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Safety instructions

- The unit is not suitable for manual operation.
- Observe all pertinent safety instructions and directives, as well as worksafety and accident-prevention regulations for laboratory use.
- The unit must not be operated without a dispersion tool.
- Never run dispersion tools dry, as the gasket and bearings will be destroyed if the tools are not cooled by the medium.
- Vibrations may loosen the hand screw on the flange of the drive unit. For your own safety check that the hand screw is secure and tighten it if necessary.
- Glass vessels must always be secured with a clamp to prevent them spinning. When working with flasks elastic couplers must be used to prevent fracture of the glass.
- Switch on the drive only at the lowest speed setting. Then gradually increase the speed to the desired level.
- Only dispersion and agitating tools approved by KOREA PROCESS may be used!
- Even in the case of repair work, the unit must only be opened by a qualified engineer. The mains plug must be pulled before opening the unit. The voltage-carrying components inside the unit may continue to carry a voltage for some time after the mains plug is pulled.
- Caution: Pull the mains plug before changing the dispersion heads!
- Caution: Continuous operation will cause the surface of the mounting flange for the dispersion tool to become hot!
- The ventilation slots on the drive must not be obstructed!
- The device does not start up again after a current failure. Switch device off and on.
- The KT60 basic may not be used to process inflammable or explosive media.
- When used for long periods of time at high rpm may cause overload phenomenon, more than 15,000 rpm unit does not work at least one hour.

Proper use

The KT60 basic is a dispersion unit suitable for manufacturing emulsions and dispersions in combination with a dispersion tool. The drive unit must be operated on a stand.

Unpacking

The KT60 basic is supplied fully assembled. The dispersion tools are also supplied fully assembled. Unpack the unit and the dispersion tools carefully and check thoroughly for damage. It is important that any damage is recognized on unpacking, as an immediate damage report may have to be made (post, rail or shipping firm). As supplied, the package contains: one KT60 basic drive unit, one boom arm, one hexagon nut, one set of tools and one set of operating instructions.

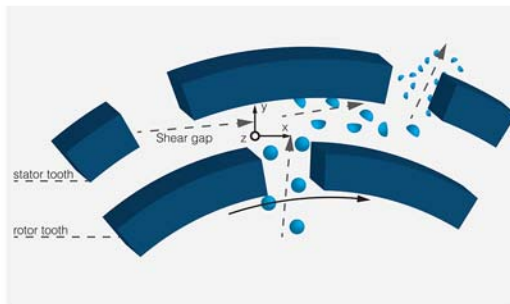
Useful information

You have acquired a high-quality product. Used in combination with an KT60 series dispersion tool, the KT60 basic unit is a high-speed dispersing and emulsifying unit capable of handling freeflowing and liquid media in batches.

Dispersion is the dissolution and diffusion of a solid, liquid or gaseous phase in a continuum that is not consolute with that phase.

The rotor/stator principle:

Due to the high rotation speed of the rotor, the medium to be processed is automatically drawn axially into the dispersion head and then forced radially through the slots in the rotor/stator arrangement.



The high accelerations acting on the material produce extremely strong shear and thrust forces. In addition, high turbulence occurs in the shear gap between rotor and stator, which provides optimum mixing of the suspension.

The dispersion effectiveness is heavily dependent on the product of the shear gradient and the time the particles spend in the shear zone. The optimum range for the circumferential velocity of the rotor/stator arrangement is 10-24 m/s.

A processing time of a few minutes is usually sufficient to produce the desired fineness. Long processing times bring only insignificant improvements in the obtainable fineness; the energy expended serves merely to increase the temperature of the medium.

Drive unit

With its power consumption, 1800 W at 24,000 rpm, the drive unit is suitable for a wide range of everyday dispersion applications in the laboratory.

The speed of the KT60 basic dispersion unit can be infinitely adjusted by using the numbered adjustment wheel. An DSM (Digital speed measuring system) can be inserted into the bore hole in order to measure the speed.

- Operating Speeds

Step in the speed range					
1	2	3	4	5	6
2500	7000	11000	15000	19000	24000 rpm

Switch Setting	Speed Range
1	2,500 rpm
2	7,000 rpm
3	11,000 rpm
4	15,000 rpm
5	19,000 rpm
6	24,000 rpm

Dispersion tools

Technical data			
Model	KT60-S-60M	KT60-S-60C	KT60-S-60F
Ident. no.	K160002	K160005	K160003
Working range	1,000 – 60,000 ml	1,000 – 50,000 ml	1,000 – 40,000 ml
Stator diameter	60 mm	60 mm	60 mm
Ultimate fineness, suspensions	High-speed mixer	10 – 50 µm	5 – 25 µm
Ultimate fineness, emulsions	High-speed mixer	1 – 10 µm	1 – 5 µm

Maintenance and cleaning

Drive unit:

The drive unit is maintenance-free but not immune from wear. The carbon brushes of the motor wear down over time and produce grooves in the collector. To clean the drive use only water with a detergent that contains tensides, or use isopropylalcohol for stubborn soiling.

Dispersion tools:

The seals in the dispersion tools must be constantly monitored. In the event of leakage, the suction effect of the rotating shaft can cause the medium to penetrate as far as the drive unit. If liquid emerges from the side holes at the top of the shaft tube, stop work immediately and check the seals.

The function of the dispersion heads depends on the condition of the sharp edges on the rotor and stator. These edges may be blunted very quickly in abrasive media, reducing the effectiveness of dispersion. The dispersion tools are cleaned by running them in a solvent which will dissolve substance residues without harming the seals. Because of the high flow speed, this is usually sufficient to clean the rotor and stator.

The dispersion tool must be removed and cleaned immediately after use to prevent residues from adhering to the threads of the rotor and stator and to prevent the formation of undesirable bacteria cultures.

The dispersion tools may also be sterilized. The following methods may be used:

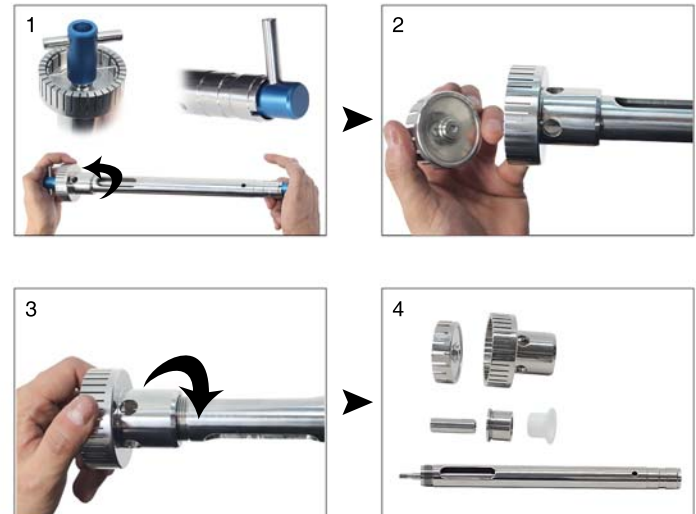
A) Chemical methods

Germicidal solutions (formalin, phenol, alcohol, etc.) are good general-purpose disinfectants. It is important that all disinfectant residues are then removed with sterilized water.

B) Sterilization with moist heat. This denotes the use of a steam jet pressurized to 2 bar at 120 °C.

C) Sterilization with hot air. Hot-air sterilization is usually performed at 160 °C or 190 °C.

Disassembling of dispersing element



Accessories

- Stands



- KPT-1000H
H-stand, 1,000mm
Ident. No. K510008



- KPT-1000TH
Telescopic H-stand, 500 ~1,000mm
Ident. No. K510009

- Fixing elements



- KPT-60BH
Boss head
Ident. No. K530006



- KPT-SC
Strap clamp
Ident. No. K520006

Warranty

You have purchased an original KOREA PROCESS laboratory machine which meets the highest engineering and quality standards. In accordance with KOREA PROCESS warranty conditions, the warranty period is 12 months. For claims under the guarantee please contact your local dealer.

You may also send the machine direct to our works, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs.

Technical data

Model	KT60 Drive
Ident. No.	K160000
Motor capacity	1,800 W
Speed range	2,500 ~ 24,000 rpm
Speed adjustment	Cont. variable
Sample volume (H ₂ O)	1,000 ~ 60,000 ml
Max viscosity	5,000 mPa·s
Noise without dispersing element	70 dB
Overload protection	Yes
Smooth run-on/start	Yes
Dimensions (W x D x H)	125 x 120 x 367
Weight	4.8 kg
Warranty	1 year