

***If you suspect that your TMC isolation system is leaking (most often evidenced by going through air/nitrogen tanks too quickly), this guide will help you to find and fix the problem. Illustrated photos are of a CleanBench Lab Table, but items shown are common for all TMC isolation systems.***

As with any troubleshooting exercise, the objective is to start with the easiest and most obvious potential leak points, and work towards the hardest.

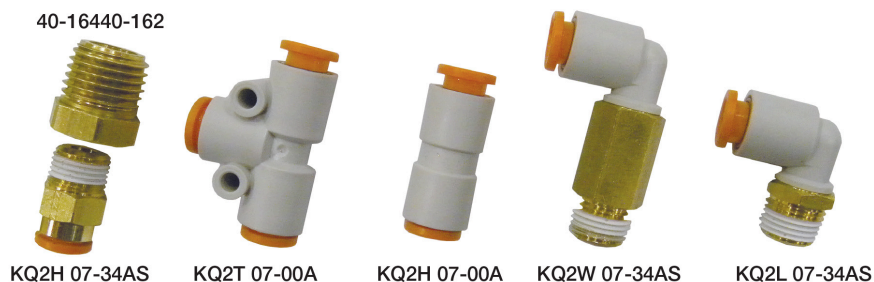
So we suggest you use this order:

1. All fittings.
2. Air filter.
3. Height control valves.
4. The isolation modules.
5. Plumbing schematic.

## 1. All fittings

The fittings you'll find on your system are shown in Figure 1 below:

**FIGURE 1**



Male Connector, Part Number: KQ2H 07-34AS

This fitting has a male “1/8 NPT” (National Pipe Thread) on one end and a “press-lock” connection (red or orange plastic) for 1/4” OD flexible tubing on the other end. It is provided as one of two fittings supplied to connect to your air source and at the INPUT port of the supplied air filter & the three height control valves.

1/4x1/8 Brass Reducing Bushing, Part Number: 40-16440-162

This fitting is supplied in case the 1/8 NPT thread on the Male Connector is too small for the output fitting of your air source. It has a female 1/8 NPT thread on one end and a male 1/4 NPT on the other end.

Male Elbow, Part Number: KQ2L 07-34AS

Male 1/8 NPT on one end, and the press-lock on the other. This is found at the OUTPUT ports of the air filter and the three height control valves.

Union Tee, Part Number: KQ2T 07-00A

There are three “T’s” in a 4 isolator system, two coming from the output side of the filter to distribute the air to the input ports of the three height control valves, and one more to distribute the air from

the output port of the “Master” valve (one of the three valves will be controlling two legs) to its own leg and to its “Slave” leg. All three ends of the Tee are press-lock.

Connector (Straight Union), Part Number: KQ2H 07-00A

This fitting is a splice for ¼” OD flexible tubing. It is used to connect the short length of special tubing that goes into each leg (at TMC, we call this short length of tubing a “pigtail”) to the tubing coming from the output port of its controlling height control valve. Press-lock fittings at each end.

Extended Male Elbow, Part Number: KQ2W 07-34AS

This fitting is the input at each leg, the tubing connecting to it comes from the output side of its controlling height control valve. It is “extended” to allow it to reach through the outer post of the leg to the isolation module inside. It has a male 1/8 NPT thread where it goes into the module and a press-lock at the outer end to accept the tubing.

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### **FINDING THE LEAK:**

The most reliable method is by using a commercially available (Home Depot, Lowes, any industrial supply retailer, etc.) leak detection fluid. You simply coat the connections with the fluid (make sure you coat both ends of the fitting). Any leak will result in visible bubbling of the fluid. A solution of soapy water can also work, though not as dependably.

### **FIXING LEAKS AT THE FITTINGS:**

If you detect a leak at the threaded end of the fitting, first try just tightening the fitting in its threaded connection. If that doesn’t work, then remove the fitting (after de-pressurizing the system), clean the threads, and reapply sealing tape (commonly called “Teflon” tape) to the male threads, and re-install the fitting.

If the leak is at a press-lock coupling, remove the tube from the coupling. This is done (again, in a de-pressurized system) by pushing the outer red button in (towards the fitting). This will release the grip the fitting has on the tube. Then you can pull the tube from the fitting. Inspect the end. It should be reasonably square and smooth (including the outside diameter). If necessary, cut it back to meet these conditions, and re-install the tube into the fitting. The method of doing this is to push the tube into the red button until you feel it bottom out, then give the tube a light pull outward. This will seat the internal seal of the fitting.

Re-pressurize and re-test with the leak detection fluid. If there is still a leak, then you will have to replace the fitting. You can order the fitting(s) from TMC, using the part numbers mentioned above. Call (800-542-9725) or email ([service@techmfg.com](mailto:service@techmfg.com)) for prices.

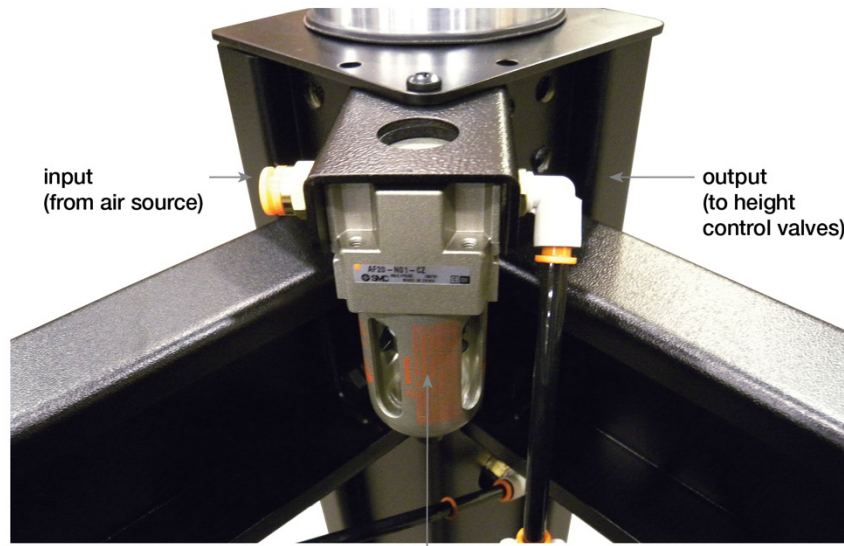
NOTE: Make sure you check the fittings at your source (tank, compressor, building air)

## 2. Air Filter

Part Number 86-18770-01

The Air Filter you'll find on your system is shown in Figure 2:

**FIGURE 2**



86-18770-01

Using the leak detection fluid described above, check the joint where the clear collection bowl joins the main body of the filter, and around the release valve at the bottom of the bowl.

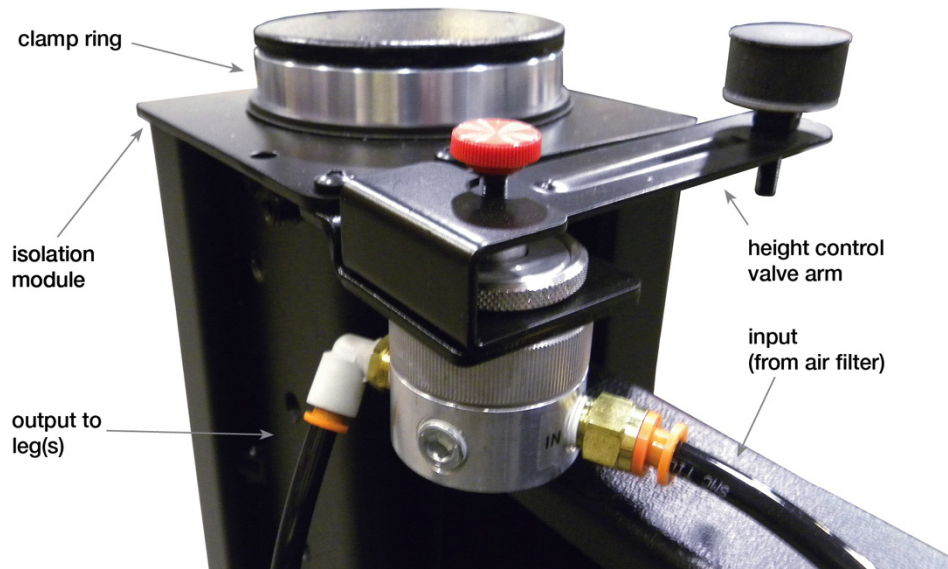
If either area is leaking, there is no fix, and you will have to replace the filter.  
Call (800-542-9725) or email ([service@techmfg.com](mailto:service@techmfg.com)) for prices.

### 3. Height Control Valves

Part Number: 86-19888-00

The Height Control Valves you'll find on your system are shown in Figures 4 and 5):

**FIGURE 3**



If the leak is at one of the height control valves or an isolation module, the leak can be narrowed down to the specific leg as follows:

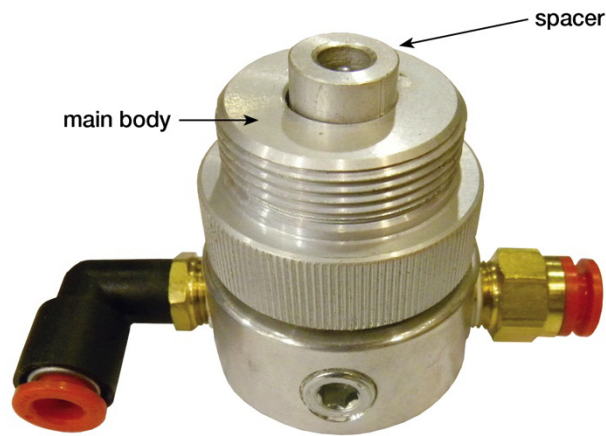
Make sure that the top is floating correctly, then shut off the air supply at the source and carefully watch to see which isolator deflates the soonest. Now you know which leg has the leak, and you just need to determine whether it is the height control valve or the isolation module.

This will be described below:

**FIGURE 4**



**FIGURE 5**

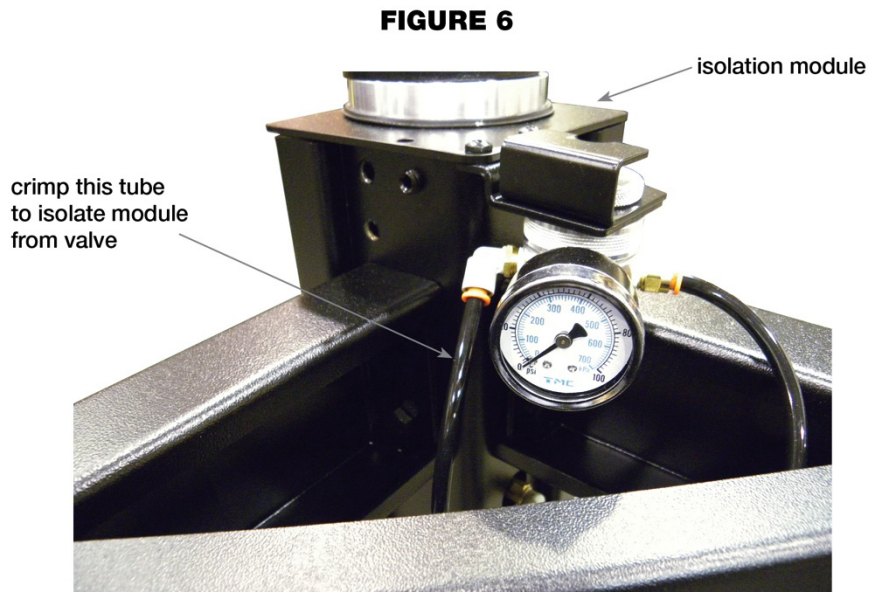


height control valve  
with externals removed  
for clarity

## 4. Isolation Modules

Isolation Module, Part Number: 64-35008-01

Isolation Module on your system is shown in Figures 3, 6, & 7:



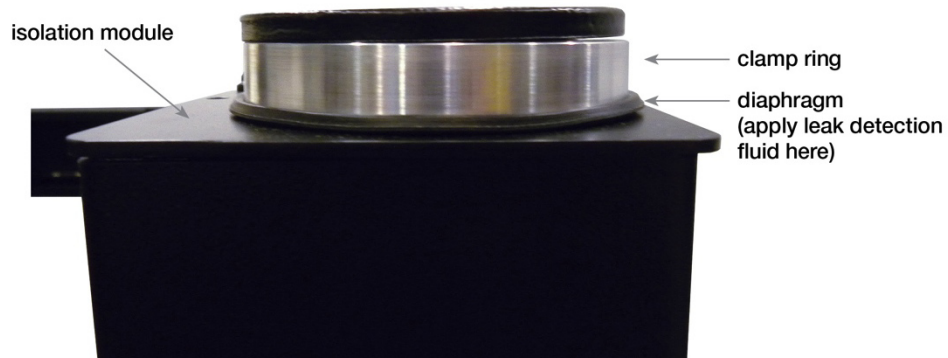
Pressurize the system and make sure the table is floating correctly. Go to the leg that deflated the soonest. You'll notice a tube going from the output port of the valve ("Male Elbow", see Figure 6) to the input of the leg itself ("Extended Male Elbow", see above). Find a point in that tube where you can bend it enough to crimp it:

NOTE: If there is not be enough slack in the line to accomplish this, you could temporarily replace this tube with a longer piece (you'll have to re-install the original one, as it is necessary for the proper operation of the system) in order to perform this test.

Shut off the air supply again, and see if this leg is still the first to deflate. If it does not, then the problem is in the valve. Apply the leak detection fluid at all 4 ports on the periphery of the valve (one input port, marked "IN" and 3 output port, no marking). One output port will be going to a leg (or legs), and the other 2 will either have plugs or a pressure gage. These are all 1/8 NPT threads, and leaks can be fixed as described earlier. If there is an obvious leak coming from where the valve spacer protrudes through the main body of the valve, or if no leaks are detected, then the problem is internal to the valve. And the recommended fix, at this point, is to replace the valve assembly. Contact TMC for pricing.

If this leg is still the first one to deflate, then the problem is in the module. There is one more thing you can try. Un-crimp the tube and use the leak detection fluid you used on the fittings to coat the outside of the diaphragm where the clamp ring seals it against the module. See Figure 7.

**FIGURE 7**



If the fluid bubbles here, then you may still be able to fix the leak by tightening the Allen Head screws that attach the clamp ring to the module. They may have loosened slightly over time, and tightening them could fix the leak.

HINT: You will need to adjust the height control valve higher to get enough clearance to get at these screws. We recommend that before you do this, you adjust the supply pressure to no more than 10 psi above the pressure in the leg (the reading on the pressure gage).

If there is no leak here, or if tightening the screws does not seal the leak, then you will have to replace the module. You will have to get the top out of the way (because the module comes straight up to remove it), but once you do, the rest of the replacement process is straight-forward. Call (800-542-9725) or email ([service@techmfg.com](mailto:service@techmfg.com)) for prices.

### Other background information and hints:

A. Each valve & isolator is fully tested for leaks before shipping, but it's important to note that a properly functioning system is not completely "closed", and will use air. Even ideally, an isolation system will use air at the following rates.

Standard Valves: 0.00015 CFM per psi of isolator (valve gage) pressure.

Precision Valves: 0.0015 CFM per psi of isolator pressure.

As you can see, the air usage for precision valves is 10 times higher than for standard valves. For this reason, we recommend that only house air be used for systems with precision valves.

B. Make sure none of the height control valves are plumbed backwards. As stated earlier, the input port of the valve is engraved with the letters "IN", and will have the "Male Connector" straight fitting. The output port will have the "Male Elbow" fitting and will not be marked.

C. Make sure that all three valve lever arms are set at a nominally horizontal position. An arm angled upward may indicate that the red pressurizing screw has been turned too far and the valve is jammed open.

## 5. Plumbing schematic

