

# INSTALLATION AND OPERATING INSTRUCTIONS



Handling  
Technology

LI series  
Linear cylinders

THE KNOW-HOW FACTORY

**1. Supporting documents**

**NOTE:**

The following documents are available for download on our website. Only the documents currently available on the website are valid.

- Catalog
- Drawings, performance data, information about accessory parts, etc.
- Technical data (data sheets)
- General Terms and Conditions of Business, including warranty information

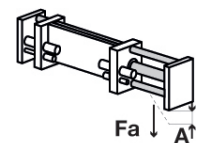
**2. Proper use**

**NOTE:**

The LI series of linear cylinders should only be used in its original state with its original accessories, without any unauthorized changes and within the scope of its defined parameters for use. Zimmer GmbH shall accept no liability for any damage caused by improper use.

The linear cylinders are exclusively designed for operation with compressed air. They are not suited for operation with other media such as liquids or gases. The linear cylinders are used as defined under "Proper use" in closed rooms to move tools or mounting pieces in a straight line. They are not suited for direct contact with perishable goods.

	All design sizes
Bending <b>A</b> [mm]	See LI product data sheets in the catalog or at <a href="http://www.zimmer-group.de">www.zimmer-group.de</a>
Max. permitted force <b>Fa</b> [N]	See LI product data sheets in the catalog or at <a href="http://www.zimmer-group.de">www.zimmer-group.de</a>



Only the accessories permitted for this type series are allowed to be installed on the linear cylinders.

⇒ Regarding this, see the Handling Technology catalog

**3. Safety notes**

1. Installation, commissioning, maintenance and repairs may only be undertaken by qualified experts in accordance with these installation and operating instructions.
2. The linear cylinders are state-of-the-art. They are fitted to industrial machines and are used to hold tools or mounting pieces.  
The linear cylinders will only be dangerous if e.g.:
  - They are not properly fitted, used or maintained
  - They are not used for their intended purpose
  - The local regulations (legislation, guidelines, directives), such as the EC Machinery Directive,
  - The Accident Prevention Regulations and installation and operating instructions are not observed.
3. The linear cylinder may be used only in accordance with its intended purpose and technical data. ZIMMER GmbH shall accept no liability for any damage caused by improper use.



4. Any use other than the intended use requires written approval from Zimmer GmbH.



5. Do not reach into the operating range of the linear cylinder.



6. Make sure that the transmission lines are disconnected before you fit, set, retool, maintain or repair the linear cylinder.



7. In case of maintenance, retrofitting or expansion work, remove the linear cylinder from the machine and carry out the work outside the danger zone.



8. When commissioning or testing, make sure that the linear cylinder cannot be actuated by mistake.

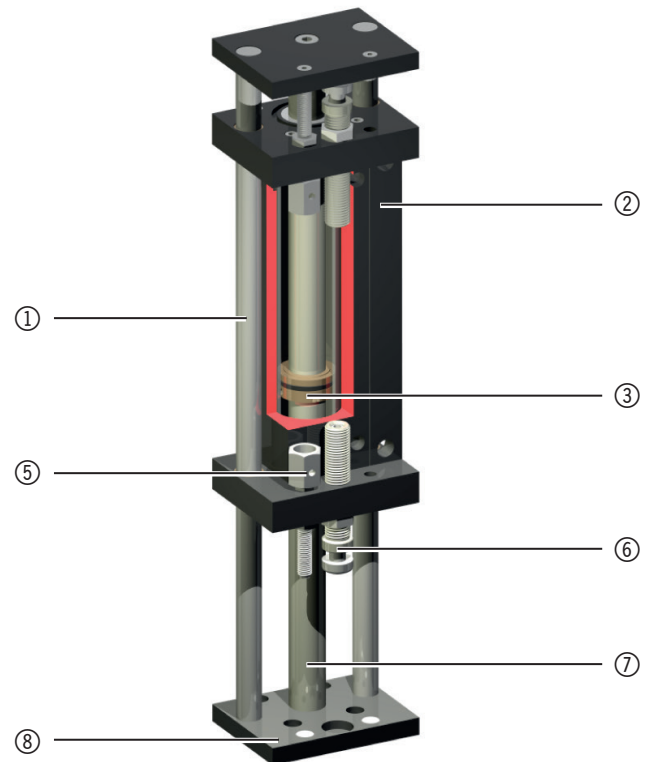
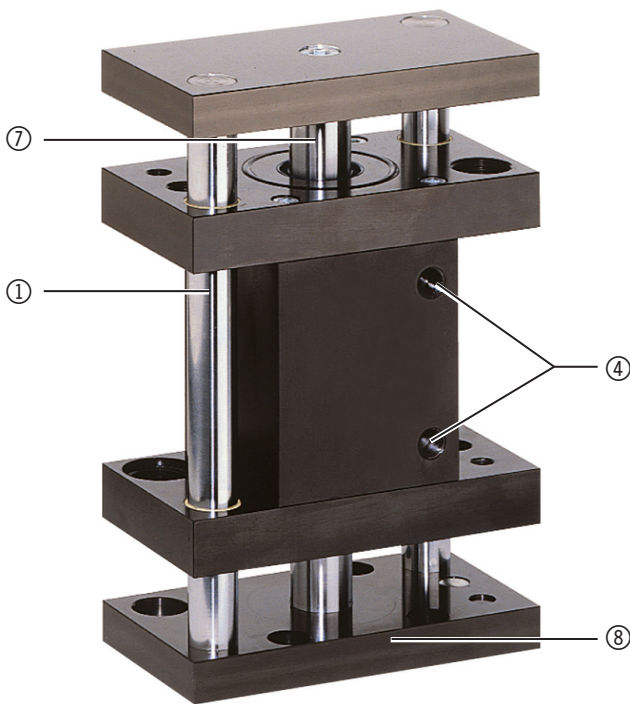
9. Modifications to the linear cylinder, such as adding boreholes or threads, may be made only with prior approval from ZIMMER GmbH.
10. The specified maintenance intervals and compressed air quality specifications are to be observed; also refer to the Maintenance section. When the linear cylinders are used under extreme conditions, the maintenance interval must be adapted depending on the extent of the contamination. Please contact our hotline for this purpose.
11. Use of the swivel jaws under extreme conditions, such as aggressive liquids and abrasive dust, is subject to prior approval from Zimmer GmbH



12. When disassembling handling systems with integrated springs, exercise increased caution because of the **spring tension that is always present.**

4. Function

The LI series linear cylinders are designed for the pneumatically controlled movement of tools, machine elements or other mounting pieces. The two-way aeration of a double-acting pneumatic rotor cylinder results in the movement of the locating flange. Using appropriate accessories, the end positions can be approached gently, or the stroke can be adapted to the respective application.



- ① : **Guide rod**  
Hardened, polished steel shaft
- ② : **Mounting block**  
Intake for inductive proximity switch
- ③ : **Drive**  
Double-acting pneumatic rotor cylinder
- ④ : **Energy supply**  
Reducing exhaust air is recommended

- ⑤ : **Stop stroke adjustment screw**  
Direct sensing of the locating flange available as an accessory
- ⑥ : **End position damping**  
With elastomer damper or patented hydraulic shock absorber
- ⑦ : **Piston rod**  
Made of polished, hard chromed steel, continuous in version D
- ⑧ : **Locating flange**  
For connecting the customized applications

5. Technical data

Technical data varies by type and variant. For the technical data, refer to the valid catalogs of the product data sheets.

These multi-page data sheets (see the adjacent image) contain

- A product description,
- The technical data,
- A dimensional drawing and
- The available accessories.

The following data sheets are available for download on our website:

[www.zimmer-group.de](http://www.zimmer-group.de)

Element Nr.	Technische Daten*	
Hub [mm]	L135-800	L135-900
Durchmesser [mm]	80	90
Zugkraft [N]	200	200
Verfahrzeit ohne Aufsatz [s]	200	200
Verfahrzeit mit Aufsatz [s]	0,21	0,25
Betriebsdruck max. [bar]	5	5
Temperatur max. [°C]	+80	+80
Zylinderinhalt max. [cm³]	80	88
Leichtgewicht [kg]	0,7	0,85
Belastung T <sub>0</sub> max. [N]	80	80
Durchbiegung A max. [mm]	0,1	0,1

\*Alle Werte gemessen bei 6 bar

Product designation:

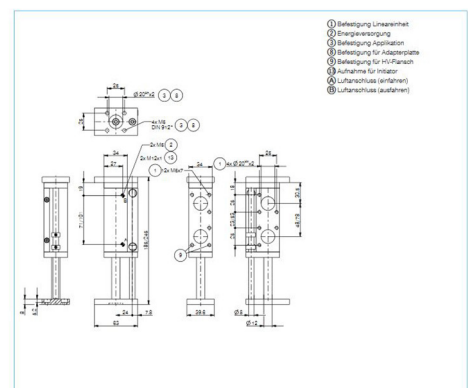
Type designation \_\_\_\_\_ LI   -

Series \_\_\_\_\_


Stroke in [mm] \_\_\_\_\_

3-fold guiding, continuous piston rod = D

2-fold guided = S



6. Installation

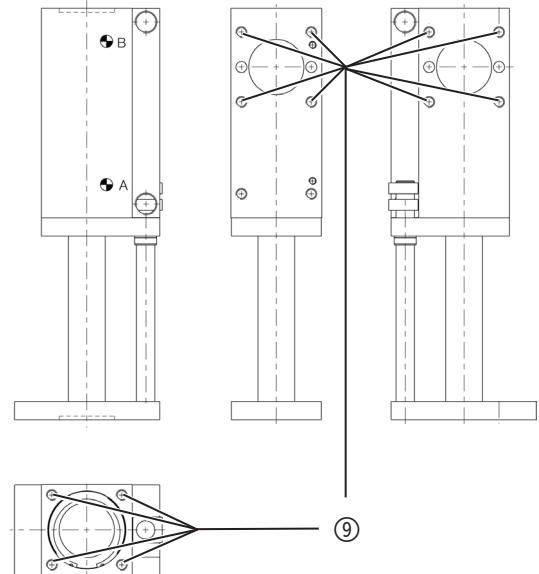



**DANGER:**  
Risk of injury in case of unexpected movement of the machine or system into which the LI linear cylinder is to be installed.

- ▶ Switch off the energy supply to the machine before all work
- ▶ Secure the machine against being switched on unintentionally
- ▶ Check the machine for any residual energy

The mounting options ⑨ and the associated measurements are displayed on the respective product data sheets.  
⇒ See "Technical data"

The respective matching centering disks are available as accessories.





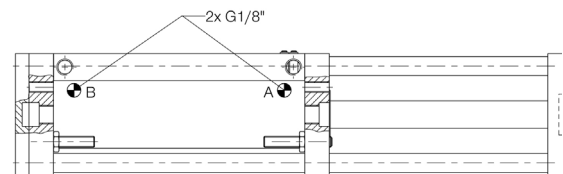
**NOTE:**  
It is mandatory to observe the specified length of the assembly bolts!

6.1 Installing the pneumatic connections

The pneumatic connections and the corresponding measurements are displayed on the respective product data sheets.  
⇒ See "Technical data"

Connection B: Extending the cylinder  
Connection A: Retracting the cylinder

The respective matching mounting elements are available as accessories.

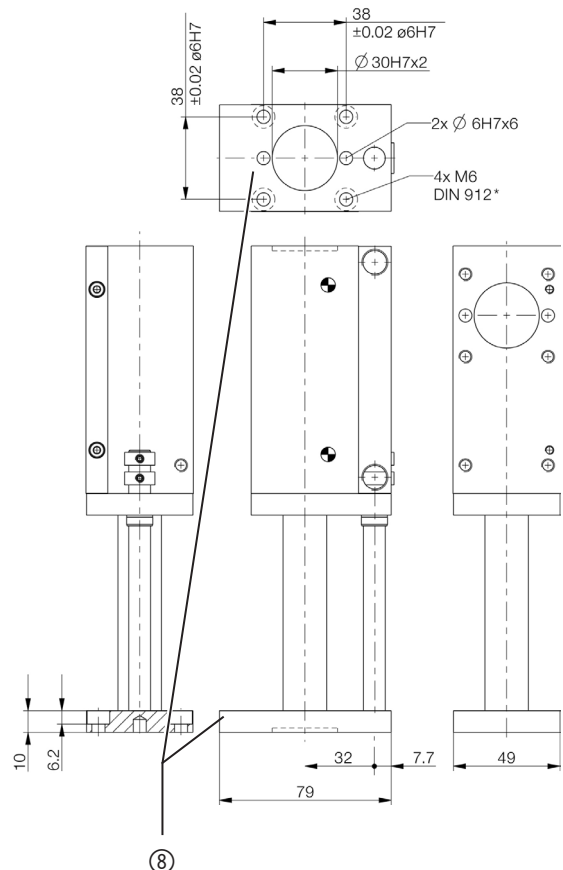


6.2 Installing the application

The locating flange ⑧ is for the installation of customer-specific applications.

The necessary measurements are displayed on the respective product data sheets.  
⇒ See "Technical data"

The respective matching adapter plates and centering rings are available as accessories.

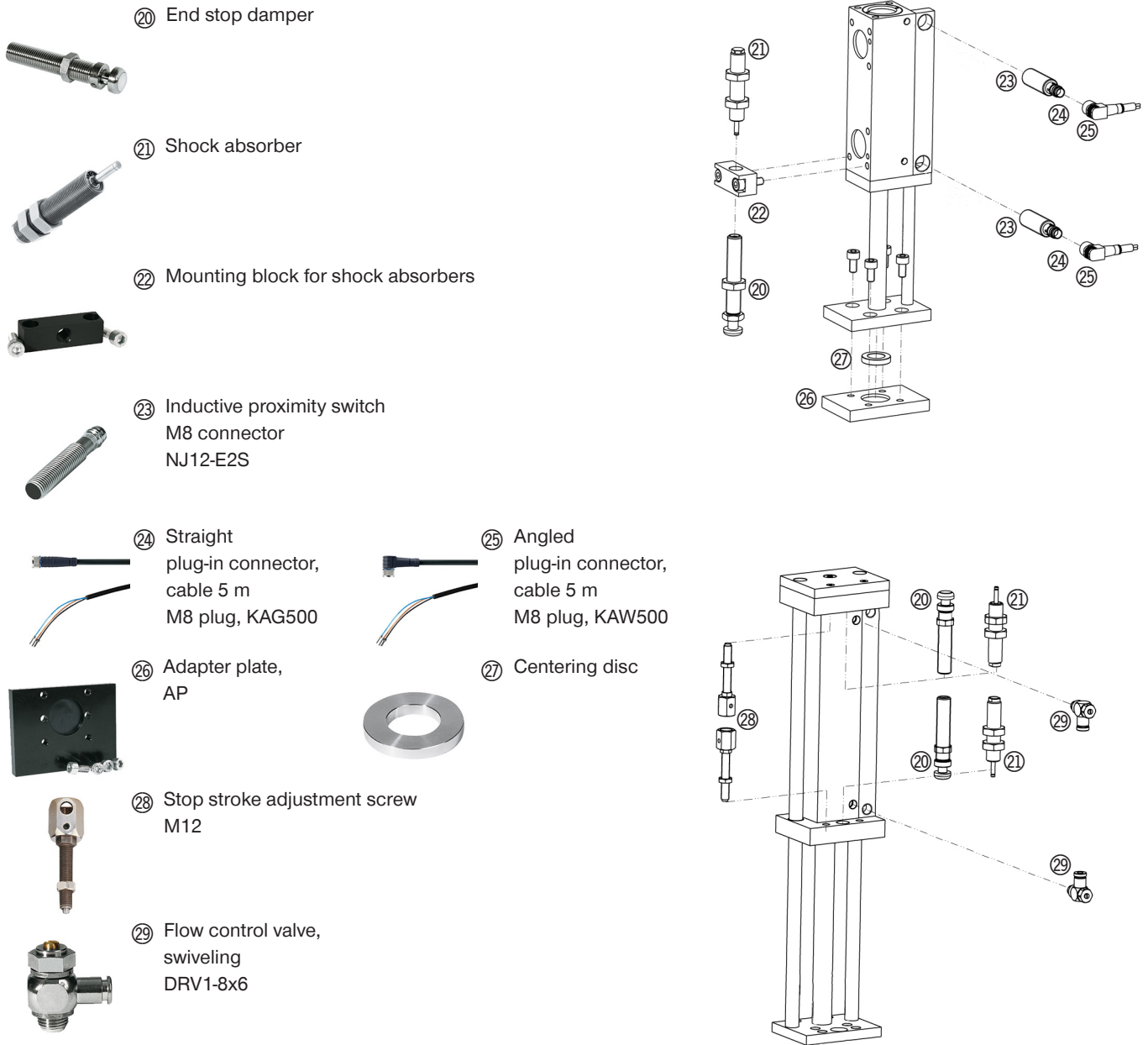


### 6.3 Accessory installation

Availability of accessories depends on type and variant. All accessory articles are available in variants matching the types and design sizes of the LI series linear cylinders.

For exact data on availability, refer to the product data sheets. The following data sheets are available for download on our website:

[www.zimmer-group.de](http://www.zimmer-group.de)



### 7. Maintenance

The LI series linear cylinders are maintenance-free for **up to 10 million movement cycles**.

This maintenance-free operation is ensured under the following conditions:

- Drive with filtered compressed air in accordance with EN ISO 8573-1:2001, Class 2.4.1.
- Clean environment
- Use in accordance with performance data

Even though the linear cylinders are, as mentioned, maintenance-free, perform a regular **monthly** check for any corrosion, damage or dirt.

Clean the linear cylinder as needed using a commercially available machine cleaning agent and then apply an anti-corrosion agent to the housing, the guiding rails and the piston rod.



#### INFORMATION:

A complete disassembly of the linear cylinder for maintaining the seal must only be carried out by the Service department of ZIMMER GmbH.

**8. Declaration of incorporation** in terms of the EU Machinery Directive 2006/42/EC (Annex II 1 B)

In terms of the EU Machinery Directive 2006/42/EC (Annex II 1 B)

**Name and address of the manufacturer:** Zimmer GmbH, Im Salmenkopf 5, 77866 Rheinau, Germany

**We hereby declare that the incomplete machines described below**

**Product designation:** Linear cylinder

**Type designation:** LI □□ - □□□□ □

**satisfy the following basic requirements of the Machinery Directive 2006/42/EC:**

No. 1.1.2., No. 1.1.3., No. 1.1.5., No. 1.3.2., No. 1.3.4., No. 1.3.7., No. 1.5.3., No. 1.5.4., No. 1.5.8., No. 1.6.4., No. 1.7.1., No. 1.7.4.


The following harmonized standards have been used:

- DIN EN ISO 12100:2011-03 Safety of machinery – General principles for design - Risk assessment and risk reduction
- DIN EN ISO 4414:2011 Hydraulic fluid power – General rules and safety requirements for systems and their components

We also declare that the specific technical documents were produced in accordance with Annex VII Part B of this Directive. We undertake to provide the market supervisory bodies with electronic versions of special documents for the incomplete machine through our documentation department, should they have reason to request them.

**The incomplete machine may only be commissioned if the machine or system in which the incomplete machine is to be installed has been determined to satisfy the conditions of the Machinery Directive 2006/42/EC and the EC Declaration of Conformity has been produced in accordance with Annex II 1 A.**

**Authorized representative for compiling relevant technical documents**



Kurt Ross	See manufacturer's address	Rheinau, Germany, 2006-11-16	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Director



