



## **Clamping module**

**Screw-in version**

No. 6215P-01

TRANSLATION OF THE ORIGINAL OPERATING & INSTALLATION MANUAL

**Keep for future use!**

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## 1 Introduction

This original operating & installation manual provides you all the information you need for trouble-free operation of the clamping module 6215P-01.

The original operating & installation manual must be read, understood and used by all persons responsible for installation, operation, maintenance, cleaning and fault elimination of the clamping module 6215P-01. This applies especially for the listed safety notes.

After studying the original operating & installation manual, you can

- properly install the clamping module 6215P-01,
- safely operate the clamping module 6215P-01,
- dismantle the clamping module 6215P-01 as prescribed,
- clean the clamping module 6215P-01 as prescribed,
- take appropriate action when a fault occurs.

In addition to the original operating & installation manual, generally accepted statutory and other mandatory regulations for accident prevention and environmental protection must be complied with.

The original operating & installation manual must always be kept at the location where the clamping module 6215P-01 is used.

Consider this original operating & installation manual as an important constituent part of the delivery. It must be well taken care of during the entire time the system is in use.

A copy of this original operating & installation manual must be made available to the installation, operating and maintenance personnel. Ensure that all additional documents provided are integrated into this original operating & installation manual. If your system is transferred to a third party, this original operating & installation manual must also be passed on.



Always treat this original operating & installation manual with care. It is not permitted to tear out pages or make changes. Keep these documents protected from heat and humidity. The AMF ANDREAS MAIER GmbH & Co. KG reserves the right to replace parts of the instructions contained herein at any time in the course of product improvement, or if construction or commercial changes so demand, without immediately providing a new edition.

## 1.1 Means of representation

As notes and for direct warning of dangers, texts to be given special attention are marked as follows in this original operating & installation manual:

### 1.1.1 Section-related warnings

Section-related warnings do not apply for a specific action, but for all actions within a section.

#### Design



#### SIGNAL WORD



Symbol for more  
detailed  
explanation of the  
danger

#### Type and source of the danger!

Possible consequence(s) if not observed!

- Action(s) to avoid the danger

---

## Danger levels



### **DANGER**

---

Danger with high degree of risk that, if not avoided, will result in death or severe bodily injury.



### **WARNING**

---

Danger with medium degree of risk that, if not avoided, can result in death or severe bodily injury.



### **CAUTION**

---

Danger with low degree of risk that, if not avoided, can result in minor or moderate bodily injury.

### **NOTE**

---

Danger with low degree of risk that, if not avoided, can result in property damage.

### 1.1.2 Other means of representation



The Info symbol provides useful information.

- Texts following this marking are lists.
- Texts following this marking describe activities that must be executed in the prescribed sequence.
- „“ Texts in quotation marks are references to other chapters or sections.

### 1.1.3 Symbols used in the original operating & installation manual

In warnings, special dangers are also labelled as follows:



#### **Warning of hand injuries**

This symbol warns of hand injuries.



#### **Warning of hot surface**

This symbol warns of the danger of burns from hot surfaces.



#### **Warning of obstacles on the floor**

This symbol warns of dangers from obstacles on the floor.



### **Recycling**

This symbol stands for return of various materials to the reprocessing cycle (recycling).

---

## 1.2 Warranty and Liability

Applicable are the duties agreed in the supply contract, the General Terms and Conditions of Business, and the Conditions of Supply of the clamping module 6215P-01 as well as the statutory regulations at the time the contract was made.

All statements and notes in this original operating & installation manual were put together with consideration given to the applicable standards and regulations, the state of the art of technology, and our many years of discoveries and experience.

This translation of the original operating & installation manual is not intended as a substitute for the suitability or reliability of the clamping module 6215P-01 for specific user applications and must not be used to determine its suitability or reliability. It is the duty of the manufacturer or distributor to carry out an appropriate and complete risk assessment, assessment and test of the clamping module 6215P-01 with regard to the respective specific application or use.

In case of personal injury and property damage, warranty and liability claims are excluded if they result from one or more of the following causes:

- unintended or improper use of the clamping module 6215P-01,
- improper installation, commissioning, operation, maintenance and cleaning of the clamping module 6215P-01,
- failure to observe the original operating & installation manual, and the notes in the original operating & installation manual, regarding installation, commissioning, operation, maintenance and cleaning of the clamping module 6215P-01,
- use of unqualified or uninstructed personnel,
- structural changes of the clamping module 6215P-01 (modifications or other changes to the clamping module 6215P-01 must not be made without the prior written permission of the AMF ANDREAS MAIER GmbH & Co. KG. In the event of non-compliance, the clamping module 6215P-01 loses its EC conformity.),
- improperly performed repairs,
- use of unapproved replacement parts or use of replacement parts that do not meet the technically established requirements,
- catastrophes, external influences and force majeure.

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Furthermore, AMF ANDREAS MAIER GmbH & Co. KG reserves the right to revise this publication at any time due to technical changes in the context of improving the functional properties and further development, without incurring the obligation to inform other persons about the revision.

### 1.3 Copyright

This original operating & installation manual is protected by copyright and intended exclusively for internal purposes. Passing on the original operating & installation manual to third parties, reproduction in any way – even of extracts – as well as exploitation and/or announcement of the content is not permitted without written permission of AMF ANDREAS MAIER GmbH & Co. KG, except for internal purposes.

Violations create liability for damages. We reserve the right to assert other claims.

### 1.4 Warranty stipulations

The warranty stipulations are contained in the General Terms and Conditions of Business of AMF ANDREAS MAIER GmbH & Co. KG.

### 1.5 Service/Customer service



Our customer service is available to you for technical information:

**Phone: +49 711 5766-0**

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

## 2 Safety



### WARNING

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

endangering of people by mechanical influences, failure of important product functions.

- Thoroughly read through the safety and danger notes in this section before you put the clamping module 6215P-01 into operation.
- In addition to the notes in this original operating & installation manual, observe the general safety and accident-prevention regulations.
- In addition to the notes in this original operating & installation manual, the existing national occupational, operating and safety regulations must be observed. Also comply with existing internal company regulations.

### 2.1 Intended use

Operational safety of the clamping module 6215P-01 is only guaranteed when they are used as intended. The clamping module 6215P-01 is a spring-actuated single-acting clamping element that clamps a clamping plate or a workpiece pressure-free and self-locked with the AMF ANDREAS MAIER GmbH & Co. KG clamping sleeves. The clamping module 6215P-01 is a zero-point clamping system and intended exclusively for set-up-time-optimised clamping during cutting and non-cutting machining in all areas, also in the food, pharmaceutical and chemical industry.

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The clamping module 6215P-01 may only be used within the scope of the technical data. The maximum loads and operating pressures specified by the manufacturer must not be exceeded. All other types of use must be agreed with the manufacturer.

Only clamping plates / workpieces with clamping sleeves may be clamped. The module is intended for pneumatic use. The product is intended for industrial and industry-related use. The clamping module 6215P-01 is intended for installation in a machine, system or technical equipment. The clamping module 6215P-01 may be put into operation only if it has been determined that the machine, system or technical equipment in which it is to be installed satisfies all safety requirements of the Machinery Directive 2006/42/EC and other applicable guidelines and standards. It is recommended to observe the operation and maintenance manual of the machine, system or technical equipment on which the clamping module 6215P-01 is installed. The clamping module 6215P-01 is not intended for use in ways other than those listed here, which is considered to be unapproved use. In particular, it is prohibited

- to use the clamping module 6215P-01 as lifting devices,
- to use the clamping module 6215P-01 as a pull element,
- to forget or pinch the sealing rings,
- to use defective or inappropriate accessories,
- to produce the installation diagram not in accordance with the specifications of AMF ANDREAS MAIER GmbH & Co. KG,
- to operate the clamping module 6215P-01 while uninstructed persons are in the danger zone,
- to operate the clamping module 6215P-01 if these are not ready for operation or have been modified,
- to operate the clamping module 6215P-01 without instruction.



Intended use also includes

- observation of all notes from the original operating & installation manual,
- compliance with the inspection and maintenance intervals,
- compliance with the operating conditions,
- compliance with the requirements for safety catches and rotary applications (see „3.5.3 Safety precautions“).

## NOTE

### Notes on clamping sleeves:

The holding force of the clamping sleeve 6215P-01 is limited by the strength of the screw connection between the clamping sleeve and the fixture. Only screws with the permitted strength class may be used. Only original AMF ANDREAS MAIER GmbH & Co. KG clamping sleeves may be used. If the clamping sleeve is used in the company's own fixtures, an adequately dimensioned threaded bore and sufficient fastening material strength must be planned for by the owner.

The technical specifications specified in the technical data must be followed without exception.



Use the clamping module 6215P-01 only as intended, or safe operation is not guaranteed.

It is not the manufacturer, but the user of the clamping module 6215P-01 who is responsible for all personal injury and property damage resulting from unintended use!

### **2.1.1 Structural changes to the clamping modules**

Design and manufacturer's acceptance are based on the German Product Safety Act (ProdSG). No changes, attachments or modifications to the clamping modules may be made without the prior written permission of AMF ANDREAS MAIER GmbH & Co. KG.

The manufacturer of the clamping module 6215P-01 is hereby outside of the warranty. Immediately replace components that are not in perfect condition. Only use original replacement parts/consumable parts/accessory parts. These parts are specially designed for the clamping module 6215P-01. In case of parts from third parties, it cannot be guaranteed that they are designed and produced to be safe or properly bear loads. Parts and special equipment that are not supplied by AMF ANDREAS MAIER GmbH & Co. KG are not approved for use on the clamping module 6215P-01.

### **2.1.2 Foreseeable improper use**

Any use going beyond or other than the intended use of the clamping module 6215P-01 can result in serious injuries. Improper use is deemed to occur, for example:

- when the technical data prescribed by AMF ANDREAS MAIER GmbH & Co. KG is exceeded.
- when the clamping module 6215P-01 is used as a tool holder, lifting device or pressing tool.
- when the clamping module 6215P-01 is used in impermissible work environments.

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## **2.2 Requirements for personnel**

The clamping module 6215P-01 may only be installed, operated, maintained and repaired by persons who are qualified and/or instructed for it. These persons must be familiar with the original operating & installation manual and act in accordance with it. The authority of the personnel must be clearly established. In the original operating & installation manual, the following qualifications are named for various areas of activity:

### **Personnel to be trained**

Personnel to be trained, such as trainee or temporary employees, are not familiar with all dangers that can occur when operating the clamping module 6215P-01. Work on the clamping modules may only be performed under supervision of qualified or instructed personnel.

### **Instructed personnel**

Instructed personnel have been instructed by the operator or by qualified personnel about the tasks assigned to them and possible dangers in case of incorrect action.

### **Qualified personnel**

Qualified personnel, due to their technical training, knowledge and experience as well as knowledge of the relevant stipulations, are able to perform the work assigned to them and to recognise and avoid possible dangers independently.

### **Pneumatics specialist**

Pneumatics specialists, due to their technical training, knowledge and experience, are able to supervise and maintain pneumatic equipment and systems. They can recognise and avoid possible dangers independently.

Pneumatics specialists are trained for the special location where they work and are familiar with the relevant standards and stipulations.

## **2.2.1 Responsibilities**

Improper actions can result in serious personal injury and property damage.

Have all activities be performed only by personnel qualified to do them.

- Permitted as personnel are only those persons who can be expected to do their work reliably. No persons may work on the clamping modules whose reactions have been impaired by drugs, alcohol, medication or the like.
- All persons who work on the clamping modules must have read and understood the original operating & installation manual.
- Personnel to be trained may initially only work on the clamping modules under the supervision of qualified personnel.

The operator is responsible for instructing the personnel.

## **2.2.2 Obligation of the personnel**

Before starting work, all persons who are assigned work with the clamping modules are obligated

- to observe the fundamental regulations on work safety and accident prevention,
- to read the safety notes and warnings in this original operating & installation manual and confirm they understand them.

## **2.2.3 Unauthorised persons**

Unauthorised persons who do not meet the qualification requirements for personnel are not familiar with the dangers in the work area.

- Keep unauthorised persons away from the work area.
- In case of doubt, address the persons and direct them away from the work area.
- Interrupt work as long as unauthorised persons are in the work area.

---

### 2.3 General safety notes

- The clamping module 6215P-01 must not be put into operation and maintained prior to familiarity with this original operating & installation manual.
- Use the clamping module 6215P-01 only as intended (see „2.1 Intended use“).
- During operation of the clamping module 6215P-01, refrain from every operation that impairs the safety of persons or of the clamping module 6215P-01.
- Always keep the working area of the clamping module 6215P-01 clean and orderly to avoid dangers from dirt and parts lying around.
- Do not exceed the technical performance data (see “3.1 Technical data sheet”).
- Maintain all notes on the clamping module 6215P-01 in a legible condition and replace them when necessary.
- Installation and work on the clamping module 6215P-01 may only be performed by qualified or instructed personnel (see “2.2 Requirements for personnel”).
- In case of malfunctions, immediately shut down operation of the clamping module 6215P-01. Have faults repaired by appropriately trained specialists or by AMF ANDREAS MAIER GmbH & Co. KG.
- Always keep original operating & installation manual at the location where the clamping module 6215P-01 is used. It must be ensured that all persons who perform activities on the clamping module 6215P-01 can see the original operating & installation manual at any time.

## **2.4 Safety measures for environmental protection**

In all work, comply with the regulations for waste avoidance and proper recycling and disposal of waste. Especially during installation and maintenance work as well as when removing from operation, attention must be paid that materials hazardous to the groundwater, such as solvent-containing cleaning liquids, or similar, do not burden the soil or enter the sewage system. These materials must be captured in suitable containers, stored, transported and disposed of in accordance with national regulations.

## **2.5 Special dangers/Residual risks**

### **2.5.1 Risk of injury if the fixture or workpiece falls down**



## **WARNING**

### **Risk of injury if the fixture or workpiece falls down by opening the clamping module!**

Non-observance can result in death or serious injuries!

- Ensure that opening of the 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.
- Ensure that the systems, machines and technical equipment on which the clamping module 6215P-01 is used, meet the minimum requirements of the EC Machinery Directive 2006/42/EC and, in particular, have effective technical protective measures against possible mechanical hazards.



## WARNING

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

Non-observance can result in death or serious injuries!

- In the case of overhead or horizontal applications, note that the device or the workpiece must be secured against falling down before opening the clamping module.

### 2.5.2 Dangers from independent movement of parts



## WARNING

**The clamping module 6215P-01 clamps by spring force. There is a risk of injury from 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 clamping modules.
- Wait until the system is at a complete standstill.
- Insert the pressure maintenance valves.

### 2.5.3 Dangers from contamination



#### CAUTION

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**Risk of injury from contamination (e.g. chips)!**

Non-observance can result in minor injuries!

- While working, always wear the protective equipment necessary for the respective work.
- Secure the danger zone through suitable measures.

### 2.5.4 Dangers from loosening of the compressed air tubing



#### WARNING

---

**Risk of injury from loosening of the compressed air tubing in case of defective connection!**

Non-observance can result in death or serious injuries!

- Secure the danger zone through suitable measures.
- Use safety circuits or valves.



### 2.5.5 Dangers caused by crushing



#### CAUTION



**During manual unloading and loading of the clamping module 6215P-01 there is a risk of crushing limbs on moving parts and during the clamping operation!**

Non-observance can result in minor injuries!

- Use a loading aid.
- Do not reach into the clamping modules.
- Wear protective gloves.

### 2.5.6 Danger from slipping and falling



#### CAUTION



**Danger of falling and slipping if the surroundings of the clamping module 6215P-01 are contaminated (e.g. by oil, cleaning agents or cooling lubricants)!**

Non-observance can result in minor injuries!

- Wear suitable safety shoes.
- Ensure the work environment is clean before starting installation work.
- Comply with the safety and accident prevention regulations during operation of the clamping module 6215P-01 and, in particular, when working with machine tools and other technical equipment.

## 2.5.7 Dangers caused by hot surfaces



### CAUTION



**Danger of burns from workpieces with a high temperature.**  
**There is a danger of burns from workpieces with a high temperature!**

Non-observance can result in minor injuries!

- Prefer automatic loading of the clamping module 6215P-01.
- Wear protective gloves when loading and removing the workpieces.

## 2.5.8 Dangers from loud noises of the pneumatics



### CAUTION



**Endangerment from loud noises of the pneumatics!**

Non-observance can result in minor injuries!

- Wear hearing protection.

### 2.5.9 Dangers from sharp edges



#### CAUTION



##### **Risk of injury from sharp edges!**

Non-observance can result in minor injuries!

- While working, always wear the protective equipment necessary for the respective work (in particular, protective gloves).

### 2.5.10 Danger from unexpected movements



#### WARNING

##### **Risk of injury from unexpected movements!**

Non-observance can result in death or serious injuries!

- Make sure that there is no more remaining energy in the system.
- Before starting all work on the product, switch off the energy supply and secure it against being switched on again.

## 2.5.11 Dangers from Pneumatic Energy



### WARNING

**Air exiting under high pressure can penetrate the skin and cause severe injuries!**

Non-observance can result in death or serious injuries!

- Only specialists with special knowledge and experience in pneumatics may work on the pneumatic equipment. Before working on the pneumatic equipment, switch off the clamping module 6215P-01 and secure it against being switched back on.
- Remove pressure from the system sections and pressure lines before starting repair work.
- Regularly check all pneumatic lines, hoses and fittings for leaks and externally recognisable damage.
- Pull hoses off cautiously. Exiting compressed air can stir up dust and chips.
- Always keep the pneumatic hoses away from your body.
- Protect open air connections against soiling.
- Never interchange connections, plugs or switches. This will unavoidably cause malfunctions.

### 2.5.12 Dangers caused by tripping



#### WARNING



**Danger of tripping over improperly laid energy supply lines!**

Non-observance can result in death or serious injuries!

- Always lay lines trip-free and barrier-free in the supply shaft.
- Mark unavoidable trip hazards in colour.

### 2.5.13 Dangers caused by using incorrect replacement parts



#### DANGER

**Incorrect or defective replacement parts can lead to damage, malfunctions or total breakdown and can impair safety!**

Non-observance will result in death, serious injuries or serious property damage!

- Only use original replacement parts.
- Procure the replacement parts from AMF ANDREAS MAIER GmbH & Co. KG.

## 2.6 Personal protective equipment

Personal protective equipment must be worn to minimise health dangers during operation of the clamping module 6215P-01, regardless of the occupational hazard evaluation.

- While working, always wear the protective equipment necessary for the respective work.
- Do not wear rings, chains or other jewellery.

The symbols have the following meaning:



### **Protective work clothing**

Protective work clothing is tight-fitting work clothing with low tear resistance, with narrow sleeves and without protruding parts. It mainly protects against being caught by moving parts.



### **Safety shoes**

Wear slip-resistant safety shoes for protection against heavy falling parts and from slipping on smooth surfaces.



### **Protective gloves**

Wear protective gloves to protect hands from friction, abrasions, punctures or deeper injuries as well as from hot surfaces or chemical substances.



### **Safety goggles**

Wear safety goggles to protect against media exiting under high pressure or flying parts.



### **Hearing protection**

Wear hearing protection to prevent hearing loss (from 85 dB(A)).

Personal protective equipment must be provided by the operator and must meet applicable requirements. In addition, national regulations and requirements from the occupational hazard evaluation and, if applicable, internal instructions of the operator must be observed.

## **2.7 Notes for emergencies**

### **Preventive measures**

- Always be ready for accidents or fire.
- Keep first-aid materials (first-aid kits, blankets, etc.) and fire extinguishers close at hand.
- Instruct personnel on facilities for accident reporting, first-aid, fire extinguishing and rescue.
- Keep the access routes for rescue vehicles free.

### **Actions in case of accidents**

- In case of emergencies, follow the procedures from the operating and maintenance instructions for the machine, system or technical equipment on which the clamping module 6215P-01 is installed. In particular, take measures to ensure that no danger to persons or property can arise in case of a defect.
- Rescue people from the danger zone.
- If the heart stops beating and/or breathing stops, immediately begin reanimation.
- In case of personal injury, inform the first aid representative and an emergency response physician or the rescue service.
- Clear access routes for rescue vehicles. If necessary, appoint someone who can inform the rescuers.

- 
- In case of fire, take the designated extinguishing measures and make sure no operating pressure is present.

## **2.8 Obligation of the Operator**

The clamping module 6215P-01 is used in commercial organisations. The operator of the clamping module 6215P-01 is therefore subject to statutory obligations for work safety. Besides the safety notes in this original operating & installation manual, the safety, accident prevention and environmental protection regulations must be followed in the area where the clamping module 6215P-01 is used. In particular:

- The operator must ensure that the clamping modules are only used as intended (see “2.1 Intended use”).
- The operator must always make the original operating & installation manual available in complete legible condition, where the clamping modules are used.
- The operator must clearly establish responsibilities for installation, commissioning, operation, maintenance and cleaning.
- The operator may only let people work with the clamping modules who have reached the legally required minimum age.
- The operator may only have adequately qualified and instructed personnel work on the clamping modules.
- The operator must ensure that all employees who handle the clamping modules have read and understood the original operating & installation manual. In addition, the operator must document that personnel have been trained and informed about dangers at regular intervals.
- The operator must provide personnel with personal protective equipment and make sure that it is used.
- The operator must ensure that no persons may work with the clamping modules whose reactions have been impaired by drugs, alcohol, medication or the like.



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Furthermore, the operator is responsible to ensure that the clamping module 6215P-01 is always in technically perfect condition. Therefore:

- The operator must ensure that the maintenance intervals described in this original operating & installation manual are maintained.
- The operator must regularly check that all attached notes on the clamping module 6215P-01 are easily legible and remain permanently on the clamping module 6215P-01.

### 3 Description of the clamping module 6215P-01

All illustrations in this document provide basic understanding and can deviate from the actual version.

#### 3.1 Technical data sheet

	Unit	-01
Pull-in force and locking force in the system	[N]	100
Holding force in static application <sup>1)</sup>	[N]	1000
Holding force in dynamic application <sup>2)</sup>	[N]	800
<b>Min. opening operating pressure</b>	<b>[bar]</b>	<b>5</b>
<b>Max. opening operating pressure</b>	<b>[bar]</b>	<b>12</b>
Opening volume	[cm <sup>3</sup> ]	0.5
Pre-positioning	[mm]	1.0
Repetition accuracy	[mm]	< 0.1
Max. permissible lateral forces*	[N]	100
Max. operating temperature	[°C]	+ 80

	Unit	-01
Diameter Ø	[mm]	22
Height	[mm]	34.3
Weight	[g]	40
Permissible ambient temperature in operation	[°C]	+ 15 to + 80
Permissible ambient temperature during	[°C]	+ 10 to + 35
Permissible air humidity during storage	[%]	10 to 90

For notes on <sup>1)</sup> and <sup>2)</sup> see next page.

**NOTE**

The holding forces are dependent on the load cycle, i.e. how often the clamping module 6215P-01 is subjected to tensile stresses in the axial direction.

- <sup>1)</sup> The application is deemed static if the system is subjected to a max. of 100,000 load cycles at full utilisation of the specified holding force.
- <sup>2)</sup> The application is deemed dynamic if the system is subjected to more than 100,000 load cycles at full utilisation of the specified holding force.

**NOTE**

Note on the compressed air in the pneumatic version of the clamping modules:

- Prepared with service unit, (dry air, water separator filter, oil-mist lubricator).
- Air purity: Compressed air according to ISO 8573-1: 2010 [7: 4: 4]
- Use only oils of viscosity class VG 32 according to ISO 3448.



## WARNING

### **Risk of injury from non-compliance with specified technical data!**

Non-observance of the notes can result in damage, malfunctions or total breakdown of the clamping module 6215P-01 and impair the safety of the clamping module 6215P-01!

- It must be ensured, by means of a pressure-limiting 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 taken into account individually, depending on the application concerned.
- The lateral force refers to zero point clamping sleeve. The counterbalance clamping sleeves must not be taken into account for the lateral forces.

---

### 3.2 Use of clamping module 6215P-01

- Clamping module for automation solutions for setup-time-optimised clamping during cutting and non-cutting machining.
- The clamping module is fastened and installed using the integrated thread; the clamping sleeves are fastened and assembled using a threaded ring.
- The clamping module is opened pneumatically and locked mechanically by spring force.
- Subsequent uncoupling of the pressure line is possible at any time (clamping module is clamped at normal pressure).

### 3.3 Surface-mounting clamping module 6215P-01

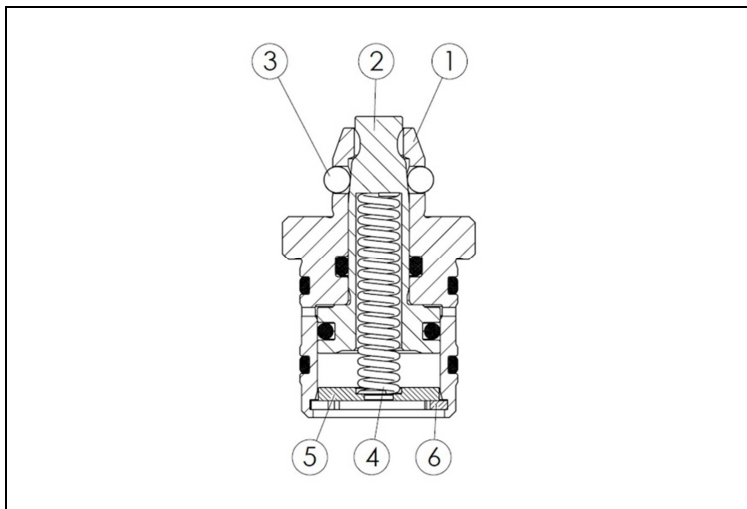


Illustration 1: Clamping module 6215P-01

- |   |         |   |         |
|---|---------|---|---------|
| 1 | Housing | 4 | Spring  |
| 2 | Piston  | 5 | washer  |
| 3 | Ball    | 6 | circlip |

### 3.3.1 Circuit diagram of clamping module 6215P-01

The clamping module 6215P-01 has one pneumatic connection.

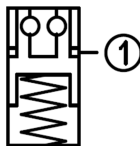


Illustration 2: Circuit diagram of clamping module 6215P-01

- 1 Pneumatic opening



### 3.3.2 Dimensions of clamping module 6215P-01

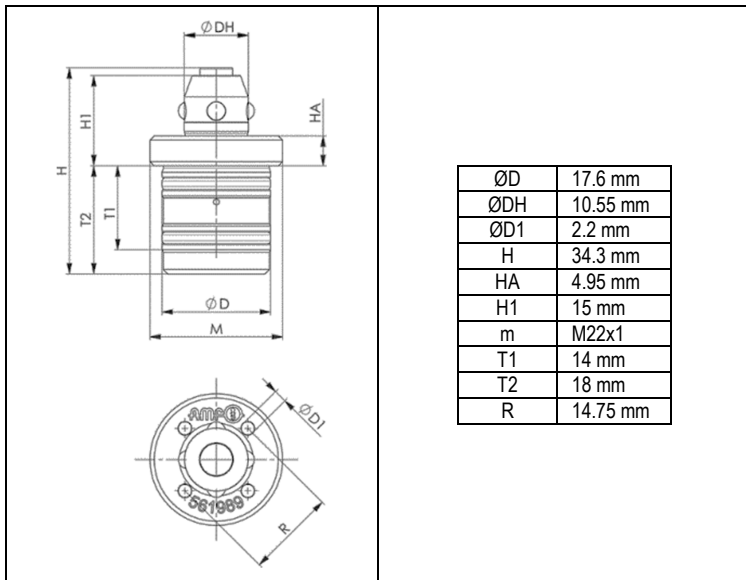


Illustration 3: Dimensions of clamping module 6215P-01

### 3.3.3 Example circuit diagram of clamping module 6215P-01

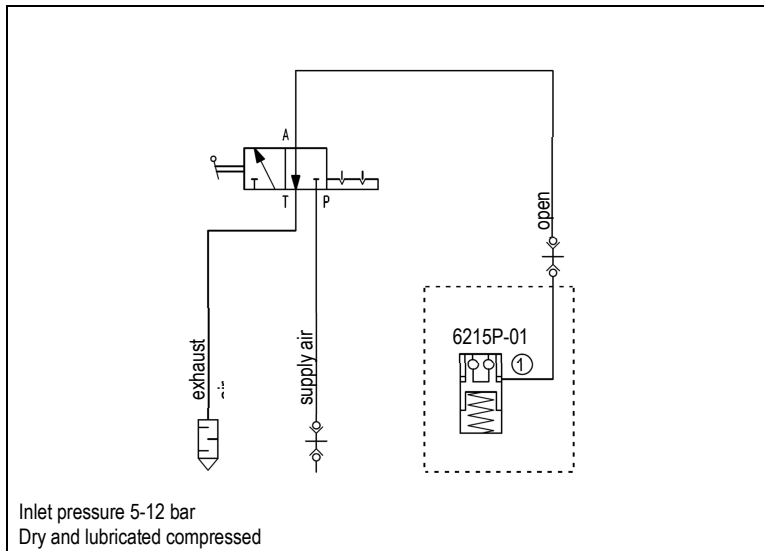


Illustration 4: Example circuit diagram of clamping module 6215P-01

## 3.4 Clamping sleeves

### 3.4.1 Design of zero point clamping sleeve 6214ZN-01-01

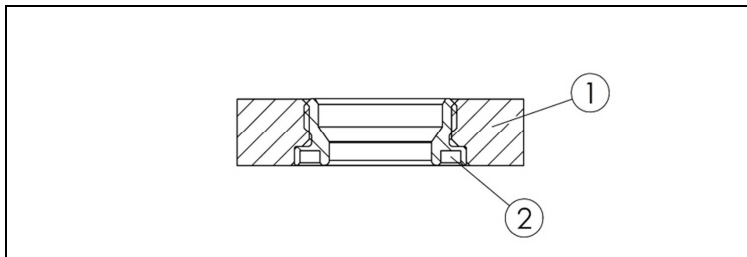


Illustration 5: Design of zero point clamping sleeve 6214ZN-01-01

- 1 Interchangeable pallet
- 2 clamping sleeve

### 3.4.2 Design of counterbalance clamping sleeve 6214ZN-01-02

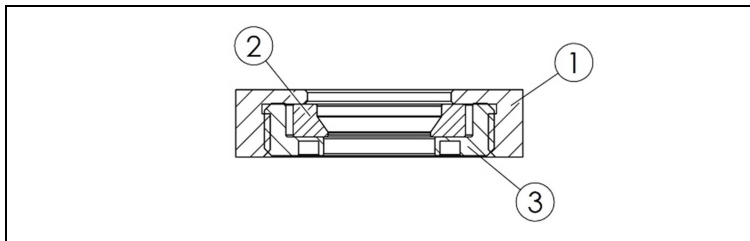


Illustration 6: Design of counterbalance clamping sleeve 6214ZN-01-02

- 1 Interchangeable pallet
- 2 Movable clamping sleeve
- 3 Threaded ring

### 3.5 Performance and restrictions on use

#### 3.5.1 Pull-in force and locking force

The pull-in and locking force describes the force with which the bolt is pulled in and clamped with positive interlocking in the clamping module.

#### 3.5.2 Holding force

The holding force specifies the maximum permissible axial pull force of the clamping sleeve. 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.

#### 3.5.3 Safety precautions

**Safety catch:**



### WARNING

#### **Dangers caused by vertically and horizontally suspended clamping!**

Non-observance can result in death or serious injuries!

- Attach an additional mechanical safety catch for vertically and horizontally suspended clamping.
- Consider a hazard analysis of the forces occurring and then carry out an accident risk assessment in order to take appropriate protective measures.
- Keep persons away from the danger zone.

Rotary applications:



## WARNING

### **Dangers caused by rotary applications!**

Non-observance can result in death or serious injuries!

- Please note that for rotary clamping, contact monitoring (opening and locking control) and support control are mandatory for safety reasons.
- Consider a hazard analysis of the shearing, centrifugal and unbalanced forces occurring and then carry out an accident risk assessment in order to take appropriate protective measures.
- Keep persons away from the danger zone.

### 3.6 Necessary tools

Tool	Property	Purpose
Insertion tool	No. 559439	Installation / disassembly

### 3.7 Marking plate

A label / marking plate of the manufacturer is affixed to the threaded recess of the clamping module 6215P-01.

#### NOTE

Labels must not be removed under any circumstances, even if the equipment is to be resold. If the label is damaged or becomes detached, please contact AMF ANDREAS MAIER GmbH & Co. KG to get a copy. Please always state the model printed on the label in any communication with AMF ANDREAS MAIER GmbH & Co. KG. Disregarding these provisions releases AMF ANDREAS MAIER GmbH & Co. KG from any liability for damage or accidents caused thereby. In this case, the operating company is solely liable to the authorities.

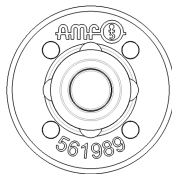


Illustration 7: Label/markings plate

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## 4 Transport and Storage

The clamping modules 6215P-01 are delivered to the customer by a transportation company authorised by AMF ANDREAS MAIER GmbH & Co. KG.

### 4.1 Inspection by recipient when taking possession

Upon arrival of the clamping module 6215P-01 at the customer, they have to be inspected for visible transportation damage.

- Report any defects or damage immediately to AMF ANDREAS MAIER GmbH & Co. KG and the carrier, who is liable for transportation damage.

#### NOTE

Any defects or damage must be claimed within 10 days of the receipt of the product.



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## 4.2 Packaging

The transportation route is also important for determining the type of packaging.

- Observe the symbol attached to the packaging.

### 4.2.1 Unpacking

When unpacking the clamping module 6215P-01, proceed as follows:

Remove the packaging.

- Remove packaging materials, such as plastic film and tape, and dispose of properly.
- Do not throw away the original packaging. Keep it in case of return.
- Check the delivery for completeness based on your order.
- Always keep the provided documents; they contain important information on working with the clamping module 6215P-01.
- Check the packaging contents for visible transportation damage.
- Inform AMF ANDREAS MAIER GmbH & Co. KG if you detect transportation damage or discrepancies between the packaging contents and your order.

### 4.2.2 Repackaging

See chapter "4.2.1 Unpacking".

### 4.3 Supplied as standard

The clamping modules 6215P-01 are supplied as standard with the following components:

- 1x Premounted clamping module
- 1x original operating & installation manual

### 4.4 Intermediate storage

If the clamping module 6215P-01 is not installed immediately after delivery, they must be carefully stored in a protected location. The clamping modules 6215P-01 must be temporarily stored in such a way that they are protected from cold, moisture, soiling, chemical and mechanical influences. You can obtain the recommended storage conditions of the installation clamping module 6215P-01 from chapter "3.1 Technical data sheet". The following points must be considered:

- Clean and degrease the surface of the clamping module 6215P-01.



No liability is accepted for damage resulting from improper storage!

## 5 Installation

The clamping module 6215P-01 is pre-mounted by AMF ANDREAS MAIER GmbH & Co. KG. Safety is only guaranteed if the clamping module The clamping module 6215P-01 is pre-mounted by is properly connected according to applicable safety regulations.

If several clamping modules are installed side by side, care must be taken to ensure that the height variation of the contact surfaces remains within 0.02 mm. The distance tolerances between the clamping modules must not exceed +/- 0.01 mm. The interchangeable pallet to be clamped with the integrated clamping sleeves must always rest completely on the contact surfaces of the clamping modules in the clamped state.

### 5.1 Notes on dangers during installation



#### WARNING



##### **Danger of tripping over improperly laid energy supply lines!**

Non-observance can result in death or serious injuries!

- Always lay lines trip-free and barrier-free.
- Mark unavoidable trip hazards in colour.
- Only qualified personnel may connect the clamping module 6215P-01 to the pressure supply.



## WARNING

### **Risk of injury from unsuitable installation material!**

Unsuitable installation material can result in serious injuries during operation!

- Use only the installation material provided.

## **5.2 Ambient and Operating Conditions**

Incorrect ambient conditions and operating conditions can cause the product to produce hazards that lead to serious injuries and considerable property damage and/or significantly reduce the service life of the product.

- Make sure that the clamping module 6215P-01 is sufficiently dimensioned according to the application.
- Make sure that the surfaces of the interface are always kept clean.
- Make sure that no chips of any kind reach the interface.
- Make sure that the clamping module 6215P-01 is used only within the defined usage parameters.
- Take into account that corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) shorten the service life of the product.
- Check the resistance of the materials of the clamping module 6215P-01 with regard to the used or ambient media.

## **5.3 Preparatory measures**

Before installing the clamping module 6215P-01, it must be ensured that

- Connections for the compressed air supply are prepared,
- Additional lighting equipment for installation is available,
- The mounting surface is clean and dust-free.,
- Tools required for the installation are at hand:
  - Insertion tool No. 559439

## 5.4 Installation

### 5.4.1 Install clamping module 6215P-01

#### Installation step 1

- Deburr and clean the installation hole.
- Lightly grease the installation hole. The appropriate grease is available from AMF ANDREAS MAIER GmbH & Co. KG.
- Insert the clamping modules into the installation hole without tilting.

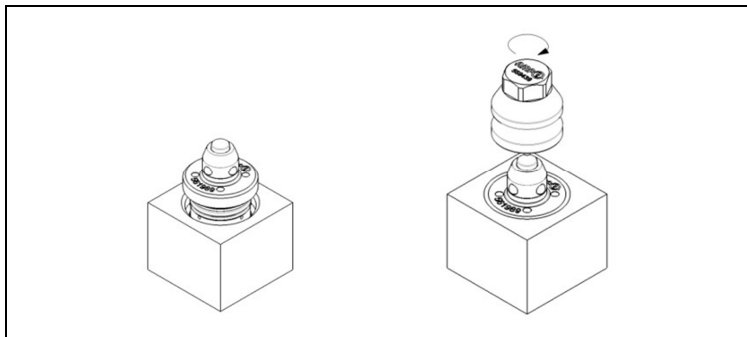


Illustration 8: Installation of clamping module step 1 and 2

#### Installation step 2

- Screw in the clamping module (tightening torque: 35 Nm).
- The appropriate installation tool No. 559439 is available from AMF ANDREAS MAIER GmbH & Co. KG.

#### 5.4.2 Install zero point clamping sleeve 6214ZN-01-01

- Deburr and clean the installation hole.
- Screw in the clamping sleeve with medium thread adhesive (tightening torque: 25 Nm).
- The appropriate installation tool No. 559439 is available from AMF ANDREAS MAIER GmbH & Co. KG.

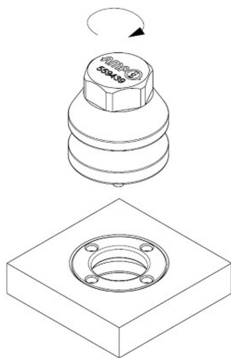


Illustration 9: Installation of zero point clamping sleeve 6214ZN-01-01

### 5.4.3 Install counterbalance clamping sleeve 6214ZN-01-02

- Deburr and clean the installation hole.
- Position the clamping sleeve so that it can move. Pay attention to the correct position.
- Screw in the threaded ring with medium thread adhesive.
- The appropriate installation tool No. 559439 is available from AMF ANDREAS MAIER GmbH & Co. KG.

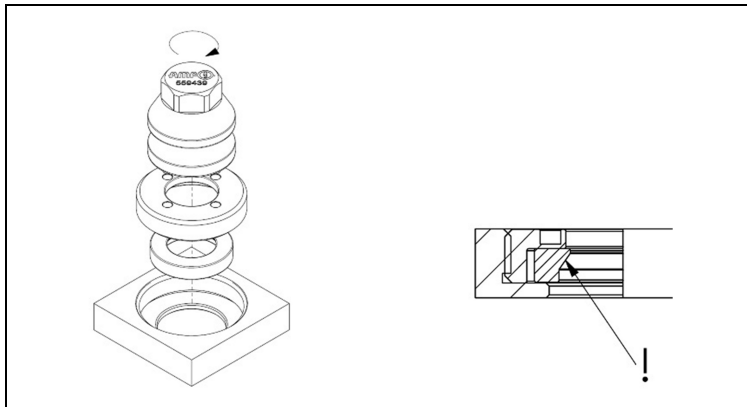


Illustration 10: Installation of counterbalance clamping sleeve 6214ZN-01-02

## 5.5 Disassembly

### 5.5.1 Dismantle clamping module 6215P-01,



## WARNING

### **Danger of serious injuries due to improper removal from operation and disassembly!**

Non-observance of the notes can result in damage, malfunctions or total breakdown of the clamping module 6215P-01 and impair the safety of the clamping module 6215P-01!

- Only qualified or instructed personnel may perform the work. Personnel must have practical experience with installation or disassembly.
- Have energy supply lines disconnected by suitably qualified personnel.
- Before working, shut off pressure in the pneumatic system.
- When performing the work, wear safety clothing, safety shoes, protective gloves and safety goggles.
- In case of doubt, contact AMF ANDREAS MAIER GmbH & Co. KG.



- Unscrew the clamping module evenly. This raises the clamping module from the installation hole until it can be pulled out. Make sure that the clamping module is pulled out evenly and without tilting.
- The appropriate installation tool No. 559439 is available from AMF ANDREAS MAIER GmbH & Co. KG.

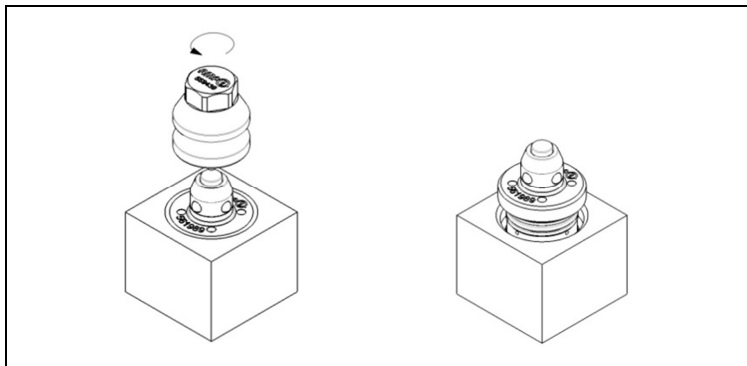


Illustration 11: Dismantling clamping module

## 5.6 Connecting to the energy supply



### WARNING

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#### **Risk of injury from compressed air!**

The operator can be injured when connecting the compressed air supply!

- The compressed air supply may only be connected by qualified personnel.

## 6 Commissioning

Become adequately familiar with

- the equipment of the clamping module 6215P-01,
- the operation of the clamping module 6215P-01,
- the immediate surroundings of the clamping module 6215P-01,
- the actions in an emergency.

Prior to initial commissioning or re-commissioning, carry out the following activities:

- Check the clamping module 6215P-01 for visible damage; immediately repair any defects found or report them to supervisory personnel - the clamping module 6215P-01 may only be operated in perfect condition.
- Check and make sure that only authorised persons are in the working area of the clamping module 6215P-01 and that no other persons can be endangered by engaging the clamping module 6215P-01.
- Remove all objects and other materials from the work area that are not required for operation of the clamping module 6215P-01.

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## 7 Operation

### 7.1 Opening procedure

The clamping module 6215P-01 is tensioned when delivered.

- After correct installation in a plate (see installation diagram), apply pressure to the clamping module 6215P-01 through line 1.
  - The clamping module 6215P-01 opens or releases the clamping sleeve, enabling it to be moved out of the system.
  - In this condition, the workpiece can be brought into the module.
  - The clamping module 6215P-01 will remain open as long as pressure is applied to the "Open" connection.
  - Make sure that the spring space is capable of being completely vented during operation.

### 7.2 Clamping process

- Depressurize the clamping module 6215P-01.
  - The clamping module 6215P-01 locks positively and is mechanically clamped by spring force.
  - The clamping module 6215P-01 remains closed as long as there is no pressure on line 1.
  - Pressure line can be decoupled after the clamping process - the clamping module 6215P-01 remains positively interlocked and self-locking.
  - Make sure that the spring space is capable of being completely vented during operation.



## CAUTION



**During manual unloading and loading of the clamping module 6215P-01, there is a risk of crushing limbs on moving parts and during the clamping operation.**

Non-observance can result in minor injuries!

- Use a loading aid.
- Do not reach into the clamping module.
- Wear protective gloves.

## 8 Fault and repair measures

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



### DANGER

#### **There is danger at the clamping module during fault elimination!**

Non-observance of the notes can result in damage, malfunctions or total breakdown of the clamping module 6215P-01 and impair the safety of the clamping module 6215P-01!

- Before fault elimination, switch off pressure to the clamping module 6215P-01.
- Fault elimination may only be performed by qualified personnel.
- If the clamping module 6215P-01 must be dismantled, always send the module to AMF ANDREAS MAIER GmbH & Co. KG for repair.

Fault	Cause	Repair measure
<b>Clamping module is leaking</b>	Seals defective	Dismantle clamping module, replace seals
<b>The clamping module no longer opens completely</b>	Minimum pressure fallen below	Check the operating pressure
	Operation without lubricated compressed air	Use maintenance unit with oiler
	Tubing diameter fallen below	Use correct tubing diameter (min. diameter 6mm)
	Compressed air connections are not connected properly	Check compressed air supply
	Defect of a component due to overload	Replace clamping module or send it in

---

## 9 Maintenance

Appropriate maintenance is important for a long service life of the system and its components under proper functional and operating conditions, and it also guarantees the required operating safety over the long term.

### 9.1 Safety measures for maintenance work

Perform the specified maintenance work, such as cleaning, servicing and inspections, when due. Before performing the maintenance work, observe the following points:

- Depressurize the clamping module 6215P-01.
- Secure the depressurized clamping module 6215P-01 against being switched on again unintentionally.
- Close off access to the work area of the clamping module 6215P-01. Make sure that no unauthorised persons are in the working area of the clamping module 6215P-01.
- Make sure that all module parts have cooled off to the ambient temperature.
- Immediately replace all imperfect module parts.
- All installation, operating, maintenance and cleaning personnel must also strictly observe the applicable accident prevention regulations in the country where the machine is installed.
- The clamping module 6215P-01 is constantly under high spring pressure. Due to the pre-tensioning of the spring stack, serious, even life-threatening injuries can result from improper maintenance.
- Wear safety shoes and all other required individual protective equipment as well as protective work clothing that covers the body as completely as possible.
- Do not wear any rings, watches, necklaces, bracelets or loose clothing during maintenance work.
- To guarantee flawless functionality, only use original replacement parts.

After completion of maintenance work and before using the clamping module 6215P-01, perform the following actions:

- Check all previously loosened screw connections again for firm seating.
- Check whether all previously removed components have been properly reinstalled.
- Make sure that all tools, materials and other equipment used have been removed from the work area.
- Clean the work area.
- Note that the air supply must run over a separate maintenance unit with oiler.



## 9.2 Inspection and maintenance work

### 9.2.1 Maintenance intervals

Maintenance point	Service work	See section
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#### Daily

Clamping module 6215P-01	Cleaning	9.2.3.1
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#### Monthly

Clamping module 6215P-01	Visual inspection	9.2.4.1
Clamping module 6215P-01	Check fittings	9.2.4.2
Clamping module 6215P-01	Check modules for deposits	9.2.4.3
Clamping module 6215P-01	Check modules for leak tightness	9.2.4.4
Compressed air tubing or pipes	Check compressed air tubing or pipes for leak tightness	9.2.4.5

#### Annually (but not later than after the following clamping cycles: 2,000,000)

Clamping module 6215P-01	Replace O-rings and the spring	9.2.5.1
--------------------------	--------------------------------	---------

Maintenance point	Service work	See section
<b>Special maintenance intervals</b>		
Pneumatic hoses (not later than every 10 years)	Replace	9.2.6.1

## 9.2.2 Preparatory measures



### WARNING

#### **Risk of injury from exiting compressed air!**

As a result of leaks or during disassembly of pneumatic components under pressure, there is danger of injuries from exiting compressed air and blowing around of dust or chips, for example!

- Before working, shut off pressure in the pneumatic system.
- While working, always wear the protective equipment necessary for the respective work.

---

### **9.2.3 Maintenance – daily**

#### **9.2.3.1 Cleaning**

Proceed as follows when cleaning the clamping module 6215P-01:

- Check the clamping module 6215P-01 for soiling.
- Clean all module components thoroughly and remove contamination, dust and foreign objects from the entire module area. General machine cleaning materials should be used for this. Never clean the clamping module 6215P-01 with high-pressure cleaners or degreasing cleaning materials.
- Do not use abrasive or corrosive materials for cleaning the clamping module 6215P-01 as they may impair the legibility of the markings or marking plates.

### **9.2.4 Maintenance – monthly**

#### **9.2.4.1 Visual inspection**

- Perform a visual inspection on the condition of the clamping module 6215P-01. When doing so, check the module for:
  - Mechanical damage,
  - Dirt deposits and
  - Unusual noises.
- Report damage immediately to your supervisor.

#### **9.2.4.2 Check fittings**

- Check the clamping module and the clamping sleeve for firm seating. Tighten loose elements firmly (observe the tightening torques).

#### **9.2.4.3 Check modules for deposits**

- Check the clamping module 6215P-01 for deposits. Remove all deposits on the module surface.

#### **9.2.4.4 Check modules for leak tightness**

- Check the clamping module 6215P-01 for leak tightness and function.
- Report damage immediately to your supervisor.

#### **9.2.4.5 Check compressed air tubing or pipes for leak tightness**

- Check the compressed air hoses or pipes of the clamping module 6215P-01 for leaks.
- Report damage immediately to your supervisor.

### **9.2.5 Maintenance – annual**

#### **9.2.5.1 Replace O-rings and the spring**

Annual maintenance, but not later than after the following cycles:

Module	Clamping cycles
Clamping module 6215P-01	2,000,000

When replacing the O-rings proceed as follows:

- Loosen and remove the circlip.
- Remove the washer and the spring.
- Carefully slide the piston out of the housing.
- Replace all O-rings (sealing kit available from AMF ANDREAS MAIER GmbH & Co. KG).
- Lightly grease the individual parts. The appropriate grease is available from AMF ANDREAS MAIER GmbH & Co. KG.
- Install the clamping module in reverse order.
- Make sure that the balls are positioned correctly.



## WARNING

### **Risk of injury from spring force!**

Non-observance can result in death or serious injuries!

- Before working, shut off pressure in the pneumatic system.
- Note that the spring is pre-tensioned in the installed state.
- While working, always wear the protective equipment necessary for the respective work.

## 9.2.6 Special maintenance intervals

### 9.2.6.1 Pneumatic hoses (not later than every 10 years)

- Perform the preparatory measures (see "9.2.2 preparatory measures")



## **WARNING**

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### **Risk of injury from exiting compressed air and blowing around of debris!**

During replacement of pneumatic components, there is a danger of injury to eyes and skin from exiting compressed air and blowing around of dust or chips, for example, if there is unexpected residual pressure in the system!

- When performing the work, wear safety goggles, protective gloves and safety clothing.
  - Pull pneumatic hoses off carefully.
  - Never point the pneumatic hoses at persons.
- Replace the pneumatic hoses not later than after 10 years. The manufacturing date of the hoses determines this (printing on the hose).

## 10 Removing from operation and disassembly

Disconnect the system from the compressed air supply and remove it from the machine, system or technical equipment on which it is installed, when it is no longer used. When doing so, observe chapter "5.5 Disassembly".



### WARNING

#### **Danger of serious injuries due to improper removal from operation and disassembly!**

Non-observance of the notes can result in damage, malfunctions or total breakdown of the clamping module 6215P-01 and impair the safety of the clamping module 6215P-01!

- Only qualified or instructed personnel may perform the work.  
Personnel must have practical experience in maintenance and repair.
- Have energy supply lines disconnected by suitably qualified personnel.
- Before working, shut off pressure in the pneumatic system.
- When performing the work, wear safety clothing, safety shoes, protective gloves and safety goggles.
- In case of doubt, contact AMF ANDREAS MAIER GmbH & Co. KG.

## 11 Disposal



### WARNING



#### **Danger of pollution/waste of resources!**

Non-observance may result in pollution!

- Only allow trained and instructed personnel carry out disposal.
- Collect any liquids and separate them.
- Make sure that oil residues in the clamping module 6215P-01 do not get into the groundwater, water or sewage system.
- Dispose of oil residues in accordance with the applicable regulations or, if necessary, contact AMF ANDREAS MAIER GmbH & Co. KG.
- Separate all other parts or materials and packaging waste according to type and recycle or dispose of them in accordance with the applicable legal regulations.
- Dispose of cleaning agents and aids used to clean the clamping module 6215P-01 in accordance with the local regulations and in compliance with the notes in the safety data sheets of the manufacturers.
- Observe local recycling regulations.



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## 12 Installation Statement (original installation statement)


Manufacturer/distributor:	AMF ANDREAS MAIER GmbH & Co. KG Waiblinger Strasse 116 D-70734 Fellbach
Authorised person for putting together the technical documents:	AMF ANDREAS MAIER GmbH & Co. KG Waiblinger Strasse 116 D-70734 Fellbach
Product:	Clamping module 6215P-01
Function:	Optimised clamping times during non-cutting machining

We hereby declare that the above incomplete machine fulfills all relevant stipulations of the Machinery Directive 2006/42/EC. In case of changes to the product, this declaration loses validity. Other applied, harmonised standards:

- EN ISO 12100
- EN ISO 4414

The special technical documents were prepared in accordance with Annex VII Part B of the Machinery Directive 2006/42/EC. We promise to submit these documents to the market supervision authorities within a reasonable time in electronic form upon justified request. The incomplete machine may be put into operation only if it has been determined that the machine in which the incomplete machine is to be installed satisfies all safety requirements of the Machinery Directive 2006/42/EC.

Fellbach, 26.01.2021

  
Rainer Zimmermann, design manager



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