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## **1. Preparation for Installation and Operation**

Principally, the machine installation shall be conducted under the direction and supervision of the technicians dispatched by our company. It is recommended to read and follow this manual to get a general idea to gain initial understanding.

After the test-run at this Company, the machine will be dismantled and packed in most convenient way for transportation and then be consigned for shipping, loading and unloading.

### **1-1 Preparation for installation**

#### 1-1-1 Foundation Centering

(1) Before the machine is shipped to the installation site, the site shall be inspected in accordance with the layout of production line in order to determine whether or not the site can meet the requirements.

(2) Based on the foundation map, draw the following datum lines on the floor with a color pencil.

(a) The machine footing lines.

(b) The center line of the conveyor.

(c) The outside boundary lines for this machine.

(3) Draw the horizontal lines for the upper part of the conveyor on some places of the building.

(4) Double check the datum lines to ensure that there is no error.

#### 1-2 Input and Installation of Machine

The Basic preparatory task shall be preformed to gear with machine input. As this machine is very heavy, double attention shall be paid to safety measures so as to keep the machine and the floor from damage.

In addition, the machine input procedure shall be followed, and the machine itself shall be positioned properly and accurately. This is very important.

#### 1-2-1 Installation

(1) At first, the center line of the conveyor shall be aligned with the corresponding datum line.

(2) Each side of the machine shall be aligned with the outside boundary lines on the floor.

(3) Adjust the machine height according to the horizontal lines on the

building for the upper part of the conveyor so as to bring the machine to be level to the horizontal lines drawn on the building.

(4) Perform the level adjustment by means of the machine base level surface or the water level in the filling tank.

(5) The allowance or tolerance in precision for the alignment of center line and horizontal lines shall be within 3mm.

#### 1-2-2 Installation of components and assemblies

Upon completion of the installation, check all the pipe-lines according to the pipe-lines blueprint for accuracy.

#### 1-2-3 Power distribution

(1) Wiring shall be conducted in accordance with the distribution diagram.

(2) Check the motor for proper rotation direction.

### **1-3 Adjustment and test run**

The test-run can't be performed until adjustment has been performed on all the devices according to the instructions described in Section.

#### 1-4 Power distribution diagram

## **2. Instruction for Operation**

### 2-1 General Requirement for Smooth Operation

#### 2-1-1. Requirement for Bottle Feeding

- (1) Bottle shall be incessantly put on the conveying belt, but the belt shall not be overloaded. Also, the length of bottle line in front of the bottle conveying lever shall not exceed two meters.
- (2) The bottles placed upside down, in different size of being broken shall be removed from the conveyor and not input to the machine.

#### 2-1-2 Requirement for Running conditions

All the units or devices including the bottle conveying lever, star wheels, bottle flushing, filling, and cap sealing devices, etc. shall be adjusted or replaced in accordance with the instructions described in Section 3. The directions or guidance of our company's technicians shall be observed.

#### 2-1-3 Requirement for Bottle Input conditions

Normally, no foreign objects shall be put and accumulate on the bottle aligning conveyor at the outlet end of the machine to hinder the conveying of bottles. For effective operation, the machine switches are made available in the operation disc. In addition, the conveyor supplier shall be required to supply and set up a sensor switch at the location about 0.5 meter from the bottle aligning star wheel for stopping the machine in emergency.

- (1) To cause the machine to stop running automatically as the bottles on the conveyor stack up to the sensor switch.
- (2) The operators shall immediately start the machine as the next machine operates normally and the bottles on the conveyor are in good order.

#### 2-1-4 Requirement for Bottle Conveying

The conveyor for the input and output of bottles shall be lubricated properly to assure smooth operation of the conveying system and extend the service life of the conveying belt.

## **2-2 Adjusting items for Machine Maintenance**

### 2-2-1 Adjusting items

As for the adjusting method, please refer to the descriptions in Section 3.

2-3-1 Check Items after 8/50/200/2500 Hours' Operation

- (1) Fill each grease port with specific grease or lubricant.
- (2) Check all the leak-proof washers in pipe-lines for any leakage.
- (3) Check the bottle clipper in bottle flush-washing unit for normal condition.
- (4) Check the filling system for any defect of blockade.
- (5) Check the cap sealing head for any damage.
- (6) Check the shaft of axle for any abnormal noise of temperature condition.

2-3-2 Check after every 50 hours' Operation

- (1) Check the bottle conveying lever and the timing and clearance on all star wheels.
- (2) Check the lubricant level in the gear box which should be between the two marking lines in the oil looking glass.

2-3-3 Check after Every 200 Hours' Operation

- (1) Check all the driving belts for proper tension.
- (2) Make a touch-up painting as necessary.

2-3-4 Check after Every 2500 Hours' Operation

- (1) Replace all the worn-out parts. In case to many parts have been worn out, an annual overhaul shall be performed. Replace the engine oil in all gear boxes.

## **Introduction and process description of all devices**

### **3-1 Bottle Conveying Belt (Fig. 3-1A)**

The empty bottle on the conveying belt, firstly it is through the bottle conveying screw pole and bottle entry star wheel into spraying device for washing, secondly being sent to the filling device by the spraying and filling star wheel for filling, then being delivered to the sealing device by the filling and sealing star wheel for sealing and finally, being discharged to the conveying belt by the bottle discharging star wheel for the next process.

#### **3-1-1 How to adjust the gap between the empty bottles on the conveying belt and track wall. (Fig. 3-1B)**

- (1) Unfasten the hand wheel (2) on the shelf of the track wall.
- (2) Push and pull the track wall (1) to make the empty bottles through and a 5mm gap remained and then fasten this hand wheel.

### **3-2 Bottle conveying screw pole and Guide Plate (Fig. 3-2A)**

The bottle conveying screw pole (1) and the guide plate (7) are made of plastic steel and SUS304 in order to reduce the frictional factor to lower the noises and to enhance the intensity.

#### **3-2-1 How to keep the gap between the bottle conveying screw pole and the bottles**

When the diameter of the bottle is different, referring to 3-2B turn the hand wheel direct to adjust it. In clockwise direction, it could increase the gap. On the contrary, it will diminish the gap.

#### **3-2-2 How to adjust the timing of the bottle conveying screw pole and the star wheel**

Loose the fixed screw (3) (Fig. 3-2C) and circle the bottle conveying screw pole to the right position (B), and then fasten the screw.

#### **3-2-3 How to disassemble the guide plate**

The guide plate must be replaced with the one in the corresponding size if the diameter of the bottle is different. And the steps are as

following:

- (1) Disassemble the hexagonal screw and the gasket to remove the guide plate.
- (2) Install the guide plate in the right size as the contrary sequence. And the gap given in the 3-2B(A) should be left.

### **3-3 Star Wheel (Fig. 3-3A)**

The empty bottle, it is firstly through the bottle conveying screw pole and bottle entry star wheel to the bottle clipper of the spraying bottle for washing, secondly being sent to the concave of the bottle holding neck on the bottle lifting pole for filling by the spraying and filling star wheel for filling, then delivered to the concave of the bottle holding star wheel under the sealing device by the filling and sealing star wheel for sealing and finally discharged to the conveying belt by the bottle discharging star wheel. To make the bottles deliver stably, the timing of the star wheel should be adjusted properly.

#### **3-3-1 How to Adjustment the Timing of Star Wheel (Fig. 3-3B)**

- (1) Loosen the bolt (1).
- (2) In clockwise direction rotate the bolt (2) to loosen the hood (3) and the wheel arch (4). Then, the star wheel unit (5) can be turned for fine adjustment. When the star wheel is adjusted to the correct position (B), loosen the screw (2) and tighten the bolt (1) to secure the hood firmly block (6).

#### **3-3-2 How to Remove and Install Star Wheel (Fig. 3-3B)**

To assure a stable conveying of bottles, the star wheel unit (5) must be replaced with the proper one when the bottle diameter is changed.

- (1) Remove the bolt to take out the star wheel.
- (2) Install the proper star wheel, and tighten the bolt again.

### **3-4 Bottle Lifting Pole for Filling (Figure 3-4A)**

The empty bottle is conveyed into the concave of bottle holding claw of the top bottle pole on the filling turntable through filling star wheel and rotates with turntable along convex wheel. When the bottle is conveyed to the rising section of the convex wheel, it will butt and open the filler to fill, and then when the convex wheel descends, it separates from the filler and make it close. At last the bottle is picked out by filling and sealing star wheel to the capping device.

#### **3-4-1 How to replace the bottle holding claw when the diameter of bottle changes (Figure 3-4B)**

Replace the bottle holding claw when the diameter of bottle changes.

- (1) Take off the R-ring of support on the upside of bottle holding claw firstly.
- (2) Place the correct bottle holding claw on the support and assembly the O-ring and fix it.
- (3) Pay attention to whether the concave of bottle holding claw is aimed at the center line of the filler.

#### **3-4-2 How to adjust the height of filling barrel when the height of the bottle Changes ( Figure 3-4B )**

To adjust the filling level first and confirm the height of the demanded leveling block, then adjust the height of the filling barrel.

- (1) Loose the securing screw.
- (2) Loose the screw on the circular pipe.
- (3) Rotate one of the four gripping bolts under the filling turntable, and then adjust the height of the filling barrel.
- (4) Rotate the bolt under the filling turntable and adjust the height of the filling barrel. Then make the bottleneck supports nestle up against the washer under the filler. It is the demanded height of the filling barrel.
- (5) Tighten the screw and the screw on the circular pipe.

### 3-5 Filler (Figure 3-5A)

JFRV Filler consists of filling tube, aeration main body base, waterproof valve gasket, spring, bottle mouth rubber gasket, O-ring, circlip, switch valve set etc...

When the rolling wheel of top bottle pole ascends along with the rotation of ring of convex wheel, head-holding plate also will hold the bottle neck and ascends together that makes the rubber gasket of bottle mouth and bottle neck sealed together and open the filler, the beverage will flow toward the inside of bottle along with conical contour of feeding filling tube, so as to it does not disturb the equal air in the bottle to vent from the aeration hole of aeration main body base to the mainframe regurgitant barrel till the beverage of bottle fill the aeration hole, the beverage will keep its liquid level required, and the surplus will flow into the mainframe regurgitant barrel, which will be used through proper processing. At last the rolling wheel set descend along with the convex wheel ring, so as to the filler will descend with the bottle for the pressure of spring, when the aeration main body tube seals closely with conical contour of filling feeding tube, the filler will be closed.

#### 3-5-1 How to adjust the liquid level ( Figure 3-5A )

Adjust the liquid level by adding or reducing the rubber gasket of bottle mouth. The distance between bottle mouth and outlet of aeration of aeration tube will be increased or decreased when open the filler by adding or reducing the gasket of bottle mouth.

#### 3-5-2 How to disassembly and assembly the filler ( Figure 3-5B )

JFRV filler is a kind of device that fixed by screws and locked on the lower part of end tube holder, and the sets the beverage attaches all are made from the materials up to standard the sanitary food, and no any disinfecting blind angle such as screw thread or spring.

- (1) When there is no any beverage in the filling barrel, you can disassembly the fixed screws and disassembly the filler easily.
- (2) Take off the clipping plate connector of the main body base first, hold the main body base with left hand while the right hand rotate and fix the screw cap in converse to take off the filling feeding tube set.
- (3) Take off the waterproof gasket with hands and then disassembly the fixed fastener to pick out the feeding filling tube.
- (4) Pull out the rubber gasket of the bottle mouth from the filling tube and the disassembling is completed now.
- (5) Assembly in contrary order above mentioned.

### 3-6 Filling barrel liquid level control device (Figure 3-6)

The beverage in filling barrel should be maintained a certain level to prevent the loss caused by filling speed or overflowing. For the purpose the filling barrel is composed of filler, float liquid level control device feeding pipe and control valve etc.

The float liquid level control device has three sensors at the upper, the middle and the under points. When the float ball rises to upper point, control valve stops feeding by shutting down automatically; when the float ball descends to the middle point, the main machine automatically stops, while when the float ball descends to the lowest point, control valve turn on for starting feeding.

### 3-7 Hopper in cap selection unit (Figure 3-6)

All the caps accumulated in the acrylic hopper, after selection and proper arrangement for unified exposure by the cap selection rotating disc, will slide to the end of cap chute. When the bottle is delivered to the underside of the chute by the star wheel, the bottle will cap automatically. On the cap chute, there is one sensor to control the switch of the cap selection motor. It could protect the caps from spoilage because of the excessive stirring. The sensor can control the switch of the tuyere and it could avert the cap from jamming in the entry of the

cap chute.

In case an automatic cap feeding device is available, the sensor can be used to control the swift of the cap feeding device automatically. If there is no automatic cap feeding device, please pay attention to the quantity of the caps in the hopper and replenish timely by the labor.

### **3-8 Cap sealing set ( Figure 3-8 )**

Bottles are sent to the bottom of end of the cap chute through the star wheel and wear the caps. And then the bottle will rotate and supported by the bottle holding star wheel on the turntable. The cap sealers will go down for the rotating of the capping cam and seal the bottles. Then the sealing capper rises along the turning of the cap sealing and selecting convex wheel. After that, the sealed bottles will be sent out by the bottle holding star wheel 1 and to the bottle conveyor.

3-8-1 How to replace the bottle holding star wheel plate when the diameter of the bottle changes.

Dismantle the screw, and take away the star wheel. Then install the suitable star plate in the original position and fasten the screw.

3-8-2 How to Adjustment when the Bottle Height Changes

(1) Loosen the bolt.

(2) Turn the screws with the wrench. Take a turn in clockwise and it will descend 2.54mm. On the contrary, it will rise 2.54mm. If the distance from the bottom of the lowest sealer to the capping rotating disc is shorter 40mm than the bottle height, it is admissible.

(3) Then, tighten the bolt.

### 3-9 Cap selecting sealing capper ( Figure 3-9 )

The cap selecting sealing capper is composed of bottle upholder, magnetic lump, sealing head, cap exiting washer, cap exiting spring, capping shaft, capping spring, capper adjusting bush, capping washer, cap selector adjusting bush etc.

#### 3-9-1 How to adjust the sealing pressure

When the cap and the bottle head can not fit the demanded pressing diameter, it means that the pressure is not correct and it needs adjusting.

- (1) Take the capper adjusting bush out.
- (2) Take the capping washer and put in the hole. Adjust the pressure by increasing the capping washer or decreasing it. If increasing the capper washers, the pressure will be increased. On the contrary, decreasing the washer, the pressure will be decreased.
- (3) After adjusting, install the capper adjusting bush back.

#### 3-9-2 How to disassemble and assemble the spring (Figure 3-9)

When the way mentioned above does not work to change the sealing pressure, please change the capping spring.

- (1) Butt the bottom of the crowner head with hydraulic jack.
- (2) Rotate the crowner adjusting bush in counter clockwise way.  
After the capper adjusting bush departs, lower the hydraulic

jack slowly, and the crowning cylinder could be take off.

- (3) Take off the crowner adjusting washer and the crowning spring in order, and then change the new crowning spring.
- (4) When installing, assemble the spare parts in the contrary order. Butt the crowner adjusting bush on the crowning cylinder up to the edge of the jacket with hydraulic jack and then rotate the crowner adjusting bush in clockwise way. At the same time, butt the hydraulic jack to the top to keep the crowner adjusting bush into the jacket and not departing.

3-9-3 How to adjust the cap exiting pressure and cap exiting spring.  
(Figure 3-9)

When the crowned bottle can not fall off automatically, it means that the cap exiting pressure is not correct and it needs adjusting. The adjusting way of the cap selector is same to the crowner.

### **3-10 Main driving system ( Figure 3-10 )**

The driving system is designed to be suspensorily closed in the machine container. A motor with transducer (1) drives the main machine. The capacity can be adjusted on the operating desk.

The motor (1) transfers power through the belt wheel to the capping worm, filling worm, filling worm gear, gear wheel and filling turn table.

The capping worm wheel unit drives the bottle feed star wheel and filling-capping star wheel. It transfers power through the middle star wheel to bottle-input star wheel and bottle conveying screw.

### **3-11 Disinfect with chlorine solution**

At present many drink manufactures still use chlorine solution to wash the pipelines and parts touched with drink by rinsing or soaking.

But even stainless steel materials may be corroded by chlorine solution. So we do not approve of the use of chlorine solution. If it must be used, please handle it in the following method:

- (1) Dilute the solution with processed drinking water.
- (2) Use the solution in the environment under 35°C.
- (3) The concentration and time forbid passing the following limit.
  - (A) Short time touching: the concentration should be 50PPM, cannot be over 100PPM. The touching time should be less than 30 minutes.
  - (B) Long time touching: the concentration should be 10PPM, cannot be over 20PPM, the touching time should be less than 15 hours.
  - (C) Avoid being over 15 hours.

*Notice: (a) the PPM value of chlorine solution is millionth. So the solution of 50PPM refers that 1kg solution contains 50mg chlorine.*

*(b) If the chlorine in drinking water to be diluted is too much, please consider reducing the chlorine solution to ensure the total content of chlorine is still in the limited value.*

- (D) The chlorine solution must be mixed and ten can be used. Forbid washing the parts with high concentration chlorine solution and then adding drinking water to dilute the solution in the machine parts.
- (E) After washing and disinfecting with chlorine solution, must discharge it and infuse processed drinking water into the drink pipeline (by regular method), allow the water to flow out from all fillers until there's no remaining chlorine solution.
- (F) After 100-hour operation, feeding pipeline, level reaction shaft, filler must be dismantled and washed, especially the inter-touched surface must be carefully washed.

The above item should be regarded when using chlorine solution. Before formal operation, there cannot be remaining chlorine solution. So after

washing, must clean the machine with processed drinking water.

### 3-12 Lubrication ( Figure 3-12 )

Suitable lubrication is an important maintaining task, which can not only prevent accidental wear and tear and sudden damage of the parts but also make the machine more stable and reduce the power expending and annoying noise.

#### 3-12-1 Lubricating

(1) Use lubricating grease gun: at the marks of fig 3-12 ◎, lubricate one time every 300-hour operation. At the mark of ○, lubricate one time every 900-hour operation. Infuse the lubricating grease until the old grease gets out from the bearing edge, and then clean it.

(2) Change lubricating oil: at the mark of fig 3-12 △, after the first operation of 500 hours, discharge the oil in gear box cleanly and then infuse new oil. Later change the oil every 2500-hour operation. At the mark of □, before every operation, should check the oil amount.

(3) Finishing lubricating, it needs to clean the overflowed or stained grease.

#### Lubrication list

Mark	Lubricating Points	variety
◎	<b>53</b>	Diamond Autoserve No.0 Lubricating grease Xsientong NO.0 lubricating grease
○	<b>8</b>	
△	<b>2</b>	Shell Oil Omala Oil R220
□	<b>1</b>	Chinese petroleum Guoguang Brand engine oil <b>HD-150</b>

#### 4. Check and Removal of Faults

The machine can operate rightly the maintaining as above-mentioned. Sometime trouble may happen. Repair it by the following method in time.

<b>4-1 Bottle conveying screw</b>		
Phenomena	Causes	Methods
1. Bottles cannot move stably at the place of conveying screw pole	1. Poor lubrication of conveying belt.	1. Add lubricating oil.
	2. The crack between conveying screw pole and bottles is not correct.	2. Adjust the crack. (3-2-1)
	3. The parts of conveying screw shaft is worn.	3. Replace (see 3-2-3)
2. Bottles cannot be stably conveyed to the concave of bottle entry star wheel.	1. The timing of the conveying screw pole and bottle entry star wheel is not exact.	1. Retiming. (3-2-2)
	2. The parts of the conveying screw pole and the bottle entry star wheel are worn or loosen.	2. Adjust or replace the worn parts.
<b>4-2 Bottle entry star wheel</b>		
1. Bottles cannot be conveyed into sealing capper.	1. The timing of star wheel is not exact.	1. Retiming. (3-3-1)
	2. The crack between star wheel and guide plate is not right.	2. Adjust the gap (3-3B)

	3.Star wheel and guide board are worn.	3.Replace.
	4. The bottle holding claws are damaged or wrongly adjusted.	4. Adjust or replace the worn parts. (3-4-1)
<b>4-3 Bottle Lifting Pole for Filling</b>		
1.Bottle cannot stably stand on the bottle lifting pole.	1.The bottle holding claws in unsuitable size or worn.	1.Replace. (3-4-1)
	2.The parts of top bottle pole are worn.	2.Replace the worn parts.
2.Bottles cannot smoothly eject the filler open.	1.The filling barrel is too high.	1. <b>Adjust again or replace.</b> (3-4-2)
	2.The filler is stuck.	2. <b>Dismantle and repair</b> (3-5-2)
<b>4-4 Filler</b>		
1.Beverage over flows from the bottle mouth.	1.The pressure in filling barrel is too low.	1.Examine the exhaust pump.
Phenomena	Causes	Methods
2.Short filling or no filling.	1.Lower liquid level in the filling barrel.	1.Check and repair the controller or add feeding amount
	2.Filler blocked.	2.Disassembly and clear it. (3-6-2)
	3.The filler not be opened fully.	3. 4-5-2 °
	4.The rubber gasket in the bottle mouth is damaged.	4.Replace it.

	5.Error of liquid level adjusted	5.Adjust again. (3-6-1)
<b>4-5 Controller for the liquid level of filling barrel</b>		
1.Lower liquid level	1.Short amount of feeding.	1.Add the amount.
	2.Trouble upon the controlling valve or power supply.	2.Check and repair or replace it.
2.Higher liquid level	1.Trouble upon the controlling valve or power supply.	1.Check and repair or replace it.
<b>4-6 Filling and sealing star wheel</b>		
1.The bottle is out of the bottle holding claw of bottle lifting pole for filling and not stable.	1.Star wheel time inaccurately.	1.Adjust again. (3-3-1)
	2.The star wheel and guide plate is damaged.	2.Replace it.
2.The bottle fails to be conveyed into concave of bottle holding star wheel of the sealing device.	1.Star wheel time inaccurately.	1.Adjust again. (3-3-1)
	2.The incorrect gap between the star wheel and guide plate.	2.Adjust the gap. (3-2B)
	3.The star wheel and guide plate is damaged.	3.Replace it.

<b>4-7 Selecting capper set</b>		
1.The sealing capper head cannot get the caps smoothly.	1.Gate arm is not adjusted correctly.	1.Adjust again and make the cap aim at the bottles on the star wheel.
	2.The height is not correct.	2.Adjust again.(3-8-2)
2.When the bottle through the cap chute, no caps for capped.	1.The amount of the caps is not enough.	1.Check the amount of the cap all the time.
	2.The size of the cap selecting turntable block is not correct.	2.Replace.
	3. The sensor or power of the cap chute is damaged.	3. Check and replace.
<b>4-8 Cap sealing device</b>		
1.The bottle is not sealed completely.	1.The capping device is adjusted too high.	1.Adjust the height.(3-8-2)
	2. The capper spring is snapped or lack of elasticity.	2. Replace. (3-9-2)
	3. The pressure of the spring is faulted.	3. Adjust again. (3-9-1)
	4. The holding bottle star wheel of the capper is damaged.	4. Replace. (3-8-1)
<b>4-8 Bottle discharging star wheel</b>		
1.Bottles cannot be stably	1.Star wheel time inaccurately.	1.Adjust the timing (3-3-1)

conveyed to the concave of bottle capping star wheel.	2.The gap between the star wheel and guide plate is not correct..	2.Adjust the gap (3-2B)
	3. The star wheel and guide plate is damaged.	3. Replace the damaged parts.
2. Discharge unstable the bottle from the bottle holding star wheel from the sealing canner device.	1. The gap between the star wheel and guide plate is not correct.	1. Adjust the gap.(3-2B)
	2.The speed of the conveyor is not correct.	2.adjust the conveyor speed.

#### 5. How to order the components by telephone.

If any spare parts are available for replacing, please find out the partial assemble diagram the part locates on the general assemble diagram, and then find out the code of spare parts from partial assemble diagram.

JFC308N-207-1 ◦ For example: If need the clipping head of cleaning the bottle, should

(1) Find out the partial assemble diagram of the part from the general assemble diagram firstly is RJFRC4505010 and figure number is 2100 ( see the sash of following diagram ).

(2) Find out according to the abovementioned machine type and figure number found out.

The partial assemble diagram that indicates the machine type is JFC308N (sash A in the diagram), and the figure number is 200 (sash B in the diagram), and them the part number is 2108 (sash in C in the diagram ) can be found out. Therefore please inform the type, figure number and part number of the spare parts, i.e. JFC308-200.