



济宁市田农机械有限公司

Jining Tiannong Machinery Co., Ltd.

MZLP-Series Flat Die Pellet Press

Operation Manual Book

JINING TIANNONG MACHINERY CO.,LTD

**NO.12 BUSINESS STREET XIPING VILLAGE WEISHAN COUNTY JINING CITY
SHANDONG PROVINCE**

TEL: 0086 516 89939296 FAX: 0086 537 8341055

E-MAIL: wstnml@hotmail.com



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一. Notices on safety:

1. Please firstly check whether the ground wire is connected well. It is strictly prohibited to switch on and start the machine under the situation without connecting the ground wire.
2. When connecting the power supply and running the machine, please don't touch any electrical parts of the electrical control cabinet and operation platform, otherwise it will get an electric shock.
3. Don't operate the plant with wet hand to avoid getting an electric shock.
4. Don't check and change the electrical parts under the situation of connecting power supply, otherwise it will get an electric shock and damage the operators.
5. Only such person who has the concerning operating knowledge can maintain the machine under strictly obeying the electrical technology to avoid the accidents.
6. When the persons are maintaining the machine, please guarantee to cut all the power supply and hang the caution cards avoiding the damaged accidents.
7. No matter when and what, don't use the hands to touch the running parts which will lead to the damage on the operators and machine.
8. The workshop must have fine ventilation and lighting. Don't store the raw material and final product in the operating workshop to keep enough and wide operating space.
The workshop must be kept clean; smoking is strictly prohibited to avoid the explosion of dust.
9. Please check the fire-protection and fire-proofing device well.
10. Please guarantee not to make children close the running machine avoiding the damage.
11. Please add special lubricating grease into the bearings of roller when the machine runs for 12 hours.
12. When the operator turns the roller by hand, please cut all the power supply and strictly prohibit touching the roller and template during running.
13. No matter when the machine is "On or Off" situation, such persons who don't know the performance of the machine can't operate and maintain the machine.
14. The distance between roller and template should not be less 0.1mm. When the distance is less 0.1mm, it will heavily damage the roller and template.

二、Application range and performance feature

1. Application range

Biomass Pellet can be made from any type of Agro-Forestry waste: Groundnut-shell • Sugarcane Biogases • Caster Shells/Stalk • Saw dust • Coffee Husk • Paddy Straw •



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Sunflower Stalk • Cotton Stalks • Tobacco waste Mustard Stalk • Jute waste •
Bamboo

Dust • Tea waste • Wheat Straw • Palm husk • Soybeans husk • Coir Pitch
Barks/Straws • Rice Husks • Forestry wastes • Wood Chips and many other Agro
wastes. Such raw materials contain coarse fiber up to 70%.

2. Performance characteristic:

Flat pellet press is mainly consisting of motor, gear-box, template, rollers and
lubrication system.

3. Feeding style:

Fully feeding under gravity.

2.3. Template

1). Raw material: Template's material contains two kinds which are medium carbon
alloy steel and stainless steel. The medium carbon alloy steel has 20CrMnTi, 40Cr,,
35Crmo,tec. The stiffness and toughness are good; the heating treatment stiffness is
HRC55-66, owning better abrasion resistance and long lifespan. Stainless steel
material contains 4Cr13, 3Cr13, 2Cr13, etc. The heating treatment stiffness is
HRC55-62.

2). Compressive ratio: Template's hole compressive ratio depends on different raw
material and the quality of raw material. The general rate scope is 1:4-8. The
customers choose different compressive ratio depends on different raw material to
make the biomass pellet achieve high quality, stiffness and softness.

2.4. Lubrication

Oil leveler in the reducer should be checked frequently. 55#65# hyperbola gear oil is
preferred. Especially in summer the higher sticky gear oil are recommended; while
the
watery gear oil is good. After operating 500hours at the first time, gear oil should be
all

take out and change new oil. The feeding quantity of lubricate should keep
accordance with safe oil level. The lubricate oil should feed to the safe oil level at
once,

otherwise the machine cannot operate .Generally under the normal running when the
pellet plant has worked for 1000hours, lubrication oil should be change with. When
change the oil, the operator should take all waste oil out and clean it, then feed new
oil.

Different feeding quantity of lubricates oil as follows:

Model	Adding volume of Gear oil (L)
MZLP200	2.60
MZLP260	4.40
MZLP300	8.00
MZLP400	15.70



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MZLP550	24.00
MZLP650	40.00
MZLP800	62.00
MZLP1000	62.00

三、MZLP-Series Main technical parameter

Model	Power(kw)	Ouput(kg/h)	Diameter of Die(mm)	Diameter of Pellet (mm)	N/W (kg)	Packing size(L*W*H)mm
MZLP200	5.5	50-100	200	Φ 6- Φ 8	200	1000*600*800
MZLP260	11	100-150	260	Φ 6- Φ 8	280	1000*600*900
MZLP300	15	150-250	300	Φ 6- Φ 8	450	1200*1000*1200
MZLP400	22	250-350	400	Φ 6- Φ 8	550	1200*1000*1200
MZLP550	40	500-700	550	Φ 6- Φ 8	800	1600*1200*1400
MZLP650	75	700-1000	650	Φ 6- Φ 8	280	1800*1200*1600
MZLP800	110	1000-1500	800	Φ 6- Φ 8	4600	2000*1400*1600
MZLP1000	160	2500-3000	1000	Φ 6- Φ 8	9600	2500*1700*1600

四： The factors which influence the quantity of pellet

1. Different raw material:

1.1 The quality and cubage of raw material: generally the larger cubage and good quality, the higher output of pelletizing.

1.2 Moisture content: If the moisture content is high, it can influence the quantity and quality. When the moisture of raw material is too higher, conditioning will be more difficult, and sometimes it can make the raw material skidded between ring die inner and roller and clog the template. Generally we ask the moisture content of raw material before conditioning is about 13-16%.

*****2. Operating*****

2.1 After conditioning the raw material, the best moisture content is between 15%-16.5%. The most obvious character of best moisture content is when the operator hold in the hand, it will form regiment; while when the operator open your hand, it will disperse and loose. If moisture content of raw material is over 18%, the material is easy to skid between die and roller, the worse result can not make pellet or reduce the output of pelletizing. While if the moisture content of raw material is less 14%, the friction between raw material and machine is stronger which will lead to damage the roller and die, and reduce the output.

2.2 The distance between roller and die has big influence to the quality of pelletizing, the distance is better between 0.1mm and 0.3mm depending on different raw



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material.

When the distance is more than 0.3mm, the raw material on the template is too thick and not even which will lead to decrease the output of wood pellet. When the thickness of raw material on the template is less than 0.1mm, the abrasion between Roller and Template is larger which will damage the Roller and Template to shorten their lives. The general way to judge the good distance between roller and template:

Considering the pelletizing theory of MZLP-200/260 is template rotating while roller fixed, so please start MZLP-200/260 to adjust the Screws of No. 12 on the Clause No.11 Sample Drawing of MZLP-200/260, it is the better situation that the

operator can't hear any noise from the abrasion of template and roller and the raw material can be pressed into the holes of template immediately. While the pelletizing theory of MZLP-300/400 is the roller rotating and the template fixed, so please adjust the screws on the Roller Shaft to turn the roller on the template by hand which will turn sometimes and stop sometimes, the operator can't hear the noise of abrasion between the roller and template.

2.3 There are some small scrap iron and oxide inside the holes of template before using; so it should be used polishing treatment to make the inner of the template holes

smooth and decrease the friction. Please use the following ways to finish the polishing,

firstly it is to drill the holes with steel nail to clean the scrap iron and oxide; secondly it is to smear some grease on the top of the template which will touch the raw material, and adjust the good distance between the roller and template; thirdly please mixed **10% fine sand, 80% biomass saw dust, and 10% wasted gear oil** together, then feed such mixed material into the Pellet Machine to press pellet for 40-60minutes repeatedly till the pellet is gradual loose, and the operator must guarantee 95% holes of template can produce pellet.

2.4. When operating the machine at the first time, the operator should use the raw material which is mixed with 10% oil to be full of all the holes of template during the pressing, then feeding the raw material formally to make our wanted biomass pellet. And when the operator finish one day's pelletizing, please feed the mixed material with 10% oil to fill the holes of template again to guarantee the holes not to be jammed,

and the operators can make a good and full preparation for the next starting without spending more time.

2.5. After the machine running normally, the operator should check the template each week, and drill the jammed holes with steel nail to guarantee **95% holes of template can produce biomass pellet.**

2.6. For the pellet mill which has run for long time, the feeding scraper board is wear out which will increase the feeding volume between the roller and template. The bad



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results are to make the motor overload, the pellet mill stop abnormally, and fire the motor out.

2.7. Once finding the jammed holes over 5% please drill them with steel nail and clean.

To some jammed holes which can't be drilled out, the best way is to put it in a box which is full of gear oil and heat the box, when the operator hear the "PONG" sound, it is ok, and the operator can use the template directly.

2.8. When the friction between the roller and template is smaller, the material is easy to skid, and will decrease the output of biomass pellet. And if the inner of holes on template can be polished well, the raw material will be jammed inside the holes and decrease the output too.

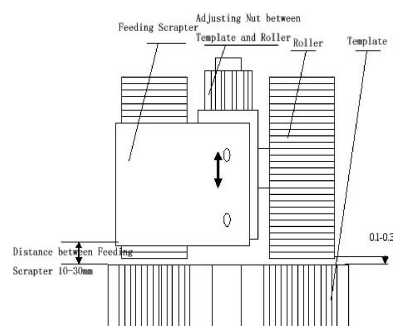
2.9. After adjusting the good distance between the roller and template, the operator should often check the moisture content of feeding material, if it is too high or too low, it will lead to the holes of template jammed. Once the ratio of jammed holes is over 5%,

the operator should stop the machine immediately. It is very dangerous to continue running the pellet mill. Because when the template is clog, the temperature of template will rise with the rotating of roller, it will fire the saw dust and burn the whole inside of pellet mill. So when the operator feeds the raw material into the pellet mill gradually, but there is not pellet or saw dust out within 2 minutes, please stop the feeding, and check the inside of pressing chamber to confirm whether the holes are jammed. When the pellet mill run more than 5minutes in clogging situation, please surely don't open the safe cover of pellet mill, and spray water to low down the temperature to ensure the inside of the pellet mill unfired or the fire is put down.

3. Factors of machinery's installation and the choices of spare parts

3.1 When the diameter of roller is bigger, the angle of pressing area for raw material will be smaller; the raw material is easy to feed into the holes of template, it will increase the output of wood pellet.

3.2 If the Feeding Scraper Board is not fitted well, the raw material will be difficult to feed into the holes of template to lead to the lower output and more powder in the pellet. When the distance between the feeding scraper board and template is bigger which will increase the feeding volume between the roller and template? The bad results are to make the motor overload, the pellet mill stop abnormally, and fire the motor out. **The better distance between the feeding scraper board and template is about 10-30mm.** The feeding scraper board has the intimate relationship with the electrical current, when the distance between the feeding scraper board and template is bigger, the electrical current will be bigger, so the operator can't make the pellet mill overloading.



3.3. Compressing ratio of template is that the diameter of holes on template divides the length of the holes. When the compressing ratio is bigger, the density of the biomass pellet is bigger, while the output of pellet will be less. When the compressing ratio is smaller, the density of the biomass pellet is smaller, while the output of pellet will be bigger. No matter what, different raw material will need different compressing ratio to get the perfect pellet.

3.4 **Knife:** If the knife under the template is close to the template, more powder will be out, and it will affect the capacity. So the knife must be adjusted in proper situation.

3.5 **Roller:** After installing the roller well, the operator should fill the lubricate oil by grease gun inside the rollers.

3.6 **Adjustment on the distance between the roller and template:** Seeing the below picture. *Considering the pelletizing theory of MZLP-200/260 is template rotating while roller fixed, so please start MZLP-200/260 to adjust the Screws of No. 12 on the Clause No.11 Sample Drawing of MZLP-200/260, it is the better situation that the operator can't hear any noise from the abrasion of template and roller and the raw material can be pressed into the holes of template immediately.* While the pelletizing theory of MZLP-300/400 is the roller rotating and the template fixed, so please adjust the screws on the Roller Shaft on clockwise way to turn the roller on the template by hand which will turn sometimes and stop sometimes, the operator can't hear the noise of abrasion between the roller and template.

3.7. **Adjustment on the distance of bearings:** During the running, the bearings are wear out which will enlarge the distance of bearings, as a result the bigger distance will damage the bearings, oil seal and roller shaft. The operator should often check the

bearings. The best way to check whether the distance between the bearings is better is that the rollers can move freely and there is no distance between the bearing and the shaft. When the distance between the bearings is too smaller, the roller will be overheated and damage the bearings. So please surely don't adjust the bearings' distance smaller.

Notices:

The distance between roller and template can not be less than 0.1mm, if the distance



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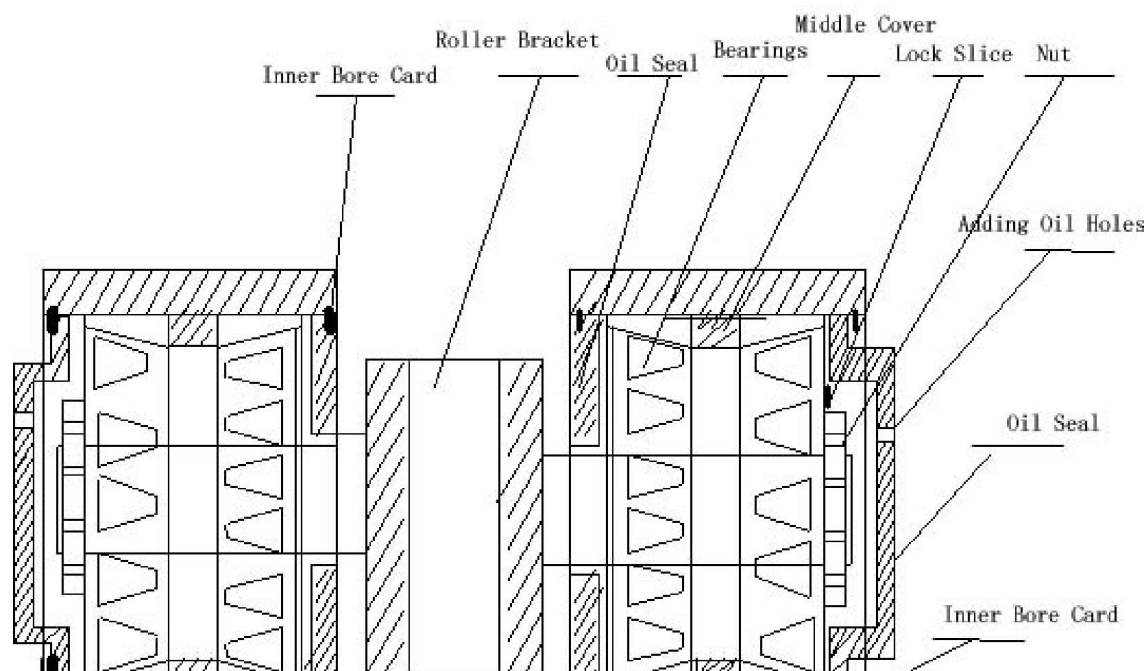
is too small, roller will conflict with the template directly to damage the roller and the template, even damage the machine.

When the operator rotate roller by hand, the operator must cut off the electricity, it is dangerous to touch the running roller and template by hand.

The operator should add the lubricate grease into the roller bearings of Pellet Mill when it runs for 12hours.

To the new Rollers of Pellet Mill or the rollers which is installed with new bearings, the operator can't work with full loading, 50% loading is ok. To the new Pellet Mill, after running for 10 hour with 50% loading, **please open the oil sealing on the rollers, clockwise rotating nuts between roller and bearing to adjust the distance between the bearings. When there is no distance between the bearing and the shaft and the roller can rotate freely, then lock the nut, install the oil seal, start the pellet mill again.** When the flat die pellet mill works for 12 hours, please stop it again and check the distance among the bearings again. Finally, the operators only need to check the distance among bearings after 24 hours running.

3.8. Installing Method of Roller Bearings:



4. Other factors:

4.1. The moisture content is the most critical elements to get good pellet.

4.2 Voltage, electric current and the stability of feeding volume will also affect the output of pellet.

In one word, the operator will meet different problem on the pelletizing process, the operating experience of operators is very important.



2. Electrical board



2.1. Electrical Control Board: 1. Urgent Stop; 2. Voltage Meter; 3. Current Meter, 4. Temperature of Pellet Press C1; 5. Temperature of Motor C2; 6. Power On/Off; 7. Starting; 8. Stop; 9. Power Indicator; 10. Running Indicator; 11. Alarm,

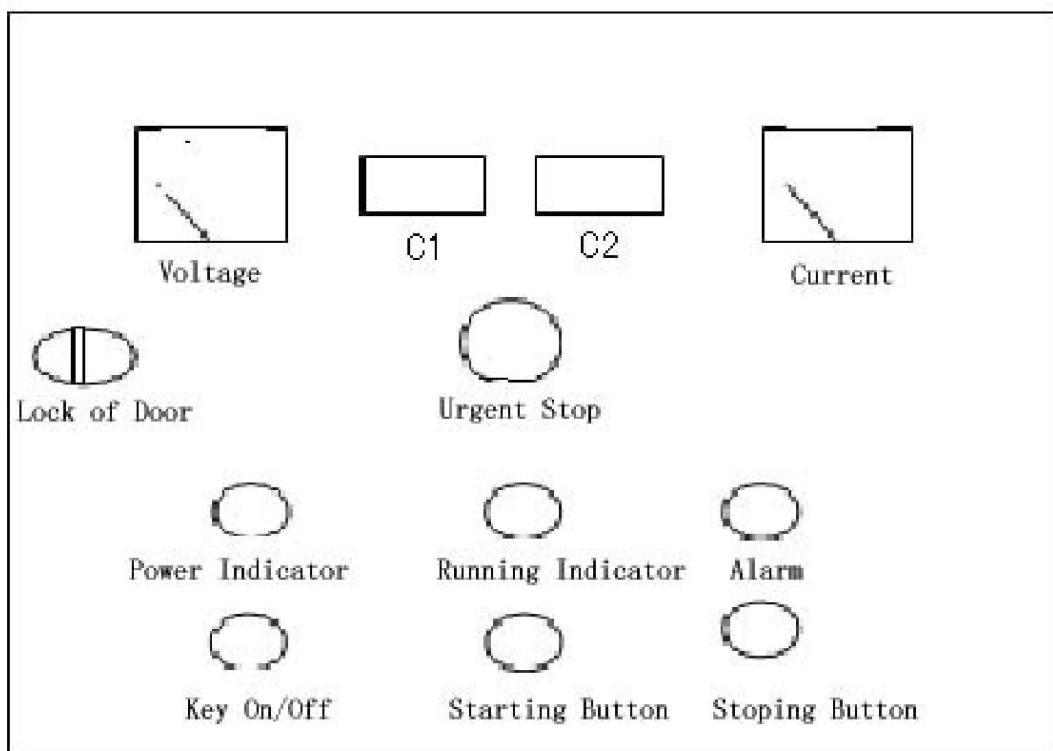


图4

六、Maintenance

1. Oil leveler in the reducer should be checked frequently. 55#65# hyperbola gear oil is preferred. Especially in summer the higher sticky gear oil are recommended; while the watery gear oil is good. After operating 500hours at the first time, gear oil should be all take out and change new oil. The feeding quantity of lubricate should keep accordance with safe oil level. The lubricate oil should feed to the safe oil level at once,

otherwise the machine cannot operate .Generally under the normal running when the pellet plant has worked for 1000hours, lubrication oil should be change with. When change the oil, the operator should take all waste oil out and clean it, then feed new

oil.



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Different feeding quantity of lubricates oil as follows:

2. The operator should always check the ground bolt and connecting bolt, if they are flexible and not stable, please fasten them in time. **Especially please check the nut which adjust the distance between the roller and template each shift.**
3. After one shift's working, please clean the dust on the machine.
4. The operator should check the equipment and change wearing part every half one year or one year. The inspection depends on the running condition.
5. The operator should always check the electrical parts, such as indicator or buttons. If damaged, change it in time.

七、General trouble and eliminating way

Failure symptoms	Reason	Way to solve
1. Difficult to start the motor	1. Low voltage	1. Avoid the peak time of using electricity
	2. The diameter of wire is smaller	2. Change appropriate wire
	3. Starting Autotransformer is too small.	3. Change a bigger one
	4. The fuse is easy to burn down	4. Change fuse
	5. The oil level of gear box is low	5. Add oil
	6. Relay is over-heat or damaged	6. Change new one
2. The motor is too hot	1. The motor runs with two phase	1. Connect broken phase, run with 3 phase
	2. The motor winding and turnoff	2. Check motor
	3. Overload for long time	3. Work under rated load
3.Flat die pellet mill can not make pellet	1. Clog	1. Drill the template through and polish it
	2. High moisture content	2. Drying the material
	3. Dry material	3. Adjust the moisture content
4. The bearing is	1. Too much lubricate	1. Change lubricate



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too hot	grease or little lubricate grease or bad lubricate grease	grease, add oil
	2. Damaged bearing	2. Change new bearing
	3. Axis is bend or rotor is imbalance, long time overload running	3. Make axis be straight, balance rotor, reducing feeding
	4. The material is too dry	4. Increase mixing or water
5. Axis leak oil	1. The oil level is over high	1. Decrease oil level
	2. The oil is too sticky.	2. Change lubricate oil, 55# or 65# hyperbola gear wheel oil are recommended
	3. The running direction of machine is not right	3. Adjust it
	4. Oil seal is damaged	4. Change oil sealing
	5. Bad ventilation of the inner and outer of machine	5. Dredging
6. The life of roller and bearing is too short	1. The quality of bearing is bad	1. Change high quality bearing, choose P5 or more advanced bearing
	2. The bearing of roller is damaged	2. One roller is equipped two bearings, when one bearing damaged, the operator should change the two bearing at one time, don't use old and new bearing together, because the dimension of old and new bearing is different, if use together,



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		it is easy to damage.
	3. The running in period is short for new roller bearing	3. When using the new roller, it need run in the new bearing for more than 48 hours. During running in period, it can't work full-loading; generally it is 1/2-2/3 of normal output. The running in period is useful for prolong the lifespan of bearing.
	4. Wrong model lubricate grease	4. Choose right lubricate grease
	5. Too much lubricate grease in the roller	5. Change roller sealing structure, if the operator use more lubricate, it is easy to leak. The lubricate grease can only load 1/3-1/2 of the bearing volume.
	6. The material has low moisture content	6. Conditioning moisture content, choose appropriate moisture content. Low moisture content make machine overload and rollers over-heating, it will lead to lower output and consume more energy, and it influence the



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		life of roller bearing, and shorten its life.
9. biomass pellet without good density, appearance, short length and more powder	1. The material with high moisture content	1. Dry the material and control the moisture content at best level about 14%-16% of material
	2. The compressive ratio is small	1. Changing higher compressive ratio, the density of biomass pellet can get to around 1.1-1.3 better, good quality and save energy consumption
10. The hardness of biomass pellet is high	1. The material with low moisture content	1. Add moisture content, make humidity better at 14-16%
	2. The compressive ratio is big	2. Change a new template with low compressive ratio, when the density is around 1.1-1.3. The biomass pellet is good quality and perfect energy consumption. If the compressive ratio is too big, it can increase the energy consumption, higher roller temperature and shorten the life of roller and bearing.

八、The condition of installation and fireproofing



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1. Workshop should have good ventilation and light, raw material and final product can not be stored in the workshop. Please keep operation safe and smooth, clean the dust in time, and don't smoke to avoid the dust explosion.

2. Before running the machine for each shift, the operator should check whether the fire protection and fireproofing establishment are safe and workable.

九、Wearing Spare Parts(setting MZLP-400 as example)

Name	Model	Q'ty	Installation Location
Bearing	32228	1	Under the main shaft
	6316	1	Top of the main shaft
	30213	4	Roller
Oil Seal	80*110*12	2	Pellet Press
O Ring	75*3	2	Roller
Template	400		Pellet Press
Shell of Roller		2	Pellet Press
Main Shaft	MZLP400	1	Pellet Press
Roller Bracket	MZLP400	1	Pellet Press
Oil Seal on Roller	MZLP400	4	Pellet Press

十、Order Notify

1. The seller guarantee the new equipment for a period ("warranty period") of 12 months immediately after commissioning, but no later than 18 months after delivery.

2. there is under no circumstances, guarantee provided for defects caused entirely or partially due to the following:

a). Normal wear

b). Non-compliance with the operation and maintenance instructions at normal usage

c). Usage of non-original parts

d). Materials operating procedures being altered under explicit



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instruction form the buyer.

十一、Sample Drawing

This operation manual contains part of technical parameter of pellet machine, we reserve our right to revise the concerning information.

十二、Product Qualified Certificate

The produce is tested up to our grade.

No.: _____

Quality Checker: _____

JINING TIANNONG MACHINERY CO.,LTD

Quality Control Department

Date of checking_____

十三、Clients' advice and feedback

Model and Name of	
Machine	
Order time	
Use life	
Whole estimate	
Main problem and	
suggestion	
Comments and	
suggestion	
Remark	
Company name	
Address and Post	
Code	
Contacting	
Information	

十四、Packing List