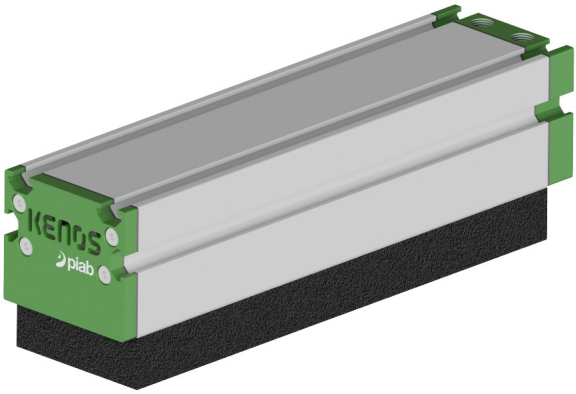
MANUAL

KVG60 Series



piab

English

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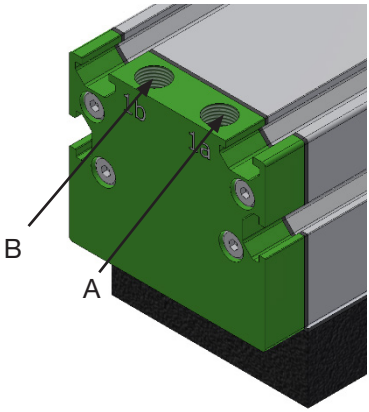
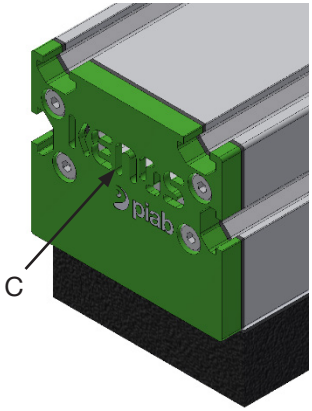
Overview

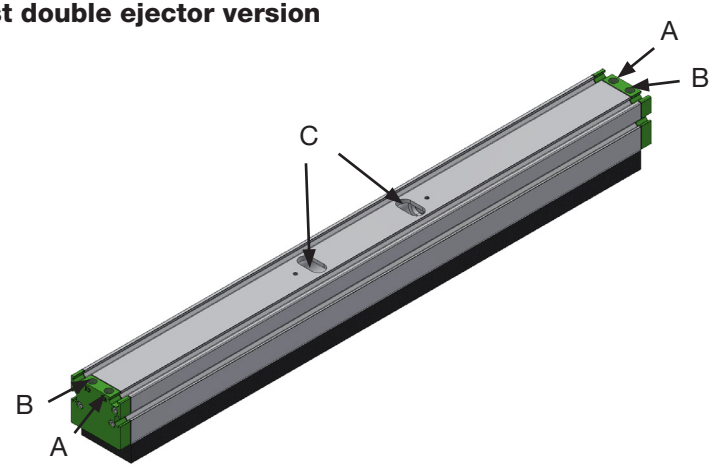
Part list single ejector version





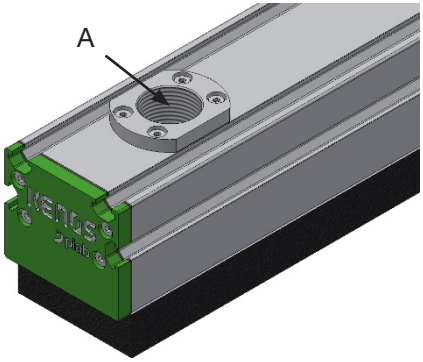
Pos.	Description
A	Connection G 1/8” compressed air (1a)
B	Connection G 1/8” blow-off or vacuum monitoring (1b)
C	Inline ejector exhaust, DO NOT COVER. The aspirated air escapes from the exhaust cover through the written Kenos

Part list double ejector version



Pos.	Description
A	Connection G 1/8” compressed air (1a)
B	Connection G 1/8” blow-off or vacuum monitoring (1b)
C	Ejector exhaust, DO NOT COVER. The aspirated air escapes from the two exhaust slots.

Part list BL version

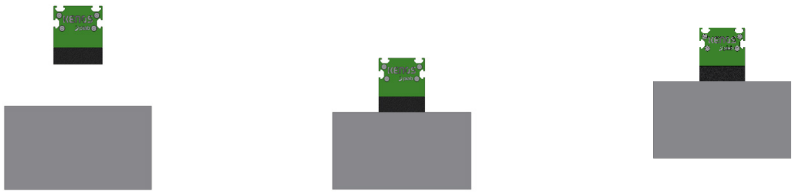


Pos.	Description
A	Vacuum supply G 3/4” connection

Work cycle details

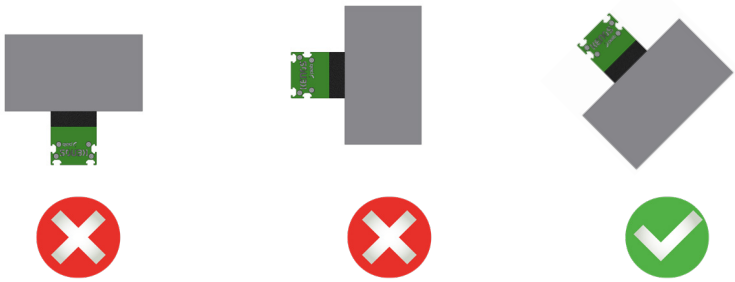
The working cycle for a KVG gripping module follows the different technologies involved:

Check valve balls version(CVL/CVM/CVH):



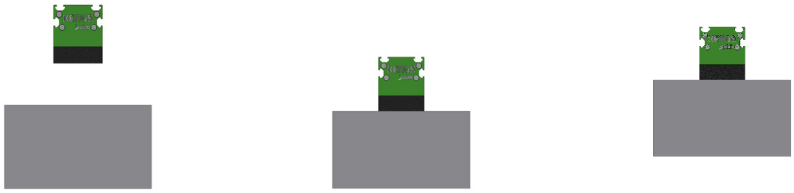
1. Positioning the module at the object to handle with the grip pad parallel to the grip surface.
2. Lowering of module until contact with the grip surface
3. Sequential activation of vacuum if multiple modules are present
4. Pick-up of object to handle
5. Drop-off of object with removal of vacuum and blow-off if necessary

N.B. If vacuum is activated before KVG is in contact with the workpiece, the workpiece will not be gripped because the check valves will be closed and not allowed the handling.



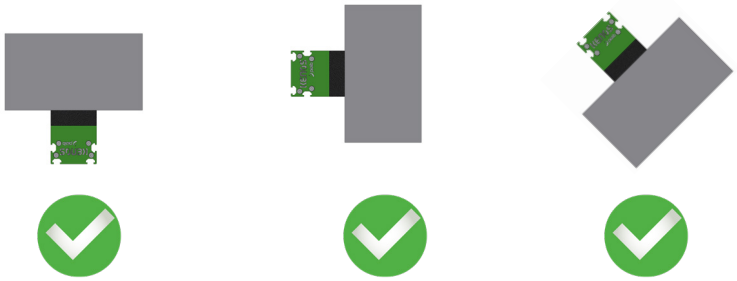
- The KVG CVL/CVM/CVH gripper module was designed for horizontal use; turning the module upside down by 180°, or vertical grips are not possible. Maximum tilt allowed is 45°.
- Stopping or passing through the work area of the gripper module is prohibited, as in case of electrical or pneumatic supply failure, the load handled by the module is released.
- The maximum vertical acceleration allowed is 5 m/s².
- Note that when check valves are present in the KVG module, the vacuum value you can measure through a vacuum switch cannot be used as indication for a safe grip of the object. This because we are detecting the vacuum level inside the gripping module and, thanks to the acting of the CV, it will be high even when the object is not present (CV will close).

Check valve piSAVE sense 02/60 (CV19):



1. Positioning the module at the object to handle with the grip pad parallel to the grip surface.
2. Lowering of module until contact with the grip surface
3. Sequential activation of vacuum if multiple modules are present
4. Pick-up of object to handle
5. Drop-off of object with removal of vacuum and blow-off if necessary

N.B. If vacuum is activated before KVG is in contact with the workpiece, the workpiece will be gripped only if the porosity will not exceed the minimum value (0.001 Nl/s at -45Kpa/0.0002 scfm at 13.3 -inHg) for opening each valve.

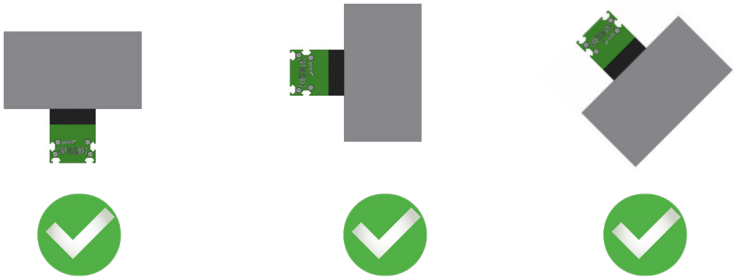


- ► Stopping or passing through the work area of the gripper module is prohibited, as in case of electrical or pneumatic supply failure, the load handled by the module is released.
- ► Note that when check valves are present in the KVG module, the vacuum value you can measure through a vacuum switch cannot be used as indication for a safe grip of the object. This because we are detecting the vacuum level inside the gripping module and, thanks to the acting of the CV, it will be high even when the object is not present (CV will close).

Flow reduction (FR5/FR6/FR8/FR10):

1. Positioning the module at the object to handle with the grip pad parallel to the grip surface.
2. Lowering of module until contact with the grip surface. **For fast cycle, we suggest to activate vacuum before module is in contact with the object.**
3. Pick-up of object to handle.
4. Drop-off of object with removal of vacuum and blow-off if necessary.

N.B. In this case the activation for vacuum can be done before or after contact with the workpiece.



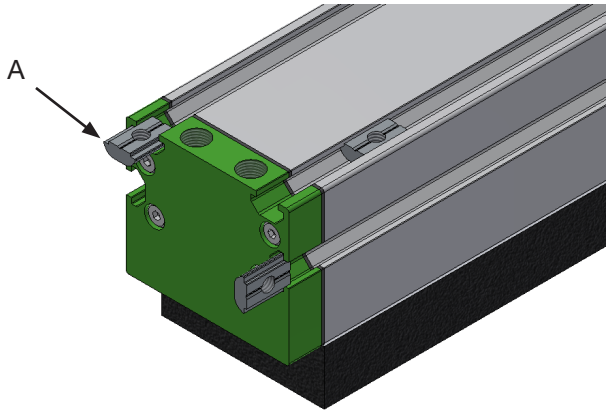
- Stopping or passing through the work area of the gripper module is prohibited, as in case of electrical or pneumatic supply failure, the load handled by the module is released.
- With the flow reduction technology, the vacuum value in the gripper is influenced by the degree of coverage of the gripper. The higher degree of coverage, the higher flow is the vacuum level measured. So in this case the vacuum switch can be used to check the grip.

Note: We recommend always running preliminary tests with original samples. We are able to perform these tests for you.

Installation

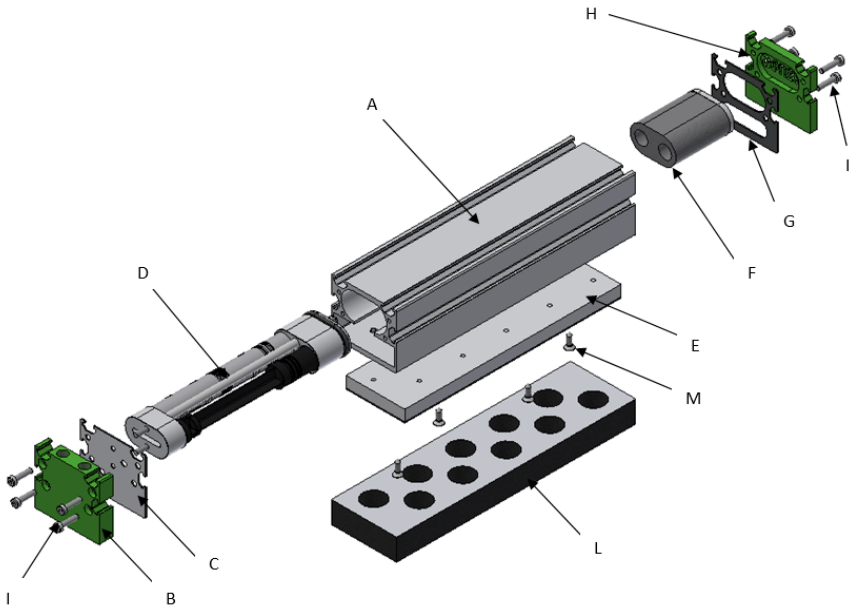
Mounting on the handling system

The gripping system is secured with the aid of slot nuts. Special slots for these nuts are available in the basic body. The gripper can be mounted either directly, via robot flange or via spring mountings. Information about the slots are present in the section dedicated to the accessories.



Pos.	Description
A	T-slot nut

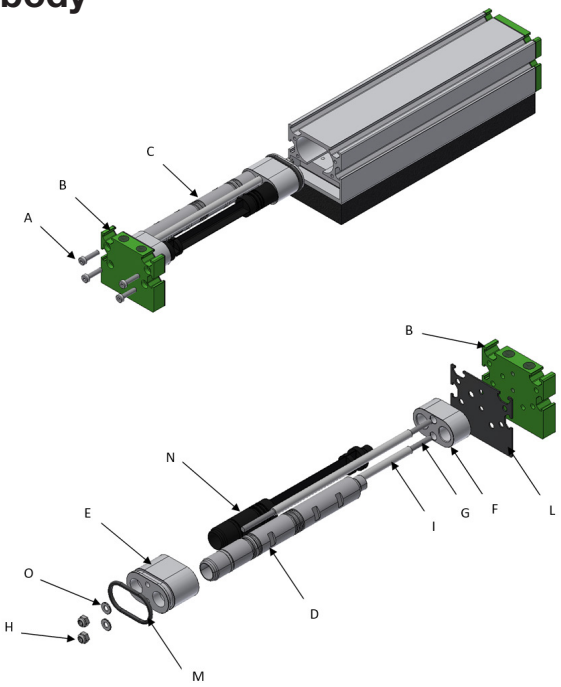
Parts diagram



Pos.	Description
A	Basic body
B	Supply cover
C	Supply cover seal
D	COAX® cartridge
E	Check valves module
F	Silencer
G	Exhaust cover seal
H	Exhaust cover
I	Cover screws
L	Technical foam

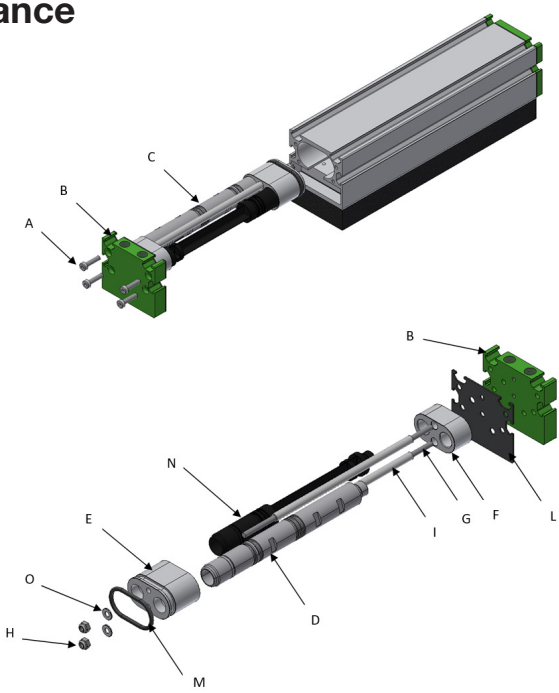
1. **Basic body** is an extruded aluminum section and is available in different lengths.
2. **Supply/exhaust cover** are made of aluminum properly finished.
3. **Technical foam** is made of EPDM FOAM.
4. **Push in ejector** build of 1 or more multistage COAX® cartridge ejector.

Ejector body



Pos.	Description
A	Cover screws
B	Supply cover
C	COAX® cartridge
D	COAX® cartridge
E	Posterior housing
F	Anterior housing
G	Tie-beam
H	Tie-beam closing nut
I	Tie-beam cover
L	Supply cover seal
M	O-ring
N	Blind Cartridge for Midi COAX®
O	Flat washer

Maintenance



Ejector maintenance

For the maintenance of the push in ejector follow these steps:

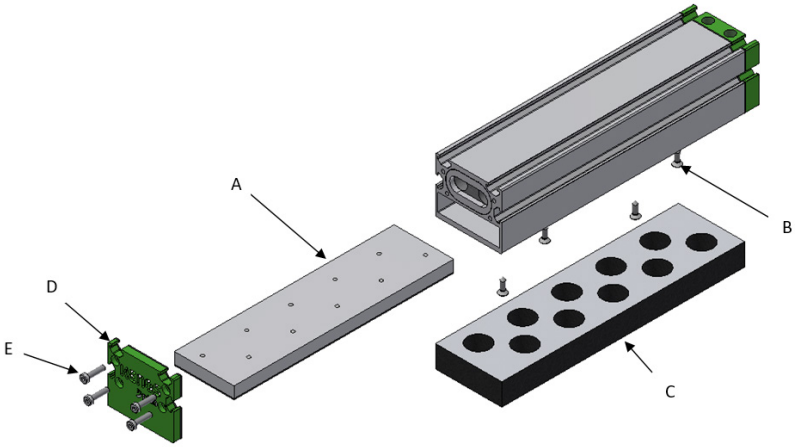
- Loosen A cover screws of the supply cover and extract the complex B+C.
- Blow and clean the ejectors with compressed air. Verify that the cartridge is intact and there are no breakages.
- Check the condition of the O-ring M, in case of damage it has to be replaced.
- Push in the complex B+C and close with A screws.

The push in ejector is modular and so it is expandable. You can, in this way, very easily increase the performance. Follow these steps:

- Loosen H nuts
- Slip off posterior housing E
- Loosen the assembly tie-beam G
- Remove blind cartridge N
- Insert a new cartridge in the free housing
- Screw the assembly tie-beam to the supply cover B
- Assembly the posterior housing E
- Fix the assembly tie-beam with H nuts

More information about ejectors is present in the accessories/spare parts section.

Check valves maintenance



Pos.	Description
A	Check valves module
B	Fixing screws check valves module
C	Technical foam
D	Exhaust cover
E	Cover screws

Maintenance

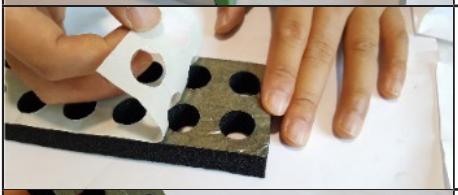
To access the check valves module, for cleaning, follow these steps with the **foam upwards** to avoid the spheres spilling during operation:

- ▶ Loosen E screws and take down the cover D
- ▶ Take off technical foam C
- ▶ Loosen B screws
- ▶ Extract check valves module A
- ▶ Clean the check valves module A with compressed air.
- ▶ Follow back the same steps to assemble the gripping system.

Foam maintenance

The foam that builds the gripping surface can be damaged during normal use. The average lifetime depends on many factors: nature of the handled objects, quality of the gripping surface, work conditions, cycle times, etc.

Foam Change

	▶ Remove the old foam. ▶ Clean the aluminum profile from any adhesive and dust residues (e.g. with solvent). ▶ Attention: Check the holes are not obstructed by any kind of residue. If they are obstructed, clean them.
	▶ Remove the silicon paper from the foam.
	▶ Align the holes of the aluminum profile with foam holes ▶ Fix the new foam on aluminum profile
	▶ Attention: Prevent formation of channels, they must be avoided.
	▶ Press the new foam
	To store the foam: ▶ Temperature (0 °C to 25 °C/32°F-77°F) ▶ Not under direct light ▶ Lay flat ▶ No dust ▶ Free from chemicals

Maintenance plan

	Daily	Weekly	Monthly	Every 6 months	Every 12 months
Check Max vacuum level of the ejector		•			
Check the vacuum (BL version)			•		
Check the check valves / FR			•		
Check the silencer			•		
Check tightenings				•	
Check the foam	•				
Check supply air pressure		•			
Check the electrical connection			•		
Check the air connection		•			
Check the general condition					•
Clean gripper exterior				•	

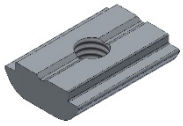
Problems/solutions

Problem	Possible reason	Solutions
Insufficient vacuum level or vacuum achieved too slowly	Operating pressure too low	Increase the pressure
	Internal diameter of pressure hose too small	Use hoses with larger internal diameter
	Damaged sealing	Check and replace if necessary
	Leak in pressure hose	Check hoses
	Dirty ejector	Clean
Object not gripped	Low vacuum level	See above
	Insufficient suction capacity	Insert one more cartridge ejector
	Dirty self-closing valves	Clean
	Lift is too fast	Slow down lift, avoid acceleration peaks (max 5 m/s^2)
	Pieces not suitable for lift with this system	Replace grip solution
	Occluded filter	Clean it
	Occluded silencer	Replace silencer
Foam wears very quickly	The system is not corrected placed on the workpiece	The gripping system must be parallel to the workpiece surface

Note: We recommend always running preventative tests with original samples. We are available for running such tests.

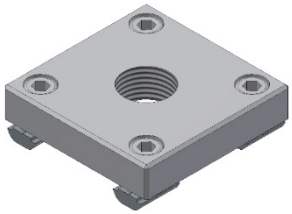
Accessories

T-slot nut kits:



Art. No	Description
0209858	T-slot nut kit 11073-M6-U8-4pcs
0209854	T-slot nut kit 11072-M5-U8-4pcs
0209851	T-slot nut kit 11071-M4-U8-4pcs
0209860	T-slot nut kit 11074-M8-U8-4pcs

Kit Flange:



Art. No	Description
0210847	KIT-FL-FX-KVG60-50-U8

Technical data

Type	Air consumption at 6 bar (Nl/s)/ 87.0 psi (scfm)
KVG.XXX.60.XXXX.CVX.S1.XX.XX	1.75 /3.71
KVG.XXX.60.XXXX.CVX.S2.XX.XX	3.5 / 7.42
KVG.XXX.60.XXXX.CVX.S4.XX.XX	7.0 / 14.84

Pneumatic technical information

Description	Unit	COAX® Si32-3 Si MIDI-cartridge (1-4 nozzles)
Feed pressure, optimal	MPa [psi]	0.6 [87]
Max vacuum at opt. pressure	-kPa [-inHg]	75 [22.1]
Air consumption at opt. pressure/nozzle	Nl/s [scfm]	1.75[3.71]
Max vacuum flow at opt. pressure/nozzle	Nl/s [scfm]	6 [12.71]

Air

Description	
Supply air connection size	8mm internal diameter by up to 2 meters (6.5ft)
Air quality	DIN ISO 8573-1 class 4

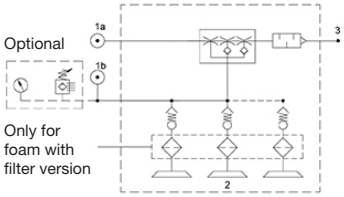
Temperature

Description	
Operating temperature environment	0-50°C (32-122F)
Operating temperature workpiece	0-50°C (32-122F)

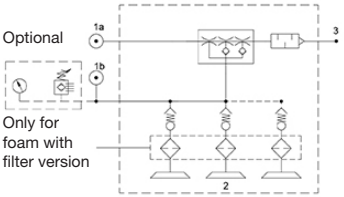
English

Pneumatic diagram

EJ version



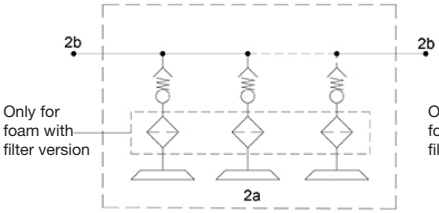
CV



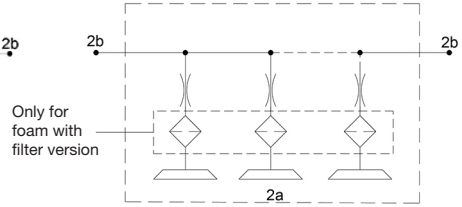
FR

1a = Pressure air supply for vacuum
1b = Pressure air supply for blow off
2 = Vacuum
3 = Exhaust

BL version



CV

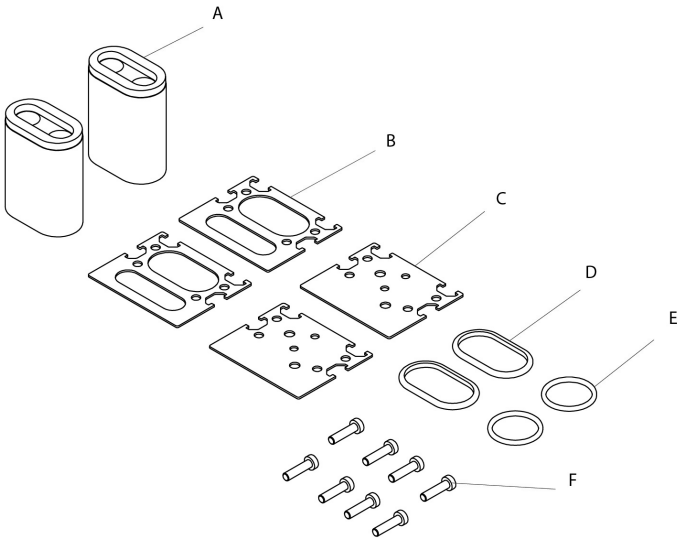


FR

2a = vacuum
2b = vacuum for blower

Spare parts

Art. No	Description
0107053	**COAX® cartridge MIDI Si32-3**



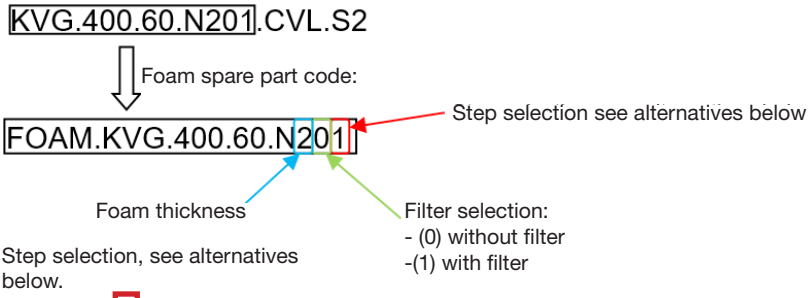
Art. No	Description
0210928	**Spare part kit KVG60**
	2x A Silencer KVG60-50
	2x B Exhaust cover seal KVG60-50
	2x C Supply cover seal KVG60-50
	2x D O-ring NBR 29x2.5 (EJ)
	2x E O-ring NBR 22x2 (BL)
	8x F Cover screw KVG60-50

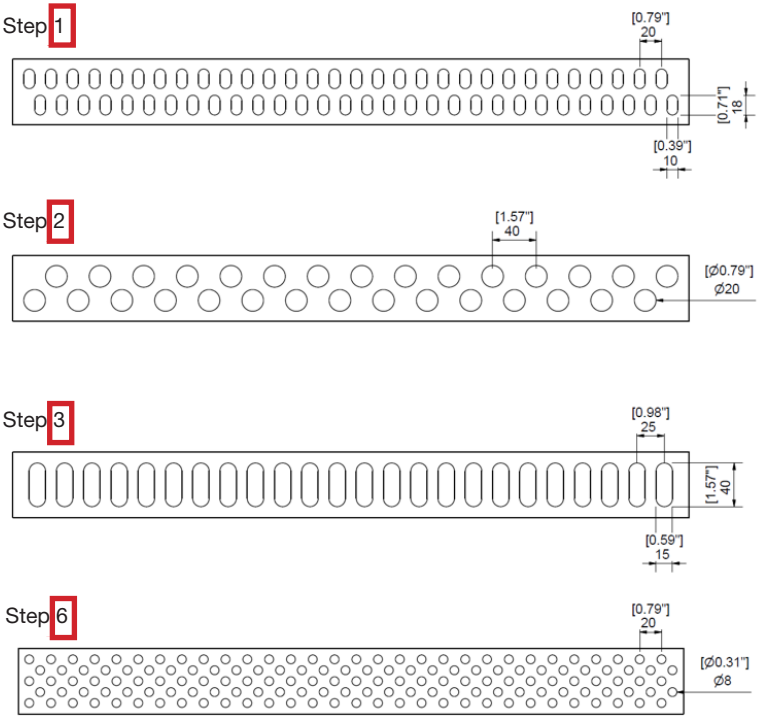
English

Foam spare parts

There are four different types of foam spare part types available;
Step1, Step 2, Step 3 and Step 6.

If you are unsure which type you have please check the part code of your configured KVG product, the first part of the code is the foam spare part code, when you put “FOAM” in front, see below.





Safety instructions

General safety instructions

The correct use of pneumatic equipment within a system is the responsibility of the system designer or the person who determines its technical specifications.
The use of safety guards is recommended to minimise the risk of injury to persons; pay close attention to the fact that compressed air may lead to the explosion of closed containers, and vacuum may lead to the implosion of closed containers. The vacuum generator, even if silenced, makes noise: if necessary, wear suitable protection.
In the event that, contrary to indications, dusts, oil mists, fumes, etc. are suctioned, these will be mixed with the discharge air of the vacuum generator and expelled via the discharge conduit; use suitable, approved air filters to avoid possible intoxications.
The discharge air has a high output speed. Do not obstruct the discharge of the gripper module.
Ensure that the components are properly secured; regularly check that connections are in good working order, as high cycles or vibrations may cause them to loosen.
Consider the possibility of pressure drops in the pneumatic supply line: then provide for a safety system that, in order to prevent injury to the operator or damage to the machine, prevents the risk of the piece being released.
Consider the possibility the electrical or pneumatic supply is interrupted, to protect persons and systems.
Consider the emergency stop when designing the system.
Consider restarting the machine after an emergency stop and machine downtime in order to avoid the risk of injury to persons and/or damage to the system.
The products in this manual are designed for implementation in industrial systems; therefore, they should not be used under application conditions different from those specified.

Pneumatic supply and connection

The supply pressure should not exceed the recommended one of 7 bar (101.5 psi).
If the compressed air contains impurities, the components may malfunction.
Install a filter upstream of the component; the filter grade should be at least 5 µm.
Air containing excessive quantities of condensate may cause the components to malfunction.
Installing condensate drains or dryers prevents these malfunctions.
For more information, see the Installation and Commissioning section.

Electric connection

Connect the cables separately from power or high voltage lines, avoiding parallel wiring or wiring in the same conduit of the same lines. Control circuits that include sensors and coils may malfunction due to the noise from these other lines.
Carefully follow the electrical wiring instructions contained in the Installation and Commissioning section, paying close attention to avoiding the short-circuiting of loads.

Assembly

Compressed air may be dangerous if used by unskilled personnel. Assembling, using and maintaining systems should solely be carried out by experienced and specially trained personnel. Both for fastening and supplying, solely use the bores and methods provided by the manufacturer. Prior to assembly/disassembly of the components, cut off voltage and pressure. Install and maintain the components only after thoroughly reading and understanding this manual.

Environment

Do not use the component in direct contact with corrosive gases, chemical products, water or vapour. For use in environments with droplets or splashes of water, oil, etc., provide suitable protective covers. Do not use the component in explosive atmospheres.
Do not use in environments subject to strong vibrations and/or impact.
Provide suitable protection in case the component is exposed to direct sunlight. Do not expose to sources of heat.

Maintenance

Maintenance must be carried out in accordance with the instructions in this manual.
Prior to any maintenance work, check the conditions to prevent the sudden release of pieces, then suspend pneumatic/electrical supply, and discharge residual pressure.

Safety instructions

- Handle the components with care
- During installation and maintenance, cut off voltage and pressure
- Modifying the components is prohibited
- Cleaning the environment and place of use is recommended
- Follow the installation and commissioning instructions
- The electrical and pneumatic connections should be permanently connected to the component

Failure to comply with the above rules may cause malfunctions, damage, injury, including with serious consequences.

Warranties

The Seller gives its Customers a five-year warranty from the receipt of the Products for vacuum pump Products (excluding electro mechanical vacuum pumps, accessories, controls and Kenos products).

- The Seller gives its Customers a one-year warranty from the receipt of the Products for allother Products (i.e. excluding vacuum pump Products but including electro mechanicalvacuum pumps, Kenos products, accessories and controls) if the failure has occurred within specified lifetime in terms of duty cycles as set out in the Product specification (if any).
- The warranty covers (i) manufacture and materials defects in the Products and (ii) if the Products do not conform to the Product specification.
- The warranty does not apply to any Product (including any component or other parts in such Products (such as suction cups, filter elements, sealing's, hoses, etc) or to the software of any Products) that (a) has been subjected to abuse, misuse, negligence, improper storage, improper handling, improper use, improper installation, abnormal physical stress, abnormal environmental or working conditions, or use, application, installation, care, control or maintenance contrary to any applicable manual or instructions for the Products issued by the Seller or good trade practice regarding the same; or (b) has been reconstructed, repaired or altered by any persons or entities other than the Seller or its authorized representatives, or have a defect as a result of fair wear and tear or wilful damage or caused by subsequent damages caused by other defective products.
- The product warranty set forth in this Section is the only warranty given by the Seller in relation to the Products. The Customer may not rely, and has not relied, on any other information, statement or warranty (express or implied), whether based on applicable law or otherwise.
- During the warranty period, the Seller shall replace or repair, at its own expense, faulty products determined by the Seller, in its sole discretion, to be covered by the warranty set out herein.
- It is at the Seller's discretion whether a faulty Product should be returned to the Seller for replacement or if it should be repaired by the Seller at the location of the Customer. Any replaced Products shall become the property of the Seller.
- The Seller is not responsible for the cost of fitting replacement parts or components of any Products in to any products or alike of the Customer.
- These Terms & Conditions shall apply to any repaired or replaced Products by the Seller.

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No need to compromise

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