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**UNISORB®**

INSTALLATION SOLUTIONS

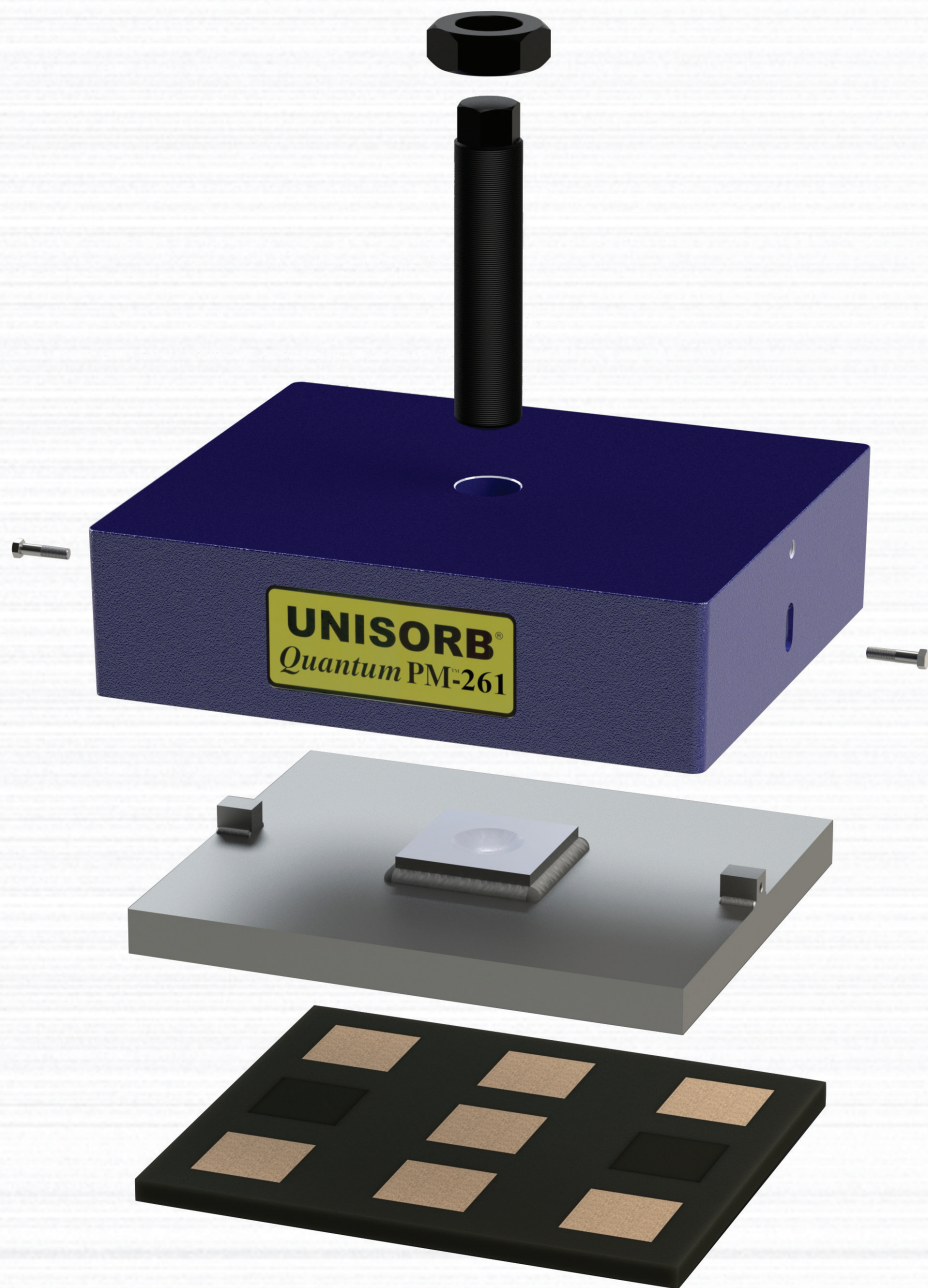
# UNISORB Quantum PM™ Press Mounts

Engineered Press Alignment Solutions.



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**UNISORB®**

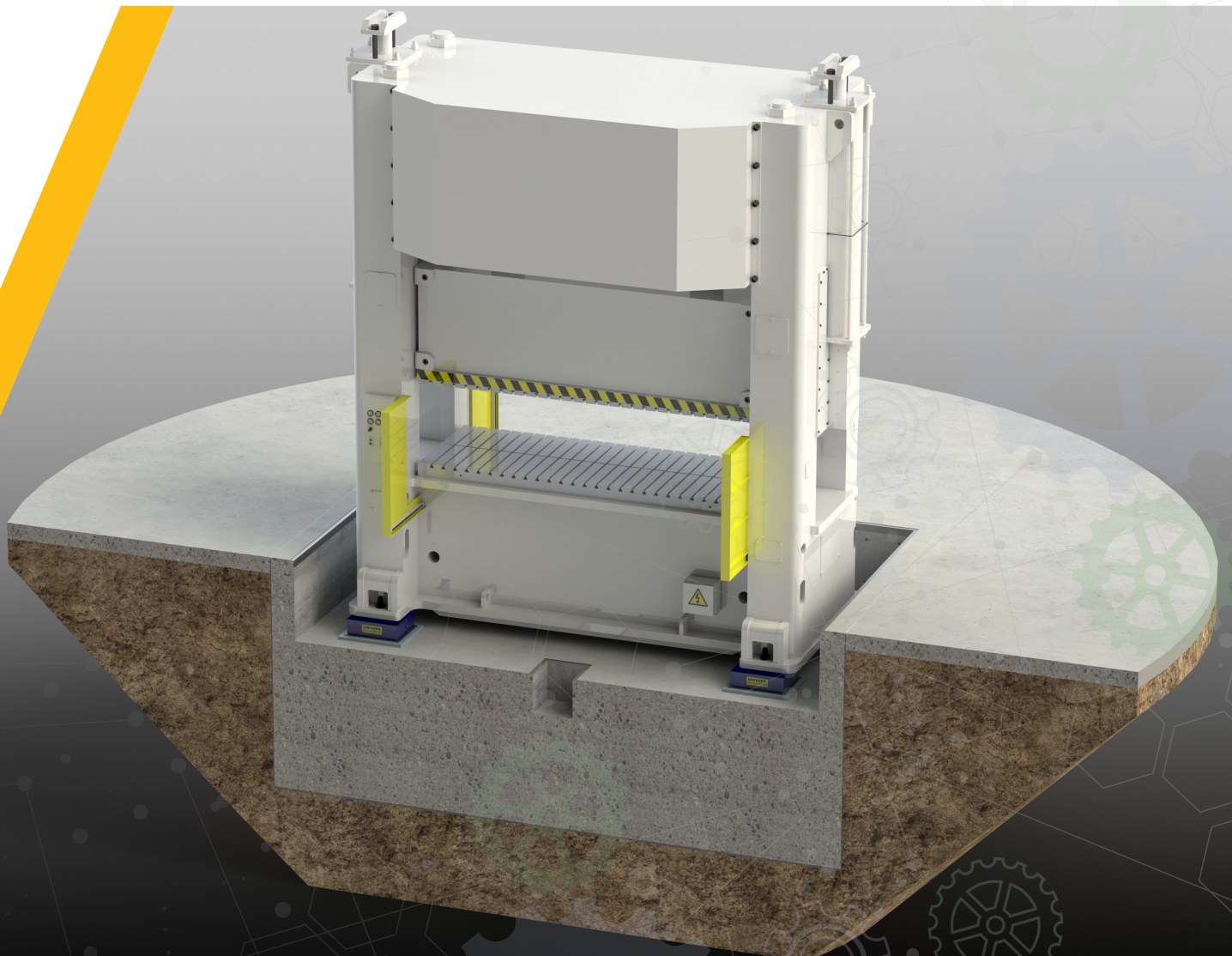
# The Quantum PM™ Press Mount

## Engineered Press Mounting for Shock, Vibration, and Alignment Control

Stamping and forming presses generate extreme shock and vibration that can shorten machine life, damage tooling, and degrade part quality. Proper mounting is critical to maintaining press stability, alignment, and long-term performance.

The Unisorb® Quantum PM™ Press Mount system is engineered to control these forces at the source, delivering predictable performance, improved machine stability, and extended tooling life. Designed for each press application, Quantum PM™ mounts combine engineered stiffness and damping to manage impact energy while maintaining consistent press alignment.

- ⦿ **Shock and vibration control:** Reduces impact loading transmitted into the press and foundation, minimizing vibration, noise, and structural fatigue
- ⦿ **Improved press and die life:** Limits harmful dynamic forces that lead to premature wear, tooling damage, and maintenance downtime.
- ⦿ **Consistent part quality:** Stabilizes press motion for improved repeatability and dimensional accuracy.
- ⦿ **Engineered system design:** Mounts are selected by our engineering team based on press tonnage, stroke, speed, tooling, and foundation conditions.



# Press Mounting Considerations

## Overview

All too often, presses are installed directly on the shop floor with little consideration for proper support. While special foundations are sometimes used, improper installation can lead to vibration, premature component wear, and die failure. Historically, felt, rubber, or composite pads with shims have been used to address shock and vibration. Today, these functions are more effectively achieved using engineered Press Mounts, as shown in Figure 1.



Figure 1

This is a step in the right direction, but does not address the problem of fast, easy, accurate leveling and alignment of the presses, or maintaining alignment. For this reason the press mount was developed to provide both ease of leveling and alignment, as well as vibration isolation (see figure 2).

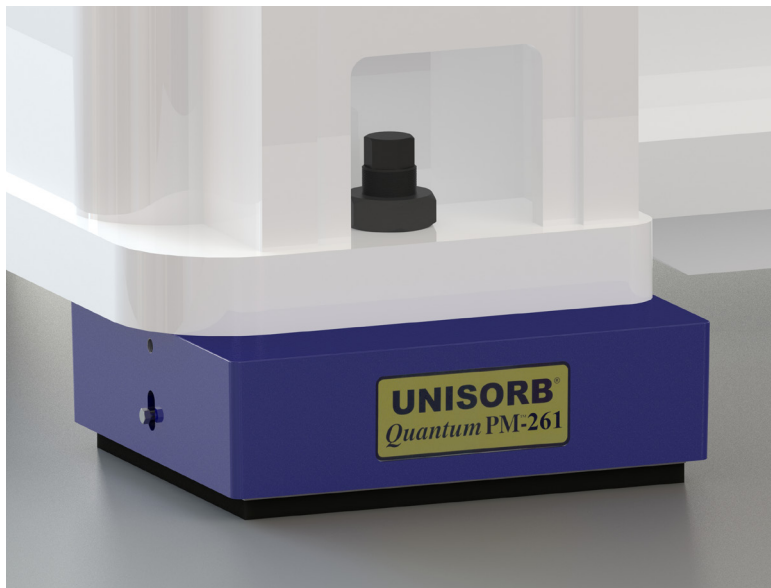


Figure 2

This development had provided cost savings for metalworking operations everywhere. The performance of a press is greatly affected by how it is installed. The performance of other equipment, as well as personnel, are also influenced by how presses are installed. Presses should be supported in such a manner that the shock and vibration generated in normal operation does not transmit into surrounding areas, thereby disrupting precision machining work and/or contributing to worker fatigue.

Press mounts have provided a way to allow presses to perform at optimum levels, while reducing the cost of installation, operation and maintenance. Other cost savings include fewer scrap parts and less building damage to floors, foundations, etc.

In order to perform to design specifications, presses must be supported adequately to maintain alignment and critical relationships between press and feed equipment.

The support system for a press must be capable of handling:

1. **Static loads (dead weight of the press)**
2. **Stamping impacts and snap-through forces**
3. **Slide inertia forces**
4. **Rotating out-of-balance forces**

To determine whether or not a press is a good candidate for the use of press mounts, let's briefly examine each of the four items listed above.

**1. Static loads** are forces seen at each mounting point with the press in operating position, but completely at rest. Most presses have four mounting points, but are constructed so that the weight is not evenly distributed among them. Usually the rear feet are farther from the center line of the slide travel than the front feet. Also, flywheels and drive equipment on mechanical presses are located on one side or another. This uneven distribution of weight must be taken into account when designing any support system. Unisorb Quantum PM™ Press Mounts make it possible to compensate for unequal weight distribution by allowing adjustment of loading among the press feet.

**2. Stamping impact and snap-through forces** are present to some degree in all presses and can be particularly troublesome when higher speed machines are used for blanking. The rapid increase of forces as the stock is contacted by the punch moves the press crown upward and the bed downward, stretching the press uprights in the process. At maximum capacity, the uprights of a press could be stretched to their allowable limits. When the work material fractures, the opposite action occurs with the press crown moving downward and the bed upward to its original position and slightly beyond. This reaction is called snap-through shock. These forces are magnified by any misalignment condition which exists within the press. Both the stamping impact and snap-through forces can be greatly reduced by proper leveling of the press, thus assuring proper alignment of the press components. Press mounts are very useful for controlling these forces and assuring symmetrical loading of the press structure, thus greatly enhancing component life.

**3. Slide inertia forces** result from acceleration acting on the slide and are an extremely important consideration in the design of a press mounting system. They act primarily in the direction of slide travel and potentially lifting the press from its supporting surface. In some high speed presses it is possible for these forces to exceed the dead weight of the press. This condition establishes a limitation as to whether or not a press should be mounted on freestanding mounts. Machines which are manufactured with dynamic balancing equipment do not have this problem, and can safely be mounted on press mounts (see Figure 3). Older high speed presses should be securely bolted down, and are good candidates for isolated foundations.

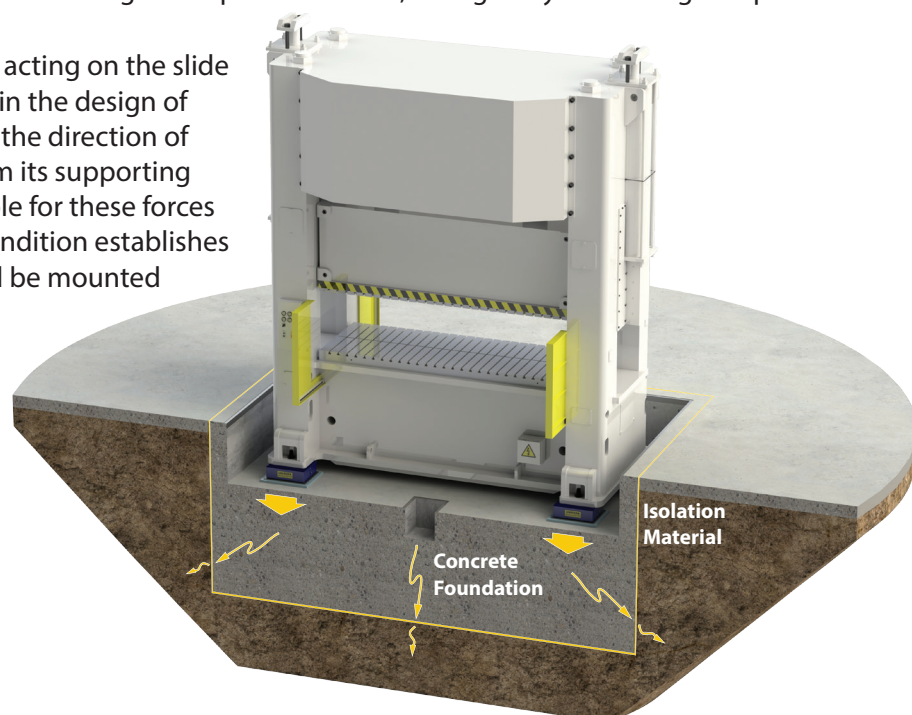


Figure 3

## Press Mounting Considerations (continued)

**4. Rotating out-of-balance forces** result from crankshaft imbalances and produce a rocking of the press about its mounting points. This problem is usually found in older presses which do not have dynamic balancing equipment, and which are being operated at high speeds. In cases like this, proper action must be taken to restrain the press. When this condition exists on a press, it is possible to predict by calculation the amplitude of the rocking motion that will occur if sufficient engineering data can be obtained on the press. Otherwise, a stiffer than normal installation must be furnished to minimize the rocking motion. This condition also is well suited to the isolated foundation approach.

Anytime a press cannot be mounted safely on press mounts due to any of the above considerations, Unisorb offers the perfect solution. Unisorb Inertia Block materials, used in conjunction with a well engineered foundation and proper anchoring, will reduce the vibration and impact problems associated with the operation of these machines, while maintaining the rigidity needed for proper support. In some cases presses have been mounted using both press mounts and inertia blocks, thus providing ease of leveling while further tuning out vibration problems.

In lieu of constructing an isolated foundation, Unisorb isolation pads can be placed under the press feet, and the press securely bolted to the floor, with leveling accomplished by the use of shims. Unisorb Vector Anchor Bolts, together with either Unisorb V-1 Non-Shrink Machinery Grout (cement-based) or V-100 Epoxy Grout, can be used to anchor the press feet to the floor.

Two very important design considerations should be taken into account when press mount evaluations and selections are made:

### A. Press mount construction

### B. Isolation pad material selection

**A. Press Mount Construction** is critical due to the severe loading experienced during press operation. Material selection is based on performance requirements, size, and loading conditions. Ductile cast iron is typically used for smaller press mounts because it provides an effective balance of strength and economy, while structural steel is used for larger or higher load designs, such as PM-161 and PM-201 configurations.

Due to the necessity for flexibility of size and shape, the PM-261 models and larger are manufactured using structural steel. All the Unisorb Quantum PM™ Press Mount components are rugged enough to suit any press application. Unisorb has the option of using structural steel for any of its press mount sizes if the need for special size or shape mounts arise. Unisorb PM mounts have also maintained the popular design feature of the spherical dimple in the impact plate under the adjusting bolt to allow for angular correction for uneven floors. For the above reasons Unisorb has maintained its position as the most versatile supplier of press mounts in the industry.

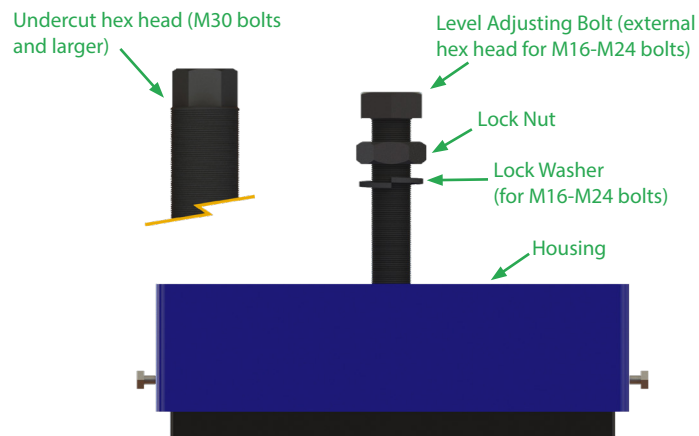
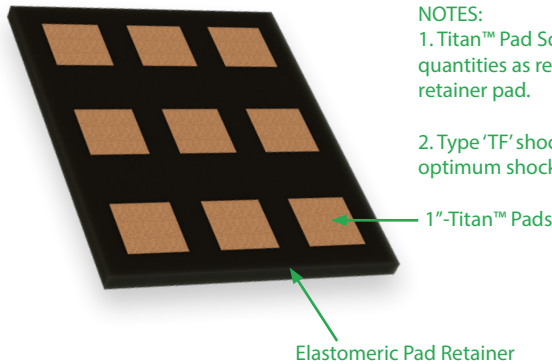


Figure 4

**B. Isolation pad material selection** is paramount because it determines the degree of proper vibration isolation which may be achieved by using press mounts. The design and construction of Unisorb Quantum PM™ Press Mounts provides the capability of choosing from a variety of isolation pad designs. These products are selected on the basis of their individual characteristics to meet your exact isolation needs. This flexibility provides the opportunity to minimize vibration and take into account shape factors, environmental considerations, spring rates, etc. Therefore Unisorb is not restricted to the use of any one type of pad material. Unisorb elastomeric pads are molded to exacting specifications to achieve optimum shock, damping and vibration control. Unisorb Titan Shock Pads provide excellent vibration control

### Unisorb Type 'TF' Shock Pad



**NOTES:**

1. Titan™ Pad Squares are provided in various sizes and quantities as required. They are inserted in place within retainer pad.

2. Type 'TF' shock pads are custom tuned to provide optimum shock and vibration damping performance.

1" - Titan™ Pads

Elastomeric Pad Retainer

**Figure 5**

and damping, especially under extreme loads and high shock applications. A combination of elastomeric pads together with Titan Shock Pad inserts offer the perfect solution to solving the vibration/isolation problems on larger presses (see Figure 5). Unisorb Elastomeric Pads are impervious to fluid absorption and provide excellent isolation and damping. The high quality molded compound is superior to industrial neoprenes in oil resistance and damping. Urethanes and other elastomers are also available, if needed, to meet the special requirements of the Food and Drug Administration and the U.S. Department of Agriculture.

Unisorb Quantum PM™ Press Mounts have a special "Friction Kote" available on the bottom surface of the resilient pads to prevent presses from "walking" on shop floors.

Unisorb PM Mounts outperform others in reducing shock and vibration. Please see pages 8 and 9 of this manual for vibration curves illustrating this.

Proper press installation is critical to achieving optimum performance.

Unisorb Quantum PM™ Press Mounts offer the following benefits:

- **Increased press and tooling life**
- **Simplified, fast and accurate press installation**
- **Reduction of shock and vibration**
- **Elimination of anchor bolts**
- **Reduced need for specialized foundation**
- **Lessen operator fatigue**
- **Accommodates uneven floors**
- **Prevents press "walking"**

## Press Mounting Considerations (continued)

Unisorb Quantum PM Press Mounts are considered engineered products, and as such are custom applied by Unisorb engineers to meet the specific requirements of each press application.

The unit consists of four main components:

- 1. Rugged housing design**
- 2. Heavy duty steel impact plate**
- 3. High strength steel adjusting bolt**
- 4. Top quality resilient isolation pad**

A variety of isolation pad materials and configurations are available to meet the requirements of almost any press application.

These pad options include:

- **Unisorb Titan Pad for high impact loading and shock**
- **Type 'TF' Pads for "fine-tuning" mounts for larger, heavier presses**
- **Specially engineered and formulated elastomeric pads**

Ten standard sizes are available (see specification chart). Special sizes and configurations are also available as required. Contact Unisorb Engineering Department for design assistance.

# Quantum Press Mount Specifications

The Unisorb® Quantum PM™ Press Mount publication presents detailed product information covering this superb line of products. These mounts are part of our Engineered Product lines of mounting equipment, and are specifically designed for each press application. It is our intent to completely familiarize you with Quantum PM™ Press Mounts while providing technical information supporting our claim to the unequalled quality represented by this line of products.

The Quantum PM™ Press Mounts have been carefully developed to provide optimum performance, even in the toughest applications, along with unparalleled ease of installation.

## Press Mount Name Legend

EXAMPLE: Press Mount Model PM-121(7.5)-M30 (380mm)-TF25

PM	12	1	(7.5)	S	M30	U	(380mm)	TF	25
Press Mount	Nominal Housing Size Length (inch)	Number of Leveling Bolts	Special Height (if applicable - inch)	Special Configuration (if applicable)	Leveling Bolt Diameter** (M20, M24, etc.)***	Undercut Hex (special)	Bolt Length (other than standard)	Pad Type (TR=Titan Ring, TF=Titan Matrix, N=Nitrile)	Size and Number of Titan Pad Inserts (2" Square x 5 Req'd)

\* If press foot requires (2) leveling bolts, contact Unisorb Engineering for application assistance.

\*\* Verify that clearance hole is suitable for leveling bolt.

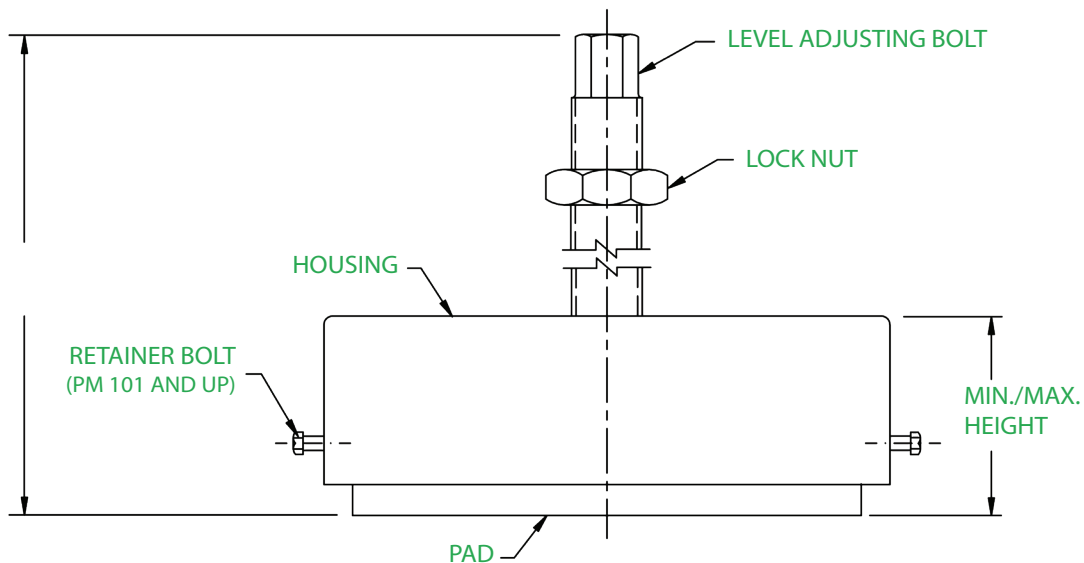
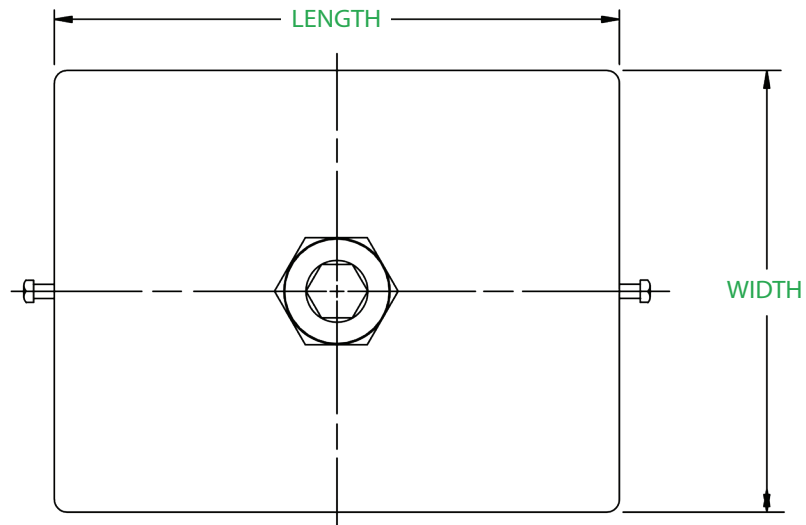
\*\*\* For step-down leveling bolts, show diameter of upper portion of bolt first, then lower portion, (Example: M20/M36).

### Specifications (mm/in)

Press Mount Series	Length	Width	Height*		Bolt Sizes Available
			Min.	Max.	
PM-61	178/7.00	114/4.50	64/2.50	99/3.88	M16 thru M24
PM-81	203/8.00	149/5.88	64/2.50	99/3.88	M20 thru M30
PM-101	254/10.00	200/7.88	83/3.25	118/4.63	M20 thru M36
PM-121	318/12.50	229/9.00	89/3.50	124/4.88	M24 thru M42
PM-161	406/16.00	318/12.50	114/4.50	149/5.88	M30 thru M56
PM-201	508/20.00	406/16.00	152/6.00	187/7.38	M42 thru M80
PM-261	660/26.00	559/22.00	191/7.50	226/8.88	M64 thru M100
PM-301	762/30.00	610/24.00	241/9.50	276/10.88	M80 thru M110
PM-321	813/32.00	610/24.00	267/10.50	302/11.88	M80 thru M130
PM-351	889/35.00	508/20.00	279/11.00	314/12.38	M80 thru M130
PM-381	965/38.00	648/25.50	330/13.00	365/14.38	M100 thru M150
PM-421	1067/42.00	610/24.00	375/14.75	410/16.13	M100 thru M150
PM-481	1219/48.00	914/36.00	394/15.50	429/16.88	M130 thru M180

\* Top of mount housing to floor.

\*\* Maximum height adjustment recommended to be no greater than bolt diameter.



# Installation Instructions

## Step-By-Step

**1 FLOOR PREPARATION** — Clean floor, removing all oil, grease and debris.

**2 POSITION PRESS** — Bring press into location and raise it sufficiently to allow mounts to be positioned under the mounting feet.

**3 PREPARE MOUNTS** — Remove the leveling bolts from PM Mounts. Keep each leveling bolt and mount together as a set so the stamped number on the housing and the bolt head match.

**4 POSITION MOUNTS** — Position mounts (with bolt holes aligned with holes in press feet) and insert leveling bolts through bolt holes in press feet and screw into bolt holes in mount.

NOTE: On the PM-61 and PM-81 series only, adjust each mount with the leveling bolt so the pad extends below the mount housing approximately 1/4". (All other mounts will automatically be positioned similarly.)

**5 SETTING PRESS** — Lower press onto mounts so all mounts accept uniform loading.

**6 SETTLE PRESS** — After 20 minutes (allowing press to "settle") locate the mount housing closest to the floor and elevate to 1/4" off of the floor. Level the press by adjusting the other mounts using the first mount as the point of reference. On large presses it may be necessary to assist lifting the press by external means, while adjusting leveling bolts. On the PM-81 series mounts the maximum amount of pad showing below housing should not exceed 5/8".

**7 CONFIRM LEVELING** — The torques on the leveling bolts should be relatively equal, signaling even load distribution.

**8 ADD WASHERS** — Add flat washers if necessary to adequately cover holes in press feet. A lock washer may also be added if desired.

**9 ADD NUTS AND SECURE** — Tighten nuts, thus securing press feet to mounts.



# Test Results

## Unisorb Quantum PM™ Press Mounts

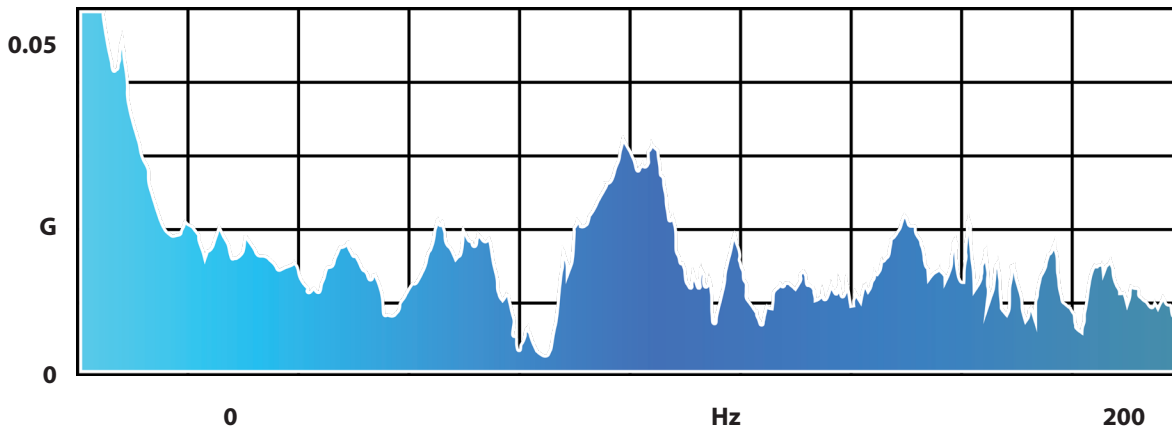
A proven track record of successful press installation, the results of which have been documented by vibration surveys.

The overall vibrations (measured on the floor compared to the press foot) are virtually eliminated when mounted on Unisorb Quantum PM™ Press Mounts. By comparison, the reduction seen on competitors' multilayer composition pads can be as low as 7%. The actual differences were 7%, 41%, 33% and 42% for an average reduction of 31% on the competitors' pad.

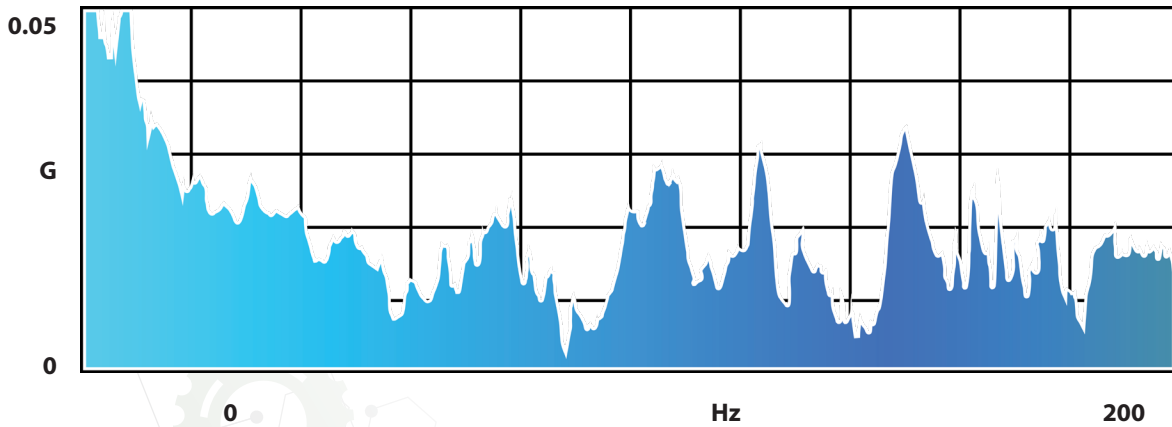
### COMPETITOR RESULTS

#### VIBRATION SPECTRUM FROM 0-200 Hz

##### 200-Ton Press Mounted on Competitors' Multi-Layer Composition Pads



ENERGY IN PRESS



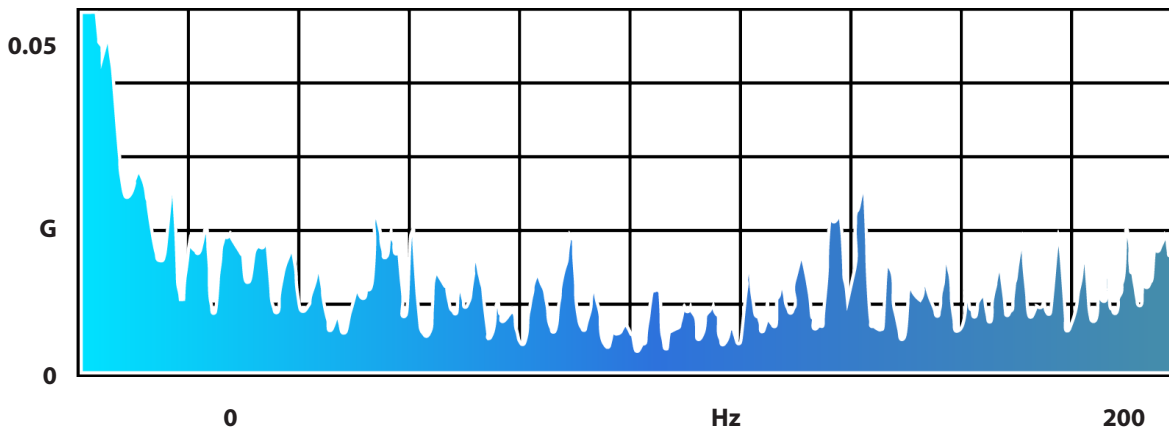
RESULTANT ENERGY IN FLOOR

The same press was installed on Unisorb Quantum PM™ Press Mounts model PM-121-125-TR. Vibrations (when measured from the press foot to the floor) are virtually eliminated as indicated on the lower curve displayed below.

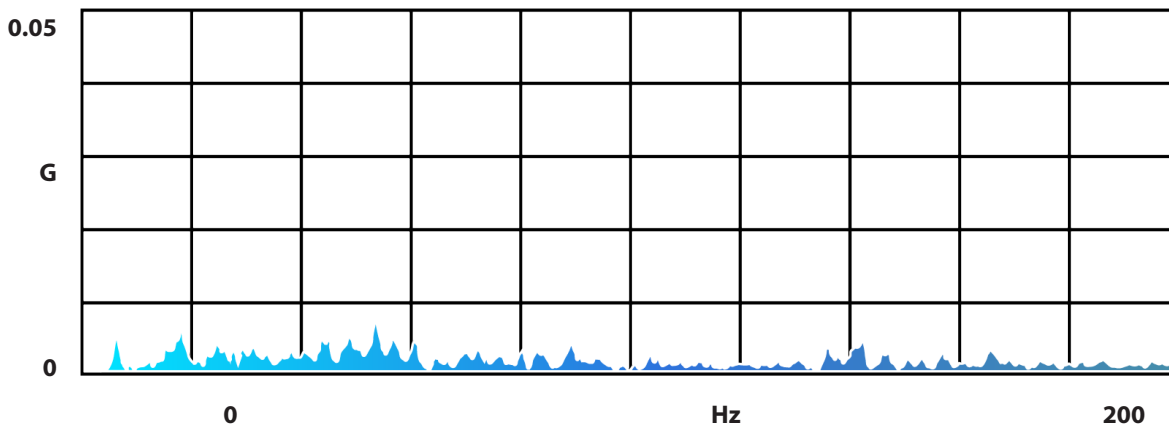
## UNISORB RESULTS

### VIBRATION SPECTRUM FROM 0-200 Hz

200-Ton Press Mounted on Unisorb Quantum PM™ Press Mounts PM-121-125-TR



ENERGY IN PRESS



RESULTANT ENERGY IN FLOOR



INSTALLATION SOLUTIONS

### Unisorb® Press Mount Calculation Form

COMPANY \_\_\_\_\_  
 NAME \_\_\_\_\_  
 ADDRESS STREET \_\_\_\_\_ CITY \_\_\_\_\_ STATE & ZIP \_\_\_\_\_  
 PHONE \_\_\_\_\_ EMAIL \_\_\_\_\_

MAKE \_\_\_\_\_ MODEL \_\_\_\_\_

TYPE  OBI  OBS  SS  OTHER (SPECIFY): \_\_\_\_\_

CAPACITY (TONS) \_\_\_\_\_ PRESS WEIGHT \_\_\_\_\_ MAX DIE WEIGHT \_\_\_\_\_

TYPE  MECHANICAL  HYDRAULIC  PNEUMATIC  OTHER (SPECIFY): \_\_\_\_\_

FUNCTION  BLANKING  DRAWING  EMBOSING  OTHER (SPECIFY): \_\_\_\_\_

STROKE LENGTH \_\_\_\_\_ STROKES PER MINUTE \_\_\_\_\_

BED SIZE \_\_\_\_\_ PRESS HEIGHT \_\_\_\_\_

WEIGHT DISTRIBUTION  BALANCED  
 UNBALANCED (DESCRIBE): \_\_\_\_\_

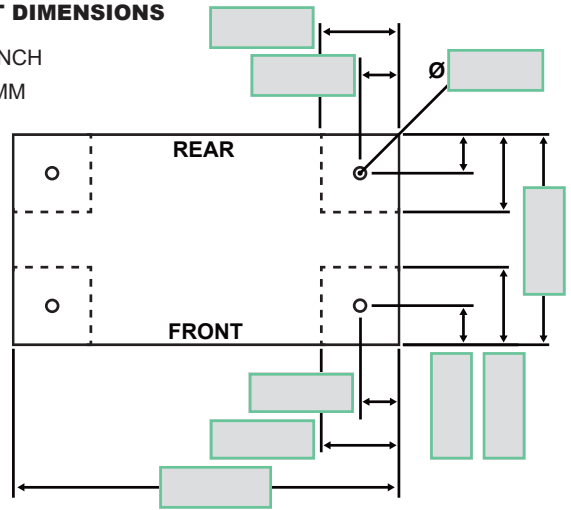
OBSTRUCTION BELOW BOTTOM OF PRESS FEET? DESCRIBE: \_\_\_\_\_

REQUESTED QUOTE:

PRESS MOUNTS (Cast housing with adjustment bolt)  
 ANCHORS  
 ISOLATION PAD (1" thick pad material)  
 GROUT  
 ISOLATED FOUNDATION

#### PRESS FOOT DIMENSIONS

UNITS:  INCH  
 MM



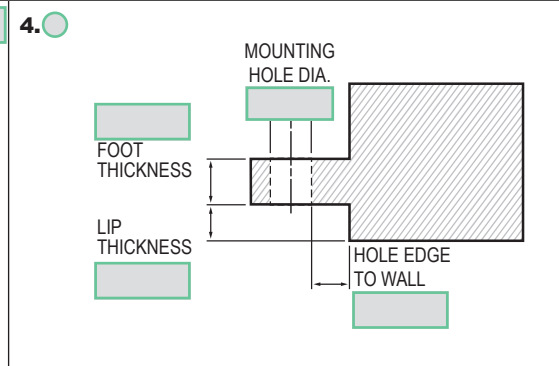
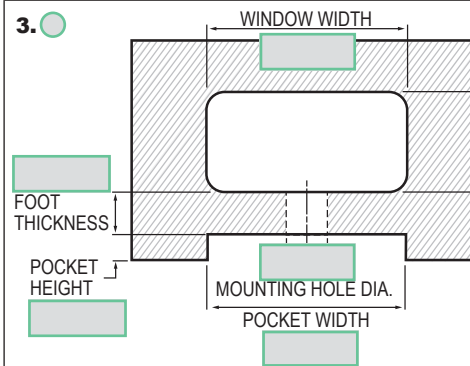
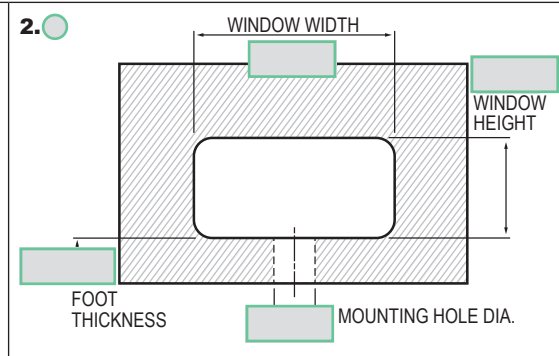
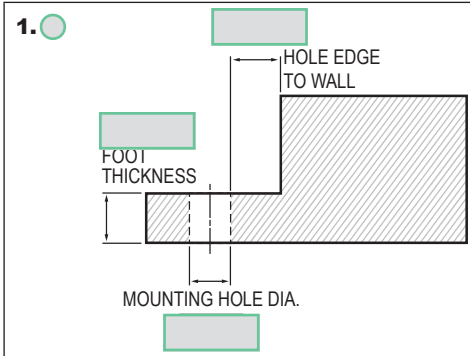
#### NOTES:

Send drawings if available.

Complete all items applicable to your specific press.

Leave all non-applicable items blank.

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