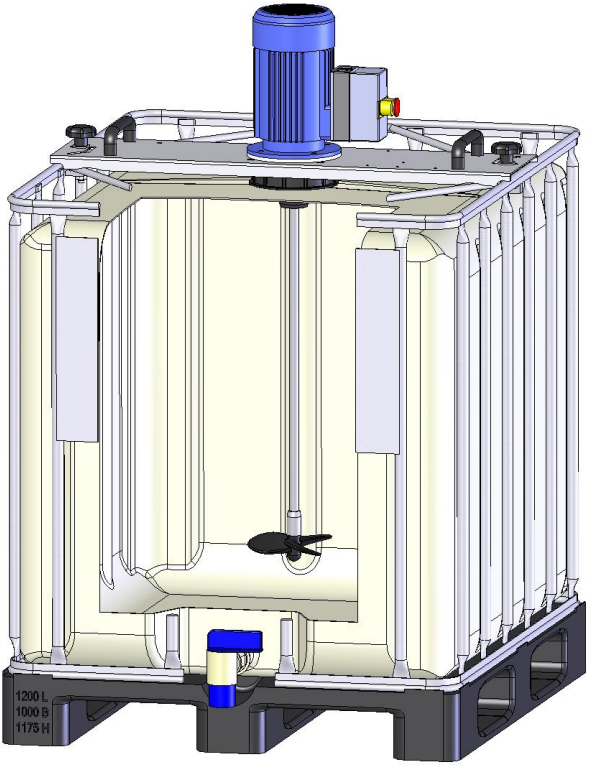
PAGERIS®



Assembly and Operating Manual for the PAGERIS - IBC Agitator

Version 1.0

Original in German

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1 Introduction

1.1 General

This Assembly and Operating Manual enables the safe and efficient handling of the PAGERIS - IBC Agitator.

The Assembly and Operating Manual is an integral part of the PAGERIS - IBC Agitator and must be kept in the immediate vicinity of the PAGERIS - IBC Agitator as well as accessible to personnel at all times. Before beginning with any work, personnel must read and understand the Assembly and Operating Manual. For safe operation, all safety information and operating instructions contained within this Assembly and Operating Manual must be observed.

Keep this Assembly and Operating Manual for future use.

This Assembly and Operating Manual describes the current version of the PAGERIS - IBC Agitators. If changes or additions become necessary over time, the Assembly and Operating Manual will be supplemented in future revisions.

The manufacturer reserves the right to change products and their documentation, without informing users of previous versions.

1.1.1 Related documents

Company	Document
C. Ehrensperger AG	EHM list of spare and wear parts
As stated on the nameplate of the electric motor	Instructions – Electric motor
As stated on the nameplate of the gear unit	Instructions – Gear unit
As stated on the nameplate of the frequency inverter	Instructions – frequency inverter

1.2 Copyrights and industrial property rights

The entire content of this Assembly and Operating Manual is subject to copyright.

Any duplication, processing, distribution, transfer to third parties in whole or in part as well as every type of use beyond what is permitted under copyright requires the written authorization of the manufacturer.

In the case of infringement, the manufacturer reserves the right to take legal action at any time.

1.3 Material defects and defects of title

Claims on the side of the operator to material defects and defects of title require that the defect is claimed in writing without undue delay, but at the latest within two working days.

The manufacturer is in no case responsible for damage to the agitator itself or for consequential damage caused by the agitator if the damage has been caused by incorrect use or handling of the agitator.

In particular, the manufacturer is not responsible for failures or faults caused by modifications undertaken by the operator or other persons.

To the extent that a defect is the responsibility of the manufacturer, the manufacturer is entitled to choose between repair or replacement.

Claims for material defects and defects of title shall expire in the case of non-observance of the requirements of this Assembly and Operating Manual, the relevant statutory provisions and/or other guidance provided by the manufacturer.

No claims exist as to the availability of previous versions or to the retrofitting capacity of delivered units with regard to the current series standard.

1.4 Legend

1.4.1 Symbols

Operating instructions

Operating instructions are presented as follows:
To perform an operation, proceed as follows:

1. Do this.
2. Do that.

‣ This results in this intermediate outcome.

3. Do the following.

✓ You have performed the operation.

Enumerations

Enumerations are represented as follows:

- Enumeration of 1st requirement,
  - Enumeration of 2nd requirement,
  - Enumeration of 2nd requirement,
- Enumeration of 1st requirement.

1.4.2 Hazard classes

In this document, safety information is depicted using standardized pictograms and symbols. Depending on the probability of occurrence and the severity of the consequence, the following hazard classes are used:

DANGER

Indicates a dangerous situation that, if not avoided, will result in serious injury or death.

‣ Measures to avoid the danger

WARNING

Indicates a dangerous situation that, if not avoided, can result in serious injury or death.

‣ Measures to avoid the danger

ATTENTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor to moderate injury.

- Measures to avoid the danger

NOTE

Application advice and useful information.

1.4.3 Warning signs

	Warning of a danger zone
	Warning of electrical voltage
	Warning of hot surfaces
	Warning of suspended loads
	Warning of risk of crushing
	Warning of risk of slipping

1.4.4 Mandatory signs

	Application advice and other useful information
	Use eye protection
	Use light respiratory protection
	Use protective clothing
	Use hearing protection
	Use protective gloves
	Use safety footwear

1.5 Notes

- A prerequisite for the safe handling of the PAGERIS - IBC Agitator is knowledge of the basic safety requirements.
- This Assembly and Operating Manual contains the most essential instructions for the safe operation of the PAGERIS - IBC Agitator. The initial operation requires a conformity assessment procedure, which is the basis for the EC conformity assessment and marking of the complete machine.
- This Assembly and Operating Manual – in particular the safety information – must be observed by every person who works on or with the PAGERIS - IBC Agitator.
- The applicable rules and regulations for accident prevention must also be observed.

1.6 Product label

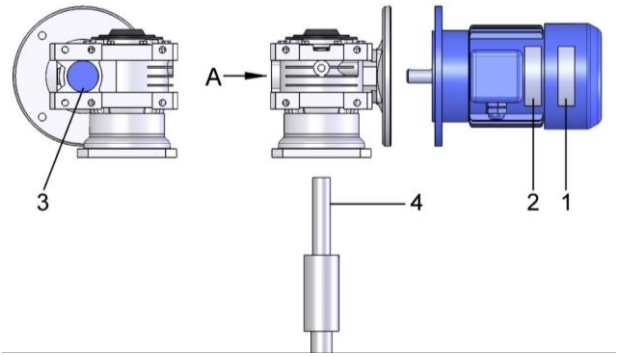


Figure 1 Identification and product label

Item 1 - Device label of the agitator

Item 2 - Product label of the electric motor

Item 3 - Product label of the gearbox

Item 4 - Marking of the agitator shaft
Example: Pageris 10630903

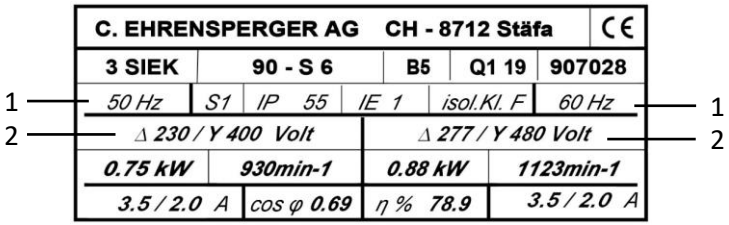


Figure 2 Product label of the electric motor

Figure 3 Product label of the gearbox

Item 1 - Frequency

Item 2 - Operating voltage

Item 3 - Gearbox transmission

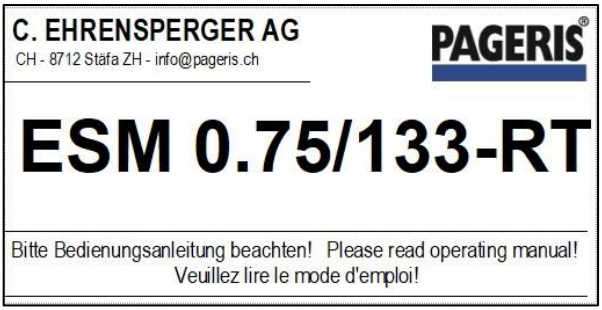


Figure 4 Device label of the agitator

1.7 Declaration of conformity

This statement applies only to the machine in the condition in which it was placed on the market. This declaration will lose its validity in the event of modifications to the product without prior agreement with us.

Manufacturer	C. Ehrensperger AG
Contact	Weierstrasse 11 8712 Stäfa Schweiz
	Tel.: +41 44 927 30 00 / info@pageris.ch
Authorized Person	Marco Sigg Technical Director
Product	PAGERIS - IBC Agitator. For the agitation of liquid media as part of a mixing sys-tem.
	Types: IBC Mischer EHM …/..-Mo IBC Mischer EHM …/..-RT IBC Mischer ESM …/…-RT
Meets the requirements of the guidelines	EU Machine Directive 2006/42/EC EMC Directive 2014/30/EU Low Voltage Directive 2014/35/EU RoHS Directive 2011/65/EU WEEE Directive 2002/96/EC
Meets the harmonized standards	DIN EN ISO 12100:2011 Safety of machinery – General principles for design – Risk assessment and risk reduction (ISO 12100:2010) EN ISO 13857:2008 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs EN 60204-1:2009 Safety of machinery – Electrical equip-ment of machinery, Part 1 DIN 28132: Agitators; diameters of shafts for agitators

Stäfa, 14.11.2018
Marco Sigg, Technical Director

2 About PAGERIS - IBC Agitator

2.1 Description PAGERIS - IBC Agitator

2.1.1 Overview

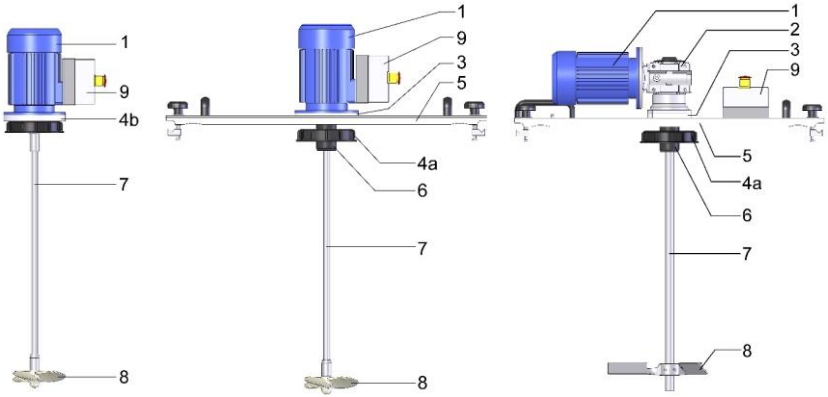


Figure 5 Overview setting up PAGERIS - IBC Agitator (example image)

Item 1 - Electric motor
Item 2 - Gearbox
Item 3 - Sealing flange with shaft seal
Item 4a,b - IBC lid with and without sealing flange
Item 5 - Crossbeam
Item 6 - Guard tube
Item 7 - Agitiation shaft
Item 8 - Agitation impeller
Item 9 - On/Off switch with emergency stop

2.1.2 Intended use

The PAGERIS - IBC Agitator is designed exclusively for the “agitation of liquid media” in IBC containers.

2.1.3 Foreseeable improper use

Any other or extended use of the PAGERIS - IBC Agitator as described in the chapter 2.1.2 Intended use is considered non-compliant and thus inappropriate.

In such cases, the safety in the environment of the machine as well as its protection against destruction can be impaired. The manufacturer assumes no liability for any injury or damage that thereby results.

2.2 Technical specifications

2.2.1 Ambient conditions

The conditions at the place of use of the PAGERIS - IBC Agitator must at least correspond to the conditions listed in this assembly and operating manual as permissible ambient conditions. Admissible are e.g.:

- Non-explosion-endangered environment
- Ambient temperature of -20°C to +40°C
- Relative humidity < 85%
- Installation site maximum 3,000 m above sea level.

Any use under other conditions is prohibited.

2.2.2 Dimensions quick reference

Electric motor

Type	Height [mm]	Diameter of flange [mm]	Weight [kg]
BG71 to BG90	215 … 306	ø 160 … 200	ca. 6 … 21

Gearbox

Type	Width [mm]	Height [mm]	Diameter of flange [mm]	Weight [kg]
ESG50 to ESG63	160 … 200	170 … 216	ø 125 … 200	ca. 3 … 7

Agitator shaft

Material	Length [mm]	Diameter [mm]	Weight [kg]
Stainless-steel 1.4435	800/850/900	ø 15 … 30	ca. 1,5 … 4,5
Steel with PE-coating	800/850/900	ø 17 … 22	ca. 1,5 … 2
Steel with PVDF-coating	800/850/900	ø 19	ca. 1,5

Agitation impeller – 3 blades

Type	Material	Diameter [mm]	Weight [kg]
DRK125 to DRK250	PP fiberglass - reinforced	ø 125 … 250	ca. 0,1 … 0,3
DRK125 to DRK250	PVDF natural	ø 125 … 250	ca. 0,1 … 0,5
DRK175 to DRK250	PVDF carbonfiber - reinforced	ø 175 … 250	ca. 0,2 … 0,5
DRK125-L to DRK200-L	PVDF	ø 125 … 200	ca. 0,1 … 0,4
DRK125-V to DRK250-V	PVDF	ø 125 … 250	ca. 0,2 … 0,4
DRS125 to DRS250	Stainless steel 1.4435	Ø 125 … 250	ca. 0,2 … 0,7
DRS150-S to DRS250-S	Edelstahl 1.4435	ø 150 … 250	ca. 0,3 … 0,5
KLPS150 to KLPS250	Stainless steel 1.4435	ø 150 … 250	ca. 0,3 … 0,6
KLR3-350 to KLR3-400	Stainless steel 1.4571	ø 300 … 400	ca. 1,6

Sealing flange

Material	Height [mm]	Diameter of flange [mm]	Weight [kg]
PP	10 … 30	ø 160 … 200	ca. 0,5 … 0,8

Radial shaft seal

Type	Material	Diameter [mm]
ø 47/25 x 10 … 68/40 x 10 PTFE	PTFE	ø 47/25 x 10 … 68/40 x 10
ø 47/25 x 10 … 68/40 x 10 NBR	NBR	ø 47/25 x 10 … 68/40 x 10

2.2.3 Speed of electric motor

Winding	RPM @ 50Hz	RPM @ 60Hz
4 pole	1500	1800
6 pole	1000	1200
4 pole with frequency innverter	0 – 2800 (0 - 100Hz)	

2.2.4 Electrical specification of electric motor

Current type [Hz]	3~Phase	50 ¦¦ 60
Power [kW] 4 poles 6 poles		 0,25 … 1,5 0,18 … 1,1
Max. Voltage [V]		400 ¦¦ 480
Continuous operation		S1
Protection class		IP 55

Current type [Hz]	1~Phase	50
Power [kW] 4 poles 6 poles		 0,25 … 1,1 0,18 … 1,1
Max. Voltage [V]		230
Continuous operation		S1
Protection class		IP 55

2.2.5 Interfaces to external systems

2.2.6 Electrical interfaces

- Motor protection switch with CEEE 16 plug

2.2.7 Mechanical interfaces

- Flange for attaching to the IBC lid or to the crossbeam. Attached using bolts.
- IBC lid with integrated flange for bolting to the opening of the container…
- Or crossbeam for clamping to metal beams.

2.3 Delivery contents

- Electric motor,
- Gear unit,
- Agitator shaft,
- Agitation impeller,
- IBC lid with sealing flange and radial shaft seal,
- Guard tube,
- Crossbeam,
- On/Off switch with emergency stop.

3 Safety

3.1 Obligations of the operator

The PAGERIS - IBC Agitator is used in the commercial sector. The operator must comply with the legal obligations for occupational health and safety.

In addition to the safety information in this Assembly and Operating Manual , the local safety, accident prevention and environmental protection regulations must be observed.

Particularly important is:

- The operator is obliged to prepare operating instructions for the individual workstations and, if necessary, to adapt these to the current status of the regulations.
- The operator is obliged to renew the labelling and, if applicable, the engravings on the components of the PAGERIS - IBC Agitator so that they are always clearly legible.

This also includes:

- affixing proper grounding,
- implementing access prohibition for unauthorized persons,
- clear signage for all prohibitions.

3.2 Obligations of the personnel

It is only permitted to work with the PAGERIS - IBC Agitator if the personnel have read and understood this Assembly and Operating Manual.

3.2.1 Requirements for personnel

Only persons who are expected to perform their tasks reliably are permitted as personnel. Persons whose reaction capability is impaired, e.g. through drugs, alcohol or medication, are NOT permitted.

NOTE

We recommend that the operator has this confirmed in writing.

3.2.2 Training of personnel

This Assembly and Operating Manual is aimed at technical personnel with the following qualifications:

Trained / instructed staff
Personnel who have been instructed and trained in the duties with which they are entrusted and the risks which may arise from incorrect behavior. These personnel have also been advised on the necessary protective devices and precautions. People who are being trained or introduced to the job or undergoing general training should only be allowed to work with the unit under constant supervision of an experienced person.

Technical personnel
The qualified personnel must be able to carry out the work assigned to them and possess adequate professional training, experience and knowledge as well as the knowledge of relevant regulations in order to independently recognize and avoid potential hazards.

Electrician
The electrician must be certified in the specific purview of their activities and know the relevant standards and regulations. They must be able to carry out work on electrical systems and possess adequate training to independently recognize and avoid potential hazards.

3.3 General safety regulations

A detailed explanation of the symbols can be found in chapter 1.4 Legend.

Certain activities may be subject to specific safety requirements. Safety and warning information can be found in the respective chapters of this Assembly and Operating Manual.

3.3.1 Basics

The local safety, accident prevention and environmental regulations must also be observed for the operation of the PAGERIS - IBC Agitator.

The PAGERIS - IBC Agitator should only be operated:

- in accordance with regulations, with regard to safety and potential hazards and in compliance with this Assembly and Operating Manual,
- if all safety equipment is in place and fully functional and,
- when the agitator is in perfect technical condition.

This also includes:

- The labels attached to the agitator must always be complete and clearly legible. Replace damaged or illegible labels.
- Perform configuration and/or maintenance only when the agitator is switched off and secured from being switched on again.
- Clean the working area daily of dirt and contamination.
- Tie back long hair and use a hairnet if necessary.
- Do not wear loose and/or hanging clothing, scarves, ties or jewelry when working with/on the agitator.

3.3.2 Personal protective equipment

Depending on the nature of the mixing medium, use suitable personal protective equipment:

- Eye protection,
- protective clothing,
- protective gloves,
- safety footwear,
- hearing protection,
- light respiratory protection.

3.4 Protection and warning devices

Before initial operation, all safety equipment must be properly attached and functional.

Safety equipment may only be removed,

- if there are no persons in the hazard area of the agitator,
- if the agitator is switched off and secured from being switched on again,
- if the area around the agitator is secured against unauthorized access.

DANGER

Possible serious injuries due to the overriding of safety equipment.

- If the disassembly of safety equipment is required, reassemble it immediately after the completion of work.
- Ensure that the safety equipment is fully functional before switching on the agitator.

3.4.1 Control and monitoring of the mixing system

The PAGERIS - IBC Agitator is delivered without electrical components, e.g. circuit breaker, control unit, level monitoring.

To ensure that the agitation impeller is always immersed sufficiently deeply in the mixing medium, a redundant level monitoring of the mixing medium in accordance with EN IEC 61511 (SIL 2) must be provided by the operator.

3.4.2 Separating protective equipment

Secure the agitator against contact during operation, e.g. with:

Access cover

- Shaft protection
- Guard tube
- Access cover on the container

3.5 General warnings

Possible irreversible injuries due to uncontrolled startup.

- Only undertake work on the agitator if you have been sufficiently well trained.
- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

Possible impacts and/or injuries due to the tipping over of the container or ejection of liquids.

- Use only approved and undamaged containers that fit the container mount.
- Regularly clean the agitator shaft and agitation impeller of deposits to avoid imbalances and the tipping over of the container.
- Use eye protection and protective gloves.

Possible injuries due to slipping or tripping.

- Remove loose cables and objects from the floor of the working area.
- Arrange and lay all cables in such a way that no tripping hazards arise.
- Always keep the working area clean and dry.
- Use safety footwear.

Noise exposure.

- With closed containers, the noise exposure is <70 dB(A). Specific mixing applications may be associated with a higher noise exposure. Wear hearing protection.

3.6 Mechanical hazards

Crushing of the limbs and/or possible entrapment due to incorrect operation or negligence.

- Only operate the agitator when there are no persons in the hazard area.
- In the event of disruptions and emergencies, immediately activate the emergency stop of the mixing system.
- Use protective gloves and safety footwear.

3.7 Electrical hazards

Possible life-threatening electric shocks due to voltaged parts.

- Work on electrical components may only be carried out by a certified electrician.
- When working on voltaged parts, assign a second person to operate the emergency stop of the mixing system in case of an emergency.
- Always close the electrical cabinet of the mixing system and keep the keys out of the reach of unauthorized persons.
- Regularly check electrical components for damage and wear. Immediately remove any loose connections and/or damaged cables.

- High humidity can result in dangerous electric shocks. It is recommended to use earth leakage circuit breakers for the power supply.

3.8 Hazards from materials / substances

Possible injuries through contact with hazardous substances.

- Consult the safety data sheets of the used mixing media.
- Avoid skin contact with the used mixing media.
- Depending on the nature of the mixing medium, use suitable personal protective equipment.

3.9 Ergonomic hazards

Possible disorders due to unilaterally straining physical work.

- Keep the displays and controls clean and clearly legible.
- Make sure to maintain a healthy posture.

3.10 Hazards from operational environment

Possible serious injury due to explosion.

- Dangerous electrostatic charging of non-conductive parts and materials, including solids, liquids and dusts, may occur.
- **Operation in a potentially explosive atmosphere is not permitted.**

4 Preparation for use

4.1 Setting up PAGERIS - IBC Agitator

Electric motor,
Gearbox,
Agitation shaft,
Agitation impeller,
IBC lid with Sealing flange with radial shaft seal,
Guard tube,
Crossbeam,
On/Off-Switch with emergency stop.

4.2 Transport and storage

4.2.1 Transportation

WARNING

Possible impacts from dropping the agitator from the means of transportation.

- Do not step or reach underneath the suspended load.
- Secure the agitator to the means of transportation.
- Pay attention to the weight and maximum dimensions of the agitators.
- Use protective gloves and safety footwear.

The PAGERIS - IBC Agitator is delivered by freight carrier.

Check the condition of the agitator immediately after delivery. Record any shipping damage in writing (and photographically) and report this immediately to both the carrier and the manufacturer or supplier.

4.2.2 Center of gravity and anchor points

Components	Center of gravity	Anchor points
Agitation impeller	Central	-
Agitation shaft	Center	-
Electric motor	Center	Flange
Gearbox	Center	Flange

4.2.3 Packaging

The disposal of the packaging must be in accordance with local disposal regulations and environmental laws.

The packaging is made of cardboard or wood and is fully recyclable.

4.2.4 Storage

- The agitator should be stored on a level, firm and clean surface.
- Do NOT store the agitator outdoors.
- Store the agitator shaft for as long as possible in the original packaging.
- Secure the components of the agitator against deformation during positioning.
- Avoid lateral forces on the agitator shaft.

Storage temperature [°C]	5 - 30
Relative humidity [%]	< 70

4.3 Assembly

4.3.1 Installation and assembly instructions

Please observe the following notes for setting up and assembling the agitator:

- Only undertake work on the agitator if you have been sufficiently well trained.
- Use only approved and undamaged containers.
- Position the agitator on a level surface.
- Use a bracket to secure the agitator and the container to the mixing system.
- Avoid imbalances during operation.
- Do not reach between the intersections of the individual components and/or the mixing system.
- Use protective gloves and safety footwear.
- Disconnect the electric motor from the power supply.
- Before assembling, check the rating plates of all components for conformity.

4.3.2 Assembling the EHM stainless-steel agitator shaft

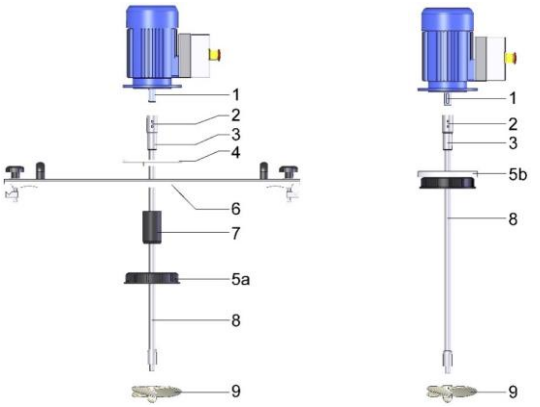


Figure 6 Assembling the EHM stainless-steel agitator shaft

Item 1 - Motor shaft

Item 2 - Threaded pins

Item 3 - Shaft coupling

Item 4 - Sealing flange

Item 5a-b - IBC lid with and without sealing flange

Item 6 - Crossbeam

Item 7 - Guard tube

Item 8 - Agitator shaft

Item 9 - Agitation impeller

To assemble PAGERIS - IBC Agitator with or without cross-beam, proceed as follows:

1. Loosen and remove the two threaded pins (Item 2).
2. Clean and lightly grease the contact surfaces of the motor shaft (Item 1) and the agitator shaft (Item 8).
3. Slide the agitator shaft (Item 8) onto the motor shaft (Item 1) as far as it will go.
   Make sure that the holes for the two threaded pins (Item 2) are aligned with the groove in the motor shaft.

4. Alternately, tighten the two threaded pins (Item 2) to the block. Ensure that the threaded pins are not protruding.

DANGER

Possible risk of impact and/or irreversible eye injury from flying parts.

- Incorrectly assembled threaded pins (Item 2) can be ejected during operation.
- After installation, check that the threaded pins (Item 2) are not protruding.

5. Lightly grease the shaft coupling (Item 3).
6. Lightly grease the radial shaft seal in the sealing flange (Item 4 or Item 5b).
7. Push the sealing flange (Item 4 or 5b) with the centering of the flange towards the electric motor until the flat surfaces of the sealing flange and motor flange are in contact with each other.
   If the IBC lid is attached to the sealing flange: tighten four suitable bolts to the motor flange to secure the sealing flange with the lid (Item 5b) and proceed to step 14.
8. For the version with crossbeam, bolt the guard tube (Item 7) to the sealing flange.

WARNING

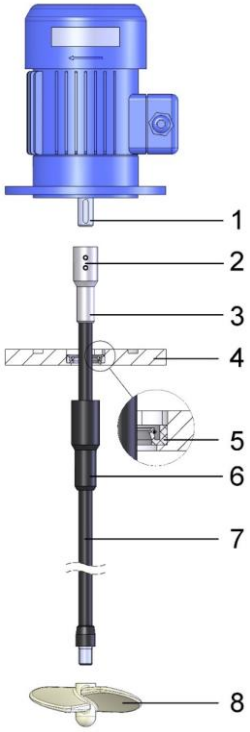
Possible impacts from dropping the electric motor or gearbox from the means of transportation.

- Do not step or reach underneath the suspended load.
- Use only suitable and undamaged lifting equipment.
- Secure the components whilst still on the means of transportation.
- Note the weights and maximum dimensions of the components.
- Use protective gloves and safety footwear.

9. Hang the preassembled unit on a crane using suitable lifting equipment. Use the mounting bracket, if available.
10. Carefully guide the shaft, together with the protective tube, through the opening of the crossbeam (Item 6) and place the electric motor in the correct position.
11. Tighten four suitable bolts in the motor flange to secure it to the crossbeam.
12. Slide the IBC lid (Item 5a) from underneath to above the guard tube (Item 7).
13. Screw the agitation impeller (Item 9) onto the thread at the end of the agitator shaft (Item 8).
14. Guide the shaft including impeller – if required, at an angle (ca. 45°) – through the container opening and place the entire unit on the IBC container.
15. Unscrew the lid (Item 5a and 5b) on the opening; for the version with the crossbeam, attach it to the container with the clamps (Item 6).

✓ The PAGERIS - IBC Agitator is assembled.

4.3.3 Assembling the EHM Agitator shaft with plastic coating



Item 1 - Motor shaft

Item 2 - Threaded pins

Item 3 - Shaft coupling

Item 4 - Sealing flange

Item 5 - Radial shaft seal

Item 6 - Coupling protection sleeve

Item 7 - Agitator shaft

Item 8 - Agitation impeller

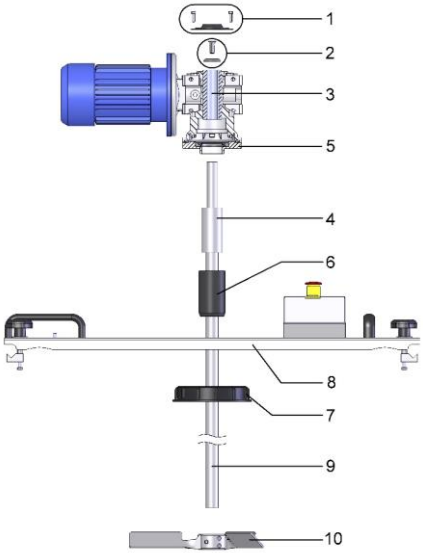
Figure 7 *Assembling the EHM Agitator shaft with plastic cladding (PE or PVDF)*

To assemble the PAGERIS - IBC Agitator, proceed as follows:

1. Slide the coupling protection sleeve (Item 6) down slightly.
2. Follow steps 1- 8 of chapter 4.3.2.
3. Push the coupling protection sleeve (Item 6) flat against the radial shaft seal (Item 5) without pressure (only press, do not press through).
4. Follow steps 9 - 16 of chapter 4.3.2.

✓ The PAGERIS - IBC Agitator is assembled.

4.3.4 Assembling the ESM Agitator



Item 1 - Gearbox cover
Item 2 - Tension rod plate and bolt
Item 3 - Shaft inlet
Item 4 - Shaft coupling
Item 5 - Sealing flange with radial shaft seal
Item 6 - Guard tube
Item 7 - IBC lid
Item 8 - Crossbeam
Item 9 - Agitator shaft
Item 10 - Agitator impeller

Figure 8 Assembling the ESM

To assemble PAGERIS - IBC Agitator, proceed as follows:

1. Clean and lightly grease the contact surfaces of the motor shaft and the motor shaft inlet.
2. Carefully, push the motor onto the gear unit.
3. Tighten four suitable bolts to the motor flange to secure it to the gear unit.
4. Hang the preassembled unit on a crane using suitable lifting equipment, and position it on the crossbeam in the correct position. Use the suspension eye, if available.

WARNING

Possible impacts from dropping the electric motor or gearbox from the means of transportation.

- Do not step or reach underneath the suspended load.
- Use only suitable and undamaged lifting equipment.
- Secure the components whilst still on the means of transportation.
- Note the weights and maximum dimensions of the components.
- Use protective gloves and safety footwear.

5. Lightly grease the radial shaft seal (Item 5) in the sealing flange.
6. Push the sealing flange (Item 5) with the centering of the flange in the direction of the gear unit until the flat surfaces of the sealing flange and gear unit flange are in contact with each other.
7. Tighten four suitable bolts in the gear unit flange to secure it to the crossbeam (Item 8).
8. Loosen and remove the bolts on the gear unit cover (Item 1).
9. Loosen and remove the tension rod plate and the bolts (Item 2).
10. Clean and lightly grease the contact surfaces of the shaft inlet (Item 3) in the gear unit and the agitator shaft (Item 9) as well as the shaft coupling (Item 4).
11. Push the mixer shaft (item 9) and the shaft coupling (item 4) from underneath through the sealing flange (item 5) into the shaft holder (item 3) as far as it will go. When doing this, pay attention to the correct alignment of the feather key.
12. Assemble the tension rod plate and the bolts (Item 2) and tighten them with the appropriate torque (See Table 1 Tightening torques).
13. Attach the gear unit cover (Item 1).

14. If available, screw the guard tube (Item 6) to the sealing flange.
15. Slide the IBC lid (Item 7) from underneath to above the guard tube.
16. From below, slide the agitation impeller (Item 10) onto the shaft.
17. Position the impeller at the desired height and tighten all threaded pins with a maximum torque of 16 Nm.
18. If required, guide the shaft including impeller through the container opening and place the entire unit on the IBC container.
19. Unscrew the lid (Item 7) on the opening and attach the crossbeam to the container with the clamps (Item 8).

✓ The PAGERIS - IBC Agitator is assembled.

Tightening torques for bolts (Item 2)

M8	max. 7 Nm
M10	max. 14 Nm
M12	max. 25 Nm

Table 1 Tightening torques

4.4 Electrical installation

DANGER

Possible life-threatening electric shocks due to voltaged parts.

- Work on electrical components may only be carried out by a certified electrician.
- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.

To assemble the PAGERIS - IBC Agitator, proceed as follows:

1. Assemble the PAGERIS - IBC Agitator, see chapter 4.3 Assembly.
2. Before assembling, check the rating plates of all components for conformity.
3. Using the arrow on the casing or device designation, check the direction of rotation of the electric motor.
4. Connect the electric motor to the control system of the mixing system; see chapter 1.1.1 Related documents.
5. Perform a grounding measurement and record the results of the measurement.

✓ The PAGERIS - IBC Agitator is installed.

4.5 Initial operation

DANGER

Possible serious injuries due to the overriding of safety equipment.

- Ensure that the safety equipment is fully functional before switching on the agitator.

WARNING

Possible injuries due to the deflection of the agitator shaft

- Make sure that the running of the agitator is steady and low-vibration.
- Ensure that the agitation impeller is immersed to at least half of its diameter.

Consult the following notes on the initial operation of the agitator:

- Before initial operation, check all connections and hose lines for damage and/or loose connections.
- Use a bracket to secure the container to the mixing system.
- Observe the safety data sheets of the used mixing media.
- Observe the specified limit values; see chapter 2.2 Technical specifications.

5 Operating the PAGERIS - IBC Agitator

5.1 General

WARNING

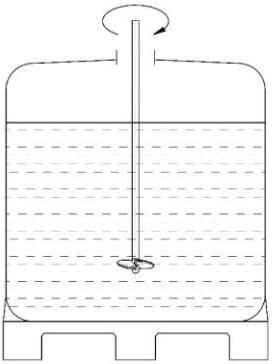
Verletzungen durch Verspritzen des Mischmediums möglich.

- The agitation impeller must always be immersed in the mixing medium to at least twice its diameter (minimum coverage).
- Operate the agitator only with active and properly functioning level monitoring of the mixing medium.
- It is not permitted to lower the level to below the minimum coverage during operation (pass-through operation).
- Depending on the nature of the mixing medium, use suitable personal protective equipment.

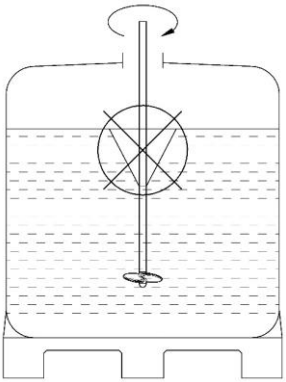
ATTENTION

Possible minor burns due to hot surfaces.

- Do not touch hot surfaces during operation, e.g. the electric motor casing.
- The radial shaft seal is not a pressure seal and serves only to limit emissions (vapors and splashes).



The immersion depth (dimension b) of the agitation impeller in the mixing medium must be at least 2x the impeller diameter.



To prevent vibration, avoid the formation of strong vortexes.

If necessary, increase the level of the mixing medium until the vortex dissipates.

ATTENTION

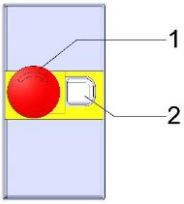
Crushing of the limbs and/or possible entrapment due to incorrect operation or negligence.

- Only operate the agitator when there are no persons in the hazard area.
- In the event of disruptions and emergencies, immediately activate the emergency stop of the mixing system.

Observe the following notes on the operation of the agitator:

- Before operation, check all connections and hose lines for damage and/or loose connections.
- Only operate the agitator with the container closed.
- Make sure that the running of the agitator is steady and low-vibration.
- Observe the safety data sheets of the used mixing media.
- Observe the specified limit values; see chapter 2.2 Technical specifications.
- Pay attention to the safety instructions of the operator.

5.2 Switching on/off



Item 1 - Emergency stop / off

Item 2 - On

Figure 9 Motor protection switch with emergency-stop switch

To switch on the agitator, press the “On” switch (Item 2) at the motor protection switch.

To switch off, press the “Off” switch (Item 1). The “Off” switch also serves as an emergency stop switch. To enable a restart, the emergency stop switch (Item 1) must be returned to its original position by turning.

5.3 Procedure for blockages

Contact the manufacturer.

5.4 Exceptional / emergency situations

Press the emergency stop switch of the mixing system:

- If there is a risk of injury,
- If there is a risk of damaging the mixing system or agitator.

Observe the operating manual of the mixing system.

Take immediate action in the event of an accident and call the local emergency number.

6 Malfunction

6.1 Procedure for malfunctions

For troubleshooting, please also observe the related documents; see chapter 1.1.1 Related documents.

In case of malfunction, proceed as follows:

1. Contact the maintenance personnel.
2. Ensure that there is no danger to persons or objects. In case of imminent risk, use the emergency stop function of the mixing system.
3. Determine the cause of the malfunction.
4. If you have to enter the hazard area of the mixing system, inform the person responsible at the site of operation.
5. Turn off the mixing system after depressurization and loss off energy.
6. Use the fault table to check whether you can rectify the malfunction yourself or have this performed by authorized personnel.
7. If the malfunction has not been caused by the agitator, refer to the operating manual of the mixing system.

6.1.1 Troubleshooting and fault resolution

Fault	Cause	Corrective action	Rectification by
Vibration / imbalance during operation	Incorrect / loose attachment of the agitator	Check fixation of agitator, reattach if necessary	Technical personnel
	Agitator shaft bent	Check concentricity of agitator shaft, replace if necessary	Technical personnel
Formation of a vortex during operation	Mixing medium rotates	Add flow breakers in the container	Technical personnel
Ungewöhnliche Laufgeräusche	Insufficient immersion depth	Increase liquid level	Operator

6.1.2 Initial operation after resolution of malfunctions

Visually inspect the components of the agitator for damage and/or contamination.

Replace damaged parts or clean the agitator if it is heavily contaminated.

7 Servicing and maintenance

7.1 General

ATTENTION

Possible minor burns due to hot surfaces.

- Before working on the agitator, ensure that the surfaces (electric motor) have cooled down sufficiently.

Please observe the following notes on maintenance:

- Only undertake work on the agitator if you have been sufficiently well trained.
- Do not reach between the intersections of the individual components and/or the mixing system.
- Use protective gloves and safety footwear.
- The procedure for the maintenance of the electric motor is described in its manual; see chapter 1.1.1 Related documents.
- Use suitable cleaning agents.
- Observe the safety instructions provided by the respective manufacturer of the cleaning agents.
- Clean the agitator of deposits.

7.2 Servicing and maintenance schedule

Adjust the maintenance interval depending on the conditions at the place of use and the nature of the mixing medium.

The maintenance of the motor is based on the operating manual of the motor (see chapter 1.1.1 Related documents) or if not further specified, according to the table below.

In case of damage and wear, order the necessary spare parts from the supplier / manufacturer.

Interval	Maintenance work
Daily	Cleaning
Monthly	Visual inspection for damage and wear Check the radial shaft seal (Item 5) and replace if necessary.
Every 24 months or 20,000 operating hours	Inspection and maintenance of the electric motor in accordance with The operating manual of the motor (see chapter 1.1.1 Related documents)

7.2.1 Replacing the radial shaft seal

WARNING

Possible irreversible injuries due to uncontrolled startup.

- Only undertake work on the agitator if you have been sufficiently well trained.
- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

To replace the radial shaft seal, proceed as follows:

1. Switch off the master switch of the mixing system and secure it against being switched on again.
2. Disassemble the sealing flange; see chapter 8.3 Disassembly
3. Loosen the fastening bolts on the radial shaft seal.
4. Remove the radial shaft seal.
5. Insert a new radial shaft seal.
6. Tighten the fastening bolts on the radial shaft seal.
7. Assemble the sealing flange; see chapter 4.3 Assembly.
8. Check the agitator for proper functioning.

✓ The radial shaft seal is replaced.

7.2.2 Replacing the agitation impeller

WARNING

Possible irreversible injuries due to uncontrolled startup.

- Only undertake work on the agitator if you have been sufficiently well trained.
- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

To replace the agitation impeller, proceed as follows:

1. Switch off the master switch of the mixing system and secure it against being switched on again.
2. Clean the agitator of deposits.
3. Disassemble the agitation impeller; see chapter 8.3 Disassembly.
4. Assemble a suitable, undamaged agitation impeller; see chapter 4.3 Assembly.
5. Check the agitator for proper functioning.

✓ The agitation impeller is replaced.

8 Decommissioning

8.1 General

ATTENTION

Possible minor burns due to hot surfaces.

- Before working on the agitator, ensure that the surfaces (electric motor) have cooled down sufficiently.

Please observe the following notes on shutting down and disassembling the agitator:

- Only undertake work on the agitator if you have been sufficiently well trained.
- Do not reach between the intersections of the individual components and/or the mixing system.
- Use protective gloves and safety footwear.

8.2 Electrical uninstallation

DANGER

Possible life-threatening electric shocks due to voltaged parts.

- Work on electrical components may only be carried out by a certified electrician.
- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- When working on voltaged parts, assign a second person to operate the emergency stop of the mixing system in case of an emergency.

To disassemble PAGERIS - IBC Agitator, proceed as follows:

1. Switch off the master switch of the mixing system and secure it against being switched on again.
2. Disconnect the electric motor from the control systems of the mixing system; see chapter 1.1.1 Related documents.

✓ The PAGERIS - IBC Agitator is uninstalled.

8.3 Disassembly

8.3.1 Disassembling the EHM stainless-steel agitator shaft

NOTE

The item numbers refer to Figure 6 Assembling the EHM stainless-steel agitator shaft.

WARNING

Possible irreversible injuries due to uncontrolled startup.

- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

To disassemble the PAGERIS - IBC Agitator, proceed as follows:

1. Switch off the master switch of the mixing system and secure it against being switched on again.
2. Unscrew the lid (Item 5a and 5b) and, if available, loosen the clamps of the crossbeam (Item 6) on the container.

WARNING

Possible impacts by dropping the electric motor from the means of transportation.

- Do not step or reach underneath the suspended load.
- Use only suitable and undamaged lifting equipment.
- Secure the electric motor to the means of transportation.
- Note the weight and maximum dimensions of the electric motor.
- Use protective gloves and safety footwear.

3. Hang the electric motor on a crane using suitable lifting equipment.
4. Remove the entire assembly from the IBC container.
5. Unscrew the agitation impeller (Item 9) from the thread at the end of the agitator shaft (Item 8).
6. Unscrew the guard tube (Item 7) and, if available, the IBC lid (Item 5a).
7. Loosen the four fastening bolts of the motor flange.
8. Remove the crossbeam (Item 6) and pull the sealing flange (Item 4 or 5b) off the motor flange.
9. Loosen and remove the two threaded pins (Item 2).
10. Pull the agitator shaft (Item 8) off the motor shaft (Item 1).
11. Screw the two threaded pins (Item 2) from the agitator shaft (Item 8) back in to prevent them from getting lost.

✓ The PAGERIS - IBC Agitator is assembled.

8.3.2 Disassembling the EHM Agitator shaft with plastic coating

NOTE

The item numbers refer to Figure 7 Assembling the EHM Agitator shaft with plastic cladding (PE or PVDF).

WARNING

Possible irreversible injuries due to uncontrolled startup.

- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

To disassemble the PAGERIS - IBC Agitator, proceed as follows:

1. Perform steps 1 - 6 to disassemble the PAGERIS - IBC Agitator; see chapter 8.3.1 Disassembling the EHM stainless-steel agitator shaft.
2. Pull the coupling protection sleeve (Item 6) away from the radial shaft seal (Item 5).
3. Perform steps 7 - 11 to disassemble the PAGERIS - IBC Agitator; see chapter 8.3.1 Disassembling the EHM stainless-steel agitator shaft

✓ The PAGERIS - IBC Agitator is disassembled.

8.3.3 Disassembling the EHM adjustable impeller

NOTE

The item numbers refer to the Figure 7 Assembling the EHM Agitator shaft with plastic cladding (PE or PVDF).

To disassemble an adjustable impeller, proceed as follows:

1. Perform steps 1 - 6 to disassemble the PAGERIS - IBC Agitator; see chapter 8.3.1 Disassembling the EHM stainless-steel agitator shaft.
2. Loosen the union nut (Item 2) from the agitation impeller (Item 4).
3. Loosen the interference fit of the agitation impeller (Item 4) on the clamping bushing (Item 3), if necessary by lightly striking the union nut (Item 2) from above with a soft, blunt object (e.g. rubber hammer).
4. Pull the agitation impeller (Item 4) downwards off the shaft (Item 1).
5. Pull the clamping bush (Item 3) sideways from the shaft (Item 1).
6. Pull the union nut (Item 2) downwards off the shaft (Item 1).

✓ The adjustable agitation impeller is disassembled.

8.3.4 Disassembling the ESM Agitator

NOTE

The item numbers refer to Figure 8 Assembling the ESM.

WARNING

Possible irreversible injuries due to uncontrolled startup.

- Ensure that the mixing system is secured against unintentional startup before undertaking any work on the agitator.
- Assign a second person who, in case of emergency, activates the emergency stop of the mixing system.

To disassemble the PAGERIS - IBC Agitator, proceed as follows:

1. Disconnect the electric motor from the power supply.
2. Loosen and remove the gear unit cover (Item 1).
3. Unscrew the lid (Item 7) and loosen the clamps of the crossbeam (Item 8) on the container.

WARNING

Possible impacts by dropping the electric motor from the means of transportation.

- Do not step or reach underneath the suspended load.
- Use only suitable and undamaged lifting equipment.
- Secure the electric motor to the means of transportation.
- Note the weight and maximum dimensions of the electric motor.
- Use protective gloves and safety footwear.

4. Using suitable lifting equipment, hang the electric motor and the gear unit on a crane.
5. Remove the entire assembly from the IBC container.
6. Loosen the threaded pin on the agitation impeller (Item 10) and pull it off the agitator shaft (Item 9).

7. Unscrew the guard tube (Item 6).
8. Loosen the four fastening bolts of the motor flange.
9. Remove the crossbeam (Item 8) and pull the sealing flange (Item 5) off the motor flange.
10. Loosen the screw and the tie rod plate (item 2) and pull the mixer shaft (item 9) downwards out of the shaft holder (item 3).
11. Screw the bolt, tension rod plate (Item 2), threaded pin of the agitation impeller (Item 10) and the gear unit cover (Item 1) back in so that they are not lost.
12. Pull the motor off the gear unit.
13. Screw in the removed bolts again so that they are not lost.

✓ The PAGERIS - IBC Agitator is disassembled.

8.4 Storage

Please also observe the related documents; see 1.1.1 Related documents.

WARNING

Possible severe injuries due to imbalances caused by incorrect storage.

- Avoid lateral forces on the agitator shaft so that it does not bend.
  A bent agitator shaft can cause an imbalance in operation.
- Do NOT store the agitator outdoors.

For storage, proceed as follows:

1. Clean the agitator of contaminants and grease slightly, if necessary.
2. Pack the agitator properly, where applicable using the original packaging.
3. The agitator should be stored on a level, firm and clean surface.
4. Avoid lateral forces on the agitator shaft.

5. Secure the agitator against deformation during positioning.

Storage temperature [°C]	5 - 30
Relative humidity [%]	< 70

8.5 Disposal and recycling

If the PAGERIS - IBC Agitator has reached the end of its life cycle, the disassembly must result in safe and proper disposal, in particular of environmentally harmful parts and/or substances.

Disposal of the PAGERIS - IBC Agitator (including operating equipment) must take due account of local disposal regulations and environmental laws.

Cleaning agents and fluids used in the course of maintenance must be disposed of in accordance with statutory regulations.

To avoid risks to the environment, an authorized specialist company must be commissioned with proper disposal. Your local authorities can provide you with more information.

Materials that can be recycled must be disposed of properly with consideration for the environment.

The packaging material consists of cardboard or wood and must be recycled separately in an environmentally sound manner according to the materials used.

9 Anhang

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