

# S Series S50 Peristaltic Pump

## SPECIFICATIONS

FLOW RATE OUTPUT 1.3 TO 315.0 GPD

### 1.0 SCOPE

This specification covers the supply, construction materials and programming of a completely functional variable speed peristaltic chemical metering pump including all accessories as shown on the drawings and described herein. The chemical metering pump manufacturer shall be responsible for supplying pump manufacturer accessories featuring a peristaltic pump tube and pump head with 3-point roller design.

#### 1.1 Quality Assurance

For the purpose of establishing quality assurance, experience, and system reliability, the products described herein are based on the metering pumps manufactured by the Stenner Pump Company. All pumps shall be factory-tested for power and function before packaging.

#### 1.2 Warranty

The chemical metering pump manufacturer shall provide a two-year limited warranty on the metering pump from the date of purchase (proof of purchase required).

### 2.0 PUMP

#### 2.1 Manufacturer: Stenner Pump Company

#### 2.2 Description

##### A. General

The chemical metering pump shall be a programmable, DC motor-driven, peristaltic pump. The pump shall include brushless DC Motor with ball bearing support, OLED Display, silicon keypad with universal markings, totally enclosed housing with NEMA 4X rating, and S5 pump head secured with thumbscrews. The main shaft shall be splined for ease of maintenance. The pump shall offer a single signal cover with eight screws, O-ring seal, and two liquid tight cord grips for signal cables. Pump shall have integral clear cover on the control panel with tamper resistant screw. The power supply shall be single-phase, 120V 60Hz; 230V 60Hz; or 230V 50Hz.

The liquid shall only be in contact with the pump tube located within the QuickPro® pump head but may touch accessories including but not limited to, weighted suction line strainer, suction & discharge tubing, and injection ball/spring check valve.

##### B. Accessories Included

1. Each pump shall come standard with one latching mounting bracket suitable for vertical or horizontal mounting.
2. Each pump shall come standard with three connecting nuts 3/8".
3. Each pump shall come standard with one injection ball/spring check valve.
4. Each pump shall come standard with one weighted suction line strainer 3/8".
5. Each pump shall come standard with one 20' roll of suction/discharge tubing 3/8" white or UV black.

6. Each pump shall come standard with one additional pump tube.
7. Each pump shall come standard with one Quick Start Guide.

### **C. Agency Listings and Ratings**

1. The pump provided shall require the following agency listings and ratings.
  - a. cULus
  - b. CE IP65
  - c. NEMA 4X
2. Pumps supplied with Santoprene® tubes shall be tested by IAPMO to confirm to ANSI/NSF STD 61 & 372.
3. S50 Models with 5G Tube and Ball Check Valve with FKM seat & O-ring, tantalum spring and ceramic ball tested by ETL to conform to ANSI/NSF STD 50.

### **D. Materials of Construction**

1. The pump shall have a polycarbonate tube housing and tube housing cover. The tube housing cover shall have an integral, oil impregnated bronze bushing for shaft support. The tube housing cover shall be secured to the tube housing via stainless steel latches that do not require a tool to fasten or unfasten.
2. The pump tube shall be FDA approved Santoprene®.
3. The injection ball check valve shall have a Ceramic ball FDA approved; tantalum spring; FKM seat & O-ring OR Ceramic ball FDA approved; stainless steel spring; EPDM seat; Santoprene® O-ring.
4. The pump head roller assembly shall have three rollers to compress the pump tube constructed of polycarbonate and three guide rollers constructed of polyethylene.
5. The suction/discharge tubing shall be FDA approved polypropylene.
6. Pump tube fittings & injection fittings shall be constructed of NSF listed PVC or polypropylene.
7. Pump tube connecting nuts shall be constructed of PVC or polypropylene (both NSF listed).
8. The pump shall have a suction line strainer and cap constructed of PVC or polypropylene (both NSF listed). The strainer shall also include a ceramic weight.
9. All fasteners shall be stainless steel except for the 4 thumbscrews constructed of stainless steel & PVC to secure the pump head.
10. Pump shall have pump thumbscrews constructed of stainless steel and PVC.
11. The pump shall have Leak Detect components consisting of springs, pins, clips and ball detents constructed of Hastelloy®. Leak Detect landing pads shall be gold plated. Leak Detect housing and drip pan shall be polypropylene.

### **E. Standard Features**

1. The pump shall have a 3-point roller design to assist in anti-siphon protection.
2. The pump shall have a 100:1 turndown controlled via operating mode.
3. The pump shall have reproducible flow rate outputs +/- 2%.
4. The pump shall have a maximum vertical suction lift of 25 ft. (7.6 m) 5. The pump head shall require no valves or tools for easy maintenance.
6. The pump shall be self-priming against maximum working pressure. A foot valve shall not be required.
7. The pump shall not lose prime or vapor lock.
8. The pump shall require tube change procedure that mandates no lubrication.

## F. Pump Flow Rate Outputs

25 psi (1.7 bar) max.

Pump Prefix	Tube	Turndown Ratio	Gallons per Day	Gallons per Hour	Ounces per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Hour	Milliliters per Minute
<b>S505G</b>	5G	100:1	3.2-315.0	0.133-13.13	17.07-1680.0	0.284-28.00	12.11-1192.0	0.505-49.68	504.72-49,684.0	8.41-828.0
Approximate output @ 50/60Hz										

100 psi (6.9 bar) max.

Pump Prefix	Tube	Turndown Ratio	Gallons per Day	Gallons per Hour	Ounces per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Hour	Milliliters per Minute
<b>S507G</b>	7G	100:1	1.3-125.0	0.054-5.21	6.93-667.0	0.116-11.11	4.92-473.0	0.205-19.72	205.04-19,716.0	3.42-329.0
Approximate output @ 50/60Hz										

### 2.3 CONTROL

- A. Pump shall have 45 RPM maximum
- B. Pump shall have the capability to be adjusted manually by the up and down arrows on the keypad, from 0% to 100% of the pump's programmed flow rate output, in increments of 1.0%
- C. The metering pump shall be microprocessor controlled. All pumping functions shall be set by keypad and all operations, and status shall be displayed on an illuminated OLED Screen. Keypad shall have 6 buttons (Up arrow, Prime, On/Off, Back, Enter, Down arrow). Three buttons (Down arrow, Up arrow, and Enter) shall be used to scroll and/or select between menu options.
- D. Pump speed shall be determined via choice of control mode and programmed settings within said control mode.
  1. Pump shall be adjusted by a programmed and/or calibrated 4-20 mA signal. Signal shall be scalable and invertible.
  2. Pump shall be adjusted by a programmed and/or calibrated 0-10VDC signal identifying the pump output range. Signal shall be scalable and invertible.
  3. Pump shall be activated by a pulse, adjusted by programmed pulse inputs and include the number of pulses to activate, pump run time, meter rate and pump speed.
  4. Pump shall be activated by a Hall Effect water meter, adjusted by programmed Hall Effect inputs and include meter K factor, minimum process flow, speed at minimum flow, maximum process flow and speed at maximum process flow.
  5. Pump shall be adjusted by programming the 7-day timer and setting the clock. The control mode shall have 24 independent timed events with each individually programmable timer's #01 - #24. Timer shall run from a minimum of 20 seconds to a maximum of 23 hours, 59 minutes, and 59 seconds from speeds 1% to 100%.
  6. Pump shall be adjustable by the PPM Feed programmed inputs for Variable and Constant flow. Constant flow inputs shall include process flow, concentration, specific gravity, and ppm feed rate. Variable flow inputs shall include meter K factor, concentration, specific gravity, and ppm feed rate.

7. Pump shall be adjustable by the Cycle Timer programmed inputs including run time per cycle, total cycle time, and pump speed. Pump shall have Modbus RTU over RS-485 capability.

## 2.4 PROGRAMMING AND CONFIGURATION

- A. Programming shall allow pump to be calibrated to display pump output in percentage of full motor speed, RPM, GPD, GPH and OZ/MIN. Programming shall also allow units in Liters displaying LPD, LPH and mL/MIN. In GPD/LPD Calibration the pump maximum output must be entered and not changed.
- B. The pump shall be equipped with keypad password protection with a programmable 4-character access code to prevent unauthorized changes to the operation. The manufacturer shall have a master override password for technical support purposes. C. Pump shall be calibrated with the flow rate output determined by the pump tube.
- D. The pump shall have a calibration mode to allow the pump to be calibrated to the system 4-20mA or 0-10VDC signal.
- E. Pump shall include highly sensitive leak detector. The sensitivity shall be factory preset to distinguish between water and common water treatment chemicals to reduce the number of false tube leaks.
- F. Pump shall have a 4-20mA output
- G. Pump shall have Modbus RTU over RS-485 capability.
- H. Pump shall have three configurable internal relays for output indication from the pump to a control system, another pump or PLC. Relays shall be rated for 24VDC @ 50mA. Each relay shall be allowed to be activated by more than one pump condition.
- I. Pump shall have the following relays and/or performance indicators.
  1. TUBE CHANGE shall be programmable to activate a relay and/or the display alarm when the set time is reached. The set time available shall be between 0 and 9999 hours.
  2. TUBE LEAK shall be programmable to activate a relay and/or the display alarm. Both are activated by conductivity on Hastelloy pins. Tube leak sensitivity shall be calibrated by a potentiometer located under the signal cover.
  3. STANDBY shall be programmable to activate a relay to cause another device to go into standby. The standby display alarm shall activate if a closed relay is wired into the standby connection terminals causing the pump to go into standby.
  4. DRIVE FAULT shall be programmable to activate a relay if the pump shuts down due to drive fault error; the alarm will automatically appear on the display.
  5. OFF shall be programmable to activate a relay when the pump is turned off from the control panel; the alarm will automatically appear on the display.
  6. RUN shall be programmable to activate a relay when the pump is running.
  7. MODE CHANGE shall be programmable to activate a relay if the mode of operation is changed from the selected mode of operation.

8. TRANSFER shall be programmable to activate a relay to transfer operation from the primary pump to a backup pump if a drive fault or loss of power occurs or if Leak Detect is programmed to stop the pump when a leak occurs.
  9. REPEAT PULSE shall be programmable to activate a relay when the pump receives the dry contact input signal to repeat this signal to another pump or device.
  10. HIGH SIGNAL shall be programmable to activate a relay and/or the display alarm if the input signal rises above the value programmed in the 4-20mA or 0-10VDC control mode.
  11. LOW SIGNAL shall be programmable to activate a relay and/or the display alarm if the input signal falls below the value programmed in the 4-20mA or 0-10VDC control mode.
  12. HIGH FLOW shall be programmable to activate a relay and/or the display alarm if the process flow rises above the value programmed in the Hall Effect or PPM Feed-Variable control mode.
  13. LOW FLOW shall be programmable to activate a relay and/or the display alarm if the process flow falls below the value programmed in the Hall Effect control mode.
  14. SIGNAL OVERRUN shall be programmable to activate a relay and/or the display alarm if the pump receives dry contact input signals while the pump is running instead of during available dose time.
- J. Pump shall have a RESET TOTALIZER option to allow the user to reset the total tallied amount of water treated using the Pulse, Hall Effect, or PPM Feed control modes.
- K. Pump shall allow user to reset the pump to factory default settings.
- L. Pump shall allow user to check the firmware version code in the pump.
- M. Pump firmware can be updated by the factory.

**END OF SPECIFICATION**