



by Gardner Denver

OWNER'S MANUAL
FOR
GEMINI™ VACUUM SYSTEM
MODELS:
2050 & 2060



Model 2050



Model 2060



CAUTION

GEMINI vacuum pumps are designed for intermittent use with aqueous based, mildly acidic / basic, or select organic media. Use with acid, base or organic vapors or gases is limited by compatibility with pump materials of construction. Always verify vapor chemical compatibility prior to pump use and utilize proper cleaning methods to remove chemical residuals from the pump after use.

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INSTRUCTION
WARNING AND CAUTION
PLEASE READ BEFORE OPERATION

While reading your manual, please pay close attention to areas labeled:
WARNING AND CAUTION.

The description of each is found below.

WARNING

Warnings are given where failure to observe instruction could result in injury or death to people.

CAUTION

Cautions are found where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

These units confirm to the SI International system of units of measurement.

The following symbols (with recommendation of IEC1010) of warning will be found on the pump.



Caution - refer to accompanying documents



Caution - risk of electrical shock



Caution - hot surface

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SECTION 1: SAFETY INFORMATION

1.10 To Prevent Injury...

- 1.11 Never operate this product if it has a damaged cord or plug. If it is not working properly, has been dropped, damaged or has fallen into water, please contact a Gardner Denver Welch service center to arrange return for examination and repair.
- 1.12 Keep the cord away from heated surfaces. All electrical products generate heat. To avoid serious burns never touch unit during or immediately after operation.
- 1.13 Never block any pump case ventilation openings or place it on a surface where the ventilation openings may be blocked.
The air openings are for ventilation of the motor inside the housing. Keep all air openings free of lint, dirt and other foreign objects.
- 1.14 Always disconnect power source before servicing.
- 1.15 Never insert fingers or any other object into any openings.
- 1.16 Do not operate this product where oxygen is being administered.
- 1.17 Wear safety glasses and goggles when operating this product. Never point any air nozzle or air sprayer toward another person or any part of the body.
- 1.18 Use only in well ventilated areas.
- 1.19 Never block pump exhaust. Serious injury can result from pressure build up.

1.20 To Reduce Risk Of Electrical Shock...

- 1.21 Do not disassemble. Disassembly or attempted repairs if accomplished incorrectly can create electrical shock hazard. Refer servicing to qualified service agencies only.
- 1.22 Unit is supplied with a three pronged plug. When using the AC adapter, be sure to connect pump to a properly grounded outlet only.

1.30 To Reduce Risk Of Electrocution...

- 1.31 Do not use this product in or near area where it can fall or be pulled into water or other liquids.
- 1.32 Do not reach for this product if it has fallen into liquid. Unplug immediately.
- 1.33 Never operate this product outdoors in the rain or in a wet area.

1.40 To Reduce Risk Of Explosion or Fire...

- 1.41 Do not use this pump in or near explosive atmospheres or where aerosol (spray) products are being used.
- 1.42 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.
- 1.43 Do not use this product near flames.



WARNING

Failure to observe the above safety precautions could result in severe bodily injury, including death in extreme cases.

SECTION 2: INSTALLATION

2.10 Introduction

2.11 This manual has been compiled not only for the care and maintenance of the Welch GEMINI Vacuum System now in your possession, but as a helpful reference and guide to prevent operating problems, enable troubleshooting, and ensure maximum pump life.

2.20 Unpacking

2.21 Carefully remove the Welch GEMINI™ Vacuum System from the shipping case. Preserve all paperwork for future reference. If damage has occurred from shipment a claim must be filed with the carrier immediately; preserve the shipping carton for inspection by the carrier. If you are required to communicate with your dealer of Welch Vacuum, be sure to include your order numbers for quick identification. Do not return the pump to Welch without first calling for a returned goods number.

2.30 Pump Location

2.31 Physical Location

The Aspiration/Filtration Vacuum System should be located preferably in a clean, dry, and well ventilated area. The system should be placed where the surrounding temperature remains between 10°C and 40°C (50°F and 104°F). Always check to insure the location chosen is protected from direct or indirect moisture contact.

2.32 Electrical Source

GEMINI™ pumps operate at 12 VDC. Locate the pump near a source of AC power (115V/60Hz, 230V/50Hz) to utilize the AC power adapter. The pump may also be used with the 12 VDC power lead plugged into a standard automotive accessory socket or other 12VDC source.

2.33 Proximity to Vacuum Application

Welch recommends that the pump be installed at the highest point within the system to prevent possible water condensate from entering the pump. The pump should be located close to the vacuum application system in order to maximize efficiency.

2.34 Proximity to Ventilation

Locate pump to achieve proper ventilation of exhaust fumes, particularly if the vacuum application evolves fumes that are dangerous or malodorous. Exhaust ventilation to a hood is recommended for all applications that could pass organic or acid base fumes through the vacuum pump.



WARNING

Do not pump flammable or explosive gases or vapors or operate this pump in an atmosphere containing flammable or explosive gases or vapors.

2.35 Pump Placement

Rubber feet are attached to the pump. Rubber feet help to isolate noise and eliminate creeping. All Aspiration/Filtration Vacuum Systems should be placed on a clean, horizontal surface. Do not block the ventilation holes located on the case.



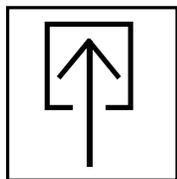
WARNING

Always vent pump exhaust to a hood or dilute exhaust gases appropriately when pumping potentially hazardous fumes.

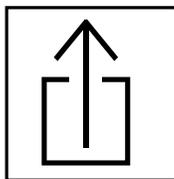
2.40 Application Connection

2.41 Vacuum ports

Vacuum ports and other GEMINI™ pump components are identified in Figure 1. Be certain to connect vacuum application to the vacuum pump inlet. See below identification signs for inlet and exhaust ports.



INLET SIGN



EXHAUST SIGN



CAUTION

Never plug or impede the vacuum pump exhaust port. Pressure build-up in the pump will cause pump to stall.

2.42 Tubing Connection

Use non-collapsible tubing for all vacuum connections. Connect to pump inlet using 3/8" (10mm) ID tubing, keeping tubing length as short as possible. Tubing should be chemically resistant to any vapors potentially evolved by the vacuum application.

2.43 Traps

GEMINI™ pumps are designed to work with aqueous vapors and select organic or acid/base fumes. Always utilize a trap to minimize chemical fume contact with pump surfaces. Empty the trap as needed to prevent fluid ingestion into the vacuum pump.



CAUTION

Always check pump compatibility to potential application fumes prior to using your GEMINI™ pump with acid, base, or organic vapors / gases. Serious damage to the pump can result from use with fumes that chemically compromise pump contact surfaces.



WARNING

Pumping flammable vapors or gases can result in fire or explosion.

SECTION 3: OPERATION

3.10 Starting Procedures

3.11 Qualifying your Application

Welch GEMINI™ pumps are designed for intermittent use in a variety of aqueous and organic solvent-based applications. Proper GEMINI™ pump operation and service life are dependent upon use with compatible application fumes, use of a trap to minimize chemical pull-through, and prompt cleanup to purge chemicals from the pump.

Fumes that will be compatible with your GEMINI™ pump include neutral pH aqueous applications as well as certain alcohols (ethanol, isopropanol) and carboxylic acids (acetic acid). It is important to check for pump material compatibility with potential fumes that can be drawn off your vacuum application. Failure to follow chemical compatibility guidelines can result in severely reduced pump service life.

The critical materials to check for chemical compatibility are the surface contact materials in your GEMINI™ pump. These materials are:

1. Viton
2. Polyarylamide

For handling harsh chemical fumes, Welch recommends use of pumps with PTFE-based contact surfaces. Contact your Welch representative for information about DRYFAST™, DRYFAST ULTRA™, and Self-Cleaning Dry Vacuum Systems™.

3.12 GEMINI™ System Components 2050 and 2060

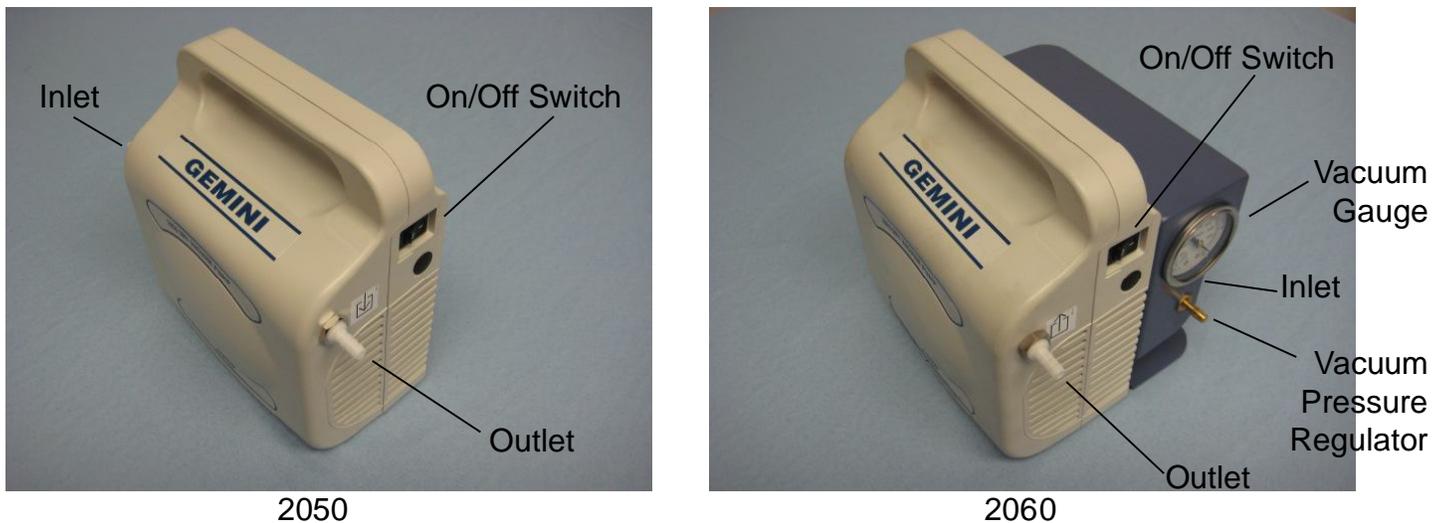


Figure 1

3.121 Vacuum Inlet and Exhaust Port

The vacuum inlet and exhaust port for both GEMINI™ models are identified in Figure 1. Be certain to follow the guidelines in the Section 2: Installation.



WARNING

Never plug pump exhaust. Resulting pressure buildup will cause pump to stall

3.122 On / Off Switch

Identify the On / Off switch for your Model in GEMINI™ Figure 1.

3.123 Vacuum Gauge and Regulator (Model 2060 only)

The vacuum gauge reads negative pressure - pressure below atmospheric. The reference point for the gauge is atmospheric pressure. The vacuum level can be adjusted anywhere between atmospheric pressure and maximum pump vacuum (230 Torr / 300 mBar).

3.13 GEMINI™ Start-Up

After verifying that your vacuum application is correctly configured per Section 2: Installation, turn on the pump On / Off switch. Welch recommends running the pump for a few minutes to warm it up, before use. The warm-up improves the pumps ability to handle humid air.

Closing off the vacuum inlet line on Model 2060 will give gauged verification of full vacuum operation and will help in identifying the presence of leaks in the application system. Set vacuum level by turning the regulator knob counter-clockwise to increase vacuum or clockwise to decrease vacuum. Note: This procedure should be performed each time you use this device.

Be sure to call Welch technical service prior to start up at (847) 676-8800 if you have any questions.

3.20 Leak Detection

3.21 Pump efficiency is compromised by pumping an added volume of leaked gas to maintain the desired vacuum. System leaks can be inferred by noticing vacuum gauge (Model 2060) differences when vacuum inlet tube is blocked from when the tube is opened for a time to the application system. System leaks can be located by slightly pressurizing the system and painting the suspected area with a thick soap solution. Escaping air will produce soap bubbles.

3.30 Pump Cleaning and Shutdown Procedure

3.31 Cleaning Contaminants

If application may have exposed the GEMINI™ pumps to acidic / base or water miscible organic compounds, pull warm water vapors through the pump for 5 minutes to clean pump contact surfaces.

3.40

3.41 GEMINI™ System Shutdown Procedures

After use, Welch recommends the pump be run for about 2 minutes disconnected from the vacuum process. The air pumped through the mechanism will purge out water vapor or droplets of water condensate that may have formed on the inside of the pump.

SECTION 4: MAINTENANCE

4.10 Maintenance Procedures

4.11 Maintaining a Welch Aspiration/Filtration Vacuum System

These units are 100% oil-free. The pump employs a non-lube piston and cylinder. No maintenance is necessary for the bearings. All bearings are sealed and permanently lubricated. Lubrication should not be attempted. The units are built for intermittent duty operation with the quietness and durability of a diaphragm, but with piston performance.

SECTION 5: TROUBLESHOOTING

5.10 Vacuum Problems

5.11 Many vacuum problems are attributable to system leakage or contamination. See Leak Detection (section 3.21) and Cleaning Contaminants (section 3.31) to address system problems. Pump operation may be verified by isolating the vacuum inlet from the system and using a gauge (built in for Model 2060) to verify vacuum vis-à-vis Specifications.

5.20 Power Failure

5.21 If pump does not turn on, the power adapter can be replaced. Contact your Welch representative for information.

SECTION 6: SPECIFICATION

6.10 SPECIFICATION TABLE

Parameter	Model 2050	Model 2060
Vacuum Pressure - Torr (mbar)	230 (300)	230 (300)
Flow - cfm (lpm)	0.38 (10.7)	0.38 (10.7)
Operating Voltage	12VDC	12VDC
Power Rating	2.2W	7.0W
Tubing ID	1/4" (7mm)	1/4" (7mm)
Dimensions (W x H x L) inch (mm)	4.66x8.41x9.05 (118x215x230)	7.6x8.41x9.15 193x214x232
Operating Temperature - C	10-40	10-40
Power Supply	100-240V/50/60Hz	100-240V/50/60Hz
Weight - lbs (kg)	7 (3.2)	13 (5.9)

SECTION 7: WARRANTY

7.10 WARRANTY

Please Read Carefully Before Operating This Welch® Vacuum Pump

Unpacking

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

Operating Pump

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

Warranty

The Welch Vacuum product is warranted to be free from defects, in material and workmanship. The liability of Gardner Denver Welch Vacuum Technology, Inc. under this warranty is limited to servicing, adjusting, repairing or replacing any unit or component part which in the judgement of Welch Vacuum 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. 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 with RMA is returned to the factory or other designated service centers, freight prepaid.
3. The product, in our judgement, 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 reduce the additional charges and delays either within or outside of the warranty period, contact Welch Vacuum at (847) 676-8800 for a return authorization number. Products without a return authorization number will be returned by our receiving department. Before shipping, pack the pump properly and insure it against loss or damage. Mark the outside of the carton and the packing slip with the return authorization number. Pumps damaged due to improper packaging are the customer's responsibility.

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