



5-axis clamping system

Concentric, modular, precise





STARK INNOVATIVE PROFICIENT INDIVIDUAL SAFE

The high-tech company STARK Spannsysteme was established in 1977 in Rankweil, Austria. It manufactures zero point clamping systems and vises of the highest quality and precision for international clients in the automotive, aviation and medical industries, for example.

STARK Spannsysteme products are a byword for minimal set-up times, faster production and high flexibility.

HILMA vises can be complemented and combined perfectly with STARK zero point clamping systems.









AVIATION





MEDICINE

FOCUS ON INDUSTRIES & MARKETS.

Every customer has specific requirements. Our established and extensive industry expertise allows us to offer you the best solutions, services and products for sustainable and efficient use in your market.

UNIVERSAL STABILE COMPACT PRECISE modular system enables versatile clamping options no deflection thanks to closed force flow reduced design ensures optimum accessibility true to position due to pull-down mechanism





HILMA.UC



HILMA.SCS

HORIZONTAL MACHINING

HILMA.MCP

5-AXIS MACHINING



HILMA.KNC





More productivity through

- Maximum flexibility in production
- Highest process reliability
- Reduced manufacturing costs through set-up time optimisation



HILMA.DS

HILMA.NC

AUTOMATION



HILMA.ASE



HILMA.ASH



HILMA.TS Vector



HILMA.TS TriStar

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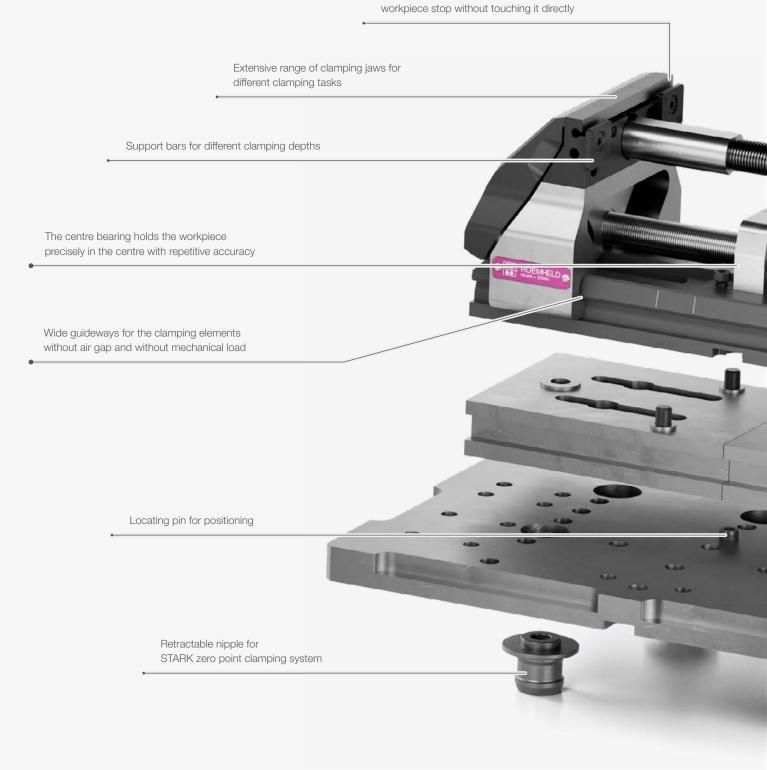
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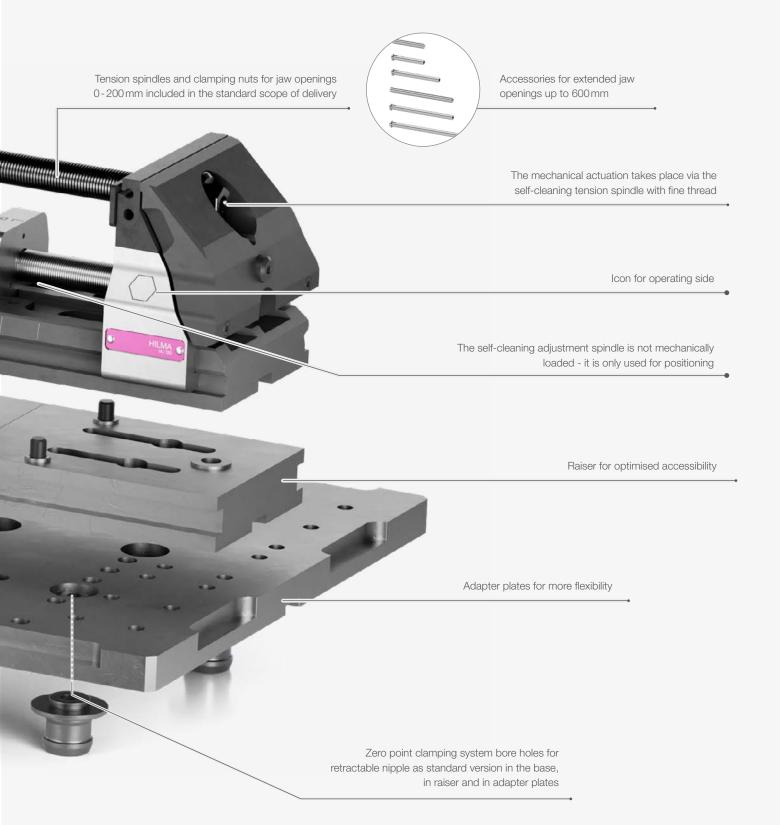
5-axis clamping system

Pull-down mechanism

The clamping force is applied to the workpiece via the outer edges of the clamping claws above the







MAXIMUM FLEXIBILITY

The HILMA.UC machine vise

The clamping system **HILMA.**UC is suitable for numerous clamping tasks and is used for machining dimensionally stable workpieces in single or multiple clamping systems.

Small workpieces as well as large plates can be clamped and machined without large interference contours. Even when production requirements change, there is no need to invest in new clamping devices.

- For 3-, 4- or 5-axis machining centres
- Milling machines and milling/turning centres

The concentric clamping device **HILMA.**UC can be easily adapted to different

workpiece geometries and is suitable for series production as well as for individual production.

Mechanical operation

- via spindle
- Spindle applies a pulling force of up to 52 kN (120 Nm)

Concentric clamping

the centre bearing holds the workpiece precisely in the centre with repetitive accuracy



Operation mechanical



Clamping principle concentric



Jaw width 125 mm

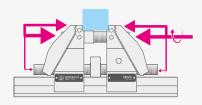


Jaw opening 0-600mm



High stability

- Closed force flow no bending force effect in the base
- + No deflection
- Separation of adjusting and tension spindle
- + Optimum force flow
- Pull-down clamping jaws
- + Active workpiece pull-down

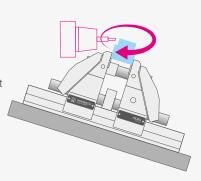




Optimum accessibility

- Compact design
- good accessibility optimum tool length can be used due to smallest interference contour
- Raiser as accessory
- + improved accessibility for special clamping tasks

more on page 15

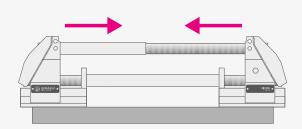






Concentric clamping system

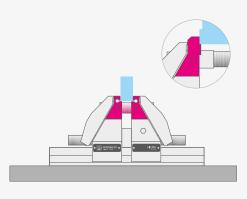
- Centre clamp, optimal for 5-axis applications
- + precise with repetitive accuracy
- + split mounting option

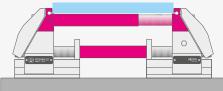




Flexible jaw opening & range of clamping jaws

- Standard jaw opening from 0-200 mm, extension sets for extended jaw opening up to 600 mm
- Conclusive range of clamping jaws for workpieces in all shapes and surfaces from round to square, small to large and smooth or uneven
- can be adapted to differently-sized workpiece geometries in just a few steps
- + variable clamping depths
- + optimised accessibility
 - more about the extension sets on page 13
 - more about the extension sets on page 14



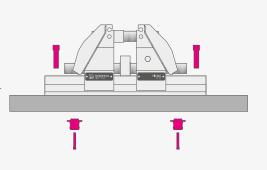




Individual fastening

- fastening with sliding block on T-slot table
- fastening via clamping claws
- fastening from above through the base by means of screws
- quick change by means of STARK retractable nipple directly or via adapter plate in the STARK zero point clamping system
- thread adapters for alternative zero point clamping system manufacturers
- standard fast closing plates available

more about fastening on page 20

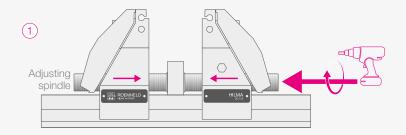




CONCENTRIC CLAMPING DEVISE WITH PULL-DOWN MECHANISM

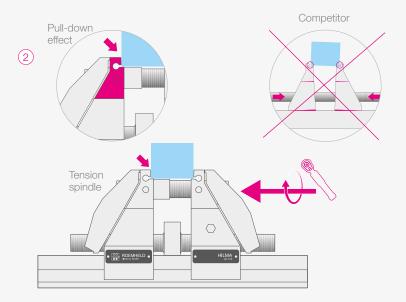
Operating principle HILMA.UC

INFO Clamping principle - closed force flow



1 The clamping range is preset until both clamping jaws are in contact with the workpiece without building up clamping force.

By turning the adjustment spindle clockwise, both adjustment elements move to the centre.



The tension spindle is mounted handtight before the clamping force is applied by turning it clockwise using a torque wrench.

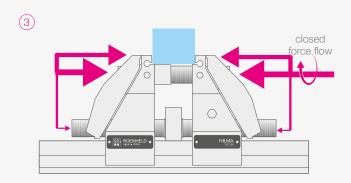
The force on the clamping jaws above the workpiece stop is introduced into the workpiece via the outer edges of the clamping claws.

The clamping force develops proportionally to the torque.

Most of the pulling force is applied directly to the workpiece. The adjustment spindles serve as counter bearings.

In the process, the adjustment elements are clamped to the base plate and the system is completely mechanically locked.

Due to the closed power flow from tension spindle to adjustment spindle, the base remains almost without bending force being applied and tilting of the adjustment elements is avoided.



The HILMA.UC 125 is a universal 5-axis concentric clamp with mechanical actuation and a jaw width of 125 mm.



Figure: 970230101 Standard scope of delivery: Machine vise incl. pull-down clamping jaws, clamping nut short and long, tension spindle short and long

The clamping nuts and tension spindles included in the standard scope of delivery allow a maximum clamping range of 200 mm, which can be extended to 600 mm with extension sets. The concentric clamp is supplied with pull-down clamping jaws for clamping pre-machined and smooth surfaces. Retractable nipple bore holes for zero point clamping systems are prepared in the base for fastening.







Operation mechanical

Jaw width 125 mm

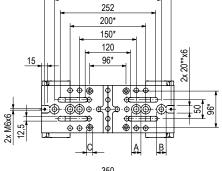
Clamping principle concentric



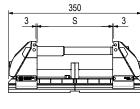


Pull force 52 kN

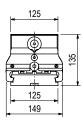
Pull-down mechanism

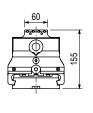


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Series		HILMA.UC 125
Operation		mechanical
Base length ¹⁾	[mm]	350
Pull force	[kN]	52
Clamping principle		concentric
Clamping range S ²⁾	[mm]	0-200 (max. 600)
Retractable nipple bore hole A	[mm]	4× Ø 25 H7 × 6; 4× M16×1.5 × 18
Retractable nipple bore hole gauge	[mm]	200
Bore hole for fastening from above B	[pc]	$2\times \varnothing$ 25 H7 \times 6; $2\times$ flat sink for M12 from above
96×96 retractable nipple bore hole gauge C	[mm]	4× Ø 16 ± 0.01 × 6; 4× M10 × 10
Weight with pull-down clamping jaws	[kg]	20
Order no.		970230101

¹⁾ Base part length without extension with a clamping range of max. 200 mm

Extension sets for clamping ranges up to 400 mm and up to 600 mm available as accessories > more on page 12 & 13 Subject to technical changes, all data without guarantee

EXTENSION SETS FOR MAXIMUM JAW OPENINGS

Flexible clamping widths

The concentric clamping system can be divided in the middle and extended. The clamping range can be extended up to 600 mm by using different tension spindle/clamping nut combinations.

A closed force flow is created between the tension spindle, adjustment element and clamping jaw, thus allowing the modular design. The base plate remains without a bending force being applied.

The extended clamping system can be mounted directly on the machine table, raisers or adapter plates.

Standard jaw opening 0 - 200mm

Four elements for adjusting the clamping range are included in the standard scope of delivery.

- Tension spindle, short
- Tension spindle, long
- Clamping device, short
- Clamping nut, long



The following clamping ranges can be combined

0-50 mm

Short tension spindle and short clamping nut



48-104 mm

Short tension spindle and long clamping nut



100-200 mm

Long tension spindle and long clamping nut





Extension set 400 for extended clamping range

The clamping range can be extended to a maximum of 400 mm with the extension set 400. The minimum clamping range is increased to min. 196 mm by the extension on the adjustment spindle.

The scope of delivery includes two differentlysized clamping nuts and an extension for the adjustment spindle.



Order no.	Extension set 400
970235002	Clamping nut 300 Clamping nut 400
	Extension for adjustment spindle 200

The following clamping ranges can be realised

196-300mm

Long tension spindle (standard scope of delivery) Clamping nut 300 mm Adjustment spindle 200 mm



296-400mm

Long tension spindle (standard scope of delivery) Clamping nut 400 mm Adjustment spindle 200 mm



Extension set 600 for maximum clamping range

The clamping range can be extended to a maximum of 600 mm with the extension set 600. The minimum clamping range is increased to min. 396 mm by the extension on the adjustment spindle.

The scope of delivery includes two differently-sized clamping nuts and an extension for the adjustment spindle.



Order no.	Extension set 600
970235003	Clamping nut 500 Clamping nut 600
	Extension for adjustment spindle 400

The following clamping ranges can be realised

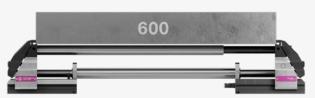
396-500 mm

Long tension spindle (standard scope of delivery) Clamping nut 500 mm Adjustment spindle 400 mm



496-600 mm

Long tension spindle (standard scope of delivery) Clamping nut 600 mm Adjustment spindle 400 mm



THE OPTIMUM JAW FOR EVERY WORKPIECE

Extensive range of clamping jaws

High clamping quality



High clamping safety

The jaws used have a major influence on the machining result.

The range of clamping jaws enables reliable blank and finished part clamping in all shapes from round to square and from small to large.

For smooth clamping jaws and clamping jaws with GripPin, support bars are required as workpiece stops.

more about support bars on page 18



Finished parts
Clamping jaw 125mm & 60mm, smooth
Page 16



Blanks
Clamping jaw with GripPins 125 mm & 60 mm
Page 16 & 17



Three-point clamping
Clamping jaw with round clamping bolts
Page 19







Round parts, large Clamping jaw with round clamping bolts Page 19



Cylindrical workpieces
Prism jaw
Page 17



Blank with special shape
Soft clamping jaw, with specific clamping contour
Page 19

Pull-down clamping jaws 125 mm, hardened

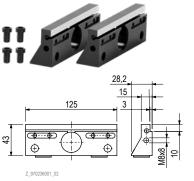
Suitable for clamping pre-machined or smooth surfaces (second side). The bending element of the jaw clamps the workpiece with pull-down and presses it onto the support surface with repetitive accuracy.

Support bars are optional for the clamping jaw. Page 18

Pull-down clamping jaws are included in the HILMA.UC standard scope of delivery.

Order no.	Clamping range	Supply
970236001	6 - 206 mm*	2 pcs. clamping jaws 4 pcs. fixing screws

^{*} Standard clamping range without extension set



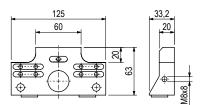
Clamping jaws 60 mm, smooth, hardened

For clamping pre-machined or smooth surfaces (second side). The narrow version of the clamping jaw has a clamping width of 60 mm and serves to optimise accessibility for narrow workpieces. The maximum clamping depth is 28 mm. Support bars are required for the clamping jaw. Page 18

Order no.	Clamping range	Supply
970236007	0 - 190mm*	2 pcs. clamping jaws 4 pcs. fixing screws

^{*}Standard clamping range without extension set





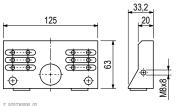
Clamping jaws 125 mm, smooth, hardened

For clamping pre-machined or smooth surfaces (second side). The clamping jaw has a clamping width of 125 mm, the maximum clamping depth is 28 mm. Support bars are required for the clamping jaw. Page 18

Order no.	Clamping range	Supply
970236006	0 - 190 mm*	2 pcs. clamping jaws 4 pcs. fixing screws

^{*} Standard clamping range without extension set





Clamping jaws with GripPins 60 mm

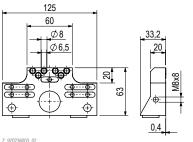
For secure clamping of uneven surfaces such as saw cuts, blanks and cast parts. The narrow version of the clamping jaw with GripPins has a clamping width of 60 mm and serves to optimise accessibility for narrow workpieces.

Attention: Marks of the pins on the workpiece. The maximum clamping depth is 28 mm. Support bars are required for the clamping jaw. Page 18

Order no.	Clamping range	Supply
970236003	0 - 190 mm*	2 pcs. clamping jaws incl. 2 x 6 pcs. GripPins 4 pcs. fixing screws

^{*} Standard clamping range without extension set







Clamping jaws with GripPins 125 mm

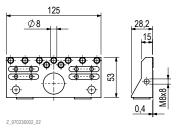
For secure clamping of uneven surfaces such as saw cuts, blanks and cast parts. The clamping jaw has a clamping width of 125 mm, the maximum clamping depth is 28 mm. Attention: Marks of the pins on the workpiece.

Support bars are required for the clamping jaw. Page 18

Order no.	Clamping range	Supply
970236002	0 - 200 mm*	2 pcs. clamping jaws incl. 2 x 9 pcs. GripPins 4 pcs. fixing screws

^{*} Standard clamping range without extension set





GripPins, hardened

If the pins are worn, they can be replaced in the existing clamping jaw. Attention: Marks of the pins on the workpiece.

Order no.	
970235004	10 pcs. spare pins D7



All dimensions in [mm] Fastening material included in scope of delivery



Change GripPins

With the help of a punch, worn pins can be knocked out of the jaw and new ones inserted.



Prism jaws, hardened

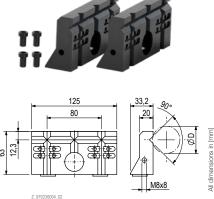
For clamping cylindrical workpieces with a diameter of 8-40 mm.

Workpieces can be clamped horizontally or vertically. With vertical clamping it is possible to place two workpieces in the outer prisms at the same time.

Support bars are optional for the clamping jaw. Page 18

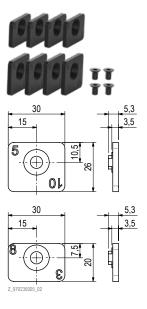
Order no.	Clamping range	
970236004	8 - 40 mm*	2 pcs. Prism jaws 4 pcs. fixing screws

^{*}Standard clamping range without extension set



Support bars with 3.5 mm thickness. A support surface for the workpiece is created by attaching the support bars. The clamping depth varies depending on the positioning of the support bar and the selection of the fastening step. The support bars are suitable for all clamping jaws except soft clamping jaw (970236008) and clamping jaw with round clamping bolt (970236005).

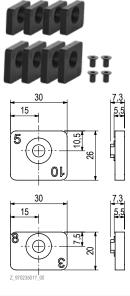
Order no.	Clamping range	
970235005	min. 7 mm	4× support bars 3.5mm for 3mm/8mm height of supports 4× support bars 3.5mm for 5mm/10mm height of supports 4 pcs. fixing screws



Set of support bars 5.5 mm, hardened

Support bars with 5.5 mm thickness. A support surface for the workpiece is created by attaching the support bars. The clamping depth varies depending on the positioning of the support bar and the selection of the fastening step. The support bars are suitable for all clamping jaws except soft clamping jaw (970236008) and clamping jaw with round clamping bolt (970236005).

Order no.	Clamping range	Supply
970235017	min. 11 mm	4× support bars 5.5mm for 3mm/8mm height of supports 4× support bars 5.5mm for 5mm/10mm height of supports 4 pcs. fixing screws

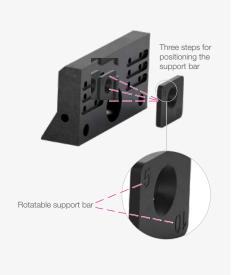


INFO

Support bar application

The support bar creates a workpiece stop and at the same time determines the clamping depth for the workpiece. According to the desired clamping depth, the support bar can be aligned and inserted into the matching slot of the clamping jaw.

Support bar	Clamping depth	Clamping depth	Clamping depth
	1st step	2nd step	3rd step
3/8mm	3 mm	13 mm	23 mm
	8 mm	18 mm	28 mm
5/10 mm	5 mm	15 mm	25 mm
	0 mm	10 mm	20 mm





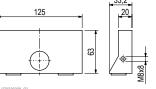
Soft clamping jaws

Soft jaw for customer insertion of workpiece-specific clamping contours.

Order no.	Clamping range	Supply
970236008	0 - 190 mm*	2 pcs. clamping jaws 4 pcs. fixing screws

^{*}Standard clamping range without extension set



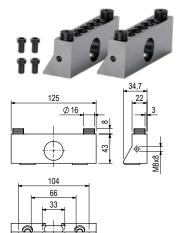


Clamping jaws with round clamping bolts

For vertical clamping of cylindrical workpieces with a diameter of 30 bis 200 mm. The diameter can be flexibly adjusted by repositioning the inserts. Three- and four-point clamping can be realised. Attention: Clamping marks on the workpiece possible.

Order no.	Clamping range	
970236005	30 - 200 mm*	2 pcs. clamping jaws incl. 4 pcs. round clamping bolt 4 pcs. fixing screws

^{*}Standard clamping range without extension set



Round clamping bolts

If the round clamping bolts are worn, they can be replaced in the existing clamping jaw. Attention: Marks on the workpiece.

Order no.	Supply
970235016	2 pcs. round clamping bolts



INFO

Round clamping bolts application

The replaceable round clamping bolts make these clamping jaws universally usable. They can be used for clamping large round plates as well as small cylindrical components.





Round clamping bolt can be moved to the centre, for three-point clamping

OPTIONS FOR FASTENING ON THE MACHINE TABLE

Fastening options

Stable Fastening on the machine table is of great importance to ensure precise machining. Fastening options can be selected depending on the type of processing and the individual requirements.

Direct mounting

Adapter plate



Sliding blocks and screws Clamping claws Zero-point mounting system



Direct mounting with Sliding block longitudinal on 5-axis T-slot table

Direct mounting with Sliding block crosswise on 3-axis T-slot table

Fastening set for slot table on page 26



Direct mounting with retractable nipples in the STARK zero point clamping system

Fastening set for retractable nipple on page 23

Quick-action coupling on page 24



Direct mounting with screws from above on hole pattern with raiser on right image

Raiser on page 25



Direct mounting in a 96×96 mm fast closing system











Adapter plates

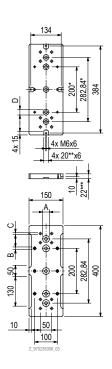
The adapter plates allow the flexibility of the system to be optimally utilised.

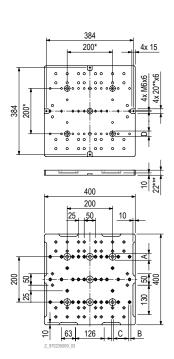
- Simplified assembly
- Defined interface below
- Flexible interface above

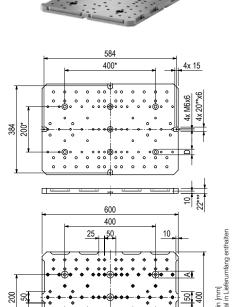
The locating pins included in the fastening set allow the HILMA.UC to be positioned precisely on the adapter plate, both in the standard version and in the extended version. Fastening set ▶ Page 23

Order no.	Description	Weight
970235008	1× adapter plate 150 × 400 mm Bore hole for retractable nipple Bore holes for locating pins and fixing screws	9 kg
970235009	2× adapter plate 400 × 400 mm Bore hole for retractable nipple Bore holes for locating pins and fixing screws	25 kg
970235010	3× adapter plate 600 × 400 mm Bore hole for retractable nipple Bore holes for locating pins and fixing screws	37.6kg









INFO

Fastening examples on adapter plate



400×400 mm Two HILMA.UC placed next to each other on the outside



400×400 mm One HILMA.UC with extension 400 mm placed centrally



400×400 mm Two HILMA.UC with extension 400 mm placed next to each other on the outside



Retractable nipple for NPS

Thanks to the integrated retractable nipple bore holes in the visebase, HILMA machine vises can be perfectly supplemented and combined with STARK zero-point clamping systems. A zero point clamping system consists of a quick-release fastener into which

retractable nipples are clamped. In order to compensate for manufacturing tolerances and the necessary "mobility for thermal expansion" on a pallet (temperature change), three different types of retractable nipples are combined.

Retractable nipple set for

SVP STARK.basic.M

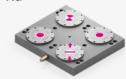
Compensation principle

The combination of retractable nipples depends on the number.

- Retractable nipple with zero point (NP)
- Retractable nipple with compensation (AG)
- Retractable nipple without centring (OZ)

Assignment example 2× adapter plate on 4× SVP

NP - OZ OZ - AG



Assignment example 3x adapter plate on 6x SVP

NP - OZ OZ - OZ - AG



Retractable nipple set for SVP STARK.classic.2

Set for direct mounting of the HILMA.UC vise.



Order no.	Supply
	Retractable nipple with zero point STARK.classic.2 NP Screws for mounting from below and above Threaded insert M10
970235014	Retractable nipple with compensation STARK.classic.2 AG Screws for mounting from below and above Threaded insert M10

Î

Retractable nipple for SVP STARK.classic.2

Individual retractable nipples for individual combination depending on the application.

Threaded inserts are required for the retractable nipples. Page 26

Order no.	Retractable nipple
S804-470	with zero point STARK.classic.2 NP
S804-471	with compensation STARK.classic.2 AG
S804-472	without centring STARK.classic.2 OZ

Retractable nipple for SVP STARK.basic.M

sation

970235015

Individual retractable nipples for individual combination depending on the application. Threaded inserts are required for the retractable nipples. Page 26

Retractable nipple with zero point

Retractable nipple with compen-

STARK.basic.M NP Screws for mounting from

below and above

Threaded insert M10

STARK.basic.M AG Screws for mounting from below and above Threaded insert M10

Order no.	Retractable nipple
S8000-300	with zero point STARK.basic.M NP
S8000-301	with compensation STARK.basic.M AG
S8000-302	without centring STARK.basic.M OZ

Fast closing plates for NPS

STARK standard fast closing plates (SVP) are a cost-effective entry-level solution for high-quality zero point clamping systems (NPS) and provide a secure and versatile connection between the machine vise and machine table.

SVP made of steel ground on both sides

with mounting holes for different slot spac-

■ NPS is clamped mechanically with spring force and released hydraulically/pneumatiApplication area on 3-, 4- and 5-axis machines for all common machining operations such as milling, grinding, eroding



Standard fast closing plate STARK.classic

- Hydraulic releasing system
- up to 120kN active retractable force

Order no.	Quick-locking plate	Size	Gauge for bore holes
S804-726	SVP with 4 STARK.classic.2 (S804-452)	4× 396×346×46 mm	200 × 200 mm
S804-727	SVP with 6 STARK.classic.2 (S804-452)	6× 596×346×46 mm	200×200 mm

Standard fast closing plate STARK.basic

- Pneumatic releasing system
- up to 54kN retention force



Order no.	Quick-locking plate		Gauge for bore holes
S805-307	SVP with 4 STARK.basic.M (S805-202)	4× 396×346×46 mm	200×200 mm
S805-308	SVP with 6 STARK.basic.M (S805-202)	6× 596×346×46 mm	200×200 mm

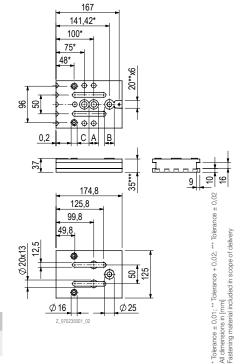


Raiser

Raiser for optimised accessibility.

+ Increased degree of freedom / improved accessibility for special clamping tasks





Order no.	Scope of delivery
970235001	2 pcs. raisers 4 pcs.fixing screws M10×45 mm



The raiser is placed between the vise and the adapter plate.





Fastening accessories

Fastening set for slot table

For positioning and mounting the clamping system on a T-slot table, hole pattern table or adapter plate.



Order no.	Scope of delivery
	2 pcs. fitting sliding block 14/18 2 pcs. M6×16
970235007	4 pcs. T-nut 18mm 4 pcs. T-nut 14mm 4×M12×40mm incl. washers
	4 × locating pins 12×20

Clamping claw set

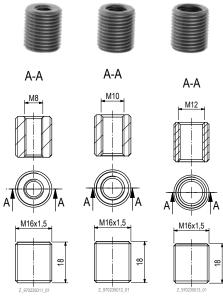
For mounting adapter plates or clamping systems.



Order no.	Scope of delivery
970235006	4 pcs. clamping claws 4 pcs. M12×30 mm 4 pcs. T-nut 18 mm 4 pcs. T-nut 14 mm

Inserts for thread

For fastening with STARK retractable nipples, the standard M16 tapped holes can be reduced to M8/M10/M12 by means of threaded inserts.



Order no.	Retractable nipple
970235011	Inserts for M8 thread
970235012	Inserts for M10 thread
970235013	Inserts for M12 thread

Further accessories such as Allen key, torque wrench and battery attachment on request.

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STARKSpannsysteme

The ROEMHELD Group is represented in Germany and Austria with different products and orientations. With numerous subsidiaries, sales partners and service companies on all continents and in more than 50 countries, rapid and intensive customer support is provided in the mechanical engineering, medical technology, automotive, aviation and agricultural industries.

As part of the ROEMHELD Group, STARK benefits from the security and experience of a family-run traditional company as well as from the worldwide sales and service network. At the same time, this background provides the independence to pursue dynamic and innovative goals for new market-driven developments and customer-specific solutions with which STARK maintains its leading technological position.



STARK Spannsysteme

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