

## Pega 244N With 04PC User Pre-Installation Guide



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## ***Warning***

- ☐ Qualified personnel must complete all work.
- ☐ Do not apply power to the Pega 244N until an A.E.S.I. (Amada Engineering and Service Incorporated) Engineer is present and has instructed you to do so.

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## Introduction

This manual describes the tasks that the purchaser of a Pega 244N must complete before calling the service organization to complete the installation and operator training.

An overview of the preparations is as follows:

Plan the location of the Pega 244N in the shop, taking into account all the maintenance areas indicated on the floor plan.

Prepare the Pega 244N floor or foundation as required.

Uncrate the Pega 244N and place on the floor or foundation, but do not fill the anchor-bolt holes (if used) until after A.E.S.I. completes the initial installation.

Install the Pega 244N electrical supply.

Install the Pega 244N air supply.

Remove the protective coating from the surface of the Pega 244N.

Note: It is the purchaser's responsibility to install any safety devices to ensure the safety area.

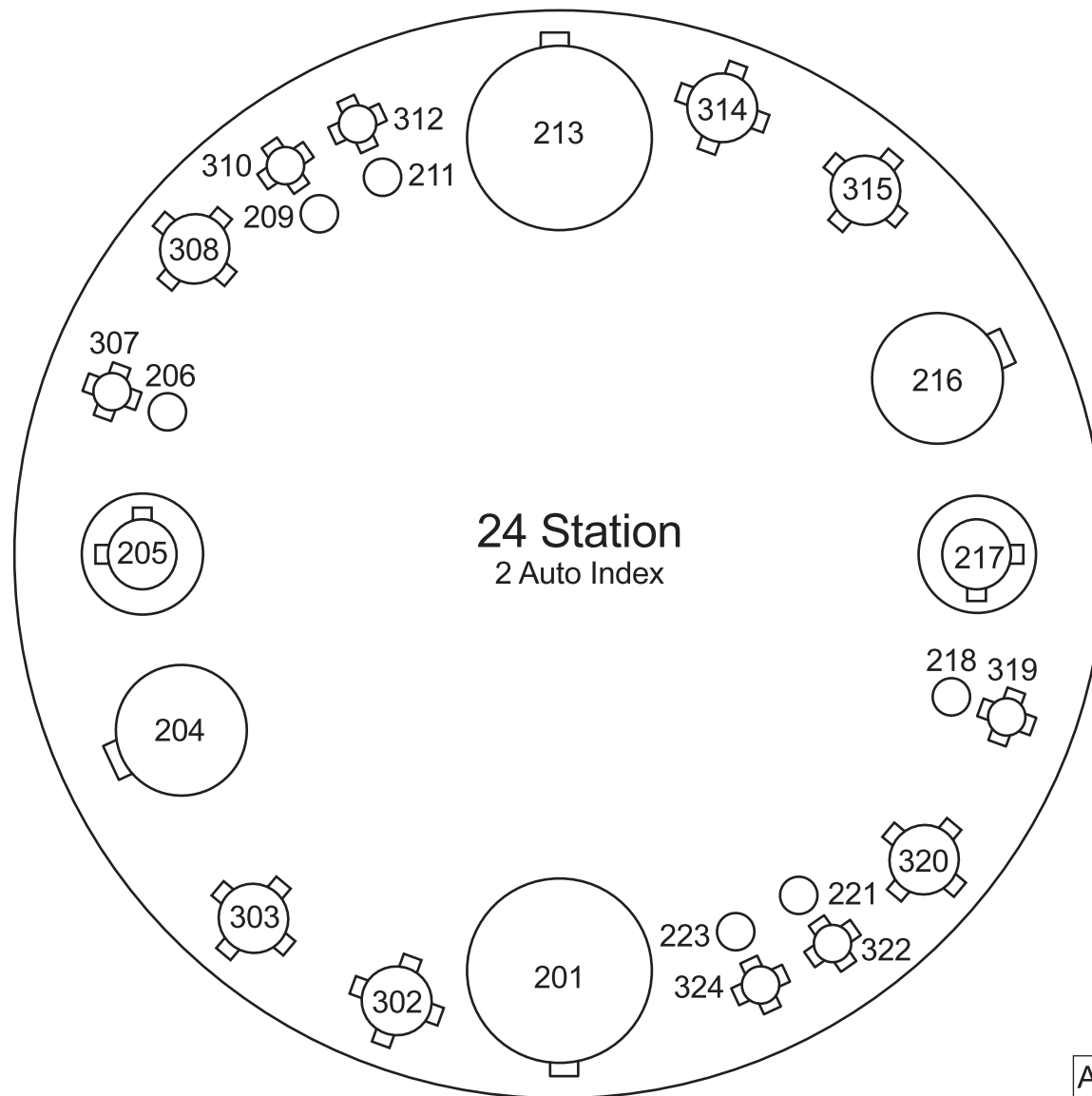
## Motion Package Specifications

Travel Method	X and Y axes work piece movement
Control Method	X, Y, T & C
Drive Motors	Fanuc AC Servo (X, Y, T, C)
Maximum Sheet Size	39.370" (Y) x 78.74" (X) with one repositioning cycle
Maximum Sheet Thickness	0.250"
Maximum Material Weight	110 lb.
Maximum Axis Travel	39.37" (X) by 39.37 (Y)
Max. Linear Table Speed	1968 IPM
Punching Accuracy	±0.004"
Positioning Accuracy	±0.001"
Repeatability	±0.001"

## Punching System Specifications

Press Capacity	22 Tons
Press Stroke	1.256"
Stroke Rate:	Nibble mode .312"(contour) 1 inch pitch 350 hpm 200 hpm
Maximum Hole Diameter	3.500"
Tool Type	Amada Thick Turret
Turret Rotation Speed	25 RPM

## Turret 740mm Disk Thick 24 Station 2 Auto Index



This turret configuration  
used on the following machine models  
Pega 244

		Maximum Size Round		Number Of Stations (Keyed)
	A	½"	12.7mm	12 (6)
	B	1¼"	31.7mm	6 (6)
	C	2"	50.8mm	2 (2)
	D	3½"	88.9mm	1 (1)
Auto Index	B	1¼"	31.7mm	2 (2)



## Fanuc O4PC Controller

Model	Fanuc O4PC
Control Function	X, Y, T & C
Input Method	MDI, Paper Tape, DNC
Minimum Command Unit	0.001" (X, Y) .01 <sup>0</sup> (C)
Minimum Travel Unit	0.001" (X, Y) .01 <sup>0</sup> (C)
Operating Modes	Automatic, MDI & Manual
Display Modes	Program Contents, Position Information, Program Check, Parameters, Tool Hit Counter, Self Diagnostics
Interlock Displays	Oil Temperature, Door Open

## Supply Requirements

Electrical Power Supply	Pega 244N	230 / 460 3ph $\pm 10\%$ , 16 kVA
Air Supply	With Air Blow	80 psi @ 8.8 ft <sup>3</sup> /min.
	Without Air Blow	80 psi @ 3.8 ft <sup>3</sup> /min.

### Installing the Electrical Power Supply

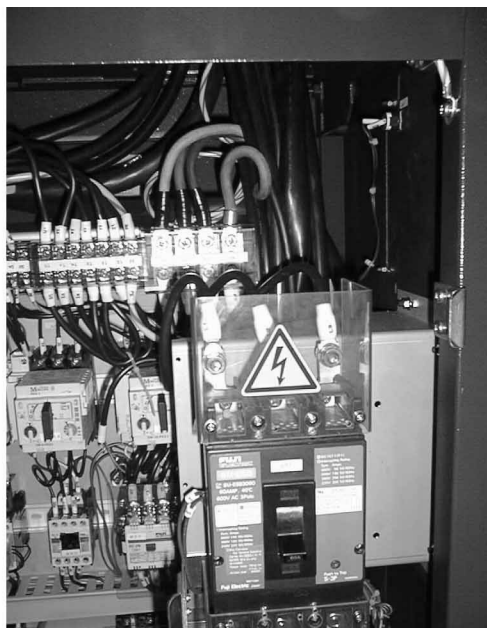
The Pega 244N requires a single electrical power source. The power source is supplied to the Fanuc O4PC. The Pega 244N should be supplied from a power line separate from those for welding machines or other machines that produce electrical noise.

The Pega 244N Electrical inlet is 64" above floor level at the left of the Fanuc O4PC control.

Pega 244N electrical enclosure



Pega 244N electrical power connection

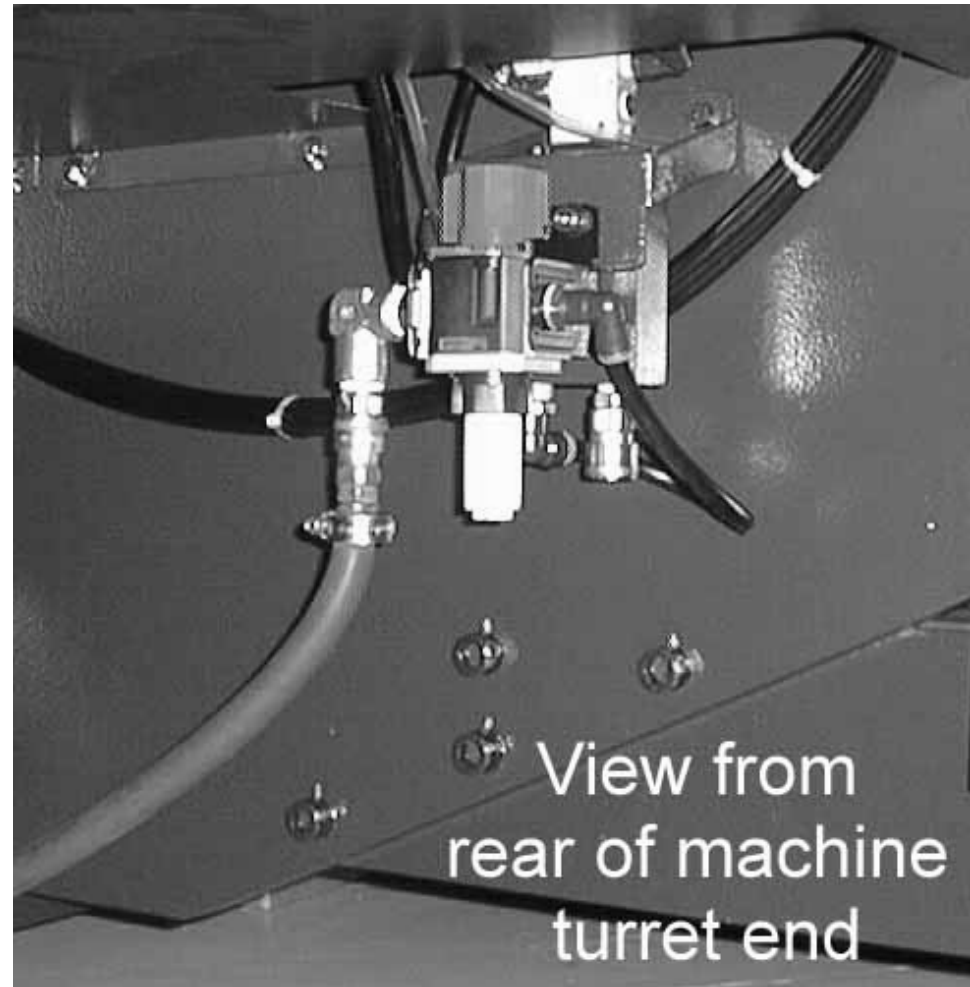


## Installing the Air Supply

The Pega 244N must be connected to a compressed air system by hose or pipe. The compressed air must be clean and dry.

Please note the following:

- ☐ The minimum inner pipe diameter is ½".
- ☐ The air pressure required is 80 psi.
- ☐ The air volume required is 8.8 ft<sup>3</sup>/min..
- ☐ The air inlet is approximately 16" above the floor level at the rear of the Pega 244N



## Planning the Location of the Machine

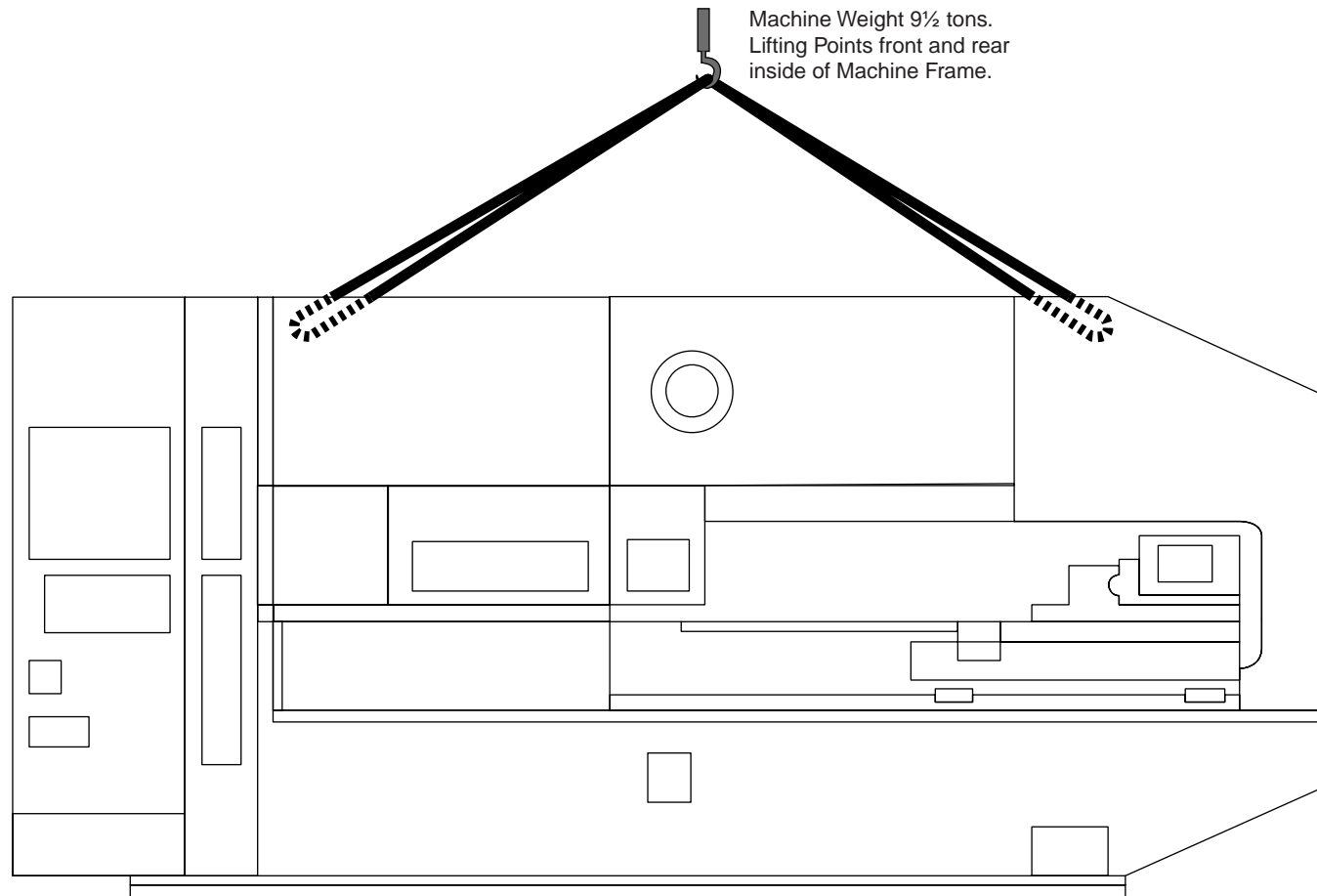
The following diagrams provide the details for positioning your new machine.

No obstacles are allowed in the worksheet travel area and the ceiling must be at least 40" above the top of the Pega 244N.

All of the maintenance areas recommended should be used, but you must at least ensure that the doors of the Fanuc O4PC NC unit can be opened.

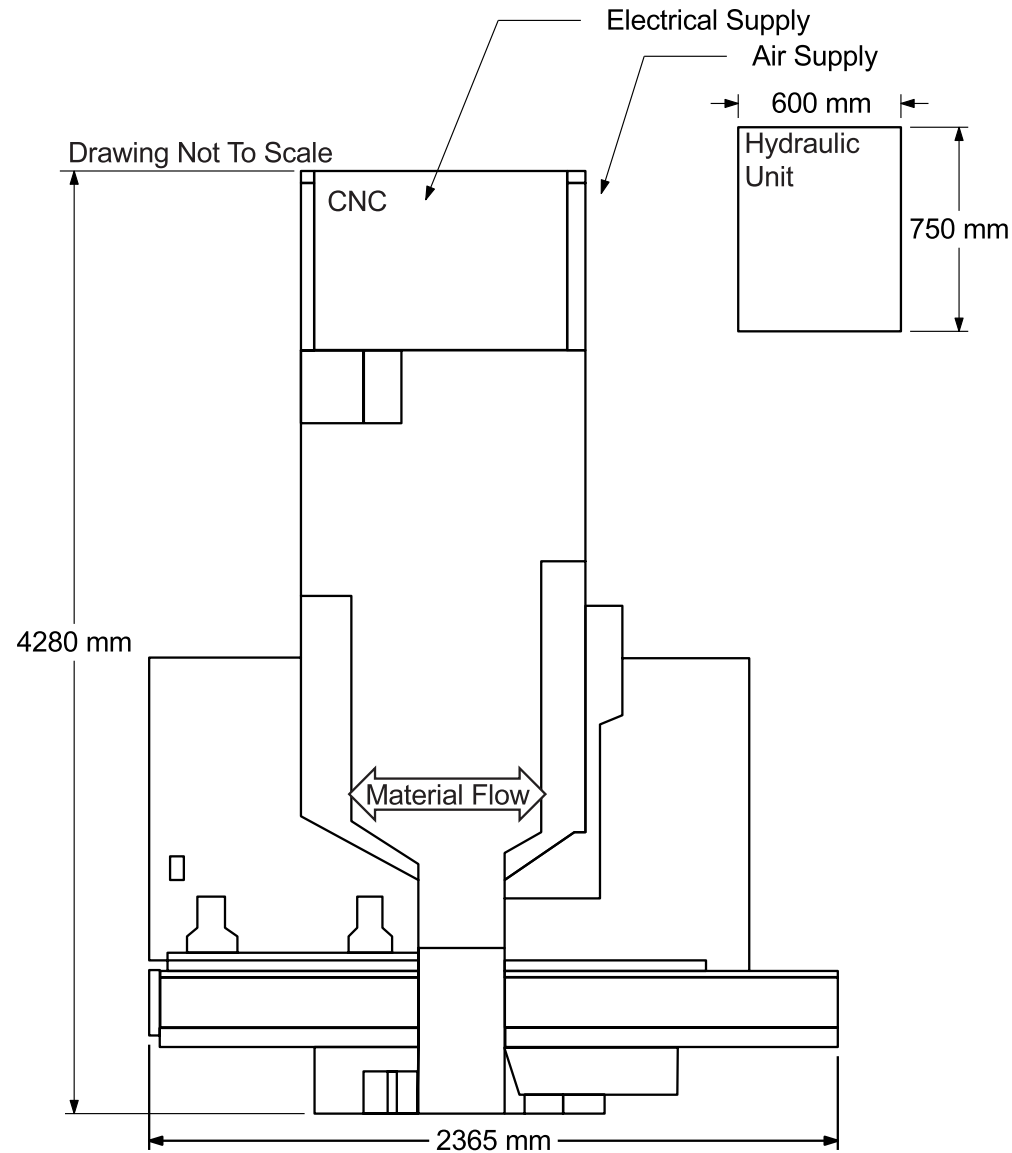
The Pega 244N and Fanuc O4PC control must be protected from direct sunlight or other heat sources. It has been shown that radiant type heaters can cause serious tool alignment problems.

## Lifting the Machine

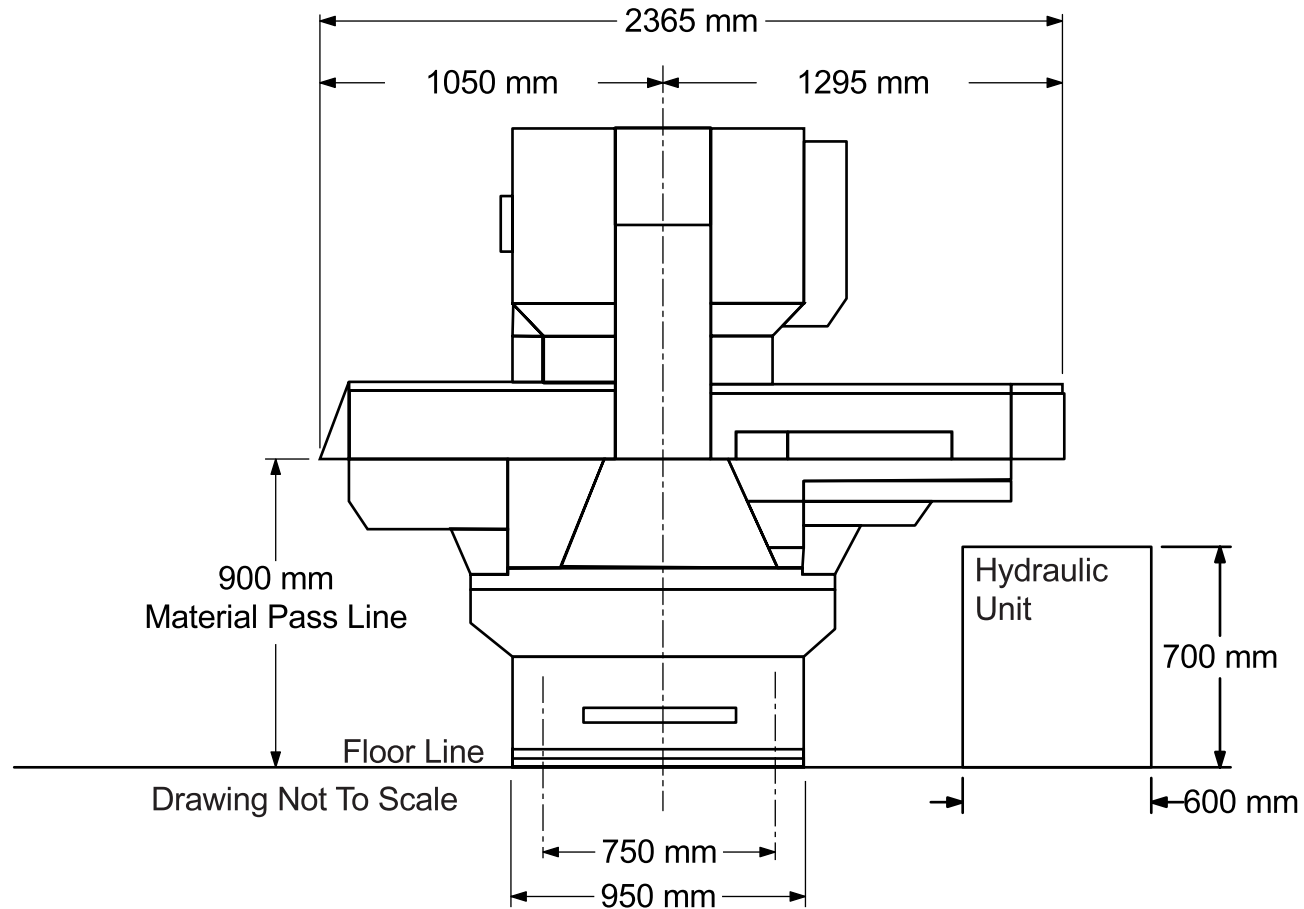


Machine Weight 9½ tons.  
Lifting Points front and rear  
inside of Machine Frame.

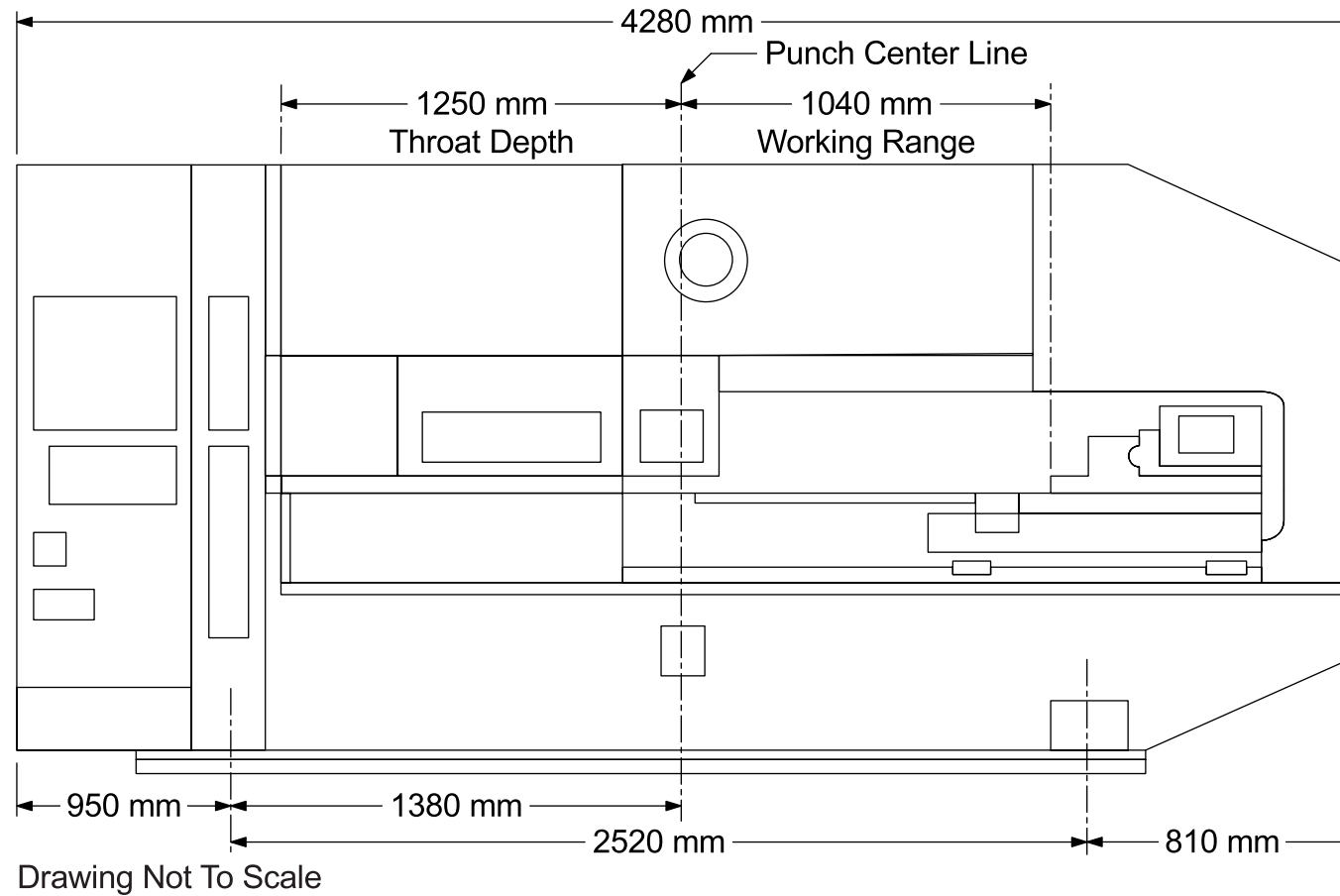
## Machine Dimensions - Plan View



## Machine Dimensions - End View

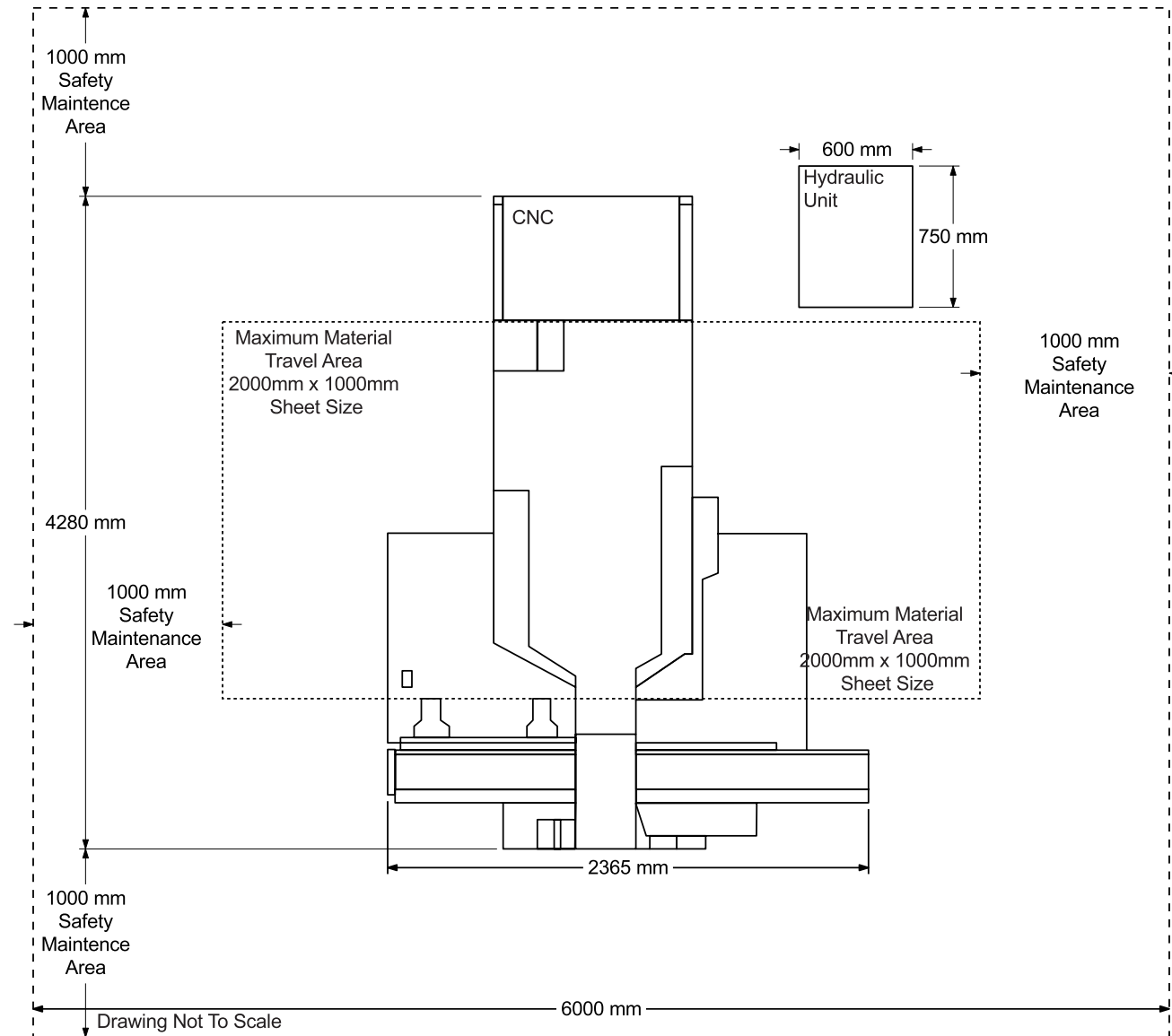


## Machine Dimensions - Elevation View





## Maintenance Areas



## Foundation Requirements

The Pega 244N does not require a special foundation to perform as expected, however there are minimum requirements that an existing floor must meet in order to assure machine reliability and tool life. If the existing floor does not meet the following minimum requirements, plans for a recommended foundation are given in the section *Foundation Anchoring Procedure*

The minimum acceptable floor conditions to assure a successful installation are:

The area of the floor where the machine frame is to be located must be a single, homogeneous slab in good condition. There must be no cracks or other signs of deterioration of the floor.

The floor must be 4" to 6" thick.

The floor must be capable of supporting 3.5 tons/ft<sup>2</sup>.

The floor must be level to 0.032"/ft.

If the existing floor meets the minimum requirement list above, it must still be inspected carefully when the anchor-bolt holes are cut. Voids under the floor, or wetness (not associated with the hole cutting procedure) should be considered signs of an inadequate floor and a new machine location or new foundation must be considered.

It is the customer's responsibility to determine that the floor meets these minimum requirements. Placing the machine on an inadequate, cracked floor, or straddling seams in a floor may be grounds for voiding the machine warranty!

Amada America does not recommend the use of vibration isolating mounts under the machine feet, as these devices have been shown to increase the vibration within the machine frame, increasing the likelihood of vibration related problems. Solid leveling devices are acceptable provided they incorporate a means of anchoring the machine to the floor with the supplied J-bolts.

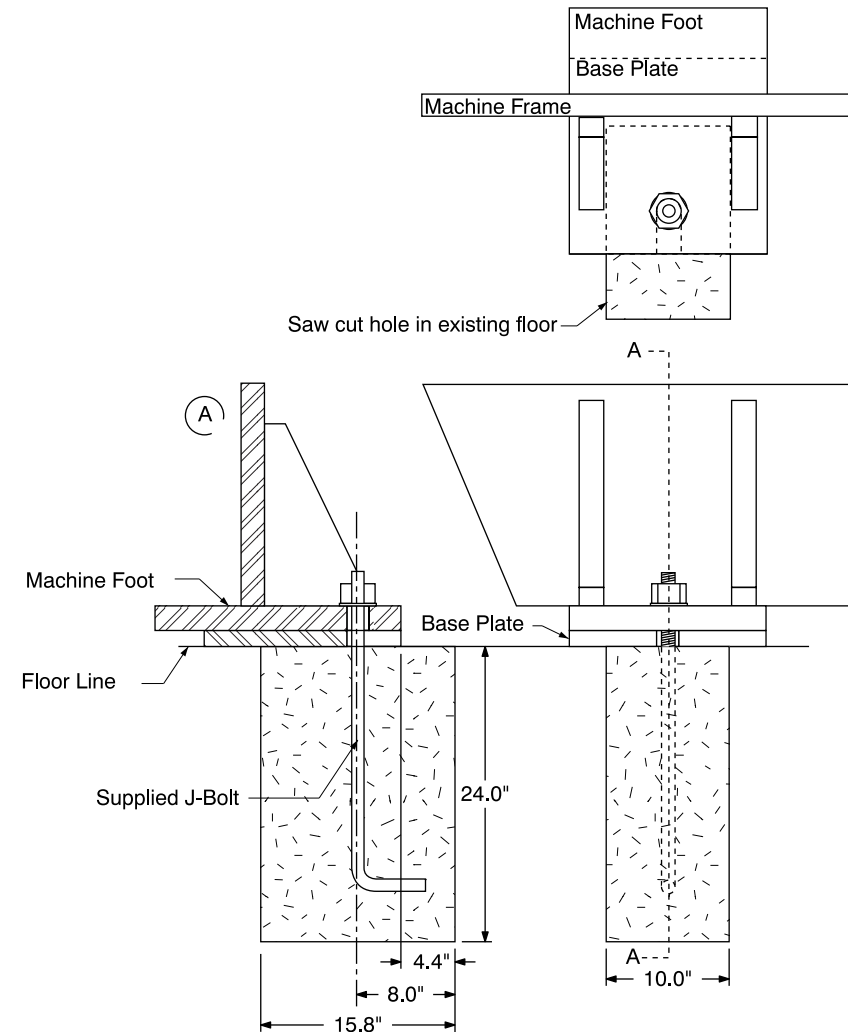
## Machine Anchoring Requirements

To maintain machine reliability, extend tool life, and remain level over an extended period the Pega 244N must be anchored in place on an adequate floor or foundation.

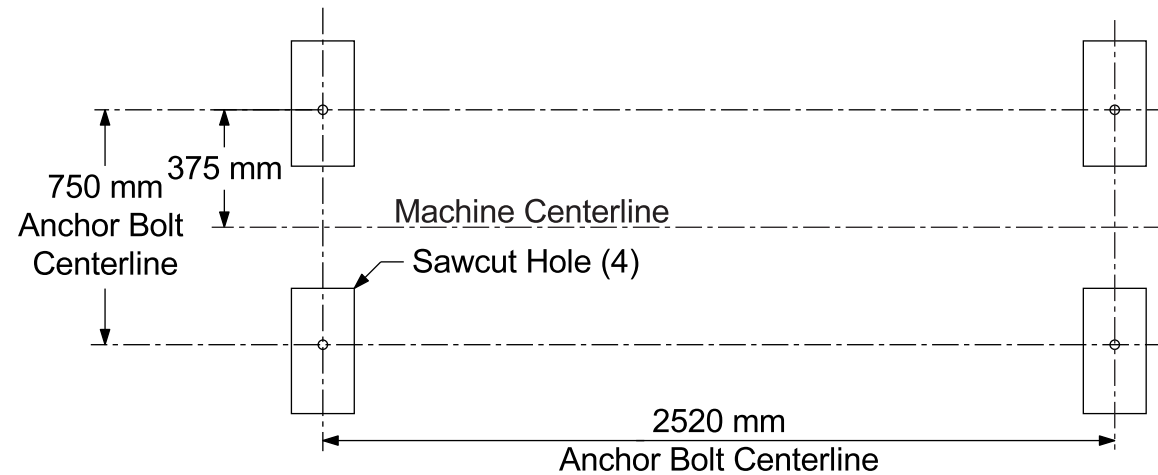
At a minimum the floor must consist of a single, homogeneous slab, level to within 0.032"/ft<sup>2</sup>, and capable of supporting 3.5 tons/ft<sup>2</sup>. It is the purchaser's responsibility to determine that the floor meets these minimum requirements.

### Floor J-bolt Mounting Hole Detail (saw cut hole)

This machine mounting method should be used only if the floor is of such quality that it will support the weight of the machine with the anchor J-bolts used only for maintaining the location of the machine.

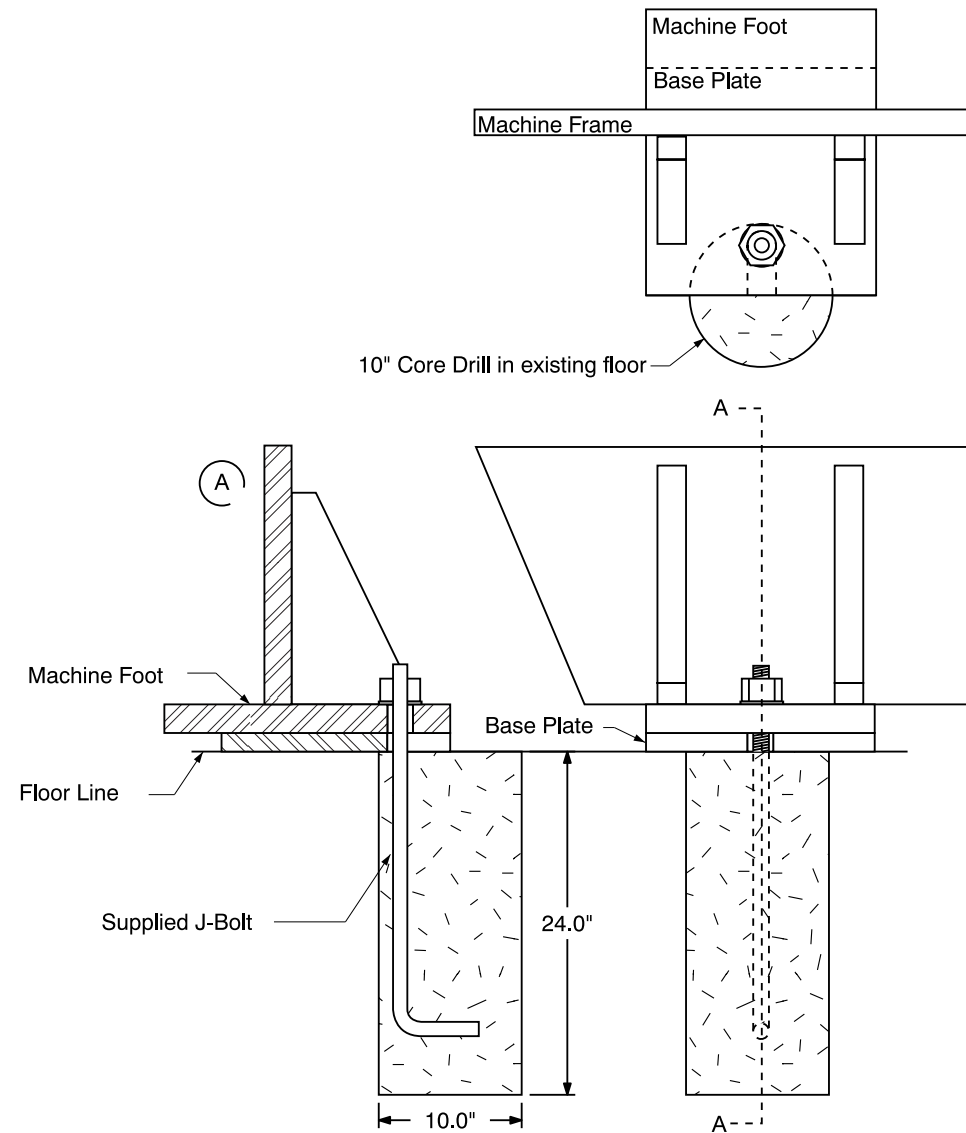


## Floor J-bolt Mounting Hole Plan View (saw cut hole)

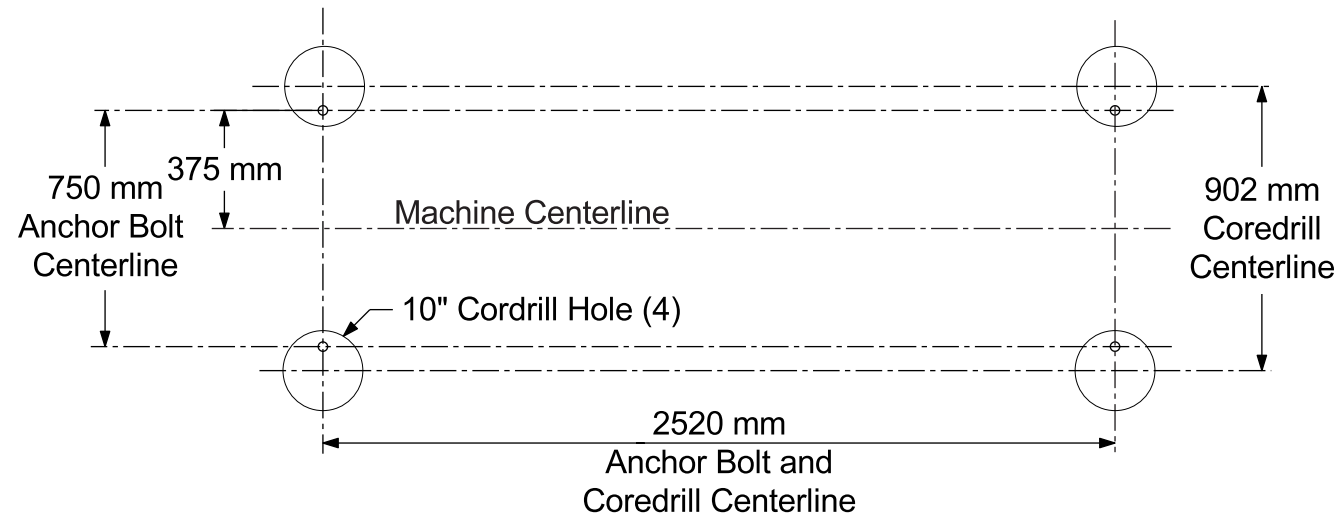


## Alternative Floor J-bolt Mounting Hole Detail (Core Drill)

This machine mounting method should only be used if the floor is of such quality that it will support the weight of the machine with the anchor J-bolts used only for maintaining the location of the machine.



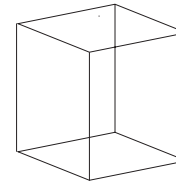
## Alternative J-bolt Mounting Method Plan View (Core Drill)



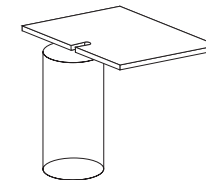
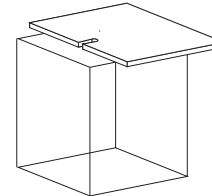
## Floor J-bolt Mounting Procedure

- Step 1. Saw cut or Core drill a hole in the existing floor and remove the underlying dirt to the required 24" depth.

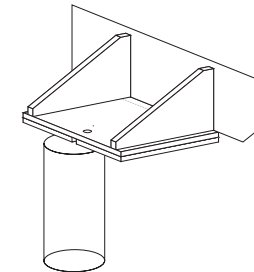
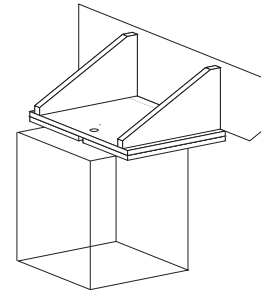
See Floor J-bolt Mounting Hole Plan View (saw cut hole) or Alternative J-bolt Mounting Method Plan View (Core Drill for correct layout dimensions of the four anchor holes required).



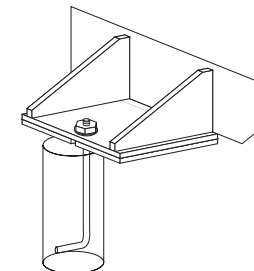
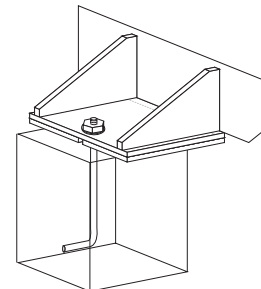
- Step 2. Set base plate over the hole.



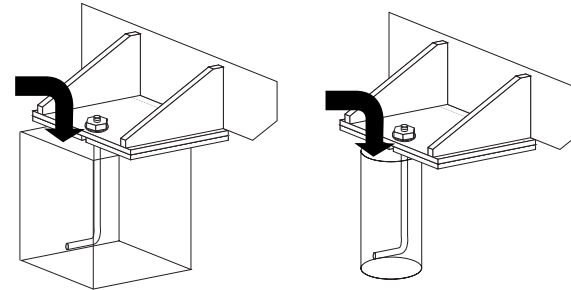
- Step 3. Set the machine on the base plate.



- Step 4. Set the J-bolt through the hole in machine foot, attach washer and nut to hold J-bolt in place.

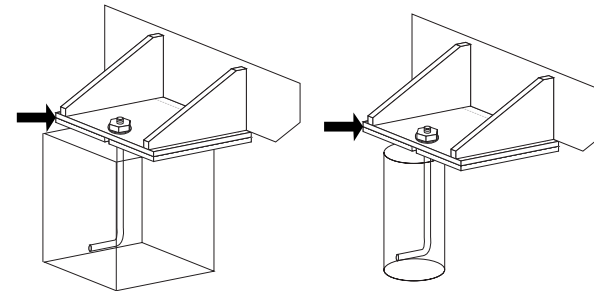


- Step 5 Pour the Concrete.  
Ensure that the J-bolt remains correctly aligned to the machine frame during the pouring and hardening time of the concrete.  
Ensure that the concrete level is equal to the floor level



- Step 6. To complete the mounting procedure, level the machine frame by inserting leveling shims between the machine foot and base plate.

See *Leveling the Machine* section for correct procedure.





## Foundation Anchoring Procedure

An ideal foundation is given on the following pages. This foundation must be used if the existing floor cannot meet the minimum requirements to support the machine.

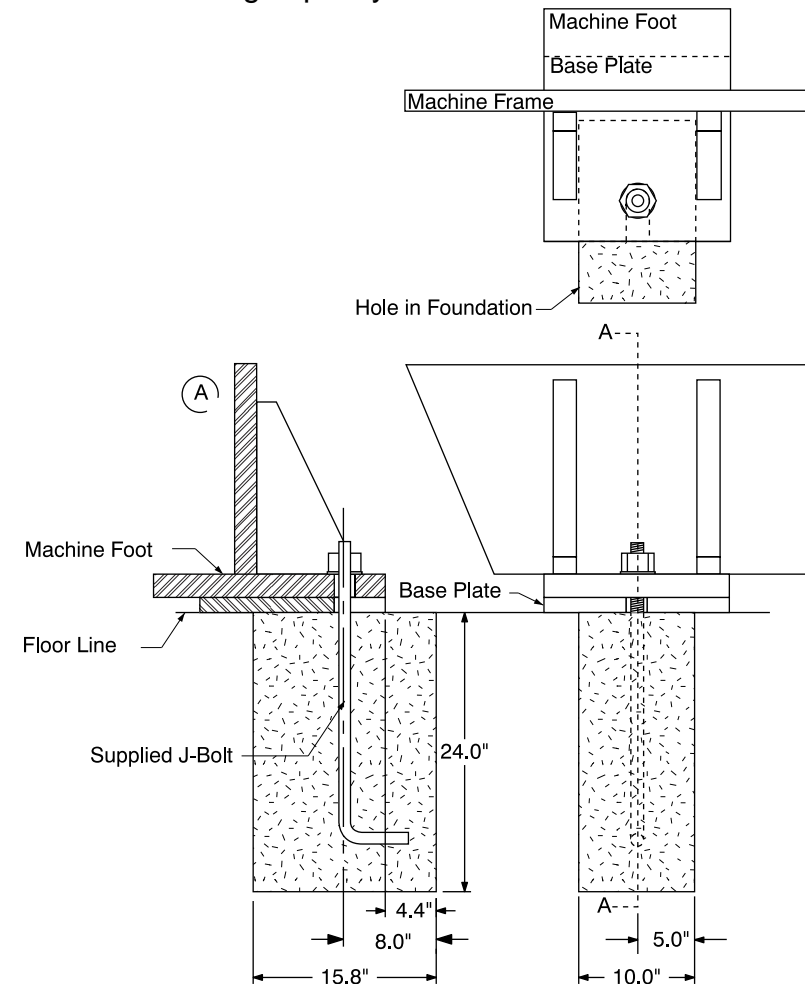
The foundation must consist of a single, homogeneous slab. The foundation must be level to within 0.032" / ft. Anchoring the Pega 244N to the floor using the anchor-bolts supplied is essential to ensure reliable performance. Amada generally recommends that the foundation have a minimum load bearing capacity of 3.5 ton/ft<sup>2</sup>. It is the purchaser's responsibility to determine that the foundation meets these requirements.

Please note the following:

- ☐ The base plates, shims, anchor bolts, nuts, and washers are shipped with the Pega 244N.
- ☐ The concrete J-bolt pads should be filled after the machine is placed on the foundation.

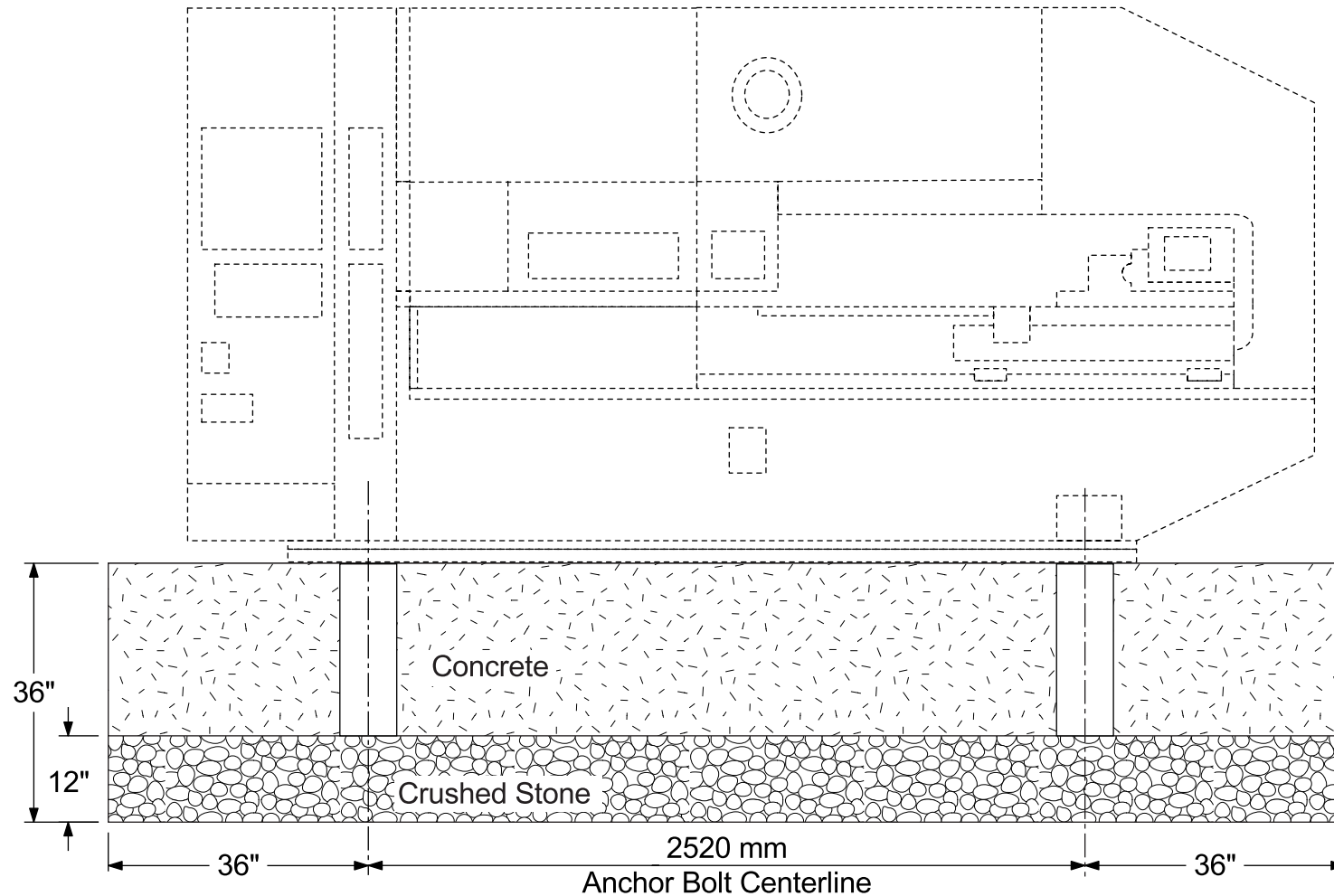
## Foundation J-bolt Detail

See *Floor J-bolt Mounting Procedure* for proper method of mounting machine on foundation.



[illegible]

## Foundation Elevation View



## Removing the Protective Coating

The Pega 244N must be thoroughly cleaned of protective coating. The sheet metal guards can be removed from around the turret to allow cleaning of the upper and lower turrets, tool bores and die holders.

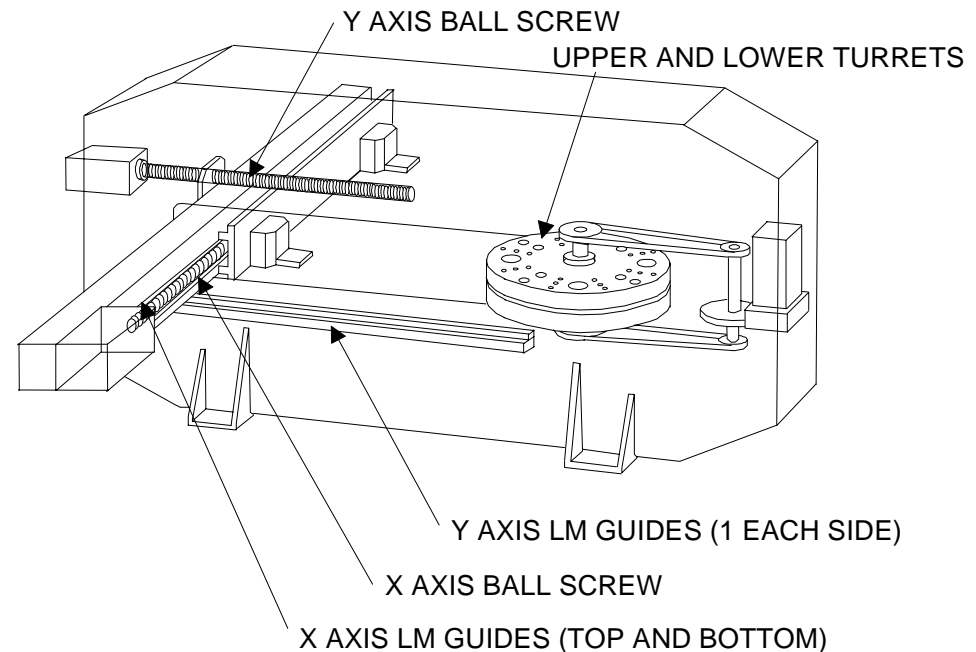
Please note the following:

Remove the wrapping paper from the X and Y axes ball screws then remove the protective coating.

Remove the wrapping paper from the X and Y LM guides then remove the protective coating, make sure that you remove the paper from both sides of the carriage.

Clean die holders one at a time. Remove a die holder, clean and replace it before removing the next die holder. If the die holders are mixed up, serious turret alignment problems may occur.

A suitable solvent should be used to remove the protective coating.



## Machine Leveling

Proper Machine leveling is critical to the Pega 244N performing as designed.

Materials and tools required:

Supplied with the machine:

Assorted thickness machine leveling shim stock

Anchor bolts

Supplied by AESI service:

Spirit level capable of reading 0.0005"/ft

One (1) 12 ton hydraulic bottle jack

Not supplied:

Additional shim stock of 0.005" thickness may be required to achieve a properly leveled machine.

## Rocking Test

After the machine frame has been leveled the use of the following G-code is necessary to determine that the machine frame is properly leveled and balanced.

G92X40.000Y39.370

X20.Y20.Tttt (Use any valid tool number)

N1

G91

X.25 (Repeat test with this value changed to 1.0", 2.0", 3.0", and 4.0")

X-.25 (Repeat test with this value changed to -1.0", -2.0", -3.0", and -4.0")

M97P1

G50

Should the machine frame vibrate or move excessively during the rocking test the machine frame must be re-leveled using the procedure in this manual.

Should the proper leveling technique not eliminate the excessive frame motion, consideration must be given to relocation of the machine or replacement of the existing floor with an adequate foundation.

## Floor Condition: Crowned

The flatness of the floor plays an important step in the leveling procedure of the machine. To properly level the machine the weight bearing points must be as far from the centerline of the machine frame as possible.

Should the floor exhibit a crowned condition the weight bearing points of the machine may not be far enough from the machine centerline to ensure a stable machine.

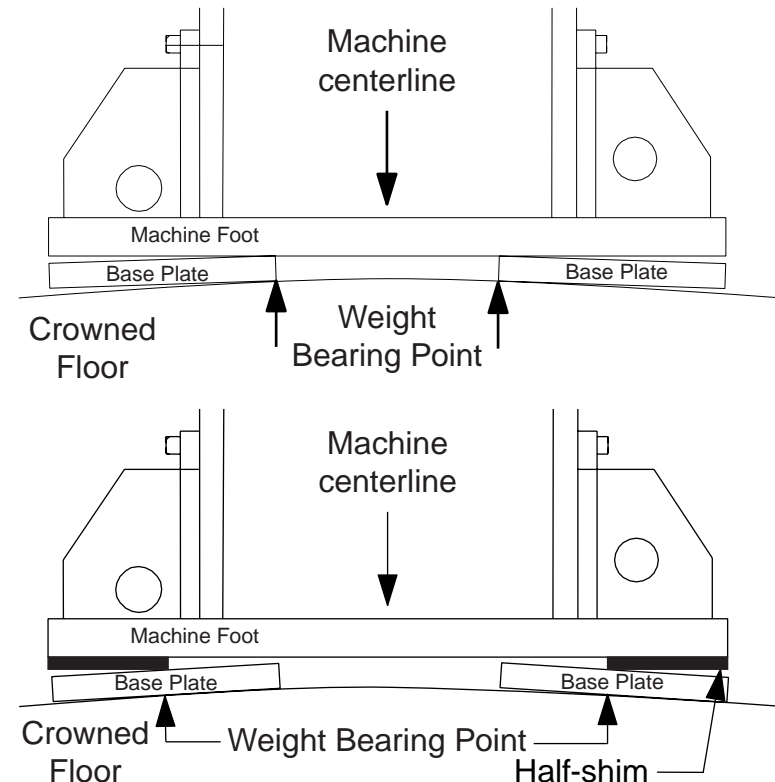
Under these conditions a procedure known as *Half-Shimming* should be used.

To move the weight bearing points further from the machine centerline the use of half-shims of .125" thick on top of the base plate as shown is recommended.

After the half-shims are installed and the machine frame is leveled use the rocking test to determine that the machine frame is stable enough to allow production without damaging the machine.

Under extreme conditions the use of half-shims may not move the machine weight bearing points far enough from the machine centerline to ensure the machine frame is stable.

Under these conditions a more suitable location must be found for the machine, or a new foundation for the machine will be necessary.



## Floor Condition: Sloped

The slope of the floor plays an important step in the leveling procedure of the machine. To properly level the machine the weight bearing points must be as far from the centerline of the machine frame as possible.

Should the floor slope excessively the weight bearing points of the machine may not be far enough from the machine centerline to ensure a stable machine.

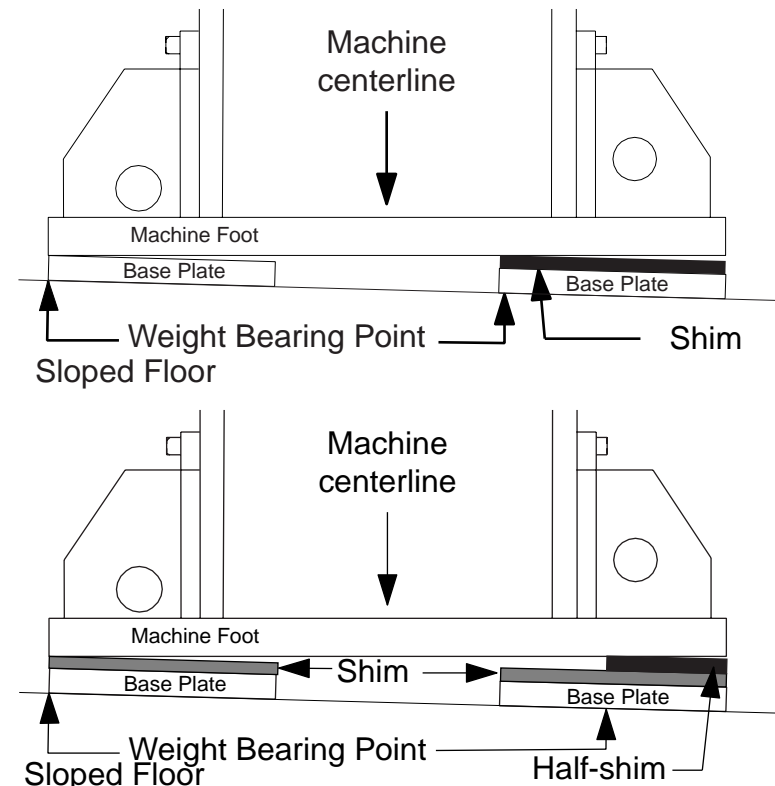
Under these conditions a procedure known as *Half-Shimming* should be used.

To move the weight bearing points further from the machine centerline the use of half-shims of .125" thick on top of the base plate and leveling shims as shown is recommended.

After the half-shims are installed and the machine frame is leveled, use the rocking test to determine that the machine frame is stable enough to allow production without damaging the machine.

Under extreme conditions the use of half-shims may not move the machine weight bearing points far enough from the machine centerline to ensure the machine frame is stable.

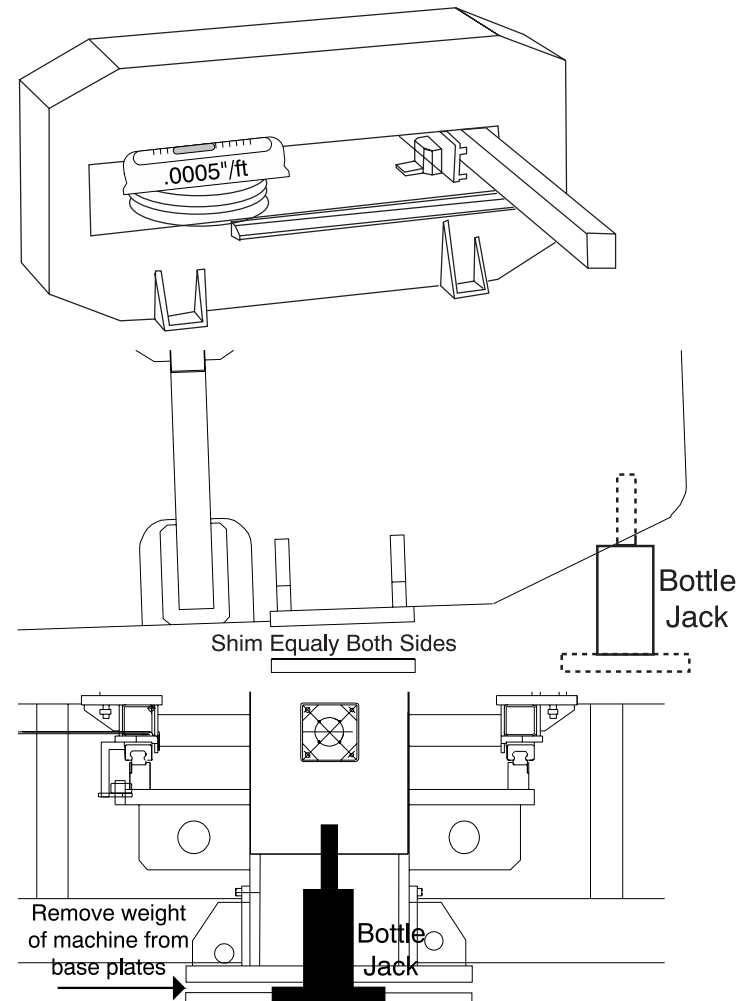
Under these conditions a more suitable location must be found for the machine, or a new foundation for the machine will be necessary.



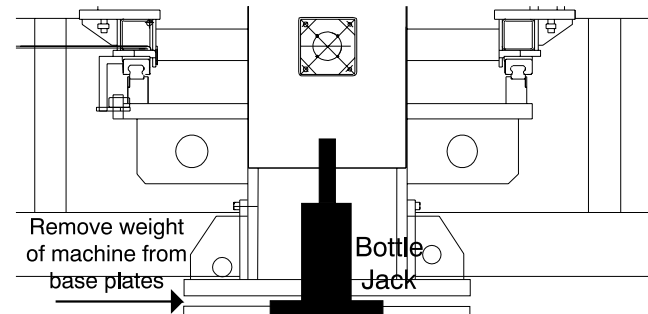
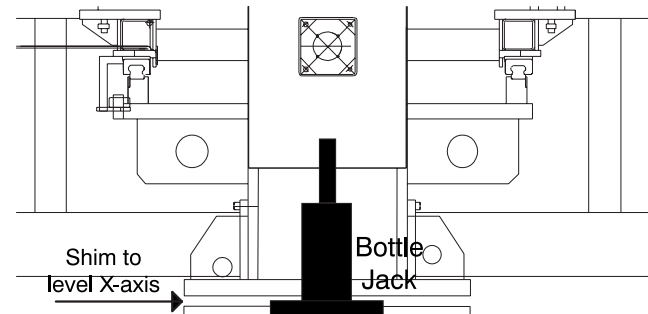
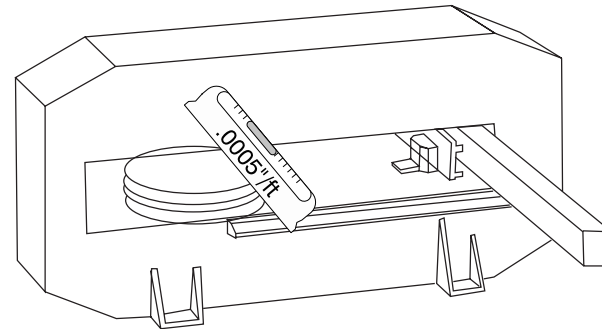


## Leveling Procedure

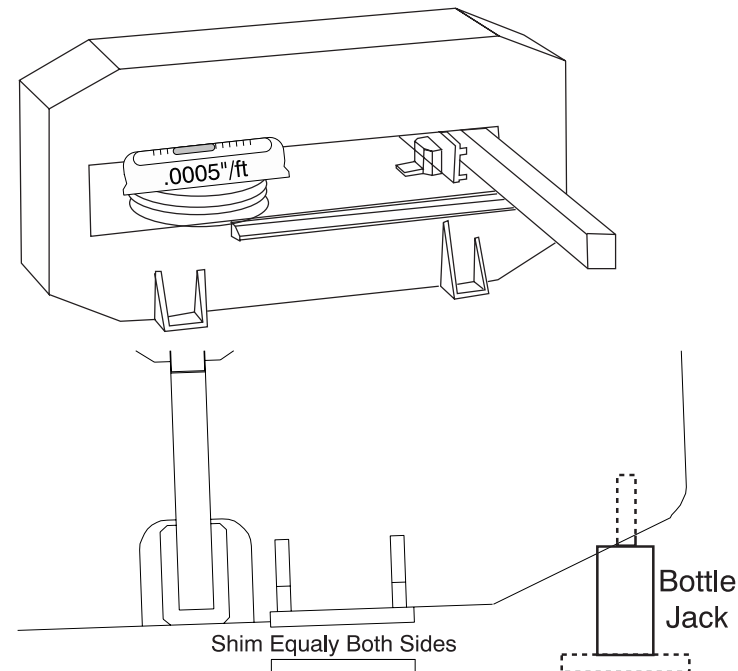
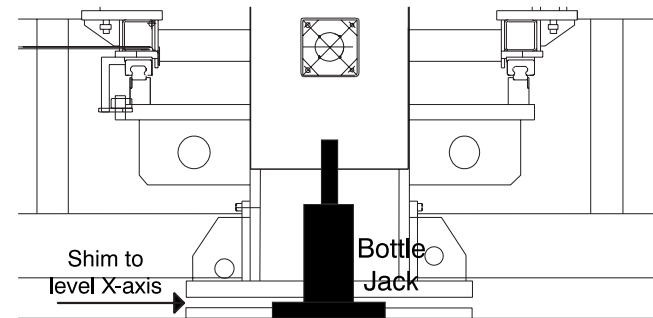
- 1) Determine the high end of machine frame by placing the spirit level on the turret to measure the level of the machine frame in the y-axis.
- 2) Use the bottle jack to lift the low end of the machine frame.
- 3) Shim equally between both machine feet and the base plates until the machine frame measures near level on the y-axis with the turret end of the machine frame slightly higher than the carriage end.
- 4) Center the bottle jack under the carriage end of the machine frame.
- 5) Lift the machine frame until all weight is off of the machine feet at the carriage end of the machine frame. Lift the machine frame as little as possible to take the weight off of the base plates.



- 6) With the machine supported on the bottle jack at the carriage end of the machine frame and the machine feet at the turret end of the machine frame, place the spirit level on the turret.
- 7) Measure and record the level of the turret in the x-axis direction.
- 8) Lower the machine frame to place all machine feet in contact with the leveling shims and base plates.
- 9) Lift the turret end of the machine frame to allow shimming between the machine feet and base plates to level the machine frame in the x-axis direction.
- 10) Repeat until the machine frame measures level in the X-axis to 0.0005"/ft , then continue.
- 11) With the bottle jack supporting the weight of the carriage end of the machine monitor the level of the turret in the x-axis as the bottle jack is slowly lowered to place the carriage end machine feet in contact with the base plates.
- 12) Any change in the level indicates that the carriage end of the machine needs to be leveled.



- 13) Lift the carriage end of the machine frame to allow shimming between the machine feet and base plates to level the carriage end of the machine frame in the x-axis direction.
- 14) Repeat until no difference in level is noted when the machine weight is on or off of the base plates and shims then continue.
- 15) With all of the machine feet setting on the shims and base plates place the spirit level on the turret to measure and note the level of the machine frame in the y-axis.
- 16) Using the bottle jack lift the low end of the machine frame and shim equally under both machine feet to level the machine frame in the Y-axis.
- 17) Repeat until the machine frame measures level to 0.0005"/ft in the Y-axis, then continue.
- 18) Run the machine using the rocking test G-code to determine that the machine frame is leveled adequately. Should excessive movement of the machine frame be noticed check for the conditions discussed in *Floor Condition Crowning* and *Floor Condition Slope*.



- 19) Tighten the anchor bolt nuts to prevent the machine frame from moving when in use. Monitor the machine level while tightening the anchor bolts to assure the machine level is not changed.

