

# Spring Vacuum Gauges

## **BOURDONVAC**

A and C, Precision Manometer

Operating Instructions GA09100\_002\_C0

Part Numbers

160 40

161 20

890 50



# Safety Information

## Important Safety Information

**Warning** Indicates procedures that must be strictly observed to prevent hazards to persons.

The Leybold **Bourdon Vacuum Gauges** have been designed for safe and efficient operation when used properly and in accordance with these Operating Instructions. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this section and throughout the Operating Instructions. The gauges **must only be operated in the proper condition and under the conditions described in the Operating Instructions**. It must be operated and maintained by trained personnel only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and/or maintenance questions to our nearest office.

**Warning**



If the system has previously handled hazardous gases, implement the proper precautionary measures before opening the connection. If necessary, use gloves, a respirator and/or protective clothing and work under an exhaust hood.

We reserve the right to alter the design or any data given in these Operating Instructions. The illustrations are not binding.

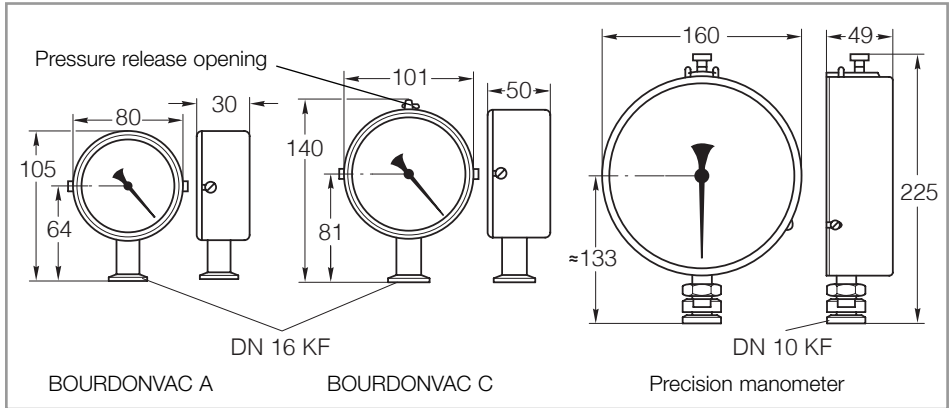


Fig. 1 Dimensions in mm

## Description

The interior of a vacuum-tight, bent expansion tube (Bourdon tube) is joined to a vacuum connection, while atmospheric pressure acts on its exterior. Pressure changes cause the curvature of the tubular spring to alter; the movements of the latter are mechanically transferred to a pointer system.

The **Bourdon gauge** is suitable for rough vacuum measurements in the range between 1020 and 5 mbar.

Pressure indication is linear and independent of the nature of the gas, but dependent on the ambient atmospheric pressure.

The **precision manometer** is suitable for pressure measurements in the range 5 - 2000 mbar. Deviations of the ambient atmospheric pressure from 1013 mbar (normal atmosphere) can be compensated for with this instrument by means of an external setting screw. The accuracy of measurement of the precision manometer is  $\pm 1\%$  of full-scale deflection.

## Supplied Equipment

The gauges are supplied without connecting fittings.

# Description

## Technical Data

BOURDONVAC	A	C	Precision manometer
Measuring range	5 to 1020 mbar	5 to 1020 mbar	5 to 2000 mbar
Accuracy class	1 (EN 837)	1 (EN 837)	1 (EN 837)
Temperature dependence of accuracy at deviation from the reference temperature 20 °C	max.± 0,4 % per 10 °C of full scale	max.± 0,4 % per 10 °C of full scale	–
Temperature resistance	- 25 to + 60 °C	- 25 to + 60 °C	- 20 to + 60 °C
Max. medium temperature	–	to +100 °C	to +100 °C
Max. pressure	1.5 bar abs.	1.3 bar abs.	2.2 bar abs.
Internal volume	approx.4.4 cm <sup>3</sup>	approx.7.5 cm <sup>3</sup>	approx.20 cm <sup>3</sup>
Scale length	207 mm	188 mm	320 mm
Weight	0.25 kg	0.5 kg	1.1 kg
Leak rate	1·10 <sup>-8</sup> mbar·l·s <sup>-1</sup>	1·10 <sup>-8</sup> mbar·l·s <sup>-1</sup>	1·10 <sup>-8</sup> mbar·l·s <sup>-1</sup>
Connection flange	DN 16 KF	DN 16 KF	DN 10 KF
Materials exposed to contact with the medium:		stainless steel 1.4404	stainless steel copper gasket
Connection flange	Brass MS CW614N-		
Bourdon tube	R430 partially nickel-plated		
Solder	Cu Zn 39 Pb 2 (2.0380)		
	CuBe2		
	S-Sn97Cu3 und		
	S-Sn60Pb38Cu2		

## Ordering Information

Part No.	160 40	161 20	890 50
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## Pressure Release Opening

The BOURDONVAC C has a pressure release opening on the housing top. When using the gauge the handle must always be in the OPEN position, as shown in Fig. 2. The CLOSE position is only for transport and storing. **Do not** pull out the handle.

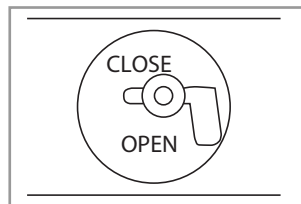


Fig. 2 Pressure release opening at the BOURDONVAC C, top view

## Connection

Connection of the gauges to the system is made directly with the small flange.

## Precision manometer

For connection to a DN 10 KF small flange the following parts are required:

- Centering ring DN 10 KF with O-ring, Part No.183 21
- Clamping ring DN 10/16 KF, Part No. 183 41

## Spring vacuum gauge

For connection to a DN 16 KF small flange the following parts are required:

- Centering ring DN 16 KF with O-ring, Part No. 182 06
- Clamping ring DN 10/16 KF, Part No. 183 41

# Service / Disposal

## Leybold Service

### Contamination

Whenever you send us in equipment, indicate whether the equipment is contaminated or is free of substances which could pose a health hazard. If it is contaminated, specify exactly which substances are involved. You must use the form we have prepared for this purpose.

### Form

A copy of the form has been reproduced at the end of these Operating Instructions: "Declaration of Contamination for Compressors, Vacuum Pumps and Components". Another suitable form is available from [www.leybold.com](http://www.leybold.com) → Documentation → Download Documents.

Attach the form to the equipment or enclose it with the equipment.

This statement detailing the type of contamination is required to satisfy legal requirements and for the protection of our employees.

We must return to the sender any equipment which is not accompanied by a contamination statement.

## Waste Disposal

### Contamination

The equipment may have been contaminated by the process or by environmental influences. In this case the equipment must be decontaminated in accordance with the relevant regulations. We offer this service at fixed prices. Further details are available on request.

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### Warning



Contaminated parts can be detrimental to health and environment. Before beginning with any work, first find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

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Separate clean components according to their materials, and dispose of these accordingly. We offer this service. Further details are available on request.

## Declaration of Contamination of Compressors, Vacuum Pumps and Components

The repair and / or servicing of compressors, vacuum pumps and components will be carried out only if a correctly completed declaration has been submitted. Non-completion will result in delay. The manufacturer can refuse to accept any equipment without a declaration.

**A separate declaration has to be completed for each single component.**

This declaration may be completed and signed only by authorized and qualified staff.

Customer/Dep./Institute : _____ Address : _____ _____ Person to contact: _____ Phone : _____ Fax: _____ End user: _____	Reason for return: <input checked="" type="checkbox"/> applicable please mark <b>Repair:</b> <input type="checkbox"/> chargeable <input type="checkbox"/> warranty <b>Exchange:</b> <input type="checkbox"/> chargeable <input type="checkbox"/> warranty <input type="checkbox"/> Exchange already arranged / received <b>Return only:</b> <input type="checkbox"/> rent <input type="checkbox"/> loan <input type="checkbox"/> for credit <b>Calibration:</b> <input type="checkbox"/> DKD <input type="checkbox"/> Factory-calibr. <input type="checkbox"/> Quality test certificate DIN 55350-18-4.2.1
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<b>A. Description of the Leybold product:</b> Material description : _____ Catalog number: _____ Serial number: _____ Type of oil (ForeVacuum-Pumps) : _____	<b>Failure description:</b> _____ <b>Additional parts:</b> _____ <b>Application-Tool:</b> _____ <b>Application- Process:</b> _____
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B. Condition of the equipment	No <sup>1)</sup>	Yes	No	Contamination :	No <sup>1)</sup>	Yes
1. Has the equipment been used	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	toxic	<input type="checkbox"/>	<input type="checkbox"/>
2. Drained (Product/service fluid)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	corrosive	<input type="checkbox"/>	<input type="checkbox"/>
3. All openings sealed airtight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	flammable	<input type="checkbox"/>	<input type="checkbox"/>
4. Purged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	explosive <sup>2)</sup>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, which cleaning agent				radioactive <sup>2)</sup>	<input type="checkbox"/>	<input type="checkbox"/>
and which method of cleaning				microbiological <sup>2)</sup>	<input type="checkbox"/>	<input type="checkbox"/>
<sup>1)</sup> If answered with "No", go to D. ←				other harmful substances	<input type="checkbox"/>	<input type="checkbox"/>

<b>C. Description of processed substances (Please fill in absolutely)</b>																						
1. What substances have come into contact with the equipment ? Trade name and / or chemical term of service fluids and substances processed, properties of the substances According to safety data sheet (e.g. toxic, inflammable, corrosive, radioactive)																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">X</th> <th style="width: 40%;">Tradename:</th> <th style="width: 50%;">Chemical name:</th> </tr> <tr><td>a)</td><td></td><td></td></tr> <tr><td>b)</td><td></td><td></td></tr> <tr><td>c)</td><td></td><td></td></tr> <tr><td>d)</td><td></td><td></td></tr> </table>	X	Tradename:	Chemical name:	a)			b)			c)			d)			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">No</th> <th style="width: 10%;">Yes</th> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	No	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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2. Are these substances harmful ? 3. Dangerous decomposition products when heated ? If yes, which ? _____																						

<sup>2)</sup> Components contaminated by microbiological, explosive or radioactive products/substances will not be accepted without written evidence of decontamination.

### D. Legally binding declaration

I / we hereby declare that the information supplied on this form is accurate and sufficient to judge any contamination level.

Name of authorized person (block letters) : \_\_\_\_\_

Date

signature of authorized person

firm stamp