Operating Instructions

including installation statement and assembly instructions
for incomplete machines according to Machinery Directive 2006/42/EG

Wedge clamping elements

Types:
8.2403.55xx
8.2404.55xx
8.2405.55xx
8.2406.55xx
8.2407.55xx
8.2408.55xx

Special models 8.240x.8xxx

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**In order to ensure safe and functional operation,
be sure to have read and understood this operation manual before installation and start-up!**

1 Safety instructions

1.1 General

Hilma-Römheld wedge clamping elements are safety-tested and approved for use in accordance with the technical specifications. Non-adherence to these specifications may result in danger to the operator and/or malfunctions of the machine. For reasons of safety, unauthorised conversions or modifications of Hilma-Römheld wedge clamping elements are prohibited and will invalidate the warranty.
Hilma Römheld cannot be held responsible or liable for any damage resulting from non-compliance with this Operation Manual and the included provisions.

1.2 Application

Hilma Römheld wedge clamping elements series 8.24xx.55xx are intended for clamping moulds, dies and parts to be processed on horizontal and vertical injection moulding machines, presses and punches, etc. The clamping bolt is extended and performs the clamping cycle by spring force. For unclamping the clamping element, it is pressurized.

1.3 Operating characteristics

The maximum specified loads of Hilma Römheld wedge clamping elements must not be exceeded (see catalogue, Product Group 2).

Attention: Overloading the wedge clamping elements may result in the elements' failure or destruction

1.4 Temperatures

The maximum operating temperature for the standard model is 80 °C. For higher temperatures, special models are to be used (special models for temperatures of up to 200 °C)

Note: For temperatures of over 80 °C to 120°C, the use of inductive sensors for monitoring the clamping element position is only possible if switches with permanently connected cables are used.

1.5 Hazard warnings

- In case of incorrect operation, the clamping bolt may fully retract into the guide housing and thus cause a die halve falling off on the ram side. This also applies to dies on horizontal injection moulding machines.
- .- For safety reasons and in accordance with the machinery directive 2006/42/EG, it must be ensured that incorrect operation of the clamping elements (unclamping) in the die area is excluded while maintenance work is performed.
- If the above-stated safety instructions cannot be met when the clamping elements are used on upper dies or with horizontal installation, **mechanical securing is required.**
- Installation and repair work may only be performed when the machine is depressurized (press in UT position)
- Do not exceed the indicated operating pressures and temperatures.

Attention:

The operator must be appropriately instructed before operating the elements for the first time.
The clamping elements must not be operated by persons under the age of 16. Apprentices over the age of 16 may operate the elements, but only under supervision. The operation manual must be made available to the operator. The operator must inform third parties about possible hazards in the working area.

1.6 Declaration

Hilma-Römheld clamping bolts have been developed, designed and produced in compliance with the EC Machinery Directive 2006/42/EC.

2 Structure and function

2.1 Structure

The wedge clamping elements primarily comprise the following component assemblies:

1. Guide housing
2. Clamping bolt with 6° clamping inclination and integrated compression spring
3. Position monitoring
4. Cover

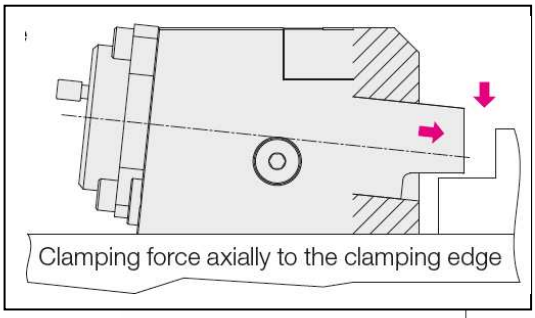
2.2 Function description

2.2.1 Standard element

The wedge clamping element consists of a guide housing and a one-piece clamping bolt.
An integrated spring pushes the clamping bolt out of the housing and builds up the clamping force.

Clamping

Clamping cycle: the clamping bolt which is inclined by 6° performs an idle stroke and simultaneously a clamping stroke.
The clamping bolt is lowered axially onto the clamping edge. The 6° angle, the spring force and the frictional engagement at the clampingpoint create a self-locking connection.



Within the permissible clamping edge tolerances, an inductive proximity switch indicates when the clamping position is reached. If there is no die, or if the clamping edge dimension is significantly outside the permissible tolerances, the switch will not supply signal.

Unclamping
For unclamping, the clamping element is pressurized. The clamping bolt retracts into the guide housing against the spring force. The unclamping position is indicated by an inductive proximity switch.

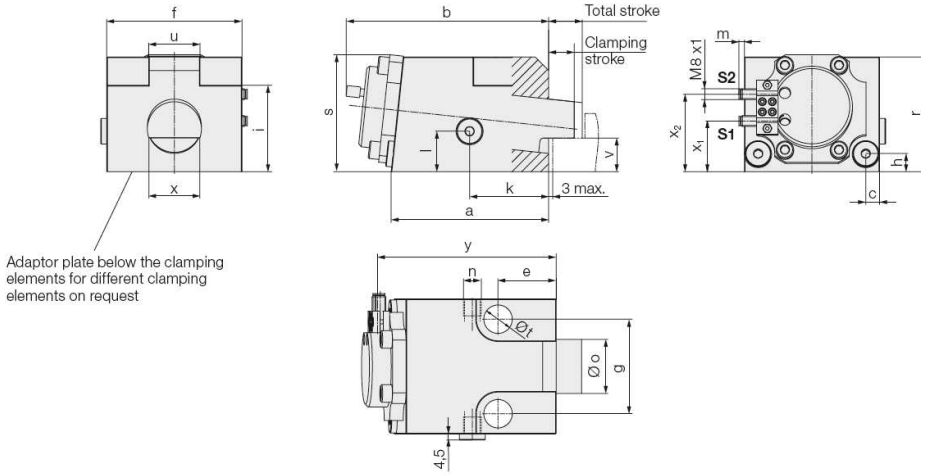
The clamping element may be adapted to non-standard clamping edge heights by using intermediate plates.

2.2.2 Special element model

For special wedge clamping element models, please observe the data given in the drawing.

3 Technical data, main dimensions

Wedge clamping elements
with position monitoring
Clamping bolt with a 6° bevel
Temperature resistance up to 80 °C
(higher temperatures on request)



Adm. operating force:	**[kN]**	25	50	80	120	120
Clamping force by spring	[kN]	2,4	5	5	11	11
Unclamping pressure	[bar]	160	160	160	160	160
Max. operating pressure	[bar]	200	200	200	200	200
Cylinder Ø	[mm]	35	60	60	85	85
Max. oil volume	[cm³]	14	39	39	90	90
Total stroke	[mm]	20	25	25	40	40
Clamping stroke	[mm]	14	19	19	15	15
a	[mm]	100	120	120	200	200
b	[mm]	131	153	153	245	245
c	[mm]	9	10	10	30	30
e min. / e max.	[mm]	10/37	12/45	15/43	15/77	18/74
f	[mm]	88	100	100	180	180
g (± 0.2 mm) mounting grip as per Euromap	[mm]	35/M12/12.9	70/M16/12.9	70/M20/12.9	140/M20/12.9	140/M24/8.8
Torque	(Nm)	85	220	300	470	550
h	[mm]	13	13,5	13,5	30	30
i	[mm]	–	64	64	94	94
k	[mm]	55	62	62	115	115
l	[mm]	14	30	30	23	23
m	[mm]	–	4	4	–	–
n	[mm]	G⅛	G¼	G¼	G¼	G¼
Ø o	[mm]	18	40	40	65	65
r	[mm]	60	85	85	120	120
s	[mm]	62	87	87	120	120
Ø t	[mm]	13	17	21	21	26
u	[mm]	–	38	38	90	90
v** (± 0.15)	[mm]	20	25	25	40	40
x_1/x_2	[mm]	25/47	38/58	38/58	58/84	58/84
y	[mm]	114	132	132	212	212
Weight	[kg]	2,5	6,5	6,5	29	29
Part no.						
with position monitoring up to 80 °C*		**8.2403.5510**	**8.2404.5510**	**8.2404.5520**	**8.2405.5510**	**8.2405.5520**
without position monitoring				**on request**		

* Higher temperatures up to 250 °C on request
** Different operating forces, clamping edge heights, mounting grids or dimensions of the housing on request

Technical data, proximity switch

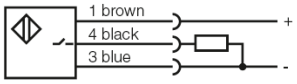
Technical data
for inductive proximity switches

Operating voltage	10 … 30 V DC
Ripple	max. 15 %
Switching function	interlock
Output	PNP
Housing material	Steel, corrosion resistant
Code class (DIN 40050)	IP 67
Part no.	**6.3829.0980**

Connecting cable with plug

Environmental temperature TA	[°C]	–25 … +80
Min. distance of the switching positions	[mm]	8
Type of connection		Plug
LED Function display		in the plug
Constant current max.	[mA]	200
Rated operating distance	[mm]	1.5
Protected against short circuits		yes
Connecting cable with plug, 5 m **Part no.**		**3829-263**
Connecting cable with plug, 10 m **Part no.**		**3829-139**

Electric circuit diagram



4 Assembly, installation, start-up

The following minimum conditions have to be fulfilled for installing the incomplete machine 'wedge clamping element' so that it may be assembled to a complete machine with other components properly and without affecting the safety and health of persons:

4.1 Assembly

- Assembly work may only be performed when the machine is unpressurized;
- The drill pattern has to comply with the drawing and/or the catalogue sheet;
- The bolt quality must be in accordance with the technical specification; bolts shall be tightened to the specified torque.

4.2 Hydraulic installation

- The machine's hydraulic lines must be dimensioned sufficiently (8x1,5 DIN 2391 - St35 NBK or larger) and be installed in accordance with the relevant standard (DIN EN ISO 4413) and/or the current state of technology in high-pressure hydraulics.
  Pipes should be short.
  Pipe bends should have a large radius. Maximum cleanliness during installation is a prerequisite for troublefree machine operation. Pipe ends shall be deburred; pipes, high-pressure hoses and bolted connections shall be cleaned and blown out. Do not remove the element's plug until immediately before establishing the connection.

Attention: Max. permissible residual pressure in return lines to tank: 5 bar

4.3 Start-up

Read the Operation Manual before machine start-up!

- Fit pressure generators with a pressure relief valve adapted to the operating pressure;
- Safeguard the working area;
- Use clean and new oil only;
- Bleed the entire system with pump in operation and low pressure (=20 bar) at the highest point, so that it is bubble-free (scour);
- Pressurize and operate the element several times; - Perform a visual inspection;
- Check hydraulic installation for leaks - visual check of pressurized pipes, hoses, bolted connections and clamping elements.

ATTENTION: Do not reach into the travel area when operating the clamping elements.
RISK OF INJURIES!

Control system:
A sufficient period t > 3s is to be provided for ensuring the process for *all elements* in the control cycle.

5 Troubleshooting

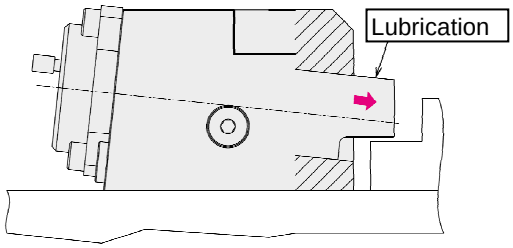
The wedge clamping elements have left our company in good order and condition. All functions are checked and the necessary settings made. Should any malfunctions occur after observing the notes in chapter 4.0 (Assembly, installation and start-up), please use the following table to check the possible causes:

Error	Possible causes	Troubleshooting
Clamping element does not clamp **Clamping bolt does not extend**	- Fastening screws tightened excessively	Tighten screws to specified torque
Clamping element does not unclamp	- Hydraulic supply interrupted/ inappropriate. - Hydraulic system not bled, - Operating pressure not set correctly. - Unit does not work and/or is not in operation.	Check hydraulic pipes and hose connections to the unit. Check correct connection (clamping/unclamping). Bleed hydraulic system. Correct operating pressure.
Proximity switch at clamping position does not supply a signal	- Clamping edge height incorrect - Die positioned incorrectly - Switch defective or set incorrectly	Check clamping edge height Check die position Correct switch setting or replace switch
Proximity switch at unclamping position does not supply a signal	- Proximity switch setting incorrect or switch defective	Correct switch setting or replace switch

6 Maintenance and repair

In general, wedge clamping elements do not require any special maintenance. A weekly visual check and check of the wedge clamping elements is to be performed.

In case of high clamping cycle frequencies or when the elements are operated at high temperatures, the clamping bolt should be lubricated monthly. For this purpose, extend the clamping bolt and lubricate it in the cylindrical area; use high-temperature grease



Hydraulic valves are very sensitive to contamination. For this reason, the pressure medium must not be contaminated. An annual oil change is recommended.
For regular maintenance work on the press:
- Visual check of electrical connections (plugs, cables) for damage;
- Check of hydraulic system for leaks;

Note: The hydraulic system is designed pursuant to **DIN EN ISO 4413,** Safety requirements of fluid power systems and their components.

Maintenance and repair work on wedge clamping elements may only be performed by qualified and trained staff.

Attention: Take care when dismantling the clamping element. The cover is highly pressurized by the spring.

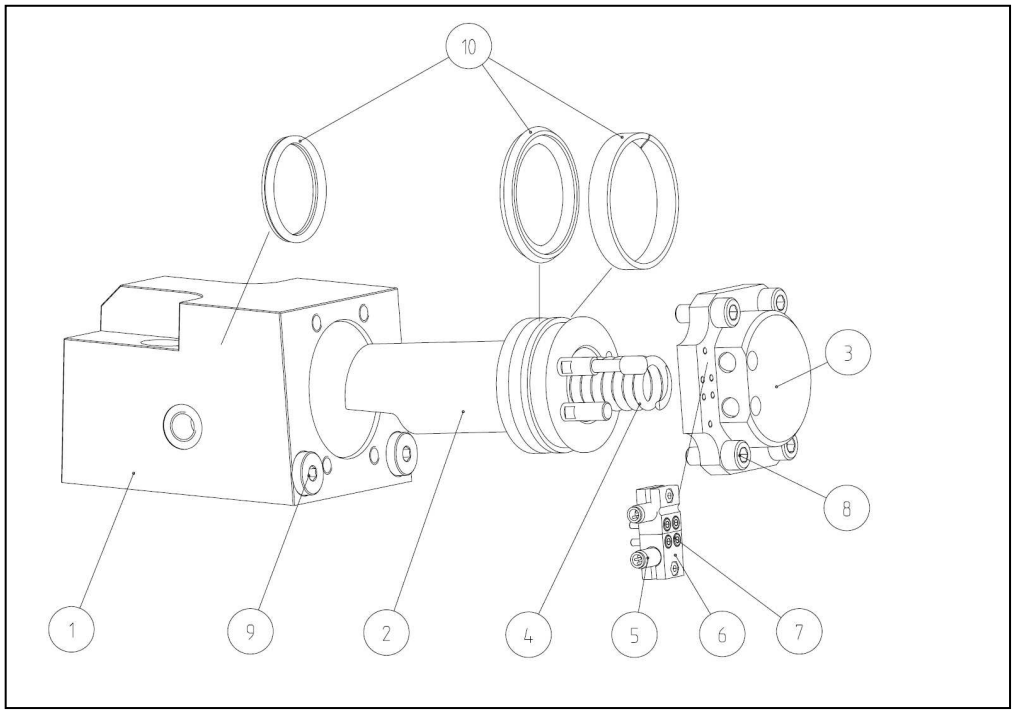
For spare parts list and installation sketches, please refer to Section 7.0 (Technical annex).

After replacement, the element has to be operated several times in order to bleed the pump unit (this also applies when hydraulic connections were released).

For start-up, observe the notes in chapter 4.0 (Assembly, installation and start-up).

7 Technical annex, spare parts

7.1 Graphic presentation



7.2 Spare parts list

Item	Designation	Number
1	Housing	1
2	Clamping bolt, complete	1
2	Cover	1
4	Compression spring	1
5	Proximity switch	2
6	Holder	2
7	Cylinder bolt	4
8	Cylinder bolt	4
9	Screw plug	3
10	Gasket set	1

Installation statement for incomplete machines

pursuant to

Machinery Directive EG-RL 2006/42/EG dated 09 June 2006.

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

Wedge clamping element

8.2403.55xx
8.2404.55xx
8.2405.55xx
8.2406.55xx
8.2407.55xx
8.2408.55xx
Special models **8.240x.8xxx**

as delivered by us is intended for integration into a machine in compliance with DIN-EN-ISO 13857. The documents were prepared in accordance with Annex VII B.
As requested, the national authority shall obtain the documents as a hardcopy by mail or as a pdf.-file by e-mail.
Commissioning shall be prohibited until it has been determined that the machine in which the components are to be installed complies with the regulations of the above-stated EC Machinery Directive.
Our components are designed in compliance with the standards DIN EN ISO 4413, EN 60204-1 and DIN EN ISO 12100.

Responsible for the document:
Berthold Ginsberg
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Hilchenbach, this 22/09/2016
H.- J. Molka
Managing Director