

Vipros 345 User Pre-installation Guide



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(219) 464-9131

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Rebuilds, Sales And
Fanuc Control Upgrades.**

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Warning

- Qualified personnel must complete all work.
- Do not apply power to the Vipros 345 until an A.E.S.I. (Amada Engineering and Service Incorporated) Engineer is present and has instructed you to do so.

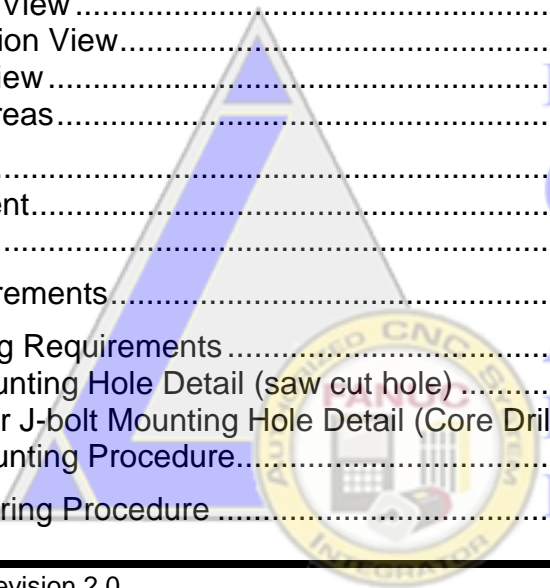


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Introduction

This manual describes the tasks that the purchaser of a Vipros 345 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 machine in the shop, taking into account all the maintenance areas indicated on the floor plan.
- Prepare the machine foundation as required.
- Uncrate the machine, control and chiller and place them on the foundation/floor, do not fill the anchor-bolt holes (if used) until after Amada completes the initial installation.
- Install the electrical supply.
- Install the air supply.
- Remove the protective coating from the surface of the machine.

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



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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	40." (Y) x 100." (X) with one repositioning cycle
Maximum Sheet Thickness	0.250"
Maximum Material Weight	110 lb.
Maximum Axis Travel	50." (X) x 40" (Y)
Max. Linear Table Speed	1968 IPM (X), 1968 IPM (Y),
Punching Accuracy	±0.004"
Repeatability	±0.001"



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Punching System Specifications

Press Capacity	33 Tons
Press Stroke	1.575"
Hit Rate	.314" Pitch
	1.000" Pitch
Maximum Hole Diameter	4.500"
Tool Type	Amada Thick Turret
Turret Rotation Speed	25 RPM
Turret Capacity	58 Station 2 Auto Index 44 Station 2 Auto Index 45 Station 4 Auto Index

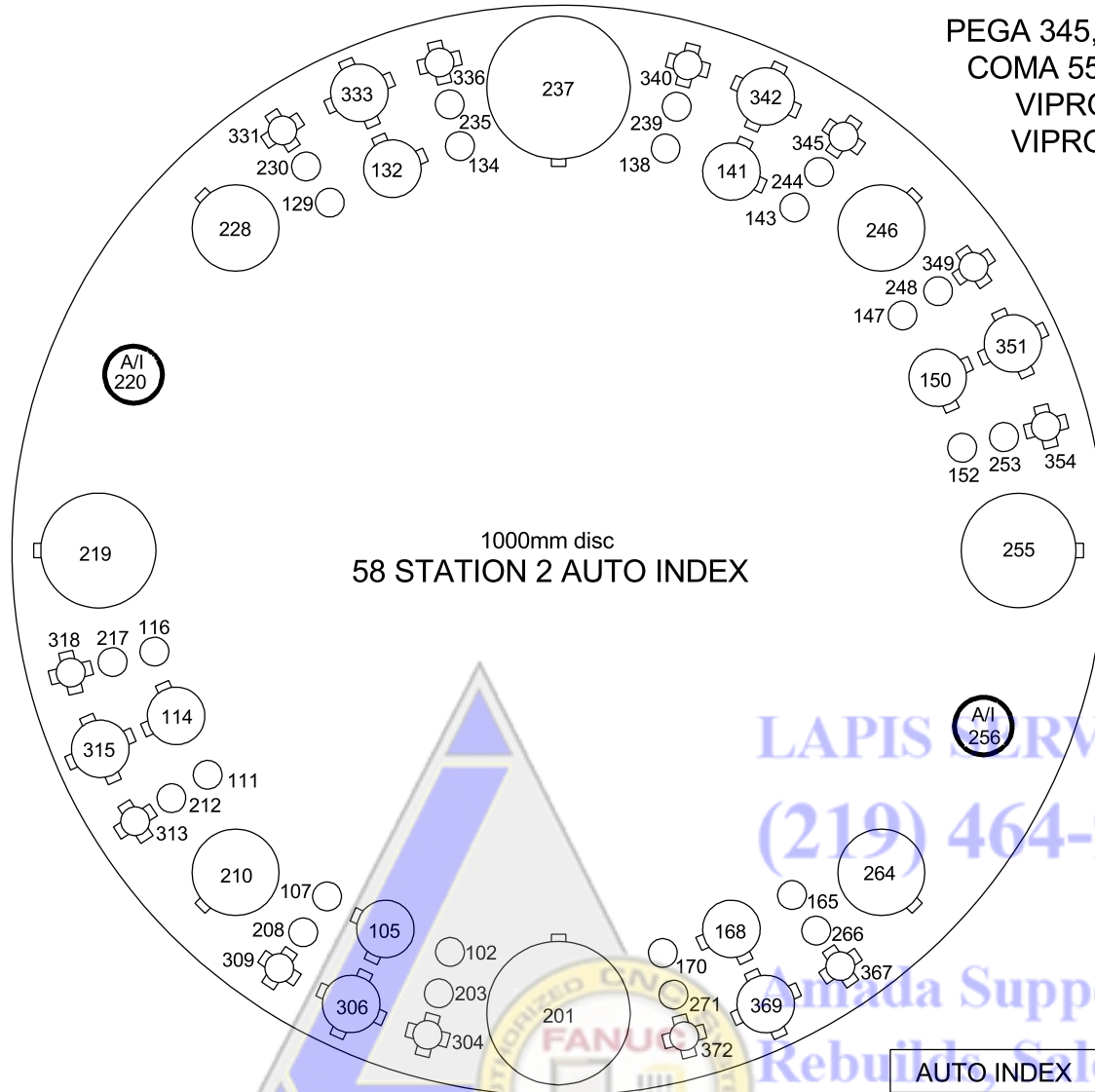


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58 Station - 2 Auto-Index Turret Configuration

PEGA 345, PEGA 345 King, PEGA 357, PEGA 367
 COMA 555, COMA 557, COMA 567, COMA 588
 VIPROS 345, VIPROS 357, VIPROS 367
 VIPROS 357 Queen, VIPROS 367 Queen

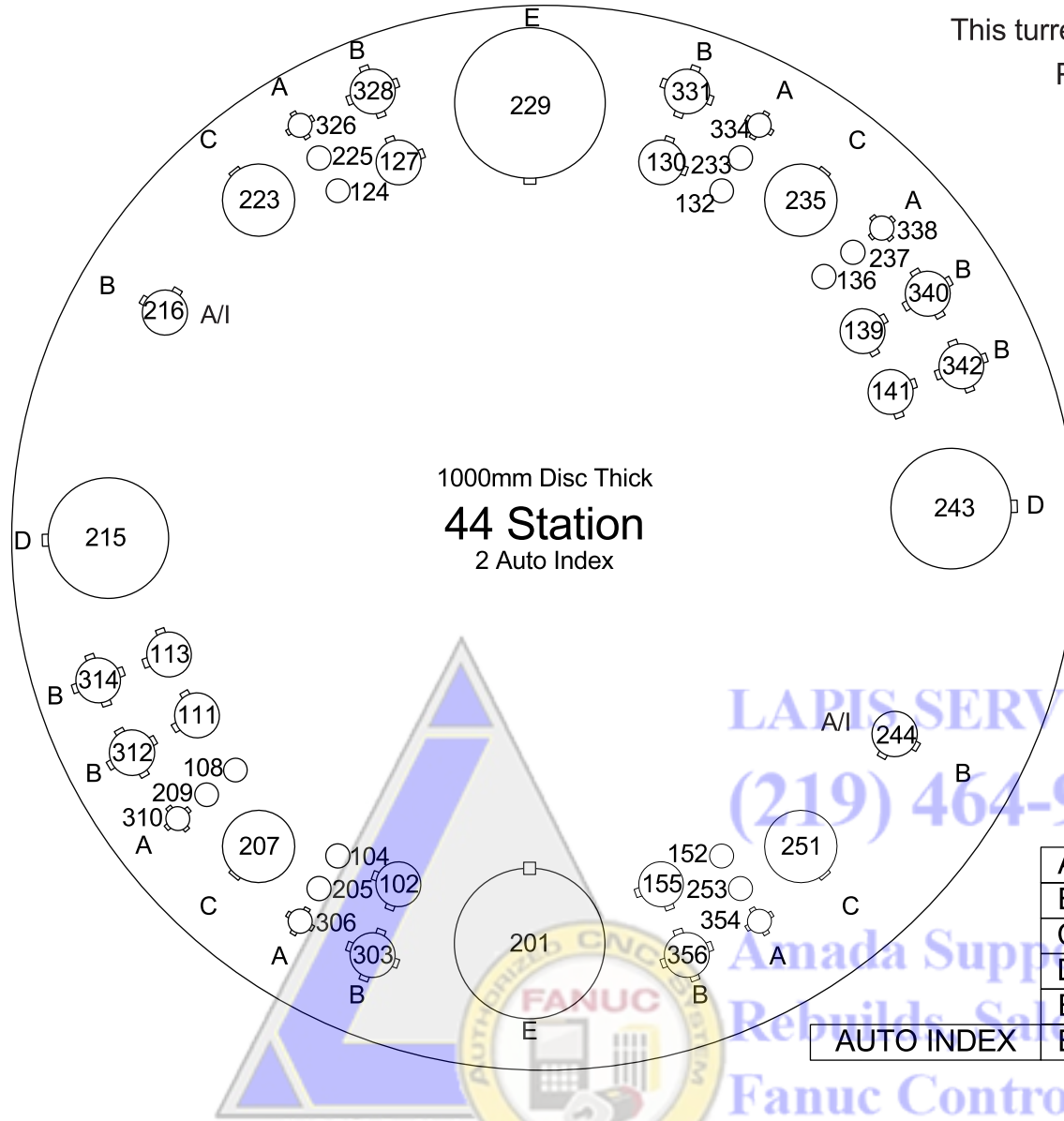


	MAXIMUM SIZE ROUND	NUMBER OF STATIONS (KEYED)	
A	1/2" (12.7mm)	36 (12)	
B	1 1/4" (31.7mm)	12 (12)	
C	2" (50.8mm)	4 (4)	
D	3 1/2" (88.9mm)	2 (2)	
E	4 1/2" (114.3mm)	2 (2)	
AUTO INDEX	B	1 1/4" (31.7mm)	2 (2)

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44 Station 2 Auto Index Turret Configuration

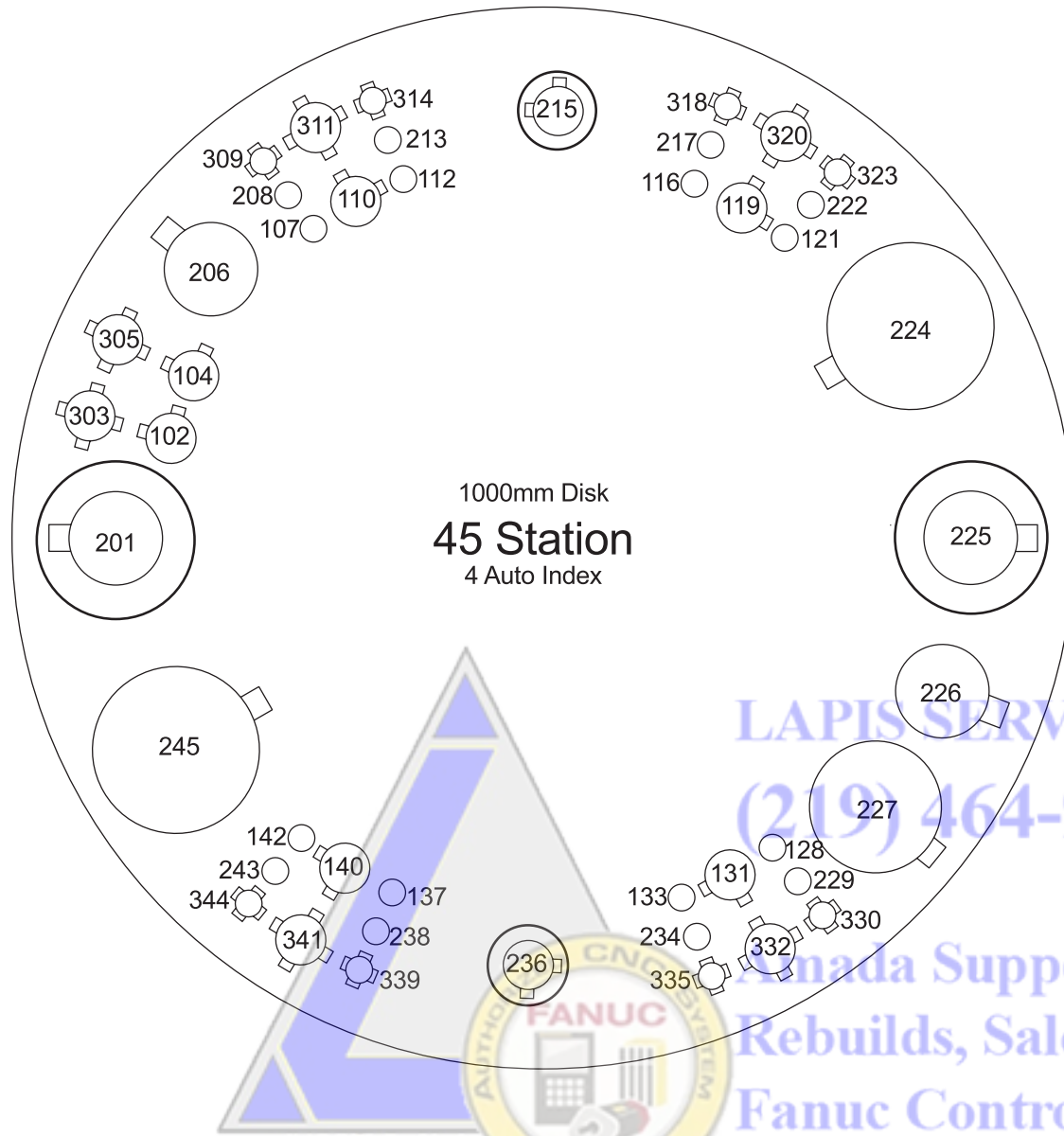


This turret used on the following machine models
 Pega 344, 345Q, 345K, 357, 367
 Coma 555, 557, 567, 588
 Vipros 345, 357, 367
 Vela II 355

	MAXIMUM SIZE ROUND		NUMBER OF STATIONS (KEYED)
A	1/2"	12.7mm	18 (6)
B	1 1/4"	31.7mm	16 (16)
C	2"	50.8mm	4 (4)
D	3 1/2"	88.9mm	2 (2)
E	4 1/2"	114.3mm	2 (2)
AUTO INDEX	B	1 1/4"	2 (2)

45 Station 4 Auto Index Turret Configuration

This Turret Configuration Used On
 Vipros Queen 357, 367
 Vipros 345, 357, 367



	Maximum Size Round		Number Of Stations (Keyed)	
A	½"	12.7mm	24 (8)	
B	1¼"	31.7mm	12 (12)	
C	2"	50.8mm	2 (2)	
D	3½"	88.9mm	1 (1)	
E	4½"	114.3mm	2 (2)	
Auto Index	B	1¼"	31.7mm	2 (2)
	C	2"	50.8mm	2 (2)

CNC Controller

Model	Fanuc O4PC (with PHNC)
Control Function	X, Y, T & C
Input Method	MDI, Floppy Disk Drive, DNC
Minimum Command Unit	0.001" (X, Y) .01 ⁰ (C)
Minimum Travel Unit	0.001" (X, Y) .01 ⁰ (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



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Hydraulic Systems Specifications

Power Hydraulic Numerical Control

Ram Cycle Patterns	65 total
	Punching 2
	Nibbling 1
	Forming 50
	Marking 4
	Knockouts 4
Slitting 4	
Minimum Increment	0.01mm



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Hydraulic Power Unit

Model	Yuken
Dual Operating Pressure	100 kgf cm ² & 195 kgf cm ²
Oil Type	Mobil DTE [®] Excel 46 <small>(formerly called Mobil Hydraulic Oil NZ 46)</small>
Oil Capacity	40 Gallons



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Supply Requirements

Electrical Power Supply* SBC EX 5.5 Chiller*	Vipros 345	230 / 460 3ph ±10%, 20 kVA 230 or 460 3ph ±10%, 15 kVA
Air Supply		80 psi @ 8.8 ft ³ /min.

*The Chiller voltage must be specified when machine is ordered.

Installing the Electrical Power Supply

The Vipros 345 requires two separate power sources. The main power source must be supplied to the Fanuc O4PC CNC Unit. The other supply source must go to the SBC EX 5.5 Chiller. The machine should be supplied from a power line separate from those for welding machines or other machines that produce electrical noise.

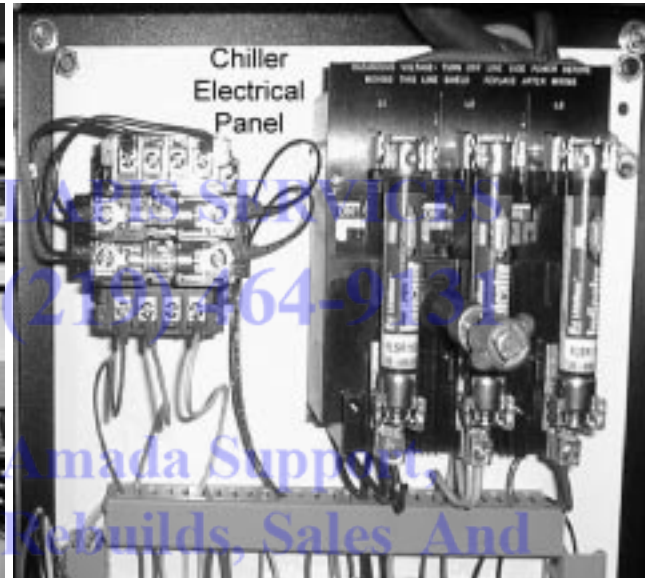
The Vipros 345 Electrical inlet is 72" above floor level.

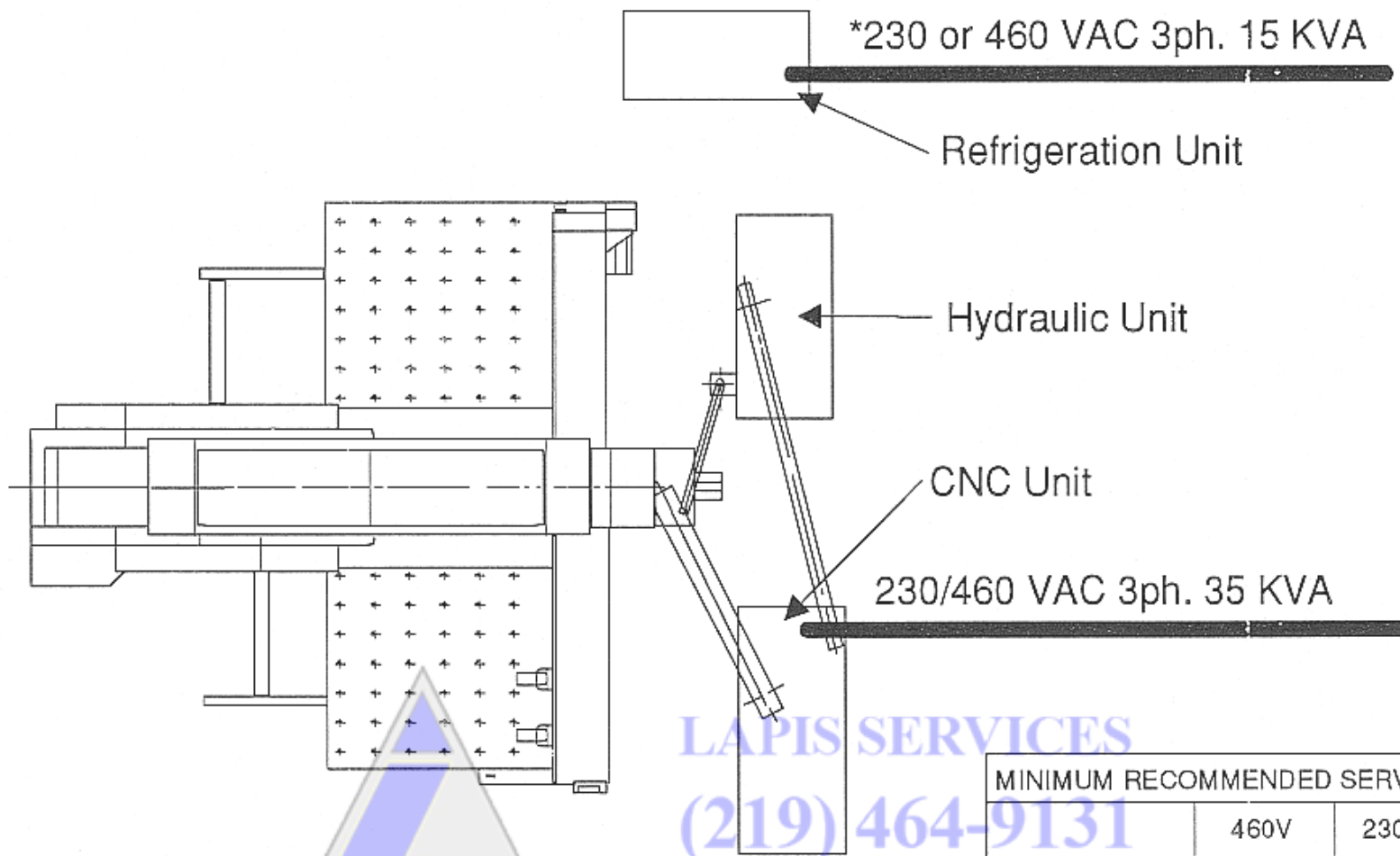
The SBC EX 5.5 Chiller Electrical inlet is approximately 53" above floor level.

Vipros electrical enclosure



Chiller electrical enclosure

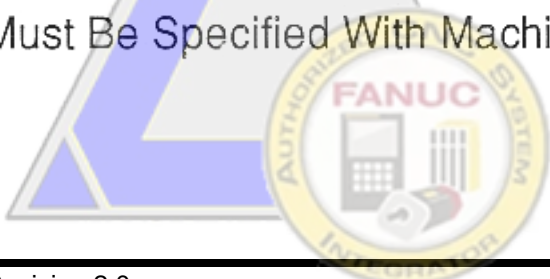




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MINIMUM RECOMMENDED SERVICE:		
	460V	230V
CNC UNIT	60A	125A
REFER. UNIT	30A	60A

* Must Be Specified With Machine Order



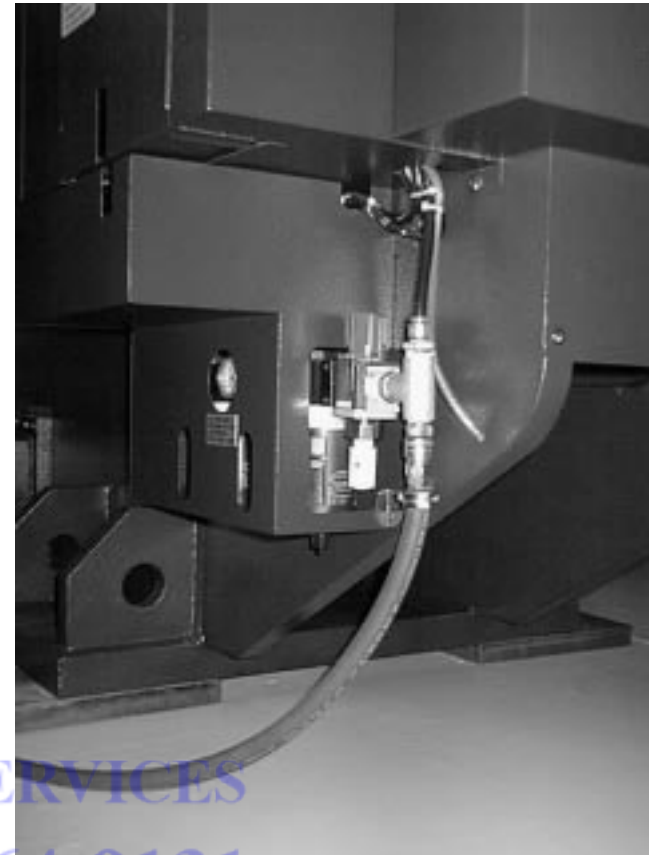
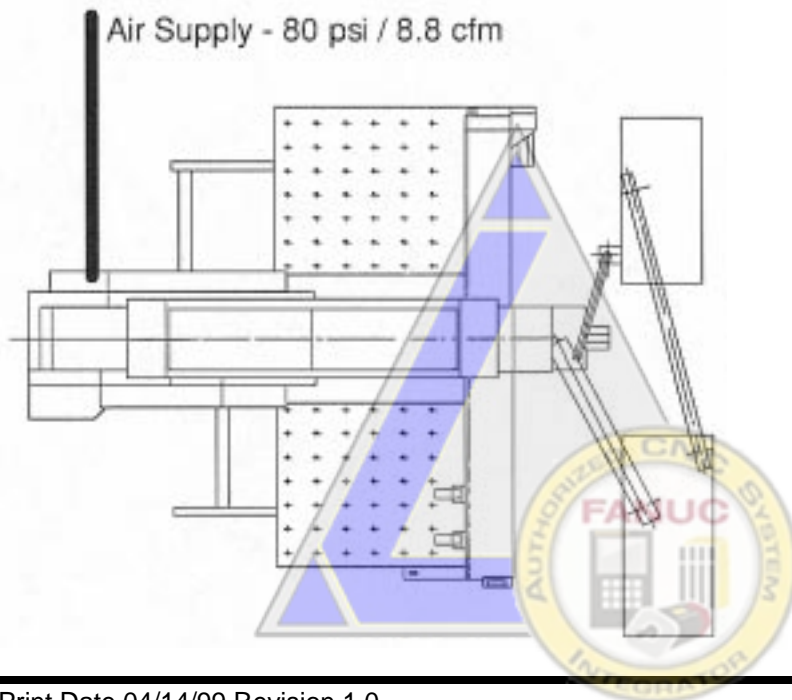
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Installing the Air Supply

The Vipros 345 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 ft³/min..
- The air inlet is approximately 18" above the floor level.



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Planning the Location of the Machine

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

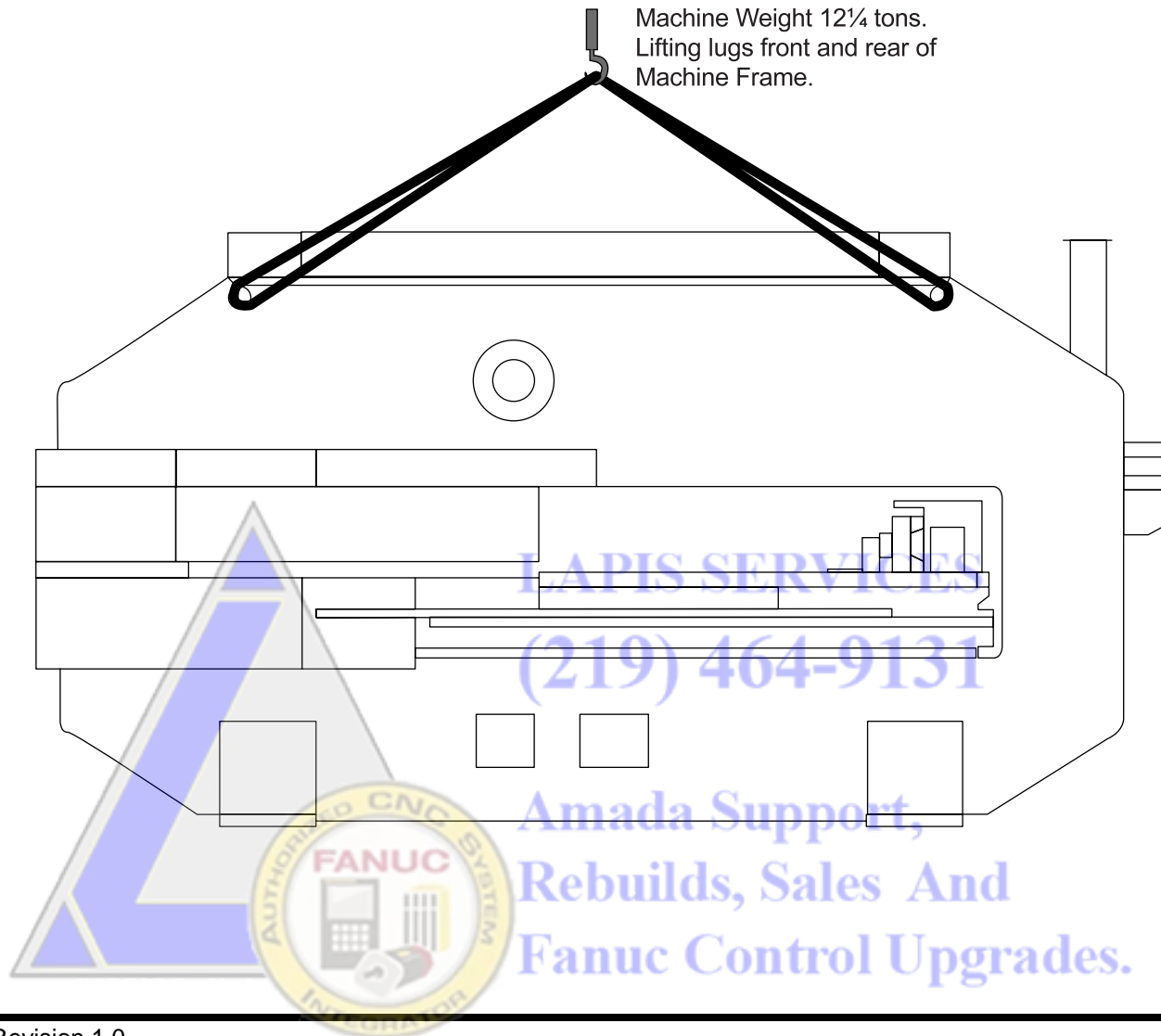
- No obstacles are allowed in the worksheet travel area and the ceiling must be at least 40" above the top of the Vipros 345.
- All of the maintenance areas recommended should be used, but you must at least ensure that the doors of the Fanuc O4PC NC unit can be opened.
- The Vipros 345 machine and control must be protected from direct sunlight or other heat sources.
- The positioning of the Chiller is very flexible. Please see the Chiller section in this booklet.



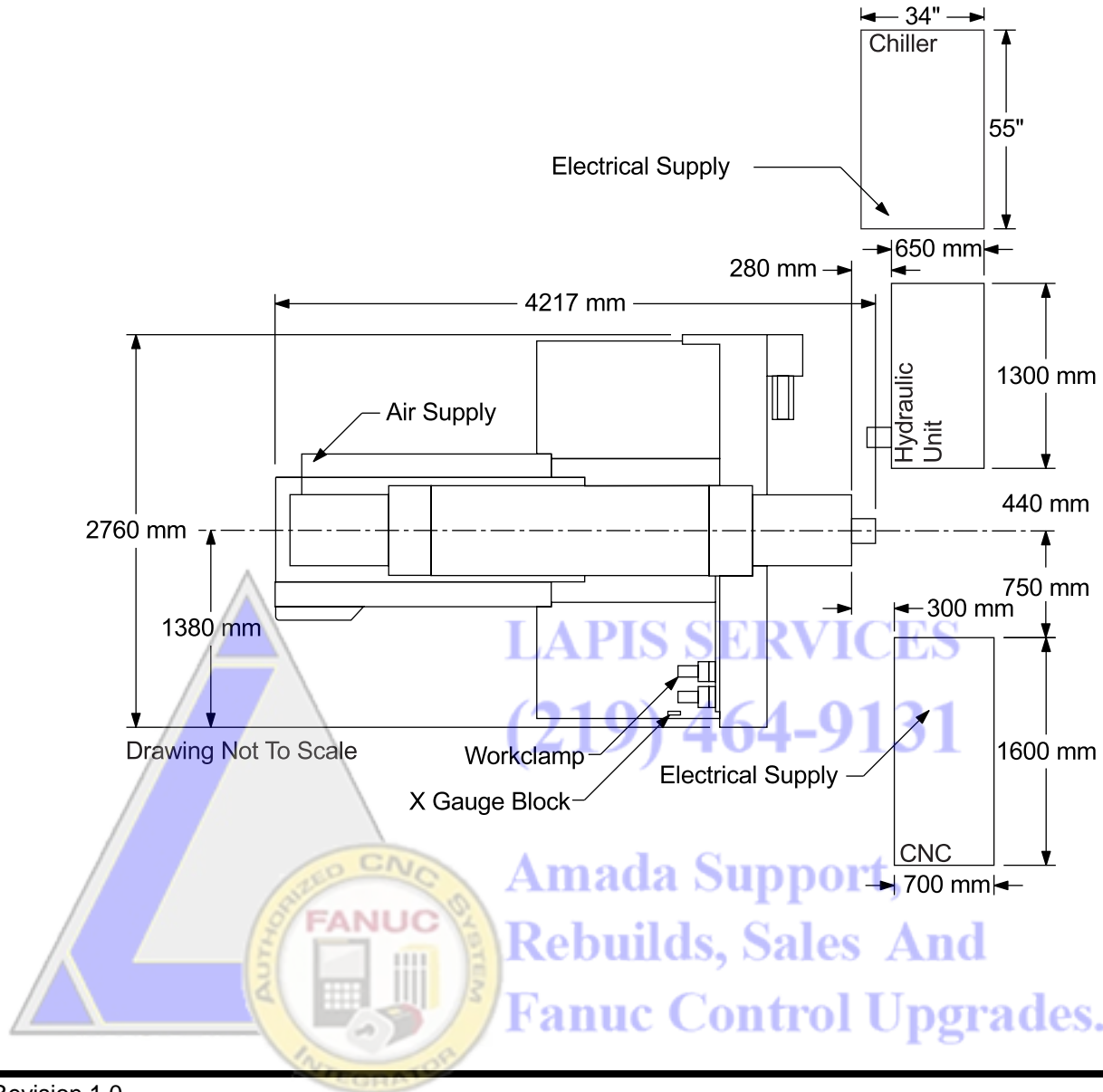
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Lifting the Machine

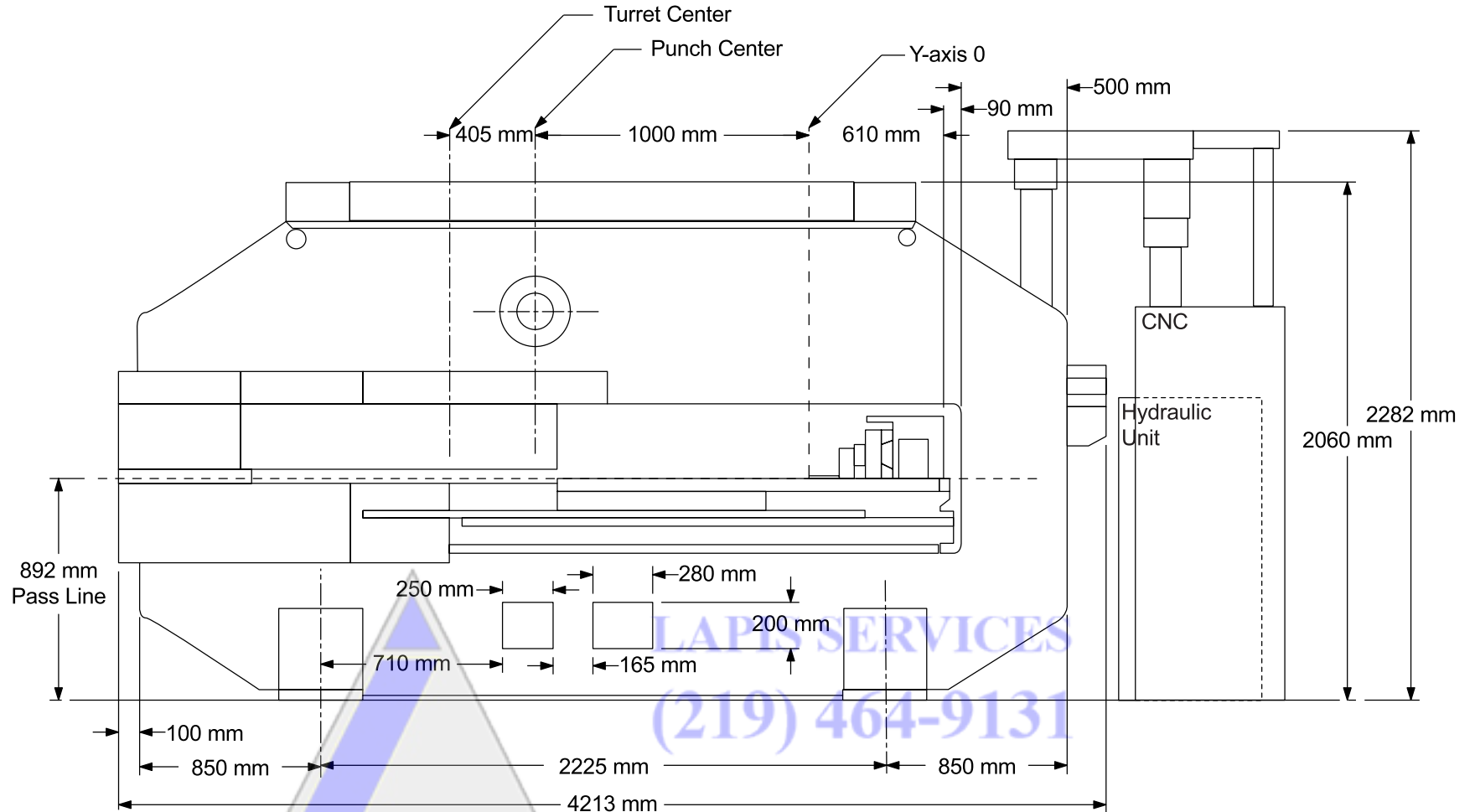


Machine - Plan View



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Machine Elevation View



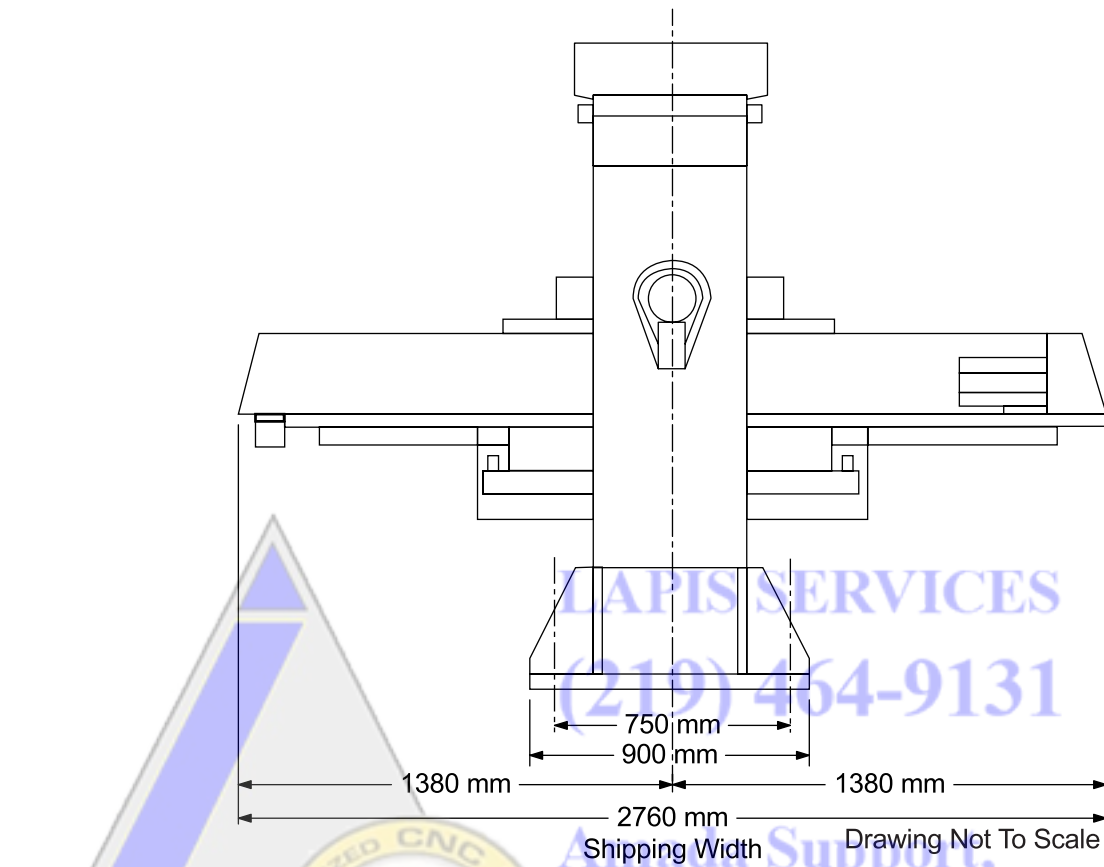
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Drawing Not To Scale



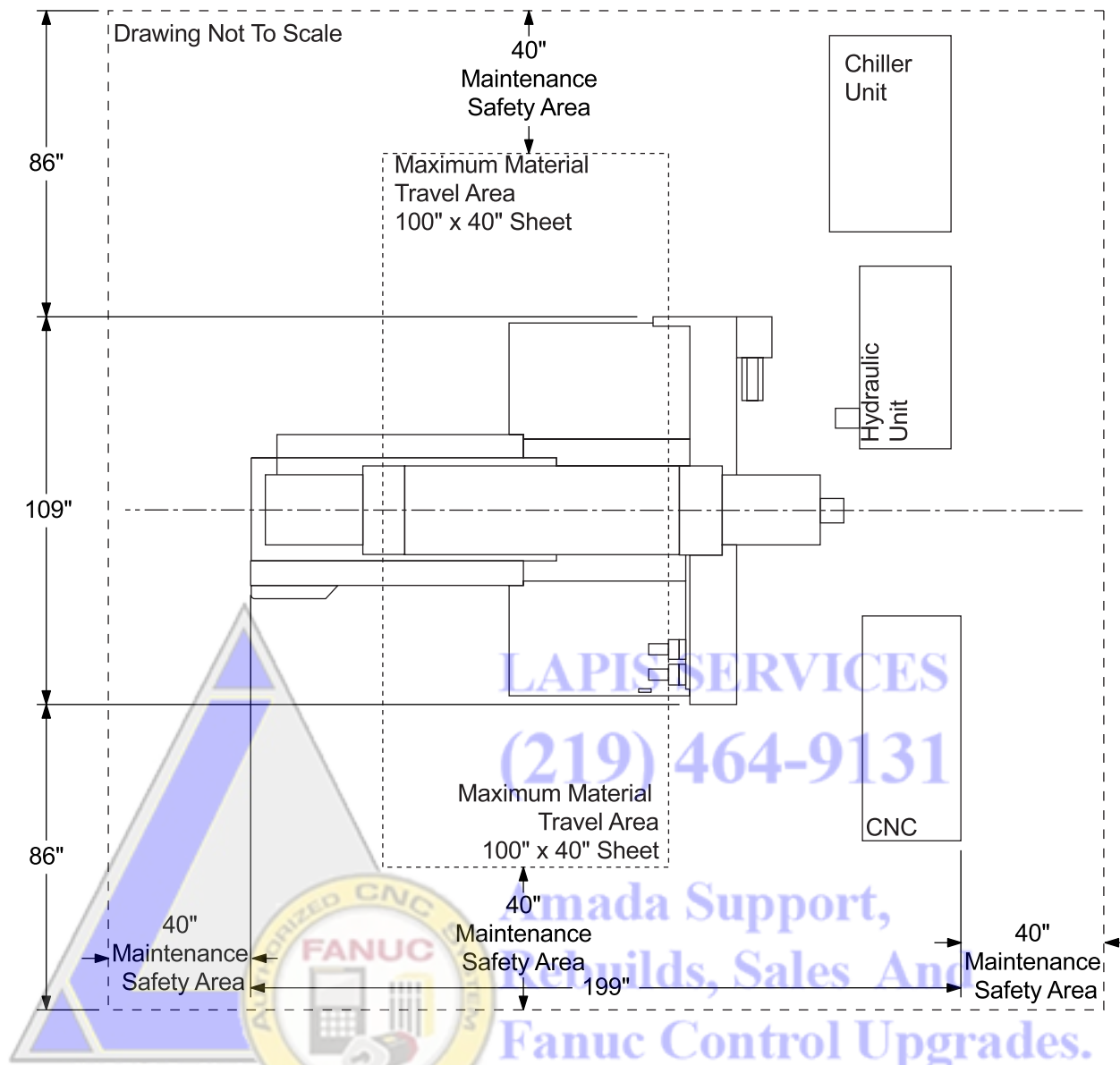
Machine End View



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Maintenance Areas



Chiller

Model	SBC EX 5.5
Cooling Capacity	78,000 BTU/hour at 65 ⁰ ambient air temperature
Water Volume	10-15 GPM at 35 psi.
Reservoir Capacity	70 Gallons
Pump HP	1 hp single phase

The SBC EX 5.5 Chiller Unit is very important to the reliable operation of the Vipros 345.

The SBC EX 5.5 Chiller must be placed so that an adequate flow of air is maintained.

The position of the SBC EX 5.5 Chiller is flexible. The Vipros 345 is supplied with two (2) fifteen-foot lengths of hose to connect the SBC EX 5.5 Chiller to the Hydraulic Unit. The customer may supply a longer length of hose if required.

Under normal operating conditions the SBC EX 5.5 Chiller may be placed against walls as shown. However for maintenance purposes access to all sides of the SBC EX 5.5 Chiller may be required.

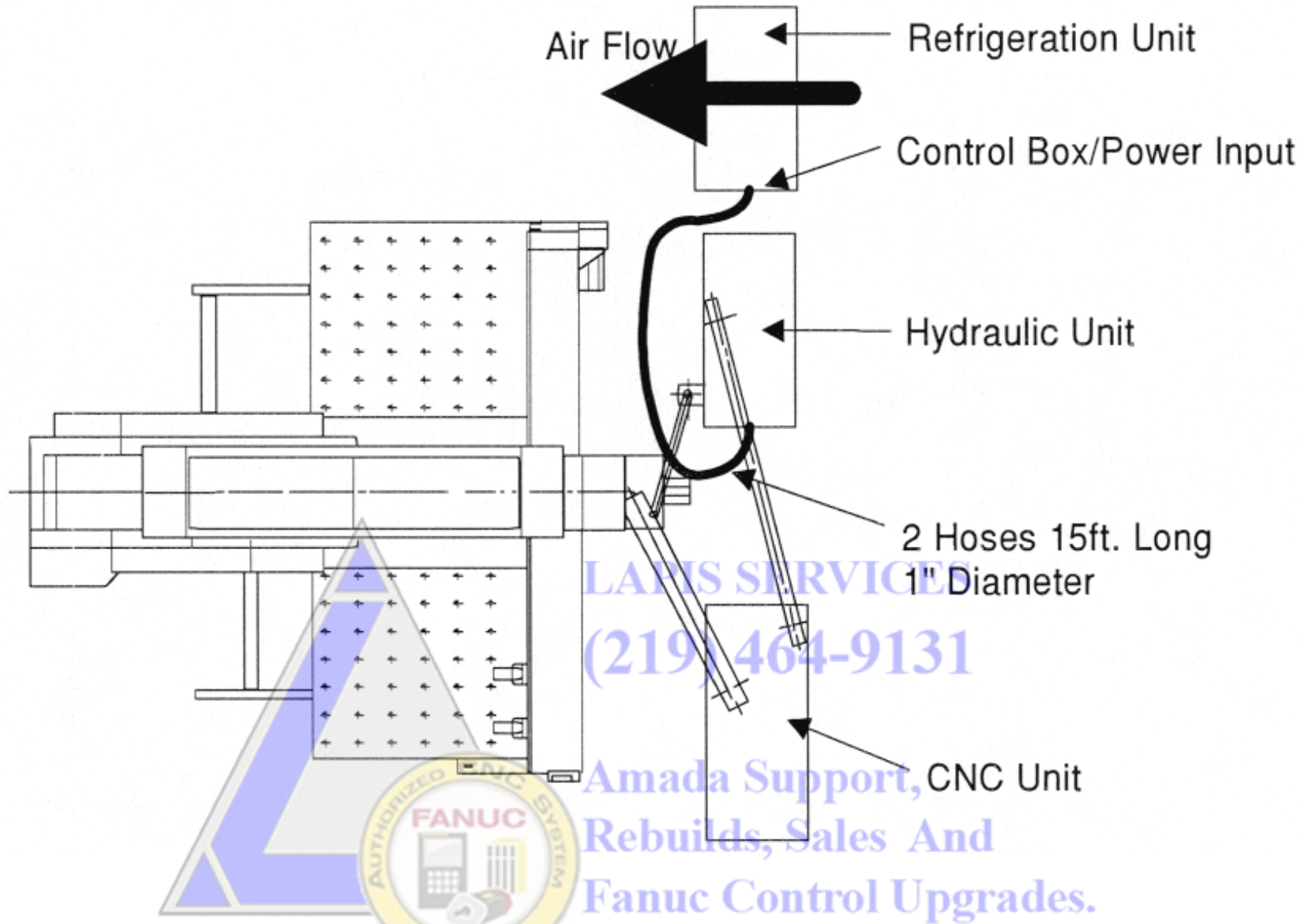
The SBC EX 5.5 Chiller must have a minimum of 60" of clearance above the SBC EX 5.5 Chiller for proper airflow.



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Chiller Placement



Connections

Hydraulic Unit

Chiller



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Foundation Requirements

The Vipros 345 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*

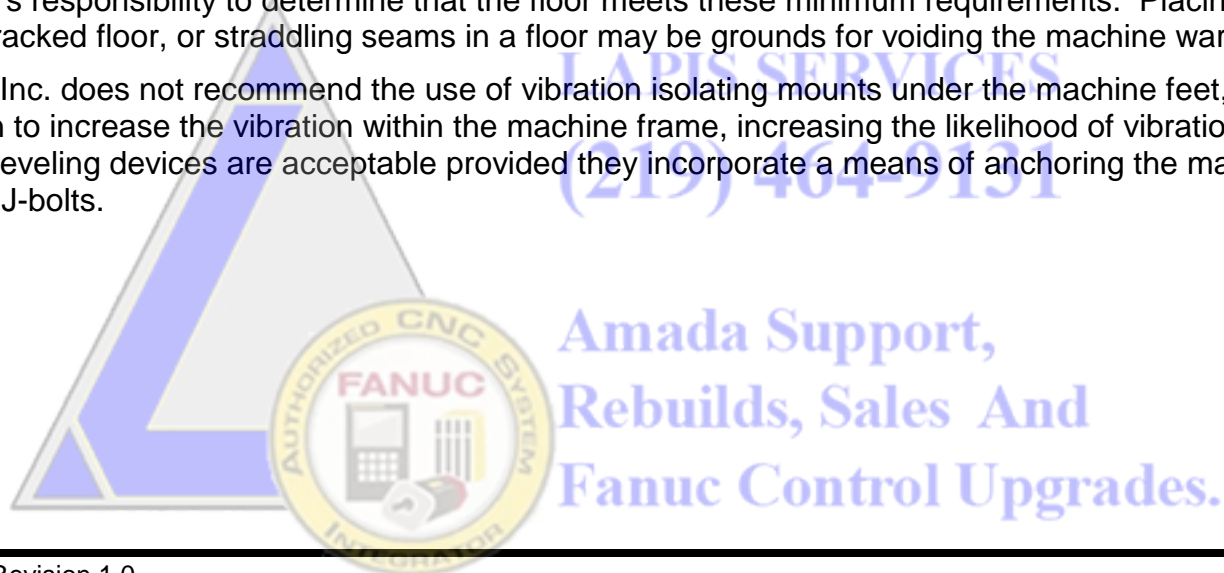
The minimum acceptable floor conditions to assure a successful installation are:

- 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/ft².
- 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, Inc. 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 Vipros 345 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"/ft², and capable of supporting 3.5 tons/ft². It is the purchaser's responsibility to determine that the floor meets these minimum requirements.

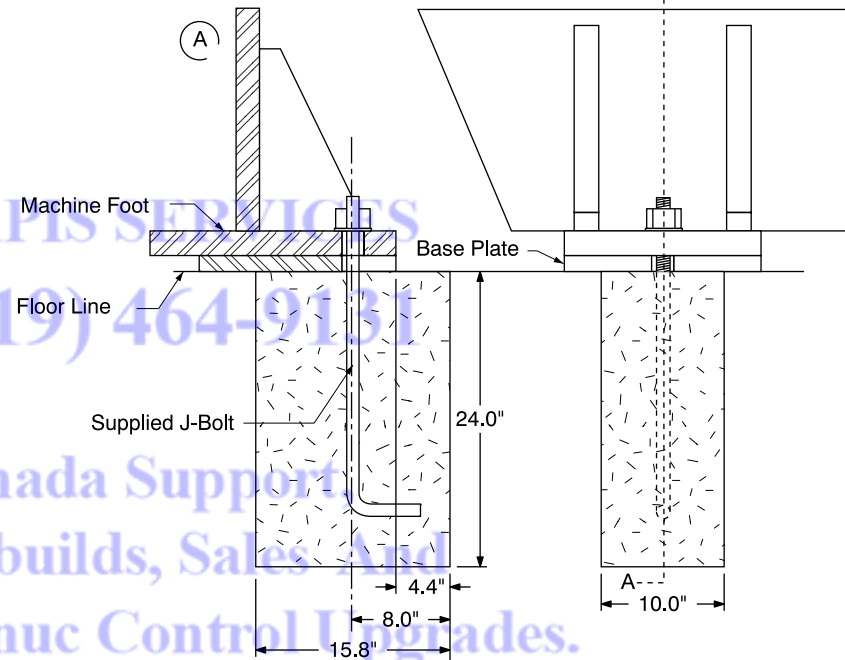
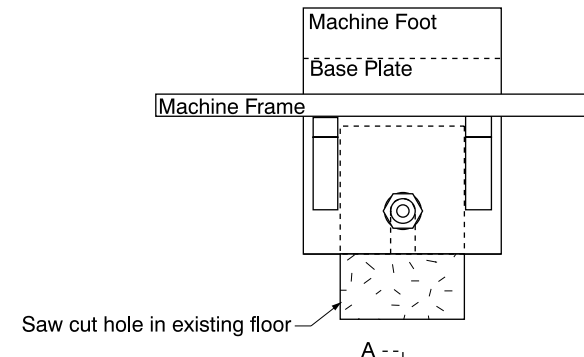
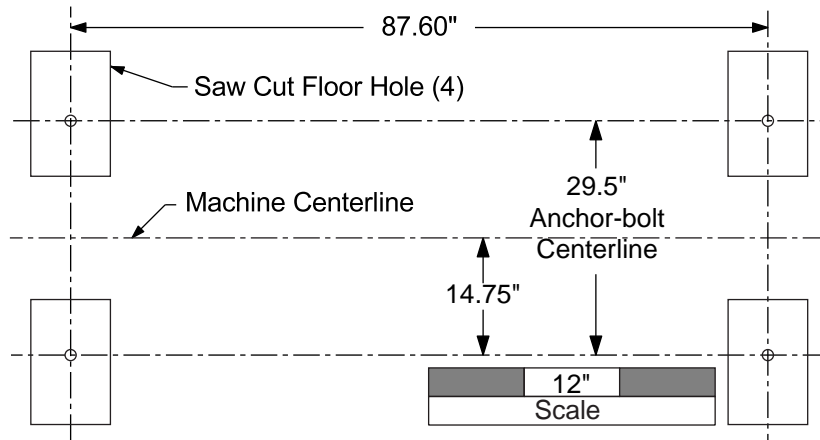


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Floor J-bolt Mounting Hole Detail (saw cut hole)

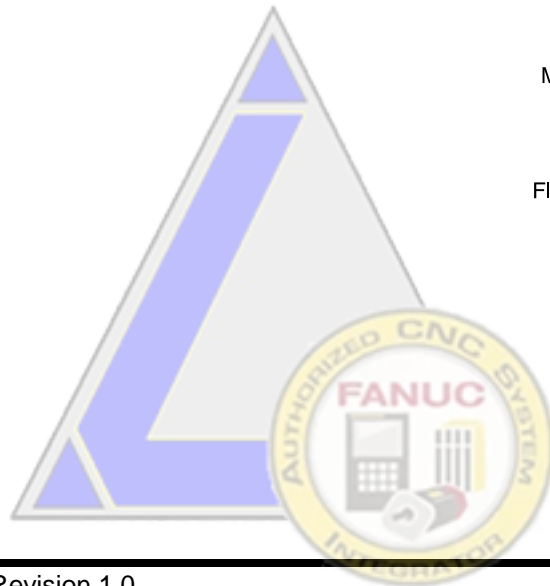
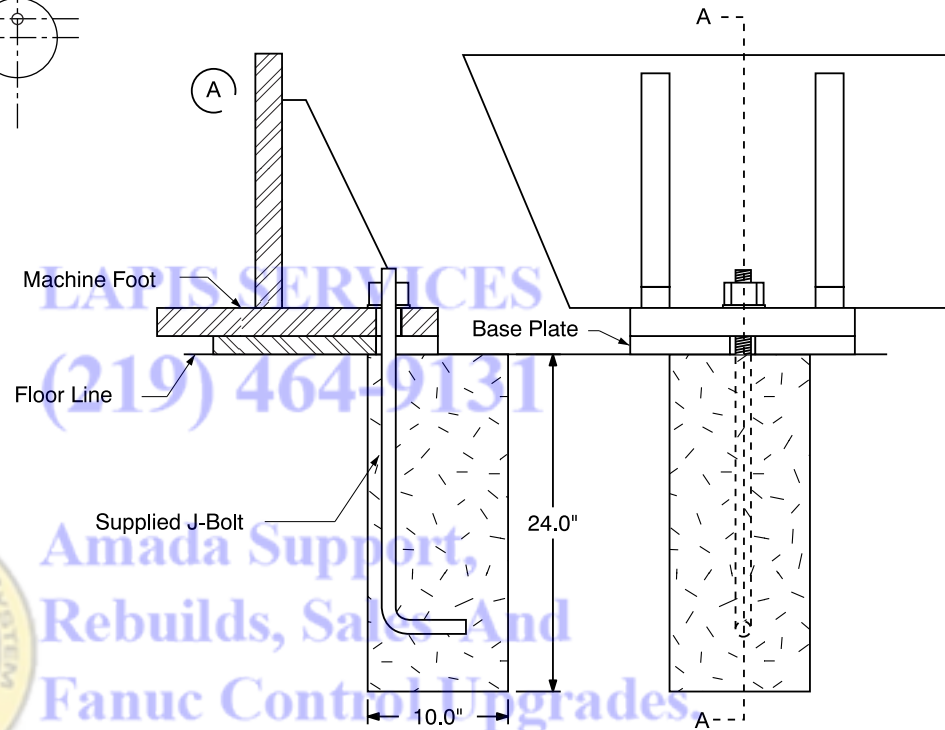
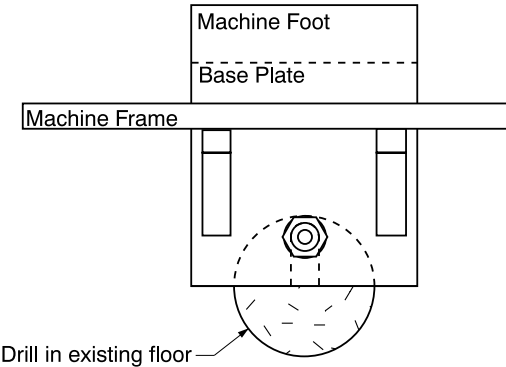
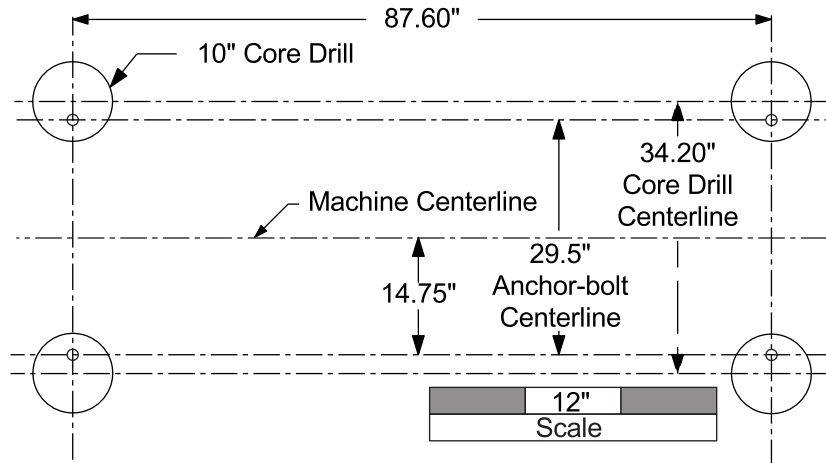
This machine mounting method should be used only if the floor is of such quality that it will support the weight of the machine with the anchor J-bolts used only for maintaining the location of the machine.



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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.

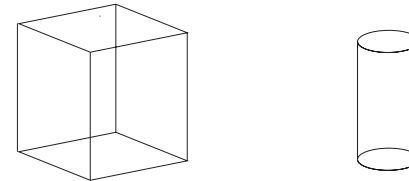


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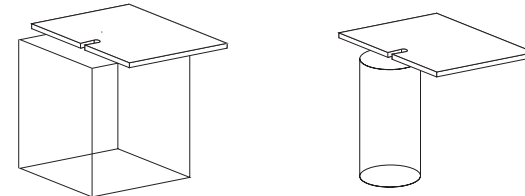
Floor J-bolt Mounting Procedure

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

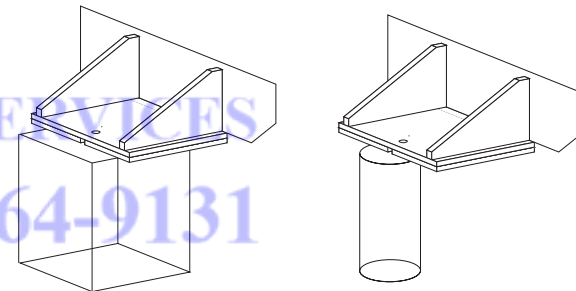
See Floor J-bolt Mounting Hole Plan View (saw cut hole) or Alternative J-bolt Mounting Method Plan View (Core Drill) for correct layout dimensions of the four anchor holes required.



Step 2. Set base plate over the hole.



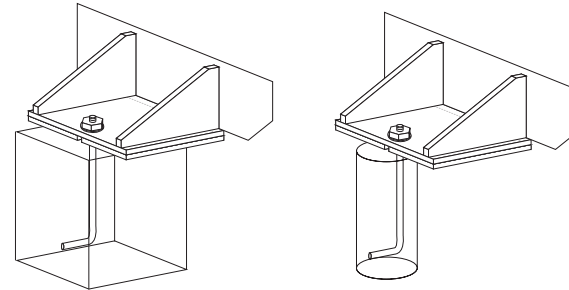
Step 3. Set the machine on the base plate.



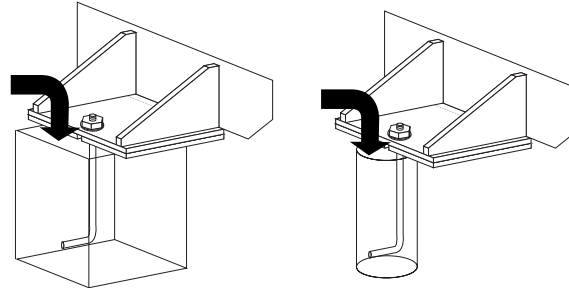
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Step 4. Set the J-bolt through the hole in machine foot, attach washer and nut to hold J-bolt in place.

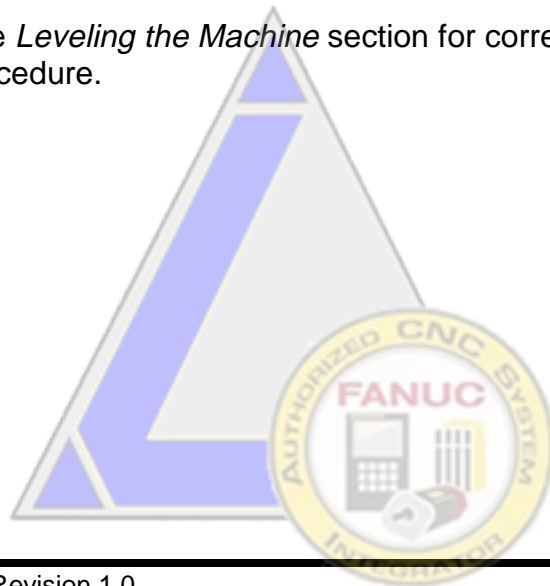
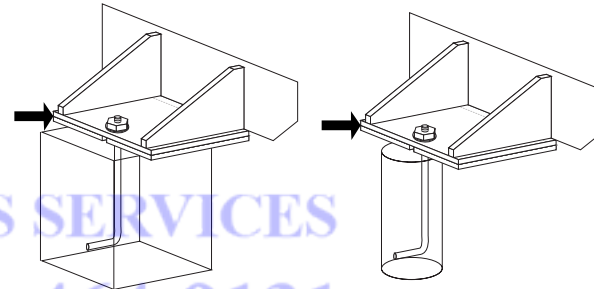


Step 5 Pour the Concrete. Ensure that the J-bolt remains correctly aligned to the machine frame during the pouring and hardening time of the concrete. Ensure that the concrete level is equal to the floor level



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.



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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 Vipros 345 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/ft². It is the purchaser's responsibility to determine that the foundation meets these requirements.

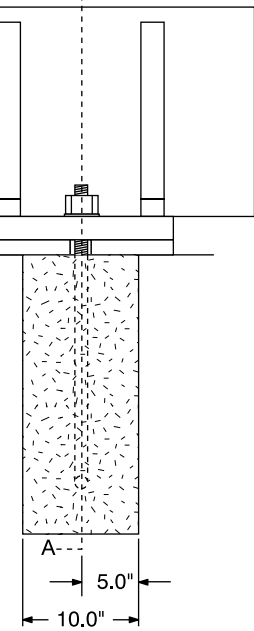
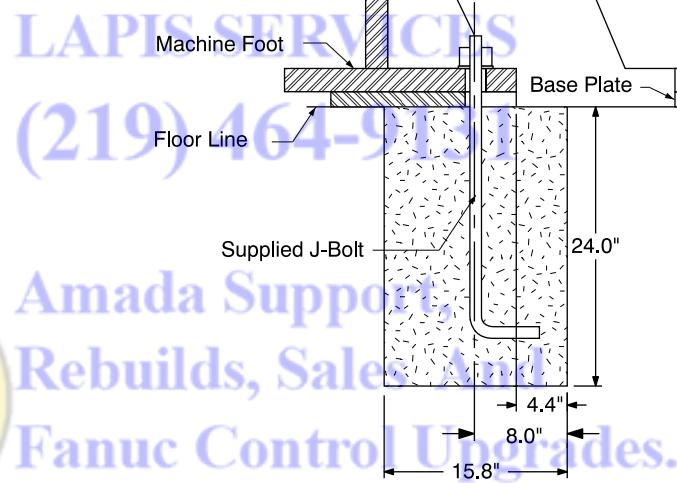
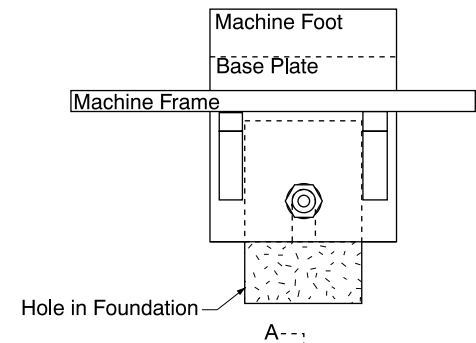
Please note the following:

The base plates, shims, anchor bolts, nuts, and washers are shipped with the Vipros 345.

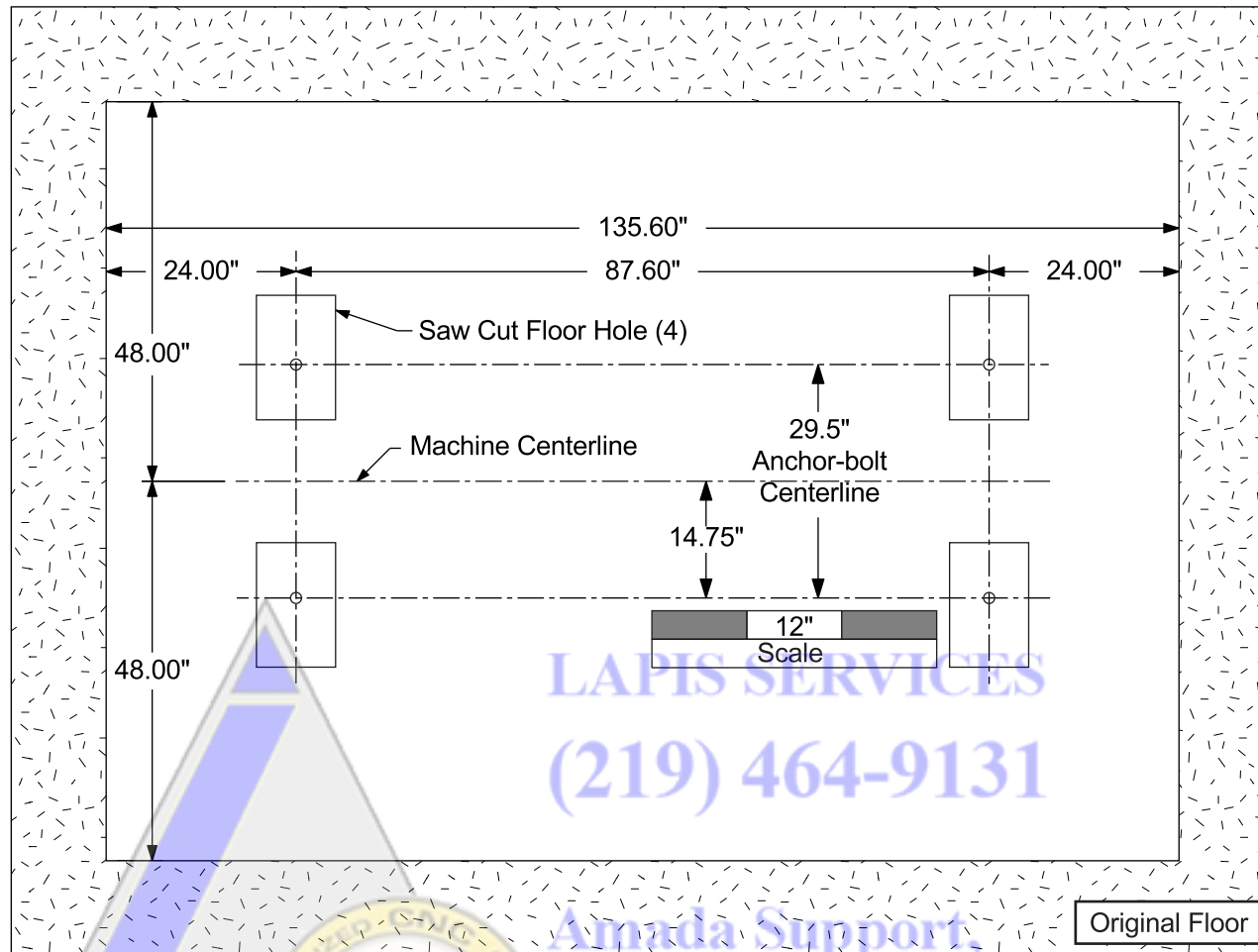
The concrete J-bolt pads should be filled after the machine is placed on the foundation.

Foundation J-bolt Detail

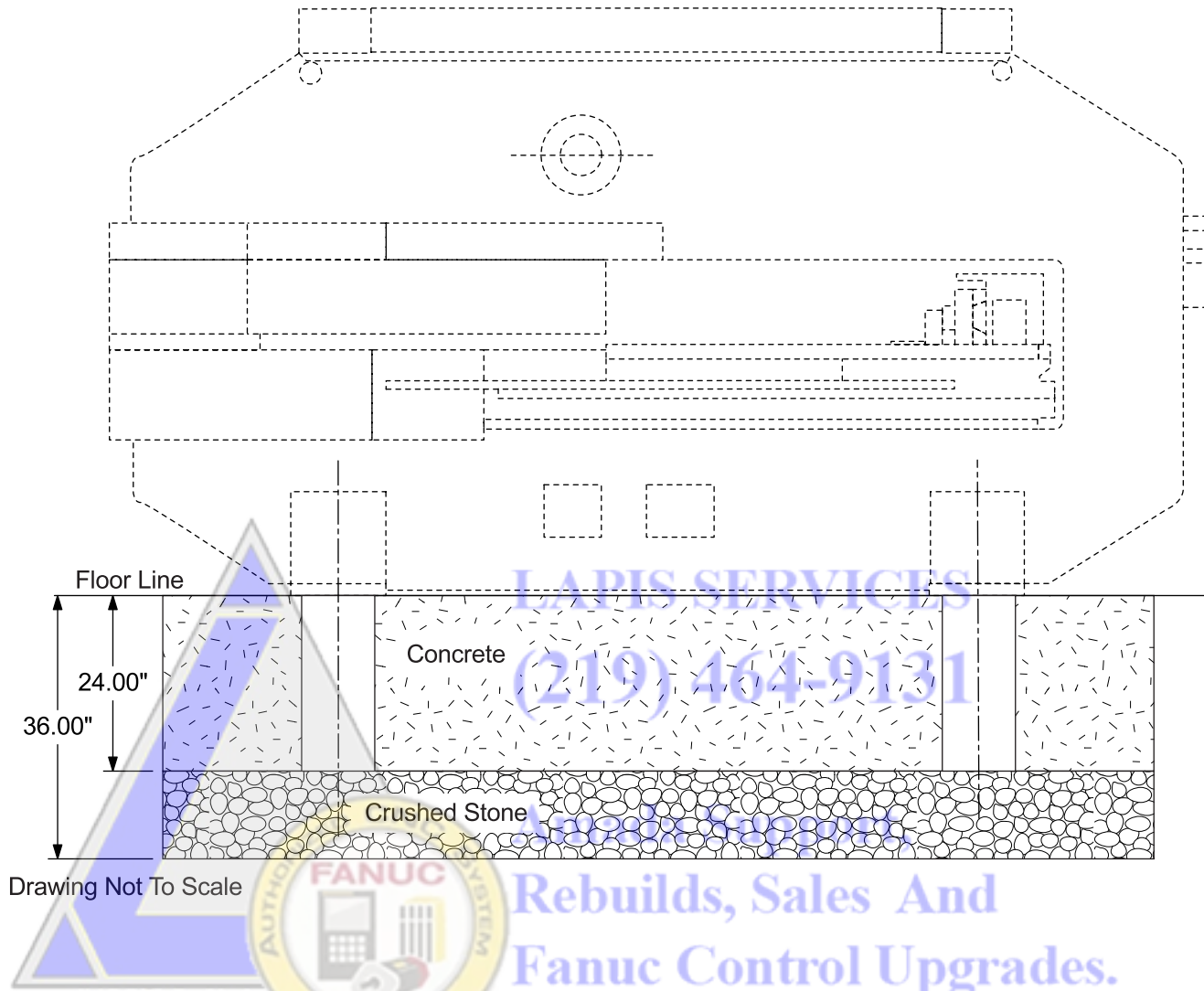
See *Floor J-bolt Mounting Procedure* for proper method of mounting machine on foundation.



Foundation Plan View



Foundation Elevation View



Removing the Protective Coating

The Vipros 345 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.

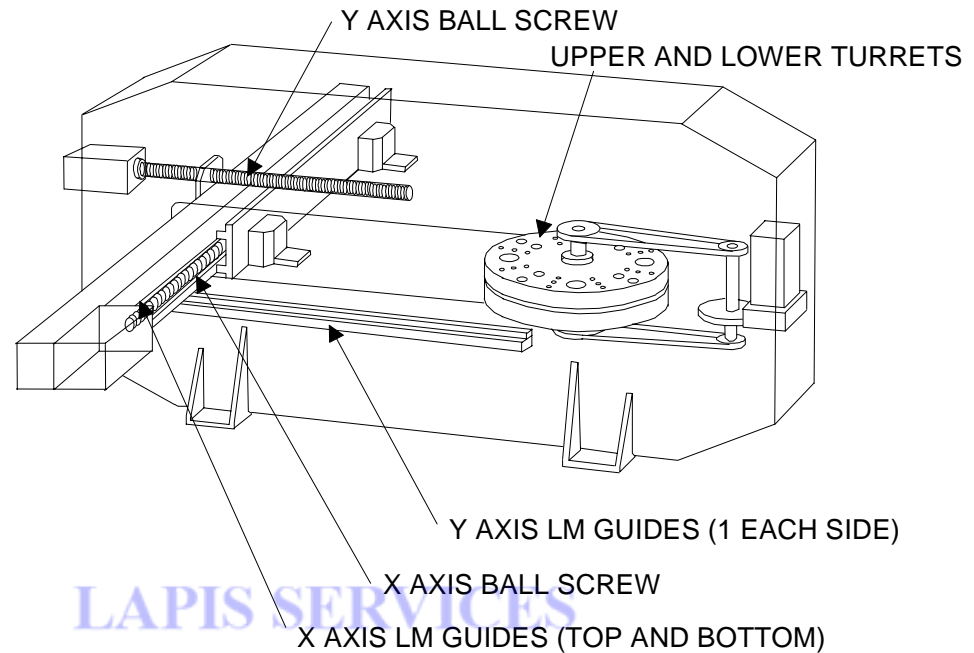
Please note the following:

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.



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Machine Leveling

Proper Machine leveling is critical to the «Model» 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.



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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.

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.

G92X50.000Y40.000

G06A.050B0

M500

G70X25.Y20.TTTT(Use any valid tool number)

N1G91X-.25

X.25

M97P1

G50



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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 a condition known as crowned exist the weight bearing points of the machine may not be far enough from the machine centerline to ensure a stable machine.

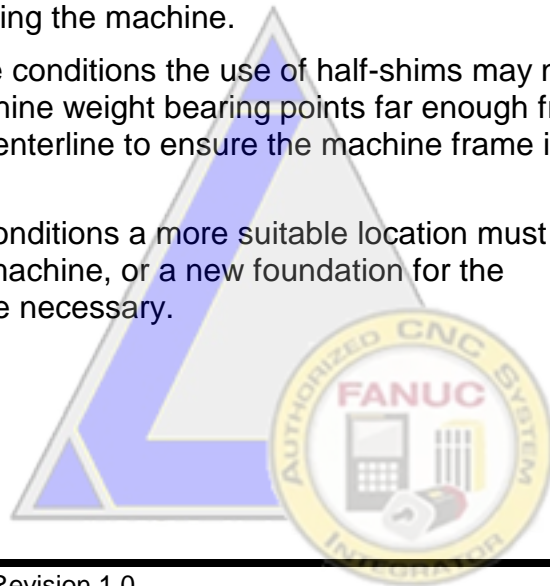
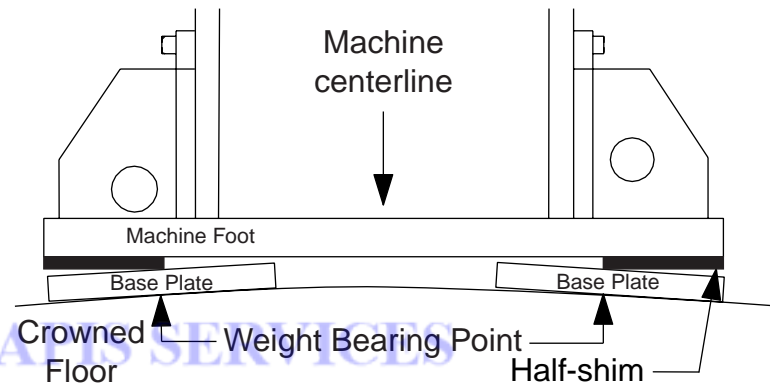
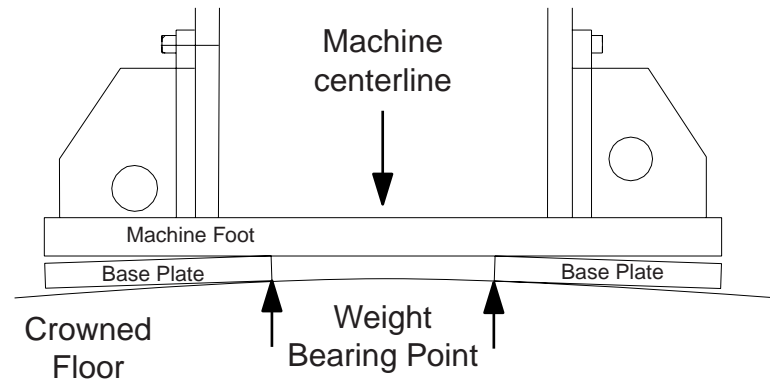
Under these conditions a procedure known as *Half-Shimming* should be used.

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.



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Floor Condition: Slope

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.

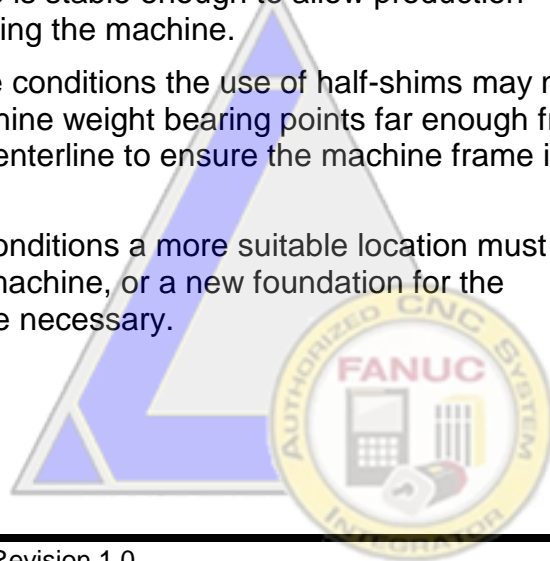
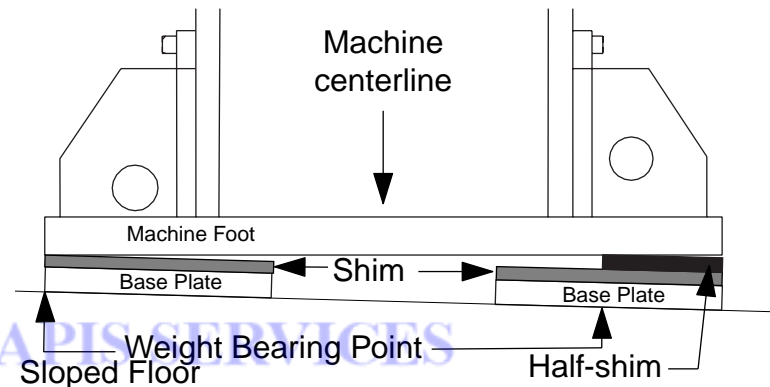
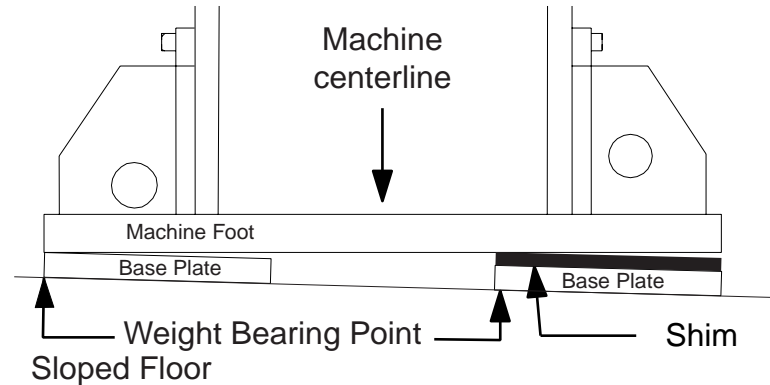
Under these conditions a procedure known as *Half-Shimming* should be used.

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.

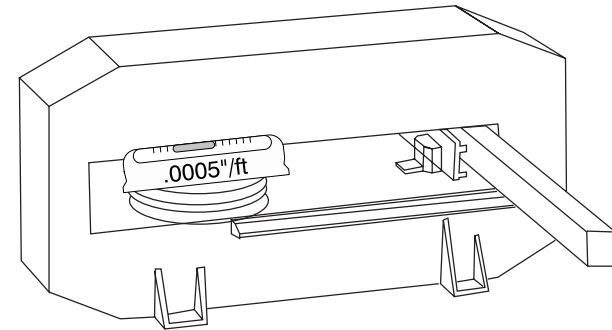
Under these conditions a more suitable location must be found for the machine, or a new foundation for the machine will be necessary.



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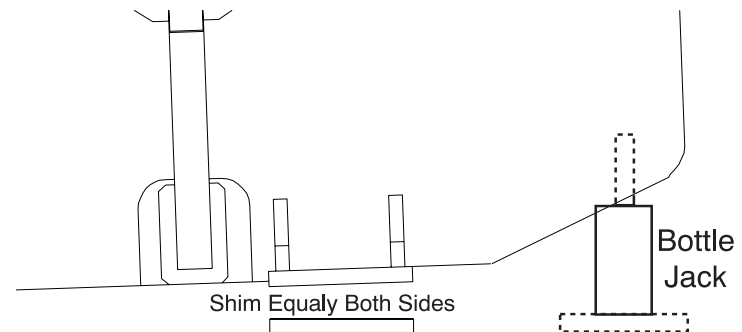
Leveling Procedure

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.



Use the bottle jack to lift the low end of the machine frame.

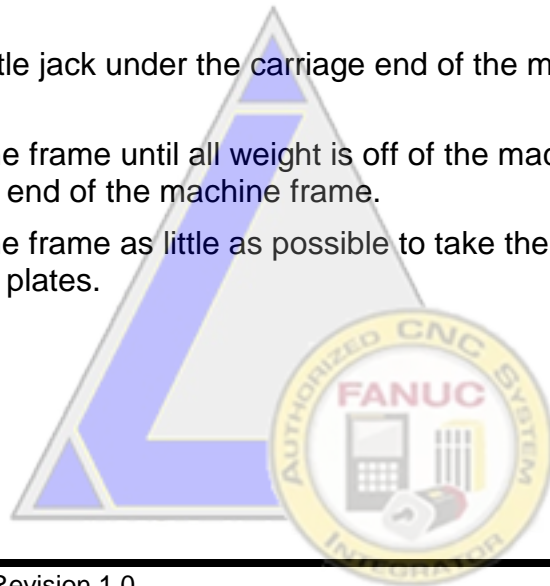
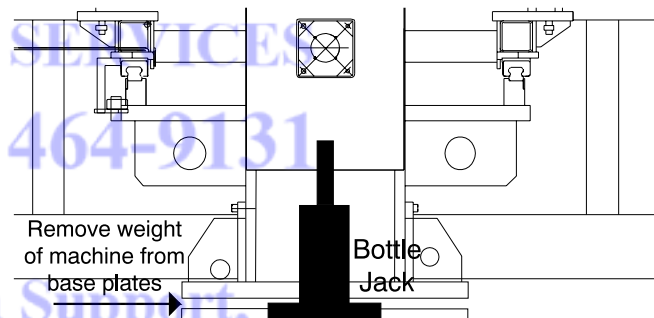
Shim equally between both machine feet and the base plates until the machine frame measures near level on the y-axis with the turret end of the machine frame slightly higher than the carriage end.



Center the bottle jack under the carriage end of the machine frame.

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.



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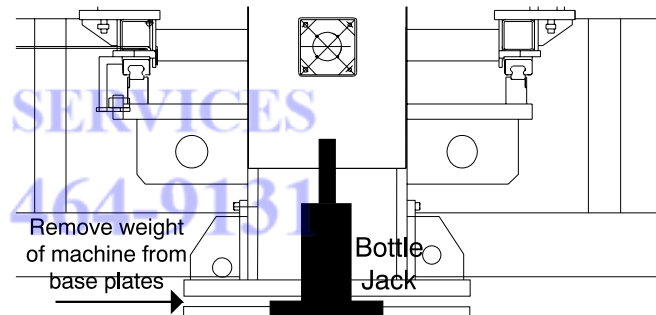
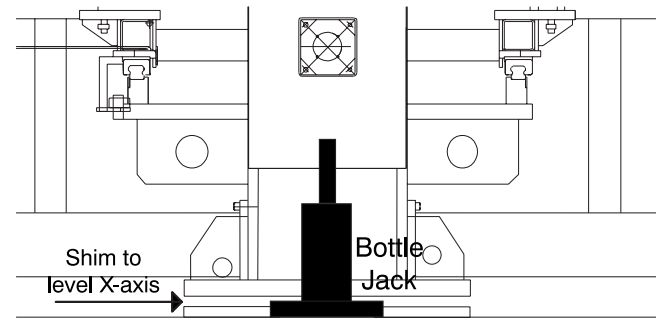
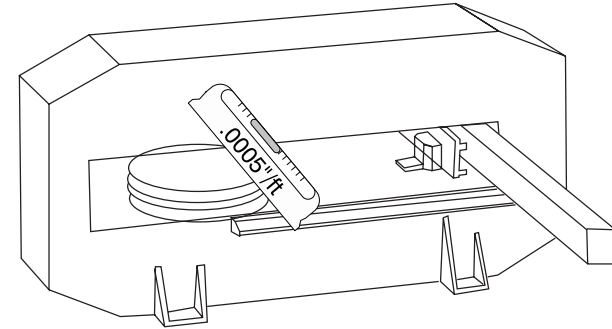
With the machine supported on the bottle jack at the carriage end of the machine frame and the machine feet at the turret end of the machine frame, place the spirit level on the turret.

Measure and record the level of the turret in the x-axis direction.

Lower the machine frame to place all machine feet in contact with the leveling shims and base plates.

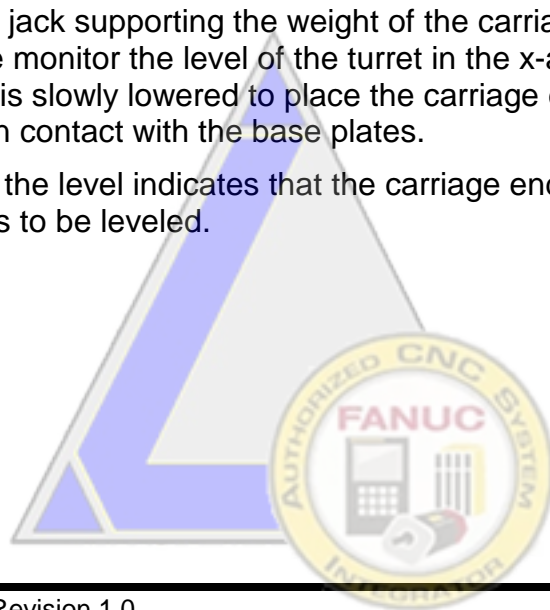
Lift the turret end of the machine frame to allow shimming between the machine feet and base plates to level the machine frame in the x-axis direction.

Repeat steps 3 to 5 until the machine frame measures level to 0.0005"/ft in step 4, then continue.



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.

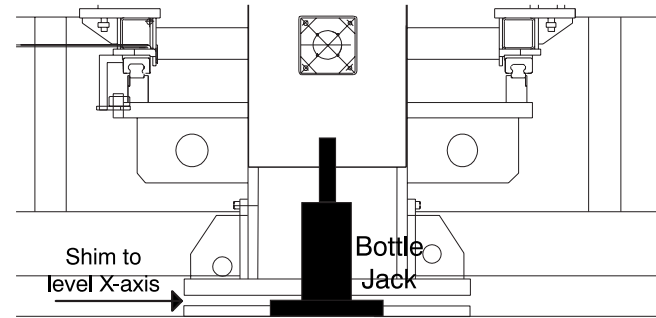
Any change in the level indicates that the carriage end of the machine needs to be leveled.



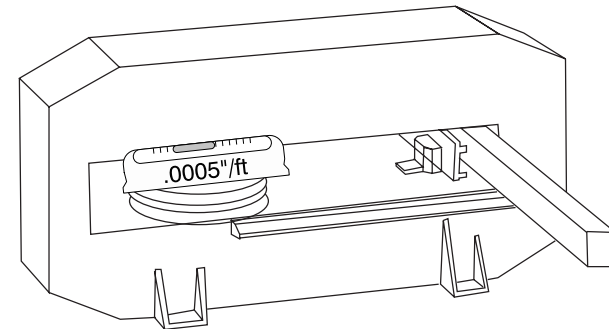
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Lift the carriage end of the machine frame to allow shimming between the machine feet and base plates to level the carriage end of the machine frame in the x-axis direction.

Repeat steps 6 and 7 until no difference in level is noted when the machine weight is on or off of the base plates and shims, then continue.

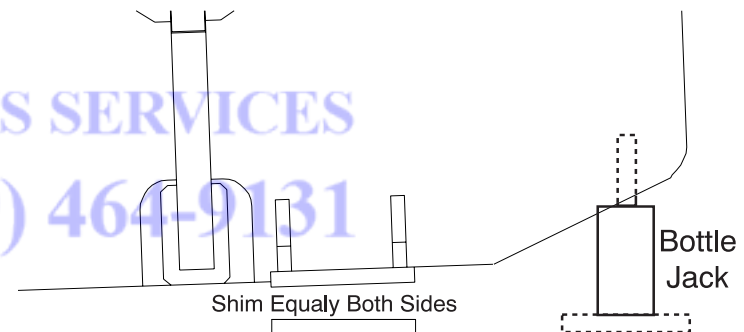


With all of the machine feet setting on the shims and base plates place the spirit level on the turret to measure and note the level of the machine frame in the y-axis.



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.

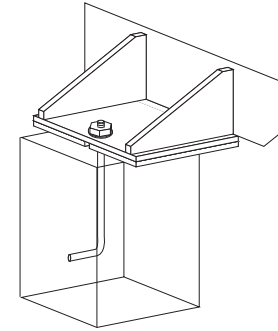
Repeat step 8 to 9 until the machine frame measures level to 0.0005"/ft in the y-axis then continue.



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*.

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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.



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