

**SSHJ SERIES**

**DOUBLE SHAFT PADDLE MIXER**

**OPERATION    MANUAL**



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**江苏中天农牧机械有限公司**

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Important instruction:

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

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

# 1. APPLICABLE SCOPE AND FEATURES

## APPLICABLE SCOPE

SSHJ Dual-shaft Paddle High-efficient Mixer is widely used to mix the materials in the shape of powder, pellet, flake, piece and sticky materials in the industries of feed, food, chemicals, pharmacy, agricultural pharmacy, etc.

## Features

Designed and manufactures by several scientific research units with the summing-up of essence of dual-shaft paddle mixers at home and abroad, SSHJ Dual-shaft Paddle High-efficient Mixer is an ideal mixing equipment with low speed, high efficiency, power saving and high quality. It has high mixing homogeneity and short mixing period without dead mixing corner. Each batch of material can generally by mixed to homogeneity within 30-120 seconds. Full-length open-door structure is adopted at the bottom for discharging, so discharging is quick without remainder. The seal of discharging door is reliable with out phenomenon of material leakage. The load has a wide changeable scope. There is a built-in oil-adding pipe and various liquids can be largely added. This machine has the features of compact structure, fine appearance, less occupying space than other mixing equipment, quick and gentle mixing, stable performance, low noise, no dust, no environmental pollution, etc.

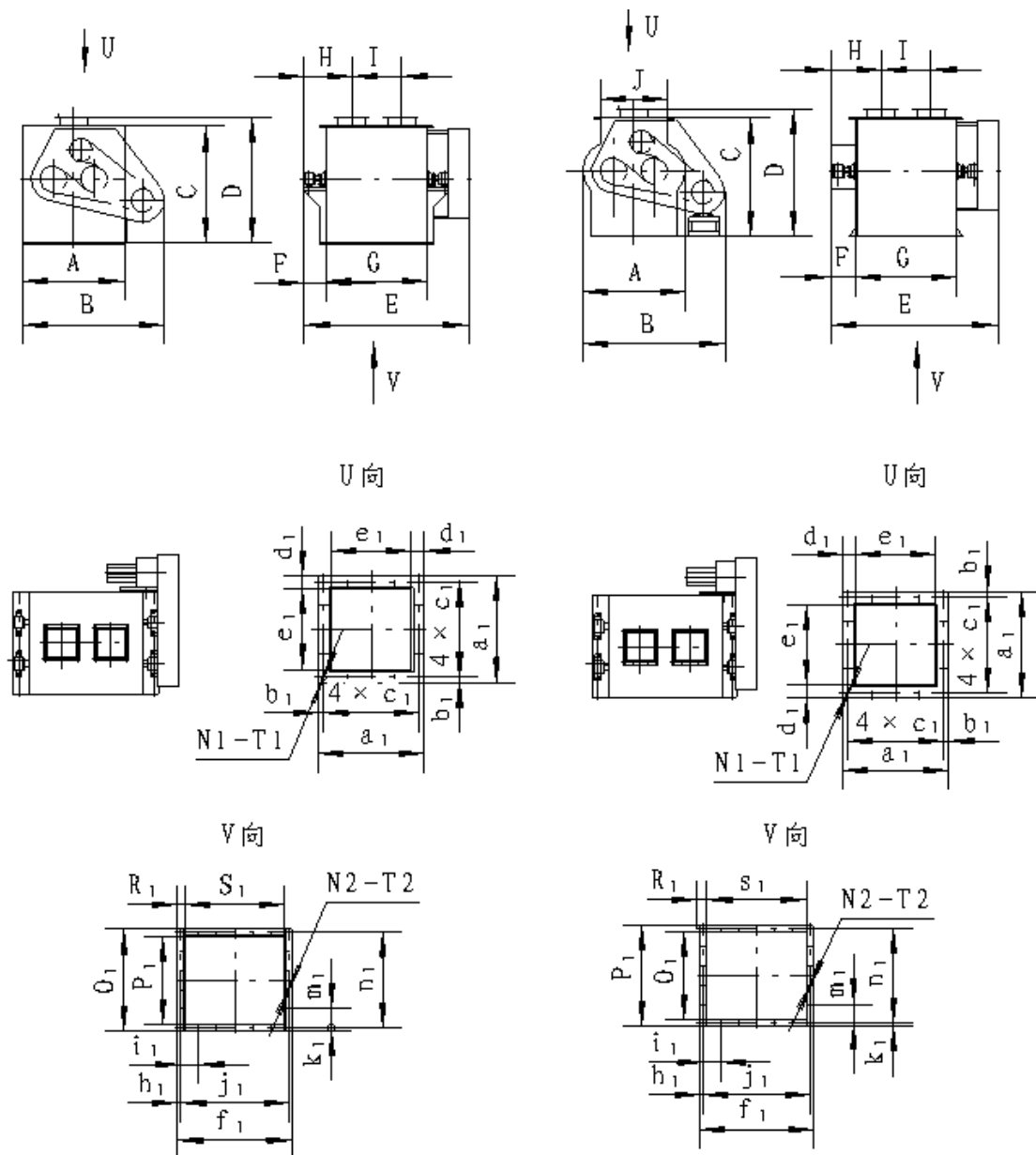
# 2. MAIN TECHNICAL SPECIFICATION

SEE FIGURE ONE

| Item<br>Model | Inner Cubage      | Capacity/B | Mixing time/B | C <sub>v</sub> %    | Power    |
|---------------|-------------------|------------|---------------|---------------------|----------|
|               | (m <sup>3</sup> ) | (kg)       | (S)           | (C <sub>v</sub> %≤) | (kW)     |
| SSHJ0.1       | 0.1               | 50         | 30~120        | 5                   | 2.2(3)   |
| SSHJ0.2       | 0.2               | 100        | 30~120        | 5                   | 3(4)     |
| SSHJ0.5       | 0.5               | 250        | 30~120        | 5                   | 5.5(7.5) |
| SSHJ1         | 1                 | 500        | 30~120        | 5                   | 11(15)   |
| SSHJ2         | 2                 | 1000       | 30~120        | 5                   | 15(18.5) |
| SSHJ3         | 3                 | 1500       | 30~120        | 5                   | 22       |
| SSHJ4         | 4                 | 2000       | 30~120        | 5                   | 22(30)   |
| SSHJ6         | 6                 | 3000       | 30~120        | 5                   | 37(45)   |
| SSHJ8         | 8                 | 4000       | 30~120        | 5                   | 45 (55)  |

# 3. WORKING PRINCIPPLE

## 3.1 Schematic Diagram



SSHJ 0.1、0.2 、0.5 高效混合机

SSHJ1、2、4、6、8 高效混合机

SSHJ 0.1、0.2 、0.5 High Efficient Mixer

SSHJ1、2、4、6、8 High Efficient Mixer

**Figure One: Schematic Diagram**

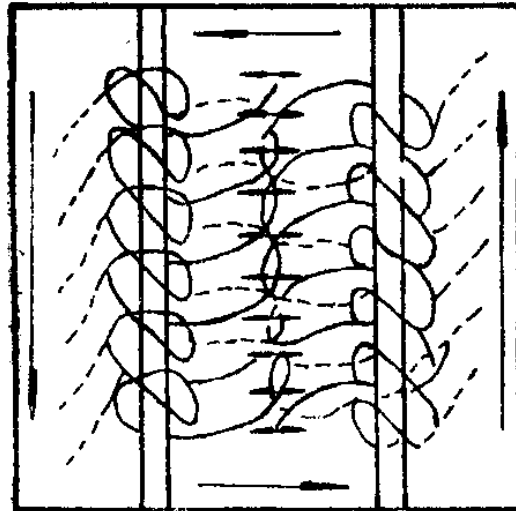
The detailed size are as follows:

The dimension data form of the Schematic Diagram

| Item           | SSHJ0.<br>1 | SSHJ0.<br>2 | SSHJ0.<br>5 | SSHJ1 | SSHJ2 | SSHJ3 | SSHJ4 | SSHJ6 | SSHJ8 |
|----------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|
| A              | 816         | 1060        | 1470        | 1345  | 1800  | 1785  | 2100  | 1860  | 2250  |
| B              | 1143        | 1366        | 1845        | 1785  | 2320  | 2765  | 3160  | 3816  | 4200  |
| C              | 953         | 1100        | 1278        | 1410  | 1550  | 1695  | 2013  | 2353  | 2883  |
| D              | 1025        | 1200        | 1368        | 1500  | 1640  | 1785  | 2100  | 2440  | 2923  |
| E              | 1330        | 1490        | 1730        | 2340  | 2585  | 2650  | 2937  | 3325  | 3477  |
| F              | 180         | 185         | 190         | 225   | 280   | 280   | 345   | 366   | 378   |
| G              | 820         | 1020        | 1200        | 1695  | 1890  | 1890  | 2012  | 2352  | 2552  |
| H              | 390         | 445         | 474         | 655   | 757.5 | 757.5 | 851   | 977   | 1024  |
| I              | 400         | 500         | 580         | 835   | 935   | 1000  | 1000  | 1150  | 1260  |
| J              |             |             |             | 1100  | 1280  | 1280  | 1270  | 1850  | 2130  |
| N <sub>1</sub> | 16          | 16          | 16          | 16    | 16    | 16    | 16    | 16    | 16    |
| N <sub>2</sub> | 26          | 40          | 40          | 26    | 30    | 40    | 40    | 40    | 44    |
| T <sub>1</sub> | φ11         | φ9          | φ9          | φ10   | φ10   | φ14   | φ13   | φ10   | φ13   |
| T <sub>2</sub> | φ11         | φ13         | φ13         | φ13   | φ13   | φ14   | φ14   | φ18   | φ18   |
| a <sub>1</sub> | 286         | 300         | 360         | 380   | 580   | 580   | 580   | 680   | 780   |
| b <sub>1</sub> | 15          | 16          | 16          | 20    | 20    | 20    | 20    | 20    | 20    |
| C <sub>1</sub> | 64          | 67          | 82          | 85    | 135   | 135   | 135   | 160   | 185   |
| d <sub>1</sub> | 35          | 30          | 30          | 40    | 40    | 40    | 40    | 40    | 40    |
| e <sub>1</sub> | 216         | 240         | 300         | 300   | 500   | 500   | 500   | 600   | 700   |
| f <sub>1</sub> | 920         | 1200        | 1300        | 1855  | 2050  | 2050  | 2212  | 2500  | 2752  |
| h <sub>1</sub> | 25          | 45          | 25          | 39.5  | 40    | 51    | 51    | 40    | 56    |
| i <sub>1</sub> | 145         | 111         | 125         | 222   | 197   | 156   | 211   | 242   | 220   |
| j <sub>1</sub> | 870         | 1110        | 1250        | 1766  | 1970  | 1970  | 2110  | 2420  | 2640  |
| k <sub>1</sub> | 23          | 25          | 25          | 25    | 25    | 25    | 20    | 25    | 40    |
| m <sub>1</sub> | 154         | 106         | 142         | 232   | 298   | 175   | 206   | 180   | 225   |
| n <sub>1</sub> | 770         | 1060        | 1420        | 1160  | 1490  | 1550  | 1670  | 1800  | 2250  |
| P <sub>1</sub> | 816         | 1060        | 1470        | 1210  | 1540  | 1785  | 2100  | 1850  | 2330  |
| O <sub>1</sub> | 710         | 950         | 1360        | 1110  | 1440  | 1490  | 2000  | 1750  | 2154  |
| R <sub>1</sub> | 60          | 100         | 60          | 90    | 90    | 90    | 116   | 90    | 116   |
| S <sub>1</sub> | 800         | 1000        | 1180        | 1675  | 1870  | 1870  | 1980  | 2320  | 2520  |

### 3.2 Working principles

This machine consists of two rotors opposite in rotary direction to which several paddles with special angle are welded. Paddles, on one hand, drive materials to rotate counter-clockwise along the inside wall of machine groove, on the other hand drive materials to turn left and right. A weightless zone is formed in the cross and overlapping place of two rotors. Despite of shape, size and density of materials, materials can float up and is in a condition of instantaneous weightlessness within this zone. From then on, materials turn continuously and circularly, and shear mutually and crossly within the machine groove, thus reaching a quick gentle and even mixing effect.(See Figure Two and

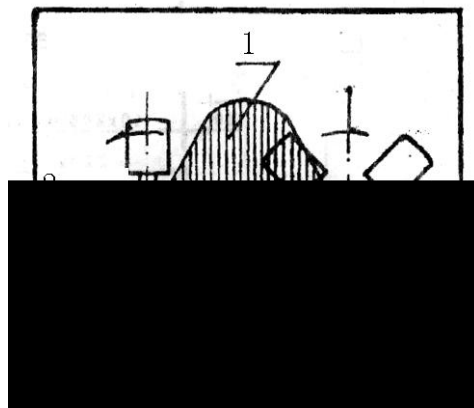


Three)

**Figure Two: Figure Of Movement Locus**

1.Gravity free zone of lift 2.material 3.paddle

**Figure Three: Figure Of Mixing Area**



## 4. STRUCTURE

This machine has a structure of horizontal shell, double spindles and several paddles. The mixer body is w-shaped and has a spraying and liquid-adding device on the top where materials are feed. After mixing, materials are discharged from the bottom.

### 4.1 ROTOR AND ITS DEIVE

Rotor consists of paddles, shaft and supporting bar. The motor drives rotor to turn in a definite speed through reducer and chain. The paddles installed on the dual shaft in a definite angle cast the materials to whole spaces in the container. In the condition of instantaneous weightless, materials cross widely to from a flowing layer for mixing, meanwhile, materials are driven by paddles to turn axially and radically, thus forming a full-position compound circulation.

### 4.2 MACHINE BODY

The machine body is w-shaped. Each of the two ends of machine body has inside and outside wall plate, between which the space is interlinked to the whole machine body. While feeding and discharging, air exhausted by materials can circulate in this space so as not to flow over the machine body.

### 4.3 DISCHARGING ANS SEALING DEVICE

The discharging door consists of door body, supporting arm and adjusting nut. Seals are installed around the discharging door frame. When the door is closed tightly, the sides of discharging door stick closely to the rubber seal stripe of seal so that materials in the machine won't leak. The damaged seal stripe can be replaced. If necessary, the position of adjusting nut can be adjusted to change the distance between supporting arm and door body so that discharging door is on level with round curve surface of the machine shell bottom. The supporting arm is installed on the coupling spindle.

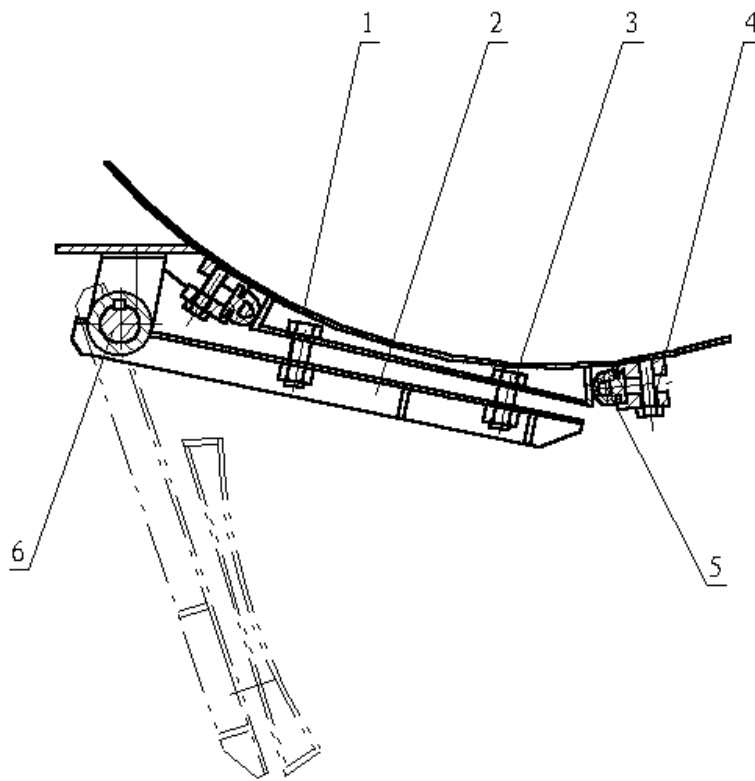
### 4.4 DISCHARGIGN CONTROL

The discharging control mechanism consists of cylinder connecting rod mechanism, coupling spindle and limit switch. The discharging door is installed on the coupling spindle, the latter is connected to the driven rock rod of connecting rod mechanism, and cylinder head articulates the driving rock rod. Cylinder moves reciprocally and drives the coupling spindle to turn through connecting rod, thus driving the discharging door to open or close.

### 4.5 LIQUID-ADDING PIPE

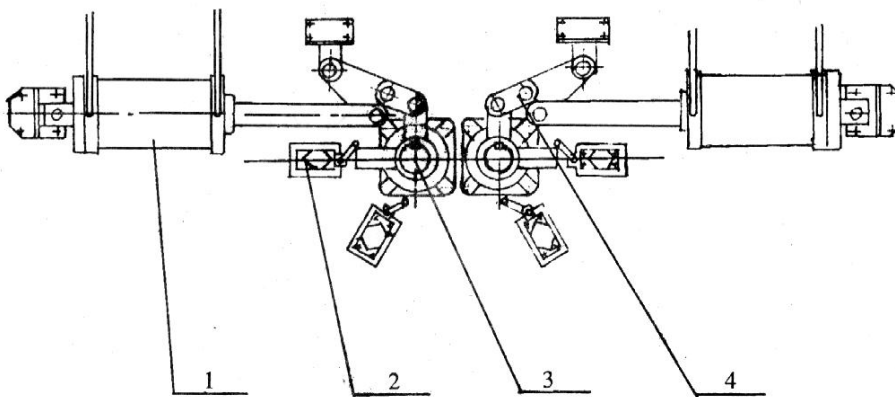
The liquid-adding pipe is installed on the top of machine body and consists of pipe and spray nozzle. Liquid is sprayed in the shape of fan through the spray nozzle. The machine body is distributed evenly with several spray head. The entrance end of pipe is equipped with a flange which is connected to the oil-supplying system.

### 4.6 ELECTRICAL CONTROL PRINCIPLE (SEE FIGURE SIX AND SEVEN)



1. Door body 2. corbel 3. Conditioning nut 4. sealing 5. sealing strip 6. coupling

**Figure Four: DISCHARGING ANS SEALING DEVICE**



1. Air cylinder 2. Limit switch 3. coupling 4. Side rod system

**Figure Five: DISCHARGIGN CONTROL**



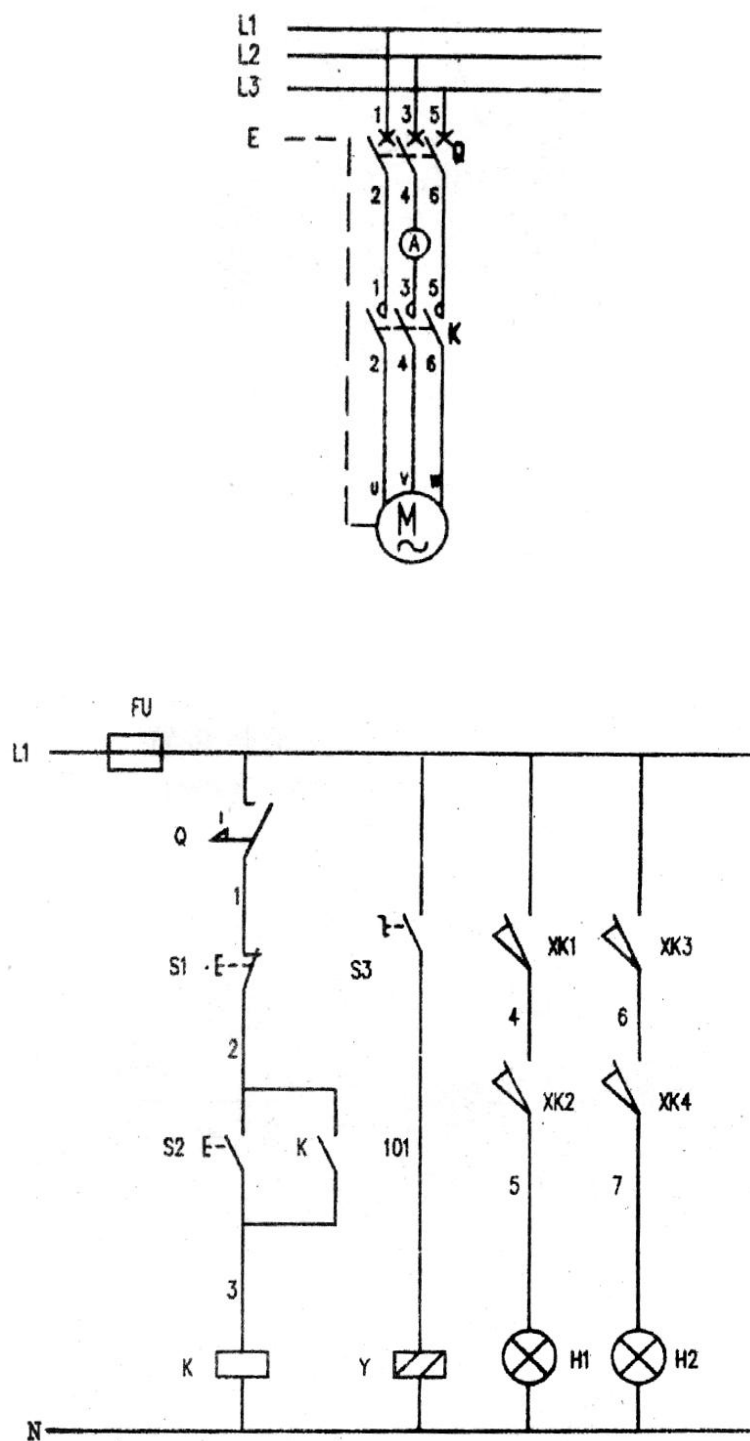
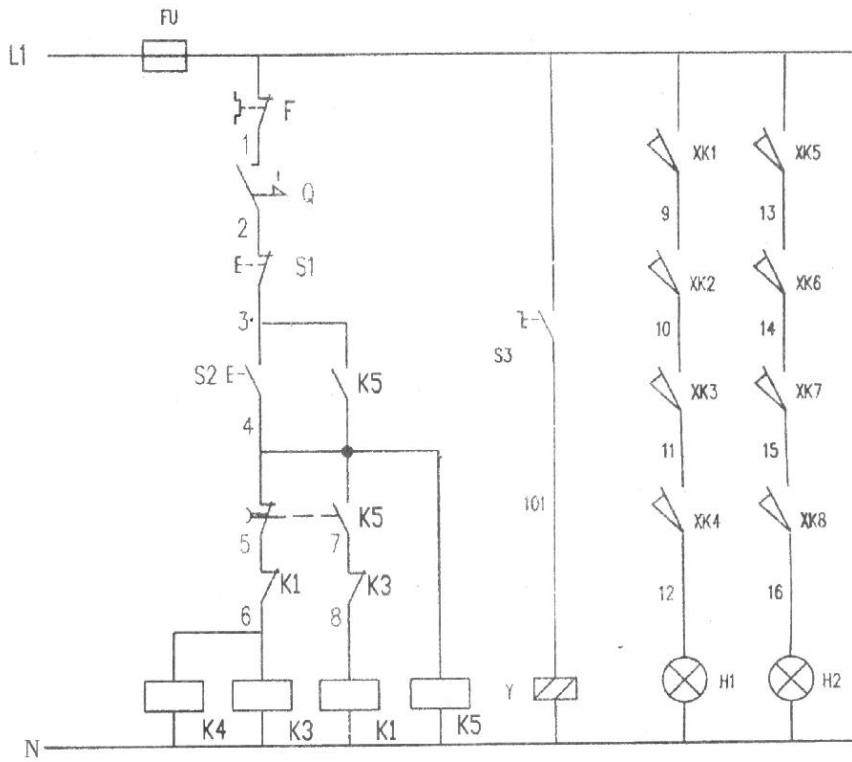
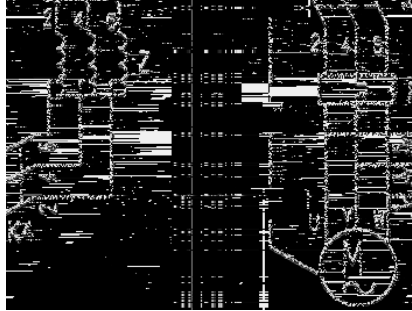


Figure Six: FIGURE OF ELECTRICAL CONTROL PRINCIPLE



**Figure Six: FIGURE OF ELECTRICAL CONTROL PRINCIPLE**

## 5.INSTALLATION, ADJUSTMENT AND PREPARATION BEFORE USE

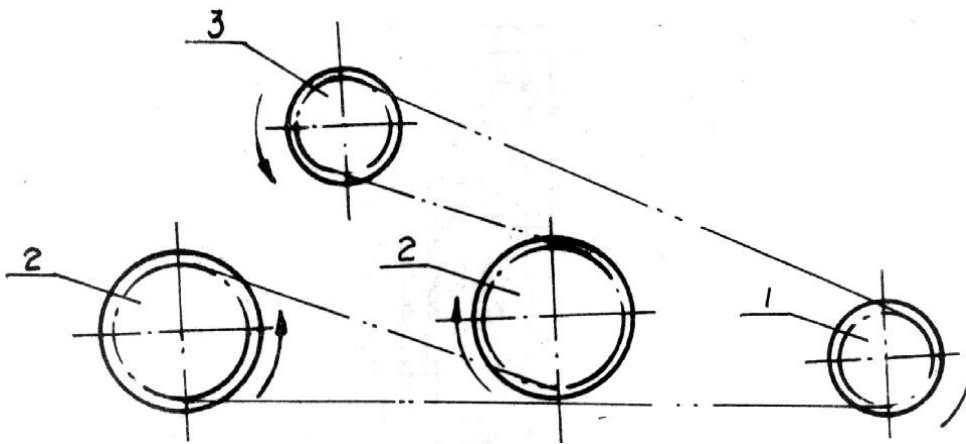
5.1 Full check should be made before installing the equipment.

5.2 This machine discharges through a big open-door, the connecting port of discharge is the flange edge of machine shell. A hopper with equivalent volume should be installed under the machine body.

5.3 Install the driving chain, adjust the position of tension chain wheel to make chain drive smoothly and make main shaft rotate on the direction of arrow shown on the mixer shell, then install the chain cover. (See Figure Eight)

5.4 Install the liquid-adding system.

5.5 Before use, check to see if discharging door is open or close. Adjust cylinder pressure and the position of limit switch so that discharging door is on a level with the bottom of machine shell when it is close, and reach a definite angle when it is open, and cylinder runs smoothly with a proper speed.



1.Small chain wheel      2. Big chain wheel      3. Tension chain wheel

**Figure Eight: Driving System**

## 6.USE, OPERATION AND POINTS FOR ATTENTION

6.1 Before use, race the machine, the machine body should be smooth without abnormal vibration. And observe if discharging mechanism operates normally.

6.2 When it use, start the reducer motor and do not feed until rotor turns normally.

6.3 Additives should be added after half batch of main materials enter the machine. After spraying, do not feed before some time of mixing.

6.4 When in stoppage and laid aside, oil-adding pipe must not remain oil to prevent oil from blocking the pipe after solidifying.

6.5 Materials must not be mixed with metal impurity to avoid damaging the rotor paddles.

6.6 The use of reducer motor and cylinder, Auxiliary components should be consistent with the stipulations of operation manual.

## 7.MAINTENANCE

7.1 The discharging mechanism should keep flexible and it's accumulated dust should be often cleared away.

7.2 Periodically replace the lube for all bearings. Sodium radical lube (GB492-65) Zn-3 is a good choice.

7.3 The driving chain should be lubricated with appropriate #30 machine oil and cleaned periodically.

7.4 The lube (LD-2H) is recommend for lubricating the reducer motor.

7.5 Lube should be changed once every eight months continuous run (8 hours work system). If the work time is prolonged, the oil change time can be properly shortened.

## 8.TROUBLE AND REMOVE

8.1 It a sudden machine stoppage occurs during the operation, motor should be started after the discharging door is opened and material is discharged.

8.2 If the discharging door leaks, check the contact of seals between the discharging door and machine shell. If the discharging door is not closed tight or sealing stripe ages, limit switch or the adjusting nuts of the supporting arm should be adjusted or the sealing stripe should be replaced.

8.3 If the discharging mechanism cannot work normally, check if cylinder and air supplying system are in trouble.

## 9.Wearing parts (See Figure Two)

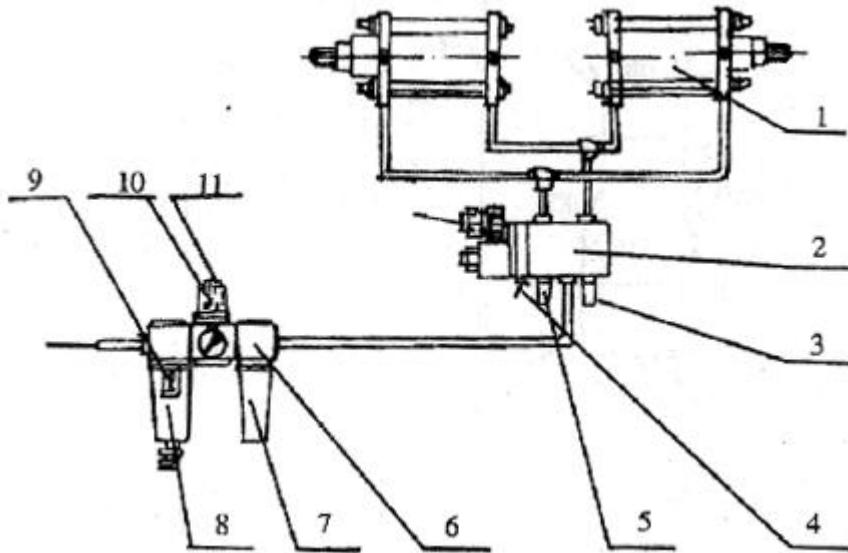
| Item | Description  | Quantity |  | Contact Way |
|------|--------------|----------|--|-------------|
| 1    | Chain        | 1        |  |             |
| 2    | Bearing      | 4        |  |             |
| 3    | Limit Switch | 4        |  |             |
| 4    | Seal Ring    | 4        |  |             |
| 5    | Seal Stripe  | 4        |  |             |

**Figure Two**

## 10. PNEUMATIC CONTROL

### 10.1 WORKING PRINCIPLE (See Figure Nine)

Figure Nine



10.1.1 Use the air compress with 0.7-0.8Mpa rated working pressure. Its produced compressed air is the power source, ensuring the working pressure of cylinder is 0.63Mpa.

10.1.2 Connect the air source pipe and check if pipes are reliably connected. Injected appropriate lubricating oil into sprayer 7 in accordance with the stipulations

10.1.3 Before air is inducted, turn the reducing valve handwheel 10 counter-clockwise to inload the rating spring of this valve, then open the air source and turn the hand-wheel clockwise, thus pressure rises gradually until the pressure shown on the pressure gauge is the needed working pressure. At this moment, lock hand-wheel through stop knob 11 to make the system work under the working pressure.

10.1.4 If without load and under the working pressure, use the manual 2-position 5-way solenoid change valve to make cylinder one operate through the manual switch 4, and check it cylinder and air supplying system are normal.

10.1.5 If with load, first adjust the openness of one-way through knob 5 to adjust the flow to make cylinder piston adjust speed in a wider speed range.

10.1.6 If with normal load, solenoid valve is electrified and receives the electric signal or air signal to change the flow direction of the compressed air and drive the cylinder to operate, thus realizing the automatic control of air pressure driving.

10.1.7 Periodcally check the oil level and water level in sprayer 7 and moisture separator 8

when oil level is near the lowest oil level, oil should be added in time. Select oil in the range of 2.5-7 F viscosity. When water level is near the filter core 9, water should be drawn off. When water will be completely drawn off, shut the drain valve at once.

## **10.2 MAINTENANCE**

10.2.1 Periodically clean the discharging control mechanism of the accumulated dust.

10.2.2 Periodically clean the filter core, water filter and oil filter.

10.2.3 All the disassembled parts should be handled with care to avoid damage.

## **10.3 Periodical Disassembly Checking and Points for Attention when**

### **Assembling Again.**

10.3.1 Clean with mineral oil for metal parts, with Soap liquid for rubber parts. Oil filler and water filler should be soaked in the petroleum solution for rinsing. Never use the solutions of acetone, ethyl acetate and toluene.

10.3.2 All the disassembled parts should be handled with care to avoid damage.



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