



## 12 ZERO-POINT CLAMPING SYSTEMS



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## ZERO-POINT CLAMPING SYSTEMS

Coupling elements for clamping and at the same time centring jigs and fixtures, developed as a quick-change system for shortening set-up times.

- Referenced clamping of jigs and fixtures provided by repeatedly accurate placement at the „zero-point“.
- For machining workpieces in several working steps on different machines.

In addition to the maximum of flexibility zero-point clamping systems – be this hydraulic operation in a built-in version with integrated lifting of the jigs and fixtures or through a modular design – the way the system is designed (with the peg of the base element mounted pointing upwards and the connecting ring integrated on the jig) guarantees a high degree of production reliability, continuous accuracy, and soiling of the reference point is avoided.

### FEATURES

- Holding force of up to 30 kN.
- Mechanical, pneumatic and hydraulic operation.
- Also with locking device against twisting when using individual elements.
- High efficiency, repeatedly accurate and cost-saving.
- Can be used on all machinery.
- Can also be integrated in Halder jig and fixture systems.



Built-in double acting connecting elements  
Holding force of 30 kN



Built-in single acting connecting elements  
Holding force of 20 kN



Connecting rings suited for all zero-point clamping systems



Modular connecting elements  
Holding force up to 10 kN



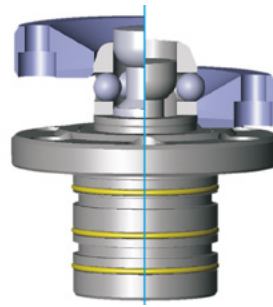
Control modules interchangeable



## ZERO-POINT CLAMPING SYSTEMS

### HYDRAULIC, DOUBLE ACTING, BUILT-IN CONNECTING ELEMENT HOLDING FORCE OF 30 kN

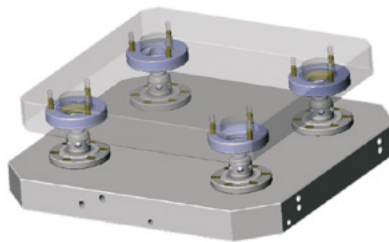
- Hydraulic clamping and centring.
- Releasing and lifting with integrated retraction cylinder, hydraulic.
- Suited for automation.
- Integrated pneumatic blow-out of the supporting surfaces.
- Pneumatic sensing check on the supporting surface during clamping.
- Can be integrated in base plates, angles, cubes, etc.



Functional Principle:  
clamp and lift-off

### HYDRAULIC, SINGLE-ACTING, BUILT-IN CONNECTING ELEMENT HOLDING FORCE OF 20 kN

- Clamping and centring by spring load.
- Releasing and lifting with integrated retraction cylinder, hydraulic.
- Suited for automation.
- Can be integrated in base plates, angles, cubes, etc.



Mounting principle

### MODULAR CONNECTING ELEMENT HOLDING FORCE OF UP TO 10 kN

- Clamping and centring by spring load.
- Release: mechanical, pneumatic, hydraulic. (Control modules interchangeable).
- Can be integrated in base plates, angles, cubes, etc.
- Provided with screw thread for bolting to tables, plates, etc.



Machine table:  
Base plate with 4  
connecting elements

## DESIGNS OF THE CONNECTING RINGS

The connecting rings are suited for all Halder zero-point clamping systems.

Can be bolted to and integrated on jigs and fixtures or directly on the workpiece.

The connecting rings are split into the following designs for positioning and simultaneous clamping of jigs and fixtures:

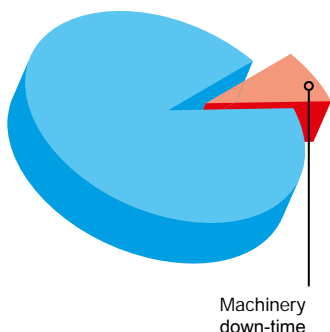
1. „Central“ connecting ring for aligning and clamping at the zero-point.
2. „Sword-shaped“ connecting ring for two-point placement for alignment in one axial direction.
3. „Floating“ connecting ring without centring function for over-determined additional clamping.

## TIME IS MONEY

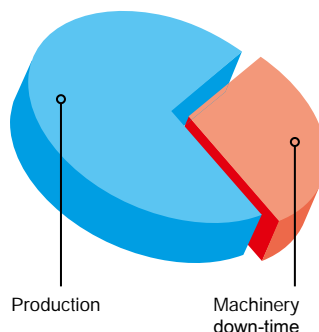
Halder zero-point clamping systems are a worthwhile investment that pay off within a very short period of time through simpler retooling procedures, less downtime for machinery and nearly unlimited flexibility. Make the comparison yourself as to the cost advantages obtained using Halder zero-point clamping systems.

### COMPARE PRODUCTION TIME / SET-UP TIME

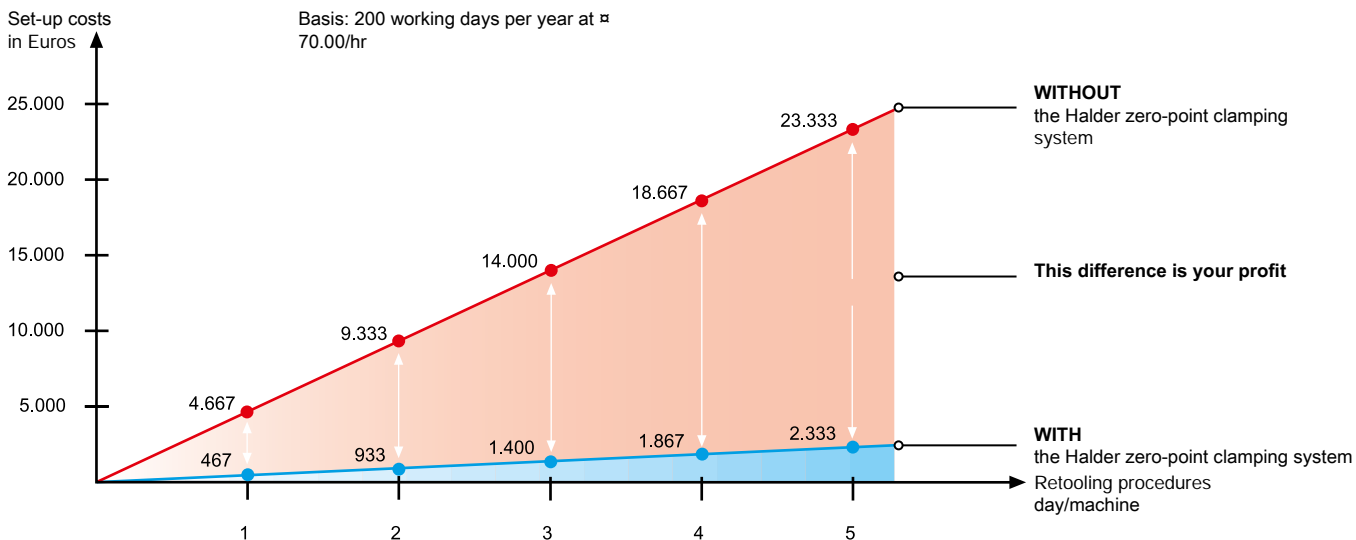
WITH the Halder zero-point clamping system



WITHOUT the Halder zero-point clamping system



### COST COMPARISON OF SET-UP COSTS WITH AND WITHOUT THE HALDER ZERO-POINT CLAMPING SYSTEM



### CALCULATION OF AMORTISATION TIME

#### Example

With five retooling procedures/shift/machine

Without the Halder zero-point clamping system: 5 x ~20 Min. = 100 Min.

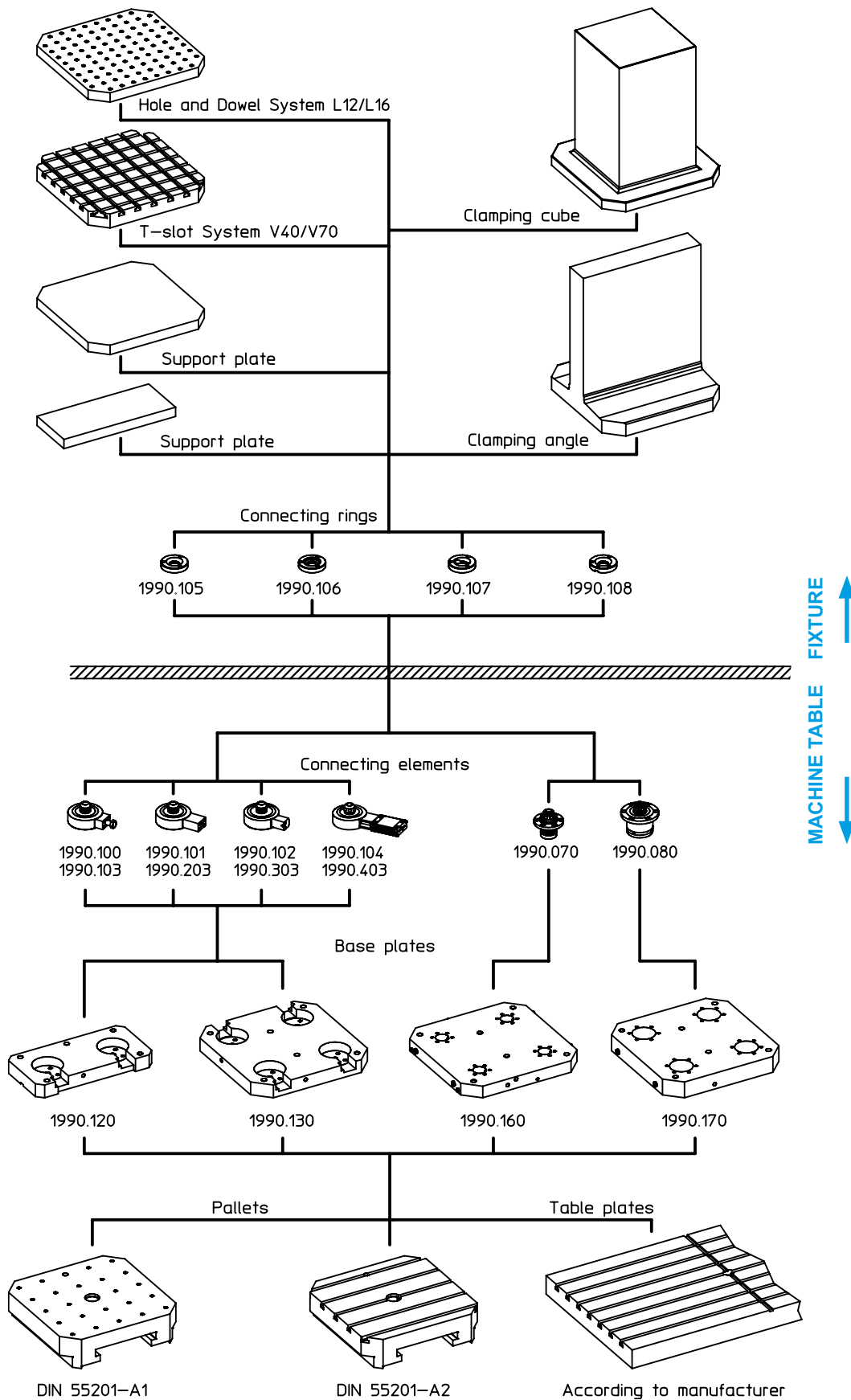
With the Halder zero-point clamping system: 5 x ~2 Min. = 10 Min.

Saving/shift/net = 90 Min.

Saving/year/200 working days = 300 h

Cost advantage/year at € 70.00/hr = € 21.000.-

OVERVIEW



**Connecting Elements • hydraulically operated, double acting, with lifting-off and blow-out**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

- Steel, case-hardened, ground

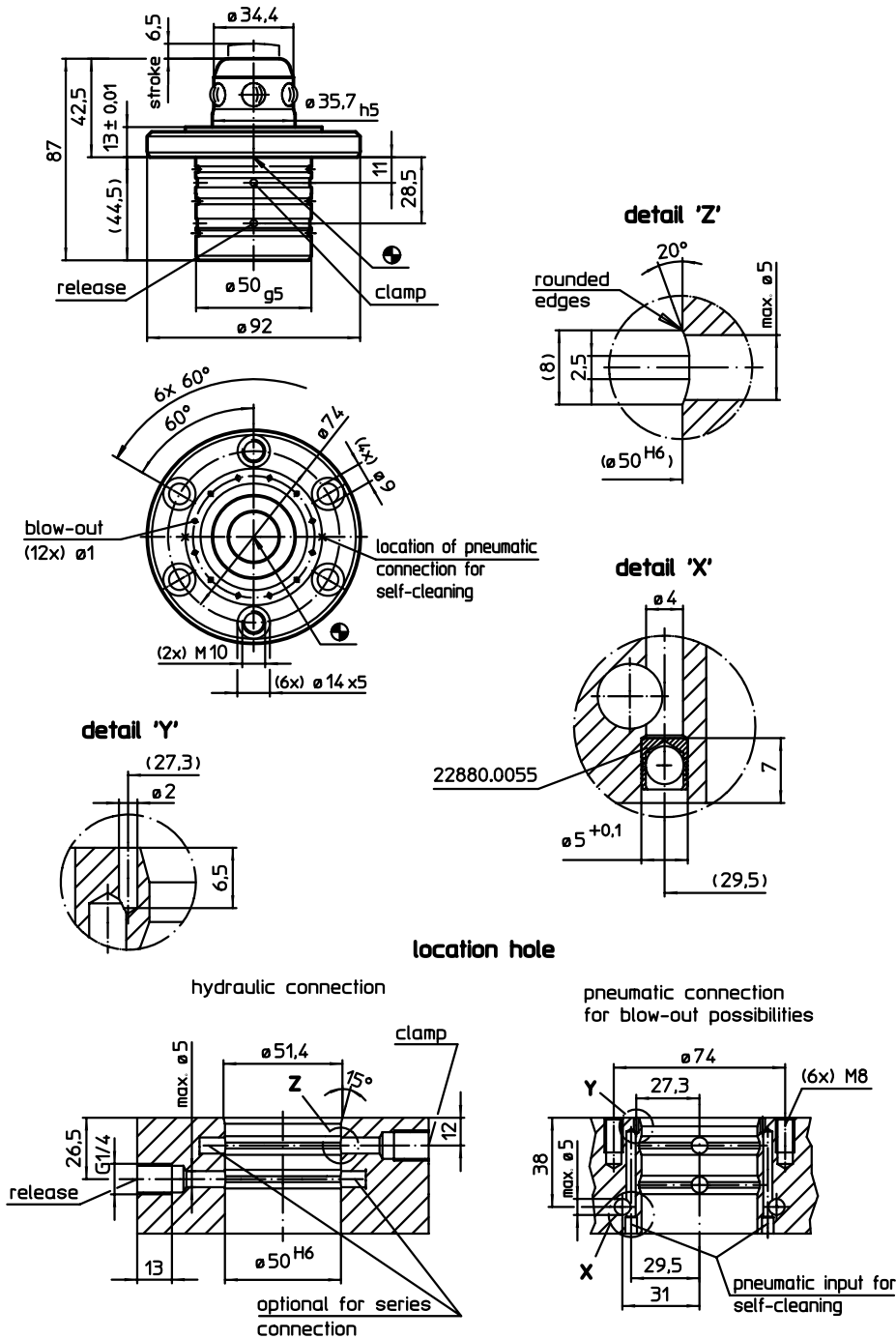
**MORE INFORMATION**

**Further products**

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

**DRAWING**



**ORDER INFORMATION**

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	< [mm]	max. [bar]	[g]	
30000	0,01	60 – 80	1200	1990.070

**Connecting Elements • hydraulically operated, single acting with lifting-off**  
EH 1990.



**PRODUCT DESCRIPTION**

**Material**

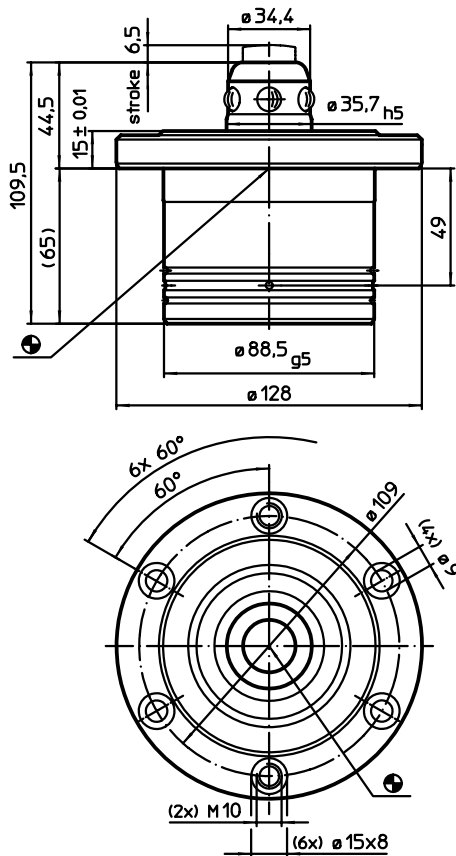
- Steel, case-hardened, ground

**MORE INFORMATION**

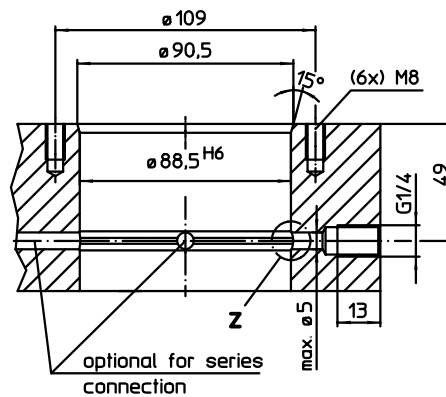
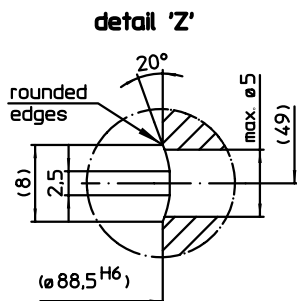
**Further products**

- Connecting Rings ..... → p. 919
- Coverings, for connecting elements ... → p. 932

**DRAWING**



**location hole**  
hydraulic connection



**ORDER INFORMATION**

Holding force	Centering accuracy	Release pressure max.		Art. No.
[N]	< [mm]	[bar]	[g]	
20000	0,01	60 – 80	3750	1990.080

**Connecting Elements • modular, mechanically operated**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

**Body**

- Steel, case-hardened, ground

**Control module**

- Steel, blackened

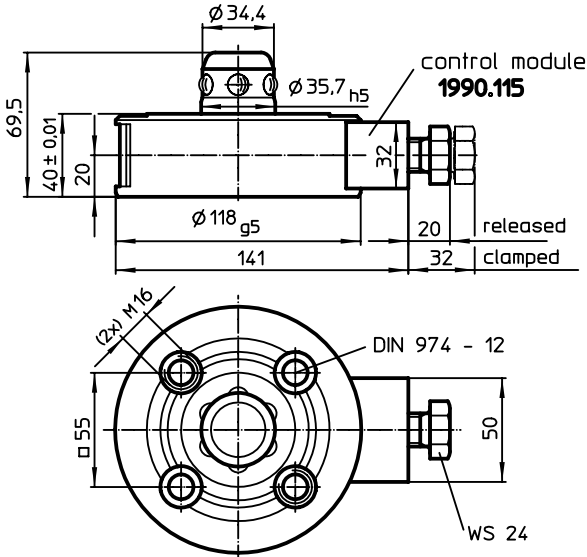
**MORE INFORMATION**

**Further products**

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

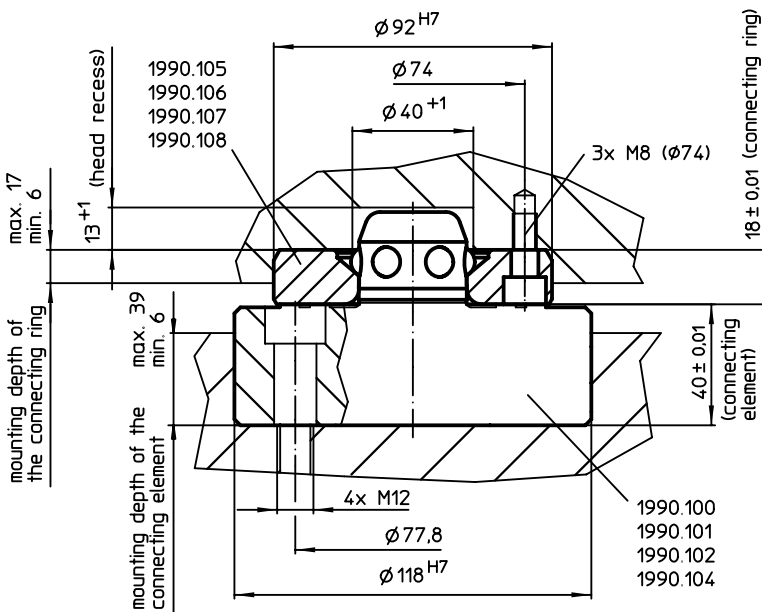
**DRAWING**



**ORDER INFORMATION**

Holding force	Centering accuracy	Release moment		Art. No.
[N]	< [mm]	[Nm]	[g]	
10000	0,01	10	3300	<a href="#">1990.100</a>

**APPLICATION EXAMPLE**



Connecting Elements • modular, hydraulically operated

EH 1990.



PRODUCT DESCRIPTION

Material

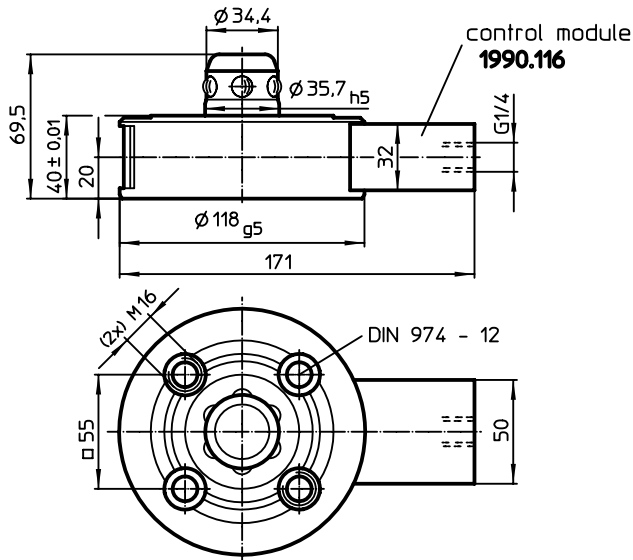
- Body**
  - Steel, case-hardened, ground
- Control module**
  - Steel, blackened

MORE INFORMATION

Further products

- Connecting Rings ..... → p. 919
- Coverings, for connecting elements ... → p. 932

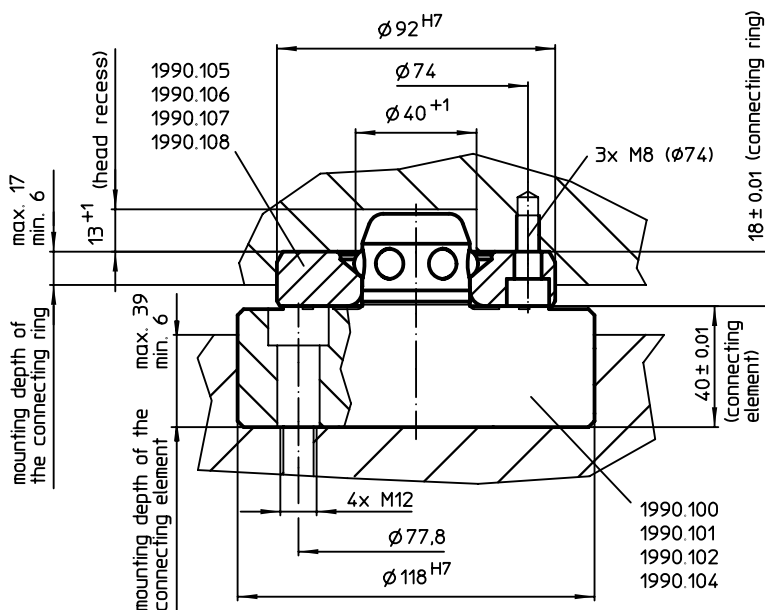
DRAWING



ORDER INFORMATION

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	[mm]	[bar]	[g]	
10000	0,01	80 – 120	3500	1990.101

APPLICATION EXAMPLE



**Connecting Elements • modular, pneumatically operated**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

**Body**

- Steel, case-hardened, ground

**Control module**

- Aluminium Al

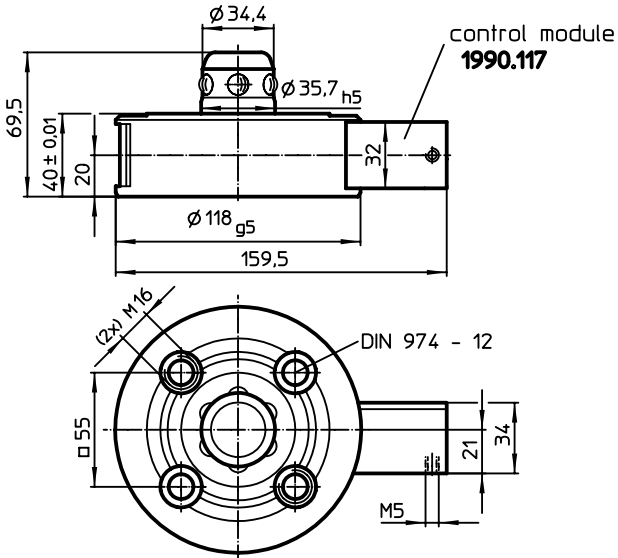
**MORE INFORMATION**

**Further products**

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

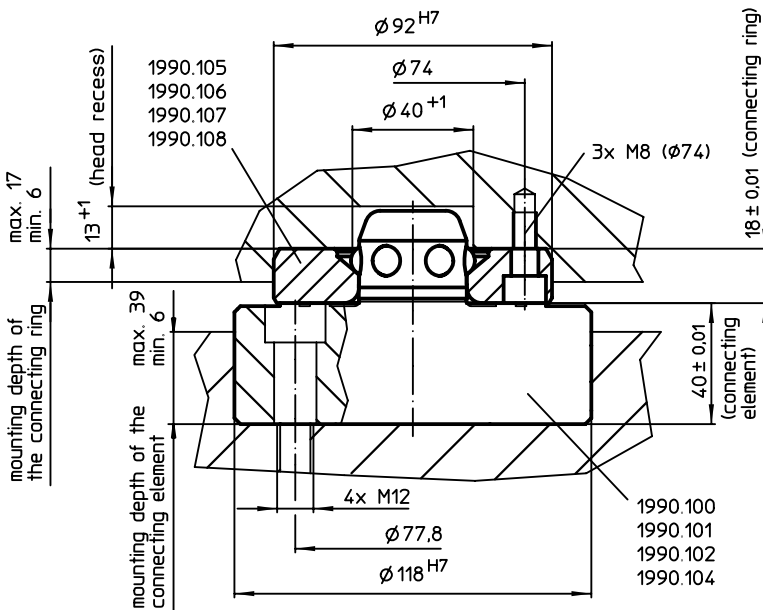
**DRAWING**



**ORDER INFORMATION**

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	< [mm]	[bar]	[g]	
5000	0,01	6	3040	<a href="#">1990.102</a>

**APPLICATION EXAMPLE**



Connecting Elements • modular, pneumatically operated, reinforced

EH 1990.



PRODUCT DESCRIPTION

Material

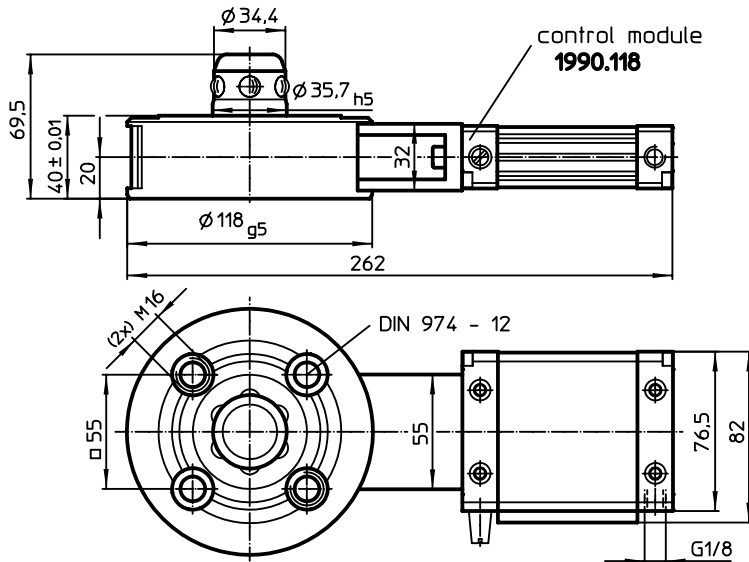
- Body**
- Steel, case-hardened, ground
- Control module**
- Aluminium Al

MORE INFORMATION

Further products

- Connecting Rings ..... → p. 919
- Coverings, for connecting elements ... → p. 932

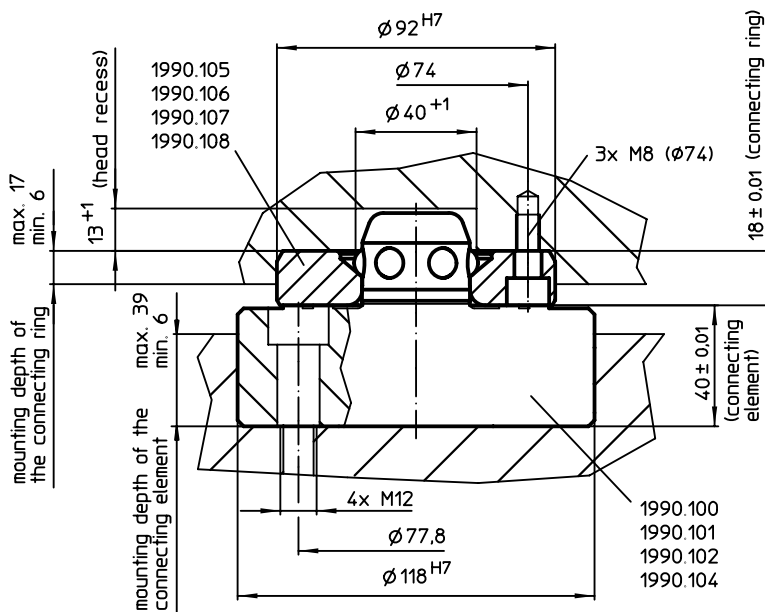
DRAWING



ORDER INFORMATION

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	[mm]	[bar]	[g]	
10000	0,01	6	3750	1990.104

APPLICATION EXAMPLE



**Connecting Elements • modular, mechanically operated, protected against twisting**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

**Body**

- Steel, case-hardened, ground

**Control module**

- Steel, blackened

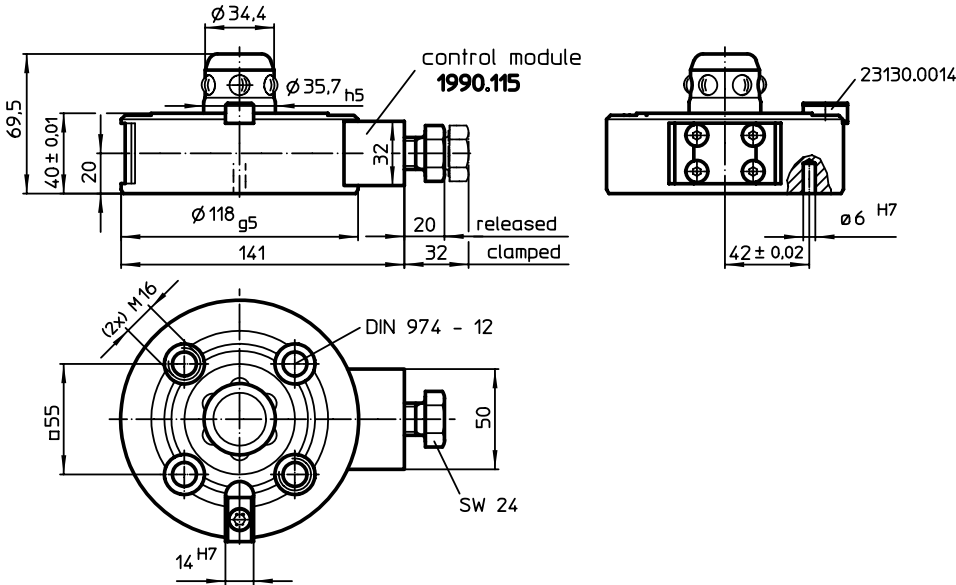
**MORE INFORMATION**

**Further products**

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

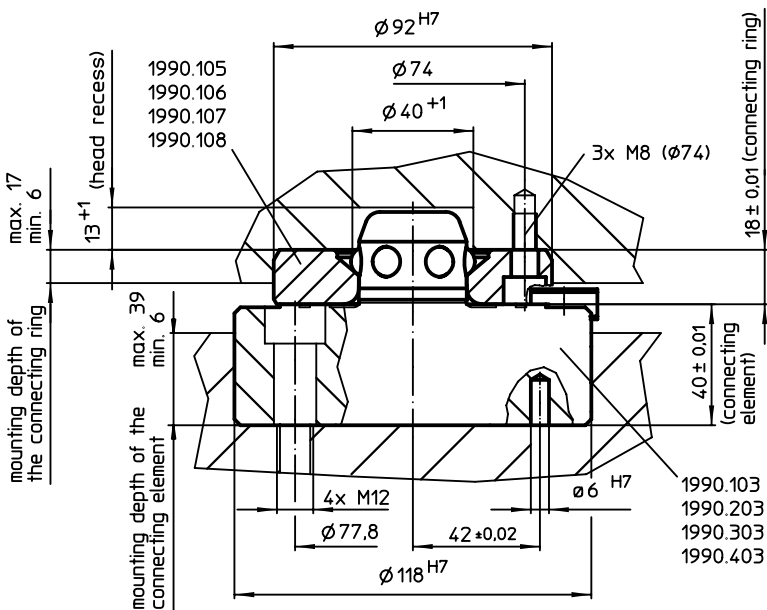
**DRAWING**



**ORDER INFORMATION**

Holding force [N]	Centering accuracy < [mm]	Release moment [Nm]	[g]	Art. No.
10000	0,01	10	3300	1990.103

**APPLICATION EXAMPLE**



Connecting Elements • modular, hydraulically operated, protected against twisting

EH 1990.



PRODUCT DESCRIPTION

Material

Body

- Steel, case-hardened, blackened, ground

Control module

- Steel, blackened

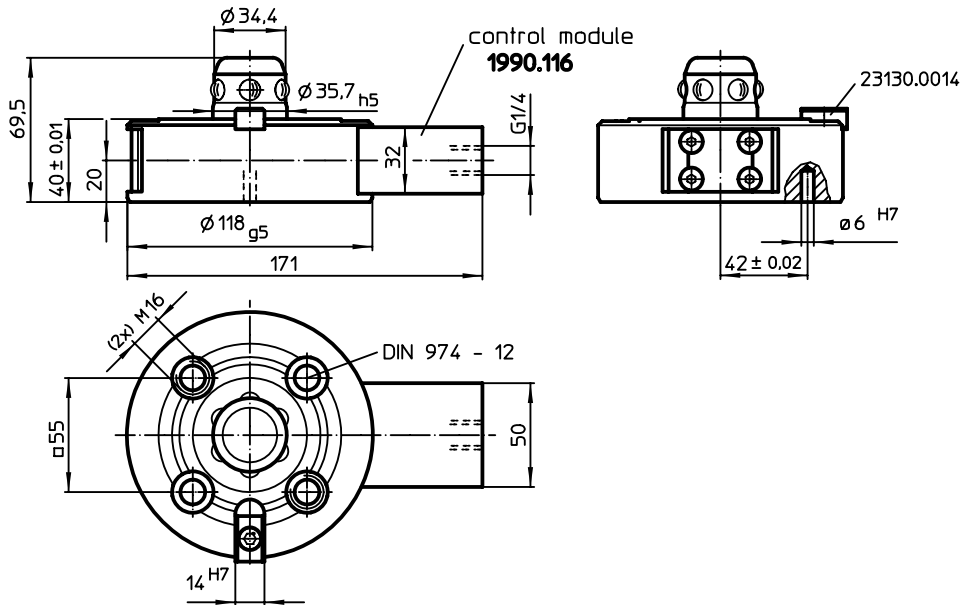
MORE INFORMATION

Further products

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

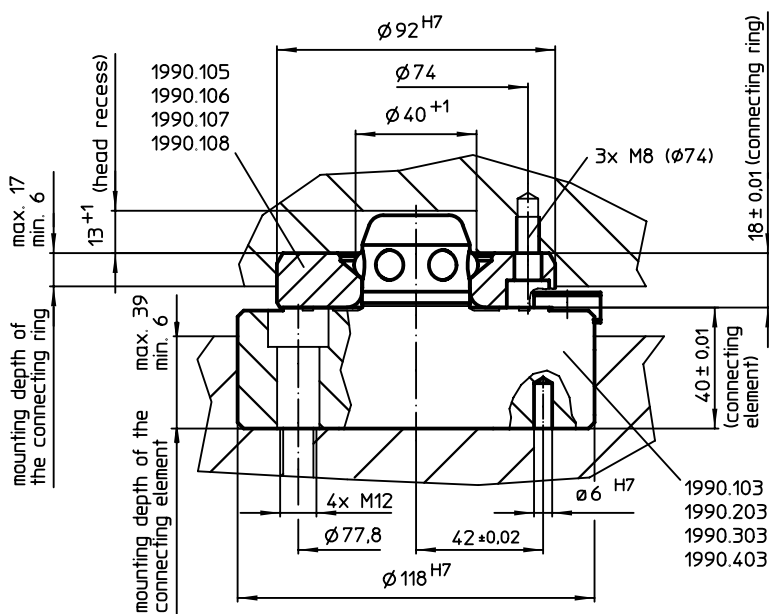
DRAWING



ORDER INFORMATION

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	[mm]	[bar]	[g]	
10000	0,01	80 – 120	3480	1990.203

APPLICATION EXAMPLE



**Connecting Elements • modular, pneumatically operated, protected against twisting**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

**Body**

- Steel, case-hardened, ground

**Control module**

- Aluminium Al

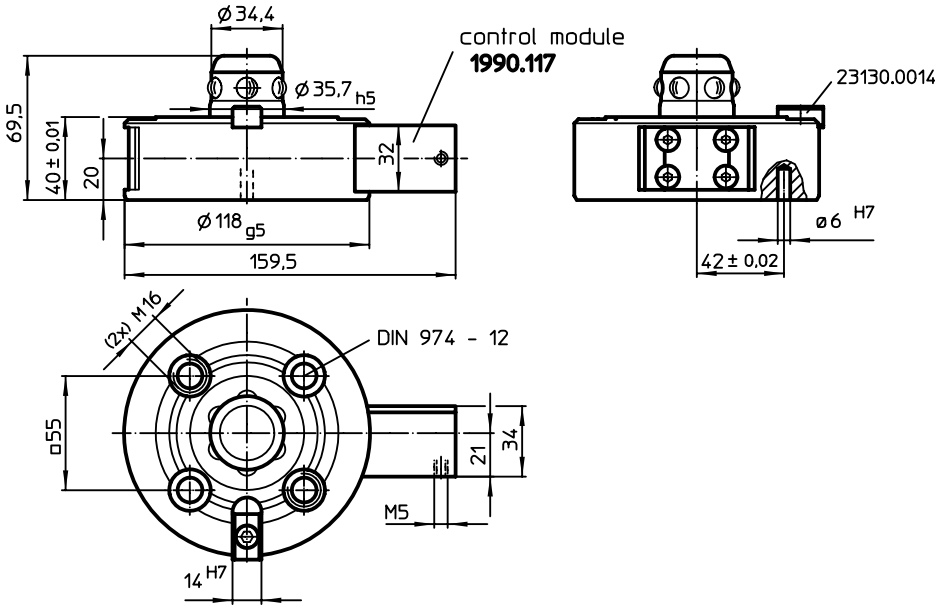
**MORE INFORMATION**

**Further products**

Connecting Rings ..... → p. 919

Coverings, for connecting elements ... → p. 932

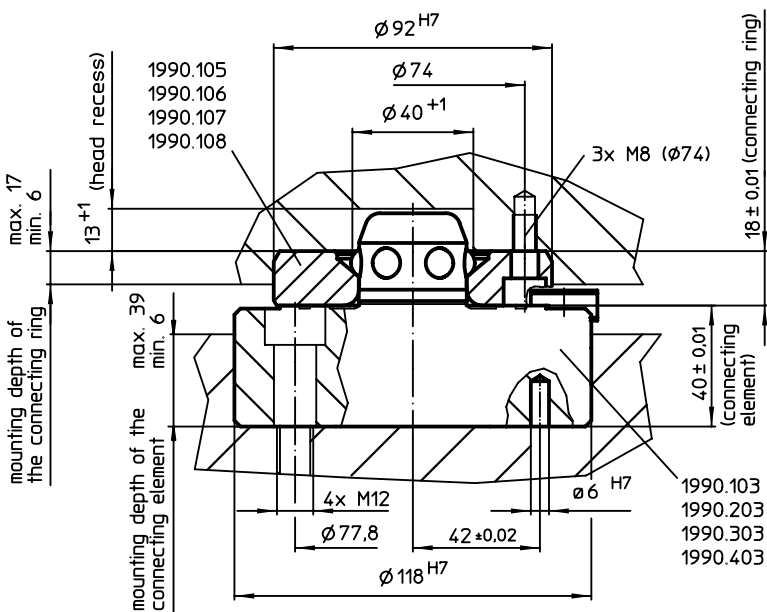
**DRAWING**



**ORDER INFORMATION**

Holding force	Centering accuracy	Release pressure		Art. No.
[N]	[mm]	[bar]	[g]	
5000	0,01	6	3040	1990.303

**APPLICATION EXAMPLE**



Connecting Elements • modular, pneumatically operated, reinforced, protected against twisting

EH 1990.



PRODUCT DESCRIPTION

Material

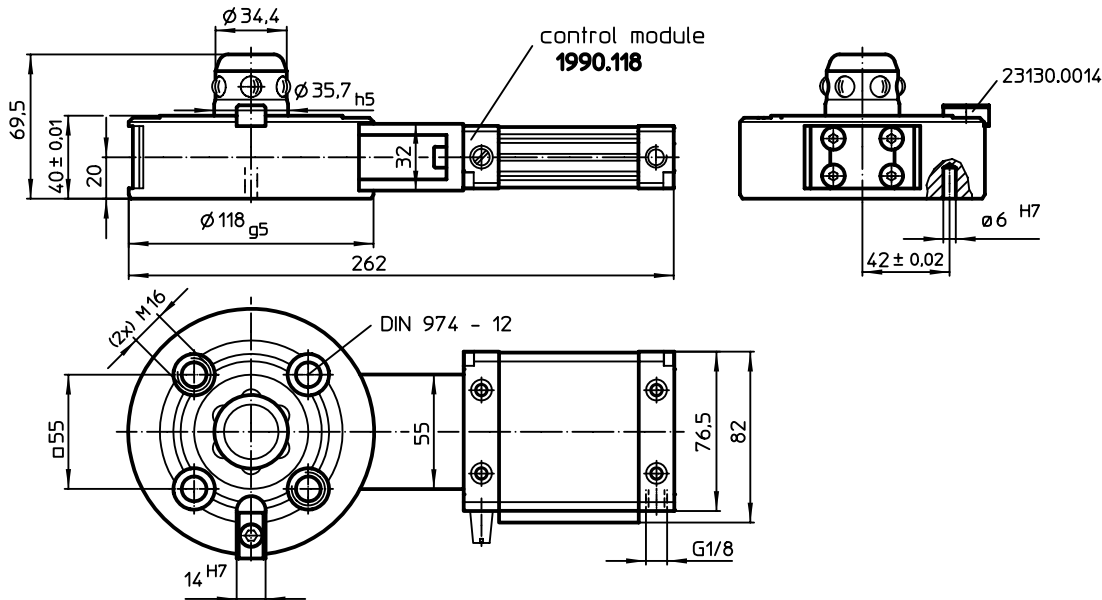
- Body**
  - Steel, case-hardened, ground
- Control module**
  - Aluminium Al

MORE INFORMATION

Further products

- Connecting Rings ..... → p. 919
- Coverings, for connecting elements ... → p. 932

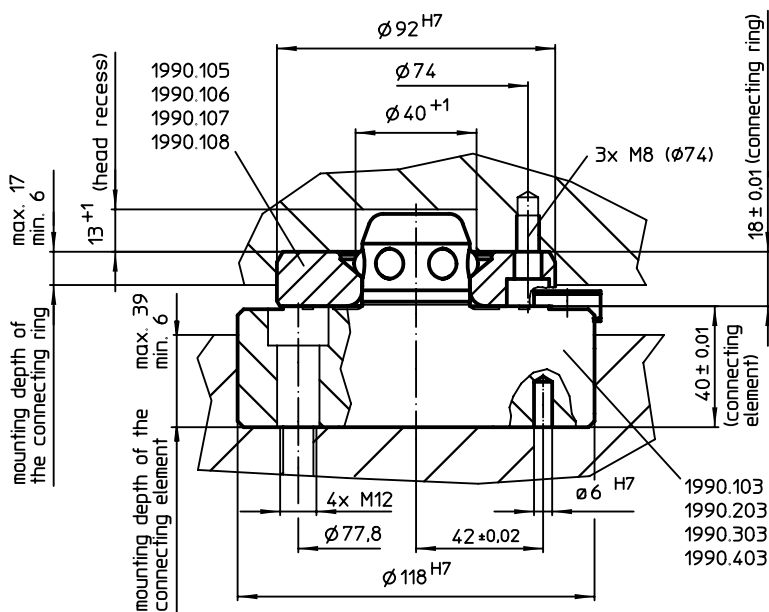
DRAWING



ORDER INFORMATION

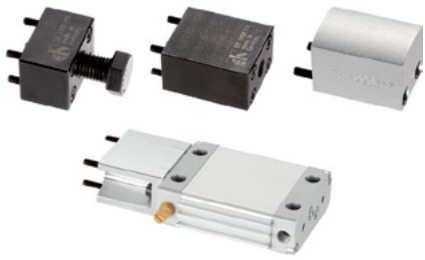
Holding force	Centering accuracy	Release pressure		Art. No.
[N]	< [mm]	[bar]	[g]	
10000	0,01	6	3750	1990.403

APPLICATION EXAMPLE



## Control Modules

EH 1990.

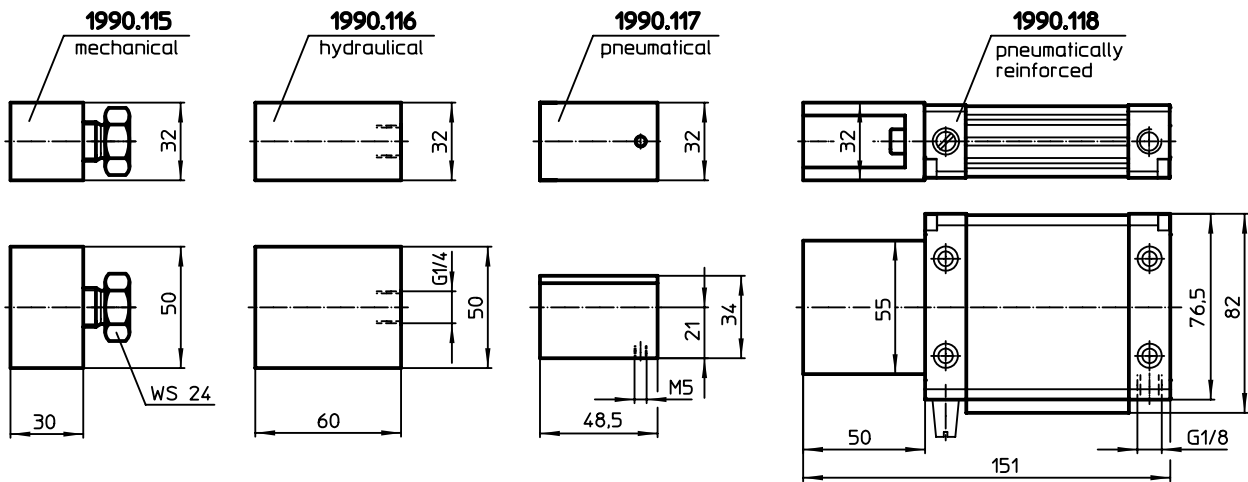


### PRODUCT DESCRIPTION


#### Material

- Steel, blackened
- Aluminium Al

### DRAWING

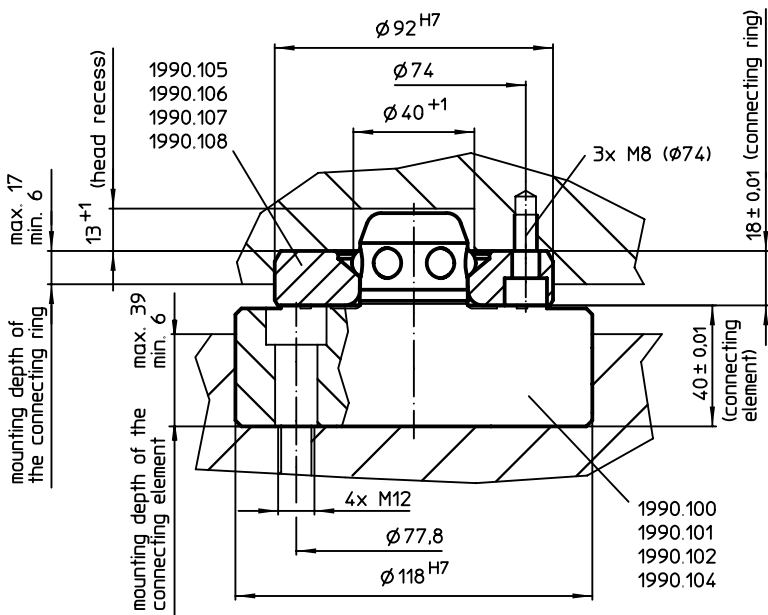
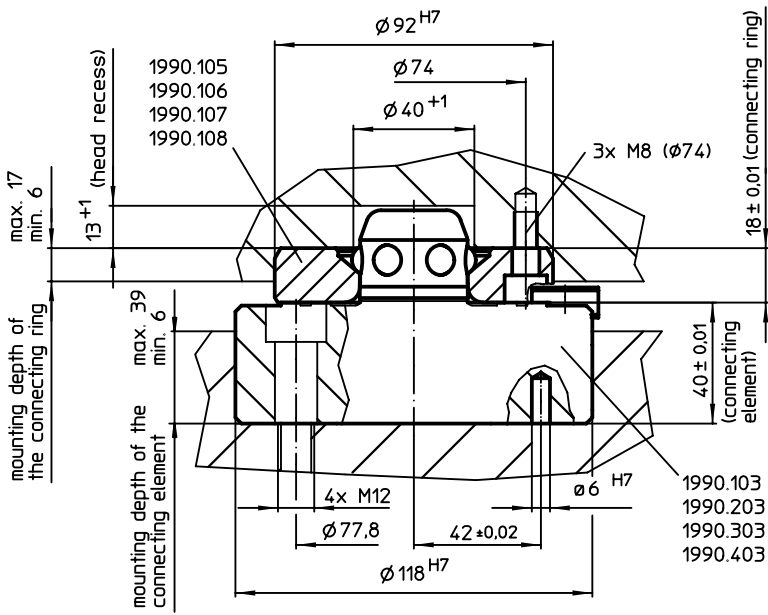


### ORDER INFORMATION

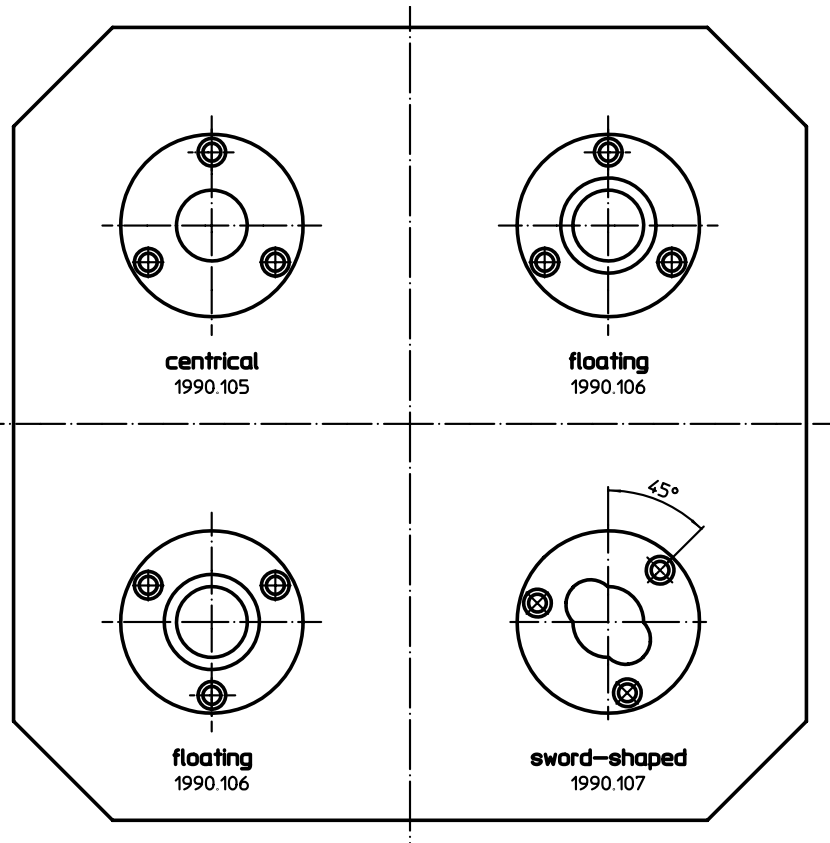
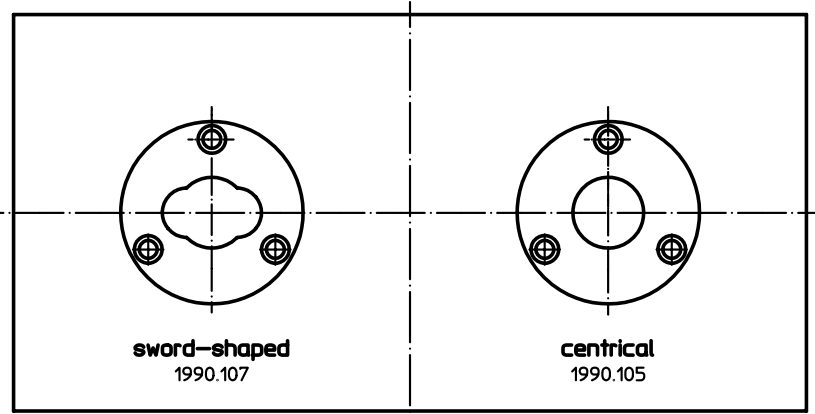
	 [g]	Art. No.
<b>mechanical</b>	387	<a href="#">1990.115</a>
<b>hydraulic</b>	617	<a href="#">1990.116</a>
<b>pneumatic</b>	165	<a href="#">1990.117</a>
<b>pneumatically, reinforced</b>	680	<a href="#">1990.118</a>



APPLICATION EXAMPLE



**ASSEMBLY POSITION OF CONNECTING RINGS INDEPENDENT FROM DISTANCE**



**Base Plates • for 2 connecting elements**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**  
 ■ Aluminium Al

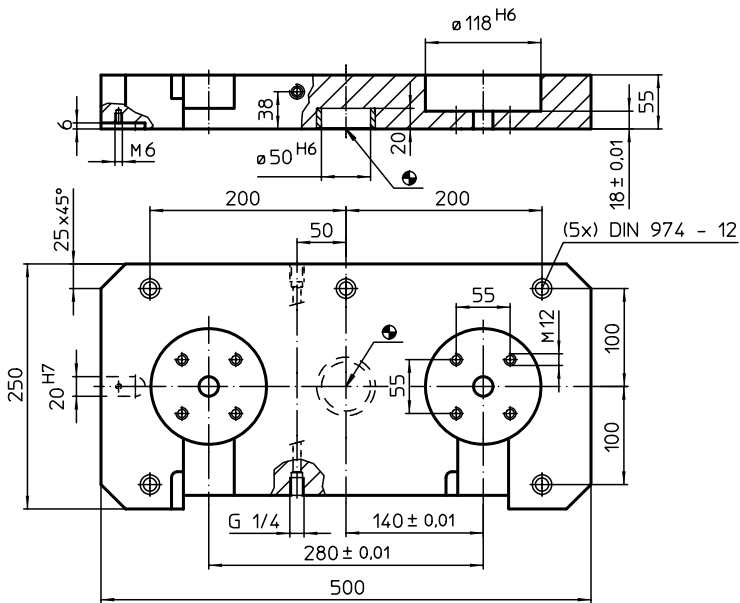
**MORE INFORMATION**

**Notes**  
 Special types on request.

**Further products**

- Connecting Elements, modular, mechanically operated ..... → p. 910
- Connecting Elements, modular, hydraulically operated ..... → p. 911
- Connecting Elements, modular, pneumatically operated ..... → p. 912
- Supporting Plates, with 2 connecting rings ..... → p. 930

**DRAWING**



**ORDER INFORMATION**

[kg]	Art. No.
14	1990.120

Base Plates • with 2 connecting elements

EH 1990.



PRODUCT DESCRIPTION

Material

- Connecting element**
  - Refer to Art. No. 1990.100 - .102

Base plate

- Aluminium Al

MORE INFORMATION

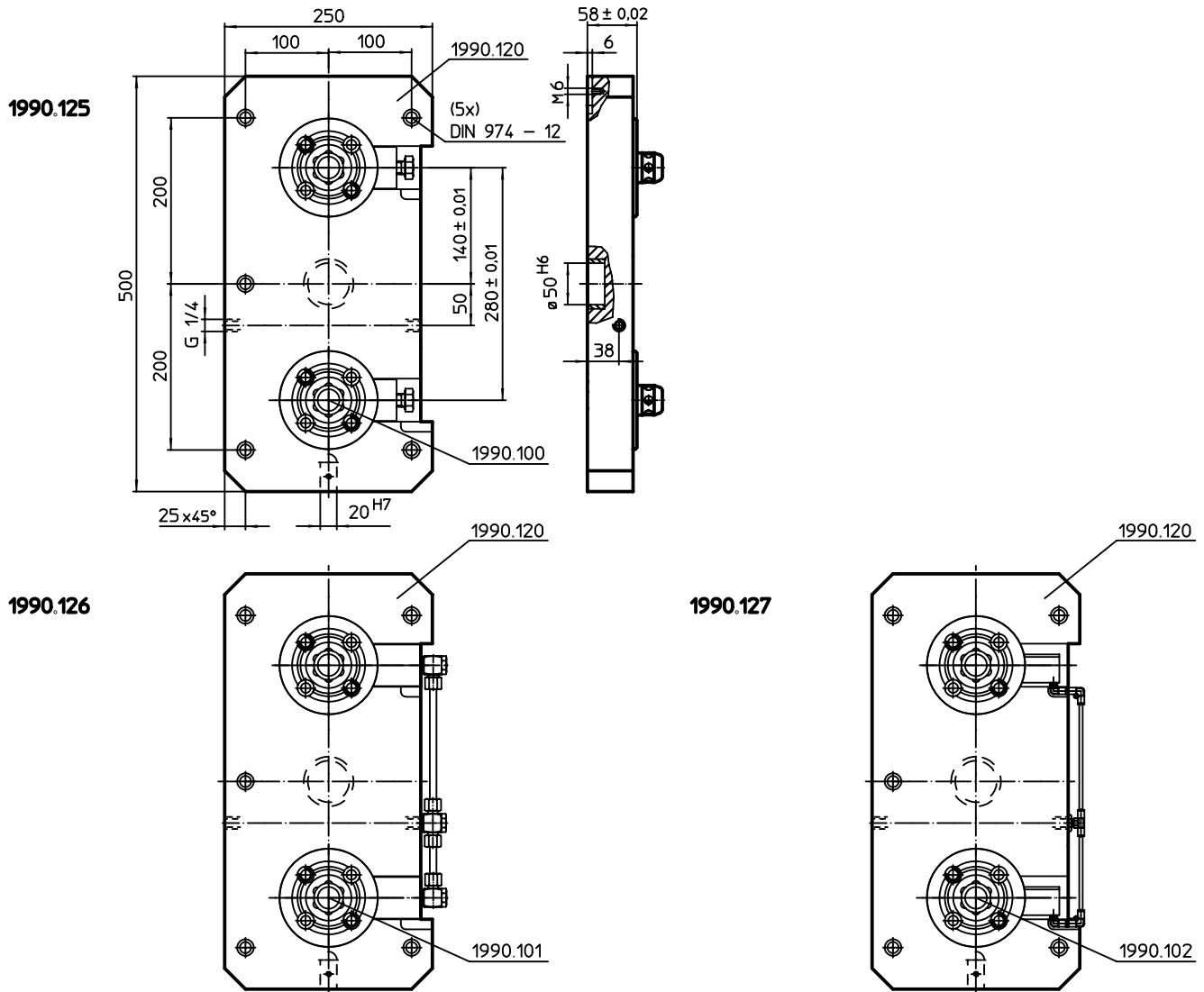
Notes

Special types on request.

Further products

- Connecting Elements, modular, mechanically operated → p. 910
- Connecting Elements, modular, hydraulically operated → p. 911
- Connecting Elements, modular, pneumatically operated → p. 912
- Supporting Plates, with 2 connecting rings → p. 930

DRAWING



ORDER INFORMATION

	[kg]	Art. No.
<b>mechanical</b>	16,5	<b>1990.125</b>
<b>hydraulic</b>	17,0	<b>1990.126</b>
<b>pneumatic</b>	16,0	<b>1990.127</b>

**Base Plates • for 4 connecting elements**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

- Aluminium Al

**MORE INFORMATION**

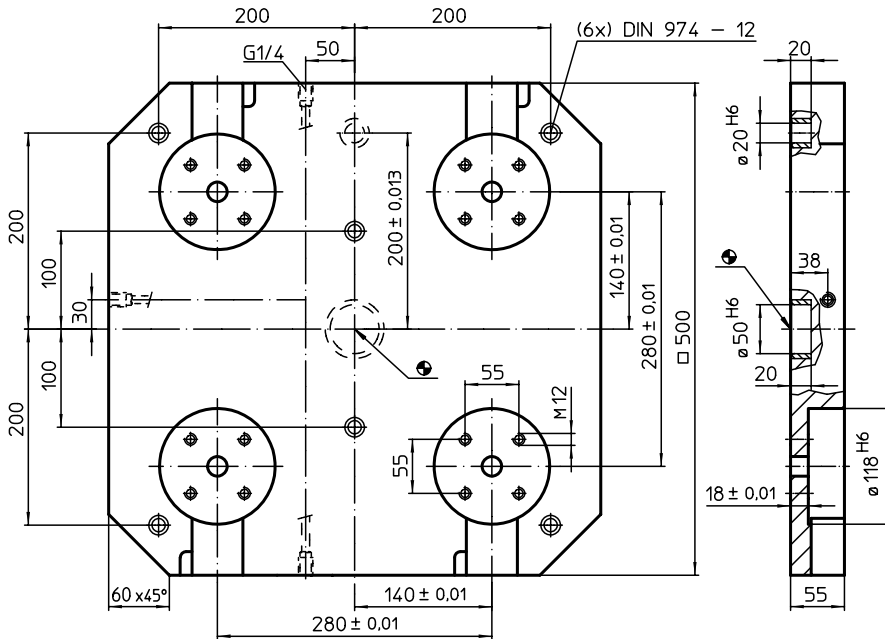
**Notes**

Special types on request.

**Further products**

- Connecting Elements, modular, mechanically operated → p. 910
- Connecting Elements, modular, hydraulically operated → p. 911
- Connecting Elements, modular, pneumatically operated → p. 912
- Supporting Plates, with 4 connecting rings → p. 931

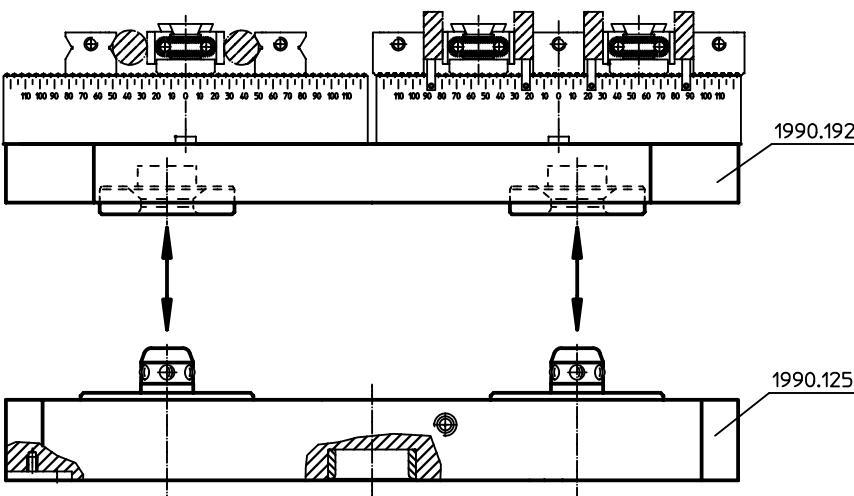
**DRAWING**



**ORDER INFORMATION**

[kg]	Art. No.
30	1990.130

**APPLICATION EXAMPLE**



Base Plates • with 4 connecting elements

EH 1990.



PRODUCT DESCRIPTION

Material

- Connecting element**
  - Refer to Art. No. 1990.100- .102

Base plate

- Aluminium Al

MORE INFORMATION

Notes

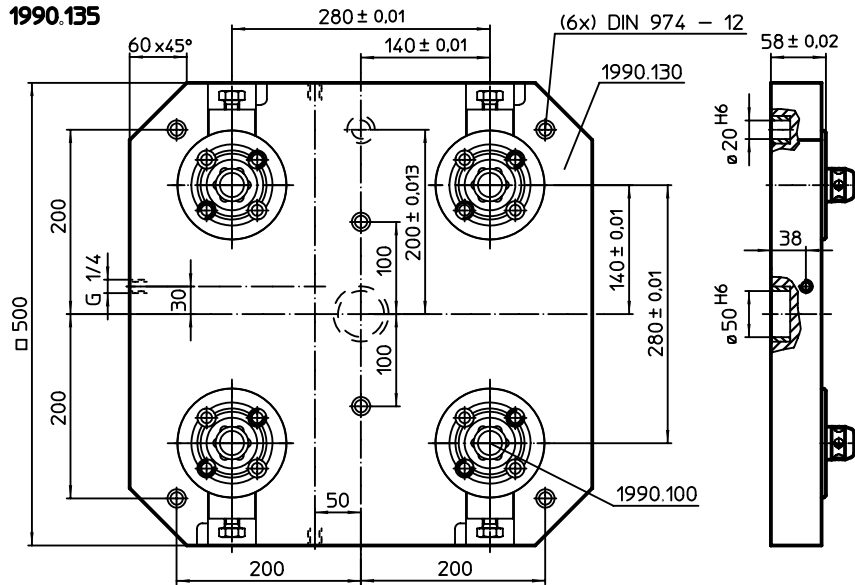
Special types on request.

Further products

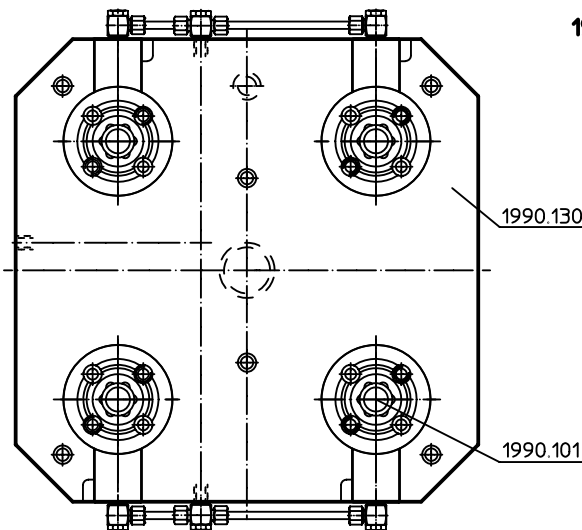
- Connecting Elements, modular, mechanically operated → p. 910
- Connecting Elements, modular, hydraulically operated → p. 911
- Connecting Elements, modular, pneumatically operated → p. 912
- Supporting Plates, with 4 connecting rings → p. 931

DRAWING

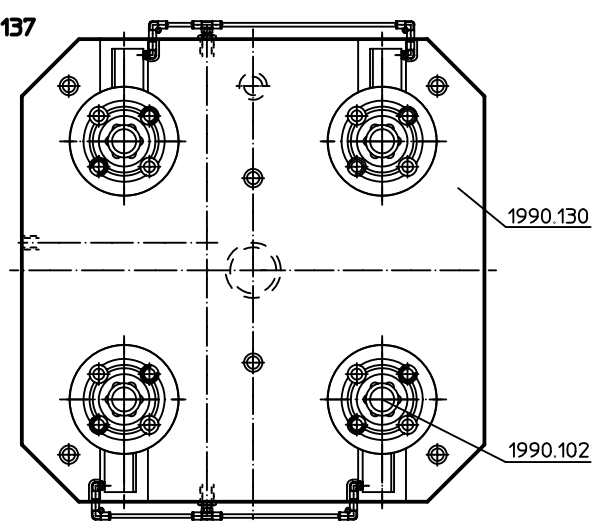
1990.135



1990.136



1990.137



ORDER INFORMATION

	[kg]	Art. No.
mechanical	43	1990.135
hydraulic	44	1990.136
pneumatic	42	1990.137

**Base Plates • for 4 double acting connecting elements**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

- Aluminium Al

**MORE INFORMATION**

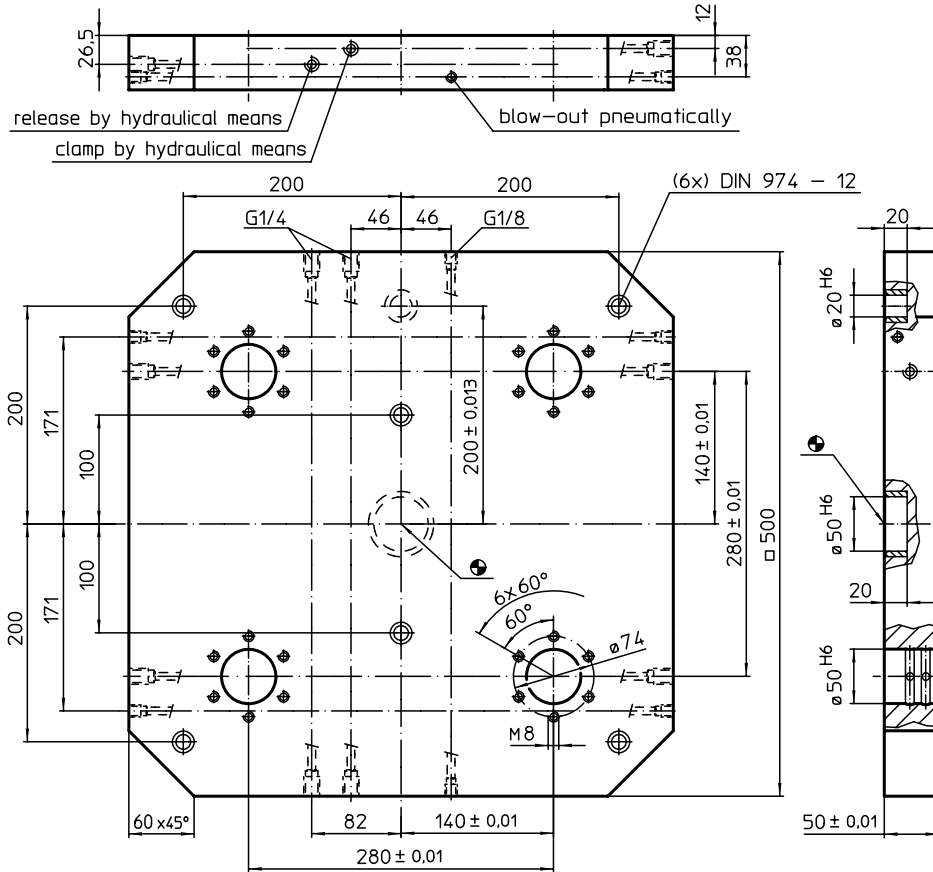
**Notes**

Special types on request.

**Further products**

Connecting Elements, hydraulically operated, double acting, with lifting-off and blow-out ..... → p. 904  
 Supporting Plates, with 4 connecting rings ..... → p. 931

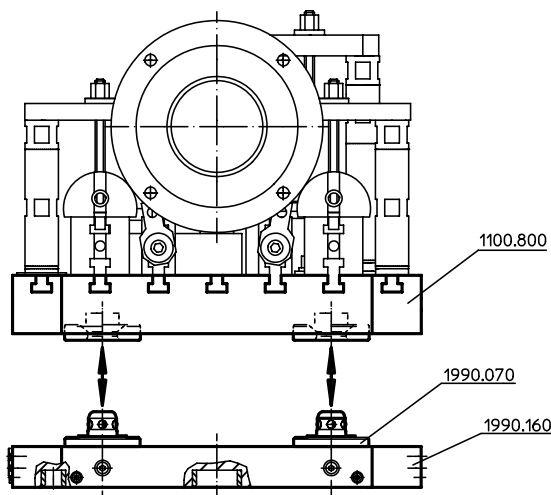
**DRAWING**



**ORDER INFORMATION**

[kg]	Art. No.
30	1990.160

**APPLICATION EXAMPLE**



Base Plates • with 4 double acting connecting elements

EH 1990.



PRODUCT DESCRIPTION

Material

- Connecting element**
  - Steel, case-hardened, ground

- Base plate**
  - Aluminium Al

MORE INFORMATION

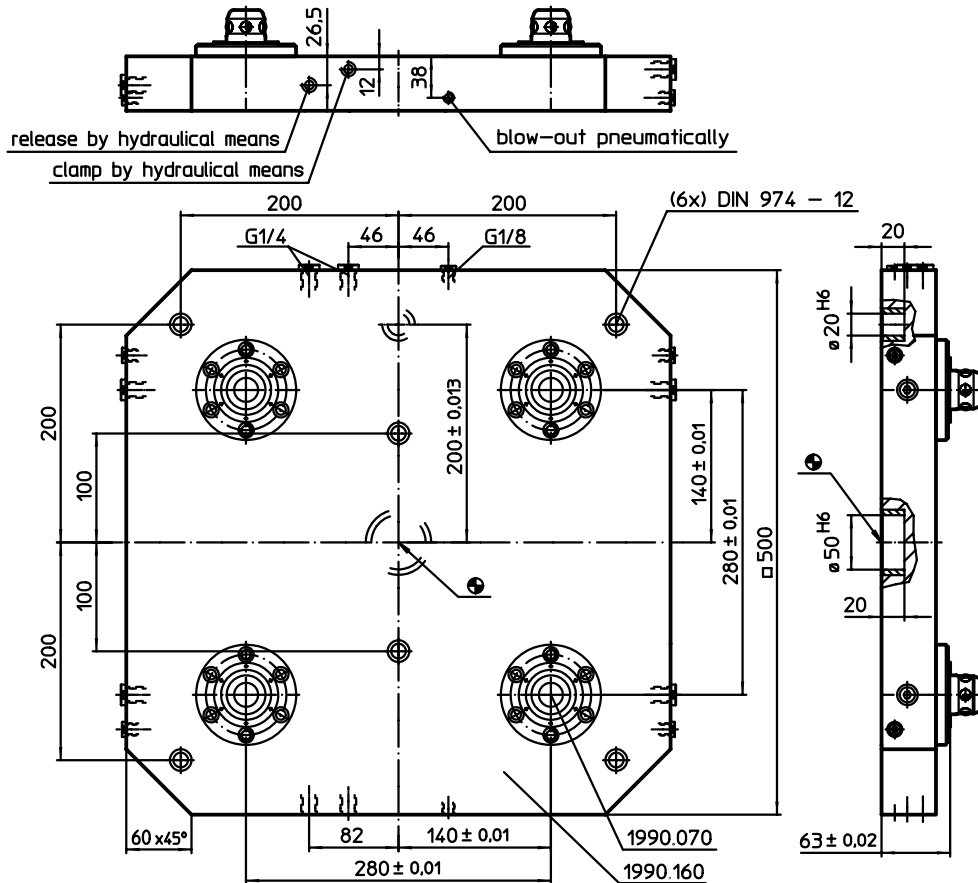
Notes

Special types on request.

Further products

- Connecting Elements, hydraulically operated, double acting, with lifting-off and blow-out → p. 904
- Supporting Plates, with 4 connecting rings → p. 931

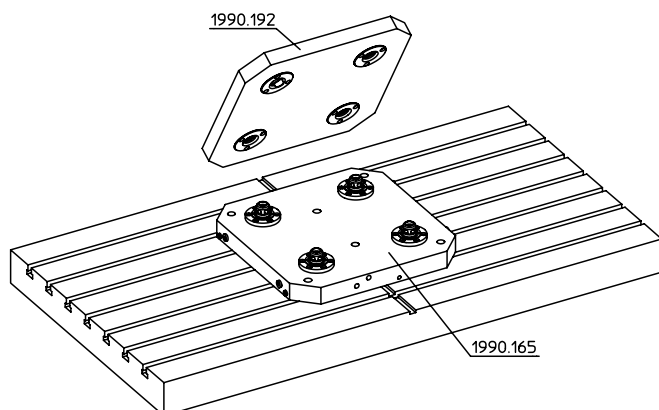
DRAWING



ORDER INFORMATION

[kg]	Art. No.
35	1990.165

APPLICATION EXAMPLE



**Base Plates • for 4 single acting connecting elements**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

- Aluminium Al

**MORE INFORMATION**

**Notes**

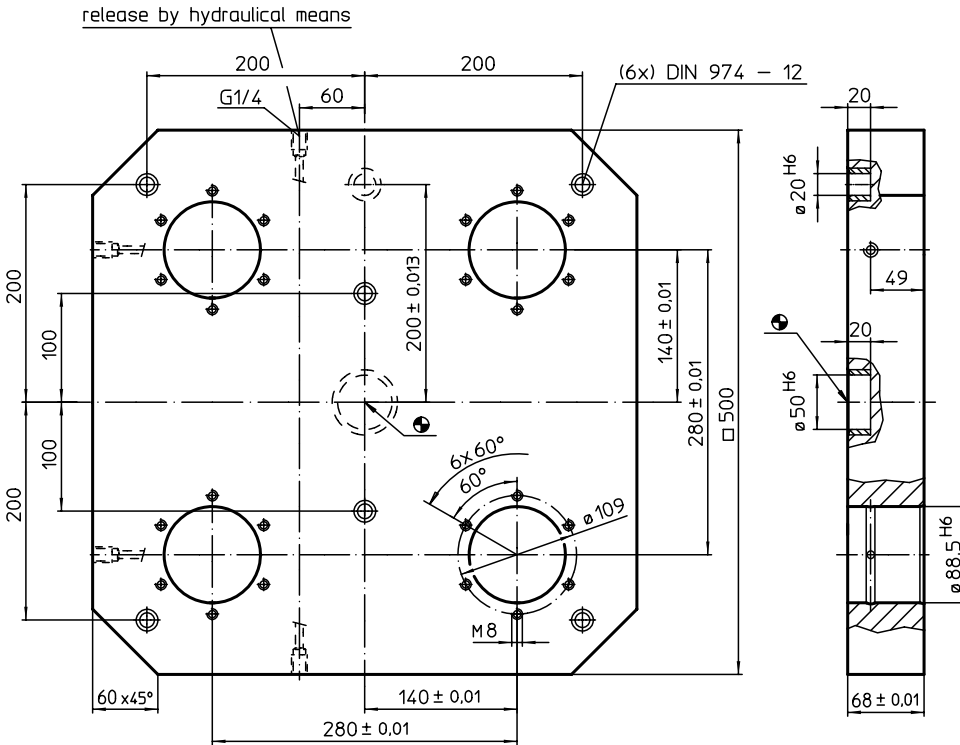
Special types on request.

**Further products**


Connecting Elements, hydraulically operated, single acting with lifting-off → p. 909

Supporting Plates, with 4 connecting rings → p. 931

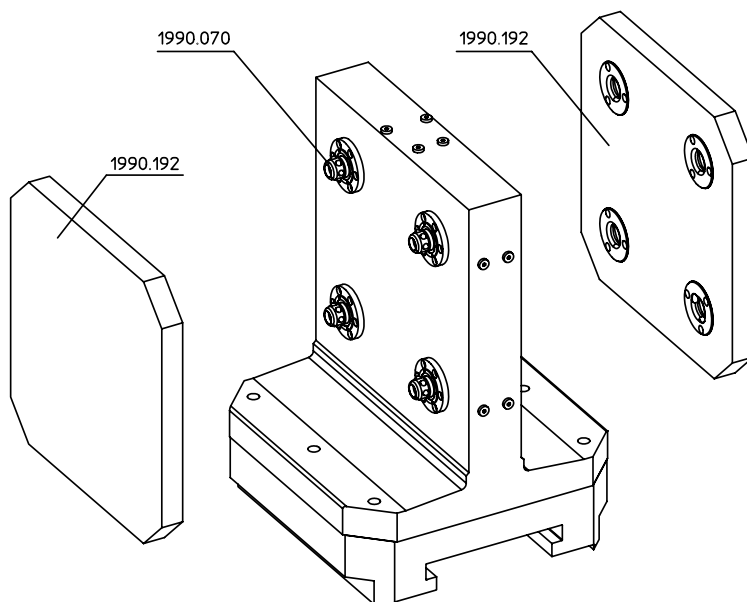
**DRAWING**



**ORDER INFORMATION**

	<b>Art. No.</b>
<b>[kg]</b>	
35	<b>1990.170</b>

**APPLICATION EXAMPLE**



Base Plates • with 4 single acting connecting elements

EH 1990.



PRODUCT DESCRIPTION

Material

- Connecting element**
  - Steel, case-hardened, ground

Base plate

- Aluminium Al

MORE INFORMATION

Notes

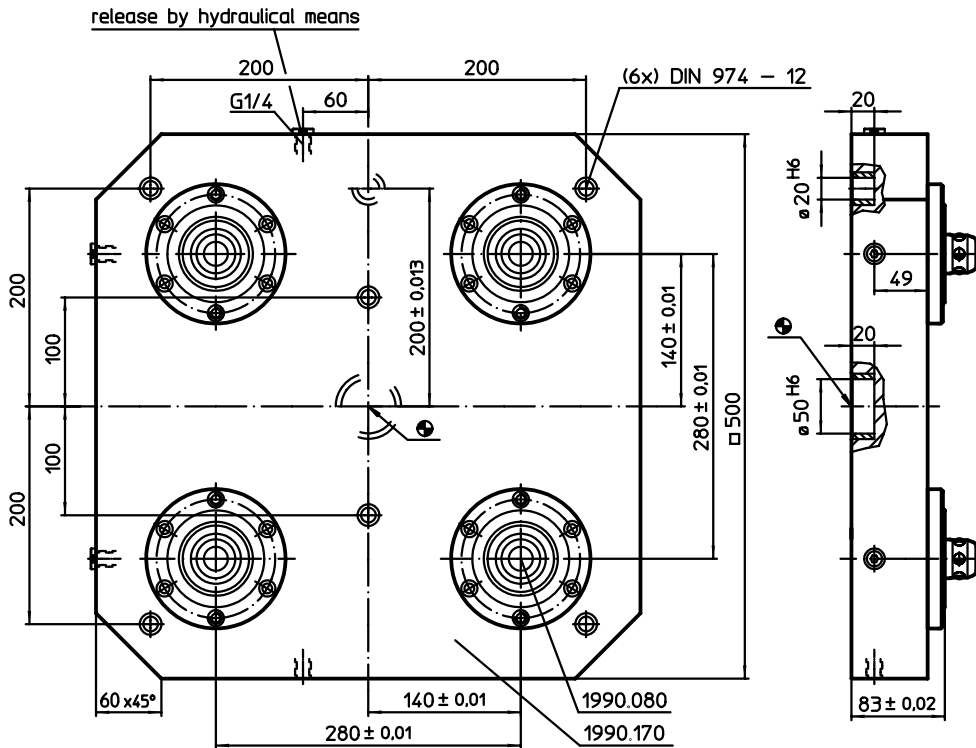
Special types on request.

Further products


Connecting Elements, hydraulically operated, single acting with lifting-off → p. 909

Supporting Plates, with 4 connecting rings → p. 931

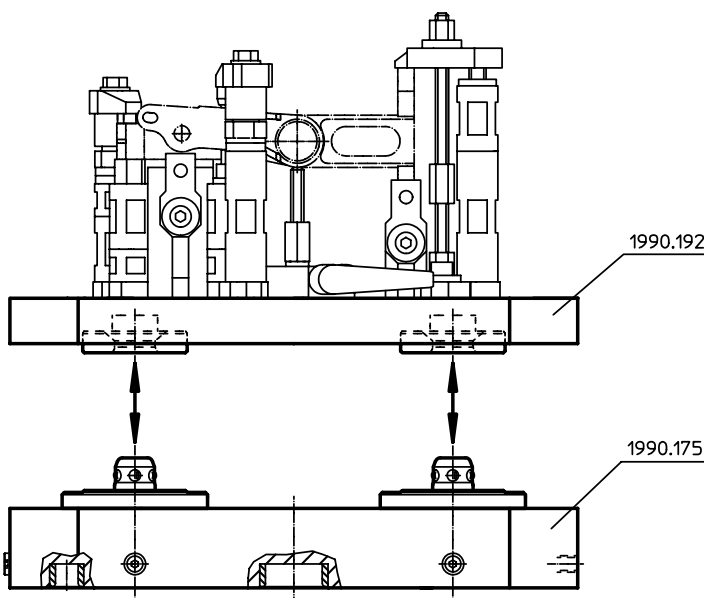
DRAWING



ORDER INFORMATION

 [kg]	Art. No.
50	1990.175

APPLICATION EXAMPLE



**Supporting Plates • with 2 connecting rings**

EH 1990.



**PRODUCT DESCRIPTION**

**Material**

**Connecting rings**

- Steel, case-hardened, ground

**Base plate**

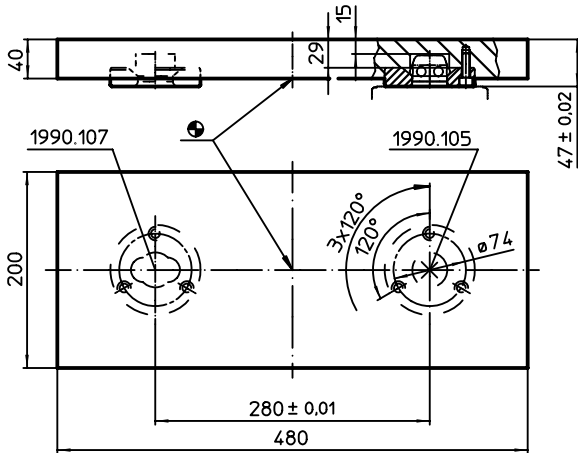
- Aluminium Al

**MORE INFORMATION**

**Notes**

Special types on request.

**DRAWING**

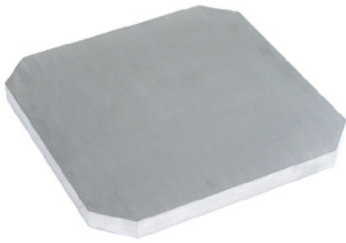


**ORDER INFORMATION**

[kg]	Art. No.
11	<a href="#">1990.190</a>

Supporting Plates • with 4 connecting rings

EH 1990.



PRODUCT DESCRIPTION

Material

Connecting rings

- Steel, case-hardened, ground

Base plate

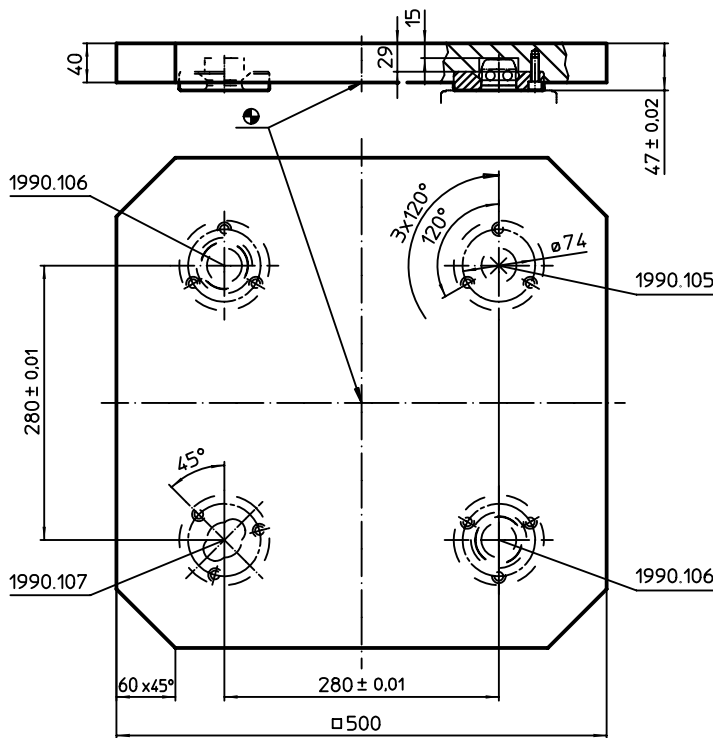
- Aluminium Al

MORE INFORMATION

Notes

Special types on request.

DRAWING



ORDER INFORMATION

[kg]	Art. No.
27	1990.192

**Coverings • for connecting elements**

EH 1990.

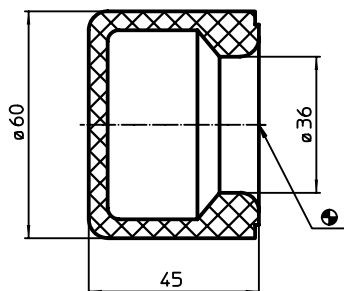


**PRODUCT DESCRIPTION**


**Material**

- Plastic

**DRAWING**



**ORDER INFORMATION**

 <b>[g]</b>	<b>Art. No.</b>
70	<b>1990.114</b>

## APPLICATION SAMPLE

### EH 1990.080 CLAMPING ELEMENT, HYDRAULICALLY OPERATED, SINGLE ACTING WITH LIFT-OFF

This sample shows the application of a zero-point clamping system on a machine center.

#### PICTURE 1

The base plate with the clamped workpiece is being put onto the zero-point clamping system by means of a crane.

#### Example

Multifunctional base plate with 9 clamping elements for the use of different supporting plates, i.e. with 2, 3 or 4 clamping rings.

#### PICTURE 2

Easy insertion of the base plate due to:

- Alignment by means of a critical taper on both the base plate and the counter piece, i.e. clamping ring.
- Base plate is supported by a retractable rest pad, plate is lowered 5 mm into position (when releasing, the base plate will be re-lifted by 5 mm).

Lowering, centering and clamping is achieved simultaneously by releasing the hydraulic pressure.

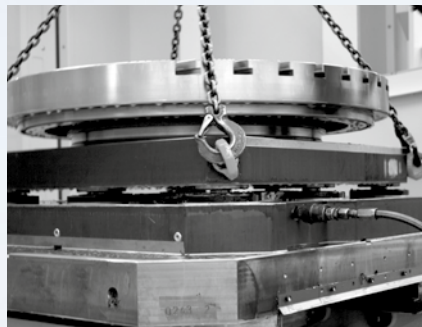
#### PICTURE 3

The workpiece is now ready for machining.

1.



2.



3.

