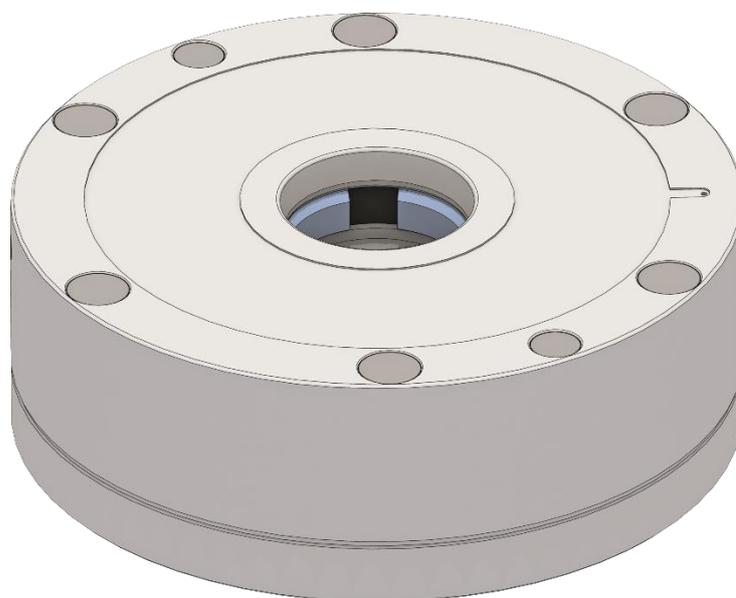


Assembly and operating instructions

DockLock airline

Pneumatic zero-point clamping system



Manufacturer:

HAINBUCH GmbH
SPANNENDE TECHNIK
Erdmannhäuser Straße 57
71672 Marbach
Germany

Phone: +49 7144.907-333
Fax: +49 7144.18826

verkauf@hainbuch.de
www.hainbuch.com

Sales Germany:

HAINBUCH GmbH
SPANNENDE TECHNIK
Erdmannhäuser Straße 57
71672 Marbach
Germany

Phone: +49 7144.907-333
Fax: +49 7144.18826

verkauf@hainbuch.de
www.hainbuch.com

Vischer & Bolli Automation GmbH
Member of HAINBUCH Group
Heuriedweg 34
88131 Lindau
Germany

Phone: +49 8382 96 19 -0
Fax: +49 8382 96 19 -30

verkauf@vb-automation.com
www.vb-automation.com

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1 General

1.1 About these instructions

These instructions contain important information for safe and proper use of the product. The instructions are part of the product and must be kept accessible to the operating personnel at all times. Before starting any work, the personnel must have read and understood these instructions. A prerequisite for safe working is the observance of all safety instructions in these instructions as well as compliance with the regulations according to the EC Machinery Directive 2006/42/EC. Illustrations in these instructions are for basic understanding and may differ from the actual design. In addition to these instructions, the technical data sheets (see section 7) as well as the installation drawings and maintenance instructions for the respective product apply.

1.2 Representation of warnings

The following signal words and symbols are used in the warnings to indicate hazards.

⚠ DANGER: Danger for persons!
Non-observance leads to irreversible injuries and even death.

⚠ WARNING: Danger for persons!
Non-observance can lead to irreversible injuries and even death.

⚠ CAUTION: Danger for persons!
Non-observance can lead to minor injuries.

⚠ NOTE: Material damage!
Information to prevent material damage.

1.3 Other applicable documents

The following documents are related to these assembly and operating instructions:

- Data sheet of the respective product (see chapter 7). The data sheets contain the corresponding installation drawings as well as the maintenance and assembly instructions.
- EU Declaration of Incorporation
- Current catalog (clamping book)

2 Safety information in these instructions

⚠ DANGER: Risk of breakage if the clamping system is overloaded.

The forces acting on a cassette/cylinder must not exceed the specified draw-in force!
Beginning loss of the zero point in Z axis due to overload of the system.

If the forces acting on a cassette/cylinder exceed the specified holding force, there is a risk of the cassette/cylinder breaking!

⚠ DANGER: Risk of injury due to unexpected movements. If the power supply is switched on or coupled and there is still residual energy in the system, components can move unexpectedly and cause severe injuries.

Before starting any work on the product: Switch off or disconnect the power supply and secure it against being switched on again.

Ensure that there is no residual energy left in the system.

Only use couplings that automatically vent when uncoupling!

⚠ DANGER: Danger to life due to suspended loads. Falling loads can lead to severe injuries and even death.

Do not step into the swivel range of suspended loads.

Move loads only under supervision.

Do not leave suspended loads unattended.

Wear appropriate personal protective equipment.

Use appropriate protective devices.

⚠ WARNING: In the event of personal injury or material damage due to malfunction as a result of improper assembly, disassembly or operation, HAINBUCH cannot accept any warranty!

Applications may only be carried out according to these instructions or after consultation with HAINBUCH!

⚠ WARNING: Risk of crushing limbs on moving parts during the loading process. 

Do not reach between clamping device and changing plate during the changing processes!

Use loading aids!

⚠ WARNING: Risk of injury and material damage! Do not exceed the maximum operating pressure (see Figure 1)! A pressure relief safety valve must be installed to operate the clamping system.

It must be ensured that the maximum operating pressure of the clamping system is not exceeded!

⚠ WARNING: Risk of injury to persons and risk of damage to the clamping system when opening the covers.

The clamping system may only be disassembled by HAINBUCH.

The covers of the clamping systems are under spring preload and may only be removed by trained specialist personnel and disassembled and assembled in

compliance with the associated disassembly and assembly instructions as well as the general safety regulations.

⚠ WARNING: Risk of injury from falling of the fixture, pallet or workpiece in case of inadvertent or negligent release of the clamped fixture.

Inadvertent or negligent release of the clamped fixture must be prevented by suitable countermeasures (e.g. by disconnecting the energy supply after the clamping process, or by using safety valves preventing unexpected energy supply).

The machines and equipment must comply with the minimum requirements of the EC Machinery Directive 2006/42/EC and in particular have effective technical protective measures against potential mechanical hazards.

Wear appropriate personal protective equipment.

⚠ WARNING: Risk of injury if the clamping bolt axis is in a horizontal position or in overhead applications due to the fixture or pallet falling down.

Use a crane or transport cart when transporting.

In case of horizontal or overhead application, secure the fixture or pallet against falling down before loosening!

⚠ CAUTION: Risk of injury due to loss of pallets in the event of incorrect control or faulty operation.

Disconnect the energy supply after locking.

The hazard area must be surrounded by a protective enclosure during operation.

Monitor clamping operations by the quantities of oil moved.

⚠ CAUTION: Risk of injury due to sharp edges and rough or slippery surfaces.

Wear personal protective equipment and protective gloves.



⚠ CAUTION: Risk of injury when setting up fixtures and assembling parts.

Wear safety shoes and personal protective equipment when installing cassettes/cylinders and when setting up pallets and closing devices!



⚠ CAUTION: Risk of injury due to contamination such as metal chips in the air connections of the closing devices that can be blown out.

Wear protective goggles and hearing protection when blowing out cassettes/cylinders!



Take appropriate measures to secure the hazard area.

⚠ CAUTION: Risk of hearing damage due to exhaust air noise from the pneumatics.

Wear protective goggles and hearing protection when blowing out cassettes/cylinders!



⚠ CAUTION: Risk of burns from workpieces with high temperature.

Wear protective gloves when removing the workpieces.



Automatic loading is to be preferred.

⚠ CAUTION: Risk of slipping and falling if the clamping system is used in a contaminated environment (e.g. cooling lubricants or oil).

Ensure a clean working environment before starting assembly and installation work.

Wear suitable work gloves and personal protective equipment.

Observe the safety and accident prevention regulations when operating the zero-point clamping system and especially when handling machine tools and other technical equipment.

⚠ NOTE: Malfunction possible if unlubricated compressed air is used. The following notes on the quality of the compressed air used must be observed:

The compressed air used for air-blast must be filtered and have an oil content of 5 mg/m³ (ISO 8573-1: 7:4:4)!

The compressed air supply must be provided by a separate maintenance unit with lubricator.

⚠ NOTE: Malfunctions and material damage possible! Only the use of original HAINBUCH spare parts ensures that all product properties are maintained or restored after maintenance and revision work.

HAINBUCH will not assume any warranty in the event of improper maintenance or the installation of third-party parts.

⚠ NOTE: Malfunctions and material damage possible! Only original DockLock clamping bolts must be used!

Proper functioning is only ensured if original parts are used.

⚠ NOTE: Malfunctions and material damage possible! Observe the maintenance intervals according to the corresponding data sheet.

Clamping cylinders must be maintained according to the intervals specified on the data sheet, in order to maintain their function in the long term.

⚠ NOTE: Malfunctions due to contamination in the clamping chamber as a result of blowing out with a compressed air gun!

Remove swarfs using a swarf vacuum cleaner.

Observe the maintenance and assembly instructions as well as the data sheet (see chapter 7)!

⚠ NOTE: Once a fixture has been clamped, it remains clamped until another release signal is applied to the clamping system or until the maximum permissible forces acting on the system are exceeded.

3 Introduction

Thank you for purchasing one of our products. We wish you best results with it. With your DockLock zero-point clamping system, you have chosen a product that clearly distinguishes itself from other clamping systems on the market thanks to its high attenuation of machining vibrations, its wear resistance and its low sensitivity to dirt.

Please read these assembly and operating instructions carefully **before** commissioning the product.

4 Product description and areas of application

Zero-point clamping systems are critical components in the production of workpieces on machine tools to achieve results with high dimensional accuracy at the highest repetition rate and shortest set-up time. By using our products, it is possible to combine highest precision with greatest possible cost-efficiency when machining workpieces in industrial production.

DockLock zero-point clamping systems can be used on a wide variety of machine types and for almost any conceivable machining requirement. There are two product types:

- Surface-mounted cassettes that are attached to the existing machine table
- Flanged cylinders and built-in cylinders that are inserted into a machine table or pallet

»Cassettes« and »cylinders« are distinguished by the fact that a cassette is enclosed in a housing that absorbs all pressures (forces) generated inside. The forces acting in a cylinder must be absorbed by the machine table or pallet in which they are installed.

The cassettes or cylinders used for clamping the workpieces can be arranged on the machine table as required. This ensures a high degree of flexibility with regard to the machining of different workpieces on machine tools.

Further applications of the DockLock zero-point clamping systems result from the unlimited clamping time. The systems are released pneumatically and clamp with spring force. Re-clamping is also performed pneumatically. The clamping and thus the draw-in force of the cassettes/cylinders are maintained until the clamping system is opened again by a pneumatic release signal. To maintain an existing clamping, the pressure medium does not have to be connected to the clamping system.

As a result, our zero-point clamping systems can also be used in the design of robot cells, production islands and production lines for positioning equipment and robots, if planned accordingly.

In addition, DockLock zero-point clamping systems can be used for handling and logistics of workpiece pallets by an industrial robot within a robotic cell.

The product can be used virtually anywhere for turning, milling, et cetera, if:

- The forces acting on the system during operation do not exceed the maximum permissible forces
- The system is operated within its defined parameters
- The conditions of use and environment are observed
- The specifications of these instructions are adhered to
- A suitable fixture is used to check the clamping position

4.1 Intended use

This product is used for positioning and clamping fixtures or workpieces on machine tools, handling equipment or other suitable technical equipment.

The product is intended for industrial and industry-related applications.

Intended use also includes compliance with all specifications in these instructions. Ensure a clean environment when working on and with the zero-point clamping system.

4.2 Non-intended use

A non-intended use of the product is for example:

- If the system is used in turning applications without suitable means for checking the clamping position and the maximum permissible forces acting on the system are exceeded.
- If used in non-permissible working environments.
- If the technical data or pressure and performance limits specified by the manufacturer are exceeded during use.
- If, in disregard of the applicable safety regulations, persons work on machines or technical equipment that do not comply with the EC Machinery Directive 2006/42/EC.
- If used as a load handling device or hoist without proper means to check the clamping position before the fixture is moved.
- If it is used as a load handling device or hoist and the maximum permissible forces acting on the system are exceeded.

4.3 Structural changes

⚠ NOTE: Malfunctions and material damage possible! Only the use of original HAINBUCH spare parts ensures that all product properties are maintained or restored after maintenance and revision work.

HAINBUCH will not assume any warranty in the event of improper maintenance or the installation of third-party parts.

Modifications, alterations and reworking of the product can change and impair its function and/or safety or cause damage to the product.

Make structural changes only with the written approval of HAINBUCH.

4.4 Spare parts

⚠ NOTE: Malfunctions and material damage possible! Only original DockLock clamping bolts must be used!

Proper functioning is only ensured if original parts are used.

Only original HAINBUCH spare parts are to be used for repairs and modifications to the product.

4.5 Ambient and operating conditions

⚠ CAUTION: Risk of slipping and falling if the clamping system is used in a contaminated environment (e.g. cooling lubricants or oil).

Ensure a clean working environment before starting assembly and installation work.

Wear suitable work gloves and personal protective equipment.

Observe the safety and accident prevention regulations when operating the zero-point clamping system and especially when handling machine tools and other technical equipment.

Inappropriate ambient and operating conditions can cause hazards from the product that can lead to severe injuries and considerable material damage and/or significantly reduce the service life of the product. All information on the ambient conditions and technical operating conditions can be found in the data sheets for the respective product.

It must be ensured that the product is only used within its specified application parameters. It must be ensured that the product is adequately dimensioned in accordance with the application.

Make sure that the interfaces (contact surfaces and clamping chamber) are always clean.

The cooling emulsion used should be of high quality and contain anti-corrosion additives.

5 Operating personnel

The work described in these assembly and operating instructions, in particular the provision of closing fixtures (base plates) and pallets, the set-up of the systems on machine tools and the maintenance work described, may only be carried out by trained specialist personnel.

Furthermore, extensive specialist knowledge of the machine tool used in each case and its functions is necessary for the installation, use and maintenance of our products.

When working on and with the product, the required personal protective equipment must be worn, and the occupational health and safety regulations must be complied with.

Only adequately qualified personnel may be used to operate the products. This is the only way to identify hazards at an early stage, to avoid them and to ensure knowledge of relevant standards and safety regulations.

The country-specific accident prevention regulations and the general safety instructions must be observed.

5.1 Personal protective equipment

When working on and with the product, the respective occupational health and safety regulations must be observed, and the required personal protective equipment must be worn.

Applicable safety and accident prevention regulations must be observed when operating the products.

Wear close-fitting protective clothing when handling moving parts.

5.2 Protection during handling and assembly

- ⚠ DANGER:** Danger to life due to suspended loads. Falling loads can lead to severe injuries and even death.
- Do not step into the swivel range of suspended loads.
 - Move loads only under supervision.
 - Do not leave suspended loads unattended.
 - Wear appropriate personal protective equipment.
 - Use appropriate protective devices.
-

- ⚠ WARNING:** In the event of personal injury or material damage due to malfunction as a result of improper assembly, disassembly or operation, HAINBUCH cannot accept any warranty!
- Applications may only be carried out according to these instructions or after consultation with HAINBUCH!
-

- ⚠ WARNING:** Risk of crushing limbs on moving parts during the loading process. 
- Do not reach between clamping device and changing plate during the changing processes!
 - Use loading aids!

Improper handling / assembly may result in hazards from the product that can lead to severe injuries and property damage. For details on assembly, see chapter 9.

Secure the product against accidental actuation during all work. Disconnect and/or use appropriate safety valves/safety switches.

Observe the applicable accident prevention regulations.

Use suitable transport equipment and take appropriate precautions against entrapment and crushing.

5.3 Protection during commissioning and operation

- ⚠ DANGER:** Danger to life due to suspended loads. Falling loads can lead to severe injuries and even death.
- Do not step into the swivel range of suspended loads.
 - Move loads only under supervision.
 - Do not leave suspended loads unattended.
 - Wear appropriate personal protective equipment.
 - Use appropriate protective devices.

Falling and ejected components can cause severe injuries or even death.

5.4 Protection against dangerous movement

⚠ DANGER: Risk of injury due to unexpected movements. If the power supply is switched on or coupled and there is still residual energy in the system, components can move unexpectedly and cause severe injuries.

Before starting any work on the product: Switch off or disconnect the power supply and secure it against being switched on again.

Ensure that there is no residual energy left in the system.

Only use couplings that vent automatically after uncoupling!

Switch off the power supply, ensure that there is no residual energy and secure against restarting, e.g. use self-venting couplings which ensure that there is no residual energy (residual pressure) in the system after uncoupling.

The response of the monitoring functions alone cannot be relied upon to avert hazards. Until the monitoring becomes effective, a faulty drive movement must be assumed, of which the effect depends on the control and the current operating state of the drive. Carry out maintenance, conversion and attachment work outside the danger zone defined by the range of movement.

To prevent accidents and/or material damage, the presence of persons in the range of movement of the machine must be restricted. Prevent unintended access for persons to this area, for example, by means of protective covers, protective fences, light barriers, etc. Protective structures must have sufficient strength with respect to the maximum possible kinetic energy.

EMERGENCY STOP switches must be easily accessible and quickly reachable. Check the function of the EMERGENCY STOP switch before commissioning the machine or system. The operation of the products in case of a malfunction of these protective devices must be prevented.

6 Information on the cassette

Figure 1 shows all the information on the cassette cover that is used to uniquely identify and allocate a cassette.

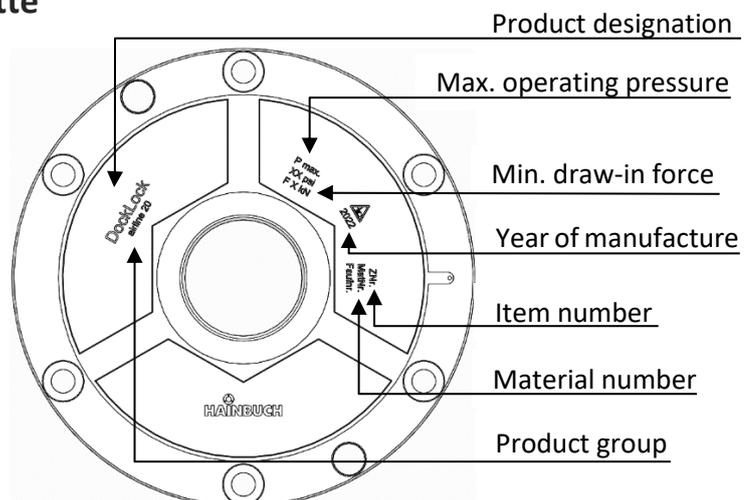


Figure 1 – Information on the cassette

7 Data sheets for the products

In addition to the technical data, the data sheet of the corresponding product contains all applicable part numbers as well as all associated documentation such as installation drawings and assembly instructions. The data sheets for the corresponding product designation on the cassette cover are listed in Table 1.

Product designation	Description	Data sheet
airline	1 t system airline standard	DB airline S

Table 1 – Assignment of data sheets

8 Using the pressure medium (compressed air)

⚠ ATTENTION: The minimum/maximum operating pressure (see Figure 1) must not be fallen short of or exceeded!

When using the pressure medium, the corresponding data sheet (see chapter 7) must be observed!

The products can either be integrated into the pneumatic system of the machine tool or production line, or operated with an independent compressed air source. The compressed air system is connected directly to the corresponding cassette. Necessary connection and distribution work on the pneumatics and the machine tool must correspond to the state of the art and be planned and carried out by trained specialist personnel.

Unless otherwise specified, DockLock cassettes are actuated with an operating pressure of 6 bar. Pressure deviations must not exceed +/- 5 % of the operating pressure.

The pressure build-up to release the lock takes approximately 1 second.

Only original DockLock pneumatic couplings (see Table 2) may be used. They vent the system automatically after uncoupling. It must be ensured that the system has been reclamped with the turbo before machining, that the system is depressurized and that the pneumatics have been disconnected.

Item	Item number
Coupling plug / dust cap	755812 / 755812-1
Coupling sleeve	755813

Table 2 – Couplings

9 Assembling the zero-point clamping system

For assembling, the installation drawings (EBZ) and assembly instructions (WMA) must be observed (see chapter 7)!

To assemble the cassettes, first prepare a **locking device** (separate or machine table) to hold the cassettes and a workpiece carrier (pallet) to hold the clamping bolts. In preparation for assembling the cassettes, it is necessary to provide appropriately dimensioned installation spaces in the locking device.

In addition, regardless of the type of cassettes, a **pallet** or **workpiece carrier** must be prepared. A few locating holes must be drilled in the pallet or workpiece carrier for mounting the clamping bolts, which are used for subsequent fastening on the locking device.

In order to assemble the zero-point clamping system and prepare it for operation, the instructions in this chapter must be implemented one after another.

The applicable framework conditions for the design of a workplace and the required ergonomic design guidelines (e.g. ISO TR 22100-3) must be taken into account during the planning, installation and operation of the clamping systems.

9.1 Specifications for the preparation of locking devices

⚠ ATTENTION: The forces acting on a cassette must not exceed the draw-in force specified on the data sheet! There is a risk of damage if the draw-in force is exceeded!

⚠ ATTENTION: The forces acting on a cassette must not exceed the specified holding force! Risk of cassette breakage!

Locking devices are the devices used to hold the workpieces or the workpiece carriers (e.g. pallets, see Chapter 9.4). Each locking device must be designed for the specific application. The design must also take the compressed air supply into account (hoses, lines, directly in the device).

When designing the locking devices, the forces to be expected on the clamping system as a whole and on the individual cassettes must be taken into account. During operation, no cassette of the system is allowed to be loaded beyond the holding force (axial and radial) specified on the data sheet. Once a cassette was exposed to a load above the specified holding force, all parts must be disassembled, inspected and replaced if necessary. The system must not be put back into operation until all affected parts have been checked.

Preferably, steel or cast iron should be used for the manufacture of locking devices. For information on strength classes, see Table 3.

Material	Grade/strength class
Steel	1.1191 (Ck45) / 1.2085 or similar
Cast iron	EN-GJL-300 (GG-30; 0.6030)

Table 3 – Materials for locking devices

9.2 Preparing the locking device

For each individual product (item number), corresponding installation drawings for the preparation of the locking devices and assembly plans are available. The installation drawings show the dimensions of the installation volumes for accommodating the cassettes.

For the selection of the corresponding installation drawing, see the data sheet of the product (for assignment to the product, see chapter 7).

9.3 Assembling the cassettes

⚠ ATTENTION: In case of pneumatic supply by means of deep-hole bores, the material must be tight and free of blowholes, and it must withstand the applied continuous load! The recommended minimum wall thickness is 3 mm for steel and 5 mm for cast iron.

Once the locking device has been prepared, attach the cassettes on or in the locking device.

For the selection of the corresponding assembly instructions, see the data sheet of the product (for assignment to the product, see chapter 7).

9.4 Specifications for the preparation of pallets

Pallets or workpiece carriers must be designed and constructed according to individual requirements of the machine, the workpieces and the expected load during machining.

There is no special recommendation for the material. Deformation due to workpiece clamping must be avoided.

9.5 Sizing the clamping bolt holes in the pallets

⚠ ATTENTION: Only original DockLock clamping bolts must be used!

The following figure shows the sizing of the clamping bolt holes for fastening the clamping bolts in the pallet. The clamping bolts can also be mounted directly in the workpiece. In this case, the use of a pallet is not necessary.

The holes differ according to the type of fastening of the clamping bolts (fastening thread). The clamping bolts can either be screwed continuously (see Figure 2, on the left) or screwed into a blind hole (see Figure 2, on the right).

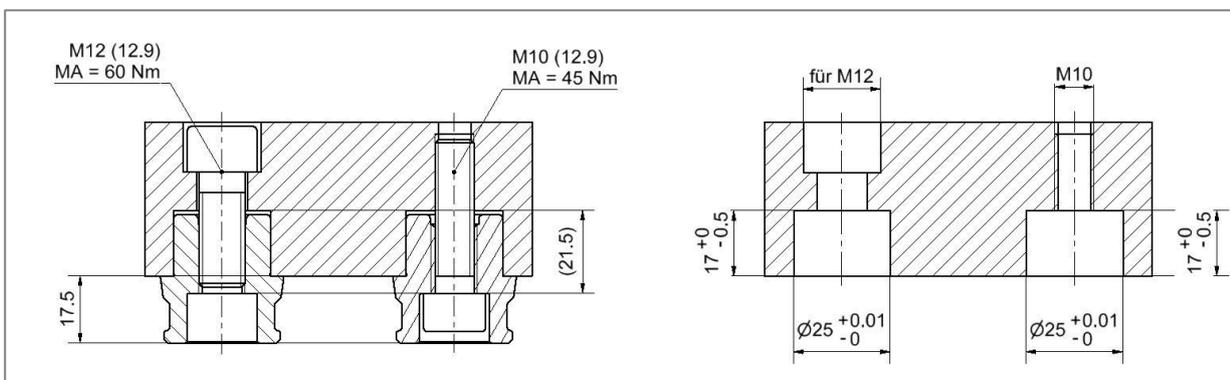


Figure 2 – Clamping bolt holes

9.6 Arranging the clamping bolt holes in the pallets

⚠ ATTENTION: Only original DockLock clamping bolts must be used!

In order to clamp a pallet or workpiece carrier reliably and accurately, at least one centering clamping bolt is required. This also applies to arrangements with more than one clamping bolt. To secure a workpiece against twisting in all directions, at least two clamping bolts are required (one centering clamping bolt and one compensating clamping bolt, see Figure3).

Three different types of clamping bolts are distinguished (see Figure3). Each type performs a specific function in the clamping bolt arrangement. Therefore, in a clamping bolt arrangement (pallet, workpiece carrier, or directly in the workpiece) with more than two clamping bolts, all three types of clamping bolts must be installed. The clamping bolts without centering function (see Figure3) are used to increase the holding force and have no function for the alignment.

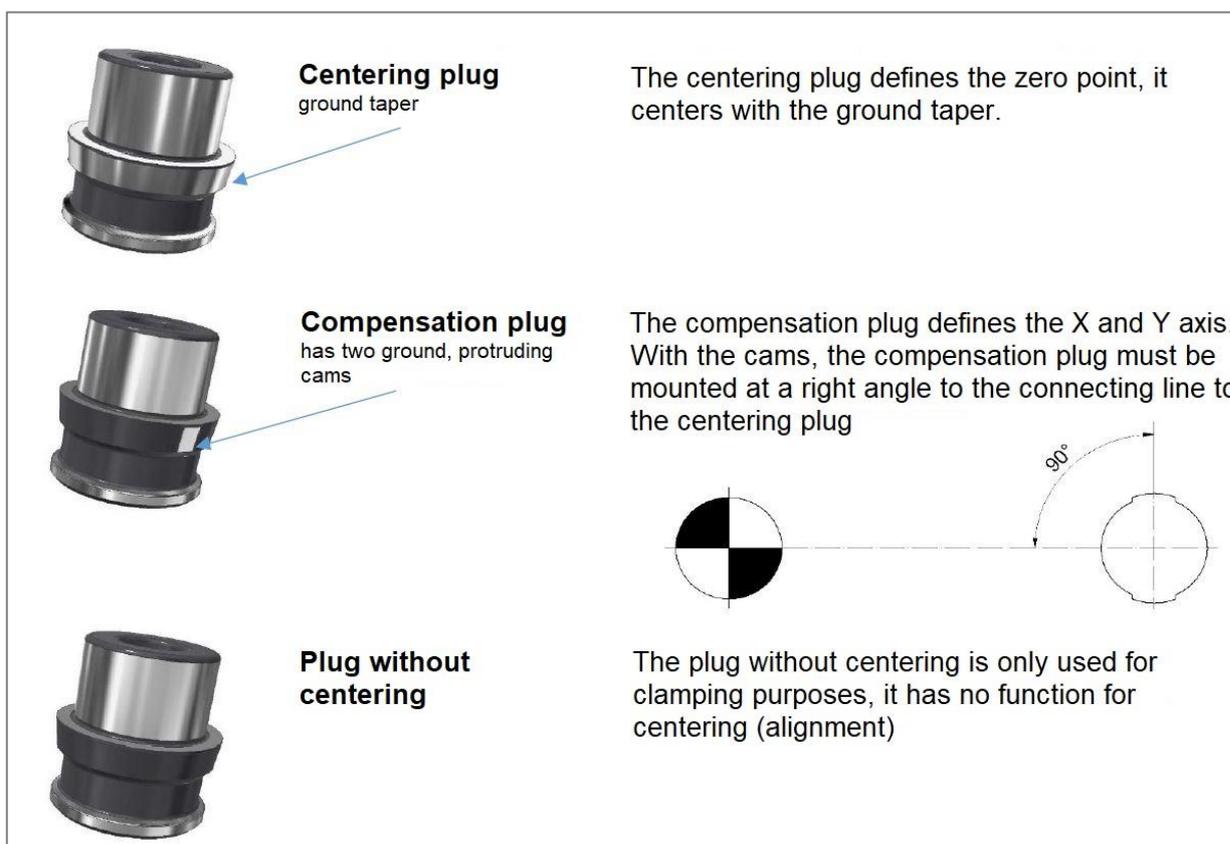


Figure3 – Types of clamping bolts

The clamping bolts must be distributed as evenly as possible on the pallet or workpiece carrier in order to minimize the vibrations generated during machining of the workpiece and to distribute the forces generated during machining as evenly as possible.

When positioning the individual types of clamping bolts, the system shown in Figure 4 is recommended.

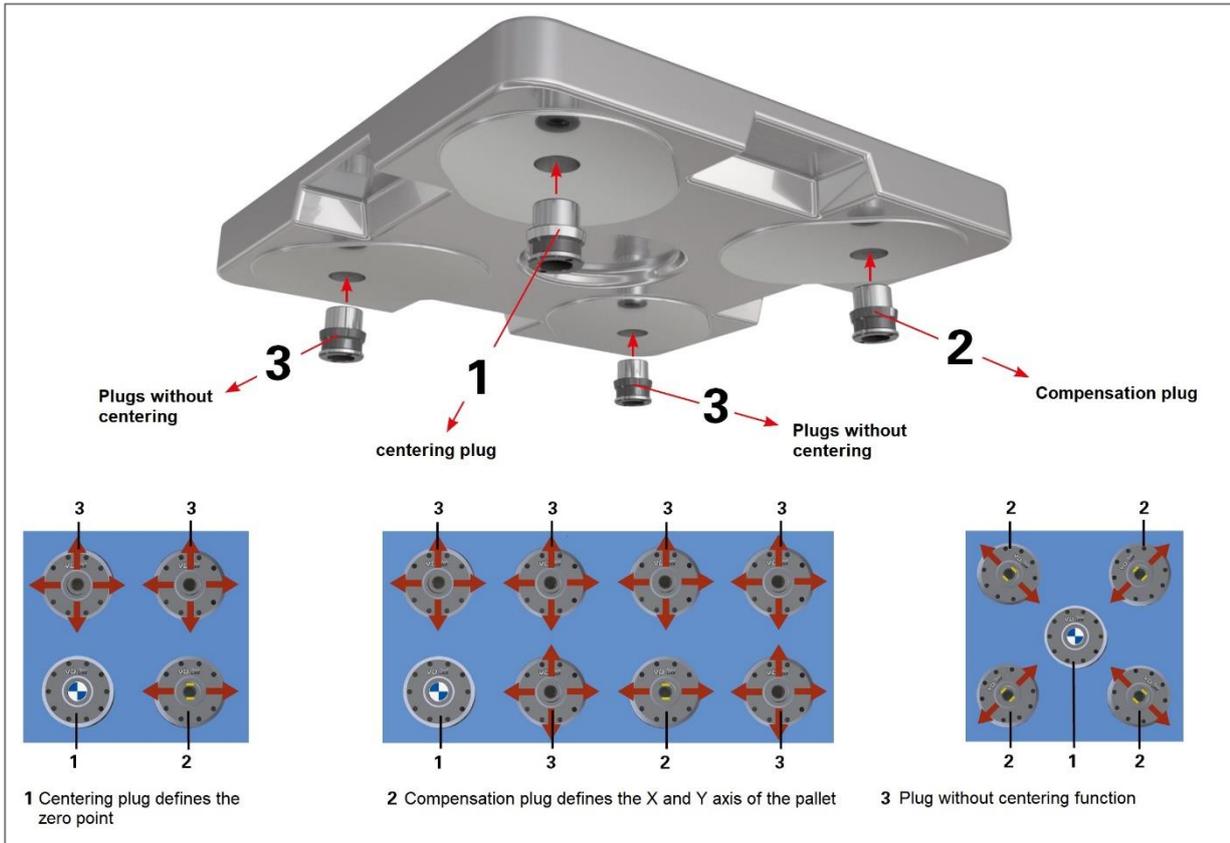


Figure 4 – Recommended clamping bolt arrangements

10 Operating the zero-point clamping system

⚠ CAUTION: Danger of crushing when placing a fixture



⚠ CAUTION: Wear safety shoes when installing cassettes and when setting up pallets and locking devices!



⚠ ATTENTION: Applications may only be carried out according to these instructions or after consultation with HAINBUCH!

⚠ ATTENTION: HAINBUCH cannot assume any warranty for malfunctions resulting from improper assembly, disassembly or operation!

⚠ ATTENTION: Do not exceed the maximum load capacity per cassette!

⚠ ATTENTION: The minimum/maximum operating pressure (see Figure 1) must not be fallen short of or exceeded!

A single operating cycle consists of a clamping operation and a release operation. When operating, observe the respective data sheet of the product (see chapter 7).

10.1 Clamping process

1. To initiate a clamping process, the piston (Fig. 5/2) must be at the lower stop. The pressure medium is introduced through the opening (release system) in the housing above the piston (Fig. 5/2).
2. The piston (Fig. 5/2), which encloses the clamping segments (Fig. 5/1), allows them to open through the expansion segments.
3. The clamping bolt (Fig. 5/4) can now be introduced and must lie flat.
4. When the pressure medium is released, the piston (Fig. 5/2) moves upwards due to the force of the spring assembly (Fig. 5/3). The clamping segments (Fig. 5/1) are placed against the piston (Fig. 5/2) and enclose the clamping bolt (Fig. 5/4).
5. To complete the clamping process, the pressure medium is introduced through the opening (clamping system) in the housing under the piston (Fig. 5/2). The pressure medium is then drained and uncoupled.
6. The clamping process is completed.

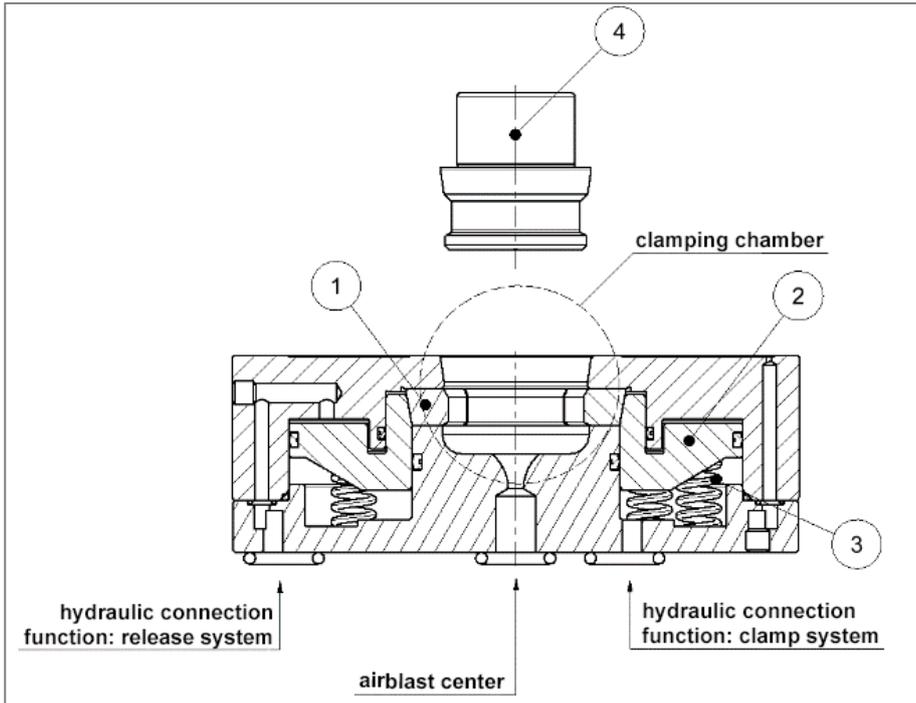


Figure 5 – Sectional view of the clamping/release process

10.2 Release process

1. The pressure medium is introduced through the opening (release system) in the housing above the piston (Fig. 5/2).
2. The piston (Fig. 5/2), which encloses the clamping segments (Fig. 5/1), allows them to open through the expansion segments.
3. The clamping bolt (Fig. 5/4) can now be lifted out of the clamping chamber.
4. The release process is completed.

10.3 Blowing out the cassettes

⚠ CAUTION: Wear protective goggles and hearing protection when blowing out cassettes!



⚠ ATTENTION: Blowing out the clamping chamber with compressed air can lead to a malfunction of the system! Remove swarfs only by using a swarf vacuum cleaner! Observe the maintenance and assembly instructions as well as the data sheet (see chapter 7)!

⚠ ATTENTION: The compressed air used for air-blast must be filtered and have an oil content of 5 mg/m³ (ISO 8573-1:2010)!

⚠ ATTENTION: The residual humidity of the compressed air used must not exceed 5 g/m³!

It is recommended to blow out the cassettes with each new clamping.

The cassettes are equipped with a blow-out device. Air-blast the cassettes is necessary to achieve high dimensional accuracy and to maintain the clamping force.

It must be possible to regulate the air volume and pressure for air-blast separately. The pressure should not exceed 5 bar. Too much blow-out air prevents clamping of the pallets.

The following steps are necessary for air-blast the cassettes:

1. Clamp the cassette to be able to perform an air-blast.
2. Switch on the air-blast
3. Release the cassette
4. Remove the fixture
5. Insert new fixture, or cover clamping bolt
6. Switch off the air-blast
7. Re-clamp the cassette

10.4 Care and maintenance

⚠ CAUTION: Wear protective goggles and hearing protection when blowing out cassettes!



⚠ ATTENTION: The compressed air used for air-blast must be filtered and have an oil content of 5 mg/m³ (ISO 8573-1:2010)!

⚠ ATTENTION: The residual humidity of the compressed air used must not exceed 5 g/m³!

The care and maintenance of the cassettes is carried out in three stages:

- It is recommended to blow out the cassettes **before each new work step** (see chapter 10.3)
- The clamping chamber of the cassettes must be cleaned **regularly** in accordance with the respective maintenance instructions (see data sheet, chapter 7).
- After a **specified number of clamping cycles**, check the draw-in force of the cassettes. The number of clamping cycles until the draw-in force is checked depends on the respective product and can be found in the corresponding data sheet (see chapter 7). The check of the draw-in force can also be performed by the customer service.

Repairs to the products are not to be carried out by yourself. The repair as well as the opening of the cassettes are the responsibility of the manufacturer. No liability is assumed for consequential damage due to unauthorized opening of the products!

Defective products can be sent directly to HAINBUCH for repair, well packaged and wrapped in oil paper. See front page for address. No liability is assumed for transport damage due to insufficiently packaged goods!

11 Production interruption, storage and disposal

For production interruption, storage and disposal, the corresponding data sheet (see chapter 7) must be observed!

Production interruption: Cassettes not in use must be provided with cover clamping bolts to prevent contamination of the clamping chamber. The cover clamping bolts are not included in the scope of delivery and must be ordered separately (see also catalog/clamping book). Cover clamping bolt item # 755534

Storage: Storage of cassettes is possible in oiled condition and wrapped in oil paper. If the cassettes are to be stored for a longer period of time, a cyclical optical condition check (monthly) is recommended.

Disposal: When disposing of cassettes, the applicable legal requirements must be complied with. The main component of the products is metal or metal alloys. The rubber seals used must be disposed of separately.

12 Other applicable documents

The following documents are related to these assembly and operating instructions:

- Data sheet of the respective product (see chapter 7). The data sheets contain the corresponding installation drawings as well as the maintenance and assembly instructions.
- EU Declaration of Incorporation
- Current catalog (clamping book)

13 Definitions

The following are explanations of the terms used in these assembly and operating instructions and on the associated data sheet.

Draw-in force: Maximum permissible force by which a cassette may be loaded axially or radially.

Limit draw-in force: Minimum force at which a cassette must draw-in. If this is not reached, the clamping springs of the system must be replaced (maintenance/repair).

Holding force: Force at which the weakest component begins to fail. Breakage occurs if this force is exceeded on a cassette.

Operating pressure for release: The pressure required for the operation of the system.

Repeatability: Describes the accuracy achieved when a fixture is removed from a system, placed back on the system, and clamped again.

Clamping cycles until maintenance: Number of clamping cycles (cycle = clamping and release) at which maintenance of the system is recommended.

Clamping cycles until testing the draw-in force: Number of clamping cycles at which a test of the available draw-in force is to be carried out.

Time until released: Time required to release a cassette (depending on line cross-sections, number of cassettes, pump type, etc.)

Pre-centering: Accuracy at which the clamping fixtures must be pre-positioned on the system to ensure that the fixtures can be inserted into the systems.

Clamping duration: Describes the duration of maintaining the clamping of a system. Once a system is clamped, it remains clamped until energy is supplied again to release it.