VibrationBloc HVAC Isolator Rail 101

Contents

Version: 02-NOV-15

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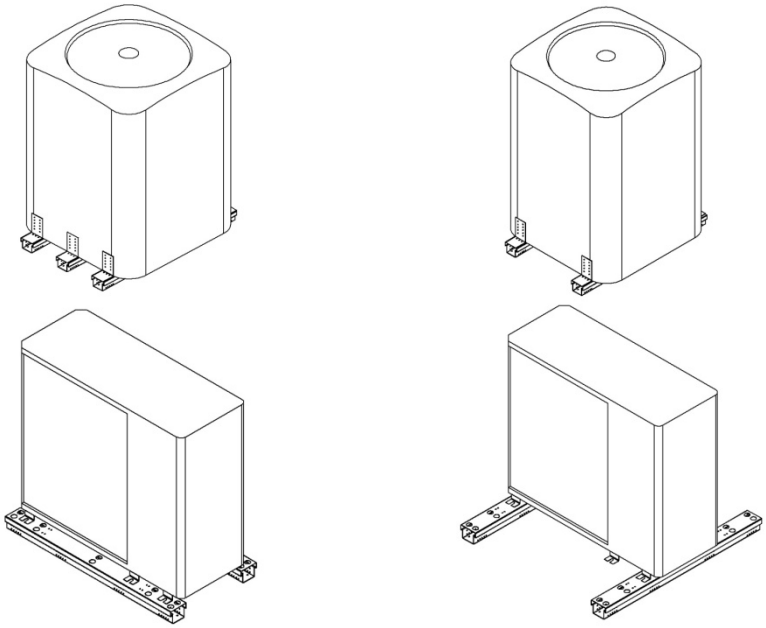
VibrationBloc HVAC Isolator: Choosing the right isolator configuration

The VibrationBloc HVAC Isolator Rail is a versatile means of providing a wind and seismic resistant mounting for residential HVAC condensers that incorporates anti-vibration qualities. The isolator rails can be configured individually for just about any installation need at the time of production, but cannot be readily reconfigured once in the field. The following is an introduction to the VibrationBloc HVAC isolator and examples of how to employ the rail in an installation with instructions on how to calculate the weight requirements for each.

Installation and Orientation:

Two Seicon isolators are required for the vast majority of residential condensers, but in certain cases where the weight of the condenser exceeds the maximum 450 lbs per pair of rails, a third rail can be used. Below are some typical mounting schemes for residential condensers:

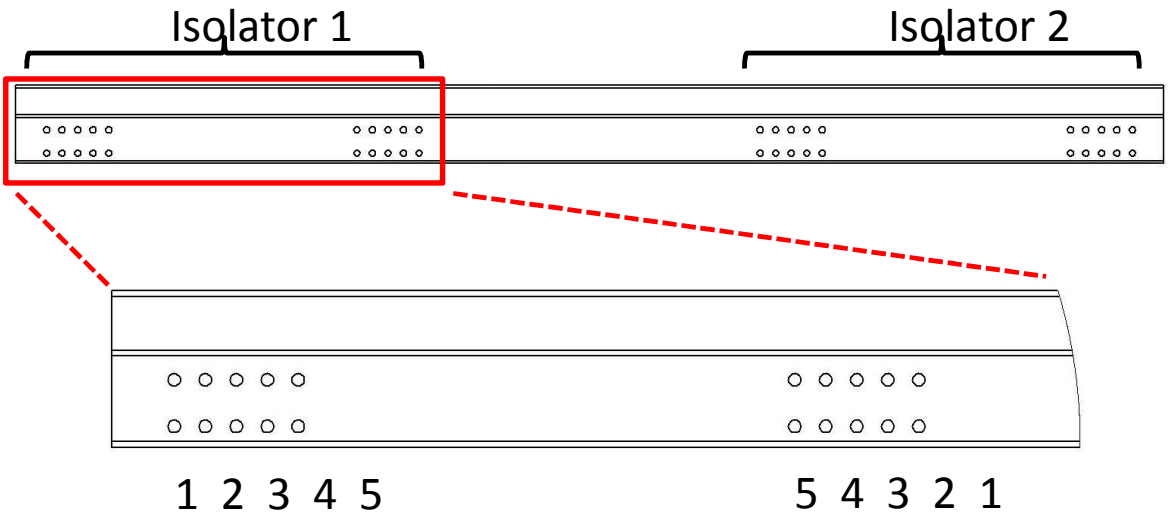


The most critical factor to installing the VibrationBloc isolator rail is the weight of the condenser and the corner weights, as the rails need to be properly configured for the weight they are to carry. For installation, one can calculate the corner weights based upon the center of gravity of the condenser and

then place a rail with the appropriate weight rating(s) under that portion of the condenser. Examples of calculations and installation considerations can be found later in this document.

Identifying the Weight Configuration for a VibrationBloc Isolator Rail

Each VIBRATIONBLOC HVAC Isolator Rail contains two separate isolators that can be individually configured to carry a specified weight range. One can identify the weight range of the isolator by examining the location of the rivet pairs securing each isolator as shown:



Once the rivet location has been determined the loading range for *each individual isolator* can be found in the following table:

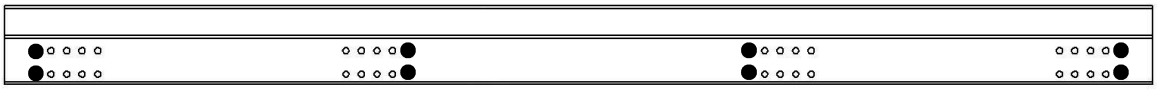
Hole Set Number	Minimum Load Per Isolator (lb) [Per Rail]* (lb)	Maximum Load Per Isolator (lb) [Per Rail]* (lb)
1	25 [50]	40 [80]
2	40.25 [80.5]	50 [100]
3	50.25 [100.5]	65 [130]
4	65.25 [130.5]	90 [180]
5	90.25 [180.5]	112.5 [225]

** This value is given for rails where both individual isolators within that rail configured for the same weight rating.*

As there are two isolators inside each rail, *the total load capacity of the each rail is the sum of the two individual isolators inside of it.* Thus, a rail with the two individual isolators set for hole three (50.25 – 65 lbs.) would have a total weight rating of 100.5 lb – 130 lb, or the sum of the individual isolators.

The following is a series of examples to illustrate this:

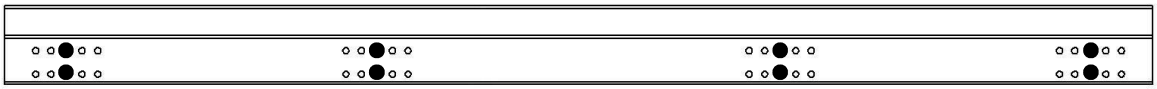
Example 1:



Left isolator: Hole 1 = 25 – 40 lb. Right isolator: Hole 1 = 25 – 40 lb.

Total Rail Capacity Range = 50 – 80 lb.

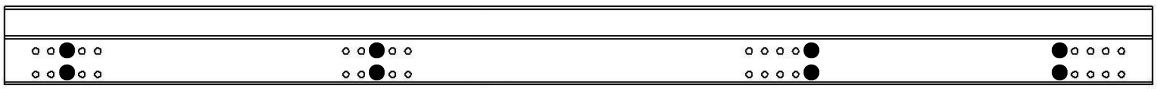
Example 2:



Left isolator: Hole 3 = 50.25 – 65 lb. Right isolator: Hole 3 = 50.25 – 65 lb.

Total Rail Capacity Range = 100 – 130 lb.

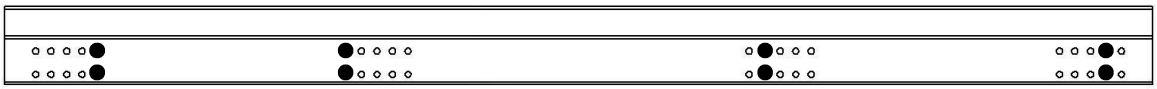
Example 3:



Left isolator: Hole 3 = 50.25 – 65 lb. Right isolator: Hole 5 = 90.25 – 112.5 lb.

Total Rail Capacity Range = 140.5 – 177.5 lb.

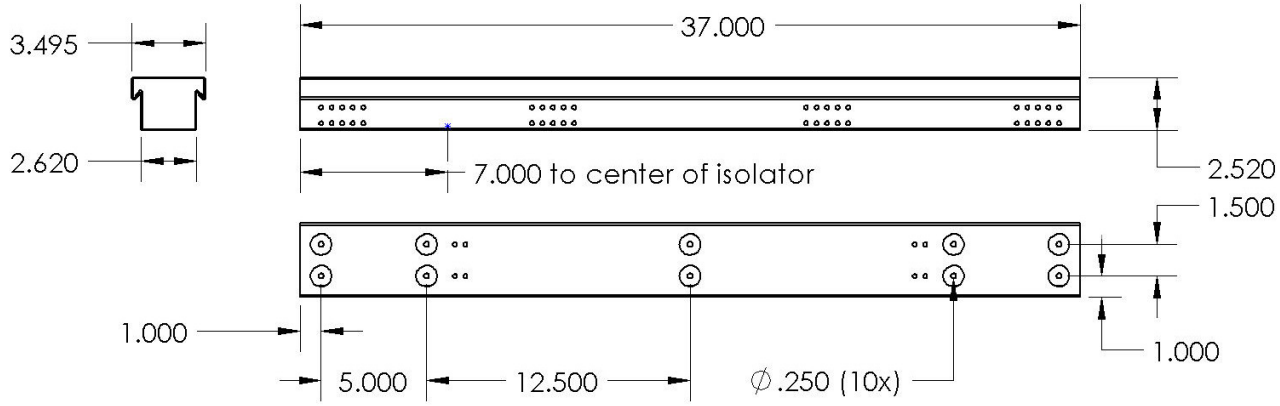
Example 4:



Left isolator: Hole 5 = 90.25 – 112.5 lb. Right isolator: Hole 2 = 40.25 – 50 lb.

Total Rail Capacity Range = 130.5 – 162.5 lb.

Isolator Dimensions:

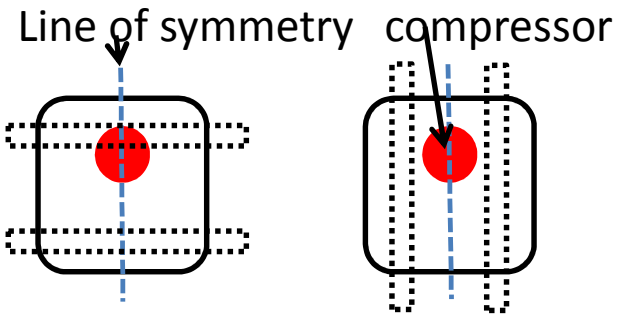


Considerations for installation of the VibrationBloc isolator rails

Most condensers possess a line of symmetry about which the weight of the condenser is distributed. As a general rule of thumb, the isolator rails should be placed perpendicular to this line of symmetry to simplify loading. Below are shown examples of preferred isolator orientation for several different footprints of condenser:

Square footprint vertical flow condenser

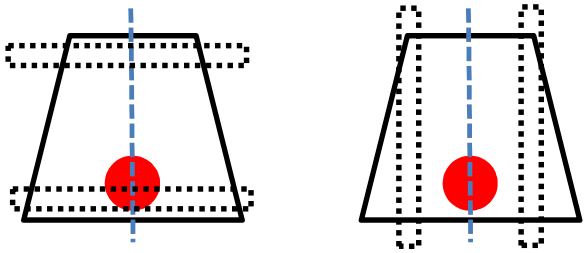
Vertical flow condensers with a square footprint generally have the compressor located at or near the center of the geometric area of the footprint. In the majority of these installations, rails with the same weight ratings can be used. Occasionally, the compressor is mounted away from the centerline of the compressor, for which the isolator rails should be oriented perpendicular to the center of gravity. In this situation, isolator rails with different weight ratings should be used.



preferred

Trapezoidal footprint vertical flow condenser

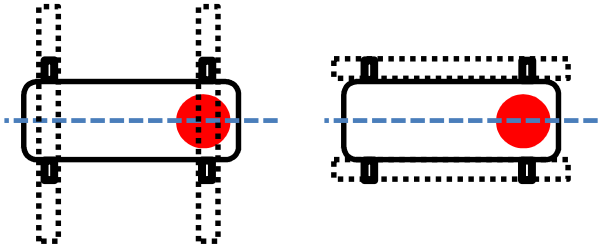
Vertical flow condensers with trapezoidal footprints generally have the condenser located away from the geometric center, so isolator rails with different weight ratings should be used. Again, the preferred means of mounting the isolator rails is perpendicular to the line of symmetry in the condenser.



preferred

Horizontal flow condensers

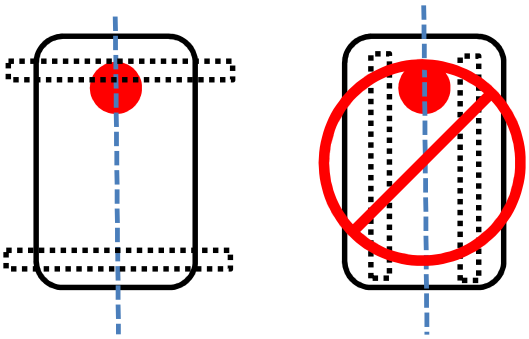
Horizontal flow condensers typically have a line of symmetry running the lengthwise axis of the unit. In this situation, the condenser is usually located at one end of the unit, while the coils are located at the other. As with the above, it is preferred to have the rails oriented perpendicular to the lengthwise axis of the unit. Occasionally, when an installation requires, the rails can be placed parallel to the lengthwise axis of the unit, but in this situation two rails with *two different* isolator weight ratings in each rail will be required.



preferred

Vertical flow condensers with rectangular footprint

Rectangular footprint units are similar in many respects to horizontal flow units in that the compressor in these units tends to be located at one end. As before, the preferred rail orientation is perpendicular to the line of symmetry, and in many cases, it is not possible to orient the rails parallel to the line of symmetry since the condenser is longer than the isolators. This orientation cannot be used in this situation because the condenser attach brackets cannot be attached properly to the top surface of the condenser.



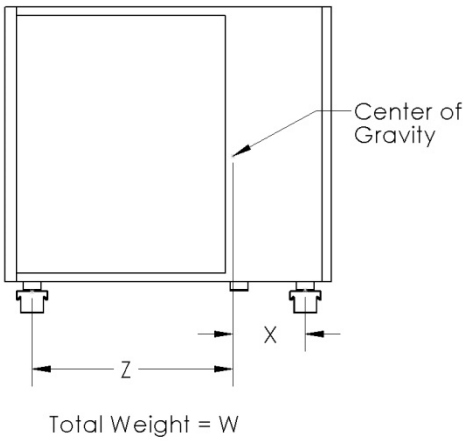
preferred

Example Installations with supporting weight Calculations*:*

Example 1: Installation of a horizontal flow condenser on two VibrationBloc isolator rails.

Typical horizontal flow units have the compressor installed towards one side of the unit, so the center of gravity lies well to one side of the unit. Because of this, the weight on one side of the unit is significantly

higher than at the other end. Since the VIBRATIONBLOC isolator rails must be properly configured for the weight they will support, the weight on each isolator must be calculated.



The weight on each condenser support foot is calculated by:

Weight on left rail = $\frac{(W)(X)}{(Z+X)}$

Weight on right rail = W – (weight on left rail)

Where:

X = the distance from the right condenser support foot to the center of gravity in inches.
Z = the distance from the left condenser support foot to the center of gravity in inches
W = the total weight of the condenser in lb.

Thus, if the condenser weighs a total of 245 lbs, the distance X is 15” and the distance Z is 34”, the total weight on each support foot is:

Weight on the left rail = $\frac{245\ lbs\ x\ 15"}{34"+\ 15"}$ = 75 lbs.
Weight on the right rail = 245 lbs. - 75 lbs. = 170 lbs.

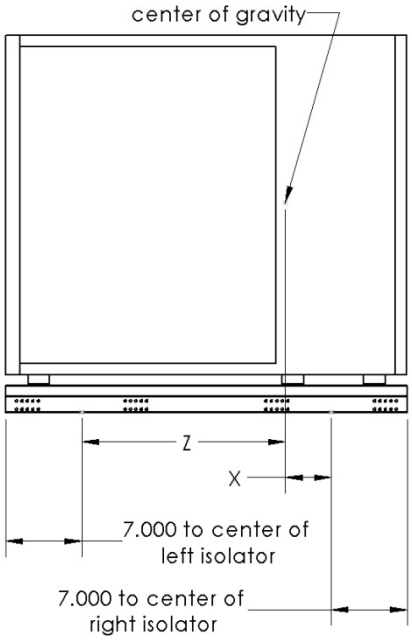
Accordingly, the rail under the left condenser support foot should be configured to support 75 lbs., while the rail under the right condenser support foot should be configured to support 170 lbs. Using the configuration hole numbers in the previous sections, the two rails should be configured as follows:

Left Rail = Hole # 1 for both isolators in the rail (50 – 80 lbs.)
Right Rail = Hole # 4 for both isolators in the rail (130.5 – 180 lbs.)

When ordering rails for this system, one would order one hole #1 isolator rail (both isolators in rail set to hole #1), and one hole #4 isolator (both isolators in rail set to hole #4).

Example 2: Installation of a horizontal flow condenser on two VIBRATIONBLOC isolator rails where the rails are parallel to the lengthwise axis of the unit:

For this horizontal flow condenser situation, the CG location requires that the rails each have two separate isolator configurations in each rail. This calculation is similar to the previous example in that the weight on the rails is calculated, but the weight needs to be calculated at the center of each isolator in a rail:



Weight on left isolator = $\frac{(W)(X)}{(Z+X)}$

Weight on right isolator = W – (weight on left isolator)

Where:

X = the distance from the center of the right isolator to the center of gravity in inches.
Z = the distance from the center of the left isolator to the center of gravity in inches
W = the total weight of the condenser in lb.

Thus, if the condenser weighs a total of 250 lbs, the distance X is 15” and the distance Z is 30”, the total weight on each support foot is:

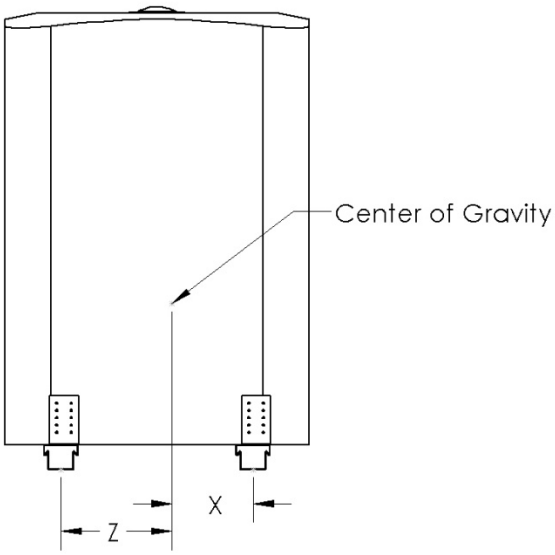
Weight on the left isolators = $\frac{250\ lbs\ x\ 15"}{30"+\ 15"}$ = 83 lbs.
Weight on the right isolators = 250 lbs. - 83 lbs. = 167 lbs.

Accordingly, both rails should be configured where one isolator in the rail supports one half of the weight of that end of the condenser (as there are two rails), and the same for the other. Using the configuration hole numbers in the previous sections, the two rails should be configured as follows:

Left Isolator in each rail = Hole # 1 for both rails (41.5 lbs on each left isolator for a total of 83 lbs.).
Right Isolator in rail = Hole # 4 for both rails (83.5 lbs on each right isolator for a total of 167 lbs.).

When ordering for this system, one would order two isolators, both configured with mixed rods of hole #1 and hole #4.

Example 3: Installation of a vertical flow condenser on two VIBRATIONBLOC isolator rails:



Total Weight = W

As above, the isolators should be oriented perpendicular to the line of symmetry of the condensers. The calculations for the weight on each isolator rail are similar to those above. The weight on each condenser support foot is calculated by:

Weight on left rail = $\frac{(W)(X)}{(Z+X)}$

Weight on right rail = W – (weight on left rail)

Where:

X = the distance from the right condenser support foot to the center of gravity in inches.
Z = the distance from the left condenser support foot to the center of gravity in inches
W = the total weight of the condenser in lb.

Thus, if the condenser weighs a total of 380 lbs, the distance X is 17” and the distance Z is 19”, the total weight on each support foot is:

Weight on the left rail = $\frac{380\ lbs\ x\ 17"}{19"+\ 17"}$ = 179 lbs.
Weight on the right rail = 380 lbs. - 179 lbs. = 201 lbs.

Accordingly, the left hand rail under the condenser should be configured to support 179 lbs., while the rail under the right condenser support foot should be configured to support 201 lbs. Using the configuration hole numbers in the previous sections, the two rails should be configured as follows:

Left Rail = Hole # 4 for both isolators in the rail (130.5 - 180 lbs.)

Right Rail = Hole # 5 for both isolators in the rail (180.5 – 225 lbs.)

When ordering isolator rails for this system, one would order two rails, one configured with both isolators in the rail set to hole #4, and the other configured with both isolators in the rail set to hole #5.

Technical Support

Seicon, Limited is pleased to provide technical support for questions regarding installation or isolator rail configuration/orientation. Contact Seicon at

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