

**CRUCIBLE INSTALLATION  
IN AN INDUCTION STRAIGHTWALL FURNACE**

The proper installation of Silicon Carbide and Clay Graphite crucibles in induction furnaces is critical to extending crucible life and assisting in providing safe working conditions for the installation of Silicon Carbide and Clay Graphite crucibles.

1) The furnace interior must be clean and the coil grout free of cracks. If any repair is necessary, use a coil grout such as Vesuvius “Kellundite G”. The grout should be evenly applied to the face of the coil to avoid slumping and when completed should be as smooth as possible, to form a near-perfect cylinder. If coil grout is used it should be completely dry before proceeding to ram the crucible.

2) A slip plane is recommended to allow for the vertical expansion of the refractory back-up lining. When dry, line the furnace with a slip plane medium such as Vesuvius “Coreweave” fiber glass cloth, or mica paper. The slip plane overlaps should all lie in the same direction and should be hung from the top of the furnace to the bottom and be contoured to fit against the furnace walls. The length required should equal the height of the furnace plus 5”. This will allow for overlap onto the top of the furnace. The overlap cloth can be slit every 6” to allow it to contour the furnace properly.

3) After the leak detector wires are set in place (per the manufacturer’s specifications), the back-up refractory can be installed in the furnace bottom:

a) The dry refractory material should be installed in 3” to 4” layers. Each layer must be leveled, de-aired, and firmly tamped. (3 to 4 passes of each step) de-airing should be accomplished using forking tool (Print D-7320). A ramming tool (Print D-7323) is typically used to ram the bottom. After ramming, the refractory will feel and appear dense.

b) Prior to installing the next layer, the surface of the previously tamped layer must be thoroughly scratched to avoid laminations and grain segregation. This is accomplished by using the forking tool. (Print D-7320)

c) Continue the practice outlined in steps a and b until the bottom refractory rammed height is 1” higher than required. Remove and level the excess 1” material with a straight edge. This will provide optimum density and bottom support for the crucible. This should bring the INSIDE base of the crucible to the level of the active power coil – not the inactive water-cooling coil.) Trim the

detector wire just above the rammed base before placing the crucible in the furnace. This should ensure they are in contact with the crucible base.

4) The crucible is lowered into the furnace, centered, and leveled. The leak detector wires must make contact with the crucible bottom. It is a good practice to stone off some of the glaze on the crucible bottom where the detector wires make contact with the crucible.

The crucible should be stabilized in the furnace using wooden wedges along the sides or by placing some weight into the crucible bottom. The objective is to insure the crucible maintains its centered position while ramming the sidewalls.

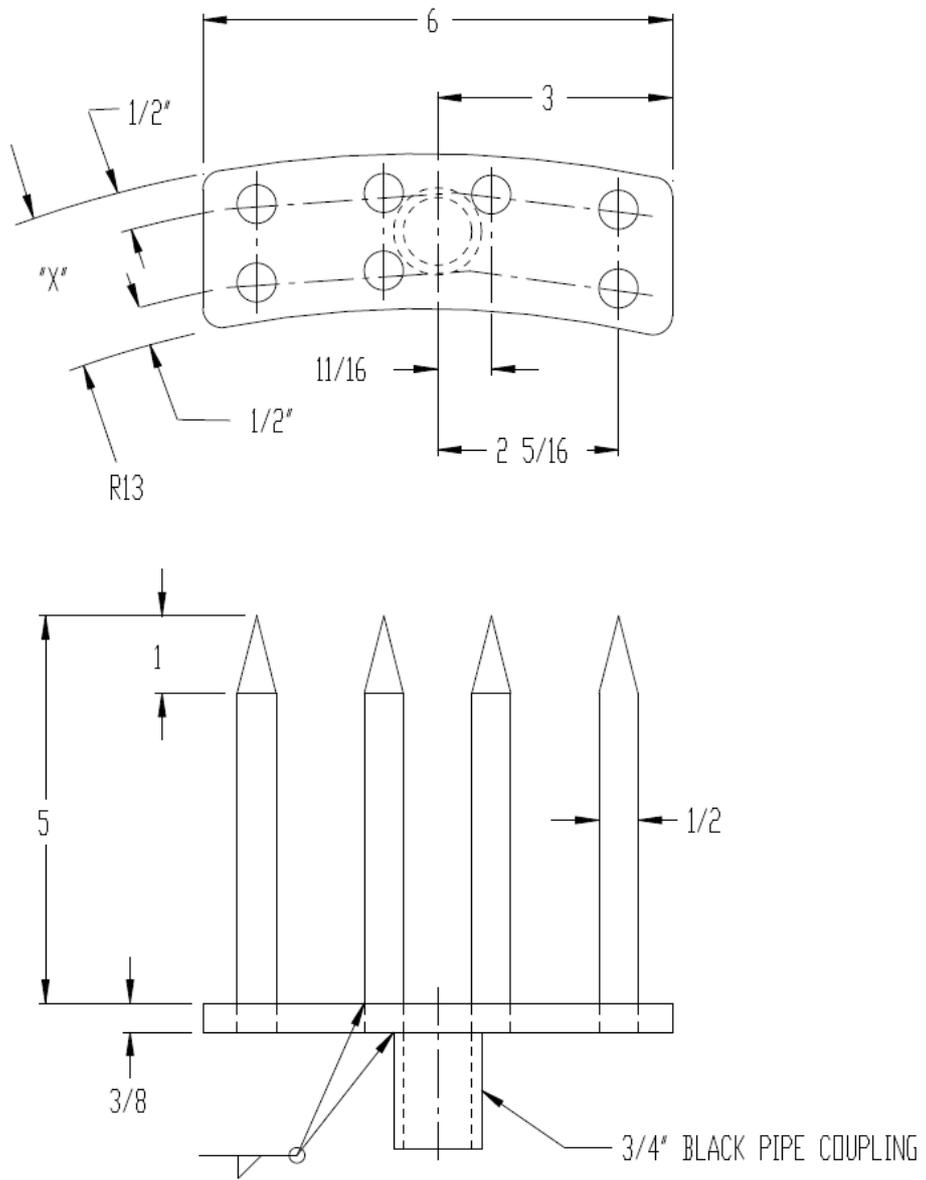
5) After the crucible is properly positioned, all exposed refractory back up must be scratched with the forking tool. The sidewall refractory material is then installed using the same techniques as employed in the bottom installation. Typically, a RAM tool (Print D-7321) is used for the sidewalls.

6) After the dry sidewall material is installed, a Buffalo RAM 85 top cap plastic is installed to provide a seal for the dense refractory back-up, as well as an abrasion resistant surface for charging. If the crucible is not supplied with a spout then plastic can be used to form the spout at this stage. Finish the top with a trowel to give a good finish. Pierce the rammed material at intervals to allow moisture to escape during heat up.

7. Once the top cap is properly installed and the crucible/refractories are free of moisture heatup can be initiated.

#### INDEX OF RECOMMENDED PRODUCTS

<b>MATERIAL</b>	<b>TRADENAME</b>	<b>COMPOSITION</b>
Slip Plane	Coreweave	Non-Asbestos Cloth
Grout Mat.	Kellundite G	Silica Based Ref.
Back-up	Magnavibe 750	Magnesia Dry-Vib
Top Cap	85 RAM PC	85% Phos-Bonded Alumina



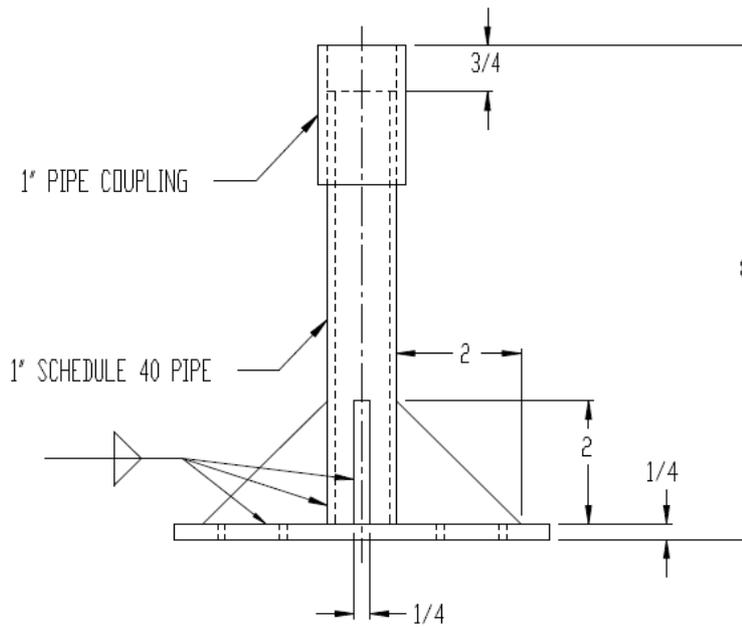
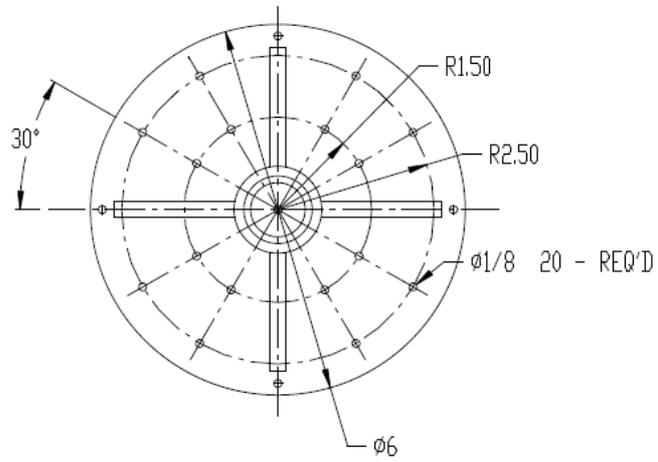
<b>DO NOT SCALE</b>		<b>DIMENSIONS IN</b>			
<b>ADDITIONAL DIMS. &amp; TOLS. ON REQUEST</b>					
<b>DRAWN</b>	<b>MADDEX</b>	<b>-</b>	<b>MADDEX</b>	<b>A</b>	<b>C</b>
<b>DATE</b>	2/7/93		24-JUL-96		
<b>CHKD</b>					

VESUVIUS



FORKING TOOL

D-7320



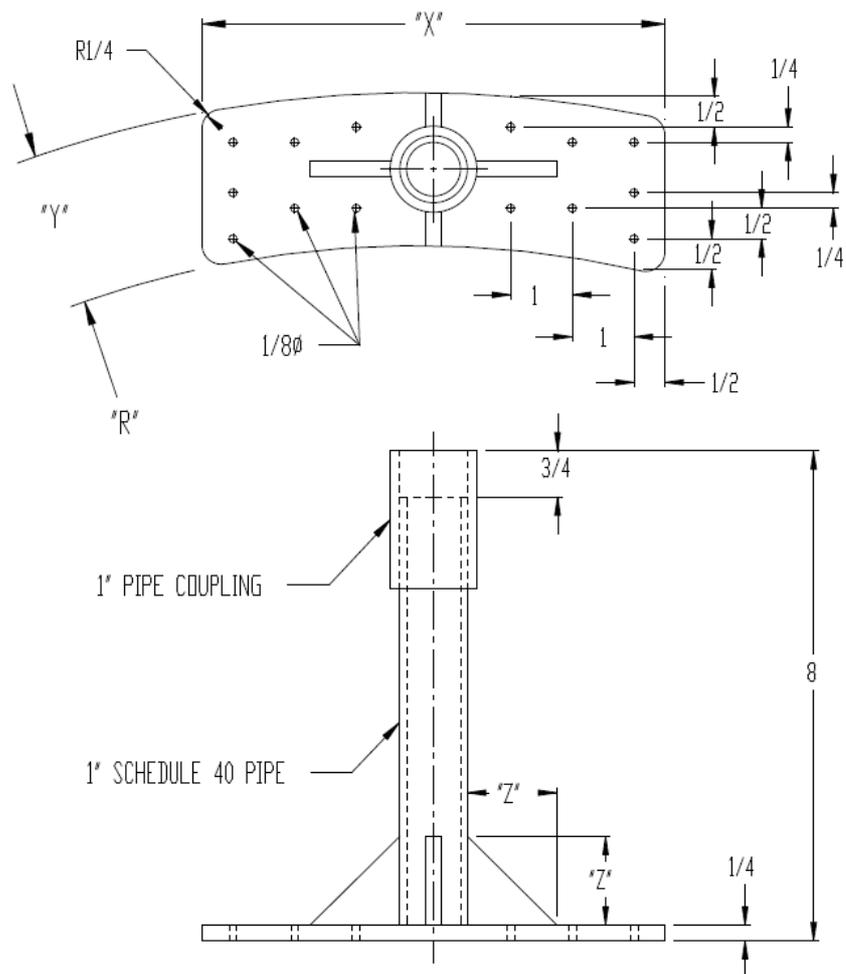
PIECES PER PACK					
DO NOT SCALE DIMENSIONS AND ADDITIONAL DRG. & TOLS. ON REQUEST					
DRWN	MANEX -	A	B	C	
DATE	2/8/93				
CHKD					

VESUVIUS



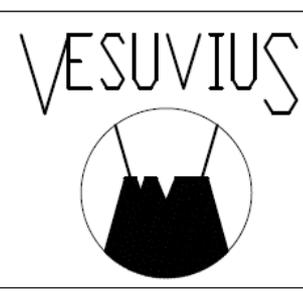
BOSCH FOOT DESIGN

D-7323



FOOT SIZE	FOOT DIMENSIONS				TYP. WALL
	X	Y	Z	R	
A	10	5	3	30	8
B	10	4	3	25	7
C	8	3	2	20	5
D	6	2	1	15	3

PIECES PER PACK					
DO NOT SCALE DIMENSIONS AND ADDITIONAL DIMS. & TOLS. ON REQUEST					
DRAWN	NAMEX	-	A	D	C
DATE	2/7/93				
CHKD					



BOSCH FOOT DESIGN

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D-7321