

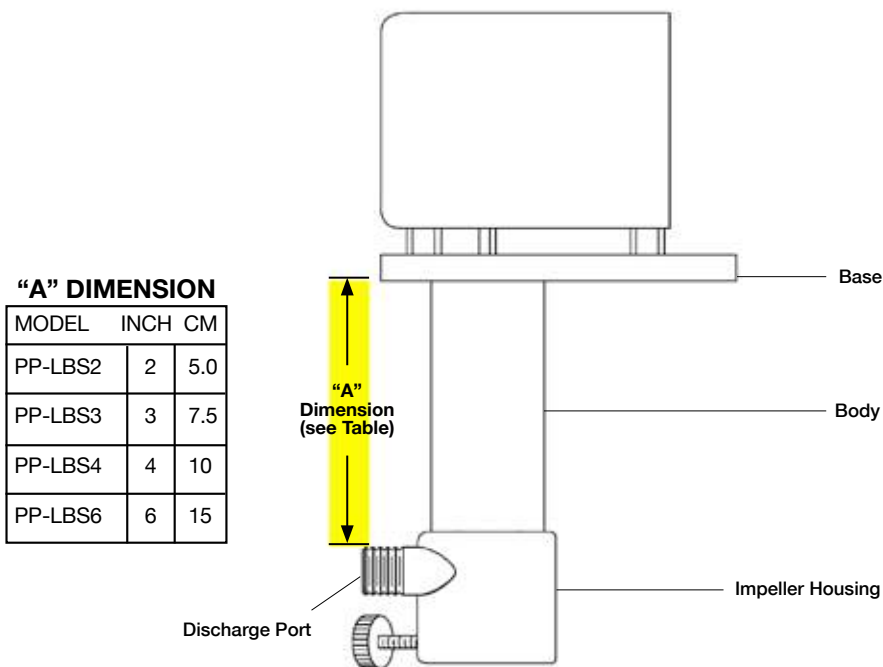


REPAIR GUIDANCE: FLO KING LAB SERIES MOTOR/SHAFT REPLACEMENT

Most Lab Series users with disabled Motors send the pump to our factory repair service or purchase a Motor with Balanced Shaft Attached (LAB MOTSHF) for do-it-yourself repairs. Installing the Motor/Shaft assembly is the easiest and most dependable way to replace a disabled Motor on the Lab Series. It is very difficult to replace only the Motor outside of the Flo King factory and is not recommended.

MEASURE PUMP-BODY LENGTH BEFORE ORDERING MOTOR/SHAFT ASSEMBLY

When ordering a Motor/Shaft Assembly, you must specify PUMP-BODY LENGTH. To determine pump-body length, see the dimensional drawing below. Measure the "A" Dimension (from the bottom of the Motor Base, where the pump is mounted on tank, to the top of the Discharge Port, where solution is expelled from the pump). This area is highlighted in yellow.



SHAFT MATERIAL OF CONSTRUCTION

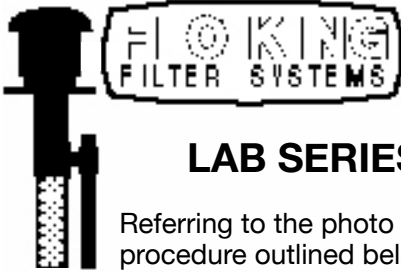
The standard Lab Series has a 303 stainless-steel Shaft covered with Teflon heat-shrink tubing. As a precaution for aggressive acid solutions that may attack SS, a titanium Shaft is available at an additional charge for pump-body lengths of 3, 4 and 6 inches. The titanium Shaft is also covered with Teflon heat-shrink tubing.

PUMP MATERIAL OF CONSTRUCTION

The Lab Series Base, Body, Impeller Housing, and Impeller are made of polypropylene (white in color) as the standard pump material of construction. The Lab Series pump is also available on a special-order basis in PVDF (Kynar) and stainless steel but not CPVC.

SPECIFY VOLTAGE WHEN ORDERING

Specify 110 or 220 volt when ordering. The Lab Series is available only with a single-phase motor.



LAB SERIES MOTOR/SHAFT REPLACEMENT INSTRUCTIONS

Referring to the photo pages that follow and to the Lab Series Exploded View on Page 8, use the procedure outlined below.

DISASSEMBLY

See Fig. 1 for suggested tools and Fig. 2 for parts identification.

1. Stand pump upside down on table and remove Filter Screw.
2. Place Phillips-head screwdriver (or other blunt object) on edge of Flow Plate and strike gently with lightweight hammer (Fig. 3). Flow Plate should pop out easily. Remove Flow Plate (Fig. 4).
3. Use Phillips-head screwdriver to remove three 6-32 x 3/8" panhead SS screws on blue Motor Cover (Fig. 5).
4. Remove Motor Cover Screen (Fig. 6).
5. Remove blue Motor Cover by gently hammering, striking with hand, or sliding off (Fig. 7).
6. Remove wire nuts and disconnect electrical wires (Fig. 8). Then separate Motor Cover and wires from Motor (Fig. 9).
7. Lay pump on side (Fig. 10a). With one hand, use needlenose pliers to hold Impeller in place. With other hand, gently cup Fan Blade and turn counterclockwise until Impeller is removed from threaded Shaft. Try not to bend Fan Blade while holding! *Alternative: If you prefer, you can use a 3/32-inch Allen wrench (Fig. 10b) to hold Fan Blade in place while turning Impeller counterclockwise with fingers or needlenose pliers. Allen wrench opening is on Fan Blade hub, just beneath blades.*
8. Secure pump on table with "C" Clamp (Fig. 11). Use Phillips-head screwdriver to remove three 8-32 x 1" flathead SS screws that hold Motor Plate to Pump Base. Then lift Motor/Shaft Assembly to separate from Base/Body/Housing (Fig. 12).

REASSEMBLY

1. With Base/Body/Housing Assembly still clamped to table, place Spacers in correct position (Fig. 13). Make sure notches on Spacers face up (toward Motor Plate).
2. Insert three 8-32 x 1" flathead SS screws through Motor Plate on Motor/Shaft Assembly (Fig. 14).
3. Lower Motor/Shaft Assembly into Base/Body/Housing (Fig. 15).
4. Tighten three 8-32 x 1" flathead SS screws to secure Motor/Shaft Assembly to Base/Body/Housing (Fig. 16). Again, make sure Spacer notches are in correct position.
5. Remove C clamp and lay pump upside down on table. As shown in Fig. 17, check to make sure Shaft is properly aligned inside Upper Stage Plate hole. *If not, referring to Fig. 18, it may be necessary to lay pump on side and realign Shaft by adjusting two hexhead Shaft Adjustment Screws that go from Motor through Motor Plate. Two open-end wrenches are needed – 11/32 inch for the hex-head (top) and 1/4 inch for the hex washer head (bottom).*
6. Use fingers (no tool) to thread Impeller onto Shaft (Fig. 19). Make sure Impeller is straight (not cross-threaded). With one hand, hold Impeller firmly. Gently cup other hand over Fan Blade and turn clockwise to tighten Shaft onto Impeller. Try not to bend Fan Blade! When you feel resistance and Fan Blade begins to bend, that's tight enough. *Alternative: If you prefer, you can use a 3/32" Allen wrench to hold Fan Blade hub stationary while turning Impeller clockwise with fingers (no tool).*
7. Slowly spin Fan Blade to ensure there is ample clearance between Fan Blade and screws on Motor. If not, slightly bend Fan Blade with hand to achieve clearance.
8. After Impeller is installed and Fan Blade adjusted, clamp pump onto table again.
9. Connect electrical wires with wire nuts.
10. Install blue Motor Cover over Motor (Fig. 20). Note how Motor Cover fits into notches of Spacers and cannot otherwise be installed. *Important precautions: Position Line Cord against inside of Motor Cover; make sure not to bend Fan Blade; tuck electrical wires out of way (under Motor if possible) so that they do not interfere with movement of Fan Blade or Shaft.*
11. Spin Fan Blade to make sure it does not strike any object. You can turn pump on briefly to test this.
12. Install Motor Screen (Fig. 21) and tighten three 6-32 x 3/8" panhead screws onto Motor Cover.
13. Remove C clamp and turn pump upside down on table to install Flow Plate. Angle Flow Plate into position and tap into place with small hammer or other blunt object (Fig. 22). Make sure Flow Plate is installed evenly until it snaps into place. Finally, install Filter Screw.

LAB SERIES MOTOR/SHAFT REPLACEMENT



Fig. 1—Suggested tools.

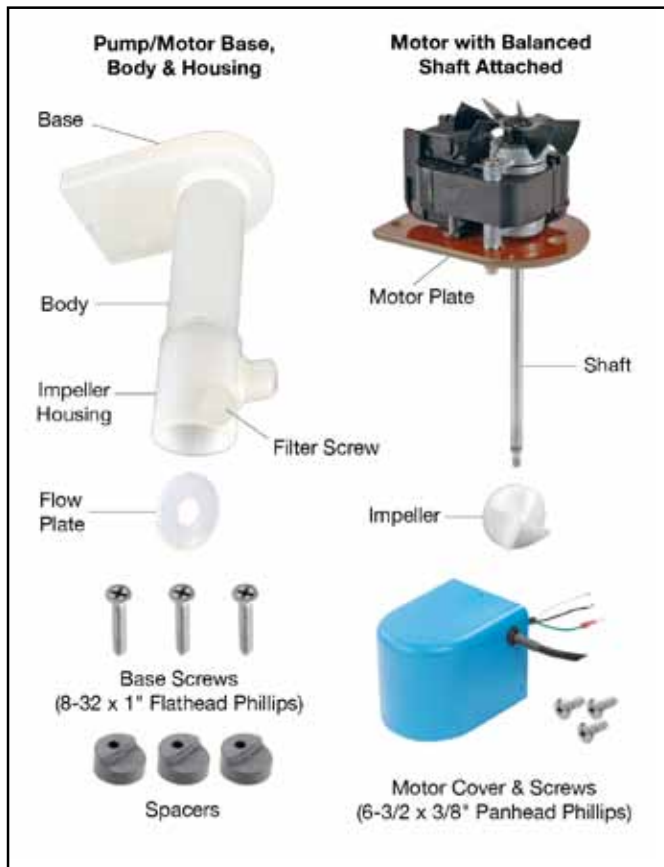


Fig. 2—Parts identification.



Fig. 3—Using hammer and blunt screwdriver, tap Flow Plate.



Fig. 4—Remove Flow Plate and put aside for reassembly later.



Fig. 5—Remove three screws from Motor Cover.



LAB SERIES MOTOR/SHAFT REPLACEMENT (continued)



Fig. 6—Remove Screen from Motor Cover.



Fig. 7—Remove Motor Cover by sliding off or striking with hand.



Fig. 8—Remove wire nuts and disconnect electrical wires on Motor.



Fig. 9—Separate blue Motor Cover from Motor.



Fig. 10a—Hold Impeller firmly with needle-nose pliers while using cupped hand to gently turn Fan Blade counterclockwise. (As an alternative, use Allen wrench as shown in Fig. 10b.)



Fig. 10b—As an alternative to Fig. 10a, you can use a 3/32" Allen wrench to hold Fan Blade stationary while turning Impeller counterclockwise with fingers or needle-nose pliers. Allen wrench opening is on Fan Blade hub, just underneath blades.

LAB SERIES MOTOR/SHAFT REPLACEMENT (continued)



Fig. 11—Secure pump on table with C Clamp. Then remove three flathead Phillips screws that hold Motor Plate to Pump Base.



Fig. 12—Lift Motor/Shaft Assembly to separate from Base, Body & Impeller Housing.

STAINLESS STEEL LAB SERIES: SPECIAL INSTRUCTIONS

The stainless steel Lab Series differs a little from those made of plastic, so some slightly different instructions apply.

Stand pump upside down on table.

Use a 5/64-inch Allen wrench to loosen the three 8-32 set screws on the Impeller Housing. Then twist and turn the Impeller Housing to remove it. It may be necessary to tap the Impeller Housing with a rubber mallet.

Note that the stainless-steel unit does not have a Flow Plate like other Lab Series pumps.



REPAIR GUIDANCE: LAB SERIES MOTOR/SHAFT REASSEMBLY



Fig. 13—Make sure notches on Spacers face up. Position as shown.



Fig. 14—Insert three 8-32 x 1" flat-head SS screws through Motor Plate on Motor/Shaft Assembly.



Fig. 15—Install new Motor/Shaft Assembly into pump body.



Fig. 16—Align Motor Plate holes with Spacer holes and Base holes. Tighten screws.



Fig. 17—Remove C Clamp and turn pump upside down. Look into Impeller Housing to make sure Shaft is approximately centered in hole, as shown. If properly aligned, ignore Fig. 18 and proceed to Fig. 19.



Fig. 18—If Shaft is not centered in hole, it may be necessary to adjust two hexhead Shaft Adjustment Screws that go from Motor through Motor Plate. Two open-end wrenches are needed—11/32" for the hex-head (top) and 1/4" for the hex washer head (bottom).

REPAIR GUIDANCE: LAB SERIES MOTOR/SHAFT REASSEMBLY



Fig. 19—Hold Impeller firmly with fingers while using cupped hand to gently turn Fan Blade clockwise. When you feel resistance and Fan Blade begins to bend, that's tight enough. *Alternatively, use a 3/32" Allen wrench to hold Fan Blade stationary while turning Impeller clockwise with fingers. Allen wrench opening is on Fan Blade hub, just beneath blades.*



Fig. 20—Tuck wires inside Motor cover so that they do not interfere with movement of Fan Blade or Shaft. Then carefully push Motor Cover over Motor. Make sure not to bend Fan Blade.



Fig. 21—Install Screen using three Motor Cover screws as shown in Fig. 5.



Fig. 22—Tap Flow Plate into place with small hammer or other blunt object.



LAB SERIES EXPLODED VIEW

