

**SG-70(B)**  
**Sound-proof Central**  
**(“Regular” Series)Granulator**

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Version: Ver.C (English)





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# 1. General Description



Read this manual carefully before installation and using this machine to avoid personal injuries or damage of the machine.



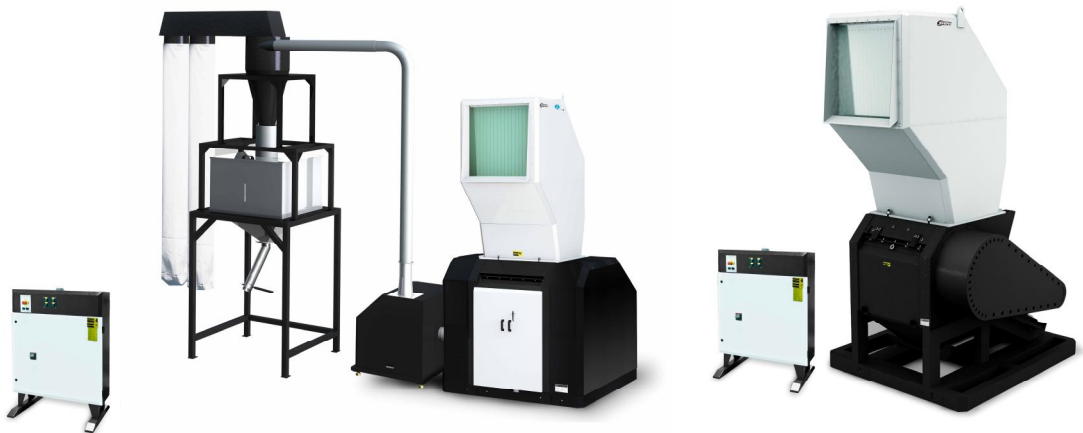
Note!

Be careful during operation, the knives of the granulator are very sharp and can cause personal injury.



It's forbidden to process any toxic or flammable materials.

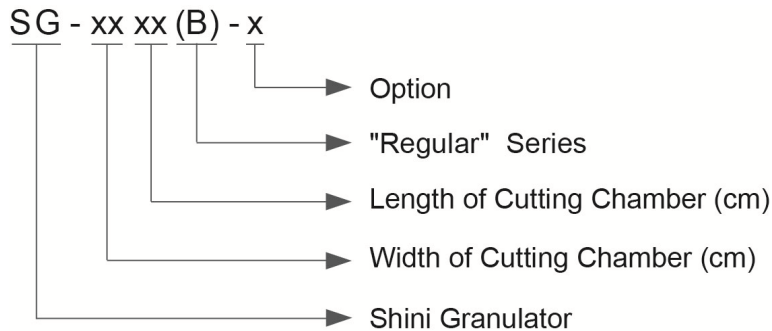
SG-70(B) series granulators are applicable to granulate various kinds of plastic materials from injection molding, blow molding or extrusion process. This series feature compact design, easy operation and quick blade replacement. It is great in motor power, cutting chamber size, and output capacity. Gradually inclined cutting and integrated power design offer a better cutting effect and a lower noise level.



Model: SG-70120

Model: SG-7090B

## 1.1 Coding Principle



## 1.2 Features

- 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.
- Two rows of 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 such as bottles, crates and drums as well as large bulky materials.
- 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 and fixed blades can be adjusted in the fixture outside the machine inside of machine instead of machine inside. It made blades adjustment must 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.
- The equipped conveying device (optional in SG-70B) for auto loading has improved efficiency.
- Equipped with flywheel (optional in SG-70B) to improve cutting ability.

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 meet any problem during using the machine, please contact the company or the local vendor.

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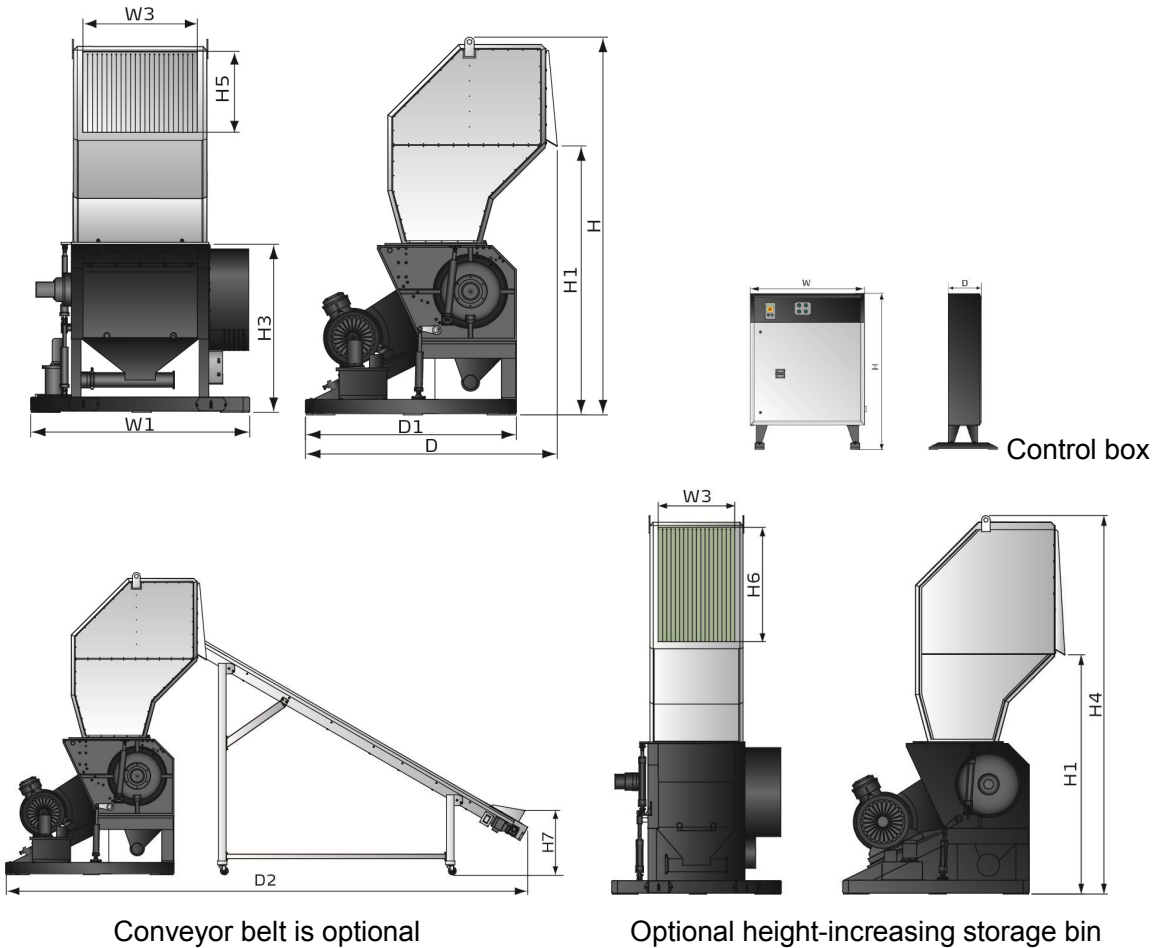
Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.:

Tel: (91) 250 3021 166

## 1.3 Technical specifications

### 1.3.1 Outline Drawing(SG-70B)



Picture 1-1: Outline Drawing (SG-70B)

### 1.3.2 Specifications(SG-70B)

Table 1-1: Specifications(SG-70B)

Model	SG-7090B	SG-70120B
Ver.	B	B
Motor Power (kW, 50/60Hz)	75	90
Rotating Speed(r.p.m. 50/60Hz)	525	525
Conveying Blower (kW, 50/60Hz)	7.5	7.5
Hydraulic Motor Power (kW, 50/60Hz)	1.5	1.5
Material of Blades	SKD11	SKD11

Number of Fixed Blades	2×2(3×2)	2×2(3×2)
Number of Rotating Blades	3×2(5×2)	3×2(5×2)
Cooling Water Device	●	●
Screen(mm)	Φ12	Φ12
Cutting Chamber (mm)	700 x 900	700 x 1200
Max. Throughput Capacity (kg/hr, 50/60Hz)	1300	1800
Noise Level dB(A)	120	120
Height-increasing storage bin	○	○
Dimension		
H (mm)	3950	3950
H1 (mm)	2815	2815
H3 (mm)	1770	1770
H4 (mm)	4450	4450
H5 (mm)	900	900
H6 (mm)	1400	1400
H7 (mm)	846	846
D (mm)	2625	2625
D1 (mm)	2200	2200
D2 (mm)	6840	6840
D3 (mm)	290	290
W1 (mm)	2000	2300
W3 (mm)	900	1200
Weight (kg)	4000	4500

Note: 1) "●" stands for standard, "○" stands for options.

We reserve the right to change specifications without prior notice.

2) SKD11 is material code number of Japanese JIS standard.

3) Maximum output is subject to the diameter and material of Screen mesh. For granulating frame and shell material, maximum output will be reduced about 50%.

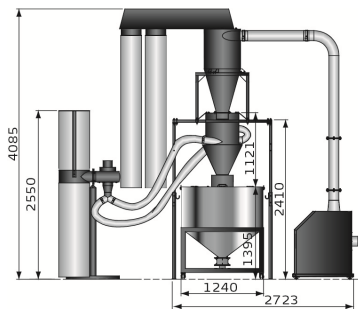
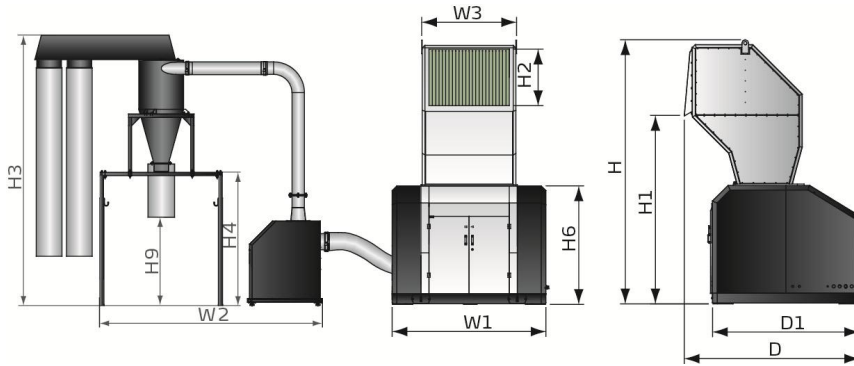
4) Noise level will vary with different materials and motor types.

5) Noise level is tested under conditions of 1m around the machine and 1.6m from the ground.

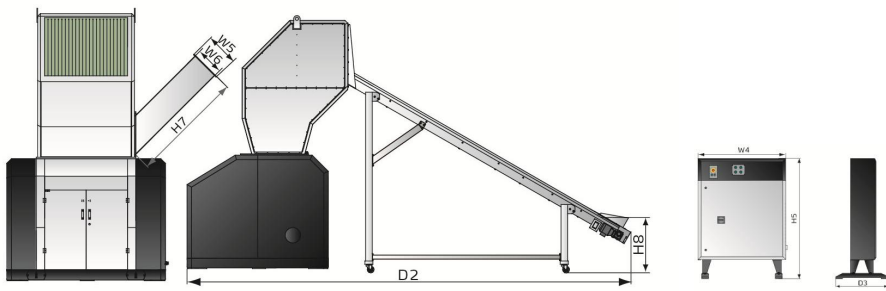
6) To avoid plastics from sticking to the blades, all materials should be crushed at normal temperature.

7) Power supply: 3Φ, 230 / 400 / 460 / 575VAC, 50 / 60Hz.

### 1.3.3 Outline Drawing(SG-70)



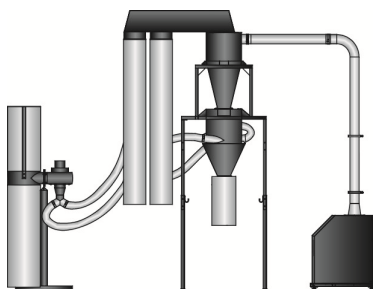
Optional DS+500kg material storage tank



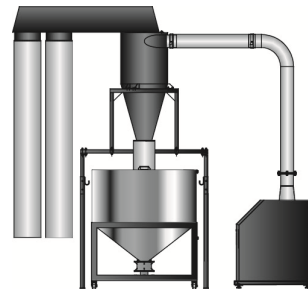
Optional side feeder

Optional conveyor

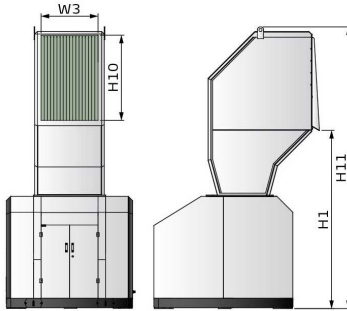
Control box



Optional DS



Optional material storage tank



Optional height-increasing storage bin

Picture 1-2: Outline Drawing (SG-70)

### 1.3.4 Specifications(SG-70)

Table 1-2: Specifications(SG-70)

Model	SG-7090	SG-70120
Ver.	B	C
Motor Power (kW, 50/60Hz)	75	90
Rotating Speed(r.p.m. 50/60Hz)	525	525
Conveying Blower (kW, 50/60Hz)	7.5	7.5
Hydraulic Motor Power (kW, 50/60Hz)	1.5	1.5
Material of Blades	SKD11	SKD11
Number of Fixed Blades	2×2(3×2)	2×2(3×2)
Number of Rotating Blades	3×2(5×2)	3×2(5×2)
Max. Throughput Capacity (kg/hr, 50/60Hz)	1300	1800
Noise Level dB(A)	115	115
Screen(mm)	Φ12	Φ12
Dimension		
H (mm)	3950	3950
H1 (mm)	2815	2815
H2 (mm)	840	840
H3 (mm)	3100	3100
H4 (mm)	1625	1625
H5 (mm)	1370	1370
H6 (mm)	1770	1770
H7 (mm)	1419	1419

H8 (mm)	846	846
H9 (mm)	1077	1077
H10 (mm)	1340	1340
H11 (mm)	4450	4450
W1 (mm)	2000	2300
W2 (mm)	2730	2730
W3 (mm)	900	1200
W4 (mm)	1000	1000
W5 (mm)	350x350	350x350
D (mm)	2630	2630
D1 (mm)	2200	2200
D2 (mm)	6840	6840
D3 (mm)	600	600
Weight (kg)	4500	5000

- Note: 1) SKD11 is material code number of Japanese JIS standard. We reserve the right to change specifications without prior notice.
- 2) Maximum output is subject to the diameter and material of Screen mesh. For granulating frame and shell material, maximum output will be reduced about 50%.
- 3) Noise level will vary with different materials and motor types.
- 4) Noise level is tested under conditions of 1m around the machine and 1.6m from the ground.
- 5) To avoid plastics from sticking to the blades, all materials should be crushed at normal temperature.
- 6) Power supply: 3Φ, 230 / 400 / 460 / 575VAC, 50 / 60Hz.



## 1.4 Safety Guide

Operation of the machine should be done according to safety guide so as to avoid personal injuries and damage of the machine.

### 1.4.1 Safety Signs and Labels



Electrical components should be installed by professionals.



Main switch and control switch should be shut off during maintenance.



Don't let any part of your body get into the granulator before you disconnect the main switch and control switch.



Warning! High Voltage

This sign is attached to the surface of the control box!



Sharp rotating blades may cause injuries!



Rotor should not be rotated by hands. Pay more attention to it.



You should not start the granulator before the feeding box and screen housing are tightly shut.



The protective sponge and the quick coupling clip at storage box outlet must not be taken apart.



When it is granulating, the operator should wear earplugs!



When open feeding box, please make sure the front door is opened.



Loading blower is applicable to convey grind powder and it requires the temperature less 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.

Make sure the waste materials are in the center of conveyor belt.



Regularly clean the dust in inlet air.



Attention!

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

When operate the granulator, please notice the following signs

	<p>Water outlet: cooling water outlet.</p>
	<p>Water inlet: inlet for replenishing water and cooling water.</p>

## 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:

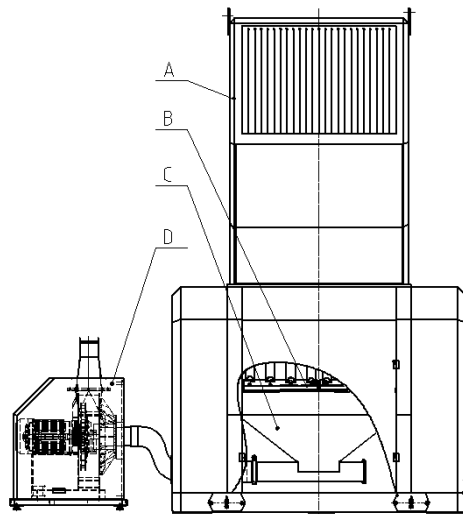
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible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

SG-70(B) series are suitable for granulating various plastic wastes, including injection molding and blow molding and extruding process. Before granulating, you need to clean metal scraps and contaminations.

#### 2.1.1 Working Principle



A. Feeding box    B. Rotating blades    C. Storage box    D. Conveying blower

Picture 2-1: Function Description

Feed the material into the cutting chamber from the feeding box(A), the rotating blades(B) and fixed blades work together to granulate the materials. The size of granules is based on the diameter of screen. The screen is fixed under the cutting chamber, and is easy to replace screen of different diameters. The regrinds will fall into storage box (C) through the screen, then conveying via conveying blower, the outfit blower will convey regrinds info cyclone dust separator to separate dust and air.

## 2.2 Safety System

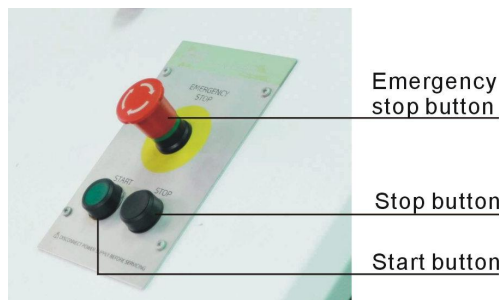
Safety system is used to prevent personal injuries caused by high rotating blades. Safety system could not be altered or accidents may happen.

Under no circumstance, the safety system could be altered otherwise the machine would be in dangerous condition and easy to have accident, so any repairing and maintenance of the safety system should be done by qualified technicians.

If there has any alteration to the safety system, our company will not fulfill our promise and all the spare parts should be purchased from Shini.

### 2.2.1 Emergency Stop Button

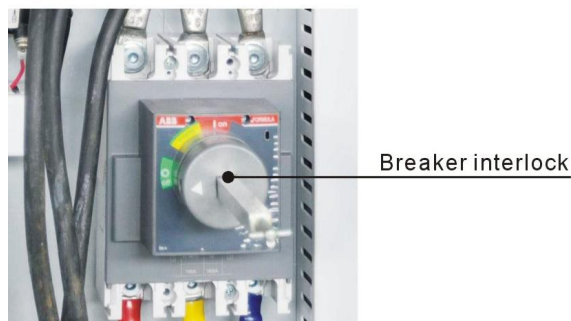
Emergency stop is a red button on the control panel. Press it then the machine will stop working. Turn the button in the arrow direction (clockwise) we can reset it.



Picture 2-2: Emergency Stop Button

### 2.2.2 Breaker interlock

When circuit breaker closed, the control box can't be opened, while the door plank of control box could be opened normally to ensure human safety.



Picture 2-3: Breaker Interlock

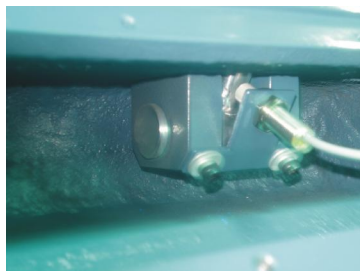
### 2.2.3 Safety Switch

The granulator has three safety switches: one is between feeding box and cutting chamber, and the other two are at front and back of machine door.



Picture 2-4: Safety Switch for Door Lock

If the machine's back door is opened or the feeding box and storage box are moved under running condition, the machine will stop at once. Pay an attention to ensure the operator's security.

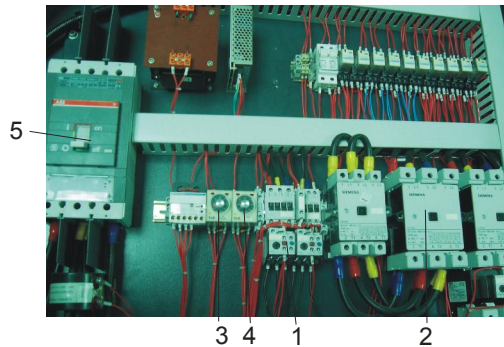


Picture 2-5: Safety Switch for Feeding Box

Pay attention to following items when start the machine:

- 1) Check if the feeding box has been locked up.
- 2) Check if the screen housing and storage box have been installed.
- 3) Close the machine door.

## 2.3 Main Electrical Components Illustration

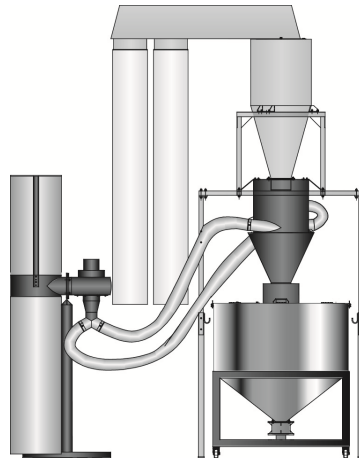


Picture 2-6: Main Electrical Components Illustration

- 1) Thermo overload relay, which can protect the motor when it is overloading or open phase.
- 2) Electromagnetic contactor controls the circuit connection and cut off.
- 3) Electrify delay timer, which can control motor to start from Y to  $\Delta$  with a reduced voltage, by doing this to save the startup current.
- 4) Power cut off delay timer, which can delay the blower's stop time, and when stop the machine, it can make the machine do a little extra work to suck the material at the bottom of the tube or within the storage box.
- 5) Breaker interlock, which perform the function of cutting off or connecting to power source.

## 2.4 Optional Accessories

### 2.4.1 DS-70 Dust Separating System+500kg Material Storage Tank



Picture 2-7: Dust Separating 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.

### 2.4.2 Screen



Picture 2-8: Screen

Special screen mesh sizes:  $\Phi 10$ ,  $\Phi 14$ (mm). Add "SS + screen diameter" at the end of the model code, e.g.:  $\Phi 10$ mm , add "SS10".

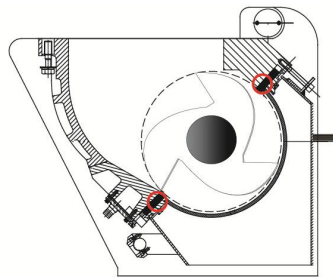


### 2.4.3 Cutter

Table 2-1: Blade List

Material	Relating standard steel ode		
	China	USA	Japan
SKD11	Cr12MoV	D2-	SKD11

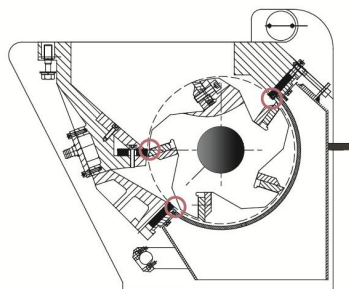
#### Standard Equipped Cutter(Low Cutting Point)



Picture 2-9: 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 2-10: 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 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.

#### 2.4.4 Sound-proof Box



Picture 2-11: Sound-proof Box

Adopt overall sound-proof box inside the machine largely reduces the noise level (Standard equipped in SG-70, option for SG-70B).

#### 2.4.5 Belt Conveyor



Picture 2-12: 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.

## 2.4.6 Material Side Feed Pipe



Picture 2-13: 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.

## 2.4.7 Flywheel



Picture 2-14: 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. (Standard equipped in SG-70, option for SG-70B)

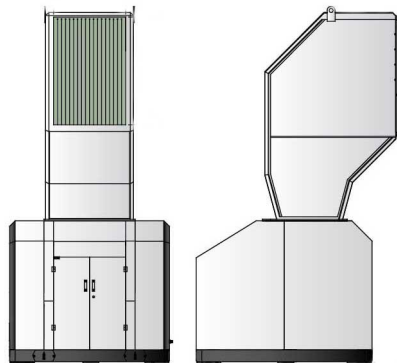
## 2.4.8 Full-receiver Alarm Device



Picture 2-15: Full-receiver Alarm Device

Full-receive alarm device helps to achieve unmanned operation and no materials will be wasted. Whenever the regrind level reaches the motor position, the machine will be forced to stop and be cut off via its sensor, thus stop the granulator and warn the user by sounding an alarm. Add "FAD" at the end of the model code.

## 2.4.9 Height-increasing Storage Bin



Picture 2-16: 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 Testing



Read this chapter carefully 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.

#### 3.1 Installation Place

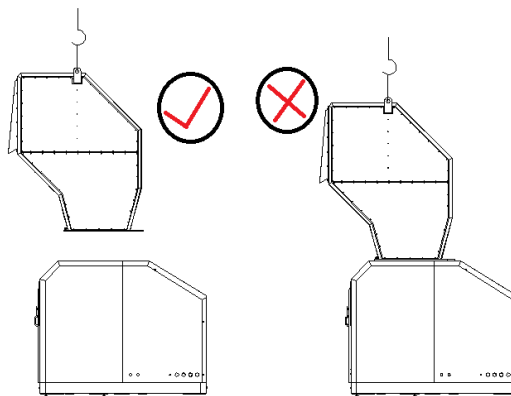


Please use the right hoisting way.

The feeding box and mainbody of the granulator is packed separately before leaving the factory. Use a forklift to transport the mainbody to a proper place, then hoist feeding box onto the mainbody, tight the installation screw up.



It is not allowed to install the feeding box onto the main body then hoist them together, because this could damage the machine!



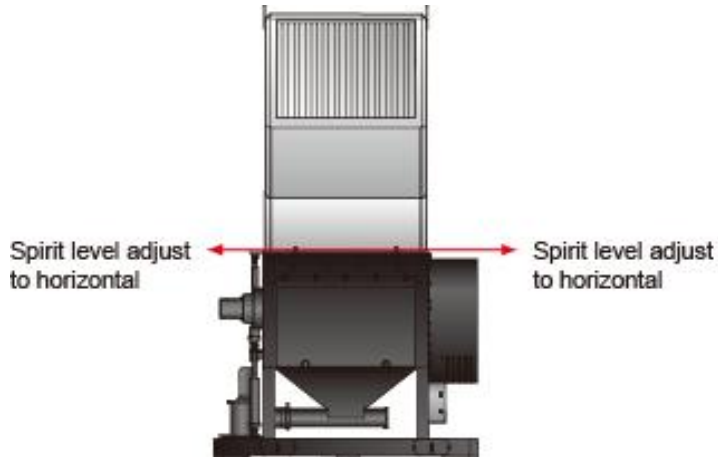
Picture 3-1: Installation Drawing



Please make sure there is enough installation space for easier maintenance and repairing.

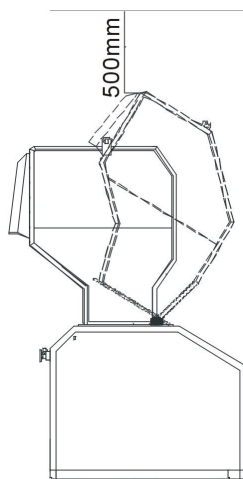
Examine and make sure the installation floor is level and enough intensity when operating.

Use spirit level to adjust the cutting chamber into a level position.



Picture 3-2: Cutting Installation Adjust Drawing

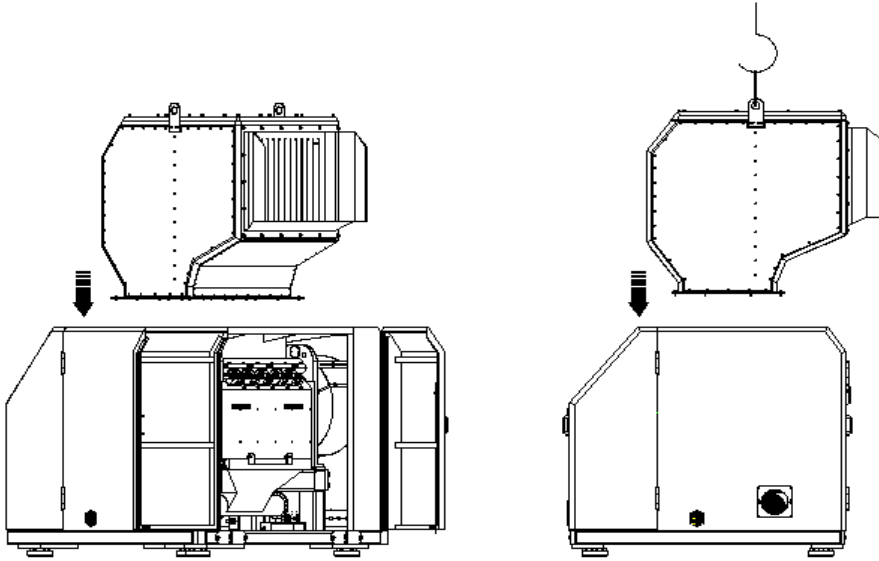
***Note: When open the feeding box, there should remain at least 500mm safety space***



Picture 3-3: Notice of Opening Feeding Box

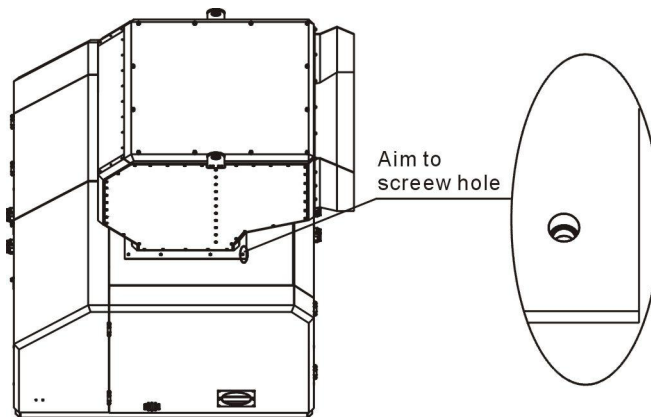
## 3.2 Install Feeding Box

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



Picture 3-4: Feeding Box Installation 1

- 2) Carefully lift the feeding box onto the cutting chamber and aim to the screw holes.



Picture 3-5: Feeding Box Installation 2

- 3) Lock the screws of the feeding box.

### 3.3 Connection and Installation of Oil Cylinder

- 1) The oil cylinder of the collection box has been installation before out factory without treatment for customer.
- 2) Feeding box and the tank is separate installation, so need to disassembly feeding box first.
- 3) The oil cylinder support in the right groove of the cover, and then amount the oil cylinder on the right bolt. (Should be tight enough of the oil cylinder and support, and then lock the oil pipes.)
- 4) Made the bolt into the right fixed block to fixed oil cylinder on the right fixed block.
- 5) Tighten enough the screw of the oil cylinder.
- 6) Testing the hydraulic system, no problem and then lock the right cover of the feeding box.



Picture 3-11: Schematic Diagram of the Feeding Box Oil Cylinder Installation

### 3.4 Connection to Cooling Water

According to machine's label, cooling water should be connected to the machine. Cooling water level indicator is equipped beside the water tank that behind the back block of the machine and helps check out the water level.

**Note: water level should be lower than 80%.**

When discharging the cooling water, first need to open rear door of the machine, insert a water hose into water outlet and drain off the water so to avoid damaging of machine.



## 3.5 Power Connection

- 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 conform with local regulations.
- 3) Use independent power cable and ON/OFF switch. The cable's size 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 source, 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: +/- 10%  
Main power frequency: +/- 2%
- 7) Power connection refers to the circuit diagram of each model.

***Note: Power connection must be done by the professional electrician.***

### 3.5.1 Check the running direction of the motor

- 1) Open the door to check whether the feeding box, screen, or storage box has been installed.
- 2) Close the door.
- 3) Ensure the main power switch is in ON position.
- 4) Check the emergency stop.
- 5) Start the granulator via pressing the START button and stop the granulator via pressing the STOP button.
- 6) The granulator needs some time to fully come to a halt. After full stop, check whether the running direction is anti-clockwise.

### 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) Start the blower and stop again to check the blower's 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.



When equipped with transmission belt: please check the running direction of the transmission belt.

### 3.6 Installation of Dust-separating System



Read chapter 3 carefully before operating on dust-separating 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, 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 dust removing.



Notes!

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

### 3.7 Installation of Separating Conveying Device

- 1) Tighten the cyclone separator body and three upper brackets;
- 2) Tighten three upper brackets with each lower bracket separately;
- 3) Lay the cyclone separator on the ground horizontally;
- 4) Fix the filter bag tightly on the outlet pipe of the cyclone separator.
- 5) Bind 5" steel wired plastic pipe on the inlet of cyclone separator and outlet of conveying blower, then tight them up with pipe clamp.
- 6) Bind 6" steel wired plastic pipe on the inlet of conveying blower and outlet of storage box, then tight them up with pipe clamp.

- 7) Connect the power source of conveying blower to the socket of control box.

## 3.8 Options Installation

### 3.8.1 Conveying Belt Installation

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

## 4. Operation



Please wear earplugs when operating machine so to avoid personal injuries!



Please wear gloves when operating machine so to avoid personal injuries!



Please wear goggles when operating machine so to avoid personal injuries!



Because blades or rotors may be loose, before operating the machine, please check the following items:

- 1) Is there any damage to the knives?
- 2) Is there any loose within the surface of the rotors?

If any above situation has been found, please contact local dealer or SHINI company.

### 4.1 Startup Pretest

Unpainted part of the machine has been covered with anti-rusted oil. Before use, the anti-rusted 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 (0.2~0.3mm) between fixing and rotating blades, confirm if the lockup screws of the blades are tightened (torque is 600 Nm).

#### 4.1.2 After First Startup for 2 Hours

- 1) Check the space between fixing 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.

#### 4.1.3 After First Startup for 20~30 Hours

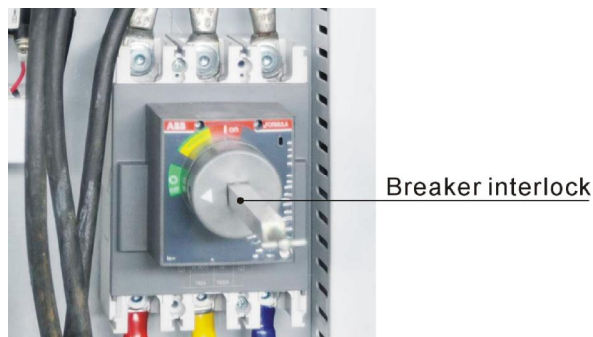
Check and adjust the belt's tension after a 20~30-hour under full-load operation.

## 4.2 Circuit Connection

SG-70(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.



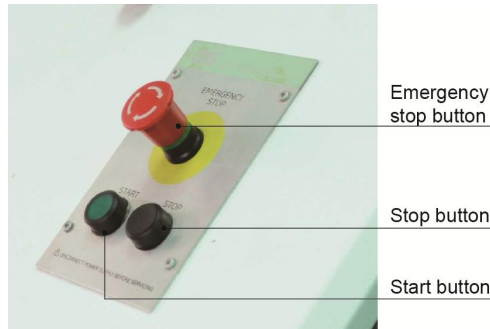
Picture 4-1: Control Box Drawing

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 4-6: Start/Stop and Emergency Stop Button

**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 when restart it.**

### 4.3 Open the Feeding 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 Feeding box

- 1) At first, loose the locking screw on feeding box's set bolt.
- 2) Check if the feeding box and cutting chamber is empty.
- 3) Operate the hydraulic button to forwardly open the feeding box, and then cut off the main power source.



Attention !

The feeding box is supported by hydraulic cylinder, which won't be dropped when opening.

After feeding box contacts the limit switch when dropping, it will stop and won't damage the hydraulic cylinder.



When using the hydraulic cylinder to open the feeding box, please unlock the locking bolt.

#### 4.3.2 Open the Screen Bracket 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.



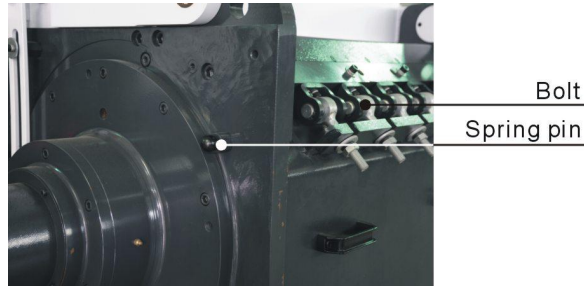
Picture 4-2: Loosen the Fast Pipe Clamp

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



Picture 4-3: Draw Out the Storage Box

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



Picture 4-4: 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

K9: When granulator motor Y is switching with  $\Delta$ ,  $\Delta$ contactor connects with the relay in delay, which avoids motor short circuit when two contactors connecting through the electricity simultaneously during activating (Range: 0.1~1S).



K10: after pressing the stop button, the conveying and dust-removing blowers will continue working for a while, which should ensure the granules could all be conveyed by the granulator (Range: 0~3Min). Note: the setting time of K10 must be larger than K24.

K8: setting the operation time of granulator motor Y (Range: 8~20S) .(Option)

K23: Make the belt conveyor work in delay. After the granulating motor  $\Delta$  is connected through in delay time and motor operates stably, connect the K23 with the belt conveyor (Range: 0~1Min). (Option)

K24: after pressing the stop button, the granulator stops in delay. It makes the un-granulated materials inside the granulator finish the granulating after pressing down the stop button (Range: 0~1Min). Note: the setting time of K10 must be larger than K24. (Option)

## 5. Trouble-shooting

### 5.1 The Granulator Can Not Work

- 1) Check if the emergency stop has been reset. If not, rotate the button anti-clockwise to reset it.
- 2) Check whether the door is closed. If not, the machine could not be started.
- 3) Check if the feeding hopper 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. Under that situation, (A) (the green pole) will come out. Press the Reset button (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 can not run neither. Check the motor protector in the electrical control box. If it is closed, the switch will be in 0 positions. Reset it to 1 position. (A) (The green pole) will come out. Press the Reset button (B) to reset it.
- 6) Check the space between blades stop will happen or the motor overload protector will trigger off if the blade is very blunt or the space between blades is not correct. More details about checking, replacing and readjusting the blades to see chapter 3.6.
- 7) Check the phase sequence protector, which is inside the control box. If power phase shortage occurs, the phase sequence protector will cut off the control circuit of granulator, and it leads to granulator can't be started.

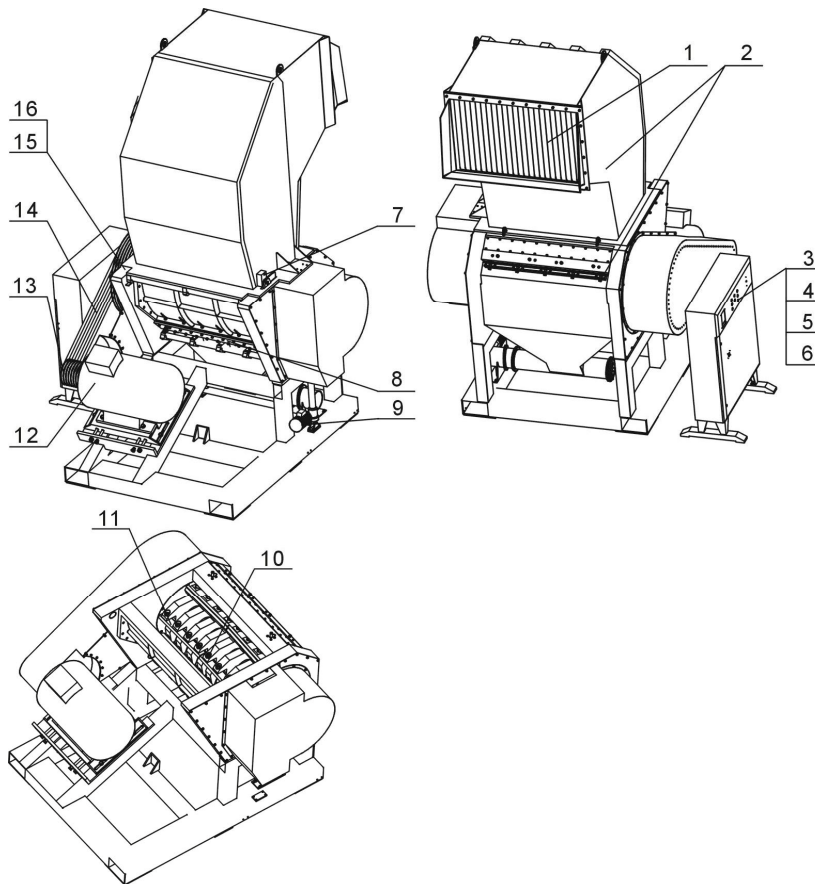


## 5.2 Stop Due to Other Reasons

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

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

## 6. Repair and Maintenance



1. Check the material defender.
2. Clean the screen and feeding chamber. Period: Daily.
3. Check the start/stop button and the main power switch. Period: Daily.
4. Check the emergency stop button. Period: Daily.
5. Check all the cables. Period: Weekly.
6. Check the electrical components joints. Period: Weekly.
7. Check the safety switch. Period: Weekly.
8. Check the cooling system function of the cutting chamber. Period: Weekly.
9. Check the hydraulic cylinder. Period: Weekly.
10. Check the screws between the fixed blades and therotating blades. Period: Weekly.
11. Check the service condition of the blades. Period: Weekly.
12. Check the gear motor. Period: Weekly.

13. Check the locking ring of the pulley. Period: Monthly.
14. Check the belt tension. Period: Semiyearly or every 1000 working hour.
15. Check the shaft, motor and the lubrication. Period: Semiyearly or every 1000 working hour.
16. Check the bearing holders. Period: Semiyearly or every 1000 working hour.

## 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

#### Daily check

- Air and dust bags, check if these bags are damaged, if there is any damage, please replace them.
- 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 checks if the collection barrel is placed right under the dust separator, if there has any deviation, please adjust it.
- Check the collection barrel, if it is full, take out the dust removed plastic in timely.

#### 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



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

- First clean the inner side of the cleaning facilitates.
- It is necessary to check and clean dust separator.
- Move away separator, use high pressure air to blow away its interior granules.
- Clean out the storage hopper and clean its interior.

- Shake the air bag to drop the dust down.
- Assembly the disassembled parts according to reversed order.

### 6.1.3 Replace the Blades



#### CAUTION!

Warning: rotating blades need balanced force. Self rotation exists due to non-balanced forces or unstable barycenter.



Press emergency stop button and turn off main power switch before blades changing.



Wear gloves to avoid being cut and be careful of the sharp blades!

Inject fixing glue (blue LOCTITE 243 recommended) on all tighten screws to protect these screws from loosing.



Picture 6-1: Blade Maintenance Drawing



#### CAUTION!

To decrease the possibility of harm to other people, the replacement action must be conducted by oneself.



#### CAUTION!

To avoid self rotation, block the rotating blade with a thick wood block. Cutters are very sharp, attention should be paid when block them. After replacement, check whether the screen is damaged. If so, replace the screen.



#### CAUTION!

Each time to replace the blade, the screw and washer must be replaced  
Before replacing the blades, open the door and feeding box remove the storage box, screen and screen bracket.

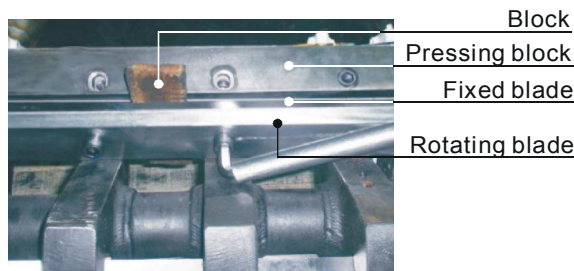
## 1. Remove the rotating blades



### CAUTION!

To avoid self rotation, block the rotating blade with a thick wood block.

- 1) Remove the screws and washers.
- 2) Remove the blades.
- 3) Clean the installation surface of the blades.



Picture 6-2: Change Blade Drawing

## 2. Remove the Fixed Blades

- 1) Revolve the screw of the front fixed blade.
- 2) Loosen and remove the hexagon socket cap screws from the front pressing block.
- 3) Remove pressing block and blade, clean the blade rest.
- 4) Loosen and remove the screws of the back blades.
- 5) Loosen and remove the hexagon socket cap screw from the pressing block again, remove the pressing block and blade. Clean the supporter box.



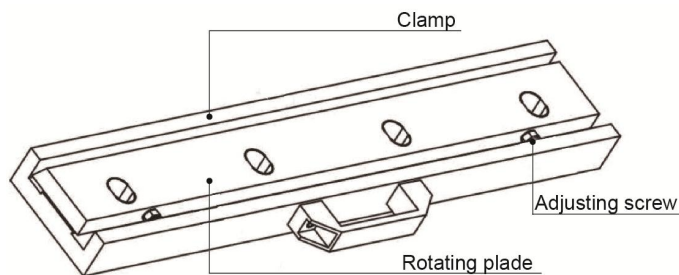
### CAUTION!

Press the pressing block and blade when you remove the last screw to avoid the personal injuries.

### 3. Install the blades

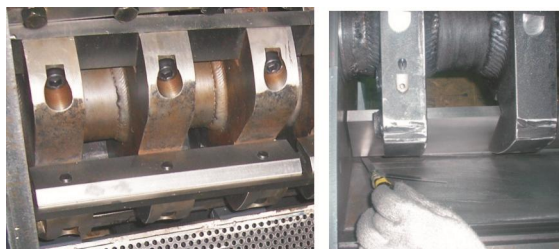
#### A: The installation steps with presetting knife jig:

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



Picture 6-3: 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 6-4: 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  $114 \pm 0.07\text{mm}$  (3 rotating blades width, 5 rotating blades width is  $90 \pm 0.07\text{mm}$ ); 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 -8.8	Grade -10.9	Grade -12.9	Grade -8.8	Grade -10.9	Grade -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 Transmission



### CAUTION!

Press emergency stop button and turn off the main power switch before repairing and maintenance of the transmission belt.

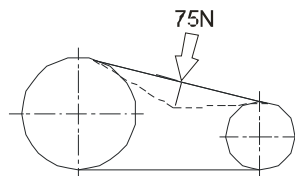
### 6.2.1 Daily Maintenance of Transmission Belts

According to granulator's motor power, it equipped with 4~8 belts.

- 1) Check the transmission belts Check transmission belts' tensility after a full-load operation for 20-30 hours. Then check its abrasion condition.
- 2) Check transmission belts' tensility every 6 months. Remove the right sideboard and transmission belt cover. Rotate the transmission belts for several circles to see if there is any damage or abrasion.

**Note: Do not place your hands between wheels and the belts. to avoid being pinched.**

If it is necessary, check the belt's tension via extra force and measure its excursion. Inflict extra force (75N) in the middle of the belt and this force is determined by power and frequency of the motor.



Picture 6-5: Conveying Belt Maintenance Drawing

Table 6-2: Conveying Belt Maintenance Standard List

Motor 50Hz	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)	22mm	23mm	20mm

## 6.2.2 Adjustment of Transmission 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.

## 6.3 Installation of Bearing and Blade Rest

- 1) Lock the right bearing housing to the right box block of the granulating chamber; then, continue to install the right flap.
- 2) Align the shaft of blade rest with the slot of right bearing housing, and insert the blade rest into the housing.
- 3) Insert the flap and left bearing housing matching to the shaft of blade rest, and lock it to the left box block.
- 4) Install sealing ring on the right and left bearing housing, and press the ring into the bearing. At the same time, use round-nut to fix the inner ring of bearing.

***Note: Add some lubricating oil to both bearing and bearing base.***

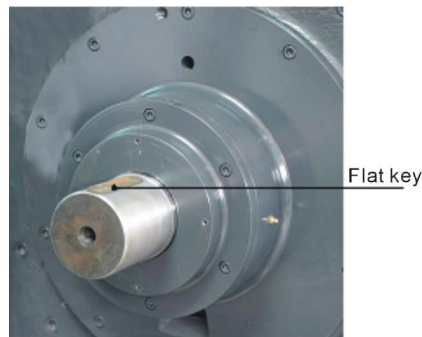
- 5) Adjust the right and left clearness of the blade rest shaft, finally install the bearing cover and lock it tightly. The right bearing cover firmly presses the outer ring of bearing to make the right bearing cannot be moved or turned direction.



Picture 6-6: Bearing and Blade Rest Installation Drawing

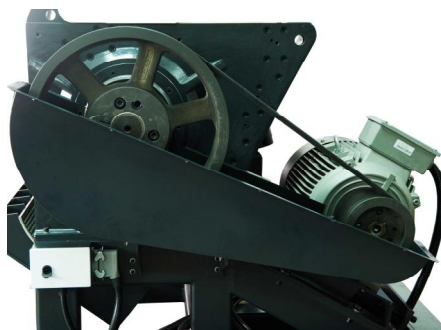
## 6.4 Installation of Belt Pulley and Motor

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



Picture 6-7: 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×50).

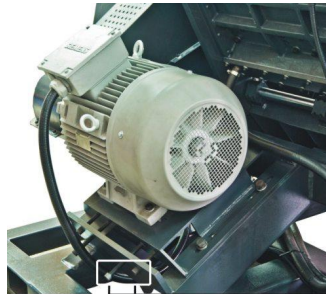


Picture 6-8: Installation of Belt Pulley and Motor 2

- 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.



Adjusting screw

Picture 6-9: Installation of Belt Pulley and Motor 3

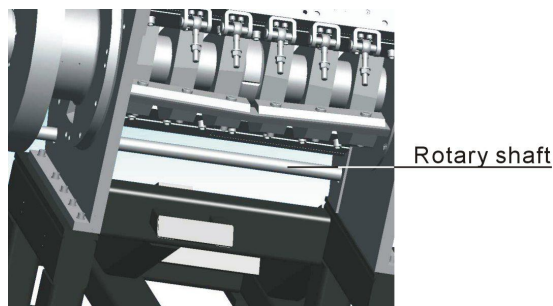
- 10) Finally mount the upper and lower protective cover for the pulley.



Picture 6-10: Installation of Belt Pulley and Motor 4

## 6.5 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.



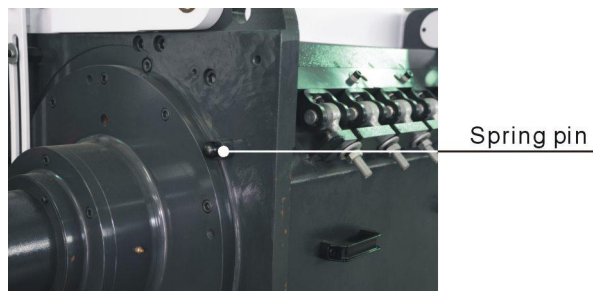
Picture 6-11: Installation of Storage Box, Screen and Screen Bracket 1

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



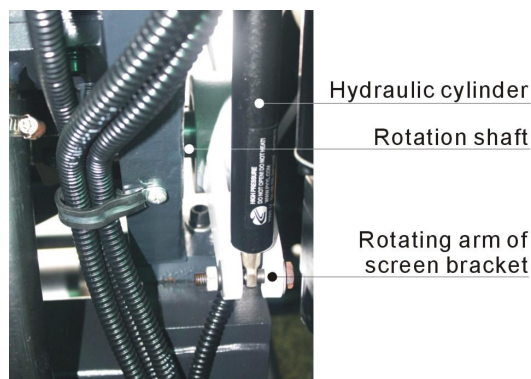
Picture 6-12: Installation of Storage Box, Screen and Screen Bracket 2

- 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 6-13: Installation of Storage Box, Screen and Screen Bracket 3

- 4) After flat key is mounted inside the rotating arm of screen bracket, put it through the rotating shaft end at left.
- 5) Mount the hydraulic cylinder and adjust the angle of screen bracket's rotating arm to correct angle, and then fasten the hydraulic cylinder.



Picture 6-14: Installation of Storage Box, Screen and Screen Bracket 4

**Note: Make sure the fixing screw of pneumatic spring is fastened. Otherwise, the screen bracket would 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 6-15: Installation of Storage Box, Screen and Screen Bracket 5

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



Picture 6-16: Installation of Storage Box, Screen and Screen Bracket 6

## 6.6 Lubrication

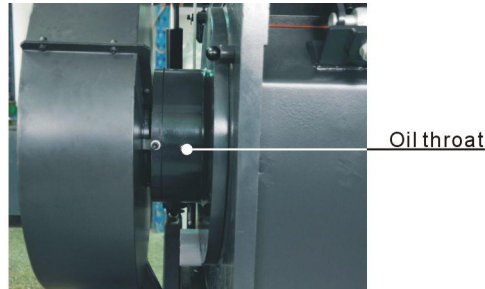
### 6.6.1 Lubricating oils

- 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 Oil 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

When carrying out maintenance, ensure that there is no material left in the granulator.

***Note: All stuff concerning repair must be conducted by professionals to avoid damage or harm to human body.***

### 6.7.1 Daily Check

- 1) There is rubber shutter in the feeding box. If the rubber shutter is damaged, replace it immediately.
- 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 function of the electrical handspike which is used to open the feeding box.

### 6.7.3 Monthly Check

- 1) Check the belt to see whether there is some damage. Check the belt's tension every 6 months. More details to see chapter 6.2 Transmission.

- 2) Check the blades and screws to see if they get loose.

## 6.8 Cleaning



### CAUTION!

The blade may do harm to human body when opening the feeding hopper!

- 1) Check whether the feeding box is emptied before stopping the machine.
- 2) Clean the exterior surface of the feeding box.
- 3) Open the front door first, then the back door, push forward to open the feeding box.
- 4) Turn off the main power switch.
- 5) Clean the check board of the feeding box with dust separator.

***Note: The feeding box is held by electrical handspike, therefore it cannot fall down.***

- 6) Clean the interior surface of the feeding hopper.
- 7) Remove the connecting pipe.
- 8) Loosen the fixing screw of screen bracket and open the screen bracket.
- 9) Take out the screen.
- 10) Loosen the hole base of screen bracket and remove the screen bracket.
- 11) Clean screen bracket and screen.
- 12) Clean both surfaces of the cutting chamber.
- 13) Clean every loading pipe, blower, and cyclone dust separator.
- 14) Clean the wheels with bright dust-precipitator.

Reinstall after cleaning

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

- 1) Install screen into screen bracket and put screen bracket under the cutting chamber.
- 2) Put pneumatic break iron rod along installation holes on both sides of the side board to insert the rod into directive block on the screen bracket and lock up the screws.
- 3) Install pneumatic break on its base and lock up the fixing screw.

(M12x17 torque: 35Nm)

- 4) Mount the pneumatic break iron rod on the pneumatic break.
- 5) Turn the spring dowel on both ends of the storage box to fix the storage box.
- 6) Install quick coupling clip at the end of the outlet pipe.
- 7) Shut off the feeding box

***Note: Before closing the feeding box, the door must be open; check if there is any residual powder left in the interface and edges; close and fix the feeding box with pothook.***

- 8) Install the plastic shutter of the feeding box.
- 9) Close the door.
- 10) Check if the feeding box is emptied.
- 11) Open the main power switch.
- 12) Start the machine.

## 6.9 Repair and Maintenance Record

### 6.9.1 About the Machine

Model \_\_\_\_\_ SN \_\_\_\_\_ Manufacture date \_\_\_\_\_

Voltage \_\_\_\_\_  $\Phi$  \_\_\_\_\_ 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 feeding hopper.
- 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 rotate blades are under looseness.
- Check if there is abnormal noise, vibration and heat in reduction gear.
- Check the cracking window

### 6.9.5 Monthly Check

- Check the status of the belt.
- Check the overload protection function of the motor.
- Check motor reversed running function.
- 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 holder
- Valuation of machine performance

### 6.9.7 3 year Checking

- PC board renewal.
- No fuse breaker renewal.