Newport.

Compact Isolation Modules Installation Instructions

Congratulations on your purchase of the most advanced pneumatic isolation system in a compact, low profile, package. The installation of your system is quick and easy.

The isolation modules are shipped fully assembled and tuned from the factory. You need only install them into your product, or place them under your equipment, and connect the air supply to realize the benefits of state of the art isolation.

1.0 Check all parts

Inspect your system to make sure there is no shipping damage. Also, ensure that you have the following parts as shown in Figure 1.

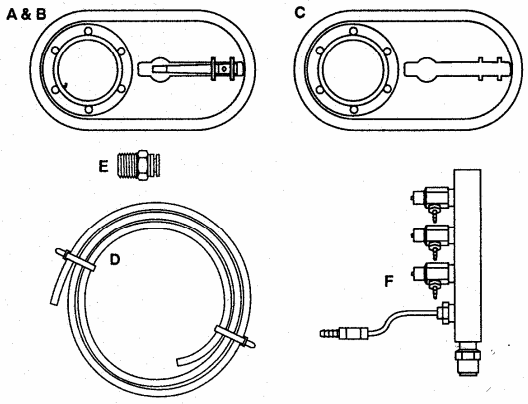

Figure 1

A. Isolation module with leveling valve — 2 per system
B. Slave driver module — 1 per system
C. Slave isolation module without leveling valve — 1 per system
D. ¼ in. Tubing
E. ¼ in. Tubing to ¼ in. NPT connector
F. Air distribution manifold
G. ⅛ in. Tubing (not shown)

Note: If you ordered the Schrader valve version, Model No. SCM-225 or USCM-225, you will receive all slave isolation modules (Item C) without leveling valves, a Schrader valve air distribution manifold, 6 mm adjustment tool and a high capacity hand air pump. You will not receive the connector.

2.0 Module Installation

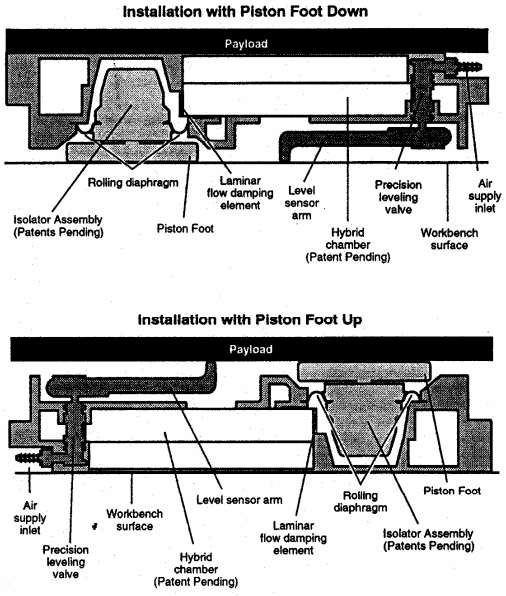

Figure 2a

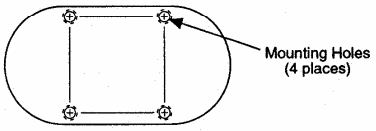

Figure 2b

2.1 General Requirements

a. The isolation modules may be installed with the piston foot either up or down. (Figure 2a)

b. The isolator module housing must be fully supported by a smooth surface to prevent housing damage when the isolator is under load.

c. The isolator module piston foot and level control arm must contact a smooth surface parallel to the surface supporting the module housing.

d. For "one-off" installations, the module housings may be held in place with double stick tape or secured by means of the four through-holes around the perimeter of the isolator (Figure 2b). Contact Newport applications engineering for specialized mounting requirements.

e. The Compact Isolation modules feature Newport's patented self centering piston design. In order to take advantage of this feature, the piston feet must be free to slide relative to the surface they bear against. After the piston feet have self-centered, they may be secured in place with double stick tape. Contact Newport for OEM applications.

f. Position the isolation modules such that each carries approximately the same load. Do not exceed approximately 56 lbs per module.

g. The payload center of gravity should be no higher above the piston feet than ½ the distance between the closest modules (Figure 3a) and within the triangle shown in Figure 3b. Higher center of gravity locations can result in system oscillation.

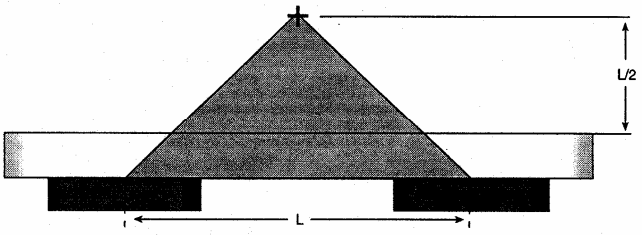

Figure 3a — Payload center of gravity should be no higher than 1/2 the shortest spacing between isolators.

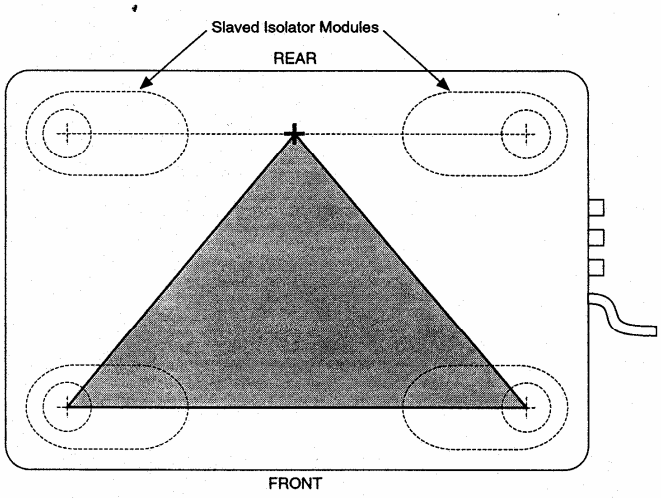

Figure 3b — Ensure that the load center of gravity is within the triangle. Note that isolator modules which are slaved together act as one larger module located at the center of force of the slaved modules.

h. Mount the air distribution manifold such that the needle valves are accessible for adjustment. For Schrader valve versions, make sure that the threaded part of the valve is accessible for pump attachment.

3.0 Air Line Connections

WARNING

The Air Distribution Manifold supplied by Newport must be used. It contains a pressure relief valve to ensure that no more than 40 psi can be applied to the isolation modules. Defeating the purpose of the pressure relief valve can result in overpressurization and potential bursting of the modules, leading to possible injury.

a. Interconnect the modules and the air distribution manifold using the ¼ in. tubing as shown in Figure 4. The slave modules are daisy chained to the modules with leveling valves as shown in Figure 4.

b. Schrader valve option compact isolation modules are connected in the same way such that modules are daisy chained in three groups of one or more modules each.

c. If you ordered a Schrader Valve version of the basic Compact Isolation Module system, Model No. SCM-225, or USCM-225, all modules will be slaves (i.e. no leveling valves), and are interconnected to the off-center barb fittings using the supplied plastic "T" fittings and tubing.

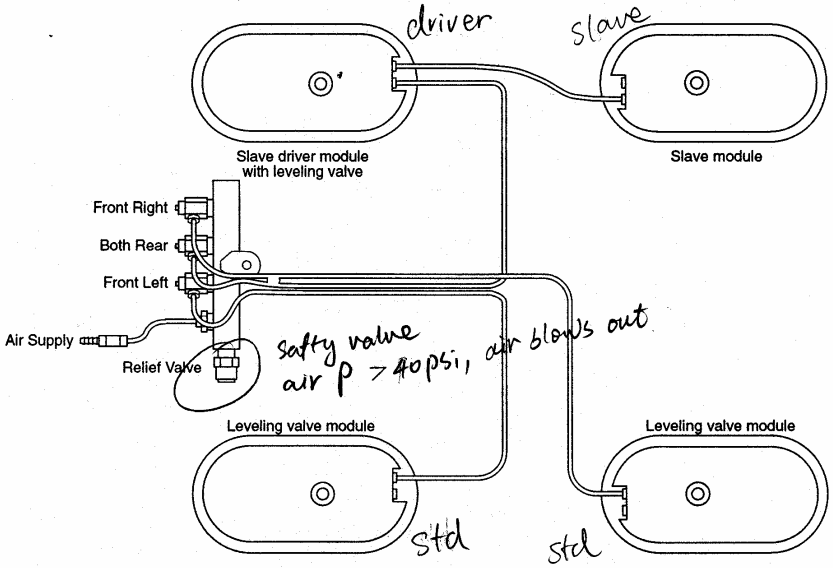

Figure 4 — Air line connections (Top view of isolator modules)

4.0 Connection to the Air Supply

a. Connect the air distribution manifold to a **regulated** air supply (see Warning above) as shown in Figure 5.*

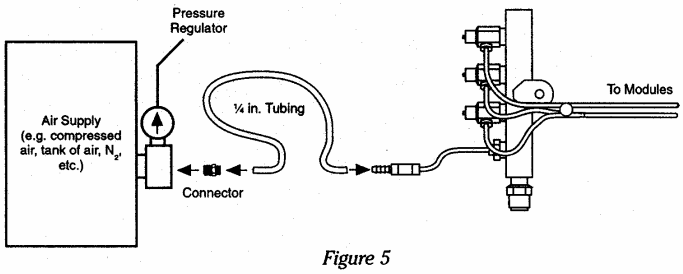

Figure 5

The air supply can be a compressed air system (such as Newport's Model ACMP air compressor) or compressed gas, such as air or nitrogen, from a standard cylinder. Carbon dioxide is not recommended as it can cause freezing in the isolators. Put your payload (i.e. microscope, analytical balance, or other equipment) on your platform and slowly increase supply air pressure until the unit begins to float (usually about 15 to 30 psi).

Note: If you ordered the Compact Isolation System Model No. SCM-225 or USCM-225, (the Schrader Valve versions), please follow the instructions in Section 7.0 to float your system and ensure optimum vibration isolation performance.

5.0 Air Pressure Optimization

In order to fully benefit from the high performance levels that the Compact Isolation Modules provide, it is necessary to optimize the air pressure in the isolators. The ideal pressure for your application (i.e. payload) occurs when the air pressure is about 5–10 psi higher than that required to just float your payload.

After connecting the air supply, place your payload so that the center of gravity falls within the shaded area shown in Figure 3b. Then slowly increase the pressure until the platform begins to float (e.g. one edge rises). Note the pressure at which this occurs, then add 5-10 psi.

You may need to further adjust the pressure to optimize performance under the conditions described in Section 8.0.

6.0 System Adjustment

CAUTION

Do not adjust needle valves or height adjustment screws until you read the following:

As previously mentioned, your Compact Isolation System unit has been tuned at the factory. It is usually not necessary to adjust the needle valves (Figure 6) or height adjusting screws. However, you may want to adjust the unit under the following conditions:

a. If the system oscillates quickly, reduce the supply air pressure. If it oscillates slowly the center of gravity of your payload may be too high. If changing these conditions does not stop the oscillation, close the valves all the way and then open the two front valves ⅛ turn and the rear valve ¼ turn. If the system still oscillates, close the valves incrementally until the oscillation stops.

b. If the Isolation System will not float at all, confirm that your total payload does not exceed 56 lbs per module, is centered on the modules, and that you have 40 psi air pressure available. If necessary open the needle valves in ⅛ turn increments until the system floats.

c. You can speed up the re-leveling of your Compact Isolation Modules after they have been disturbed by opening the needle valves ⅛ turn at a time. Be careful, because if they are opened too far the system will oscillate.

d. There is a floating height adjustment screw in each of the three height control arms under the modules. **These screws are set at the factory. We suggest they be adjusted only if you are sure there are no other solutions to floating height problems.** If the unit floats too high or too low so that vertical travel is impeded, these screws may be turned ⅛ turn at a time to adjust the floating height. Clockwise raises the unit, counter clockwise lowers it.

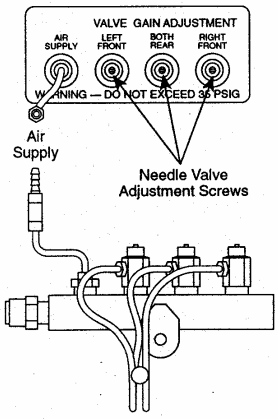

Figure 6

7.0 Schrader Valve Installation and Adjustment

Note: Float your system platform with the payload in place. The payload center of gravity must fall within the boundaries described in Figure 3.

1. Set your payload upon the compact isolation system as shown in Figure 7.
2. Remove the cap from the air supply Schrader valve.
3. Open all three needle valves. (CCW to open, CW to close). This will deflate the isolators.
4. With the isolators completely deflated, measure the distance between the support structure and the payload platform (dimension "A")
5. Cut a gage from paper or cardboard which is 0.12 inches (3 mm) higher than dimension "A". This will be used in setting the optimum fill pressure.
6. Attach the hand pump to the Schrader valve and inflate the isolators until your platform and payload "top out". To ensure all isolators are topped out, depress and release each corner of the platform. When the system is topped out, you can feel each isolator hit its upstop when it is released.
7. Close and hand tighten all three needle valves. Remove the pump from the Schrader valve.
8. Hold the cardboard height gage under the rear edge of the platform as shown in Figure 7. Observe the clearance between the platform and the gage and *slowly* open the "Both Rear" (center) needle valve (Figure 6). The rear edge of the platform will begin to lower. Slowly lower the rear of the platform until it barely touches the top of the gage, then close the valve. The platform should float so that the gage just slips under the platform. Move the gage to the left front and right front in turn and repeat the process using the "left front" and "right front" needle valves.

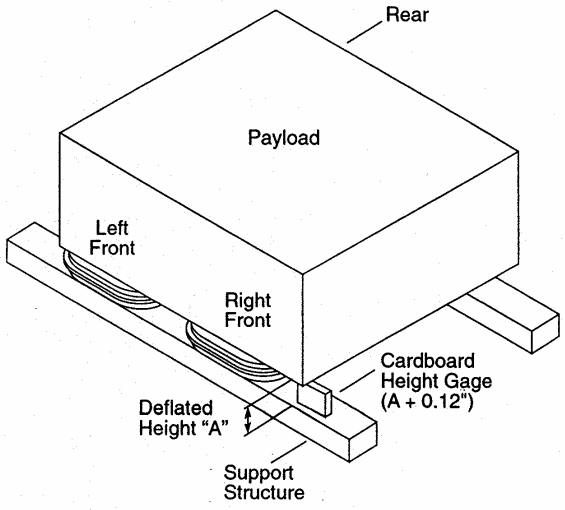

Figure 7 — Adjustment of isolator inflation for Schrader Valve version.

9. If one side of the platform drops too low, reconnect the pump, open the appropriate needle valve, pump up the affected isolators, and repeat steps 7 and 8.

10. After the initial adjustment, fine level adjustments can be made as required to ensure a level platform.

11. **Securely tighten all three valves with the supplied 6 mm adjustment wrench after all adjustments are complete.**

8.0 Troubleshooting

Observations	Recommendations
1. Unit does not float	a. Confirm load is less than 56 lbs per module
	b. Confirm air supply pressure and hose connections
	c. Increase air pressure to 40 psi max
	d. Review adjustments in Section 5.0 and 6.0 (or Section 7.0 for Schrader Valve Version).
2. After floating the system with air, the unit oscillates (i.e. rocks back and forth and will not readily become stable).	a. Close (turn clockwise) all three needle valves all the way and then open the front valve ⅛ turn and the real valve ¼ turn.
	b. Confirm that the payload center of gravity is no higher than half the distance between the closest isolators.
	c. Reduce supply air pressure until system just floats and relevels quickly.
3. Unit sags to one side	a. Confirm that the payload center of gravity is within the shaded area in Figure 3.
	b. Increase air pressure to 40 psi max.
	c. Adjust the floating height adjustment screws per Section 6.0, paragraph "d".

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