



TECHNICAL BULLETIN M/L-613

INSTALLATION AND LEVELING OF PRESSES ON MICRO/LEVEL ISOLATORS – AN ENGINEERING IMPROVEMENT

The primary purpose of any engineering improvement is to increase profitability. The Micro/Level method of machine installation has proven itself as a cost saving procedure in stamping plants throughout the country. The performance of a machine is very dependent upon how it is installed. The performance of other equipment and of personnel may also depend upon how the machine is installed. The Micro/Level method is designed to bring out the best in the machine, to allow it to perform as it was designed to perform-without having the foundation interfere with performance, to reduce cost of installation, operation, and maintenance, and to make the environment better for personnel and other equipment. Here's how:

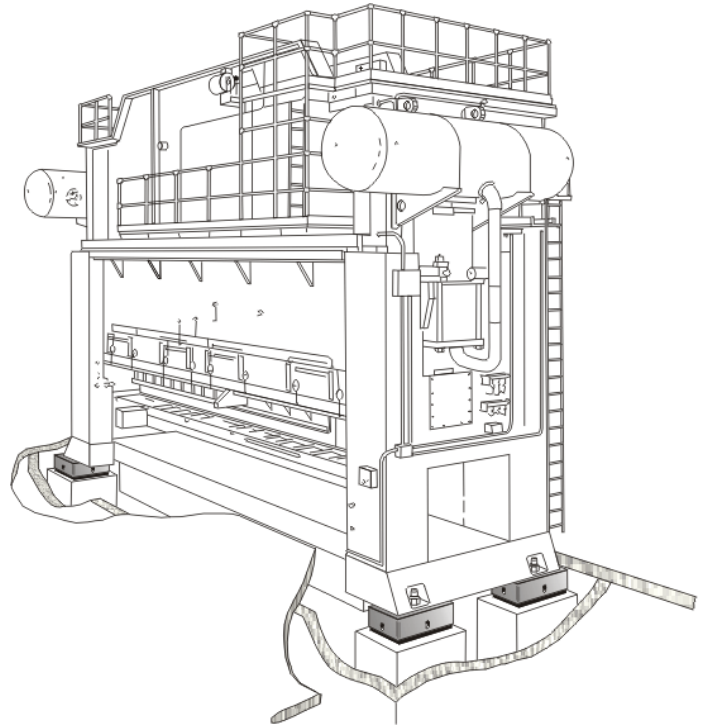
PRECISION LEVELING AND ALIGNMENT

In order to perform to its maximum efficiency, a press bed should be level and parallel with the face of the slide. The gibs must also be parallel. In the past, it was thought that a press had to be bolted down to a foundation in order to hold it level and to keep it in alignment. At that time, it was impossible to achieve this condition with ordinary mounts or pads. The machines on such mounts tended to sway and walk due to packing and settling of the mounting components.

The Micro/Level design overcomes the problems of ordinary mountings. They are also more precise in lining up the press and holding it that way than anchoring the press to a foundation, even when a ground steel plate or shims and grout are used under the press feet.

REDUCED INSTALLATION COSTS

Using the Micro/Level methods, it is possible to eliminate anchor bolts, steel plates, grouting, and shims. The savings in material alone often pay for the Micro/Level Isolators. There are additional savings in labor and down time. Further savings are realized each time the machine is relocated.



CONTROL OF STRUCTURE-BORNE VIBRATION

Micro/Level Isolators reduce the transmission of impact forces into the foundation. They also reduce the transmission of the impact reaction forces from the foundation back into the press. When a press is bolted down the anchor bolts transmit the primary impact force and the secondary impact force into the foundation. This impact force is carried great distances by the floor and the soil. The entire floor area vibrates and this is transmitted into the walls, roof, and all structural members. Because the shock forces are so sudden, the structure vibrates with a combination of frequencies.

Tests show that the structure-borne vibration is reduced by about 6 dB throughout the audible frequency range when Micro/Level Isolators are used. This is substantiated by our computer analysis of the transmission and feedback of impact aftershocks.

REDUCED PRESS LOAD

Micro/Level Isolators have been found to reduce press load in two ways.

1. By providing precise alignment of gibs and parallelism of the bed and slide. In one typical high-speed press, fine-tuning on Micro/Level Isolators reduced motor load by 20 to 25%.
2. By reducing impact stress. In another typical example on an aluminum pull-top end press, press load as measured by a strain gage type of load monitoring instrument read 55% of press capacity when the press was anchored down. After installation on Micro/Level Isolators it required only 43% of press capacity to make high quality parts, a reduction of about 22%.

NOISE CONTROL

The total noise control program as related to punch press operations includes five basic steps. The *first* step is to isolate the press from the floor. The other four include shielding of direct air-borne noise from the die, acoustically treating ceilings and walls to cut reverberation, keeping all fasteners tight to prevent rattling, and reducing compressed air line noise.

The role played by Micro/Level Isolators is to isolate the press from the floor to reduce the transmission of structure-borne vibration and noise. Since structure-borne noise is exactly the same thing as structure-borne vibration, the Micro/Level Isolators have reduced structure-borne noise by about 6 dB or more. This is substantiated by tests conducted in various stamping plants.

Measuring the effectiveness of isolators in reducing structure-borne noise requires one or more of the following procedures:

1. To shield the microphone from the direct die noise and other noise sources.
2. To measure peak noise with impulsive type instrumentation.
3. To use a vibration accelerometer attached to the floor.

Such measurements substantiated a 6 dB reduction in overall noise and 8 to 12 dB reduction in the critical 500 to 4000 Hz range.

For more information, please ask for a copy of Vibro/Dynamics' Technical Bulletin M/L-650 "How to Measure the Effectiveness of Press Isolators".

Experienced die setters notice that presses leveled and fine-tuned on Micro/Level Isolators typically produce a lower-pitched solid sound compared to the high pitched ringing noise when the same press is bolted down. While the microphone may not be able to differentiate much between the two sounds, it is often easier to communicate because noise in the voice frequencies is reduced. In any event, the deeper sound of the press on Micro/Level Isolators seems to be the sound that indicates to the die setter that the press and dies are properly set.

REDUCED MAINTENANCE COSTS

All of the above benefits lead directly to reduced maintenance costs and longer life of:

- Presses
- Dies
- Foundations

All have been substantiated many times by users of Micro/Level Isolators.

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