DAEIL SYSTEMS

Optical Table

DVIO Series

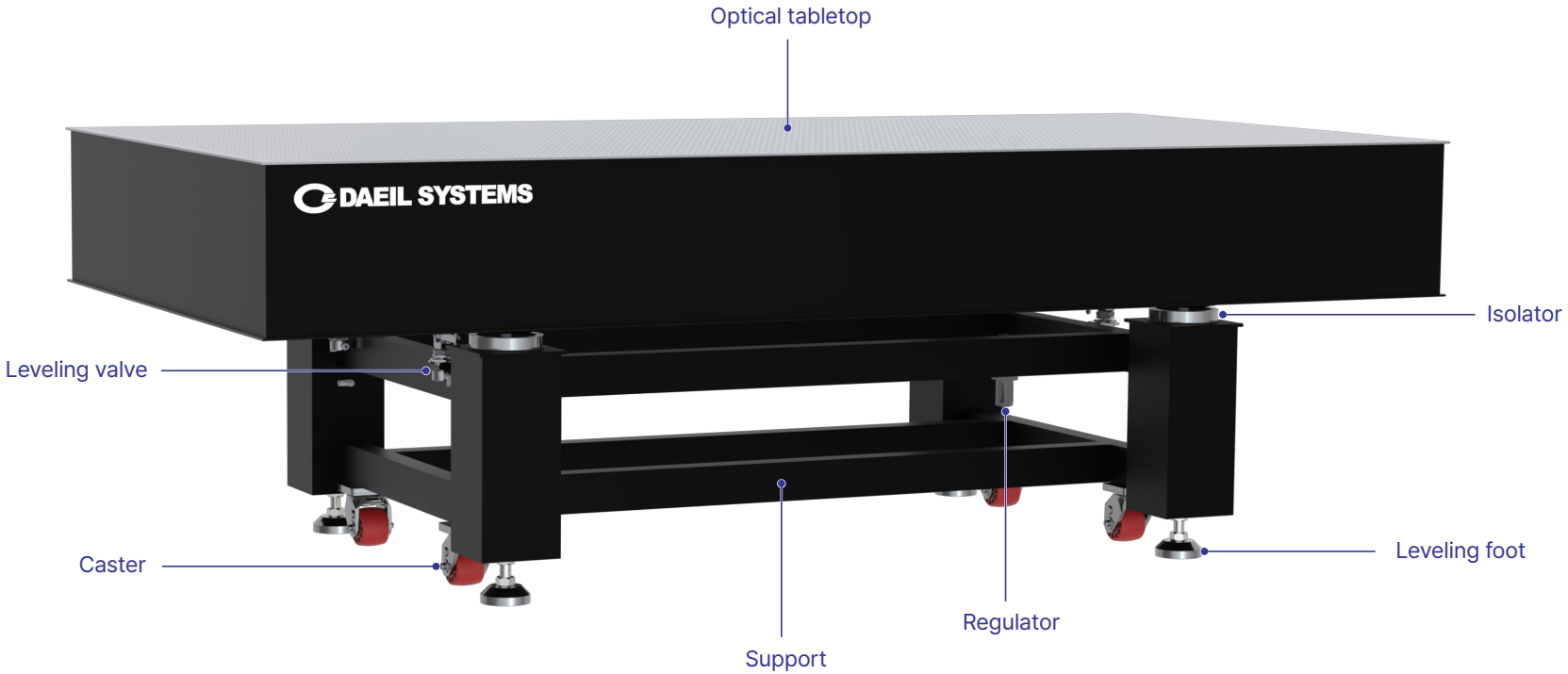
User Manual

Table of Contents

Safety Information

- An optical tabletop and a support are not fastened together and are separated. Please be cautious as the optical tabletop may shift and fall off during movement.
- Do not move the optical table while the isolators are inflated.
- Do not tilt or apply heavy impact to the optical table, as this could damage the components.
- Do not push down on the optical table intentionally or frequently, as this could damage the components.
- When unloading heavy equipment from the optical table, ensure that the isolators are fully deflated. Pushing heavy equipment across the optical table while the isolators are floating may cause the optical tabletop to shift from its level position, potentially damaging the components.
- Do not adjust the leveling valves before injecting air into the optical table.
- Do not disassemble the isolator and leveling valves without explicit instructions provided by DAEIL SYSTEMS.
- Use compressed air or nitrogen gas (N_2) to prevent air leakage.

Product Overview



Optical Tabletop

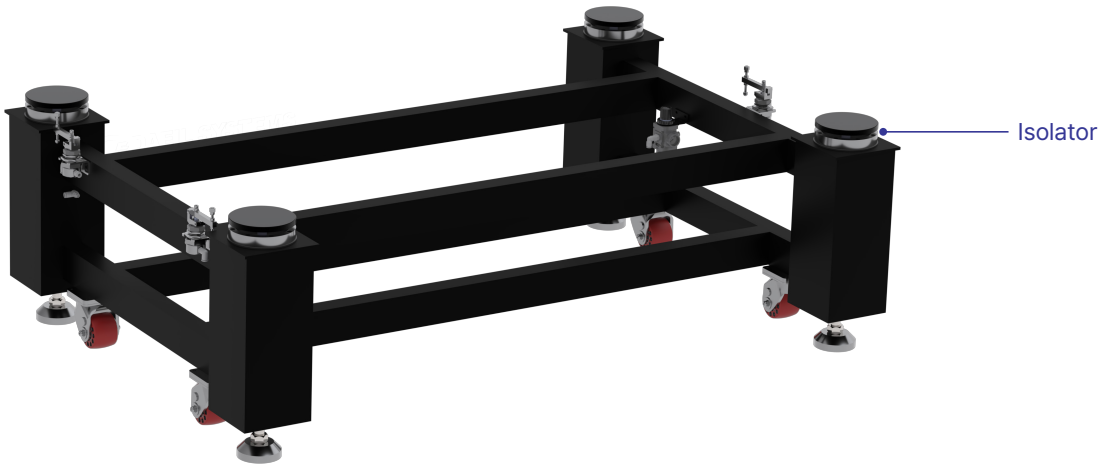
The optical tabletop features a high-density steel honeycomb core, enhancing both static and dynamic rigidity. Its sandwich structure, composed of a steel honeycomb core, a stainless steel top plate, and a steel bottom plate bonded with special adhesive resin, provides high stiffness and flatness and minimizes the displacement amplitude when the external force is applied. Precisely processed M6 tapped holes on the surface for mounting various instruments.

Note

Thicknesses of 25 mm, 50 mm, and 100 mm are referred to as optical breadboards, while 200 mm, 300 mm, and 400 mm thicknesses are known as optical tabletops.

Pneumatic Support (Tie-bar type)

The pneumatic support consists of pneumatic isolators designed to isolate sensitive equipment on the optical tabletop from floor vibrations. The tie-bar pneumatic support is a welded steel frame that does not require on-site assembly.



Leveling Foot

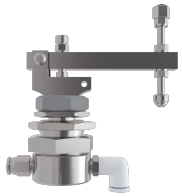
Leveling feet allow for precise level adjustments of the optical table.

Caster

Casters are attached to the support, providing enhanced mobility and ease of movement. The casters allow the optical table to be relocated and positioned easily at various sites.

Leveling Valves

Each optical table has three leveling valves that automatically relevel the optical tabletop with a leveling repeatability of ±1.0 mm. An optional upgrade is available, providing a higher leveling repeatability of ±0.05 mm.

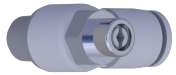


Regulator

A regulator maintains a consistent air pressure level within the isolators.

Speed Controller Valve

A speed controller valve enables precise regulation of airflow within the isolators, improving stability and reducing rocking issues.



Required Tools • 8 mm Wrench • 30 mm Wrench • Spirit level

How to Set Up

1. Placing optical tabletop

1.1 Place the optical tabletop at the center of the isolators using an appropriate lifting tool.

2. Leveling optical table

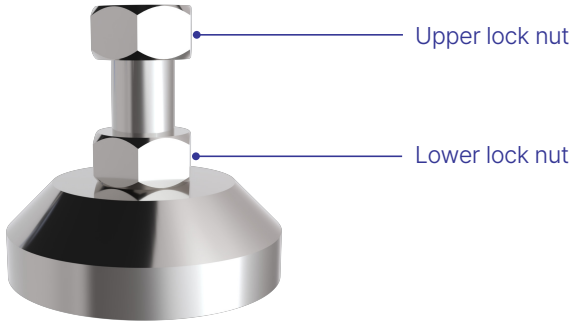
2.1 Place a spirit level on the optical table to check its level.

2.2 Turn the lower lock nut clockwise by hand.

2.3 Use a 30 mm wrench, continue turning the lower lock nut clockwise until the leveling foot is lower enough to lift the casters off the floor.

2.4 Adjust each leveling foot to level the optical table, while continually checking with the spirit level.

2.5 Once the optical table is level, use the 30 mm wrench to turn the upper lock nut counterclockwise, securing it in place.

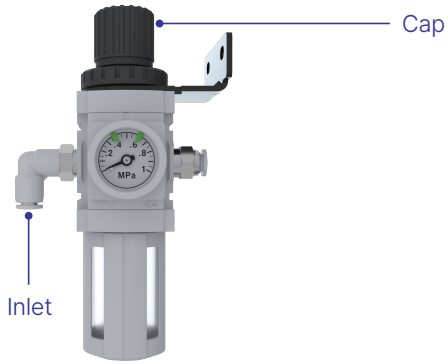


3. Connecting air line

3.1 Connect an air line to the regulator's air inlet.

4. Air pressure setting

4.1 Turn on the air compressor and set the air pressure to between 0.04 MPa (4 bar) and 0.06 MPa (6 bar) by adjusting the regulator cap.



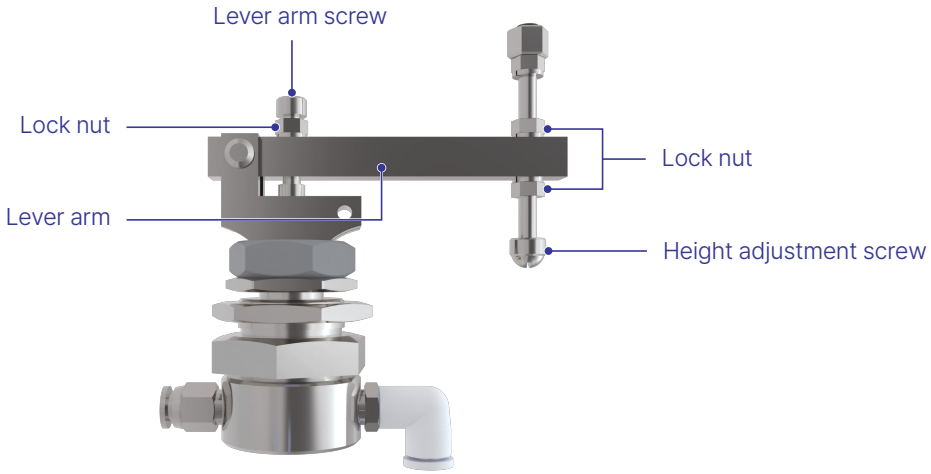
5. Adjusting leveling valves

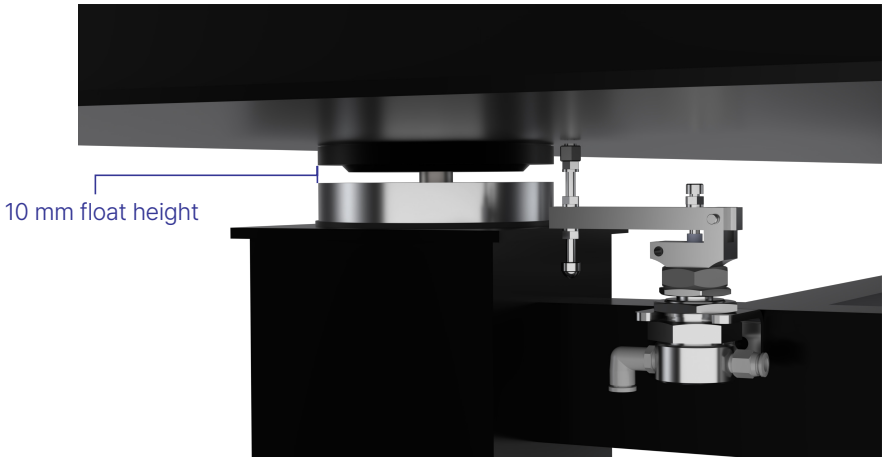
5.1 Adjust the lever arm screw to until the lever arm is aligned horizontally. Wait a few seconds for the isolators to float.

5.2 Using the height adjustment screw, adjust the isolator's float height to 10 mm.

5.3 With the spirit level, adjust all three leveling valves to ensure that the optical table is level.

5.4 After leveling the optical table, use an 8 mm wrench to tighten the lock nuts on all three leveling valves to maintain the adjusted level.





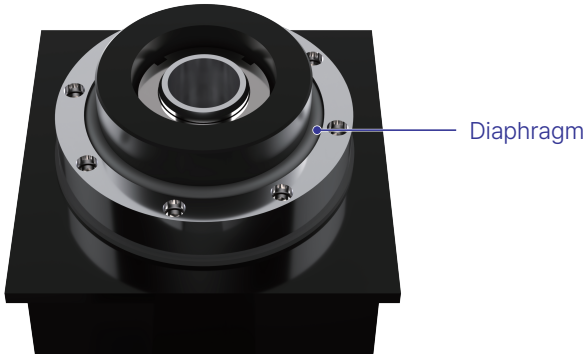
6. Final check

6.1 Gently push down on the four corner of the optical table to check if the leveling valves return it to its original level.

Troubleshooting

Problem > The optical table is not floating.
Cause > Potential air leakage at the diaphragm of the isolators.
Solution

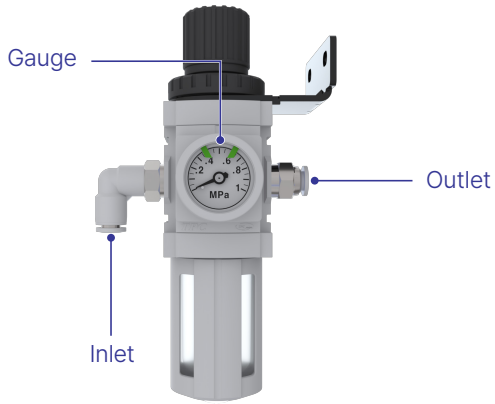
1. Spray soapy water on the diaphragm of the isolators.
2. Observe for any bubbles; if bubbles appear, this indicates an air leak.
3. If an air leak is detected, contact DAEIL SYSTEMS to replace the leaky diaphragm.



Isolator

Problem > The optical table is not floating.
Cause > Potential air leakage at the regulator.
Solution

1. Stop the air supply to the isolators by folding the air hose from the regulator's outlet.
2. Stop the air supply to the regulator's inlet.
3. Check the regulator gauge after 30 minutes for any changes.
4. If the gauge changes, contact DAEIL SYSTEMS to replace the leaky regulator.

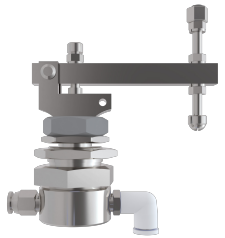


Regulator

Problem > The optical table is not floating.
Cause > The air pressure is too low, or the equipment installed on the optical table is too heavy.
Solution > Increase the air pressure up to 0.6 MPa (6 bar).

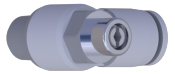
Problem > The optical table is not floating or not maintaining original level.
Cause > The leveling valves may not be functioning properly.
Solution

1. Listen if a hissing sound coming from the leveling valves.
2. Push down the optical table and observe if the leveling valves fail to return to their original level.
3. If either of these is detected, contact DAEIL SYSTEMS to replace the faulty leveling valve.



Leveling valve

Problem > The optical table is rocking and unstable.
Cause > Equipment with a high center of gravity and uneven weight distribution installed on the optical table.
Solution > Precisely open the speed controller valve to increase the airflow rate until the optical table is stable.



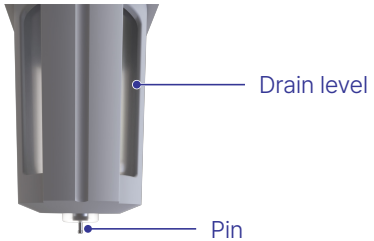
Speed controller valve

Problem > The poor vibration isolation performance.
Cause > The optical table is not floating.
Solution

1. Follow the Troubleshooting Guide: Use the “optical table is not floating” troubleshooting steps to identify any underlying issues.
2. Ensure there are no air leaks and that all components are properly setup and functioning.
3. After verifying that all components are in working order, confirm that the optical table is floating as expected.

Problem > The regulator’s drain level has reached its maximum.
Cause > Water and oil from the air compressor are filling the regulator.
Solution

1. Press the bottom of the regulator’s pin to drain the water and oil from the regulator.
2. Drain the air compressor’s water and oil regularly.



Regulator

Warranty

DAEIL SYSTEMS warrants the DAEIL SYSTEMS-branded product contained in the original packaging against defects in materials and workmanship under normal use for a period of FIVE (5) YEARS from the date of original shipment by the purchaser. DAEIL SYSTEMS will repair or replace the product free of charge during the warranty period. Replaced or repaired products will continue to be covered by the original warranty period for the remainder of its term. To claim warranty service, contact DAEIL SYSTEMS and provide the product's serial number.

This warranty does not apply: (a) to damage caused by use with a third-party component or product that does not meet the DAEIL SYSTEMS products' specifications; (b) to damage caused by accident, abuse, misuse, fire, earthquake, or other external cause; (c) to damage caused by operating the DAEIL SYSTEMS product outside DAEIL SYSTEMS's published user manual, the technical specifications or other guidelines; (d) to DAEIL SYSTEMS product that has been modified to alter functionality or capability without the written permission of DAEIL SYSTEMS.

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