

AVI-350/LP User Guide

This User Guide is meant to supplement, not replace, the AVI-350/LP Instruction Manual. Please read the complete instruction manual.

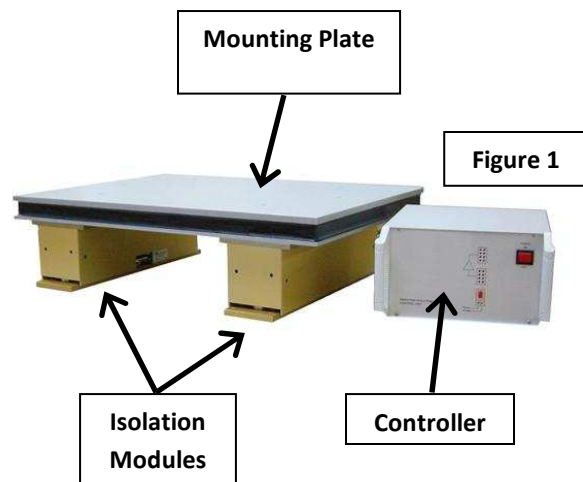
About the AVI-350/LP

The AVI-350/LP is a modular active vibration isolation system. A standard system consists of two isolation modules and one controller. Additional modules and controllers can be added to increase the load capacity. The AVI operates by sensing incoming vibrations using piezo accelerometers that are mounted inside the isolation modules. The signals from these sensors are integrated by the electronics in the controller, which send signals to the piezo transducers mounted inside the isolation modules. The transducers generate an equal, out-of-phase signal, effectively cancelling incoming vibrations. The isolation system utilizes a feedback loop which eliminates the system's mechanical resonances.

'AVI' stands for Active Vibration Isolation. '350' refers to the load capacity under ideal loading conditions, 350 kilograms. The system is quoted as having 300 kg of load capacity, due to the difficulty of achieving a perfectly balanced load. 'LP' refers to low power, as this version is a lower power consumption model of a previous version. The AVI-350/LP is available in with two module lengths: AVI-350S / LP and the AVI-350M / LP. The 'S' system features modules that are 36 cm / 14.1" long; the 'M' system features modules that are 60 cm / 23.6" long.

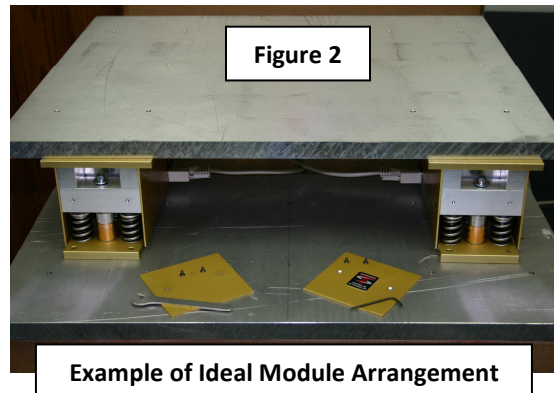
Contents

- Two Isolation Modules
- Controller
- Two 15-pin D-Sub Cables
- Power Cable
- 6 mm Wrench
- 2 mm Hex Wrench
- Instruction Manual
- Mounting Plate and attachment screws (optional)



Guidelines for Placing the Modules

- **FLATNESS:** The AVI modules must be placed on a flat surface in order for the transducers to operate effectively. The floor flatness must be within 2 millimeters per meter. If your floor or mounting area is not within this specification, we recommend using a 3/8" metal plate to support the module. Additionally, the surface that is placed **ON TOP** of the modules should be flat as well. For the modules to isolate effectively, the surface mounted on top must sit flush (without rocking) on top of the modules, spanning the width and length of the module top plates. If the load does not match these criteria, a 3/8" metal mounting plate should be used.

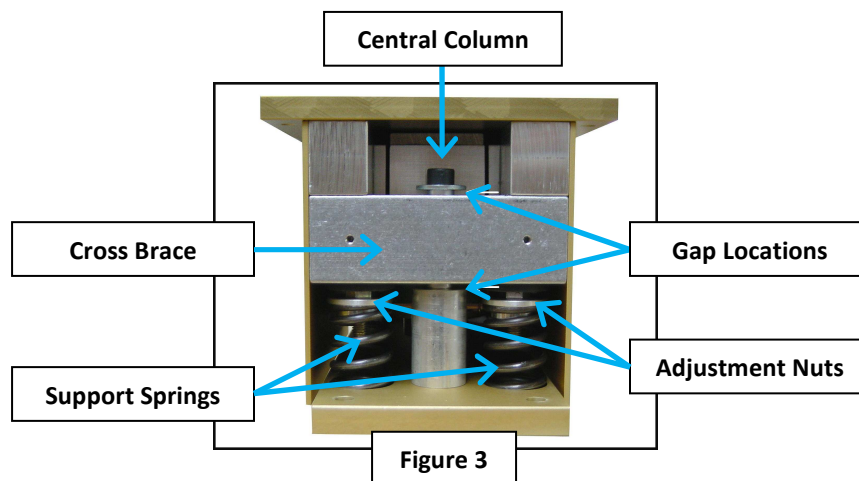


- **LEVEL:** For the AVI modules to be adjusted properly, they need to be sitting on a level surface. Check the level of the floor or mounting area using a carpenter's level. If the floor is not level, use a 3/8" metal plate and shims to bring the area into level. If using a table, adjust the table's leveling feet to make the mounting surface level.
- **ORIENTATION:** The AVI modules should be placed parallel to one another. The modules should mirror each other, i.e. the D-Sub cable ports on each module should either be facing each other or both be facing away from each other.
- **STABILITY:** The instrumentation set-up needs to have good stability in order for the modules to operate properly. As such, the isolation modules should be placed apart by a distance at least equal to the length of the isolation module (14" for an **S** version, 24" for an **M** version). A rule of thumb is to move the modules as far outboard as possible, to increase the stability of the system.
- **BALANCE:** Take care that the load is not too top-heavy. If the load is top heavy, the modules should be spread further apart to support the load. The load should be distributed evenly across the modules and should not be over-loaded or under-loaded on any side. Contact Herzan if you are unsure about the load distribution of your system.
- **LOAD:** A two-module AVI-350 system has a **MINIMUM** load capacity of 50 pounds. If your load is less than 50 lbs, add dummy weights above the modules to reach 50 lbs. If your load is near 50 lbs, you will need to decompress the system's springs fully (see Step 6 below). A two-module AVI-350 system has a **MAXIMUM** load capacity of 660 pounds. If your load is above 660 pounds, you will need additional isolation modules.

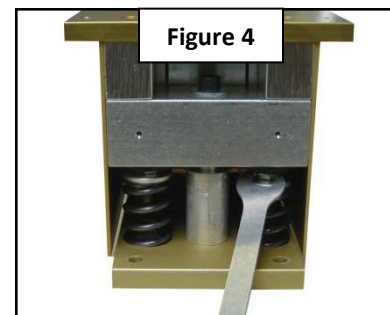
Adjusting the Modules for Load

The AVI modules require an adjustment to be made for the load on top. This must be done before the system can operate properly. This procedure is described below.

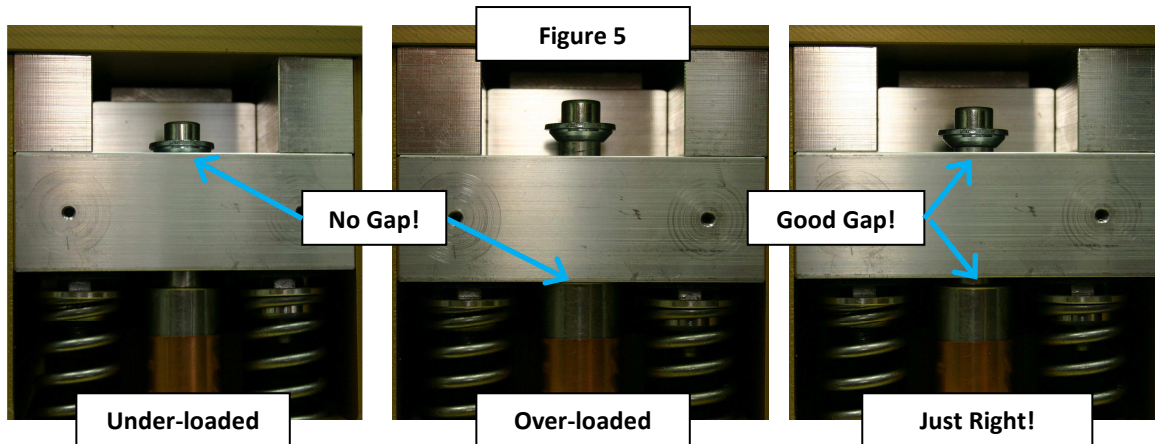
1. Remove AVI modules from box and packaging. Before placing, remove end plates using the 2 mm hex wrench. See Figure 2. **NOTE:** If the AVI modules and instrumentation will be placed inside an enclosure or in a location where it will be difficult to access the ends of the modules, Steps 2 through 8 will need to be done in a convenient and accessible location prior to final placement. Follow Steps 2 through 8 in an accessible location and then do Step 9.
2. Place the modules according to guidelines outlined above. Place mounting plate (if necessary) and instrumentation on top of the modules as it will be used.
3. Use 2 mm hex wrench (included) to remove end plates of modules.



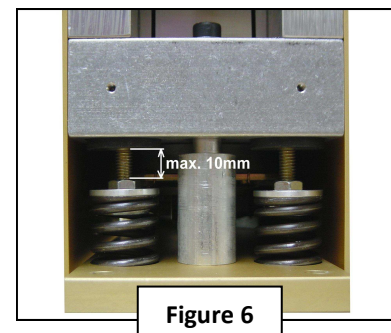
4. Adjust the modules for the weight of the load. The modules are adjusted by using the 6 mm wrench (included) to adjust the tension on the support springs by turning the adjustment nuts. See Figure 4.



- There should be a gap above and below the cross brace on each central column, allowing for approximately 2 mm of travel on each side. The adjustment nuts should be adjusted incrementally, adjusting each nut on each side by a few turns, then moving on to the other nut on that side, then moving on to the other side of the module, then moving on to the other module, turning each nut a few times. Work your way back to the original adjustment nut and continue adjusting, if necessary.



- If the module is UNDER-LOADED (see Figure 5), you will have no gap ABOVE the cross brace, all the travel will be below the cross brace. You need to DECREASE the tension on the springs by moving the adjustment nut UP the screw. This is done by turning the wrench to the RIGHT. When the nut hits the rubber stopper, you have reached the end of the travel. Make sure all the support springs are fully decompressed on all sides. If you reach the end of the travel and the system is still under-loaded, you will need to load some dummy weight on top of the system.
- If the module is OVER-LOADED (see Figure 5), you will have no gap BELOW the cross brace, all the travel will be above the cross brace. You need to INCREASE the tension on the springs by moving the adjustment nut DOWN the screw. This is done by turning the wrench to the LEFT. **CAUTION:** Do not turn the nut too far down the screw or you risk the nut coming off the screw, which will damage the system. There should be no more than 10 millimeters of exposed thread between the stopper and adjustment nut (see Figure 6). If you reach the end of travel, make sure all the support springs are fully compressed on all sides. If the system is still over-loaded, you will need to add additional modules.



8. Adjust until the central columns on both sides of each module have adequate travel. Test the travel by pushing down and releasing on each corner of the set-up. The module should bounce back without bottoming out or topping out. Replace end plates.
9. (If necessary) Deconstruct set-up, move isolation modules to their final location, and reconstruct set-up in the same configuration used to make the load adjustment.

Final Steps and Verifying Performance

1. Check that all cables are connected loosely. Check to make sure nothing is coupling the instrumentation to the ground or other vibration sources.
2. Plug the male D-Sub connectors into the controller. Plug the power cable into the rear of the controller, then into an outlet. Flip 'ON' switch on the front panel. Press 'Enable' button to enable active isolation.
3. After several seconds the yellow enable LED light should turn solid, indicating the system is isolating properly.
4. The red LED lights on the front of the controller are related to the sensors mounted in the modules. When a sensor is overloaded, the corresponding light turns on. These lights should come on when the system is turned on, but go off after the system is enabled and working properly. When stomping the ground or tapping the load lightly, the red lights on the controller should light up briefly and then go out.
5. If the LED lights are behaving abnormally (staying on, flashing, or coming on without stimulus), please re-check that all the guidelines on Page 2 have been followed. Check to make sure no cables or other objects are touching the isolation modules. Check to make sure that no cables running to instrumentation are stretched tight; cables should be slack.
6. If all of the above have been checked and lights are still behaving abnormally, please contact Herzan for support.

Please contact Herzan with any questions, support@herzan.com or 949-363-2905.

