

Operation Manual (en)



Translation of the german original manual



Rough Vacuum Gauge

Type PIZA 101

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We reserve the right to make changes and amendments.

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EC Declaration of Conformity

Important Information

1 Important Information

1.1 General Information

The **Rough Vacuum Gauge PIZA 101** conforms to the following directives:

2006/95/EC	Low Voltage Directive
2006/42/EC	Machinery Directive
2004/108/EC	Electromagnetic Compatibility Directive

The CE sign is located on the rating plate.

Observe the binding national, local and plant-specific regulations.

1.2 Target Groups

This Operating Manual is intended for the personnel planning, operating and maintaining vacuum apparatus and vacuum gauges.

This group of people includes:

- Designers and fitters of vacuum apparatus,
- Employees working on laboratory and industrial applications of vacuum pumps / apparatus,
- Service personnel for vacuum pumps / vacuum gauges,
- Electricians for performing the electrical work.

The personnel operating and maintaining must have the technical competence required to perform the work that has to be done.

The user must authorize the operating personnel to do the work that has to be done.

This personnel must have read and understood the complete Operating Manual before starting the work.

The Operating Manual must be kept at the place of use and be available to the personnel when required.

1.3 Intended Use

- The Rough Vacuum Gauge may only be operated under the conditions stated
 - in the "Technical Data" section,
 - on the type plate, and
 - in the technical specification for the order concerned.
- The Rough Vacuum Gauge is used in conjunction with a vacuum pump / vacuum system in industry, and in chemical and physical laboratories.
- The applicable regulations must be observed when it is used with hazardous substances (corrosive, toxic, microbiological, radioactive or other hazardous substances). The user bears the responsibility for such a use.

1.4 Use for an Unauthorized Purpose

It is forbidden to use the pump for applications deviating from the technical data stated on the type plate or the conditions stated in the supply contract, or to operate it with missing or defective protective devices.

1.5 Safety Devices

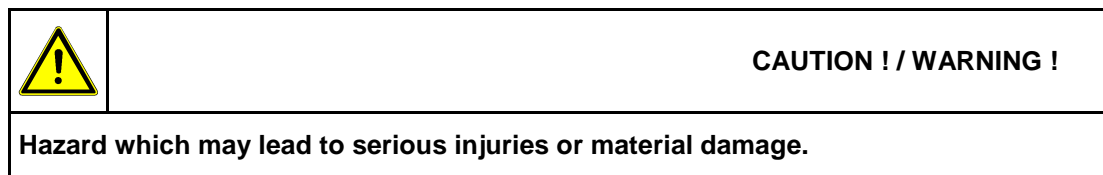
Measures such as the following are for the safety of the operating personnel:

- electrical connecting cable with protective conductor and earthing plug,
- device casing

The rough vacuum gauge must not be operated without these elements.

1.6 Meaning of the Warning notes

Take note of the warning notices. They are in the following box:



1.7 Product Standards, Safety Regulations

The Rough Vacuum Gauge fulfils the following product standards:

DIN EN ISO 12100-1:2004	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
DIN EN ISO 12100-2:2004	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles
DIN EN ISO 13857:2008-06	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
DIN EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
DIN EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements
DIN EN 50110-1	Operation of electrical installations
Directive 2012/19/EC	Electrical and electronics - old devices (WEEE)
Directive 2011/65/EC	Dangerous materials in electrical and electronics devices (RoHS)
China - RoHS	Environment protection law - China 2007-03

The following additional safety regulations apply in the FR Germany:

BGV A3	Electrical equipment and operating materials
VBG 5	Power-driven machines
BGR 120	Guidelines for laboratories
BGI 798	Hazard assessment in the laboratory
BGR 189 (BGR 195;192;197)	Use of protective working clothes

Observe the standards and regulations applying in your country when you use the Rough Vacuum Gauge.

2 Basic Safety Instructions

2.1 General Information

The safety instructions and warning notices in this operating manual must be observed. Failure to follow these instructions may lead to damage to health and property.

All work must be performed by qualified, skilled workers who are aware of the specific dangers. The Rough Vacuum Gauge is maintenance-free. Valves should be cleaned whenever necessary.

The manufacturer or authorized authorised workshops will only service or maintain the device if it is accompanied by a fully completed damage report. In this case, the contaminated parts must be completely cleaned or exact information provided about the contamination before they are given to the manufacturer or customer service. This is a legally binding part of the contract.

The box must be disposed of in accordance with the legal regulations.

2.2 Electricity

Follow the regulations for the recurrent testing of electrical devices to verify their electrical safety. In the FRG, the rough vacuum gauge, as mobile operating material, is subject to obligatory regular testing. The connecting cable to the vacuum gauge must not be damaged.

2.3 Mechanical Systems

However, damage may occur to the connected vacuum pump or vacuum apparatus if the vacuum gauge is manipulated or if it is used improperly.

Solid particles in the gas to be pumped may impair the function of the sensor. Prevent solid particles penetrating into the vacuum apparatus.

2.4 Hazardous Substances

Hazardous substances in the gases to be pumped can cause personal injuries and property damage. Pay attention to the warning notices for handling hazardous substances.

Explosive gases

The Rough Vacuum Gauge is not suitable for operation in areas at risk of explosion as defined by standard DIN VDE 0165.

The user must take suitable safety measures when pumping gases which can form explosive or inflammable mixtures. For example: Feeding in inert gas, connection of a potential source of ignition.

Poisonous gases

The gas to be pumped by the vacuum apparatus may be poisonous or detrimental to the environment and/or human health.

- Observe the requirements of the safety data sheets of the manufacturer's of hazardous substances.
- Test the strength and leak-tightness of the connecting lines.
- Prevent substances which are poisonous or harmful to the environment from leaking out of the apparatus.

3 Description

3.1 Device description

With the **Rough Vacuum Gauge** type **PIZA 101**, you can measure absolute pressures in the vacuum range which is created by, for example, water jet pumps, diaphragm pumps, piston pumps, rotary vane pumps and similar devices. Simple programming is possible via the keyboard on the front plate.

The PIZA 101 is supplied as a hand-held device.

3.2 Device design

PIZA 101	Item	Description
	1	Vacuum hand-held gauge
	2	Combination sensor PIZA 101
	3	Sensor cable
	4	Plug power pack

Fig. 1 Complete view

3.3 Area of Application

The range of applications for our PIZA 101 is determined by the following characteristics:


- Capacitive absolute pressure measurement in the range from 1050 mbar to 1 mbar
- Calibration of the measuring range
- High display resolution in digital read-out
- High display speed.

Description

3.4 Scope of Delivery

The scope of delivery is specified in the supply contract.

3.5 Accessories (Options)

Figure	Description	Order No.
	Stand	620007
	Sensor cable 2 m	620003
	Hose nozzle PP, DN 6 - male thread ¼ inch, complete with FKM - O-ring	710952
	Hose nozzle PP, DN 8 - male thread ¼ inch, complete with FKM - O-ring	710953
	Hose nozzle PP, DN 10 - male thread ¼ inch, complete with FKM - O-ring	710955

4 Technical Data

Parameter	Unit	Data
Measuring range	mbar	1050 to 1 absolute pressure
Measuring accuracy	mbar	< 0,8 % FS (<i>Full Scale</i>) max. combined error from linearity, hysteresis and repeatability
Reproducibility	%	< 0,5 %
Permissible overload	bar	max. 2 absolute pressure
Display	-	digital LCD display, 4 digit, height 13 mm
Resolution	mbar	1
Operation voltage / External power supply unit	V DC	9 V battery or mains pack 9 V / 200 mA
Conditions of use - Temperature: - Humidity:	°C	0 to 60 90% rH at 30°C
Vacuum connection	-	1/4" female thread, DN 16 KF <i>option hose nozzle DN 6, DN 8 or DN 10; male thread 1/4"</i>
Dimensions (W/D/H) - Measuring device: - Sensor:	mm	80 / 36 / 125 80 / 40 / 40 with small flange DN 16 <i>optionally with threaded connector</i>
Order no. PIZA 101 complete	-	600071

The information presented in this material is based on technical data and test results of nominal units. It is believed to be accurate and reliable and is offered as an aid to help in the selection of Welch-Ilmvac products.

It is the responsibility of the user to determine the suitability of the product for the intended use and the user assumes all risk and liability whatsoever in connection therewith. Welch-Ilmvac does not warrant, guarantee or assume any obligation or liability in connection with this information.

Assembly and Installation

5 Assembly and Installation

5.1 Unpacking

Carefully unpack the **Rough Vacuum Gauge PIZA 101**.

Check the gauge for:

- Transport damage,
- Conformity with the specifications of the supply contract (type, electrical supply data),
- Completeness of the delivery.

Please inform us without delay if there are discrepancies between the delivery and the contractually agreed scope of delivery, or if damage is detected.

Please take note of the general terms of business of the manufacturing firm.

Keep the packaging in a safe place so that it can be used when sending the controller to the manufacturer's works or to an authorized workshop for maintenance or repair.

5.2 Storage

The pumps are to be stored in a low-dust, interior room within the temperature range from + 5 to + 40 °C and at a relative air humidity < 90% .

5.3 Assembly and Connecting

After removing the measuring device and the accessory from the packaging, please connect the sensor cable between the measuring device and the sensor.

The 9-pole D-sub contact strip of the sensor cable is attached to the sensor plug, the 9-pole D-sub multipoint connector of the sensor cable is attached to the socket of the measuring device.

Please use the fixing screws on the sensor cable to secure the plug connections against being accidentally dislodged.

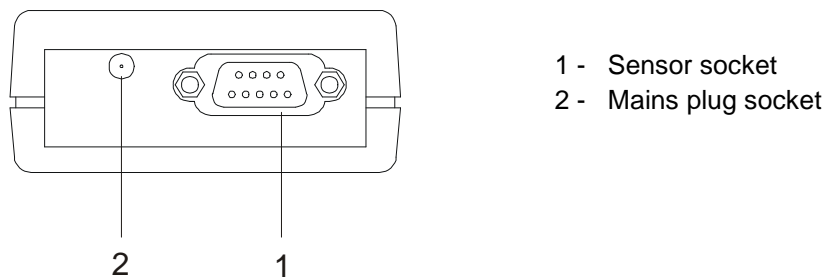


Fig. 2 Socket assignment

5.3.1 Mains operation

If you want to work on the mains network, please connect the supply unit plug to the measuring device. Ensure that the operating voltage of the plug-in power supply unit is the same as the voltage of your mains supply.

The power supply unit is laid out on the work side so that the negative pole lies on the outer sheath of the coaxial plug connector. Please ensure that the polarity of the plug on the supply unit is maintained, as otherwise the measuring device cannot function. (see fig. 3).

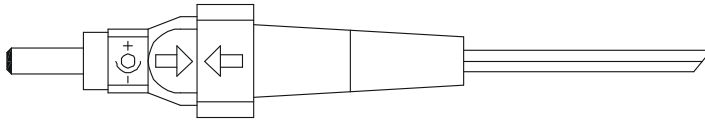



Fig. 3 Plug connector of supply unit plug

	WARNING !
If the user changes the electrical connection, for example, by building it into a system, then this may only be done by a qualified person under compliance with the regulations for the prevention of accidents.	

5.3.2 Battery operation

A 9 V block battery is required for battery operation independent of the mains network, this has to be inserted into the battery compartment on the back of the measuring device. Open the battery compartment by lightly pressing the actuating element down and lifting the lid. Attach the battery to the battery clip.

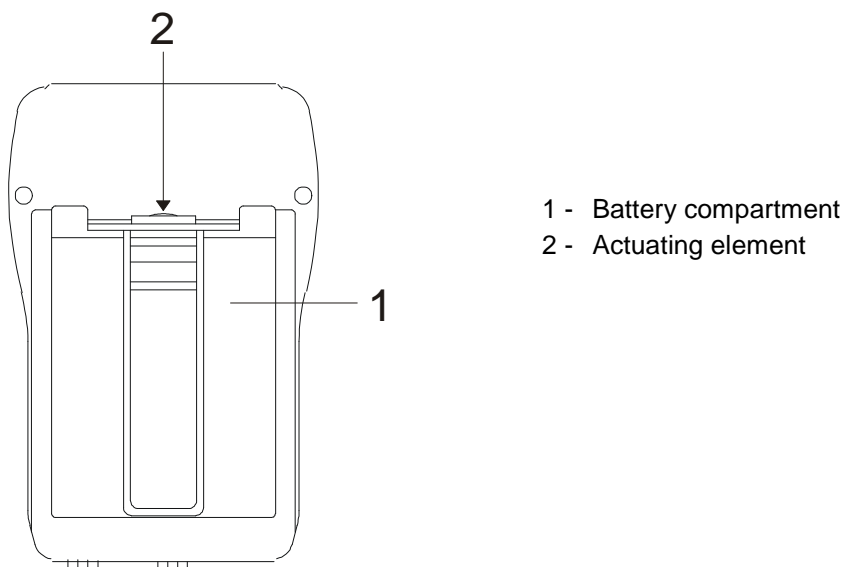


Fig. 4 Rear side of device

Assembly and Installation

The use of a 9 V alkali-manganese block battery with a capacity of > 500 mAh is recommended.

The service life of the battery averages 200 operating hours (active measuring time).

Once the battery has discharged, this is indicated by "BAT" appearing in the display on the measuring device.

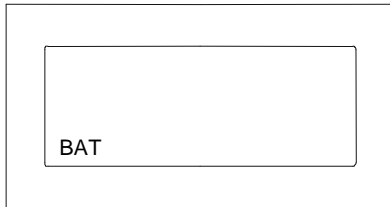




Fig. 5 Display: Battery discharged

5.4 Scrap Disposal

	CAUTION !
<p>The 2012/19/EC directive or the regulations applicable to the country of use must be followed when the Rough Vacuum Gauge PIZA 101 is disposed of.</p> <p>Any contaminated PIZA 101 must be decontaminated in accordance with the legal requirements.</p>	

6 Operation

6.1 Operating instructions

	ACHTUNG !
<p>Make sure that you do not overload the vacuum sensor! The maximum permissible pressure is 2 bar.</p>	

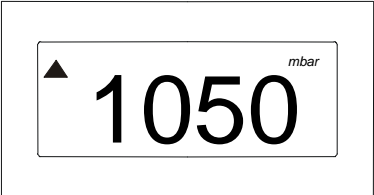
	<p>A measuring range overflow is indicated in the display by a triangle pointing upwards in front of the measured value (overflow).</p>
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Fig. 6 Exceeding the measuring range

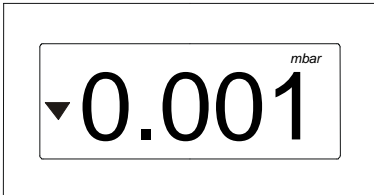
	<p>Falling below a pressure of 0.001 mbar is indicated in the display by a triangle pointing downwards in front of the measured value.</p>
--	--

Fig. 7 Falling below the measuring range

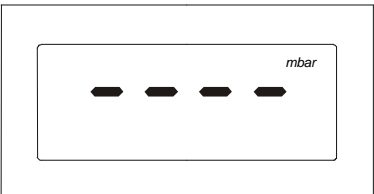
	<p>If there is no vacuum sensor on the measuring device, this is indicated in the display as shown in the illustration.</p>
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Fig. 8 Vacuum sensor not connected to the measuring device

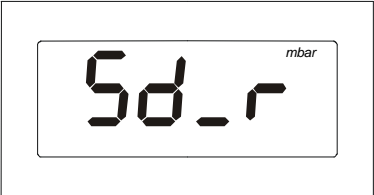
	<p>When a sensor is attached for the first time after starting up the measuring device, the sensor data must first be read out, this is shown briefly in the display. This information remains in the display if a vacuum sensor is not then attached to the measuring device.</p>
---	--

Fig. 9 Read in sensor data

Operation

6.2 Making a measurement

- Switch the measuring device on with the **< on/off >** button. The device is now in measuring mode and indicates the air pressure if the sensor is not connected to your receptacle.
- Make the connection to the receptacle.
- Read the current measured value.

6.3 Calibration

6.3.1 Calibration instructions

The measuring device and sensor have already been calibrated by the manufacturer. It is not necessary to calibrate before starting up for the first time.

If necessary, the measuring device can be recalibrated at any time.

You can calibrate at a vacuum $< 10^{-2}$ mbar (zero point of the characteristic curve), at 1 mbar, and at atmospheric pressure in the range from 920 to 1050 mbar.

You can calibrate at just one specific calibration point or in pairs (zero point – end point or 1 mbar point – end point) for both calibration points.

The capacitive sensor is thermally compensated in the range between 0°C and 60°C, it is recommended to calibrate the measuring device at the environmental temperature of the sensor prevailing in the application concerned.

6.3.2 Key assignment

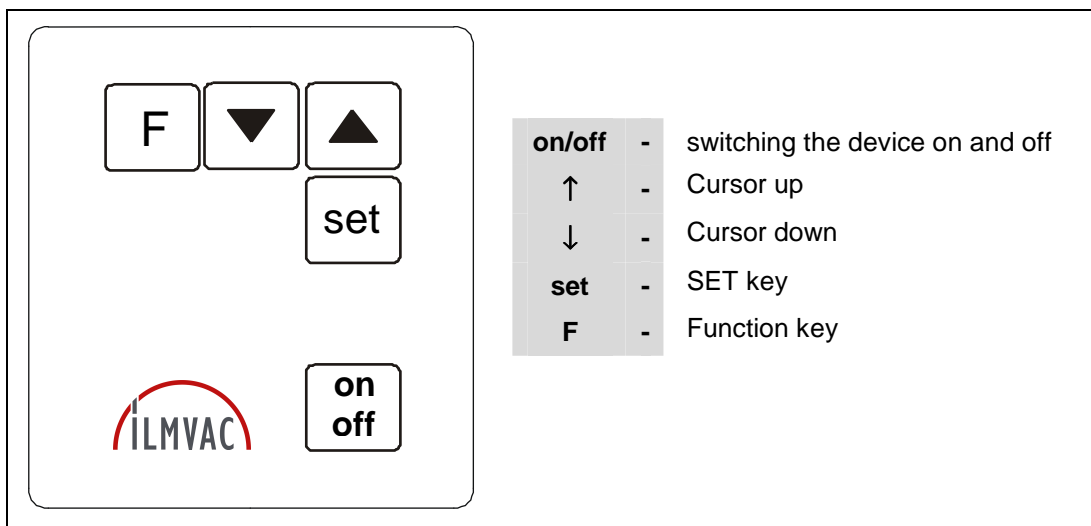



Fig. 10 Key assignment

The calibration modes available are described in more detail below.

	CAUTION !
<p>After accepting new calibration values, the measuring device requires some seconds in order to display the current measured value exactly again.</p>	

6.3.3 Zero point calibration of the capacitive sensor element

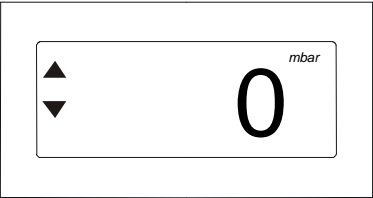
	<p>You can calibrate the zero point of the capacitive sensor element if you are sure that the vacuum is $< 10^{-2}$ mbar.</p> <p>Please ensure that this pressure is applied to the sensor during the calibration procedure.</p>
---	--

Fig. 11 Calibration mode: calibrating the zero point

Calibration mode is called by pressing both the **< set >** and **< ↑ >** keys simultaneously. The calibration mode is indicated in the display by two triangles in front of the measured value.

- Select the pressure to be calibrated (in this case 0 mbar) with the **< ↑ >** and **< ↓ >** cursor keys.
- Make sure that a pressure of $< 10^{-2}$ is applied to the sensor.
- Accept the measured value by pressing the **< set >** key.

Please press the function key **< F >** if you want to leave calibration mode prematurely without taking over the new calibration value, the device then switches back to measuring mode.

6.3.4 Calibrating the capacitive sensor element at 1 mbar

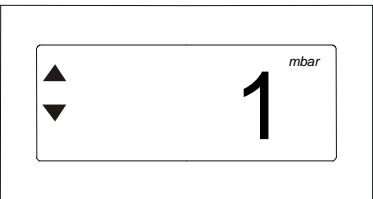
	<p>If you have no facilities for creating a vacuum better than 10^{-2} mbar at your location, you can also calibrate the zero point of the capacitive sensor element at 1 mbar.</p> <p>Please ensure that this pressure is applied to the sensor during the calibration procedure.</p>
---	---

Fig. 12 Calibration mode: calibrating 1 mbar

Operation

Calibration mode is called by pressing both the **< set >** and **< ↑ >** keys simultaneously. The calibration mode is indicated in the display by two triangles in front of the measured value.

- Select the pressure to be calibrated (in this case 1 mbar) with the **< ↑ >** and **< ↓ >** cursor keys.
- Make sure that a pressure of 1 is applied to the sensor.
- Accept the measured value by pressing the **< set >** key.

Please press the function key **< F >** if you want to leave calibration mode prematurely without taking over the new calibration value, the device then switches back to measuring mode.

6.3.5 Calibrating the end point of the capacitive sensor element

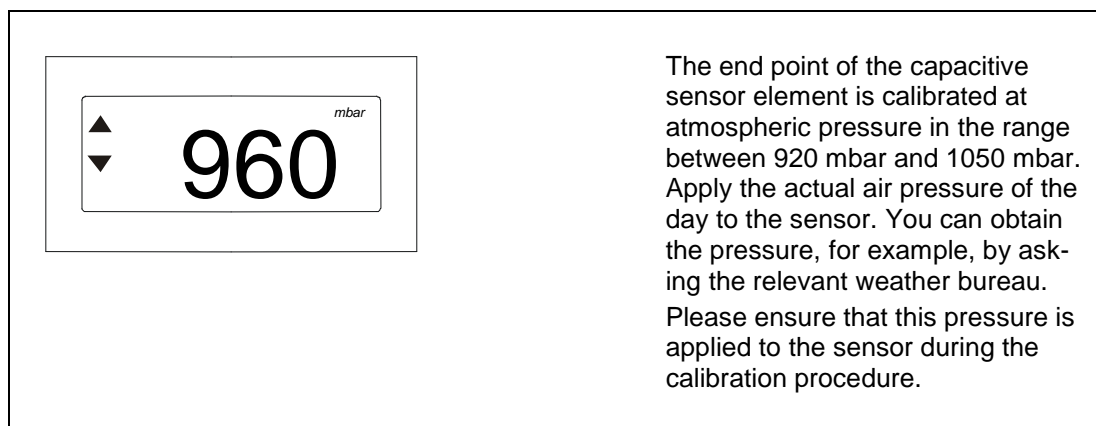


Fig. 13 Calibration mode: Calibrating atmospheric pressure 920 to 1050 mbar

Calibration mode is called by pressing both the **< set >** and **< ↑ >** keys simultaneously. The calibration mode is indicated in the display by two triangles in front of the measured value.

- Select the pressure to be calibrated (in this case 960 mbar, or the actual air pressure at your location) with the **< ↑ >** and **< ↓ >** cursor keys.
- Make sure that this pressure is also applied to the sensor.
- Accept the measured value by pressing the **< set >** key.

Please press the function key **< F >** if you want to leave calibration mode prematurely without taking over the new calibration value, the device then switches back to measuring mode.

7 Maintenance and Servicing

The used **Rough Vacuum Gauge PIZA 101** is maintenance-free!

Component parts in contact with the fluid handled should be cleaned at regular intervals, depending on the degree of contamination.


Send in defective devices for repair either to the manufacturer or to an authorized workshop. No repair will be carried out unless a completely filled-in damage report is received.

The information about the contamination or thorough cleaning are legally binding parts of the contract.

7.1 Damage Report

You find the form of the damage report to the Download on our web page in the menu "service" and "Downloads". www.ilmvac.eu, www.ilmvac.de

If you should not have an entrance to the Internet, you can request the form also gladly with us, under phone +49 (0)3677 604 0.


	WARNING !
<p>Incomplete or incorrectly completed damage reports may endanger the service personnel! Give full information in the damage report, in particular regarding a possible contaminating of the sensor.</p>	

List of spare parts

8 List of spare parts

The spare parts list contains all the spare parts and all the information necessary for ordering.

When ordering, please quote the description, quantity, serial number and order number!

	CAUTION !
We are not liable for any damage caused by the installation of any parts not supplied by the manufacturer.	

Item no.	Description	Remark	Order no.
1	Display device	without item no. 2 - 5	827427-1
2	Sensor	including sensor cable	620001-01
3	Supply main plug	-	827427-2
4	Stand clip	complete	620552
5	Block battery	9 V	826252



EG - Konformitätserklärung

EC Declaration of Conformity / CE Déclaration de Conformité

DIN EN ISO / IEC 17050

(de)

Hiermit erklären wir

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unter eigener Verantwortung, dass nachstehendes Produkt aufgrund seiner Konzipierung und Bauart sowie in den von uns in Verkehr gebrachten Unterlagen den nachfolgend aufgeführten EG-Richtlinien und Normen entspricht. Bei einer nicht mit uns abgestimmten Änderung des Produkts verliert diese Erklärung ihre Gültigkeit.

(en)

We (ILMVAC GmbH) herewith declare under our sole responsibility that the product described below is in accordance with the following Directives standards and other technical specifications regarding design and version when delivered from our factory.

This declaration becomes invalid whenever the product has been modified without our consent.

(fr)

Nous (ILMVAC GmbH) certifions par la présente, que le produit décrit ci-après est conforme, tant dans sa conception que dans sa réalisation, aux normes de sécurité et d'hygiène exigées par les standards de la CE. En cas de modification du produit sans notre accord, cette déclaration devient caduque.

Bezeichnung des Produkts (Messgeräte)

Description of product (measuring gauges)
 Description du produit (instruments de mesure)

Artikel-Nr. / Fabrication No. / No. de fabrication

Baujahr / Year of manufacture / Année de fabrication

Großvakuummeter / Rough Vacuum Gauge / Dépressiomètre pour vide primaire PIZA 101
600071
2013

Das Produkt entspricht folgenden Richtlinien und Normen:

The product is in conformity with the following Directives and standards: / Le produit est conforme aux directives et standards suivants:

- Richtlinie 2006/42/EG Maschinenrichtlinie / EC machinery directive / directive CE sur les machines (17.05.2006)
- Richtlinie 2006/95/EG Niederspannungsrichtlinie / EC low voltage directive / Directive CE de basse tension (12.12.2006)
- Richtlinie 2004/108/EG Elektromagnetische Verträglichkeit / EC Electromagnetic Compatibility Directive / Directive CE relative à la compatibilité électromagnétique (15.12.2004)
- Richtlinie 2011/65/EU Gefährliche Stoffe in Elektro- und Elektronikgeräten (RoHS) / Dangerous materials in electrical and electronics devices (RoHS) / Substances dangereuses dans les appareils électriques et électroniques (RoHS)
- Richtlinie 2012/19/EU Elektro- und Elektronik - Altgeräte (WEEE) / Electrical and electronics - old devices (WEEE) / Electro et électronique - appareils de contralto (WEEE)
- China - RoHS Umweltschutzgesetz - China 2007-03 / Environment protection law / Loi sur la protection de environnement

Angewandte harmonisierte Normen: / applied harmonized standards: / standards appliqués et harmonisés:

- DIN EN ISO 12100-1:2004 Sicherheit von Maschinen - Grundbegriffe, Teil 1: Grundsätzliche Terminologie, Methodologie / Safety of machinery - Basic concepts, part 1: Basic terminology, methodology / Sécurité des machines - Notions fondamentales, partie 1: Terminologie de base, méthodologie
- DIN EN ISO 12100-2: 2004 Sicherheit von Maschinen - Grundbegriffe, Teil 2: Technische Leitsätze / Safety of machinery - Basic concepts, part 2: Technical principles / Sécurité des machines - Notions fondamentales, partie 1: Taux de référence technique
- DIN EN ISO 13857:2008 Sicherheit von Maschinen - Sicherheitsabstände gegen das Erreichen von Gefährdungsbereichen mit den oberen und unteren Gliedmaßen / Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs / Sécurité des machines - Distances de sécurité empêchant les membres supérieurs et inférieurs d'atteindre les zones dangereuses
- DIN EN 1012-2:1996 Kompressoren und Vakuumpumpen - Sicherheitsanforderungen - Teil 2: Vakuumpumpen / Compressors and vacuum pumps - Safety requirements - part 2: Vacuum pumps / Compresseurs et pompes à vide - Exigences de sécurité - partie 2: pompes à vide
- DIN EN ISO 2151:2008 Akustik - Geräuschmessnorm für Kompressoren und Vakuumpumpen - Verfahren der Genauigkeitsklasse 2 / Acoustics - Noise test code for compressors and vacuum pumps - Engineering method (grade 2) / Acoustique - norme de mesure des émissions pour les compresseurs et les pompes à vide - Procédé de classe de précision 2
- DIN EN 60204-1:2006 Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen / Safety of machinery - Electrical equipment of machines - part 1: General requirements / Sécurité des machines - Equipement électrique des machines - partie 1: Prescriptions générales
- EN 61000-6-2:2005 Elektromagnetische Verträglichkeit (EMV) - Teil 6-2: Fachgrundnormen - Störfestigkeit für Industriebereiche / Electromagnetic compatibility (EMC) - part 6-2: Generic standards - Immunity for industrial environments / Compatibilité électromagnétique (EMV) - partie 6-2: Normes génériques - Immunité pour les environnements industriels
- EN 61000-6-4:2007 Elektromagnetische Verträglichkeit (EMV) - Teil 6-4: Fachgrundnormen - Störaussendung für Industriebereiche / Electromagnetic compatibility (EMC) - part 6-4: Generic standards - Emission standard for industrial environments / Compatibilité électromagnétique - partie 6-4: Normes génériques - Emissions de parasites pour les activités industrielles
- DIN EN 50110-1 Betrieb von elektrischen Anlagen / Operation of electrical installations / Fonctionnement des installations électriques
- DIN EN 61010-1 Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 1: Allgemeine Anforderungen / Safety requirements for electrical equipment for measurement, control and laboratory use - part 1: General requirements / Consignes de sécurité pour les appareils électriques de mesure, de commande, de régulation ou de laboratoire - partie 1: Prescriptions générales

	Datum / Date	2013-10-29
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