SZLH678（768）MX PELLET MILL

OPERATION MANUAL

江苏中天农牧机械有限公司

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Important instruction:

1 This manual detailedly describes SZLH678(768)MX series biomass pellet mill of each system structure, function and use and maintenance method. Before installation and use of the machine , customer should read the manual,and have a full understanding of the ministries and its structure and function ,then have operation and maintenance of the machine. Due to the continuous improvement of product structure, after a certain time period, the manual of narrative content and the actual situation of the products will have small changes.Users should pay attention to it.

2 Please propose your advice to us for melioration when finding quality problem or others.Thanks !

1. Applications and performance features

1.1 SZLH678(768) wood pellet mill is a machine which is used to produce hard pellets and is applicable to produce high quality pellet feed.

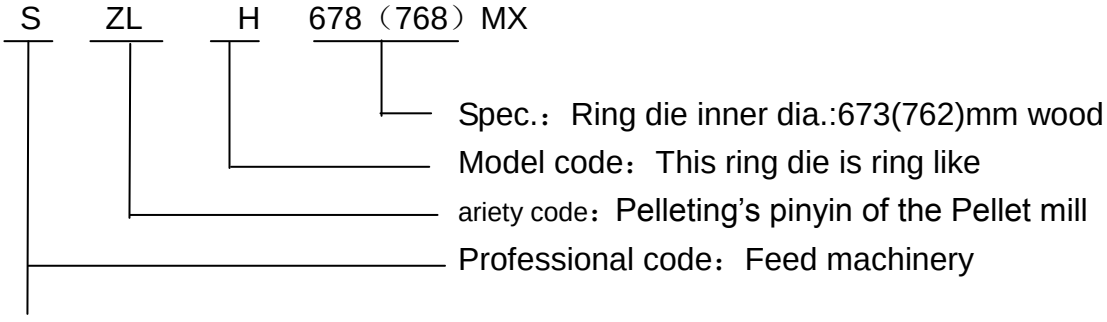
1.2 This machine owns features of compact structure, fine appearance, convenient installation, operation and maintenance, and reliable performance.

1.3 Dies of various hole diameter such as Φ6, Φ8, Φ10, Φ12 are available for this machine. Dies of different hole diameter can be made for users and users can choose freely according to different requirements.

1.4 This machine adopts a system of conversion speed-adjustable feeding and axial steam spraying, and a cleaning method of “LL” conditioner big opening, and also systems of external discharging, strong magnetic safety and overload protection, additionally, clamp type die, fully imported bearings in gearbox ,Set cooling, filtering, broken oil alarm in one of the cake layer thin oil lubrication cooling circulation system, the main bearing forced lubrication and power transmission through S-shaped spring coupling.

2. Model implications and Technical specification

2.1 Model implications



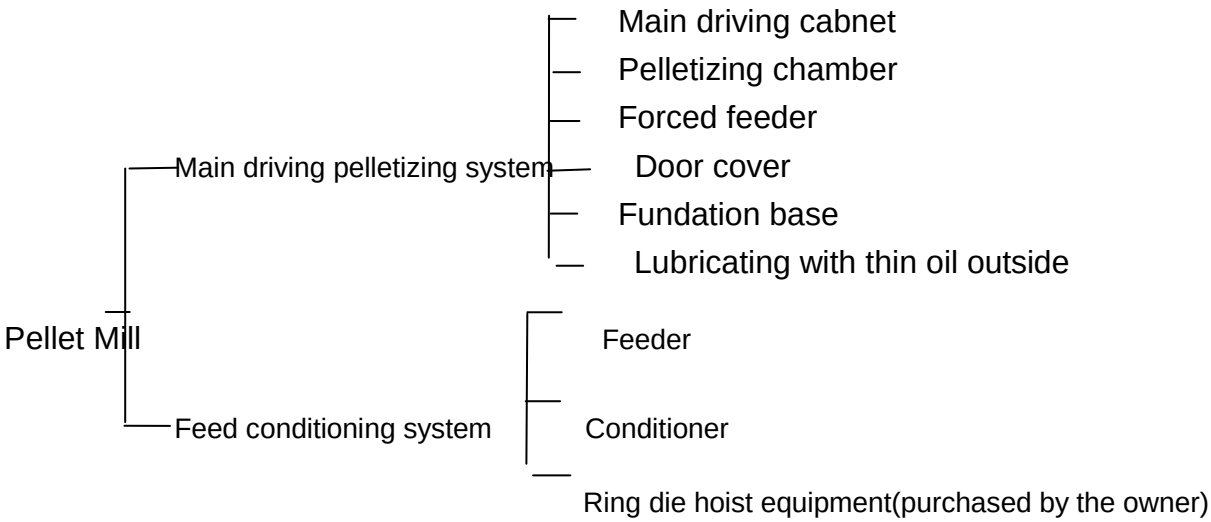
2..2 TECHNICAL SPECIFICATION AND PERFORMANCE INDEXES

Description	Performance Indexes & Technical Parameters	
	SZLH678MX	SZLH768MX
Capacity (t/h)	1-7	1.5-8

Main Motor Powe (kW)	200、220、250	205、280、315
Feeder Motor Power (kW)	2.2	2.2
Conditioner Motor Power (kW)	11	11
Cooling cycle turned motor power (kW)	0.55	0.55
Pellet Forming Rate	≥90%	≥90%
Pellet Powdering Rate	≤10%	≤10%
Noise [dB(A)]	≤93	≤93
Steam Usage (t/h)	≥1. 5	≥2
Overall Dimension (LxWxH)	4550×1612×3186	4550×1612×3186
Weight（t）	8.0	8.5

2. MAIN STRUCTURE AND WORKING PRINCIPLE

System exploded view



3.1 Main Structure

This machine mainly consists of two parts, feeding and conditioning system and main driving and pelleting system. Read the following system resolution chart and Figure 1 for the specific structure:

3.2 Working Principle

The powder compound feed in bin enters the conditioner from the feeder through a magnetic separating device. With steam piped into conditioner, the feed is conditioned and mixed with steam and enters the pellet chamber through the feed chute, and is fed to two pelleting sections inside the die by a deflector. Because of high speed rotation of die, the feed is driven to between die and roller. Under the forceful extrusion, the feed is extruded solid and takes shape in the die hole. Since the extrusion of feed between die and roller is continuous, the shaped feed extrudes constantly from the die hole in shape of column, then is cut to pellets of required proper length to go the next process.

3.3 Main Structure Of All Parts

3.3.1 Feeder

Feeder consists of screw shaft, shell, cycloidal pin gear reducer, conversion speed-adjustable motor, bearing with housing, etc. The pick of screw is of full face, the pitch is variable. The screw shaft is driven to rotate by cycloidal pin gear reducer, conversion speed-adjustable motor and chain drive to achieve the function of conveying feed.

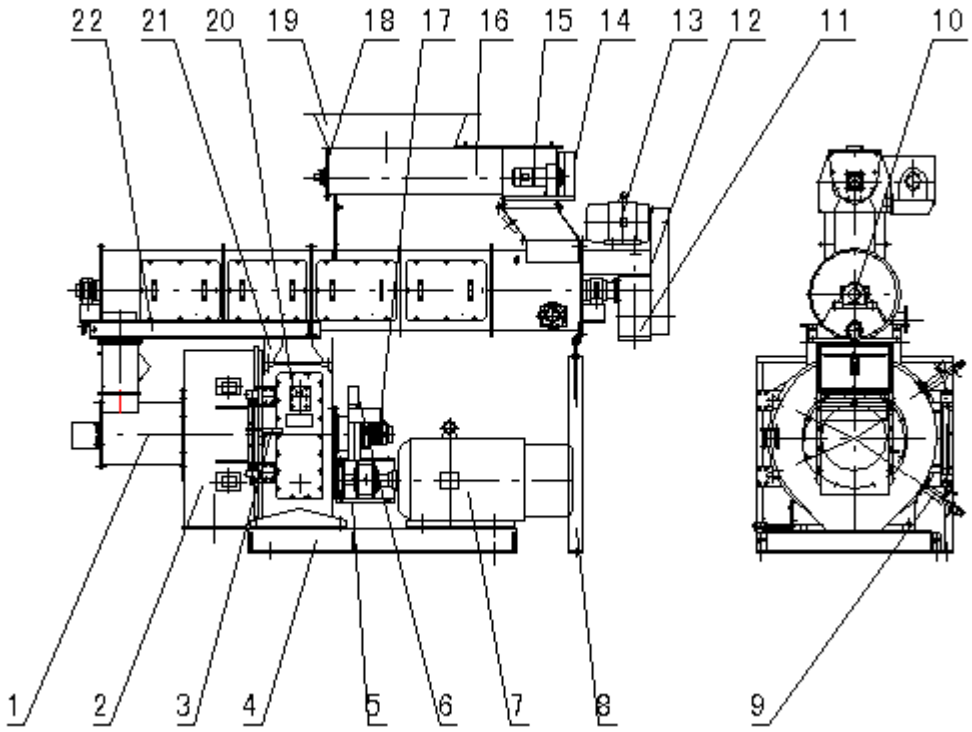


Figure 1 SZLH678(768) PELLET MILL STRUCTURE

1. Forced feeder 2. Pellet Chamber Door 3. Limit Switch 4. Base 5. Guard 6 Limit Switch 7. Main motor 8. Support 9. Knife Assembly 10. Bearing 11. Reducer 12. Guard 13. Speed-adjusting Motor 14. Chain cover shell volunteers 15. Frequency conversion motor reducer 16. Feeder Screw 17. Oiling system 18. Bearing 19. Save hopper 20. Gearbox 21. Support 22. Hoist Guide(purchased by the owner)

3.3.2 Conditioner

Conditioner is sometimes called mixer. It consists of mixer shaft, picks, shell, axial sleeve collective pipe, steam system, bearing with housing, pulley, reducing motor, temperature controller, etc. Conditioner shell is pieced together with two sections whose length can be added properly according to the requirements of user. There is a sight and cleaning door for the convenience of maintenance and cleaning. When conditioning steam passes through the sleeve steam collective pipe and inlet is changed from radial to axial to make steam and feed fully contact and improve the conditioning effects.

3.3.3 Die Hoist (Option)

This device is used for user’s convenience of disassembling and assembling die and roller.

Worm gear and worm are used for driving. When in use, pull out the guide, connect the hole of hoist and the screw hole on die with bolt for hoisting.

3.3.4 The material discharging machine compulsory feeder

When need to loosen the cake layer discharging as long as discharging handle, discharging door open, this time the mandatory turn the materials in the feeder all turned out, and not enter the suppression indoor, the agency is mainly used for granulating machine in the normal work of commissioning, and before that the unusual situation of granulating machine, and too late to stop or without stop, can make out fault for not suppress indoor material into normal lock, wait for after discharging handle, discharging door reset, can make the material tends to be normal.

3.3.5Gearbox

See Figure 2 for the structure of gearbox which consists of pinion shaft, main gear, main shaft, quill shaft, gearbox body, die, roller, etc. A motor drives pinion shaft to rotate through S-shaped spring coupling, pinion shaft meshes with main gear so that the main gear is driven to rotate. And die is connected with quill shaft through die clamp and key resulting in the rotation of die. Main shaft does rotate (except overload) during the normal run, the front end is stationary support of roller and deflector, the rear end is equipped with overload protection system.

3.3.6 Overload Protection System

When the foreign materials such as iron, stone, flaxen thread enter pellet chamber or the feed flow is excess, and rollers do not rotate along with die any more, the torque main shaft bears will exceed the normal torque resulting in that the shearing force transmitted to shear pin exceeds the allowable strength limit of its own, then shear pin break so that the shear pin housing rotates and touches limit switch to stop the machine.

3.3.7 Cake layer thin oil lubrication system

The system structure is shown in figure 3. Mainly by motor gear pump, magnetic oil filters, electromagnetic valves, air cooling, heat exchangers, flow switch etc. It combines cooling, filter, alarm at an organic whole. From the oil storage tank bottom gear pump in oil absorption, oil filters remove impurities by magnetic magnetic, through the air-filled type heat exchanger cooler after the oil flow rate, pressure the mouth after regulation respectively spindle bearing shaft lubrication, empty after bearing and tooth shaft bearings by cabinet after before wall into the box at the

bottom.

Former must first boot on the thin oil lubrication system, when the oil temperature is less than 50 ° C cooling without work, when when the oil temperature is greater than 77 ° C must make the main motor and stop.

Lubrication oil set up to detect the spindle bearing device that, when no oil out of date must make the main motor and stop.

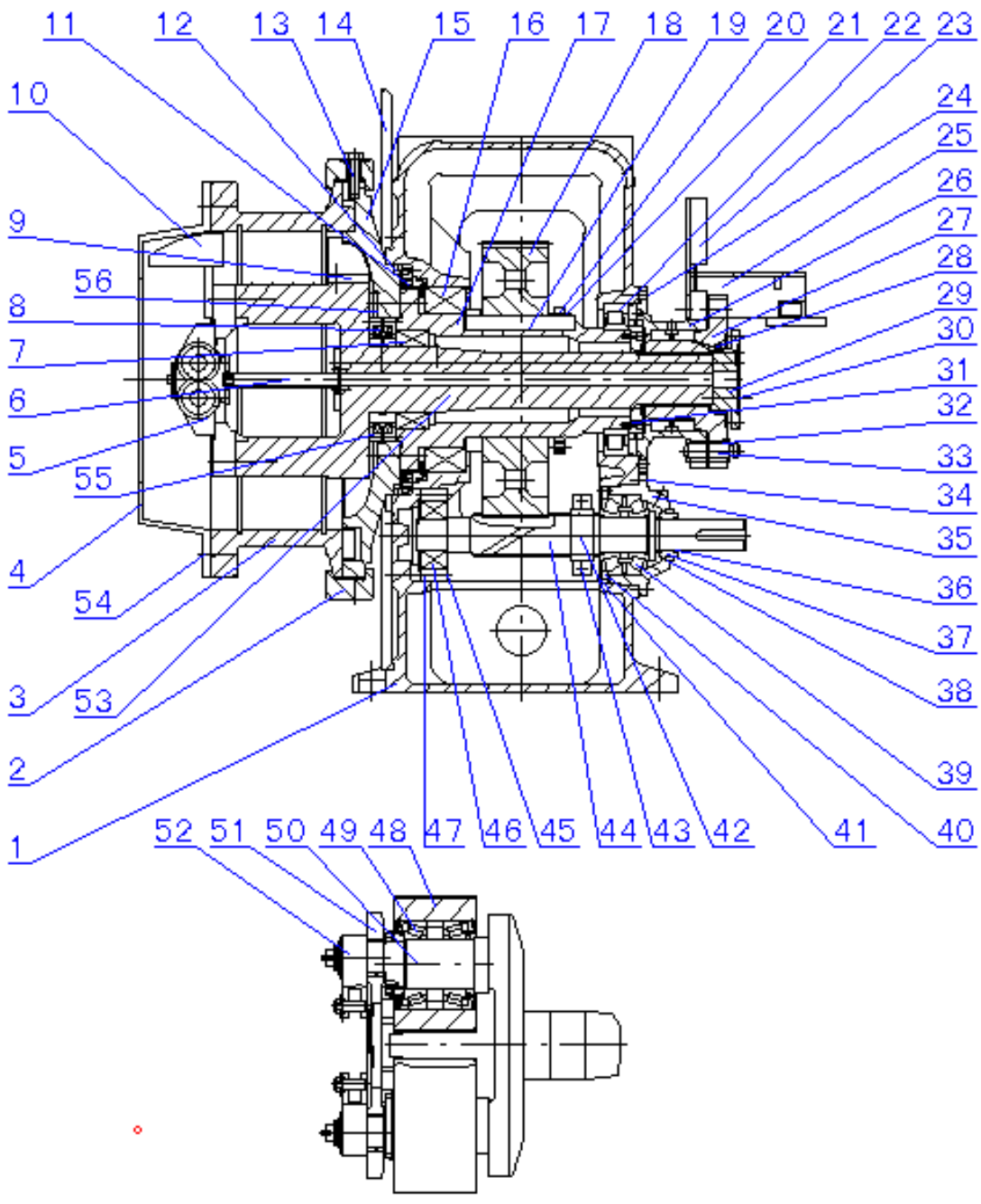


Figure 2 SZLH678(768) PELLET MILL GEARBOX STRUCTURE

1. Gearbox 2. Fastening Screw 3. Die 4. Feed Cone 5. Mold the gap to roll institutions (manual) 6. Protection tube 7. Bearing 8. Oil Seal 9. Wiper 10. Deflector 11. Oil Seal 12. Oil Seal 13. Bolt 14. Front Roller Support 15. Driving Key 16. Bearing 17. Race rotation 18. Main Gear 19.Key 20. Retaining Ring 21. Bolt 22. Bearing 23. Limit Switch 24. Bolt 25. Limit Switch 26. Bush 27. Main Shaft Splined Hub 28. Oil Seal 29. Main Gland 30. Bolt 31. Bolt 32. Safety pin set 33. Shear Pin 34. Bolt 35. Gear shaft cover 36. Oil Seal 37. Tooth stem bushing 38. Oil Seal 39. Bearing 40. Gland 41. Bolt 42. Oil thrower 43. Bolt 44. Pinion Shaft 45. Bearing 46. Bearingblock 47. Bolt 48. Calender roll 49. Bearing 50. Calender roll mandrel 51. Front Roller Support 52. Adjustable gap round 53. Spindle 54. Bolt 55. Bolt 56. Cover plate

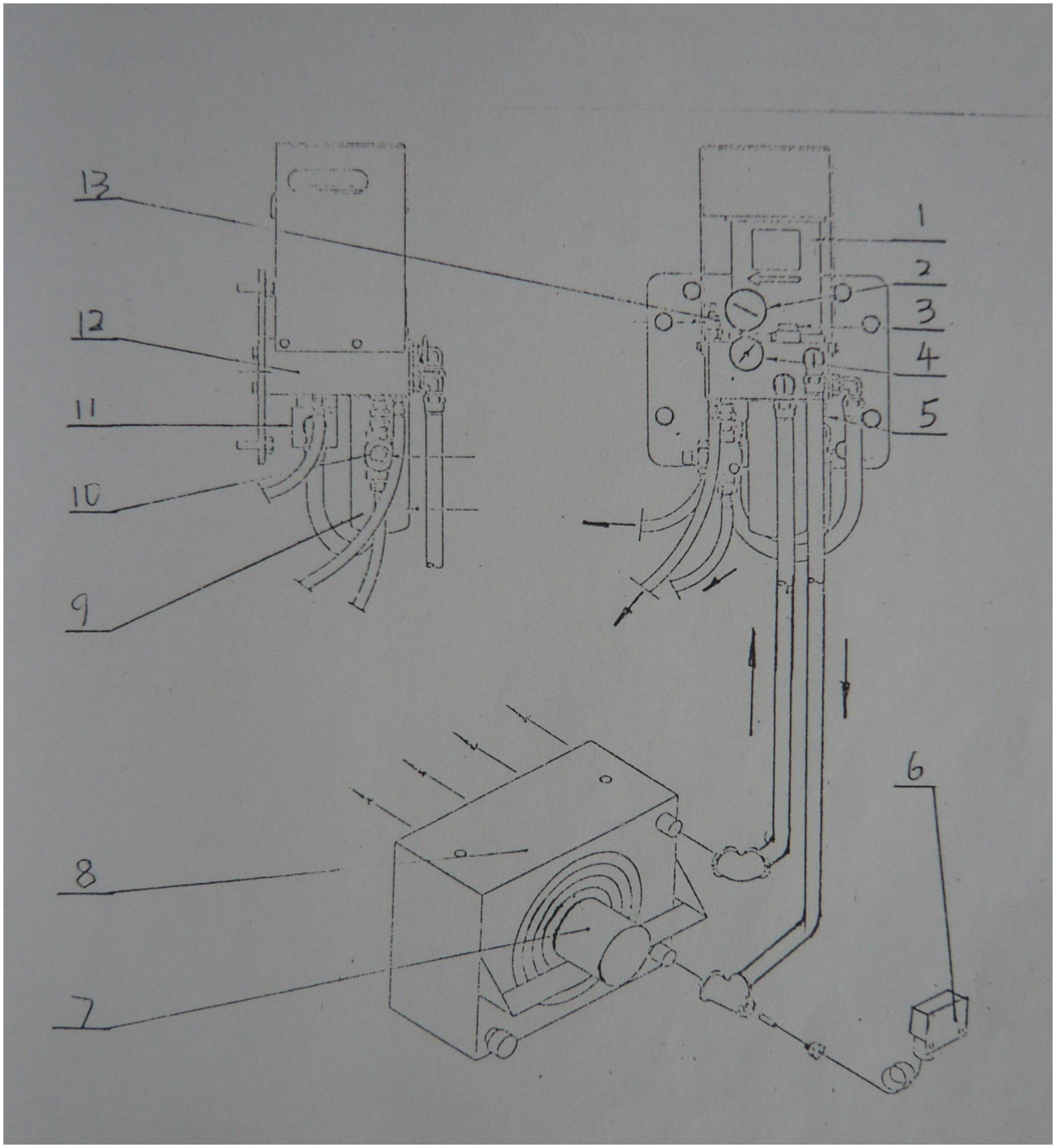


Figure 3 cake layer thin oil lubrication system

1.Motor 2. Pressure gauge 3. Filter alarm lamp 4. Temperature gauge 5. Half-leaf local lesion tube 6. Low temperature control begins 7. Fan 8. Heat exchanger 9. Filter 10. Flow switch

11. The gear pump 12. Grommet 13. The oil to flow rate, pressure mouth adjusting device

3.3.8 dry oil lubrication system

The system is by the oil (gas) move petrol pump hydraulic oil will be to the spindle hole, and lubrication two pressure roller bearings. It consists of mobile electric (gas) petrol pump and installed on the main shaft gland place on the mouth combination.

3.3.9 Electric Control System

See Figure 4 for electric control principle. It is only used in the installation of a single machine. Separate design is needed for the use in the complete project.

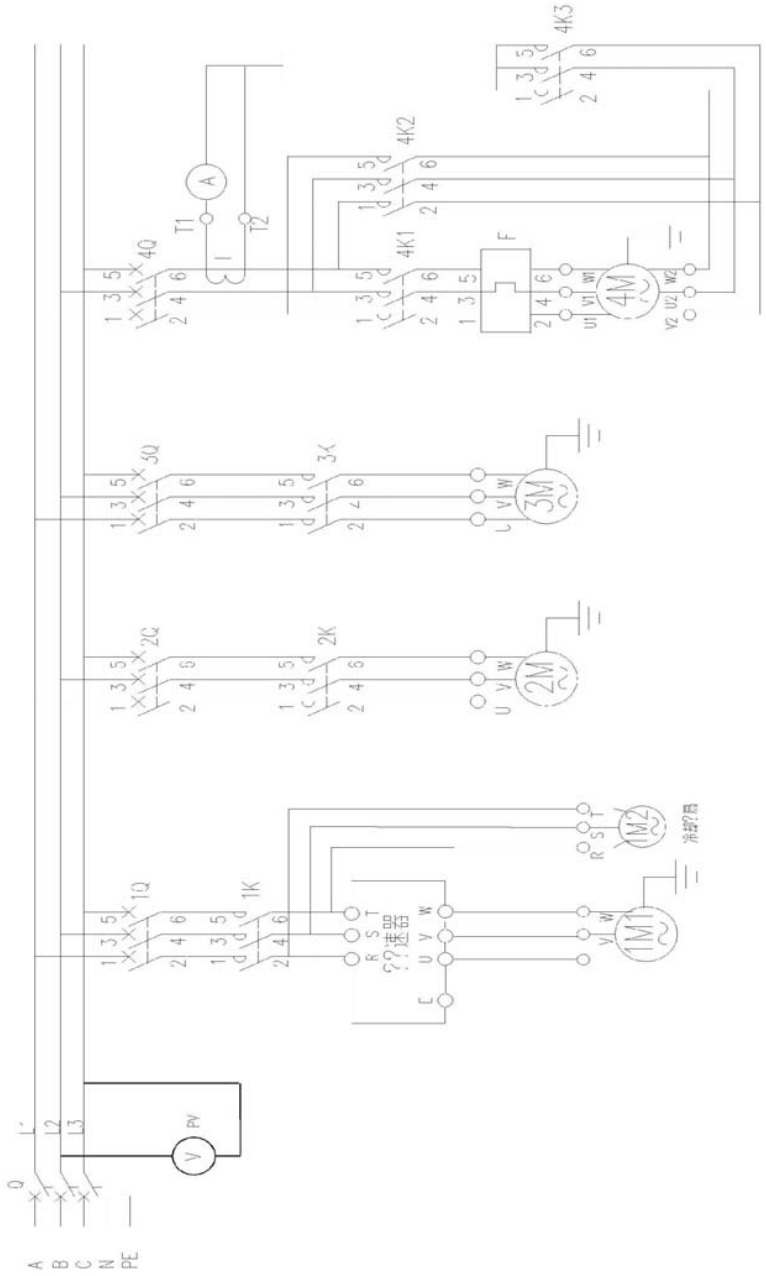


Fig.4 electrical schematic diagram

4. INSTALLATION, ADJUSTMENT AND TRIAL RUN

4.1 Installation

4.1.1 For equipment installation, the technological process (feeding, discharging, cooling, etc) should be thought over, floor should be determined and distance from the wall should be considered to make it easy for worker to operate and open the pellet chamber.

4.1.2 The equipment must be installed on the firm foundation. Dig the foundation according to the base size on the schematic diagram (see Figure 5), pour cobble concrete and screw the foundation bolt on. Some good practice should be followed when installing the pellet mill on the

floor to make sure that vibration of machine during the normal run can be absorbed after the installation.

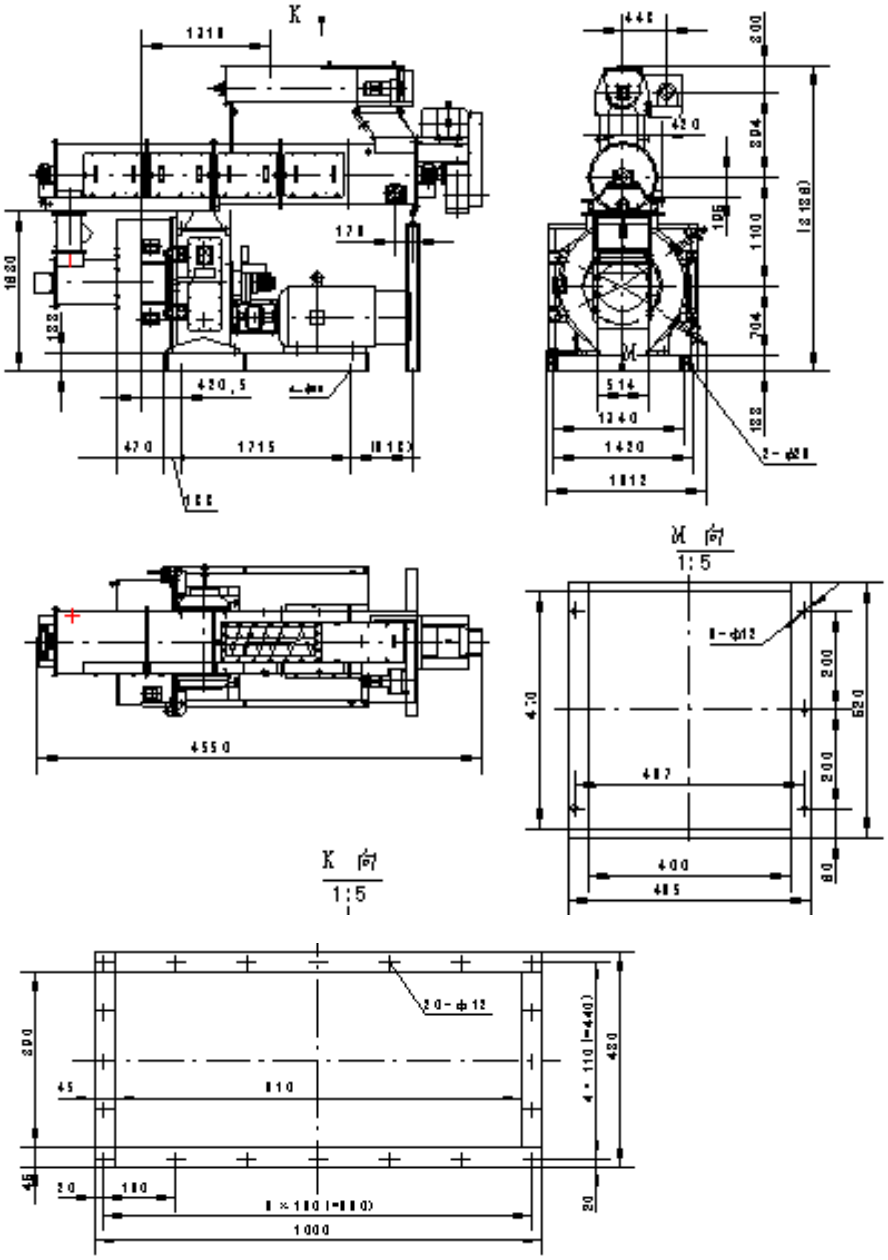


Fig.5　SZLH678（768）MX Pellet Mill Sample

4.1.3 Generally pellet mill is positioned on the floor where dimension should be digged with proper size. Or will the anchor bolts welding on the floor of the reinforced.

4.1.4　Steam system

Appropriate steam system (See Figure 6) is critical for the successful operation of the pellet mill.

A. The boiler steam content should be properly, should be able to to granulating machine and affiliated equipments provide enough steam. Steam content in not enough boiler can lead to granulating machine production capacity drops.

B. Boiler and granulating machine main steam pipeline between must be big enough, in case of

excessive steam pressure loss, and heat insulation, to reduce the condensed water.

C. To granulating machine a pipe should be the main steam duct bifurcation (in the top of the proper size) through the water separator, to remove condensate, above water separator, equipped with traps to ensure the water separator, condensed water can be put off.

D. Pressure reducing valve will provide constant pressure to control valves, size not enough pressure reducing valve will limit to granulating machine of the steam flow. Dimension to pressure reducing valve for pressure control will be too weak, and lead to pressure reducing valve seat rapid wear, note, the selection of the pressure reducing valve.

E. Into granulating machine should be high temperature steam, water less super-saturation steam, steam pressure is 0.2-0.4 MPa, steam temperature of 130 150 ℃.

F. Piping system also should be fitted with the relief valve, traps, pressure gauge, stop valve, etc, and through the view as a mirror, check valves, check the system can effectively work.

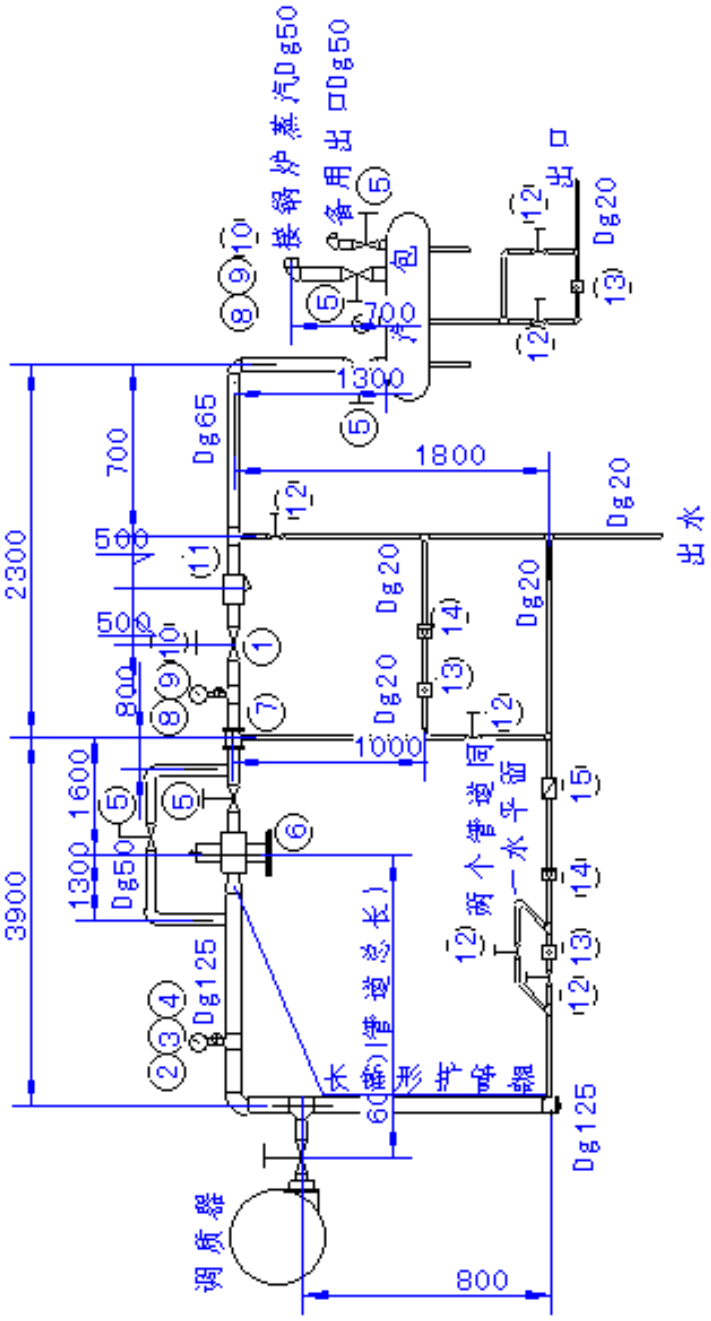


Figure 6 SZLH678 (768) MX granulating machine imported steam pipe graph

SZLH678 (768) MX import steam lines that figure

1. 6 meters length low-pressure pipe is especially designed for high starch or heat sensitive formula, to other formula is relatively short.

2. The water back to the boiler water supply system or empty.

3. Pipeline tapping in actual match.

4. Figure size is only for reference, production can change, but 6000 mm to ensure the best possible.

5. Steam lines do not include drum, but can be customized for the user.

Table 2

No	Name	Model	Specification	Qty	Remarks
1	Stop valve	J41T-16	Dg50	5	
2	Pressure gauge		3/8”	1	Nominal pressure 0-10bar; Dial dia. 100mm
3	Gauge cock		3/8”	1	
4	Siphon		3/8”	1	Ring siphon
5	Stop valve	J41T-16	Dg40	1	
6	Regulator	DP17	Dg40	1	Outlet pressure 0.05-0.4Mpa (yellow spring)
7	Moisture separator	S3	DN65	1	Flange (connecting DIN PN16)
8	Pressure gauge		3/8”	2	Nominal pressure 0-16bar; Dial dia. 100mm
9	Gauge cock		3/8”	2	
10	Siphon		3/8”	2	Ring siphon
11	Strainer		2”	1	With 100 mesh stainless steel filtering screen
12	Stop valve	J41T-16	Dg20	6	
13	Steam trap	HM10-8	3/4”	3	
14	Sight glass		3/4”	2	
15	Check valve		3/4”	1	
16	Flat welding steel flange			5	

17	Flat welding steel flange			2	
18	Flat welding steel flange			14	

4.2 Adjustment

4.2.1 Adjustment of die-roller clearance (see Figure 7)

Open the pellet chamber door, screw eight fastening bolts off the feed cone and remove feed cone and remove feed cone to clear away the accumulated feed on the inside surface of die and outside surface of rollers. Loosen the retaining nut and twist the adjusting screw to make adjusting gear to turn. Make adjustment according to the arrow direction of roller adjusting gear. When the clearance becomes smaller, adjust to the opposite direction; when the clearance becomes bigger, if it is checked that the adjustment cannot be carried out in the shown direction, that mans rollers are wrongly assembled and must be reassembled correctly. It is very important to control the clearance between die and roller. Too small clearance will severely wear rollers and die; too big clearance will result in difficulty of pelleting. Generally, proper clearance is 0.05-0.3mm. judge through visual inspection and take it as appropriate that rollers just touch the surface of die and rotation of die can just drive rollers to turn round without feed. Attention, do not forget to screw the retaining nut and lock screw on after the adjustment of clearance between die and roller.

4.2.2 Knife Adjustment

Pellets with different diameter have different length, generally, pellet length is 1.5-3 times longer than pellet diameter. To make adjustment, loosen the lock handle on the knife post first, pull out knife post, and loosen the lock handle on the positioning bushing, set the positioning bushing at a proper place according to the graduation of knife post, then lock the positioning bushing and move the knife post to make the positioning bushing and fixing sleeve touch, and lock the knife post handle. Note that distance between knife and the surface of die cannot be smaller than 3mm to avoid the touch of knife and die.

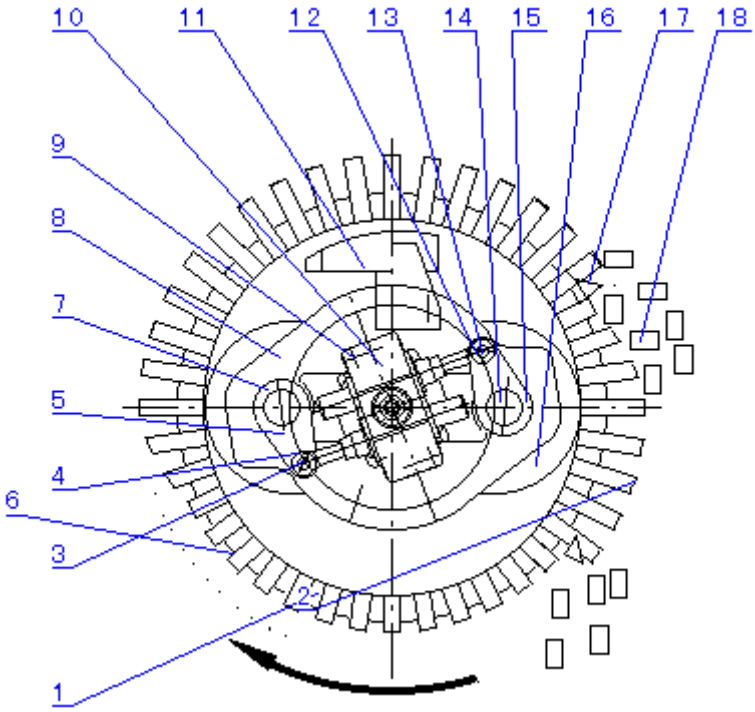


Figure 7 PELLET CHAMBER WORKING PRINCIPLE

1. Die 2. Bolt 3. Hinge pin 4. Bolt 5. Retaining Pin 6. Bolt 7. Bolt 8. Plate pinch 9. Bolt 10. Adjustment bolts and pin nut 11. Deflector 12. Bolt 13. Plate pinch 14. Hinge pin 15. Roller Shaft 16. Roller 17. Knife 18. Pellet Feed

4.3 Trial run

4.3.1 Turn off the power of pellet mill.

4.3.2 Remove knife on pellet chamber door from die and open the pellet chamber door.

4.3.3 Check to see if there are iron pieces and other impurities inside the feeder, conditioner and pellet chamber.

4.3.4 Check the die clamp bolt and 48kgm of tightening moment is regarded as fine.

4.3.5 Check to see if the clearance between die and rollers is appropriate, and turn the die with hand to make sure that pellet mill is not blocked.

4.3.6 Check the oil level of oil level gauge at the side gearbox and make sure that the oil level is at the point of 2/3 graduation. Meanwhile, lubricate main shaft bearing, roller bearing and other lubrication points according to Figure8.

Check the cake layer thin oil lubrication system all sports parts for operation, pipe was clear.

4.3.7 Close the pellet chamber door and turn on the main motor.

4.3.8 Start the main part of machine and check to see if the rotation direction of die is correct (die should rotate clockwise when facing the die).

4.3.9 Manually check to see if limit switch at the rear side of gearbox functions. Power shall be able to be turned off when you push the touching head of limit switch.

4.3.10 Do not make pellet mill run for a long time without feed. It will result in the wear of die and roller due to the excess surface touch.

WARNING:

1. Do not place any object (including hand) in the pallet mill when the pellet mill is running.
2. Please pay attention to machine on the various signs warning, avoid unnecessary damage.

5. USE CONDITIONS, OPERATION AND SAFETY RULES

5.1 Use Conditions

5.11 The equipment technologically related to the pellet mill should match.

5.12 The working voltage should be stable with deviation not more than ±5%.

5.13 The supplied steam should accord with the rules of this manual.

5.14 Galvanometer and operation switch should be installed on the site of pellet mill for the convenience of observation and operation.

5.2 Operation

Correct operation includes two meanings: firstly, to make equipment bring the efficiency into full play to improve the output and make the pellet quality accord with requirements; secondly, to be able to correctly use and maintain the equipment to make it have a longer service life. It is wrong to neglect any aspect.

The related part of the machine should be adjusted before operating the pellet mill. We have mentioned this previously and will not repeat here. Secondly, a check of trial run should be carried out before operating this machine. Only like this can you correctly operate the pellet mill.

5.2.1 Starting Steps

When the trial run is completely over, the formal staring can be carried out. You should pay attention to the starting sequence when starting the machine, the sequence should be from the bottom to the top. The steps are as following:

5.2.1.1 Do your beat at the check according to the steps of trial run.

5.2.1.2 Adjust the steam pressure, remove the condensate in the steam pipe.

5.2.1.3 To start the cake layer thin oil lubrication system motor.

5.2.1.4 To start the main motor and forced feeding motor.

5.2.1.5Turn on the conditioner motor.

5.2.1.6Turn on the feeder motor, adjust the feeder to the lowest rotational speed.

5.2.1.7Open the discharging door and open the admission valve at the same time. Slightly adjust the rotational speed of feeder motor. After pellet is produced, gradually adjust the rotational speed of feeder and steam adding volume to a proper level.

5.2.1.8 Adjust the knife to make the pellet length appropriate.

5.2.1.9 Further adjust the rotational speed of feeder to make the working current reach the rated

current value, and relevantly adjust the steam flow to make the temperature and humidity appropriate.

5.2.2 Points for attention when starting the operation and newly replacing the die.

5.2.2.1 For the unskilled operator, when carrying out the step of 5.2.1.7, you can open the pellet chamber door or adopt the external discharging system to make the initial feed not enter the pellet chamber but fall on the ground. When you feel by hand that steam content and conditioning temperature are proper, that is, when you firmly grasp the feed, it can shape into a ball, and when you loosen your grip, it can fall apart, that means the conditioning effect is good. At this moment, let the feed enter the pellet chamber for pelleting. Observe the galvanometer of the main part of machine at any time after the starting of the machine is normal, and adjust the feeding volume and admission volume in time. And observe at any time by opening the inspection door of the feed chute.

5.2.2.2 During the production with load, if moisture added to feed is too much and die is not suited to feed formula due to excess width, feed will be extruded from under the rollers but not the die holes, resulting in block. In this case, shut off steam at once and shut off feeder motor, conditioner motor and the main motor of pellet mill, then clean up the die. After making sure that the surface of die holes has no adhesive feed, start the main part of machine, add a few dry feed until feed is extruded from most of the die holes. Remember the last adjusting point of steam valve and the adjusting point for feeding control as the key adjusting points during the everyday operation. The two adjusting points vary with the feed formula. Factors such as moisture content, grease content, fibre content and use volume of steam will vary the adjusting points.

5.2.2.3 During the trial run of new die, first use the greasy materials to make sure that feed is extruded from all the die holes (over90%), then add the feed with bigger friction to grind the die holes.

5.2.2.4 When new die is put into use, the rotational speed of feeder should be slowly adjusted. The

Feeding speed con not be increased before the amperemeter pointer is stable. If die is blocked up, first get rid of the feed in the pellet chamber, and then restart the main part of pellet mill. At this moment, you can not start at the feeding speed set originally and should use the lower feeding speed for running. Since feed in the die holes clog the holes tightly after cooling, an extra force should be imposed to make feed pass through the die holes. Then, the feeding volume and steam volume can be increased according to the condition of amperemeter. An experienced operator can make the pellet mill reach the highest capacity within several minutes.

5.2.2.5 Do not be careless and impatient when using a new die. It is very necessary to let the new die be heated with a rise in temperature before it attains the highest capacity.

5.2.2.6 For dies whose hole diameter is equal to or bigger than 4.5mm, excess steam should be used. Powder feed with high moisture content is relatively easy to fill up the die holes, but the extruded pellet feed is too soft. This trouble can be overcome by slowly increasing the dry materials until feed becomes dry and hard. The excess dry materials will block up the die holes.

5.2.2.7 Operator can operate the new pellet mill and new die according to the above operation

sequence. After being familiar with the pellet mill, he will try to find out all skills and skillfully use the pelleting experience to make the pelleting equipment to be in the best production condition and produce high-quality and high-output pellet feed. But one point should be remembered firmly:" Do not feed to the pellet mill excessively, or just the opposite consequence will be brought about."

5.2.3 Stopping Steps

When the production is over, the machine must be stopped. When stopping the machine, we should pay attention to the stopping steps which should be opposite to starting steps and is from the top to the bottom. The steps are as following:

5.2.3.1 Close the discharging door.

5.2.3.2 When seeing no feed from the inspection door, turn off the feeder motor, steam valve and conditioner motor.

5.2.3.3 Feed the greasy materials through the inspection door to fill up the die holes.

5.2.3.4 Turn off forced feeding motor and the main motor.

5.2.3.5 Shut down cake layer thin oil lubrication system motor;

5.2.3.6 After the main machine stops, open the pellet chamber door remove the accumulated feed inside.

5.2.3.7 Remove the magnet impurities.

5.3 Points for attention during operation

During the operation, we should pay attention to some problems. Any neglect of these problems will severely affect the production.

5.3.1 There should not be foreign materials such as stone, iron impurity and flaxen thread in the powder feed.

5.3.2 Turn on the main motor first when starting the machine; Turn off the feeder motor first, then turn off the conditioner motor when stopping the machine.

5.3.3 Feed the greasy feed before turning off the main motor.

5.3.4 Remove the accumulated feed in the pellet chamber after stopping the machine.

6. COMMON TROUBLE ANALYSIS AND REMOVAL

Table 3

No	TROUBLE	CAUSES	REMOVAL METHOD
1	No material enters the pellet chamber.	1.Bin arches or screw is blocked. 2.The feeder drive loses efficacy. 3.The conditioner is blocked.	1.Break the arch or change bin structure, clean up the screw. 2.Replace the drive. 3.Clean up the conditioner.

2	Material can enter the pellet chamber normally, but pellet cannot be produced.	1.Die holes are blocked. (a.Die is too thick; b.formula is irrational) 2.Moisture in material is too much or too little. 3.Die-roller clearance is big. 4.Deflector is damaged.	1.a.Thin the die holes; b.Change the formula. 2.Adjust the steam volume. 3.Adjust to a rational die-roller clearance. 4.Replace deflector.
3	The current of the main motor of pellet mill is unstable.	1.The added dry saturated steam is not sufficient. 2.The material flow entering the pellet chamber is unstable. 3.The mixing shaft of conditioner is damaged.	1.Improve the steam quality. 2.The powder feed returning to the pelleting bin is irregular. Re-improve the condition of returned feed. 3.Replace the mixing shaft or picks.
4	The main machine has big noise and fierce vibration.	1.The gearbox or roller bearing in the pellet chamber wears seriously. 2.Die and roller wear seriously. 3.Roller clearance is too small. 4.There is foreign materials in the pellet chamber.	1.Replace bearings. 2.Replace die and rollers. 3.Adjust the roller clearance. 4.Clear off the foreign materials.

7. MAINTENANCE AND REPAIR

7.1 Routine Maintenance

7.1.1 Strictly follow the lubrication diagram to inject lube to each lubrication point. Note that the correct choice of lube is very important for the normal run of pellet mill. For main shaft bearing, roller bearing and other bearing, use No.2 high-grade lithium radial lube or its similar grease; For the inside of the gearbox, use the imported high-grade antioxidant turbine engine oil.

7.1.2 Check the distance between knife and die every shift to make sure that it is not smaller than 3mm.

7.1.3 Check every shift to see if bolts and screws in the pellet chamber are loose.

7.1.4 Remove the accumulated feed in the pellet chamber and on the outer surface of the machine every shift.

7.1.5 Inject about 35-50g lube to each roller bearing every four hours.

7.2 Regular Check and Maintenance

7.2.1 Check the oil level of feeder and reducer and chain drive every week. Replace oil in the reducer after the initial run of 200 hours, later replace oil once every 2000 hours of continuous run.

7.2.2 Check the wear conditions of wear ring and driving key every week and replace in time.

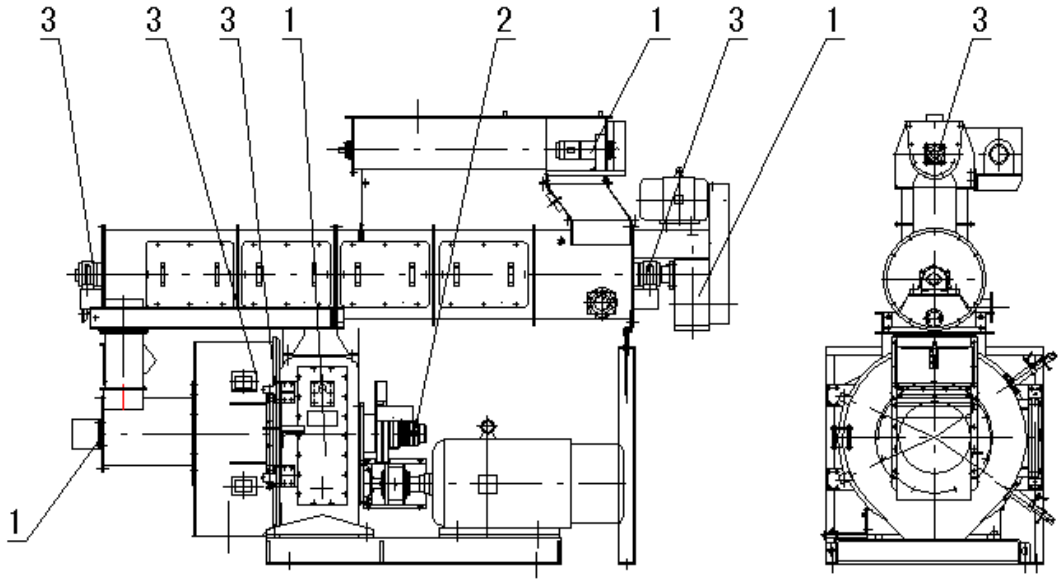


Figure 8 SZLH678 (768) MX granulating machine lubrication chart

1. Lubricate with dilute oil, renew it after 200 hours' working and then change it every 6 months;(Use #68 machine oil)
2. No.2 high-grade lithium radical lube. (Inject once or twice every shift).
3. Calcium radical lube.

7.3 Repair

The check and repair of pellet mill mainly include the disassembling and assembling of pellet mill and the replacing and repairing method of easily-worn parts.

The disassembling and assembling of pellet mill include the disassembling and assembling of feeding system, mixing system, main driving system and feed chute system. (See Figure 9)

The pellet mill can be divided into four parts by disassembling the fasteners between the feeding system, mixing system, main driving system , face plate and feed chute system.

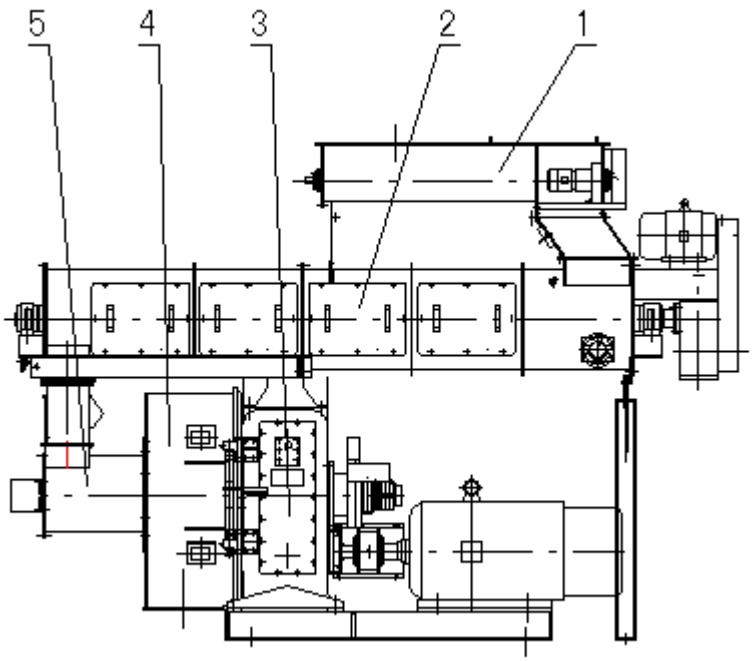


Figure 9 SZLH678(768)PELLET MILL

1. Feeding System 2. Mixing System 3. Pelleting System 4.Cover
5. Forced feeder

7.3.1 Feeding System

Feeding system mainly consists of transmission and feeding conveyor.

7.3.1.1 Transmission parts

Figure 10 shows: main transmission part frequency control motor, coupling and reducer, control motor bearing seat, guard etc.

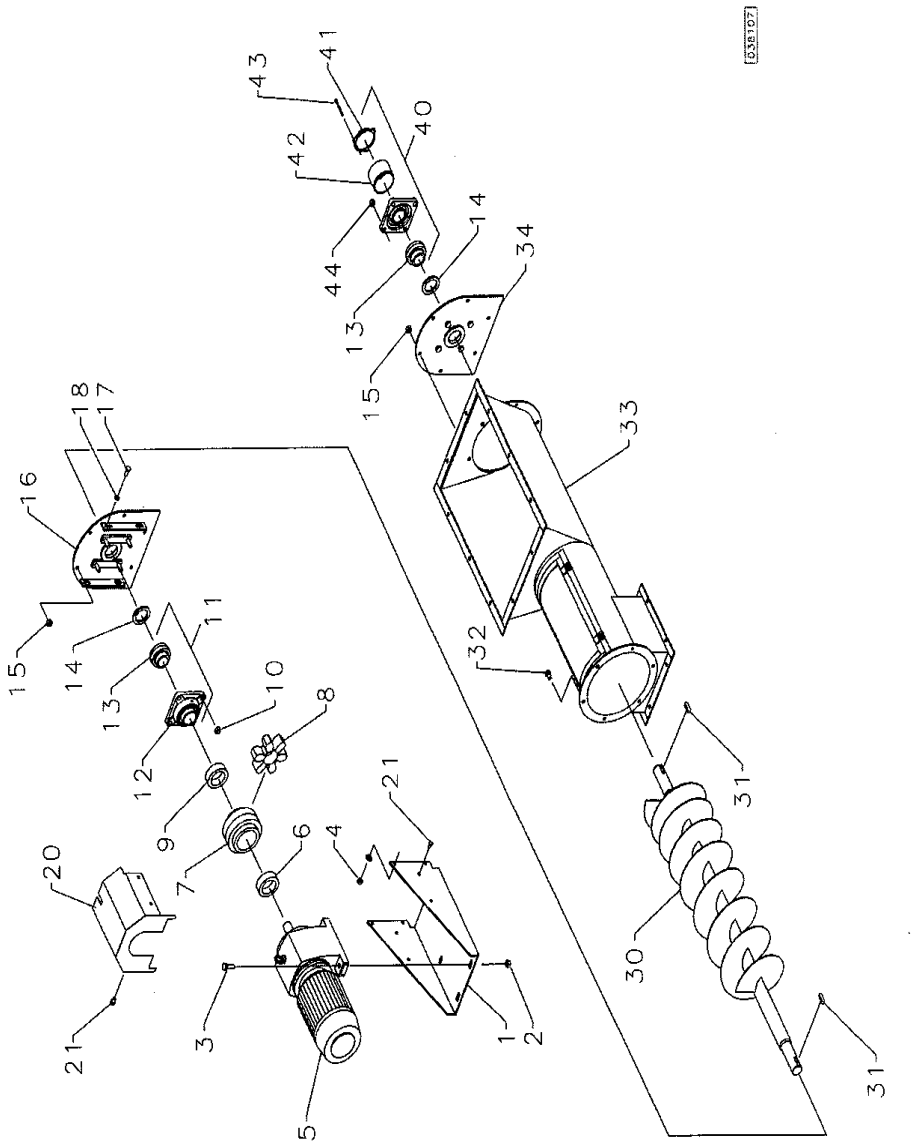


Figure 10 Feed system

1, motor bearing seat 2, the nut 3, bolts 4, nut 5, frequency conversion motor 6-9, even the shaft 10, nuts 11-13, bearing 14, gasket 15, nut

16, motor end plate 17, bolts 18, flat gasket 20, shields 21, bolts 30, wring dragon shaft 31, flat key 32, bolts 33, feeder shell 34, end cover plate

40-41, bearing 42, lie between circle 43, screw 44, nuts

Transmission part and procedure is as follows:

A. loosen cover on the bolt of 21, can tear open next shields 20;

B. loosen bolts 3, mobile control motor 5;

C. with suitable "radmanovic" (special remove tool) under the desirable couplings 6-9;

D. remove bolts, desirable 12 under control motor speed reducer, 2, and 3

E. Remove bolts 21, and take control motor bearing a 1;

Transmission part assembly, according to the above opposite order.

When the transmission part a place malfunctions or relaxation, can according to the above steps to installation, maintenance and adjustment of the installation.

7.3.1.2 feeding conveyor parts

Feeding conveying’s main part consists of ground dragon shaft, feeder shell, front and rear, housing and sealing circle, as shown in figure of block 10.

Its installation procedure is as follows:

A. Loosen cover plate and cylinder of between the bolt, can tear open next cover plate (34);

B. Pulled down after the transmission part, loosen bolts, namely the desirable both ends bearing down on both ends of the bearing (11-13) and (40-41);

C. Dismantling the cover the seal on block pad (14), and ground dragon axis (30).

Feeding section assembly, according to the above steps instead.

7.3.2 Mixing System

The mixing system mainly consists of the tempering shaft, barrel, vanes and conditioning motor, housing, seals, supporting, belt, the size of the belt wheel etc . (See Figure 11)

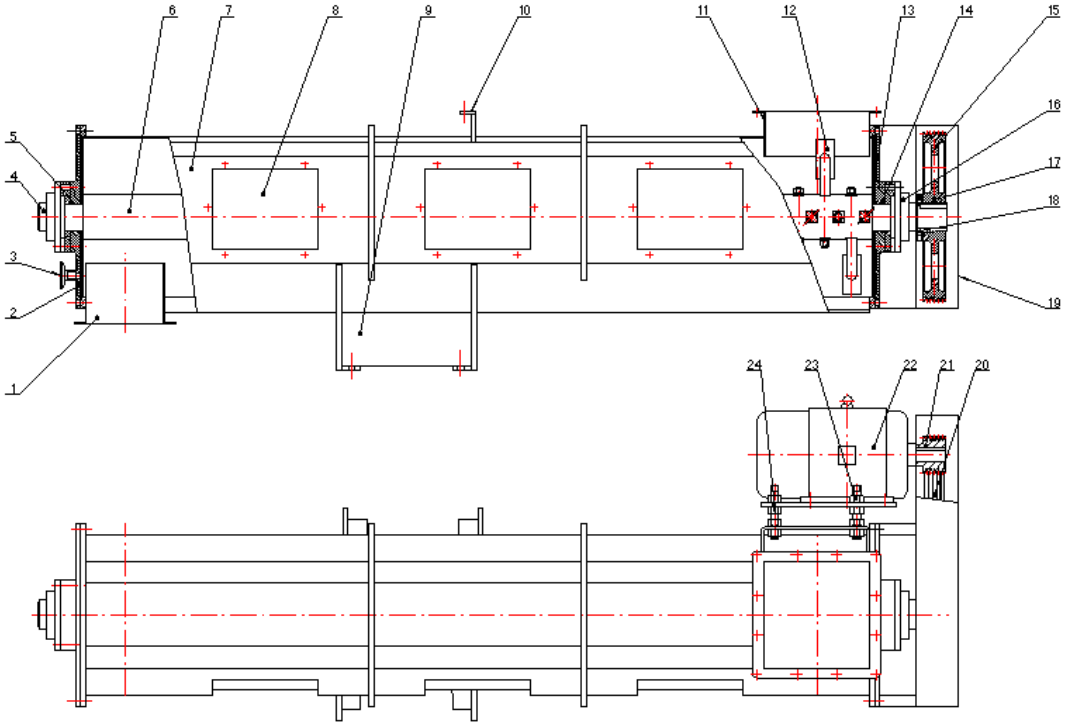


Figure 11 conditioning (mixing) system

1. The material mouth 2. Left cover 3. The thermometer 4. Bearing 5. Sealing ring 6. Conditioning shaft 7. The tempering device the cylinder body 8. Clean up the door 9. Cylinder bearing 10. Feeder bearing 11. Steam import 12. Conditioning blades 13. Right cover

14. Sealing ring 15. Big wheel bearings with 16, Bearing 17. Key 18. Big pulleys cone set of 19. Cover 20. The belt 21. Small pulleys 22. Conditioning motor 23. Nut 24. Motor adjusting bolt

Conditioning system and handling procedure steps are as following:

a. Loosen the tightening bolt of guard to remove the guard 19;

b. Adjust bolt and remove the belt 20;

C. Remove the bolt round with, and through the big belt wheel threaded hole dismantling the big belt wheel 15, and take great and the wheels of 19 and key cone 17

D. loosen bolts on bearing and tight set screw, remove the bearing 16

E. dismantling the thermometer 3

F. loosen cover bolts, will the left rear left 2, the tempering shaft 6, the tempering blades 12 and bearing 4, sealing ring together at the left, from 5 pull, and loosen nut, cut down the blade and quality

G. dismantling the sealing ring 14

H. loosen bolts and cover impinging 13

I. when installed according to remove the reverse, but don't forget the nuts and lock.

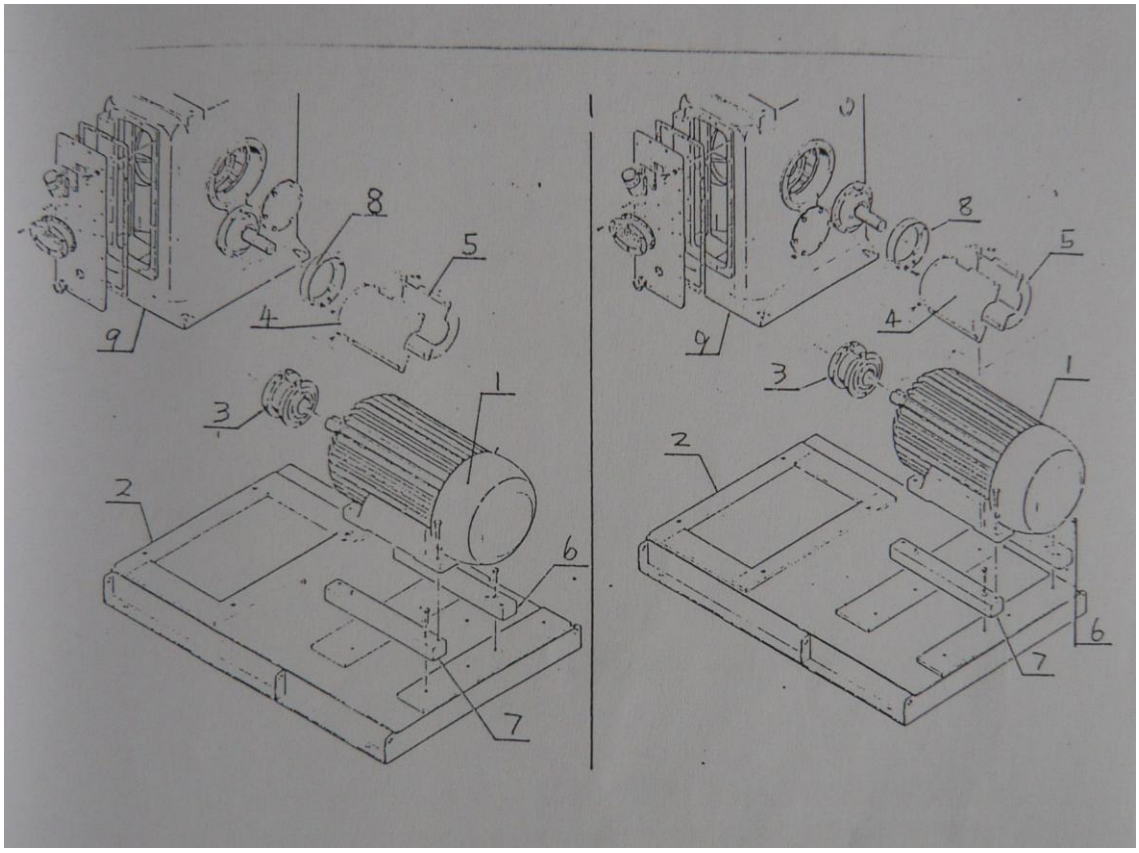


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Figure 12 MAIN MOTOR

1. Motor 2. Base 3. Hub 4. Half Cover Ⅰ 5. Half Cover Ⅱ 6. Bolts 7. Motor Adapter Rail Ⅱ 8. Bushing 9. Gearbox

7.3.3 Main Driving And Pelleting System

The main driving and pelleting system mainly consists of gearbox, base, motor, coupling, pellet chamber, etc. (See Figure 12)

The disassembling and assembling steps are as following:

jDisassemble the bolts of guard to remove half guards Ⅰ4 and Ⅱ5;

kDisassemble the bolts of bushing to remove the bushing 8;

lDisassemble the clamp and spring of the coupling hub 3;

mDisassemble bolt 6 to remove motor 1;

nRemove the hub 3 from the motor with proper “puller”;

oRemove the hub 3 from the pinion shaft in the gearbox with proper “puller”.

The disassembling and assembling of gearbox include the disassembling and assembling of

pinion shaft, main shaft, quill shaft and main gear.

7.3.3.1 Disassembling and Assembling of Pinion Shaft

The disassembling and assembling steps of pinion shaft are as following (see Figure13):

a. Loosen the ball valve 14 to let the lube out of the gearbox body
b. Remove key27
c. Disassemble bolt 7 to remove the rear end cap 21 and paper gasket22;
d. Knock the pinion shaft 28 from the front of gearbox with proper strength to make it separate from bearing30;

To assemble the pinion shaft, follow the steps opposite to the above.

7.3.3.2 Disassembling and Assembling of Main Shaft

The disassembling and assembling steps are as following (see Figure 14):

A. Exit cutting knife open granulating machine door cover, and mould pressing cover, ring die, (see ring die tear open outfit);

B. Take block pin, twist the bolt 12 4, which in turn off linking piece 13 and pin shaft 3 (see figure 7),

C. Loosen lock nut, through the gap adjusting bolt 10 adjust wheel (see figure 7 5).

D.Remove screw, take off the linking piece 10, pressure roller assembly 9.

E. Remove bolts and, in turn, take down 12, 14 cover wing spring, rubber gasket 13;

F. Knock the main shaft 7 from the left side and remove it from the right side with proper tool.

To assemble the main shaft, follow the steps opposite to the above.

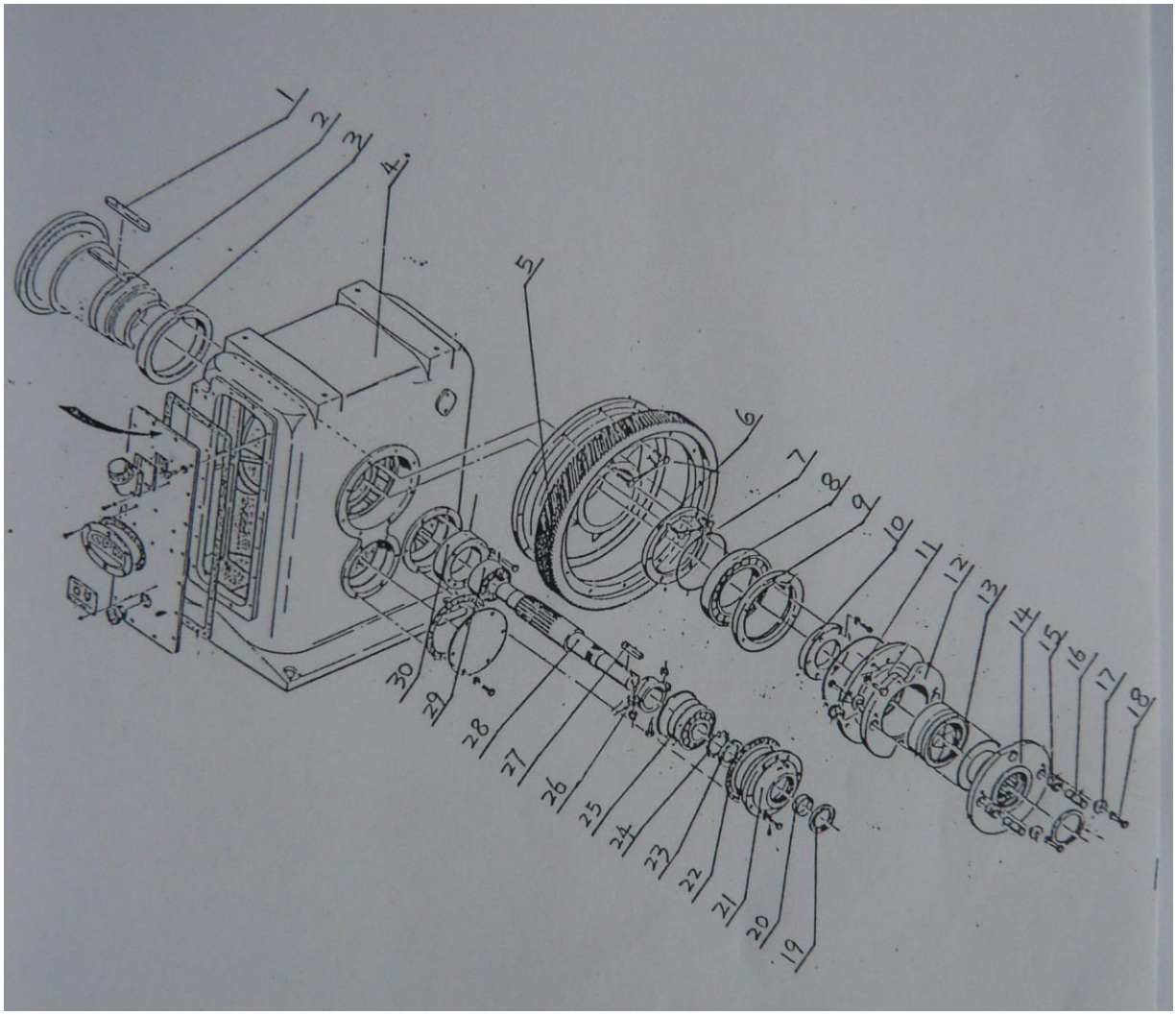

Figure 13 Gear shaft, big gear installation schemes

1. The key 2. Empty shaft 3. Gear block circle 4. Gear box 5. Big gear 6. Lock block circle 7. Axis with block circle 8. Bearing 9. Bearing every lap 10. Empty axis every lap 11. Safety pin set 12. Safety pin 13.Bearing 14. The spline shaft bearing a 15. Safety pin set of 16. Safety pin 17. Safety pin linking piece 18. Bolt 19. Oil seal 20. Bolt sleeves 21. After the shaft cover 22. Gaskets 23. Lock nut 24. Check back 25. Bearing 26. Gasket bearing splashing of oil 27. Key ring gear shaft 28. Gear shaft 29. Bearing 30 Bearing housing

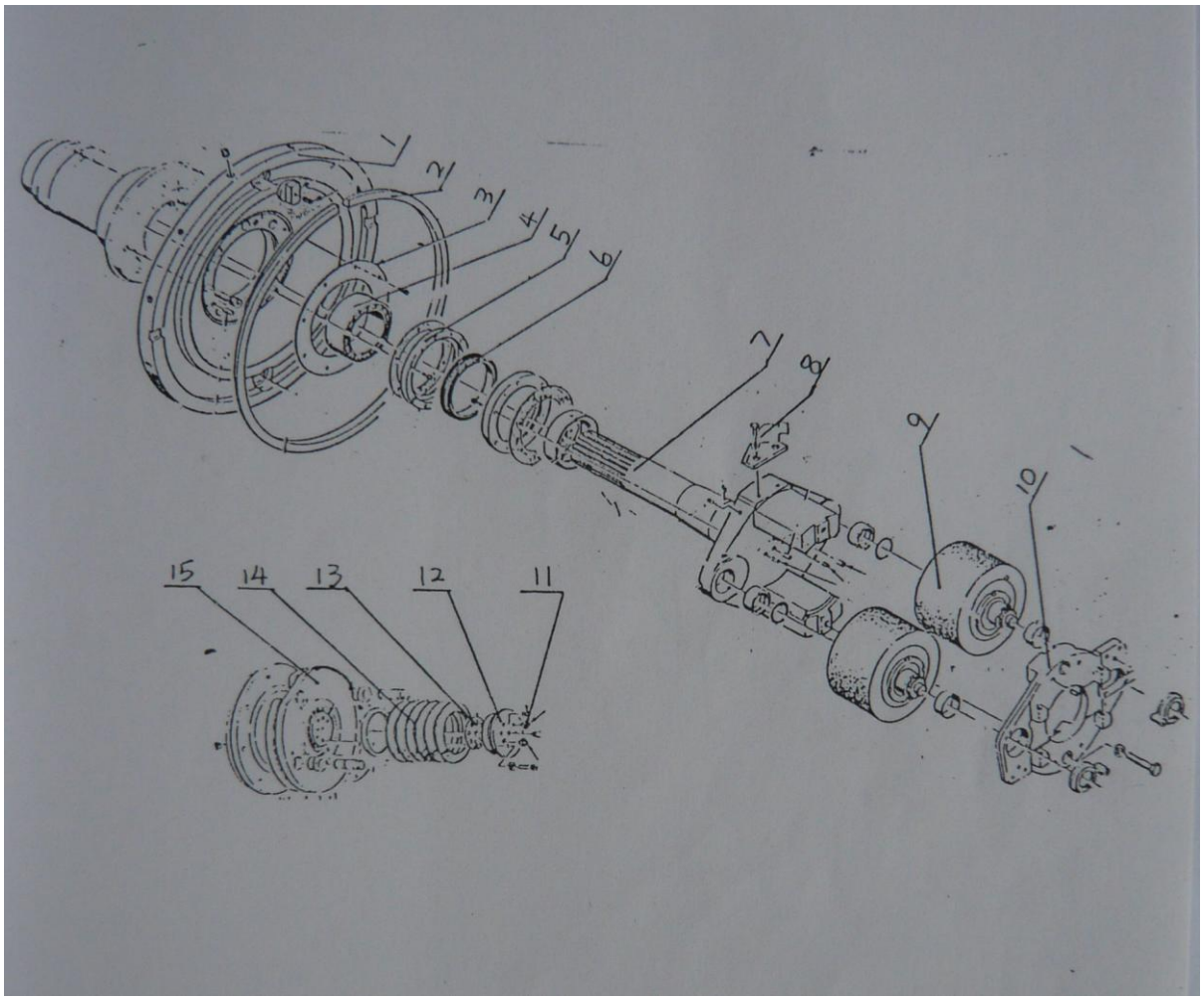

Figure 14 The axis of installation schemes

1. Rotating 2. Press mould lining 3. Rotating flat 4. Bearing 5. Oil seal a 6. Oil seal 7. Spindle 8. Small scraper 9. Pressure roller assembly 10. Linking piece 11. Bolt 12. Gland 13. Rubber pad 14. Wing spring 15. Spindle spline seats

7.3.3.3 Empty big gear shaft, tear open outfit, see figure 13 and 15 shows;

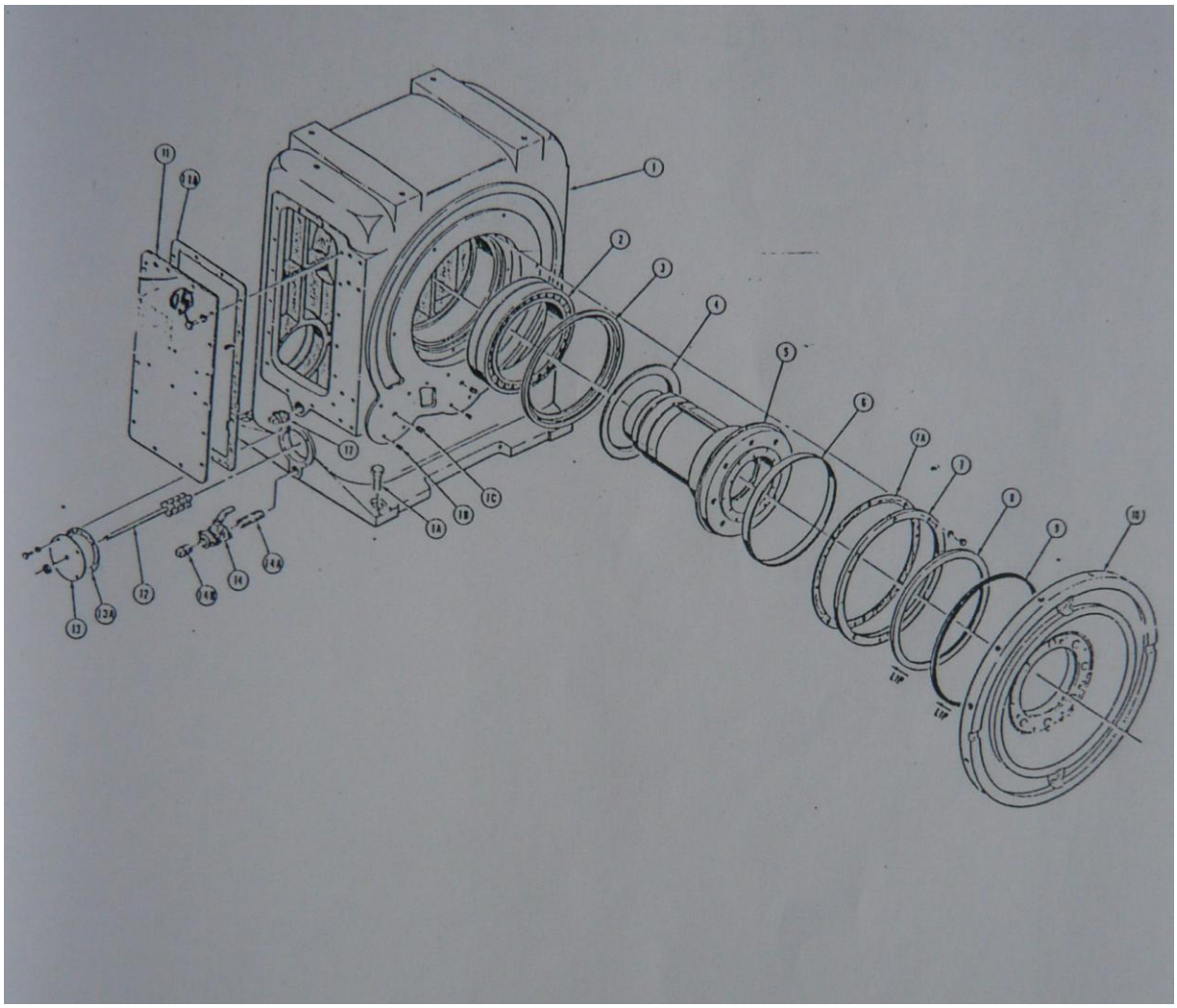

Figure 15 air shaft installation schemes

1. Gear box 2. Bearing 3. Keep frame 4. Lining 5. Empty shaft 6. Wear-resisting lining 7. Empty shaft hermetic seal 7 A. Rubber gasket 8. Oil seal 9. V type oil seal 10. Rotating 11. Side cover plate 11 a. side cover plate MATS 12. Iron 13. Cover and a. cover plate MATS 14. Ball valve and a. take over 14 b. bulkhead 15. Bolt

Air shaft, big gear disassembly procedures are as follows:

A. the disassembly procedures, according to the spindle first remove the spindle; (figure 14)

B. remove bolts 18, were taken safety pin linking piece 17 and under safety pin 16; (figure 13).

C. Remove bolts, and take the spline shaft, a 14 safety pin a 12, air shaft every lap 10 and bearing every circle (figure 14); 9

D. remove bolts 15, take down gear box side cover plate, the flat mat 11 11 A; (figure 15)

E. Remove the screws, and take 10 rotating (according to the figure 15);

F. from gear box behind the tail shaft knock 1 empty or by air shaft disassembling tooling, from the front air shaft (figure 5 out 15);

G. From the side of the gear box 4 out of 5 big gear (figure 13).

Air shaft, big gear assembly in the reverse order.

7.3.4 vulnerable parts of the tear open outfit

Granulating machine vulnerable parts including the replacement of the roller's tear open outfit, safety pin the tear open outfit, spindle bearing tear open outfit, ring die of tear open outfit.

7.3.4.1 pressure roller tear open outfit

Pressure roller disassembling including pressure roller of assembly pressure roller to assembly and disassembly assembly. Figure 16.

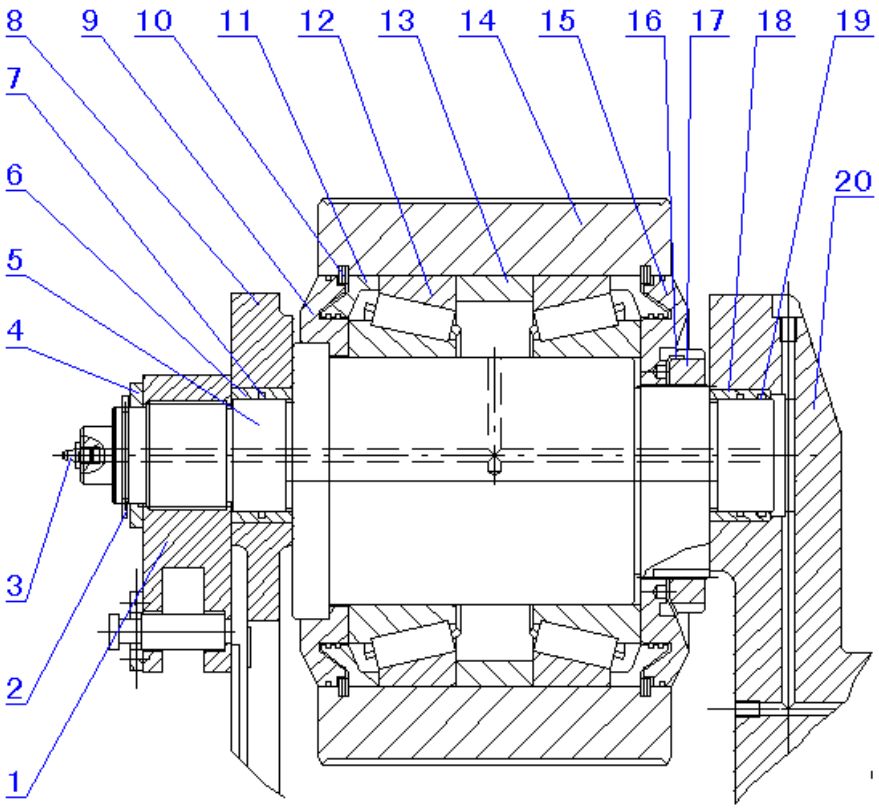

Figure 16 SZLH678 (768) MX granulating machine pressure roller assembly

1. The gap round 2. Block pin 3. Oil cup 4. Pressure roller baffle 5. Pressure roller 6. Linking piece bushing 7. Oil seal 8. Linking piece 9. Pressure roller block 10. Hole with block circle 11. Pressure roller to block oil ring 12. Pressure roller bearing 13. Every other set of 14. Pressure

roller 15. Pressure roller thread block 16. Check back gasket 17. Round nut 18. The Lord stem bushing 19. Oil seal 20. The main axle

7.3.4.1.1 pressure roller assembly to assembly

(1) tearing down the old pressure roller

A. loosen round nut, remove the check out 17 gasket 16;

B. loosen the right end thread block 15, pressure roller with wooden hammer type the pressure the roll shaft to the left; 5

C. Right down the block and pressure roller, the circle 10 and 11 block oil ring;

D. hammering bearing the lateral edge or with an appropriate "radmanovic" pull out bearing outer ring; 12

E. And every other sets of pressing roller 13.

(2) assembly pressure roller

Step A:

A. replace damaged parts, and the assembly parts clean;

B. in pressure roller is installed inside pressure roller on every set of 13;

C. With proper tool loaded on two bearing outer ring (taper surface main outward).

Step B:

A. in pressure roller is installed on the block in the ring, with 11 oil hole block circle 10;

B. in pressure roller is installed on the roll shaft block 9 and a bearing inner circle;

Steps C:

A. The steps of pressure roller, put a loaded to pressure on the roll shaft;

B. In the pressure on the other one in the roll shaft bearing inner circle;

C. Put on one block oil ring;

D. Ensure bearings between regulation, then loaded on check back gasket, and screw down the round of 16 17, twist the nut good ear embedded within the nuts back round;

E. Can check pressure roller flexible rotation and, when necessary, need to readjust the

clearance of bearing.

7.3.4.1.2 pressure roller assembly tear open outfit

(1) remove the pressure roller, see figure 7.

A. will cutting knife to quit, opened the door cover;

B. press mould cover bolts removed, take down mould mask.

C. loosening bolts, and take 2 feeding scraper 11;

D. loosen block 12 and bolt 4, sell off linking piece 13 and pin shaft 3;

E. loosening bolts, and take mode and the gap institutions 10; roll

F. loosen bolts 2, take off the linking piece 9;

G. hard to pull at the assembly may be unloaded and pressure roller pressure roller assembly

(2) assembly pressure roller assembly

A. the granulating indoor clean up;

B. will pressure roller is installed in the position shown in figure 17 sure arrow "E" shows the eccentric shaft position;

C. Installation linking piece and 9, and strong in bolt 2;

D. in pressure roller head gear to adjust, install pressure roller, pressure gap between die appropriate;

E. in turn mount mold the gap institutions and roll clips, bolts, pin shaft and block pin;

F. installed in turn feed scraper and molding hood.

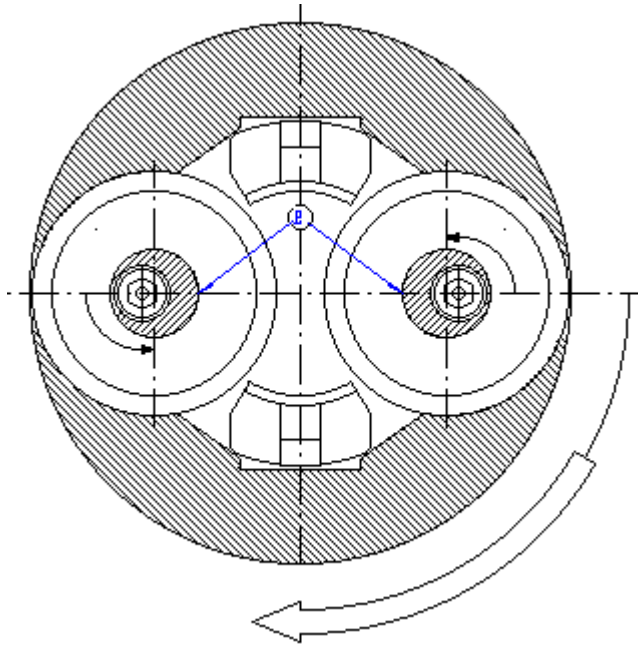

Figure 17 SZLH678 (768) MX granulating machine pressure roller regulation diagram

7.3.4.2 Safety pin tear open outfit, see figure 13.

(1) safety pin remove

A. closed granulating machine Lord motor;

B. loosen bolts 18, take down safety pin linking piece 17;

C. Tap on a safety pin, 16, and remove

a. （

(2) safety pin assembly

A. will spare safety pin gently into the bushing inside; knock

B. sure pin set of 15, and shell and not shift connection, loaded on safety pin tighten bolts and screw down the linking piece. 18.

7.3.4.3 spindle bearing tear open outfit

(1) tear open outfit bearing

A. in the disassembly sequence spindle take spindle; (see figure 14)

B. in appropriate "radmanovic" dismantling the spindle bearing.

7.3.4.4 ring die of tear open outfit, FIG. 18.

Disassembling pressure mode:

A. exit cutting knife assembly 3, opening the door cover 2;

B. remove cover bolts press mould 4, take cover 5; press die

C. Remove to pressure roller ring die of pressure, (adjust the gap institutions) die roller;

D. remove bolts 9, and take hold hoop 7;

E. Use on rotating slot with 8, pry bar will ring die from granulating machine pry down

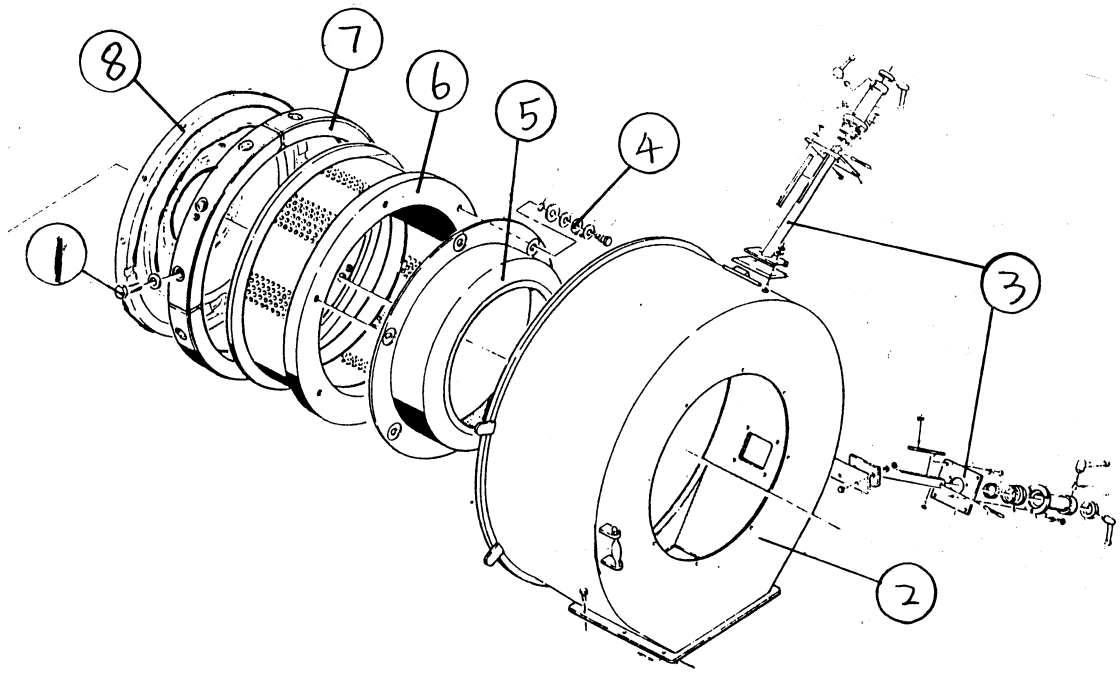

Figure 18 ring die installation schemes

1. Bolt 2. Gate lid 3. Cutting knife assembly 4. Press mould cover bolts 5. Press mould cover 6. Ring die 7. Embrace hoop 8. Transmission shaft

Assembly ring die:

A. will ring die weight in the lift;

B. will push the ring die system grain, make indoor ring die positioning surface and positioning with rotating face;

C. Strong hold hoop 7;

D. adjustment pressure roller, to that of the ring die guarantee proper clearance;

E. loaded on pressing dies cover 5;

F. shut the door cover, adjust the cutting knife assembly 3 for appropriate location.

7.3.4.5 transmission key tear open outfit

The old and the damage of the key must be replaced, the use of key puller will take the keys of the old, and the assembly of a new key, as shown in figure 19 shows:

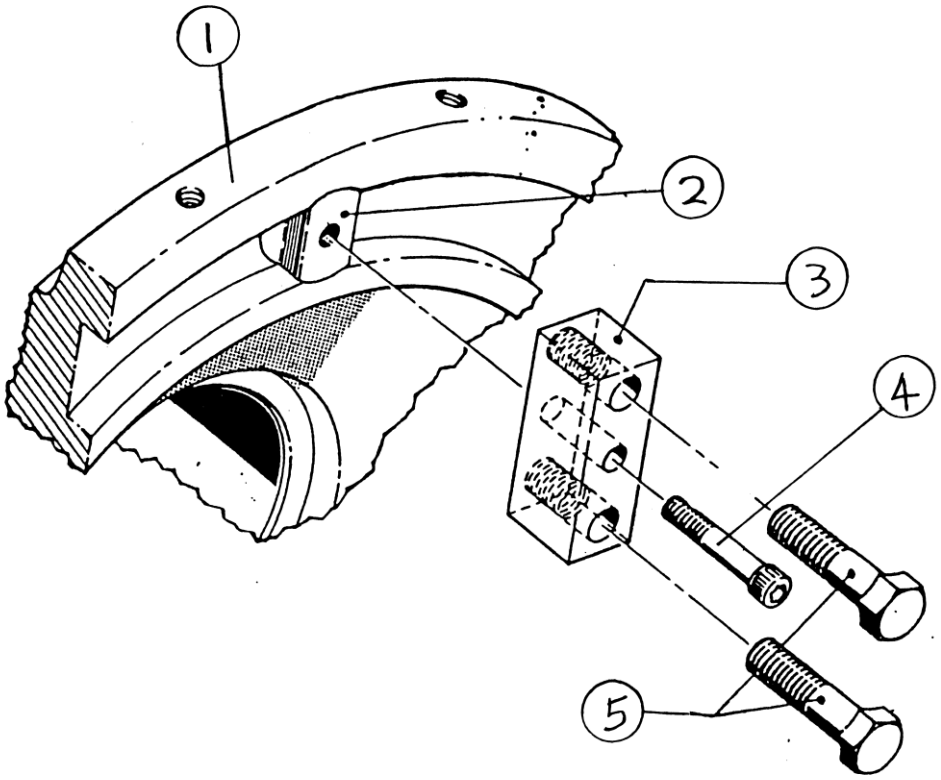

Figure 19 transmission key disassembling schemes

1. Transmission empty round 2. Transmission key 3. Key puller 4. Positioning screws 5. Tear open outfit screws

Use the following steps to take down ring die transmission key:

A. ring die according to the above the disassembly procedures take down ring die;

B. move disassembling screws 5, will locate screws 4 through the key puller 3 twist into the

transmission key the threaded hole of 2, and sure that key puller to the other two threaded hole position in the flange surface rotating 1;

C. in the puller twist on the disassembling screws 5;

D. plug-fuse two disassembling screws 5, pull out transmission key 2; If the screw thread when disassembling twist to the bottom of the key puller, the key still don't come out, that is, will exit the disassembling screws, in key puller and rotating between flange installation boards. To tear open outfit screw plug-fuse two, that drive key pull out;

E. Check 1 flange holes in rotating (key is rotating flange out from the), its should no scars, with sand paper and solvent corrosion, remove.

F. will locate screws turned to key in the ring die transmission to, the role is to make thread from corrosion. Assembly transmission, according to the above key opposite order.

7.4 cake layer thin oil lubrication system (see chart 3)

7.4.1 inspection system pipeline connecting safe whether, the casing is oil a whether meet the requirements height, check whether the power cord connected and whether the host to start in state.

7.4.2 turn starting switch, motor, motor starting system driven gear pump and check system 11 pipeline leaks oil.

7.4.3 will low temperature control switch 6 in a set temperature (general product out prenatal set to good, but users can also customize the adjustment), since the bearing and the meshing surfaces fever heat make oil temperature more than the set, low temperature control switch 6 drive fan, heat exchanger in July 8 in the cold wind on the oil for cooling, when the oil temperature below the set temperature, the low temperature control switch and cut off power supply, fan fan and stop turning.

7.4.4 when export pressure is too high, and part of the oil will through the backflow tube flows back to the body mainframe box.

7.4.5 shutdown, first off, then cut off power supply motor motor power supply.

7.4.6 common fault elimination method.

A. oil pipeline to link or replacing the union.

B. filter alarm light back off the shell, take filter oil filter core, with gasoline or kerosene clean, clear magnets, surface magnetic impurities clean or replace filter core, oil reinstall it.

7.4.7 Because the system long work should be promptly oil metamorphic oil change, will put the oil from the impurity oil out, and kerosene or mouth cavity, the casing clean gasoline to go to join the new filter from oil.

7.4.8 Heat exchanger weekly must take internal dust blow to open or when the oil temperature is up to or more than 50 ℃, must improve the heat transfer efficiency in the use of fan, when the oil temperature over 77 ℃ must make the main motor and stop

7.4.9 Often check low temperature control switch 6 whether can work normally.

7.4.10 Flow switch 10 role is: when the axis of oil amount to less than a setting, and cut off the mechanical and electrical source system grain, the flow rate can be adjust the oil to flow through the mouth pressure adjusting device and to control.

8. LIST OF MAIN VULNERABLE PARTS

Item	Code	Description	Qty/Unit	Mounting Parts
1		Die	1	Pellet Chamber
2		Roller	2	Pellet Chamber
3		Clamp	2	Pellet Chamber
4		Shear Pin	2	Shear Pin Housing
5		Knife	2	Knife Post Assembly
6		Deflector	1	Pellet Chamber
7		Die Driving Key	1	Pellet Chamber
8		Wear Ring	1	Pellet Chamber
9		Main Shaft Bearing	1	Front of Gearbox (near the die)
10	SKF	Front Bearing of Quill Shaft	1	Front End of Quill Shaft of Gearbox
11	SKF	Rear Bearing of Quill Shaft	1	Rear End of Quill Shaft
12	SKF	Front Bearing of	1	Front End of Pinion

		Pinion		
13	SKF	Rear Bearing of Pinion	1	Rear End of Pinion Shaft
14	GB278-6	Hinge Support Bearing	2	Hinge Support of Pellet Chamber Door
15		Feed Bearing	2	Both Ends of Feeder
16	SKF	Conditioner Bearing	2	Both Ends of Conditioner
17		Feed Bearing	2	Both Ends of Feeder
18		Roller Bearing	4	Roller Assembly
19	Double Lips	Main Shaft Oil Seal	1	Front End of Main Shaft
20	Double Lips	Quill Shaft Oil Seal	1	Front End of Quill Shaft
21	Single Lip	Rear Oil Seal of Quill Shaft	1	Rear End of Quill Shaft

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