Operator's Manual

Homogenizer Models:
VWR 300D, VWR 400D & VWR 400DEL

Table of Contents

Warranty

VWR International, LLC warrants this Homogenizer to be free from defects in materials or workmanship under normal use for a period not to exceed twenty-four (24) months from receipt. This warranty does not include normal wear from use; it doesn't apply to any instrument or part which has been altered nor any instrument which has been damaged through accident, negligence, misuse, abuse, or failure to follow operating instructions, as well as the use of electric currents or circuits other than those specified on the plate affixed to the instrument.

Liability is limited to repair or replacement of the unit at VWR International, LLC discretion. This warranty is in lieu of all other warranties either expressed or implied.

Claims against this warranty must be made by first contacting the VWR International, LLC at phone 1-888-VWR-LINE (1-888-897-5463) or email technicalproductSupportNA@vwr.com. At that time the method for remedy and service will be determined. Under no circumstances shall a unit be returned to VWR International, LLC without first obtaining a Return Authorization (RA) Number. The RA number must be clearly visible on the return-shipping label. The RA number serves as identification of this unit once it arrives at the VWR International, LLC.

Claims for part shortages or shipping damage in transit must be reported within ten (10) working days from receipt of unit. Such claims made after this time will not be honored. VWR International, LLC reserves the right to change, alter, modify or improve any of its instruments without any obligation to make corresponding changes to any instrument previously sold or shipped. The foregoing obligations are in lieu of all other obligations and liabilities, including negligence, and all warranties, of merchantability or otherwise, expressed or implied in fact or by law, and state our entire and exclusive liability and buyer's exclusive remedy for any claim or damages in connection with the sale or furnishing of goods or parts. Only original parts and accessories that have been approved by VWR International, LLC can be used (third-party spares without VWR International, LLC approval void the warranty).

Maintenance

Care and Handling:

Please unpack the apparatus carefully and check that it is not damaged. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage, the carrier must be notified immediately.

Maintenance & Service:

The homogenizer should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. The finish can be washed with water and soap or detergents, using a cloth or sponge. Do not allow water to get inside the unit. Allow drying before using.

Environmental Conditions:

Non-Operating Storage:

Temperature: -20 to 65 deg. C (-4 to 149 deg. F)
Humidity: 20% to 85% RH, non-condensing

Operating Conditions:

Temperature: 18 to 33 deg. C (64 to 91 deg. F)
Humidity: 20% to 85 % RH, non-condensing
Altitude: 0 to 6,562 ft. (2000 M) above sea level

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

Safety

Safety Information:

1) Never attempt to hold the lower end of the generator while the generator is attached to the motor.
2) Over tightening the rotor knife onto the rotor shaft can result in breaking the shaft and/or distortion of the rotor knife.
3) Any servicing of the homogenizer motor unit, except brush replacement, should be performed by certified VWR Service Department.
4) Use of any accessories or attachments other than those supplied by the manufacturer may be hazardous.
5) The motor unit is supplied with sealed ball bearings and requires no additional lubrication. Any additional lubrication to the motor can result in bearing and/or motor failure.
6) Running a generator or chamber assembly without liquid media can cause damage to the bearings.

D Series Homogenizer Introduction

Specifications:

Power (Watts) and Maximum Velocity ("Speed") in Revolutions:
VWR 300D – 576W and 28,000 RPM
VWR 400D /VWR 400DEL – 1305W and 23,000 RPM

Electrical Requirements:
120 Volts 50/60HZ 20 Amps OR 220 Volts 50/60HZ 10 Amps

Description:

The VWR D-Series Homogenizer is a perfect balance of power and superior performance. Combing a high watt motor and advanced technology in digital speed controls has resulted in the most reliable and durable laboratory benchtop homogenizer. Between its 3 Turn Speed Knob ability to adjust RPM in the hundreds opposed too thousands and brighter LED display provides a more user-friendly control. The VWR D-Series Homogenizer has two different models determined by the power (watt) options, of 576W or 1305W. With a sample volume range capability from microliters to liters, it demonstrates enormous processing versatility, which is designed to homogenize, emulsify, blend, and/or mix organic and inorganic materials.

Motor Unit Contents:

The D-Series consists of the following:

1. Motor Unit with Built-in Closed Loop Speed Control
2. Motorized Stand Assembly
3. Instruction Manual and Tool Kit
4. Appropriate Power Cord Set
5. Built-in Speed Display and Dual Power Light Indicators

The following accessories are supplied with the D-Series as part of the Tool Kit:

1. Safety Clip
2. 1/4" Hex Key
3. Screw Driver Tool

D Series Operation Instruction

This section contains information necessary to unpack and assemble the D-Series.

Unpacking:

The D-Series is shipped in a specially designed foam pack for added protection during shipping. Remove all parts from the shipping container and inspect for damage or missing parts. If any is defective or missing, contact VWR immediately.

Assembling The D-Series:

To assemble the D-Series:

1. Before inserting the power cord into the back of the stand and connecting it to the proper voltage outlet, make sure that the power switch located on the back of the stand is in the off position (push the "o" portion of the switch inward).

2. Likewise make sure that the motor switch located on the face of the housing is also in the off position (push the "o" portion of the switch inward), and that the speed control knob has been turned fully counter clockwise to the "off" position.

3. Check that the voltage noted on the back of the stand channel agrees with the available voltage. Variations of +/- 10% are permissible.

4. Insert the female end of the power cord into the power inlet module located on the back of the stand channel and the male end into the proper voltage outlet.

5. After all of the above assembly operations have been completed and the electrical connections checked, a test run of the motor unit and motorized stand can be made. Do not use any attachments at this time.

CAUTION:

Running a generator or chamber assembly without liquid media can cause damage to the bearings, unless the lower bearing of the generator has been replaced with a sealed and shielded stainless steel bearing.

6. Once again making sure that the motor switch on the front of the housing is in the "off" position, turn the power switch on the back of the stand to the "on" position. With the power switch turned "on" the power light indicator and digital display should light up. This is an indication that the main power is on.

7. Push the motor switch on the front of the housing to the "on" position the motor light indicator should light up. .

8. Turn the speed control knob clockwise and the motor will start to run and the motor speed will appear on the digital display. This knob controls a closed loop speed control, which allows for speed adjustment of 0 to the max. rpm with a speed variation of +/- 2% over the full speed range regardless of the change in viscosity of the sample being processed.

Raising And Lowering The Motor Unit:

The D-Series is supplied with the motorized stand. This unique stand design has utilized the technology of precision positioning used in the field of automation. Combining the accuracy and ease of movement of a linear ball screw with the precision positioning used in the field of automation. Combining the accuracy and ease of movement of a linear ball screw with the precision of linear ball bushings has resulted in the industry's most advanced motor support system. Positioning of the motor unit along the length of the stand is achieved by pushing stand height switch located on the front of the housing. Hold the stand height switch in either the up or down position until the unit has reached the desired position along the stand. The motorized stand is designed so that the standard 380mm long generator cannot be driven down into the tabletop. The motor will stop with the generator mounted on the motor, the generator can be lowered down into a steam bath or similar apparatus located below the surface of the table.

Generators/Sealed Chambers Recommended:

02-05075	5 mm Diameter x 75 mm Long Flat Bottom Generator
02-07075	7 mm Diameter x 75 mm Long Saw Tooth Bottom Generator
02-07095	7 mm Diameter x 95 mm Long Saw Tooth Bottom Generator
02-07120**	7 mm Diameter x 120 mm Long Saw Tooth Bottom Generator
02-07150**	7 mm Diameter x 150 mm Long Saw Tooth Bottom Generator
02-10105	10 mm Diameter x 105 mm Long Saw Tooth Bottom Generator
02-10115	10 mm Diameter x 115 mm Long Saw Tooth Bottom Generator
02-10150**	10 mm Diameter x 150 mm Long Saw Tooth Bottom Generator
02-20105	20mm Diameter x 105 mm Long Saw Tooth Generator
02-20115	20 mm Diameter x 115 mm Long Saw Tooth Bottom Generator
02-20150**	20 mm Diameter x 150 mm Long Saw Tooth Bottom Generator
02-20200**	20 mm Diameter x 200 mm Long Saw Tooth Bottom Generator
02-20340**	20 mm Diameter x 340 mm Long Saw Tooth Bottom Generator
02-30115	30 mm Diameter x 115 mm Open Slotted Generator
02-30150**	30 mm Diameter x 150 mm Open Slotted Generator
02-30200**	30 mm Diameter x 200 mm Open Slotted Generator
02-30340**	30 mm Diameter x 340 mm Open Slotted Generator
02-37115	37 mm Diameter x 115 mm Open Slotted Generator
02-37150**	37 mm Diameter x 150 mm Open Slotted Generator
02-37200**	37 mm Diameter x 200 mm Open Slotted Generator
02-37340**	37 mm Diameter x 340 mm Open Slotted Generator
02-43115	43 mm Diameter x 115 mm Open Slotted Generator
02-43150**	43 mm Diameter x 150 mm Open Slotted Generator
02-43200**	43 mm Diameter x 200 mm Open Slotted Generator
02-43340**	43 mm Diameter x 340 mm Open Slotted Generator
02-50150	50 mm Diameter x 150 mm Long Cryogenic Generator
02-59115	59 mm Diameter x 115 mm Open Slotted Generator
02-59150	59 m Diameter x 150 mm Open Slotted Generator
02-59200**	59 mm Diameter x 200 mm Open Slotted Generator
02-59340**	59 mm Diameter x 340 mm Open Slotted Generator
02-70150	70 mm Diameter x 150 mm Long Cryogenic Generator
02-30200HD	30 mm Diameter x 200 mm Open Slotted "HD" Series Generator
02-37200HD	37 mm Diameter x 200 mm Open Slotted "HD" Series Generator
02-43200HD	43 mm Diameter x 200 mm Open Slotted "HD" Series Generator
02-59200HD	59 mm Diameter x 200 mm Open Slotted "HD" Series Generator

****Important information for generators with a length greater than 115mm**

To ensure proper homogenization and to protect both the generator and sample, generators with a length greater than 115mm should only be used when the sample height in your tube/container comes at least half way up the generator shaft. Check the generator sizes located above for the length you are interested in and compare it to your total sample height to be homogenized to ensure that your sample height is equal to or greater than half of the generator length.

02-070MG7XL-12	12-pack of GenPack generators

15-32002	ST-2 Sealed Tube Assembly W/5 mm Generator For 1.5/2.0 ml Tubes
15-32005	ST-5 Sealed Tube Assembly W/ 5 mm Generator For 5 ml Tubes
15-32010	ST-10 Sealed Tube Assembly W/ 7 mm Generator For 18 ml Tubes
15-32015	ST-15 Sealed Tube Assembly W/ 7 mm Generator For 19 ml Tubes
15-32050	ST-50 Sealed Tube Assembly W/ 10 mm Generator For 50 ml Tubes
15-32050-20	ST-50 Sealed Tube Assembly W/ 20 mm Generator For 50 ml Tubes
15-09070	70 ml Stainless Steel Chamber Assembly W/ 1" Diameter Blade
15-09600	600 ml Stainless Steel Chamber Assembly W/ 2" Diameter Blade
15-19473	473 ml Glass Chamber Assembly W/ 2" Diameter Blade
15-19946	946 ml Glass Chamber Assembly W/ 2" Diameter Blade
15-02070-10	70 ml Chamber Assembly W/ 10 mm Diameter Generator
15-02070-20	70 ml Chamber Assembly W/ 20 mm Diameter Generator
15-02600-20	600 ml Chamber Assembly W/ 20 mm Diameter Generator
15-02600-30	600 ml Chamber Assembly W/ 30 mm Diameter Generator
15-081200	1200 ml Chamber Assembly W/ 70 mm Diameter Cryogenic Generator
15-12473-20	473 ml Chamber Assembly W/ 20 mm Diameter Generator
15-12473-30	473 ml Chamber Assembly W/ 30 mm Diameter Generator
15-12946-20	946 ml Chamber Assembly W/ 20 mm Diameter Generator
15-12946-30	946 ml Chamber Assembly W/ 30 mm Diameter Generator

(See Generators section for installation and usage instructions)

Homogenizer Unit Generator Probes

Description:

Our generator probes are manufactured out of 316 stainless steel for the utmost in chemical compatibility. They are precision crafted with a very narrow clearance between the inner rotating knife (rotor) and the outer tube (stator), which allows for quick, effective and repetitive processing, meaning you will get the results you want each and every time. Our generator probes are designed to be anti-foaming in design and are very easy to take apart and clean between samples. Appropriate cleaning procedures include chemically cleaning, autoclaving and flaming.
Complete replacement parts for the generator probe are available, thereby extending the life of this valuable piece of equipment.

All of the generator probes will fit any of the homogenizer units. The ability to scale-up in size is important, therefore, all of the generator probes are designed with this in mind. The choice of a generator probe depends on the end result desired and the material being treated. One of the most important items to consider in choosing a generator probe is the peripheral speed, which is critical for particle size reduction. The following shows the peripheral speeds that the individual units can reach in the medium:

5mm diameter generator probes	= 6 meters per second
7mm diameter generator probes	= 9 meters per second
10mm diameter generator probes	= 13 meters per second
20mm diameter generator probes	= 26 meters per second
30mm diameter generator probes	= 39 meters per second

All generator probes work on the same principal. The medium to be processed is pulled into the bottom of the tube by the rotor and forced out through the slots in the stator. The stator acts as an ideal flow breaker and prevents, to a large extent, the rotation of the medium and allows the introduction of large mechanical energies in a very small space. The vortex formation known in stirring is greatly reduced but cannot be avoided altogether. In the shearing gap between the rotor and the stator, about 1,000 times more energy is introduced into the medium than in stirring. The particles are pulled into the center of the rotor and then forced radially outward. In this process, the particles are reduced in size by hitting sharp edges, shearing between the edge of the rotor knife and the stator slots as well as cavitation. It usually takes only a few minutes to obtain a fine particle size reduction. Longer processing times achieve only a minor improvement in particle size reduction while increasing the temperature of the medium through the energy input.

Attaching the Generator Probe to the Homogenizer Unit:

1) All generator probes are fitted to the homogenizer unit by inserting the upper end of the generator probe into the collar end of the homogenizer unit.
2) Align the vertical slots in the generator probe with the locating pins in the motor collar by rotating the generator probe.
3) Once aligned, push the generator probe inward as far as possible and turn the generator probe left. The collar is spring loaded so you will feel some resistance as you push the generator probe inward and turn it.

****CAUTION****

AT NO POINT SHOULD EXCESSIVE FORCE BE NECESSARY TO CONNECT THE GENERATOR PROBE TO HOMOGENIZER UNIT

4) Once you have turned the generator probe ¼ turn, release the generator probe and you will hear a distinct click which the generator probe is dropping into its locked position.
5) To disconnect the generator probe from the homogenizer unit, push the generator probe up into the motor collar as far as possible and turn the generator probe clockwise ¼ turn. The generator probe will be pushed out of the motor collar by the force of the internal spring.

****CAUTION****

DO NOT REMOVE THE MOTOR COLLAR FROM THE HOMOGENIZER UNIT.

Operating Procedures:

1) The generator probe should be used within an open chamber (tube, beaker, or container).
2) The ideal situation is when the diameter of the generator probe is as large as the chamber will allow or as close.
3) Insert the generator probe into the medium that is to be homogenized. The depth to which the generator probe is inserted should be 1/3 of the liquid's height measured from the bottom of the chamber. According to the properties of the material, it may not be necessary to insert the generator probe to this depth. In case of heavy sediments, the generator probe may have to be positioned lower, but the generator probe must never come in contact with the bottom of the chamber.
4) **MID-BEARING NOTE:** All generator probes that are 120mm in length and longer contain a mid-bearing, which is located inside the generator probe approximately half way up the shaft. The mid-bearing must be lubricated by the sample/liquid during processing; therefore the sample volume should cover about half the length of the generator probe.
5) Start the homogenizer unit at the lowest possible speed and then slowly increase the speed to the desired level.
6) It is advisable that the generator probe be immersed within the container off-center. This off-center location will help minimize vortexing.
7) A generator probe has two (2) sets of venting holes. One set is located approximately 1" from the bottom of the generator probe and the second set is approximately 1" below the bottom of the generator probe collar. The lower hole aids in keeping the lower bearing lubricated, while the top hole allows venting of any liquid that might be forced up into the tube. There is no need to avoid liquid from entering the lower set of holes.
8) Once you have reached the level of processing that is required, reduce the homogenizer speed and start to slowly remove the generator probe from the chamber while the homogenizer is still slightly running. It is important that this be done slowly as you want to spin all medium from the generator probe back into the chamber and not outside of the chamber.
9) After spinning the medium off the generator probe while still in the chamber, the homogenizer can be turned off and the generator probe totally removed from the chamber.

Dismantling the Generator Probe:

Dismantling the 5mm generator probe

The following instructions are for the dismantling of only 5mm generator probe ONLY.

1. Unscrew the rotor knife from the bottom of the rotor shaft. Insert the 1/4" hex key (supplied in the tool kit) into the end of the rotor shaft collar and insert the screwdriver (supplied in the tool kit) into the rotor knife and turn the hex wrench counter clockwise.
2. Remove the rotor knife from the bottom of the generator probe tube and collar assembly.
3. Draw the rotor shaft and rotor shaft collar assembly upwards out of the tube and collar assembly. The PTFE (polytetrafluoroethlyene) washer can be removed from the rotor shaft.
4. Remove the lower bearing from the bottom of the generator probe tube and collar assembly. The lower bearing should be replaced when worn before the rotor knife starts to rub against the side of the stator.
5. The rotor shaft collar assembly can be removed from the rotor shaft by loosening the set screw located at the side of the rotor shaft collar using the hex wrench end of the screw driver (supplied in the tool kit).

Dismantling 7mm, 10mm, 20mm and 30mm generator probes

The following instructions are for the dismantling of all other generator probes except 5mm.

1. Unscrew the rotor knife from the bottom of the rotor shaft. Insert the ¼" hex key (supplied in the tool kit) into the end of the rotor shaft collar and insert the screwdriver end into the rotor knife and turn the hex wrench counter clockwise.
2. Remove the rotor knife from the bottom of the generator probe tube and collar assembly
3. Remove the rotor shaft collar assembly by loosening the setscrew located in the side of the rotor shaft collar from the rotor shaft using the hex wrench end of the screwdriver tool (For convenience, do not fully remove the setscrew from within the rotor shaft collar assembly).
4. Remove the PTFE washer from the rotor shaft. Draw the rotor shaft downwards out of the generator probe tube and collar assembly. (If rotor shaft does not slide out, press down on the rotor shaft from the top of the generator probe tube and collar assembly using the hex wrench end of the screwdriver tool).
5. Remove the lower bearing from the end of the generator probe tube and collar assembly using the screwdriver. The screwdriver should be inserted high enough to reach the inner side of the lower bearing. Put the flat side of the screwdriver against the lower bearing, and then pull the handle of the screwdriver against the saw-teeth or open-slotted end of the generator probe. The lower bearing should come out. The lower bearing should be replaced when it shows signs of wear and before the rotor shaft collar starts to come in contact with the inside wall of the motor collar or starts to rub on the top of the generator probe tube and collar assembly.

Assembly of the Generator Probe:

Assembling 5mm generator probe

The following instructions are for the assembly of only 5mm generator probe.

1. Insert the lower bearing into the bottom of the generator probe tube and collar assembly. Take the rotor knife and place it into the bottom of the generator probe tube and collar assembly and push the lower bearing into its proper location. The proper location is when the end of the rotor knife is flush with the bottom of the generator probe tube and collar assembly.
2. Attach the rotor shaft collar to the end of the rotor shaft. Make sure that the setscrew in the rotor shaft collar lines up with the flat on the end of the rotor shaft. The rotor shaft collar should be located as close to the end of the rotor shaft as possible. Slide the PTFE washer up the rotor shaft until it contacts the rotor shaft collar.
3. Insert the rotor shaft with the rotor shaft collar and PTFE washer attached into the upper end of the tube and collar assembly.
4. The rotor shaft should rotate freely within the generator probe tube and collar assembly. If the rotor shaft does not rotate freely, remove the rotor shaft from the tube and collar assembly and inspect both the upper and lower bearings for any possible damage. Replace any damaged bearings.
5. Insert the rotor knife into the end of the generator probe tube and collar assembly and rotate the knife clockwise while holding the rotor shaft collar.
6. Once the rotor knife is threaded onto the end of the rotor shaft, insert the ¼" hex wrench into the end of the rotor shaft collar and the screwdriver into the end of the rotor knife and lightly tighten.
7. With the rotor knife attached, place the generator probe with the blade end downward onto a flat surface. Loosen the setscrew located on the side of the rotor shaft collar. Push the rotor shaft collar downward until the nylon washer is in contact with both the bottom of the rotor shaft collar and the top of the upper bearing. Tighten the set screw and check that the generator rotates freely.

Assembling 7mm, 10mm, 20mm, and 30mm generator probes

The following instructions are for the assembly of all other generator probess except 5mm.

1. Slide the lower bearing onto the rotor shaft.

2. Attach the rotor knife to the rotor shaft by screwing it together until tight (hand tighten).
3. Insert the rotor shaft into the end of the generator probe tube and collar assembly. Then push the rotor knife up into the end of the generator probe tube and collar assembly until it cannot go any further. This will put the lower bearing into its proper place. The rotor shaft should stick out through the upper bearing located in the top of the generator probe tube and collar assembly.
4. While pushing against the rotor knife, place the PTFE washer over the end of the rotor shaft and put the rotor collar assembly onto the rotor shaft.
5. While holding the rotor knife, align the setscrew on the side of the rotor shaft collar and the flat end on the rotor shaft so they are facing each other. Once lined up with one another, tighten the setscrew against the flat end of the rotor shaft using the hex wrench end of the screwdriver tool (supplied in the tool kit).
6. Insert the ¼" hex key (supplied in the tool kit) into the end of the rotor shaft collar and insert the screwdriver end into the rotor knife and turn the hex wrench clockwise to confirm its tight (Over tightening of the rotor knife onto the rotor shaft can result in breaking of the rotor shaft and/or distorting of the rotor knife).

Generator Probe Maintenance:

Regular maintenance and inspection / replacement of wearing generator probe parts are recommended and will thereby extend the life of this valuable piece of equipment.

****CAUTION****

RUNNING THE GENERATOR PROBE WITH MISSING OR WORN COMPONENTS CAN CAUSE DAMAGE TO THE GENERATOR PROBE AND/OR HOMOGENIZER UNIT.

Perform an upper washer check:

1. Is the upper white Polytetrafluoroethylene (PTFE) washer missing? These tend to get misplaced when cleaning and often the generator probe is reassembled without the PTFE washer.
2. Is the white PTFE washer worn?
3. If you answered yes to either of these questions, then you will need to order replacement upper PTFE washers. This item is the same for all generator probes. You will need to order part number PRO-99-03302P (5 pack of upper PTFE washers).

Perform a lower bearing maintenance check:

1. It is time to replace your lower Polytetrafluoroethylene (PTFE) bearing if...
    a. The inside diameter of the lower PTFE bearing fits loosely on the outside diameter of the shaft
    b. And/or you are able to wiggle and tilt the PTFE bearing
2. Find the correct lower bearing part number for your generator.
    a. Refer to the Generator Spare Parts Section of this manual
    b. Speak with a sales consultant, and they will be happy to assist you in finding the correct part.

Upper SS bearing maintenance check:

1. Replacement of upper stainless steel bearing should be performed by an authorized Service technician.

Mid-Bearing maintenance check:

1. All generator probes that are 120mm in length and longer contain a mid-bearing, which is located inside the generator probe approximately half way up the shaft.
    a. The mid-bearing must be lubricated by the sample/liquid during processing; therefore the sample volume should cover about half the length of the generator probe.
2. Replacement of mid-bearing should be performed by an authorized Service technician.

Tips to maximize generator probe performance.

1. Never run the generator probe dry. The generator probe requires liquid sample/medium to lubricate the bearings during processing.
2. Without the liquid, the bearings can burn out and cause damage to the generator probe itself.
3. Make sure you are processing the recommended sample volume for the generator probe you are using. If you are unsure if this is the correct generator probefor your application, please contact a sales representative before using the generator probe.
4. Always begin homogenizing at a low rpm, and then gradually increase the speed to your target level.
5. Please follow the instructions in the manual to ensure that you attach the generator probe properly to the homogenizer unit.
6. We recommend taking apart and cleaning generator probe after each daily uses or in between samples, depending on your protocols.

GenPack Probe Pack Introduction

Description:

The GenPack Probe Pack are manufactured from 316 stainless steel and PTFE and consists of a generator probe tube, rotor shaft and knife assembly, drive collar and a set of PTFE bearings. GenPack Probes require use of the GenPack Adapter to attach to a homogenizer unit in order to operate.

Attachment of the GenPack Adapter to the Homogenizer Unit:

1) Align the grooves in the side of the GenPack Adapter's upper collar with the two (2) pins in the bottom of the homogenizer motor collar.
2) Push the GenPack Adapter into the homogenizer motor collar.
3) Once inserted as far as it will go, turn the GenPack Adapter left until you feel the GenPack Adapter lock into place. This should be approximately ¼ turn. The collar is spring loaded so you will feel some light resistance as you pushup, inward, and turn.

Attachment of the GenPack Probe to the GenPack Adapter:

1) Remove a GenPack Probe from the box.
2) Push the spring loaded sleeve on the GenPack Adapter upward.
3) While the sleeve is pulled back, insert the grooved end of the GenPack Probe into the GenPack Adapter.
4) Once the GenPack Probe has been inserted as far as possible into the GenPack Adapter, the bottom sleeve of the GenPack Adapter can be released. Releasing the bottom sleeve will lock the GenPack Probe in place. Pulling gently on the GenPack Probe will ensure that the GenPack Probe is locked securely in place.

Removal of the GenPack Probe from the GenPack Adapter:

1) With the homogenizer unit in an upward position, (GenPack Probe pointing downward), slide the bottom spring loaded sleeve of the GenPack Adapter upward. Sliding the bottom sleeve of the GenPack Adapter upward will allow the GenPack Probe to drop out of the GenPack Adapter.
2)

****CAUTION****

CARE SHOULD BE TAKEN WHEN HANDLING THE GENPACK PROBE, ESPECIALLY WHEN REMOVING THE GENPACK PROBE FROM THE GENPACK ADAPTER. DO NOT LET THE GENPACK PROBE DROP AS THIS COULD DAMAGE THE TEETH OF IT.

Operating the GenPack Probes:

Once attached to the GenPack Adapter, the GenPack Probe can be used like any other generator probe.

****CAUTION****

SHOULD NOT RUN THE GENPACK PROBE DRY, WHICH CAN RESULT IN THE FAILURE OF THE PTFE BEARINGS AND SUBSEQUENT DAMAGE TO THE GENPACK PROBE DURING OPERATION OF THE HOMOGENIZER UNIT, PLEASE ENSURE THAT THE LOWER BEARING IS WITHIN THE LIQUID OF THE SAMPLE BEING PROCESSED.

Dismantling of the GenPack Probe:

1. Insert the allen wrench end of the screwdriver (supplied in the motor unit tool kit) across and through the open slot of the GenPack Probe.
2. While firmly holding the drive collar at the upper end of the GenPack Probe (opposite end of the screwdriver) turn the screwdriver counter clockwise. If the drive collar is not held securely it will spin with the screwdriver, thereby not allowing the knife assembly and rotor shaft to be unscrewed from the drive collar.
3. With the drive collar removed, the rotor shaft knife assembly will slide out the bottom of the GenPack Probe tube.
4. The upper PTFE bearing can now be removed from the upper end of the GenPack Probe tube.
5. The lower PTFE bearing can now be removed from the lower end of the GenPack Probe tube.
6. GenPack Probe parts can now be placed on a tray and autoclaved as necessary.

GenPack Probe Maintenance:

Regular maintenance and inspection / replacement of lower bearings are recommended and will thereby extend the life of this valuable piece of equipment.

Perform a lower bearing maintenance check:

1. It is time to replace your lower Polytetrafluoroethylene (PTFE) bearing if...
    c. The inside diameter of the lower PTFE bearing fits loosely on the outside diameter of the shaft
    d. And/or you are able to wiggle and tilt the PTFE bearing
2. This item is the same for all GenPack Probe. You will need to order part number PRO-03-11703P (6 pack of GenPack Probe lower PTFE bearings).

Tips to maximize your GenPack Probe performance:

1. Never run the GenPack Probe dry. The GenPack Probe requires liquid sample/medium to lubricate the bearings during processing.
2. Without the liquid, the bearings can burn out and cause damage to the GenPack Probe itself.
3. Make sure you are processing the recommended sample volume for the GenPack Probe you are using. If you are unsure if this is the correct GenPack Probe for your application, please contact a sales representative before using the GenPack Probe.
4. Always begin homogenizing at a low rpm, and then gradually increase the speed to your target level.
5. Please follow the instructions in the manual to ensure that you attach the GenPack Probe properly to the homogenizer unit.
6. We recommend taking apart and cleaning GenPack Probe after each use.

All Generator Probe Cleaning

1) Immediately after you have finished working with the generator probe, the generator probe must be cleaned so that the substance residues do not stick to the rotor and stator and allow small bacterial cultures to form in undesirable places.
2) For this purpose, the generator probe should be run in a solvent, which dissolves the substance residue and does not harm the components. The rotor and stator are cleaned as the solvent is pumped through the generator probe.
3) Please ensure that all cleaning processes are compatible with 316SS and PTFE.
4) For a more thorough cleaning it is recommended that your generator probe be disassembled and cleaned via one of the following processed;
    a. Chemical process - Germicidal solutions (formalin, phenol, alcohol etc.) can disinfect in most cases.
        i. Residues of the germicide must subsequently be removed with sterilized water.
        ii. Please ensure that all chemical processes are compatible with 316SS and PTFE.
    b. Sterilizing by humid heat – This means sterilizing with steam at a pressure of 2 bar above atmosphere and a temperature of 120^{O}C.
        i. Generator probes are heat resistant up to 390° F / 198° C.
    c. Sterilizing by hot air - Hot air sterilization is normally carried out at 160 to 190^{O}C.
        i. Generator probes are heat resistant up to 390° F / 198° C
    d. Flaming - This method can be used, however, it is only effective on external surfaces.
        i. Generator probes are heat resistant up to 390° F / 198° C