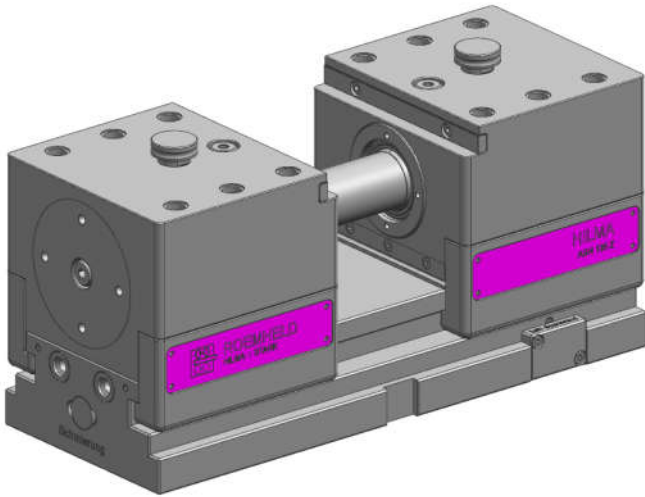




ASH clamping system

Jaw width 125 mm, centric – hydraulic with / without distance measurement system



1 Description of the product

Description

The products are designed for universal workpiece clamping on machine tools.

The hydraulic power stroke is generated by an external pressure transducer (e.g. Roemheld modular unit). The clamping system is hydraulically double-acting.

Application

The products are used for machining dimensionally stable workpieces in single or multiple clamping devices. The products are suitable for both series and individual production.

The products are intended exclusively for automated production (with the corresponding safety devices) and not for manual operation.

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2 Validity of the documentation

This documentation applies to the products:

Option for quick-change jaws

- 9.4586.8035 (with distance measurement system)
- 9.4586.8039 (without distance measurement system)

Option for bolted jaws

- 9.4586.8040 (without distance measurement system)

3 Target group

Specialists, fitters and installers of machines and systems, with specialist knowledge of hydro-mechanical equipment.

Qualification of personnel

Expertise means that personnel must:

- be able to read and fully understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have specialised knowledge of the function and structure of the corresponding components.

A **specialist** is a person who has sufficient knowledge based on their professional training and experience and is familiar with the relevant regulations to such an extent that they:

- can assess the work assigned to them,
- can recognise potential dangers,
- can take the necessary measures to eliminate hazards,
- are familiar with recognised technical standards, rules and guidelines,
- have the necessary repair and assembly skills.

4 Symbols and signal words

WARNING

Personal injury

Indicates a potentially dangerous situation.
 If it is not avoided, death or serious injury can result.

CAUTION

Minor injuries / damage to property

Indicates a potentially dangerous situation.
 If not avoided, minor injuries or property damage may result.

Hazardous to the environment



The symbol indicates important information for the proper handling of environmentally hazardous substances.
 Failure to observe these instructions may result in serious environmental damage.



Mandatory sign!

The symbol indicates important information on the necessary protective equipment, etc.

NOTE

- The symbol indicates user tips or particularly useful information. This is not a signal word for a dangerous or harmful situation.

5 For your safety

5.1 Basic information

The operating manual serves to provide information and avoid hazards when installing the products in the machine as well as information and notes for transport, storage and maintenance. Accidents and damage to property can only be avoided and trouble-free operation of the products can only be guaranteed if this operating manual is strictly observed.

Observance of the operating manual also has the same effect:

- avoidance of injuries,
- reduced downtime and repair costs,
- increased service life of the products.

5.2 Safety instructions

The product was manufactured in accordance with the generally recognised rules of technology.

Observe the safety instructions and descriptions of actions in this operating manual to avoid personal injury or damage to property.

- Read this operating manual thoroughly and completely before working with the product.
- Keep the operating manual in a place where it is accessible to all users at all times.
- Observe the applicable safety regulations, accident prevention and environmental protection regulations of the country in which the product is used.
- Only use the Roemheld product if it is in perfect technical condition.
- Observe all instructions on the product.
- Only use accessories and spare parts approved by the manufacturer in order to prevent personal injury due to unsuitable spare parts.
- Comply with intended use.

- You may only put the product into operation once it has been established that the incomplete machine or machinery into which the product is to be installed complies with the country-specific provisions, safety regulations and standards.
- Carry out a risk analysis for the incomplete machine or machinery.
 Due to the interaction of the product with the machine / device and the environment, risks may arise that can only be determined and minimised by the user, e.g.
 - Generated forces,
 - Generated movements,
 - Influence of hydraulic and electrical control,
 - etc.
- Ensure that personal protective equipment is used during all work steps.

6 Use

6.1 Intended use

The products are intended exclusively for clamping workpieces in industrial use.

The intended use also includes

- Use within the performance limits specified in the technical data (see catalogue sheet).
- Use in the manner described in the operating manual.
- Compliance with the maintenance intervals.
- Personnel qualified or instructed in accordance with the activities.
- The installation of spare parts only with the same specifications as the original part.
- Only clamping jaws may be moved.

6.2 Improper use

WARNING

Injury, material damage or malfunctions!

- Do not make any modifications to the product!

The use of the products is not permitted:

- For use at home.
- On pallets or tool tables in primary shaping and forming machines.
- If physical/chemical effects (vibrations, welding currents or other things) could damage the product.
- In machines, pallets or tool tables used to change the properties of materials (magnetisation, irradiation, photochemical processes, etc.).
- In areas where special guidelines apply, especially for equipment and machinery:
 - For use at fairgrounds and amusement parks.
 - In food processing or in areas with special hygiene regulations.
 - For military purposes.
 - In mines.
 - In explosive and aggressive environments (e.g. ATEX).
 - In medical technology.
 - In the aerospace industry.
 - For passenger transport.

- For deviating operating and environmental conditions, e.g:
 - With higher operating pressures than specified in the catalogue sheet or installation drawing.
 - For fluids that do not comply with the specifications.
 - For larger volume flows than specified in the catalogue sheet or installation drawing.

Special solutions are available on request!

7 Assembly

⚠ WARNING

Injury due to falling parts!

- Keep hands and other body parts away from the work area.
- Wear personal protective equipment!

⚠ CAUTION

Heavy weights can fall down

- Some product types have a considerable weight. These must be secured against falling during transport.
- The weight specifications can be found in the "Technical data" chapter.

7.1 Design

The hydraulic centric force is transmitted to the clamping jaws via the slides.

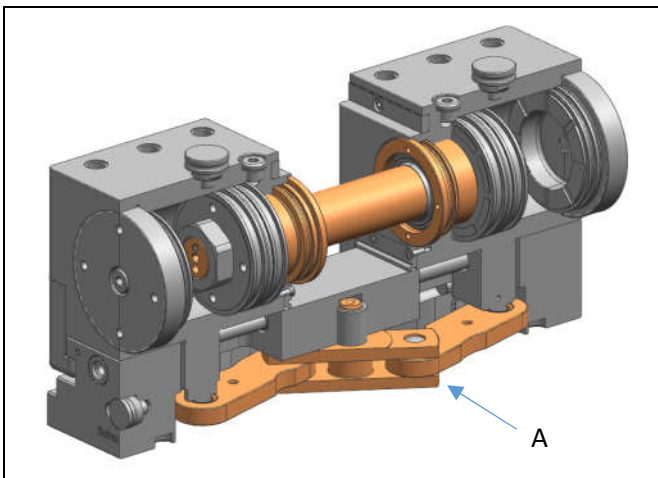


Fig. 1: Design – Synchronization device (A)

- Hydraulic clamping and release is performed by an external pressure transducer with a double-acting circuit.
- Low-backlash synchronization device ensures high centring accuracy.

7.2 Assembly types

⚠ WARNING

Risk of injury due to improper attachment of the product!

Improper fastening of the product can cause the product to come loose from the machine table or be damaged during clamping or processing.

- Install the product according to the instructions in this operating manual.
- Before installing the product, ensure that the mounting surface of the product base and machine table are clean.
- The mounting surface of the product substructure must be level and rest on the machine table with at least a 75 % overlap.
- Install the product according to the torque specifications in the operating manual.
- Fasten the product in such a way that it cannot be displaced by the machining forces.

Assembly types

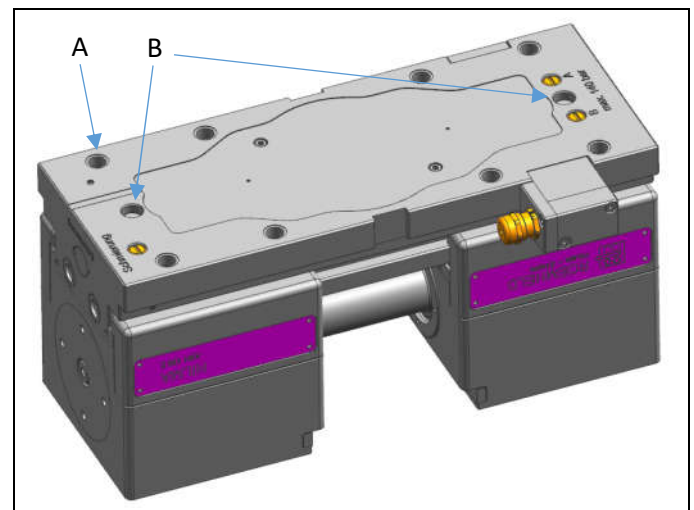


Fig. 2: Assembly types

A Threaded hole	B Positioning hole
-----------------	--------------------

Attachment to the machine table:

1. Remove any unevenness and chips between the support and the base surface.
2. Align
 - with the dial gauge,
 - with positioning hole in the lower part (B).
3. Fasten
 - with screws from below (A)

Recommendation:

We recommend fastening the clamping system to the machine table using an intermediate plate.

7.3 Rotary encoder

The rotary encoder (E) measures the linear stroke of the clamping slides.

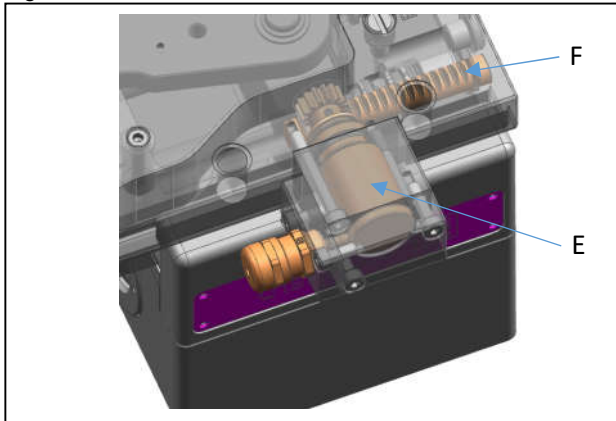


Fig. 3: Rotary encoder (E) and toothed rack (F)

PIN assignment

Pin	Designation	Description	Colour
1	Analog_OUT	Analog output	yellow
2	Supply Voltage IN	Supply voltage	green
3	Ground IN	Ground	brown
4	Ser.Program+ IN/OUT	Ser. programming interface RS485	white
5	Ser.Program- IN/OUT	Ser. programming interface RS485	gray
6	Analog-Ground	Analog-GND	blue
7	Direction IN	Change of counting direction	pink

NOTE

Only carry out wiring work, opening and closing electrical connections when the power is switched off!

Short circuits, voltage peaks etc. can lead to malfunctions and uncontrolled states of the system or to considerable personal injury and material damage.

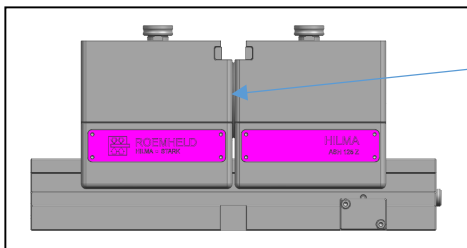


Fig. 4: Clamping system max.closed

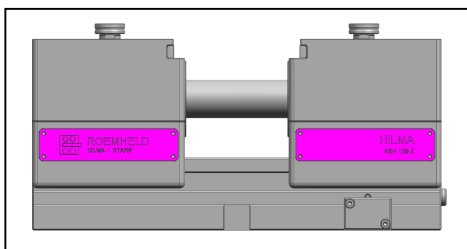


Fig. 5: Clamping system max.open

NOTE

The rotary encoder is set and calibrated at the factory. Replacement or removal requires recalibration at the factory.

7.4 Jaw fastening options

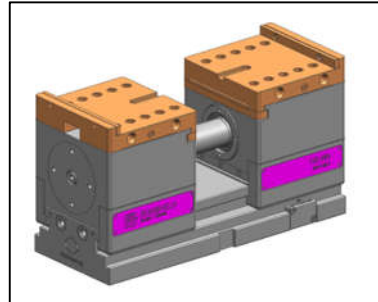


Fig. 6: Quick-change jaws

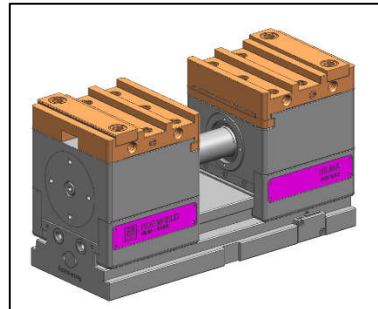


Fig. 7: Quick-change jaws with interchangeable insert

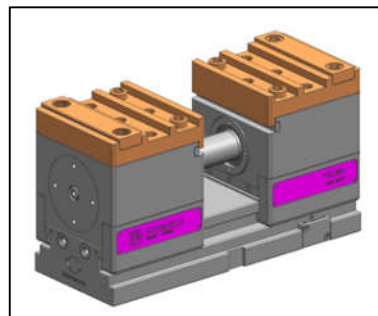


Fig. 8: Bolted jaws with interchangeable insert

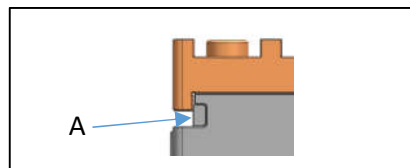


Fig. 9: Tuning bar for bolted jaws

Tuning bar (A) bolted to slides as stop for clamping jaw. This is used to adjust the symmetry.

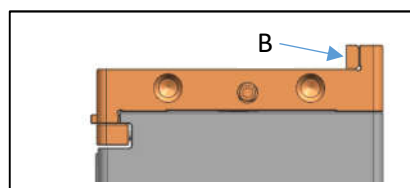


Fig. 10: Tuning bar for quick-change jaws

Tuning bar (A) on the slide must be dismantled before mounting the quick-change clamping jaws. The symmetry is adjusted via the tuning bar (A).

8 Commissioning

NOTE

Lubricate before commissioning

The elements are supplied with minimum lubrication.

Before commissioning, the sliding surfaces must be lightly oiled with ISO VG 220 bedway oil!

- Check tight fit (check tightening torques of fixing screws).

NOTE

Operation of the product on grinding machines is not permitted!

If the product is used on grinding machines, the moving components may be damaged due to increased dirt ingress.

- Do not use the product on grinding machines.

WARNING

Risk of injury or material damage due to collision with system components!

Persons may be injured by collision with the system components in the movement area of the system components or property damage may be caused by collision with other system components.

- Before commissioning, check the movement range of the system components for collisions.

9 Operation

WARNING

Vibration loosens the fastening of the product!

Vibration impairs the fastening of the workpiece and leads to an improperly fastened workpiece. An improperly fastened workpiece can be ejected from the product during processing and injure people or cause material damage.

- Avoid vibration on the product as far as possible.

Risk of burns from hot workpieces!

Hot workpieces can cause burns to parts of the body.

- Wear heat-resistant protective clothing.

Crushing, burns and broken bones from falling workpieces!

Workpieces can fall during work and cause injuries.

- Wear protective footwear with at least safety level 1 (S1) during work.

Risk of injury from high-pressure injection due to improper handling!

If the hydraulic system is handled improperly, fluids can spray out of the hydraulic system under high pressure and injure people.

- Only allow work on hydraulic equipment to be carried out by qualified personnel with the appropriate knowledge in this area.

Risk of injury when clamping the workpiece!

Due to the properties of the workpiece, people may be injured during the clamping process because the workpiece is not properly clamped.

- Remove any dirt from the clamping surfaces before clamping.
- Observe the material properties of the workpiece when clamping.
- Observe the shape of the workpiece when clamping.
- Observe the clamping surface of the workpiece when clamping.
- Observe the inertia of the workpiece when clamping.

CAUTION

Risk of injury due to crushing of limbs when clamping

The product must be used in such a way that no limbs of yourself or others can be crushed during clamping.

- When clamping, keep the clamping area clear of limbs of yourself or others.

Risk of injury when clamping and releasing the product due to the high force exerted

Initially, higher forces have to be overcome when unclamping the product. Persons can slip and injure themselves due to the high exertion when unclamping.

- Release clamping carefully and slowly.

9.1 Pressure oil connection and venting

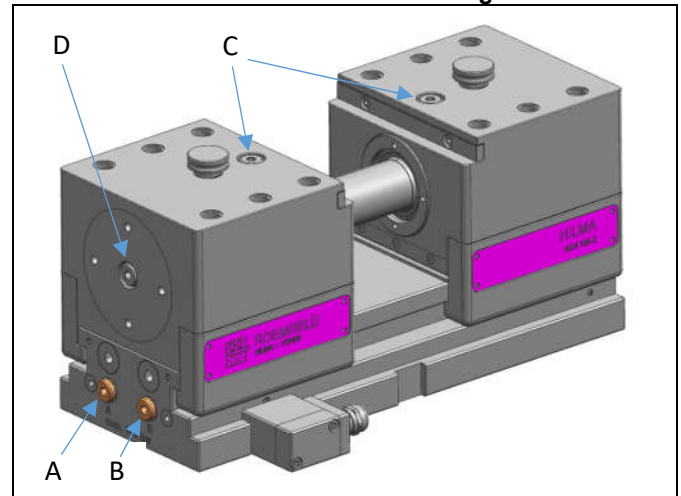


Fig. 11: Pressure oil connection and venting

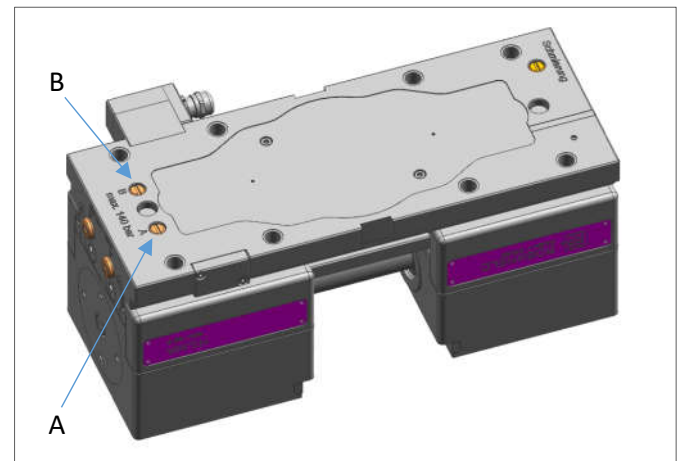


Fig. 12: Pressure oil connection from below, rotary encoder

A "Clamp" pressure oil connection	B "Release" pressure oil connection
C "Hydraulic clamping" venting	D "Hydraulic release" venting

Oil recommendation: HLP 32 or HLP 46 according to DIN 51524.

9.2 Clamping and releasing

⚠ WARNING

Risk of injury due to flexible or insufficiently clamped workpieces!

Flexible or insufficiently clamped workpieces can be ejected from the machine during machining or fall down and injure persons.

- Only use the product for clamping rigid workpieces.
- Clamp the workpiece sufficiently before machining.

Risk of injury due to insufficient clamping force or clamping of the workpiece!

Insufficient clamping force of the product or insufficiently clamped workpieces can be ejected from the machine during machining or fall down and injure persons.

- Have the product checked for operational safety by a qualified specialist after prolonged downtime, after repairs and at regular intervals.
- Have the product checked for defined clamping force by a qualified specialist.
- Have the product checked for visual damage or wear by a qualified specialist.
- Before commissioning the product, check that the product is properly secured.
- Before commissioning the product, check that the workpiece is securely clamped.

1. Carry out double-acting clamping and releasing process via selector switch, if necessary clamp or release via 2-hand safety switch or via signal control in fully automatic mode. Observe the maximum values, especially the max. release pressure (see chapter 13 "Technical data").
Workpiece is clamped or released in proportion to the set pressure.

10 Maintenance

⚠ WARNING

Burns due to hot surface!

- During operation, surface temperatures on the product can exceed 70 °C.
- Only carry out maintenance and repair work when the unit has cooled down or when wearing protective gloves.

Risk of injury due to breakage of parts of the product!

Overloading or incorrect operation during operation can cause parts of the product to break and cause injury to persons.

- Observe the maintenance intervals for the parts in accordance with the operating manual.

10.1 Maintenance schedule

Maintenance work	Interval	Performance
Cleaning	As required	Operator
Regular checks	Daily	Operator
Regular lubrication	At least once a month, at the latest after 500 clamping procedures!	Operator ⚠ Caution! If this lubrication is not carried out, the clamping system may fail!
Repair	As required	Specialised personnel

10.2 Cleaning

⚠ CAUTION

Damage to the moving components!

Avoid damaging the moving components (slides).

Aggressive cleaning agents

The product may not be cleaned with:

- corrosive or caustic components or
- organic solvents such as halogenated or aromatic hydrocarbons and ketones (nitro thinner, acetone, etc.).

Depending on the type of stress, the clamping element must be subjected to basic cleaning. Maintenance and cleaning work is limited to the surfaces and components accessible from the outside. The running surfaces of the slide guide in particular must be checked for damage and lubricated.

We recommend one of the following lubricants:

- Bedway oil Vg 68
- BP Maccurat D 68
- Mobil Vactra Oil No. 2

In case of heavy contamination, cleaning must be carried out at shorter intervals.

10.3 Regular checks

1. Check the clamping force regularly with a load cell.
2. Observe maintenance intervals.

10.4 Regular lubrication via central lubrication

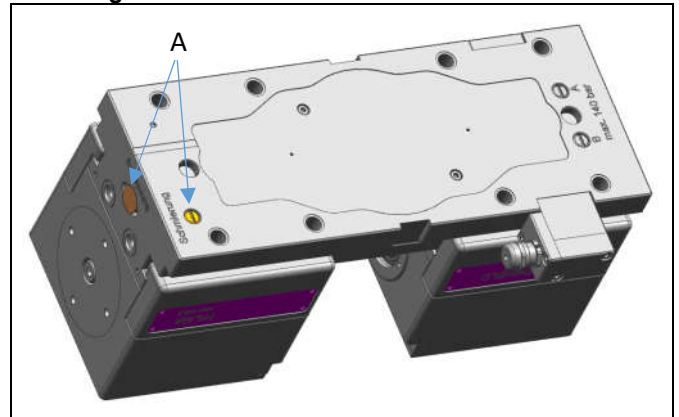


Fig. 8: Central lubrication (A)

The following maintenance and care work must be carried out as required, but at least once a month:

Lubricate the guide rails with bedway oil using an oil pusher via the lateral grease nipple or via the bottom connection (using plug connection no. 8.0530.0023).

11 Service / maintenance service

1. Austria and Germany

Repair at the manufacturer's works:

Please return the clamping system carriage paid with a STARK return note.

Stark Spannsysteme GmbH
Römergrund 14
6830 Rankweil, Austria
Tel: +43 5522 37400
E-mail: info@stark-roemheld.com

Repair at the customer's factory:

Please request the maintenance service.

Service telephone: +49 6405 89400
E-mail: service@roemheld.de

2. Third country

Please contact the HILMA-RÖMHELD general importer or your local dealer.

12 Troubleshooting

Fault	Cause	Elimination
Workpiece is not or insufficiently clamped.	Slides move towards the system.	Check clamping range (see section 9.2)
	Soft work-piece.	Support work-piece.
	Operating pressure to low.	Set a higher operating pressure on the pressure transducer.
Workpiece is not clamped centrally.	Jaw set not mounted symmetrically.	Change or re-work the jaw set.
Slide does not open continuously. Pump keeps switching off.	Overload / wear. Excessive flow resistance when opening.	Repair at the manufacturer's plant. Increase cable cross-sections. Provide pressure switch with timer.

13 Technical data

Characteristic values

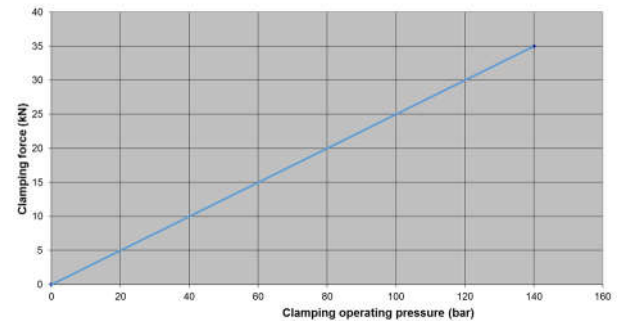
Jaw width (mm)	125	Max. clamping force [kN]	35
Lower part length [mm]	322	Clamping stroke [mm]	80
Height (mm)	150	Clamping operating pressure [bar] Min. / max.	Min. 20 Max. 140
Mass [kg]	31	Releasing operating pressure [bar] Min. / max.	Min. 20 Max. 140
Volume flow (l/min.)*	5	Travel time (sec.)	3

*related to a clamping element.

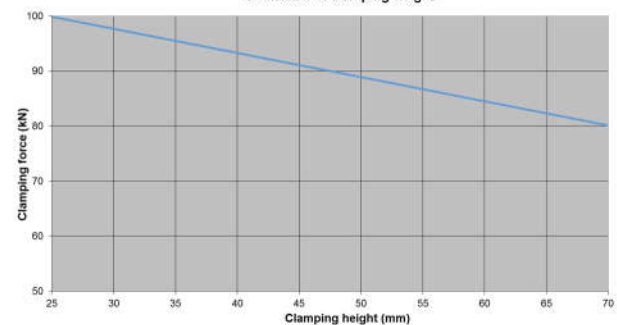
NOTE

- Setting effects, wear, lubrication, hydro-aggregate influence the clamping force.

Clamping force progression ASH 125



Clamping force progression as a function of clamping height



The values depend on the nature of the workpiece and its material, as well as the design of the clamping jaws.

NOTE

Further information

- Further technical data can be found in the catalogue sheet.

Suggestion, tightening torques for screws of strength class 8.8; 10.9, 12.9

NOTE

- The specified values are to be regarded as guide values and must be designed by the user depending on the application!
See note!

Thread	Tightening torques (MA)		
	[Nm]		
	8.8	10.9	12.9
M6	10	15	18
M8	25	36	45
M10	49	72	84
M12	85	125	145
M14	135	200	235
M16	210	310	365
M20	425	610	710

Note: Valid for workpieces and shaft screws made of steel with metric thread and head dimensions such as DIN 912, 931, 933, 934 / ISO 4762, 4014, 4017, 4032

The table values for tightening torques (MA) are taken into account:

Steel/steel design, coefficient of friction $\mu_{\text{total}} = 0.14$ - not lubricated, utilisation of minimum yield strength = 90%.

13.1 Storage

CAUTION

Storage of components!

- The product must not be exposed to direct sunlight, as the UV light can destroy the seals.
- Storage outside the storage conditions is not permitted.
- Improper storage can lead to embrittlement of seals and resinification of the anti-corrosion oil or corrosion of the element.

ROEMHELD products are tested with mineral oil as standard. On the outside, the products are treated with an anti-corrosion agent.

The oil film remaining after the test provides six months of internal corrosion protection when stored in dry and evenly tempered rooms.

For longer storage periods, the product must be filled with a non-resinifying corrosion inhibitor and the outer surfaces must be treated.

13.2 Accessories

NOTE

Accessories

- See catalogue sheet.

14 Disposal



Hazardous to the environment

Due to possible environmental pollution, the individual components must be disposed of by an authorised specialist company.

The individual materials must be disposed of in accordance with the applicable guidelines and regulations as well as the environmental conditions.

Special attention must be paid to the disposal of components with residual pressurised fluids. The instructions for disposal in the safety data sheet must be observed.

When disposing of electrical and electronic components (e.g. position measuring systems, proximity switches, etc.), the country-specific legal regulations and provisions must be observed.

15 Declaration of Incorporation

Manufacturer

STARK Spannsysteme GmbH
 Römergrund 14
 6830 Rankweil Austria
 Tel.: +43 5522 37400-0
 E-mail: info@stark-roemheld.com
 Internet: www.stark-roemheld.com

This documentation applies to the products:

- 9.4586.8035
- 9.4586.8039
- 9.4586.8040

They are designed and manufactured in accordance with Directive **2006/42/EC** (MD) as amended and the applicable technical regulations.

According to the MD, these products are components that are not ready for use and are intended exclusively for installation in a machine, device or system.

According to the Pressure Equipment Directive, the products are not classified as pressure vessels but as hydraulic actuators, as pressure is not the main factor for the design, but strength, rigidity and stability against static and dynamic operating stresses.

- The products may only be put into operation once it has been established that the incomplete machine / machinery into which the product is to be installed complies with the provisions of the Machinery Directive (2006/42/EC).

The manufacturer undertakes to provide the specific documentation of the products to national authorities on request.

The technical documentation in accordance with Annex VII Part B has been prepared for the products.

15.1 List of applied standards

Product Safety Act; November 2011

DIN EN ISO 12100, 2011-03, Safety of machinery; Basic concepts, general principles for design (replacement for parts 1 and 2)

DIN EN ISO 13857; **2008-06**, Safety of machinery; Safety distances to prevent hazard zones being reached by upper and lower limbs. (replaced: DIN EN 294)

DIN EN 349, 2008-09, Safety of machinery; Minimum gaps to avoid crushing of parts of the human body.

DIN EN 81714-2, 2007-08; Design of graphical symbols for use in the technical documentation of products

DIN EN ISO 4413, 2011-04, Hydraulic fluid power – General rules and safety requirements for systems and their components

DIN EN 82079; **2010-10**, Preparation of instructions for use; Structuring, content and presentation – Part 1

STARK SPANNSYSTEME GmbH

Martin Greif

Managing director

Rankweil, 07.05.2024







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