

Agitators 509

Electric agitator

GB Installation and operating instructions

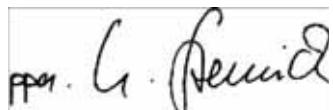


Declaration of conformity

We **Grundfos Alldos** hereby declare under our sole responsibility that the products **509, electric agitator**, to which this declaration relates, comply with the following EC Directives for harmonisation with the legal requirements of the EC member states:

- Machinery (2006/42/EC).
- Standards which have been used:
EN ISO 12100, EN 60034-1:2004 und EN 60204-1:2006.

Pfinztal, 01 July 2010

A handwritten signature in black ink, appearing to read "Ulrich Stemick".

Ulrich Stemick
Technical Director

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Warning

These installation and operating instructions are also available online at www.Grundfosalldos.com.

Please read these installation and operating instructions before installation. Installation and operation must be undertaken in accordance with local regulations and the rules of technology.

1. General notes

These installation and operating instructions contain all the information needed to commission and operate the agitator 509 listed below.

If you require further information or should problems arise which are not described in detail in this manual, please contact your nearest Grundfos Alldos branch.

1.1 Service documentation

If you have any other questions, please contact your nearest Grundfos Alldos branch.

2. Installation data

Note
*Please enter the following data after
commissioning. It will help you and your
Grundfos Alldos service partner to undertake
settings on the installation later on.*

Owner:

Grundfos Alldos customer no.:

Contract no.:

Order no.:

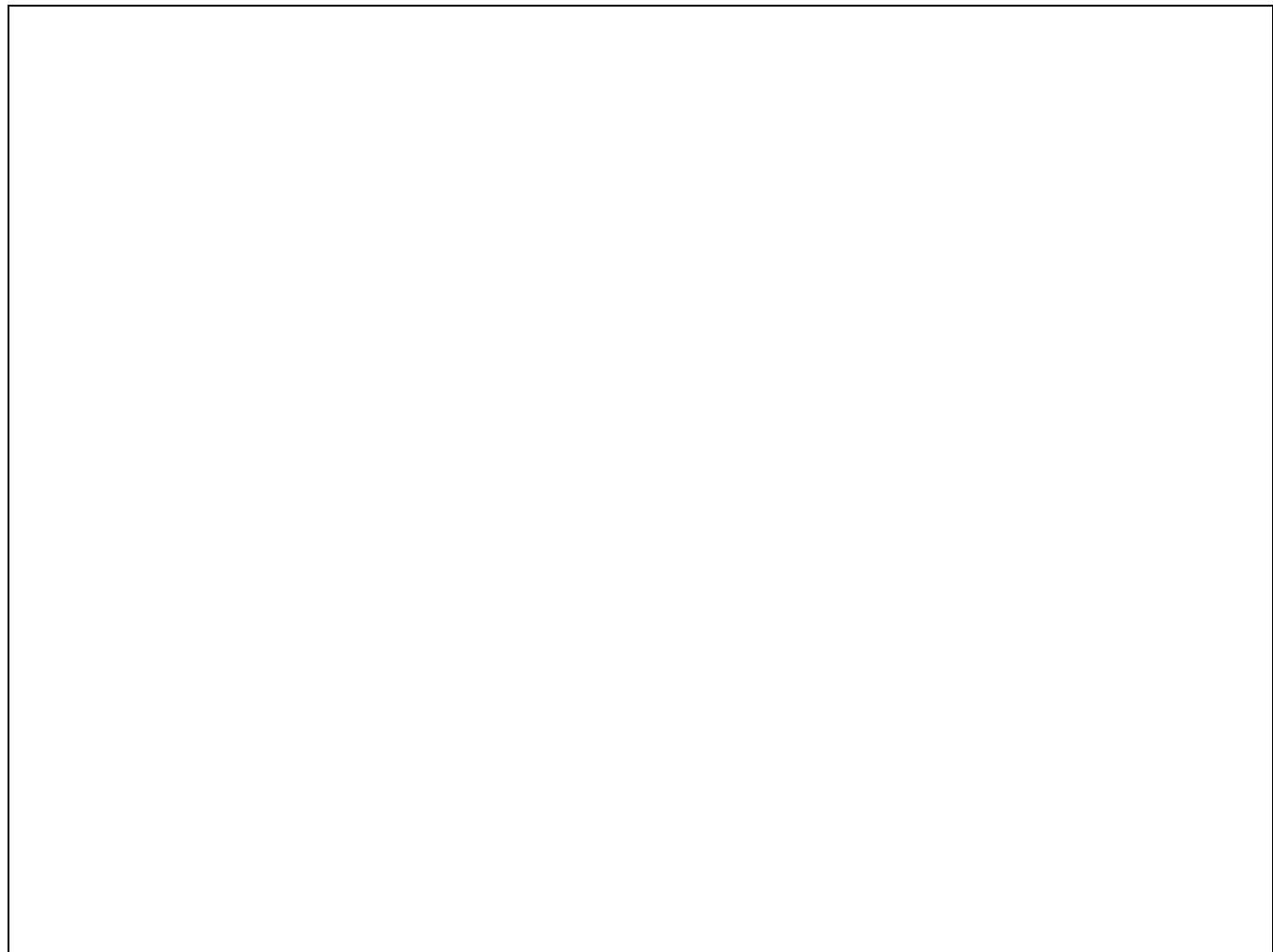
Serial no.:

Commissioning on:

Installation site:

Used for:

3. Installation sketch



4. Intended purpose

Agitators from Grundfos Alldos, series 509, are intended for the mixing and loosening of dosing media as described in these instructions.

**No other applications are approved or permitted.
Grundfos Alldos is not liable for damage resulting from incorrect use.**

4.1 Guarantee

In line with our general conditions of sale and delivery, a guarantee claim can only be recognised if:

- the agitator was only used as described in the corresponding instructions.
- the agitator has been neither dismantled nor incorrectly operated.
- repairs have only been carried out by authorised and qualified personnel.
- only genuine spare parts have been used for repairs.

5. Safety

These instructions contain general information which should be observed when installing, operating and maintaining the agitator. These instructions must therefore be read with care by technicians and appropriately trained specialists/operators before installation and commissioning and must always be available at the installation site.

It is not only the general safety notices described in this "Safety" section that must be observed, but all specific safety notices that are provided in the other sections too.

5.1 Identification of safety notices in this manual

If the safety notices or other information provided in these instructions are not observed, this may result in injury and the agitator may be damaged. Safety notices and other information are identified by the following symbols:



Warning

Failure to observe these safety notices may result in injury.



Caution
Failure to observe these safety notices may result in malfunction and damage to property.



Note
Information or instructions intended to simplify use and ensure safe operation.

Information on the agitator must be clearly legible at all times.

5.2 Qualification and training of staff

The staff responsible for operation, maintenance, inspection and installation must be suitably qualified for this work. Areas of responsibility, levels of responsibility and staff supervision must be precisely defined by the person responsible for operations.

If staff do not have the necessary knowledge, they should be trained and instructed accordingly. The person responsible for operations is in charge of ensuring that the staff understand the content of these instructions.

5.3 Risks when safety notices are not observed

Non-observance of the safety notices may have dangerous consequences for staff, the environment and the pump. Non-observance of the safety notices may lead to the loss of any claims for damages.

Non-observance of the safety notices may lead to the following risks:

- failure of important functions of the agitator / system
- failure of prescribed methods for maintenance
- personal injury caused by electrical, mechanical and chemical influences
- environmental damage due to media hazardous to health escaping.

5.4 Safety-conscious working

The safety notices in these instructions should be observed in the same way as statutory health and safety at work guidelines and the operating and safety notices provided by the person responsible for operations.

5.5 Safety notices for the person responsible for operations / user

Dangerous hot or cold parts on the agitator must be protected to avoid accidental contact.

Hazards caused by electrical energy must be prevented (for more details, please refer to the relevant regulations, for example those of the VDE and the local power supply company).

5.6 Safety notices for maintenance, inspection and installation work

The person responsible for operations must ensure that all installation, maintenance and inspection work is undertaken by authorised specialists who are appropriately trained by reading these instructions.

All work on the agitator may only be carried out with the device switched off.

All safety and protection equipment must be put back into operation as soon as work is complete.



Warning

Electrical connections may only be established by trained staff.

Do not open the agitator under any circumstances.

Repairs may only be undertaken by authorised and qualified staff.



Warning

When dosing dangerous media, observe the corresponding safety precautions.

Wear protective clothing (gloves and goggles) if required.

5.7 Unauthorised modification and impermissible spare parts

Modifications or changes to the agitator are only permitted with the consent of the manufacturer. Genuine spare parts and accessories approved by the manufacturer are safe to use.

Liability cannot be assumed if spare parts which are not genuine are used.

5.8 Incorrect operation

The operating safety of the agitator supplied is only ensured if it is used in compliance with section 6.2 *Technical data*. The specified limit values should on no account be exceeded.

6. Description of product and accessories

6.1 General description

The agitators 509 ensure that the dosing medium in the dosing tank is mixed constantly. The 1500 rpm agitators are suitable for dosing media with a low viscosity.

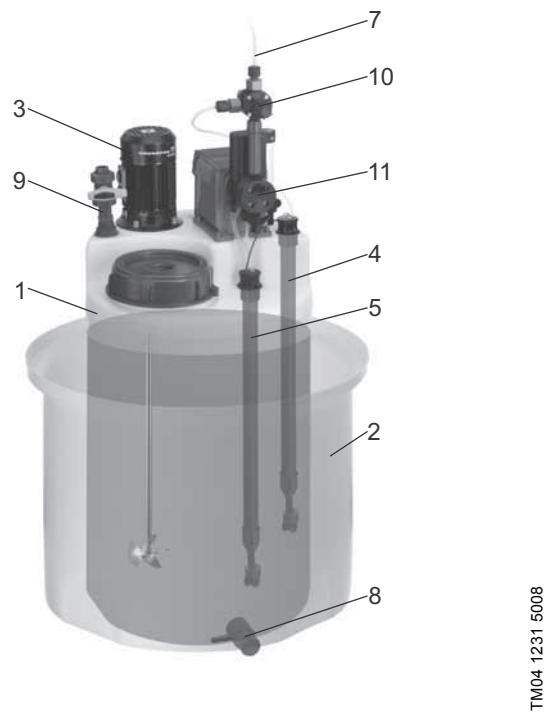
Grundfos Alldos agitators are available in the following versions.

- 7 sizes for Grundfos Alldos dosing tanks with contents of between 75 l and 1000 l.
- Plastic version: spindle PP-coated, mixer turbine made from PP.
 - The annular turbine draws in the product to be mixed axially and discharges it radially.
 - For outgassing media, with a sealing flange on the motor flange
- Stainless steel version for aggressive media: spindle and mixer propeller made from stainless steel 1.4571.
- Depending on agitator size, 3-phase current and optionally single-phase motor.

6.2 Technical data

- Permissible ambient temperature: 0 to +60
- Dosing medium must be in the liquid phase.

6.3 Fitted tank dosing station



TM04 1231 5008

Fig. 1 Fitted tank dosing station (example)

Item	Description
1	Tank
2	Drip tray
3	Agitator
4	Level monitoring
5	Suction line
6	Injection unit (not shown)
7	Pressure line
8	Drain valve
9	Filling unit
10	Multi-function valve
11	Dosing pump

6.4 Versions / order numbers

6.4.1 Material (mixer and spindle): stainless steel (1.4571) Mixer version: propeller

Product no.	Motor	Order no.
509-11.1	Three-phase current	96726871 (509-11.1-10000)
	Single-phase	96698329 (509-11.1-10001)
509-21.1	Three-phase current	96697254 (509-21.1-10002)
	Single-phase	96698331 (509-21.1-10000)
509-31.1	Three-phase current	96726905 (509-31.1-10001)
	Single-phase	96698362 (509-31.1-10003)
509-41	Three-phase current	96726917 (509-41-10000)
509-51	Three-phase current	96698364 (509-51-10000)
509-61	Three-phase current	96698365 (509-61-10000)

6.4.2 Material (mixer and spindle): PP, without sealing flange Mixer version: turbine

Product no.	Motor	Order no.
509-12.1	Three-phase current	96726879 (509-12.1-10001)
	Single-phase	96726878 (509-12.1-10000)
509-22.1	Three-phase current	96726897 (509-22.1-10000)
	Single-phase	96726898 (509-22.1-10001)
509-32.1	Three-phase current	96726909 (509-32.1-10000)
	Single-phase	96726911 (509-32.1-10002)
509-42	Three-phase current	96726925 (509-42-10001)
509-52	Three-phase current	96726937 (509-52-10000)
509-62	Three-phase current	96726949 (509-62-10000)

6.4.3 Material (mixer and spindle): PP, with sealing flange
Mixer version: turbine

Product no.	Motor	Order no.
509-13.1	Three-phase current	96726884 (509-13.1-10001)
	Single-phase	96726883 (509-13.1-10000)
509-23.1	Three-phase current	96726901 (509-23.1-10002)
	Single-phase	96698134 (509-23.1-10001)
509-33.1	Three-phase current	96726913 (509-33.1-10000)
	Single-phase	96726916 (509-33.1-10003)
509-43	Three-phase current	96703370 (509-43-10000)
509-53	Three-phase current	96726939 (509-53-10000)
509-63	Three-phase current	96726954 (509-63-10000)

6.5 Motor data

- Three-phase current motor:
220-240/380-420 V, (50/60 Hz), 440-480 V (60 Hz), IP 65/F
- Single-phase motor:
230 V (50/60 Hz) Hz, IP 54/B, up to 200 l tank

6.6 For Grundfos Alldos dosing tanks

Product no.	Dosing tank
509-11.1, 509-12.1, 509-13.1	75 l
509-21.1, 509-22.1, 509-23.1	100 l
509-31.1, 509-32.1, 509-33.1	200 l
509-41, 509-42, 509-43	300 l
509-51, 509-52, 509-53	500 l
509-61, 509-62, 509-63	1000 l

6.7 Performance data

Product no.	Speed [rpm]	Motor power [kW]
509-11.1, 509-12.1, 509-13.1	1500	0.09
509-21.1, 509-22.1, 509-23.1	1500	0.09
509-31.1, 509-32.1, 509-33.1	1500	0.09
509-41, 509-42, 509-43	1500	0.25
509-51, 509-52, 509-53	1500	0.25
509-61, 509-62, 509-63	1500	0.55

6.8 Weight

Product no.	Weight [kg]
509-11.1, 509-12.1, 509-13.1	4
509-21.1, 509-22.1, 509-23.1	4
509-31.1, 509-32.1, 509-33.1	4
509-41, 509-42, 509-43	8
509-51, 509-52, 509-53	8
509-61, 509-62, 509-63	12

6.9 Dimensional drawings

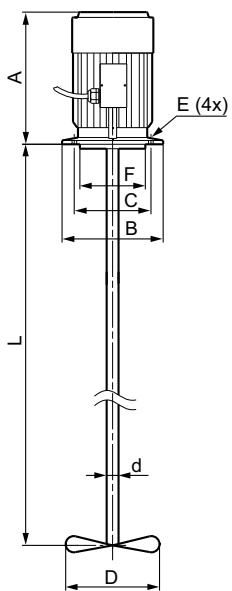


Fig. 2 Stainless steel version* with propeller as mixer

* Material of mixer and spindle

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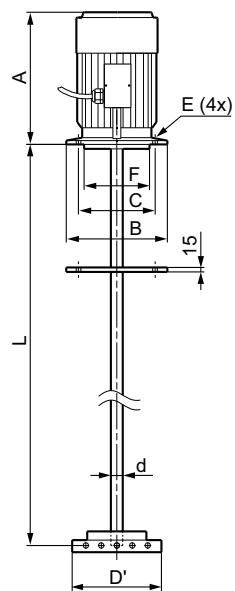


Fig. 3 PP version* with turbine as mixer

* Material of mixer and spindle

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Dimensions in mm

7. Transport and storage

- Do not throw or drop the agitator 509.**
In particular protect the mixer spindle and mixer from knocks, impact and twisting.
- Caution** **Do not hold or transport the agitator by the spindle or mixer.**
Do not use the protective packaging as packaging for transport.

7.1 Unpacking

- Unpack the agitator as soon as you receive it and check for visible transport damage.
- Retain the packaging for future storage or return, or dispose of the packaging in accordance with local regulations.
- Fit the agitator as soon as possible after unpacking.

7.2 Storage

Keep the agitator in a dry, cool place.

8. Installation

8.1 General notes



Warning

The agitator may only be fitted by a qualified specialist.

In particular protect the mixer spindle and mixer from knocks, impact and twisting.

Caution

When introducing into the tank, the mixer spindle must not be strained by the weight of the drive.

Do not hold or transport the agitator by the spindle or mixer.

Caution

Minimum distance from tank base: 100 mm.

Do not position agitator centrally in the tank.

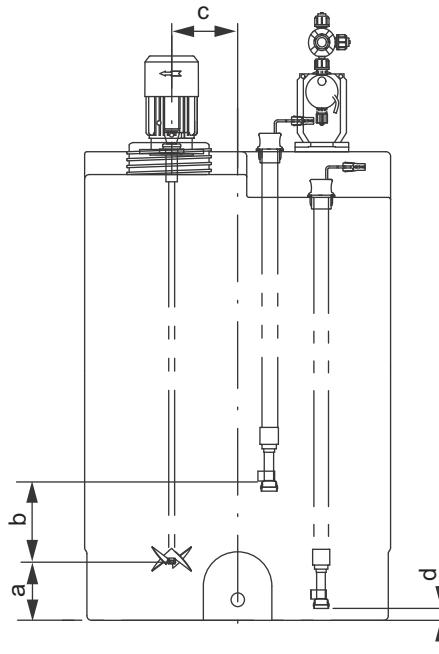
8.2 Requirement of installation location for agitator, suction line and level switch

- Installation surfaces (dosing tank cover or mounting frames) must be as free from vibrations as possible.
- Mixer spindle and mixer must not touch any part of the tank.
- Do not position agitator centrally in the tank.
- The mixer must not be positioned too close to the tank base and it must not run dry.

The following dimensions are recommended as approximate figures for compliance with the installation requirements:

Product no.	a	b	c	d
509-11.1 – 509-13.1	100	160	115	20
509-21.1 – 509-23.1	100	160	115	20
509-31.1 (stainless steel)	125	180	150	20
509-32.1 – 509-33.1 (PP)	125	160	150	20
509-41 (stainless steel)	150	220	165	20
509-42 – 509-43 (PP)	150	200	165	20
509-51 (stainless steel)	175	220	200	20
509-52 – 509-53 (PP)	175	200	200	20
509-61 (stainless steel)	245	260	270	20
509-62 – 509-63 (PP)	245	200	270	20

Dimensions in mm



TM04 1247 5008

Fig. 4 Installation sketch

Item	Description
a	minimum distance between mixer and tank base
b	minimum distance of level switch above mixer
c	recommended distance between agitator and centre of tank
d	minimum distance between suction line and tank base

8.3 Installation

- Install agitator vertically on suitable dosing tank 502 using 4 screws.
 – When guiding into tank do not twist mixer spindle or strain it with the weight of the drive.
- After installation check that the mixer spindle and mixer are not touching any point of the tank.
- Before commissioning use level switch to ensure the level monitoring.
 – Minimum distance between level switch and mixer: twice the diameter of the mixer ($\varnothing D$ or $\varnothing D'$) above the mixer (see Fig. 3).

8.4 Electrical connections

Warning

Electrical connections may only be established by trained staff.



Before opening housing, disconnect agitator from power supply.

Observe the local safety regulations.

Protect the cable connections and plugs against corrosion and humidity.

Before connecting the mains cable check whether the supply voltage stated on the nameplate matches the local figures (permissible mains frequency deviation: $\pm 5\%$). An incorrect mains voltage may destroy the agitator.

Caution

1. Connect motor following circuit diagram in terminal box.
2. Fuse motor with a motor overload switch of the appropriate rating.
3. Check direction of rotation before commissioning (note arrow indicating direction of rotation).

9. Commissioning

When commissioning all the system's components must be ready for operation.

Caution

Follow the installation and operating instructions for the components used.

The agitator must not run if it has nothing to stir (run dry). Use level switch to generally ensure the correct level.

10. Operation

Note

Depending on the installation, the electric agitator is switched on and off using an external control unit during operations.

11. Maintenance

In the event of contamination or deposits, the agitator (mixer spindle and mixer) can be cleaned:

11.1 Cleaning the agitator

Warning

The entire system should be switched off before any maintenance work.

Disconnect supply voltage before opening housing.



Warning

The agitator may only be removed and fitted by a qualified specialist.

In particular protect the mixer spindle and mixer from knocks, impact and twisting.

When removing or introducing into the tank, the mixer spindle must not be strained by the weight of the drive.

Do not hold or transport the agitator by the spindle or mixer.

11.1.1 Removal

1. Remove electrical connections and level monitoring if necessary.
2. Loosen the agitator's 4 retaining bolts.
3. Lift agitator vertically out of the dosing tank.
 - Do not twist mixer spindle or strain with the weight of the drive.

11.1.2 Cleaning

1. Use appropriate cleaning agents to clean mixer spindle and mixer.

11.1.3 Installation

1. Install agitator vertically on dosing tank 502 using 4 screws.
 - When guiding into tank do not twist mixer spindle or strain it with the weight of the drive.
2. After installation check that the mixer spindle and mixer are not touching any point of the tank.
3. Before commissioning re-establish electrical connections and level monitoring with level switch, check direction of rotation.

12. Disposal

This product and all its associated parts must be disposed of in an environmentally friendly manner.

1. Suitable private waste disposal operations can be used here.
2. If no such operations exist or if they refuse to process the waste, the product can be sent to the closest Grundfos or Grundfos Alldos branch or service centre.

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Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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