Work Supports

Frequently Asked Questions

Why do I need to use work supports?

The basics of 3-2-1 fixturing require that three points define the plane of part location. When machining, a floating location support (work support) is an easy solution to a part requiring additional support beyond the three basic locators. You can use a work support anywhere a “screw jack” can be used. It adjusts faster, without distortion and without dependence on the operator’s “feel”.

A work support will provide solid adjustable support for parts ranging from fragile circuit boards to massive airplane spars, without inducing distortion. They provide “automatic” adjustment and lock-up giving repeatable, predictable results. Eliminate the risk of “forgetting” a clamp or the time consumption of manually adjusted alternatives.

What is required to use work supports?

Work supports will work in most applications where part distortion, chatter, ringing or poor surface finish results are present. Work supports can decrease most of the problems caused by part movement during machining. All you need to use them is an application, space to insert the support, power supply and plumbing. They can work wonders to improve part quality and reduce scrap and rework. Work supports are often used on fixtures where parts are manually clamped but require support.

After the plunger is advanced, hydraulic pressure is used to “squeeze” the sleeve against the plunger, “locking” it securely against the part. It then becomes a solid support holding the part with the capacity indicated on the appropriate chart.

Can I use work supports without other hydraulic clamps?

Yes, work supports are often used when manual clamps are used. They reduce the dependence on “operator feel,” speed operations by locking multiples with a single adjustment and speed load time dramatically even when used with manual clamps to secure the part. In fact, one of Vektek’s most effective applications was one where the part was bolted in place over a tower equipped with several work supports. They supported the inside of a case while the outside was being machined. Our work supports reduced the part loading time from over five hours to just under one hour in this application.

Explain the difference in the three advance types and why I might want to use one over the other.

Spring advance is typically used when the part is heavy enough to depress the spring loaded plungers. This can be used on most applications.

Air advance is normally used when a part is very light, fragile or heavy contamination is present. Light weight parts may require clamping before the supports can be advanced. Air advance supports can be “fine tuned” to lightly touch the part without distorting or unseating it before lockup. When heavy contamination (fines, heavy flood coolant or corrosives) is present, use of a full time “air spring” continuously purges the sleeve/plunger contact area to keep it clear.

Fluid advance is recommended to avoid the introduction of a second power medium. This is significant when palletizing fixtures where quick connectors must be connected to add an air control circuit to the fixture. Fluid advance supports should not be used if advance force control is required.

What is the “breather port” and can I plug it or use it for my hydraulic connection?

All Spring Advance Work Supports require the exchange of air to and from the atmosphere. Air Advance Work Supports have no breather, but use a continuous air pressure to advance the plunger into position. Fluid Advance Work Supports have an internally vented plunger that gives trapped air between the hydraulic advance piston and the support plunger a place to escape.

What type of part will typically need work supports? Are there any I should avoid?

Parts with thin webs, unusual shapes or unsupported structures that must be held within a plane are likely candidates for work supports. There are no parts to be avoided. Cast iron and aluminum parts produce large quantities of fines that can infiltrate cavities and reduce work support life (air advance should be considered for both).

What about deflection?

Deflection is a difficult topic to discuss relative to work supports. Let’s start with a support measured in its free state with “no load, not locked.” This will establish a “no load, no lock zero” point. When a support is pressurized, there is a small amount of growth. As it is loaded the support “deflects” back closer to the “no load, no lock zero.” As the support approaches full capacity it may deflect below the “no load, no lock zero” slightly. Other factors which may be more important include: the surface finish of the part where it is contacted, the shape and contact area of the end effector, the actual cutter or load force applied to the part, and the repeatability from part to part or lot to lot. For this reason, Vektek has chosen to publish only repeatability data on our work supports.

Can I lay my work support on its side?

Normally, you can lay the work support on its side. As long as you are not using a heavy end effector or unusually side loading your support, the physical orientation should not affect performance. If you have a question about a specific application, please give us a call.

I have an interrupted cut that is going to take place over the top of a work support. The forces involved are transmitted directly down on the support. The cutter is a large straddle milling cutter and the cut is interrupted because I am sawing through webs on a cast part. How do I size the work support for this application?

You are correct, the impact of the re-entry of the cutter teeth to the next web of your part will create an interruption and may cause an impact beyond the normal horsepower, depth of cut and tooth loading formulae. In this case, you should plan to allow no less than 2X more capacity than necessary on the work support. Impact loading from interrupted cuts can require increasing capacity beyond this safety measure, hence up to 5:1 times calculated force in the event of interrupted cuts may be appropriate. Keep in mind that if you are tapping with a ball peen hammer the upsizing is less than if you are impact loading with a full striking blow, but often both create forces well beyond the size of the hammer.

Do I need to use a torque wrench and socket when installing cartridge work supports?

Yes, a torque wrench and a 6-point socket is required. If you use an open end, adjustable or box end wrench you increase the chances of damaging the thread, roundness of the support sleeve or damaging the seals causing leakage between the sleeve and body. Please use an appropriate socket, torque wrench and care when installing cartridge work supports.
Standard Features

- Highly repeatable, repeats position \( \pm 0.005 \) mm.
- Built in fluorocarbon wipers keep chips and debris out and reduces the chance of plunger/sleeve sticking or binding.
- May be bolted up or down to mount directly on fixture plates. May also be installed through a hole and locked in place using retaining collars for easy adjustment.
- Cartridge mount work supports available in all styles for installation into customer machined cavities.

Standard G1/4 and G1/8 porting is located in the base of the support for easy access to both the clamp and vent ports (bronze filter installed before shipping).

VektorFlo® Metric work supports last longer and stand up to harsh environments and abuse better than other models.

Proprietary wiper and seal designs reduce contamination and drag for longer lasting, better performing work supports.

Special corrosion resistant plungers and sleeves reduce the tendency to stick.

Special large diameter plungers and sleeves provide greater rigidity.
Replace older models with higher capacity cartridges or complete with bases!

Normally retracted plungers do not interfere with part loading. Advance them with hydraulic pressure, exerting only spring force to bring the plunger into contact with your part. Hydraulic pressure then automatically sequences, "freezing" the plunger properly against the part.

- Available in 8.9 kN or 17.8 kN capacity.
- Order with base or cartridge only.
- Ventless configuration and built-in wipers protect the plunger movement from chips and debris.
- Up to 3X capacity of competitor’s version.
- Uses Vektek’s BHC technology to guard against corrosion.
- O-Ring face seal design makes machining cavities easier.

Standard G Series and alternate O-Ring manifold face seal is located in the base of the support for bolt down installation. The base can be removed for direct cartridge mounting.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Direct Replacement for Older Model</th>
<th>Support Capacity (kN)*</th>
<th>Mounting Style***</th>
<th>Contact Force (N)</th>
<th>Stroke (mm)</th>
<th>Base Dimensions (mm)</th>
<th>Retracted Height (mm)</th>
<th>Working Oil Capacity** (cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0706-10</td>
<td>41-0071-04</td>
<td>8.9</td>
<td>Cartridge</td>
<td>4.4 - 26.7</td>
<td>6.5</td>
<td>N/A</td>
<td>54.2</td>
<td>0.8</td>
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<tr>
<td>41-0806-10</td>
<td>41-0070-04</td>
<td>8.9</td>
<td>Base/Manifold</td>
<td>N/A</td>
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<td>41-0708-10</td>
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<td>Cartridge</td>
<td>13.5 - 44.5</td>
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<tr>
<td>41-0808-10</td>
<td>41-0070-03</td>
<td>17.8</td>
<td>Base/Manifold</td>
<td>N/A</td>
<td>82.5</td>
<td>N/A</td>
<td>3.3</td>
<td></td>
</tr>
</tbody>
</table>

* Support capacities are listed at 350 Bar maximum pressure. Support capacities for other pressures are shown in the fluid advance High Capacity and Part Present Sensing load capacity chart.

** Restrict flow rate to a maximum of 2.13 l/min.

*** For cartridge mount models, see cavity dimensions drawings in this catalog section.

**** For complete dimensions, see fluid advance work supports (Section B)

NOTE: The maximum system back-pressure a fluid advance work support can overcome is 0.7 bar (0.07 MPa). Returning back-pressure greater than 0.7 bar (0.07 MPa) may cause slow or failed retraction.
Now up to 3X competitive capacity at 350 Bar!

Plungers stay retracted during part loading. Hydraulic pressure advances the plunger exerting only spring force as it makes contact with the part. Hydraulic pressure then automatically sequences, “freezing” the plunger, to properly support the part.

- Available in 8.9 kN or 17.8 kN capacity.
- Order with base or cartridge only.
- Ventless configuration and built in wipers protect the plunger movement from chips and debris.
- Four bolt base is compatible with Vektek in port flow control and in port sequence valves.
- Uses Vektek’s BHC technology to guard against corrosion.
- O-Ring face seal design makes machining cavities easier.

Standard G Series porting and alternate O-Ring manifold face seal is located in the base of the support for bolt down installation. The base can be removed for direct cartridge mounting.

**Specifications**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Support Capacity (kN)*</th>
<th>Mounting Style***</th>
<th>Contact Force (N)</th>
<th>Stroke (mm)</th>
<th>Base Dimensions (mm)</th>
<th>Retracted Height (mm)</th>
<th>Working Oil Capacity (cm³)**</th>
<th>Port X Depth for Optional In-Port Valves****</th>
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</thead>
<tbody>
<tr>
<td>41-0706-10</td>
<td>8.9</td>
<td>Cartridge Base/Manifold</td>
<td>4.4 - 26.7</td>
<td>6.5</td>
<td>N/A</td>
<td>54.2</td>
<td>0.8</td>
<td>N/A G1/8 X 15.16</td>
</tr>
<tr>
<td>41-0806-20</td>
<td>17.8</td>
<td>Cartridge Base/Manifold</td>
<td>13.5 - 44.5</td>
<td>6.5</td>
<td>37 x 36 x 36</td>
<td>71.2</td>
<td>72.5</td>
<td>N/A</td>
</tr>
<tr>
<td>41-0708-10</td>
<td>8.9</td>
<td>Cartridge Base/Manifold</td>
<td>4.4 - 26.7</td>
<td>6.5</td>
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<td>41-0808-20</td>
<td>17.8</td>
<td>Cartridge Base/Manifold</td>
<td>13.5 - 44.5</td>
<td>6.5</td>
<td>37 x 44 x 44</td>
<td>71.2</td>
<td>72.5</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Support capacities are listed at 350 bar (35 MPa) maximum pressure. Support capacities for other pressures are shown in the fluid advance High Capacity and Part Present Sensing load capacity chart.

** Restrict flow rate to a maximum of 2.13 l/min.

*** For cartridge mount models, see cavity dimensions drawings in this catalog section.

**** In-Port Valves require the use of manifold mount ports.

NOTE: The maximum system back-pressure a fluid advance work support can overcome is 0.7 bar (0.07 MPa). Returning back-pressure greater than 0.7 bar (0.07 MPa) may cause slow or failed retraction.
Work Supports

High Capacity, Fluid Advance

Cartridge Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
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<tr>
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<td>14.3</td>
<td>3.6</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td>41-0808-20</td>
<td>89.5</td>
<td>6.5</td>
<td>38.1</td>
<td>37</td>
<td>9.3</td>
<td>30</td>
<td>19</td>
<td>4.8</td>
<td>44</td>
<td>44</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>41-0806-20</td>
<td>13.5</td>
<td>27</td>
<td>13.5</td>
<td>4.5</td>
<td>8</td>
<td>28</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-0808-20</td>
<td>16.5</td>
<td>33</td>
<td>16.5</td>
<td>5.5</td>
<td>9.5</td>
<td>27</td>
<td>17</td>
<td></td>
<td></td>
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</tbody>
</table>

For proper sealing, the mating surface must be flat within 0.08 mm with a maximum surface roughness of 1.6 µm Rs.

Fluid Advance

<table>
<thead>
<tr>
<th>Support Force (kN)</th>
<th>Input Pressure (bar) 0-35 MPa</th>
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<tbody>
<tr>
<td>0</td>
<td>70</td>
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<tr>
<td>4</td>
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<td>8</td>
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<tr>
<td>12</td>
<td>280</td>
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<tr>
<td>16</td>
<td>350</td>
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</table>

ILMV100720

*Chart data for both High Capacity and Part Present Sensing models.
**Fluid Advance High Capacity Cartridge Cavity Check List**

- Confirm capacity of item selected.
- Note the sealing surface finish requirements.
- Minimum depth specification represents the nominal depth of the standard Vektek base dimension.
- Confirm cavity drawing is appropriate for the model number used.
- Note specified thread depth when cutting threads.
- When using a bottoming tap tool, modifications may be required.
- When hand tapping threads, perpendicularity is essential.

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**Dimensions**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>M</th>
<th>V</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0706-10 M26 x 1.5</td>
<td>54.2</td>
<td>6.5</td>
<td>43.7</td>
<td>6.3</td>
<td>5.5</td>
<td>23</td>
<td>14.3</td>
<td>3.6</td>
<td>23.3</td>
<td>13</td>
<td>M8 x 1.25 x 5</td>
<td></td>
</tr>
<tr>
<td>41-0708-10 M35 x 1.5</td>
<td>72.5</td>
<td>6.5</td>
<td>58.1</td>
<td>8.5</td>
<td>9.3</td>
<td>30</td>
<td>19</td>
<td>4.8</td>
<td>29.7</td>
<td>17</td>
<td>M12 x 1.75 x 6.5</td>
<td></td>
</tr>
</tbody>
</table>

VEKTEK METRIC FLUID ADVANCE HIGH CAPACITY CARTRIDGE MOUNT WORK SUPPORT CAVITY DIMENSIONS

**Dimensions**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Installation Torque</th>
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<tr>
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<td>24.5</td>
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<td>5</td>
<td>3.2</td>
<td>50 N-m</td>
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<tr>
<td>41-0708-10 M35 x 1.5</td>
<td>14.5</td>
<td>33.5</td>
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<td>5</td>
<td>4.7</td>
<td>70 N-m</td>
<td></td>
</tr>
</tbody>
</table>
**NEW**

Confirm part is present and contacted even on as-cast surfaces!

Plungers stay retracted during part loading while air flow travels through the work support. Hydraulic pressure advances the plunger exerting only spring force as it makes contact with the part. This closes the integral air valve to indicate part is present and contacted. Hydraulic pressure then automatically sequences, “freezing” the plunger.

- Available in 8.9 kN or 17.8 kN capacity.
- Order with four bolt base or cartridge only.
- Once support is locked, air sensing positively confirms both contact and part present.
- Use Vektek's Air Sensing Control Kit 45-0824-00 for easy setup.
- Four bolt base is compatible with Vektek In The Port Flow Control and In The Port Sequence Valves.
- Uses Vektek’s BHC technology to guard against corrosion.
- O-Ring face seal design makes machining cavities easier.
- Max air operating pressure is 1 bar.

Standard G-Series porting and alternate O-Ring manifold face seal is located in the base of the support for bolt down installation. The base can be removed for direct cartridge mounting.

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Support Capacity (kN)*</th>
<th>Mounting Style***</th>
<th>Contact Force (N)</th>
<th>Stroke (mm)</th>
<th>Base Dimensions (mm)</th>
<th>Retracted Height (mm)</th>
<th>Working Oil Capacity (cm³)**</th>
<th>Port X Depth for Optional In-Port Valves****</th>
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</thead>
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<tr>
<td>41-0706-10-PS</td>
<td>8.9</td>
<td>Cartridge Base/Manifold</td>
<td>4.4-26.7</td>
<td>6.5</td>
<td>N/A 37 x 36 x 36</td>
<td>57.8</td>
<td>0.8</td>
<td>N/A G1/8 x 15.16</td>
</tr>
<tr>
<td>41-0806-20-PS</td>
<td>17.8</td>
<td>Cartridge Base/Manifold</td>
<td>13.5-44.5</td>
<td>6.5</td>
<td>N/A 37 x 44 x 44</td>
<td>77.2</td>
<td>3.3</td>
<td>N/A G1/8 x 15.16</td>
</tr>
</tbody>
</table>

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** Restrict flow rate to a maximum of 2.13 L/min.

*** For cartridge mount models, see cavity dimensions drawings in this catalog section.

**** For complete dimensions, see fluid advance work supports (Section B)

**NOTE:** The maximum system back-pressure a fluid advance work support can overcome is 0.7 bar (0.07 MPa). Returning back-pressure greater than 0.7 bar (0.07 MPa) may cause slow or failed retraction.
Work Supports

Part Present Sensing, High Capacity, Fluid Advance

Cartridge Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
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<th>J</th>
<th>K</th>
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<thead>
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<th>T</th>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>AA</th>
<th>AB</th>
<th>AC</th>
<th>AD</th>
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<tr>
<td>41-0806-20-PS</td>
<td>4.5</td>
<td>8</td>
<td>28</td>
<td>11</td>
<td>M8 x 1.25 x 5</td>
<td>G1/8</td>
<td>10.5</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>M5 x 8</td>
</tr>
<tr>
<td>41-0808-20-PS</td>
<td>5.5</td>
<td>9.5</td>
<td>27</td>
<td>17</td>
<td>M12 x 1.75 x 6.5</td>
<td>G1/8</td>
<td>10.5</td>
<td>10</td>
<td>13</td>
<td>M5 x 8</td>
<td></td>
</tr>
</tbody>
</table>

For proper sealing, the mating surface must be flat within 0.08 mm with a maximum surface roughness of 1.6 µm Rₐ.

Part Present Sensing Work Support Air Flow

- Workpiece
- POPPET CLOSED & AIR PRESSURE BUILDS
- WORK SUPPORT ADVANCES
- OIL FEED HOLE
- AIR FEED HOLE
**Fluid Advance Part Present**

**Sensing Cartridge Mount**

**Cavity Check List ✓**

- Confirm capacity of item selected.
- Note the sealing surface finish requirements.
- Minimum depth specification represents the nominal depth of the standard Vektek base dimension.
- Confirm cavity drawing is appropriate for the model number used.
- Note specified thread depth when cutting threads.
- When using a bottoming tap tool, modifications may be required.
- When hand tapping threads, perpendicularity is essential.

---

### Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
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<th>M</th>
<th>V</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0706-10-PS</td>
<td>M26 x 1.5</td>
<td>57.8</td>
<td>6.5</td>
<td>43.7</td>
<td>6.3</td>
<td>5.5</td>
<td>23</td>
<td>14.3</td>
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<td>77.2</td>
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</tr>
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**Work Supports**

Part Present Sensing, High Capacity, Fluid Advance

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**Patent Pending**
VEKTEK FLUID ADVANCE PART PRESENT SENSING
HIGH CAPACITY CARTRIDGE MOUNT WORK SUPPORT CAVITY DIMENSIONS

Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>Installation Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0706-10-PS</td>
<td>M26 x 1.5</td>
<td>9</td>
<td>24.5</td>
<td>13.5</td>
<td>27</td>
<td>5</td>
<td>3.2</td>
<td>2</td>
<td>9.8</td>
<td>50 N-m</td>
</tr>
<tr>
<td>41-0708-10-PS</td>
<td>M35 x 1.5</td>
<td>14.5</td>
<td>33.5</td>
<td>21.5</td>
<td>36</td>
<td>5</td>
<td>4.7</td>
<td>3</td>
<td>12</td>
<td>70 N-m</td>
</tr>
</tbody>
</table>
For Supporting Most Parts

- Spring Advance Work Supports are available in four capacities 4.4 kN to 55.6 kN. Each providing excellent support for light weight or heavy parts and in "hog out" applications.
- When using the 3-2-1 locating principles, you often need additional support for a 4th, 5th or even more areas on your part. A work support gives you “floating” locators which won’t interfere with your 3, 2 or 1 fixed stops. Clamp opposite your locators then lock the supports.
- Even clamp over the supports if needed.
- Spring extended plungers maintain contact with the part during loading exerting only spring force against the part; then hydraulically “freezes” the plunger without exerting any additional force on the part.

Proprietary wiper and seal design reduces contamination and drag for longer lasting and better performing work supports.

Stainless steel plunger and sleeve assemblies help guard against corrosion in most machining environments.

Special corrosion-resistant plungers and sleeves reduce the tendency to stick.

Precision fitted plunger/sleeve assemblies allow VektorFlo® Metric work supports to begin locking at lower pressures and building support faster.

If spring advance supports must be used in flood coolant environments (we recommend air advance) attach tubing to the vent port and route to clean-dry air to keep coolant from being drawn in and becoming sticky on internal faces.

Standard G Series porting and alternate O-Ring manifold face seal is located in the base of the support for bolt down instillation. The base can be removed for direct cartridge mounting.

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model No.</strong></td>
</tr>
<tr>
<td>41-0050-07</td>
</tr>
<tr>
<td>41-0050-06</td>
</tr>
<tr>
<td>41-0050-05</td>
</tr>
</tbody>
</table>

* Support capacities are listed at 350 bar (35 MPa) maximum operating pressure.

** Minimum fluid pressure is 52 bar (5.2 MPa).**

Note: DIN ISO 2768 T1 and T2 not applicable.

For minimum operating pressures and resulting capacities, see Model Capacity Charts.
## Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0050-07</td>
<td>M26 x 1.5</td>
<td>56</td>
<td>6.5</td>
<td>25</td>
<td>24</td>
<td>5.5</td>
<td>23</td>
<td>16</td>
<td>M8 x 1.25 x 7.5</td>
<td>33.5</td>
<td>16.5</td>
<td>24.5</td>
</tr>
<tr>
<td>41-0050-06</td>
<td>M35 x 1.5</td>
<td>70.5</td>
<td>9.5</td>
<td>33</td>
<td>25</td>
<td>6.5</td>
<td>30</td>
<td>20.5</td>
<td>M10 x 1.5 x 11.5</td>
<td>41.5</td>
<td>20.5</td>
<td>30</td>
</tr>
<tr>
<td>41-0050-04</td>
<td>Ø 57</td>
<td>111</td>
<td>12.5</td>
<td>68.5</td>
<td>25</td>
<td>12.5</td>
<td>50</td>
<td>38</td>
<td>M12 x 1.75 x 15</td>
<td>63.5</td>
<td>31.5</td>
<td>52.5</td>
</tr>
<tr>
<td>41-0050-05</td>
<td>Ø 76</td>
<td>133</td>
<td>19</td>
<td>76</td>
<td>31.5</td>
<td>12.5</td>
<td>70</td>
<td>51</td>
<td>M16 x 2 x 20</td>
<td>89</td>
<td>44.5</td>
<td>73</td>
</tr>
</tbody>
</table>

For proper sealing, the mating surface must be flat within 0.08 mm, with a maximum surface roughness of 1.6 µm Ra. 

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### Work Supports

#### Spring & Air Advance Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>ΔP (bar)</th>
<th>Support Force (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0050-07</td>
<td>12</td>
<td>44.5</td>
</tr>
<tr>
<td>41-0050-06</td>
<td>15</td>
<td>59</td>
</tr>
<tr>
<td>41-0050-04</td>
<td>26</td>
<td>76</td>
</tr>
<tr>
<td>41-0050-05</td>
<td>36.5</td>
<td>97</td>
</tr>
</tbody>
</table>

For input pressures ranging from 0 to 35 bar.

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### Input Pressure (bar) (0-35 MPa)

#### Spring & Air Advance

- **4.4 kN**
- **11 kN**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>41-0051-07</th>
<th>41-0051-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>41-0050-07</td>
<td>41-0050-06</td>
</tr>
<tr>
<td></td>
<td>41-0061-07</td>
<td>41-0061-06</td>
</tr>
<tr>
<td></td>
<td>41-0060-07</td>
<td>41-0060-08</td>
</tr>
</tbody>
</table>

**ILMV100507 REV D**

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### Input Pressure (bar) (0-35 MPa)

#### Spring & Air Advance

- **33 kN**
- **55 kN**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>41-0050-04</th>
<th>41-0050-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>41-0060-04</td>
<td>41-0060-05</td>
</tr>
</tbody>
</table>

**ILMV100508 REV D**
### Cavity Check List

- Confirm capacity of item selected.
- Note the sealing surface finish requirements.
- Minimum depth specification represents the nominal depth of the standard Vektex base dimension.
- Confirm cavity drawing is appropriate for the model number used.
- Note specified thread depth when cutting threads.
- When using a bottoming tap tool modifications may be required.
- When hand tapping threads, perpendicularity is essential.
- The ‘fluid’ passage is located on the outer diameter and ‘vent’ passage is in the center.

### Cartridge Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0051-07</td>
<td>M26</td>
<td>47.5</td>
<td>6.5</td>
<td>40.5</td>
<td>7.5</td>
<td>5.5</td>
<td>23</td>
<td>16</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>41-0051-06</td>
<td>M35</td>
<td>62</td>
<td>9.5</td>
<td>49.5</td>
<td>8.5</td>
<td>6.5</td>
<td>30</td>
<td>20.5</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

All dimensions are in millimeters.

NOTE: DIN ISO 2766 T1 and T2 not applicable
Work Supports

Spring Advance Cavity Dimensions

Model No. 41-0051-07, Spring Advance, 4.4 kN
Model No. 41-0061-07, Air Advance, 4.4 kN
(Tighten to 40.5 Nm torque)

Work Support Cavity Dimensions
M35 x 1.5-6H
Minor Ø33.5 ± 0.1
Ø 0.05A

SECTION A-A

7±0.5 (Thread Length)
16.4 Minimum
3.8 Minimum

Work Support Cavity Dimensions
Model No. 41-0051-06, Spring Advance, 11 kN
Model No. 41-0061-06, Air Advance, 11 kN
(Tighten to 40.5 Nm torque)

Detail B
SCALE 4.000
2X Ø2.4 Minimum to intersection of Ø2.7

Detail B
SCALE 4.000
2X Ø2.4 Minimum to intersection of Ø3.5

0.05
0.05A

0.05
0.05A
For Supporting Fragile Parts Or Use In Harsh Environments

- Air Advance Work Supports are available in four capacities 4.4 kN to 55.6 kN. Each providing excellent support for light weight or heavy parts and in “hog out” applications.
- Normally retracted plungers provide additional clearance for part loading. Advance them with air pressure, exerting ONLY the force needed to “kiss” the part, then “freeze” the plunger hydraulically.
- Heavier attachments may be used with air advance supports because of their additional air powered lifting/contact force.

Special large-diameter plungers and sleeves provide greater rigidity.

Continuous flow of air, can serve as an “air spring” and be left connected during machining. This “air spring” effect helps keep harsh contaminants from getting between the plunger and sleeve. This is an excellent support choice when using double acting cylinders. You should observe air bubbles escaping around the plunger when used in this manner.

Standard G Series porting and alternate O-Ring manifold face seal is located in the base of the support for bolt down installation. The base can be removed for direct cartridge mounting.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Support Capacity* (kN)</th>
<th>Mounting Style***</th>
<th>Hydraulic Connection</th>
<th>Maximum Contact Force** (N)</th>
<th>Stroke (mm)</th>
<th>Base Dimensions (mm)</th>
<th>Retracted Height (mm)</th>
<th>Oil Capacity (cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-0060-07</td>
<td>4.4</td>
<td>Base</td>
<td>G1/8 Port Thru Cavity</td>
<td>17.5</td>
<td>6.5</td>
<td>24 x 33.5 x 44.5</td>
<td>49.5</td>
<td>0.16</td>
</tr>
<tr>
<td>41-0061-07</td>
<td>11</td>
<td>Cartridge</td>
<td>G1/8 Port Thru Cavity</td>
<td>35.5</td>
<td>9.5</td>
<td>25 x 41.5 x 59</td>
<td>61</td>
<td>0.33</td>
</tr>
<tr>
<td>41-0060-06</td>
<td>33.4</td>
<td>Base</td>
<td>G1/8 Port</td>
<td>89</td>
<td>12.5</td>
<td>25 x 63.5 x 76</td>
<td>98</td>
<td>1.64</td>
</tr>
<tr>
<td>41-0060-05</td>
<td>55.6</td>
<td>Base</td>
<td>G1/8 Port</td>
<td>253.5</td>
<td>19</td>
<td>31.5 x 89 x 97</td>
<td>114</td>
<td>4.26</td>
</tr>
</tbody>
</table>

* Support Capacities are calculated at 350 bar (35 MPa) maximum operating pressure. Support capacities at other pressures are shown on the Capacity Charts.

** The maximum air pressure recommended for advancing the plunger is 1.7 bar (0.17 MPa). Order air regulator Model No. 50-0440-01 with a 0-1.7 bar (0.17MPa) output, to more precisely control plunger advance force.

*** For cartridge mounted models, see the Cartridge Mount Cavity dimensions.

NOTE: Minimum fluid pressure is 52 bar (5.2 MPa)

DIN ISO 2768 T1 and T2 not applicable.
For proper sealing, the mating surface must be flat within 0.08 mm with a maximum surface roughness of 1.6 µm Ra.