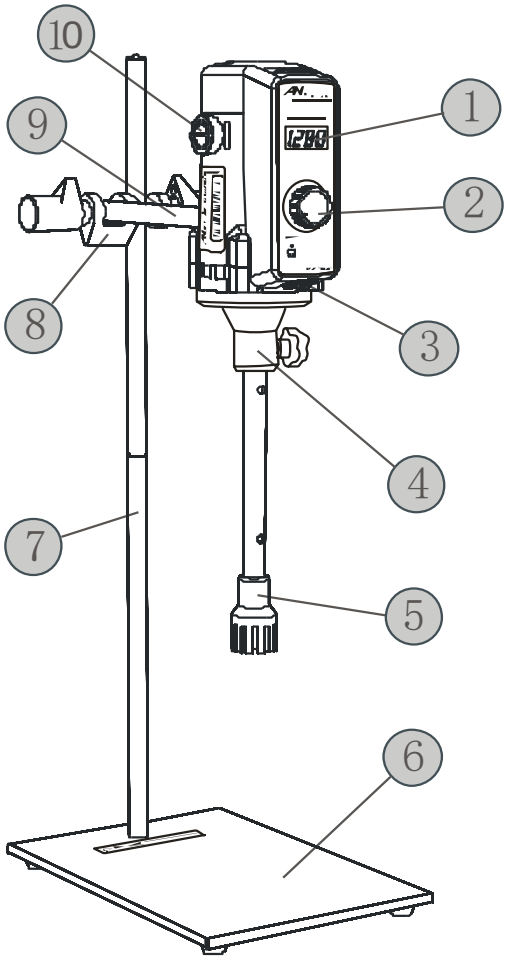
Laboratory Homogenizer
Nahita Brand
Ref. ZHB003

User's Manual



1. Speed digital display
2. Speed control knob
3. Power switch
4. Join block
5. Operating head
6. Base
7. Supporting stand
8. Supporting and fixing frame
9. Beam
10. Brush holder

Homogenizer ref. ZHB003

Packing list:

order	item	number	order	item	number
1	Heterogeneous host	1	6	Column wrench	1
2	Base	1	7	Allen key	1
3	Supporting stand	2	8	Operating head	1
4	Beam	1	9	Brushes (Spare)	2
5	Supporting and fixing frame	1	10	Operation manual	1

Thank you for using the Nahita Lab Homogenizer, ref. ZHB003. To make the best use of this product, please read the manual carefully before using it and keep the instruction manual for further reference.

1. Product overview

This high shear homogenizer is powered by micro motors of compact-structured Series excitation type, so the product can be widely used in laboratories or testing workshop for the mixing of low, moderate or high viscosity liquids. The mixer consists of the high-speed motor, the working head of homogeneous dispersion, speed controller and other components. The host is made of high-quality engineering plastic and die-cast aluminum to ensure steady operation. The working head is made of stainless steel for wide experimental application. The Operating Speed is controlled by a microprocessor to compensate for any sudden rotating speed change caused by overload changes or voltage fluctuations. The constant rate and built-in soft startup can ensure the operating safety. Stepless regulation of the speed can make sure you can modify the speed accordingly. The digital speed display can be of great help for you to collect experimental data; and the timer function can ensure the control of the operating time in experiment.

- Please pay special attention to the warning signal

- To avoid injury, please pay special attention to the warning signal

2. Technical parameters

Reference	ZHB003
Rated voltage	220 ACV
Rated frequency	50/60 Hz
Input power	850 W
Output power	500 W
Rated torque	17.1 N·cm
Working modes	Continuous/Timer
Speed control	Continuous (stepless)
Speed range	2000 – 28000 rpm
Speed display	LED
Speed detection function	Yes
Timer	1 – 999 min
Speed memory function	Yes
Overload protection	Yes
Working head material	Stainless steel 316
Adaptation for working head	12G/18G (included)/24G/30G/36G
Permissible ambient temperature	Lower than 40° C
Permissible relative humidity	Less than 80%
Homogenizer size	165×230×330 mm
Weight	8.7 kg

3. Installation

3-1. Put the base (6) on the platform, connect the two parts of supporting stand (7) by screwing them together before fixing it into the mounting hole in the base. Set in the supporting and fixing frame (8) on the upper end of the supporting stand and turn the handle to fasten them.

3-2. Connect the short beam (9) to the dispersing host electric motor through the mounting bolt hole at the back of the motor, then insert the beam into the supporting and fixing frame and turn the handle on it to fasten the motor on the supporting stand. The host motor can be adjusted on the supporting and fixing frame as needed.

3-3. When installing the operating head, follow the steps in Use and Maintenance 4-4.

- To ensure the running safety of the product, fix the key points of connections firmly and inspect it regularly.
- Before testing or operating the product, please read the Use and Maintenance carefully.
- Operate the product on the base and NO hand operation.

- The product can't be put into use in a flammable and explosive environment.
- Ensure a good grounding for the Input power supply socket. It's strictly prohibited to connect the grounding with telephone lines, metal pipes or lightening arresters.
- There must be enough space between the end of the operating head (feed inlet) and the experimental medium container, and the liquid level of the medium must be below the overflow hole of the operating head.

4. Use and maintenance

4-1. The machine uses single phase three wire system, so the power socket should be a triple one (220V, 10A).

4-2. A testing run is necessary before use and the operating head of the shearing homogenizer should NOT be installed when testing.

4-3. To avoid damage to the machine, it's strictly prohibited to start the machine when the operating head is out of the agitating medium.

4-4. Disassembling and assembling steps for the operating head:

4-4-1. When assembling the operating head, leave the feed inlet of the working head (5) downwards, hold the middle of working head and insert it into the join block (4) properly, and then rotate the handle to fix it.

4-4-2. When disassembling the operating head, unscrew the handle to remove the head. Be cautious not to drop the working head onto the base to avoid any damage to the feed inlet.

4-5. The input power to the unit: Turn on the power switch. The built-in Switch Indicator is on, and the speed digital display shows [0000]; the machine is ready for work.

4-6. Speed setting: rotate the speed control knob to enter the pre-state speed setting. You can pre-set the desired experimental operation of the stirring speed, or dynamically adjust the speed during the operation.
4-7. Start control: press the speed control knob to start the machine. The machine will work at the initial default speed if NO pre-set speed is conducted.
4-8. Pause / Restart: press the speed control knob to pause the machine during the run . Press the speed control knob again to restart the machine at the previous running speed (with speed memory function).

4-9. The timing control: press the speed control knob for 3 seconds, the digital display shows "SET" . You can rotate the speed control knob to set the desired experimental time. Press the speed control knob again to exit the timer setting and it is ready to set the speed value. Rotate the speed control knob to set the required speed; press the speed control knob to start the machine . Then the homogenizer is working at the required speed. The display alternately displays running speed and timing control of the countdown time. When the machine is suspended, its regular operation control must be reset.
4-10. Operating state control: When the input power is interrupted or the power switch is turned off accidentally, to ensure the safety ,the machine enters the preset initial state when you restart it.
4-11. Operational failure of the machine: When your instruction can not be executed, digital displays "Errl", indicating that the unit is in alarm status.
4-12. After the operation is completed, turn off the power switch, unplug the machine. And timely clean the shear emulsification working head for the next use.

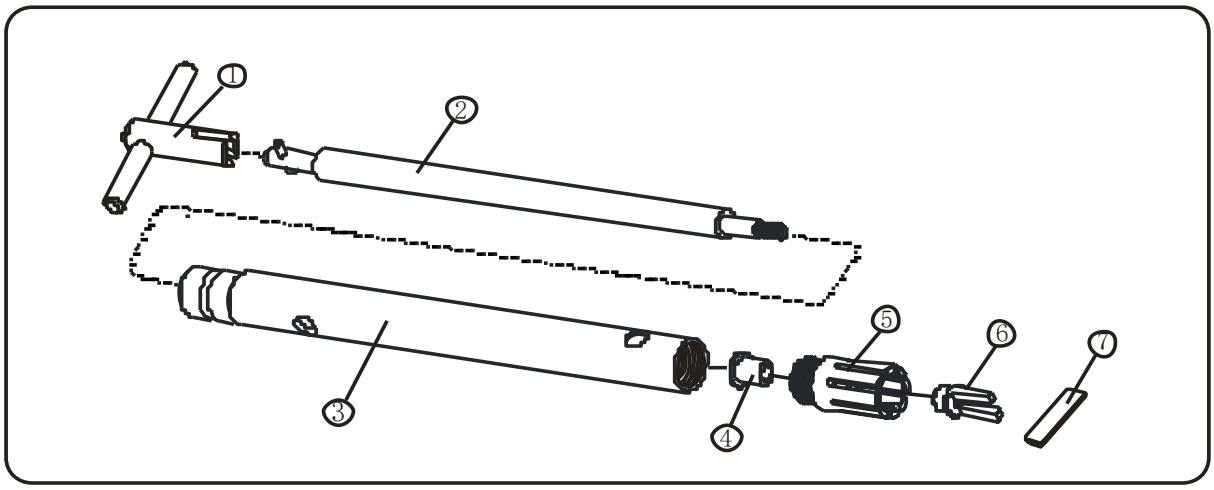
4-13. After using the product for some time or after a long stop, a maintenance inspection is needed before reusing it. To ensure electrical safety, use a Megger to measure insulation resistance.

4-14. The mixer brush is a wearing part, so a regular inspection is needed. When inspecting, switch off the electricity, pull the plug out, unscrew the brush cap (10) to pull the brush out. If the brush is less than 6 mm , replace it with a new brush of the original specification. Make sure the new brush should be able to move freely in the tube because a stuck brush may cause electric sparks or a motor failure.

4-15. If a motor failure happens, check whether the power is on ,the plug is loosened, or whether the brush is in good contact. If these faults are eliminated and the motor failure remains, contact your distributor. No mounting or dismounting the product for any person without operation certificate of such machine to avoid any accident.

Schematic diagram of parts on how to disassemble the operating head:

① Shaft removal tool ②Transmission shaft ③Bushings ④Bearing ⑤Stator ⑥Rotor ⑦Turn stator removal tool



CAUTION

Precautions：

- Place the product in dry and clean place. The ambient temperature should be no more than 40ºC. Avoid the falling into of foreign bodies.
- When operating the product in wet conditions, you need a electric leakage protection.
- Fierce fluctuation of voltage may cause an instable speed, so use a regulated power supply device.
- Avoid using the machine in severely corrosive environment. If you have to, protective measures are needed.
- If the agitating medium is volatile and flammable, be cautious that the electric sparks may cause explosion or fires.

5. Principle of dispersion homogeneity

In the experimental device, a high-speed motor drives an operating head, which consists of a fine claw type structure of the rotor and stator. The high speed of rotation of the rotor produces high frequent, strong circumferential tangential and angular velocity, inhaling the material from the bottom of the rotor and throwing it out of the stator bore with great centrifugal force. Under the comprehensive effect like hydrodynamic shear, friction, centrifugal extrusion, flow collision, the material is well dispersed and homogenized, 1000 times more efficient than ordinary mixing.

The device can be applied to different areas like dispersing of tissue in biotechnology, sample preparation in medicine, cosmetic industry, paint industry, petro-chemical processing. The experimental medium can achieve a fine and delicate mixing by squeezing, strongly impacting and cracking, and liquid layers can be avoided during the operating.

Different operating heads are designed for different experimental requirements. They can be widely used achieve different purposes: smash, homogenizing, emulsification, polymerization, suspension and agitation.

Different operating heads for you to choose from

Working head	12G	18G	24G	30G	36G
Handling capacity (mL)	30-800	50-1500	80-5000	100-8000	150-13000
For maximum viscosity (mPa.s)	5000	5000	5000	5000	5000
The maximum line speed of the rotor (m/s)	12	15	18	20	26
Min/Max immersion liquid height (mm)	35/150	45/160	50/165	60/170	65/175
Stator diameter (mm)	Φ12	Φ18	Φ24	Φ30	Φ36
Working head length (mm)	215	222	225	235	238
The highest temperature (℃)	120	120	120	120	120
Working head material	SS316	SS316	SS316	SS316	SS316
Working head bearing material	PTFE	PTFE	PTFE	PTFE	PTFE