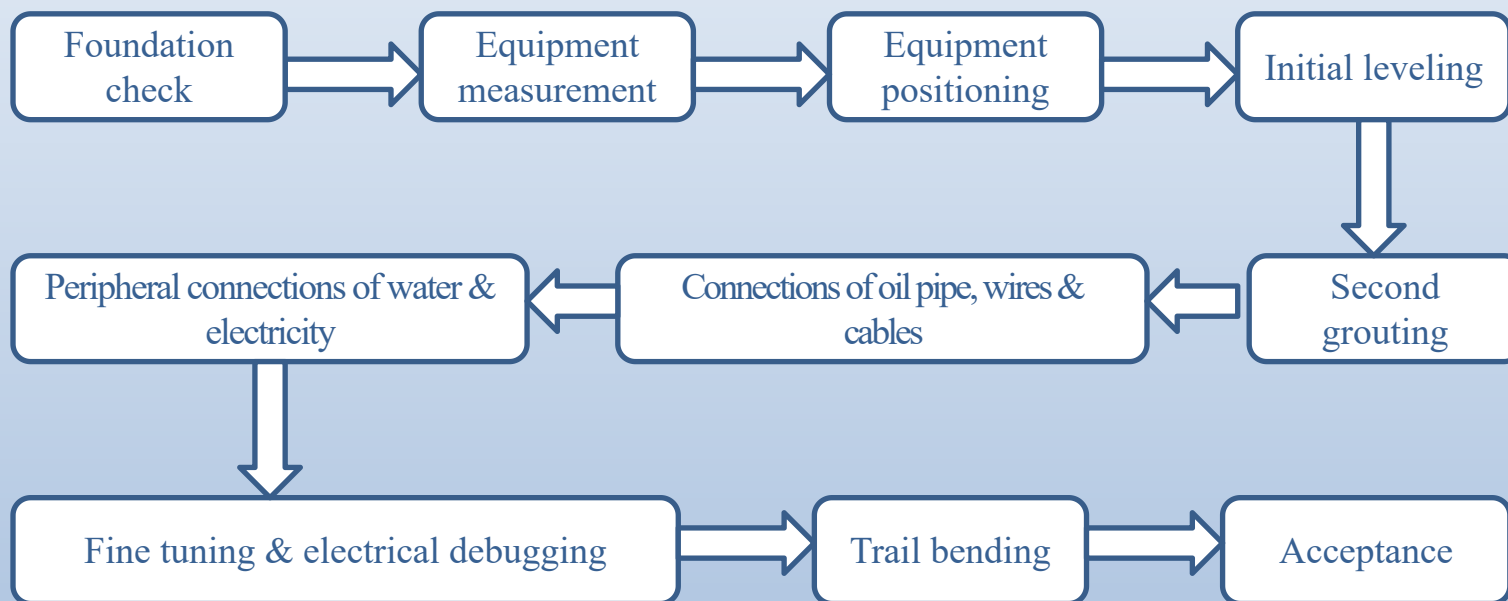


Instruction for Installation of MF Induction Pipe Bending Machine

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Flow Chart



Note: Foundation check, equipment measurement, positioning and initial leveling can be completed within 7days. Second grouting, connections of oil pipe, wires & cables as well as peripheral connections of water and electricity can be done at the same time which would take about 6days. Fine tuning, electric trial can be finished in 3days. Trail bending & acceptance would take 5days.

1. Foundation check

Before the equipment is in place, according to the requirements of the basic level measurement drawings, the leveling instrument should be used to measure the the installation surface of the equipment foundation.

According to level height difference of the measured max. & min. points of the plane, two center-lines are marked with elastic line alignment.

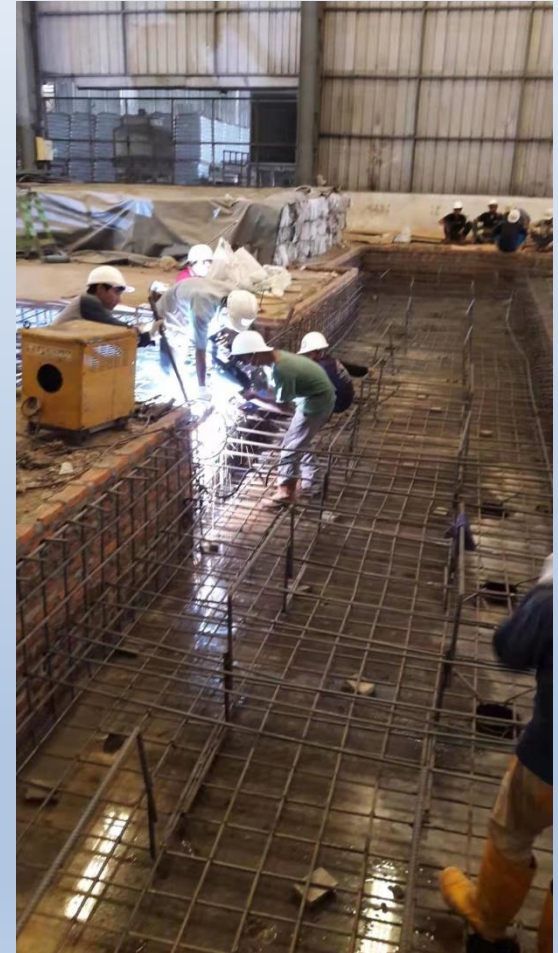


Prepare tools & material
for foundation
installation



Foundation check

Before the equipment arrives at the user's site, the user should complete the foundation of the pipe bending machine according to the basic foundation drawing provided by our company. Make reserved holes in the places where the anchor bolts need to be installed, and prepare the basic installation accessories such as adjusting pad iron, foundation bolts, cushion plates according to the requirements of the basic drawing.



2. Equipment measurement



3. Equipment positioning

Initial measurement and positioning of steel platform

After the steel platform is completed, it is necessary to check the levelness of the steel platform before equipment positioning to its exact position. If condition permits, the steel platform can be annealed for post weld stress relief treatment, then the single piece of steel plate can be machined by vertical lathe to make sure the flatness be within $\pm 0.2\text{mm}$. This would help the level adjusting of the whole steel platform. The steel plate can be lifted one by one and mounted with foundation bolt. When the steel plate reaches corresponding position, slowly lower down the steel plate and match all steel plates together.



3. Equipment positioning

Mark the center line on the front and rear end surfaces of the machine bed. Mark the center line on the left and right end surfaces of the bending arm base. Place the adjustable pad iron (sizing blocks) on the position of each bolt hole according to the drawing. Adjust the high and low positions of the pad iron to the middle position, reserve the final adjustable upper and lower space, and finally place the pad iron with the corresponding thickness on the position of the pad iron that needs to be raised according to the difference of the horizontal height of the base surface measured beforehand. Then, according to the conditions of the workshop, the bed is hoisted to the corresponding position of the foundation by using a crane with a lifting capacity of more than 50T, and adjusted slowly until the center line marked on the bed is aligned to the center line of the foundation.

The bending arm is lifted and placed in the corresponding position of the foundation by 20T crane or track crane, and adjusted slowly until the center line marked on the base of the bending arm is aligned with the center line of the foundation. And adjust the left and right distances between the bending arm and the bed according to the reference paper.



4.Initial leveling

The leveling instrument will be used to initially adjust levelness of the machine body, bending arm and steel platform. Make sure the levelness of the machine body, bending arm as well as steel platform be within $\pm 1\text{mm}$ after initial adjustment. During initial adjustment, remove abundant base plate, and check if all foundation bolts holes are with adjustable sizing blocks. After completion, adjust the screw thread extension distance of the foundation bolt. This would make it easier for future fine tuning.



5.Second grouting

Selection of grouting material

The grouting of foundation bolt holes is the second grouting of the equipment foundation. The material should have high strength, self-flowing state, no shrink, and compound extensive type. Such as CGM high strength no-shrink grouting material, this kind of grouting material has high-early strength. The anti-pressure strength can be more than 60MPa per day. The slurry has good self-fluidity and does not need to be tampered. Compound expansion and seamless grouting can ensure effective contact between slurry and base. Durability, the strength of 300 freeze-thaw cycles did not change significantly. The oil resistance is good, and the strength of the machine oil soaked for 30 days is non-destructive.

Preliminary treatment of grouting

The holes shall be dipped for over 24hrs before grouting for the foundation bolts holes. The inner sides of the bending arm foundation bolts holes shall be scabbed. Drain the water and clear impurities 1hour before grouting. Make the surface flat immediately after grouting. And water the surface three times a day. The watering maintenance shall keep for 1 week till it reaches 80% strength.

Note: If it's in cold winter, the surface shall be immediately covered by thermal insulation material after grouting. The lowest temperature shall not be lower than minus 5°C. It's not allowed to grout or water maintenance under subzero temperature.



6.Connections of oil pipe, wires & cables



7. Peripheral connections of water & electricity

This includes the installation of final water pipes, wires & cables, gas pipe, water chiller, general power distribution cabinet, air compressor etc.



8. Fine tuning & electric debugging



It shall be at least 7 days after second grouting, the equipment level can be fine-tuned. Fine adjustment is based on the traveling guide surface of the pipe pusher inside the machine bed. A measuring ruler is placed on the guide rail and a collimator is placed on the ruler for measurement and adjustment.

When fine-tuning, the position of the bolt holes of the foot on both sides of the bed is taken as a reference, and the horizontal value is measured and adjusted on the corresponding guide rails. Finally, the overall level of the guide rails of the bed is required to be less than $\pm 0.25\text{mm}$.

Based on the fine-tuned bed guide surface, the base of bending arm should be fine-tuned. The parallelism between the bed guide surface and the bending arm guide surface should be less than $\pm 0.5\text{mm}$ and the verticality between the bed and the bending arm should be less than $+1\text{mm}$. Based on the fine-tuned bed guide rail surface, the overall flatness of the steel platform is required to be less than $\pm 0.5\text{mm}$, and the flatness of the steel platform without surface processing is required to be less than $\pm 1\text{mm}$.

A seamless steel pipe with 6 meters long, 219 mm outer diameter and 15mm wall thickness is selected as the concentricity adjustment of the final pusher fixture, bending arm fixture and waist drum wheel at three points and one line. The steel tube itself needs no obvious deformation, the ellipticity is less than 1%, the full length bending is less than 0.05%, and the bending degree per meter is less than 1 mm/m.

9. Trial bending & acceptance

After the installation and commissioning of the equipment are completed, according to the technical requirements of the equipment, after adding the corresponding oil (lubricating oil, oil, hydraulic oil, etc.) to the equipment, it is necessary to conduct electrical test run on the equipment. Calibration and inspection of the normal operation of equipment, the normal operation of various instruments.



Bending Process Record Card

× × × Company		06Cr19Ni10 MF induction heating pipe bending			Record No.					
Pipe specification		φ325 × 10			Pipe material			06Cr19Ni10		
Pipe bending machine		WGYC-426/60-350			Pipe No.			16G07005		
Feeding speed		40~50mm/min			Equipment power			350KW		
Temperature measurement		Infrared optical thermometer			Equipment frequency			≥700Hz		
Temperature Records (°C)										
Position		Bending Angle (°)								
		5	10	15	20	25	30	35	40	45
External wall	Elbow external									
	Elbow internal									
Internal wall										
Heating temperature		850~1050 °C								
Operator					Date					

This data in this record card is for reference only.