

Zero-Point Clamping System EH 1990.

https://www.halder.com/eng_de/Products/Workholding-Systems/Zero-Point-Clamping-Systems

Coupling elements for clamping and at the same time centering jigs and fixtures, developed as a quick-change system for shortening set-up times. The Zero-Point Clamping System is designed in two parts, as a Connecting Element on the Machine Table or Base Plate and a Connecting Ring on the opposite side (machining side).

In addition to the highest possible flexibility of the Halder Zero-Point Clamping Systems, this technology ensures outstanding production reliability, very high accuracy and, in particular, the avoidance of contamination on the reference point thanks to the pin of the Connecting Element and the Connecting Ring integrated in the fixture.

Connecting Element, hydraulically operated, double acting with lifting-off and blow-out

EH 1990.070

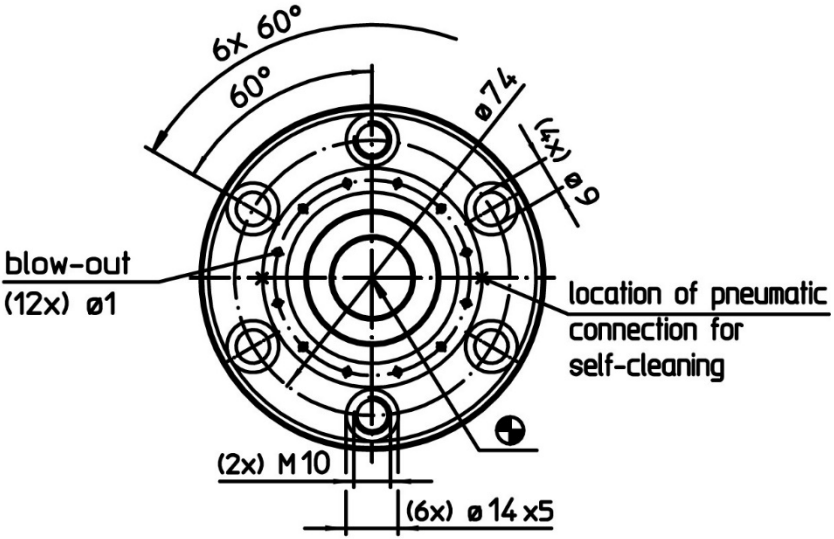
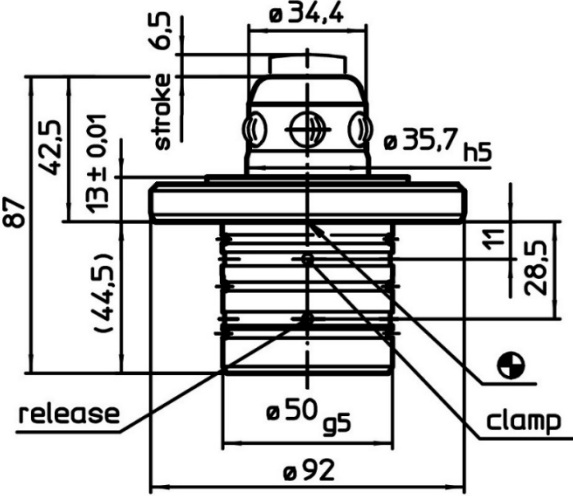
The Connecting Element is tensioned and centered by using hydraulic pressure. The Element is also released by using hydraulic pressure. The Connecting Element requires a permanent hydraulic pressure of 60-80 bar, which must be supplied via two separate hydraulic bore holes. A pneumatic cleaning function of the surface can optionally be used via small holes on the support surface. The cleaning function removes chips from the support surface and thereby prevents contamination and functional failures due to jamming chips. For this, pneumatic pressure must be provided via separate bore holes.

The Element has also a lifting function. This function relieved the change by lifting the fixture (Connecting Ring). This prevents canting or damage to the components.

The holding force of the Connecting Element is 30.000 Newton. The Connecting Elements can be integrated in base plates, Clamping Angles, Clamping Cubes and so on. The oil requirement for operating the Connecting Element is 13/cm³. The force of the lifting function is 7.700 Newton at an 80 bar hydraulic pressure. The Connecting Elements must be mounted on a base plate or similar with hydraulic supply. The exact specifications are given in the chapter "assembly dimensions". For disassembly, two of the six mounting holes contain a pull-off thread in size M10.



Dimensions Connecting Element:



Connecting Rings

EH 1990.105 / .106 / .107

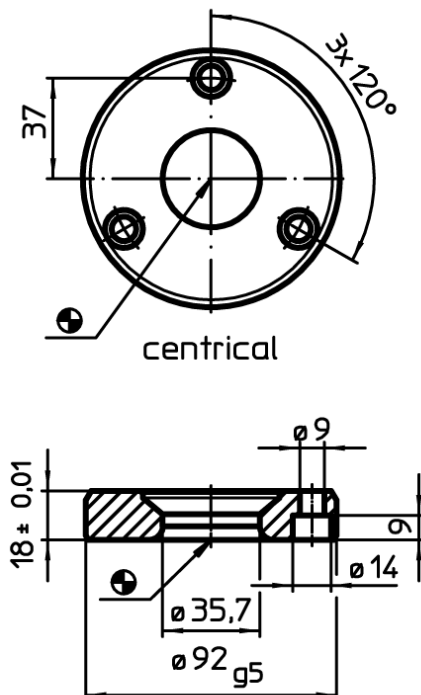
The Connecting Rings are compatible for all Halder Connecting Elements.

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:

- „Central“ Connecting Ring for aligning and clamping at the zero-point. (a protection against twisting is optional possible)
- „Sword-shaped“ Connecting Ring for two-point placement for alignment in one axial direction.
- „Floating“ Connecting Ring without centering function.

Dimensions Connecting Ring



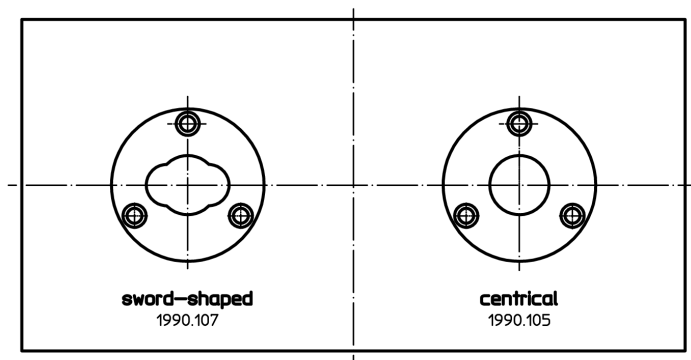
Adjustment Connecting Rings:

The Connecting Rings must, regardless of your number, be located as shown in the following sketches.

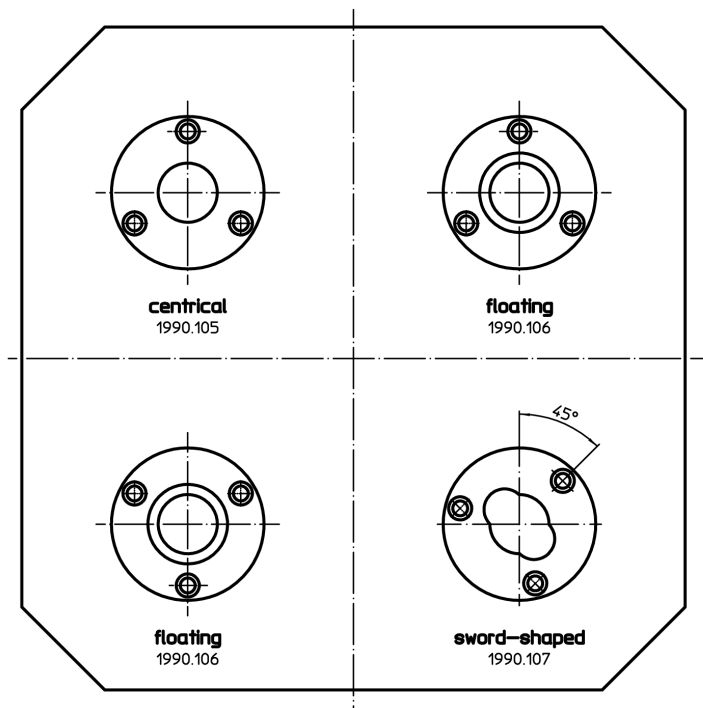
The “Central” Connecting Ring defines the zero-point of the carrier plate / fixture.

The “Sword-shaped” Connecting Ring defines the carrier plate / fixture in the axis direction, the slot must be aligned to the “Central” Connecting Ring.

The “Floating” Connecting Ring is used when more than 2 Connecting Elements are installed. Due to its construction, the floating Ring has no centering, whereby an over-determining of the fixture will be avoided.



Assembly position of connecting rings independent from distance



Assembly dimensions:

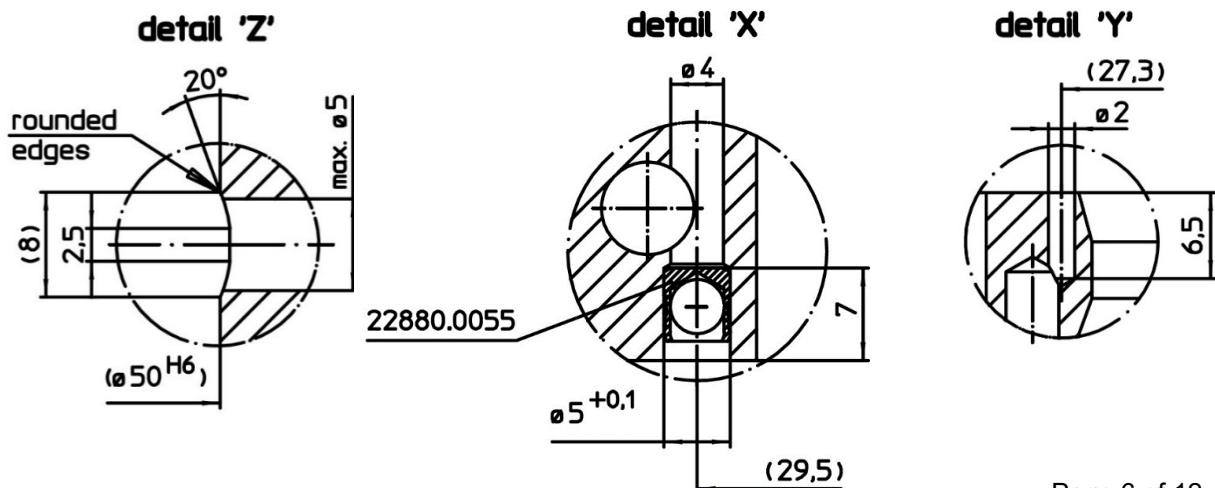
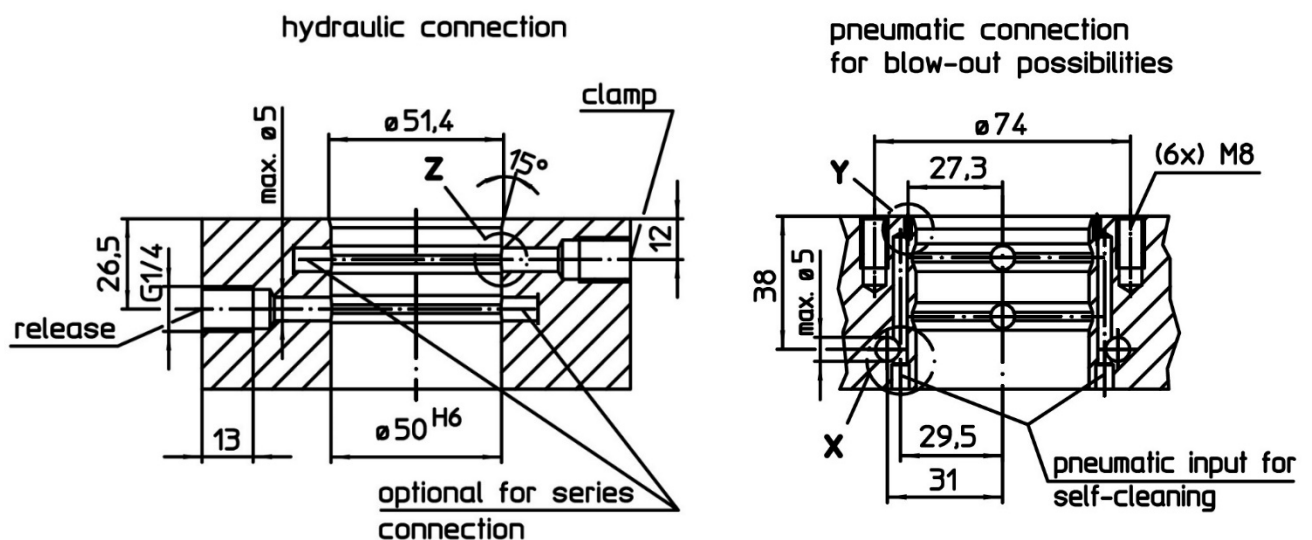
Connecting Element

To assemble the Connecting Element a fit $\text{Ø}50\text{H}6$, and 6 threads M8 are required.

In addition, 2 hydraulic bore holes for the oil supply and bore holes for the pneumatic blow-out are required. For the safe assembly, a chamfer must be attached on the location hole. Also, all the holes and edges must be absolutely free of burrs to ensure that the seals are not damaged.

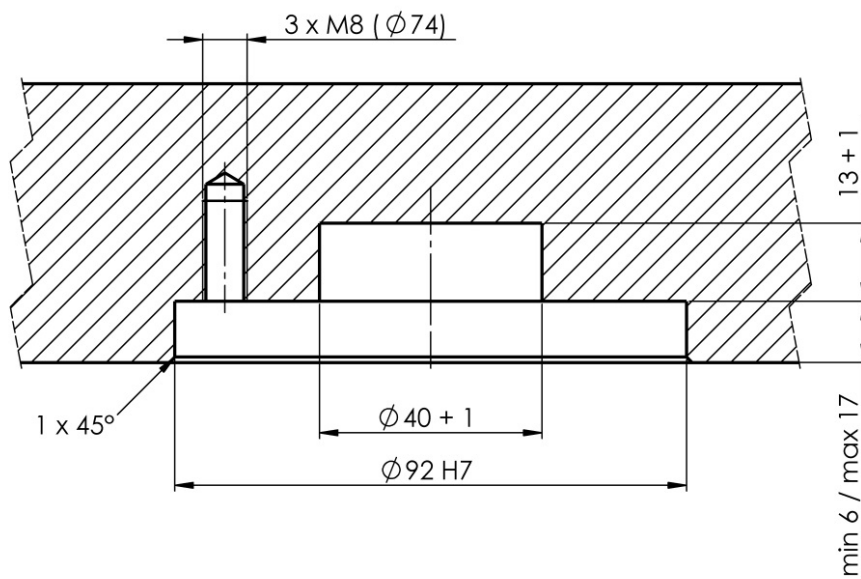
The center distance between 2 Connecting Elements is freely selectable and depends on the workpiece and machining. To ensure proper function, the gauge must be tolerated with ± 0.01 mm.

Dimensions location hole:



Connecting Ring

To assemble the Connecting Ring a fit $\text{Ø}92\text{H}7$, 3 threads M8 and a central cut-out $\text{Ø}40+1$ mm with a depth of $13+1$ mm is required. The center distance between two connecting rings must be identical with the corresponding Connecting Elements and also tolerated with $\pm 0.01\text{mm}$. The assembly depth of the Connecting Rings is at least 6mm and maximum 17mm.



Assembly:

Assembly Connecting Element:

1. Insert the enclosed sealing ring into the bottom side of the support surface (see diagram on page 9, support surface, 4).
2. Rub the seals on the Connecting Element with grease or similar.
3. Make sure that the location hole corresponds to the specified dimensions.
4. Carefully insert the Connecting Element into the $\text{Ø}50$ H6 fit.
5. Assemble the Connecting Element with 6 M8 x 20mm cylinder head screws after DIN 6912 in the pre-machined fit.
6. After the assembly of the Connecting Element, the hydraulic supply must be checked for leaks (observe pressure of 60-80 bar).
7. Perform function check.

Assembly Connecting Ring:

1. Assemble the Connecting Ring with 3 M8 x 20mm cylinder head screws after ISO 4762 (DIN 912) in the pre-machined fit ($\text{Ø}92\text{H}7$).
2. Note the alignment of the Sword-shaped Connecting Ring!

Disassembly:

Disassembly Connecting Element:

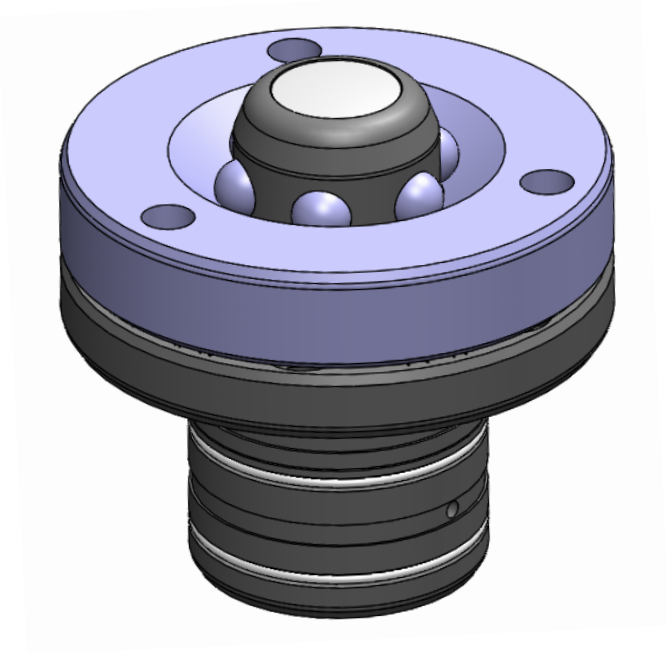
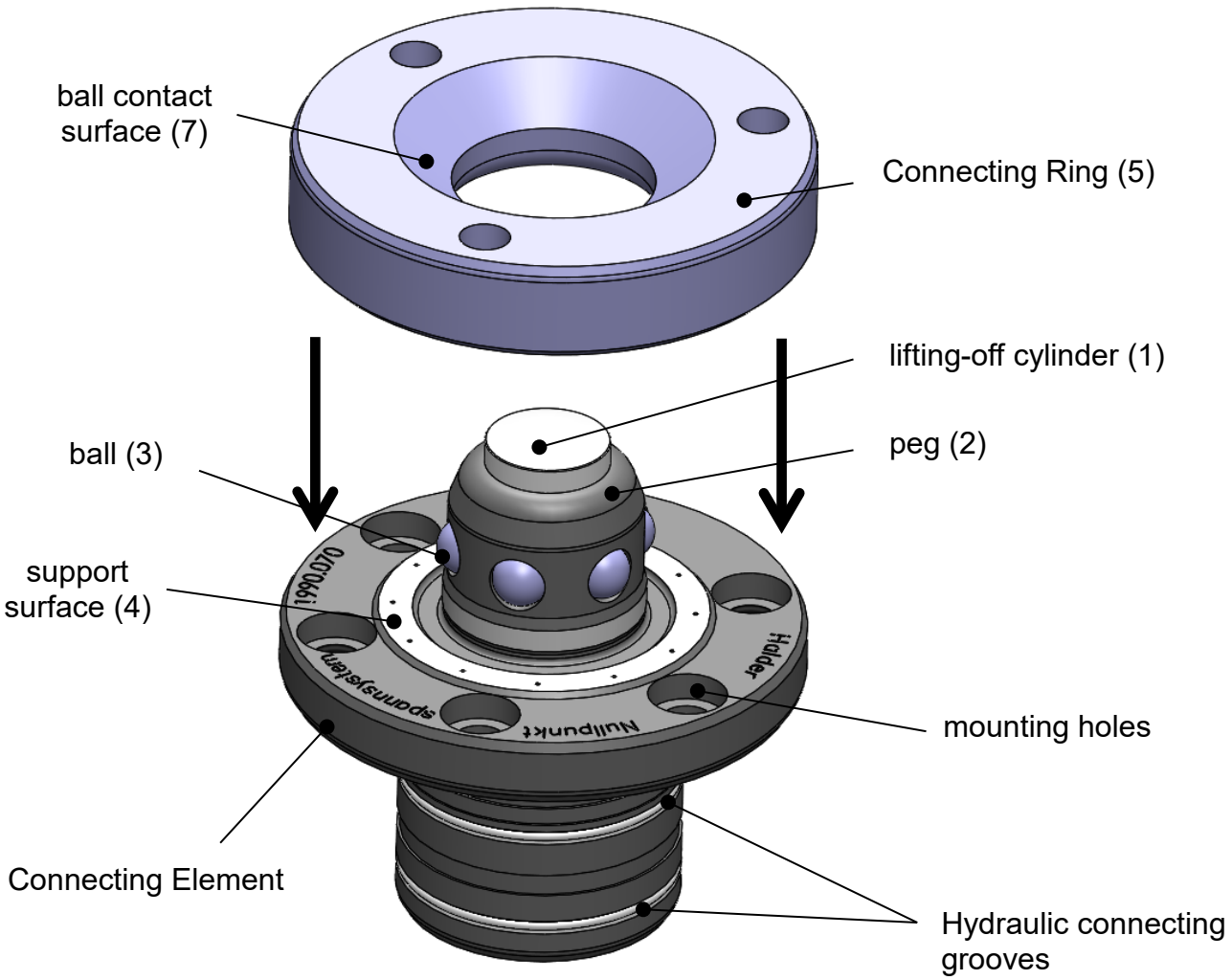
1. Stop the hydraulic pressure supply (switch off pressure).
2. Loosen and remove M8 cylinder head screws evenly.
3. Use the two pull-off threads M10 and suitable M10 screws to push the Connecting Element evenly out of the fit.

Disassembly Connecting Ring:

1. Loosen and remove M8 cylinder head screws evenly.
2. Remove the Connecting Ring evenly and without tilting from the fit.

Clamping cycle:

1. Apply hydraulic pressure to the base plate with the Connecting Elements via the connection thread G 1/4 "release". On the connection thread G 1/4 "clamp" a return must be guaranteed.
2. Balls (3) in the peg (2) will be released by the applied hydraulic pressure
→ Connecting Element is released. At the same time, the lifting-off cylinder (1) moves up.
3. Pressurize the pneumatic connection for blow-out → possible chips and dirt will be removed from the contact surface by compressed air.
4. Insert the Connecting Ring (5) over the support surface (4) of the Connecting Element, balls (3) move inside without resistance.
5. Change hydraulic pressure supply from "release" to "clamp" (Attention: on the connection "release" a return must be granted). Lifting function retracts and at the same time the Connecting Ring is lowered onto the support surface (4).
6. Stop the pneumatic pressure supply.
7. Balls (3) in the peg (2) will be pushed to the outside. The balls (3) tighten the Connecting Ring (5) through the ball contact surface (7) onto the support surface (4) → Connecting Element is clamped and the Connecting Ring (5) is automatically centered by the balls (3)



Notes:

- The Support surface of the Connecting Element must be clean and free of chips and other contaminants.
- The Connecting Element has to be sprayed weekly with anti-rust oil.
- A hydraulic pressure of 60-80 bar is required when the Connecting Element is actuated.
- A hydraulic pressure accumulator for permanent pressure is required.
- Use caps (EH 1990.114) if the risk of contamination is given. In the tensioned state contamination is not possible because of the design.
- The enclosed sealing ring for the pneumatic blow-out must be inserted on the bottom side of the support surface (4)
- For the pneumatic blow-out we recommend a maximum pressure of 8 bar.

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