SLHY RIBBON MIXER

OPERATION MANUAL

江苏中天农牧机械有限公司

JIANGSU ZHONGTIAN AGRO MACHINERY CO.,LTD

Important instruction:

1 This manual detailedly describes SLHY series ribbon 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

1.1 APPLICABLE SCOPE

SLHY Ribbon Mixer is applicable to the mixing of powder in the materials in the compound feed factory, making all feed compositions be homogenized and ensuring the quality of compound feed.

1.2 FEATURES

This machine is a horizontal batch mixer. A double layer Ribbon, whose bottom gap is very small, is adopted in rotor. The material outlet is at the bottom of the machine and the material can be discharged over rapidly through its all sections. The discharging door is pneumatically controlled. This machine is equipped with liquid adding pipe for the adding the oil.

This model of machine has high mixing efficiently, fine mixing quality and little material remainder.

2.MAIN TECHNICAL SPECIFICATIONS

2.1 MAIN TECHNICAL DATA (See Table One)

Table One

Item / Model	Inner Cubage	Capacity/B	Mixing Time/B	Cv%	Power
	m^3	kg	min	Cv%≤	kW
SLHY0.4	0.4	200	3～6	7	5.5
SLHY0.6	0.6	300	3～6	7	5.5
SLHY1	1	500	3～6	7	11
SLHY2.5	2.5	1000	3～6	7	18.5
SLHY5	5	2000	3～6	7	30
SLHY7.5	7.5	3000	3～6	7	37
SLHY10	10	4000	3～6	7	45

3.WORKING PRINCIPLE

The Ribbon has two circles, inside and outside, which rotates left and right separately. When the rotor rotates, the left-rotating ribbon pushes the materials from one and another end and the right-rotating ribbon pushes the materials to move in the opposite direction. Through the repeated conveetion of two streams of materials and turnover of materials pushed to the side plates at the opposite ends the mixing purpose is gained.

(See Figure Two)

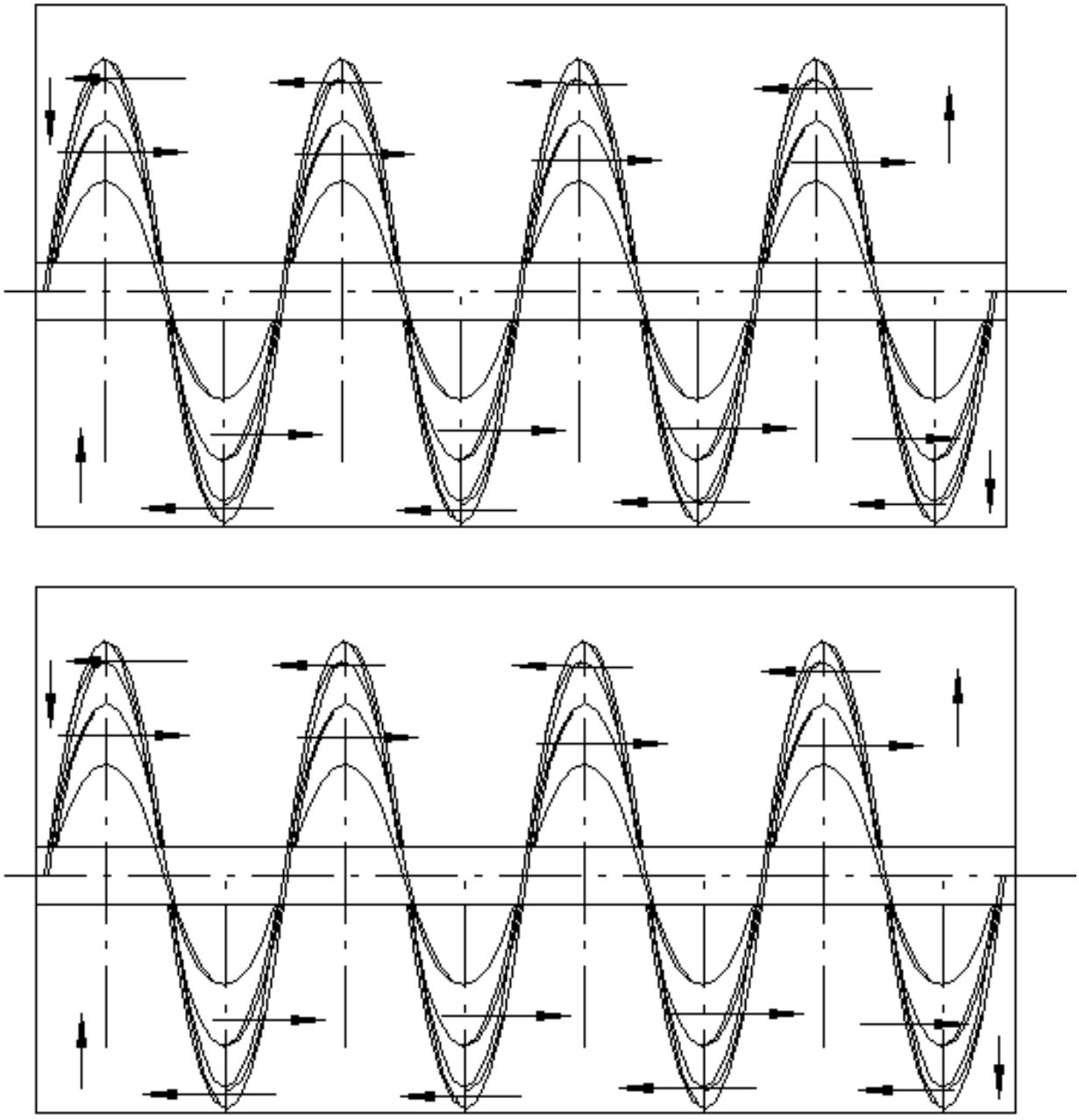


Figure Two

4.Structure

The Main Structure of the SLHY RIBBON MIXER:

a. Rotor

b. Machine Body

c. Driving System

d. Door Opening System

e. Liquid Adding System

4.1 MIAN STRUCTURE (See Figure Three)

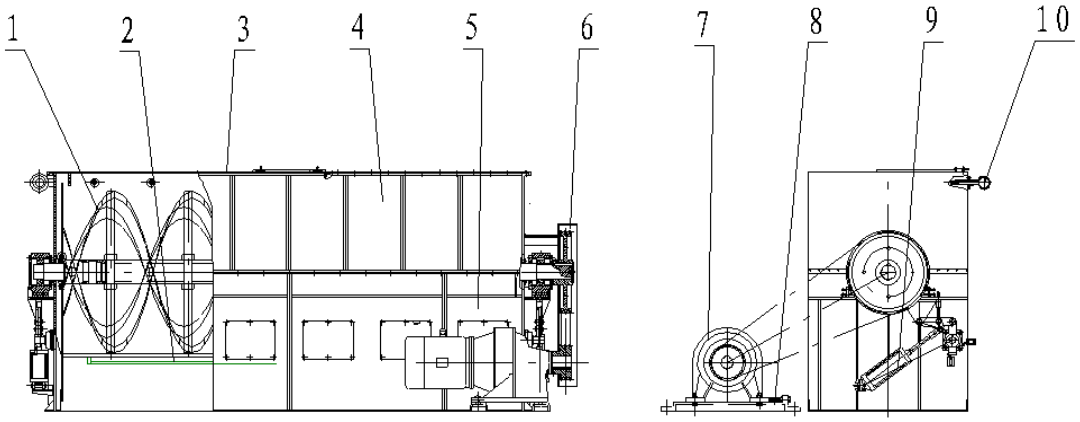


Fig.3 Main Structure

1.Rotor 2.Opening Gate 3.Cover plate
4.Upper Machine Body 5. Lower Machine Body 6.Chain Cover
7.Motor 8.Slide Guide 9.Cylinder
10.Liquid Adding System

4.2 MAIN SPARE PARTS

4.2.1 ROTOR

The rotor consists of ribbon, shaft, ring and supporting rod. The ribbon has two circles, inside and outside, which rotary left and right separately. When the rotor rotates, the left-rotating ribbon pushes the materials from one end to another end and the right-rotating ribbon pushes the materials to move in the opposite direction. Through the repeated convection of two streams of materials and turnover of materials pushed to the side plates at the opposite ends the mixing is gained.

Both ends of rotor are near to the inner wall of machine body. The connecting rod of outer ribbon is equipped with an adjustable wiper so that materials at four corners of machine can

fully mixed.

The rotor shaft is driven through chain and chain wheel. The speed of driving chain wheel is reduced by cycloidal pin gear reducer.

4.2.2 MACHINE BODY

There are inside and outside layer plates at opposite ends of machine body. The space between the inside and the outside layer wall plates is open to the whole machine. When the materials is feed and discharged, air discharged discharged by material can circulate in this space, avoiding overflowing the machine. There are inspection door and two material inlets on the top cover of the machine body.

4.2.3 THE DISCHARGING DOOR AND ITS SEALING DEVICE (See Figure Four)

The discharging door consists of door body, supporting arm and adjusting nut. The installed seal around the discharging door frame at the lower part of the machine shell. When the door is closed tight, the side of discharging door body sticks close to the rubber sealing stripe of replaced when it is damaged. If necessary, the distance between the supporting arm and the door body can be changed by adjusting the position of the adjusting nut to make the discharging door on a level with round curve surface of the bottom of machine shell. The supporting arm is installed on the coupling shaft.

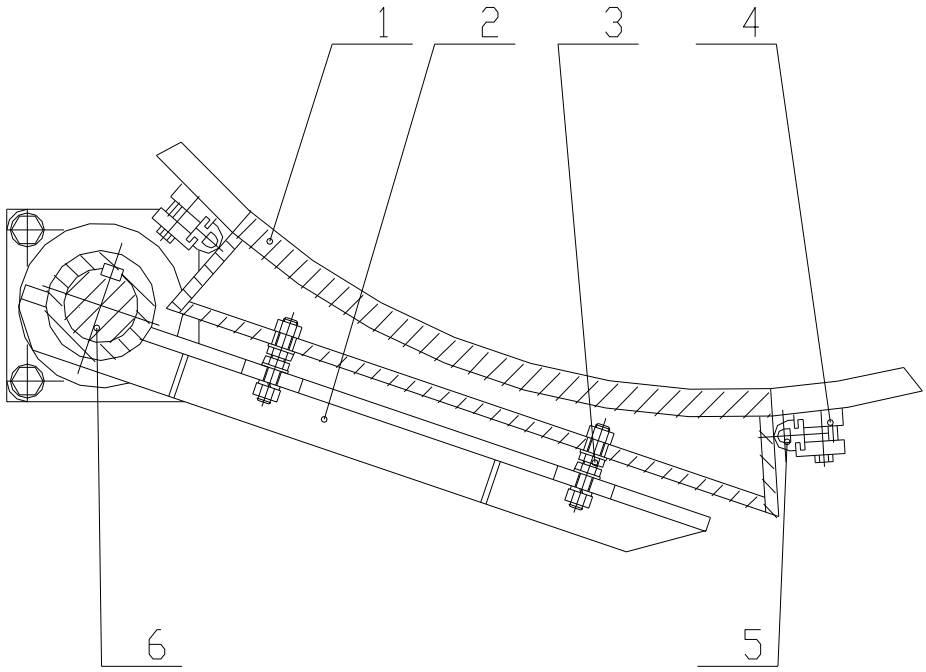


Fig.4

1.Door Body 2.Supporting Arm 3.Adjusting Nut
4.Seal 5.Seal Stripe 6.Coupling Shaft

4.2.4 DISCHARGING CONTROL MECHANISM(See Figure Five)

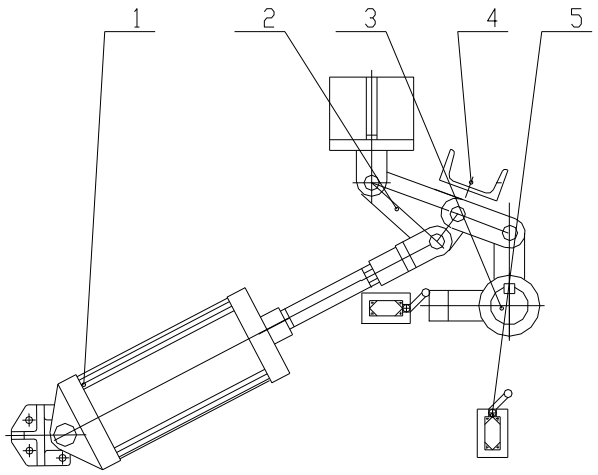


Fig.5 DISCHARGING CONTROL MECHANISM

1.Cylinder 2.Connecting Rod Mechanism
3.Coupling Shaft 4.Limit Bolt
5.Limited Switch

The discharging control mechanism consists of cylinder, connecting rod mechanism, coupling shaft, limited switch. The discharging door is installed on the coupling shaft which is connected with the drive rocker rod of the connecting rod mechanism. The cylinder head is articulated with the driving rocker rod. Cylinder reciprocates to make the coupling shaft turn through the connecting rod mechanism, thus driving the discharging door to open or close (when the piston rod of cylinder is pushed out, the discharging door is closed). See Figure Six for the pneumatic principle.

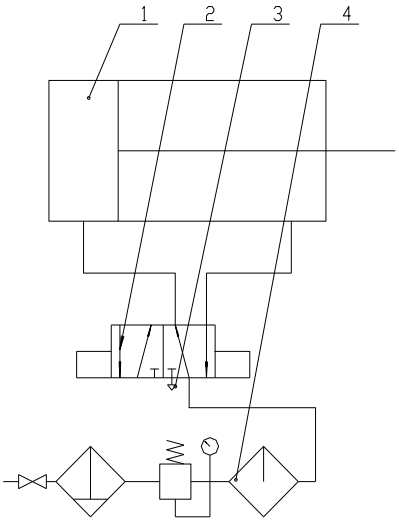


Fig.6 Pneumatic principle

No.	Name	Model & Spec.			Qty.
		SLHY0.25	SLHY0.4、SLHY0.6	SLHY1、SLHY2.5、SLHY5、SLHY7.5、SLHY10	
1	Cylinder	QGS80×125-MT4-L2	QGS100×125-MP2-L2	QGS125×125MP2	The front two cylinder each one; the 3rd cylinder needs 2
2	Two five-way solenoid valve	2637050.0201	2636000.0201	2636000.0201	1
3	muffler	QXS-L12	QXS-L8	QXS-L8	2
4	Air Treatment FRL	398.363	398.223	398.223	1 set

4.2.5 FIXING OF BEARING HOUSEING OF MAINSHAFT

Three installed two pads between the bottom face of main shaft bearing and the supporting face of the machine body. The touching face between two pads is bevel face. The height of bearing housing, that is , the gap between outer diameter of the rotor and the machine shell can be adjusted by moving these two pads.

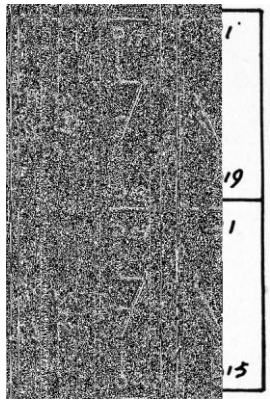
The bearing housing and both ends of two pads are pressed tight by the bolts installed in the machines.

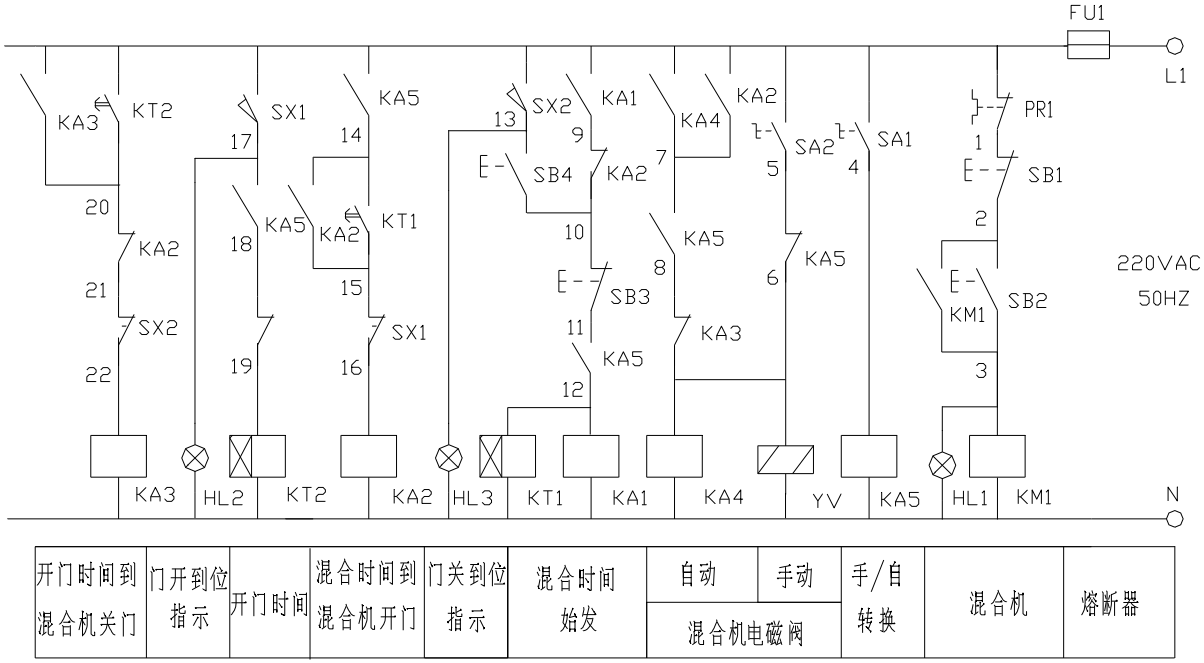
4.2.6 LIOUID ADDING PIPEING

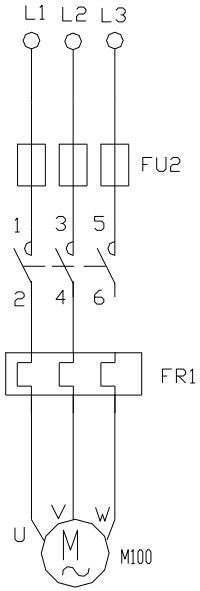
Being installed at the upper side of the machine, liquid adding pipeline consists of pipe and spray nozzles. Liquid is sparyed in the shape of fan through spray nozzle. Several spray heads are evenly distributed in the machine. A flange is installed at the inlet of pipe to be connected with the oil supplying system.

4.2.7 ELECTRICAL CONTROL PRINCIPLE

ELECTICAL PRINCIPLE OF THE MIXER(See Figure Seven)




FU1
L1
N
KA3
KT2
SX1
KA5
SX2
KA1
KA4
KA2
SA2
SA1
PR1
SB4
SB1
KA2
KA5
KA2
KT1
KA5
SB3
KA5
KA3
SX2
SX1
KA5
SB2
KM1
220VAC
50HZ
KA3
HL2
KT2
KA2
HL3
KT1
KA1
KA4
YV
KA5
HL1
KM1
开门时间到
混合机关门
门开到位
指示
开门时间
混合时间到
混合机开门
门关到位
指示
混合时间
始发
自动
手动
手/自
转换
混合机
熔断器
混合机电磁阀


L1 L2 L3
FU2
FR1
U
V
W
M
M100

限位开关

Fig.7 ELECTICAL PRINCIPLE

NOTE:

1. This figure is only a reference one of the operation of the single mixer.
2. For this control plan, catch mixing of a batch of materials in the “manual” mode needs to start SB4 one time.
3. When it is designed systematically in factory, the interlocking relation of all upstream and downstream equipment of mixer should be considered.

14	$SX_{1.2}$	Limit switch	$JLXK_1$-111	2	
13	YV	Solenoid valve	2636000.0201	1	
12	HL_3	Solenoid valve	2636000.0201	1	Red
11	$HL_{1.2}$	Indicator light	XD_2-220V	2	Green
10	KT_2	Indicator light	XD_2-220V	1	1S～999S
9	KT_1	Time relay	JSS_1P_1-061M	1	10S～9990S
8	$KA_{1\sim5}$	AC Relay	JZ_7-44.20V	5	
7	FR_1	Thermal relay	RL_0-	1	
6	KM_1	AC Contactor	CJ-220V	1	Equipped with the M power
5	$SA_{1.2}$	Rotate button	LA18-22	2	
4	$SB_{1.3}$	Stop button	LA18-22	2	Red
3	$SB_{2.4}$	Start button		2	Green
2	Fu_2	Start button	RL_1-	3	Fuse should be equipped with the M power
1	Fu_1	Fuse	$RL_{1\text{-}5}$，2A	1	
No.	Code	Name	Spec. & Model	Qty.	Remarks

ELECTICAL PRINCIPLE OF THE MIXER

5.INSTALLATION, AJUSTMENT AND THE PREPARE BEFORE THE OPERATION

5.1 A complete safety check should be made before installing the equipment.

5.2 The machine discharges the material through a full-open door. The flange edge of machine shell is the connecting port for discharging. A hopper with equivalent volume should be installed under the machine.

5.3 The reducer motor is installed on the slide guide, and adjust the position of the main motor according the position of the big chain wheel.
5.4 Install the driving chain and adjust the position of motor to make chain drive smoothly, and make the rotation direction of mainshaft the same as that shown by arrow on the machine. Then install the chain cover.
5.5 Install the feeding pipe on the upper cover plate according to the technical demand.
5.6 Connect the liquid adding pipe as per the technical demand and ajust the position of the spray nozzles, ensure the liquid will be sprayed to the raw materials.
5.7 Before use it, check the opening and the closing condition of the discharging door, ajust the pressure of cylinder and position of limit switch to make the discharging door on a level with the bottom of machine shell when it is closed, reach a definite angle when it is opened, and make the cylinder operate smoothly.

6.OPERTION AND POINTS FOR ATTENION

6.1 Before use it, race the machine first, The run should be smooth without abnormal vibration. And check if the discharging mechanism is closed tight.
6.2 When use the machine, start the reducer motor first, then feed after rotor turns normally.
6.3 The material level in the machine must not be lower than shaft line plane of main-shaft and higher than the diameter of outer ribbon.
6.4 Additives should be fed after haif batch of main material has entered the machine, and oil should be sprayed after all main material has entered the machine, the material should be mixed for some time before being discharged.
6.5 Metal impurities cannot be mixed into the material to avoid damaging the rotor ribbon.
6.6 The operation of the reducer motor, cylinder and auxiliary components should accord with the stipulations of the operation manual.
6.7 The working current of mixer cannot exceed the rated current of motor.
6.8 When the machine is stopped, the oil-adding pipe cannot have any oil remained to prevent oil from blocking the pipe after it solidifies.

7. MAINTANCE

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 #40-#50 machine oil is recommend for lubricating. After the first addition of oil and

run of 500 hours, oil should be changed once every half a year continuous run (8 hours work system). If the work time is prolonged, the oil change time can be properly shortened.

8.TROUBLE AND REMOVEL

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.VULNERBALE PARTS (See Figure Two)

Figure Two

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

10.PNEUMATIC CONTROL

10.1 WORKING PPRINCIPLE (See Figure Nine)

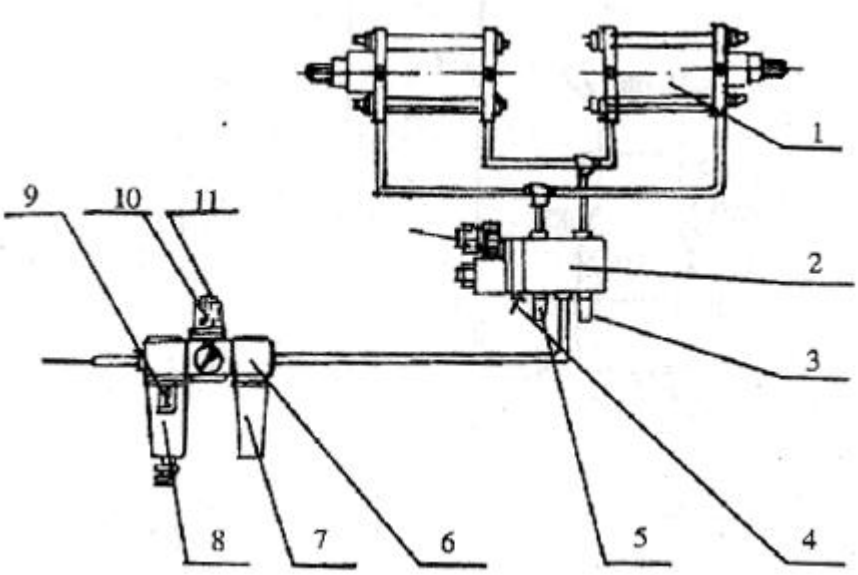


FIg.9 PNEUMATIC CONTROL WORKING PPRINCIPLE

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.

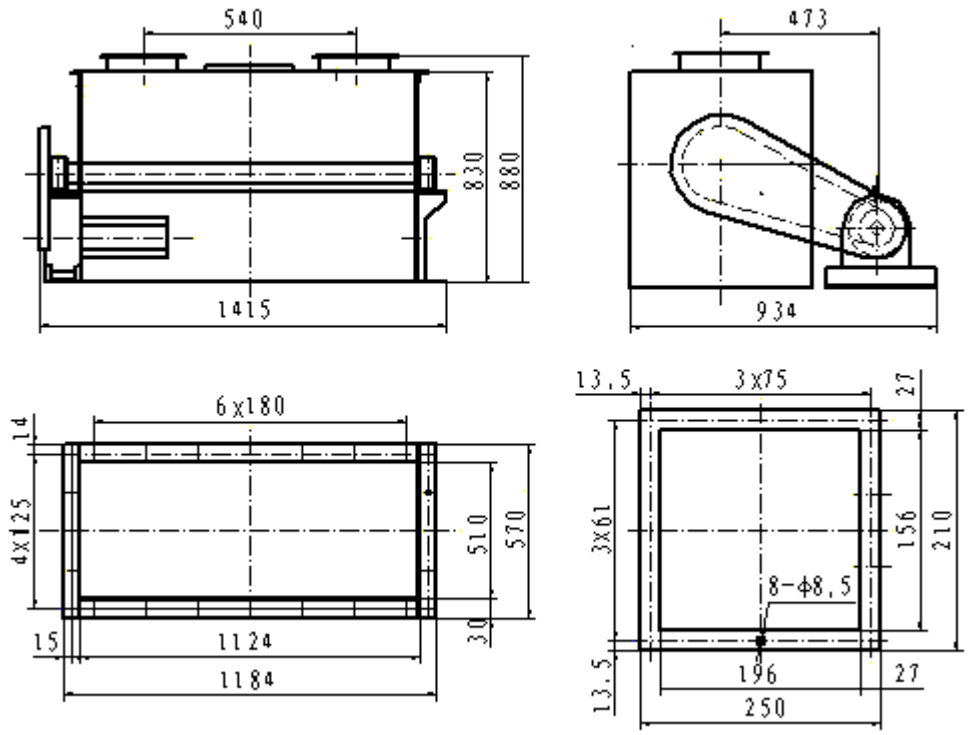
10.3 PNEUMATIC CONTROL TROUBLE AND REMOVAL

Troubles	Reasons	Troubleshooting
Air leakage between cylinder block and end cover	Sealing ring damage	Replace the sealing ring
Cylinder buffer throttle valve of the adjusting rod leakage	Sealing ring damage	Replace the sealing ring
Weak output force of the cylinder	poor lubrication	Check whether the oil mist machine is out of work
	Insufficient air supply	Widen the inner dia. Of the connection pipe or the pipe connector
Pressure can't be increased when conditoning the pressure by the reducing valve	Spring breakage	Replace the spring
Oil mist device does not drop oil when working.	Decrease of import flow	Add the oil
	Oil needle blocking	Clean or replace
Electromagnets are noisy	Dirt between the suction surface of the iron core	Clean up
	The voltage is below the rated voltage	Adjust the voltage
The main valve can't be reversed or have reversing trouble.	Solenoid valve is not well connected	Inspect the electric line
	Electromagnet exhausts slowly or not	Clean the electromagnet
	Poor lubrication with low working pressure	Inspect and clean the lubricator ,increase the air pressure and check out if it is leakage

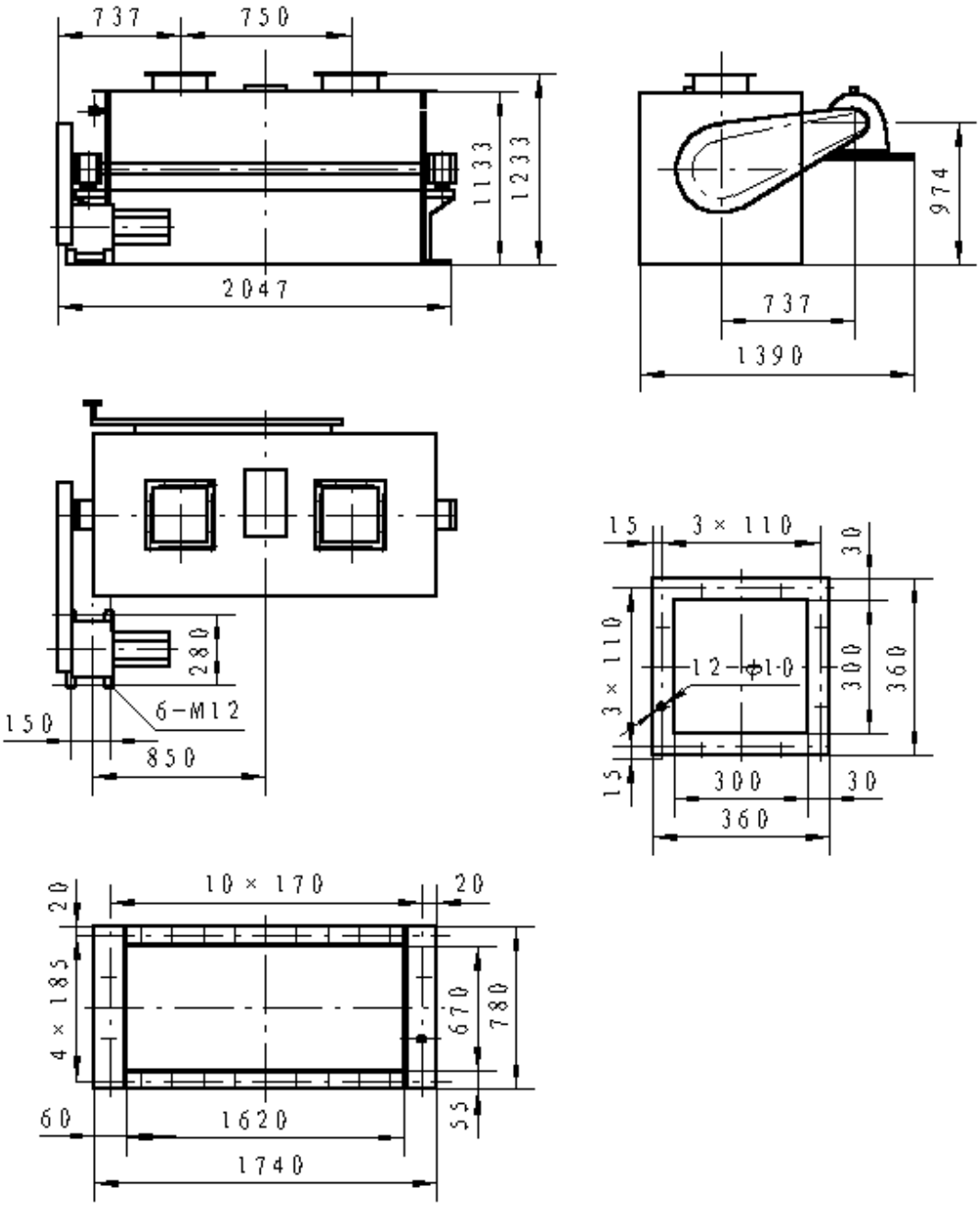
10.4 Periodical Disassembly Checking and Points for Attention when Assembling Again.

10.4.1 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.

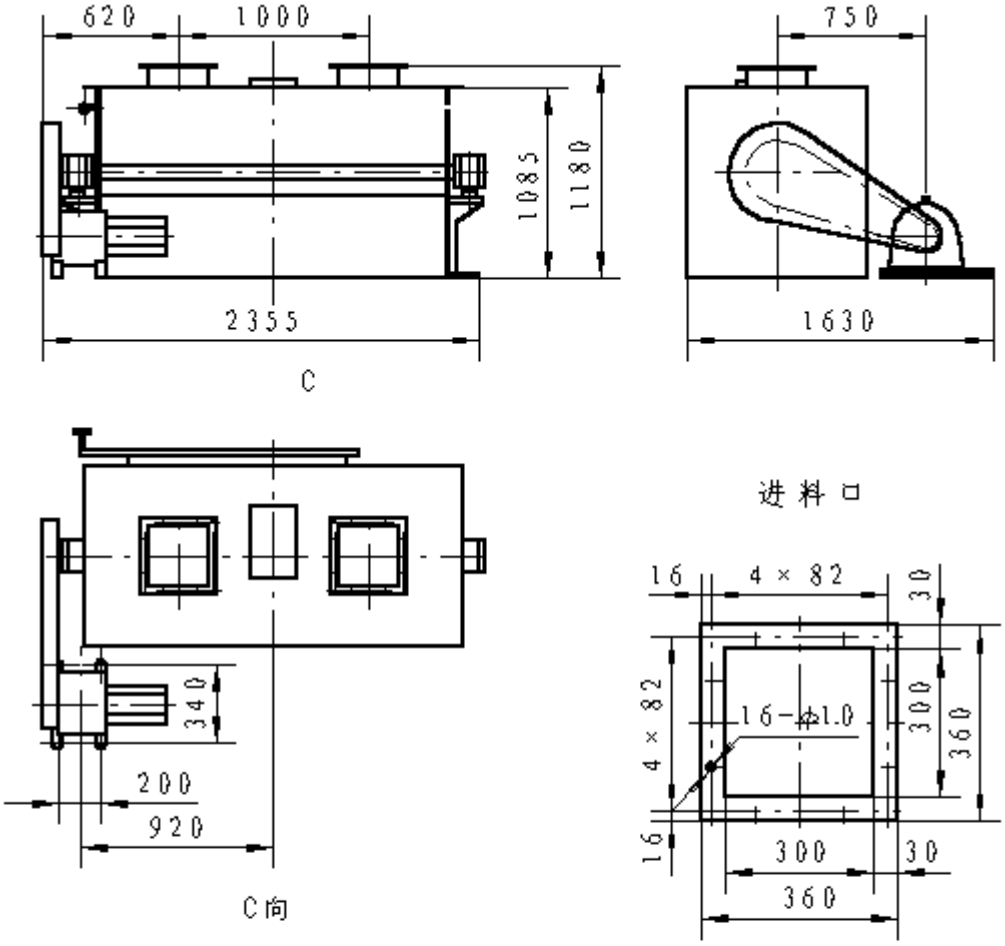
10.4.2 All the disassembled parts should be handled with care to avoid damage.



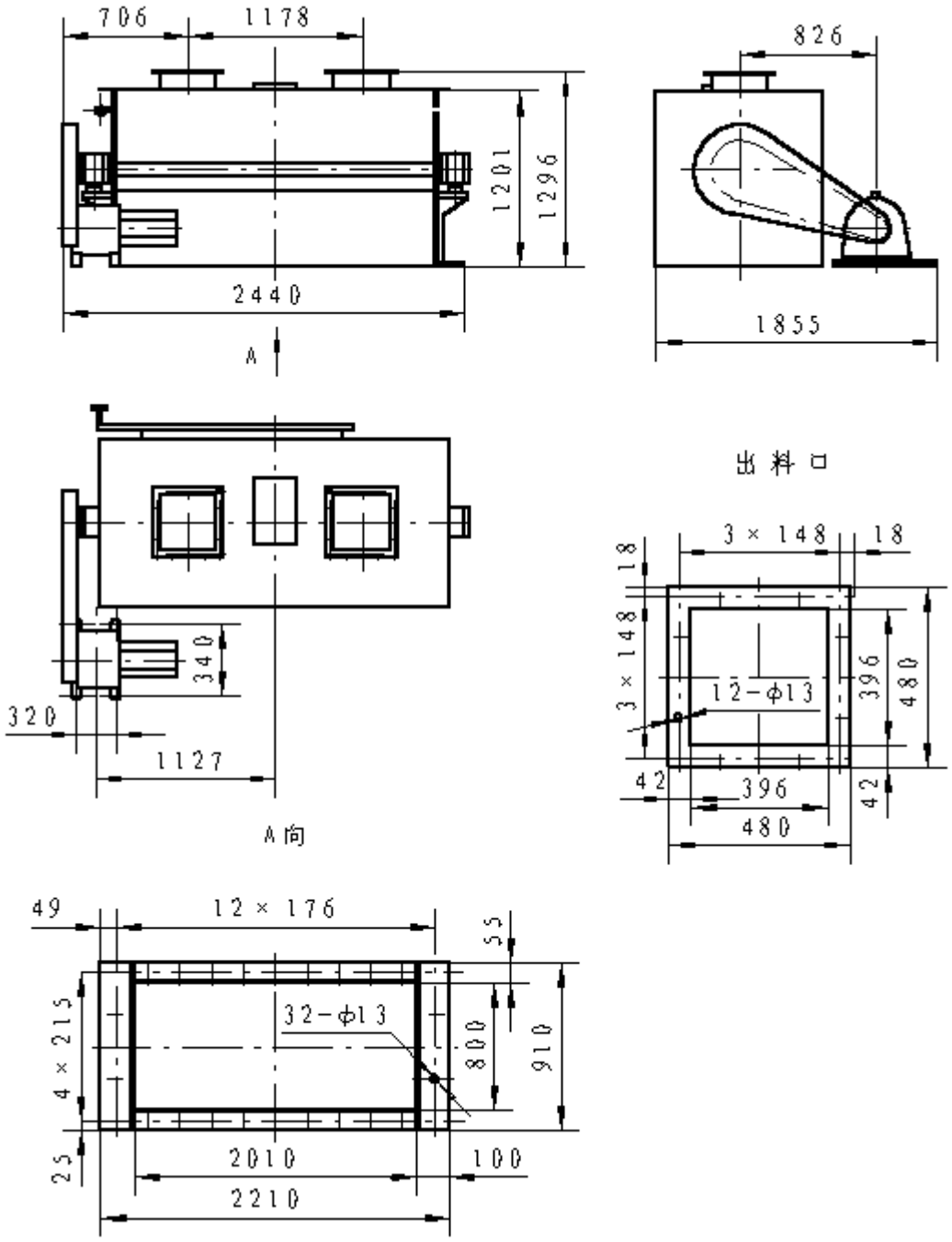
SLHY0.25 Spiral ribbon mixer Sample



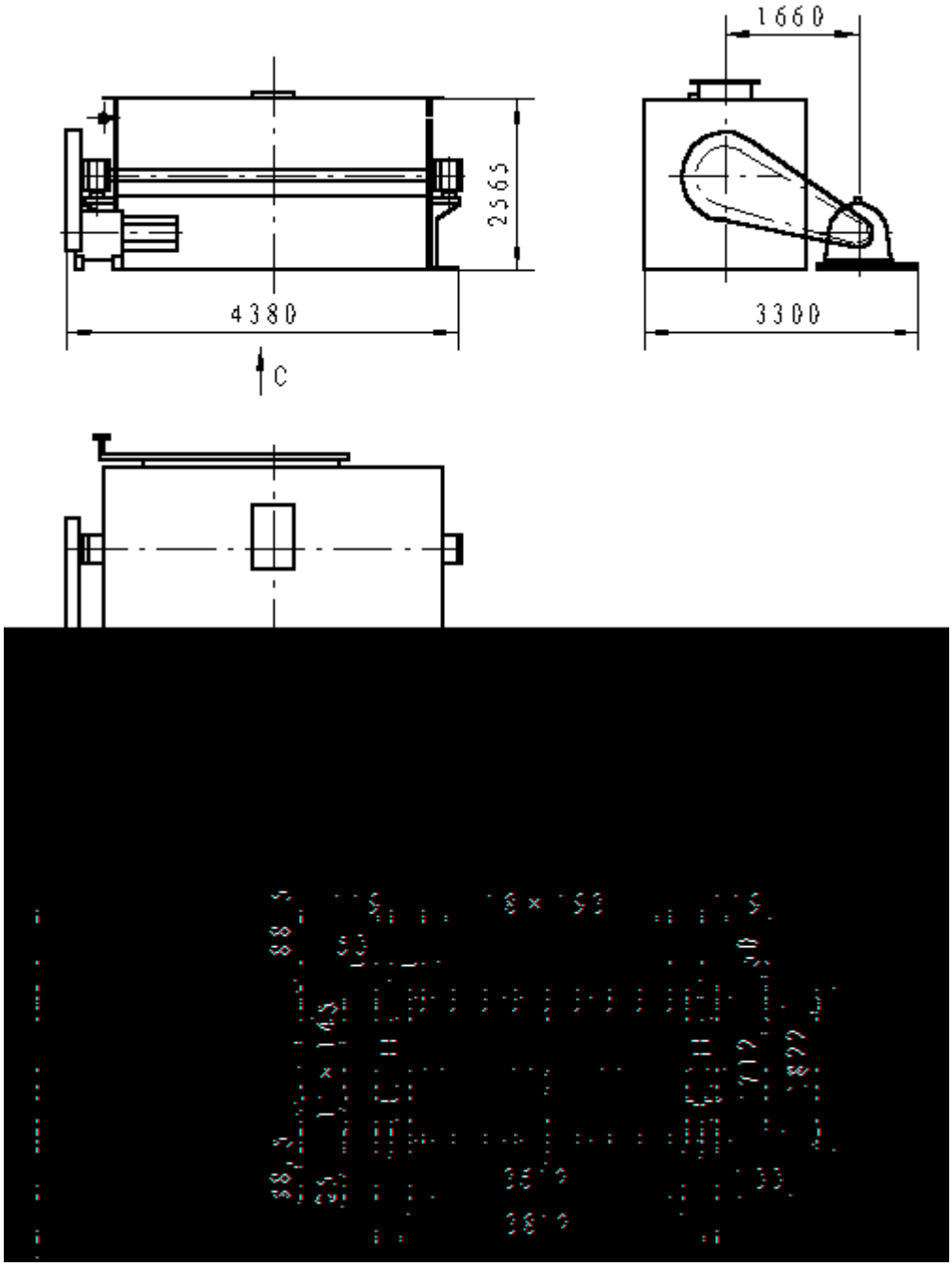
SLHY0.4 Spiral ribbon mixer Sample



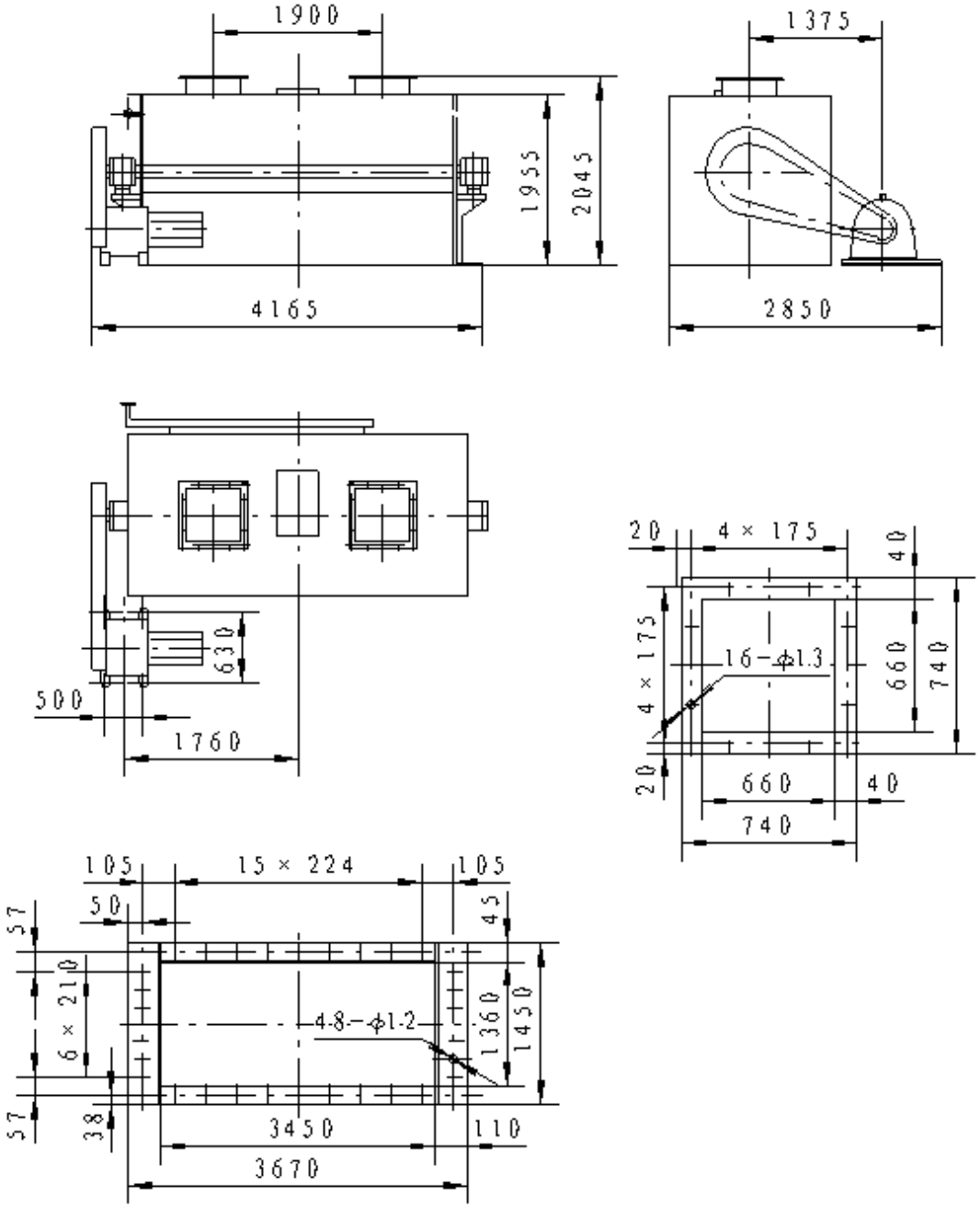
SLHY0.6 Spiral ribbon mixer Sample



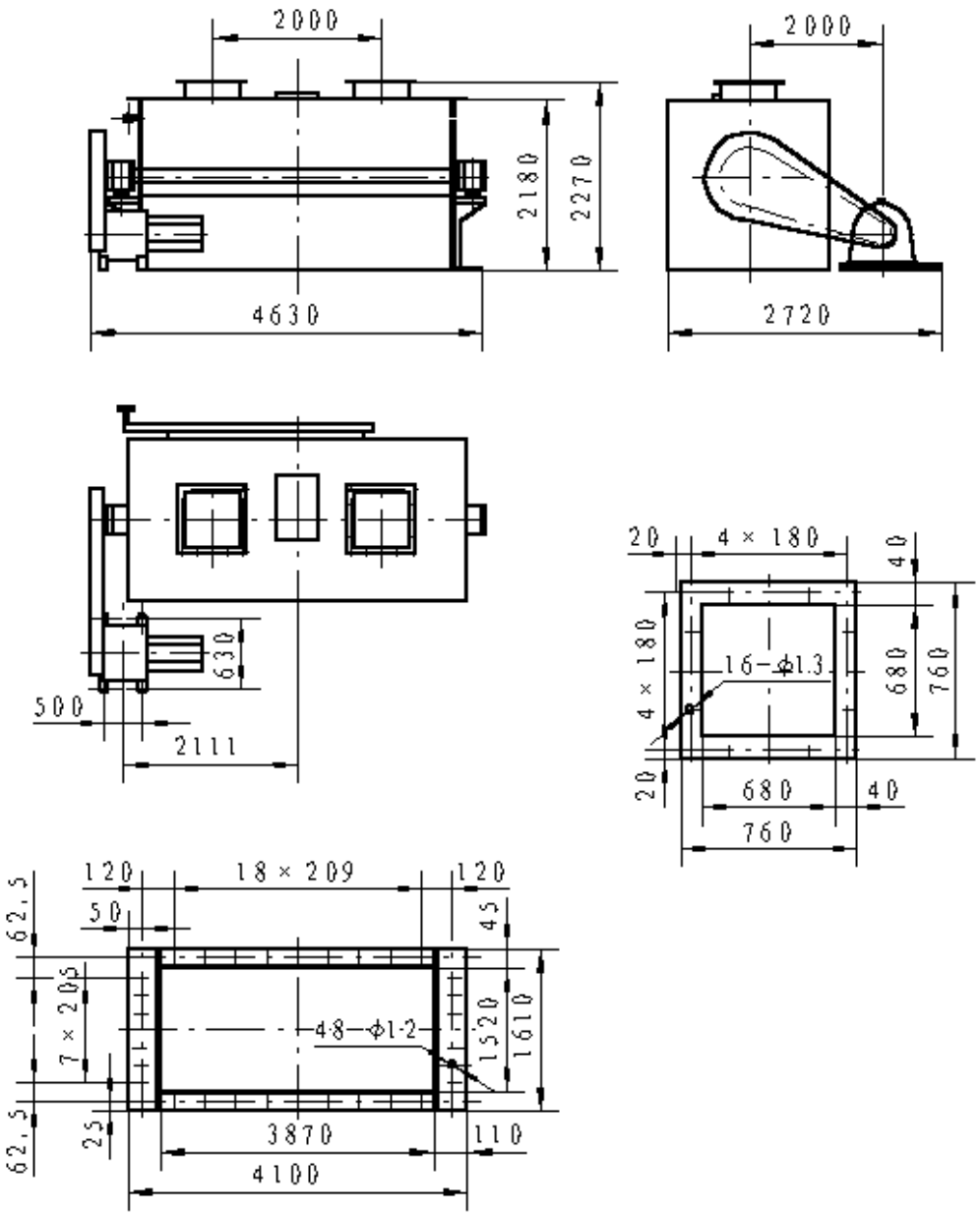
SLHY1 Spiral ribbon mixer Sample



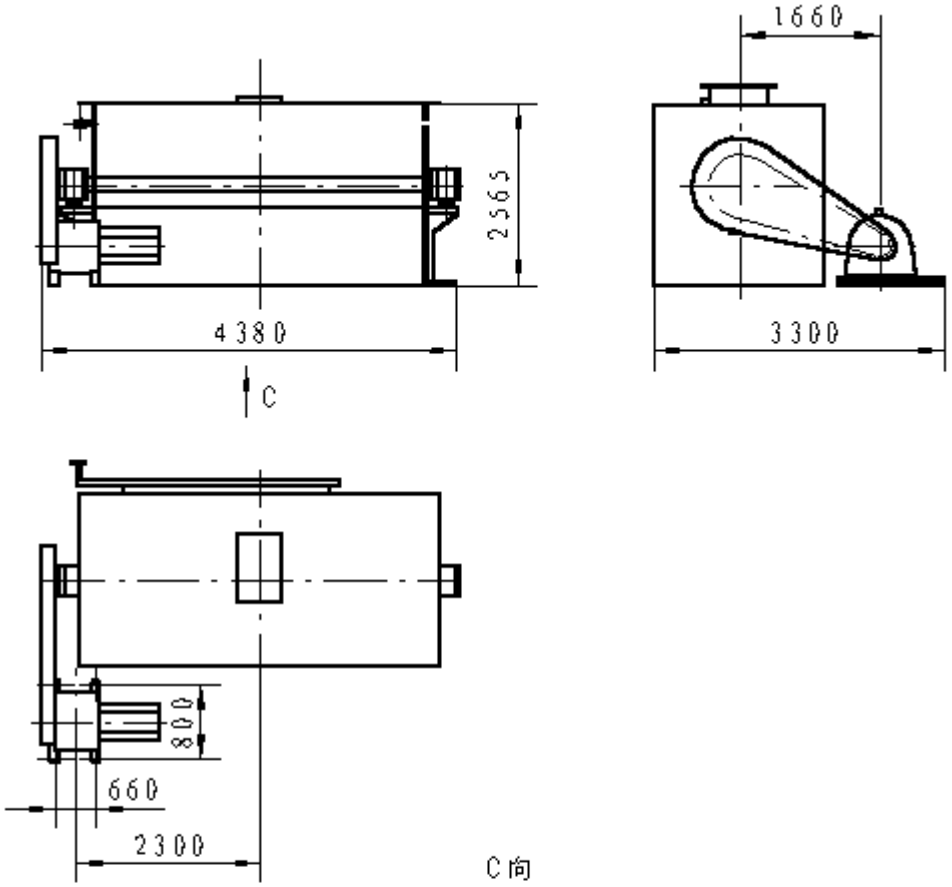
SLHY2.5 Spiral ribbon mixer Sample

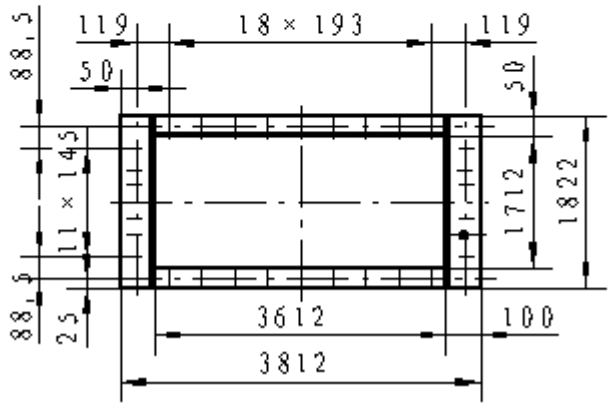


SLHY5 Spiral ribbon mixer Sample



SLHY7.5 Spiral ribbon mixer Sample





SLHY10 Spiral ribbon mixer Sample

ZTMT
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