

Quick Facts

CLASSIC 45

- Single head, adjustable or fixed output
- 0.2 to 22.0 gpd, pressures to 100 psi maximum
- 0.2 to 50.0 gpd, pressures to 25 psi maximum
- 26 rpm

CLASSIC 85

- Single head, adjustable or fixed output
- 0.3 to 40.0 gpd, pressures to 100 psi maximum
- 0.3 to 85.0 gpd, pressures to 25 psi maximum
- 44 rpm

CLASSIC 100

- Double head, adjustable or fixed output
- 0.3 to 20.0 gpd, pressures to 100 psi maximum
- 0.3 to 100.0 gpd, pressures to 25 psi maximum
- 26 rpm

CLASSIC 170

- Double head, adjustable or fixed output
- 0.5 to 34.0 gpd, pressures to 100 psi maximum
- 0.5 to 170.0 gpd, pressures to 25 psi maximum
- 44 rpm

Features

- Advantages of Stenner peristaltic pumps on page 1
- Fast tube replacement without tools with patented QuickPro® pump head
- Adjustable models:
 - External adjustable dial ring on feed rate control
 - 20:1 turndown, 2.5% increments
- Single head models:
 - Available as Tank Systems: 7.5, 15, 30 gallon
 - Fixed output pump can be utilized for proportional dosing, refer to pages 54-57
- Components are interchangeable between models
- Tank System ships pre-assembled for quick installations

Versatile and Time-Tested

For over 60 years, the versatile peristaltic Classic Series remains a popular choice with installers. The pump is easy to service or convert to another model. Injection can be directly into the water line. Pump can be activated by a pressure switch or controller.

Weights and Dimensions

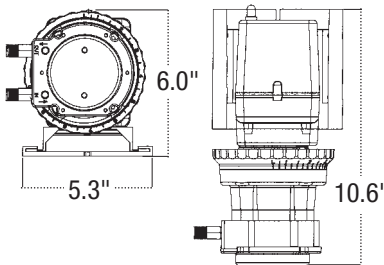
Single Head Adjustable

Shipping Weight 9 lbs (3.9 kg)

Box Dimensions

13 x 8 x 10 in. (33 x 20 x 24 cm)

Product Dimensions



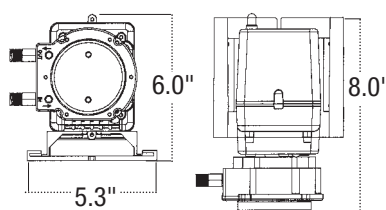
Single Head Fixed

Shipping Weight 8 lbs (3.4 kg)

Box Dimensions

13 x 8 x 10 in. (33 x 20 x 24 cm)

Product Dimensions



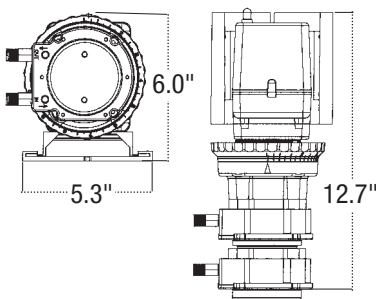
Double Head Adjustable

Shipping Weight 10 lbs (4.5 kg)

Box Dimensions

18 x 8 x 10 in. (46 x 21 x 25 cm)

Product Dimensions



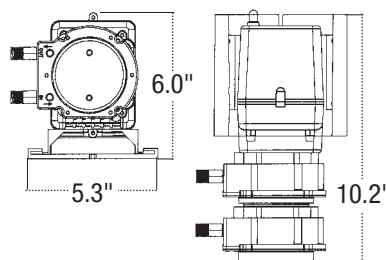
Double Head Fixed

Shipping Weight 10 lbs (4.1 kg)

Box Dimensions

18 x 8 x 10 in. (46 x 21 x 25 cm)

Product Dimensions



Accessories Shipped with Each Pump

- 3 Connecting nuts 1/4" or 3/8"
- 3 Ferrules 1/4" or 6 mm *Europe*
- 1 Duckbill check valve 100 psi (6.9 bar) maximum or injection fitting 25 psi (1.7 bar) maximum
- 1 Weighted suction line strainer 1/4", 3/8" or 6 mm *Europe*
- 1 20' Roll suction/discharge tubing 1/4" or 3/8", white or UV black or 6 mm white *Europe*
- 1 Additional pump tube
- 2 Additional latches
- 1 Mounting bracket
- 1 Manual

Specifications

Flow Rate Output Control

Adjustable model: External dial ring

Reproducibility $\pm 2\%$

Maximum Working Pressure

25 psi (1.7 bar), 100 psi (6.9 bar)

Maximum Operating Temperature 125°F (52°C)

Maximum Suction Lift

25 ft (7.6 m) vertical lift, based on water

Motor Type 1/30 HP, shaded pole, class B

Shaft rpm (average maximum) 26 or 44

Duty Cycle Continuous

Maximum Viscosity 1500 Centipoise

Motor Voltage (Amp Draw)

120V 60Hz 1PH (1.7), 220V 60Hz 1PH (0.9),
230V 50Hz 1PH (0.9), 250V 50Hz 1PH (0.9)

Power Cord Type

120V 60Hz, 220V 60Hz: SJTOW
230V 50Hz, 250V 50Hz: H05VV-F

Power Cord Plug End

120V 60Hz NEMA 5-15P, 220V 60Hz NEMA 6-15P,
230V 50Hz CEE7/7, 250V 50Hz CEE7/7

Power Cord Length 6 ft (1.8 m)

Classification Indoor and suitable for Outdoor when installed with a Stenner Rain Roof part # MP90000

Materials of Construction

All Housings Polycarbonate

Pump Tube Santoprene® (FDA approved) or Versilon®

Check Valve Duckbill

Santoprene® (FDA approved) or Pellethane®

Pump Head Rollers Polyethylene

Roller Bushings Oil impregnated bronze

Suction/Discharge Tubing, Ferrules

Polyethylene (FDA approved)

Tube Fittings, Check Valve Fittings

PVC or Polypropylene (both NSF listed)

Connecting Nuts

PVC or Polypropylene (both NSF listed)

3/8" Adapter PVC or Polypropylene (both NSF listed)

Suction Line Strainer and Cap

PVC or Polypropylene (both NSF listed); ceramic weight

All Fasteners Stainless steel

Pump Head Latches Polypropylene

NOTE: Refer to the chemical guide for material compatibility.

Agency Listings

- WQA Listed, conforms to standard NSF/ANS 61 & 372 (excludes any model with a Versilon® tube).
- INTERTEK/ETL Sanitation Listed, Adjustable models conform to standard NSF/ANSI 50 (excludes any model with a Versilon® tube).
- INTERTEK/ETL Sanitation Listed, Fixed models conform to standard NSF/ANSI 50 only when used with standard NSF/ANSI 50 listed controllers.



Intertek
94247
CONFORMS TO
ANSI/NSF STD. 50
Equipment for swimming pools,
spas, hot tubs and other
recreational water facilities.



Intertek
94247
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ANSI/NSF STD. 50
Equipment for swimming pools,
spas, hot tubs and other
recreational water facilities.



METERING PUMP
96F8
LISTED
METERING PUMP
L879565



USA
THIS PUMP IS TESTED AND
CERTIFIED BY WQA ACCORDING TO
ANSI/NSF STANDARD 61 FOR
SODIUM HYPOCHLORITE AND
WATER ONLY AND ANSI/NSF 372.



Listings vary by model.

USA and Canada 800.683.2378, International 904.641.1666 **3**

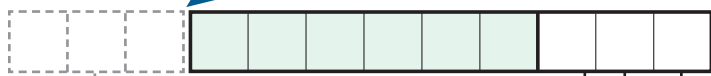
CLASSIC SERIES

Single Head Adjustable 25 psi (1.7 bar) max. Flow Rate Outputs Approximate 20:1 turndown, 2.5% increments

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute
45MJL1	1	0.2 to 3.0	0.01 to 0.13	0.02 to 0.27	0.8 to 11.4	0.03 to 0.48	0.56 to 7.92	0.6 to 9.1	0.02 to 0.38	0.31 to 6.32
45MJL2	2	0.5 to 10.0	0.02 to 0.42	0.04 to 0.89	1.9 to 37.9	0.08 to 1.58	1.32 to 26.32	1.5 to 30.3	0.06 to 1.26	1.04 to 21.04
45MJL3	3	1.1 to 22.0	0.05 to 0.92	0.10 to 1.96	4.2 to 83.3	0.18 to 3.47	2.92 to 57.85	3.3 to 66.6	0.14 to 2.78	2.29 to 46.25
45MJL4	4	1.7 to 35.0	0.07 to 1.46	0.15 to 3.11	6.4 to 132.5	0.27 to 5.52	4.44 to 92.01	5.1 to 106.0	0.21 to 4.42	3.54 to 73.61
45MJL5	5	2.5 to 50.0	0.10 to 2.08	0.22 to 4.44	9.5 to 189.3	0.40 to 7.89	6.60 to 131.43	7.6 to 151.4	0.32 to 6.31	5.28 to 105.14
85MJL1	1	0.3 to 5.0	0.01 to 0.21	0.03 to 0.44	1.1 to 18.9	0.05 to 0.79	0.76 to 13.13	0.9 to 15.1	0.04 to 0.63	0.52 to 10.49
85MJL2	2	0.8 to 17.0	0.03 to 0.71	0.07 to 1.51	3.0 to 64.4	0.13 to 2.68	2.08 to 44.65	2.4 to 51.5	0.10 to 2.15	1.67 to 35.76
85MJL3	3	2.0 to 40.0	0.08 to 1.67	0.18 to 3.55	7.6 to 151.4	0.32 to 6.31	5.27 to 105.14	6.1 to 121.1	0.25 to 5.05	4.24 to 84.10
85MJL4	4	3.0 to 60.0	0.13 to 2.5	0.27 to 5.33	11.4 to 227.1	0.48 to 9.46	7.92 to 157.71	9.1 to 181.7	0.38 to 7.57	6.32 to 126.18
85MJL5	5	4.3 to 85.0	0.18 to 3.54	0.38 to 7.55	16.3 to 321.8	0.68 to 13.4	11.32 to 223.40	13.0 to 257.4	0.54 to 10.73	9.03 to 178.75
Approximate Output @ 60Hz							Approximate Output @ 50Hz			

Single Head Adjustable 100 psi (6.9 bar) max. Flow Rate Outputs Approximate 20:1 turndown, 2.5% increments

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute
45MJH1	1	0.2 to 3.0	0.01 to 0.13	0.02 to 0.27	0.8 to 11.4	0.03 to 0.48	0.56 to 7.92	0.6 to 9.1	0.02 to 0.38	0.31 to 6.32
45MJH2	2	0.5 to 10.0	0.02 to 0.42	0.04 to 0.89	1.9 to 37.9	0.08 to 1.58	1.32 to 26.32	1.5 to 30.3	0.06 to 1.26	1.04 to 21.04
45MJH7	7	1.1 to 22.0	0.05 to 0.92	0.10 to 1.96	4.2 to 83.3	0.18 to 3.47	2.92 to 57.85	3.3 to 66.6	0.14 to 2.78	2.29 to 46.25
85MJH1	1	0.3 to 5.0	0.01 to 0.21	0.03 to 0.44	1.1 to 18.9	0.05 to 0.79	0.76 to 13.13	0.9 to 15.1	0.04 to 0.63	0.52 to 10.49
85MJH2	2	0.8 to 17.0	0.03 to 0.71	0.07 to 1.51	3.0 to 64.4	0.13 to 2.68	2.08 to 44.65	2.4 to 51.5	0.10 to 2.15	1.67 to 35.76
85MJH7	7	2.0 to 40.0	0.08 to 1.67	0.18 to 3.55	7.6 to 151.4	0.32 to 6.31	5.27 to 105.14	6.1 to 121.1	0.25 to 5.05	4.24 to 84.10
Approximate Output @ 60Hz							Approximate Output @ 50Hz			



To Order, Build Pump Item Number
Insert item number prefix and code for each specification.

code Voltage & Hertz
A 120V 60Hz
B 220V 60Hz
C 230V 50Hz *International*
D 250V 50Hz *International*
 Contact the factory for additional voltage and plug options.

code Suction & Discharge Tubing
1 1/4" White
2 1/4" UV Black
3 3/8" White
4 3/8" UV Black
5 6 mm White *Europe*
 O.D. does not affect output.

code Tube Material
S Santoprene®
T Versilon®
 (#7 not available)
 Refer to the chemical guide for material compatibility.

OPTIONAL

To order **Tank System**, insert code before pump item number.

code Tank System
 S7G 7.5-Gallon UV Gray
 S7N 7.5-Gallon White
 S1G 15-Gallon UV Gray
 S1N 15-Gallon White
 S3G 30-Gallon UV Gray
 S3N 30-Gallon White

NOTE: Duckbill check valve included with pumps rated 100 psi (6.9 bar) maximum.

NOTICE: The information within these charts is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs. To reduce feed rate control wear, select the pump with a maximum flow rate output that most closely matches your application's maximum need.

Single Head Fixed 25 psi (1.7 bar) max. Flow Rate Outputs

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
45MFL1	1	3.0	0.13	0.27	11.4	0.48	7.92	9.1	0.38	6.32	
45MFL2	2	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04	
45MFL3	3	22.0	0.92	1.96	83.3	3.47	57.85	66.6	2.78	46.25	
45MFL4	4	35.0	1.46	3.11	132.5	5.52	92.01	106.0	4.42	73.61	
45MFL5	5	50.0	2.08	4.44	189.3	7.89	131.43	151.4	6.31	105.14	
85MFL1	1	5.0	0.21	0.44	18.9	0.79	13.13	15.1	0.63	10.49	
85MFL2	2	17.0	0.71	1.51	64.4	2.68	44.65	51.5	2.15	35.76	
85MFL3	3	40.0	1.67	3.55	151.4	6.31	105.14	121.1	5.05	84.10	
85MFL4	4	60.0	2.50	5.33	227.1	9.46	157.71	181.7	7.57	126.18	
85MFL5	5	85.0	3.54	7.55	321.8	13.40	223.40	257.4	10.73	178.75	
Approximate Output @ 60Hz							Approximate Output @ 50Hz				

Single Head Fixed 100 psi (6.9 bar) max. Flow Rate Outputs

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
45MFH1	1	3.0	0.13	0.27	11.4	0.48	7.92	9.1	0.38	6.32	
45MFH2	2	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04	
45MFH7	7	22.0	0.92	1.96	83.3	3.47	57.85	66.6	2.78	46.25	
85MFH1	1	5.0	0.21	0.44	18.9	0.79	13.13	15.1	0.63	10.49	
85MFH2	2	17.0	0.71	1.51	64.4	2.68	44.65	51.5	2.15	35.76	
85MFH7	7	40.0	1.67	3.55	151.4	6.31	105.14	121.1	5.05	84.10	
Approximate Output @ 60Hz							Approximate Output @ 50Hz				



To Order, Build Pump Item Number
 Insert item number prefix and code for each specification.

- | | |
|----------|--------------------------------|
| code | Voltage & Hertz |
| A | 120V 60Hz |
| B | 220V 60Hz |
| C | 230V 50Hz <i>International</i> |
| D | 250V 50Hz <i>International</i> |
- Contact the factory for additional voltage and plug options.

- | | |
|----------|----------------------------|
| code | Suction & Discharge Tubing |
| 1 | 1/4" White |
| 2 | 1/4" UV Black |
| 3 | 3/8" White |
| 4 | 3/8" UV Black |
| 5 | 6 mm White <i>Europe</i> |
- O.D. does not affect output.

- | | |
|----------|---------------------------------|
| code | Tube Material |
| S | Santoprene® |
| T | Versilon®
(#7 not available) |
- Refer to the chemical guide for material compatibility.

OPTIONAL

To order Tank System, insert code before pump item number.

- | | |
|------|--------------------|
| code | Tank System |
| S7G | 7.5-Gallon UV Gray |
| S7N | 7.5-Gallon White |
| S1G | 15-Gallon UV Gray |
| S1N | 15-Gallon White |
| S3G | 30-Gallon UV Gray |
| S3N | 30-Gallon White |

NOTE: Duckbill check valve included with pumps rated 100 psi (6.9 bar) maximum.

NOTICE: The information within these charts is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.

CLASSIC SERIES

Double Head Adjustable 25 psi (1.7 bar) max. Flow Rate Outputs Approximate 20:1 turndown, 2.5% increments

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute
100JL1	1	0.3 to 6.0	0.01 to 0.25	0.03 to 0.53	1.1 to 22.7	0.05 to 0.95	0.76 to 15.76	0.9 to 18.2	0.04 to 0.76	0.61 to 12.64
100JL2	2	1.0 to 20.0	0.04 to 0.83	0.09 to 1.78	3.8 to 75.7	0.16 to 3.15	2.64 to 52.57	3.0 to 60.6	0.13 to 2.53	2.11 to 42.06
100JL3	3	2.2 to 44.0	0.09 to 1.83	0.19 to 3.91	8.3 to 166.5	0.35 to 6.94	5.76 to 115.63	6.6 to 133.2	0.28 to 5.55	4.58 to 92.50
100JL4	4	3.5 to 70.0	0.15 to 2.92	0.31 to 6.22	13.2 to 265.0	0.55 to 11.04	9.17 to 184.03	10.6 to 212.0	0.44 to 8.83	7.36 to 147.22
100JL5	5	5.0 to 100.0	0.21 to 4.17	0.44 to 8.88	18.9 to 378.5	0.79 to 15.77	13.13 to 262.88	15.1 to 302.8	0.63 to 12.61	10.49 to 210.28
170JL1	1	0.5 to 10.0	0.02 to 0.42	0.04 to 0.89	1.9 to 37.9	0.08 to 1.58	1.32 to 26.32	1.5 to 30.3	0.06 to 1.26	1.04 to 21.04
170JL2	2	1.7 to 34.0	0.07 to 1.42	0.15 to 3.02	6.4 to 128.7	0.27 to 5.36	4.44 to 89.38	5.1 to 102.6	0.21 to 4.29	3.54 to 71.55
170JL3	3	4.0 to 80.0	0.17 to 3.33	0.35 to 7.11	15.1 to 302.8	0.63 to 12.62	10.49 to 210.28	12.1 to 242.2	0.50 to 10.09	8.40 to 168.22
170JL4	4	6.0 to 120.0	0.25 to 5.00	0.53 to 10.66	22.7 to 454.2	0.95 to 18.93	15.76 to 315.42	18.2 to 363.4	0.76 to 15.14	12.64 to 252.36
170JL5	5	8.5 to 170.0	0.35 to 7.08	0.76 to 15.10	32.2 to 643.5	1.34 to 26.80	22.36 to 446.88	25.7 to 514.8	1.07 to 21.45	17.92 to 357.50
Approximate Output @ 60Hz							Approximate Output @ 50Hz			

Double Head Adjustable 100 psi (6.9 bar) max. Flow Rate Outputs Approximate 20:1 turndown, 2.5% increments

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute
100JH1	1	0.3 to 6.0	0.01 to 0.25	0.03 to 0.53	1.1 to 22.7	0.05 to 0.95	0.76 to 15.76	0.9 to 18.2	0.04 to 0.76	0.61 to 12.64
100JH2	2	1.0 to 20.0	0.04 to 0.83	0.09 to 1.78	3.8 to 75.7	0.16 to 3.15	2.64 to 52.57	3.0 to 60.6	0.13 to 2.53	2.11 to 42.06
170JH1	1	0.5 to 10.0	0.02 to 0.42	0.04 to 0.89	1.9 to 37.9	0.08 to 1.58	1.32 to 26.32	1.5 to 30.3	0.06 to 1.26	1.04 to 21.04
170JH2	2	1.7 to 34.0	0.07 to 1.42	0.15 to 3.02	6.4 to 128.7	0.27 to 5.36	4.44 to 89.38	5.1 to 102.6	0.21 to 4.29	3.54 to 71.55
Approximate Output @ 60Hz							Approximate Output @ 50Hz			



To Order, Build Pump Item Number

Insert item number prefix and code for each specification.

code	Voltage & Hertz
A	120V 60Hz
B	220V 60Hz
C	230V 50Hz <i>International</i>
D	250V 50Hz <i>International</i>

Contact the factory for additional voltage and plug options.

code	Suction & Discharge Tubing
1	1/4" White
2	1/4" UV Black
3	3/8" White
4	3/8" UV Black
5	6 mm White <i>Europe</i>

O.D does not affect output.

code	Tube Material
S	Santoprene®
T	Versilon® (#7 not available)

Refer to the chemical guide for material compatibility.

NOTE: Duckbill check valve included with pumps rated 100 psi (6.9 bar) maximum.

NOTICE: The information within these charts is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs. To reduce feed rate control wear, select the pump with a maximum flow rate output that most closely matches your application's maximum need.

Double Head Fixed 25 psi (1.7 bar) max. Flow Rate Outputs

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
100FL1	1	6.0	0.25	0.53	22.7	0.95	15.76	18.2	0.76	12.64	
100FL2	2	20.0	0.83	1.78	75.7	3.15	52.57	60.6	2.53	42.06	
100FL3	3	44.0	1.83	3.91	166.5	6.94	115.63	133.2	5.55	92.50	
100FL4	4	70.0	2.92	6.22	265.0	11.04	184.03	212.0	8.83	147.22	
100FL5	5	100.0	4.17	8.88	378.5	15.77	262.88	302.8	12.61	210.28	
170FL1	1	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04	
170FL2	2	34.0	1.42	3.02	128.7	5.36	89.38	102.6	4.29	71.55	
170FL3	3	80.0	3.33	7.11	302.8	12.62	210.28	242.2	10.09	168.22	
170FL4	4	120.0	5.00	10.66	454.2	18.93	315.42	363.4	15.14	252.36	
170FL5	5	170.0	7.08	15.10	643.6	26.80	446.88	514.8	21.45	357.50	
Approximate Output @ 60Hz							Approximate Output @ 50Hz				

Double Head Fixed 100 psi (6.9 bar) max. Flow Rate Outputs

Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
100FH1	1	6.0	0.25	0.53	22.7	0.95	15.76	18.2	0.76	12.64	
100FH2	2	20.0	0.83	1.78	75.7	3.15	52.57	60.6	2.53	42.06	
170FH1	1	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04	
170FH2	2	34.0	1.42	3.02	128.7	5.36	89.38	102.6	4.29	71.55	
Approximate Output @ 60Hz							Approximate Output @ 50Hz				



To Order, Build Pump Item Number
 Insert item number prefix and code for each specification.

- | | | |
|---|--|---|
| <p>code Voltage & Hertz</p> <p>A 120V 60Hz</p> <p>B 220V 60Hz</p> <p>C 230V 50Hz <i>International</i></p> <p>D 250V 50Hz <i>International</i></p> <p>Contact the factory for additional voltage and plug options.</p> | <p>code Suction & Discharge Tubing</p> <p>1 1/4" White</p> <p>2 1/4" UV Black</p> <p>3 3/8" White</p> <p>4 3/8" UV Black</p> <p>5 6 mm White <i>Europe</i></p> <p>O.D does not affect output.</p> | <p>code Tube Material</p> <p>S Santoprene®</p> <p>T Versilon® (#7 not available)</p> <p>Refer to the chemical guide for material compatibility.</p> |
|---|--|---|

NOTE: Duckbill check valve included with pumps rated 100 psi (6.9 bar) maximum.

NOTICE: The information within these charts is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.