

# CINCIINNATI®

## Foundation

Certain machine options or auxiliary machine prints may be included in the e-mail for your reference. See the machine specifications sheet attached in your e-mail for the print numbers.

The given foundation dimensions are minimum based on soil bearing capacity of 2,000 pounds per square foot. Should there be any doubts concerning your soil condition, we recommend core drilling of the foundation area. Based on the core samplings, a Certified Civil Engineer can design a foundation that will be cost effective and substantial enough to maintain permanent machine position.

The concrete used in the foundation must be 4,000 psi quality and be properly cured prior to the setting of the machine. Strength of concrete is normally determined by the number of bags of cement in the mix. The mix for 4,000 psi concrete is normally considered to be six bags per cubic yard. Curing of this concrete will normally take seven full days to reach the strength required for setting the machine.

Reinforcement of the concrete is to be with steel to at least the extent of 1/5 of 1% of the cross sectional area of the concrete. As an example, you will need .288 square inches of steel for every 144 square inches of concrete. To determine the area in square inches of the steel you intend to use, please refer to the data manuals furnished by the steel suppliers. In most cases, the area is given for all bars and beams. The reinforcement should be installed uniformly through the total area of your foundation.

## **IMPORTANT**

Concrete slab under machine must be a continuous slab.

The intent of the foundation print and the above stated parameters are to provide the necessary information to construct a satisfactory foundation for your new CINCINNATI equipment. We recommend this type of foundation so the integrity of the machine housings and/ or the operational running clearances are not affected by machine flexing due to inadequate foundations and/ or anchoring.

The CINCINNATI INCORPORATED machine warranty does not cover damage attributed to the failure of an insufficient foundation.

An Example of a method used to determine the foundation steel reinforcements requirements is as follows:

1. Amount of steel required = 1/5 of 1% cross sectional area.  
Example:  $.01/5 - .002 \times 144 = .288$  square inches -steel required for a 12 x12 cross sectional area
2. Area of steel per square inch = Diameter squared x .7854.  
Example: 1/4 bar =  $.250 \times .250 = .063 \times .7854$  rounded = .05  
 $.288 / .05 = 5.760$  rounded = 6 bars per 12 x 12 square  
1/4 reinforcing bar would require placement of 6 in. centers

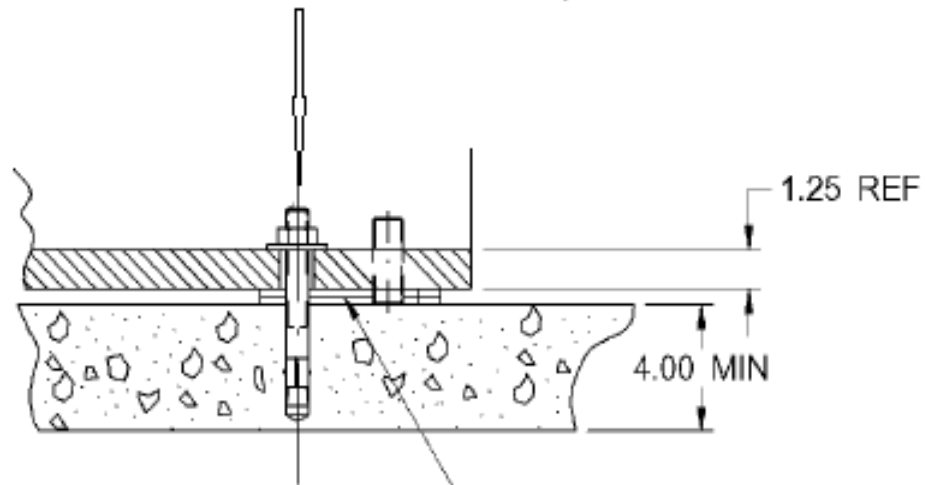
Bar Number	Diameter	Area Square Inch	Number of Bars per 12x12 Square
2	.250	.05	5.760=6
3	.375	.11	2.168=3
4	.500	.20	1.440=2
5	.625	.31	.929=1
6	.750	.44	.655=1

## Anchors

Foundation studs if used in place of the supplied wedge anchor must be manufactured from medium carbon steel with a yield of at least 60,000 psi. A minimum of grade 2 stud or bolt with a yield of 52,000 psi is acceptable. All studs must have U.N.C. threads. Heavy semi-finished hexagon nuts should have a finished dimension across the flats as shown in the chart below. It is necessary to follow these guidelines to be certain the foundation studs are capable of the torque specifications as listed below on the Machine Specification Sheet

BOLT DIAMETER	THREADS PER INCH	NUT DIMENSION ACROSS FLATS	TORQUE TO BE APPLIED
.750	10	1.250	122 FT. LBS.

.750-10 X 6.25" RAMSET/RED HEAD TRUBOLT  
WEDGE ANCHOR (C.I. PART # 428320-B)  
(4) .75 DIA. X 3.25 MIN. DEEP HOLES REQUIRED.



SHIM PACK (C.I. PART # 415439-B)  
START WITH 1/8" SHIM UNDER  
FOOT BARS AT FRONT ANCHOR  
LOCATIONS.

## **Use of Epoxy Anchors**

Epoxy anchors are not the preferred method of Cincinnati Incorporated. However, if done correctly will be suitable for anchoring a press brake on foundations requiring 6" or less of concrete.

### **Required criteria for Epoxied anchors.**

1. Anchoring Studs must meet or exceed the requirements of the preferred anchoring stud mentioned above.
2. Anchoring studs must be degreased and free of debris.
3. The core drilled anchor hole is drilled to the epoxy manufacturer's requirements and has been thoroughly cleaned.
4. Epoxy has had the time to cure to the manufacturer's specifications before moving press brake in place.
5. Epoxy must cure in an environment that is dry and between the manufacturer's recommend curing temperatures.

### **Epoxy Structural requirements**

1. Tensile strength meets or exceeds 6,900 PSI
2. Bond Strength meets or exceeds 2,000 PSI
3. Compressive strength meets or exceeds 10,500 PSI at 90° F

## Preparation Prior to Equipment Arrival

In order to anticipate problems that may cause delays at equipment arrival, we recommend reviewing the following:

1. Size of door opening.
2. Overhead clearances.
3. Plant obstructions in route to machine foundation.
4. Capacity of cranes or other lifting devices.
5. Capacity of rigging, if used.
6. Internal personnel or professional riggers.
7. Code requirements for all services. (Electrical, etc.)
8. Spreader bar. (Lifting device to span lifting points)
9. Location of equipment within plant to allow efficient operation and disassembly if necessary.

To aid you, we are providing the following information on the machine specifications sheet:

Approximate shipping weight in pounds  
Machine Lifting Hole Size in inches

This information will enable you to determine the clevis or lifting bar size necessary to rig your machine from an overhead crane or to have it moved by acceptable floor methods.

Please refer to your foundation print to determine the distance between the machine housing. Make sure your spreader bar is of sufficient size to maintain housing position when lifting the machine.

Foundation bolt torque specifications for your machine are found on the Machine Specification sheet if standard foundation bolts were used.

Electrical control enclosure is mounted on the RIGHT HAND housing. The full door opening, in inches, is available on the machine data sheet. Please reference your foundation print to insure there is sufficient clearance for the extended door opening measurement.

Pendant arm radius in inches is available on the machine data sheet. Please reference the foundation print for location of the arm and radius to insure

clearance to any obstruction or pathway.

## **Equipment Arrival**

All Cincinnati equipment must pass a Quality Control inspection prior to being released for shipment. We strongly recommend that the following steps be taken upon arrival of the equipment at your facility.

### **A. Inspect equipment upon arrival for damage.**

1. Equipment is shipped FOB Whitewater, Ohio, unless otherwise specified
2. The equipment should be inspected before unloading for such things as rust, due to torn shipping tarp, machinery movement resulting in damaged valves, piping, structural damage, etc. Damage should be noted on the shipper's bill of lading and a hidden damage claim filed.
3. In the event equipment is damaged, a claim should be filed with the carrier. We suggest contacting a CINCINNATI INCORPORATED Service Representative for necessary estimates of repair so they can be undertaken before start-up. Should CINCINNATI INCORPORATED Field Personnel be required to investigate a damage claim, a formal purchase order from the machine owner will be required.

### **B. Verify that all equipment has arrived and is unloaded from carrier**

1. Compare received equipment to PACKING LIST
2. In the event all equipment was not received, a claim should be filed with the carrier and a CINCINNATI INCORPORATED Branch Office or authorized distributor should be contacted so missing parts can be reshipped before startup.

### **C. Equipment Unloading**

1. It is the customer's responsibility to properly unload all equipment from the carrier.

2. Refer to the lifting photograph in the operation, safety and maintenance manual for your machine.

## **Equipment Preparation and Installation Suggestions**

The use of a spreader bar is to maintain housing position due to the angle of lift being too severe. Any angle of lift under 60 degrees shall require the use of a spreader bar.

Refer to your Operation, Safety and Maintenance Manual for suggested installation procedures under the section labeled INSTALLATION. This manual will be shipped with your machine. An electronic copy of the manual is also available on this pre-installation site.

1. Installation of leveling shims prior to setting of the machine to the foundation anchor bolts. Shim packs are provide to level the machine with a maximum floor level change of 5/8-inch (16mm) over a distance equal to largest span between mounting feet. If the floor elevation changes more than this amount, it is the customer's responsibility to procure additional shims or provide them at installation.
2. All shim packs are shipped with machine. Remove the thickest shims and place it foundation bolt location. The top surfaces of these shims must be level in the same plane. Thinner shims can be used to obtain this level condition. Then place a 1/4" to 1/2" thick shim at the front foundation bolt(s) location. As most CINCINNATI machines are front heavy, this allows for easier raising of the rear of the machine to obtain the necessary level of the machine.
3. Thinner shims must always go between the thicker shims.
4. Position slot of shim so it clears both the foundation anchor bolt and the leveling screw. When the machine is set to foundation shim packs, all housing feet must be tight to the shims. If not, the shim packs are not level in the same plane. Re-shim as required.
5. Install heavy flat washers and heavy hex nuts to retain machine on the foundation.



## Equipment Service Connections

The foundation plan contains electrical full load current information for your machine. This information will be used to determine wire and conduit sizes for electrical supply line to the machine location. It will be the customer's responsibility to run the electrical to the machine shut off (including transformer). The supply should be in position before the machine is installed.

It is very important the Local, State and National electrical codes be checked prior to connecting the service wire to the machine disconnect switch.

Unless your local electrical codes are more restrictive, use the National Electrical Code (NFPA 70) to size the electrical service drop for the machine as follows:

1. The full load current is listed on the certified foundation print and the machine nameplate. Using the 60 degree C and 75 degree C columns for copper wire in Table 310-16, size the supply conductors for 125% of the full load current.

For disconnect switches rated 100 amps or above, use the 75 degree column (where permitted by the manufacturer). Wire rated above 75 degrees C can be used by the ampacity shall be sized from either the 60 degree or 75 degree columns.

2. After the wire size and type has been determined, refer to chapter 9, table I, for sizing the conduit. See tables 3A, 3B and 3C for the number of conductors (all of the same size) permitted in conduit trade sizes of tubing 1/2 inch through 6 inch.

Connect the equipment grounding wire to the ground lug adjacent to the disconnect switch.

Use NEMA 12 type fittings for the incoming service and ground wire connections to the machine in order to maintain the OIL tight integrity of the

electrical enclosures.

Please contact a CINCINNATI INCORPORATED Service Representative as to your anticipated start-up date so we may schedule start-up of your machine.

## **INPUT POWER REQUIREMENTS**

The equipment furnished contains electrical controls which are sensitive to input power fluctuations and high voltage transients. The main power supplied should be as "clean" as possible to prevent control errors and increase machine reliability. Protection against normal high voltage spikes and voltage fluctuations is built into the machine control. Unless otherwise specified on the certified foundation plan, limits on input power for proper machine operation is as follows (NFPA 79 Section 3-7):

Supply voltage: Rated Voltage +/- 10%

Supply frequency: Rated Frequency +/- 2%

Impulse Voltage: Not to exceed 200% peak voltage up to 1 millisecond duration with a rise time of 500 nanoseconds to 500 microseconds.

Voltage Drop: Not to exceed a reduction of 50% of peak voltage for 1/2 cycle or 20% for one cycle with more than one second between successive reductions.

If variations from these parameters do exist, please contact CINCINNATI INCORPORATED for line conditioning recommendations or additional information.

## **GROUNDING REQUIREMENTS**

Equipment grounding supplied by the customer for safe and proper operation shall consist of the following GROUNDING ELECTRODE SYSTEM and GROUNDING CONDUCTOR.

Machine must be properly grounded in accordance with the National Electric Code NFPA 70, 2002 edition, Article 250, Sections 50 through 70. CINCINNATI INCORPORATED recommends using an individual electrode per Article 250-52 (5) to avoid interference from other equipment.

## **AUXILLARY EQUIPMENT**

Any auxiliary equipment that will be attached to or used in conjunction with CINCINNATI INCORPORATED machines, shall have an R-C suppression network in parallel with each inductive load (relay coil, solenoid, etc.) which is turned on and off during normal operation. The suppression network should be located as close as possible to each inductive load.

Please contact CINCINNATI INCORPORATED if additional information or parts are required.