

SGF-26 series
Roll-feed Granulator

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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.



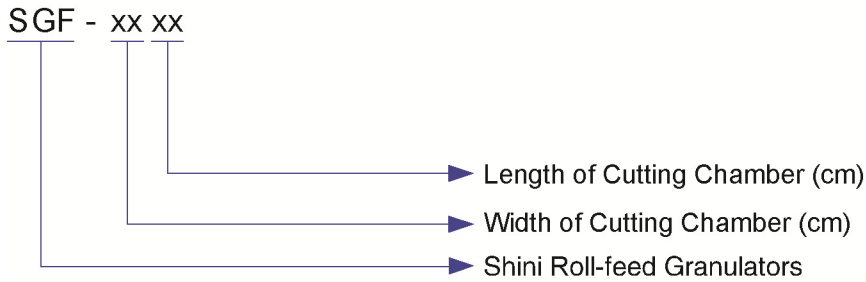
Forbidden to process flammable or toxic material!

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-2660

1.1 Coding Principle



1.2 Feature

- Applicable to process extruded waste films and adopt high safety operation design.
- Cutters with best cutting angle and adjustable V rotating blades.
- Integrated material scrolling devices into one unit can facilitate the granulating work by easily scrolling the material into cutting chamber. Equipped with anti-cut protective device to prevent materials be rolled cut.
- Motor overload protective function.
- React with assembly line or operated by specialized person.
- Attractive and compact design save more space.
- Width adjustable feeding inlet of 900 or below and thickness adjust designs facilitate the different film granulating applications.
- Scrolling motor has a frequency convertor to satisfy different film cutting capacity.
- 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.
- Equipped with cyclone dust collector, which can effectively separate regrinds and air and is also convenient for regrinds collection.
- Adjustable range of feeding speed 5~50m/min (16.4~164feet/min).
- Thickness range of material 0.5~4mm/ 0.02”~0.16”.

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.

Headquarter and Taipei factory:

Tel: (886) 2 2680 9119

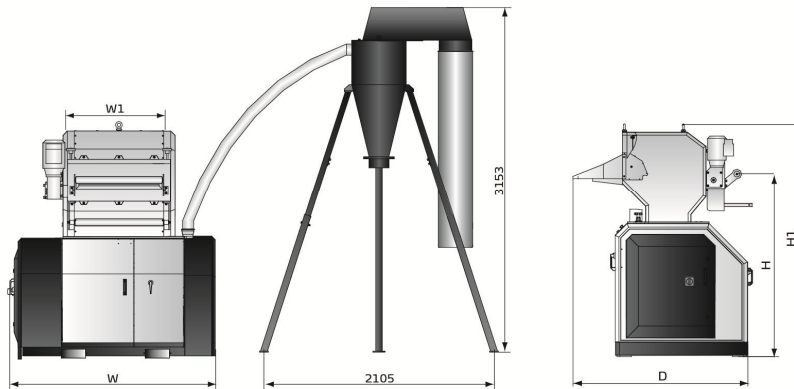
Shini Plastics Technologies (Dongguan), Inc:

Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.:

Tel: (91) 250 3021 166

1.3 Technical Specifications



Picture 1-1: Dimensions (Standard)

Table 1-1: Technical Specifications

Model	SGF-2660	SGF-2690
Ver.	B	B
Motor Power (kW, 50 / 60Hz)	7.5 / 8.3	15 / 17.3
Rotating Speed (rpm, 50/60Hz)	410 / 492	410 / 492
Scrolling Power (kW, 50 / 60Hz)	0.75 / 0.83	0.75 / 0.83
Conveying Blower Power (kW, 50 / 60Hz)	2.2 / 2.44	2.2 / 2.6
Scrolling Speed (rpm)	*	*
Knife Materia	SKD11	SKD11
Number of Fixed Blades	3×2	3×2
Number of Rotating Blades	3×2	3×2
Maximum Granulating Capacity (kg / h)	200	300
Noise Level dB (Max.)	90~95	90~95
Cooling Loop	✓	✓
Dia. of Screen Mesh	Φ10	Φ10
Special Screens	○	○
Dimensions		
H (mm)	1515	1515
H1 (mm)	1932	1932
W (mm)	1555	1930
W1 (mm)	600	900
D (mm)	1410	1410
Weight (kg)	1150	1570

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: 3Φ, 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.



Regularly clean dust in air from air inlet.



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!

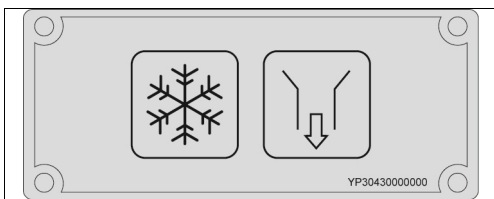
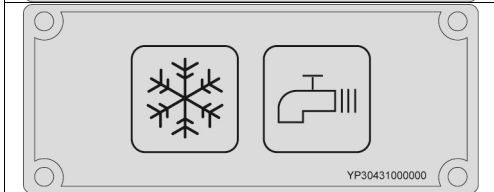
Do not use damaged or parts that lack frequency converter, because there is a risk of being hurt.



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-26 series of granulators are packed in plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
- 2) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.
- 3) The structure of the machine is well-balanced, although it should also be handled with care when lifting the machine for fear of falling down.

- 4) The machine and its attached parts can be kept at a temperature from -25°C to $+55^{\circ}\text{C}$ for long distance transportation and for a short distance, it can be transported with temperature under $+70^{\circ}\text{C}$.

Storage

- 1) SGF-26 series should be stored indoors with temperature kept from 5°C to 40°C and humidity below 80%.
- 2) Disconnect all power supply and turn off main switch and 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, CO₂ dry powder fire extinguisher should be applied.



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



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



When material's width is larger than feed port's, please cut it off until the length is shorter than feed port's.



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 0.2~6mm.

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:

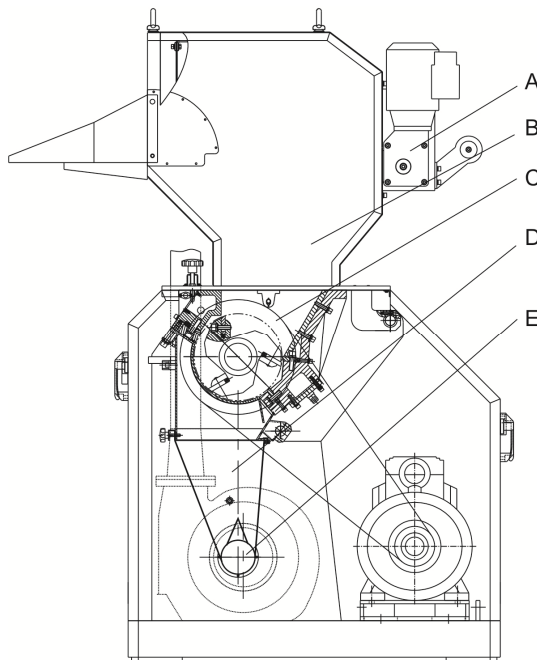
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible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

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

2.1.1 Working Principle



Picture 2-1: Working Principle

Parts name:

A. Convey device B. Feeding box C. Cutting chamber D. Screen bracket

E. Extraction line

The film materials are conveyed into the feed box (B) through the feeding device (A) on the feed box, and then to the cutting chamber (C). In the cutting chamber, the rotating blades against the fixed blades are rotating oppositely to crush the film materials, and the size of regrind materials are controlled by the screen size on the bracket (D). The regrind materials are discharged into the storage box through the screen, and then be discharged via the output pipe (E). The built-out feeding blower adsorbs the regrind materials into the cyclone separator to separate the

materials and air.

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 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.

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:

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



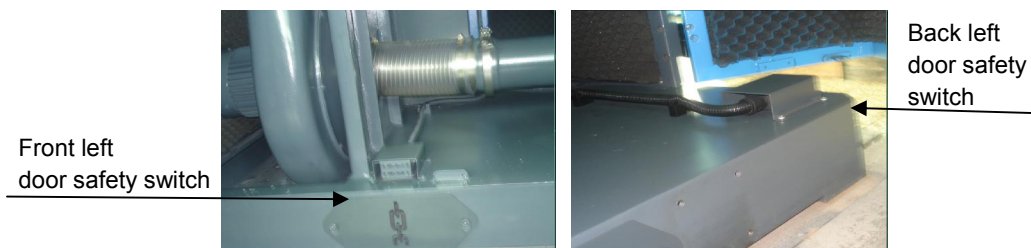
Picture 2-2: Button of Start / Stop, Emergency Stop Switch

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.

2.2.2 Safety Switch

There is a safety switch of independent operating parts on granulator. Change of safety switch's position will make the operating parts separate from the safety switch, which will cut off the power supply. There are two safety switches on the granulator: one is located behind the front left door while the other one is in front of the back left door.

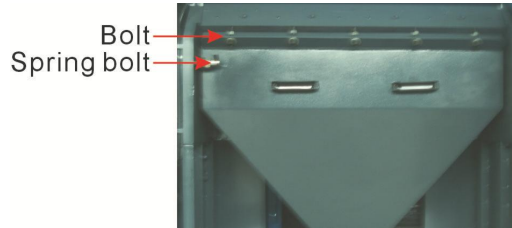


Picture 2-3: Safety Switch

2.2.3 Lock

The lock of feed box, screen bracket 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.

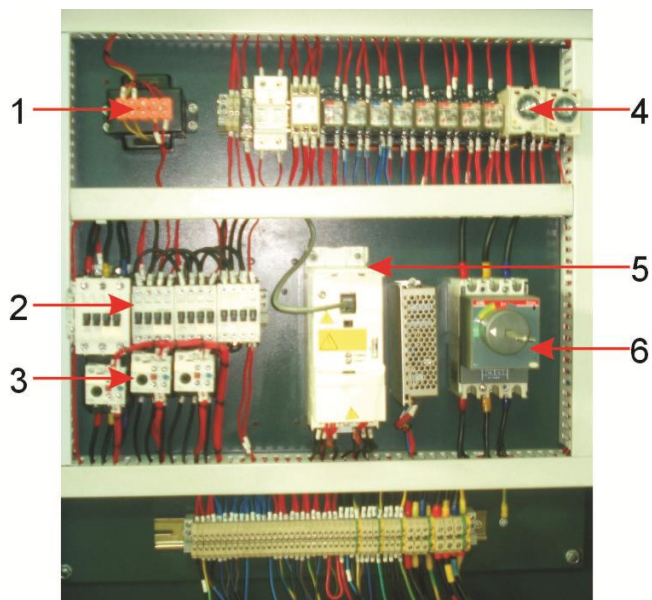
The screen bracket is locked by bolts. It's necessary to loosen the bolts when opening the screen bracket. The loosening will last a quite long period of time, which is long enough to make the granulator completely stops, and thus to avoid personal injury. Besides, an adjustable spring bolt is installed, which can avoid personal injury caused by the rushing down of screen bracket after the bolts are all took off.



Picture 2-4: Hexagonal Handle

Note: Befroe starting up, check if the screen bracket and front block have been tightened.

2.3 Electrical Components Instruction



Picture 2-5: Electrical Components Instruction

1. Frequency converter, which controls the rotating speed of the scrolling motor.
2. Transformer, provide suitable voltage for the control circuit.
3. Timer, which can setup the suction blower's delay time.
4. Thermo overload relay, which can protect the motor and suction blower when they are overloading or phase opening.
5. Contactor, which connects or disconnects the main circuit.
6. Circuit breaker, which perform the function of short circuit protection or circuit isolation.

2.4 Optional Accessories

2.4.1 Special screens

Special screens with different diameters ($\Phi 10\text{mm}/0.39''$ 、 $\Phi 12\text{mm}/0.47''$ are optional. Add "SS + screen diameter" at the end of the model code, e.g.: $\Phi 6\text{mm}$, add "SS06".



Picture 2-6: Screen

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.

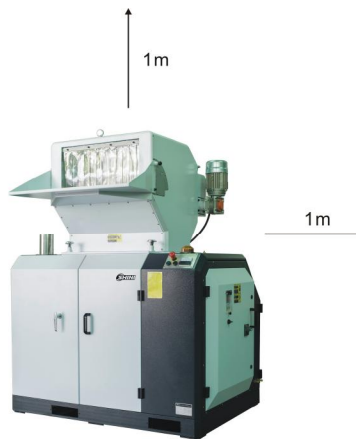


The power connection of the granulator should be carried out by professional electrician so to avoid electrical shock!

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 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

Steps of installation

- 1) Put the rotary blade into the groove of blade rest; its hole position shall match with the fixing hole position of blade rest. Then press the pressing blade and screw down the screws as well as the spring gasket until the blade doesn't shake (for easier adjustment of the clearance between rotary blade and static blade).
- 2) Install the front and back pressing blocks and fixed blade on front and back blocks. Screw down the screws until the blade doesn't shake.
- 3) Use filler gauge to test the clearance between fixed blade and rotary blade. The normal clearance is 0.1~0.15mm. If not within this scope, adjust fixed blade and rotary blade to reach the scope and then screw down their screws. them.



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 personal injury and machine damage, the fixing screw of blades shall be tightened well.

3.5 Installation of Belt and Belt Pulley

- 1) Put the key into keyway of shaft and then install the big belt pulley.



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

- 2) Put the lock ring into the round hole of big belt pulley to make its hole position match with the big belt pulley and then tighten the inner hexagon screw.
- 3) Use dial indicator to adjust big belt pulley's balance: Put the dial indicator tightly against the big belt pulley and then turn the big belt pulley to see whether the needle of the dial indicator points at the range within 0~0.1mm.



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

- 4) Tighten 8 inner hexagon screws on lock ring after balancing.
- 5) Put the small belt pulley on the shaft of motor and tighten 6 inner hexagon screws.
- 6) Put the motor on motor fixing board. Then push it forward to shorten the distance between the big and small belt pulley while adjusting and tightening 4 fixing screws.



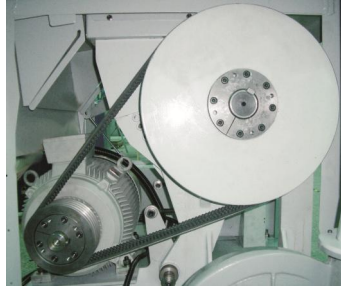
Picture 3-6: Installation of Belt and Belt Pulley 3

- 7) Adjust the big and small belt pulley to be parallel and level: Put level ruler between the big and small belt pulley. See whether the mercury is in the middle. If it's not, then adjust the small belt pulley (note: It's not allowed to adjust the big one) to make the small belt pulley level with the big one.



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

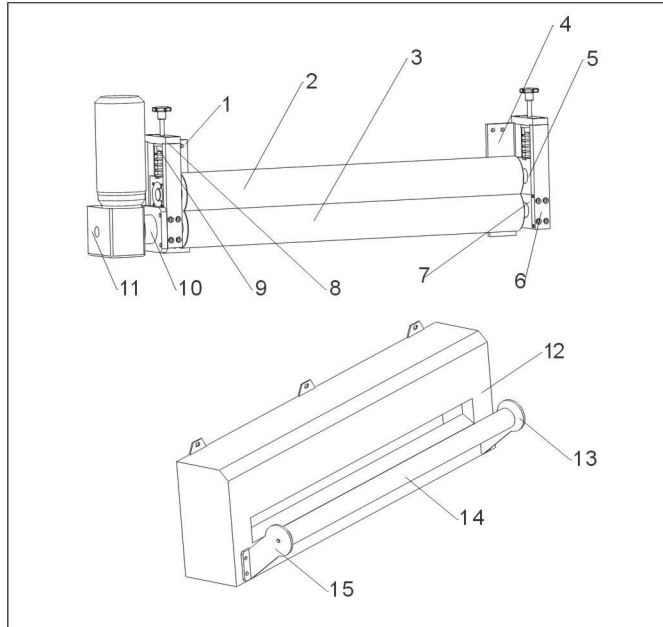
- 8) Put the belt on and push the motor to the right as well as tighten the positioning screw to make the 4 belts bear stress evenly and pull the belts tight. Then tighten the positioning screws.



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

3.6 Installation of Convey Device

- 1) Put the driving feed roller 3 into fixed bearing block 7. Then install the bearing on bearing block and connect it with screws to the right mounting plate 1, left mounting plate 4 and left side plate of frame 6
- 2) Put the driven feed roller 2 into sliding bearing block 5 and install the bearing on bearing block. Then install them along the bearing block, left and right mounting plate and sliding groove on left side plate of frame
- 3) Put the pressure spring on the sliding bearing block 5 and then install the pressure spring block 9. Next, install the top board 8 of frame and fixing it by using screws.
- 4) After sealing the bearing block cover, use screws to connect the holes on right and left mounting plates to the feed box's back.
- 5) Install the gearmotor connection plate 10 and use screws to fix it on the right mounting plate and left side plate of frame. Then install gearmotor 11 and use screws to fix it on the gearmotor connection plate 10.
- 6) Use screws to fix left mounting plate 13 of guide roller and right mounting plate 15 of guide roller on the feeding device shield 12.
- 7) Use screws to fix guide roller 14 on the right and left mounting plate of guide rollers.
- 8) Use screws to fix convey device shield to the feed box's back.



Picture 3-9: Installation of Rolling Device

3.6.1 Installation of Dust Separating System



Read through chapter 3 before operation.

The connection of dust separating system's circuit should be carried out by a professional electrician.

Before first startup:

Parts of no paint are coated with anti-rust oil before leaving plant. The anti-rust oil should be cleaned off before operation.

Connection

- 1) Install a separator whose diameter is $\Phi 250\text{mm}$ under the cyclone dust collector.
- 2) Connect convey pipe whose diameter is $4" \times 2$.
- 3) Install dust collecting device, including air and dust collecting bag.
- 4) Put a container under separator to collect plastics which just go through dedusting.

Note: Connect the separator with a cloth bag to guarantee ventilation of cloth bag.

3.7 Installation of Screen Bracket and Screen

- 1) Put the screen bracket under the cutting chamber. Move the screen bracket to the arc of hinge pin hole seat and match the screen shaft with the hinge pin hole seat. Then install the pressing plate of hinge pin hole seat and tighten them by screws.
- 2) Fold downward the screen bracket and install the screen into it.
- 3) Raise the screen bracket. Shut down the spring bolt and lock the screw right ahead.

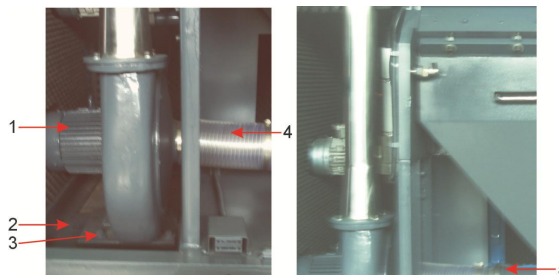
Note: The screw must be tightly locked in this step. Otherwise, it will cause distortion of screen bracket and broken of screws.



Picture 3-10: Installation of Screen Bracket and Screen

3.8 Installation of Feeding Blower

- 1) Install the blower 1 on the blower fixing plate 2 of granulator rack and tighten fixing screw 3.
- 2) Insert feeding blower 1 and feed-in pipe 5 into extraction line 4 of granulator.
- 3) Connect the power wire according to the circuit diagram.



Picture 3-11: Installation of Feeding Blower

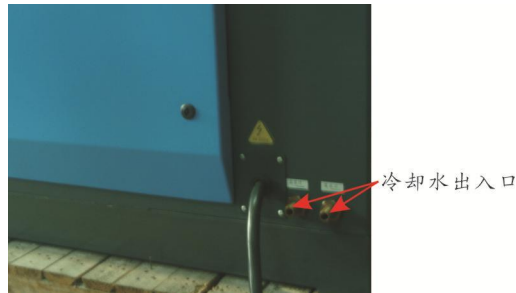
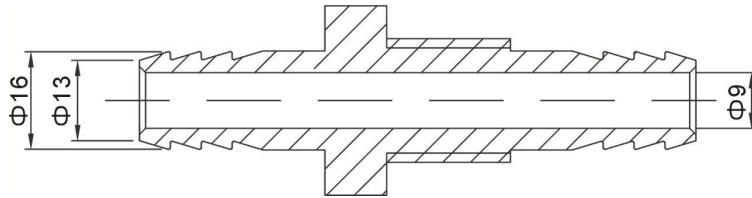
Warning: When the material feed blower is rotating in wrong direction, its working capability will decrease by no less than 25%! Please cut off the power supply, exchange two lines

among three lines of the fan in the control cabinet.

Note: 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

Connect the cooling water pipe to the cooling water access.



Picture 3-12: 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.

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.

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

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

Note: 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



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 star screw 1 and open the front and back door. Open the feed box through electronic handspike controller 2 on back left door.
- 3) With its self-locking function, electronic handspike can prevent feeding device drop out.

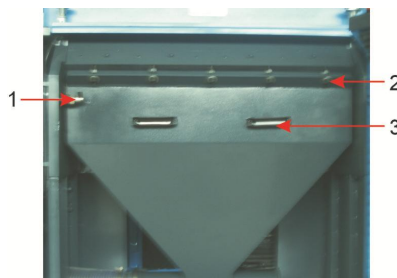
Note: The feed box is very heavy. When opening or closing it, be careful of its sudden falling to cause bodily injury!



Picture 4-2: Open Feed-in Device

4.3.2 Open the Screen and Screen Bracket

- 1) Turn off power supply of granulator
- 2) Loosen locking screw 2.
- 3) Loosen spring bolt 1.
- 4) Hold screen bracket handle 3 with hands and put the screen bracket down slowly.
- 5) Take out the screen.

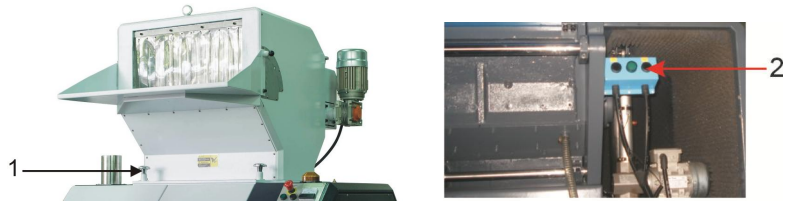


Picture 4-3: Open the Screen and Screen Bracket

4.4 Closing Feed Box and Screen Bracket

4.4.1 Closing the Feed Box

- 1) Make sure no powder remains on the Interface surface or corner.
- 2) Make sure all the doors open and close the feed box by operating electric handspike controller 2.
- 3) Tighten the star screw 1.



Picture 4-4: Close 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 Close the Screen and its Frame



Note!

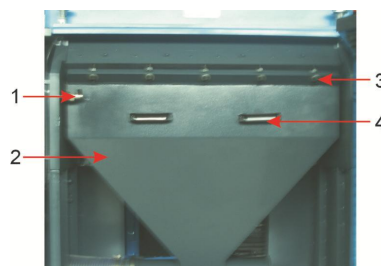
Before closing, clean the interface surface.

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) Hole the screen bracket handle 4 and raise the screen bracket. Then use spring bolt 4 to lock the screen bracket on side plate.
- 3) Lock the screen bracket on front block by using screw 3.



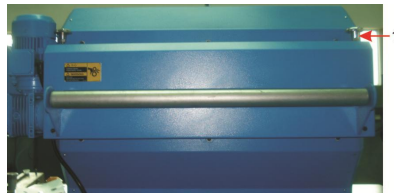
Picture 4-5: Close the Screen and its Frame

4.5 Adjustment of feeding Device

The feeding device of granulator can adjust the clearance between the driving wheel 1 and the driven wheel 2 according to the thickness of surplus materials 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.

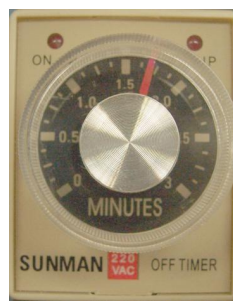


Picture 4-6: Adjustment of Rolling Device

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.

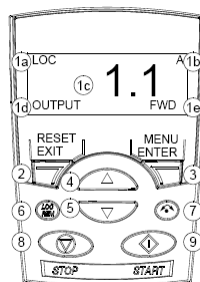
4.6 Timer (With Material Feed Blower)

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 4-7: Timer

4.7 Transducer



Picture 4-8: Transducer

4.7.1 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"> • scroll menu or list upwards • add values if selecting one of parameters • add set point under set point mode Keep pressing the key can fulfill quick modify
5	Down – <ul style="list-style-type: none"> • scroll menu or list downwards • reduce values if selecting one of parameters • reduce set point under set point mode 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.

4.7.2 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:

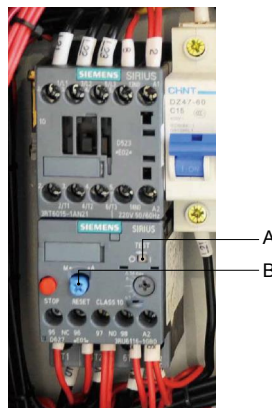
9905 (motor voltage), 9906 (motor current), 9907 (motor frequency),
9908 (motor rotate speed), 9909 (motor power)

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



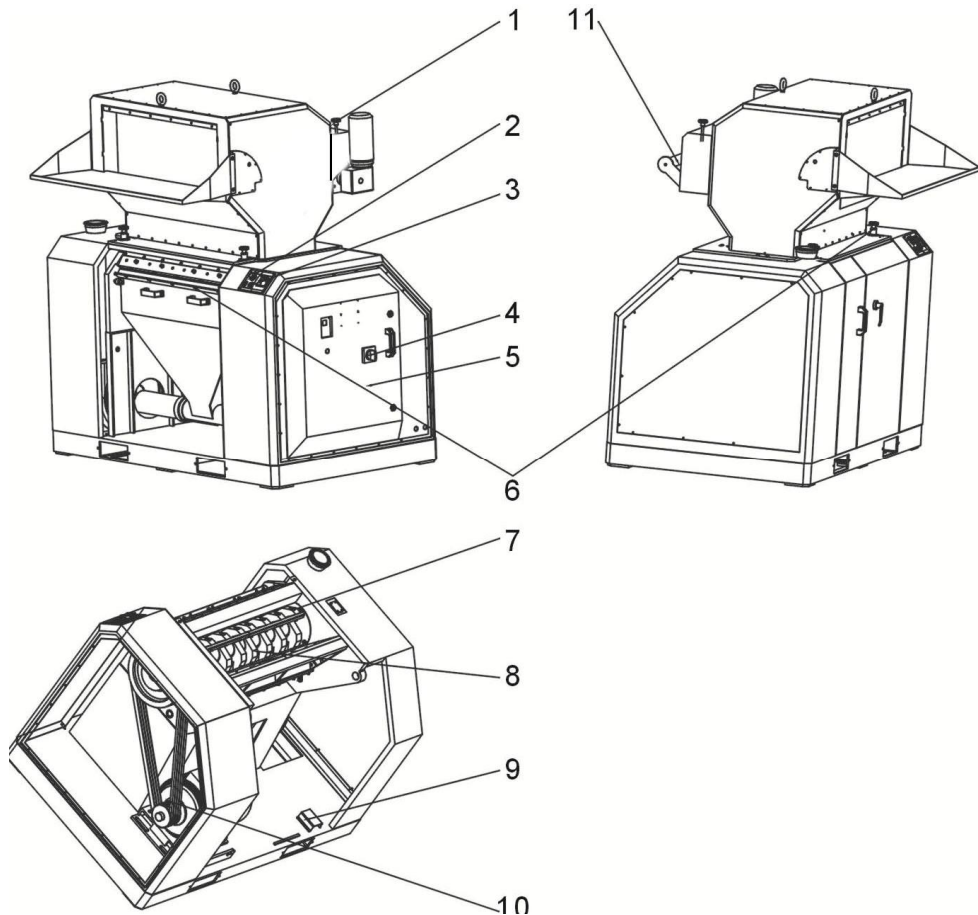
NO.	Fault	Possible Reason	Trouble Shooting
1	After open the main power switch, the system can not get started by pressing startup button.	Disconnect with power. Emergency stop button hasn't been reset. The main power is damaged. The circuit breaker is not shut off or it is damaged. The circuit fault. 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.

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

6. Maintenance and Repair



1. Check the tightness of driven roller wheel and whether the star handle moves smoothly. Cycle: daily.
2. Check whether the emergency stop switch works fine. Cycle: daily.
3. Check whether the start/stop key works fine. Cycle: daily.
4. Check whether the main power supply switch works fine. Cycle: daily.
5. Check the connection of electric components inside electric control box. Cycle: weekly.
6. Before starting up, check whether the screws of feed box and screen bracket on cutting chamber is tightly locked. Cycle: daily.
7. Check whether the fixing screws of fixed blade and rotary blade is loose. Cycle: monthly
8. Before starting up, check whether there is any metal inside cutting chamber. Cycle: daily

9. Check whether the safety switch works fine. Cycle: daily
10. Check the belt tension. Cycle: half a year (or after 20-30h of full-load operation)
11. Before starting up, check whether the rolling drum moves fine. Cycle: daily

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 maintaining, or replacing, please refer to 3.4 for installation of static blade and rotary blade. Imnfuse thread fixative (light green LOCTITE243 is recommended) into thread interface to fix each screw to prevent it from slip.



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.

6.2.2 Daily Maintenance of V belt

The granulator is equipped with V belt according to motor's power.

1) Check the V belt

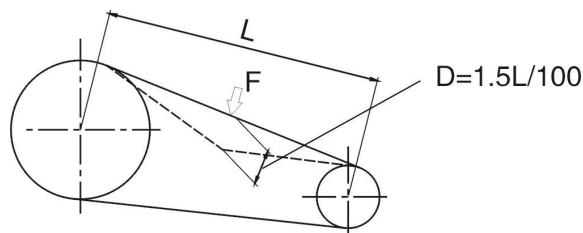
After 20-30h of full-load operation, it's necessary to check the belt tension and its operating situation. Check the wear situation of V belt every month after that.

2) Check the V belt every six months

Open the side plate of control box on the right side of granulator. Turn the V belt for several circles to check whether it's damaged.

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).



6.2.3 Adjustment of V belt

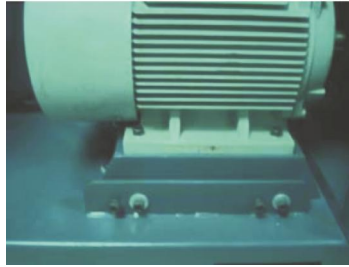
1) Open the shield door plank.

2) Open the fast pipe connector of extraction line end and then take out the screen bracket.

3) Adjust two movable screws to change the clearance between the big belt pulley and the small one to adjust the belt tension.

4) Lock the movable screws.

5) Check the belt tension again after 20-30h of full-load operation.



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

6.4 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.

6.4.1.1 Operation and Maintenance of Dust Separating System

Daily check

Air bag and dust bag: Check whether the air bag or dust bag is damaged. If there is any damage, please replace it.

Convey pipe: Check whether the convey pipe is damaged. If there is any damage, please replace it.

Check whether the connection is good and seal it up.

Check whether the dust bag is full. Please empty it if it's full.

Storage box: Check whether the storage box is right under the dust separator. If it's not, please adjust it.

Check the storage box. If it's full, please take away in time the plastics which has gone through dedusting.

Weekly check

Check whether the wires are damaged and the connection situation. If there is any damage, please fix it.

6.4.1.2 Clean of Dust Separating System



Clean it once after replace the plastics or 300h of operation. Before cleaning, please turn off the power supply.

- 1) Clean the inner wall of device first.
- 2) Check and clean the dust separator when necessary.
- 3) Move away the separator and use high pressure air to blow off inside grains.
- 4) Empty the storage box and clean its inside.
- 5) Shake the air bag to make the dust fall off.
- 6) Install all the parts back to the machine.

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.
- 6) Clean the inner surface of feed box.
- 7) Remove the screen bracket.
- 8) Clean the screen bracket.
- 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 _____ Φ _____ 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.