

HAMMER MILL APPLIED FOR TFS420/500 MANUAL

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1. Safety Warnings

1. Adjust and maintain the hammer mill according to the manual before operation. Check whether all fasteners and direction of rotation are in good condition and make sure the upper envelope is locked. Then screw the bolts when there is no clearance between machine and base.

2. Select the matched power according to technical parameters if equipping the power by yourself. Overspeed rotation is not allowed, or it is liable to accidents.

3. Operators (especially the feeding operators) shall not work with a long sleeve clothes; and the female operators with long hair should wear safety helmet.

4. Teenagers under 16 years old, the disabled person or elderly people above age 60 are not allowed to work alone; workers who have not mastered the machine performance and service regulations are not allowed to work alone.

5. The person who is drunk, ill or overtired is not allowed to operate machine, either.

6. Strictly prohibit putting hands into feed inlet. It is not allowed to use hands or stiff objects to help feed.

7. When it is running, the V-belt can not be too tight, or the quick-wear parts may cause an accident. For there is no buffering to the feeding hard sundries.

8. When it is running, in order to prevent hard objects flying out to hurt people, operators should stand on either the right or left side of the hammer mill by 1 m away from the machine when feeding from haystack pileup or the higher place.

9. When it is running, strictly prohibit feeding raw materials mixed with hard objects of metal and stones, and it has to be

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equipped with magnetic protective device which avoids magnetic metal sundries getting into the grinding chamber.

10. During running, it shall be shut down immediately if any abnormal voice occurs to the equipment. Cut off the power, then check and solve the problem.

11. Transmission parts should be equipped with protective net cover or other protective devices. Pay attention to ventilation in the work place and keep the workplace clean to avoid risks caused by dust accumulation.

12. A reliable grounding measure is a must if it is driven by an electric motor.

13. For protecting personal safety, it is prohibited for the operator to feed with a bag.

14. About safety signs and arrow description:

1) Arrow direction is as same as the rotation direction of the rotor.

2) Safety sign above the feed inlet implies:

A. Hands shall not outreach into the inlet when feeding lest the rotor in the machine injures or even cripple them.

B. Do not feed sundries of metals and stones into machine lest damages occur to the machine or even human injury happens.

15. Safety warning icons

2. Technical parameters and performance indexes

1. Main technical parameters

Model Parameter	FSP420	FSP500
Item		
Overall dimension	730x650x920	1100x930x980
Total weight (kg)	170	280
Rotor dia. (mm)	420	500
Power (kw)	7.5、11	11、15
Speed of mainshaft (r/min)	3200	3300
Linear velocity of hammer plate end (m/s)	70.4	85.1
Width of grinding chamber	280	280
Clearance between hammer plate and sieve	5~8	12
Quantity of hammer (pcs)	16	16
Arrangement of hammer plates	Interlaced and balanced arrangement	Interlaced and balanced arrangement
Width of hammer p late (mm)	275	267
Wrap angle of hammer	180°	180°
Standard of the plate	1.2~20	1.2~20
Impeller diameter of fan (mm)	300	350

2. Performance indexes

Technically, feedstock includes corn, corn stalk, peanut shell and bean stalk with moisture content about 14% can be ground with the sieve mesh diameter of 2.5mm during which the production yield shows as the following indexes:

Model Indexes Feedstock	FSP420	FSP500
Corn	90 / 800~1000	90 /1000~1200
Corn stalk	20 / 300~600	20 / 600~800
Peanut shell	50 / 40~500	50 / 50~600
Bean stalk	25 / 200~250	25 / 200~300

Note:

Within the above table, before "/" refers to yield in terms of kg/kwh; while after "/" in terms of kg/h.

3. Structure and operating principles

1. Structure of the hammer mill



Figure 1 Structure diagram of hammer mill

Structure Diagram 1.lower body 2.sieve 3.rotor 4.fan 5.upper body 6.feed hopper 7.discharge hopper 8.cyclome

2. Operating principles

After raw material gets into grinding chamber from the feed hopper, it is crushed by hammer plates rotating at high speed. Under the impact of centrifugal force, the material in pieces will be extruded continuously, and crushed and rubbed swiftly by toothed plates and sieve nets. Thanks to centrifugal force of the rotor and suction of the fan, the powdery material will be discharged out of the machine through sieve pores. Disqualified material will be pulverized repeatedly in the process above until it passes through the pores and is discharged out.

4. Installation and commissioning

1. Installation

Work site for the hammer mill should be spacious, ventilated and sufficient space shall also be left; also it should be equipped with reliable fire extinguishing appliance.

This hammer mill is supposed to be installed with a dust collection device, the latter of which can be divided into three forms of powder storage pool, power collection bags and powder storage bin. No matter which kind of form is chosen, the dust collection device should keep a good air permeability and ventilation performance. Otherwise, it will adversely affect the production and service life of hammer mill.

If the hemmer mill is equipped with driving force by the customer, diameter of the pulley installed on motor or diesel engine has to be calculated well before installation and commissioning. Calculation methods: pulley diameter of motor (diesel engine) (mm) = rated speed of hammer mill x pulley diameter of hammer mill/rated speed of motor (diesel engine).

Note: If the rated speed of diesel engine is 2000r/min, the throttle speed is 1500 rpm; if the rated speed of diesel

engine is 2200r/min, the throttle speed is 1800 rpm. If running speed exceeds the rated speed, it will damage the machine and cause accidents; if lower than the rated speed, the productivity will decrease obviously.

2. Commissioning

1) Tightness of the V-belt is according to the position of motor (diesel engine).

2) Start up the machine for a while and make sure there is no quirky sound. After the machine runs for 30min without feedstock, and the temperature of bearing pedestal on the main shaft ought to be not more than 25° C, then it can be put into use with loads of material. Otherwise, loosen the fixed bolt on bearing pedestal and rotate the rotor for a few turns manually. Tighten the bolts and start the machine again, repeat the operations for several times until the temperature of bearing pedestal is lower than 25° C.

3) Hammer arrangement



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FSP420 hammer mill



FSP500 hammer mill

The hammer plate corner will be worn out gradually when used for a period of time. If the first corner is worn, the rest corners can be used as well. In order to ensure the dynamic balance of the rotor and prevent the machine from vibration, all hammer plates have to be adjusted at the same time during corner changing. Renew the plates in time if all corners are worn out.

4) When grinding concentrated feed (e.g. corn), take

down 4 pieces of plates from pin shaft (that is to say, there are 16 pieces left in total) to reduce power consumption yet increase unit efficiency.

5) Disassembly and assembly of sieve. Install the side of sieve with burr as the upper lest clogging occurs.

5. Operation methods

1. Before operating the equipment, operators should peruse the manual carefully, get to know the structure and performance and master the operation methods.

2. Before starting up it, adjustment and maintenance shall be done first according to the manual, and make sure the fastener is tight. Start motor in safe circumstances, idle the machine for 2-3min, make sure there is no abnormal sound and then feed materials. Air suction system should be in normal working state before feeding.

3. Feeding should be stable and even, not less or more erratically. Overloaded feed is forbidden. Add an adjusting plate to control feeding quantity when feed granular feedstock. If the materials are blocked at the feeding inlet, do not force them into machine by hand or with a hard wooden piece.

4. Discharge material in time when the storage bag, storage pool and storage chamber are full to avoid blockage and keep hammer mill running normally.

5. Sieve and the lower body should be close to each other to avoid materials leakage and badly affect pulverized quality.

6. Stop running and check immediately if there is abnormal sound. No troubleshooting during operation.

7. Check wear degree of the hammer plates and whether the pin is broken. Cut off power first and replace quick-wear parts properly if they are worn severely. Open the upper shell in running condition is not allowed.

8. After overhauling the machine, close upper shell and align the upper and lower shells. Tighten fixed hand wheel and turn the main shaft. Main shaft rotation should be nimble and agile. It can be started up again when there is no abnormal noise of blocking, rubbing and impacting.

9. Idle run for a few minutes after running of each shift. It can not stop until the remaining material is sucked clean. Then add grease to main shaft bearing.

Failures	Cause	Solution
Difficult to start	(1) Blowout of fuse	(1) Change with a new fuse
the motor	(2) Voltage is low	(2) Start up in normal voltage
Motor without enough power and the temperature is too high	(1) Motor is running in two-phase	(1) Remove the fault of power supply with phase-loss
	(2) Machine winding and cutting-out	(2) Overhaul motor
	(3) Overloading operations for a long time	(3) Run with rated load or halt it
	(1) Hammer plates installation error	(1) Install as the arrangement diagram
	(2) Too large weight difference of each set of the corresponding plates	(2) Adjust hammer plate weights and keep the weight difference in 5g
	(3) Several hammers are blocked to rotate	(3) Keep hammer plates rotating agile and nimble
	(4) Weights of other parts on the rotor are imbalanced	(4) Adjust them to be balanced
	(5) Bending deflection of main shaft	(5) Straighten or change it
	(6) Bearing is damaged	(6) Change bearing

6. Common failures and solutions

	(1) Hard objects of metal or stones get into machine	(1) Stop running and check it
Voice of metal	(2) Body inside the machine is damaged or dropped off	(2) Stop running and check; change or repair
colliding in grinding chambe	 (3) Clearance between hammer plate and sieve is too small or the sieve becomes loose 	(3) Adjust hammer plates
	(1) Moisture content of materials is too high	(1) Reprocess after drying
Capacity reduced dramatically	(2) Motor can not be started up immediately	(2) Overhaul the motor
	(3) Hammer is worn heavily	(3) Turn the hammer direction or change them
Overload	(1) Grinding chamber is block due to too much feed	(1) Control feeding amount
Feed inlet regurgitates	(1) Material is so moist that the sieve holes and feed delivery pipe are blocked	 Stop running and clean the blockage; reprocess after drying them
Finished product	(1) Sieve with leakage	(1) Repair or change sieve
is too thick	(2) There is a leak between sieve and frame	(2) Adjust the sieve so that they can be close to plates
Oil-leakage of	(1) Poor sealing	(1) Change felt
bearing	(2) Improper selection of grease	(2) Select the proper grease
	(1) Poor lubrication	(1) Add lubricating grease every shift
	(2) Rotor is imbalanced	(2) Balance the rotor
Bearing overheats	(3) Too much grease in bearing box	(3) Remove the excessive grease
	(4) Belt is too tight	(4) Loosen it
	(5) Sundries in bearing	(5) Clean the bearing
	(6) Bearing is damaged	(6) Change the bearing
Belt overheats	(1) Improper degree of tightness of belt	(1) Adjust the degree
	(2) Trough of belt is damaged or the surface is too coarse	(2) Repair or sanding the surface

7. Quick-wear parts list

Model Indexes Variety	FSP420	FSP500
Hammer plates	5x40x120	5x40x180
Split pin	4x35	5x35
Impeller of fan	φ300	φ350
Bearing	308	308
Sieve	705x200	870x267

8. Packaging and transportation

1. Packing with container for long-distance transportation; and with rope for short-distance transportation.

2. Transport in two layers arrangement (upper and lower) if no dummy plate with enough strength is available.

3. When the machine needs to be moved, don't take hopper, pulley and main shaft as force point to avoid damaging machine.

4. When machine needs to be stored or not be used for a long time, it should be stored in a dry and ventilated place and keep upright. The exposed surfaces of rotating parts should be applied antirust oil to avoid corrosion. And the machine can not bear a heavy burden with other articles on top so as not to deform.

9. Quality assurance

1. Warranty Policy

We hereby warrant each new product to be free from defects in material and workmanship for a period of 12 month from the date of shipment. We will replace without charge product, part or component thereof, which is defective in material or workmanship (other than

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transportation charges, which shall be borne by the purchaser).

We reserve the right to require the purchaser to return the defective product or part thereof to factory for inspection.

2. Clauses Not Covered by Warranty

1) The machine is not purchased from us or an authorized representative of our company.

2) Any part of the product has been altered, modified or changed, except by our written authorization.

3) The machine has not been installed, used or serviced in accordance with the instruction manual.

4) Wearing parts, such as electric parts, hammer, sieve, bearing, grease seal, belt, etc., are not covered by warranty.

6. If the motor is unable to start immediately after disconnecting the power, or the motor is overheated in a short time, it can be changed with a new one; and the burned-out motor will be borne by purchaser.

Notes:

With technology renewal our product is improved constantly. We are not liable for informing purchaser about product update in structure, and performance.

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