

USER MANUAL

D-160 Hand held Homogenizer



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D-160 complies with the regulations 89/336/EEG and 73/23EEG and conforms with the standards or standardized documents EN 61010-

1: EN 60204-1, EN 292-1, EN 292- 2 and DIN EN IEC 61326-1

Contents

Product Description	1
Important Safeguards.....	1
Unpacking the Instrument.....	2
Proper Use of the HOMOGENIZER	2
Working with Speed Control	6
Maintenance of Motor	6
Stand.....	6
Assembly of stand.....	6
Specifications and Technical Data	6
Warranty.....	7

Product Description

The handheld Homogenizer is a high speed dispersing instrument. It is based on the Rotor/Stator Technology. The shaft and rotor/stator can be disassembled for easy cleaning. You will receive the dispersing tools completely assembled for immediate use with your dispenser. Should you dismantle these (e.g. for cleaning) please refer to page 4. This product is for laboratory use only and is used in mainly in biotechnology and human and veterinary medicine and clinical medicine and is suitable among other application for disruption of cells.

The drive unit can be used, based on the dispersing shaft used for volumes from 0.1ml to 50ml with the 5mm shaft or from 1ml to 250ml with the 10mm shafts.

Important Safeguards

When using electrical equipment, basic safety precautions are necessary to reduce the risk of fire, electric shock and personal injury.

- Only use the instrument for its intended purpose.
- Ensure that the correct electric voltage of the instrument and the power supply correspond correctly.
- Do not use this instrument in a hazardous area or manner. When handling hazardous chemicals, use appropriate hand and eye protection.
- Do not immerse electrical equipment in water.
- The drive must not be used in highly combustible areas and operated with easily inflammable liquids. It is recommended to run the units in fume hoods during operation.
- To avoid electrical shock, do not open housing. Remove cord from the power source when it is being checked or serviced. This instrument should only be opened by a qualified service personnel only.

The HOMOGENIZER is designed for continues operation, however normally the ultimate fineness will be reached within a few minutes. Any further dispersing will only introduce unnecessary heat into the medium.

- The HOMOGENIZER must never run without liquid when the shaft is attached– the lower slide bearing is cooled and lubricated by the liquid phase of the treated medium. Any dry running will destroy the slide bearing!!
- Ensure the dispersing shafts are cleaned properly after every use. When cleaning, remove the power cord from the power source.
- Never touch the spinning rotor, nor shaft, motor side coupling parts.

- Do not operate after equipment malfunctions or has been damaged in any manner. Return unit to our service centre for examination and repair.
- Switch off the unit before changing the dispersing element.
- Only suitable dispersing shafts from manufacturer must be used.
- The ventilation slots of the drive must not be obstructed.
- Never let the aggregate touch the bottom of the vessel.

Unpacking the Instrument

Please unpack the instrument carefully and inspect the unit, the tools and the stand (if this has been ordered) for damage. It is important that any damage during transport is noted at the time of unpacking. In certain cases it may be necessary to follow up with the forwarder.

A typical delivery includes:

- HOMOGENIZER drive
- One or more dispersing element according to your order
- One small H stand with clamp (if stand has been ordered)
- Operating instructions

Proper Use of the HOMOGENIZER

The voltage on the name plate must match the main voltage. If it does not, do not operate the instrument.

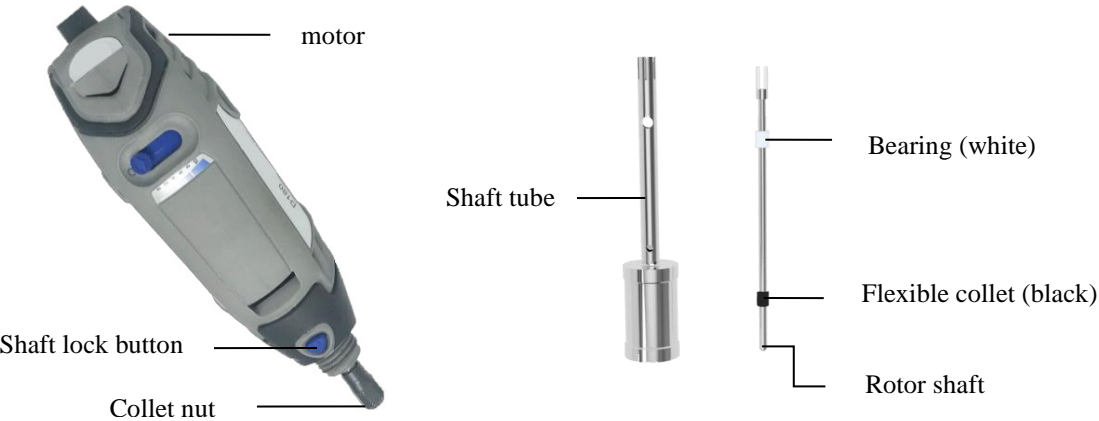
Make sure that the unit is switched off when connecting or disconnecting the dispersing shaft into the drive.

Insert the axle/rotor of the dispersing element completely into the drive coupling and tighten the screw cap by holding the rotor axle of the motor. Then screw the stator/shaft tube onto the motor flange directly.

To remove the dispersing element from the flange, remove the stator/shaft tube from the drive. Then hold rotor axle of the motor to release the screw cap and remove the axle rotor.

Never turn the motor on with the stator/shaft tube removed it may bend the axle/rotor. Always, both axle/rotor and stator/shaft tube must be attached.

Parts introduction



Installation

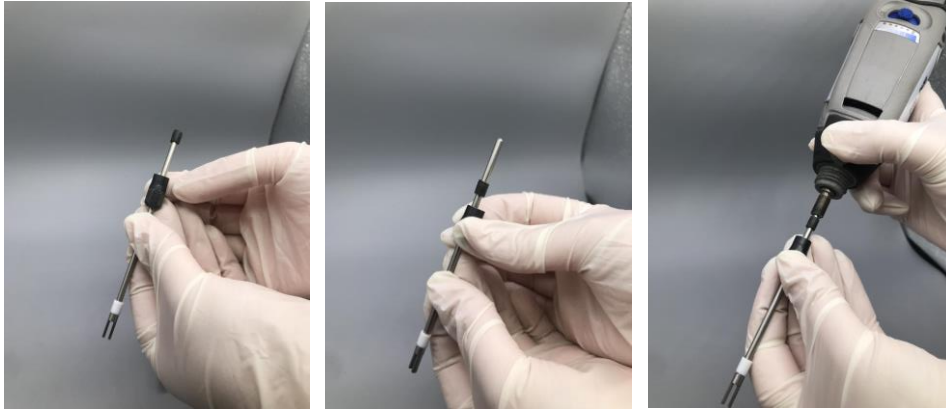
Fixing the shaft onto HOMOGENIZER drive



Hold HOMOGENIZER drive open the collet nut and press the blue button to unlock it and unscrew the collet nut



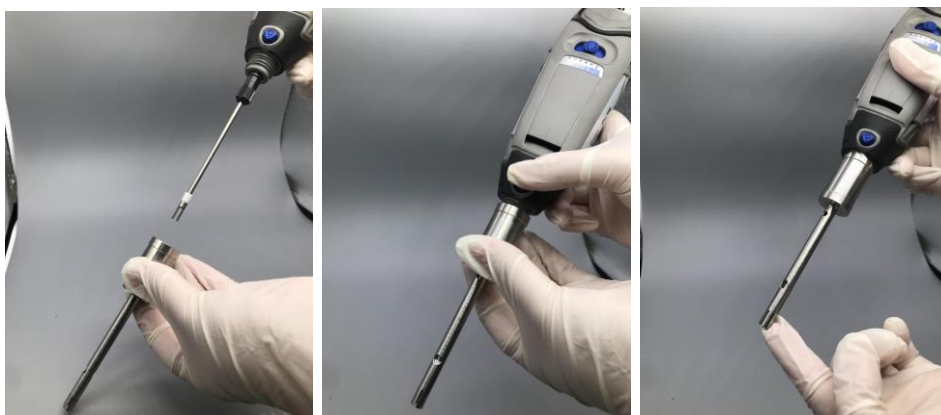
Remove collet nut and insert axle of the shaft into its place! Note: Please pull the Flexible collet (black) downward, ensure the shaft completely fixed.



Put collet onto the shaft and screw it back to the drive itself! While doing that you must press the blue button to lock it



**Put the shaft tube onto the axle and screw clockwise onto the housing!
Press the blue locking button and screw it fully onto the drive!**



When assembling the dispersing tool, always make sure that the PTFE bearing is fixed correctly and cooled by the working medium. Otherwise, it may cause serious defects to the whole dispersing tool. Examine the PTFE bearings regularly. Treat the dispersing tools carefully as they are the hearts of your dispersing unit. In particular the axle reacts very sensitive to impacts.

Cleaning

- Immediately after finishing work with the apparatus, the dispersing element must be cleaned so that substance residues do not stick to the threads.
- Small bacterial cultures can form in the small grooves, and this will create difficulties.

For this reason, and to clean the dispersing tool effectively, it should be run in a solvent that dissolves the residue, but does not harm the Teflon bearing and the steel.

- For proper cleaning, the dispersing element must be disassembled.
- Proper care and cleaning of the equipment will ensure a longer and better use of the equipment.

Sterilization

- Chemical processes: Germicidal solutions (formalin, phenol, alcohol etc) can disinfect in most cases. However, residues of the gemoce must subsequently be removed with sterilized water.
- Sterilizing by humid heat: This means sterilizing with steam at a pressure bar of 2 above atmospheric and a temperature of 120 degrees C
- Sterilizing by hot air: Hot air sterilization is normally carried out at 160C or 190C

Corrosion

- Stainless steel is not corrosion proof. Certain chemicals can seriously attack this material.
- All corrosive agents should only be in contact with the fine steel for a short period of time. Make sure they do not dry out the material.
- Ensure that the dispersing element is always cleaned properly after every use. Neutralise lye with solutions and acids.
- Protect all parts from aggressive agents.

Working with the HOMOGENIZER

The optimal immersion depth of the dispersing shaft is **approximately 2/3 below the liquid surface and 1/3 above the bottom of the beaker**. Based on the dispersing shaft used the unit can be used for following volumes 0.1-50ml with the 5mm shaft, which

makes it ideal for small applications inside Eppendorf tubes etc., or for volumes of 1-250ml with the 10mm shaft which makes it ideal for all other test tubes or small vessels.

Working with Speed Control

The drive and control are in the same housing. Before using the unit, run a test without the dispersing shaft by switching the ON button on the side of the drive. The speed is selected by the control knob on the top of the drive. Approximate rpm of the drive is:

1-2 = 8000-14000r/min; 3-4 =15000-19000r/min; 5-6 =20000-23000r/min;

7-8 = 24000-28000r/min; 9-10 = 29000-32000r/min;

For an emergency stop, press the large button on the drive.

Maintenance of Motor

The motor does not need any maintenance and there are no parts inside which can be repaired by the user. The only parts which are excluded from this are the carbon brushes. Please contact your authorized supplier for replacement and use original spare parts only. The carbon brushes can be replaced after disconnecting the power supply!

Stand

The Homogenizer is designed as a hand held one. However it can also be delivered with a small stand for more comfortable usage and storage of the unit.

Assembly of stand

This H stand consisting of a base, a rod and a holding clamp for the Homogenizer.

Screw the rods to the aluminum bottom piece to fix the “H” on the bottom. Screw the two shorter pieces at the back (50mm) and the longer pieces at the front of the base to get the “H”. Then attach the rod onto the middle piece. The rod consists of two different parts which need to be connected to save space during shipment. Then fix the aluminum clamp onto the desired height and insert the motor. Tighten the screw lightly.

Specifications and Technical Data

Voltage	230V 50/60Hz, 110V 50/60Hz
Power input/output	160/110 Watt
Rotor speed	between 6.3 to 14 m/sec
Weight	0.535 kg
Sound Pressure Level	72 dB(A)
Speed Range	1-10
Speed Setting	Infinitely Variable

Permissible Ambient Temperature	5°C- 40°C
Relative Humidity	85%
Permissible Period of Operation	100%
Protection	IP 20
Dimensions WxDXH (drive)	45mm x 55mm x 190mm

Warranty

This instrument has a warranty of 24 months from date of purchase which covers material and workmanship.

Manufacturer will repair or replace free of charge the defect parts which were found defective after an inspection finds that the defect is due to materials or workmanship.

The warranty for this equipment does not cover normal wear from using it and does not apply to any instrument or part which has been altered by anyone else than an employee of manufacturer or its authorized agents.

It also does not cover instruments which have been damaged due to accident, negligence of the user, failure to follow the operating instructions, the use of electric currents and circuits other than in this manual, misuse of the unit or abuse of it.

We reserve the right to change or modify or improve any of our instruments without any obligation to make corresponding changes to any instrument previously sold.

Please contact your authorized dealer for any further assistance.

USER MANUAL

D160 手持式均质/分散机



目录

1. 产品描述.....	1
2. 重要安全指示.....	1
3. 开箱检验.....	2
4. 正确使用.....	2
5. 安装分散头.....	2
6. 清洁.....	4
7. 灭菌.....	4
8. 腐蚀.....	4
9. 使用手持式均质/分散机.....	4
10. 调速方法.....	5
11. 马达保养.....	5
12. 技术指标.....	5
13. 支架.....	5
14. H型支架的组装.....	5
15. 质量保证.....	6

1. 产品描述

手持式均质/分散机是一款基于定/转子技术的高速均质/分散机仪器，其分散头及其中的定/转子可以方便地拆装达到清洁目的。您购买的是一体化分散头，已装配好可以马上使用。若因清洁而需要拆解分散头，请参考第3页的相应内容。

该仪器仅限于实验室使用，其应用领域包括化工、化妆品、药品、颜料等工业及大学、医学实验室。该仪器是一台高效均质/分散机，当工作体积为0.1ml到50ml时，建议选用配有5mm定子的分散头；当工作体积为1ml到250ml时，建议选用配有10mm定子的分散头。

2. 重要安全指示

- 当使用仪器时，基本的安全保护可以降低火灾、电击伤害及其他人身伤害发生的可能性。
- 只在其适用范围内使用该仪器。
- 确认供电电压、频率与该仪器匹配。
- 不在危险区域使用该仪器，也不以危险方式使用该仪器。
- 不要将仪器渗入水中。
- 不要在易燃物品存放处使用该仪器，也不要使用易燃液体操作该仪器。建议在通风环境中使用。
- 为防止电击伤，不要随意拆卸外壳。维修时要切断电源，只有合格的维修人员才能进行该仪器的维修。
- 手持式均质分散机的设计适用于连续工作模式，但一般条件下几分钟的连续工作均能达到很好的分散均质目的。更长的工作时间只能将介质温度无谓地升高。
- 手持式均质/分散机必须在有液体的状态下工作--
分散头下端的垫圈被介质液体冷却。干转将会立即破坏垫圈！
- 每次使用后务必正确清洁分散头，清洁前必须切断电源。
- 不要触摸旋转中的分散头及其任何部分，以免受伤。
- 当使用该仪器时，工作人员应配备必要的防护装备。
- 不使用有任何功能缺陷或已损坏的仪器，若有故障可送回制造商或供应商的售后服务部进行维修。
- 分散头更换之前，请切断电源。
- 只可使用经制造商认可的分散头。
- 使用玻璃等器皿时必须使用固定夹将器皿固定以防被打碎。
- 选择合适的转速防止液体飞溅。
- 不要覆盖马达的通风孔。
- 分散头不可接触容器的底部。

3. 开箱检验

请小心打开包装箱并检查内包装是否有损坏。当场与运输商确认仪器损坏非常重要，在一般情况下，运输过程中的损坏均可通过适当渠道向运输商索赔。

包装箱内一般含有：

- 主机
- 主机支撑杆
- 按照订单含有相应的分散头
- H 型单支撑杆支架（如果订购了 H 型支架）
- 使用手册

4. 正确使用

环境电压必须与仪器标识电压匹配，若不符合要求，请不要开机。

拆装分散头时要确认主机电源切断。

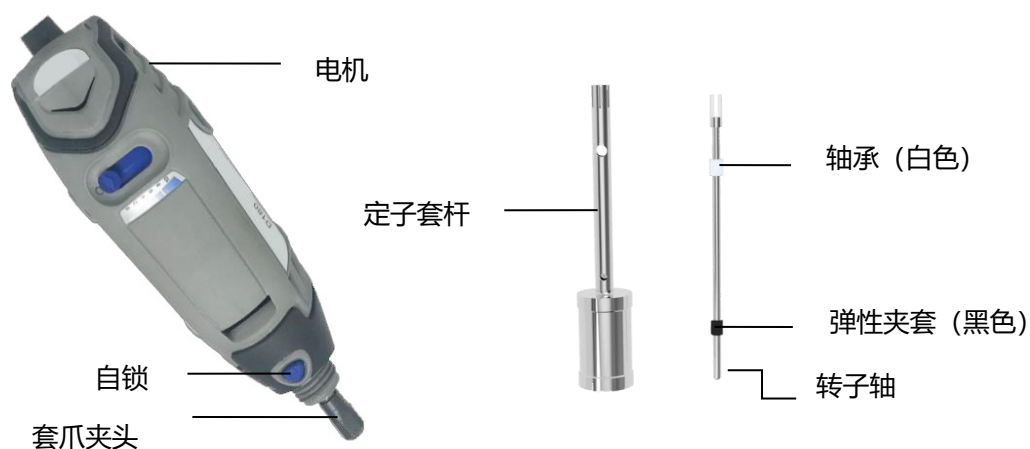
将转子及转子轴组装好，并上紧到主机上，然后将定子套杆固定到主机上。

从主机上拆卸分散头，手握机身同时松开锁紧帽，将分散头拆卸下来。

分散头不安装的情况下不要开机，以免损伤主机，永远保持定转子组件安装在主机上后开机。

5. 安装分散头

部件说明



安装分散头

将分散头安装在主机上



按住主机前端自锁蓝色按钮，同时旋松套爪夹头



取掉套爪夹头，将转子轴插入套爪夹头中心孔内。注意：请将黑色弹性夹套转子轴中部移动，确保转子轴完全固定。



将套爪夹头重新安装回去，注意同时按下蓝色自锁按钮同时旋紧套爪夹头。



将定子套杆旋入主机。压下蓝色自锁按钮同时紧固定子套杆。



在重新组装分散头过程中，一定要保护PTFE（特氟龙）垫圈的正确安装。在开机使用时务必保证分散头处于液体介质中以冷却PTFE垫圈，并定期检查垫圈的状态。分散头是分散器的核心，要小心操作，防止损伤，特别小心保护转子杆。

6. 清洁

- 工作完成后立即拆卸部件并小心清洁，防止分离物质粘结在分散头部件上。
- 在细小的沟槽中容易滋生微生物，为了有效地清洁分散头，也可采用可以溶解残留物的溶剂来清洁，但要小心不要损伤 PTFE 垫圈。
- 应该首先拆卸分散头，然后进行清洁。
- 正确的清洁保养可以延长仪器的使用寿命。

7. 灭菌

- 化学灭菌法：灭菌的溶剂（如：甲醛、苯酚、乙醇等）可以在大部分情况下实现灭菌，但是一定要用无菌水将残留的溶剂洗净。
- 湿热灭菌法：指 120°C，一个大气压条件下蒸 20 多分钟。
- 高温水蒸气灭菌法：一般是用 160°C-190°C 之间的水蒸汽进行灭菌。

8. 腐蚀

- 不锈钢不是全防腐材料，某些化学试剂可能会将其腐蚀。
- 有腐蚀性的化学试剂只能短暂地接触不锈钢，并且保证它们不能残留在分散头表面。
- 每次使用后都应该正确清洁，并将化学试剂洗净。

9. 使用均质/分散机

分散头插入被分散液体的正确深度是被分散液的 $\frac{2}{3}$ ，距容器底部约 $\frac{1}{3}$ 液体深。

10. 调速方法

调速钮位于主机的顶部，在无分散头的状态下打开主机前面的电源开关试运行，各档的大约速度为

1-2 = 8000-14000r/min; 3-4 = 15000-19000r/min; 5-6 = 20000-23000r/min;

7-8 = 24000-28000r/min; 9-10 = 29000-32000r/min;

需紧急停机时，按动主机上的大按钮。为达到最佳的分散效果，速度应设置为与分散目的相匹配的速度。

11. 马达保养

马达无需任何特殊保养，主机内部也没有用户可以自行更换的任何零件。唯一可以更换的零件是碳刷，碳刷备件请联系生产商或经销商，更换时务必断开电源。

12. 技术指标

技术指标	
电源/频率	230V/50/60Hz; 110V/50/60Hz
功率(输入/输出)	160/110Watt
转子线速度	6.3-14m/sec
重量	0.535 kg
噪音	72 dB(A)
速度设定	10档可调
环境温度	5°C - 40°C
相对湿度	85%
允许工作时间	100%
设计保护	IP20
尺寸	45mm x 55mm x 190mm

13. 支架

手持式均质/分散机是手持型产品，但是也可以与支架一起使用，使用支架更舒适方便，支架也可用于均质分散机的贮存。

14. H 型支架的组装

H型支架含底盘，一个支撑杆和容器束带夹。

将支撑杆固定在铝制的基座上，然后将支架脚放在支架基座的两侧，较短的支架脚放置在离基座

50mm的位置，较长的支架放在基座前端形成H型。支撑杆含有两个不同的锁紧部件，两个部件连接在一起以保证支撑杆在运输过程中的安全。容器束带夹放置在所需高度，并将主机固定，拧紧锁紧部件。

15. 质量保证

根据制造商的质量保证条款，在本说明书规定的正常使用条件和操作方法下使用该仪器时，该仪器的保修期为24个月（自购买之日起）。由于错误安装与操作、私自拆卸与维修以及其他违反说明书中规定的操作条款造成的仪器性能下降和损坏，不能按照本质量保证进行维修。如出现质保条款中的相关问题，请联系供应商。

