Operating instructions

Rotor spray with integrated speed regulator

RotorsprayIntegra
417101448 Rev. 04-03.2019
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ENGLISH

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1 General

1.1 Information on User Manual

Read the instructions!

Before beginning all work and/or operating devices or machines, it is essential to read and understand these instructions.

In addition, always heed all the instructions relating to the product that are included with the product!

This operating manual contains all the instructions for installing, commissioning, maintenance and repairs.

- *Personnel must have carefully read and understood this manual before starting any work. The basic premise for safe operation is observing all safety instructions and work instructions in this manual.*
  The local accident-prevention regulations and general safety instructions also apply to the area of application.
- *Illustrations in this manual are provided to aid basic understanding and may deviate from the actual design.*
- *The original language of this guide is German and, as such,* ***the German version of the original operating manual*** *shall prevail.*
  All other languages are translations.

WARNING!

- All instructions must be placed at the disposal of the operating and maintenance personnel at all times. Please store all manuals and guides as a reference for operation and service.
- If the system is resold, the operating manual must be supplied with it.
- The relevant sections of this operating manual must be read, understood and noted before installing the system, using it for the first time, and before carrying out any maintenance or repair work.

The most current and complete operating instructions are made available on the Internet:

https://www.ecolab-engineering.de/fileadmin/download/bedienungsanleitungen/ads/Bedienungsanleitungen-ADS/417101448_RotorsprayIntegra.pdf

If you want to download the manual with a tablet or smartphone, you can use the QR code listed below.

1.1.1 Call up operating instructions with smartphone

Fig. 1: ***Ecolab DocuAPP***

The Ecolab ***'DocuApp'*** can be used to call up all published operating instructions, catalogues, certificates & CE Declaration of Conformity from Ecolab Engineering using smartphones (Android & IOS).

The documents shown in the ***'DocuApp'*** are always up-to-date and new versions are displayed immediately.

Android smartphones have the "Google Play" app .
This app can be used to access the app store for the Android system.
This can be searched for and installed by entering the app name "Ecolab DocuAPP" .

IOS smartphones have the "APP Store" app .
This app can be used to access the app store for the Apple IOS system.
This can be searched for and installed by entering the app name "Ecolab DocuAPP" .

1.1.1.1 Installation of the *'Ecolab DocuApp'* for Android

Android based smartphones the ***'Ecolab DocuApp'*** is located in the "Google Play Store" .

1. Call the "Google Play Store" with your smartphone/tablet.
2. Enter the name „**Ecolab DocuAPP**“ in the search field.
3. Select by the search term **Ecolab DocuAPP** in conjunction with this symbol the *'Ecolab DocuApp'*.
4. Press the button *[install]*.
   ⇨ The ***'Ecolab DocuApp'*** will be installed.

Via a PC or a web browser, the ***'Ecolab DocuApp'*** can be accessed via this link:
https://play.google.com/store/apps/details?id=ecolab.docuApp

1.1.1.2 Installation of the *'DocuApp'* for IOS (Apple)

IOS based smartphones the ***'Ecolab DocuApp'*** is located in the "APP Store" .

1. Call the "APP Store" with your smartphone/tablet.
2. Go to the search function.
3. Enter the name „**Ecolab DocuAPP**“ in the search field.
4. Select by the search term **Ecolab DocuAPP** in conjunction with this symbol the *'Ecolab DocuApp'*.
5. Press the button *[install]*.
   ⇨ The ***'Ecolab DocuApp'*** will be installed.

1.2 Copyright

This manual is copyright protected.

Transferring this manual to third parties, reproduction in any form – even partially – and the exploitation and/or disclosure of the contents without written permission from Ecolab Engineering (hereinafter “the manufacturer”) is prohibited except for internal purposes. Any contravention of this will result in claims for damages.

The manufacturer reserves the right to assert additional claims.

1.3 Symbols, highlights and enumerations

Symbols, safety information

Safety instructions are marked in this manual with symbols.
The safety instructions are introduced with signal words which express the extent of the danger.

DANGER!
This combination of symbol and signal word indicates an imminently dangerous situation that will lead to serious or fatal injury if not avoided.

WARNING!
This combination of symbol and signal word indicates a potentially dangerous situation which could result in serious or fatal injury if not avoided.

CAUTION!
This combination of symbol and signal word indicates a potentially dangerous situation that could lead to minor or slight injuries if not avoided.

NOTICE!
This combination of symbol and signal word indicates a potentially dangerous situation that could lead to material damage if not avoided.

ENVIRONMENT!
This combination of symbol and signal word indicates possible dangers to the environment.

Safety instructions in the operating instructions

Safety instructions can refer to specific, individual operating instructions.
These safety instructions are embedded in the operating instructions, so they do not interrupt the reading flow when executing the action.
The signal words described above are used.

Example:

1. Loosen screw.
2. 

   CAUTION!
   Risk of trapping on the cover!

   Close the cover carefully.
3. Tighten screw.

Tips and recommendations

This symbol highlights useful tips, recommendations and information for an efficient and trouble-free operation.

Further markings

The following markings are used in this manual to highlight operating instructions, results, collections, references and other elements:

Marking	Explanation
1., 2., 3. ... ➥	Step by step operating instructions
⇨	Results of the operating steps
⇝	References to sections of this manual and related documents
■	Collections in no set order
[Button]	Controls (e.g. button, switch), indicators (e.g. signal lights)
'Display'	Screen elements (e.g. buttons, assignment of function keys)

1.4 Transport

Please refer to the “Technical data” section for the packaging dimensions and packaging weight

Improper transport

NOTICE!

Material damage due to improper transportation!

Transport units can fall or tip over if improperly transported.
This can cause a high degree of damage.

- Be careful when unloading the transport units on delivery and during in-house transport in-house transport; observe the symbols and instructions on the packaging.
- Only use the attachment points provided.
- Remove packaging just before assembly.

DANGER!

Risks when commissioning equipment which has been damaged during transportation.

Installation or commissioning must not take place if any transport damage is detected when unpacking the system.

By installing/commissioning damaged components, unmanageable errors may occur, which may lead to irreparable damage to personnel and/or the system with the use of aggressive dosing agents.

Transport inspection

NOTICE!

Check the delivery for completeness and any transport damage.

In case of visible damage, proceed as follows:

- Do not accept the delivery or accept provisionally.
- Note down the extent of damage in the transport documents or on the delivery slip.
- Lodging a complaint.

Claim for any damages as soon as you notice them.

Damage claims can only be filed within the applicable period for complaints.

1.5 Packaging

The individual packages are packaged according to the expected transport conditions.
Only environment-friendly materials were used for the packaging.
The packaging is designed to protect the individual components up to assembly against shipping damage, corrosion and other damage.
Do not destroy the packaging and only remove it just before assembly.

ENVIRONMENT!

Risk of environmental damage due to incorrect disposal!

Packaging materials are valuable raw materials and can, in many cases, be used again or be usefully processed and recycled.

Incorrect disposal of packaging materials can be a threat to the environment.

- Observe the locally applicable disposal regulations!
- Environmentally-friendly disposal of packaging materials.
- If necessary, hire a specialist to carry out disposal.

1.6 Storage

Under certain circumstances, instructions for storage, which go beyond the requirements listed here, can be found on the package.
These must be complied with accordingly.

Please note the following storage conditions:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Protect from sunlight.
- Avoid mechanical vibrations.
- For storage periods of more than 3 months, check the general condition of all parts and packaging regularly. If necessary, refresh or renew the preservative.

1.7 Warranty

The manufacturer provides a warranty for operational safety, reliability and performance under the following conditions only:

- Assembly, connection, adjustment, maintenance and repairs must be carried out by qualified and authorised specialists with the aid of the User Manual and all the provided documents.
- Our products are used in accordance with the instructions in the User Manual.
- Only original equipment spare parts are to be used for repairs.

Our products are built, tested and CE certified in accordance with current standards/guidelines. They left the factory in a safe, faultless condition.
To keep the equipment in this condition and to ensure risk-free operation, the user must observe the instructions / warnings, maintenance regulations, etc. contained in these operating instructions and, if applicable, affixed to the product.

The general warranty and service conditions of the manufacturer also apply.

1.8 Manufacturer's service and contact address

Ecolab Engineering GmbH
Raiffeisenstraße 7
D-83313 Siegsdorf, Germany
Telephone (+49) 86 62 / 61 0
Fax (+49) 86 62 / 61 166
Email: engineering-mailbox@ecolab.com
http://www.ecolab-engineering.com

2 Safety

2.1 General safety advice

DANGER!

If you believe that the rotor spray can no longer be operated safely, you must place it out of operation immediately and secure it so that it cannot be used inadvertently.

This applies:

- If visible damage occurs,
- If the rotor spray no longer appears to be operational,
- After prolonged periods of storage under unfavourable conditions (carry out a function test).

The following instructions must always be observed:

- The safety regulations and the required protective clothing for work with chemicals, adhesives and oils must be complied with.
- Attention must be paid to all information included on the product data sheet for the dosing medium used.

2.2 Proper use

WARNING!

Proper use particularly includes the following points:

- The rotor spray is used for the dosing of liquid, adhesives and oils.
- The metering valve has been developed, designed and built for industrial and commercial use. The unit is not intended for private use.

Any use which extends beyond or differs from the appropriate use is considered improper use.

2.2.1 Reasonable foreseeable incorrect use

To maintain the function of the metering valve, please take care to avoid the following in particular:

- Incorrect use of design versions (e.g. incorrect sealing materials).
- Excessive ambient temperatures.
- Excessive media temperature.
- Incompatible accessory parts.
- Incorrect dosing lines.
- Line cross-sections too small.
- Viscosities too high or too low.
- Use of unsuitable dosing media.

2.2.2 Unauthorised modification and spare parts manufacture

CAUTION!

Unauthorised modifications or changes are only permissible following discussion with and the approval of the manufacturer.

Original spare parts and accessories authorised by the manufacturer ensure safety.

The use of other parts excludes liability for the consequences arising from this.

2.3 Life span

Depending on properly conducted maintenance (visual inspection, functional testing, replacement of parts, etc.), the life span is approximately 2 years.

Components that come into contact with product are excluded from the warranty!

2.4 Safety measures taken by the operator

It is expressly up to the owner to train, monitor and instruct his operating and maintenance personnel so that they comply with all of the necessary safety measures.

The frequency of inspections and controls must be complied with and documented.

2.5 Workforce requirements

Qualifications

DANGER!

Risk of injury if personnel are inadequately qualified!

If inadequately qualified personnel work on the system or are in the hazardous area, hazards may arise that can cause serious injuries and significant material damage.

– All work must be carried out by qualified personnel only!
– Keep unqualified personnel away from hazard areas.

NOTICE!

Only those individuals who can be expected to perform their work reliably are authorised as personnel. Individuals whose reactions are impaired, e.g. by drugs, alcohol, medicines, are not authorised. When selecting personnel, the valid age and occupation-specific regulations must be observed.

Manufacturer
Certain work may only be carried out by specialist staff of the manufacturer or by staff authorised or specially trained by the manufacturer. Other people or personnel are not authorised to carry out this work.
To carry out this work, contact our customer service team.

Mechanic
The mechanic is trained for the particular range of tasks in which s/he operates and knows the relevant standards and regulations.
The mechanic can perform work on pneumatic and hydraulic systems because of his/her specialized training and experience and can independently recognise and avoid potential dangers.

Operator
The operator has been instructed by the owner on the tasks entrusted to them and is aware of the potential dangers associated with incorrect behaviour. The operator is only permitted to carry out tasks that go beyond the scope of normal operation if these tasks are specified in this manual and the owner has authorised the operator to do so.

Production supervisor
The production supervisor is capable of performing the work assigned to them because of their technical training, knowledge and experience, as well as awareness of the relevant standards and regulations; they are able to autonomously identify and prevent potential risks. The production supervisor is authorised to give orders to other listed personnel.
The production supervisor or authorised personnel are responsible for parameterisation of the system.

Qualified electrician
Qualified electricians are able to carry out the work on electrical system because of their technical training, knowledge and experience, as well as awareness of the relevant standards and regulations; qualified electricians are capable of autonomously identifying and preventing potential risks.
Qualified electricians are specially trained for the type of work they do and are familiar with the relevant standards and regulations.

Service personnel
Certain work may only be carried out by the service staff of the manufacturer or by staff authorised or specially trained by the manufacturer. Other people or personnel are not authorised to carry out this work. To carry out this work, contact our customer service team.

2.6 Personal protective equipment (PPE)

DANGER!
Personal protective equipment, hereinafter referred to as PPE, is used to protect personnel. It is imperative to pay attention to the PPE described in the product data sheet (safety data sheet) for the metered medium.

2.7 Presentation and meaning of PSA

WARNING!

Face guard

A face mask must be worn when working in areas which are marked with the symbol opposite. The face protection is used to protect the eyes and face from flames, sparks or glow as well as hot particles, exhaust gases or liquids.

WARNING!

Protective eyewear

Goggles must be worn when working in areas marked with the symbol opposite. Protective eyewear protects the eyes against flying parts and liquid splashes.

WARNING!

Protective work clothing

In the event of works in areas, which are identified with an adjacent symbol, appropriate protective clothing is to be worn. Protective work clothing is close-fitting clothing with low resistance to tearing, close-fitting sleeves and no protruding parts.

WARNING!

Chemical resistant protective gloves

Suitable protective gloves must be worn when working in areas marked with the symbol opposite. Chemical resistant safety gloves protect the hands from aggressive chemicals.

WARNING!

Protective gloves, mechanical hazards

In the event of works in areas, which are identified with an adjacent symbol, appropriate protective gloves are to be worn. Safety gloves provide protection of the hands against friction, grazes, punctures or deeper wounds and against coming into contact with hot surfaces.

WARNING!

Safety shoes

Suitable protective shoes must be worn when working in areas marked with the symbol opposite. Safety shoes protect the feet from bruising, falling parts, slipping on surfaces and protecting against aggressive chemicals.

2.8 Indications of risks

Risk of fire

DANGER!
Risk of fire
If there is a risk of fire, it is imperative to use the designated extinguishing agent and to implement suitable safety measures to tackle the fire.
It is also imperative here to comply with the safety data sheet for the chemicals you use to tackle the fire!

Risk of slipping

DANGER!
Slipping hazards are marked by the symbol opposite.
Spilled chemicals create a risk of slipping when wet.

WARNING!
Risk of slipping due to fluid in the operation and provisioning area!

- Wear non-slip, chemically resistant shoes when working.
- Place product containers in a tank to prevent a slipping hazard caused by leaking fluids.

ENVIRONMENT!
Immediately soak up any leaking liquids with a suitable binding agent and dispose of properly.

Unauthorised access

DANGER!
Unauthorised access
The owner must ensure that unauthorised personnel are prevented from accessing the operating area.

Chemical hazards (dosing medium/active substance)

DANGER!
Risk of injury to the skin and eyes caused by the chemical used (dosing medium).

- Read the enclosed safety data sheet carefully before using the dosing medium.
- The safety regulations and the prescribed protective clothing must be complied with when working with chemicals.
- Attention must be paid to the information included on the product data sheet of the dosing medium used.

DANGER!

It is essential that that hands are washed prior to work breaks and at the end of the working day. Information about the usual precautions when handling chemicals and about the use of PPE can be found on the relevant safety data sheet for the chemical being used and must be complied with.

ENVIRONMENT!

Leaked, spilled dosing media can harm the environment.

Leaked, spilled dosing media must be cleaned and disposed of correctly, according to the instructions on the product data sheet. It is essential to ensure that the required personal protective equipment is used.

Preventive action:

– Place product containers in a tank to collect leaking fluids without harming the environment.

2.9 Environmental protection measures

ENVIRONMENT!

The environmental symbol denotes environmental protection measures.

2.10 Installation, Maintenance and Repairs

NOTICE!

Material damage by using incorrect tools!

Material damage may arise by using incorrect tools during assembly, maintenance or troubleshooting. **Only use the correct tools.**

DANGER!

Damage and injuries may occur if installation, maintenance or repair work is carried out incorrectly.

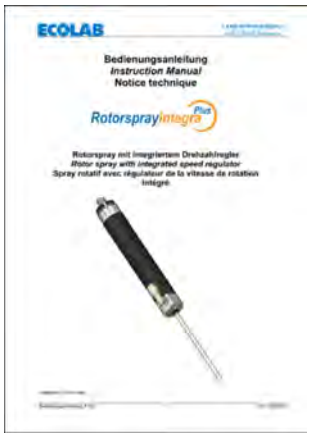
- All installation, maintenance and repair work must only be performed by authorised and trained specialist personnel in accordance with the applicable local regulations.
- Safety regulations and prescribed protective clothing when handling chemicals should be followed. Attention must be paid to the information included on the product data sheet for the metering medium used.
- Prior to installation, maintenance and repair works the feeding of the dosing medium should be disconnected and the system cleaned.

NOTICE!

Only original equipment spare parts may be used for maintenance and repairs.

3 Scope of supply

Rotorsprayintegra^{PLUS}, article no. 295055



Operating Manual, article no. 417101448

4 Use

The rotor spray with integrated speed regulator, Rotorspray integra^{PLUS}, is used for the automatic application of adhesives, sealants and lubricants in drilled holes in the diameter range from 8 bis 100 mm.The automobile sector represents a significant range of applications.

The Rotorspray integra^{PLUS} is generally used together with a dispensing valve EP (Article No. 295219).

The product (reactive adhesives, oils or other liquids) is delivered into the rotating rotor disc via the needle of the dispensing valve. The product is applied in a ring shape in the drilled hole to be wetted due to the rotation of the rotor disc and its construction. Preferred use is horizontal or from above.

Only low viscosity adhesives or oils can be processed using the Rotorspray integra^{PLUS}.

The size of the rotor disc and the length of the shaft are variable within broad limits in order to take into consideration the differing drilled hole diameters and lengths to be wetted.

The customer’s PLC is responsible for the coordinated activation of dispensing valve and Rotorspray integra^{PLUS}.

The Rotorspray integra^{PLUS} is integrated in production facilities and works there in connection with the super ordinate control system. A release signal input and a ready reply signal output are integrated to coordinate the operation sequence.

In addition to the actual speed regulator, the Rotorspray integra^{PLUS} also has a switch-on current limitation and adjustable acceleration monitoring.

The rotor spray is subject to the limits stated in the technical data regarding the output available to accelerate the shaft and the rotor disc.

Data	Value	Unit
Largest rotor disc diameter:	40	mm
Largest shaft diameter:	6	mm
Longest shaft (with bearing bush):	600	mm

5 Construction

5.1 Mechanical construction

The rotor disc is located at the end of the rotor shaft with double ball bearings and is driven via a flexible coupling by a DC motor.

Product feed is effected via a dispensing needle which runs parallel to the rotor shaft; the connection for product is integrated in the headpiece of the rotor sprays. Alternatively, the dispensing valve can be attached directly to the rotor spray via the angle bracket available as an accessory.

Speed adjustment is carried out at an adjustment ring at the end of the rotor spray.
The voltage supply and signal exchange are via an 8-pole connector.

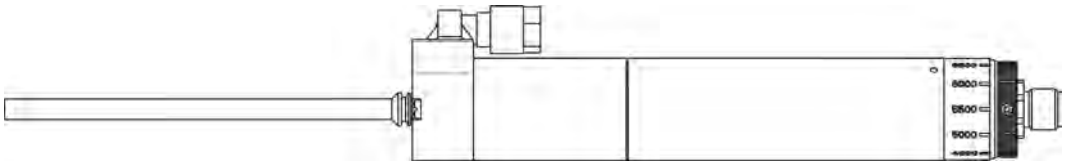


Fig. 2: Rotorspray integra PLUS general view

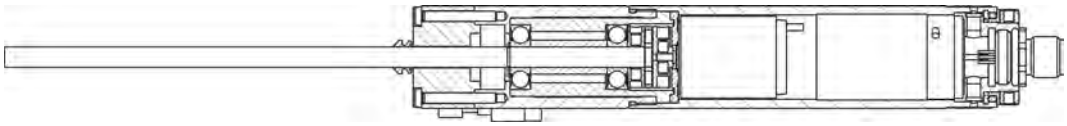
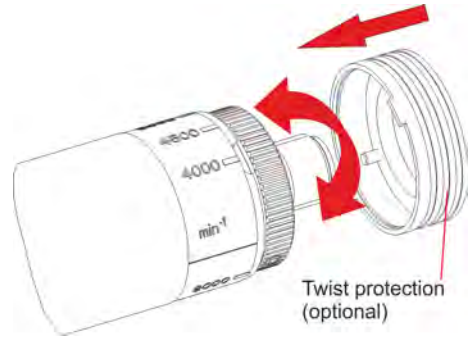


Fig. 3: Rotorspray integra PLUS sectional view

5.2 Electrical construction

The electrical construction comprises the drive motor, a control board with speed regulator and power circuitry as well as the 8-pole connector M12.

5.2.1 Speed adjustment



The cap at the connection end can be rotated and has 10 lock-in positions.

Thus the rotor spray speed is pre-selected between 4000 and 9000 rpm in increments of 500 rpm.
Scanning of the speed set point is optical.

A protective cap can be used to prevent unintentional turning. (see accessories)

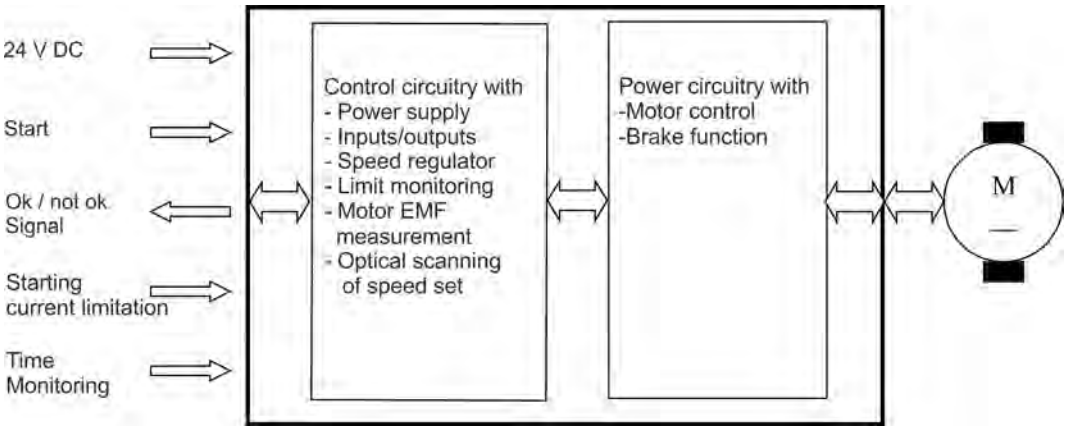
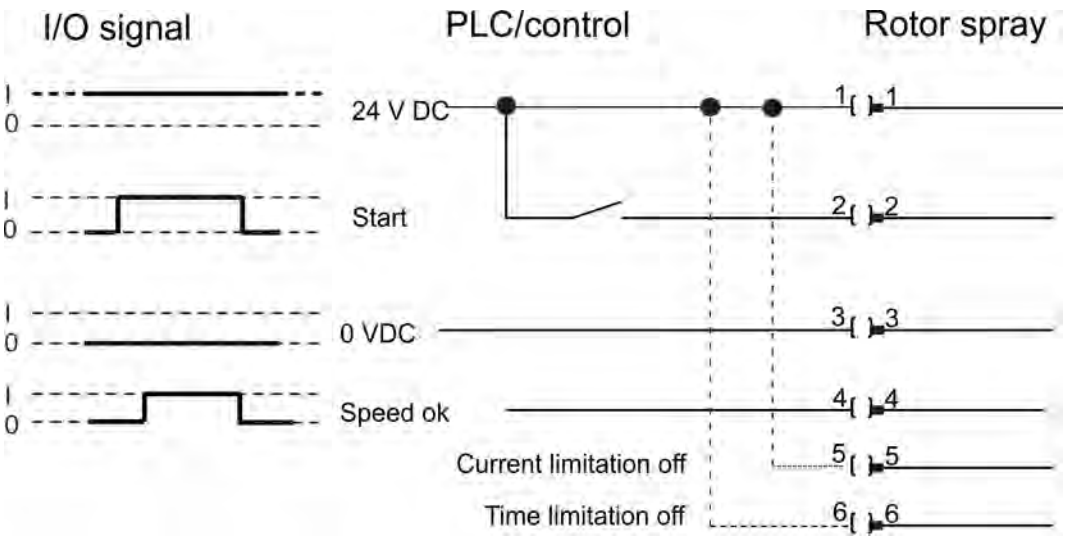


Fig. 4: Block diagram control board



The signal “Speed OK” is active as soon as the nominal speed is reached after the start-up period. A PLC output is generally used for the start function.

The signal is one-active!

6 Installation

6.1 Installation diagram

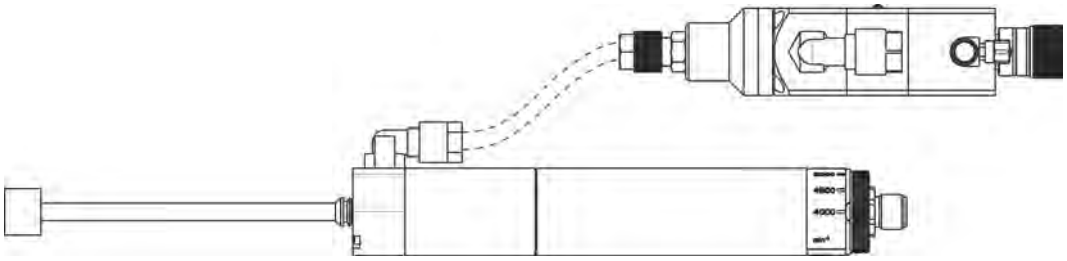


Fig. 5: Dispensing valve attached separately

NOTICE!

The dispensing valve is to be fitted as closely as possible to the rotor spray to exclude errors in dispensing and the dispensing monitoring.

We recommend using the angle bracket available as an accessory.

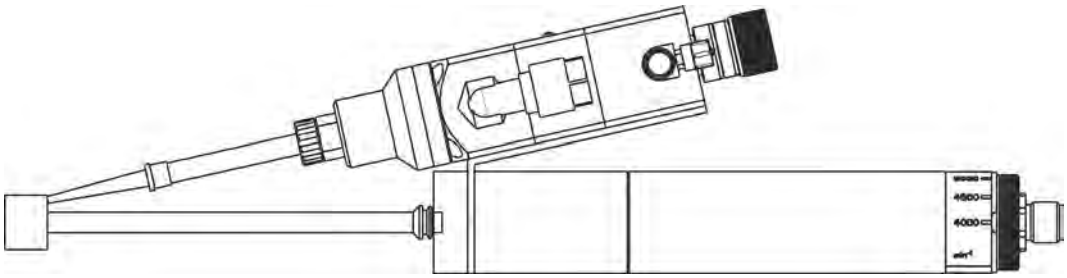
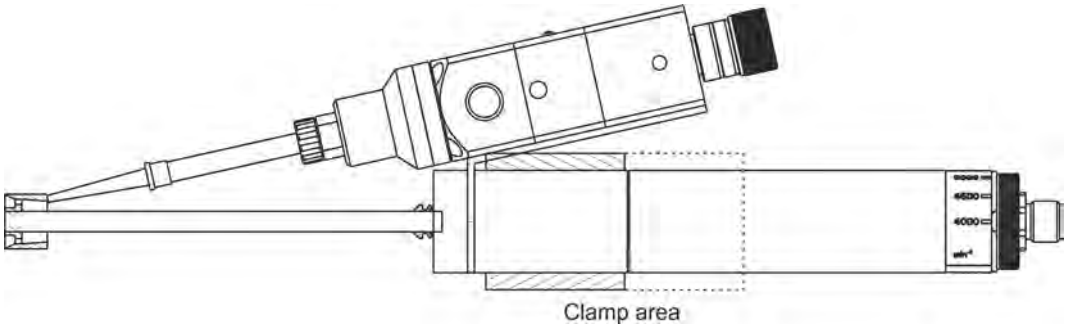


Fig. 6: Dispensing valve attached using angle bracket

6.2 Attachment

The Rotorspray integra^{PLUS} is to be attached using a clamp mounting.
The permissible clamp area is to be observed.



If necessary an elastomer strip (rubber sheet) is inserted prior to clamping to protect the Rotorspray integra^{PLUS} from excessive clamping force.

WARNING!
The rotor shaft is to be handled with particular care since even slight damage due to bending or such like may lead to incorrect speeds and thus to insufficient wetting with product and reduce the service life of the bearings.

NOTICE!
Attachment is to be effected so that the speed adjustment ring remains accessible and cleaning of the parts in contact with product is possible at any time.

7 Functional description

7.1 Normal operation

The Rotorspray integra^{PLUS} is supplied with 24 V direct voltage.
This is normally the voltage which is also used to run the PLC.

The start signal for theRotorspray integra^{PLUS} is active when the input is connected to 24 V DC. The motor then accelerates to the speed set.

The Rotorspray integra^{PLUS} remains switched on until the start signal changes back to 0 V DC.

Once the speed has been reached, the Rotorspray integra^{PLUS} signals OK, i.e. the corresponding output signal changes after the start from 0 V DC to 24 V DC within a few hundred milliseconds.

When the start signal changes from 24 VDC to 0 VDC, theRotorspray integra^{PLUS} is electronically decelerated to collision monitoring speed (approx. 100 rpm).

7.1.1 Start-up time monitoring

If the required speed is not achieved within the specified time of 0.5 s, then there is no signal change i.e. the Rotorspray integra^{PLUS} signals not OK.

This malfunction message can be suppressed by connecting the line “Time limitation OFF” with 24 V. The signal change then takes place as soon as the set point speed has been reached.

7.1.2 Current limitation

The integrated current limitation restricts the Rotorspray integra^{PLUS} current consumption to a maximum of **max. 0,8 A.**

At high speeds and great masses, the start-up time of 0.5s may be exceeded. To deactivate current limitation, the input “Current limitation off” must be connected with 24 V.

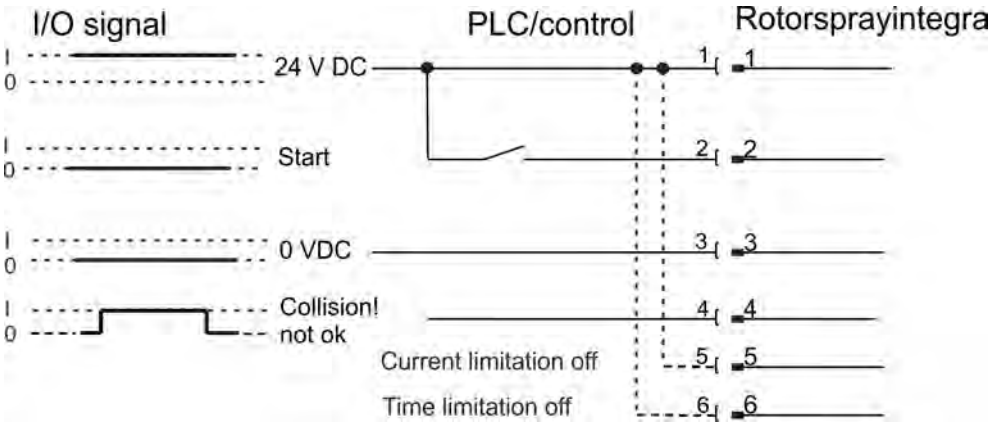
This enables current consumption to increase to around **2 A**.

7.1.3 Collision monitoring

The rotor spray is equipped with a collision monitoring detector.
In this process, the rotor shaft rotates constantly at low speed (100 rpm) as soon as the supply voltage is applied.

In the event of a collision of the rotor disc or shaft with the work piece to be wetted, the rotor shaft blocks. This is detected by the electronics.

The signal “Not OK” is output by inverting the “OK” signal.



After the successful completion of a rotational cycle and after change of the start signal back to 0 VDC, the rotor shaft runs at collision monitoring speed.

7.1.4 Speed regulation

The motor speed is regulated by the integrated control electronics via a pulse-width modulated voltage. The speed regulation reliably compensates for motor torque fluctuations due to unstable supply voltage or fluctuating frictional resistance.

7.2 Calibration function

The differing lengths of the rotor spray shafts and the different rotor disc sizes mean that the torque the motor must transfer to achieve the set point speed differs from one case to another.

Frictional effects in the bearings also influence the speed curve.

The Rotorspray integra^{PLUS} can be integrated in a learning process via an operating unit connected between the PLC and Rotorspray integra^{PLUS}. During the learning phase, the controller in the Rotorspray integra^{PLUS} attempts to influence the control parameters so that the set point speed is achieved in a very brief period without overshooting. Calibration is preferable ex works.

7.3 Operating data collection function

The Rotorspray integra^{PLUS} electronic contain a microprocessor with memory functions. During operation, operating data such as switch-on time, motor running time, start/stop incidents etc. are recorded.

The data can be read out in the factory. The data recorded can thus provide information for preventative maintenance and for the replacement of wearing parts.

7.4 Process sequence diagram

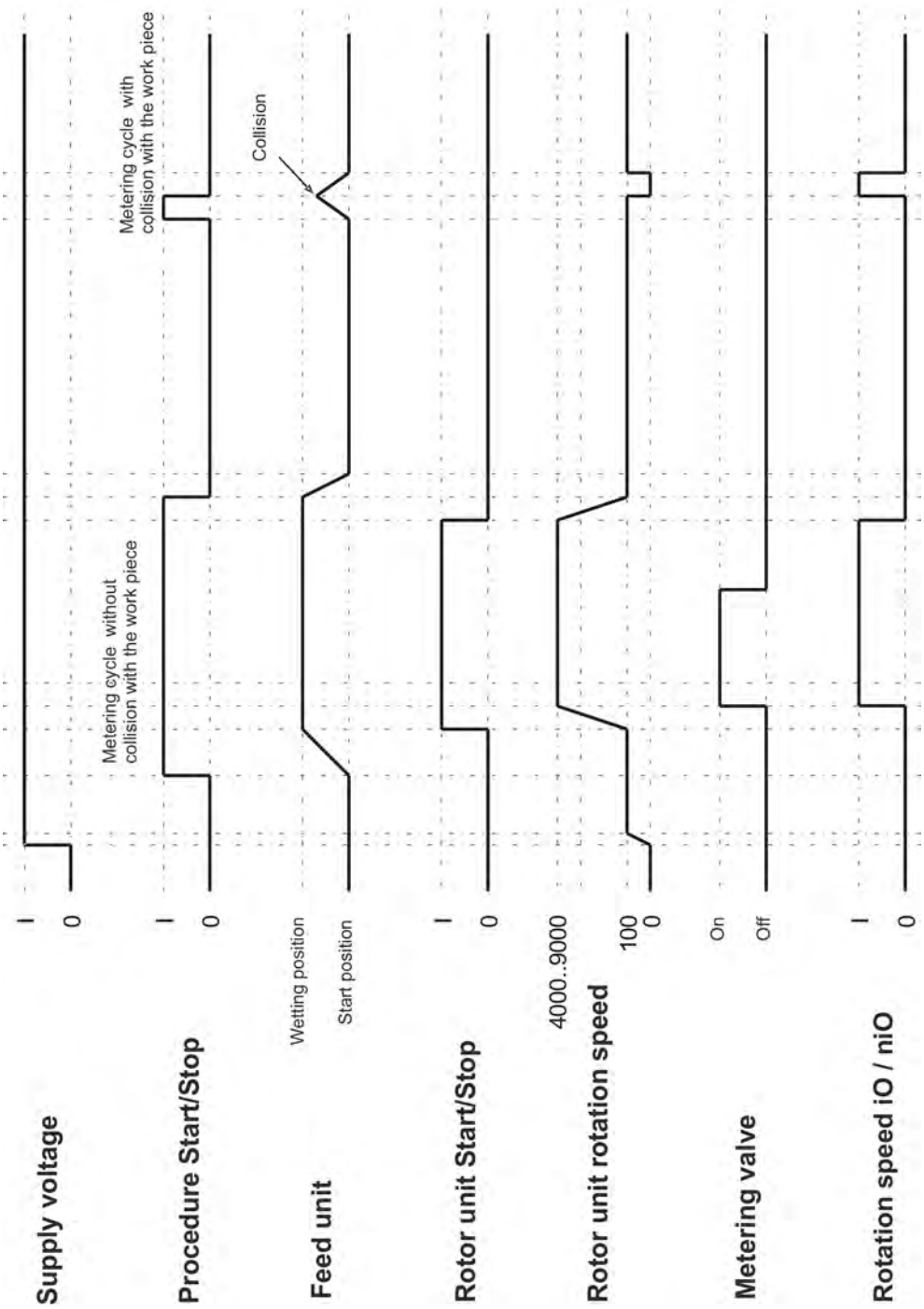


Fig. 7: Process sequence diagram

8 Installation, assembly

Personnel:
- Qualified electrician
- Service personnel

8.1 Electrical connection

The Rotorspray integra^{PLUS} is constructed and tested according to IEC 61131-2 (automation technology) and has left the factory in a perfectly safe technical condition.

The user must observe the information and warning notes contained in this Operating Manual in order to maintain this condition and to ensure operation without hazard.

If it is to be assumed that operation without hazard is no longer possible, then the Rotorspray integra^{PLUS} is to be taken out of service and safeguarded against unintentional operation.

This is the case if:

- the Rotorspray integra^{PLUS}shows visible damage,
- the Rotorspray integra^{PLUS} no longer appears to function, e.g. after longer storage periods under unfavorable conditions.

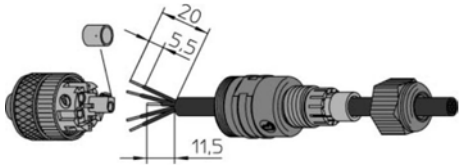
The rotor spray is protected against interference effects according to the NAMUR recommendations and EN 61000-6-4:2001.

8.2 Connectors

8.2.1 Connection to Rotorspray integra^{PLUS}

The Rotorspray integra^{PLUS} has an 8-pole plug. The corresponding coupling is prewired ex works. Only the bridges for the activation/deactivation of the monitoring functions have to be installed.

Attachment plug M12 (coupling) straight version



Attachment plug M12 (coupling) offset version

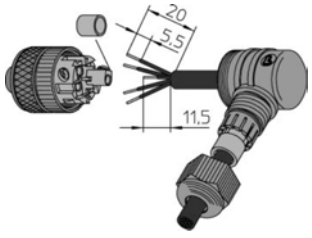


Fig. 8: Connection diagram

1 brown , 24 V, DC
2 white, Start
3 blue, 0 V, DC
4 black, OK/not OK signal
5 current limitation
6 start-up time limitation
7 not connected
8 not connected

8.2.2 Attachment plug PLC

The PLC attachment plug is mounted to a 4-m cable.

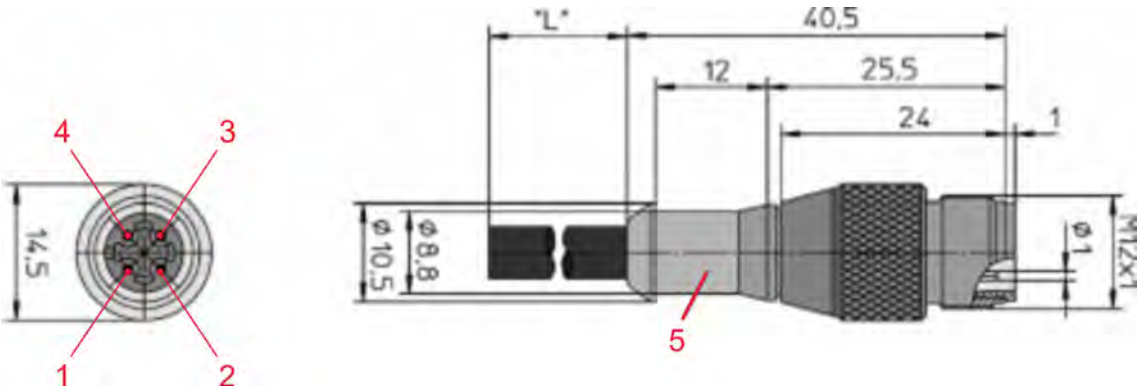


Fig. 9: Connection diagram

1 brown, 24 VDC
2 white, Start
3 blue, 0 VDC
4 black, OK/not OK signal
5 protection hose

9 Maintenance / repair

Personnel:
- Mechanic
- Qualified electrician
- Service personnel

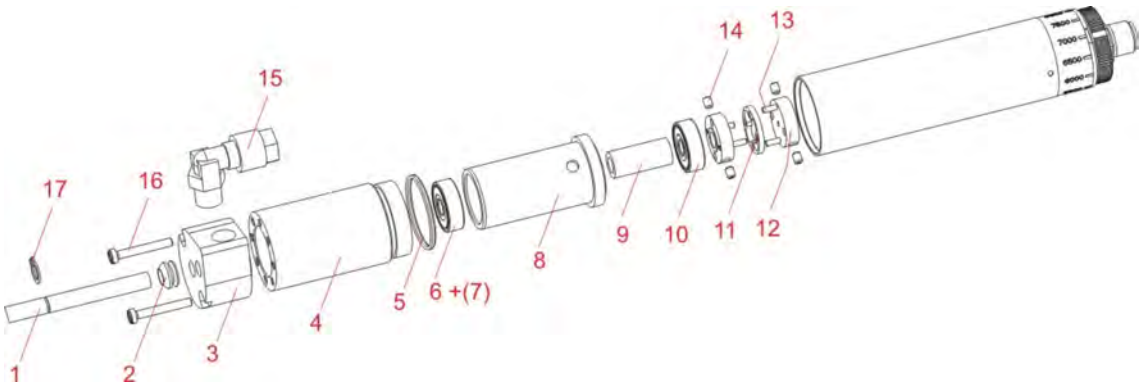
Maintenance or repair is only to be performed by trained experts.

Preventative maintenance measures such as the replacement of wearing parts etc. is recommended to maintain the readiness for use of the rotor spray.

The Rotorspray integra^{PLUS} has an integrated operating data collection function.

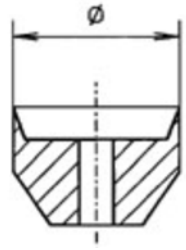
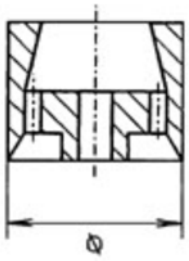
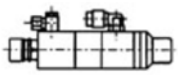
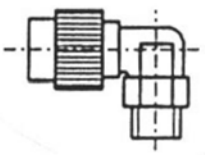
In the event of a repair, the actual running time of the Rotorspray integra^{PLUS} can be read out of the integrated memory to assess the necessity of replacing components.

9.1 Spare parts



Item	Designation	Article No.
1	Rotorspray integra^{PLUS} standard rotor shaft	39505504
2	V-ring V-6S 5 X 2 X 5.2 NBR	417008404
3	Head piece	39503704
4	Rotorspray integra^{PLUS} bearing housing Al black	39505501
5	Precision O-ring 24.8 X 1.5 70 NBR BUNA	417002241
6	Deep groove ball bearing AD 19 x ID 6 x 6 pres.	414000009
7	Labyrinth covering plate for ball bearings	414000013
8	Rotorspray integra^{PLUS} bearing receiver sleeve Ms	39505502
9	Rotorspray integra^{PLUS}bearing spacer Ms	39505505
10	Rotorspray integra^{PLUS} coupling claw shaft Al	39505507
11	Rotorspray integra^{PLUS} coupling elastic part POM	39505508
12	Rotorspray integra^{PLUS} MID coupling claw motor Al	39505506
13	Set pin DIN7 A2 2x10	413612107
14	Set screw with I.6KT M3 x 4 DIN 913 V2A	413405012
15	Screw-in offset 1/8" 6 X 4 PA	415101807
16	Cap screw M3X22 DIN84 ISO1207 V2A	413018263
17	Circlip D.6/ID.5.6 DIN471	413780004

10 Accessories

Image	Article/designation	Article no.
	**Rotor discs with back leading edge:**	
	Rotor disc 6 mm Ø shaft 2 mm Ø	39502001
	Rotor disc 7 mm Ø shaft 2 mm Ø	39502002
	Rotor disc 8 mm Ø shaft 2 mm Ø	39502003
	Rotor disc 9 mm Ø shaft 3 mm Ø	39502004
	Rotor disc 10 mm Ø shaft 3 mm Ø	39502005
	Rotor disc 11 mm Ø shaft 3 mm Ø	39502006
	Rotor disc 12 mm Ø shaft 3 mm Ø	39502007
	**Rotor discs with front leading edge:**	
	Rotor disc 9 mm Ø shaft 2 mm Ø	39502022
	Rotor disc 10 mm Ø shaft 2 mm Ø	39502019
	Rotor disc 12 mm Ø shaft 3 mm Ø	39502023
	Rotor disc 14 mm Ø shaft 3 mm Ø	39502008
	Rotor disc 16 mm Ø shaft 3 mm Ø	39502009
	Rotor disc 18 mm Ø shaft 6 mm Ø	39502010
	Rotor disc 20 mm Ø shaft 6 mm Ø	39502011
	Rotor disc 20 mm Ø shaft 6 mm Ø	39502018
	Rotor disc 22 mm Ø shaft 6 mm Ø	39502012
	Rotor disc 28 mm Ø shaft 6 mm Ø	39502013
	Rotor disc 32 mm Ø shaft 6 mm Ø	39502014
	Rotor disc 36 mm Ø shaft 6 mm Ø	39502015
	Rotor disc 40 mm Ø shaft 6 mm Ø	39502017
	Dispensing valve EP	295219
	Angle bracket with bearing cover to attach the EP dispensing valve	295038
	Angled screw connection, R 1/8" PVDF for product line Ø 6/8 mm	415101809
	Angled screw connection R 1/8" PVDF for product line Ø 4/6 mm	415101810
	Circular connector 8-pole RKC 8/9, straight version	418463151
	Circular connector 8-pole RKCW 8/9, offset version	418463152
	Twist protection, black	39505514

11 Technical data

Data	Value	Unit
Supply voltage	24 ± 10%	V, DC
Power consumption, without current limitation (max.)	2	A
Power consumption, with current limitation switched on (max.)	0,8	A
Speed adjustment range (in increments of 500)	4000 – 9000	rpm
Calibration at	4000 and 8000	rpm
Speed tolerance, of set point	± 2,5 %	
Speed monitoring time to nominal speed unrestricted, with speed moni-toring switched off	0,5	s
Speed monitoring time up to rated speed (detachable)	0,5	s
International protection	55	IP
Protection class	III	
Ambient temperature	+10 to + 40	°C
Weight (approx.)	0,4	kg
Range of application (wettable drilled hole diameter)	8 to 100	mm

Electrical connection 8-pole circular connector M12

	one – active	Current limitation:	Time limitation:
Inputs start signal:	24 V = Start 0 V = Stop	open = On 24 V =Off	open = On 24 V = Off

All inputs have over voltage and transient protection.

Output speed OK/not OK and collision signal:
One-active, with active start signal 0 V = not OK,
24 V = OK, with inactive start signal 0 V = OK, 24 V = not OK
The output is short-circuit-proof, it is to be loaded with a max. 50 mA.

11.1 Dimensions

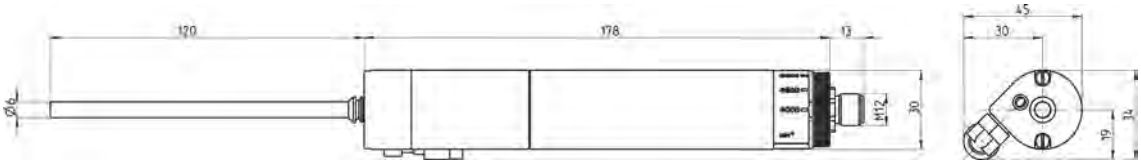


Fig. 10: Dimensions

12 Set out of operation / disassembly / environmental protection

Personnel:
- Manufacturer
- Production supervisor
- Operator
- Mechanic

DANGER!
Risk of injury due to the disregard of the specified personal protective equipment (PPE)!
For all disassembly work, please respect the use of the PSA which is specified on the product data sheet.

12.1 Shutting down

DANGER!
The procedures described here may only be carried out by skilled personnel using PPE.

The procedure for shutting down is as follows:

1. Before carrying out any subsequent work, isolate the electrical supply completely first of all and secure it against being switched on again.
2. Physically disconnect the entire power supply; dissipate stored residual energy.
3. Drain and remove operating fluids and consumables.
4. Remove the remaining processing materials and dispose of them in an environmentally-friendly way.

12.2 Dismantling

DANGER!

Dismantling may only be carried out by skilled personnel using PPE.

Before commencing dismantling, ensure that the device has been fully isolated from the power supply. Contact with live components can be fatal.
Activated electrical components can make uncontrolled movements and lead to serious injury.

Carefully rinse all components which come into contact with the product in order to remove chemical residue.

WARNING!

Danger of injury in case of improper dismantling!

Stored residual energy, components with sharp edges, points and corners, on and in the system, or on the required tools can cause injuries.

NOTICE!

Material damage by using incorrect tools!

Material damage may arise by using incorrect tools during assembly, maintenance or troubleshooting.
Only use the correct tools.

The procedure for dismantling is as follows:

- Make sure you have sufficient space before starting all tasks.
- Drain operating fluids and consumables and remove the remaining processing materials; dispose of them in an environmentally-friendly way.
- Clean assemblies and components correctly, and dismantle taking prevailing local health and safety and environmental protection regulations into consideration.
- Always handle open, sharp-edged components carefully.
- Keep the workplace tidy and clean.
  Components and tools which are loosely stacked or left lying around can cause accidents.
- Depressurise the system and pressure line.
- Disassemble the components professionally.
- Bear the heavy weight of some components in mind. If required, use lifting gear.
- Support the components to avoid them falling or tipping.

NOTICE!

If you are uncertain, it is imperative to contact the manufacturer.

12.3 Disposal and environmental protection

ENVIRONMENT!

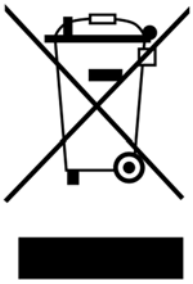
Risk of environmental damage due to incorrect disposal!

Incorrect disposal can be a threat to the environment.

- Electrical scrap, electronic components, lubricants and other operating fluids must be disposed of by approved waste disposal service providers
- If in doubt, contact your local authority, or an approved waste disposal service provider, for information on correct disposal.

All components are to be disposed of in accordance with prevailing local environmental regulations. Dispose of them accordingly, depending on the condition, existing regulations and with due regard for current requirements and criteria.

Prior to disposal, all parts which are in contact with media must be decontaminated. Oils, solvents, detergents and contaminated cleaning tools (brushes, cloths, etc.) must be disposed of in compliance with local requirements, in accordance with the prevailing waste code and with due attention to the notes contained in the manufacturers' safety data sheets.



ENVIRONMENT!

Reduction or avoidance of waste from reusable raw materials

Do not dispose of any components in the domestic waste. Take them instead to the appropriate collection points for recycling.

We would like to point out the need for compliance with the WEEE Directive 2012/19/EU, the aim and purpose of which is to reduce or avoid waste from recyclable raw materials. This directive requires member states of the EU to increase the collection rate of electronic waste so that it can be recycled.

Recycle the dismantled components:

- Scrap metals.
- Electrical waste and electronic components must be recycled.
- Recycle plastic elements.
- Dispose of all other components in line with their material characteristics.
- Hand in batteries at communal collection points or dispose of them through a specialist.

13 CE-Declaration of Conformity

D GB F

Konformitätserklärung / Declaration of Conformity / Déclaration de Conformité

ECOLAB

gemäß EG Richtlinie 2006/42/EG, Anhang II 1A
referring to EC Directive 2006/42/EC, Annex II 1A
référant à la EC directive 2006/42/EC, Annexe II 1A

SAP Dokument / document / document: KON047006(00)

ECOLAB Engineering GmbH
Postfach 1164
D-83309 Siegsdorf

Wir erklären hiermit, dass das folgende Produkt
We herewith declare that the following product
Nous déclarons que le produit suivant

Beschreibung / description / description	Auftrags-Dosiersystem Application-Dosing system Systéme de dosage pour l'application
Modell / model / modèle	Rotorspray integra PLUS
Typ / part no / type	295056
Gültig ab / valid from / valable dès:	01.03.2019

auf das sich diese Erklärung bezieht, der / den folgenden Norm(en) oder normativen Dokument(en) entspricht:
to which this declaration relates is in conformity with the following standard(s) or other normative document(s):
auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s)

ISO 12100:2010-11
EN 61000-6-2:2005
EN 61000-6-3:2007+A1:2011
EN 61010-1:2010
EN 50581:2012

gemäß den Bestimmungen der Richtlinie(n):
following the provisions of directive(s):
conformément aux dispositions de(s) directive(s):

2006/42/EC
2014/30/EU
2011/65/EU

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen:
Authorised person for compiling the technical file:
Personne auterisée pour constituer le dossier technique:

Ecolab Engineering GmbH
Postfach 1164
D-83309 Siegsdorf

Ort und Datum der Ausstellung
Place and date of issue
Lieu et date

83313 Siegsdorf, 18.02.2019

M. Niederbichler
Geschäftsführer
Company Manager
Directeur

i.V. A. Ruppert
Entwicklung und Konstruktion
Research & Development
Développement et la Construction

Annex 1 to WI-EU-RDE-602 Rev. 0 / 2019-01-22

Fig. 11: CE-Declaration of Conformity

Dokumenten-Nr.: document no.:	RotorsprayIntegra
Erstelldatum: date of issue:	05.03.2019
Version / Revision: version / revision:	417101448 Rev. 04-03.2019
Letze Änderung: last changing:	05.03.2019