

ROEMHELD
HILMA ■ STARK

Operating manual

Including installation and assembly instructions
For incomplete machines as per Machinery Directive 2006/42/EC

Self-centering machine vice
hydraulically operated

Z 100 H

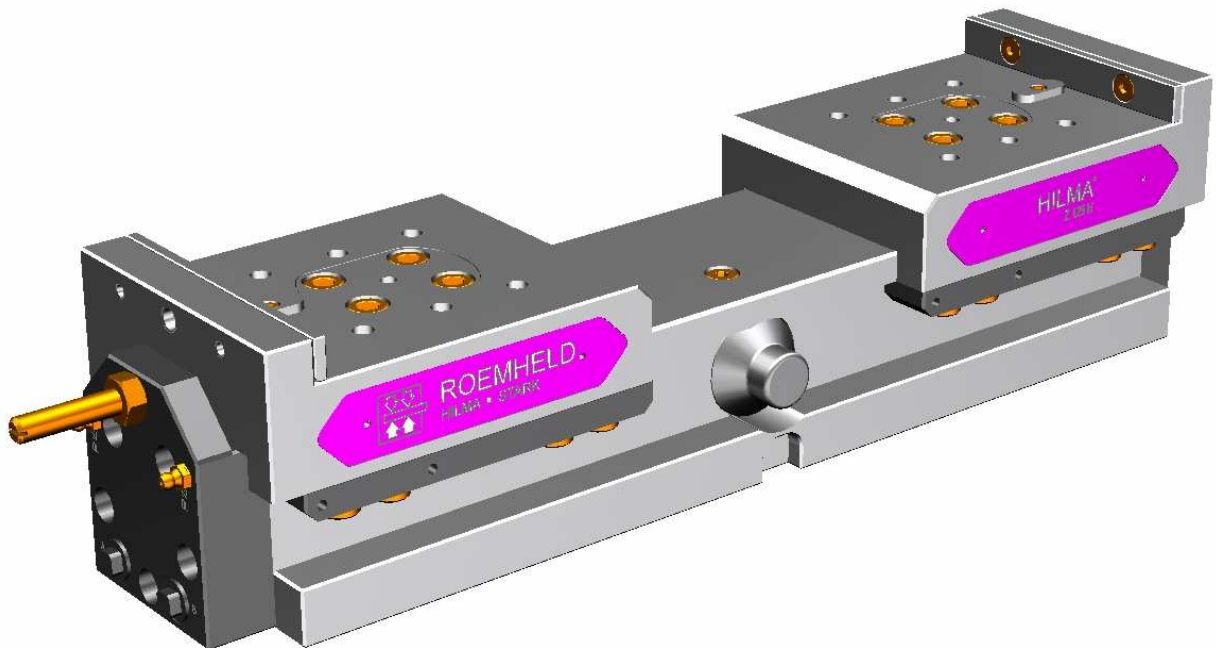
Z 125 H

Z 160 H

Type 9.3542.

Type 9.3543.

Type 9.3544.



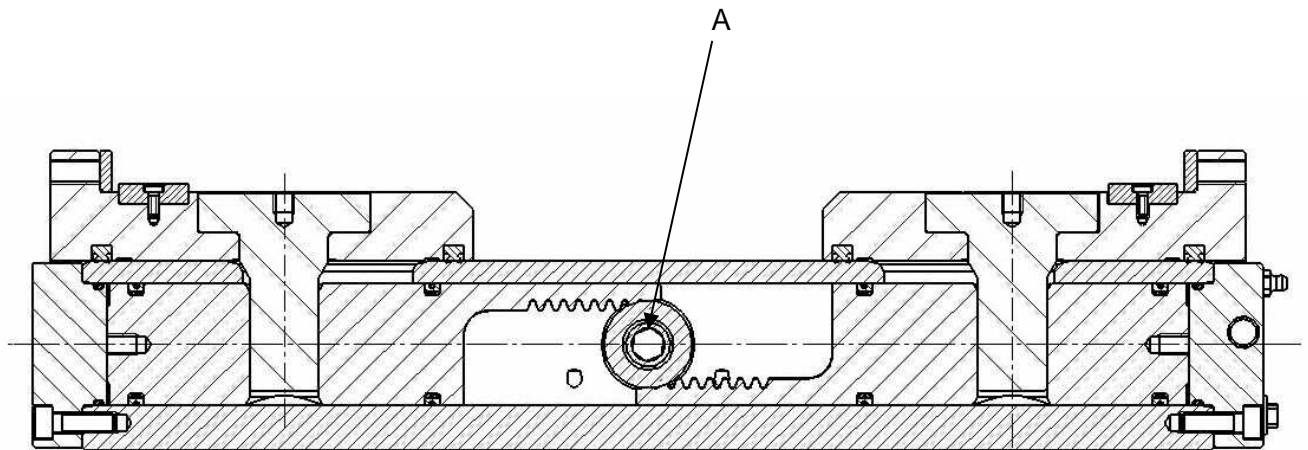
Hilma-Römheld GmbH
Schützenstraße 74
57271 Hilchenbach
Phone: +49 (0) 2733/281-0
Fax: +49 (0) 2733/281-169
E-Mail: info@hilma.de
www.hilma.de



TABLE OF CONTENTS

		Page
1.	General	
	1.1 Description	3
	1.2 Safety hints	3
	1.3 Scope of supply	4
	1.4 Technical data	4
2.	Operation	
	2.1 Fastening on the machine bed	5
	2.2 Pressure transmitter, e.g. pump unit	5
	2.3 Hydraulic oil connection and venting	5
	2.4 Checking the clamping range	6
	2.5 Clamping and unclamping	6
3.	Appendix	
	3.1 Troubleshooting	7
	3.2 Maintenance and upkeep	7
	3.3 Lubrication of the vices	7
	3.4 Service	7
	3.5 Spare parts	8
4.	Including Installation	9

Please read the operating manual before putting the self-centering machine vice into operation for the first time, to ensure safe and optimum use of the system.



1.1 Description

The self-centering machine vice is used for concentric precision clamping of workpieces on machine tools, regardless of their outside tolerance.

Hydraulic clamping and unclamping is powered by an external pressure transmitter with two double-acting circuits.

The synchronising device which is adjustable without play ensures high centering precision.

1.2 Safety hints

- Before putting the vice into operation, a reflection on collision with due consideration of the working area of the machine should be made.
- Position the self-centering vice on the machine bed and fasten it firmly by means of screws.
- The workholding force must be such that the workpiece cannot be displaced by the machining force.
- During commissioning and in normal operation suitable measures must be taken to avoid injury from pinch hazards due to the large stroke of the slide.
- To ensure safe clamping, only part of the hydraulic power stroke should be used.
- Adjust the insertion gap between workpiece and clamping jaw to 4 mm maximum.
Risk of bruising!
- Screw A of the synchronizing device shall only be undone in the manufacturer`s plant.



1.3 Scope of supply

Self-centering machine vice with operating instructions / list of spare parts. Sets of jaws do not form part of the scope of supply.

1.4 Technical data

Type	Clamping force	Operating pressure max.	Unclamping pressure max.	Powerstroke per slide	Oil consumption total stroke		weight with-out jaws
	kN	bar	bar		clamping	unclamping	
Z 100 H	16	150	20	22	61	61	22
Z 125 H	25	150	20	35	138	138	39
Z 160 H	40	150	20	45	280	280	68



2.1 Fastening on the machine bed

- Fasten the self-centering machine vice on the machine bed in a way that it cannot be displaced due to the machining forces.
- Before putting the vice into operation, a reflection on collision with due consideration of the working area of the machine should be made.
- Use ring bolts M12 DIN 580 for ease of handling.
- Make sure that the surface of the machine bed is plain, and that no swarf is between the machine bed and the base of the vice.
- Align the vice (crosswise keyway 20 H7 and the keyblocks).
- Fasten the vice using clamping claws (accessories).

2.2 Pressure transmitter, e.g. pump unit

When machining for long periods of time, the pressure transducer should work intermittently and be provided with a pressure control for machine safety. If the pressure drops by 10%, the pressure control starts the pump. If the pressure drops by 15%, the machine is switched off by the machine safety system (e. g. HILMA compact pump unit, series 9.1500).

Attention: During commissioning and in normal operation suitable measures must be taken to avoid injury from pinch hazards due to the large stroke of the slide.

2.3 Hydraulic oil connection and venting

The concentric machine vice is connected to a pressure transducer through the two ports G1/4, A = clamping and B = unclamping.

For venting the complete system, set the pressure to a max. of 20 bar, and operate the system several times. To do this, open the vent screws G 1/8 until the oil comes out without bubbles.

Recommended oil: HLP 32 or HLP 46, DIN 51524.

2.4 Checking the clamping range

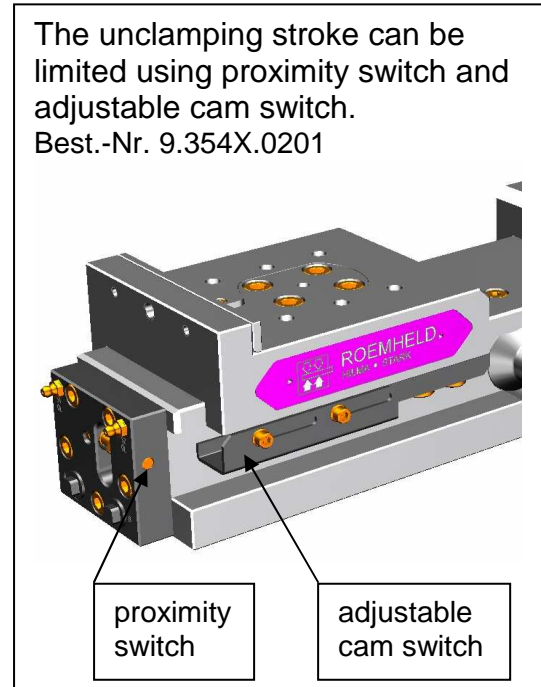
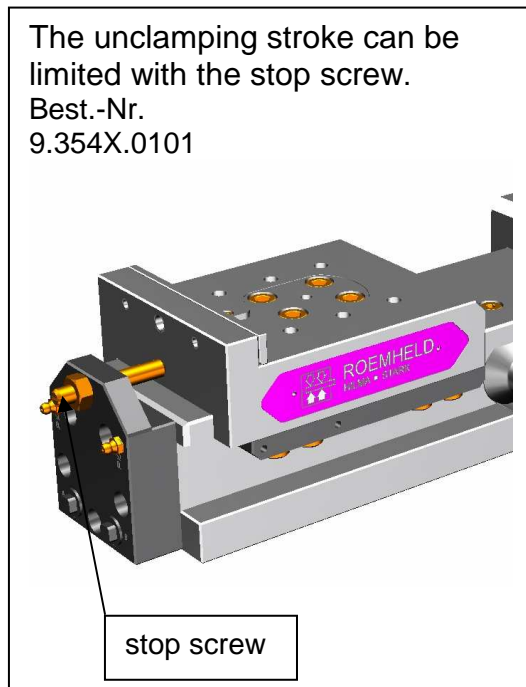
Remove the workpiece and completely close the concentric machine vice. The jaws must be closed by at least 2 mm more than when a workpiece is inserted.

Attention: The total power stroke must not be used as the insertion tolerance, because the clamping slides may run against the inner stop, and the workpiece will not be properly clamped.

2.5 Clamping and Unclamping

Clamping and unclamping is achieved by a double-acting system using a selector switch, if necessary with a two-hand safety control, or signal controlled in a fully automated operation. The workpiece is clamped proportionally to the set pressure. The max. operating pressure is 150 bar.

The max. operating pressure by unclamping is 20 bar.





3.1 Troubleshooting

Failure	Cause	Remedial action
Workpiece is not firmly clamped	Slides move against the inner stop	See 2.4, check the clamping range, change set of jaws, if necessary
	Flexible workpiece	Support the workpiece
	Operating pressure too low	Adjust to a higher pressure on the pressure gauge
Workpiece is not centrally clamped	Set of jaws is not symmetrical	Rework set of jaws
	Overload / wear	Repair in the manufacture's plant

3.2 Maintenance and upkeep

In addition to normal cleaning, lubricate the slideways at regular intervals by filling the lubricating nipples with special oil, or connect the slide to a central lubrication system.

3.3 Lubrication of the vices

- The vices have two lubrication ports, which both must be provided with oil (each has 1 port for each of the two slides).
- We recommend:
 - special oil Vg 68 or the like (e.g. BP Maccurat D68 or Mobil Vactra Oil No.2)
 - automatic lubrication in the case of short cycle times (< 60 sec):
 - between 0.06 cm³ and 0.1 cm³ oil per lubricating pulse which should occur every 30 minutes (or every 25 - 50 strokes)
 - for applying the grease, it is recommended that central lubrication systems are used with piston distributors (e.g., mfr. Vogel, group 320, dosing unit identification "6").
 - manual lubrication in the case of long cycle times (> 60 sec)
 - weekly
 - 2 grease gun pumps
- In the case of short cycle times which means high cycle rates, the guideways should be cleaned and lubricated using machine oil once a week.



3.4 Service

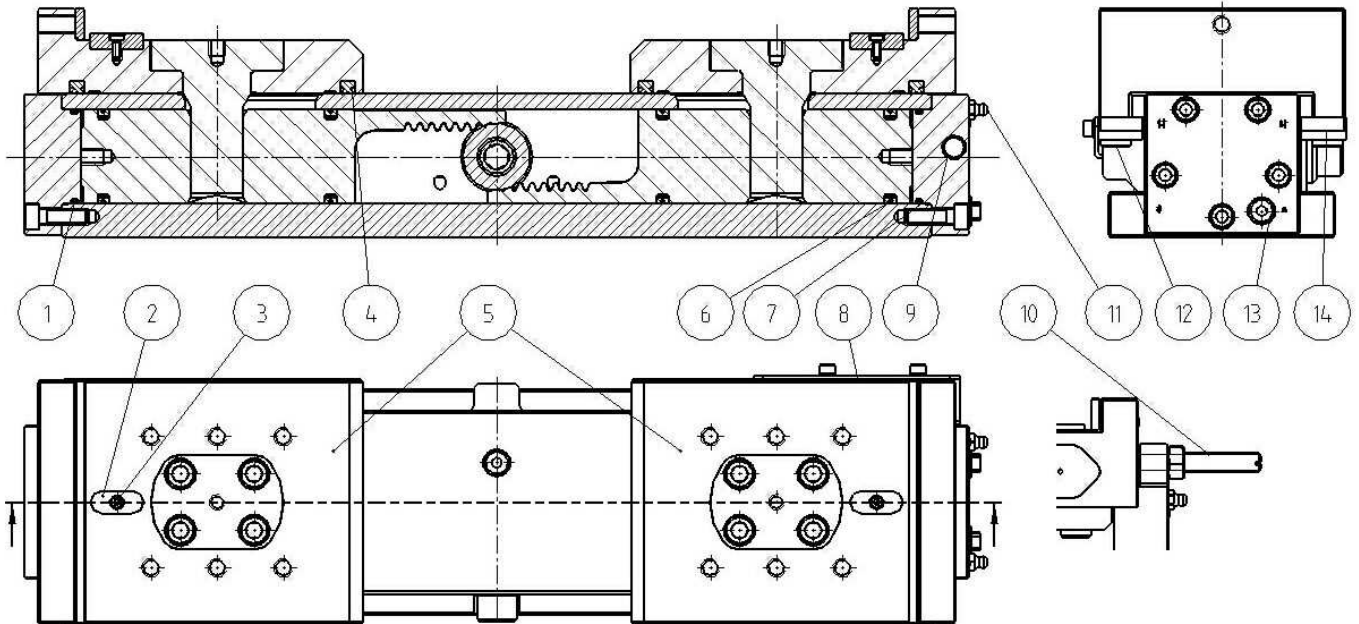
Customers abroad

Please contact the general importer of Hilma-Römheld products or your local dealer.



Operating manuel

3.5 Spare parts



Pos.	Description	Pc.	Part-no. Z 100 H	Part-no. Z 125 H	Part-no. Z 160 H
1	O-Ring 8x2	5	1.9500.0097	1.9500.0097	1.9500.0097
2	Fitting key C12x8x28	2	1.6885.0031	1.6885.0031	1.6885.0031
3	Fillister head screw M4x10	2	1.7984.0019	1.7984.0019	1.7984.0019
4	Scraper	4	1.9607.0012	1.9607.0013	1.9607.0014
5	Slide	2	5.2040.0307	5.2040.0312	5.2040.0313
6	AQ-Seal	4	1.9611.0042 42x6x3,65	1.9611.0050 50x6x3,65	1.9611.0063 63x6x3,65
7	O-ring	2	1.9500.0163 36x3,70SH	1.9500.0031 44x3,70SH	1.9500.0317 57x3,70SH
8	Adjusting sheet Order-No. 9.354X.0201	1	5.2073.0596	5.2073.0597	5.2073.0598
9	Proximity switch Order-No. 9.354X.0201	1	2.5012.0072	2.5012.0072	2.5012.0072
10	Stop-screw Order-No. 9.354X.0101	1	1.0913.0101	5.0551.0001	5.0551.0002
11	Lubricating nipple AM 8x1	2	1.4005.0003	1.4005.0003	1.4005.0003
12	Fillister head screw	16	1.0912.1080 M8x20, 10.9	1.0912.1106 M10x25, 10.9	1.0912.1121 M12x30, 10.9
13	Plug screw G1/8	2	1.0908.2004	1.0908.2004	1.0908.2004
14	Guide bar	4	5.2042.0158	5.2042.0160	5.2042.0161



Attention: If needed, components for the synchronising system can be replaced or adjuste in the manufacturer's plant.



Declaration of incorporation

as per

**Machinery Directive EC-RL 2006/42/EC
dated June 9, 2006.**

We, **Hilma- Römheld**
Schützenstrasse 74
57271 Hilchenbach, declare, that the incomplete machine and its variants:

Self-Centering machine vice, hydraulically operated

type 9.3542.xxxx
type 9.3543.xxxx
type 9.3544.xxxx

as supplied by us has been specifically designed for incorporation into a machine, taking full account of DIN-EN 294. The documentation has been prepared in conformity with appendix VII B. If required, the national authority may receive the documentation as a hard copy by post or by e-mail as a PDF format file. The machine into which the parts are to be integrated must only be put into operation after the conformity of the machine with the above EC directive has been demonstrated.

The design of our products is in accordance with DIN EN 982, DIN 24346 and EN 60204-1.

Responsible for the document:
Stefan Groos
Schützenstraße 74
D-57271 Hilchenbach

Hilchenbach May 05, 2008
Hans-Joachim Molka
Managing Director