SGS-S

Single-shaft Shredders

Date: Jan, 2019

Version: Ver.C(English)

SHINI

Contents

Table Index

Picture Index

1. General Description

Please read carefully the operation instructions before install and use this machine in order to prevent from any human injury or damage to the machine.

Caution!

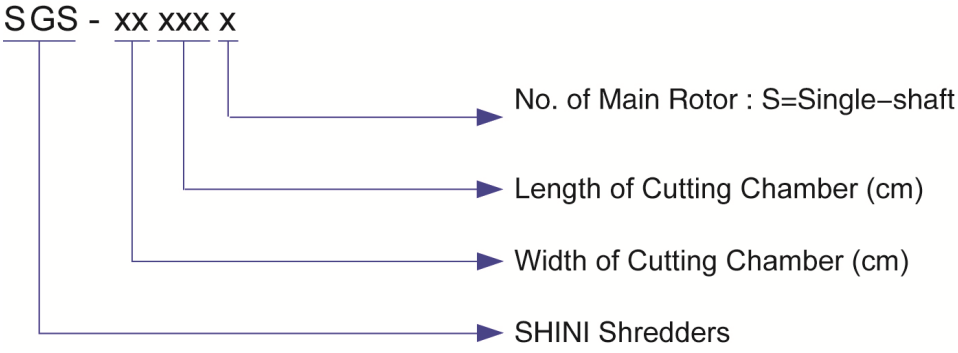
Granulator's blades are sharp and users are vulnerable from being cut, which requires users to pay attention to them.

No treating with poisonous and inflammable materials!

SGS-S series of single-shaft shredders can shred extremely thick, tough and large solid materials. They can be applied in a wide range, for example, recycling all kinds of materials such as plastics, rubber and wood. Wastes that are produced by the injection molding, blow molding or extrusion molding are also included.

Model: SGS-6080S

1.1 Coding Principle



1.2 Features

- Milling smashing design, low noise, low energy consumption, smashing in the uniform size. Screen mesh is optional in accordance with customer's requirements.
- Cutters quality is excellent, hard wearing, high rigidity and long service life.
- Rotor uses the square knife block of indentation on the surface to reduce the friction heat. When one of the angles of cutter is broken, it can simply inter-change the cutter to improve cutting efficiency.
- Automatically hydraulic device can be adjusted to achieve optimal production
- Equipped with independent control panel, there are automatic and manual operational modes to choose, quite flexible and safe.
- The bottom components of machine adopt the welding way, the structure is very solid and can make machine run smoothly.
- Cooling system is optional based on customer's requirements.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

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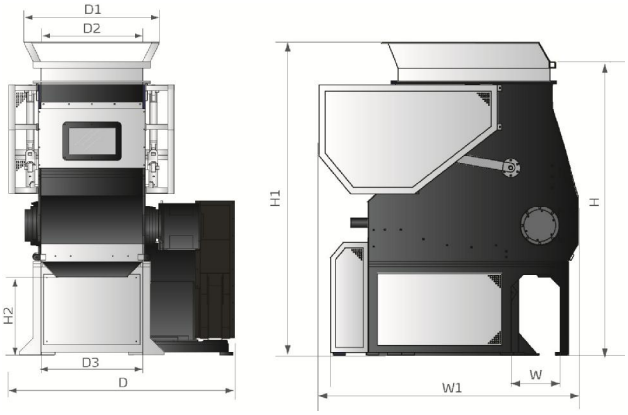
1.3 Technical Specifications



Picture 1-1: Dimensions (SGS-6080S)

Table 1-1: Technical Specifications

Model	SGS-6080S	SGS-75120S
Ver.	C	C
Motor Power (kW, 50/60Hz)	37/41.5	55
Speed of main rotor (rpm, 50/60Hz)	73	73
Hydraulic motor power (kW)	2.2	2.2
Material of the cutters	SKD11	SKD11
Number of fixed blades	4	6
Number of rotating blades	57	93
Cutting chamber (mm)	600×800	750×1200
Max. throughput (kg/hr)	1000	1500
Noise level dB(A)	110	110
Screen mesh size (Φ30mm)	✓	✓
Screen mesh size (Φ20, Φ25, Φ35mm)	○	○
Regrind conveying device	○	○
Dimensions		
H (mm)	2300	2560
H1 (mm)	2455	2715
H2 (mm)	610	770
W (mm)	390	440
W1(mm)	2040	2410
D (mm)	1780	2265

D1 (mm)	1060	1460
D2 (mm)	800	1200
D3 (mm)	800	1200
Weight (kg)	3970	5500

Note: 1) " √" stands for standard, "○" stands for option.

2) Max capacity of the machine is subject to diameter of screen mesh and composition of material. The above data is based on 5 mins continually shredding of PVC sprue. For shredding tubing, material usage should be 300~500kg;

3) Noise level will vary with different materials and motor types.

4) SKD11 is JIS code number.

5) For avoiding plastic to adhere to the blade, all materials should be crushed at normal temperature.

6) Power supply: 3Φ. 400VAC. 50Hz。

1.4 Safety Regulations

Follow the instructions in this manual to avoid personal injury and damage to machine components.

1.4.1 Safety Signs and Labels

Electrical installation must only be done by a competent electrician!

Disconnect main switch and control switch before the granulator servicing and maintenance.

Never put any part of your body through the granulator openings, unless both the main switch and the control switch on the granulator are in "OFF" position.

High voltage! Danger!
This sign is attached on the control box and the wiring box.

Rotating blades of granulator are extremely sharp, which are liable to cause injuries.

Be particularly careful when blade rest is rotating manually.

No starting up granulator before close screen frame.

No privately turning up hydraulic pump output volume and hydraulic system pressure.

Operating personnel shall put on ear shield while granulator is crushing materials.

Be sure open feed hopper before open screen frame.

When conveying belts is used to convey regrinds and powders, the

temperature of material should be higher than 60℃.

When replace and inspect conveying belts, make sure disconnect main power and avoid objects or clothes to be nipped into belts. Also make sure motor shield and baffle are well installed when startup.

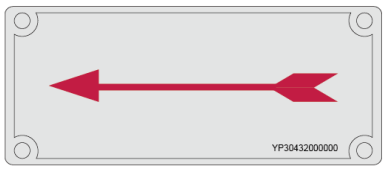
Please scrutinize whether the conveyer belt nips clothes, arms and feet of operating personnel while using it in cooperation with conveyor belt.

Please scrutinize when conveying plastic wastes with high temperature in order to ensure that the materials are conveyed in the center of conveyor belt.

Note!

All screws of electric components in cabinet have been tightened and no need for periodical checking.

When operate the shredder, please notice the following signs

	Motor rotation direction.

1.4.2 Machine Transportation and Storage

Transportation

1) SGS-S series of granulator is packaged with slatted crate or wood case with wood plate as its cushion, which is suitable for forklift to change positions in a quick way.
2) There is space on the bottom of machine for forklift to easily move the machine after unpacking.
3) Please do not make it collide with other objects during the transportation in order to avoid any machine damage.
4) Machine structure is well-balanced with transfer hoisting rings and please be careful while lifting the machine in order to avoid machine's falling

down.

5) Temperature requirement for the preservation of this machine and its auxiliaries for long-distance transportation shall be within the range from -25℃to +55℃.

Storage

1) SGS-S series of granulator shall be stored indoors with the environmental temperature between 5℃ to 40℃ and humidity lower than 80%.
2) Please turn off all power supplies and shut down main power switch and control switch.
3) Please separate the entire machine especially its electric parts from water resource in order to avoid any potential faults caused by water vapor.
4) Drain out hydraulic oil of hydraulic system and gear oil of reduction gear to avoid impurity sedimentation.
5) Please wrap tightly the machine with plastic film in order to keep from the invasion of dust and rain.

Working Environment

Indoor temperature shall never exceed +45℃ and humidity shall never exceed 80%.

The machine works normally with the environment at an elevation below 3000m.

The machine requires peripheral space of 1m at least during its operation. Please keep it a distance of 2m at least from inflammable materials.

Please avoid vibration and influence by magnetic force within the work area.

No using this machine in following situations:

1) Damaged cables.
2) No running the machine on wet floors or after the machine is caught in the rain in order to avoid electric shock.
3) Before the inspection, repair and installation by professional maintenance personnel if the machine is damaged or dismantled.

1.4.3 Treatment with Discarded Parts

Please cut off power supply when the equipment's service life expires and it is unavailable for continual service. Please treat it well according to local regulations.


Fire alarm. Please equip it with CO^2 dry powder fire extinguisher to avoid fire disaster.


No using the granulator to deal with inflammable and explosive materials, or materials polluted by inflammable and explosive materials and liquids, which is liable to cause explosion or fire disaster.


Danger of intertwining especially during manual feeding! Please contact with SHINI or with your local agents.


Screw tightly the screws according to the regulation requirements.


Pay attention to feeding method if material length is bigger than feed hopper port.

1.5 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

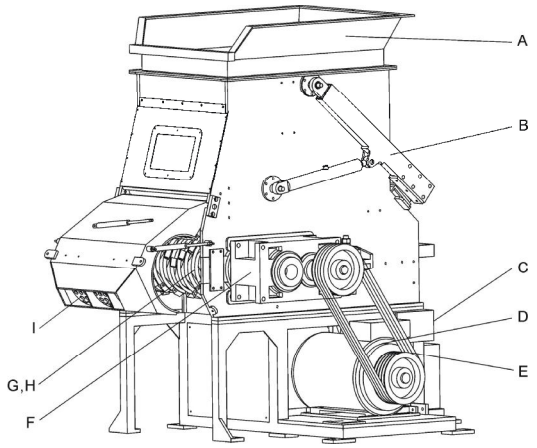
1) Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2) Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3) Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4) Employing consumables or oil media that are not appointed by Shini.

2. Structural Features and Working Principle

2.1 General Description

SGS-S series are suitable for crushing plastics including wastes of injection molding, blow molding or extrusion molding; it is a must to clear away metal dust and dirt before crushing.

2.1.1 Working Principle



Parts name:

A. Feed hopper	B. Material pushing block	C. Hydraulic pump station
D. Motor	E. V belt	F. Reduction gear
G. Cutter shaft	H. Fixed blade	I. Screen

Picture 2-1: Working Principle

Wastes fall into crushing chamber through feed hopper (A). Activated by hydraulic system, oil cylinder drives pushing block to move wastes close to cutter shaft (G). Cutter shaft is driven by motor (D) plus reduction gear (F). Wastes then are granulated by rotate and fixed blade (H), granule size is controlled by screen (I), which locates in bottom of crushing chamber for easy replacement. Regrinds falls into storage hopper though screen and conveyed by V-belts to granulators for further crushing. Feeding methods include conveyor belt or forklift, etc.

Regrind can be conveyed to granulators via belts or conveyed to store.

Shredder is equipped with a removable feed hopper, which can be customized based on varied sizes.

Note:For shredding hard or brittle materials, regrinds may pop put of feed hopper. Add a baffle or other plates in feed hopper to solve the problem.

Single-shaft shredder is controlled by control cabinet and control station. There're power switch in the cabinet and control panel in control station, which are used to operate or debug machine.

2.2 Security System

In order to prevent from accidental human injury during the operation, the granulator is equipped with highly secured protection system.

Nobody is allowed to make any changes of security system in any condition.

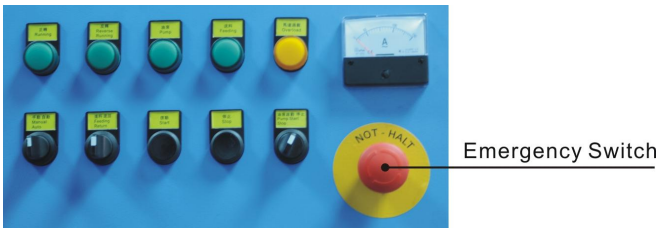
Otherwise, the machine might be in dangerous state and liable to cause accidents. Maintenance and repair for security system must be accomplished by profession personnel.

The company will not continue to perform any commitment if anyone makes any change of granulator's security system and the replacement of all components must be provided by Shini Company.

Picture 2-2: Main Power Switch

2.2.1 Emergency Switch

There is a red button on the machine's control panel and the machine will stop running after presses this button. Rotate this button along the arrow direction, which will reset the button (counterclockwise direction).



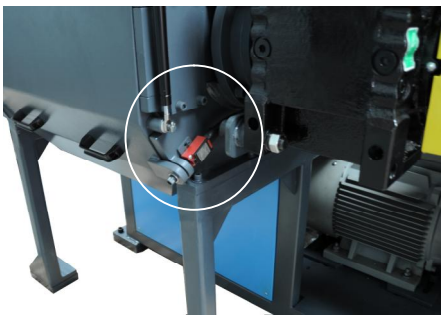
Picture 2-3: Emergency Switch

2.2.2 Safety Switch

Shredder is equipped with breaker with safety switch, which cuts power if hopper position changes or motor baffle opens.

There are two locations equipped with safety switch: one between storage hopper and chamber left side plate, another between motor baffle and shield.

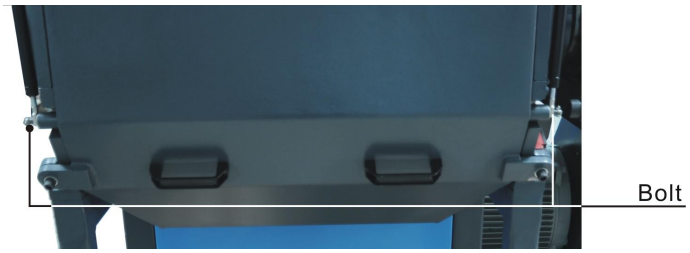
Running machine will stop as soon as motor shield or hopper and screen open to ensure operation safety.



Picture 2-4: Screen Frame Safety Switch

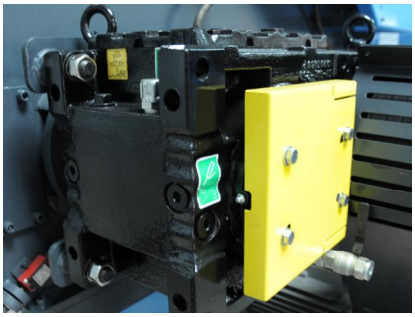
Notice before start-up:

1) Check if screen frame and hopper are locked tightly.
2) Check if motor baffle is well installed.
3) Ensure no one working inside crushing chamber.



Picture 2-5: Bolts

2.2.3 Reduction Gear



Picture 2-6: Reduction Gear

1. Installation and Use

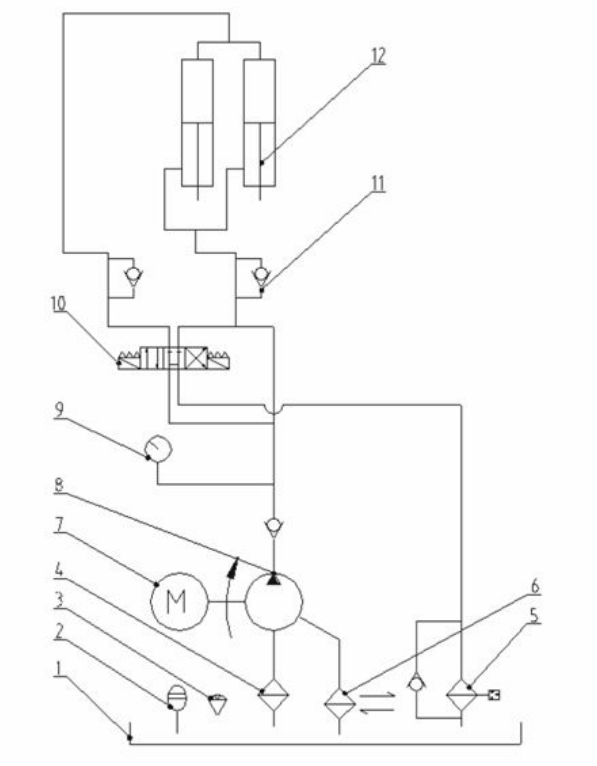
For connection of high speed shaft and other parts, hammering is not allowed. Users can rotate bolts into shaft-end holes and press fastenings.
After install reduction gear, rotate it manually to ensure smooth rotation.
Without loading condition, operate device for 2 hours. If you find uneven sounds, overheat and oil leakage, please shut it down and contact Shini Company.
During installing torque arm, make point of connection being vertical with output shaft axis, deviation is $\pm 5^{o}$.

2. Lubrication

Use VG46 gear oil to lubricate reduction gear, do not use additives containing graphite or molybdenum disulfide. After first oil filling, run the machine for 2 hours then replace oil. Replace the oil after 6 months or 2500 hours running.

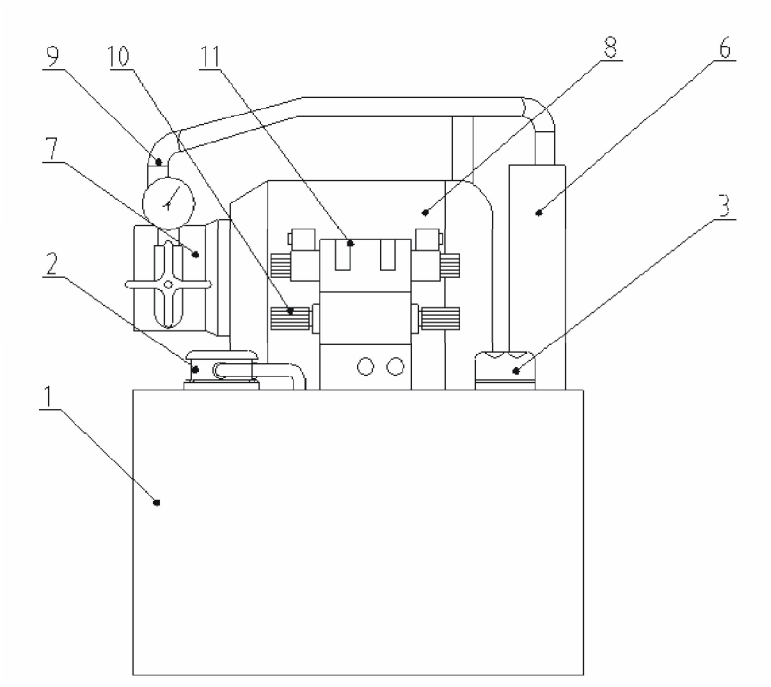
2.2.4 Hydraulic System

2.2.4.1 Principle of Hydraulic System



Picture 2-7: Principle of Hydraulic System

2.2.4.2 Hydraulic Pump Station



Picture 2-8: Hydraulic Pump Station

2.2.4.3 Hydraulic System Parts List

Table 2-1: Hydraulic System Parts List

No.	Name	No.	Name
1	Oil tank 100L	7	Oil pump VPF-30
2	Dipstick 3“	8	Motor 3HP
3	Oil filler 63	9	Oil meter 250kg
4	Precise filter screen 08	10	Shuttle valve DSG-03-3C6-A5
5	Return oil filter 40L	11	Throttle valve MTC-03W
6	Air cooler 407	12	Hydro-cylinder MOB63x420-CA-I

2.2.4.4 Overview of Hydraulic System

Hydraulic system of SGS-S includes many hydraulic elements and auxiliaries. Hydraulic circuit adopts integral oil circuit structure. Overall, the system is easy to maintain with a reasonable and reliable design.

2.2.4.5 Performance and Technical Parameters

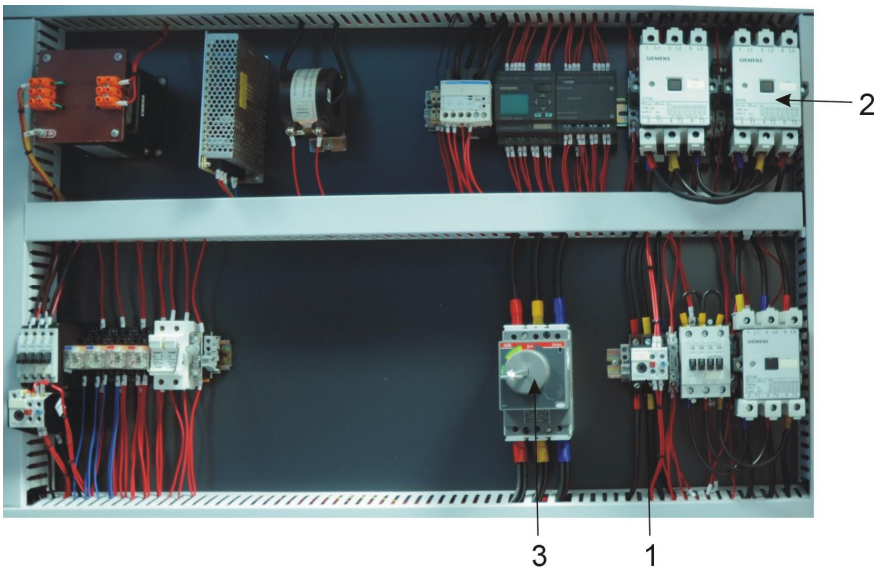
1) Rated operating pressure: 7MPa
2) Flow rate: 25/min
3) Motor technical parameters:
   Model: 3HP-4P
   Power: 2.2kW
   Rotation speed: 1450r.p.m.
4) Power parameters of components:
   Solenoid directional valve (electro-hydraulic): DC24V
   Motor: AC380, 50Hz
5) Recommended transmission medium:
   N46, N32 antiwear hydraulic oil
   Cleanness for oil tank operation: NAS11 class (NAS1638)
   Temperature range of system oil: 5℃ ≤ t ≤ 50℃
   Oil tank effective volume: 100L

2.2.4.6 Operation and Use of Hydraulic System

1) Inspection before using
   Inspect if adjusting handle of elements and auxiliaries is in correct position, if oil level in liquid indicator range, if pipe joint and fastening screw are lose, if valve and pipeline leaks.
2) Inspection after startup
   Start oil pump and check if system pressure is not higher than 6.5Mpa, if pushing device speed is suitable. Check at all times motor and oil pump temperature rising and observe system operating pressure.
3) Maintenance
   Replace oil after debugging hydraulic system. Replace hydraulic oil once after initial using then replace once every year to ensure normal operation. During operation, inspect if oil filter is blocked and clean or replace filter core. Spares parts and auxiliaries should be stored for dealing with faults.

2.3 Electrical Components Instruction

2.3.1 Thermal Overload Relay



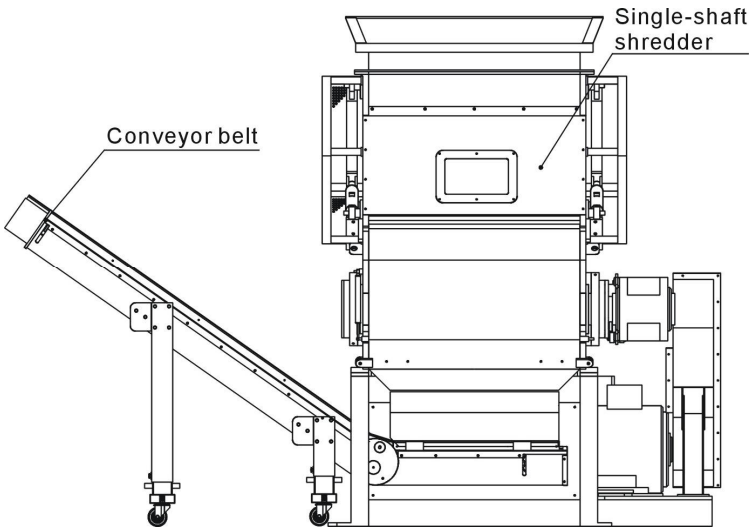
Picture 2-9: Main Electric Components

1. Thermal overload relay protects motor when overload or loss of phase.
2. Electromagnetic contactor can connect or disconnect circuit in the distance.
3. Main power switch connects or disconnects power.

2.4 Options

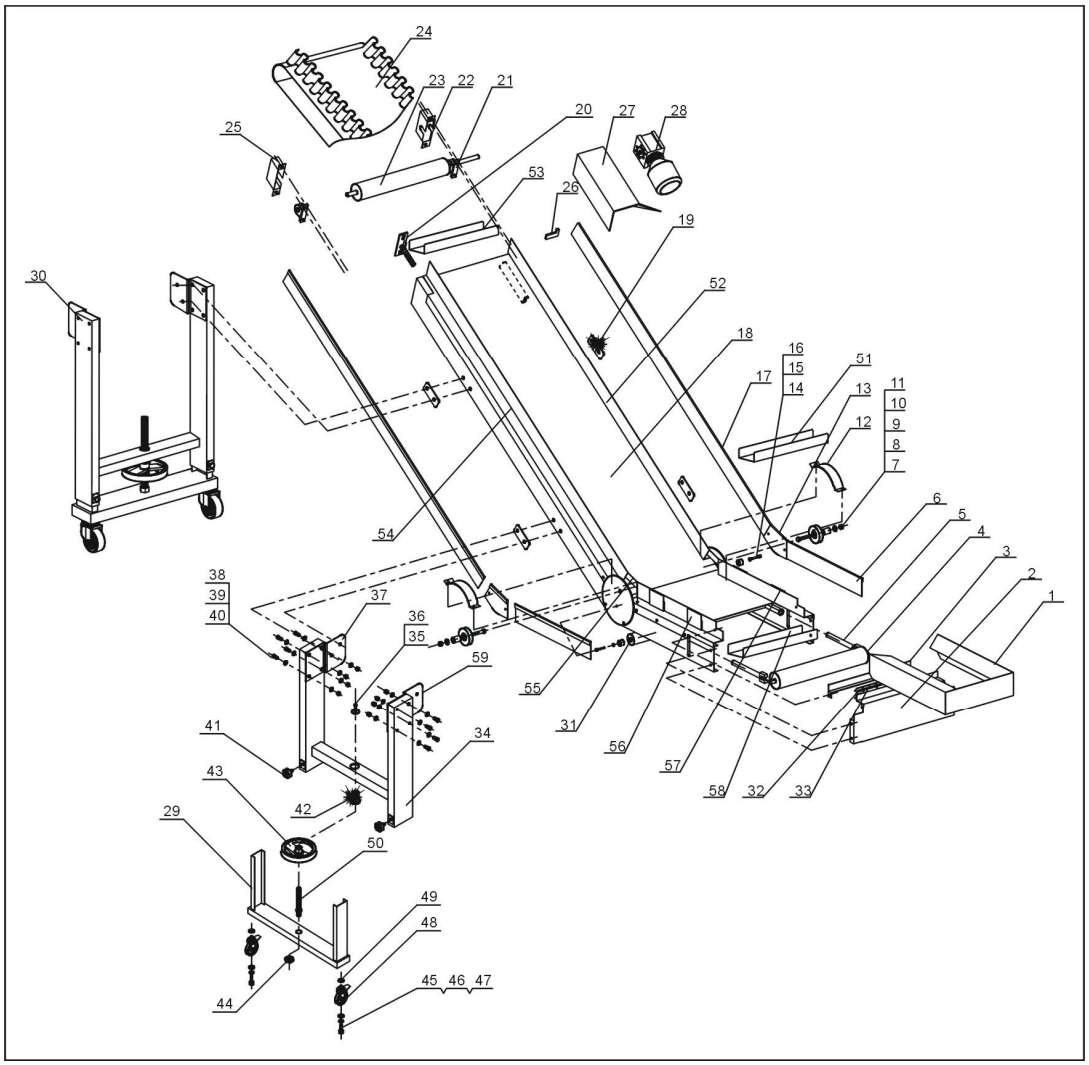
2.4.1 Conveyor Belt Feeding System

2.4.1.1 Conveyor Belt Feeding System Installation



Picture 2-10: Conveyor Belt

2.4.1.2 Conveyor Belt Assembly Drawing (CB-3675)



Note: Please refer to 2.6.1.3 material list about the parts code.

Picture 2-11: Conveyor Belt Assembly Drawing (CB-3675)

2.4.1.3 Conveyor Belt Parts List

Table 2-2: Conveyor Belt Parts List (Matching in-SGS-6080S)

No.	Name	Part No.	No.	Name	Part No.
1	Material fender	-	31	Iron bar	YW08367513000
2	Front plate	-	32	Baffle	-
3	Front upper plate	-	33	Clamping plate of front plate	-
4	Conveying wheel (motor less)	YW08367504000	34	Lifter	-

5	Jaw bolt	BH10000603840	35	Adjusting bolt M12×25	YW69122500000
6	Front edge package board	-	36	Flat washer 12	YW66123200100
7	Locknut 12	YW64001200000	37	Adjusting plate 1	BL56360200040
8	Flat washer	YW66122400000	38	Outer hexagonal bolt M10×60	YW60106000000
9	Pinch roller sleeve	BH10062500010	39	Flat washer 10	YW66102500000
10	Pinch roller	BH10367517010	40	Outer hexagonal locknut	YW64101100000
11	Outer hexagonal screw M12×60	YW60126000100	41	Star knob M10×15	YW09101500100
12	Cover plate of pinch roller	-	42	Sleeve	-
13	Middle edge package board	-	43	Rotor wheel	-
14	Socket head cap screw M6×40	YW61064000000	44	Hex nut M27	YW64002700000
15	Flat washer 6×12	YW66061200000	45	Socket head cap screw M12×40	YW61124000000
16	Sleeve	BH10062600010	46	Spring washer 12	YW65012000000
17	Back edge package board	-	47	Flat washer	YW66122400000
18	Horizontal bracket	-	48	Caster	YW03010000000
19	Adjusting plate	-	49	Flat washer 12	YW66123200100
20	Fixed plate assembly drawing	-	50	Bolt	BH10061100010
21	Bearing seat	YW11020500200	51	Middle beam	-
22	Lower right end cap	-	52	Left rear side bracket	-
23	Conveying wheel	YW08367510000	53	Front beam	-
24	Conveying belt	YR00367511000	54	Right rear side bracket	-
25	Lower left end cap	-	55	Middle side plate	-
26	Motor stop plate	-	56	Right front side bracket	-
27	Motor guard board	-	57	Left front side bracket	-
28	Gear motor	YM50102000000	58	Back beam	-
29	Base 1	-	59	Adjusting plate	BL56360300040
30	Base 2	-			

* means possible broken parts.

** means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

2.4.1.4 Conveyor Belts Feeding Installation

Note:Refer to manual carefully before operate conveyor belt feeding system.All electrical connection should be conducted by professional electricians.

2.4.1.5 Control Circuit Connection and Operation

Conveyor belt can be solely controlled or can be controlled with single-shaft shredder by a control station. In solely controlling, connect power and start/stop machine via start button in conveyor belt. Note: upon delivery, conveyor belt is controlled plus shredder and power connector of belt is covered with waterproof plug, which should be dismantled if solely control. In connecting with shredder, conveyor belt is separate from host machine and belt does not connect shredder. Therefore, before shredder servicing, connect power of conveyor belt to the plug in right door of control cabinet.

Note:Turn start switch of conveyor belt on if adopting this type of controlling.

Start-up and shutdown

In sole control, control belt start/stop via start and stop buttons in conveyor belt.
In combined control, control belt start/stop via select switch in master control station.

2.4.1.6 Checkup of Conveyor Belt

Refer to CB Manual for Details.

3. Installation and Debugging

 Please read carefully this part before installation.

 Please install the machine according to the following orders in order to avoid human injury and machine damage!

 Please be very careful and avoid cut by the extremely sharp blades!

 Power connection of granulator must be accomplished by professional electricians!

Table 3-1: Torque Forces of Blades and Other Fixing Screws

Screw thread size	M10	M12	M14	M16	M18	M20	M22	M24
Axial force (N)	23.8	34.5	47	65.5	78.5	103	129	149
Tightening torque force (Nm)	50	86	135	215	290	420	570	730

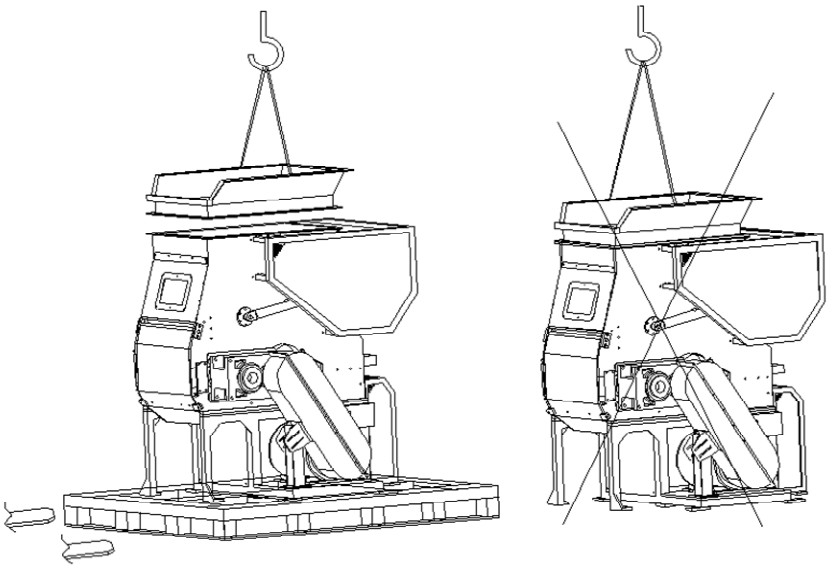
3.1 Installation Notices

1) Please ensure that the voltage and frequency match with those marked on name plate provided by the plant.
2) Connection of cables and ground wires shall accord with local regulations.
3) Please use independent cables and power switches and the diameter of cables shall not be less than that of cables applied in electric cabinet.
4) Cable terminals shall be safe and fixed.
5) This series of machine requires three-phase four-wire power supply. Power supply (L1, L2, L3) connects with live conductor and ground wire (PE).
6) Power distribution requirement:
   Main power supply pressure: ± 10%
   Main power supply frequency: ± 2%

3.2 Installation Positions

Note: Please use correct lifting method!
Feed box and granulator body are separately packaged when the machine leaves the factory. Use forklift to move the granulator body to suitable position before install feed box on granulator body and then lock tightly its installation screws.

Note:No lifting the machine while installing the feed box on granulator body and overweight will damage the machine!



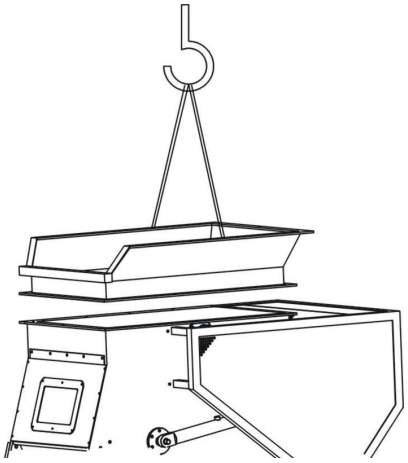
Picture 3-1: Installation Positions

Note:Please assure of enough installation space in peripheral area of the machine for the convenience of machine maintenance and repair.

Note:Please inspect and confirm the level installation ground and its full strength for machine's operation.

3.3 Installation of Feed Hopper

1) Reserve M12 screwed holes on feed hopper to fix two lifting eyes.
2) Lift up feed hopper and lay it on top of crushing chamber carefully to make it match well with crushing chamber and justify with its fixing holes.
3) Lock tightly the external hex bolts of feed hopper. (torque: 220Nm).

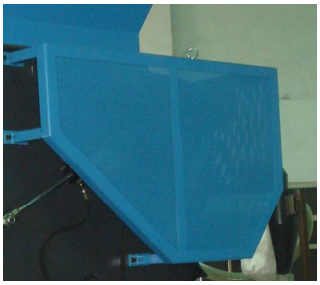


Picture 3-2: Installation of Feed Hopper

3.4 Installation of Shield

Before installing shield, make sure finishing feed hopper installation first.

1) Place shield plate on the side to match whole sites.
2) Lock screws at the front and back ends.



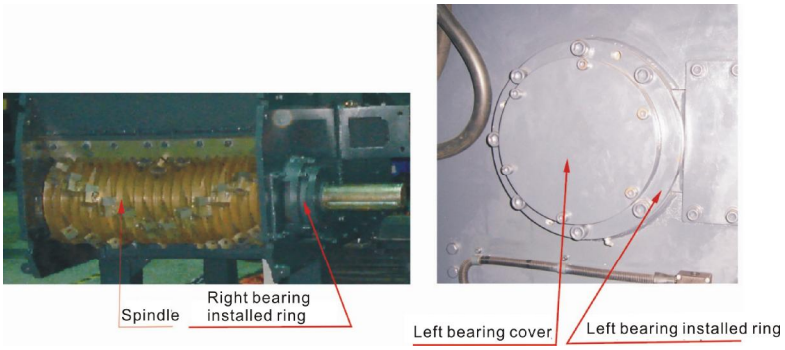
Picture 3-3: Installation of Shield

3.5 Installation of Main Cutter Shaft and Bearing

1) Use hoist to lift shaft to installing port of cutting chamber, then push it inwards after match two ends.
2) Press bearing into mounting ring.
3) Place mounting ring into cutter shaft, use tool to press bearing inner race to mounting place, then match ring hole sites and screw bolts and lock.

Attention: apply lubricating oil to bearing and mounting ring.

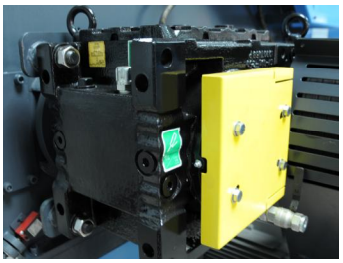
4) Mount bearing end cap and lock it up with bolts.



Picture 3-4: Installation of Main Cutter Shaft and Bearing

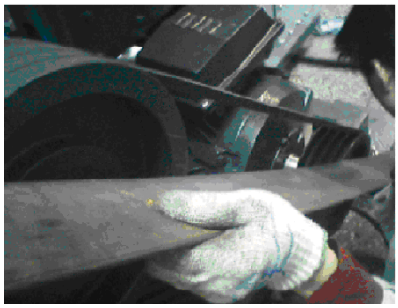
3.6 Installation of Pulley, Motor and Reduction Gear

1) Put key into keyway of cutter shaft, use hoist to lift reduction gear, insert output hole into shaft, then screw bolts to drag reduction gear in a proper place; after install, make sure gear can rotate smoothly.
2) During installing torque arm, make point of connection being vertical with output shaft axis, deviation is $\pm 5^{o}$.
3) After reduction gear installing, mount pulley on input shaft of gear.



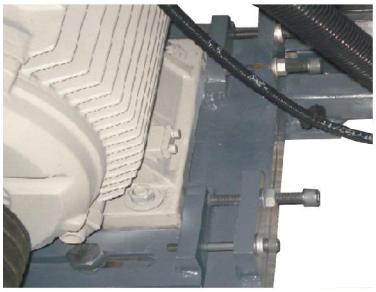
Picture 3-5: Installation of Main Cutter Shaft and Bearing 1

4) Put taper sleeve into pulley round hole, match hole sites with pulley and screw inner hex bolts.
5) Adjust pulley via dial indicator, fit indicator tightly with pulley and rotate pulley to check if indicator within 0~0.1mm.



Picture 3-6: Installation of Main Cutter Shaft and Bearing 2

6) After adjusting, fasten 3 inner hex bolts in loop with the torque 150Nm.
7) Mount pulley on motor shaft.
8) Put taper sleeve into pulley round hole, match hole sites with pulley and screw inner hex bolts (M10mm×25, torque 45 Nm).
9) Place motor on fixing plate and push it forward to shorten distances between pulley.
10) Adjust pulley: put a level bar in the middle of two pulleys, observe if mercury column stays in the middle. If not, adjust pulleys to make them balanced.
11) Mount pulley, push motor to the right, twist adjusting screws to spread forces on pulley evenly then tighten pulley and fasten adjusting bolts.
12) Mount motor shield and motor baffle.



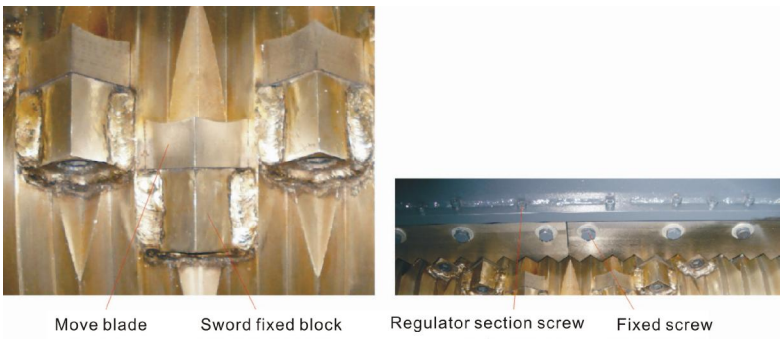
Picture 3-7: Installation of Main Cutter Shaft and Bearing 3

3.7 Installation of Blades

Note:Blades are extremely sharp and please put on gloves before installation and please be very careful to avoid cut during the installation.

Steps:

1) Put rotate blades into groove, match hole sites with fixing block then tighten bolts to fit blades to cutter groove and front end face of fixing block.
2) Fix upper fixed blades in fixed mount then screw screws to fasten blades; screw adjusting bolts to fasten lower fixed blades in fixing block.
3) Use feeler gauge to inspect gap between fixed blades and rotate blades. Normal range is 0.5~1.5mm; if not, change the gap by adjusting fixed blades then tighten fixing screw of fixed blades.



Picture 3-8: Installation of Fixed and Rotate Blades

Note:Make sure tighten set screws to avoid personal injuries and machine damage.

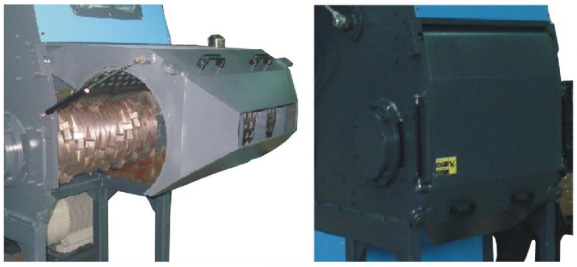
Note: During adjusting blade gaps, do not adjust the gap too close to avoid blades contacts and damages. Rotate cutter shaft for a few rounds to adjust gap to a suitable range.

3.8 Installation of Screen and Frame

1) Put screen into frame, match hole sites at two ends and fasten screws. Place the frame under crushing chamber.
2) Insert two bars from frame to hole site at two sides of crushing chamber, then tighten screws to fasten the frame.
3) Mount air spring between left side plate and frame, then insert cotter pin.

4) Pull down and close the frame, screw bolts at two sides. Firstly loosen sets crews of screen and frame then tighten them again.

Note: Before change screen and tighten screws at twp ends of frame, make sure loosen screws on frame then tighten them, otherwise it will cause loosening of two ends in screen.



Picture 3-9: Sieve Net and the Installation of a Screen

3.9 Connection of Hydraulic System

Connect hydraulic oil pipeline based on drawing, use pipe clamp to fasten oil pipelines.

There is level indicator of hydraulic oil behind machine to observe oil content. (note: oil levee should reach the top of indicator)

Note: Open hydraulic pump shield before maintain and adjust hydraulic system.

3.10 Power Connection

Note: Power connection of granulator must be accomplished by professional electricians!

Note: Open hydraulic pump shield during connecting power line, then pass power line across left side hole in control cabinet to connect main power switch.

3.10.1 Inspect operation direction of motor

1) Check up if screen frame and feed hopper are well installed.
2) Inspect operation direction of motor:
3) Check up if emergency switch acts.
4) Start granulator by pressing the button of "Start"; then shut it down immediately by pressing the button of "Stop".

5) Granulator needs some time for full stop and examine if the operation direction of the motor is clockwise direction.

Note:If the operation direction of the motor is incorrect, it is liable to damage the blades. At the same time, it will also largely reduce the machine's crushing capability! Please cut off power supply and change any two of the three connection wires of the main power supply.

Note:Be careful of crushing injuries when checking motor direction manually!

3.10.2 Inspect operation direction of hydraulic pump motor

1) Check if motor direction is in accord with the arrow mark.
2) Manually start hydraulic system then shut it down to observe motor direction.

Note: Warning!
If the operation direction of hydraulic motor is incorrect, device can not operation normally. At the same time, it will also largely reduce the machine's crushing capability! Please cut off power supply and change any two of the three connection wires of the main power supply.

Note: If opting for conveying belt, please check rotation direction of conveying belt.

4. Operation Guide

Please put on ear shield while operating the machine in order to avoid human injury!

Please put on gloves while operating the machine in order to avoid human injury!

Please put on protective glass while operating the machine in order to avoid human injury!

Please inspect whether the blades or rotators are loosened before operate the machine:

1) If any damage exists in blades.
2) If fixed welding block of rotated blade is loosened.
3) Pull or push rotators and blades to examine if they are loosened.

Please contact local sale company or Shini Company if users find out any of the above-mentioned situations.

4.1 Starting-up Pre-inspection

Rust preventing oil has been painted on parts without any painting upon delivery, clear away rust preventing oil before using this machine.

1) Clean it with cleaning rag first.
2) Then clean it with cleaning rag by amyl alcohol.

4.1.1 Before First Starting-up

1) Inspect if the shredder is in the level position.
2) Inspect blade gap (0.5~1.5mm) and if lock screws of blades are tightened.
3) Inspect if reduction gear is adequately lubricated, if hydraulic oil is adequately filling.

4.1.2 2 Hours Later after First Starting-up

1) Recheck blade gap, including fixed and rotate ones, then check blade screws are loosened.

2) Check motor positioning screw and check if positioning screw is tightened.

4.1.3 20~30 Hours Later after First Starting-up

Check belt tension after full-load 20~30 running, then adjust belt tension if it goes wrong.

4.2 Circuit Connection

Circuit installation of shredder shall be accomplished by professional electricians.

1) Connects shredder power.
2) Shredder motor and oil pump motor rotate clockwise

4.2.1 Inspect the Operation Direction of Motor

1) Confirm main power switch is "ON".
2) Check up if emergency switch acts.
3) Start shredder by pressing the button of "Start"; then shut it down immediately by pressing the button of "Stop".
4) Shredder needs some time for full stop and examine if the operation direction of the motor is clockwise direction.

Note:Be careful not being crushed by belt when manually checking motor operation direction.

4.2.2 Inspect the Operation Direction of Hydraulic Motor

Start pump and shut it down to check if motor vanes rotate in accord with the arrow mark in nameplate.

4.3 Open Screen Frame

Turn off control power switch and shredder power before opening screen frame.

Note:Sharp blades may cause personal injuries.

4.3.1 Open Screen Frame

1) Turn off shredder power.
2) Unscrew fixed bolt at two sides of frame then pull it out.
3) For replacing screen, user needs to dismantle the whole frame firstly.

Note: Screen frame is supported by pneumatic spring bar so it would not drop down when opening. Use an object to support

frame if manually working under screen to prevent injuries caused by spring bar failure.

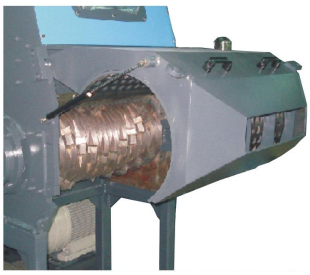
4.4 Close Screen Frame

Note:Hold the handles on frame tightly and push them toward crushing chamber to close frame, then lock fixed screws at two ends of screen.

Note:Avoid crushing injuries when close frame!

4.4.1 Install Screen Frame

1) Put screen into frame, match hole sites and fix them via lockup bolts.
2) Refer to installation instruction for details.



Picture 4-1: Installation of Screen Frame and Storage Hopper

4.5 Turn On and Off the Machine

1) Shredder is controlled by main power switch, safety switch, console and emergency stop.
2) There are two modes of Manual and Auto available.
3) Normal operation adopts Auto mode.
4) Once start-up, check instruction on panel and check if switches are in OFF position. Then turn on main switch on left side of control cabinet and switch motor into “Running” on control panel.
5) Manual mode is to maintain, debug, cleanup and other operations of separately controlling pushing block and cutter shaft. Under Manual mode, motor switch controls shaft running and reversely running, turn on oil pump to control pushing block movements.

Note: Under Auto mode, oil pump switch, pushing switch and motor reverse are unavailable. During operation, keep oil pump

and pushing switch in OFF position to avoid misoperation when switching for Manual mode and cause personal injury and device damage.

Main power switch:

Main power switch of shredder is installed on control cabinet and turning on/off the machine is controlled by main power switch. Door interlock switch id adopted for convenience.

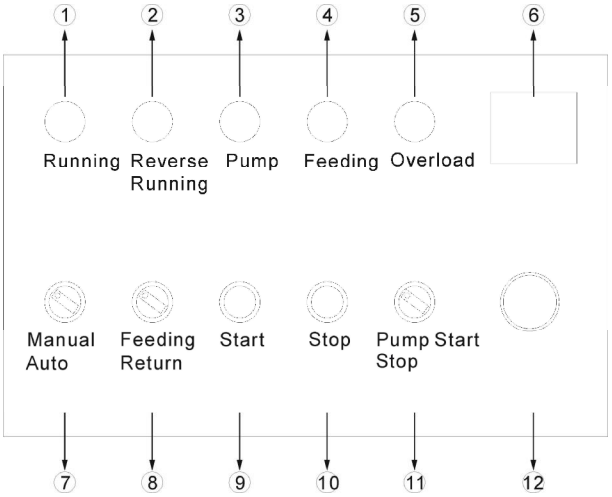
Picture 4-2: Main Power Switch

Shutdown and Turn Power Off

Under Auto mode, switch off motor to shut down shredder; under manual mode, just switch off oil pump, motor and pushing block; for cutting ff power, switch power to “O” position in the left side of control cabinet.

Emergency Button:

Furthermore, an emergency button is also equipped with machine. Press this button if any accident or other situations happen.



Picture 4-3: Emergency stop

1. Running	2. Reverse running	3. Pump running
4. Feeding	5. Motor overload	6. Ampere meter
7. Manual/Auto	8. Feeding /return	9. Start
10. Stop	11. Pump start/stop	12. Emergency stop

Note: Under Auto mode, oil pump switch, pushing switch and motor reverse are unavailable. During operation, keep oil pump and pushing switch in OFF position to avoid misoperation when switching for Manual mode and cause personal injury and device damage.

4.6 Parameter Setting

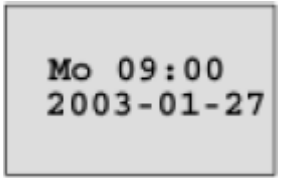
Parameters are set via SIEMENS LOGO! Controller. Firstly, confirm parameters based on demands then input parameters to controller manually. Turn on control panel and enter LOGO! Setting.

4.7 Parameters List

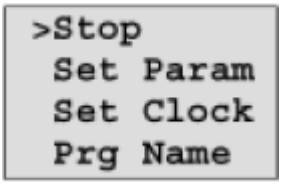
Param. No.	Function	Remark
B1	Startup reversely running	Cleanup of residual material, default is 5S.
B2	Star start time	Star starting time, default is 8S.
B9	Shutdown time after start and reverse running	Shutdown time after reverse running, default is 10S.
B14	Feeding time interval	The swing arm rests at the highest position, so that we know the feeding time interval, and the factory setting is 3S
B16	Residence time when materials are pushed to the max. position	The residence time of swing arm when it is pushed into the max. position each time (not include the time after the 1st startup), and the factory setting is 3S.
B17	Feed crushing time	Judging time when the swing arm is pushed for n secs, that it hasn't reached the max. feeding position. The factory setting is 30s.

4.8 Parameter Input

Initial screen of SIMENS LOGO！is the clock and date.



1) Press “ESC” key to switch LOGO！ controller from Operation mode to Parameter assign mode and a menu comes out:



Below are the functions of 4 menu keys:

STOP

Press this key to turn off controller.

Note: Do not select this menu functions, for it will forces running system to stop.

Set Param

Parameters setting of B1, B2, B3, B4, and B5 are completed via this key.

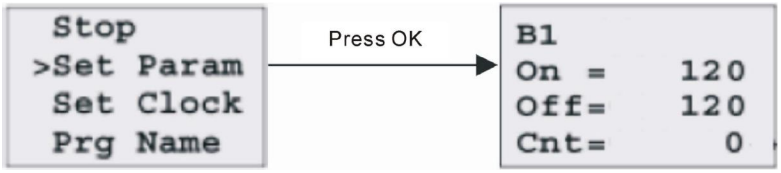
Set Clock

Setting controller time via this key.

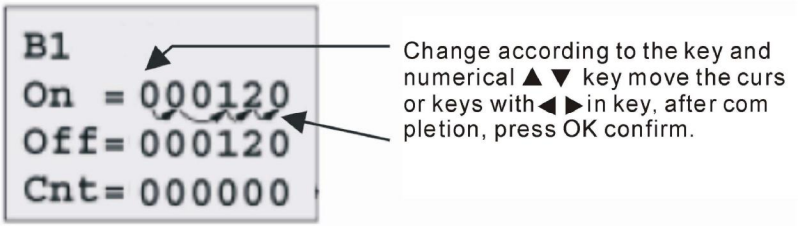
Prg Name

This menu command only allows you to read the name control program.

1) Press ▲ or ▼ keys to move cursor “>” to “Set Param”.



2) Press OK key to confirm, LOGO！ will display first parameter B1.
3) Press OK again to confirm parameters edited.



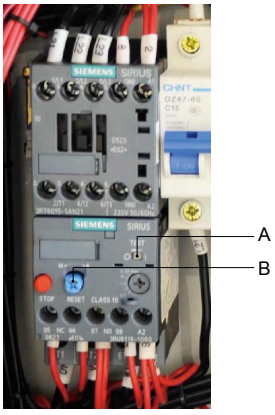
4) After setting B1 parameters, press ▲ key and LOGO！ Displays second parameter B2. Press OK key to modify parameters then press ▲ key,

LOGO！ Displays third parameters B5. Repeatedly, complete settings of B2, B5 and...B11, press ESC key to exit parameters setting menu to parameter assign screen. Press ESC key to return initial screen with clock and date.

5. Trouble-shooting

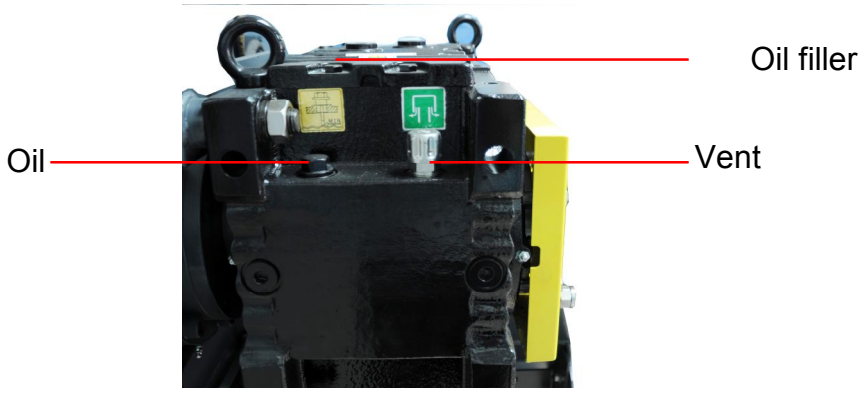
5.1 Shredder Fails to Operate

1) Check if the emergency stop has been reset or not. If not, rotate the button anti-clockwise to reset it.
2) Check if the safety switch between feed box and storage box is completely closed. If not, machine can not be started.
3) Checking overload protector of the motor.
4) The overload protector in the electrical control box will work if the motor overloads. Test white key (A) turn left, press the “Reset” button (B) to reset it. Before it starts again, check whether there is any powder left in the granulator.
5) Check the overload protector of the feeding blower's motor.
6) If the feeding blower does not run, the granulator can run neither. Check the motor protector in the electric control box. If the protector is closed, the switch will be at “0” position, reset it to “1” position. Check if there’s no leftover, then re-start the machine. Test the white key(A) turn left, press” Reset” key (B) to reset it.
7) Check the clearance between the blades
8) The stop will happen or the motor overload protector will work if the blade is very blunt or the space between blades is not correct. Protector will be tripped if motor is overload. Blades should be checked, replaced or adjusted between the blades.
9) The contactor is burnt down or the control circuit is break off.



5.2 Excessive Noise of Reduction Gear

1) Check if lubrication oil is filled to the desired level (as oil pointer indicates).
2) Incorrect installation position of reduction gear. This situation should detected during first start-up and adjust it to the right position.
3) Too high ambient temperature, take off pump shield to ensure enough space for pump cooling.



Picture 5-1: Oil Filler, Oil Pointer, and Vent

5.3 Hydraulic System Faults

Too high oil temperature

1) Inspect if oil used is recommended brands, if oil has been polluted with too much impurities, if oil level exceeds specified point (above the top of liquid indicator).
2) Inspect if hydraulic oil cooler works normally; if hydraulic pressure too high (not more than 7MPa).

No pressure indicated in pressure gauge, oil cylinder stays idle

1) Inspect if oil pressure gauge is turned on.
2) Inspect setting pressure of relief valve is too low, if flow rate of one-way throttle valve is too small or in shutdown.
3) Inspect if oil circuit is suspended and if pump still works.

5.4 Others Causes for Shutdown

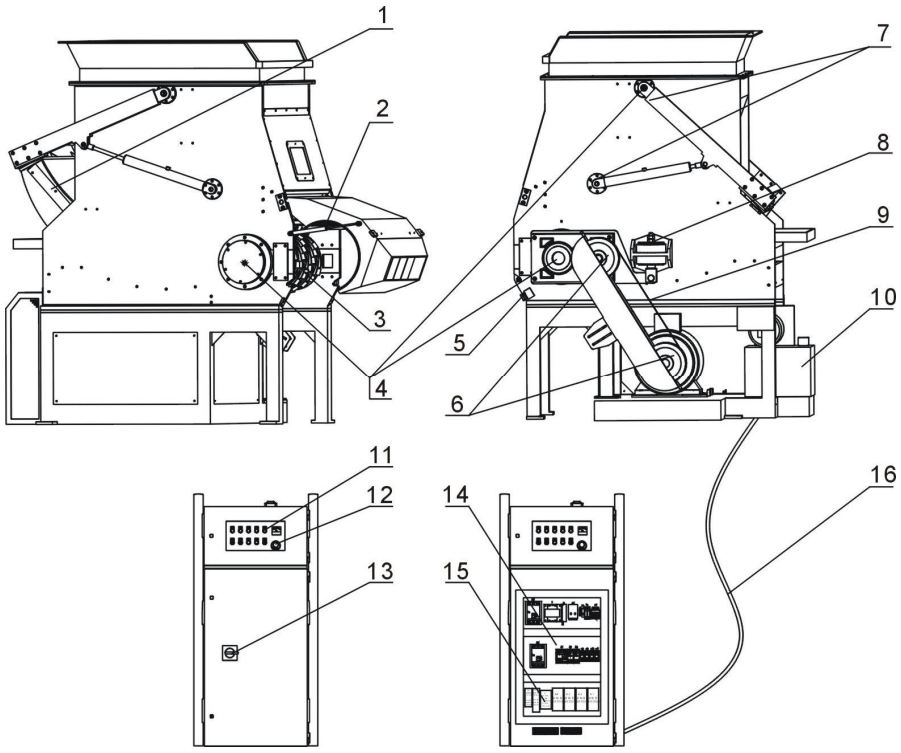
1) Too much material remained in crushing chamber once start-up.
2) Solution: start machine manually, manually control pushing block to move backwards, then run motor reversely and non-reversely until it runs normally. At last shift motor into Auto running mode.
3) Connection damage or loose in safety and limit switch also cause shutdown.

Note: Do not break off safety switch or control switch.

5.5 Inaction of Pushing Block under Auto Mode

1) Shutdown then re-startup machine.
2) If it still fails to run, manually start machine and start oil pump motor. Manually control pushing block to move backward and forward, if machine starts then shift it to the Auto mode and running.
3) If solutions above do not work, inspect position switch of pushing block, if they are well adjusted, if nylon bars are under serious wear for renewal. If connection screws in pushing mechanism are loose.

6. Maintenance and Repair



1. Check the condition of nylon bars. Period: Monthly
2. Check the condition of the screen. Period: Monthly
3. Check the wear and tightness condition of the blades. Period: Monthly
4. Check the lubrication of bearing, gear and reduction motor.
   Period: Semiyearly
5. Check all the safety switches. Period: Weekly
6. Check the belt pulley. Period: Semiyearly
7. Check the material pushing device. Period: Weekly
8. Check whether the anti-vibration device is lossened, if yes, tighten the screw nut on it.
9. Check the condition of the belt and belt tension. Period: Weekly
10. Check the hydraulic oil and system pressure. Period: Daily
Check whether there is leakage in the hydraulic system. Period: Weekly
Check the hydraulic system elements and oil quality. Period: Semiyearly
11. Check the start/stop button. Period: Daily
12. Check the emergency switch. Period: Daily

13. Check the main power switch. Period: Daily
14. Check the wire terminal of the electrical elements. Period: weekly
15. Check the overload protection function.
16. Check all the wires to ensure no breakage. Period: Weekly

6.1 Maintenance

All maintenance work must be finished by professional personnel in order to avoid human injury and machine damage.

6.1.1 Replacement of Blades

Warning!

After replacing rotate blades, make sure fix new blades tightly to avoid the constant contact between rotate blade and fixed blade.

Users must press emergency switch and turn off main power switch while replacing the blades!

Blades are extremely sharp. Please put on gloves before operation and please be very careful during operation to avoid cut injury!

Refer to chapter 3.4 for assembly during blades maintenance and replace. After fix screws, use thread fixing agents (Blue, LOCTITE234) to fill the joints to tighten them to avoid slipping.

Attention!

During assembly and disassembly of blades, dismantle motor baffle and pull belt to rotate cutter shaft. Do not rotate shaft manually to avoid personal injury.

Attention!

To avoid accidents caused by shaft autorotation, use a wood block to fasten fixed blades and rotate blades.

Check if screen is damaged after replace blades, replace screen if serious wear or deformation is caused.

 Replace screws and washers along with blades

Before replace rotate and upper fixed blades, open storage hopper and dismantle screen frame; dismantle pressing block before replace lower fixed blades.

1) Demount rotate blades

Note: Use wood block to plug into blades to avoid shaft autorotation.

1. Take off screws.
2. Take out rotate blades.
3. Clean fitting surface of blades.

Note: Single-shaft model adopts sunken diamond-shape blades, which can switch degrees for using even if one of angels wears.

2) Demount fixed blades

1. Unscrew bolts of upper fixed blades in chamber before demount them.
2. Unscrew adjusting bolts of upper fixed blades.
3. Take off bolts and fixed blades.

Note: When unscrew the lasting bolt, make sure press pushing block and blades to avoid injuries!

4. Unscrew six inner hex sunk bolts of pushing block before demount fixed blades.
5. Take off pushing block.
6. Unscrew fixed bolts and take off lower fixed blades.
7. Clean fixing plate of lower fixed blades.

3) Install Blades

Carefully clean fixed and rotate blades before installation.

Note: Screws and washers need to be replaced along with blades. Firstly install rotate blade then upper, lower fixed blade. Refer to chapter 3.7 for blades installation.

Note: Carefully inspect cutters, pushing block, screws, cutter rest and main shaft during blade replacement for any damage.

6.2 Transmission

6.2.1 Maintenance for V-belt

Note: Press emergency stop and turn off power switch before maintenance or repair!

Shredder is equipped with four conveyor belts based on motor power.

1) Inspect cog belt

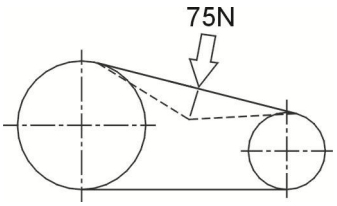
Inspect cog belt tension and running state after 20~30 full load operation. Also check cog belt wear condition once in a month.

2) Inspect cog belt tension every six month

Open side plate of control cabinet, rotate cog belt for several circles and inspect if there is wear or damage.

Note:Never put your hands between belt and pulley, otherwise it will cause crushing injuries!

Inspect belt tension and adjust it if necessary. Check tension by applying force (75N) at the middle of pulley then measure offset. (Distance of offset depends on motor power and frequency, below is specifications):

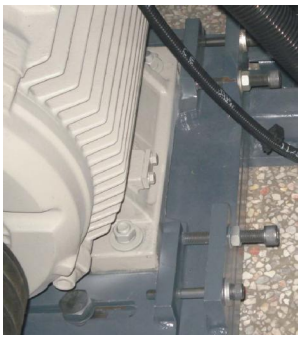


Diameter (mm)	18.5/22kW	30/37kW	45-55kW
New belt	15mm	14mm	15mm
Old Belt (after 6 month)	19mm	19mm	19mm
Motor 60Hz	18.5/22kW	30/37kW	45-55kW
New belt	18mm	17mm	16mm
Old belt (after 6 month)	23mm	23mm	20mm

6.2.2 Adjustment of V-belt

1) Unscrew four fixed bolts (C) in motor plate (A).
2) Use four flexible bolts (B), and then adjust belt tension by changing gap between pulleys.
3) Tighten flexible bolts (B).
4) Tighten fixed bolts (C).

Recheck belt tension after 20~30 hours machine full load running.



Picture 6-1: Adjustment of V-belt

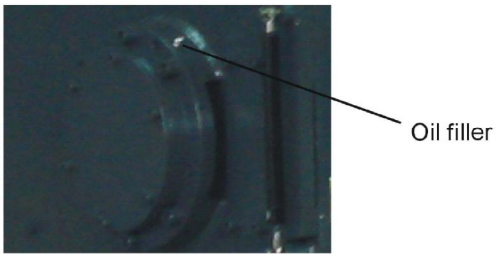
6.3 Lubrication

6.3.1 Bearing lubrication oil (Recommended brand)

Shenzhen XCL: FX-00
FX-000
Bp: BP Grease LGEP 2
ESSO: Beacon Ep2, Beacon EP2
Mobil: Mobilux EP2
Shell: Shell Alvania EP2
Texaco: Multifak Ep2, Novotex Grease EP2

6.3.2 Periodically lubricate bearings

1) Open motor shield.
2) Use lubricate oil gun to fill oil in the bearing.

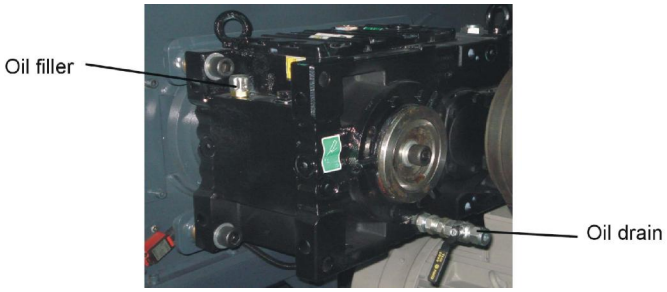


Picture 6-2: Bearing Oil Filler

6.3.3 Periodical Check or Renew Lubrication oil

1) Open oil discharge valve to drain old oil then close the valve.
2) Open oil filler and place a funnel, fill in with 10L gear lubricate oil VG460.

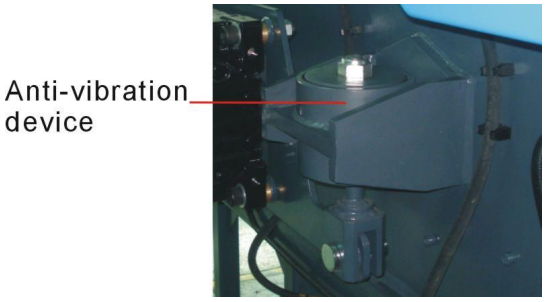
If shredder not used for a long time, apply oil to tool rest, fixed blade, rotate blade, crushing chamber and screws.



Picture 6-3: Oil Filling and Drain of Reduction Gear

6.3.4 Regularlly Check the Anti-vibration Device

The anti-vibration pad narrows due to the pinching during operatin and thus lead to the looseness. Check whether the anti-vibration device is loosened after 20~30 hours operation, if yes, please tighten the screw nut on the device.



Picture 6-4: Anti-vibration Device

6.4 Maintenance

Please make sure that there is no raw material in the granulator while executing maintenance.

Note: All maintenance work must be finished by professional personnel in order to avoid human injury and machine damage.

6.4.1 Daily Inspection

1) Once startup, check if hydraulic pressure is normal and oil is enough is oil tank (amounts to 70%).
2) Inspect if emergency switch is normal and stop the machine immediately after turn on the machine. Rotate the button along the arrow direction, namely, counterclockwise direction, to reset it.

6.4.2 Weekly Inspection

1) Inspect if power wire is wear or damaged. Replace with new one if any damage.
2) Inspect safety switch.
3) Inspect if baffle nylon bar of pushing block and baffle iron are lose. Fix screws if they are loosened.

6.4.3 Monthly Inspection

1) Inspect if belt is wear and inspect belt tension every 6 month.
2) Inspect if blades and their fixing screws are loosened.
3) Inspect wear condition of baffle nylon bar, adjust it to make it fit with bottom plate; inspect scrapping nylon bar and adjust it to make it fit with top face of pushing block; inspect wear condition at two sides of pushing block, replace it if serious damage.

6.5 Cleaning Up

Please be careful of not touching blades while dismantling feed hopper, which is extremely sharp and liable to cause human injury.

1) Check if crushing chamber empties material before shutdown.
2) Turn off main power switch.
3) Clean feed port then clear side walls and pushing block.

4) Open storage hopper then pull out screen frame.

Note: Screen frame is supported by air spring and it would not drop down.

Watch out during working to avoid air spring sudden failure, causing personal injuries.

5) Clean interior of crushing chamber and residuals on blades.
6) Dismantle storage hopper.
7) Unscrew bolts in screen fixed block and take it off.
8) Unscrew fixed bolts in screen.
9) Hold the screen and pull it out outwards.
10) Clean storage hopper, screen and frame.
11) Clean interior and exterior of crushing chamber.
12) Clean conveyor belt.
13) Dismantle motor baffle, clean pulley via dedust agent.

Reinstall after cleaning up

Note: Be careful of crushing injury when close screen frame!

1) Fix screen into frame and place frame below discharge port.
2) Lift frame and fix it with fixed block.
3) Pull up frame and install air spring to frame and left side plate, then insert cotter.
4) Close screen frame and lock screws.
5) Match pin hole behind storage hopper with pin hole in the base, then fix hopper to frame.

Note:Close frame before fixing storage, otherwise hopper would be attached to frame.

6) Place conveyor belt under hopper.
7) Close motor baffle.
8) Turn on power switch.
9) Start-up.

6.6 Maintenance Schedule

6.6.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage _____Φ_____ V Frequency _____ Hz Power _____ kW

6.6.2 Check After Installation

☐ Check if pipe connections are firmed locked by clips.

☐ Check the gap between fixed blade and rotating blade. (0.2~2mm).

☐ Check the rotating balance of the belt wheel.

Electrical Installation

☐ Voltage: _____ V_____ Hz

☐ Specs of the fuse: 1 Phase _____ A 3 Phase _____ A

☐ Check phase sequence of the power supply.

☐ Operation direction of oil pump motor and conveyor belt.

6.6.3 Daily Check

☐ Inspect main power switch.

☐ Inspect emergency switch.

☐ Inspect start / stop button.

☐ Inspect motor overload protection function.

☐ Inspect motor forward and opposite rotation functions

☐ Check whether emergency stop and safety switch works normally.

☐ Clean screen and feeding hopper.

☐ Check whether start, stop and power switches are normal.

6.6.4 Weekly Check

☐ Inspect if there is damage to all cables of the machine.

☐ Inspect if junctions of electric components are loosened.

☐ Inspect reduction gear's lubricant.

☐ Inspect wear condition of blades.

☐ Check whether set screws in fixed and rotate blades are under looseness.

☐ Check if there is abnormal noise, vibration and heat in reduction gear.

☐ Check the cracking window

6.6.5 Monthly Check

- ☐ Inspect status of motor and reduction gear.
- ☐ Inspect motor overload protection function.
- ☐ Inspect wear condition of blades.
- ☐ Inspect lubrication of gears.
- ☐ Inspect lubrication of bearings
- ☐ Check whether clamp ring of pulley is fastened.
- ☐ Check belt tension.

6.6.6 Check Half-yearly or Every 1000 Running Hours

- ☐ Check or replace lubrication for gear motor.
- ☐ Check lubrication of bearing.
- ☐ Check coupling.
- ☐ Evaluation of the machine condition.

6.6.7 3 year Checking

- ☐ PC board renewal.
- ☐ No fuse breaker renewal.