



Vacuum Grid Chuck Systems

Quick Start Guide



Northern Engineering & MFG, Inc.
11841 243rd Ave NW
Zimmerman, MN 55398
Voice: 763.856.2044
<http://www.nemi.com>



Vacuum Chuck Kit Contents



Your new NEMI Vacuum chuck Kit contains the following components:

- **(1) 9.5" x 17.75 x 1" Vacuum chuck - P/N 1284**
- **(1) 4.03 CFM Vacuum Generator – P/N 1278**
- **(13) Port Plugs – P/N 724**
- **(13) Port seals – P/N 725**
- **(1) Magnet with Handle – P/N 694**
- **(1) Shutoff Valve – P/N 1360-375**
- **(15') Vacuum Rated Hose – P/N 1358**
- **(10') ¼ x 5/16" EPDM Foam "D" Gasket – P/N 1285**
- **(5') ¼" Round EPDM Foam Gasket – P/N 796**
- **Instructions**



Setting up the NEMI Vacuum Grid Chuck

Setting up and using the NEMI Vacuum Grid Chuck is fast and simple! First, the chuck must be installed on the machine. This can be done in one of two ways. Mounted directly to the T-Slot table (Figure "P") or mounted in vises (Figure "Q").

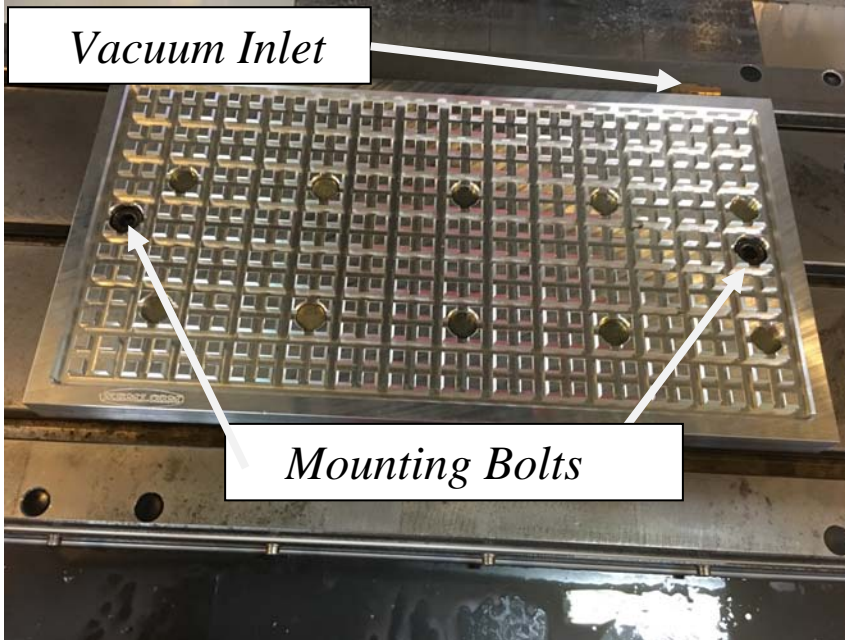


Figure "P"

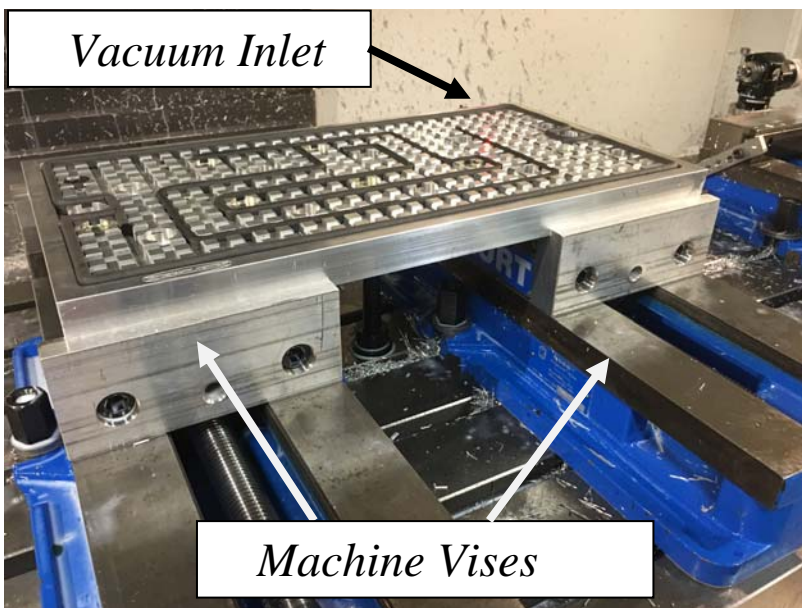


Figure "Q"



Setting up the Vacuum Grid Chuck (cont'd)

Once the chuck is installed in the machine, the vacuum line can be hooked up. The kit includes 15' of vacuum rated hose. This should allow mounting the generator outside the machine and routing the hose to the chuck. The vacuum generator requires compressed air to function. Be sure and place the vacuum generator near a compressed air hose. Figure "R" illustrates one example of the generator on the front of the machine and the vacuum hose running in from the side.

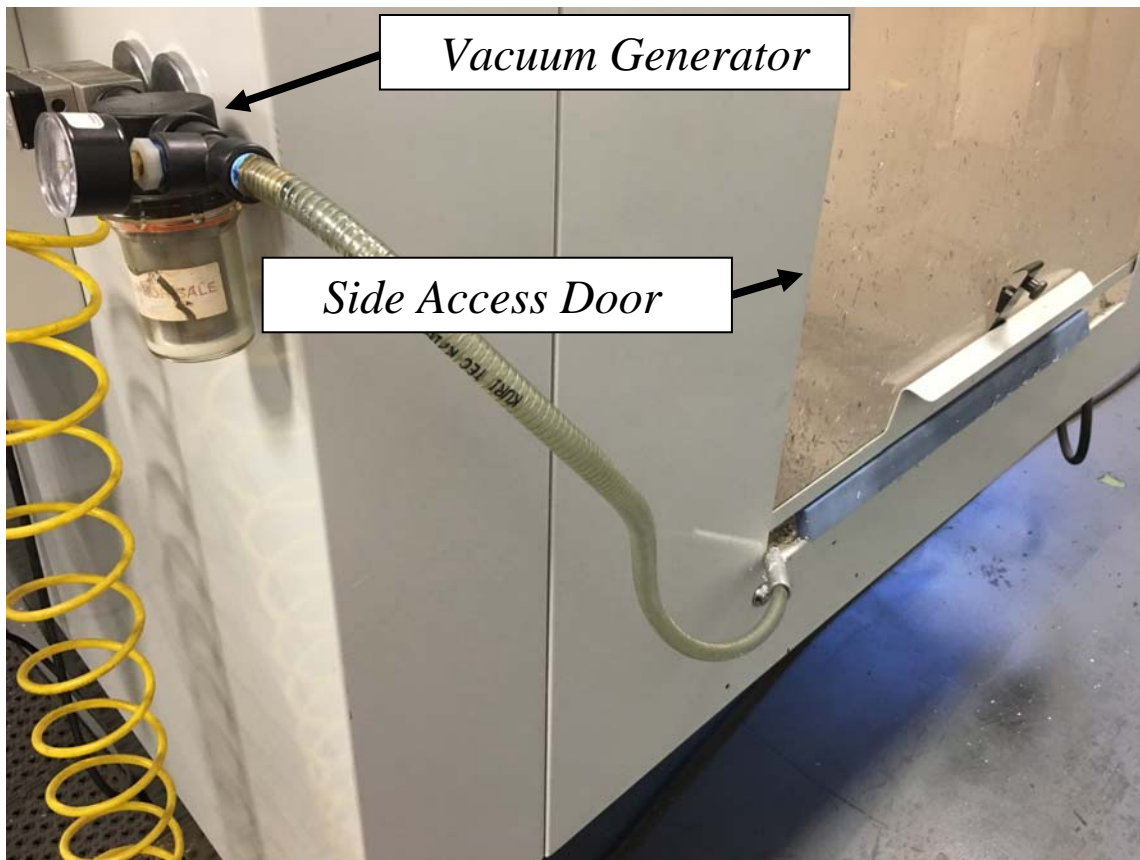


Figure "R"



Setting up the Vacuum Grid Chuck (cont'd)

Using the supplied hose clamps, connect the other end of the vacuum hose to the chuck.



NOTE

The arrow on the shutoff/slider valve **must** point towards the chuck. Failure to connect properly will result in loss of vacuum. See Figure "T".

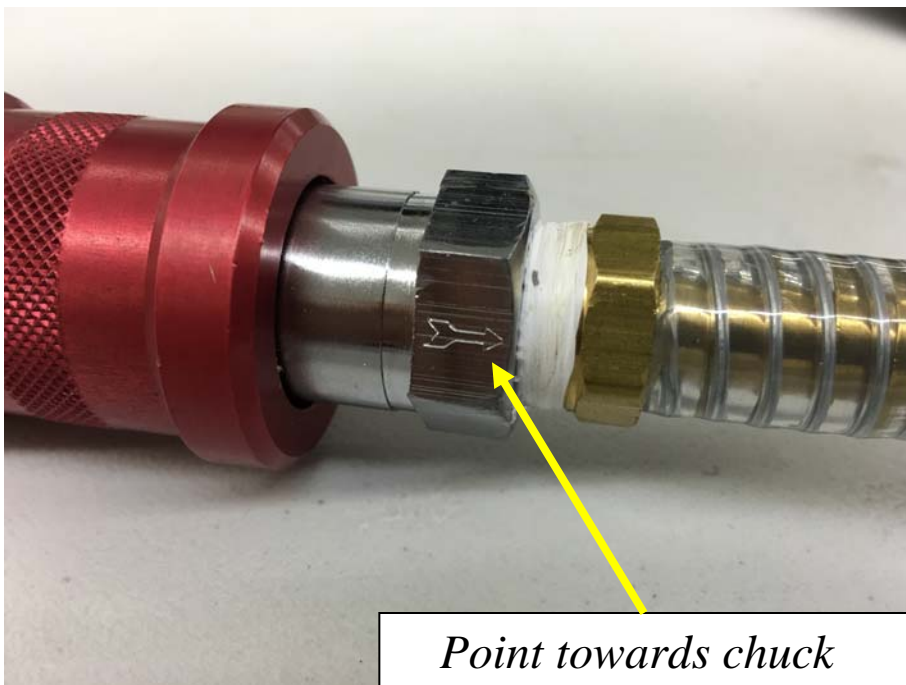
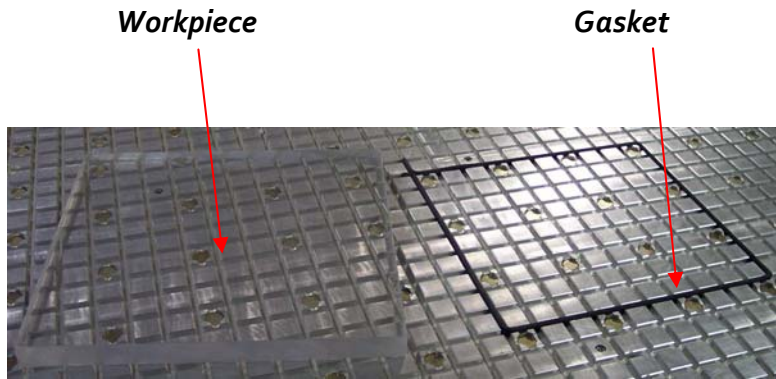


Figure "T"



Using the NEMI Vacuum Grid Chuck

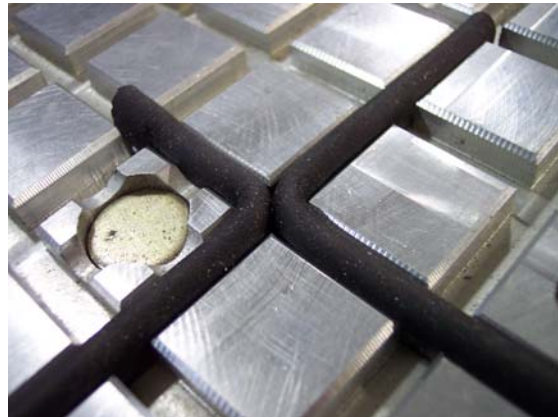
For thin and flat plate applications, using the included 'D' shaped or round gasket simply gasket off the required area respective to the workpiece as shown:



The gasketed area can be sealed off at the ends in one of two ways:



The gasket material can be cut approximately 1/4" long and then pressure butted to the other end.



Gasket cutting can be avoided by using the configuration above.

NEMI.COM**Using the Vacuum Grid Chuck (cont'd)**

With the gasket in place, simply remove the vacuum port plugs within the sealed off area using the included magnet. See the table in the technical data section for more information regarding vacuum plug usage & removal.



With the gasket in place and the vacuum port plugs removed, place the workpiece over the sealed off area, turn on the vacuum and you're ready to go!





Using the Vacuum Grid Chuck (cont'd)

NOTE:

When using the entire surface of the vacuum chuck, the mounting bolt holes must be segregated to avoid vacuum loss. See Figure "X".



Figure "X"

Emptying the Filter Trap

The AIR PRESSURE MUST BE DISCONNECTED when emptying the filter trap. To empty the filter trap, turn the jug counter clockwise to loosen and remove the jug. Take care to not spill the trapped coolant/debris.





Technical Data

Vacuum Plug Usage & Removal

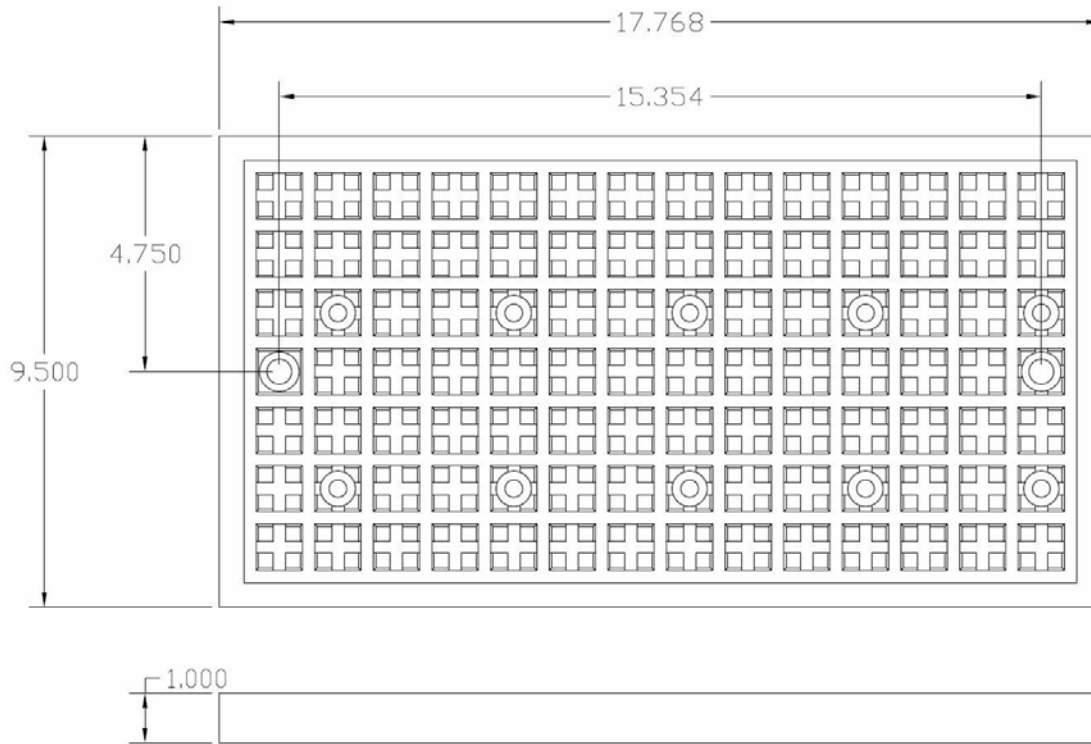
When removing the vacuum port plugs it is important to keep in mind that you need only remove the number of plugs equal to the area of your vacuum supply hose inside diameter. Removing more plugs than this area is unnecessary. For example, (1) vacuum plug has an approximate area of .101 sq/in. A ¼" vacuum supply hose has an area of approximately .049 sq/in. Therefore, removing (1) vacuum plug would be sufficient. See the table below for more examples.

| Supply Hose I.D. | Area (sq/in) | Number of Plugs Removed |
|------------------|--------------|-------------------------|
| ¼" | .049 | 1 |
| ½" | .196 | 2 |
| ¾" | .441 | 5 |
| 1" | .785 | 8 |
| 1-1/4" | 1.226 | 13 |
| 1-1/2" | 1.766 | 18 |
| 1-3/4" | 2.404 | 24 |
| 2" | 3.14 | 31 |
| 2-1/2" | 4.906 | 50 |
| 3" | 7.065 | 71 |



Technical Data (cont'd)

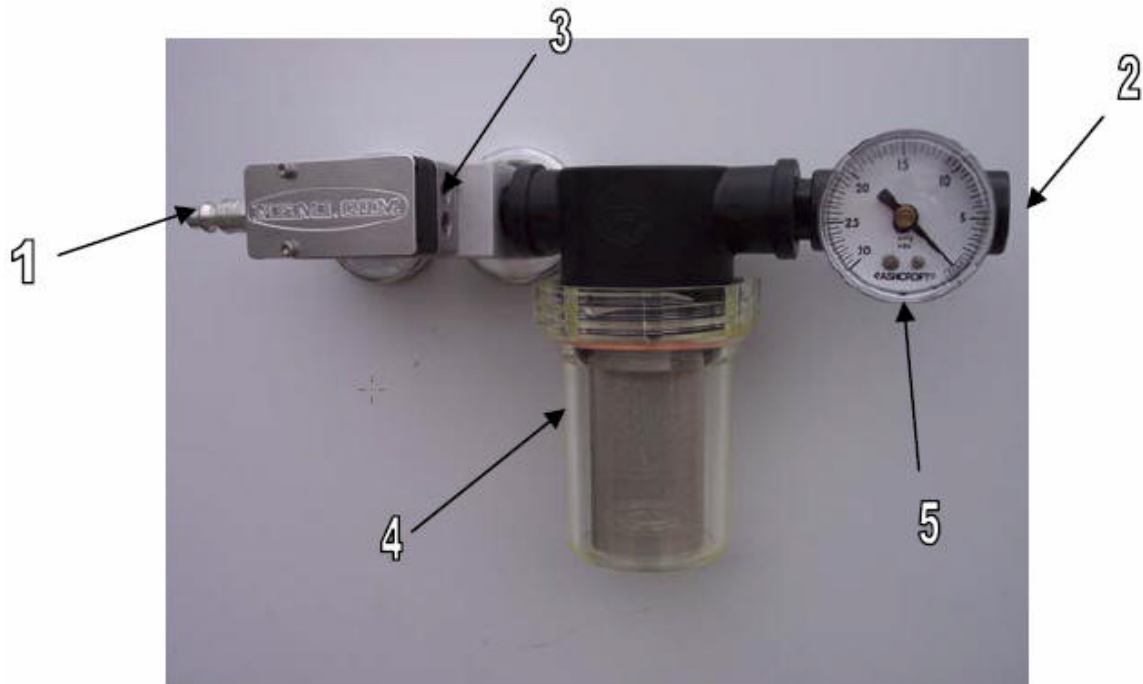
Basic Chuck Dimensions





Technical Data (cont'd)

Vacuum Generator Data



1. $\frac{1}{4}$ " Male Industrial-Shape Hose Coupling Compressed Air Inlet, Or $\frac{1}{8}$ " NPT port. (58-110 PSI Recommended Operating Pressure)
 2. $\frac{3}{8}$ " NPT Vacuum Connection
 3. Exhaust
 4. Filter Trap
 5. 0-30" hg Vacuum Gauge
- 27.9 In. Hg Vacuum Rating
 - 3.39 SCFM Air Consumption
 - 4.03 SCFM Vacuum Flow



A few words about Vacuum...

The basic science of vacuum clamping involves the atmosphere. Essentially all atmosphere from beneath the workpiece is removed. The atmosphere above and around the workpiece is what actually holds it in place.

At sea level, the atmosphere provides 14.7 psi of holdown force. However, for every 1000 feet of elevation you lose about .49 psi of holdown force. For example, a workpiece held down by a 12" x 12" square area would effectively have 2116.8 lbs of hold down force at sea level.

Vacuum is measured in inches of mercury (hg). A perfect vacuum is 30 inches of mercury (30 hg) but the maximum we can draw is 29.92Hg at sea level under perfect conditions. See the following table for examples.

| Altitude (FT) | Atmospheric Pressure (psi) | Maximum Vacuum Attainable (Inches Hg) |
|---------------|----------------------------|---------------------------------------|
| 0 | 14.7 | 29.92 |
| 1000 | 14.16 | 28.86 |
| 2000 | 13.66 | 27.82 |
| 3000 | 13.16 | 26.82 |
| 4000 | 12.68 | 25.84 |
| 5000 | 12.22 | 24.89 |
| 6000 | 11.77 | 23.98 |
| 7000 | 11.33 | 23.09 |
| 8000 | 10.91 | 22.22 |
| 9000 | 10.50 | 21.38 |
| 10000 | 10.10 | 20.57 |
| 11000 | 9.71 | 19.79 |
| 12000 | 9.34 | 19.02 |
| 13000 | 8.97 | 18.29 |
| 14000 | 8.62 | 17.57 |
| 15000 | 8.28 | 16.88 |

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