Operation Manual

Model: PMV1-0.4L

Introduction

Before operating the planetary ball mill, please read the following Instructions carefully, Failing to do so can result in denial of warranty claims.

1. ⚠Warnings:

The machine has to be operated and maintained in accordance with PMV1-8 Series Instruction. Any illegal operations may cause damages to the machine and make it stop working.

2. Inspection of possible damage during shipping

Before connecting the power, please inspect the machine to see any damage caused during shipping, if found any, please report to Supplies Immediately.

3. Power

Before connecting the power, make sure the voltage is consistent with the voltage requirement (110V/60Hz), and ensure that the rated load of power socket has to be more than machine's specified load requirement.

4. Power Cord

Independent power cord is required to operate this machine. Broken power cord has to be to be replaced. And the same type and specification of the power cord should be replaced. During operation, any other item is not allowed to be put on the power cord. Especially do not put the machine in the area where people often walk around.

5. Environment of the machine's location

Cool, ventilated, dry, dust-proof environment is needed. Monitor the machine's temperature to avoid overheating which will cause fast rate of wearing and failure of electronics. ⚠ Warning: Never use the machine in the environment of electronic conductive powders. The cooling fan will suck the powders into the electronic system causing electronic shocking.

Safety Cautions ⚠

1 Keep electrical parts dry. It is prohibited to operate machine with wet hands.

2 When the machine is under standby condition, power supply has to be turned off in order to prevent accidents.

3 Make regular inspection and maintenance of machine to ensure that running parts are properly lubricated and the electrical parts are properly connected.

4 Keep the equipment clean.

5 It is prohibited to operate machine overloaded.

6 ⚠⚠⚠ No explosive material or material combinations are allowed. Solvent based wet milling procedures need to be examined by professionally trained personnel before being carried out.

7 Before the machine starts up, please make sure whether the locking device of milling jars is properly tightened as requested.

8 Parameters of machine (especially the frequency converter) should not be adjusted randomly.

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PMV1-0.4 Planetary Ball Mill Operation Instruction

1. Overview

1.1 Main Application

PMV1-0.4 planetary ball mill is a kind of necessary equipment for finely grinding small batch of high – tech material. Due to its advantages of being compact, full – featured, high efficiency, low noise, it is widely used in fields of material research, geology, mining, metallurgy, electronics, building materials, ceramics, chemicals, light industry, medicine, environmental protection and other scientific research institutes.

1.2 Working Principle

Planetary Ball Mill has four ball grinding jars/tanks installed on one turntable. When the turntable rotates, the jar/tank axis makes planetary movements, the balls and samples inside the jars/tanks are impacted strongly in high speed movement, and samples are eventually ground into powder. Various kinds of different materials can be ground by the mill with dry or wet method. Minimum granularity of ground powder can be as small as 0.1micron

1.3 Structure Chart of Vertical Planetary Ball Mill

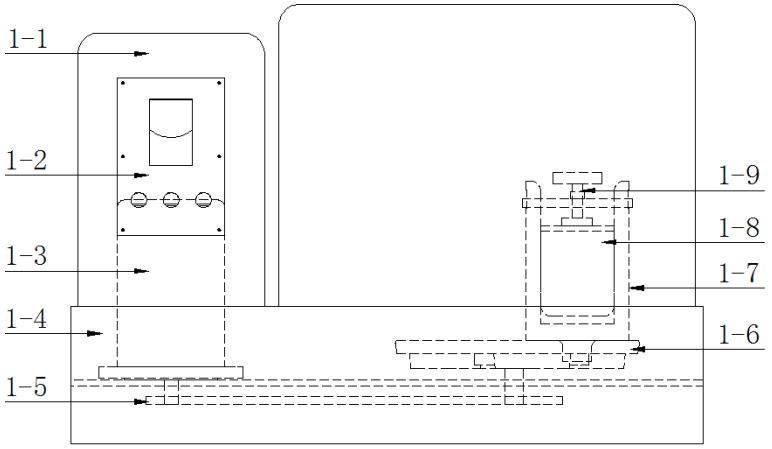


Figure1 Structure Diagram of Vertical Planetary Ball Mill (Square Type)

1-1 Control Box; 1-2 Control Panel; 1-3 Motor; 1-4 Frame Work; 1-5 Drive Belt; 1-6 Planetary Mechanism; 1-7 Pot Seat, 1-8 Grind Pot 1-9 Fastening Device for Grinding Pots.

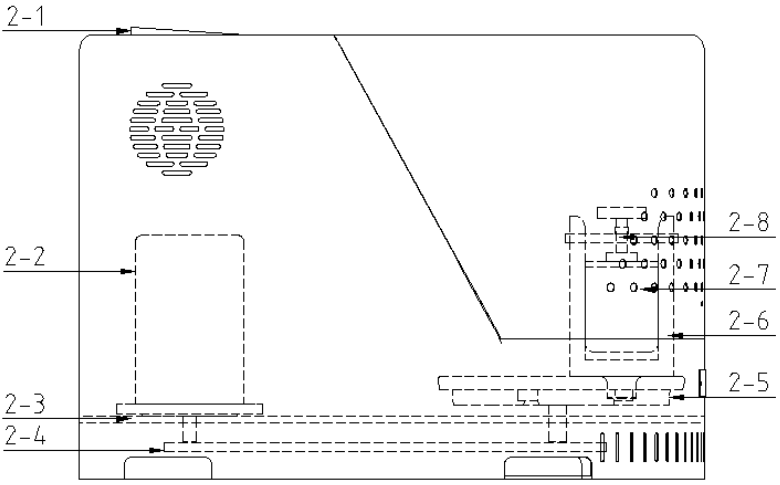


Figure2 Structure Diagram of Vertical Planetary Ball Mill (Semi-circle Round Type)

2-1 Control Panel; 2-2 Motor; 2-3 Frame Work of Machine;

2-4 Drive Belt; 2-5Planetary Mechanism; 2-6 Pot Seat, 2-7 Grind Pot

2-8 Fastening Device for Grinding Pots

Remarks: The above figures are just for conference. There may be differences between different models.

1.4 Main Parameter

Revolution Speed (RPM): 60-580

Rotation Speed (RPM): 120-1160

Motor Power (W): 90W

Continuous Working time: 1-999 min

Reverse Time Between Clockwise and counterclockwise turns: 1-99min.

1.5. Mill Ball, Jar Instruction

(1) Commonly Used Types

Jar Type	Specification（Volume L ）									
Agate	0.05	0.15	0.25	0.3	0.4	0.5	1	2		
Stainless Steel	0.05	0.1	0.25	0.35	0.5	1	4	5	8	10
Ceramic	0.1	0.25	0.5	1	4	5	10			
Nylon	0.25	0.3	0.4	0.5	1	4	5	10		
PU	0.25	0.5	1	2	4	5	7	12	16	
Corundum	0.5	1	4	5	10					
Zirconia	0.5	1	2	4	5	8	10			
PTFE	0.5	1	2	5	8	10	12			
WC Alloy	0.5	1	4	5						

(2) Jar and Matched Ball

Jar / Ball	Agate		Stainless Steel	Nylon	Steel	Alumina	WC Alloy	Zirconia
Agate	*							
Ceramic	△	*						
Stainless Steel			*		△		△	
Nylon	△			*				
Steel					*		△	
Alumina						*		△
Alloy							*	
Zirconia						△		*
* means best match effect				△ means matchable				

(3) How to match mill ball with mill jar

1. According to our customer needs, we can provide a variety of mill balls in any size from diameter 0.1mm to 55mm from materials of agate, ceramic, stainless steel mill balls etc.
2. In order to achieve the best effect, balls of large-sized, medium sized and small sized have to be matched at a proper portion.

Remarks：large-sized balls amount to 20% ； medium-sized balls amount to 50% ； and small-sized amount to 30% .

2. Operation Instructions

Operation Procedure:

a. Check to make sure the machine is safe status.

b. Choose the right milling materials and jars based on the material to mill.

c. Load Material on top of balls. **Warning**: Load material first may cause material sticking to the wall.

d. Jar Loading.

⚠**Warning: When Load and unload jars, always turn main power off.**

⚠**Warnings:** When 50ml jar is used, size converter/cushion is required.

⚠ **Warnings:** All Jars loaded must have the same weight and positioned symmetrically. Jars without bring balanced may lead to high noise and wearing of parts or breakdown of mechanical parts and void the warranty.

⚠**Warnings: The machine can only operate with two jars or four jars. And the jars with the same weight must be loaded on diagonal positions.**

⚠**Warnings:** After the jars are loaded, please hand tight the jars to secure them. Too loose may cause shifting of jars and spilling, even fly-out of jars causing heavy damage of the machine. Too tight may break the cover of the jars.

e. Turn on Power. Make sure the right power supply is connected according to the requirement of the machine specifications.

f. Programming. Setting up frequency converter parameter. Please see corresponding section for instruction of programming.

g. Grinding Materials. Warning:

h. Halt machine

i. Unload jars

j. Discharging materials

k. Cleaning

⚠**Warning: When wet milling using solvent is carried out, it is the operator's responsibility to check the material compatibility and**

proper running conditions to keep the jar temperature low. Heat generated during milling can cause solvent vaporization and quick expansion of the gas phase in the jars can cause explosion.

⚠**Warning: Certain mixture of material can react generating heat or gas causing explosion. It is the operators responsibility to check the safety.**

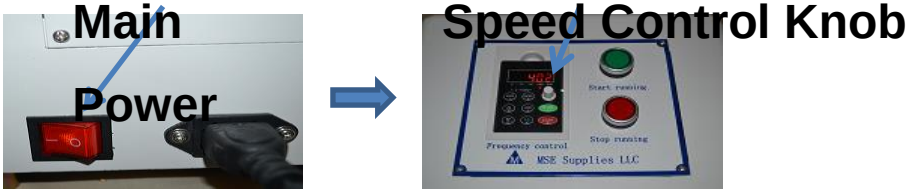
2.1 Checking

2.1.1 Accessory and Package Checking

First, check the packing list carefully after opening the case, and make sure if there is any missing on the attachment, whether there is any broken accessory during transportation. If any, please do not hesitate to inform us immediately. If everything is normal, switch on power and let the machine work without any loading (mill jars and mill balls).

2.1.2 Testing Machine

Before you load any jars on the machine, switch on main power on the back of the machine next to the cord, turn the knob on the frequency control panel counter-clockwise to the end and indicator is 0. Check if the indicator is illuminated or not, then turn on the run switch, check if speed indicated on frequency converter is zero, rotate the frequency converter button slowly clockwise and adjust the speed to 50% of the maximum rated rotation speed (400~435RPM), and keep the machine running for 5 minutes. If nothing unusual occurs, you may go to the next step.



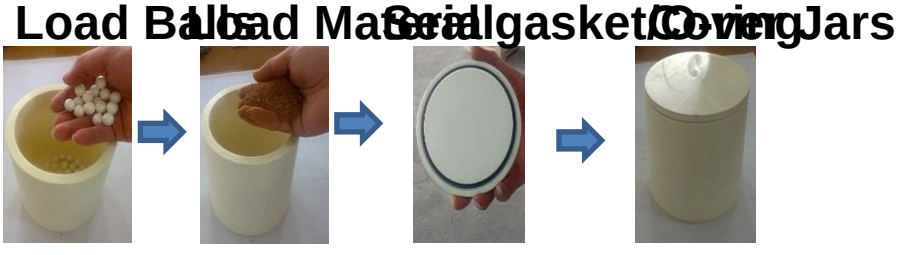
2.2 Match ball and load material

2.2.1 According to customer need, small, medium, large-sized balls have to be matched and mixed together at proper ratio. Large balls act as weighing and smashing samples as well as dispersing small balls, while small balls are used for mixing and grinding samples.

Recommendation: large-sized balls amount to 20% ； medium-sized balls amount to 50% ； and small-sized amount to 30% .

Choose proper ratio, size and amount according to jar size. It is recommended that Ball + material < 2/3 of jar volume. ⚠ **Warning:** Overloading can cause ineffective milling. Material May stick to the wall.

Warning: Load Material on top of balls. Load material first may cause material sticking to the wall during dry milling.



Remark: Install the jar inside the machine after materials and balls are put into the jar, lock the device of jar top tightly.

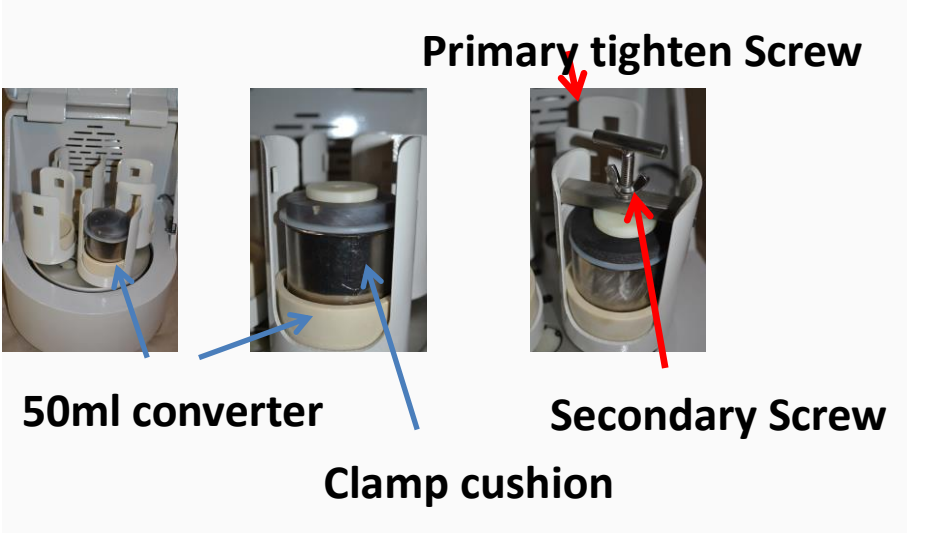
2.3 Install Jar

Cautions:

1) ⚠Warning: Before installation of Jars, please switch off the main power

2) Loading jars: For 100ml jars, no converter is needed. If you are using 50 ml jars, 50ml converters are required for the best clamping. After you

load the covered jar and material, please put a clamp cushion on top center. And insert the metal clamping screws. First tighten the primary screw and then tighten the secondary screw. (See the attached figures).



3) Warning ⚠: The jars have to be installed tightly and symmetrically. One Jar or three jars are prohibited to be operated. Total loaded weight of both symmetrical jars (including weight of jar, balls and materials) must be almost the same.

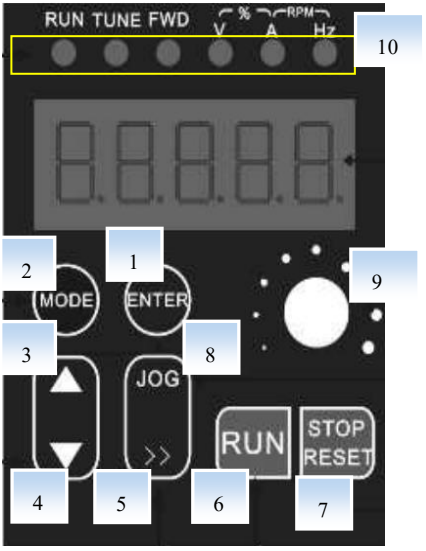
4) Center of jar has to be aligned with center of turntable.

5) When locking tightening device, please tighten primary screw first, then tighten the secondary screw. You have to make sure that there are enough locking strengths in order to avoid tightening device becoming loose and prevent jars flying out of the machine.

⚠ Warnings: Too loose may cause shifting of jars and spilling, even fly-out of jars causing heavy damage of the machine. Too tight may break the cover of the jars.

2.4.2 Operation Guide of H2000 Converter Factory Parameters Setting

2.4.2.1 **Introduction of Function Code:**



1."ENTER"Key: Scrolling displays operation data in the monitoring mode, reads and stores the set parameters when setting them. press once for setting, press one more time for storage.

2. "MODE" Key: shift key between Programming State and Monitoring Status which shows data and programming menu respectively. When the key is clicked under programming status, it returns to the previous menu

3."△"Key: Increase of function code, menu, or the setting value.

4. "▽" Key: Decrease of function code, menu, or the setting value

5. "》" **Key:** The key shift the indicators of frequency, voltage, current,

running direction and speed. It also shift the cursor position during parameters editing.

6."RUN" Key: Start up the frequency converter under panel control.

7. "STOP" Key: To stop the frequency converter. When it is under failure warning status, it resets operation.

8. "JOG" Key: When machine is dwelling, hold the key, the machine runs. Release the key, it stops.

9 **.Potentiometer:** Rotate to Adjust the rotating speed or frequency.

10."Unit indicator light": Red light indicates status of F/R, V , A, Hz, RUN, etc respectively. when（V)、(A)、(Hz) are not lighting, it indicates rotating speed; (FWD) lighting indicates forward rotating; (V) lighting indicates voltage; (A) lighting shows current, (Hz) lighting states frequency, (RUN) lighting indicates converter in under running condition.

2.4.2.2 Function Code of Converter

Function code	Name	Range	Factory default
u3.0.02	Selection of PLC Power lost memory	Unit: Selection of Power lost memory 0:No memory of powder lost 1: Memory of power lost Decade:Selection of stop memory 0:No memory of machine stop 1: memory of machine stop	0

u3.0.04	Stage 0 working time （FWD）	0～6500 minutes	10
u3.0.06	Stage 1 working time（Reversal）	0～6500 minutes	10
u3.0.35	Stage 0 working direction	H.010:The default direction H.110：reversal	H.010
u3.0.36	Stage 1 working direction	H.010:The default direction H.110：reversal	H.110
u3.2.11	Timing control	4200：no timing 4239： timing	4239（with time relay set as per 4200）
u3.2.17	Standby time interval	0～3600 S	0
u3.2.24	Total working time	0～3600 minutes	1000

Note: The above function codes can be modified to the needed value from the factory setting value according to the actual need. Other code numbers and setting value inside the converter are not allowed to be amended. All those setting values are specially used for ball mill. All prefix code are “U”, if the prefix code letter turns “P” or “C”, please contact us.

2.4.2.3 Frequency Converter Parameter Setting Steps

2.4.2.3.1 Factory setting value on the converter indicates function code parameters set for converter system by the factory. If you need to modify, please set new parameters manually as per steps of 3.2.

2.4.2.3.2 Code setting

Operation Steps	Indicators Display
1.Turn on the power supply	Indicator shows current rotate speed

2.Press **"MODE"** one time, it displays "U" function code.	For example: U0.0.11
3.Press **"△"**or **"▽"** to select the function code to change.	Indicate the current function code.
4.Press **"ENTER"** one time, edit the parameter selected.	Indicator shows Factory setting value, edit according to you needs.
5.Press **"》"**to the flashing value that you need to edit, press **"△"**or **"▽"**to change the number.	Shows edited value
6. Press **"ENTER"** once to save edition. (Press **"MODE"** to exit without saving.)	Shows the next code number after saving.
7. Repeat 3rd-6th step to edit other code value.	
8. Press **"MODE"** once	Indicate current rotate speed value.

2.4.2.3.3 Press "MODE" once after turning on for standby, the screen indicates "U" code, press "△"or "▽" to change the current indicating code, "△" means increasing, and "▽" means decreasing. Please make parameter setting according to your needs as indicated in the upper step.

2.4.2.3.4 Press "MODE"once after finishing of all code parameters set, the screen displays rorate speed, then return back to monitoring section.

2.4.2.3.5 Function code U3.2.17: Ball mills above 16L size have to set with interval between FWD (Foreward) and reversal.

Examples:

Working Mode 1: One-way Running

Example: running for 30 minutes, stop for 10 minutes, cycle for 10 times

U3.0.36: set value H.010

U3.0.04 and U3.0.06: Change from factory value 10 to set value 30 for each

U3.2.17: change the value from factory setting “0” to “600” please note the unit of this parameter is in seconds.

U3.2.24: change the factory value 1000 to 390 (min) as the total operation time because the last cycle is stopped anyway.

Calculation Formula:

(each run time 30+each standby time 10)* cycle time 10-each standby time after run 10 = 390 (min)

Working Mode 2: Foreward (FWD) & Reversal Running

Example: FWD running for 30 minutes, stop for 10 minutes, and then reversal running for 30 minutes, stop for 10 minutes, cycle for 10 times

U3.0.36: set value H.010 from factory value

U3.0.04: from factory value 10, change to value 30 for each FWD running time

U3.0.06: from factory value 10, change to value 30 for each reversal running time

U3.2.17: from factory value 0, change to set interval 600 (sec)

U3.2.24: set value 790 from factory value 1000

Calculation Formula:

(each FWD run time 30+each standby time 10 after FWD run+ each reversal run time 30+ each standby time 10 after reversal run)* cycle time 10-each standby time 10 after running=790

⚠**Warning: When wet milling using solvent is carried out, it is the operator's responsibility to check the material compatibility and proper running conditions to keep the jar temperature low. Heat generated during milling can cause solvent vaporization and quick expansion of the gas phase in the jars can cause explosion.**

⚠**Warning: Certain mixture of material can react generating heat or gas causing explosion. It is the operators responsibility to check the safety.**

⚠ ⚠ ⚠**No explosive material or material combinations are allowed. Solvent based wet milling procedures need to be examined by professionally trained personnel before being carried out.**

⚠ Warning: It is recommended to set an empty run with reasonable number that you can observe at the beginning or when a new user is being trained.

2.5 Grinding Materials

After setting the frequency converter, cover the jar tightly, press the "RUN" or "Start Running" button and start grinding process.

⚠ **Warning:** If you need to stop the machine in the middle of running, please use the top "Stop Running" Button. Please avoid opening the cover directly even though the interlock will stop the running once the cover is opened. Just in case the interlock fails.

⚠ **Warning:** Without the manufactures permission, the interlock cannot be modified, taking off, or relocated. Violation can cause void of wanranty.

Cautions:

1. Please stop the rotation and open the machine cover after the machine runs for five minutes, and check if the top-tightening device is loose or not. If loose, it has to be tightened once again.
2. Frequency converter often indicates rotation speed.
3. High rotation speed does not mean better milling effect, while high rotation causes excessive abrasion of machinery parts and shorten machine's life and jar life. Therefore, clients are suggested to lower rotating speed depending on the materials.
4. When running of the machine, users are often suggested to check the equipment, once the machine is found to be in unusual condition, please stop machine immediately for inspection.

2.6 Stop the Machine

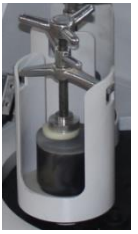
After the machine finishes setting time, turn the speed controller of frequency converter to "0", press stop button, and turn off the main power.

⚠ **Warning**: After speed controller of frequency converter is turned to "0", the machine stopped running, but it is still on status of power standby. Do remember, at this moment, you have to press stop button and turn off main power before you reach hand to the jars to do any operations. Fail to do so may cause serious injury or can be fatal.

2.7 Unload Jar

Open machine cover, unscrew the screw cap, loosen "T" screw rod, shoulder pole and spacer.

①unscrew hex nut ②take out jar




2.8 Unload Materials

Pour materials and balls into a sieving plate and separate balls from materials.

2.9 Clean Machine

Clean the jar and ball with water, then use cloth or oven to make it dry. During oven drying, please use appropriate temperature to avoid thermal shock of the jar materials. Please wear appropriate protection gears depending on the materials.


4. Frequency Converter Specification

Note: Please consult H2000 Series Frequency Inverter Operation Manual included in the package

3.1 Input： Single-phase 110V, 60Hz±5% .

3.2 Output： Single-phase voltage 110V，frequency 0～60Hz。rated current 8A, allowed overload 150% per minute. Suitable for motor power up to 0.5KW.

3.3 Indicator： frequency, rotate speed, voltage, current(digital display) , abnormal indicator(letter display), Status display (led display).

3.4 Environment： indoors, elevation less than 1000 meters, no corrosion gas, no dust and direct sunlight. Temperature -10～+50℃，humidity 20～90%（no condensed water droplets). Vibration: below 0.6 G.

4. Common Fault Diagnosis and troubleshooting measures

If any fault or unusual event occurs, you have to check the machine according to the following instruction chart, and make record of faults in details. You may contact our service department directly if you need further support.

No.	Category	Fault Type	Countermeasures
1	Machinery & Transmission	Strange noise appears suddenly	Turn off power directly; check if the device is loose or not; tighten bolts and restart.
		Metal clashing noise appear when work	Turn off power; check wearing of the gear and bearing. If they are worn badly, they

			need to be replaced with new ones. If not, fill lubricating oil for bearing and gears.
		Rotation speed of turntable is obviously down or not evenly-distributed. when working	Turn off power and check if the triangle belt is worn or not. If worn, change for another new one.
2	Electrical Part	Ball mill does not start-up	① Turn on power, check if indicator is on, if not, first, Make sure power supply and cable are in good condition, then check if the power switch is damaged or not.
			② If the indicator is lighted, firstly check whether the mill cover is closed well or not, then check if the frequency converter displays well，finally check if the “Run Key” is damaged or not.

5. Care and Maintenance

5.1 Daily Care and Maintenance

The machine has to be installed and operated strictly following the instructions and warning signs. Some potential faults could occur as a result of the environment, temperature, humidity, vibration and aging and wearing down of inner components, etc. In order to ensure the machine operate more steadily and last a longer time, daily and regular care and maintenance is necessary for the machine.

<table>
<tr><th>No.</th><th>Category</th><th colspan="2">Checking Items</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Machinery Part</td><td colspan="2">Check regularly whether bolts become loose</td></tr>
<tr><td colspan="2">Check if jar seat is loose or dislocated or not</td></tr>
<tr><td rowspan="6">2</td><td rowspan="6">Electrical Part</td><td rowspan="2">Motor</td><td>Check regularly if cable is damaged or terminals are loose.</td></tr>
<tr><td>Check regularly if cooling fan works in normal condition</td></tr>
<tr><td rowspan="4">Frequency Converter</td><td>Check regularly if vibration is stable, and wind-warm syndrome is reasonable</td></tr>
<tr><td>Check if noise is abnormal</td></tr>
<tr><td>Check wire connector, terminal and screw, if they are loose</td></tr>
<tr><td>Check if electrical instruments are sensitive</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Transmission Part</td><td colspan="2">Check If bearing is seriously abraded, you may plan to replace them with new ones</td></tr>
<tr><td colspan="2">Check if all lubricating points are lubricated</td></tr>
</table>

		Put lubricating oil to gear frequently
		Check belt regularly to find if it's worn out
		Check if abnormal noise appears when the gearing is working

5.2 Warranty of Planetary Ball Mill

We promise to provide one-year quality warranty for machines free of charge excluding wearing and consumable parts (from the date when machine arrives at the customer site), except for damages caused by abnormal usage without observing warning and operational instructions.

5.3 Planetary ball mill accessories:

Please contact supplier for accessories

Name	Quantity
Carrier Gear	4
Transmission Gear	4
6204 bearing	12
6206 bearing	2
Bearing block	4
Carrier Bearing	4
1180A Belt	4
Frequency Converter	1
Position Switch	1
Plug	2
Air Switch	2

Start/Stop Switch	4

6. Warranty of Jar Mill

("" or "Manufacturer") provides a limited warranty on all new jar mill machines ("Machine") and their components (except those listed below under Limits and Exclusions of Warranty) ("Components") that are manufactured by the OEM of and sold by as set forth in this Agreement. The warranty set forth in this Agreement is a limited warranty, it is the only warranty by Manufacturer, and is subject to the terms and conditions of this Agreement.

Limited Warranty Coverage

Each Machine and its Components (collectively,") are warranted by Manufacturer against defects in material and workmanship. This warranty is provided only to an end-user of the Machine (a "Customer"). The period of this limited warranty is one (1) year. The warranty period commences on the date the Machine is delivered to the Customer's facility. Customer may purchase an extension of the warranty period from (a "Warranty Extension"), any time during the first year of ownership.

Repair or Replacement Only

Manufacturer's sole liability, and Customer's exclusive remedy under this warranty, with respect to any and all products, shall be limited to repairing and replacing Components, at the discretion of the Manufacturer, of the defective Machine. The limited warranty covers the cost of Components and excludes the labor and travel costs if an onsite service visit is deemed necessary. will quote the Customer such labor and travel cost prior to the

service visit. Service only will be carried out and billed after the customer's approved permission.

Disclaimer of Warranty

This warranty is Manufacturer's sole and exclusive warranty, and is in lieu of all other warranties of whatever kind or nature, express or implied, written or oral, including, but not limited to, any implied warranty of merchantability, implied warranty of fitness for a particular purpose, or other warranty of quality or performance or noninfringement. All such other warranties of whatever kind are hereby disclaimed by Manufacturer and waived by Customer.

Limits and Exclusions of Warranty

Components subject to wear during normal use and over time, including, but not limited to, rollers, belt, etc., are excluded from this warranty. Manufacturer's specified maintenance procedures must be adhered to and recorded in order to maintain this warranty. This warranty is void if Manufacturer determines that (i) any Product was subjected to mishandling, misuse, abuse, neglect, accident, improper installation, improper maintenance, improper storage, or improper operation or application, (ii) any Product was improperly repaired or serviced by Customer, an unauthorized service technician, or other unauthorized person, (iii) Customer or any person makes or attempts to make any modification to any Product without the prior written authorization of Manufacturer, and/or (iv) any Product was used for any non-commercial use (such as personal or household use). This warranty does not cover damage or defect due to an external influence or matters beyond the reasonable control of Manufacturer, including, but not limited to, theft, vandalism, fire, weather

condition (such as rain, flood, wind, lightning, or earthquake), or acts of war or terrorism. Without limiting the generality of any of the exclusions or limitations described in this statement, this warranty does not include any warranty that any Product will meet any person's production specifications or other requirements, or that operation of any Product will be uninterrupted as error-free. Manufacturer assumes no responsibility with respect to the use of any Product by any person, and Manufacturer shall not incur any liability to any person for any failure in design, production, operation, performance, or otherwise of any Product, other than repair or replacement of same as set forth in the warranty above. Limitation of Liability and Damages Manufacturer will not be liable to Customer or any other person for any compensatory, incidental, consequential, punitive, special, or other damage or claim, whether in an action in contract, tort, or other legal or equitable theory, arising out of or related to any product, other products or services provided by Manufacturer or an authorized distributor, service technician, or other authorized representative of Manufacturer (collectively, "authorized representative"), or the failure of parts or products made by using any Product, even if Manufacturer or any authorized representative has been advised of the possibility of such damages, which damage or claim includes, but is not limited to, loss of profits, lost data, lost products, loss of revenue, loss of use, cost of down time, business good will, any damage to equipment, premises, or other property of any person, and any damage that may be caused by a malfunction of any product. All such damages and claims are disclaimed by Manufacturer and waived by Customer. Manufacturer's sole liability, and Customer's exclusive remedy, for damages and claims for any cause whatsoever shall be limited to repair or replacement, at the discretion of Manufacturer, of the defective Product as provided in this warranty.

Customer has accepted the limitations and restrictions set forth in this Agreement, including, but not limited to, the restriction on its right to recover damages, as part of its bargain with Manufacturer or its Authorized Representative. Customer realizes and acknowledges that the price of the Haas Products would be higher if Manufacturer were required to be responsible for damages and claims beyond the scope of this warranty.

Entire Agreement

This Agreement supersedes any and all other agreements, promises, representations, or warranties, either oral or in writing, between the parties or by Manufacturer with respect to subject matter of this Agreement, and contains all of the covenants and agreements between the parties or by Manufacturer with respect to such subject matter. Manufacturer hereby expressly rejects any other agreements, promises, representations, or warranties, either oral or in writing, that are in addition to or inconsistent with any term or condition of this Agreement. No term or condition set forth in this Agreement may be modified or amended, unless by a written agreement signed by both Manufacturer and Customer. Notwithstanding the foregoing, Manufacturer will honor a Warranty Extension only to the extent that it extends the applicable warranty period.

Transferability

This warranty is transferable from the original Customer to another party if the Machine is sold via private sale before the end of the warranty period, provided that written notice thereof is provided to Manufacturer and this warranty is not void at the time of transfer. The transferee of this warranty will be subject to all terms and conditions of this Agreement.

Miscellaneous

This warranty shall be governed by the laws of the State of Arizona without application of rules on conflicts of laws. Any and all disputes arising from this warranty shall be resolved in a court of competent jurisdiction located in Pima County, Arizona. Any term or provision of this Agreement that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof, or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction.