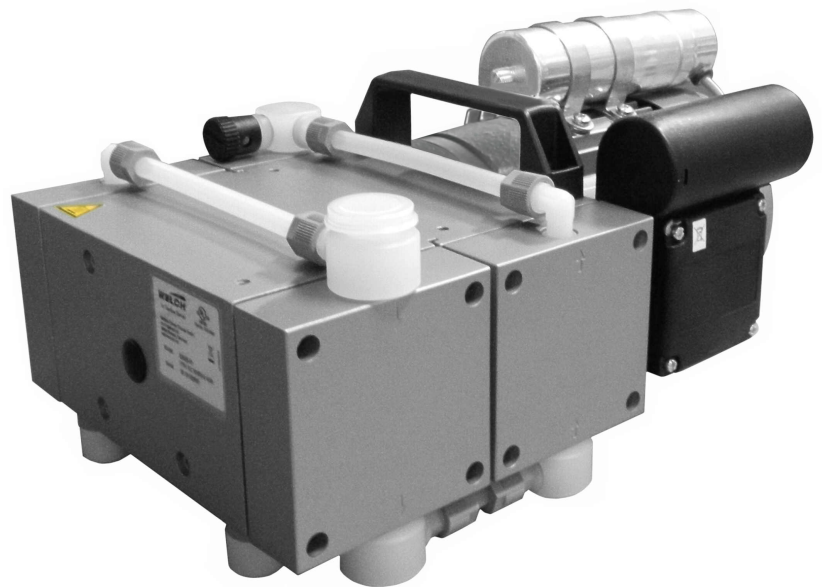


Operation Manual (EN)
Translation of the german original manual

**PTFE Diaphragm pump
4 - headed**

Model:

▶ 2052B-01



We are constantly working on the further development of all our product models.

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2052B-01 PTFE Diaphragm Pump MAINTENANCE AND INSTALLATION INSTRUCTIONS

Read and understand the information and instructions included with this product before using. This information is for your safety and to prevent damage to this product. Failure to observe these safety precautions could result in severe bodily injury, including death in extreme cases.



CAUTION: To reduce risk of electrical shock...

1. Do not disassemble. Disassembly or attempted repairs if accomplished incorrectly can create electrical shock hazard. Refer servicing to qualified service agencies only.
2. If this pump assembly is supplied with a three-pronged plug, connect unit to a properly grounded outlet only.



WARNING: To reduce risk of electrocution...

1. This product should never be left unattended when plugged in.
2. Always unplug this product immediately after use and store in dry place.
3. Do not use this product in or near area where it can fall or be pulled into water or other liquids.
4. Do not reach for this product if it has fallen into liquid. Unplug immediately.
5. To Reduce the Risk of Electric Shock or Injury, Use Indoors Only.



DANGER: To reduce risk of explosion or fire...

1. Do not use this product in or near explosive atmospheres or where aerosol (spray) products are being used.
2. Do not pump combustible liquids or vapors with this product or use in or near an area where flammable or explosive liquids or vapors may exist.
3. Do not use this product near flames.



CAUTION: To prevent Injury...

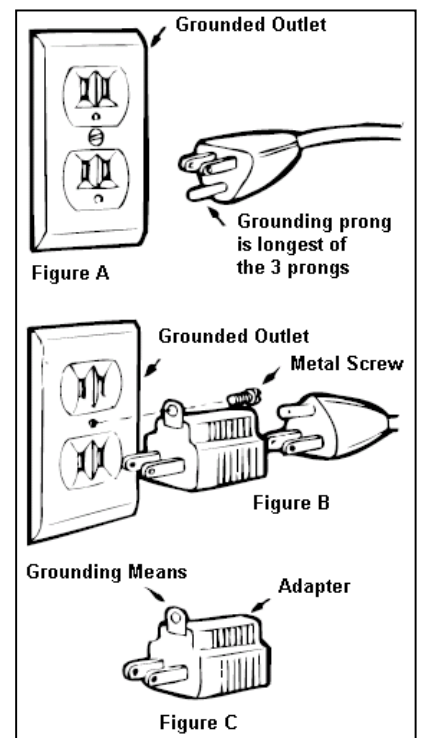
1. Close supervision is necessary when this product is used near children or invalids. Never allow children to operate unit.
2. Never operate this product if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or if it has fallen into water. Return the product to a service center for examination and repair.
3. Keep the cord away from heated surfaces.
4. Never use while sleeping or drowsy.
5. Do not operate this product where oxygen is being administered.
6. This unit is thermally protected. If the motor should overheat, the overload protector will shut the motor off. If this occurs, turn off the unit and allow the motor to cool until thermal protector resets automatically.
7. Always disconnect power source before servicing.
8. Wear safety glasses or goggles when operating this product.
9. Use only in well ventilated areas.
10. All electrical products generate heat. To avoid serious burns never touch unit during or immediately after operation.

Grounding Instructions

This product should be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.



DANGER – Improper installation of the grounding plug can result in a risk of electric shock. If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded. Do not modify the plug provided; if it will not fit the outlet, have the proper outlet installed by a qualified electrician. This product is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in Fig. A. A temporary adapter that looks like the adapter illustrated in Fig. B and Fig. C may be used to connect this plug to a 2-pole receptacle as shown in Fig. B, if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet (Fig. A) can be installed by a qualified electrician.



The green colored rigid ear, lug, or the like extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by a metal screw. This adapter shown in Fig. B and Fig. C is not acceptable in Canada.

Extension Cords – Use only a 3-wire extension cord that has a 3-blade grounding plug, and a 3-slot receptacle that will accept the plug on the product. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. For lengths less than 25 feet, No. 18 AWG extension cords should be used. For lengths less than 100 feet, No. 12 AWG extension cords should be used. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Ambient Conditions – This unit should be operated in a well-ventilated area where the surrounding air is relatively clean, dry and temperatures are consistently within the range of 41°F (5°C) and 104 °F (40°C). Adequate ventilation is required for proper operation.

Operation

The intended use for this vacuum pump is for general physical and chemical laboratory applications requiring vacuum ranging from atmospheric pressure down to an ultimate vacuum of 2 mbar.

1. The pump is equipped with an ON/OFF (O/I) power switch.
2. Gas Ballast – A gas ballast valve **(A)** is provided on the pump. When condensable vapors are pumped, they may be compressed above the saturated vapor pressure and condense in the pump. Opening the gas ballast valve admits air into the last stage of the vacuum pump there by reducing the partial pressure of the condensable vapors and preventing condensation and flushing the pump clear. Gas ballast operation leads to increasing the ultimate pressure and operating temperature.

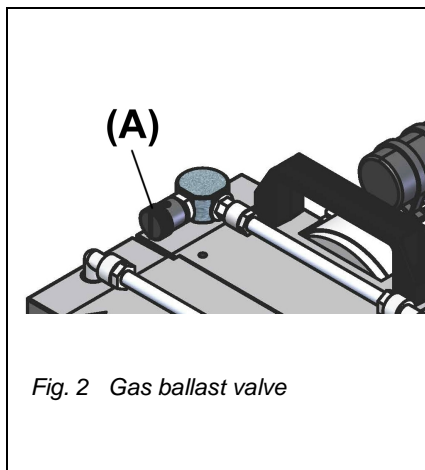


Fig. 2 Gas ballast valve

Maintenance

General Requirements

1. Check the pump daily for unusual running noises and heat building up on the surface of the pump.
2. Replace the diaphragm after 10,000 operating hours. The user may specify replacement be made earlier, depending upon the application process.
3. Check the electrical and vacuum connections daily.
4. When the unit is not in use, Unplug and wrap the cord securely and store in a dry place. Do not abuse cord or plug.
5. Inspect hose, plug and cord for signs of damage before use. Do not use if a deficiency is found. Contact your nearest service centre for replacement parts. Never operate a damaged unit.

Maintenance Performed by the User

1. Warning! Be sure to unplug the pump before conducting any maintenance work.
2. Loosen and remove the hoses
3. Open and remove the pump heads
4. Inspect the pump chambers, diaphragms and valves
5. Deposits in the inside of the pump must be cleaned out
6. Change the diaphragms, valves and seals

Tools required:

Tool kit: Order no. 402106, consists of:

- Order no. 826801 Pin type face wrench, adjustable, size 3,
- Order no. 826801-6 Hex wrench, size 4mm,
- Order no. 826801-5 Open spanner, size 17mm.

Disassembly

1. Open the screw clamps **(9)** of the hoses **(10)** on the pump body with the size 17 open spanner.
2. Remove four machine screws **(1)** from each connection head with an Allan key, size 4.
3. Lift off the connection head **(2)** and the pump head **(5)**. The valves **(3)**, O-rings **(4)** and diaphragm **(7)** are now freely exposed.
4. Loosen the diaphragm **(7)** at the strain washer **(6)** by turning the size 3 pin type face wrench anticlockwise.
5. Clean the valves **(3)**, the pump head **(5)** and the diaphragm **(7)** with a soft cloth and acetone.
6. Check that the drive is in good working order.

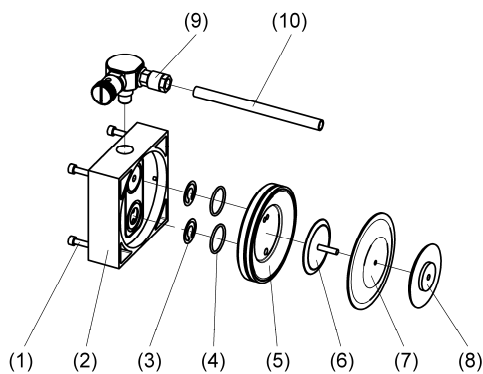


Fig. 2 Disassembly, assembly

Assembly (see Fig. 2)

1. Place the pump so that the diaphragm is lying in a horizontal position.
2. Use the size 3 pin-type face wrench to tighten the pressure disc **(8)**, the diaphragm **(7)** and the strain washer **(6)** with the correct torque of 5 - 6 Nm.
3. Bring the connecting rod (see Fig. 3) and the diaphragm **(7)** into the central position.
4. Replace the pump head **(5)**.
5. Insert the valves **(3)** and the O-rings **(4)**.
Ensure that they are lying completely flat. Do not insert the burred side facing the sealing surface. Align the connection head flush with the pin.
6. Tighten the four machine screws **(1)** symmetrically with a torque of 3 to 4 Nm.
7. Reattach the hose connections **(10)** with clamping ring screw fittings **(9)**.

Test

Connect a vacuum gauge to the intake connection and measure the ultimate pressure. The pump must not make any abnormal noises. Moving parts must not touch each other. If the repair was successful and the pump is working properly, then a fully warm pump should attain the specified ultimate pressure stated in the specifications data.

Maintenance by the Manufacturer

Repairs and maintenance going beyond the extent of the work described *above* or reconditioning or modification may only be performed by the manufacturer or authorized dealer.

Service Parts

Service kit for model 2052B-01 is Order No. 402042-US

402042-US Service kit consists of:

| Description | Kit – Order No. 402042-US | |
|-----------------------------|---------------------------|-----------|
| | Quantity | Order no. |
| O-Ring \varnothing 12 x 2 | 9 | 829217-3 |
| O-Ring \varnothing 25 x 2 | 8 | 829250-1 |
| Valve | 8 | 400656 |
| Diaphragm | 4 | 400732 |

Exploded View 2052B-01

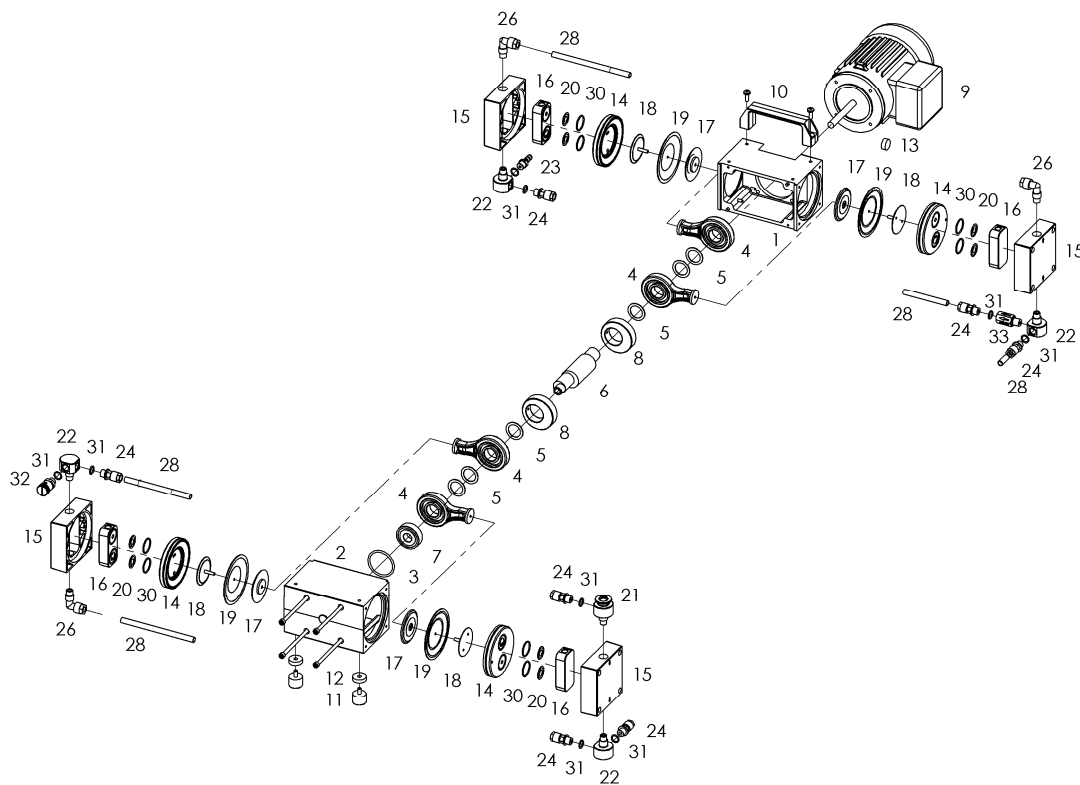


Fig. 3 Exploded View 2052B-01

Service Parts List 2052B-01 (see Fig. 3)

| Item no. | Description | Piece | 2052B-01 |
|----------|--|-------|-----------|
| | | | Order no. |
| - *) | Basic pump complete (consisting of position: 1 – 9) | 1 | 410403-01 |
| 1 | - Pump casing 1 | 1 | 410430-01 |
| 2 | - Pump casing 2 | 1 | 410430-3 |
| 3 | - O-Ring \varnothing 47.22 x 3.53 | 1 | 829269 |
| - | - Drive complete (consisting of position: 4 – 8) | 1 | 400844 |
| 4 | - Piston rod with ball bearing | 4 | 400647-01 |
| 5 | - Close tolerance spacer 25 x 35 x 1 | 6 | 824957-1 |
| 6 | - Eccentric shaft | 1 | 400742-1 |
| 7 | - Ball bearing | 1 | 824949-3 |
| 8 | - Mass balance | 2 | 400678-1 |
| 9 | - Alternating-current motor | 1 | 826446-1 |
| 10 | Handle | 1 | 828634 |
| 11 | Rubber metal-pad | 2 | 829141-2 |
| 12 | Spacer distance PP, Foot | 2 | 400784-01 |
| 13 | Rubber pad | 1 | 400785-1 |
| 14 | Pump head | 4 | 400705-02 |
| 15 | Connection head | 4 | 410432 |
| 16 | PTFE insert | 4 | 400902 |
| 17 | Pressure washer | 4 | 400680 |
| 18 | Tightening washer | 4 | 400707 |
| 19 | Diaphragm | 4 | 400732 |
| 20 | Valve | 8 | 400656 |
| 21 | Manifold 5 | 1 | 400917-01 |
| 22 | Manifold 2 | 4 | 400903 |
| 23 | Hose nozzle PP, DN 8 – ¼" (1x enclosed) | 2 | 710798 |
| | Hose nozzle PP, DN 12 – ¼" (1x enclosed) | 1 | 720331 |
| 24 | Straight threaded joint with seal edge PVDF, 10 – ¼" | 7 | 829931 |
| 26 | Threaded elbow joint 10, PVDF, M12 x 1 | 3 | 829972 |
| 28 | Vacuum hose PTFE, 10 / 8 x 1 mm | 0.6 m | 828332 |
| 30 | O-Ring EPDM, \varnothing 25 x 2 | 8 | 829250-1 |
| 31 | O-ring EPDM, \varnothing 12 x 2 | 9 | 829217-3 |
| 32 | Gas ballast valve | 1 | 400599-01 |
| 33 | Check valve | 1 | 829909 |
| - | 115V North America IEC cord set, NEMA5-15 (US) | 1 | 825903 |

*) The "basic pump" module (items 1 – 9) can only be supplied complete under order number 410403-01.

IMPORTANT NOTICE TO PURCHASER: WARRANTY

UNPACKING

Inspect the pump carefully. If any damage has occurred, file claim with the carrier immediately. Save the shipping container for carrier to inspect.

OPERATING PUMP

Refer to the enclosed Instruction/Operation Manual for all information to properly operate and maintain the pump.

WARRANTY

This Welch Vacuum product is warranted to be free from defects in material and workmanship.

The liability of Welch under this warranty is limited to servicing, adjusting, repairing or replacing any unit or component part which in the judgment of Welch-Ilmvac has not been misused, abused or altered in any way causing impaired performance or rendering it inoperative. No other warranties are expressed or implied. The method of executing this warranty: servicing, adjusting, repairing or replacing shall be at the discretion of Welch. Vacuum pumps that have been used for any period, however short, will be repaired under this warranty rather than replaced.

The warranty is effective for one year from the date of original purchase when:

1. The warranty card has been completed and returned.
2. The product is returned to the factory or other designated service centers, freight prepaid.
3. The product in our judgment is defective through no action or fault of the user.

If the product has become defective through misuse, abuse, or alteration, repairs will be billed regardless of the age of the product. In this event, an estimate of the repair costs will be submitted and authorization of these charges will be required before the product is repaired and returned.

To obtain a return authorization number, please fill in the on-line request form on www.welchvacuum.com. Products without a return authorization number will be refused by our receiving department. Before shipping, properly pack the pump, insure it against loss or damage, and on the outside of the pump packaging and the packing slip write in the return authorization number. Pumps damaged due to improper packaging are the customer's responsibility.

For USA, Canada and all Americas

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