



TECHNICAL BULLETIN M/L-646

INSTRUCTIONS FOR PREPARATION OF FOUNDATION SURFACE AND MACHINE FEET, AND FOR THE POSITIONING AND ADJUSTMENT OF VIBRO/DYNAMICS® ISOLATORS

INTRODUCTION

Thank you for using Vibro/Dynamics' Isolators to improve the installation and performance of your machinery. For best results, we recommend that you completely study this information before you start the installation.

Vibro/Dynamics' Isolators are precisely adjustable in order to support and level presses and other machines to the same precision used in the making of precision die sets. The purpose of this bulletin is to give you information regarding the installation of Vibro/Dynamics' Isolators and the optional electronic Lod/Sen™ (load-sensing) System, so that you can install your machine in the most stress-free condition with the bed precisely flat, level, and parallel with the ram; with the gibs or ways in parallel alignment; and with the bed supported most uniformly.

PREPARATION OF FOUNDATION SURFACE

Ideally, the isolators should be set on a dry, flat and level concrete surface with a smooth trowel or flat finish. The surface does not have to be smooth, ground or polished, but there should not be any holes, joints, cracks, or bumps in the floor surface directly under the isolator. Remove all loose concrete, chips, oil, grease and water from the foundation surface that will support the isolator.

PREPARATION OF MACHINE FEET

Before installing the Vibro/Dynamics' Isolator, remove all loose concrete, chips, oil, grease and water from the machine feet or base. The mounting holes in the machine feet should be cleaned out. The bottom of the machine feet should also be clean and flat in the area in contact with the

top of the isolator to obtain a uniform bearing surface. In some cases, it may be necessary to scrape, file or grind the bottoms of the machine feet.

After cleaning, inspect the machine legs and feet, and repair or replace them if they are broken or cracked.

CAUTION! PREVENTION OF DAMAGED AND/OR JAMMED SCREWS

It is very important that the fine threads of the precision leveling adjustment screw and threads in the isolator housing be kept clean and free of grit, filings and other foreign matter. If you allow anything to contaminate the threads, it may cause the screw to jam in the housing. We individually wrap each screw to help prevent contamination and damage during storage and shipment.

To help prevent contamination of the threaded hole in the isolator housing, we insert a protective orange plastic plug, or attach an adhesive cover over the hole at final inspection. The orange plug or cover should not be removed until just before installation and insertion of the leveling adjustment screw.

If your Vibro/Dynamics' Isolators are equipped with electronic Lod/Sen leveling screws, be especially careful not to bump or cut the sensor section at the lower end of the screw. You must keep oil and other contaminants out of the receptacle at the top end. The plastic cap that covered the sensor end of the screw during shipment is intended for use as a protective cap for the top of the screw after installation, and should only be removed when adjusting the screw.

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POSITIONING OF THE ISOLATOR

The isolators should be positioned under the machine feet carefully, so that the threads of the isolator leveling adjustment screw do not rub on the inside surface of the machine foot mounting holes. The leveling screws should run freely in the threads so they can be turned in by hand with a short-handled wrench. If you feel resistance when turning in the screw, stop turning or you may jam the screw. Back the screw out and inspect the threads of both the screw and the isolator, remove any grit, burrs, etc.; and relubricate the threads. Also re-check to be sure the screw is not rubbing against the machine foot.

Turn each leveling screw until the end of the leveling screw comes in contact with the internal bearing plate in the isolator. (If you have Lod/Sen style isolators with electronic fine-tuning, remember to make the null calibration check *before* the Lod/Sen screw touches the bearing plate.) After making contact with the bearing plate and using a hydraulic jack to support the machine foot, turn each screw clockwise one full turn.

It is not necessary for the machine foot to cover the entire area of the isolator support housing. The internal steel bearing plate of the isolators transfers the load equally over the isolator's resilient cushion.

LEVELING AND FINE-TUNING PROCEDURES

We recommend that the leveling and Fine-Tuning procedures be done prior to the installation of tooling.

For electronic Lod/Sen installations, first read the Operator's Manual for your Lod/Sen Analyzer, and then calibrate the Analyzer and Lod/Sen leveling screws as instructed.

At this point the isolators should be supporting the machine. Each leveling screw should have been threaded into the isolator housing by hand using a short-handled wrench until it made contact with

the internal bearing plate, and the screw then turned one additional full turn while using a hydraulic jack to support the machine feet.

The next steps in the installation procedure will be to adjust the leveling screw in the isolators to level and "fine-tune" the support of the machine. The purpose of the leveling and fine-tuning is:

1. To get the machine bed level and in one plane.
2. To remove any twist from the machine structure that would otherwise be imposed on the machine by the foundation supporting the machine feet.
3. To achieve parallelism between the bed and the slide for presses and the machine ways for machine tools and other types of equipment.
4. To provide proper support so that the machine's support condition mirrors its weight distribution
5. To effectively reduce vibration caused by impact reaction force in both the foundation and in the machine.

The leveling and fine-tuning steps are fast and simple, yet very precise. It is advisable, and makes the job faster and easier, to use a hydraulic jack to support the machine foot when adjusting the isolators. A jack *must* be used for Lod/Sen installations. Use the leveling instructions supplied by the builder of the machine or use the following steps.

1. Using a precision machinist's level, electronic level, transit or other leveling instrument, determine whether or not there is a twist in the machine bed and which side is low.
2. Remove any twist in the machine bed by turning the leveling adjustment screws clockwise in the "low" diagonal pair of isolators until the bed is one plane.
3. Determine the low side of the machine in the *front-to-back* direction. Raise the

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low side by turning the leveling screws in both isolators on the low side an equal amount until the bed is level in the *front-to-back* direction.

4. Repeat Step 3 in the *left-to-right* direction. Then go to Step 5 if you have electronic Lod/Sen style Isolators, or go to Step 6 if you do not have Lod/Sen style Isolators.
5. If you have Lod/Sen style Isolators, it is possible to improve upon the leveling by electronically fine-tuning the support of the machine bed. An optimal fine-tuned condition, on most four-footed machines, is when both diagonals carry 50% of the machine weight. The fine-tune readings from the analyzer will tell you three things:
 - a. How uniformly the isolators support the machine bed.
 - b. Which isolators to adjust to improve the machine support.
 - c. How much to adjust them.

For machines with more than four feet, our Application Engineers will provide the necessary information and/or assistance to achieve the proper weight distribution and fine-tuned support for your machine. Please contact our offices for further information.

6. Tighten the locknuts to secure the Vibro/Dynamics' Isolators to the machine feet. Hold the screw head with a wrench to prevent turning of the screw while tightening the locknuts with a second wrench. (If a Lod/Sen installation, screw on plastic cap.).

For punch press installations, you will find additional information and helpful hints in our Technical Bulletin M/L-647, "How to Level a Press Using a Precision Machinists' Level". Please contact Vibro/Dynamics' Customer Service for a copy.

INSTALLATION TOOLS & EQUIPMENT

During the installation, you will need the ordinary tools for leveling a machine, i.e. open-end or box wrenches to fit the head of the leveling screw and the locknut, and a calibrated machinists' level. A hydraulic jack capable of supporting at least half of the machine weight should be used to support the machine while adjusting the leveling screws. You will also need 110-125 VAC electric power, at 50-60 Hz, for Lod/Sen installations.

FOR ADDITIONAL REDUCTION OF VIBRATION TRANSMISSION

Following these additional steps will help the isolators provide maximum reduction of transmission of impact forces, vibration and noise.

- There should not be any solid connections between the isolators or machine and the building structure.
- Flexible connections are highly recommended for plumbing and electrical conduit.
- Floor plates, walkways, railings, etc. should not be attached to both the machine and the building. Eliminate paths that would allow impact forces and vibration to bypass the isolators.

For further information, contact:

Vibro/Dynamics Corporation, 2443 Braga Drive, Broadview, Illinois 60155-3941. Telephone: 708/345-2050 or 1-800-842-7668. Fax: 708/345-2225.

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