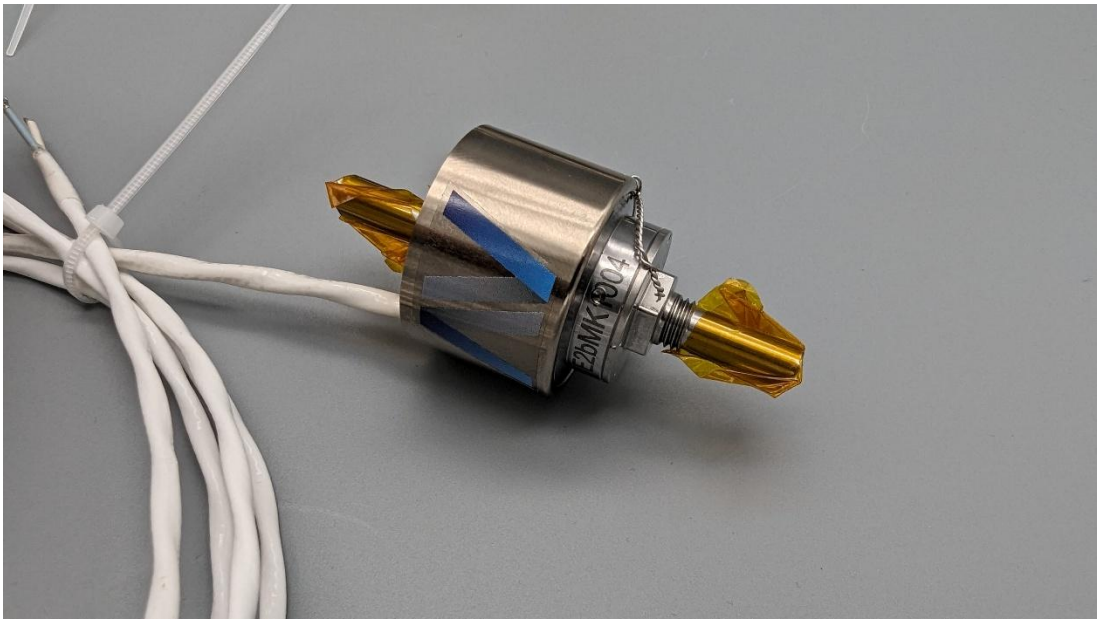
deltaVision
fluid control & aerospace

OPERATING INSTRUCTIONS

Manufacturer	deltaVision GmbH Hofmannstr. 50 81379 München Germany
Product	Latching solenoid valve L2a



CONTENTS

SAFETY

SAFETY

Strict compliance with these operating instructions is essential for the safe and enduring use of this product. No warranty is given in case of non-compliance with the operating instructions or improper handling of the product. This product is intended exclusively for use with the fluids specified in the data sheet. Use of the product under conditions not specified in the data sheet or contrary to the instructions contained therein is understood to be IMPROPER. The manufacturer assumes no liability for damage or loss resulting from improper use of the product.

No warranty is given in case the customer opens the product without prior agreement of deltaVision.

DANGER

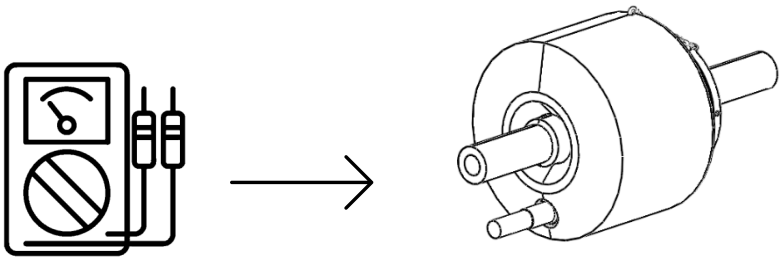
Risk of injury! The coil can reach high temperatures during operation. Do not touch the valve during operation. Allow the valve to cool down after operation before touching it.

WARNING

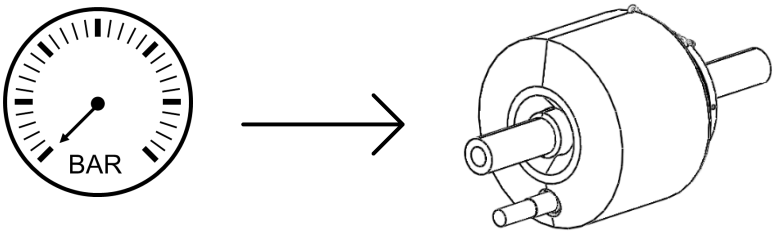
- The generally applicable safety regulations must be observed when planning, installing and using the product.
- Appropriate measures must be taken to prevent unintentional, incorrect handling or damage to the product.
- Valves or connections in the system must not be unscrewed or dismantled under pressure. Before dismantling pressure lines, make sure that they are depressurized.
- Before any intervention in the system, the supply voltage must be disconnected.

BEFORE INSTALLATION

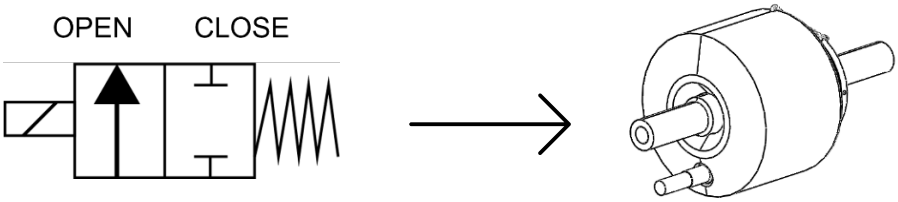
1. Switch off the power supply before installation



2. Release the pressure of the system before installation



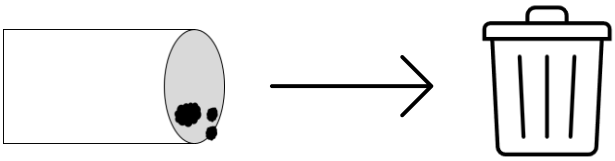
3. Check the switching position of the valve before switching on and applying pressure



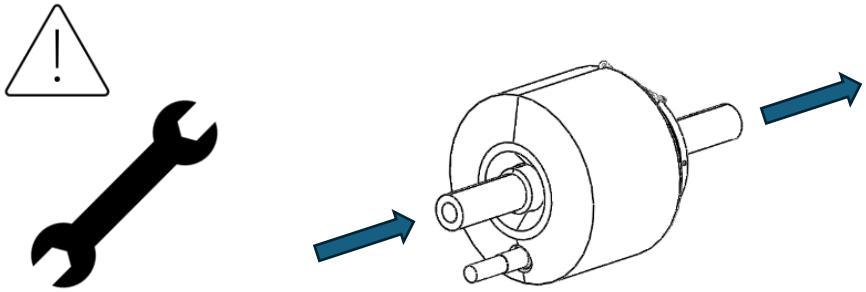
ASSEMBLY

MECHANICAL ASSEMBLY

1. Clean pipes before installation



2. Install pipes on the valve by using press fittings. The installation specification for these fittings is provided by the fittings supplier. Make sure to use the correct tools. Remember the flow directions.

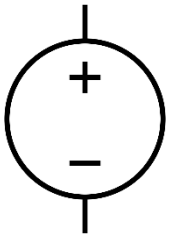


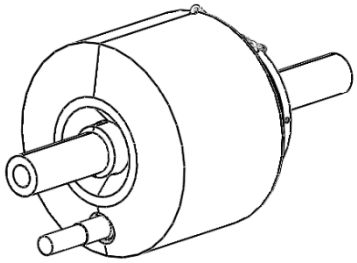
3. It is recommended to install a filter of 20 microns upfront of the valve to avoid valve contamination

A: Electrical Assembly without Latch Driver

1. Connect the electrical supply cables to the valve. **Pay special attention to the polarity: the valve is delivered in closed position. The plus serves to open the valve and the minus to close it**. Special care must be taken to avoid kinking/breaking of the cables. **The cables can withstand maximum 250 strokes with 500g weight.**

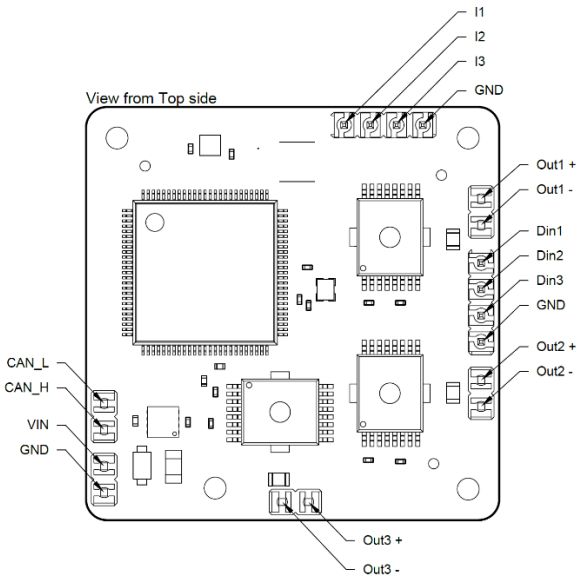
2. Open the valve by applying the nominal voltage on the “+” cable for the duration recommended in the valve acceptance protocol then stop powering the valve. To close the valve, apply the nominal voltage on the “-“ cable for the duration recommended in the valve acceptance protocol then stop powering the valve. Avoid valve temperatures above 70 °C.





B: Electrical Assembly with Latch Driver

Pinout



Name	Description
VIN	24 – 28 V Supply Voltage
GND	GND
CAN_L	Not Used
CAN_H	Not Used
Din1	Digital Control Input Valve 1
Din2	Digital Control Input Valve 2
Din3	Digital Control Input Valve 3
Out1 + / -	Valve 1 Positive / Negative
Out2 + / -	Valve 2 Positive / Negative
Out3 + / -	Valve 3 Positive / Negative
I1	Analog Output Valve 1
I2	Analog Output Valve 2
I3	Analog Output Valve 3

Setup

We highly recommend using the latch valves with the driver as this enables fast, easy & safe actuation of the valve. For proper functioning of the driver follow the guide below:

- For each valve, connect the corresponding cables with the respective Out Pins (Out1, 2 & 3 respectively). Make sure to connect the positive cable with the positive pin and vice versa for the negative cable.
- Connect your power supply to the valve driver on the respective pins (VIN and GND) and set it to 28V with sufficient current and overvoltage limits (for more information see
- **Important Information**).
- Connect your digital control input source to the respective pin (DIN1, 2 & 3) for each valve. **Please make sure to add a pull-down to your control input**. Although the valve driver contains a built-in debouncing mechanism please keep the control signal as clean as possible to avoid unintentional switching of the valve.
- If needed, connect a measurement device to the respective analog output pins (I1, 2 & 3) if information about the current flow in the valve is needed. For information about the extraction of current flow values please see
- **Important** Information)

Important Information

Since rapid actuation of latch valves can cause voltage fluctuations on the main voltage bus make sure to set appropriate overvoltage limits on your power supply (Supply Voltage+ 4V typically). Also make sure to set appropriate current limits to enable actuation of the valves.

To calculate current flow information from the drivers analog output voltages please use the following conversion formula:

$$Current_{Channel\ X} = \frac{AOut_{Channel\ X}}{5V} * \ 1.5\ A$$

The maximum current display is 1.5 A. No distinction is made between positive and negative currents hence the analog output will be the same for the same absolute current no matter if positive or negative.

Example Application

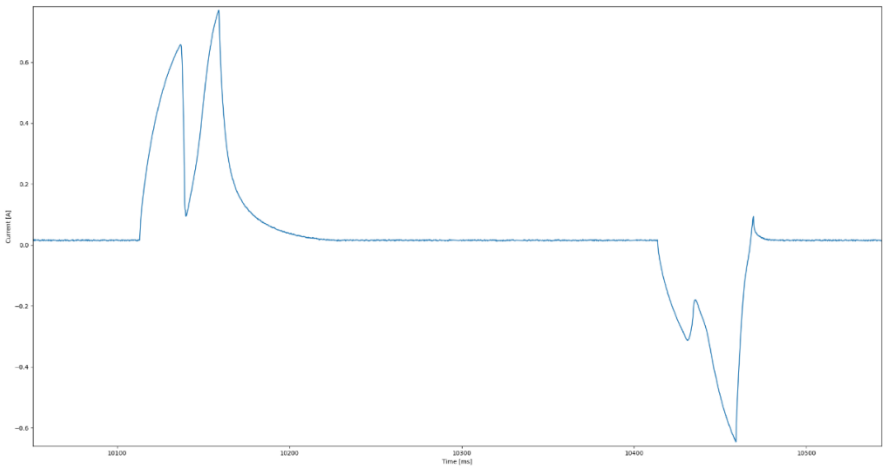


Figure 1: Current Flow during Actuation of a Latch Valve from Close to Open to Close

To use the latch valve driver, follow the procedure as described below:

- Turn on power supply with settings as described in **Setup** and make sure all cables are properly connected
- To open the valve set the corresponding valve channels digital input pin **HIGH (3.3V).** The valve driver will open the valve and then cut off power to the valve when it has latched into

an open position. **To keep the valve open, keep the input pin high.** The valve itself will not consume any more power once it has latched open.

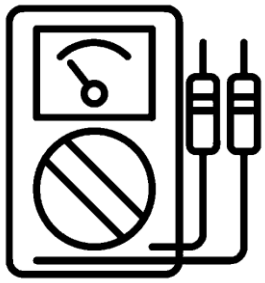
- To close the valve set the corresponding valve channels digital input pin **LOW (GND)** the valve driver will close the valve and then cut off power to the valve when it has latched into position. **To keep the valve closed, keep the input pin low.** The valve itself will not consume any more power once it has latched close.

Additional Information

Since the valve may start in any position (open or closed) please make sure to open and close the valve before using it in any actual scenario to avoid having the valve in an unwanted position.

TROUBLESHOOTING

1. Check the cables and power supply.



2. Check the pressure in the pipings.

3. Check the piping for contamination.

4. For measuring the pressure drop/Kv of the valve, make sure that any elbow placed after the valve is placed at a distance of minimum 5 times the nominal diameter of the valve.