

# DLK16

elettromagnetico valve



**Zator**  
gluing solutions

**USER AND  
MAINTENANCE  
MANUAL**





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# Declaration of Conformity



(All. IIA DIR. 2006/42/CE)

**Manufacturer:**

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**DECLARES**

Under its responsibility that the electromagnetic valve:

Model	DLK16	Code	
Serial Number		Year of manufacture	

It's in compliance with all regulations and conditions of security required by Directive 2006/42/CE concerning the machines as accepted by the national legislation with Legislative Decree of 27 January 2010 - No. 17.

It's in compliance with the conditions of the following other CE Directives:

Directive 2004/108/CE of the European Parliament and the Council of 15 December 2004 concerning the reconciliation of the member States legislations relative to electromagnetic compatibility.

Directive 2006/95/CE of the European Parliament and the Council of 12 December 2006 concerning the reconciliation of the member States legislations relative to electrical equipment designed for use within certain voltage limits.

**Cusano Milanino**

**Legal Representative**

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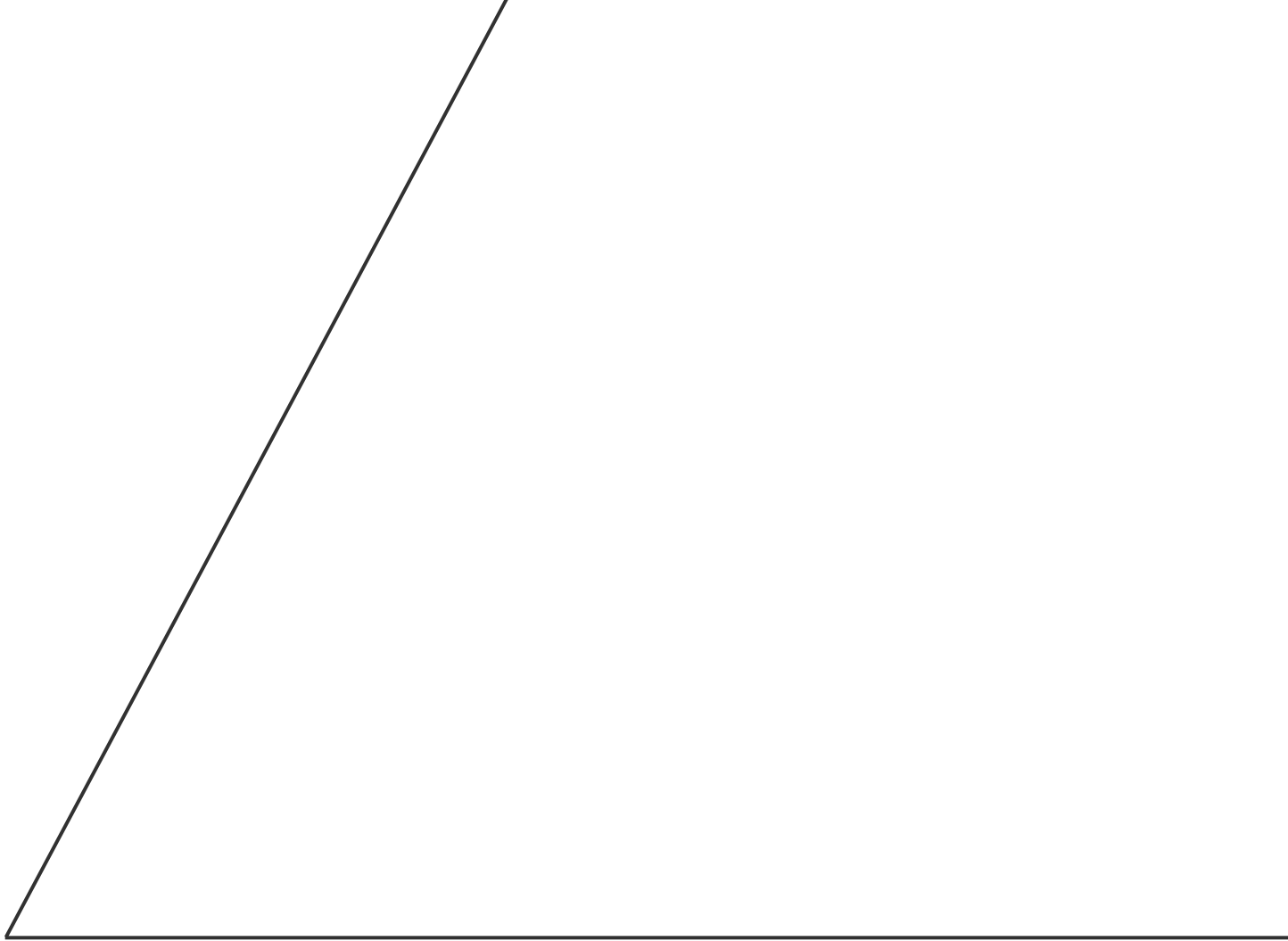
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# Index

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<b>1</b>	<b>GENERAL INFORMATION</b>	<b>8</b>
1.1	Introduction	8
1.2	Warranty	9
1.3	Warranty restrictions	10
1.4	Maintenance service request	11
1.5	Spare parts request	11
<b>2</b>	<b>SAFETY NORMS - CONFORMITY OF USE</b>	<b>12</b>
2.1	Safety and environment general informations	13
2.2	P.P.E. Personal protective equipment	13
2.3	Risks, protections, warnings and cautions	14
2.3.1	General safety	14
2.3.2	Dangers and risks unavoidable	15
2.3.3	Safety devices adopted	16
2.3.4	More general safety precautions	16
2.4	Environmental condition	17
2.5	Installation - General norms	19
2.6	Use of adhesives, glues or other fluids	20
<b>3</b>	<b>TECHNICAL DESCRIPTION</b>	<b>22</b>
3.1	Valve functions	22
3.2	Technical data	22
3.3	Functioning description	23
<b>4</b>	<b>INSTALLATION</b>	<b>24</b>
4.1	Fixing of the valve	24
4.2	Contact-less gluing application	24
4.3	Contact gluing application	25
4.4	Fluid supply connection	25
4.5	Electrical connection	25
<b>5</b>	<b>VALVE ADJUSTMENTS</b>	<b>26</b>
5.1	Fluid quantity adjustment	26
5.2	Needle travel adjustment	26

<b>6</b>	<b>MAINTENANCE</b>	<b>27</b>
6.1	General norms	27
6.2	Maintenance program	27
6.3	Cleaning and/or replacement of the nozzle	28
6.4	Valve disassembly	29
6.5	Needle disassembly	31
6.6	Needle assembly	31
6.7	Valve assembly	32
<b>7</b>	<b>TROUBLE SHOOTING</b>	<b>34</b>
<b>8</b>	<b>MODELS</b>	<b>35</b>
<b>9</b>	<b>PARTS LIST</b>	<b>36</b>
<b>10</b>	<b>DIMENSIONS</b>	<b>38</b>



# USER AND MAINTENANCE MANUAL

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elettromagnetic valve DLK16

# 1 GENERAL INFORMATION

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## 1.1 Introduction

This manual is an essential part of the electromagnetic valve and is destined to trained and well-informed personnel, which is aware of the machine performance at the risk conditions to which it may be exposed. This document supposes that in the plants where the valve is destined, are complied the present norms of safety and hygiene of the work.

Zator Srl won't be liable for actions or improper connections made by unqualified and unformed personnel.

Instructions, drawings and documentation contained in this manual are of reserved technical disposition, only for Zator Srl property and may be not reproduced in any way, neither in full or partially reproduction; not translated into another language, or transmitted in any electronic or mechanical means or form, without written permission of Zator Srl.

The data and values expressed in the manual are approximate and variable depending on fluids, applications and methods of use.

Zator Srl doesn't assume any responsibility regarding the accuracy of the contents of this manual.

The drawings and technical data in this document is updated to the date of their publication and Zator Srl reserves the right to change, without notice, the contents of this manual.

It is therefore forbidden for Technician and Operators of the maintenance to use this manual for different purposes from those relatives to the care and maintenance of equipment in question.

This manual includes the installation, use and maintenance norms of the electromagnetic valve in safety.

### ***Test in production workshop***

The manufacturer guarantees the valve, that this document refers, has been inspected and tested by his production workshop.

*"At term of law we reserve the property of the data and technical information with the prohibition of play, communicate to third parties or use them anyway for any other executive purpose and what is shown in this document is the property of the Manufacturer"*



## 1.2 Warranty

This warranty is valid for 12 months from the actual delivery.

During the warranty period Zator Srl undertakes to remove in the necessary time the obvious faults and flaws of material and/or production, on condition that machine or equipment has been used properly, according to the best rules of behaviour and maintenance provided in this manual.

The flawed parts under warranty are fixed or replaced free from Zator Srl in the time compatibly necessary, understood that the Zator Srl is exempted from each responsibility for any title, while the buyer give up to ask damages or costs, including those resulting from the temporary not use of the purchased machinery for all the time is necessary to put it back in efficiency; The transport and/or the forwarding costs, the outward and the return trip costs relative to the operation by the Zator's technicians in the Buyer address are always on charge of the buyer.

The labor costs relative to the operation of the Zator's technicians in the Buyer address for the removal of flawed parts under warranty, are on charge of Zator Srl, except these cases when the nature of the flaw can be easily removed on place by the Buyer.

This commitment of Zator Srl excludes each other warranty effects provided by the law.

The warranty for the replaced or repaired spare parts of the electromagnetic valve finishes the same day of the warranty expiration date of the electromagnetic valve, the replaced part warranty however doesn't has lifetime less than three months after its installation.

Replaced parts during the warranty period by the seller are free acquired in the same place with new parts.

Are excluded from the warranty all the tools and consumable materials, possibly supplied by Zator Srl with the machine.

It are excluded and renounced by the buyer every pretensions of items/people damages reimbursement on charge to Zator Srl, for any titles, even if the damages were depending from manufacture or material flaws. It's of equal excluded and given up any reimbursement for people and/or items damages depending on the practise of the electromagnetic valve. Parts replaced free remain of Zator Srl property.

Elapsed the warranty period every operation will be on charge to the buyer.

### ***Application fields***

- Packaging machines
- Paper converting industry
- Printing machines
- Tobacco industry
- Assembly industry
- Food industry

### ***Condemnation of conformity flaw - Goods reception***

The original configuration of the electromagnetic valve never must be changed.

On goods reception, check that:

- The packaging is intact
- The exact correspondence of the commissioned material

In case of damages or wrong delivery contact immediately Zator Srl.

The buyer, on penalty of warranty decadence, must report in writing the flaw conformity or fault of the electromagnetic valve to the seller, specifying in detail the nature, within eight days from their discovery. In no case the condemnation of conformity flaw or fault may be validly made after the expiration date of the warranty terms.

Also the buyer decays from the warranty if doesn't allow each reasonable control that the seller requires. It's excluded from this warranty the most damage caused to the machine by the failure timely condemnation to the seller of a conformity flaw or fault of the the electromagnetic valve.

## **1.3 Warranty restrictions**

This warranty is only valid for products of new construction.

This warranty is limited to the reparation or replacement, by the seller, of each parts of the machine or supplied material that results flawed, after checking the existence of the flaw.

In no case the seller will be liable for every consequential or indirect flaws or otherwise derived from production cycle interruption or machine stoppage.

The seller is not liable for flaws of the electromagnetic valve derived from the use of devices, equipments, etc. that are enquired and provided by the customer and installed on the machine to change its use compared to the original design.

The seller is not liable for every conformity flaws of the electromagnetic valve or faults owed for the normal wear of those parts that, by their nature, are subject to rapid and continuous wear.

The seller also is not liable for damages resulting from improper use of the equipment and from the non-observance of the norms expected for the execution of the ordinary periodic maintenance.

The seller is not liable for conformity flaws of the electromagnetic valve or faults that depends on changes, reparations, alterations or tampering attributed to the buyer and however non-authorized personnel of the buyer.

The costs relative to the wear materials necessary for test and restart the electromagnetic valve are on charge of the buyer.



## 1.4 Maintenance service request

Contact:

### Technical office of Zator S.R.L.

Via Galvani 11 - 20095 Cusano Milanino (MI) - Italy  
e-mail: [info@zator.it](mailto:info@zator.it) [www.zator.it](http://www.zator.it)  
Tel.: +39-0266403235 Fax.: +39-0266403215

Always forward the request in writing (fax or email) and give all the information to identify the machine object of the request:

- **Model**
- **Serial number**

Please refers to the frontispiece of this manual or directly to the nameplate on-board to the machine or to the serial number of the electromagnetic valve.

## 1.5 Spare parts request

The customer is responsible to purchase original spare parts that guarantee him to keep efficient and safe the electromagnetic valve.

The disassembly and assembly operations must be performed according to the manufacturer's instructions.

Contact the Technical Office of Zator Srl which will give to you the specifications to do the request of the parts and will provide the information about their replacement.

To order the spare parts is necessary to report completely all identification data of the electromagnetic valve and those of spare part to be replaced.

The illustrations in this document are for example.

## 2 SAFETY NORMS - CONFORMY OF USE

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The *electromagnetic valve DLK16* is designed and manufactured in compliance with the current safety standard. Only trained personnel is authorized to install and use the valve. For the electromagnetic valve DLK16 are provided only and exclusively the application fields describe in this manual. All data and parameters indicated in this manual must be respected. Any other use is considered improper.

All operation with the electromagnetic valve DLK16 must be carry out in compliance with the following current safety norm written in part:

1. DPR 547 of 27th April 1955 "Rules for prevention of work accidents" - DPR 303/56 "General rules for work hygiene"
2. Law No.186 of 1st March 1968 (Regulations concerning the manufacturing of materials, equipments, machinery, installations and electrical and electronic plants);
3. Rules of fire prevention;
4. D.L. No.277/91 Risks of chemical, physical, biological agents (in particular noise, lead and asbestos);
5. D.L. No.476 of 4th December 1992 Actualization Directive No.92/31/CEE – 89/336/CEE on electromagnetic compatibility;
6. DLGS 14th August 1996, No. 493 Safety signs actualization Directive No.92/58/CEE;
7. D.P.R. No.459 of 24th July 1996 Rule for introduction and use of machines and safety components on European Union district;
8. Law No.46 of 5th March 1990 Rules for safety of technical plants;
9. DPR No.447 of 6th December 1991 "Rule of law actualization of 5th March 1990, No.46 for the plants safety";
10. Legislative Decree of 19th September 1994 No.626 and 242/96 of 19th March 1996 for the improvement of the safety and health of workers in the workplace;
11. Law No.791 of 18th October 1977 - DLGS No.277 of 31th July 1997 - Actualization of the European Communities council Directives of the 73/23/CEE and 93/68/CEE) about the safety guarantees that the electric material must has, designed for use within specific voltage limits;
12. Directives 89/686/CEE about the PPE.

## 2.1 Safety and environment general informations

Before the start-up of the electromagnetic valve the personnel must be adequately informed and trained (D.L. 626/94) on its use, direction and start-up process, as well as the safety norms to be performed and also observe how it is prescribed in this document and in other documents possibly attached to the electromagnetic valve.

The employer must provide to instruct the personnel on the risks of injury, on safety devices and accident prevention general rules provided by the community directives and the legislation of the country where the electromagnetic valve is installed.



**CAUTION:** Always disconnect the power supply before proceed to carry out any maintenance or adjustment operations.

Discharge the fluid pressure before to proceed to carry out any maintenance or adjustment operations.

## 2.2 P.P.E. Personal protective equipment

For personnel who will work on the electromagnetic valve, for any functions (installation, assembly, demolition, maintenance and operation) they will be provided with appropriate P.P.E. - Personal protective equipment of type approved and certificate by C.E.:

- anti-solvent gloves
- cut resistant gloves
- masks
- coverall (no floating coverall)



**CAUTION:** The clothes of who will operate on the electromagnetic valve for any functions must be in compliance with the essential safety requirements defined by the community Directives 89/656/CEE and 89/686/CEE and to the actual laws in the country.

## 2.3 Risks, protections, warnings and cautions

### 2.3.1 General safety

In accordance with the Machine Directive it means for:

**DANGER ZONE** = area within or near the electromagnetic valve where the presence of an exposed person make a risk to the safety and health of himself (Attached I - 1.1.1 Directive 89/392/CEE).

**EXPOSED PERSON** = any person that is placed entirely or partially inside a danger zone (Attached I - 1.1.1 Directive 89/392/CEE).

**OPERATOR** = person who is appointed to install, operate, adjust, perform ordinary maintenance and clean the machine (Attached I - 1.1.1 Directive 89/392/CEE).

All risk areas of the pneumatic valve have been checked and consequently have been taken the necessary precautions to avoid risks to people and damage to the components of the electromagnetic valve.

### *Safety glossary*

#### **Intended purposes**

By this term it refers to the use of the machine as described by the manufacturer.

For “intended purposes” also refers to the use of the unit through its design, its construction and function.

#### **Secondary risks and/or residual risks**

A secondary risk is a danger which is not obvious and results from the use of the machine.

Secondary risk are unavoidable despite all the preventive measures that are taken.

#### **Competent personnel**

A person is competent when it acquired sufficient knowledge in a specific field both through the professional instruction and with the experience. A competent person must get to know with the specific norms for the safety on work and for the accident prevention and generally with the technical knowledge rules.

#### **Trained personnel**

A person is trained when it is informed by a competent person about the activities it must perform and the risks relative to improper behaviour and, if necessary, it has received the required training. Also a trained person must be informed about the safety devices and protective measures.

### Skilled personnel

A skilled person is a competent person or sufficiently trained.

The operator must be informed of the position and operation of all commands and features of the plant. The maintenance and start-up operations must be performed by qualified technicians after properly setting up the machine.

The unauthorized tampering or replacement of one or more electromagnetic valve parts, the adoption of accessories that modify the original use of the electromagnetic valve and the purpose of different consumer product from those recommended in this manual, can become a cause of injury risks.

The protective devices must not be removed or tampered for the risk to reduce the accident prevention features of our systems.

To highlight particular situations for the safety of the instrument, are used the following graphic symbols:



**CAUTION and/or DANGER** – Accident prevention rules for the operator



**DISCONNECT** from the power supply line



**R. R. – RESIDUAL RISKS**

**WARNING** - There is the possibility to damage the machine and/or its components

**PRECAUTION** - Further information about the operation in progress

**NOTE** - Provides useful information

### 2.3.2 Dangers and risks unavoidable

On the machine also equipped with protection systems remain the following **R. R. RESIDUAL RISKS**:

**A - Danger due to electricity in general**

**B - Danger due to inhalation of dangerous vapours to health and fire danger**

**C - Danger due to problems/malfunctions of the control system**

This can lead an excessive increase of dispensing of glue as well as a fire danger or dangers due to inhalation of dangerous vapours to health.

**D - Risk due to the projection of fluids under pressure**

In case of improper maintenance of the hydraulic system parts.

**E - Risk of fire**

Prohibition to smoke and/or to be present objects at temperature near the electromagnetic valve.

### 2.3.3 Safety devices adopted

In order to safeguard the health and security of the exposed people, the machine is equipped with:

- Fixed guards: removable only by tools
- Mobile guards: depending on the model of electromagnetic valve

The machine can be equipped with area delimiters that prevent operator access to dangerous areas (see **R.R.**).

### 2.3.4 More general safety precautions



**CAUTION:** The maintenance operations must be peremptorily carry out by qualified and authorized personnel, only and exclusively with machine turned off: power switch in “OFF” position. Make sure the passages around the machine is not hindered by misplaced cables and dangerous for personnel.

The user must always put available to the operators, in the areas that require it, safety goggles, gloves, and any other necessary protections; it must also make sure that these safeguards are being used.

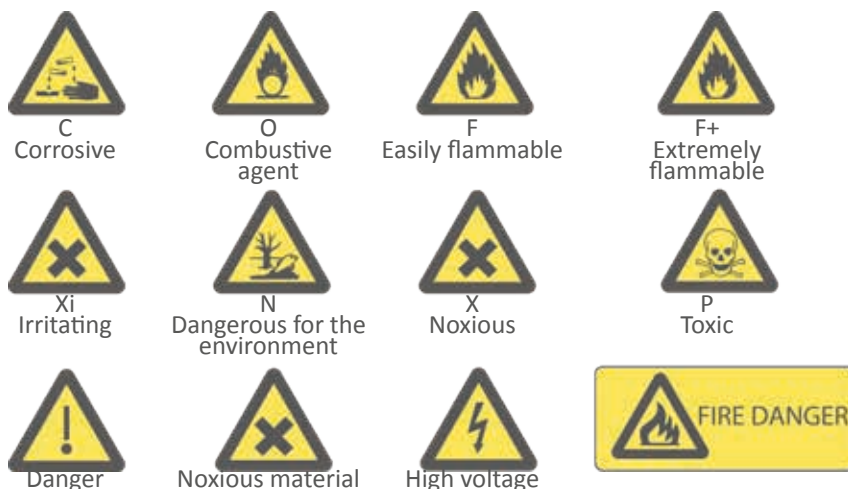
The areas that require the use of protective clothing must be marked with warning signs and pictograms indicating the residual risk.



**CAUTION:** is **ABSOLUTELY FORBIDDEN** to tamper or remove the plates and the protections on the electromagnetic valve.

The manufacturer declines all responsibility for the safety of the electromagnetic valve in case of omitted observance of the prohibition.

#### CE norms signage: examples of danger symbols





## 2.4 Environmental condition

### ***Operating environmental conditions***

The electromagnetic valve is designed to operate in a closed local, protected from the atmospheric agents, with all the safety requirements resulting from the laws in force.

### ***Waste disposal***

The buyer is responsible to follow the correct process and the norms in force in the country for the disposal of waste and residual material.

### ***Waste definition***

Waste is any material and object resulting from human activity or natural cycles which is abandoned or destined to be abandoned.

### ***Special waste***

They are considered special waste:

- Remains from industrial production, agricultural activities, crafts, commercial and service that for quantity are not declared comparable to urban waste;
- Obsolete and deteriorated machinery and equipments;
- Motor vehicles and their parts out of use.

### ***Toxic-noxious waste***

Are to be considered toxic-noxious waste all waste containing or contaminated by materials listed in the attached on the DPR 915/52 of actualization of Directives 75/442/CEE, 76/403/CEE and 768/319/CEE.

### ***Temporary storage***

Temporary storage of toxic and noxious waste is allowed depending on the expected disposal of the same by treatment and/or final disposal. In each case, must be observed the laws in force in the country of the user in the environmental safeguard field.

### ***Features of containers***

The fixed and mobile containers designed to contain toxic and noxious waste must have suitable strength requirements in relation to the chemical-physical properties and the dangerousness features of the waste contained. The containers where the products and the dangerous or noxious materials are stored, must have markings and symbols in order to show the nature of their contents.

### ***Registration obligations***

Pursuant to the DPR of 23 August 1982 relative to the implementation of the Directive 75/439/CEE the records of loading/unloading operations must be kept by all companies that generate - special or toxic - noxious waste from industrial and hand-crafted productions.

**Disposal**

The pick up of special and/or toxic-noxious waste must be committed with contract to specifically authorized companies and who do the transport materially must be in ownership of the required authorizations and must be turn out to be registered in the haulers register.

It's absolutely forbidden to throw waste in the environment.

For the disposal of the packaging, the user must follow the laws in force in the country of plant installation.

**Fire material**

There is no fire dangers by the operation of the electromagnetic valve.



**CAUTION:** The customer must provide an appropriate fire-fighting system, evaluating its internal situation and respecting the laws in force.

In case of fire, disconnect immediately the power switch to interrupt the power supply.

**CAUTION: explosive atmosphere**

The electromagnetic valve is not designed to operate in explosive atmosphere. It is forbidden to use the machine in an explosive atmosphere, even if only partially explosive.

**Lighting**

The customer is responsible for ensuring an appropriate lighting of the local where the machine is installed, according to the laws in force in your country and the EU directives.

**Vibrations**

The electromagnetic valve doesn't make vibrations.

## 2.5 Installation - General norms

Zator's products are manufactured in compliance with the laws in force during its construction.

The personnel will be trained and qualified to take advantage of the installed machinery requirements. The personnel must operate in a comfortable space that could be guarantee safety and hygiene for the operator.

In case of a different destination or necessity of use of the electromagnetic valve, it's appropriate to refer to the technical offices of the Zator Srl.

### ***Goods in packaging***

Outside the package are indicated all the information about the content identification and the safety movement:

- CE marking
- address of the sender and the addressee
- dimensions: length – width – height
- gross – net – tare weight
- annotations and pictograms (ex. brittle, handle with care, high)

**CAUTION:** The customer must check the condition of the goods upon its arrival.

### ***Predispositions: choose the installation space***

Without prejudice to specific dispositions, the customer will be provide to:

- Appropriate logistic arrangement for the placement and conduction of the electromagnetic valve
- Power supply, including the protective conductor usually called "GROUNDED"
- Electrical equipment arrangement and possible pneumatic system
- Wear materials

For the electrical connection it is necessary to have a preferential line of power supply with the features listed in "technical features".

### ***Pneumatic connections***



**CAUTION:** The compressed air must be free of humidity. It is necessary to assemble on the compressor one or more automatic condensation outlet; the air must be filtered and dried out. Make sure that in the pneumatic circuit is not inserted any type of substances (ex. lubricants or other substances).

## 2.6 Use of adhesives, glues or other fluids

The use of the valve with adhesives, glues or general fluids must be respect the following basic rules.

**Before use** a specific type of fluid check that:

- The fluid viscosity is compatible with the features of the valve
- The characteristics of the fluid meet the desired requirements
- The datasheet of the fluid provided by the manufacturer includes all the informations about the fluid such as: viscosity, applications, gluing time (for glues or adhesives) and storage
- The storage time of the fluid has not been exceeded
- The fluid has not been exposed to temperatures near or below than zero therefore it has deteriorated
- The packaging of the fluid are sealed

For the use of **special adhesives, glues or fluids** we recommend to contact the Zator company to verify the compatibility of the application.

Before use a different type of fluid clean accurately the valve to avoid possible contamination of the new fluid.

When used water-based adhesives or glues they are easily removable with water in their liquid state. However, when they harden is more difficult to remove it. For this reason, before long stop it is recommended to wash accurately the valve. Please refer to the maintenance program shown in this manual.



## 3 TECHNICAL DESCRIPTION

### 3.1 Valve functions

The *electromagnetic valve DLK16* has been designed and realized for its use on various kind of production machines operating at high speed: its design and versatility make it ideal for any applications that require the use of dispensing valves.

It's an high-speed dispenser of low and viscosity glues, adhesives and fluids (max 800 mPas).

It can be dispense glue dots. It is controlled by a Zator's microprocessor control or by an instrument of external control after testing and approval of Zator company.

Full stainless steel gun, zero cavity short nozzle, needle with ceramic ball.

The scaled micrometric adjustment allows a fine control of dot size.

No air supply is needed, the reliability of these valves grant a long working life without any service.



### 3.2 Technical data

Available nozzle diameters	from 0,2 to 0,8 mm
Valve body	stainless steel
Maximum fluid viscosity	~ 800 mPass
Maximum working pressure	6 bar
Fluid supply connection	M5
Maximum working frequency	1000 dots/sec.
Coil	6 Volt
Weight	170 g



Dots

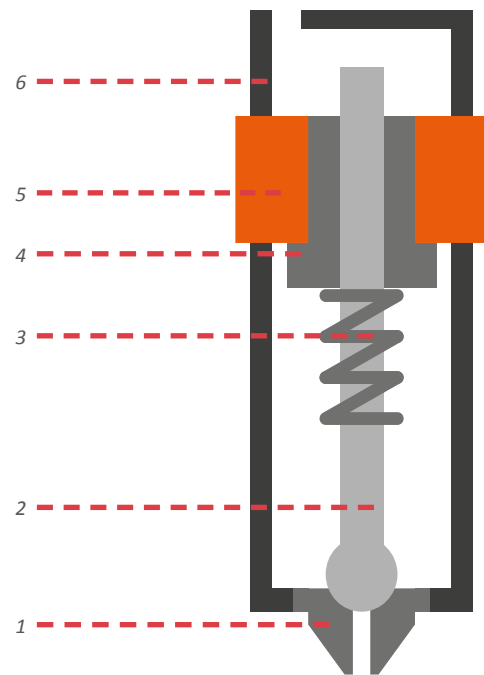
#### fluid types

- | adhesives and glues
- | inks
- | paints
- | mastics
- | low viscosity fluids

### 3.3 Functioning description

The valve <sup>3A</sup> is composed mainly of:

1. Nozzle
2. Needle with a ball
3. Spring
4. Guide sleeve
5. High frequency coil
6. Body valve



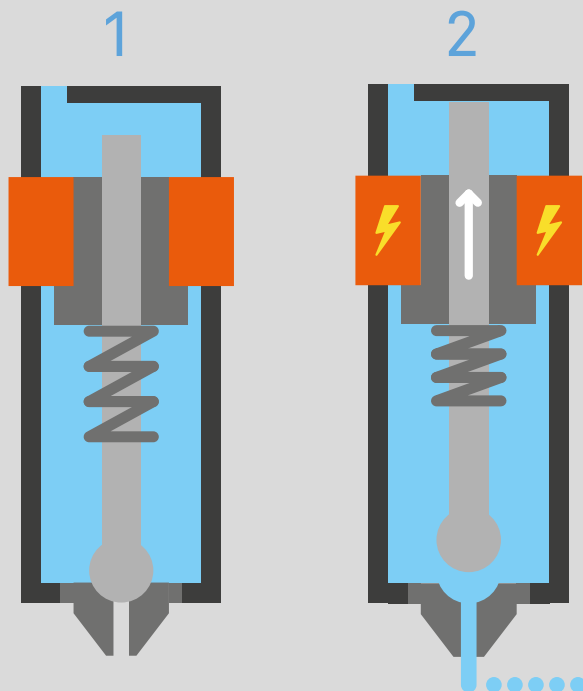
3A. Internal section diagram of the main components (for illustration only)

#### Functioning diagram

**1** When the valve is not activated, the needle closes the nozzle seat, pushed by a spring, and stops the fluid under pressure to flow out from the nozzle hole.

**2** Once the coil is activated, the needle moves back, allowing the fluid flow to come out from the nozzle. Deactivating the coil, the needle comes back to the closure position.

For the *dots application* this sequence is realized hundreds of times per second.



## 4 INSTALLATION

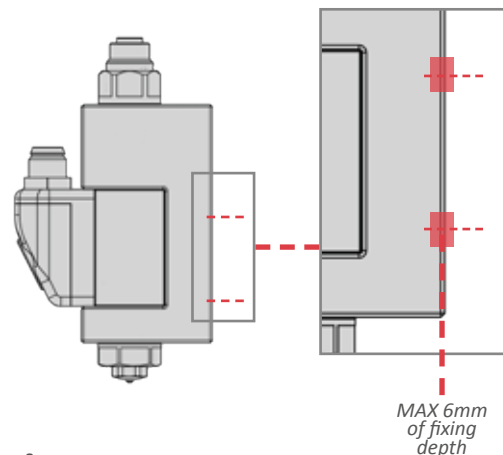
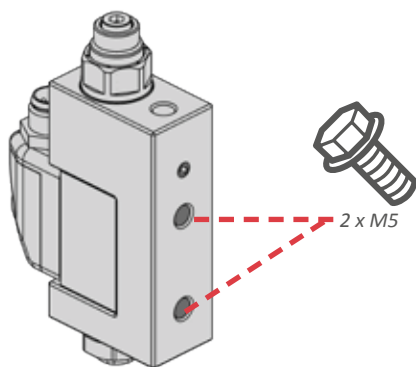
### 4.1 Fixing of the valve

The DLK16 valve must be fixed on a proper bracket thanks to the **threaded holes** (M5 dimension) machined on the valve body.

A vibration-free environment and a good accessibility for regulation, cleaning and maintenance and a good fixing of the valve to the support/bracket and of the latter to the machine must be guaranteed.



**The maximum fixing depth** of the fixing screws in the body valve is 6 mm. To avoid coil damage don't exceed to this measure.



### 4.2 Contact-less gluing application

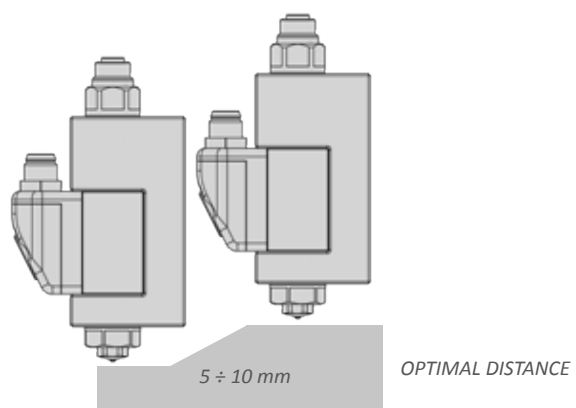
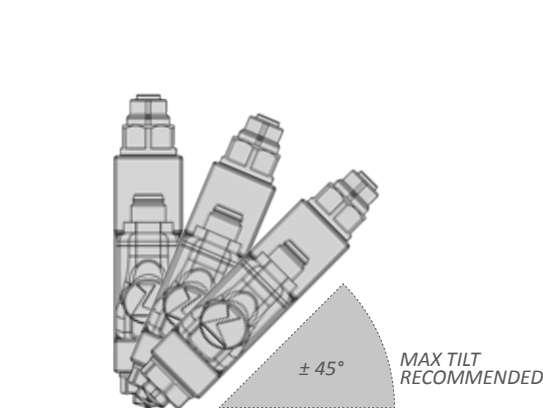
Where is possible it's always better to adopt this type of application because it is convenient both for the ease of application and to avoid the wear of the nozzle.

The **ideal working position** of the valve is vertical, with the nozzle facing downwards.

It's possible to tilt the valve of  $\pm 45^\circ$  degrees (see next page).

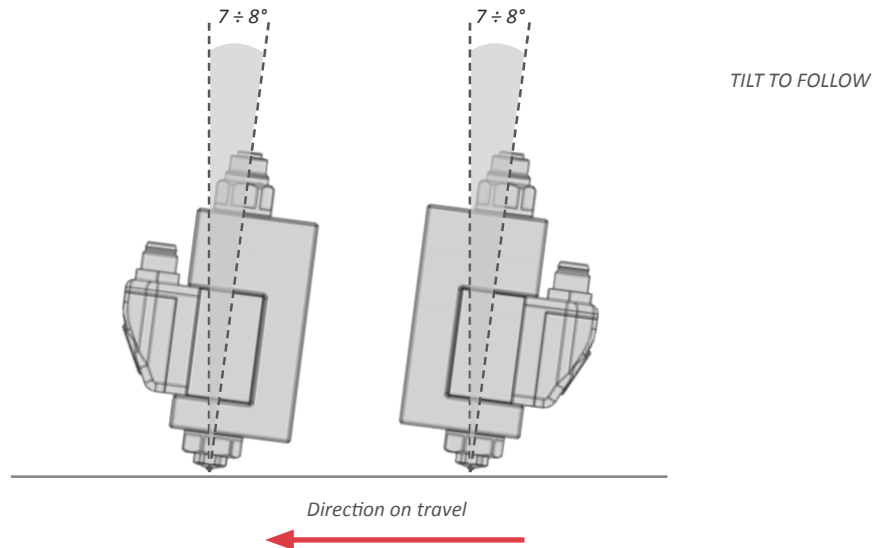
The **optimal distance** between the nozzle and the surface to be glue is between 5 and 10 mm (see next page).

Other different positions are possible upon approval of the Zator.



### 4.3 Contact gluing application

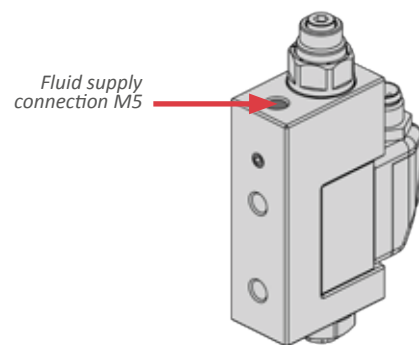
The contact gluing application is used when is necessary to dispense very thin glue lines. In this case the valve must always be positioned vertically, with the nozzle facing downwards but with an **inclination of  $7 \div 8^\circ$**  with respect to its axis towards the direction of travel and the nozzle must lightly touch the surface to be glued.



### 4.4 Fluid supply connection

The valve must be connected to a *glue feed units\**. A *flexible plastic pipe\** (**for applications up to 8 bar**) must be connected to a *pipe fitting (M5)\** to be screwed on the fluid supply connection of the valve. For applications with working pressure **over 8 bar** use *fittings and pipes\** for high pressure must be used.

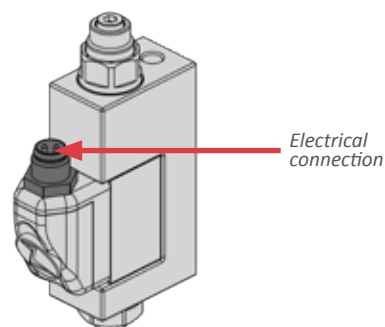
*\*Parts are supplied separately*



### 4.5 Electrical connection

Connect an *electrical cable\** with cross-section not less than 0.35 mm to the coil connector. The valve must be electronically controlled by a Zator's microprocessor control or alternatively with an instrument tested and approved by Zator.

*\*Parts are supplied separately*



## 5 VALVE ADJUSTMENTS

### 5.1 Fluid quantity adjustment

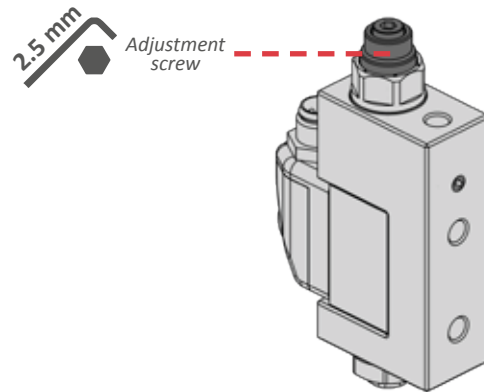
The adjustment of the dispensed fluid quantity (ex. glue) by the valve is determined by:

- The nozzle diameter: **greater diameter → more fluid quantity**
- The fluid pressure: **greater pressure → more fluid quantity**
- The needle travel adjustment: **greater needle travel → more fluid quantity**

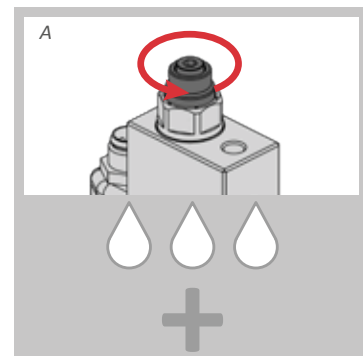
Operating on this points it's possible to adjust the dispensed fluid quantity.

### 5.2 Needle travel adjustment

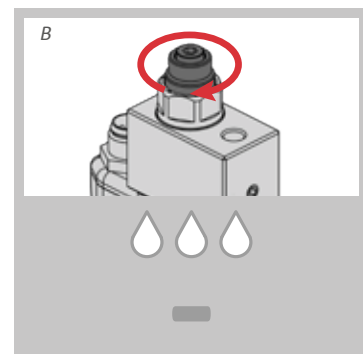
To adjust the needle travel, operate on the *adjustment screw* placed on the top of the valve. This handle can be do with a 2.5mm hex key allows to adjust with a fine control the dots or lines size that are dispensed.



- A. Turn **counter-clockwise** to **increase** the needle travel therefore the dispensed fluid quantity.



- B. Turn **clockwise** to **decrease** the needle travel therefore the dispensed fluid quantity. At the **end of the needle travel**, the valve is **completely closed**, therefore it doesn't dispense any fluid.



**Don't tighten with excessive force** the screw adjustment to avoid damage to the nozzle and needle.

## 6 MAINTENANCE

### 6.1 General norms

The *electromagnetic valve DLK16KV*, thanks to the construction methods and employed materials, is easy to maintain. A minimal, simple, accurate and constant maintenance allows a long-lasting and regular functioning of the valve, keeping unchanged its performance.



- For the general cleaning of the valve **don't use** metallic, sharp or pointed objects. Use only soft brushes or cotton rags.
- All the maintenance works on the valve **must be performed by qualified personnel** and after the supply pressure system has been discharged
- For the nozzle cleaning **use only** cleaning needles supplied by the valve manufacturer: if you use other sharp objects the nozzle could be **damaged**
- **Use only** original spare parts
- The valve must be washed **only and exclusively** with water, especially if you need to replace the nozzle or the needle
- Every evening and if you expect a long work break put some grease on the nozzle tip

### 6.2 Maintenance program

	TIMING*	WHAT TO DO
1	Every day, before the start production	<ul style="list-style-type: none"> <li>• Do a valve test</li> <li>• Clean the valve externally</li> </ul>
2	Every day, at the end of production	<ul style="list-style-type: none"> <li>• Do a valve test</li> <li>• Clean the valve externally</li> <li>• Put some grease on the nozzle tip</li> </ul>
3	Before a production break longer than two weeks	<ul style="list-style-type: none"> <li>• Drain the fluid from the system and wash it completely with water</li> <li>• Leave the system with water inside</li> </ul>
4	After a production break longer than two weeks	Discharge the water from the system and fill it with the adhesive fluid
5	Every month or after 2000 working hours	As point 3 and 4
6	Every year or after 4000 working hours	<ul style="list-style-type: none"> <li>• As point 3 and 4</li> <li>• Replace possible worn parts</li> </ul>

\*Approximate values that can change depending on the type of glue, adhesive or fluid used.  
For the use of special fluid we recommend to contact the Zator company for any questions.

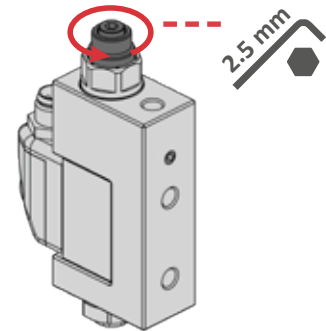
## 6.3 Cleaning and/or replacement of the nozzle

**Before** you disassembling, cleaning or replacing the nozzle the following steps **must be done**:

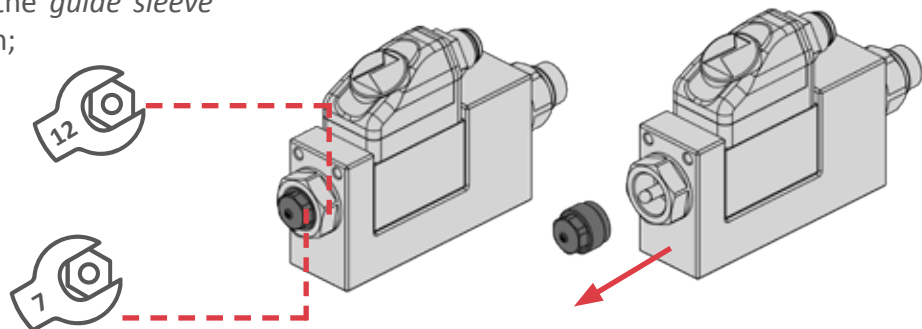
- Wash the valve with water
- **Discharge the pressure from the supply system**

Then proceed as follows:

- 1 Loosen the *micrometric adjustment handle*, turning it counter-clockwise until it doesn't resist anymore with 2.5mm hex key;

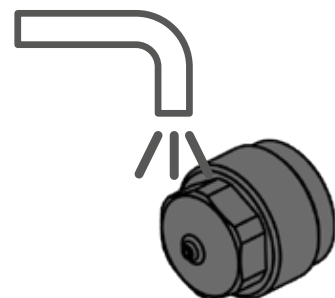


- 2 Unscrew the *nozzle* with a 7mm wrench by holding the *guide sleeve* with a 12mm wrench;



After removing the nozzle, to clean it:

- 3 Put the *nozzle* under running water then blow it with compressed air and clean the *nozzle* hole with the *cleaning needle*;
- 4 Repeat the step until you have removed all the impurities inside and outside the *nozzle*;
- 5 Screw the *nozzle* on the valve with a 8mm wrench.



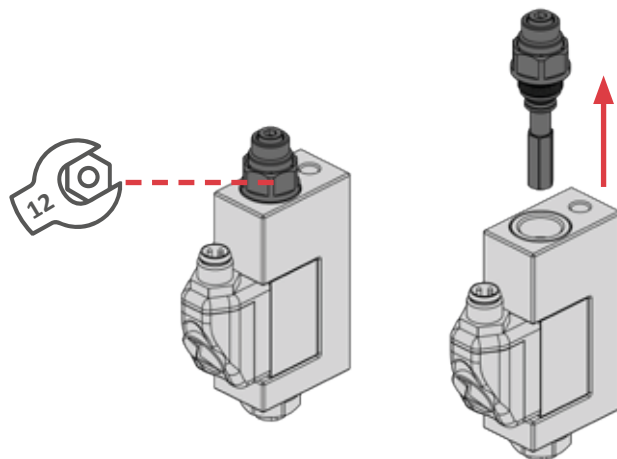
## 6.4 Valve disassembly

**Before** you disassembling the valve the following steps **must be done**:

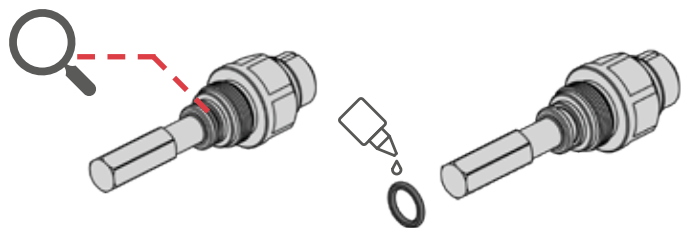
- Wash the valve with water
- **Discharge the pressure from the supply system**

Then proceed as follows:

- 1 Unscrew the *adjustment* with a 12mm wrench, then pull it out;

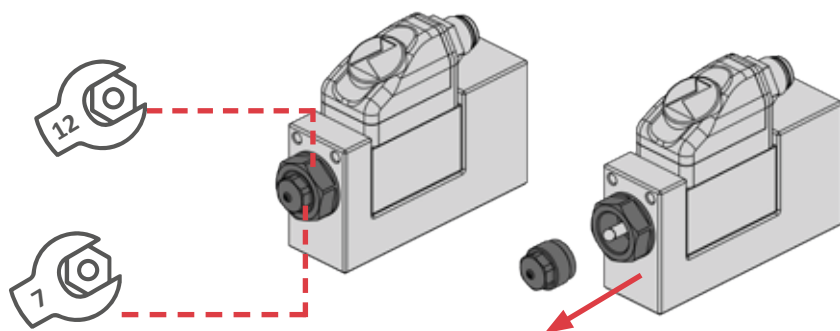


- 2 Check the wear of the micrometric adjustment O-ring and if it is necessary, replace it. Always grease\* the new O-rings before assembling them;

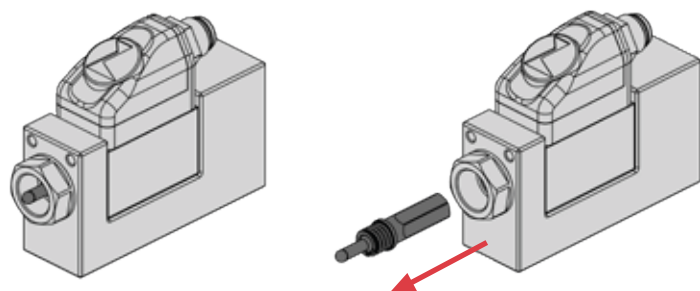


\*Use silicon-based grease or oil specific for O-rings. For any questions or information contact the Zator company.

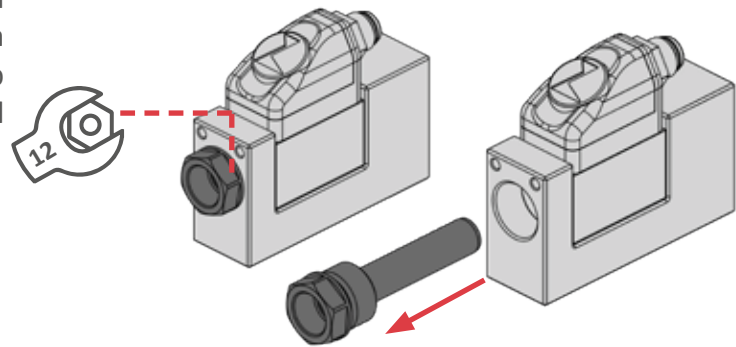
- 3 Unscrew the *nozzle* with a 8mm wrench by holding the *guide sleeve* with a 12mm wrench;



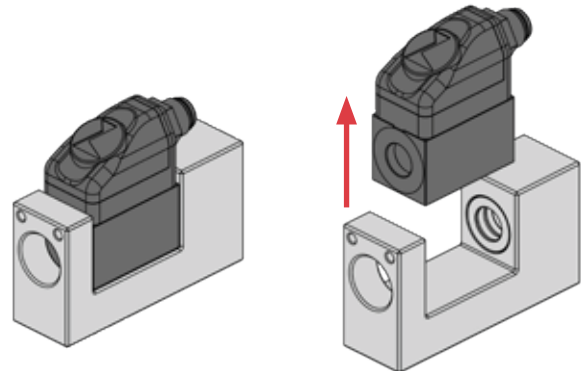
- 4 Pull out the needle using fingers (to disassemble the needle see *section 6.5 - Needle disassembly*);



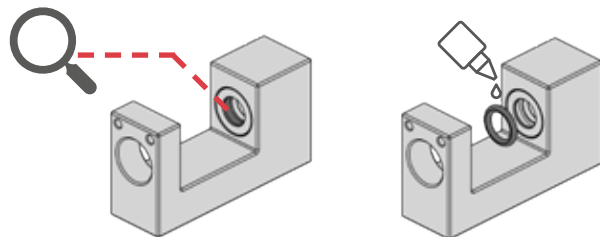
- 5 Unscrew the *guide sleeve* with a 15mm wrench, then pull it out from the valve, **being careful** not to drop the coil on the ground because it will be free to move;



- 6 Remove the *coil* from the valve body;



- 7 Check the wear of the *O-ring* inside the valve body and if it is necessary, replace it. Always grease\* the new O-rings before assembling them.

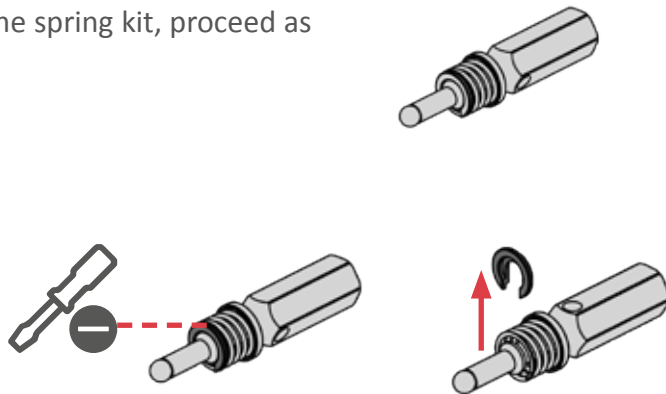


\*Use silicon-based grease or oil specific for O-rings. For any questions or information contact the Zator company.

## 6.5 Needle disassembly

To disassemble the *needle* and/or replace the spring kit, proceed as follows:

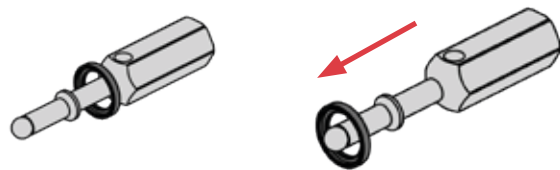
- 1 Extract the *snap ring* that keeps the spring compressed with the help of a small screwdriver;



- 2 Pull out the *spring* from the needle;



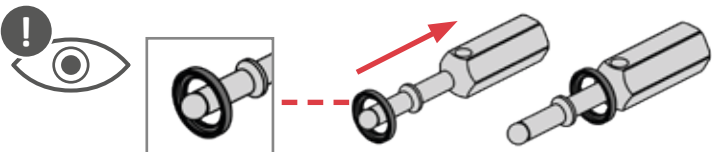
- 3 Finally pull out the *washer*.



## 6.6 Needle assembly

To assemble the *needle* proceed as follows:

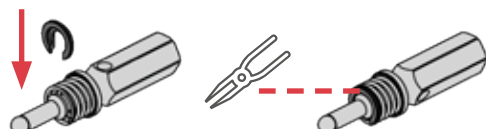
- 1 Insert the *washer* in the needle **being careful** to the **assembly direction**;



- 2 Insert the *spring* in the needle;



- 3 Finally insert the *snap ring* with the help of a smooth plier.



**\*Pay attention** to not scratch and/or bend the needle with the plier.

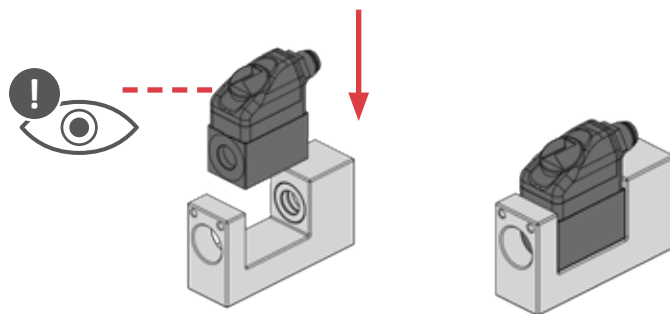
## 6.7 Valve assembly

**Before** to assembling the valve the following steps **must be done**:

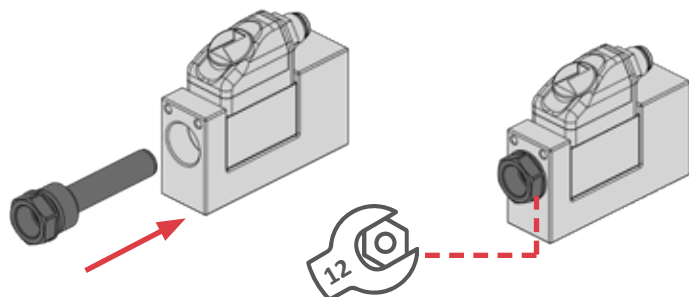
- Remove the residual glue from the valve using a wet rag or soft brush
- Clean the nozzle and if it is necessary put it under running water then blow it with compressed air and clean the nozzle hole with the cleaning needle
- Check the wear of the O-rings and if it is necessary replace it
- Before the assembly always grease the O-rings

Then proceed as follows:

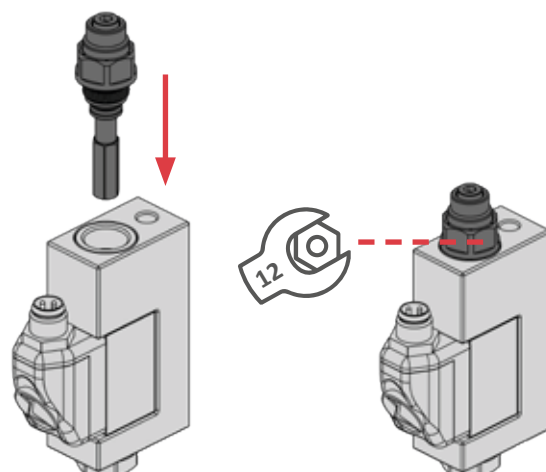
- 1 Place the *coil* into the valve body **being careful to the assembly direction**;



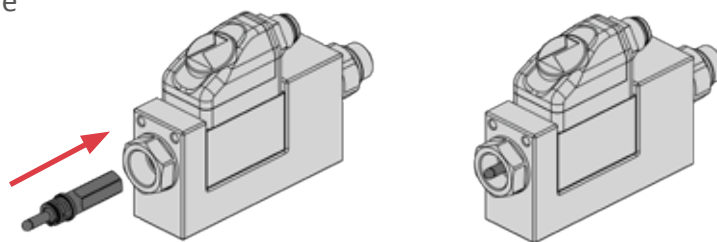
- 2 Insert the *guide sleeve* through the valve body and the coil, then screw it with a 12mm wrench;



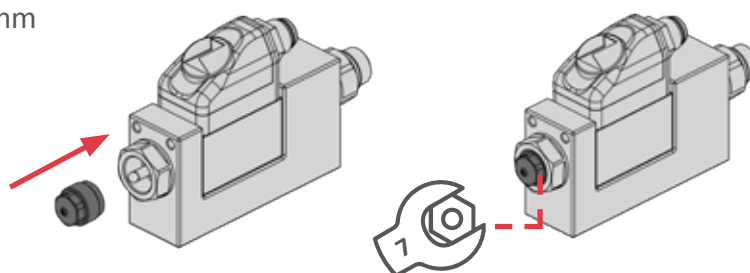
- 3 Insert the *adjustment* and with a 12mm wrench screw it into the valve body;



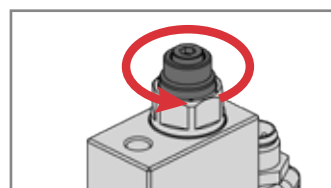
- 4 Insert the *needle* inside the guide sleeve;



- 5 Screw\* the *nozzle* with a 7mm wrench.



**\*Before screw the nozzle**, check the micrometric adjustment handle is completely loosened to avoid damage to the nozzle and needle. To loosen the handle, turning it counter-clockwise with 2.5mm hex key.



## 7 TROUBLE SHOOTING



**CAUTION:** the trouble shooting **must be performed only by qualified personnel** observing the safety norms.

TROUBLE	POSSIBLE CAUSE	WHAT TO DO
No or little quantity of dispensed fluid	The valve doesn't receive any signal	<ul style="list-style-type: none"> <li>• Check the cables of the valve, the start sensor and the encoder;</li> <li>• Check the functioning data setted on the control;</li> <li>• Make a manual test</li> </ul>
	The pressure of the fluid is low or missing	Check the supply pressure
	The nozzle is clogged	Unscrew and clean the nozzle
	The filter is dirty (If in use)	Wash or replace the filter
	Bent pipe	Check the condition of the supply pipe
	Residual glue into the system	Wash the complete system
Leak of fluid from the adjustment	Adjustment O-ring is damaged	Replace the adjustment O-ring
Leak of fluid from the top of the coil	O-ring inside the valve body is damaged	Replace the O-ring inside the valve body
Nozzle drips fluid even if the valve is not activated	Presence of dirt inside the nozzle	Clean or replace the nozzle
The valve is activated with a lag	The needle spring is deteriorated	Replace the needle spring

## 8 MODELS

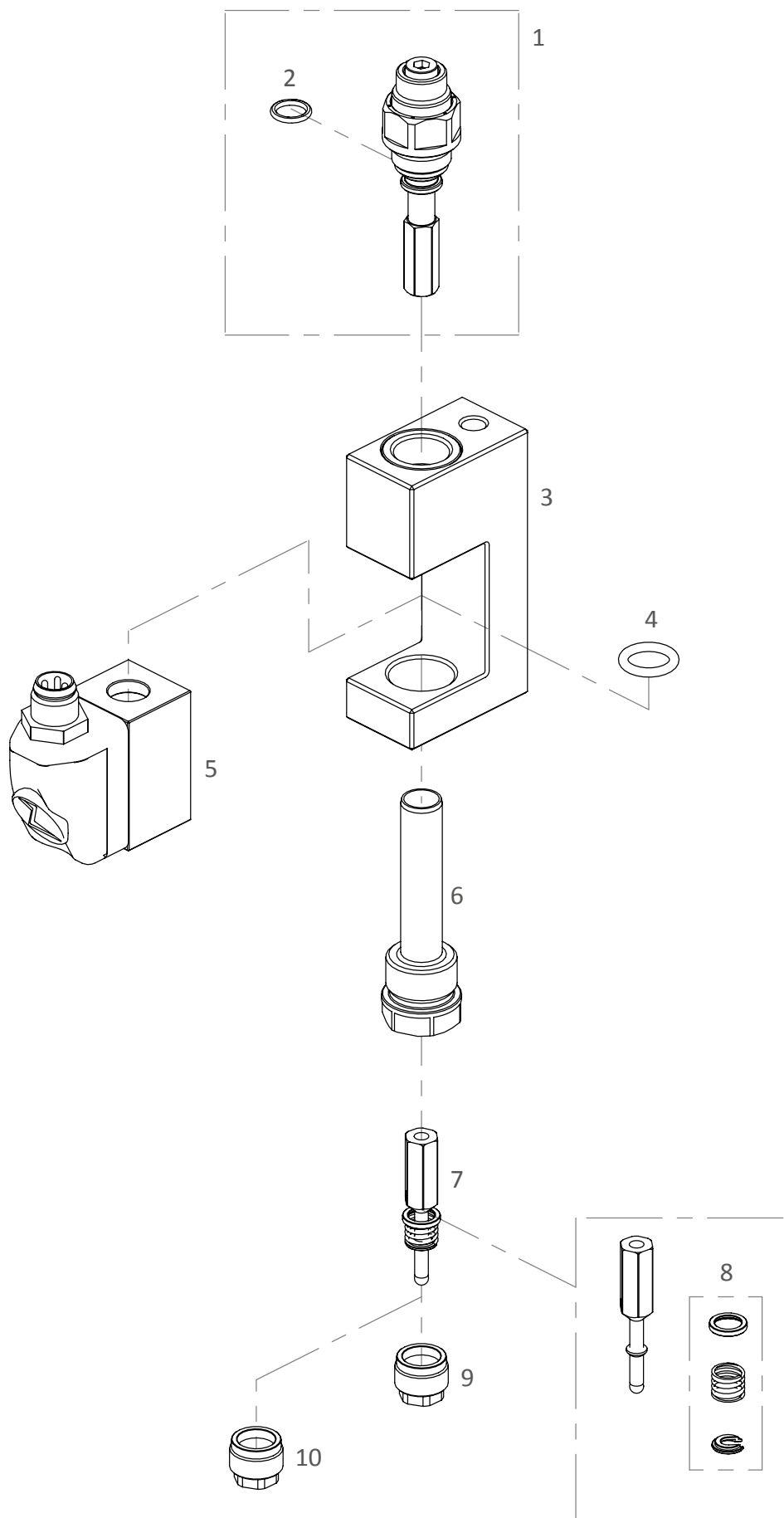
code	description
EA02D01XXX	Electromagnetic valve DLK16KV 6 Volt
<i>Replace XXX value with nozzle diameter desired Available nozzle diameters from 0,30 to 0,80 mm</i>	
EA14E01XXX	Electromagnetic valve DLK16KC 6 Volt with ceramic tip nozzle
<i>Replace XXX value with nozzle diameter desired Available nozzle diameters from 0,20 to 0,30 mm</i>	
CBL000005	Cable DLK16 length 5 mt





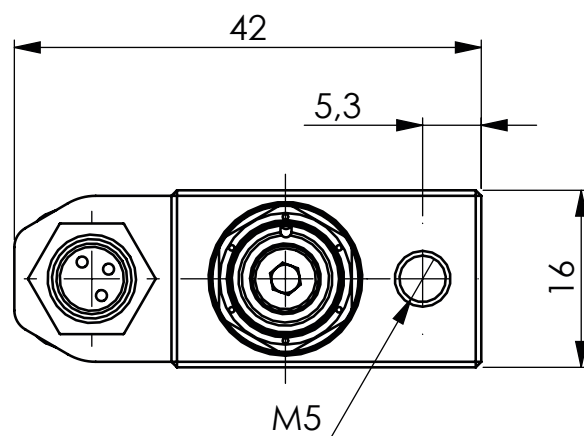
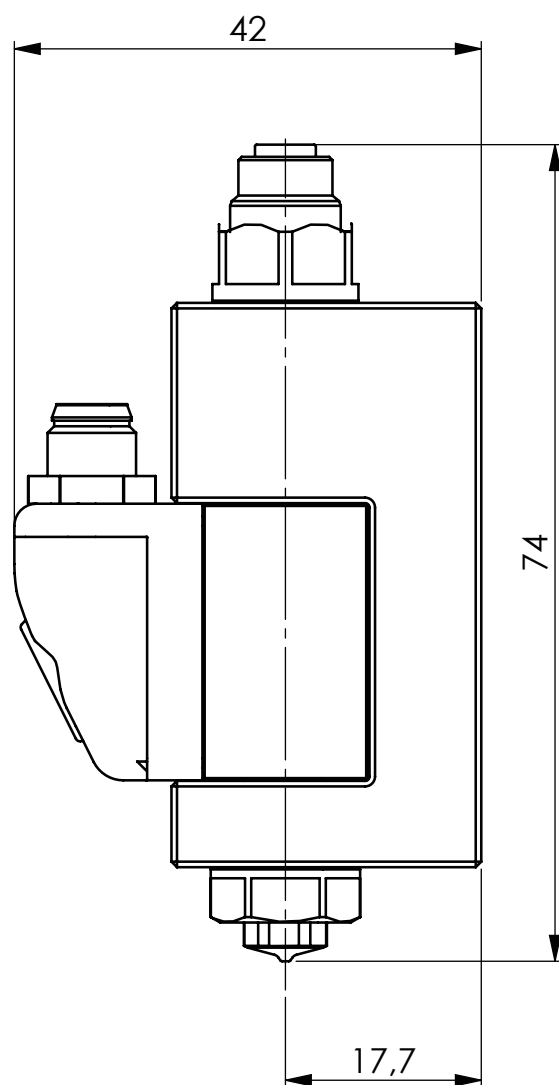
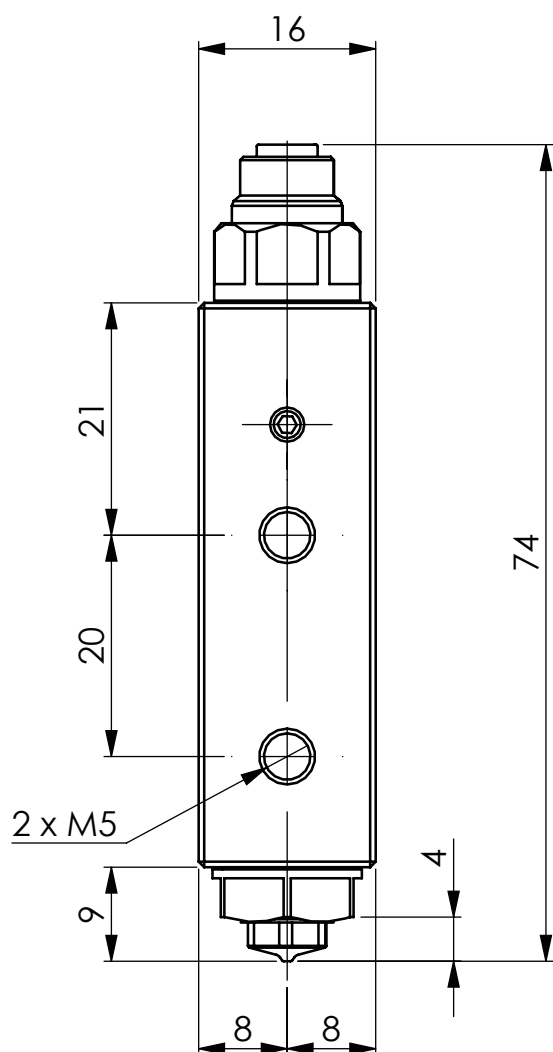
## 9 PART LIST

pos.	code	q.ty	description
1	MCR000009	1	Micrometric adjustment
2	K92010501	1	O-ring
3	BG000004	1	Valve body
4	K92010703	1	O-ring
5	CL000007	1	Coil 6 Volt
6	GDS00003	1	Guide sleeve
7	NDL000003	1	Needle KV
8	SPK000001	1	Spring kit
9	NZLE0204XXX	1	Nozzle KV
Replace XXX value with nozzle diameter desired Available nozzle diameters from 0,30 to 0,80 mm			
10	NZLE1404XXX	1	Nozzle KC with ceramic tip nozzle
Replace XXX value with nozzle diameter desired Available nozzle diameters from 0,20 to 0,30 mm			



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# 10 DIMENSIONS





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