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WIGGENS
THE MAGIC MOTION

Химически стойкий мембранный насос

C900E/C920Z/C960T/C980V

Руководство по эксплуатации

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Operating Manual

Congratulations!

You have made an excellent choice.

WIGGENS thanks you for the trust you have placed in us.

This operating manual has been designed to help you gain an understanding of the operation and possible applications of our instruments. For optimal utilization of all functions, we recommend that you thoroughly study this manual prior to beginning operation.

Unpacking and Inspecting

Please unpack the device carefully. Check that the package is right-side-up and then open it. Check that model of the product is one that you ordered. Check that there is no damage. If there is any damage, file a damage claim with the carrier. In the case of any damage a damage report should be requested immediately. These instructions must be followed fully for us to guarantee our full support of your claim for protecting against loss from concealed damage. The form required for filing such a claim will be provided by the carrier.

Important: keep operating manual for future use

Content

1. Intended Use

The C-Series Chemical Resistant Diaphragm Pumps are designed for laboratory use only.

All materials of the Chemical Resistant Diaphragm Pumps which have direct contact with gases are made of PTFE. They can be used in the chemical and petrochemical industry, the pharmacy industry and all industries that make use of chemical resistant vacuum processes, such as filtration, vacuum distillation, rotary evaporation, vacuum and centrifugal concentration, solid phase extraction, etc.

The Chemical Resistant Diaphragm Pumps' ultimate vacuum can reach a value as low as 2 mbar. They are working with noise less than 50 dB due to the special structure design.

All Chemical Resistant Diaphragm Pumps adopt an overheating protection system, which shuts down the pump when the inner temperature is too hot and automatically starts the pump again when it cools down to a safe temperature. This guarantees stable work of the pump and the safety of use. The Chemical Resistant Diaphragm Pumps can be integrated into vacuum filtration systems and a diverse variety of accessories are available. The special design prevents solid impurities from accessing the pump head and thus guarantees the longevity of the pump.

2. Operator Responsibility and Safety Recommendations

2.1. Operator Responsibility

The products of WIGGENS ensure safe operation when installed, operated, and maintained according to common safety regulations. This section explains the potential dangers that may arise when operating the instrument and also specifies the most important safety precautions to preclude these dangers as far as possible.

- The operator is responsible for the qualification of the personnel operating the instrument.
- The personnel operating the instrument should be regularly instructed about the dangers involved with their job activities as well as measures to avert these dangers.
- Make sure all persons tasked with operating, installing, and maintaining the instrument have read and understand the safety information and operating instructions.
- When using hazardous materials or materials that could become hazardous, the instrument may be operated only by persons who are absolutely familiar with these materials and the instrument. These persons must be fully aware of possible risks.

If you have any questions concerning the operation of your instrument or the information in this manual, please contact us!

2.1.1. Safety Instructions for the Operator:

- You have received a product designed for industrial and experimental use. Nevertheless, avoid strikes to the housing, vibrations, damage to the operating-element panel, and contamination.
- Make sure the product is checked for proper condition regularly (depending on the conditions of use). Regularly check (at least every 2 months) the proper condition of the mandatory, warning, prohibition and safety labels.
- Make sure that the mains power supply has low impedance to avoid any negative effects on instruments being operated on the same mains.
- Do not expose the unit to sunlight.

2.1.2. Appropriate Operation

Only qualified personnel are authorized to perform configuration, installation, maintenance and repairs of the instrument.

Routine operation can also be carried out by untrained personnel who should however be instructed by trained personnel.

2.2. Disposal

At the end of its service life the instrument is to be disposed of in accordance with the local regulations specified for the disposal of electronic industry waste in an environmentally friendly manner.

CE Conformity

The products described in the operating instructions conform to the requirements of the following European guidelines:

Low voltage regulations with respect to legal harmonization of the member countries concerning electric devices for use within certain voltage limits.

EMC guideline with respect to legal harmonization of the member countries concerning electromagnetic compatibility.

APPROVALS European	EN61326-1: 2013, 2014/30/EU EN61010-1: 2010/A1:2019, 2014/35/EU

2.3. Warranty Conditions

WIGGENS warrants its products against defects in material or in workmanship, when used under appropriate conditions and in accordance with appropriate operating instructions

for a period of TWO YEARS.

This limited warranty covers parts and labor.

WIGGENS reserves the right to decide the validity of any warranty claim. In case of faults arising either due to faulty materials or workmanship, parts will be repaired or replaced free of charge.

Any other compensation claims, such as consumables, damages caused by corrosion or accidental breakage, are excluded from this guarantee.

This warranty may only be altered by a specifically published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments.

2.4. Product Liability

Under no circumstances shall WIGGENS be liable for indirect, consequential or special damages of any kind.

WIGGENS reserves the right to any technical changes without prior notice.

Web: www.wiggens.com

E-mail: info@wiggens.com

2.5. Packing List

Compare the contents of the shipment with the items listed below to ensure all parts are received with the pump. Do not discard the container and packing materials until all parts have been counted. It is recommended that the original packing materials are retained for transportation and storage.

Name / Description	Quantity			
	C900E	C920Z	C960T	C980V
Chemical Resistant Diaphragm Pump	1	1	1	1
Operating Manual	1	1	1	1
QC Report	1	1	1	1
Packing list	1	1	1	1

2.6. Technical Specifications

Model	C900E	C920Z	C960T	C980V
Maximum Flow Rate (L/min)	95	75	60	40
Ultimate Vacuum(mbar)	<30	<8	<2	<1
Hose Connections (mm)	10	10	10	10
Maximum Continuous Pressure	1 Bar (14.7 psi)			
Power (W)	370	370	370	370
Mains(Voltage/Frequency)	200-240V, 50Hz			
Permissible Ambient Temperature	+5...+40°C			
Permissible Temperature of Pumped Gas	+5...+40°C			
Weight (kg)	21.5	21.5	21.5	21.5
Order No.	169900-22	169920-22	169960-22	169980-22

All measurements have been carried out at the stated voltage, frequency, and an ambient temperature of 25°C.

Technical changes without prior notification reserved.

3. Safety Instructions

3.1. Explanation of Safety Notes

In addition to the safety warnings listed, warnings are posted throughout the operating manual. These warnings are designated by an exclamation mark inside an equilateral triangle. “Warning of a dangerous situation (Attention! Please follow the documentation).”
The danger is classified using a signal word.
Read and follow these important instructions for averting dangers.

Warning!
Describes a possibly highly dangerous situation. If these instructions are not followed, serious injury and danger to life could result.

CAUTION!
Describes a possibly dangerous situation. If this is not avoided, slight or minor injuries could result. A warning of possible property damage may also be contained in the text.

Notice!
Describes a possibly harmful situation. If this is not avoided, the product or anything in its surroundings can be damaged.

3.2. Explanation of Other Notes

Note!
Draws attention to something special.

Important!
Indicates usage tips and other useful information.

3.3. General Instructions

Follow the general safety recommendations to prevent damage to persons or property.

Further, the valid safety instructions for working places must be followed.

- Connect the instrument to a power socket with earthing contact (PE-protective earthing)!
- The power supply plug serves as a safe disconnecting device from the line and must always be easily accessible.
- Do not stay in the area below the instrument.
- Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your instrument.
- Never operate damaged equipment.
- Always turn off the instrument and disconnect the mains cable from the power source before performing any service or maintenance procedures, or before moving the instrument.
- Sudden drops may cause damage in the interior of the instrument.
- Transport the instrument with care.
- Never operate instruments with damaged mains power cables.
- Observe all warning labels.
- Never remove warning labels.

Repairs are to be carried out only by qualified service personnel.

3.4. Safety Recommendations

All operators must be familiar with the pump and should read this entire manual.

Never use the pump with any flammable gas or toxic material.

- When finished with the pumping operation, do not turn off the pump at once but continue to run the vacuum pump for at least two minutes in order to draw out the mist and tiny liquids to prolong the service life of the pump.
- The filter cartridge (optional) is used to absorb moisture and dust. Replace it when it is saturated to maintain a high pumping efficiency.
- Never use the pump with any flammable gas or toxic material.
- Press the power switch to interrupt the pump, rather than disconnect the main power plug directly.
- When in an emergency, disconnect the main power plug.

4. Operating Procedures

4.1. Environmental Operating Conditions

The pump must operate in the following conditions:

- Indoors
- Altitudes up to 2000 meters
- Temperatures from+5°C to +40°C
- Maximum relative humidity 80% for temperatures up to +31°C, linear decrease down to 50% relative humidity at a temperature of +40°C
- Max. mains fluctuation of ±10 % is permissible
- Overvoltage category II

4.2. Installation

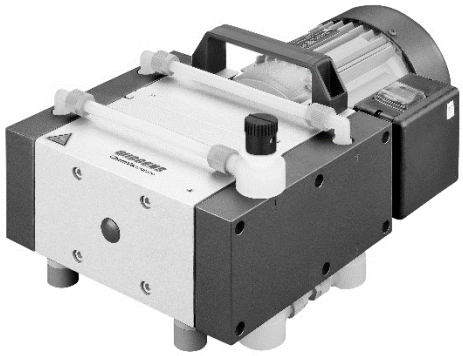
1. Place the vacuum pump on a stable, flat surface and in a proper environment for operation.
2. Check the voltage specified on the rear label at the bottom of the unit. Make sure that it matches the mains requirements in your country.
3. To enable the suction function, connect the inlet of the pump to the outlet of your objective equipment with high-pressure tubing.

4.3. Operation

Warning:

When the pump is used in water filtration, prevent the liquid level in the flask / waste bottle from exceeding the safety level. Failure to comply can result in serious damage to the pump and void the warranty.

4.3.1. Operation Controls for C900E/C920Z/C960T/C980V



1) The diagram of the pump system is shown above.
2) When all tubes have been properly connected to the Inlet and Outlet, activate the pumping function by pressing the On/Off Button.
3) For vacuum monitoring and regulation, an optional vacuum regulator / moisture trap is needed.

4.3.2. Functions of the Vacuum Regulator/ Moisture Trap

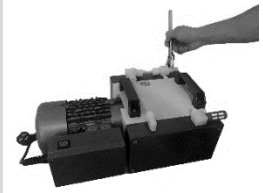
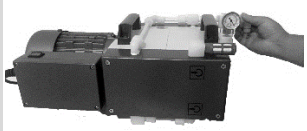
The Vacuum Regulator/ Moisture Trap is used to filter out small particles and liquids before they can reach the pump head. By adjusting the regulator and monitoring the vacuum gauge, an approximate vacuum level can be maintained. However, for more accurate vacuum control an external vacuum controller is needed.

Replacement of the Cartridge

When the filter cartridge is saturated and the flow rate or vacuum decrease, the filter cartridge should be replaced.

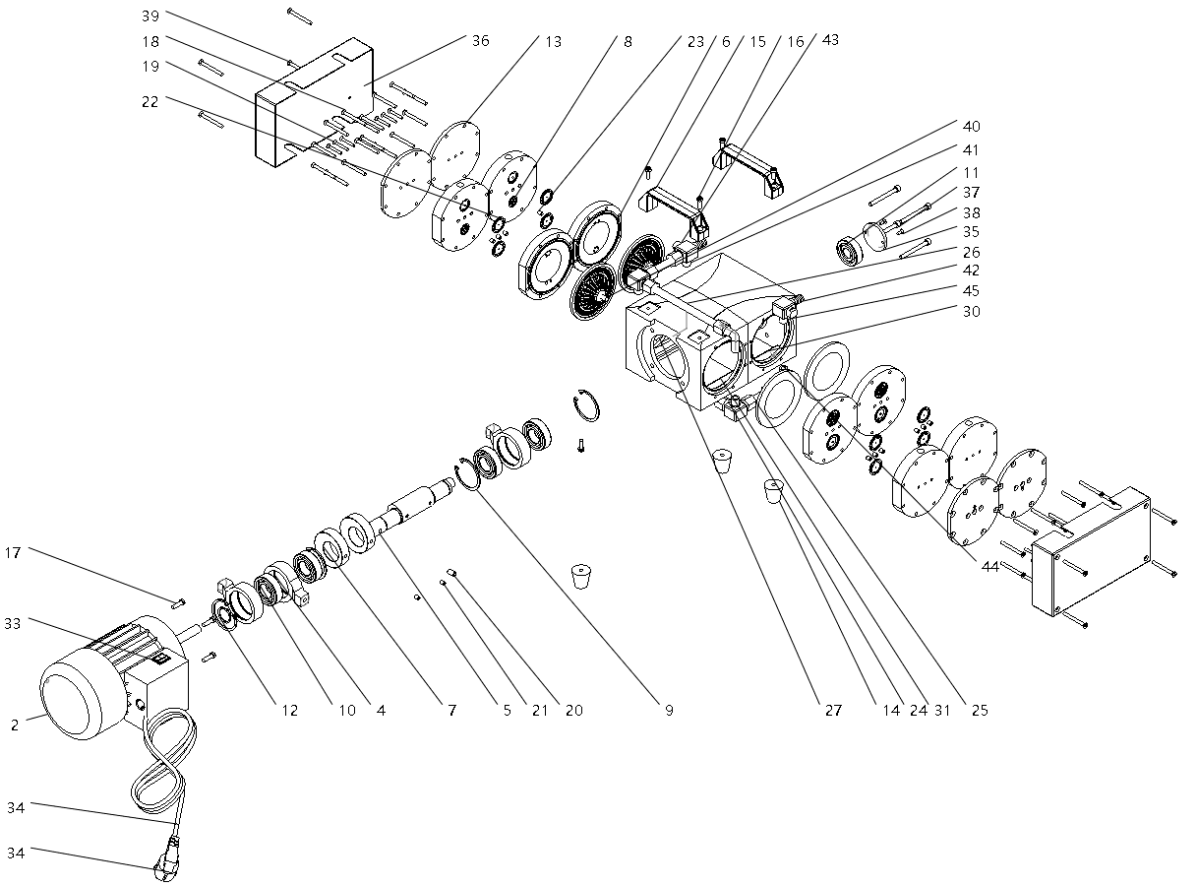
Remove the moisture trap by rotating the waste flask counterclockwise. Then remove the cartridge in the same way and replace it with a new one. Dispose of the water in the moisture trap and mount it back onto the Regulator.

4.3.3. Installation of the Vacuum Regulator for C900E/ C920Z/ C960T/C980V

	Remove the screw at the side of the cylinder head with a spanner.
	Fix the moisture trap at the location where you removed the screw in Step 1.

4.4. Parts List

Parts of C900E/C920Z/C960T/C980V



Index	Description	Index	Description
2	Body	19	Cross screw
4	Tappet	22	Leather pad
5	Eccentric shaft 1	24	connector
7	Eccentric shaft 2	26	Gas line
8	Pump head	29	Body1
9	Clamps	30	Body2
10	Bearing	33	On/Off Switch
11	Bearing	34	Plug
12	Retaining ring	35	Cover
13	Stainless Plate	36	Pump head cover
14	Rubber Stand	40	Diaphragm
15	Handle	41	connector
16	Fixing screws	42	Pagoda joints
17	Fixing screws	43	Plug the head
18	Cross screw	44	elbow

5. Changing the Pump Diaphragms and the Valve Plates/Seals

Structured diaphragms and valve plates/seals are the only parts subject to wear. It is easy to change them.

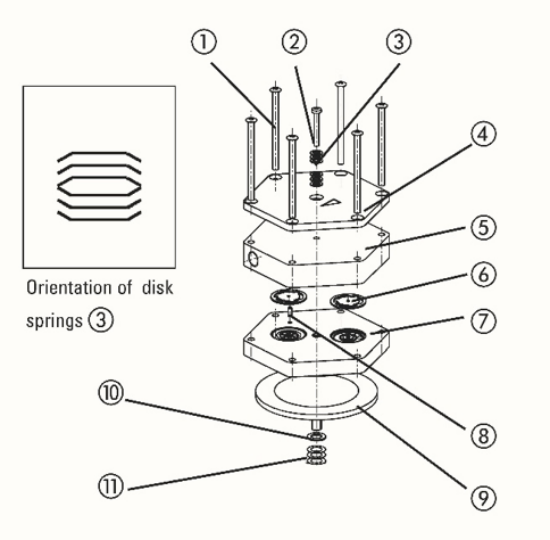
In the case of two-headed pumps the structured diaphragms in both pump heads should be changed at the same time. When the structured diaphragms are changed, valve plates/sealings should also be replaced. If the structured diaphragms are not changed in both heads at the same time or the structured diaphragms and valve plates/sealings are not changed at the same time, the nominal performance of the pump is not guaranteed after the service.

If a pump has been used for aggressive substances or other types of substances which are hazardous, hazardous to health, or injurious, the following points must be observed:

1. Clean the pump and its components before servicing.
2. Ensure that the service personnel is not subject to a health hazard. Apply the safety and protection measures that are necessary for the medium that has been handled by the pump (example: the use of protective gloves).
3. Ensure that discarded parts and materials are safely and correctly disposed of. Use only original WIGGENS replacement parts.

5.1. Pump Head Structure

The position numbers in the following text refer to fig.4.



（1）Screw	（7）intermediate plate
（2）Screw	（8）Guide pin
（3）Disk spring	（9）Structured diaphragm
（4）Top plate	(10) Spacer (thick)
（5）Head plate	(11) Spacer(thin)
（6）Valve plate/sealing	

5.2. Change the structured diaphragm valve plates/seals

Required tools and material:

Change the structured diaphragm valve plates/seals in the following sequence:

a) Preparatory steps

b) Remove pump heads

c) Change structured diaphragms

d) Change valve plates/seals

e) Refit pump heads

f) Final steps

Detail description for the procedures:

a) Preparatory Steps

1) Shut down the system including disconnecting the pump from the power source (unplug from the electrical supply unit of the socket).
2) Remove tubing from the inlet and outlet connector of the pump.
3) If the pump is integrated in a vacuum system: remove pump from the base plate.

b) Removing the pump heads

1) On the pneumatic head connections, loosen one of the union nuts by hand. Then slightly loosen the angle-fitting in the pump head by turning it anticlockwise, so that the connecting tube can be pulled out.
2) Loosen the outer screws（1）on each pump head.
3) Carefully remove both pump heads(top plate（4）, head plate（5） and intermediate plate（6）).

c) Change structured diaphragms

1) Push down one structured diaphragm（9） until the other structured diaphragm is pushed upwards to its highest position.
2) Carefully unscrew the higher structured diaphragm anticlockwise using both hands.
3) Replace all spacers （10）/（11）onto the screw thread of the new structured diaphragm (same number and order)
4) Screw in the new structured diaphragm（9）and tighten it by hand. You do not need any tool.
5) Change the second structured diaphragm as described above (step（1）to（4）)for the first.
6) Changing the two structured diaphragms one after the other ensures that the same number of diaphragm spacers are refitted as were removed. This is essential to maintain the pneumatic performance of the pump.

d) Change valve plates/seals

1) For one pump head: Unscrew the single screw（2）(three screws) in the top plate（4）.
2) Carefully remove top plate (5) and head plate（5）from inter mediate plate（7）; expose the valve plates/seals（6）.
3) Remove old valve plate/seals（6）.
4) If there should be deposits in the recesses in the intermediate plate（7）clean them until the deposits

have been completely removed.

5) Insert new valve plates/seals（6）in the recesses in the intermediate plate（7）(upper and lower sides of the valve plates/seals are identical).
6) Carry out the steps（1）to（5）for the second pump head.

e) Refitting the pump heads for one pump head

1) Press the lip on the edge of the structured diaphragm（9）into the groove in the housing.
2) Place the intermediate plate（7）, with the valve plates/seals on the adapter（16）, in the position indicated by the guide pin (8).
3) Place the head plate (5) on the intermediate plate (7) in the position indicated by the guide pin (8) .
4) Place the top plate (4) on the head plate in the right position.
5) Gently tighten screws (1) in diagonal order.
6) Screw in the single screw（2）in the center of the pump top plate（4）until it is flush with the top plate(they are flush with the top plate).
7) Then screw one final half turn to tighten.
8) For orientation of disk springs（3）see fig.4.
9) Carry out steps （1）to （6）for the second pump head.

Refit the pneumatic head connection:

Place the tube onto the connecting part of the angle fitting, turn angle fitting to the straight position and tighten the union nut.

f) Final steps

1) Remount the pump to the base plate.
2) Reconnect system tubing.
3) Reconnect the pump to the electricity supply.

If the pump does not reach the desired vacuum after changing diaphragms and valve plates/seals:

1) Check whether the spacers have been replaced onto the structured diaphragm screw thread.
2) Check the interconnecting pipework connection between both pump heads as well as the tubing for leaks.
3) Possibly the screws on one of the pump heads (or other heads) are insufficiently tightened (carefully tighten the screws crosswise).

If you have any questions about servicing call our technical adviser (see the last page for contact telephone number).

6. Routine Cleaning, Maintenance, Transport, Storage, Trouble-Shooting

6.1. Routine Cleaning

Wipe the housing and operation panel of the instrument with a damp cloth using a mild soap and water solution. For heavier soiling, using isopropyl alcohol is appropriate.

Note:

Do not use chlorine bleach, chlorine-based cleanser, abrasives, ammonia, steel wool or scouring pads with metal content or similar harsh solvents or abrasives. These may damage the surface of the instrument.

6.2. Maintenance

Do not attempt to service or repair a WIGGENS pump. If the pump housing is opened the warranty becomes void. Contact WIGGENS for return authorization and return instructions.

6.3. Transport and Storage

- Clean the pump so that it is free from any materials which may be harmful to the health. Provide a material safety data sheet where appropriate.
- Place the pump unit and its parts into the original packing or a container with necessary protection to prevent damage during transport. Seal the original packing or container with packing tape.
- Store the packed unit in a dry place.

CAUTION:

Failure to clean, maintain, and handle the pump as outlined can lead to damages or be harmful to the health.

6.4. Trouble-Shooting

Cause	Remedy
The pump does not react after turning on the On / Off Switch	1. Ensure that the mains electricity plug is plugged into a working socket outlet and check if the On / Off Switch is in the “on” position. 2. If the On / Off Switch is in the “on” position, release the vacuum, disconnect the pump from the power source and let the pump cool down, and investigate the reason for overheating. 3. After cooling down, connect the pump to the power source and try again. 4. If there is no reaction after several attempts, please contact the WIGGENS support.
The pump does not reach the designated ultimate vacuum	1. Check if all tubing is tight and if there is a leakage at any point. 2. Disconnect the pump from all other sources, connect it directly to a vacuum controller / vacuum gauge, and block the gas intake. 3. If the pump still does not reach the designated ultimate vacuum, please contact the WIGGENS support. Diaphragms, valve plates, or seal rings might be worn out.

WIGGENS reserves the right to carry out technical modifications with repairs for providing improved performance of the instrument.

6.5. Contact /Technical Service

Contact information is on the last page of this manual.

Confirmation of condition of unit

In the case of repair, copy and complete the Conformation of condition of unit and send it to *WIGGENS* Instruments.

1. **Details about the unit**

   Product number _____

   Serial number _____

   Reason for repair _____

   _____

2. **Has the device been cleaned, decontaminated/sterilized?**

   Yes ☐ No ☐

3. **Is the unit in a condition which does not represent any health threats for the staff of our service department?**

   Yes ☐ No ☐

   If not, which substances has the unit come into contact with?

   _____

4. **Legally binding declaration**

   The customer is aware of being legally liable to *WIGGENS* Instruments for any damages arising from incomplete and incorrect information.

Date	Signature
Company stamp	

Please Note

The shipper is responsible for the return of the goods in well-packed condition, suitable for the mode of transport.

Sender information

Name
Company
Department, research group Street
Zip code, city
Country

Operating Manual

Phone

E-mail

Контактная информация сервисных центров

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E-mail: service@dia-m.ru
www.dia-m.ru

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www.dia-m.ru

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