

MPL5701 INSTALLATION MANUAL

Installation Clamping Module

For Automation Solutions

Hydraulic





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For the following part numbers:

- 570262 - ZERO POINT, KH20, 55KN

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0. Introduction

The Operating & Installation Manual provides the information necessary for the safe and reliable operation of the installation clamping modules. All personnel involved in installation, operation, maintenance, cleaning, or troubleshooting must read and follow this manual. All safety instructions and procedures must be strictly observed. Anyone working with this equipment must understand and comply with these instructions.

After reviewing the Operating & Installation Manual, users will be able to:

- Properly install and safely operate the installation clamping modules
- Disassemble the clamping modules as required
- Clean the clamping modules as specified
- Respond appropriately to faults or malfunctions

In addition to this manual, all applicable federal, state, and local regulations — including workplace safety and environmental requirements — must be followed.

Vektek LLC reserves the right to revise this documentation at any time to reflect product improvements or design updates without obligation to issue an immediate revision.

Warranty and Liability

All information in this Operating & Installation Manual has been prepared in accordance with applicable standards, current industry practices, and Vektek LLC's technical expertise. This manual does not replace the user's responsibility to determine whether the installation clamping modules are suitable for a specific application. The manufacturer or distributor must conduct a complete risk assessment, evaluation, and functional test to confirm suitability for the intended use.

Warranty and liability claims are excluded for personal injury or property damage resulting from:

- Improper or unintended use of the installation clamping modules
- Incorrect installation, startup, operation, maintenance, or cleaning
- Failure to follow the instructions and safety information in this manual
- Use of unqualified or untrained personnel
- Modifications made without prior written approval from Vektek LLC
- Improper or unauthorized repairs
- Use of non-approved replacement parts or components that do not meet required specifications
- External factors such as accidents, environmental conditions, or force majeure

Service / customer service



Our customer service is available to you for technical information:

Phone: +1(800)992-0236

Request Customer Support

Email: CustomerSupport@Vektek.com

In addition, our employees are constantly interested in latest information and experiences resulting from use of the product that could be valuable for improving our products.



WARNING

Failure to observe the following safety notes can have serious consequences:

Endangering of people by mechanical and chemical influences and the failure of important product functions!

Thoroughly read through the safety and danger notes in this section before you put the installation clamping modules into operation.

In addition to the notes in this operating & installation manual, observe the general safety and accident-prevention regulations.

In addition to the notes in this operating & installation manual, observe the existing national occupational, operating and safety regulations. Also comply with existing internal company regulations.

Intended use

Safe operation of the installation clamping modules is ensured only when they are used as intended. These are spring-actuated, single-acting clamping devices designed to hold an interchangeable pallet or workpiece in a pressure-free, self-locking condition using a Vektek LLC pull stud.

The modules are intended exclusively for positioning and clamping interchangeable pallets or workpieces used in cutting or non-cutting machining applications on machine tools or other suitable industrial equipment. They must only be operated within their specified technical limits. Maximum load capacities and operating pressure must never be exceeded. Any other use requires prior approval from the manufacturer.

Only pallets or workpieces equipped with an approved flat-head screw and pull stud may be clamped. The modules are designed for hydraulic and/or pneumatic operation and are intended strictly for industrial applications.

Use outside the intended purpose is prohibited. The following are specifically not permitted:

- Using the installation clamping modules as lifting devices
- Using the modules as pulling elements
- Using defective, unsuitable, or unapproved accessories
- Creating installation layouts that do not comply with Vektek LLC specifications
- Operating the modules while untrained personnel are within the hazard area
- Operating the modules if they are damaged, malfunctioning, or modified
- Operating the modules without proper training

Intended use also includes:

- Following all instructions in the Operating & Installation Manual
- Performing inspections and maintenance at required intervals
- Operating within all specified conditions

NOTE

Notes on fastening bolts and pull-studs:

The holding force of the installation clamping modules is limited by the strength of the screw connection between the pull-stud and the fixture. Only screws with the permitted strength class may be used. Only original Vektek LLC pull-studs may be used. If the pull-stud is used in the company's own fixtures, an adequately dimensioned threaded bore and sufficient mounting material strength must be planned for by the owner.

All technical specifications listed in the technical data must be strictly observed.

Structural changes to the installation clamping modules

No modifications, additions, or alterations may be made to the installation clamping modules without prior written approval from Vektek LLC.

Unauthorized modifications void the manufacturer's warranty.

Replace any damaged or worn components immediately. Use only original replacement, wear, and accessory parts supplied or approved by Vektek LLC. These components are specifically designed for safe operation. Use of third-party parts may compromise safety and load capacity. Parts or accessories not supplied by Vektek LLC are not approved for use.

Foreseeable improper use

Any use beyond the intended application can result in severe injury.

Examples of foreseeable misuse include:

- Operating the modules beyond the limits specified in the technical data
- Using the modules as tool holders, lifting devices, hoists, or press tools
- Using the modules in unsuitable or prohibited work environments

General safety notes

- The installation clamping modules may only be operated and maintained by personnel who have read and understood this manual.
- Use the installation clamping modules only as intended.
- Do not perform any actions that compromise personnel safety or equipment integrity.
- Keep the work area clean and organized to prevent hazards caused by debris or loose parts.
- Do not exceed rated performance specifications.
- Ensure all labels and markings on the modules remain legible and replace them if necessary.

- Installation and service work may only be performed by qualified or properly instructed personnel.
- In the event of a malfunction, stop operation immediately. Repairs must be performed by trained personnel or Vektek LLC.

Keep this Operating & Installation Manual at the equipment location and ensure it is accessible to all personnel working with the modules.

Special dangers / residual risks

Risk of injury if the fixture or workpiece falls



WARNING

Risk of injury if the fixture or workpiece falls due to opening of the installation clamping module!

Non-observance can result in death or serious injuries!

Please note that opening of the installation clamping module during operation must be prevented by suitable countermeasures (disconnection of the energy supply after interlocking, use of safety valves or switches).

While working, always wear the protective equipment necessary for the respective work.



WARNING

Risk of injury during overhead applications or horizontal position of the pull-stud axis if the workpiece or fixture falls!

Non-observance can result in death or serious injuries!

In the case of overhead or horizontal applications, please note that the fixture or workpiece must be secured against falling before opening the installation clamping module.

Dangers caused by independent movement of parts



WARNING

The installation clamping modules clamp by means of spring force. There is a risk of injury caused by independent movement of parts into their end positions after emergency off is actuated, after shutdown or if the energy supply fails!

Non-observance can result in death or serious injuries!

Do not reach into the installation clamping modules.

Wait until the system is at a complete standstill.

Use pressure maintenance valves.

1. Description of the system

Technical datasheet:

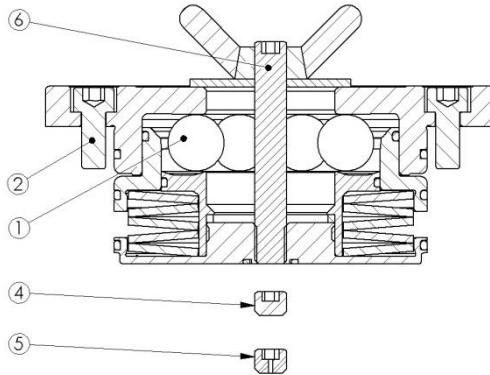
	Unit	K20
Pull-in and locking force in the system up to	[kN]	20
Holding force	[kN]	55
Hydr. operating pressure for opening min.	[bar]	60
Hydr. operating pressure for opening max.	[bar]	70
Pressure blow out	[bar]	1-6
Pressure support sensing out	[bar]	1-2
Opening volume	[cm ³]	10.0
Pre-positioning	[mm]	12
Repetition accuracy	[mm]	<0.005
Max. permissible lateral forces*	[kN]	20
Max. operating temperature	[°C]	80



CAUTION:

It must be ensured, by means of a pressure regulation valve for example, that the maximum operating pressure is not exceeded. The safety factor is not included in the holding force value. It must be considered individually, depending on the application concerned. The lateral force refers to zero point and timing pull stud. The undersized pull stud must not be considered for the lateral forces.

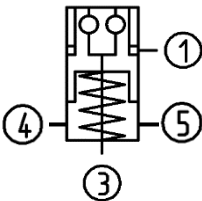
1.1 Structure of the Zero Point System:



1. Ball
2. Cylinder screw
3. Threaded pin as forcing screw
(not shown in the drawing)
4. Threaded pin for "Without blow out" application (included)
5. Threaded pin for "With blow out" application (included)
6. Installation tool

1.2 Circuit diagram of the Zero Point System

Description of the required connections:



1 = Open hydraulically

3= Support control and pneumatic blow out

4= Opening control, pneumatic input

5= Opening control, pneumatic output

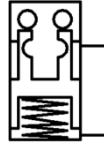
1.3 Operation of the Zero Point System:

Vent: After the Zero Point System is installed in a base, the entire system must be vented.

Opening procedure:

Pressurize Zero Point System.

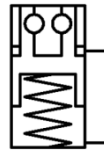
The system will release the clamping pull stud, enabling it to be moved in and out of the system. The system will remain open if pressure is applied to the Open connection.



Clamping procedure:

Depressurize Zero Point System.

The system locks positively and is mechanically clamped by spring force. The system will remain closed if no pressure is applied to the Open connection. Pressure line can be decoupled after the clamping process – the system remains positively interlocked and self-locking.



CAUTION:

Don't reach in the Zero Point System

Support control procedure:

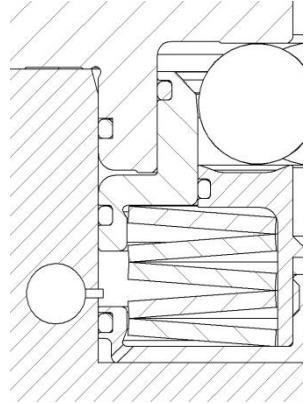
In the center are the blow-out and support control, to which the compressed air is guided. If the distance is small between the underside of the fixture and the support surface, the surface can be blown out. The pressure build-up of the support control is then produced by placing the fixture onto the support surface. (The pressure build-up here can be sensed by means of a pressure gauge). The support control can only be operated pneumatically.

Locking control process:

This is in the lower area of the module, which is actuated by the piston in the opened state. It can be operated pneumatically.

Operation of the locking sensing:

(The pressure build-up here can be sensed by means of a pressure gauge).



1) Zero Point System opened

- Piston is in the lower switching position
- Opening control flow from "input" to "output" is blocked.

2) Zero Point System closed

- Piston is in the upper switching position
- Opening control flow from "input" to "output" is opened.

Arrangement of the Zero Point Systems:

Check of the closed state

- Arrangement of the Zero Point Systems as series connections

Check of the opened state

- Arrangement of the Zero Point Systems as parallel connections

If both states are sensed simultaneously, the modules must be individually driven and individually sensed.

Integrated blow-out procedure

The air escapes from the module in the center and serves to clean the interior space and the support surface. During operation, there is danger of eye injury since shavings can arise from the automatic blow out. Please wear safety goggles.



Manual blow-out:

The interior of the Zero Point System can be blown out with an ordinary commercial compressed air blow gun or suctioned out with a vacuum device.

During operation, there is danger of eye injury since shavings can arise from the blow out. Please wear safety goggles.



CAUTION!

Wear safety goggles

2. INSTALLATION

2.1 General

Safety is only guaranteed if the Zero Point System is properly connected according to applicable safety regulations.



CAUTION:

Only qualified personnel may connect the Zero Point System to the pressure supply.

If several Zero Point Systems are installed side by side, care must be taken that the height variation of the contact surfaces remains within 0.02 mm.

The spacing tolerances between the clamping systems should not exceed +/- 0.01 mm.

The change pallet to be clamped with the integrated clamping pull studs must always rest against the contact surfaces of the Zero Point Systems in the clamped state.

2.2 Installation in a mounting hole



Do not remove installation tool (6) for the hydraulic and pneumatic version

Important:
Neatly deburr mounting holes, clean the hole and contact surface,
check elements for greased state



Tilt-free introduction



**Uniform insertion of four
opposing cylinder screws
(2), up to flat contact.**

The threaded pins (3) must not be driven in too far; otherwise, the cover cannot lie flat.



CAUTION: The spring is pre-tensioned at installation.



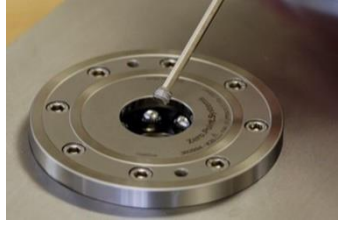
Uniform tightening of the cylinder screws (2) with torque:

K20: (M6) 15 Nm

After installation, the bearings must be able to move freely in the track.



Remove installation tool (6)



Screw threaded pin (4) or (5) into Zero Positioning System base and glue with soluble adhesive for stainless steel.

Installation instructions, threaded pin
Blow-out is used = Install threaded pin (5)
Blow-out is not used = Install threaded pin (4)

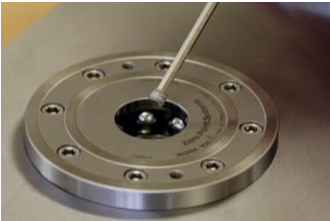
Caution! Do not lift the base of the ZPS via the threaded pin. For this purpose, it can be screwed back again by one-half turn after contact with the bottom of the mounting hole.

2.3 Removal from a mounting hole



CAUTION:

The system must be completely depressurized before starting to dismantle.



Remove threaded pin (4) or (5)



Insert installation tool (6)



CAUTION Spring is pre-tensioned in the installed state.



Uniformly loosen cylinder screws (2)



Screw in threaded pins (3) in order to be able to press down the clamping system



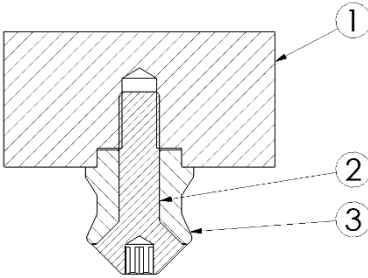
Uniform and tilt-free removal of the clamping module

Note on installation tool (6): Screw long cylinder screw with large washer that covers the central hole for the clamping pull stud into the base of the ZPS. In this way, the ZPS can be held together before removal so that it can be taken out as a unit.

The supply holes for the pressure medium must be free during removal, as otherwise a vacuum could arise in the mounting hole.

3. CLAMPING PULL STUD

3.1 Design



1. Pallet to be changed
2. Engagement pull stud screw
3. Clamping pull stud

3.2 Installation instructions

The clamping pull stud with the engagement pull stud screw is to be inserted into the provided hole of the pallet. Please observe the arrangement of the various pull stud shapes and the orientation of the timing pull stud to the zero point pull stud.

Tighten engagement pull stud screw with the torque wrench and defined torque.

unit	thread [mm]	holding force [kN]	torque [Nm]
K20	M10	25	60
K20	M12	43	120
K20	M16	55	215

3.3 Tolerance and clamping pull stud arrangement.

Bottom view of a change pallet with clamping pull stud (drawing simplified):



- Zero-point pull stud (1)
- for full centring

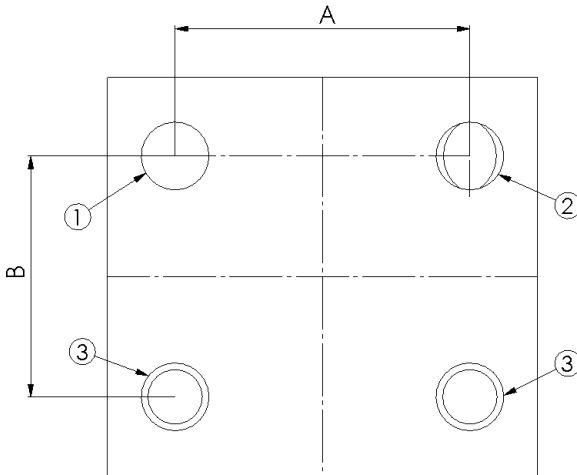


- Timing pull stud (2)
- for centring the remaining free axis



- Undersized pull stud (3)
- exclusively for holding and clamping function

Bottom view of a change pallet with clamping pull stud (drawing simplified):



Note: The slit form of the slit pull stud must lie at an angle of 90° to the axis of connection between itself and the zero-point pull stud.

Distance tolerance:

A = Zero-point to timing pull stud: $\pm 0.01\text{mm}$

B = Zero-point/timing pull stud to undersize pull stud: $\pm 0.03\text{mm}$

4. PERFORMANCE AND RESTRICTIONS ON USE

4.1 Pull-in and locking force

The pull-in and locking forces are the force with which the pull stud is pulled in and clamped with positive interlocking in the clamping module.

4.2 Holding force

The holding force specifies the maximum permissible axial pull force of the engagement pull stud screw. A safety value suitable for the application must additionally be taken into consideration.

Elevated tensile forces can cause a material-induced elastic deformation of the components.

4.3 Safety precautions

Safety catch: An additional mechanical safety catch must be attached for vertical and horizontally suspended clamping. For this usage, the user must consider a risk analysis of the forces occurring and then carry out an accident risk assessment to take appropriate protective measures. People are not permitted to be present in the danger zone.

Rotary applications: For rotary clamping, piston location sensing and contact monitoring are mandatory for safety reasons. For rotary usage, the user must consider a risk analysis of the shearing, centrifugal and imbalance forces occurring and then carry out an accident risk assessment to take appropriate protective measures. People are not permitted to be present in the danger zone.

5. MAINTENANCE

5.1 Introduction

Appropriate maintenance is fundamentally important for a long service life of the system and its components under flawless functional and operating conditions and additionally guarantees the required operating safety over the long term.

5.2 Safety standards during maintenance



CAUTION:

All maintenance steps must be undertaken by qualified personnel (see chapter 0.1).

Here are the most important points for the performance of maintenance measures:

Maintenance and repair measures must be undertaken with a depressurized system. The entire operating, maintenance and cleaning personnel must also strictly observe the applicable accident prevention regulations in the country where the machine is installed.

The clamping systems are constantly under high spring pressure. Due to pre-tensioning of the spring stack, serious, even life-threatening injuries can result if maintenance is improper.

Always wear safety shoes and all other required individual safety gear as well as clothing that covers the body as completely as possible.

Do not wear any rings, watches, necklaces, bracelets or loose clothing.

To guarantee flawless functioning, use only original replacement parts.

-Do not use abrasive or corrosive materials when cleaning the equipment, as they may impair the legibility of the markings or type plates.

5.3 Daily maintenance

Check the interior of the module for contamination. It can be cleaned with an ordinary commercial compressed air gun (wear safety goggles) or with a chip vacuum.

5.4 Monthly maintenance

Visual inspection of the condition of the Zero Point System

Checking the mounting screws and pull stud screws for firm seating

Removal of deposits on the module surface

Check for integrity and functioning of the system

Check of the pressure hoses or tubing
Check the oil level, change oil if needed

5.5 Annual maintenance, but at the latest after following cycles

Model	Cycles
570262	1.500.000

Dismantling of the ZPS and renovation of the O-rings and the spring stack.

Exchanging both elements is recommended as preventive repair. Preventive repair should be done at shorter intervals in case of very frequent clamping processes.

5.6 Seal Kit Information

Model	Seal Kit
570262	60570262

6. POSSIBLE PROBLEMS AND HOW TO REMEDY THEM

The information contained in this section supports the user in identification of malfunctions that can occur during operation of the system.

Malfunction	Cause	Remedy
The module does not open completely	- Opening pressure is too low - Oil level in the power unit is too low	- Check operating pressure at the pressure generator and add oil if needed
Visible oil in the interior of the module	- Seals defective	- Dismantle clamping system, replace seals

7. DECOMMISSIONING AND DISPOSAL

7.1 Decommissioning

If the equipment is no longer going to be used, cut off the system from the pressure supply and remove it from the production machine on which it is installed.

7.2 Placing into storage

The following points should be considered:

Clean and grease the surface of the Zero Point System.

Keep the system in a dry environment at +10°C (32°F) ÷ 55°C (131°F).

7.3 Disposal

If the ZPS is to be scrapped, the oil in it must be emptied and disposed of in accordance with the applicable legal regulations in the respective country.

The remaining parts of the pump unit should be sorted by material and then also disposed of in accordance with the legal regulations.