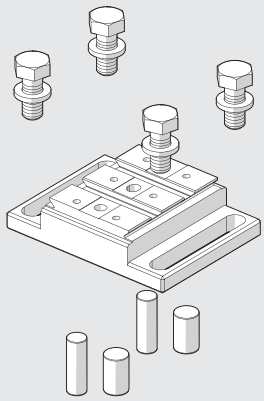


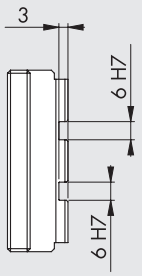








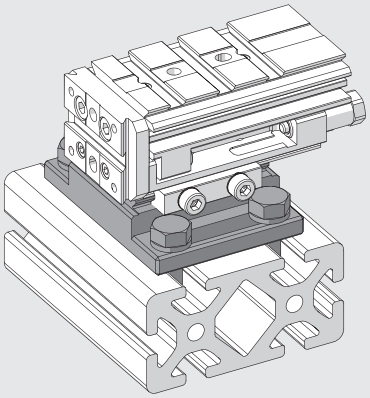




An adaptor for fixing V-Lock components transversally onto extruded profiles, with slots with 40 or 45 mm centre distance or 8 or 10 mm width.
If the slots have a 40 mm centre distance, insert two pins in the slots 20 mm from the axis of the adaptor and use them as an alignment reference.
If the slots have a 45 mm centre distance, use the 22.5 mm pin slots.

Kit contents:		
1 transversal adaptor:	Material	Anodized aluminium
	Weight	0.160 kg
2 cylindrical pins Ø 10 x 16		
2 cylindrical pins Ø 8 x 24		
4 zinc-plated M8 x 16 screws		

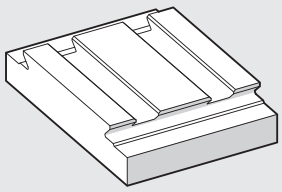
EXAMPLE OF APPLICATION



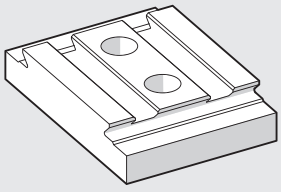
V-Lock TRANSFORMER

V-Lock transformers can be used to connect components other than V-Lock to the system or V-Lock components to other types of frames (e.g. bases, plates and walls). V-Lock transformers can be supplied without fixing screw holes or pinholes. This means that you can create the desired configuration.
For other similar adapters, see **chapter V-Lock Gripper accessories**.
The example below shows how to transform an S11 slide into a V-Lock slide.

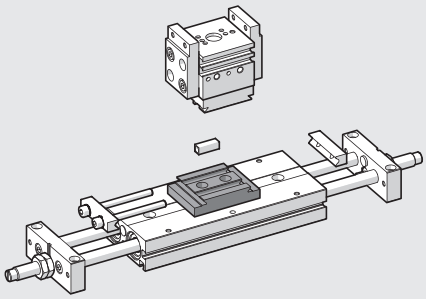
Start from V-Lock transformer



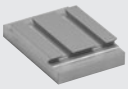
Drill a hole where required

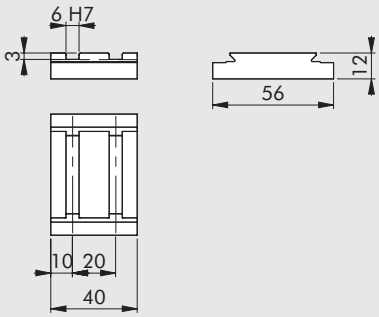


Apply to the component



2-GROOVE V-Lock TRANSFORMER, CODE 0950008012K

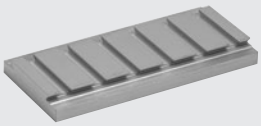


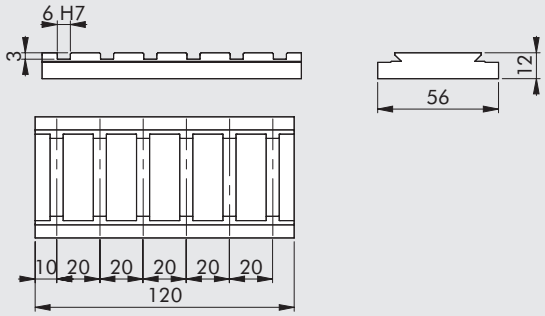


Weight: 0.060 kg
Material: anodized aluminium

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

6-GROOVE V-Lock TRANSFORMER, CODE 0950008016K

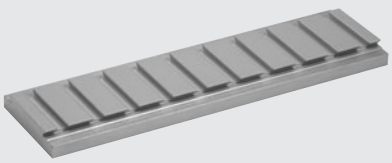


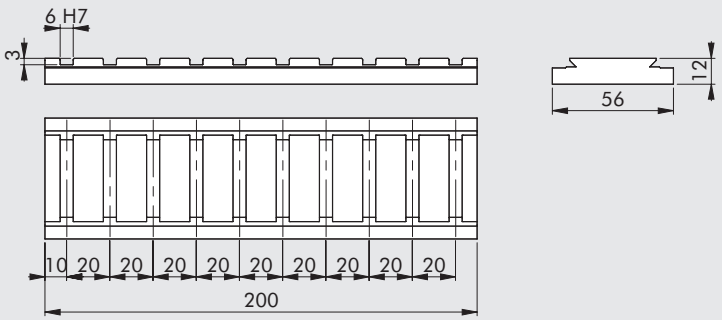


Weight: 0.181 kg
Material: anodized aluminium

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

10-GROOVE V-Lock TRANSFORMER, CODE 0950008020K



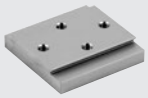


Weight: 0.301 kg
Material: anodized aluminium

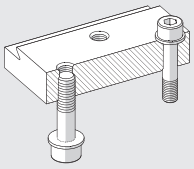
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

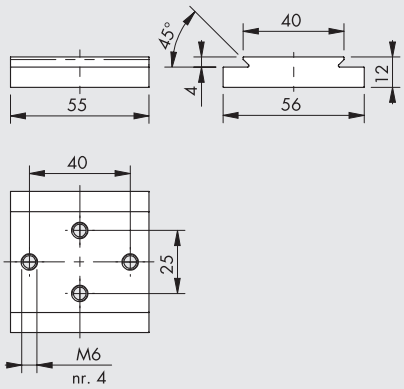
METAL WORK PNEUMATIC

QS TRANSFORMER L = 55, CODE 0950008050K



Fixing from below with M6 screw, or from above with through M5 screw.





Weight: 0.087 kg
Material: anodized aluminium

NOTES

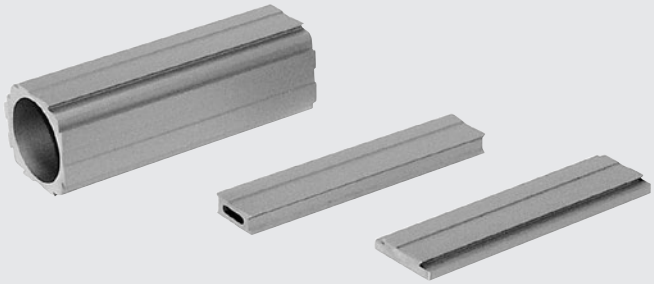
NOTES

METAL WORK PNEUMATIC

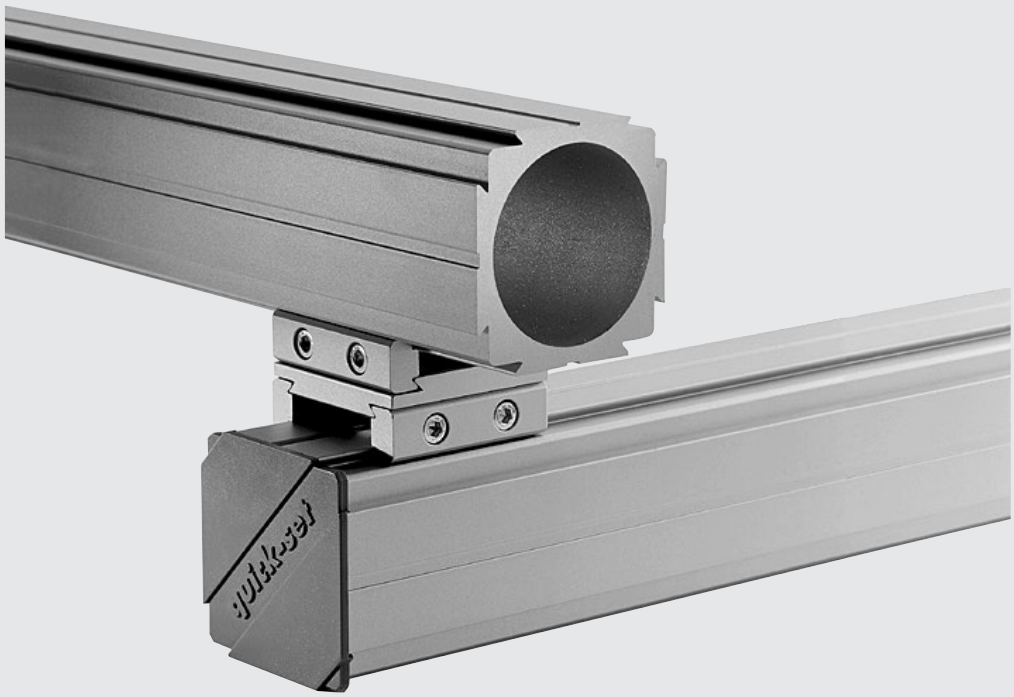
NOTES

PROFILES

The Quick-Set fixing system is the natural complement to modular components for V-Lock automation. The two systems share the same dovetail coupling system.
All types of structures can be quickly installed using Quick-Set profiles and accessories, including simple lightweight supports and complete assembly and testing lines. Couplings between profiles are accurate, very sturdy and vibration resistant. They are suitable for use in both static and dynamic applications. The profiles can be cut to measure using a die cutter and without requiring any machining; no need for holes or junction pinholes.
Dovetail joints can withstand higher loads than T-grooved joints; the reciprocal resistance of two screw-coupled joints is over 3000 N.
All the locking screws can be accessed at all times. The installations can be dismantled and reused.
In addition to the products shown in this catalogue and available from Metal Work stock, all the other Montech® Quick-Set components can be supplied on request.

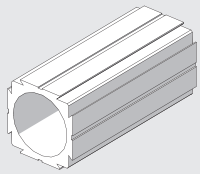


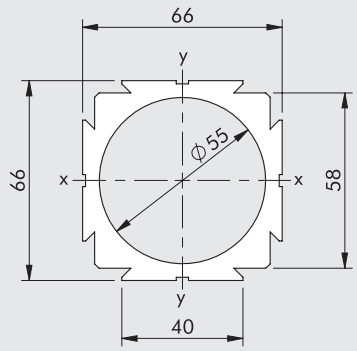
EXAMPLES OF APPLICATION



METAL WORK PNEUMATIC

TP-66-40-3M SUPPORTING PROFILE, CODE W0950005800K

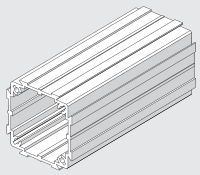


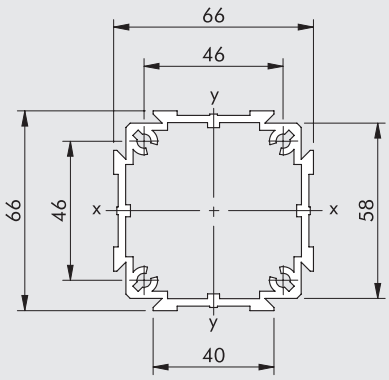


Profile to DIN 17615 (precision profiles)

Length	3000 mm
Profile surface	1480 mm^2
Flexural modulus	Wx = Wy = 23 cm^3
Moment of inertia	Jx = Jy = 76 cm^4
Length tolerance	±2 mm (DIN 7168 average)
Torsion tolerance	1 mm/m
Straightness tolerance	0.5 mm/m
Material	Anodized aluminium heat set
Weight	3.996 kg/m

LP-66-40-3M LIGHTWEIGHT PROFILE, CODE W0950005801K

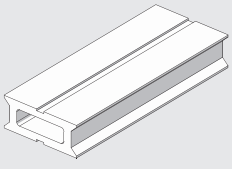


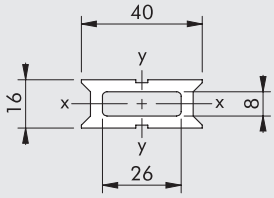


Profile to DIN 17615 (precision profiles)

Length	3000 mm
Profile surface	809 mm^2
Flexural modulus	Wx = Wy = 13 cm^3
Moment of inertia	Jx = Jy = 45 cm^4
Length tolerance	±2 mm (DIN 7168 average)
Torsion tolerance	1 mm/m
Straightness tolerance	0.5 mm/m
Material	Anodized aluminium heat set
Weight	2.186 kg/m

TP-16-40-2M SUPPORTING PROFILE, CODE W0950005802K

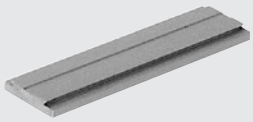


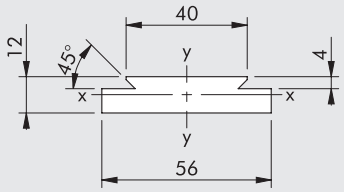


Profile to DIN 17615 (precision profiles)

Length	2000 mm
Profile surface	368 mm^2
Flexural modulus	Wx = 1.025 cm^3 Wy = 1.640 cm^3
Moment of inertia	Jx = 0.820 cm^4 Jy = 3.28 cm^4
Length tolerance	±1.2 mm (DIN 7168 average)
Torsion tolerance	1 mm/m
Straightness tolerance	0.5 mm/m
Material	Anodized aluminium heat set
Weight	0.980 kg/m

AP-56-40-2M ADAPTER PROFILE, CODE W0950005803K

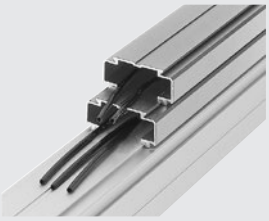


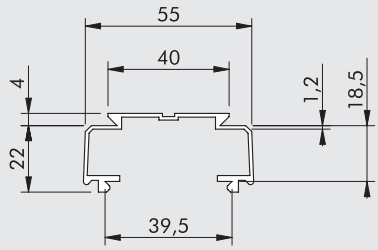


Profile to DIN 17615 (precision profiles).
Used for making adaptors.

Length	2000 mm
Profile surface	600 mm^2
Flexural modulus	Wx = 1.04 cm^3
	Wy = 4.83 cm^3
Moment of inertia	Jx = 0.67 cm^4
	Jy = 13.53 cm^4
Length tolerance	±1.2 mm (DIN 7168 average)
Torsion tolerance	1 mm/m
Straightness tolerance	0.5 mm/m
Material	Anodized aluminium heat set
Weight	1.620 kg/m

KFM-40-2M CABLE CARRIER PROFILE, CODE W0950005804K

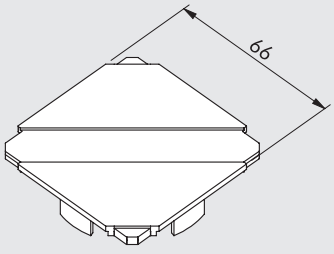




Profile to DIN 17615 (precision profiles).
Snap-in profile for the laying of pneumatic hoses and electrical cables.

Length	2000 mm
Length tolerance	±1.2 mm (DIN 7168 average)
Material	Anodized aluminium heat set
Weight	0.549 kg/m

AK-66-40 PLASTIC CAP, CODE W0950005810K

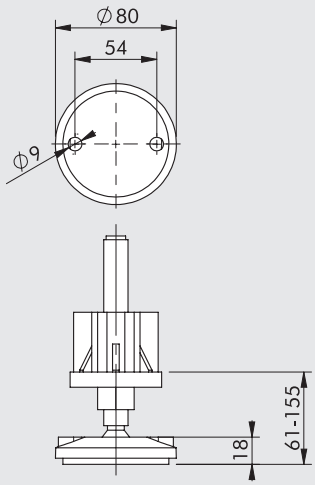


End cap for TP-66-40 and LP-66-40 bearing profiles.

Material	Light grey ABS
Weight	2.5 g

METAL WORK PNEUMATIC

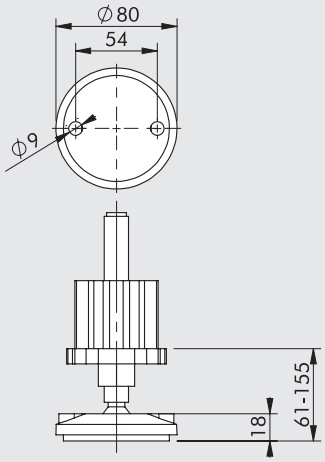
GFTP-66-40 ARTICULATED FOOT, CODE W0950005814K



Articulated foot with adaptor for TP-66-40 bearing profile.

Maximum axial load	5000 N
Material	Black plastic plate. Threaded rod in zinc-plated steel.
Weight	0.350 kg

GFLP-66-40 ARTICULATED FOOT, CODE W0950005815K



Articulated foot with adaptor for LP-66-40 lightweight profile.

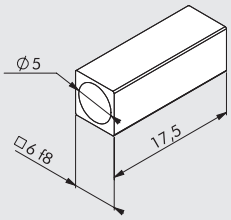
Maximum axial load	5000 N
Material	Black plastic plate. Threaded rod in zinc-plated steel.
Weight	0.400 kg

NOTES

V-Lock ACCESSORIES AND SPARE PARTS

ACCESSORIES

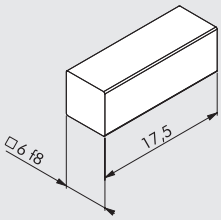
V-Lock HOLLOW KEY



Code	Description
W0950005150K	V-Lock hollow key kit

Note: Kit of 5 stainless steel 6 x 6 hollow keys

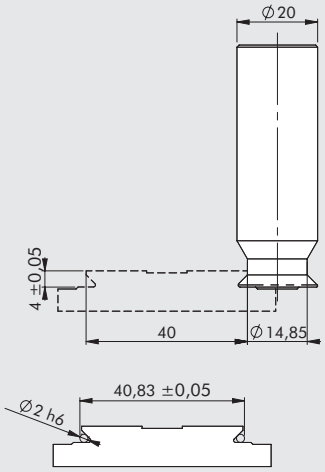
V-Lock SOLID KEY



Code	Description
W0950005151K	V-Lock key kit

Note: Kit of 5 stainless steel solid 6 x 6 keys

V-Lock profile tool



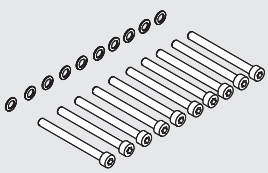
Code	Description
9000770	Tool for V-Lock profile

Workable materials: aluminium – steel

Note: This tool can be used to obtain the dovetail V-Lock profile on parts and/or components without it (e.g. plates, jibs and columns).

SPARE PARTS

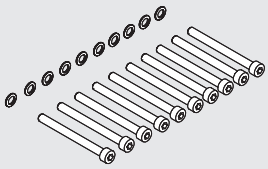
V-Lock SCREW KIT



Code	Description
W0950005170K	K screw kit

Note: Kit of 10 zinc-plated M5x55 screws (class 8.8) and 10 zinc-plated knurled M5 washers

Quick-Set SCREW KIT



Code	Description
W0950005171K	QS screw kit

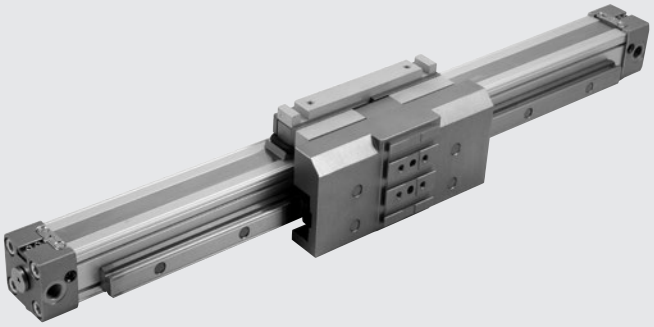
Note: Kit of 10 zinc-plated M5x50 screws (class 8.8) and 10 zinc-plated knurled M5 washers

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE SERIES V-Lock

METAL WORK PNEUMATIC

V-Lock rodless cylinders come with bores Ø 16, Ø 25 and Ø 32.
Their main feature is that the carriage support has a dovetail with V-Lock grooves for mounting other components in the V-Lock family.
The provision of threaded holes and centring pins allows non-V-Lock components to be fixed onto the carriage.
The fixing foots also use the V-Lock system, so the cylinder can be fixed onto something else using K or QS elements.
The carriage support is mounted on ball-recirculation pads that run on tempered guides and can withstand very high loads and moments.
Main features of V-Lock rodless cylinders:

- extruded anodized aluminium alloy cylinder liner;
- sensor grooves in the liner;
- longitudinal pneumatic seal system using stainless steel non-deformable strips;
- very high load capacities acting in any direction, without affecting the cylinder carriage in any way;
- tempered steel guide anchored firmly to the cylinder liner;
- ball-bearing pads made using special technology to allow very silent operation and long maintenance intervals;
- built-in adjustable pneumatic cushioning;
- provision for the application of adjustable stops and shock absorbers;
- with diameter 32 cylinders, the valves can be fixed onto the liner using the retracting sensor grooves, without the need for intermediate brackets.



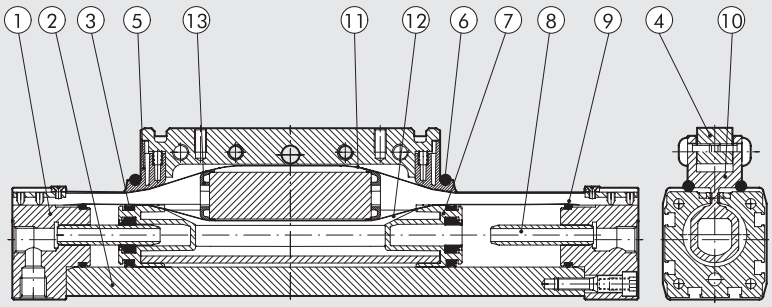
TECHNICAL DATA		Ø16	Ø25	Ø32
Operating pressure	bar	1 to 8		
	MPa	0.1 to 0.8		
	psi	14.5 to 116		
Temperature range	°C	–10 to +80		
Design		Double-acting rodless cylinder with direct transmission system		
Fluid		50 µm unlubricated filtered air Lubrication, if used, must be continuous		
Standard strokes	mm	100 to 1350	100 to 2300	
Threaded ports		M5, 1/8", 1/4"		
Fixing position		Free		
Max. speed with or without shock absorbers	m/s	≤1		
Lubrication		Every 2000 km or once a year (grease code 9910506)		
Notes		**For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.** When operating conditions exceed the values shown in the "Diagram of speed and maximum cushionable load", it is advisable to use the version with external shock absorbers.		

WEIGHTS

Ø	Version 275_ _ _ _ _ _ _ _CNK		Version 276_ _ _ _ _ _ _ _CNK	
	Weight [g] Stroke = 0	Weight [g] every mm	Weight [g] Stroke = 0	Weight [g] every mm
16	500	1.79	758	1.79
25	1676	2.99	2208	2.99
32	3168	5.04	4381	5.04

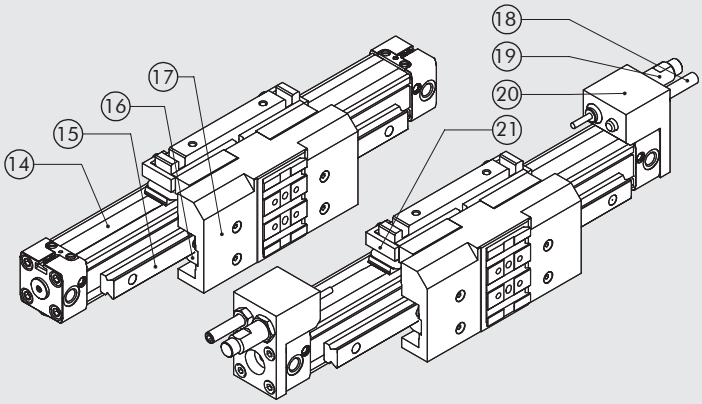
COMPONENTS

① CYLINDER HEAD: aluminium alloy
② LINER: shaped anodized aluminium alloy
③ PISTON GASKET: NBR o FKM/FPM
④ CENTRAL ELEMENT: aluminium alloy
⑤ WIPER RING: Hostaform®
⑥ OR-SEAL: FKM/FPM
⑦ PISTON: Hostaform®
⑧ CUSHIONING CONE: aluminium alloy
⑨ STATIC OR-SEAL: NBR or FKM/FPM
⑩ CARRIAGE: aluminium alloy
⑪ BOUTER STRIP: stainless steel
⑫ INNER STRIP: stainless steel
⑬ BAND SUPPORT: Hostaform®

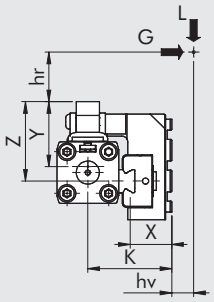


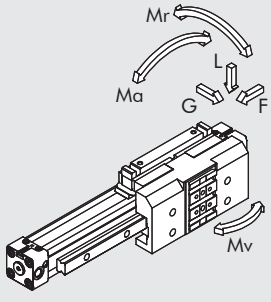
For version 275_ _ _ _ _ _ _ CNK
⑭ CYLINDER: see above
⑮ GUIDE: hardened steel
⑯ PAD: steel with hardened ball recirculation
⑰ CARRIAGE SUPPORT: anodized aluminium

For version 276_ _ _ _ _ _ _ CNK
In addition to the above details:
⑱ END-OF-STROKE STUD PIN: zinc-plated steel, complete with 2 zinc-plated steel nuts
⑲ DECELERATOR: burnished steel, complete with 2 zinc-plated or burnished steel nuts
⑳ DECELERATOR SUPPORT: anodized aluminium
㉑ BRACKET: hardened-andtempered zinc-plated steel



DIMENSIONING - MOMENTS AND FORCES





Ø	Actual force F at 6 bar [N]	Cushioning stroke [mm]	K [mm]	X [mm]	Y [mm]	Z [mm]	Max. load L [N]	Max. load G [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
16	110	15	35	16	29	33	500	500	16	15	16
25	250	21	50.5	21	44	51.5	1500	1500	100	50	100
32	420	26	59	22.5	53.5	70	3000	3000	200	100	200

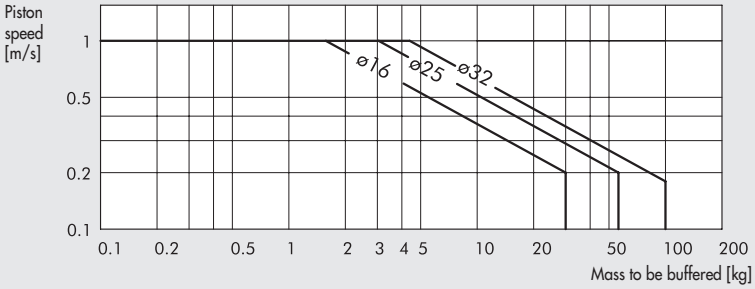
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.
$Ma = F \cdot (hr + Y)$ $Mr = G \cdot (hr + z) + L \cdot (hv + X)$ $Mv = F \cdot (K + hv)$

$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + \frac{Mv}{Mv_{max}} + \frac{L}{L_{max}} + \frac{G}{G_{max}} \leq 1$$

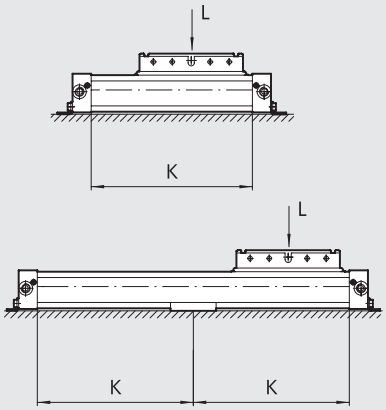
METAL WORK PNEUMATIC

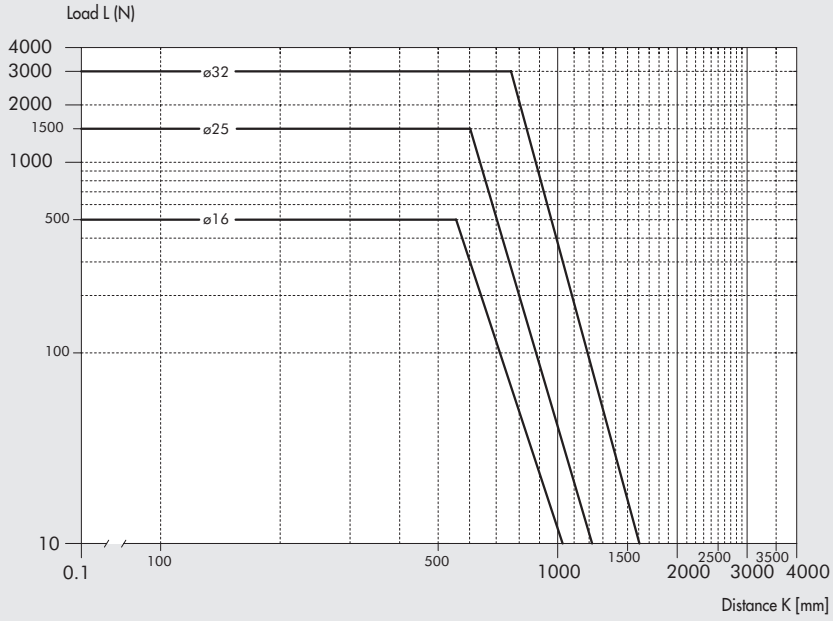
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact, which would damage it, it is necessary to annul the kinetic energy of the moving mass and the energy generated.
The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders.
The diagram shows the speeds and cushionable masses for the various diameters at a pressure of 6 bar.

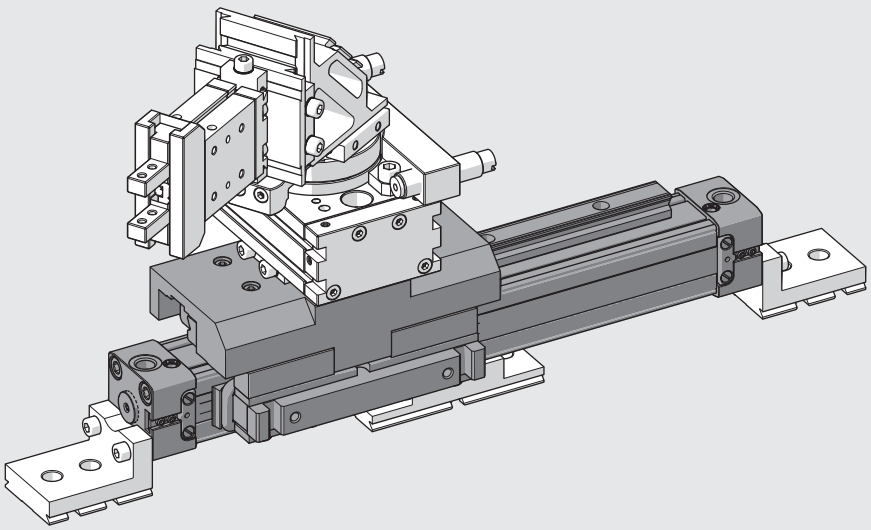


MAXIMUM LOAD BASED ON DISTANCE BETWEEN SUPPORTS



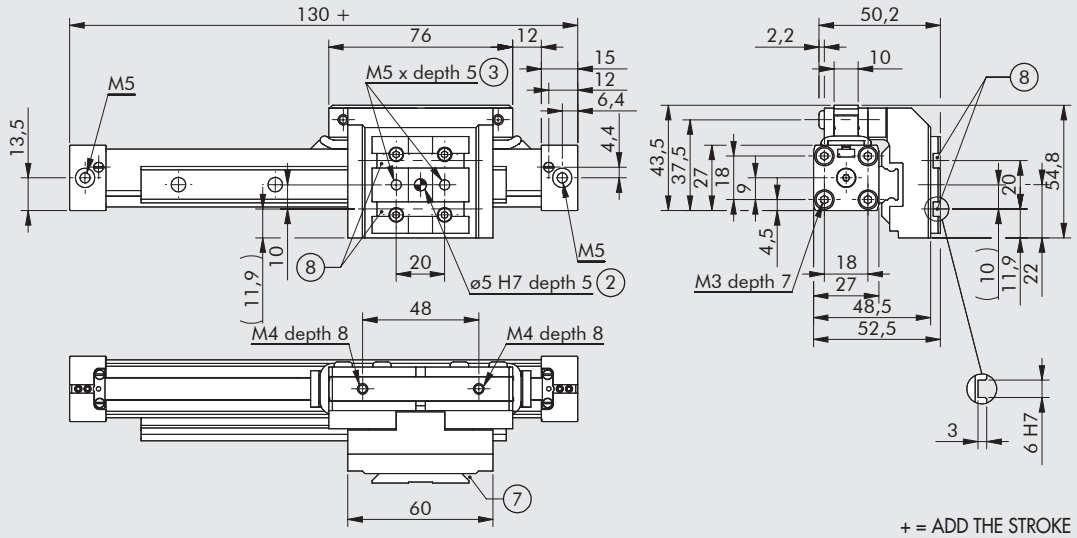


EXAMPLES OF APPLICATION



DIMENSIONS

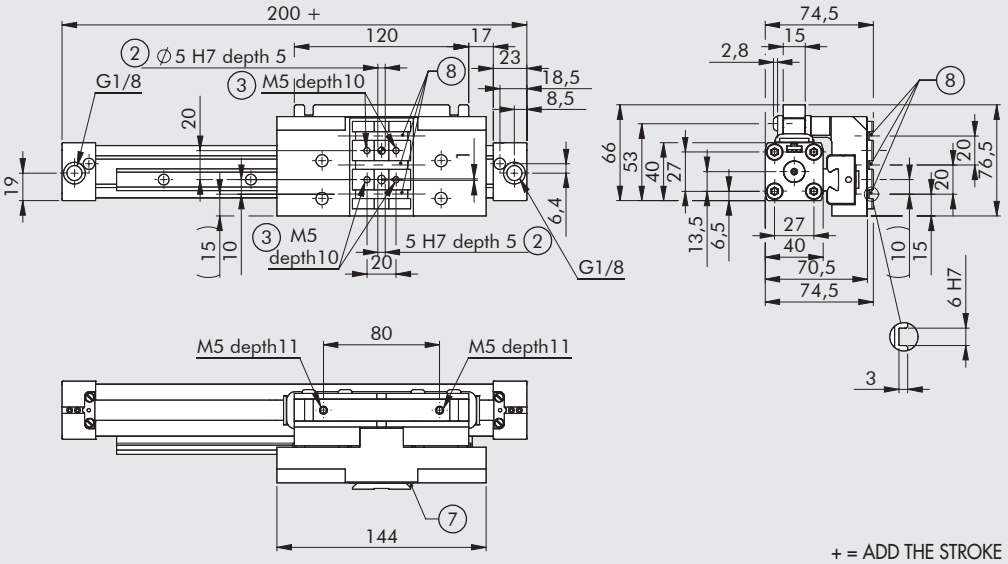
Ø 16



② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

+ = ADD THE STROKE

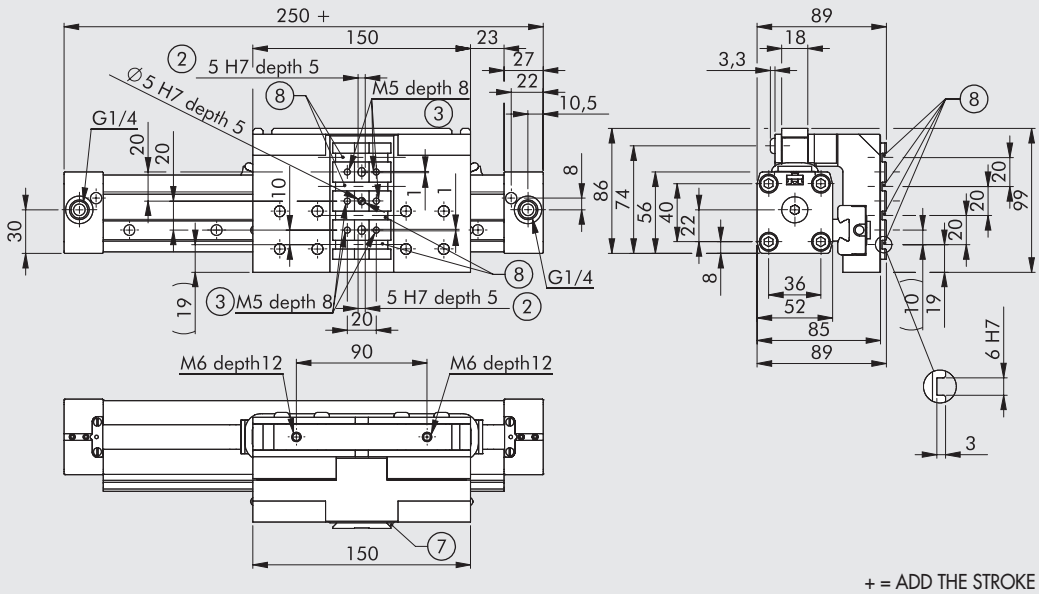
Ø 25



② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

+ = ADD THE STROKE

Ø 32



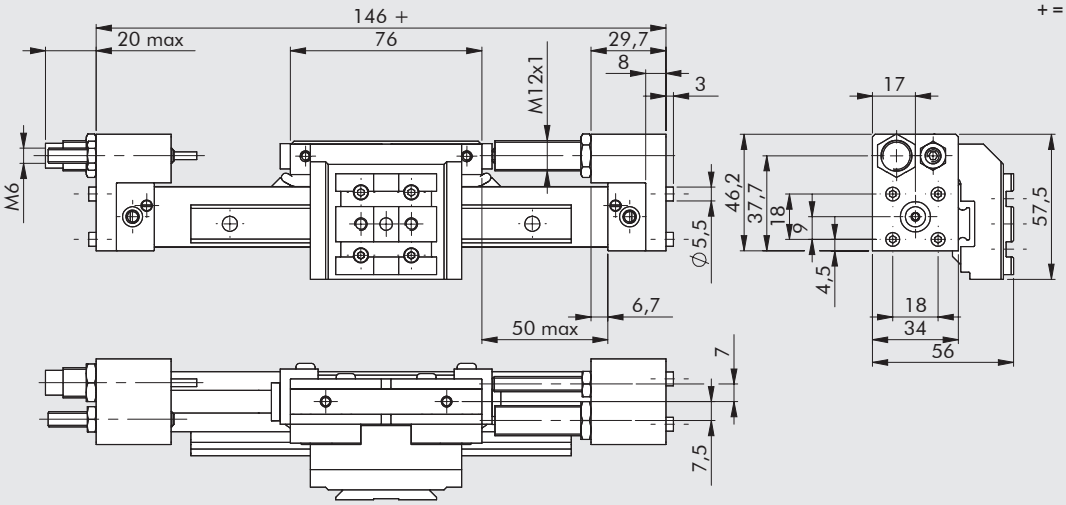
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

+ = ADD THE STROKE

DIMENSIONS OF VERSION WITH DECELERATORS

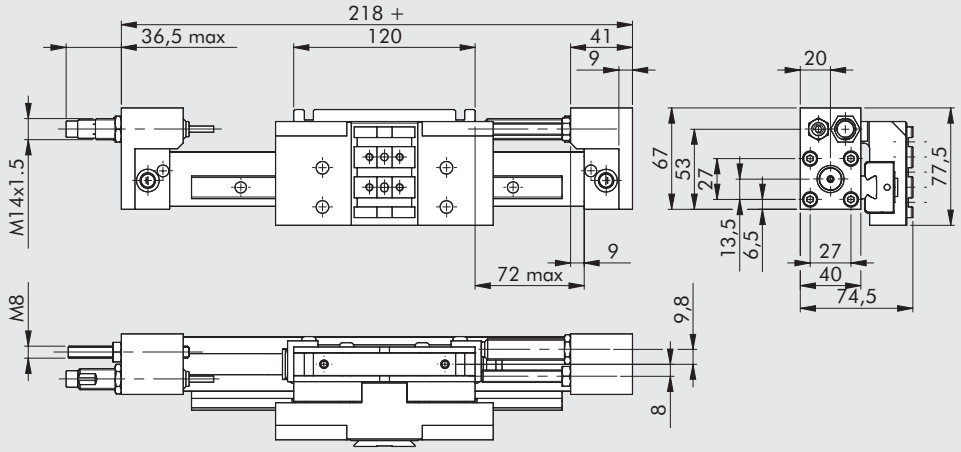
Ø 16

+ = ADD THE STROKE



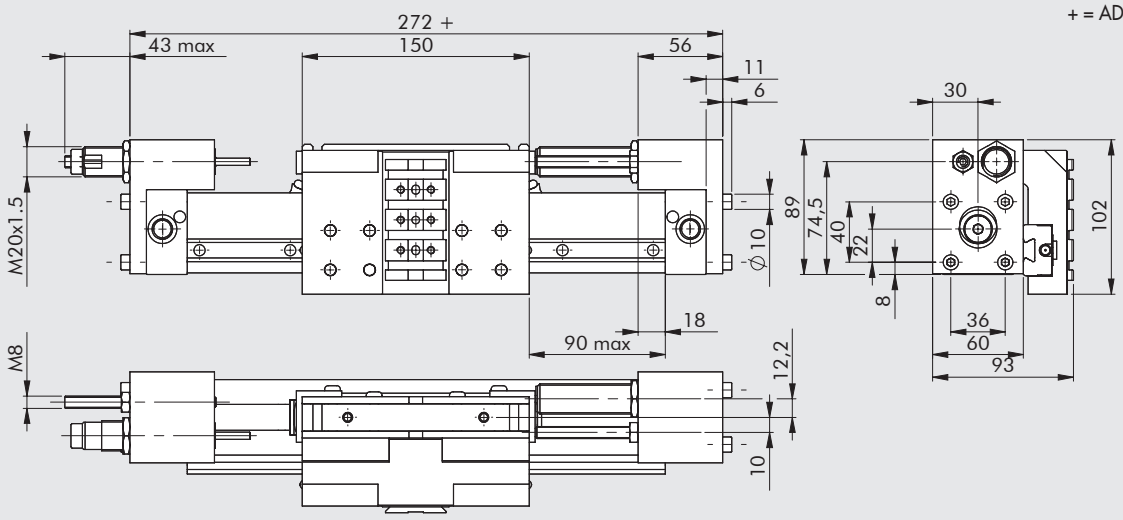
Ø 25

+ = ADD THE STROKE



Ø 32

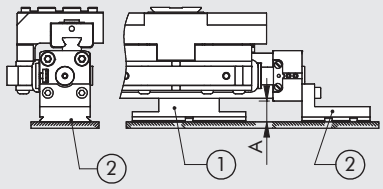
+ = ADD THE STROKE



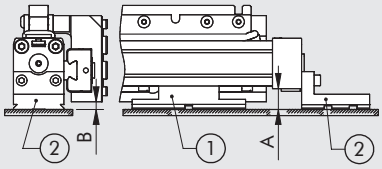
Ø	Stroke	Max. cushioning For stroke [J]	Max. cushioning For hour [J]	Max. impact force [N]	Max. thrust force [N]
16	10	4.5	14125	1000	220
25	16	18	34000	2800	530
32	22	40	53700	3750	890

ASSEMBLY DIAGRAMS

275 (horizontal)

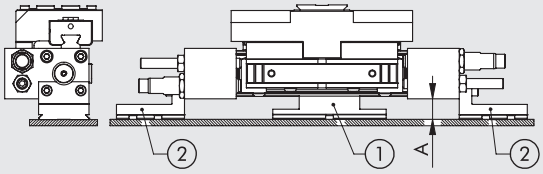


275/276 (vertical)

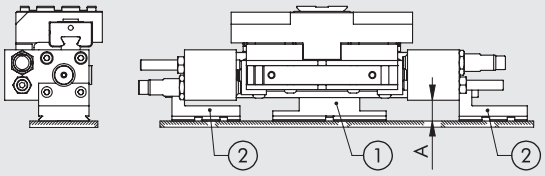


276 (horizontal)

Ø 16 - 25



Ø 32



Ø	A	Horizontal		A	B	Vertical	
		Intermediate support code (1)	Foot code (2)			Intermediate support code (1)	Foot code (2)
16	17	**W0950164004K**	**W0950167001K**	17	5.7	**W0950164004K**	**W0950167001K**
25	16.5	**W0950254004K**	**W0950257001K**	16.5	6	**W0950254004K**	**W0950257001K**
32	17.5	**W0950324004K**	**W0950327001K**	17.5	4.5	**W0950324004K**	**W0950327001K**

KEY TO CODES

CYL	27	5	0	32	0100	C	N	K
	TYPE			**BORE**	**STROKE**		**GASKETS**	**FAMILY**
	27 Rodless cylinder	**5** Dual-acting, cushioned, magnetic, with ball recirculation guides ▲ **6** Dual-acting, cushioned, with ball recirculation guides + adjustable stops and decelerators	**0** Magnetic **S** Non-magnetic ■ **G** No stick-slip	16 25 32	**Ø 16**: 100 to 1350 mm **Ø 25** and **32**: 100 to 2300 mm		**N** NBR gaskets	**K** V-Lock

■ **Use at speeds lower than 0.2 m/s to prevent bounce. Use unlubricated air only.**

▲ For use in conditions exceeding those shown in the "Diagram of speed and maximum cushionable load" on page **A3**.39.

NOTES

METAL WORK PNEUMATIC

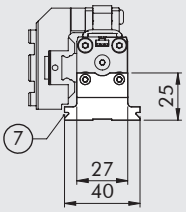
ACCESSORIES: FIXINGS

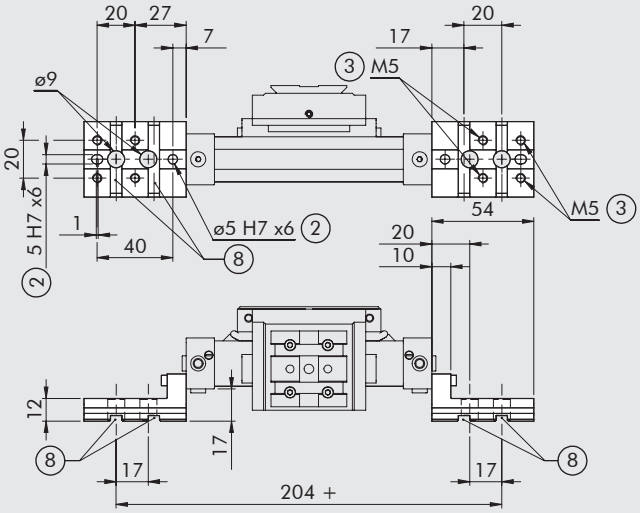
FOOT Ø 16, CODE W0950167001K

+ = ADD THE STROKE

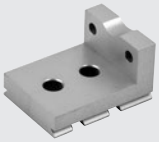
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see
chapter V-Lock adaptors
⑧ Slot for "V-Lock" precision key

Weight: 68 g
Note: One element per pack, complete with 2 short screws for fixing to the head and 2 long screws for use when a decelerator support is prese





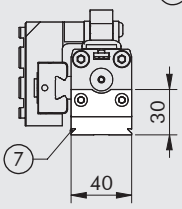
FOOT Ø 25, CODE W0950257001K

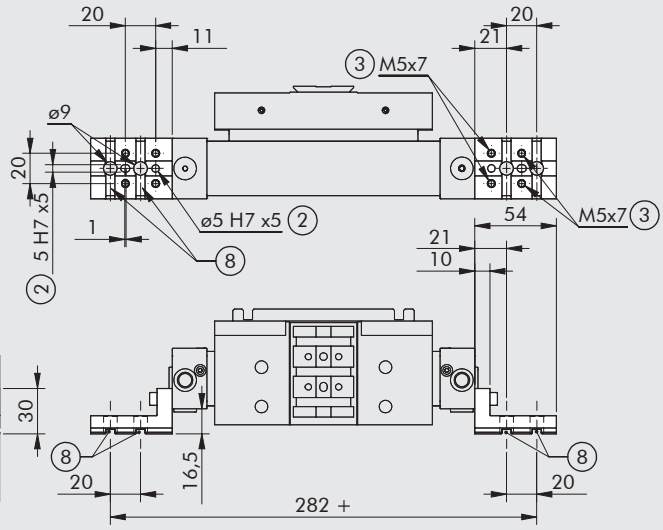


+ = ADD THE STROKE

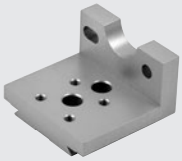
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see
chapter V-Lock adaptors
⑧ Slot for "V-Lock" precision key

Weight: 94 g
Note: One element per pack, complete with 2 short screws for fixing to the head and 2 long screws for use when a decelerator support is prese





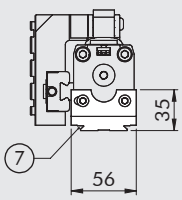
FOOT Ø 32, CODE W0950327001K

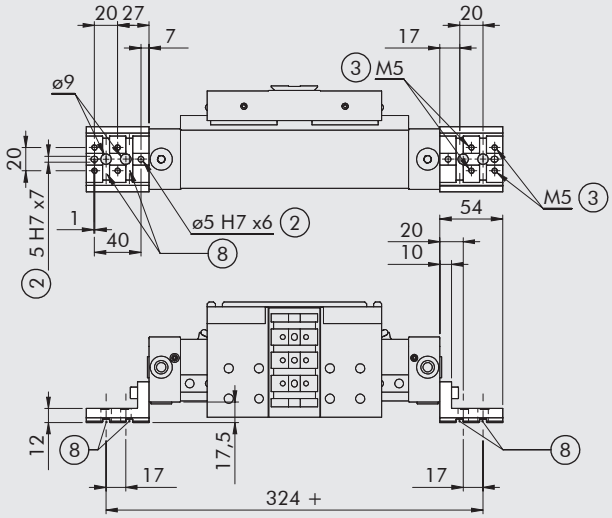


+ = ADD THE STROKE

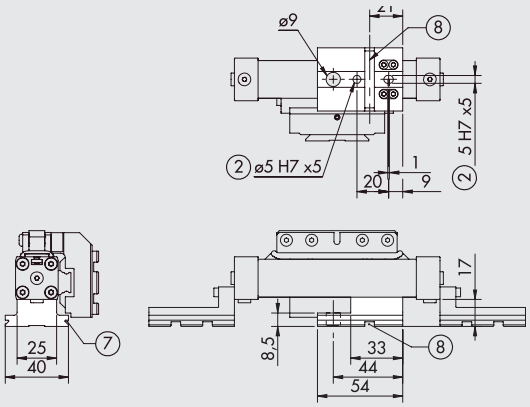
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see
chapter V-Lock adaptors
⑧ Slot for "V-Lock" precision key

Weight: 148 g
Note: One element per pack, complete with 2 short screws for fixing to the head and 2 long screws for use when a decelerator support is prese





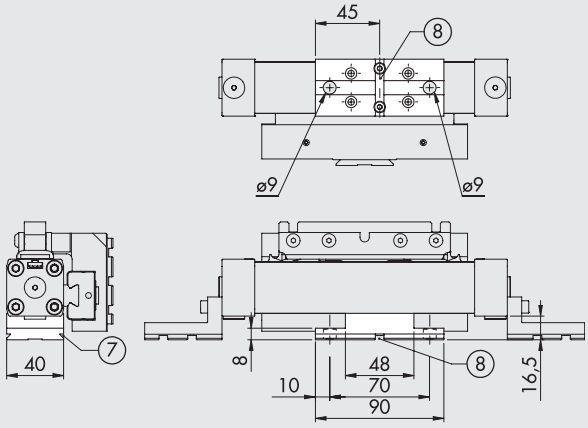
INTERMEDIATE SUPPORT Ø 16, CODE W0950164004K



② Holes for centring pins
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

Weight: 70 g
Note: 1 per pack, complete with 4 screws.
To fix it to the barrel, make the holes indicated in the instruction together with the accessorie.
Use only as a support and not as a fixture

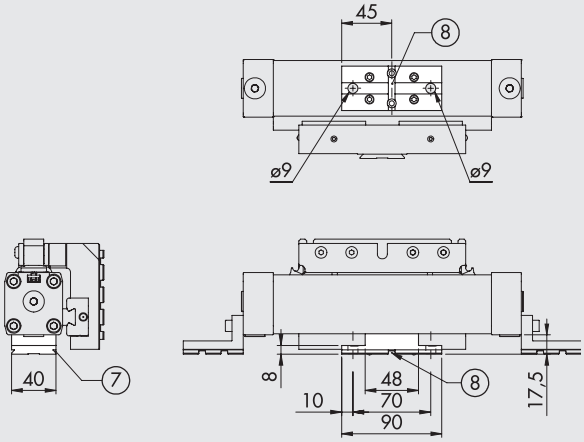
INTERMEDIATE SUPPORT Ø 25, CODE W0950254004K



⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

Weight: 127 g
Note: Plate supplied with 2 screws.
To fix it to the barrel, make the holes indicated in the instruction together with the accessorie.
Use only as a support and not as a fixture

INTERMEDIATE SUPPORT Ø 32, CODE W0950324004K



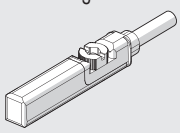
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

Weight: 136 g
Note: 1 support + 4 screws and 4 fixing plates.
Use only as a support and not as a fixture

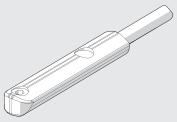
ACCESSORIES: MAGNETIC SENSORS

RETRACTING SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing

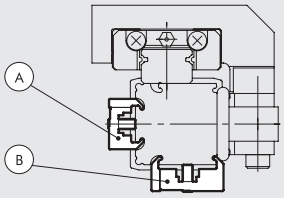


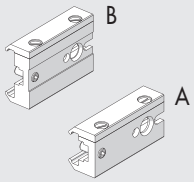
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

Ø 16 SENSOR SUPPORT

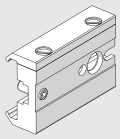




Code Sensor support	Description Sensor support	Type Sensor support	Mounting on the carriage opposite side	Mounting on the guide opposite side
0950164003	Sensor support short	A	•	
0950164001	Sensor support std	B		•

Note: Supplied cmplete with 2 screw, 1 pin

Ø 25 SENSOR SUPPORT

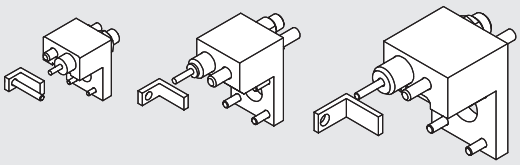


Code	Description
0950164001	Sensor support STD

Note: Supplied with 1 stud pin, 2 screws

ACCESSORIES: DECELERATORS

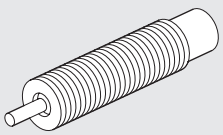
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



Code	Description	Weight [g]
0950164002K	Rodless cylinder limit switch and shock absorbers Ø 16 V-Lock	133
0950254002K	Rodless cylinder limit switch and shock absorbers Ø 25 V-Lock	267
0950324002K	Rodless cylinder limit switch and shock absorbers Ø 32 V-Lock	610

Note: Kit contents: 1 decelerator support, 1 decelerator, 1 decelerator nut, 1 stop grub screw, 1 grub screw nut, 1 bracket, 1 bracket screw (for Ø 16 only), 4 support locking screws.

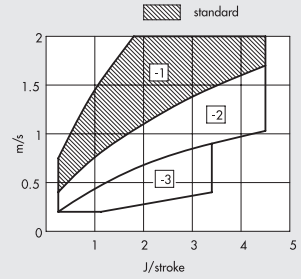
SHOCK ABSORBERS



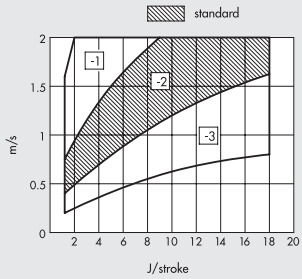
Code	Description	Ø
0950004003	Shock absorbers ECO15 MF1 + nut M12x1	16
0950004004	Shock absorbers ECO25 MC2 + nut M14x1.5	25
0950004005	Shock absorbers ECO50 MC2 + nut M20x1.5	32

GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS

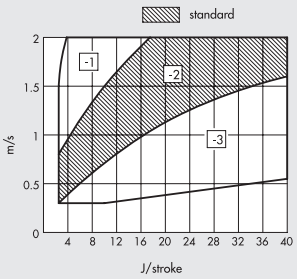
Ø 16



Ø 25



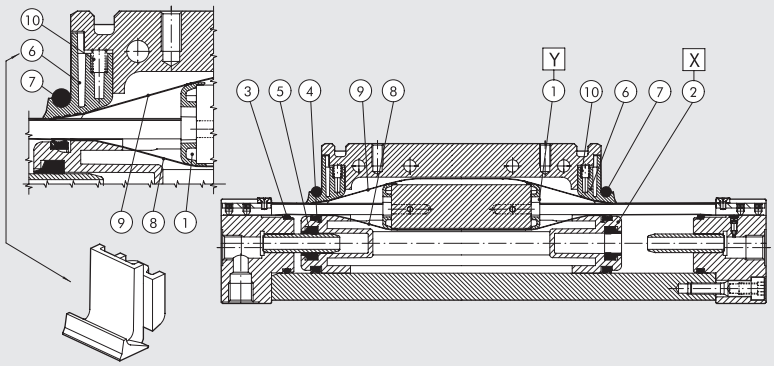
Ø 32

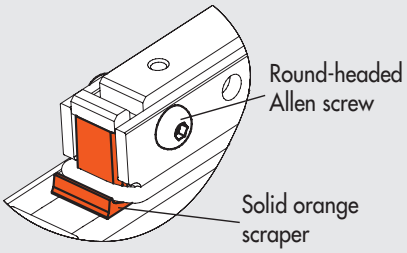


The dotted areas indicate that the SHOCK ABSORBERS is supplied standard. Other options can be selected depending on the speed [m/sec] and the maximum work force [J/stroke] to dissipate at each stroke. Refer to the diagrams above to select the correct option.

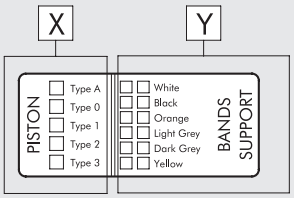
SPARES

① Band support kit
② Piston kit
③ ④ ⑤ ⑥ ⑦ ⑩ NBR gaskets Kit (FKM/FPM for ⑦)
⑧ ⑨ Bands Kit (inner/outer)





Spare parts label on one cylinder side



BANDS SUPPORT KIT POS 1 (Y)

Ø	Code White	Code Black	Code Orange	Code Light grey	Code Dark grey	Code Yellow
16	0090165080	0090165081	0090165082	0090165083	0090165084	0090165085
25	0090255080	0090255081	0090255082	0090255083	0090255084	0090255085
32	0090325080	0090325081	0090325082	0090325083	0090325084	0090325085

PISTON KIT POS 2 (X)

Ø	Code Type 0 (0 rings)	Code Type 1 (1 rings)	Code Type 2 (2 rings)	Code Type 3 (3 rings)	Code Type A (4 rings)	Code Yellow
16	0090165015	0090165016	0090165017	0090165018	–	0090165085
25	0090255015	0090255016	0090255017	0090255018	0090255019	0090255085
32	0090325015	0090325016	0090325017	0090325018	0090325019	0090325085

BANDS KIT (INNER AND OUTER) POS. 8-9

Ø	Code
16	0090166_ _ _ _
25	0090256_ _ _ _
32	0090326_ _ _ _

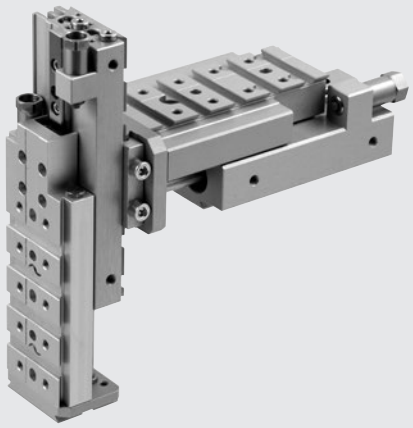
Complete the code with the 4 figure cylinder stroke.

NBR GASKET KIT POS. 3-4-5-6-7-10

Ø	Code
16	0090165022
25	0090255022
32	0090325022

COMPACT PRECISION SLIDE SERIES S14K

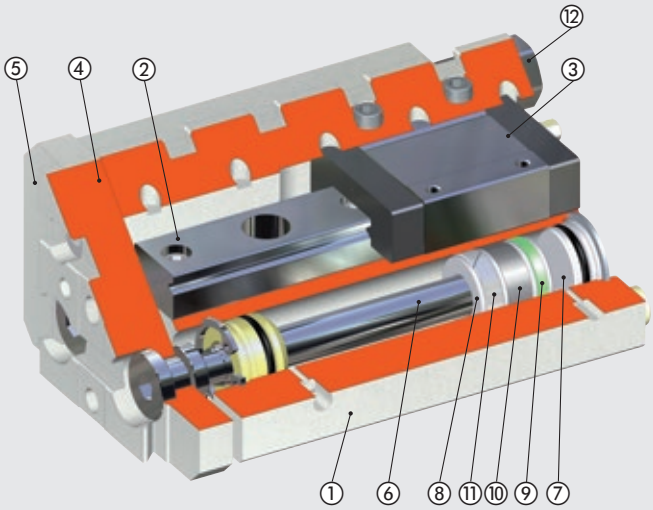
Flat, compact precision slides with two cylinders.
The fixed and moving parts are moved by a sturdy ball recirculation carriage running on hardened guides. Elastic mechanical stop or shock absorbers are used to achieve adjustable stop at the end of the stroke.
A three-position version is available allowing an intermediate stop.
Slots are provided in the body for end-of-stroke sensors.



TECHNICAL DATA		S14K-8	S14K-16	S14K-25
Operating pressure	bar	2 to 8		
	psi	29 to 116		
Temperature range	°C	–10 to +80		
Fluid		Dry or lubricated 10 µm filtered compressed air. Lubrication, if used, must be continuous		
Maximum speed	m/s	0.8 (we always suggest to use micro regulator)	0.8	0.8
Versions		With shock absorbers – With elastic mechanical stop		
Bore		2 x Ø 8	2 x Ø 16	2 x Ø 25
Piston rod diameter	mm	4	8	12
Strokes	mm	10, 20, 30, 40, 50, 80, 100	10, 20, 30, 40, 50, 80, 100, 125, 150	10, 20, 30, 40, 50, 80, 100, 125, 150, 200
Stroke reduction by adjusting the decelerators retraction	mm	16 extension / 16 retraction	12 extension / 12 retraction	30 extension / 30 retraction
Stroke reduction by adjusting the buffers retraction	mm	8 extension / 8 retraction	10 extension / 10 retraction	15 extension / 15 retraction
Maximum impact energy with hydraulic decelerators	J	2	5	20
Maximum impact energy with buffers	J	0.15	0.25	0.5
Sensors		Sensors Magnetic Hall or Reed		
Theoretical thrust force at 6 bar	N	60	240	589
Theoretical pull force at 6 bar	N	46	180	453
Repeatability in stop positions	mm	0.02 (with shock absorbers); 0.02 (with buffers and 5 bar minimum pressure)		
Monitoring position		Any		
Notes		Lubrication recommended: every 2 million cycles for strokes below 100 mm and 1 million for longer strokes (grease code 9910506)		

COMPONENTS

① SLIDE BODY: anodized aluminium
② GUIDE: hardened steel
③ CARRIAGE: recirculating ball bearings
④ MOVING PART: anodized aluminium
⑤ FRONT PLATE: anodized aluminium
⑥ PISTON ROD: stainless steel
⑦ END CAP: brass
⑧ PISTON: aluminium
⑨ GASKETS: polyurethane/NBR
⑩ MAGNET: plastoferrite/plastoneodymium
⑪ GUIDE STRIP: special technopolymer
⑫ STOP: stainless steel



WEIGHTS OF SLIDES AND OF MOVING MASSES

S14K Ø 8

Stroke [mm]	Total slide weight [kg]	Masses in movement [kg]
10	0.341	0.162
20	0.337	0.162
30	0.335	0.162
40	0.369	0.178
50	0.430	0.208
80	0.526	0.148
100	0.591	0.174

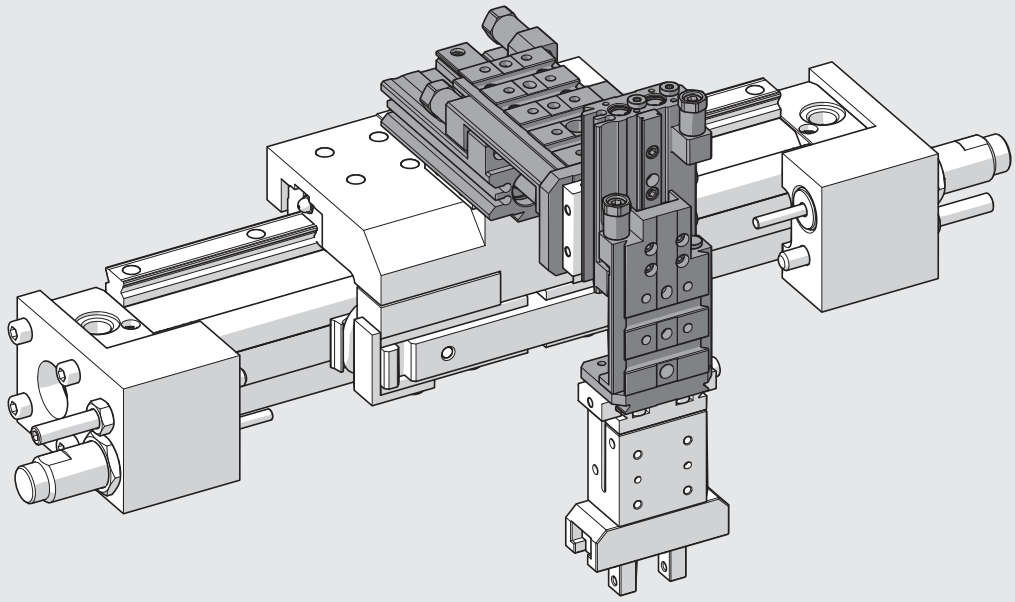
S14K Ø 16

Stroke [mm]	Total slide weight [kg]	Masses in movement [kg]
10	0.783	0.386
20	0.777	0.386
30	0.773	0.386
40	0.839	0.413
50	0.905	0.436
80	1.110	0.531
100	1.363	0.648
125	1.533	0.721
150	1.678	0.773

S14K Ø 25

Stroke [mm]	Total slide weight [kg]	Masses in movement [kg]
10	2.582	1.137
20	2.570	1.137
30	2.561	1.137
40	2.548	1.137
50	2.705	1.198
80	3.143	1.367
100	3.434	1.469
125	3.788	1.608
150	4.180	1.748
200	4.914	2.026

EXAMPLES OF APPLICATION



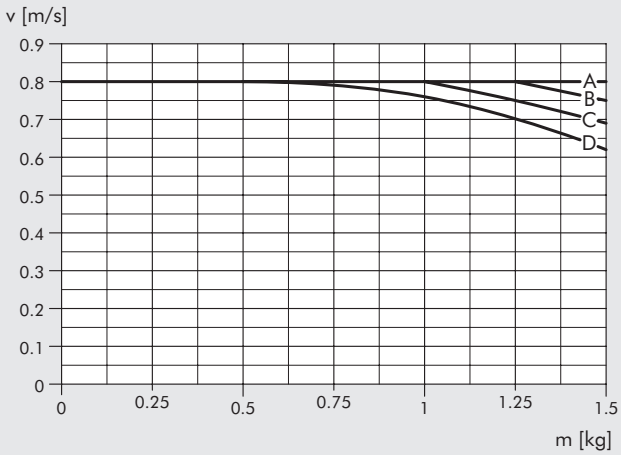
MAXIMUM LOADS AND SPEEDS

The graphs below show the maximum recommended movable loads (masses) [kg] as a function of the average traverse speed [m/s], defined as stroke/time, slide position (horizontal/vertical) and supply pressure.
The following stop versions are available:
- buffer: for lightweight applications, with a lower amount of energy to cushion (relatively low speeds and loads);
- shock absorbers: for heavy-duty applications, with more energy to cushion.

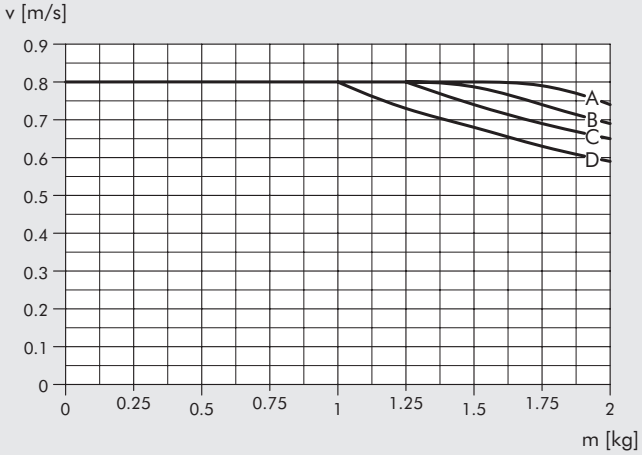
METAL WORK PNEUMATIC

MAXIMUM LOADS: VERSIONS WITH SHOCK ABSORBERS

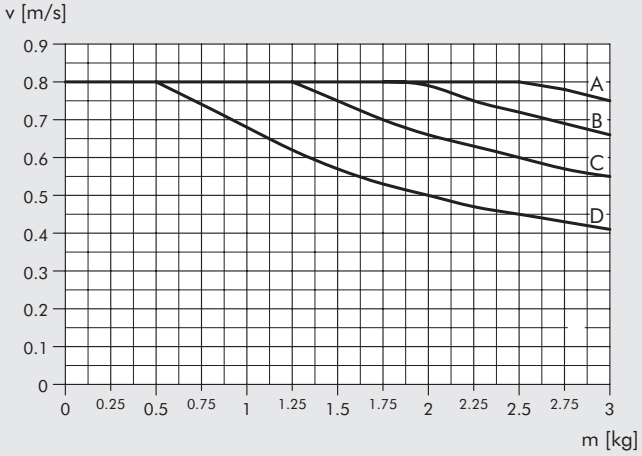
S14K **Ø 8** - Vertical orientation



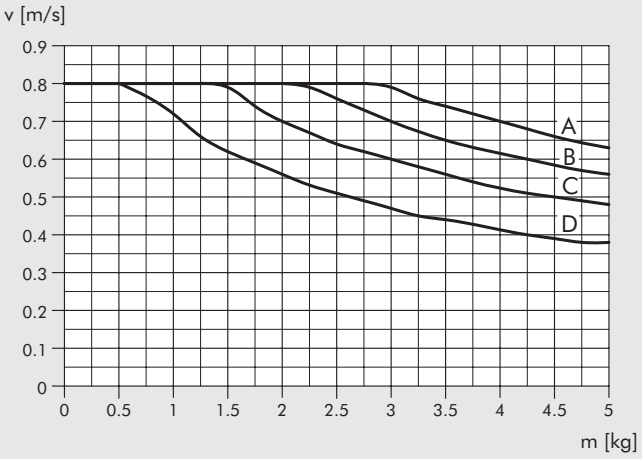
S14K **Ø 8** - Horizontal orientation



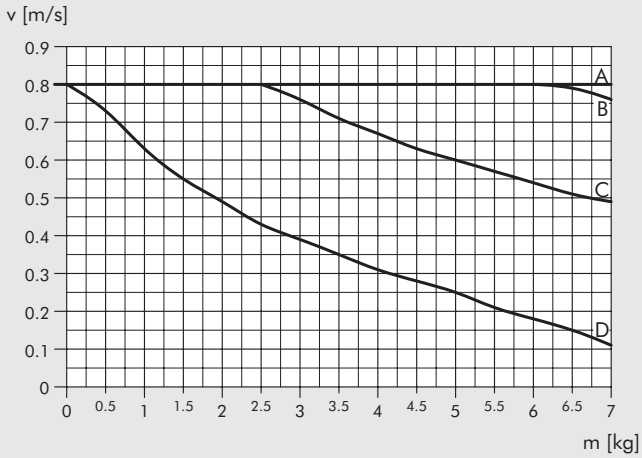
S14K **Ø 16** - Vertical orientation



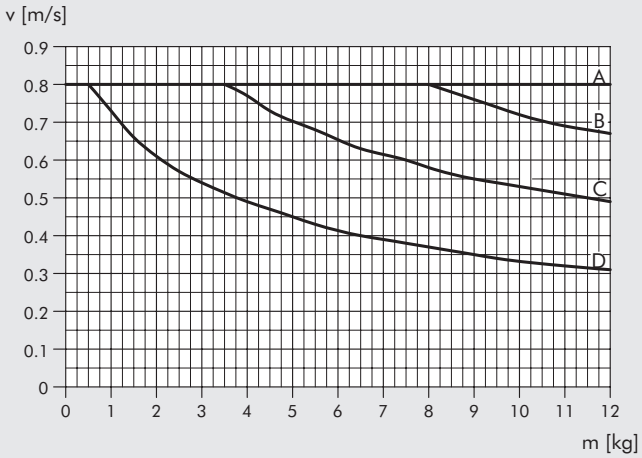
S14K **Ø 16** - Horizontal orientation



S14K **Ø 25** - Vertical orientation



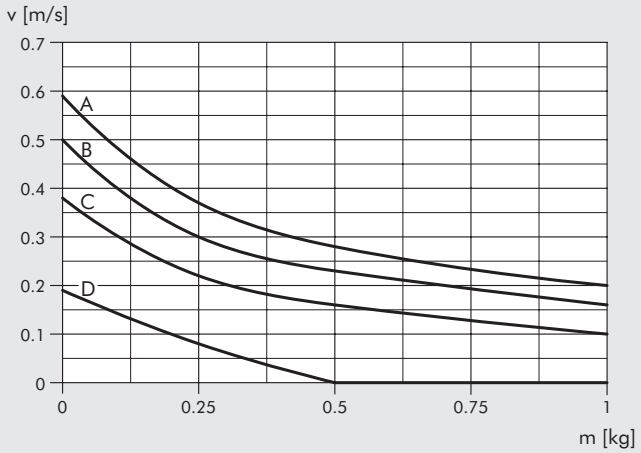
S14K **Ø 25** - Horizontal orientation



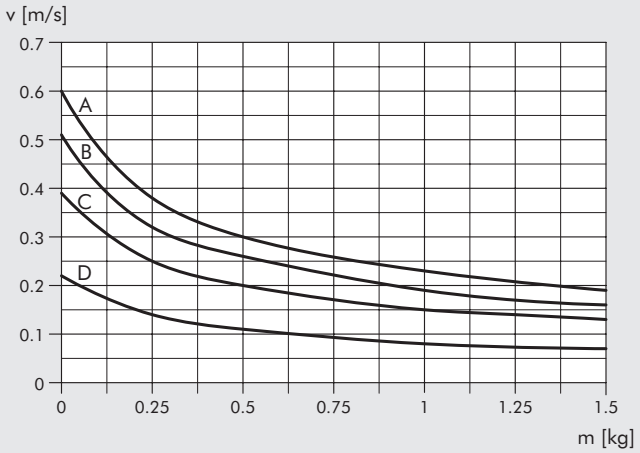
A = 2 bar B = 4 bar C = 6 bar D = 8 bar

MAXIMUM LOADS: VERSIONS WITH ELASTIC MECHANICAL STOP

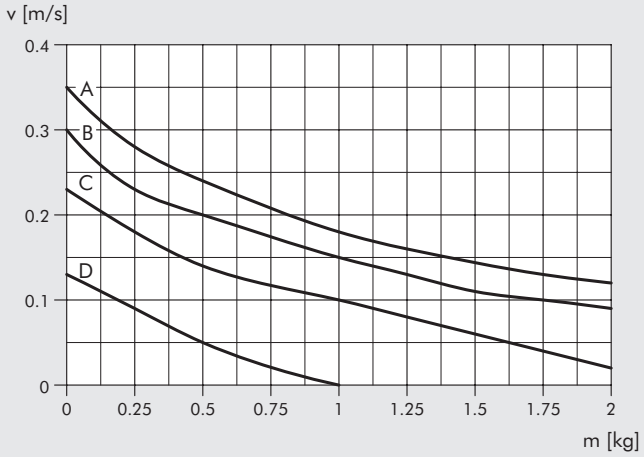
S14K **Ø 8** - Vertical orientation



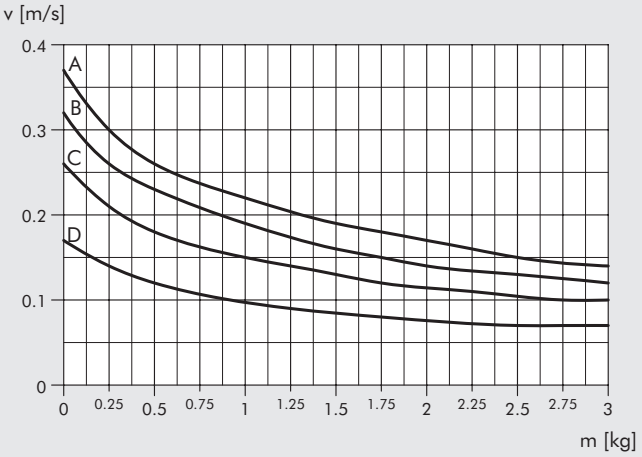
S14K **Ø 8** - Horizontal orientation



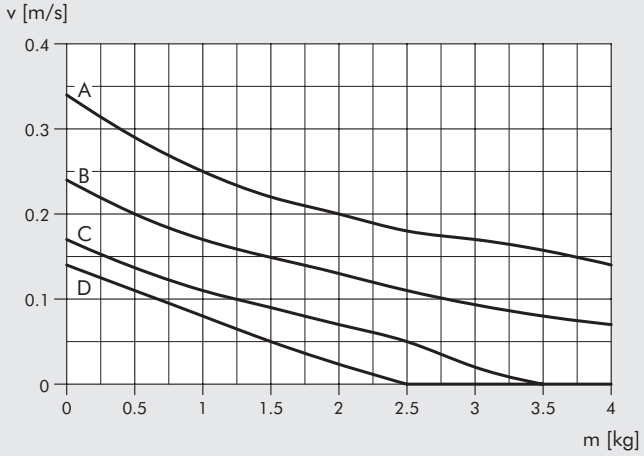
S14K **Ø 16** - Vertical orientation



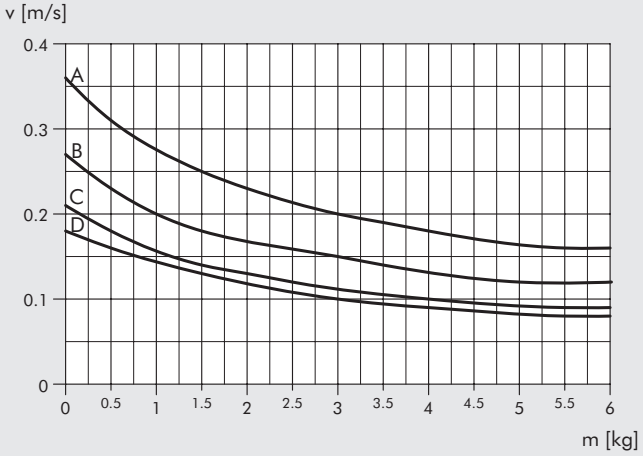
S14K **Ø 16** - Horizontal orientation



S14K **Ø 25** - Vertical orientation



S14K **Ø 25** - Horizontal orientation



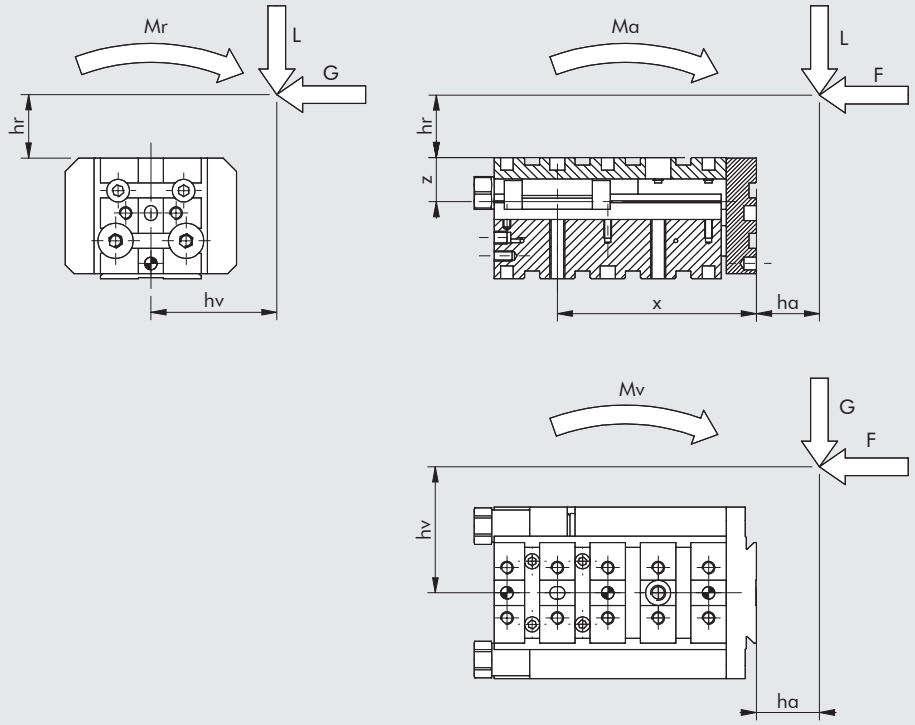
A = 2 bar B = 4 bar C = 6 bar D = 8 bar

METAL WORK PNEUMATIC

STATIC FORCES AND MOMENTS

To prevent the recirculating ball guide from getting damaged, the maximum static loads and moments applied must meet the following equations, where the lengths have to be given in metres.

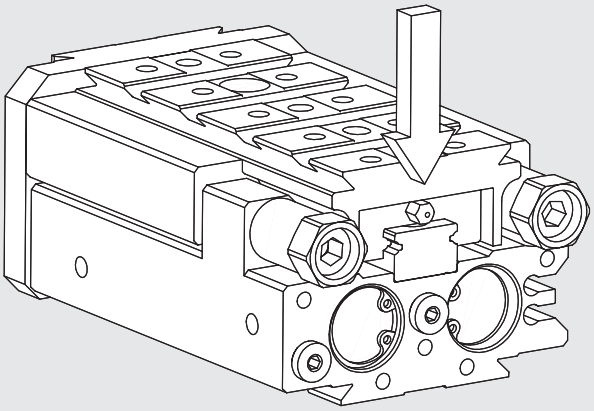
$$\frac{Ma}{Ma\ max} + \frac{Mr}{Mr\ max} + \frac{Mv}{Mv\ max} + \frac{L}{L\ max} + \frac{G}{G\ max} \leq 1$$



Sum of the moments, with the signs shown in the example:
Mr = L · hv - G · (hr+z)
Ma = -F · (hr+z) + L · (ha+x)
Mv = -F · hv + G · (ha+x)

Ø	Stroke [mm]	X [mm]	Z [mm]	G max [N]	L max [N]	Mr max [Nm]	Ma max [Nm]	Mv max [Nm]
8	10	61	14	309.1	368.0	1.8	1.3	1.1
	20	61	14	309.1	368.0	1.8	1.3	1.1
	30	61	14	309.1	368.0	1.8	1.3	1.1
	40	71	14	309.1	368.0	1.8	1.3	1.1
	50	83.5	14	398.2	474.1	2.7	2.7	2.2
	80	113.5	14	398.2	474.1	2.7	2.7	2.2
	100	133.5	14	398.2	474.1	2.7	2.7	2.2
16	10	67	17.5	962.6	1145.9	10.7	9.1	7.7
	20	67	17.5	962.6	1145.9	10.7	9.1	7.7
	30	67	17.5	962.6	1145.9	10.7	9.1	7.7
	40	79	17.5	962.6	1145.9	10.7	9.1	7.7
	50	79	17.5	962.6	1145.9	10.7	9.1	7.7
	80	119	17.5	962.6	1145.9	10.7	9.1	7.7
	100	146.5	17.5	962.6	1145.9	10.7	9.1	7.7
	125	171.5	17.5	962.6	1145.9	10.7	9.1	7.7
	150	196.5	17.5	962.6	1145.9	10.7	9.1	7.7
25	10	98	22	1423.1	1694.1	43.6	18	15.1
	20	98	22	1423.1	1694.1	43.6	18	15.1
	30	98	22	1423.1	1694.1	43.6	18	15.1
	40	98	22	1423.1	1694.1	43.6	18	15.1
	50	108	22	1423.1	1694.1	43.6	18	15.1
	80	138	22	1423.1	1694.1	43.6	18	15.1
	100	158	22	1423.1	1694.1	43.6	18	15.1
	125	183	22	1423.1	1694.1	43.6	18	15.1
	150	208	22	1423.1	1694.1	43.6	18	15.1
	200	258	22	1423.1	1694.1	43.6	18	15.1

LUBRICATION INSTRUCTIONS



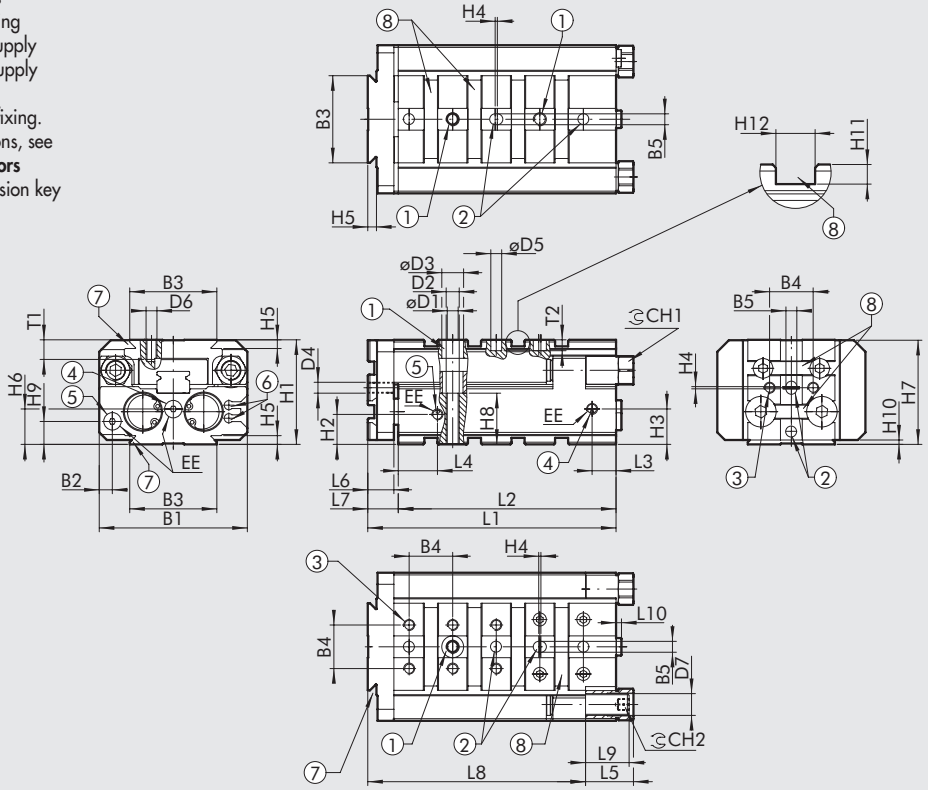
Ball recirculation carriages are supplied pre-lubricated.
They can be re-greased when necessary using the hole (Ø 8) or greasing Nipple (Ø 16 and Ø 25) provided.
The lubrication frequency depends on the environmental and operating conditions.
To ensure smooth movement and long life, we recommend an average lubrication interval of 2 million cycles for strokes less than 100 mm and 1 million for longer strokes.
A suitable bearing lubrication grease must be used (code 9910506).

NOTES

METAL WORK PNEUMATIC

DIMENSIONS

① Through holes for fixing actuators
② Holes for centring pins
③ Threaded holes for fixing
④ Piston rod extension supply
⑤ Piston rod retraction supply
⑥ Sensor fixing slots
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key



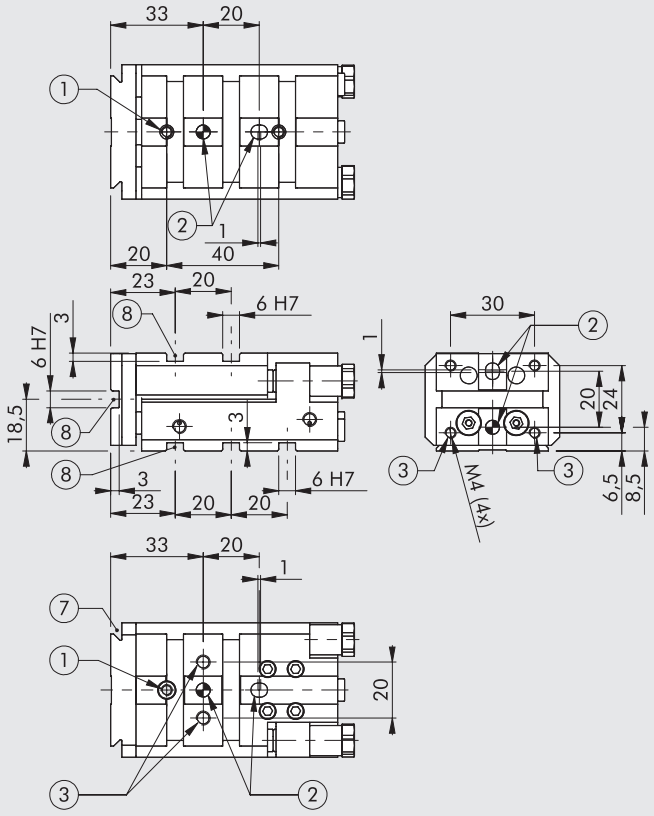
Ø	B1	B2	B3	B4	B5H7	øD1	D2	øD3	D4	øD5H7	D6	D7	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12H7	T1	T2	CH1	CH2
8	48	7	40	-	5	3.3	M4	6	-	5	M5	M8x1	M5	35	8.8	11.3	1	4	10	34.8	17	7.5	2	3	6	6	5	11	4
16	68	6	40	20	5	5	M6	9.5	M5	5	M5	M10x1	M5	48	13.8	16.3	1	4	16.3	47.8	23.5	10.5	2	3	6	9	5	13	5
25	106	7.5	40	20	5	6.8	M8	11	M5	5	M5	M14x1.5	1/8"	64	17.3	23	1	4	17	63.8	35	12	2	3	6	10	5	18	6

ACCORDING TO THE STROKE

Ø	Stroke	L1	L2	L3	L4	L5	L6	L7	L8	L9		L10
										buffer decel.	shock absorbers	
	10	81	70	10	13.5	16	9	11	71	15	27.9	2.5
	20	81	70	10	13.5	16	9	11	71	15	27.9	2.5
	30	81	70	10	13.5	16	9	11	71	15	27.9	2.5
8	40	91	80	10	13.5	16	9	11	81	15	27.9	2.5
	50	106	95	10	13.5	16	9	11	96	15	27.9	2.5
	80	136	125	10	13.5	16	9	11	126	15	27.9	2.5
	100	156	145	10	13.5	16	9	11	146	15	27.9	2.5
	10	109	95	11	18	22	12	14	95	20	30.7	2.5
	20	109	95	11	18	22	12	14	95	20	30.7	2.5
	30	109	95	11	18	22	12	14	95	20	30.7	2.5
	40	119	105	11	18	22	12	14	105	20	30.7	2.5
16	50	129	115	11	18	22	12	14	115	20	30.7	2.5
	80	159	145	11	18	22	12	14	145	20	30.7	2.5
	100	179	165	11	18	22	12	14	165	20	30.7	2.5
	125	204	190	11	18	22	12	14	190	20	30.7	2.5
	150	229	215	11	18	22	12	14	215	20	30.7	2.5
	10	138	120	16.5	25	30	16	18	118	28	65.7	2.5
	20	138	120	16.5	25	30	16	18	118	28	65.7	2.5
	30	138	120	16.5	25	30	16	18	118	28	65.7	2.5
	40	138	120	16.5	25	30	16	18	118	28	65.7	2.5
25	50	148	130	16.5	25	30	16	18	128	28	65.7	2.5
	80	178	160	16.5	25	30	16	18	158	28	65.7	2.5
	100	198	180	16.5	25	30	16	18	178	28	65.7	2.5
	125	223	205	16.5	25	30	16	18	203	28	65.7	2.5
	150	248	230	16.5	25	30	16	18	228	28	65.7	2.5
	200	298	280	16.5	25	30	16	18	278	28	65.7	2.5

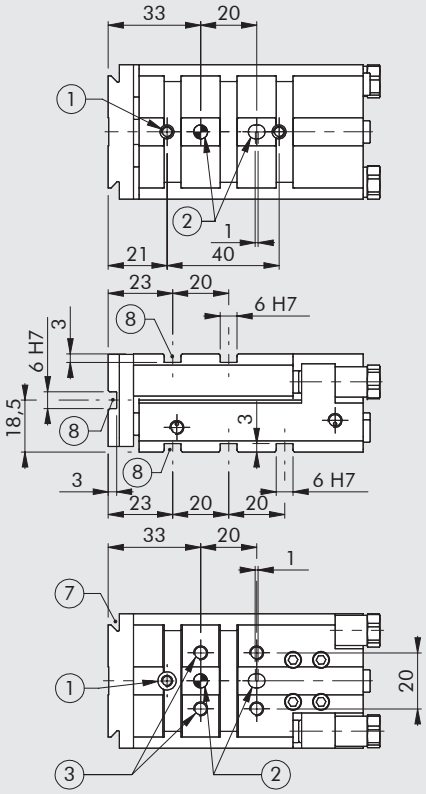
DIMENSIONS OF SLIDE S14K Ø 8

Ø 8 stroke 10; 20; 30 mm

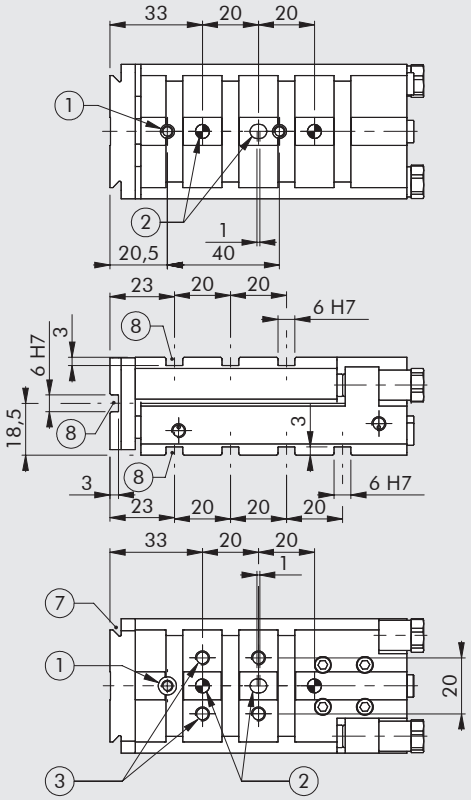


① Through holes for fixing actuators
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

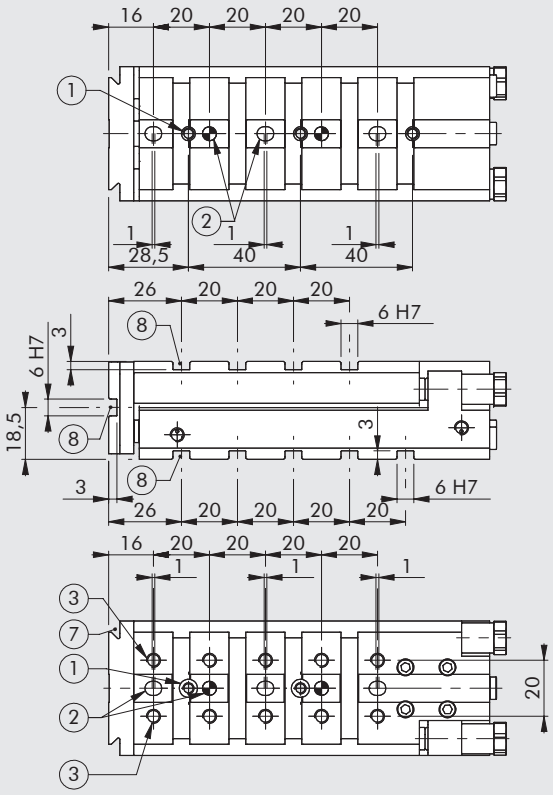
Ø 8 stroke 40 mm



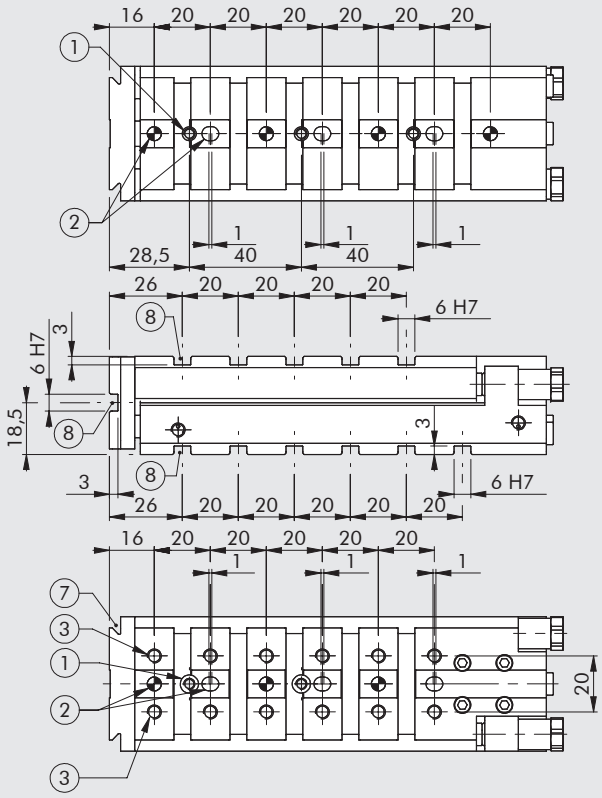
Ø 8 stroke 50 mm



Ø 8 stroke 80 mm



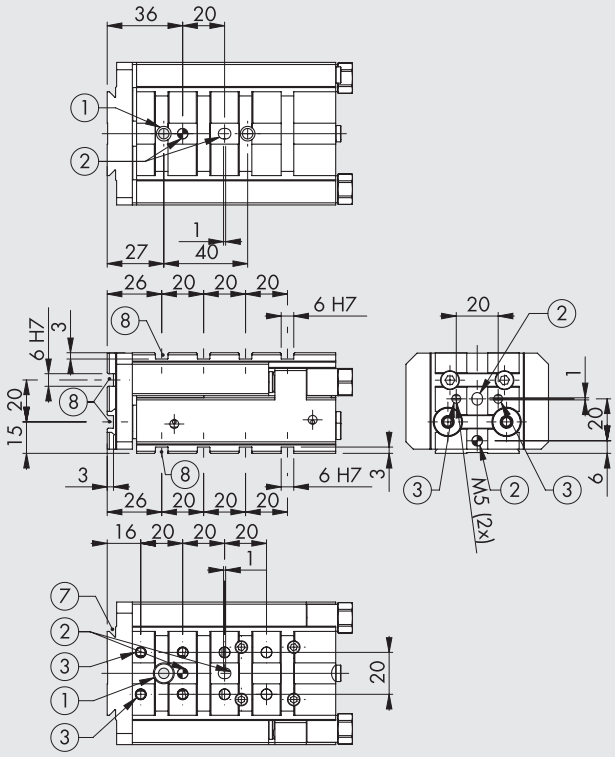
Ø 8 stroke 100 mm



NOTES

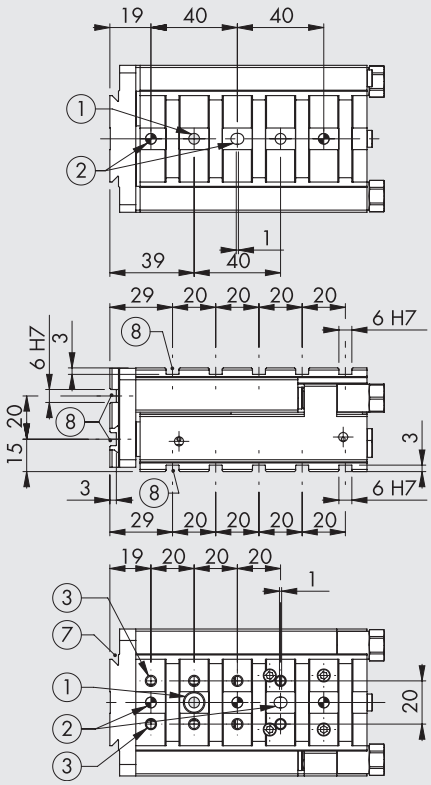
DIMENSIONS OF SLIDE S14K Ø 16

Ø 16 stroke 10; 20; 30 mm

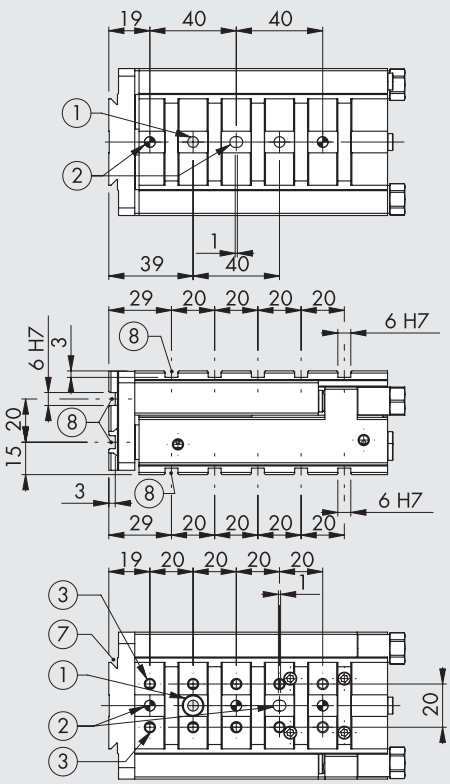


① Through holes for fixing actuators
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

Ø 16 stroke 40 mm

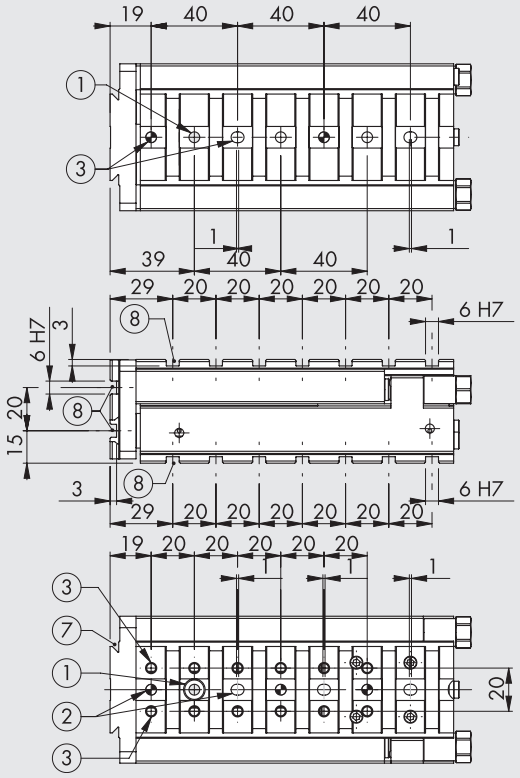


Ø 16 stroke 50 mm

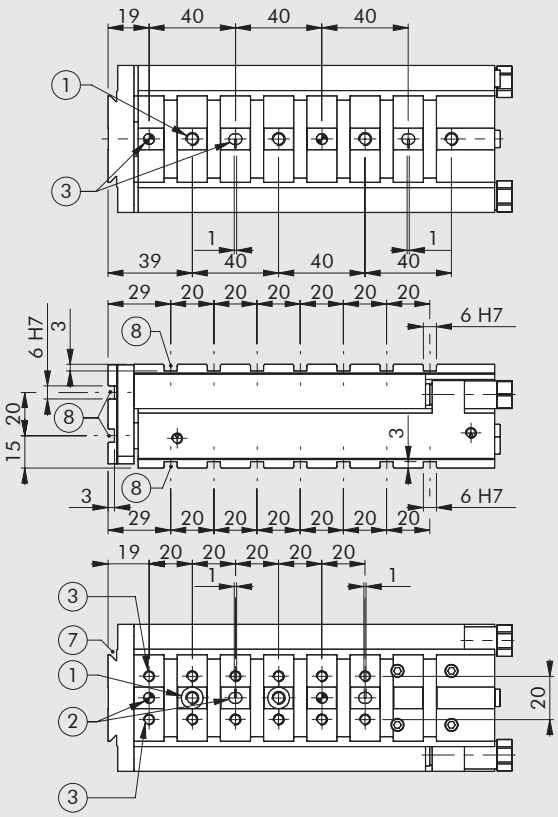


METAL WORK PNEUMATIC

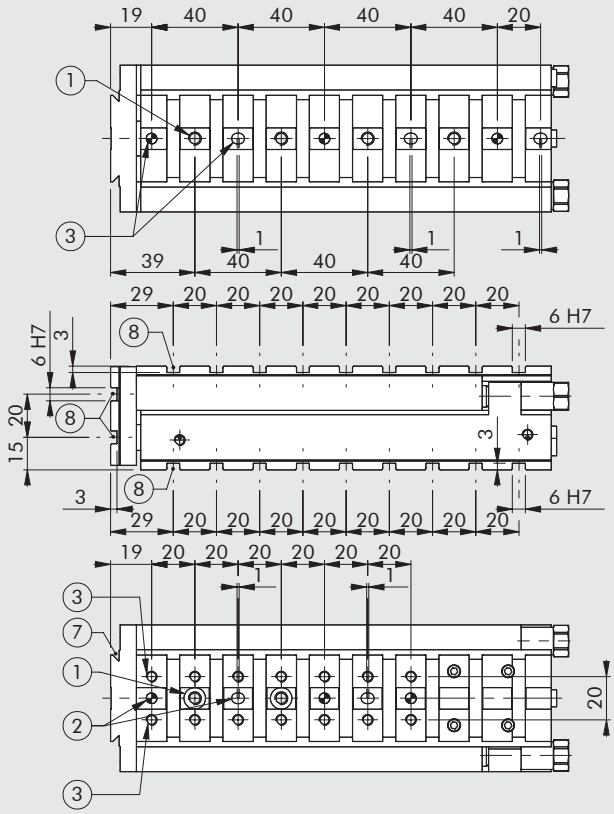
Ø 16 stroke 80 mm



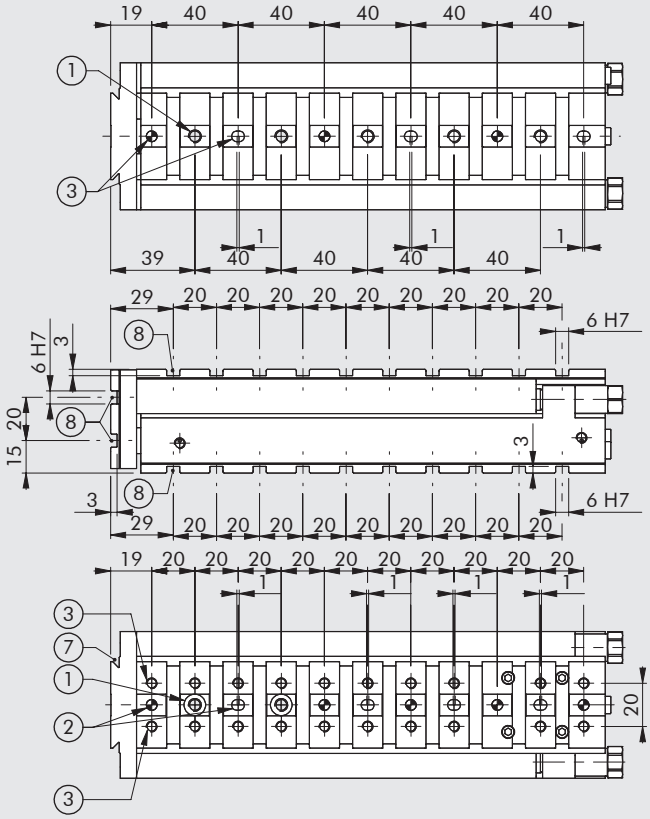
Ø 16 stroke 100 mm



Ø 16 stroke 125 mm

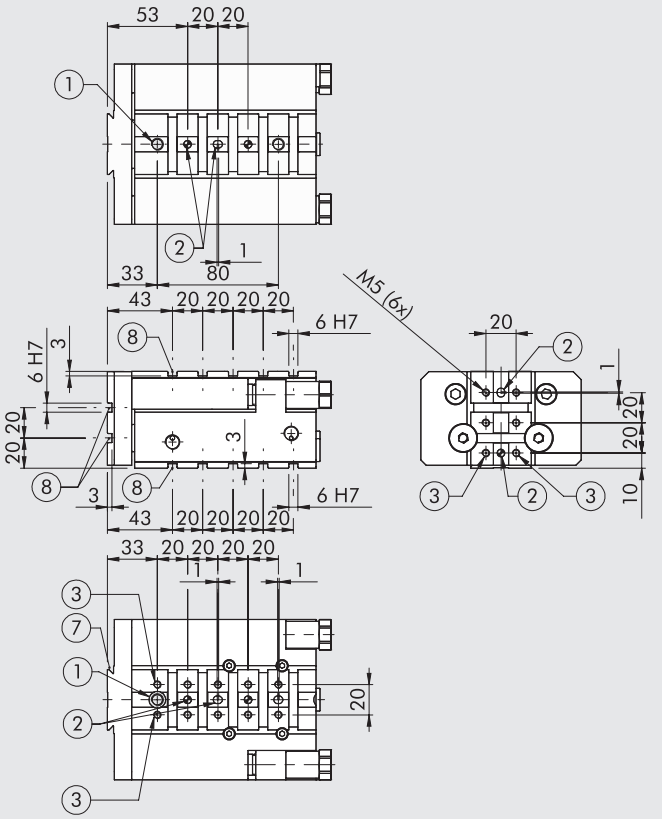


Ø 16 stroke 150 mm



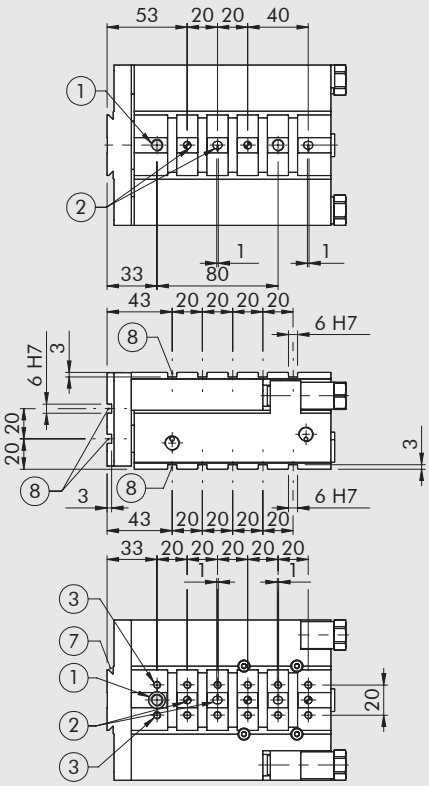
DIMENSIONS OF SLIDE S14K Ø 25

Ø 25 stroke 10; 20; 30; 40 mm

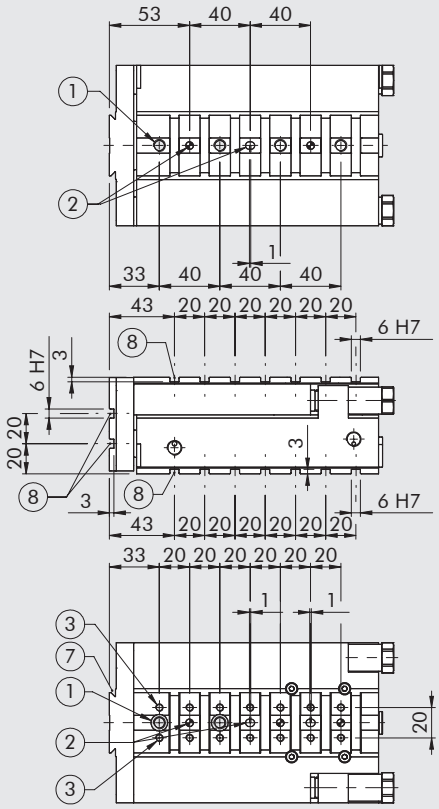


① Through holes for fixing actuators
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

Ø 25 stroke 50 mm

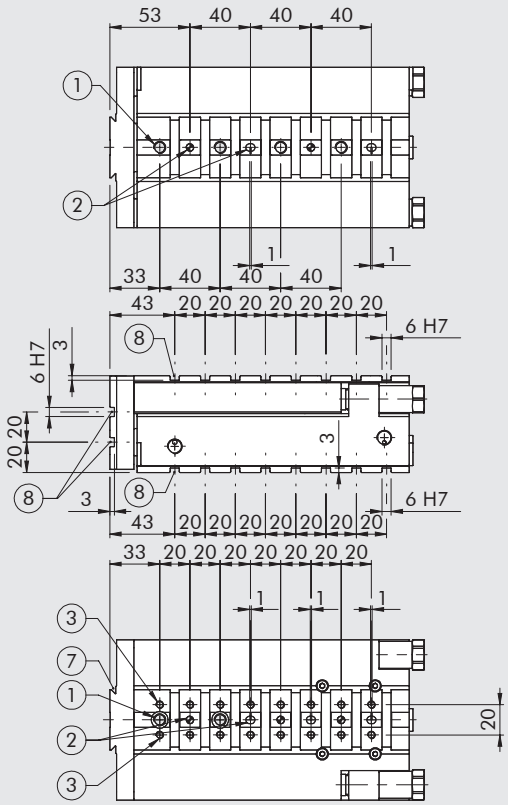


Ø 25 stroke 80 mm

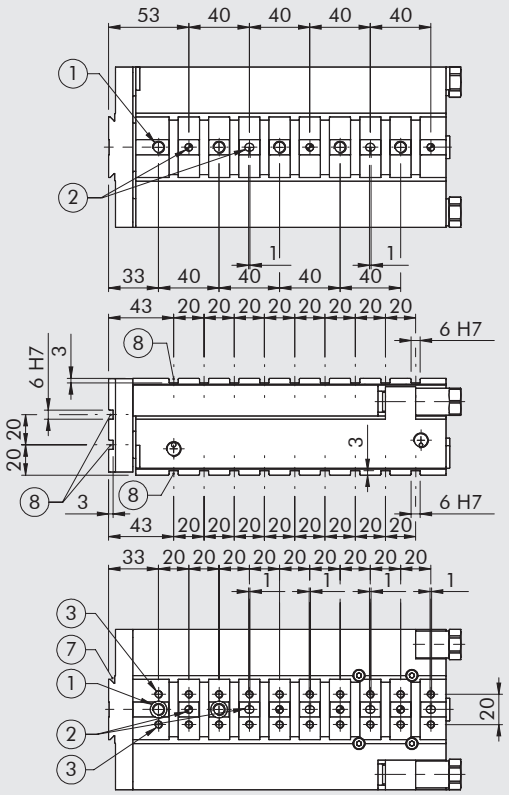


METAL WORK PNEUMATIC

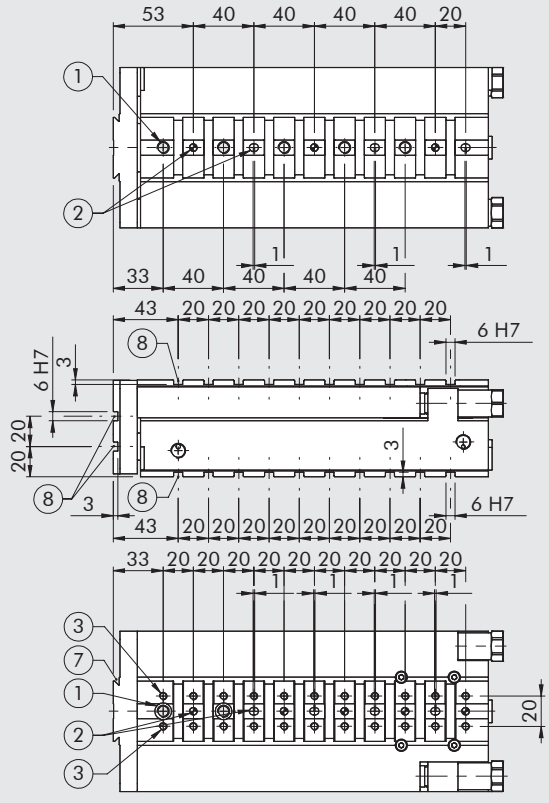
Ø 25 stroke 100 mm



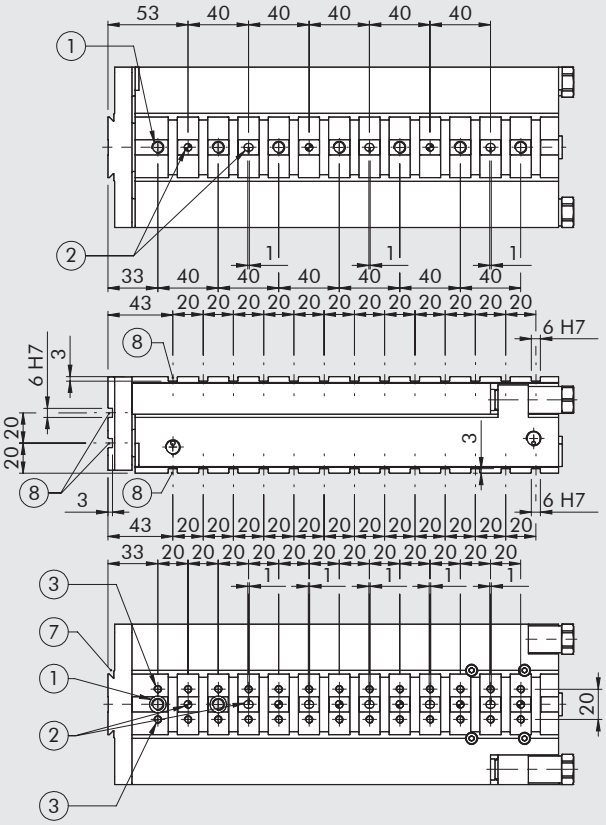
Ø 25 stroke 125 mm



Ø 25 stroke 150 mm

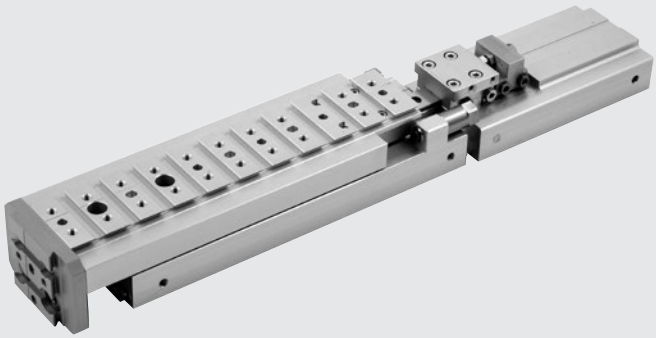


Ø 25 stroke 200 mm



THIRD-POSITION STOP DEVICE

Slide S14 can be supplied in a version with a third-position stop device for application where the slide needs to stop in an intermediate position (e.g. for depositing a workpiece).
A stop device is mounted in series with the slide and partialises the total stroke when supplied with compressed air.
The third-position stop device comes with a magnet on the piston and slots for sensors to monitor the position of the piston rod.

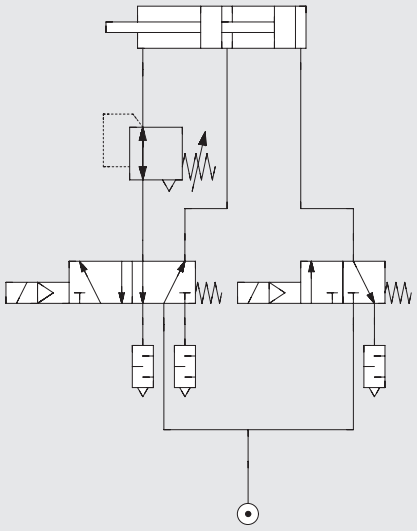


This device can be ordered with a free nominal stroke, up to the total length of the slide on which it is mounted, with 1 mm interval.
The stop position can be adjusted mechanically within ± 1.5 mm of the nominal stroke. For example, a stop device with a 30 mm stroke can limit the stroke of the slide by an adjustable length ranging from 28.5 to 31.5 mm.

	S14K-8	S14K-16	S14K-25
Maximum impact energy in intermediate position [J]	0.05	0.15	0.25

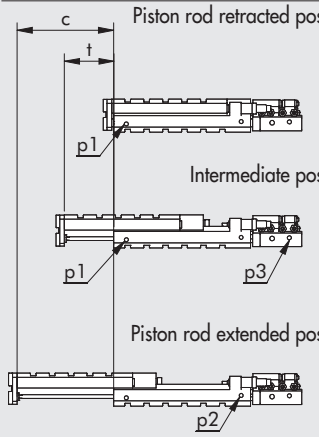
PNEUMATIC SYSTEM DIAGRAM

The third-position stop device can be operated by a 3/2 valve, as shown in the diagram.
The optional pressure regulator can be used to regulate the backpressure, and hence the useful force, in the first section of the stroke.



PNEUMATIC THRUST CHART

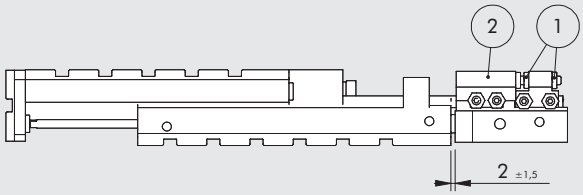
Supply diagram	Useful theoretical thrust [N] depending on pressure [bar]		
	S14K-8	S14K-16	S14K-25
Piston rod retracted position	p1 x 7.5	p1 x 30	p1 x 75.5
Intermediate position	p3 x 10 - p1 x 7.5	p3 x 40 - p1 x 30	p3 x 98 - p1 x 75.5
Piston rod extended position	p2 x 10	p2 x 40	p2 x 98



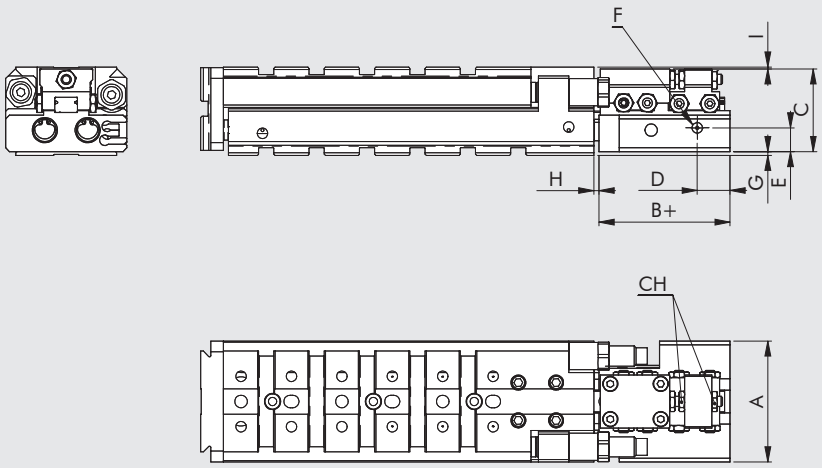
c = Slide S14K stroke
t = Third-position stop device stroke

FINE ADJUSTMENT

How to adjust the third position:
- Unscrew the lock nuts on the adjusting grub screw ①
- Regulate the position of the stop by adjusting the moving unit ②
- Tighten the lock nuts on the adjusting grub screw ①



DIMENSIONS OF THE THIRD-POSITION DEVICE FOR SLIDE S14K Ø 8 - Ø 16 - Ø 25



+ = Add the stroke of the third position
H = Adjusting the third position

Ø	A	B	C	D	E	F	G	H max	I	CH
8	48	52	33.3	13	9	M5	1	4	0.7	7
16	68	60	42	13	12	M5	3	4	3	8
25	106	85	59.5	16	16	1/8"	4	4	0.5	13

KEY TO CODES - STANDARD VERSION

W147	2	08	3	050	K
TYPE	**MODEL**	**BORE**	**STOP**	**STROKE**	**FAMILY**
Precision slide	**2** S14K	08 16 25	**3** With mechanical stop **5** With shock absorbers	See general technical data	**K** V-Lock

KEY TO CODES - VERSION WITH THIRD-POSITION STOP DEVICE

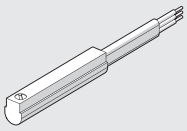
W147	2	08	3	050	020	K
TYPE	**MODEL**	**BORE**	**STOP**	**STROKE**	**THIRD POSITION STROKE**	**FAMILY**
Precision slide	**2** S14K	08 16 25	**3** With mechanical stop **5** With shock absorbers	See general technical data		**K** V-Lock

S14K SLIDE ACCESSORIES

V-Lock ACCESSORIES

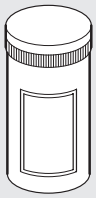
See page **A3**.36

SENSOR Ø 4



For codes and technical data, see **chapter A6**.

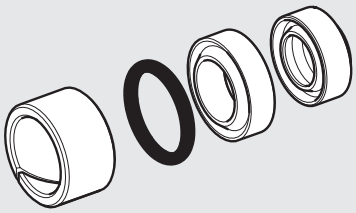
GREASE



Code	Description	Weight [g]
9910506	Tube of RHEOLUBE 363 AX1 grease	400

S14K SLIDE SPARE PARTS

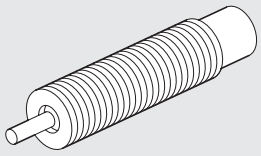
GASKET SPARE PARTS KIT



Code	Description
W1472089001K	S14K gasket kit Ø 8
W1472169001K	S14K gasket kit Ø 16
W1472259001K	S14K gasket kit Ø 25

NOTE: kit contents: 1 guide strip, 1 piston rod gasket, 1 piston gasket, 1 end cap O-ring

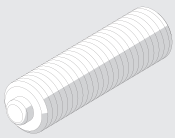
SHOCK ABSORBERS



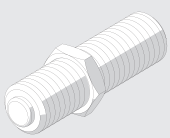
Code	Ø	Description
W0950005300	8	Shock absorbers - 2 M8 x 1
W0950005301	16	Shock absorbers - 2 M10 x 1
W0950005303	25	Shock absorbers - 2 M14 x 1.5

ELASTIC MECHANICAL STOP

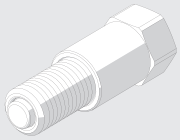
Ø8



Ø16



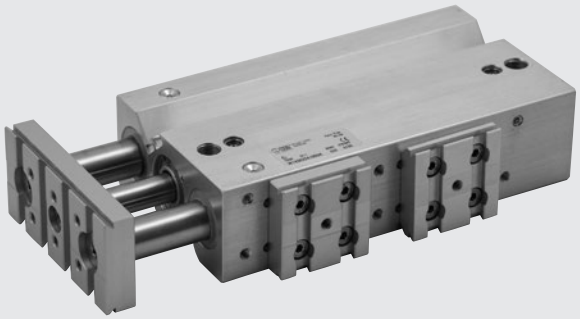
Ø25



Code	Ø	Description
W0950005400K	8	Elastic mechanical stop M8 x 1
W0950005401K	16	Elastic mechanical stop M10 x 1 + nut
W0950005402K	25	Elastic mechanical stop M14 x 1.5 + bushing

COMPACT GUIDED CYLINDER SERIES CMPGK

The CMPGK is a functional, sturdy guided compact cylinder with a built-in guide unit.
The piston rod guide bushings are mounted directly in the anodized aluminium alloy cylinder liner.
Two different types of guides can be mounted as required: sintered bronze bushings coupled with chromed and ground carbon steel piston rods, or ball recirculation bushings with chromed and ground hardened steel piston rods.
Grooves are provided on one side of the body to accommodate retractable sensors.
Currently available is either a non-cushioned version with the end-of-stroke stop cushioned by NBR front gaskets, or a cushioned one with pins that can be adjusted to regulate progressive braking.
The front plate features the typical V-lock dovetail with grooves and holes.
V-Lock fixing elements can be fitted to the main body on any of the three surfaces identified as UP, SIDE and DOWN. The chosen surface has a grid of threaded holes and pinholes with one or two V-Lock plates, depending on the stroke.
The plates are mounted in a preset position, but they can be moved on the grid as required.



TECHNICAL DATA		CUSHIONED	NON-CUSHIONED
Operating pressure	bar	1 to 10	
	MPa	0.1 to 1	
	psi	14.5 to 145	
Temperature range	°C	-10 to +80	
	°F	14 to 176	
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous	
Bore	mm	16, 20, 25, 32, 40	
Standard stroke	mm	**Ø 16:** 20, 30, 40, 50	**Ø 16:** 30*, 40, 50, 75, 100, 150, 200
		Ø 20: 20, 30, 40, 50, 75, 100, 150, 200	**Ø 20:** 25, 30, 40, 50, 75, 100, 150, 200
		Ø 25: 20, 30, 40, 50, 75, 100, 150	**Ø 25:** 25, 30, 40, 50, 75, 100, 150, 200
		Ø 32: 25, 50, 75, 100, 150, 175	**Ø 32:** 25, 50, 75, 100, 150, 200
		Ø 40: 25*, 50, 75, 100, 150, 175	**Ø 40:** 50, 75, 100, 150, 200
Version		With bronze bushings - With ball bearings	
Sensor magnet		Standard	
Maximum impact energy	J	See diagram on **next page**	**Ø 16**: 0.06
			Ø 20: 0.14
			Ø 25: 0.2
			Ø 32: 0.4
			Ø 40: 0.6
Notes		* Side and Down versions only	

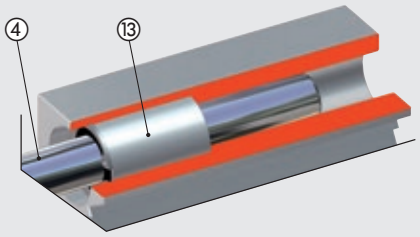
WEIGHTS

Ø	Non-cushioned		Cushioned	
	Weight [g] Stroke = 0	Weight [g] each mm	Weight [g] Stroke = 0	Weight [g] each mm
16	395	5.77	514	5.77
20	586	7.38	643	7.38
25	650	11.01	835	11.01
32	1042	17.51	1454	17.51
40	1128	19.04	1579	19.04

COMPONENTS

① BARREL: anodized aluminium alloy
② PISTON ROD: grinded chromed steel
③ GUIDE ROD: grinded chromed steel
④ GUIDE ROD: hardened and tempered chrome steel, grinded
⑤ REAR BASE: anodized aluminium alloy
⑥ FRONT BASE: anodized aluminium alloy
⑦ PISTON ROD GASKET: polyurethane
⑧ CUSHIONING GASKET: NBR
⑨ PISTON: aluminium alloy
⑩ MAGNET: plastoferrite
⑪ PISTON GASKET: NBR
⑫ SLIDE BUSHING: sintered bronze
⑬ BALL BEARINGS
⑭ DUST SCRAPER RING: NBR or FKM/FPM
⑮ GREASE NIPPLES: zinc-plated or stainless steel
⑯ FLANGE: anodized aluminium alloy
⑰ CUSHIONING NEEDLE: OT58 brass

Ball Bearings versions



Bronze bushings version

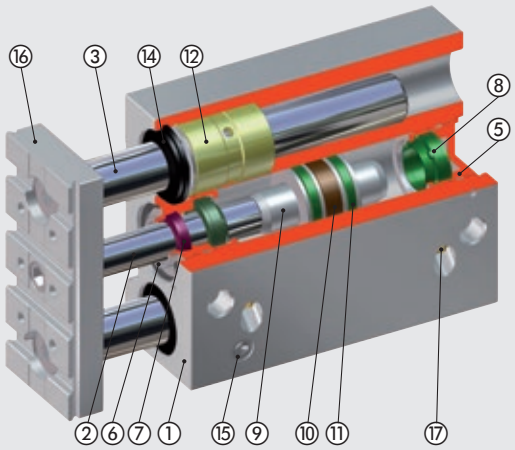
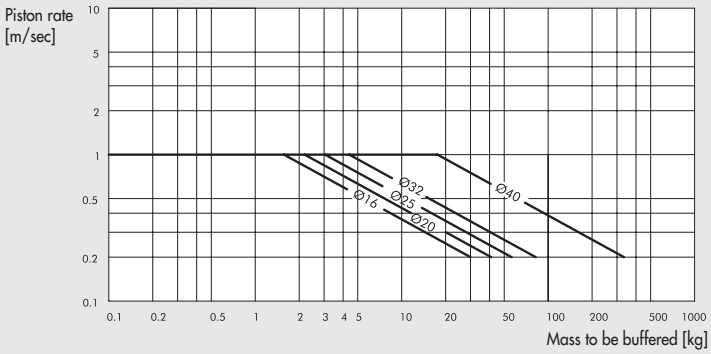
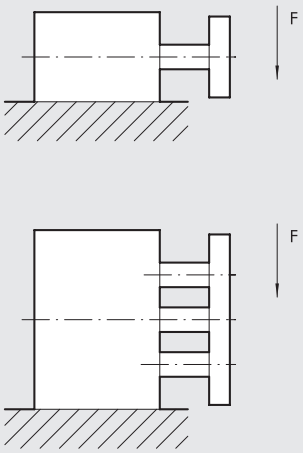


DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.



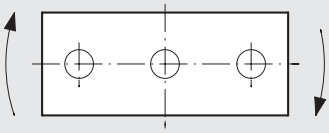
MAXIMUM SIDE LOAD



Ø	Guide unit	Stroke (mm)									
mm		20	25	30	40	50	75	100	150	175	200
16	Bushes	29	–	26	23	20	16	14	10	–	8
	Balls	31	–	27	38	34	29	24	12	–	8
20	Bushes	52	50	45	39	35	58	49	38	–	31
	Balls	56	–	48	79	70	54	50	27	–	32
25	Bushes	71	67	61	54	48	78	66	50	–	41
	Balls	72	68	62	78	73	60	52	37	–	30
32	Bushes	–	197	–	–	168	138	109	78	70	65
	Balls	–	89	–	–	60	276	217	138	122	110
40	Bushes	–	197	–	–	168	138	109	78	70	65
	Balls	–	89	–	–	60	276	217	138	122	110

N.B.: Forces are expressed in N

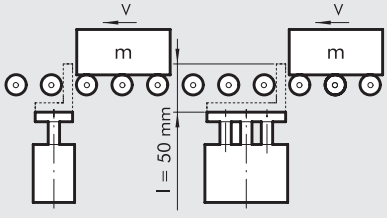
MAXIMUM TORQUE ON PLATE



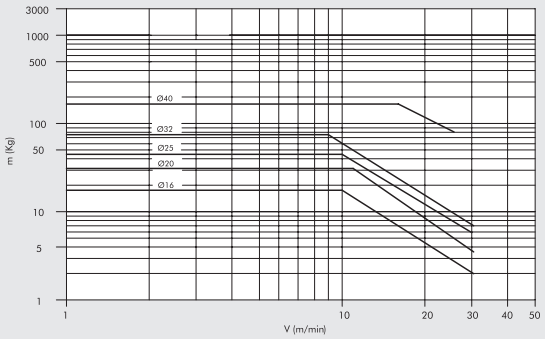
Ø	Guide unit	Stroke (mm)									
mm		20	25	30	40	50	75	100	150	175	200
16	Bushes	0.45	–	0.36	0.32	0.28	0.24	0.20	0.46	–	0.12
	Balls	0.60	–	0.50	0.72	0.65	0.54	0.45	0.35	–	0.25
20	Bushes	0.92	0.85	0.79	0.72	0.64	1.05	0.90	0.69	–	0.56
	Balls	1.28	–	1.08	1.78	1.59	1.24	1	0.61	–	0.49
25	Bushes	1.55	1.42	1.32	1.18	1.04	1.70	1.44	1.10	–	0.90
	Balls	1.98	1.78	1.70	2.16	2.20	1.66	1.4	1.02	–	0.82
32	Bushes	–	3.94	–	–	2.95	2.46	1.97	1.55	1.38	1.24
	Balls	–	1.97	–	–	1	2.96	2.44	2.40	2.43	2.18
40	Bushes	–	4.40	–	–	3.45	2.96	2.46	1.70	1.55	1.40
	Balls	–	2.46	–	–	1.45	6.38	5.4	3	2.73	2.40

N.B.: Forces are expressed in Nm

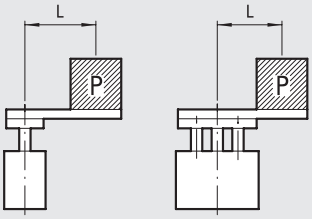
STOPPER FUNCTIONS



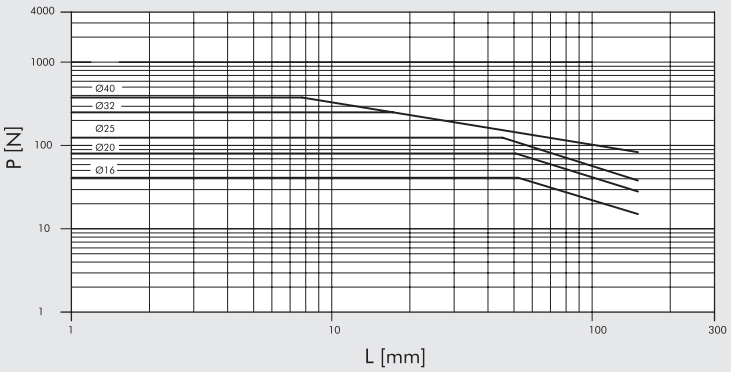
The graph refers to a 50 mm-stroke cylinder.



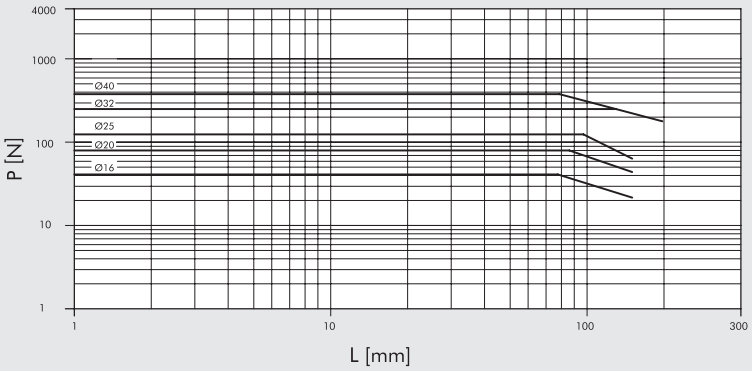
LIFTING FUNCTIONS



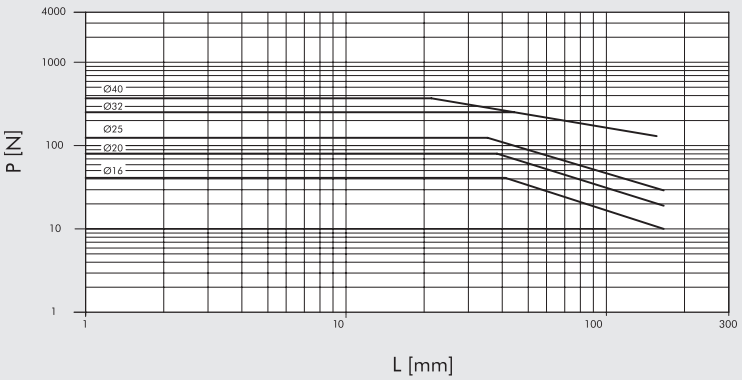
The graph refers from 25 to 50 mm-stroke cylinders with ball re-circulation guide unit



The graph refers from 75 to 100 mm-stroke cylinders with ball re-circulation guide unit

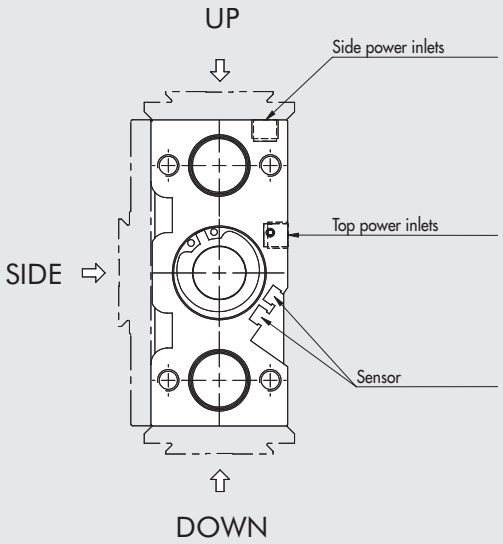


The graph refers to 50 mm-stroke cylinders with bushing guide unit



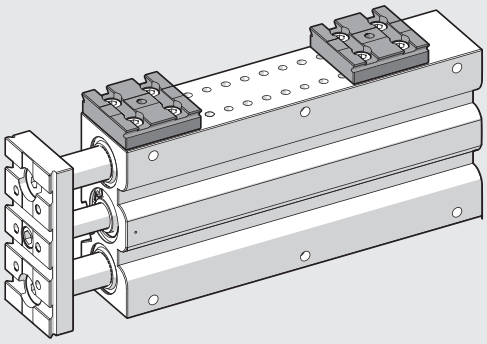
MOUNTING OPTIONS

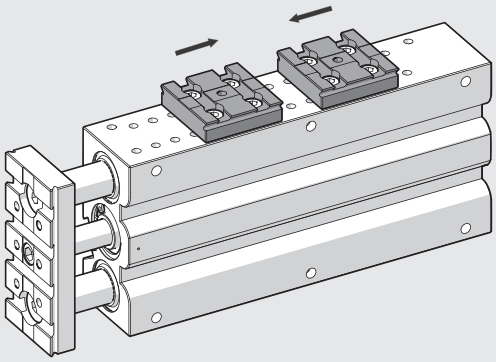
The surface of the body on which to mount the V-Lock plates must be specified at the coding stage. The surface is identified by a letter **U** (Up), **S** (Side) or **D** (Down).



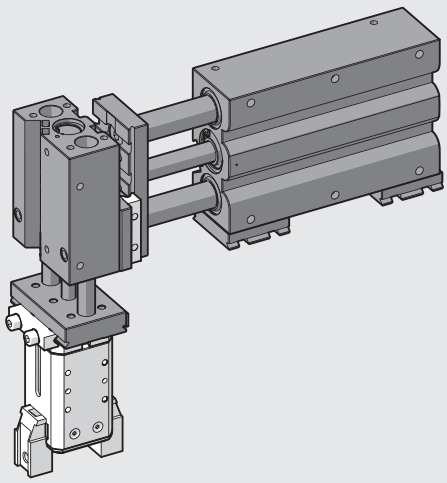
The chosen side of the CMPGK cylinder has a series of threaded holes and pinholes, and one or more V-Lock plates, depending on the stroke. The cylinder is delivered with a plate mounted in the foremost position and another, if provided, in the rearmost position.

The V-Lock plates can be moved as required and fixed to any of the threaded holes.

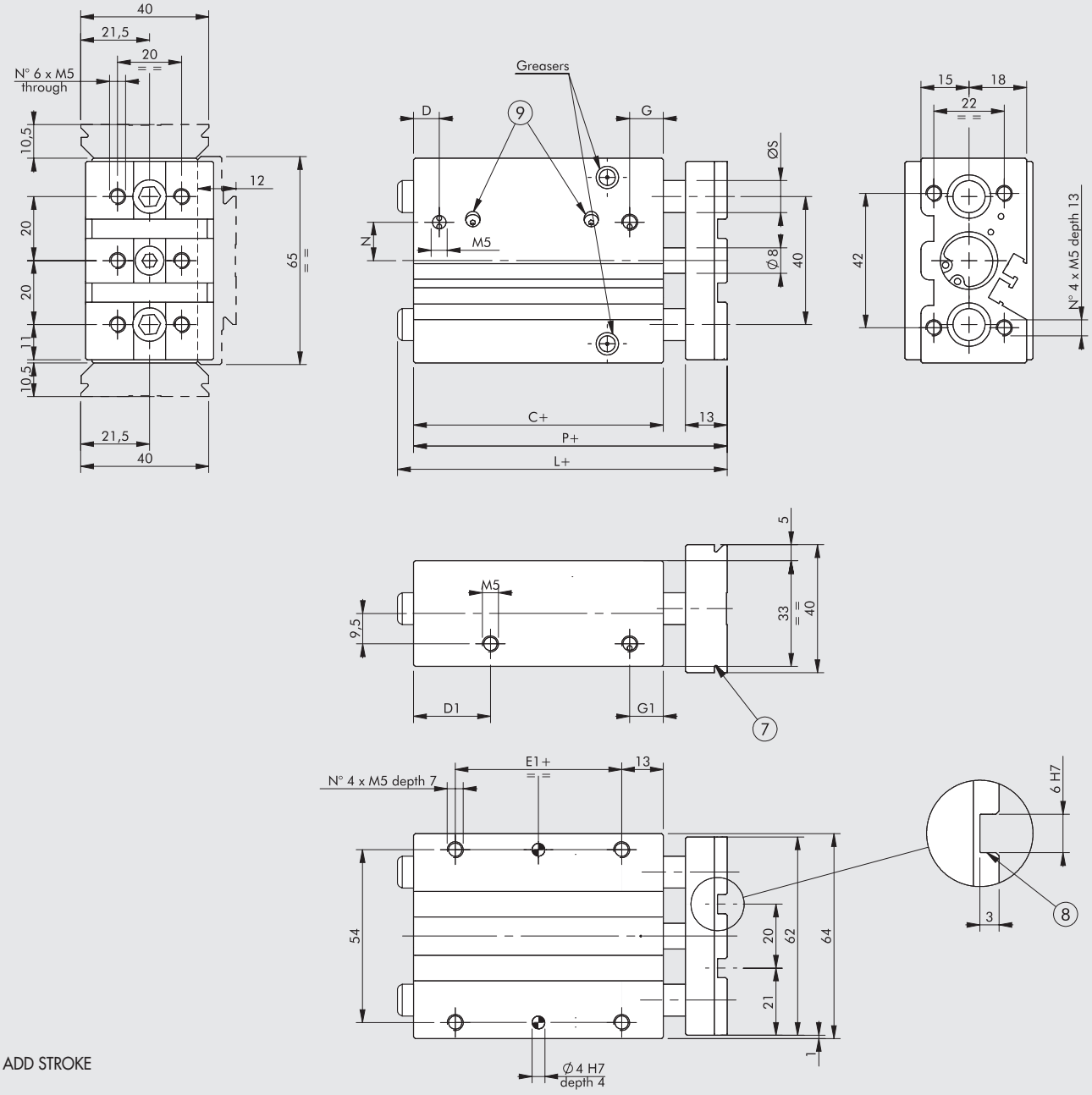




EXAMPLES OF APPLICATION



DIMENSIONS OF Ø 16, BA AND BB NON-CUSHIONED VERSION
DIMENSIONS OF Ø 16, BA AND BB CUSHIONED VERSION



+ = ADD STROKE

⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key
⑨ Cushioning pins (in the cushioned version only)

Stroke	L ◆
0 to 50	49
75 to 200	77.5

Stroke	L
0 to 50	76
75 to 200	104.5

NON-CUSHIONED

C ◆	D	D1	E1	G	G1	L		N	P ◆	Ø S	
						BA*	BB**			BA*	BB**
33	8.5	20	7	11.5	11.5	see above		6.5	49	10	10

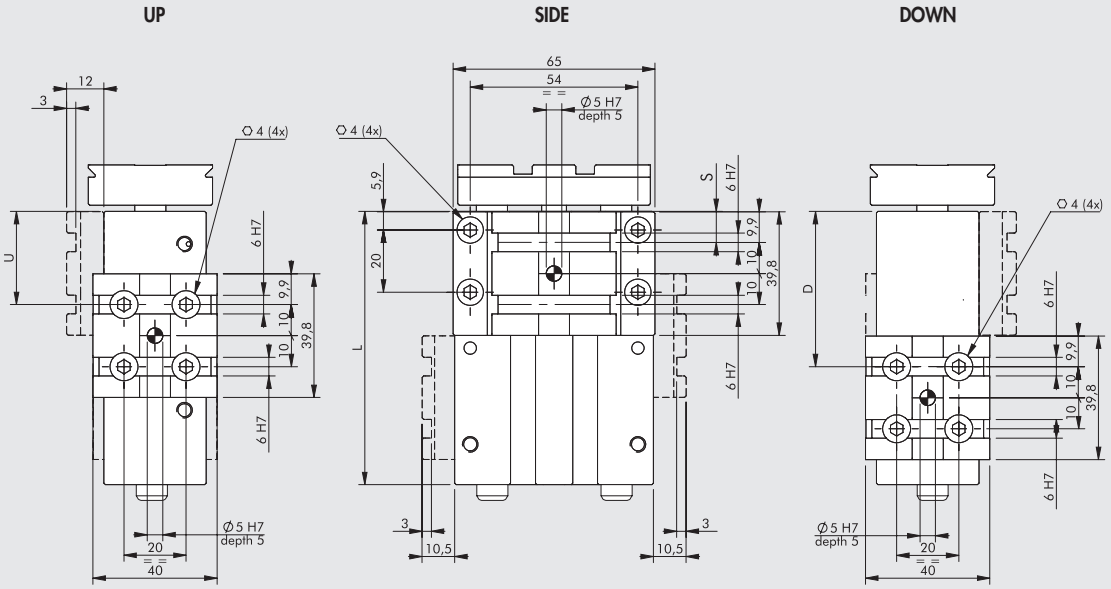
CUSHIONED

C	D	D1	E1	G	G1	L		N	P	Ø S	
						BA*	BB**			BA*	BB**
58	8	24	32	10.5	10.5	see above		12	74	10	10

*** Version BA (Bronze Bushings)**
**** Version BB (Ball Bearings)**
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

METAL WORK PNEUMATIC

POSITION OF Ø 16 PLATES, BA AND BB NON-CUSHIONED VERSION
POSITION OF Ø 16 PLATES, BA AND BB CUSHIONED VERSION



NON-CUSHIONED

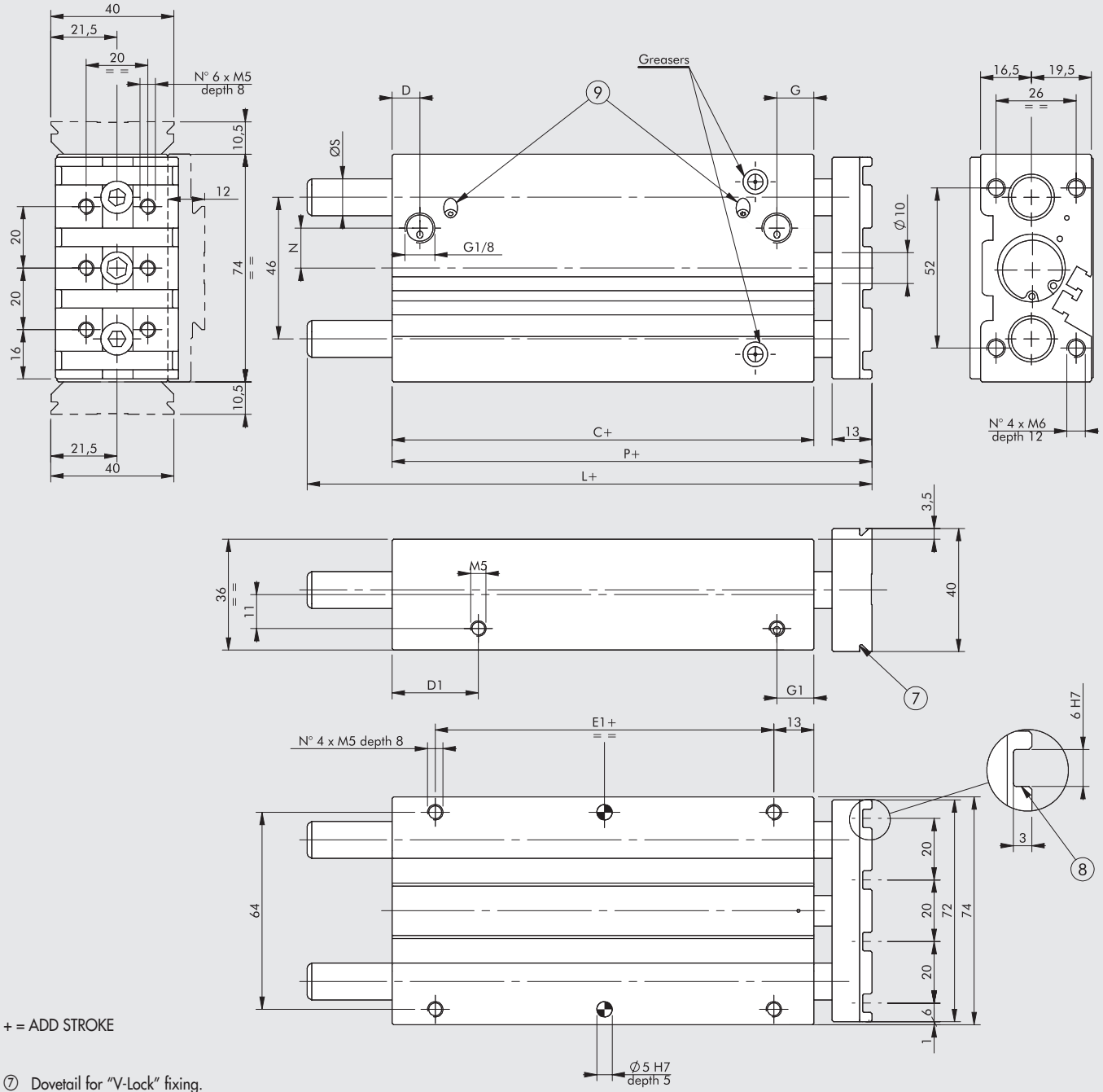
Stroke [mm]	30			40			50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10
	-	-	30	✱ 30	30	30	✱ 30	-	30	30	30	30	30	30	30	30	30	30	30	30	30
							-	-	50	50	50	50	50	-	50	50	50	50	50	50	50
										✱ 70	70	70	70	-	70	70	70	70	70	70	70
													✱ 90	90	90	90	90	90	90	90	90
																110	110	110	110	110	110
																✱ 130	130	130	130	130	130
																-	-	150	150	150	150
																			170	170	170
																			✱ 190	190	190
No. of V-Lock plates supplied	1			1			1			2			2			2			2		
L	63			73			83			108			133			183			233		

CUSHIONED

Stroke [mm]	20			30			40			50		
Position	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	-	10	-	-	10	-	-	10	-	-	10	-
	✱ 30	30	30	✱ 30	-	30	30	-	30	30	30	30
	-	-	50	-	-	50	✱ 50	-	50	✱ 50	50	50
							-	-	70	-	70	70
No. of V-Lock plates supplied	1			1			1			2		
L	78			88			98			108		

✱ Outlet side power supply not available

DIMENSIONS OF Ø 20, BA AND BB NON-CUSHIONED VERSION
DIMENSIONS OF Ø 20, BA AND BB CUSHIONED VERSION



+ = ADD STROKE

⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key
⑨ Cushioning pins (in the cushioned version only)

Stroke	L ◆
0 to 50	52
75 to 200	82

Stroke	L
0 to 50	81
75 to 200	108.5

NON-CUSHIONED

C ◆	D	D1	E1	G	G1	L		N	P ◆	Ø S	
						BA*	BB**			BA*	BB**
37	9	20	10	11	11	see above		8.5	52	12	10

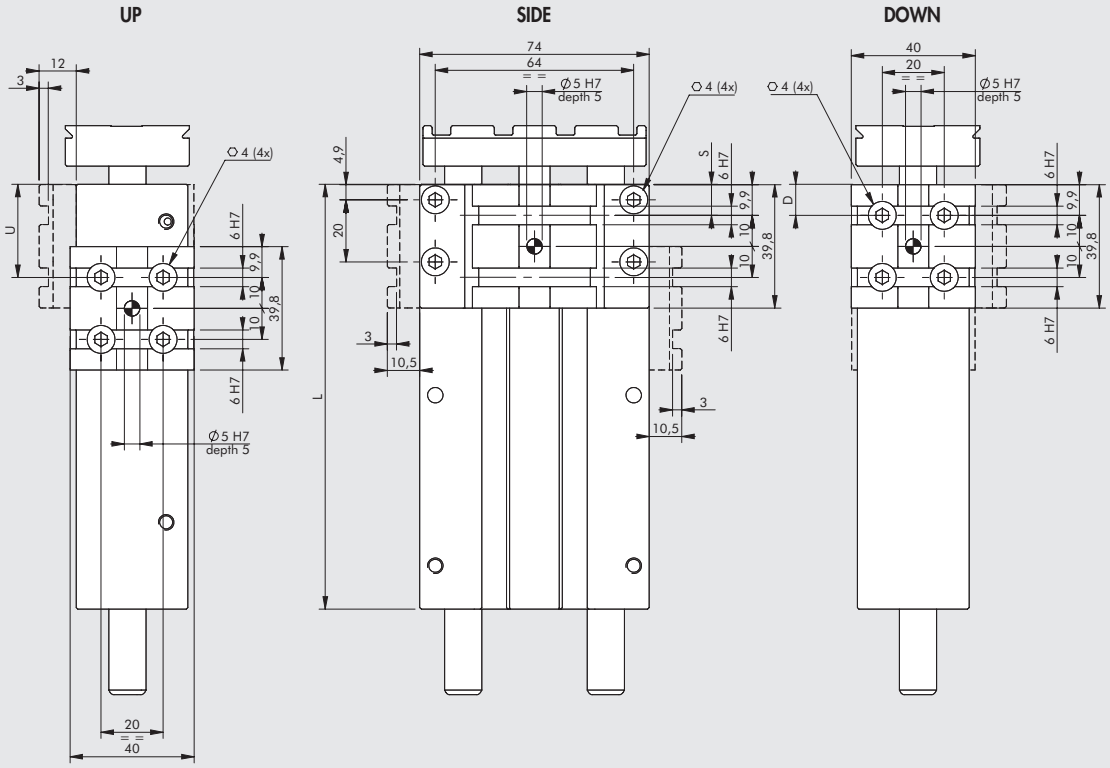
CUSHIONED

C	D	D1	E1	G	G1	L		N	P	Ø S	
						BA*	BB**			BA*	BB**
62	9	28	35	12	12	see above		13	81	12	10

*** Version BA (Bronze Bushings)**
**** Version BB (Ball Bearings)**
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

METAL WORK PNEUMATIC

POSITION OF Ø 20 PLATES, BA AND BB NON-CUSHIONED VERSION
POSITION OF Ø 20 PLATES, BA AND BB CUSHIONED VERSION



NON-CUSHIONED

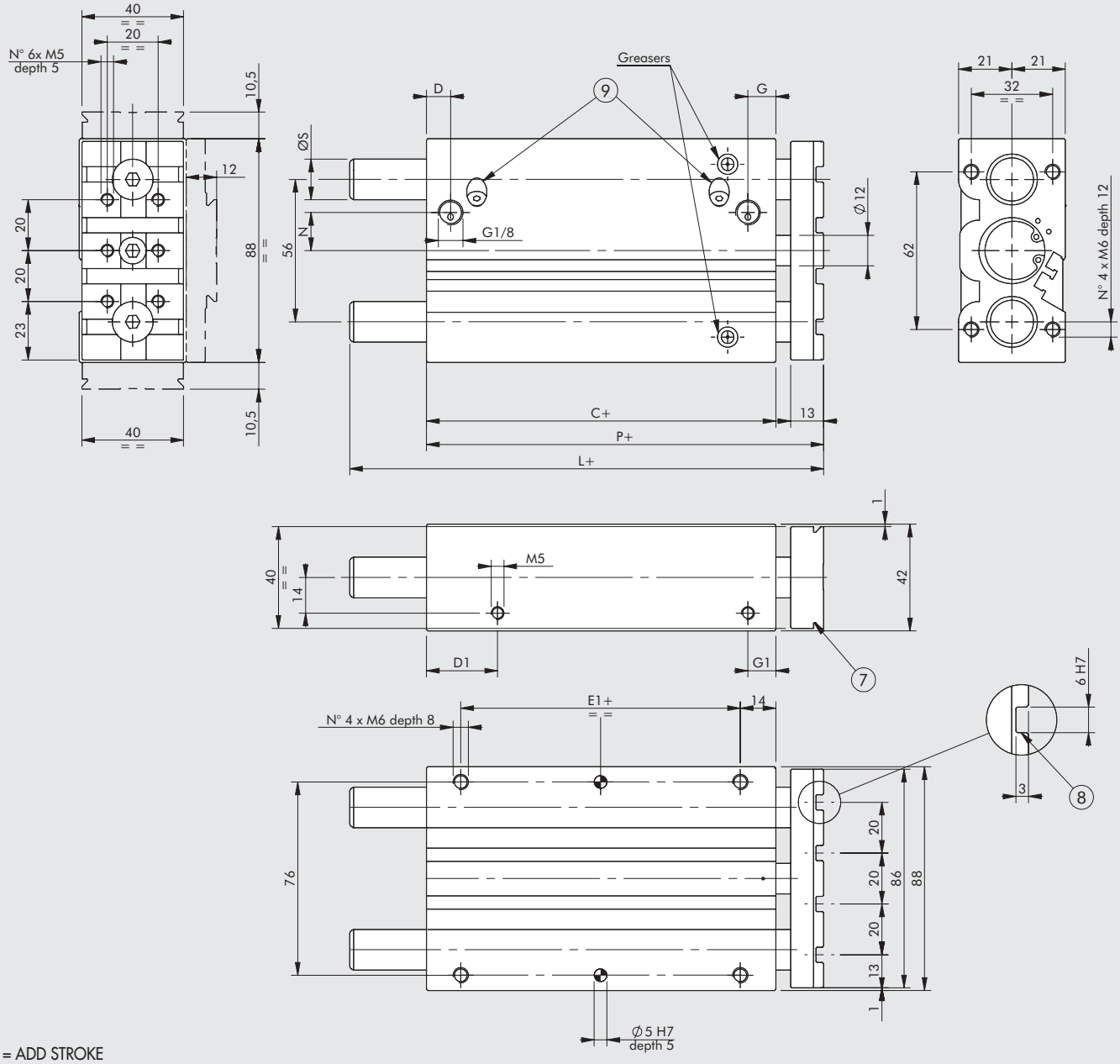
Stroke [mm]	25			30			40			50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	■ 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
	-	-	30	-	30	30	✱ 30	30	30	30	-	30	30	30	30	30	30	30	30	30	30	30	30	30
										-	-	50	50	50	50	50	-	50	50	50	50	50	50	50
													✱ 70	70	70	70	-	70	70	70	70	70	70	70
																✱ 90	90	90	90	90	90	90	90	90
																			110	110	110	110	110	110
																			130	130	130	130	130	130
																			-	150	150	150	150	150
																						170	170	170
																						✱ 190	190	190
																						-	-	210
No. of V-Lock plates supplied	1			1			1			1			2			2			2			2		
L	62			67			77			87			112			137			187			237		

CUSHIONED

Stroke [mm]	20			30			40			50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	10
	✱ 30	-	30	✱ 30	-	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	-	-	50	-	-	50	✱ 50	50	50	✱ 50	50	50	50	-	50	50	50	50	50	50	50	50	50	50
							-	-	70	-	70	70	70	-	70	70	-	70	70	70	70	70	70	70
													✱ 90	90	90	90	-	90	90	-	90	90	90	90
																✱ 110	110	110	110	-	110	110	110	110
																-	-	130	130	130	130	130	130	130
																			✱ 150	150	150	150	150	150
																			-	170	170	170	170	170
																						190	190	190
																						✱ 210	210	210
																						-	-	230
No. of V-Lock plates supplied	1			1			1			1			2			2			2			2		
L	82			92			102			112			137			162			212			262		

✱ Outlet side power supply not available ● Return side power supply not available ■ Side power supply not available

DIMENSIONS OF Ø 25, BA AND BB NON-CUSHIONED VERSION
DIMENSIONS OF Ø 25, BA AND BB CUSHIONED VERSION



+ = ADD STROKE

⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key
⑨ Cushioning pins (in the cushioned version only)

Stroke	L ◆
0 to 50	52.5
75 to 200	82.5

Stroke	L
0 to 50	81.5
75 to 200	111.5

NON-CUSHIONED

C ◆	D	D1	E1	G	G1	L		N	P ◆	Ø S	
						BA*	BB**			BA*	BB**
37.5	9	23	10	11	11	see above		8	52.5	16	16

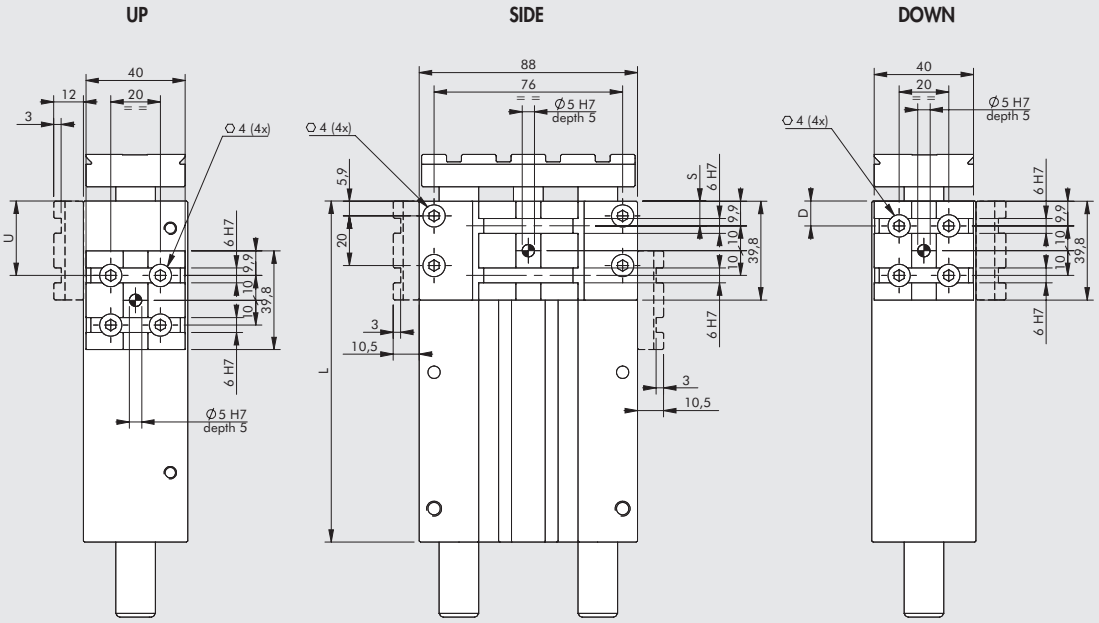
CUSHIONED

C	D	D1	E1	G	G1	L		N	P	Ø S	
						BA*	BB**			BA*	BB**
62.5	9.5	28	35	11	11	see above		15	81.5	16	16

*** Version BA (Bronze Bushings)**
**** Version BB (Ball Bearings)**
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

METAL WORK PNEUMATIC

POSITION OF Ø 25 PLATES, BA AND BB NON-CUSHIONED VERSION
POSITION OF Ø 25 PLATES, BA AND BB CUSHIONED VERSION



NON-CUSHIONED

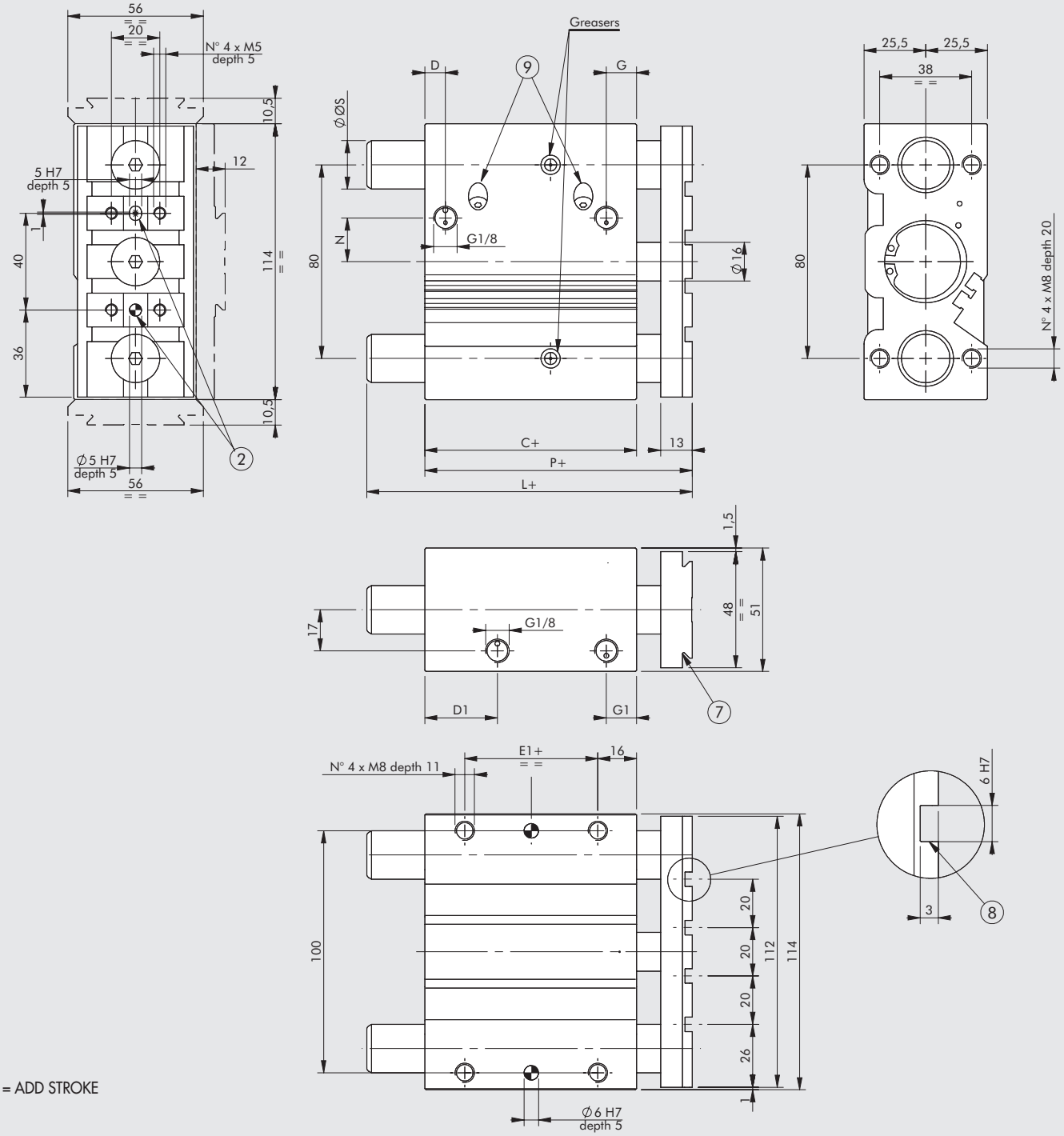
Stroke [mm]	25			30			40			50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	■ 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
	-	-	30	-	30	30	✱ 30	30	30	✱ 30	-	30	30	30	30	30	30	30	30	30	30	30	30	30
							✱ 50	-	50	-	-	50	50	50	50	50	-	50	50	50	50	50	50	50
													✱ 70	70	70	70	-	70	70	70	70	70	70	70
																✱ 90	90	90	90	90	90	90	90	90
																-	-	110	110	110	110	110	110	110
																			✱ 130	130	130	130	130	130
																			-	150	150	150	150	150
																						170	170	170
																						✱ 190	190	190
																						-	-	210
No. of V-Lock plates supplied	1			1			1			1			2			2			2			2		
L	62.5			67.5			77.5			87.5			112.5			137.5			187.5			237.5		

CUSHIONED

Stroke [mm]	20			30			40			50			75			100			150			
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	
Possible positions (see page A3.67)	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	
	✱ 30	-	30	✱ 30	-	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
	-	-	50	-	-	50	✱ 50	50	50	✱ 50	50	50	50	-	50	50	50	50	50	50	50	
							-	-	70	-	70	70	70	-	70	70	-	70	70	70	70	
													✱ 90	90	90	90	-	90	90	-	90	
													✱ 110	-	110	✱ 110	110	110	110	-	110	
																-	-	130	130	130	130	
																			✱ 150	150	150	
																			-	170	170	
No. of V-Lock plates supplied	1			1			1			1			2			2			2			
L	82.5			92.5			102.5			112.5			137.5			162.5			212.5			

✱ Outlet side power supply not available ● Return side power supply not available ■ Side power supply not available

DIMENSIONS OF Ø 32, BA AND BB NON-CUSHIONED VERSION
DIMENSIONS OF Ø 32, BA AND BB CUSHIONED VERSION



+ = ADD STROKE

② Holes for centring pins
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key
⑨ Cushioning pins (in the cushioned version only)

NON-CUSHIONED

C ◆	D	D1	E1	G	G1	L ◆		N	P ◆	Ø S	
						BA*	BB**			BA*	BB**
37.5	9	26.5	5	12.5	12.5	76.5	76.5	14	52.5	20	20

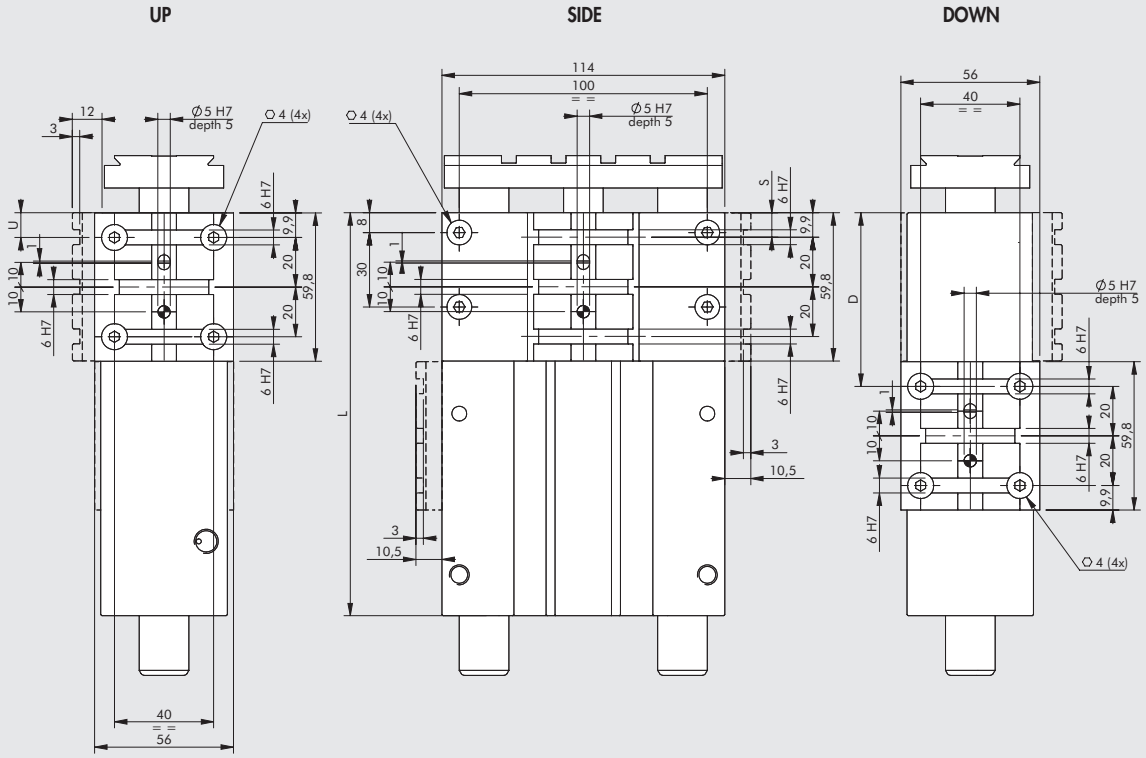
CUSHIONED

C	D	D1	E1	G	G1	L		N	P	Ø S	
						BA*	BB**			BA*	BB**
62.5	8.5	25	30	12.5	12.5	109.5	109.5	18	85.5	20	20

*** Version BA (Bronze Bushings)**
**** Version BB (Ball Bearings)**
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

METAL WORK PNEUMATIC

POSITION OF Ø 32 PLATES, BA AND BB NON-CUSHIONED VERSION
POSITION OF Ø 32 PLATES, BA AND BB CUSHIONED VERSION



NON-CUSHIONED

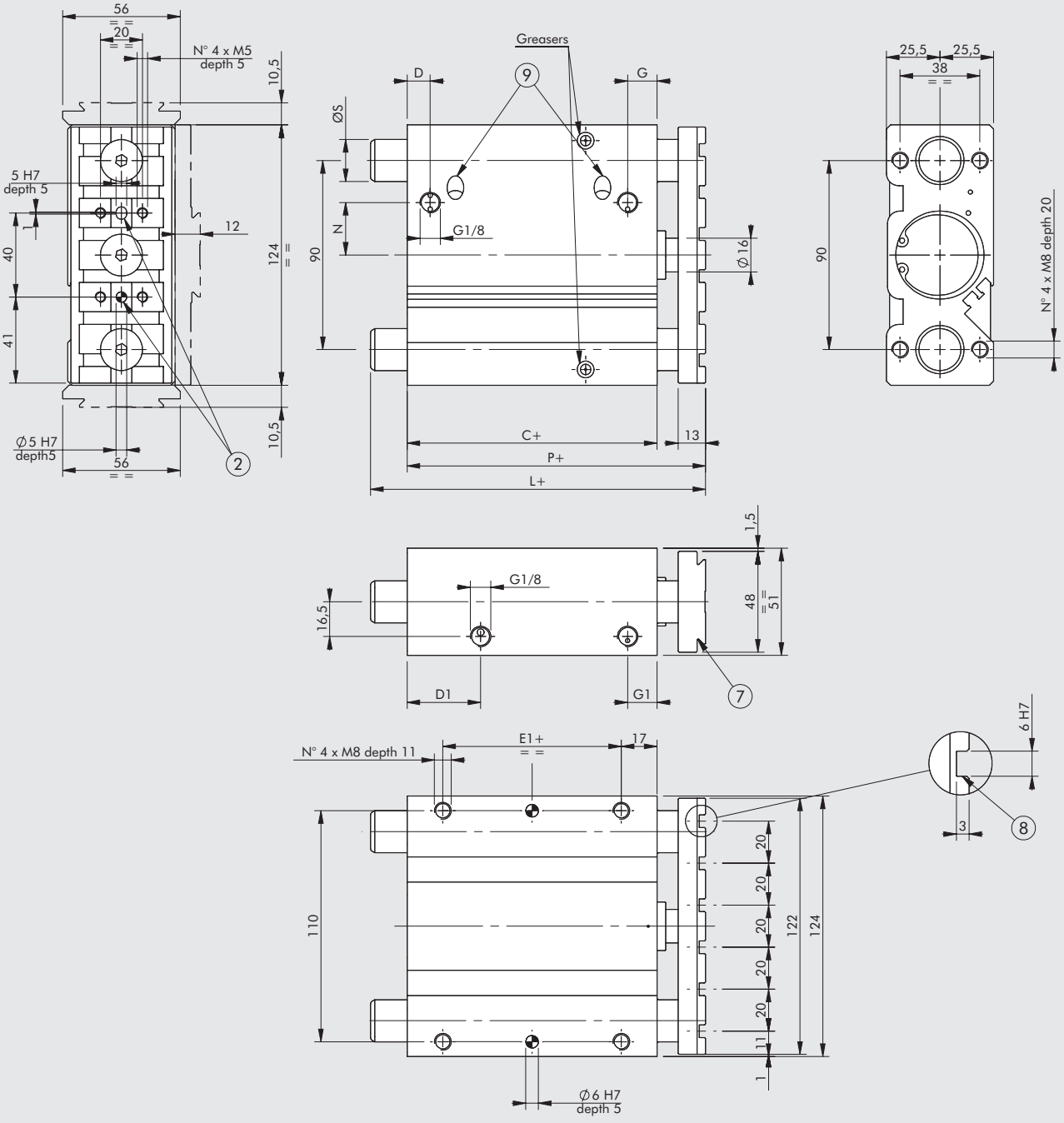
Stroke [mm]	25			50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	■ 10	10	10	■ 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
							-	40	-	-	-	-	-	40	-	-	40	-
										✱ 70	-	70	70	-	70	70	70	70
										-	100	-	-	-	-	-	100	-
													-	130	130	130	130	130
																-	160	-
																-	-	190
No. of V-Lock plates supplied	1			1			1			2			2			2		
L	62.5			87.5			112.5			137.5			187.5			237.5		

CUSHIONED

Stroke [mm]	25			50			75			100			150			175		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	■ 10	-	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
							-	-	-	-	40	-	-	40	-	-	40	-
							-	-	70	70	70	70	70	70	70	70	70	70
							-	100	-	-	100	-	-	100	-	-	100	-
													✱ 130	130	130	130	130	130
													-	160	-	-	160	-
																-	-	190
No. of V-Lock plates supplied	1			1			1			2			2			2		
L	87.5			112.5			137.5			162.5			212.5			237.5		

✱ Outlet side power supply not available ● Return side power supply not available ■ Side power supply not available

DIMENSIONS OF Ø 40, BA AND BB NON-CUSHIONED VERSION
DIMENSIONS OF Ø 40, BA AND BB CUSHIONED VERSION



+ = ADD STROKE

② Holes for centring pins
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key
⑨ Cushioning pins (in the cushioned version only)

NON-CUSHIONED

C ◆	D	D1	E1	G	G1	L ◆		N	P ◆	Ø S	
						BA*	BB**			BA*	BB**
44	10	35	10	14	14	76.5	76.5	21	59	20	20

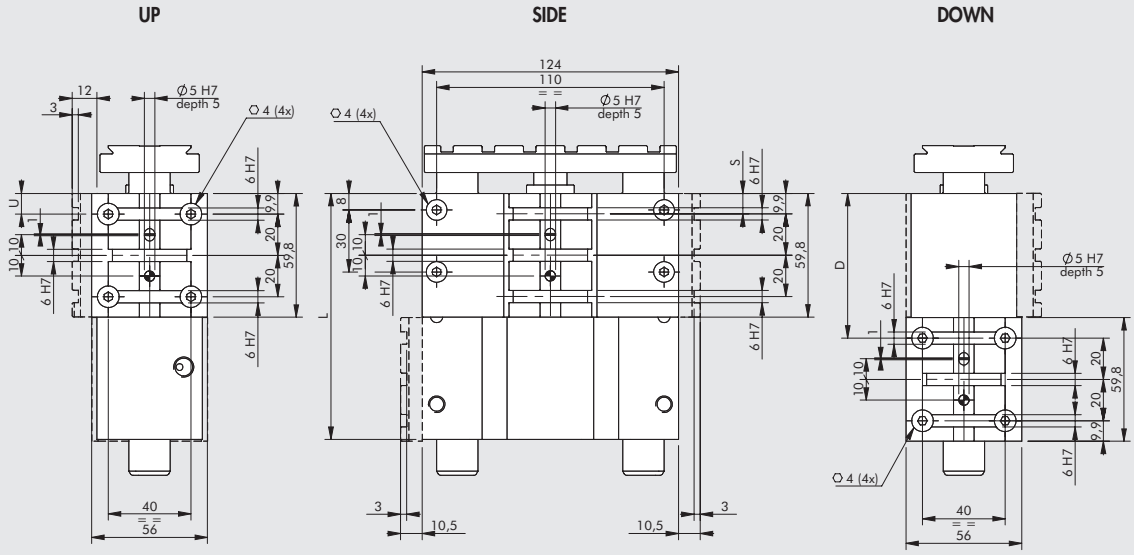
CUSHIONED

C	D	D1	E1	G	G1	L		N	P	Ø S	
						BA*	BB**			BA*	BB**
69	11	35	35	14	14	109.5	109.5	25	92	20	20

*** Version BA (Bronze Bushings)**
**** Version BB (Ball Bearings)**
◆ For cylinders with non-standard strokes, the correct size is that of the cylinder with the standard stroke immediately above.

METAL WORK PNEUMATIC

POSITION OF Ø 40 PLATES, BA AND BB NON-CUSHIONED VERSION
POSITION OF Ø 40 PLATES, BA AND BB CUSHIONED VERSION



NON-CUSHIONED

Stroke [mm]	50			75			100			150			200		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	■ 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
	-	40	-	-	40	-	-	-	-	-	40	-	30	40	-
	-	-	-	✱ 70	-	70	✱ 70	-	70	70	-	70	70	70	70
										-	-	-	-	100	-
										✱ 130	130	130	130	130	130
													-	160	-
													-	190	190
No. of V-Lock plates supplied	1			1			1			2			2		
L	94			119			144			194			244		

CUSHIONED

Stroke [mm]	25			50			75			100			150			175		
Position	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D	U	S	D
Possible positions (see page A3.67)	-	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10	● 10	10	10
	-	40	-	-	40	-	-	-	-	-	40	-	-	40	-	-	40	-
				-	-	70	✱ 70	-	70	70	70	70	70	70	70	70	70	70
										-	100	-	-	100	-	-	100	-
													✱ 130	130	130	130	130	130
													-	160	-	-	160	-
																-	190	190
No. of V-Lock plates supplied	1			1			1			2			2			2		
L	94			119			144			169			219			244		

✱ Outlet side power supply not available ● Return side power supply not available ■ Side power supply not available

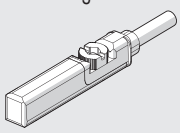
KEY TO CODES

CYL	W143	032	2	050	U	K
	TYPE	**DIAMETER**	**VERSION**	**STROKE**	**FIXING SIDE**	**FAMILY**
	Compact guided cylinder	**016** Ø 16 **020** Ø 20 **025** Ø 25 **032** Ø 32 **040** Ø 40	**2** Non-cushioned with bronze bushings **3** Non-cushioned with ball bearings **4** Cushioned with bronze bushings **5** Cushioned with ball bearings	CUSHIONED VERSION **Ø 16:** 20, 30, 40, 50 **Ø 20:** 20, 30, 40, 50, 75, 100, 150, 200 **Ø 25:** 20, 30, 40, 50, 75, 100, 150 **Ø 32:** 25, 50, 75, 100, 150, 175 **Ø 40:** 25*, 50, 75, 100, 150, 175 NOT CUSHIONED VERSION ◆ **Ø 16:** 30*, 40, 50, 75, 100, 150, 200 **Ø 20:** 25, 30, 40, 50, 75, 100, 150, 200 **Ø 25:** 25, 30, 40, 50, 75, 100, 150, 200 **Ø 32:** 25, 50, 75, 100, 150, 200 **Ø 40:** 50, 75, 100, 150, 200 * Side and Down versions only ◆ Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.	**U** Up **S** Side **D** Down	**K** V-Lock

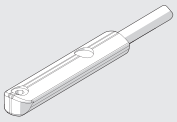
ACCESSORIES

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional

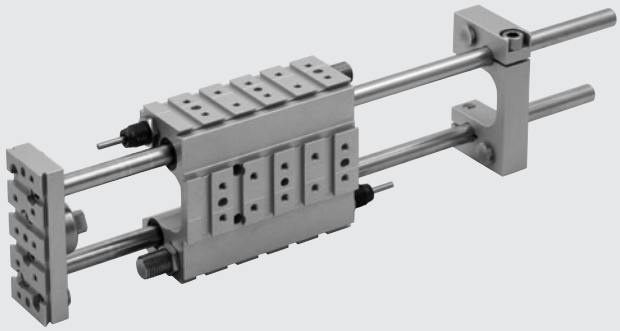


For codes and technical data, see **chapter A6**.

NOTES

GUIDE UNITS SERIES GDHK AND GDMK

Guide units GDHK and GDMK guarantee excellent alignment and anti-rotation of the pneumatic cylinder connected to them.
They can be used either singly or in combination to obtain complete handling units. The typical dovetail profile with V-Lock slots allows assembly with other elements in the V-Lock series.



Guide units can be coupled with:
- ISO 6432 cylinders Ø 12, 16, 20 and Ø 25. **You can not use sensor bracket mod. DSW;**
- ISO 15552 series 3 cylinders Ø 32 and 40;
- ISO 15552 STD and type A cylinders Ø 32 and 40. **You can not apply position sensors.**
- Electric cylinder series Elektro ISO 15552 Ø32. It is a version with shorter columns; the cylinder must be an anti-rotation type because the guide coupling is rotary and cannot prevent piston rod rotation.

Series GDHK has bronze bushes and is more suitable for high loads.
Series GDMK has recirculating ball bushes and is more suitable for high speeds.

Guide units are available with 5 types of stop mechanism:
- without stops (stop is provided by the cylinder);
- with buffers for piston rod retraction;
- with a hydraulic shock absorber for piston rod retraction;
- with buffers for piston rod extension and retraction;
- with hydraulic shock absorbers for piston rod extension and retraction.

TECHNICAL DATA		Ø 12	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40
Strokes	mm	From 1 to 600					
		The total stroke can be shortened using adjusting stops and/or the rear plate					
Stroke reduction via stop adjustment	mm	–14 per side		–22 per side		–40 per side	–35 per side
Temperature range	°C	–10 to +80					
Recommended maximum speed	m/s	1					
Rear plate torques	Nm	7 ±1		22 ±2			35 ±2
Guide column diameter	mm	10		12		16	20
Maximum impact energy							
with shock absorbers	Ec [J]	5		20		25	70
with buffers	Ec [J]	0.5		1		2	2
without stops		refer to the diagram on page **A3**.82					
Repeatability (at 6 bar)							
Versions with buffers	mm	±0.02 (with minimum pressure 5 bar)					
Versions with shock absorbers	mm	±0.02					
Lubrication		The guides are supplied lubricated. There are two greasers on the guide bodies (one per column) for periodic lubrication using a pump with a nozzle. The following greases are recommended: - version GDHK: code 9910502 (RHEOLUBE 362 HB) - version GDMK: code 9910506 (RHEOLUBE 363AX1) The lubrication interval depends on numerous factors such as load, temperature, speed, stroke, lubricant, environmental conditions and assembly position. **As a general rule, lubrication is recommended every 500.000 – 1.000.000 cycles.**					

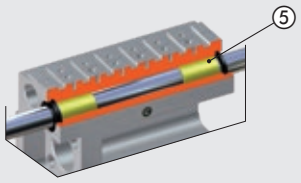
COMPONENTS

① BODY: anodized aluminium
② FRONT PLATE: anodized aluminium
③ REAR PLATE: anodized aluminium
④ STOP: tempered steel
⑤ COLUMN GUIDES:
- sintered bronze (for GDH version)
- recirculation ball bushes (for GDM version)

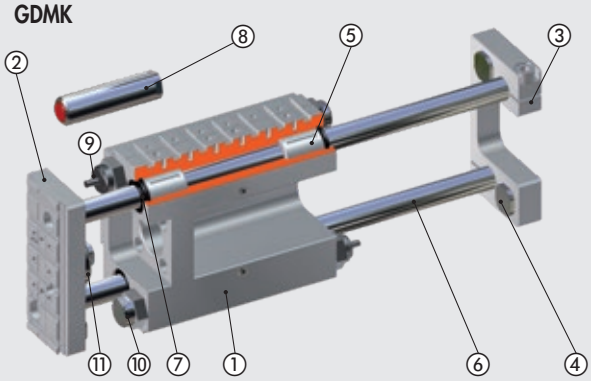
⑥ GUIDE COLUMNS:
- C45 grinded chromed steel (for GDH version)
- tempered steel (for GDM version)

⑦ DUST SCRAPER RING: polyurethane or NBR
⑧ BUFFER
⑨ DECELERATOR
⑩ ADJUSTABLE STOP: tempered steel (for versions with shock absorbers)
⑪ COUPLING: C45 steel

GDHK

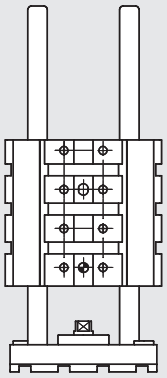


GDMK



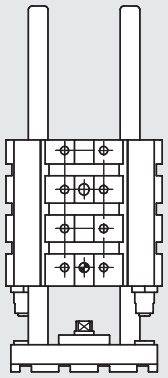
EXECUTIONS

00



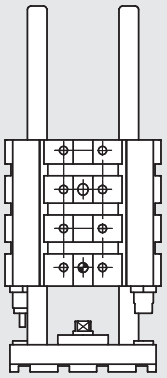
without stop

01



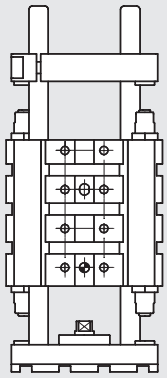
with front stop and buffers

02



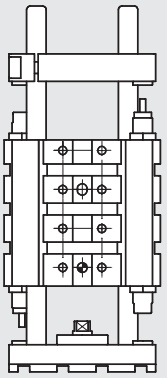
with front stop and shock absorber

03



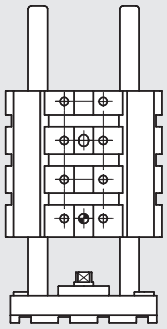
with front and rear stop and buffers

04



with front and rear stop and shock absorbers

05



with short columns for Elektro cylinder

WEIGHTS AND MOVING MASSES

TOTAL WEIGHTS

Ø mm	Weight [g] for Stroke = 0 mm — Execution 00	01	02	03	04	05	Weight [g] every mm
12-16	779	817	823	953	965	-	1.2
20-25	1412	1520	1534	1809	1837	-	1.8
32	2262	2582	2558	3161	3113	2137	3.1
40	4316	4836	4873	5864	5938	-	4.9

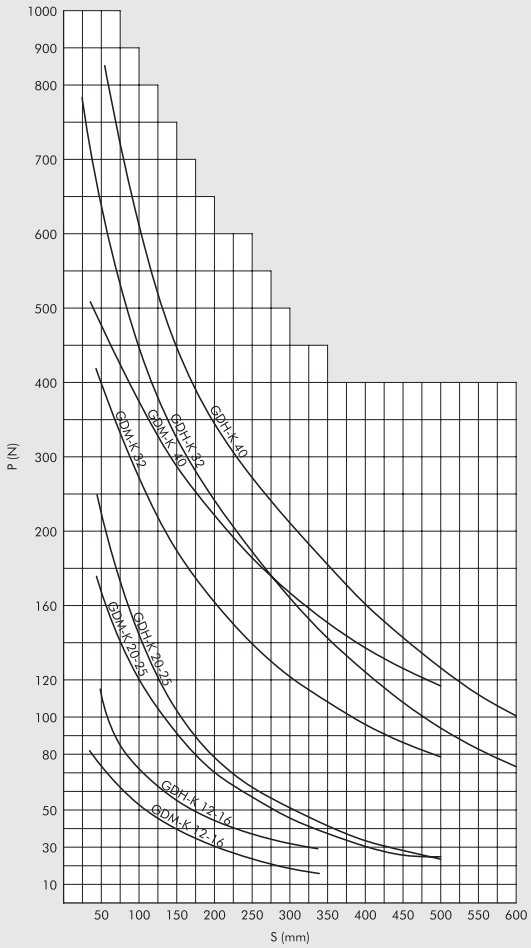
TOTAL MOVING MASSES

Ø mm	Weight [g] for Stroke = 0 mm — Execution 00	01	02	03	04	05	Weight [g] every mm
12-16	293	293	293	391	391	-	1.2
20-25	518	518	518	699	699	-	1.8
32	667	667	667	926	926	542	3.1
40	1670	1670	1670	2178	2178	-	4.9

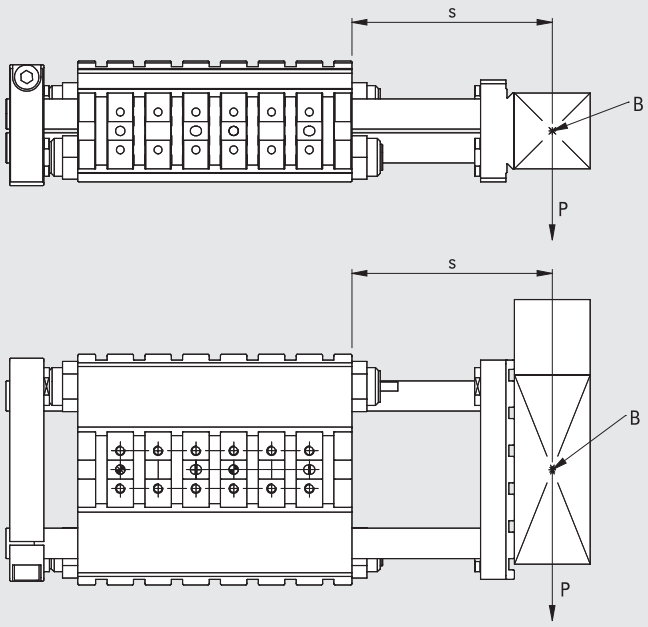
METAL WORK PNEUMATIC

LOAD DIAGRAM

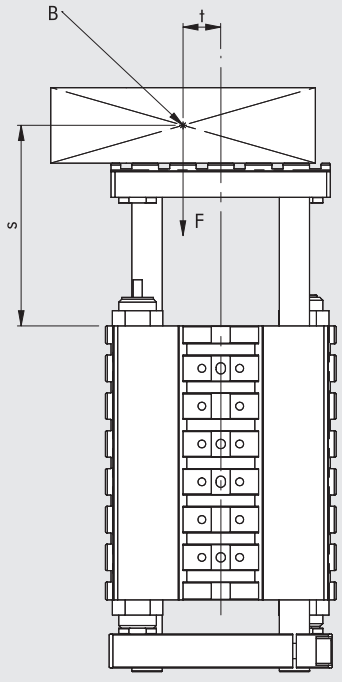
The graph on the right shows the maximum static load that can be applied to the guides as a function of the distance between the body of the guide and the barycenter of the load (with the piston rod extended).



HORIZONTAL APPLICATIONS



VERTICAL APPLICATIONS



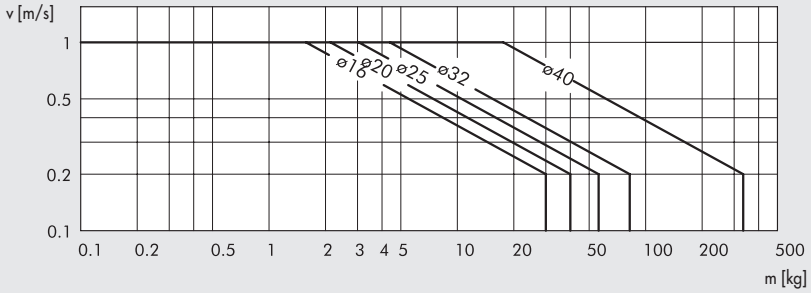
$$P = \frac{F \cdot t}{s}$$

B = Barycentre; S = Projection; P = Useful load

MAXIMUM LOADS AND SPEEDS

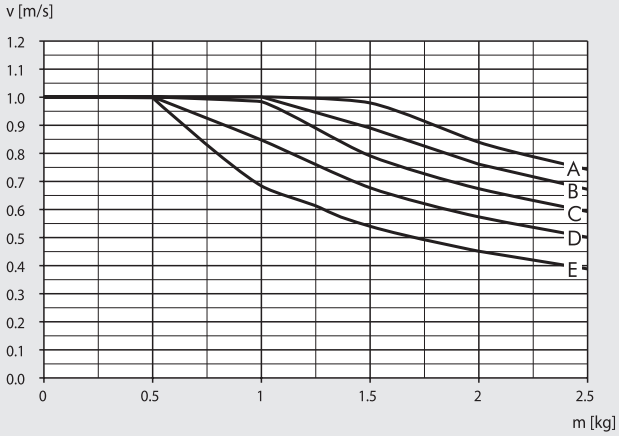
The graphs below show the maximum recommended movable loads "m" (masses) [kg] as a function of the average traverse speed "v" [m/s], defined as stroke/time, slide position (horizontal/vertical) and supply pressure.

MAXIMUM LOADS: VERSIONS WITHOUT STOPS

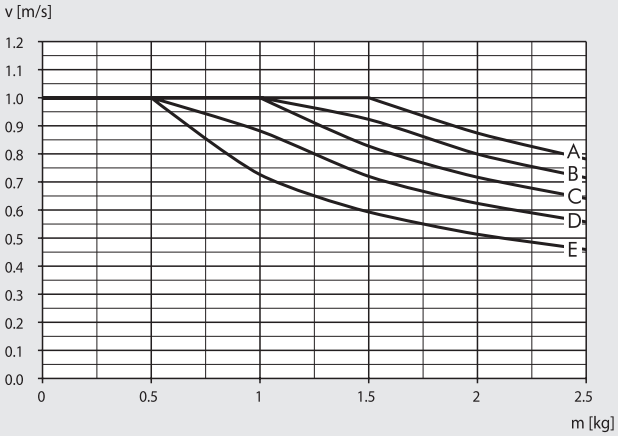


MAXIMUM LOADS: VERSIONS WITH SHOCK ABSORBERS

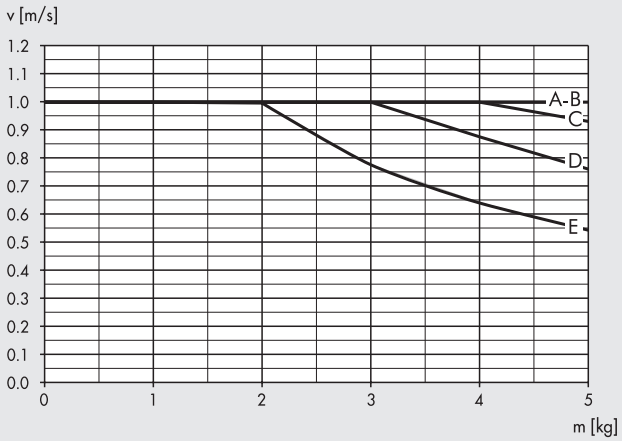
Ø 12-16 - Vertical orientation



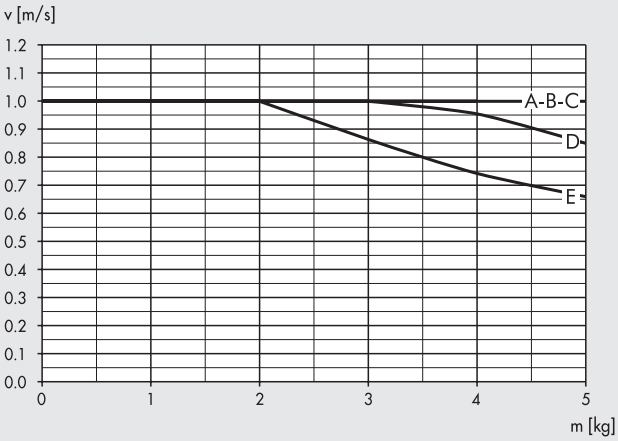
Ø 12-16 - Horizontal orientation



Ø 20-25 - Vertical orientation

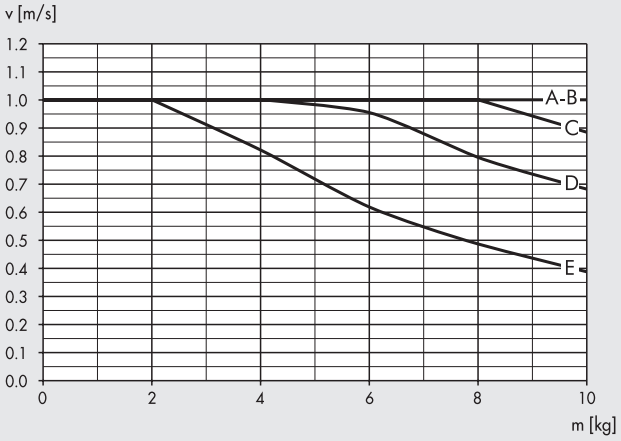


Ø 20-25 - Horizontal orientation

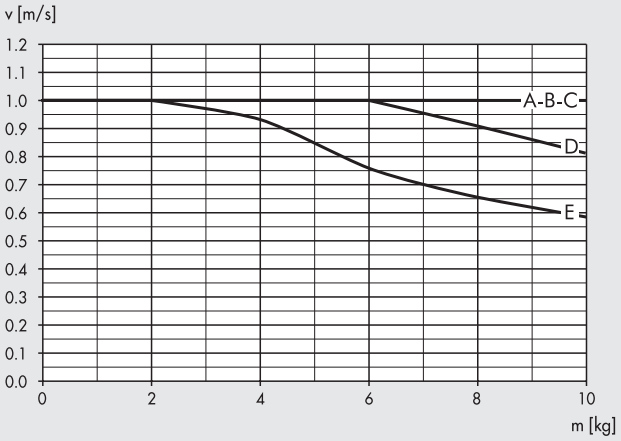


A = 2 bar B = 4 bar C = 6 bar D = 8 bar E = 10 bar

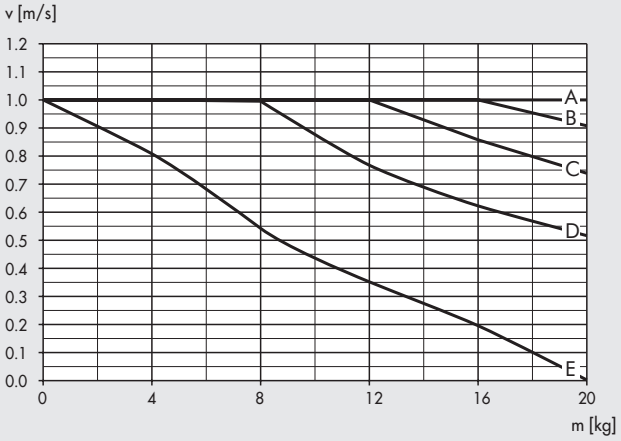
Ø 32 - Vertical orientation



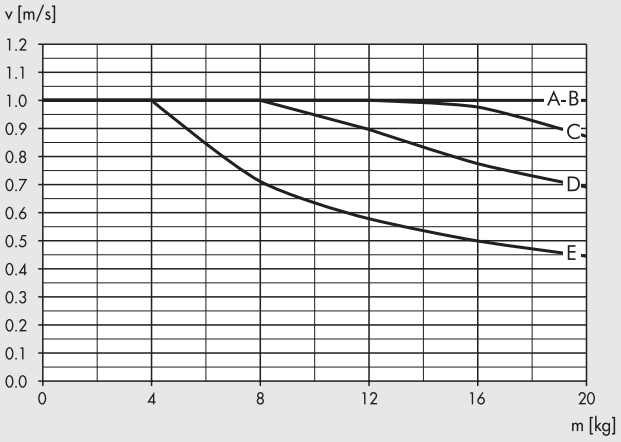
Ø 32 - Horizontal orientation



Ø 40 - Vertical orientation



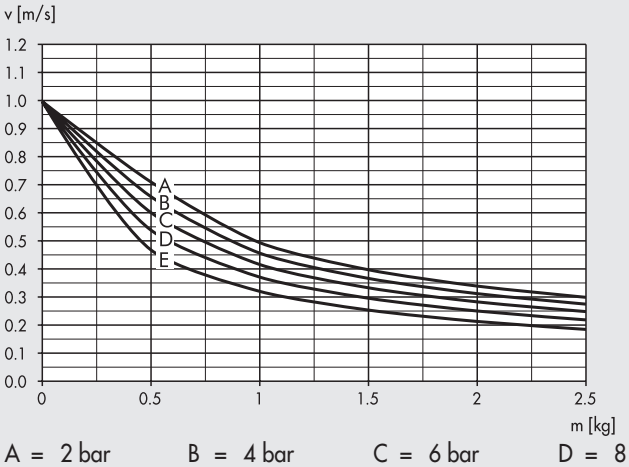
Ø 40 - Horizontal orientation



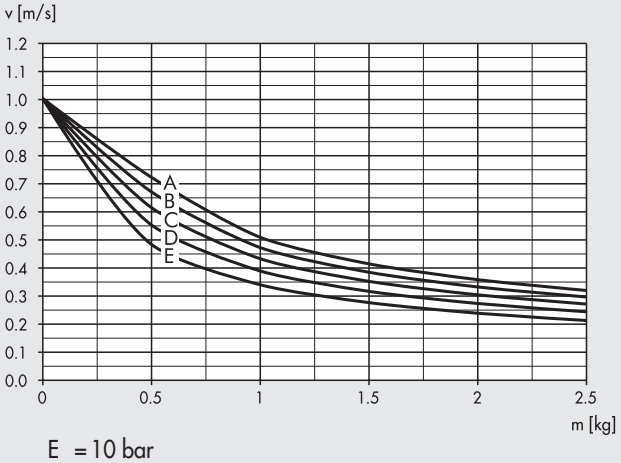
A = 2 bar B = 4 bar C = 6 bar D = 8 bar E = 10 bar

MAXIMUM LOADS: VERSIONS WITH BUFFERS

Ø 12-16 - Vertical orientation

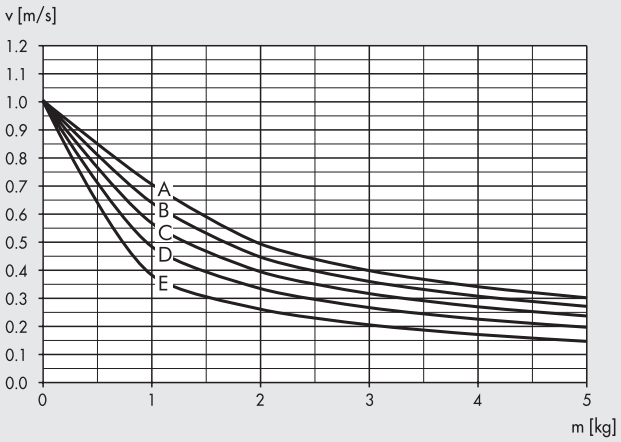


Ø 12-16 - Horizontal orientation

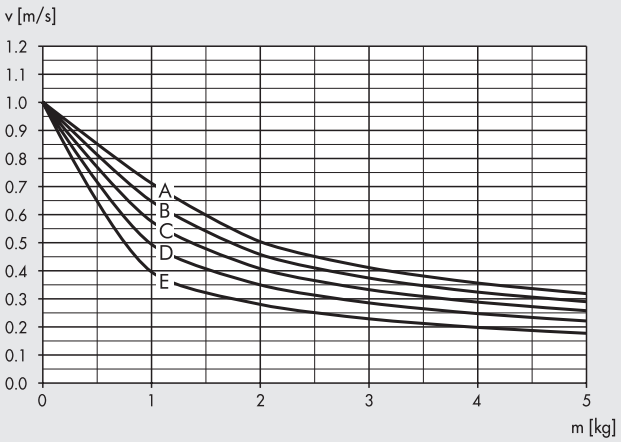


A = 2 bar B = 4 bar C = 6 bar D = 8 bar E = 10 bar

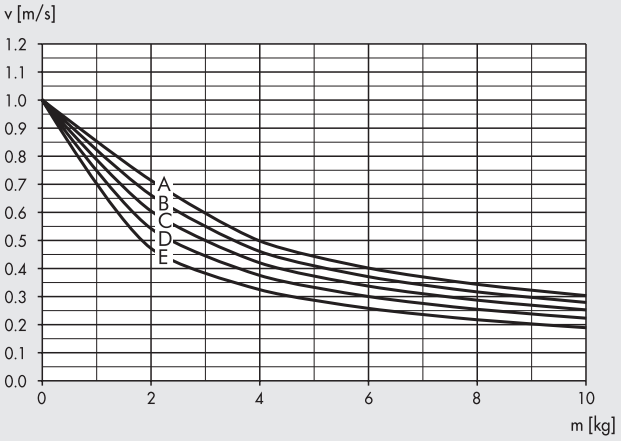
Ø 20-25 - Vertical orientation



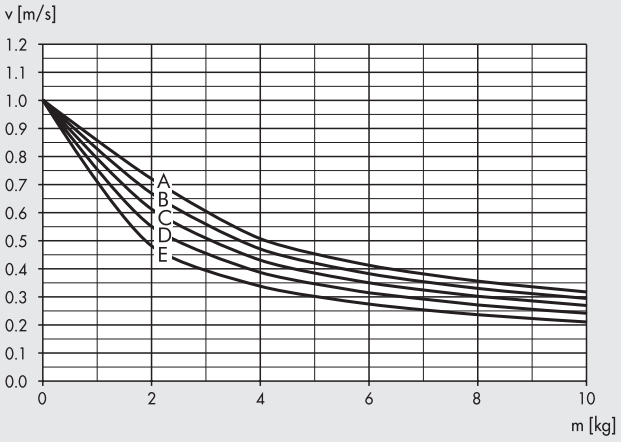
Ø 20-25 - Horizontal orientation



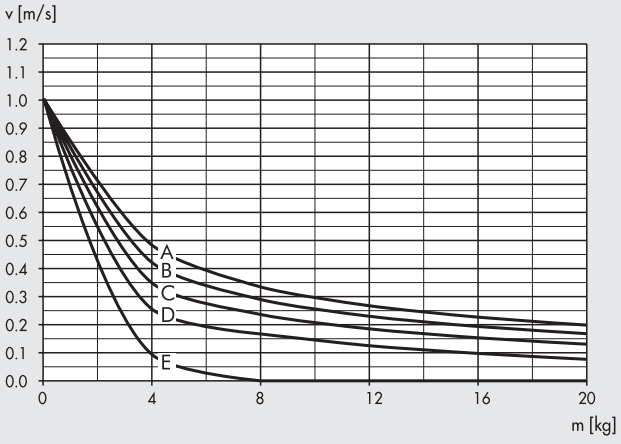
Ø 32 - Vertical orientation



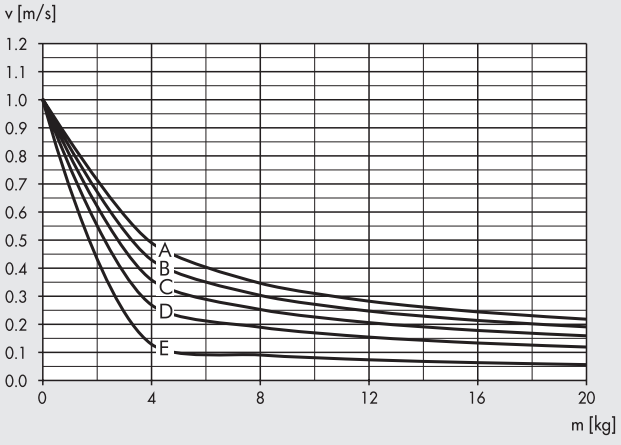
Ø 32 - Horizontal orientation



Ø 40 - Vertical orientation



Ø 40 - Horizontal orientation



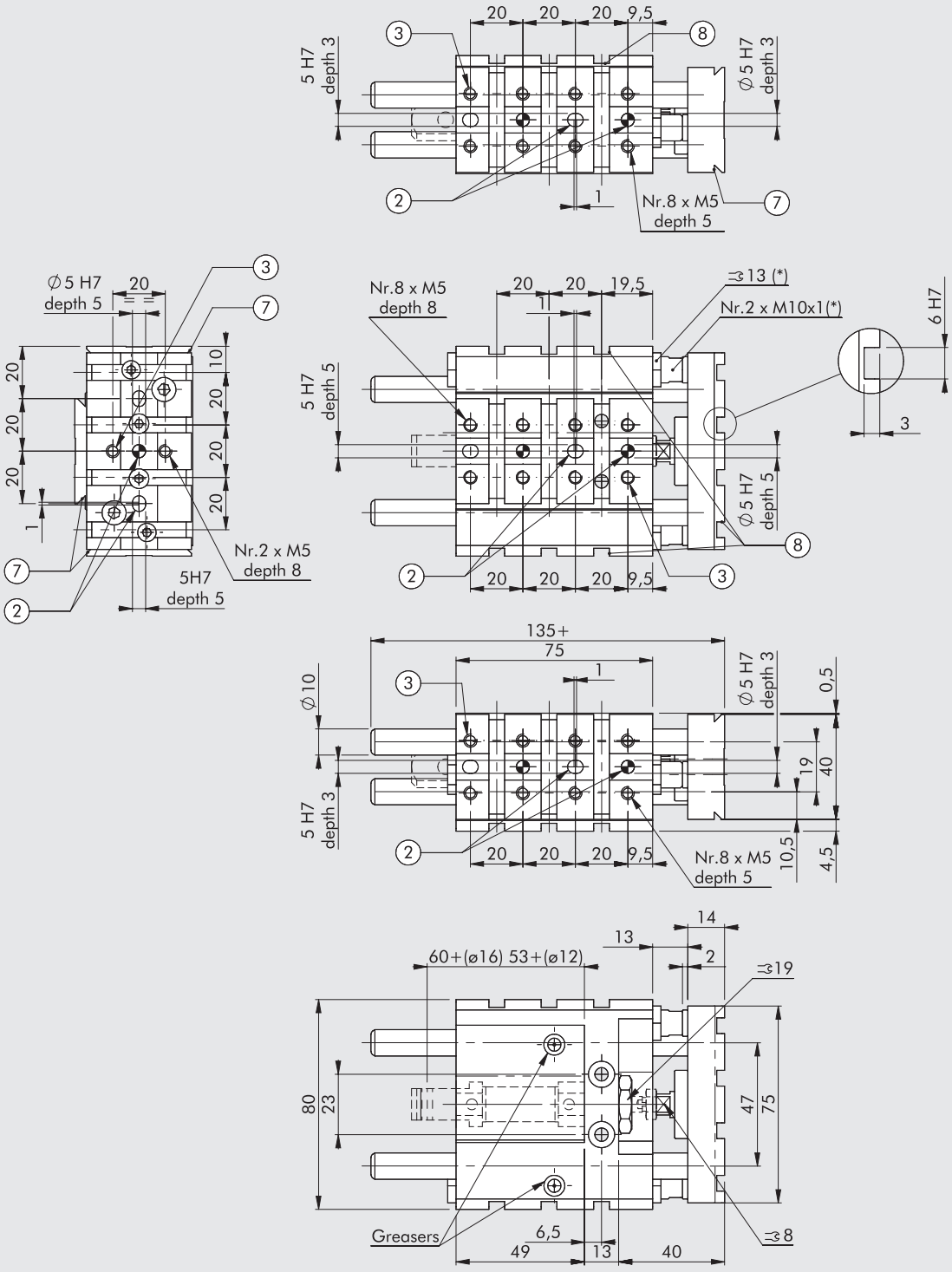
A = 2 bar B = 4 bar C = 6 bar D = 8 bar E = 10 bar

METAL WORK PNEUMATIC

DIMENSIONS Ø 12-16

Versions 00-01-02

+ = ADD THE STROKE

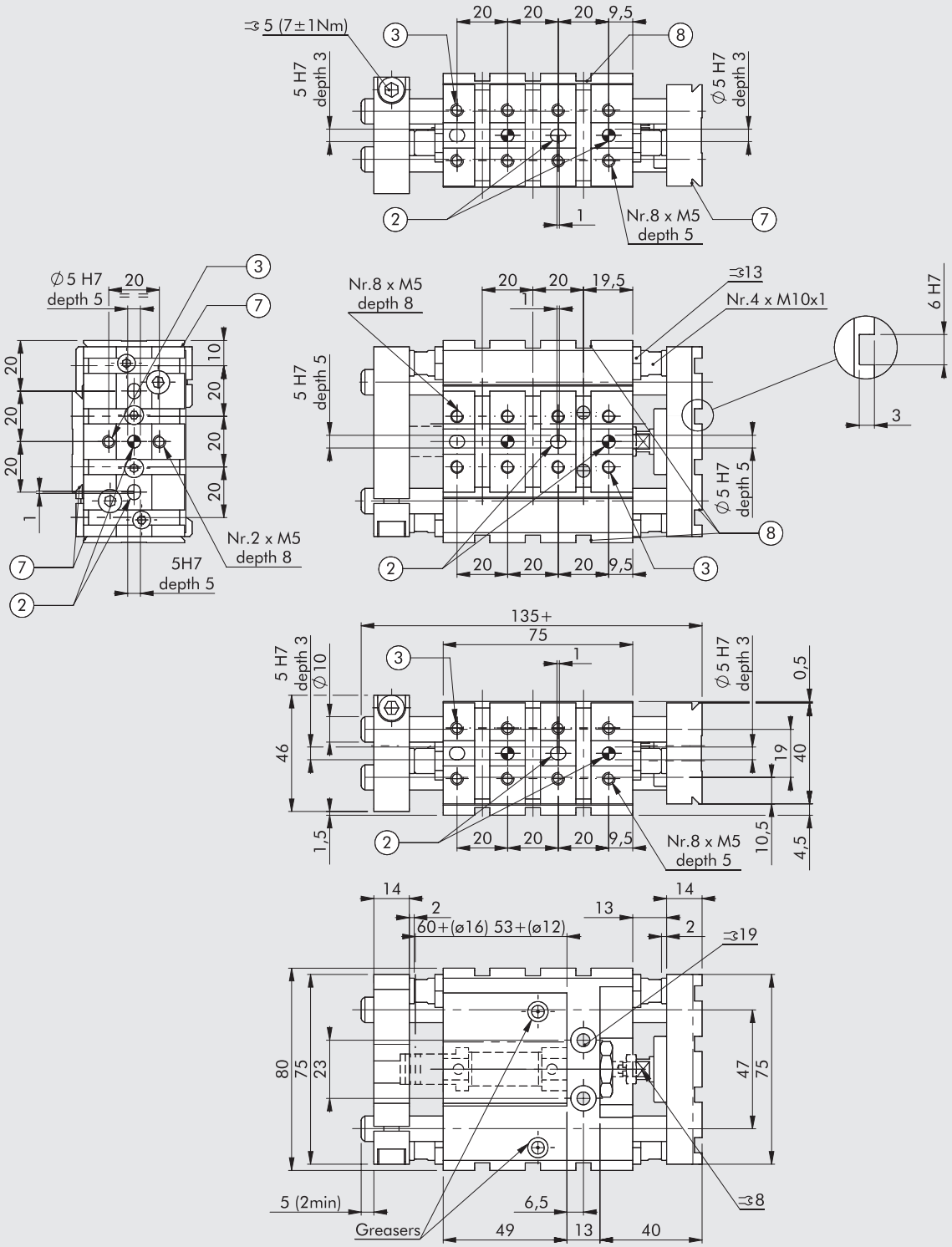


* Not present in version 00
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

DIMENSIONS Ø 12-16

Versions 03-04

+ = ADD THE STROKE



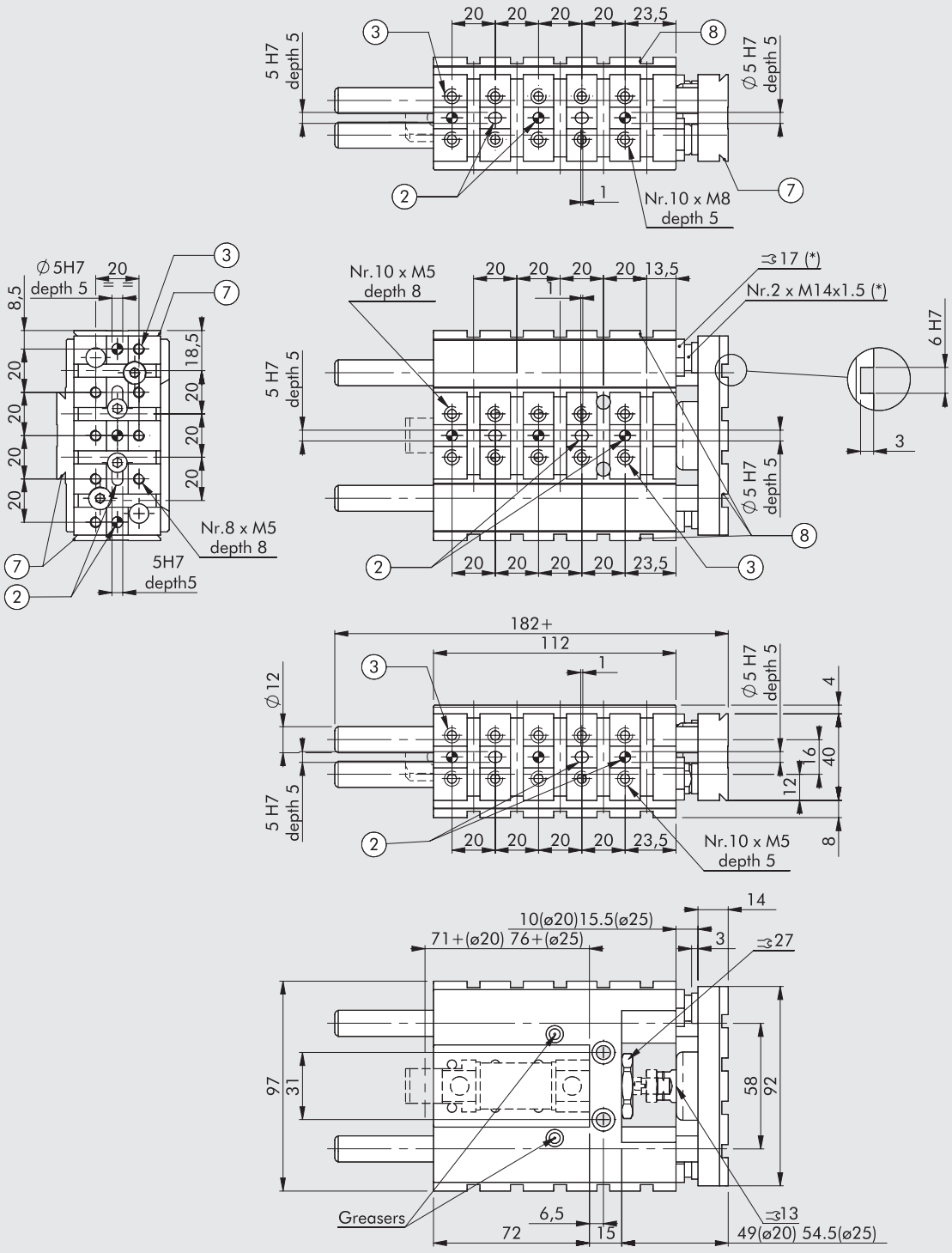
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

METAL WORK PNEUMATIC

DIMENSIONS Ø 20-25

Versions 00-01-02

+ = ADD THE STROKE

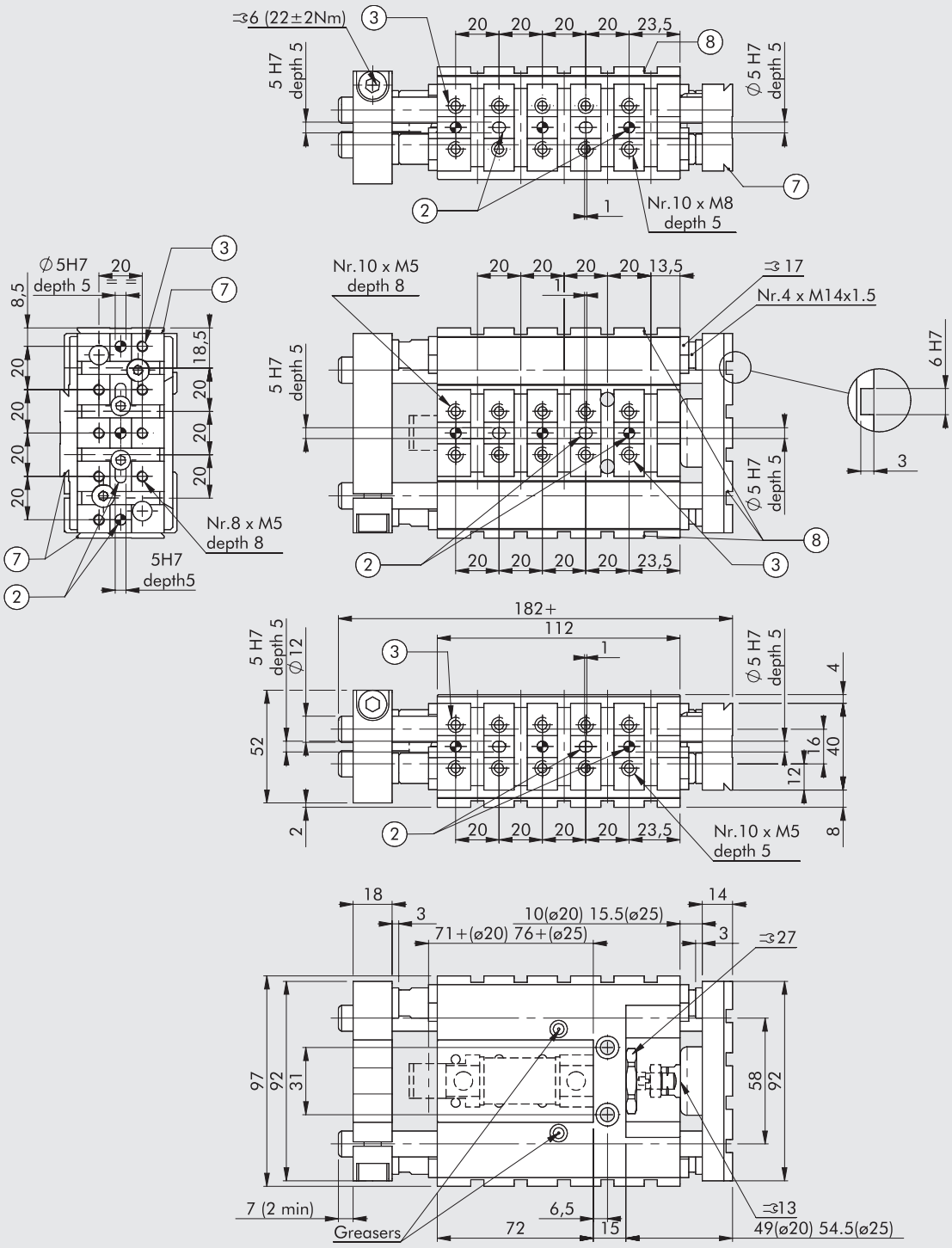


* Not present in version 00
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

DIMENSIONS Ø 20-25

Versions 03-04

+ = ADD THE STROKE



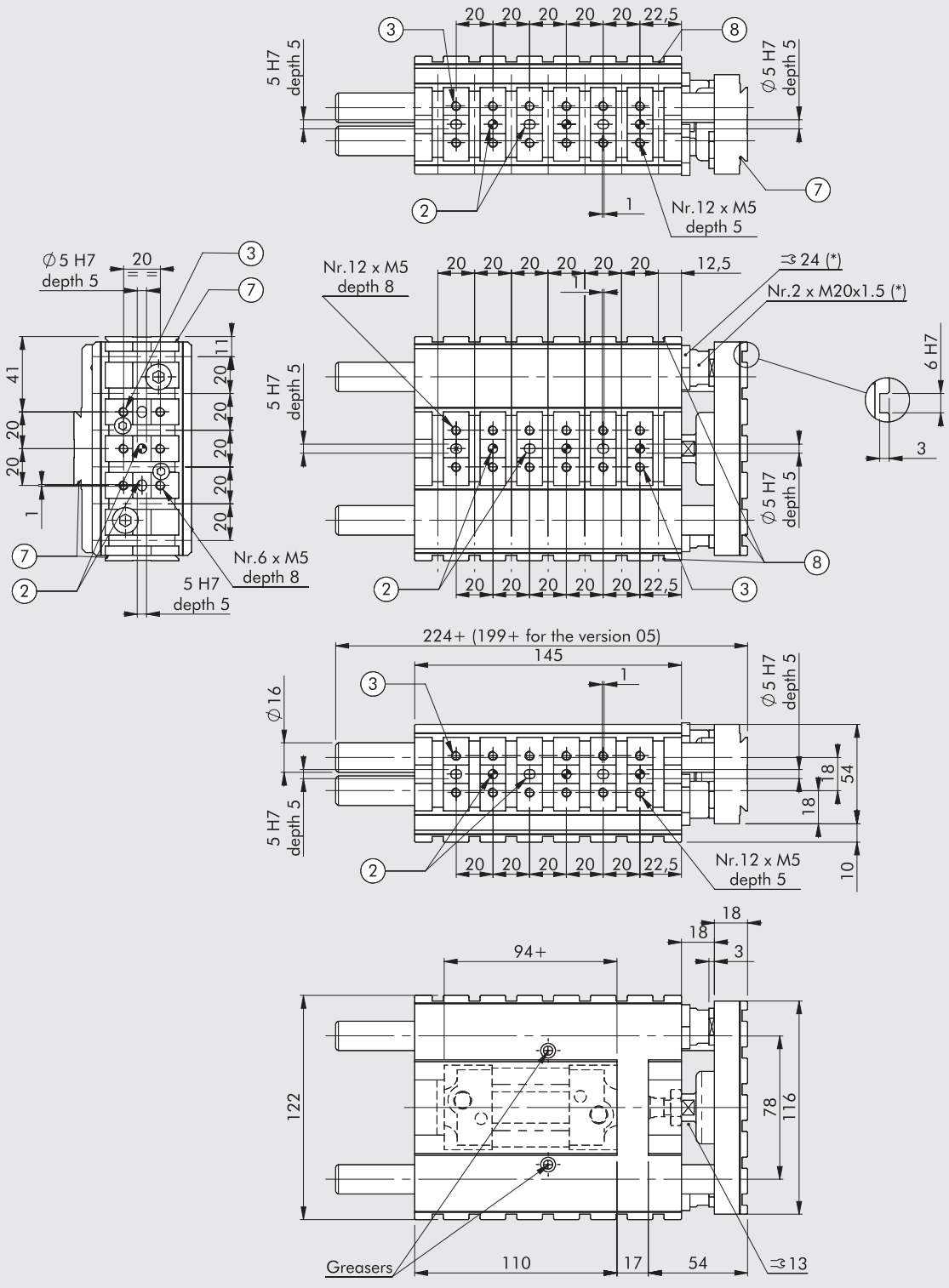
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

METAL WORK PNEUMATIC

DIMENSIONS Ø 32

Versions 00-01-02-05

+ = ADD THE STROKE

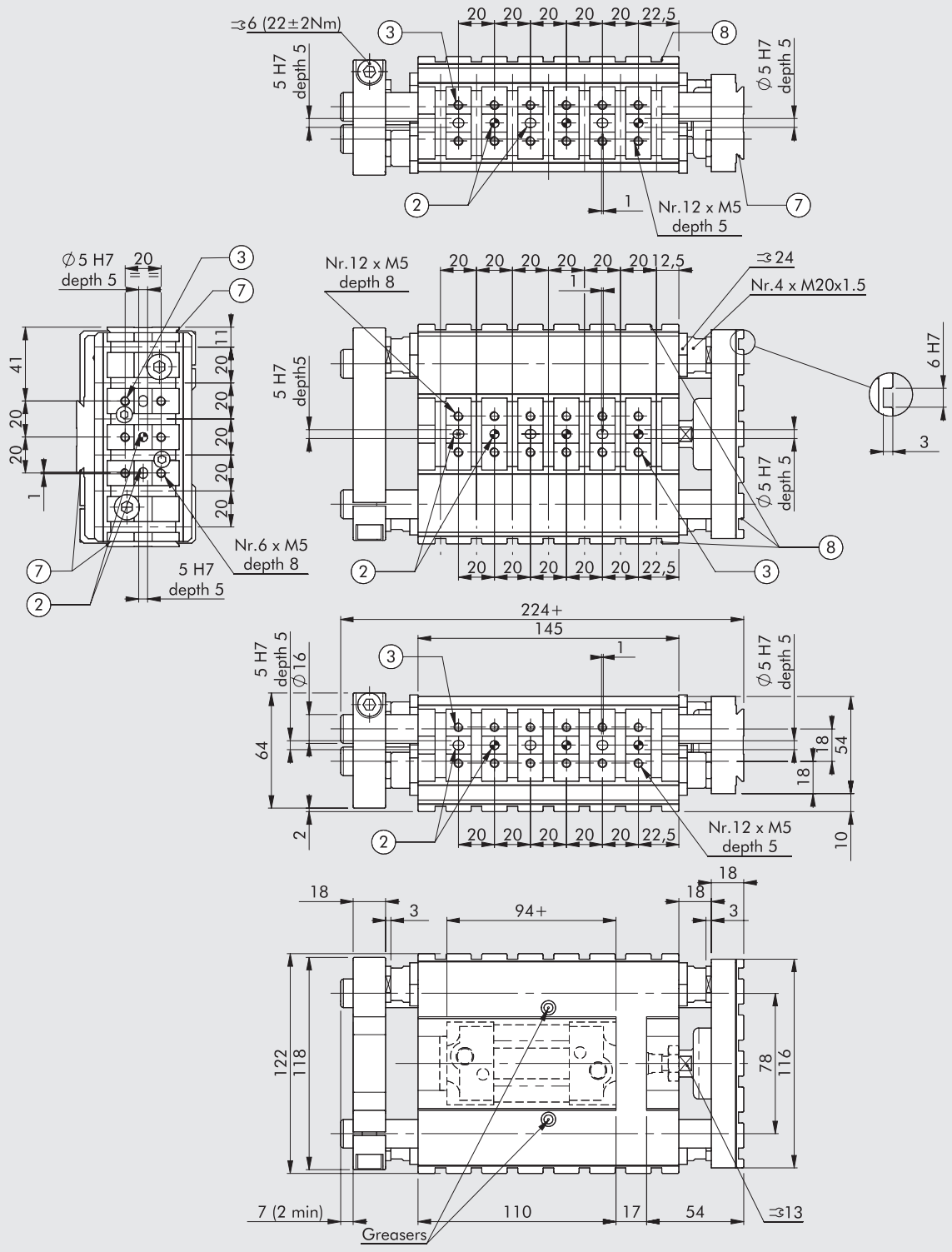


* Not present in version 00 and 05
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

DIMENSIONS Ø 32

Versions 03-04

+ = ADD THE STROKE



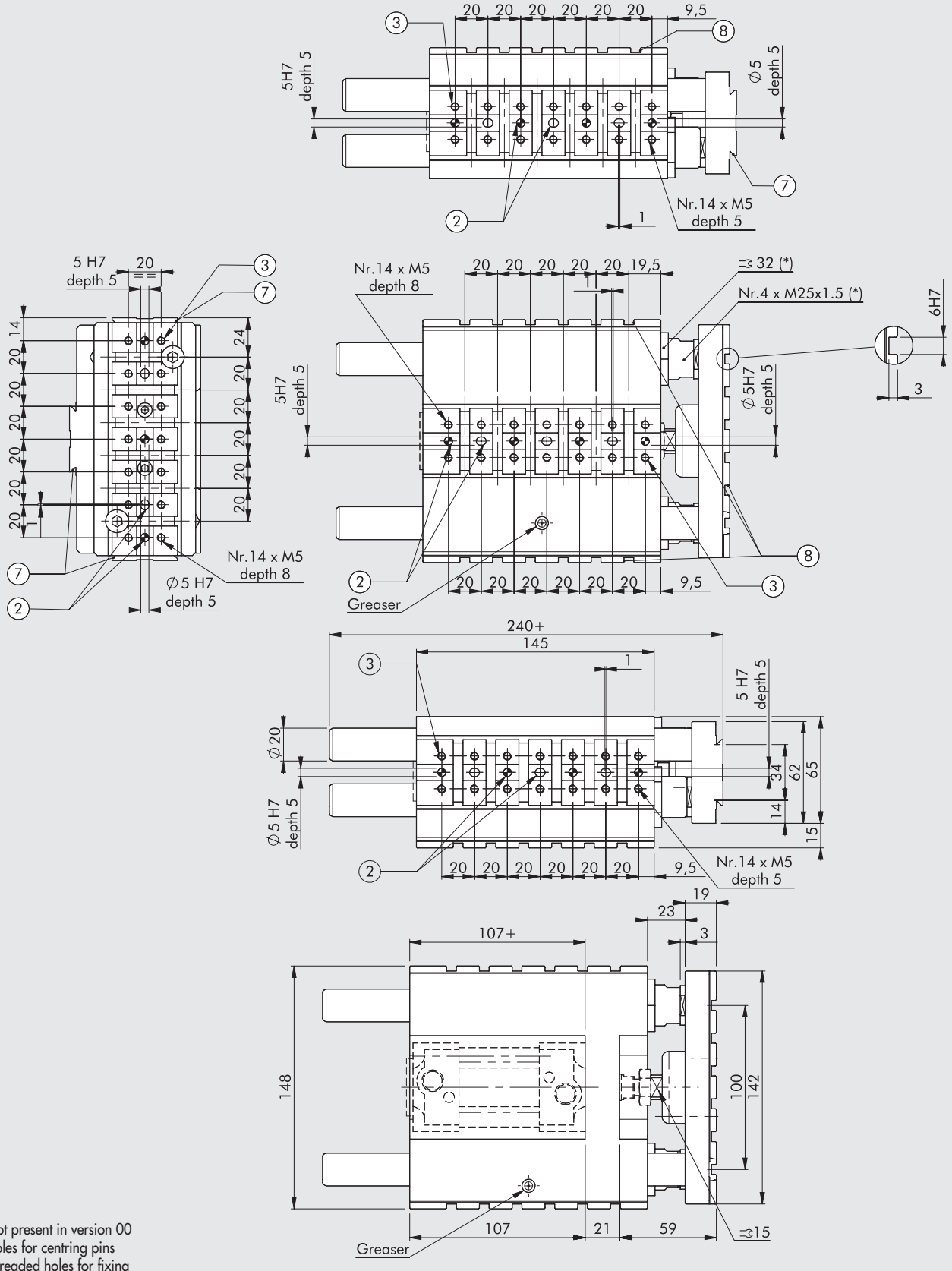
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

METAL WORK PNEUMATIC

DIMENSIONS Ø 40

Versions 00-01-02

+ = ADD THE STROKE

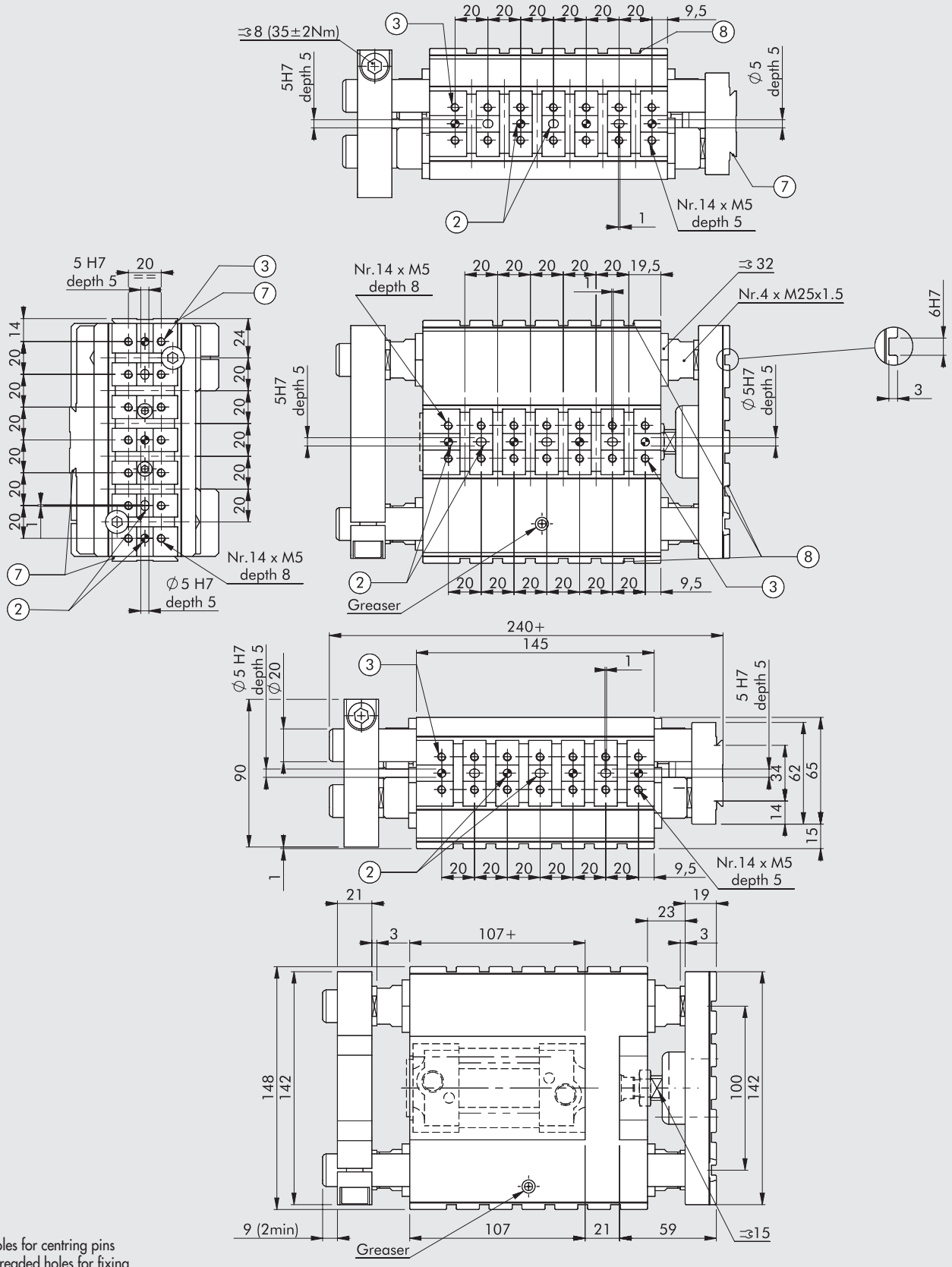


* Not present in version 00
② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

DIMENSIONS Ø 40

Versions 03-04

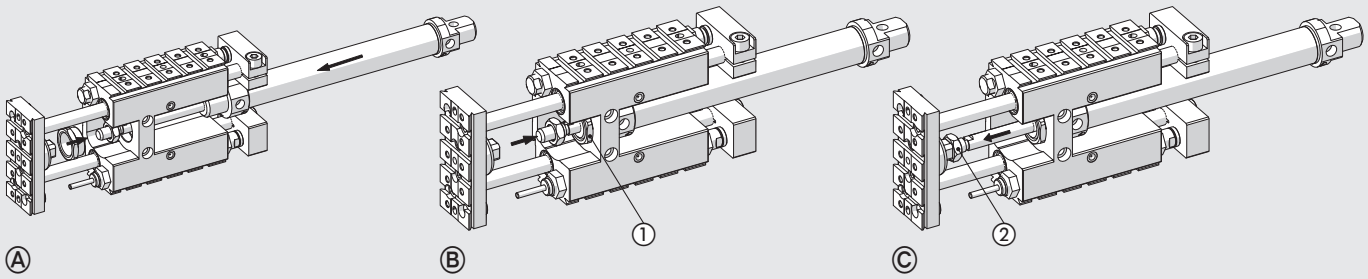
+ = ADD THE STROKE



② Holes for centring pins
③ Threaded holes for fixing
⑦ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑧ Slot for "V-Lock" precision key

MOUNTING ON ISO 6432 CYLINDERS

For mounting on the body of ISO 6432 cylinders:
Ⓐ Insert the cylinder in the guide.
Ⓑ Retract the piston rod and tighten the nut ① from the front using a wrench, holding the front end of the cylinder firmly.
Ⓒ Screw the piston rod onto the coupling and tighten the nut ②.

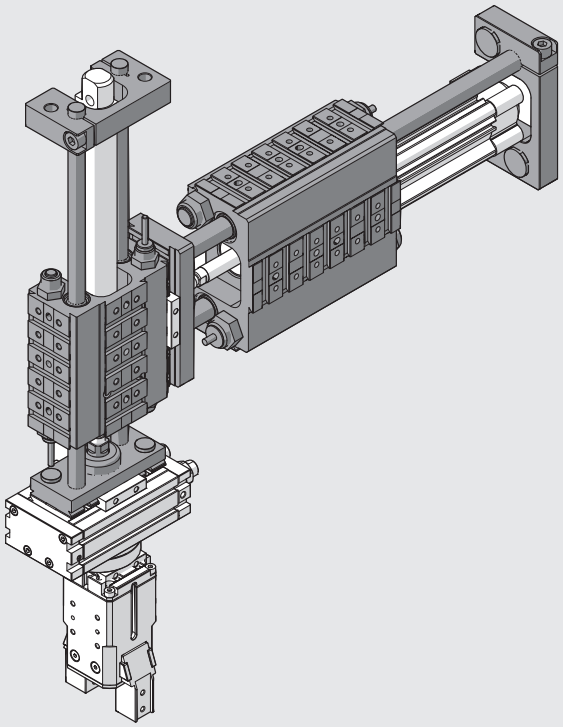


KEY TO CODES

W070	012	2	050	00	K
TYPE	**BORE**	**VERSION**	**STROKE**	**EXECUTION**	**FAMILY**
Guide unit	**012** 12 **012** 16 **020** 20 **025** 25 **032** 32 **040** 40	**2** Version H **3** Version M	See general technical data	**00** Without stop **01** With front stop and buffers **02** With front stop and shock absorber **03** With front and rear stops and buffers **04** With front and rear stops and shock absorbers ■ **05** With short columns for Elektro cylinder	**K** V-Lock

■ For Ø 32 only

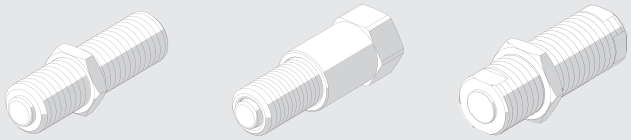
EXAMPLES OF APPLICATION



ACCESSORIES AND SPARE PARTS FOR GUIDE UNITS SERIES GDHK AND GDMK

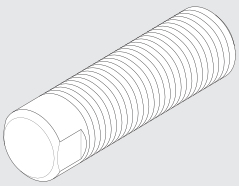
ELASTIC MECHANICAL STOP

Ø12-16 Ø20-25 Ø32-40



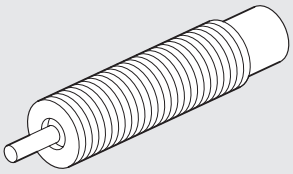
Code	Ø	Description
W0950005401K	12-16	Elastic mechanical stop M10x1 + nut
W0950005402K	20-25	Elastic mechanical stop M14x1.5 + bushing
W0950005403K	32	Elastic mechanical stop M20x1.5 + nut
W0950005404K	40	Elastic mechanical stop M25x1.5 + nut

MECHANICAL STOPS



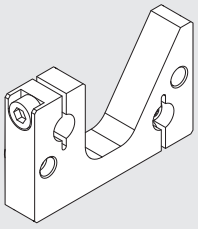
Code	Ø	Description
W0950005501K	12-16	Mechanical stop M10x1 + nut
W0950005502K	20-25	Mechanical stop M14x1.5 + nut
W0950005503K	32	Mechanical stop M20x1.5 + nut
W0950005504K	40	Mechanical stop M25x1.5 + nut

SHOCK ABSORBERS



Code	Ø	Description
W0950005301	12-16	Shock absorbers 2 M10x1 + nut
0950004004	20-25	Shock absorbers ECO25 MC2 + nut M14x1.5
0950004005	32	Shock absorbers ECO50 MC2 + nut M20x1.5
0950004006	40	Shock absorbers ECO100 MF2 + nut M25x1.5

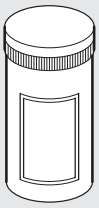
REAR PLATE KITS



Code	Ø	Description
W0950005600K	12-16	Rear plate kit GD_K
W0950005601K	20-25	Rear plate kit GD_K
W0950005602K	32	Rear plate kit GD_K
W0950005603K	40	Rear plate kit GD_K

Note: invidually packed with 2 screws

GREASE



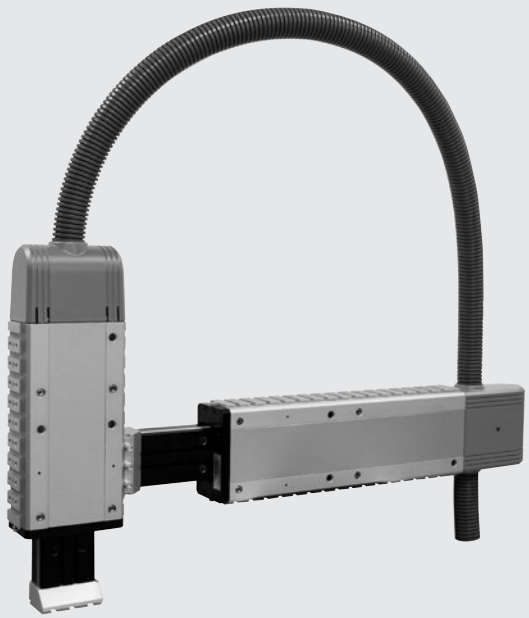
Code	Description	Weight [g]
9910502	Tube of RHEOLUBE 362 grease (for GDHK version)	1000
9910506	Tube of RHEOLUBE 363 AX1 grease (for GDMK version)	400

LINEAR UNITS SERIES LEPK

The LEPK linear units are designed for horizontal or vertical mounting. They are driven by an ISO 6432 pneumatic cylinder that can be easily removed when it needs to be replaced.
The precision round bars, which are hardened and incorporated in the rectangular profile enclosed by the body, provide a reliable guide system without any backlash, jointly with the adjustable casters.
The stoke is limited by mechanical stops that are provided with a fine adjustment device and hydraulic shock-absorbers.
A LED visible through the openings provided in the body indicates the switching status. The final positions are controlled by inductive sensors (included in the supply). The front plate comes with V-Lock connections. Dovetail guides are provided on both sides of the body for the connection of the V-Lock or QS system.
The area of the body where to make the transversal grooves for connection with type K fixing elements can be specified at the time of the order. The encapsulated construction ensures the elimination of any points of hazard and increased silent operation.
The linear units are available in two versions:

- version A comes with a retracted position and an adjustable extended position;
- version B is designed to achieve a second supplementary adjustable extended position.

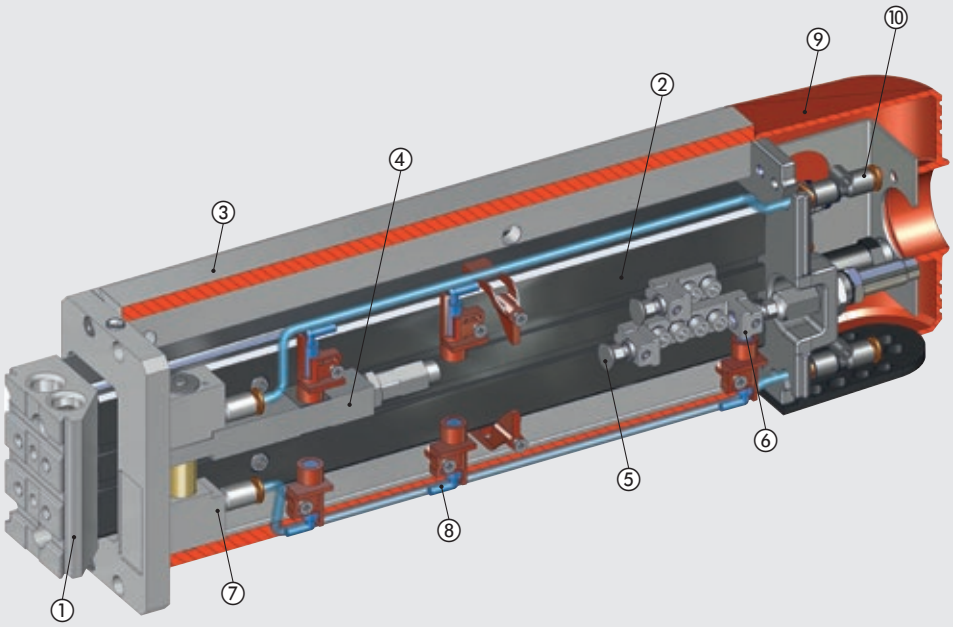
The LEPK units for vertical mounting can be equipped with a return spring to balance the weights. In the event of an emergency or a drop in pressure, the vertical slide is automatically pulled into the upper end-of-stroke position (slide fully retracted). For the orderly arrangement of cables and pipes, a hose pipe can be ordered. The linear unit for horizontal mounting can be supplied complete with an electrical terminal board.

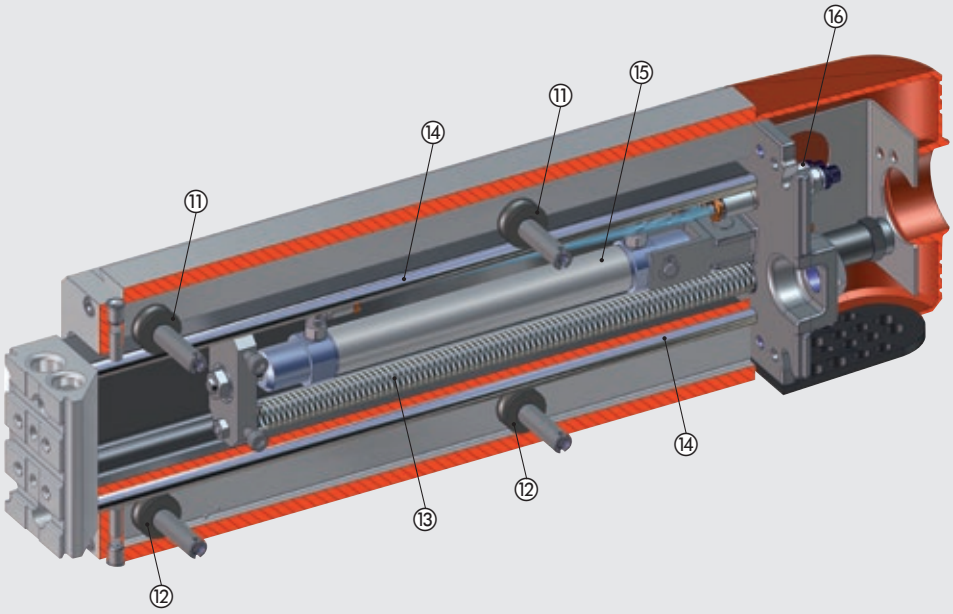


TECHNICAL DATA		LEPK-1-90-H		LEPK-1-160-H		LEPK-1-225-H		LEPK-2-320-H		LEPK-2-450-H		LEPK-1-60-V		LEPK-1-90-V		LEPK-1-160-V	
		Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B
Number of positions		2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3
Orientation		Horizontal										Vertical					
Operating pressure	bar	3 to 7															
	MPa	0.3 to 0.7															
	psi	43.5 to 101															
Temperature range	°C	-10 to 50															
	°F	14 to 122															
Fluid		Lubricated or unlubricated 20 µm filtered air. If lubricated air is used, lubrication must be continuous															
End position stop shock-absorption	mm	Hydraulic shock-absorbers															
End-position control		Inductive sensors with a LED visible from the outside															
Repeatability (on 100 strokes at constant conditions)	mm	< 0.005															
Piston diameter / Piston rod diameter	mm	16 / 6						20 / 8		25 / 10		16 / 6					
Stroke (min / max)	mm	15 to 90		15 to 160		15 to 225		50 to 320		50 to 450		15 to 60		15 to 90		15 to 160	
Intermediate useful stroke	mm	-	0 to 80	-	0 to 100	-	0 to 100	-	0 to 150	-	0 to 150	-	0 to 50	-	0 to 80	-	0 to 100
Theoretic force at 6 bar:																	
in thrust	N	106		106		106		165		260		Max. 90 (see page **A3**.101/102)					
in traction	N	90		90		90		137		218		Max. 150 (see page **A3**.101/102)					
Weight	kg	2.5	3.1	3.2	3.8	4.5	4.6	8	9.6	10.5	11	2.15	2.5	2.35	3	3.1	3.7
Weight of the moving mass	kg	0.68		0.83		1.25		2.29		3.12		0.61		0.68		0.83	
Maximum kinetic energy	J/stroke	5.88						19.6				5.88					
	J/h	25000						53000				25000					
Electrical protection class with PG29 pipe mounted (only for versions with a terminal board)		IP 42										-		-		-	
Relative air humidity (only for versions with a terminal board)		< 95 %										-		-		-	
Power connection cable (only for versions with a terminal board)		Max. 17 wires 0.14 - 0.5 mm² for max. 15 proximity switches +0 V +24 V										-		-		-	
Pneumatic connection		Pipe Ø 4						Pipe Ø 6				Pipe Ø 4					
Speed control		Flow regulators Ø 4 - M5						Flow regulators Ø 6 - 1/8"				Flow regulators Ø 4 - M5					

IMPORTANT: for maximum forces and moments, see page **A3**.97

COMPONENTS

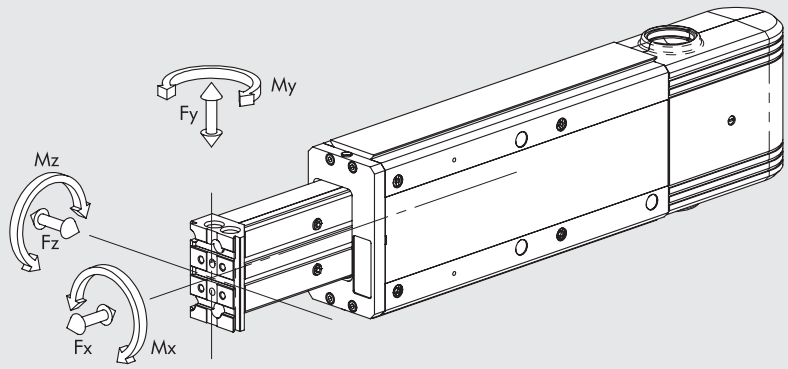




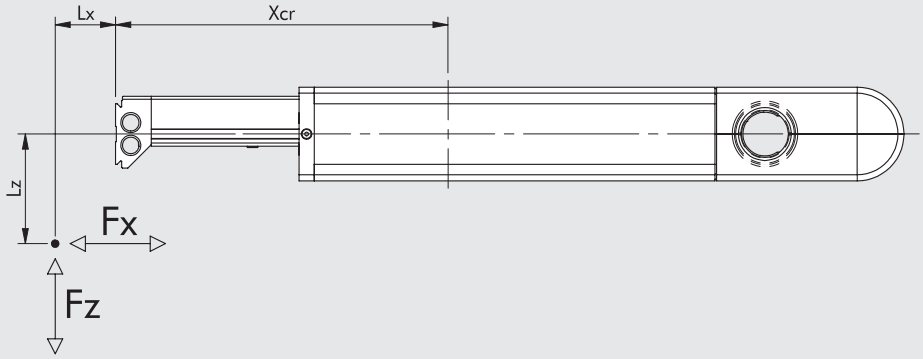
① FRONTAL INTERFACE: anodized aluminium
② SLIDING GUIDE: burnished aluminium
③ BODY: anodized aluminium
④ 3rd POSITION STOP: aluminium
⑤ ADJUSTABLE STOP: zinc-plated steel
⑥ FIXED STOP: zinc-plated steel
⑦ CONTROL CYLINDER, 3rd POSITION
⑧ INDUCTIVE SENSOR
⑨ GUARD: technopolymer
⑩ CYLINDER AIR SUPPLY FITTING, 3rd POSITION
⑪ ECCENTRIC ROLLER
⑫ CENTRIC ROLLER
⑬ RETURN SPRING: steel (optional for vertical versions only)
⑭ HARDENED GUIDE: hardened ground chromed steel
⑮ PNEUMATIC CYLINDER FOR HANDLING
⑯ FLOW REGULATOR FOR PNEUMATIC CYLINDER

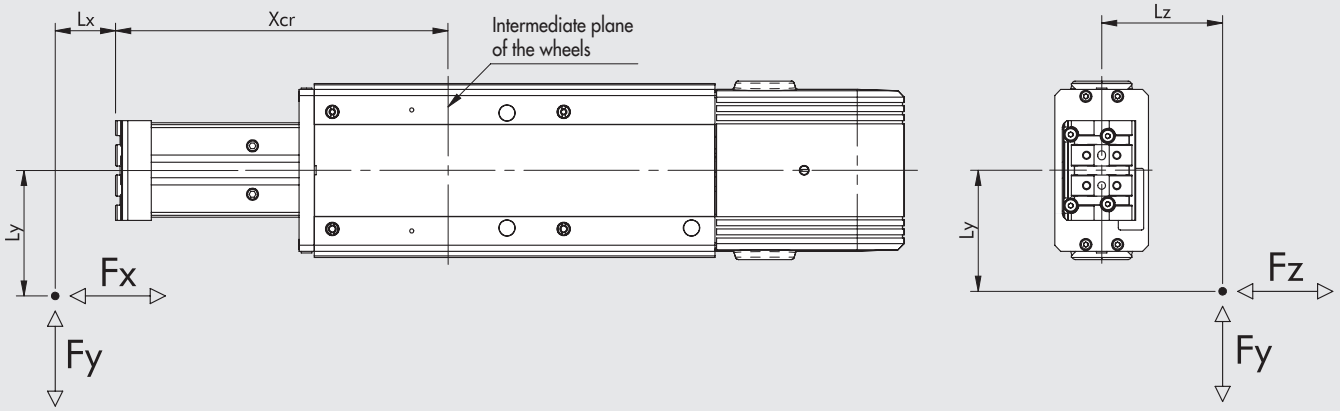
METAL WORK PNEUMATIC

DIAGRAM OF FORCES AND MOMENTS



Type	Xcr [mm]
LEPK-1-90-H-A	100
LEPK-1-90-H-B	128.5
LEPK-1-160-H-A	100
LEPK-1-160-H-B	134
LEPK-1-225-H-A	165
LEPK-1-225-H-B	165
LEPK-1-60-V-A	100
LEPK-1-60-V-B	115.5
LEPK-1-90-V-A	100
LEPK-1-90-V-B	128.5
LEPK-1-160-V-A	100
LEPK-1-160-V-B	134
LEPK-2-320-H-A	132
LEPK-2-320-H-B	179.5
LEPK-2-450-H-A	179.5
LEPK-2-450-H-B	179.5





Size	Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]
LEPK-1	550	270	11	20	40
LEPK-2	1000	600	50	60	100

N.B.: The values are calculated on the basis of theoretical useful life of 10.000 km.

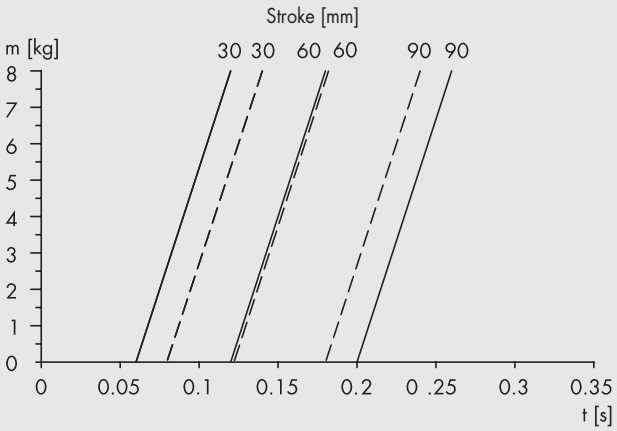
N.B.: When the cylinder is subjected simultaneously to torque and force, keep to the following equations, where the lengths have to be given in metres.

$Mx = Fz \cdot Ly + Fy \cdot Lz$ $My = Fz \cdot (Lx + Xcr) + Fx \cdot Lz$ $Mz = Fy \cdot (Lx + Xcr) + Fx \cdot Ly$

$$\frac{[Mx]}{Mx_{max}} + \frac{[My]}{My_{max}} + \frac{[Mz]}{Mz_{max}} + \frac{[Fy]}{Fy_{max}} + \frac{[Fz]}{Fz_{max}} \leq 1$$

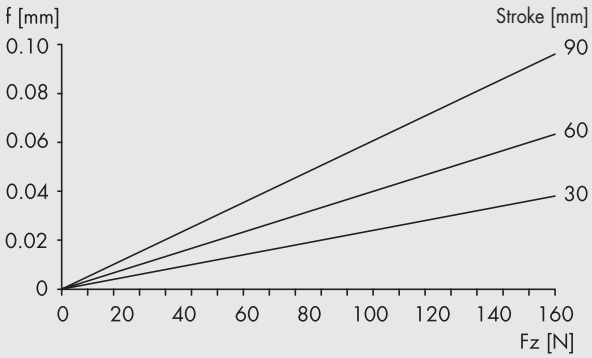
HORIZONTAL LAYOUT

LEPK-1-90-H-A/B - Diagram of traverse times



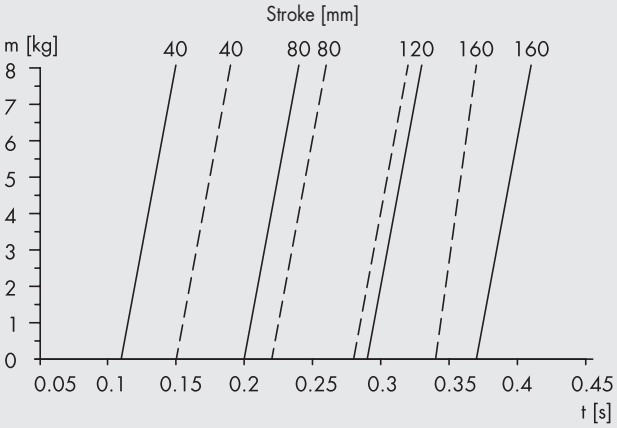
— — — Extension time
——— Retraction time at 5 bar without choke

LEPK-1-90-H-A/B - Stress-deformation diagram



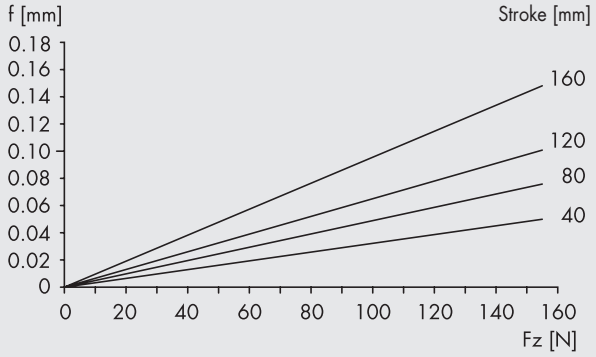
f = Deflection (measured at the locking plate)
Fz = The sum of all vertical forces

LEPK-1-160-H-A/B - Diagram of traverse times



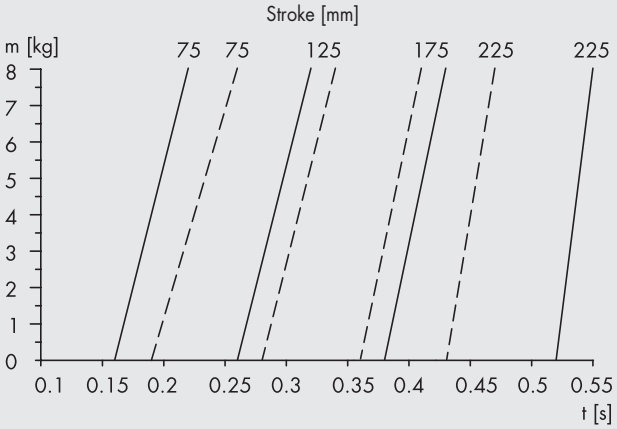
— — — Extension time
——— Retraction time at 5 bar without choke

LEPK-1-160-H-A/B - Stress-deformation diagram



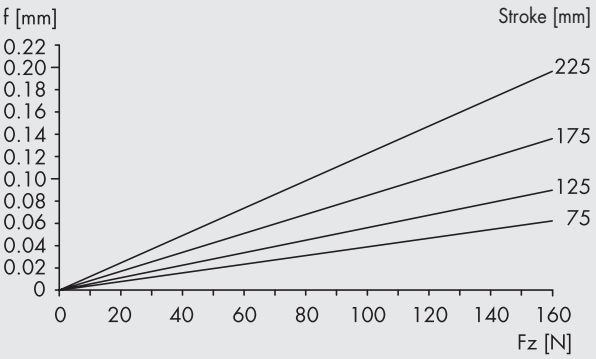
f = Deflection (measured at the locking plate)
Fz = The sum of all vertical forces

LEPK-1-225-H-A/B - Diagram of traverse times



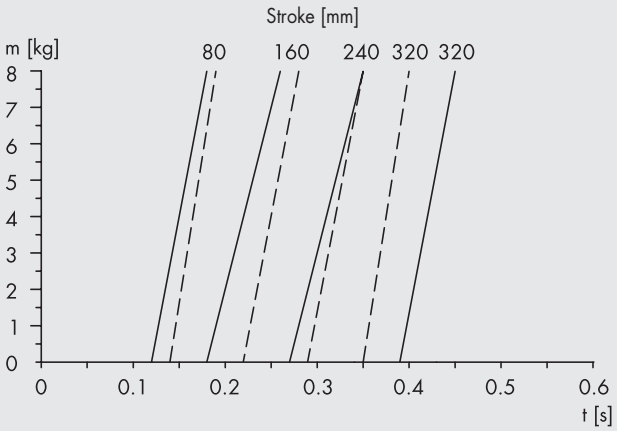
— — — Extension time
——— Retraction time at 5 bar without choke

LEPK-1-225-H-A/B - Stress-deformation diagram



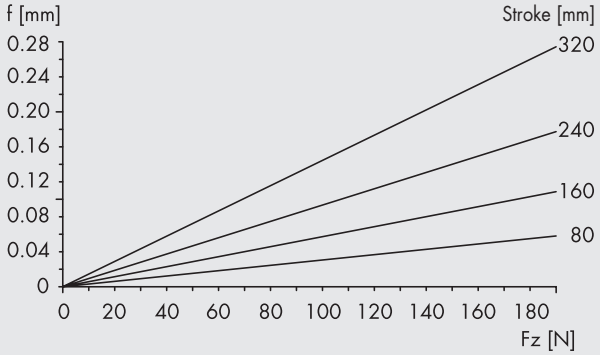
f = Deflection (measured at the locking plate)
Fz = The sum of all vertical forces

LEPK-2-320-H-A/B - Diagram of traverse times



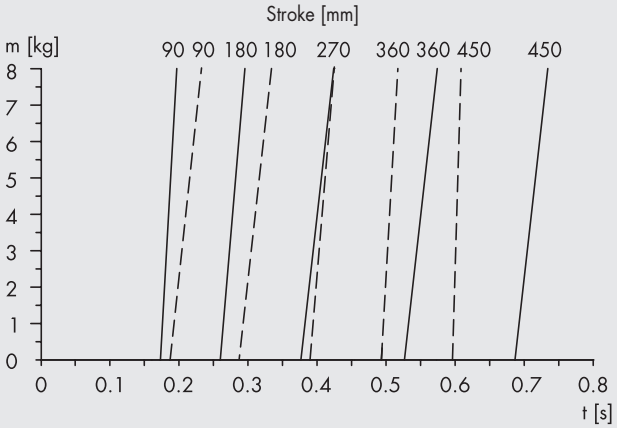
— — — Extension time
——— Retraction time at 5 bar without choke

LEPK-2-320-H-A/B - Stress-deformation diagram



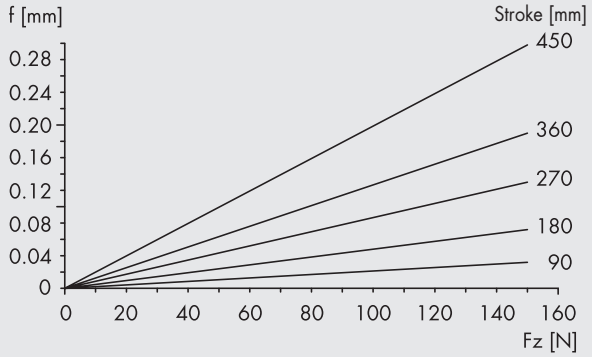
f = Deflection (measured at the locking plate)
Fz = The sum of all vertical forces

LEPK-2-450-H-A/B - Diagram of traverse times



— — — Extension time
——— Retraction time at 5 bar without choke

LEPK-2-450-H-A/B - Stress-deformation diagram



f = Deflection (measured at the locking plate)
Fz = The sum of all vertical forces

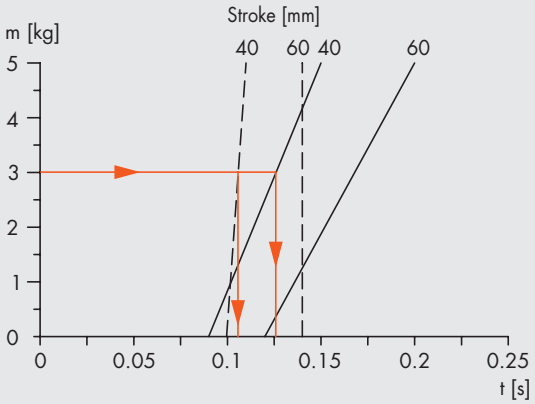
VERTICAL LAYOUT

EXAMPLE
LEPK-1-60-V-A/B - Traverse times

Extension time
m = 3 kg
Stroke = 40 mm
Result: t = 0.11 s

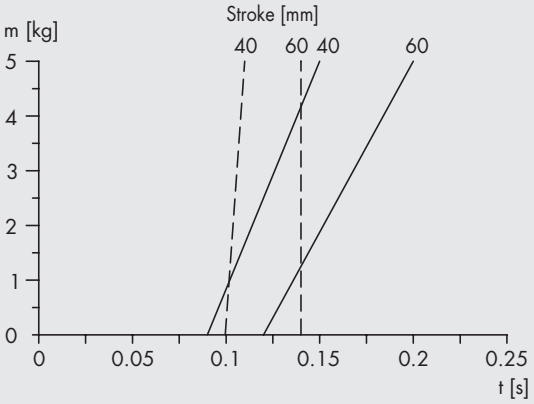
Retraction time
m = 3 kg
Stroke = 40 mm
Result: t = 0.13 s

m = Mass applied [kg]
t = Traverse times [s]
Stroke = Traverse stroke [mm]



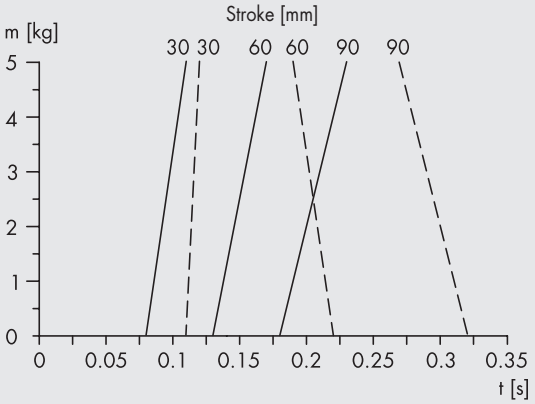
Extension time
Retraction time at 5 bar without choke

LEPK-1-60-V-A/B - Diagram of traverse times



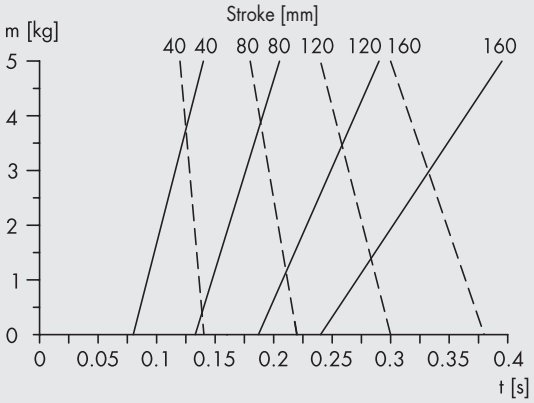
Extension time
Retraction time at 5 bar without choke

LEPK-1-90-V-A/B - Diagram of traverse times



Extension time
Retraction time at 5 bar without choke

LEPK-1-160-V-A/B - Diagram of traverse times

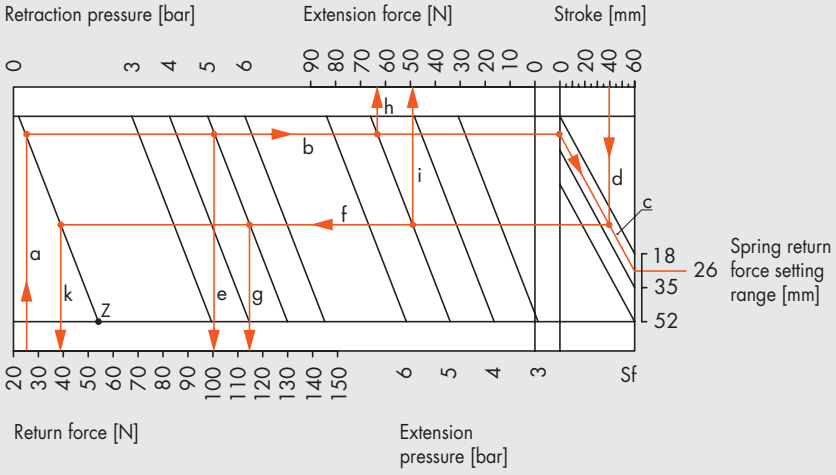


Extension time
Retraction time at 5 bar without choke

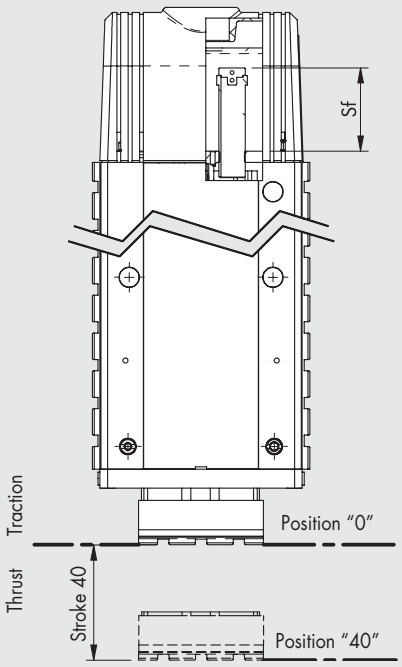
FORCES RELATING TO LEPK VERTICAL UNITS WITH SPRING

EXAMPLE
LEPK-1-60-V-A/B – Diagram of forces – Interpretation of the diagram of LEPK vertical unit forces

Stroke = 40 mm
Operating pressure = 5 bar
Mass applied = 2.5 kg (about 25 N)
Requirement = in no-pressure conditions (0 bar), the mass applied (2.5 kg) must move to the upper end-of-stroke position ("0")



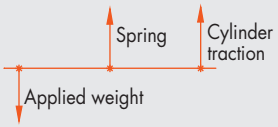
Vertical mounting position



1) Maintenance of the LEPK in position "0" with no pressure (stroke = 0 mm, pressure = 0 bar):
starting from the weight force of the mass to be lifted (25 N), and following the lines **a** - **b** - **c**, you can set the Sf = 26 mm and the following force values:

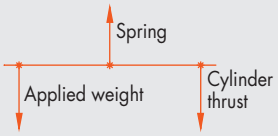
- **line e**: tractive force in position "0" and with a pressure of 5 bar in the cylinder on the front side (stroke = 0 mm, pressure = 5 bar): in the case in point, it is around 100 N.
  The mass applied must now be subtracted:
  F = 100 N - 25 N = 75 N

Traction position "0" p = 5 bar



- **line h**: thrust force in position "0" and with a pressure of 5 bar in the cylinder on the back side (stroke = 0 mm, pressure = 5 bar): in the case in point, it is about 65 N.
  The mass applied must now be added up, which gives:
  F = 65 N + 25 N = 90 N

Thrust position "0" p = 5 bar

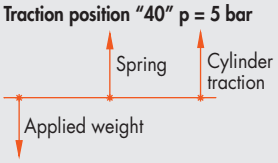


N.B.: As can be seen in the graph, for the LEPK-1-60-V, the maximum weight sustainable by the spring alone without pressure is about 55 N (with Sf = 52 mm). See point "**Z**" in the graph.

2) Verification of the forces with stroke setting to 40 mm:
starting from the 40 mm stroke and following the line **d** - **f** the following values of force are obtained:

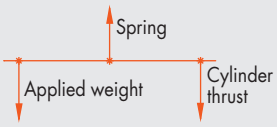
- **line g**: traction force in position "40" and with a pressure of 5 bar in the cylinder on the front side (stroke = 0 mm, pressure = 5 bar): in the case in point, it is around 115 N.
  The mass applied must now be subtracted, which gives:
  F = 115 N - 25 N = 90 N

Traction position "40" p = 5 bar



- **line i**: thrust force in position "40" and with a pressure of 5 bar in the cylinder on the back side (stroke = 40 mm, pressure = 5 bar): in the case in point, it is about 50 N.
  The mass applied must now be added up, which gives:
  F = 50 N + 25 N = 75 N

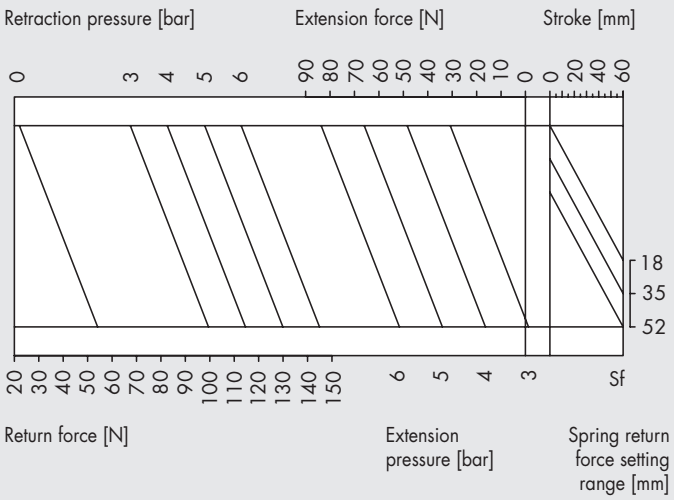
Thrust position "40" p = 5 bar



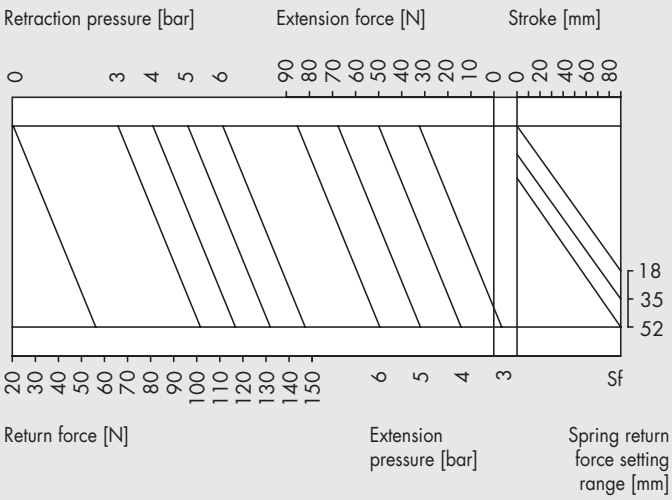
- **line k**: tractive force of the spring in position "40" and without pressure (stroke = 40 mm, pressure = 0 bar): in the case in point it is about 39 N.
  The mass applied must now be subtracted, which gives:
  F = 39 N - 25 N = 14 N

Traction position "40" p = 0 bar

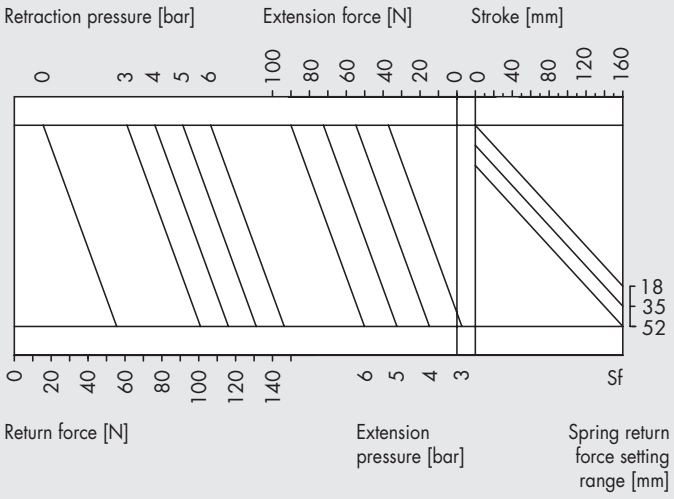
LEPK-1-60-V-A/B - Diagram of forces



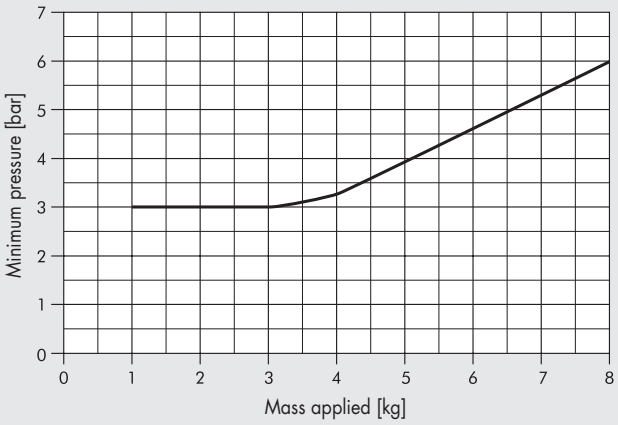
LEPK-1-90-V-A/B - Diagram of forces



LEPK-1-160-V-A/B - Diagram of forces

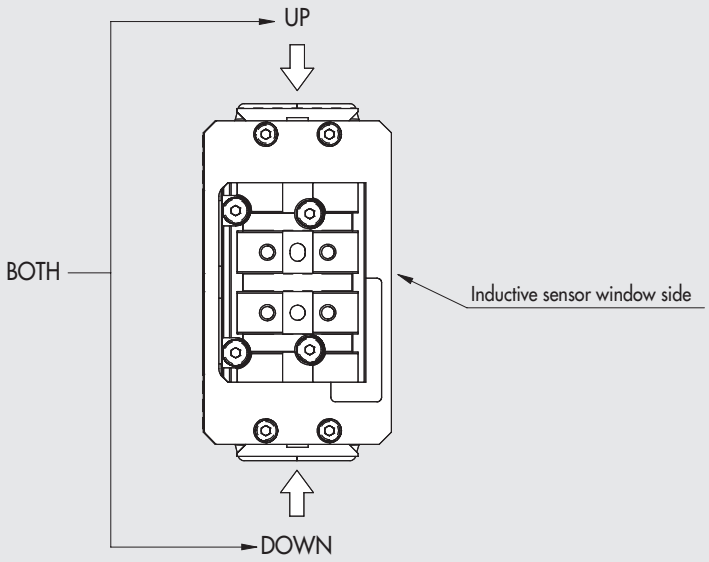


Minimum vertical retraction actuation pressure without spring



MOUNTING OPTIONS

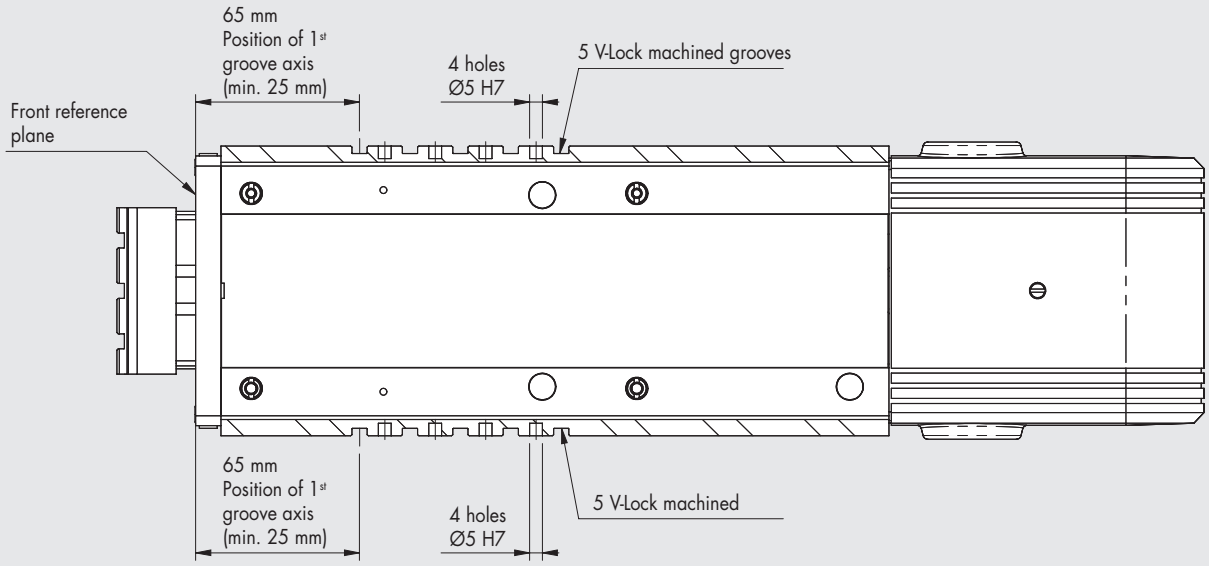
At the encoding stage, you need to determine whether to make the V-Lock grooves and on what side. Number "0" (Zero) identifies the no machining condition, while the letters "U" (Up), "D" (Down) and "B" (Both) identify the side where V-Lock connections must be provided.
The letters identify the position of machining in accordance with the diagram shown in the drawing below.



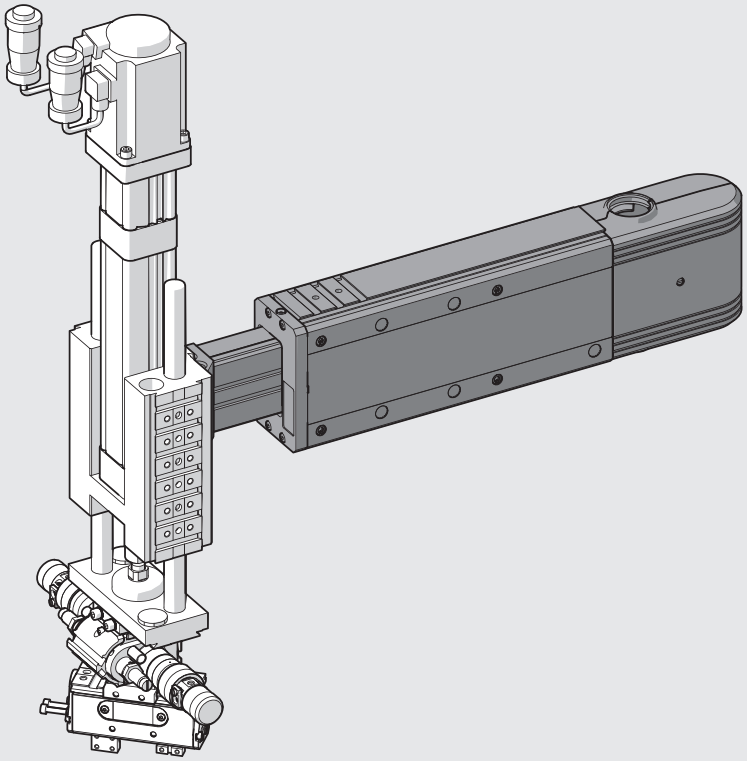
After determining the side of machining, you need to establish the point at which to perform the first V-Lock machining (the reference is the front plane).
The position of the first machining shall be in accordance with the following rules:
- minimum distance from the front reference plane: 25 mm;
- subsequent distances: starting from 25 mm, the distance is increased by 20 mm steps at a time (i.e. 25, 45, 65, 85, etc.).
The number of the V-Lock grooves to be machined is then indicated (the number of Ø5 H7 pinholes coincides with the number of grooves less 1).

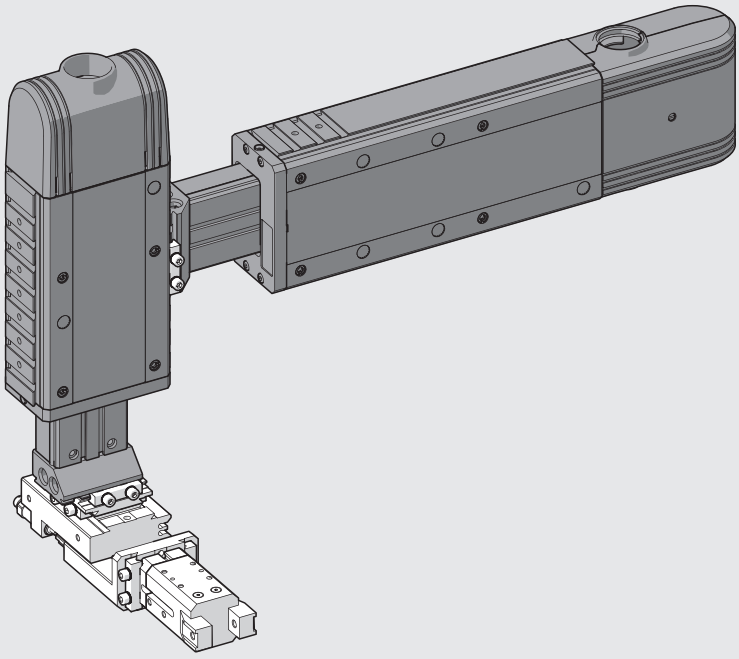
IMPORTANT!
If you decide for version "B", i.e. the one with the grooves machined on both sides of the body, the distance values and the number of grooves shall apply to both sides.

EXAMPLE
If you order an LEPK unit encoded **K1012H00090B06505K** the part ordered will be as follows:



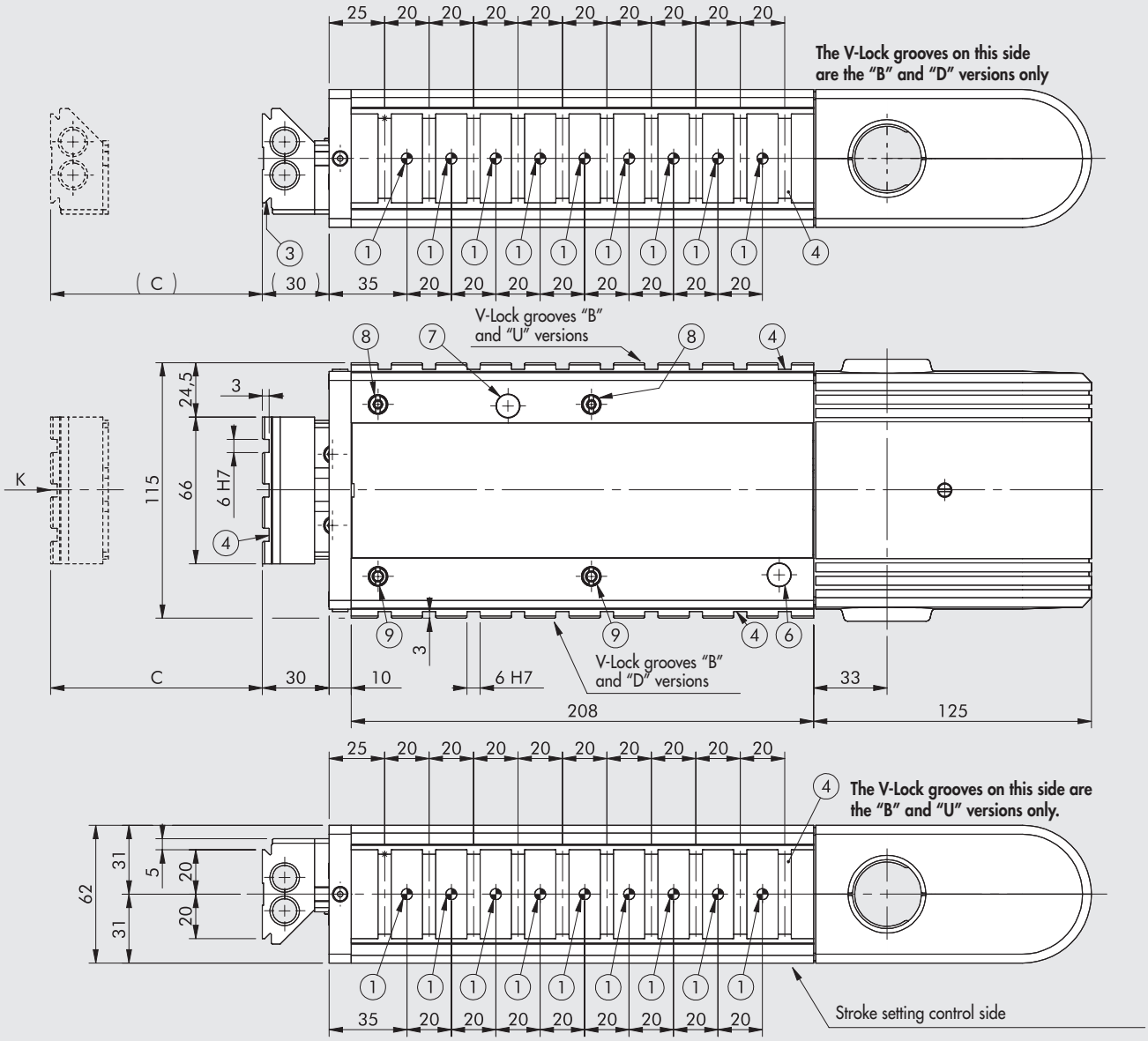
EXAMPLES OF APPLICATION





METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-90-H-A LINEAR UNIT (horizontal, 2 positions)

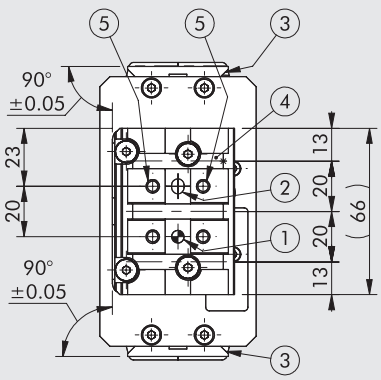


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AH00090B02510K with the maximum number of V-Lock grooves (version BOTH)

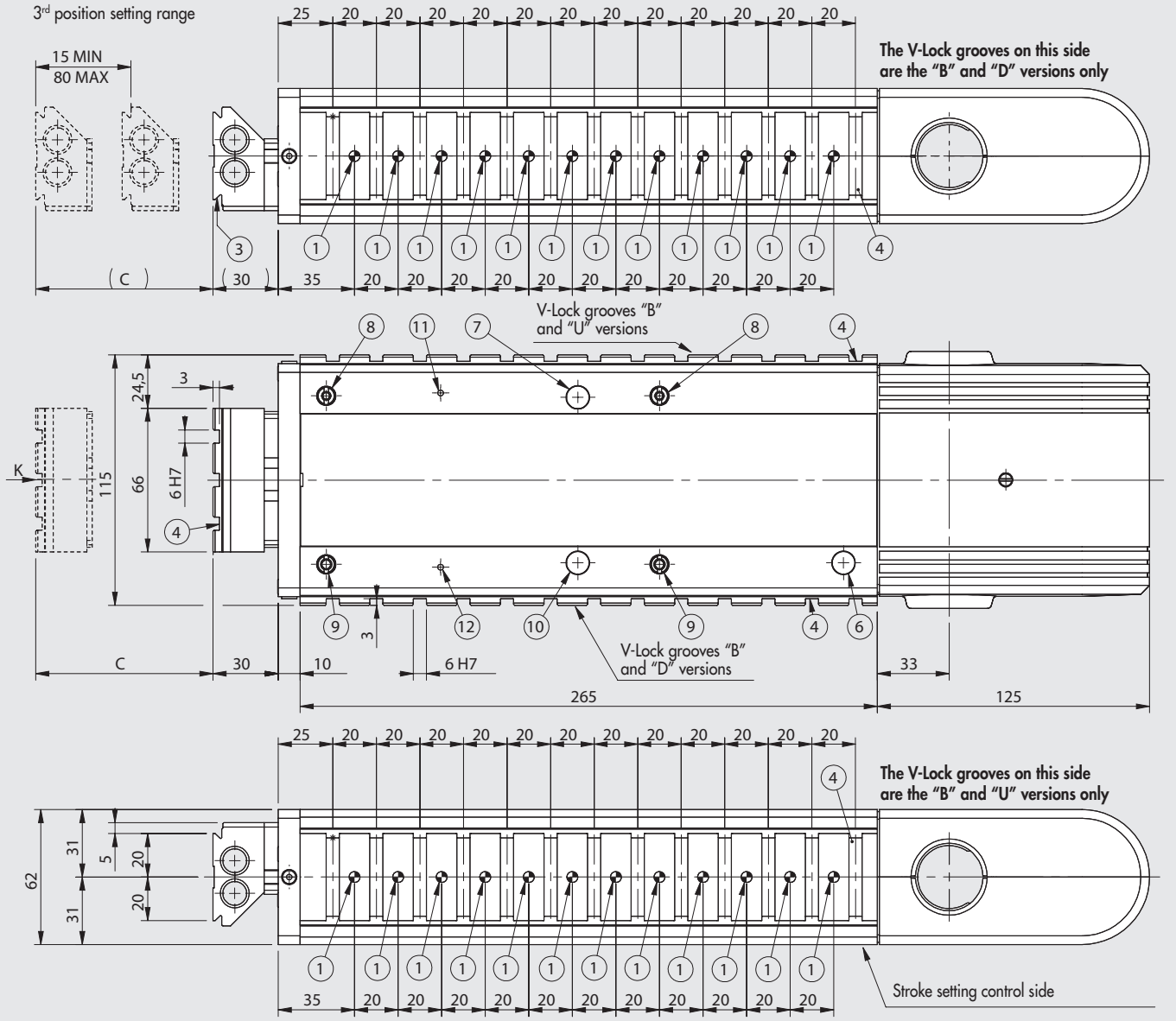
Code	Description	C
K101AH00090000000K K101AH00090B _ _ _ _ _ K K101AH00090D _ _ _ _ _ K K101AH00090U _ _ _ _ _ K	LEPK-1-90-H-A	15 to 90
K101AH20090000000K K101AH20090B _ _ _ _ _ K K101AH20090D _ _ _ _ _ K K101AH20090U _ _ _ _ _ K	LEPK-1-90-H-A without terminal board	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-90-H-A can hold maximum 10 V-Lock grooves and hence a maximum of 9 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-90-H-B LINEAR UNIT (horizontal, 3 positions)

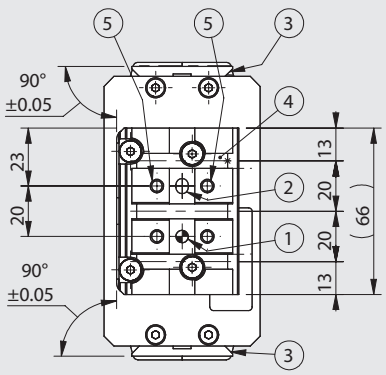


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BH00090B02513K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BH00090000000K	LEPK-1-90-H-B	15 to 90
K101BH00090B _ _ _ _ _ K		
K101BH00090D _ _ _ _ _ K		
K101BH00090U _ _ _ _ _ K		
K101BH20090000000K	LEPK-1-90-H-B without terminal board	
K101BH20090B _ _ _ _ _ K		
K101BH20090D _ _ _ _ _ K		
K101BH20090U _ _ _ _ _ K		

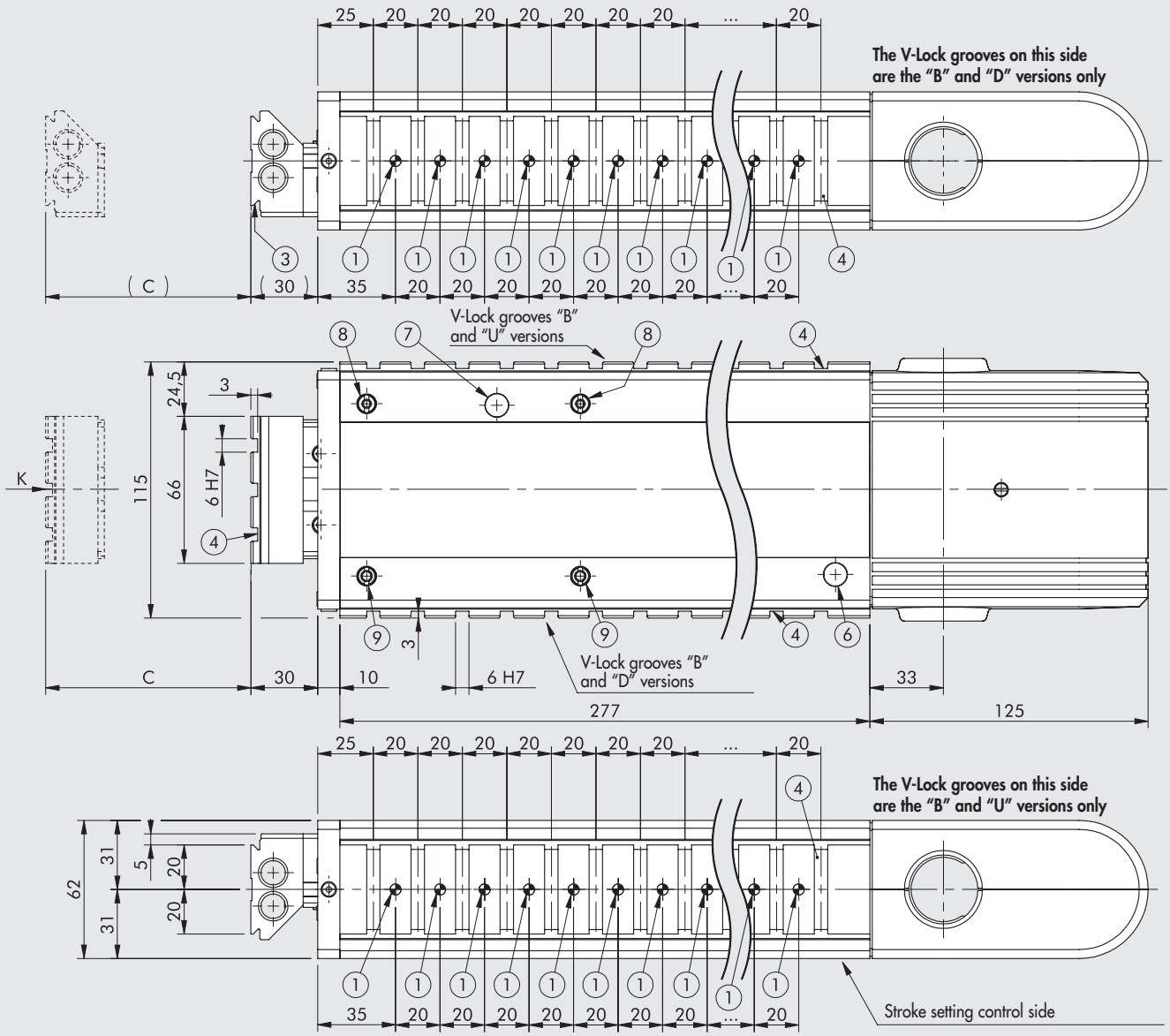
VIEWED FROM "K"



IMPORTANT. The LEPK-1-90-H-B can hold maximum 13 V-Lock grooves and hence a maximum of 12 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-160-H-A LINEAR UNIT (horizontal, 2 positions)

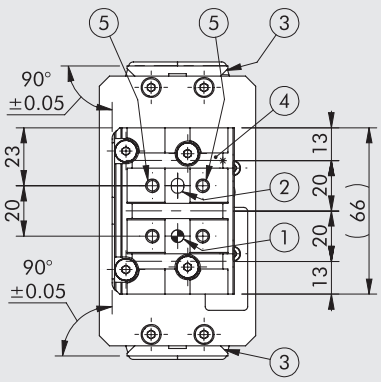


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AH00160B02513K with the maximum number of V-Lock grooves (version BOTH)

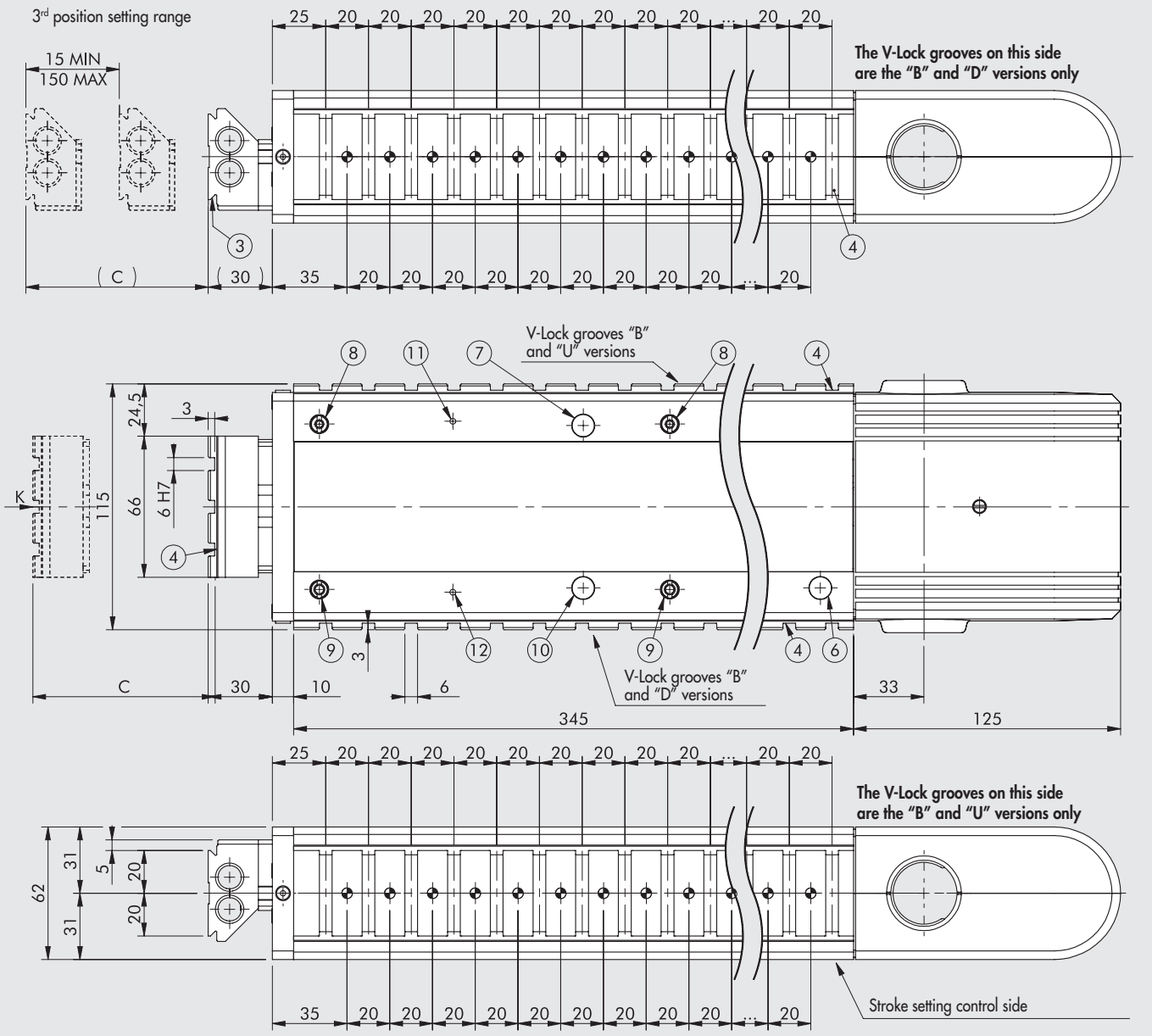
Code	Description	C
K101AH00160000000K K101AH00160B _ _ _ _ _ K K101AH00160D _ _ _ _ _ K K101AH00160U _ _ _ _ _ K	LEPK-1-160-H-A	15 to 160
K101AH20160000000K K101AH20160B _ _ _ _ _ K K101AH20160D _ _ _ _ _ K K101AH20160U _ _ _ _ _ K	LEPK-1-160-H-A without terminal board	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-160-H-A can hold maximum 13 V-Lock grooves and hence a maximum of 12 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-160-H-B LINEAR UNIT (horizontal, 3 positions)

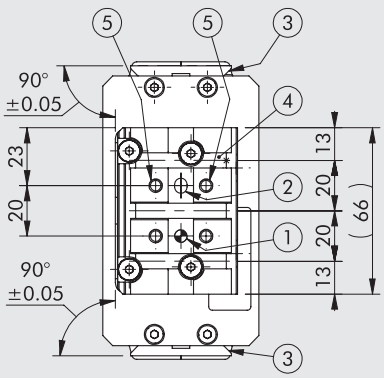


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BH00160B02517K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BH00160000000K	LEPK-1-160-H-B	15 to 160
K101BH00160B _ _ _ _ _ K		
K101BH00160D _ _ _ _ _ K		
K101BH00160U _ _ _ _ _ K		
K101BH20160000000K	LEPK-1-160-H-B without terminal board	
K101BH20160B _ _ _ _ _ K		
K101BH20160D _ _ _ _ _ K		
K101BH20160U _ _ _ _ _ K		

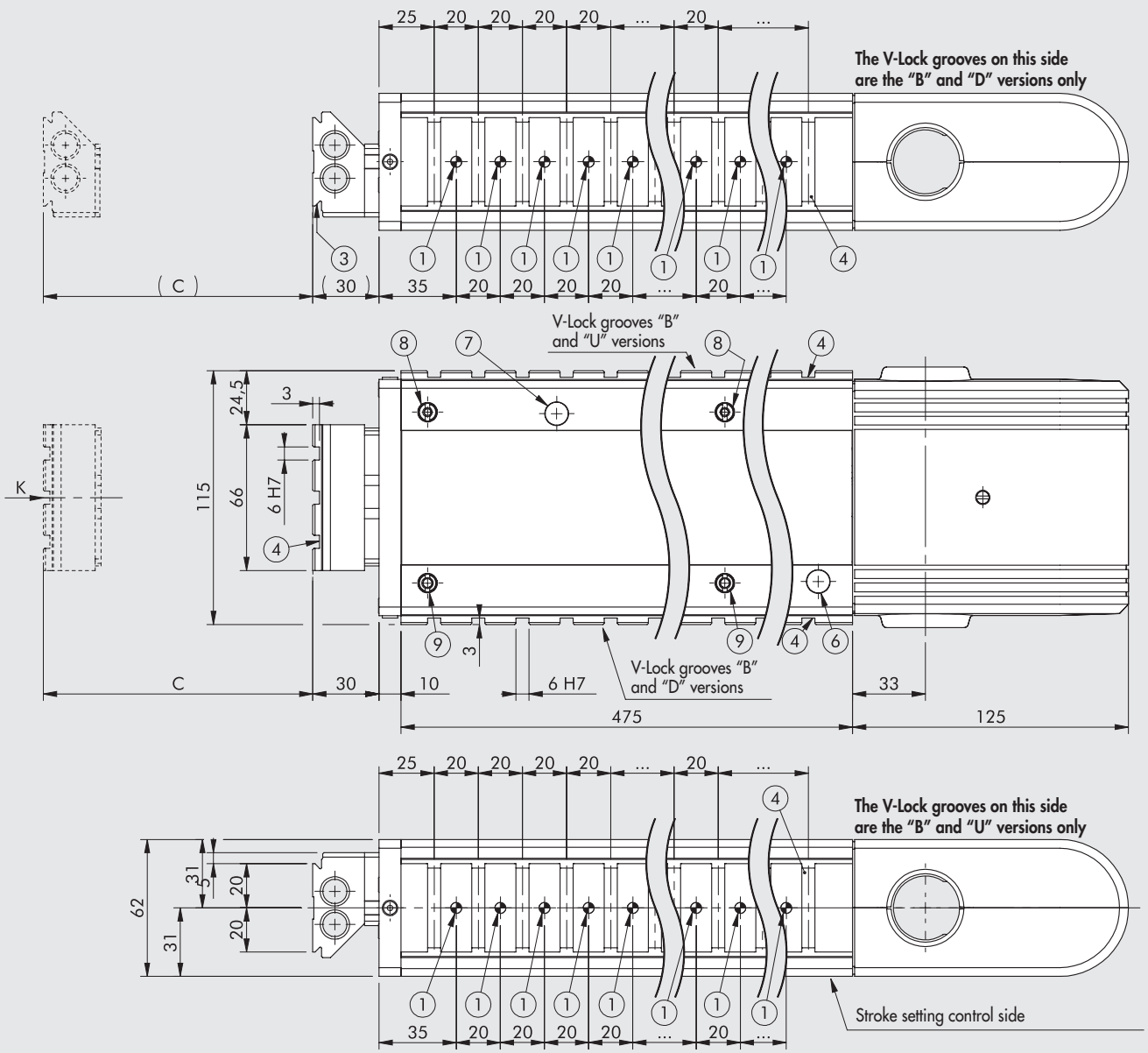
VIEWED FROM "K"



IMPORTANT. The LEPK-1-160-H-B can hold maximum 17 grooves and hence a maximum of 16 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-225-H-A LINEAR UNIT (horizontal, 2 positions)

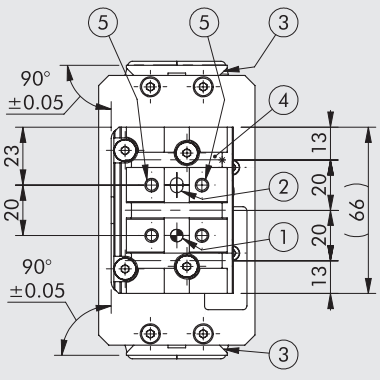


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AH00225B02523K with the maximum number of V-Lock grooves (version BOTH)

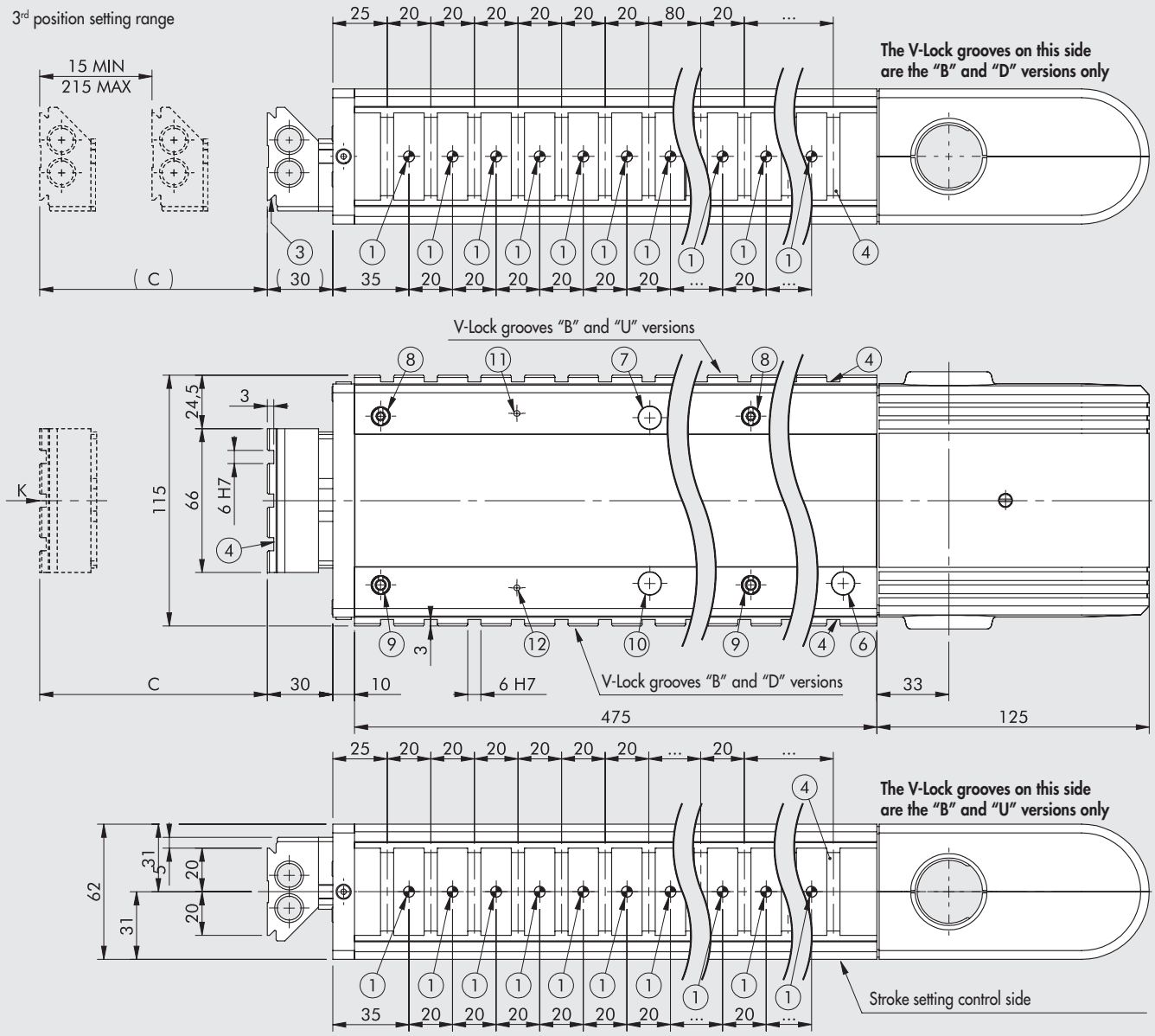
Code	Description	C
K101AH00225000000K K101AH00225B _ _ _ _ _ K K101AH00225D _ _ _ _ _ K K101AH00225U _ _ _ _ _ K	LEPK-1-225-H-A	15 to 225
K101AH20225000000K K101AH20225B _ _ _ _ _ K K101AH20225D _ _ _ _ _ K K101AH20225U _ _ _ _ _ K	LEPK-1-225-H-A without terminal board	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-225-H-A can hold maximum 23 grooves and hence a maximum of 22 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-225-H-B LINEAR UNIT (horizontal, 3 positions)

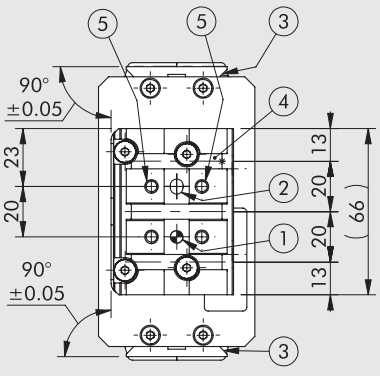


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BH00225B02523K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BH00225000000K K101BH00225B _ _ _ _ _ K K101BH00225D _ _ _ _ _ K K101BH00225U _ _ _ _ _ K	LEPK-1-225-H-B	15 to 225
K101BH20225000000K K101BH20225B _ _ _ _ _ K K101BH20225D _ _ _ _ _ K K101BH20225U _ _ _ _ _ K	LEPK-1-225-H-B without terminal board	

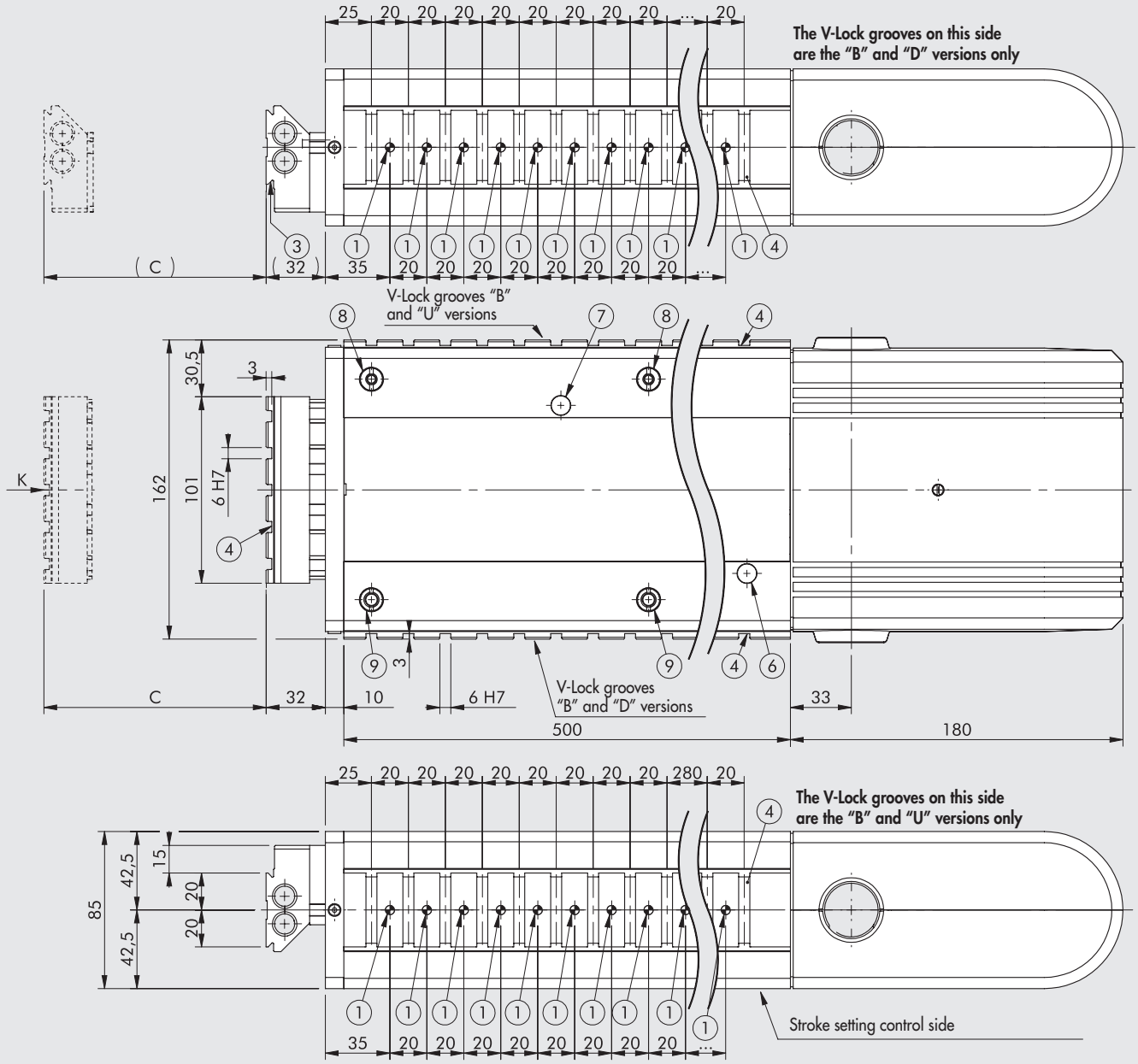
VIEWED FROM "K"



IMPORTANT. The LEPK-1-225-H-B can hold maximum 23 V-Lock grooves and hence a maximum of 22 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-2-320-H-A LINEAR UNIT (horizontal, 2 positions)

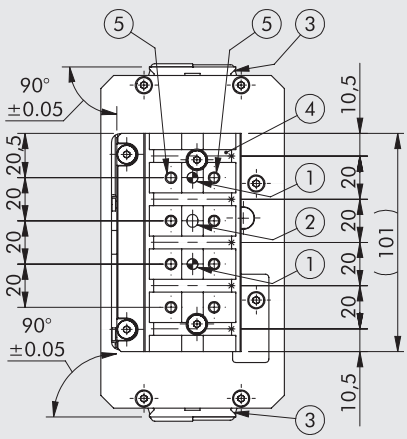


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K102AH00320B02524K with the maximum number of V-Lock grooves (version BOTH)

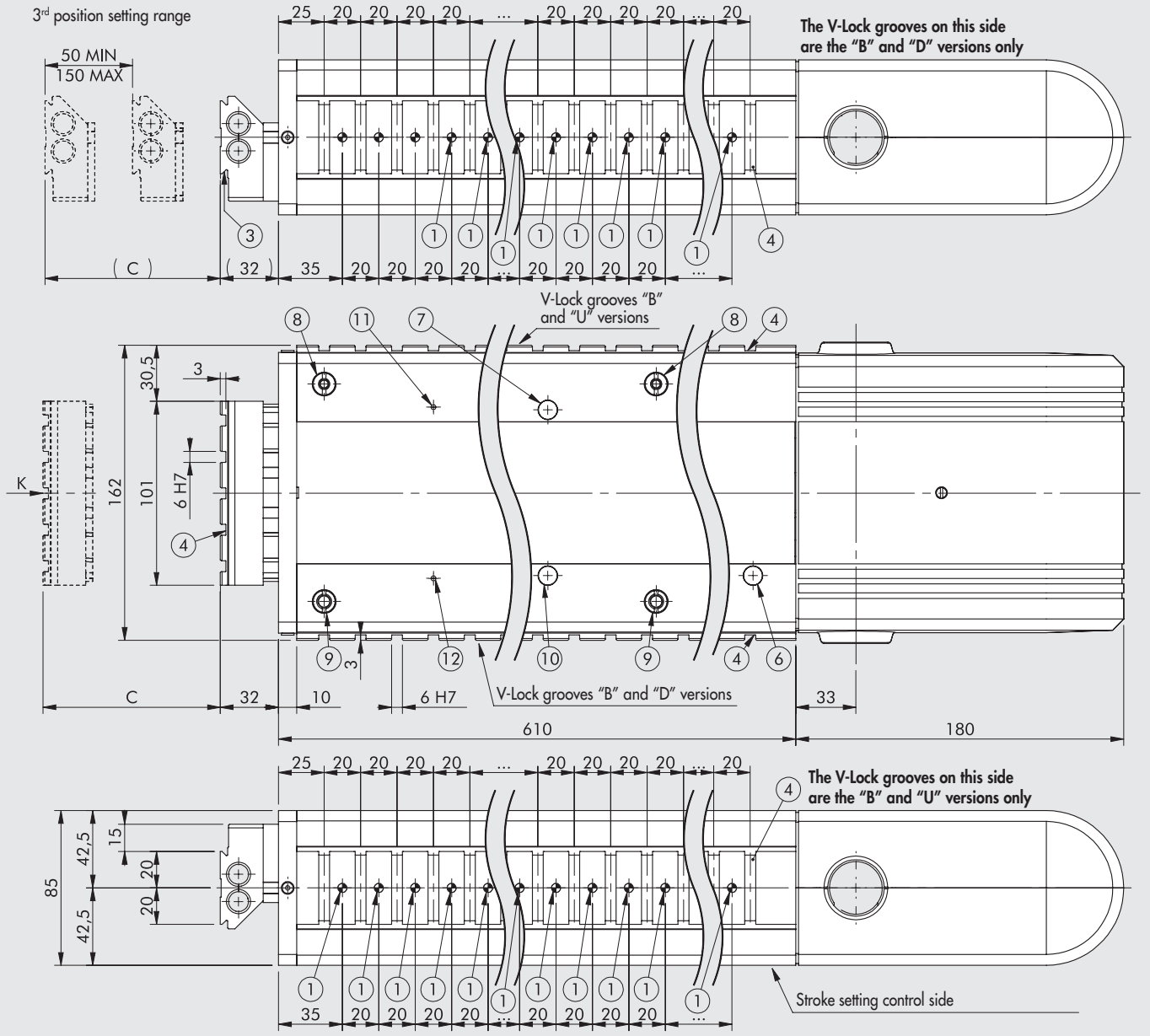
Code	Description	C
K102AH00320000000K K102AH00320B _ _ _ _ _ K K102AH00320D _ _ _ _ _ K K102AH00320U _ _ _ _ _ K	LEPK-2-320-H-A	50 to 320
K102AH20320000000K K102AH20320B _ _ _ _ _ K K102AH20320D _ _ _ _ _ K K102AH20320U _ _ _ _ _ K	LEPK-2-320-H-A without terminal board	

VIEWED FROM "K"



IMPORTANT. The LEPK-2-320-H-A can hold maximum 24 V-Lock grooves and hence a maximum of 23 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-2-320-H-B LINEAR UNIT (horizontal, 3 positions)

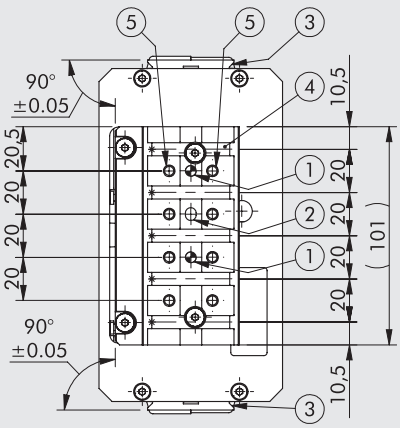


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K102BH00320B02529K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K102BH00320000000K	LEPK-2-320-H-B	50 to 320
K102BH00320B _ _ _ _ _ K		
K102BH00320D _ _ _ _ _ K		
K102BH00320U _ _ _ _ _ K		
K102BH20320000000K	LEPK-2-320-H-B without terminal board	
K102BH20320B _ _ _ _ _ K		
K102BH20320D _ _ _ _ _ K		
K102BH20320U _ _ _ _ _ K		

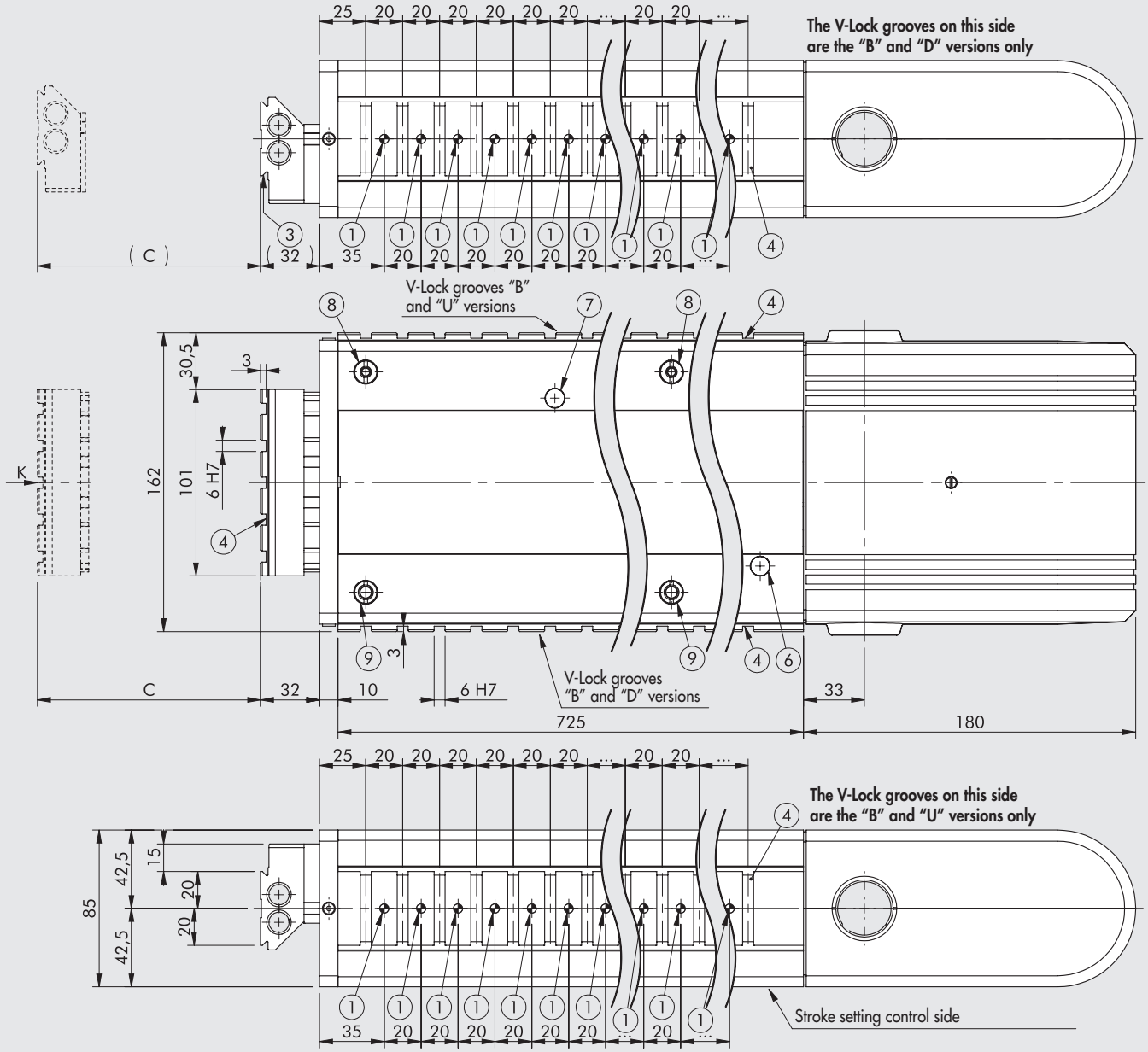
VIEWED FROM "K"



IMPORTANT. The LEPK-2-320-H-B can hold maximum 29 V-Lock grooves and hence a maximum of 28 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-2-450-H-A LINEAR UNIT (horizontal, 2 positions)

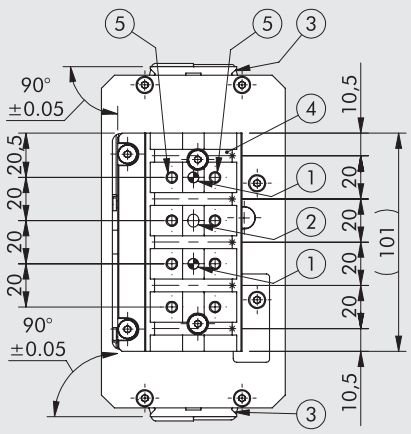


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K102AH00450B02535K with the maximum number of V-Lock grooves (version BOTH)

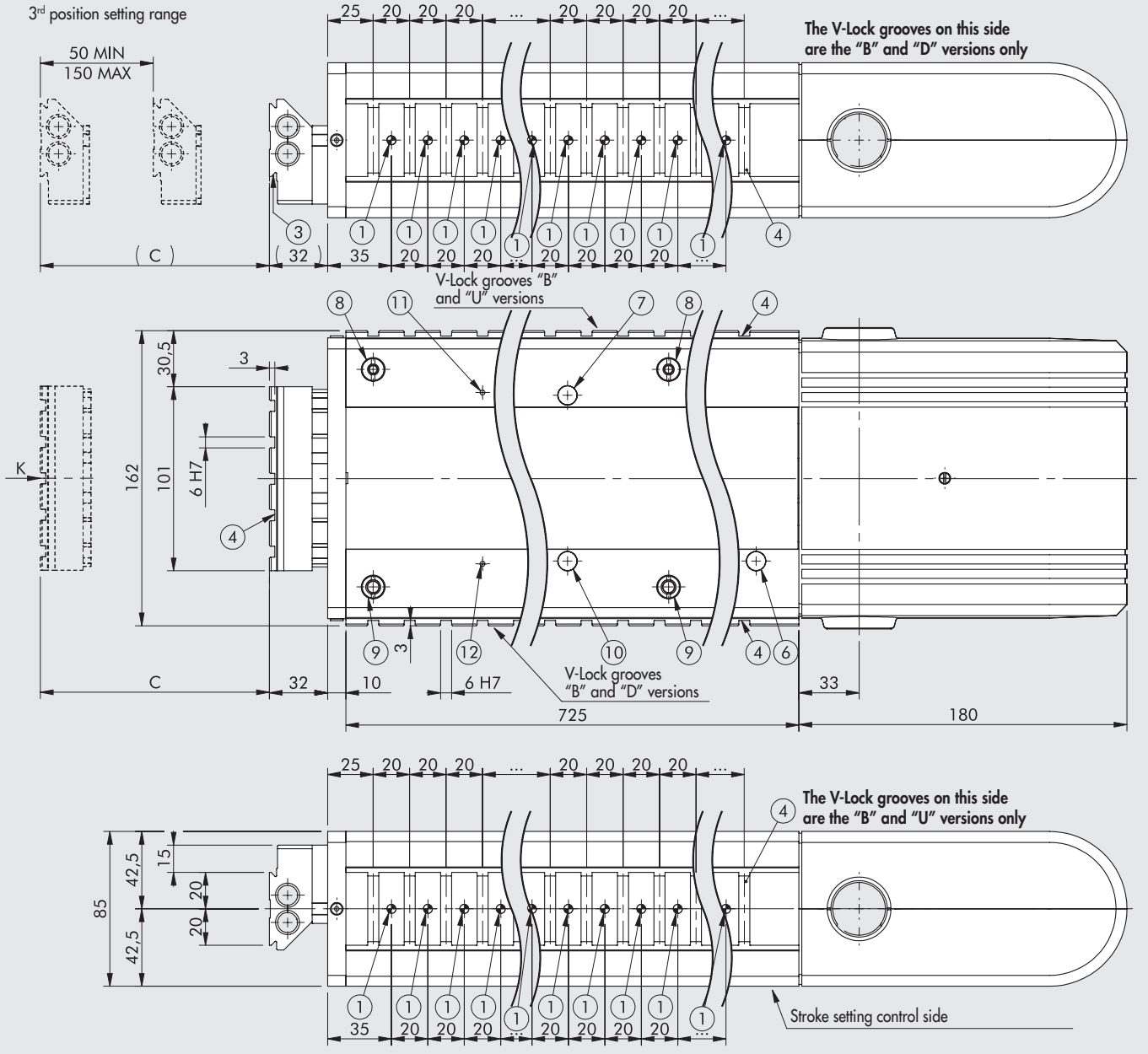
Code	Description	C
K102AH00450000000K	LEPK-2-450-H-A	50 to 450
K102AH00450B _ _ _ _ _ K		
K102AH00450D _ _ _ _ _ K		
K102AH00450U _ _ _ _ _ K		
K102AH20450000000K	LEPK-2-450-H-A without terminal board	
K102AH20450B _ _ _ _ _ K		
K102AH20450D _ _ _ _ _ K		
K102AH20450U _ _ _ _ _ K		

VIEWED FROM "K"



IMPORTANT. The LEPK-2-450-H-A can hold maximum 35 V-Lock grooves and hence a maximum of 34 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-2-450-H-B LINEAR UNIT (horizontal, 3 positions)

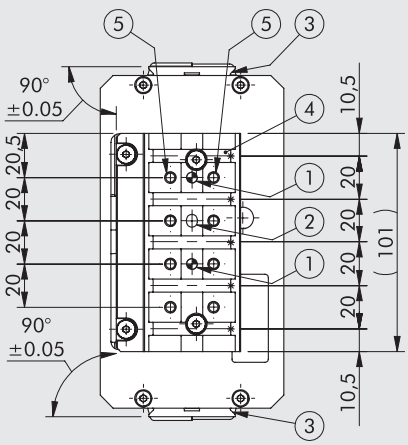


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K102BH00450B02535K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K102BH00450000000K K102BH00450B _ _ _ _ _ K K102BH00450D _ _ _ _ _ K K102BH00450U _ _ _ _ _ K	LEPK-2-450-H-B	50 to 450
K102BH20450000000K K102BH20450B _ _ _ _ _ K K102BH20450D _ _ _ _ _ K K102BH20450U _ _ _ _ _ K	LEPK-2-450-H-B without terminal board	

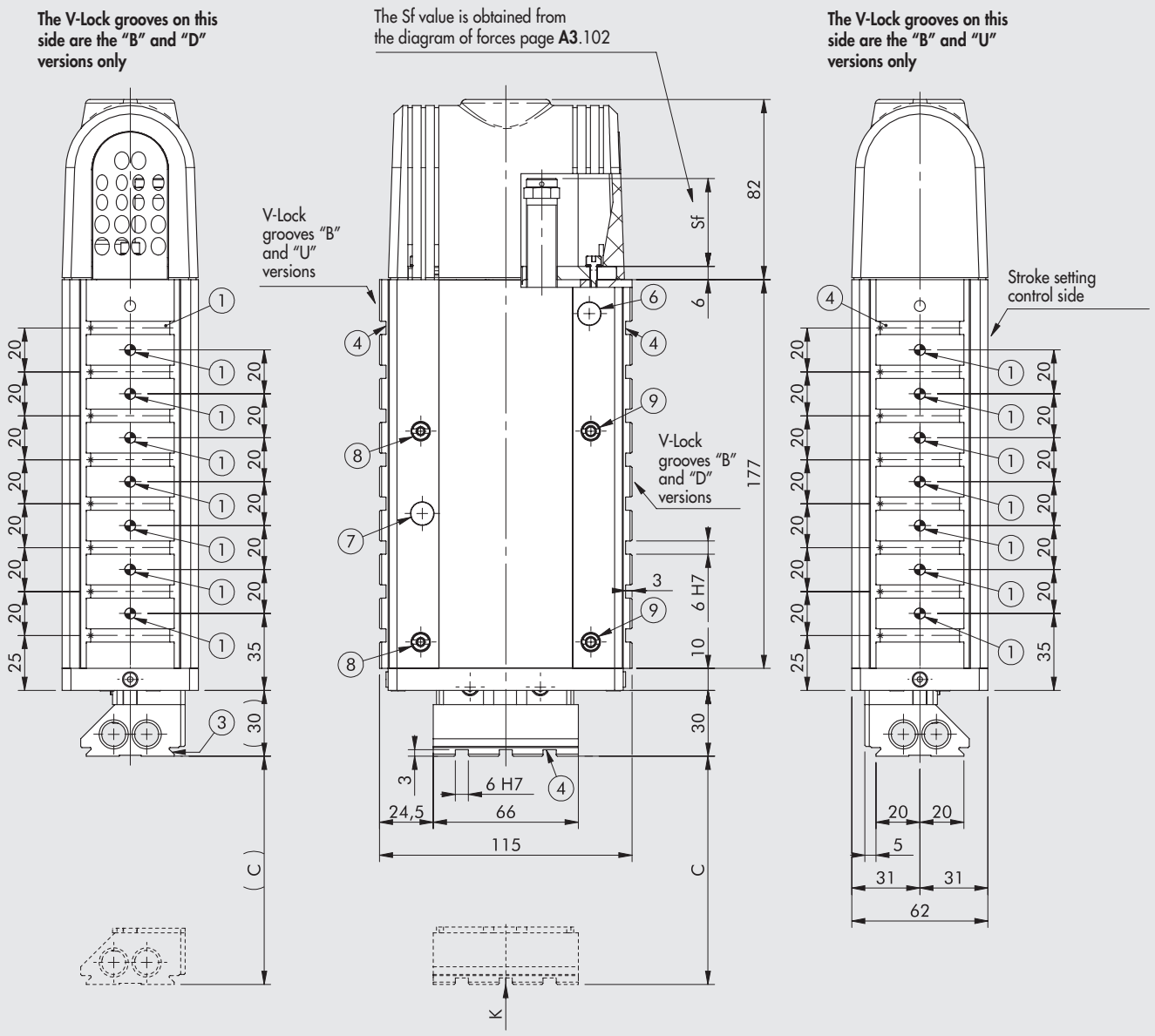
VIEWED FROM "K"



IMPORTANT. The LEPK-2-450-H-B can hold maximum 35 V-Lock grooves and hence a maximum of 34 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-60-V-A LINEAR UNIT (Vertical, 2 positions)

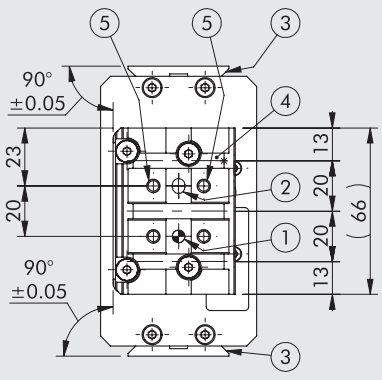


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AV00060B02508K with the maximum number of V-Lock grooves (version BOTH)

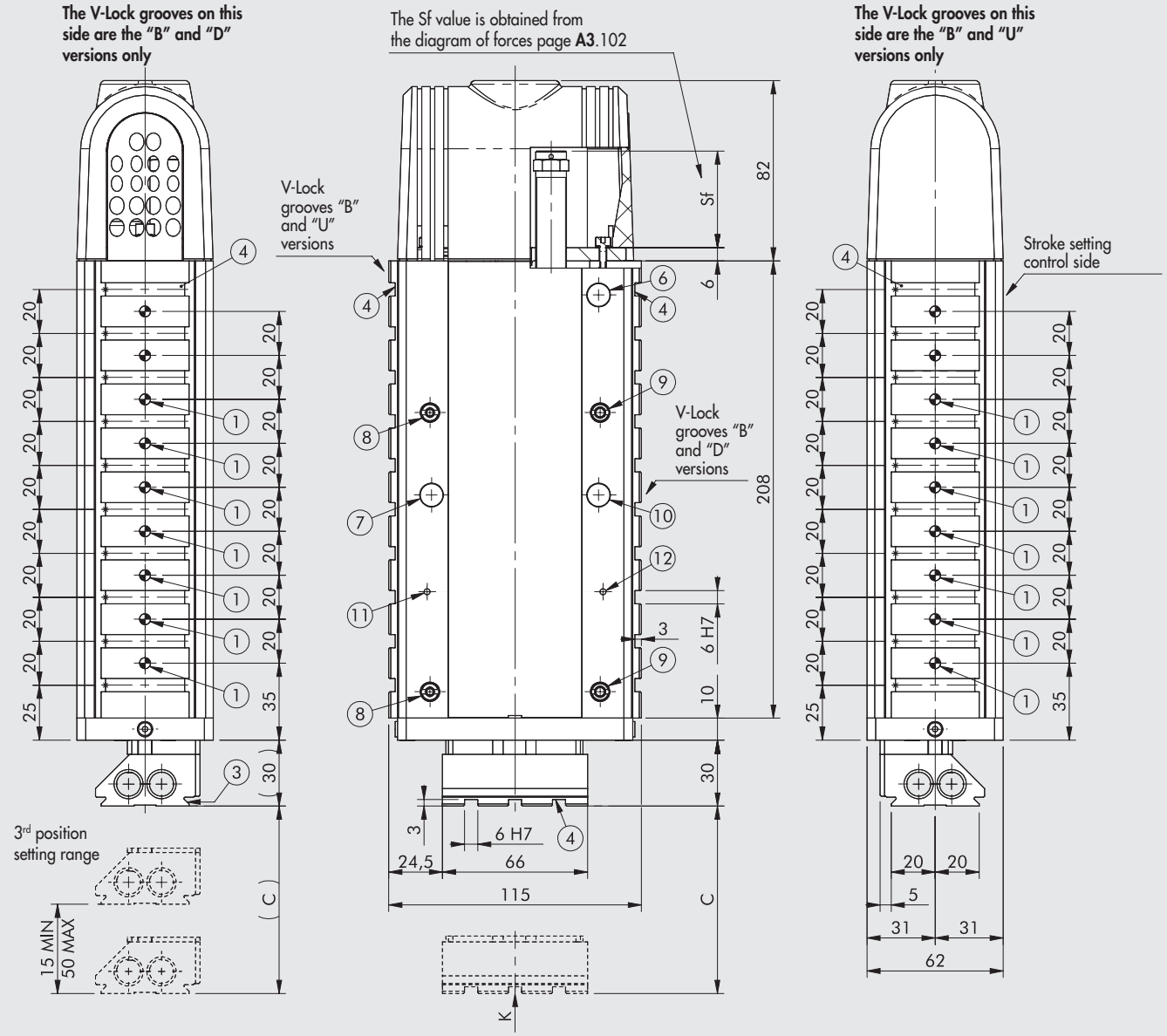
Code	Description	C
K101AV20060000000K K101AV20060B _ _ _ _ _ K K101AV20060D _ _ _ _ _ K K101AV20060U _ _ _ _ _ K	LEPK-1-60-V-A	15 to 60
K101AS20060000000K K101AS20060B _ _ _ _ _ K K101AS20060D _ _ _ _ _ K K101AS20060U _ _ _ _ _ K	LEPK-1-60-V-A without spring	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-60-V-A can hold maximum 8 V-Lock grooves and hence a maximum of 7 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-60-V-B LINEAR UNIT (Vertical, 3 positions)

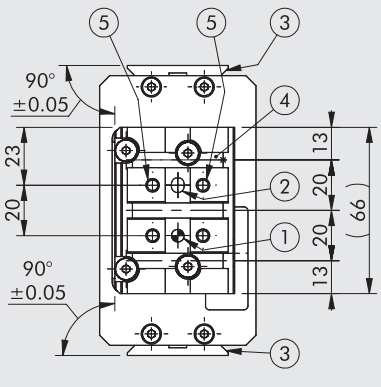


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BV00060B02510K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BV20060000000K	LEPK-1-60-V-B	15 to 60
K101BV20060B _ _ _ _ _ K		
K101BV20060D _ _ _ _ _ K		
K101BV20060U _ _ _ _ _ K		
K101BS20060000000K	LEPK-1-60-V-B without spring	
K101BS20060B _ _ _ _ _ K		
K101BS20060D _ _ _ _ _ K		
K101BS20060U _ _ _ _ _ K		

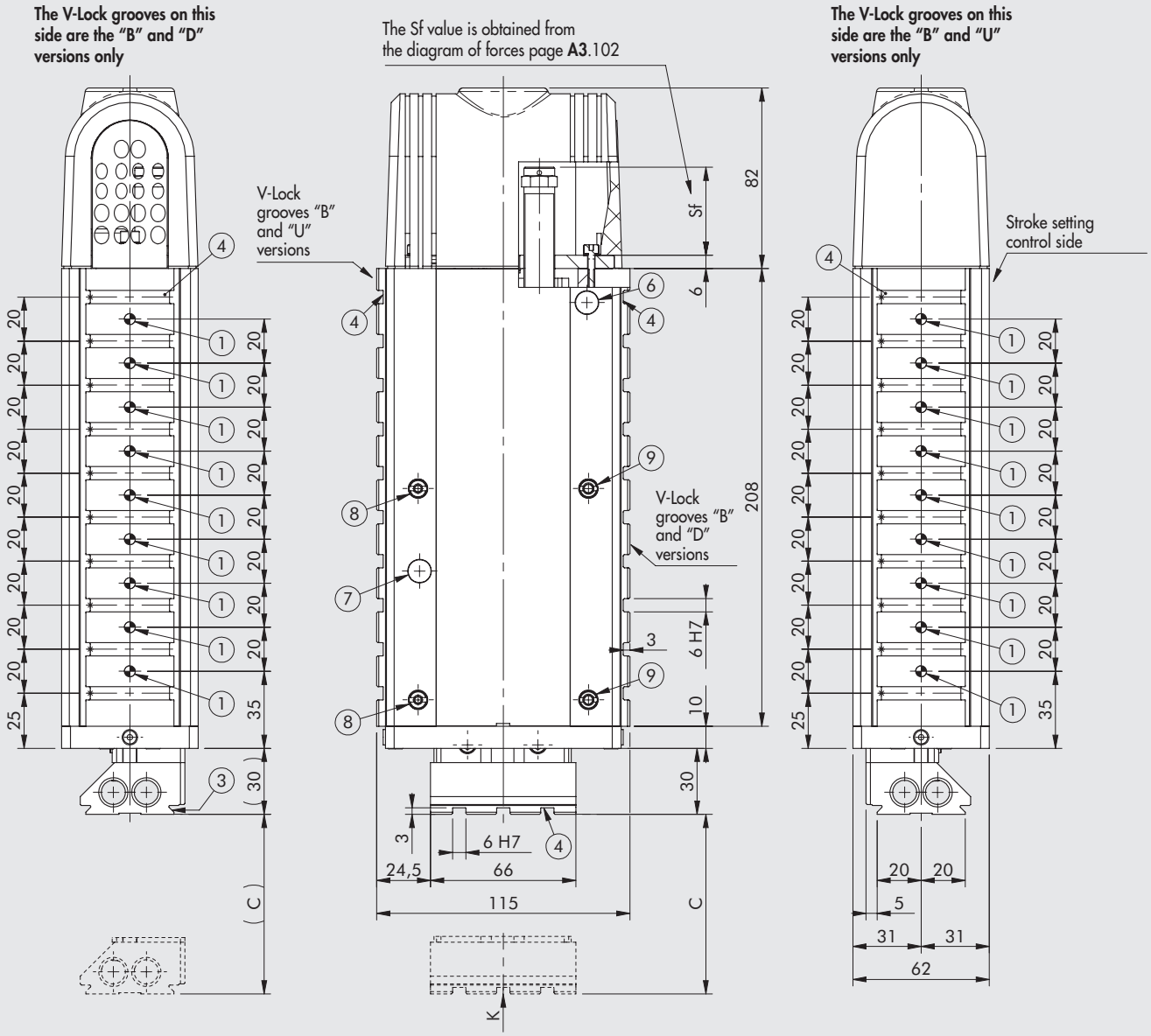
VIEWED FROM "K"



IMPORTANT. The LEPK-1-60-V-B can hold maximum 10 V-Lock grooves and hence a maximum of 9 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-90-V-A LINEAR UNIT (Vertical, 2 positions)

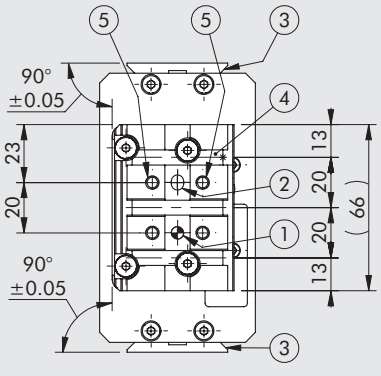


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AV00090B02510K with the maximum number of V-Lock grooves (version BOTH)

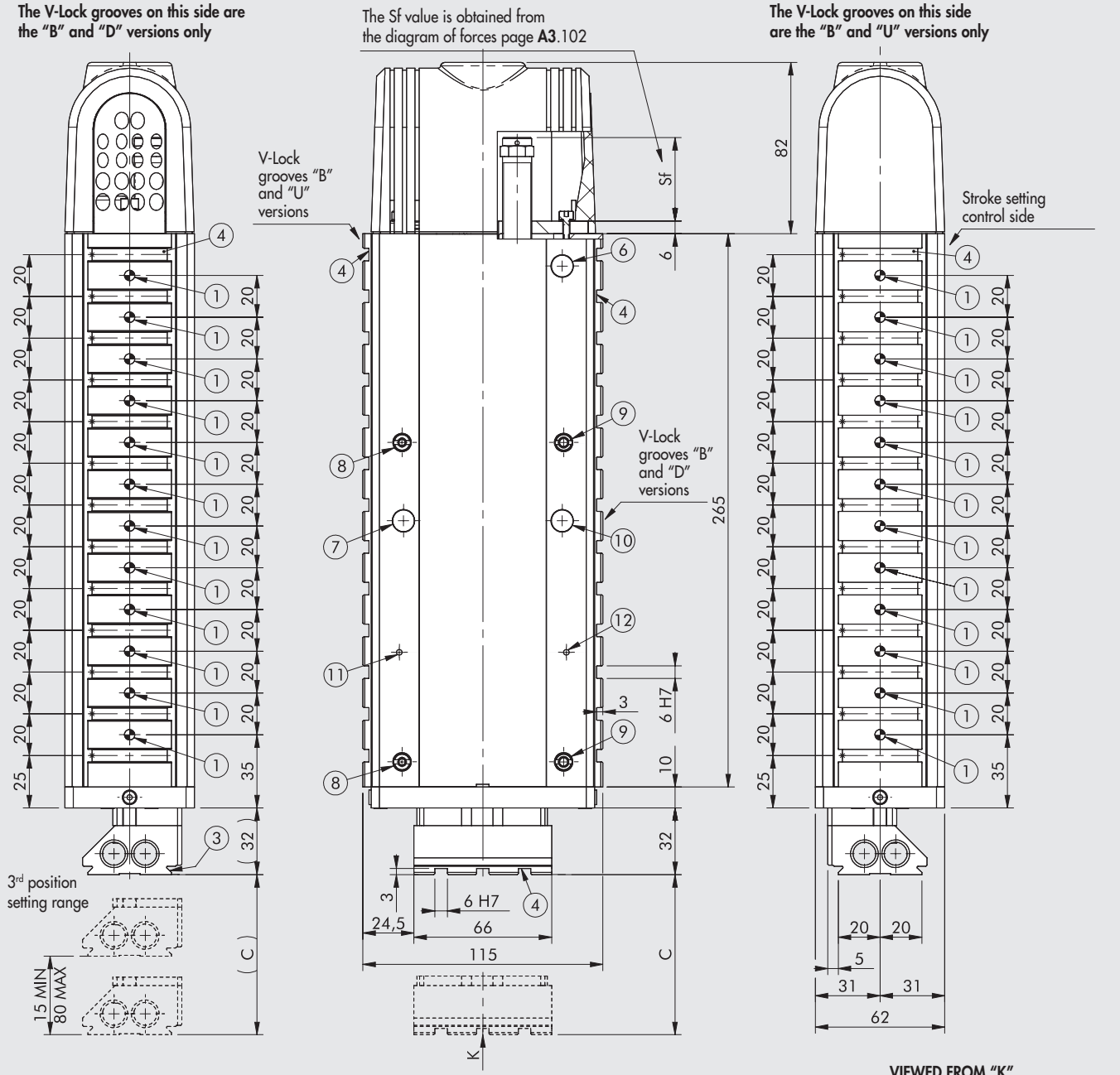
Code	Description	C
K101AV20090000000K K101AV20090B _ _ _ _ _ K K101AV20090D _ _ _ _ _ K K101AV20090U _ _ _ _ _ K	LEPK-1-90-V-A	15 to 90
K101AS20090000000K K101AS20090B _ _ _ _ _ K K101AS20090D _ _ _ _ _ K K101AS20090U _ _ _ _ _ K	LEPK-1-90-V-A without spring	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-90-V-A can hold maximum 10 V-Lock grooves and hence a maximum of 9 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-90-V-B LINEAR UNIT (Vertical, 3 positions)

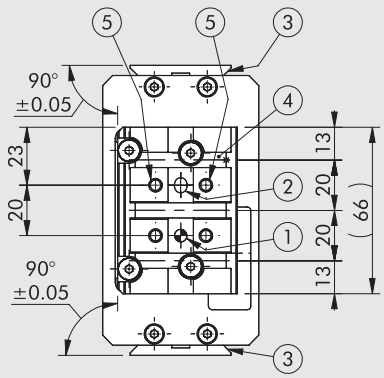


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BV00090B02513K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BV20090000000K	LEPK-1-90-V-B	15 to 90
K101BV20090B _ _ _ _ _ K		
K101BV20090D _ _ _ _ _ K		
K101BV20090U _ _ _ _ _ K		
K101BS20090000000K	LEPK-1-90-V-B without spring	
K101BS20090B _ _ _ _ _ K		
K101BS20090D _ _ _ _ _ K		
K101BS20090U _ _ _ _ _ K		

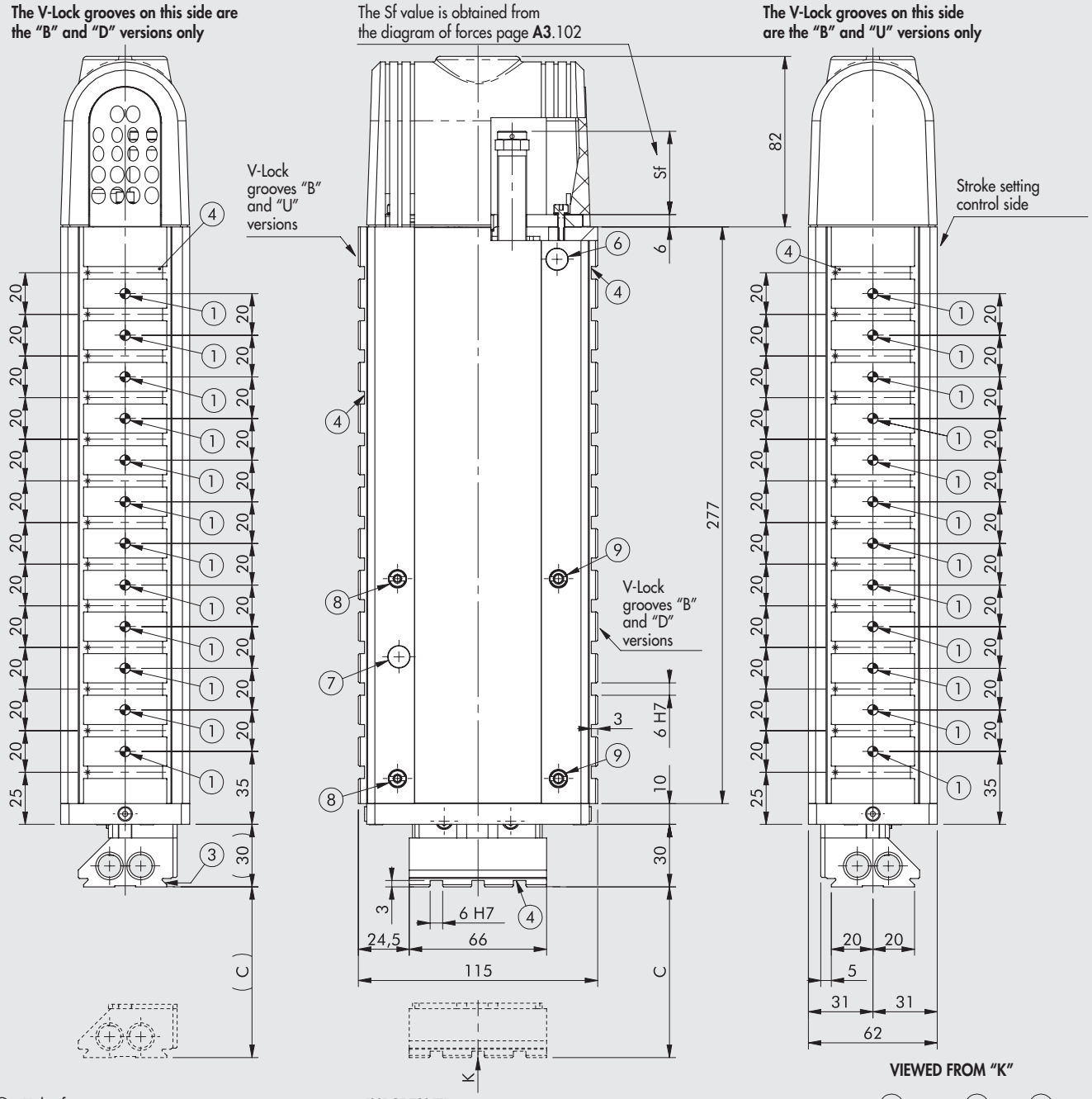
VIEWED FROM "K"



IMPORTANT. The LEPK-1-90-V-B can hold maximum 13 V-Lock grooves and hence a maximum of 12 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

DIMENSIONS OF THE LEPK-1-160-V-A LINEAR UNIT (Vertical, 2 positions)

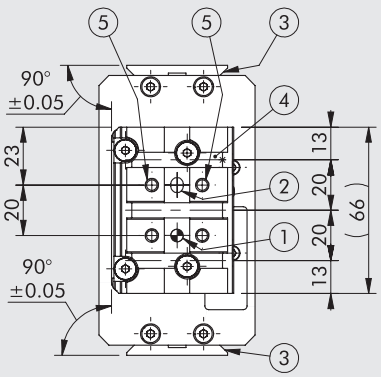


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod

IMPORTANT!
The drawing shows the code K101AV00160B02513K with the maximum number of V-Lock grooves (version BOTH)

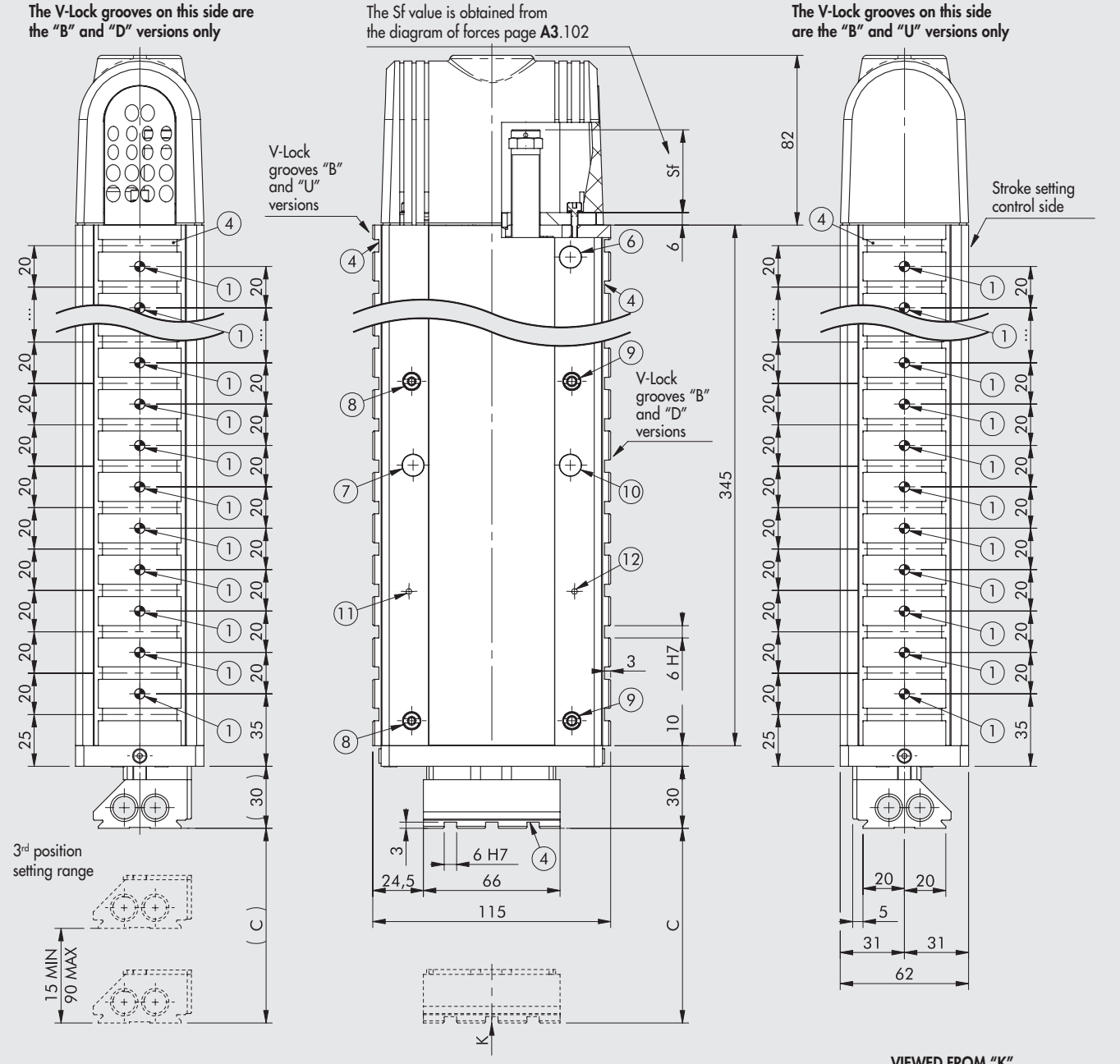
Code	Description	C
K101AV20160000000K K101AV20160B _ _ _ _ _ K K101AV20160D _ _ _ _ _ K K101AV20160U _ _ _ _ _ K	LEPK-1-160-V-A	15 to 160
K101AS20160000000K K101AS20160B _ _ _ _ _ K K101AS20160D _ _ _ _ _ K K101AS20160U _ _ _ _ _ K	LEPK-1-160-V-A without spring	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-160-V-A can hold maximum 13 grooves and hence a maximum of 12 Ø5 H7 pinholes.

DIMENSIONS OF THE LEPK-1-160-V-B LINEAR UNIT (Vertical, 3 positions)

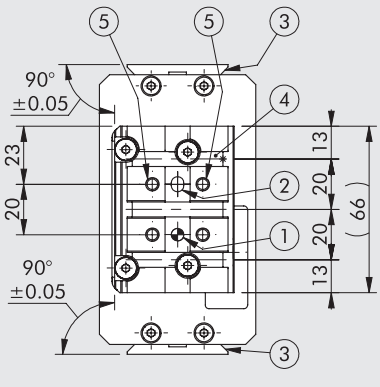


① Holes for centring pins
② Centring slot
③ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
④ Slot for "V-Lock" precision key
⑤ Threaded holes for fixing
⑥ Sensor LED inspection hole for the retracted position ("0")
⑦ Sensor LED inspection hole for the extended position
⑧ Eccentric rod for backlash take-up
⑨ Centric rod
⑩ Sensor LED inspection hole for 3rd position
⑪ Sensor LED inspection hole for 3rd position DISABLED
⑫ Sensor LED inspection hole for 3rd position ENABLED

IMPORTANT!
The drawing shows the code K101BV00160B02517K with the maximum number of V-Lock grooves (version BOTH)

Code	Description	C
K101BV20160000000K **K101BV20160B _ _ _ _ _ K** **K101BV20160D _ _ _ _ _ K** **K101BV20160U _ _ _ _ _ K**	LEPK-1-160-V-B	15 to 160
K101BS20160000000K **K101BS20160B _ _ _ _ _ K** **K101BS20160D _ _ _ _ _ K** **K101BS20160U _ _ _ _ _ K**	LEPK-1-160-V-B without spring	

VIEWED FROM "K"



IMPORTANT. The LEPK-1-160-V-B can hold maximum 17 V-Lock grooves and hence a maximum of 16 Ø5 H7 pinholes.

METAL WORK PNEUMATIC

KEY TO CODES

K10	1	A	H	0	0	090	0	000	00	K
	SIZE	POSITION	ORIENTATION			STROKE	V-Lock CONNECTION	V-Lock POSITION	Number of V-Lock GROOVES	FAMILY
Linear units series LEPK	**1** Size 1 ◀ **2** Size 2	**A** 2 positions **B** 3 positions	**H** Horizontal **V** Vertical (with return spring) **S** Vertical (without return spring)	**0** Inductive sensors (with terminal board) ● **2** Inductive sensors (without terminal board)		▼ **060** ◆ **090** ◆ **160** ✚ **225** ✱ **320** ✱ **450**	**0** None **B** Grooves above and below **D** Grooves below **U** Grooves above	☐ **000** None ▲ _ _ _ Position	☐ **00** None ■ _ _ Number of grooves	**K** V-Lock

◀ Available only in horizontal orientation (H).
● Standard for the version with vertical orientation (V).
▼ Only size 1 - V/S
◆ Only size 1 - V/S/H
✚ Only size 1 - H
✱ Only size 2 - H
☐ Always use when "V-Lock connection" is equal to "0" (none)
▲ For connecting V-Lock "B" - "D" - "U" minimum value "025", the following values vary by steps of 20 mm (e.g. "045", "065" and "085").
For mounting options, see page **A3**.103

■ The maximum number of possible grooves is:

LEPK 1-60-V/S-A = n. 08	LEPK 1-160-V/S-A = n. 13
LEPK 1-60-V/S-B = n. 10	LEPK 1-160-V/S-B = n. 17
LEPK 1-90-V/S-A = n. 10	LEPK 1-225-H-A = n. 23
LEPK 1-90-V/S-B = n. 13	LEPK 1-225-H-B = n. 23
LEPK 1-90-H-A = n. 10	LEPK 2-320-H-A = n. 24
LEPK 1-90-H-B = n. 13	LEPK 2-320-H-B = n. 29
LEPK 1-160-H-A = n. 13	LEPK 2-450-H-A = n. 35
LEPK 1-160-H-B = n. 17	LEPK 2-450-H-B = n. 35

N.B.: The number of Ø5 H7 pinholes always coincides with the number of grooves ordered less 1.
For mounting options, see page **A3**.103

ORDERING CODES

Code	Description
LEPK-1 HORIZONTAL	
K101AH000900000000K	LEPK-1-90-H-A without V-Lock
K101AH00090B____K	LEPK-1-90-H-A V-Lock above and below
K101AH00090D____K	LEPK-1-90-H-A V-Lock above
K101AH00090U____K	LEPK-1-90-H-A V-Lock below
K101AH200900000000K	LEPK-1-90-H-A without V-Lock
K101AH20090B____K	LEPK-1-90-H-A V-Lock above and below
K101AH20090D____K	LEPK-1-90-H-A V-Lock above
K101AH20090U____K	LEPK-1-90-H-A V-Lock below
K101BH000900000000K	LEPK-1-90-H-B without V-Lock
K101BH00090B____K	LEPK-1-90-H-B V-Lock above and below
K101BH00090D____K	LEPK-1-90-H-B V-Lock above
K101BH00090U____K	LEPK-1-90-H-B V-Lock below
K101BH200900000000K	LEPK-1-90-H-B without V-Lock
K101BH20090B____K	LEPK-1-90-H-B V-Lock above and below
K101BH20090D____K	LEPK-1-90-H-B V-Lock above
K101BH20090U____K	LEPK-1-90-H-B V-Lock below
K101AH000160000000K	LEPK-1-160-H-A without V-Lock
K101AH00160B____K	LEPK-1-160-H-A V-Lock above and below
K101AH00160D____K	LEPK-1-160-H-A V-Lock above
K101AH00160U____K	LEPK-1-160-H-A V-Lock below
K101AH201600000000K	LEPK-1-160-H-A without V-Lock
K101AH20160B____K	LEPK-1-160-H-A V-Lock above and below
K101AH20160D____K	LEPK-1-160-H-A V-Lock above
K101AH20160U____K	LEPK-1-160-H-A V-Lock below
K101BH001600000000K	LEPK-1-160-H-B without V-Lock
K101BH00160B____K	LEPK-1-160-H-B V-Lock above and below
K101BH00160D____K	LEPK-1-160-H-B V-Lock above
K101BH00160U____K	LEPK-1-160-H-B V-Lock below
K101BH201600000000K	LEPK-1-160-H-B without V-Lock
K101BH20160B____K	LEPK-1-160-H-B V-Lock above and below
K101BH20160D____K	LEPK-1-160-H-B V-Lock above
K101BH20160U____K	LEPK-1-160-H-B V-Lock below
K101AH002250000000K	LEPK-1-225-H-A without V-Lock
K101AH00225B____K	LEPK-1-225-H-A V-Lock above and below
K101AH00225D____K	LEPK-1-225-H-A V-Lock above
K101AH00225U____K	LEPK-1-225-H-A V-Lock below
K101AH202250000000K	LEPK-1-225-H-A without V-Lock
K101AH20225B____K	LEPK-1-225-H-A V-Lock above and below
K101AH20225D____K	LEPK-1-225-H-A V-Lock above
K101AH20225U____K	LEPK-1-225-H-A V-Lock below
K101BH00225000000K	LEPK-1-225-H-B without V-Lock
K101BH00225B____K	LEPK-1-225-H-B V-Lock above and below
K101BH00225D____K	LEPK-1-225-H-B V-Lock above
K101BH00225U____K	LEPK-1-225-H-B V-Lock below
K101BH202250000000K	LEPK-1-225-H-B without V-Lock
K101BH20225B____K	LEPK-1-225-H-B V-Lock above and below
K101BH20225D____K	LEPK-1-225-H-B V-Lock above
K101BH20225U____K	LEPK-1-225-H-B V-Lock below
LEPK-1 VERTICAL	
K101AS20060000000K	LEPK-1-60-S-A without V-Lock
K101AS20060B____K	LEPK-1-60-S-A V-Lock above and below
K101AS20060D____K	LEPK-1-60-S-A V-Lock above
K101AS20060U____K	LEPK-1-60-S-A V-Lock below
K101AV20060000000K	LEPK-1-60-V-A without V-Lock
K101AV20060B____K	LEPK-1-60-V-A V-Lock above and below
K101AV20060D____K	LEPK-1-60-V-A V-Lock above
K101AV20060U____K	LEPK-1-60-V-A V-Lock below
K101BS20060000000K	LEPK-1-60-S-B without V-Lock
K101BS20060B____K	LEPK-1-60-S-B V-Lock above and below
K101BS20060D____K	LEPK-1-60-S-B V-Lock above
K101BS20060U____K	LEPK-1-60-S-B V-Lock below
K101BV20060000000K	LEPK-1-60-V-B without V-Lock
K101BV20060B____K	LEPK-1-60-V-B V-Lock above and below
K101BV20060D____K	LEPK-1-60-V-B V-Lock above
K101BV20060U____K	LEPK-1-60-V-B V-Lock below
K101AS20090000000K	LEPK-1-90-S-A without V-Lock
K101AS20090B____K	LEPK-1-90-S-A V-Lock above and below
K101AS20090D____K	LEPK-1-90-S-A V-Lock above
K101AS20090U____K	LEPK-1-90-S-A V-Lock below
K101AV20090000000K	LEPK-1-90-V-A without V-Lock
K101AV20090B____K	LEPK-1-90-V-A V-Lock above and below
K101AV20090D____K	LEPK-1-90-V-A V-Lock above
K101AV20090U____K	LEPK-1-90-V-A V-Lock below
K101BS20090000000K	LEPK-1-90-S-B without V-Lock
K101BS20090B____K	LEPK-1-90-S-B V-Lock above and below
K101BS20090D____K	LEPK-1-90-S-B V-Lock above
K101BS20090U____K	LEPK-1-90-S-B V-Lock below

ORDERING CODES

Code	Description
LEPK-1 VERTICAL	
K101BV20090000000K	LEPK-1-90-V-B without V-Lock
K101BV20090B____K	LEPK-1-90-V-B V-Lock above and below
K101BV20090D____K	LEPK-1-90-V-B V-Lock above
K101BV20090U____K	LEPK-1-90-V-B V-Lock below
K101AS20160000000K	LEPK-1-160-S-A without V-Lock
K101AS20160B____K	LEPK-1-160-S-A V-Lock above and below
K101AS20160D____K	LEPK-1-160-S-A V-Lock above
K101AS20160U____K	LEPK-1-160-S-A V-Lock below
K101AV20160000000K	LEPK-1-160-V-A without V-Lock
K101AV20160B____K	LEPK-1-160-V-A V-Lock above and below
K101AV20160D____K	LEPK-1-160-V-A V-Lock above
K101AV20160U____K	LEPK-1-160-V-A V-Lock below
K101BS20160000000K	LEPK-1-160-S-B without V-Lock
K101BS20160B____K	LEPK-1-160-S-B V-Lock above and below
K101BS20160D____K	LEPK-1-160-S-B V-Lock above
K101BS20160U____K	LEPK-1-160-S-B V-Lock below
K101BV20160000000K	LEPK-1-160-V-B without V-Lock
K101BV20160B____K	LEPK-1-160-V-B V-Lock above and below
K101BV20160D____K	LEPK-1-160-V-B V-Lock above
K101BV20160U____K	LEPK-1-160-V-B V-Lock below

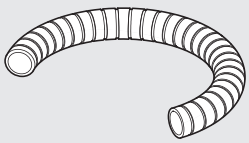
Code	Description
LEPK-2 HORIZONTAL	
K102AH00320000000K	LEPK-2-320-H-A without V-Lock
K102AH00320B____K	LEPK-2-320-H-A V-Lock above and below
K102AH00320D____K	LEPK-2-320-H-A V-Lock above
K102AH00320U____K	LEPK-2-320-H-A V-Lock below
K102AH20320000000K	LEPK-2-320-H-A without V-Lock
K102AH20320B____K	LEPK-2-320-H-A V-Lock above and below
K102AH20320D____K	LEPK-2-320-H-A V-Lock above
K102AH20320U____K	LEPK-2-320-H-A V-Lock below
K102BH00320000000K	LEPK-2-320-H-B without V-Lock
K102BH00320B____K	LEPK-2-320-H-B V-Lock above and below
K102BH00320D____K	LEPK-2-320-H-B V-Lock above
K102BH00320U____K	LEPK-2-320-H-B V-Lock below
K102BH20320000000K	LEPK-2-320-H-B without V-Lock
K102BH20320B____K	LEPK-2-320-H-B V-Lock above and below
K102BH20320D____K	LEPK-2-320-H-B V-Lock above
K102BH20320U____K	LEPK-2-320-H-B V-Lock below
K102AH00450000000K	LEPK-2-450-H-A without V-Lock
K102AH00450B____K	LEPK-2-450-H-A V-Lock above and below
K102AH00450D____K	LEPK-2-450-H-A V-Lock above
K102AH00450U____K	LEPK-2-450-H-A V-Lock below
K102AH20450000000K	LEPK-2-450-H-A without V-Lock
K102AH20450B____K	LEPK-2-450-H-A V-Lock above and below
K102AH20450D____K	LEPK-2-450-H-A V-Lock above
K102AH20450U____K	LEPK-2-450-H-A V-Lock below
K102BH00450000000K	LEPK-2-450-H-B without V-Lock
K102BH00450B____K	LEPK-2-450-H-B V-Lock above and below
K102BH00450D____K	LEPK-2-450-H-B V-Lock above
K102BH00450U____K	LEPK-2-450-H-B V-Lock below
K102BH20450000000K	LEPK-2-450-H-B without V-Lock
K102BH20450B____K	LEPK-2-450-H-B V-Lock above and below
K102BH20450D____K	LEPK-2-450-H-B V-Lock above
K102BH20450U____K	LEPK-2-450-H-B V-Lock below

ACCESSORIES

OIL

Code	Description	Volume [ml]
9910490	PARALIQ P 460	80

CABLE GUIDE



Code	Description	Length [mm]
095K2100850K	Cable guide LEPK-1-90-A/B 160-A	850
095K2100900K	Cable guide LEPK-1-160-B	900
095K2101200K	Cable guide LEPK-1-225-A/B	1200
095K2101550K	Cable guide LEPK-2-320-A/B	1550
095K2101700K	Cable guide LEPK-2-450-A/B	1700
095K2102500K	Cable guide LEPK	2500

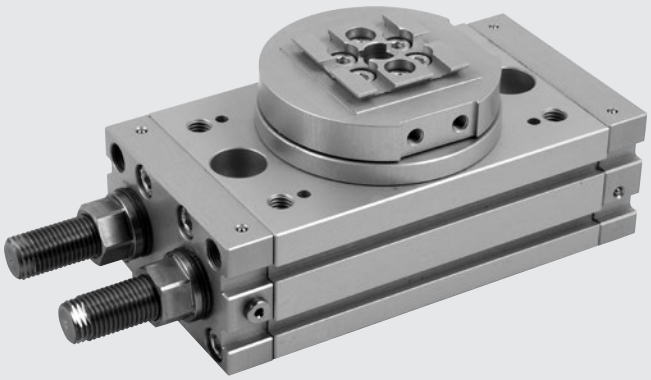
METAL WORK PNEUMATIC

NOTES

ROTARY ACTUATOR SERIES R3K

An actuator with a double rack and play take-up.
Angle of rotation adjustable from 0° to 180°.
These rotary actuators can be supplied with a mechanical stop or, for some sizes, a hydraulic decelerator.
There is also a version with external hydraulic decelerators with more kinetic energy.
The typical V-Lock dovetail and grooves are present on the turntable and the lower part of the body.
There are two grooves on either side for inserting retracting magnetic sensors.
There is a hole in the flange for air pipes or power cables.

N.B.: We always suggest to use flow microregulators.
During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievment of the required speed.

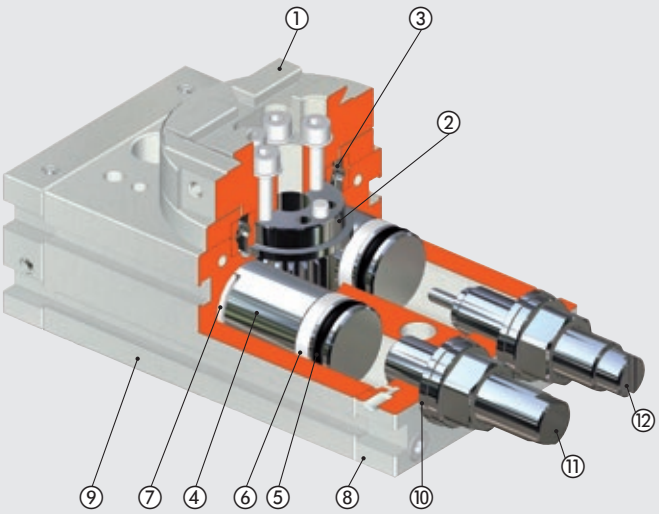


TECHNICAL DATA		R3K-16	R3K-20	R3K-25
Operating pressure	bar	3 to 7		
	MPa	0.3 to 0.7		
	psi	43 to 101		
Temperature range	°C	-10 to 80		
Fluid		Lubricated or unlubricated 20 µm filtered air. If lubricated air is used, lubrication must be continuous		
Bore	mm	2 x 16	2 x 20	2 x 25
Theoretical torque at 6 bar	Nm	0.9	1.8	4.6
Maximum axial load	N	74	135	300
Maximum radial load	N	78	137	450
Maximum overturning moment	Nm	2.4	4	9.7
Rotation time without load	s	0.2	0.2	0.2
Maximum kinetic energy:				
with mechanical stop	Joule	0.007	0.025	0.082
with inner decelerators	Joule	-	-	0.29
Weight	kg	0.66	1.13	2.17

COMPONENTS

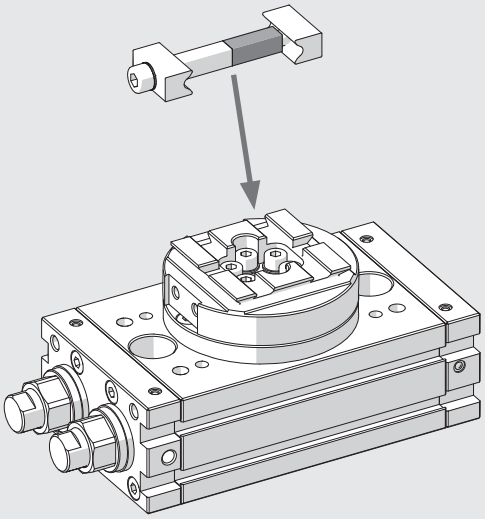
① ROTARY FLANGE: anodized aluminium
② PINION: hardened and tempered steel
③ BALL BEARING
④ PISTON / RACK: hardened and tempered steel
⑤ CUSHIONING GASKET: NBR
⑥ GUIDE PAD: PTFE
⑦ MAGNET: neodymium
⑧ HEAD: anodized aluminium
⑨ BARREL: anodized aluminium
⑩ GASKET: NBR

VERSIONS:
⑪ Stroke adjustment
⑫ Stroke adjustment with inside hydraulic shock absorbers (available from Ø 25)

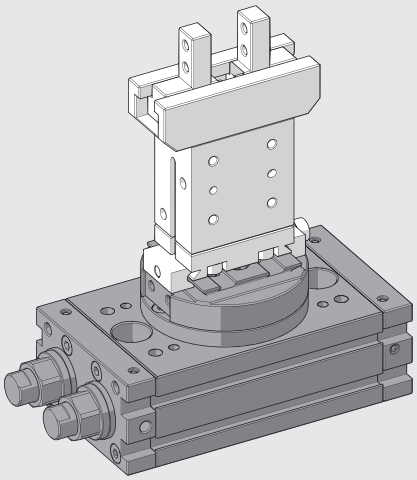


KEY DIAGRAM

Due to the design of turntables for R3K actuators, and to allow precision assembly with the K fixing elements, it is necessary to add a second key code W0950005150K to the one already present on the standard element.



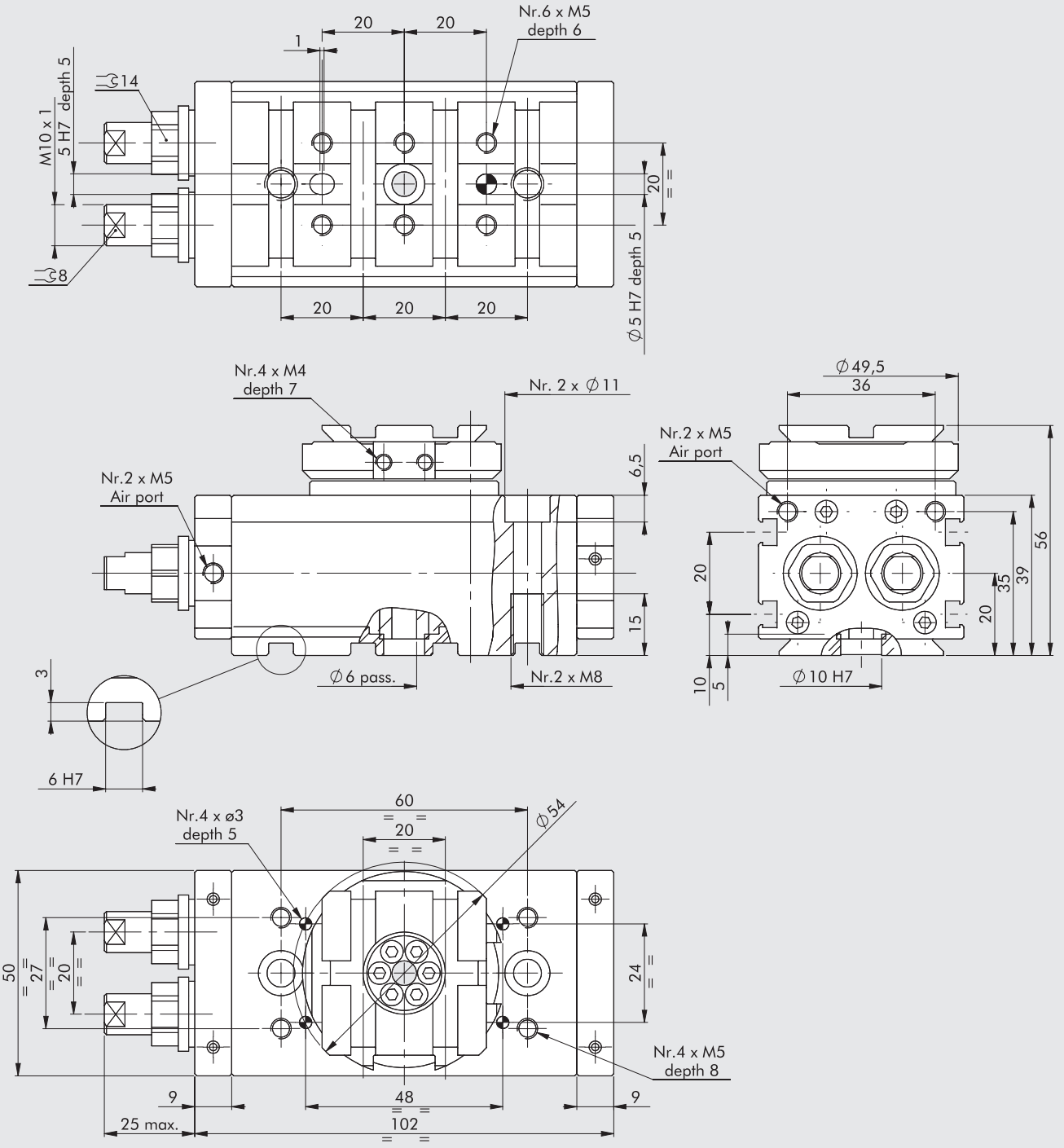
EXAMPLES OF APPLICATION



NOTES

ROTARY ACTUATOR R3K-16

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

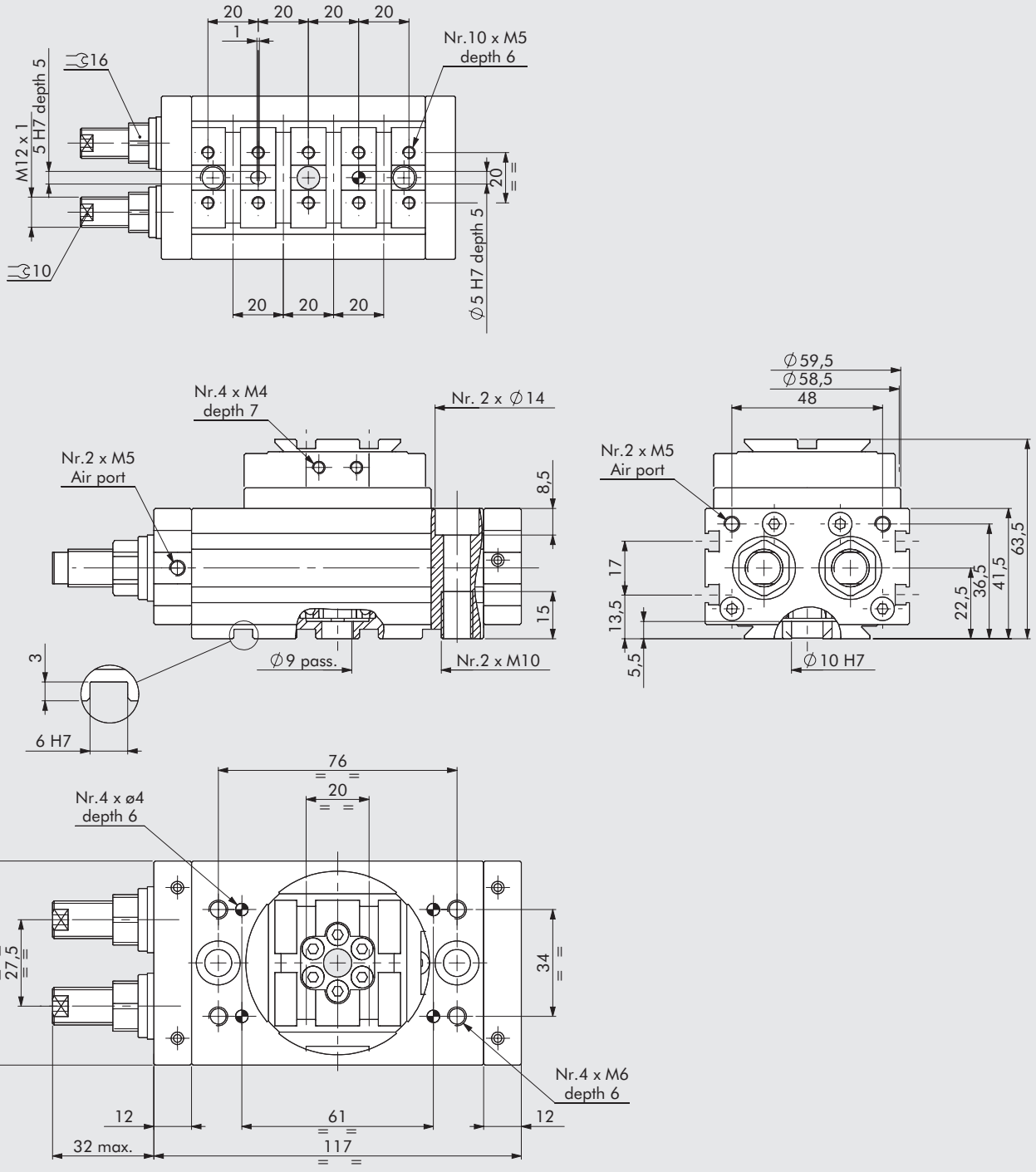


Code	Description
W1630162180K	Rotary actuator R3K-16

METAL WORK PNEUMATIC

ROTARY ACTUATOR R3K-20

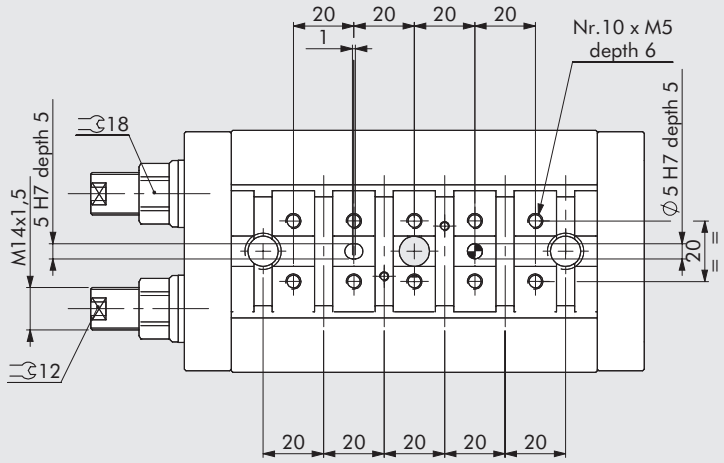
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

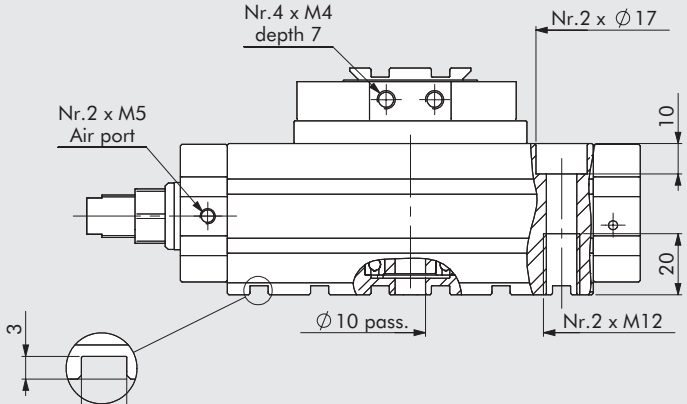


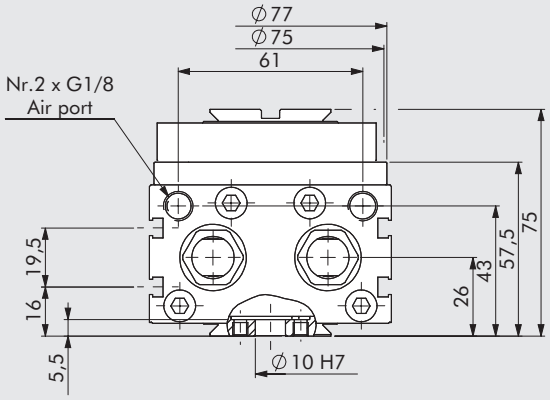
Code	Description
W1630202180K	Rotary actuator R3K-20

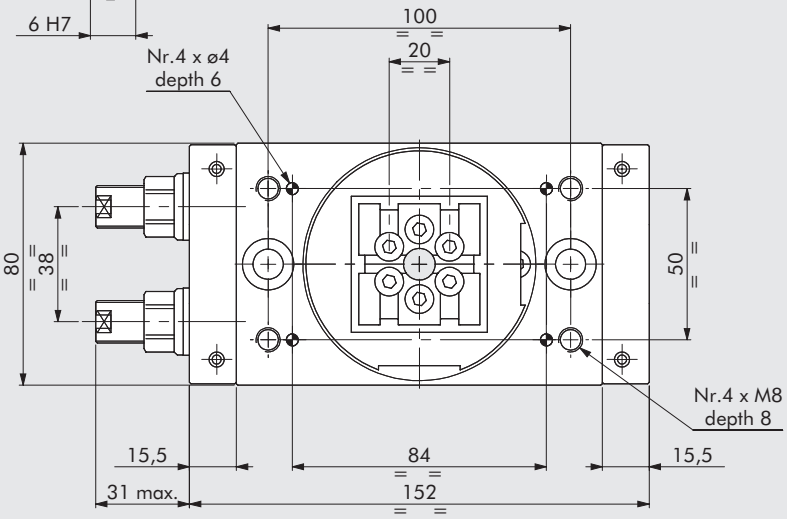
ROTARY ACTUATOR R3K-25

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.







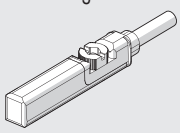


Code	Description
W1630252180K	Rotary actuator R3K-25
W1630253180K	Rotary actuator + shock absorbers R3K-25

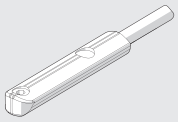
ACCESSORIES

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing



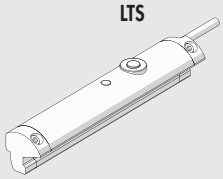
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

POSITION SENSORS

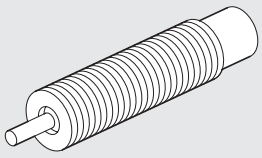
LTS



For technical data and usage strokes see **chapter A6**.

SPARE PARTS

SHOCK ABSORBERS



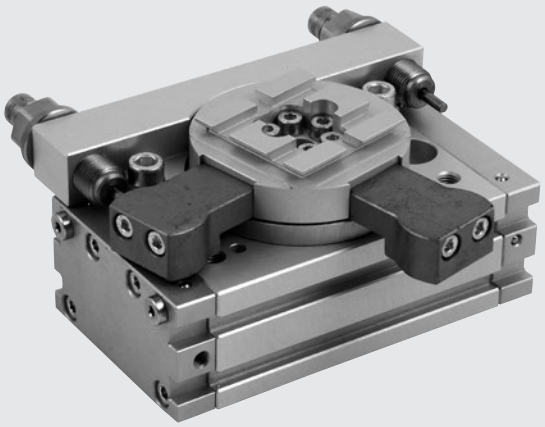
Code	Ø	Description
0950004015	25	Shock absorbers ECO S 25 MC2 short M14 x 1.5

NOTES

ROTARY ACTUATOR SERIES R3K WITH EXTERNAL SHOCK ABSORBERS

An actuator with a double rack and play take-up.
The hydraulic decelerators are mounted externally and act at a greater distance from the rotation axis compared to internal decelerators.
This means the amount of kinetic energy absorbed is 4-8 times greater than with internal decelerators.
Reduced longitudinal dimensions as there are no adjusting screws.
Available in versions with 90° and 180° rotation.
The typical V-Lock dovetail and grooves are present on the turntable and the lower part of the body.
There are two grooves on either side for inserting retracting magnetic sensors.
There is a hole in the flange for air pipes or power cables.

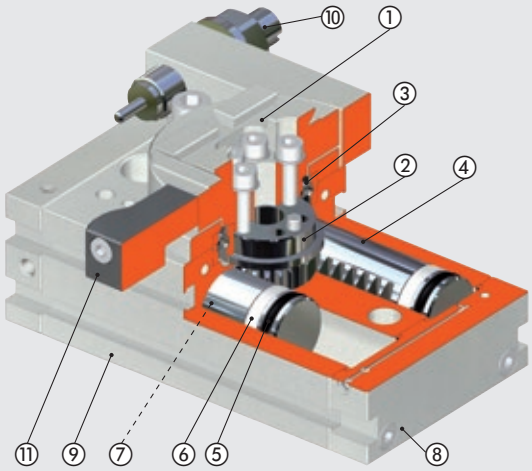
N.B.: The use of flow microregulators is recommended.
During setup, start with the microregulator CLOSED, then open it gradually until the desired speed is reached.



TECHNICAL DATA		R3K-16	R3K-20	R3K-25
Operating pressure	bar	3 to 7		
	MPa	0.3 to 0.7		
	psi	43 to 101		
Temperature range	°C	-10 to 80		
Fluid		Fluid Lubricated or unlubricated 20 µm filtered air. If lubricated air is used, lubrication must be continuous		
Bore	mm	2 x 16	2 x 20	2 x 25
Theoretical torque at 6 bar	Nm	0.9	1.8	4.6
Maximum axial load	N	74	135	300
Maximal radial load	N	78	137	450
Maximum overturning moment	Nm	2.4	4	9.7
Rotation time without load	s	0.2	0.2	0.2
Maximum kinetic energy	Joule	0.16	0.55	1.40
Weight	kg	0.76	1.43	2.86

COMPONENTS

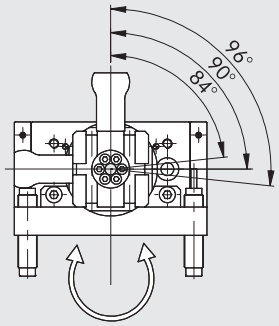
① ROTARY FLANGE: anodized aluminium
② PINION: hardened and tempered steel
③ BALL BEARING
④ PISTON / RACK: hardened and tempered steel
⑤ CUSHIONING GASKET: NBR
⑥ GUIDE PAD: PTFE
⑦ MAGNET: neodymium
⑧ HEAD: anodized aluminium
⑨ BARREL: anodized aluminium
⑩ STROKE REGULATOR WITH HYDRAULIC SHOCK ABSORBERS
⑪ Block for 90° version



METAL WORK PNEUMATIC

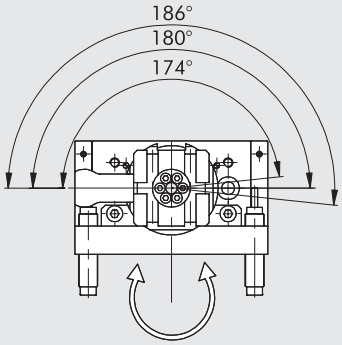
ANGLES OF ROTATION

90°



Hole position
for bottom pins

180°



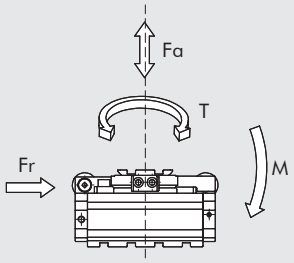
Hole position
for bottom pins

MAXIMUM KINETIC ENERGY Joule [J]

Ø	With flange, 90° rotation: W1630__4090K With flange, 180°rotation: W1630__4180K
16	0.16
20	0.55
22	0.85
25	1.40

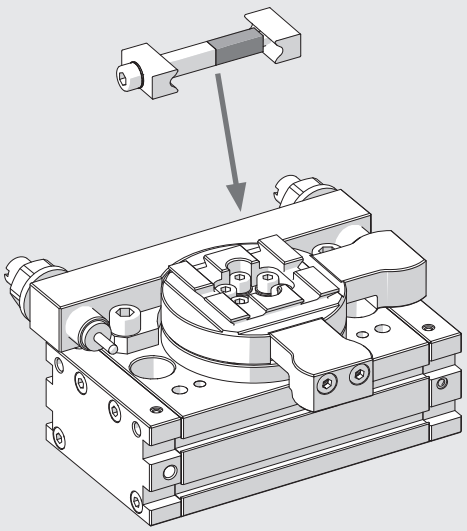
DIMENSIONS - FORCES AND MOMENTS

Ø	T Theoretical torque at 6 bar [Nm]	FA Max axial load [N]	FR Max radial load [N]	M Overturning moment [Nm]
16	0.9	74	78	2.4
20	1.8	135	137	4
22	2.7	195	360	5.3
25	4.6	300	450	9.7

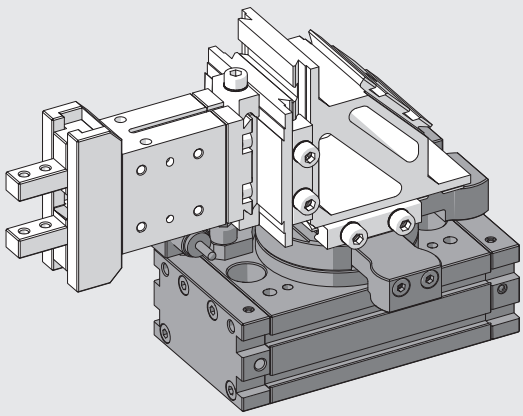


KEY DIAGRAM

Due to the design of turntables for R3K actuators, and to allow precision assembly with the K fixing elements, it is necessary to add a second key code W095000515 0K to the one already present on the standard element.

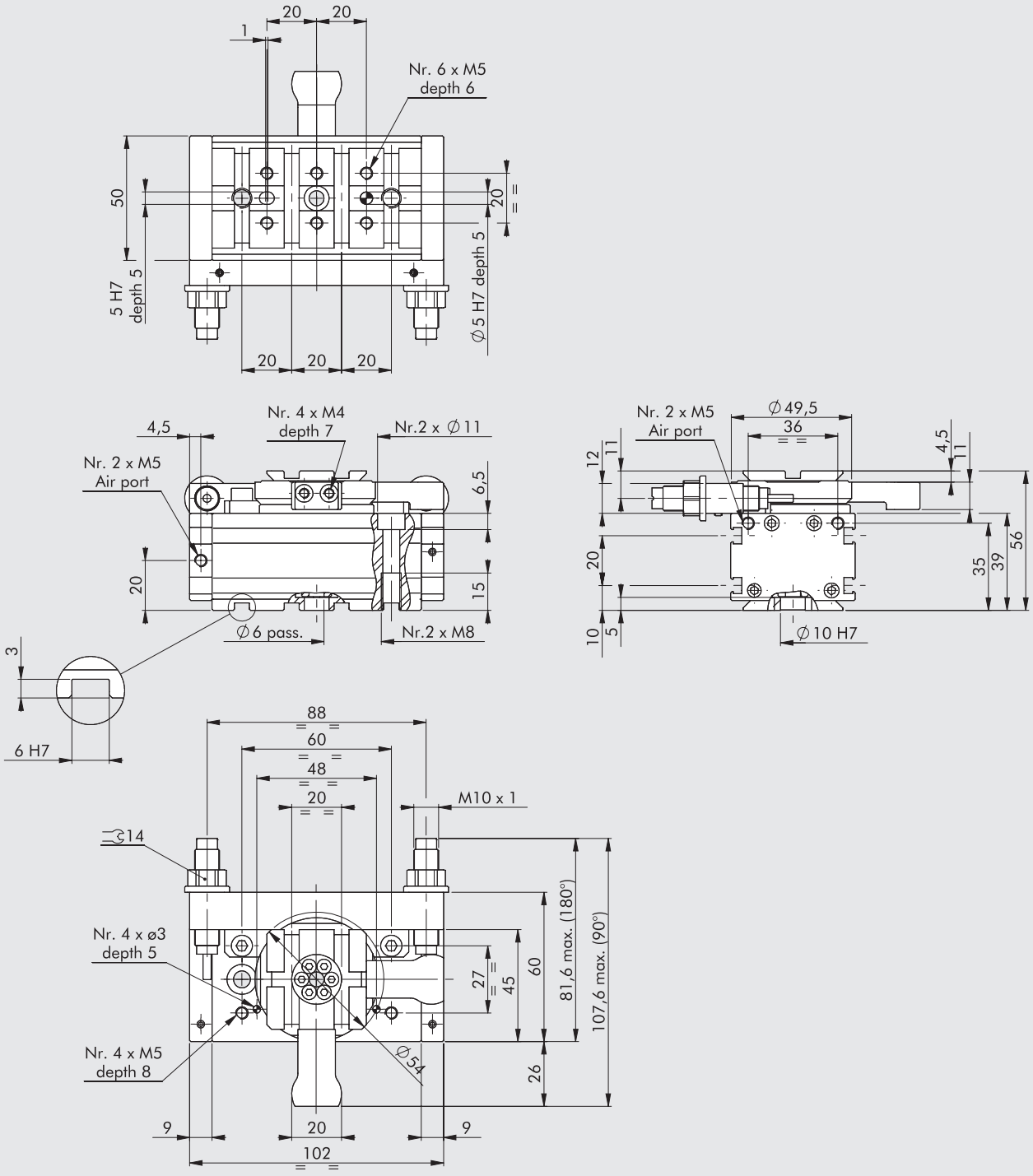


EXAMPLES OF APPLICATION



ROTARY ACTUATOR WITH EXTERNAL SHOCK ABSORBERS R3K-16 90/180°

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

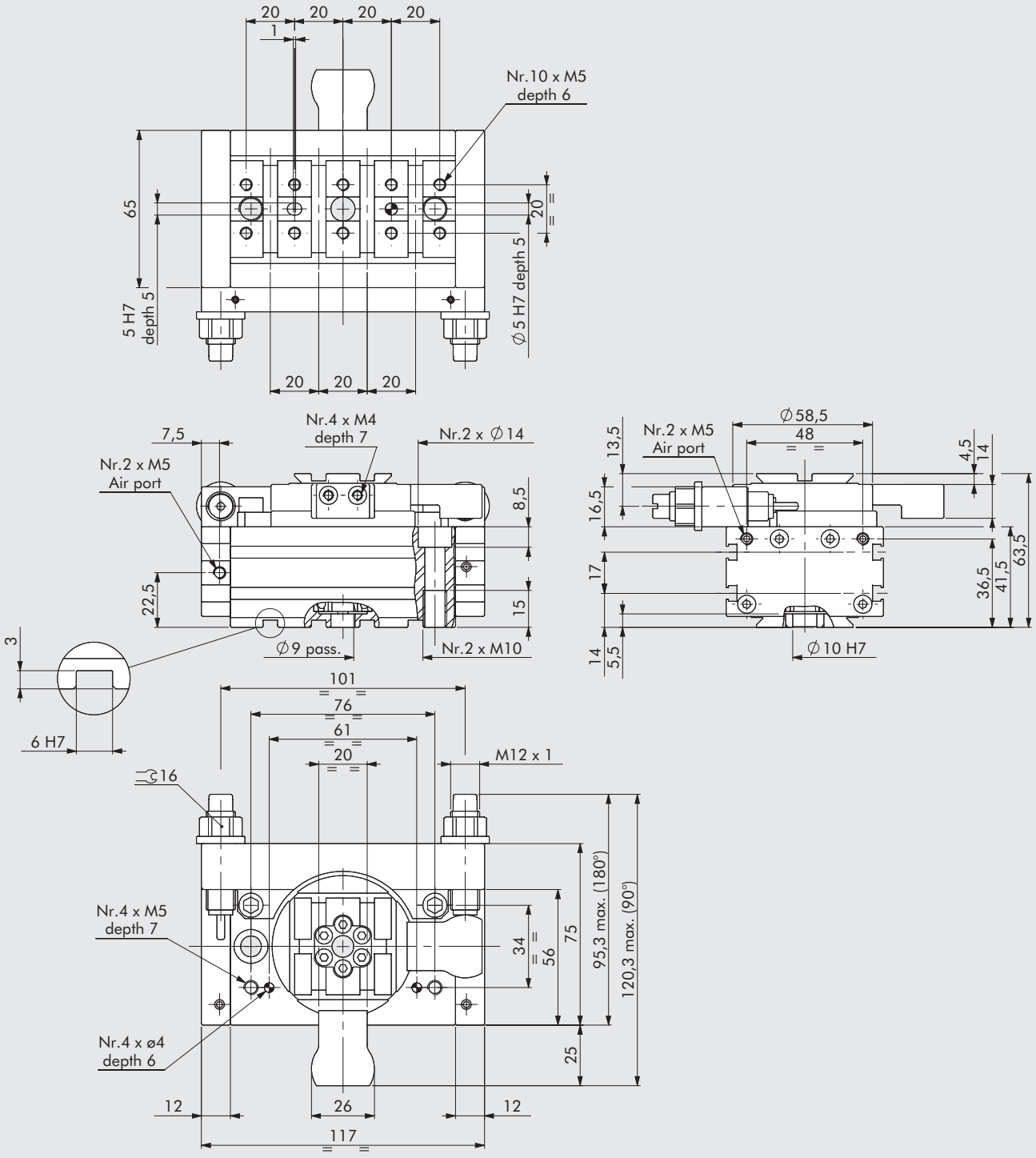


Code	Description
W1630164090K	Rotary actuator with external shock absorbers R3K-16-90
W1630164180K	Rotary actuator with external shock absorbers R3K-16-180

METAL WORK PNEUMATIC

ROTARY ACTUATOR WITH EXTERNAL SHOCK ABSORBERS R3K-20 90/180°

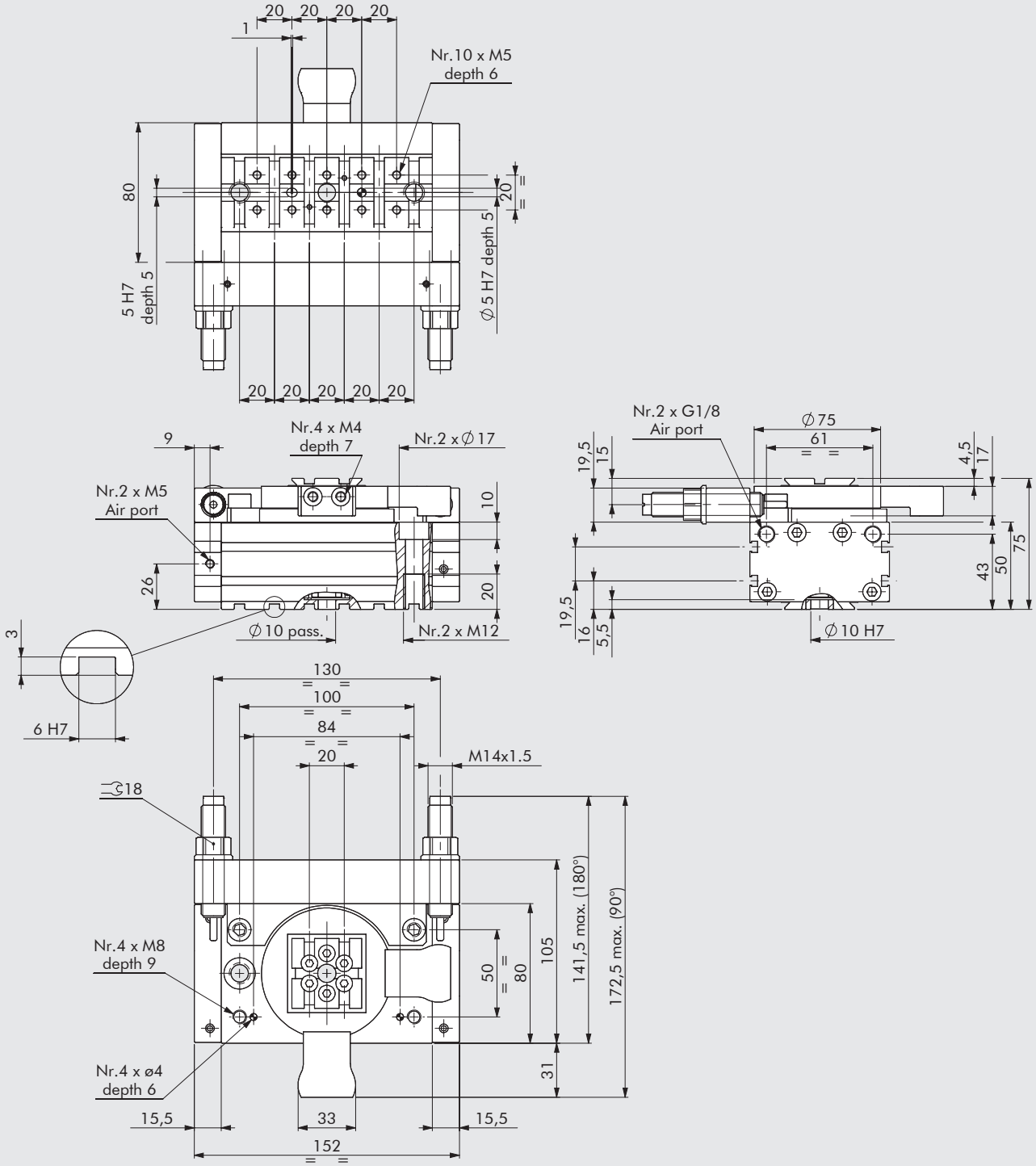
NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.



Code	Description
W1630204090K	Rotary actuator with external shock absorbers R3K-20-90
W1630204180K	Rotary actuator with external shock absorbers R3K-20-180

ROTARY ACTUATORS WITH EXTERNAL SHOCK ABSORBERS R3K-25 90/180°

NOTE: For standard dovetail dimensions see **chapter V-Lock Adaptors**.

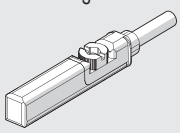


Code	Description
W1630254090K	Rotary actuator with external shock absorbers R3K-25-90
W1630254180K	Rotary actuator with external shock absorbers R3K-25-180

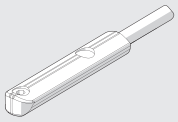
ACCESSORIES

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing



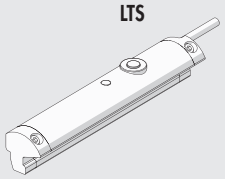
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

POSITION SENSORS

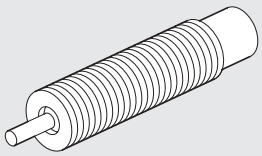
LTS



For technical data and usage strokes see **chapter A6**.

SPARE PARTS

SHOCK ABSORBERS

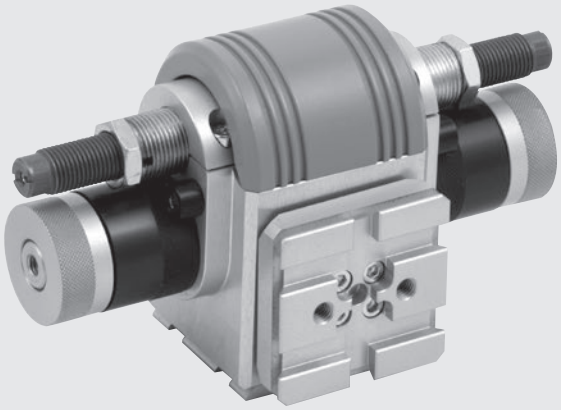


Code	Ø	Description
0950004009	16	Shock absorbers ECO 10 MF3 M10 x 1
0950004010	20	Shock absorbers ECO 15 MF4 M12 x 1
0950004015	25	Shock absorbers ECO S 25 MC2 short M14 x 1.5

NOTES

ROTARY ACTUATOR SERIES DAPK

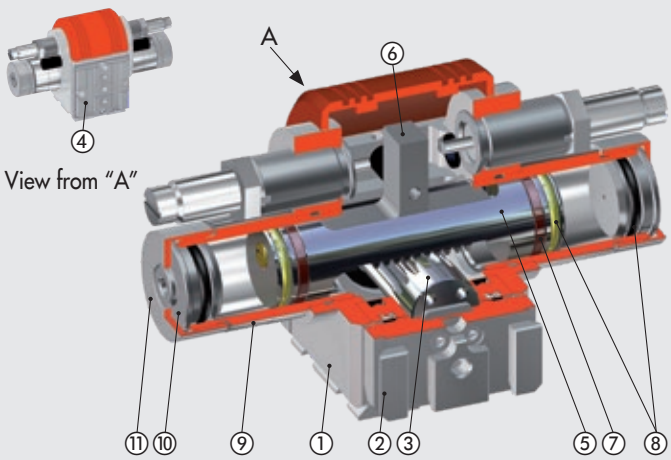
The DAPK rotary actuator is characterised by an exceptionally high level of performance, great ease of use, positioning accuracy and long life. It features a patented rack and pinion slack adjustment mechanism.
The angle of rotation can be adjusted between 0° and 180°.
A 3° overrun beyond 180° is also provided at each side.
The end position stops can be either elastic mechanical stop (for application with reduced mass and velocity) or hydraulic shock absorbers.
The end position can be detected using either the magnetic version, which is suitable for magnetic sensors, or the version suitable for inductive sensors. Versions with two, three and four positions are also available. The third and fourth position can be added at a later stage by installing the accessory provided. The versions with a pneumatic rotary distributor can be used to supply compressed air to the rotating plate from the inside, thus avoiding using external rotating pipes.
In this case the rotating plate can be chosen among the one mounted in-line and that tilted by 90°.
N.B.: We always suggest to use flow microregulators.
During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievment of the required speed.



TECHNICAL DATA		DAPK-1	DAPIK-1	DAPK-2	DAPIK-2
Internal air flows		NO	YES	NO	YES
Operating pressure	bar	2 to 7			
	MPa	0.2 to 0.7			
	psi	29 to 101			
Temperature range	°C	-10 to 80			
	°F	14 to 176			
Fluid		Lubricated or unlubricated 20 µm filtered air. If lubricated air is used, lubrication must be continuous			
End position stop shock-absorption		Hydraulic shock-absorbers or elastic mechanical stop			
End-position control		Inductive sensors, magnetic sensors			
Rotation angle	°	Adjustable from 0 to 180			
Bore	mm	20		32	
Moment of inertia around the central axis	kg·m²	0.004		0.030	
Theoretical torque at 6 bar	Nm	1.1		3.8	
Maximum overturning moment	Nm	5		15	
Allowable axial tensile stress/compression	N	90 / 120		240 / 460	
Allowable critical strain energy:					
with elastic mechanical stop	Joule	0.02		0.06	
with shock absorbers	Joule	0.20		0.60	
Repeatability (on 100 strokes at constant conditions)	°	≤ 0.01		≤ 0.01 - 0.02	
Weight of the 2-position version	kg	0.56	0.71	1.50	1.73
Weight of the 3-position version	kg	0.66	0.80	1.67	1.90
Weight of the 4-position version	kg	0.76	0.89	1.84	2.07

COMPONENTS

① BODY: blank anodized aluminium
② PLATE: blank anodized aluminium
③ PINION: steel
④ INTERFACE COVER: blank anodized aluminium
⑤ RACK: steel
⑥ SECONDARY RACK: steel
⑦ GUIDE RING: special technopolymer
⑧ GASKETS: NBR
⑨ TUBE: hard-anodized aluminium
⑩ END CAP: blank anodized aluminium
⑪ COVER: blank anodized aluminium



METAL WORK PNEUMATIC

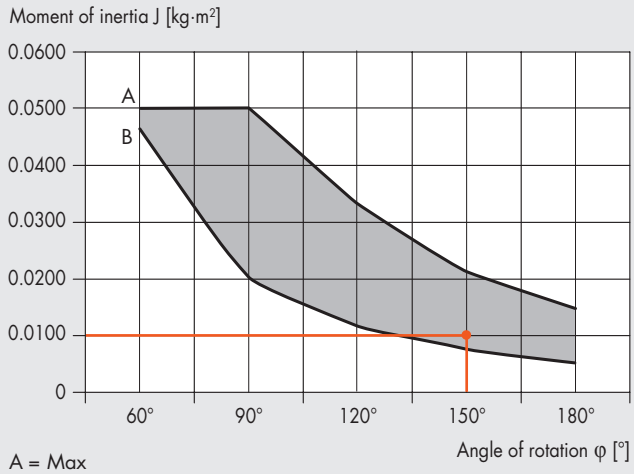
CHOOSING THE SHOCK-ABSORBER

For the correct use of the DAPK-1/DAPIK-1 and DAPK-2/DAPIK-2, use the shock-absorber that best suits the application.
For the DAPK-1/DAPIK-1, you can select only one shock-absorber.
For the DAPK-2/DAPIK-2, you can choose three types of shock-absorbers according to the following procedure:

EXAMPLE
DAPK-2 with:
- Moment of inertia applied to the rotary actuator: J = 0.0100 kg.m²
- Set angle of rotation: φ = 150 °

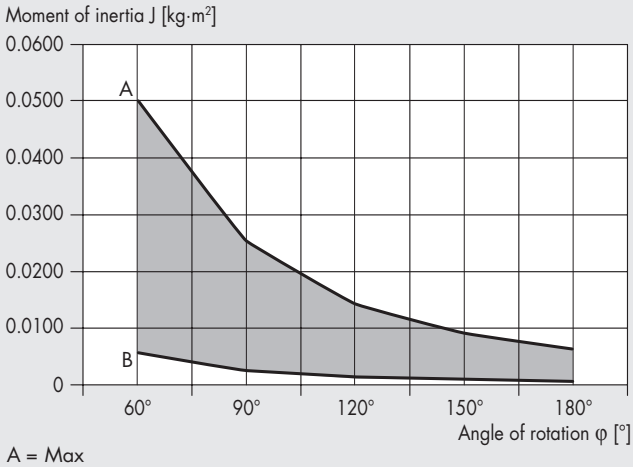
Requirement: Determine the shock-absorber that best suits the application:

1. Calculate the moment of inertia of the component applied to the DAPK-2/DAPIK-2 rotary actuator.
   In our case the value is J = 0.0100 kg.m²
2. Determine the angle of rotation that the rotary actuator must perform.
   In our case the value is φ = 150 °
3. Intersect the angle and moment of inertia in the diagrams "shock-absorber range of use" of the three types of shock-absorbers used. The shock-absorber whose point is inside the grey area shall be chosen.
   In our case the shock-absorber obtained is the "Shock-absorber on request" MC150EUMH2 average hardness (see encryption key).



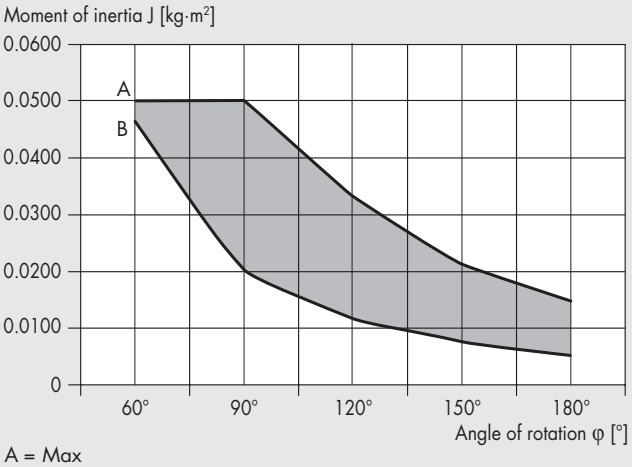
A = Max
B = Min

MC150EUMH STD shock-absorber range of use



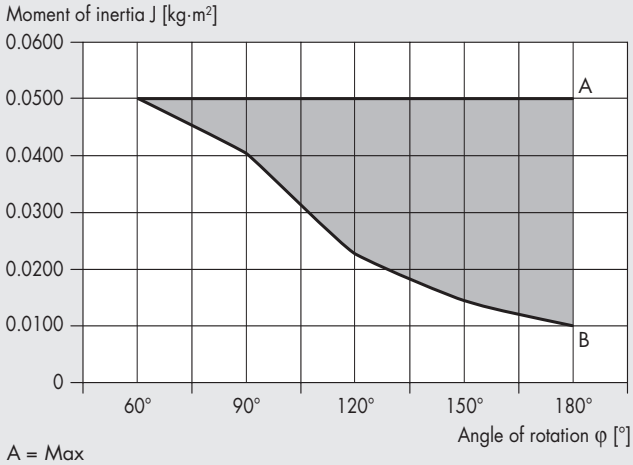
A = Max
B = Min

MC150EUMH2 medium hardness shock-absorber range of use



A = Max
B = Min

SC190EUM7 hard shock-absorber range of use



A = Max
B = Min

PERFORMANCE

The method used to determine the maximum theoretical number of cycles and theoretical time of a rotation is the same for both sizes of the DAPK/DAPIK, which involves the use of:

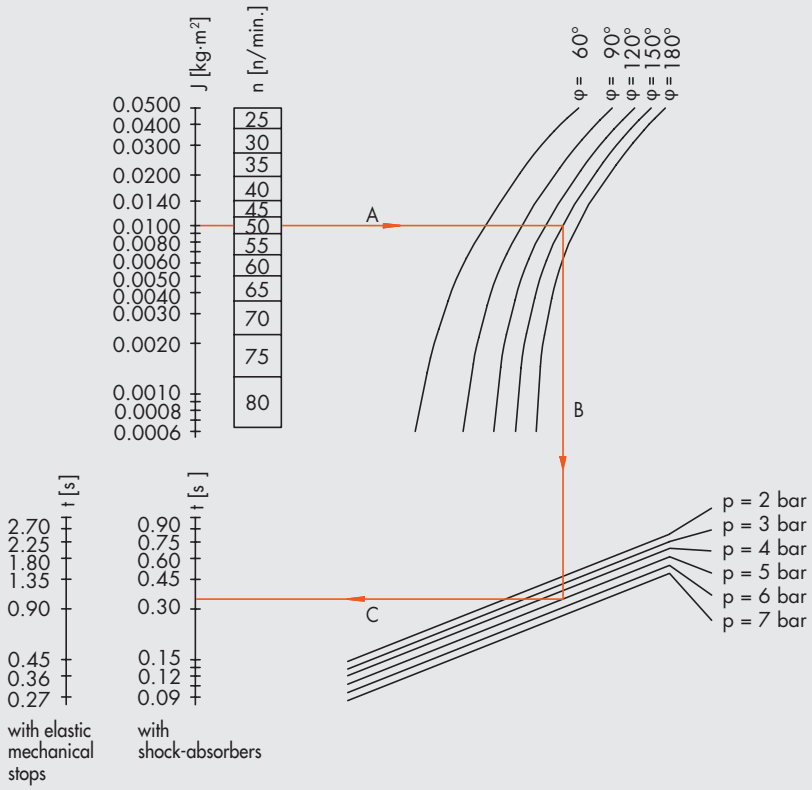
- "performance chart of DAPK-1/DAPIK-1 with hydraulic shock-absorbers and buffers";
- "performance chart of DAPK-2/DAPIK-2 with hydraulic shock-absorbers and buffers".

EXAMPLE

DAPK-2 with:

- Moment of inertia applied to the rotary actuator: J = 0.0100 kg.m^2
- Set angle of rotation: φ = 150 °
- Supply pressure: p = 5 bar

Requirement: Determine the maximum theoretical number of cycles and theoretical time of a rotation:



Applicability:

- Centre of gravity of the rotating mass on the axis of rotation. Axis of rotation in any position.
- Centre of gravity of the rotating mass outside the axis of rotation. Axis of rotation in a vertical position.

Example of hydraulic with shock-absorbers:
J = 0.010 kg·m^2
φ = 150°
p = 5 bar

Results:
n_{max} = 50 double strokes per minute
t = 0.34 s standard shock absorber

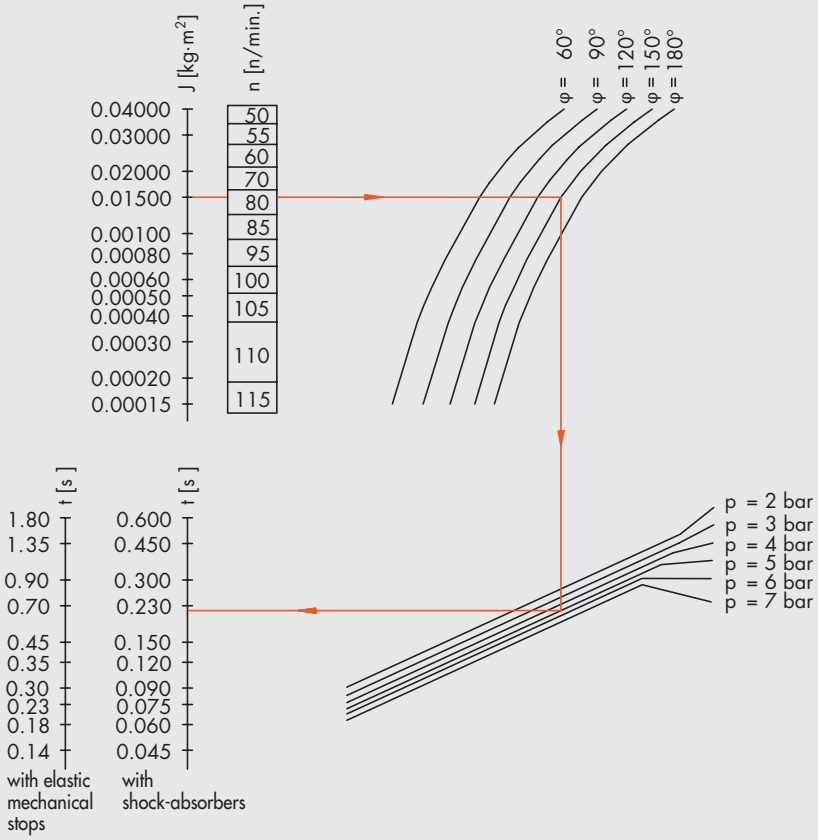
J = moment of inertia of mass
n = max. number of double strokes per minute for the version with shock-absorbers
p = pneumatic drive pressure
t = traverse time per stroke
φ = angle of rotation

1. Starting from the moment of inertia applied to the rotary actuator, the maximum number of settable theoretical cycles is determined (line A). In our case the value is = 50 cycles/min
2. When the line of the desired angle of rotation is intercepted, move down to the supply pressure (line B) and, by crossing the indexed scale "t" (line C), you obtain the theoretical time of a rotation.
3. In our case the value is t ≈ 0.35 sec.

IMPORTANT: the maximum number of cycles and the time of a rotation are theoretical data and as such, for particular applications, these values are unlikely to be achieved.

METAL WORK PNEUMATIC

PERFORMANCE GRAPHS FOR DAPK-1, DAPIK-1 WITH HYDRALIC SHOCK-ABSORBERS AND ELASTIC MECHANICAL STOPS



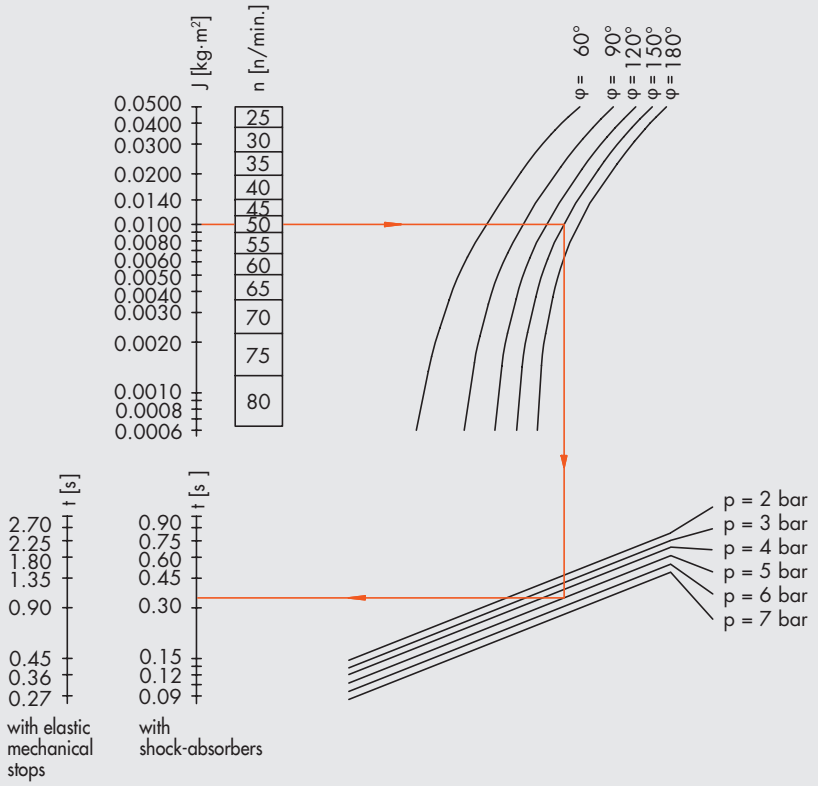
Applicability:
- Centre of gravity of the rotating mass on the axis of rotation. Axis of rotation in any position.
- Centre of gravity of the rotating mass outside the axis of rotation. Axis of rotation in a vertical position.

Example of hydraulic with shock-absorbers:
J = 0.0015 kg·m²
φ = 150°
p = 5 bar

Results:
n_{max} = 80 double strokes per minute
t = 0.22 s

J = moment of inertia of mass
n = max. number of double strokes per minute for the version with shock-absorbers
p = pneumatic drive pressure
t = traverse time per stroke
φ = angle of rotation

PERFORMANCE GRAPHS FOR DAPK-2, DAPIK-2 WITH HYDRALIC SHOCK-ABSORBERS AND ELASTIC MECHANICAL STOPS



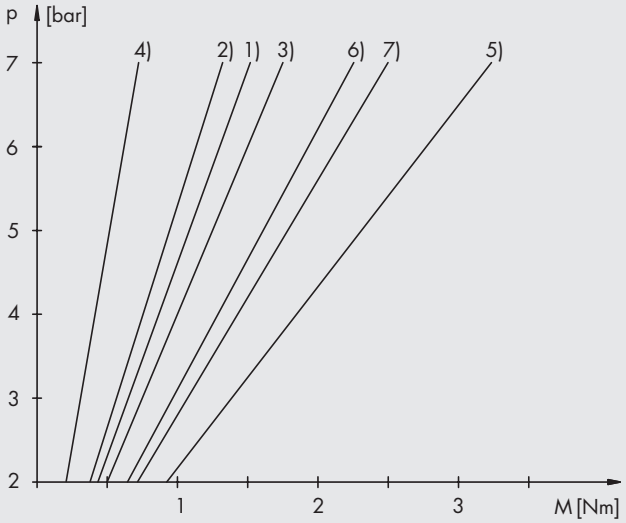
Applicability:
- Centre of gravity of the rotating mass on the axis of rotation. Axis of rotation in any position.
- Centre of gravity of the rotating mass outside the axis of rotation. Axis of rotation in a vertical position.

Example of hydraulic with shock-absorbers:
J = 0.010 kg·m²
φ = 150°
p = 5 bar

Results:
n_{max} = 50 double strokes per minute
t = 0.34 s standard shock absorber

J = moment of inertia of mass
n = max. number of double strokes per minute for the version with shock-absorbers
p = pneumatic drive pressure
t = traverse time per stroke
φ = angle of rotation

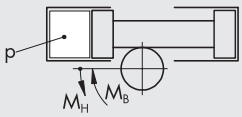
PRESSURE / TORQUE CHART DAPK-1, DAPIK-1, DZAK-1



p = drive pressure
M_H = moment of holding, i.e. the moment applicable from the outside to the stationary pinion shaft, with no pinion movement.
M_B = moment of movement, i.e. the moment available for the moving pinion shaft due to the effect of pneumatic drive.

2-POSITION VERSIONS

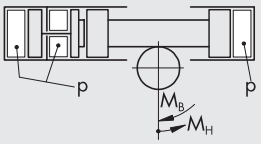
DAPK left /right end position



M_H = p · 0.21 ⟶ 1)
M_B = p · 0.18 ⟶ 2)

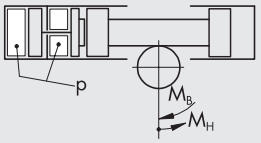
3-POSITION VERSIONS (DZAK)

DAPK against DZAK on the outlet



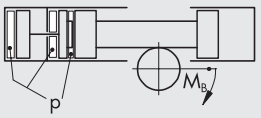
M_H = p · 0.25 ⟶ 3)
M_B = p · 0.10 ⟶ 4)

DZAK outlet, DAPK without pressure



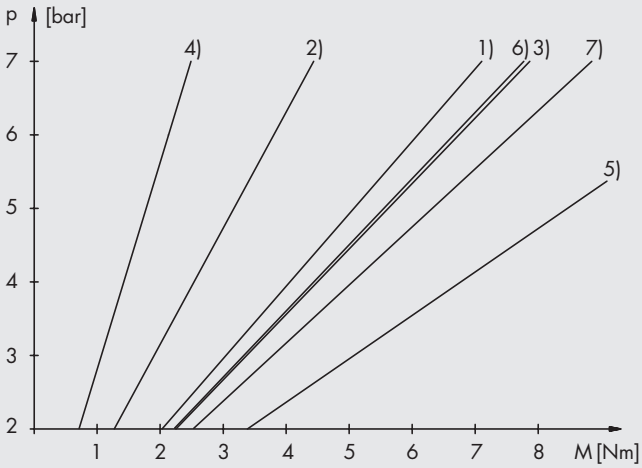
M_H = p · 0.46 ⟶ 5)
M_B = p · 0.32 ⟶ 6)

DAPK + DZAK



M_B = p · 0.35 ⟶ 7)

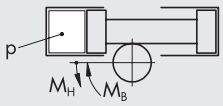
PRESSURE / TORQUE CHART DAPK-2, DAPIK-2, DZAK-2



p = drive pressure
M_H = moment of holding, i.e. the moment applicable from the outside to the stationary pinion shaft, with no pinion movement.
M_B = moment of movement, i.e. the moment available for the moving pinion shaft due to the effect of pneumatic drive.

2-POSITION VERSIONS

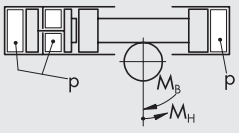
DAPK left /right end position



M_H = p · 1.01 ⟶ 1)
M_B = p · 0.63 ⟶ 2)

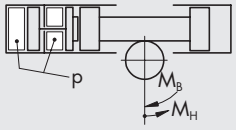
3-POSITION VERSIONS (DZAK)

DAPK against DZAK on the outlet



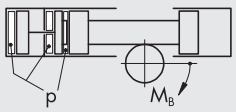
M_H = p · 1.12 ⟶ 3)
M_B = p · 0.35 ⟶ 4)

DZAK outlet, DAPK without pressure



M_H = p · 1.69 ⟶ 5)
M_B = p · 1.10 ⟶ 6)

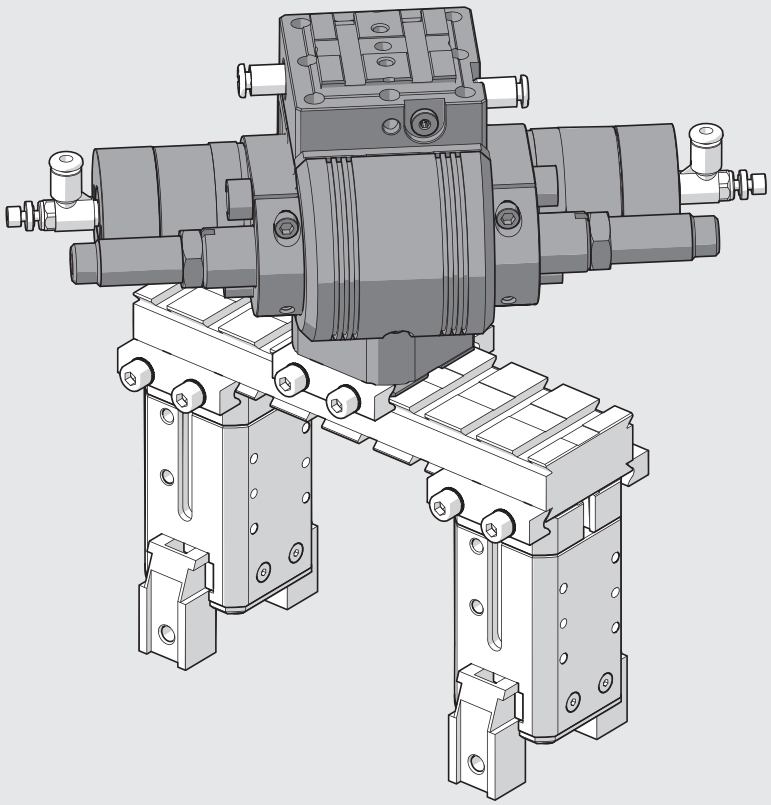
DAPK + DZAK

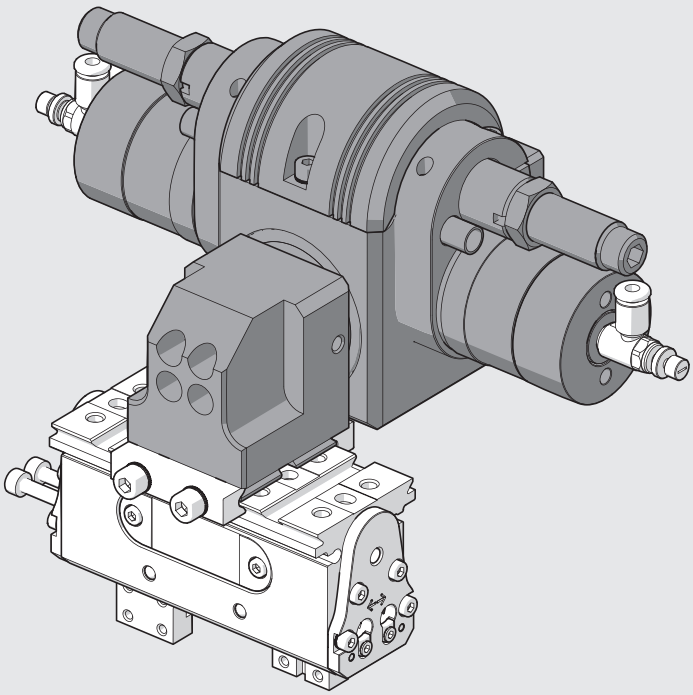


M_B = p · 1.26 ⟶ 7)

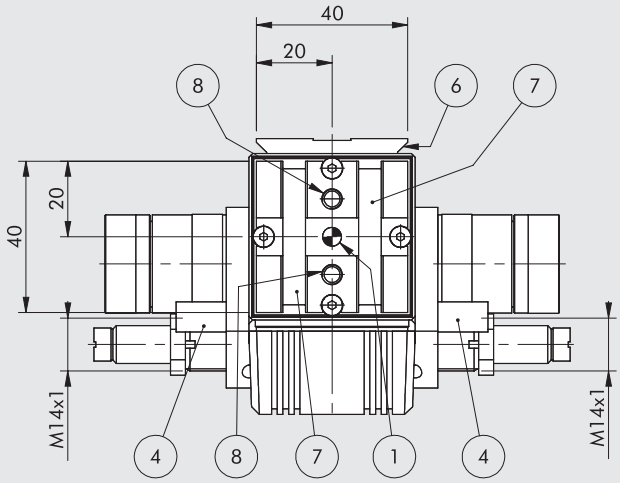
METAL WORK PNEUMATIC

EXAMPLES OF APPLICATION

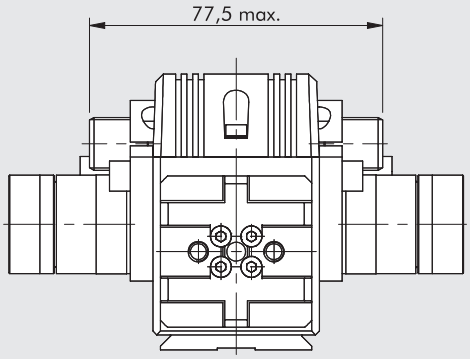




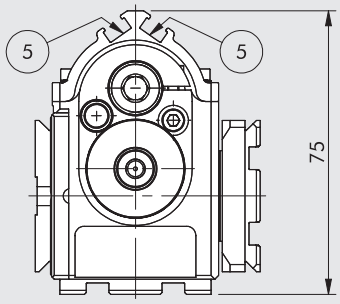
DIMENSIONS OF THE DAPK-1 ROTARY ACTUATOR

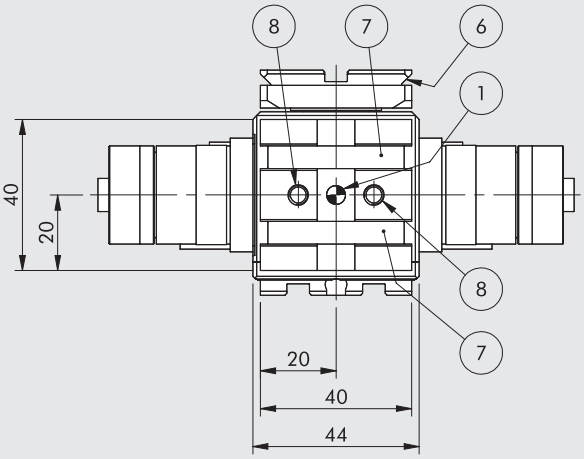


VERSION WITH ELASTIC MECHANICAL STOP

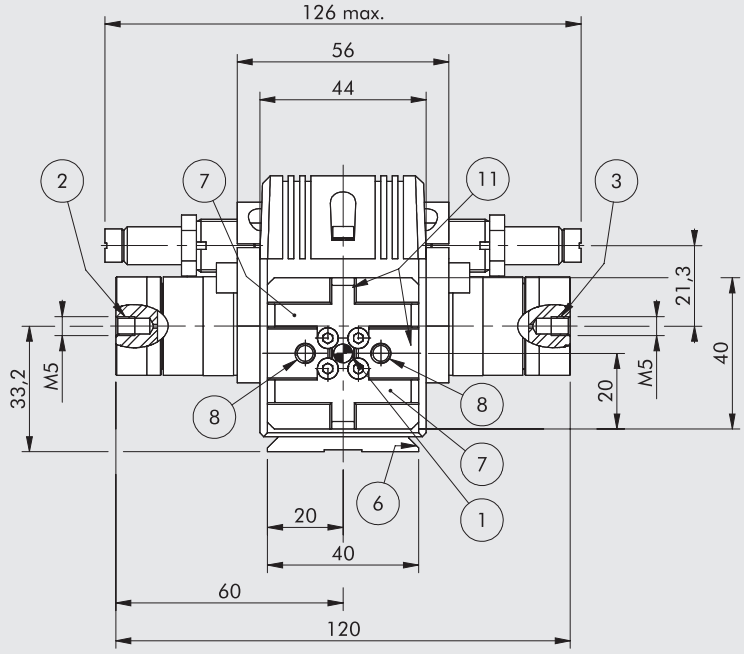


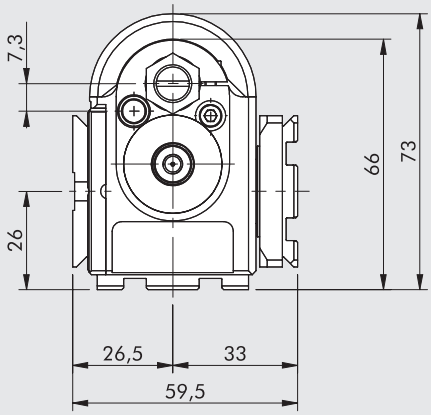
MAGNETIC VERSION





① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
④ Bushing for inductive sensors
⑤ Magnetic sensor or position sensor fixing slots
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing

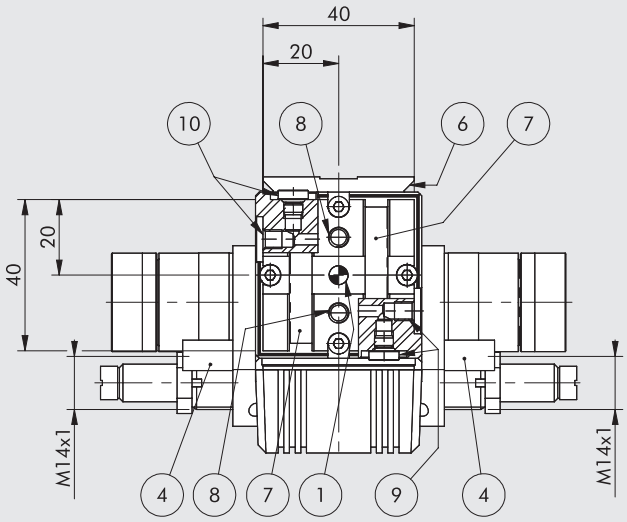


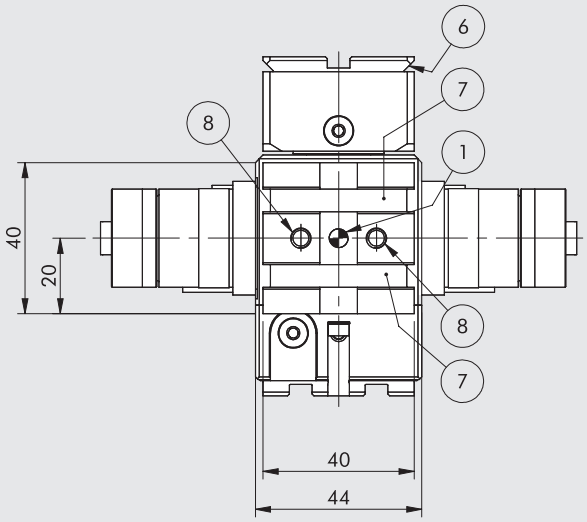


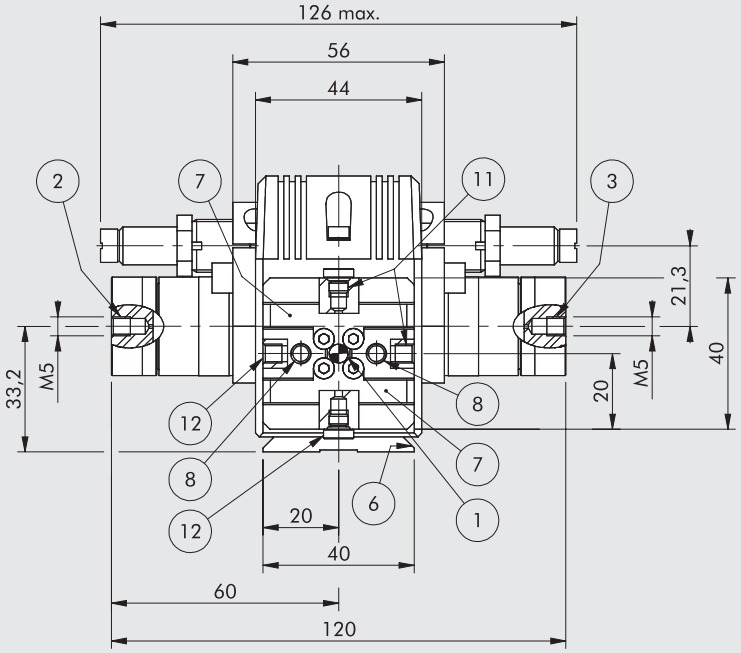
IMPORTANT: 1° of rotation corresponds to a linear movement of Δ = 0.126 mm

METAL WORK PNEUMATIC

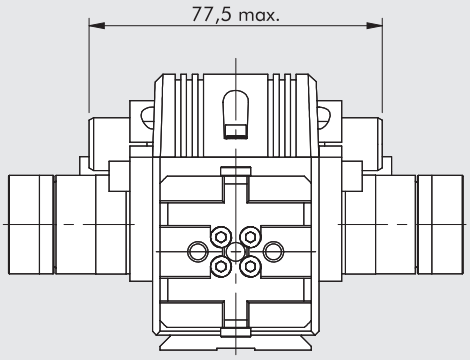
DAPIK-1 ROTARY ACTUATOR DIMENSIONS WITH INTERNAL AIR FLOWS



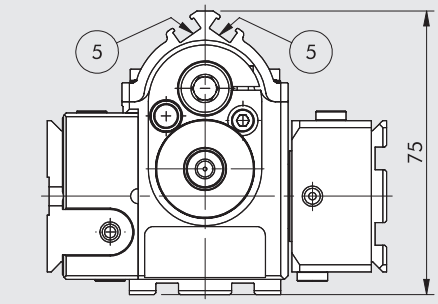




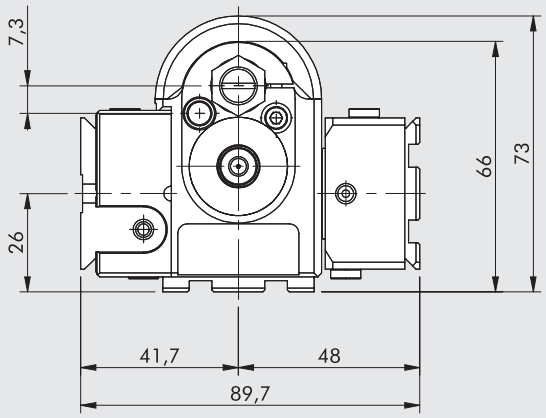
VERSION WITH ELASTIC MECHANICAL STOP



MAGNETIC VERSION

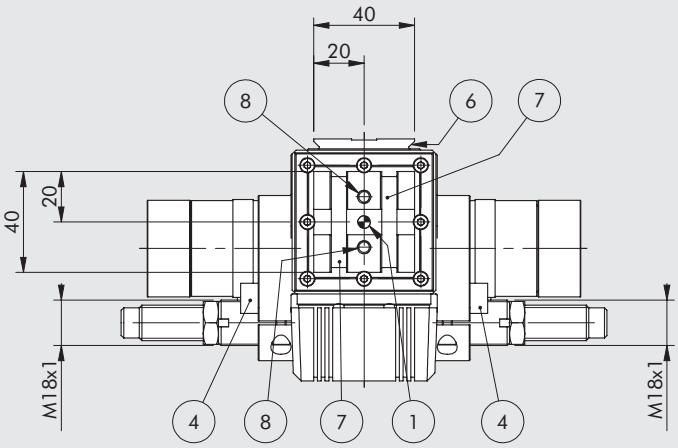


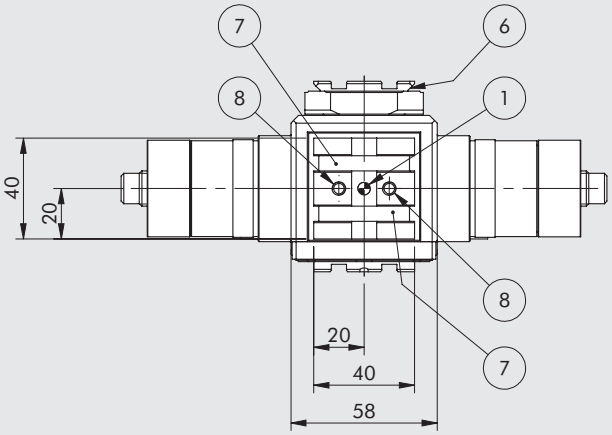
① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
④ Bushing for inductive sensors
⑤ Magnetic sensor or position sensor fixing slots
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing
⑨ Air inlets on the right (M5 thread)
⑩ Air inlets on the left (M5 thread)
⑪ Air outlets on the right (M5 thread)
⑫ Air outlets on the left (M5 thread)

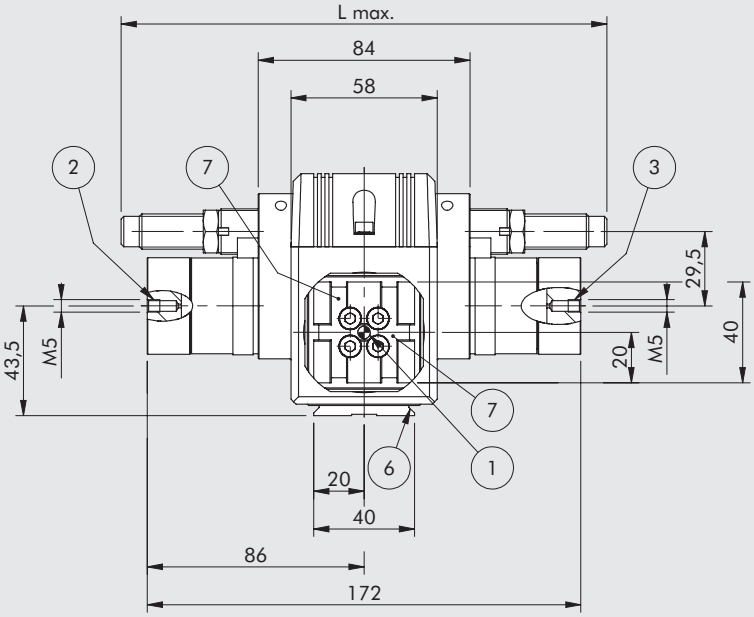


IMPORTANT: 1° of rotation corresponds to a linear movement of Δ = 0.126 mm

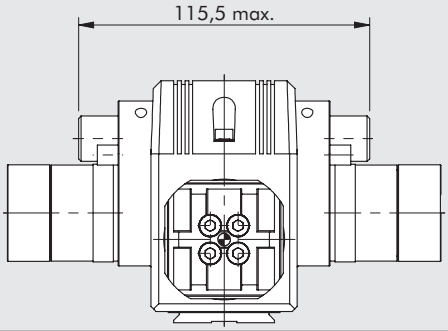
DIMENSIONS OF THE DAPK-2 ROTARY ACTUATOR



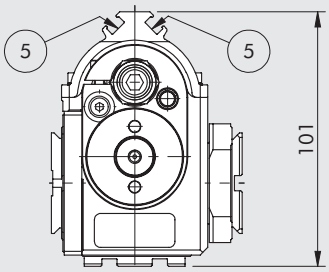




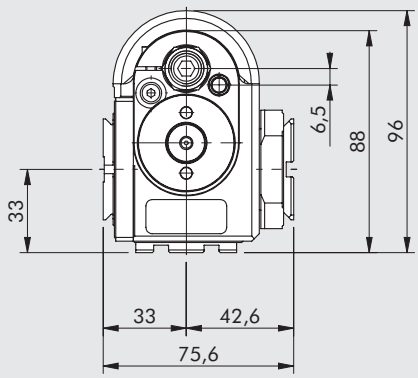
VERSION WITH ELASTIC MECHANICAL STOP



MAGNETIC VERSION



① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
④ Bushing for inductive sensors
⑤ Magnetic sensor or position sensor fixing slots
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing

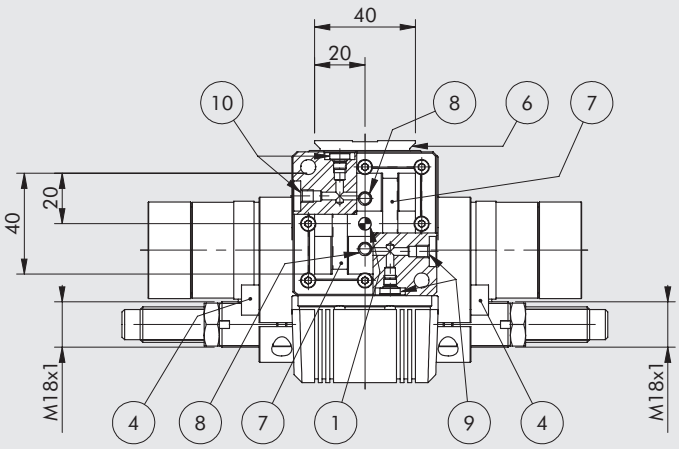


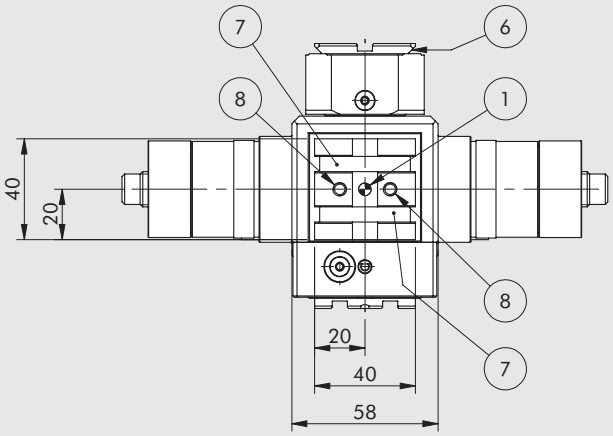
Shock-absorbers	L
Standard (H)	192.7 mm
Medium hardness (H2)	192.7 mm
Hard (M7)	209.5 mm

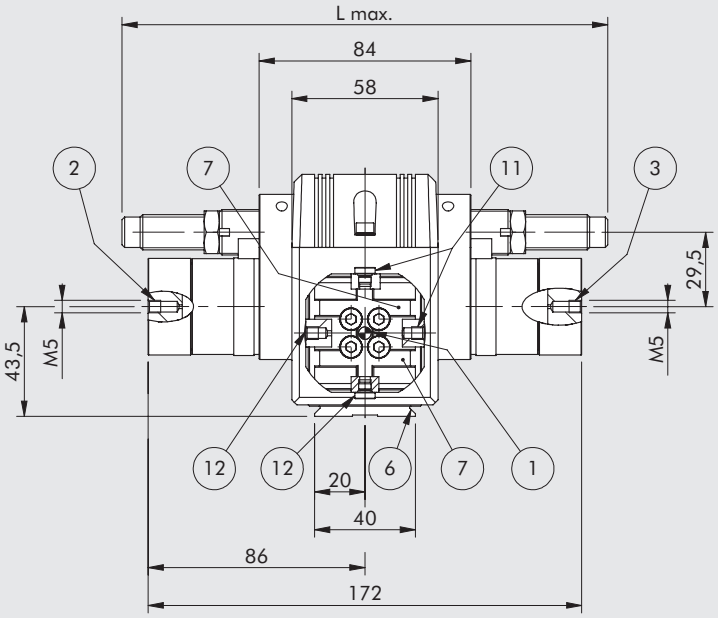
IMPORTANT: 1° of rotation corresponds to a linear movement of Δ = 0.183 mm

METAL WORK PNEUMATIC

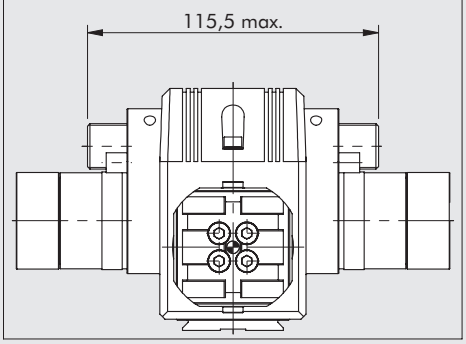
DAPIK-2 ROTARY ACTUATOR DIMENSIONS WITH INTERNAL AIR FLOWS



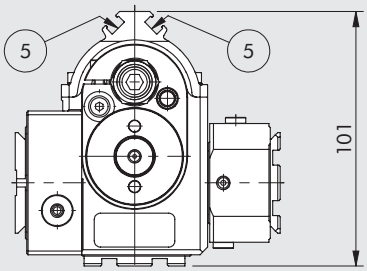




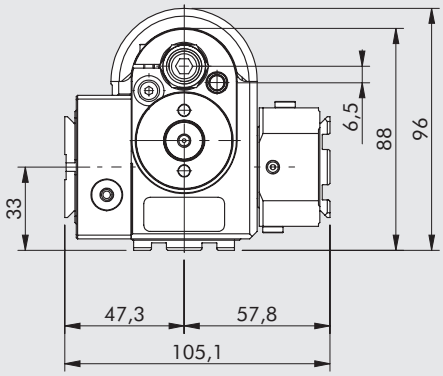
VERSION WITH ELASTIC MECHANICAL STOP



MAGNETIC VERSION



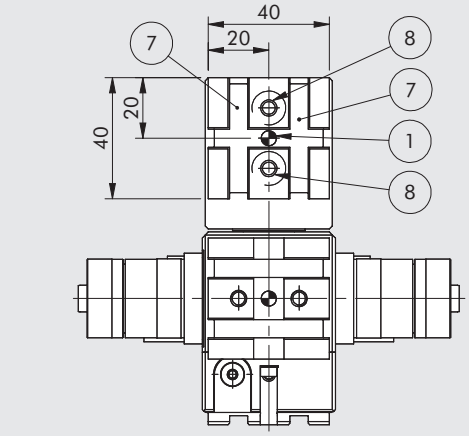
① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
④ Bushing for inductive sensors
⑤ Magnetic sensor or position sensor fixing slots
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing
⑨ Air inlets on the right (M5 thread)
⑩ Air inlets on the left (M5 thread)
⑪ Air outlets on the right (M5 thread)
⑫ Air outlets on the left (M5 thread)

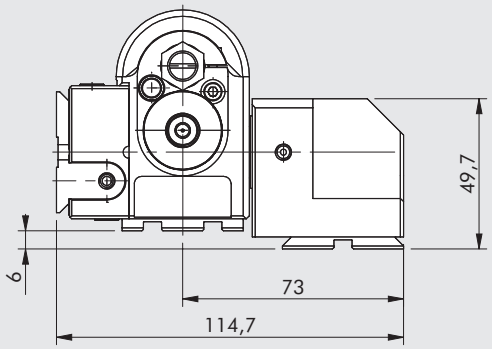


Shock-absorbers	L
Standard (H)	192.7 mm
Medium hardness (H2)	192.7 mm
Hard (M7)	209.5 mm

IMPORTANT: 1° of rotation corresponds to a linear movement of Δ = 0.183 mm

DIMENSIONS OF DAPIK-1 + WAK-1 ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN

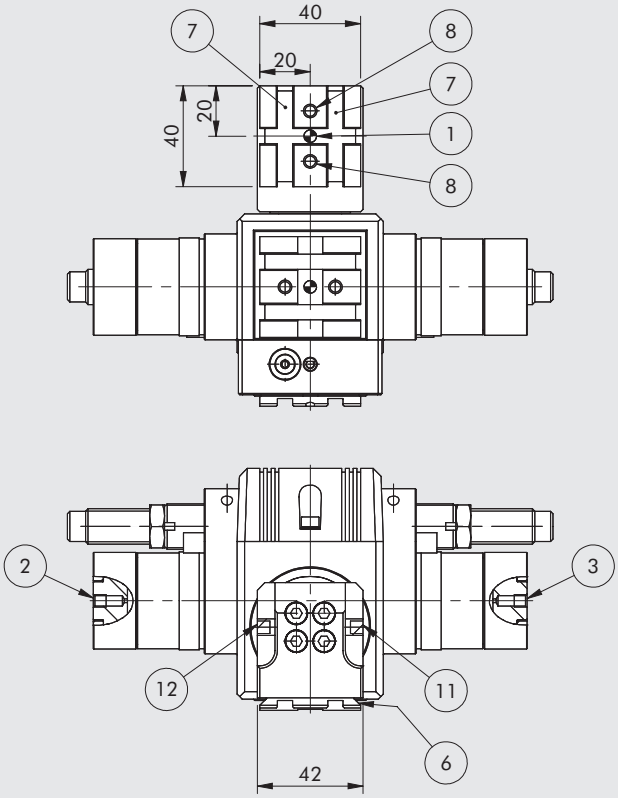


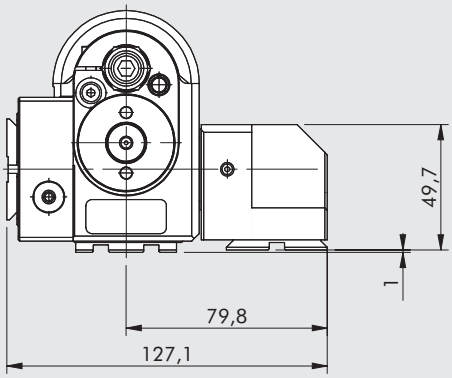


① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing
⑪ Air outlets on the right (M5 thread)
⑫ Air outlets on the left (M5 thread)

IMPORTANT: for any missing dimensions, please refer to the DAPIK-1 rotary actuator on page **A3**.143

DIMENSIONS OF DAPIK-2 + WAK-2 ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN



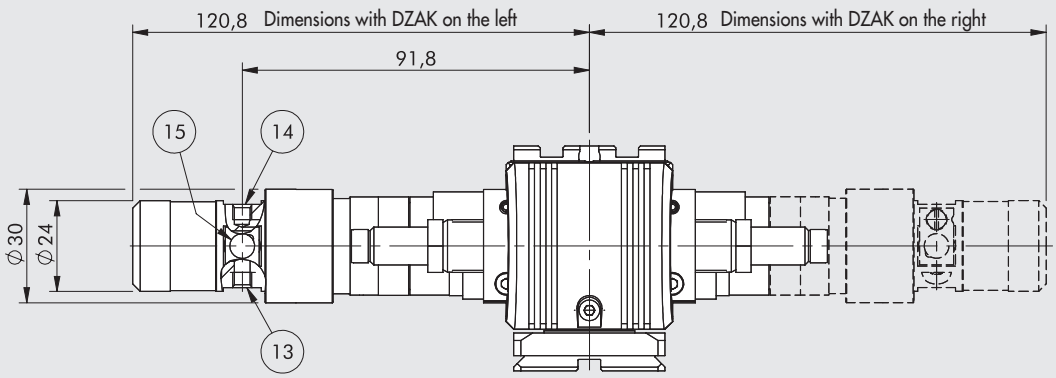


① Holes for centring pins
② Right-hand rotation supply
③ Left-hand rotation supply
⑥ Dovetail for "V-Lock" fixing.
For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Threaded holes for fixing
⑪ Air outlets on the right (M5 thread)
⑫ Air outlets on the left (M5 thread)

IMPORTANT: for any missing dimensions, please refer to the DAPIK-2 rotary actuator on page **A3**.145

METAL WORK PNEUMATIC

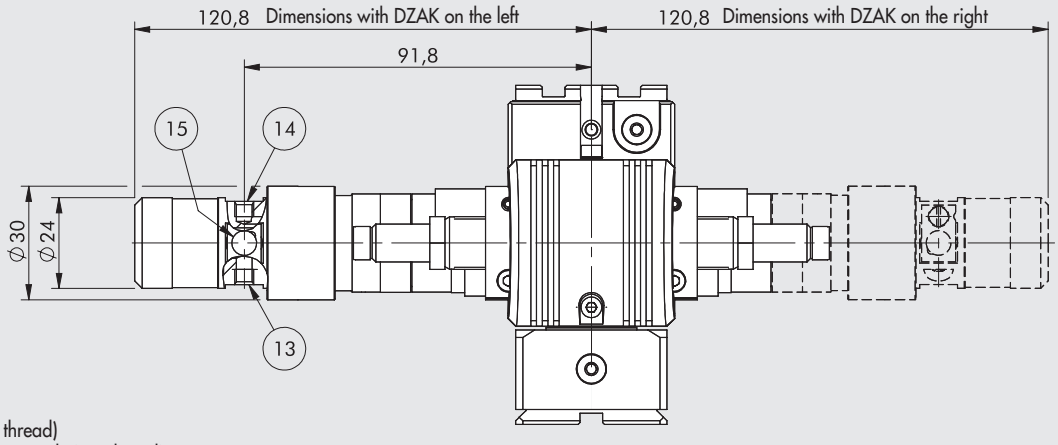
DIMENSIONS OF DAPK-1 + DZAK-1 THREE-POSITION ROTARY ACTUATOR (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPK-1 rotary actuator on page **A3**.142

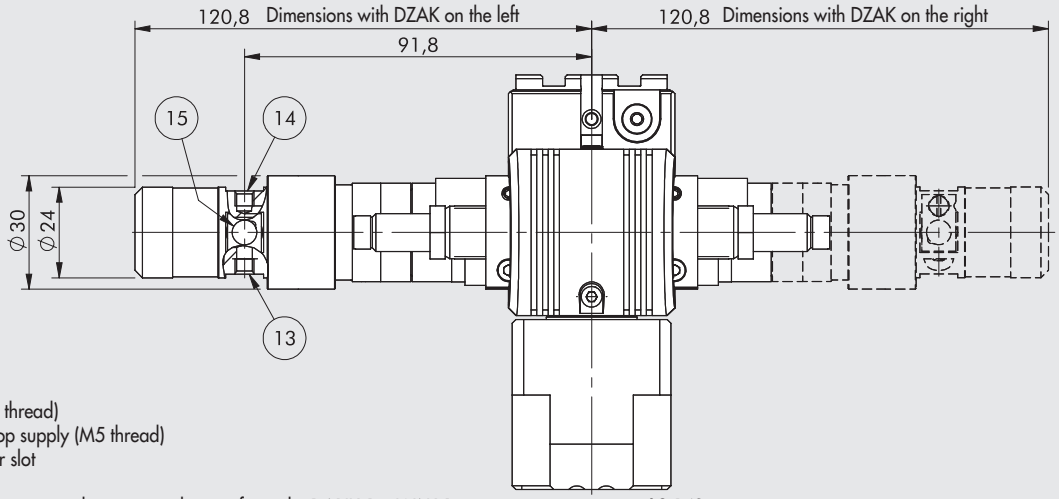
DIMENSIONS OF DAPIK-1 + DZAK-1 THREE-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-1 rotary actuator on page **A3**.143

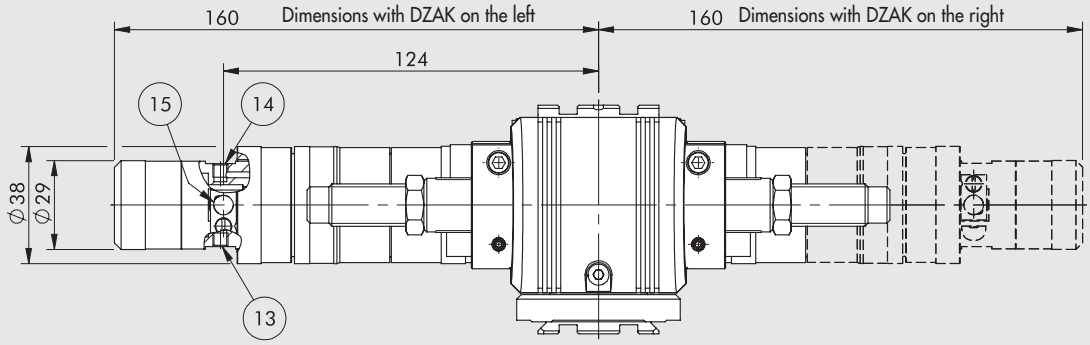
DIMENSIONS OF DAPIK-1 + WAK-1 + DZAK-1 THREE-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-1 + WAK-1 rotary actuator on page **A3**.142

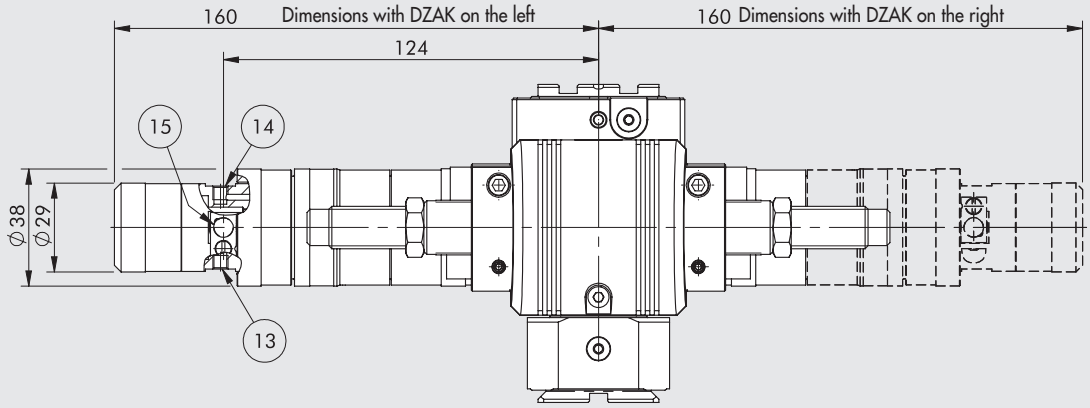
DIMENSIONS OF DAPK-2 + DZAK-2 THREE-POSITION ROTARY ACTUATOR (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPK-2 rotary actuator on page **A3**.144

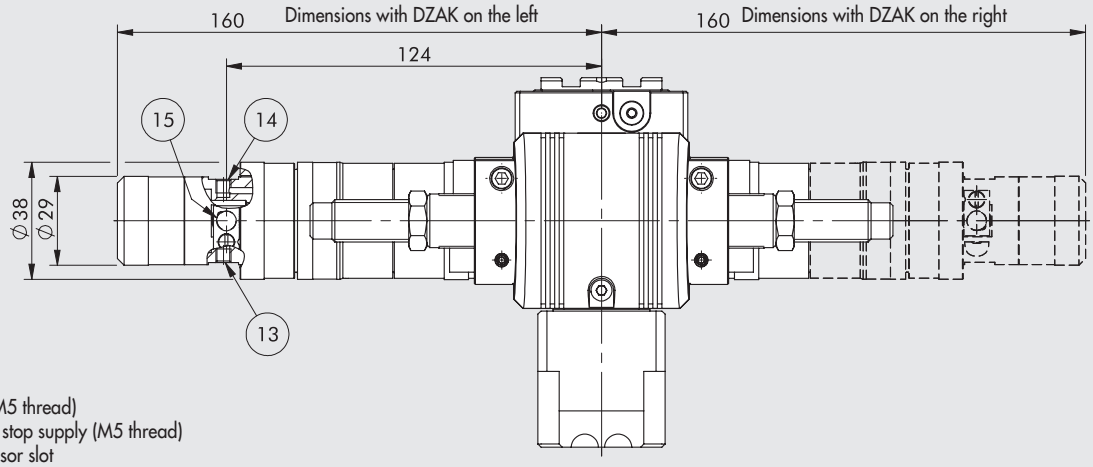
DIMENSIONS OF DAPIK-2 + DZAK-2 THREE-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-2 rotary actuator on page **A3**.145

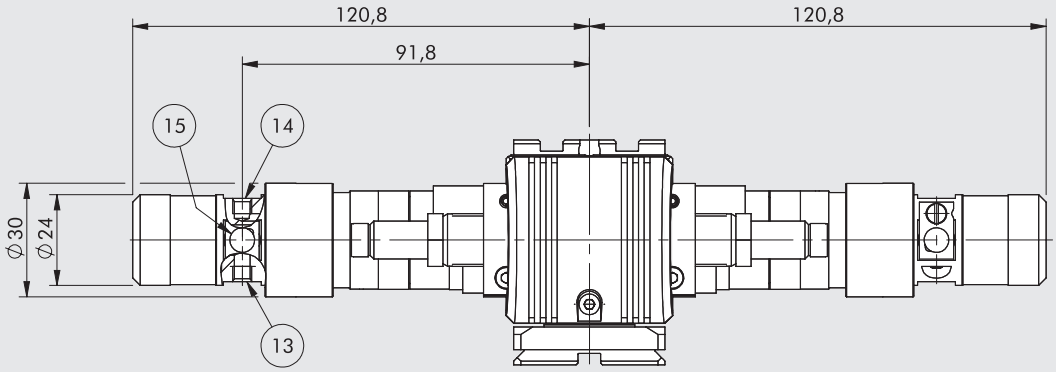
DIMENSIONS OF DAPIK-2 + WAK-2 + DZAK-2 THREE-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN (right or left)



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-2 + WAK-2 rotary actuator on page **A3.**146

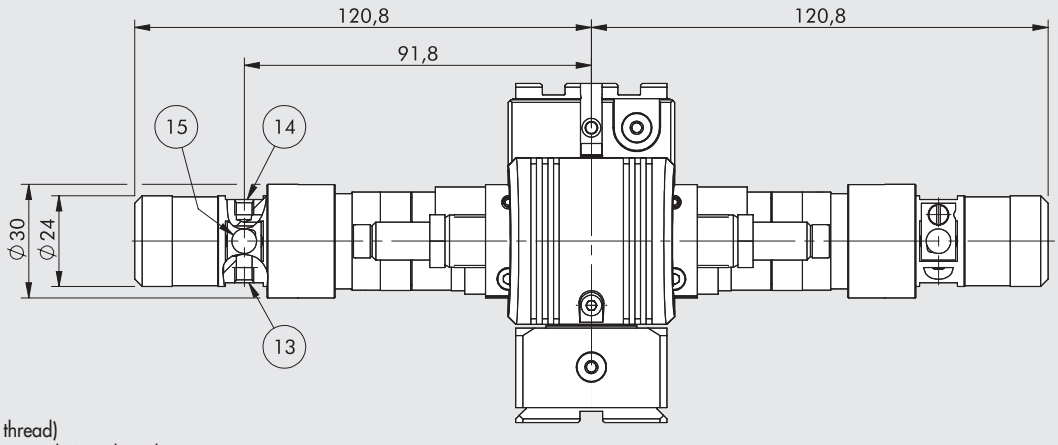
DIMENSIONS OF DAPK-1 + 2 DZAK-1 FOUR-POSITION ROTARY ACTUATOR



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPK-1 rotary actuator on page **A3**.142

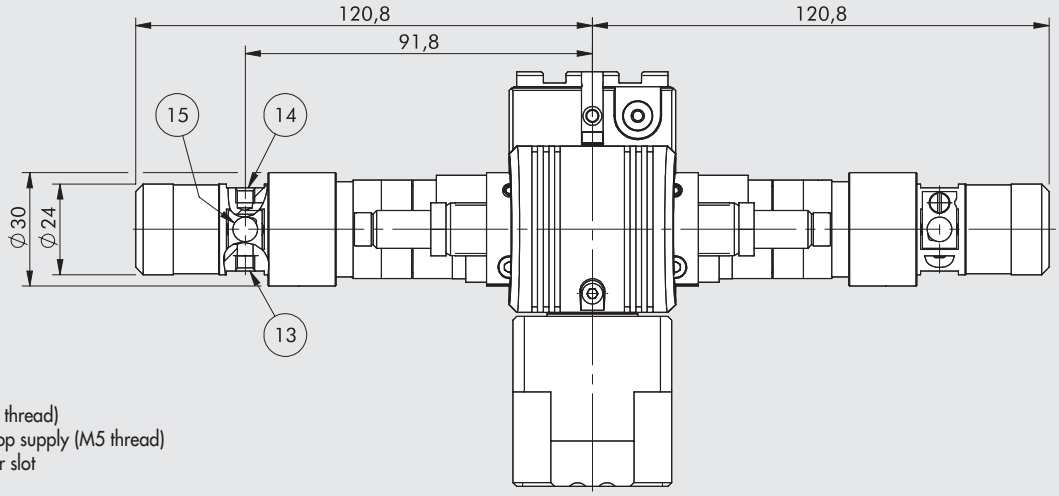
DIMENSIONS OF DAPIK-1 + 2 DZAK-1 FOUR-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-1 rotary actuator on page **A3**.143

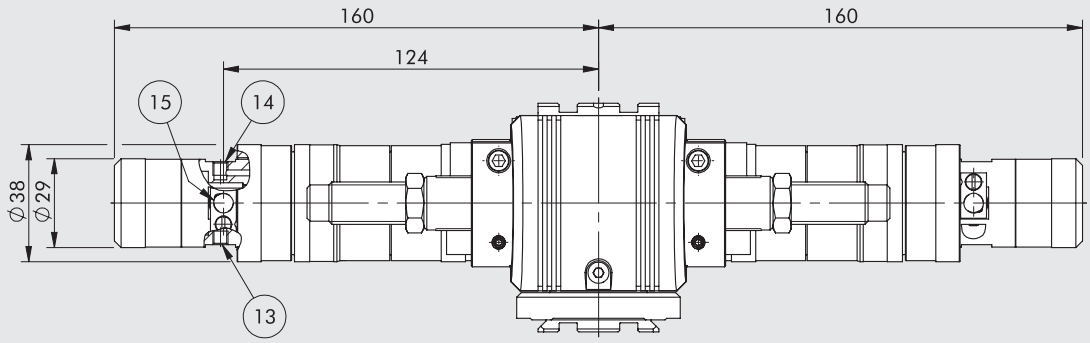
DIMENSIONS OF DAPIK-1 + WAK-1 + 2 DZAK-1 FOUR-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-1 + WAK-1 rotary actuator on page **A3**.142

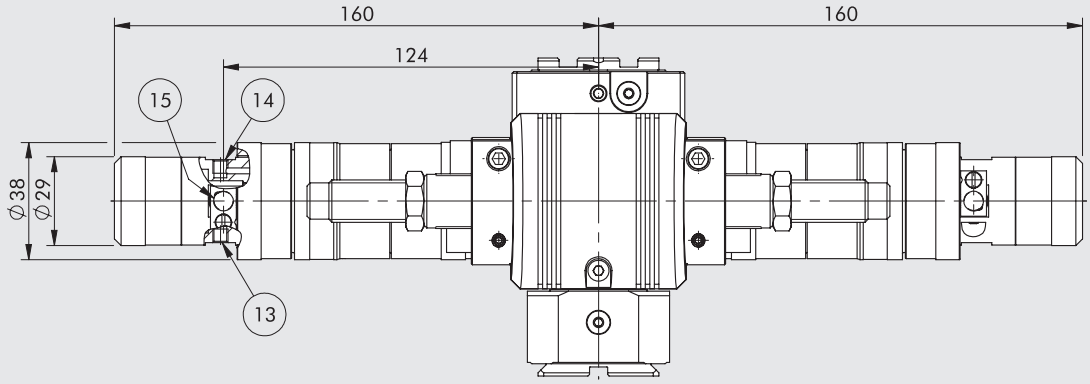
DIMENSIONS OF DAPK-2 + 2 DZAK-2 FOUR-POSITION ROTARY ACTUATOR



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPK-2 rotary actuator on page **A3**.144

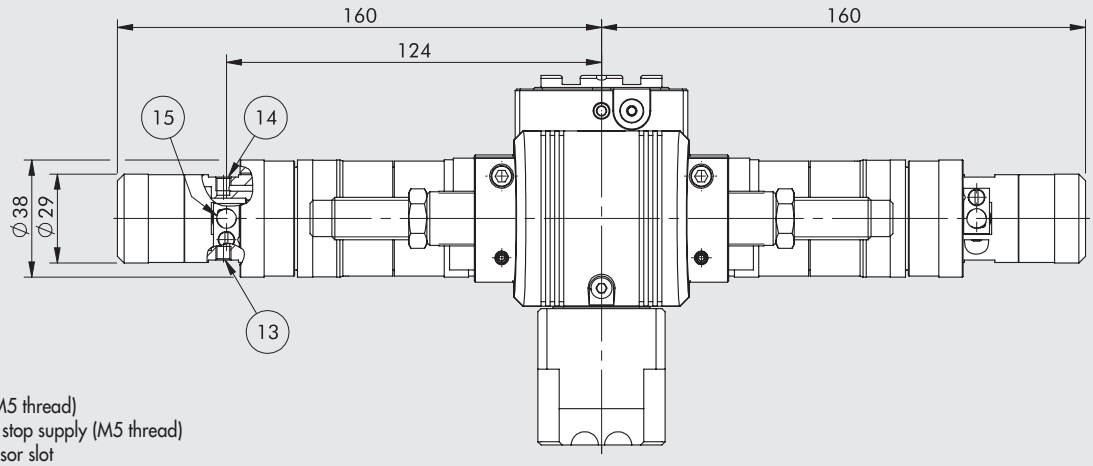
DIMENSIONS OF DAPK-2 + 2 DZAK-2 FOUR-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-2 rotary actuator on page **A3**.145

DIMENSIONS OF DAPIK-2 + WAK-2 + 2 DZAK-2 FOUR-POSITION ROTARY ACTUATOR WITH INTERNAL AIR FLOWS AND 90° RETURN



⑬ Air supply (M5 thread)
⑭ Intermediate stop supply (M5 thread)
⑮ Inductive sensor slot

IMPORTANT: for any missing dimensions, please refer to the DAPIK-2 + WAK-2 rotary actuator on page **A3.**146

METAL WORK PNEUMATIC

KEY TO CODES

K20	1	02	0	3	0	00	K
	SIZE	POSITION		END POSITION			FAMILY
Rotary actuator series DAPK / DAPIK	**1** Size 1 **2** Size 2	**02** 2 position (DAPK) ▲ **S3** 3 position (DAPK + DZAK) ■ **D3** 3 position (DAPK + DZAK) **04** 4 position (DAPK + n.2 DZAK)	**0** Without internal air flow **1** With internal in-line air flow (DAPIK) **2** With 90° in-line air flow (DAPIK + WAK)	**3** With elastic mechanical stop **5** With standard shock absorbers (STD) **On request** ● **6** With medium hardness shock-absorbers (H2) ● **7** With hard shock-absorbers (M7)	**0** Magnetic **S** Non-magnetic		**K** V-Lock

▲ On the left viewed from the rotating plate. ■ On the right viewed from the rotating plate. ● Only for size 2.

ORDERING CODES

Code	Description
DAPK-1	
K2010203000K	DAPK-1 magnetic with elastic mechanical stop
K2010203S00K	DAPK-1 NON-magnetic with elastic mechanical stop
K2010205000K	DAPK-1 magnetic with shock absorbers
K2010205S00K	DAPK-1 NON-magnetic with shock absorbers
K2010213000K	DAPIK-1 magnetic with elastic mechanical stop
K2010213S00K	DAPIK-1 NON-magnetic with elastic mechanical stop
K2010215000K	DAPIK-1 magnetic with shock absorbers
K2010215S00K	DAPIK-1 NON-magnetic with shock absorbers
K201S303000K	DAPK-1 + DZAK-1 (SX) magnetic with elastic mechanical stop
K201S303S00K	DAPK-1 + DZAK-1 (SX) NON-magnetic with elastic mechanical stop
K201S305000K	DAPK-1 + DZAK-1 (SX) magnetic with shock absorbers
K201S305S00K	DAPK-1 + DZAK-1 (SX) NON-magnetic with shock absorbers
K201D303000K	DAPK-1 + DZAK-1 (DX) magnetic with elastic mechanical stop
K201D303S00K	DAPK-1 + DZAK-1 (DX) NON-magnetic with elastic mechanical stop
K201D305000K	DAPK-1 + DZAK-1 (DX) magnetic with shock absorbers
K201D305S00K	DAPK-1 + DZAK-1 (DX) NON-magnetic with shock absorbers
K2010403000K	DAPK-1 + n°2 DZAK-1 magnetic with elastic mechanical stop
K2010403S00K	DAPK-1 + n°2 DZAK-1 NON-magnetic with elastic mechanical stop
K2010405000K	DAPK-1 + n°2 DZAK-1 magnetic with shock absorbers
K2010405S00K	DAPK-1 + n°2 DZAK-1 NON-magnetic with shock absorbers
K201S313000K	DAPIK-1 + DZAK-1 (SX) magnetic with elastic mechanical stop
K201S313S00K	DAPIK-1 + DZAK-1 (SX) NON-magnetic with elastic mechanical stop
K201S315000K	DAPIK-1 + DZAK-1 (SX) magnetic with shock absorbers
K201S315S00K	DAPIK-1 + DZAK-1 (SX) NON-magnetic with shock absorbers
K201D313000K	DAPIK-1 + DZAK-1 (DX) magnetic with elastic mechanical stop
K201D313S00K	DAPIK-1 + DZAK-1 (DX) NON-magnetic with elastic mechanical stop
K201D315000K	DAPIK-1 + DZAK-1 (DX) magnetic with shock absorbers
K201D315S00K	DAPIK-1 + DZAK-1 (DX) NON-magnetic with shock absorbers
K2010413000K	DAPIK-1 + n°2 DZAK-1 magnetic with elastic mechanical stop
K2010413S00K	DAPIK-1 + n°2 DZAK-1 NON-magnetic with elastic mechanical stop
K2010415000K	DAPIK-1 + n°2 DZAK-1 magnetic with shock absorbers
K2010415S00K	DAPIK-1 + n°2 DZAK-1 NON-magnetic with shock absorbers
K2010223000K	DAPIK-1 + WAK-1 magnetic with elastic mechanical stop
K2010223S00K	DAPIK-1 + WAK-1 NON-magnetic with elastic mechanical stop
K2010225000K	DAPIK-1 + WAK-1 magnetic with shock absorbers
K2010225S00K	DAPIK-1 + WAK-1 NON-magnetic with shock absorbers
K201S323000K	DAPIK-1 + WAK-1 + DZAK-1 (SX) magnetic with elastic mechanical stop
K201S323S00K	DAPIK-1 + WAK-1 + DZAK-1 (SX) NON-magnetic with elastic mechanical stop
K201S325000K	DAPIK-1 + WAK-1 + DZAK-1 (SX) magnetic with shock absorbers
K201S325S00K	DAPIK-1 + WAK-1 + DZAK-1 (SX) NON-magnetic with shock absorbers
K201D323000K	DAPIK-1 + WAK-1 + DZAK-1 (DX) magnetic with elastic mechanical stop
K201D323S00K	DAPIK-1 + WAK-1 + DZAK-1 (DX) NON-magnetic with elastic mechanical stop
K201D325000K	DAPIK-1 + WAK-1 + DZAK-1 (DX) magnetic with shock absorbers
K201D325S00K	DAPIK-1 + WAK-1 + DZAK-1 (DX) NON-magnetic with shock absorbers
K2010423000K	DAPIK-1 + WAK-1 + n°2 DZAK-1 magnetic with elastic mechanical stop
K2010423S00K	DAPIK-1 + WAK-1 + n°2 DZAK-1 NON-magnetic with elastic mechanical stop
K2010425000K	DAPIK-1 + WAK-1 + n°2 DZAK-1 magnetic with shock absorbers
K2010425S00K	DAPIK-1 + WAK-1 + n°2 DZAK-1 NON-magnetic with shock absorbers

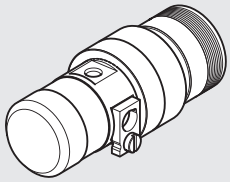
Code	Description
DAPK-2	
K2020203000K	DAPK-2 magnetic with elastic mechanical stop
K2020203S00K	DAPK-2 NON-magnetic with elastic mechanical stop
K2020205000K	DAPK-2 magnetic with STD shock absorbers
K2020205S00K	DAPK-2 NON-magnetic with STD shock absorbers
K2020213000K	DAPIK-2 magnetic with elastic mechanical stop
K2020213S00K	DAPIK-2 NON-magnetic with elastic mechanical stop
K2020215000K	DAPIK-2 magnetic with STD shock absorbers
K2020215S00K	DAPIK-2 NON-magnetic with STD shock absorbers
K202S303000K	DAPK-2 + DZAK-2 (SX) magnetic with elastic mechanical stop
K202S303S00K	DAPK-2 + DZAK-2 (SX) NON-magnetic with elastic mechanical stop
K202S305000K	DAPK-2 + DZAK-2 (SX) magnetic with STD shock absorbers
K202S305S00K	DAPK-2 + DZAK-2 (SX) NON-magnetic with STD shock absorbers
K202D303000K	DAPK-2 + DZAK-2 (DX) magnetic with elastic mechanical stop
K202D303S00K	DAPK-2 + DZAK-2 (DX) NON-magnetic with elastic mechanical stop
K202D305000K	DAPK-2 + DZAK-2 (DX) magnetic with STD shock absorbers
K202D305S00K	DAPK-2 + DZAK-2 (DX) NON-magnetic with STD shock absorbers
K2020403000K	DAPK-2 + n°2 DZAK-2 magnetic with elastic mechanical stop
K2020403S00K	DAPK-2 + n°2 DZAK-2 NON-magnetic with elastic mechanical stop
K2020405000K	DAPK-2 + n°2 DZAK-2 magnetic with STD shock absorbers
K2020405S00K	DAPK-2 + n°2 DZAK-2 NON-magnetic with STD shock absorbers
K202S313000K	DAPIK-2 + DZAK-2 (SX) magnetic with elastic mechanical stop
K202S313S00K	DAPIK-2 + DZAK-2 (SX) NON-magnetic with elastic mechanical stop
K202S315000K	DAPIK-2 + DZAK-2 (SX) magnetic with STD shock absorbers
K202S315S00K	DAPIK-2 + DZAK-2 (SX) NON-magnetic with STD shock absorbers
K202D313000K	DAPIK-2 + DZAK-2 (DX) magnetic with elastic mechanical stop
K202D313S00K	DAPIK-2 + DZAK-2 (DX) NON-magnetic with elastic mechanical stop
K202D315000K	DAPIK-2 + DZAK-2 (DX) magnetic with STD shock absorbers
K202D315S00K	DAPIK-2 + DZAK-2 (DX) NON-magnetic with STD shock absorbers
K2020413000K	DAPIK-2 + n°2 DZAK-2 magnetic with elastic mechanical stop
K2020413S00K	DAPIK-2 + n°2 DZAK-2 NON-magnetic with elastic mechanical stop
K2020415000K	DAPIK-2 + n°2 DZAK-2 magnetic with STD shock absorbers
K2020415S00K	DAPIK-2 + n°2 DZAK-2 NON-magnetic with STD shock absorbers
K2020223000K	DAPIK-2 + WAK-2 magnetic with elastic mechanical stop
K2020223S00K	DAPIK-2 + WAK-2 NON-magnetic with elastic mechanical stop
K2020225000K	DAPIK-2 + WAK-2 magnetic with STD shock absorbers
K2020225S00K	DAPIK-2 + WAK-2 NON-magnetic with STD shock absorbers
K202S323000K	DAPIK-2 + WAK-2 + DZAK-2 (SX) magnetic with elastic mechanical stop
K202S323S00K	DAPIK-2 + WAK-2 + DZAK-2 (SX) NON-magnetic with elastic mechanical stop
K202S325000K	DAPIK-2 + WAK-2 + DZAK-2 (SX) magnetic with STD shock absorbers
K202S325S00K	DAPIK-2 + WAK-2 + DZAK-2 (SX) NON-magnetic with STD shock absorbers
K202D323000K	DAPIK-2 + WAK-2 + DZAK-2 (DX) magnetic with elastic mechanical stop
K202D323S00K	DAPIK-2 + WAK-2 + DZAK-2 (DX) NON-magnetic with elastic mechanical stop
K202D325000K	DAPIK-2 + WAK-2 + DZAK-2 (DX) magnetic with STD shock absorbers
K202D325S00K	DAPIK-2 + WAK-2 + DZAK-2 (DX) NON-magnetic with STD shock absorbers
K2020423000K	DAPIK-2 + WAK-2 + n°2 DZAK-2 magnetic with elastic mechanical stop
K2020423S00K	DAPIK-2 + WAK-2 + n°2 DZAK-2 NON-magnetic with elastic mechanical stop
K2020425000K	DAPIK-2 + WAK-2 + n°2 DZAK-2 magnetic with STD shock absorbers
K2020425S00K	DAPIK-2 + WAK-2 + n°2 DZAK-2 NON-magnetic with STD shock absorbers

ACCESSORIES

V-Lock ACCESSORIES

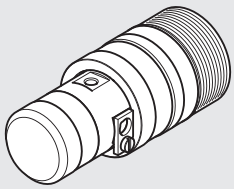
See page **A3**.36

DZAK-1 INTERMEDIATE STOP



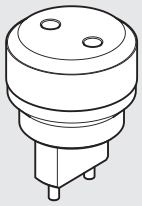
Code	Description	Weight [g]
095K2000100K	DZAK-1 intermediate stop	105

DZAK-2 INTERMEDIATE STOP



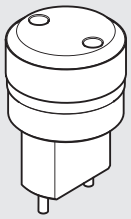
Code	Description	Weight [g]
095K2000110K	DZAK-2 intermediate stop	214

DZAK-1 ADJUSTING WRENCH



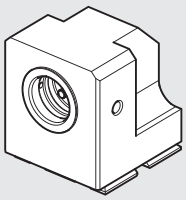
Code	Description	Weight [g]
095K2000250K	DZAK-1 adjusting wrench	25

DZAK-2 ADJUSTING WRENCH



Code	Description	Weight [g]
095K2000260K	DZAK-2 adjusting wrench	30

WAK-1

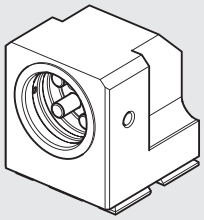


Code	Description	Weight [g]
095K2000150K	WAK-1 angle adaptor	190

Note: Individually packed with 4 screws, 4 washers

METAL WORK PNEUMATIC

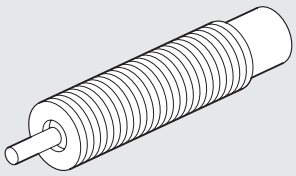
WAK-2



Code	Description	Weight [g]
095K2000160K	WAK-2 angle adaptor	175

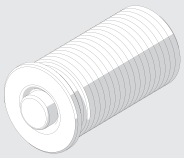
Note: Individually packed with 4 screws, 4 washers

SHOCK ABSORBERS



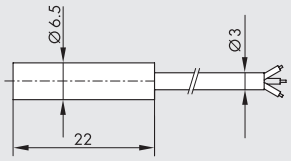
Code	Description	For
W0950005301	Shock absorbers - 2 M10 x 1	DAPK-1/DAPIK-1
0950004012	Shock absorbers standard MC150EUMH M14 x 1.5	DAPK-2/DAPIK-2
0950004013	Medium hardness shock absorber MC150EUMH2 M14 x 1.5	DAPK-2/DAPIK-2
0950004014	Hard shock absorber SC190EUM7 M14 x 1.5	DAPK-2/DAPIK-2

ELASTIC MECHANICAL STOP



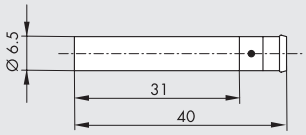
Code	Description	For
095K2000200K	Elastic mechanical stop M14 x 1	DAPK-1/DAPIK-1
095K2000210K	Elastic mechanical stop M18 x 1	DAPK-2/DAPIK-2

INDUCTION SENSOR Ø 6.5



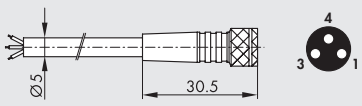
Code	Description
W095K030006	PNP Ø 6.5 PNP inductive sensor with LED 2 m
W095K031006	NPN Ø 6.5 NPN inductive sensor with LED 2 m

QUICK-FIT INDUCTIVE SENSOR Ø 6.5



Code	Description
W095K030009	PNP Ø 6.5 inductive sensor with push-in LED

CABLE WITH STRAIGHT CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

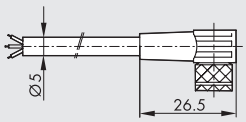


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

CABLE WITH 90° CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

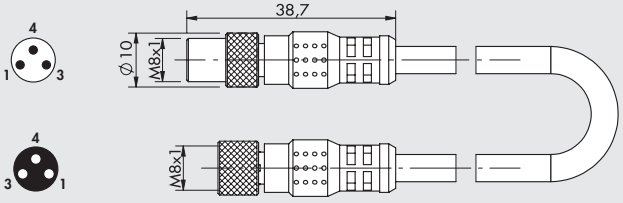


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

M8 M – M8 F CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

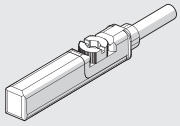


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

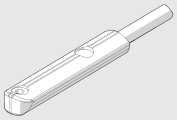
Note: Can be used for direct connection to the modules with digital INPUT of the EB 80 and CM valves

RETRACTING SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



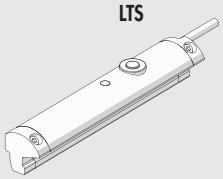
SENSOR, OVAL TYPE
Traditional



For codes and technical data, see **chapter A6**.

POSITION SENSOR

LTS



Code	Description	For
W0950000470	LTS-032 position sensor with M8 4-PIN 0.3 m connector	DAPK-1/ DAPIK-1
W0950000471	LTS-064 position sensor with M8 4-PIN 0.3 m connector	DAPK-2/DAPIK-2

For technical data, see **chapter A6**.

OIL

Code	Description	Volume
9910490	PARALIQ P 460	80 ml

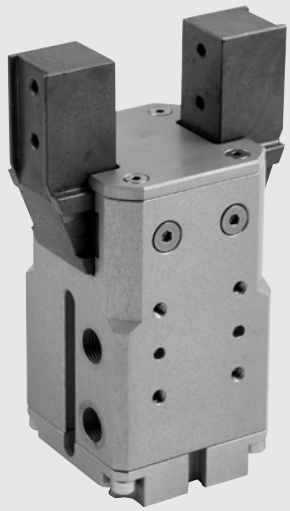
NOTES

METAL WORK PNEUMATIC

NOTES

GRIPPER WITH TWO PARALLEL JAWS SERIES P1K

Dual-acting grippers with parallel jaws and internal and external clamping.
The body is made of anodized aluminium alloy and the jaws are made of hardened steel. All sizes are equipped with a magnet and sensor grooves. The lower plate has a V-Lock profile and grooves.
A plate with a V-Lock coupling can also be mounted to the sides of the grippers.



TECHNICAL DATA		P1K-20	P1K-32
Operating pressure	bar	2 to 8	
	MPa	0.2 to 0.8	
	psi	29 to 116	
Temperature range	°C	5 to 70	
Fluid		20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous	
Bore	mm	20	32
Clamping force of a single jaw	N	70	170
at 6.3 bar, 20 mm from the upper surface, on opening and closing			
Stroke of each jaw	mm	5	5
Max. frequency on continuous operation	Hz	> 5	> 5
Minimum opening/closing time	s	0.009 / 0.016	0.02 / 0.02
Repeatability	mm	> 0.02	> 0.02
Lubrication		Grease the sliding surfaces of the jaws every one million cycles. Use grease code 9910509	
Max. admissible static loads:			
- Fa	N	200	350
- Mx	Nm	6	10
- My	Nm	6	10
- Mz	Nm	8	12
Weight	kg	0.50	0.85

COMPONENTS

① BODY: anodized aluminium
② JAWS: nitrided steel
③ GUIDE: tempered steel
④ PISTON ROD: chromed steel
⑤ PISTON: aluminium
⑥ PISTON GASKET: NBR
⑦ GUIDE RING: PTFE
⑧ MAGNET: plastoferrite
⑨ GASKET: NBR
⑩ V-Lock REAR PLATE: anodized aluminium
⑪ GASKET: NBR
⑫ GUIDE BUSHING
⑬ PISTON ROD GASKET: polyurethane

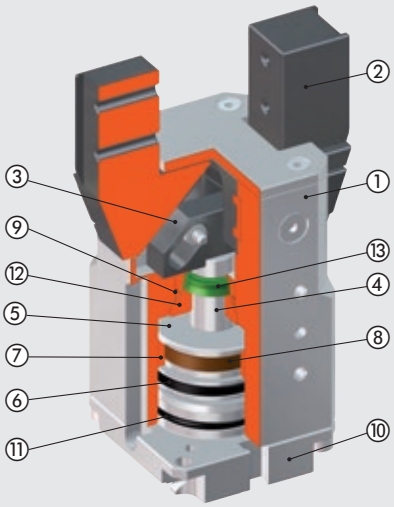
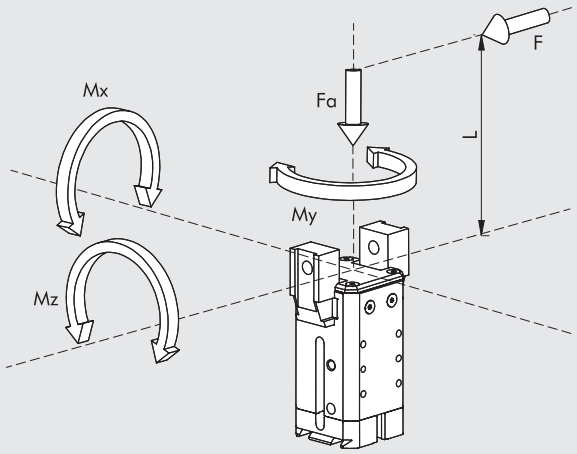
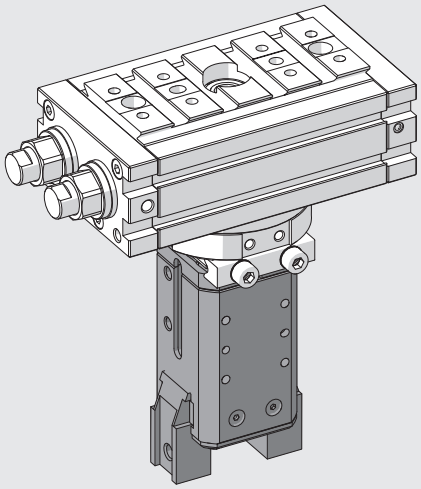


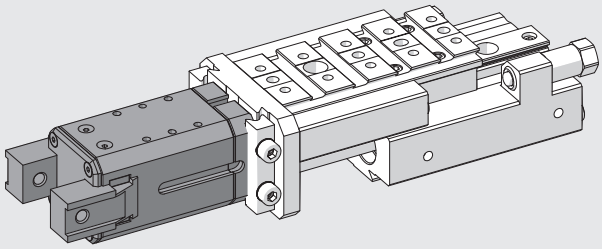
DIAGRAM OF FORCES AND MOMENTS



F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

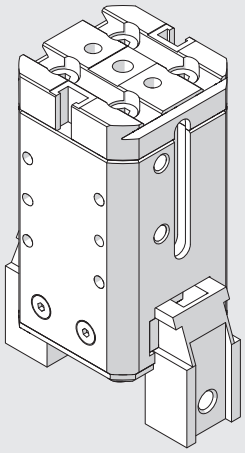
EXAMPLES OF APPLICATION



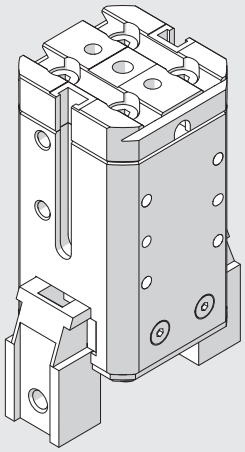


NOTES

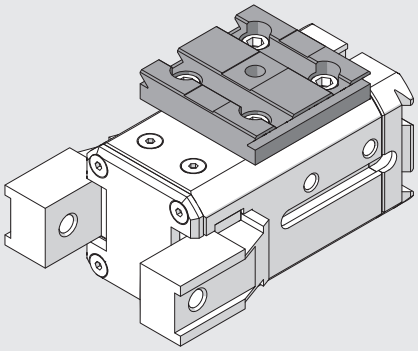
V-Lock MOUNTING OPTIONS



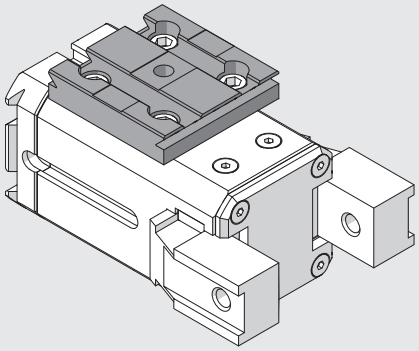
Gripper as supplied



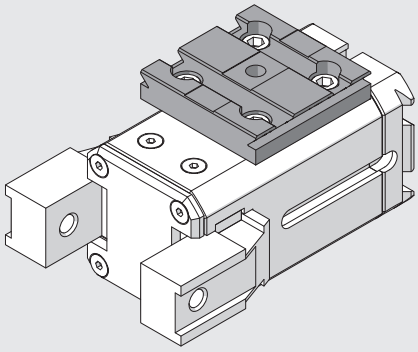
Unscrew the 4 screws at the back and rotate the rear flange by 90°



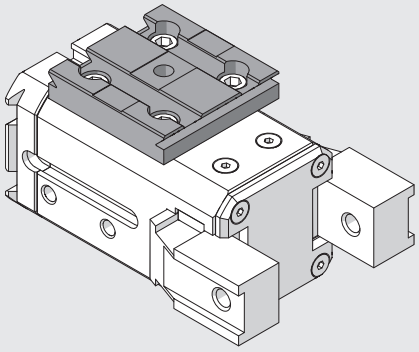
Fix the accessory "type 2 side adaptor" code 0950008004K to the right, lengthwise



Fix the accessory "type 2 side adaptor" code 0950008004K to the right, crosswise



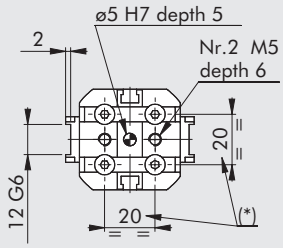
Fix the accessory "type 2 side adaptor" code 0950008004K to the left, lengthwise



Fix the accessory "type 2 side adaptor" code 0950008004K to the left, crosswise

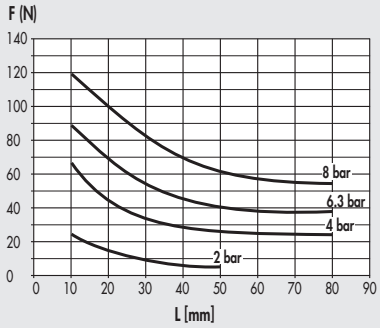
METAL WORK PNEUMATIC

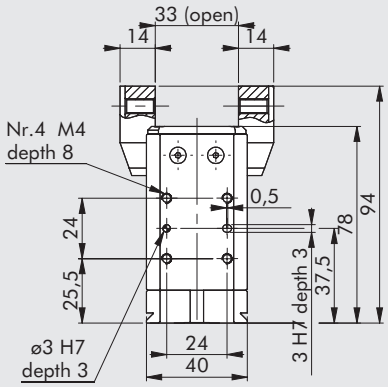
DIMENSIONS OF GRIPPER P1K-20

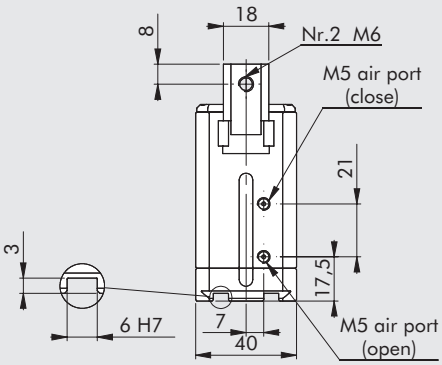


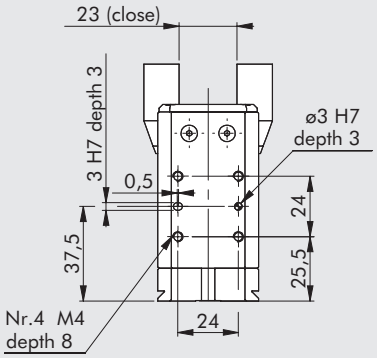
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

(*): The screws can be untightened. Rotate the rear plate by 90° and tighten the screws.



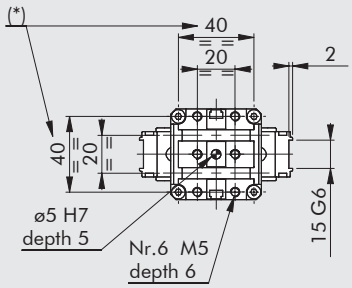






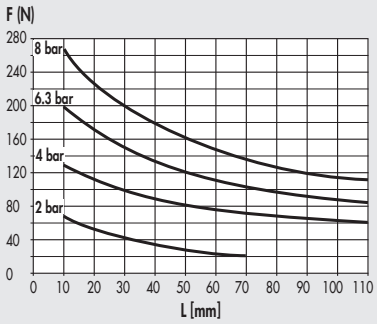
Code	Description
W1550200001K	Gripper with 2 parallel jaws P1K-20

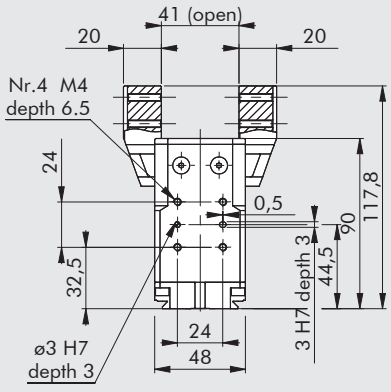
DIMENSIONS OF GRIPPER P1K-32

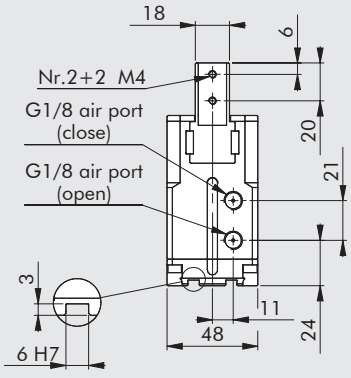


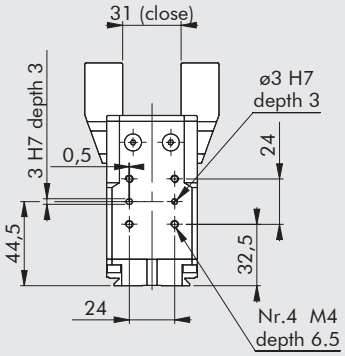
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

(*): The screws can be untightened. Rotate the rear plate by 90° and tighten the screws.







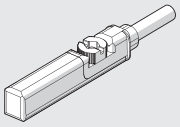


Code	Description
W1550320001K	Gripper with 2 parallel jaws P1K-32

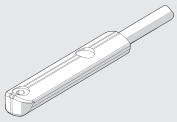
ACCESSORIES

RETRACTING SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional

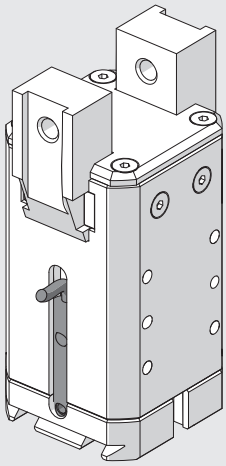


For codes and technical data, see **chapter A6**.

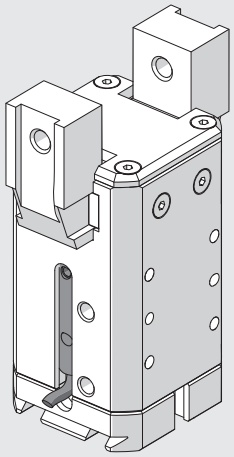
DIRECTION RECOMMENDED FOR FIXING THE SENSORS TO THE GRIPPER GROOVES

P1K-20

CLOSED

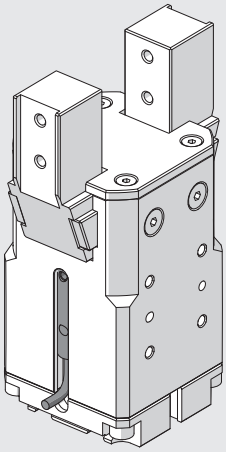


OPEN

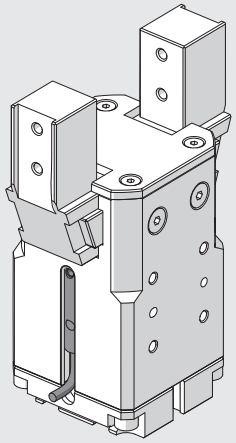


P1K-32

CLOSED



OPEN



GRIPPER WITH TWO PARALLEL JAWS SERIES P2K

Parallel double-acting two-jaw gripper, with either internal or external clamping, with sliding of the jaws on inclined planes.
Aluminum alloy body coated with surface hardening treatment, jaws made of wear-resistant coated steel.
The jaw-guiding system and precision in coupling with the body make the gripper extremely stable.
The ceramic-coated body reduces friction and wear, and enhances the movement of the jaws on the body.
All sizes are equipped with a magnet and sensor grooves.
The lower plate has a V-Lock profile and grooves.
A plate with a V-Lock coupling can also be mounted to the sides of the grippers.

TECHNICAL DATA		P2K-20
Operating pressure	bar	2 to 8
	MPa	0.2 to 0.8
	psi	29 to 116
Temperature range	°C	-10 to 80
Fluid		Fluid 20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous
Bore	mm	20
Clamping force of a single jaw	N	100
at 6.3 bar, 20 mm from the upper surface, on opening and closing		
Stroke of each jaw	mm	5
Max. frequency on continuous operation	Hz	2
Minimum opening/closing time	s	0.01/ 0.02
Repeatability	mm	± 0.01
Moment of inertia around the piston axis Jy	kg cm^2	0.87
Max. admissible static loads:		
- Fa	N	300
- Mx	Nm	4
- My	Nm	2
- Mz	Nm	5
Weight	kg	0.3

COMPONENTS

① BODY: hard-anodized aluminium
② JAWS: nitrided steel
③ PISTON ROD + GUIDE: nitrided steel
④ PISTON ROD GASKET: polyurethane
⑤ BUSHING: bronze
⑥ BUFFER: polyurethane
⑦ PISTON: aluminium alloy
⑧ PISTON GASKET: NBR
⑨ MAGNET: plastoferrite
⑩ GASKET: NBR
⑪ V-Lock REAR PLATE: anodized aluminium

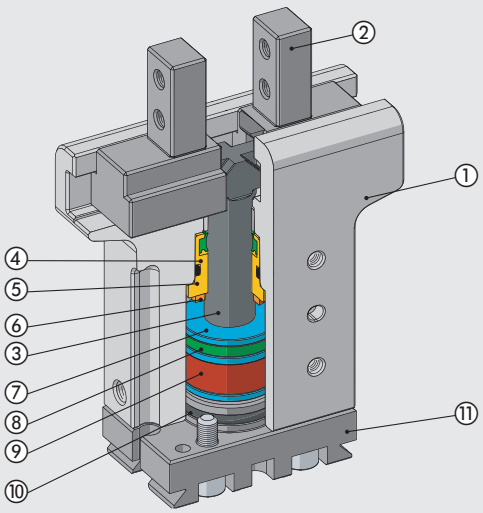
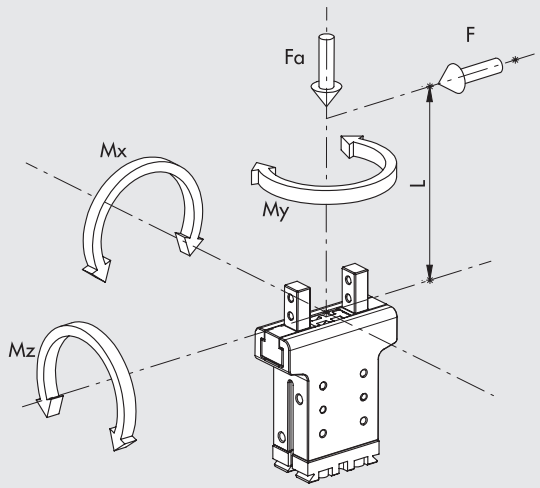
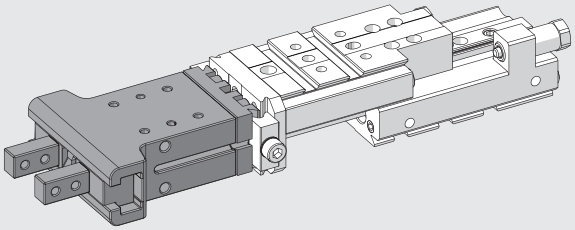


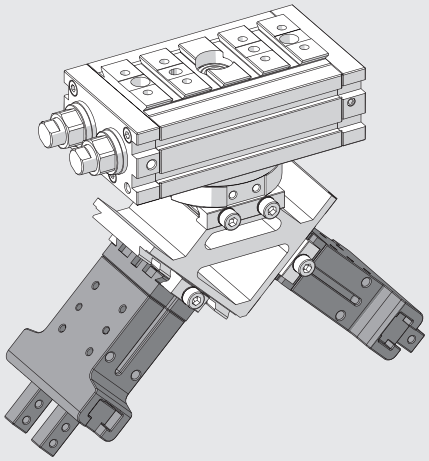
DIAGRAM OF FORCES AND MOMENTS



F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

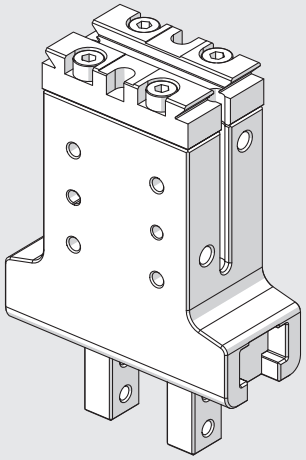
EXAMPLES OF APPLICATION



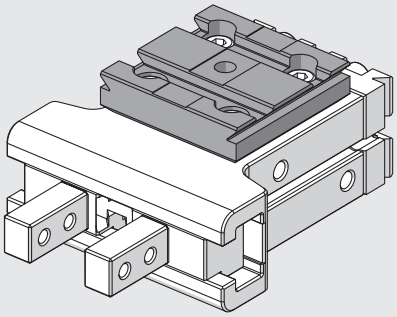


NOTES

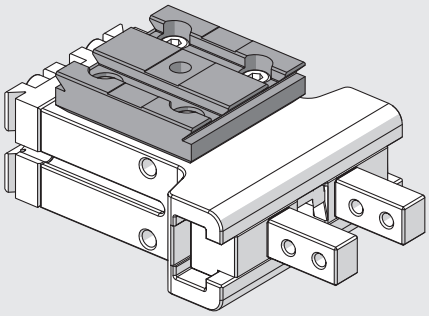
V-Lock MOUNTING OPTIONS



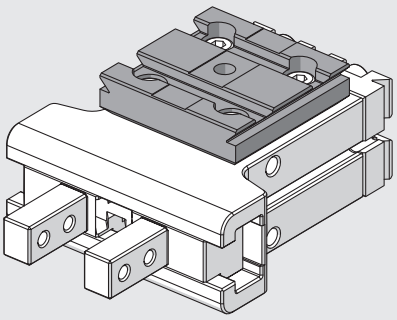
Gripper as supplied



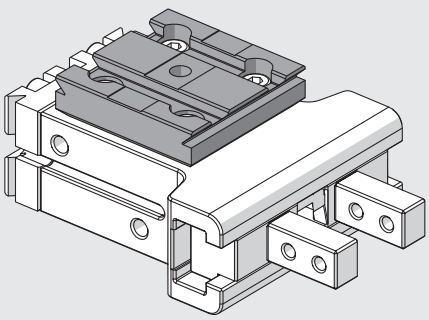
Fix the accessory "type 2 side adaptor" code 0950008004K to the right, lengthwise



Fix the accessory "type 2 side adaptor" code 0950008004K to the right, crosswise



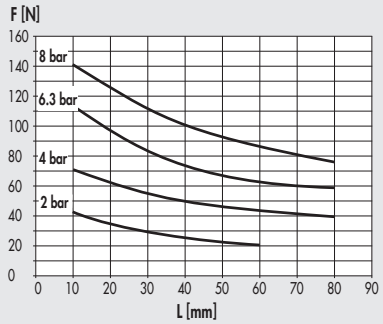
Fix the accessory "type 2 side adaptor" code 0950008004K to the left, lengthwise

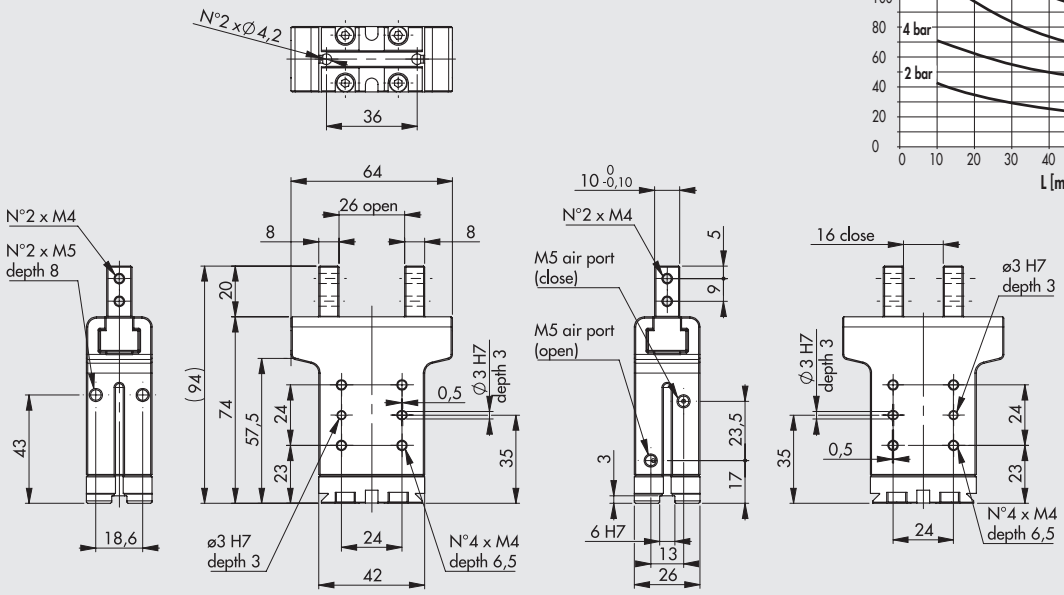


Fix the accessory "type 2 side adaptor" code 0950008004K to the left, crosswise

DIMENSIONS OF GRIPPER P2K-20

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

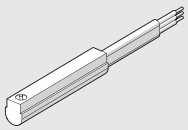




Code	Description
W1570200200K	Gripper with 2 parallel jaws P2K-20

ACCESSORIES

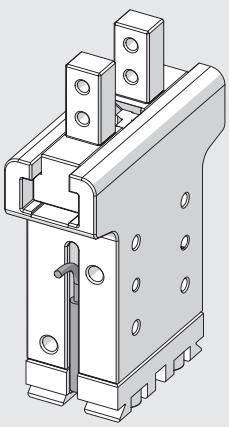
SENSOR Ø 4



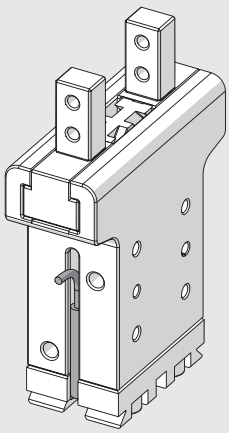
For codes and technical data, see **chapter A6**.

DIRECTION RECOMMENDED FOR FIXING THE SENSORS TO THE GRIPPER GROOVES

CLOSED

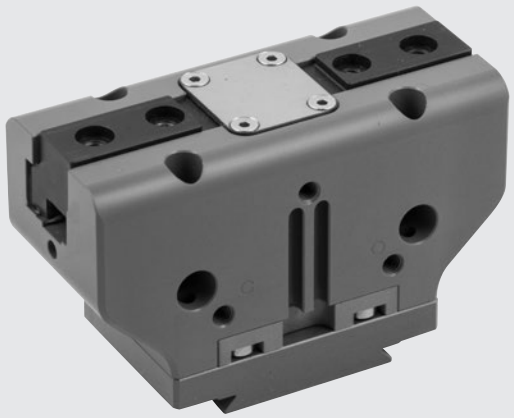


OPEN



GRIPPER WITH TWO PARALLEL JAWS SERIES P3K

Parallel double-acting two-jaw gripper, with either internal or external clamping.
Aluminum alloy body coated with surface hardening treatment; jaws made of wear-resistant coated steel.
The jaw-guiding system and precision in coupling with the body make the gripper extremely stable.
The ceramic-coated body reduces friction and wear, and enhances the movement of the jaws on the body.
All sizes are available in the version with standard stroke and clamping force, while only some in the version with reduced stroke but with higher clamping torque.
The gripper is equipped with a magnet and grooves for sensors.
A version designed to house inductive sensors is also available (**the inductive sensors are not supplied by Metal Work**).
Pneumatic supply is available on both sides. There are different mounting options, including that with V-Lock interfacing plates on the bottom or on the side.



TECHNICAL DATA		P3K-64	P3K-80		P3K-100	
			Standard	Increased force	Standard	Increased force
Operating pressure	bar	2 to 8				
	MPa	0.2 to 0.8				
	psi	29 to 116				
Temperature range	°C	-10 to 80				
Fluid		20 µm filtered, lubricated or unlubricated air; lubrification if used, it must be continuous				
Clamping force of a single jaw at 6.3 bar,	N	125	265	445	360	790
20 mm from the upper surface, on opening and closing						
Maximum movable weight	kg	1.3	2.5	5	3.5	7
Stroke of each jaw	mm	6	8	4	10	5
Minimum opening/closing time	s	0.05				
Repeatability	mm	0.01				
Moment of inertia as regards the piston axis	kg cm²	4	4.5		12	
Max. admissible static loads:						
- Fa	N	1100	1500		2000	
- Mx	Nm	60	90		115	
- My	Nm	40	55		70	
- Mz	Nm	40	55		80	
Weight	kg	0.4	0.6		1	

COMPONENTS

① BODY: hard-anodized aluminium
② JAWS: nitrided steel
③ PISTON ROD + GUIDE: nitrided steel
④ PISTON: hard-anodized aluminium
⑤ PISTON GASKET: NBR
⑥ PISTON ROD GASKET: NBR / polyurethane
⑦ BASE GASKET: reinforced SBR / NBR
⑧ MAGNET: neodymium

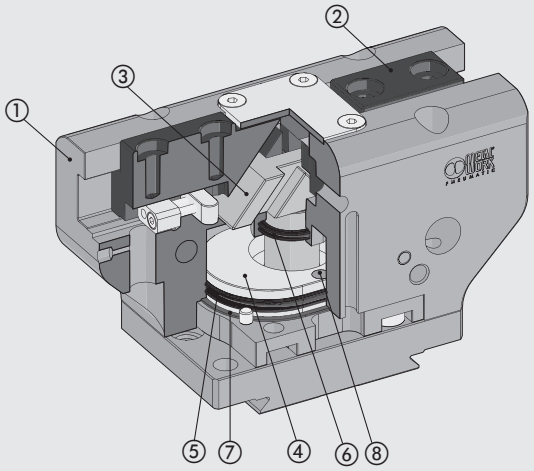
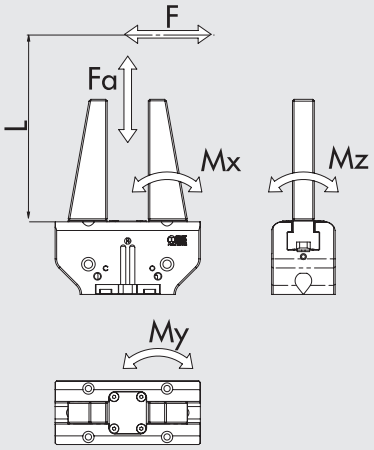
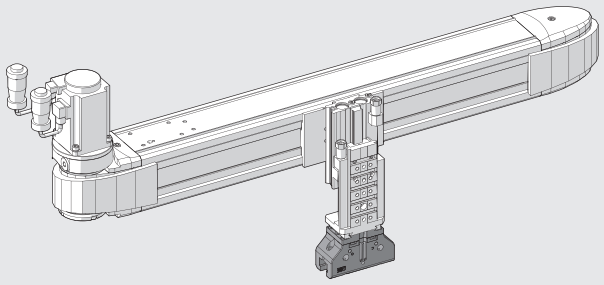


DIAGRAM OF FORCES AND MOMENTS



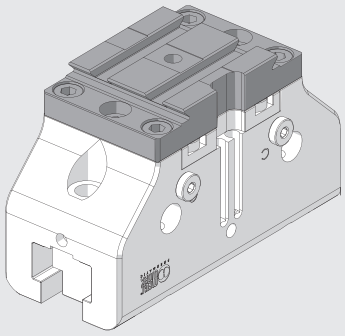
F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

EXAMPLES OF APPLICATION



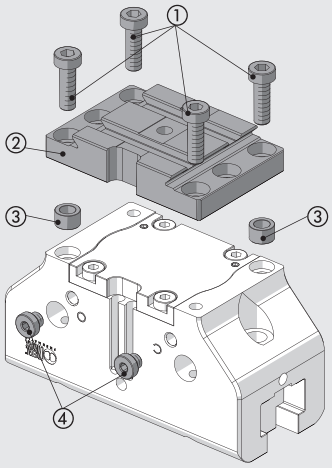
V-Lock MOUNTING OPTIONS

Standard

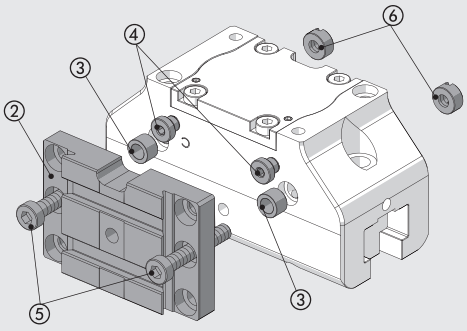


The gripper as supplied.

Lateral

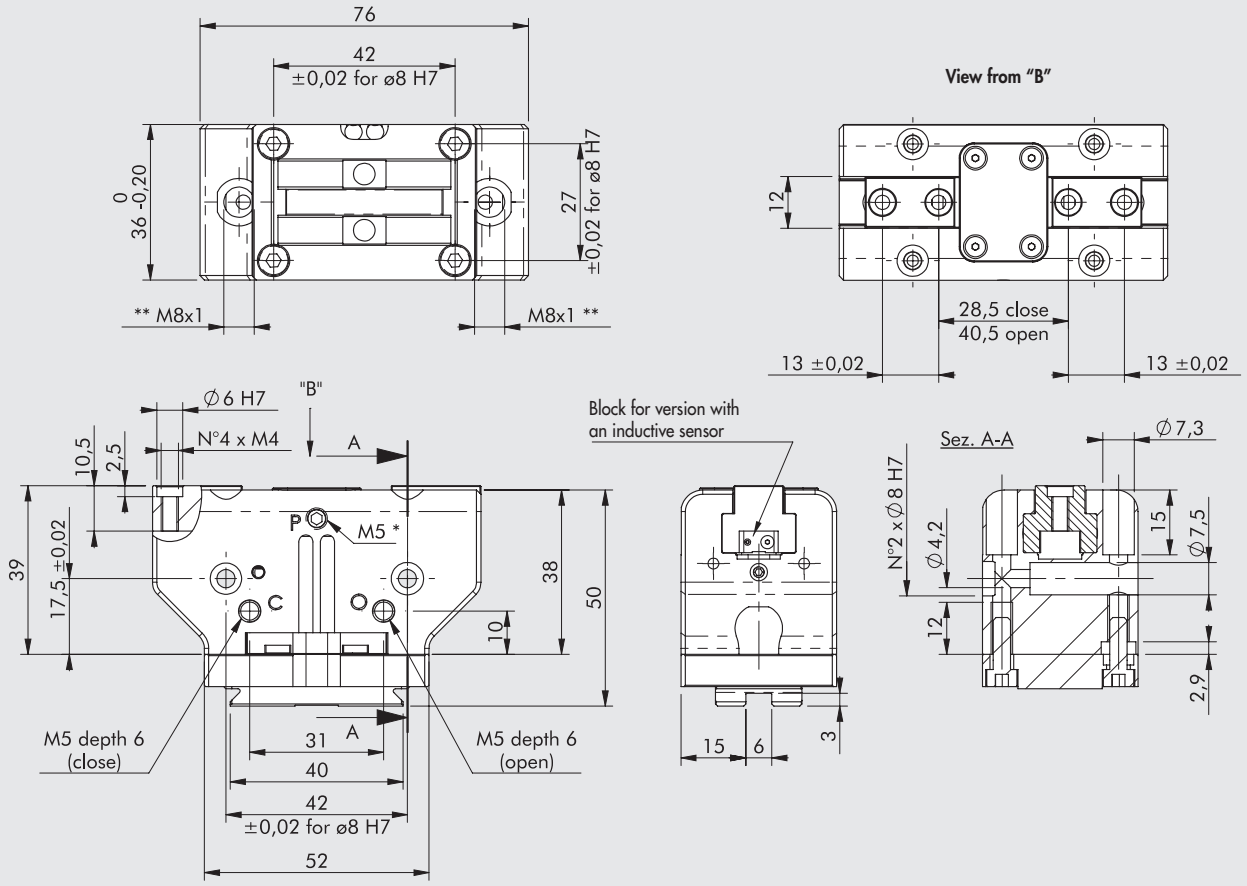


Unscrew the 4 screws ①, remove the plate ② and pull out the centring rings ③. Then unscrew the 2 plugs ④.



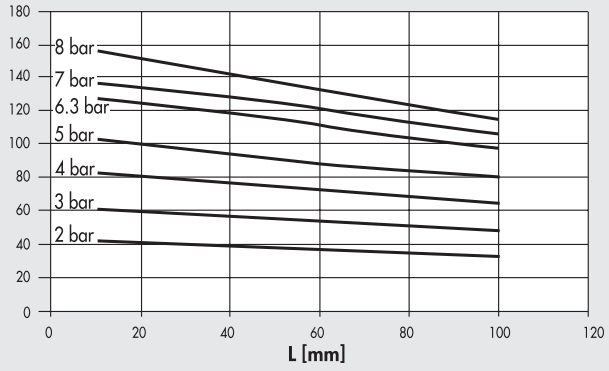
Replace the 2 plugs ④ on the opposite side of the gripper and insert the 2 centring rings ③.
Position the plate ② and the two long screws ⑤ (supplied with the gripper). On the opposite side of the plate, insert the two nuts with a screwdriver slot ⑥ (supplied with the gripper) and tighten them against the screws ⑤.

DIMENSIONS OF GRIPPER P3K-64



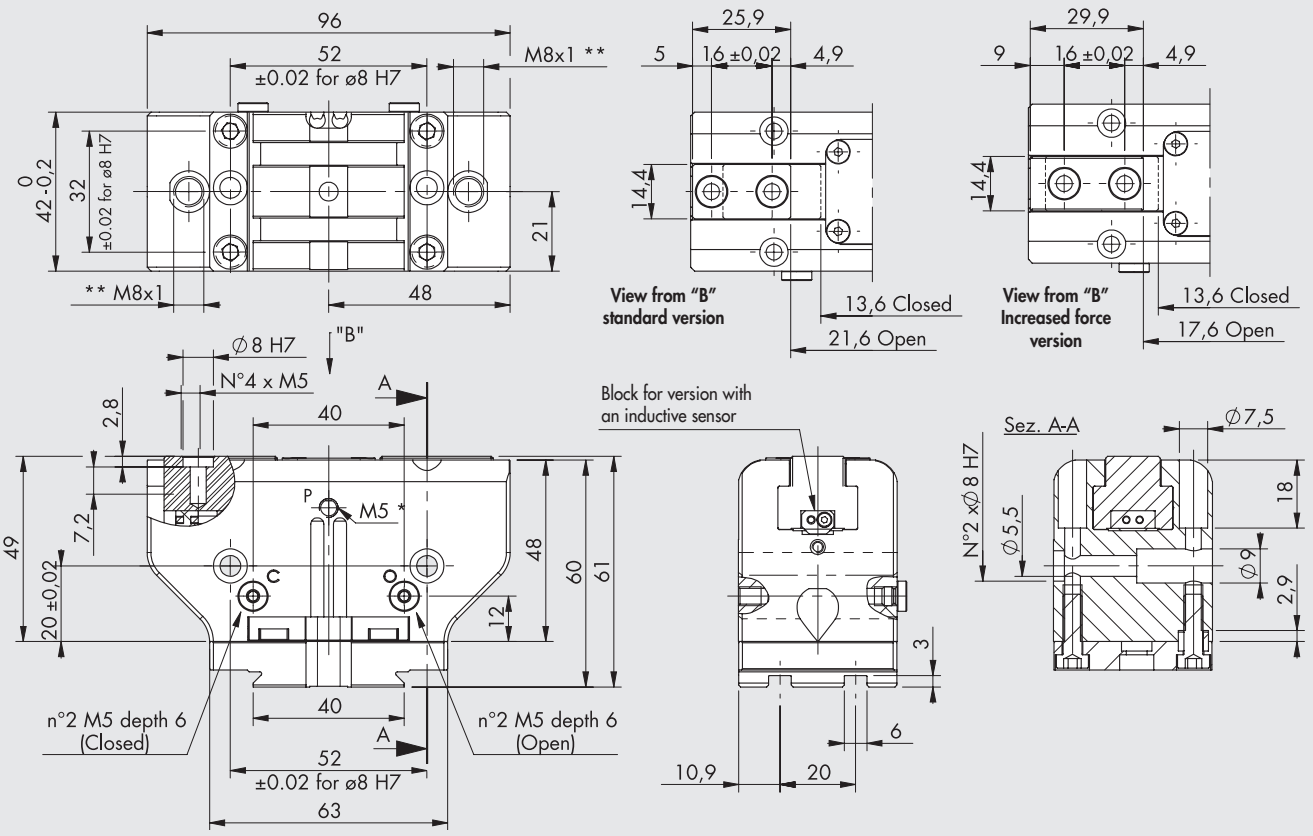
* Discharge pressurization connection, present on both sides
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

F [N]



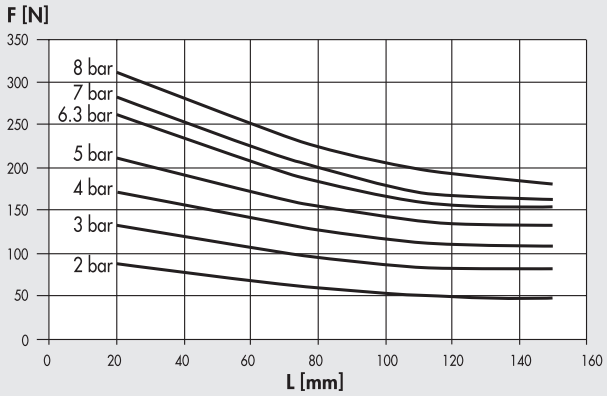
Code	Description
W1560640200K	Gripper with 2 parallel jaws P3K-64
W1560640201K	Gripper with 2 parallel jaws P3K-64 for inductive sensors

DIMENSIONS OF GRIPPER P3K-80

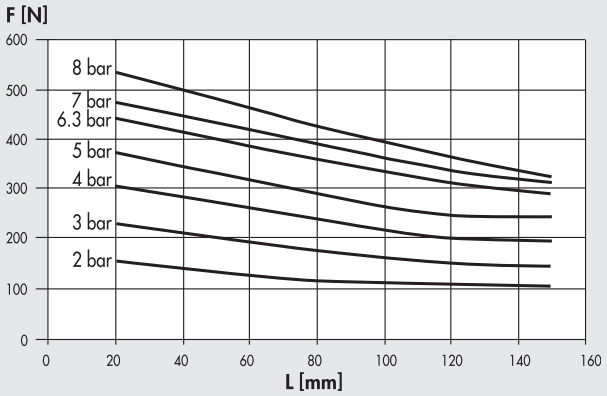


* Discharge pressurization connection, present on both sides
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

Standard version



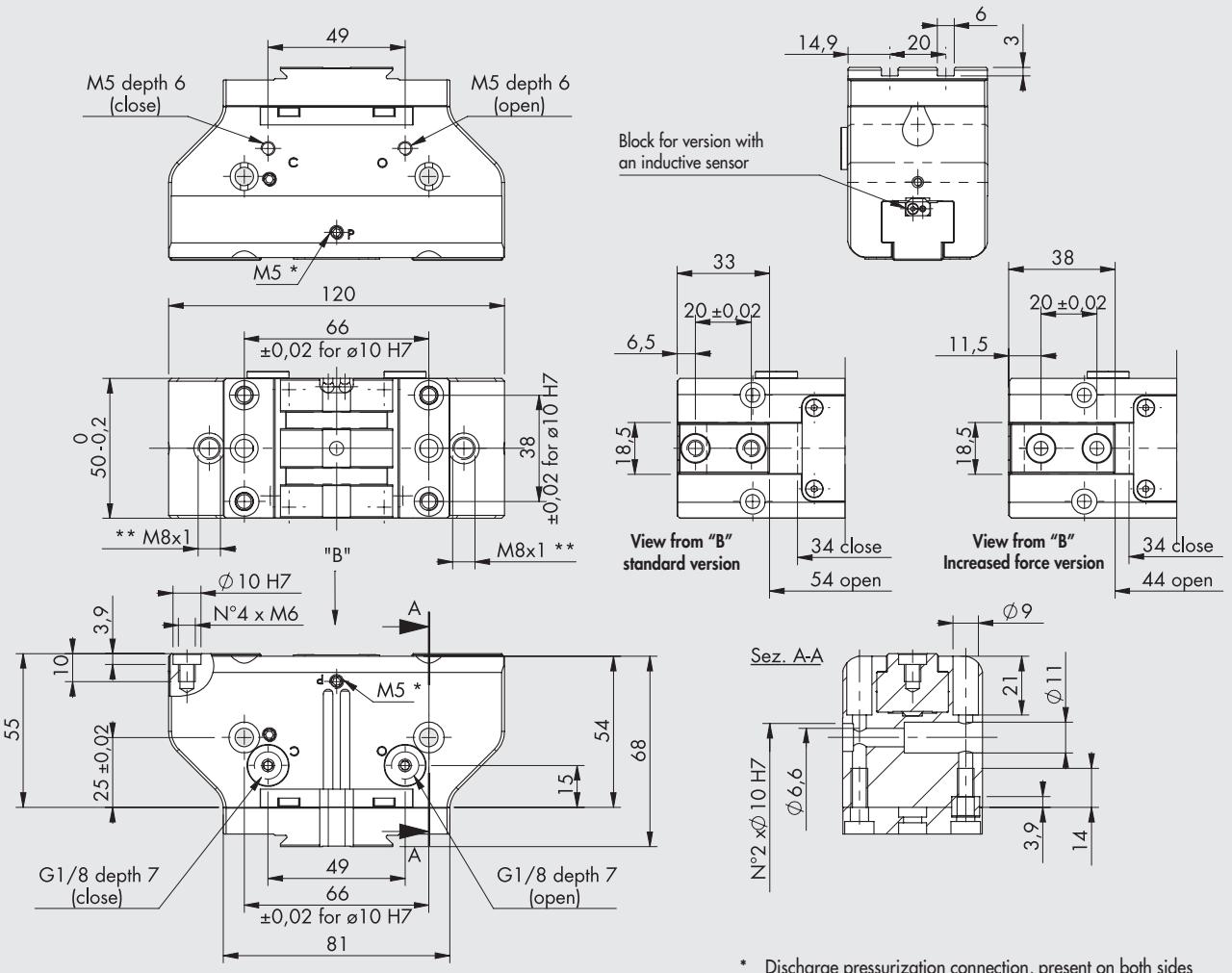
Increased force version



Code	Description
W1560800200K	Gripper with 2 parallel jaws P3K-80
W1560800201K	Gripper with 2 parallel jaws P3K-80 for inductive sensors
W1560800220K	Gripper with 2 parallel jaws P3K-80 increased force
W1560800221K	Gripper with 2 parallel jaws P3K-80 increased force for inductive sensors

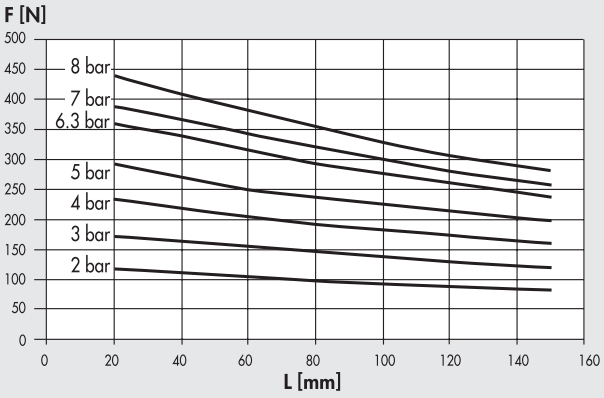
METAL WORK PNEUMATIC

DIMENSIONS OF GRIPPER P3K-100

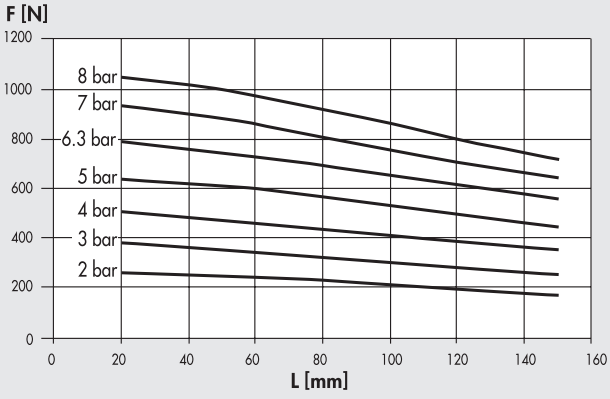


* Discharge pressurization connection, present on both sides
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

Standard version



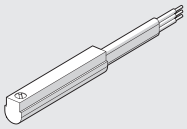
Increased force version



Code	Description
W1561000200K	Gripper with 2 parallel jaws P3K-100
W1561000201K	Gripper with 2 parallel jaws P3K-100 for inductive sensors
W1561000220K	Gripper with 2 parallel jaws P3K-100 increased force
W1561000221K	Gripper with 2 parallel jaws P3K-100 increased force for inductive sensors

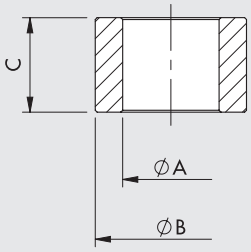
ACCESSORIES

SENSOR Ø 4



For codes and technical data, see **chapter A6**.

CENTRING RING



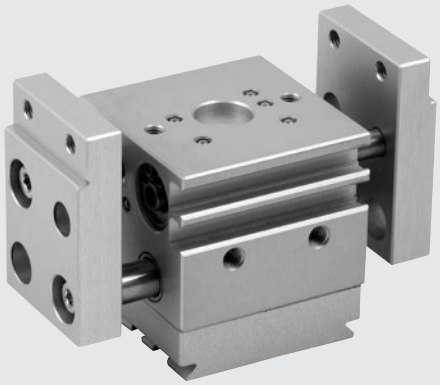
Code	Size	ØA	ØB f7	C
W1560649201	**64**	$4.5^{0}_{-0.1}$	6	$5^{0}_{-0.1}$
W1560809201	**80**	$5.1^{0}_{-0.1}$	8	$5^{0}_{-0.05}$
W1561009201	**100**	$6.2^{\pm 0.1}$	10	$6.9^{0}_{-0.1}$

Note: 2-pieces pack

NOTES

GRIPPER WITH TWO PARALLEL LONG-STROKE JAWS, SERIES P4K

Dual-acting grippers with parallel jaws and internal and external clamping.
Specifically designed for clamping particularly bulky items.
They come with a magnet and sensor grooves.
The lower plate has a V-Lock profile and grooves.
A plate with a V-Lock coupling can also be mounted to the sides of the grippers.



TECHNICAL DATA		P4K-12
Operating pressure	bar	3 to 8
	MPa	0.3 to 0.8
	psi	43 to 116
Temperature range	°C	-10 to 80
Fluid		20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous
Bore	mm	2 x 12
Clamping force of a single jaw at 6.3 bar, 20 mm from the upper surface, on opening and closing	N	45
Stroke of each jaw	mm	10
Max. frequency on continuous operation	Hz	> 4
Minimum opening/closing time	s	0.008 / 0.008
Repeatability	mm	< 0.04
Max. admissible static loads:		
- Fa	N	200
- Mx	Nm	6
- My	Nm	6
- Mz	Nm	8
Weight	kg	0.35

COMPONENTS

① BODY: anodized aluminium
② JAWS anodized aluminium
③ GUIDE BUSHING: steel strip with bronze insert
④ PISTON ROD: nitrided steel
⑤ DRIVE ROD: steel
⑥ PISTON GASKET: NBR
⑦ BUFFER: polyurethane
⑧ GASKET: NBR
⑨ PISTON ROD GASKET: polyurethane
⑩ END CAP: bronze
⑪ MAGNET: plastoneodymium
⑫ V-Lock REAR PLATE: anodized aluminium

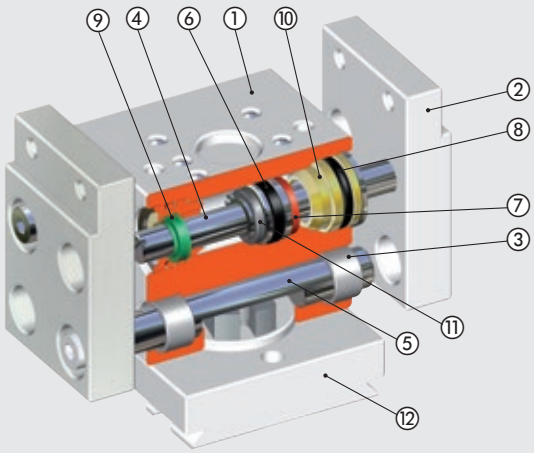
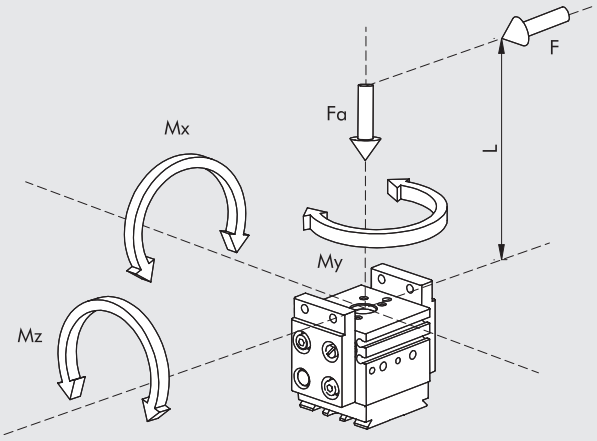
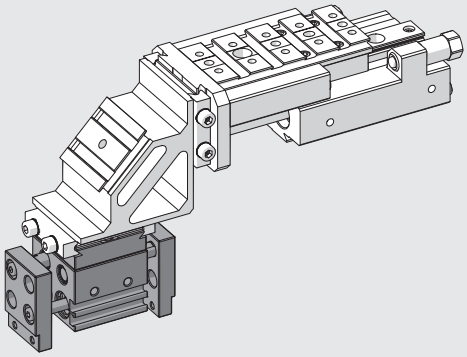


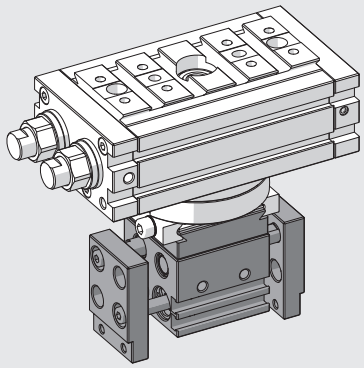
DIAGRAM OF FORCES AND MOMENTS



F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

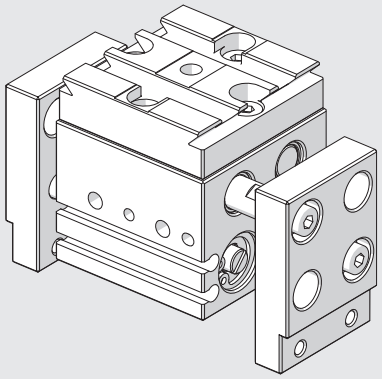
EXAMPLES OF APPLICATION



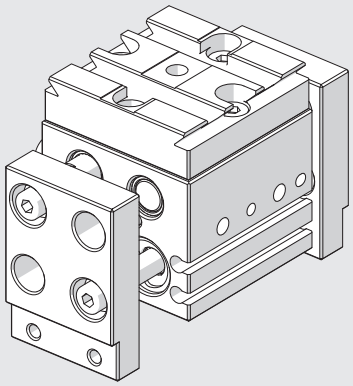


NOTES

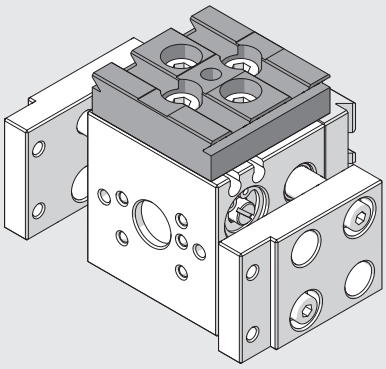
V-Lock MOUNTING OPTIONS



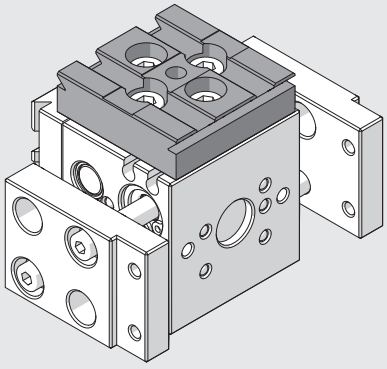
Gripper as supplied



Unscrew the 4 screws at the back and rotate the rear flange by 90°



Fix the accessory "type 1 side adaptor" code 0950008003K to the right, lengthwise



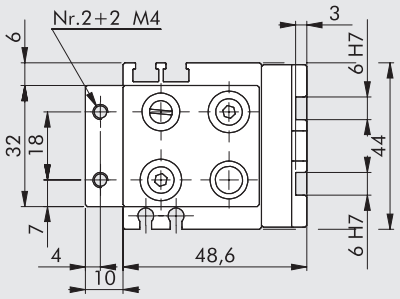
Fix the accessory "type 1 side adaptor" code 0950008003K to the right, crosswise

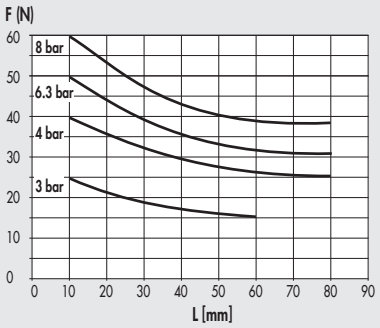
NOTES

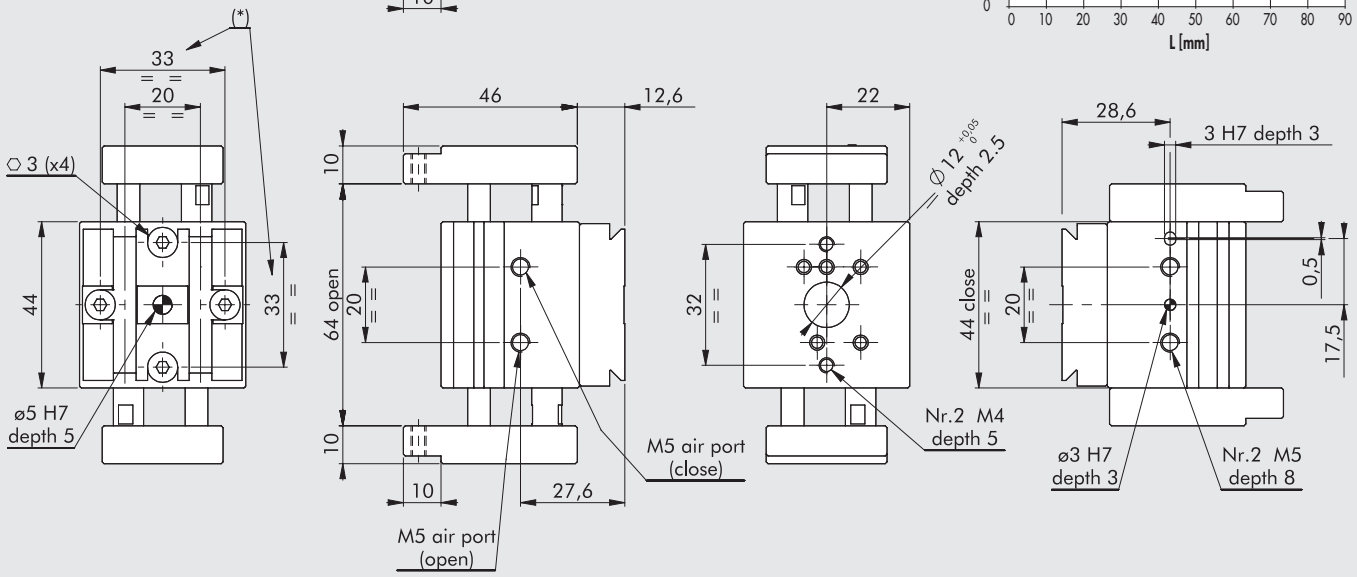
DIMENSIONS OF GRIPPER P4K-12

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

(*): The screws can be untightened. Rotate the rear plate by 90° and tighten the screws.



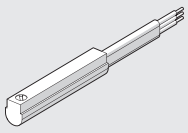




Code	Description
W1580120200K	Gripper with 2 parallel long-stroke jaws P4K-12

ACCESSORIES

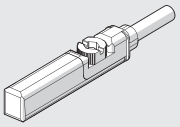
SENSOR Ø 4



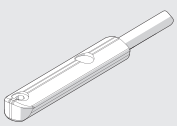
For codes and technical data, see **chapter A6**.

RETRACTABLE SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional

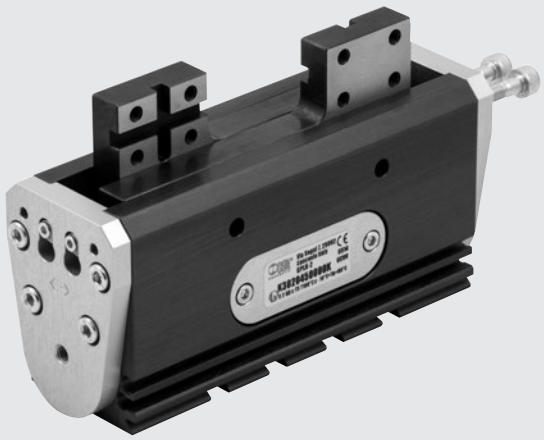


For codes and technical data, see **chapter A6**.

GRIPPER WITH TWO PARALLEL LONG-STROKE JAWS, SERIES GPLK

METAL WORK PNEUMATIC

Dual-acting parallel grippers with either internal or external clamping.
The long stroke make them ideal for clamping parts of different sizes or when the clamping fingers are specifically shaped to hold the part.
The jaw guide is particularly sturdy and is designed to reduce friction and backlash to a minimum, which is a guarantee of long life.
The body is made of hard-anodized aluminium.
The jaws are made of high-tensile hardened and ground steel.
The pistons are housed in a stainless steel jacket.
The end-of-stroke position both on opening and closing can be adjusted using the screws positioned on one side. The grippers come with magnetic or inductive sensors to read the end-of-stroke position.
The magnetic sensors are housed in grooves on the side of the body.
Inductive sensors are inserted into holes on one side.
The side of the body opposite the jaws has a V-Lock profile and grooves.
It is advisable to use flow regulators to control the opening and closing speed and prevent end-of-stroke impacts.



TECHNICAL DATA		GPLK-1-30	GPLK-1-40	GPLK-2-45	GPLK-2-60	GPLK-2-75
Operating pressure	bar	2 to 8				
	MPa	0.2 to 0.8				
	psi	29 to 116				
Temperature range	°C	-10 to 80				
Fluid		20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous				
Clamping force of a single jaw	N	42		116		
at 6.3 bar, 20 mm from the upper surface, on opening and closing						
Single jaw stroke, adjustable	mm	1 to 15	6 to 20	5.5 to 22.5	13 to 30	20 to 37.5
Maximum overall stroke	mm	30	40	45	60	75
Minimum opening/closing time						
measured at maximum stroke:						
at 3 bar	s	0.18	0.22	0.44	0.60	0.76
at 6 bar	s	0.10	0.12	0.28	0.32	0.36
Repeatability (on 100 strokes at constant conditions)	mm	< 0.03			< 0.04	
Moment of inertia around the y axis	kg.cm²	3.5	4.4	16.4	21.5	29.1
Weight	kg	0.44	0.46	1.04	1.12	1.26
Max. admissible static loads						
Ft	N	7.5			15	
Fa	N	70			120	
Mx	Nm	9			37	
My	Nm	4			23	
Mz	Nm	7			22	

COMPONENTS

① BODY: hard-anodized aluminium
② ROLLER: tempered steel
③ BLANKING PLATE: blank anodized aluminium
④ STOP PLATE: blank anodized aluminium
⑤ INTERNAL BODY: steel
⑥ PINION: nitrided steel
⑦ MAGNET: neoplast
⑧ PISTON: technopolymer
⑨ GASKET: NBR
⑩ RACK: burnished steel
⑪ JAW: tempered steel

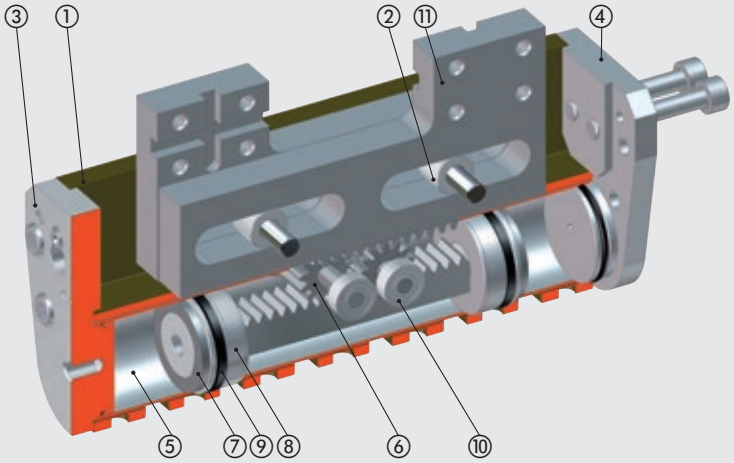
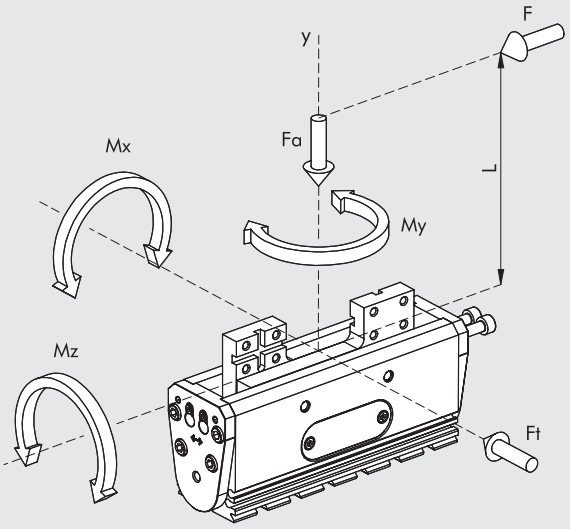
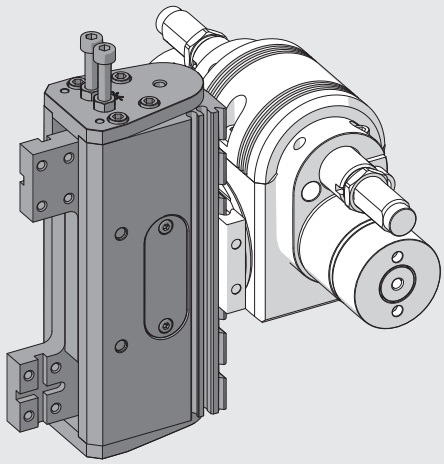


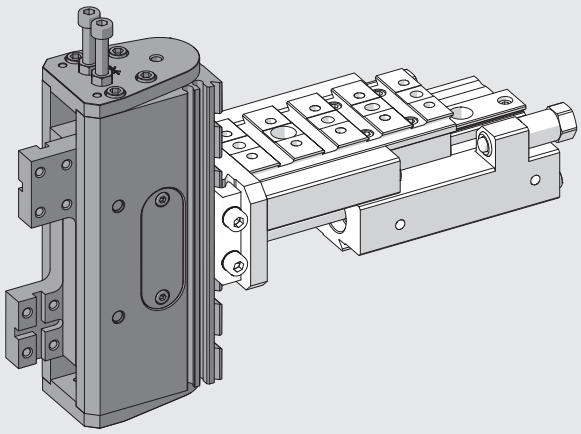
DIAGRAM OF FORCES AND MOMENTS



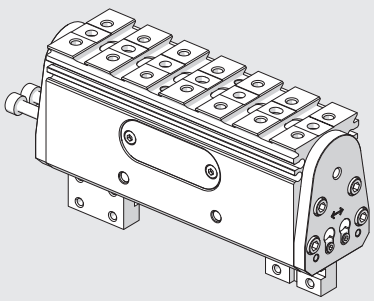
F	Clamping force
Ft	Maximum static traverse force
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

EXAMPLES OF APPLICATION

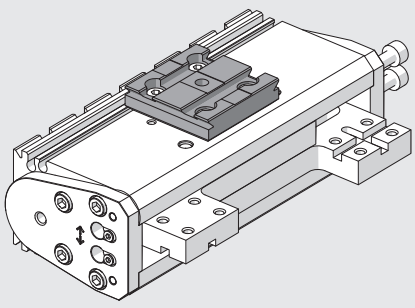




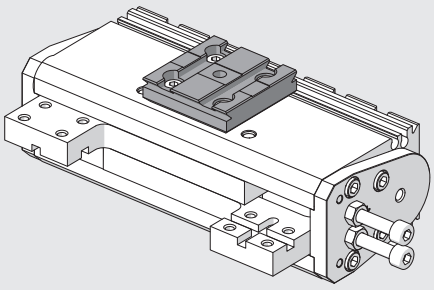
V-Lock MOUNTING OPTIONS



Gripper as supplied



Fix the accessory "type 2 side adaptor" code 0950008004K, lengthwise

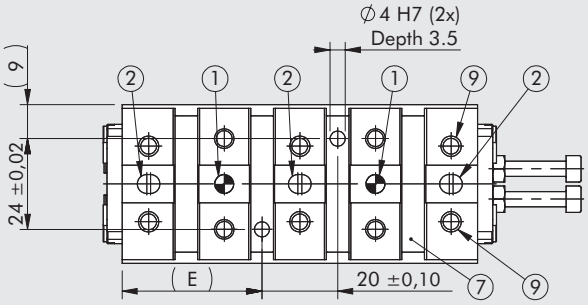


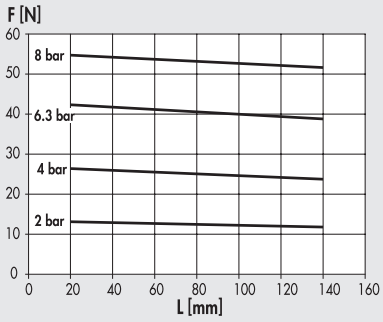
Fix the accessory "type 2 side adaptor" code 0950008004K, crosswise

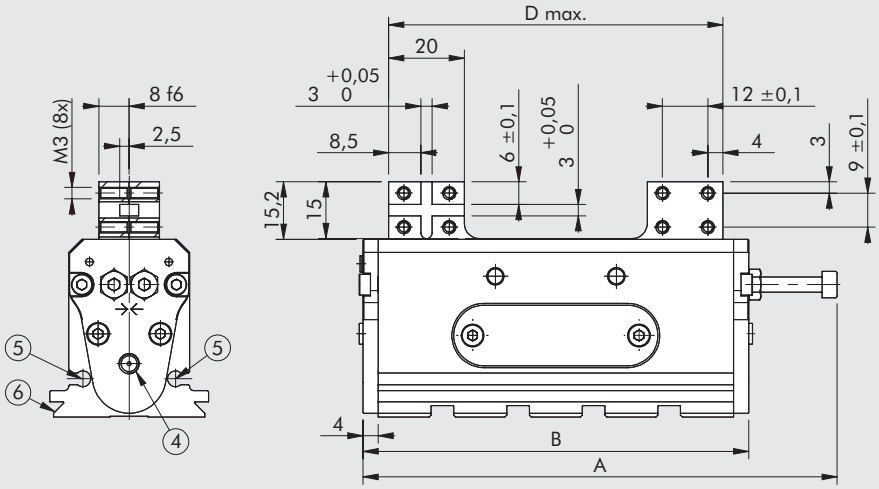
METAL WORK PNEUMATIC

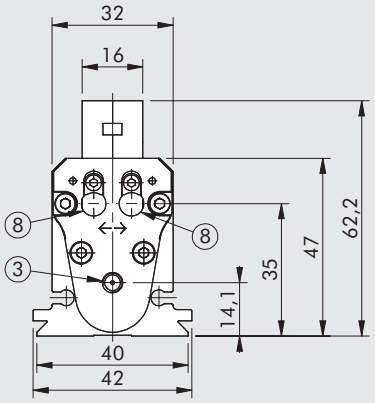
DIMENSIONS OF GRIPPER GPLK-1

① Holes for centring pins (Ø5H7 depth 2.5)
② Centring slot (Ø5H7 depth 2.5)
③ Gripper opening power (M5)
④ Gripper closing power (M5)
⑤ Magnetic sensor fixing slots
⑥ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Inductive induction sensor slot
⑨ Threaded holes for fixing (max depth 4.5)

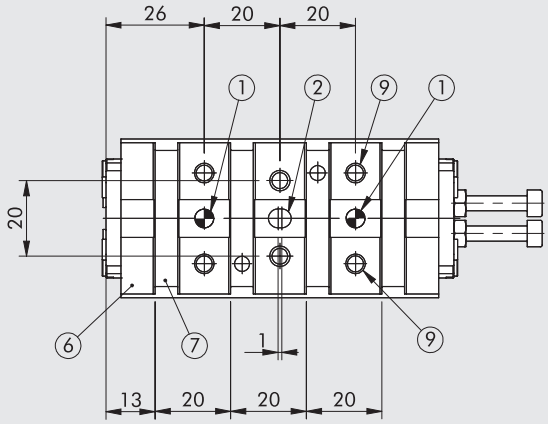


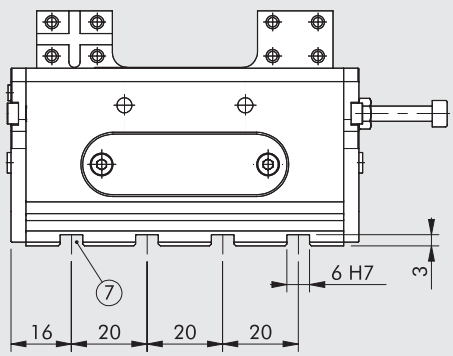




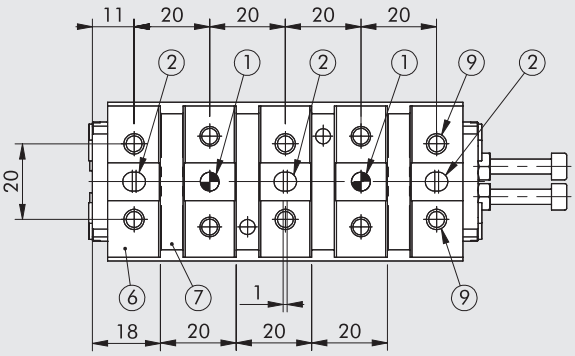


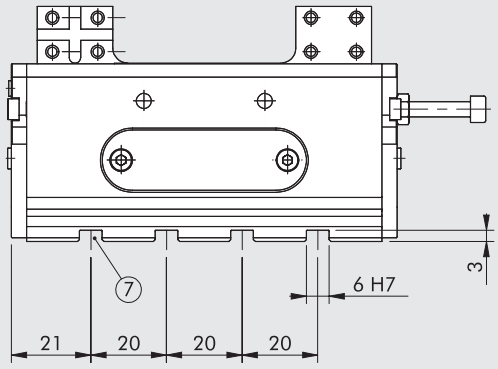
GPLK-1-30





GPLK-1-40

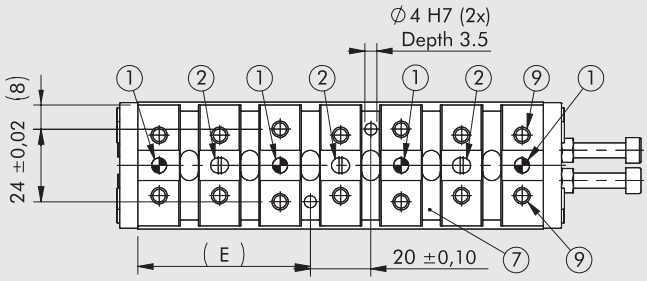


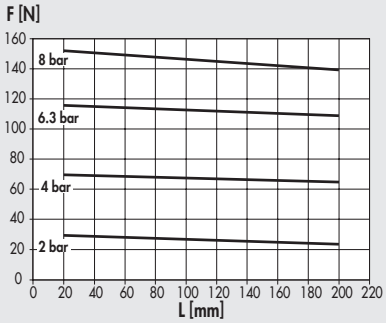


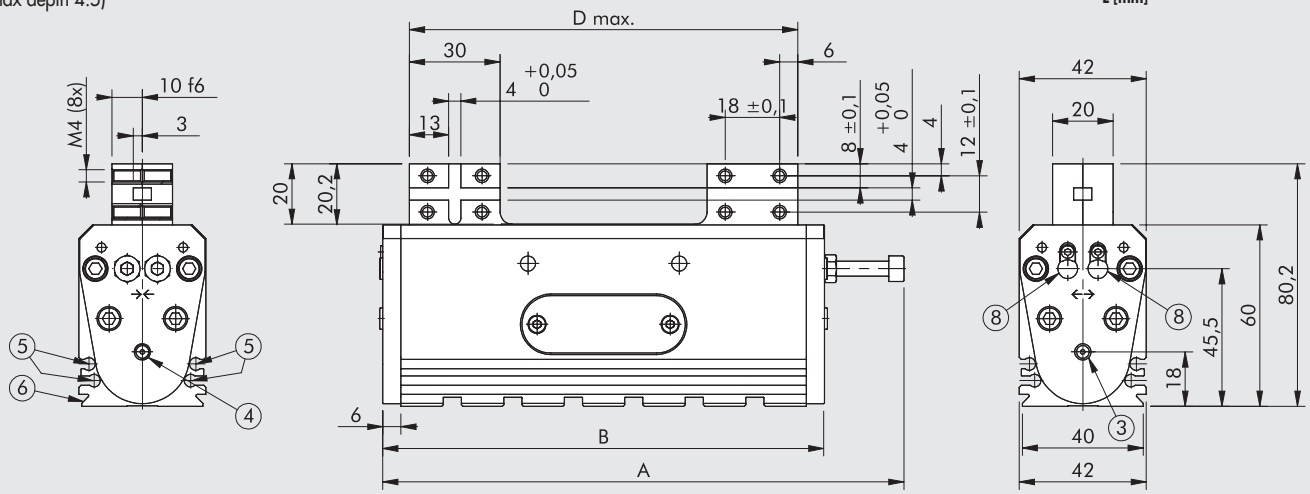
Code	Description	Overal Stroke	A	B	D max	E
K3010300000K	GPLK-1-30	30	114	92	78	32
K3010400000K	GPLK-1-40	40	124	102	88	37

DIMENSIONS OF GRIPPER GPLK-2

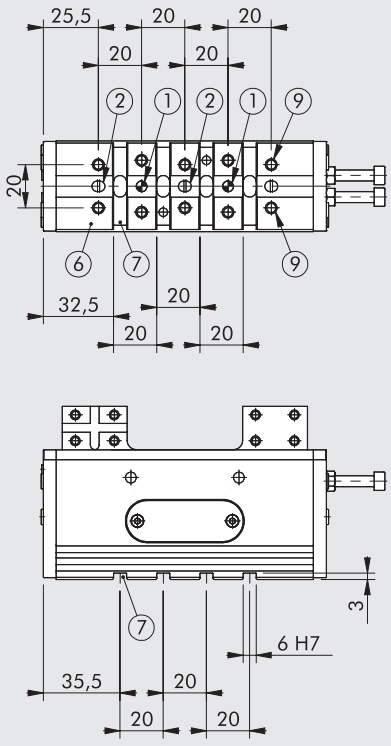
① Holes for centring pins (Ø5H7 depth 2.5)
② Centring slot (Ø5H7 depth 2.5)
③ Gripper opening power (M5)
④ Gripper closing power (M5)
⑤ Magnetic sensor fixing slots
⑥ Dovetail for "V-Lock" fixing. For standard dimensions, see **chapter V-Lock adaptors**
⑦ Slot for "V-Lock" precision key
⑧ Inductive induction sensor slot
⑨ Threaded holes for fixing (max depth 4.5)



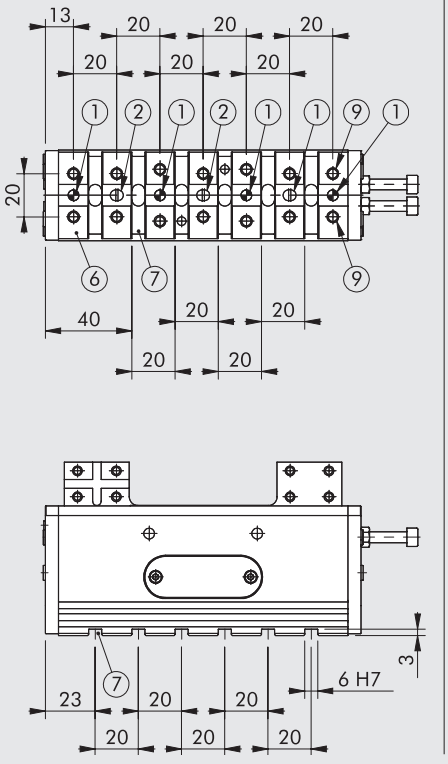




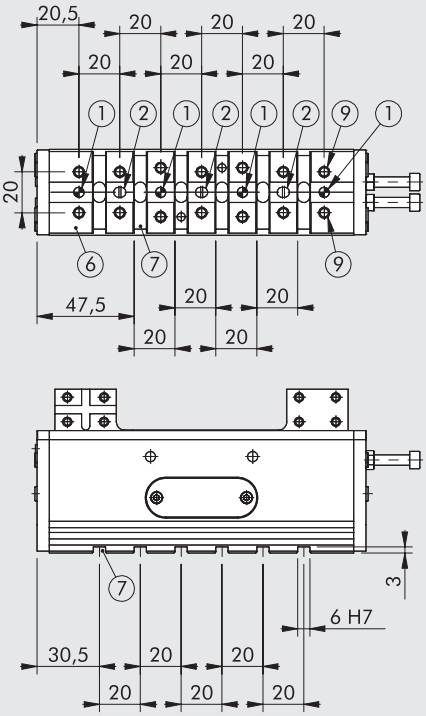
GPLK-2-45



GPLK-2-60



GPLK-2-75



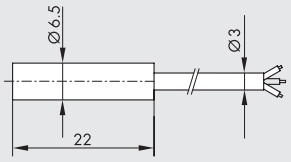
Code	Description	Overal Stroke	A	B	D max	E
K3020450000K	GPLK-2-45	45	157	131	113	49.5
K3020600000K	GPLK-2-60	60	172	146	128	57
K3020750000K	GPLK-2-75	75	187	161	143	64.5

ACCESSORIES

V-Lock ACCESSORIES

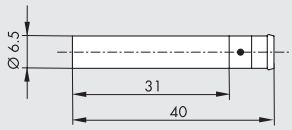
See page **A3**.36

INDUCTION SENSOR Ø 6.5



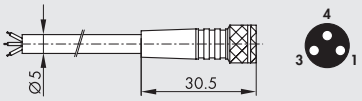
Code	Description
W095K030006	PNP Ø 6.5 PNP inductive sensor with LED 2 m
W095K031006	NPN Ø 6.5 NPN inductive sensor with LED 2 m

QUICK-FIT INDUCTIVE SENSOR Ø 6.5



Code	Description
W095K030009	PNP Ø 6.5 inductive sensor with push-in LED

CABLE WITH STRAIGHT CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

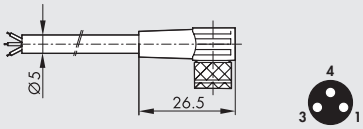


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

CABLE WITH 90° CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)

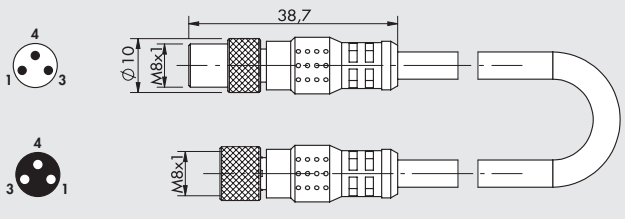


in	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

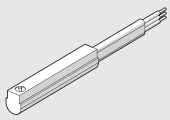
M8 M – M8 F CONNECTOR FOR Ø 6.5 PUSH-IN INDUCTIVE SENSOR (MOBILE INSTALLATION)



Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital INPUT of the EB 80 and CM valves

SENSOR Ø 4



For codes and technical data, see **chapter A6**.

OIL

Code	Description	Volume
9910490	PARALIQ P 460	80 ml

GRIPPER WITH TWO HINGED JAWS SERIES P7K

The body is made of anodized aluminium alloy and the jaws are made of hardened steel. They come with a magnet and sensor grooves.
The lower plate has a V-Lock profile and grooves.
A plate with a V-Lock coupling can also be mounted to the sides of the grippers.

TECHNICAL DATA		P7K-20	P7K-32
Operating pressure	bar	2 to 10	
	MPa	0.2 to 1.0	
	psi	29 to 145	
Temperature range	°C	-10 to 80	
Fluid		20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous	
Bore	mm	20	32
Maximum opening angle for single jaw		16° 30′	16°
Clamping force of a single jaw at 6.3 bar, 20 mm from the upper surface, on opening and closing	N	50	120
Max. frequency on continuous operation	Hz	> 5	> 5
Minimum opening/closing time	s	0.042 / 0.016	0.017 / 0.010
Repeatability	mm	0.01	0.01
Lubrication		Grease the sliding surfaces of the jaws every one million cycles. Use grease code 9910509	
Max. admissible static loads:			
- Fa	N	200	350
- Mx	Nm	6	10
- My	Nm	6	10
- Mz	Nm	8	12
Weight	kg	0.22	0.54

COMPONENTS

① BODY: anodized aluminium
② JAWS: nitrided steel
③ PISTON ROD: nitrided steel
④ PISTON: aluminium
⑤ PISTON GASKET: NBR
⑥ GUIDE RING: PTFE (only for Ø 32)
⑧ MAGNET: plastoferrite
⑧ GASKET: polyurethane
⑨ GASKET: NBR
⑩ V-Lock REAR PLATE: anodized aluminium

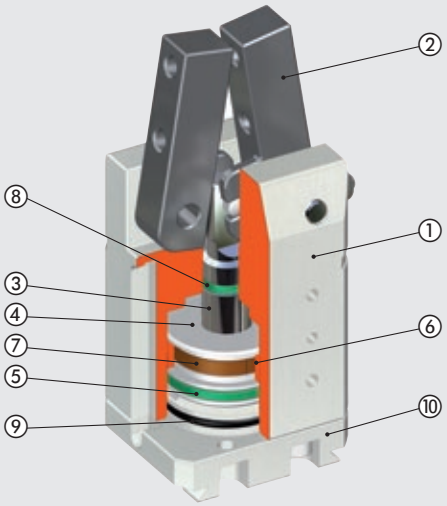
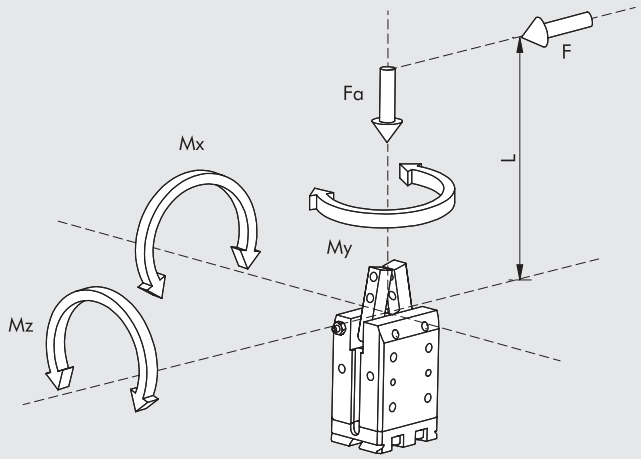
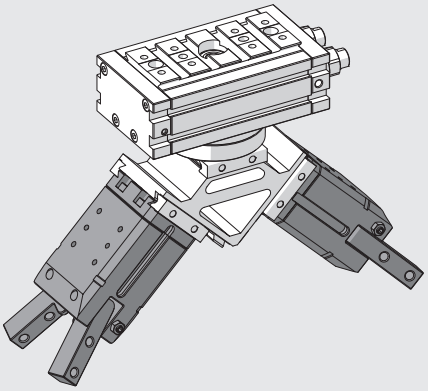


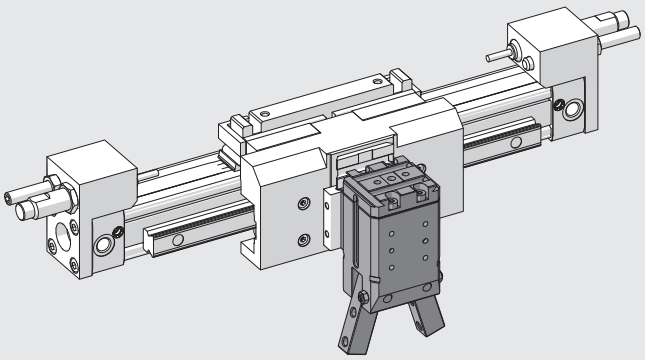
DIAGRAM OF FORCES AND MOMENTS



F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

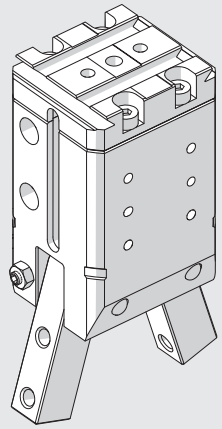
EXAMPLES OF APPLICATION



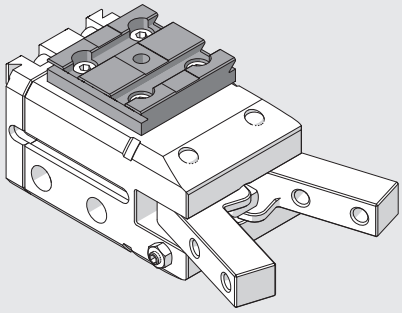


NOTES

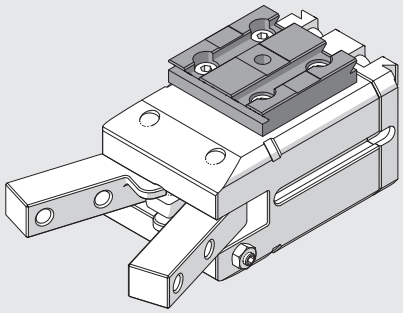
V-Lock MOUNTING OPTIONS



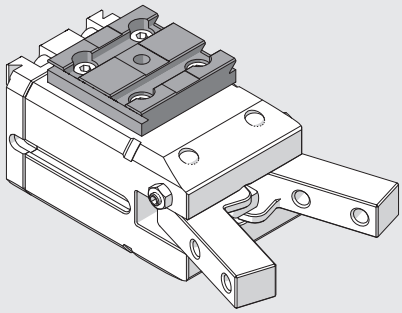
Gripper as supplied



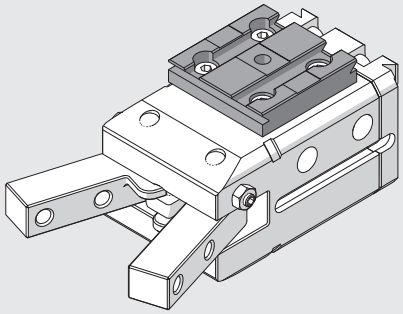
Fix the accessory "type 2 side adaptor" code 0950008004K to the right, lengthwise



Fix the accessory "type 2 side adaptor" code 0950008004K to the right, crosswise



Fix the accessory "type 2 side adaptor" code 0950008004K to the left, lengthwise

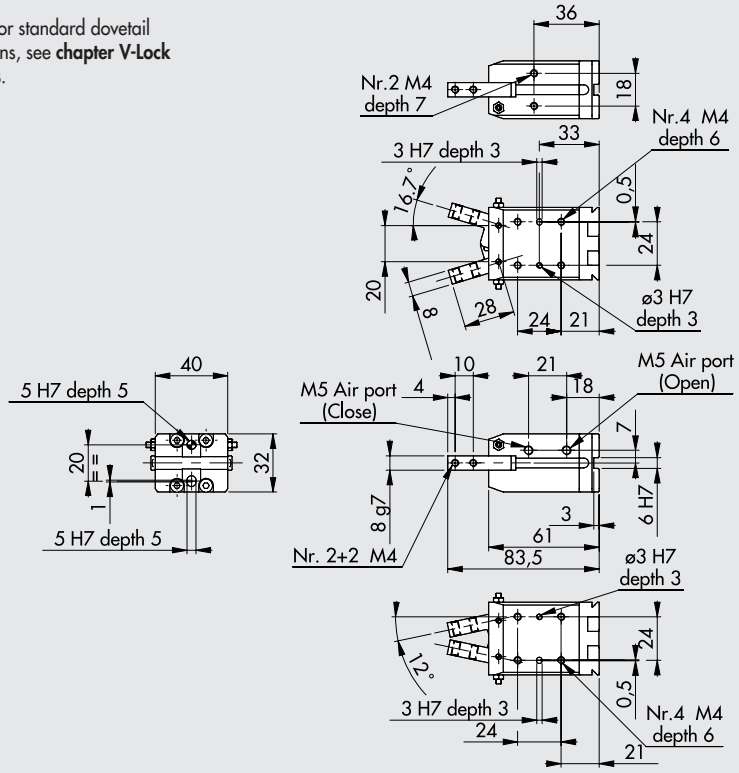


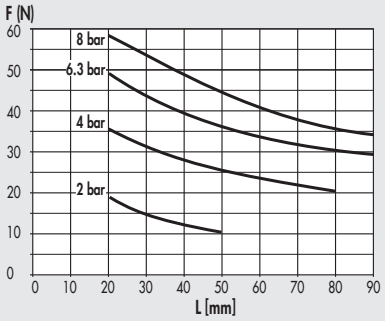
Fix the accessory "type 2 side adaptor" code 0950008004K to the left, crosswise

METAL WORK PNEUMATIC

DIMENSIONS OF GRIPPER P7K-20

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

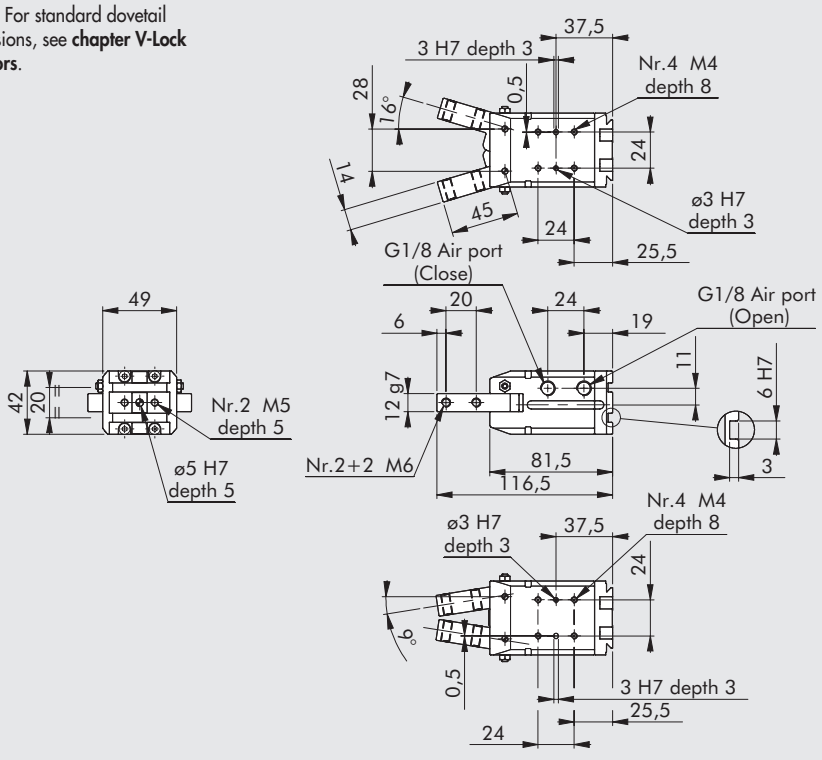


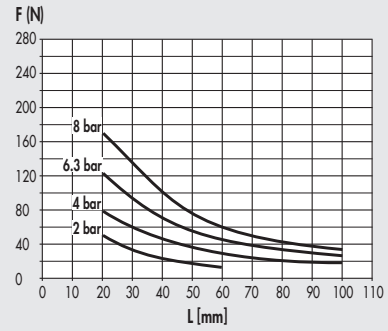


Code	Description
W1590200200K	Gripper with 2 hinged jaws P7K-20

DIMENSIONS OF GRIPPER P7K-32

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.



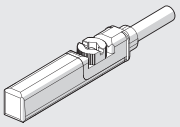


Code	Description
W1590320200K	Gripper with 2 hinged jaws P7K-32

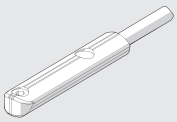
ACCESSORIES

RETRACTING SENSOR

SENSOR, SQUARE TYPE
Latest generation, secure fixing



SENSOR, OVAL TYPE
Traditional

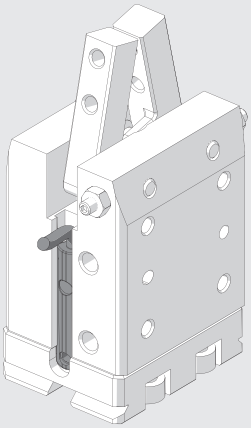


For codes and technical data, see **chapter A6**.

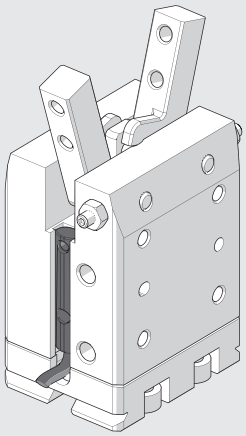
DIRECTION RECOMMENDED FOR FIXING THE SENSORS TO THE GRIPPER GROOVES

P7K-20

CLOSED



OPEN



P7K-32

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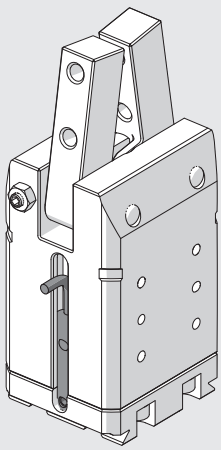

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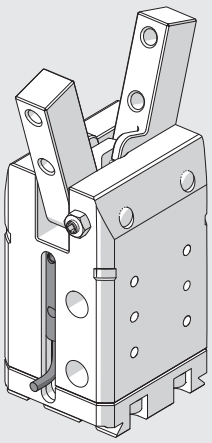


GRIPPER 180° WITH TWO HINGED JAWS SERIES P9K

METAL WORK PNEUMATIC

Hinged toggle grippers with an adjustable opening angle.
High clamping forces.
The body is made of hard anodized aluminium alloy and the jaws and moving parts are made of hardened steel.
They come with a magnet and sensor grooves.
The lower plate has a V-Lock profile and grooves.
A plate with a V-Lock coupling can also be mounted to the sides of the grippers.

TECHNICAL DATA		P9K-32	P9K-40
Operating pressure	bar	2 to 8	
	MPa	0.2 to 0.8	
	psi	29 to 116	
Temperature range	°C	-10 to 80	
Fluid		20 µm filtered air, lubricated or unlubricated. If lubricated air is used, lubrication must be continuous	
Bore	mm	32	40
Clamping force of a single jaw at 6.3 bar, 40 mm from the upper surface, on opening and closing	N	160	260
Max. frequency on continuous operation	Hz	> 5	> 5
Minimum opening/closing time	s	0.034 / 0.041	0.052 / 0.061
Repeatability	mm	< 0.02	< 0.02
Lubrication		Grease the sliding surfaces of the jaws every one million cycles. Use grease code 9910509	
Max. admissible static loads:			
- Fa	N	350	500
- Mx	Nm	12	20
- My	Nm	12	20
- Mz	Nm	16	24
Weight	kg	0.76	1.6

COMPONENTS

① BODY: anodized aluminium
② JAWS: nitrided steel
③ LEVERAGE SYSTEM: nitrided steel
④ PISTON ROD: stainless steel
⑤ PISTON: aluminium
⑥ PISTON GASKET: NBR
⑦ GUIDE RING: PTFE
⑧ MAGNET: plastoferrite
⑨ GASKET: NBR
⑩ GUIDE BUSHING: bronze
⑪ GASKET: NBR
⑫ V-Lock REAR PLATE: anodized aluminium
⑬ PISTON ROD GASKET: polyurethane

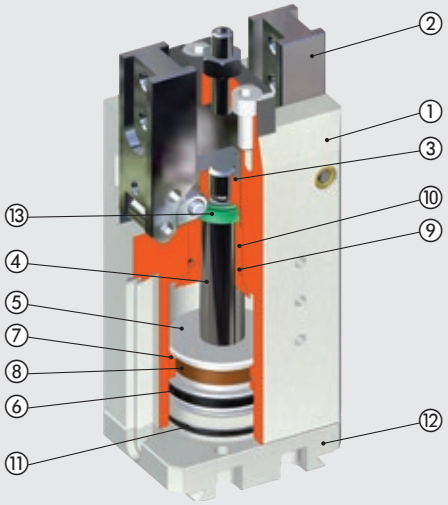
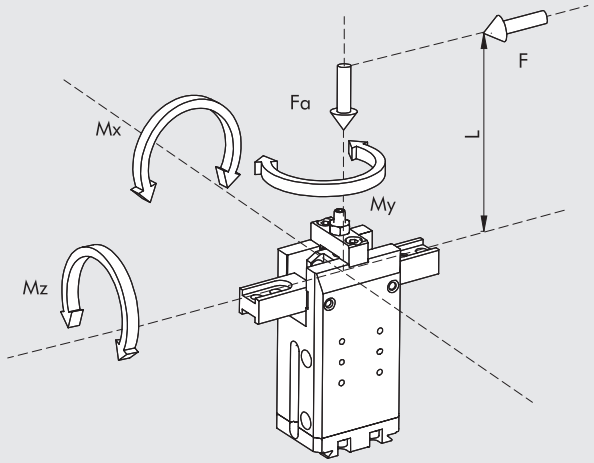
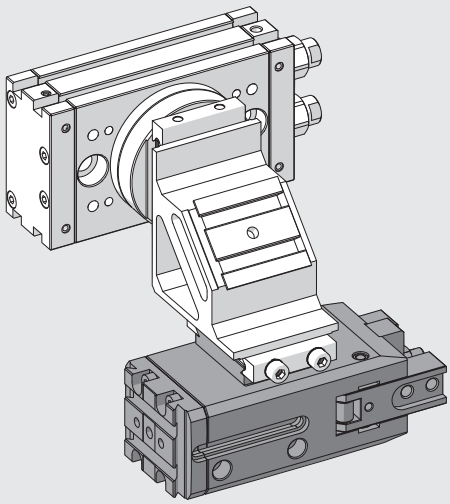


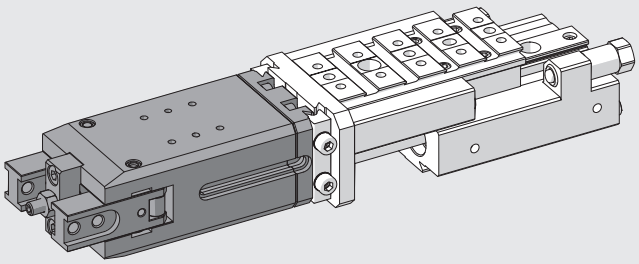
DIAGRAM OF FORCES AND MOMENTS



F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

EXAMPLES OF APPLICATION

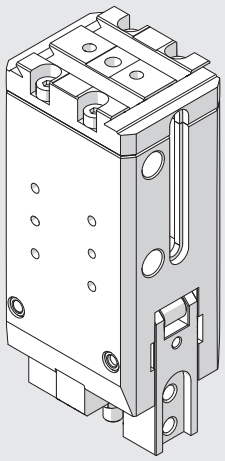




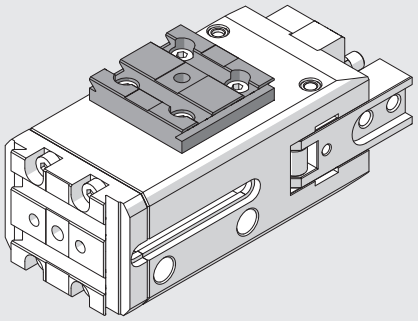
NOTES

METAL WORK PNEUMATIC

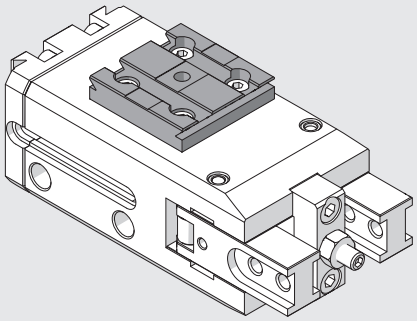
V-Lock MOUNTING OPTIONS



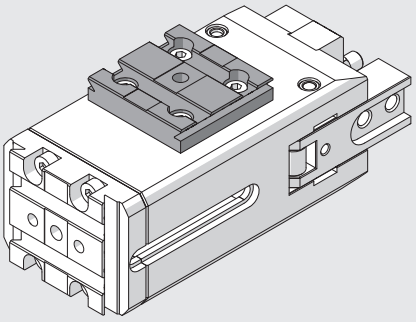
Gripper as supplied



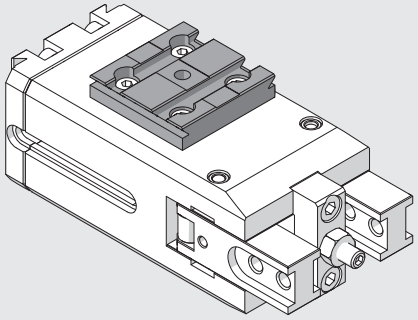
Fix the accessory "type 2 side adaptor" code 0950008004K (for Ø 32) or "type 3 side adaptor" code 0950008005K (for Ø 40) to the right, lengthwise



Fix the accessory "type 2 side adaptor" code 0950008004K (for Ø 32) or "type 3 side adaptor" code 0950008005K (for Ø 40) to the right, crosswise



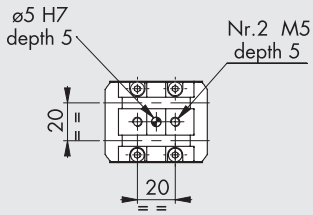
Fix the accessory "type 2 side adaptor" code 0950008004K (for Ø 32) or "type 3 side adaptor" code 0950008005K (for Ø 40) to the left, lengthwise

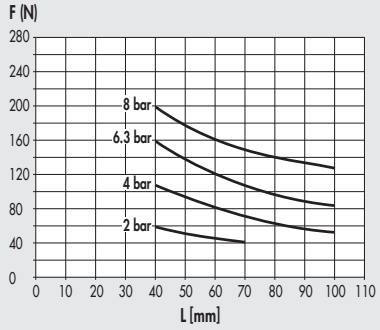


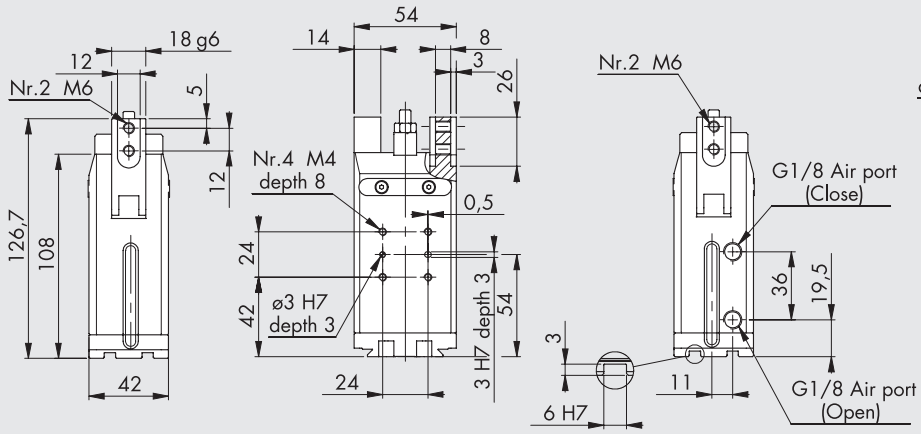
Fix the accessory "type 2 side adaptor" code 0950008004K (for Ø 32) or "type 3 side adaptor" code 0950008005K (for Ø 40) to the left, crosswise

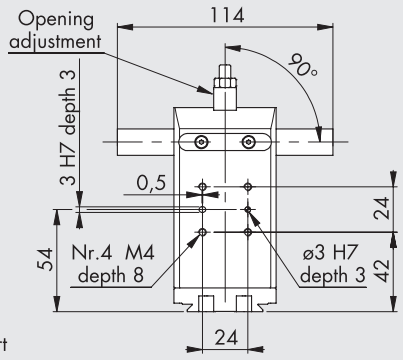
DIMENSIONS OF GRIPPER P9K-32

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.





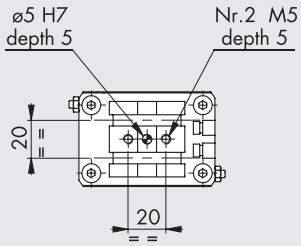


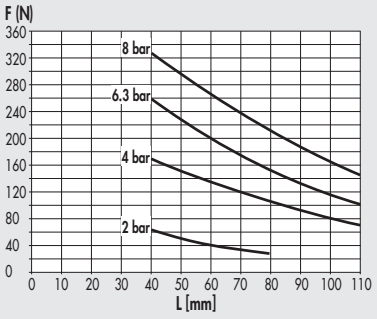


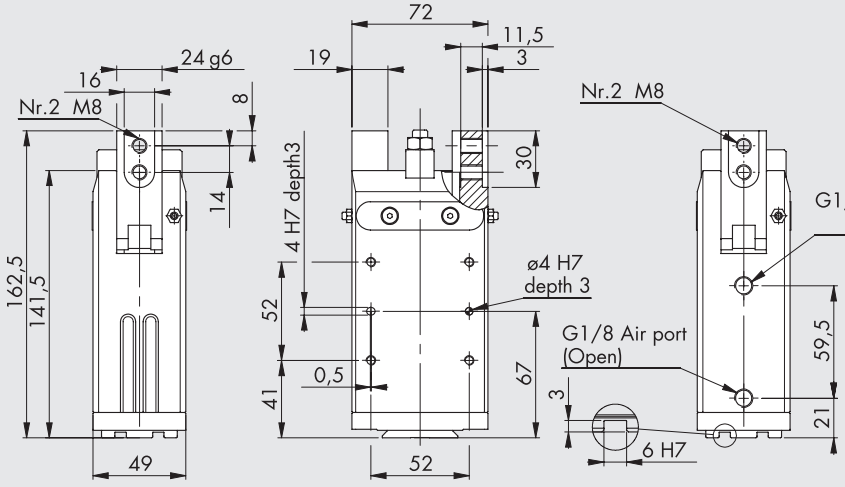
Code	Description
W1530320180K	Hinged gripper P9K-32

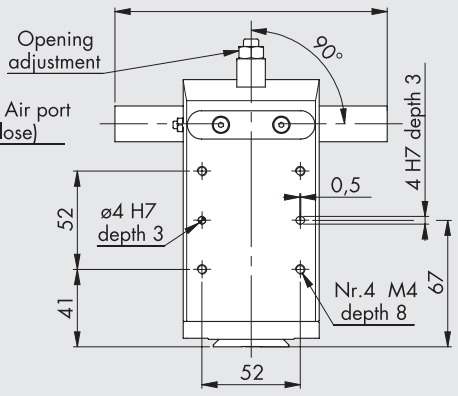
DIMENSIONS OF GRIPPER P9K-40

NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.







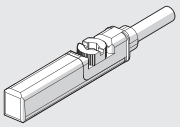


Code	Description
W1530400180K	Hinged gripper P9K-40

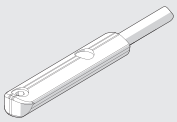
ACCESSORIES

RETRACTING SENSOR

SENSOR, SQUARE TYPE
Latest generation,
secure fixing



SENSOR, OVAL TYPE
Traditional

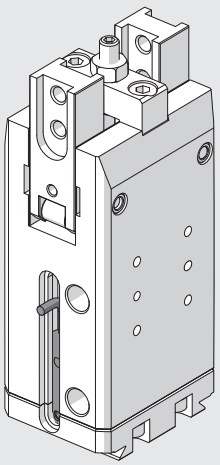


For codes and technical data, see **chapter A6**.

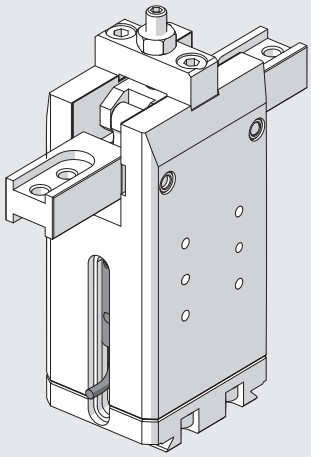
DIRECTION RECOMMENDED FOR FIXING THE SENSORS TO THE GRIPPER GROOVES

P9K-32

CLOSED



OPEN



NOTES

GRIPPER WITH THREE PARALLEL JAWS SERIES P12K

Parallel double-acting three-jaw gripper, with either internal or external clamping.
Aluminum alloy body coated with surface hardening treatment; jaws made of wear-resistant coated steel.
The jaw-guiding system and precision in coupling with the body make the gripper extremely stable.
The ceramic-coated body reduces friction and wear, and enhances the movement of the jaws on the body.
All sizes are available in the version with standard stroke and clamping force, while only some in the version with reduced stroke but with higher clamping torque.The gripper is equipped with a magnet and grooves for sensors.
A version designed to house inductive sensors is also available (**the inductive sensors are not supplied by Metal Work**).

TECHNICAL DATA		P12K-64	P12K-80		P12K-100	
			Standard	Increased force	Standard	Increased force
Operating pressure	bar	2 to 8				
	MPa	0.2 to 0.8				
	psi	29 to 116				
Temperature range	°C	-10 to 80				
Fluid		20 µm filtered, lubricated or unlubricated air; lubrification if used, it must be continuous				
Clamping force of a single jaw at 6.3 bar, 20 mm from the upper surface, on opening and closing	N	310	435	860	840	1450
Maximum movable weight	kg	2.9	4.5	9	9	20
Stroke of each jaw	mm	6	8	4	10	5
Minimum opening/closing time	s	0.05				
Repeatability	mm	0.01				
Moment of inertia as regards the piston axis	kg cm²	6	6.5		19	
Max. admissible static loads:						
- Fa	N	1100	1500		2000	
- Mx	Nm	60	90		115	
- My	Nm	40	55		70	
- Mz	Nm	40	55		80	
Weight	kg	0.75	0.8		1.5	

COMPONENTS

① BODY: hard-anodized aluminium
② JAWS: nitrided steel
③ PISTON ROD + GUIDE: nitrided steel
④ PISTON: hard-anodized aluminium
⑤ PISTON GASKET: NBR
⑥ PISTON ROD GASKET: NBR / polyurethane
⑦ BASE GASKET: reinforced SBR / NBR
⑧ MAGNET: neodymium

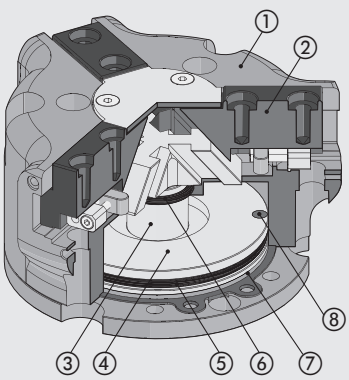
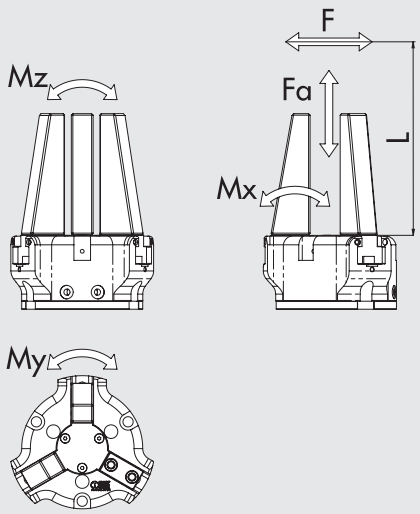
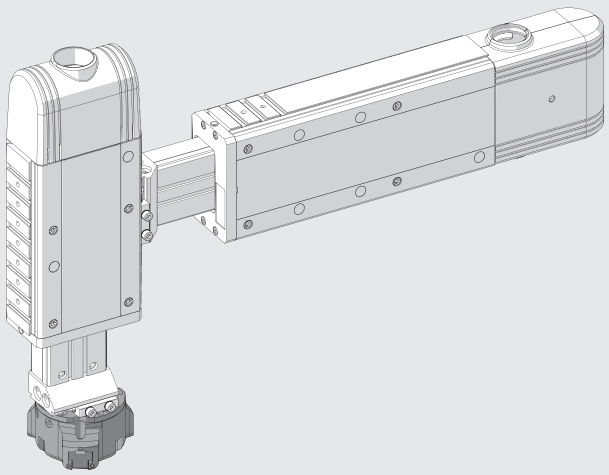


DIAGRAM OF FORCES AND MOMENTS



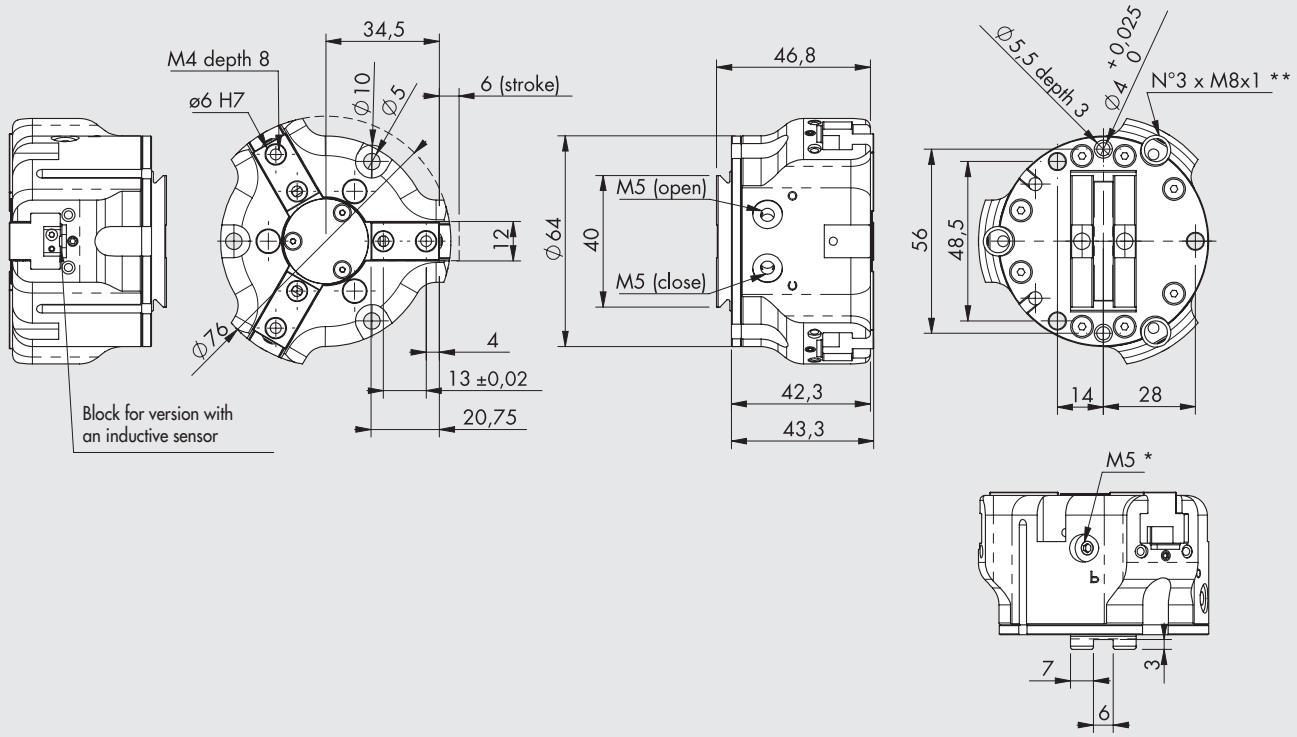
F	Clamping force for each jaw
Fa	Maximum static axial force
Mx, My, Mz	Maximum static moments

EXAMPLES OF APPLICATION



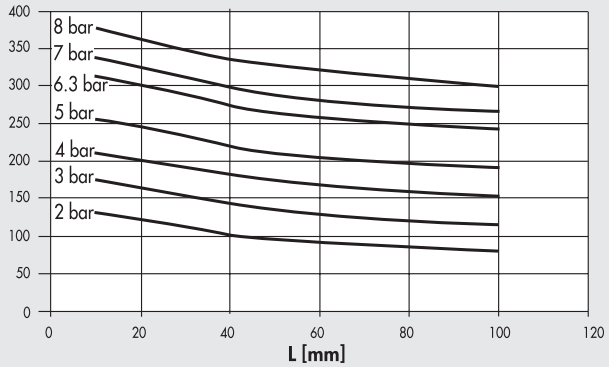
NOTES

DIMENSIONS OF GRIPPER P12K-64



* Discharge pressurization connection
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

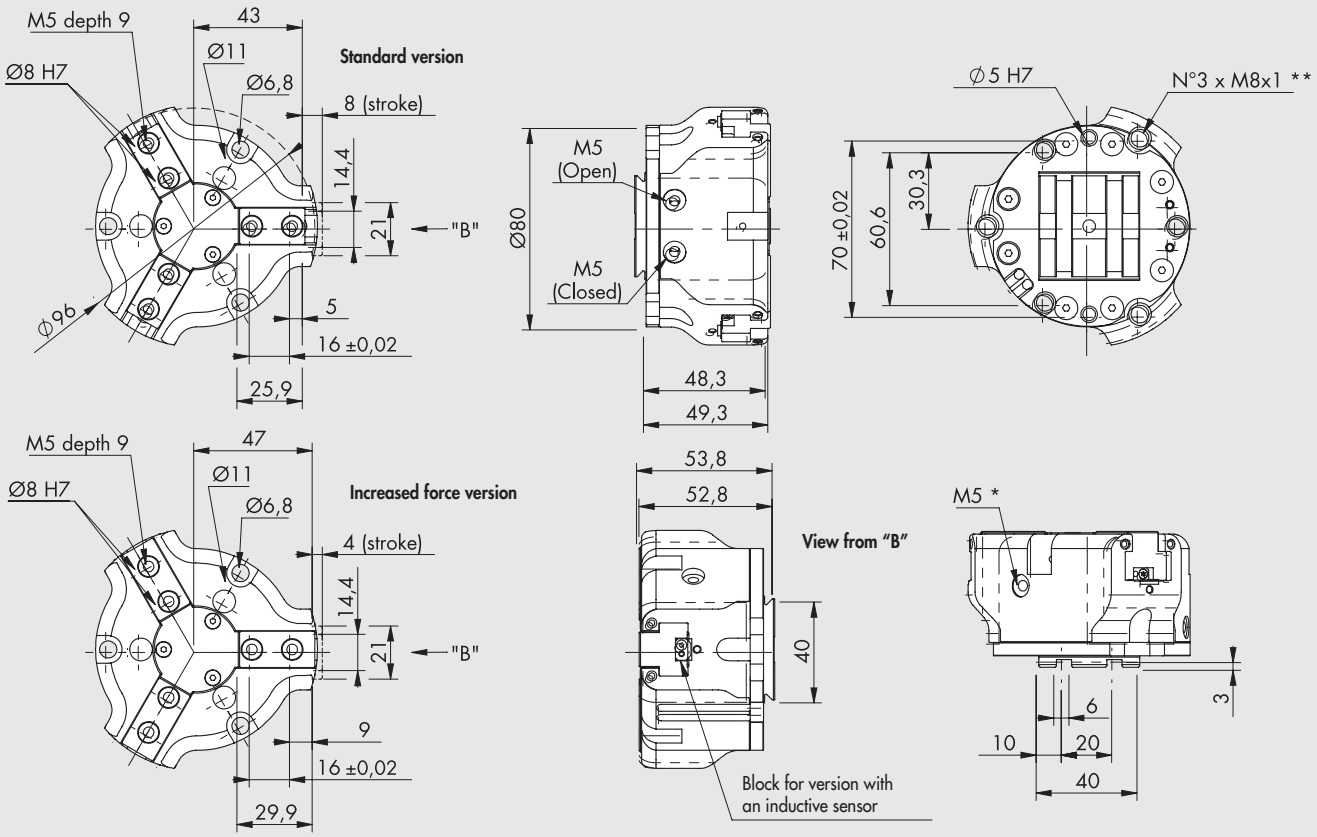
F [N]



Code	Description
W1560640300K	Gripper with 3 parallel jaws P12K-64
W1560640301K	Gripper with 3 parallel jaws P12K-64 for inductive sensors

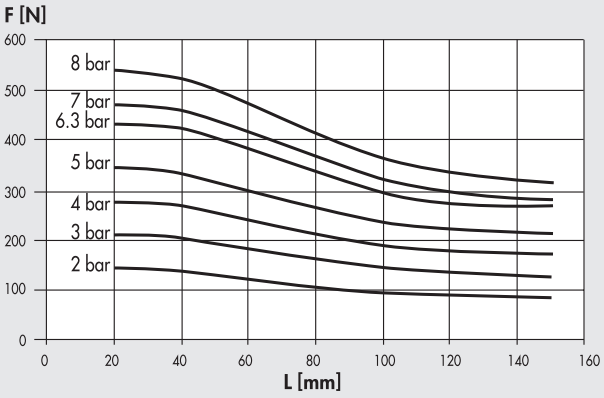
METAL WORK PNEUMATIC

DIMENSIONS OF GRIPPER P12K-80

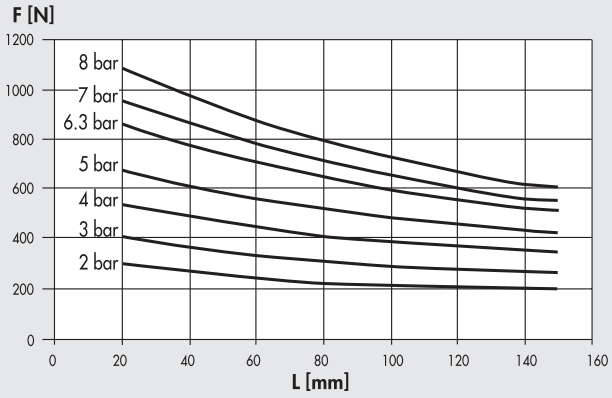


* Discharge pressurization connection
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

Standard version

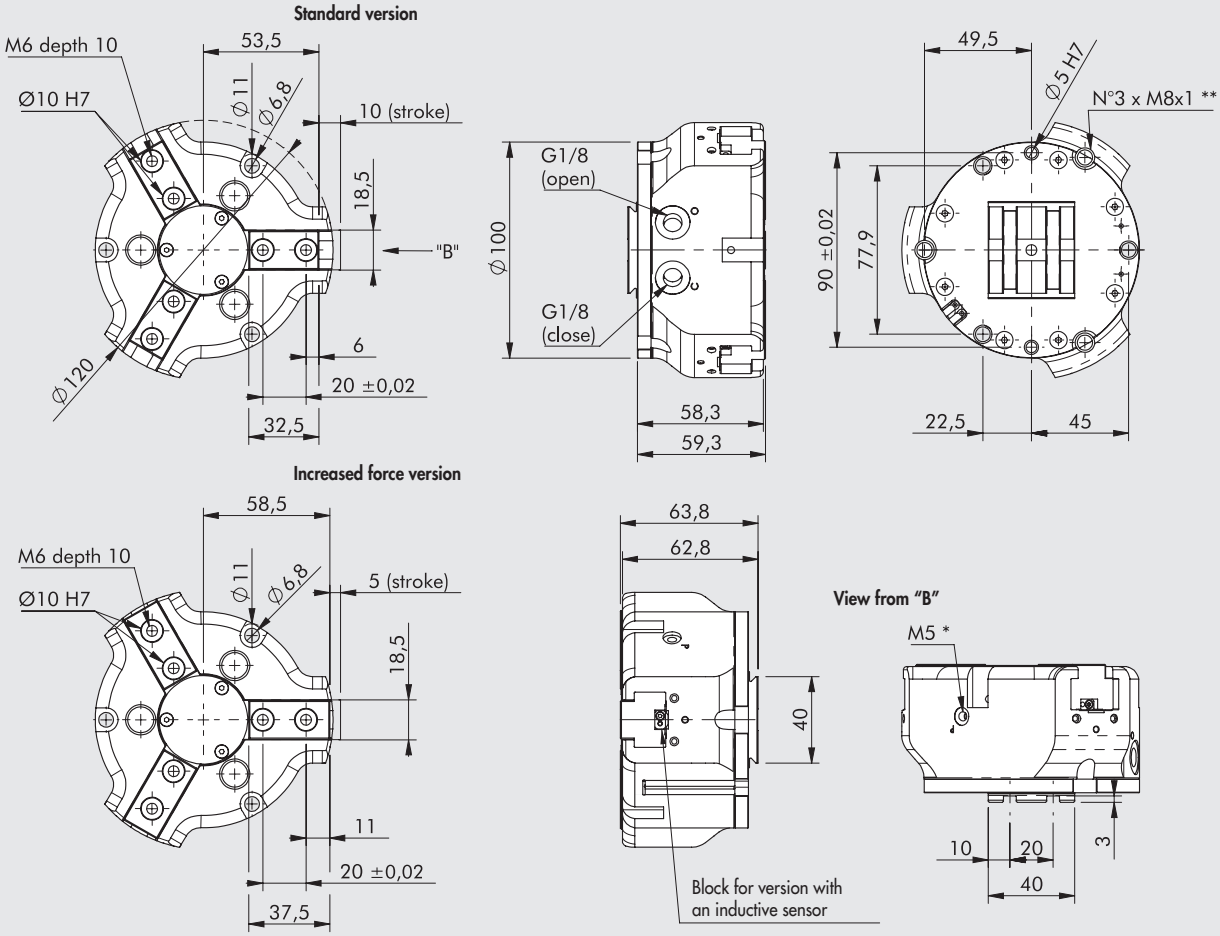


Increased force version



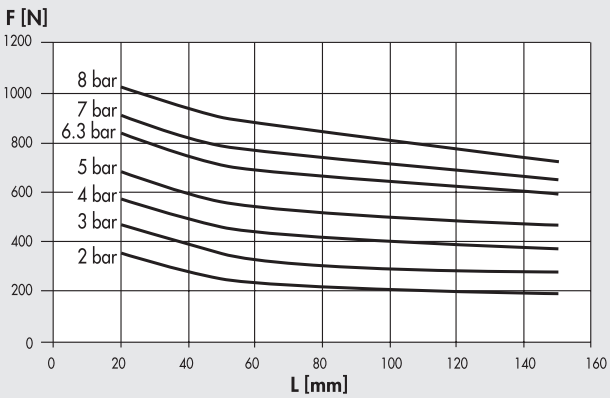
Code	Description
W1560800300K	Gripper with 3 parallel jaws P12K-80
W1560800301K	Gripper with 3 parallel jaws P12K-80 for inductive sensors
W1560800320K	Gripper with 3 parallel jaws P12K-80 increased force
W1560800321K	Gripper with 3 parallel jaws P12K-80 increased force for inductive sensors

DIMENSIONS OF GRIPPER P12K-100

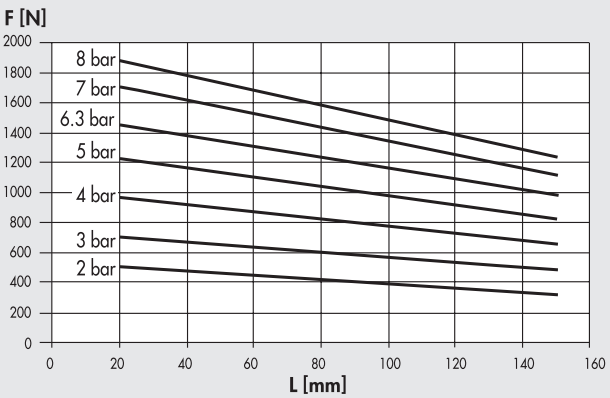


* Discharge pressurization connection
** Inductive sensor slot
NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

Standard version



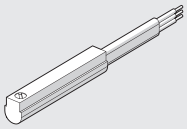
Increased force version



Code	Description
W1561000300K	Gripper with 3 parallel jaws P12K-100
W1561000301K	Gripper with 3 parallel jaws P12K-100 for inductive sensors
W1561000320K	Gripper with 3 parallel jaws P12K-100 increased force
W1561000321K	Gripper with 3 parallel jaws P12K-100 increased force for inductive sensors

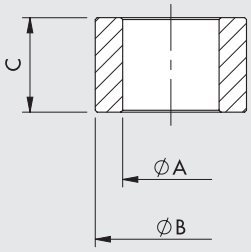
ACCESSORIES

SENSOR Ø 4



For codes and technical data, see **chapter A6**.

CENTRING RING



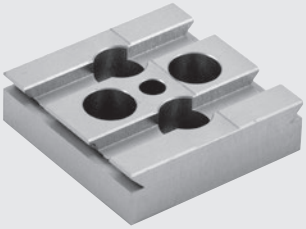
Code	Size	ØA	ØB f7	C
W1560649201	64	$4.5^{0}_{-0.1}$	6	$5^{0}_{-0.1}$
W1560809201	80	$5.1^{0}_{-0.1}$	8	$5^{0}_{-0.05}$
W1561009201	100	$6.2^{\pm 0.1}$	10	$6.9^{0}_{-0.1}$

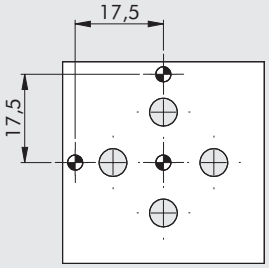
Note: 2-pieces pack

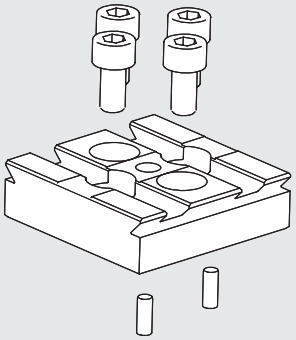
NOTES

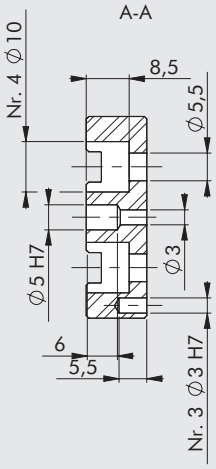
V-Lock GRIPPER ACCESSORIES

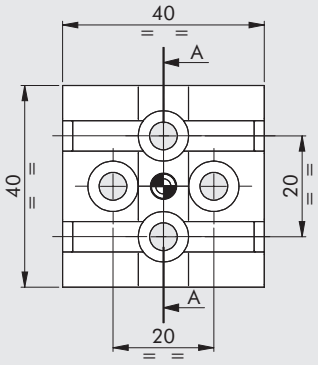
SIDE ADAPTOR KIT TYPE 1 CODE 0950008003K

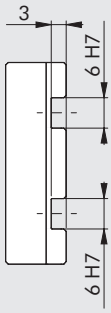












NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

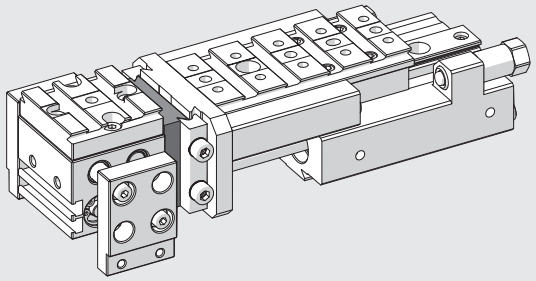
Adaptor for fixing to other V-Lock or Quick-set components. For lateral fixing to the grippers.
W1580120200K Gripper with 2 jaws, long stroke, P4K-12

The 4 screws and 2 pins can be used to fix the plate to the grippers in two orthogonal directions.

Kit contents:

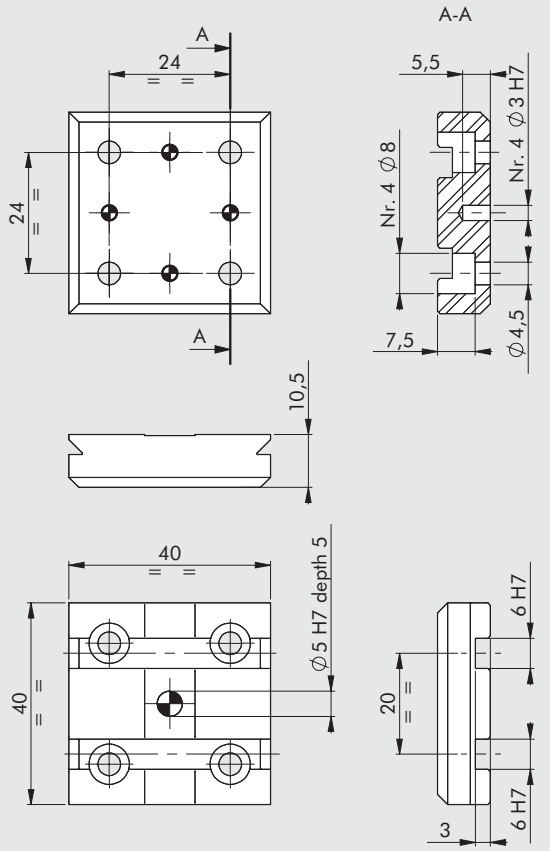
1 side cylinder head P4K-12:	Material	Anodized aluminium
	Weight	0.041 kg
2 cylindrical pins Ø 3 x 8		
4 screws M5 x 10 zinc-plated		

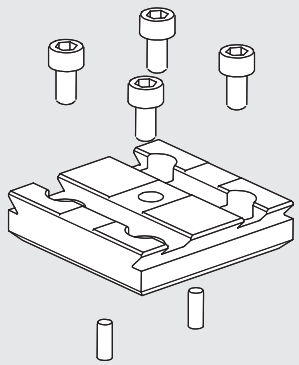
EXAMPLES OF APPLICATION



METAL WORK PNEUMATIC

SIDE ADAPTOR KIT TYPE 2 CODE 0950008004K





NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

Adaptor for fixing to other V-Lock or Quick-set components. For lateral fixing to the grippers.

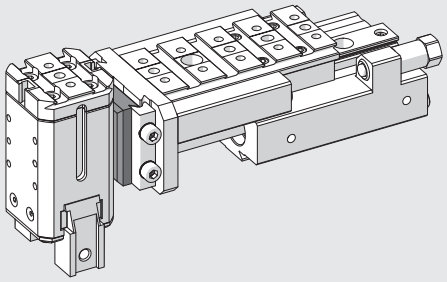
W1550200001K	Gripper with 2 parallel jaws P1K-20	**K3010300000K**	Gripper with 2 parallel jaws, long stroke GPLK-1-30
W1550320001K	Gripper with 2 parallel jaws P1K-32	**K3010400000K**	Gripper with 2 parallel jaws, long stroke GPLK-1-40
W1570200200K	Gripper with 2 parallel jaws P2K-20	**K3020450000K**	Gripper with 2 parallel jaws, long stroke GPLK-2-45
W1590200200K	Gripper with 2 hinged jaws P7K-20	**K3020600000K**	Gripper with 2 parallel jaws, long stroke GPLK-2-60
W1590320200K	Gripper with 2 hinged jaws P7K-32	**K3020750000K**	Gripper with 2 parallel jaws, long stroke GPLK-2-75
W1530320180K	Gripper 180° with 2 hinged jaws P9K-32		

The 4 screws and 2 pins can be used to fix the plate to the grippers in two orthogonal directions.

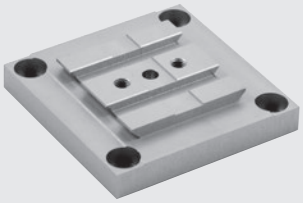
Kit contents:

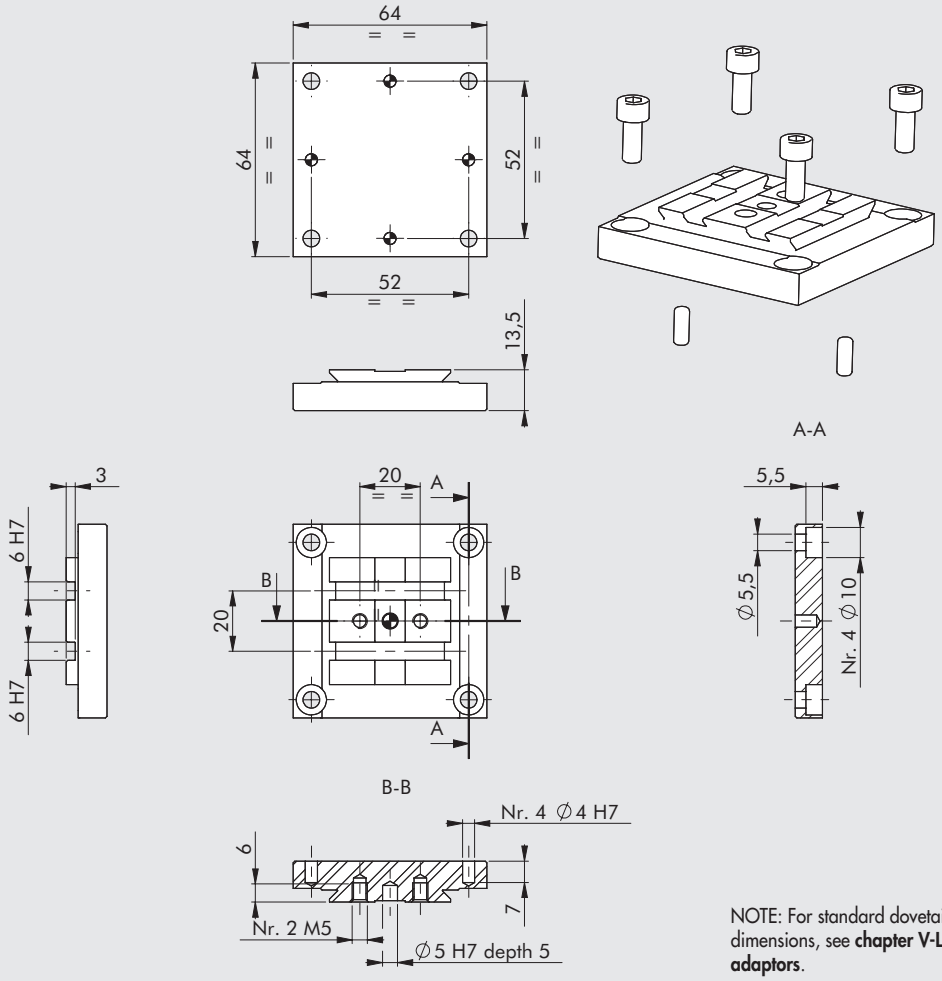
1 side cylinder head P1K-20:	Material	Anodized aluminium
	Weight	0.037 kg
2 cylindrical pins Ø 3 x 8		
4 screws M4 x 8 zinc-plated		

EXAMPLES OF APPLICATION



SIDE ADAPTOR KIT TYPE 3 CODE 0950008005K





NOTE: For standard dovetail dimensions, see **chapter V-Lock adaptors**.

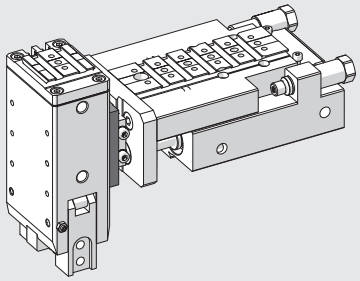
Adaptor for fixing to other V-Lock or Quick-set components. For lateral fixing to the grippers.
W1530400180K Gripper 180° with 2 hinged jaws P9K-40

The 4 screws and 2 pins can be used to fix the plate to the grippers in two orthogonal directions.

Kit contents:

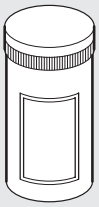
1 side cylinder head P9K-40:	Material	Anodized aluminium
	Weight	0.115 kg
2 cylindrical pins Ø 4 x 10		
4 screws M5 x 12, zinc-plated		

EXAMPLES OF APPLICATION



METAL WORK PNEUMATIC

GREASE



Code	Description	Weight [g]
9910509	Grease pipe NYOGEL 774 H	500

NOTES