



The Safety Rules Of Numerical Control Fully Hydraulic Die Forging Hammer

1. Preparation of workers

Hammer operator must be skilled workers, trained with professional knowledge and have certificate, any other persons shall not allowed to operate the hammer. Before operate the hammer, the operator must read the operation manual carefully, have a certain understanding for the variety actions and performance of the CNC close die forging hammer. The workers must wear the necessary protective clothing and protective gear, including protective glasses, helmets and so on.

2. The check before start hammer

- 1) Check the easy to loose bolts, if loose, tighten immediately.
- 2) Check the guide rails of hammer body, if don't have lubricating oil, start the lubrication pump to supply oil. If there is no oil in the lubrication pump, fill oil immediately.
- 3) Check the pressure accumulator with special tools (regular), if have leak, recharge immediately.
- 4) Check the pipes have oil leak or not, if any, solve it immediately.
- 5) Check hose whether damaged or not, if damaged, replace it immediately.
- 6) Check the fire fighting system that matching the hammer, if damaged, replace immediately.
- 7) Check the lighting throughout the production line, if damaged, replace it immediately.
- 8) Check the air pressure, if the pressure is low, adjust it immediately.
- 9) Check the cooling water get through or not, if not, open immediately.
- 10) Check the valve on the cooling oil road, all of them should be opened.
- 11) Ensure the work area that around the hammer is clean and tidy.

3. The check after hammer start

After the above mentioned work completed, do start hammer check, make



sure the main power switch of the hammer has been turned off, mode switch is at the "0" position, tup at the below dead point, at this time, the accumulator is in emptying state (oil pressure is 0 Mp), and the main motor does not rotate.

First, pull the key to the "adjust" position, press the "motor start" button, the button lamp light at this time, the main motor starts.

Then pull the key to "run" position, at this time, the system oil pressure starts to rise, tup rise quickly, begin to slow down when reach a certain position, the tup will rise to the top dead point slowly.

Attention !

After start the main motor, listen to the motor starting sound, if the sound is abnormal, stop the motor immediately, and ask professionals to check the reason, start the main motor only after solved the problem.

Before lifting up the tup, make sure there are no workers around the tup, also can give alarming before lifting up the tup.

4. Accurately Dies Adjustment

Turn the key to "adjusting" position, push the "tup down" button, the tup will come down slowly, check the dies closed condition when the top die contact with bottom die, check the inspecting angle align condition. If the dies are deflected on left-right side, push the "tup up" button, the dies will be separated and adjust the top and bottom dies through wedges till the dies well aligned. If the dies are deflected in front-back side, the wedge of top dies shall be push out and dismantle the top die, and check the fix pin between the top die and hammer head if need to use proper cushion till the dies front- back well ligned. Through iterative adjustment, till the inspecting angle of dies well aligned, then finish dies adjustment.

Attention !

1) During dies adjusting process, the operator and the dies inspector shall cooperate closely, without permission of operator, the inspector or any other person shall not stretch arms or other parts of body under the hammer head, in



case of accident. If must repair the dies or machine maintenance under the hammer head, the hammer head must lift up to the top dead point, and shoot out the safety pin to support the hammer head, if necessary, use a hard support to uphold the hammer head, set down the cover of foot pedal and then work under the hammer head.

2) After well adjust the dies, all the wedges shall be tighten well by tools, and loosen wedges are not allowed, exposed length shall not exceed 100mm.

3) When changing the dies, the wedge must be well shaving and grinding, guarantee the dies and hammer head coattail contacting surface, avoid cottail broken.

5. Forging work-piece

When the key is in the "adjust" position, set the forging process parameters on the control panel: die height (between 220mm and 540mm); the left, middle and right three foot switches energy (between 0 and 100) except foot switch used to eject; lubrication time for guide rail. After determined the parameters, pull the key to "run" position, then step the set foot pedal in proper order, then quickly down the hammer blow, when the fight against forging, the tup hit immediately. After completing forging, the tup is lifted up immediately to stop in the upper dead point, once hitting is completed.

When the forging process is mature, you can set automatic hitting procedure, which can complete different energy hitting by once foot pedal

Attention!

1) Pre-heat the dies to the proper temperature before starting work, heat the hydraulic oil above 20 °C, heat the forging billet over the pre-heated forging temperature (but also preventing over-burning), pay attention to the dies lubrication and cooling during work; The operator is not allowed to stretch hand or any part of body to working area range (including the lower part of hammer and area hammer frame) during operating; When carrying high temperature



forging by manual after finishing hitting, it is necessary to prevent burn to own and workmates specially.

- 2) Check if any wedge is loose in time during operation, if yes, tighten it immediately to prevent accident.
- 3) Only professional forger can step the foot pedal switch, or else, there will be accident because of disharmony.
- 4) Choose optimum hitting energy and numbers to finish the forging. Don't allow hit cold hammer or approach cold hammer, or else, it will damage dies and equipments badly.
- 5) If there is abnormal situation, stop the hammer and eliminate troubles on time. Don't allow the equipment to work with trouble.

6. Stop hammer

Please turn the key to "adjust" position, press the "stop motor" button on the control panel, motor stops, then press the "stop hammer" button on the control panel, the accumulator relief pressure automatically, when the pressure is below 10Mp, the tup will fall down automatically. When the pressure reduce 0Mp, the relief pressure is finished, turn off the power supply of control cabinet, the stop-hammer is finished.

7. The work after stop hammer

- 1) Please maintain the hammer, refer to the operation manual.
- 2) Please turn off air supply, draw of the water of oily water separator.
- 3) Turn off water supply.
- 4) Clean work site.
- 5) If there is signal from differential pressure relay on oil filter during the hammer working, Please clean the filter element or replace the filter element.

8. Please execute existing forging worker job responsibility system strictly, at the same time, please abide the following operating condition.

- 1) If find the external leakage as the pipeline break when hammer working, please press "emergency button" immediately to stop the system, then solve



the problems.

- 2) When the oil temperature rises quickly, the general reason is that the internal leakage is large. Please find out the reasons and solve it.
- 3) If the hammer doesn't drop for more than ten minutes, you'd better stop the hammer.
- 4) The hammer must be used the nitrogen in the accumulator, please don't use other gas, including air.
- 5) Please keep the hydraulic station, operating panel, electrical cabinet, electric cooling in good condition, please don't let the hammer work with any problems.
- 6) In order to assure the hammer work normally, there is should be professional maintenance worker on site, the problems can be solved duly when finding problems.
- 7) The system pressure is adjusted and nitrogen gas is filled by specially trained workers to assure the system of the hammer is safety.
- 8) The hammer can't work without work-pieces, and the cold work-pieces can't be forged on the hammer.
- 9) The work-pieces can't be forged below final forging temperature on the hammer.