



Peristaltic pumps

CPsingle X1, CPdouble X1



Installation and Operation Instructions

Original instructions





Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen
Tel. +49 (0) 21 02 / 49 89-0, Fax: +49 (0) 21 02 / 49 89-20
Internet: www.buehler-technologies.com
E-Mail: analyse@buehler-technologies.com

Read this instruction carefully prior to installation and/or use. Pay attention particularly to all advises and safety instructions to prevent injuries. Bühler Technologies can not be held responsible for misusing the product or unreliable function due to unauthorised modifications.

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Document information

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Version.....09/2018

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1 Introduction

1.1 Intended use

This unit is intended to discharge condensate from cooled process fluids. The temperature of these mediums is approx. 5 °C.

These operating instructions apply to pressurised encapsulation with surface-cooled electric motors for low voltage, degree of protection IP40, IP54, IP64, IP65 EN 60034-5:2001+A1:2007.

The motor is ignition protection type Ex db, designed for Zone 1 (ATEX and IECEx).

The competent supervisory authority or the operator is responsible for determining the degree of explosion hazard of an operating site.

The electric motor may only be used for continuous duty, not for frequent starting without significant start-up warming.

The pump may be used in explosive areas Zone 1 and 2. Explosion group IIB, temperature class T4.

1.2 Scope of delivery

- 1 x Peristaltic pump
- Product Documentation

1.3 Type plate

Example:

Manufacturer and address	→	Bühler Technologies GmbH Harkortstr. 29 D-40880 Ratingen
Model designation	→	CPsingle CPdouble
Purchase order no.+Item no.+Counter	→	101001080015 44921123101
Blast protection marking	→	Ex II 2G c IIB T4 X
Materials in contact with mediums, operating instructions no.	→	Material: Norprene, doc.no.: BX450026
Temperature specifications	→	Medium max: see manual; Tamb: 0°C-60°C
Year of manufacture	→	Read manual! Year: 2017



1.4 Peristaltic pump ordering information

The item number is a code for the configuration of your unit. Please use the following model key:

4492	X	1	X	3	1	0	X	Product Characteristic
								Gas path
		1						Single gas path
		2						Double gas path
								Version
		1						Housing version
								Supply voltage
			1					115 V AC
			3					230 V AC
								Area of application
				3				for explosive areas zone 1
								Hose material
				1				Norprene
								Flow rate / hour
					0			0.3 L/h
								Hose connection
						1		straight hose nipple
						4		Screw connection (metric) DN 4/6
						5		Screw connection (US) 1/6" - 1/4"

2 Safety instructions

2.1 Important advice

This unit may only be used if:

- The product is being used under the conditions described in the operating- and system instructions, used according to the nameplate and for applications for which it is intended. Any unauthorized modifications of the device will void the warranty provided by Bühler Technologies GmbH,
- The specifications and markings in the type plate are observed,
- The limits in the data sheet and the instructions must be observed,
- Monitoring equipment / protection devices must be connected correctly,
- Service and repair work not described in these instructions is performed by Bühler Technologies GmbH,
- Using genuine replacement parts.

Regulation IEC/EN 60079-14 must be observed when erecting electrical systems in explosive areas.

Additional national regulations pertaining to initial operation, operation, maintenance, repairs, and disposal must be observed.

These operating instructions are a part of the equipment. The manufacturer reserves the right to change performance-, specification- or technical data without prior notice. Please keep these instructions for future reference.

Signal words for warnings

DANGER	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
WARNING	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
CAUTION	Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided.
NOTICE	Signal word for important information to the product.

Warning signs

These instructions use the following warning signs:

	Warns of a general hazard		General information
	Warns of voltage		Unplug from mains
	Warns not to inhale toxic gasses		Wear respiratory equipment
	Warns of corrosive liquids		Wear a safety mask
	Warns of explosive areas		Wear gloves

2.2 General hazard warnings

The equipment must be installed by a professional familiar with the safety requirements and risks.

Be sure to observe the safety regulations and generally applicable rules of technology relevant for the installation site. Prevent malfunctions and avoid personal injuries and property damage.

The operator of the system must ensure:

- Safety notices and operating instructions are available and observed,
- The respective national accident prevention regulations are observed,
- The permissible data and operational conditions are maintained,
- Safety guards are used and mandatory maintenance is performed,
- Legal regulations are observed during disposal.

Maintenance, Repair

Please note during maintenance and repairs:

- Repairs to the unit must be performed by Bühler authorised personnel.
- Only perform conversion-, maintenance or installation work described in these operating and installation instructions.
- Always use genuine spare parts.

Always observe the applicable safety and operating regulations in the respective country of use when performing any type of maintenance.

DANGER

Electrical voltage

Electrocution hazard.



- a) Disconnect the device from power supply.
- b) Make sure that the equipment cannot be reconnected to mains unintentionally.
- c) The device must be opened by trained staff only.
- d) Regard correct mains voltage.



DANGER

Toxic, corrosive condensate



- a) Protect yourself from toxic, corrosive condensate when performing any type of work.
- b) Wear appropriate protective equipment.
- c) Please note the national safety rules!



3 Transport and storage

The products should be transported only in its original packaging or a suitable replacement.

When not in use, protect the equipment against moisture and heat. Keep it in a covered, dry and dust-free room.

4 Installation and connection

4.1 Installation site requirements

Be sure to maintain the approved ambient temperature. Please also note the technical data of the add-on gas cooler.

When mounting to a subframe, it screws directly onto the cooler housing frame.

The unit is intended for use in enclosed areas. Adequate protection from the weather must be provided when used outdoors.

The pressurised encapsulation must be protected from sunlight to prevent prohibited heating.

The ambient temperature is 0 °C to +60 °C.

The minimum bend radius of the connecting cable is 55 mm.

4.2 Mounting

WARNING



Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION



Wrong mains voltage

Wrong mains voltage may damage the device.
Regard the correct mains voltage as given on the type plate.

The adapter plate has two bores each at the top and bottom. These are used to screw down the device.

Slide the hoses over the connection fittings, secure with a hose clamp or nut, and ensure the connection is tight.

4.3 Electrical connections

Compare the mains voltage with the specifications in the name plate of the motor, not exceeding max. $\pm 5\%$ from the operating voltage specified. The mains voltage specified must not deviate from the operating frequency by more than $\pm 2\%$. (Range A per EN 60034 + Cor.:2010)

The external potential equalisation must be established via cable (at least 4 mm²) via the earthing terminal on the terminal box or the fixed and the secured metal contact between the motor and machine which in turn is connected with the potential equalisation system of the machine (EN 60079-14:2014).

To protect the motor against short-circuits we recommend using one of the following devices:

- Fuse per IEC 60127,
- 2-pole automatic fuse,
- 2-pole protective motor switch.

The recommended rated current is between 0.5 A and 1.6 A, the breaking capacity must be appropriate for the conditions on site, at least 1500 A.

We recommend one of the following devices as separator, also in all-pole version:

- automatic fuse,
- protective motor switch
- 2-pole relay with positive-action contacts.

Per EN 60204-1 the motor must not be overloaded; external overload protection may be omitted.

Peristaltic pumps type SA-AC-X1 (230 V AC 50/60 Hz and 115 V AC 50/60 Hz) come standard with a 3 m connection cable.

Motor direction of rotation: CV (clockwise rotation).

The fixed connection cable has three strands: N+L and one PE connection.



The protective conductor (at least 4 mm²) must be connected to the yellow/green strand of the connection cable.

When connecting the non-terminated cable end of the motor to a circuit within the explosive area, select a terminal box with separate certificate and explosion markings per the on-site conditions.

Be sure to observe any varying information in the rating plate. The conditions at the site must correspond with all rating plate information.

Protective measures against prohibited heating

Unless otherwise certified, the electric motor may only be used for continuous operation, not frequent restarting without significant start-up warming.

5 Operation and control

NOTICE



The device must not be operated beyond its specifications.

The pump does not have a power switch. It starts running as soon as the power supply is turned on.

NOTICE



Installing peristaltic **pumps** CPsingle / CPdouble limits the maximum permissible **operating pressure** in the system!
Operating pressure ≤ 1 bar

6 Maintenance

During maintenance, remember:

- The equipment must be maintained by a professional familiar with the safety requirements and risks.
- Only perform maintenance work described in these operating and installation instructions.
- When performing maintenance of any type, observe the respective safety and operation regulations.

DANGER



Electrical voltage

Electrocution hazard.

- Disconnect the device from power supply.
- Make sure that the equipment cannot be reconnected to mains unintentionally.
- The device must be opened by trained staff only.
- Regard correct mains voltage.



DANGER



Toxic, corrosive condensate

Protect yourself from toxic, corrosive condensate when performing any type of work. Wear appropriate protective equipment.



Cleaning the pump head

Dust and output from the pump hose contaminate the pump head. Regular visual inspection and, if necessary, cleaning increase the pump life. The individual parts can be wiped clean dry. Never use solvents, as these are harmful to plastic. The pump head can also be blown out with oil-free compressed air.

The motor is maintenance-free.

The hose inside the pumps is a wear item and must regularly be checked for leaks.

6.1 Maintenance Schedule

Component	Interval in operating hours*	Work to be performed	To be performed by
Motor	After ~30,000 h	Replace motor	Service technician/ Bühler Technologies
	Pay attention	to changes in how the motor sounds during operation	Customer
Bearing	After ~30,000 h	Change bearing	Service technician/ Bühler Technologies
	When replacing the hose	visually inspect for contamination.	Customer
	Pay attention	to changes in operating noise	Customer
Pump head	Every 24,000 h or 3 years	Visually inspect for tears/cracks	Customer
	Every 8,000 h or 1 year	Visually inspect for contamination from abrasion	Customer
Rotor	Every 16,000 h or 2 years	Visually inspect for tears/cracks	Customer
Pressure rollers	Every 12,000 h or 1.5 years	Visually inspect for abrasion	Customer
Pressure spring	Every 12,000 h or 1.5 years	Visually inspect for wear/loss in clamping action	Customer
Pump hose	Every 4,000 h or 6 months	Visually inspect for abrasion + leaks	Customer
	Every 8,000 h or 1 year	Replace hose	Customer
Pump hood	Every 16,000 h or 2 years	Visually inspect for cracks in the hood	Customer
Knurled nuts	When replacing the hose	Retighten all knurled nuts hand tight	Customer

*When operating hours/years is specified, whichever comes first applies.

6.2 Replacing the hose

- Close gas supply.
- Switch off device and disconnect all plugs (e.g. connector plug alarm output, supply input, etc.).
- Disconnect supply and discharge tube on peristaltic pump (**observe safety notes!**).
- Loosen but do not remove centre knurled nut on the hammer-head screw. Flip down screw.
- Pull cover up and off.
- Unplug external connections and remove hose.
- Replace hose (Bühler spare part) and install peristaltic pump in reverse order.
- Restore the power and gas supply.

NOTICE

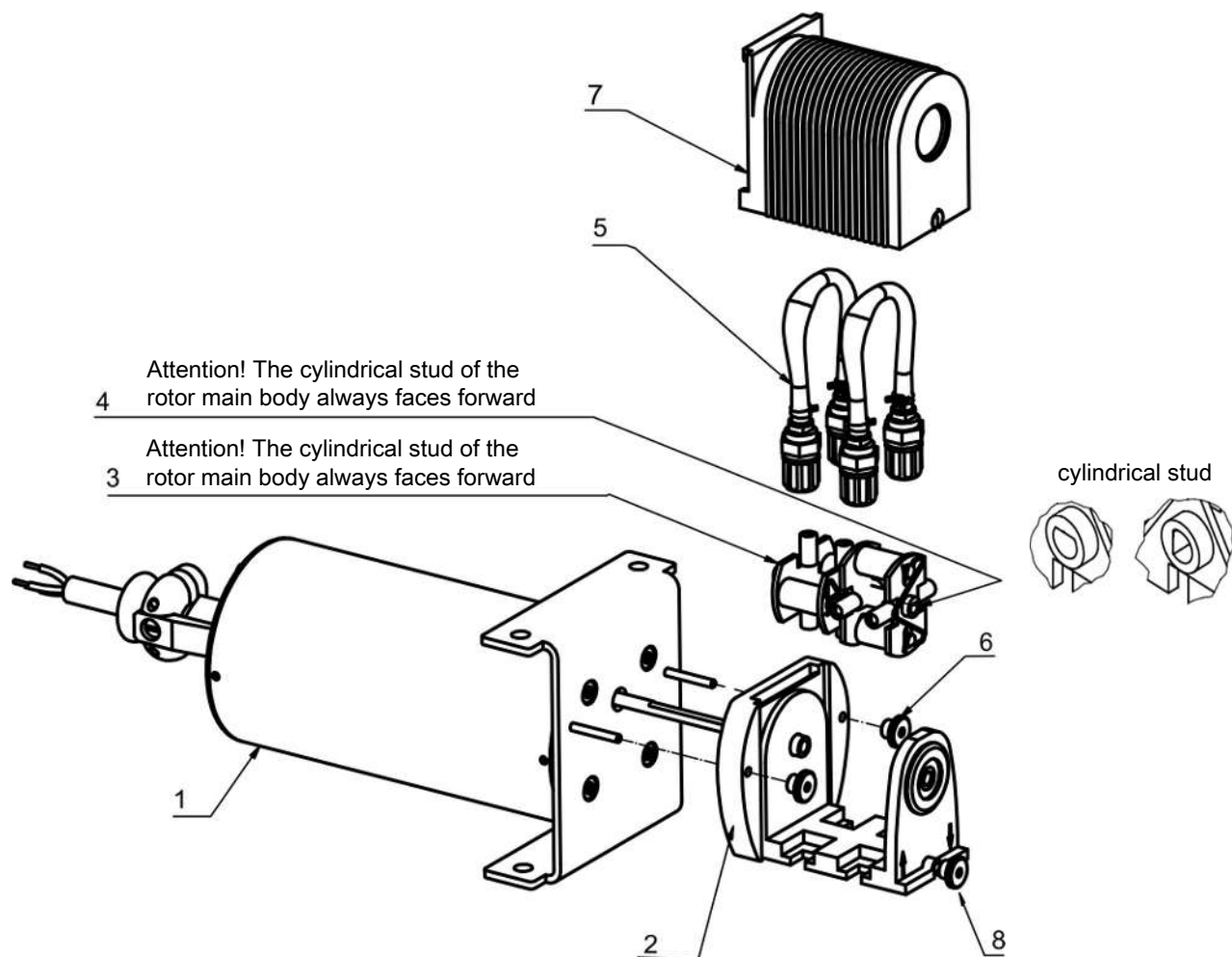


Never grease the pump hose!

Check all parts for contamination prior to assembly and clean as necessary.

6.3 Changing the pump head/rotor

Single and double pump heads fix the same. The individual parts vary based on the version.



1 Single/double motor	5 Pump hose
2 Single/double pump head	6 Knurled nut
3 Rotor 1	7 Single/double hood
4 Rotor 2	8 Knurled nut with hammer-head screw

To change:

- Slide the first bearing seat of the pump head (2) over the shaft of the motor (1).

Double version:

- Allow the shaft to protrude from the bearing seat slightly, then also fit the rotor 1 (3) onto the shaft. Place rotor 2 (4) between rotor 1 (3) and the second bearing seat, offset by 90°
- Then slide the shaft all the way through the rotors and the second bearing seat. Guide the set screw through the bearing seat/pump head (2) when doing so.

Single version:

- Position the rotor 1 (3) between the two bearing seats and slide the shaft through both bearing seats.
- Guide the set screw through the bearing seat/pump head (2) when doing so.

Both versions:

- Tighten the knurled nuts (6) hand-tight to fix the motor (1) on the bearing seat of the pump head (2).
- Feed one or two neoprene tubes (5) between the guide pulleys of the rotors (3, 4) and insert the hose connections into the pump head (2) by the square.
- Loosen the knurled nut of the hammer-head screw (8) on the pump head (2), attach the hood (7), then fix with the knurled nut.

CAUTION! Be careful not to lose the hammer-head screw!

7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation.

Repairs to the unit must be performed by Bühler authorised personnel.

Please contact our Service Department with any questions:

Tel.: +49-(0)2102-498955 or your agent

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment inside suitable packaging to:

Bühler Technologies GmbH

- Reparatur/Service -

Harkortstraße 29

40880 Ratingen

Germany

Please also attach the completed and signed RMA decontamination statement to the packaging. We will otherwise be unable to process your repair order.

You will find the form in the appendix of these instructions, or simply request it by e-mail:

service@buehler-technologies.com.

7.1 Safety instructions

- The device must be operated within its specifications.
- All repairs must be carried out by Bühler authorised personnel only.
- Only perform modifications, servicing or mounting described in this manual.
- Only use original spare parts.

DANGER

Electrical voltage

Electrocution hazard.



- a) Disconnect the device from power supply.
- b) Make sure that the equipment cannot be reconnected to mains unintentionally.
- c) The device must be opened by trained staff only.
- d) Regard correct mains voltage.



DANGER

Toxic, corrosive condensate

Protect yourself from toxic, corrosive condensate when performing any type of work. Wear appropriate protective equipment.



7.2 Spare parts and accessories

Spare parts and wear item requirements vary based on the specific operating conditions of the pump.

Please also specify the model and serial number when ordering parts.

Upgrade and expansion parts can be found in our catalog.

Available spare parts:

Item no.	Description
44 9200 11Ex	Rotor 1, complete
44 9200 21Ex	Rotor 2, complete
44 9200 108Ex	Ex hood, single
44 9200 208Ex	Ex hood, double
44 9200 12Ex	Ex pump head, single (no rotor, no hood)
44 9200 22Ex	Ex pump head, double (no rotor, no hood)

7.2.1 Ordering information replacement hoses for 0.3 l/h pumps

4492	0	0	3	5	0	X	X	Product Characteristics
								Output per litre
								0 0.3 L/h
								Hose material
								1 Norprene
								Hose connection
								1 straight hose nipple
								4 Screw connection (metric) DN 4/6
								5 Screw connection (US) 1/6" – 1/4"

Information about hose materials

The standard hose in Norprene has excellent mechanical properties with high chemical resistance to many substances.

8 Disposal

The applicable national laws must be observed when disposing of the products. Disposal must not result in a danger to health and environment.

The crossed out wheelie bin symbol on Bühler Technologies GmbH electrical and electronic products indicates special disposal notices within the European Union (EU).



The crossed out wheelie bin symbol indicates the electric and electronic products bearing the symbol must be disposed of separate from household waste. They must be properly disposed of as waste electrical and electronic equipment.

Bühler Technologies GmbH will gladly dispose of your device bearing this mark. Please send your device to the address below for this purpose.



We are obligated by law to protect our employees from hazards posed by contaminated devices. Therefore please understand that we can only dispose of your waste equipment if the device is free from any aggressive, corrosive or other operating fluids dangerous to health or environment. **Please complete the "RMA Form and Decontamination Statement", available on our website, for every waste electrical and electronic equipment. The form must be applied to the packaging so it is visible from the outside.**

Please return waste electrical and electronic equipment to the following address:

Bühler Technologies GmbH
WEEE
Harkortstr. 29
40880 Ratingen
Germany

Please also observe data protection regulations and remember you are personally responsible for the returned waste equipment not bearing any personal data. Therefore please be sure to delete your personal data before returning your waste equipment.

9 Appendices

9.1 Technical data

Technical Data CPSingle/CPdouble Peristaltic Pumps

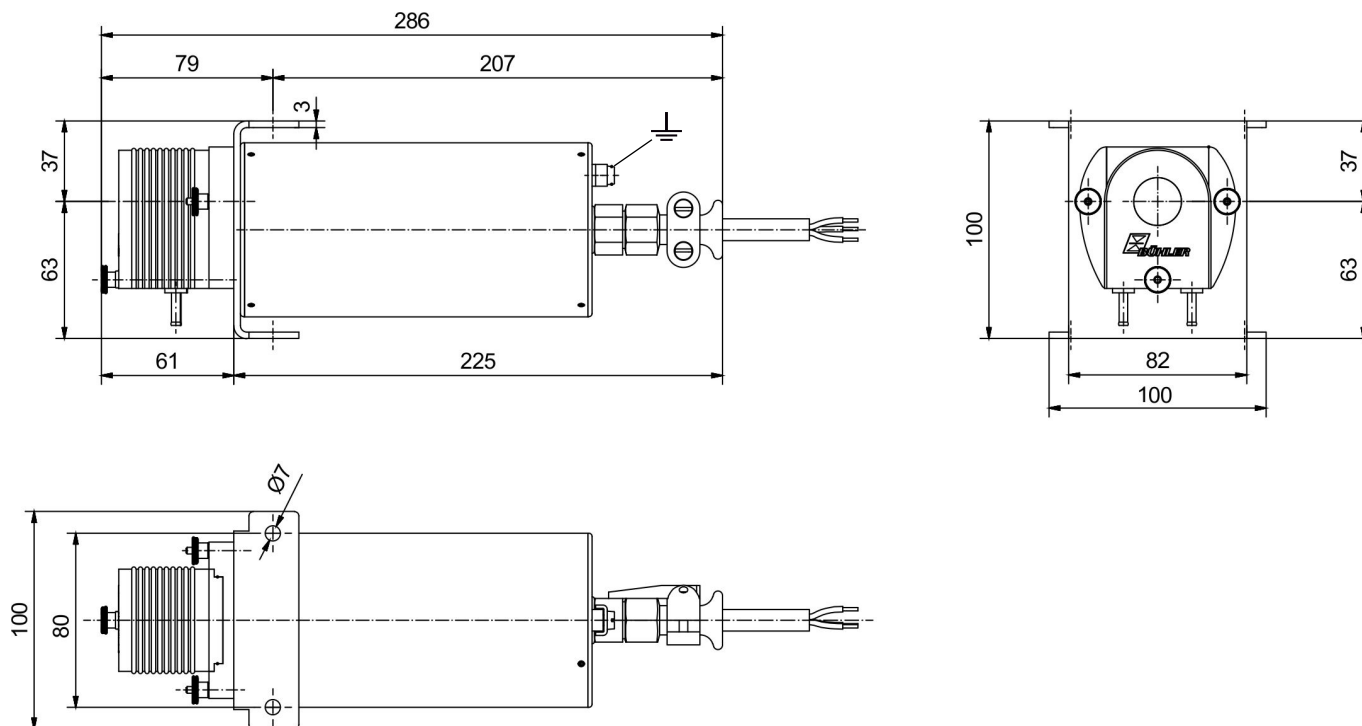
Nominal voltage / power input:	230 V 50/60 Hz, 0.026 A (50/60 Hz)
at T _{amb} = 20 °C and under load	115 V 50/60 Hz, 0.052 A (50/60 Hz)
	±5 % voltage, ±2 % frequency
Flow rate:	0.3 L/h (50 Hz)/0.36 L/h (60 Hz) with standard hose
Inlet vacuum:	max. 0.8 bar
Inlet pressure:	max. 1 bar
Output pressure:	1 bar
Degree of protection:	IP 40
Ambient temperature:	0...60 °C
Cord length:	3 m
Materials	
Hose:	Norprene (standard)
Connections:	PVDF
Motor markings:	ATEX:  II 2G Ex db IIB T4 Gb IECEX: Ex db IIB T4 Gb
Pump marking:	 II 2G c IIB T4 X

The motor may be operated without protective circuit and depending on the housing length is designed for maximum heating in the event of a fault.

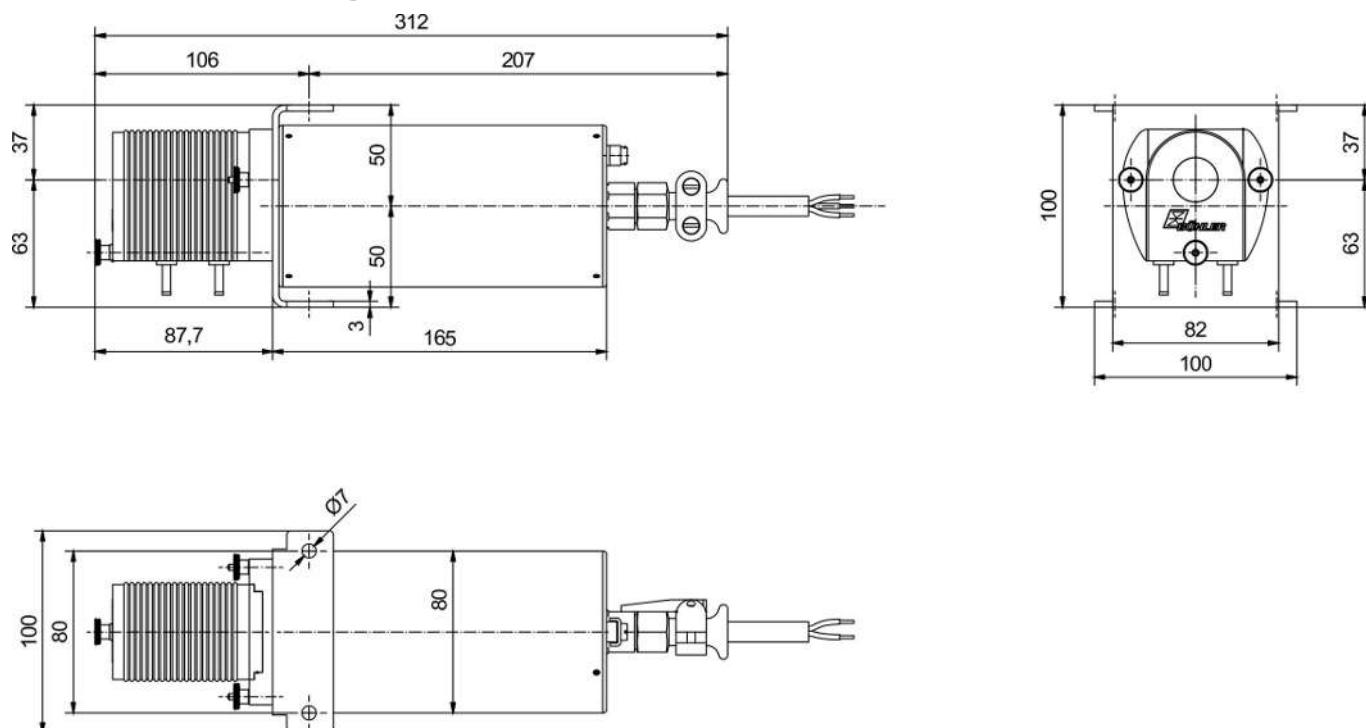
The expected life of the motor is over 30,000 operating hours.

9.2 Dimensions of peristaltic pumps 115 / 230 V

9.2.1 Version with 1 gas path



9.2.2 Version with 2 gas paths



10 Attached documents

- Certificate IECEx IBE 17.0019
- Type Examination Certificate IBEExU17ATEX1008
- Declaration of Conformity KX450016
- RMA - Decontamination Statement



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx IBE 17.0019

Issue No: 0

Certificate history:

[Issue No. 0 \(2017-09-19\)](#)

Status: **Current**

Page 1 of 3

Date of Issue: **2017-09-19**

Applicant: **ASTRO Motorengesellschaft mbH & Co. KG**
Große Beek 7
27607 Geestland
Germany

Equipment: **Synchronous gear motor ADK***S1e SG****
Optional accessory:

Type of Protection: **Ex db**

Marking:
Ex db IIB T4 Gb

*Approved for issue on behalf of the IECEx
Certification Body:*

Dipl.-Ing. Alexander Henker

Position:

Deputy Head of Certification Body

*Signature:
(for printed version)*

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](#).

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Certification Body
Fuchsmühlenweg 7
09599 Freiberg
Germany





IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0019

Issue No: 0

Date of Issue: 2017-09-19

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Manufacturer: **ASTRO Motorengesellschaft mbH & Co. KG**
Große Beek 7
27607 Geestland
Germany

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements

Edition:6.0

IEC 60079-1 : 2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Edition:7.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[DE/BE/ExTR17.0022/00](#)

Quality Assessment Report:

[DE/TUR/QAR13.0008/02](#)



IECEx Certificate of Conformity

Certificate No: IECEx IBE 17.0019

Issue No: 0

Date of Issue: 2017-09-19

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Synchronous gear motor type ADK***S1e SG** is provided to use in potentially explosive atmospheres. It consists of a flameproof enclosure with direct cable entry. The built in synchronous motor ASM ** is designed for continuous operation and it is power reduced. The motor is equipped with permanently connected cable, which is led in into the enclosure directly via a separate certified flameproof cable gland.

Technical data

Synchronous gear motor type ADK...	164S1e SG**	166S1e SG**	184S1e SG**	186S1e SG**	204S1e SG**	206S1e SG**	224S1e SG**	226S1e SG**
Power input (W):	6	6	10	10	14	14	18	18
Power output (W):	3	3	5	5	7	7	9	9
Nominal torque (cNm):	2.0/1.7	3.0/2.5	3.3/2.8	5.0/4.2	4.6/3.9	7.0/5.8	6.0/5.0	9.0/7.5
Maximum output speed (min ⁻¹):	300/360	200/240	300/360	200/240	300/360	200/240	300/360	200/240

- Nominal voltage: 24-400 V AC 1~ or 24-600 V AC 3~
- Nominal frequency: 50/60 Hz
- Mode of operation: S1
- Ambient temperature range: -20 °C up to +60 °C

The accurate technical data of the respective Synchronous gear motor are specified in the test documents as well as in the data sheet attached in the operating instruction.

SPECIFIC CONDITIONS OF USE: NO



[1] **EU-BAUMUSTERPRÜFBESCHEINIGUNG**

[2] Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, **Richtlinie 2014/34/EU**

[3] EU-Baumusterprüfbescheinigung Nummer **IBExU17ATEX1008** | Ausgabe 0

[4] Produkt: **Synchron-Getriebemotor**
Typ: ADK***S1e SG**

[5] Hersteller: **ASTRO Motorengesellschaft mbH & Co. KG**

[6] Anschrift: **Große Beek 7
27607 Geestland
GERMANY**

[7] Dieses Produkt sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Bescheinigung sowie den darin aufgeführten Unterlagen festgelegt.

[8] IBExU Institut für Sicherheitstechnik GmbH, notifizierte Stelle mit der Nummer 0637 in Übereinstimmung mit Artikel 17 der Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014, bestätigt, dass dieses Produkt die wesentlichen Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Produkten zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen aus Anhang II der Richtlinie erfüllt.

Die Untersuchungs- und Prüfergebnisse werden in dem vertraulichen Prüfbericht IB-15-3-213 festgehalten.

[9] Die Beachtung der wesentlichen Sicherheits- und Gesundheitsanforderungen wurde in Übereinstimmung mit folgenden Normen gewährleistet:

EN 60079-0:2012+A11:2013 EN 60079-1:2014

Hiervon ausgenommen sind jene Anforderungen, die unter Punkt [18] der Anlage aufgelistet werden.

[10] Ein „X“ hinter der Bescheinigungsnummer weist darauf hin, dass das Produkt den besonderen Bedingungen für die Verwendung unterliegt, die in der Anlage zu dieser Bescheinigung festgehalten sind.

[11] Diese EU-Baumusterprüfbescheinigung bezieht sich ausschließlich auf die Konzeption und den Bau des angegebenen Produktes. Für den Fertigungsprozess und die Bereitstellung dieses Produkts gelten weitere Anforderungen der Richtlinie. Diese fallen jedoch nicht in den Anwendungsbereich dieser Bescheinigung.

[12] Die Kennzeichnung des Produktes muss Folgendes beinhalten:

Ⓔ II 2G Ex db IIB T4 Gb

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

Im Auftrag

Dipl.-Ing. (FH) Henker



- Siegel -
(Notifizierte Stelle Nummer 0637)

Telefon: +49 (0)3731 3805-0
Fax: +49 (0)3731 3805-10

Freiberg, 10.05.2017

Bescheinigungen ohne Siegel und Unterschrift haben keine Gültigkeit. Bescheinigungen dürfen nur vollständig und unverändert weiterverbreitet werden.

[13] **Anlage**

[14] **Bescheinigung Nummer IBExU17ATEX1008 | Ausgabe 0**

[15] **Beschreibung des Produkts**

Der Synchron-Getriebemotor Typ ADK***S1e SG** ist zur Verwendung in explosionsgefährdeten Bereichen vorgesehen. Er besteht aus einem druckfesten Gehäuse mit direkter Kabel- und Leitungseinführung. Der eingebaute Synchronmotor ASM ** ist für Dauerbetrieb ausgelegt und leistungsreduziert. Der Anschluss erfolgt mit dauerhaft verbundener Leitung, die direkt über eine separat bescheinigte druckfeste Leitungseinführung in das Gehäuse eingeführt ist.

Technische Daten

Synchron- Getriebemotor Typ ADK...	164S1e SG**	166S1e SG**	184S1e SG**	186S1e SG**	204S1e SG**	206S1e SG**	224S1e SG**	226S1e SG**
Leistungs- aufnahme (W):	6	6	10	10	14	14	18	18
Leistungsabgabe (W):	3	3	5	5	7	7	9	9
Nenn Drehmoment (cNm):	2,0/1,7	3,0/2,5	3,3/2,8	5,0/4,2	4,6/3,9	7,0/5,8	6,0/5,0	9,0/7,5
Max. Abgangs- drehzahl (min ⁻¹):	300/360	200/240	300/360	200/240	300/360	200/240	300/360	200/240

- Nennspannung: 24-400 V AC 1~ bzw. 24-600 V AC 3~
- Nennfrequenz: 50/60 Hz
- Betriebsart: S1
- Umgebungstemperaturbereich: -20 °C bis +60 °C

Die genauen technischen Daten des jeweiligen Synchron-Getriebemotors sind in den Prüfunterlagen sowie in den der Betriebsanleitung beigelegten Datenblättern enthalten.

[16] **Prüfbericht**

Die Prüfergebnisse sind in dem vertraulichen Prüfbericht IB-15-3-213 vom 10.05.2017 festgehalten. Die Prüfunterlagen sind Teil des Prüfberichts und werden darin aufgelistet.

Zusammenfassung der Prüfergebnisse

Der Synchron-Getriebemotor Typ ADK***S1e SG** genügt den Anforderungen des Explosionsschutzes für Geräte der Gruppe II, Kategorie 2G in Zündschutzart druckfeste Kapselung „db“ für explosionsfähige Atmosphären mit Gasen und Dämpfen bis zur Explosionsgruppe IIB und Temperaturklasse T4.

[17] **Besondere Bedingungen für die Verwendung**

keine

[18] **Wesentliche Sicherheits- und Gesundheitsanforderungen**

Zusätzlich zu den wesentlichen Sicherheits- und Gesundheitsanforderungen, die in den Anwendungsbereich der unter Punkt [9] genannten Normen fallen, wird Folgendes für dieses Produkt als relevant angesehen und die Konformität wird im Prüfbericht dargelegt: - nicht zutreffend -

[19] **Zeichnungen und Unterlagen**

Die Dokumente sind im Prüfbericht aufgelistet.

Im Auftrag

Freiberg, 10.05.2017


Dipl.-Ing. (FH) Henker



[1] **EU-TYPE EXAMINATION CERTIFICATE**

[2] Equipment and protective systems intended for use
in potentially explosive atmospheres, directive 2014/34/EU

[3] EU-Type Examination Certificate Number **IBExU17ATEX1008** | Issue 0

[4] Equipment: **Synchronous gear motor**
Type: ADK***S1e SG**

[5] Manufacturer: **ASTRO Motorengesellschaft mbH & Co. KG**

[6] Address: **Große Beek 7
27607 Geestland
GERMANY**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH, Notified Body number 0637 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential test report IB-15-3-213.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:
EN 60079-0:2012+A11:2013 EN 60079-1:2014
Except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This EU-type examination certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Ex II 2G Ex db IIB T4 Gb

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg, GERMANY

By order

Dipl.-Ing. (FH) Henker



- Seal -
(Notified Body number 0637)

Phone: +49 (0)3731 3805-0
Fax: +49 (0)3731 3805-10

Freiberg, 10 May 2017

Certificates without seal and signature are not valid.
Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

[13] **Schedule**

[14] **Certificate Number IBExU17ATEX1008 | Issue 0**

[15] **Description of product**

The Synchronous gear motor type ADK***S1e SG** is provided to use in potentially explosive atmospheres. It consists of a flameproof enclosure with direct cable entry. The built in synchronous motor ASM ** is designed for continuous operation and it is power reduced. The motor is equipped with permanently connected cable, which is led in into the enclosure directly via a separate certified flameproof cable gland.

Technical data

Synchronous gear motor type ADK...	164S1e SG**	166S1e SG**	184S1e SG**	186S1e SG**	204S1e SG**	206S1e SG**	224S1e SG**	226S1e SG**
Power input (W):	6	6	10	10	14	14	18	18
Power output (W):	3	3	5	5	7	7	9	9
Nominal torque (cNm):	2.0/1.7	3.0/2.5	3.3/2.8	5.0/4.2	4.6/3.9	7.0/5.8	6.0/5.0	9.0/7.5
Maximum output speed (min ⁻¹):	300/360	200/240	300/360	200/240	300/360	200/240	300/360	200/240

- Nominal voltage: 24-400 V AC 1~ or 24-600 V AC 3~
- Nominal frequency: 50/60 Hz
- Mode of operation: S1
- Ambient temperature range: -20 °C up to +60 °C

The accurate technical data of the respective Synchronous gear motor are specified in the test documents as well as in the data sheet attached in the operating instruction.

[16] **Test report**

The test results are recorded in the confidential test report IB-15-3-213 of 10 May 2017.
The test documents are part of the test report and they are listed there.

Summary of the test results

The Synchronous gear motor type ADK***S1e SG** fulfils the requirements of explosion protection for equipment of Group II, Category 2G, type of protection flameproof enclosure „db“ for explosive atmospheres with gases and vapors up to explosion group IIB and temperature class T4.

[17] **Special conditions for use**

none

[18] **Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report: - not applicable -

[19] **Drawings and documents**

The documents are listed in the test report.

By order

Freiberg, 10 May 2017



Dipl.-Ing. (FH) Henker

EU-Konformitätserklärung EU-declaration of conformity



Hiermit erklärt Bühler Technologies GmbH, dass die nachfolgenden Produkte „Geräte“ im Sinne der Richtlinie

Herewith declares Bühler Technologies GmbH that the following products are "equipment" according to Directive

**2014/34/EU
(Atex)**

in ihrer aktuellen Fassung sind.

in its actual version.

Folgende Richtlinien wurden berücksichtigt:

The following directives were regarded:

**2014/35/EU (NSR/LVD)
2014/30/EU (EMV/EMC)**

Produkt / products: Peristaltikpumpe / Peristaltic pump
Typ / type: CPsingle, CPdouble
Seriennummer / serial number: 4492x1x310x (x=0-9)

Die Produkte werden entsprechend der derzeit gültigen Atex-Richtlinie innerhalb der internen Fertigungskontrolle folgendermaßen gekennzeichnet:

The products are marked according to the currently valid Atex directive during internal control of production:



II 2G Ex h IIB T4 Gb X

Kennzeichnung unter Berücksichtigung des nicht-elektrischen Explosionsschutzes.

Marking, taking into account non-electrical explosion protection.

Zur Beurteilung der Konformität gemäß Atex-Richtlinie wurden folgende harmonisierte Normen herangezogen:
For the assessment of conformity according to the Atex directive the following standards have been used:

EN ISO 80079-36:2016

Nr. CE-Erklärung Zulieferer	Astro Motorengesellschaft mbH & Co. KG
No. CE-Declaration Supplier	
Eingeschaltete Benannte Stelle:	IBExU Institut für Sicherheitstechnik GmbH, Freiberg
Engaged Notified Body:	0637
Nr. der	IBExU17ATEX1008 0
Konformitätsbescheinigung:	
No. of Certificate	

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Dokumentationsverantwortlicher für diese Konformitätserklärung ist Herr Stefan Eschweiler mit Anschrift am Firmensitz.

The person authorised to compile the technical file is Mr. Stefan Eschweiler located at the company's address.

Ratingen, den 22.02.2021


Stefan Eschweiler
Geschäftsführer – Managing Director


Frank Pospiech
Geschäftsführer – Managing Director

RMA-Formular und Erklärung über Dekontaminierung

RMA-Form and explanation for decontamination



RMA-Nr./ RMA-No.

Die RMA-Nr. bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service. Bei Rücksendung eines Altgeräts zur Entsorgung tragen Sie bitte in das Feld der RMA-Nr. "WEEE" ein./ You may obtain the RMA number from your sales or service representative. When returning an old appliance for disposal, please enter "WEEE" in the RMA number box.

Zu diesem Rücksendeschein gehört eine Dekontaminierungserklärung. Die gesetzlichen Vorschriften schreiben vor, dass Sie uns diese Dekontaminierungserklärung ausgefüllt und unterschrieben zurücksenden müssen. Bitte füllen Sie auch diese im Sinne der Gesundheit unserer Mitarbeiter vollständig aus./ This return form includes a decontamination statement. The law requires you to submit this completed and signed decontamination statement to us. Please complete the entire form, also in the interest of our employee health.

Firma/ Company

Firma/ Company

Straße/ Street

PLZ, Ort/ Zip, City

Land/ Country

Gerät/ Device

Anzahl/ Quantity

Auftragsnr./ Order No.

Ansprechpartner/ Person in charge

Name/ Name

Abt./ Dept.

Tel./ Phone

E-Mail

Serien-Nr./ Serial No.

Artikel-Nr./ Item No.

Grund der Rücksendung/ Reason for return

- ☐ Kalibrierung/ Calibration ☐ Modifikation/ Modification
☐ Reklamation/ Claim ☐ Reparatur/ Repair
☐ Elektroaltgerät/ Waste Electrical & Electronic Equipment (WEEE)
☐ andere/ other

bitte spezifizieren/ please specify

Ist das Gerät möglicherweise kontaminiert?/ Could the equipment be contaminated?

- ☐ Nein, da das Gerät nicht mit gesundheitsgefährdenden Stoffen betrieben wurde./ No, because the device was not operated with hazardous substances.
☐ Nein, da das Gerät ordnungsgemäß gereinigt und dekontaminiert wurde./ No, because the device has been properly cleaned and decontaminated.
☐ Ja, kontaminiert mit:/ Yes, contaminated with:



☐
explosiv/
explosive



☐
entzündlich/
flammable



☐
brandfördernd/
oxidizing



☐
komprimierte
Gase/
compressed
gases



☐
ätzend/
caustic



☐
giftig,
Lebensgefahr/
poisonous, risk
of death



☐
gesundheitsge-
fährdend/
harmful to
health



☐
gesund-
heitsschädlich/
health hazard



☐
umweltge-
fährdend/
environmental
hazard

Bitte Sicherheitsdatenblatt beilegen! / Please enclose safety data sheet!

Das Gerät wurde gespült mit:/ The equipment was purged with:

Diese Erklärung wurde korrekt und vollständig ausgefüllt und von einer dazu befugten Person unterschrieben. Der Versand der (dekontaminierten) Geräte und Komponenten erfolgt gemäß den gesetzlichen Bestimmungen.

This declaration has been filled out correctly and completely, and signed by an authorized person. The dispatch of the (decontaminated) devices and components takes place according to the legal regulations.

Falls die Ware nicht gereinigt, also kontaminiert bei uns eintrifft, muss die Firma Bühler sich vorbehalten, diese durch einen externen Dienstleister reinigen zu lassen und Ihnen dies in Rechnung zu stellen.

Should the goods not arrive clean, but contaminated, Bühler reserves the right, to commission an external service provider to clean the goods and invoice it to your account.

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature



Vermeiden von Veränderung und Beschädigung der einzusendenden Baugruppe

Die Analyse defekter Baugruppen ist ein wesentlicher Bestandteil der Qualitätssicherung der Firma Bühler Technologies GmbH. Um eine aussagekräftige Analyse zu gewährleisten muss die Ware möglichst unverändert untersucht werden. Es dürfen keine Veränderungen oder weitere Beschädigungen auftreten, die Ursachen verdecken oder eine Analyse unmöglich machen.

Umgang mit elektrostatisch sensiblen Baugruppen

Bei elektronischen Baugruppen kann es sich um elektrostatisch sensible Baugruppen handeln. Es ist darauf zu achten, diese Baugruppen ESD-gerecht zu behandeln. Nach Möglichkeit sollten die Baugruppen an einem ESD-gerechten Arbeitsplatz getauscht werden. Ist dies nicht möglich sollten ESD-gerechte Maßnahmen beim Austausch getroffen werden. Der Transport darf nur in ESD-gerechten Behältnissen durchgeführt werden. Die Verpackung der Baugruppen muss ESD-konform sein. Verwenden Sie nach Möglichkeit die Verpackung des Ersatzteils oder wählen Sie selber eine ESD-gerechte Verpackung.

Einbau von Ersatzteilen

Beachten Sie beim Einbau des Ersatzteils die gleichen Vorgaben wie oben beschrieben. Achten Sie auf die ordnungsgemäße Montage des Bauteils und aller Komponenten. Versetzen Sie vor der Inbetriebnahme die Verkabelung wieder in den ursprünglichen Zustand. Fragen Sie im Zweifel beim Hersteller nach weiteren Informationen.

Einsenden von Elektroaltgeräten zur Entsorgung

Wollen Sie ein von Bühler Technologies GmbH stammendes Elektroprodukt zur fachgerechten Entsorgung einsenden, dann tragen Sie bitte in das Feld der RMA-Nr. „WEEE“ ein. Legen Sie dem Altgerät die vollständig ausgefüllte Dekontaminierungserklärung für den Transport von außen sichtbar bei. Weitere Informationen zur Entsorgung von Elektroaltgeräten finden Sie auf der Webseite unseres Unternehmens.

Avoiding alterations and damage to the components to be returned

Analysing defective assemblies is an essential part of quality assurance at Bühler Technologies GmbH. To ensure conclusive analysis the goods must be inspected unaltered, if possible. Modifications or other damages which may hide the cause or render it impossible to analyse are prohibited.

Handling electrostatically conductive components

Electronic assemblies may be sensitive to static electricity. Be sure to handle these assemblies in an ESD-safe manner. Where possible, the assemblies should be replaced in an ESD-safe location. If unable to do so, take ESD-safe precautions when replacing these. Must be transported in ESD-safe containers. The packaging of the assemblies must be ESD-safe. If possible, use the packaging of the spare part or use ESD-safe packaging.

Fitting of spare parts

Observe the above specifications when installing the spare part. Ensure the part and all components are properly installed. Return the cables to the original state before putting into service. When in doubt, contact the manufacturer for additional information.

Returning old electrical appliances for disposal

If you wish to return an electrical product from Bühler Technologies GmbH for proper disposal, please enter "WEEE" in the RMA number box. Please attach the fully completed decontamination declaration form for transport to the old appliance so that it is visible from the outside. You can find more information on the disposal of old electrical appliances on our company's website.

