

VIBRATION ISOLATED LABORATORY TABLES



GS-34-ST



GS-34-FR

- Ultra rigid, dynamically stable table top
- High performance vertical isolation system
- Patented horizontal isolation system
- Automatic self-leveling for load compensation
- Stainless steel or formica table surface
- Easy to use; Human engineered

The GS-34 Series Laboratory Tables provide a stable, vibration-free work surface for precision applications in such diverse areas as neuro-science, optical microscopy, semiconductor wafer inspection and profilometry. These general purpose 36" by 48" laboratory tables have the isolation performance and table top dynamic rigidity essential for superior performance of sensitive laboratory instrumentation. Both vertical and horizontal isolation are incorporated in a leg system integrated with a rigid honey-comb table for a cost effective, compact unit.

TABLE TOP

The table top is available with either of two working surfaces. Model GS-34ST has a 3/16" ferromagnetic stainless steel surface drilled and tapped with 1/4-20 holes on 1" centers. It offers the convenience of tie-down with either mechanical fasteners or magnetic bases. Model GS-34FR has a similar structure but with a white formica surface and edge finish. It is particularly suitable for clean room and biological applications, because the surfaces are easy to clean.

Both table types are internally damped to avoid "ringing" of the top and to minimize acoustically induced resonant flexing or vibrational motion of the top. Again, we are able to provide superior damping without sacrificing static rigidity. In contrast, other techniques such as using a thin metal skin resiliently coupled to a steel plate seriously compromise the stability of components attached to it due to local rigidity considerations. Such a surface does not ring, but it is neither rigid nor stable.

APPLICATIONS

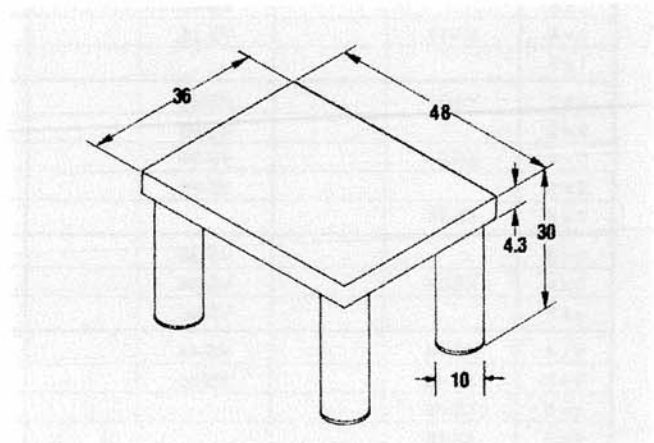
GS Series Tables are used wherever precision instruments require a rigid, damped surface free from floor vibrations. Isolation from horizontal floor vibrations is a feature of these tables which is particularly desirable on the upper floors of buildings where horizontal vibration can be more severe than vertical vibration. The following are some of the areas where these tables are in use:

Semiconductor — Precision linewidth measurements and electrical probing of high density integrated electronic circuits requires the degree of isolation provided by GS Series tables.

Biological Sciences — High dimensional stability is required for intra-cellular probing and obtaining ultra-microtome samples.

Microscopy — Both optical and scanning electron microscopy take advantage of the vibration isolation of GS Series tables for high resolution viewing and measurement.

Measurements — Microbalances, profilometers and other instrumentation for very high resolution measurement will perform optimally when free from instrument noise generated by external vibration.



VIBRATION ISOLATION SYSTEM

This system provides effective isolation even with very little load on the table. It is easy to set up, trouble free to operate, and returns to a preset level even with placement of an off-center heavy load. All in all, this system is a pleasure to use. The performance is the best available for a system of this size and load carrying capability, providing superior isolation in both the horizontal and vertical directions.

The performance in the vertical direction presents a major breakthrough in the design of lightly loaded vibration isolation systems. It achieves a very low resonant frequency and low displacement amplitude at resonance, even at low operating loads or pressures. It functions equally well for both large and small amplitude motions. Other types of systems must overcome appreciable static friction and thus are ineffective for small amplitude floor motions. Figure 35-1 shows typical performance in the vertical direction for various table loading conditions.

Effective isolation in the horizontal direction is achieved with a pendulum cable system - the same patented horizontal isolation mechanism found in our standard isolation systems now used in most laser/optical laboratories. Figure 35-2 shows horizontal isolation performance with and without the patented horizontal system, which gives a factor of 10 improvement in horizontal performance. The patented pendulum system is markedly superior to ball or rolling pivot systems which reduce horizontal motion by coupling such motion into vertical motion - hence degrading the isolation in the vertical direction.

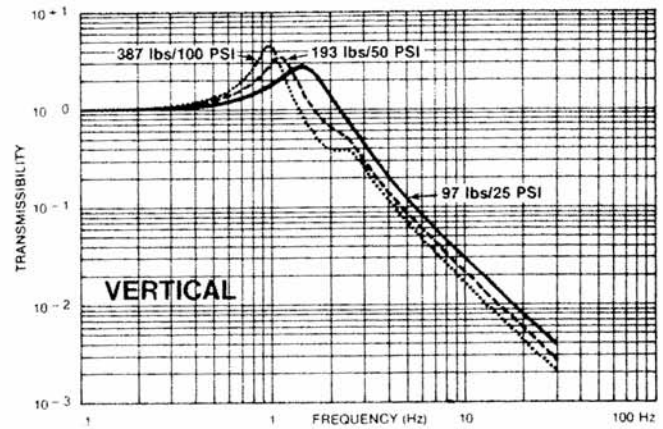


Fig. 35-1
Vertical transmissibility vs frequency for different air mount loadings for the GS-34 air mounts.

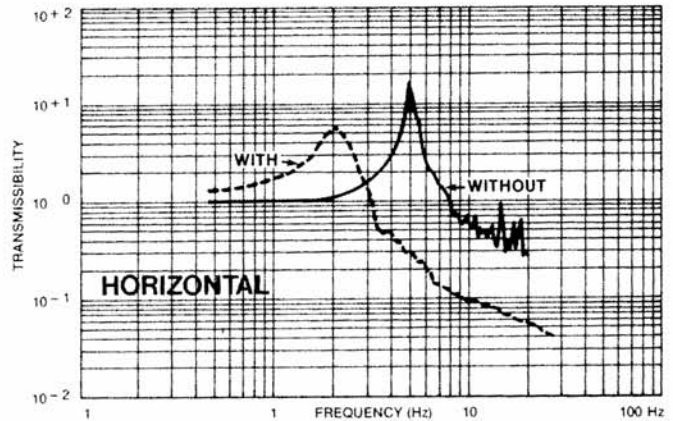


Fig. 35-2
The performance of the standard air mount is significantly improved by our **patented** horizontal isolation piston - Note the lower amplification at resonance and the significant reduction in transmissibility achieved at all higher frequencies.

SPECIFICATIONS:

- Table Top: 36" x 48" x 4.3"
- Working Surface:
 - GS-34ST: 3/16" ferromagnetic stainless steel drilled and tapped with 1/4-20 mounting holes on 1" centers; flatness better than ± 0.003 " over the entire surface; dull gray reflective finish.
 - GS-34FR: White formica finish on top and sides
- Honeycomb Core: Hi-density aluminum honeycomb with cell size no greater than 0.12 sq. in.
- Static Rigidity: Independent of load location; deflection less than 0.005 arc-sec/lb. of load
- Dynamic Rigidity: Compliance of less than 3.5×10^{-5} in/lb.
- Isolation System: (for both large and small loads) Vertical resonant frequency 0.9 hz with table fully loaded; Horizontal resonant frequency 2 Hz
- Working Height: 30" nominal

OEM TABLE SYSTEM

A custom version of the GS Series Isolated Laboratory Tables is available in quantity discounts for OEM purchasers. Consult Newport for details.

ACCESSORIES

Model GS-AR Arm Rests attach easily to two of the table legs to enable an operator to work comfortably with equipment on the table without disturbing the surface position. These articulated arms allow freedom of motion while providing a stable resting surface. The arms can be retrofit to all GS series tables.

