Viscoelastic
Shock Absorber
Springs
**Hengstenberg GmbH** as an expert, provides the customer solutions for shock-absorbing, vibration and motion control.

**Hengstenberg GmbH** offers both, standard catalog products as well as custom designed products to meet the different needs of customers.

Technologically superior products for railway, shipbuilding, aircraft industry, heavy industry, gantry cranes, elevators, factory automation, steel industry, space, defense, etc.

**DYNA SHOCK SYSTEM** is specialized in the design and manufacturing of products providing protection against shocks. The shock absorbers use the compression of viscous elastomeric fluids. This technology is under continuous development and has been successfully applied for more than 45 years.

best service ✓ best quality ✓ short delivery times ✓

to the satisfaction of our customers
Application area:

- Automotive & Transfer lines
- Printing industry
- Defence
- Aerospace
- Container cranes, trolleys
- Steel mills, slabs, crushing
- Rolling mills
- Elevator
- Railway
- Sluices (Floodgates), bridges
- earthquake protection

Reference

- RATP
- SNCF
- BOMBARDIER TRANSPORTATION
- ÖBB Traktion
- RiSEitsu
- brussels
- CAF
- SIEMENS
- EURO TUNNEL
- LEX-HESSE
- Wiener Linien
- ZVH
- METAL Studenka
- SilkRoad 24
- ArcelorMittal
The shock absorbers are designed on the principal of compression of hydrostatic viscoelastic fluids.

The viscosity and the compressibility of our fluids allow in a same device to obtain both functions the one of a shock absorber and the one of a spring, without the need of any additional rearming mechanism (gas or mechanical spring). The two functions can be used separately or in combination, in the same product.

Protection against shocks in:
- Industry
- Material Handling
- Rolling Mill
- Railway
- Defence
- Waterways
- Paper industry

Advantages
- Simple design – High reliability
- High damping coefficient
- Low sensitivity to temperature variances
- Security by integrated static preload

All performance characteristic can be modified. Please advise us of your specific requirements
**BA1: specifications**

### Dimensional Characteristics

<table>
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<tr>
<th>Model</th>
<th>L1 mm</th>
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Outside protection: Zn6CFe

*Devices not available on stock (delivery from 8 to 10 weeks according to model and/or quantity)*

### Mechanical Characteristics

<table>
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<tr>
<th>Model</th>
<th>E₀ kJ</th>
<th>Stroke mm</th>
<th>RDY₀ kN</th>
<th>RDYmax kN</th>
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*Based on following data:

- Impact speed: 2 m/s
- Operating temperature: -20°C to +40°C

**Symbols:***

- $E₀$: nominal energy capacity
- $C₀$: maximum stroke
- RDY: dynamic reaction

All performance characteristic can be modified. Please advise us of your specific requirements.
BA5
Viscoelastic shock absorber
(25 to 150 kJ)

The shock absorbers are designed on the principal of compression of hydrostatic viscoelastic fluids. The viscosity and the compressibility of our fluids allow in a same device to obtain both functions the one of a shock absorber and the one of a spring, without the need of any additional rearming mechanism (gas or mechanical spring). The two functions can be used separately or in combination, in the same product.

Protection against shocks in:
- Industry
- Material Handling
- Rolling Mill
- Railway
- Defence
- Waterways
- Paper industry

Advantages
- Simple design – High reliability
- High damping coefficient
- Low sensitivity to temperature variances
- Security by integrated static preload

All performance characteristic can be modified. Please advise us of your specific requirements.
**BA5: specifications**

**DIMENSIONAL CHARACTERISTICS**

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*Impact speed*: BA5 series shock absorbers are designed for impact velocities up to 4 m/s. Higher velocities require custom modification.

*Outside protection: painting – Reservoir: Zn6CFe*

**MECHANICAL CHARACTERISTICS**

| BA5A-105 | 25 | 105 | 167 | 310 |
| BA5B-130 | 50 | 130 | 280 | 500 |
| BA5C | 75 | 140 | 400 | 700 |
| BA5D | 100 | 160 | 470 | 820 |
| BA5E | 150 | 180 | 640 | 1100 |

* Based on following data:
  * Impact speed: 2 m/s
  * Operating temperature: -20°C to +40°C

Symbols:
- $E_n$: nominal energy capacity
- $C_n$: maximum stroke
- RDY = dynamic reaction

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Protection against shocks in

- Industry
- Material Handling
- Rolling Mill
- Railway
- Defence
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- Paper industry

Advantages

- Simple design – High reliability
- High damping coefficient
- Low sensitivity to temperature variances
- Security by integrated static preload

All performance characteristic can be modified. Please advise us of your specific requirements.
**BXLRL: specifications**

**DIMENSIONAL CHARACTERISTICS**

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<th>L1 (mm)</th>
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<th>L3 (mm)</th>
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<th>L5 (mm)</th>
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<th>L7 (mm)</th>
<th>L8 (mm)</th>
<th>D1 (mm)</th>
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* Mounting type on request
* Outside protection: paint and reservoir Zn6CF6
* Devices not available on stock (delivery from 12 to 16 weeks according to model and/or quantity)

**MECHANICAL CHARACTERISTICS**

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<th>Stroke (mm)</th>
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(1) Based on the following data:
- Impact speed: 2 m/s
- Operating temperature: -20°C to +40°C

Symbols:
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- Cn = maximum stroke
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**Advantages**

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- Security by integrated static preload
**BALR**: specifications

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* Mounting type on request
* Outside protection: paint and reservoir Zn6CF6
* Devices not available on stock (delivery from 12 to 16 weeks according to model and/or quantity)

**MECHANICAL CHARACTERISTICS**

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</tr>
<tr>
<td>BALR-220S</td>
<td>220</td>
<td>400</td>
<td>380</td>
</tr>
<tr>
<td>BALR-250</td>
<td>250</td>
<td>650</td>
<td>270</td>
</tr>
<tr>
<td><em>BALR-400</em></td>
<td>400</td>
<td>850</td>
<td>330</td>
</tr>
<tr>
<td><em>BALR-600</em></td>
<td>600</td>
<td>1050</td>
<td>370</td>
</tr>
<tr>
<td><em>BALR-800</em></td>
<td>800</td>
<td>1200</td>
<td>430</td>
</tr>
<tr>
<td><em>BALR-1000</em></td>
<td>1000</td>
<td>1300</td>
<td>500</td>
</tr>
</tbody>
</table>

(1) Based on following data:
- Impact speed: 2 m/s
- Operating temperature: -20°C to +40°C

![Graph showing impact speed vs. force](image)

**Symbols:**

\[ E₀ = \text{nominal energy capacity} \]
\[ C₀ = \text{maximum stroke} \]
\[ RDY = \text{dynamic reaction} \]

* Impact speed: BALR range shock absorbers are designed for impact velocities of 2 m/s. Higher velocities require custom modification.
Dyna Shock System SAS

Horizontal Press
(200t)

Verticale Presse
(100t)

Climatic
(-30°C up to + 100°C)

Torque controlled screwing and unscrewing machine
(Capacity 25000Nm)

Digitized drop test
(Wmax=20 kJ u. Vmax=9m/s)

Inspection room
• approx. 69,000 stock locations in the new floor arrangement
• more than 8,000 stock locations for palettes and large parts
• approx. 6,000 m² surface in the floor arrangement up to 800 boxing / hours can be carried by means of a new vertical sponsor from the floor arrangement
• on 750 m² enlarged for hydraulic assembly with production lines and service area a total of 11,000 m² camp surface
„He who stops beeing better has stopped beeing good“

Philip Rosenthal Entrepreneur 1916—2001