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# Altair 2412β2, 3015β2

Laser Machine  
Foundations and Levelling  
10 June, 1998

**PRODUCTION**  
*laser*  
Systems

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## Warning

**ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.**  
**DO NOT APPLY POWER TO THE MACHINE UNTIL AN *A.E.S.I.* (*AMADA ENGINEERING AND SERVICE INCORPORATED*) ENGINEER IS PRESENT AND HAS INSTRUCTED YOU TO DO SO.**  
**APPLYING POWER TO THE MACHINE WITHOUT REMOVING ALL WRAPPING PAPER AND PROTECTIVE COATINGS MAY DAMAGE THE MACHINE.**

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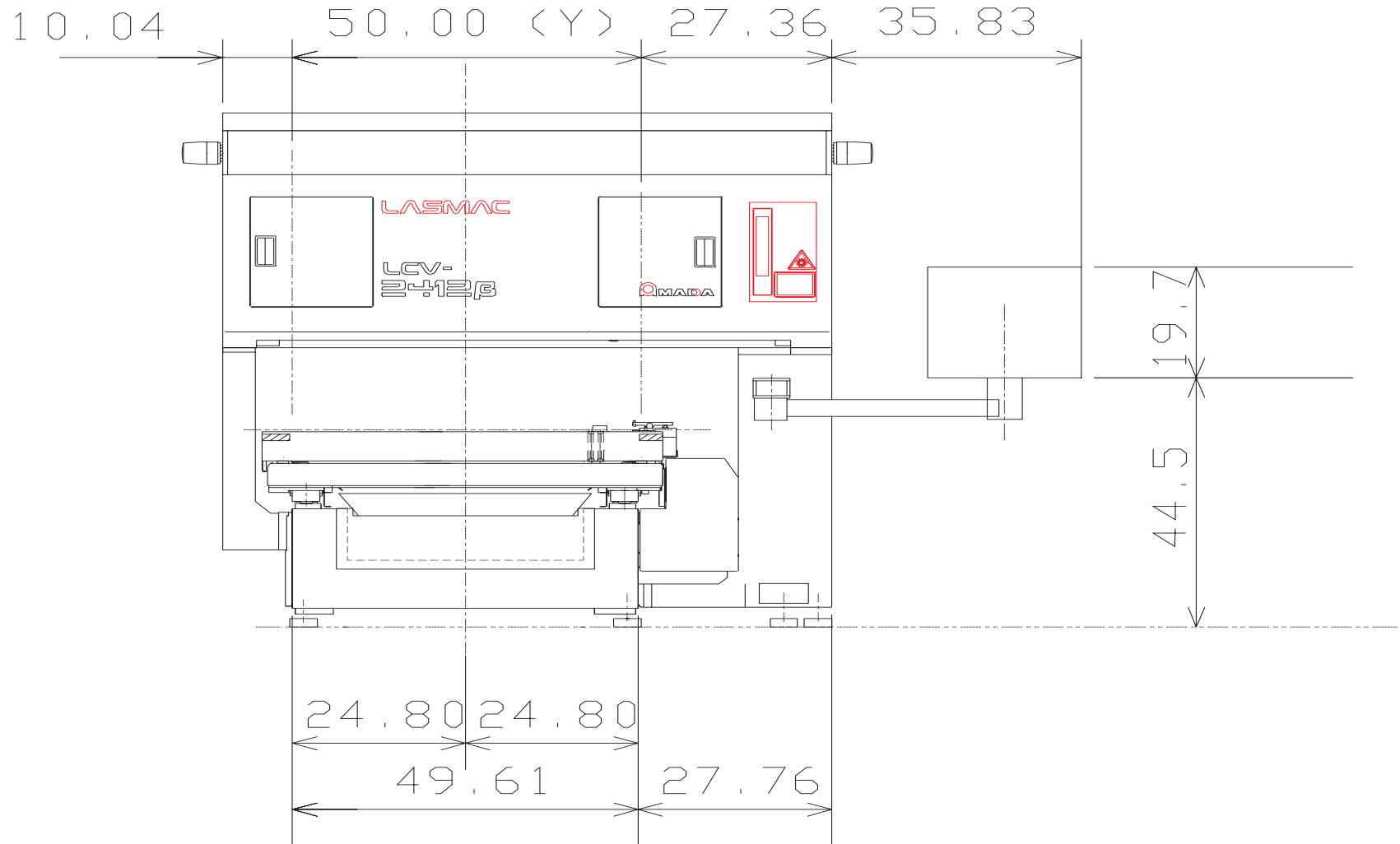
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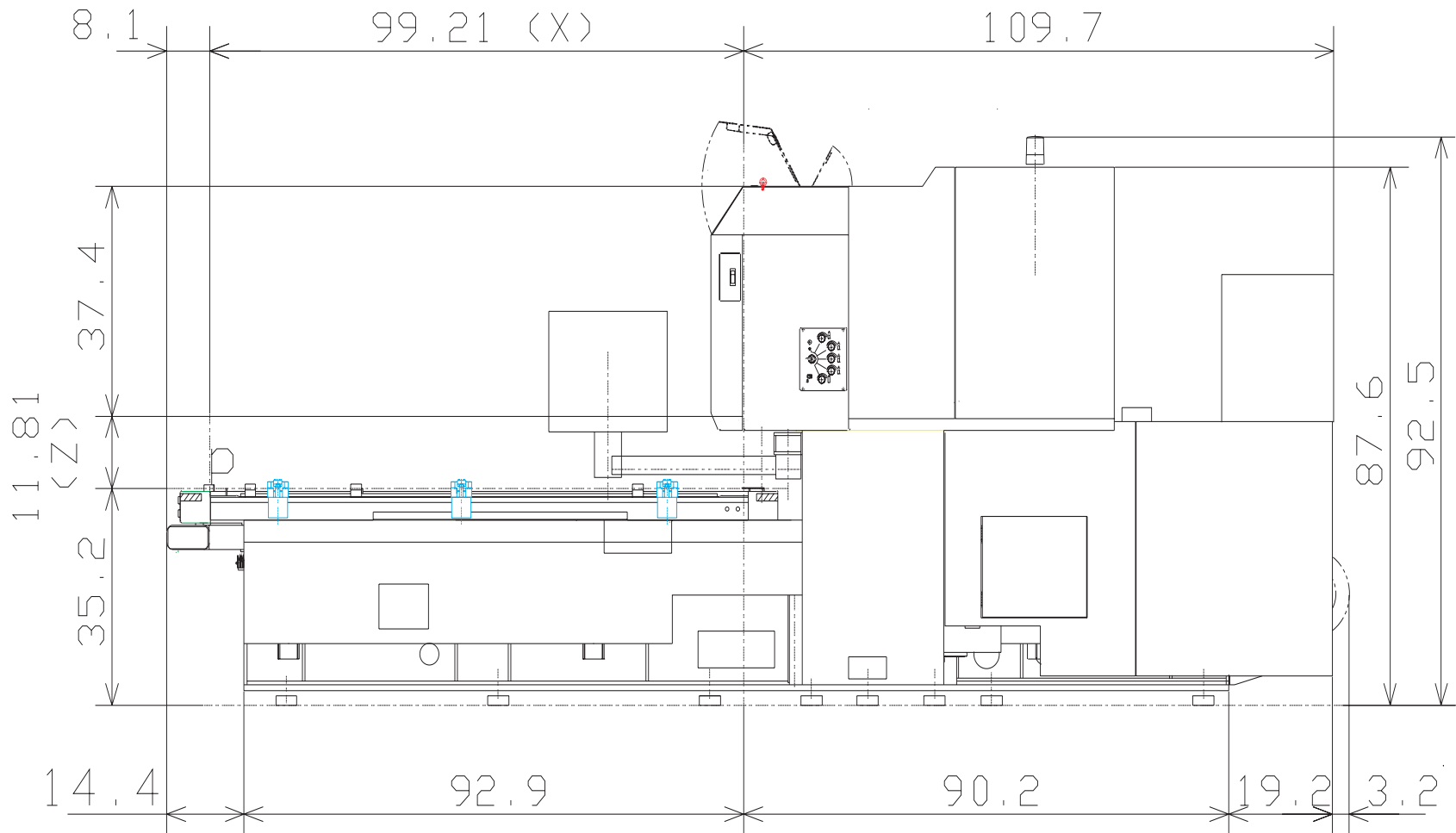
## Introduction

This document describes the foundation preparation required and general machine levelling procedure for the Altair 2412 and 3015 machines.

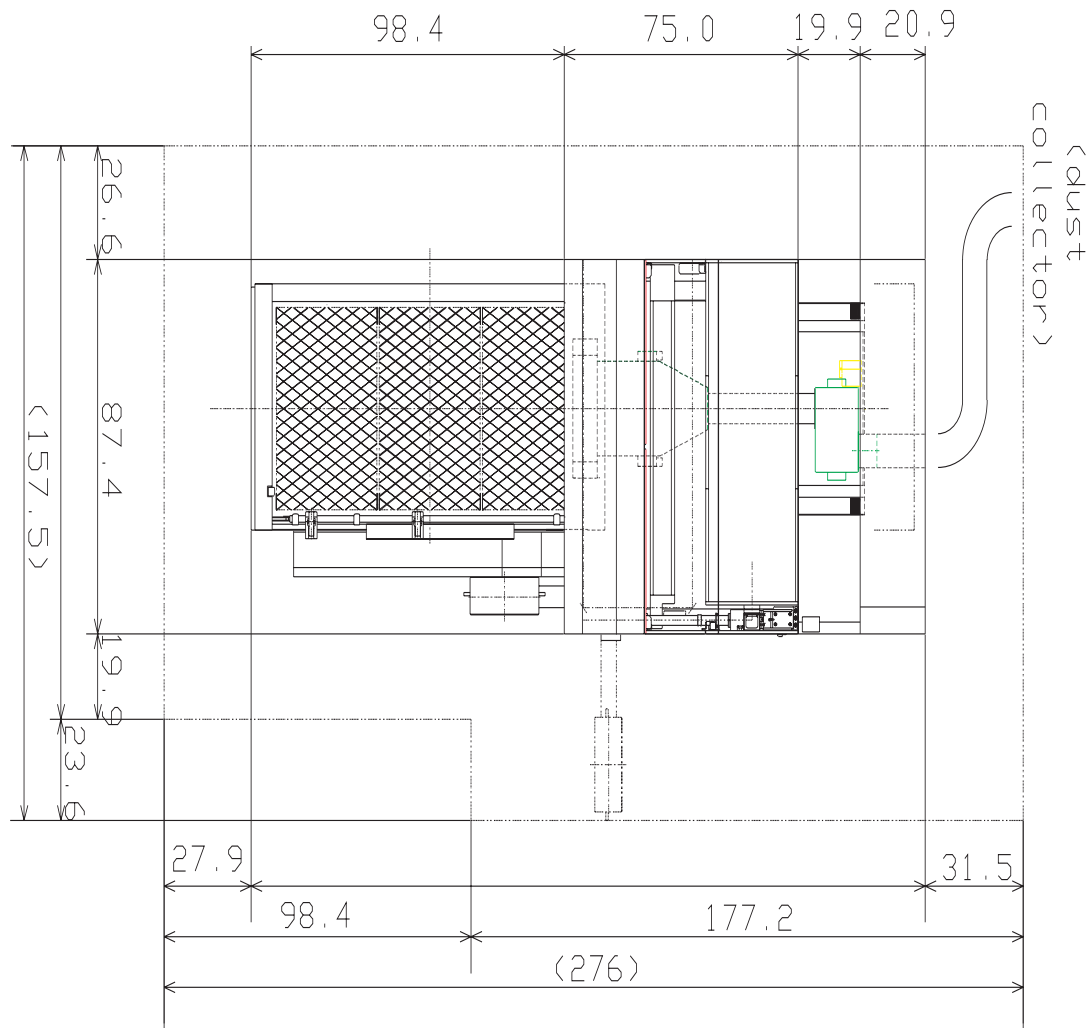
# Machine Dimensions - Altair 2412 Front View



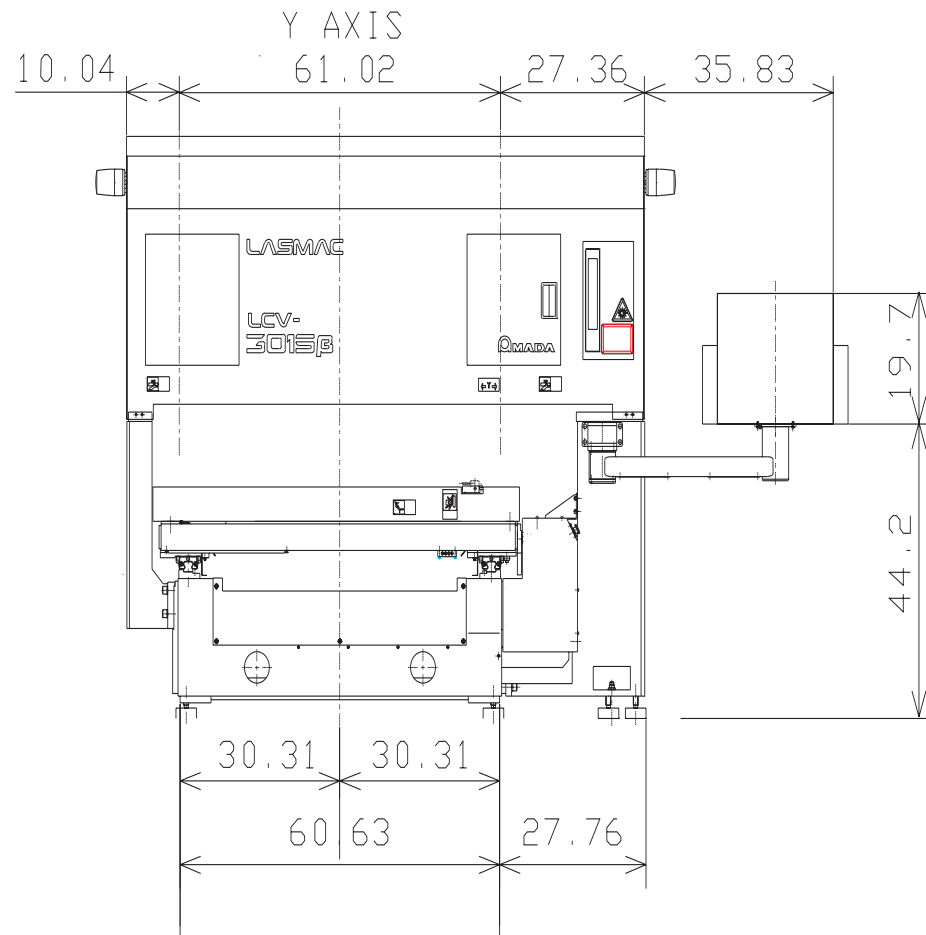
## Machine Dimensions - Altair 2412 Side View



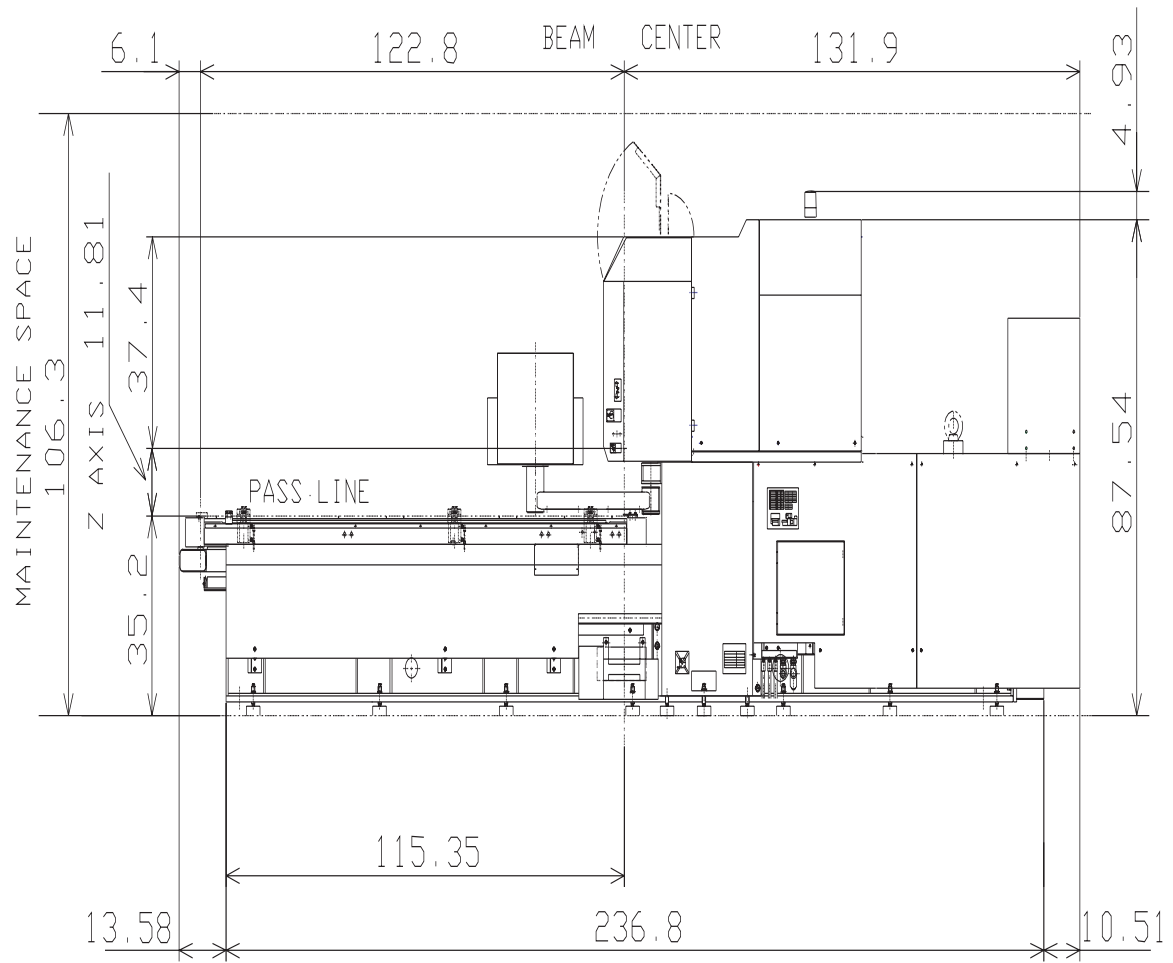
# Machine Dimensions - Altair 2412 Plan View



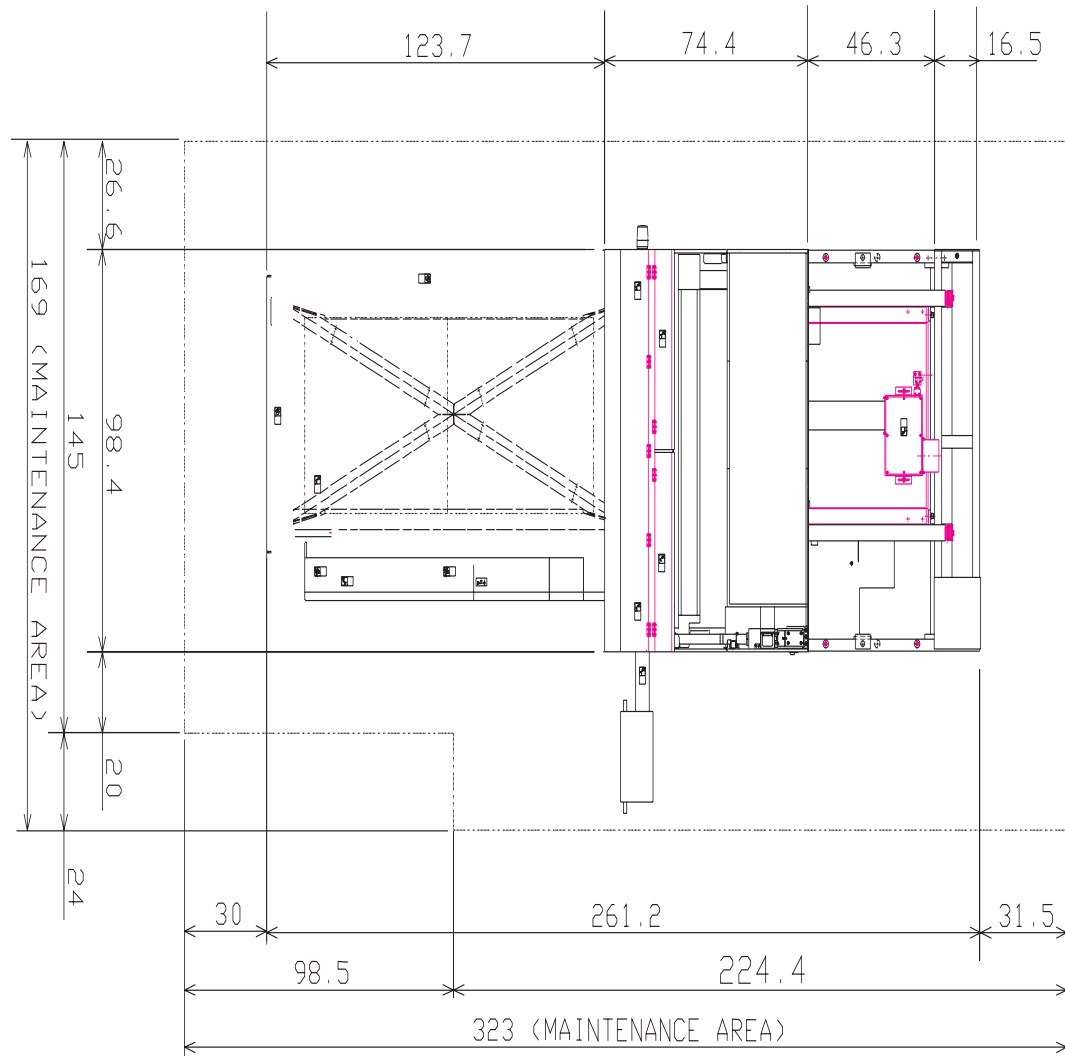
## Machine Dimensions - Altair 3015 Front View



# Machine Dimensions - Altair 3015 Side View



## Machine Dimensions - Altair 3015 Plan View



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## Machine Foundations

The machine must be properly secured to a suitable foundation for best results. If an existing floor is used, it must be capable of supporting the weight of the machine; Amada recommends a minimum load bearing capacity of 1020 lb/ft<sup>2</sup>. It is the purchaser's responsibility to determine the necessary thickness of the foundation concrete to assure this requirement.

- ❑ External vibration must not exceed 0.05G acceleration, at maximum amplitude of 5 microns.

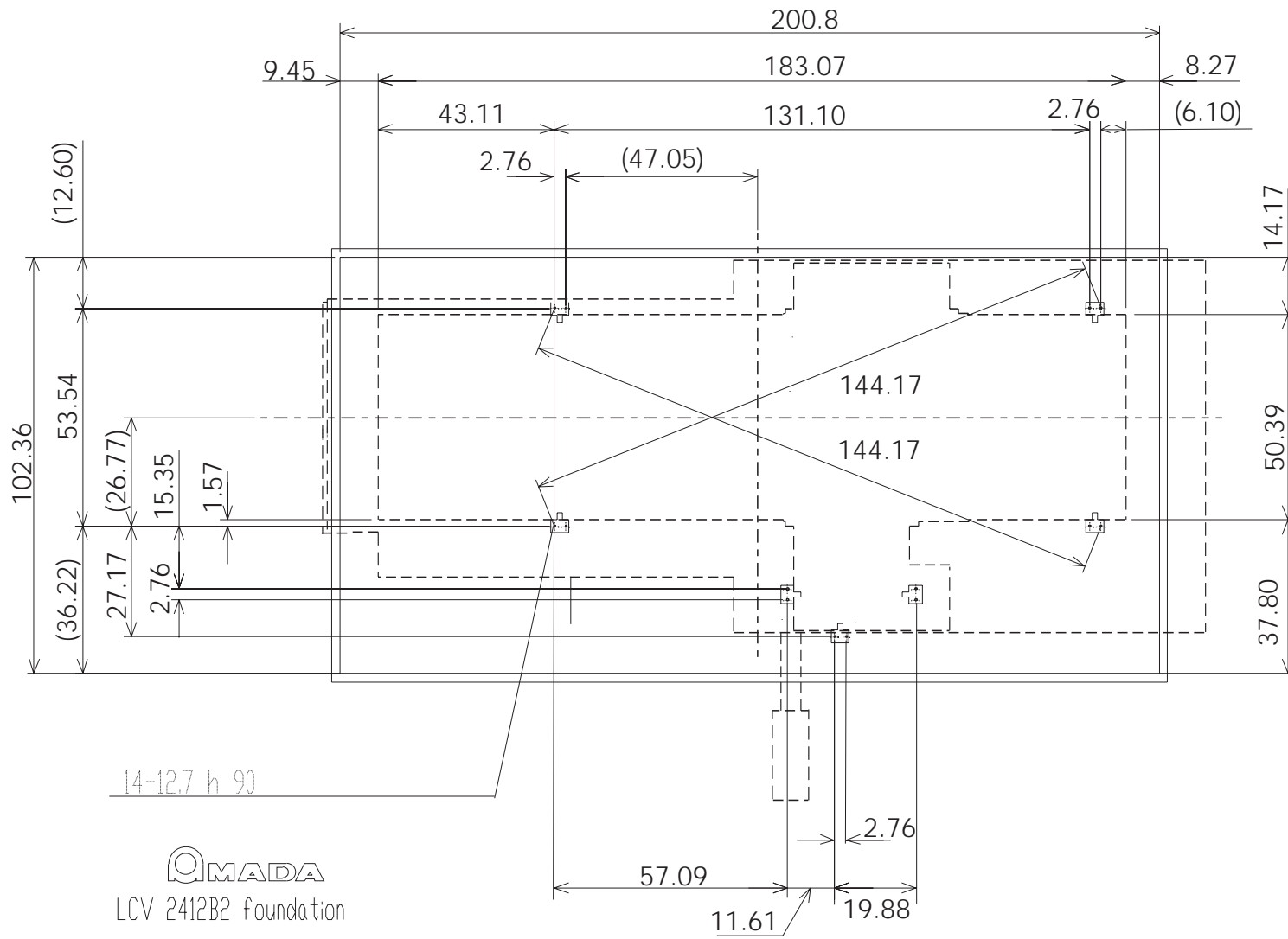
NOTE: The machine does not require any special foundation to produce accurate parts, but the laser and machine may not stay properly aligned if not properly supported and anchored. Improper support (floor cracking/motion) will result in more frequent service needs and reduced machine life.

A preferred foundation is given on the following pages.

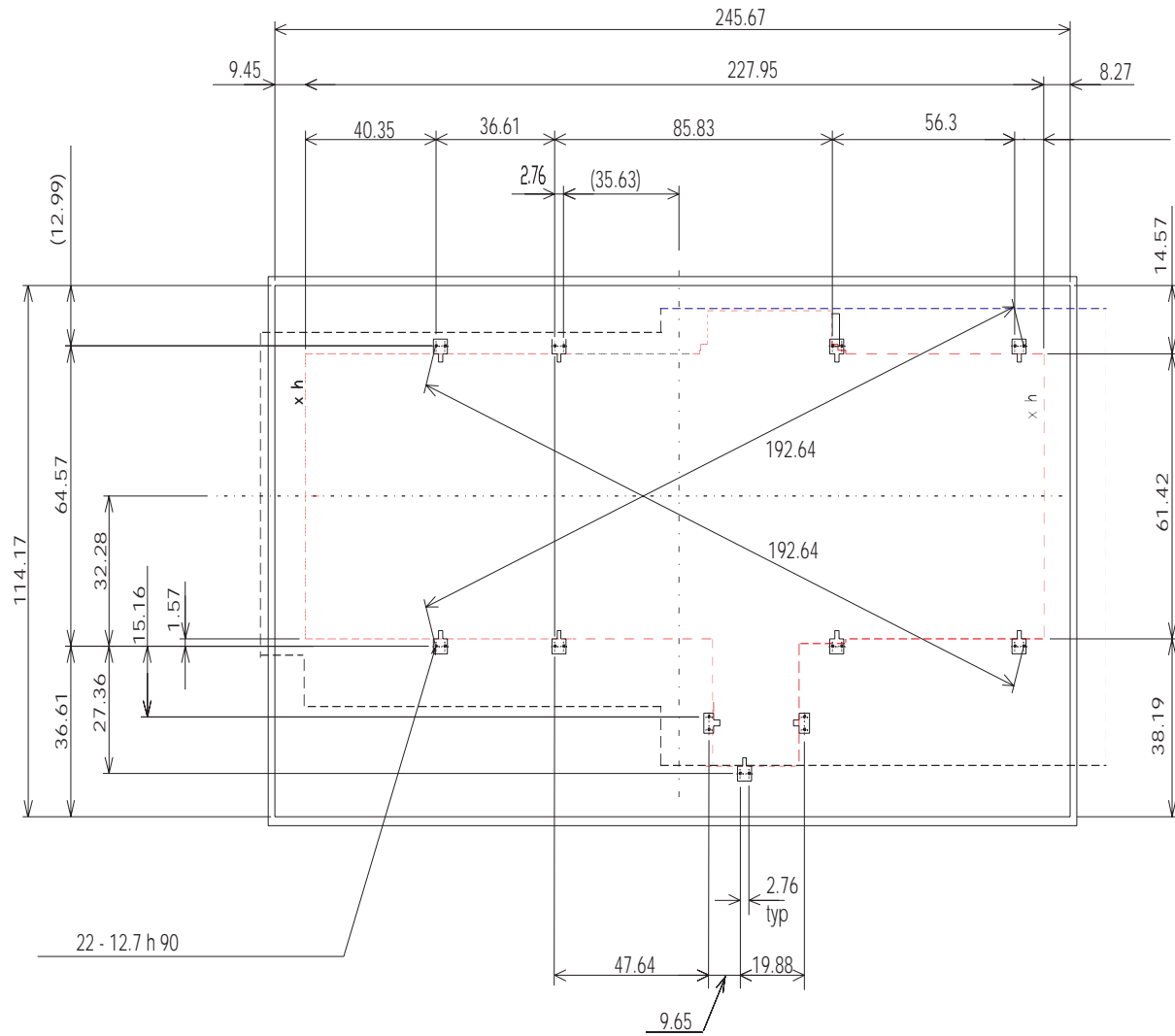
Please note the following:

- ❑ Certain of the anchor holes must be drilled BEFORE THE MACHINE IS PLACED. See the following pages for locations.
- ❑ The machine must be placed on a single continuous foundation. (This means no cracks in the supporting slab)
- ❑ The jack bolts and block, anchor bolts, hold-down clamps, nuts and washers for the machine are provided in the accessory crate.
- ❑ Make sure that the machine will not be exposed to excessive external vibration. (0.05G, 5 microns maximum) If the machine is located near a punch press, stamping press, large shear or other vibration source, it may be necessary to cut the foundation around the laser or provide additional isolation.
- ❑ Do not install the machine where it is exposed to direct sunlight or any other heat source.

# Foundations Plan View, Altair 2412



# Foundations Plan View, Altair 3015



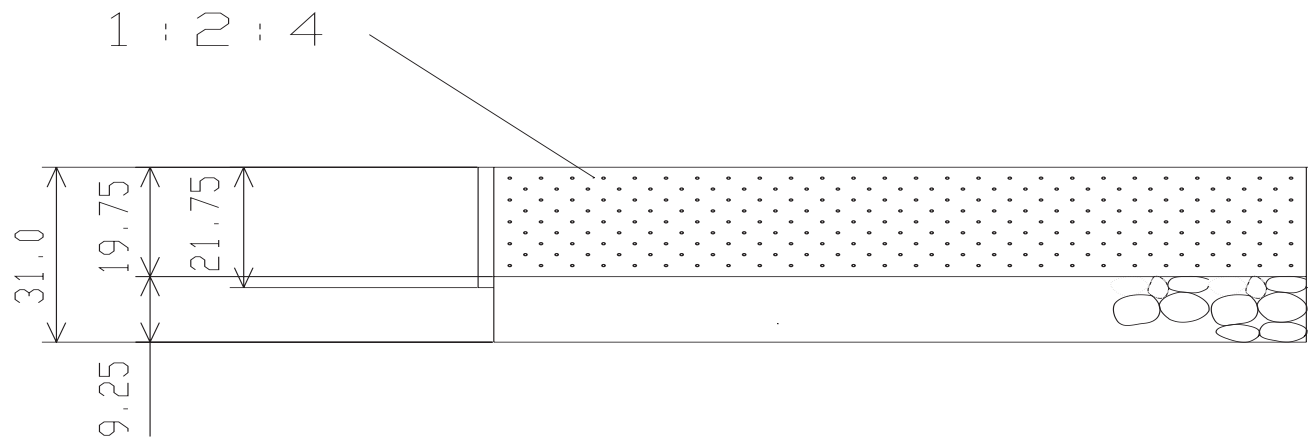
## Machine Foundations Cross Section

Bearing capacity required: 1124 lb/ft<sup>2</sup>

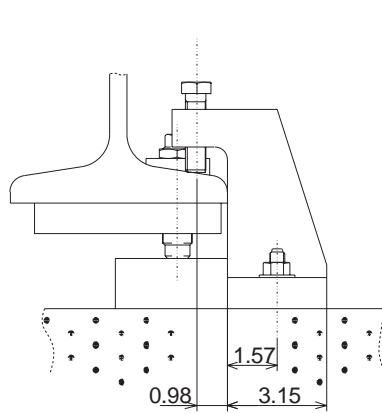
External disturbances allowed:

Max acceleration: 0.05G

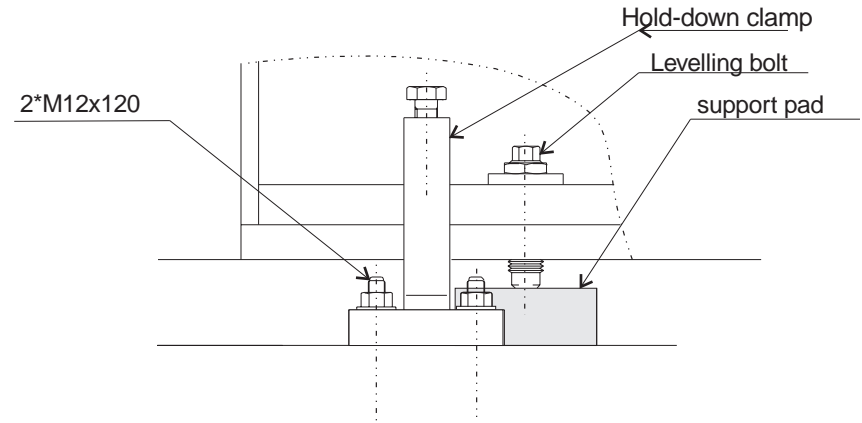
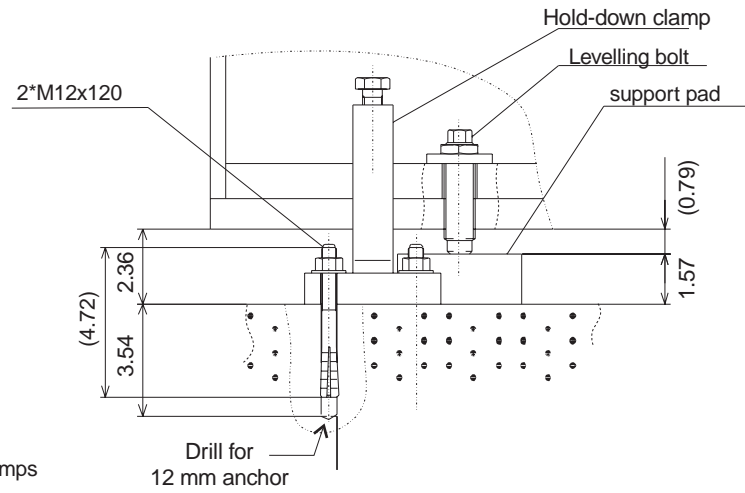
Max amplitude: 5 microns



# Machine Hold-down Clamps Detail






MADA LCV 2412β2 foundation hold-down clamps

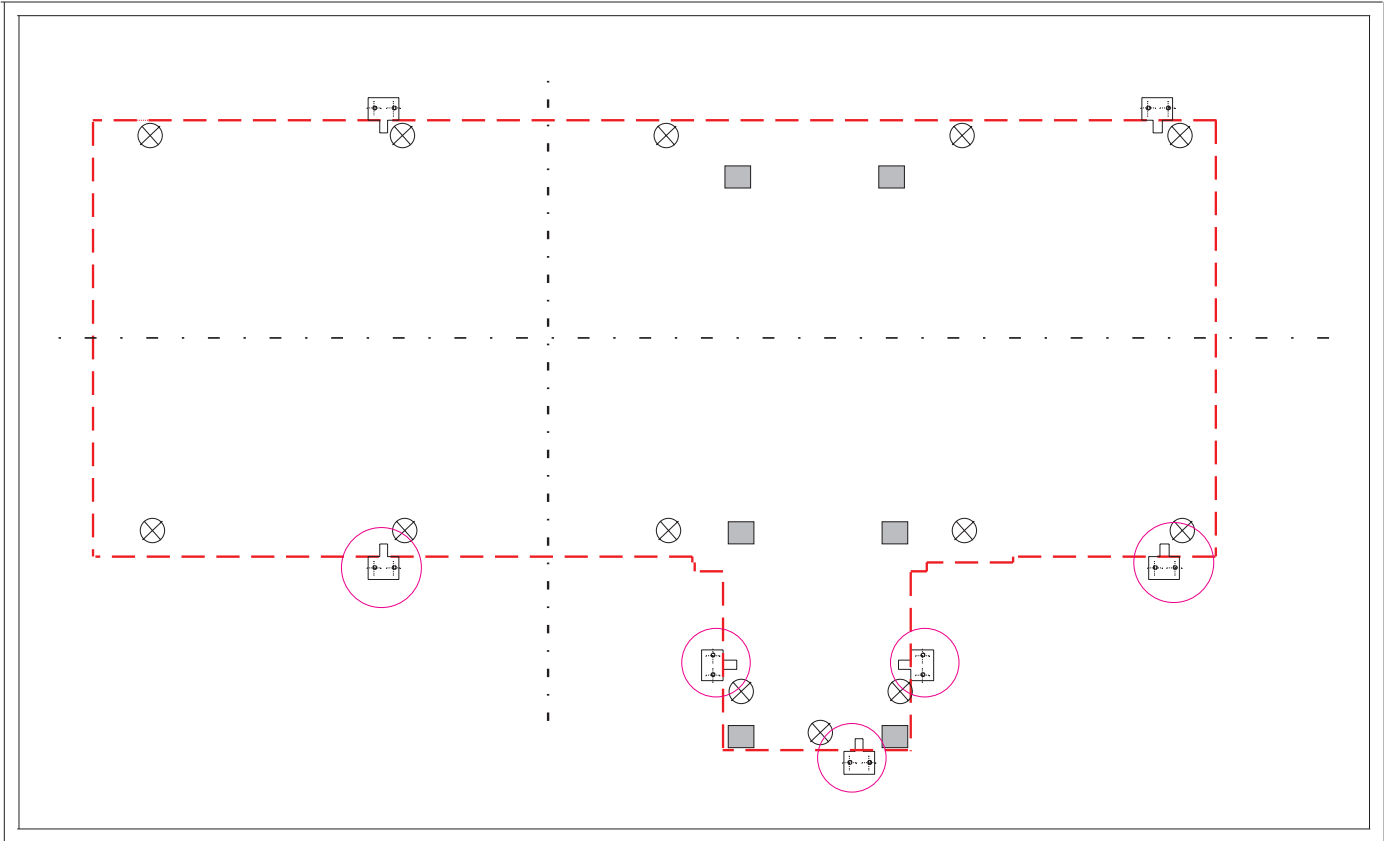


MADA LCV 2412β2 foundation hold-down clamp and jacking bolt

## Pre-Drilling for 2415

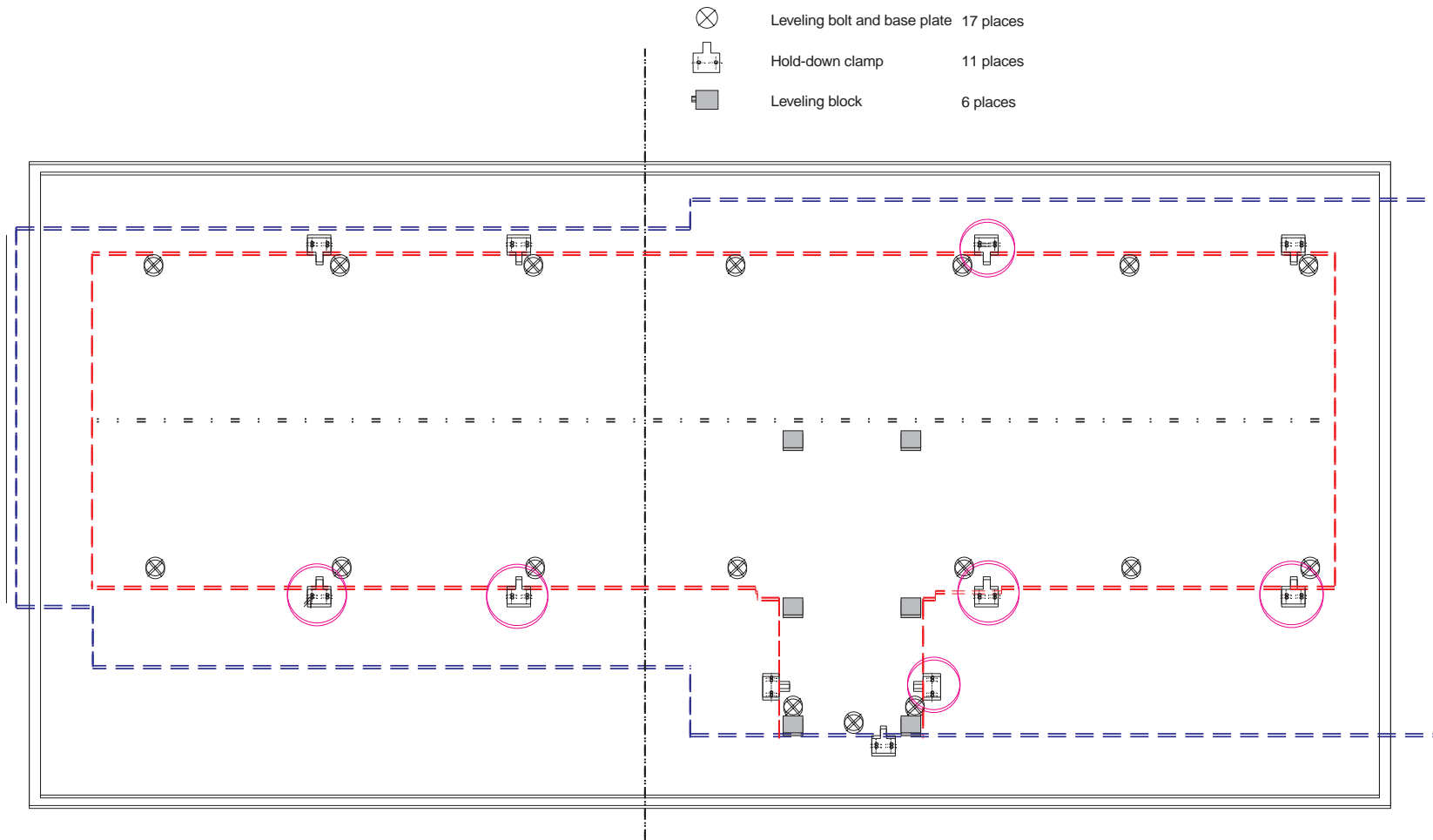
The figure below depicts the clamps (circled) which can't be drilled (anchor holes) after machine placement. For dimensions, see the 2412 foundation plan view on page 12.

-  Leveling bolt and base plate 13 places
-  Hold-down clamp 7 places
-  Leveling block 5 places



## Pre-Drilling for 3015

The figure below depicts the clamps (circled) which can't be drilled (anchor holes) after machine placement. For dimensions, see the 3015 foundation plan view on page 13



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## Machine Mounting Procedure

Prepare foundation/slab according to the drawings in this document.

### (1) Laser machine

Insert the levelling bolts into the laser machine. Place a base plate on the floor under each levelling bolt. (see page 16 for 2412, page 17 for 3015 )

Install the hold-down clamps, (illus page 15) and once the position is determined, secure them with the anchors. After installing the clamps, level the machine.

- ❑ Caution: Anchors for some of the the hold-down clamps must be drilled before the laser machine is placed. The anchor locations can't be drilled with the machine in place.

### Temporary leveling

#### (1) Remove the X-axis bellows.

(2) Place a level for the X-axis direction on the X-axis LM guide and one for the Y-axis direction by using a V-block stretcher like the diagram below. Confirm the level at 3 places, both ends and the center.

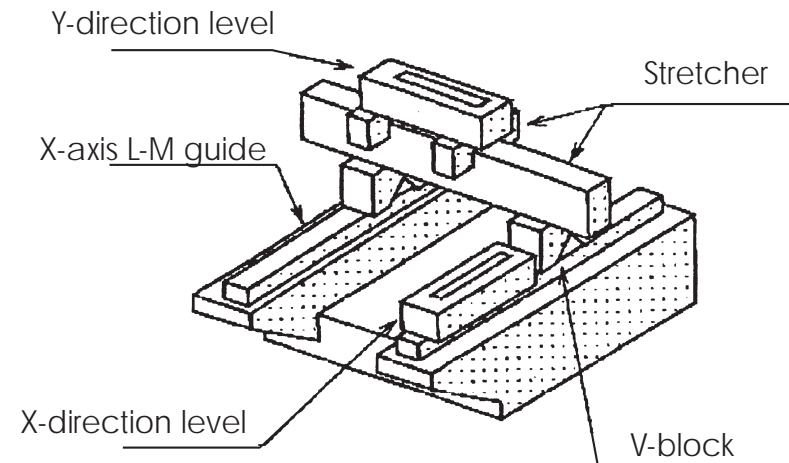


Figure 1: Initial level

(3) Adjust leveling by using the levelling bolts and the hold-down clamps,

First, raise the center of the machine, and then raise both ends to level it. (See illustration on page 19) After temporary leveling, put back the X-axis bellows.

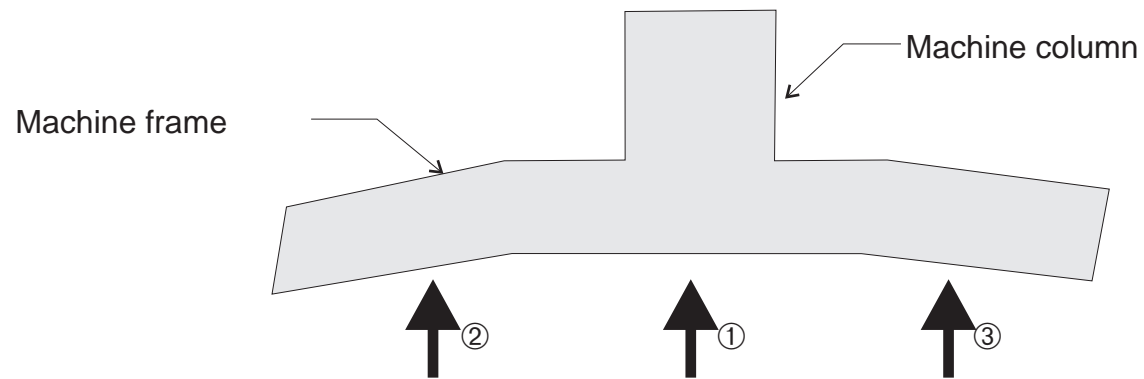


Figure 2: Machine side view- leveling sequence

## Leveling

- (1) Place an aluminum plate on the cut table and place a level on top of the aluminum plate.
- (2) Adjust it by the leveling bolt and the hold-down clamps, so that it becomes less than 0.05mm/m with the entire length of the level when the X-axis moves.
- (3) Tighten the lock nut after leveling.

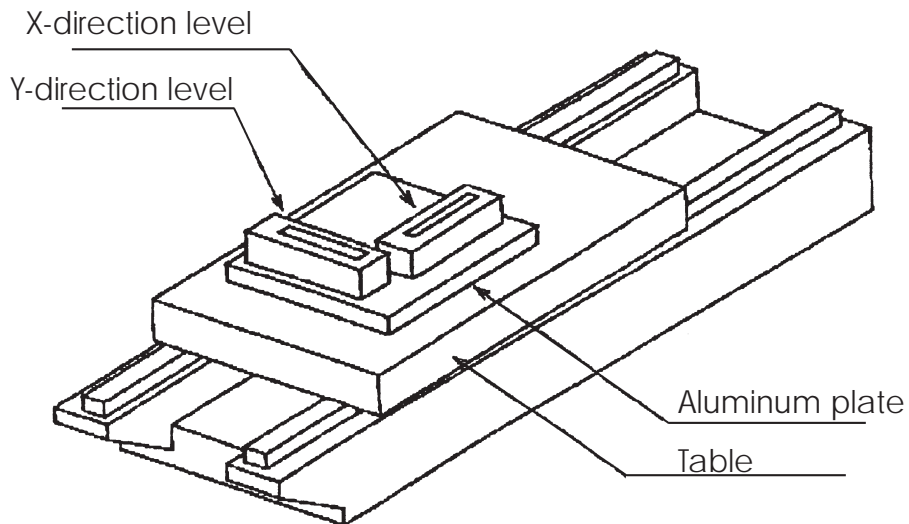


Figure 3: Setup for Final level

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(4) Install the leveling block under the the frame so that it slightly touches the bed.

(5) Confirm the level is within the standard.

### Level Blocks

These are actually for long-term support/stabilization of the frame. They are not intended for use as levelling blocks or jacks, and may break if used as such.

When installing them, just put them in place, tighten jack screw until snug.

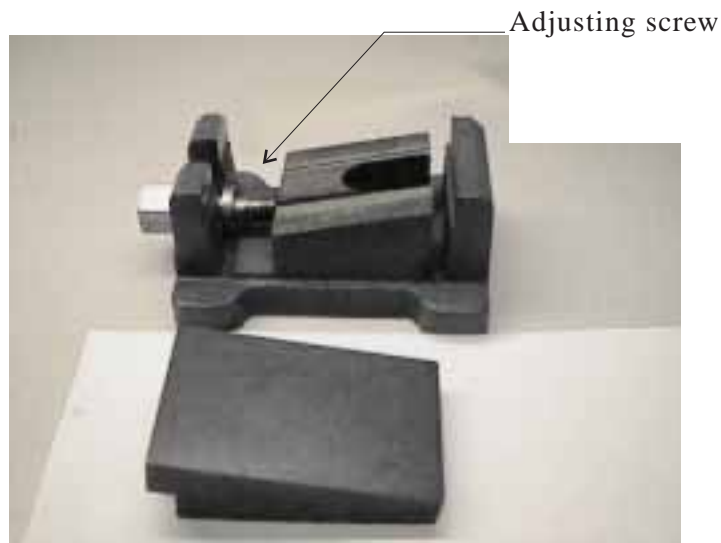


Figure 4:Level block apart



Figure 5:Level block assembled

