



De-Airing pugmill

Instruction Manual

NVA-04S

Please make sure to read the entire instruction manual thoroughly before initial set-up, operation, maintenance and inspection to ensure proper use.

Please keep this instruction manual in a location that is always available to the user.

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Safety Precautions

Please be sure to closely follow all safety precautions and warnings.

Please be sure to read the entire instruction manual thoroughly before initial set-up, operation, maintenance and inspection and use.

Please start using only after you have read the equipment's function, safety information and precautions.

This instruction manual provides three grades of safety warnings: "Danger", "Warning" and "Caution". All precautions described hereunder which concern to the safety are to be read carefully. Please be sure to follow them.



Danger marking indicates possible death, severe injury or fire if the user disregards the instruction.



Warning marking indicates the possibility of severe injury if the user does not follow the instruction.



Caution marking indicates the possibility of minor injury or damage if the user operates the pug mill improperly. However, depending on the circumstances, it is still possible to cause severe injury. Please make sure to pay close attention to these warnings.

We call your attention to these warnings throughout the manual using the following symbols:



Warning; Pay Close Attention



Do Not



Please Follow Instructions



DANGER

Installation These are safety precautions regarding with installation of the pug mill.



Do not set up in a location that is susceptible to rain and water or an area of high moisture.

This may cause a fire or failure from electrical shock or electrical leakage.



Do not overload the electrical outlet.

Check the amperage rating of the outlet and of any other equipment that may be on the same circuit. A fire could result from overloading the circuit.

OPERATION These are safety precautions regarding with operation of the pug mill.



Do not let anyone operate the pug mill without proper instructions and supervision.

Please assign a specific person to supervise the use of the pug mill in a facility where many people may operate the unit. Make especially sure not to let children operate the pug mill.



Do not insert hands.

Please do not insert hands into the clay hopper or clay nozzle. Serious injury could occur.



Be careful of clothing.

Loose fitting ties, aprons and other clothing may hang into the clay hopper or clay nozzle and become entangled in the internal moving parts causing serious injury.



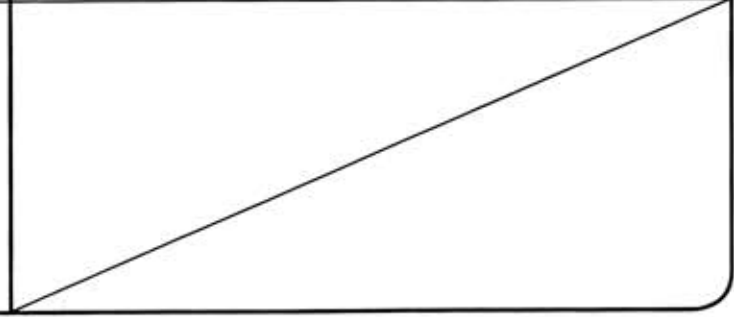
Secure long hair away from the pug mill.

Serious injury may occur if a person's hair becomes entangled in the internal moving parts.



Do not operate any switches with wet hands.

This may cause an electrical shock if you operate switches or plug / unplug the power cord into the power outlet.



MAINTENANCE

These are safety precautions regarding the maintenance of the pug mill.



Switch the power off before doing any inspection.
Unplug the power cord.

Please make sure to switch the power off and unplug the power cord from the outlet before doing any cleaning, inspection, adjustment, or moving the pug mill.



Unplug the power cord carefully by pulling on the power plug, not the power cord.

Do not pull on the cord when you unplug the power cord.

This may cause damage to the cord and/or plug which could result in a fire created by an electric short or injury from an electrical shock.



Do not use damaged power cord.

Please do not use damaged power cord, damaged plug or worn power outlet.

It may cause a fire due to an electrical shock or electrical short.



Warning

INSTALLATION

These are safety precautions regarding with installation of the pug mill.



Be careful with handling since this product is heavy.

Please handle the pug mill with extreme care since serious injury can occur if the unit should fall on hands or feet.



Caution

OPERATION

These are safety precautions regarding with operation of the pug mill.



Please turn the power switch off if you will not be using the pug mill for an extended period of time.

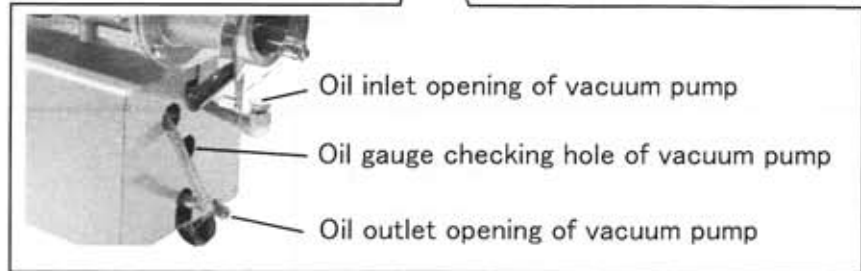
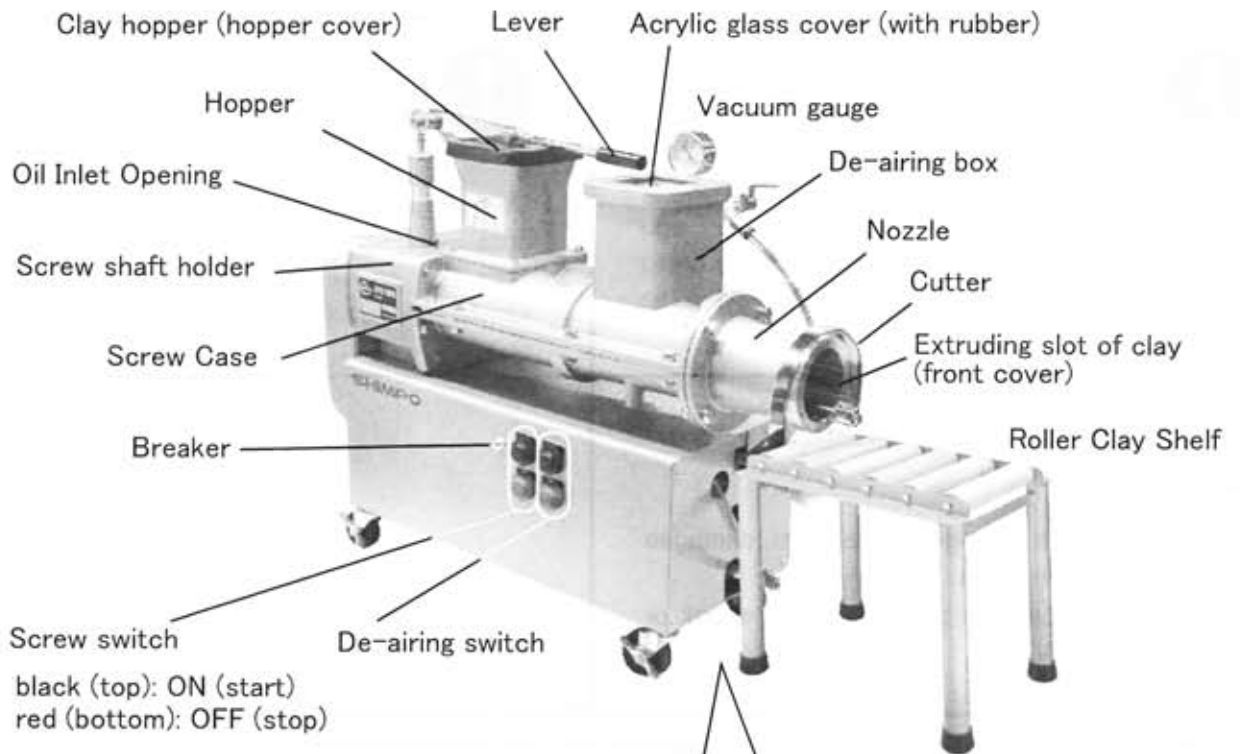
If you will not be using the pug mill for a long period of time please switch the power off and unplug the power cord from the outlet to prevent damage from a possible power surge such as a lightning strike.



Do not pour water on the pug mill to clean it.

Please do not pour water on the pug mill to clean it. This may cause an electric short or damage to the pug mill. Clean off the pug mill with a damp cloth. The clay hopper, screw case, and nozzle are washable only after disassembly.

Pug Mill Diagram



Lists of Contents

Description	Quantity	Reference
Drive Housing	1	
Clay Roller Shelf	1	
Hopper Cover	1	Cover for Clay Hopper
Front Cover	1	Cover for Nozzle Opening
Earth wire	1	
Wrench	1	17 × 13mm
Double-head wrench	1ea.	1 each 17 × 13mm 13 × 10mm for screw case removal
Allen Wrench	1	2.5mm Width
Bolt	2	M10 × 25mm for nozzle removal · for screw case removal
Acrylic glass	1	De-airing box cover (with rubber)
Glass cover	1	Acrylic glass cover
Instruction manual	1	
Warranty card	1	

Installation / Preparation

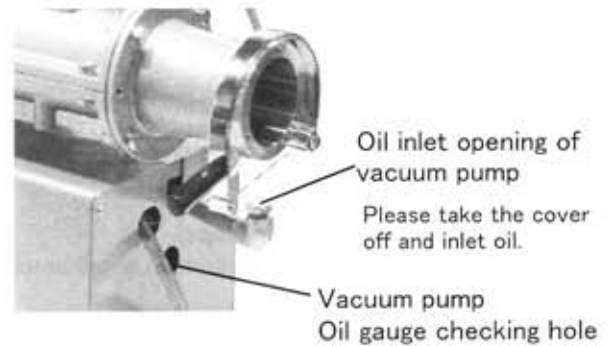
Please install at horizontal space not to move.

1. Inlet the attached oil into vacuum pump.

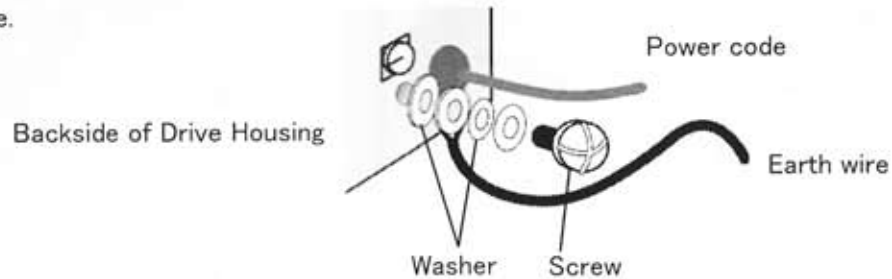
(Please inlet oil to the center of oil level checking hole. That indicates proper quantity (0.6L).)

Oil; Idemitsu OP oil super R-68

In the event that oil level is lower than the center of oil level checking hole, please add the attached oil to the center from oil inlet opening of vacuum pump.



2. Connect earth wire.



Danger:

Please be sure to connect earth wire in order to prevent electric shock.
Never connect earth wire into gas pipe. It might spark.

3. Put acrylic glass on the top of de-airing box and place glass cover on it.

4. Install roller clay shelf.

Please place roller clay shelf in front of the extruding slot of clay.

5. Remove front cover and hopper cover.



Operation

■ Operation

1. Insert the power plug into outlet.
2. Turn the de-airing switch on.
3. Turn the screw switch on.
4. Close valve next to the de-airing box.
5. Pull the lever up (screw stops).
Place clay into the clay hopper in small amounts in sequence.

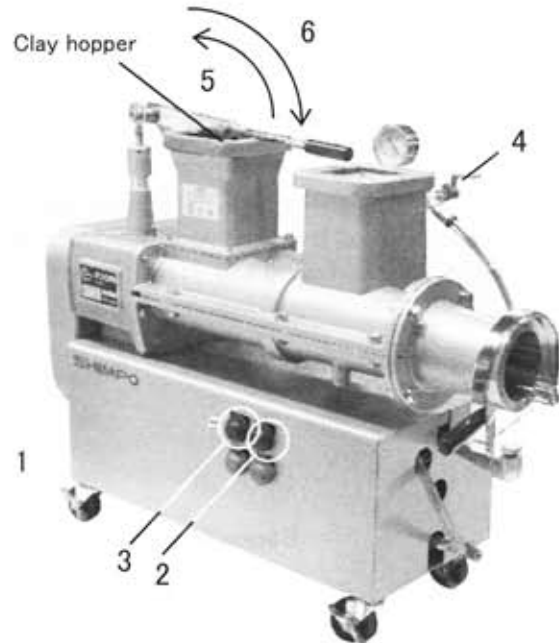
It is normal that the needle of vacuum gauge points to 0.09MPa or more while extruding clay.

0.09MPa or more



Danger

Please do not operate any switches with wet hands.



Attention

Vacuum gauge doesn't indicate accurate numeric when shocked. Please pay attention not to drop.



Danger

Please do not insert your hands into any opening on the pug mill.

Please be sure to add water into the clay and put it into the clay hopper in the condition that you can knead by hands.

Please do not put a chunk of dry clay or clay refuse into the clay hopper. Otherwise screws may stop and clay may not mix well. Please be sure to use clay in the condition that you can knead by hands.

Please do not put a chunk of clay at one time.

If a chunk of clay is put at one time, clay may not mix well and come out with surface irregularity. Better clay comes out by putting a small portion of clay in sequence no to make cut line.

6. Pull the lever down. (Screw rotates.)

*Since clay which is not mixed well tends to come out at start of operation, please put it through two or three times, and adjust the hardness.

If you operate the lever strongly, breaker might shut off and stop the power supply.
(Operation of breaker (Recovery of operation), refer to P.10)

*De-airing pug mill can be used at normal pressure if vacuum pump isn't used.
(Turn the vacuum pump switch off.)

□ Trouble at operation

When dry clay comes out from extruding slot

⇒ Please remove nozzle and clean the internal parts.
(Disassembly Procedure, refer to P.9)

When screw stops

Screw stops when a chunk of dry clay or clay refuse is put into the clay hopper.

⇒ Please be sure to add water into the clay and put it in the condition that you can knead by hands into the clay hopper.

When operation stops (Breaker shuts off and stops the power supply.)

Breaker might shut off and stop the power supply by putting a chunk of dry clay or clay refuse into the clay hopper, or operating the lever aggressively.

⇒ Please remove the cause of overloading and push the protrusion of the breaker down. Operation restarts.

The center button projects upward if breaker shuts off.



Breaker

When clay doesn't mix well

The reasons can be considered as follows.

- ① Clay which is extremely soft is put into the clay hopper ⇒ Please put soft and hard clay in sequence when putting soft clay.
Even if only soft clay is put, clay will be mixed well as the hardness of clay becomes even.
- ② A chunk of dry clay or clay refuse is put into the clay hopper ⇒ Clay blows back and doesn't mix well if hard clay is put in sequence. Please add water and leave it for 3 days. If the clay still remains, please disassembly and clean the internal parts in order to remove the hard-set clay inside the pug mill.(Disassembly Procedure, refer to P.9)
- ③ Clay is left in the main body and hardened up. ⇒ Please disassemble and clean the internal parts.
(Disassembly Procedure, refer to P.9)

De-airing doesn't work well

De-airing might not work well depending on the quality of the clay.

⇒ Please put the clay through the pug mill several times until the condition of the clay becomes better.

Clay moves upward to the de-airing box

Clay moves upward to the de-airing box depending on the hardness of clay.

If wall of clay is made inside the de-airing box, only the top of the de-airing box is evacuated and de-airing doesn't work while mixing clay.



▲ Clay is moving upward to de-airing box.
(Screw cannot be recognized.)

* If you can recognize the rotation of screw watching from above, the de-airing box is in the best condition.



Danger

Please be sure to turn the power off.
Please do not operate the power code with wet hands.

How to remove clay inside de-airing box

- ① Turn the screw switch and de-airing switch off, and unplug the power code from the outlet.
- ② Take the cover of the de-airing box (glass cover + acrylic glass) off and remove the clay carefully.

* Please remove the clay with wet sponge completely enough to recognize the screw.
If clay still remains, it might move upward the de-airing box again.

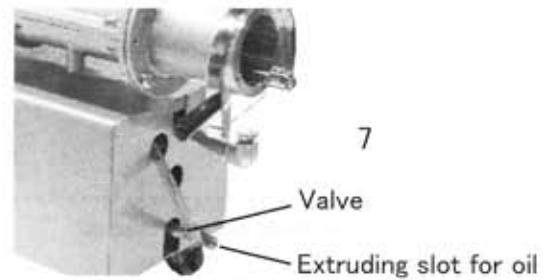
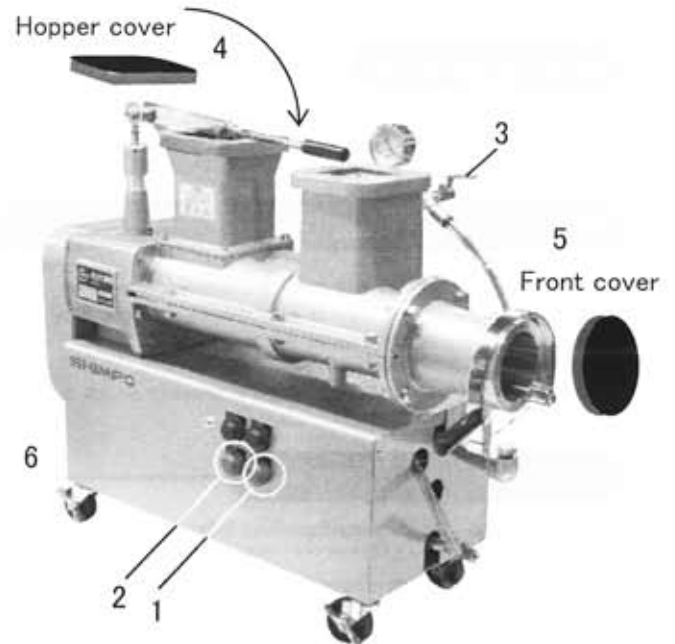
Please put the clay that is wet enough to knead by hands.

Operation

■ After Operation

1. Turn the de-airing switch off after operation.
2. Turn the screw switch off.
3. Open the valve next to the de-airing box.
4. Pull the lever down and fit the hopper cover on.
5. Fit the front cover on the extruding slot.
6. Unplug the power cord from the outlet.
7. Drain the pug mill. (After one day of operation)

Please drain the pug mill after one day of operation since moisture of clay builds up inside oil by operation.



Please do not leave clay in main body for a long time.

Just in case dry clay remains in the main body, do not operate the pug mill in such a condition. Please disassemble the pug mill and remove the clay. (Disassembly Procedure, refer to P.9.)

Please be sure to open the valve next to the de-airing box after operation.

If valve is closed and left for a long time, oil inside the vacuum pump might blow back to the de-airing box.

* Please disassemble the pug mill according to the procedure for cleaning internal parts or removing clay completely. (Disassembly Procedure, refer to P.9.)

Maintenance

■ Cleaning

When total cleaning of the pug mill is desired, clean the internal parts of the main body by following the disassembly procedure.

- * Rinse each of the disassembled parts with water and dry them well.
- * Please clean screw without removing from the screw holder.
- * Do not disassemble parts which are not described, since this may cause the pug mill to fail and will void the warranty.

□ Disassembly Procedure

1. Turn the de-airing switch and screw switch off. Check if the power cord is unplugged from the outlet.
2. Take the hopper cover and front cover off.
3. Pull the hose of the vacuum pump out. Pull it out pushing A toward B.
4. Take the four fixed nuts for nozzle off by wrench and spanner, and remove nozzle from screw case.

When nozzle is hard to be taken off, please tighten the attached bolts into the screw hole of nozzle to remove it easier. (Refer to the bottom-right diagram 4-1.)

5. Put two spacers into the gap of the bottom of the screw case.
6. Take the top-to-bottom seven fixed nuts of screw case by wrench and double-head wrench.
7. Take the six bolts of screw holder off by wrench and remove the screw case of the upper side.

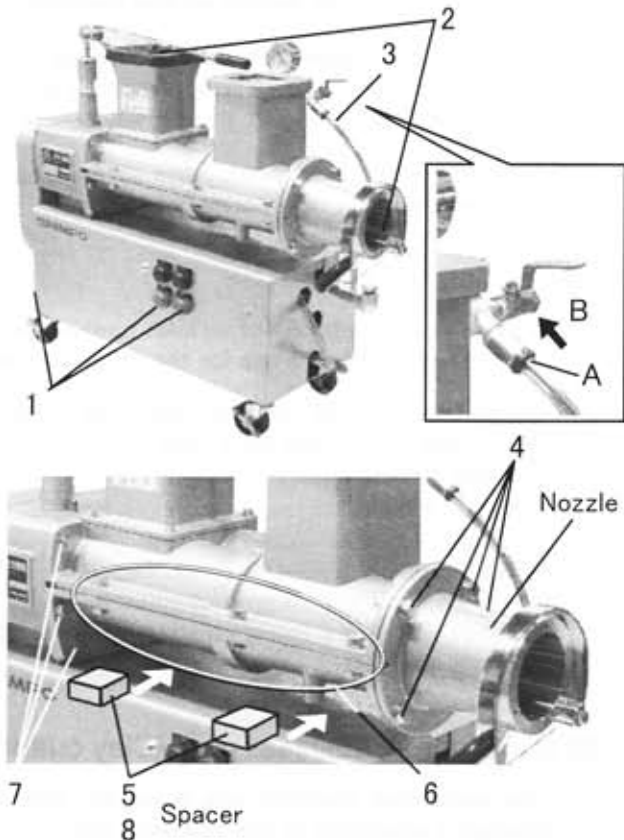
If screw case is hard to be taken off due to the hardness of clay, please screw minus driver into the gap of the top-to-bottom screw case and move it up and down. (Refer to the bottom-right diagram 8-1)

8. Pull the spacer off and remove the screw case of the bottom side.
9. Please assemble according to the above procedure reversely.

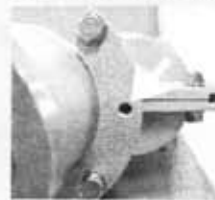


Danger

Please be sure to turn the power off.
Please do not operate the power code with wet hands.



4-1 When it is hard to remove nozzle



Please tighten the attached bolts into the screw hole of nozzle to remove it easier.

8-1 When it is hard to remove screw



Please screw minus driver into the gap of the top-to-bottom screw case and move it up and down.



Danger

Please be careful to handle screw since the tip is sharp.

□ Checking after disassembly or assembly

Please do trial operation after disassembly or assembly and be sure if pug mill operates normally according to the following procedure.

1. Connect earth wire.
(Installation/Preparation, refer to P.5)
2. Plug the power code into the outlet.
3. Turn the vacuum pump switch on and check if vacuum hose is not leaking air and installed properly.
4. Turn the screw case switch on and check if main body is not shaking and making abnormal sound.
(Please do not put clay at this time.)
5. Pull the lever up and check if the screw stops.
(If screw stops, it is in normal condition.)

■ Oil filling

Please remove the screw of oil inlet opening and lubricate two or three drops for the following cases.

- *When the sound of operation becomes louder
- *When pug mill is used for a long time
(About 50 hours)
- *Once in a month

- * Please purchase over-the-counter oil for machine.
- * Heavy oil and grease are not suitable.
- * Please do not put foreign matter or water into the oil inlet opening.

■ Exchange of stainless wire (Clay cutter)

In the event that stainless wire is cut off, please exchange it according to the following procedure.

- ① Remove the broken stainless wire.
- ② Hold on stainless wire on the side A.
- ③ Twist cutter a little in the direction of B, and hold on stainless wire on the side C.

- * Please purchase over-the-counter stainless wire.
(Piano wire is available.)

■ Operation of breaker (Recovery of operation)

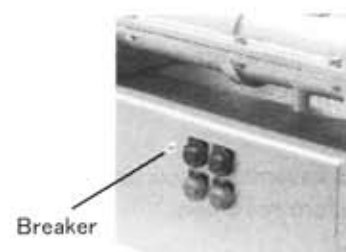
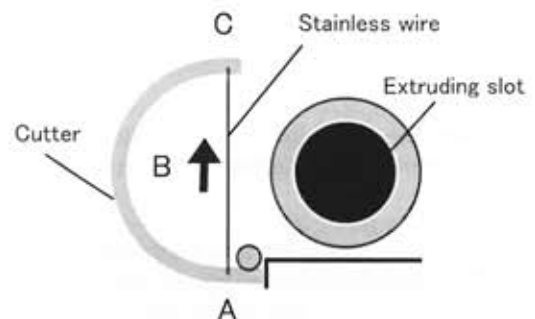
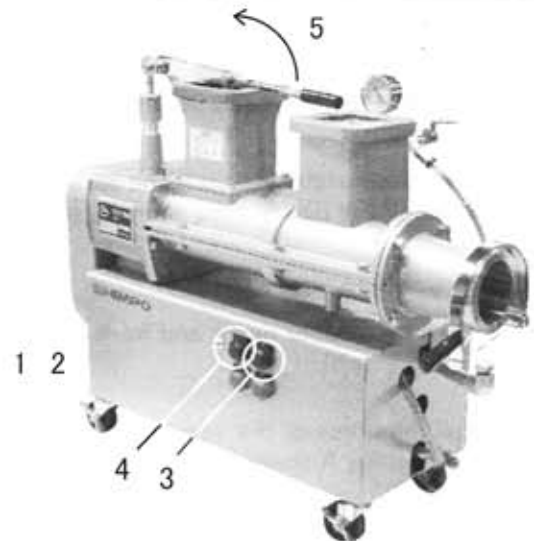
The breaker will not shut off under normal use. If you forcibly push a large amount of clay, or hard clay, into the clay hopper it will cause the breaker to shut off the pug mill.

In the event that the breaker shuts off the pug mill will stop. In this case press the breaker switch inward. The breaker switch is under a waterproof cap. Do not remove the waterproof cap. Press the breaker with the cap in place. Operation will restart.



Danger

Please do not operate the power code with wet hands. Please do not insert hands into the clay hopper or clay nozzle.



Disposal Method

- * Please consult with local government since the disposal method for the pug mill is different in each local government.
- * Please do not disassemble the pug mill when you dispose of it.

Specifications

Model	NVA-04S
Dimensions	920(1,320 including clay roller stand) × 420 × 750mm
Weight	Main body : 140kg Clay roller stand : 5kg
Screw rotation	15 rpm 60Hz
Main motor	Single phase 120V 400W
Vacuum motor	Single phase 120V 100W
Extruding capacity	200kg/hour
Screw horizontal	Clay hopper; two shafts Nozzle opening; one shaft
Extruding diameter	Dia.90 mm

Stainless steel is used for clay hopper, nozzle, clay pushing board, screw, and screw case.

Manufactured by

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