

DMS, Variant B

- ⓖ Installation and operating instructions
- ⓓ Montage- und Betriebsanleitung
- ⓕ Notice d'installation et d'entretien
- ⓓ Istruzioni di installazione e funzionamento
- ⓔ Instrucciones de instalación y funcionamiento
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- ⓖ Οδηγίες εγκατάστασης και λειτουργίας
- ⓓ Installatie- en bedieningsinstructies
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- ⓕ Asennus- ja käyttöohjeet
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Declaration of Conformity

We **GRUNDFOS** declare under our sole responsibility that the products **DMS**, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EEC Member States relating to

- Machinery (98/37/EEC).
Standard used: EN 292.
- Electromagnetic compatibility (89/336/EEC).
Standards used: EN 61 000-6-2 and EN 61 000-6-3.
- Electrical equipment designed for use within certain voltage limits (73/23/EEC).
Standards used: EN 60 335-1 and EN 60 335-2-41.

Konformitätserklärung

Wir **GRUNDFOS** erklären in alleiniger Verantwortung, daß die Produkte **DMS**, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedstaaten übereinstimmen:

- Maschinen (98/37/EWG).
Norm, die verwendet wurde: EN 292.
- Elektromagnetische Verträglichkeit (89/336/EEG).
Normen, die verwendet wurden: EN 61 000-6-2 und EN 61 000-6-3.
- Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (73/23/EVG).
Normen, die verwendet wurden: EN 60 335-1 und EN 60 335-2-41.

Déclaration de Conformité

Nous **GRUNDFOS** déclarons sous notre seule responsabilité que les produits **DMS** auxquels se réfère cette déclaration sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CEE relatives à

- Machines (98/37/CEE).
Standard utilisé: EN 292.
- Compatibilité électromagnétique (89/336/CEE).
Standards utilisés: EN 61 000-6-2 et EN 61 000-6-3.
- Matériel électrique destiné à employer dans certaines limites de tension (73/23/CEE).
Standards utilisés: EN 60 335-1 et EN 60 335-2-41.

Dichiarazione di Conformità

Noi **GRUNDFOS** dichiariamo sotto la nostra esclusiva responsabilità che i prodotti **DMS** ai quali questa dichiarazione se riferisce sono conformi alle Direttive del Consiglio concernente il ravvicinamento delle legislazioni degli Stati membri CEE relative a

- Macchine (98/37/CEE).
Standard usato: EN 292.
- Compatibilità elettromagnetica (89/336/CEE).
Standard usati: EN 61 000-6-2 e EN 61 000-6-3.
- Materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione (73/23/CEE).
Standard usati: EN 60 335-1 e EN 60 335-2-41.

Declaración de Conformidad

Nosotros **GRUNDFOS** declaramos bajo nuestra única responsabilidad que los productos **DMS** a los cuales se refiere esta declaración son conformes con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CEE sobre

- Máquinas (98/37/CEE).
Norma aplicada: EN 292.
- Compatibilidad electromagnética (89/336/CEE).
Normas aplicadas: EN 61 000-6-2 y EN 61 000-6-3.
- Material eléctrico destinado a utilizarse con determinadas límites de tensión (73/23/CEE).
Normas aplicadas: EN 60 335-1 y EN 60 335-2-41.

Declaração de Conformidade

Nós **GRUNDFOS** declaramos sob nossa única responsabilidade que os produtos **DMS** aos quais se refere esta declaração estão em conformidade com as Directivas do Conselho das Comunidades Europeias relativas à aproximação das legislações dos Estados Membros respeitantes à

- Máquinas (98/37/CEE).
Norma utilizada: EN 292.
- Compatibilidade electromagnética (89/336/CEE).
Normas utilizadas: EN 61 000-6-2 e EN 61 000-6-3.
- Material eléctrico destinado a ser utilizado dentro de certos limites de tensão (73/23/CEE).
Normas utilizadas: EN 60 335-1 e EN 60 335-2-41.

Δήλωση Συμμόρφωσης

Εμείς η **GRUNDFOS** δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα **DMS** συμμορφώνονται με την Οδηγία του Συμβουλίου επί της σύγκλισης των νόμων των Κρατών Μελών της Ευρωπαϊκής Ένωσης σε σχέση με τα

- Μηχανήματα (98/37/EEC).
Πρότυπο που χρησιμοποιήθηκε: EN 292.
- Ηλεκτρομαγνητική συμβατότητα (89/336/EEC).
Πρότυπα που χρησιμοποιήθηκαν: EN 61 000-6-2 και EN 61 000-6-3.
- Ηλεκτρικές συσκευές σχεδιασμένες για χρήση εντός ορισμένων ορίων ηλεκτρικής τάσης (73/23/EEC).
Πρότυπα που χρησιμοποιήθηκαν: EN 60 335-1 και EN 60 335-2-41.

Overeenkomstigheidsverklaring

Wij **GRUNDFOS** verklaren geheel onder eigen verantwoordelijkheid dat de producten **DMS** waarop deze verklaring betrekking heeft in overeenstemming zijn met de Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgevingen van de Lid-Staten betreffende

- Machines (98/37/EEG).
Norm: EN 292.
- Elektromagnetische compatibiliteit (89/336/EEG).
Normen: EN 61 000-6-2 en EN 61 000-6-3.
- Elektrisch materiaal bestemd voor gebruik binnen bepaalde spanningsgrenzen (73/23/EEG).
Normen: EN 60 335-1 en EN 60 335-2-41.

Försäkran om överensstämmelse

Vi **GRUNDFOS** försäkrar under ansvar, att produkterna **DMS**, som omfattas av denna försäkran, är i överensstämmelse med Rådets Direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende

- Maskinell utrustning (98/37/EEC).
Använd standard: EN 292.
- Elektromagnetisk kompatibilitet (89/336/EC).
Använda standarder: EN 61 000-6-2 och EN 61 000-6-3.
- Elektrisk material avsedd för användning inom vissa spänningsgränser (73/23/EC).
Använda standarder: EN 60 335-1 och EN 60 335-2-41.

Vastaavuusvakuutus

Me **GRUNDFOS** vakuutamme yksin vastuullisesti, että tuotteet **DMS**, jota tämä vakuutus koskee, noudattavat direktiivejä jotka käsittelevät EY:n jäsenvaltioiden koneellisia laitteita koskevien lakien yhdenmukaistusta seura:

- Koneet (98/37/EY).
Käytetty standardi: EN 292.
- Elektromagneettinen vastaavuus (89/336/EY).
Käytetyt standardit: EN 61 000-6-2 ja EN 61 000-6-3.
- Määrättyjen jänniterajojen puitteissa käytettävät sähköiset laitteet (73/23/EY).
Käytetyt standardit: EN 60 335-1 ja EN 60 335-2-41.

Overensstemmelseserklæring

Vi **GRUNDFOS** erklærer under ansvar, at produkterne **DMS**, som denne erklæring omhandler, er i overensstemmelse med Rådets direktiver om indbyrdes tilnærmelse til EF medlemsstaternes lovgivning om

- Maskiner (98/37/EØF).
Anvendt standard: EN 292.
- Elektromagnetisk kompatibilitet (89/336/EØF).
Anvendte standarder: EN 61 000-6-2 og EN 61 000-6-3.
- Elektrisk materiel bestemt til anvendelse inden for visse spændingsgrænser (73/23/EØF).
Anvendte standarder: EN 60 335-1 og EN 60 335-2-41.

Bjerringbro, 1st January 2002



Jan Strandgaard
Technical Manager

DMS, Variant B

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Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

1. General description

The GRUNDFOS DMS dosing pump is a self-priming diaphragm pump.

The pump consists of:

- a **cabinet** incorporating the drive unit and electronics,
- a **dosing head** with back plate, diaphragm, valves, connections and vent valve and
- a **control panel** incorporating display and buttons.

The pump is fitted with a synchronous motor, which is started and stopped by means of the integrated electronics. The capacity is varied by changing the stroke frequency. The pump always generates a complete stroke with full stroke length and the speed of the suction and dosing strokes is constant, irrespective of the capacity setting. The motor drive also eliminates undesired peak values during the suction and dosing strokes. As the pump is always dosing at full stroke length, it ensures the same high accuracy and suction capability, irrespective of the capacity, which is infinitely variable in the ratio of 1:100.

The pump features an LCD display and a user-friendly control panel which gives access to the pump functions.

1.1 Applications

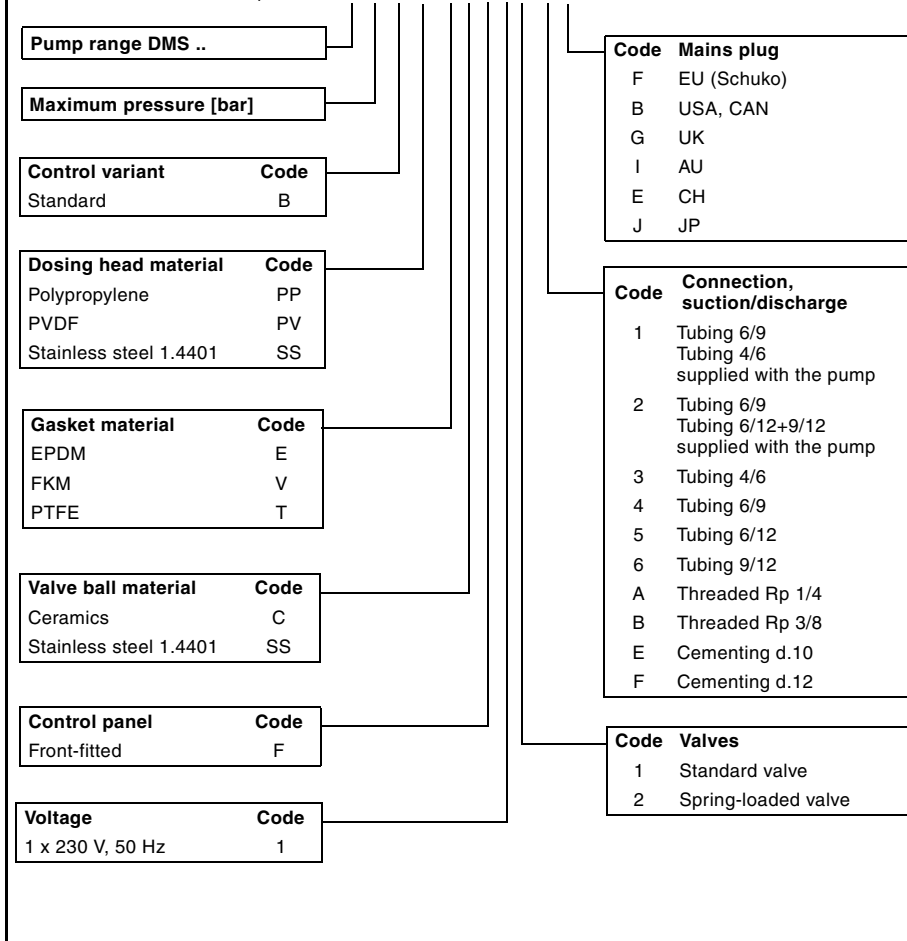
The DMS dosing pump is designed for handling chemicals within the following ranges of applications:

- Drinking water treatment.
- Wastewater treatment.
- Swimming pool water treatment.
- Boiler water treatment.
- Cooling water treatment.
- Process water treatment.
- Washing systems.

1.2 Type key

(Cannot be used for pump configuration.)

Example: **DMS 2-11 B-PP/E/C-F-2 1 1 E F**



2. Technical data

2.1 Mechanical data

| | DMS 2 | DMS 4 | DMS 8 | DMS 12 |
|--|---------|-------|-------|--------|
| Maximum capacity *1 [l/h] | 2.5 | 4 | 7.5 | 12 |
| Maximum pressure [bar] | 11 | 7 | 5.4 | 3.4 |
| Maximum stroke rate per minute [stroke/min.] | 180 | | | |
| Maximum suction lift during operation [m] | 6 | | | |
| Maximum suction lift when priming with wet valves [m] | 1.8 | 2 | 3 | 3 |
| Maximum viscosity with spring-loaded valves *2 [mPas] | 500 | | | |
| Maximum viscosity without spring-loaded valves *2 [mPas] | 200 | | | |
| Diaphragm diameter [mm] | 28 | 30 | 38 | 42.5 |
| Liquid temperature [°C] | 0 to 50 | | | |
| Ambient temperature [°C] | 0 to 45 | | | |
| Accuracy of repeatability | ±1% | | | |
| Sound pressure level [dB(A)] | <70 | | | |

*1 Irrespective of counter pressure

*2 Maximum suction lift 1 metre

2.2 Electrical data

| | DMS 2, 4, 8, 12 |
|---------------------------------------|-------------------------|
| Voltage [VAC], frequency [Hz] | 1 x 230, 50 |
| Maximum current consumption [A] | 0.1 |
| Power consumption, P ₁ [W] | 16 |
| Enclosure class | IP 65 |
| Insulation class | F |
| Supply cable | 1.5 m H05RN-F with plug |




2.3 Dimensions

See dimensions at the end of these instructions.
All dimensions are in mm.

3. Installation

3.1 Safety instructions



- When working with chemicals, local safety rules and regulations must be observed (e.g. wear protective clothes).
- Before starting work on the dosing pump and system, disconnect the electricity supply to the pump, ensuring that it cannot be accidentally switched on. Before reconnecting the electricity supply, make sure that the dosing hose is positioned in such a way that any chemical left in the dosing head is not ejected, thereby exposing persons to danger.
- If the vent valve in the dosing head is used, it must be connected to a hose which is led back to the tank.
- When changing a chemical, make sure that the materials of the dosing pump and system are resistant to the new chemical. If there is any risk of chemical reaction between the two types of chemicals, clean the pump and system thoroughly before adding the new chemical.
Proceed as follows:
Place the suction hose in water and press the  button until residual chemical has been removed.
Note: When the buttons  and  are pressed simultaneously, the pump can be set to run for a specific number of seconds at maximum capacity. The remaining number of seconds will appear in the display. The maximum value is 300 seconds.
- The liquid is under pressure and may be hazardous.

3.2 Installation environment

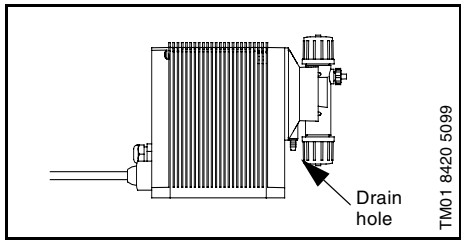
- Exposure to direct sunlight should be avoided. This applies especially to pumps with plastic dosing heads, as this material can be damaged by sunlight.
- If the pump is installed outside, an enclosure or similar protection is required to protect the pump against rain and similar weathers.

3.3 Installation of pump

- See also the installation example in section 3.4.
- **Note:** The dosing head may contain water from the factory test. If a liquid which must not come into contact with water is to be dosed, it is recommended to let the pump run with another liquid to remove the water from the dosing head before installation.
- Always install the pump on the supporting foot with vertical suction and discharge ports.
- Always use suitable tools for the mounting of plastic parts. Never apply unnecessary force.
- Make sure that the dosing pump and system are designed in such a way that neither system equipment nor buildings are damaged in case of leakage from the pump or rupture of hoses/pipes. The installation of leakage hoses and collecting tanks is recommended.
- Make sure that the drain hole in the dosing head points downwards, see fig. 1.
Note: It is important that the drain pipe/hole is not inserted direct into the tank contents, as gasses may penetrate into the pump.



Fig. 1

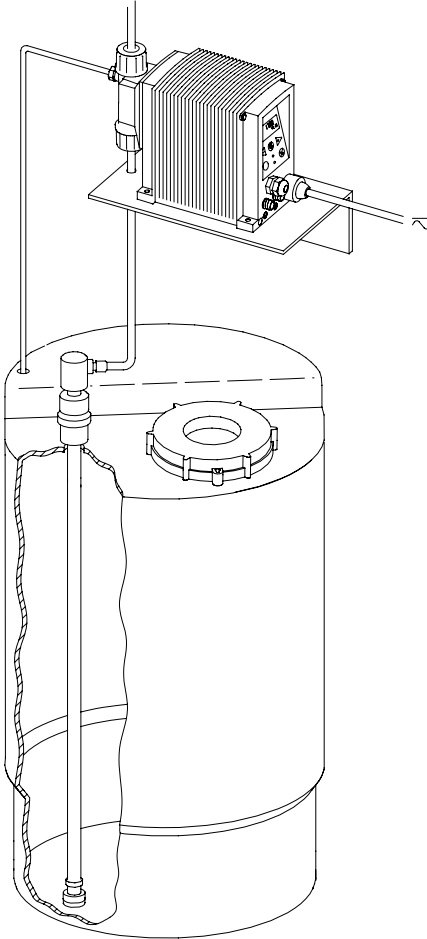


3.4 Installation example

The drawing in fig. 2 shows an installation example.

Fig. 2

The DMS pump can be installed in many different ways. The tank is a GRUNDFOS chemical tank.



TM01 8452 3600

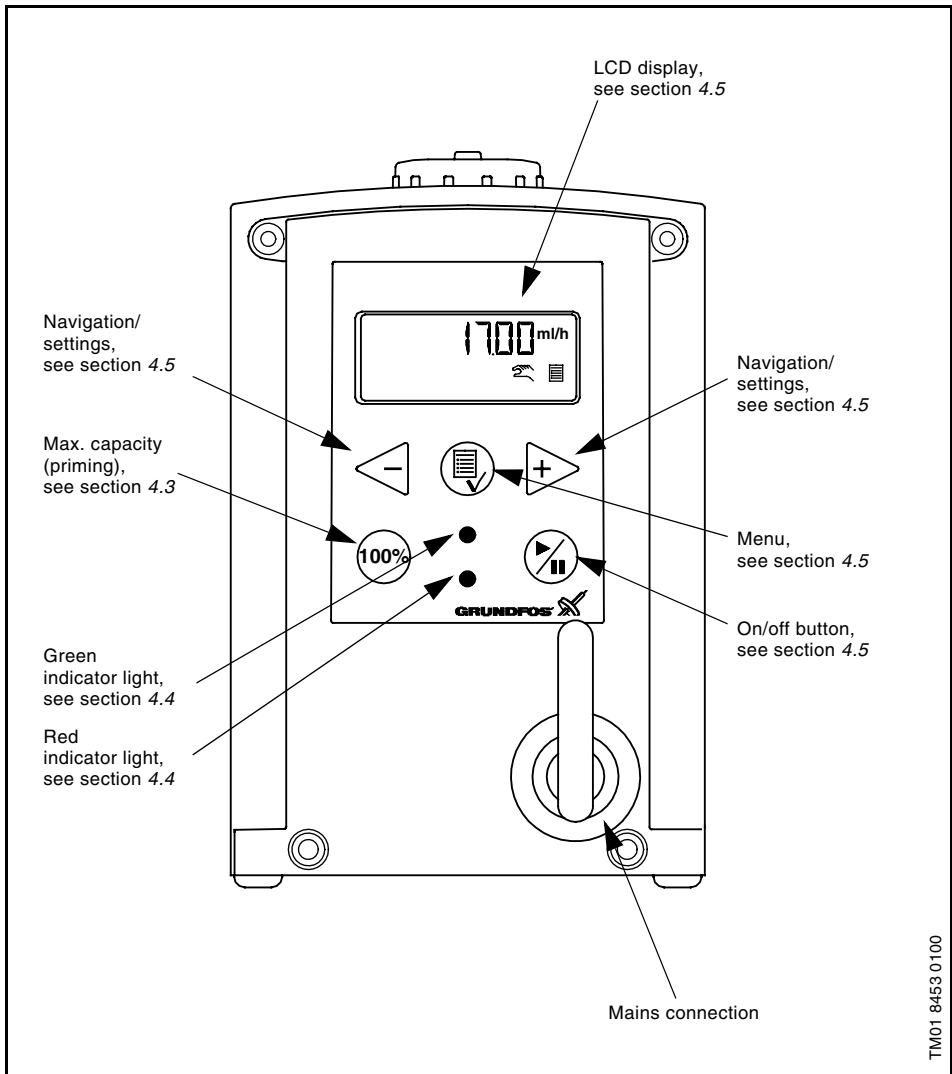
3.5 Electrical connection

- The electrical connection of the pump should be carried out by qualified persons in accordance with local regulations.
- For electrical data of the pump, see section 2.2.

4. Functions

4.1 Control panel

Fig. 3




4.2 Start/stop of pump



The pump can be started/stopped in two different ways:

- Locally on the pump control panel.
- By switching on/off the electricity supply.

4.3 Priming/venting of pump

The pump control panel incorporates a  button. Press this button if the maximum pump capacity is required over a short period, e.g. during start-up. When the button is released, the pump automatically returns to the previous operating mode.

During priming/venting, it is recommended to let the pump run without a counter pressure or to loosen the vent valve by giving it a 1/8 to 1/4 turn.

Note: When the buttons  and  are pressed simultaneously, the pump can be set to run for a specific number of seconds at maximum capacity. The remaining number of seconds will appear in the display. The maximum value is 300 seconds.

4.4 Indicator lights

The green and red indicator lights on the pump are used for operating and fault indication.

The functions of the indicator lights appear from the table below:

| Condition | Green LED | Red LED | Display |
|----------------|-----------|---------|-------------------|
| Pump running | On | Off | Normal indication |
| Set to stop | Flashing | Off | Normal indication |
| Pump fault | Off | On | EEPROM |
| Supply failure | Off | Off | Off |
| Overheating | Off | On | MAX. TEMP. |

4.5 Menu



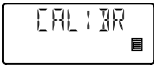
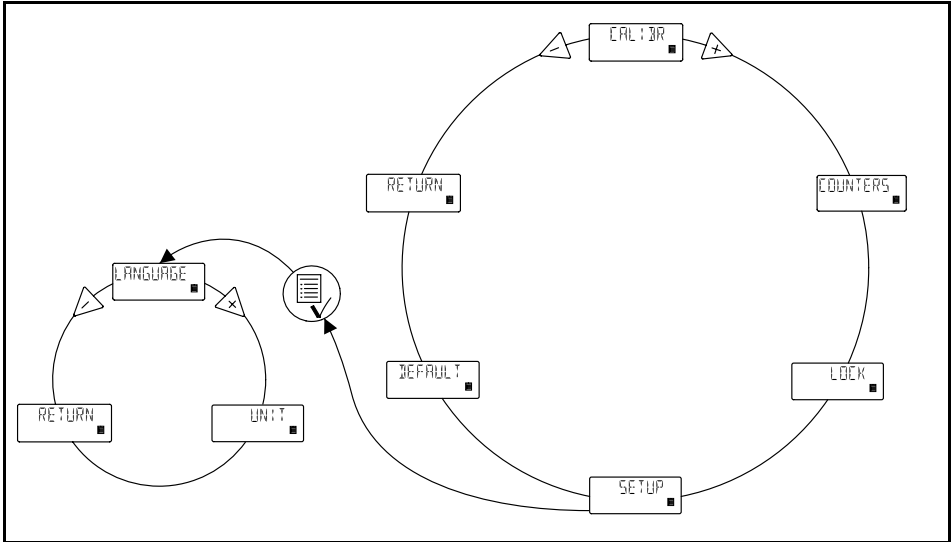
The pump features a user-friendly menu which is activated by pressing the  button. During start-up, all texts will appear in English language. To select language, see section 4.9.

Fig. 4

All menu items are described in the following sections. When  appears at a menu item, it means that this item is activated. By selecting "RETURN" anywhere in the menu structure, you will return to the operating display without changes.



See section 6



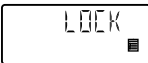
See section 4.8



See section 4.6



See section 4.9



See section 4.11



See section 4.10



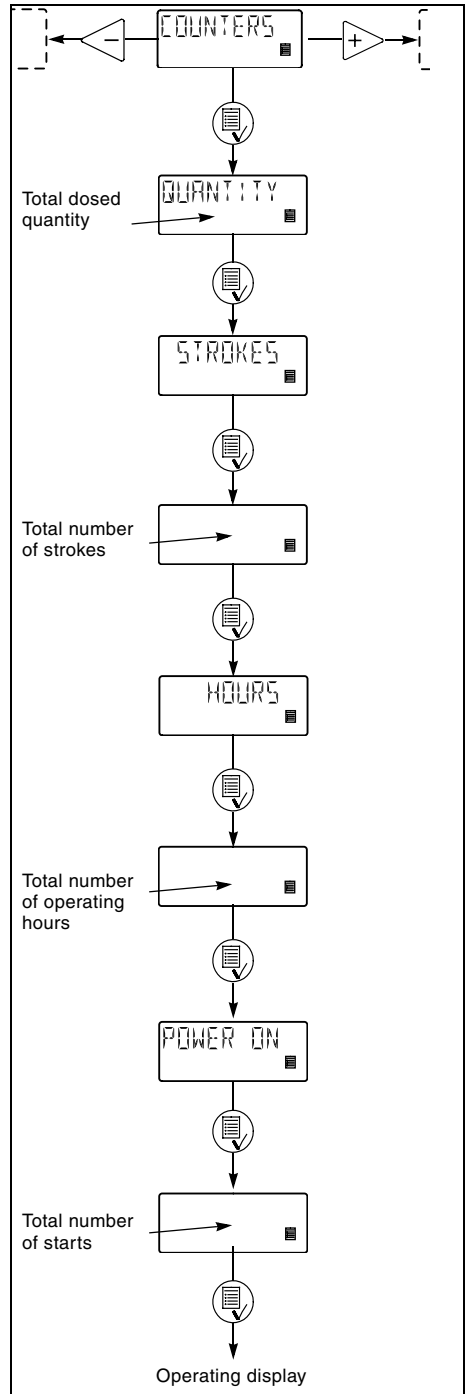
See section 4.7

4.6 Counters

The pump can display “non-resettable” counters for:

- **“QUANTITY”**
Accumulated value of dosed quantity in litres or US gallons.
- **“STROKES”**
Accumulated number of dosing strokes.
- **“HOURS”**
Accumulated number of operating hours (Power on).
- **“POWER ON”**
Accumulated number of times the electricity supply has been switched on.

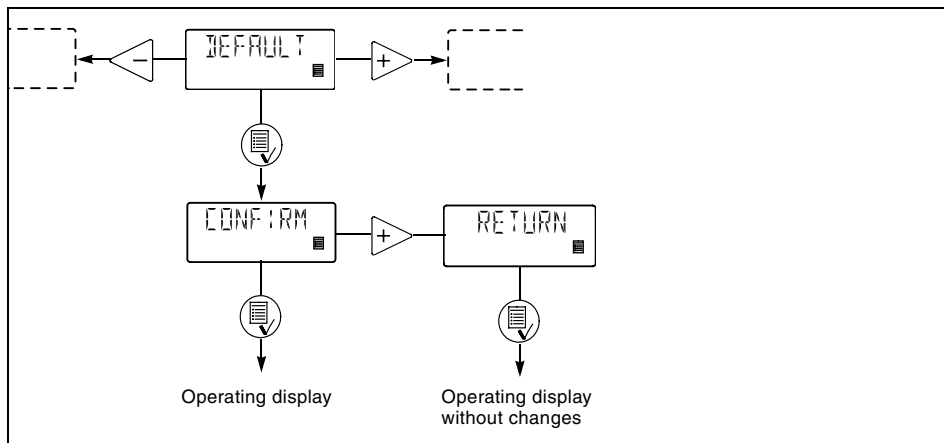
Fig. 5



4.7 Resetting

When “DEFAULT” is activated, the pump will return to the factory settings.

Fig. 6



4.8 Return

Fig. 7



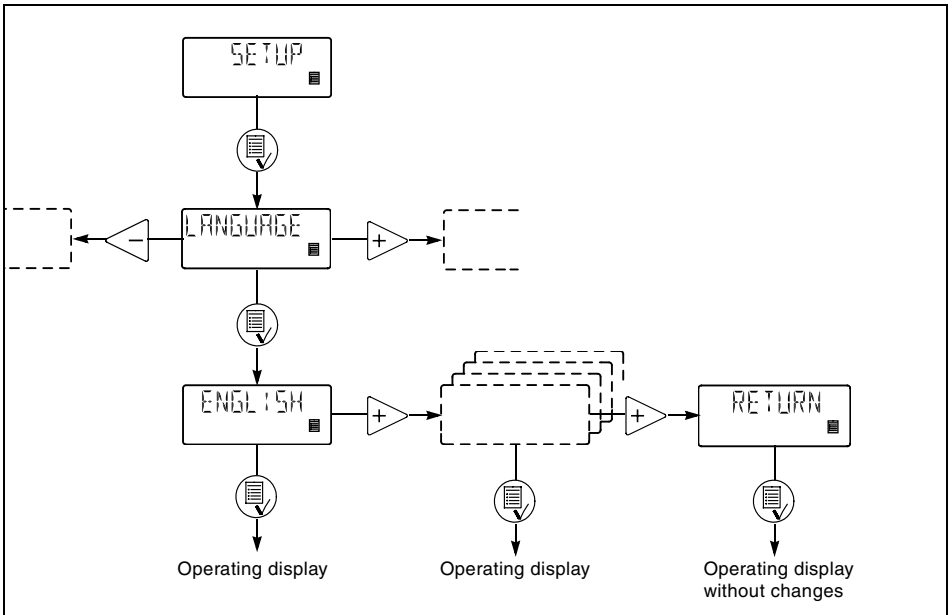
The “RETURN” function makes it possible to return from any level in the menu to the operating display without changes after the menu functions have been used.

4.9 Language

The display text can be displayed in one of the following languages:

- English
- German
- French
- Italian
- Spanish
- Portuguese
- Dutch
- Swedish
- Finnish
- Danish
- Czech
- Slovak
- Polish
- Russian

Fig. 8



4.10 Measuring units

It is possible to select metric units (litre/millilitre) or US units (gallons/millilitre).

Metric measuring units:

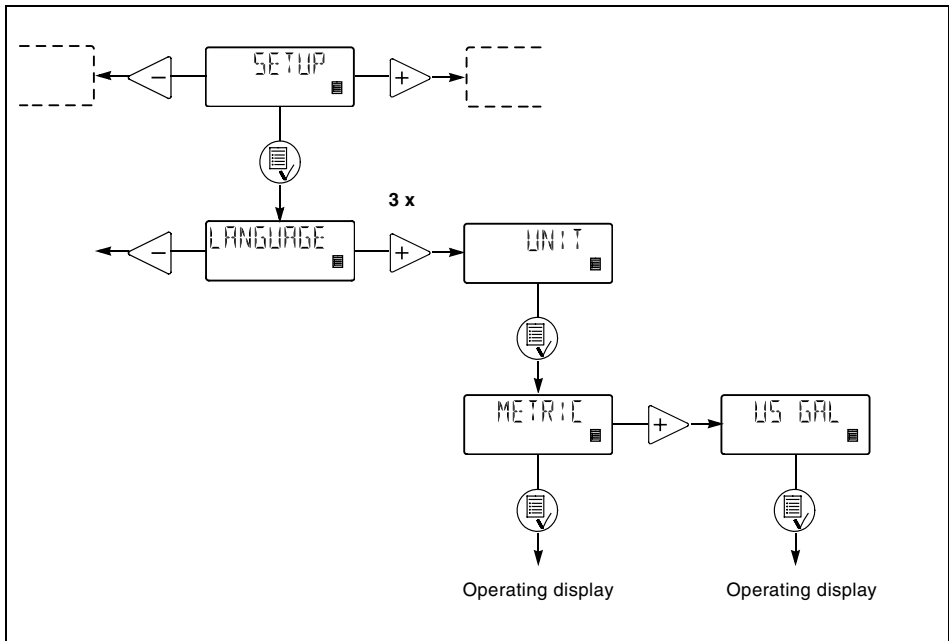
- **In manual and analog modes**, set the quantity to be dosed in litres per hour (l/h) or millilitres per hour (ml/h).
- **In pulse mode**, set the quantity to be dosed in ml/pulse. The actual capacity is indicated in litres per hour (l/h) or millilitres per hour (ml/h).
- **For calibration**, set the quantity to be dosed in ml per 100 strokes.
- **In timer and batch modes**, set the quantity to be dosed in litres (l) or millilitres (ml).
- Under the "QUANTITY" menu item in the "COUNTERS" menu, the dosed quantity is indicated in litres.

US measuring units:

- **In manual and analog modes**, set the quantity to be dosed in gallons per hour (gph).
- **In pulse mode**, set the quantity to be dosed in ml/pulse. The actual capacity is indicated in gallons per hour (gph).
- **For calibration**, set the quantity to be dosed in ml per 100 strokes.
- **In timer and batch modes**, set the quantity to be dosed in gallons (gal).
- Under the "QUANTITY" menu item in the "COUNTERS" menu, the dosed quantity is indicated in US gallons (gal).



Fig. 9



4.11 Control panel lock

It is possible to lock the buttons on the control panel to prevent malfunction of the pump. The locking function can be set to "ON" or "OFF". The default setting is "OFF".

A PIN code must be entered to change from "OFF" to "ON". When "ON" is selected for the first time, "----" will appear in the display. If a code has already been entered, it will appear when an attempt to change to "ON" is made. This code can either be re-entered or changed.


If no code has been entered, a code must be set.

If a code has already been entered, active digits are flashing.

If attempts are made to operate the pump in locked condition, "LOCKED" will appear in the display for 2 seconds, followed by "----". A code must be entered. If the entering of a code has not been started within 10 seconds, the operating display without changes will appear.

If a wrong code is entered, "LOCKED" will appear in the display for 2 seconds, followed by "----". A new code must be entered. If the entering of a code has not been started within 10 seconds, the operating display without changes will appear. This display will also appear if the entering of the correct code exceeds 2 minutes.

If the locking function has been activated but the control panel is unlocked, the control panel will be locked automatically if it is not operated for 2 minutes.

The locking function can also be reactivated by selecting "ON" in the "LOCK" menu. The previously entered code will then appear and must be re-entered by pressing the  button four times. The code can also be changed.

The control panel can be unlocked either by means of the selected code or the factory code 2583.

The following buttons and inputs are still active when the panel is locked:


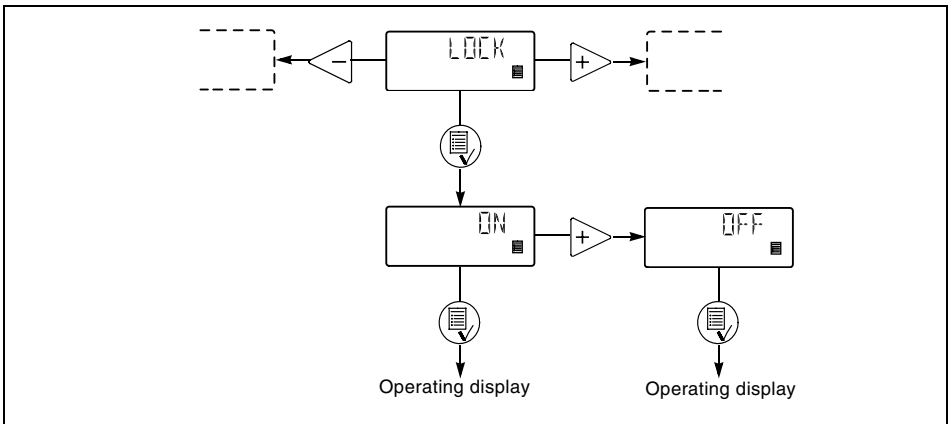






- Priming (-button).
- On/off button.
- All external inputs.

Fig. 10







Activating the locking function and locking the control panel:

1. Select "LOCK" in the menu.
2. Select "ON" by means of the buttons  and  and confirm with .
3. Enter or re-enter a code by means of the buttons ,  and .




The locking function has now been activated and the control panel is locked.

Unlocking the control panel (without deactivating the locking function):

1. Press  once. "LOCKED" appears in the display for 2 seconds, followed by "----".
2. Enter the code by means of the buttons ,  and .

The control panel has now been unlocked and will automatically be locked again if the control panel is not operated for 2 minutes.

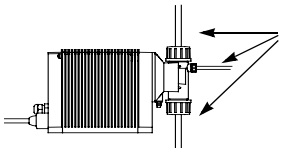
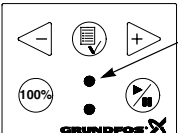
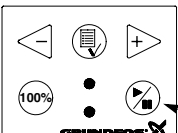
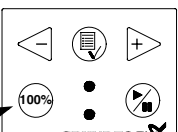
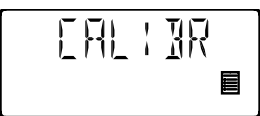
Deactivating the locking function:

1. Unlock the control panel as described above.
2. Select "LOCK" in the menu.
3. Select "OFF" by means of the buttons  and  and confirm with .

The locking function has now been deactivated and the control panel is unlocked.

* The panel can always be unlocked with code 2583.

5. Start-up

| Step | Action |
|--|--|
| <p>1</p>  | <p>Connect the hoses/pipes:</p> <ul style="list-style-type: none"> • Connect the suction and dosing hoses/pipes to the pump. • Connect a hose to the vent valve, if required, and lead the hose to the tank. |
| <p>2</p>  | <p>Switch on the electricity supply:</p> <ul style="list-style-type: none"> • The display is on. • The green indicator light is flashing (the pump has stopped). • Select language, if required, see section 4.9. |
| <p>3</p>  | <p>Start the pump:</p> <ul style="list-style-type: none"> • Start the pump by pressing the on/off button. • The green indicator light is permanently on. |
| <p>4</p>  | <p>Priming/venting:</p> <ul style="list-style-type: none"> • Press the 100% button on the pump control panel and let the pump run without a counter pressure. Loosen the vent valve by giving it a 1/8 to 1/4 turn, if required. <p>When the buttons 100% and on/off are pressed simultaneously during priming, the pump can be set to run for a specific number of seconds at maximum capacity.</p> |
| <p>5</p>  | <p>Calibration:</p> <ul style="list-style-type: none"> • When the pump has been primed and is running at the right counter pressure, calibrate the pump, see section 6. |

If the pump is not operating satisfactorily, see section 9. *Fault finding chart*.

6. Calibration

It is important that the pump is calibrated after installation to ensure that the correct value (ml/h or l/h) appears in the display.

The calibration can be carried out in three different ways:

- **Direct calibration** (recommended).
The dosed quantity of 100 strokes is measured directly. See section 6.1.
- **Indirect calibration.**
A calibration factor selected from a table is used for the specific installation. This method can be used if it is not possible to carry out a direct calibration. Indirect calibration will never be as accurate as direct calibration. See section 6.2.
- **Check calibration.** See section 6.3.

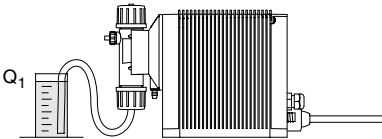
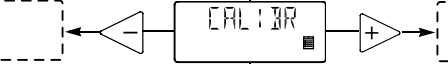

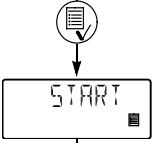
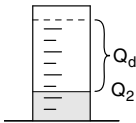
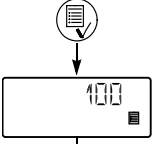
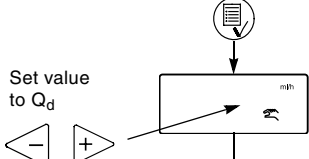

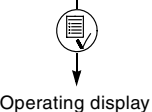
6.1 Direct calibration

Before calibration, make sure:

- that the pump is installed with foot valve, injection valve, etc. in the existing system.
- that the pump is running at the counter pressure it is supposed to operate at (adjust the counter pressure valve, if required).

- that the pump is operating with the correct suction lift.

To carry out a direct calibration, proceed as follows:

| Action | Pump display |
|--|---|
| 1. Vent the dosing head and the suction hose. | |
| 2. Stop the pump. The green LED is flashing. | |
| 3. Fill a graduated glass with dosing liquid, Q_1 . DMS 2: approx. 40 ml DMS 8: approx. 150 ml DMS 4: approx. 150 ml DMS 12: approx. 250 ml | |
| 4. Read and note the quantity Q_1 . | |
| 5. Place the suction hose in the graduated glass.  | |
| 6. Go to the calibration menu, see section 4.5. |  |
| 7. Press the  button twice. |  |
| 8. The pump is performing 100 dosing strokes. | |
| 9. The factory-calibration value appears in the display. | |
| 10. Remove the suction hose from the graduated glass and read Q_2 .  |  |
| 11. Set the display value to $Q_d = Q_1 - Q_2$. |  |
| 12. Confirm with the  button. | |
| 13. The pump is now calibrated and returns to the operating display. |  |

6.2 Indirect calibration

A value from the following table is to be added to the default factory calibration value in the display. To reset the pump to the factory calibration value, activate the "DEFAULT" function, see section 4.7.

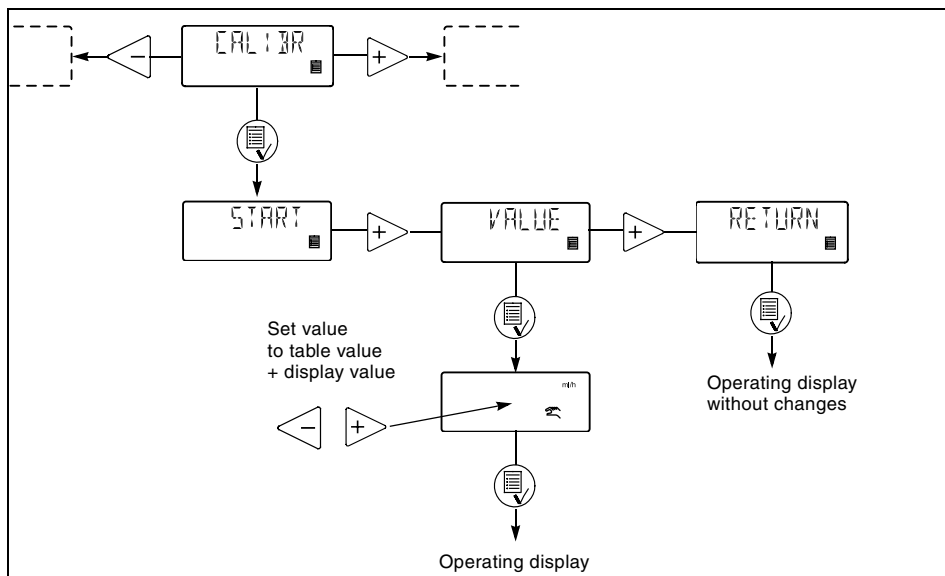
To use the values, the following must be fulfilled:

- The viscosity and density of the liquid to be dosed must not differ considerably from water at 20°C.
- A GRUNDFOS installation kit or corresponding foot valve, injection valve and hose diameter must be used.
- The length of the dosing hose must not exceed 6 metres.
- The suction lift must lie between 0.1 and 1.5 metres.

| Pump type | Values to be added to the calibration value at various counter pressures [bar] | | | | | | | | |
|-----------|--|-----|------|------|------|------|------|------|-------|
| | 0-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-6 | 6-8 | 8-10 | 10-12 |
| DMS 2 | 1.4 | 1.1 | 0.8 | 0.5 | 0.2 | -0.2 | -0.6 | -1.2 | -1.8 |
| DMS 4 | 2.2 | 1.6 | 1.0 | 0.3 | -0.3 | -1.0 | -1.9 | -3.2 | - |
| DMS 8 | 2.0 | 1.2 | 0.4 | -0.4 | -1.2 | -2.0 | - | - | - |
| DMS 12 | 1.3 | 0.4 | -0.4 | -1.3 | - | - | - | - | - |

Adding the value:

Fig. 11






6.3 Check calibration

In check calibration, the calibration value is calculated by reading the consumption of chemical in a specific period and comparing this with the number of dosing strokes performed in the same period.

This calibration method is very accurate and especially suitable for check calibration after long periods of operation or if direct calibration is impossible. The calibration can for instance be carried out when the chemical tank is replaced or filled.

To carry out a check calibration, proceed as follows:

1. Stop the pump by pressing the  button.
2. Read the counter and note the number of dosing strokes, see section 4.6.
3. Read and note the quantity in the chemical tank.
4. Start the pump by pressing the  button and let it run for at least 1 hour. The longer the pump is operating, the more accurate the calibration will be.
5. Stop the pump by pressing the  button.
6. Read the counter and note the number of dosing strokes, see section 4.6.
7. Read and note the quantity in the chemical tank.
8. Calculate the dosed quantity in ml and the number of dosing strokes performed during the operating period.
9. Calculate the calibration value as follows:
(dosed quantity in ml/dosing strokes) x 100.
10. Set the calculated value in the calibration menu like for indirect calibration, see section 6.2.

7. Maintenance

The pump is maintenance-free. However, it is recommended to keep the pump clean.

The dosing pump is produced according to the highest quality standards and has long life. The pump incorporates wear parts such as diaphragm, valve seat and valve balls.

To ensure long life and to reduce the risk of disturbance of operation, visual checks should be carried out regularly.

It is possible to order dosing heads, valves and diaphragms in materials which are suitable for the specific liquid to be pumped. See the product numbers at the end of these instructions.

8. Service

Before returning the pump to GRUNDFOS for service, the safety declaration at the end of these instructions must be filled in by authorized personnel and attached to the pump in a visible position.

Note: If a pump has been used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.

If GRUNDFOS is requested to service the pump, it must be ensured that the pump is free from substances that can be injurious to health or toxic. If the pump has been used for such substances, the pump must be cleaned before it is returned.

If proper cleaning is not possible, all relevant information about the chemical must be provided.

If the above is not fulfilled, GRUNDFOS can refuse to accept the pump for service. Possible costs of returning the pump are paid by the customer.

The safety declaration can be found at the end of these instructions (only in English).

Note: The replacement of the supply cable must be carried out by an authorised GRUNDFOS service workshop.

9. Fault finding chart

| Fault | Cause | Remedy |
|--|--|--|
| The dosing has stopped or the output is too low. | Valves leaking or blocked. | Check and clean valves. |
| | Valves incorrectly installed. | Remove and fit valves. Check that the arrow on the valve casing is pointing in the liquid flow direction. Check that all O-rings have been fitted correctly. |
| | Suction valve or suction pipe/hose leaking or blocked. | Clean and seal the suction pipe/hose. |
| | Suction lift too high. | Install the pump in a lower position. |
| | | Install a priming tank. |
| | Viscosity too high. | Install a pipe/hose with larger cross-section. |
| Fit spring-loaded valves. | | |
| Pump out of calibration. | Calibrate the pump, see section 6. | |
| Pump dosing too little or too much. | Pump out of calibration. | Calibrate the pump, see section 6. |
| Pump dosing irregularly. | Valves leaking or blocked. | Check and clean the valves. |
| Leakage from drain hole. | Diaphragm defective. | Install a new diaphragm. |
| Frequent diaphragm failures. | Diaphragm not fastened properly. | Install a new diaphragm and ensure that the diaphragm is fastened properly. |
| | Counter-pressure too high (measured at the pump discharge port). | Check the system. Check the injection valve, if required. Reduce the dosing stroke by fitting a pulsation dampener. |
| | Sediment in dosing head. | Clean/flush the dosing head. |



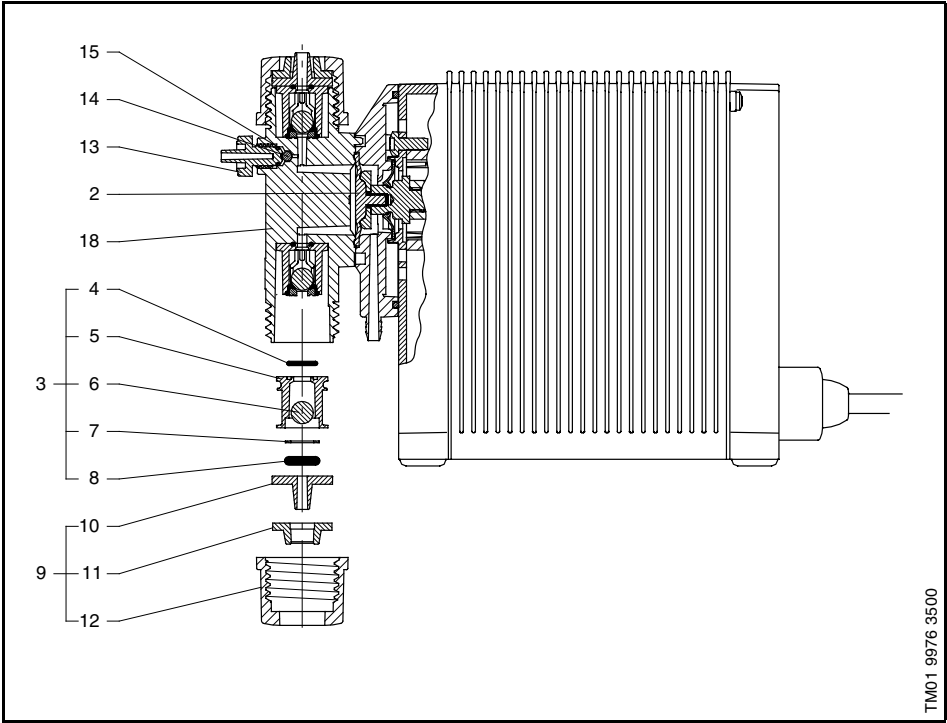
10. Disposal

Disposal of this product or parts of it must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, please deliver the product or any hazardous materials from it to your nearest GRUNDFOS company or service workshop.

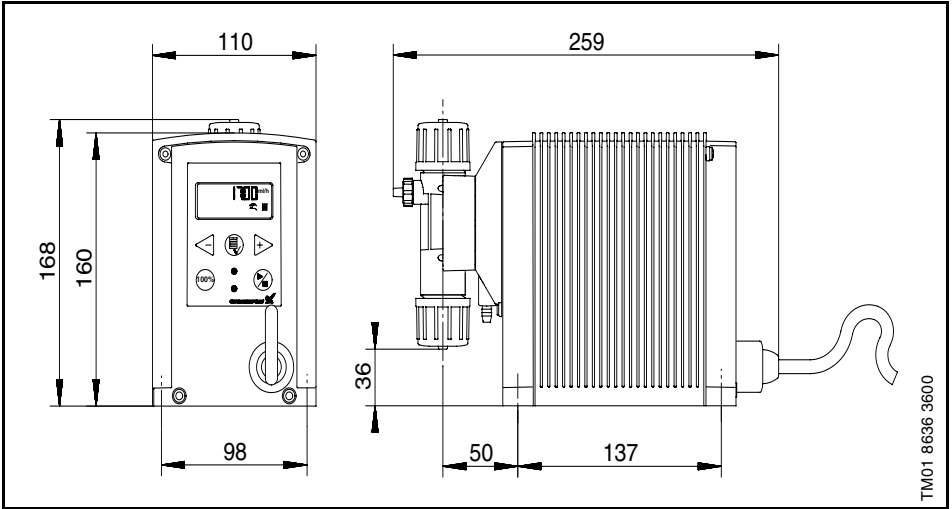
Service kits

| Pump size | Valves | Materials dosing head/ gaskets/ valve balls | Product numbers | | | |
|-----------|---------------|---|---|--------------------------------------|------------------|-------------------|
| | | | Complete dosing head Pos. 3+9+13+14+15+18 | Valves + diaphragm Pos. 2+3 x pos. 3 | Diaphragm Pos. 2 | Valves 3 x pos. 3 |
| DMS 2 | Standard | PP/EPDM/ceramics | 96440665 | 96441131 | 96440740 | 96440705 |
| | | PP/FKM/ceramics | 96446814 | 96446774 | 96440740 | 96446834 |
| | | PVDF/FKM/ceramics | 96440667 | 96441133 | 96440740 | 96440707 |
| | | Stainless steel/FKM/stainless steel | 96440669 | 96441135 | 96440740 | 96440709 |
| | Spring-loaded | PP/EPDM/ceramics | 96440666 | 96441132 | 96440740 | 96440706 |
| | | PP/FKM/ceramics | 96446815 | 96446775 | 96440740 | 96446835 |
| | | PVDF/FKM/ceramics | 96440668 | 96441134 | 96440740 | 96440708 |
| | | Stainless steel/FKM/stainless steel | 96440670 | 96441136 | 96440740 | 96440710 |
| DMS 4 | Standard | PP/EPDM/ceramics | 96440699 | 96441177 | 96440750 | 96440705 |
| | | PP/FKM/ceramics | 96446818 | 96446782 | 96440750 | 96446834 |
| | | PVDF/FKM/ceramics | 96440701 | 96441179 | 96440750 | 96440707 |
| | | Stainless steel/FKM/stainless steel | 96440703 | 96441181 | 96440750 | 96440709 |
| | Spring-loaded | PP/EPDM/ceramics | 96440700 | 96441178 | 96440750 | 96440706 |
| | | PP/FKM/ceramics | 96446819 | 96446783 | 96440750 | 96446835 |
| | | PVDF/FKM/ceramics | 96440702 | 96441180 | 96440750 | 96440708 |
| | | Stainless steel/FKM/stainless steel | 96440704 | 96441182 | 96440750 | 96440710 |
| DMS 8 | Standard | PP/EPDM/ceramics | 96440671 | 96441149 | 96440743 | 96440705 |
| | | PP/FKM/ceramics | 96446816 | 96446780 | 96440743 | 96446834 |
| | | PVDF/FKM/ceramics | 96440673 | 96441151 | 96440743 | 96440707 |
| | | Stainless steel/FKM/stainless steel | 96440675 | 96441153 | 96440743 | 96440709 |
| | Spring-loaded | PP/EPDM/ceramics | 96440672 | 96441150 | 96440743 | 96440706 |
| | | PP/FKM/ceramics | 96446817 | 96446781 | 96440743 | 96446835 |
| | | PVDF/FKM/ceramics | 96440674 | 96441152 | 96440743 | 96440708 |
| | | Stainless steel/FKM/stainless steel | 96440676 | 96441154 | 96440743 | 96440710 |
| DMS 12 | Standard | PP/EPDM/ceramics | 96440659 | 96441125 | 96440739 | 96440705 |
| | | PP/FKM/ceramics | 96446812 | 96446772 | 96440739 | 96446834 |
| | | PVDF/FKM/ceramics | 96440661 | 96441127 | 96440739 | 96440707 |
| | | Stainless steel/FKM/stainless steel | 96440663 | 96441129 | 96440739 | 96440709 |
| | Spring-loaded | PP/EPDM/ceramics | 96440660 | 96441126 | 96440739 | 96440706 |
| | | PP/FKM/ceramics | 96446813 | 96446773 | 96440739 | 96446835 |
| | | PVDF/FKM/ceramics | 96440662 | 96441128 | 96440739 | 96440708 |
| | | Stainless steel/FKM/stainless steel | 96440664 | 96441130 | 96440739 | 96440710 |



TM01 9976 3500

Dimensions



Safety declaration

Please copy, fill in and sign this sheet and attach it to the pump returned for service.

We hereby declare that this product:

Product type: _____

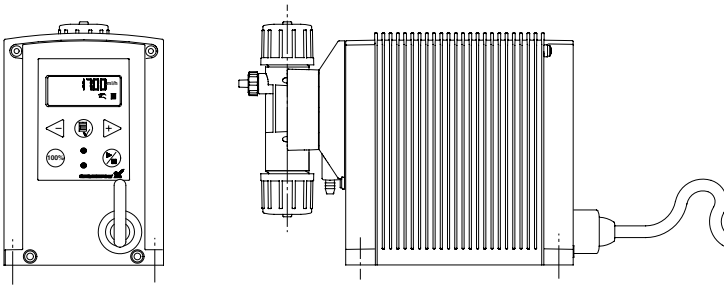
Model number: _____
(see pump nameplate)

is free from hazardous chemicals, biological and radioactive substances.

Fault description

Please make a circle around the damaged part.

In the case of an electrical or functional fault, please mark the cabinet.



Please give a short description of the fault:

Date and signature

Company stamp

TM02 8953 1104

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