SCHUNK

Clamping Force Block
TANDEM KSE3, KSE3-LH
Assembly and Operating Manual

Hand in hand for tomorrow

Imprint

Technical changes:
We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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Please read the operating manual in full and keep it close to the product.

Table of Contents

1 General

1.1 About this manual

This manual contains important information for the safe, correct use of the product.

It is an integral part of the product and must be kept accessible for personnel at all times.

Personnel must have read and understood this manual before beginning any work. The observance of all safety notes in this manual is a prerequisite to ensure safe work processes.

The illustrations are intended to provide a basic understanding and may deviate from the actual version.

Besides this manual, other documents which apply are those listed under ▸ 1.1.2 [🗋 6]

1.1.1 Illustration of warning notices

To make risks clear, the following signal words and symbols are used for safety notes.

⚠ DANGER

Denotes a hazard with a high degree of risk that, if not avoided, will result in death or serious injury.

⚠ WARNING

Denotes a hazard with a medium degree of risk that, if not avoided, could result in death or serious injury.

⚠ CAUTION

Denotes a hazard with a low degree of risk that, if not avoided, could result in a minor or moderate injury.

NOTICE

Information about avoiding material damage.

1.1.2 Applicable documents

- General Terms and Conditions *
- Catalog data sheet for the attached product *
- Technical data sheet for optional attachments *
- Installation drawing
- Software manual *
- IO-Link Device Description (IODD) *

The documents labeled with an asterisk (*) can be downloaded from **schunk.com**.

1.1.3 Design

This guide applies to the following sizes in all variants

TANDEM Clamping Force Block

- Size KSE3 100 IOL
- Size KSE3 140 IOL
- Size KSE3 160 IOL

1.2 Warranty

The warranty for standard products is 24 months from the date of delivery from the factory, or 500,000 cycles*, assuming appropriate use in accordance with the following conditions:

- Observe the applicable documents, ▸ 1.1.2 [🗋 6]
- Observance of the ambient conditions and operating conditions, ▸ 2.5 [🗋 8]
- Observance of maintenance and lubrication intervals, ▸ 6.2 [🗋 22]

Parts touching the workpiece and wearing parts are not covered by the warranty.

* One cycle comprises one complete clamping procedure ("opening" and "closing").

1.3 Scope of Delivery

- **Clamping Force Block** (without top jaws)
- Accessory kit ▸ 9.2 [🗋 27]
- Assembly and Operating Manual
- Software Manual

1.4 Accessories

(see catalog or data sheets when ordering separately)

- Electrical rigid contact interface (ID number 1521278)
- Top jaws
- Adapter plate

2 Basic safety notes

Improper handling, assembly and maintenance of this product may result in risk to persons and equipment if this operating manual is not observed.

2.1 Appropriate use

- The product is used for clamping metal and plastic workpieces on machine tools and other suitable technical facilities.
- The product may only be used within the scope of its technical data.
- The product is designed to be set up on a machine tools or other suitable technical facility (e.g. also as a gripper on a robot).
- The product is intended for industrial and commercial use.
- Appropriate use of the product includes compliance with all instructions in this manual.
- Use suitable top jaws with a suitable interface.
- Clamping workpieces with temperatures between 0°C and 100°C.
- The outer dimensions of the workpiece must be smaller than or at most equal to the outer diameter of the clamping device.
- The workpiece must not undergo plastic deformation while under clamping force (clamping indentations are permissible).

2.2 Inappropriate use

The product is not being used appropriately if:

- the product is used as a press or a punch, as a toolholder, as a lathe chuck, as a drill or as a cutting tool.
- the technical data specified are exceeded during usage.
- workpieces are not properly clamped, paying particular attention to the specified clamping forces.
- the top jaws are not mounted properly.
- the product is not being operated properly.
- the guideways are overloaded due to the chuck jaws being too high or the selected clamping point being too high.
- the product has been insufficiently maintained.
- the product is used for turning applications over 100 RPM without consulting SCHUNK.
- the product is brought into contact with aggressive media, especially acids.
- the product is used in abrasive blasting processes, especially sandblasting.

2.3 Structural changes

Implementation of structural changes

Modifications, changes or reworking, e.g. additional threads, holes, or safety devices, can damage the product or impair its functionality or safety.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Only use original spare parts and spares authorized by SCHUNK.

2.5 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction in the service life of the product

- Make sure that the product is only used within its defined application parameters.
- Ensure that the product is of a sufficient size for the application.
- Ensure that maintenance and lubricating intervals are observed.
- When machining, use only coolant emulsions with anti-rust additives.
- Depending on the operating conditions, the function must be checked after a certain period of operation.

2.6 Material limitations

The product is made of steel alloys, elastomers, aluminum alloys, electronic circuit boards, electronic components and brass. In addition, Microgleit LP 410 grease, Branotect anti-rust oil and Renolit HLT2 are incorporated into the product as auxiliary and operating materials. The safety data sheet for Microgleit LP 410 can be found at **www.schunk.com**.

2.7 Chuck Jaws

Requirements of the chuck jaws

When using chuck jaws, please observe the following rules:

- Change chuck jaws at a standstill and without a clamped workpiece.
- Do not use welded jaws.
- Design the chuck jaws to be as low as possible. The clamping point must be as close as possible to the housing. (clamping points at a greater distance cause higher surface pressures in the jaw guides and can significantly reduce the clamping force.)
- If the clamping point is at a greater distance from the housing, the clamping force must be reduced.
- After a collision, the clamping device and the chuck jaws must be subjected to a crack detection test before being used again. Replace damaged parts with original SCHUNK spare parts.
- The chuck jaw mounting screws and if present, the T-nuts, must be replaced if there are signs of wear or damage. Only use screws of quality grade 12.9 in compliance with the specified tightening torques. For clamping devices with fine serration, the jaw mounting screws must be screwed into the holes closest to the clamping point.

2.8 Personnel qualifications

Inadequate qualification of personnel

Any work on the product by inadequately qualified personnel can lead to serious injuries and considerable material damage.

- All work must be performed by appropriately qualified personnel.
- Personnel must have read and understood the complete manual before beginning any work on the product.
- Observe country-specific accident prevention regulations and the general safety notes.

The following personnel qualifications are required for the various activities on the product:

Qualified electrician

Qualified electricians have the professional training, knowledge, and experience to work on electrical systems, to recognize and avoid potential dangers, and know the relevant standards and regulations.

Specialist personnel

Specialist personnel have the specialized training, knowledge, and experience to perform the tasks entrusted to them, to recognize and avoid potential dangers, and know the relevant standards and regulations.

Instructed person

Instructed persons have been instructed by the operator regarding the tasks entrusted to them and the potential dangers of inappropriate behavior.

Manufacturer's service personnel

The manufacturer's service personnel have the specialized training, knowledge, and experience to perform the work entrusted to them and to recognize and avoid potential dangers.

2.9 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff in the event of a danger that may interfere with their health or safety at work.

2.10 Transport

Handling during transport

Incorrect handling during transport can make the product unsafe and risks the danger of serious injuries and considerable material damage.

- During transport and handling, secure the product to prevent it from falling.
- Use the transport thread on the clamping device.

2.11 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly can make the product unsafe and can risk the danger of serious injuries and considerable material damage.

- All work must only be performed by appropriately qualified personnel.
- Secure the system against accidental operation during all work.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

2.12 Protection during commissioning and operation

Falling or violently ejected components

Falling and ejected components can lead to serious injury or death.

- Take suitable protective measures to secure the danger zone.

2.13 Notes on safe operation

Incorrect manner of working by personnel

An incorrect manner of working can make the product unsafe and risks serious injuries and considerable material damage.

- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media.
  Products for special ambient conditions are excluded.
- Rectify malfunctions as soon as they occur.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention, and environmental protection regulations for the application field of the product.
- Do not start the machine spindle until the force has built up in the chuck jaw and clamping is complete in the permissible operating range.
- Unclamping may only occur once the machine spindle has come to a standstill.

2.14 Disposal

Handling of disposal

Incorrect handling during disposal can make the product unsafe and risks serious injuries and considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.15 Fundamental dangers

General

- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- Do not reach into the open mechanism or movement area of the product during operation.

2.16 Protection against dangerous movements

Safe condition

1. Clamping force block with workpiece:
   Workpiece clamped outside the end positions, clamping force block without applied drive system voltage.
2. Clamping force block without workpiece, without applied drive system voltage.

Unexpected movements

If the system still retains residual energy, serious injuries can be caused while working on the product.

- Establish a safe state, switch off the energy supply of the drive system, ensure that no residual energy remains and secure against inadvertent reactivation.

2.17 Notes on particular risks

⚠ WARNING

Risk of injury in the event of workpiece loss due to component failure on the product as a result of exceeding the technical data.

- The product is only allowed to be used within the scope of its technical data.

⚠ WARNING

Danger of crushing due to the chuck jaws moving to the workpiece during the clamping procedure when loading and unloading manually.

- Do not reach between the workpiece and the chuck jaw during the clamping procedure.
- Implement the safety functions according to the integrator's risk assessment.

⚠ WARNING

Risk of injury from falling parts during transport, assembly and disassembly of the product and its accessories.

- Use suitable load handling equipment for transport.
- Do not linger in the danger zone.
- Wear protective equipment (protective shoes).

⚠ CAUTION

Ergonomic risk to the musculoskeletal system when lifting and transporting the product using manual force.

- Use load handling equipment for lifting and transporting.

⚠ CAUTION

Allergic reactions or irritation due to skin or eye contact with lubricants on the product.

- In case of foreseeable contact with lubricants on the product (e.g. when lubricating or cleaning),
- wear protective equipment (protective gloves, protective goggles).

3 Technical data

Communication system	IO-Link
Pressure medium (air purge)	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Repeat accuracy [2] [mm]	0.01
Max. speed of the machine table [rpm]	100
Supply voltage IO-Link [VDC]	24
Supply voltage drive system [VDC]	24
Quiescent current [mA]	70
Average current consumption [3] [mA]	800
Max. current peak [4] [mA]	5000
Installation position	any
Operating temperature [°C]	+5 to +60
Storage temperature [°C]	-20 to +80
Noise emission [dB(A)]	≤70

Variant	Stroke per jaw [mm]	Max. clamping force [1] [kN]	Max. jaw height [mm]	Jaw speed [5] [mm/s]	Weight [kg]
KSE3 100	2	18	60	0.3	4.2
KSE3 140	3	30	60	0.4	8.8
KSE3 160	3	35	60	0.4	12.8
KSE3-LH 100	6	8	150	0.7	4.3
KSE3-LH 140	7	15	120	0.8	8.9
KSE3-LH 160	8	15	200	0.8	12.9

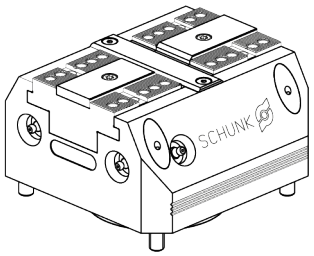
[1] Clamping force is the arithmetic sum of the individual forces occurring at the chuck jaws at distance "H" (see also catalog).

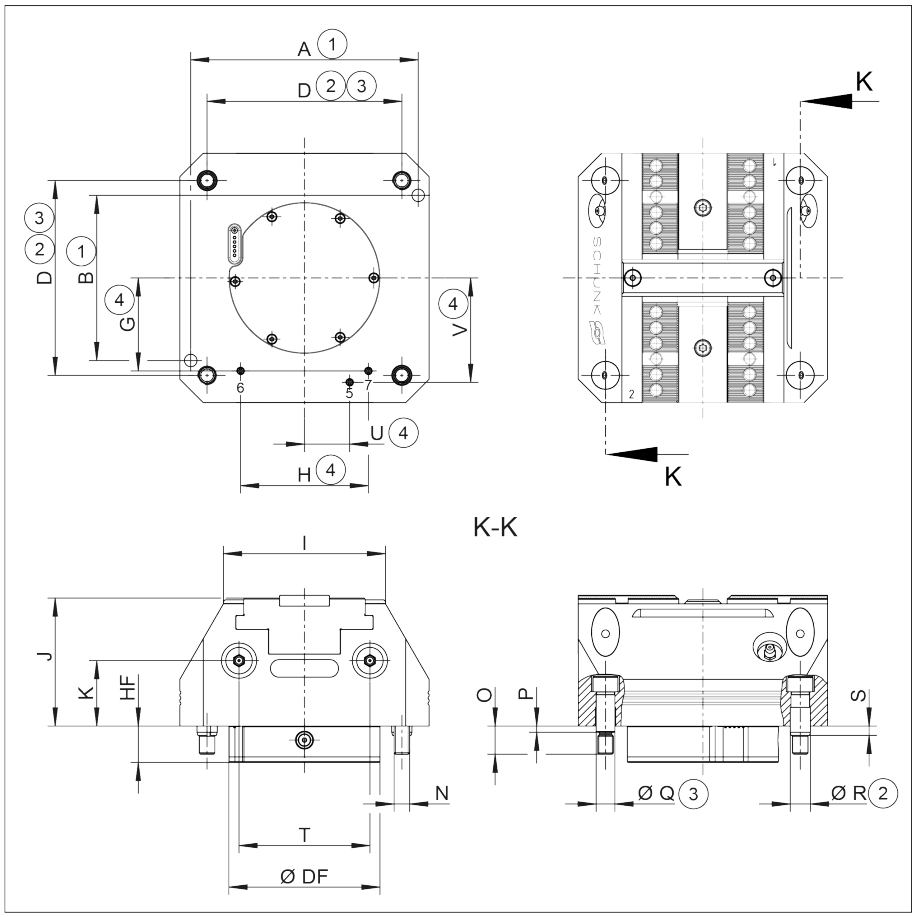
[2] End position spread after 100 consecutive strokes.

[3] Average current consumption over one clamping cycle (clamping / opening)

[4] Current peak max. 1 time over one clamping cycle

[5] Maximum possible travel speed. If lower clamping forces are set, the travel speed will be slower.





1	Clamping sleeve ±0.04 mm to clamping center
2	Fitting screw ±0.02 mm to clamping center
3	Only for size 140 & 160

Dimension	Size KSE3 / KSE3-LH		
	100	140	160
D	80	110	125
G	34.5	51.8	59.7
H	55	74	82
HF	28.35	28.35	28.35
Ø DF	97	97	97
I	64	91	104
J	69.2	72.7	82.2
K	36	38	42
N	M8	M8	M10
O	15	15.5	18
P	4	3.5	4
Ø Q	10f7	10f7	12f7
Ø R	11	11	13
S	4.5	5.5	6
T	54	76	84
U	18.7	26	29
V	40	58.5	67

4 Assembly and connection

The numbers shown for individual components refer to the illustrations for assembly or connections of the clamping force block.

⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

⚠ WARNING

Danger of crushing due to the product approaching the machine table during assembly.

- Do not reach between the product and machine table during assembly

⚠ WARNING

Risk of injury due to rotation movements of the product.

When the product is commissioned, resulting rotation and swivel movements may catch or pull in adjoining components or limbs.

- The danger zone must be surrounded by a protective enclosure during operation.
- Follow the safety and accident-prevention regulations when operating the product, especially when working with machine tools and other technical equipment.

⚠ WARNING

Risk of injury due to hot surfaces!

Touching hot surfaces can cause burns.

- Before carrying out any work on the product, make sure that all surfaces have cooled down to the ambient temperature.
- Wear suitable protective equipment, especially protective gloves.

⚠ CAUTION

Danger of abrasions due to rough components of the product and its accessories, which may slip out of your hands during assembly.

- Wear protective equipment (protective gloves) when working on the product and when handling its accessories

⚠ CAUTION

Risk of injury from electric shock if the clamping device is not yet fitted (open interface)

Only connect the interface to the power supply after installation is complete

⚠ CAUTION

Risk of injury due to short circuit if the clamping device has not yet been fitted (open interface)

Only connect the interface to the power supply after installation is complete

4.1 Tightening torques for screws

Tightening torques to mount the clamping system on the machine table (screw quality 10.9)

Screw size	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Tightening torque M_A (Nm)	4.2	7.5	13	28	50	88	120	160	200	290	400	500

Tightening torque for mounting top jaws on the TANDEM clamping force block (screw quality 12.9)

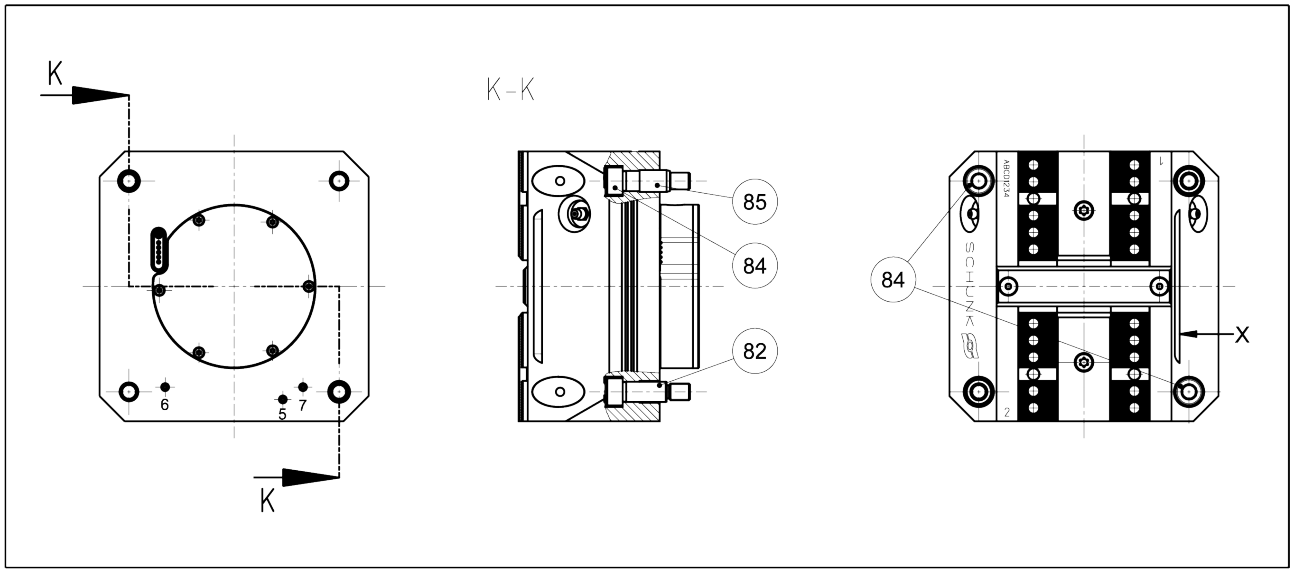
Screw size	M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
Tightening torque M_A (Nm)	5	9	15	32	62	108	170	262	510	880

Tightening torques for fastening the rigid contact interface

(Screw quality A2-70)

Schraubengröße	M2
Tightening torque M_A (Nm)	0.3

4.2 Assembly of the Clamping Block on the machine table



82	Fitting screw Ø f7 (▶ 9.3 [🗋 27])
84	Screw DIN EN ISO 4762
85	Clamping sleeve DIN EN ISO 13337

NOTE

- Surface **"X"** is parallel to the guideway of the base jaws (item 2) so the clamping force block can be aligned on the machine table or to check the positioning.

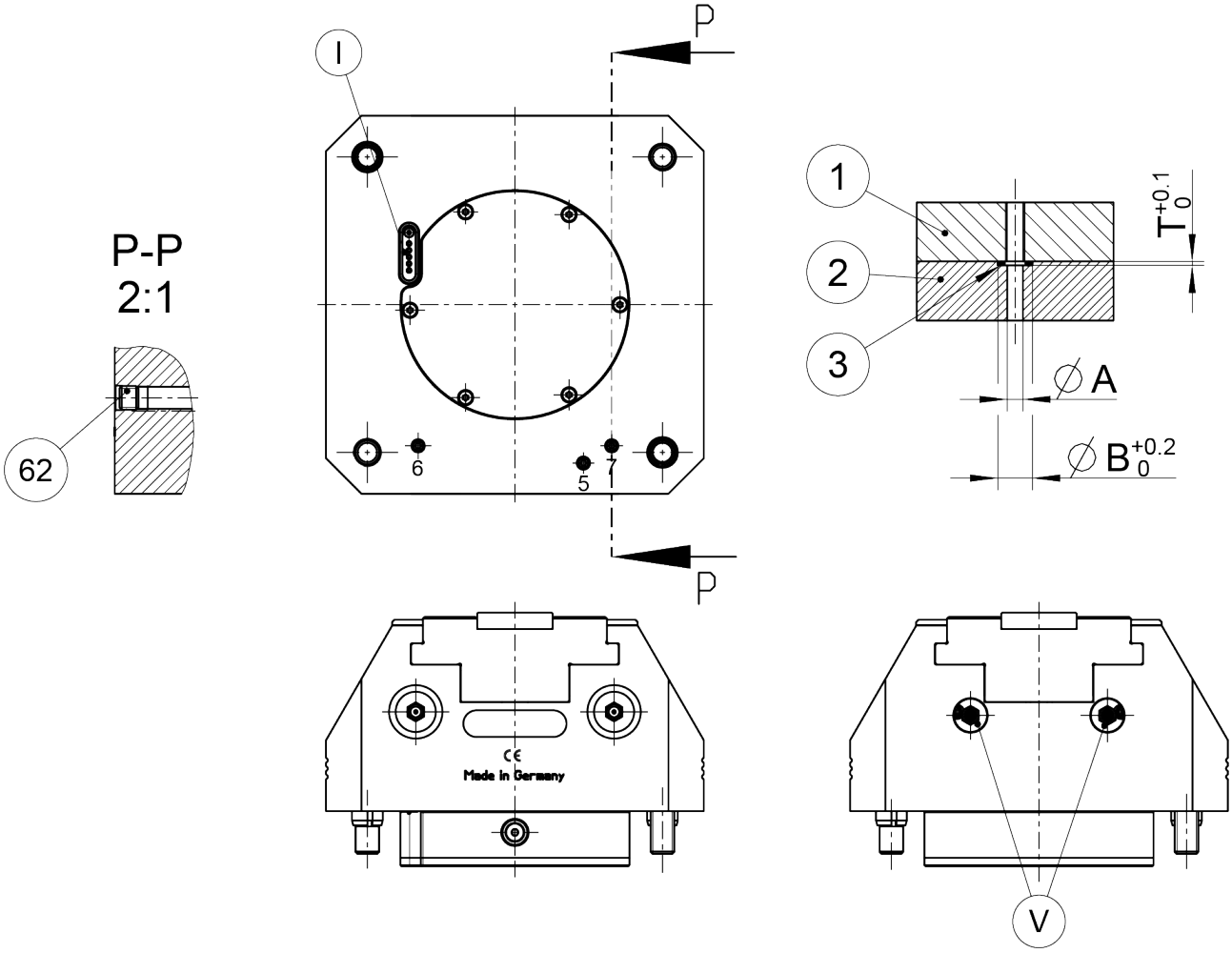
Assembly with clamping sleeves:

Mount the clamping force block on the machine table together with clamping sleeves (item 85) and screws (item 84).

Assembly with fitting screws:

There are two fittings in the housing (item 1) that, along with the fitting screws (item 82), are used to center the clamping force block on the machine table with repeat accuracy. Do not realign the clamping force block after removing it from the machine table (e.g., after replacing the seals). When using fitting screws (item 82), these are used instead of the clamping sleeves (item 85) and two of the four screws (item 84).

4.3 Connecting the clamping force block



I	OPEN (front)
V	Coolant drainage / connection for air purge (front)
1	Clamping system
2	Adapter
3	Sealing element
5	Bottom connection for coolant drain or use for air purge
6	Bottom connection for lubrication (one-sided supply, left)
7	Bottom connection for lubrication (one-sided supply, right)

NOTE

- For vertical installation, the openings of the coolant drain (V) must always face downwards

NOTE

Please refer to the installation drawing for precise information on the installation space for the product. The electronic rigid contact interface is required for the installation space (ID no. 1521278). This is not included in the scope of delivery and must be ordered as an accessory.

4.3.1 Supply lines

The product can be controlled on the bottom side via connection 5 with air purge.

When using the air purge via connection 5, the two sound absorbers (V) must be removed and replaced by set-screws (item 93), ▶ 9.2 [🗋 27].

The threads for hose-free, direct connection are not designed for pneumatic fittings.

Hose-free direct connection		100	140	160
Connection 5 – 7	ØA [mm]	4	4	4
	ØB [mm]	8.8	8.8	8.8
	T [mm]	1.0	1.0	1.0
	O-Ring* [mm]	Ø 6 x 1.5	Ø 6 x 1.5	Ø 6 x 1.5

*Included in accessory kit and sealing kit

Requirements for compressed air supply: Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]

Unconditioned compressed air contains dust and oil particles and moisture, all of which can lead to malfunctions or premature wear in the clamping force block.

The sizes 140 and 160 have two more base connections (**6/7**) for direct lubrication through the machine table. These connections come sealed on delivery with set-screws (item 62).

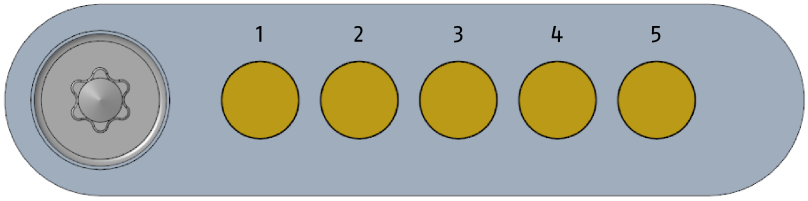
4.3.2 Electrical connection

The product features a 5-pin spring contact interface. This meets a 5-pole rigid contact interface in the adapter plate on which the product is mounted. The customer must install the electrical rigid contact interface in the adapter plate, connect it electrically and test it. The screw torques ▶ 4.1 [🗋 16] and cable cross-sections must be observed. The rigid contact interface (ID number 1521278) is not included in the scope of delivery of the clamping force block and must be ordered as an accessory.

NOTICE

Do not use excessive temperatures when attaching the cables to the rigid contacts. This can damage the rigid contacts.

The assignment of the rigid contact can be found in the following figure and table.



NOTE

Both electronic interfaces must be clean and dry during assembly. A damp electronic interface leads to corrosion on the contacts, which in turn can cause the product to malfunction.

Pin	Assignment	Function	minimum cross section	IO-Link connection port type		
				Power supply unit	Class A	Class B
1	2 L+	Drive unit +24 VDC Power	0.25 mm²	X	-	X
2	2 L-	Drive unit GND	0.25 mm²	X	-	X
3	L+	IO-Link +24 VDC Power	0.25 mm²	-	X	X
4	L-	IO-Link GND	0.25 mm²	-	X	X
5	C/Q	IO-Link Communication	0.25 mm²	-	X	X

SCHUNK recommends making the connection with an M12 square flat plug (see Franz Binder GmbH & Co. Elektrische Bauelemente KG, order number 99 3443 100 05).

5 Function

The product offers the option of reducing the clamping force and pre-positioning the jaws to a defined stroke. All software functions are described in the corresponding software manual. Therefore, only the setting of the clamping force is described below.

⚠ WARNING

Risk of injury due to losing pallets or workpieces in the case of incorrect actuation caused by incorrect operation.

- Disconnect the energy supply of the drive unit after locking.
- Use safety switches.
- The danger zone must be surrounded by a protective enclosure during operation.

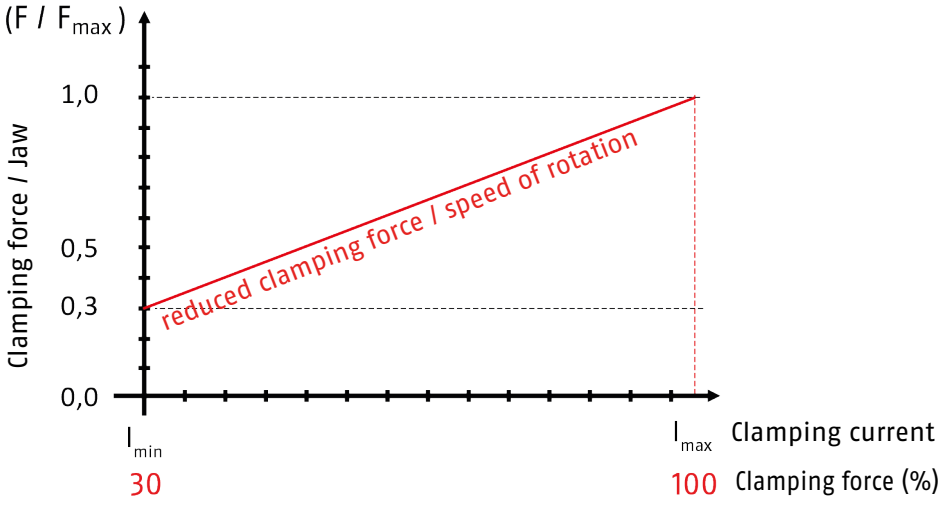
5.1 Adjusting the clamping force

The maximum clamping force (= 100 %) is achieved with the nominal engine speed and the preset current value for clamping. For clamping forces <100% of the nominal clamping force, both the current and the motor speed are reduced. To ensure reliable operation, the clamping force must not fall below 30 % of the maximum clamping force. In order to set the clamping force optimally, it is recommended to use a clamping force tester (SCHUNK IFT SST (ID number: 1475766)).

NOTICE

When carrying out a clamping movement, a minimum stroke of ≥0.2 mm must be maintained. If a clamping movement starts at aposition with a distance of less than 0.2 mm to the clamping point, reliable clamping force regulation cannot be guaranteed. This can lead to damage to the workpiece or the clamping force block. This also applies to movements with the "Release to insertion position" command (see software manual) in the direction of the clamping point.

Note: The clamping force depends on the lubrication condition. Theclamping force should be defined in lubricated condition. Observe lubrication intervals, ▶ 6.2 [🗋 22].



6 Maintenance and care

6.1 Notes

The KSE3 is not intended for disassembly by the customer. The specified maintenance work therefore does not require disassembly. If disassembly is required, the product must be sent to SCHUNK.

6.2 Maintenance and lubrication intervals

Clean the outside of the product and check for damage and wear.

The following maintenance work should be carried out after the specified cycle numbers or at the latest after the monthly data.

Maintenance work	Interval [cycles/month]
Lubricate	10,000 / 1

6.3 Greasing areas / lubricants

Greasing areas	Lubricants
Lubrication nipple	microGLEIT LP 410
Central lubrication	microGLEIT LP 410

(Product information for microGLEIT LP 410 can be requested from SCHUNK).

Alternative lubricant

LINOMAX plus can also be used as an alternative to microGLEIT LP 410. However, the specified clamping forces exclusively refer to the microGLEIT LP 410 used by SCHUNK. When using LINOMAX plus, the clamping forces can be lower.

6.4 Maintenance work

6.4.1 Lubricate

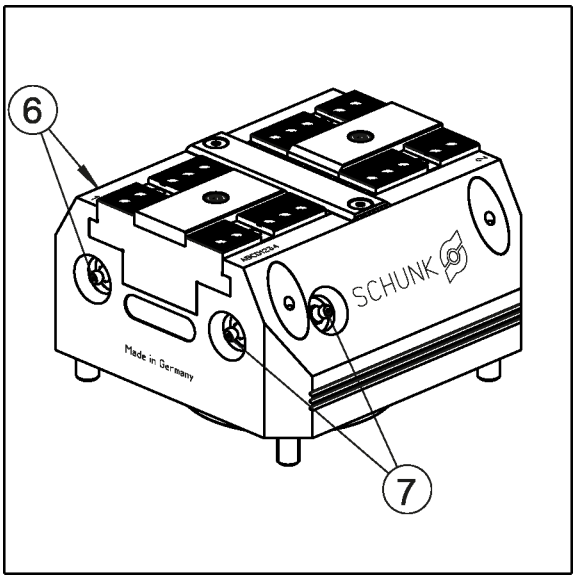
⚠ CAUTION

Allergic reactions or irritation due to skin or eye contact with lubricants on the product.

- In case of foreseeable contact with lubricants on the product (e.g. when lubricating or cleaning), wear protective equipment (protective gloves, protective goggles)

To maintain reliable function and high quality of the product, it has to be regularly lubricated. This can be done with a hand lever press for greases or by means of central lubrication (Only sizes 140 & 160 feature a central lubrication).

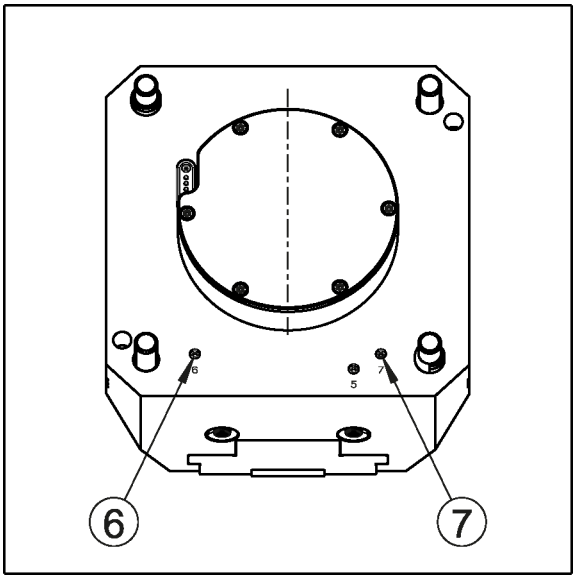
Manual lubrication



- Press grease either into the grease nipples at the side or front of the respective supply line (6/7).
- Only lubricate in the open position.
- After greasing, run through the complete stroke several times.
- Grease to be used and lubrication intervals, ▸ 6.3 [🗋 22].

Size	Grease quantity (strokes per grease nipple)
100	2
140	2
160	2

Central lubrication (Sizes 140 & 160)



- To use central lubrication, the set-screws of the factory sealed connections (6 &7) must be removed.
- For proper lubrication, both supply lines must be connected.
- The central lubrication system must be suitable for greases of NLGI 2 classification.
- Only lubricate in the open position.
- After greasing, run through the complete stroke several times.
- Grease to be used and lubrication intervals, ▸ 6.3 [🗋 22]

Size	Grease quantity (per connection) [cm³]
140	4
160	4

7 Troubleshooting

Clamping force block chuck jaws will not move

Possible cause	Solution(s)
Power supply interrupted	Check power supply
Connections of the electronics mixed up	Check pin assignment and correct if necessary
Reference run not performed	The product must run through a reference run so that stroke positions can be controlled
Corroded electronics interface	The product must be sent to SCHUNK for maintenance
Incorrect reference value entered in the software	Check the reference value in the software for plausibility.If necessary, follow the software instructions

Piston will not move

Possible cause	Solution(s)
Chuck piston screw broken (overload)	Send clamping system to SCHUNK for repairs
Spindle broken (overload)	Send clamping system to SCHUNK for repairs

Clamping force block does not complete stroke

Possible cause	Solution(s)
Chips or dirt between covering strip and base jaws	Unscrew the covering strip (item 8) and remove chips and dirt

Clamping force getting weaker

Possible cause	Solution(s)
Inadequate lubrication	Lubricate the lubricating nipples with microGLEIT LP 410 ▶ 6 [🗋 22]

Clamping force block movement jerky

Possible cause	Solution(s)
Steel guide rollers on sliding surfaces not greased	See chapter "Maintenance and Care" ▶ 6 [🗋 22]

8 Storage

When storing the product for a longer period of time, observe the following points:

- Clean the product and lubricate it lightly.
- Store the product in a suitable transport container.
- Only store the product in dry rooms.
- Protect the product from major temperature fluctuations.

NOTE: Before recommissioning, clean the product and all attachments, check for damage, functionality and leaks.

9 Sealing kits, accessory kits and parts lists

When ordering spare parts, the type, size and, if possible, the serial number of the clamping force block must always be stated to avoid delivery mistakes.

Seals, sealing elements, fittings, springs, bearings, screws, wiper bars and parts that come into contact with the workpiece are not covered by the warranty.

9.1 Sealing kit lists

There is one sealing kit for the sealing elements of the bottom connections.

Sealing kit *	ID
Size 100	1529183
Size 140	1502963
Size 160	1529183

* For included items, see note **X** in the following Parts List chapter. Seals are wearing parts and are recommended to be replaced during maintenance. The sealing kit can only be ordered as a complete set. The enclosed small 0-rings are not required for size 100.

9.2 Accessory kits

The accessory kit contains all fastening elements and sealing elements required for mounting the product. Screws for fastening the top jaws are also included.

Accessory kit *	ID
Size 100	1360209
Size 140	1549334
Size 160	1549335

* For included items, see note **Z** in the following Parts List chapter. The enclosed small 0-rings are not required for size 100. For sizes 140 and 160, only three pieces are required for bottom-side lubrication and purge air.

9.3 Parts lists

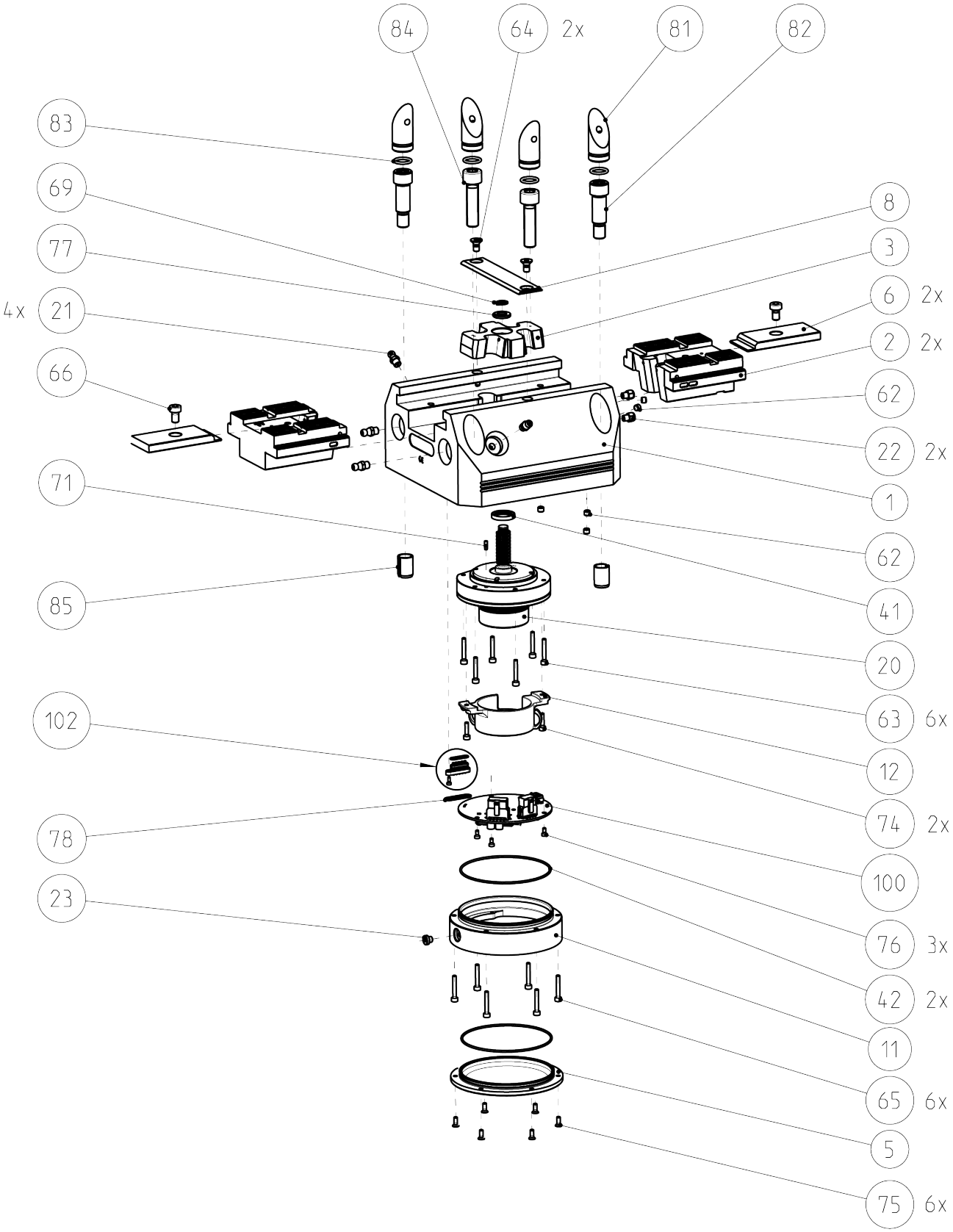
Item	Designation	Quantity	Note
1	Body	1	*
2	Base jaw	2	*
3	Piston	1	
5	Drive unit cover	1	
6	Guide strip	2	
8	Covering strip	1	
11	Drive unit housing	1	
12	Engine cover	1	
20	Drive unit	1	
21	Lubrication nipple	4	
22	Silencer	2	
23	Locking screw	1	
41	Sealing ring	1	
42	O-ring	2	
62	Set-screw	5	140 / 160
63	Screw	6	
64	Screw	2	
65	Screw	6	
66	Screw	2	
69	Screw / Circlip	1	
71	Cylindrical pin	1	
74	Screw	2	
75	Screw	6	
76	Screw	3	
77	Washer	1	
78	O-ring	1	**X** / **Z**
81	Plug	4	**Z**
82	Fitting screw	2	**Z**
83	O-ring	4	**Z**
84	Screw	4	**Z**
85	Clamping sleeve	2	**Z**
86	Screw	8	100 / 160 / **Z**
87	O-ring	3	140 / 160 / **X** / **Z**
93	Set-screw	2	**Z**
100	Electronic unit	1	
102	Electrical interface	1	

Parts list key

100	for size 100	**X**	included in the sealing kit
140	for size 140	**Z**	included in accessory kit
160	for size 160		

* Individual components are specially tuned to one another and cannot be replaced by the customer.

10 Assembly drawings



11 Manufacturer certificate

Manufacturer / Distributor:	H.-D. SCHUNK GmbH & Co. Spanntechnik KG Lothringer Str. 23 D-88512 Mengen
Product:	Electromechanical clamping System
Designation:	Electromechanic TANDEM clamping force block
Type designation:	KSE3, KRE3

Heinz-Dieter SCHUNK GmbH & Co. Spanntechnik KG certifies that the above-mentioned products, when used as intended and in compliance with the operating manual and the warnings on the product, are safe according to the national regulations and:

- a **risk assessment** has been carried out in accordance with ISO 12100:2010.
- an **operating manual** for the assembly instructions has been created in accordance with the contents of the Machinery Directive 2006/42/EC Annex I No. 1.7.4.2. and the contents of the provisions of Annex VI of the Machinery Directive 2006/42/EC.
- **Markings** have been made in accordance with EN 1550:1997+A1:2008 Section 6.3.1, VDMA 34192:2019 Section 6.3 or ISO 16156:2004 Section 6.3. The requirements of Annex I No. 1.7.3. of the Machinery Directive 2006/42/EC have been complied with.
- the relevant basic and proven safety principles of the Annexes A to C of **ISO 13849-2:2012**, taking into account the requirements of the documentation have been observed for the component. The Parameters, limitations, ambient conditions, characteristic values, etc. for proper operation are defined in the operating manual.
- an $MTTF_D$ value of 150 years can be estimated for mechanical components using the informative procedure in Table C.1 of ISO 13849-1:2015.
- the **fault exclusion** against the fault "Breakage during operation" regarding Annex A to C in compliance with the parameters, limitations, ambient conditions, characteristic values and maintenance intervals, etc., specified in the operating manual.

Harmonized Standards applied:

- **ISO 12100:2010** Safety of machinery - General principles for design - Risk assessment and risk reduction

Other related technical Standards and specifications:

- **VDMA 34192:2019** Safety requirements for clamping devices for use on machines

Signature: see original declaration

Mengen, 04th of June 2024 p.p. Philipp Schräder; Head of Engineering Design

12 EU declaration of conformity

in accordance with Directive 2014/30/EU (electromagnetic compatibility), Annex IV of the European Parliament and Council of 26 February 2014.
The manufacturer bears sole responsibility for issuing this EU declaration of conformity.

Manufacturer/ Distributor	H.-D. SCHUNK GmbH & Co. Spanntechnik KG Lothringer Str. 23 D-88512 Mengen

We hereby declare that the product described below is in conformity with the essential health and safety requirements of Directive 2014/30/EU in its design and construction and in the version placed on the market by us at the time of this declaration. The declaration is rendered invalid if modifications are made to the product.

Product designation:	TANDEM electrical clamping force block
Type designation:	KSE3 100 IOL, KSE3-LH 100 IOL, KSE3 140 IOL, KSE3-LH 140 IOL, KSE3 160 IOL, KSE3-LH 160 IOL
ID number:	1357129, 1465897, 1465965, 1465966, 1465973, 1465974
Serial number:	- (continuous)

The object of the declaration described above complies with the following harmonization legislation:

2011/65/EU	RoHS Directive

European harmonized standards applied:

DIN EN ISO 12100:2011-03	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 55011:2016 + A1:2017	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
EN 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
EN 61000-6-4:2019	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
EN 61800-3: 2018	Adjustable speed electrical power drive systems - Part 3: EMC requirements including special test procedures

Related technical standards and specifications:

IEC 61131-9:2021

Person authorized to compile the technical documentation:
Philipp Schräder, Address: see manufacturer's address

i. V. Philipp Schräder

Mengen, 17th of December 2024 p.p. Philipp Schräder; Head of Engineering Design

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