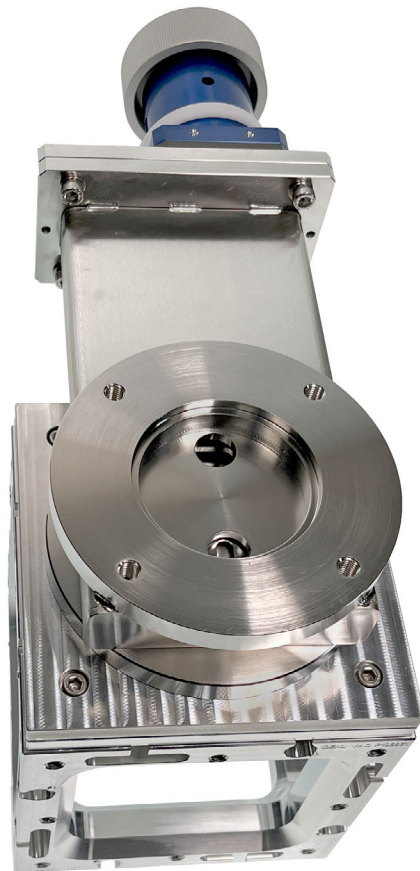


OUR PRODUCTS DEVELOP TOMORROW'S TECHNOLOGIES™

Gate Valve Adapter and Turbo Pump Mounting for all Ideal Vacuum Cubes USER MANUAL



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INTRODUCTION

This manual illustrates the general step-by-step procedure for installing the Gate Valve Adapter, one of many accessories available for the Ideal Vacuum Cube™ modular high-vacuum chamber system. This adapter allows the compact connection of an ISO-F gate valve (with tapped mounting holes) to an Ideal Vacuum Cube™, without additional plumbing or fittings.

Photos are of a 6 x 6 x 6 Cube and an ISO-F 63 manual gate valve. The procedure for all other plate sizes and gate valves is essentially the same, although different sized adapters may look slightly different.

The adapter consists of two plates. One plate has our patented Taper-Seal™ O-ring seal and is mounted to the Cube frame. The other plate is mounted to the gate valve's threaded flange. An ISO centering ring is sandwiched between the two plates which are then screwed together to make the seal.

This adapter kit can be used to isolate a turbomolecular pump from the chamber. It creates the shortest possible pumping path for maximum high vacuum performance.

Another use for the gate valve adapter kit is to join two Cubes together in load lock applications. Two adapter kits are required, one on each side of the gate valve. When two cubes are joined with a gate valve in between, one Cube can be used as an antechamber to transfer materials from ambient atmosphere into the other which remains under vacuum.

Similarly, when two Cubes of differing sizes are joined with a gate valve between them, the system can be used for explosive decompression testing. Here, the larger Cube decompresses the smaller Cube. It is best to use a pneumatic gate valve since it opens more rapidly than a manually operated one.

Download and read the [IVP Cube Plate Installation Manual](#) for instructions about how to properly mount a Cube plate onto a Cube frame.

NEEDED

Prepare a clean, flat, soft surface, like a work table with a lint free cloth on it, on which to work

Cube frame	Centering rings (2 ea)
Gate valve adapter (must be same ISO size as gate valve)	SAE and Metric Hex wrenches
Gate valve (ISO-F with tapped mounting holes) (must be same ISO size as gate valve adapter)	Torque wrench

SAFETY



- **Read this manual and all associated manuals before installing or operating this equipment. Failure to follow the warnings and instructions may result in serious injury or equipment damage.**
- **Keep this manual in a safe location for future reference.**
- **This equipment should only be installed and operated by trained, qualified personnel, wearing appropriate protective equipment.**

STEP 1

Clean all parts with Isopropyl alcohol (IPA) and a lint free cloth before proceeding.

The Gate Valve Adapter consists of two plates. It is delivered with the plates held together with screws.

One plate has the Taper-Seal O-ring (shown). The opposite plate is flat.

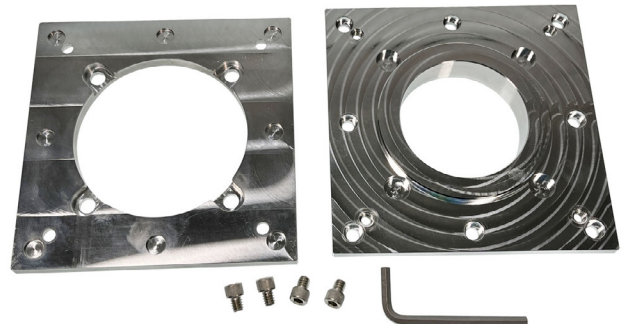


STEP 2

Place the plate with the Taper-Seal flat side up on the soft flat surface.

Get a hex wrench. Unscrew and remove the hex head screws that hold the plates together.

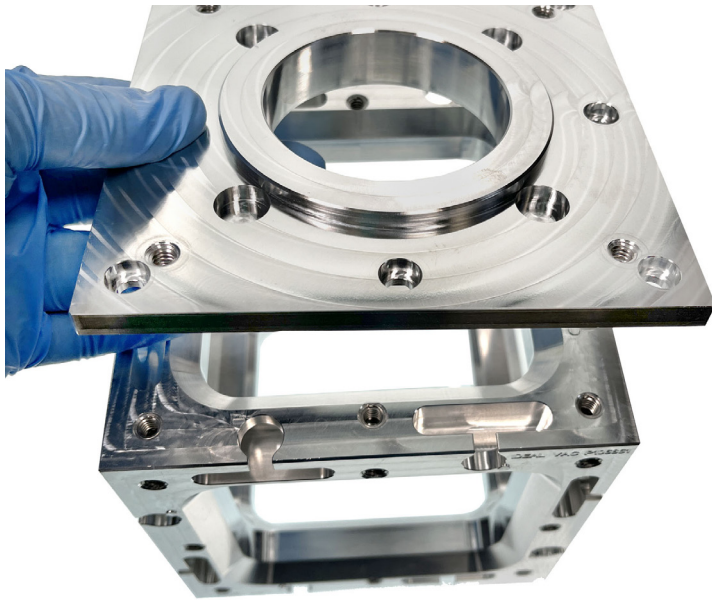
Separate the plates.



STEP 3

Orient the Cube so that the face that will receive the gate valve is up.

Place the plate with the Taper-Seal gently onto the frame, Taper-Seal down.



STEP 4

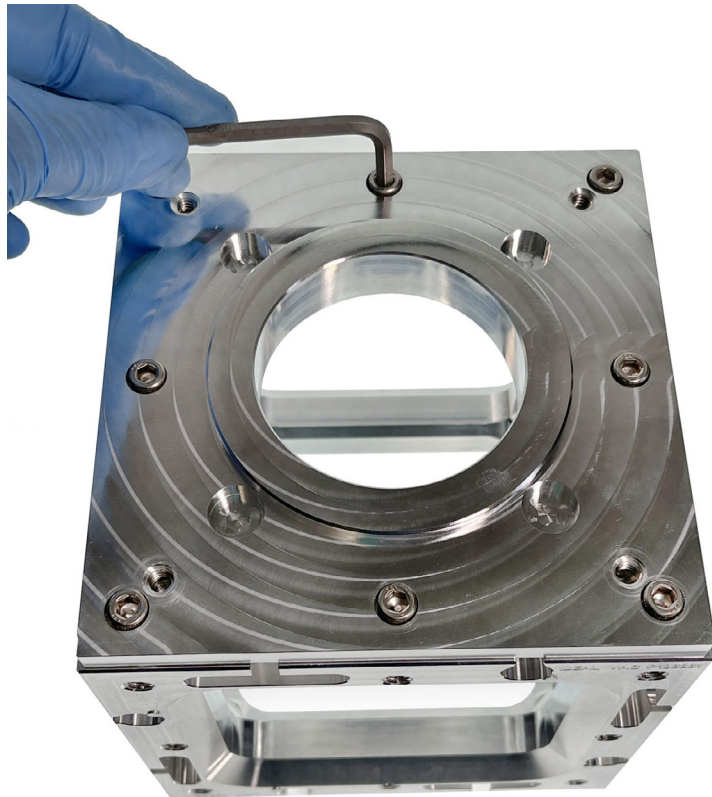
Get the 1/4-20 x 5/16" long hex head Cube plate mounting screws from the adapter kit. There may be eight or more depending on the frame size. Place these screws into the holes at the outer perimeter of the plate.

Use a 3/16" hex wrench to screw down the screws. Use a "star" pattern to tighten the screws using the procedure described in the [IVP Cube Plate Installation Manual](#). Refer to Chapter 4 - Plate Mounting.

Tighten the bolts using a torque wrench set to 70 in-lb. (maximum).

Note: Over-tightening the screws DOES NOT improve the seal.

Put the frame and plate assembly aside temporarily.



STEP 5

Open the gate valve slightly to determine which side of the gate the O-ring is on.

Note: The gate valve is normally mounted so that the O-ring seal on the valve's gate is towards the chamber.

Orient the valve with the gate O-ring face up.



STEP 6

Place the flat plat adapter on the gate valve with the pocketed through holes face up.

Align the holes with the valve's tapped mounting holes.

Pocket holes
face up



STEP 7

Get a metric hex wrench (6 or 8 mm) and metric screws out of the adapter kit.

There may be four or more depending on the valve size.

Place the screws through the plate holes and into the valve's tapped holes.

Use a "star" pattern to tighten the plate.

Torque the screws to these specs:

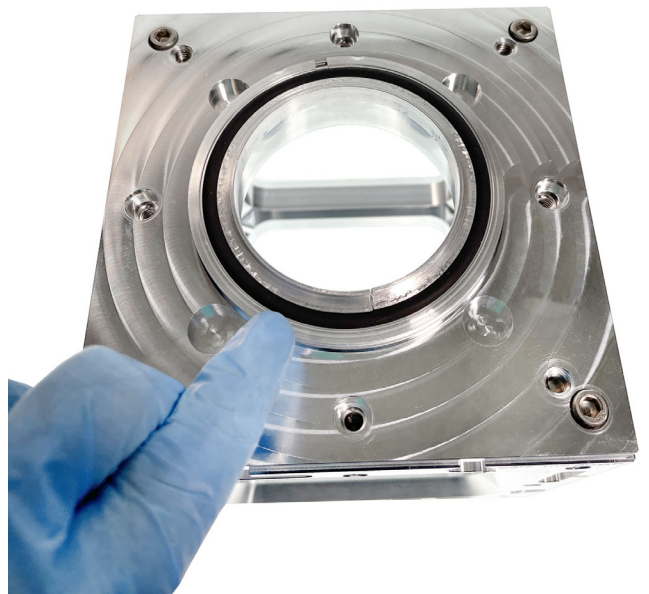
M8: 86 lb-in. (6mm hex wrench)

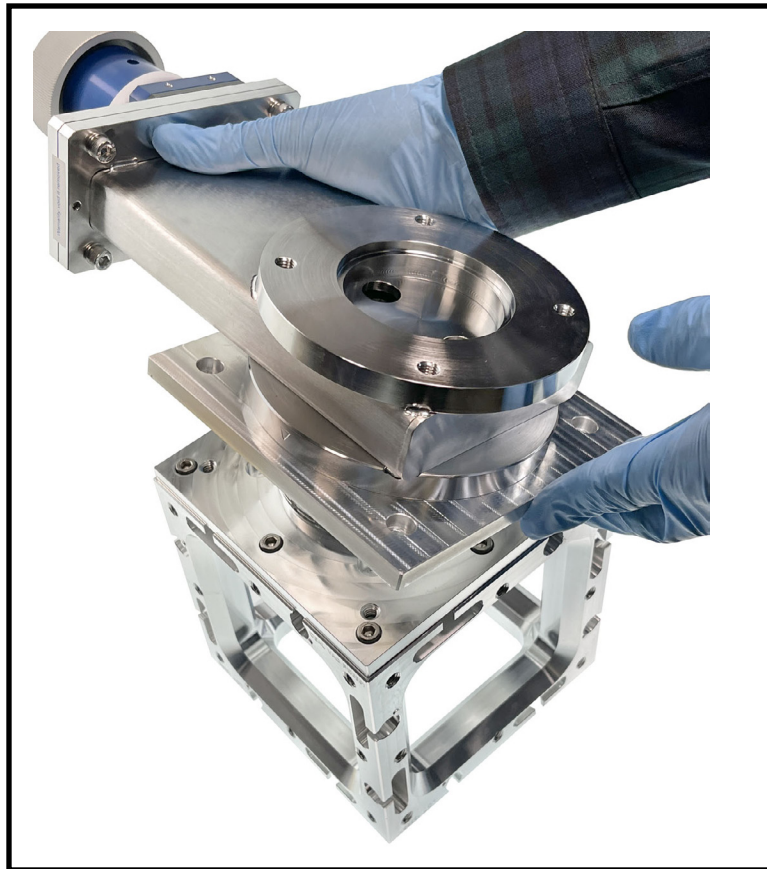
M10: 130 lb-in. (8 mm hex wrench)



STEP 8

Take the frame with mounted adapter plate and fit a centering ring on the plate's boss.



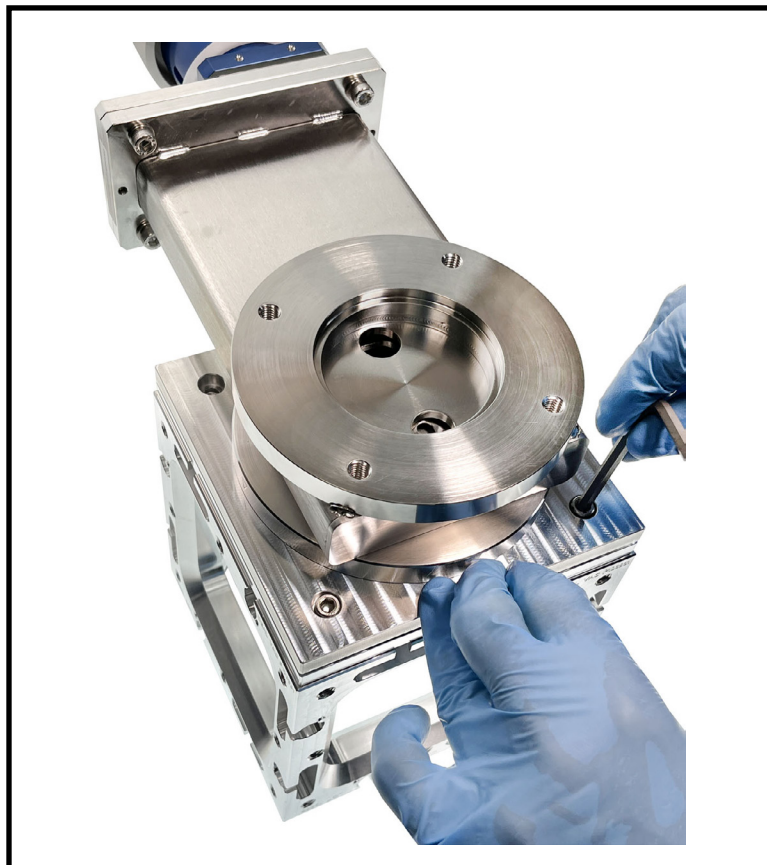


STEP 9

Place the valve on to the Cube with the mounted adapter plate face down.

Note: It is best to use two hands when placing the gate valve as it is heavy and awkward.

Use care to align the two plates so as not to damage the centering ring.



STEP 10

Screw the gate valve adapter plate to the frame adapter plate using the remaining 1/4-20 x 5/16" screws from the adapter kit.

Note: It is best to start the screws at the bottom of the gate valve first. Also, the valve may need to be supported at the bonnet to keep it from tipping the frame over.

Tighten the screws in a "star" pattern until the two adapter plates touch equally around all sides. Then, turn each screw an additional 1/2 turn.

The gate valve is now mounted.

STEP 11

These steps are for mounting a turbo pump on to the gate valve.

Place another centering ring on to the gate valve flange.



STEP 12

Place the turbo pump carefully on to the valve.



STEP 13

Note: The gate valve has an ISO-F flange with metric tapped holes. The turbo pump has an ISO-K flange.

Get a quantity of single claw clamps with metric screws equal to the number and size of the threaded holes in the gate valve flange. Also get an appropriately sized metric wrench for tightening the screws.

Start all of the claw clamps by hand and tighten using a “star” pattern. Torque to 7-10 lb-ft. or until the claw clamps contact the gate valve flange.

For instruction on how to properly install claw clamps, download our [Common Vacuum Fittings Selection and Assembly Guide](#). Refer to Chapter 7 - ISO (Large) Flanged Fittings Overview.





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