

SG-50/50B

"Regular" Central Granulators

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Version: Ver.E (English)



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1. General Description



Please read this manual carefully before using this machine in order to operate correctly against any damage caused due to improper operation.



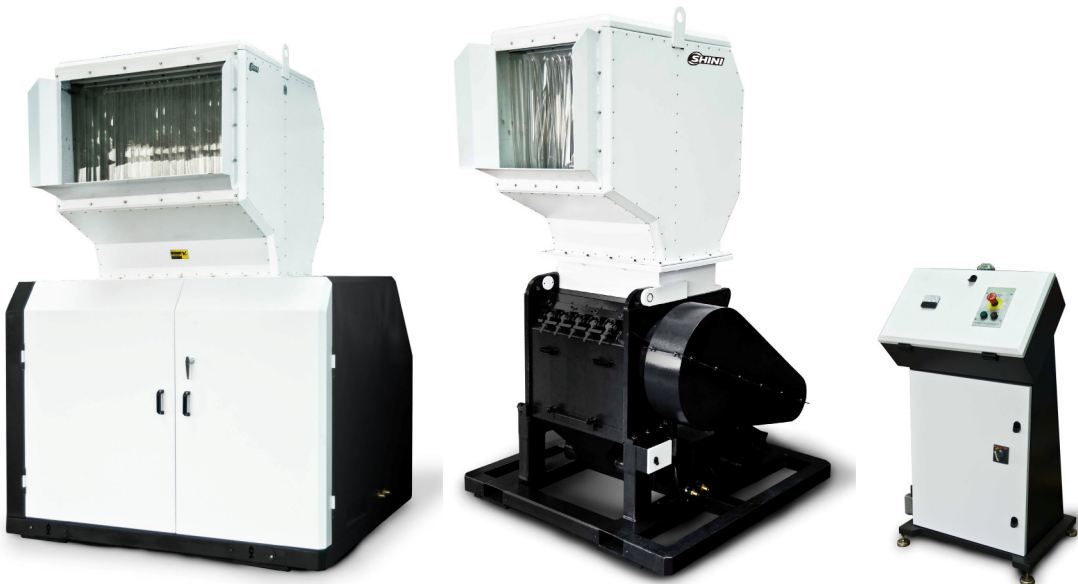
Note!

Always take great care when the blades are within reach, they are very sharp and can cause personal injury.



Forbidden to process flammable or toxic material!

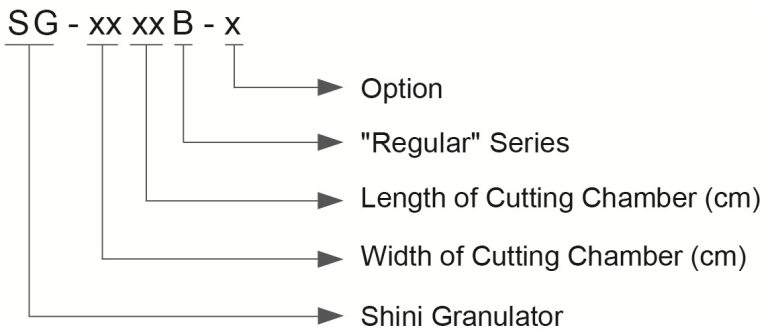
SG-50(B) series granulators are applicable to granulate various kinds of plastic materials from injection molding, blow molding or extrusion molding. This series features compact design, easy operation and quick blade replacement. Gradually inclined cutting and integrated power design offers a better cutting effect and a lower noise level.



Model: SG-50110

Model: SG-5080B

1.1 Coding Principle



1.2 Feature

- Rotating cutters adopt newly developed V-type cutting technology which can send the feeding material into the center of rotating cutters so to prevent the material from adhering onto the inner side of the cutting chamber while enhancing its wearability.
- The cutters are made of imported high quality steel featuring wearability, high rigidity, long service life and reusable after re-sharpening.
- Equipped with presetting knife jig, rotating blades can be adjusted in the fixture outside the machine inside of machine instead of machine inside. It made blades adjustment much easier.
- Cutting chamber made of high rigidity material, after processing by CNC machine, has the features like high intensity, super wearability, no contamination, long service life and easy for maintenance and repairing.
- Sound-proof feeding box reduces the noise level in operation, also equips a safety material checking curtain which ensures no material sprinkling during granulating.
- V-type transmission belts help maintain a balanced operation mode, close contact, and also easy to disassemble and repair.
- Both feeding hopper and screen cradle can be opened and closed by the hydraulic system which ensures safe operation.
- Cooling water device at the rear plate of cutting chamber can effectively cool down the cutting chamber and prevent the inside material from melting up.

All service work should be carried out by a technical person. 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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Shinden Precision Machinery (Chongqing), Inc.:

+86 (0)23 6431 0898

1.3 Safety Regulations

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

1.3.1 Safety Signs and Labels



Electrical installation must only be done by a competent electrician!



Before the granulator is opened for servicing and maintenance, always disconnect the power with both the main switch and the control switch on the granulator.



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.



Be careful with the rotating knives, they are very sharp and can cause personal injury!



If the rotor must be turned manually-do this with great care!



The granulator should not be able to start before the hopper and screen bracket are properly closed.



Attention please!

Ear protection is used during granulating of plastic materials.



Make sure the power has been cut off before opening the feed box!



Never remove protective sponge or quick coupling clips adjacent to the outlet of storage bin!



The feeding blower is used to convey granules and powder which requires the temperature is not higher than 80°C.



Loading blower has great suction power and it is easy to have objects and clothes suctioned into and lead to personal injuries. So the blower should not be used without any protective cover.



When it is working with transmission belt, please carefully check if the operator's clothes, arm or leg has been stuck by the transmission belt.



Clean the dust on the air inlet regularly.



SG-50(B) series cutting chamber should be heat-processed and the blades must be changed before the granulators deal with fiber added materials.

When operate the granulator, please notice the following signs.

<p>保養週期/Maintenance Schedule</p> <table border="1"> <thead> <tr> <th>項目Item</th> <th>週期CT</th> </tr> </thead> <tbody> <tr> <td>檢查急停開關及安全開關是否正常工作 Check whether emergency stop and safety switch works normally.</td> <td>每日 Daily</td> </tr> <tr> <td>清掃篩網與進料箱 Clean screen and feeding hopper.</td> <td>每日 Daily</td> </tr> <tr> <td>檢查啟動、停止及主電源開關是否正常工作 Check whether start, stop and power switches are normal.</td> <td>每日 Daily</td> </tr> <tr> <td>檢查定刀與動刀片固定螺絲是否鬆動 Check whether set screws in fixed and rotate blades are under looseness.</td> <td>每周 Weekly</td> </tr> <tr> <td>檢查減速電機有無異常聲音、震動、發燙 Check if there is abnormal noise, vibration and heat in reduction gear.</td> <td>每周 Weekly</td> </tr> <tr> <td>檢查擋窗裂化狀態 Check the cracking window.</td> <td>每周 Weekly</td> </tr> <tr> <td>檢查皮帶輪鎖緊圈是否牢固 Check whether clamp ring of pulley is fastened.</td> <td>每月 Monthly</td> </tr> <tr> <td>檢查皮帶張力 Check belt tension.</td> <td>每月 Monthly</td> </tr> <tr> <td>PCB板 PCB renewal.</td> <td>3年換新 Every 3 year exchange</td> </tr> <tr> <td>無熔絲開關 No fuse breaker.</td> <td>3年換新 Every 3 year exchange</td> </tr> </tbody> </table> <p>注：詳細操作方法，請參考產品說明書。 Note: Please refer to the Manual for detailed operations.</p> <p>YP31115900200</p>	項目Item	週期CT	檢查急停開關及安全開關是否正常工作 Check whether emergency stop and safety switch works normally.	每日 Daily	清掃篩網與進料箱 Clean screen and feeding hopper.	每日 Daily	檢查啟動、停止及主電源開關是否正常工作 Check whether start, stop and power switches are normal.	每日 Daily	檢查定刀與動刀片固定螺絲是否鬆動 Check whether set screws in fixed and rotate blades are under looseness.	每周 Weekly	檢查減速電機有無異常聲音、震動、發燙 Check if there is abnormal noise, vibration and heat in reduction gear.	每周 Weekly	檢查擋窗裂化狀態 Check the cracking window.	每周 Weekly	檢查皮帶輪鎖緊圈是否牢固 Check whether clamp ring of pulley is fastened.	每月 Monthly	檢查皮帶張力 Check belt tension.	每月 Monthly	PCB板 PCB renewal.	3年換新 Every 3 year exchange	無熔絲開關 No fuse breaker.	3年換新 Every 3 year exchange	<p>Please do maintenance regularly.</p>
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<p>YP30430000000</p>	<p>Water outlet: cooling water.</p>																						
<p>YP30431000000</p>	<p>Water inlet: inlet for replenishing water and cooling water.</p>																						

1.3.2 Transportation and Storage of the Machine

Transportation

- 1) SG-50(B) series of granulators are packed in crate or plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
- 2) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.
- 3) The structure of the machine is well-balanced, although it should also be handled with care when lifting the machine for fear of falling down.
- 4) The machine and its attached parts can be kept at a temperature from -25°C to $+55^{\circ}\text{C}$ for long distance transportation and for a short distance, it can be transported with temperature under $+70^{\circ}\text{C}$.

Storage

- 1) SG-50(B) series should be stored indoors with temperature kept from 5°C to 40°C and humidity below 80%.
- 2) Disconnect all power supply and turn off main switch and control switch.
- 3) Keep the whole machine, especially the electrical components away from water to avoid potential troubles caused by the water.
- 4) Use plastic film to cover the machine tightly to prevent the machine from dust and rains.

Working environment

Indoors in a dry environment with max. temperature +45°C and humidity no more than 80%.



Do not use the machine:

- 1) If it is with a damaged cord.
- 2) On a wet floor or when it is exposed to rain to avoid electric shock.
- 3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.
- 4) This equipment works normally in the environment with altitude over 3000m.
- 5) At least 1m surrounding space is requested when this equipment is running. Keep this equipment away from flammable sources at least 2 meters.
- 6) In the work area of vibration and strong magnetic force.

1.3.3 Rejected parts disposal

When the equipment has run out its life time and can not be used any more, unplug the power supply and dispose of it properly according to local code.



Fire hazard!

In case of fire, CO₂ dry powder fire extinguisher should be applied.



Flammable materials or materials which are contaminated by flammable substances/liquid may not be processed in the granulator. Serious risk of fire or explosion may cause personnel injury.



When blocking occurs! Especially in manual feeding (such as film, fiber, fragment or others), please make further confirmation with SHINI or local agent.



It is very important to tighten the screw as required torque.



When material is longer than feed port, please cut the material a half until the length is shorter than the feed port.



Please don't put materials into the granulator if they are thinner than 2 mm and are soft and flexible, like rubber.

1.4 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:

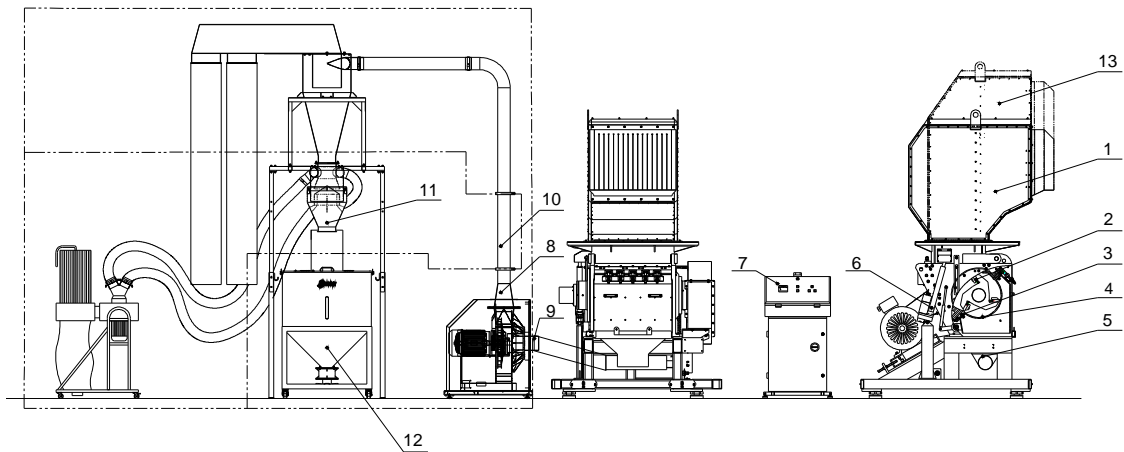
- 1) Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
- 2) Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible 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

SG-50(B) series granulators applicable to granulate waste plastic of wastes and rejected products from injection, blow moulding and extrusion lines. Make sure to clean the metal scraps and dirt before granulating!

2.1.1 Working Principle



1	Feed box	8	Conveying blower (option of SG-50B)
2	Rotating blade	9	Conveying pipe (option of SG-50B)
3	Fixed blade	10	Discharge pipe (option of SG-50B)
4	Screen	11	Dust separator (Options for SG-50/50B)
5	Storage box	12	300KG Material storage tank (Options for SG-50/50B)
6	Electronic handspike	13	Height-increasing feed box (Options for SG-50/50B)
7	Electrical control box		

Picture 2-1: Working Principle

The waste materials discharge to cutting chamber via the feed box (1). The rotating blade (2) and fixed blade (3) grind the materials. The particle size is controlled by the size of screen (4). The screen is located under the cutting chamber. Thus it is convenient to replace screen for other different sizes. The granulated materials are dropped into the regrind storage box (5) via the screen and be conveyed via the conveying pipe (9). The external feeding blower (8) via the discharge pipe (10) absorbs the granulated materials into the cyclone dust separator to separate the granulated materials and air. Dust-separating system

(11) and 300KG material storage tank (12) are optional. The obtained particles can be reused directly or sent to somewhere for storage. The granulator has the open feed box, electronic handspike (6) which can open the feed box. Cutting chamber cleaning is very convenient, the whole machine operation and safety protection are controlled by electrical control box (7).

Note: Before use the electrical handspike to open the feed box, please loosen the locking bolt of feed box.

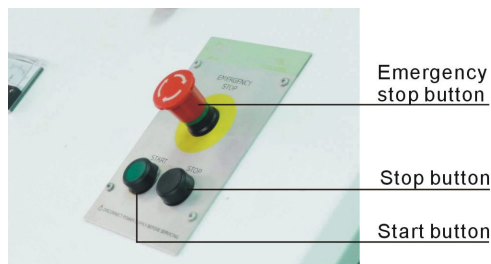
2.2 Safety System

The granulator possesses a highly-secure safety system to avoid accident during the operation. The fast-rotating blade in the granulator is prone to result in an accident. Thus, the safety system can protect human body. The safety system can be altered under no circumstance. Otherwise the machine would in dangerous situation and can do harms. All repair and maintenance work should be carried out by the professionals.

If any safety system change takes place, no commitment will be fulfilled and all replaced components should be provided by SHINI.

2.2.1 Emergency Stop Button

Emergency stop button is a red button on the control panel. Press it then the machine will stop working. Turn the button in the arrow direction (clockwise) we can reset it.



Picture 2-2: Emergency Stop Button

2.2.2 Breaker interlock

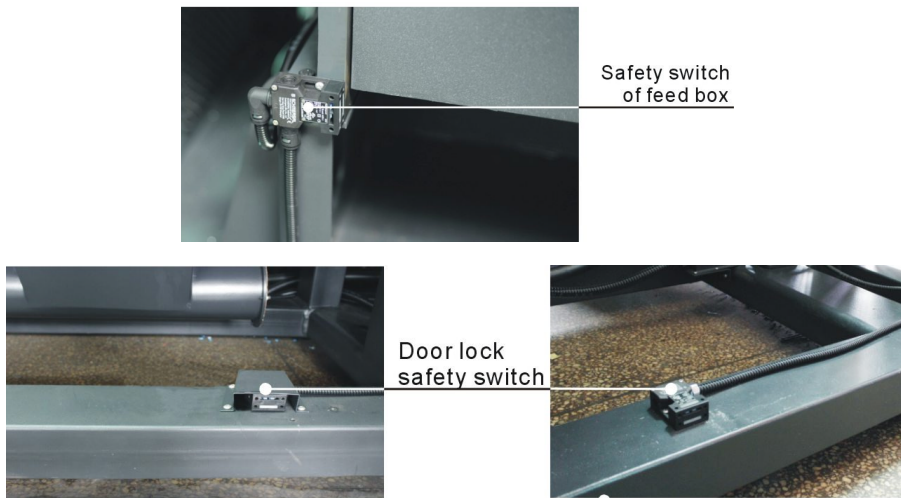
The breaker interlock is fixed on the granulator, if control box door changes or circuit breaker trips, it would cut off the power supply to stop the machine.



Picture 2-3: Door Interlock Switch

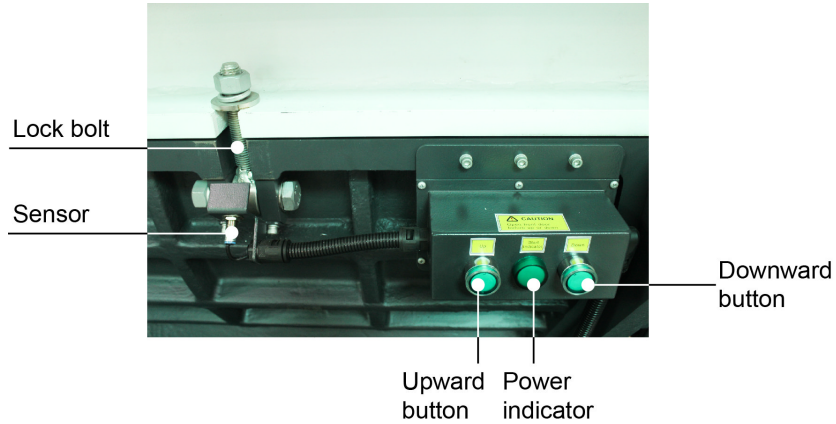
2.2.3 Safety Switch

The granulator SG-50 has three safety switches; one is located between the feed box and cutting chamber, and the other two are located at the front and rear door. The granulator SG-50B has two safety switches; one is located between the feed box and cutting chamber, and the other is located between the storage box and case body.



Picture 2-4: Safety Switch

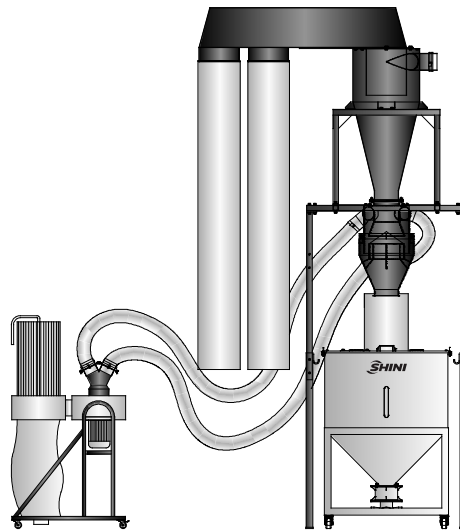
When opening the feed box or storage box, the machine that is working will stop immediately to ensure the operator's security.



Picture 2-5: Locking Bolt of Feed Box

2.3 Optional Accessories

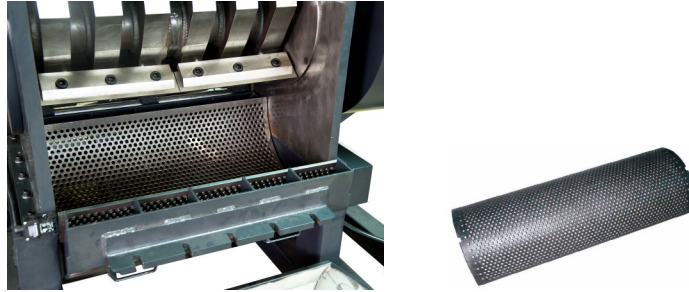
2.3.1 Dust Separating System



Picture 2-6: Dust Separator System

Dust Separator can separate the dust in the regrind for immediate recycle use. The dust will be kept in filter bag, thus working environment will remain clean. This device ensures full use of regrind to avoid material wasting and enhance the economy returns. Add "DS" at the end of the model code.

2.3.2 Screen



Picture 2-7: Screen

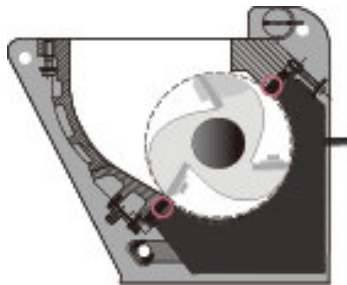
Special screen mesh sizes: $\Phi 8$, $\Phi 10$, $\Phi 14$, $\Phi 17$, $\Phi 25$ (mm). Add "SS + screen diameter" at the end of model code, e.g.: $\Phi 8$ mm, add "SS08".

Note: Screen diameter directly affects granulator performance!

2.3.3 Cutter

Material	International code		
	China GB	USA ASTM	Japan JIC
SKD11	Cr12MoV	D2	SKD11

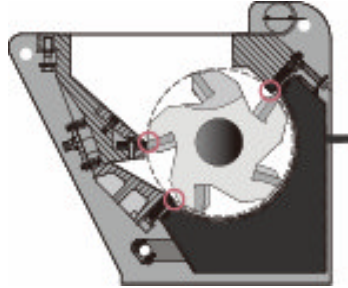
Standard Equipped Cutter (low cutting point)



Picture 2-43: Standard Equipped Cutter (Low Cutting Point)

Low cutting point fixed blades model has big inlet space and initially low cutting point. Material can be easily grabbed and cut thus making this rotor/housing combination ideal for the granulation of hollow objects and frame material.

Optional Cutter (High Cutting Point)



Picture 2-8: Optional Cutter (High Cutting Point)

High cutting point fixed blades model has small inlet space and initially high cutting point. Thus its cutting force is not so strong, which enhances the reliability of cutting solid material. The design is suitable for granulating big solid material with thick wall and sheet. Based on the high cutting point of standard layout, a row of fixed blade is added and makes it a 3 rows of fixed blades so that cutting performance is higher than that of 2 rows of fixed blades. But 3 rows have the same design parameter, features and applications as the 2 rows.

2.3.4 Automatic Conveying Device



Picture 2-9: Automatic Conveying Device

The machine is equipped with automatic conveying device of regrind materials, which is able to increase the conveying efficiency; materials are conveyed by blowers, which promote airflow and achieve air cooling of the cutting chamber to some extent. Thus, the room temperature of the cutting chamber can be reduced. (Standard equipped in SG-50, option for SG-50B)

2.3.5 Belt Conveyor



Picture 2-10: Belt Conveyor

Material feeding for traditional large granulators is quite a difficult matter. They are generally installed at a lower place or a platform must be built for material feeding. Add “BCF” at the model behind.

2.3.6 Material Side Feed Pipe



Picture 2-11: Material Side Feed Pipe

The design of feeding hopper of traditional granulators is not suitable for longer pipes and section bars. We have designed material side feed pipe for convenient feeding of long materials. Add “SF” at the model behind.

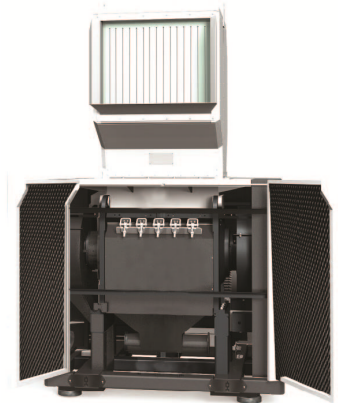
2.3.7 Flywheel



Picture 2-12: Flywheel

Increase inertia, thereby increasing the cutting ability. At the same time can result in a more balanced force and longer service life. Add "FW" at the model behind.

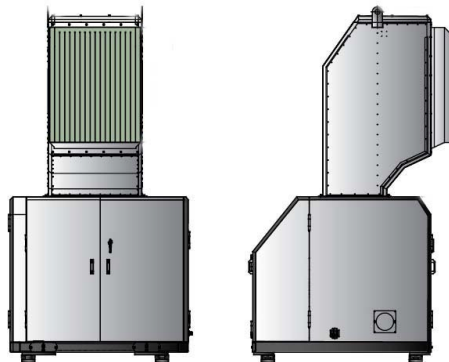
2.3.8 Sound-proof Box



Picture 2-13: Sound-proof Box

Optimized structure and hermetic double sound-proof layers keep noise level low.
(Standard equipped in SG-50)

2.3.9 Height-increasing Storage Bin



Picture 2-14: Height-increasing Storage Bin

When some customers crush car bumpers, the standard feed box inlet may not be suitable for the long bumpers. So the height-increased feed box with larger feed inlet can meet customers' demands for crushing long materials.

3. Installation and Debugging



Read through this chapter before installation.



Install as following orders to avoid any accident!



Be careful! Not to be cut by the sharp blade.



Power connection must be done by the professional electrician to avoid electrical shock!

3.1 Installation Notice

- 1) The machine is standard equipped with anti-vibration pad, there is no need other device for postion fixing.
- 2) There should be a good supporting stiffness at machine locating place.

3.2 Installation Place

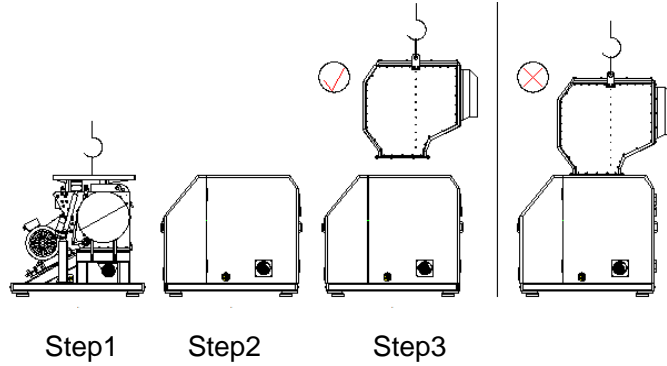


Please use the correct way to lifting the machine!

Before factory delivery, the feed box and granulator main body are packed separately. First, use the forklift to move the granulator main body to suitable place. Then lift the feed box onto the granulator and lock it up with screws.

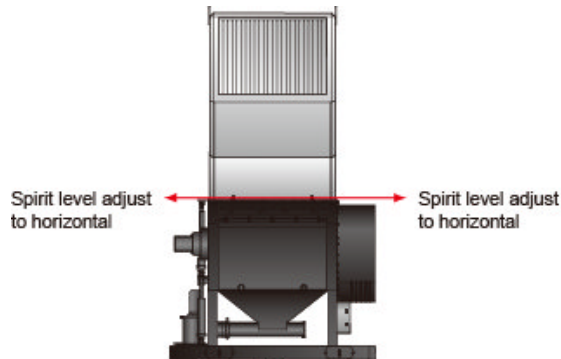


Please do not install feed box on the mainbody of the granulator, then hoist them together, or it will cause damage to the machine!



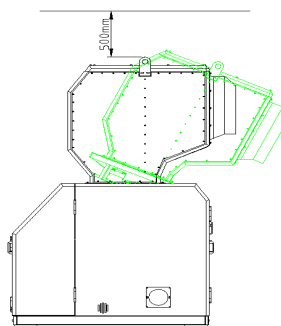
Picture 3-1: Installation Diagram 1

Note: Make enough installation space to help the repair and maintenance. Check and make sure the installation ground is level. There is enough intensity when it is running. Use spirit level to adjust the cutting chamber to the level position.



Picture 3-2: Installation Diagram 2

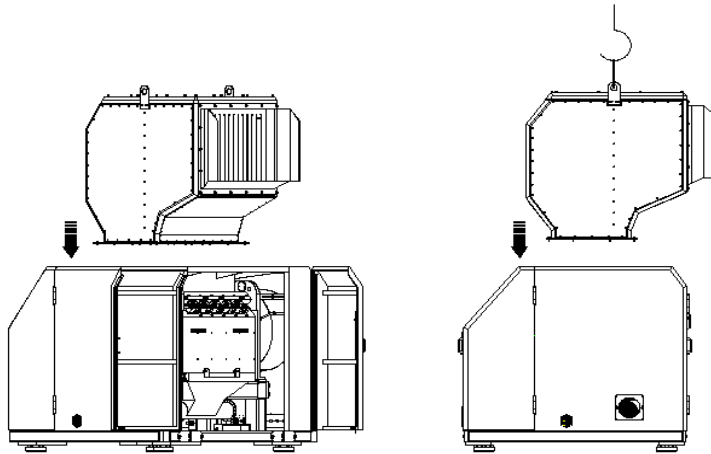
Note: Make sure there is at least 500mm safety space to open the feed box.



Picture 3-3: Installation Diagram 3

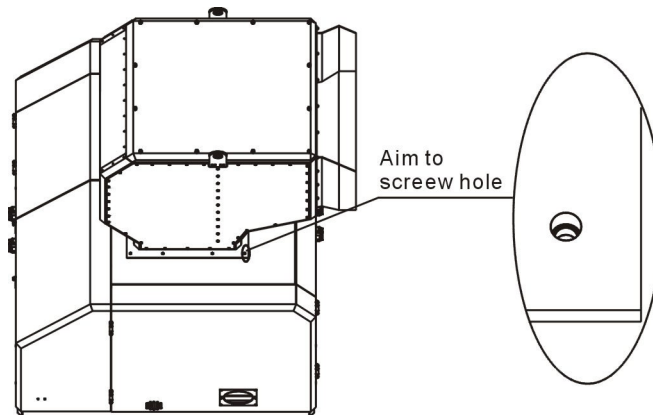
3.3 Feed Box Installation

- 1) Open the two front doors of the machine.



Picture 3-4: Feed Box Installation 1

- 2) Carefully lift the feed box above the cutting chamber and aim to the screw holes.

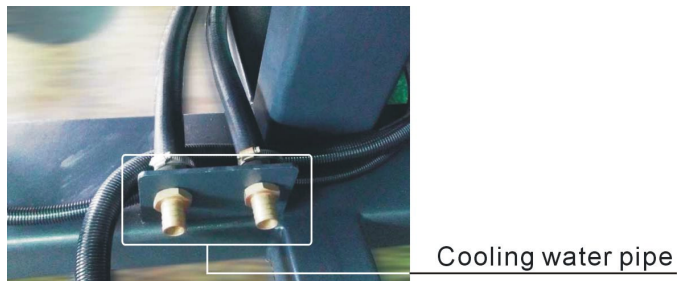


Picture 3-5: Feed Box Installation 2

- 3) Lock the screws of the feed box.

3.4 Cooling Water Connection

The cooling water device is mounted in the rear-block water tank of the machine. Connect the water pipe connector of the rear block and the water pipe connector on machine shell with ordinary water pipe ($\Phi 26\text{mm}$), pressure 2~3bar. Lock them up with pipe clamp and make sure there is no leakage.



Picture 3-5: Cooling Water Connection

3.5 Power Connection



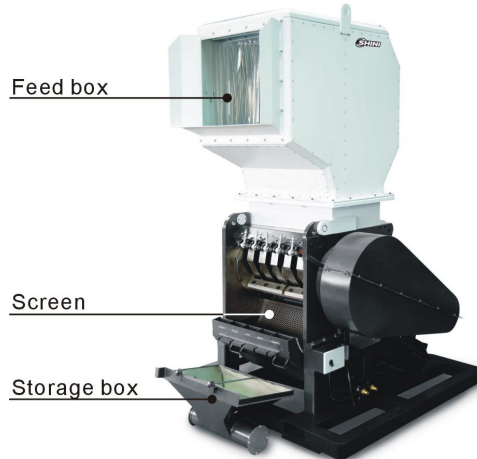
The installation of the granulator's circuit must be conducted by the professional electrician!

Installation Notice:

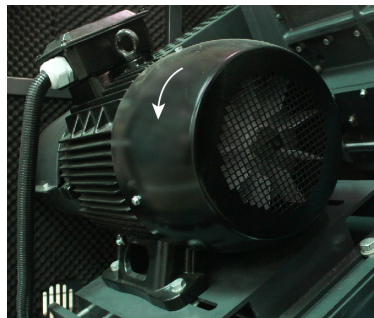
- 1) Make sure voltage and frequency of the power source comply with those indicated on the manufacture's plate, which is attached to the machine.
- 2) Power cable and earth connections should comply with local regulations.
- 3) Use independent power cable and ON / OFF switch. The cable's dia. should not smaller than those applied in the control box.
- 4) The power cable connection terminals should be tightened securely.
- 5) The machine requires a 3-phase 4-wire power sources, connect the power lead (L1, L2, L3) to the live wires, and the earth (PE) to the ground.
- 6) Power supply requirements:
Main power voltage: +/- 5%
Main power frequency: +/- 2%
- 7) ***Power connection refers to the circuit diagram of each model.***

3.5.1 Check the Running Direction of the Motor

- 1) Open the door to check whether the feed box, screen and storage box are fixed.



- 2) Close the door.
- 3) Ensure the main power switch is in ON position.
- 4) Check the emergency stop button is pressed or not, rotate the button clockwise to reset.
- 5) Press “start” button to run the granulator; after the machine runs stably, press “stop” button.
- 6) It needs a while for the granulator to stop. During the time, the operator should stand at the right side of the motor to check if it rotates anticlockwise or not.

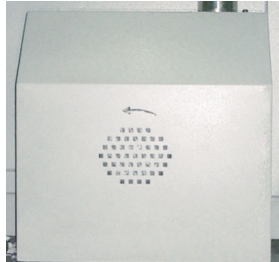


Picture 3-5: Motor Rotation Diagram

Note: The cutting tools may be damaged and the granulating capability will be reduced if there is a wrong running direction. Please disconnect the power and transpose any two wires of the three in the main power.

3.5.2 Check the Running Direction of the Blower

- 1) Check whether the running direction of the blower is in accordance with the symbol on the shield.
- 2) Connect to the power and stop again to check the blower's running direction.



Picture 3-6: Blower Running Direction



CAUTION!

If the blower's running direction is not in accordance with the symbol, the machine's working capability will be reduced by at least 25 percent. Under these circumstances, please disconnect to the main power and transpose any two wires of the three in the blower.



Working with the conveying belt:

Please check the direction of the conveying belt.

3.6 Options Installation

3.6.1 Installation of Dust-seperating System



Read chapter 3 carefully before operating on dust-seperating system the circuit connection of the system should be done by professional electrician.

Before first startup

The unpainted parts of the machine are protected with oil prior to delivery and transport. Clean the granulator from rust protection agent before it is used.

- 1) Place a separator under cyclone device, the diameter is $\Phi 180\text{mm}$.

- 2) Connect to conveying pipe, and the diameter is 4"×2.
- 3) Mount dust collection device including air and dust separate bags.
- 4) Place a container under the separator to help collecting plastic material after dustremoving.



Notes!

If use cloth bag to connect the separator, please make sure a good ventilation within the cloth bag.

3.6.2 Installtion of Separating Conveying Device

- 1) Mount 4 anti-vibration pads on the base of the conveying blower with fixation;
- 2) Tighten the cyclone separator body and three upper brackets;
- 3) Tighten three upper brackets with each lower bracket separately;
- 4) Lay the cyclone separator on the ground horizontally;
- 5) Fix the filter bag tightly on the outlet pipe of the cyclone separator.
- 6) Bind 5" steel wired plastic pipe on the inlet of cyclone separator and outlet of conveying blower, then tight them up with pipe clamp.
- 7) Bind 6" steel wired plastic pipe on the inlet of conveying blower and outlet of storage box, then tight them up with pipe clamp.
- 8) Connect the power source of conveying blower to the socket of control box.

3.6.3 Conveying Belt Installation

- 1) Connect belt main frame to floor stand with hexagon bolt.
- 2) Put belt top end to feed box inlet.
- 3) Insert belt power plug into power socket.
- 4) Connect metal head of belt control wire to control box socket.

4. Operation Guide



Wear earplugs during operating to avoid personal injury!



Wear gloves during operating to avoid personal injury!



Wear goggles during operating to avoid personal injury!



Because the blades and rotor may be loosen, and check the following items before operating:

- 1) If the blades has any damage.
- 2) If the surface of the rotor is loosen.

If any of the above suitation is found, please contact local representative or SHINI company for help.

4.1 Startup Pretest

Unpainted part of the machine has been covered with stainless oil. Before use, the stainless oil should be cleaned.

- 1) Clean with a towel.
- 2) Wash with a towel dipping with amyl acetate.

4.1.1 Before the First Startup

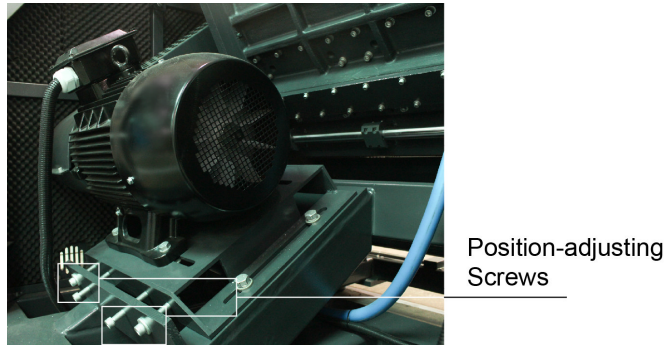
- 1) Check whether the granulator is in the level state.

Note: Adjust the machine to make its four holders to share the weight and be in a level state.

- 2) Check the space of the cutting tools (0.2~0.3mm) to see whether the lockup screws of the blades are tightened (Torque: 500Nm).

4.1.2 After First Startup for 2 Hours

- 1) Check the space of the cutting tools of the fixed blades and rotating blades again; check whether the lockup screws of the blades are loose.
- 2) Check the position-adjusting screws of the motor and check whether the position-adjusting screws are tightened.



Picture 4-1: Position-adjusting Screws

4.1.3 After First Startup for 20~30 Hours

Check and adjust the belt's tensility after a 20~30-hour full-load operation. Check belt tension with calibration, the method refers to 6.5.1.

4.2 Start / Stop of the Machine

SG-50(B) series of granulators via the main power switch, safety switch, "start/stop" button and the "emergency stop button" to control the machine.

Main power switch:

The main power switch of granulator is mounted on control box. The connection of the power is controlled by rotating of the main power switch.



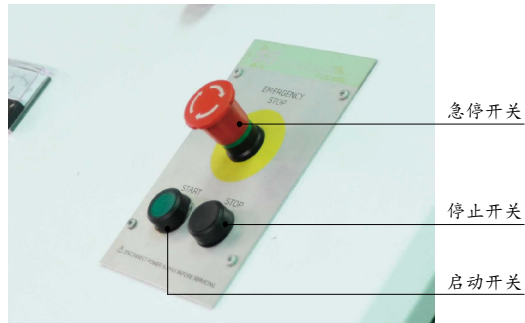
Picture 4-2: Door Interlock Switch

Start/Stop Button:

The granulator has start/stop button, which controls machine's start/stop.

Emergency Stop Button:

Besides, the machine has design of emergency stop button. When accident or emergency happens, press down the emergency stop button to stop the machine.



Picture 4-3: Start, Stop and Emergency Stop Buttons

Note: Never stop the granulator before any material in the hopper or cutter chamber is completely granulated.

Residual material will clog the rotor in the granulator during restart.

The motor will be overloaded and the overloading protection will trigger.

4.3 Open the Feed Box, Screen Bracket and the Storage Box



Before opening the feed hopper, screen bracket and the storage box, turn off the main power switch and the power switch of the granulator.

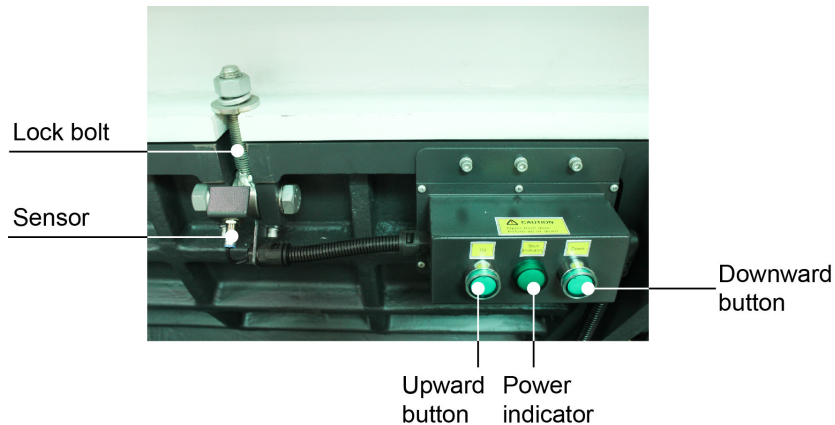


Be careful!

The blade is very sharp, please take care!

4.3.1 Open the Feed Box

- 1) Firstly, loosen the lock screw of the feed-box fixing bolt.



Picture 4-4: Electric Handspike Button

- 2) Check if the feed box and cutting chamber are emptied totally or not.
- 3) Press the electric handspike button, it pushes forwardly to open the feed box, and then turn off the main power.



CAUTION!

The feed box is supported by electric handspike to avoid its dropping when opening it.

When the dropping feed box touches the limit switch, it will not fall down anymore. So it will not damage the electric handspike.



Before the electric handspike opening the feed box, please unbolt the lock bolt of the feed box.

4.3.2 Open the Storage Box and Screen

- 1) Power off the granulator.
- 2) Open the front door.
- 3) Loosen the fast pipe clamp at the end of outlet pipe and put it aside.



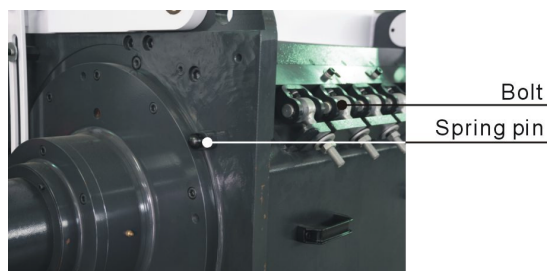
Picture 4-5: Loosen the Fast Pipe Clamp

- 4) Loosen the two star screws, and draw out the storage box.



Picture 4-6: Draw Out the Storage Box

- 5) Unscrew the bolt on the screen bracket, and turn the spring pin on the left block to left.



Picture 4-7: Spring Bolt

- 6) Gradually lay down the screen bracket, and take out the screen.

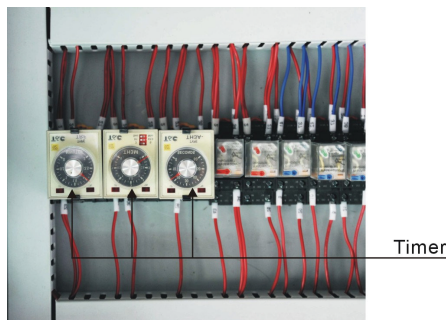
Note: The screen bracket is supported by pneumatic stick to avoid its dropping when opening it.

4.4 Timer (Optional with feeding blower)

Press down the stop button to stop the machine, the feeding blower working time can be prolonged by the timer, which enables the granules in the storage box be fully conveyed. The setting of timer varies with different screen diameters and output capacities.

Timer Setting:

After the granulator stops, via the timer it could prolong the working time of the feeding blower, the granules in the storage box can be sent out completely. The setting of timer varies with different screen diameters and output capacities.

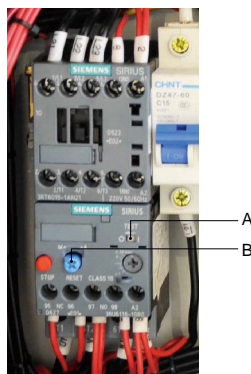


Picture 4-7: Timer

5. Trouble-shooting

5.1 Granulator Can Not Work

- 1) Check if the emergency stop has not been reset. If not, rotate the Button clockwise to reset it.
- 2) Check whether the door is closed. If not, the machine could not be started.
- 3) Check if the feed box is completely closed. If not, the machine could not be started. Then, check the lockup clip after opening the door.
- 4) Check the motor's overload protector. The overload protector in the electrical control box will work if the motor overloads. Test key (A) turn left, press "Reset" key (B) to reset it. Before startup again, check whether there is any powder in the granulator.
- 5) Check the overload protector of the feeding blower's motor. If the feeding blower does not run, the granulator cannot run either. Check the motor protector in the electric control box. If it is closed, the switch will be in "0" positions. Reset it to "1" position, check whether there is any material residue, then re-start the machine. Test key (A) turn to left, press "Reset" key (B) to reset.
- 6) Check the space between blades. 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. The motor overload protector will trip.

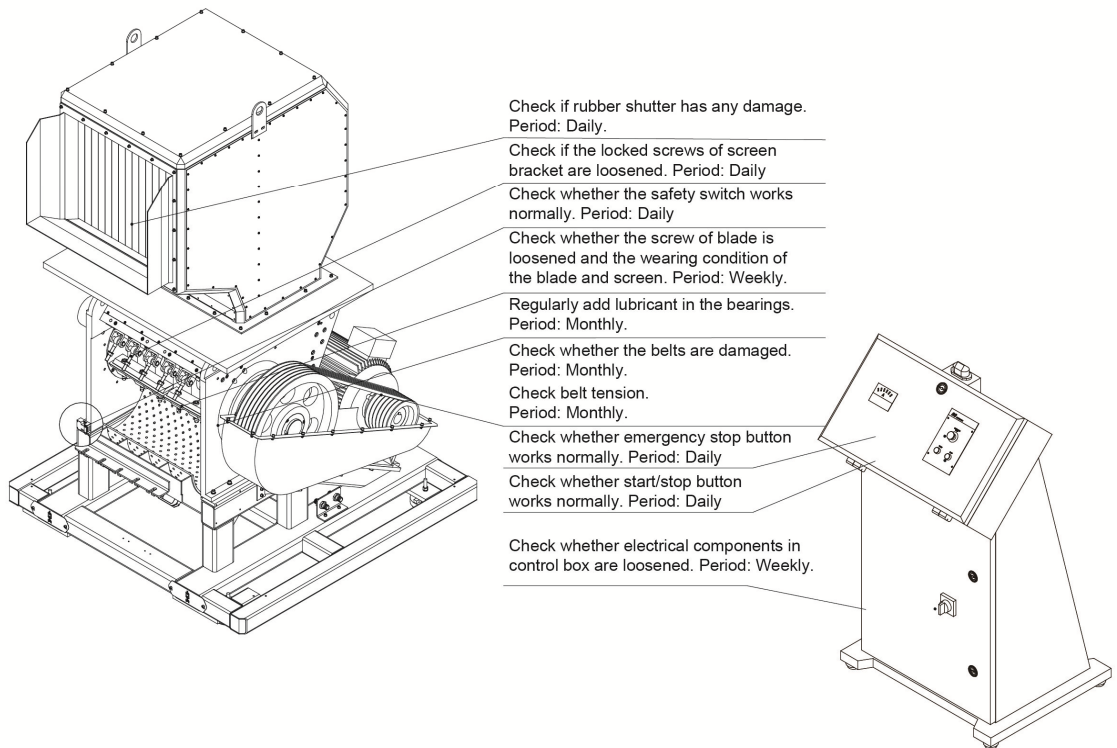


5.2 Stop Due to Other Reasons

Connection failure or looseness of safety switch or limit switch can also result in operation failure.

Note: Do not disconnect to safety switch or control switch.

6. Maintenance and Repair



6.1 Repair

All the repair work should be done by professionals in order to prevent personal injuries and damage of the machine.

6.1.1 Operation and Maintenance of Dust-separating System

Start and stop of the machine.

Start and stop of the machine is controlled by main power switch.

Daily check

Air bag and dust bag: check if these bags are damaged, if there is any damage, please replace them.

Conveying pipe: check if the conveying pipe is damaged, if it is, please replace it.

Check if the connecting joint had been fixed and sealed.

Check if the dust collection bag is full, if it is, please dump it.

Weekly check

Check to see if the wire has any damage and the condition of the wire, if it has any problem, please fix it.

6.1.2 Dust-separating System Cleaning



Notes!

Clean the machine when the processing material is changed or after every 300-hour running time. Before cleaning, please cut off the power.

- 1) First clean the inner side of the cleaning facilitates.
- 2) It is necessary to check and clean dust separator.
- 3) Move away separator, use high pressure air to blow away its interior granules.
- 4) Clean out the storage hopper and clean its interior.
- 5) Shake the air bag to drop the dust down.
- 6) Assembly the disassembled parts according to reversed order.

6.1.3 Blade Replacement



Caution!

The blade rest shaft of the granulator is balanced. So during blade installation, it will self-rotate due to unbalance. When there is unstable center of gravity, it will self-rotate too.



It must press down the emergency stop button and turn off the main power switch before blade replacement!



Be careful when holding the blades, they are sharp and can cause personal injury. Use protective gloves!

The maintenance, repair and blade replacement, please refer to 3.6 The installation of rotating and fixed blade. After locking of every screws, squeeze the screw fixing agent (LOCTITE 243, blue is suggested) on the connection thread to fasten the screw and avoid screw loosening.



Caution!

During blade dismantlement and replacement, please complete it by oneself. Do avoid other human injury, and the blade replacement should be conducted individually!



Caution!

Do not install the cutters by working together, because this could bring personal injury. Use a thick wood block to stop the rotating knives from turning.

Check whether there is damage after blade replacement. If the screen diameter gets larger, change the screen immediately.

During every blade replacement, the screw and washer should also be replaced.

Before blade replacement, open the feed box, and dismantle the screen bracket, screen and the storage box.

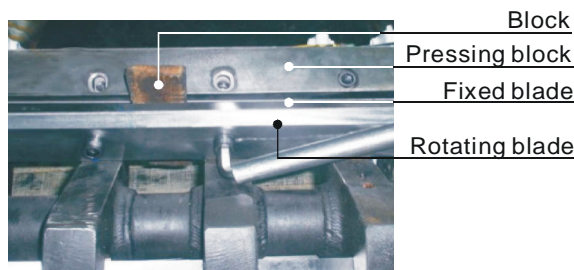
1. Remove the Rotating Blade



Note!

In order to avoid blades rotating by itself, please must take one thick wooden block to seize the rotor to prevent its rotating.

- 1) Remove the screw and washer.
- 2) Take out the rotating blades.
- 3) Clean the mounting interface of blades.



Picture 6-1: Remove the Rotating Blade

2. Remove the Fixed Blade

- 1) Revolve the screws of the front fixed blades.
- 2) Loosen and remove the inner hexagon screw on front pressing block.
- 3) Remove the pressing block and blades, and clean the blade rest at last.
- 4) Loosen and remove the screws on the back blades.
- 5) Loosen and remove the inner hexagon screw, remove the pressing block and the blades, clean all the blocks.



CAUTION!

When loosen the last screw, make sure to hold down the pressing block and blade, to avoid human injury due to blade dropping.

3. Blade Installation

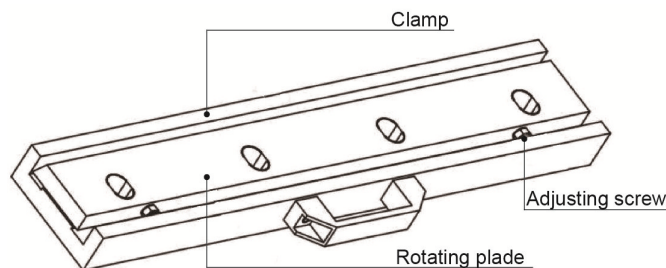
Carefully clean the fixed blades and rotating blades, then install them.



Be careful! Wear gloves during operating to avoid personal injury!

A: The installation steps with presetting knife jig:

- 1) All blades, including rotating blade and fixed blade, could be adjusted inside the presetting knife jig outside the machine. Put all the blades need to be adjusted, including rotating and fixed blade, inside the presetting knife jig. Regulate the adjusting screw till it touches the presetting knife jig.

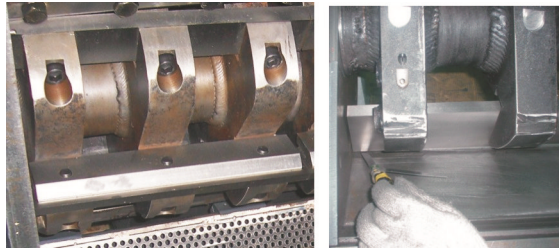


Picture 6-2: Blades Installation Adjusting

- 2) After the rotating and fixed blade adjusted well on the presetting knife jig, put the rotating blade inside the groove of the milled blade rest. Aim the holes on the blade rest, put down the pressing plate and fix the screws till

the blade without any shaking (in order to adjust the clearance between the rotating and fixed blade).

- 3) Mount front / back pressing block of the rotating and fixed blade on front /back block, fasten the screw till the blade without any shaking.
- 4) Use the feeler gauge to check the clearance between rotating and fixed blade, the distance is 0.2~0.3mm; Adjust the rotating and fixed blade if it is not within this distance. At last, lock the fixing screw of rotating and fixed blade with torque spanner, for the torque please refer to Table 6-1.



Picture 6-3: Installation of Rotating and Fixed Blade

B: Without presetting knife jig:

- 1) When presetting knife jig is not adopted, firstly adjust the length of one adjusting screw on rotating blade as its total width with blade to 110.5 ± 0.07 mm (3 rotating blades width, 5 rotating blades width is 90 ± 0.07 mm); and then adjust another screw length to the same value, at last lock the nuts and screws.
- 2) Same as the installation with presetting knife jig.



CAUTION!

In order to avoid human injury and machine damage, it must lock up the blade screw tightly.



CAUTION!

The blade clearance can't be too close to avoid blade damage!



CAUTION!

Every time to replace the cutters, the blade, pressing block, screw, blade

rest and main shaft should be inspected carefully, to check if there is any damage.

Table 6-1: Attached Form, Cutters and Other Fixing Screw Torque

Threading Type	Threading Specification	Stretching Force Fv(N)			Tightening Torque Ma (N.M)		
		Grade	Grade	Grade	Grade	Grade	Grade
		-8.8	-10.9	-12.9	-8.8	-10.9	-12.9
Coarse Thread	M4	3900	5750	6700	3.0	4.4	5.1
	M5	6400	9400	11000	5.9	8.7	10
	M6	9000	1320	15500	10	15	18
	M8	16500	24300	28400	25	36	43
	M10	26300	38700	45200	49	72	84
	M12	38400	56500	66000	85	125	145
	M14	52500	77500	90500	135	200	235
	M16	72500	107000	125000	210	310	365
	M18	91000	129000	152000	300	430	500
	M20	117000	166000	195000	425	610	710
	M22	146000	208000	244000	580	820	960
	M24	168000	240000	281000	730	1050	1220
	M27	222000	316000	369000	1100	1550	1800
	M30	269000	384000	449000	1450	2100	2450
Fine Thread	M8×1	18100	26600	31200	27	39	46
	M10×1.25	28300	41600	48700	52	76	90
	M12×1.25	43300	63500	74600	93	135	160
	M12×1.5	40800	60000	70000	89	130	155
	M14×1.5	58600	86000	100000	145	215	255
	M16×1.5	79500	116000	136000	226	330	390
	M18×1.5	108000	152000	177000	340	485	570
	M20×1.5	134000	191000	224000	475	680	790
	M22×1.5	166000	236000	276000	630	900	1050
	M24×2	189000	270000	316000	800	1150	1350
	M27×2	246000	350000	409000	1150	1650	1950
	M30×2	309000	440000	515000	1650	2350	2750

6.2 Installation of Bearing and Blade Rest

- 1) Lock up the right bearing base on right block of cutting chamber, then install right-side material fender.
- 2) Put the blade-rest shaft inside the right bearing block.
- 3) 3) Mount the material fender on left bearing block, and insert to the blade-rest shaft, then lock them tightly on left block of the cutting chamber.
- 4) Mount the seal ring on left/right bearing base, and press the bearing. At the same time, fix the bearing inner shaft with round nut and stop washer.

Note: Add some lubricating oil in both bearing and bearing block.

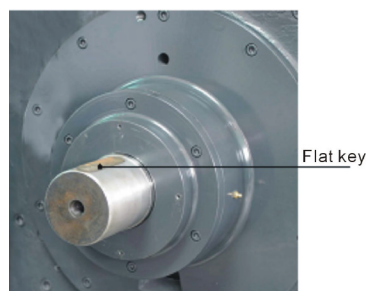
- 5) Check the gap between left and right blade rest, finally install bearing cover and lock it up to avoid axial movement of right bearing.



Picture 6-4: Installation of Bearing and Blade Rest

6.3 Installation of Belt Pulley and Motor

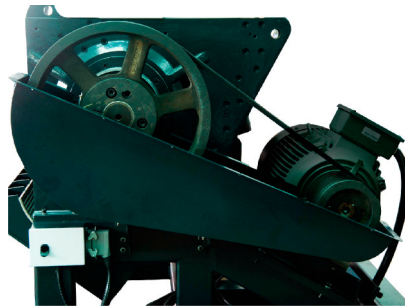
- 1) Put the flat key on the key groove of the shaft.



Picture 6-5: Installation of Belt Pulley and Motor 1

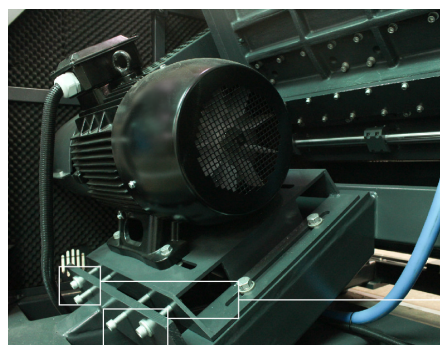
- 2) Put the taper sleeve inside the hole of large pulley and aim the hole to the big pulley. Then lock up the inner hexagon screw (M20mm×50).

- 3) Adjust the balance of the large pulley with dial gauge. Stick the dial gauge to the large pulley and rotate the large pulley to see whether the value of gauge is within 0~0.1 mm.
- 4) After balance, screw tightly the 3 inner hexagon screws (Torque: 710 Nm)
- 5) Install the small pulley on the shaft of the motor.
- 6) Put the taper sleeve into the hole of small pulley and aim the hole to large pulley, then lock it up with inner hexagon screw (M12mm×40, the torque is 145 Nm).



Picture 6-6: Installation of Belt Pulley and Motor 2

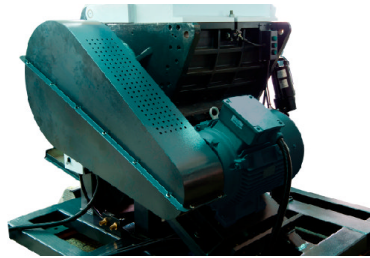
- 7) Put the motor on the motor fixed board, and move it forward to reduce the distance between small and large pulley.
- 8) Adjust the balance of the small and large pulley: put spirit level between the big pulley and the small pulley to observe whether the mercury column is in the middle. If not, adjust the small pulley (Note: NOT to adjust the big pulley) to make the two pulley in balance.
- 9) Install the belt, push the motor backward and screw tightly the position adjusting screw. Make the 6 belts be stressed by equal forces. Tighten the belts and lock up the position adjusting screw.



Position-adjusting
Screws

Picture 6-7: Installation of Belt Pulley and Motor 3

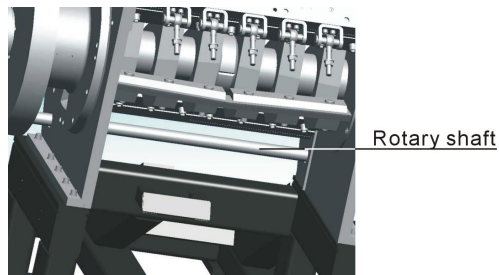
10) Finally mountl the upper and lower protective cover for the pulley.



Picture 6-8: Installation of Belt Pulley and Motor 4

6.4 Installation of Screen, Screen Bracket and Storage Box

1) Insert the rotary shaft of screen bracket in left / right block hole. Make the right end of rotary shaft and right block outside in a line.



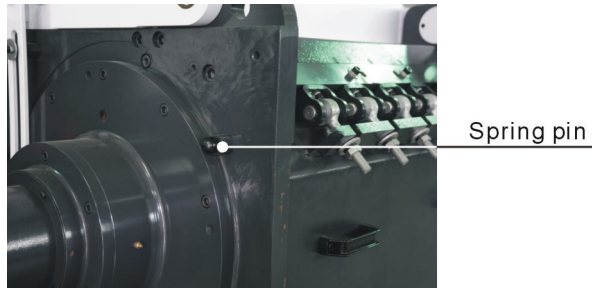
Picture 6-9: Installation of Storage Box, Screen and Screen Bracket 1

2) Mount the screen bracket on the rotary shaft under the cutting chamber,fix the pin hole cover with serew tightening.



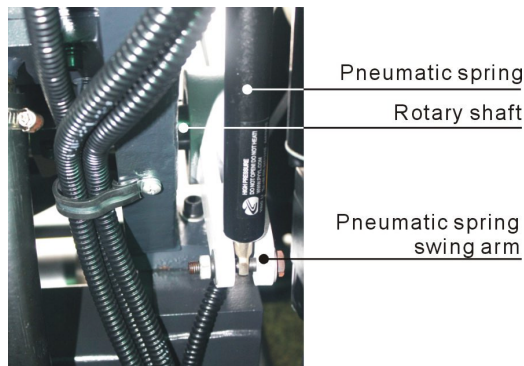
Picture 6-10: Installation of Storage Box, Screen and Screen Bracket 2

3) Put the screen into the screen bracket. Lift up the screen bracket to left spring pin and insert in the screen bracket, lock it up with 5 screws for fixing.



Picture 6-11: Installation of Storage Box, Screen and Screen Bracket 3

- 4) Mount the tensioning sleeve inside the swing arm of pneumatic spring, and then put through the end of left rotary shaft.
- 5) Mount the pneumatic spring and adjust the angle of the swing arm to the correct angle then fasten the tentioning sleeve.



Picture 6-12: Installation of Storage Box, Screen and Screen Bracket 4

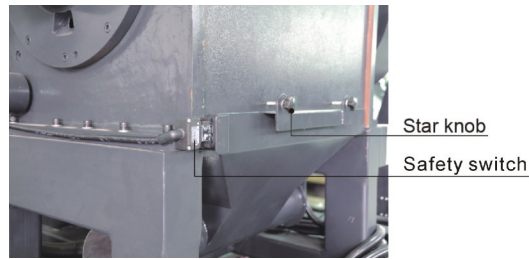
Note: Make sure the fixing screw of pneumatic spring is fastened. Otherwise, the screen bracket woule be deformed with screw fracture.

- 6) Lift up the storage box, insert the storage box on the support plate and mount the safety switch.



Picture 6-13: Installation of Storage Box, Screen and Screen Bracket 5

- 7) Lock the two star bolts in front of the screen bracket tightly.



Picture 6-14: Installation of Storage Box, Screen and Screen Bracket 6

6.5 Transmission



Pressing down the emergency stop button and main power switch before maintenance and repairing.

6.5.1 Daily Maintenance of V Belts

There are four to six V belts according to motor power.

- 1) Check the V belts

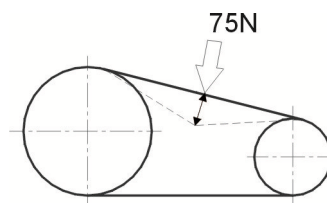
Check V belts' tensility after a full-load operation for 20-30 hours. And then check its abrasion condition.

- 2) Check V belts' tensility every 6 months.

Remove the right side plate and belt cover of the granulator. Rotate the transmission belt to check if there is any damage.

Note: Pinch risk! Do not place your hands between wheels and the belts.

If it is necessary, check the belt's tensility via enforce extra force (75N) and measure its excursion. (This extra force is determined by power and frequency of the motor. More details please refer the following table):



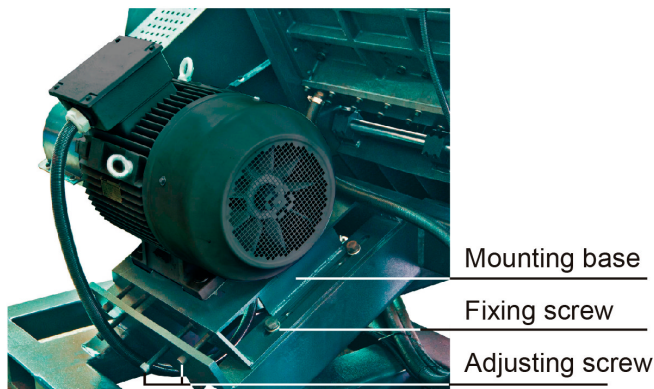
Picture 6-15: Daily Maintenance of V Belts

Table 6-2: Daily Maintenance of V Belts

Dia.(mm)	18.5/22kW	30/37kW	45-55kW
New belt	15mm	14mm	15mm
Old belt (Six- month later)	19mm	19mm	19mm
Motor 60Hz	18.5/22kW	30/37kW	45-55kW
New belt	18mm	17mm	16mm
Old belt (Six- month later)	23mm	23mm	20mm

6.5.2 Adjustments of V Belts

- 1) Loose the 4 fixing screws on mounting base of the motor.
- 2) Adjust the V belt tension by pulling and pushing up the motor mounting base via the adjustment of the 4 screws.
- 3) Lock up the moving bolts.
- 4) Lock up the fixed bolts. Recheck the belt tension after a full-load operation of 20-30 hours.



Picture 6-16: Belt Adjustment

Note: The torque of 4 fixing bolts (C) is 400Nm.

6.6 Lubrication

6.6.1 Lubricating Oils (Following brands are suggested.)

Xin Chang Long: FX-00

FX-000

Bp: BP Grease LGEP 2

ESSO: Beacon Ep2, Beacon EP2

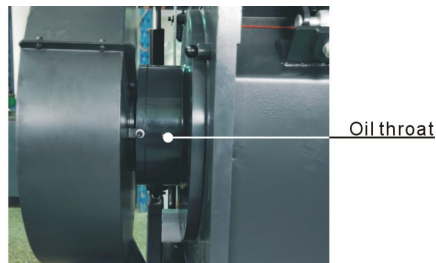
Mobil: Mobilux EP2

Shell: Shell Alvania EP2

Texaco: Multifak Ep2, Novotex Grease EP2

6.6.2 Please Grease the Bearing with Lubricating Oils Periodically

- 1) Open the front door of the machine.
- 2) Inject lubricating oil via throat with an oil greaser.



Picture 6-17: Oil Throat

6.7 Maintenance

During maintenance, make sure there is no residue left in the granulator.

Note: All the repairs must be completed by technical person to avoid human injury and machine damage.

6.7.1 Daily Check

- 1) There is rubber shutter in the feed box. If the rubber shutter is damaged, replace it immediately. Otherwise the fragment of the shutter will damage the blades in the cutting chamber.
- 2) Check whether the Emergency Stop works properly. Start the machine and then stop it via Emergency Stop. Rotate the button anti-clockwise to reset the Emergency Stop.

6.7.2 Weekly Check

- 1) Check the power wire to see whether there is any damage. If so, replace it immediately.
- 2) Check the safety switch.
- 3) Check the electronic handspike's working for opening the feed box.

6.7.3 Monthly Check

- 1) Check the belt to see whether there is some damage.
- 2) Check the belt's tensility every 6 months. More details to see chapter 6.2 Transmission.
- 3) Check the blades and screws to see if they get loose.

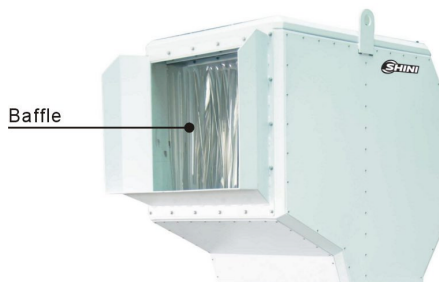
6.8 Cleaning



CAUTION!

The sharp blade may cause human injury when opening the feed box!
Please wear the gloves!

- 1) Check whether the feed box is emptied before machine stop.
- 2) Clean the outside surface of the feed box.
- 3) Turn off the main power switch.
- 4) Clean the shutter of the feed box with a dust separator.



Note: The feed box is supported by electrical handspike for convenient control.

- 5) Clean the interior surface of the feed box.
- 6) Remove the quick pipe clamp at pipe end.
- 7) Remove the storage box.
- 8) Loosen the screws on screen bracket and remove the screen bracket.
- 9) Take out the screen.
- 10) Hold the screen and take it out outwardly.
- 11) Clean the storage box, screen bracket and the screen.

- 12) Clean both surfaces of the cutting chamber.
- 13) Clean every feeding pipe, blower, and cyclone dust separator.
- 14) Clean the pulley with bright dust-precipitator.

Re-install the machine after cleaning.

Note: Take care not to be squeezed when closing the door!

6.9 Maintenance Schedule

6.9.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage _____ Φ _____ V Frequency _____ Hz Power _____ kW

6.9.2 Check After Installation

- Check if pipe connections are firmly locked by clips.
- Check the gap between fixed blade and rotating blade. (0.2~0.3mm).
- 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.
- Check the rotating direction of the conveying blower.

6.9.3 Daily Check

- Check main power switch.
- Check emergency stop button.
- Check start / stop button.
- Check material check plate (strip) is perfect or not.
- Check whether emergency stop and safety switch works normally.
- Clean screen and feed box.
- Check whether start, stop and power switches are normal.

6.9.4 Weekly Check

- Check all the electrical cables.
- Check if there are loose connections of electrical components.
- Check the start and stop function of the electrical handspike.
- Check function of all the safety switch
- Check the cooling system of the cutting chamber
- Check blade condition.

- Check whether set screws in fixed and rotating blades are under looseness.
- Check if there is abnormal noise, vibration and heat in reduction gear.

6.9.5 Monthly Check

- Check the status of gear motor.
- Check the overload protection function of the motor.
- Check the tightness of the blades.
- Check the pneumatic stick.
- Check start/stop delay function of the conveying motor
- Check whether clamp ring of pulley is fastened.
- Check belt tension.

6.9.6 Check Half-yearly or Every 1000 Running Hours

- Check belt tension.
- Check the bearings, motor and shaft lubrication
- Check the shaft holde
- Valuate the machine performance

6.9.7 3 year Checking

- PC board renewal.
- No fuse breaker renewal.