Zero-Point Clamping Systems

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Halder 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 provided by Halder 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.

... 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
Designs of the 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.

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.

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.

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. "Centrical" 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**

<table>
<thead>
<tr>
<th>Retooling procedures day/machine</th>
<th>WITHOUT the Halder Zero-point Clamping System</th>
<th>WITH the Halder Zero-point Clamping System</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>467</td>
<td>467</td>
</tr>
<tr>
<td>2</td>
<td>933</td>
<td>933</td>
</tr>
<tr>
<td>3</td>
<td>1,400</td>
<td>1,400</td>
</tr>
<tr>
<td>4</td>
<td>1,867</td>
<td>1,867</td>
</tr>
<tr>
<td>5</td>
<td>2,333</td>
<td>2,333</td>
</tr>
</tbody>
</table>

This difference is your profit

**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 = **EUR 21,000.**
Connecting Elements

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

Material:
- Steel, case-hardened, ground

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force N</th>
<th>Centering accuracy mm</th>
<th>Release pressure bar max.</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.070</td>
<td>30.000</td>
<td>&lt;0.01</td>
<td>60 - 80</td>
<td>1200</td>
</tr>
</tbody>
</table>
## Connecting Elements

Hydraulically operated, single acting with lifting-off

### Material:
- Steel, case-hardened, ground

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force N</th>
<th>Centering accuracy mm</th>
<th>Release pressure bar max.</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.080</td>
<td>20,000</td>
<td>&lt;0,01</td>
<td>60 - 80</td>
<td>3750</td>
</tr>
</tbody>
</table>

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Connecting Elements

**EH 1990.**

**Modular, hydraulically operated**

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

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force N</th>
<th>Centering accuracy mm</th>
<th>Release pressure bar</th>
<th>g</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.101</td>
<td>10.000</td>
<td>&lt;0.01</td>
<td>80 - 120</td>
<td>3500</td>
<td></td>
</tr>
</tbody>
</table>

**Connections:**

- DIN 974 - 12

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**EH 1990.**

**Modular, mechanically operated**

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

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force N</th>
<th>Centering accuracy mm</th>
<th>Release moment Nm</th>
<th>g</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.100</td>
<td>10.000</td>
<td>&lt;0.01</td>
<td>10</td>
<td>3300</td>
<td></td>
</tr>
</tbody>
</table>

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Zero-Point Clamping Systems

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### EH 1990. Connecting Elements

**modular, pneumatically operated**

**Material:**
- **Body:** Steel, case-hardened, ground
- **Control module:** Aluminium

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force</th>
<th>Centering accuracy</th>
<th>Release pressure</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.102</td>
<td>5.000</td>
<td>&lt;0.01</td>
<td>6</td>
<td>3040</td>
</tr>
</tbody>
</table>

### EH 1990. Connecting Elements

**modular, mechanically operated, protected against twisting**

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

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Holding force</th>
<th>Centering accuracy</th>
<th>Release moment</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.103</td>
<td>10.000</td>
<td>&lt;0.01</td>
<td>10</td>
<td>3300</td>
</tr>
</tbody>
</table>
**Connecting Rings**

**Material:**
- Steel, case-hardened, ground

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Finish</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.105</td>
<td>centrical</td>
<td>680</td>
</tr>
<tr>
<td>1990.106</td>
<td>floating</td>
<td>670</td>
</tr>
<tr>
<td>1990.107</td>
<td>sword-shaped</td>
<td>670</td>
</tr>
<tr>
<td>1990.108</td>
<td>centrical, secured against twisting</td>
<td>670</td>
</tr>
</tbody>
</table>

**Coverings for connecting elements**

**Material:**
- Plastic

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.114</td>
<td>70</td>
</tr>
</tbody>
</table>
Base Plates
for 2 connecting elements

Material:
- Aluminium

Ref. No. | Kg
---|---
1990.120 | 14

Mounting dimensions for 1990.100 - 1990.103
**EH 1990.**

*Base Plates*

with 2 connecting elements

>>> Special plates upon request. <<<

**Material:**

- **Base plate:** Aluminium
- **Connecting element:** Refer to ref. no. 1990.100-102

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Finish</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.125</td>
<td>mechanical</td>
<td>16.5</td>
</tr>
<tr>
<td>1990.126</td>
<td>hydraulical</td>
<td>17.0</td>
</tr>
<tr>
<td>1990.127</td>
<td>pneumatical</td>
<td>16.0</td>
</tr>
</tbody>
</table>

---

Zero-Point Clamping Systems
Base Plates
for 4 connecting elements

>>> Special plates upon request. <<<

Material:
- Aluminium

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.130</td>
<td>30</td>
</tr>
</tbody>
</table>
EH 1990.

Base Plates
with 4 connecting elements

Base Plates

Material:
- Base plate: Aluminium
- Connecting element: Refer to ref. no. 1990.100-102

Ref. No. | Finish     | kg
---|-------------|---
1990.135  | mechanical  | 43
1990.136  | hydraulical | 44
1990.137  | pneumatical | 42

>>> Special plates upon request. <<<
Base Plates
for 4 double acting connecting elements

Material:
- Aluminium

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.160</td>
<td>30</td>
</tr>
</tbody>
</table>

>>> Special plates upon request. <<<
Base Plates
with 4 double acting connecting elements

>>> Special plates upon request. <<<<

Material:
Base plate: • Aluminium
Connecting element: • Steel, case-hardened, ground

Ref. No.  kg
1990.165  35

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EH 1990.

Base Plates
for 4 single acting connecting elements

Material:
• Aluminium

Ref. No. | Kg
---|---
1990.170 | 35

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>>> Special plates upon request. <<<

Zero-Point Clamping Systems
EH 1990.

Base Plates
with 4 single acting connecting elements

Material:
- **Base plate:** Aluminium
- **Connecting element:** Steel, case-hardened, ground

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.175</td>
<td>50</td>
</tr>
</tbody>
</table>

>>> Special plates upon request. <<<
EH 1990.

Supporting Plates

with 2 connecting rings

<<< Special plates upon request. <<<

### Material:

- **Base plate:** Aluminium
- **Connecting ring:** Refer to ref. no. 1990.105-107

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.190</td>
<td>11</td>
</tr>
</tbody>
</table>

>>> Special plates upon request. <<<

### Material:

- **Base plate:** Aluminium
- **Connecting ring:** Refer to ref. no. 1990.105-107

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990.192</td>
<td>27</td>
</tr>
</tbody>
</table>

www.halder.com
Assembly position of connecting rings independent from distance
Pressure intensifiers - also called pressure converters - are used to convert compressed air into hydraulic pressure and can be used on all hydraulically operated zero-point clamping systems.

Pressure intensifiers are normally applied if compressed air is already available for a machine or a device. They are an alternative for conventional hydraulic power units.

A hydraulic hose at a length of 1.5 m is included.

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>System pressure bar</th>
<th>Oil volume l</th>
<th>Pneumatic pressure bar</th>
<th>suitable for</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991.074</td>
<td>KOLOSS</td>
<td>80</td>
<td>0.3</td>
<td>6</td>
<td>EH 1990.</td>
<td>13</td>
</tr>
</tbody>
</table>
Application sample showing 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 work piece 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 work piece is now ready for machining.
The product range from Halder

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Soft-face Mallets
Workholding Systems
Aviation Products

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