



**Safety Notice:** Only trained and qualified personnel should be permitted to install, use and maintain Flo King equipment. Follow all safety-related procedures to prevent injury to personnel or damage to the workplace and the environment.

## REPAIR GUIDANCE: MOTOR REPLACEMENT FOR BX3000 & BX5000

Referring to the Exploded Views of the BX3000 or BX5000 (Pages 11-12) and to the photo pages that follow, use the procedure shown below. **Important: When ordering parts, specify Pump Body Length (see Bulletin 13.9 for BX5000 or Bulletin 14 for BX3000) and Pump Material of Construction. CPVC is gray in color; polypropylene is white; PVDF/Kynar is also white but weighs considerably more than polypro and will sink in water. Stainless steel is also available.** Shafts are identical for BX3000 and BX5000. Thread size is 0.375-16 (3/8 inch). Also specify Motor Voltage and Frequency.

### DISASSEMBLY

See Fig. 1 for some Suggested Tools and Fig. 2 for Parts Identification.

1. If installed, remove Handle from Pump using socket wrench with 7/16-inch socket.
2. Loosen Lock Screw on Swiveling Impeller Housing (Fig. 3).

**IF YOU HAVE A PUMP MADE OF STAINLESS STEEL, INSTEAD OF PLASTIC, SEE SPECIAL INSTRUCTIONS ON PAGE 5.**

3. Use needlenose pliers to remove white Teflon Strap from Swiveling Impeller Housing (Fig. 4).
4. Twist and pull Swiveling Impeller Housing to remove from Pump Body (Fig. 5). It may be necessary to gently strike Impeller Housing with rubber mallet if solution chemistry has caused Swiveling Impeller Housing to stick to Pump Body.
5. Lay pump horizontally (sideways) on table.
6. Use Phillips-head screwdriver to remove screws holding Fan Cover to Motor (Fig. 6). Remove Fan Cover (Fig. 7).
7. Referring to Fig. 8, use flathead screwdriver to loosen screw on Fan Blade (or remove Clip on some Motors). Then pry off Fan Blade with two pry bars (Figs. 9 and 10).
8. To remove Impeller, use vice grips to hold Motor Stub on which Fan Blade was mounted (Fig. 11). With other hand, turn Impeller counterclockwise and remove (Fig. 12). Then remove Impeller Washer and Super Slinger.
9. Stand Pump upside down on table, so that Motor is supporting pump. *Suggestion: To make a motor stand to support the pump, drill a 1-inch-diameter (25-mm-diameter) hole in a piece of wood 3-1/2 x 3-1/2 x 2 inches thick (89 mm x 89 mm x 50 mm thick), as shown in Fig. 1. Alternatively, use a bench vice to stabilize Motor.*
10. Use Phillips-head screwdriver to remove four stainless-steel 1/4-20 Pump/Motor Base Screws (Fig. 13), then remove Pump Base/Body Assembly from Motor/Shaft Assembly (Fig. 14).
11. Use razor knife to cut and remove Teflon Shrink Tubing from Shaft (Fig. 15).
12. Lift Boot Seal with Needlenose Pliers, then use hand to carefully slide Boot Seal off Shaft (Fig. 16). Put aside for use again during reassembly, or order new Boot Seal if badly worn or damaged.
13. Firmly secure Motor in a bench vice. Tighten the bench vice onto the Motor Stub that is normally connected to the Fan Blade (Fig. 17). Using a torch, heat Shaft about 1 to 2 inches (25 to 50 mm) from Motor to loosen Loctite adhesive that secures Shaft to Motor Threads (Fig. 18). Torch for about 20 seconds, then turn Shaft counterclockwise with vice grips to loosen (Fig. 19). If Shaft will not turn, torch for another 20 seconds, then try turning again with vice grips. Repeat as necessary. When loose, unscrew and remove Shaft from Motor.



## REASSEMBLY WITH NEW MOTOR

1. Note that new Motor includes Fan Cover and Fan Blade (uninstalled). Set aside Fan Cover and Fan Blade for installation later.
2. Stand new Motor upside down (Fig. 20). Use Phillips-head screwdriver to remove screws from Spacers. Set Spacers aside for installation later.
3. Apply a drop or two of Loctite RC/609 inside female threaded end of long Shaft (Fig. 21).
4. Mount Motor in bench vice (Fig. 22). Tighten the bench vice onto the Motor Stub that normally connects to the Fan Blade. Thread long Shaft onto short Motor Shaft. Then tighten vice grips onto long Shaft. Turn vice grips clockwise to tighten long Shaft onto short Motor Shaft.
5. Place Motor/Shaft Assembly on wood Motor Stand. To activate Loctite adhesive, torch Shaft about 2 to 3 inches (50 to 75 mm) from Motor for 7 seconds (Fig. 23). Caution! Be careful not to damage Motor Washer.
9. Allow Shaft to cool before proceeding to next step.
10. Check to see if Shaft is properly balanced. **SAFETY WARNING!** Keep a safe distance from Shaft. If badly out of balance, Shaft may swing wildly! Turn Motor on. If Shaft turns normally, proceed to Step 11. If Shaft does not turn normally, it must be balanced before proceeding to Step 11. For balancing instructions, go to [www.floking.com](http://www.floking.com). Click the link that says Repair Parts & Service. Then scroll down to find the instructions for "Balancing BX3000 and BX5000 Shaft."

### STOP! DO NOT PROCEED WITH THESE INSTRUCTIONS UNLESS SHAFT IS BALANCED!

11. When Shaft is balanced, turn Motor off. Slide Boot Seal onto Shaft until it just touches Motor Washer (Fig. 24). Make sure Boot Seal seats evenly.
12. Slide new piece of Teflon Shrink Tubing over Shaft (Fig. 25). Shrink Tubing must extend from Boot Seal to end of Threads where Impeller screws onto Shaft. Use scissors to cut Shrink Tubing as shown.
13. Turn Motor on. While Shaft is spinning, use razor knife to cut Teflon Shrink Tubing between first and second threads of Shaft closest to Motor (Fig. 26).
14. With Motor still on and Shaft spinning, use torch to carefully heat Teflon Shrink Tubing onto Shaft (Fig. 27). Start torching from bottom up—that is, from Motor end of Shaft. Then carefully work your way up toward Impeller end of Shaft. Move torch slowly and evenly upward as Tubing shrinks around Shaft. CAUTION! Overheating will cause bubbling and irreparable damage to Teflon Shrink Tubing! Also be careful not to damage Boot Seal.
15. Turn Motor off and allow Shaft to cool before proceeding to next step.
16. Position Spacers on Motor, then place Pump Base/Body Assembly over Shaft (Fig. 28). Make sure Shaft is centered in hole (Fig. 29). Failure to center Shaft may result in serious damage as spinning Shaft and Impeller collide at high speed with other pump components.
17. Use Phillips-head screwdriver to tighten four stainless-steel 1/4-20 screws onto Pump/Motor Base and through Spacers into Motor (Fig. 30).
18. Push flat end of Super Slinger onto Shaft until it touches Pump Body (Fig. 31). Next, push Impeller Washer onto Shaft until it touches Super Slinger (Fig. 32). Make sure Impeller Washer lays flat. Tip: It may help to turn Impeller Washer clockwise to flatten against Super Slinger.
19. To install Impeller, use vice grips to hold Motor Stub (Fig. 33) that is normally connected to Fan Blade. With other hand, turn Impeller clockwise and tighten until snug.
20. Install Swiveling Impeller Housing onto Pump Body (Fig. 34).
21. Push Teflon Strap into hole while turning Swiveling Impeller Housing back-and-forth (Fig. 35). Teflon Strap secures Swiveling Impeller Housing to Pump Body.
10. Rotate Swiveling Impeller Housing to desired position, then tighten Lock Screw (Fig. 36).
11. Reinstall Fan Blade (Fig. 37). Tighten screw (or fasten clip on some Motors) to secure Fan Blade.
12. Reinstall Fan Cover and tighten screws (Fig. 38).

## BX3000 & BX5000 Motor Replacement (continued)



Fig. 1. Some suggested tools.

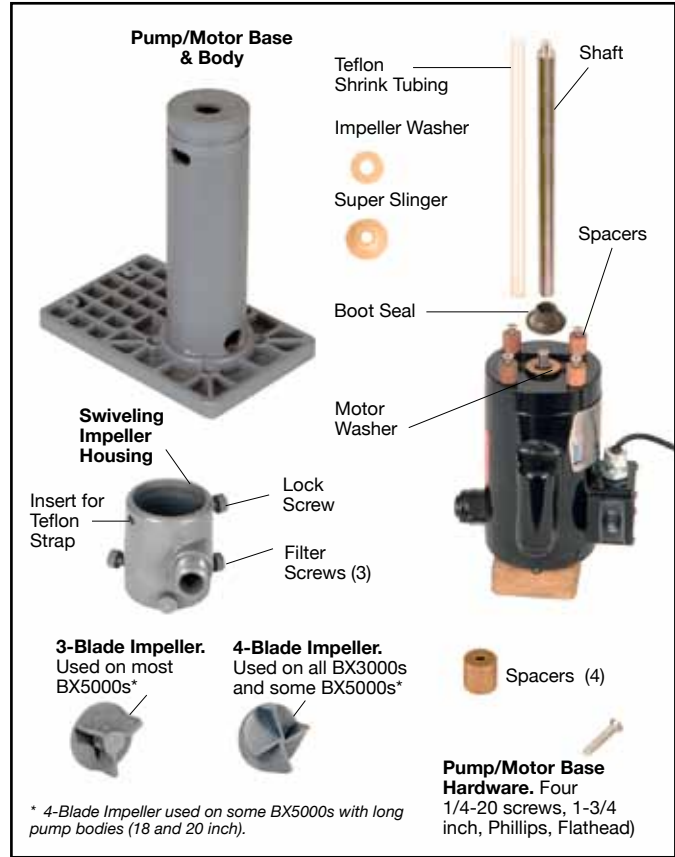


Fig. 2. Parts identification.



Fig. 3. Loosen Lock Screw on Swiveling Impeller Housing.



Fig. 4. Use needlenose pliers to remove Teflon Strap from Swiveling Impeller Housing.



Fig. 5. Twist and pull Swiveling Impeller Housing to remove from pump body.

**BX3000 & BX5000 Motor Replacement (continued)**



Fig. 6. Use Phillips-head screwdriver to remove screws holding Fan Cover to Motor.



Fig. 7. Remove Fan Cover from Motor.

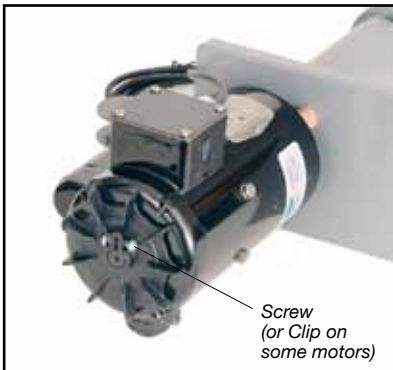


Fig. 8. Loosen screw on Fan Blade (or release clip on some motors).



Fig. 9. Use two bars to pry off fan blade.



Fig. 10. Remove Fan Blade.



Fig. 11. While firmly holding Motor Stub with vice grips, turn Impeller counterclockwise with hand.



Fig. 12. Remove Impeller, Super Slinger, and Impeller Washer.

**BX3000 & BX5000 Motor Replacement (continued)**



Fig. 13. Use Phillips-head screwdriver to remove four Pump/Motor Base Screws.



Fig. 14. Lift Pump Body/Base to separate from Motor/ Shaft Assembly.

**STAINLESS STEEL BX3000 & BX5000:  
SPECIAL INSTRUCTIONS**

The stainless steel units differ a little from those made of plastic, so some slightly different instructions apply.

After removing the Fan Cover and Fan Blade, stand pump upside down on table.

**Use a 3/16-inch Allen wrench to loosen the three 5/16-18 set screws on the Swiveling Impeller Housing.**

**Then twist and turn the Swiveling Impeller Housing to remove it. It may be necessary to tap the Housing with a rubber mallet.**

Now go back to Page 1 and proceed with Disassembly Step 5.



**BX3000 & BX5000 Motor Replacement (continued)**



Fig. 15. Use razor knife to remove Teflon Shrink Tubing from existing Shaft.



Fig. 16. Remove Boot Seal and set aside for reuse. Or order a new Boot Seal if old one is badly worn or damaged.



Fig. 17. Tighten bench vice onto Motor Stub, where Fan Blade is normally mounted. Make sure Motor is firmly secured.



Fig. 18. Torch Shaft for 20 seconds about 1 to 2 inches (25 to 50 mm) above Motor to loosen Loctite adhesive. Be careful not to damage Motor Washer.

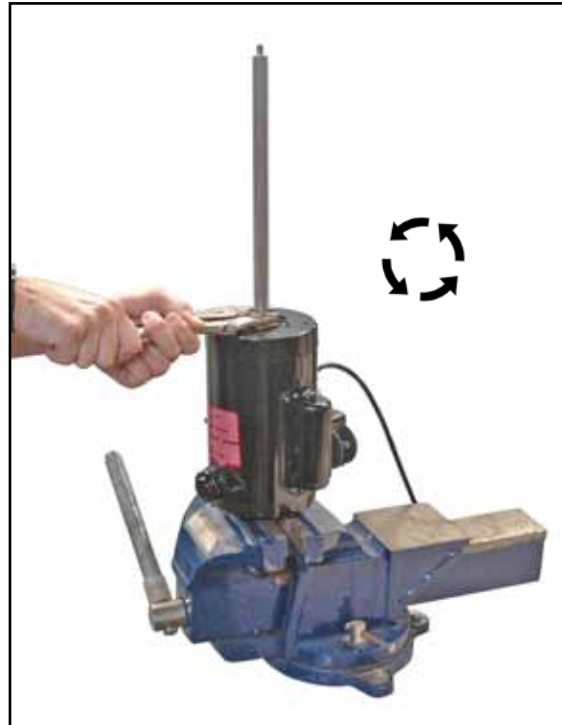


Fig. 19. Turn vice grips counterclockwise to loosen Shaft. If Shaft will not turn, torch for another 20 seconds, then try vice grips again. Repeat as necessary until Shaft can be removed.



### BX3000 & BX5000 Motor Replacement REASSEMBLY



Fig. 20. On new Motor, use Phillips-head screwdriver to remove four screws holding Spacers. Set Spacers aside.



Fig. 21. Apply a drop or two of Loctite inside female threaded end of Shaft that screws onto Motor.



Fig. 22. Secure Motor on bench vice. Screw long Shaft onto short Motor Shaft. Tighten clockwise with vice grips.



Fig. 23. Place Motor/Shaft Assembly on Stand. To activate Loctite adhesive, torch Shaft about 2 to 3 inches (50 to 75 mm) above Motor for 7 seconds. Be careful not to damage Motor Washer. Allow Shaft to cool.

**STOP!  
DO NOT PROCEED  
UNTIL SHAFT IS  
BALANCED**

1. **Caution! Keep a Safe Distance from Shaft Before Turning Motor on.** If out of balance, Shaft may swing wildly when Motor is turned on!
2. **Turn Motor On.** If Shaft turns normally, proceed to next step. If Shaft does not turn normally, it must be balanced before proceeding to steps on Page 8.
3. **If Shaft Needs Balancing, Refer to Instructions at [www.floking.com](http://www.floking.com).** Click the link that says Repair Parts & Service. Then scroll down to find the instructions for Balancing the BX3000 and BX5000 Shaft.

**BX3000 & BX5000 Motor Replacement REASSEMBLY (continued)**



Fig. 24. Proceed with this step only after Shaft is balanced. With Motor off, push Boot Seal onto Shaft until it touches Motor Washer.

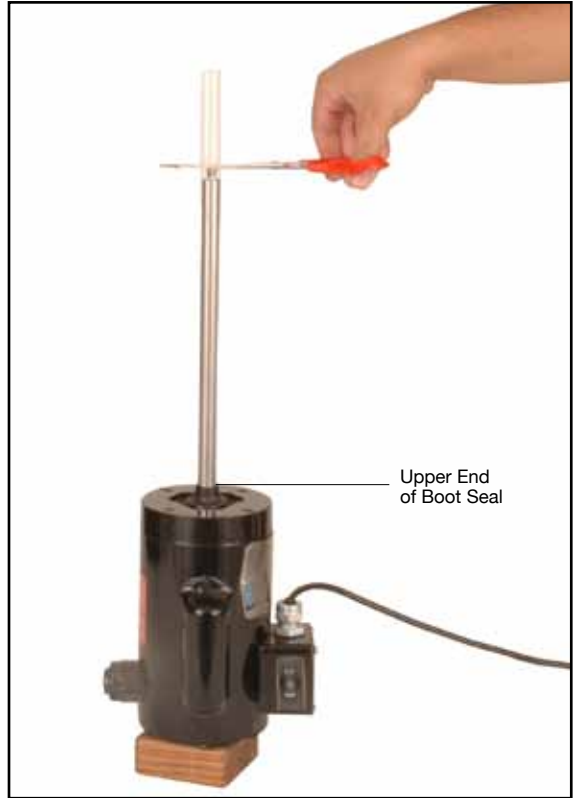


Fig. 25. Slide new piece of Teflon Shrink Tubing over Shaft until Tubing touches upper end of Boot Seal, as shown. Cut Tubing with scissors at top of Shaft Threads, as shown.

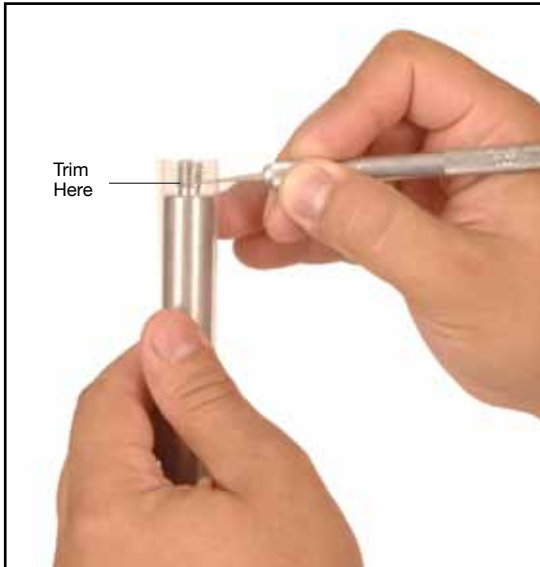


Fig. 26. Turn Motor on. Loosely hold one hand around spinning Shaft. With other hand, press razor knife firmly to trim Teflon Shrink Tubing in exact location shown (between first and second Shaft threads closest to Motor).

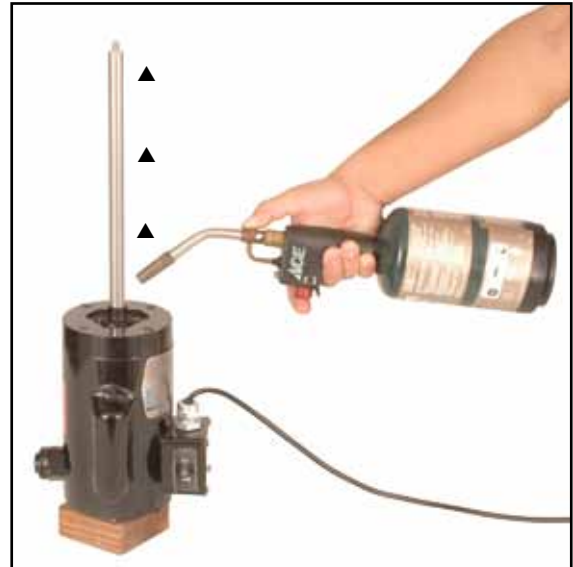


Fig. 27. With Motor still on and Shaft spinning, carefully heat Teflon Shrink Tubing. Start torch at bottom of Shaft and work way up toward top of Shaft until Tubing is evenly coated on Shaft. Caution: Overheating will damage Teflon Shrink Tubing!



**BX3000 & BX5000 Motor/Shaft Replacement REASSEMBLY (continued)**



Fig. 28. Position Spacers on Motor. Then place Base/Body Assembly over Shaft.



Fig. 29. Make sure Shaft is centered in hole, as shown above. Failure to center Shaft will result in serious damage to pump.



Fig. 30. Use Phillips-head screwdriver to tighten screws onto Pump/Motor Base, through Spacers and into Motor.



Fig. 31. Push Super Slinger over threaded end of Shaft. Note that flat side of Super Slinger must be against pump body.



Fig. 32. Push Impeller Washer over threaded Shaft until flush against Super Slinger. Make sure Impeller Washer lays flat.

**BX3000 & BX5000 Motor/Shaft Replacement REASSEMBLY (continued)**



Fig. 33. Install Impeller. While firmly holding Motor Stub with vice grips, turn Impeller clockwise with hand. Impeller should spin freely and not touch pump body.



Fig. 34. Install Swiveling Impeller Housing onto Pump Body.



Fig. 35. Push Teflon Strap into hole while turning Swiveling Impeller Housing back-and-forth. Teflon Strap secures Swiveling Impeller Housing to Body.



Fig. 36. Rotate Swiveling Impeller Housing to desired position for installation in tank, then tighten Lock Screw.

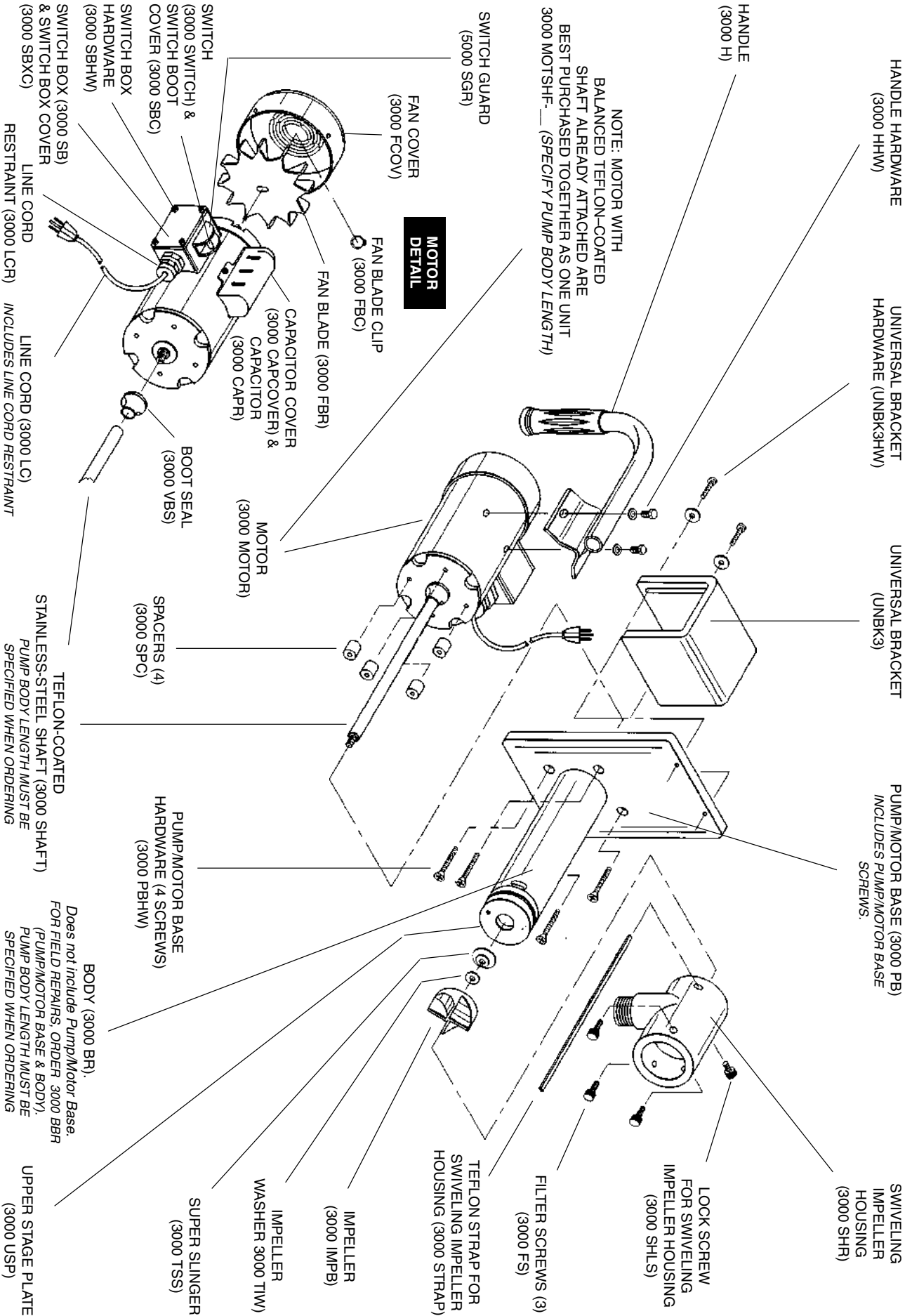


Fig. 37. Install Fan Blade and tighten screw (or clip on some Motors).



Fig. 38. Install Fan Cover and screws.

# FLO KING BX3000 EXPLODED VIEW



# FLO KING BX5000 EXPLODED VIEW

