

FLUID MANAGEMENT

Instructions manual for the Shakers

Type:

SO-20a



Illustrated model:
SO-20a
Uk-1861099

We, **Fluid Management Europe B.V.**
A Unit of IDEX Corporation
Hub van Doorneweg 31
2171 KZ SASSENHEIM

herewith declare, on our own responsibility, that the products

Shakers / Gyromixers
SO-10m / SO-20a / SO-30m / SO-30ex / SO-40a / SX-40m / SX-40a

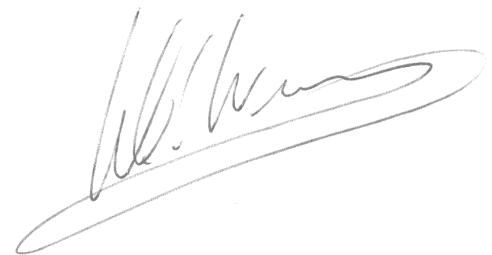
which this declaration refers to, are in conformity with the following standard(s) or other such specifications

NEN 3544, May 1984
NEN 2446, December 1976
EN 55024-2
EN 55024-4
NEN-EN 60204, September 1993
NEN-EN 292-1, September 1992
NEN-EN 292-2, September 1992
NEN 418, November 1990

according to the conditions of the Machinery-, Low Voltage- and the EMC-directive.

The Netherlands

W. Van Westerop



Sassenheim, 5-5-1999

Vice President Manufacturing
Fluid Management Europe B.V.
A Unit of IDEX Corporation

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By selecting a Fluid Management shaker you have opted for a product which is the result of intensive research. Top-quality components, craftsmanship and a modern ergonomic design all serve to guarantee a long service life and a high degree of user friendliness.

The machine complies with Council Directives 89/392/EEC on machines, 89/336/EEC on electromagnetic compatibility, and 73/32/EEC on electrical equipment intended for use within given voltage limits, as enacted by the Council of Ministers of the European Community. The machine is furnished with a CE mark.

Keep this manual in a safe place

In these guarantee conditions, 'FM' is understood to mean Fluid Management Europe.

The guarantee conditions incorporated into FM's general conditions of sale are summarized as follows (for free general conditions you can apply to FM):

1. FM guarantees the proper operation of any goods, which it supplies, for a period of one year, except where a breakdown is the result of normal wear and tear. The cost of any inspection activities carried out by FM, with the aim of establishing whether or not a breakdown is covered by the guarantee, will be reimbursed by the other party if it transpires that the breakdown is not covered by the guarantee. If it transpires that a breakdown is covered by the guarantee, then FM will supply identical or equivalent goods under the conditions referred to in point 6 of the general conditions of sale. The guarantee obligation described in this article only applies if the goods supplied by FM have been used in accordance with the manual. Time spent on guarantee-related activities, including travel time, travel costs and accommodation costs, are charged at current rates.
2. In contrast to the above, FM will not be held to any guarantee obligation if
 - a) repairs have been carried out, or attempted, by the other party or a third party, unless FM had previously declined to repair the goods for a fair price;
 - b) FM demonstrates that the defect did not emerge during testing;
 - c) the other party fails to inform FM of the defect immediately, if possible either by letter and/or by fax, providing full, accurate details and/or has failed to comply fully with FM's instructions;
 - d) the other party has failed to use or treat the goods properly or in accordance with FM's instructions;
 - e) the damage has been caused by incidents, beyond FM's supervision, which have occurred either during transport or installation.
3. In the following text, the expression "Software" will be understood to mean the standard computer software supplied by FM to the other party, recorded on a computer-readable storage medium, plus the accompanying documentation (Software Manual) and including any improved and/or new versions supplied. The expression "processing unit" (PU) is understood to mean the machine for which and with which the Software is supplied, and which is the sole machine on which the Software may be used.
4. The other party is authorized to copy the Software either in its entirety, or in part, (up to a maximum of 2 copies) for purposes of internal security. These copies will be furnished with the same marks, designations relating to copyright and other registration numbers as the original version of the Software.
5. The other party will neither amend, translate, decompile nor adapt the Software, nor convert it into source code, without express written permission from FM. If the other party so requests, FM will provide that party with the information required to render the Software interoperable with other software.
6. In the event that the PU experiences a breakdown, the other party may use the software on another processing unit until the PU is again operational. The other party will inform FM of this within 5 days.
7. If it is a requirement that the Software be definitively transferred from the PU to another processing unit then the other party shall request permission from FM, which will not withhold such permission on unreasonable grounds.

Before installing the machine and setting it in operation, read the instructions for use carefully. This is safer for you and prevents any needless damage to the machine.

Fluid Management Europe B.V. will not accept any liability if the instructions below are not followed:

- If a machine has been damaged (during transport, for example), do not attempt to set it in operation. When in doubt, first contact either the Service department (see section 6.4) or your supplier.
- Place and connect up the machine exclusively in accordance with the installation instructions.
- All local safety rules and regulations should be observed.
- The SO-20a must be connected up in accordance with the following specifications:
Supply voltage 230 V.
- The machine must on no account be operated when empty. The total to be shaken weight may on no account exceed 20 kg.



figure 1

- Users should ensure that the machine is kept in good condition. Defective components should be replaced.
- Qualified technicians may only carry out all service activities (other than routine adjustments). Ensure that the mains lead is always kept unplugged while repairs are being carried out.
- Do not place any damaged containers in the machine. Such containers are shaken entirely at the user's own risk.

4.1 Conditions for correct installation

When installing the machine make sure that the following conditions are observed:

- Make sure the machine is level on a stable and even floor.
- Make sure that the machine is properly connected to the supply voltage or compressed air line (see Section 3, Safety instructions and warnings).

4.2 Installing the machine

4.2.1 Removal from the pallet



figure 2

- Remove the bottom panel by releasing the tape (figure 2).
- Remove the fixing brackets on the front-and backside of the machine (see figure 3 a 4). The bracket on the front side is fixed with 5 bolts (M6, key 10), see figure. The brackets on the backside are fixed to the pallet with 2 bolts (M6) per bracket. These brackets are gliding over the adjusting feet.
- Attention!: The SO-20a is standing loose of the pallet now.
- You can save the brackets. You need these when you will move the machine over a long distance (on a pallet).

Bracket for (5 bolts)

Brackets at the back (2x 2 bolts)

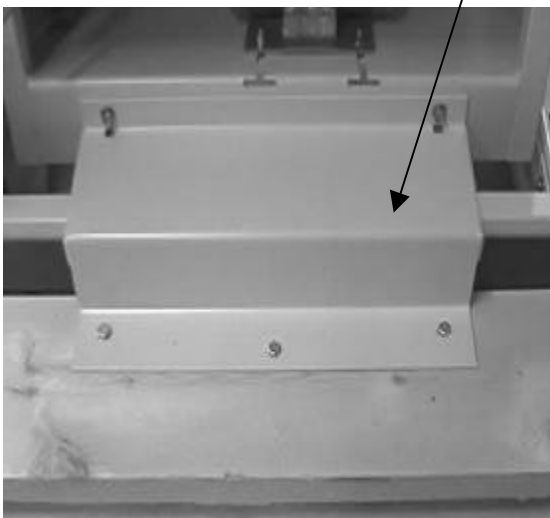


figure 3

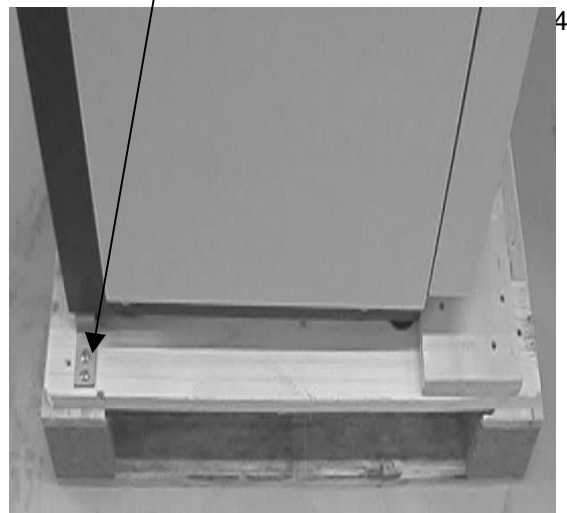


figure 4

If you removed the transport brackets, the machine is standing loose of the pallet (figure 5). Please go to work as follow:

- Stand (2 persons are needed) behind and next to the machine.
- Move the SO-20a backward from the pallet, so the adjusting feet can be placed on the ground and the machine is standing stable. (see figure 6).
- One person must cant the SO-20a a little bit backwards and the other must push away the pallet.
- Place the machine carefully on its wheels (see figure 7).
- Attach the loose bottom panel with 4 hooks in the slots of the machine and push these downwards. The door must go open without touching the panel.
- Turn the two adjusting feet at the back upwards, so the SO-20a is standing on his 4 wheels.
- You can move the machine to the every place you want (taking into account paragraph 4.1.)
- Ensure that the machine is level by raising or lowering the adjustable feet. For the machine to work properly, it is necessary for this to be done carefully.
- Secure the adjustable feet with the lock nuts.

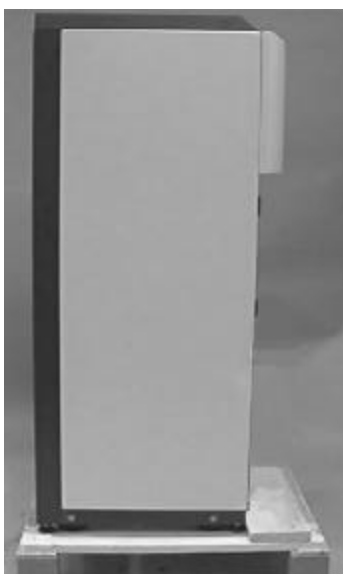


figure 5



figure 6



figure 7

4.2.2 Connecting up the machine

- By connection up the machine, check the following conditions:
The emergency stop is pushed in and the ON/OFF-switch at the right side of the machine is at <O>-positon (figure 8).
- The main lead of the SO-20a can now be plugged into a 230 V powerpoint.

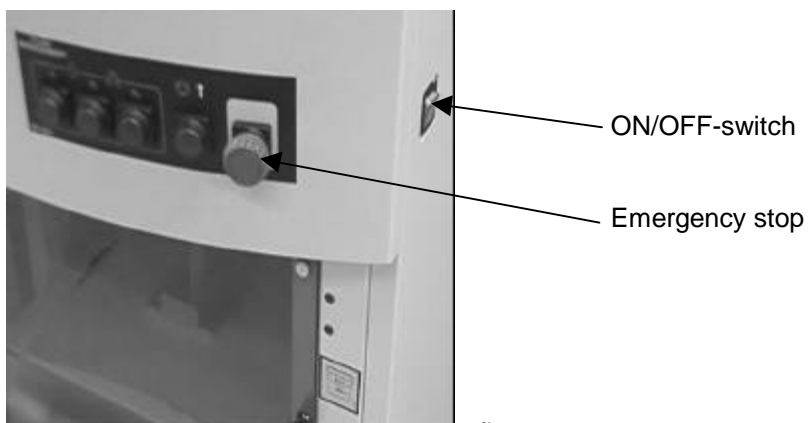


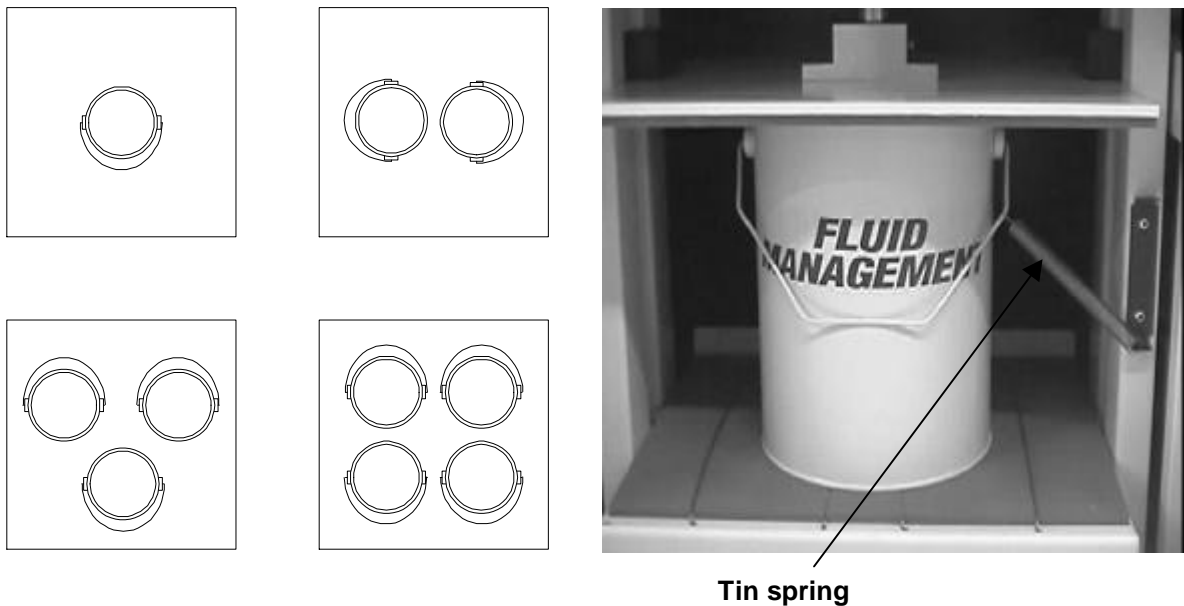
figure 8

5.1 Starting up for the first time (all types)

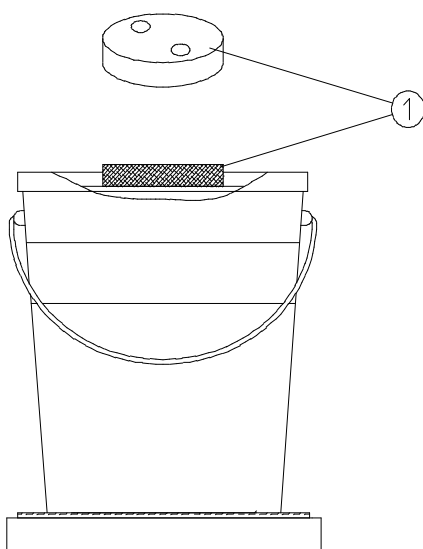
- Check whether the machine has been correctly placed and connected up.
- Turn the emergency stop in the direction of the arrow so that it is released.

5.2 Placing containers inside

To keep the inside frame in equilibrium during shaking, it is necessary for the combined center of gravity of the containers to lie in the middle of the shaking platform (between the lead screws) as far as possible. Otherwise, extreme vibrations can damage the machine. The correct distributions of containers are shown in Figure 9. It is also possible, for example, to place a box holding six 1-litre containers in the machine. To prevent the handle of the container hitting against the container and damaging the container during shaking, the handle must be fastened. Using a spring, which is attached to the right side of the spring bracket (figure 10), can do this.



5.3 Use of filler discs



Two soft rubber filler discs (a thin one and a thick one) are supplied with the machine. For containers with a deep lid, lay the filler disc on the lid. This prevents the lid from having a pumping effect during shaking.

Fluid Management recommends the use of filler discs to guarantee proper operation of the machine and to prevent damage to the machine and its surroundings. Failure to use the filler discs may result in cracking of the containers and leakage.

1 = rubber filler disc

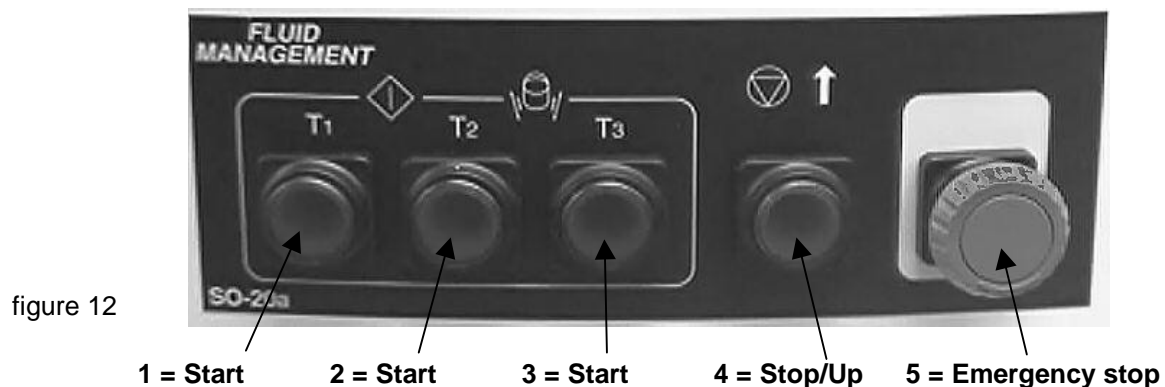
figure 11

5.4 Operating the shaker

1. Check if the machine has been correctly installed and connected up as stated in 4.2.1. and 4.2.2.
2. Press the ON/OFF-switch at the right side of the machine (figure 8) into the <I> position.
3. Open de door of the SO-20a.
4. Place the container(s) inside as described in 5.2 and 5.3.
5. If the container does not fit in the machine, the clamping plate can be moved upwards by using the STOP/UP-button (figure 11, number 4). Press the button constantly. The maximal height of the container is 270 mm.
6. Close the door of the SO-20a.
7. Push on (or at the same time a combination of) start button(s) (figure 12, numbers 1,2,3) to set the desired shaking time and to start the machine. Realizable shaking times are stated in the table beneath.

T1	T2	T3	T1+T2	T1+T3	T2+T3	T1+T2+T3
30 sec.	60 sec.	120 sec.	90 sec.	150 sec.	180 sec.	210 sec.

8. The clamping plate will move downwards and will clamp the container, immediately the shaking starts for the setting time.
9. After the shaking period the machine shall stop and will move the clamping plate automatically upwards. Before opening the door and remove the container please wait till the frame is not moving anymore. If necessary place a new container, close the door and repeat procedure from point 7.
10. At the end of the day, de-energize the machine by setting the ON/OFF-switch in the <O> position.



Notes:

The shaking cycle can be interrupted while it is in progress by pressing the UP-button. The clamping plate will automatically move upwards then.

In an emergency, pressing the emergency stop can also interrupt the shaking cycle. In this case it is necessary to wait 15 seconds before releasing the emergency stop. The emergency stop can be released by turning it a quarter turn to the left.

WARNING: Do not reach into the machine until it has come to a complete standstill!

6.1 Maintenance instructions

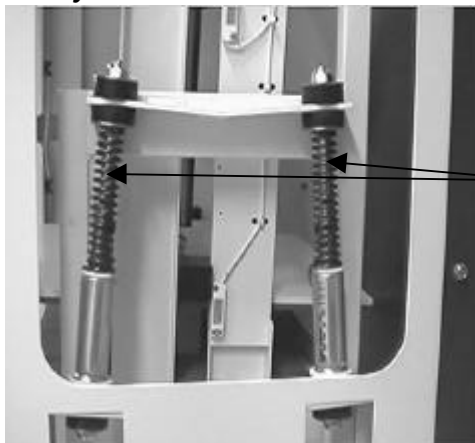
Before carrying out any maintenance, make sure that the machine has been disconnected from the mains power supply.

- 1) Qualified personnel should only carry out maintenance and any repairs.
- 2) Use only reliable and properly fitting tools.
- 3) Use only original management parts.
- 4) Before the equipment is released for use following servicing, checks must be carried out to ensure that all the settings are correct and the control and safety systems are working properly.

6.2 Maintenance to be carried out by the user

The maintenance consists mainly of lubricating the machine.

Every 3 months:



Lubricate the shaft of the shock absorber with grease containing (4x) (figure 13).

shafts (4x)

Every 6 months:

Lubricate the flange bearing (2x) (figure 14).
Lubricate the main shaft bearing (2x) (figure 15).
figure 13

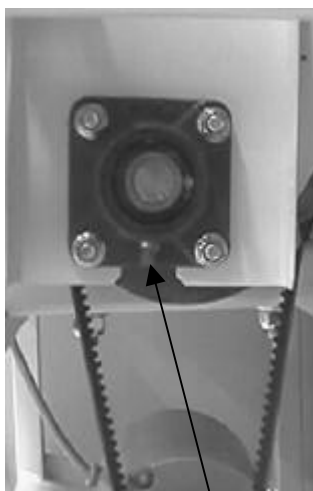


figure 14

lubrication point (2x)

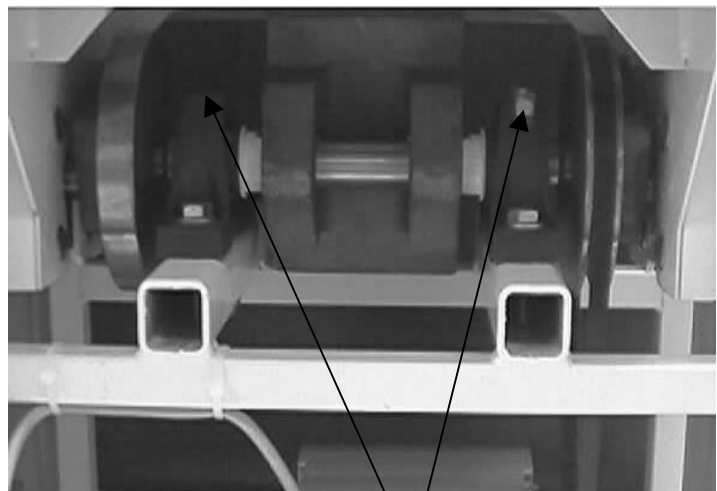









figure 15

lubrication point (2x)

6.4 Troubleshooting guide

Before calling in the Service Department, please check whether you can solve the problem yourself. If you don't succeed, call the Service Department for advice (see 6.5), making sure you have the model number and serial number to hand. They can be found on the nameplate on the machine (see figure 16).

Use the chart of Problem, Cause and Action below to judge whether you can solve a problem yourself or whether you will need to call in the Service Department. The  symbol means that the Service Department must be called.

Problem	Cause	Action
The machine is not receiving any power (230V)	<ol style="list-style-type: none"> 1. On/Off-button is in <0>position 2. Plug is not in the socket 3. No supply voltage present 	<ol style="list-style-type: none"> 1. Put On/Off-button in <I> position 2. Stick the plug into the socket 3. Check main power supply
Main power supply is present but the machine doesn't work	<ol style="list-style-type: none"> 1. Emergency stop has been pressed 2. Door of the machine is open 3. Machine (stirring motor) is overloaded 4. Door switch is defective 5. Start button defective 6. Printed-circuit board is defective 	<ol style="list-style-type: none"> 1. Release the emergency stop 2. Close the door 3. Let the machine cool down (stirring motor) 4.  5.  6. 
Extreme vibrations during shaking	<ol style="list-style-type: none"> 1. Machine has been loaded incorrectly 2. Machine is not levelled 3. Adjustable feet have been set incorrectly 4. Shock absorbers are defective 	<ol style="list-style-type: none"> 1. Centre the load 2. Level the machine 3. Adjust all feet so they support the machine properly and lock them into position 4. 
Clamping plate goes down, container has been clamped, but the machine does not shake	<ol style="list-style-type: none"> 1. Shaking motor is overloaded 2. Shaking motor is switched off 3.  thread 	<ol style="list-style-type: none"> 1. Let machine cool down 2. Start the shaking motor 3. 
Clamping plate goes down and stops, but the container is not clamped	<ol style="list-style-type: none"> 1. Container too low 	<ol style="list-style-type: none"> 1. Place adaptor under container
Clamping plate goes down, Container is not clamped, but machine shakes	<ol style="list-style-type: none"> 1. Too much resistance (because of contamination) in gliding profile 	<ol style="list-style-type: none"> 1. Clean gliding profile with benzine on flannel

6.6 Service / Service Department

If necessary, you can contact your supplier, local service department or you can contact the manufacturer directly:

Fluid Management Europe B.V.
 A Unit of IDEX Corporation
 P.O. Box 220
 2170 AE Sassenheim, The Netherlands
 Hub van Doorneweg 31
 2171 KZ Sassenheim, The Netherlands
 Tel : + 31 (0) 252 - 240800
 Fax : + 31 (0) 252 - 240882

7.1 Data machine disc

The machine plate is situated at the right side of the machine, just under the main plug. On this machine plate the type of machine and serial number is stated.
If there are questions about the machine, please have the type-and serial number at hand.



figure 16

7.2 Technical Data

Machine-dimensions(HxBxD in mm)	1385x740x710
Empty weight(kg)	150
Maximal size of product (HxBxD in mm)	Standard:270x370x320 Optional: 320x370x320 *
Minimum height of product (mm)	Standard: 70 *: 170
Maximum weight of product (kg)	20
Maximum clamping force (N)	2500
Supply	220/240 Volt~50 Hz, 10 Ampère
Motor output (Watt)	180
Motor speed (rpm)	1425
Shaking frequency (rpm)	685