

Installing the Vacuum System Hardware Kit & Connecting to the Vacuum Pump

Thank you for selecting our Vacuum System Hardware Kit. The kit contains the following items.

- 1 – Vacuum manifold with adapter storage mast
- 1 – 2” vacuum gauge
- 1 – Quarter-turn brass control valve
- 1 – High-capacity pleated element air filter with clear canister.
- 10 ft. – 3/8” I.D. reinforced vinyl hose
- 2 – Threaded male 3/8” hose adapter
- 2 – Threaded male 3/8” hose elbow
- 1 – Threaded female 3/8” hose adapter
- 1 – 3/8 female x 1/4 male brass adapter bushing
- 1 – 3/8” x 1/2” hose reducer with 3” piece of 1/2” I.D. hose
- 8 - Plastic ties to secure hose on fittings
- 1 – Teflon 1/2” tape roll
- 1 – Set of hook & loop industrial grade Velcro tape

Note: Exact style and color of items may vary



Vacuum System Hardware Kit Components

Locating the Manifold

Begin by determining the mounting location for the vacuum manifold. It is advisable to locate the manifold where the control valve is readily at hand and the gauge can be clearly seen from the turning position, allowing the turner to monitor and adjust vacuum amount as conditions dictate.

The manifold provides numerous mounting options. If you have sufficient flat surface on the headstock of your lathe, you may want to apply the Velcro to the manifold and to the mating surface on the lathe. You can also use the Velcro mounting on a nearby flat surface such as a wall or cabinet. The adhesive on the Velcro requires 24 hours to gain full bond.

Each lathe and shop situation is unique. If no suitable flat surfaces are available or convenient, you may need to devise a bracket or fixture to hold your vacuum manifold. Mounting holes are provided on both sides and the back edge of the manifold body. The back edge holes are 1/4-20 threaded to approximately 3/4" depth. The side holes are through-drilled and can be used with 3/16" (#10) fasteners as they are, or they can be threaded for 1/4-20 bolts if desired. If you decide to drill additional holes in the manifold, do not drill on the side where the gauge and fittings are mounted.

Assembly and set up of the Manifold

Now that the manifold mounting decisions are made, you can prepare the manifold for use. Using the fittings provided, determine where to use straight or elbow fittings for your particular mounting situation. From the top down, install the gauge, the control valve, and two hose fittings. Normally, the hose directly below the control valve will go to your Precision Vacuum Adapter, and the bottom hose will go to the air filter. You can alter these positions if required for your particular situation.

As you attach these items to the manifold, apply Teflon tape to each fitting. Wrap about three turns of tape to the male threads, wrapping in a clock wise direction when looking at the threaded end of the fitting. Use caution not to leave loose or exposed tape near the hole in the fitting, just on the threads. Turn the fittings into the appropriate hole and tighten securely, using a wrench with light pressure until resistance is felt. Adjust the angle as necessary - the Teflon tape will allow you to adjust the angle of the gauge, control valve, and fittings and maintain a good seal. Try to adjust positions of items by turning them in the right-hand (tightening) direction. Use the Teflon tape on all fittings as you proceed with your installation, wrapping tape on the male side of each connection and being careful to apply tape to the threads only.



About the Pump

If you are using our pump, locate the pump as close as practical to the lathe and an available 115v power source. The pump has a switch built in, but you may find it more convenient to use a switched outlet to more easily control your pump's electrical power. You may use both the filter included with the pump and the larger more efficient filter included in the kit, or just use the kit provided filter only in your system. Remember, you must use one of these filters in your system between the manifold and the pump to maintain the pump's warranty.

Beginning at the pump, decide if you will utilize the pump's attached filter. If so, attach the filter to the 1/4" threaded male fitting stem on the head of the pump. **Do Not** use Teflon tape on this connection, as the connector to the filter includes a rubber gasket to seal the connection. Install the small filter so that the clear body stands vertically in orientation. Next, connect the included 1/8" female x 1/4" male threaded brass bushing to the 1/8" male threaded fitting on



the filter, wrapping Teflon tape on the male side of this connection. Next, connect the included female threaded hose barb fitting to the bushing, again wrapping the male bushing with Teflon tape. Tighten all fittings carefully, but firmly until resistance is felt. Use wrenches on both sides of a connection when tightening, if practical. Alternatively, if you elect not to use the small pump filter, then use tape on the male connection stem on the head of the pump and attach the female threaded hose connector. At this point you are ready to attach the hose to the pump. (See *Making the Connections* below)



If you already have a vacuum pump, evaluate the connection requirements of your pump and obtain any additional fittings that might be required.

Making the Connections

Once you are happy with the position of all fittings on the manifold and all threads are sealed, mount the manifold in the location that you have determined to use. Now decide on how much hose length you need between the manifold and Precision Vacuum Adapter to comfortably manipulate the adapter and to store it on the manifold mast. Note: - use an elbow hose connector on the threaded fitting of the Precision Vacuum Adapter. Cut the required length of hose and set aside. Now, determine how much hose is required to go from the manifold to the filter and from the filter to the pump. Leave comfortable lengths for easy maneuvering and adjustments. Using tape, attach a straight or elbow hose connector to the side port of the filter.

Now you are ready to install the hose and retainer ties. At this point, it is advisable to utilize a hair dryer to heat the areas of the hose that will be pushed onto the various fittings. Heat each hose end as you go - this will make the task much easier. Attach the short length of 1/2" hose and the hose reducer to the 1/2" pipe on the filter. Route the hose from the manifold to the vacuum adapter and push in place. Route the hose from the manifold to the large filter side port and push in place. Route the hose from the large filter center port to the small filter or pump fitting and push in place. Now secure all these hose connections with the included plastic ties. Remember this is a vacuum system and, as such, will tend to suck the connections together, not push them apart as in a compressed air system, so the ties will work fine - no need to mess with sharp metal hose clamps.



Using the System

You've done the hard part. Now, just attach a JT Precision Vacuum Chuck/Hub or other vacuum chuck to the lathe spindle. Insert your Precision Vacuum Adapter, switch on the pump, center your project on the vacuum chuck, and slowly close the control valve until the project is held to the lathe. Most vacuum pumps will pull vacuum from 22 to 26 inches of Mercury. We recommend adjusting

your control valve for a chucking pressure of about 20 inches – this leaves a little pump capacity available to deal with leaks or seepage should they occur. Twenty inches of Mercury will give you a good hold on most projects. Remember, vacuum holding is all about the number of square inches of surface exposed to a vacuum, so the larger the vacuum chuck, the more force will be exerted for a given amount of vacuum (inches of Mercury) reading.

Enjoy using your new Vacuum Chucking System. Vacuum chucking brings a whole new dimension to turning and makes many tasks easier, quicker, more precise, and more fun! Please contact us if we may be of assistance or answer any questions.

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