

PROLINE HIGH-FLOW SUBMERSIBLE WATER PUMP

Operation and Instruction Manual



MODELS 90101, 90102, 90103, 90104, 90105, 90106

1/6 thru 1 HP

Thank you for choosing the Danner High-Flow Submersible Pump. Before using your pump please take a moment to review the information contained in this manual.

To avoid any accidents, do not use the pump in any way other than as described in this manual. After reading this manual, be sure to keep it in a safe place for future reference.

Prior to Operation and Installation

Perform the following checks upon opening the carton:

- Check for any damage to pump and power cable that may have occurred during the shipment.
- Check the model number to make sure it is the product that was ordered and verify the voltage and frequency are correct.
- Check for fittings included.
 - Models 90101 and 90102 are supplied with 1 1/2"(40mm) & 2" (50mm) Barbed Fittings and an Adapter Coupling.
 - Model 90103 is supplied with 1 1/2"(40mm) & 2" (50mm) Barbed Fittings.
 - Models 90104, 90105, 90106 are supplied with a 2" (50mm) Barbed Fitting ONLY.

Caution

- DO NOT operate this product under any condition other than those for which it is specified. Failure to observe this precaution can lead to electrical shock, electrical leakage, fire, water leakage or other problems.
- The Pumps operate on a voltage and frequency rating of 120VAC / 60Hz. Use only with a proper power supply voltage & frequency based on these ratings.
- DO NOT apply any paint over the stainless steel motor body. Reduced cooling ability will result in overheating, introduce undesirable performance reductions, periodic on/off cycling and eventual pump malfunction.
- Never place your hand or any object in or near the inlet opening while the pump is in operation. If pump inlet is clogged, always disconnect from the power supply, fuse box or circuit breaker and wait until the motor is completely stopped before attempting to remove any clogged material.
- Make sure that the plug and the AC outlet receptacle are protected and away from water or pump discharge hose to prevent accidental electric shock or short circuit.
- Always operate the pump **COMPLETELY SUBMERSED**.
- **NEVER RUN THE PUMP DRY!** This will cause the pump to overheat/malfunction, leading to electrical leakage, shock or premature failure.
- **Caution:**
THIS PUMP IS TO BE USED IN A CIRCUIT PROTECTED BY A GROUND CIRCUIT INTERRUPTER.
- **Caution:**
THIS PUMP HAS BEEN EVALUATED FOR USE IN FRESH WATER ONLY.
- **Caution:**
NOT FOR USE IN POOLS WITH PERSONS PRESENT IN THE WATER.
- **Warning:**
RISK OF ELECTRIC SHOCK- THIS PUMP IS SUPPLIED WITH A GROUNDING CONDUCTOR AND GROUNDING-TYPE ATTACHMENT PLUG. TO REDUCE THE RISK OF ELECTRIC SHOCK, BE CERTAIN THAT IT IS CONNECTED ONLY TO A PROPERLY GROUNDED, GROUNDING TYPE RECEPTACLE.

Before You Start

- Check the model name plate to make sure once again that the product is of the correct voltage and frequency rating.
- The setting on the circuit breaker or other overload protector should be made in accord with the rated current of the pump.
- Turn off the power supply or circuit breaker before inserting the plug to avoid electrical shock, shorting, or unexpected starting of the pump, which could lead to injury.
- Never operate the pump while it is suspended in the air. The recoil may result in injury or other major accident.

Electrical Safety

- Electrical wiring should be installed by a qualified electrician in accordance with all applicable safety regulations. Incorrect wiring can lead to a pump malfunction, electrical shock or fire.
- Pump must be protected by a ground fault circuit interrupter (GFCI).
- Pump must be plugged into a standard, properly grounded, 120VAC/60Hz three pronged outlet.
- Do not cut the electrical cable. If a cable with cut insulation or other damage is submerged in water, there is danger of water seeping into the pump motor and causing a short. This may result in damage to the pump, electrical shock or fire.
- Never move or handle the pump by pulling on the electrical cable. Make sure the electrical cable does not become excessively bent or twisted, does not rub against a structure in a way that might damage it, and does not come in contact with heated surfaces.

Operation

- In case of a power outage, turn off the power to the pump to avoid having it start unexpectedly when the power is restored.
- Pay careful attention to the water level while the pump is operating. Dry operation may cause the pump to malfunction. **Pump must always be fully submersed while operating.**
- In case of very excessive vibration, unusual noise or odor, turn off the power immediately and consult with your dealer. Continuing to operate the pump under abnormal conditions may result in mechanical failure, electrical leakage, electrical shock or fire.

Motor Protection System

- The pump has a built-in motor protection system. The following reasons may cause the pump to stop automatically regardless of water level.
 1. Motor overheating
 2. Excessive current
 3. Change in voltage polarity
 4. Open-phase operation or operation under constraint
- Repeating cycles of stopping and restarting will damage the pump. Do not continue operation at low lift, low water level, or while the inlet is clogged with debris. Such conditions may cause noise, heavy vibration, and pump failure.
- If the motor stops, ALWAYS DISCONNECT POWER BEFORE CHECKING FOR CAUSE as motor may re-start once cooled or has been freed from debris.

Monthly Inspection

Check for any drop in performance. Reduced performance is usually caused by debris blocking the intake screen. **Follow steps 1 and 2 below prior to performing any inspections.**

1. Detach the power cable from the receptacle and turn off the power supply (circuit breaker).
2. Disconnect the pump discharge and remove the pump from the water.
 - Remove any accumulated debris from the surface of the pump, inlet screen and impeller.
 - Make sure all nuts and bolts are fastened securely.
 - Do not disassemble the pump for any reason. Disassembly will void the pump warranty. Refer operating and maintenance problems to a qualified technician.

Winterization

NEVER leave your pump in water that can potentially freeze over. Always remove it from service prior to harsh winter conditions.

- If your pump will be out of use for an extended period of time, wash it and dry it thoroughly, then store it indoors. Always run a test operation before putting the pump back into service.
- If the pump remains in the water during the winter, it should be run at regular intervals.

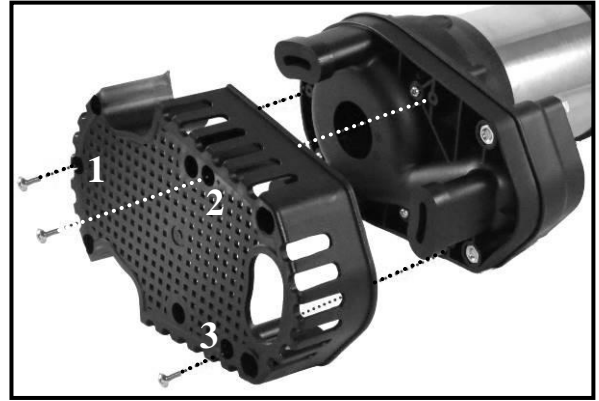
Removing The Intake Screen to Convert to Solids Handling Pump

The Danner High-Flow Submersible Pumps are designed to work with or without the removable intake screen. When used without the screens, pumps up to 1/4 hp are designed to handle waste solids as large as 1 1/8". Pumps greater than 1/4 hp can handle waste solids as large as 1 3/8".

To remove the intake screen and use the pump as a Waste Solids Handling Pump follow the instructions below:

WARNING: ALWAYS DISCONNECT PUMP FROM ELECTRIC SOURCE PRIOR TO DIS-ASSEMBLY

- There are (3) holes in the screen with screws in them which retain the screen to the pump. Please refer to exploded view on the right for the approximate locations.
Note: The heads of the(3) screws which retain the screen to the pump base sit slightly higher in the holes than the others. Look for these (3) screws when following the instructions below.
- Now that you've located the (3) screws, use a #2 Phillips head screwdriver to remove them.
- Once the (3) screws have been removed, the screen should be easily removed.
- If the screen does come off easily, check that the correct screws have been removed. If not, replace the screws that were removed and locate the screws referenced in the Note above.



Troubleshooting Guide

Always turn off power before inspecting the pump. Failure to observe this precaution can result in a serious injury. Before ordering repairs, carefully read through this instruction booklet. If the problem persists, contact your dealer.

| Problem | Possible Cause | Possible Solution |
|---------------------------------------|-------------------------------|---|
| Pump does not start | Power is off | Turn power on |
| | Power Failure | Check power supply or contact local power company |
| | Voltage drop/Overload | Check/Replace the GFI (Ground Fault Interrupter) |
| | Power cord is not connected | Connect power cord |
| Pump stops after starting | Pump is overheating | Allow pump to cool then re-submerge pump or raise water level |
| | Power/Current overload | Check length/size of power cable. Check or replace GFI |
| | Impeller is blocked | Remove debris from the impeller chamber |
| Diminished Flow rate or No water flow | Air lock | Lay pump down horizontally to remove trapped air |
| | Obstruction in pump or piping | DISCONNECT POWER , then clear obstruction |
| | Excessive Piping | Reduce pipe length, increase pipe diameter or reduce number of transitions (i.e., tees, elbows..etc.) |

PUMP SPECIFICATIONS

PERFORMANCE RANGES

| HEAD HT. | FLOW RATE (GPH) @ FEET OF HEAD HT | | | | | | | | | MAX HEAD HEIGHT |
|-----------------------|-----------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| | 0 FT | 5 FT | 10 FT | 15 FT | 20 FT | 25 FT | 30 FT | 35 FT | 40 FT | |
| MODEL 90101 1/6 HP | 1860 | 1600 | 1308 | 846 | 400 | | | | | 23 FT |
| MODEL 90102 1/5 HP | 3000 | 2604 | 2250 | 1800 | 1122 | 530 | | | | 28 FT |
| MODEL 90103 1/4 HP | 3270 | 2769 | 1925 | 1143 | 240 | | | | | 21 FT |
| MODEL 90104 1/3 HP | 4800 | 4140 | 3270 | 2400 | 1638 | 546 | | | | 27 FT |
| MODEL 90105 1/2 HP | 5904 | 5460 | 4800 | 3900 | 3120 | 2040 | 1020 | | | 35 FT |
| MODEL 90106 1 HP | 7200 | 7200 | 6600 | 6000 | 4800 | 3720 | 2820 | 2160 | 840 | 44 FT |

OPTIMAL
 ACCEPTABLE
 AVOID IF POSSIBLE

DIMENSIONS

| MODEL | L INCHES (MM) | W INCHES (MM) | H INCHES (MM) | WEIGHT LBS. (KGS) |
|-----------------|---------------------|---------------------|---------------------|-------------------------|
| 90101 1/6 HP | 7.5 (190) | 5.2 (132) | 12.2 (310) | 9.3 (4.2) |
| 90102 1/5 HP | 7.5 (190) | 5.2 (132) | 13 (330) | 10.6 (4.8) |
| 90103 ¼ HP | 9.25 (235) | 6.1 (155) | 14.2 (360) | 12.8 (5.8) |
| 90104 1/3 HP | 9.25 (235) | 6.1 (155) | 14.4 (365) | 13.9 (6.3) |
| 90105 ½ HP | 9.25 (235) | 6.1 (155) | 15 (380) | 16.5 (7.5) |
| 90106 1 HP | 9.25 (235) | 6.1 (155) | 15.6 (395) | 19.4 (8.8) |

CURRENT USAGE 120VAC, 60Hz

| MODEL | AMPS |
|-----------------|------------|
| 90101 1/6 HP | 2.7 |
| 90102 1/5 HP | 3.5 |
| 90103 1/4 HP | 3.5 |
| 90104 1/3 HP | 5 |
| 90105 1/2 HP | 6 |
| 90106 1 HP | 8.5 |

REPLACEMENT PARTS

| PART DESCRIPTIONS | DANNER P/N | MODELS USED ON |
|------------------------------|-------------|--|
| REDUCER COUPLING | ZL1029 | 90101, 90102 |
| LARGE PRE-FILTER SCREEN | ZL1028 | 90103, 90104, 90105, 90106 |
| SMALL PRE-FILTER SCREEN | ZL1027 | 90101, 90102 |
| 1 1/2" (40mm) BARBED FITTING | ZL1026 | 90101, 90102, 90103 |
| 2" (50mm) BARBED FITTING | ZL1025 | 90101, 90102, 90103, 90104, 90105, 90106 |
| IMPELLER_ 1/6 HP | 90101 - IMP | 90101 |
| IMPELLER_ 1/5 HP | 90102 - IMP | 90102 |
| IMPELLER_ 1/4 HP | 90103 - IMP | 90103 |
| IMPELLER_ 1/3 HP | 90104 - IMP | 90104 |
| IMPELLER_ 1/2 HP | 90105 - IMP | 90105 |
| IMPELLER_ 1 HP | 90106 - IMP | 90106 |



ZL1029
REDUCER COUPLING



ZL1028
LARGE FILTER SCREEN



ZL1027
SMALL FILTER SCREEN



ZL1026
1 1/2" BARBED FITTING



ZL1025
2" BARBED FITTING



9010X - IMP
IMPELLER

PROLINE HFS PUMP IMPELLER REPLACEMENT PROCEDURE



Fig. 1

WARNING: TO AVOID INJURY REMOVE ALL POWER TO THE PUMP PRIOR TO ANY DIS- ASSEMBLY PROCEDURE

1. REMOVE THE SCREEN- REMOVE THE (3) SELF-TAPPING SCREWS THAT HOLD THE INTAKE SCREEN TO BASE OF THE PUMP. SEE Fig.1.

(REFER TO PAGE 3 FOR DETAILED INSTRUCTIONS ON SCREEN REMOVAL).



Fig. 2a

2. REMOVE THE VOLUTE- USE A PHILLIPS HEAD DRIVER TO REMOVE THE SCREWS THAT HOLD THE VOLUTE TO THE PUMP BASE.

MODELS 90101 and 90102 - HAVE (6) SELF-TAPPING SCREWS THAT RETAIN THE VOLUTE TO THE BASE. SEE Fig.2a.



Fig. 2b

MODELS 90103 THRU 90106 - HAVE (4) MACHINE BOLTS WITH ACORN NUTS THAT RETAIN THE VOLUTE TO THE BASE. SEE Fig. 2b.

3. REMOVAL AND REPLACEMENT OF THE IMPELLER-

MODELS 90101 and 90102:

LAY THE PUMP ON ITS SIDE AND USING A PLASTIC HEAD Mallet GIVE A SHARP TAP TO THE IMPELLER BLADES IN A COUNTERCLOCKWISE DIRECTION. SEE Fig. 3a. CONTINUE TO UNSCREW THE IMPELLER FROM THE THREADED SHAFT TO REMOVE IT. REPLACE THE IMPELLER BY SCREWING IT BACK ONTO THE THREADED SHAFT IN A CLOCKWISE DIRECTION UNTIL HANDTIGHT. USING A HANDHELD PHILLIPS SCREWDRIVER RE-ATTACH THE VOLUTE WITH THE (6) SELF-TAPPING SCREWS THAT WERE REMOVED IN STEP 2a. FINALLY RE-ATTACH THE INTAKE SCREEN WITH THE (3) SELF-TAPPING SCREWS THAT WERE REMOVED IN STEP 1.

(DO NOT USE POWER TOOLS TO RE-INSTALL ANY OF THE SELF-TAPPING SCREWS)



Fig.3a

MODELS 90103 thru 90106:

USING A PHILLIPS HEAD SCREWDRIVER, OR 5/16" or 8 mm SOCKET, REMOVE THE BOLT LOCATED IN THE CENTER OF THE IMPELLER, SEE Fig. 3b. BY HOLDING THE IMPELLER AND LOOSENING THE BOLT IN A COUNTERCLOCKWISE DIRECTION. REMOVE THE BOLT & THE IMPELLER. BE AWARE OF THE WASHER BEHIND THE IMPELLER AS IT MUST REMAIN ON THE SHAFT OR BE PLACED BACK ONTO THE SHAFT BEFORE INSTALLING THE NEW IMPELLER. AFTER REPLACING THE IMPELLER TIGHTEN THE BOLT IN A CLOCKWISE DIRECTION UNTIL SNUG. NOW RE-ATTACH THE VOLUTE BACK TO THE PUMP BASE. **STOP AND REFER TO NOTE 1 BELOW BEFORE PROCEEDING.** RE-ATTACH THE VOLUTE WITH THE (4) MACHINE BOLTS THAT WERE REMOVED IN STEP 2b. USING A HANDHELD PHILLIPS SCREWDRIVER RE-ATTACH THE INTAKE SCREEN WITH THE (3) SELF-TAPPING SCREWS THAT WERE REMOVED IN STEP 1. **(DO NOT USE POWER TOOLS TO RE-INSTALL ANY OF THE SELF-TAPPING SCREWS)**



Fig. 3b



Fig. 3c

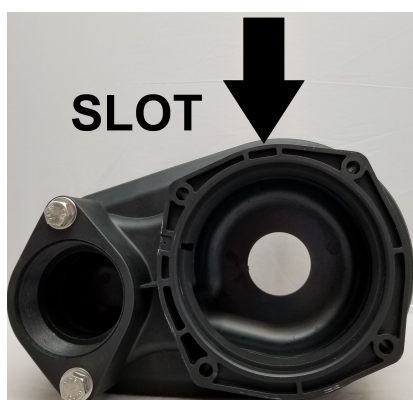


Fig. 3d

NOTE 1:

WHEN RE-ATTACHING THE VOLUTE BACK ONTO THE BASE OF THE MOTOR, BE SURE TO ALIGN THE TAB ON THE MOTOR SHOWN IN Fig 3c WITH THE SLOT IN THE VOLUTE SHOWN IN Fig 3d.

LIMITED WARRANTY

E .G. Danner Mfg.,Inc. will repair or replace any unit found to be defective within two years of original purchase. Cutting or altering the cord, painting any metal surfaces, removing or defacing product labels, incorrect use of the unit causing abuse & misuse voids any warranty consideration. Please include a dated proof of purchase and \$20.00 for postage and handling. Damages or injuries resulting from negligence, shipping, handling, improper installation, maintenance or misuse of the product are not covered by the warranty. This warranty gives you specific legal rights. You may have other rights which vary from state to state. To validate this warranty keep your proof of purchase. (Copy of your sales receipt.).

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