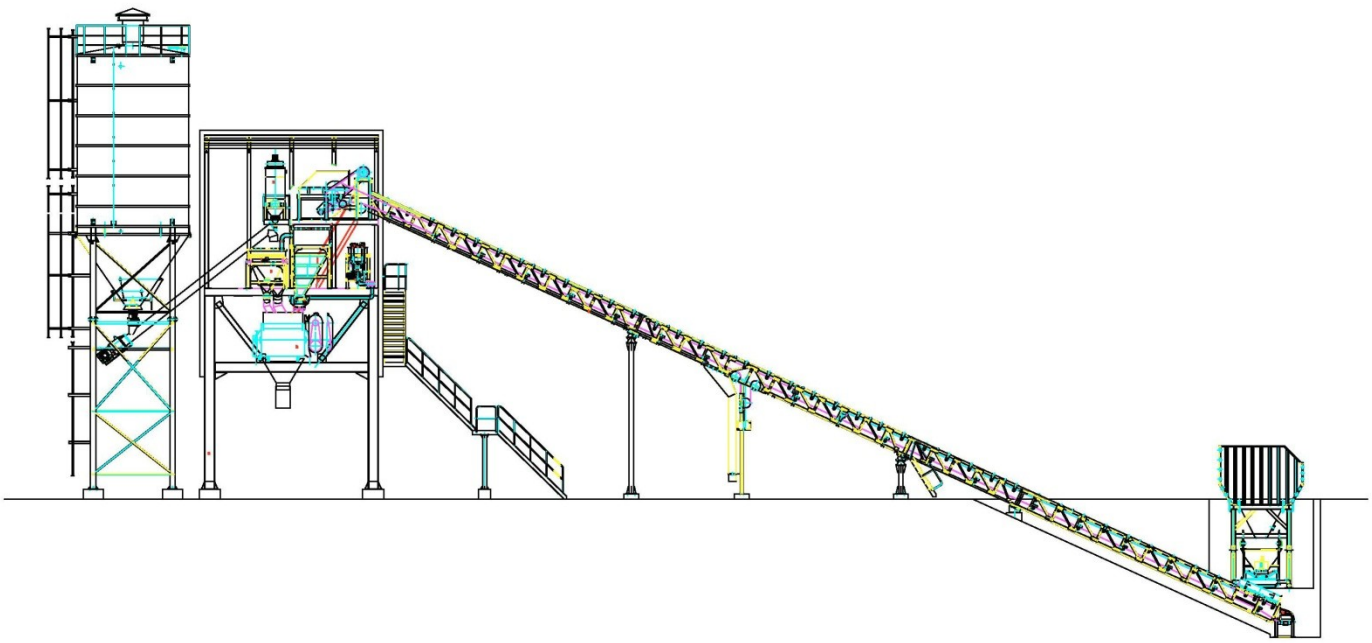
编制单位：河南惠亚机电设备有限公司 联系电话：15938731655 传真：0371-875228155 网址：www.hiyamech.com

HZS-120

Concrete Mixing Station



Supplier: Henan Hiya Mechanical Equipment Co., Ltd. (www.hiyamech.com)

Manufacturer: Zhengzhou Hydraulic Engineering Machinery Co., Ltd. (www.zzsg.net.cn)

Ⅰ. Introduction

HZS120 is a new type of concrete mixing plant. Its mainframe machine is Double Horizontal Shaft Concrete Mixer JS2000, and its automatic control system is composed of IPC (Industrial Personal Computer) and Programmable Controller. Through this system, various ratio of concrete can be mixed, with the average hourly productivity of 120m^3/h and discharge height of 3.8m. HZS120 is suitable for medium scale engineering constructions of hydropower, highway, bridge, port, airport, ect., and the large and medium-sized concrete precast factories and commodity concrete production factories.

Concrete Mixing Plant HZS120 consists of many different parts, such as aggregate batching system, material conveying system, measurement system, stirring device, water supply system, additives supply system, pneumatic system and electric control system. The process is: the screw conveyor transports cement and fly ash in the cement silo into the weighing hopper; and the sand and stone in the aggregate hopper are put onto the horizontal belt conveyor through the arc door under the silo to have a weigh, and then, they are sent into the bin by the horizontal and inclined belt conveyor; the electric pump sends water and additives into their respective weighing hopper. Then, put all the batching into the mixer and mix the concrete. At last, discharge the mixed concrete into the transferring truck through the collecting hopper.

HZS120 is reliable and accurate. The mixed time is short and the quality is good. It has two methods of operation, manual and automatic method. HZS 120 can save 200 kind of concrete formulation, and be equipped with the printer, which is very convenient for production management.

To operate the plant correctly and improve the work efficiency greatly, the workers must read the full set of instructions carefully, and be trained before operating HZS 120.

HZS 120 Executive Standard: GB10172-88.

The factory has established and implemented the quality system consistent with GB/T19001-2000-ISO9001:2000 standard.

Ⅱ. Main Technical Parameters

1. **Productivity** 120 m^3/h
2. **Discharge Height** 3800 mm
3. **Mixer**

Model	JS2000（MAO3000/2000）
Discharging Capacity	2 m^3
Motor Power	37X2 KW
Aggregate Size (gravel/ pebble)	40/60

4. **Weighing System**

Stone:	Equipment	Electronic scale
	Metering Capacity	50—2500kg
	Metering Mode	Single Measurement
Sand:	Equipment	electronic scale
	Metering Capacity	50—2500kg
	Metering Mode	Single Measurement
Cement:	Equipment	trolley balance
	Metering Capacity	20—1200kg
	Metering Mode	two materials accumulated
	Metering Accuracy	1%
Fly ash:	Equipment	trolley balance
	Metering Capacity	10—500kg
	Metering Mode	Single Measurement
	Metering Accuracy	1%

Admixture:	Equipment	trolley balance
	Metering Capacity	5—300kg
	Metering Mode	Single Measurement
	Metering Accuracy	1%
Water:	Equipment	trolley balance
	Metering Capacity	10—500kg
	Metering Mode	Single Measurement
	Metering Accuracy	1%
Additive:	Equipment	trolley balance
	Metering Capacity	1—70kg
	Metering Mode	two materials accumulated
	Metering Accuracy	1%

5. Material Conveying Apparatus

Horizontal Belt Conveyor

Width	1000 mm
Speed	1.6 m/s
Length	16000 mm
Motor Power	11 kW

Inclined Belt Conveyor

Width	1000 mm
Speed	1.8 m/s
Length	39668 mm
Obliquity	23^0

Motor Power 11 kW

3 Cement Screw Conveyors

Length 11430、 9640、 10480 mm

Diameter 323 mm

Obliquity 26^0 31.3^0 28.6^0

Productivity 100t/h

Motor Power 18.5kW

1 Fly Ash Screw Conveyor

Length 9060 mm

Diameter 273 mm

Obliquity 32.3^0

Productivity 80t/h

Motor Power 15kW

1 Admixture Screw Conveyor

Length 8060 mm

Diameter 219 mm

Obliquity 37.1^0

Productivity 50t/h

Motor Power 9.2kW

6. Water Supply System

Pump IS80-65-125 Flow $50m^3/h$

The Maximum Head 20000mm

Power 5.5 kw

7. Additives Supply System

Pump	FB40-32-20
Flow Rate	6.3m^3/h
The Maximum Head	20000mm
Power	0.75X2 kw

8. Pneumatic System

2 Air Compressors	w-1.0
Displacement	1.0 m^3/min
Pressure	0.7 Mpa
Power	7.5X2KW

9. Sand and Stone Storage Bin

Bin Capacity	4X25 m^3
Sorts of Sand and Stone	4 (3 for stone and 1 for sand)

10. Cement Silo (4 sets in total) 100 t x 4

11. Electric Control System

Power Source: 3 phase 4 wire 380 V, 50Hz;

Power Supply: Transformer. The capacity is not less than 500KVA.

Methods of Operation: manual control and automatic computer control. It can preset 200 kind of concrete formulation.

12. Total Installation Power 210 KW

13. Total Weight (without the silo) About 72 t

14. Prime Overall Size (L W H) 6400 x 5400 x 13000mm

Ⅲ Structure Introduction

1. HZS 120 process structure is presented in Figure 1.

2. The following are the introduction of different systems.

(1) **Aggregate Batching System & Material Conveying System. The** process flow is shown in figure 2 below:

A. Sand, stone storage bin

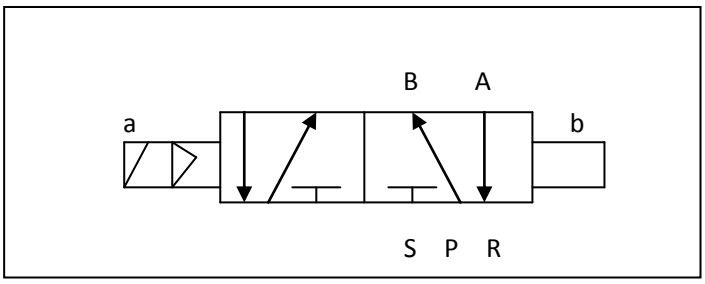
Sand, stone storage bin is a steel structure, which is composed of a sub-frame, a bin body and a net. The bin body is divided into four bins, with the capacity 25 m^3 for each bin. Each storage bin has two discharge ports with cylinder driven arc doors at the bottom. The operator can open two arc doors at the same time, and also can open only one door to get the accurate measurement. Two 0.25KW vibrators are installed on the storage bin to quicken the sand-dropping, while there are also two 240X75mm steel plate screen meshes on the top of the storage bin to prevent large material into the mixer, and damage the mixer.

Note (1): Storage Bin Switch Cylinder

Model: QGA100X170MT4----Y; Pressure: 0.1-----1.0MPa

Note (2) Pneumatic Control Valve Model

Symbol: (Size 15mm)



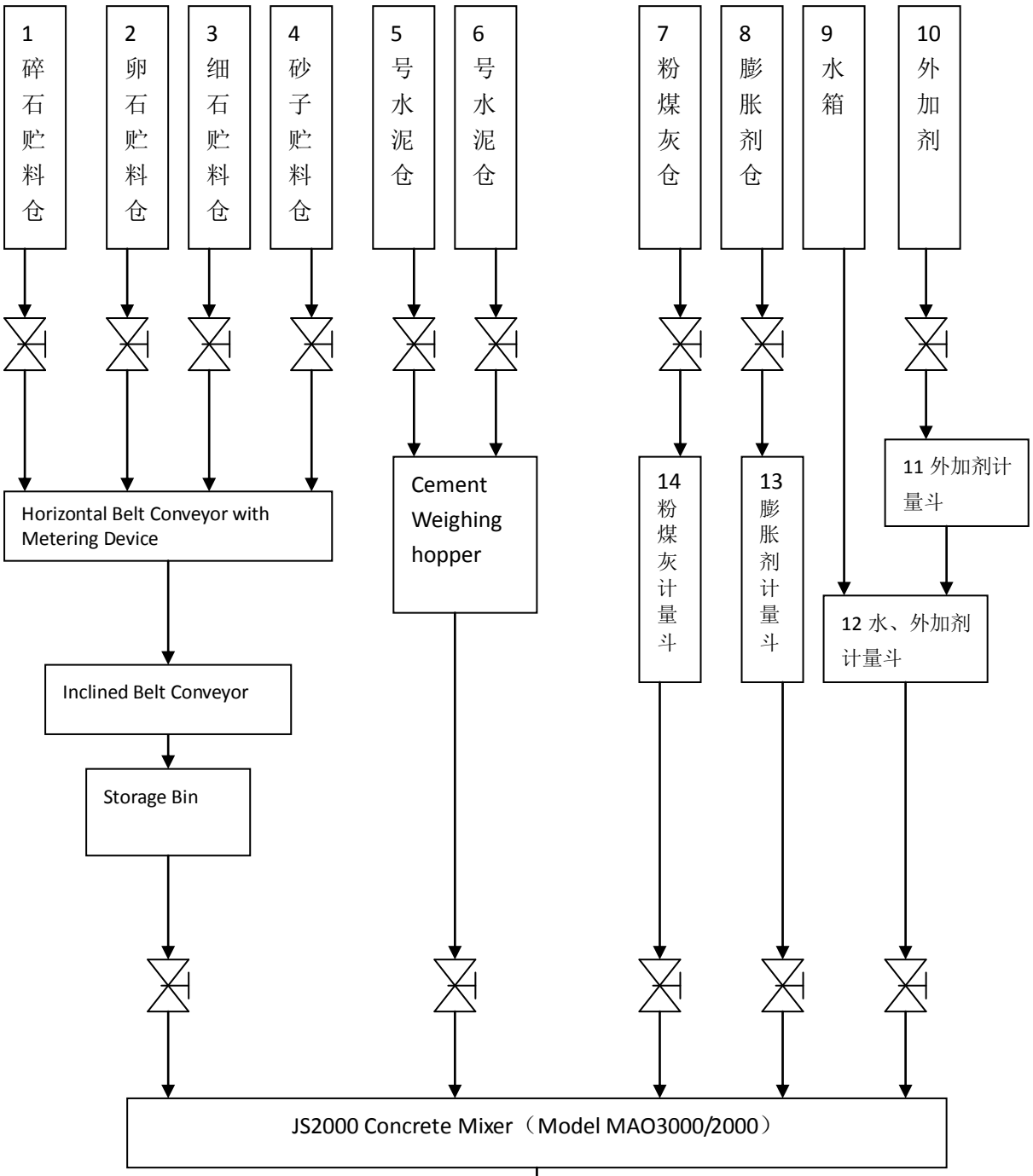
Pressure Range: 0.1---1.0MPa

The Electric Magnet Model: BEST Nr 0200

Voltage：220V、50Hz; ED: 100 % ; IP 00/65

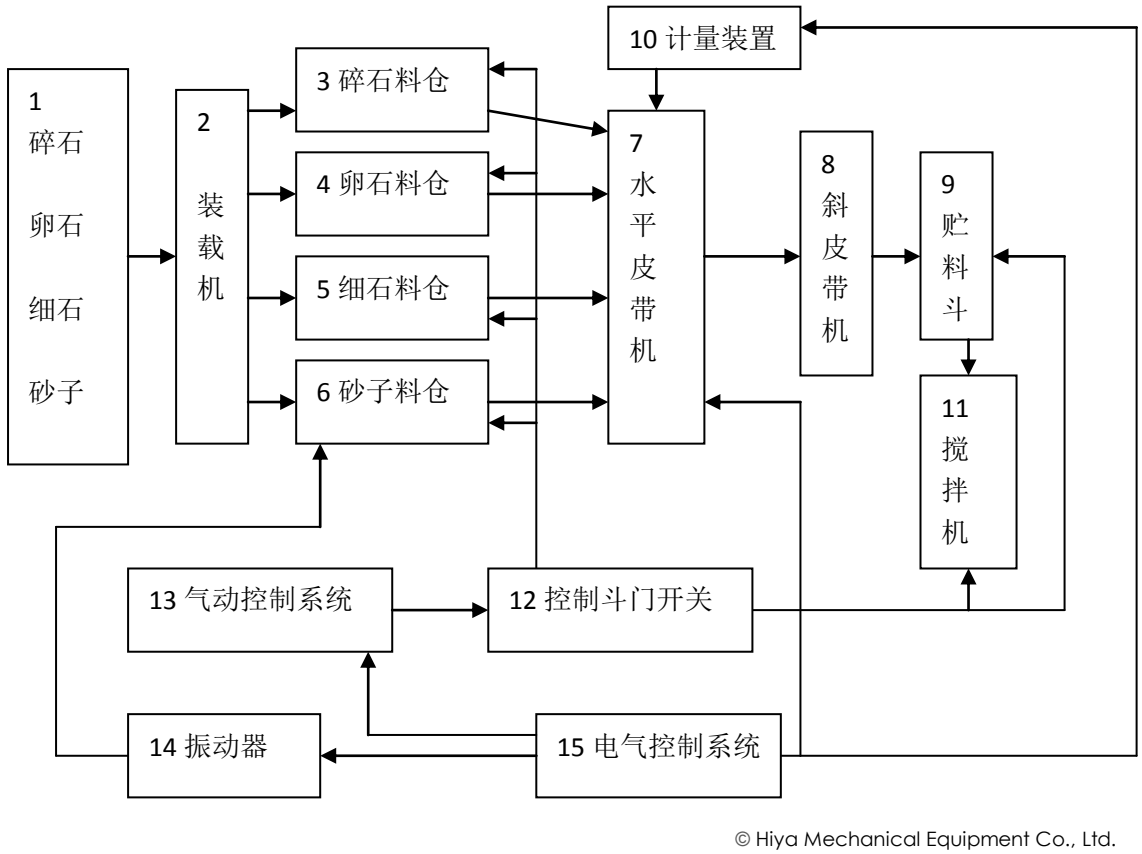
Note（3）The Vibrator Model: MVE200/3 Power：0.25K

Figure 1：The Process Flow of Concrete Mixing Plant



1 Crushed stone storage silo
2 Cobblestone storage silo
3 Fine stone storage silo
4 Sand storage silo
5 Cement storage silo 1
6 Cement storage silo 2
7 Fly ash storage silo
8 Expanders storage silo
9 Water Tank
10 Admixture silo　　11 Admixture metering bucket　　12 Water, admixture metering bucket
13 Expanders weighing bucket　　14 Fly ash measuring bucket

Figure 2: The Process Flow of Aggregate Batching System & Material Conveying System



1 gravel, pebble, Fine stone, Sand	2 Loader	3 Crushed stone storage silo
4 Cobblestone storage silo	5 Fine stone storage silo	6 Sand storage silo
7 Horizontal belt conveyor	8 Large angle belt conveyor	9 Storage hopper
10 Metering device	11 Concrete Mixer	12 Discharge door switch
13 Pneumatic control system	14 Vibrator	

B. Horizontal Belt Conveyor

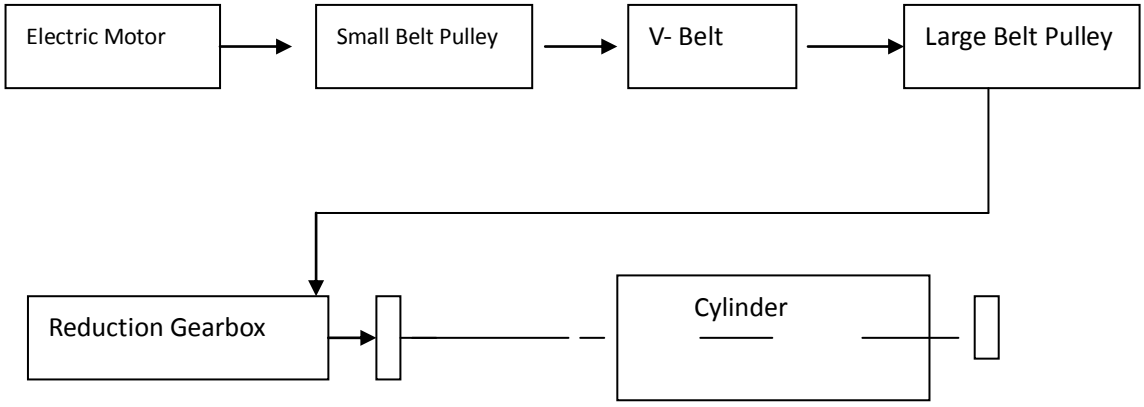
Horizontal belt conveyor is composed of a driving roller, a driving device, an upper and a lower supporting roller, a bend pulley, cleaning device, rubber conveyor belt and a frame. There are striker plates on both sides of the belt to increase the storage quantity. The roller of the bend pulley is arranged at the movable tail frame, and the operator can adjust the tension of the rubber conveyor belt through the screw. The metering device is arranged on the belt, so the metering of the sand and stone can be done on the horizontal belt conveyor.

Note (1) The transmission of the horizontal belt conveyor is shown in Figure 3:

Note (2) The main technical parameters :

a. The motor model: YE2----160L----4----B3; Power: 15KW; Speed： 1400r/min

Figure 3: The Transmission of The Horizontal Belt Conveyor



b. V-Belt : C----2286 five V-belts

c. Reducer Model: ZJY212---25---1 Hardened Gear Reducer

Manufacture: Jiangyin Deling Gear Box Co., Ltd

d. Roller

Diameter Width: 630X1150 mm

Belt Width: 1000mm

Belt Speed: 1.6m/s

Length: 16000 mm

The backup Roll Chock Model:

e. Bend Pulley

Diameter Width: 500X1150 mm

The backup Roll Chock Model:

f. Troughing Idler

Quantity: 24sets Φ108Trough Idler Frame

The backup Roll Chock Model: 4G305

g. Horizontal Idler

Quantity: 6 sets Φ108 Horizontal Idler Frame, in which there must be one set with guide device

The backup Roll Chock Model: 4G305

h. Another One Horizontal Idler

Diameter X Width: 200X1150 mm

The backup Roll Chock Model:

i. Small Belt Pulley Diameter: Φ=190mm

j. Large Belt Pulley Diameter: Φ=220mm

(3) **Metering Device**

C. Inclined Belt Conveyor

Inclined belt conveyor sends the aggregate which are from horizontal belt conveyor to the sand & stone aggregate bin. Inclined belt conveyor is composed of a driving device, an upper and a lower support roller, a roller of the bend pulley, a vertical tensioning device, a frame, a bracket, a head cover, a funnel, a rubber conveying belt and a glass fiber reinforced plastic cover. There is also a control device to prevent the conveying belt from deviating. Belt tension can be adjusted by the counter-weights installed in the inclined belt conveyor. Both sides of the inclined belt conveyor are arranged with the LXK3---20S/B travel switch in case of an emergency.

Note (1)The transmission of the inclined belt conveyor is shown in Figure 3:

Note (2) The main technical parameters :

a. The motor model: YE2—225S----4----B3； Power： 37KW

Speed： 1400r/min

b. V-belt： C---2159 Six V-belt

c. Reducer Model: ZJY212----16----N Hardened Gear Reducer

d. Roller

Diameter Width: 630X1150 mm

Belt Width: 1000mm

Belt Speed: 2.5m/s

Length: 57130 mm

Obliquity: 18^0

e. Bend Pulley

Diameter Width: 500X1150 mm

f. Troughing Idler

Quantity: 48 sets Φ108 Trough Idler Frame, in which there must be 4 rubber idler, 3 with guide device, and 41 rigid trough idler.

The backup Roll Chock Model: 4G305

g. Horizontal Idler

Quantity: 18 sets Φ108 Horizontal Idler Frame, in which there must be two sets with guide device

The backup Roll Chock Model: 4G305

h. Another Two Horizontal Idlers Diameter X Width: 400X1150 mm

i. Tension Mechanism Diameter X Width: 500X1150 mm

j. Bend Pulley at both sides of Tension Mechanism Diameter X Width: 400X1150 mm

k. Bend Pulley at the head of inclined belt conveyor Diameter X Width: 200X1150 mm

l. Small Belt Pulley Diameter: Φ=260mm

m. Large Belt Pulley Diameter: Φ=280mm

D. Sand& Stone Aggregate Bin

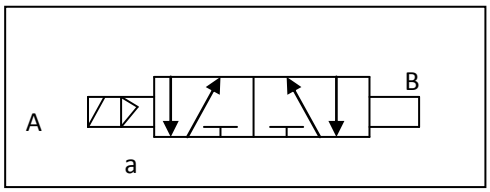
Sand & stone aggregate bin is a steel structure. The bin stores the metered sand & stone that are conveyed by the inclined belt conveyor, and then put them into the mixer. The bin switch is controlled by the flap gate mechanism installed at both ends of the cylinder, and the switch signal is given by the magnetic switch in the cylinder.

Note (1) Sand & Stone Aggregate Bin Switch Cylinder

Model: QBKB100X280MP2----Y; Pressure: 0.1-----1.0MPa

Note (2) Pneumatic Control Valve Model

Symbol: (K23JD-15, Size 15mm)



Pressure Range: 0.1---1.0MPa The Electric Magnet Model: BEST Nr 0200

Voltage：220V、50Hz; ED: 100 %; IP: 00/65

(2) Screw Conveying & Metering System

This system is composed of cement screw conveying, fly ash screw conveying and expansion agents screw conveying. The process flow is shown in figure 5.

1) The cement conveying & metering system process flow is shown in figure 5.

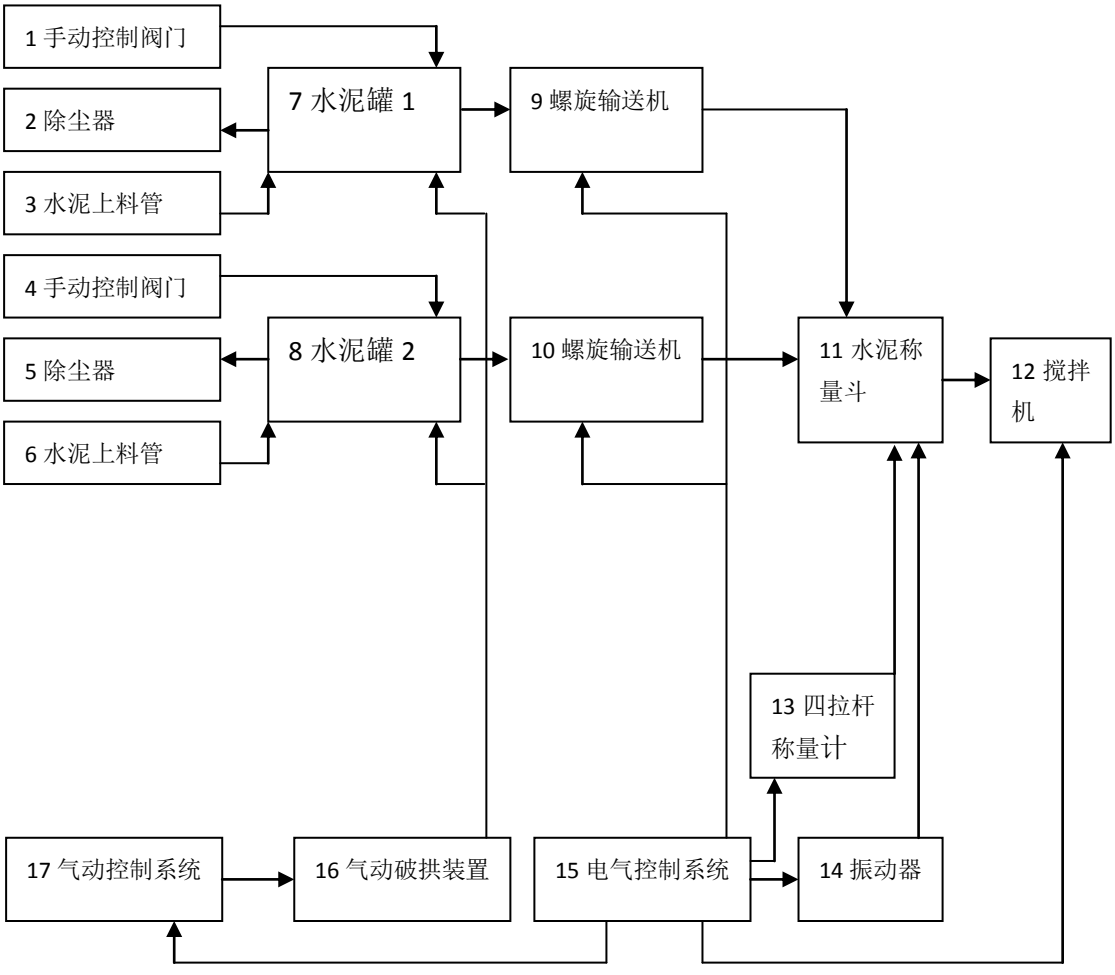
A. Cement tank No. 1 and No. 2 are steel structure. They are composed of support, cylinder, flap gate, dust collector, and pipeline. Bulk cement is sent to silos through the feeding tube with the air pressure, while gas is discharged through the dust collector. Through the flap gate, the cement in the cylinder is conveyed to the screw conveyor, and then to the weighing hopper to weigh. There are 4 sets 100t

silos in total.

B. Cement screw conveyor is a kind of device that conveys the cement in the tank to the weighing hopper to weigh. It has high transmission efficiency, good sealing performance, and no dust pollution. It is mainly composed of a power transmission device, a spiral shaft, a tube, a middle bearing block, and feeding and out-feeding pipe. It is overhung on the cement silo by a pair of connecting rod and two sets of wire rope.

Two cement screw conveyor's working length is 7.117m. The whole screw machine is divided into three sections, and each section is connected with each other by involute splines. The screw conveyor has two bearing blocks, and there are dust blocking covers on the both sides of the bearing seat and an oil filler hole at the top.

Figure 5: The Cement Conveying & Metering System Process Flow



1 Manual control valve 2 dust collector 3 Cement feeding pipe 4 Manual control valve
5 dust collector 6 Cement feeding pipe 7 Cement silo 1 8 Cement silo 2
9 Screw conveyor 10 Screw conveyor 11 Cement weighing bucket 12 Concrete Mixer
13 four-link weighing meter 14 Vibrator 15 Electric control system 16 Pneumatic arch breaker
17 Pneumatic control system

Cement weighing hopper is composed of three 1.2t sensors, one weighing hopper, one cylinder, and one vibrator.

With the rod balance principle, metering device has high accuracy and good stability. The supporting frame and the weighing hopper are fastened together, and two groups of rod balance ensure the lateral stability, avoiding the effect of vibration and wind.

The pneumatic system will convey the measured cement in the weighing hopper into the mixer by controlling the switch of the cylinder.

The vibrator on the cement weighing hopper helps the cement get into the mixer.

Note: Cement Metering Sensor

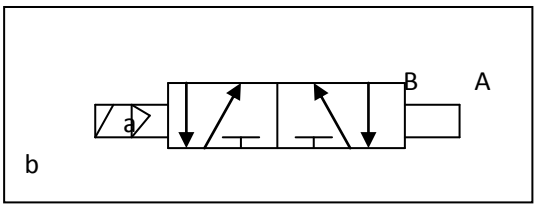
1. Cement Metering Sensor Type: CBLGM------S (Three)

   Grade: 005 Range: 1.2t

2. Switch Cylinder of the Cement Weighing hopper

   Type: QGA100X350MT4----Y; Pressure: 0.1-----1.0MPa

3. Pneumatic Control Valve Type: K23JD-15， Size 15mm



   Pressure Range：0.1---1.0MPa

   Electric Magnet Type：BEST Nr 0200

   Voltage：220V、50Hz ED: 100 % IP 00/65

4. Vibrator Type：ZF18----50

Power：0.18KW　Amplitude of Vibration：2.35mm;　Voltage：380V、50Hz.

5. Motor Type：YE2-180M-----4----B5; Power：18.5KW.

Speed：1460r/min。

6. The Screw Conveyor Conveying Pipe Diameter; Φ323 mm

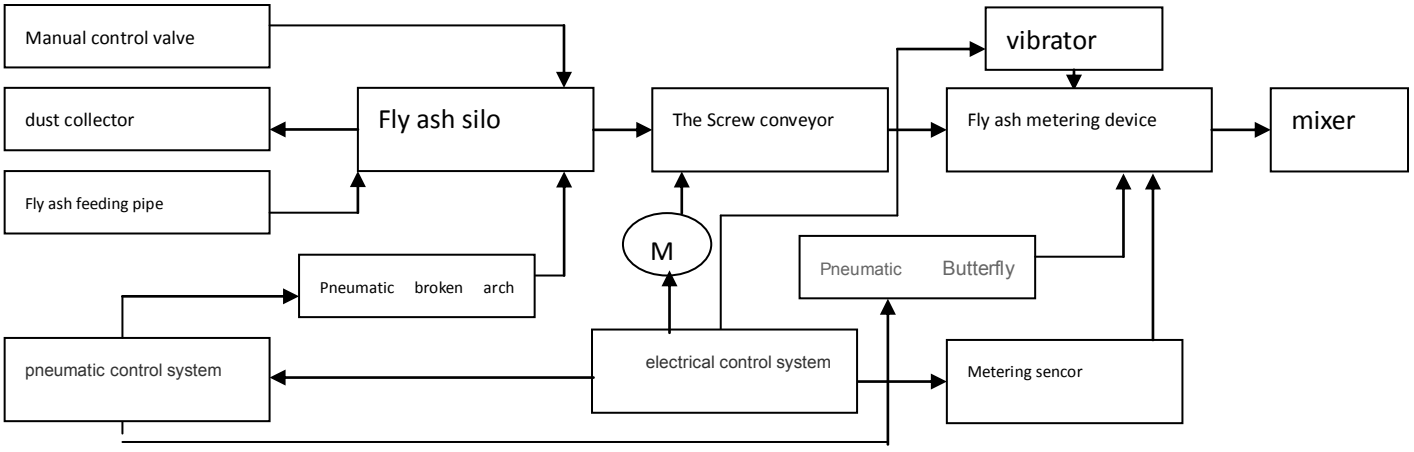
7. Helical Gear Reducer Type：273

2) Fly Ash Conveying & Metering System Process Flow is shown in Figure 6.

A. Fly ash silo is a steel structure. It is composed of bracket, cylinder, shutter gate, dust collector and pipeline. Bulk fly ash is conveyed into the silo by the air pressure through the conveying pipe, and the gas is exhausted out through the dust collector. The fly ash in the silo is conveyed to the conveyor through the shutter gate, and then to the metering device. There is a 100t silo in this system.

B. The Screw Conveyor is a machine that conveys the fly ash in the silo to the metering device. It has high efficiency, good sealing, and has no dust pollution. It is mainly composed of power transmission gear, screw shaft, pipe body, intermediate bearing block, and feed &discharge pipes. And it is hung on the cement silo by a pair of joint lever and two sets of steel wire rope.

Figure 6: Fly Ash Conveying & Metering System Process Flow



The fly ash screw conveyor working length is 7.117m. The overall screw conveyor is divided into three parts, and each two parts are connected with involute splines. There are two bearing blocks in the middle, and two sides of the blocks are nylon cover and the top is the oil filler hole.

Notes: 1. Motor type: YE2160M----4---B5

Power: 11 KW

Rotating speed: 1460 rpm

2. The Screw Conveyor Conveying Pipe Diameter; Φ273 mm

C. The fly ash weighing hopper is composed of three 0.5t sensors, a weighing hopper, a switch cylinder and a vibrator.

1. Metering Sensor Type: CBLGM------S(Li Tian Brand)

   Grade: 005 Range: 0.5t

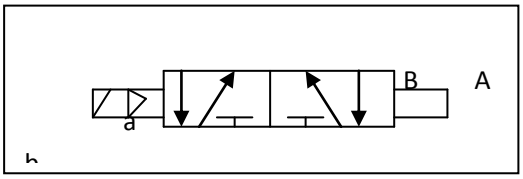
2. Vibrator Type: ZF18----50

   Power: 0.18KW. Amplitude of Vibration: 2.35mm. Voltage: 380V、50Hz.

3. Switch Cylinder Type: QGA100X350MT4----Y

   Pressure: 0.1-----1.0MPa

4. Pneumatic Control Valve Type: K23JD-15， Size 15mm



Pressure Range：0.1---1.0MPa

Electric Magnet Type：BEST Nr 0200

Voltage：220V、50Hz ED: 100 % IP 00/65

With the rod balance principle, metering device has high accuracy and good stability. The supporting frame and the weighing hopper are fastened together, and two groups of rod balance ensure the lateral stability, avoiding the effect of vibration and wind.

The pneumatic system will convey the measured fly ash in the weighing hopper into the mixer by controlling the switch of the cylinder.

The vibrator on the fly ash weighing hopper helps the cement get into the mixer.

3) Expansion agent conveying & metering system process flow is shown in figure 6

A. Expansion Agent silo is a steel structure. It is composed of bracket, pipe body, shutter gate, dust collector and pipeline. Bulk expansion agent is conveyed into the silo by the air pressure through the conveying pipe, and the gas is exhausted out through the dust collector. The expansion agent in the silo is conveyed to the conveyor through the shutter gate, and then to the metering device. There is a 50t silo in this system.

B. The Screw Conveyor is a machine that conveys the expansion agent in the silo to the metering device. It has high efficiency, good sealing, and has no dust pollution. It is mainly composed of power transmission gear, screw shaft, pipe body, intermediate bearing block, and feed &discharge pipes. And it is hung on the cement silo by a pair of joint levers and two sets of steel wire rope.

The expansion agent screw conveyor working length is 7.4m. The overall screw conveyor is divided into three parts, and each two parts are connected with involute splines. There are two bearing blocks in the middle, and on the two sides of the blocks are nylon cover and on the top is the oil filler hole.

Notes: The screw conveyor conveying pipe diameter: Φ219mm

D） The expansion agent weighing hopper is composed of three 0.5t sensors, weighing

hopper and cylinder.

Notes: 1. Metering Sensor Type: CBLGM------S (Three)

Grade: 005 Range: 1.2t

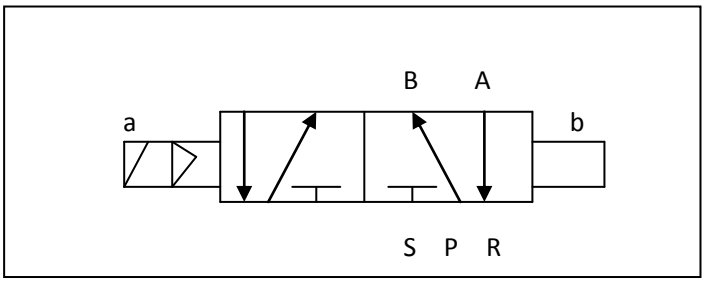
2. Vibrator Type：ZF18----50

Power：0.18KW Amplitude of Vibration：2.35mm; Voltage：380V、50Hz.

3. Switch Cylinder of the Cement Weighing hopper

Type: QGA100X350MT4----Y; Pressure: 0.1-----1.0MPa

4. Pneumatic Control Valve Type: K23JD-15，Size 15mm



Pressure Range：0.1---1.0MPa

Electric Magnet Type：BEST Nr 0200

Voltage：220V、50Hz ED: 100 % IP 00/65

With the rod balance principle, metering device has high accuracy and good stability. The supporting frame and the weighing hopper are fastened together, and two groups of rod balance ensure the lateral stability, avoiding the effect of vibration and wind.

The pneumatic system will convey the measured expansion agent in the weighing hopper into the mixer by controlling the switch of the Pneumatic butterfly valve.

4）Water, Admixture Conveying & Metering System Process Flow is shown in Figure 8:

The admixture weighing hopper is under the water weighing hopper. When the liquid is discharged, it is mixed with water first, and then enters into the mixer.

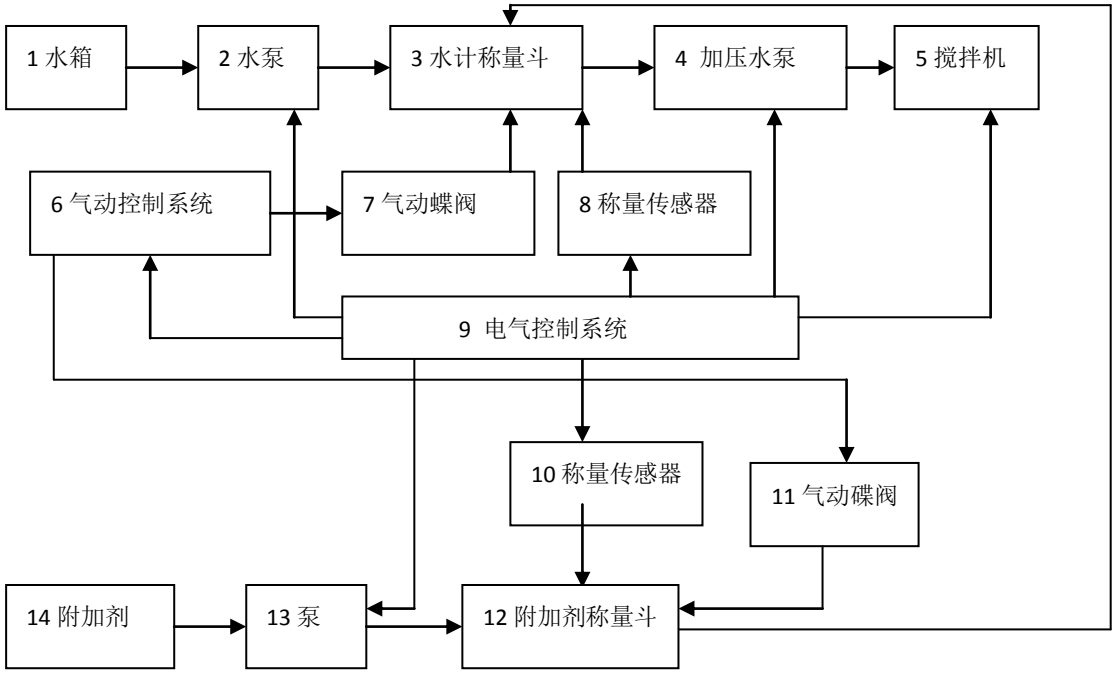
The admixture weighing hopper is composed of a 200Kg sensor, a weighing hopper, a pneumatic butterfly valve and a signal switch. There are two sets of independent admixture supply system so that two kinds of admixtures can be accumulated. There is also a leaking &overflowing proof device between the admixture weighing hopper and the water weighing hopper to avoid more admixture into the water.

Notes: The Installation Parts on the Admixture Weighing Hopper

1. Pneumatic Butterfly Valve Type: QD-80. Shanghai Meilong Valve Co., Ltd.
2. Metering Sensor Type: CBLGM------S

Grade: 005 Range: 0.2t

Figure7: Water, Admixture Conveying & Metering System Process Flow



1 water tank 2 Pump 3 water meter weighing bucket

4 Pressurized water pump 5 Concrete Mixer 6 Pneumatic control system

7 Pneumatic butterfly valve 8 Load cell 9 Electric control system

10 Load cell 11 Pneumatic butterfly valve 12 Additive weighing hopper

13 Pump 14 Additives

The water weighing hopper is composed of a 1.2t sensor, a weighing hopper, a pneumatic butterfly valve and a signal switch.

Pneumatic control system controls the butterfly valve with the pneumatic butterfly valve and signal switch, and conveys the weighing admixtures and water into the mixer.

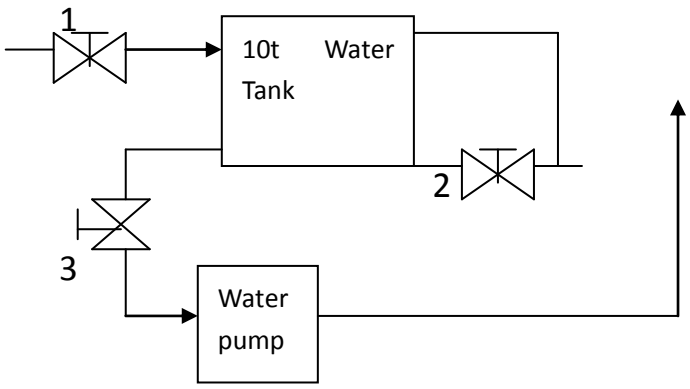
Notes: The Installation Parts on the Water Weighing Hopper

1. Pneumatic Butterfly Valve Type: QD-110.
2. Metering Sensor Type: CBLGM------S Grade: 005 Range: 1.2t

Booster pump can convey the admixture and water that has been weighed into the mixer very soon, and maximize the efficiency of the mixer.

Notes: The Water &Admixture Conveying & weighing System

A. The Water Conveying & weighing System Process Flow



Notes: 1. Rising Stem Wedge Gate Valve Type: Z45T-----10

Drift Diameter: 50mm.

2. Rising Stem Wedge Gate Valve Type: Z45T-----10

Drift Diameter: 40mm.

3. Flange Gate Valve Type: Z44T---100N

Drift Diameter: 80mm.

4. Water Pump Type: IS80-65-160

Flow Rate: 60m^3/h The Maximum Head: 29000mm

Motor Type: Power: 7.5 kw

B. The Admixture Conveying & weighing System Process

The Pump Type: FB40---32---20 Flow Rate: 6.3m^3/h The Maximum Head: 20000mm

3.Mixer System The mixer system process flow is shown in figure 8

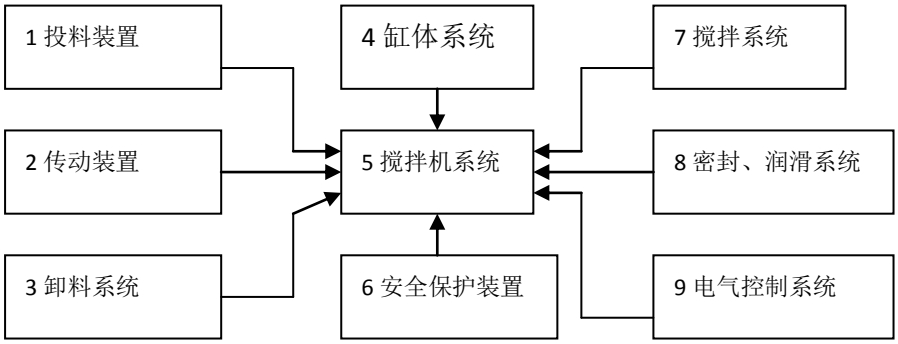


Figure 8: The Mixer System Process Flow

1 Feeding device 2 transmission 3 Discharging system 4 Cylinder system

5 Mixer system 6 Safety protection device 7 Mixing system

8 Sealing and lubrication system 9 Electric control system

(一) The Mixer Main Technical Parameters:

1） JS2000(MAO3000/2000) Concrete Mixer Main Technical Parametes:

Load Capacity	3200L
Dense Volume	2000L
Operating Period(Without Feeding)	60Sec
One Hour Output	120m^3/h
Main Motor Power(2 pieces)	37KW
Main Motor Voltage	380V
Motor Speed	1460r/min
Reduction Gearbox	YCJ400---37---47

Mixer Shaft Speed 26r/min

Overall Dimension (Length X Width X height)： 4555 X 2617 X 1650 mm

Mixer Weight 9622KG

2）Mixer Feeding Device

A. The mixer feeding device is equipped with a spray pipe, an inspection door, an observation door and an aggregate powder feeder nose.

B. There is also dust collector on the mixer feeding device, which can collect the excessive gas from the mixer to keep the mixer air in balance when mix the weighed sandstone, water and admixture, and can supply air to the mixer when discharge the material to ensure a fast discharging.

C. The limit switch is arranged on the inspection door faceplate.

3）Safety Device

There is a limit switch on the mixer inspection door faceplate. When the inspection door is open, the mixer stops working, so that as the maintainer goes into the tank to do the maintenance work, it promises his safety.

4）Cylinder Block System

The system is composed of the cylinder block and some other accessories to bear the mixing material and the supporting parts.

A. The cylinder block is a bucket that made of wide and heavy plate. It has special design and making, and also has multifunctional supporting frame, which provides the cylinder block enough rigidity to ensure the accuracy of the double shaft parallelism and the single axis concentricity.

B. The upper part of the cylinder block is the roof cover, and the main body and the

feeding device are almost together. They are mainly for sealing, distributing and observation.

Maintenance platform is a working platform that is composed of checkered plate and frame. It can retract and support as necessary, which is convenient for operating and maintaining.

5）Mixing System

The main body of mixing function is composed of mixing shaft, mixing arm, mixing blade, and cylinder liner (wear-resisting liner plate).

Mixing system rotates in opposite direction based on the parallel double shaft. The direction at the shaft end for the head or the right is clockwise, otherwise the left is counterclockwise. The mixing arm of the double shaft and blade are in 90 degrees interval, and the double shafts are in 45 degrees staggered operation. They work in with appropriate clearances and operation to achieve the perfect mixing effect in a short time.

A. Mixing Shaft: The shaft is made of high quality carbon structural steel, and there is alloy steel sleeve in the supporting stand.
B. Mixing Arm: The spiral plate is cast by the wear-resistant ductile cast iron.
C. Mixing Blade: The blade is composed of medium mixing blade and side mixing blade, made of wear-resistant cast iron.
D. Side Plate: It is composed of the side plate and small liner plate, made of high wear-resistant steel.
E. Plug Pad: It is made of wear-resistant cast iron.

6）Transmission System

The transmission system is composed of mixing motor, reducer, chain and mixing shaft.

The main reducer type: R143

A. Main technical parameters: 1. speed ratio: 27.41.

2. Rated speed: 54rpm. 3. Weight: 610kg.

B. Chain type: Double sleeve roller chain: 160.

C. Synchronized mode: Forced synchronization with gear transmission.

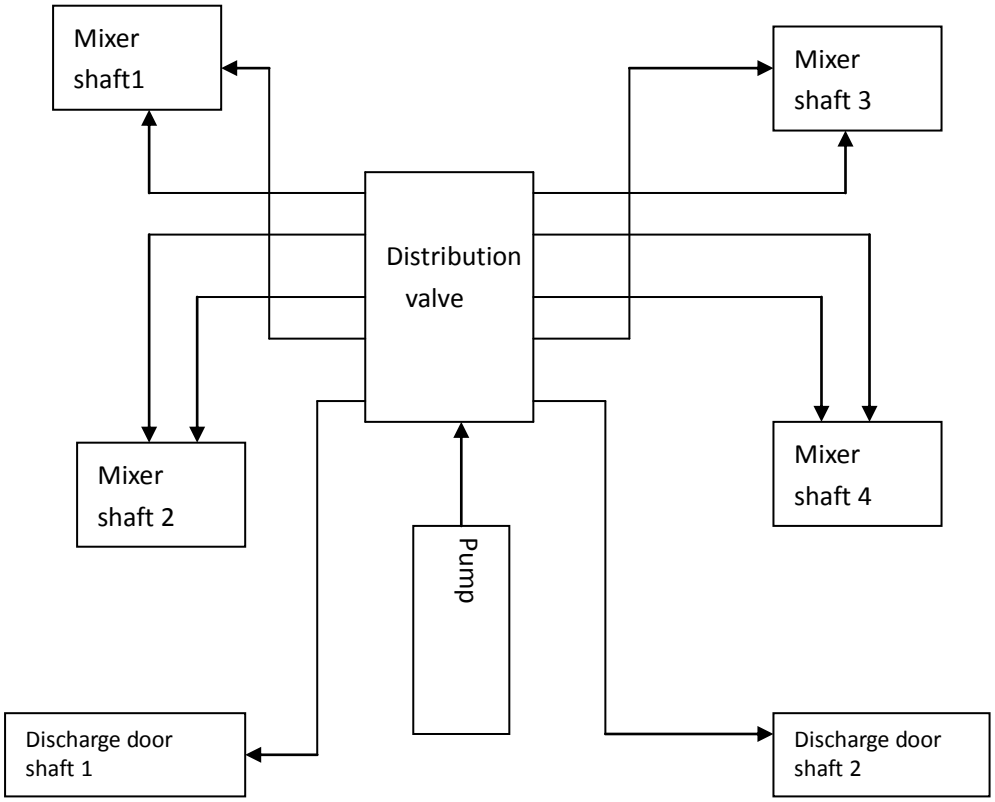
7) Shaft End Bearing, Sealing and Lubrication System

JS2000 （MAO3000/2000）concrete mixer shaft end bearing is fixed with bolts in the mixing drum bearing stand supporting plate, for supporting full load of the mixing shaft. The sealing device is fixed in the end plate of the mixing drum, and uses the floating sealing mode. Injecting grease into the sealing device is the most important routine maintenance. The lubricating grease, coming from the fuel supply system, goes into oil inlet A to ensure the surface lubrication of the supply floating sealing ring; the lubrication grease that goes into the oil inlet B, squeezes out the unset mortar through the oil ring B to ensure the oil supply passage clean. The kind of work is carried out after each using and cleaning of the mixer. If it is not maintained properly, mortar will solidify in the oil inlet channel, even with the pressure oil, it cannot be squeezed out. We must use wire to draw it out, otherwise it will cause serious wearing. When the fixed ring and the rotating ring wear to the gap of 3---5 mm, the fixed ring, the rotating ring and the grinding ring need to be changed.

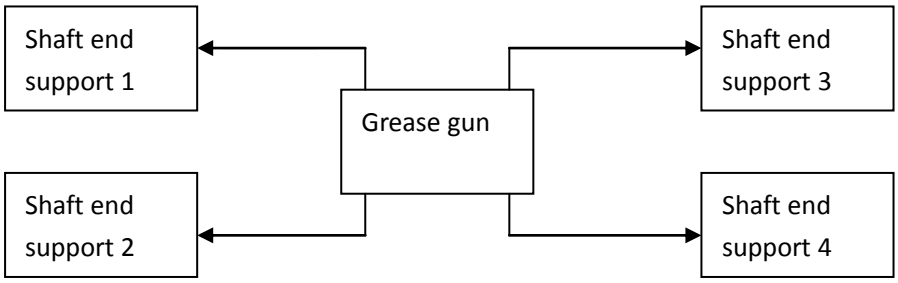
Fuel supply system uses motor oil pump to supply oil respectively to the mixer four shaft end seals and two discharging door shaft bearings. The oil pump and mixer are linked to operate. Oil pump lubricating oil is grease No. 00. Grease must be kept clean and must

not be mixed with foreign material in case of blockage. The oil pump outlet supply oil to the mixer four shaft end seals and two discharging door shaft bearings through a distribution valve. If one of the fuel pipeline blocks, the distribution valve pin will be popped-up and alarm the inhibited flow of oil, and the motor oil pump stops running. We must timely clear the trouble to guarantee the normal work of the fuel supply system. Other lubrication points are supplied with oil guns. The lubrication system can be expressed in the following block diagram.

The first Lubrication system:



The second Lubrication system:



Note: Small DRB-P Type: DJB

Rated Voltage: AC220V; Rated Pressure: 16MPa;

Rated Flow: 8ml/min

8) Discharge System

The discharge system is composed of discharge door, cylinder, travel switch, etc.

A. Discharge Door

It is composed of the discharge door and bearing, and the circular gap with the mixing cylinder should be controlled in 1-1.5mm. In order to prevent the accumulation of concrete and affect the discharging work, we should always clean the accumulation around the discharge door.

B. Cylinder:

It is composed of two cylinders and the connecting rod mechanism which is between the cylinder and the discharge door. The opening and closing of the discharge door is controlled by the travel switch which is installed on the discharge door.

C. The opening and closing of the cylinder is controlled by the pneumatic system.

9) Mixer Electric System Diagram

4. Pneumatic System

Pneumatic control system is mainly used to control sandstone batching hopper door switch, sandstone weighing hopper door switch, cement, fly ash, expansion agent, admixture, water, sandstone storage hopper door switch, and the pneumatic breaking arch device of the cement silo, fly ash bin and expansion agent chamber. According to the specific situation of spatial arrangement of the pneumatic system, there are two main loop: The principle of the first pneumatic control system loop is shown in figure:

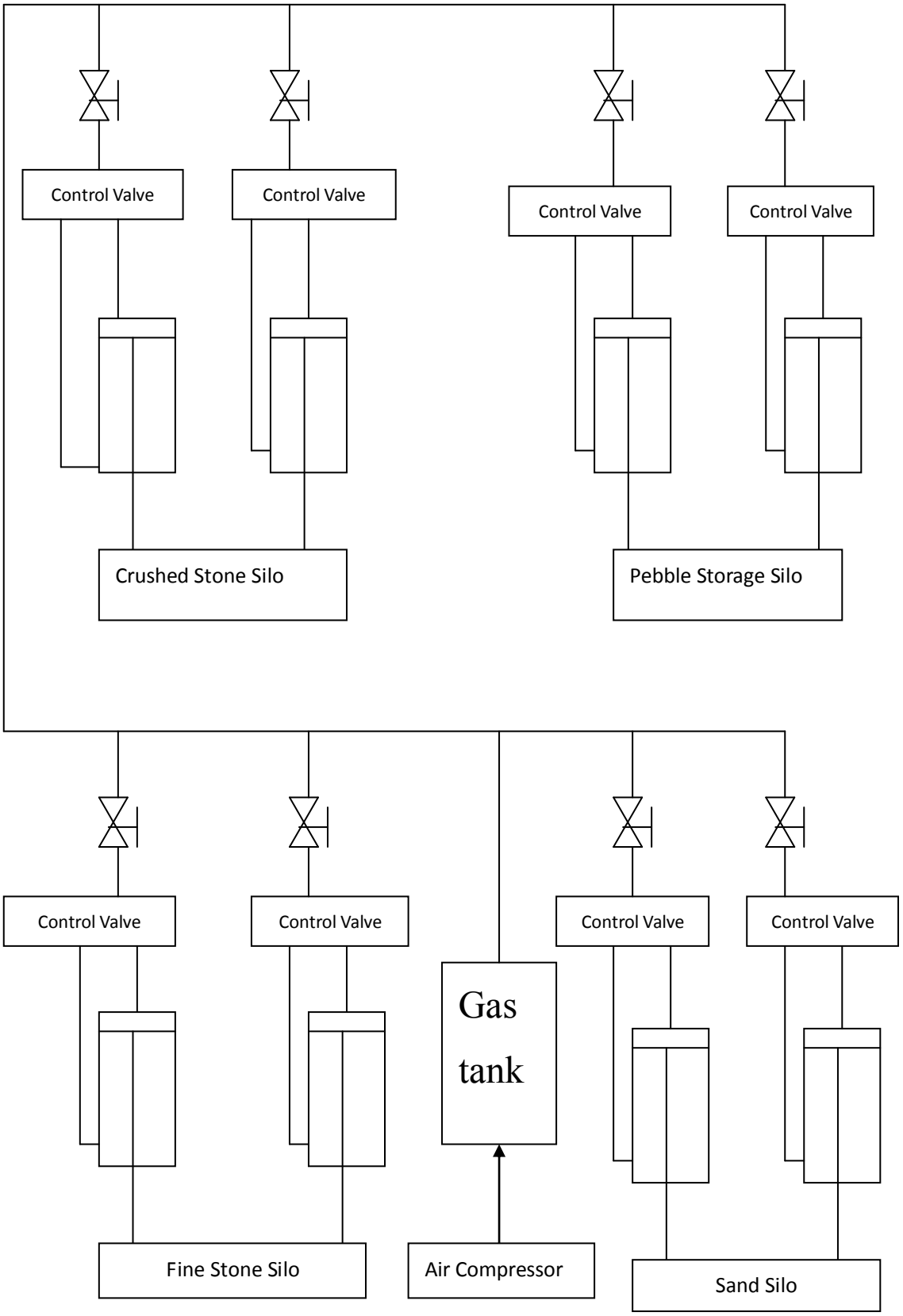
1. Air Compressor Type: TA------100

Motor Type：Y2----132M----4----B3 Power：7.5KW Speed：144Orpm 0.7MPa

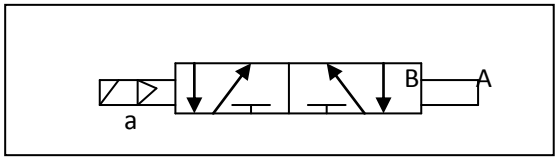
Rated Pressure： 0.7MPa Maximum Pressure： 0.8MPa Working Stroke： 70mm

Volume Flow：1.0m^3/min V-belt on the air compressor: B---1905 Three

RFL Combination of Air Source Treatment：



2. Pneumatic Control Valve Type：K23JD-15，Size 15mm



Pressure Range：0.1---1.0MPa

Electric Magnet Type：BEST　Nr 0200

Voltage：220V、50Hz　ED:　100 %　IP　00/65

4. Cylinder：

（1）Switch Cylinder of the Sandstone storage hopper

Type：QGA100X170MT4----Y

Pressure：0.1-----1.0MPa

(2) Switch Cylinder of the Gravel, Cobble, Coarse Aggregate and Sand Metering Hopper

Type：QGA100X350MT4----Y

Pressure：0.1-----1.0MPa

Pneumatic system is required to:

(1) Frequently exhaust water in the gas-water-separation cup in the air compressor tank in order to ensure the air in the pipeline dry.

(2) Keep in storage spindle oil or machine oil in the oil mist cup, and regulate appropriate oil supply (about 5 each minutes) in order to guarantee the reliable lubrication of the actuators in the system.

(3) Pressure Adjustment: Working pressure is generally 0.55-0.7Mpa.

The principle of the second pneumatic control system loop is shown in figure 54:

1. Air Compressor Type: TA------100

Motor Type：Y2----132M----4----B3

Power：7.5KW

Speed：144Orpm 0.7MPa

Rated Pressure：0.7MPa

Maximum Pressure：0.8MPa

Working Stroke：70mm

Volume Flow：1.0m^3/min

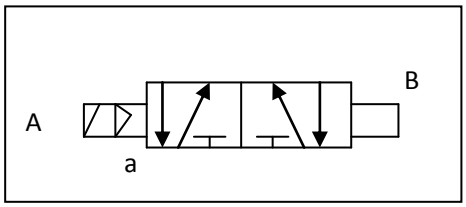
V-belt on the air compressor: B---1905 Three

2. RFL Combination of Air Source Treatment：

Air-operated Valve:

（1）Switch Cylinder of the Sandstone storage hopper：

(Type：K23JD-15，Size 15mm)



Pressure Range：0.1---1.0MPa

Electric Magnet Type：BEST Nr 0200

Voltage：220V、50Hz ED: 100 % IP 00/65

(2) Electromagnetic Valve that controls the action of electric butterfly valve:

Type: SR561-----RN35DW

Electromagnet：SRS2----5D

Voltage： AC220V

(3) Arch-breaking Electromagnetic Valve in the tank of cement, fly ash and swelling agent

Type：K22DL-----15M

(4) The cut-off valve that prevents the counter flow of the air in the tank of cement, fly ash and swelling agent

Type： KA----15

Pressure Range：0.05----0.8MPa

3 Switch Cylinder of the Sandstone storage hopper

Type：QBKB100X280MP2----Y

Pressure：0.1-----1.0MPa

Pneumatic system is required to:

(1) Frequently exhaust water in the gas-water-separation cup in the air compressor tank in order to ensure the air in the pipeline dry.

(2) Keep in storage spindle oil or machine oil in the oil mist cup, and regulate appropriate oil supply (about 5 each minutes) in order to guarantee the reliable lubrication of the actuators in the system.

(3) Pressure Adjustment:

Main Body: Working pressure is generally 0.55-0.7Mpa.

SiloArch-breaking：Working pressure is generally 0.2-0.3M

Note：

Conditions of Use

This product can be used under the following conditions:

1. Ambient temperature -15° to +40°

2. Wind load does not exceed 700pa

3. Snow load does not exceed 800pa

4. Altitude less than 2000m

5. Power supply conditions

(1) Power supply 220/380V±10%, 50HZ

(2) compressed air source working pressure 0.6 ~ 0.7Mpa

(3) Water supply pressure is not less than 0.3Mpa

Henan Hiya Mechanical Equipment Co., Ltd.

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