

# Installation and Adjustment

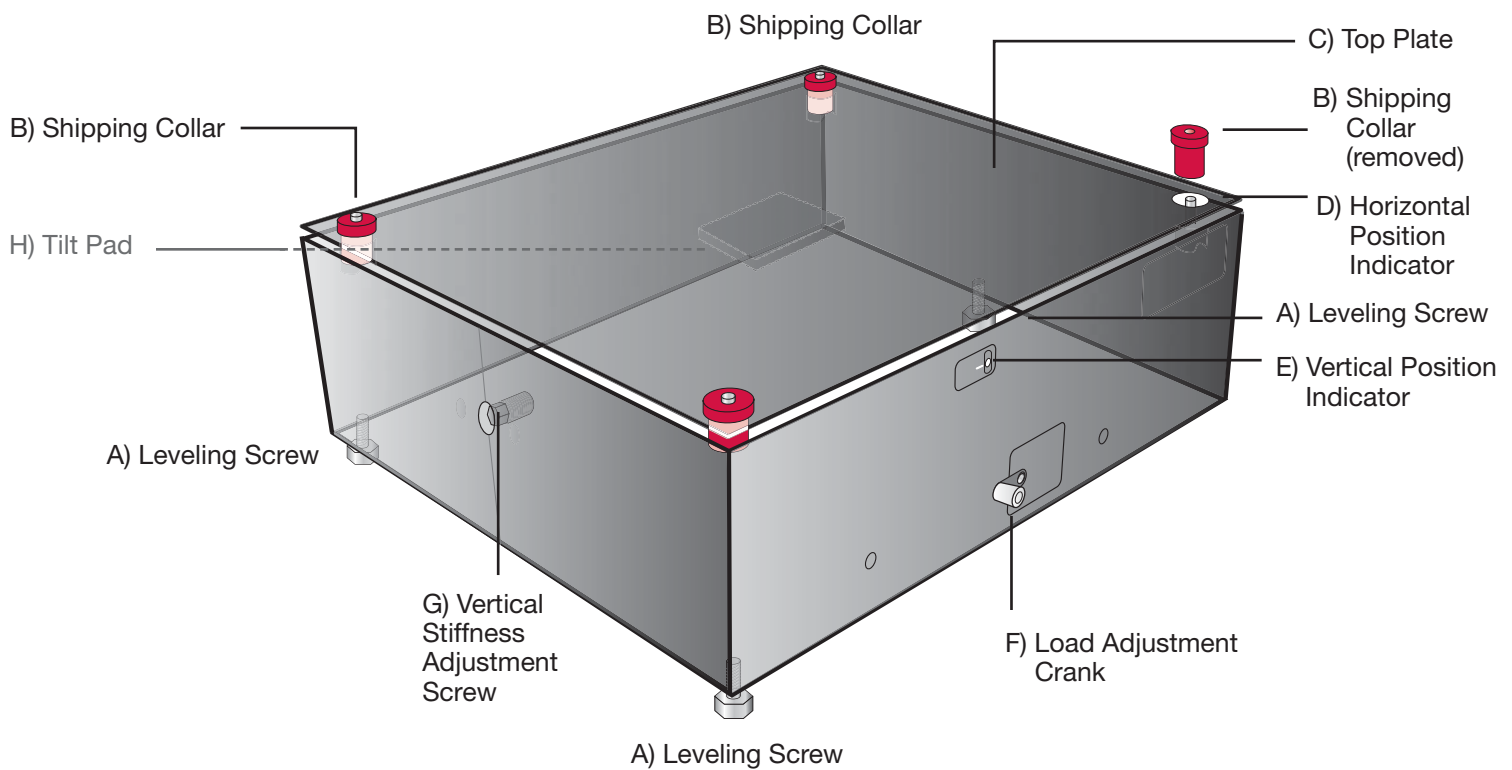
## BM-1 Bench Top Vibration Isolation Platform

Dimensions: 24" W x 22.5" D x 9" H (310mm W x 310mm D x 117mm H)	
Approximate payload weight range:	
Model	Payload Range
100BM-1	60-100 lb (27 - 45 kg)
150BM-1	90 - 155 lb (40 - 70 kg)
250BM-1	180 - 270 lb (82 - 122 kg)
350BM-1	290 - 370 lb (132 - 168 kg)
500BM-1	360 - 525 lb (163 - 238 kg)
650BM-1	500 - 680 lb (227-308 kg)
Weight: Approximately 90 lb (41 kg) - Dimensions - an additional 0.675" taller than the above units	
850BM-1	630 - 900 lb (286 - 408 kg)
1000BM-1	890 - 1050 lb (404 - 476 kg)

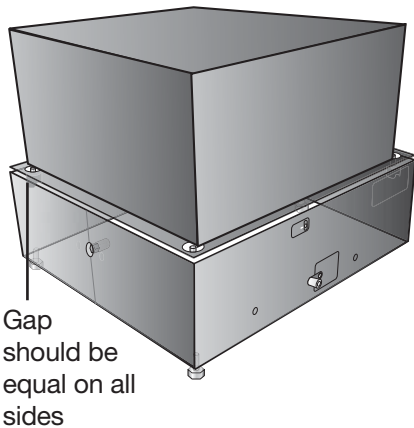
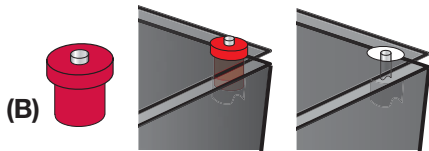
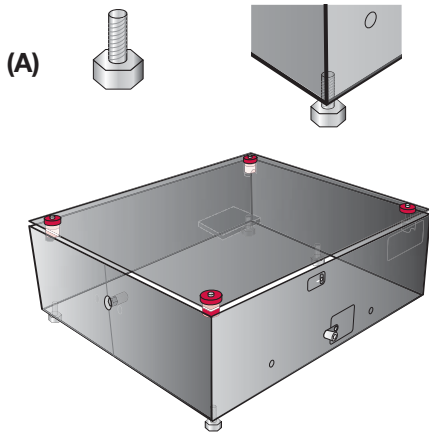
## BM-1 Bench Top Vibration Isolation Platform *Installation and Adjustment*

Required tools:

- 3/16 hex key
- 1/2 inch open-end wrench
- 1/2 inch socket wrench



DO NOT REMOVE SHIPPING COLLARS UNTIL INSTRUCTIONS INDICATE. SHIPPING COLLARS MUST BE USED WHEN MOVING ISOLATOR.



1. Make sure you have the correct model for your payload. Payload weight **MUST** be within the recommended range.
2. Locate the three (3) leveling screws (A). Insert the leveling screws into the bottom of the isolator and place on a solid, level surface. Place the bubble level on the top plate and use the leveling screws to level the isolator.
3. Carefully position payload on top plate so its center-of-mass (CM) is as close to center as possible.
4. Remove the four (4) red shipping collars (B). **STORE SHIPPING COLLARS IN A SAFE PLACE AS THEY MUST BE USED WHENEVER MOVING ISOLATOR.** Replace the screws into the holes to serve as Horizontal Position Indicators.

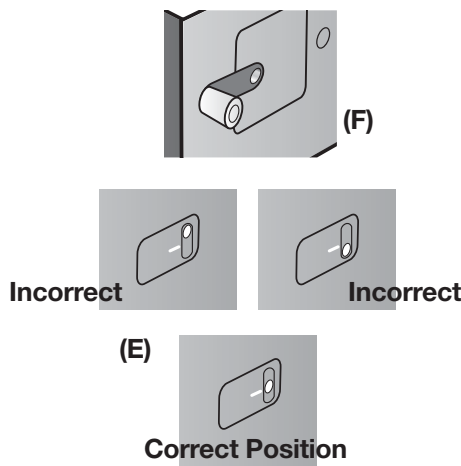
**CAUTION: If payload covers shipping collar holes, collars must be removed before placing payload. Take extra care when placing payload without shipping collars attached. Do not replace screws as they may interfere with payload.**

5. Check the level of the top plate. The gap between the top plate and the Isolator cover should be approximately equal on all sides.
6. Reposition the payload, as necessary, to level the top plate. It is recommended that you re-install the red shipping collars if you need to re-position the payload (see Step 3). However, it is not necessary if you take extra care repositioning the payload. Do not use leveling screws to level the top plate.

**NOTE:** Cables, hoses, etc. connected to the payload can affect the horizontal and vertical position. If possible make the following adjustment without attaching the cables.

### Floating Isolator Vertically

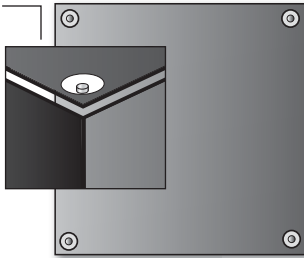
The isolator comes from the factory adjusted to support the nominal weight, i.e., 100 lb for the 100BM-1, 150 lb for the 150BM-1, etc. Internal stops limit vertical motion. The isolator must be “floated” between the stops.



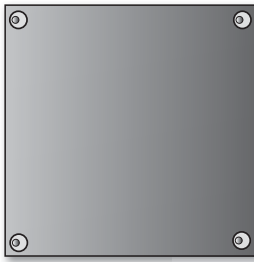
7. Check Vertical Position Indicator (E). The pin should be approximately centered on the horizon line. Turn Load Adjustment Crank (F) only clockwise when pin is below the line, and only counterclockwise when it is above the line. If the payload weight varies from nominal weight by a few pounds/kilograms it may take many turns (approximately 10 turns per payload pound/kilogram).

**NOTE: To avoid damage never force the Load-Adjustment Crank. If pin cannot be easily centered on line, turn Vertical Stiffness Adjustment Screw slightly counterclockwise and readjust vertical position. Repeat as necessary. This is a very sensitive adjustment. Turn the screw only a few degrees each time.**

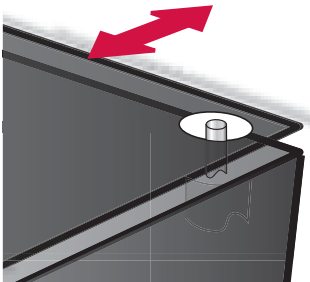
Horizontal  
Position  
indicator  
(D)



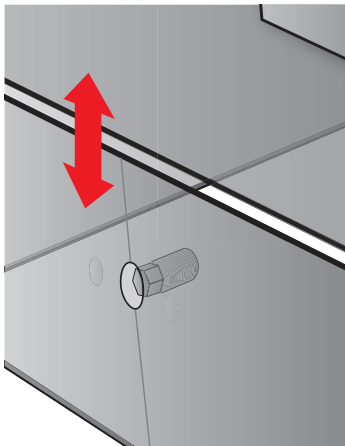
Top View



$1/2 \text{ Hz} = 3 \text{ cycles in } 6 \text{ secs.}$



$1/2 \text{ Hz} = 3 \text{ cycles in } 6 \text{ secs.}$



## Floating Isolator Horizontally

8. Internal stops limit the horizontal motion. The Isolator must be “floated” horizontally between the stops by adjusting the leveling screws. Horizontal Position Indicator screws (D) should be approximately centered within holes.

Example: If screws are too far to the left of center, turn right leveling screw clockwise (as viewed from above).

9. IF HORIZONTAL POSITION INDICATOR SCREWS ARE NOT VISIBLE, check positioning by pushing the top plate gently front to back then side to side. If it does not float freely and independently front to back and side to side then adjust accordingly.

## HORIZONTAL NATURAL FREQUENCY

10. The horizontal natural frequency can only be changed by varying the payload weight.  $1/2 \text{ Hz}$  is achieved when payload is near nominal weight (ie. 150 lb. for the 150BM-1). Increasing the weight lowers the frequency. Decreasing the weight raises the frequency. Ballast weights can be used for fine adjustments to frequency.

Check the horizontal frequency by pushing horizontally on the edge of top plate to create small horizontal oscillations, then count cycles (one back and forth movement). For example, 3 cycles in 6 seconds is  $1/2 \text{ Hz}$ . Depending on the damping, the isolator may only cycle 2 or 3 times.

## VERTICAL NATURAL FREQUENCY

11. Check the vertical frequency by pushing down vertically on top plate to create small vertical oscillations, then count cycles (one up and down movement).  $1/2 \text{ Hz}$  is equal to one cycle in 2 seconds.

The vertical natural frequency can be changed using the vertical stiffness adjustment screw (G), although this adjustment is seldom necessary. This adjustment requires a  $1/2$  inch socket wrench. Turning the screw clockwise reduces the natural frequency, counterclockwise increases the frequency. This is a sensitive adjustment. Turn only a few degrees each time then check the vertical position and frequency. Adjust further, if necessary.

**Note: Run any cables to the instrument with plenty of slack. Do not tie cables together as this will make them stiffer. Stiff and taut cables can stop the isolator from providing vibration isolation.**