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## Start-up Instructions

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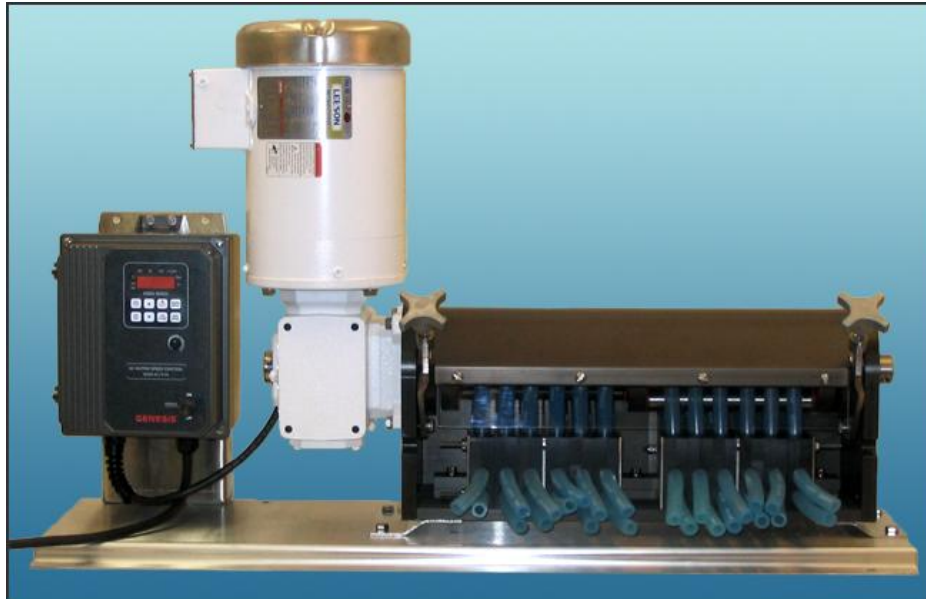


**Peristaltic Pumps with  
VFD 110 or 220 Volt  
Single Phase Input  
Power**

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Document Version 3

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## **Start-up Instructions for AccuStaltic Peristaltic Pump with VFD 100V or 220V Single Phase Input Power (v3)**

Pump serial number: \_\_\_\_\_ Date of manufacture: \_\_\_\_\_

Motor native speed at 60 Hz: 1725 RPM 3PH      3450 RPM 3PH

Gearbox ratio: \_\_\_\_\_

Pump native operating speed (motor RPM/ gearbox ratio): \_\_\_\_\_

\*Pump operating range: \_\_\_\_\_

Pump original manifold type: \_\_\_\_\_

Pump original tubing ID x wall thickness: \_\_\_\_\_

Approximate flow per channel for this tubing: \_\_\_\_\_

Original input voltage of VFD at manufacturer: 115V      220V

\*Going lower than this range for extended periods of time can cause the motor to overheat and is not recommended. The VFD is designed to shut down the motor before catastrophic damage can occur.

## Start-up Instructions

Your AccuStaltic pump is equipped with a KBDA-27D Genesis Variable Frequency Drive (VFD) that has been preprogrammed to provide a simple, nearly plug-and-play startup. The VFD has many powerful features which are fully explained in the *Installation and Operation Manual*. If you are using remote control or interfacing with other machinery, a thorough review of the manual, in addition to this document, is important.

For manual operation, the following instructions will explain the pre-programming that has already been done to your VFD.

In operation, you can cycle the readout to display amp draw, revolutions or flow per minute (a programmable feature we will explain later), or programming mode. Before operating the pump, please go through the following checklist to verify the preset programming of the VFD.

### ***Setup and Verification of VFD Controls:***

1. Turn speed control knob counterclockwise to minimum.
2. If your VFD was ordered as 110V, it will come with a US standard 3-prong plug pre-installed. If you ordered it as 220V, it will come bare-wired, ready for the plug of your choosing. Plug in your VFD.

Note: The VFD **will not auto-switch** between voltages, but can easily be converted from 115V to 230V by changing an internal jumper. Failure to change this jumper before attempting to use another voltage **can destroy the VFD**. If you desire to change the voltage, please call Ledebuhr Industries for assistance.

3. Turn power switch to on. The display should blink 0000. This is the normal startup condition. The display will blink any time the motor is stopped. The PROGRAM/DISPLAY button will cycle through RPM, program settings, and amp draw.

If an error code shows, you may have a problem with your input power. Check Table 7 on page 30 of your KBDA Installation and Operation Manual to identify your error code.

4. Check motor preset values:
  - a. Motor Frequency Rating: Press the PROGRAM/DISPLAY button. 00.00 should appear. Press the READ/ENTER button. 0002 should appear. Press READ/ENTER button. "End" should display briefly before returning to 00.00. By choosing the 0002 option, you allow the motor to operate over its native frequency of 60 Hz.

- b. Max Motor Amps: Press the up arrow to 00.01. Press READ/ENTER. 04.50 should appear. This is the maximum amperage allowable before the VFD will fault and shut down the motor. Press READ/ENTER.

Because the motor can be operated beyond its rated speed, there is a mandatory power de-rate. 4.5 amps is the maximum input amperage that the motor can sustain at 85 Hz and not overheat, in normal operating conditions. If you only intend to operate the motor at lower than maximum speeds, or intermittently, you may be able to increase the max amps, up to the nameplate amperage rating at 220V. Any increase in this parameter should be followed by a period of monitoring the temperature of the motor using an infrared thermometer. The motor should normalize at 150° Fahrenheit after an hour or so of continuous operation. The motor temperature should never go past 180° F during intermittent operation. If the motor heat continues to climb, decrease the maximum amperage until temperature stabilizes.

- c. Max Motor Frequency: Press the up arrow to 00.05 and press READ/ENTER. 85.00 should appear. This is the maximum motor hertz that the VFD will output. Press READ/ENTER.

This parameter should ABSOLUTELY NOT BE INCREASED. If you feel you would like to operate at higher speeds, contact Ledebuhr Industries to discuss your application options.

- d. Activate the Potentiometer Control: Press the left arrow/RESET button twice. Press the up arrow twice. The display should read 02.00. Press READ/ENTER. It should read 0001. Press READ/ENTER.

This activates the potentiometer dial on the VFD face as the primary speed control. Consult the operation manual for other options.

- e. Upper Frequency Limit: Press the left arrow/RESET button twice. Press the up arrow once. Press the left arrow/RESET button twice. Press the up arrow twice. The display should read 03.02. Press READ/ENTER. The display should read 85.00. Press READ/ENTER.

This is a safety parameter that will disable the motor if it over speeds. Over speeding does not occur during normal operation. This parameter should ABSOLUTELY NOT BE INCREASED. If you feel you would like to operate at higher speeds, contact Ledebuhr Industries to discuss your application options.

- f. Motor Ramp-up Speed: Press the up arrow once to 03.03, then READ/ENTER. 010.0 should appear. This is the number of seconds the motor will take to reach full speed after being turned on. Press READ/ENTER.

Setting a motor ramp-up time reduces the current required to accelerate the motor. You may set your ramp to any time range that suits you. At very short ramps you may find the VFD throwing a fault code due to excessive power demand. If this happens, increase your ramp time in .1 second intervals until the VFD no longer faults.

- g. Motor Ramp-down Speed: Press the up arrow once to 03.04, then READ/ENTER. 001.0 should appear. This is the number of seconds the motor will have to coast to a stop. Press READ/ENTER.

Ramp-down is similar to ramp-up. A short ramp-down will cause the VFD to act as a brake. At very short ramp intervals, the VFD may throw a fault condition due to high braking current. If this occurs, increase the ramp-down time in .1 second intervals until you no longer get the fault.

- h. Display Mode: Press the left arrow/RESET button twice. Press the up arrow once. The display should read 04.00. Press READ/ENTER. The display should read 0002. Press READ/ENTER.

Setting Display mode parameter 0002 allows you to enter a custom unit. This will allow you to show RPM or flow rate on the readout of the VFD, once you have specified it in 4.01 (next step).

- i. Set Custom Unit: Press the up arrow once to 04.01, then READ/ENTER. The display should read the max RPM of the pump head, listed in your pump information at the beginning of this document. Press READ/ENTER. For displaying any custom units, including flow rate, see page 35 of your manual, or call Ledebuhr Industries for assistance.
- j. Set Custom Unit Display: Press up to 04.02, and then READ/ENTER. The display should read 0000. Press READ/ENTER.

This sets custom units to whole numbers. This will need to be modified as well if you want to set Custom Units to flow rate instead of pump RPM.

- k. Motor Current Display: Press the up arrow twice to 04.04, then press READ/ENTER. 0001 should appear. Press READ/ENTER.

This enables the motor current display in the rotation when you push the PROGRAM/DISPLAY button. To disable this function and remove it from the display rotation, select 0000.

## Operate the Pump

After all parameters are set correctly, the VFD is ready to operate. Press PROGRAM/DISPLAY and cycle to the Custom Units display. Press the RUN/STOP button, and then twist the control knob clockwise. The motor will accelerate, taking the pre-determined ramp time to reach full speed. You can use the PROGRAM/DISPLAY mode to cycle between program mode, amp draw, and RPM of the motor.

**All the above presets plus many other options and features are described in the Installation and Operation Manual for the VFD.**

## Care and maintenance

Please review the “Care and Maintenance of AccuStaltic Pumps” manual for instructions on maintaining the pump head and tubes. Also review the “Dosing Systems” manual if you have purchased a dosing system.