GONANO
DOSIERTECHNIK GMBH

# Operating instructions
# Needle valve GV-1425

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## Dear Customer

Thank you for purchasing the GV-1425.
These operating instructions are intended for simple and safe operation of the valve.
Please read these instructions carefully before commissioning and also observe the safety instructions given.

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## 1. Intended use

The GV-1425 needle valve has been specially developed for dispensing low to medium viscosity materials. The materials can be applied from the smallest drops to continuous application in bead form.

It can be actuated single or double-acting. Due to the integrated spring reset, the closing time is fast and reliable even with single actuation.

The opening gap can be finely adjusted with the adjusting screw. The slim design allows installation in automated lines and a high packing density.

## 2. Specifications

| | | **GV-1425** |
|---|---|---|
| Principle | | Needle valve |
| Min. operating pressure | | 3.5 bar |
| Max. Material pressure | | 20 bar |
| Weight | | approx. 160 g |
| Dimensions | Length<br>Ø | 120 mm<br>28 mm |
| Material<br>Parts in contact with medium | Valve needle<br>Seals<br>Material chamber | Carbide<br>PTFE<br>Anodised aluminium |
| Connections | Material inlet<br>Material outlet<br>Control air inlet | 1/8" NTP<br>Luer Lock<br>10-32 UNF-2B |

## 3. Valve assembly

1 Adjustment cap
2 Mounting option (rear)
3 Material inlet G 1/8"
4 Luer-Lock connection
Dispensing needle
5 Auxiliary air connection (optional)
6 Scaling for adjustment
7 Control air inlet
8 Valve body
9 Valve seat

## 4. Operating principle

The valve is closed in the rest position.

The opening gap for the material is adjustable on the valve (1). The valve is opened with the control air (7). The valve needle moves upwards out of the seat (9) and material can flow via the material inlet to the material outlet (4).

Optionally, auxiliary air (5) can also be used for faster closing. Otherwise the valve closes by spring force.

If the valve is double-acting, an O-ring must be fitted. (See drawing page 10 position 13)

To do this, please unscrew the adjustment cap (1) and fit the O-ring), screw the cap back in.

## 5. Commissioning

### 5.1 Setting up the valve

(Numbers refer to illustration on page 5)

In addition to the supplied Luer Lock connection, a tested 1/8" NPT line can be used to supply the dispensing medium, if necessary.

If necessary, the material chamber and drive cylinder can be mounted against each other in a 90° grid using 4 allen screws in order to change the connection positions.

1. Mount the valve on the desired bracket
2. Connect the material line to (3). The valve can be rotated 360° so that the material inlet is in the right place.
4. Connect the control air to (6)
5. Apply pressure to the material tank (max 20 bar!)
5. Open the valve with your control until there is no more air in the material line. It may be helpful to hold the valve with the outlet pointing upwards.
6. Insert a suitable dispensing needle into the luer lock (4).

## 5.2 Valve settings

The shot size and the bead width depend on the following factors:

- Actuation time of the valve
- Opening gap
- Material print
- Material viscosity
- Dispensing needle diameter and type

## 5.3 Adjustment of the opening gap

On the GV-1425 needle valve, the opening gap between the valve needle and the valve seat can be adjusted. This influences the flow rate.

**Small opening gap / small flow**

Turn the adjustment cap (14) clockwise.

DO NOT screw the cap all the way in, otherwise the valve will not open.

**Large opening gap / large flow**

Turn the adjustment cap (14) anticlockwise.

Dosing data for water:

| | |
|---|---|
| Smallest shot size | 0 .003ml |
| Flow rate at 100psi | 1680ml/ min |
| Switching frequency | 600 cycles / min |
| Material viscosity | up to 100.000 mPas |

Repeatability depends on the dispensing medium.

## 6. Maintenance

To clean and replace the seal, the valve must be dismantled.
For this you need

- Open-end spanner 8 mm
- Allen key 2.5 mm
- circlip pliers (when replacing the cylinder seal)

### 6.1 Disassembly

1. First flush the valve with cleaning fluid and disconnect the material line from the valve body (3).
2. Unscrew the adjustment cap (14). Remove the spring, two plastic washers (15) and the piston with valve needle (9).
3. Remove the four allen screws on the front. Now carefully pull the parts apart.

### 6.2 Cleaning

Steps 1 - 3 see disassembly

4. Note the installation position of the seal (4) in the cylinder. Remove the seal.
5. Unscrew the Luer Lock adapter or needle seat (1).
6. Clean the seals and all other parts. Inspect the parts for damage and wear. (1 + 4). Replace the parts if necessary.

Reassemble the valve.

### 6.3 Replacing the cylinder gasket

Steps 1 - 3 see disassembly

4. Remove the circlip (5). Remove the nylon washer (7) from the cylinder (10).
5. Take out the O-ring (8). Remove the two plastic washers (12).
6. Clean all parts. Inspect the parts for damage and wear. Replace the parts if necessary.

7. Grease the O-ring (8) (grease order no. 01-990064) and put it back into the cylinder (10).
8. Replace the nylon (7) washer and fit the circlip (5).
9. Insert the seal (4) into the valve body (3). To do this, use a "soft" rod, e.g. made of wood, to press in the seal.
10. Screw the Luer-Lock adapter (1) back in.
11. Insert the cylinder (10) into the valve body (3) and screw the four Allen screws on the face.
12. Carefully reinsert the piston with the valve needle (9) into the cylinder (9).
13. Screw the adjusting cap (14) into the cylinder (10). Make sure that the two plastic washers (12) are inserted in the adjusting cap (14).

## 7. Troubleshooting

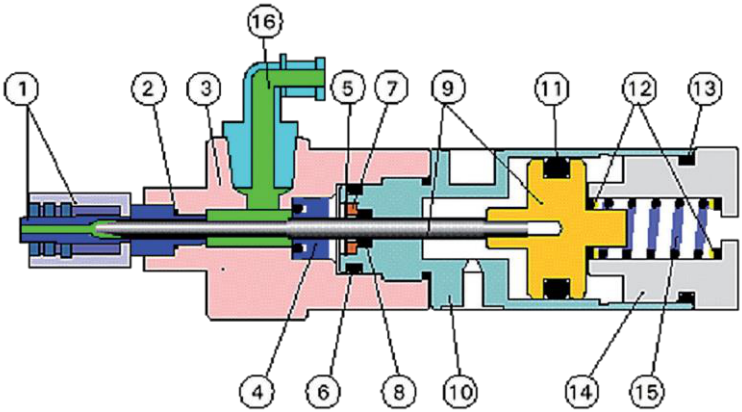
| Error | Possible cause / troubleshooting |
|---|---|
| No material flow | • Material pressure is too low. Increase material pressure<br>• Operating pressure is too low, increase to 4 bar.<br>• Material has deposited in the valve seat. Clean valve<br>• Adjustment cap (14) is completely screwed in. The valve needle does not open because of this. Unscrew the adjustment cap by 1 turn. |
| No constant material flow | • Operating pressure fluctuates<br>• Material pressure fluctuates<br>• Operating pressure is too low, increase to 4 bar.<br>• Air is in the valve, valve must be vented<br>• The dosing time is too low to control the valve. Increase the dispensing time. |
| Material continues to flow even though the valve is closed. It may stop flowing after some time. | • Air is in the valve, valve must be vented<br>• Air is in the material itself, degas / evacuate material.<br>• Material has deposited in the valve seat. Clean valve |
| Constant dripping | • Dirty needle or valve seat - clean / replace<br>• Valve may not have been mounted correctly after cleaning. Disassemble again and reassemble |
| Material pressure is above 20 bar | • Decrease pressure.<br>• Closing spring missing or defective, check / replace |
| Air escapes from adjusting cap (14) | • O-ring (13) is not fitted with the control mode "double-acting".<br>• Mount O-ring |

## 8. Parts list and detail drawing

| No. in fig. | Article number | Description |
|---|---|---|
| 1 | G-0040 | Valve seat |
| 2 | G-0041 | O-ring |
| 3 | G-0043 | Valve body aluminium |
| 4 | G-0045 | Seal |
| 5 | G-0020 | Seegering |
| 6 | G-0022 | O-ring |
| 7 | G-0021 | Nylon disc |
| 8 | G-0023 | O-ring |
| 9 | G-0046 | Piston with valve needle |
| 10 | G-0047 | Cylinder |
| 11 | G-0026 | O-ring |
| 12 | G-0048 | 2 x plastic disc |
| 13 | G-0028 | O-ring |
| 14 | G-0049 | Adjustment cap |
| 15 | G-0038 | Spring |
| 16 | Luer lock 75 | Luer Lock Adapter, black |

**The following articles / components are included in the scope of delivery:**

| | | |
|---|---|---|
| o. A. | V-0034 | Seal kit (description page 11) |
| o. A. | V-0039 | Valve kit (description page 11) |
| o. A. | V-0035 | Compressed air inlet fitting M5 for 6 mm hose |
| o. A. | V-0036 | Compressed air inlet fitting M5 for 4 hose |



# 9. Spare parts sets

## 9.1 Seal Kit: G-0034

| Order number | Description | Number |
|---|---|---|
| G-0041 | O-ring | 1 |
| G-0023 | O-ring | 1 |
| G-0022 | O-ring | 1 |
| G-0026 | O-ring | 1 |
| G-0028 | O-ring | 1 |
| G-0045 | Seal | 1 |
| Luer lock 75 | Luer lock adapter black | 1 |

## 9.2 Valve kit: G-0039

| Order number | Description | Number |
|---|---|---|
| G-0022 | O-ring | 1 |
| G-0023 | O-ring | 1 |
| G-0026 | O-ring | 1 |
| G-0028 | O-ring | 1 |
| G-0041 | O-ring | 1 |
| G-0045 | Seal | 1 |
| G-0020 | Seegerring | 1 |
| G-0021 | Nylon disc | 1 |
| G-0048 | Plastic disc | 2 |
| G-0040 | Valve seat | 1 |
| G-0046 | Piston with valve needle | 1 |
| Luer lock 75 | Luer lock adapter black | 1 |

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