INSTALLATION MANUAL

FOR OPTICAL TABLES

OSDVIO-Series

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Introduction

Congratulations on the purchase of your OptoSigma® optical table. Following these installation steps will help ensure successful and long-term performance of your optical table over its lifetime.

Safety

Pinch Points

Caution should always be used when working with pneumatic isolators. Floating a payload on pneumatic isolators may cause dangerous “pinch points”.

Though care is taken to avoid designing pinch points, certain areas should always be avoided (placing fingers in or under an inflated air piston for example).

Each final table installation is unique. Your installed, populated table may have pinch points created by your unique setup and the equipment being supported.

Compressed Air

Tables are normally floated using compressed air from an air compressor, nitrogen or air from a high-pressure cylinder. Compressed air can generate large forces and should always be handled with great care. Your compressor or cylinder may provide additional safety information.

Heavy Table Tops

Table-tops can be massive. Some weigh as much as several tons. Smaller tops should be lifted by groups of individuals that are physically qualified. Do not attempt to lift a tabletop unless you are completely confident that you are able to do so safely. Larger tops require professional rigging equipment, procedures, and personnel.

Unpacking

Crates

Table tops, workstations and frames are shipped and delivered in crates. The crates are made with skids to provide enough space underneath to allow access with a fork lift or hand truck. The top of the crate can be separated from the base for easy access to the contents within.

Removing Crate Top

The top of the crate can be detached from the base of the crate by removing the hex head screws located along the bottom perimeter of the crate box. The screws have an 8-mm hex head and can be removed with a like-sized socket and ratchet wrench. Smaller crate tops can be safely lifted by groups of individuals that are physically qualified. Do not attempt to lift larger crate tops without adequate equipment, working space, personal, and safety precautions.

System Air Supply Requirements

Pneumatic Self-Leveling Vibration Isolators

The pneumatic self-leveling vibration isolator support frames require a continuous flow of compressed filtered air or nitrogen. A preinstalled pressure regulator is included with the pneumatic self-leveling support frames. Normally, a positive upstream air pressure to the table should be maintained. That is, it is not necessary to “shut-off” the air supply to the table when you leave the lab for the night or weekend.

Air Supply

An air supply having a 40-80 PSI operating pressure is needed to activate the pneumatic vibration isolator support frames. This air supply should be clean and dry for best long-term results. Filtering is unnecessary if you are using bottled nitrogen, air or are using some other form of clean compressed air. Since the airflow rate for an installed table is very small, accumulation of debris or water in the valves or isolator is unlikely. However, a single large contaminate in the leveling valve can cause leakage or other problems.

Leveling Valves

Optical tables with self-leveling vibration isolators have four pneumatic piston assemblies to keep the table top level to gravity and achieve vertical vibration isolation. Three of these piston assemblies incorporate pneumatic leveling valves, however the fourth piston assembly shares a leveling valve with one of the other three piston assemblies.

Piston Isolators

Improved Isolation Performance

Most vibration isolation systems incorporate a pneumatic piston assembly to achieve vertical vibration isolation.

Piston assemblies are inherently more stable at any height in their normal travel than other types of air mounts. They will not set to one side or develop a sideways lean due to diaphragm stresses and deformations.

They help control complex rocking modes in the isolated load by incorporating a horizontal flexure at the same plane as the principle vertical support. This ensures that horizontal isolation is virtually as efficient as vertical isolation.

Air Supply: Piston vibration isolators require a continuous supply of compressed air or nitrogen to operate properly. For a complete discussion of the air supply requirements, see System Air Supply Requirements in Introduction section.

Installation Procedure

1. **Movement & Loading**
   a. Engage the rolling casters on the table support frame by retracting the leveling feet. To do this, loosen the lock nut on the leveling feet, rotate each leveling foot using a spanner (30 mm) until the frame is resting on the rolling casters and is free to move.
   b. Move table top & frame to required place for installation.
   c. Put the table top on the frame so that its position is centered on the frame.
   d. Roll the optical table to its final working location.
   e. Fix the position of the table by reengaging the leveling feet to make contact with the floor. A gap of 5 mm should exist between the floor and the caster wheel. Level the frame to gravity by rotating each of the leveling feet as needed. Use a bubble level or other similar meter on the crossbar of the frame to check it is level.

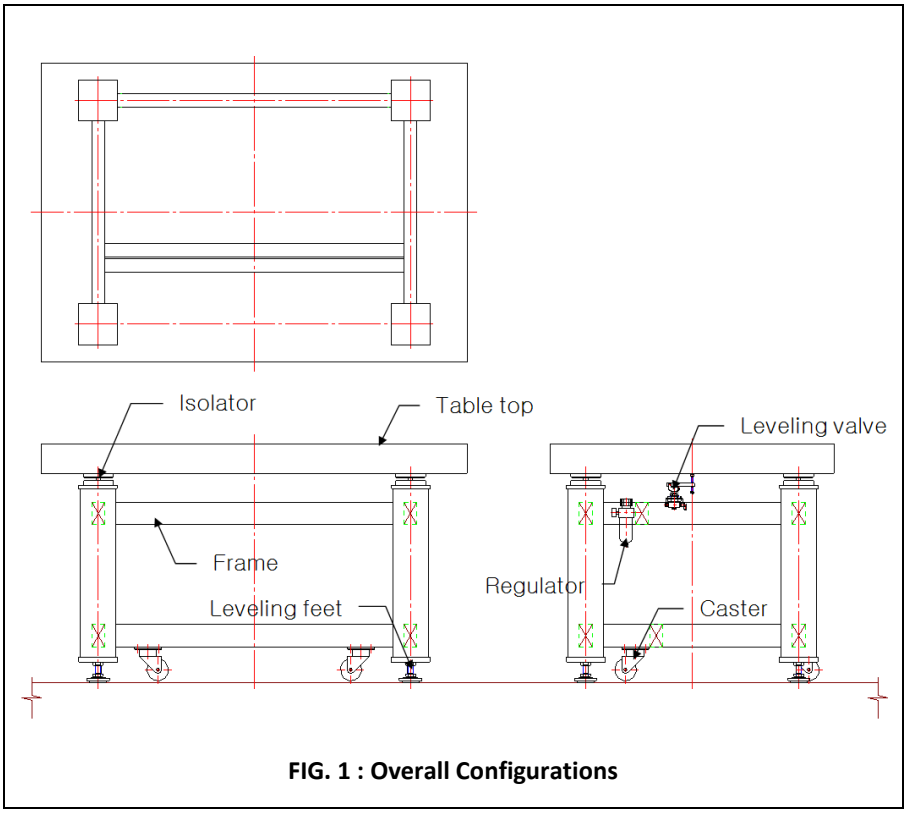

FIG. 1 : Overall Configurations

f. After leveling work, fasten the lock nut so that the leveling feet will not move.

g. Put your equipment on the table top paying attention to the center of it's weight.

h. For systems with Rigid Level Supports, skip to the end of these instruction steps to section, Systems with Rigid Leveling Supports.

2. Air supply input connection

a. Plumb tubing between air supply and system's input pressure regulator/air filter as appropriate.

b. To connect tube, insert the air tube firmly into the self-sealing fitting on the pressure regulator as shown in figure 2 below. Pull the tube back to ensure it has made an air-tight connection. For most systems, the diameter needed for the air tubing is 6-mm OD.

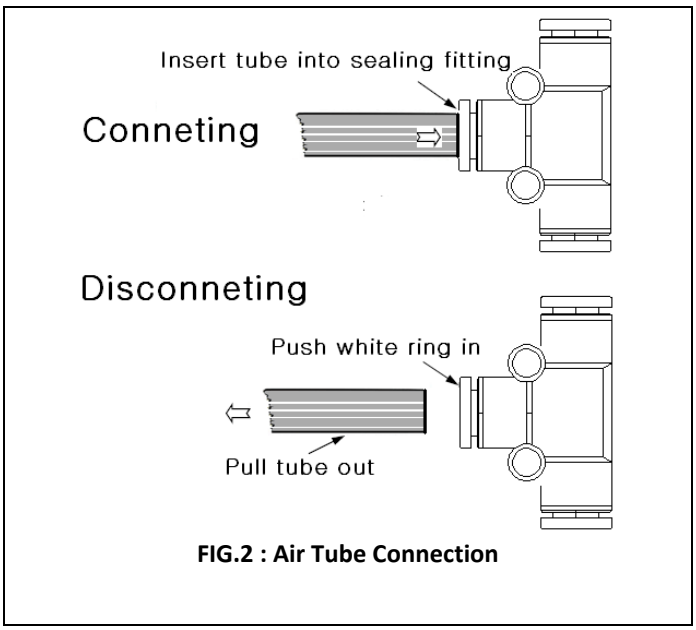

FIG.2 : Air Tube Connection

c. To disconnect tube, push the red cylinder with your thumb and forefinger toward the center of the fitting body while pulling the tube in the opposite direction as shown in figure below. Whenever disconnecting the air tubing from the fitting, make sure any residual pressurized air is released from the system.

3. Isolator level adjustment

a. Adjust the FINE ADJUST BOLT, as identified in figure 3, raising the tip until it is in slight contact with the tabletop.

b. Repeat above steps for remaining two isolators.

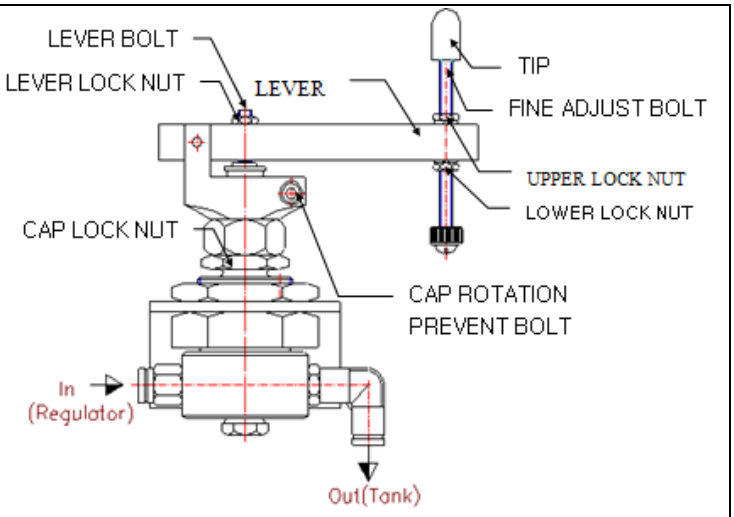

FIG.3 : Leveling Valve

4. Piston adjustment

a. Turn on the main air supply and set pressure regulator to approximately 60 PSI**.** After a short delay, all the support plates should lift away from the clamp rings and the tabletop will be floating.

b. If necessary, rotate the FINE ADJUST BOLT, raising tip until it is in slight contact with the tabletop.

c. Continue to adjust isolator height by turn fine adjust bolt.

d. Check to see that the top of the piston and the top surface of the clamp ring are parallel as shown in figure 4. Piston below. Sliding or tapping support plate towards the low spot of the piston will correct any tilt.

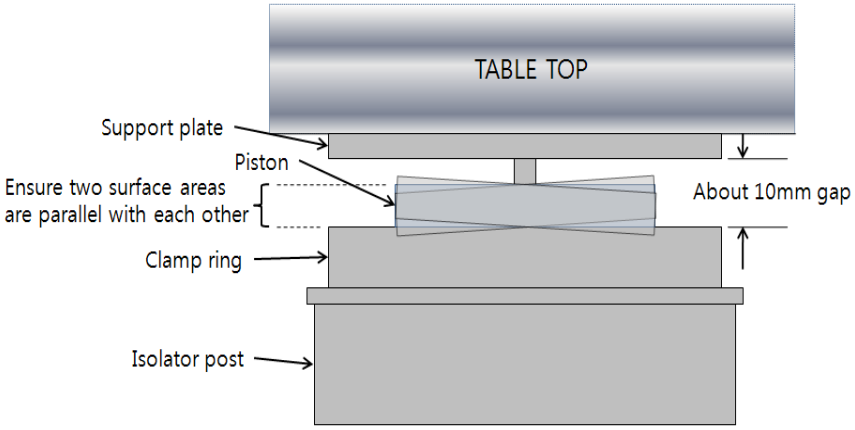

FIG.4 : Piston

e. Adjust the angle of the LEVER arm as shown in figure 3. such that it is parallel to the bottom of the table top. This is done by adjusting the LEVER BOLT. Once the LEVER arm is adjusted properly, then fasten LEVER LOCK NUT.

f. Repeat above steps for another two leveling valves.

g. Using a bubble level, align the table top so it is level to gravity by rotating the FINE ADJUST BOLT. Making this adjustment will release or add air to the pneumatic isolator pistons.

h. Tighten all *locking nuts* on the leveling valves: fine adjust bolt, lever lock nut, cap lock nut, and cap rotation prevent bolt for all three valves as shown in fig 3. Leveling Valve.

i. The installation and setup of your optical table is now complete. For a trouble shooting checklist and guide, see below.

Check List and Troubleshooting

#	Observed Problem	Check / Question
1	The table top did not float	Is the air supply working properly?
		Is the leveling valve's fine adjusting bolt tight?
		Is the level bolt of leveling valve tight?
		Is the air pressure too low on the regulator?
		Is there any leakage from any of the air supply tubes?
		Is the installed instruments on the table top too heavy load compared with specified load capacity?
		Is any leakage from the leveling valves or regulator?
2	The table top is not level or stable	Is the lever bolt of leveling valve tight?
		Is the leveling valve's fine adjusting bolt tight?
		Is there any leakage from any of the air supply tubes?
		Is the table top or equipment on the table top in contact with other objects which could prevent the table top from self-leveling?
		Is there any leakage from isolators or diaphragms?
		Does equipment on the table top have a center of gravity that is too high?
3	Vibration is not being isolated from the table top	Is there any leakage from any of the air supply tubes?
		Did you adjust the compressed air pressure?
		Is the table top or equipment on the table top in contact with other vibration-producing objects including pumps, fans or electrical cables?
		Is there any leakage from isolators or diaphragms?
		Is the leveling valve working appropriately? To check this, press once on the corner of the table top and see if it re levels itself.
4	Contact and questions	When using the optical table system, Feel free to contact below stated address. Tel : +1-949-851-5881 Email : sales@optosigma.com

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