

**SCREW OIL PRESS MACHINE**  
**APPLIED FOR □ ZX85**

**MANUAL**

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Thanks for using our products. In order to familiar with the performance of this machine, please read the instruction manual carefully before operation.

### I. Brief Introduction

1. This is a plant oil producing machine, which can process grain type oil material, such as rapeseeds, cotton seeds, beans, peanuts, sesames and tung nuts ect. and tiny grain of wild plant oil materials.
2. Before grinding, the oil materials should be pretreated, for example, cleaned, peeled, broken, crushed, soften and broiled and baked. The requirement of the pretreatment seen in appendix (ii). The quality of pretreatment contributes directly to the performance, longevity, safe production and oil grinding

### II. Main Technical Parameters

ITEM NO.	ITEMS	PARAMETERS
1	Outline dimension	900×400×1200mm
2	Weight	200Kg
3	Motor power	Y132S-4p 5.5 Kw
4	Grinding shaft rotational speed	40-50r/min
5	Production capacity	1.4-2 T/24hrs
6	Reduction gear ratio	$52/16 \times 52/16 = 10.56$

The production capacity refers to the selecting, separating and material pressing equipments are complete and process is reasonable. It means the index reached during normal operation and pressed only once.

### III. Main Structure and Working Principle

This machine is composed of feeder, gearbox, pressing cage, screw shaft and machine stand etc.

#### 1. Feeder:

It is composed of feeder, feeder flange etc.

#### 2. Gear box:

It is composed of gear box, cover, cylinder gear, driving axis, rolling bearing and triangle belt wheel, etc. Oil can be added when the oil adding screw on top of the gear box is discharged. Likewise, oil can be released when the oil release screw on the bottom is removed.

#### 3. Pressing cage:

It is composed of upper and lower pressing cages, roll bar, bar, pressing ring, cake output ring and pressing screws, etc. Both sides of it are linked with gear box and stand. When assembling after discharging the machine, the original sequence must be followed. They must be tightened with pressing screws. The pressing intensity will be more proper when

The pressing ring can worm on during the oil pressing.

4. Screw axis:

It is composed of screw axis, pressing screw, cake guide ring, press nut, adjusting bolt and planar bearing, etc. The bar, pressing ring, cake output ring, cake guide ring are made of quality carbonsteel. After thermal treatment, the surface temperature reaches as high as HRC56-62 with 20# rather fine abrasion resistance. The assembling between the pressing screws must be precise and tightened by fastening nuts to prevent from axis way moving.

5. Stand:

It is composed of base, stand, screw nut. The base is the basic component for the assembling and installation of the entire oil miller. Besides supporting the mother parts, the stand is also a cookie outlet.

**Working principle:** The screw oil miller enforces grinding pressure to the materials by making use of the pushing force of the pressing screw, the turning force of the chamber of grinding roll, the mutual abrasion and pressing between the materials and the charges in the volume of grinding roll, consists of three parts.

1) Compressing force

With the changeable gap between the pressing screw, the material in the pressing chamber will press each other, so the process will produce grinding pressure to the material.

2) Cookie release resistance

The cake guide ring

3) Abrasion resistance

During the grinding, rather great abrasion resistance will grow between the materials and pressing ring, between the bar, the materials and grinding screw and between materials. The heat resulted from this will help improve the thermal change of protein in the materials, damage the colloids, improve plasticity, reduce the viscosity of oil and improve pressing effects.

#### IV. Installation

This machine should be fastened to the ground with ground bolts, the machine should keep horizontal.

#### V. Application

##### i. Preparation before operation new machine

1. Because of the transport and stock, the new machine should be cleaned before using it. Clean away the rustproof coating, pull the screw shaft out of the press cage, disassemble the top cage, use the sand-cloth to buff the surface of the worms and the inside surface of the pressing ring then reset them.
2. Add NO.32 machine oil or gear oil into the gearbox till to the oil gauge, also check other lubricated parts and add lubrication oil.
3. Check and adjust the tightness of the belt. Hand turn the triangle belt wheel so as to make it rotate over 8 turns, check if there is any blocking, meanwhile check if the gears mate is normal.
4. Loose the cookie outlet to prevent blocking. Do it as follow: Counter clock wise rotation

- the adjusting ring, until the cake guide ring touch the cake output ring, then clockwise rotation the adjusting ring for about 4-5 turns.
5. Milling the new machine in order to let material goes more smoothly, and so do oil releasing and cookie forming. Milling is the promise for new oil press machine operation normally.
  6. The milling method: Add evenly 10% water to dull cookie pieces, then put them to mill again and again. At the beginning, add the pieces into the feeder slowly, meanwhile, observe if the cookie outlet release cookie, and adjust the gap between cake guide ring and cake output ring timely. Because the dull cookie pieces will reduce the water during pressing, so should add the water to it properly. The screw shaft will be blocked because of the material blocking, the sudden feeding of material and the too small gap between the cake guide ring and cake output ring. If the screw shaft is blocked, should stop the machine immediately, clean the chamber then go on milling. At normal situation, the machine after milling can form the cookie successfully and the cookie is tile like. It means the milling is finished. Milling is the promise for new oil press machine operation normally. After cleaning the machine, check if each part is abnormal. Start to operate when everything is normal.

## ii. Normal running

1. In normal production, use the dull cookie pieces to mill to preheat the machine before pressing (do as milling), until the surface of pressing cage is hot. Put the preheated oil materials into feeder then start pressing. The pressing temperature is 120-135°C, the oil material water content percentage is 2.5-4% or so. When starting pressing, the feeding of materials should not be too hard, otherwise the chamber is easy to jam and bear no oil. With the rise of temperature in the chamber, the inserting of materials can be increased progressively.
2. Turn and adjust the screw slowly reduce the thickness of cookies, the cookie thickness is usually between 1.5-2mm or so, when the oil outlet is normal, tighten the tight nut. After the oil miller is normally running, select the broken cookies that were first milled with rather rich oil and evenly mix them into the oil materials to be broiled, baked and milled again. During normal running, the feed must be even, never too much or little, or it may influence the oil output and longevity of oil miller.
3. Pay attention to the cookie release state, when normal, the cookie is tile like and the side near the pressing worm is smooth, while there are a few small screases on the other side. They will become hardened once fallen down. There is no oil stain nor burned odor on the surface. If the water content of the oil material is too much, the cookie will be soft and fragile; otherwise, the cookie will be shapeless, but rather like powder with rather deep color and burned odor.
4. Observe oil outlet. When normally run, the oil outlet position of those plant oil materials containing high ratio of oil will gather around the bar. In the pressing ring near the bar also flows little oil. The oil color is neat. If the water content of the oil material to be pressed is too much or too little, the oil left in the cookie will be increase and the oil outlet will be muddy with the increasing foam.
5. Before stopping the oil miller, first stop feeding and loosen the cookie outlet, then feed little cookie or raw material to kick the well done ones out of the chamber. Then

the machine can be stopped. After stop, pull the screw shaft out of the pressing cage, clean away the material that was left in the chamber. Doing this can avoid the well-done material's hardening in the chamber and breaking of screw shaft and explosion of cage, etc.

6. If the machine is out of electric suddenly during running, should pull the screw shaft out of the pressing cage timely and clean the chamber.

7. Note to users: when pressing the high oil content material (such as tea seeds, cypress seeds), since its oil outlet is great, the pressing gaps of the grinding bars should be widened meanwhile, and also can increase the rotation of screw shaft. The working handling the miller should be trained for a certain period before independent operation.

### iii. Maintenance

1. Frequently check if each moving parts is abnormal, check if the fastening parts are in good station, if the oil supply of each lubrication part is sufficient.

2. With serious abrasion, those fragile parts, like pressing worms, pressing rings, bars, cake guide ring and cake output ring etc. must influence the oil pressing effect, therefore, those parts should be altered timely. There are something need to explain: when change the pressing screw, should change it very few, it is better don't change all worms at the same time; when change the pressing ring, don't change it together with the pressing worms at the same time. When the bar is worn, turn the bar for 180°C, and it can be used again by rearrangement. During alteration, don't change the cake guide ring and cake output ring at the same time. Do not change too many fragile parts at the same time, otherwise the machine need mill again.

3. Regular repair: rough check once a month, ordinary check twice a year and big check once a year. During repair, the lubrication in the gearbox should be changed timely, and add lubrication properly to each lubrication part.

4. Clean the machine regularly. Keep it clean and tidy.

## VI. Lubrication System

Lubricating part	Lubricating style and quantity	Lubricating cycle
Gearbox	Machine oil or gear oil (till to the oil gauge)	Once a year
Adjusting bolt oil cup	Plant oil (properly)	1-2 times each shift
Each rolling bearing	Consistent lubricant (2/3 of bearing)	Once a year

Note: 1. When choose the plant oil as lubricant, it should be the same kind plant with oil material

2. Tung oil is not proper as the lubricant

## VII. Assemble and Disassemble of Main parts

Note: Before disassemble the miller, the user should read the manual diagram contrasting with the material object. Make sure to assemble the parts follow the original sequence.

**i. Assemble and disassemble of screw shaft(see appendix 4:structure diagram of screw shaft).**

When disassemble of screw shaft that has pressed already should disassemble the screw shaft when it is hot after it stop running. If the shaft is cool already, should heat the screw parts. The method of disassemble is: First rotate down the end nut of the shaft, pull out the adjusting bolt, loose the press nut that is left-hand screw threaa with spanner. After heat the screws part(temperature should be not high than 150℃), the screws will be pull down easily. During the process, it is prohibited to beat the worms with iron bar, or the worms will be destroyed. The screw should be cleaned before assemble them, The original sequence should be followed. Please note the following: two thrust bearings 51207 should be buricated, and the bigger inner whole of bearing should be put to adjusting bolt. Keep a considerable gap between thick and the other side of bearing 51207 after combining the thick and thin nuts that on the end of screw shaft, to promise that adjusting bolt can rotate easily, but not the shaft move.

**ii. Assemble and disassemble of pressing cage(see appendix4: structure diagram of pressing cage)**

1. Disassemble of pressing cage: after pull the screw shaft out of pressing cage, rotate the pressing bolt so that the pressing cage will be loosed. Pull down the four pieces of bolt M14 connecting the top and bottom cage, loose the four bolts that are on two sides of bottom cage for several turns and so do the four bolts M12 of base and rack. Meanwhile the top cage can be disassembled, the pressing rings and roll bar can be taken out.

2. Disassemble of roll bar parts: Put mat bade under the roll bar so that the space under bar is empty. Use the hammer to ham down one of the pressing bar, than the other will pull down antomatically.

Assemble of roll bar parts: Clean the internal space of roll bar and surface of bars. Put the roll bar on level ground, then, put the bars into roll bar orderly, and the solts should towards to one direction. The last one of pressing bar s can be hammered into the roll bar. The tightness of bars should depend on the oil material. It can be adjusted by different kinds of thickness iron plates(the length of iron plate is the same with bar). Observe from the side of roll bar after assembling, it is a regular polygon; use hand feel the inner of the roll bar is no protrusion.

3. Assemble of pressing rings(see appendix4: Structure diagram of pressing cage and pressing rings)

The same number pressing ring can be exchangeable using, the side of solt of all pressing rings towards rack side.

4. Assemble of pressing cage: After assemble the roll bar parts and pressing rings, pre-tight the pressing bolt, not too hard. Assemble the top cage, tight the bolt that connects the top and bottom cage, use the spanner to tight the pressing bolt, meanwhile, beat the pressing ring with hammer softly to make the pressing ring close the inner side of pressing cage(the pressing rings can move on during the oil pressing). Then, tight all fastening bolts of top and bottom from middle to two sides of pressing cage. Then tight the bolts of top cage, gearbox and rack orderly. Last, tight the four M12 fastening bolts of rack and base. The assembling of pressing cage parts is finished.

### **iii. Assemble and disassemble of gearbox (see appendix4: structure diagram of gear-box)**

Take the complete disassemble of gearbox for example: pull down the oil seal, take a container to contain the machine oil that release from the gearbox, pull down all the bearing end cover, loose down all the fastening bolts of gearbox body and gear box cover, open the gearbox cover, take out the big gear(52 teeth) and bearing, the gearbox major and minor shaft that be beat out of the gearbox with hammer and sleeve.

The order of assemble is opposite with the order of disassemble, after finish assembling, should add machine oil to gearbox.

## **VIII. Safe production and information**

1. Operator of the machine must have known the knowledge of mechanical safety. Electrical parts shoule be installed by experts.
2. When installing the miller, the belt wheel should be installed near the wall or the place that people do not pass.
3. The exposed runing V-belt and the connecting belt must be covered all time to prevent from contacting human body. The device is not provided. The user should self-made.
4. It is prohibited to open the cover of the pressing cage for observation when the machine is operating. The oil is in very high temperature.
5. Operator cannot weat skirt or fat clothes. Longhair operator must tighten and cycle the long hair around head to prevent it from dripping, it is prohibited to touch ant running part of the machine with anybody part when it is working. People under alcoholic effect, or not in healthy condition, or under circumstances prone to safety violation are not allowed to operator.
6. When adjusting the tension pulley, the machine must be stopped.
7. The operator should not leave away when the machine is running.
8. Hard things, like iron blockes must not enter the clamber. No iron bar should be insetred into the feeder.



9. After the coolie is cool then can pack or stack it, or it will self-fire because of the high temperature.

## IX. Appendix

### i . Attachment with machine

one nut fastened spanner

one triangle motor belt wheel

one manual for oil milling machine

one certificate

### ii. The pretreatment requirement of various oil materials

ITEM VARIETY	SHELL VOLUME (%)	BREAKING		CRUSHINGSHELL		GRINDING MOISTURE (%)	GRINDING TEMPERATURE (°C)
		SHELL VOLUME IN KERNEL (%)	KERNEL VOLUME IN SHELL (%)	CRUSHINGS SHELL RATE (%)	FLOUR DEGREE (%)		
RAPE SEED	<0.5			>85	<5	1.5-2.5	120-130
COTTON SEED	<0.5	10-20	0.5			2-2.5	120-125
TEA SEED	<0.5	10-20	0.5			3.5-4	115-120
SHELLED PEANUTS	<0.5	<0.5				1.5-2	125-128
PARK WAX	<0.5					0.5-1	135-140
ZI-SEED	<0.5					2-2.5	100-110
TUNG SEED	<0.5					2-2.5	80-85
SOYBEAN	<0.5					1.5-2.5	125-128

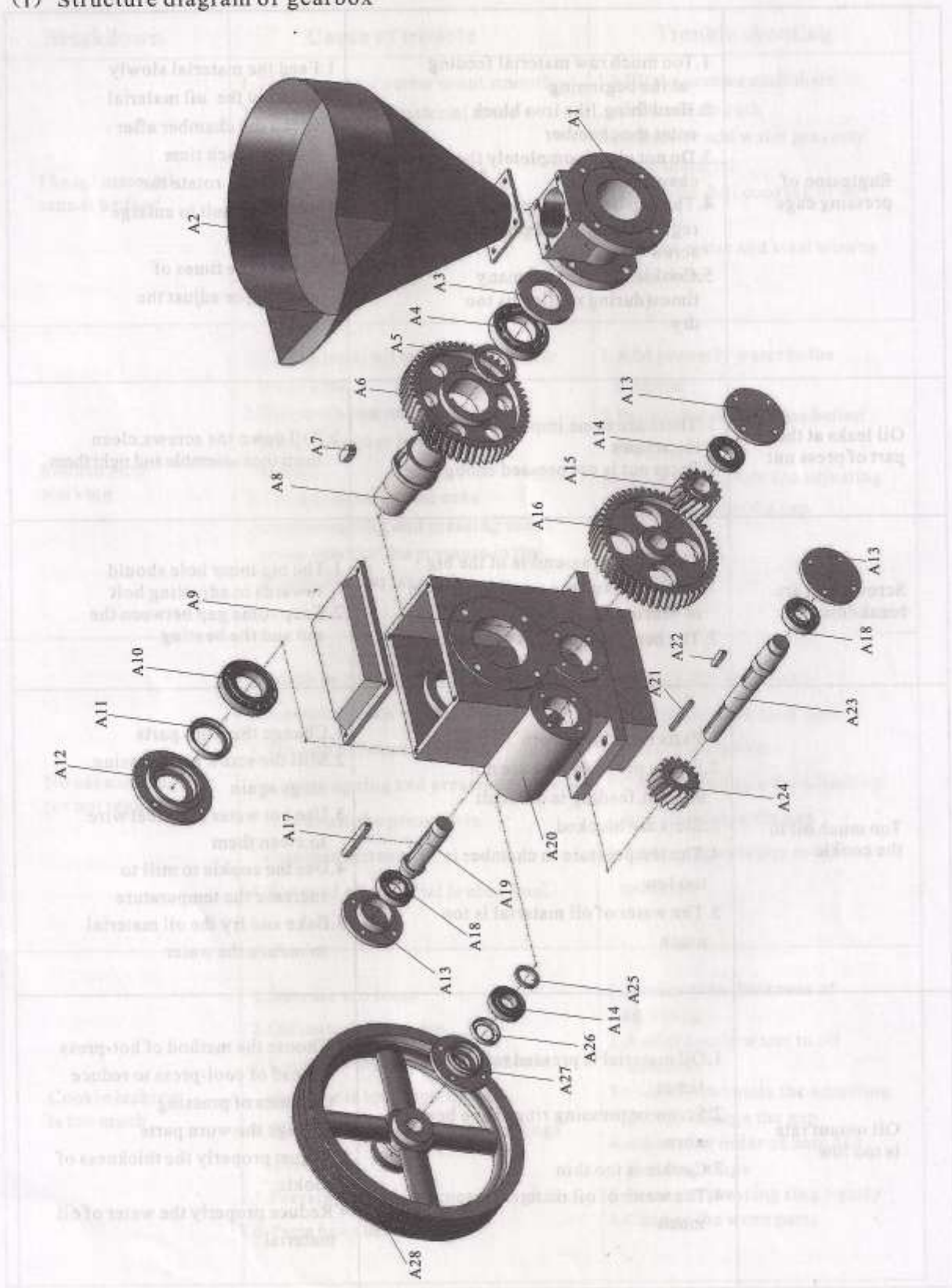
### iii . Breakdown and the Methods of Removal

Breakdown	Cause of trouble	Trouble shooting
The oil material cannot be feed	<ol style="list-style-type: none"> <li>1.The surface of screw is not smooth</li> <li>2.The water of oil material is too much or too little</li> <li>3.Raw material has too much capacity of oil</li> <li>4.The slot of bar and pressing ring is blocked</li> </ol>	<ol style="list-style-type: none"> <li>1.Mill the screws until their surface is smooth</li> <li>2.Reduce or add water properly to the material</li> <li>3.Add some dull cooking of the material</li> <li>4.Use hot water and steel wire to clean them</li> </ol>
Sudden stop working	<ol style="list-style-type: none"> <li>1.The water of oil material or cookie is too little</li> <li>2.Too much raw material feed in before chamber being heated enough</li> <li>3.The gap between the cake regulating ring and pressing screw is too small or the pressure in the chamber is too lanrge</li> </ol>	<ol style="list-style-type: none"> <li>1.Add properly water to the material</li> <li>2.Pre-heated the machine before feeding</li> <li>3.Clock wise rotate the adjusting bolt to enlarge the gap</li> </ol>
No cake output (or not regular)	<ol style="list-style-type: none"> <li>1.Screw or pressing rings are worn</li> <li>2.Screws are new</li> <li>3.The gap between the cake regulating ring and pressing screw is to small,the pressure in chamber increased</li> <li>4.Water of oil material is abnormal</li> </ol>	<ol style="list-style-type: none"> <li>1.Change the worn parts</li> <li>2.Mill the screws until their surface is smooth</li> <li>3.Clockwise rotate the adjusting bolt to enlarge the gap</li> <li>4.Add properly water to oil material</li> </ol>
Cookie leaking is too much	<ol style="list-style-type: none"> <li>1.Bars are too loose</li> <li>2.Oil material is to dry</li> <li>3.Cookie is too thin,the pressure in chamber is too large</li> <li>4.The slot of bars and pressing rings is too deep</li> <li>5.Pressing ring is not pressed tightil</li> <li>6.Parts have been worn</li> </ol>	<ol style="list-style-type: none"> <li>1.Increase the thickness of adjusting</li> <li>2.Add properly water to oil material</li> <li>3.Clock wise rotate the adjusting bolt to enlarge the gap</li> <li>4.Adjust the order of bars and pressing rings</li> <li>5.Press the pressing ring tightly</li> <li>6.Change the worn parts</li> </ol>

<p>Explosion of pressing cage</p>	<ol style="list-style-type: none"> <li>1. Too much raw material feeding at the beginning</li> <li>2. Hard thing, like iron block enter the chamber</li> <li>3. Do not clean completely the chamber</li> <li>4. The gap between the cake regulating ring and pressing screw is too small.</li> <li>5. Cookie that pressed many times (during milling) is too dry</li> </ol>	<ol style="list-style-type: none"> <li>1. Feed the material slowly</li> <li>2. Take out the oil material</li> <li>3. Clean the chamber after running each time</li> <li>4. Clock wise rotate the adjusting bolt to enlarge the gap</li> <li>5. Reduce the times of pressing or adjust the water</li> </ol>
<p>Oil leaks at the part of press nut</p>	<ol style="list-style-type: none"> <li>1. There are some impurity between the screws</li> <li>2. Press nut is not pressed enough</li> </ol>	<ol style="list-style-type: none"> <li>1. Pull down the screws, clean them then assemble and tight them</li> </ol>
<p>Screw shaft are breakdown</p>	<ol style="list-style-type: none"> <li>1. The order of assemble of the big inner hole and the small inner hole of bearing is missed</li> <li>2. The bearing nut press too tight</li> </ol>	<ol style="list-style-type: none"> <li>1. The big inner hole should towards to adjusting bolt</li> <li>2. Keep some gap between the nut and the bearing</li> </ol>
<p>Too much oil in the cookie</p>	<ol style="list-style-type: none"> <li>1. Parts have been worn</li> <li>2. Screw, pressing ring are not smooth, feeding is difficult</li> <li>3. Slots are blocked</li> <li>4. The temperature in chamber is too low</li> <li>5. The water of oil material is too much</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the worn parts</li> <li>2. Mill the screw and pressing rings again</li> <li>3. Use hot water and steel wire to clean them</li> <li>4. Use the cookie to mill to increase the temperature</li> <li>5. Bake and fry the oil material to reduce the water</li> </ol>
<p>Oil output rate is too low</p>	<ol style="list-style-type: none"> <li>1. Oil material is pressed too many times</li> <li>2. Screw or pressing rings have been worn</li> <li>3. Cookie is too thin</li> <li>4. The water of oil material is too much</li> </ol>	<ol style="list-style-type: none"> <li>1. Choose the method of hot-press instead of cool-press to reduce the times of pressing</li> <li>2. Change the worn parts</li> <li>3. Adjust properly the thickness of cookie</li> <li>4. Reduce properly the water of oil material</li> </ol>

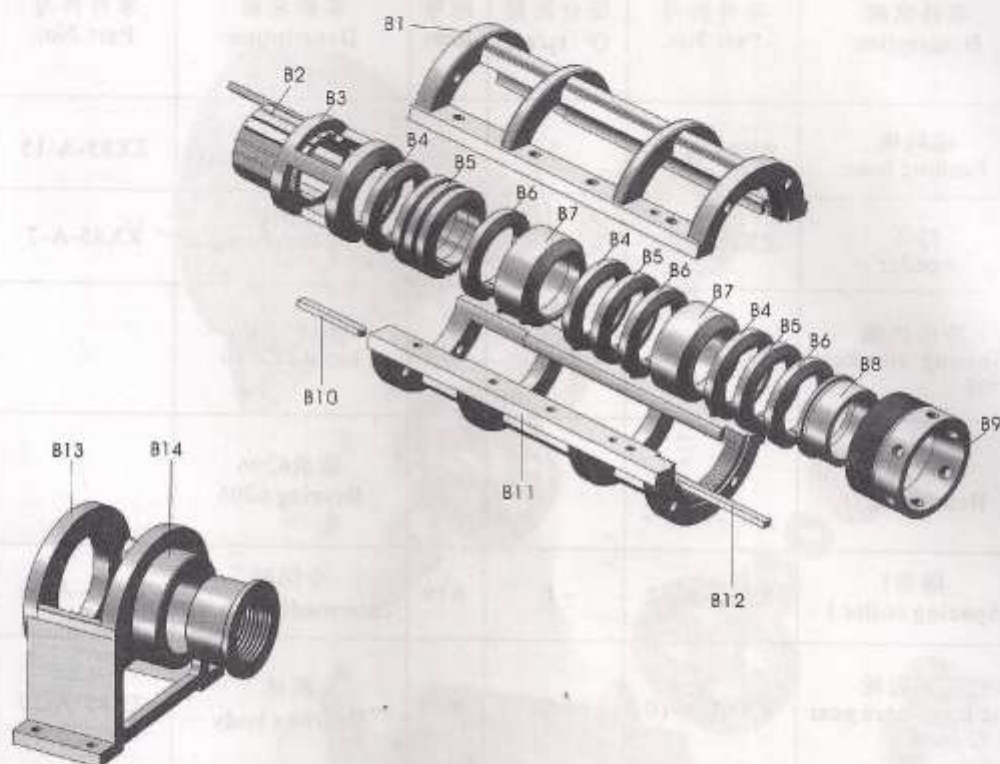
#### iv. Structure Diagram of Main Parts (Fragile Parts)

##### (i) Structure diagram of gearbox



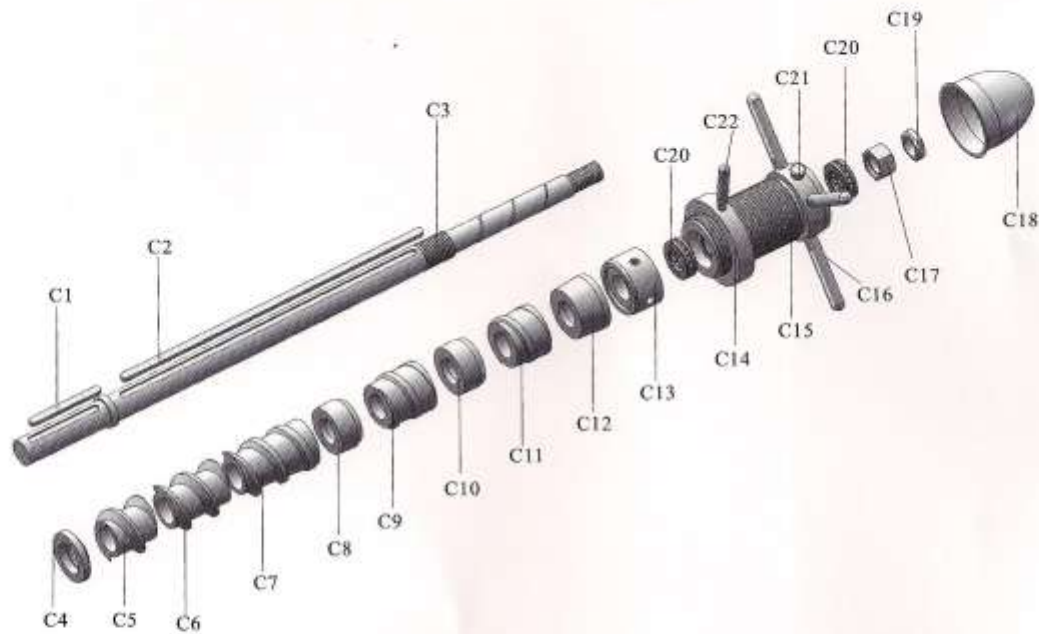
标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set	标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set
A1	进料座 Feeding base	ZX85-A-14	1	A15	长16牙齿轮 Long gear 16teeth	ZX85-A-15	1
A2	料斗 Feeder	ZX85-A-18	1	A16	小孔52牙齿轮 Small inner bore gear 52teeth	ZX85-A-7	1
A3	轴承挡圈 Bearing strinker ring	ZX85-A-13	1	A17	键A12×90 key A12×90	/	1
A4	轴承6211 Bearing 6211	/	1	A18	轴承6206 Bearing 6206	/	2
A5	隔套1 Spacing collar 1	ZX85-A-12	1	A19	中间轴 Intermediate shaft	ZX85-A-06	1
A6	大孔52牙齿轮 Big inner bore gear (52 teeth)	ZX85-A-10	1	A20	箱体 Gearbox body	ZX85-A-17	1
A7	键A16×35 key A16×35	/	1	A21	键C8×85 key C8×85	/	1
A8	从动轴 Driven gear axis	ZX85-A-09	1	A22	键A10×40 Key A10×40	/	1
A9	箱盖 Gearbox cover	ZX85-A-11	1	A23	主动轴 Active gear axis	ZX85-A-16	1
A10	轴承 30211 Bearing 30211	/	1	A24	短16牙齿轮 Short gear 16teeth	ZX85-A-01	1
A11	油封75×55×10 Oil seal 75×55×10	/	1	A25	隔套2 Spacing collar 2	ZX85-A-02	1
A12	大压盖 Big gland	ZX85-A-08	1	A26	油封50×30×10 Oil seal 50×30×10	/	1
A13	无孔压盖 Gland	ZX85-A-05	3	A27	有孔压盖 Gland with hole	ZX85-A-04	3
A14	轴承 7206 Bearing 7206	/	2	A28	三角带轮 Triangular belt wheel	ZX85-A-03	2

(ii) Structure diagram of pressing cage and stand



标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set	标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set
B1	上榨笼 Top cage	ZX85-B-01	1	B8	出饼圈 Cake output ring	ZX85-B-09	1
B2	条排 Pressing Bar	ZX85-B-02	1	B9	压紧螺丝 Pressing bolt	ZX85-B-08	1
B3	条排骨圈 Rails group ring	ZX85-B-03	1	B10	键C12×100 key C12×100	/	1
B4	1#圆排(进料) Pressing ring No. 1(feeder)	ZX85-B-04	3	B11	下榨笼 Bottom cage	ZX85-B-10	1
B5	2#圆排(普通) Pressing ring No. 2(common)	ZX85-B-05	5	B12	键B12×300 key B12×300	/	1
B6	3#圆排(出料) Pressing ring No. 3(outlet)	ZX85-B-06	3	B13	机架 Stand	ZX85-B-11	1
B7	4#圆排 Pressing ring No. 4	ZX85-B-07	2	B14	螺套 Screw nut	ZX85-B-12	1

(iii) Structure diagram of screw axis



标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set	标号 Item	零件名称 Description	零件件号 Part No.	每台数量 Q' ty/set
C1	短平键 Short flat key	/	1	C12	出渣头 Cake guide ring	ZX85-C-10	1
C2	长平键 Long flat key	/	1	C13	锁紧螺丝 Check nut	ZX85-C-11	1
C3	螺旋轴 Screw shaft	ZX85-C-01	1	C14	紧定螺母 Tight nut	ZX85-C-17	1
C4	垫圈 Intermediate collar	ZX85-C-02	1	C15	调节螺丝 Adjusting bolt	ZX85-C-12	1
C5	1#榨螺 Worm No.1	ZX85-C-03	1	C16	大手柄 Big handle	ZX85-C-16	4
C6	2#榨螺 Worm No.2	ZX85-C-04	1	C17	端螺母1 End nut 1	ZX85-C-15-1	1
C7	3#榨螺 Worm No.3	ZX85-C-05	1	C18	防护罩 Safe cover	ZX85-C-18	1
C8	4#榨螺 Worm No.4	ZX85-C-06	1	C19	端螺母2 End nut 2	ZX85-C-15-2	1
C9	5#榨螺 Worm No.5	ZX85-C-07	1	C20	轴承 51311 Bearing 51311	/	2
C10	6#榨螺 Worm No.6	ZX85-C-08	1	C21	油杯 Oil cup	/	1
C11	7#榨螺 Worm No.7	ZX85-C-09	1	C22	小手柄 Small handle	ZX85-C-13	1