

DSS dosing skid station

Installation and operating instructions



Original installation and operating instructions

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Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.



Warning

Read the installation and operating instructions of the components used.

1. General information

These installation and operating instructions apply to Grundfos DSS (dosing skid station) systems equipped with Grundfos dosing pumps.

The proper functioning of a DSS system depends on the following points:

- correct operation
- regular maintenance
- regular control of the dosing performance
- provision of the necessary resources and spare parts.

2. Safety information

Non-observance of the safety instructions may have dangerous consequences for the staff, the environment and the product and may result in the loss of any claims for damages.

Should you require further information, please contact Grundfos.

2.1 Target group

These installation and operating instructions contain general instructions that must be observed during installation, startup, operation and maintenance of the product. The responsible staff must read these installation and operating instructions prior to any work at the product. These installation and operating instructions must be available at the installation location at all times.

2.1.1 Qualification and training of staff

The staff responsible for the installation, startup, operation and maintenance must be qualified for these tasks. Areas of responsibility, levels of authority and the supervision of the staff must be precisely defined by the operating company. If necessary, the staff must be trained.

2.1.2 Obligations of the operating company

- Observe the local safety regulations.
- Instruct the operating staff.
- Provide the stipulated safety equipment and personal protective equipment.
- Arrange regular maintenance.

2.1.3 Obligations of the user

- Read this manual thoroughly before putting the product into operation.
- Observe the recognised health and safety regulations as well as the accident prevention regulations.
- Wear protective equipment in accordance with national health and safety regulations when working at the system and handling chemicals.

2.2 Symbols used in this document



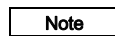
Warning

If these safety instructions are not observed, it may result in personal injury.



Caution

If these safety instructions are not observed, it may result in malfunction or damage to the equipment.



Note

Notes or instructions that make the job easier and ensure safe operation.

2.3 Safety-related symbols on the product

Symbol	Description
	Indication of universally dangerous spot.
	In case of emergency and prior to all maintenance work and repairs, take the mains plug out of the mains supply.
	The product complies with electrical safety class II.
	Connection for deaeration hose at dosing head. If the deaeration hose is not correctly connected, danger will arise due to possible leakage of dosing medium.

All signs and symbols on the product must be observed and kept legible.

2.4 Safety instructions for the user



Warning

Observe the local regulations for work safety.
Observe the safety data sheets of the supplier of chemicals.

All work on the DSS systems must be carried out by authorised and qualified staff.

Wear protective clothing when working on the DSS systems.

2.5 Unauthorised changes

No changes of the DSS systems are allowed without prior consent of or agreement with the supplier.

Use only original accessories and original spare parts. Use of other parts or modification of the DSS systems can result in malfunction of the product.

2.6 Safety of the system in the event of product failure

Use appropriate monitoring and control devices in order to ensure the overall safety of the system in case the product fails.



Warning

Danger of personal injury due to contact with chemicals.

Make sure that leaking chemicals do not cause personal injury or damage to property.

We recommend installation of leakage monitoring solutions and drip trays.

2.7 Working with chemicals



Warning

Danger of personal injury due to contact with chemicals.

Wear the stipulated personal protective equipment (protective clothing, goggles, respirator etc.) when handling chemicals.

Observe the chemicals manufacturer's safety data sheets and safety instructions of the chemicals used.

Make sure that parts in contact with the chemicals are resistant to the chemicals under the specific operating conditions.

Caution

Should you have questions regarding the material resistance of the product to specific chemicals, please contact Grundfos.

3. Product introduction

The DSS systems consist of one or more dosing pumps mounted in a cabinet together with optional equipment. See section [3.3 Product overview](#).

The DSS systems are always designed as customer-specified products. A drawing of the DSS system including product number, specified materials and components is supplied with the DSS system. Make sure to keep this drawing together with the installation and operating instructions as it gives important specifications as to the proper use of the DSS system.

3.1 Intended use

- The DSS systems are intended for dosing certain liquid dosing media according to an agreement with the customer.
- The operating safety of the DSS systems is only ensured, if it is used for the specified application and media, and in accordance with the values mentioned in section [4. Technical data](#). The specified limit values must not be exceeded.
- The DSS systems may only be operated by technical staff in accordance with the installation and operating instructions.
- Modifications to the DSS system are only permitted with the consent of the manufacturer. Original spare parts and accessories approved by the manufacturer are safe to use.



Warning

Any usage other than that described here is not intended. Grundfos accepts no liability for any injuries or damage resulting from improper use.

3.2 Improper use

- The DSS systems are not intended for dosing explosive, gaseous, highly viscous, solid media, or media containing abrasive or long-fibred particles.
- The DSS systems are not intended for operation in other conditions than specified in the agreement with the customer or described in section [4. Technical data](#).



Warning

Any improper use can lead to personal injury and damage to the equipment.

Note

Observe the freezing and boiling points of the dosing medium at operating pressure. Observe the temperatures specified.

The operational safety of the product is only guaranteed, if it is used in accordance with section [3.1 Intended use](#).

- The product must not be used for media that are not specified in the agreement between Grundfos and customer.
- The product must not be used in potentially explosive areas.
- The product must not be used in food-processing systems.
- The product must not be used if it is damaged.
- The product must not be used after improper repair.
- The product must not be used after unauthorised modification.

3.3 Product overview

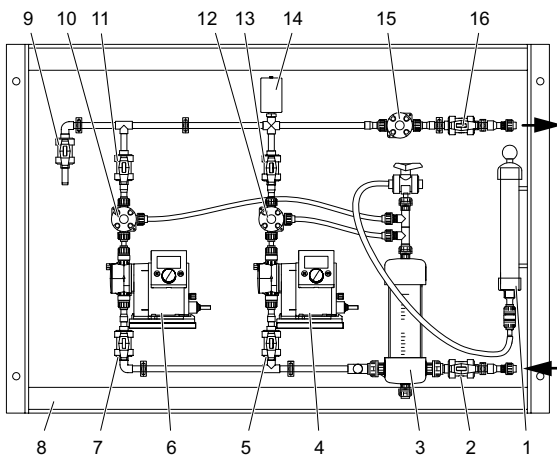


Fig. 1 Example of a DSS system

Pos.	Description
1	Manual vacuum pump (suction aid)
2	Suction-side isolating valve
3	Suction-side pulsation damper
4	Dosing pump
5	Suction-side isolating valve for dosing pump
6	Dosing pump (standby)
7	Suction-side isolating valve for dosing pump (standby)
8	Drip tray
9	Drain/flush valve
10	Safety valve for dosing pump (standby)
11	Discharge-side isolating valve for dosing pump (standby)
12	Safety valve for dosing pump
13	Discharge-side isolating valve for dosing pump
14	Discharge-side pulsation damper
15	Pressure-loading valve
16	Discharge-side isolating valve

4. Technical data

The values stated in the technical data of the components must be observed.

Caution

For the entire system, the value of the component with the most limited value applies.

Caution

The dosing medium must be in liquid state. Observe the freezing point of your dosing medium.

Refer to the installation and operating instructions of the dosing pump and characteristic of the dosing medium.

5. Transport and storage

Caution

Transport the DSS system carefully and only at temperatures above 5 °C.
Risk of breakage.

Note

The DSS system is tested for tightness in the factory. Some residual water may still be present in the fittings and pipes.

- Check the DSS system for transportation damage or missing parts.
- Store the DSS system in a sheltered place at temperatures between 5 and 45 °C.

6. Installation



Warning

Make sure that the room where the DSS system is installed has sufficient ventilation.



Warning

Protect the DSS system against unauthorised access.

Caution

The dosing medium must be in liquid state. Observe the freezing point of your dosing medium.

Note

Keep the DSS system freely accessible for operation and maintenance.
Provide sufficient lighting.

6.1 Hydraulic connection

Mount the DSS system with a support on a wall, or on a suitable steel frame, depending on its weight.

Keep the minimum diameter of the suction and discharge lines (see provided drawing). Too small diameters may cause damage to the DSS system and the dosing pump.

Depending on the viscosity and density of the dosing medium, the number of valves and fittings, and the length of the pipes, an increase of the diameter may be required.

The discharge line is dimensioned in such a way that pressure peaks during the discharge stroke do not exceed the pressure limit of the pump.

The suction line is dimensioned in such a way that the minimum pressure during the suction stroke of the pump does not fall below the vapour pressure of the dosing medium.

- Install the suction line with a continuous upward slope towards the dosing pump.
 - If this is not possible, use a manual vacuum pump (suction aid).
- If the DSS system has a water flush connection, connect it to the water supply only during flushing.
 - Observe possible siphoning effects.

6.2 Electrical connection



Warning

Observe the local regulations when connecting the DSS system to the power supply.

- Cables must comply with EN 60204-1 to meet the operating requirements and withstand external influences.
- The electrical components must be secured against short circuit and overload in accordance with EN 60204-1.
- DSS systems installed outdoors must be sheltered to allow trouble-free operation.
 - Exceptions are DSS systems equipped with an IP65 outdoor cabinet with integrated heating.
- An emergency stop switch is included in the delivery. The emergency stop switch must be installed near the DSS system in a place where it can be reached easily. The emergency stop switch must be connected to the control cabinet.

7. Startup



Warning

Some chemicals react with water, which can lead to explosions. If the dosing medium can react with water, the DSS system must be flushed with a medium compatible with both water and the dosing medium first, to remove remaining water in the DSS system.

Caution

Prior to startup, flush all tanks and pipes.

An initial test can be made with water if the dosing medium is compatible with water.

Note

The DSS system is tested for tightness in the factory. Some residual water may still be present in the fittings and pipes.

1. Retighten all threaded joints.
2. Check the tightness of the entire DSS system and all pipes.
3. Check the electrical wiring and the power supply.
4. For dosing pumps with three-phase motors, additionally check the direction of rotation and the setting of the motor protection.
5. Install the suction line with foot valve in the dosing tank.
 - Install the suction line with a continuous upward slope towards the dosing pump.
6. Make sure that the valve at the flush connection is closed.
7. Open the isolating valves for the dosing pump.
8. Vent the pump.

Procedure for venting a pump via the flush connection:

 - Open the valve at the flush connection by turning it left.
 - Flush liquid pressure: maximum 0.5 bar above the operating pressure.
 - Close the valve at the flush connection by turning it right.
 - Disconnect the hose from the flush connection.
9. Check the proper interaction of all accessories such as leakage detection, level switch, alarm relay, with the controller of the installation.
10. Make sure that the valve at the flush connection is closed.

7.1 Calibration

Calibration must be done with the dosing medium. For details on calibration, see installation and operating instructions of the dosing pump.

8. Operation

In normal operation, the DSS system operates independently.

- Do not close the isolating valves on the discharge side of the pump during normal operation.
 - Otherwise the safety valve will open.
- Keep all isolating valves closed, that are not in the line between the dosing medium inlet and the injection point, e.g. valves (pos. 7, 10, 11) of standby pump (pos. 6) and drain/flush valve (pos. 9). See fig. 1.
- Do not close or block the vent hole of the dosing tank.
- Do not contaminate the dosing tank.

9. Maintenance

9.1 Safety instructions



Warning

Cleaning and maintenance must only be carried out by authorised and qualified staff.

Wear the stipulated personal protective equipment (protective clothing, goggles, respirator etc.) when handling chemicals.

Observe the chemicals manufacturer's safety data sheets and safety instructions of the chemicals used.

Warning

Shut down the entire installation before starting any work on the system components and lines.

Before starting maintenance work, disconnect the DSS system from the power supply.

Before starting maintenance work, depressurise the discharge line.

Drain and flush dosing head, valves and pipes.



Warning

Safety devices, which have been deactivated during maintenance, must be activated again immediately after maintenance.



Note

Store important spare parts close to the DSS system.

9.2 Maintenance intervals

9.2.1 Daily checks

- Inspect the tightness visually.

9.2.2 Regular checks

Regular checks must be carried out weekly or monthly, depending on the type of dosing pump and dosing medium. See the installation and operating instructions of the dosing pump and characteristic of the dosing medium.

- Check the dosing performance.
- Check the strainer and the foot valve,
 - clean the strainer, if necessary.
- Maintain the dosing pump,
 - see installation and operating instructions of the dosing pump.
- Maintain the pressure loading valve,
 - see installation and operating instructions of the pressure loading valve.
- Check all accessories such as leakage indication, level switch, alarm relay for their proper functioning.

9.2.3 Annual checks

- Check the entire installation,
 - replace gaskets, O-rings, diaphragms and other wear parts, if necessary.

Note

After maintenance, check the proper functioning and tightness of the entire installation.

10. Long-term shutdown





Warning

Some chemicals react with water, which can lead to explosions. If the dosing medium can react with water, the DSS system must be flushed with a medium compatible with the dosing medium.

1. Flush the dosing tank, lines, pipes, connections and pumps.
 - The flushing can be done with water if the dosing medium is compatible with water.
 - In case of danger of frost, remove remaining liquid from tanks, lines and connections with compressed air.
2. Disconnect the DSS system from the power supply.

11. Disposal

This product or parts of it must be disposed of in an environmentally sound way. Use appropriate waste collection services. If this is not possible, contact the nearest Grundfos company or service workshop.

Declaration of incorporation	
according to the EU Machinery Directive 2006/42/EC, Annex II 1. B	
for partly completed machinery	
Manufacturer	Person established in the Community authorised to compile the relevant technical documentation
Grundfos Water Treatment GmbH Reetzstr. 85 DE - 76327 Pfinztal/Söllingen	Manja Steiner Grundfos Water Treatment GmbH Reetzstr. 85 DE - 76327 Pfinztal/Söllingen
Description and identification of the partly completed machinery	
Product / Article	DSS System
Type	DDA, DDC, DDE, DDI, DME, DMX, DMH
Serial number	See nameplate on the machine
Project number	2017/03_EN
Commercial name	Cabinet installed dosing system
Order	Standard
Function	The DSS systems consist of one or more dosing pumps which are mounted together with optional equipment in a cabinet and are always designed according to customer specifications. A drawing of the DSS system, the product number, specified materials and components, is delivered with the DSS system. Keep this drawing with the assembly and operating instructions, as it contains important specifications for the correct use of the DSS system.
It is expressly declared that the partly completed machinery fulfils all relevant provisions of the following EU Directives or Regulations:	
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1) Published in L 157/24 of 09.06.2006
Reference to the harmonised standards used, as referred to in Article 7 (2):	
EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
It is also declared that the relevant technical documentation has been compiled in accordance with part B of Annex VII.	
The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place PDF.	
This does not affect the intellectual property rights!	
Important note! The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.	
 	
Pfinztal/Söllingen, 29.05.2017	
Stemick, Ulrich Technical Direktor	Ludmann, Serge Head of CSU Project Department

Einbauerklärung

im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anh. II 1. B
für unvollständige Maschinen

Hersteller

Grundfos Water Treatment GmbH
Reetzstr. 85

DE - 76327 Pfinztal/Söllingen

In der Gemeinschaft ansässige Person, die bevollmächtigt ist, die relevanten technischen Unterlagen zusammenzustellen

Manja Steiner
Grundfos Water Treatment GmbH
Reetzstr. 85
DE - 76327 Pfinztal/Söllingen

Beschreibung und Identifizierung der unvollständigen Maschine

Produkt / Erzeugnis	DSS-System
Typ	DDA, DDC, DDE, DDI, DME, DMX, DMH
Seriennummer	siehe Typenschild am Gerät
Projektnummer	2017/02_DE
Auftrag	Standard
Funktion	Die DSS Systeme bestehen aus einer oder mehreren Dosierpumpen, die zusammen mit optionaler Ausrüstung in einem Schrank montiert sind und werden immer nach Kundenspezifikation konstruiert. Eine Zeichnung des DSS Systems, die Produktnummer, spezifizierte Werkstoffe und Komponenten enthält, wird mit dem DSS System ausgeliefert. Bewahren Sie diese Zeichnung zusammen mit der Montage- und Betriebsanleitung auf, da sie wichtige Spezifikationen zur korrekten Verwendung des DSS Systems enthält.

Es wird ausdrücklich erklärt, dass die unvollständige Maschine allen einschlägigen Bestimmungen der folgenden EG-Richtlinien bzw. Verordnungen entspricht:

2006/42/EG	Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) (1) Veröffentlicht in L 157/24 vom 09.06.2006
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Fundstelle der angewandten harmonisierten Normen entsprechend Artikel 7 (2):

EN ISO 12100:2010-11	Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobewertung und Risikominderung (ISO 12100:2010)
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Ferner wird erklärt, dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B erstellt wurden.

Der Hersteller bzw. der Bevollmächtigte verpflichten sich, einzelstaatlichen Stellen auf begründetes Verlangen die speziellen Unterlagen zu der unvollständigen Maschine zu übermitteln. Diese Übermittlung erfolgt als PDF.

Die gewerblichen Schutzrechte bleiben hiervon unberührt!

Wichtiger Hinweis! Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen dieser Richtlinie entspricht.

Pfinztal/Söllingen, 29.05.2017



Stemick, Ulrich
Technical Direktor



Ludmann, Serge
Head of CSU Project Department

Déclaration d'incorporation

conformément à la Directive Machine CE 2006/42/CE, Annexe II 1. B
pour quasi-machines

Fabricant

Grundfos Water Treatment GmbH
Reetzstr. 85
DE - 76327 Pfinztal/Söllingen

Personne établie dans la Communauté autorisée à constituer le dossier technique en question

Manja Steiner
Grundfos Water Treatment GmbH
Reetzstr. 85
DE - 76327 Pfinztal/Söllingen

Description et identification de la quasi-machine

Produit	DSS- Système
Type	DDA, DDC, DDE, DDI, DME, DMX, DMH
Numéro de série	Voir la plaque signalétique sur l'appareil
Code projet	2017/02_FR
Commande	Standard
Fonction	Les systèmes DSS se composent d'une ou plusieurs pompes de dosage, qui sont montés conjointement avec des équipements optionnels dans une armoire, et sont toujours construits selon les spécifications du client. Le système DSS est livré avec un plan qui comprend, le numéro de produit, les exigences des matériaux et des composants. Gardez ce plan avec les instructions d'installation et d'exploitation, car il contient des spécifications importantes pour l'utilisation correcte du système DSS.

Une déclaration précise expressément que la quasi-machine satisfait à l'ensemble des dispositions pertinentes des directives ou des règlements CE suivants.

2006/42/CE	Directive 2006/42/CE du Parlement européen et du Conseil du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE (refonte) (1) Publié dans L 157/24 de 09.06.2006
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Fundstelle der angewandten harmonisierten Normen entsprechend Artikel 7 (2):

EN ISO 12100:2010-11	Sécurité des machines - Principes généraux de conception - Appréciation du risque et réduction du risque (ISO 12100:2010)
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Il est indiqué ci-après que le dossier technique spécial a été établi selon l'Annexe VII partie B.

Le fabricant ou son mandataire a l'obligation de transmettre le dossier technique relatif à la machine complète à la suite d'une demande dûment motivée des autorités nationales. Cette transmission a lieu PDF.

Elle ne porte pas préjudice aux droits de propriété intellectuelle du fabricant!

Déclaration importante ! La quasi-machine ne doit pas être mise en service avant que la machine finale dans laquelle elle doit être incorporée ait été déclarée conforme aux dispositions pertinentes de la présente directive, le cas échéant.

Pfinztal/Söllingen, 13.06.2017



Stemick, Ulrich
Technical Direktor



Ludmann, Serge
Head of CSU Project Department

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ECM: 1258502

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