



Pressure transmitter

Pressotronik 700, 702

## Installation and Operation Instructions

Original instructions



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1800-645765

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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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# Contents

1	Introduction.....	2
1.1	Intended Use.....	2
1.2	Ordering instructions Pressotronik 700.....	2
1.3	Ordering instructions Pressotronik 702.....	2
1.4	Contents.....	2
2	Safety instructions.....	3
2.1	Important advice.....	3
2.2	General hazard warnings.....	3
3	Transport and storage.....	5
4	Setup and connection.....	6
4.1	Installation.....	6
5	Operation and control.....	7
6	Cleaning and Maintenance.....	8
7	Service and repair.....	9
7.1	Accessories.....	9
8	Disposal.....	10
9	Appendices.....	11
9.1	Technical Data Pressotronik 700.....	11
9.2	Technical Data Pressotronik 702.....	13
9.3	Standard Pin Assignment Pressotronik 700.....	14
9.4	Standard pin assignment Pressotronik 702.....	14
10	Attached documents.....	15



# 1 Introduction

## 1.1 Intended Use

The Pressotronik 700/702 is a pressure transmitter for monitoring the pressure in a fluid system. The transmitter can be installed some distance from the analysis unit. The components are connected using a connection cable with M12 connectors. Model 702 is optionally available with M3 plug connection (with plug top).

The Pressotronik 700/702 has a 4 - 20 mA analog signal output.

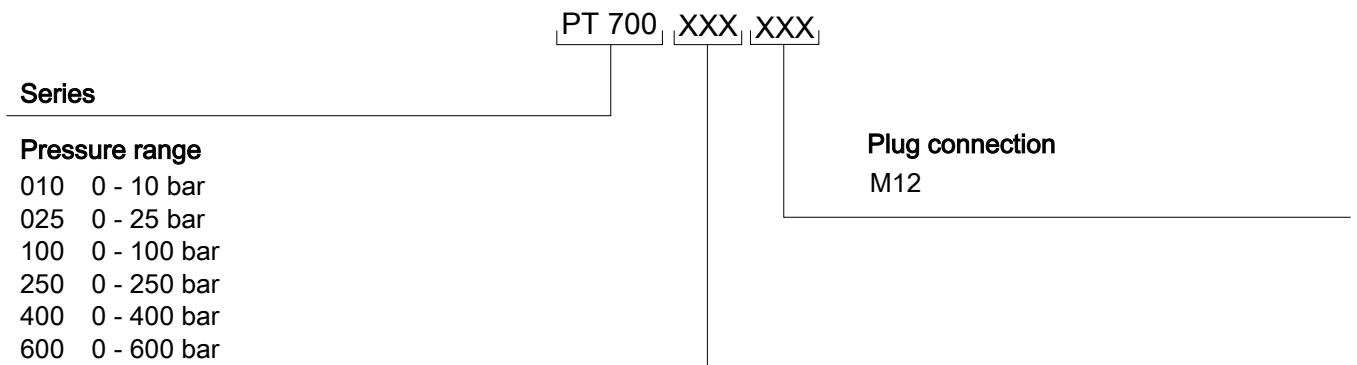
Please note the technical data in the appendix for the specific intended use, existing material combinations, as well as pressure and temperature limits.

### WARNING

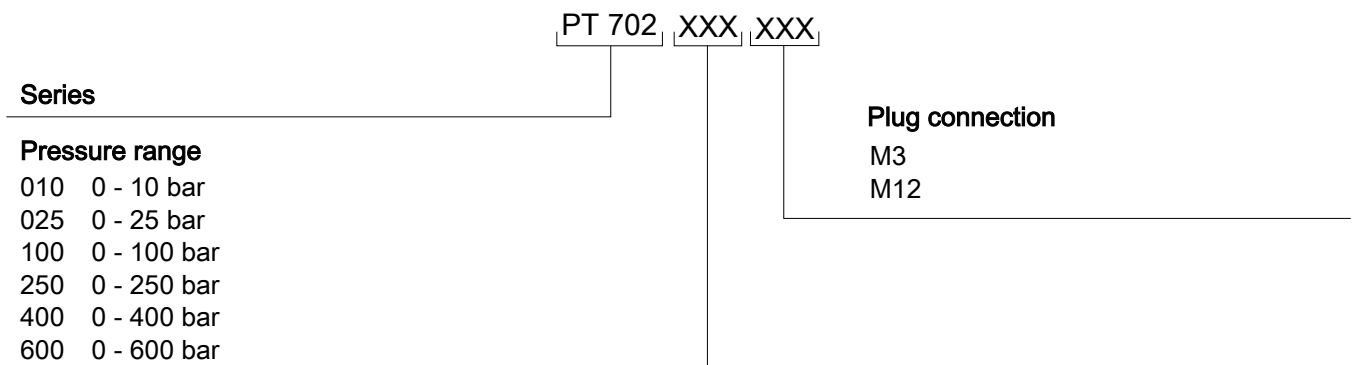


All device models are solely intended for industrial applications. They are **not safety components**. The devices must not be used if failure or malfunction thereof jeopardises the safety and health of persons. Use in explosive areas is **prohibited**.

## 1.2 Ordering instructions Pressotronik 700



## 1.3 Ordering instructions Pressotronik 702



## 1.4 Contents

- Pressotronik
- Product documentation
- Connection/mounting accessories (optional)



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## 2 Safety instructions

### 2.1 Important advice

Operation of the device is only permitted if:

- the product is used under the conditions described in the installation- and operation instruction, the intended application according to the type plate and the intended use. In case of unauthorized modifications done by the user Bühler Technologies GmbH can not be held responsible for any damage,
- when complying with the specifications and markings on the nameplates.
- the performance limits given in the datasheets and in the installation- and operation instruction are obeyed,
- monitoring devices and safety devices are installed properly,
- service and repair is carried out by Bühler Technologies GmbH,
- only original spare parts are used.

This manual is part of the equipment. The manufacturer keeps the right to modify specifications without advanced notice. Keep this manual for later use.

### Signal words for warnings

<b>DANGER</b>	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
<b>WARNING</b>	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
<b>CAUTION</b>	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.
<b>NOTICE</b>	Signal word for important information to the product.

### Warning signs

These instructions use the following warning signs:



Warns of a general hazard



General information



Voltage warning



Unplug from mains



High pressure warning

### 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,
- compliance with national installation regulations.

## 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.
- Do not install damaged or defective spare part. If necessary, visually inspect prior to installation to determine any obvious damage to the spare parts.

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

The method for cleaning the devices must be adapted to the IP protection class of the devices. Do not use cleaners which could damage the device materials.



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### 3 Transport and storage

Only transport the product inside the original packaging or a suitable alternative.

The equipment must be protected from moisture and heat when not in use. It must be stored in a covered, dry, dust-free room at room temperature.



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## 4 Setup and connection

**DANGER**

**Electric voltage**



Risk of electric shock

- a) Always disconnect the unit from the mains before performing work.
- b) Secure the equipment from accidental restarting.
- c) The equipment may only be installed, maintained and put into operation by instructed, competent personnel.
- d) Always observe the applicable safety regulations for the operating site.



**DANGER**

**Toxic, acidic gases/liquids**



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



### 4.1 Installation

**WARNING**

**Gases or liquids discharged under pressure**



Depressurise the system before installing or removing the transmitter.

Disconnect from power all over!

The hydraulic connection of the transmitter uses an G1/4 external thread, DIN 3852 shape E. The Pressotronik connects to the analysis unit via cable.

Please refer to the appendix for the pin assignment.



## 5 Operation and control

**NOTICE**



The device must not be operated beyond its specifications.

## 6 Cleaning and Maintenance

This device is maintenance-free.

The method for cleaning the devices must be adapted to the IP protection class of the devices. Do not use cleaners which could damage the device materials.



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## 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 Accessories

Item no.	Description	
9144 05 0010	Connecting cable	M12x1, 1.5 m, angled coupler and straight plug
9144 05 0046	Connecting cable	M12x1, 3.0 m, angled coupler and straight plug
9144 05 0047	Connecting cable	M12x1, 5.0 m, angled coupler and strands



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## 8 Disposal

In EU member states, as per Directive 2012/19/EU, device with electrical components must be recycled separately.

Dispose of parts so as not to endanger the health or environment. Follow the laws in the country of use for disposing of electronic components and devices as well as hazardous materials during disposal.

As an EU member state you have the option to return Bühler Technologies GmbH products to us. When returning the product, the completed and signed RMA decontamination declaration must be attached to the packaging. You will find the form in the appendix of these instructions, or simply request it by e-mail: [service@buehler-technologies.com](mailto:service@buehler-technologies.com).



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## 9 Appendices

### 9.1 Technical Data Pressotronik 700

#### Pressure transmitter

	Pressure range	Dimensions Pressotronik 700
	0 - 10 bar 0 - 25 bar 0 - 100 bar 0 - 250 bar 0 - 400 bar 0 - 600 bar	
	Other pressure ranges available upon request	
Pressure connection	G1/4 external thread, DIN 3852 Form E; peak pressure aperture standard for 100 bar and higher	
Overload higher values available upon request	2.5 x full range at 10 to 600 bar (but max. 900 bar)	
Burst pressure Higher burst pressure available upon request	2.5 x full range at 6 to 600 bar (but max. 900 bar) Patented medium stop system to prevent medium leaks when exceeding the bursting pressure range (>40 bar rated pressure)	
Material / version		
Housing	1.4305	
Material in contact with media	Ceramic, 1.4305, PPS, FPM	
Weight	approx. 95 g	
Temperature		
Medium	-15 °C to + 125 °C	
Ambient temperature	max. 85 °C	
Temperature influences	Within - 40 to +125 °C temperature range	
	Calibration in bar	Calibration in psi
TCO - Temperature zero error	< ±0.15 % FS/10 K	< ±0.25 % FS/10 K
TCE - Temperature full range error	< ±0.15 % FS/10 K	< ±0.15 % FS/10 K
Response time	< 2 ms / typically 1 ms	
Electrical data		Standard pin assignment Pressotronik 700
Supply voltage (U <sub>B</sub> )	10 – 30 V DC (nominal voltage 24 V DC)	Plug: 1xM12x1
Degree of protection	IP67	Pin
Burden Ω	= (U <sub>B</sub> -8 V) / 0.02 A	1 +24 V DC
Dielectric strength	500 V DC	3 4-20 mA

**Accuracy**

<b>Parameter</b>	<b>Unit</b>
Tolerance zero	max. $\pm 0.3$ % FS
Tolerance full range	max. $\pm 0.3$ % FS
Resolution	0.1 % FS
Sum of linearity, hysteresis and reproducibility	max. $\pm 0.3$ % FS/10K
Long-term stability per DIN EN 60770	$\pm 1$ % FS
TC zero	max. $\pm 0.15$ % FS/10K
TC sensitivity	max. $\pm 0.15$ % FS/10K

Test conditions: 25 °C, 45 % rF, supply 24 V DC, K0/TCE -40 °C... +125 °C



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## 9.2 Technical Data Pressotronik 702

### Pressure Transmitter Pressotronik 702

Pressure ranges	0 - 10 bar 0 - 25 bar 0 - 100 bar 0 - 250 bar 0 - 400 bar 0 - 600 bar
Medium	Liquids, gasses and refrigerants, incl. ammonia
Pressure connection	G1/4 male thread, DIN 3852 Form E with profile gasket FPM
Overload	3 x limit at 10 to 600 bar (but max. 1500 bar) <i>higher values upon request</i>
Burst pressure	6 x terminal value (max. 2500 bar)
Mounting position	any
Weight	approx. 90 g
<b>Material</b>	
Housing	1.4305
Connector holder	Polyarylamide 50 % GF VO
<b>Materials in contact with media</b>	
Pressure connection	Stainless steel 1.4404 / AISI 316L
Measuring element	Stainless steel
<b>Temperature</b>	
Medium	-30 °C to +135 °C
Ambient temperature	-30 °C to +85 °C
Storage	-50 °C to +100 °C

### Electrical data

Response time	$\leq 2$ ms / typical 1 ms
Load cycle	$\leq 100$ Hz
Supply voltage ( $U_b$ )	7 - 33 V DC
Power input	$\leq 23$ mA
Output signal	4 - 20 mA, 2 wire
Load $\Omega$	$= (U_b - 7 \text{ V}) / 0.02 \text{ A}$
Reverse polarity safety	Short circuit and reverse polarity safety (each connection to each with max. voltage)
Connection	M3 (IP 65)
<i>other versions on request</i>	M12 (IP 67) / Delivered without connector head

### Accuracy (test conditions: 25 °C, 45 % RH, supply 24 VDC)

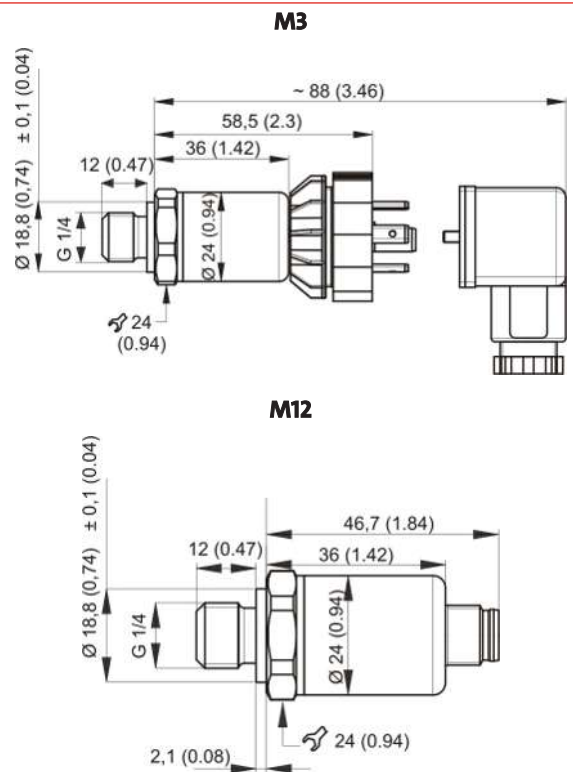
Characteristic*	$\pm 0.3$ % FS
Resolution	0.1 % FS
Thermal behaviour**	$\pm 0.2$ % FS/10K
Long-term stability per DIN EN 60770-1	$\pm 0.25$ % FS

\*Typical; max. 0.5 % FS, \*\* -15 °C to +85 °C

### Certificates/Approvals

Electromagnetic compatibility	CE compliant per EN 61326-2-3
Shock per IEC 60068-2-27	100 g, 11 ms, half-sine curve, all 6 directions, free fall from 1 m onto concrete (6x)
Continuous shock per IEC 60068-2-29	40 g over 6 ms, 1000x all 3 directions
Vibration per IEC 60068-2-6	20 g, 15...2000 Hz, 15...25 Hz with amplitude $\pm 15$ mm, 1 octave/minute all 3 directions, 50 continuous loads

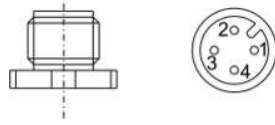
### Dimensions



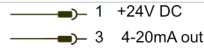
### 9.3 Standard Pin Assignment Pressotronik 700

M12 plug A coded  
4-pin  
DIN EN 61076-2-101  
IP67

Plug connection



Pin assignment  
2 lead

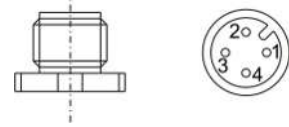
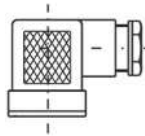


### 9.4 Standard pin assignment Pressotronik 702

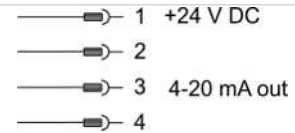
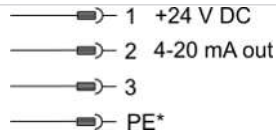
M3 valve connector  
3-pin + PE  
DIN EN 175301-803-A  
IP65

M12 plug A coded  
4-pin  
DIN EN 61076-2-101  
IP67

Plug connection



Pin assignment  
2 lead



\* not connected to transmitter housing.



## 10 Attached documents

- Declaration of Conformity: KX130021
- RMA - Decontamination Statement



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**EU-Konformitätserklärung**  
**EU-declaration of conformity**



Hiermit erklärt Bühler Technologies GmbH,  
dass die nachfolgenden Produkte den  
wesentlichen Anforderungen der Richtlinie

*Herewith declares Bühler Technologies GmbH  
that the following products correspond to the  
essential requirements of Directive*

**2014/30/EU**  
**(Elektromagnetische Verträglichkeit / *electromagnetic compatibility*)**

in ihrer aktuellen Fassung entsprechen.

*in its actual version.*

**Produkt / products:** Drucksensoren / *Pressure transmitters*  
**Typ / type:** Pressotronik 700 / 702

Die Betriebsmittel sind Drucktransmitter, die den Druck in einem Fluidsystem überwachen.  
*The equipment is a pressure transmitter used for monitoring pressure in fluid control systems.*

Das oben beschriebene Produkt der Erklärung erfüllt die einschlägigen  
Harmonisierungsrechtsvorschriften der Union:  
*The object of the declaration described above is in conformity with the relevant Union harmonisation  
legislation:*

**EN 61326-2-3:2013**

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 20.04.2016

Stefan Eschweiler  
Geschäftsführer – *Managing Director*

Frank Pospiech  
Geschäftsführer – *Managing Director*

KX 13 0021

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# RMA-Formular und Erklärung über Dekontaminierung

## RMA-Form and explanation for decontamination



RMA-Nr./ RMA-No.

Die RMA-Nummer bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service./ You may obtain the RMA number from your sales or service representative.

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  
 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

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen  
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E-Mail: [service@buehler-technologies.com](mailto:service@buehler-technologies.com)  
Internet: [www.buehler-technologies.com](http://www.buehler-technologies.com)

rechtsverbindliche Unterschrift/ Legally binding signature

DE000011  
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*Die Analyse defekter Baugruppen ist ein wesentlicher Bestandteil der Qualitätssicherung der Firma Bühler Technologies.*

*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.*

*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.*

*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.*

*Analysing defective assemblies is an essential part of quality assurance at Bühler Technologies.*

*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.*

*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.*

*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.*



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