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TRANSLATION OF ORIGINAL - en

Operating and installation instructions

Keep for future use!

Version: 1.3

DV VN8-D

Dosing valve VN8

Scope

Assembly: Dosing valve VN8

Item Number	Product Version
3HDAK0100064887	DV VN8-D 12 AL 20 630
3HDAK0100064889	DV VN8-D 12 AL 100 630
3HDAK0100064890	DV VN8-D 12 VA 20 615
3HDAK0100064891	DV VN8-D 12 VA 100 615
3HDAK0100073390	DV VN8-D 12 AL 100 630 HM

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1 General information

1.1 Purpose of these instructions

This document describes the use and installation of the assembly. The manual is meant to enable to integrate the module into a safe system and successfully perform necessary maintenance and repair work.

IMPORTANT

Follow these instructions!

- These instructions must be assessable to everybody that handles this module in any way.
- The operating company must ensure that these instructions are read and understood by everybody that handles this module in any way.

The components connected to this module are covered in separate instruction manuals.

DOCUMENTS REFERENCE

Observe reference documents**!**

- Read the instruction manual for the module in its entirety before operating the equipment for the first time!
- Also note the corresponding chapter of the provided sub-contractor documentation of purchased parts! If you have any questions please contact our Customer Service or the manufacturers directly.

1.2 Target readership of these instructions

These instructions must be used both by operating and by maintenance and repair personnel.

Persons working with the plant must have been suitably trained by the manufacturer or plant owner.

The repair personnel must be suitably trained.

Personnel	Prerequisites
Briefed personnel	Operating personnel are people who have been instructed by the plant owner or trained persons to carry out tasks relating to the operation of the plant. They must provide instruction about possible dangers arising from incorrect behaviour and about the required protective equipment and safety measures.
Trained personnel	Has received in-depth subject education and training, is cable to assess the plant's safety status and is familiar with the applicable accident prevention and health and safety regulations and with the acknowledged rules of technology.

Table 1: Personnel skills requirements

The table below outlines what work each of these user groups is authorised to perform:

Activity	Briefed personnel	Trained personnel
Operating the plant	X	X
Perform maintenance and repair work and tooling		X

Table 2: Personnel and their activities

1.3 Legal Notice / Liability

The manufacturer assumes warranty and liability claims only under the conditions specified in the contract and in compliance with the warranty periods.

The warranty expires:

- In the event of errors and damages that can be attributed to the fact that instructions in the manual have not been observed,
- In the event of complaints that can be attributed to the fact that others then the original parts specified in the documentation were used when replacing components,
- When changing the module (function, operating parameters) disregarding the conditions specified in the order and without prior consent of the manufacturer.

The content of the technical documentation has been prepared with the utmost care. However no liability is assumed for possible errors or incompleteness. This also applies to the content of the technical documentation of all sub-contractors.

Technical changes and errors are not impossible.

1.4 Information symbols used in these instructions

The entire documentation contains notes about workplace safety that are intended to prevent injury.

These notes are labelled with the following signs and symbols:

DANGER

This box indicates an immediate danger.

Unless prevented, this situation can lead to severe injury or death.

WARNING

This box indicates a potentially dangerous situation.

Unless prevented, this situation can lead to severe injury or death.

CAUTION

This box indicates a potentially dangerous situation.

Unless prevented, this situation can cause minor injury or material damage.

IMPORTANT

This box indicates a potentially dangerous situation.

Unless avoided, this situation can lead to material or product damage.

NOTE

This box contains important notes that require special attention.

Notes without a specific sequence are given with bullet points. If a specific order is necessary, these notes are numbered.

DOCUMENTS REFERENCE

This box contains cross-references to associated documents.

References without a specific sequence are given with bullet points. If a specific order is necessary, these references are numbered.

ENVIRONMENTAL PROTECTION

This box contains information about environment-conscious procedures and behaviour.

It may indicate environment protection measures.

Symbol	Meaning
	This symbol prohibits access for unauthorized persons.
	This symbol prohibits touching of plant components or workpieces.
	This symbol prohibits reaching into the plant component.
	This symbol prohibits stepping onto the plant component or workpiece.
	This symbol indicates that the instructions must be observed.
	This symbol specifies wearing of suitable protective clothing.
	This symbol specifies wearing of suitable safety shoes.
	This symbol specifies wearing of suitable protective gloves.
	This symbol specifies wearing of head protection (hard hat).
	This symbol specifies wearing of suitable protective goggles.
	This symbol specifies wearing of hearing protection.

Symbol	Meaning
	This symbol indicates general hazard locations and information about general dangers.
	This symbol indicates hazard locations at which hand injuries are possible.
	This symbol indicates dangers through electric current.
	This symbol warns of a laser or other strong light source that could cause eye injury.
	This symbol warns of uneven ground or other structural characteristics that can cause tripping.
	This symbol indicates plant components that can start to move automatically and cause injury.
	This symbol warns of hot surfaces.
	This symbol warns of dangerous plant components that can trap and draw in clothing or limbs, resulting in serious or fatal injury.
	This symbol indicates obstacles at head height, which can cause severe head injuries.
	This symbol indicates a risk of crushing that can cause severe injuries.

(Symbols according to DIN EN ISO 7010)

Table 3: Meaning of the pictograms (prohibition, mandatory and warning signs)

2 Safety

2.1 Proper Use

This module is intended for industrial use in a commercial environment.

The dosing valve precisely doses material for application. It is fitted to the dosing unit.

Any use of this assembly other than that for which it is intended is not considered proper use.

Its connection to a power or compressed air network must be carried out by qualified specialists, observing the generally applicable technical rules of technology.

Maintenance and repair work must be performed only by qualified specialists.

Operation only by briefed persons and specialists. Incorrect operation can cause faults and loss of plant functionality.

The intended use also includes:

- Compliance with the intervals indicated in the maintenance plan.
- Observe all notes in the documentation.

The components connected to this module are covered in separate instruction manuals.

DOCUMENTS REFERENCE

Observe reference documents!

- Read the instruction manual for the module in its entirety before operating the equipment for the first time!
- Also note the corresponding chapter of the provided sub-contractor documentation of purchased parts! If you have any questions please contact our Customer Service or the manufacturers directly.

DANGER

Danger of life due to improper use!

The improper use of this assembly may result in death or serious injury to persons who are on the assembly as well as serious damage to other property.

Intentional misuse of this assembly is prohibited.

The plant's owner/operator is liable for any injury or material damage resulting from improper use of this assembly. The manufacturer does not accept liability in this case.

2.2 Realistically predictable misuse fault

► Use of materials and substances in the material supply (glue application) system other than those approved for this assembly.

► Use of tools and aids other than those listed in these instructions.

2.3 Safety Notes

When working on or with the assembly, observe the following general safety instructions:

1. The safety instructions must be observed at all times to prevent accidents.
2. The Occupational Safety Provisions and Accident Prevention Regulations of the relevant country are applicable in which the component is operated.
   - The operating company of the system is responsible for implementing these provisions.
3. For work on the assembly, the personnel has to have access to personal protective equipment such as protective work wear, safety gloves, helmet and safety goggles.

In addition, the following points must be observed during assembly:

4. The assembly and installation of the products may only be carried out by trained maintenance and repair personnel.
5. It may only be used the tools and equipment specified in this manual.
6. All work described here may only be carried out on a pressure- and voltage-free system. The system must be protected against restarting.
7. The function of the module can only be granted if the assembly is carried out according to these instructions!

2.4 Risks in Using the Module

DANGER

Danger through electric current!

Risk of serious or fatal injury through incorrect handling.

Only qualified electricians must operate or work on the electrical installation. The plant must be isolated from mains power and secured against restarting during this work. Observe all information about machine parts that remain live when the plant is switched off at the main switch.

WARNING

Risk of injury through sudden plant startup!

When re-establishing the energy supply after an interruption, the plant can unexpectedly restart. This can cause severe injuries.

During maintenance work, switch off the plant and secure it against restarting (main switches and shut-off valves). Observe the safety instructions in the plant documentation. The plat operating personnel must receive regular training in operation and handling of the plant and its components.

WARNING

Pressurized material!

Technical defects or incorrect handling can cause pressurized material to escape. Splashing or spraying material can cause severe eye injuries!

Carry out regular visual inspections of the material supply lines. Relieve the working pressure before starting work. Wear your personal protective clothing.

WARNING

Contact with solvents, adhesives and sealants!

Contact with eyes or skin causes injury.

Place the relevant safety data sheets in a clearly visible place on the plant and instructor the personnel. All work on the material supply lines and adjacent components must be carried out only by trained, briefed specialists and with sufficient ventilation. Within the area of the plant, eating, drinking, smoking, snuffing tobacco etc. is prohibited. Dispose of spilt or escaped material immediately and according to regulations. The specified protective clothing must be worn when working on the material supply lines and adjacent components.

WARNING

Danger through incorrect behaviour when troubleshooting!

Incorrect user action during troubleshooting can result in uncontrolled movement, which, in turn, can cause injuries.

Use the operating instructions in the technical documentation for troubleshooting and fault rectification. The maintenance personnel must be suitably trained. Troubleshooting and fault rectification work on the assembly must be carried out by trained, briefed specialists. If the fault cannot be rectified easily, notify the manufacturer about the fault.

NOTE

The plant must be entered for repair and maintenance work only when it is at a standstill.

2.5 Safety Measures

When working with the module, the following protective equipment must be provide:

- Always wear protective clothing and safety shoes according to accident prevention and industrial safety regulations.

- If necessary, use protective gloves or disposable gloves when working on the material and hydraulic system.

- When working on the material, compressed air and hydraulic system also wear protective goggles.

- When working within the machine wearing a head protection (protection against bumping) is required.

NOTE
 Check your protective clothing before each use!

3 Technical Data

3.1 General technical data

3.1.1 Dimensions

Dimensions (l × w × h):	100 mm x 100 mm x 180 mm
Net weight:	approx. 2.9 kg

3.1.2 Power supply / rating

Air supply:	4.5 – 8.0 bar
Air quality:	ISO 8573-1:2010 (7:4:4)
Max. permissible material pressure:	250 bar
Noise emission:	<78 dB

Optional with heated product variant:

Rated voltage:	230 V
Frequency:	50 Hz
Rating:	200 W

3.1.3 Ambient conditions

Ambient temperature

- Storage and transport: 0 °C to +55 °C
- Operation: +10 °C to +40 °C

Relative humidity

- Storage and transport: < 95 %, non-condensing
- Operation: < 65 %, non-condensing

3.2 Operating and Auxiliary Materials

Operating and auxiliary substances	Manufacturer
▶ Assembly grease Aviaticon EP-07	Finke (www.finke-mineraloelwerk.de)
▶ Festo special-purpose grease LUB-KB2 (silicone-free)	Festo (www.festo.de) ⚠
▶ White special Vaseline	Reiff (www.reiff-tp.de)
▶ Cleaning cloths WYPALL 7722	Kimberly-Clark (www.kcprofessional.com)

NOTE

Do not replace substances marked ⚠ with other products!

4 Description of the assembly

4.1 Overview of dosing valve

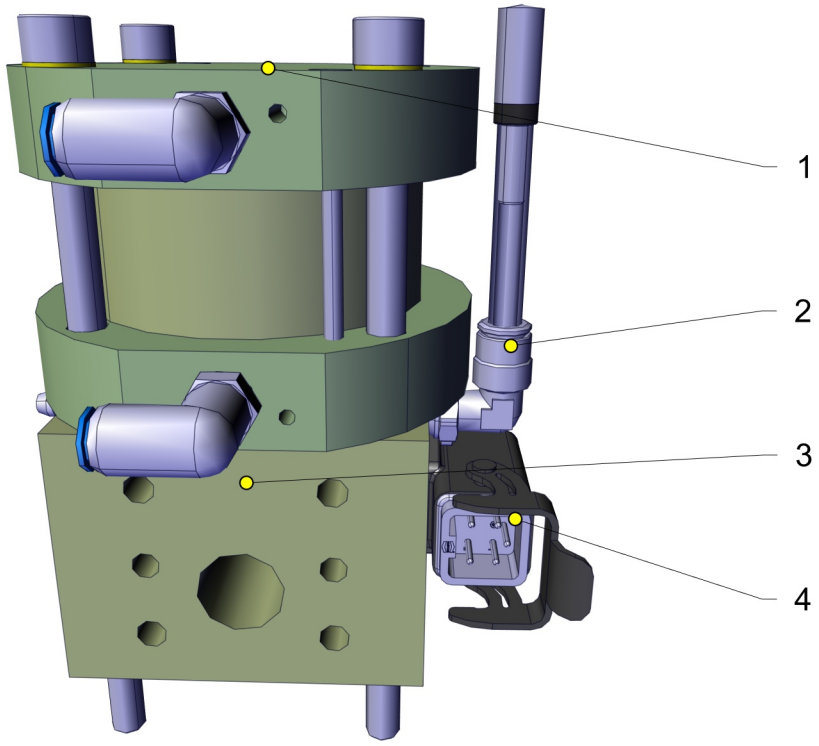


Figure 1: Design of dosing valve

No.	Component	Function
1	Drive	Lifts the needle off the nozzle plate.
2	Leakage indicator	Discharges leakage to prevent it from entering the drive.
3	Valve body	Holds the nozzle plate and the seal holder.
4	Heating with Pt100 (optional)	The heater consists of an 8 mm heating cartridge with 200 W. The integrated Pt100 resistance temperature detector measures the temperature of the valve body.

Table 4: Components of the DV VN8-D

4.2 Functional description

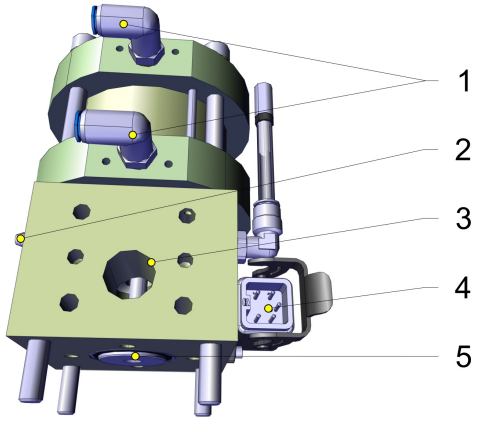
The dosing valve opens or shuts off the material lines up- and downstream of dosing units. This is achieved with a needle that opens a hole in a nozzle plate. The needle stroke is 2 mm, resulting in short response times.

It is actuated with a relatively large pneumatic actuator to ensure that the valve remains leak tight at pressures of up to 250 bar. A built-in pressure spring closes the valve if the compressed air supply fails.

The needle seal is of a dual design for a long service life. Behind the seals, these is a channel with the connections for lubrication and leakage indication.

The valve is equipped with a controlled 200 W heater. It is controlled by the dosing unit's controller.

4.3 Connections



DOCUMENTS REFERENCE

For terminal assignment, cable types and lengths of the preassembled cables, see the circuit diagram.

Figure 2: Dosing valve connections

No.	Description
1	Pneumatic connections – dosing valve control.
2	Grease nipple for connection of a grease gun (maintenance and repair)
3	Connection to application (material inlet or outlet)
4	Electrical power supply connection – power supply (optional)
5	Connection to application (material inlet or outlet)

Table 5: Description of Connections dosing valve VN8-D

4.4 Interfaces to other components

The dosing valve is flange-fitted. On the underside, there is a nozzle plate, which is always bolted to the dosing unit’s connection block. On the side, there is a flange with ½” threaded holes. There, material hoses are connected either directly with screws or using connection blocks. This allows a modular arrangement of single, dual and 2C dosing systems.

5 Installation

5.1 Notes

- ► All work described here may only be carried out on a pressure- and voltage-free system. The system must be protected against restarting.
- ► The safety and accident prevention regulations given in these documentations must also be observed.
- ► Assembly work must be carried out by the manufacturer, by specially briefed personnel or by trained personnel.

NOTE
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5.2 Tools and accessories

The following tools and accessories are required for installation, uninstallation, maintenance and repair of the assembly:

- ► Set of Allen keys
- ► Set of open-end spanners
- ► Electrical clamping tools

5.3 Uninstalling the assembly

DOCUMENTS REFERENCE
 **Observe associated documents!** For information about operating the glue feed controller, see the user manual for the general assembly.

NOTE
 You can find the overview illustrations in Chapter 4, "Description of the assembly".

To uninstall the assembly, take the following steps:

1. Release the material hose.
2. Take the inlet block off the dosing valve and secure the O-ring.
3. Pull the pneumatic hoses and, if necessary, the heater cables off the dosing valve.
4. Release the socket head screws on the dosing valve.
5. Remove the dosing valve.

5.4 Installing the assembly

To install the assembly, take the following steps:

1. Flange the dosing valve with the socket head screws.
2. Fit the inlet block with O-ring.
3. Fit the material hose.
4. Connect the pneumatic hoses and, if necessary, the heater cables to the dosing valve.

DOCUMENTS REFERENCE

For connection and terminal assignments, cable types and lengths of the preassembled cables, see the circuit diagram.

Before commissioning the assembly, the following point must be observed:

5. Having successfully installed the assembly, it must be purged together with the connected system.

DOCUMENTS REFERENCE

Observe associated documents!

For information about operating the glue feed controller, see the user manual for the general assembly.

NOTE

You can find the overview illustrations in Chapter 4, "Description of the assembly".

6 Maintenance and Repair

6.1 Notes

Maintenance personnel must be familiar and apply the general and special safety regulations and recommendations of the employers' liability insurance association.

DOCUMENTS REFERENCE
Observe the "Maintenance Schedule" of the complete documentation and the electrical, pneumatic and hydraulic circuit diagrams. Observe also the relevant chapters of the supplied purchased parts documentation!

The safety and accident prevention regulations given in these documentations must also be observed.

NOTE
Carry out maintenance and repair work as described in these documentations.

Any damage or malfunction must be remedied immediately by qualified specialist personnel.
Repairs must be carried out by the manufacturer or by briefed specialists.

IMPORTANT
If you have any questions, contact our customer service.

Before Start Maintenance work, observe the following points:

- The work described here must be carried out only with the plant depressurized and isolated from mains power.
- The plant must be secured against unauthorized restarting during this work
- Isolate the plant from its electrical supply and depressurize it.

6.2 Lubricating the needle

Regular lubrication of the needle increases the service life of the seals and reduces wear of the needle and the metal guides.

The needle is supplied pre-lubricated with technical Vaseline.

To lubricate the needle, the leakage indicator must first be removed.

To lubricate, use the grease nipple on the side with a suitable grease gun. Press Vaseline into the dosing valve until it emerges from the leakage opening. Wipe off the escaped Vaseline.

Then refit the leakage indicator.

IMPORTANT

Use Vaseline to grease the needle.
Recommended: White special-purpose Vaseline from Reiff
You can replace this with a higher-grade bearing grease (e.g. SKF LGEP 2).

Observe the following lubrication points during maintenance of the dosing valve:

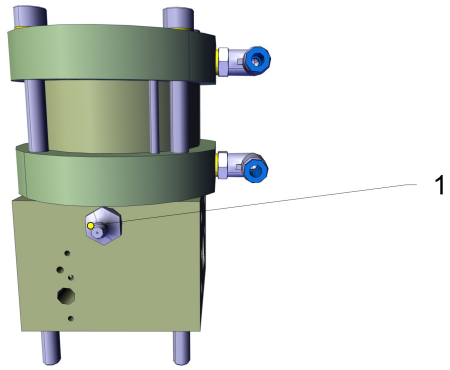

Figure 3: Lubrication point

No.	Description
1	Lubricating the needle

Table 6: Lubrication points of the DV VN8-D

NOTE

Observe the specified maintenance intervals.

6.3 Replacing seals

Defective seals can be identified with the help of the leakage indicator.

To replace the seal, uninstall the dosing valve from the depressurized plant (see "Uninstalling the assembly").

Remove and clean the valve body as described in the overhaul instructions. When assembling the dosing valve, fit the new seals.

DOCUMENTS REFERENCE
For a detailed description of how to disassemble the dosing valve, see the overhaul instructions for the dosing valve.

The dosing valve can then be reinstalled in the pressureless system (see "Installing the assembly").

6.4 Overhaul

For maintenance and repair work on the assembly partially special skills are required mediated as part of a separate training by the manufacturer.

DOCUMENTS REFERENCE
Observe associated documents! The revision instruction for the assembly will only be handed over after the appropriate training of the maintenance and repair personnel by the manufacturer.

NOTE
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6.5 Handling of faults

IMPORTANT

Removal of faults

Faults which are not removed or removed improperly can lead to faulty products, damages to the plant or personal and property damage in adjoining areas!

Faults influence directly the proper operation of the plant! Faults have to be analysed and removed immediately!

6.5.1 Dosing valve does not switch

If the applied compressed air values do not meet requirements, the valve switches incorrectly or not at all. Damaged needle seals could also be a possible cause. Check for possible defects and re-establish the operational values. Replace any defective components. Follow the overhaul instructions.

As a general rule, check the plant for leakage whenever the pressure values deviate.

6.5.2 Application pressure is too high

If the application pressure is too high or if material continues to exit from the dosing valve during an interruption in application, the nozzle is clogged or the needle no longer fully seals the nozzle. With 2C and booster applications, there is a risk that the two components react with each other and clog the mixing tube.

In that case, the valve must be removed and inspected. Replace any defective components.

6.5.3 Nonconforming application results

Insufficiently discharged material beads or entrapped air can be prevented by regularly cleaning the assembly and re-purging the entire material fed system before restarting the plant after maintenance and repair work and after longer production pauses.

6.6 Maintenance intervals

Pos	Plant component	Activities	Operation	Maintenance interval					Remarks
			... whichever occurs first!						
			Cycles	EOS	D	W	M	Y	
1	General	Perform general visual inspection for obvious defects.		1					Replace faulty components immediately.
2	General	Perform general visual inspection for soiling.		1					Clean soiled components immediately.
3	General	Check all electrical and pneumatic connecting elements for condition and firm seat.				1			Replace any faulty components immediately.
4	General	Check all screw couplings for firm seat.					1		Retighten any loose connections.

Table 7: Maintenance intervals, general

1	Dosing valve	Check for leaktightness.			1				Immediately eliminate any leakage.
2	Dosing valve	Lubricate the needle.	20.000				3		Vaseline, two strokes from grease gun.
3	Dosing valve	Overhaul.	100.000					1	Replace all wear parts.

Table 8: Dosing valve maintenance intervals

IMPORTANT

Note on the warranty of wear parts

The replacement intervals of the seals and gaskets depend, among other things, on pressure, temperature, material and volume flow.

The manufacturer does not assume any warranty for the service life of the seals.

Replace any worn components immediately.

Column	Meaning
Cycles	Number of cycles after which maintenance must be performed.
EOS	The maintenance must be performed before the shift change.
D	The maintenance must be performed every X days.
W	The maintenance must be performed every X weeks.
M	The maintenance must be performed every X months.
Y	The maintenance must be performed every X years.

Table 9: Legend to maintenance intervals

X stands for the value in the table.

All figures are recommendations and may have to be adapted to the applicable requirements.

Maintenance and repair work must be performed only with the entire plant at standstill.

All maintenance and repair work within the cell to be performed only by trained, briefed specialists.

Observe the maintenance and repair instructions in the maintenance schedule for the overall plant in this technical documentation.

NOTE
 The regular inspection of the pneumatic and electrical installation must be carried out only at plant standstill. All work must be carried out by trained, briefed specialists.