

# **SGF-26E** series

## **Roll-feed Granulators**

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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 knives are within reach, they are very sharp and can cause personal injury.



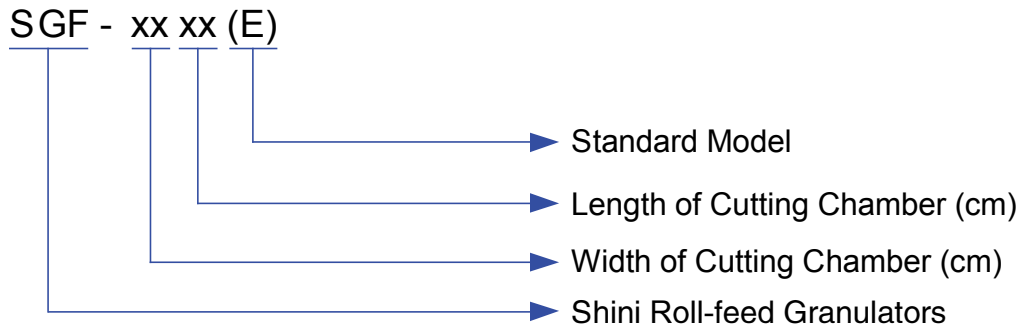
Forbidden to process flammable or toxic material!

SGF-26 series are applicable to granulating and recycling plastic films. After pressed toughly by a material scroller, films are sent to cutting chamber to be cut into granules to reuse.



Model: SGF-2624E

## 1.1 Coding Principle



## 1.2 Feature

- 1) Applicable to process extruded waste films, highly operation safety and compact design.
- 2) Cutters with best cutting angle and adjustable rotating blades.
- 3) Integrated material scrolling devices into one unit can facilitate the granulating work by easily scrolling the material into cutting chamber.
- 4) Motor overload protective function.
- 5) React with assembly line or operated by specialized person.
- 6) Attractive and compact design save more space.
- 7) Width adjustable feeding inlet and thickness adjustor designs facilitate the different film granulating applications.
- 8) Scrolling motor has a frequency convertor to satisfy different film cutting capacity.
- 9) Cutting chamber is equipped with a cooling water loop to effectively lower the temp.of the chamber so that improve working efficiency and avoid granule powder from melting up.
- 10) Equipped with cyclone dust collector, which can effectively separate regrinds and air and is also convenient for regrinds collection.
- 11) Adjustable range of feeding speed 1.9~19m/min.
- 12) Thickness range of material 0.5~6mm.



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

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

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

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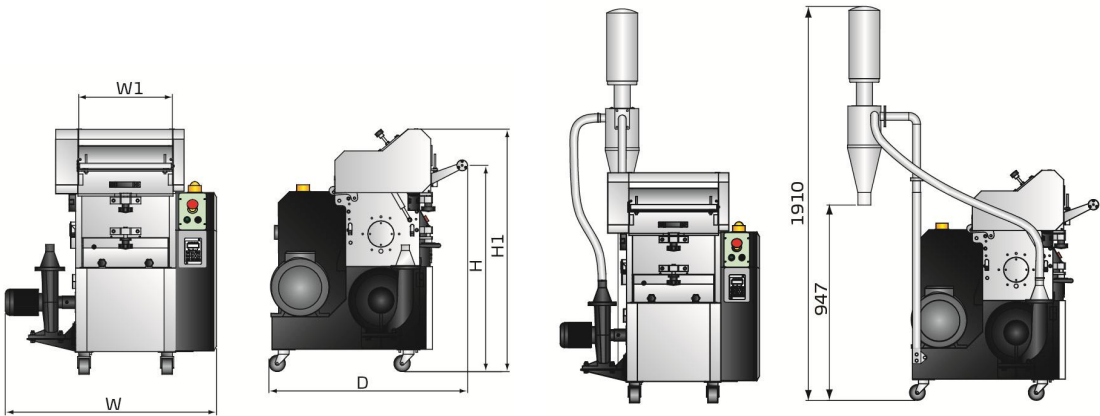
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## 1.3 Technical Specifications

### 1.3.1 Dimensions



equipped with cyclone dust collector

Picture 1-1: Dimensions

### 1.3.2 Technical Specifications

Table 1-1: Technical Specifications

Model	SGF-2628E	SGF-2642E
Motor Power (kW, 50 / 60Hz)	4.0 / 4.6	5.5 / 6.3
Rotating Speed (rpm, 50/60Hz)	300 / 360	300 / 360
Scrolling Power (kW, 50 / 60Hz)	0.4 / 0.45	0.4 / 0.45
Conveying Blower Power (kW, 50 / 60Hz)	0.55 / 0.66	0.55 / 0.66
Scrolling Speed (rpm)	*	*
Knife Material	SKD11	SKD11
Number of Fixed Blades	2	2
Number of Rotating Blades	3	3
Maximum Granulating Capacity (kg / h)	30	45
Noise Level dB (Max.)	88~93	88~93
Cooling Loop	✓	✓
Dia. of Screen Mesh	Φ8	Φ8
Special Screens	○	○
Dimensions		
H (mm)	930	930
H1 (mm)	1115	1115
W (mm)	845	1105
W1 (mm)	280	420
D (mm)	765	765
Weight (kg)	316	388

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

2) "\*" stands for different speed according to the thickness of the film.

- 3) SKD11 is material code number of Japanese JIS standard.
- 4) Max. capacity of the machine is subject to diameter of screen hole and composition of the material.  
The listed maximum output is tested continually with PET films, with 1mm thickness size.
- 5) Noise level will vary with different materials and motor types.
- 6) For avoiding plastic to adhibit the blade, all materials should be crushed at normal temperature.
- 7) Power supply: 3 $\Phi$ , 230 / 400 / 460 / 575VAC, 50 / 60Hz.

## 1.4 Safety Regulations

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

The following safety measures shall be followed when operating the granulator.

### 1.4.1 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!



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.



Air inlet dust clean.



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



Loading blower is applicable to convey regrind powder and it requires the temperature less than 80°C.



The loading blower has great suction power and it is easy to get goods or clothes sucked into, so it should have a protective cover.



**Danger!**

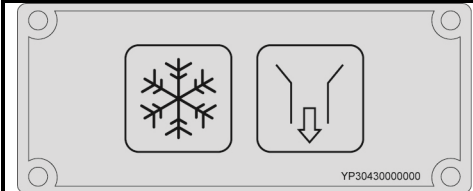
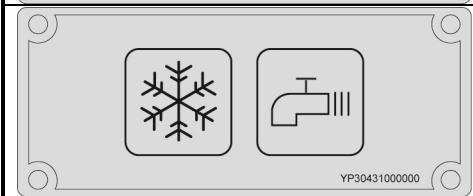
Do not use damaged or parts that lack frequency converter, because there is a risk of being hurt.



**Caution!**

Do not let any wire lead or screw fall into the frequency converter or it will damage the frequency converter.

When operate the granulator, please notice the following signs

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

## 1.4.2 Transportation and Storage of the Machine

### Transportation

- 1) SGF-26E series of granulators are packed in plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
- 2) After unpacked, castors equipped on the machine can be used for ease of movement.
- 3) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.

- 4) 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.
- 5) The machine and its attached parts can be kept at a temperature from  $-25^{\circ}\text{C}$  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) SGF-26E series should be stored indoors with temperature kept from  $5^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  and humidity below 80%.
- 2) Disconnect all power supply and turn off main switch and exigency stop 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

The machine should be operated:

- 1) Indoors in a dry environment with max. temperature  $+45^{\circ}\text{C}$  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 two meters.
- 6) In the work area of vibration and strong magnetic force.

### 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, CO<sub>2</sub> 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.



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



When process item is longer than feed port, please cut long items into half until the length is shorter before processing.



Please don't put materials into the granulator if they are thinner than 0.5mm and are soft and flexible, like rubber.



The thickness range of grinding material is 0.5~6mm.

## 1.5 Exemption Clause

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

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

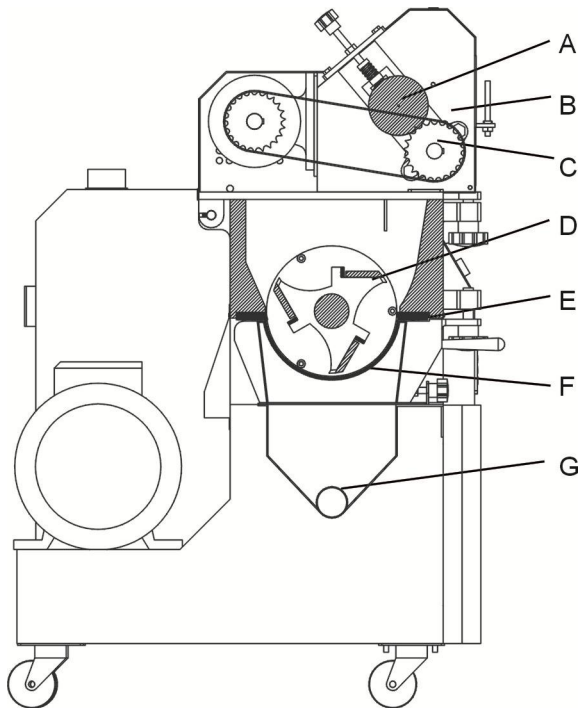
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible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

## 2. Structural Features and Working Principle

### 2.1 General Description

Surplus material granulator of SGF-26 series is suitable to granulate many kinds of plastic film surplus. The granulator is controlled by main power switch, safety switch, the switch of "start/stop" and emergency stop switch. The film surplus is sent by the feed mechanism to the pressing device to press it firm, and then transferred to the cutting assembly, cutting it into grain type.

#### 2.1.1 Working Principle



Parts name:

- |                 |                |                  |                 |
|-----------------|----------------|------------------|-----------------|
| A. Driven wheel | B. Feed throat | C. Driving wheel | D. Rotary blade |
| E. Static blade | F. Screen      | G. Storage box   |                 |

Picture 2-1: Working Principle

Through the feed throat (B), the film surplus is pressed firmly by the driving wheel (C) and driven wheel (A) and then sent to the cutting chamber. In the chamber, the surplus is granulated into grains by the rotary blade (D) and static blade (E). The granulated grains are fallen into the storage box (G) through the



screen (F). The storage box, screen and its frame can be removed. The feed box can be opened to allow cleaning and easier maintenance.

## 2.2 Safety System

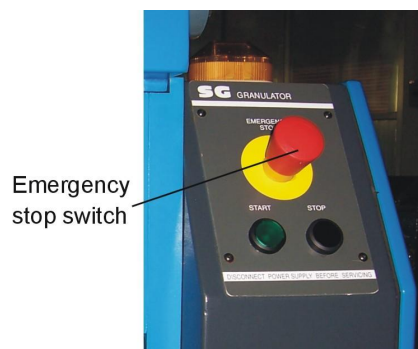
To avoid accidental bodily injury during granulator running, a set of safety system has been designed.

High-speed rotating cutter is located in the granulator and subject to accident. So safety system has been set up to protect bodily safety.

In any cases, the safety system cannot be changed at random. Otherwise the machine will be under dangerous condition and subject to accident happening. The maintenance and preservation of safety system shall be done by professional staff. In case the safety system of granulator is changed, our company will not perform our commitment. The replacement of all spare parts will be done by SHINI company.

### 2.2.1 Emergency Stop Switch

There is one red button on the control panel. Upon pushing it, the machine will stop running. Turn the button in the arrow direction as shown on the button, the button will reset (counter-clockwise).

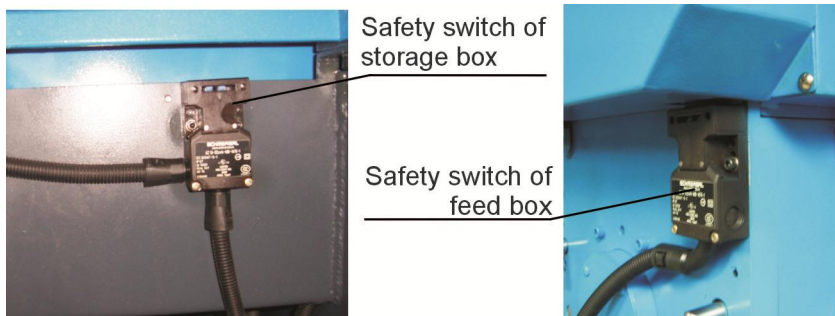


Picture 2-2: Emergency Stop Switch

### 2.2.2 Safety Switch

On the granulator is equipped the safety position switch for the breaker. In case the position of storage box or feed box is changed or the breaker is loosened, it will cut off the power supply. There are two safety switches on the granulator:

one is located between the feed box and the cutting chamber while the other one is linked with the storage box and the machine.



Picture 2-3: Safety Switch

### 2.2.3 Lock

The lock of feed box, screen frame and storage box is a long hexagonal screw, when opening the door, this hexagonal screw shall be loosened. The loosening will last a quite long period of time to enable the granulator fully stops, avoiding personnel injury.



Picture 2-4: Hexagonal Handle



Prior to machine switch-on, check if the feed box, screen frame and storage box have been tightened.

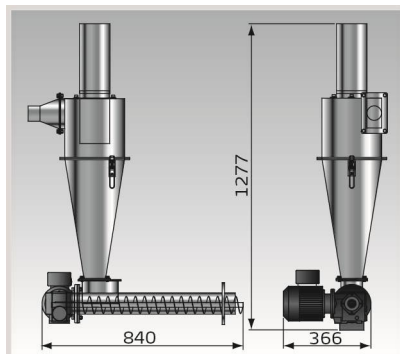
## 2.3 Optional Accessories

- 1) Special screens with different diameters ( $\Phi 10\text{mm}$ 、 $\Phi 12\text{mm}$  are optional. Add "SS + screen diameter" at the end of the model code, e.g.:  $\Phi 6\text{mm}$  , add "SS06".



Picture 2-5: Screen

- 2) It can option with screw conveying device which is convenient for granulated scraps entering the extruder and instant recycling (only suitable for SGF-E series). Add "AF" at the end of the model code.



Picture 2-6: Screw Conveying Device

### 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.



Caution!

Cutters should be laid level, prevent the cutters from self-rotating when do installation, don't let your hands be near to the cutters to avoid personal injury.



Notice!

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.



Notice!

The blades are very sharp, so use protective gloves to avoid being cut.



Notice!

Please use new screws and gaskets when installing cutters.

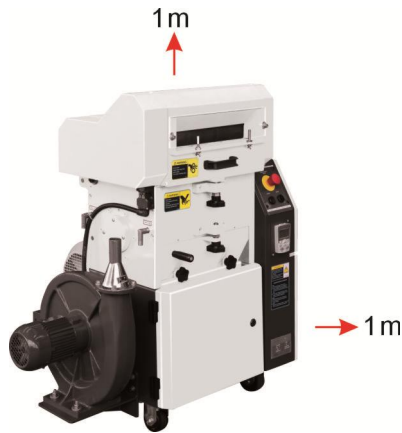


The power connection of the granulator should be carried out by professional electrician so to avoid electrical shock!

### 3.1 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 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%

Make at least 1 meter clearance around the machine to facilitate repair and maintenance.



Picture 3-1: Installation Place

Table 3-1: Attached Form, Cutters and Other Fixing Screw Torque

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

### 3.2 Installation Place

Move the granulator to the proper place and fix its castors

Check and make sure the installation ground is level, there is enough intensity when it is running.

### 3.3 Installation of Bearing and Blade Rest

- 1) Install the sealed bearing 2 and greased bearing 1 into the bearing base 3 in sequence.



Picture 3-2: Installation of Bearing and Blade Rest

- 2) Install the bearing base with bearing, flap and bearing on the blade shelf.
- 3) Put the blade rest in the cutting chamber to enable two ends of bearing pedestal match the holes at both sides and then tighten the screw.
- 4) Install the bearing cover and tighten it by screw.



Note!

Apply grease on the bearing and bearing pedestal.

### 3.4 Installation of Rotary Blade and Static Blade



Note!

The blade is very sharp edged and care shall be taken when installation to avoid injury!

Installation steps are:

- 1) Put the movable blade into the milled groove of blade shelf; its hole position shall match with the fixed hole position of blade shelf. Then, install the spring washer and flat gasket, screw down the screws which have been greased until the blade doesn't shake (for easier adjustment of the clearance between rotary blade and static blade).

- 2) Install the fixed blade into the front and rear box blocks; its whole position shall match with the fixed hole position of rear box. Then install spring washer and flat gasket, screw down the screws which have been greased until the blade doesn't shake.
- 3) Check the clearance between the rotary blade and the static blade with feeler gauge. The normal clearance is 0.1~0.15mm. If not within this scope, adjust them to reach the scope and then tighten them by screw (M16, torque of 215Nm).



Picture 3-3: Installation of Rotary Blade and Static Blade



Note!

When adjusting the clearance, it shall not be too small to avoid damage to the cutter!



Note!

To avoid bodily injury and machine damage, the fixing screw of blades shall be tightened well.

### 3.5 Installation of Belt and Belt Pulley

- 1) Install one end of blade shaft in the cutting tighten the screw with correct torque (280Nm) after matching the hole on the outer shell frame.



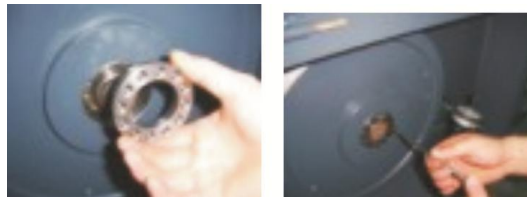
Picture 3-4: Installation of Belt and Belt Pulley 1

2) Match the blade shaft and install the belt pulley.



Picture 3-5: Installation of Belt and Belt Pulley 2

3) Tighten the lock rings by lock screw. Before tightening, the needle of dial indicator contacts the edge of belt pulley. As the pulley is turned, tighten the lock screw as indicated by the dial indicator (its range is 0.01-0.03mm) to enable the lock rings are fully engaged between the pulley and the blade shaft.



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

4) Put the small belt pulley on the motor to allow the key of motor corresponding with the key groove on the belt pulley.



Picture 3-7: Installation of Belt and Belt Pulley 4



- 5) Put the belt on the blade shaft belt pulley and motor belt pulley. The tooth of belt shall correspond with synchronal gear. Turn the blade shaft and motor shaft to enable the tooth of belt fully corresponds with the pulley tooth under totally even stress.



Picture 3-8: Installation of Belt and Belt Pulley 5

- 6) Put the straight edge closely against the surface of the blade shaft belt pulley; then observe the spacing between two pulleys and the straight edge and adjust the motor belt pulley at the same time to allow the surface of the motor belt pulley parallel with it.



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

- 7) Adjust the adjusting screws at both ends of motor fixed plate by the wrench until two belt pulleys are parallel, to keep the motor flat and the belt tensioned. Use the correct torque (340Nm) until the pulley moves to the place where the belt is balanced.
- 8) Tighten the fix screws of motor at four corners to allow the motor fixed on the base plate of granulator.



Picture 3-10: Installation of Belt and Belt Pulley 7

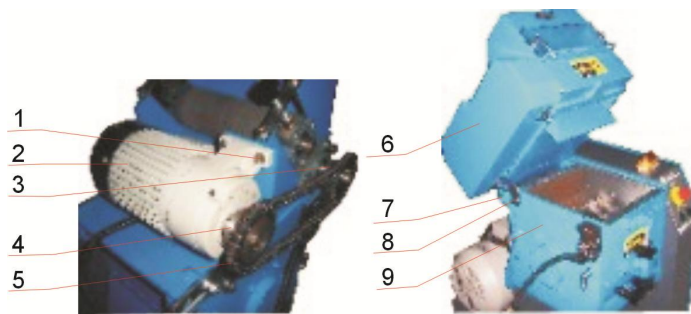


**Be careful!**

The cutting blade rest shall be put stably. Self turning of cutting tool shall be prevented prior to installation. At the time of operating, hand shall stay away from the cutting tool to avoid bodily injury.

### 3.6 Installation of Rolling Device

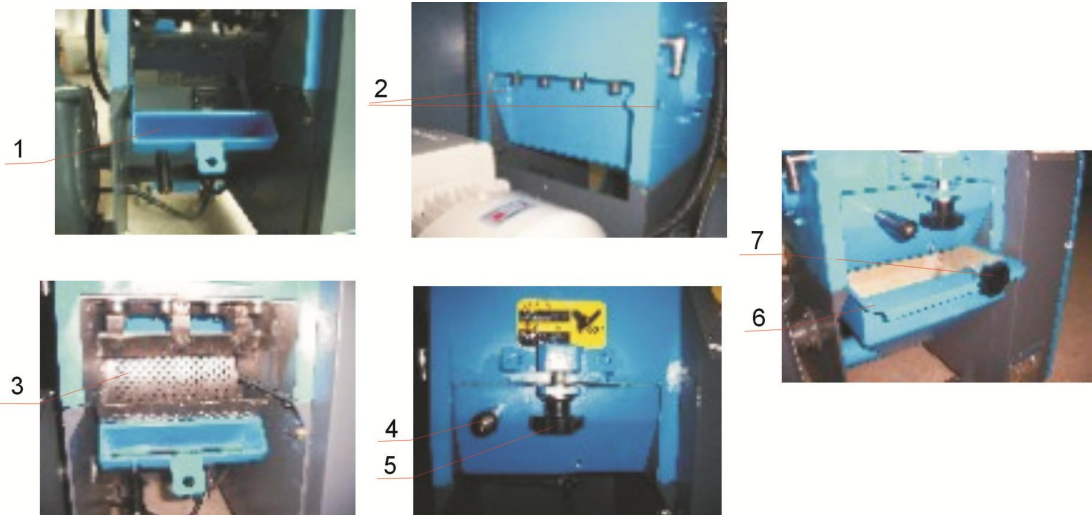
- 1) Install the rolling motor 2 on its fix plate and tighten its fix screw 1.
- 2) Install two sprocket wheels 3, 4 respectively on the motor and the driving wheel shaft.
- 3) Install the chain 5 on two sprocket wheels, making the chain correspond with the wheel. Rotate the driving wheel shaft and the motor shaft to render the chain fully matching the sprocket wheel under even stress.
- 4) Install the motor and the outer chain cover.
- 5) Connect the rolling device 6 with the cutting chamber 9 by the shaft pin 7.
- 6) Install the supporting block 8 of the rolling device.



Picture 3-11: Installation of Rolling Device

### 3.7 Installation of Screen Frame, Screen and Storage Box

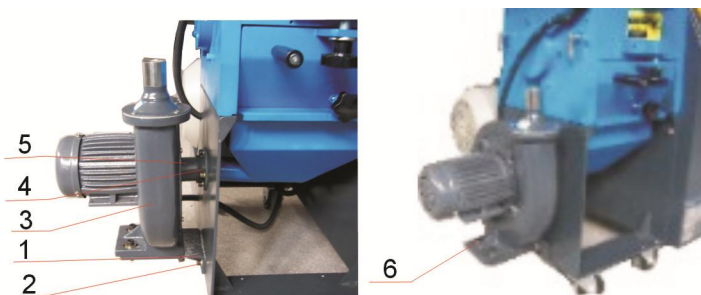
- 1) Put the screen frame 1 at the end of the cutting chamber; insert the rotary shaft pins at both sides 2.
- 2) Put the screen 3 on the screen frame.
- 3) Support the handle of screen frame 4, lift the frame, and lock the frame by the hexagonal handle 5 on the pulverizing room.
- 4) Insert the storage box 6 in the guide slot at both sides of lateral plate.
- 5) Lock the storage box by the hexagonal handle 7 on the screen frame.



Picture 3-12: Installation of Screen Frame, Screen and Storage Box

### 3.8 Installation of Material Feed Blower

- 1) Install the fix plate of fan 1 on the granulator frame and tighten the fix screw 2.
- 2) Insert the feed line 5 of the material feed blower 3 in the extraction line 4 of granulator.
- 3) Install the material feed blower 3 on its fix plate 1; tighten the fix screw 6.
- 4) Connect the power line as per the circuit diagram.



Picture 3-13: Installation of Material Feed Blower



#### Warning!

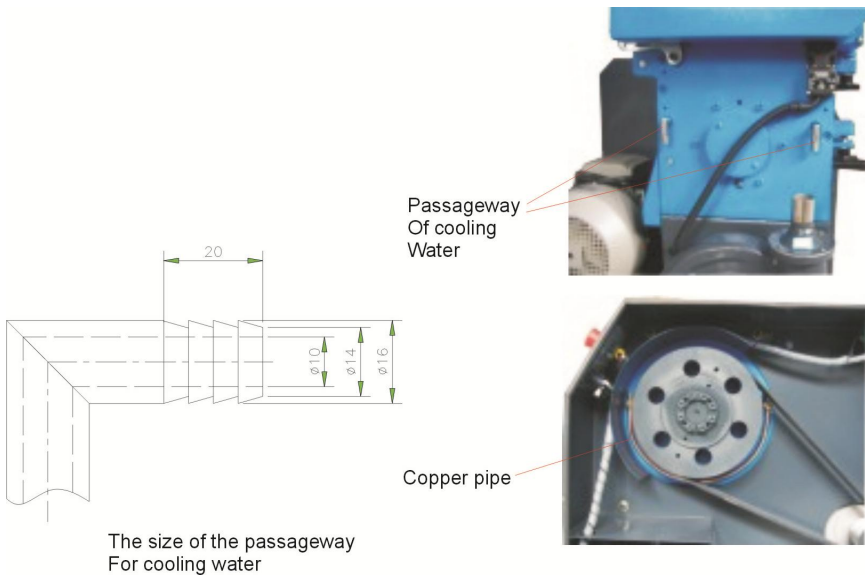
When the material feed blower is rotating in wrong direction, its working capability will decrease by no less than 25%! Please cut off the power supply, exchange two lines among three lines of the fan in the control cabinet.



First close the main power switch before the power supply of blower is connected; otherwise, risk of electric shock may be encountered!

### 3.9 Installation of Cooling Device

Put "1/2" cooling waterpipe into the passageway for the cooling water.



Picture 3-14: Installation of Cooling Device

## 4. Operation Guide

### 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.
- 2) Check the space of the cutting tools to see whether the lockup screws of the blades are tightened (torque 215Nm).



Caution!

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

#### 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.

#### 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.

## 4.2 Circuit Connection

The installation of the granulator's circuit must be conducted by the professional electricians.

- 1) Connect granulator to the power.
- 2) Connect the transmission belt clockWise.

#### 4.2.1 Check the Running Direction of the Motor

- 1) Open the door to check whether the feed box is closed.
- 2) Ensure the main power switch is in ON position.

- 3) Check the emergency stop.
- 4) Start the granulator via pressing the START button and stop the granulator via pressing the STOP button.
- 5) The granulator needs some time to fully come to a halt, After full stop, check whether the running direction is clockWise.

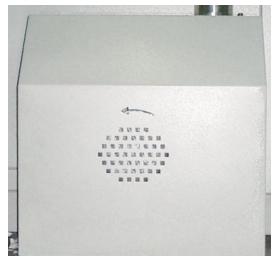


#### CAUTION!

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.

#### 4.2.2 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 4-1: Check the Running Direction of the Blower



#### 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.

## 4.3 Opening the Feed Box and the Storage Box



Note!

Prior to opening the feed box and the storage box, cut off the main switch and the power supply on the granulator.



Caution!

The blade is very sharp-edged and easy to injure people.

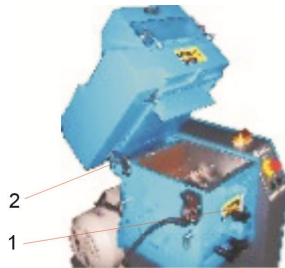
### 4.3.1 Opening the Feed Box

- 1) Check if the feed box is empty and then cut off the main power.
- 2) Loosen the long hexagonal screw 1 and the feed box.
- 3) Open the feed box backWards; use the supporting block 2 to support the feed box to avoid its falling.



Note!

The feed box is very heavy. When opening or closing it, be careful of its sudden falling to cause bodily injury!



Picture 4-2: Opening the Feed Box

### 4.3.2 Opening the Storage Box, Screen and its Frame

- 1) Cut off the power supply of granulator.
- 2) Loosen the long hexagonal screw 1.
- 3) Draw out the storage box 2.
- 4) Support by hand the handle of frame 3; loosen the long hexagonal screw 4 of screen frame.
- 5) Open the screen frame and take out the screen 5.



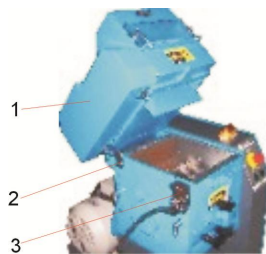


Picture 4-3: Opening the Storage Box, Screen and its Frame

## 4.4 Closing Feed Box and Storage Box

### 4.4.1 Closing the Feed Box

- 1) Check no powder remains on the Interface surface or corner.
- 2) Loosen the supporting plate 2 of the feed box.
- 3) Close the feed box 1 forwards.
- 4) Check full closing of safety switches 3.



Picture 4-4: Closing the Feed Box



Note!

The feed box is very heavy. When opening or closing it, be careful of its sudden falling to cause bodily injury!

### 4.4.2 Closing the Screen and its Frame



Note!

Before closing, clean the interface surface.

Be careful!

Don't get squeezed and injured.

Check no powder or leftover material around the cutting chamber, screen and screen frame; timely remove them if any.

- 1) Put the screen 1 on the screen frame 2.
- 2) Support by hand the handle of frame 3, lift the frame and lock the frame by the long hexagonal screw 4 on the feed box.
- 3) Insert the storage box 6 in the guide slot at both sides of lateral plate. Lock the storage box by the hexagonal handle 5 on the screen frame.



Picture 4-5: Closing the Screen and its Frame

#### 4.5 Machine Switch-on and Switch-off

The granulator is controlled by the main power switch, safety switch, button of "start/stop" and emergency stop switch. The main power switch of granulator is installed on the front panel. Turning of this switch is made to control switch on or switch off the machine.



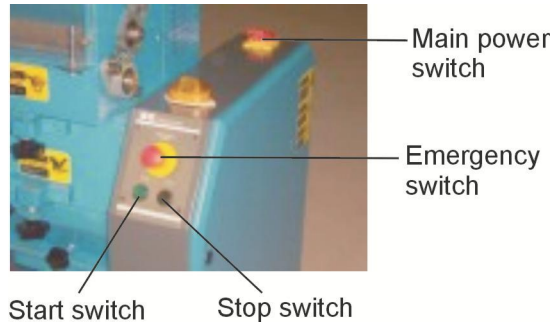
Picture 4-6: Machine Switch-on and Switch-off

Button of "start/stop"

The granulator is equipped with the button of "start/stop" to control the operations of "start" and "stop".

Emergency stop switch:

In addition, the machine is also designed to have an emergency stop switch used in such cases that any accident occurs or urgent stop is needed.



Picture 4-7: Button of Start / Stop, Emergency Stop Switch



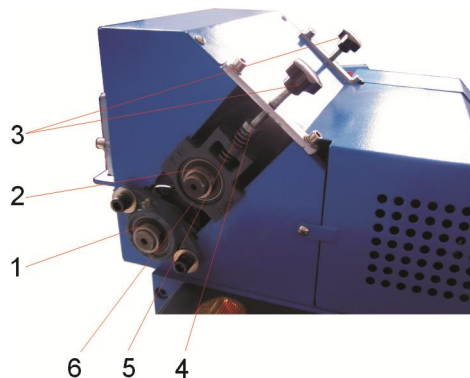
**Note!**

The machine cannot stop until the material in the feed box and the cutting chamber has been totally granulated. Otherwise, the left material may block the rotor and the machine may trip due to motor overload when it restarts.

### 4.6 Adjustment of Rolling Device

The rolling device of granulator can adjust the clearance between the driving wheel 1 and the driven wheel 2 depending on the thickness of surplus to be granulated.

Rotate the hexagonal screw handles 3 at both sides at the same time; press the pressure head 4 and compression spring 5 to enable the bearing pedestal of the driven wheel slides in the guide slot for the purpose of adjusting the clearance with the driving wheel.



Picture 4-8: Adjustment of Rolling Device

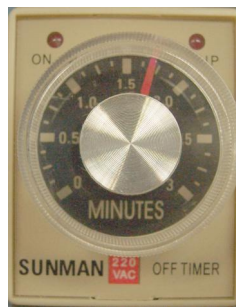


**Note!**

Keep the same clearances at both side between the driven wheel and the driving wheel. Otherwise the rolled material is not pressed under balance to impact the cutting capability.

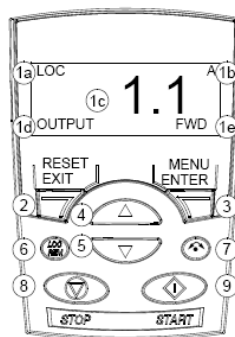
### 4.7 Timer (With Material Feed Blower)

When the granulator is shutdown, the timer can extend the working time of the material feed blower to send all granulated material out of the storage box. The set time of the timer varies from the diameter of screen hole and granulating capability.



Picture 4-9: Timer

### 4.8 Transducer



Picture 4-10: Transducer

#### 4.8.1 About Function Indicators

No.	Functions
1	LCD display – divided into five display areas: a. top left corner – control area: LOC: transducer under local control means it is controlled by panel. REM: transducer under remote control means it is controlled via I/O terminals or feildbus. b. top right corner-display value unit. c. middle-variable; usually it displays parameters and signal, menu or lists, also displays error code in control panel. d. bottom left corner and middle – control panel status: OUTPUT: output mode PAR: parameter mode MENU: menu e. bottom right corner– status displayer: FWD (forward) / REV ( reverse): motor rotation Slow flash: already stop; Fast flash: motor’s running but it is not at setting point; Stable: running at setting point; Setting: value displaying is modifiable (under parameter and set point modes )
2	RESET/EXIT – back to previous menu, and modification is not saved. Fulfill fault reset under output and fault modes.
3	MENU/ENTER – enter next nemu. Under parameters mode, displayed values will be saved as new setting values.
4	UP – <ul style="list-style-type: none"> <li>• scroll menu or list upwards</li> <li>• add values if selecting one of parameters</li> <li>• add set point under set point mode</li> </ul> Keep pressing the key can fulfill quick modify
5	Down – <ul style="list-style-type: none"> <li>• scroll menu or list downwards</li> <li>• reduce values if selecting one of parameters</li> <li>• reduce set point under set point mode</li> </ul> Keep pressing the key can fulfill quick modify
6	LOC/REM – shift between Local and Remote controls
7	DIR – change motor rotation
8	STOP – stop transducer under local control
9	START – start transducer under local control

Operate control panel based on Help information of menu and button. Select one of items such as operation mode or parameters by scrolling screen and pressing button. Press button when the item you selected is displayed. Also you may use keys to return previous interface and not save modifications.

Basic control panel include five modes: output, set point, parameter, copy and

fault. If fault takes place and alarm sounds, control panel shifts into fault mode automatically and display fault codes. Under output or fault mode, users can reset faults and alarms. After connecting power supply, control panel enters output mode, where users can launch, stop, commutate and shift between local and remote controls, also users can monitor up to three actual values. For other operations, users need to enter menu and select modes.

#### 4.8.2 Default Parameters Setting of Transducer

NO.	Code	Meaning of parameters	Default value	Remark
1	1001	Digit input to control start/stop	1	
2	1003	Forward rotation	1	
3	1103	Control panel is given by outer signals	0	
4	1401	Faults output	4	
5	2007	Min. frequency	10	
6	2008	Max. frequency	50	
7	2202	Acceleration time	5	
8	2203	Deceleration time	3	
9	9901	Language shift	0 for En/1 for CN	

Below parameters are set based on nameplate of motor:

9905 (motor voltage), 9906 (motor current), 9907 (motor frequency),  
9908 (motor rotate speed), 9909 (motor power)



Note!

LOC/REM key in panel should be shifted to REM (Remote control).

## 5. Trouble-shooting

### 5.1 Granulator Can Not Work

- 1) Check if the emergency stop has been reset or not. If not, rotate the button anti-clockwise to reset it.
- 2) Check if the safety switch between feed box and storage box is completely closed. If not, machine can not be started.
- 3) Checking overload protector of the motor.

The overload protector in the electrical control box will work if the motor overloads. Test white key (A) turn left, press the “Reset” button (B) to reset it. Before it starts again, check whether there is any powder left in the granulator.

- 4) Check the overload protector of the feeding blower's motor.

If the feeding blower does not run, the granulator can run neither. Check the motor protector in the electric control box. If the protector is closed, the switch will be at “0” position, reset it to “1” position. Check if there’s no leftover, then re-start the machine. Test the white key(A) turn left, press” Reset” key (B) to reset it.

- 5) Check the clearance between the 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. Protector will be tripped if motor is overload. Blades should be checked, replaced or adjusted between the blades.

- 6) The contactor is burnt down or the control circuit is break off.



NO.	Fault	Possible Reason	Trouble Shooting
1	After open the main power switch, the system can not get started by pressing startup button.	Disconnect with power. Emergency stop button hasn't been reset. The main power is damaged. The circuit breaker is not shut off or it is damaged. The circuit fault. The fuse of the control circuit is melted. Control transformer is damaged. Safety switch on-off action. The thermo overload relay trip Off. The frequency converter's fault.	Connect to power. Reset emergency stop button. Change power switch. Check the circuit breaker. Check the power line. Replace the fuse after wiring checking. Replace the transformer. Check the safety switch. Reset the thermo overload relay. Press down the frequency converter's fault reset button.
2	After open the main power switch, the motor is buzzing when press down startup button.	Overlow voltage. Default phase. Motor seized. Motor faults.	Check the power. Check the power. Check the cutting chamber. Check the motor.
3	The mixing motor can not get started after the system has been started.	The parameter setup fault. The frequency converter fault. The contactor K2 is damaged. The clearance between the upper and lower roller are too narrow.	Adjust the frequency converter's parameter. Change/check the frequency converter. Check /change contactor. Adjust clearance between the castors.
4	The machine suddenly comes to fully stop during operation.	The granulating motor overloads. The material suction motor overloads. Mixing motor overloads. Voltage fluctuation range is too large.	Check the granulating motor and its relevant components. Check the suction motor. Check the mixing motor. Improve the power quality.

## 5.2 Stop Due to Other Reasons

The connection of safety or limit switch is damaged or loosen, which may also result in machine stop.

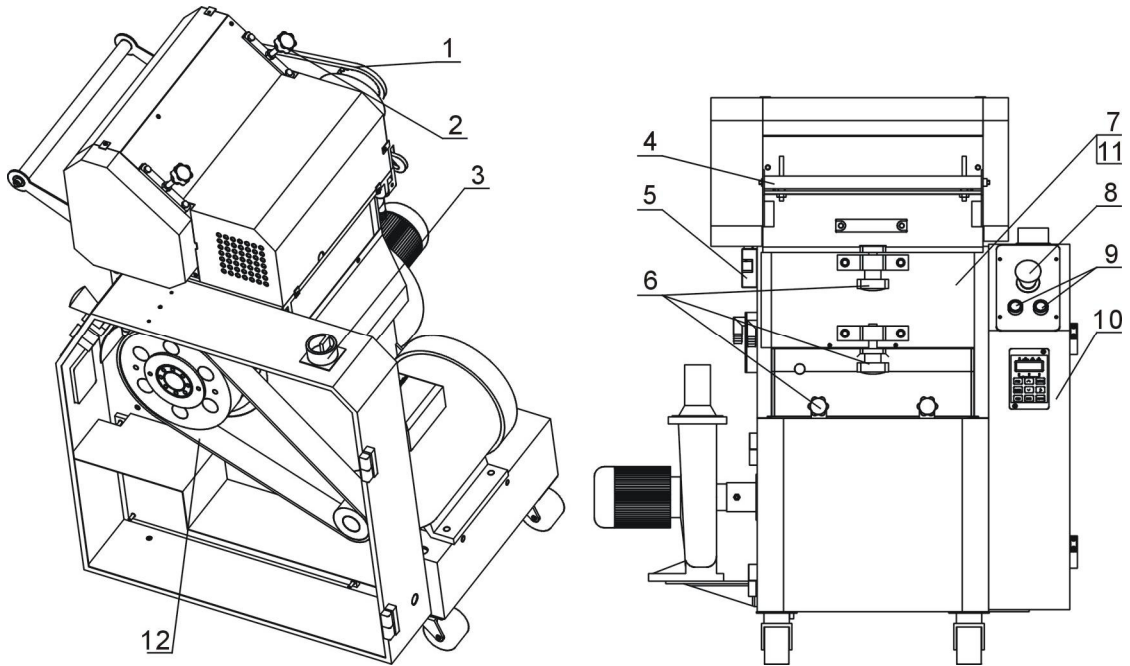


**Caution!**

Do not turn off safety switch or control switch.



## 6. Maintenance and Repair



1. Regularly grease the chain on the driven sprocket. Period: Daily.
2. Check the star knob used to tighten the driven wheel. Period: Daily.
3. Check the main power switch. Period: Daily
4. Check the rolling device. Period: Daily.
5. Check the safety switch. Period: Daily.
6. Check the all the screws on the feeding chamber and cutting chamber. Period: Daily.
7. Check whether there is metal in the cutting chamber. Period: Daily.
8. Check the emergency stop button. Period: Daily.
9. Check the start/stop button. Period: Daily.
10. Check the contactors of the electrical components in the cabinet. Period: Weekly.
11. Check the screws on the fixed blades and rotating blades. Period: Monthly.
12. Check the belt tension. Period: Semiyearly or after a full load operation of 20-30 hours.

## 6.1 Repair

All the repair must be done by professionals to avoid damage to machine and harm to human body.

### 6.1.1 Blade replacement



Note!

The rotary blade of granulator shall be under balanced stress. When blade installation, it may turn itself due to unbalanced stress!



Caution!

When the center of gravity of blade is unstable, it can still turn itself.



The blade is very sharp-edged. Gloves shall be put on prior to operation.

Be very careful when operating to avoid injury! When maintenance, preservation or cutting tool replacement, please refer to 3.4 for installation of static blade and rotary blade. apply the thread fixative (light green LOCTITE243 recommended) at the thread interface Upon fixing each screw, to fix it and prevent it from disengagement.



Warning!

When dismantling or installing the rotary blade, no outside force can help you. Replace the blade yourself to minimize the chance of injuring more people.



Warning!

To avoid rotating, take a plank to block the rotary blade.  
Be careful when doing so because the blade is very sharp-edged.



Once the blade is replaced, replace the screws and gaskets with new ones.

Before blade replacement, open the feed box and remove the storage box, screen and screen frame.

### 1) Dismantle the static blade



#### Note!

To prevent the cutting tool from self rotating, take a plank to block it.

1. Take off the screw and the gasket.
2. Take out the static blade.
3. Clean the installation surface of the blade.

### 2) Dismantle the rotary blade

1. Open the feed box.
2. Loosen the hexagonal screw on the blade rest.
- c. Clean the whole rotary blade and the cutting chamber.



#### Caution!

When loosening the last screw, you must press the blade block and the blade to avoid any injury.

### 3) Installation of blade

Carefully clean the static blade and the rotary blade before their installation.



#### Warning!

Once the blade is replaced, the screw and the gasket shall be totally replaced.

First install the rear static blade and then the front one; install the rotary blade afterwards. See 3.4 Installation of static blade and rotary blade for detailed installation steps.

## 6.2 Transmission

### 6.2.1 Routine Preservation of Tooth Belt

The tooth belt is provided for the granulator according to the power of motor.

#### 1) Check the tooth belt

After running for 20~30 hours with full load, check the tension of ooth belt and its operation; then monthly check its wearing.

#### 2) Check the tension of tooth belt every 6 months

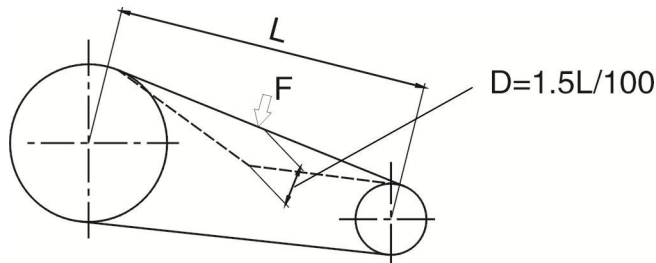
Open the side plate of the control cabinet at the right of the granulator and check any damage or wearing of belt.



Note!

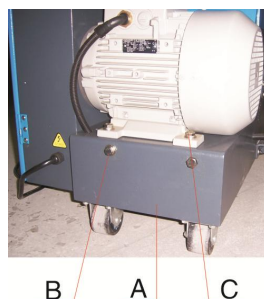
Don't put your hand between the belt and the belt pulley to avoid any injury.

Check the tension of belt and adjust it when necessary. Apply force to check the tension of the belt. Apply the force  $F$  (150N) in the middle of belt pulley and measure the offset at the same time (the offset size depends on the center-to-center spacing  $L$  of belt pulley).



### 6.2.2 Adjustment of Tooth Belt

- 1) Loosen four fix bolts (C) on the motor fix plate (A).
- 2) Apply two movable bolts (B) to change the spacing between big and small belt pulleys for the purpose of adjusting the tension of the belt.
- 3) Fasten the movable bolt (B).
- 4) Fasten the fix bolt(C).



Picture 6-1: Adjustment of Tooth Belt

## 6.3 Lubricating of Bearing

### 6.3.1 Lubrication

Xin Chang Long: FX-00

FX-000

Bp: BP Grease LGEP 2

ESSO: Beacon Ep2, Beacon EP2

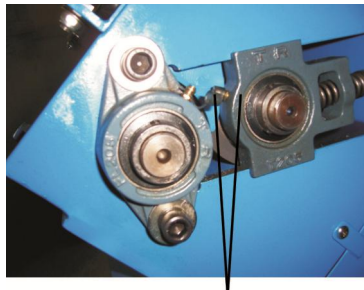
Mobil: Mobilux EP2

Shell: Shell Alvania EP2

Texaco: Multifak Ep2, Novotex Grease EP2

### 6.3.2 Please Grease the Bearing with Lubricating Oils Periodically

Inject lubricating oil via throat with an oil greaser. If the granulator is not used for a long time, please grease anti-rust oil in blade rest, fixed blade, rotating blade, cutting chamber and screws to avoid dust.



Oil filler hole

Picture 6-2: Oil Filler Hole

## 6.4 Maintenance

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



**CAUTION!**

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

### 6.4.1 Daily Check

1) There is acryl shutter in the feed box. If the 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 an ti-clockWise to reset the Emergency Stop.

#### 6.4.2 Weekly Check

- 1) Check the power wire to see whether there is any damage. If so, replace it immediately.
- 2) Check the safety switch.

#### 6.4.3 Monthly Check

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

### 6.5 Cleaning



When opening the feed box, be careful not to touch the blade that is very sharp-edged and may injure people.

- 1) Before the machine is stopped, check the feed box is empty.
- 2) Clean the outer surface of feed box.
- 3) Clean the material fender of feed box with the deduster.
- 4) Close the main power switch.
- 5) Loosen the long hexagonal screw and then open backWards the feed box.  
Support the feed box with the supporting plate.
- 6) Clean the inner surface of feed box.
- 7) Remove the storage box.
- 8) Clean the storage box.
- 9) Clean the cutting chamber internally and externally.
- 10) Clean the belt pulley with bright shining dedusting agent.

## 6.6 Maintenance and Preservation of Frequency Converter



Note!

Only professional staff can maintain and preserve the frequency converter; otherwise it may result in bodily injury or damage to the granulator!



Note!

Only professional staff can check the signal during running; otherwise it may result in bodily injury or damage to the granulator!



Danger!

Maintenance and preservation of frequency converter cannot be carried out unless the light "harge" of the converter is off; otherwise it may result in bodily injury or damage to the facilities!

### 6.6.1 Routine Preservation

#### Routine check activities

- 1) Check any abnormal change of sound during motor running.
- 2) Check any material vibration during motor running.
- 3) Check any change of frequency converter installation environment.
- 4) Check normal working of the heat dissipate fan of the converter.
- 5) Check the converter is not overheated.

#### Routine cleaning

- 1) Keep the converter clean all the time.
- 2) Effectively remove oil stain from the heat dissipate fan of the converter.

### 6.6.2 Periodic Check

- 1) Check the air duct and periodically clean it.
- 2) Check the screw isn't loosened.
- 3) Check the converter isn't eroded.
- 4) Check any arcing of terminal.
- 5) Test of main circuit insulation.

## 6.7 Maintenance Schedule

### 6.7.1 About the Machine

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

Voltage \_\_\_\_\_  $\Phi$  \_\_\_\_\_ V Frequency \_\_\_\_\_ Hz Power \_\_\_\_\_ kW

### 6.7.2 Check After Installation

- Check if pipe connections are firmly locked by clips.
- Check the gap between fixed blade and rotating blade. (0.1~0.15mm).
- 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.

### 6.7.3 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.

### 6.7.4 Weekly Check

- Check all the electrical cables.
- Check if there are loose connections of electrical components.
- 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

### 6.7.5 Monthly Check

- Check the condition of rolling device.



- Check the delay function of the material feed motor.
- Check the motor overload protector.
- Check the tightness of the blades.
- Check whether clamp ring of pulley is fastened.
- Check belt tension.

#### 6.7.6 Check Half-yearly or Every 1000 Running Hours

- Check the tensility of the belt
- Check the lubrication of bearing、 motor and hopper's rotating shaft
- Check the two bearing blocks

#### 6.7.7 3 year Checking

- PC board renewal.
- No fuse breaker renewal.