SGS-4860S

Single-shaft Shredders

Date: Oct, 2017

Version: Ver.C (English)

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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.

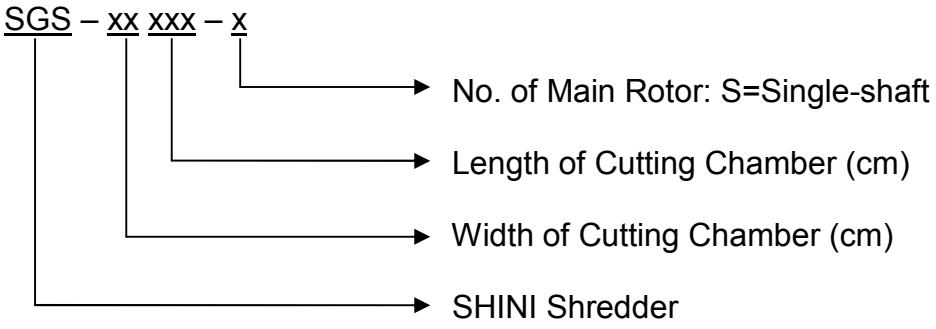
Caution!
Granulator's blades are sharp and users are vulnerable from being cut, which requires users to pay attention.

No treating with poisonous and inflammable materials!

SGS-4860S series of single-shaft shredder can shred extremely thick, tough and large solid materials. It can be applied in wide range, for example, recycling all kinds of materials such as plastics, rubber and wood. Wastes that are produced by injection molding, blow molding or extrusion molding are also included.

Model: SGS-4860S

1.1 Coding Principle



1.2 Features

1) Milling smashing design, low noise and with smashing granules in uniform size.
2) Rotor uses the square knife block of indentation on the surface to reduce friction heat. When one of the angles of the cutter is broken, it can simply inter-change the cutter for cutting efficiency improvement.
3) Tangent feed box, no need hydraulic device, and low in consumption.
4) Gear motor mounted on cutter shaft which directly drives the shaft to rotate the crushing.
5) Equipped with foot shock, reduce the vibration when machine is crushing.
6) Reverse alarm function, when power connection is incorrect, machine can't start up and will alarm.
7) Current relay and motor overload protections.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both manual operators and serviceman. Chapter 6 contains service instructions which are intended for service engineers while other chapters for 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. If you have any problem during using the machine, please contact our company or local vendor.

Headquarter and Taipei factory:
Tel: (886) 2 2680 9119

China Service Line:
Tel: 800 999 3222

1.3 Machine Specification

1.3.1 Machine Specification Table

Table 1-1: Machine Specification Table

Model	**SGS-4860S**
Motor power (kW)	15
Speed of main shaft (r.p.m)	65
Material of cutters	SKD11
Number of fixed blades	2
Number of rotating blades	39
Cutting chamber size (mm)	480×600
Max. throughput capacity (kg/hr)	400
Noise level dB(A)	110
Dia. of screen hole (Φ30mm)	✓
Dia. of screen hole (Φ20, Φ25, Φ35, Φ50 mm)	○
Regrind conveying device	○
Dimensions	
H (mm)	1900
H1 (mm)	2500
H2 (mm)	530
W (mm)	720
W1(mm)	990
D (mm)	1450
D1 (mm)	600
D2 (mm)	700
D3 (mm)	1045
Weight (kg)	1620

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

We reserve the right to change pecifications without prior notice.

2) Max capacity of the machine is subject to diameter of screen mesh and composition of material.

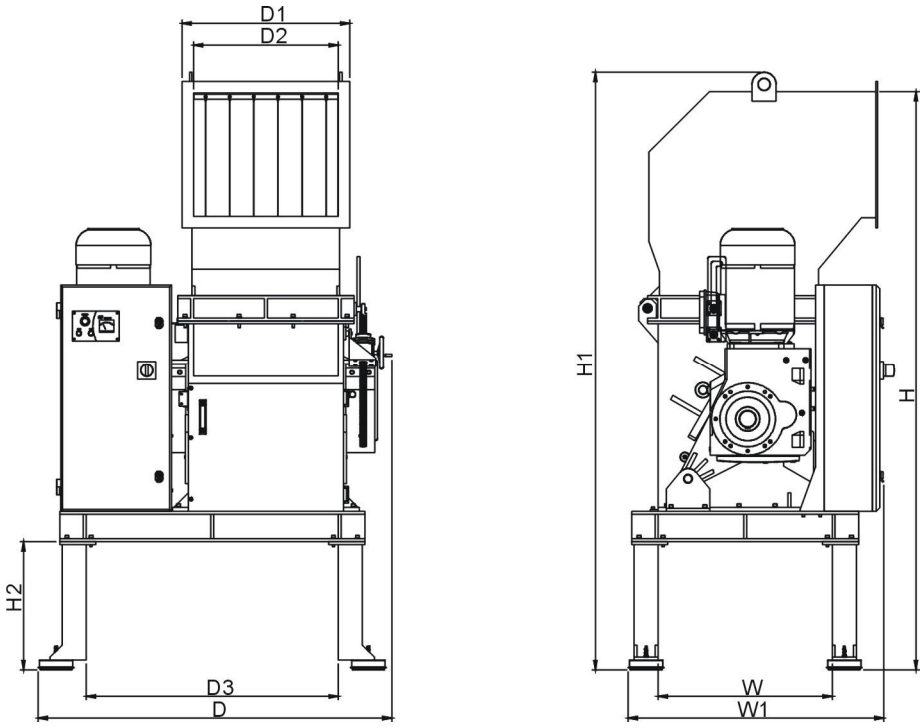
3) Noise level will vary with different materials and motor types.

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.

1.3.2 External Dimensions



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

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 into granulator before it open, unless both the main switch and the control switch of the granulator are at "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 screen bracket closed.

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

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

Be sure open feed hopper before open screen bracket.

When conveying belt is used to convey regrinds and powders, the temperature of material should not higher than 60℃.

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

Please scrutinize whether the conveyor belt nips clothes, arms and feet of operator during conveyor belt cooperation.

During conveying belt cooperation, if it conveys plastic wastes with high temperature in order to ensure materials are conveyed in the center of conveyor belt.

Attention!

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

1.4.2 Machine Transport, Strorage and Working Envrionment

Transport

1) SGS-4860S series of granulator is packaged with slatted crate or plywood case. The bottom with wooden plate pad which applicable for forklift to promptly change the places.
2) There is space at bottom of the machine for forklift to move the machine easily after unpacking.
3) When in transport, don't turn on machine and to avoid it colliding with other objects for operation prevention.
4) Though machine structure is well-balanced with transfer hoisting rings, please be careful when machine is lifting in order to avoid it falling down.
5) During long-distance transport, temperature requirement of the machine and its auxiliary should be range within -25℃to +55℃.

Storage

1) SGS-S series of granulator should be stored indoors with environmental temperature between 5℃ to 40℃ and humidity lower than 80%.
2) Please cut off all power supplies and shut down main power and control switch.
3) Please separate entire machine, especially its electrical components from water resource in order to avoid any potential faults from water vaporing.
4) Drain out hydraulic oil of hydraulic system and gear oil of gear to avoid impurity sedimentation.

5) Please wrap machine tightly with plastic film in order to keep it from dust and rain invasion.

Working Environment

Indoor the highest temperature should not exceed +45℃ and humidity should not exceed 80%.
Machine works normally in environment below altitude of 3000m.
Machine requires at least 1m peripheral space during operation.

Please keep at least 2m distance between the machine and the inflammable materials.
Please avoid vibration and magnetic influence in working areas.

Don't use the machine as following:

1) There has cable damaged.
2) Don't operation the machine on wet floors or after it caught by rain to avoid electric shock.
3) Without professional repair and installation when machine damaged or dismantled.

1.4.3 Discarded Parts Handling

When machine reaches its lifespan and can be used any more, please cut off power supply and dispose it probably according to local regulation.

Fire Alarm!

Please equip it with CO_2 dry powder fire extinguisher to avoid fire disaster.

Don't use the granulator to handling inflammable and explosive materials, or materials polluted by inflammable and explosive materials or liquids, which is liable to cause explosion and fire disaster.

Intertwining Danger! Please contact SHINI or local agents when danger cuased by intertwining especially for manual feeding!

 Tightly up the screws according to regulations.

 Pay attention to the feeding method when material length is bigger than feed hopper inlet.

1.5 Exemption Clause

Following statements clarifed 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 false installation, operation and maintenance upon machines without referring to manual ahead machine operating.

2 Any incidents beyond human reasonable controls, which include man-made vicious, deliberate damages,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.

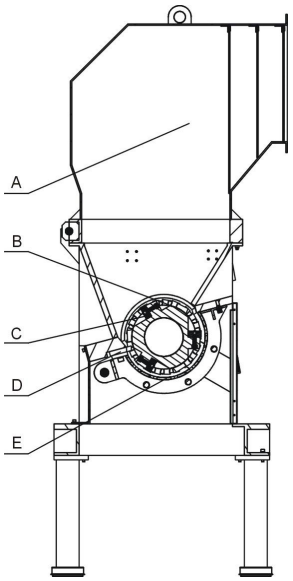
4 Employ consumables or oil media that are not appointed by Shini.

2. Structural Features and Working Principle

2.1 General Description

SGS-4860S series are suitable for crushing plastics including wastes of injection molding, blow molding or extrusion molding; Metal dust and dirt must be clear away before crushing.

2.1.1 Working Principle



Parts name:

A. Feed hopper B. Cutter shaft C. Rotating blade D. Fixed blade

E. Screen

Picture 2-1: Working Principle

Wastes fall on cutter shaft (B) inside crushing chamber through feed hopper (A). Cutter shafts (B) are directly driven by gear motor which drives rotating blades (C) on cutter shaft (B) and fixed blades (D) mounted on crashing chamber to granulate the wastes. Granule size is controlled by screen (E) which locates at bottom of crushing chamber for easy replacement. Regrinds falls into storage hopper though screen (E) for production use.

2.2 Security System

There are rotary blades inside crashing chamble. In order to prevent the shredder from accidental human injury during operation, the machine 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 shredder's security system and the replacement of all components must be provided by Shini Company.

2.2.1 Emergency Switch

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

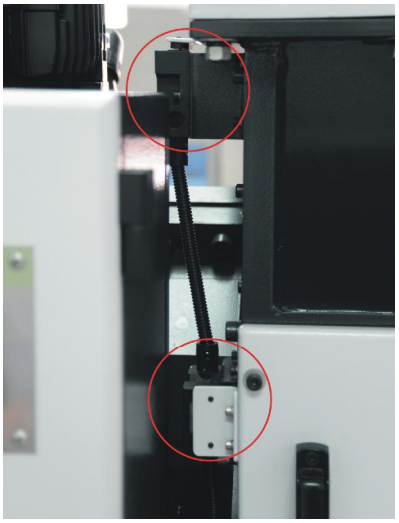
Picture 2-2: Emergency Switch

2.2.2 Safety Switch

Shredder is equipped with breaker with safety switch, which cuts power if feed hopper or crushing chamber baffle opens.

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

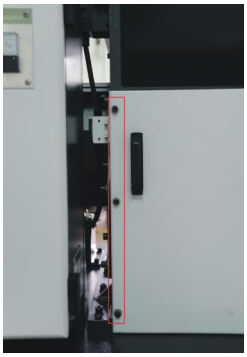
Running machine will stop at once when feed box or crushing chamber baffle is open to ensure operator’s safety.



Picture 2-3: Safety Switch

Notice before start-up:

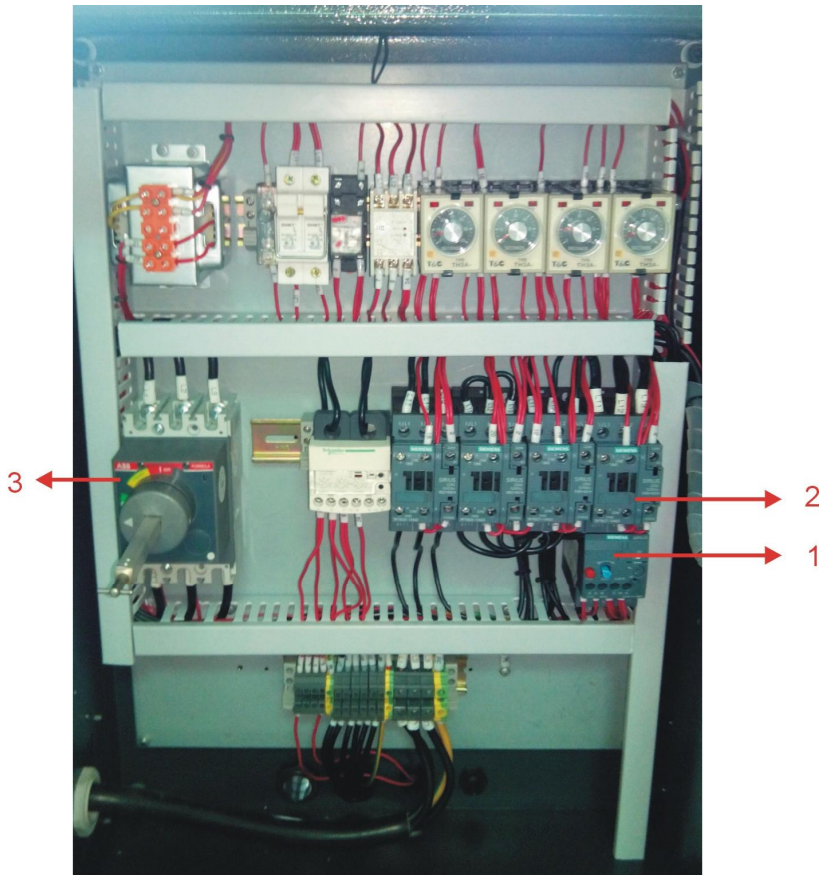
1) Ensure nobody is repairing or maintaining inside the crushing chamber.
2) Check if feed box and crushing chamber baffle is locked tightly.



Picture 2-4: Bolt

2.3 Main Electrical Components Instruction

2.3.1 Thermal Overload Relay



Picture 2-5: Main electrical components

1. Thermal overload relay protects gear 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.

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!

 During operation, operator must wear protective gloves in case cutting by extremely sharp blades.

 Power connection of granulator must be accomplished by professional electricians!

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

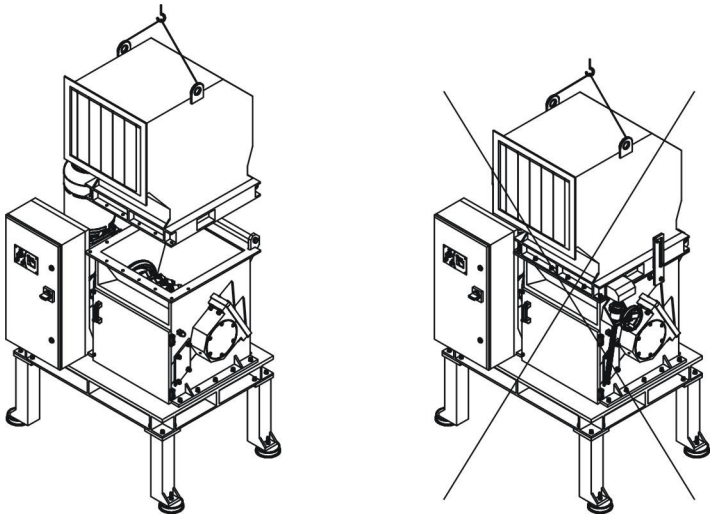
Screw thread size	M10	M12	M14	M16	M18	M20	M22	M24
Axial force (N)	23.8	34.5	47	65.5	78.5	103	129	149
Tightening torque force (Nm)	50	86	135	215	290	420	570	730

3.1 Installation Notices

1) Please ensure voltage and frequency match those marked on nameplate provided by plant.
2) Connection of cables and ground wires should observe local regulations.
3) Please use independent cables and power switches, diameter of cables should not less than cables applied in control box.
4) Cable terminals should 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

Don’t lift the machine with lifting eyes installed on feed box, otherwise it would be damaged!



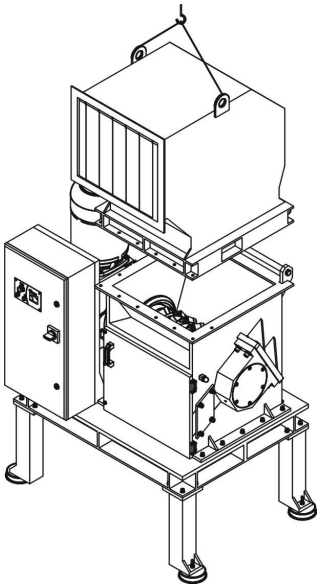
Picture 3-1: Machine installation

Please ensure enough installation space around the machine for convenient maintenance and repair.

Please check and confirm installation level ground and full strength during machine operation.

3.3 Installation of Feed box

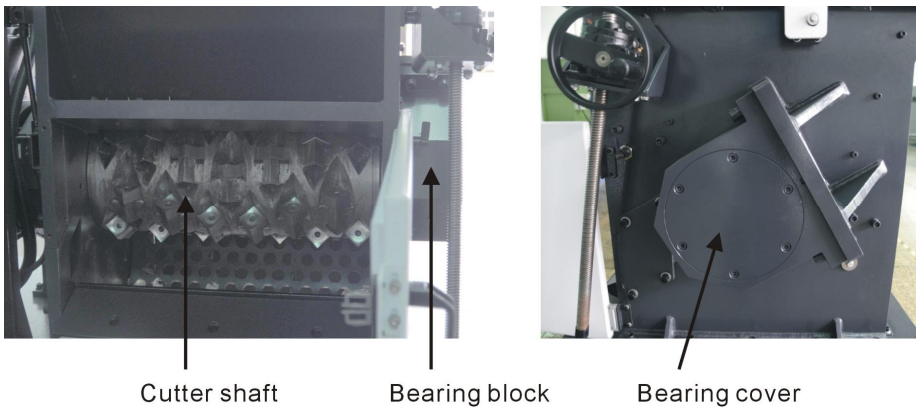
1) There are two lifting eyes welded on feed box.
2) Lift up feed box and lay it on top of crushing chamber carefully to make it well match crushing chamber, and aim at the fixed holes.
3) Install rotary shaft and shaft base cover of feed box;
4) Lock the screws at feed box inlet tightly. (torque: 86 Nm).



Picture 3-2: Feed box installation

3.4 Installation of Cutter Shaft and Bearing

1) Press bearing into bearing block.
2) Place bearing block into cutter shaft and with alignment, use tools to press bearing inner race to mounting position.
   Attention: apply lubricating oil to bearing and bearing block.
3) Use hoist to lift cutter shaft to installing port of cutting chamber, then push it inwards after match two ends. Match hole sites of bearing block, and tighten up the screws.
4) Mount bearing end cap and tighten up the screws.



Picture 3-3: Installation of main cutter shaft and bearing

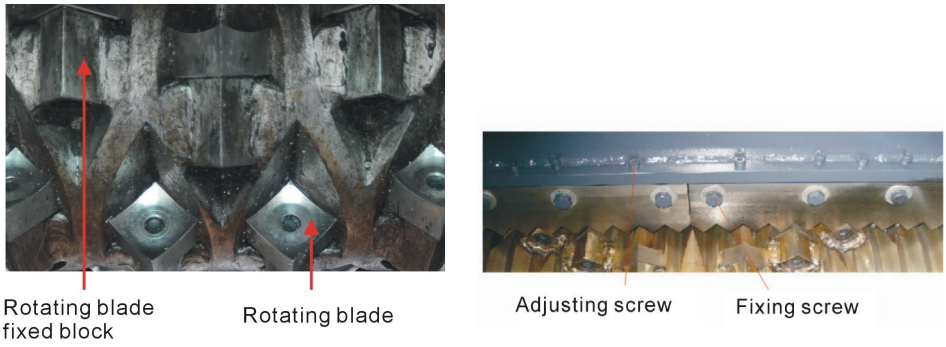
3.5 Installation of Fixed and Rotating Blades

Blades are extremely sharp, please put on gloves before installation and be careful to avoid cutting during installation.

Steps:

1) Put rotating baldes into groove of cutter shaft and match hole sites with those on fixing block. Tighten up screws to make blades close to two groove sides of cutter shaft and the front side of rotating blades fixed block.
2) Twist screws of fixed blades then screw the blades on back box block of crushing chamber.
3) Inspect the clearance between fixed blades and rotating blades by feeler.

Normal clearance is range in 0.5~1.5mm. If not in the range, adjust the fixed blades to reach it, tighten up the fixed blades with screws.



Picture 3-4: Installation of fixed & rotating blades

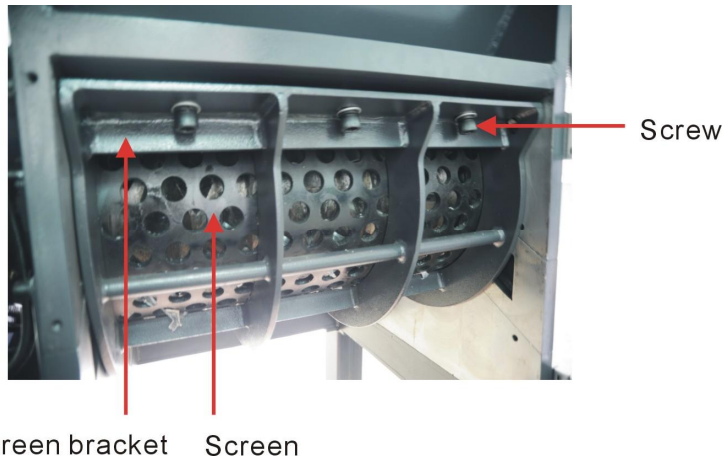
Notice!

Make sure tighten up the fixing screws of blades to avoid personal injuries and machine damage.

During clearance adjustment, don't adjust it too close to avoid blades contacts and damages. Rotate cutter shaft for a few rounds to reach suitable clearance.

3.6 Installation of Screen and Screen Bracket

1) Put screen bracket into crushing chamber, make rear end of the bracket matches installation holes on crushing chamber.
2) Cross rotary shaft of screen bracket through crushing chamber and the bracket. Lock limit pad of rotary shaft to make the bracket hang under the cutter shaft.
3) Put screen into the bracket.
4) Rotary screen bracket and attach it to its front end to crushing chamber. Tighten up the screen bracket and crushing chamber with screws.



Picture 3-5: Installation of screen and screen bracket

3.7 Power Connection

Power connection of shredder must be accomplished by professional electricians!

Installation notices:

1) Please ensure the voltage and frequency match those marked on nameplate provided by plant.
2) Connection of cables and ground wires should observe local regulations.
3) Please use independent cables and power switches. Diameter of the cables should not less than cables applied in electric cabinet.
4) Cable terminals should 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 voltage: ±10%
   Main power supply frequency: ±2%

4. Operation Guide

Please put on ear shield during machine operation in order to avoid human injury!

Please put on gloves during machine operation in order to avoid human injury!

Please put on protective glass during machine operation in order to avoid human injury!

Please check whether the blades or rotators are loosened before machine operation:

1) Blade has damage or not.
2) If fixed welding block of rotating blade on cutter shaft is loosened.
3) Pull or push fixed blades and blades to examine if they are loosened.

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

4.1 Starting-up Pre-inspection

Rust preventing oil has been painted on parts without any painting in 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) Check if shredder is on horizontal level position.
2) Check blade clearance (0.5~1.5mm) and if blades lock-screws are tightened.
3) Check if gear motor with enough lubricant.

4.1.2 2 Hours Later after First Starting-up

1) Recheck blade clearance, then check if blade screws are loosened.
2) Check motor positioning screw and check if positioning screw is tightened.

4.2 Open and Close Screen Bracket

Before screen bracket opened, must turn off power supply and main power switch on shredder.

1) Turn off power supply of shredder.
2) Loose the fixing screws ahead of screen bracket, unbolt spring pin of the bracket and then rotate the bracket downwards.
3) Open screen bracket if screen needs replacement.
4) Rotate screen bracket upwards to close it, recover spring pin of the bracket. Then tighten up the fixing screws ahead of the screen bracket.

Attention!
Sharp blades may cause personal injuries.

4.3 Turn On or Off the Machine

1) Single-shaft shredder is controlled by main power switch, safety switch, “start/stop” button and “emergency switch”.
2) When start-up, check instruction on panel and check if switches are at OFF position. Turn on main power switch on left side of control box and then press start button on control panel, the machine will run normally.
3) Press stop button, the machine will stop running, then roate the main power switch to “0” position, the power would be cut off.

Attention!
When opening the feed box or door plank, it will cut off the connection of safety switch. Machine will stop at once when in running to ensure human safety. Besides, the machine has another emergency switch design. Press the switch when accident or other situation happened that needs machine stops in emergency,.

Main power switch:

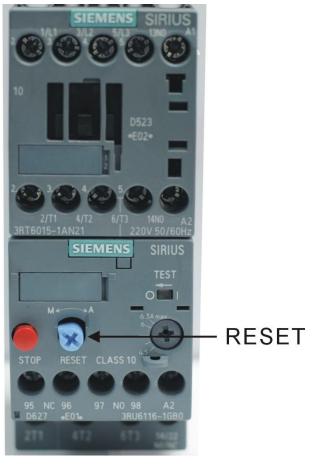
Main power switch of shredder is installed on control box and the turning on/off machine is controlled by main power switch. Door interlock switch is adopted for convenient operation.

Picture 4-1: Main Power Switch

5. Trouble-shooting

5.1 Shredder Fails to Operate

1) Check if emergency stop is reset, if not, switch button to reset as arrow (anti-clockwise) indicates.
2) Check if motor baffle is fully closed, if feed box is not closed fully, shredder can not start up.
3) Check door planks of crushing chamber are fully closed, if not, shredder cannot start up.
4) Check gear motor's overload protector. Tripping happens when gear motor overload in running. Press "Reset" button (blue) to reset it. Before shredder re-start, check whether there's the residual material in it.



Picture 5-1: Thermo overload relay

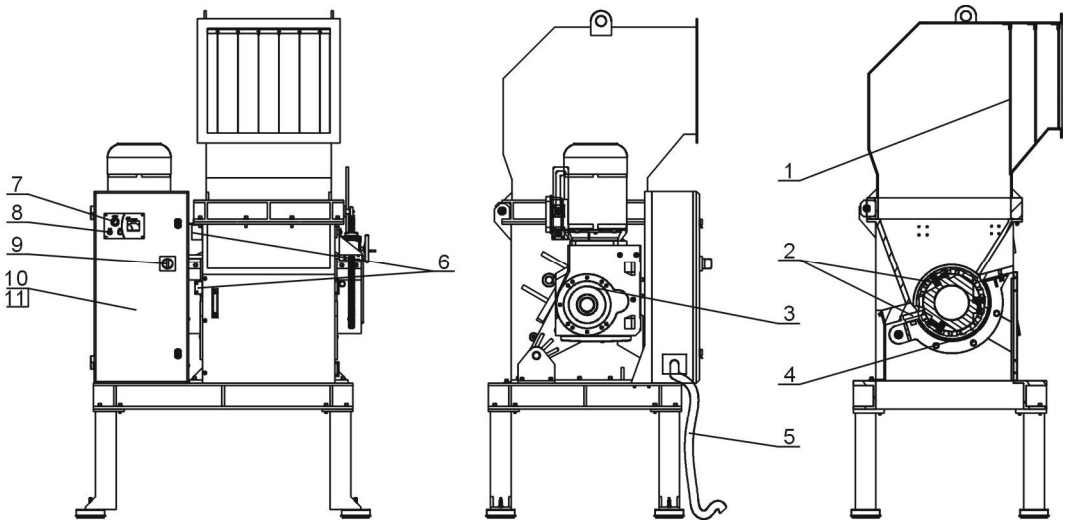
5.2 Others Causes for Shutdown

Damage or loose connection of safety and limit switch also cause shutdown.

Attention!

Don't cut off safety switch or control switch.

6. Maintenance and Repair



1. Check the condition of material fender. Period: Monthly
2. Check the wear and tightness condition of the blades. Period: Monthly
3. Check the lubrication of machine's bearing and gear motor. Period: Monthly
4. Check the condition of screen bracket. Period: Monthly
5. Check all the wires of machine to ensure no breakage. Period: Weekly
6. Check all the functions of safety switch. Period: Weekly
7. Check the emergency switch. Period: Daily
8. Check the start/stop button. Period: Daily
9. Check the main power switch. Period: Daily
10. Check the wire terminal of electrical elements. Period: weekly
11. Check the overload protective function of gear motor. Period: Monthly

6.1 Repair

All repairs must be completed by professional personnel in order to avoid human injury and machine damage.

6.1.1 Blades Replacement

Warning!

After changing direction and replacement of rotating blades, make sure fixing new blades tightly to avoid the constant contact between rotating and fixed blades.

Users must press emergency switch and turn off main power switch before blades replacement!

Blades are extremely sharp. Please put on gloves before operation and please be careful during operation to avoid the cutting!

Refer to chapter 3.5 for blades assembly during maintenance and replacement. After all screws fixed, use thread fixing agents (Blue, LOCTITE234) to fill the screw joints for tightening and to avoid slipping.

Attention!

To avoid accidents caused by shaft autorotation during rotating blades tightening, insert a wood block between upper & lower fixed and rotating blades.

Check if screen is damaged after blades replacement. Replace it if there's wear or large deformation.

In every blade replacement, screws and washers must be changed accordance with the new blade (same dimension).

Before rotating and upper fixed blades replacement, open storage hopper and dismantle screen bracket; dismantle pressing block before lower fixed blades replacement.

1) Dismentlement of Rotating Blades

Attention!

Insert a wood block to avoid human injury form shaft autorotation during blades dismantlement.

1. Take off screws.
2. Take out rotating blades.
3. Clean mounting surface of blades.

Attention!

Single-shaft shredder adopts square blades of indentation. When one angle of the blade is broken, it can simply transfer to another angle for reuse.

2) Dismentlement of Fixed Blades

1. Losse the inner hexagon screws on pressing block before dismentlement.
2. Take out pressing block.
3. Loose adjusting screws of fixed blades.
4. Clean fixed blades and pressing block.

Attention!

When tighten up the last screw, make sure to press pressing block and blades to avoid injuries!

3) Blades Installation

Carefully clean fixed and rotating blades before installation.

Attention!

In every blades replacement, screws and washers must all be replaced.

Firstly install rotating blades, then install the upper and lower fixed blades.

Refer to chapter 3.5 for detailed steps of blades installation.

Attention!

Carefully check the blades, pressing block, screws, cutter rest and main shaft during every blades replacement for any damage.

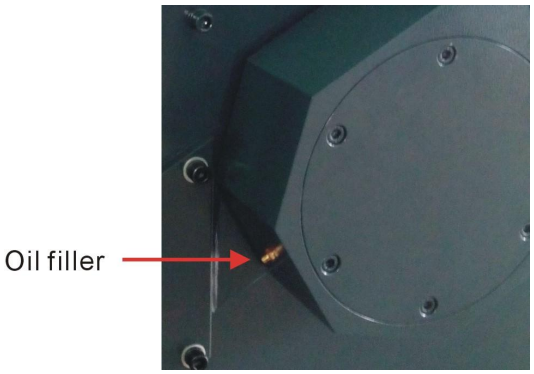
6.2 Lubrication

6.2.1 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

6.2.2 Please periodically lubricate bearings.

Use lubricating oil gun aim at oil filler to fill oil to the bearing.



Picture 6-1: Bearing oil filler

6.3 Maintenance

Please make sure there is no residual material in shredder during maintenance.

Attention!
All maintenances must be completed by professional personnel in order to avoid human injury and machine damage.

6.3.1 Daily Inspection

1) Check condition of material fender.
2) Check emergency switch.

3) Check start/stop switch.
4) Check main power switch.

6.3.2 Weekly Inspection

1) Check if power wire is wear or damaged. Replace it if there's any damage.
2) Check safety switch.
3) Check if contactors of electrical components are loosened.

6.3.3 Monthly Inspection

1) Check wear and tighten up condition of cutters.
2) Check lubrication of machine bearing and gear motor.
3) Check the condition of screen.
4) Test the protective function of gear motor overload.

6.4 Cleaning Up

When opening the feed box, be careful to avoid blades touching. Extremely sharp blades may cause human injury.

1) Check if crushing chamber empties the material before shutdown.
2) Turn off main power switch.
3) Clean feed box then clean the side walls of crushing chamber.
4) Open door plank of crushing chamber, then open the screen bracket.
5) Clean interior of crushing chamber and residuals on blades.
6) Clean screen bracket and screen.
7) Clean exterior of crushing chamber.

Re-install after the cleaning.

Attention:

Be careful of crushing injury when close screen bracket!

1) Fix screen into the bracket.
2) Lift the sreen bracket up and fasten it with fixing screws.

3) Close door plank of crushing chamber, fasten it with fixing screws.
4) Check feed box and other parts are closed or tightened.
5) Turn on main power switch.
6) Start-up the machine.

6.5 Maintenance Schedule

6.5.1 About the Machine

Model: _____ SN _____Manufacture Date: _____

Voltage: _____Φ _____ V Frequency: _____ Hz Power: _____ kW

6.5.2 Check After Installation

☐ Check if pipe connections are firmed locked by clips.
☐ Check the clearance between fixed blades and rotating blades. (0.2~2mm).
☐ Check 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.

6.5.3 Daily Check

☐ Check main power switch.
☐ Check emergency switch.
☐ Check start / stop button.
☐ Check working condition of emergency stop and safety switch.
☐ Clean screen and feed box.
☐ Check working condition of start/stop and main power switch.

6.5.4 Weekly Check

☐ Check if there is damage to all cables of the machine.
☐ Check if contactors of electric components are loosened.

- ☐ Check function of all safety switches.
- ☐ Check if set screws of fixed and rotating blades are loosened.
- ☐ Check if gear motor has abnormal noise, vibration or heat.

6.5.5 3-year Checking

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