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Workholding Systems

VarioLine

08/2014

Products | for | productivity

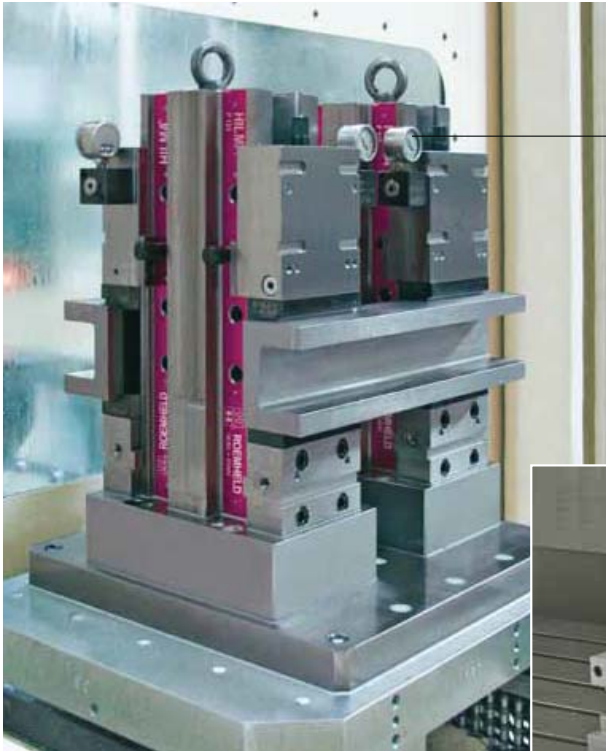
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VarioLine

For vertical use ...



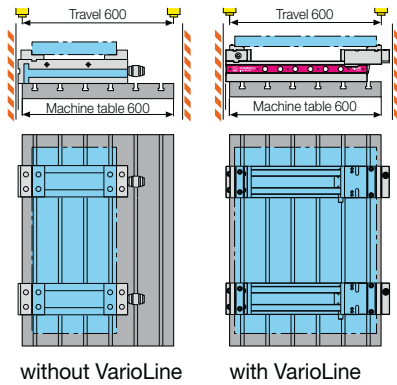
Pressure gauge as an option
for exact clamping force display and monitoring.
A unique HILMA advantage.

... or horizontal use

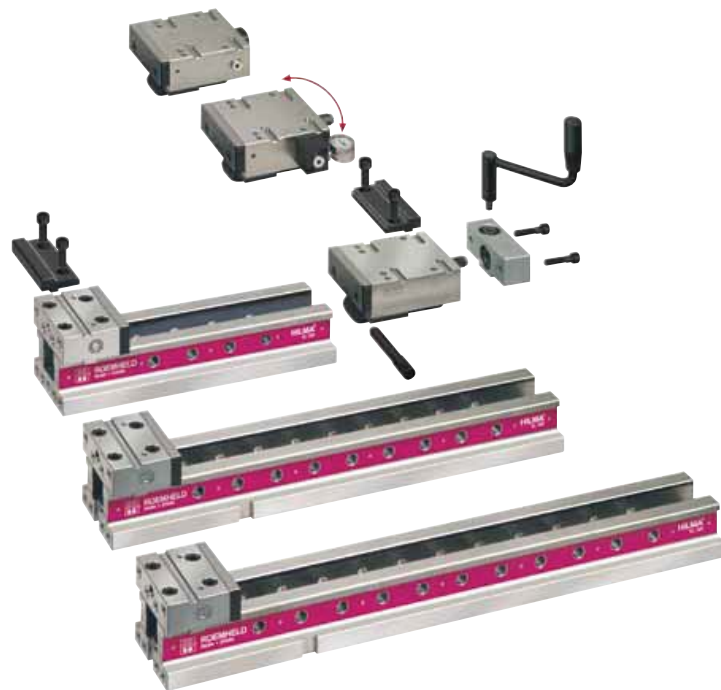


Your benefits at a glance:

- ★ Adaptation to the machine tool
- ★ Clamping force/process safety
- ★ Application of clamping force
- ★ Individual use
- ★ Clamping jaws



**Using VarioLine
clearly increases the utilization
of your machine tool !**



The clamping device can be individually adapted to different distances of travel, to working space, clamping surface and machining task. User-friendly set-up for differently sized workpieces is performed in a jiffy.

The use of a pressure gauge (an optional extra) permits exact, continuous clamping force display (important when carrying out rough and finish machining in one operation) and exact clamping force monitoring.

The clamping force can be applied manually using a crank handle (mechanical-hydraulic design) or by means of a hand or foot switch (hydraulic design).

VarioLine is suitable for use in both horizontal and vertical machining centres. Direct adaptation to the machine tool is possible using selection parameters (see page 6, parameters).

HILMA standard jaws as well as customer's existing special jaws can be used provided that their dimensions fit the HILMA standard. This extends the range of applications.



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VarioLine

Standard tapped holes
in both sides of the fixed jaw
for precision workpiece stop

Slots and tapped holes
for top step jaws
to obtain very large jaw openings

integral
mechanical-hydraulic
force transmission

Hardened
and ground
guides

Clamping edge
for clamping claws

Quick coarse adjustment
of the desired clamping range
using the socket pins

Longitudinal and crosswise
keyways 20 H7
(see page 6, parameters)

Resistant to deformation
by the use of an optimized
base section

Make your choice:
based on page 6, parameters

- Length of the base
- Hydraulic or mechanical-hydraulic slide
- Pressure gauge
- Vertical design
- Positioning slot
- Positioning holes
- Mounting grid
- Angle drive
- Top jaws



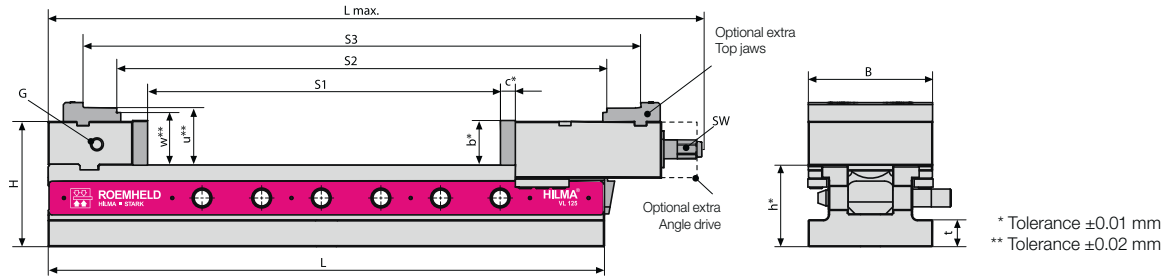
Technical data



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Mechanical-hydraulic design, manual operation

The completely revised force transmission requires minimum effort on the crank handle. An angle drive (optional extra) facilitates the operation, e.g. in the case of longitudinal clamping on the machine table. The optional clamping force preselection (retrofittable) enables the force to be applied in 6 stages up to the maximum.

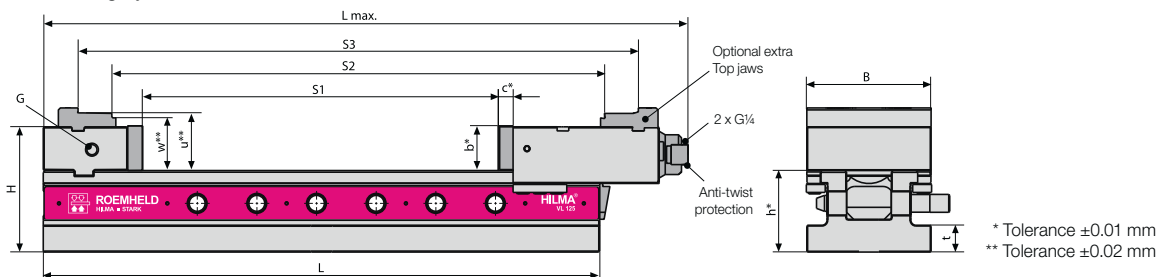


* Tolerance ±0.01 mm
** Tolerance ±0.02 mm

Type	Part no.	Clamping force [kN]	Weight [kg]	Jaw openings			Dimensions mm											
				S1	S2	S3	L	L max.	B	H	G	b	c	h	SW	t	u	w
VL100	9.3172.7003	25	18.5	205	330	386	380	466	100	103	M 12 x 18	34	13	70	14	24	45	40
			26.3	365	490	546	540	626										
VL125	9.3173.7003	40	31.5	225	363	431	430	528	125	126	M 12 x 18	45	15	82	17	27	58	53
			41.0	355	493	561	560	658										
			52.7	515	653	721	720	818										
VL160	9.3174.7003	50	58.5	308	502	572	550	684	160	148	M 20 x 27	54	18	95	19	27	70	65
			79.8	508	702	772	750	884										

Hydraulic design, for use in semi or fully automatic operation

Connection to a separate hydraulic pressure transducer, e.g. a hydraulic power unit. Coarse adjustment of the clamping range using socket pins. Precise positioning against the workpiece and adjustment of the insertion tolerance manually using lead screw. The clamping process is triggered by a hand or foot switch in the case of fully automatic working cycle.



* Tolerance ±0.01 mm
** Tolerance ±0.02 mm

Type	Part no.	Clamping force [kN]	Operating pressure [bar]	Stroke	Weight [kg]	Jaw openings			Dimensions in mm											
						S1	S2	S3	L	L max.	B	H	G	b	c	h	SW	t	u	w
VL100	9.3172.7003	25	350	5	18.5	209	334	390	380	456	100	103	M 12 x 18	34	13	70	8	24	45	40
					26.3	369	494	550	540	616										
VL125	9.3173.7003	40	350	5	31.5	228	366	434	430	528	125	126	M 12 x 18	45	15	82	8	27	58	53
					41.0	358	496	565	560	648										
					52.7	518	656	724	720	808										
VL160	9.3174.7003	60	350	7	58.5	313	507	577	550	674	160	148	M 20 x 27	54	18	95	10	27	70	65
					79.8	513	707	777	750	875										



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This page may be used as a pattern for copying

Parameters

Planned variant Varioline

Customers' requests concerning design, positioning and fixation are met using basic standard versions.
Please determine parameters and advise us accordingly together with your enquiry or order.

Inquiry Order Quantity = _____

Parameter - size

9.3172.7003 VL 100 (Jaw width 100 mm) 9.3173.7003 VL 125 (Jaw width 125 mm) 9.3174.7003 VL 160 (Jaw width 160 mm)

Parameter - length of base

380 long (VL 100) 430 long (VL 125) 550 long (VL 160)
 540 long (VL 100) 560 long (VL 125) 750 long (VL 160)
 720 long (VL 125)

Parameter - slides 1+2 with upper T-slot (2 off)

mechanical-hydraulic without pressure gauge mechanical-hydraulic pressure gauge right-hand mechanical-hydraulic pressure gauge left-hand hydraulically operated

Viewing direction: Lead screw direction towards the fixed jaw!

Parameter - hole pattern for vertical design

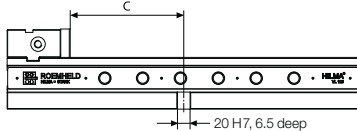
Grid 40 M12 (VL 100 und VL 125) without head plate hole pattern Grid 50 M16 (VL 125 and VL 160)

Parameter - head plate for vertical design

9.3296.2401 12 H7 (VL 100) without head plate (separate sales item) 9.3296.3401 12 H7 (VL 125) 9.3296.4501 16 H7 (VL 160)
 9.3296.3501 16 H7 (VL 125)

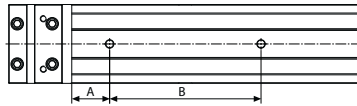
Parameter - crosswise keyway

without crosswise keyway with crosswise keyway 20 H7, 6.5 mm deep C = _____ mm ±0.02



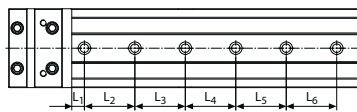
Parameter - mounting holes

without mounting holes 12 H7 16 H7 A = _____ mm ±0.02
 18 G7 (for drilling bushing 1.0179.0014) 26 G7 (for drilling bushing 1.0179.0017) B = _____ mm ±0.02



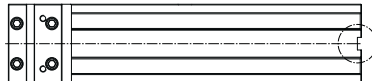
Parameter - mounting grid

without mounting grid KM 12 KM 16 (DIN 74) L4 = _____ mm
L1 = _____ mm L5 = _____ mm
L2 = _____ mm L6 = _____ mm
L3 = _____ mm L7 = _____ mm



Parameter - longitudinal keyway

without longitudinal keyway with longitudinal keyway 20 H7 6.5 mm deep



Parameter - angle drive

(imperative accessories from overall length 540 mm)

9.3294.0505 (VL 100) 9.3294.0605 (VL 125) 9.3294.0705 (VL 160)

Parameter - top jaws

9.3284.0201 (VL 100) without top jaws (separate sales item) 9.3284.0301 (VL 125) 9.3284.0401 (VL 160)
 9.3284.1201 9.3284.1301 9.3284.1401

Date

Stamp

Signature

Standard jaws



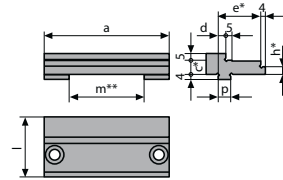
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Top step jaws

to obtain very large jaw openings

for fixed jaw Part no.	for slide Part no.	a	c	d	e	h	l	m	p
9.3284.0201	9.3284.1201	100	11,5	6	34	6,5	48	60	10h6
9.3284.0301	9.3284.1301	125	14,0	6	40	9,0	58	65	12h6
9.3284.0401	9.3284.1401	160	17,0	8	43	12,0	64	88	18h6



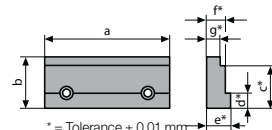
* = Tolerance ± 0.01 mm,
** = only top step jaws for slide



Precision step jaw

for clamping of rectangular workpieces without parallel pads.
These jaws allow holes to be drilled near the edge. Used in pairs only.

Part no.	a	b	c	d	e	f	g
5.2082.0001	100	34	29	10	19	15	11
5.2082.0002	125	45	39	13	25	20	16
5.2082.0003	160	54	45	15	25	20	16



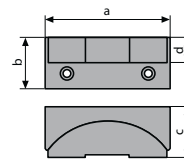
* = Tolerance ± 0.01 mm



Pendulum jaw

for clamping one workpiece with nonparallel clamping surfaces
or two workpieces with differential tolerances.

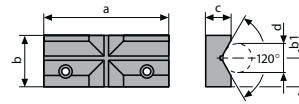
Part no.	a	b	c	d
8.3711.0208	100	34	35	16
8.3711.0308	125	45	50	22
8.3711.0408	160	54	55	26



Vee jaw

for horizontal and vertical clamping of cylindrical workpieces.

Part no.	a	b	b1	c	d
5.3030.0002	100	34	19	17	8 – 35
5.3030.0003	125	45	27	19	10 – 50
5.3030.0004	160	54	32	21	12 – 60



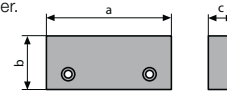
Vee tolerance ± 0.01 mm



Clamping jaw, soft

16 MnCr5, supplied oversize, for preparation of special jaws by the customer.

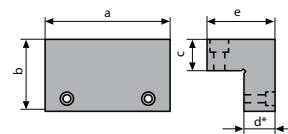
Part no.	a	b	c
5.2055.0097	100	36	20
5.2055.0098	125	47	25
5.2055.0099	160	56	30



Clamping jaw, extra high

for safe clamping of high workpieces.
Used as single jaw or in pairs.

Part no.	a	b	c	d	e
9.3283.0201	100	58,0	25	25	60
9.3283.0301	125	75,5	32	32	74
9.3283.0401	160	92,5	40	40	100



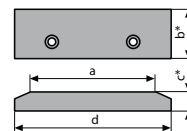
* = Tolerance ± 0.01 mm



Clamping jaw, extra large

for safe clamping of workpieces exceeding the standard jaw width.
Used in pairs only.

Part no.	a	b	c	d
5.2058.1025	100	34	13	125
5.2058.1026	125	45	15	160
5.2058.1027	160	54	20	200



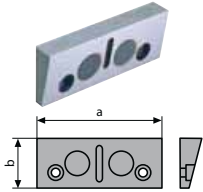
* = Tolerance ± 0.01 mm

all dimensions in mm



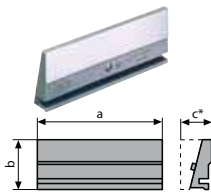
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QIS Jaws



QIS base jaw with permanent magnets

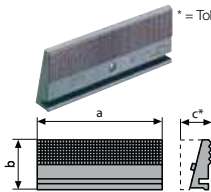
Part no.	a	b
9.3771.0201	100	34
9.3771.0301	125	45
9.3771.0401	160	54



QIS interchangeable jaw, smooth

Part no.	a	b	c
8.3771.1201	100	34	21
8.3771.1301	125	45	26
8.3771.1401	160	54	31

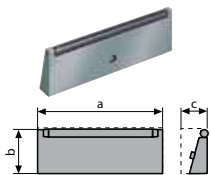
* = Tolerance ± 0.01 mm



QIS interchangeable jaw, serrated

Part no.	a	b	c
8.3771.2201	100	34	21
8.3771.2301	125	45	26
8.3771.2401	160	54	31

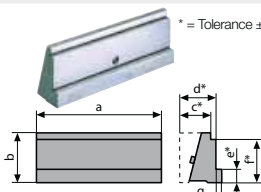
* = Tolerance ± 0.01 mm



QIS interchangeable jaw, crowned

Part no.	a	b	c
8.3771.3211	100	32.5	23.0
8.3771.3311	125	43.0	27.3
8.3771.3411	160	51.0	31.9

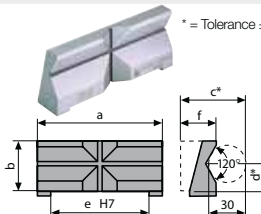
* = Tolerance ± 0.01 mm



QIS interchangeable jaw, stepped

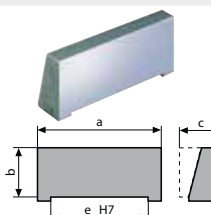
Part no.	a	b	c	d	e	f	g
8.3771.4201	100	34	21	25	10	29	4
8.3771.4301	125	45	26	30	13	39	5
8.3771.4401	160	54	31	35	15	45	5

* = Tolerance ± 0.01 mm



QIS interchangeable jaw, prismatic

Part no.	Ø from to	a	b	c	d	e	f
8.3771.5201	8 – 35	100	34	53	19	78	28.0
8.3771.5301	10 – 50	125	45	58	27	98	34.2
8.3771.5401	12 – 60	160	54	60	32	125	37.0



QIS interchangeable jaw, soft

Part no.	a	b	c	e
8.3771.7201	100	34	30.0	78
8.3771.7301	125	45	36.5	98
8.3771.7401	160	54	47.0	125

all dimensions in mm

Jaw change in a few seconds with downthrust effect:

The base jaws are fastened to the slide and to the fixed jaw using screws. The interchangeable jaws can be inserted and removed quickly. They are kept in place by two permanent magnets.

Fasten the base jaws to the slide and to the fixed jaw (one-off task).



Slide the desired interchangeable jaw in the guide-way against the base jaw.



The permanent magnets and guide pin keep the interchangeable jaw in its basic position.



For changing the interchangeable jaw, pull it upwards until the guide pin engages in the slot.



Slightly tilt the interchangeable jaw to overcome the retention force of the permanent magnets.



For installing a new interchangeable jaw proceed as described in 2 and 3.



SlimFlex jaw system



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Optimum machining of workpieces on three sides in one clamping operation

The SlimFlex jaw system allows 3-side machining of centrally clamped workpieces with dimensions less than the jaw width of the clamping device. Inserts keep the workpiece off the base jaw, which provides optimum access from three sides for the work spindle.

Quick positioning and alignment of the jaw sets



The blank is approx. 2 mm larger than the finished workpiece.



Adjust the jaws approx. 2 mm below the finished dimensions.

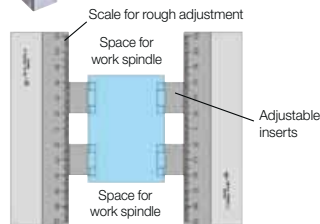
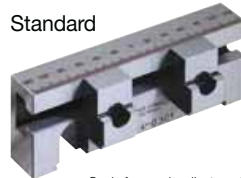


Place the workpiece by eye in a central position and clamp it.

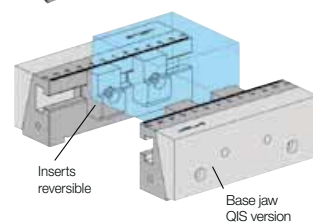
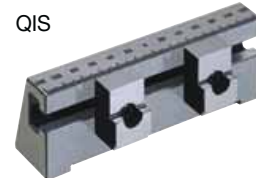


Proceed to 3-side machining.

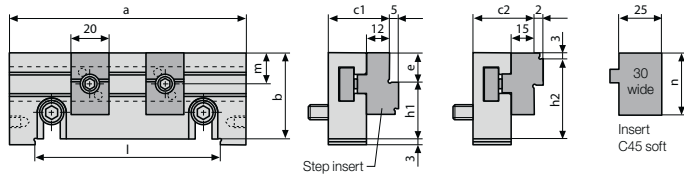
Standard



QIS



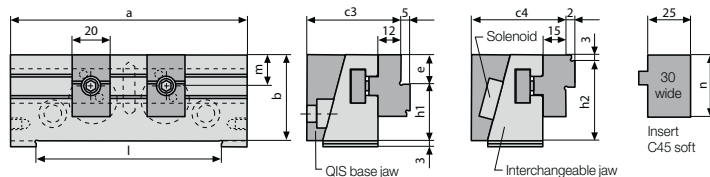
SlimFlex jaw system, standard version



Jaw width a	Part no. SlimFlex jaw system without step inserts	Part no. SlimFlex jaw system with step inserts	Part no. Insert C45 soft
100	9.3714.0202	9.3714.0212	5.5050.0123
125	9.3714.0302	9.3714.0312	5.5050.0099
160	9.3714.0402	9.3714.0412	5.5050.0099

Jaw width a	Dimensions in mm								
	b	c1	c2	e	h1	h2	l	m	n
100	34	30 ± 0.02	33 ± 0.02	10	24 ± 0.02	31 ± 0.02	78 H7	11	30
125	45	32 ± 0.02	35 ± 0.02	15	30 ± 0.02	42 ± 0.02	98 H7	16	40
160	54	34 ± 0.02	37 ± 0.02	15	39 ± 0.02	51 ± 0.02	125 H7	16	40

Slim Flex jaw system, QIS version



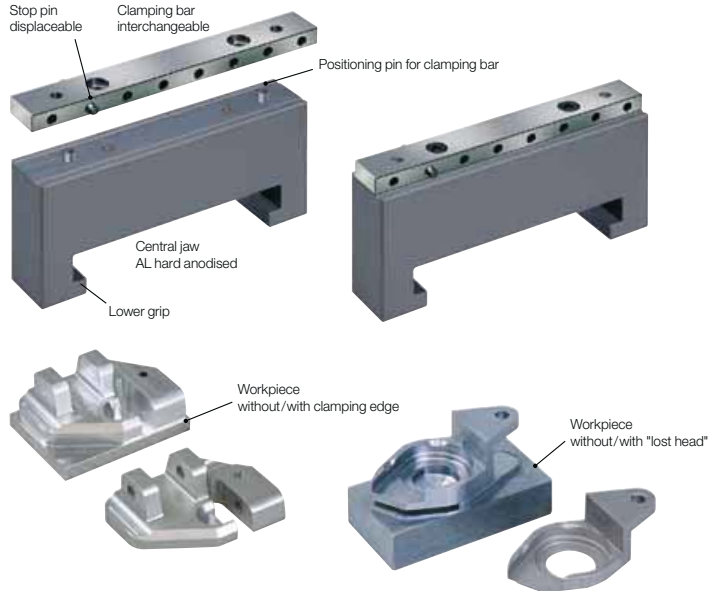
Jaw width a	Part no. Interchangeable jaw without step inserts	Part no. Interchangeable jaw with step inserts	Part no. Insert C45 soft	Part no. QIS base jaw
100	9.3771.9201	9.3771.9211	5.5050.0123	9.3771.0201
125	9.3771.9301	9.3771.9311	5.5050.0099	9.3771.0301
160	9.3771.9401	9.3771.9411	5.5050.0099	9.3771.0401

Jaw width a	Dimensions in mm								
	b	c3	c4	e	h1	h2	l	m	n
100	34	45 ± 0.02	48 ± 0.02	10	24 ± 0.02	31 ± 0.02	78 H7	11	30
125	45	50 ± 0.02	53 ± 0.02	15	30 ± 0.02	42 ± 0.02	98 H7	16	40
160	54	55 ± 0.02	58 ± 0.02	15	39 ± 0.02	51 ± 0.02	125 H7	16	40



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SMV jaws



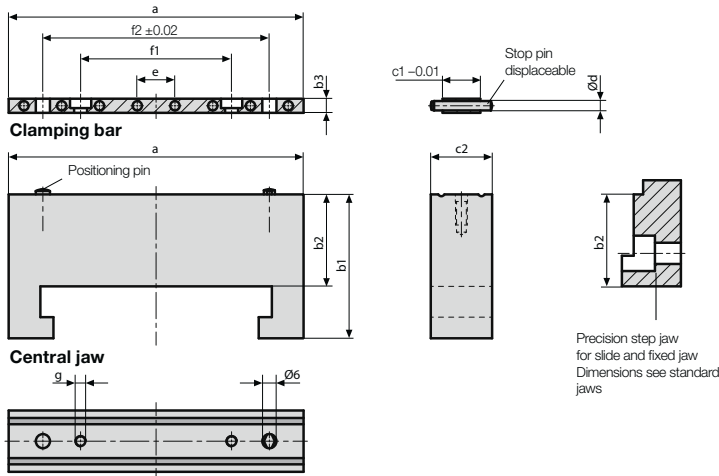
Efficient and cost-effective:
Existing or new HILMA machine vices can be changed from single to multiple clamping systems at low cost and with minimum retrofitting work.

Efficient multiple clamping using floating central jaws

Using floating central jaws for multiple clamping, the working area in an NC machine is utilized to the maximum. The resulting reduction in tool changes and travel contributes to a significant reduction in costs per piece. Can be combined with all HILMA clamping systems of types EL, NC.

- the lower grip prevents workpieces from rearing up
- longer machine running times allow to operate several machines
- complex workpieces can be milled all around
- all workpieces are clamped with the same clamping force
- optimum utilization of the working area by dense workpiece arrangement
- determination of the lateral workpiece position by displaceable stop pins

Floating central jaw, standard version



After finish-machining, the "lost head" is separated from the workpiece using a disk milling cutter.



The clamping edge is milled off in the 2nd clamping step.

Jaw width a	Part no. Central jaw with clamping bar	Part no. clamping bar	Part no. Precision step jaw	Dimensions in mm									
				b1	b2	b3	c1	c2	Ød	e	f1	f2	g
100	9.3715.0211	9.3715.1201	5.2082.0001	48	29	5	12	20	3	13	52	78	M5
125	9.3715.0311	9.3715.1301	5.2082.0002	61	39	6	16	26	4	16	64	96	M5
160	9.3715.0411	9.3715.1401	5.2082.0003	70	45	9	20	30	5	20	80	120	M6

Accessories



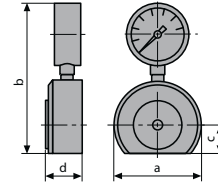
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Load cell

for regular checks of the clamping force of hydraulic and mechanical clamping systems.

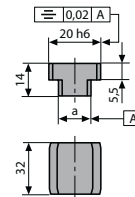
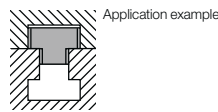
Part no.	Display range kN	a	b	c	d	for jaw width
2.9501.0001	0 – 60	88	150	29	37	100/125/160



Set of key blocks DIN 6323

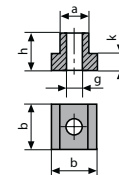
For precise alignment of the clamping device on the machine table the key blocks are inserted laterally.

Part number for 2 off = 1 set	Table slot a
9.3917.4121	14 h6
9.3917.4141	18 h6



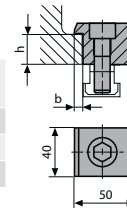
Set of T-nuts DIN 508

Part number for 4 off = 1 set	a	b	g	h	k
9.3777.3211	14	22	M 12	16	8
9.3777.3231	18	28	M 12	20	10
9.3777.3311	18	28	M 16	20	10



Set of clamping claws with screws

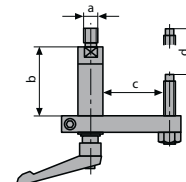
Part number for 4 off = 1 set	h	Socket head cap screw DIN 912
9.3777.2011	24	M 12x45 8.8
9.3777.3011	27	M 12x45 8.8
9.3777.3021	27	M 16x50 8.8



Precision workpiece stop

pivoting, rapid fixation. Adjustment in 2 levels.

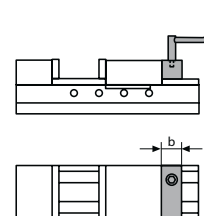
Part no.	For jaw width	a	b	c	d
9.3291.0201	100/125/160	M 12	61	95	46
9.3291.0401	only EL/NC 160	M 20	81	124	66



Angle drive

for machine vices and clamping systems of the type mechanic-hydraulic. May be used when normal operation is difficult or even impossible. Ideal for retrofitting.

Part no.	For jaw width	SW	b	Crank radius
9.3294.0505	100	10	39	125
9.3294.0605	125	10	43	125
9.3294.0705	160	10	46	125



6-stage clamping force preselection

retrofitable for hydro-mechanical vices

Part no.	For jaw width	SW
9.3762.0100	100	14
9.3762.0125	125	17
9.3762.0160	160	19

all dimensions in mm



ROEMHELD
HILMA ■ STARK

VarioLine tower design with floating central jaw for multiple clamping

Equipment of a moving column machining centre with VarioLine clamped in series for differently sized workpieces



Tower design using VarioLine for large workpieces

Clamping of plate-shaped workpieces with high cutting performance

Products | for | productivity