

Important information for ERV Control Programming

This document provides important notes for creating and adjusting the ERV control program. Proper programming will help prevent valve problems and maximize valve life.

1. Before Programming:

- (1) Home Port (Port 1) is identified by a letter "P" engraved on the valve body. Clockwise rotation to next ports i.e. Port 2, 3, ... is defined from looking at the valve side (not the motor side).
- (2) Refer to motor and fitting installation instructions for valve assemble. The instructions can also be found at FHT website www.fluidicht.com.
- (3) Read the FHT ERV Manual before operating the valve. ERV Manual can also be found at FHT website www.fluidicht.com.
- (4) To avoid damaging the valve sealing surface, please ensure the following conditions are met:
 - (a) The Max Valve Speed is 100rpm (preferable 40 - 60 rpm);
 - (b) Maintain continuous liquid flow (such as clean water) through the channels whenever the valve is rotating, *especially during the program debugging*;
 - (c) Do not continuously rotate the valve. More than one rotation is not recommended without stopping, with or without flow.
 - (d) Maximum Duty Cycle (Recommended): 25% for liquid application, 10% for gas application.

For more information, reference the manual.

Caution: Avoid valve "over speed", or uncontrolled, operation (even for short periods), which will directly damage the sealing surface of valve.

2. Motor start and stop conditions:

- (1) To achieve accurate and stable flow rate, FHT recommends using a minimum 16 micro steps per each 1.8° step of stepper motor control. This also helps the motor start and stop smoothly.
- (2) To avoid high peak torque at motor start-up FHT recommends using motor acceleration control commands. Please refer to stepper motor controller's manual for more technical information.

3. Position Signals:

FHT's ERV design has precise Home and Port signals to meet constant flow rate requirement. The following suggestions are helpful for developing the valve control program:

- (1) For proper port position sensing, FHT suggests using a 3° to 5° first step movement before moving to next port. This first step movement will ensure the ERV position sensor moving out of the existing port signal. It will avoid possible confusion of the motor controller sensing a new position signal.
- (2) Once controller receives the Home or Port signal, motor can be stopped immediately without any additional micro step or angle adjustment. The valve flow rate will be guaranteed for the application regardless the rotation direction (clockwise or counter clockwise). Note: in this case, the sensor signal level might not reach to its full high or low levels or strength.
- (3) If the application requires a full sensor signal, FHT recommends that upon the controller receiving the Home or Port signal, continue to rotate an additional ¼ to ½ of 1.8° step of stepper motor before stopping the motor. In this case, the sensor signal level (strength) is guaranteed while the flow rate variation is negligible.

For example: when using 64 micro steps per step, rotate and additional 16-32 micro steps before the motor stop to achieve maximum sensor signal strength. This suggestion is especially useful for the application that requires both Home and Port signals as the determination of Home Port.