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# **NILSAN PRIME INDIA PVT.LTD.**

## **NS 10000**

### **Automatic Temperature Controlled Combined Oil Press Instruction**

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## I .Summary

The NS 10000 series automatic temperature controlling combined oil press made by our company are suitable for squeezing vegetable oil from rapeseed, cottonseed, soybean, shelled peanut, flax seed, Mustard, sunflower seed and palm kernel, etc. The product has characteristics of small investment, big capacity, strong oil material compatibility, auto feeding and high oil output, etc. It is widely used in middle & small oil refinery and rural enterprise.

The series NS 10000 automatic temperature controlling combined oil press is developed on the basis of the single machine to meet the market demands. The function of auto-heating the press cage has replaced the traditional way by squeezing residue cake, which could shorten the preparation work, reduce the energy consumption and abrasion, thus lengthen the durability. When the squeezing is suspended, the temperature can be maintained by this system. In the meanwhile, this machine was added with filtration function. The crude oil discharged from the press cage will directly be filtrated by the vacuum filtration system. The structure of this combined oil press is compact, only requires a small working place and saves labor. It is ideal equipment for medium or small oil refinery and enterprise, especially suitable for processing material supplied by clients in rural area.

NS 10000 is two step pressing spiral oil press. In addition, the gears of oil press have been updated to bevel gears. The tooth has good meshing performance, large coincidence degree and improved carrying capacity,

so that the speed reduction mechanism can drive smoothly, reduce noise and prolong the service life of the gear.

Above mentioned models do not have cake cracking device. Machine of model number with S has cake crack device.

## II. Main technique features

### 1. The main features

Below features (Table 1) are based on oil plants with above average quality smoothly and continuously squeezed after good pretreatments, such as screening, husking, flaking and cooking, etc.

Table 1 Main technique features

<i>Oil Plants</i>	<i>Processing Capacity(t/24h)</i>	<i>Oil content of Dry cakes (%)</i>	<i>Oil yield(%)</i>	<i>Power consumption(k.W.h/t)</i>
Rapeseed	$\geq 9.0$	$\leq 7.6$	$\geq 82$	$\leq 40.0$
Cotton seeds	$\geq 9.0$	$\leq 6.8$	$\geq 77$	-
Soybean	$\geq 8.0$	$\leq 6.5$	$\geq 67$	$\leq 56.0$
Groundnut	$\geq 9.0$	$\leq 6.5$	$\geq 92.3$	$\leq 39.0$

#### **Note:**

① It is normal that sometimes the actual results may be a little different from those in the index (table 1), for the oil plant's type, quality and original content may be different in different areas.

② The day capacity (t/24h) is based on using hot way to squeeze one time. If use cold way to squeezing two or three times, the day capacity will be 1/2 or 1/3 time less accordingly. The more the squeeze times are, the lower the date capacity is.

### 2. Technical specification

Table 2 Technique specification

Items	NS 10000	REMARKS
Revolving speed of spiral axis (r/min)	32-44	
Power of main electromotor (kW)	18.5 OR 22	4 pole electromotor
Power of oil filter (kW)	2.2	4 pole electromotor
Power for temperature controlling (kW)	$\geq 3$	
Measurement (mm)	2100×1610×2010	L ×W×H
Weight(kg)	1410	With feeding

### **III. Structure and working principle**

#### **1. Structure**

The automatic temperature controlled combined oil press is built up with electricity controlling part, auto heating and squeezing system, transmission part, vacuum filtrating system and machine pedestal (refer Fig. 1).

The electric controlling department mainly consists of air switch, AC contactor, thermal relay, automatic heating and temperature controlled unit, knob switch and controlling button part, etc.( See Fig. 6 electric controlling device).

The auto heating and squeezing department mainly consists of electric heating parts, squeeze cage part and squeeze spiral part etc.

The transmission part includes electromotor, triangle belt and deceleration box, etc.

The vacuum filtration department mainly consists of electromotor, vacuum pump, oil and gas separator urn, oil filter tank, valves, vacuum pipes etc. (See Fig. 5)

#### **2. Working principle**

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Transferred through the triangle belt and decelerated through the deceleration part, the electromotor drives the spiral. The oil plants falls to the first section of the spirals through the feeding part and carried forward toward the direction for cake out along with the rotating squeeze spirals. As the space between the squeeze spirals are getting smaller, the oil plants are squeezed and the pressure in the press cage is getting bigger. The oil plants fractions with each other and in the same time the oil plants fractions with the spirals and squeeze loops. During this process, the oil plants are smashed and generate big amount of heat, the tissue cells are destroyed and the oil is separated from the oil plants and discharged from the squeeze bars and the oil grooves on the squeeze loops. This is the whole squeezing process. The oil plants turns to be cake containing low oil after the oil is extracted out and discharged in thin slices from the circle space between the cake adjuster and the loop for cake out. The oil extracted from the oil plants gathered on the top part of the filtration vat. The vacuum pump extracted the air in the vat and forms negative pressure in the vat. Then the oil is absorbed in the vat and the residue is left on the filtration cloth. When the oil in the vat reaches a certain quantity, it can be released (oil in the vat can not exceed the top level of the observer, otherwise will affect the filtration effect.) The two vacuum vats alternatively work, so the oil press can continuously work.

#### **IV. Installation of oil press**

The oil press should be mounted on the flat platform, and adjusted to horizontal level. After the oil press placed to horizontal level, adjust the vats to horizontal level.

For convenient operation and maintenances, leave enough space around the oil press.

After the oil press is installed, install ground electrode to avoid electric accident.

#### **V. Maintenance and lubrication**

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## **1. Maintenance**

① Before running the machine, be sure to tighten the bolts and nuts to avoid the components getting loose.

② Check if the power source and the size of the lead wire meet the electro-motor's requirement, and make sure the rotating direction is the same as that indicated on the sign plate.

③ Must clear out the residue in the press cage after finishing squeezing, in order to avoid any fault happening when run the machine next time.

④ To guarantee the machine's service-life, lubricate the machine as required below.

## **2. Lubrication**

In order not to pollute the oil plants and the cakes, the lubrication points 2 and 3 (refer to the table below) should be filled with squeezed vegetable oil, but the tung seed oil can't be taken as lubricant. The deceleration part should be filled with 8-9 kilograms of N32# machinery lubricant. It is forbidden to start the machine without feeding lubricant, or will damage the gears and the bearings.

Table 4 Categories of lubricant

No.	Lubrication Part	Categories	Add Period	Change period
1	Deceleration gear	N32# machinery lubricant	7~8 kg each time	Every 6 month
2	Umbrella gear (90Ytype)	Plant oil	1-2 times each shift	
3	Adjusting bolt cover	Plant oil	1-2 times each shift	
4	Each rolling	Grease		Annually

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	bearing			
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## **VI. Adjustment and operation**

### **1. Preparation before starting**

① After the oil press installed, lubricate the machine as required above, check if all the parts are fastened. The cake adjuster should be nimble and the feeding plate should be nimble and reliable.

② Check and adjust the belt.

③ Loosen the lock nut, turn the handle counter-clockwise to make the cake adjuster touch the cake loop, then rotate the handle clockwise by 4-5 circles to make the cake adjuster leave the cake circle, then lock it with lock nut.

④ Start the electromotor; make sure the spiral axis's rotating direction follows the direction indicated on the deceleration box. Check if the working parts are in normal operation. Make sure the press chest is smooth, no abnormal noise and debris stuck the press cage. Fix it in time if any problem. And then let the oil press idle (without feeding) generally for half an hour. During this period, pay attention to the sound of oil press and the temperature of the bearing parts. Shutdown the machine in time when there's any problem.

### **2. Pretreatment of oil plants**

The oil plants should be pretreated before pressing. The quality of the pretreatment directly affects the oil press's performance, service life and safety, as well as the oil quality and oil yield efficiency.

Pretreatment generally includes:

① Screening and cleaning: get rid of the silt, gravel and metal, etc. Not well screened oil plants will speed up machine's abrasion, or even damage the machine and decrease the oil yield efficiency.

②Husking and separation of shell and kernel: in order to exert the machine's productivity and reduce oil loss, peanut, tung oil seed, cotton seed, tea seed and other oil plants with shells should be husked first and then the shells and kernels should be separated.

③Smashing: normally rapeseed and soybean could be squeezed in whole pieces. But the smashed rapeseed and soybean could achieve higher oil yield efficiency. Other oil plants after smashed also could achieve higher squeeze effect.

④Cooking (steaming and frying): good cooking result is the key point to achieve higher oil yield efficiency. The moisture and squeeze temperature can be controlled by cooking. Customer could select proper cooking equipment

⑤ Table 5 Moisture and temperature of oil plants for reference

Items	Rapeseed	Groundnut	Cotton seed	Soybean (hot pressing)	Soybean (cold pressing)
Moisture (%)	1.5~2.5	1.5~2.5	2~2.5	1.5~2.5	8~10
Temp. (°C)	130-135	125-135	125-128	115-125	Normal temp.

### **3. Operation points**

① Sufficiently high temperature in the press chest is significant for the output and the oil yield efficiency. The pressure can not be formed in the press cage without sufficient temperature, the cake can't be formed and the oil output will be affected. In order to raise the temperature, a process called "warm up the press cage" should be done. The operation is: set up a required degree on the temperature controlled instrument (between 120~150°C according to different oil plants), turn the switch of heating, at this time the green light is on while the red light is off. When the temperature of the press cage reaches the degree set up,



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the red light is on while the green light is off. After that, the green light will be alternatively on and off. It is the temperature control instrument is automatically controlling the press cage's temperature. It is normal phenomenon.

After the temperature gets up, feed oil plants into the feed hopper directly if use cold pressing (note: feeding slowly, add feeding quantity gradually only when the feeding and cake comes out normally). If use hot pressing, the oil plants should be fried which called "frying oil plants". The frying results directly affect the oil yield efficiency, oil quality and cake quality. If the seeds contain high moisture, the pressure in the press chest will be abnormal. The oil will have foam and light color. The cake will be soft and large. The cake surface will have oil stains. If the moisture is too low; the oil plants will be powdery and even become scorched to block the press chest. Normal pressure also could not be formed. The oil will be muddy and have deep color. The cakes will be crisp (no shape) and with crinkle on the back. The cake color will be dark and black. The cake may have a smell of scorching.

② Revolve the adjusting bolt clockwise by 4-5 circles to enlarge the space between the cake adjuster and the cake circle. Feed the fried oil plants slowly and evenly into the hopper. Only start to press until the oil plants transferred smoothly.

③ Revolve the adjusting bolt clockwise by 4-5 circles to enlarge the space between the cake adjuster and the cake circle. Turn the adjusting bolt counter-clockwise to adjust the cake's thickness slowly (revolve the adjusting bolt counter-clockwise is to make the cake thinner, the pressure is increasing; revolve the adjusting bolt clockwise is to make the cake thicker, the pressure is decreasing) till the oil comes out normally, and then lock the bolt. The normal thickness of cake is about 1.5~2mm. The cake neither can be too thin nor too thick. When the

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cake is too thin, the pressure in the press cage will increase, even may stuck the spiral axes or cause press cage break and other severer accident. If the cake is too thick, it will contain too much oil. Normally, the squeeze bars discharge most of the oil; the second is the 5# squeeze loop. Only little oil comes out from the other squeeze loops. If the oil comes out from the place nearby the feeding part and the oil color is light, the oil has much bubbles, it means the oil plants contain high moisture or the cake is too thick. If big amount of oil comes out from the place nearby the cake out place, the oil color is dark and muddy, it means the oil plants is too dry. It is abnormal when big amount of oil comes out from the place nearby the feeding part or the cake out.

④ During the squeezing process, pay attention to the cake situation. Generally, the cake must be dry and smooth inside, no oil and crinkle on the face. If the cake is crisp and easy to broken, means the moisture of oil plants is too low; if the cake is soft and big, with oil on the face, means the moisture is too high. The normal residue is about 5%, the reasons cause abnormal must be: press circle gets loosen or the oil plants have high moisture. The normal residue is about 5%, the reasons cause abnormal must be: press circle gets loosen or the oil plants have improper moisture. If the moisture is high, residue in slice will come out from the squeeze loop. If the moisture is low, the residue in powder will come out from the squeeze loops.

⑤ Frequently check if the temperature and the lubrication are in normal condition, and listen if there's abnormal noise in the machine. Fix problems in time to avoid accident.

⑥ Frequently check if the temperature and the lubrication in the bearing part are in normal condition, and listen if there's abnormal noise in the machine. Fix problems in time to avoid accident.

⑦ Power off

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a. Normal power off: only power off when all the oil plants in the machine completely pressed. Repeatedly let the spiral axes in and out several times to run out of the oil plants in the press cage, adjust the cake to be the thickest, and then shuttle down the machine and power off. Avoid accident may be caused when the oil plants get cold in the chest.

b. Power failure or other emergencies: open up the feeding apron to let out the oil plants. Then turn the big triangle belt reversely to draw out the spiral axes. If the spiral wouldn't be drawn out, don't have more people to do it or take other actions to turn the big triangle belt forcibly. Loosen the pressing bolt properly and dismantle the upper squeeze cage. Then try to loose the squeeze loops (pour hot water on the squeeze loops to soften the oil plants and the cake in the press chest), and draw out the spiral axes, clean the press chest. Don't turn on the machine again when it is not cleaned.

#### **4. Notes**

- ① Operator needs to be professionally trained, familiar with the squeezing craft and the functions of the machine.
- ② Before operating the new machine, fill 8-9 kilograms lubricant oil into the decelerator (N32# lubricant oil).
- ③ Do not start the machine when there's no space between the cake adjuster and the loop for cake out.
- ④ Don't feed before the temperature comes up; the cake mustn't be too thin.
- ⑤ Don't put metal impurity into the squeeze chest.
- ⑥ Don't put metal stick into the feeding part.
- ⑦ Fix the failure in time when spiral axes blocked, otherwise, don't start the machine again.
- ⑧ Don't stack the cakes until cool down below 40°C, otherwise the cakes will be on fire.

⑨ Take actions recommended previously when meet power failure.

## **5. Safe operation regulation**

For users' safety, strictly abide the regulations below:

- ① Read the instruction before operating the machine.
- ② Users should obtain basic knowledge of machinery and electrics.
- ③ When the oil press works, forbidden to touch any working parts; no long shirt, big clothes and long hair close to the machine, keep persons from being hurt by the oil press.
- ④ Don't take off the squeeze cage when machine works, or persons will be hurt by hot oil.
- ⑤ No other operation this instruction doesn't recommend.
- ⑥ The oil press's v-belt needs to be protected by protection cover for safe producing. Don't start again without protection.
- ⑦ Under ages and elders above 60 years old forbidden to operate the machine.

## **6. Main failure and fix**

Table 6 Main failure and fix methods

Failure	Causes	Fix methods
Spiral shaft stops rotating suddenly	①Feeding oil plants before heating the press chest. ②The cake for warming up the machine is too dry. ③The cake is too thin and pressure in the chest is too high. ④Oil plants have shells or hard sundries mixed into the	①Start to feed until cakes come out normally. ②Increase the cake's moisture. ③Turn the adjusting bolt clock-wise to enlarge the cake's thickness. ④Husk the oil plants. Screen and clean the oil plants.

	oil plants.	
Feeding blocked. No oil comes out.	<p>①The work-sections of squeeze loops and squeeze spirals are coarse.</p> <p>②Oil plants in the press chest mixed with oil.</p> <p>③Gaps between the squeeze bars and oil grooves on the squeeze loops are blocked.</p> <p>④ Oil plants has high oil content, need more oil channels to discharge the oil.</p> <p>⑤Oil plants are too dry when press in hot way.</p>	<p>①Gradually squeeze the cake (except tea seed) mixed with 10% water until squeeze loops and squeeze spirals' working sections become smooth.</p> <p>②Add a small quantity of residue cake into oil plants to squeeze together. Slowly add the feeding quantity. Can't suddenly feed too much.</p> <p>③Dismantle the squeeze bars and squeeze loops. Put them into hot water for 10 minutes and then clean them with wire brush.</p> <p>④Replace with press bars and loops with deeper oil grooves.</p> <p>⑤Insure the right moisture of oil plants.</p>
Cake's situation abnormal	<p>①Moisture too low</p> <p>②Moisture too high</p>	<p>①Increase the moisture. Shorten frying time.</p> <p>②Reduce the moisture. Lengthen the frying time.</p>
Oil belches from locknut	<p>①Residue appears between the squeeze spirals' sections and forms gaps.</p> <p>②Locknut is loosen.</p>	<p>①Shut down the machine. Dismantle and clean the squeeze spirals' sections.</p> <p>②Fasten the locknut.</p>

<p>Low oil output</p>	<p>①Oil plants with low oil content or many impurities.</p> <p>②Temperature and moisture are abnormal.</p> <p>③Low temperature in squeeze chest.</p> <p>④Spare parts frayed.</p>	<p>①Screen and clean the oil plants.</p> <p>②Adjust the frying temperature and moisture.</p> <p>③Follow this instruction to increase the temperature of squeeze chest by warm up the machine by cakes.</p> <p>④Replace the spare parts.</p>
<p>Has oil come out from the deceleration plate or feeding part (return oil)</p>	<p>①Squeeze bars installed in opposite direction.</p> <p>②Squeeze bar and loop's oil grooves are shallow.</p> <p>③Cake is too thin.</p> <p>④High oil content, oil can't be discharged in time.</p> <p>⑤Oil grooves blocked.</p>	<p>①Install the squeeze bar correctly.</p> <p>②Set the squeeze loop with deep grooves before the 5# loop.</p> <p>③Enlarge the space for cake out, increase thickness of cakes.</p> <p>④Change the spare parts, choose right squeeze loops and bars suitable for oil plants with high oil content.</p> <p>⑤ Clean the oil grooves.</p>
<p>Residue cake has oil mark on the surface</p>	<p>①High moisture in oil plants.</p> <p>②Low temperature of squeeze chest.</p> <p>③Squeeze spirals and loops not smooth. Feeding not smooth.</p> <p>④Oil grooves blocked, oil can't be discharged in time</p>	<p>①Dry the oil plants, lower the moisture.</p> <p>②Warm up the press chest by running-in the machine with cake.</p> <p>③Press residue cake mixed with water to polish the squeeze loops and the spirals.</p> <p>④Clean the oil grooves.</p>

	⑤ Spare parts frayed.	⑤ Replace the spare parts.
Low processing capacity	① Rough squeeze spirals and loops. ② High moisture in oil plants. ③ Cake is too thin. ④ Squeeze spirals frayed. ⑤ Oil plants squeezed more than 1 time.	① Press residue mixed with water to polish the squeeze loops and spirals. ② Dry the oil plants, lower the moisture. ③ Increase cake's thickness. ④ Replace with new squeeze spirals. ⑤ Use hot way to squeeze one time.
Much residue comes from the squeeze loops	① Squeeze loop and squeeze spiral's grooves are too deep. ② Cake is too thin; Pressure in squeeze chest is too big. ③ Squeeze loops are loosen. ④ Oil plants been squeezed more than 1 time. ⑤ Spare parts frayed. ⑥ Oil plants is too dry.	① Adjust the positions of squeeze bars and squeeze loops. ② Increase cake's thickness. ③ Fasten the squeeze loop. ④ Reduce squeezing time. ⑤ Replace spare parts. ⑥ Increase the moisture.
Press cages breaks	① Feed too much at the beginning. ② Metal sundries went into the squeeze chest. ③ Residue cake is too dry when warm up the machine. ④ Space between cake adjuster and loop is too	① Feeding slowly. Add feeding quantity only when the feeding becomes smooth and cake comes out normally. ② Select and clean the oil plants carefully. ③ Maintain the residue cake for running in the machine with

	<p>narrow. Or feeding forcibly.</p> <p>⑤Oil plants has been squeezed more than 1 time and did not add water into the oil plants.</p> <p>⑥Begin to feed and squeeze after cleaning the residue in the squeeze chest.</p>	<p>proper moisture .</p> <p>④Enlarge the space for cake out.</p> <p>⑤Increase oil plant’s moisture to lower the pressure in the press chest.</p> <p>⑥Clean the squeeze chest before starting the machine again.</p>
Frame damages	<p>①Reverse the spiral shaft forcibly when it is stuck.</p> <p>②Reverse the triangle belt forcibly when the spiral shaft stuck.</p>	<p>①No reversing the spiral shaft.</p> <p>②No reversing the big v-belt pulley forcibly.</p>
Spiral axes breaks off	<p>①The thrust bearing close to the locknut has been installed oppositely.</p> <p>②The hexagonal nut is too tight and pressed the bearing.</p>	<p>①Install the thrust bearing correctly.</p> <p>②Need appropriate space between the nut’s end surface and bearing’s end surface.</p>

## **7. Dismantling and assembly of main spare parts**

In order to re-assemble the machine successfully, keep in mind the situation of the assembled machine and the order of dismantling. Assemble the machine according to the reverse order of dismantling.

### **A. Dismantling and assembly of squeeze cage department.**

① Dismantling of squeeze cage: (before dismantling the squeeze cage, the electric heating ring should be dismantled by professional electrician and kept carefully before going to following steps) turn the



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handles on the spiral shaft clockwise, draw out the spiral axes. Then insert a steel stick into the pressing bolt, turn it counter-clockwise to loosen the pressing bolt. Dismantle the 4pcs M18 connection bolts on the top squeeze cage and the 10pcs M16 bolts connecting the top and the bottom cage. Loosen the 2pcs M18 bolt connecting the bottom cage and the machine frame. Loosen the 4pcs M14 bolts connecting the frame and the pedestal, and then dismantle the top cage and other spare parts.

② Dismantling of squeeze bars: support the squeeze bar loop, push one bar off, and then others will automatically drop.

③ Assembly of squeeze bars: clean the dismantled squeeze bars, put the squeeze bar loop on flat ground. Arrange all 20 bars in order inside the squeeze bar loop, close to the inner wall. The oil grooves should not be close to the inner wall and all the grooves should be toward one direction. Hammer the spacer into the bars until its end is horizontally on the same level with the loop. The space should not be too tight or too loose. Hammer the inside of the bars to make the bars close to the inner wall until no bar protruding when touches by fingers.

④ Assembly of squeeze loops: the arrange order of squeeze loops has large effect to the oil press's performance. The original order must be followed when re-install the squeeze loops. The sections with oil grooves should face the pressing bolt. The section with inner chamfer on the 1# squeeze loop should face the deceleration box. The direction of 2#, 3#, 4# and 5# squeeze loop should not be arranged in wrong way. The gap between the loops should not exceed 0.1mm.

⑤ Assembly of squeeze cage: install the squeeze bar loop next to the deceleration box (oil grooves on the squeeze bars should face the deceleration box). The squeeze loops should be set up in original order and pre-fastened with the pressing bolt. Hammer the loops as well as pre-fasten the loops. Do not pre-fasten the loops too hard, otherwise may

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break the squeeze cage's pitches. Cover the top cage and press the 10pcs M16 bolts slightly in place and then use afterburner to fasten the screw bolts. During fastening the bolts, hammer the squeeze loops to make them arranged in parallel and close to the press chest. Normally fastened squeeze loops will not get loose. It is allowable for some loops slightly twist when working. Alternatively fasten the 10pcs M16 bolts from the middle to the both ends. Then fasten the 2pcs M18 bolts connecting the squeeze chest and the deceleration box. Fasten the 2pcs M18 bolts connecting the stand. At last fasten the 2pcs M18 bolts connecting the squeeze chest and the stand, the 4pcs M14 bolts connecting the stand.

### **B. Dismantling and assembly of spiral axes department.**

① Dismantling of squeeze spiral: the already used spirals will be a bit difficult to dismantle. Heat (roast) the spirals first or dismantle them right after the squeezing finished Follow the details below:

Dismantle the hexagonal nut, remove the adjusting bolt and the thrust ball bearings on its both sides, use pipe wrench to fix one end of the spiral axes, insert the pressure lever into the lock nut on the other end and turn it clock-wise to spin out the lock nut. Then dismantle each squeeze spiral and the cake adjuster. Attention: No hammering the squeeze spirals and the spirals' pitches, or will damage the components.

② The original order of spirals also should be followed when re-install the spirals, otherwise will cause change on machine's performance or accident. The bigger rings on the two thrust ball bearings should be installed next to the adjuster bolt, and filled with lubricants. The hexagonal nut should press with each other, but should have gap with 0.2-0.3mm between the nut's section and bearing's section (to be able to rotate the bearing with hand).

**Note: All the screw threads related with spiral axes are left screw thread.**

### C. Dismantling and assembly of deceleration box

① Take out the 4pcs bolts on bearing cover 220, dismantle the bearing cover; and then take out the bolts in the cover, dismantle the top cover and pull out the big gear.

②Screw 2pcs M10 bolts into the bearing cover 212 and the thread hole on the close cover of bearing 310 to eject the bearing cover. After that, the shaft with gear, driving axis, gears and other parts can be taken out in turn.

③Fit the medium gear into the gear box when install the deceleration box. Penetrate the shaft with gear into the gear hole and install a bearing cover, then install the bearing cover on the other end (do not forget to install the bearing sleeve). Install the driving shaft according to above steps and then install the big gear, top cover and bearing through cover.

### 8. Rolling bearing

Table 7 Rolling bearing list

Model	Bearing type		Installation part	Quantity
	140 normal gear	140XC bevel gear		
NS 10000	6220	7220AC	Hollow shaft	2
	NJ310E	7310AC	Long axes with gear, short shaft with gear	3
	6212	7212AC	Long shaft with gear	2
	51311		Main spiral axes	2
	6206		Transmission shaft, Feeding axes(Y type)	4

	51206	Feeding axes(Y type)	1
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**NS 10000 squeeze bars, size: 157\*19\*19mm, 23pcs**

**Spacer, size: 157\*19\*19mm, 1pc**

**Spiral for cakes out 1pc**

**Loop for cakes out 1pc**

## **VII Operation and notice of vacuum filter system** **(see Fig.5)**

1. Operation and fix of vacuum pump, please refer "instruction of vacuum pump"

2. Operation: The squeezed oil collects on the oil tray, and then flows to the filtration vat. The two vats should work alternatively. When the oil completely submerge the filtration cloth (mesh), press the start button of the vacuum pump, then the vacuum pump starts to work. The revolving direction of the vacuum pump should accord with the direction the arrow indicated. During the vacuum system is working, only keep the vacuum control valve of the working vat open, the other valves must be closed. When the vacuum pump is working, the air in the working filtration urn is extracted out and negative pressure is formed, so the filtered oil is sucked into the vat, while the oil diesel is isolated on the filtration cloth (mesh). When the filtrated oil reaches a certain quantity (reaches the middle level of the observer on the vat), shift to use the other vat. Close the vacuum valve on the worked oil vat (part 4 on Fig.5), turn on the air control valve (part 7 on Fig. 5) to eliminate the negative pressure in the vat, in the meanwhile turn off the vacuum pump, and then turn on the valve (part 6 on Fig. 5) to release the oil and close it. Clean the dry dregs on the filtration cloth (mesh) by wooden shovel. The dregs can be mixed into the oil plants to be squeezed again. Clean or replace filtration cloth when the filtration cloth is blocked and the oil can not be sucked into the vat. The filtration cloth can be reused after washed and dried (the reason why the filtration cloth being blocked frequently is that many residues come out from the squeeze loops

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because the oil plants are fried too dry or not dry enough. The frying result is the key point influence the squeezing process). Release the oil from the vat in time, otherwise, may cause problem on the vacuum system when the oil is too much, for example, the vacuum pump will spray oil.

### 3. Notes

① As the crude oil has high temperature and contains many residues, it is easy to generate bubbles under the negative pressure in the vat. The bubbles may be sucked into the vacuum pump through the oil-gas separator. When the oil reaches some quantity in the vacuum pump, the vacuum pump will spray oil, thus lower down the working efficiency or even the vacuum pump can not work normally. Therefore, open the air valve now and then to let in some cold air to low down the temperature in the vat and avoid generating bubbles when the vacuum pump is working normally (observe through the observer on the vast to see if there are bubbles generated. Once there is bubble, open the air valve to let some cold air in). If the vacuum pump is already spraying oil, it reflects that the temperature in the vat is already too high; lots of bubbles already have been generated and sucked into the vacuum pump. Shutdown the machine and power off, open the valve of the vacuum pump to let the oil in it out (at the same time let the oil in the air-oil separator out) and use coal to wash the pump chamber. Only to start the machine again after implanting vacuum pump oil into specified place.

② Making use of the vacuum suction force to filtrate the oil, the vacuum filtration way is safe, reliable, easy operating and convenient to work with spiral oil press. When work with the oil press, the dregs can be mixed into the oil plants to be squeezed again, which forms a automatic recycling system and raises the working efficiency.

The filtration force of vacuum is not as big as that of the compressing filtration way. Keep the filtration cloth or filter clean in order to obtain good filtration result. In the meanwhile, please respect below tips:

a. Check whether the pipeline and valves are revealing. When it happens, only start to use after fixing them.

b. The crude oil should have a certain temperature (not lower than 80°C. If the temperature is too low, the viscosity is high, so the filtration

efficiency will not be high).

c. User should select proper filtration media (cloth and filter with proper item) for different oil or liquid.

d. Replace the vacuum pump oil regularly according to the instruction and often check the oil level situation in the vacuum pump.

③ This machine is an integration of machinery and electric product. It is very important to operate it safely. The installation of electric circuit, switch and fuse should be carried out by professional electrician. The machine should have grounding protection as stipulated. Our factory has already reserved the wiring point in the electric cabinet for users (see Fig. 1). **(Attention: For people's safety, the machine should have grounding protection)**

④ The operation of the vacuum pump should accord with the instruction 《Operation of Vacuum Pump》 for the vacuum is precision equipment. The service life will be reduced severely if operate it improperly. Repairing should be carried out by professional technician.

### **VIII. Technique service**

In order to obtain satisfied quality and provide the technical service, if there is any problem please contact with our company.

**Service Tel: Mr. Bhavesh +91 9016981912**

### **IX. Provided accessories**

No.	Item	Spec	Unit	Quantity
1	Wooden Shovel	75	Piece	1
2	Nylon stick	Ø30×280	Piece	1
3	Allen Wench	5	Piece	1
4	Allen Wench	6	Piece	1
5	Allen Wench	10	Piece	1
6	Double-headed spanner	14x17	Piece	1
7	Double-headed spanner	19x22	Piece	1
8	Offset ring spanner	24x27	Piece	1
9	Cruciform screw driver	100x6	Piece	1
10	Instruction of oil press		Piece	1

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11	Instruction of filtration machine		Piece	1
12	Filter cloth	Φ 750	piece	2
13	Squeeze cage cover		piece	1
14	Oil pan		piece	1

### **Postscript**

With the continuous development of industrial technology, the products will be constantly improved. We apologize that the general small changes are not reflected in the instruction.

