Vakuum-Lösungen

Applikations-
Unterstützung

Service

LEYBOLD

LEYBOLD VACUUM

TURBOVAC 1100 C

Turbo-Molekularpumpe
mit fettgeschmierten Lagern

Turbomolecular pump with
grease-lubricated bearings

Kat.-Nr. / Cat. No.
894 80
894 83
894 84

Gebrauchsanleitung

Operating instructions

Contents

Die deutsche Gebrauchsanleitung beginnt auf Seite 2

Conventions used in these instructions

Illustrations

The references to diagrams, e.g. (2/10), consist of the figure number and the item number, in that order.

Warning

This indicates procedures and operations which must be strictly observed to prevent hazards to persons.

Caution

This indicates procedures and operations which must be strictly observed to prevent damage to or destruction of the unit.

We reserve the right to change at any time the design and data given in these operating instructions.

The illustrations are approximate.

1 Description

The TURBOVAC 1100 C is a turbomolecular pump featuring grease-lubricated bearings. It is engineered to pump vacuum chambers down to pressures in the high-vacuum range. A TURBOTRONIK frequency converter and a forevacuum pump are required for the operation of the TURBOVAC.

These units are **not** suitable for operation without a forevacuum pump.

The TURBOVAC 1100 C is equipped with a type Turbo Guard 3 rotor bearing monitoring device featuring an operating hours counter.

Compatibility with pumped media

Turbomolecular pumps are **not** suitable for pumping either gases which contain dust particles or liquids.

Turbomolecular pumps **without** purge gas are suitable only for moving air or inert gases. They are **not** suitable for pumping reactive gases or gases which contain particles; in this case purge gas operation is required.

TURBOVAC versions identified with a "C" in the model number are equipped with a purge gas feature, it protects only the bearing area and the motor in the TURBOVAC.

Some media (such as aluminum trichloride) can sublime inside the pump and form deposits. Thick deposits reduce the play between moving parts to the point that the pump could seize. In some processes deposits can be prevented by heating the pump. Please consult with us in case such problems arise.

Corrosive gases (such as chlorine) can destroy the rotors.

During operation the pressure inside the TURBOVAC is so low that there is no danger of ignition (at pressures below about 100 mbar, 75 Torr). A hazardous condition will be created if flammable mixtures enter the hot pump at pressures above 100 mbar (75 Torr). During operation the pump can reach temperatures as high as 120°C (248 °F). Sparks could occur in case of damage to the pump and these could ignite explosive mixtures.

We would be glad to consult with you as regards the media which can safely be handled with this unit.

Warning

Never expose any parts of the body to the vacuum.

1.1 Standard equipment

The TURBOVAC is shipped in a sealed PE bag which also contains a desiccant.

The maximum effective life of the desiccant is one year.

Part of the standard equipment for the high-vacuum port are

- Splinter guard,
- Centering ring with FPM sealing ring; outer ring.

and for the forevacuum port

- Centering ring with O-ring and clamping ring.

Both the purge gas port and the airing port are blanked off for shipping.

The electronic frequency converter and the connector cables required for operation are not included as standard equipment with the pump.

PE = Polyethylene
FPM = Fluoroelastomer, resistant to temperatures of up to 150°C (300 °F)

1.2 Order data

TURBOVAC 1100 C		Part No.
with high-vacuum port	DN 250 ISO-K	894 80
	DN 200 ISO-K	894 83
	DN 160 ISO-K	894 84

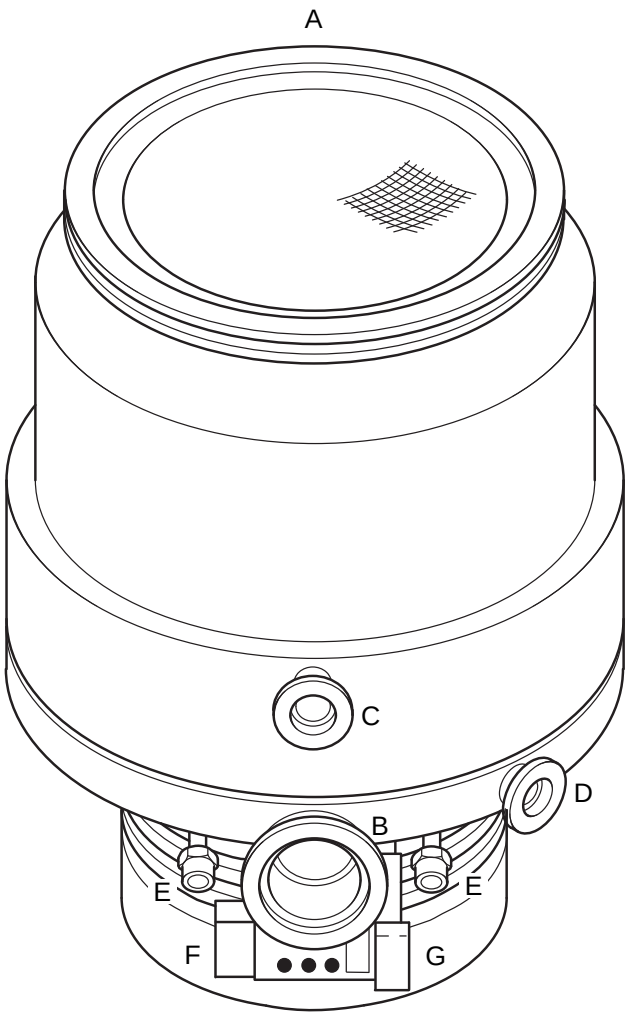
Electronic frequency converter TURBOTRONIK NT 20	
230 V	857 20
120 V	857 21
Connection cable TURBOVAC - TURBOTRONIK	
3 m long	857 65
5 m long	857 66
10 m long	857 67
20 m long	857 68
Purge gas filter with O-ring	200 18 515

1.3 Technical data

TURBOVAC	1100 C
High-vacuum connection	DN 250/200/160 ISO-K
Max. permissible high-vacuum pressure (p_{HV})	
During continuous-duty operation	$1 \cdot 10^{-2}$ mbar
In intermittent operation	on inquiry
Pumping speed for N_2	
At $p_{HV} \leq 10^{-3}$ mbar	approx. 1050 l/sec
At $p_{HV} \geq 10^{-3}$ mbar	see data sheet
Forevacuum connection	DN 63 ISO-K
Max. permissible forevacuum pressure (p_{FV})	
at the forevacuum connector flange	
During continuous-duty operation	$1 \cdot 10^{-1}$ mbar
In intermittent operation	on inquiry
Required pumping speed at forevacuum pump corresponding to high-vacuum extraction + purging gas rate	
at $p_{HV} \leq 10^{-4}$ mbar	7 l/sec
Nominal rotation speed	30,000 r.p.m.
Run-up period	approx. 9 min.
Weight	22 kg
Required frequency converter	
TURBOTRONIK	NT 20
Ref. No. 857 20 (230 V) as of serial No.	Z9601221
Ref. No. 857 21 (120 V) as of serial No.	Z9600321
Purging gas connection	10 or 16 mm KF
Purging gas	Ambient air or N_2
Purging gas requirement	0.6 mbar·l·sec^{-1}
Vent connection	DN 10 or 16 KF
Venting gas	Ambient air or special venting gas
Cooling water connections, hose nipple	10 mm diam.
Cooling water inlet temperature	10 to 30 °C
Cooling water requirements	See section 2.4

Turbo Guard 3

Measuring range	0 °C - 140 °C (± 2 °C)
Switching points	factory set
Relay contacts	24 V, max. 1 A, floating
Ambient temperature	0 °C - 55 °C
Storage temperature	-25 °C - 70 °C
EMC: Generic emission acc. to	EN 50081 Part 1
EMC: Generic immunity acc. to	EN 50082 Part 2



A High-vacuum connector flange
B Forevacuum connector flange
C Airing flange
D Purge gas flange
E Connection for water cooling
F Connection for TURBOTRONIK
G Sub-D socket for
- Processing status signals
- Manual query of the rotor bearing temperature

Fig. 1 TURBOVAC 1100 C

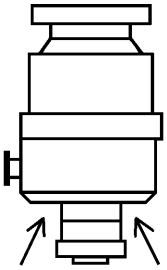


Fig. 2 Transport

2 Connections

Caution

Unless appropriate accessories and attachments are used, the TURBOVAC **is not** suitable for aggressive or corrosive media, or those containing dust. When handling reactive media or media which contain particles the C version pump must be operated with purge gas.
Observe the information on media compatibility, to be found at the beginning of these operating instructions.

Do not open the packaging until immediately prior to installation.

Remove the covers and the blank flanges at the turbomolecular pump only just before installing, to ensure that the TURBOVAC is installed under the cleanest possible conditions.

When moving the heavier pumps, the lower surfaces on the base flange are suitable for accepting a lifting fork; see Fig. 2.

Caution

Take care not to damage the plugs and coolant connections during movement.

Do not stand below the TURBOVAC pump while it is being connected to or detached from the system.

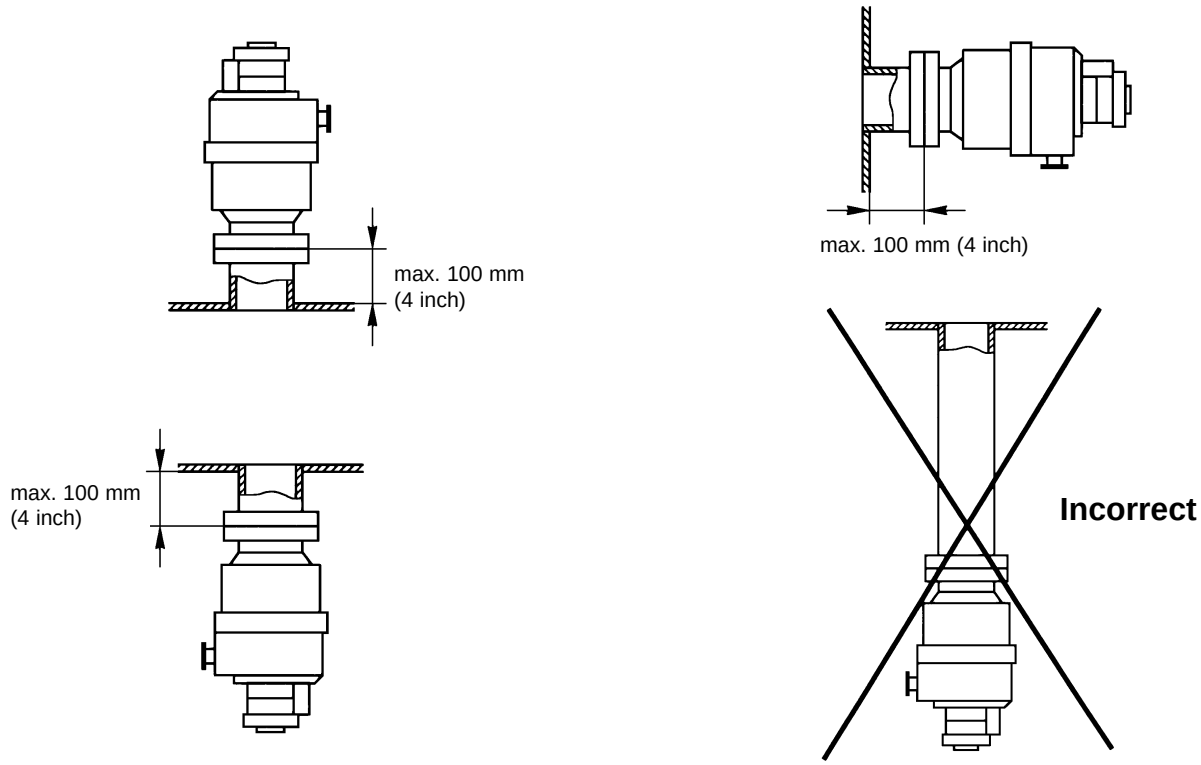


Fig. 3 Permanent flanging of the TURBOVAC to the vacuum chamber

2.1 Operating environment

When using the TURBOVAC inside a magnetic field, the magnetic induction at the pump housing surface may not exceed the following values:
B = 5 mT in case of radial impingement
B = 15 mT in case of axial impingement

Provide suitable shielding measures if these values are exceeded.

The standard version is resistant to radiation at levels up to 10^3 Gy.

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1 mT (milliTesla) = 10 G (Gauss)
1 Gy (Gray) = 100 rad

2.2 Connecting the pump to the vacuum chamber

Remove the packing flange from the high-vacuum flange. Pay attention to maintaining maximum cleanliness during connection work.

Warning

The high-vacuum flange must be securely attached to the vacuum chamber . If the pump were to become blocked, insufficient attachment could cause the pump to break away from its mount or allow internal pump parts to be discharged. Never operate the pump (in bench tests, for instance) without its being flanged to the vacuum chamber.

If the pump should suddenly seize, the ensuing deceleration torque of 2500 Nm will have to be absorbed by the system. To accomplish this, 10 clamping bolts are required when securing an ISO-K type high-vacuum flange.

Clamping bolts made of steel must be torqued down to 35 Nm, those made of stainless steel to 50 Nm.

You will find the order numbers for the (clamping) bolts in the Leybold Catalog.

The clamping bolts are **not** included as standard equipment with the pump.

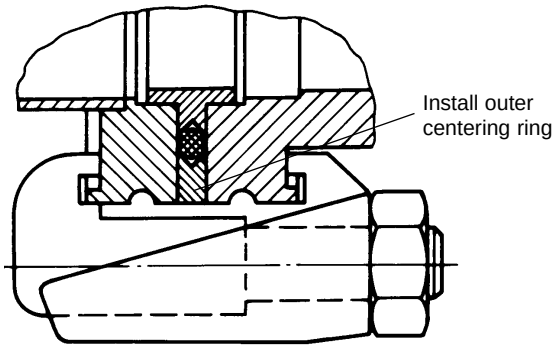


Fig. 4 Using ISO-K flanges

In most applications the TURBOVAC will be flanged direct to the high-vacuum flange for the system. The design of the lubricating system makes it possible to mount and run the TURBOVAC in any desired attitude. It is not necessary to support the pump.

The TURBOVAC is precision balanced and is generally operated without a vibration damper. A special-design vibration damper is available for mounting at the TURBOVAC high-vacuum flange to decouple extremely sensitive equipment and to prevent external vibrations from being transferred to the TURBOVAC. If the TURBOVAC 1100 C is flanged via a vibration damper secure it in addition at the foot or the base flange.

Design with ISO-K clamp flange

Fit the O-ring at the centering ring.

The O-ring should be flat and even; it must not be twisted. Then add the outer ring.

A collar flange with retaining ring and suitable sealing washer can also be used to connect the TURBOVAC.

A collar flange is required when using ultra-high-vacuum sealing washers.

Splinter guard

A splinter guard is installed in the high-vacuum flange to protect the TURBOVAC. Do not remove this splinter guard.

Operate the pump only with this splinter guard in place as foreign objects passing through the intake port and into the pump can cause serious damage. Damage caused by foreign objects in the rotor section is excluded from the guarantee.

The pump running noise is below 70 dB(A); no noise-insulating measures are required.

2.3 Making the forevacuum connection

Use a connector line to attach a suitable forevacuum pump at the forevacuum connection flange. Select the forevacuum pump and the connector line so that the forevacuum pressure and the pumping speed at the forevacuum connector flange are sufficient to serve all pumping processes.

Connect the forevacuum pump in such a way that the TURBOVAC will not be vented from the forevacuum side in case it is switched off, fails or comes to as standstill. Venting from the forevacuum side can result in oil vapors entering the TURBOVAC.

Be sure that there is sufficient vibration decoupling between the TURBOVAC and the forevacuum pump.

Warning

The forevacuum line must be tight.
Hazardous gases could escape from leaks or the gases being pumped could react with air or humidity.

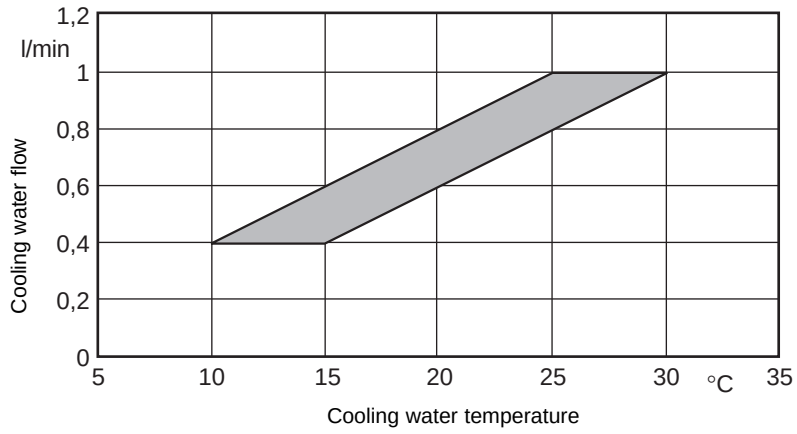


Fig. 5 Cooling water consumption

2.4 Connecting the cooling

The TURBOVAC must be cooled with water.

Cooling water specifications

Inlet temperature	10 - 30 °C
Inlet pressure	3 to 7 bar absolute
Cooling water requirement	See Fig. 5
Appearance	Colorless, clear, free of oils and greases
Sediments	< 250 mg/l
Particle size	< 150 µm
pH value	7 to 8.5
Overall hardness (total alkaline earths)	max. 20 ° German hardness scale (= 3.57 mmol/l)

Further information on request.

Connecting the cooling water

Connect the coolant hoses to the hose nipples and secure with hose clamps.

If the coolant flow is turned on and off by means of a solenoid valve, make the electrical connection in such a way that coolant flow will be started and stopped together with the pump itself.

2.5 Connecting the purge gas and the airing device

Purging gas

When evacuating reactive gases or gases containing dust, the TURBOVAC will have to be used with purging gas. To do so, a suitable purging gas valve with a gas filter will have to be installed at the purging gas flange on the TURBOVAC.

Connect the purging gas valve in such a way that it will open when the pump is started and will close, at the very earliest, when the pump is switched off.

Suited are all gases,

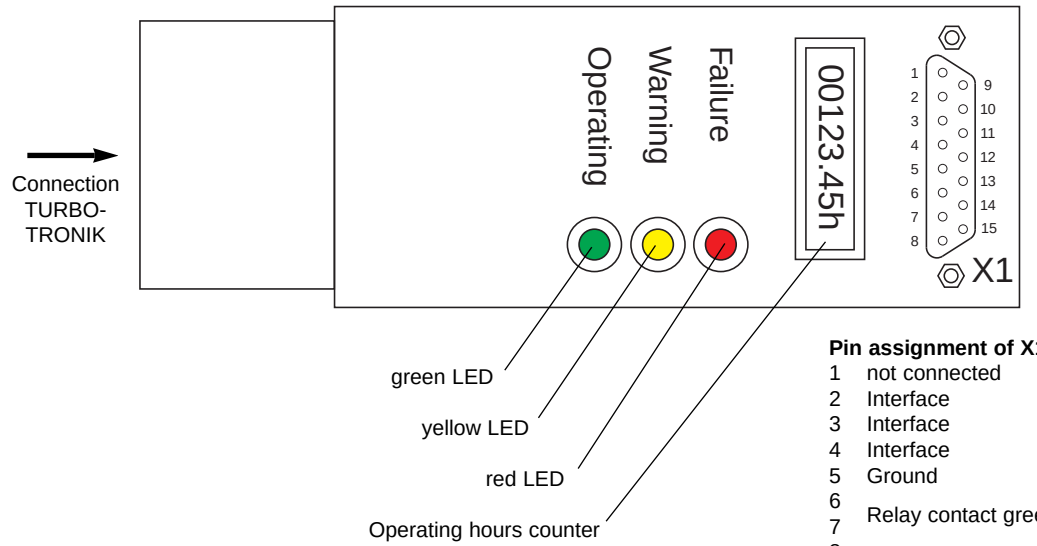
- which will not cause corrosion or pitting in aluminium and steel and
- which in connection with process deposits in the pump will not cause corrosion or sticking.

For venting and as the purge gas we recommend inert gases like nitrogen or argon. The temperature of these gases should be between 5 °C and 80 °C , max. relative humidity should not exceed 10 ppm.

In individual cases and after consultation also dry, filtered, oil-free air or filtered ambient air may be used (filter mesh < 1µm).

Change the filters after some time, at least annually.

Different venting methods are described in Chapter 3.4.



Pin assignment of X1

1	not connected	
2	Interface	
3	Interface	
4	Interface	
5	Ground	
6	Relay contact green LED	Contact closed when LED aktive
7		
8	Relay contact yellow LED	
9		
10	Relay contact red LED	
11		
12	Pt 100 external	Pins 12 and 13 are bridged in the plug
13	Pt 100 Input	
14	Pt 100 external	Pins 14 and 15 are bridged in the plug
15	Ground	

Fig. 6 Rotor bearing monitoring device Turbo Guard 3

2.6 Connecting the frequency converter TURBOTRONIK

Please refer to Sections 1.2 and 1.3 for information on the TURBOTRONIK model required and on the connector lines. The connector line may be up to 100 m long; please forward your inquiry for details.

Use the connector cable to attach the TURBOVAC and the TURBOTRONIK; see the operating instructions on the TURBOTRONIK NT 20 for details (GA 05.208).

Warning

Operate the pump only with the matching frequency converter and connector cable.
Voltages of up to 400 V will be present at the connection cable between the frequency converter and the pump; mains voltage will be present at the flange heater, the valves and their supply leads.
Route the conductors and cables so as to protect them from damage.

The connections are of the IP 40 safety classification. Do not expose the pump, frequency converter or connectors to dripping water.

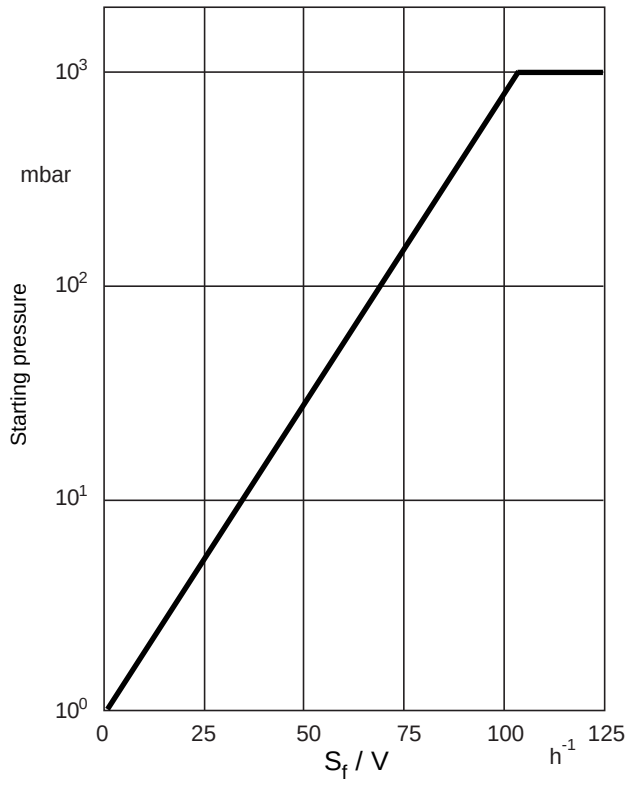
2.7 Connecting the rotor bearing monitoring unit

A remote monitoring can be connected to the relay contacts.

Please forward your inquiry concerning the connection of the interface or an external measuring instrument to the Pt 100 outputs.

Caution

The supplied plug for X1 with the bridges between pins 12-13 and 14-15 must be plugged in for proper operation of the Turbo Guard.



S_f = Pumping speed at the forevacuum pump (m^3/h)

V = Chamber volume (m^3)

Fig. 7 Determining the starting pressure for a TURBOVAC when evacuating larger volumes

3 Operation

3.1 Switching on

Large vacuum chambers will first have to be pumped down with the forevacuum pump or the forevacuum pump system.

When dealing with smaller vacuum chambers, the starting pressure for the TURBOVAC will be found in Figure 7.

Where S_f / V > 100 [h^{-1}], the TURBOVAC and the forevacuum pump can be started simultaneously.

Then switch on the cooling and the purging gas and switch on the TURBOVAC at the TURBOTRONIK control unit.

Details will be found in the operating instructions for the TURBOTRONIK.

After switching on the pump it takes approx. 2 minutes before the LEDs at the Turbo Guard light up.

3.2 Operation

Avoid sudden changes of attitude during operation and avoid severe outside vibrations and shock to the pump.

Observe the displays and information provided by the TURBOTRONIK and the Turbo Guard. The temperature of the pump bearings is also an indicator for their wear.

LEDs at the Turbo Guard

LED	Pump bearing temperature	Measures
green Operating	normal (0 - 80 °C)	—
yellow Warning	conspicuous (80 - 95 °C)	You may continue to operate the pump. Check cooling water supply and process pressures and improve if necessary.
red Failure	critical operation for at least 1 hour (> 95 °C)	Possibly measure the pump bearing temperature. Replace the pump as soon as possible and send it to the Leybold Service. The red LED cannot be reset.

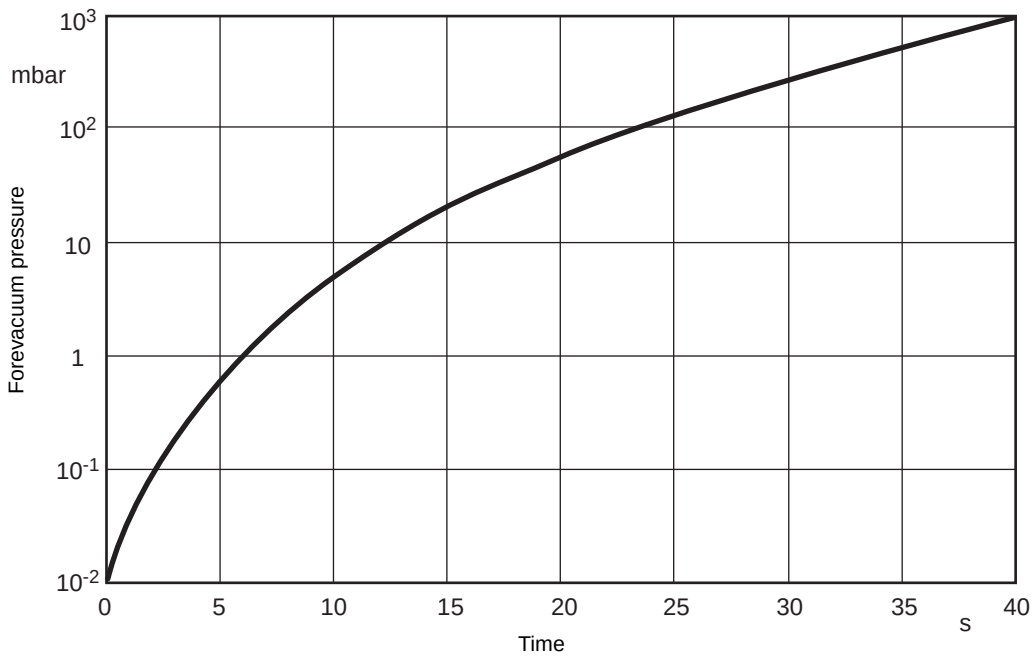


Fig. 8 Curve showing the pressure rise

3.3 Switching off

Switch off the TURBOVAC at the TURBOTRONIK. Refer to the TURBOTRONIK operating instructions for details.

Switch off the forevacuum pump.

Vent the TURBOVAC and close off the purging gas supply before the pump comes to a complete stop.

Close off the cooling water supply immediately after switching off the TURBOVAC in order to prevent condensate formation inside the pump.

3.4 Venting

As to suitable gases, see Chapter 2.5.

Venting Methods

There are three different methods of venting the turbomolecular pump.

In the case processes requiring a purge gas, the pump must be vented via the **purge gas and venting valve** when shutting the pump down.

When additionally venting the vacuum chamber, the venting function of the purge gas and venting valve must be opened before opening the chamber valve. This will ensure the presence of a higher pressure in the area of the ball bearings compared to the remaining vacuum area. This will prevent particles, dust or aggressive gases from being forced through the bearings into the not yet vented motor chamber of the pump.

Cautious venting of the pump is possible from the **high vacuum side**, since here the bearing forces will be lowest. When doing so, no free jet of gas must be allowed to form on the rotor so as to avoid exposing the rotor to additional forces.

When venting the pump through its **foreline connection**, neither oil nor particles may be entrained in the gas flow from the forevacuum side into the pump.

Speed of the Pressure Rise

All turbomolecular pumps may be vented at full speed. However, the pressure must not increase faster than specified through the pressure rise curve.

The pump must be vented significantly slower when there is the risk of particles entering into the pump from the process. During venting, the flow must be of the laminar type in both the vacuum chamber and the turbomolecular pump.

The speed of the pressure rise during venting of the running pump will greatly influence the load on the rotor/stator pack and the bearings. The slower the pump is vented, the longer the service life of the bearings will be.

The pump must not be vented to pressures above atmospheric pressure.

3.5 Removing the pump from the system

Switch off the pump and vent it as per the instructions in Sections 3.3 and 3.4.

TURBOVAC pumps which are used in critical processes may be contaminated with hazardous process gases or deposits.

If the pump previously handled reactive or hazardous gases, then allow the purge gas to flow for as long as possible before detaching the pump from the system.

Warning

Take the appropriate precautionary measures prior to opening the intake or discharge connection if the pump has previously handled hazardous gases.

If necessary, use gloves, a respirator and/or protective clothing and work under an exhaust hood.

Remove the TURBOVAC from the system.

A packing set is included with TURBOVAC models with a “C” in the type designation. Use this packing set after detaching the pump from the system.

Faulty (leaky) packing of a TURBOVAC will nullify the guarantee.

Pack the pump so that it cannot be damaged during shipping and so that no contaminants can escape from the packaging. Protect in particular the flanges, the coolant connection nipples and the cable grommets.

If you return a pump to Leybold, be absolutely sure to observe the instructions given in Section 4.1.

4 Maintenance

After 10,000 operating hours at the latest a standard bearing exchange will be required. Moreover we recommend to have the rotor assy. exchanged , depending on the thermal stress on the rotor, after 45,000 to 100,000 operating hours. This can only be done by Leybold Service. For this ask for a quotation.

When using purge gas valves:

Depending on the degree of contamination of the purge gas used the filter will clog and will have to be exchanged (our experience indicates that this will become necessary after 1 to 6 months).

Caution

The pump must only be opened by such persons who have been authorised by Leybold to do so.

4.1 Service by LEYBOLD

Whenever you send a pump to LEYBOLD, indicate whether the pump 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; we will forward that form on request.

A copy of the form is printed at the end of the operating instructions: “Declaration of contamination for vacuum equipment and components”.

Attach the form to the pump or enclose it to the pump. Do not place it together with the pump inside the PE bag.

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

LEYBOLD must return to the sender any pumps which are not accompanied by a contamination statement.

5 Troubleshooting

Warning

When the connector cable to the TURBOVAC is attached, the outputs of the TURBOTRONIK frequency converter are not free of voltage.

Before commencing troubleshooting procedures, make the following simple checks:

Is the TURBOVAC being supplied with electrical energy?

Are the connections . . .
- from the mains power cord to the frequency converter
- at the connector cable from the frequency converter to the mains network in good working order?

If a water flow or purge gas monitoring device is connected, is it functioning properly?

Check the flow monitoring devices by jumping their terminals and starting the TURBOVAC.

Is the forevacuum pressure sufficient?

Is the vacuum chamber free of leaks?

Observe also the troubleshooting instructions for the TURBOTRONIK.

Malfunction	Possible cause	Rectification
TURBOVAC does not start.	Motor connection cable not attached, is loose or is defective.	Check the motor connection cable and connect correctly; replace if necessary.
	Pump has seized.	Replace the pump.
	The frequency converter does not match the pump or the frequency converter is encoded incorrectly for the pump (see the operating instructions for the frequency converter).	Run the pump with a suitable frequency converter: NT 20, Ref. No. 857 20 as of serial No. Z9601221 or NT 20, Ref. No. 857 21 as of serial No. Z9600321
TURBOVAC generates loud running noises and vibrations.	Rotor is out of balance.	Balance the rotor (only by the Leybold Service Department).
	Bearing is defective.	Bearings will have to be replaced (only by the Leybold Service Department).
	Pump running within the natural frequency range of the system, causing resonance.	Change the masses of the system or install vibration damper to isolate oscillations.
The TURBOVAC does not achieve ultimate pressure.	Measurement device is defective.	Check the measurement device.
	Measurement gauges are soiled.	Clean or replace the measurement gauges.
	Leak at the system, lines or pump.	Locate the leaks.
	Grime collection at the pump.	Have the pump cleaned (only by the Leybold Service Department).
	Forevacuum pump with insufficient pumping speed or ultimate pressure which is too high.	Check ultimate pressure of the forevacuum pump or install a more powerful forevacuum pump.
	Leak at the power cord passage port.	Locate and repair leaks (only by the Leybold Service Department).
	TURBOVAC is rotating in the wrong direction.	Check the connector lines; interchange poles if necessary.
TURBOVAC overheats (malfunction indication at the TURBOTRONIK or yellow or red LED at the the Turbo Guard light up; see Section 3.2).	Forevacuum pressure too high.	Check the forevacuum pump; install a more powerful forevacuum pump if necessary.
	Gas volume too great / leak in the system.	Seal leak; install a more powerful forevacuum pump if necessary.
	Ambient temperature is too high.	—
	Cooling water is lacking or insufficient.	Ensure sufficient supply of cooling water.
	Bearings are defective.	Have the pump repaired (only by the Leybold Service Department).
No LED lights up at the Turbo Guard after normal operation is reached.	The supplied plug for X1 hasn't been plugged in.	Plug in the supplied plug or plug with bridges 12-13 and 14-15.
	External measuring instrument connected.	—

EC Manufacturer's Declaration

in the spirit of Appendix IIb to the 89/392/EEC Machinery Guidelines

We, the Leybold Vakuum GmbH, declare herewith that the commissioning of the incomplete machine designated below is prohibited until such time as it has been determined that the system in which this complete machine is to be installed corresponds with the EC Machinery Guidelines.

At the same time we certify conformity with the Low-Voltage Guidelines 73/23/EEC.

When using the appropriate Leybold accessories, e.g. connector lines or flange heaters, and when powering the pump with the specified Leybold frequency converters, the protection level prescribed in the EMC Guidelines will be attained

Applicable, harmonized standards:

• EN 292 Part 1 and Part 2	November 1991
• EN 1012 Part 2	1996
• EN 60 204	1993

Applied national standards and technical specifications:

• DIN 31 001	April 1983
• DIN ISO 1940	December 1993

Designation: Turbomolecular pump

Model: TURBOVAC 1100 C

Catalog no.: 894 80/83/84

LV.GT.0134.02.10.97

Cologne, Oct. 20, 1997

Dr. Mattern-Klosson, Turbomolecular Pump
Division Manager

Cologne, Oct. 20, 1997

Hölzer, Turbomolecular Pump
Engineering Manager

LEYBOLD

VDMA

Erklärung über Kontaminierung von Vakuumgeräten und -komponenten

Die Reparatur und/oder die Wartung von Vakuumgeräten und -komponenten wird nur durchgeführt, wenn eine korrekt und vollständig ausgefüllte Erklärung vorliegt. Ist das nicht der Fall, kommt es zu Verzögerungen der Arbeiten. Wenn die Reparatur/Wartung im Herstellerwerk und nicht am Ort ihres Einsatzes erfolgen soll, wird die Sendung gegebenenfalls zurückgewiesen.

Diese Erklärung darf nur von autorisiertem Fachpersonal ausgefüllt und unterschrieben werden.

1. Art der Vakuumgeräte und -komponenten:

- Typenbezeichnung: _____
- Artikelnummer: _____
- Seriennummer: _____
- Rechnungsnummer: _____
- Lieferdatum: _____

2. Grund für die Einsendung:

_____
_____
_____
_____
_____

3. Zustand der Vakuumgeräte und -komponenten:

- Waren die Vakuumgeräte und -komponenten in Betrieb?
  ja ❒ nein ❒
- Welches Pumpenöl wurde verwendet ? _____
- Sind die Vakuumgeräte und -komponenten frei von gesundheitsgefährdenden Schadstoffen?
  ja ❒ (weiter siehe Absatz 5)
  nein ❒ (weiter siehe Absatz 4)

4. Einsatzbedingte Kontaminierung der Vakuumgeräte und -komponenten:

- toxisch	ja ❒	nein ❒
- ätzend	ja ❒	nein ❒
- mikrobiologisch*)	ja ❒	nein ❒
- explosiv*)	ja ❒	nein ❒
- radioaktiv*)	ja ❒	nein ❒
- sonstige Schadstoffe	ja ❒	nein ❒

*) Mikrobiologisch, explosiv oder radioaktiv kontaminierte Vakuumgeräte und -komponenten werden nur bei Nachweis einer vorschriftsmäßigen Reinigung entgegengenommen!

Art der Schadstoffe oder prozessbedingter, gefährlicher Reaktionsprodukte, mit denen die Vakuumgeräte und -komponenten in Kontakt kamen:

Handelsname Produktname Hersteller	Chemische Bezeichnung (evtl. auch Formel)	Gefahrklasse	Maßnahmen bei Freiwerden der Schadstoffe	Erste Hilfe bei Unfällen
1.				
2.				
3.				
4.				
5.				

5. Rechtsverbindliche Erklärung

Hiermit versichere(n) ich/wir, dass die Angaben in diesem Vordruck korrekt und vollständig sind. Der Versand der kontaminierten Vakuumgeräte und -komponenten erfolgt gemäß den gesetzlichen Bestimmungen.

Firma/Institut: _____

Straße: _____ PLZ, Ort: _____

Telefon: _____

Fax: _____ Telex: _____

Name: (in Druckbuchstaben) _____

Position: _____

Datum: _____ Firmenstempel

Rechtsverbindliche Unterschrift:

_____

Verteiler: Blatt 1 (weiß) an den Hersteller oder seinen Beauftragten senden - Blatt 2 (gelb) den Begleitpapieren der Sendung beifügen - Blatt 3 (blau) Kopie für den Versender

LEYBOLD

VDMA

Declaration of Contamination of Vacuum Equipment and Components

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

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

1. Description of Vacuum Equipment and Components

- Equipment type/model: _____
- Code No.: _____
- Serial No.: _____
- Invoice No.: _____
- Delivery date: _____

2. Reason for Return

_____
_____
_____
_____
_____
_____

3. Condition of the Vacuum Equipment and Components

- Has the equipment been used?
  yes ❒ no ❒
- What type of pump oil/liquid was used? _____
- Is the equipment free from potentially harmful substances?
  yes ❒ (go to Section 5)
  no ❒ (go to Section 4)

4. Process related Contamination of Vacuum Equipment and Components:

- toxic	yes ❒	no ❒
- corrosive	yes ❒	no ❒
- explosive*)	yes ❒	no ❒
- biological hazard*)	yes ❒	no ❒
- radioactive*)	yes ❒	no ❒
- other harmful substances	yes ❒	no ❒

*) Vacuum equipment and components which have been contaminated by biological explosive or radioactive substances, will not accepted without written evidence of decontamination!

Please list all substances, gases and by-products which may have come into contact with the equipment:

Trade name Product name Manufacturer	Chemical name (or Symbol)	Dangerous material class	Measures if spillage	First aid in case of human contact
1.				
2.				
3.				
4.				
5.				

5. Legally Binding Declaration

I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contaminated vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transportation and Labelling of Dangerous Substances.

Name of organisation or company: _____

Address: _____ Post code: _____

Tel.: _____

Fax: _____ Telex: _____

Name: _____

Job title: _____

Date: _____ Company stamp:

Legally binding signature: _____

Copies: Page 1 (white) to manufacturer or representative - Page 2 (yellow) attach to consignment packaging securety - Page 3 (blue) copy for file of sender

 Order No.: 2121

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