Agilent
Trusted Answers

Quick Reference Guide

Turbomolecular Pump Installation and Flange Fastening Handbook

Why it is important

WARNING

Installing a turbo pump correctly is a key factor in guaranteeing safe operation and longevity.

- The most important element to consider is the turbo pump flange fastening. It ensures a safe connection between your system and the turbomolecular pump during normal operation and in case of exceptional events, such as pump failure or rotor crash.
- Correct installation of the flange sealing element is essential for a leak-tight connection to your system.
- Finally, the correct electrical connection allows the pump to operate properly.

Correct Installation Procedure

Preliminary preparation

1. Each turbomolecular pump user manual contains crucial details about the required counter flange, correct fastening procedure, required tools, fastening systems, and fastening torque level. Review the user manual before starting the installation procedure.
2. Be sure that the flange on your system is compatible with the turbomolecular pump inlet flange.
3. Verify that flange on your system can guarantee the required resistance torque according to specifications outlined in the turbo pump instruction manual.
4. Ensure that the orientation of the pump when mounted on your system is supported in the user manual.
5. Before beginning the installation of the pump, ensure all necessary Agilent approved accessories and tools are available.
6. Carefully examine the sealing surfaces on your pump inlet flange and the counter flange; scratches, particles, or other impurities can lead to a vacuum leak.
7. Verify the sealing element (O-ring, gasket) is intact with no cuts, scratches, particles, or other visible impurities.

NOTE Please ensure you've carefully read the Installation chapter in your product user manual before starting the pump installation.

Pump mounting

1. Position the sealing element (O-ring, gasket) between the pump's inlet flange and your system.
2. Install the turbomolecular pump using the required number of approved screws or clamps. Always tighten the screws or clamps to the correct torque level (indicated in the user manual) using a calibrated torque wrench.
3. To generate uniform sealing-element compression, gradually tighten flange screws. until the torque specified in the manual is reached. This can be done in three fastening cycles, each to provide one third of final torque to all the screws. Follow a cross pattern (×) for ISO flanges and an "all around" (C) pattern for CF flanges.

CAUTION **The use of unapproved accessories, counter flanges, or fastening methods can result in damage to your product and serious injury.**

Agilent
Trusted Answers

Quick Reference Guide

NOTE To guarantee the correct sealing, always assemble the sealing elements in a dry, oil-free, and dust-free environment. Always wear gloves when handling components. Do not damage sealing surfaces with sharp edges.

Mounting auxiliary devices

1. Verify that the ambient temperature of your installation is within the acceptance range specified in your turbomolecular pump user manual.
2. Connect the water-cooling kit (if required) using approved cooling fluid adapters (optional), verify that the cooling fluid temperature is in the range indicated in pump's user manual.
3. Install the optional electromagnetic vent valve (if present) or tighten the manual vent valve.
4. Install the optional purge valve (if required) to help protect the pump's bearing and lubrication.
5. Connect the backing pump to the turbomolecular pump foreline port using the correct center-ring/O-ring/clamp. The recommended backing pump for each turbomolecular pump model can be found in the user manual.
6. Connect the pump power cable, air cooling kit, and vent valve cables (if present) between electronic controller and the turbo pump.

NOTE Ensure you're using Agilent official accessories, auxiliary devices, and spare parts. Unapproved devices can cause system malfunctions and pump damage.

Connection to mains or power supply

1. Verify that the mains voltage and frequency are within the controller's specifications (found on the controller's rating plate and in the user manual).
2. Always use an Agilent-approved mains cable to power the electronic controller.

CAUTION **Do not modify the controller, pump, or electrical equipment.**
It is strictly recommended to connect the turbo pump controller to a safe and protected power circuit where ground connection is available and a power breaker aligned to power requirements reported on user manual is installed.

What about risks

WARNING

Disregarding any of the steps in this installation procedure can create serious safety issues if pump failure or rotor crashes occur, as well as operational issues with the turbomolecular pump itself.

Contacts:
U.S. and Canada (toll free):
+1 800 882 7426
vpl-customercare@agilent.com

Europe & other countries (toll free):
+00 800 234 234 00
vpt-customercare@agilent.com

China (toll free):
400 8206778 (mobile)
800 8206778 (landline)
vpd-support-china@agilent.com

Printed in Italy, May 1st, 2021
D0011150 (A.00)