

PUMPS PRODUCTS

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SUBMERSIBLE PUMPS FW SW

These Maxi-Jet Pro water pumps are useful in hatching tanks, aquariums, trickle and undergravel filters, etc. This powerful, submersible, sealed pump functions as a powerhead, propeller pump or a utility pump to suit your aquarium needs. Included components allow quick and easy conversion from impeller to propeller-driven use. The sealed pumps can be used either submerged or external (with flooded suction cup mounting). Suitable for salt and freshwater systems.

- 3 pumps in one: powerhead, circulation pump, utility pump

| MODEL | VOLTS | HZ | WATTS | FLOWRATE (GPM) | MAX HEAD | SHIP WT (LBS) | EACH |
|--------------|-------|----|-------|----------------|----------|---------------|----------------|
| PU151 | 115 | 60 | 5 | 1.8 | 29" | 1.7 | \$15.99 |
| PU161 | 115 | 60 | 8 | 2.7 | 53" | 1.7 | 17.99 |
| PU171 | 115 | 60 | 9 | 3.8 | 46" | 1.9 | 21.99 |
| PU181 | 115 | 60 | 20 | 4.9 | 69" | 2.0 | 23.99 |



PU181

SUBMERSIBLE PUMPS FW SW

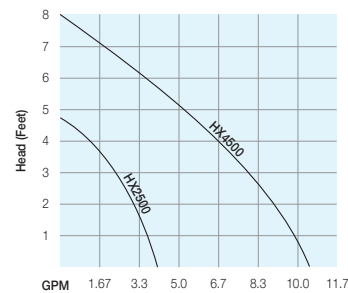
These powerful submersible water pumps feature an alumina ceramic shaft, 4 suction cup mounting feet, 3/4" outlet and venturi assemblies for aeration are included. 3/16" x 16" L venture inlet tubing. 6' 2-prong power cord. Six-month warranty.

| MODEL | VOLTS | HZ | WATTS | FLOWRATE (GPM) | MAX HEAD | SHIP WT (LBS) | EACH |
|---------------|-------|----|-------|----------------|----------|---------------|----------------|
| HX2500 | 115 | 60 | 22 | 4 | 54" | 1.5 | \$19.99 |
| HX4500 | 115 | 60 | 70 | 10 | 96" | 2.0 | 31.99 |



HX2500

HX4500



SUBMERSIBLE PUMPS FW

These magnetic drive pumps can be used submersed or in-line by removing the integrated pre-filter with sponge (flooded suction only). They include bottom-mounting brackets, barbed fittings and suction cups. CE/LVD-approved. 6' power cord. Six-month warranty.

| MODEL | VOLTS | HZ | WATTS | FLOWRATE (GPM) | MAX HEAD | SHIP WT (LBS) | EACH |
|-------------|---------|-------|-------|----------------|----------|---------------|----------------|
| WP22 | 115/230 | 50/60 | 20 | 4.4 | 6' | 2.0 | \$23.99 |
| WP33 | 115/230 | 50/60 | 35 | 10.6 | 7.8' | 3.0 | 45.99 |
| WP4 | 115 | 60 | 90 | 21.2 | 14.8' | 5.0 | 65.99 |
| WP5 | 115 | 60 | 130 | 27.2 | 12.5' | 5.0 | 69.99 |



WP22



WP4

SUBMERSIBLE PUMPS FW SW

These mini water pumps are excellent for tabletop fountains, aquariums or other applications that require a compact pump. Completely submersible. Features 1/4" outlets and 3' power cord. UL-listed. Six-month warranty.

| MODEL | VOLTS | HZ | WATTS | FLOWRATE (GPM) | MAX HEAD | SHIP WT (LBS) | EACH |
|--------------|-------|----|-------|----------------|----------|---------------|---------------|
| SP800 | 115 | 60 | 5 | 1.2 | 18" | 0.7 | \$8.99 |
| SP985 | 115 | 60 | 9 | 2.4 | 36" | 0.9 | 9.99 |

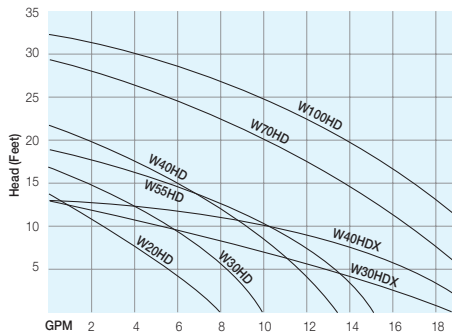


SP985



W70HD

2-YEAR WARRANTY



◀ MAGNETIC DRIVE PUMPS

FW SW TECH FAV

High quality at a low price!

These magnetic drive pumps will run much quieter and cooler than most magnetic drive pumps. Feature seal-free bearings (no seals to leak!), stainless steel hardware, a ceramic shaft and polypropylene body. The open-mouth impeller design allows for higher flowrates than similar pumps. A longer magnet and higher bearing surface provide less heat transfer and greater torque for less slippage. Dimensionally interchangeable with Iwaki® pumps, each pump has a TEFC motor and a 10' power cord.

- Fresh and salt water compatible
- 115V/60 Hz
- Not UL-listed, CE-approved
- 230V models also available; call for details

| MODEL | IN/OUT MNPT | WATTS @ 115V/60 HZ | SHIP WT (LBS) | EACH |
|---------------|-------------|--------------------|---------------|-----------------|
| W20HD | 3/4" | 45 | 6 | \$142.58 |
| W30HD | 3/4" | 90 | 7 | 176.84 |
| W30HDX | 1" | 90 | 7 | 184.58 |
| W40HD | 3/4" | 120 | 8 | 210.00 |
| W40HDX | 1" | 130 | 8 | 217.74 |
| W55HD | 1" | 180 | 16 | 287.37 |
| W70HD | 1" | 290 | 21 | 313.89 |
| W100HD | 1" | 390 | 23 | 359.21 |

▶ MAGNETIC DRIVE PUMPS

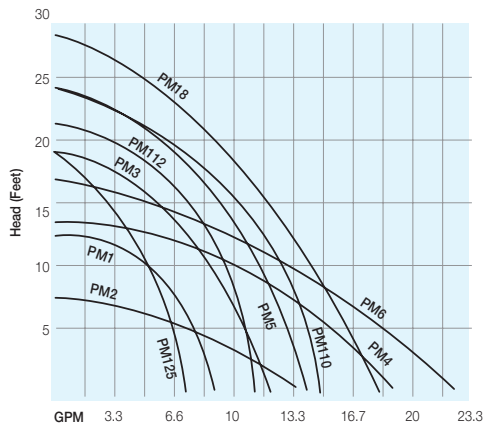
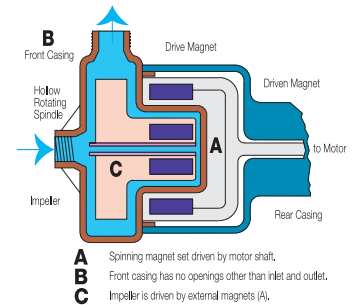
FW SW

Low-medium head

These pumps are perfect for aquaculture and home aquariums. Outlets are adjustable directionally. Thermally protected, 115V/60 Hz, with 6' power cord. UL-listed. One-year warranty. Made in USA.



PM112



| MODEL | MFRS PART NO. | AMPS | INLET/OUTLET FNPT/MNPT | SHIP WT (LBS) | EACH |
|---------------|---------------|------|------------------------|---------------|-----------------|
| PM1 | 2MDQ-SC | 1.6 | 1/2" | 9 | \$185.00 |
| PM2 | 2MDQX-SC | 1.5 | 1" | 9 | 195.00 |
| PM3 | 3MDQ-SC | .8 | 3/4" / 1/2" | 10 | 255.00 |
| PM4 | 3MDQX-SC | .9 | 1" | 10 | 260.00 |
| PM5 | 4MDQ-SC | 1.3 | 1" / 1/2" | 10 | 300.00 |
| PM6 | 4MDQX-SC | 1.3 | 1" | 10 | 295.00 |
| PM125* | 3MDX | 1.5 | 5/8" BARB | 7 | 170.00 |
| PM112* | 3MD-SC | 2.4 | 3/4" / 1/2" | 9 | 220.00 |
| PM110* | 4MD-SC | 1.7 | 1" / 1/2" | 10 | 265.00 |
| PM18* | 5MD-SC | 2.0 | 1" / 1/2" | 10 | 380.00 |

*Not recommended for salt water.

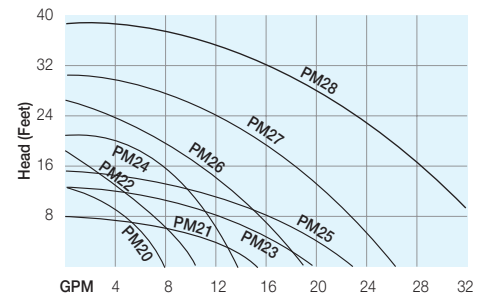
MAGNETIC DRIVE PUMPS  

Low-medium head

Iwaki® magnetic drive pumps are an excellent choice for aquaculture applications, aquariums and industrial process applications, as they are very efficient, extremely quiet and transfer minimal motor heat to the water. TENV or TEFC motors with built-in thermal protectors. Liquid ends are polypropylene. 115V/60 Hz with 6' power cord (3' cord on models PM26, PM27, PM28). One-year warranty.

| MODEL | MFRS PART NO. | AMPS | INLET/OUTLET MNPT | DIMENSIONS | | | SHIP WT (LBS) | EACH |
|-------|---------------|------|----------------------|------------|-----|-----|------------------|-----------------|
| | | | | L | W | H | | |
| PM20 | WMD20RLT | .45 | ¾" | 13" | 6½" | 6½" | 7.2 | \$170.68 |
| PM21 | WMD20RLXT | .45 | 1" | 13" | 6½" | 6½" | 7.2 | 174.37 |
| PM22 | WMD30RLT | 1.0 | ¾" | 13¾" | 6½" | 6½" | 9.3 | 176.28 |
| PM23 | WMD30RLXT | 1.0 | 1" | 13¾" | 6½" | 6½" | 9.3 | 193.59 |
| PM24 | WMD40RLT | 1.9 | ¾" | 13½" | 6½" | 6½" | 10 | 217.57 |
| PM25 | WMD40RLXT | 1.9 | 1" | 13½" | 6½" | 6½" | 10 | 261.71 |
| PM26 | MD-55RLT | 1.6 | 1" | 13" | 9¾" | 8½" | 14 | 342.64 |
| PM27 | MD-70RLT | 3.0 | 1" | 12½" | 9¾" | 8½" | 15.7 | 377.23 |
| PM28 | MD-100RLT | 3.4 | 1" | 13" | 6¼" | 7" | 21 | 464.29 |

Note: Do not exceed maximum head, as nonwarranty pump failure can occur.
Iwaki® is a registered trademark of Iwaki Co., Ltd., or one of its global affiliates.



PUMP FILTER BAGS

Submersible pump intake screens are typically quite small and can be blocked with just a little debris. In 1995, it dawned on us that we could put the pump into a filter bag, and we created the Pump Bag®. We now have five sizes.

Place your submersible pump, its power cord and outlet hose right in the bag, tie the top closed and you have a large surface area, long-life inlet strainer. Select a bag larger in diameter than your pump, with a mesh opening smaller than the pump's inlet strainer but not so fine that the bag requires frequent cleaning.

We have three types: lightweight, medium and heavyweight. The lightweight are fine mesh, ideal for pumps up to 15 gpm. They have a bottom stiffener ring and about 2 sq.ft. of surface area with a drawstring closure, fitting pumps up to 10" in diameter. Our popular medium weight bag fits pumps up to 7" in diameter and has about 2 sq.ft. of surface area. The heavyweight bags handle up to 12" in diameter and offer about 6 sq.ft. of surface area. The heavyweight bags use a stiff, semirigid, polyethylene mesh for flows to 60 gpm. The medium and heavyweight bags use a tie-wrap closure. Made in USA.

| MODEL | TYPE, PUMP DIA. | OPENINGS | FLAT DIMENSIONS | | COLOR | EACH | 4+ |
|--------|------------------|----------|-----------------|--|-------|----------------|----------------|
| | | | W X L | | | | |
| PFB101 | LIGHTWEIGHT, 10" | 1/32" | 15" X 24" | | GREEN | \$15.50 | \$11.21 |
| PFB102 | LIGHTWEIGHT, 10" | 1/8" | 15" X 24" | | BLUE | 15.00 | 9.88 |
| PB1A | MEDIUM, 7" | 1/16" | 12" X 22" | | BLACK | 26.85 | 25.38 |
| PB2A | HEAVYWEIGHT, 12" | 3/16" | 20" X 39" | | BLACK | 14.50 | 13.78 |
| PB38 | HEAVYWEIGHT, 12" | 3/8" | 17" X 39" | | BLACK | 9.60 | 9.12 |

SUBMERSIBLE PUMPS, 12 & 24VDC FW SW **NEW!**

SHURFLO® submersible pumps are smart, reliable and efficient; suitable for many applications. Built for the harsh marine environment to withstand the toughest conditions. Permanent magnet, continuous duty motors with 3' tinned wire leads for below waterline installations. (6' Leads on 1500 & 2000 GPH models) SHURFLO® pumps control and manage water intake by transferring and removing excess water. Note: Do not run pump dry. Do not pump oil, diesel fuel, gasoline or other flammable liquids with these pumps. One-year warranty.

- Anti-Airlock
- Tough Nylon Housing and impeller
- Water Cooled Motors – Extended Life
- Quick-disconnect base plate for easy installation
- CE Listed and Ignition Protection 8846

Optional automatic caged float switch for remote or direct mounting. Constructed of ABS plastic housing with 3' tinned wire leads, contains no mercury and is ignition protected. 12A maximum at 12V, 6A maximum at 24V. Turns on pump when water is 1¾", turns off at ¾". Operating temperature from 33°F to 180°F. 5.1" x 4" x 2.8". One-year warranty.

RULE® Model 3700 submersible pump is quiet, energy-efficient and maintenance-free. 29" wire leads. CE Certified. One-year warranty.

Applications include tank dewatering, hauling truck use, boat bilge pumping, pit/basement dewatering, livewell recirculating, emergency pumping.

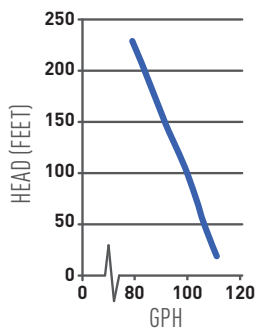
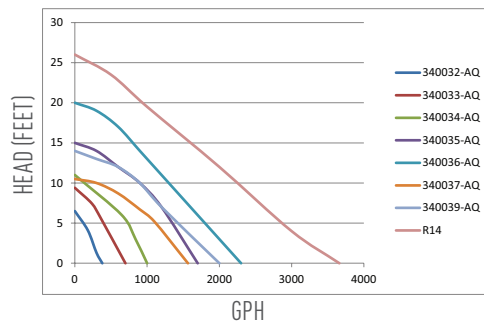
| MODEL | VOLTS | MAX AMPS | FLOW RATE GPM/GPH | PORT SIZE OUTLET | BRAND | H | DIA. | SHIP WT (LBS) | EACH |
|------------------|-------|----------|-------------------|------------------|---------|-----|------|---------------|----------------|
| 340032-AQ | 12VDC | 1.70 | 6.3/380 | ¾" | SHURFLO | 4¼" | 3¾" | 1.00 | \$18.95 |
| 340033-AQ | 12VDC | 3.20 | 11.7/700 | ¾" | SHURFLO | 4¼" | 3¾" | 1.00 | 26.95 |
| 340034-AQ | 12VDC | 3.20 | 16.7/1000 | 1½" | SHURFLO | 4¼" | 3¾" | 1.00 | 34.95 |
| 340035-AQ | 12VDC | 8.00 | 25.0/1500 | 1½" | SHURFLO | 7¼" | 6" | 5.30 | 70.95 |
| 340036-AQ | 12VDC | 10.00 | 33.3/2000 | 1½" | SHURFLO | 7¼" | 6" | 5.30 | 99.95 |
| R14 | 12VDC | 15.5 | 61.7/3700 | 1½" | RULE | 7¼" | 4¾" | 7.00 | 159.00 |
| 340037-AQ | 24VDC | 4.00 | 25.0/1500 | 1½" | SHURFLO | 7¼" | 6" | 5.30 | 79.95 |
| 340039-AQ | 24VDC | 5.00 | 33.3/2000 | 1½" | SHURFLO | 7¼" | 6" | 5.30 | 109.00 |

Float Switch and Plastic Hoses

| | | | |
|------------------|---|------|----------------|
| 340040-AQ | OPTIONAL AUTO FLOAT SWITCH FOR SHURFLO 12 & 24VDC PUMPS | 0.60 | 31.95 |
| R81 | PLASTIC HOSE, ¾" I.D. | — | 1.59/FT |
| R80 | PLASTIC HOSE, 1½" I.D. | — | 1.79/FT |
| R88 | PLASTIC HOSE, 1½" I.D. | — | 3.19/FT |



SHURFLO®



SEE PAGE 471 FOR SUBMERSIBLE POWER CABLES

| MODEL | VOLTS | MAX AMPS | FLOW RATE GPM/GPH | PORT SIZE OUTLET | MAX VERTICAL LIFT | H | DIA. | SHIP WT (LBS) | EACH |
|------------------|--------------|-------------|-------------------|------------------|-------------------|------------|------------|---------------|-----------------|
| 340041-AQ | 24VDC | 4.60 | 1.9/111 | ½" | 230' | 12" | 3¾" | 7.50 | \$649.00 |

◀ 9300 SERIES SUBMERSIBLE PUMP, 24VDC **NEW!**

The SHURFLO® 9300 submersible pump is the solution to your remote water pumping needs. This pump is rugged, durable and built to last. It delivers a steady 1.0 GPM (60 GPH) at 100 PSI at its maximum depth of 230 feet. Its unique water-tight cable connector stops water wicking and prevents potential condensation problems. Great for livestock watering, irrigation, pond aeration, remote homes and cabins. ½" hose barb discharge port. One-year warranty.

Note: Do not use this SHURFLO pump for petrol gasoline, petroleum products, solvents, thinners or any other flammable liquid with a flash point below 82 C (180 F). Not for use where flammable vapors are present.

- Fits wells 4" in diameter and larger
- Corrosion-proof housing with stainless-steel fasteners
- Runs dry without damage
- 50 mesh stainless steel inlet screen
- Quick disconnect for easy installation and service



MD2 - MD7



MD9-MD18



MD24



FOAM PRE-FILTER



RIGID PRE-FILTER



IMD6



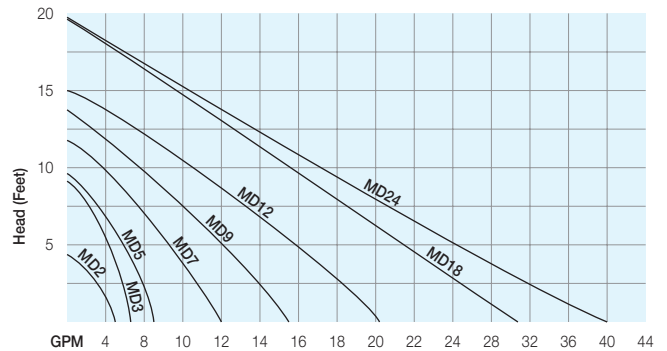
VOL2

◀ **MAGNETIC DRIVE PUMPS** FW SW

These Danner Supreme® magnetic drive, low-head, epoxy-sealed pumps are robust, low maintenance and energy-efficient. Only one moving part. No oiling necessary. They are great for water return from a wet/dry sump or for powering a protein skimmer. All models include reusable foam pre-filter except models MD24 and MD242 have rigid plastic pre-filter. 115V/60 Hz. UL-listed.

- For fresh or salt water applications
- Positions for vertical or horizontal discharge
- Use in-line (above water) or submerged
- Easy-to-clean prefilter

3-YEAR WARRANTY ON PUMP BODY & COVER
5-YEAR WARRANTY ON IMPELLER



| PUMP MODEL | FLOW RATE GPM/GPH | AMPS | WATTS | FPT INLET/ MPT OUTLET | SHUTOFF | L | W | H | SHIP WT (LBS) | WITH 10' CORD | | WITH 18' CORD | |
|----------------------------|----------------------|------|-------|--------------------------|---------|------|------|------|------------------|---------------|----------------|---------------|----------------|
| | | | | | | | | | | MODEL | EACH | MODEL | EACH |
| PUMP WITH FOAM PRE-FILTER | 4.2/250 | 0.3 | 24 | 1/2" | 7' | 5" | 3.8" | 4.2" | 4 | MD2 | \$59.99 | MD22 | \$69.99 |
| PUMP WITH FOAM PRE-FILTER | 5.8/350 | 0.6 | 35 | 1/2" | 10.5' | 5" | 3.8" | 4.2" | 5 | MD3 | 69.99 | MD32 | 79.99 |
| PUMP WITH FOAM PRE-FILTER | 8.3/500 | 0.8 | 45 | 1/2" | 10.5' | 5" | 3.8" | 4.2" | 6 | MD5 | 74.99 | MD52 | 84.99 |
| PUMP WITH FOAM PRE-FILTER | 11.7/700 | 1.3 | 60 | 1/2" | 11.65' | 5" | 3.8" | 4.2" | 6.5 | MD7 | 89.99 | MD72 | 89.99 |
| PUMP WITH FOAM PRE-FILTER | 15.8/950 | 1.33 | 93 | 3/4" | 12.85' | 5.5" | 3.4" | 5" | 7 | MD9 | 114.99 | MD92 | 114.99 |
| PUMP WITH FOAM PRE-FILTER | 20/1200 | 1.5 | 110 | 3/4" | 13.5' | 6.4" | 4.5" | 4.6" | 9 | MD12 | 152.99 | MD122 | 159.99 |
| PUMP WITH FOAM PRE-FILTER | 30/1800 | 1.5 | 145 | 3/4" | 16.85' | 6.4" | 4.5" | 4.6" | 11 | MD18 | 184.99 | MD182 | 184.99 |
| PUMP WITH RIGID PRE-FILTER | 40/2400 | 3.0 | 265 | 1" | 18' | 7.5" | 4" | 6" | 11 | MD24 | 214.99 | MD242 | 214.99 |

REPLACEMENT PARTS

| MODEL | REPLACEMENT IMPELLERS | EACH |
|--------------|-----------------------------|----------------|
| IMD2 | FOR MD2,MD22 | \$11.60 |
| IMD3 | FOR MD3,MD32,MD5,MD52 | 13.75 |
| IMD4 | FOR MD7,MD72 | 13.75 |
| 12746 | FOR MD9,MD92 | 21.75 |
| IMD5 | FOR MD12,MD122 | 21.25 |
| IMD6 | FOR MD18,MD182 | 33.25 |
| 12780 | FOR MD24,MD242 | 43.45 |
| IMD5B | FOR MD12,MD122 (AFTER 2001) | 21.25 |
| IMD6B | FOR MD18,MD182 (AFTER 2001) | 38.25 |

REPLACEMENT PARTS

| MODEL | REPLACEMENT PRE-FILTERS | EACH |
|---------------|---------------------------------|---------------|
| FRP2 | FOAM - FOR MD2-MD7, MD22-MD72 | \$7.00 |
| FRP12 | FOAM - FOR MD9-MD18, MD92-MD182 | 11.25 |
| MD24PF | RIGID PLASTIC - FOR MD24, MD242 | 9.25 |

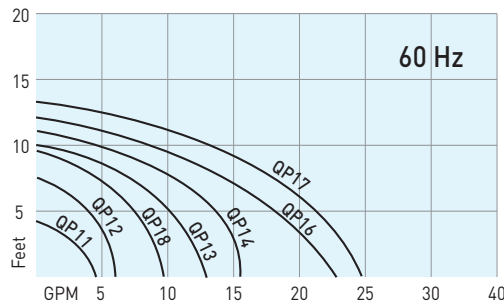
REPLACEMENT PARTS

| MODEL | REPLACEMENT VOLUTES | EACH |
|-------------|------------------------------------|---------------|
| VOL2 | FOR MD2,MD22,MD3,MD32 | \$5.75 |
| VOL3 | FOR MD5,MD52,MD7,MD72 | 5.75 |
| VOL4 | FOR MD9,MD92,MD12,MD122,MD18,MD182 | 7.25 |
| VOL5 | FOR MD24,MD242 | 8.60 |

MAGNETIC DRIVE PUMPS

- Quiet operation
- Energy-efficient
- External or submersible
- Small footprint, high flowrate

Quiet One® pumps have a noise level less than 45 decibels and can be used in either above-water or submersible applications, except QP11, which is for submerged use only. A unidirectional impeller with ceramic bearing ensures longer life. Fins provide air cooling and/or water cooling. The 6' power cord pumps are excellent for aquariums and fountains close to a receptacle. Pond pumps include a spray nozzle assortment and have a 20' power cord. 115V/60 Hz (available in 230V/50 Hz in quantity by special order). UL, C-UL, CE, TUV-GS listed. One-year warranty.



| WATTS | IN/OUT | STD. MODELS | | POND MODELS | |
|-------|-----------|-------------|---------|-------------|---------|
| | | MODEL | EACH | MODEL | EACH |
| 14 | 1/2" BARB | QP11 | \$12.99 | QP11P | \$29.99 |
| 26 | 1/2" MNPT | QP12 | 17.99 | QP12P | 39.99 |
| 40 | 1" MNPT | QP13 | 49.99 | QP13P | 79.99 |
| 41 | 1" MNPT | QP18 | 45.99 | QP18P | 69.99 |
| 50 | 1" MNPT | QP14 | 52.99 | QP14P | 79.99 |
| 110 | 1" MNPT | QP16 | 88.99 | QP16P | 124.99 |
| 140 | 1" MNPT | QP17 | 99.99 | QP17P | 129.99 |

Quiet One® is a registered trademark of Lifegard Aquatics, Inc.



PENTAIRAES.COM

EVERYTHING YOU NEED, ON EVERY DEVICE



◀ **SUBMERSIBLE PUMP** FW

The Ebara Optima Pro-Drainer pump has a 304 stainless steel case and an automatic float switch, thermal overload protection with automatic reset and an oil lubricated double mechanical shaft seal. Perfect for pumping slurry or semi-dirty water. For continuous-duty applications. Temperature rating to 122F/50C; 140F/60C intermittent duty. 1¼" FNPT outlet and a ¾" diameter strainer. 20' power cord. One-year warranty.

| MODEL | HP | VOLTS | HZ | PHASE | AMPS* | DIA. | H | SHIP WT (LBS) | EACH |
|------------|-----|-------|----|-------|-------|------|-----|---------------|-----------------|
| PU7 | 1/3 | 115 | 60 | 1 | 4 | 6¾" | 13" | 11 | \$299.00 |

*at 5 ft
Ebara® is a registered trademark of Ebara Corp.

SUBMERSIBLE PUMP FW

Medium head

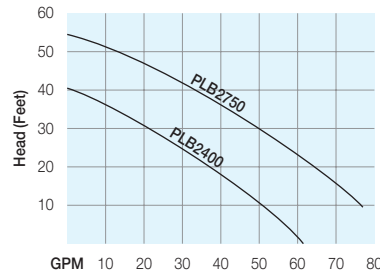
The Tsurumi Pump® top discharge pump is built for long life, high performance, and maximum motor cooling efficiency for continuous duty operation. Aluminum motor frame with synthetic rubber casing. Motors have thermal overload protection. Urethane semi-vortex impeller & wear plates for maximum durability. 1HP model has cast iron impeller. Pumps down to 3½". Double mechanical seal w/silicon faces. Multidirectional discharge connector allows easy switching from vertical to horizontal discharge. 2" MPT outlets and 32' power cord (50' on 1HP model).

PLB2400

- Special urethane rubber impeller
- Aluminum motor frame
- Synthetic rubber casing
- Suction cover and wear ring

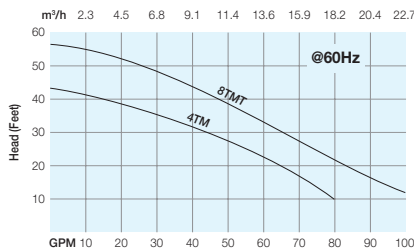
PLB2750

- Galvanized steel housing
- Cast iron impeller



| MODEL | HP | VOLTS | HZ | PHASE | AMPS | DIA. | H | SHIP WT (LBS) | EACH |
|----------------|-----|---------|----|-------|------|------|----------|---------------|-----------------|
| PLB2400 | 2/3 | 115 | 60 | 1 | 6.1 | 7¾" | 11¼" | 28 | \$349.00 |
| PLB2750 | 1 | 115/230 | 60 | 1 | 9.6 | 7¾" | 13-7/16" | 35 | 519.00 |

2-YEAR WARRANTY



◀ **TITANIUM PUMP FOR SALT WATER** FW SW

The Tsurumi Pump® Titanium Pump is designed specifically for continuous duty in salt water. These high-quality pumps are designed for long service life. All parts in contact with water are either titanium or FRP resin, including the motor shaft and the screws! Both models have built-in thermal protectors. 2" FPT outlets, 32' power cords and 1" strainer inlets.

Note: Like most submersible pumps, these should have their motors underwater (for cooling) when in continuous duty applications.

| MODEL | HP | VOLTS | HZ | PHASE | AMPS* | DIA. | H | SHIP WT (LBS) | EACH |
|-------------|-----|-------|----|-------|-------|------|------|---------------|-----------------|
| 4TM | 1/2 | 115 | 60 | 1 | 5.8 | 9¾" | 14¼" | 18 | \$999.00 |
| 8TMT | 1 | 230 | 60 | 3 | 3.1 | 9¾" | 14¼" | 20 | 1099.00 |

2-YEAR WARRANTY

SUBMERSIBLE STAINLESS STEEL PUMPS



ShinMaywa® Norus® submersible pumps are highly efficient, reliable, and designed for continuous duty operation. Unique 304 stainless steel and poly amide fiber reinforced resin housing provides superior corrosion resistance. Stainless steel shaft. Cast aluminum bearing housing provides superior heat dissipation and structural integrity. Dual mechanical shaft seals protect motor from water entry. Thermal overload protection prevents motor from overheating due to locked rotor or under voltage. 2" FNPT discharge outlet. 32' PVC power cord (20' on 1/5HP model). ETL Listed.

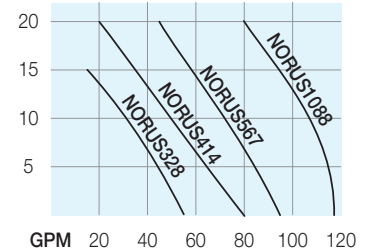
- Class E insulated motor for long life and low operating cost
- Anti-vibration bearing technology
- Handles solids up to 1¼"
- Vortex impeller design to handle fibrous and stringy materials –means less cleaning
- Lightweight design for easy installation

Note: Pumps need to be submerged at all times.



NORUS414

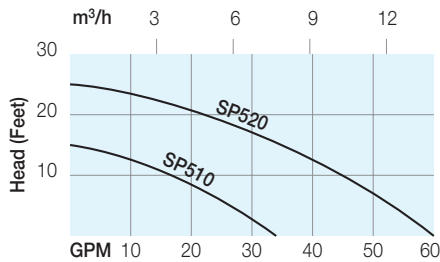
ShinMaywa



2-YEAR WARRANTY

PERFORMANCE IN GPM

| MODEL | HP | VOLTS | HZ | PHASE | AMPS | WATTS | MAX LIFT | DIA. | H | SHIP WT (LBS) | EACH |
|------------------|-----|-------|----|-------|------|-------|----------|-------|-------|---------------|-----------------|
| NORUS328 | 1/5 | 115 | 60 | 1 | 3.0 | 328 | 19' | 8.1" | 15.5" | 16 | \$349.00 |
| NORUS414 | 1/3 | 115 | 60 | 1 | 4.4 | 414 | 27' | 9.45" | 15.5" | 20 | \$459.00 |
| NORUS567 | 1/2 | 115 | 60 | 1 | 5.5 | 567 | 37' | 9.45" | 15.5" | 24 | \$599.00 |
| NORUS1088 | 1 | 115 | 60 | 1 | 10.0 | 1088 | 48' | 9.45" | 15.5" | 25.1 | \$679.00 |



PERFORMANCE IN GPM

| MODEL | HP | VOLTS | HZ | PHASE | AMPS | WATTS | MAX LIFT | DIA. | H | SHIP WT (LBS) | EACH |
|--------------|-----|-------|----|-------|------|-------|----------|------|-----|---------------|-----------------|
| SP510 | 1/3 | 115 | 60 | 1 | 3.0 | 330 | 15' | 5½" | 12" | 8 | \$219.00 |
| SP520 | 1/2 | 115 | 60 | 1 | 5.6 | 650 | 28' | 5½" | 12" | 11 | \$269.00 |



SP510

SUBMERSIBLE PUMPS



These Leader EcoVort submersible pumps are safe, reliable and of high-quality construction. They can handle dirty water and solids up to 1" in diameter. Manufactured with non-corrosive and rust-proof materials. No screws to corrode or vibrate loose. Environmentally safe and oil-free. Built in thermal overload protection and stainless steel shaft. Perfect cooling allowing running of pump even if partially submerged. Elbow with O-ring can be hand tightened and provides superior sealing. 1¼" threaded outlet, includes barb. 16' power cord. One-year warranty.

SUBMERSIBLE PUMP

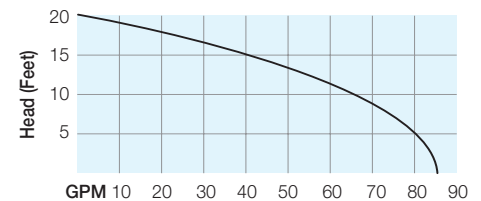


Pondmaster® ProLine™ Hy-Drive pump uses the best of mag drive and direct drive technology to efficiently supply up to 80GPM/4800GPH. Whisper-quiet continuous duty operation. In-line and submersible operation. Ideal for large ponds, waterfalls, skimmers and multi-tank aquariums. Oilless design ensures your fish are safe. Includes extra-large inlet screen and 1½" hose barb adapters. 1½" FNPT inlet and 1½" MNPT outlet. 20' power cord.



3-YEAR WARRANTY

PONDMASTER
By Danner Manufacturing, Inc.



| MODEL | VOLTS | HZ | PHASE | AMPS | WATTS | MAX LIFT | L | W | H | SHIP WT (LBS) | EACH |
|-------------|-------|----|-------|------|-------|----------|----|----|-----|---------------|-----------------|
| PM48 | 115 | 60 | 1 | 2.0 | 250 | 18.5' | 7" | 7" | 15" | 15 | \$279.99 |

Pondmaster® and ProLine® are registered trademarks of Eugene G. Danner Manufacturing, Inc.

ShinMaywa® and Norus® are registered trademarks of ShinMaywa Industries, Ltd.



Float switch and two discharge port adaptors included

SEE OUR YouTube CHANNEL TO LEARN MORE!

◀ **SUBMERSIBLE STAINLESS STEEL PUMP** FW ★ TECH FAV

This Pentair Aquatic Eco-Systems Submersible Pump, 3/4 HP stainless steel pump is designed for draining and utility applications, with the capability to pump water down to 1'-3/8" in depth. The pump features improved flow rates, a superior stainless steel casing, suction strainer, impeller and shaft for greater corrosion resistance and longer service life. Debris and stones up to 3/4" are able to pass through the pump. The pump features a 1-1/4" discharge port for faster draining. Two discharge port adaptors are included.

Equipped with an automatic reset thermal protector to help prevent premature failure caused by overheating. If the internal motor temperature rises to unsafe levels, the switch will protect the motor by causing it to stop. When the motor has sufficiently cooled, the switch will reset automatically and restart the motor, allowing you to resume pumping.

The external float switch allows for optional automatic operation of the pump. It is easily installed by plugging directly into an outlet and connecting the pump cord to the opposite end of the switch. The pump is then automatically activated when the surrounding water raises the float switch to a 45° angle from the handle. Once the water level and float switch return to its original position, the pump is automatically turned off. CSA certified. One-year warranty.

- 115V, 60 Hz, single phase, permanent split capacitor motor
- Automatic thermal overload protection
- Clog-resistant cast stainless steel impeller
- Accommodates water temperatures ranging from 32°F to 130°F
- Equipped with 15-foot, 18/3 grounding-type power cord
- Convenient top-mounted handle
- Rubber feet to eliminate scratching
- Includes adaptors; 1 1/4" Female NPT Elbow, 1 1/4" Male NPT to 1 1/2" Female NPT

PUMP PERFORMANCE

| MODEL | MINIMUM CIRCUIT REQ. | LIQUID TEMPERATURE RANGE | PUMPS DOWN TO |
|-------------|----------------------|--------------------------|-----------------|
| PCD-1000-AQ | 15 AMPS | 32/130° F, 0/54° C | 1 3/8" (3.5 CM) |

| TDH | PUMP PERFORMANCE TDH/GPM | | | | SHUT OFF HEAD |
|-----|--------------------------|------|------|------|---------------|
| | 5' | 10' | 15' | 20' | |
| GPM | 45.5 | 34.0 | 21.5 | 12.0 | N/A |

| MODEL | HP | VOLTS | HZ | PHASE | FULL LOAD AMPS | RPM | SWITCH SETTING | | SHIP WT (LBS) | EACH |
|-------------|-----|-------|----|-------|----------------|------|----------------|-----|---------------|----------|
| | | | | | | | ON | OFF | | |
| PCD-1000-AQ | 3/4 | 115 | 60 | 1 | 6.4 | 3450 | 12" | 6" | 19 | \$330.00 |

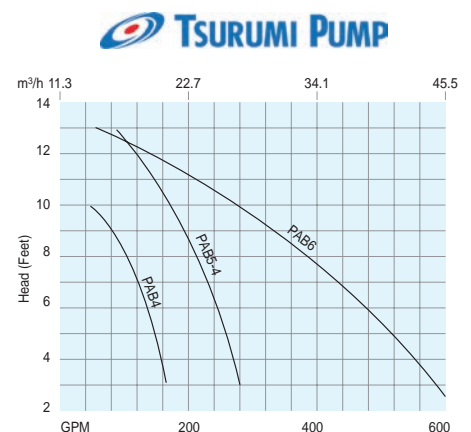
▶ **SUBMERSIBLE STAINLESS STEEL PUMP** FW ★ TECH FAV

The Tsurumi Pump® can't be beat for low-head, high-flow, continuous duty applications. The exterior housing is stainless steel, the top and inside portions are cast iron. They have double mechanical seals with silicon carbide faces and high-temperature C3 bearings rated for 60,000 hours. To make installation and removal easier, use our Quick Disconnect Fittings (see Index) to connect the outlet piping. All pumps will handle 5/16" solids. PAB4 comes with a 16' power cord, PAB5-4 and PAB6 do not come with power cords. Two-year warranty.

| MODEL | HP | PH | VOLTS 60HZ | AMPS | OUTLET | DIA. X HT. | SHIP WT (LBS) | EACH |
|--------|-----|----|-------------|------|--------|------------|---------------|----------|
| PAB4 | 1/2 | 1 | 115 | 7.9 | 4" MPT | 10" X 19" | 40 | \$961.67 |
| PAB5-4 | 1 | 3 | 208/230/460 | 5.7 | 4" MPT | 10" X 19" | 68 | 1,179.00 |
| PAB6 | 2 | 3 | 208/230/460 | 10.7 | 6" FPT | 11" X 23" | 97 | 1,955.00 |



PAB4



2-YEAR WARRANTY

200 GPM WITH ONLY 7.9 AMPS!

SWEETWATER® HIGH-EFFICIENCY PUMPS



Low head, very quiet

- High-efficiency
- Stainless steel motor shafts
- Salt water compatible shaft sleeve and seal
- 1,725-rpm, thermally protected ODP motors
- Glass-filled polypropylene pump bodies
- 8' power cords and 1½" FNPT inlet/outlet (**SHE1.7** and **SHE2.4**)
- **SHE2.9** and **SHE4.4** have a 2" in/out with slip unions
- **SHE2.4-4.4** also available in 230V/50 Hz (add "-230")
- Made in USA

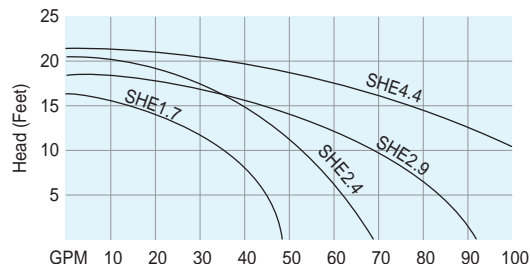
| MODEL | WATTS @ 10' HEAD | AMPS @ 115V | SHIP WT (LBS) | EACH |
|---------------|------------------|-------------|---------------|-----------------|
| SHE1.7 | 170 | 1.5 | 24 | \$585.00 |
| SHE2.4 | 220 | 1.9 | 28 | 610.00 |
| SHE2.9 | 290 | 2.9 | 31 | 645.00 |
| SHE4.4 | 450 | 4.0 | 35 | 750.00 |



SHE1.7

SHE4.4

2-YEAR WARRANTY



We constantly preach energy conservation because it saves money. An aquaculture business cannot afford big monthly power bills nor should the hobbyist accept that. Compare our **SHE2.9** to a typical hardware store water pump when run continuously.

| BRAND | GPM @ 10' HEAD | WATTS | COST/YR@10¢/KWH |
|---------------------|----------------|-------|-----------------|
| SHE2.9 | 70 | 290 | \$254 |
| TYPICAL PUMP | 70 | 900 | 788 |

Our pump cost about \$100 more but saved over \$500/year. Which one is the bargain?

TECH TALK 75

Water Pump Efficiency and Redundancy

We know what you're thinking ... here they go again, talking about efficiency. Yes, and we'll keep doing it. The problem is that, in the US, electricity is so cheap, we all but ignore it. Then, when we get the power bill, we complain about how high it is!

Sound familiar?

Here is a note on energy efficiency from our 1981 Aeration Handbook and Catalog: "... one kilowatt-hour is equivalent to about two days of hard work by one man." A man's labor for 5¢ per day—that's cheap!

As efficiency relates to aquaculture, pumping and aeration are the two biggest consumers of electricity. After feed costs and labor, electricity is probably the next highest overhead expense. Be careful when selecting a pump. Do not compare them by horsepower alone. Often, a cheap pump has an undersized motor that must work very hard to do the job. This may be an appropriate pump selection for temporary or noncritical applications, but not where the lives of your animals are concerned. Often, pool type pumps, when used for low-pressure aquaculture applications, keep the motor in a continuous overload condition.

Operating an undersized motor in the duty range of its service factor is acceptable from the pump manufacturer's point of view, but not a fish farmer's point of view. It lowers the pump's cost (which looks good when you are comparing pumps), but increases energy consumption and operating temperature. Higher operating temperature shortens motor life.

We've painstakingly selected and tested all of our pumps for power consumption. We've illustrated ratings, specifications and power consumption clearly. We use the term "aquaculture duty" to indicate long-term reliability and efficiency in humid, industrial applications.

Multiple water pumps provide redundancy.

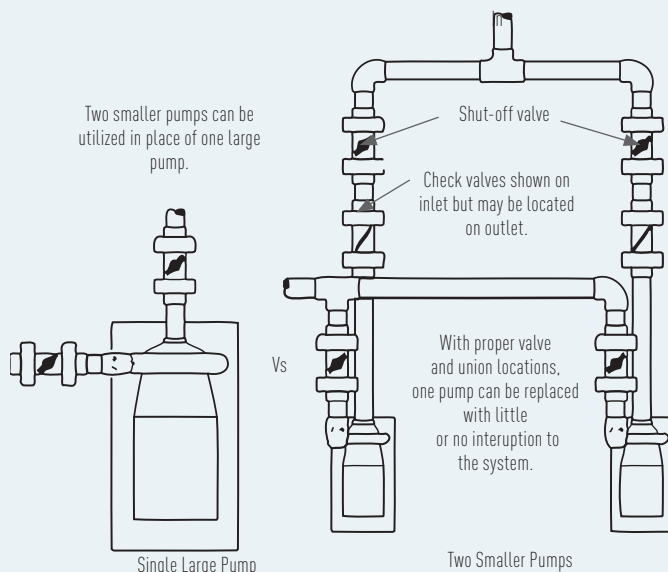
Bigger may not be better when it comes to pumping water. For example, to pump 300 gallons per minute (gpm) to a height of 20', you could use one large 300-gpm pump, two 150-gpm pumps, three 100-gpm pumps, four 75-gpm pumps, five 60-gpm pumps, etc. To determine which is best for your application, consider the following options.

Large pumps may only be available with 3-phase motors. If 3-phase power is not available, an expensive, power-robbing phase converter must be used, or multiple single-phase pumps. Even if one large pump can be used, another one must be available as a backup, if the pumping need is critical.

Consider multiple pumps. If one pump moves 100 gpm, two of the same pumps together will move 200 gpm, three will move 300 gpm, and so on. If less than 300 gpm is ever needed, multiple smaller pumps will save electricity, as they can be individually turned on or off as needed (installing a check valve on

each pump will prevent water from flowing back when that pump is not in use). Also, multiple pumps may be preferred, as then only a portion of the total water flow would be lost when one pump fails. The cost of having a small pump on hand for backup is much less than a large one. For a "ready-to-go" backup, extra pumps could be plumbed into the main line (put the pumps on separate circuit breakers) so that the reserve pump is ready when needed. Alternate the use of the pumps to keep them exercised.

Simplify the backup and spare parts inventory at your facility by using multiples of the same pump instead of several single-purpose pumps. Similar multiple redundancy can be used with air blowers, heaters, chillers, filters, etc.

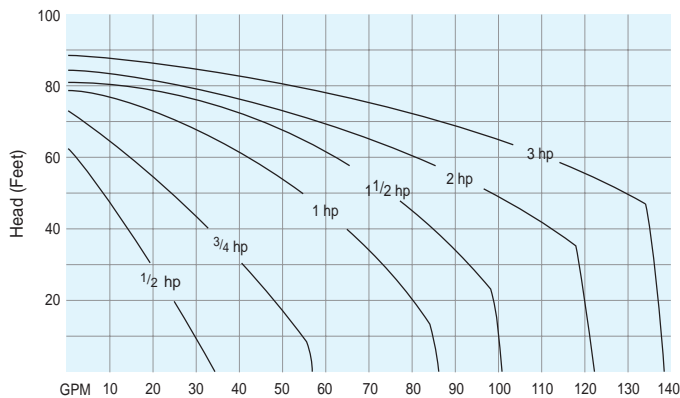


Utilizing two smaller pumps provides redundancy and allows continuous operation should one pump fail.



PS2SS

2-YEAR WARRANTY



TECH TALK 110

Inlet Strainers

Pump inlets can become quickly clogged by just a few leaves, a plastic bag, a small amount of debris or even a dead fish. Inlet strainers are devices that keep debris out of a pump that might otherwise damage or clog it. They generally are not designed to be water filters (requiring frequent cleaning), but rather pump protectors. A pump's performance is greatly diminished when its inlet is restricted. To avoid flow reduction or stoppage, you will need an inlet strainer with a large enough surface area to not impede water flow, even when partially clogged.

Another reason you need a large surface area strainer is to reduce the water velocity at the strainer inlets, so that debris, small fish and animals do not become stuck. To prevent this blockage, we recommend that the strainer screen surface area be a minimum of one square foot for every ten gallons per minute pumped.

The strainer opening should be small enough to keep out anything that will clog the pump, the pump's strainer and the orifices of any valves, etc., after the pump. Your water filtering device, such as sand filters, bead filters, cartridge filters, etc., should be located just after the pump.

Stringy materials can be a problem because they can go through small surface openings and wrap themselves on the pump's impeller. To prevent this, use a very large surface area with a strainer inlet that creates a tortuous path. Spun polypropylene, open cell foam and even multiple wraps of window screen over a strainer can be used for this purpose.

A check valve (also known as a foot valve) can be attached to the inlet strainer in applications where the pump will lose its prime when shut off. The check valve's orientation is important for rapid and positive closure.

SWEETWATER® CENTRIFUGAL PUMPS FW SW

Medium and high head

These high-performance pumps are molded out of glass-filled PPO resin. They are fitted with a seal that prevents water from contacting any metal parts, making the pumps salt water compatible.

All pumps come with stainless steel hardware, 8' power cord (PS2SS through PS4SS models only). Inlet/outlet connections are 1 1/2" FNPT on all pumps. 3,450 rpm, TEFC Baldor® motors are slightly oversized for the pumps, resulting in a cool-running, long-lasting, reliable pump. Two-year warranty. Made in USA.

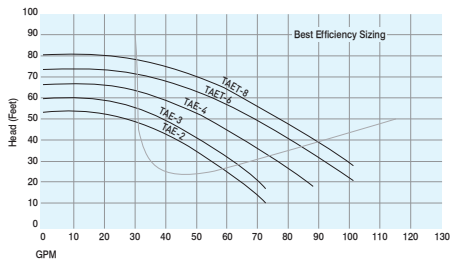
| MODEL | HP | VOLTS | PHASE | FULL LOAD AMPS | SHIP WT (LBS) | EACH | 3+ |
|-----------|------------------------|---------|-------|----------------|---------------|----------|----------|
| PS2SS | 1/2 | 115/230 | 1 | 7.4 @ 115V | 30 | \$670.95 | \$617.27 |
| PS3SS | 3/4 | 115/230 | 1 | 10.8 @ 115V | 35 | 719.25 | 661.71 |
| PS4SS | 1 | 115/230 | 1 | 12.0 @ 115V | 36 | 785.40 | 722.57 |
| PS5SS | 1 1/2 | 115/230 | 1 | 15.0 @ 115V | 47 | 823.85 | 757.94 |
| PS53SS | 1 1/2 | 208/460 | 3 | 4.2 @ 230V | 41 | 773.85 | 711.94 |
| PS6SS | 2 | 230 | 1 | 11.5 @ 230V | 63 | 908.25 | 835.59 |
| PS63SS | 2 | 208/460 | 3 | 4.6 @ 230V | 45 | 827.40 | 761.21 |
| PS73SS | 3 | 208/460 | 3 | 5.4 @ 230V | 49 | 900.00 | 828.00 |
| 1000.0414 | REPLACEMENT SHAFT SEAL | | | | 1 | 36.57 | 34.43 |

PUMP TRAPS

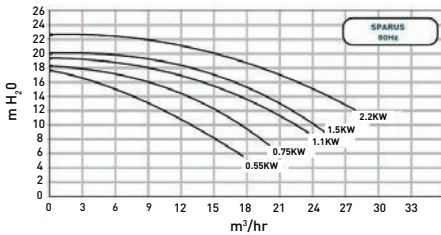
Here is a pump trap (also known as priming pot) at a very reasonable price. Ideal for garden ponds, recirculating systems, and many other applications. All-plastic trap has a 1 1/2" FNPT inlet, 1 1/2" MNPT outlet and weighs 2 lbs. Measures 11" H x 7" D x 7 1/2" L. One-year warranty.

| MODEL | | EACH |
|-------|--------------|---------|
| P5 | PUMP TRAP | \$48.36 |
| P5B | REPL. BASKET | 15.39 |
| P5C | REPL. COVER | 37.00 |
| P5R | REPL. O-RING | 8.92 |





60HZ Performance



50HZ Performance

TAURUS™ 110 ENERGY-EFFICIENT AQUACULTURE DUTY 50 & 60HZ CENTRIFUGAL PUMPS

The Taurus™ 110 moves more water more efficiently for lower operating cost and super-quiet operation. Plus, by performing with less effort, there's simply less wear and tear—and that means longer life for a higher return on your pump investment. The Taurus 110 meets all the criteria for a superior pump: super energy efficient, super quiet and super easy to maintain. Plus, it's designed with innovative materials that will stand up to the most demanding installations and conditions. The Taurus™ 110 is performance and pressure tested to ensure superior quality. Self-priming for quick, easy start-up. 1 1/2" x 1 1/2" NPT port size (1 1/2" NPT union set included). One-year warranty. UL778 listed. Not certified for use on swimming pools.

Optional 3ft 115V, 20 amp power cord, model 79137800-AQ, is compatible with 115V Sparus and Taurus pumps. Includes a NEMA 5-15 three-prong plug and a 1/2" NPT cord-grip-gland with strain relief. UL listed. One-year warranty.

All Pump Models

- Minimal energy consumption
- Cam and Ramp™ lid locks in place with a quarter-turn
- Thermal protection built into single phase motors
- Saltwater compatible construction
- Quiet operation due to superior internal flow design reduces hydraulic noise
- See-through lid permits easy inspection of strainer basket
- Corrosion resistant, high-grade stainless steel motor shaft and parts

60HZ Models

Available for shipment from our North American distribution center.

- 1 Phase models with TEFC Pentair motors
- IP55 rated, UL approved

50HZ Models

Available for shipment from our North American or European distribution centers.

- 1 and 3-Phase models with TEFC Pentair motors
- IP55 rated, CE approved
- Unions included for both 50mm connections

CALL FOR PRICING ON 50HZ MODELS.

| 60 HZ Models | HP | VOLTAGE | HZ | PHASE | FLAMPS | MOTOR | L | DIMENSIONS | | | SHIP WT (LBS) | EACH |
|--|--|-------------|----|-------|--------------|-------|-----|------------|---------|--|---------------|-----------------|
| | | | | | | | | W | H | | | |
| TAE-2-AQ | 1/2 | 115/208-230 | 60 | 1 | 8.8/4.5-4.4 | TEFC | 25" | 10 7/8" | 10 3/4" | | 38 | \$336.99 |
| TAE-3-AQ | 3/4 | 115/208-230 | 60 | 1 | 8.8/4.5-4.4 | TEFC | 25" | 10 7/8" | 10 3/4" | | 38 | 371.25 |
| TAE-4-AQ | 1 | 115/208-230 | 60 | 1 | 11.2/6.0-5.6 | TEFC | 25" | 10 7/8" | 10 3/4" | | 38 | 390.62 |
| TAET-6-AQ NEW | 1 1/2 | 115/208-230 | 60 | 1 | 9.8-8.6 | TEFC | 25" | 10 7/8" | 10 3/4" | | 40 | 414.25 |
| TAET-8-AQ NEW | 2 | 208-230 | 60 | 3 | 11.1-9.5 | TEFC | 25" | 10 7/8" | 10 3/4" | | 48 | 479.25 |
| 79137800-AQ | OPTIONAL 3-FT, 115V, 20AMP POWER CORD FOR 115V TAURUS AND SPARUS PUMPS | | | | | | | | | | | 11.95 |

| 50 HZ Models | HP/KW | VOLTAGE | HZ | PHASE | MOTOR | L | DIMENSIONS | | | SHIP WT (LBS) | EACH |
|---|-----------|---------|----|-------|-------|---------|------------|-----|--|---------------|---------------|
| | | | | | | | W | H | | | |
| P-TRS-051-AQ | 0.5/0.37 | 220-240 | 50 | 1 | TEFC | 21" | 12" | 11" | | 30 | CALL |
| P-TRS-071-AQ | 0.5/0.55 | 220-240 | 50 | 1 | TEFC | 21" | 12" | 11" | | 31 | CALL |
| P-TRS-073-AQ | 0.5/0.55 | 380-420 | 50 | 3 | TEFC | 21" | 12" | 11" | | 28 | CALL |
| P-TRS-101-AQ | 0.75/0.75 | 220-240 | 50 | 1 | TEFC | 23" | 12" | 11" | | 32 | CALL |
| P-TRS-103E2-AQ | 0.75/0.75 | 380-420 | 50 | 3 | TEFC | 21" | 12" | 11" | | 31 | CALL |
| P-TRS-151-AQ | 1.0/1.10 | 220-240 | 50 | 1 | TEFC | 23" | 12" | 11" | | 34 | CALL |
| P-TRS-153E2-AQ | 1.0/1.10 | 380-420 | 50 | 3 | TEFC | 22" | 12" | 11" | | 49 | CALL |
| P-TRS-201-AQ NEW | 1.5/1.50 | 220-240 | 50 | 1 | TEFC | 22" | 12" | 11" | | 38 | 717.06 |
| P-TRS-203E2-AQ NEW | 1.5/1.50 | 380-420 | 50 | 3 | TEFC | 22" | 12" | 11" | | 53 | 758.10 |
| P-TRS-301-AQ NEW | 2/2.20 | 220-240 | 50 | 1 | TEFC | 23 1/8" | 12" | 11" | | 51 | 884.64 |
| P-TRS-303E2-AQ NEW | 2/2.20 | 380-420 | 50 | 3 | TEFC | 23 1/8" | 12" | 11" | | 66 | 935.94 |

SPARUS™ 160 ENERGY-EFFICIENT AQUACULTURE DUTY 50 & 60HZ CENTRIFUGAL PUMPS FW SW

Pentair Aquatic Eco-Systems Sparus™ 160 pumps offer extremely high water flow in a quiet, energy-efficient package making them effective in a wide range of Aquaculture applications. Saltwater compatible, corrosion-resistant plastic construction, 316SS stainless steel internal fasteners, oversized anti-blocking strainer basket and volute, and 2-inch female NPT inlet/outlet ports. EPDM/316SS mechanical seal. Compatible with a wide assortment of cleaning and filtration systems. Clear lid for easy inspection. Self-priming, also suitable for flooded suction applications. One-year warranty. UL778 listed. Not certified for use on swimming pools. Optional 3ft 115V, 20 amp power cord, model 79137800-AQ, is compatible with 115V Sparus and Taurus pumps. Includes a NEMA 5-15 three-prong plug and a 1/2" NPT cord-grip-gland with strain relief. UL listed. One-year warranty.

ALL PUMP MODELS:

- Single body design provides for quiet/durable operation
- High-temperature thermoplastic withstands harsh conditions and prevents corrosion
- Saltwater compatible construction
- Thermal protection built into single-phase motors
- Easy installation and trouble-free servicing
- Corrosion resistant, high-grade stainless steel motor shaft and internal fasteners

60HZ MODELS:

Available for shipment from our North American distribution center.

- 1-phase and 3-Phase models with TEFC motors (except 1/2 - 1HP 1Ph). UL approved.
- TEFC motors are IP55 rated.

50HZ MODELS:

Available for shipment from our North American or European distribution centers

- 1-Phase and 3-Phase models with TEFC Pentair motors. IP55 rated. CE approved
- Unions included for both 50mm and 63mm connections

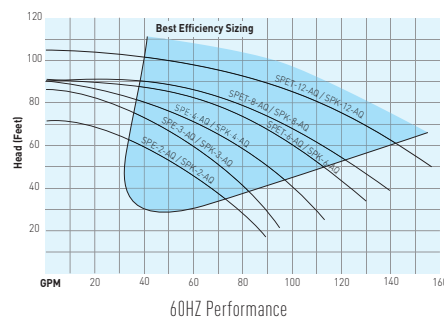
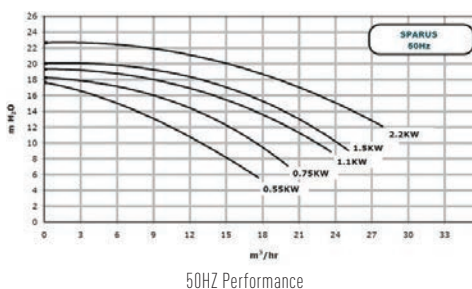


60HZ



50HZ

CALL FOR PRICING ON 50HZ MODELS.



| 60HZ Models | HP | VOLTAGE | HZ | PHASE | FL AMPS | MOTOR | L | W | H | SHIP WT (LBS) | EACH |
|---|---|-------------|----|-------|--------------|-------|---------|---------|---------|---------------|-----------------|
| SPE-2-AQ | 1/2 | 115/208-230 | 60 | 1 | 8.8/4.5-4.4 | ODP | 24 1/2" | 10 7/8" | 12 3/4" | 41 | \$515.25 |
| SPK-2-AQ | 1/2 | 208-230/460 | 60 | 3 | 3.3-3.6/1.8 | TEFC | 24 1/2" | 10 7/8" | 12 3/4" | 39 | 525.50 |
| SPE-3-AQ | 3/4 | 115/208-230 | 60 | 1 | 11.2/6.0-5.6 | ODP | 24 1/2" | 10 7/8" | 12 3/4" | 41 | 535.25 |
| SPK-3-AQ | 3/4 | 208-230/460 | 60 | 3 | 4.5-4.4/2.2 | TEFC | 24 1/2" | 10 7/8" | 12 3/4" | 42 | 566.25 |
| SPE-4-AQ | 1 | 115/208-230 | 60 | 1 | 14.8/7.8-7.4 | ODP | 24 3/4" | 10 7/8" | 12 3/4" | 46 | 589.90 |
| SPK-4-AQ | 1 | 208-230/460 | 60 | 3 | 4.9-4.5/2.3 | TEFC | 24 3/4" | 10 7/8" | 12 3/4" | 46 | 635.55 |
| SPET-6-AQ NEW | 1 1/2 | 208-230 | 60 | 1 | 9.6-8.8 | TEFC | 21 3/4" | 10 7/8" | 12 1/8" | 48 | 630.25 |
| SPK-6-AQ | 1 1/2 | 208-230/460 | 60 | 3 | 6.4-6.3/3.2 | TEFC | 25 1/4" | 10 7/8" | 12 3/4" | 54 | 665.75 |
| SPET-8-AQ NEW | 2 | 208-230 | 60 | 1 | 11.0-10.2 | TEFC | 22 1/8" | 10 7/8" | 12 1/8" | 52 | 741.45 |
| SPK-8-AQ | 2 | 208-230/460 | 60 | 3 | 7.5-7.2/3.6 | TEFC | 25 3/4" | 10 7/8" | 12 3/4" | 56 | 783.25 |
| SPET-12-AQ NEW | 3 | 208-230 | 60 | 1 | 15.0-13.6 | TEFC | 22 7/8" | 10 7/8" | 12 1/8" | 52 | 906.95 |
| SPK-12-AQ | 3 | 208-230/460 | 60 | 3 | 9.8-9.4/4.7 | TEFC | 25 3/4" | 10 7/8" | 12 3/4" | 58 | 956.25 |
| 79137800-AQ | OPTIONAL 3-FT POWER CORD FOR 115V SPARUS AND TAURUS PUMPS | | | | | | | | | 1 | 11.95 |

| 50HZ Models | HP/KW | VOLTAGE | HZ | PHASE | MOTOR | L | W | H | SHIP WT (LBS) | EACH |
|-----------------------|-----------|---------|----|-------|-------|---------|---------|---------|---------------|-------------|
| P-SPR-071-AQ | 0.5/0.55 | 220-240 | 50 | 1 | TEFC | 21 1/4" | 11 7/8" | 12 1/2" | 32 | CALL |
| P-SPR-073-AQ | 0.5/0.55 | 380-420 | 50 | 3 | TEFC | 21 1/4" | 11 7/8" | 12 1/2" | 28 | CALL |
| P-SPR-101-AQ | 0.75/0.75 | 220-240 | 50 | 1 | TEFC | 21 1/4" | 11 7/8" | 12 1/2" | 30 | CALL |
| P-SPR-103E2-AQ | 0.75/0.75 | 380-420 | 50 | 3 | TEFC | 21 1/4" | 11 7/8" | 12 1/2" | 32 | CALL |
| P-SPR-151-AQ | 1.0/1.10 | 220-240 | 50 | 1 | TEFC | 22" | 11 7/8" | 12 1/2" | 34 | CALL |
| P-SPR-153E2-AQ | 1.0/1.10 | 380-420 | 50 | 3 | TEFC | 22" | 11 7/8" | 12 1/2" | 49 | CALL |
| P-SPR-201-AQ | 1.50/1.50 | 220-240 | 50 | 1 | TEFC | 22" | 11 7/8" | 12 1/2" | 37 | CALL |
| P-SPR-203E2-AQ | 1.50/1.50 | 380-420 | 50 | 3 | TEFC | 22" | 11 7/8" | 12 1/2" | 53 | CALL |
| P-SPR-301-AQ | 2.0/2.20 | 220-240 | 50 | 1 | TEFC | 23 1/4" | 11 7/8" | 12 1/2" | 51 | CALL |
| P-SPR-303E2-AQ | 2.0/2.20 | 380-420 | 50 | 3 | TEFC | 23 1/4" | 11 7/8" | 12 1/2" | 67 | CALL |

SPARUS™ PUMP WITH CONSTANT FLOW TECHNOLOGY™

- The world's first aquaculture duty pump to deliver a CONSTANT user-defined flow rate
- Pump motor speed self-adjusts to maintain the constant flow rate setting, even as system conditions change
- Digital communication port RS-485 allows monitoring/control by PLC systems. Contact us for solutions utilizing a PLC.



IN-HOUSE REPAIR AND SERVICE AVAILABLE
 Contact Pentair Aquatic Eco-Systems for more details.



Under typical operating conditions, Sparus Pump with Constant Flow Technology offers the highest water flow rate of any high performance pump—with the lowest electricity consumption. Thanks to its integrated on-board variable frequency drive, this pump automatically calculates and self-adjusts to provide the exact operational speed needed to deliver the exact flow rate you establish. As system conditions change, it self-adjusts to achieve a constant user-specified flow rate. The result of this breakthrough technology is that you achieve the absolute minimum energy usage required to deliver any given flow rate! This high level of efficiency can save you thousands of dollars per year in pump operating costs.

No more closing valves to decrease flow rate or making manual adjustments. Simply select the flow rate you require and the Sparus Pump with Constant Flow Technology delivers. As system conditions change, the flow rate remains constant. Need a higher or lower flow rate? Simply adjust the desired flow rate by using the simple keypad. No matter what flow rate you select, you'll rest assured that your desired flow rate remains constant.

The law of physics known as the Affinity Law states that there is a cubic relationship between the speed of an electric motor and its power consumption. By decreasing the speed of a motor by only 10%, you'll reap up to 33% in electrical energy savings while still achieving the exact flow rate that your application requires. With conventional pumps, the motor is often operating at a speed that is needlessly high for the application. Users of conventional single-speed pumps often find that their only option to decrease their flow rate is to partially close a valve to "throttle" the flow rate. The Sparus Pump with Constant Flow Technology takes that paradigm and turns it on its head! The intelligence built into this pump means that you establish the desired flow rate and leave the decision-making to the pump.

SPARUS™ PUMP WITH CONSTANT FLOW TECHNOLOGY™

Sparus Pump with Constant Flow Technology(CFT) will always operate at the slowest speed required to achieve the user-established flow rate; the savings it provides is yours to keep! This pump delivers proven reliability thanks to its saltwater-rated stainless steel internal fasteners and highly robust mechanical seal. Sparus Pump with Constant Flow Technology is a self-priming pump, and it's also suitable for flooded-suction applications. UL778 listed. One-year warranty. Made in USA. Not certified for use in swimming pool applications.

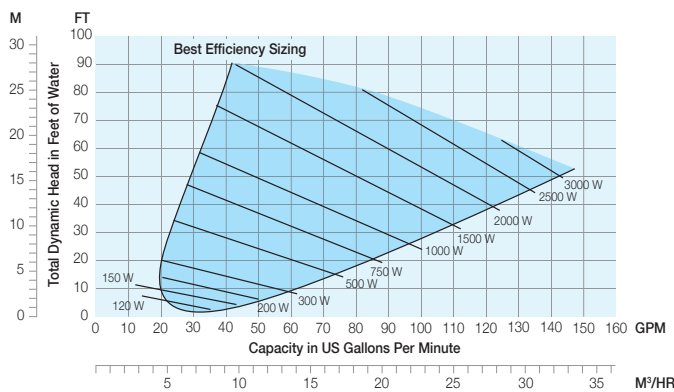
Pump Features:

- Fully-programmable for any flow rate from 20–140 gpm
- On-board keypad for simple programming of desired flow rate
- 3 hp rating. 230V, single-phase, 50hz/60hz
- Ultra efficient permanent magnet TEFC motor
- 2" internally threaded NPT inlet/outlet ports and anti-blocking strainer basket ensure maximum flow and efficiency
- Easy installation and trouble-free servicing
- IP55-rated enclosure for wet locations and harsh conditions



Sparus Pump with Constant Flow Technology in a five pump application at Pentair Aquatic Eco-Systems' PAES W.A.T.E.R. facility in Apopka, FL.

Sparus Pump with Constant Flow Technology Performance Chart



SPARUS WITH CFT COST SAVINGS CALCULATOR

The Sparus™ Pump with Constant Flow Technology™ Cost Calculator Tool calculates the savings an operator will realize when switching from a standard pump to the Sparus with Constant Flow Technology. It's simple and easy to use. Just enter in the operational, hydraulic, and head loss characteristics of your system and the cost savings, per day and per year, will be instantly calculated for you.

Visit PentairAES.com/CFT-Calculator to determine your savings!

| MODEL | HP | POWER(KW) INPUT/OUTPUT | VOLTS | HZ | PHASE | MOTOR | FULL LOAD AMPS | SERVICE FACTOR | SF HP | IN/OUT PORTS | L | W | H | SHIP WT (LBS) | EACH |
|-----------|----|------------------------|-------|-------|-------|-------|----------------|----------------|-------|--------------|-------|-----|-------|---------------|------------|
| 348045-AQ | 3 | 3.2/2.2 | 230 | 50/60 | 1 | TEFC | 16 | 1.32 | 3.95 | 2" | 23.4" | 11" | 12.6" | 45 LBS | \$1,200.00 |

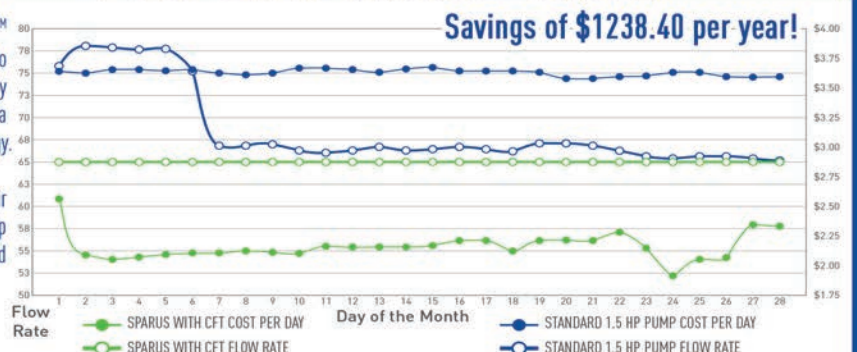
Operates with identical performance on 50 Hz or 60 Hz input power.

MARC SITE CASE STUDY

Pentair launched the Sparus™ Pump with Constant Flow Technology™ (CFT) with the goal of offering an advanced, aquaculture-duty pump to the global aquaculture industry. Pentair Aquatic Eco-Systems recently collaborated with the research team at the MARC site to conduct a real-world field trial of the Sparus Pump with Constant Flow Technology.

The goal of the collaborative research jointly conducted between Pentair Aquatic Eco-Systems and the MARC site was to examine pump performance and operational costs in an active, operational real-world aquaculture setting.

View the entire case study on our blog.



SPARUS™ PUMP WITH CONSTANT FLOW TECHNOLOGY™ **NEW!** AND POINT FOUR™ PLC INTEGRATION OPTIONS

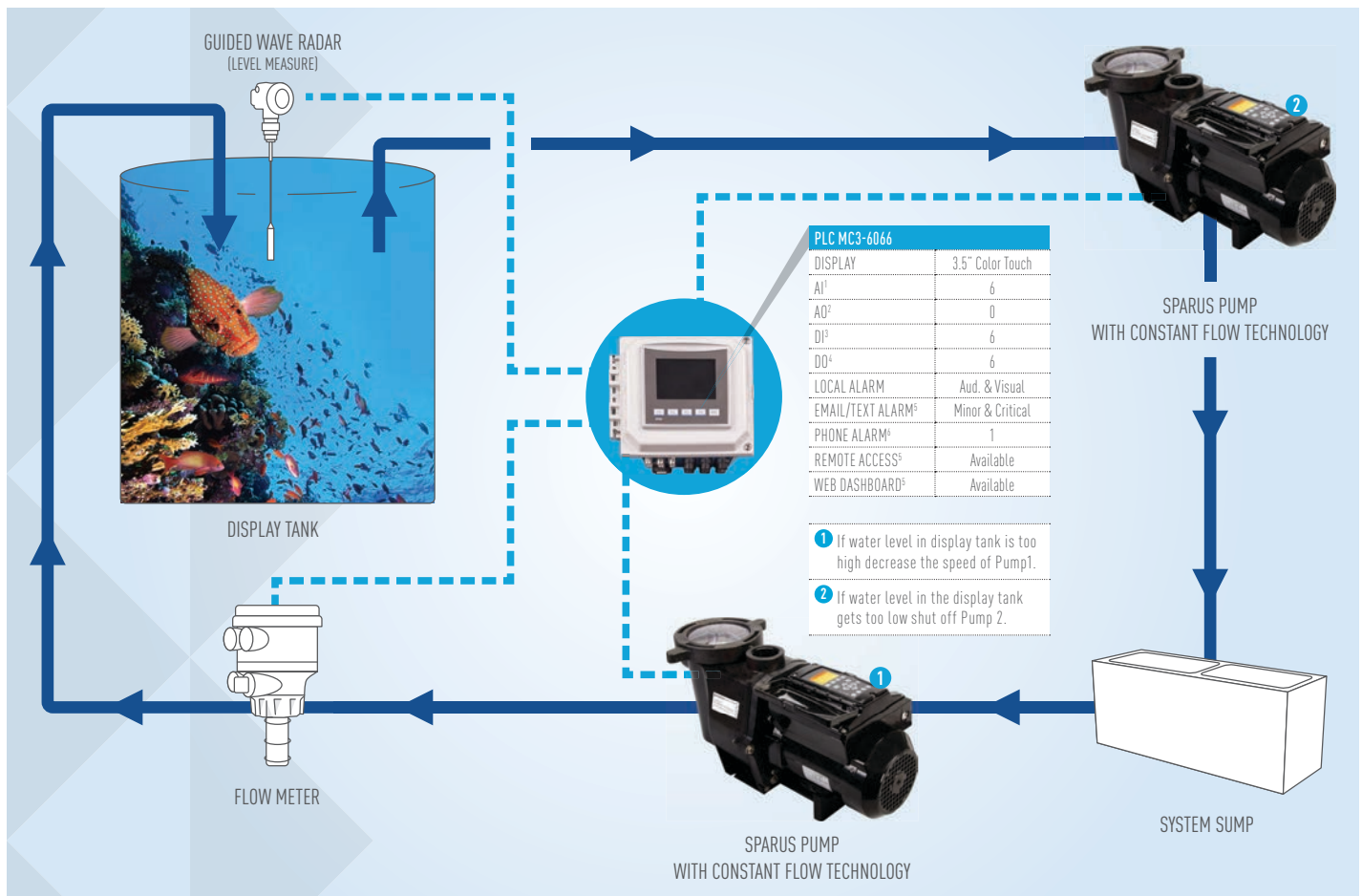


Maintaining the Ideal Water Level

A local establishment was experiencing an issue with periodic overflowing of their aquarium. The issue was related to a lack of flow rate control, and lack of balanced flow rates between two pumps in the system. When the system malfunctioned, it was possible for the pump in the filtration room to move more water than the pump on top of the aquarium; causing water overflow into the dining room with no warning.

These overflow events caused damage to the facility and the equipment. The system experienced ongoing problems and the costs associated with the repairs were starting to mount-up. Additionally, the downtime associated with cleanup was frustrating and inconvenient for the staff members. Pentair Aquatic Eco-Systems' aquatic life support team was approached to find a solution to this urgent situation.

As part of the solution the Pentair Aquatic Eco-Systems team strategically deployed a PLC system and two digital level sensors to allow the pump to maintain the water height within the tank to half-an-inch of a predefined target level. The new system automatically reports a signal back to the PLC which adjusts the pump's flow rate to maintain the ideal water level; eliminating the issue of potential overflows!



1. Analog input (continuous read sensors). 2. Analog output (VFD pumps). 3. Digital input (buttons/switches). 4. Digital output (lights/valves). 5. Internet access required. 6. AutoDialer required. *Custom option.

Each Sparus with CFT pump features a digital communication port that allows for monitoring/control by programmable logic control (PLC) systems. The integration of a Point Four programmable logic controller (PLC) and Sparus Pump with Constant Flow Technology delivers a state-of-the-art package capable of solving a variety of challenges facing aquatic facilities around the world.

For more details on this option and other integration possibilities, please contact us.

CALL FOR MORE INFORMATION AND PRICING:

CONSTANT FLOW TECHNOLOGY™ SAVINGS CALCULATOR

YOU SET THE FLOW RATE, CFT DELIVERS THE SAVINGS

PentairAES.com/cft-calculator

TECH TALK 61

Friction Loss in PVC Plumbing

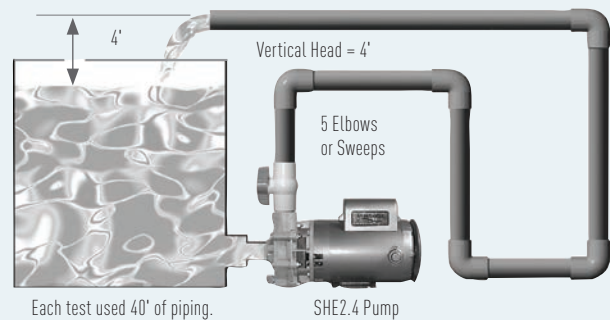
The Pentair AES technical team set up this actual pumping system (shown at right) six different times using our **SHE2.4** pump. Two elbow types and three pipe sizes were used to illustrate the importance of correct plumbing.

Study the results below to understand these principles:

- Elbows vs sweeps.
- Vertical head vs total discharge head.
- Flow vs pipe size.
- Pumping cost vs head.

Note: Centrifugal pumps (not self-priming) perform best with flooded suction (pumps filled by gravity) as shown. The suction pipe should be nonrestrictive. To control pump's output, put a valve on the discharge side.

Actual Pumping System Using the SHE2.4 Pump



| Pipe Size | Elb Style | Vertical Head | Measured Total Discharge Head* (ft water) | GPM Pumped |
|-----------|-----------|---------------|---|------------|
| 1 1/4" | 90° | 4' | 13 | 34 |
| 1 1/4" | SWEEP | 4' | 12.8 | 37 |
| 1 1/2" | 90° | 4' | 12 | 45 |
| 1 1/2" | SWEEP | 4' | 10.4 | 49 |
| 2" | 90° | 4' | 7.4 | 57 |
| 2" | SWEEP | 4' | 6.5 | 62 |

| Running Amps @ 115V | kW | Pumping Time per 100,000 gal | Pumping Cost per 100,000 gal @ 10¢ kWh |
|---------------------|-----|------------------------------|--|
| 2.2 | .26 | 49 HOURS | \$1.27 |
| 2.2 | .26 | 45 HOURS | 1.17 |
| 2.3 | .27 | 37 HOURS | 1.00 |
| 2.3 | .27 | 34 HOURS | .92 |
| 2.3 | .27 | 29 HOURS | .78 |
| 2.3 | .27 | 27 HOURS | .73 |

All PVC pipe was **Schedule 40**, elbows were 90° short. Cost is based on 10¢ per kWh. Actual vertical head was only 4 feet. **IMPORTANT:** Vertical head is always measured from water surface (as shown), not from pump.

Friction Loss in PVC Pipe

1. From the chart at left, using gpm and pipe size, find the friction loss per 100' of pipe.

Example: 40 gpm in a 1 1/2" pipe = 10' loss per 100' of pipe. 40' then causes about 4' of head loss.

2. Next, find the friction loss caused by the fittings. Please note that the friction loss depends on the fitting diameter. A standard 1.5" elbow is equal to about 4' of pipe; long elbows, sweeps and 45° elbows are equal to about 2' of pipe; straight through a "T" about 3' of pipe and a 90° turn through a "T" about 9' of pipe.

Example: 40 gpm through 5 standard 1.5" elbows = 20' of pipe, which equals 2' of head loss. Add this to the pipe's head loss and the actual vertical head height in feet to get total dynamic head (TDH).

It is up to you to determine which pump to purchase and how to plumb it correctly. If you need help, send us a sketch and we'll size the pipe for you—at no charge.

Note: The electric energy required for a centrifugal pump usually goes down as the head pressure goes up. It is the opposite of an air compressor.

*This example is total discharge head only. For total dynamic head (TDH), entrance and friction losses on the pump inlet side must be added.

Plastic Pipe Selection Chart

| Flow (gpm) | Feet of Head Loss per 100' at Diameter (inches) | | | | | | |
|------------|---|------|------|-------|-------|------|-------|
| | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 |
| .5 | .3 | — | — | — | — | — | — |
| 1 | 1.1 | — | — | — | — | — | — |
| 2 | 4.1 | 1.0 | .3 | — | — | — | — |
| 3 | 8.6 | 2.2 | .7 | — | — | — | — |
| 4 | 14.8 | 3.7 | 1.1 | .3 | — | — | — |
| 5 | 22.2 | 5.7 | 1.7 | .5 | — | — | — |
| 10 | 80.5 | 20.4 | 6.3 | 1.7 | .8 | .2 | — |
| 15 | — | 43.3 | 13.4 | 3.5 | 1.6 | .5 | — |
| 20 | — | 73.5 | 22.8 | 6.0 | 2.8 | .8 | .3 |
| 30 | — | — | 48.1 | 12.7 | 6.0 | 1.9 | .7 |
| 40 | — | — | 82.0 | 21.6 | 10.2 | 3.0 | 1.3 |
| 50 | — | — | — | 32.6 | 15.4 | 4.6 | 1.9 |
| 60 | — | — | — | 45.6 | 21.6 | 6.4 | 2.7 |
| 70 | — | — | — | — | 28.7 | 8.5 | 3.6 |
| 80 | — | — | — | — | 36.8 | 10.9 | 4.6 |
| 90 | — | — | — | — | 45.7 | 13.6 | 5.7 |
| 100 | — | — | — | — | 56.6 | 16.5 | 6.9 |
| 150 | — | — | — | — | — | 35.0 | 14.7 |
| 200 | — | — | — | — | — | 59.4 | 25.0 |

H3-PLUS SERIES® & L3-PLUS SERIES™ ENERGY EFFICIENT LOW TO MEDIUM HEAD PUMPS

The new H3-PLUS SERIES and L3-PLUS SERIES were engineered using best-in-class technology. The proprietary impeller design delivers a higher level of precision concentricity for increased efficiency. The proprietary hydraulic isolator smooths the water flow inside the volute, raising the efficiency even higher. A rugged plastic construction delivers durable pumps at an affordable price. UL778 listed. Not certified for use in swimming pool applications.

The L3-PLUS pump is a low-head/high-flow pump designed for Aquaculture applications that call for large flow rates in low-head conditions. This high-quality pump features a four-pole induction motor that rotates at 1725 rpm when connected to 60hz input power. The relatively slow speed of this motor allows the pump to produce exceptionally high water flow rates; while performing in a highly-efficient manner. These pumps are perfectly suited for ponds, water features, fountains and aquaculture. One-year warranty.

The H3-PLUS pump is a medium-head/high-performance, aquaculture-duty pump designed for maximum up-time and reliable performance. This high-quality pump features an all-weather, ultra-heavy-duty TEFC (totally enclosed fan cooled) motor with an all-aluminum construction and an anodized finish for maximum corrosion resistance. The easy-to-access wiring compartment is located on top of the motor; with optimum accessibility for easy wiring, even in space constrained applications. One-year warranty.

- Freshwater and Saltwater compatible, 316SS internal fasteners, EPDM/ Stainless mechanical seal
- Hydraulic isolator separates priming water from pumping water for faster priming, more turbulent-free flow and increased efficiency
- H3-PLUS Models feature Aquaculture-duty, single and three phase TEFC motors with anodized aluminum construction
- Union connectors included for connecting directly to 2.5" or 3" plumbing.
- Diamond seals made of oxidation-resistant, self-retaining EPDM rubber for increased durability and tighter seal
- Extra-large, robust basket with smooth surface for easy debris removal
- Easy-carry handle; easily removable, ergonomic lock ring; and see-through lid for easy basket inspection
- H3 pumps have IP55-rated enclosures for wet locations and harsh conditions

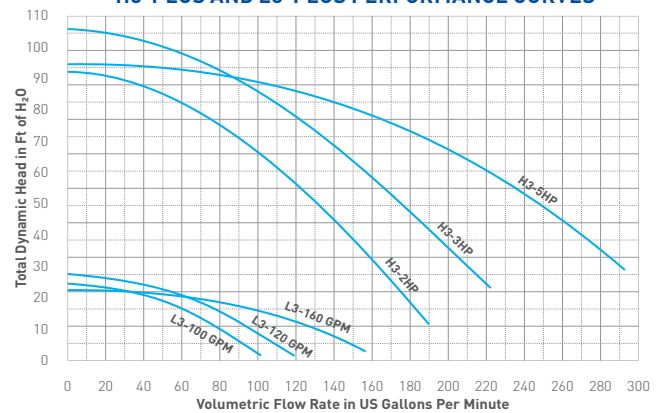


H3-PLUS
MEDIUM HEAD/HIGH PERFORMANCE



L3-PLUS
LOW HEAD/HIGH FLOW

H3-PLUS AND L3-PLUS PERFORMANCE CURVES



| H3-PLUS SERIES™ | | | | | | | | | | | |
|-----------------------|----|-------------|----|-------|----------------|-------|-----|-----|-----|---------------|-----------------|
| MODEL | HP | VOLTAGE | HZ | PHASE | FULL LOAD AMPS | MOTOR | L | W | H | SHIP WT (LBS) | EACH |
| H3-2HPE-AQ NEW | 2 | 208-230 | 60 | 1 | 11.1-9.5 | TEFC | 25" | 12" | 14" | 56.5 | \$880.00 |
| H3-2HP-AQ | 2 | 208-230/460 | 60 | 3 | 7.5-7.2/3.6 | TEFC | 25" | 12" | 14" | 56.5 | 940.00 |
| H3-3HPE-AQ NEW | 3 | 208-230 | 60 | 1 | 14.6-12.6 | TEFC | 25" | 12" | 14" | 61 | 895.00 |
| H3-3HP-AQ | 3 | 208-230/460 | 60 | 3 | 9.8-9.4/4.7 | TEFC | 25" | 12" | 14" | 61 | 960.00 |
| H3-5HPE-AQ NEW | 5 | 208-230 | 60 | 1 | 20.0-18.8 | TEFC | 25" | 12" | 14" | 67 | 910.00 |
| H3-5HP-AQ | 5 | 208-230/460 | 60 | 3 | 13.9-13.1/6.6 | TEFC | 25" | 12" | 14" | 67 | 980.00 |

| L3-PLUS SERIES™ | | | | | | | | | | | |
|-----------------|-------------|---------|----|-------|----------------|-------|---------|---------|-----|---------------|-----------------|
| MODEL | NOMINAL GPM | VOLTAGE | HZ | PHASE | FULL LOAD AMPS | MOTOR | L | W | H | SHIP WT (LBS) | EACH |
| L3-100-AQ | 100 | 115/230 | 60 | 1 | 8.0/4.0 | ODP | 26 1/4" | 11 3/8" | 14" | 50.5 | \$820.00 |
| L3-120-AQ | 120 | 115/230 | 60 | 1 | 8.4/4.2 | ODP | 26 1/4" | 11 3/8" | 14" | 50.5 | 830.00 |
| L3-160-AQ | 160 | 115/230 | 60 | 1 | 9.6/4.8 | ODP | 26 1/4" | 11 3/8" | 14" | 50.5 | 840.00 |



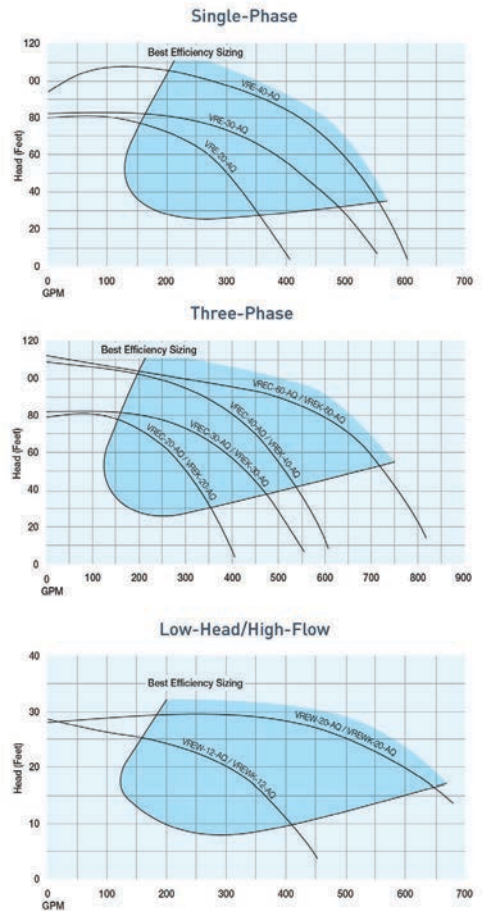
◀ **VERUS™ 850 PREMIUM EFFICIENCY AQUACULTURE DUTY PUMPS** FW SW

Pentair Aquatic Eco-Systems Verus™ 850 pumps are for commercial aquaculture and other heavy-duty water applications. Available in flows to 800 gpm, and from 3 to 15 hp. Verus™ 850 high-performance commercial pumps are designed for maximum efficiency and quiet operation in every detail. They are noncorrosive, all-plastic and designed exclusively for the commercial aquaculture industry. Stainless steel internals. Saltwater-rated. Verus 850 impellers are manufactured for true breakthrough performance, allowing for lower loads and longer motor life. Strainer pot sold separately. One-year warranty.

Features:

- Close-coupled for quiet, stable flow operation
- Lightweight for easy installation
- Cam and Ramp™ locking ring design with clear lid for added service convenience
- 6" suction and 4" discharge with strainer pot
- Closed impeller for long life and durability
- Available in single- and three-phase models
- Self-priming with use of strainer pot assembly, sold separately
- UL778 listing (for aquaculture). Not certified for use on swimming pools.
- TEFC motors are IP55 rated for wet locations and harsh conditions

| MODEL | HP | VOLTAGE | HZ | PHASE | FULL LOAD AMPS | MOTOR | SHIP WT (LBS) | EACH |
|--|--|-------------|----|-------|----------------|-------|---------------|-------------------|
| 60 HZ Models | | | | | | | | |
| VRE-20-AQ | 5 | 230 | 60 | 1 | 20.0 | ODP | 175 | \$3,250.00 |
| VREKT-20-AQ | 5 | 208-230/460 | 60 | 3 | 13.5-12.3/6.2 | TEFC | 102 | 3,025.00 |
| VRE-30-AQ | 7.5 | 230 | 60 | 1 | 30.4 | ODP | 202 | 3,250.00 |
| VREKT-30-AQ | 7.5 | 208-230/460 | 60 | 3 | 20.4-18.2/9.1 | TEFC | 122 | 3,325.00 |
| VRE-40-AQ | 10 | 230 | 60 | 1 | 40.0 | ODP | 154 | 3,850.00 |
| VREKT-40-AQ | 10 | 208-230/460 | 60 | 3 | 27.0-26.2/13.1 | TEFC | 168 | 3,625.00 |
| VREKT-60-AQ | 15 | 208-230/460 | 60 | 3 | 40.0-38.0/18.8 | TEFC | 182 | 3,950.00 |
| 50 HZ Models* | | | | | | | | |
| VREK5-12-AQ | 3 | 230/400 | 50 | 3 | 7.9/4.5 | ODP | 131 | 2,995.00 |
| VREK5-20-AQ | 5 | 230/400 | 50 | 3 | 12.3/7.1 | ODP | 235 | 3,125.00 |
| VREK5-30-AQ | 7.5 | 230/400 | 50 | 3 | 18.1/10.4 | ODP | 174 | 3,325.00 |
| VREK5-40-AQ | 10 | 230/400 | 50 | 3 | 24.0/13.7 | ODP | 152 | 3,625.00 |
| *2875 RPM | | | | | | | | |
| 575V Models | | | | | | | | |
| VREC-20-AQ | 5 | 575 | 60 | 3 | 5.1 | ODP | 83 | 3,025.00 |
| VREC-30-AQ | 7.5 | 575 | 60 | 3 | 7.2 | ODP | 93 | 3,325.00 |
| VREC-40-AQ | 10 | 575 | 60 | 3 | 10.2 | ODP | 138 | 3,625.00 |
| VREC-60-AQ | 15 | 575 | 60 | 3 | 15 | ODP | 138 | 3,950.00 |
| 1750 RPM Models | | | | | | | | |
| VREW-12-AQ | 3 | 208-230 | 60 | 1 | 19.5-19.2 | ODP | 138 | 3,430.00 |
| VREWK-12-AQ | 3 | 208-230/460 | 60 | 3 | 8.4-7.8/3.9 | ODP | 180 | 3,250.00 |
| VREW-20-AQ | 5 | 208-230 | 60 | 1 | 23.0-20.1 | ODP | 175 | 3,980.00 |
| VREWK-20-AQ | 5 | 208-230/460 | 60 | 3 | 13.8-13.0/6.5 | ODP | 145 | 3,525.00 |
| Flange Kits & Optional Strainer Pot | | | | | | | | |
| VR-STR-AQ | OPTIONAL STRAINER POT ASSEMBLY, 6" X 6" | | | | | | 33 | 715.00 |
| 357262-AQ | 4" ANSI FLANGE W/GASKET AND SS HARDWARE | | | | | | | 67.21 |
| 357263-AQ | 6" ANSI FLANGE W/GASKET AND SS HARDWARE | | | | | | | 110.79 |
| 357212-AQ | 6" ANSI FLANGE W/GASKET AND SS HARDWARE USE ON VERUS PUMPS NOT EQUIPPED WITH STRAINER POT | | | | | | | 92.32 |



VERUS™ 850 PREMIUM EFFICIENCY PUMP WITH CONSTANT FLOW TECHNOLOGY™ **NEW!**

We know that Variable Frequency Drive (VFD) programming can be challenging, time-consuming and error-prone... That's why we've removed the guesswork; enabling customers to easily upgrade to a proven solution for off-the-shelf control using Constant Flow Technology. The Verus™ 850 Premium Efficiency Pump with Constant Flow Technology™ system is available in a range of configurations to suit the needs of various applications. Verus™ with Constant Flow Technology is offered as a plug-and-play kit consisting of a robust, aquaculture-duty Verus pump; paired with a heavy-duty outdoor-rated (IP55) variable frequency drive. The pump and drive are delivered to you pre-programmed and ready-to-install with an included flow meter for ease-of-installation and minimal setup time. Unlike conventional pumps that require manual valve adjustments, the Verus™ with Constant Flow Technology is an integrated system that self-adjusts to deliver the user's established flow rate, even as system conditions change. Optional strainer pot and flanges sold separately.

System Includes:

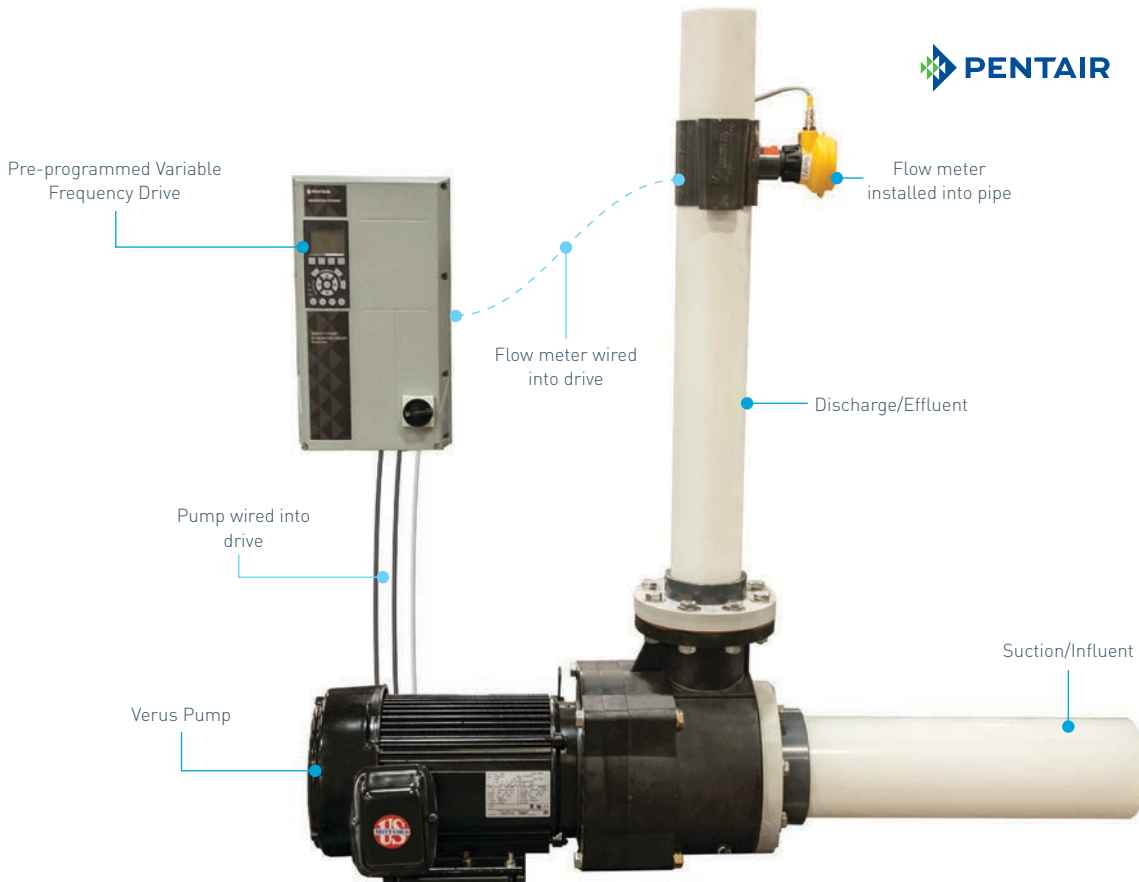
- Verus 850 Premium Efficiency Pump
- Saltwater rated, all-plastic construction
- 3 Phase TEFC motor
- Closed-coupled for quiet, stable flow operation
- Lightweight for easy installation
- 6" suction port and 4" discharge port
- Outdoor-rated (IP55) pre-programmed variable frequency drive
- Industrial-grade flow meter



IT'S EASY TO ORDER:

1. Choose the Horsepower (5, 7½, 10 or 15 HP)
2. Select the Voltage (230V or 460V)
3. Select Outlet Pipe Diameter (4" or 6")

Once you choose the horsepower, voltage and outlet pipe diameter, Pentair Aquatic Eco-Systems will load the proper software into the variable frequency drive to meet your specific requirements. The Verus™ with Constant Flow Technology System will be shipped pre-programmed and ready-to-install!



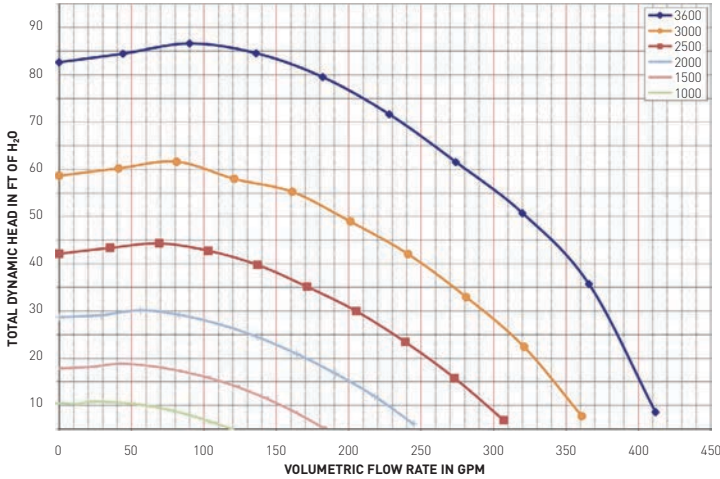
Verus Pump with Constant Flow Technology.
(Flanges available as optional accessories. PVC pipe not included.)

VERUS™ 850 PREMIUM EFFICIENCY PUMP WITH CONSTANT FLOW TECHNOLOGY™

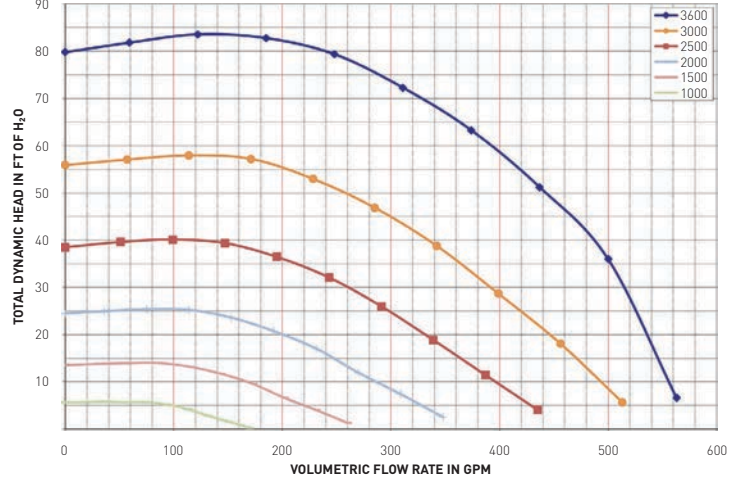
Performance Curves

A range of speeds are displayed below to demonstrate the potential capacity of the Verus with CFT due to its ability to self adjust to a user-defined flow rate.

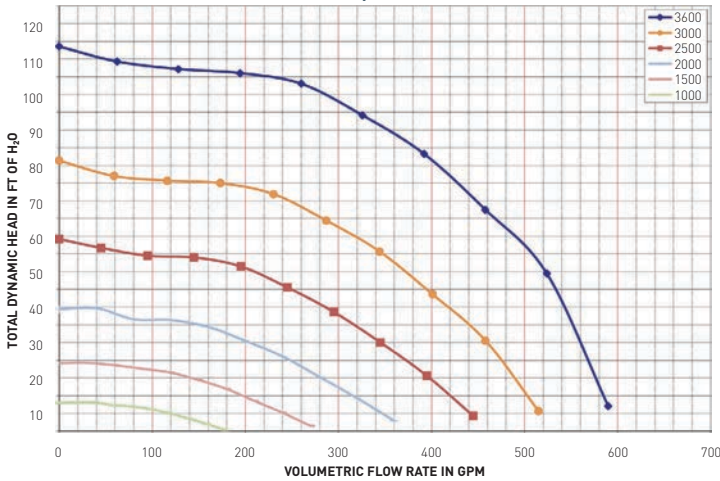
5HP Pump Performance



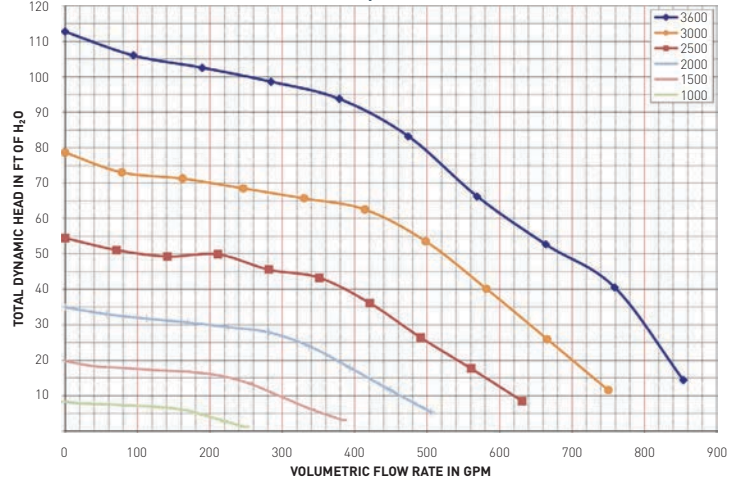
7.5HP Pump Performance



10HP Pump Performance



15HP Pump Performance



| MODEL | HP | VOLTAGE | PIPE DIA. | EACH | MODEL | HP | VOLTAGE | PIPE DIA. | EACH |
|-------------------|----|---------|-----------|------------|--------------------|----|---------|-----------|------------|
| VERUSCFT-230-5-4 | 5 | 230 | 4" | \$4,520.00 | VERUSCFT-230-7.5-4 | 7½ | 230 | 4" | \$4,920.00 |
| VERUSCFT-230-5-6 | 5 | 230 | 6" | 4,520.00 | VERUSCFT-230-7.5-6 | 7½ | 230 | 6" | 4,920.00 |
| VERUSCFT-460-5-4 | 5 | 460 | 4" | 4,520.00 | VERUSCFT-460-7.5-4 | 7½ | 460 | 4" | 4,920.00 |
| VERUSCFT-460-5-6 | 5 | 460 | 6" | 4,520.00 | VERUSCFT-460-7.5-6 | 7½ | 460 | 6" | 4,920.00 |
| VERUSCFT-230-10-4 | 10 | 230 | 4" | 5,320.00 | VERUSCFT-230-15-4 | 15 | 230 | 4" | 5,720.00 |
| VERUSCFT-230-10-6 | 10 | 230 | 6" | 5,320.00 | VERUSCFT-230-15-6 | 15 | 230 | 6" | 5,720.00 |
| VERUSCFT-460-10-4 | 10 | 460 | 4" | 5,320.00 | VERUSCFT-460-15-4 | 15 | 460 | 4" | 5,720.00 |
| VERUSCFT-460-10-6 | 10 | 460 | 6" | 5,320.00 | VERUSCFT-460-15-6 | 15 | 460 | 6" | 5,720.00 |

| MODEL | OPTIONAL ACCESSORIES | EACH |
|-----------|--|----------|
| VR-STR-AQ | OPTIONAL STRAINER POT ASSEMBLY, 6" X 6" | \$715.00 |
| 357262-AQ | 4" ANSI FLANGE W/GASKET AND SS HARDWARE | 67.21 |
| 357263-AQ | 6" ANSI FLANGE W/GASKET AND SS HARDWARE | 110.79 |
| 357212-AQ | 6" ANSI FLANGE W/GASKET AND SS HARDWARE USE ON VERUS PUMPS NOT EQUIPPED WITH STRAINER POT | 92.32 |

IN-HOUSE REPAIR AND SERVICE AVAILABLE
Contact Pentair Aquatic Eco-Systems for more details.

VERUS™ PLUS HIGH-EFFICIENCY AQUACULTURE DUTY 15-30HP PUMPS FW SW **NEW!**

Pentair Aquatic Eco-Systems Verus™ Plus pumps offer breakthrough performance at an unprecedented value. Providing exceptionally-high flow rates for a wide range of applications, Verus™ Plus pumps operate quietly and efficiently, and they are lightweight for their size; eliminating the need for unwieldy hoists and large installation crews. Sold without pre-filter (strainer pot available separately as an accessory item). 8" ANSI flange suction and discharge ports, 316SS Mechanical seals and 304SS hardware. Robust injection-molded components of glass-reinforced thermoplastic. One-year warranty.

All Pump Models

- Aquaculture-duty TEFC motor, IP55 rated, Class F Insulation
- IE2 Motor Rating
- Robust injection-molded components made of glass reinforced thermoplastic
- Salt/Seawater approved up to 40 ppt salt concentration
- All pumps are TUV and CE certified
- Suitable for use with Variable Frequency Drives
- 316SS Mechanical seals and 304SS hardware
- 8" ANSI flange suction and discharge ports



Pump without optional Strainer Pot

Pump with optional Strainer Pot

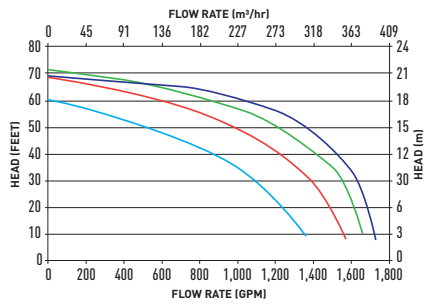
60HZ Models:

- Available for shipment from our North American distribution center

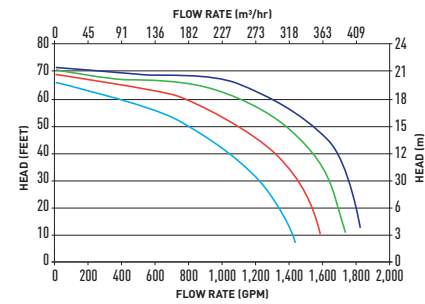
50HZ Models:

- Available for shipment from our European distribution center

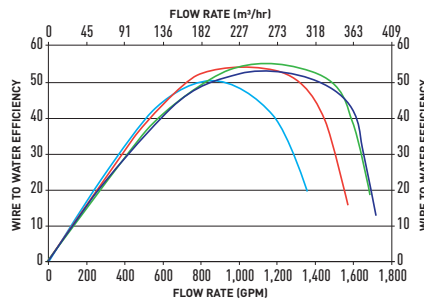
60HZ PERFORMANCE CURVES



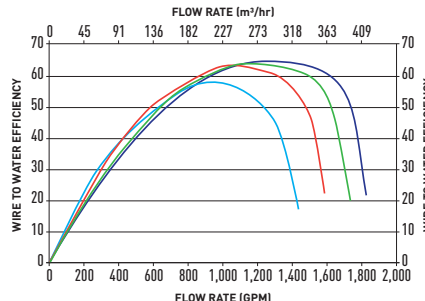
50HZ PERFORMANCE CURVES



60HZ EFFICIENCY CURVES



50HZ EFFICIENCY CURVES



| MODEL | HP | VOLTAGE | HZ | PHASE | FULL LOAD AMPS* | MOTOR | L | W | H | (LBS) | EACH |
|---------------------|----|---------|----|-------|-----------------|-------|------|------|------|-------|-------------------|
| 60HZ Models | | | | | | | | | | | |
| VERPL6-60-AQ | 15 | 230/460 | 60 | 3 | 38.8/19.4 | TEFC | 39¾" | 28¾" | 29¼" | 452 | \$4,400.00 |
| VERPL6-80-AQ | 20 | 230/460 | 60 | 3 | 51.4/25.7 | TEFC | 39¾" | 28¾" | 29¼" | 478 | 5,200.00 |
| VERPL6-100-AQ | 25 | 230/460 | 60 | 3 | 54.4/27.2 | TEFC | 42¾" | 28¾" | 29¼" | 539 | 5,700.00 |
| VERPL6-120-AQ | 30 | 230/460 | 60 | 3 | 65.8/32.9 | TEFC | 42¾" | 28¾" | 29¼" | 557 | 6,300.00 |
| 50 HZ Models | | | | | | | | | | | |
| VERPL5-60-AQ | 15 | 380/660 | 50 | 3 | 22.5/13.0 | TEFC | 39¾" | 28¾" | 29¼" | 452 | 4,400.00 |
| VERPL5-80-AQ | 20 | 380/660 | 50 | 3 | 29.8/17.2 | TEFC | 39¾" | 28¾" | 29¼" | 478 | 5,200.00 |
| VERPL5-100-AQ | 25 | 380/660 | 50 | 3 | 36.5/21.0 | TEFC | 42¾" | 28¾" | 29¼" | 539 | 5,700.00 |
| VERPL5-120-AQ | 30 | 380/660 | 50 | 3 | 44.5/25.7 | TEFC | 42¾" | 28¾" | 29¼" | 557 | 6,300.00 |

Flange Kit & Optional Strainer Pot

| | | | |
|--------------|--------------------------------|----|-----------------|
| VERPL-STR-AQ | OPTIONAL STRAINER POT ASSEMBLY | 66 | 1,250.00 |
| 350808 | 8" ANSI FLANGE ASSEMBLY KIT | | 630.00 |

GENESYS® 2X3X6 CENTRIFUGAL PUMPS

The Genesys® nonmetallic, end-suction centrifugal pump line is designed and engineered for highly efficient pumping solutions. The interchangeable 2x3x6 model is a drop-in replacement for ANSI B73.1-conforming pumps. Composite construction with no wetted metal parts gives it compatibility with most aggressive chemistries. The unique closed impeller and time-tested volute design render performances up to 500 gpm (or 180' of shut-off head). And it can produce peak performances at 81% efficiency!

CALL FOR MORE INFORMATION AND PRICING.



Features

- Straightforward through-bolt construction for simplified field maintenance
- True closed-coupled/back pull-out design for ease of use
- No impeller or seal adjustment necessary. The simple assembly maintains proper heights
- Sizes range from 3/4 to 15 hp



SEQ45T

3-YEAR WARRANTY



SEQUENCE® TITAN CENTRIFUGAL PUMPS

As large water features and high turnover requirements continue to gain popularity, the cost of energy does not! Titan pumps will give you 12,000 gph for less than 845 watts! With flowrates between 12,000 and 18,400 gph and head capabilities between 21 and 45', they're sure to cover most large-scale water feature requirements. All have TEFC motor enclosure, 3" inlet and 2" discharge. Available in 115V or 230V. SEQ21T includes 115V or 230V power cable. Three-year warranty. Made in USA.

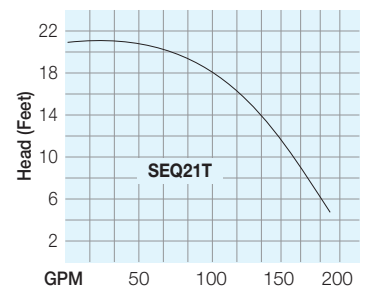
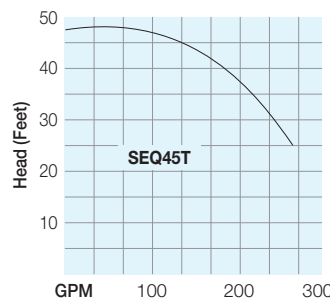
| MODEL | HP | GPH | WATTS | AMPS | MAX HEAD | EACH |
|--------|-----|--------|-------|------|----------|-------------------|
| SEQ21T | 3/4 | 12,500 | 845 | 6 | 21' | \$1,902.00 |
| SEQ45T | 3 | 18,400 | 2,110 | 10.8 | 45' | 2,400.00 |

TECHNICIAN PROFILE



Clarke DeWitt

Clarke graduated from Brunswick Community College in Supply, NC, with an A.S. degree in aquaculture technology. His technical experience includes hatchery management, aquatic weed control and aquarium supplies.



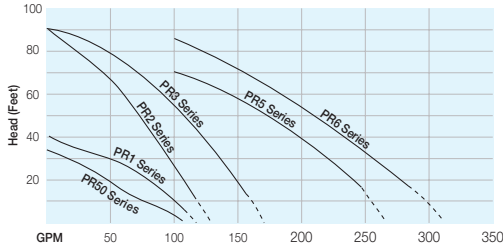
Genesys® and Sequence® are registered trademarks of Multi-Duti Manufacturing, Inc.

Online Orders: PentairAES.com | Phone Orders and Tech Advice: 877.347.4788

SELF-PRIMING PUMPS



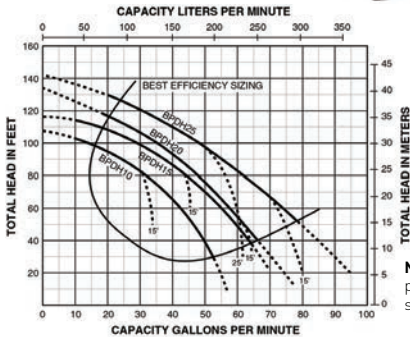
Pacer® pumps are an excellent choice for saltwater applications or situations requiring self-priming. They feature 316 stainless steel shafts, EPDM seals, lined volute and all stainless steel fasteners. Baseplates include fasteners, shims and the motor coupling guard. Motors listed are TEFC (specify voltage). Power cords are not included. Flexible coupled models listed include motors, bases and preassembly. Because we have many variations, you may want to call for a quotation. 50-Hz motors are available by special order. One-year warranty. Made in USA.



| MODEL | STYLE | HP | PHASE | MAX RPM | MAX FLOW (GPM) | INLET/OUTLET FNPT | SHIP WT (LBS) | EACH |
|-------|---------------|-----|-------|---------|----------------|-------------------|---------------|-----------------|
| PR50C | CLOSE-COUPLED | 0.6 | 1 | 1,750 | 80 | 1½" | 30 | \$719.83 |
| PR1C | CLOSE-COUPLED | 1 | 1 | 1,750 | 120 | 2" | 35 | 869.83 |
| PR2C | CLOSE-COUPLED | 2 | 1 | 3,450 | 110 | 2" | 45 | 1,003.08 |
| PR3C | CLOSE-COUPLED | 3 | 3 | 3,450 | 180 | 2" | 60 | 926.50 |
| PR3F | FLEXIBLE* | 3 | 1 | 3,450 | 180 | 2" | 75 | 1,899.25 |
| PR5F | FLEXIBLE* | 5 | 1 | 3,450 | 240 | 2" | 75 | 2,407.58 |
| PR6F | FLEXIBLE* | 5 | 1 | 3,450 | 280 | 3" | 75 | 2,339.25 |
| PR6F3 | FLEXIBLE* | 5 | 3 | 3,450 | 280 | 3" | 75 | 2,184.92 |

*Includes preassembly on baseplate—flexible coupling only. maximum priming suction life: 25' on 3,450 rpm; 12' on 1,750 rpm.

Pacer® is a registered trademark of ASM Industries, Inc.



NOTE: Dotted lines indicate performance reduction at high suction lift.

| MODEL | HP | VOLTAGE* | HZ | FULL LOAD AMPS | INLET (FNPT) | OUTLET (FNPT) | MAX FLOW GPM | L (IN.) | W (IN.) | H (IN.) | SHIP WT (LBS) | EACH |
|-----------|----|----------|----|----------------|--------------|---------------|--------------|---------|---------|----------|---------------|-----------------|
| BPDH10-AQ | 1 | 115/230 | 60 | 14.8/7.4 | 2" | 1½" | 50 | 18 5/8 | 10 ½ | 11 13/16 | 29 | \$379.00 |
| BPDH15-AQ | 1½ | 115/230 | 60 | 19.9/9.95 | 2" | 1½" | 65 | 19 3/4 | 10 ½ | 11 13/16 | 36 | 399.00 |
| BPDH20-AQ | 2 | 115/230 | 60 | 24/12 | 2" | 2" | 70 | 21 | 10 ½ | 12 3/8 | 42 | 519.00 |
| BPDH25-AQ | 2½ | 115/230 | 60 | 24/12 | 2" | 2" | 80 | 21 | 10 ½ | 12 3/8 | 43 | 579.00 |

*All motors shipped at 230V setting.

SELF-PRIMING PUMPS



These Berkeley BPD Series Pumps feature lightweight, corrosion-resistant construction in a self-priming design. Constructed of fiberglass reinforced thermoplastic body with reinforced ribs, 300 stainless steel motor shaft, engineered polymer impeller, polypropylene diffuser, and 2" suction. Applications include drawing fresh or salt water from tanks, wells, lakes, and off of docks. One year warranty. Made in USA.

Features

- 25' max suction lift
- Fiberglass-reinforced thermoplastic provides total corrosion resistance and high resistance to sandy water
- Composite impeller precision molded for perfect balance, performance and efficiency
- Normal wear parts are easily accessible for service or replacement without disturbing piping or mounting
- Dustproof cover protects electrical components from dust and insects
- Heavy-duty motors with stainless steel shafts designed for continuous operation
- Lightweight design makes these pumps more portable than conventional cast iron pumps
- Simple, easy-to-change voltage settings



BERKELEY®



BVM (Cast Iron)

◀ **BERKELEY® BVM SERIES VERTICAL MULTI-STAGE PUMPS**

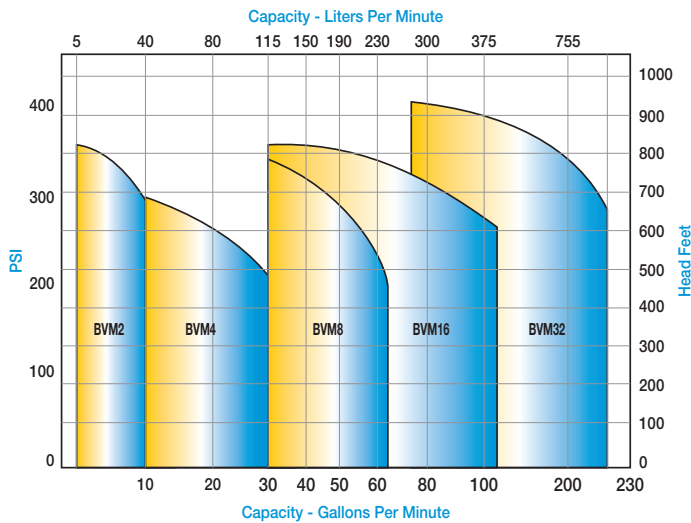
Pumps water and non-corrosive liquids in the most demanding operating environments

Ideal for applications where pressure needs boosting and available space is an issue. Standing tall in demanding high-pressure and high-temperature applications, Berkeley vertical multistage pumps deliver outstanding reliability and performance. BVM's stainless steel construction with a heavy-duty cast iron base and motor bracket are designed for pumping water and noncorrosive liquids in the most demanding operating environments. One-year warranty from date of original installation or two years from date of manufacture, whichever comes first.

CALL FOR MORE INFORMATION AND PRICING.



BVM (Stainless Steel)



| Models | Series | Flow HP Range | GPM |
|----------|--------|---------------|--------|
| BVM/BVMI | 2 | 1/2-5 | 1-20 |
| BVM/BVMI | 4 | 1/2-7.5 | 3-40 |
| BVM/BVMI | 8 | 3/4-15 | 5-65 |
| BVM/BVMI | 16 | 5-25 | 8-105 |
| BVM | 32 | 3-40 | 15-210 |

BVM—Cast Iron
BVMI—304 Stainless Steel



907-058

Note: Not for continuous duty.

| | FLOWRATE (ML/MIN) @ TUBING ID (INCH [MM]) | | | |
|---------|---|------------|------------|------------|
| | .062 (1.6) | .125 (3.2) | .187 (4.9) | .250 (6.3) |
| 907-014 | 3 | 12 | 28 | 48 |
| 907-036 | 8 | 30 | 72 | 126 |
| 907-058 | 12 | 49 | 116 | 208 |
| 907-172 | 36 | 144 | 344 | 602 |
| 907-282 | 60 | 237 | 564 | 987 |

DIAPHRAGM-METERING PUMPS

These diaphragm pumps offer excellent metering capabilities and chemical resistance at affordable prices. They are extremely quiet and ideal for dosing systems with buffer solutions, chemical additives, fertilizers, etc. Self priming, they include 4' of suction tubing with strainer, 8' of 3/8" I.D. discharge hose, check valve assembly and complete instructions. The wetted end (those parts that contact the solution being pumped) is constructed of SAN, PVC, PTFE and polyethylene. Pumps are single output variable control. Includes a 5' power cord.

| MODEL | VOLTS* | HZ* | MAX PSI | GPD | SHIP WT (LBS) | EACH |
|-------|--------|-----|---------|-----|---------------|----------|
| MP103 | 115 | 60 | 100 | 3 | 7 | \$345.00 |
| MP107 | 115 | 60 | 100 | 7 | 7 | 345.00 |
| MP115 | 115 | 60 | 100 | 15 | 7 | 345.00 |
| MP130 | 115 | 60 | 100 | 30 | 7 | 395.00 |

*230/50 Hz available for export by special order.

Range
0 to 14 pH
Resolution
.01 pH
Dosage
Proportional
Acid or Base



DS21

PERISTALTIC PUMPS

Use these fixed-speed, general purpose pumps for dispensing nutrients, chemicals and liquid feeds. Features: self-priming to 29 feet, act as check valves when off, fluid touches only the tube and easy servicing. Controlled by an on/off switch. If required, they can run with a repeat cycle timer for variable flowrates. Pumps come with four sizes of plastic tubing that can also be used to vary the flowrate. For intermittent use only. 115V/60Hz. One-year limited warranty.

| MODEL | VOLTS | HZ | AMPS | RPM | SHIP WT (LBS) | EACH |
|---------|-------|----|---------|-----|---------------|----------|
| 907-014 | 115 | 60 | .37 | 14 | 4 | \$178.48 |
| 907-036 | 115 | 60 | .90 | 36 | 4 | 178.48 |
| 907-058 | 115 | 60 | 1.2 | 58 | 4 | 185.08 |
| 907-172 | 115 | 60 | 1.2 | 172 | 5 | 217.33 |
| 907-282 | 115 | 60 | 3.3/2.2 | 282 | 6 | 273.96 |



MP115

DOSING PUMP W/PH CONTROLLER

This unique dosing pump has an integrated pH controller. It features ±.01 pH resolution and an internal alarm that is activated whenever the pH value varies by more than 2 pH units from the set point. Proportional dosing slows the pump when the measured pH level approaches the set value, ensuring precise dosage. PVDF, fluoroelastomer rubber and PTFE materials are used for all parts that come into contact with liquid. Maximum flowrate is .04 gpm @ 58 psi (50 gpd). Pump is 115V, 50/60Hz and includes power cord, discharge and suction lines, valves and instructions. Weighs 11 lbs. Connects to any BNC pH electrode (sold separately). One-year warranty.

| MODEL | VOLTS | HZ | SHIP WT (LBS) | EACH |
|----------|--------------------------|-------|---------------|----------|
| DS21 | 115 | 50/60 | 11 | \$795.00 |
| DS21-220 | 230 | 50/60 | 11 | 900.00 |
| 2910B/5 | SUBMERSIBLE PH ELECTRODE | | 0.4 | 120.00 |

FLOW METER, PADDLE WHEEL

Designed for use in industrial fields, including irrigation, aquaculture, aquariums, paper mills and swimming pools. They are universally accepted as a means of measuring water flow electronically. Wide range in flow rates, negligible head-loss and good accuracy at a reasonable price, make these meters popular. Easy removal for cleaning and repair permit the meters to be mounted in lines with moderate particulate levels. Meters can be mounted outdoors when shielded from direct sunlight. Isolated monitoring locations are also viable. The flow rate, a resettable and a non-resettable totalizer are simultaneously displayed. Embossed buttons on the face. Programming consists of selecting the pipe size and schedule from a list; measures in gallons, GPM, liters, cubic ft.

Sizes and Flow rates

Meters mount on vertical or horizontal pipes that meet the flow rate guidelines below. Pipes must be full of water with 10 times the pipe ID upstream of the meter and 5 times the ID on the outlet side.

SPECIFICATIONS

Maximum percent solids: 1% of fluid scale
Linearity: ±1.5% full scale
Repeatability: ±1.0% full scale
Operating Ambient Temperature: 0-130° F
Battery Life: greater than 5 years
Max Water Pressure: 150 PSI



ET13 Meter mounted on Schedule 80 pipe

| MODEL | PVC PIPE SIZE | SCHEDULE | FLOW RATE (GPM) | EACH |
|-------------|---------------|----------|-----------------|----------|
| ET12 | 1/2" | 80 | 1/2-15 | \$350.00 |
| ET13 | 3/4" | 80 | 2-30 | 350.00 |
| ET14 | 1" | 80 | 5-50 | 350.00 |
| ET15 | 1 1/2" | 40 | 10-120 | 350.00 |
| ET16 | 2" | 40 | 15-200 | 350.00 |
| ET17 | 3" | 40 | 40-400 | 350.00 |
| ET18 | 4" | 40 | 70-700 | 350.00 |
| PT-I-40-2.0 | 2" | 40 | 10-200 | 335.00 |
| PT-I-40-3.0 | 3" | 40 | 15-400 | 335.00 |
| PT-I-40-4.0 | 4" | 40 | 70-700 | 335.00 |
| PT-I-40-6.0 | 6" | 40 | 120-1700 | 335.00 |
| PT-I-40-8.0 | 8" | 40 | 250-3200 | 335.00 |

Note: ET models are pre-installed on 13" long PVC pipe. PT models install on existing pipe.

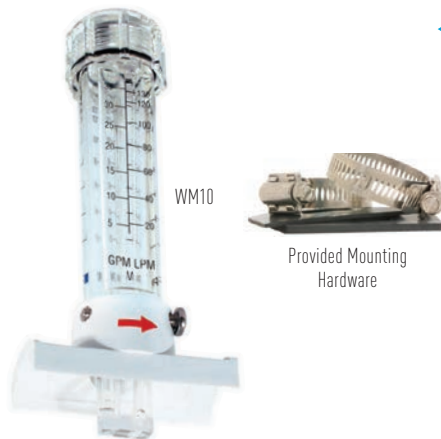
FLOW METERS

These clamp-on flow meters are simple to install. Just drill an 11/16" hole in a horizontal section of pipe and clamp it on with the two stainless steel clamps provided. Easily disassembled for cleaning. Maximum temperature 120°F. Maximum pressure 120 psi. Dual scale, gpm & Lpm. Replacement float fits all. Made in USA.

| MODEL | PVC PIPE SIZE | FLOWRATE (GPM/LPM) | EACH | 4+ |
|--------|---------------|--------------------|---------|---------|
| WM10 | 1" | 5-35/20-130 | \$65.00 | \$54.36 |
| WM1 | 1 1/2" | 20-80/80-300 | 65.00 | 54.36 |
| WM2 | 2" | 30-140/120-550 | 65.00 | 54.36 |
| WM3 | 2 1/2" | 40-200/160-750 | 65.00 | 54.36 |
| WM4 | 3" | 80-350/300-1,300 | 65.00 | 54.36 |
| WM5 | 4" | 150-600/600-2,200 | 65.00 | 54.36 |
| 812365 | | REPLACEMENT FLOAT | 5.97 | 5.37 |

Flow Meter Mounting Instructions

Mount vertically on horizontal pipe that's at least 10 times the pipe inside diameter from nearest fitting or restriction on the inlet side and 5 times the diameter on the outlet side.



FLOW METERS

These high-performance flow meters feature a durable, one-piece body made of polysulfone. Flow meters also have built-in 316 stainless steel pole guided floats (reduce flow oscillation) and permanent gpm/Lpm scales. Inlet/Outlet 2" FPT unions, fluoroelastomer rubber O-ring seals. Flow meters measure 19" OAL (including unions) x 4 1/2" W and weigh 3 lbs each. MUST be mounted vertically. One-year warranty.

| MODEL | FLOW RATE (GPM) | FLOW RATE (LPM) | EACH |
|-------|-----------------|-----------------|----------|
| BWM2 | 2-20 | 7-75 | \$473.80 |
| BWM6 | 6-60 | 30-230 | 473.80 |
| BWM10 | 10-80 | 40-300 | 473.80 |
| BWM5 | 5-100 | 20-380 | 473.80 |
| BWM15 | 15-130 | 60-500 | 500.73 |
| BWM20 | 20-175 | 75-660 | 500.73 |
| BWM30 | 30-230 | 115-870 | 473.80 |



Series of WM10 properly installed.

FLOAT SWITCHES

No electrician needed!

Use these mercury float switches to automatically operate pumps or alarms. They have 10' SJOW-A Class underwater-rated cable with a piggyback plug so devices can be conveniently plugged into it at the power receptacle (all float switch installations should be GFCI-protected and installed on thermally protected equipment only). Pump Up (U)=when pump switch falls, pump turns on. Pump Down (D)=when pump switch lifts, pump turns on. UL-listed and CSA-certified. Ship weight 2 lbs. One-year warranty. Made in USA. Not for use in potable water.

| MODEL | VOLTS | MAX RUNNING AMPS | MAX STARTING AMPS | POWER CORD | MIN/MAX TETHER LENGTH | EACH |
|-------|-------|------------------|-------------------|------------|-----------------------|---------|
| PL1U | 115 | 13 | 40 | 16 GAUGE | 6"-17" | \$61.60 |
| PL1D | 115 | 13 | 40 | 16 GAUGE | 6"-17" | 61.60 |
| PL2U | 115 | 15 | 55 | 14 GAUGE | 6"-14" | 106.98 |
| PL2D | 115 | 15 | 55 | 14 GAUGE | 6"-14" | 106.98 |
| PL3U | 230 | 15 | 35 | 14 GAUGE | 6"-14" | 109.29 |
| PL3D | 230 | 15 | 35 | 14 GAUGE | 6"-14" | 109.29 |



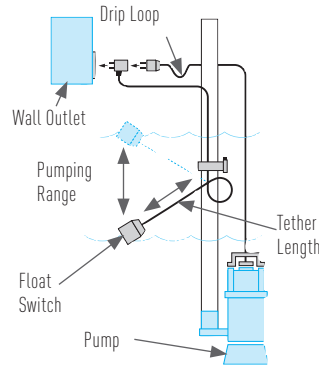
WL273

3-YEAR WARRANTY

FLOW SWITCHES

An excellent value on UL-recognized flow sensing switches that can turn on or off a heater, chiller, alarm, pump, etc., up to 2 hp (@ 230V). The ST9 is factory adjusted to close the circuit at 14 gpm and open it at 6 gpm, but is also field adjustable over a wider range. At 40 gpm, it causes only 6" of H₂O pressure loss. A "flapper" (piston in ST12) moves with water flow, actuating a magnetic switch on the outside of the pipe. Water cannot reach the electrical section! Operates by sensing water flow only (unaffected by pressure). Plumbing is PVC slip sockets. ST11 and ST12 have a selectable N.O./N.C. setting. Rated to 50 psi, 125VAC to 25 A (1-hp motor) or 250VAC to 25 A (2-hp motor). Switch is single pole, single throw (one wire in, one wire out) with 1/2" FNPT conduit connections on both sides. One plastic plug (shown in black) is included. Switches measure 6" x 6". One-year warranty. Made in USA.

| MODEL | | EACH | 6+ |
|-------|--------|---------|---------|
| ST9 | 1 1/2" | \$73.59 | \$66.41 |
| ST12 | 1" | 95.65 | 86.09 |
| ST11 | 2" | 103.00 | 92.70 |



Power cord tethering clamp not included.

PL1U



HIGH- AND LOW-WATER ALARMS

Mercury-free

These alarms operate with a mechanical float switch and 15' cable. The indoor Tank Alert is housed in a NEMA 1 metal enclosure and features a red warning light, horn with silence switch and test button. The indoor/outdoor Tank Alert is the same as the indoor model but housed in a Type 3R watertight, thermoplastic enclosure. Alarms sound when water level rises. All are 115V with 6' power cords. UL- and CSA-approved. Three-year limited warranty.

| MODEL | | EACH |
|--------|---------------------------------|----------|
| WL252 | INDOOR HIGH-WATER ALARM | \$121.16 |
| WL252L | INDOOR LOW-WATER ALARM | 121.16 |
| WL273 | INDOOR/OUTDOOR HIGH-WATER ALARM | 177.16 |
| WL273L | INDOOR/OUTDOOR LOW-WATER ALARM | 195.00 |



GROUNDING PROBES, TITANIUM

Made of pure titanium, these specially designed probes remove "stray voltage" generated by pumps, heaters, lights and other electrical devices. A worthwhile safety device for live seafood tanks, aquariums, hatcheries, garden ponds, etc. Noncorroding titanium probes have 10' wire lead. Simply immerse probe in water and either plug into wall receptacle or attach to grounding lug. Instructions included.

| MODEL | | EACH | 6+ |
|-------|----------------|---------|---------|
| TG10 | PROBE W/PLUG | \$14.50 | \$13.05 |
| GP10 | PROBE W/O PLUG | 14.95 | 12.95 |



WATER LEVEL SWITCHES

These float switches convert from normally open (N.O.) to normally closed (N.C.) circuitry by simply inverting the stem. Polypropylene construction. Each with 16" wires. Great pump switches when used with relays. One-year warranty. Made in USA.

| MODEL | | WATTS | OVERALL LENGTH | DIA. | MOUNTING MPT | EACH |
|-------------|--------------|-------|----------------|------|--------------|----------------|
| ST3M | MINI SWITCH | 30 | 2 1/4" | 1" | 1/8" | \$19.78 |
| ST3 | LARGE SWITCH | 60 | 3 3/8" | 1.5" | 1/4" | 62.65 |



ST3

AIRLIFTS

We have designed these PVC pipe sections with simple removable fittings to save you time. These are straight PVC pipes suitable for almost any airlift application.

The 1 1/4" sizes use a single air inlet (the performance is the same as with 2 inlets). The 3" and 4" sizes use two air inlets (note: more than two inlets typically do not improve performance in these size ranges). Sold complete with air fittings and 10' of vinyl air line of the size shown. Made in USA.

| MODEL | TYPICAL* CFM RANGE | PVC PIPE SIZE & AIR TUBING SIZE | OVERALL LENGTH | EACH |
|-------------|--------------------|---------------------------------|----------------|----------------|
| AL2 | 0.7-2 | 1 1/4" AIRLIFT, 1/4" | 8" | \$11.87 |
| AL2C | 0.7-2 | 1 1/4" AIRLIFT, CLEAR, 1/4" | 8" | 17.34 |
| AL5 | 2-4 | 3" AIRLIFT, 1/4" | 12" | 21.12 |
| AL6C | 3-5 | 4" AIRLIFT, CLEAR, 3/8" | 12" | 48.15 |

*"Typical" means lifting water to a 4" (10 cm) height above the surface.



AL5

TECH TALK 33

Airlift Notes

Airlifts are most efficient when moving water from one place to another within the water column. They become less efficient as the water is lifted higher above the surface. For our purpose here, we will split them into two categories: water-moving airlifts, and water-lifting airlifts, up to 4" in diameter.

Moving Water With Airlifts

Water is heavy when it is in the air, but weighs no more than the water around it when it is in the water. A water-moving airlift will translocate water using very little energy (compressed air). It just needs energy to accelerate and overcome friction. The more air that is injected and the deeper it goes, the more power available. An unconfined airlift doesn't even need a pipe. For example, an air diffuser moves a lot of water within its mass of bubbles.

Water-Lifting Airlifts

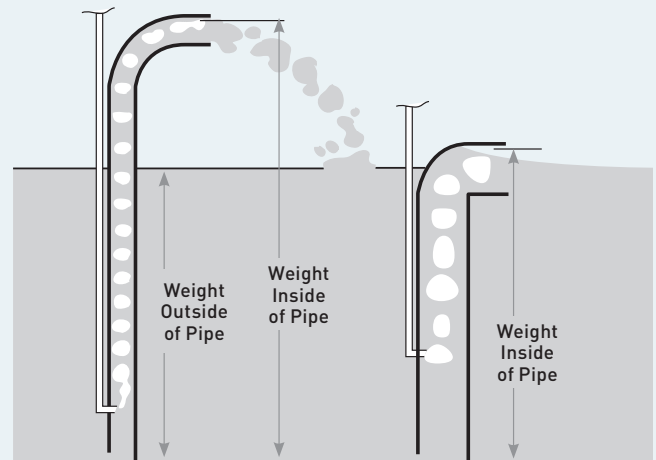
When trying to lift water to a high level, a water pump is simpler and more efficient than an airlift. However, raising water only slightly above the surface can be done easily and economically with compressed air and an airlift pipe.

Water-Lifting Guidelines

1. Do not use an air diffuser. Large bubbles work best, as they reduce water slippage. Air-injecting collars can improve performance slightly on short pipes, but, typically, they are not worth the installation and maintenance difficulty.
2. Smaller pipe diameters work best. If more water is needed, use multiples of small diameter pipes. Also, a sweep works better than an elbow.

How Does It Work?

- A. Water in the pipe is displaced with air, making the total weight within the pipe less than the weight outside the pipe.
- B. Since water seeks its own level by virtue of its weight (and its fluid nature), it will get pushed up an airlift pipe because the weight is less there (lower pressure).
- C. Ever hear the phrase, "Wind doesn't blow, it sucks"? It's true. The direction of flow is from high pressure to low.



The level of service was extremely responsive. In this day and age of poor service and belligerence, it was enjoyable to experience a company who prides themselves on taking care of the customer. I am very satisfied with [Pentair] Aquatic Eco-Systems' professional and rapid service, as well as the quality and value of the products. I will certainly make them one of my go-to companies.

Thank You,

Bill Ashling



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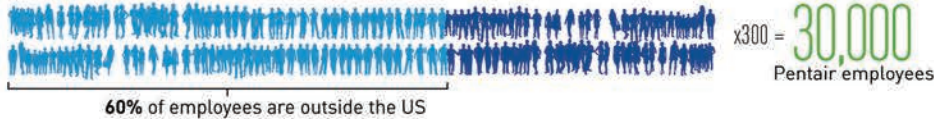
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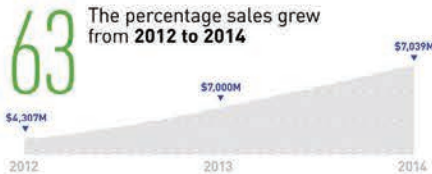
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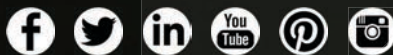
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