We engineer

Water

for a better

LIFE

amici

Catalog 2021 - 2022

FOREWORD

Since 1976, we've worked hard to give our customers quality water products and services. We have overcome many challenges over the last 40 years. Going forward, our strategy revolves around better availability, better communication, and better solutions.

We're improving our market coverage through key dealer accounts and enhancing dealer training so customers can get faster, quality customer support. By improving distribution, we hope to deliver reliable solutions to more homes and families nationwide.

We're also adopting communication technologies to enable our customers to reach us more easily, at their convenience.

Finally, we continue to improve our products with new innovations, especially green products. Customers can expect an expanded water treatment line, particularly under-the-sink purifiers, point-of-entry softeners and UV systems. We've also added Ozone Swim and Mineral Swim, great solutions to get the clearest pools possible. Our steam and sauna products also got an upgrade in reliability.

Ask about products with the green-leaf icon to know how they help the environment.

The new year ahead of us is full of possibilities and we believe that having a healthy environment is a key to having a good life. That's why we move forward to enhance life for our customers by continually improving water.

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Air Purifier

The Visible Clean Air

Super fast filters

Cleans air in just 30 Min. of 100m² room

Super fine dust filter

Super smooth removal of PM 2.5 (Super fine dust) due to MERV17 standard HEPA filtration

Air quality in real time

Patented smart sensor gives precise PM 2.5 dust density in real time

Formaldehyde Purification

Formaldehyde, which is the most active compound of TVOC gases presented in household, is removed effectively to give fresh air output

	AOS KJ500F-B01	AOS KJ800-B01	AOS KJ1200F
Coverage Area	40-60 m2	56-96 m2	84-144 m2
Sensor	PM2.5 Laser & Infrared Sensor / VOC Sensor		
Power W	63	140	146
Efficiency on 0.3um	99.97%		
CADR Dust/Pollen	500 m3/hr	800 m3/hr	1,200 m3/hr
CADR Formaldehyde	120 m3/hr	180 m3/hr	627.6 m3/hr
Air Change Per Hour	5.7-3.3	5.7-3.3	5.7 - 3.3
Purification	3 Stages 6 Layers		4 Stages 8 layers
Filters	HEPA MERV7 Pre-Filter/ HEPA MERV17 Main Filter/Carbon		
Effective on Pollutants	PM100, PM10, PM2.5, PM0.3 TVOC Formaldehyde, Toluene, Tobacco Smoke Pollen, Dust Mite, Mold, Allergen, Odor		
Effective on Bacteria & Virus	S. Albus, S. Aureus, K. Pneumoniae, E. Coli		
Noise dB(A)	63/55/51/40	69/55/51/40	68/60/55/46
Activated Carbon	1kg	1.6kg	2.36 Kg

DID You Know?

Ozone and ions can be harmful to health, especially to small children.

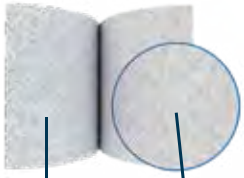
A. O. Smith uses 100% natural filtration technology to avoid re-polluting the air.

Humidity creates favorable conditions for the growth of bacteria and molds.

Make sure your air purifier does not increase air humidity.

Comparison of HEPA Filter Membrane

MERV17 HEPA Filter Membrane of A. O. SMITH

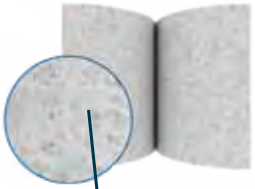


Glass fiber frame helps prolong the membrane filter.

PP non-woven, compresses filter, improves it in the long run.

VS

Conventional HEPA Filter Membrane



PP thin layer woven into the mesh with large holes size, which limits the ability of filter to clean super smooth dust.

Primary Filter Membrane of A. O. Smith Standard MERV17

A. O. Smith Primary Filter

Made of fiberglass and PP, Eliminates polluting components from PM 100 to PM 10, Helps in extending life of the main filter

VS

Regular Primary Filter

Filter made of plastic steel , with large pore size, which lets PM 10 and above particles pass to main HEPA filter and reduce the life of HEPA filter

Filter Membranes

Large Density Carbon

High quality charcoal can absorb toxic substances contained in the air as Formalade, touene and TVOC.

HEPA MERV17

3.6 Meter square area can host a large amount of dust. high longevity.

A. O. Smith uses MERV17 standard HEPA Filters which can cover an area up to 100 folds from 3.6m2 filter area. The thick fold density helps the MERV17 HEPA membrane to filter PM 2.5 super smooth molecules with the highest performance and with longer life.

The Ability to clean air Super Fast

A. O. Smith Air Purifier with filtration capacity 500m³/h (CADR) takes just 24 minutes to clean a room of 26m² with heavy pollution and with PM2.5 dust levels at 1000mcg/m³.

The result was made by the Corporate Technology Center (CTC) in Milwaukee, Wisconsin, U.S.A.

A. O. Smith AIR PURIFIER
CADR 500

CONVENTIONAL AIR PURIFIER
CADR 216

Above given results of experiment conducted in 26m² room with PM 2.5 as Primary pollutants. The comparison shows the filtration capacity between A. O. Smith Air Purifier with CADR 500 m³/h and other air purifier with CADR 216m³/h.

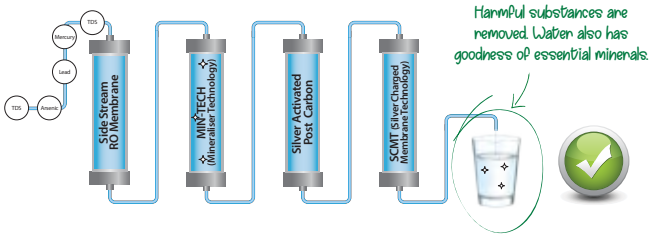
A.O. Smith
Innovation has a name.

Unmatched features. Designed to suit your lifestyle.

Protect your family's health with advanced technology that gives you 100% RO water. A. O. Smith's RO water purifiers give your family healthy water with the goodness of essential minerals. They offer state-of-the-art design with features and conveniences like warm and hot water at the press of a button, as well as night assist technology which beautifully lights up your kitchen and is also very convenient for a glass of water at night.

Why Reverse Osmosis?

100% RO + MINERALS + SCMT



Pure Water in every drop

We are aware of how important water has become in today's conditions where clean drinking water supply is decreasing constantly. Therefore, A.O. Smith is striving to develop technologies that will enable you to easily obtain top-quality, healthy drinking water, both in your home and at your workplace.

Purification Technologies	A6 | Water Purifier	S7 | Water Purifier	S4 | Water Purifier
Suitable for TDS levels	Up to 2,000 ppm	Up to 2,000 ppm	Up to 2,000 ppm
Suitable for hardness level	Up to 500 ppm	Up to 500 ppm	Up to 500 ppm
Pre-Filter	Yes	Yes	Yes
Sediment Filter	Yes	Yes	Yes
Pre-Carbon Filter	Yes	Yes	Yes
Side stream RO Membrane	Yes	Yes	Yes
MIN-TECH (Mineraliser Technology)	Yes	Yes	No
Silver Advanced Post Carbon	Yes	Yes	Yes
SCMT (Silver Charged Membrane Technology)	Yes	Yes	No
Large Storage Capacity	10 Litres	9 Litres	9 Litres
Auto Flushing	Yes	Yes	Yes
Advance Digital Display	Yes	Yes	LED Indicators
Twin Advance Alert	For Sediment+Pre-Carbon and RO membrane+ other filters change	For Sediment+Pre-Carbon and RO membrane+ other filters change	For Sediment+Pre-Carbon and RO membrane+ other filters change
Tank overflow protection	Yes	Yes	Yes
Leakage Sensors	Yes	Yes	Yes
Product Dimensions (HxDxW)	482H x 369D x 326W	490H x 329D x 315W	503H x 325D x 314W
Pressure Rating	7 psi to 30 psi	7 psi to 30 psi	7 psi 30 psi
Power-Rating (Max.)	60 Watts	48 Watts	48 Watts
Heating Element Wattage	500 Watts @230 Vac	N/A	N/A
% Recovery	Up to 30%	Up to 30%	Up to 30%

UV Water Purifier

HOT UV
UV PURIFIED WATER

Capacity: 9.2 litres (approximately)

Features

- 5 Stage: Pre-filter + Sediment filter + Silver Activated Post Carbon + UV Lamp + UFSS (For Hot water only)
- UV is a proven Non-chemical, disinfectant technology to give you healthy water
- Suitable for water up to 200 ppm TDS
- UV purified with choice of 45°C and 80°C temperature settings
- Glow effect guides you to your water purifier at night
- Indicates in advance when the UV Lamp needs to be changed
- Comes with pre-filter for effective removal of suspended solids and sediment
- Provision for both wall mounting & table top
- Digital display for simple and intelligent display of information

ADR75-V-E-T-1 RO+UV Purifier

A. O. Smith's Floor-standing purifier with firm and elegant design is the best for drinking water for your family and office.

Hot - Cold - Ambient Water
Make your own coffee, cold juice or a glass of drinking water with a single click, meeting all the drinking water needs for your family or office.

Double protection with UV Light
Non-chemical sterilization technology eliminate up to 99.99% of viruses, bacteria, molds and other pathogenic microorganisms.

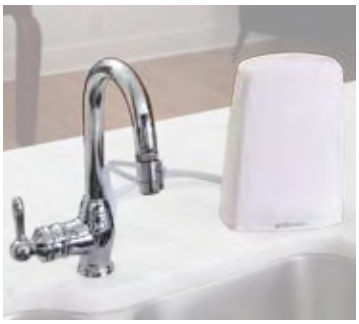
Child lock function

Capacity:
Ambient: 7L
Hot: 2L
Cold: 2L

Total Power: 630W
Hot: 500W, Cold: 85W

HxWxD (mm): 1220 x 380 x 420

Aquasana AQ-4000W DIY Water Filter



Direct to kitchen faucet installation for quick DIY installation

4 Filtration Methods:
- Activated carbon
- Catalytic carbon
- Ion-exchange
- Sub-micron filtration

HxWxD: 241.3 x 101.6 x 228.6 mm

S600 Tankless RO Purifier

Pure water delivered fresh, always

Features:
- 4-stage RO purification
- DIY filter replacements
- Carbon block
- 2:1 pure water vs reject water ratio
- Electronic faucet lets you know when to change filters

H x D x W: 430 x 185 x 310 mm

The Clean Water Filter

Fast, filtered water from your main faucet
- Claryum filtration reduces up to 99% of 77 harmful contaminants
- IAPMO tested and certified to NSF/ANSI standards 42, 53, and 401+P473

Flow rate: 1.5 gpm
Filter life: 784 gallons or 6 months

Invi U1 5-Stage UV Water Purifier

5 Stage Purification:
- Sediment
- Fine Sediment
- Carbon block
- UV
- Silver Activated Post Carbon

Power (max): 36W

HxWxD: 324 x 230 x 236 mm

Intelligent Flush System I Water Leakage Protection I NSF Safe and Reliable I Required Water Pressure 14.5-50 psi

A.O. Smith FS-55A Beauty Shower with Infused Vitamin C

An adjustable beautiful shower head with built-in Vitamin-C infused shower filter.

- Up to 90% of chlorine in your water will be removed
- Prevents having bleached skin, peeled off skin layer and allergies as well as dry hair, hair breakage and split ends
- Imports vitamin C essence using lemons
- 0.5mm water outlet for a smoother water flow
- Can spray two times higher compared to ordinary shower heads
- Features multiple bathing modes, an elegant appearance and a corrosion-resistant surface treatment

Aquasana AQ-4100NSH Shower Filter

A shower filter that is used together with your existing shower head to provide you with the healthiest shower experience.

Specifications:
Pressure range: 50psi
Rated Flow: 2.5gpm
Operating Pressure: 30-80 psi
Max Operating Temperature: 115°F
Filter Life: 6 months

A.O. Smith AO-FF Fridge/Freezer Water Filter

Filters water from your refrigerator/freezer by reducing up to 99% of 77 harmful contaminants.

Specifications:
Dimensions (HxWxD in.): 8.75 x 4 x 3
Filter Life: 6 months
Flow Rate: 0.5 gpm

Sediment Pre-filters

Spin-down pre-filters that prevent impurities and sediments from entering your water line, protecting your water heater and other appliances

Features:
- Prolongs the life of your water heater and other appliances
- High precision, food-grade stainless steel filter mesh
- Easy, Fuss-free Maintenance

	PF-25C1	PF-B1
Microns	100	90
Flow Rate m3/hr (gpm)	2.5 (11)	3.6 (15.8)
m3	45	65
Max Pressure	100psi	150psi
Temp deg C	5-38	5-40
Connection	DN20 3/4"	DN25 1"
Drain	DN8 1/4"	DN15 1/2"

AOS PF-B1

AOS PF-25C1

A.O. Smith AO-WH-FILTER Central Water Filter

- Clean, filtered water for your entire home
- For households with 4 or more people
- Reduces 97% of chlorine taste and odor for 6 years or 600,000 gallons using Granular Activated Carbon (GAC)

Dimensions: Height: 29", Diameter: 9"
Flow rate: 7 gallons per minute

AO Smith AO-WH-DSCLR Salt-Free Water Conditioner

- For households with 4 or more people
- Reduces scale build-up for 6-years or 600,000 gallons
- Reduces sediment and turbidity

Dimensions: Height: 26.5", Diameter: 8"
Flow rate: 7 gallons per minute

A.O. Smith
Innovation has a name.

A. O. Smith Water Softeners

HOW WATER SOFTENERS PERFORM IN YOUR HOME...

CLEANER
More efficient on dish washing and laundry

SOFTER
Hair will shine after showering, and have a silky, smooth feel

BRIGHTER
Brighter, softer, and longer lasting clothing

LONGER
Extend the life of appliances and plumbing

AO-WH-SOFT-PRO-500

- Capacity: 50,000 grains
- Direct wi-fi connection with text and email alerts
- Softener Resin: 47L
- Easy controller access
- Max hardness: 110 gpg / 1885 ppm
- Max. iron reduction: 10 ppm
- Color touch screen controller
- 200 lb salt capacity
- 39.5” High

Touch screen controller

Salt-sensing technology
Adapts to your water usage: allowing for less salt, water and energy use.

Designed, engineered and built to last
Patented, slim, single-unit design with bypass valve.

No filter changes-ever
Save time and money with the 20 micron self-cleaning pre-filter.

Fast and quiet regeneration
Quickly renew the resin beads to remove hardness from water.

Power loss protection
Back-up battery saves your settings in case of power loss.

AO-WH-SOFT-PRO-300

Integrated Central Filtration reduces chlorine taste and odor

- Capacity: 30,000 grains
- Wifi-enabled notifications
- Softener Resin: 28.3L
- 2lbs Garnet -- 20 micron filtration
- Max hardness: 90 gpg / 1540 ppm
- Max. chlorine: 3 ppm
- Color touch screen controller
- 200 lbs salt capacity
- 39.5” high

AO-WH-SOFT-450T

- Capacity: 45,000 grains
- Wi-fi controller with text/email alerts
- Softener Resin: 35.4L
- 2 lbs. Garnet –20 Micron Filtration
- Max hardness: 100 gpg / 1710 ppm
- Color touch screen controller
- 200 lb salt capacity
- 39.5” High

UV Disinfection

Domestic drinking water and small communities

The BIO-UV reactors in the UV HOME and IBP ranges are used to:
- make raw water coming from local drinkable resources (wells, boreholes, catchments etc.)
- make water in the system safe to drink, particularly after dechlorination using active charcoal
- make recycled rainwater safe for domestic use only

PRINCIPLE
The sun emits invisible light: ultraviolet light. This natural phenomenon is reproduced inside the reactors in the BIO-UV Group's ranges using powerful lamps, the result of leading-edge technology, that emit UV-C rays.

At 254 nanometers, the optimum wavelength for destroying microorganisms (viruses, bacteria, algae, yeasts, mould...), the UV-C rays penetrate to the heart of DNA and disturb the metabolism of cells until they are totally destroyed. All germs are thus deactivated (including Legionella and Cryptosporidium) and cannot reproduce.

Effective Dose

The reactors in the BIO-UV ranges are dimensioned according to the pump flow rate, as it is the combination of the contact time in the reactor and the power of the lamp(s) that will ensure that the necessary dose (expressed in millijoules per square centimeter or mJ/cm2) sufficient to kill 99.9% of the microorganisms (bacteria, viruses, algae in suspension) is received.

Description	Max. flow rate in m3/h * for 16 millijoules	Max. flow rate in m3/h * for 30 millijoules	Max. flow rate in m3/h * for 40 millijoules	UV lamp : Number x Power consumption	Connection	Height of reactor in mm	Diameter of reactor in mm	Stainless Steel
UV HOME 2	5.5 (24GPM)	2.9 (13GPM)	2.2 (10GPM)	1 x 33 W	¾"	446	90	304L
UV HOME 3	8 (35GPM)	4.3 (19GPM)	3.2 (14GPM)	1 x 55 W	¾"	717	90	304L
UV HOME 4	11.5 (51GPM)	6.1 (27GPM)	4.6 (20GPM)	1 x 87 W	1"	1067	90	316L
UV HOME 6	16.5 (73GPM)	8.8 (39GPM)	6.6 (29GPM)	1 x 87 W	1-½"	1072	114	316L
UV HOME 9	23.3 (103GPM)	12.4 (55GPM)	9.3 (41GPM)	1 x 105 W	1-½"	1325	114	316L

Deep Bed Filter

The deep bed sand filter is used to filter the water supply for domestic or light commercial use.
The filter bed traps undesired elements from the water like rust, sand, dirt and other solids.

Features:
Easy installation; 1" Multiport valve; Pressure gauge; Max Working Pressure: 100 psi / 7 bars; Max. Temperature: 50ºC

Specifications:
Filter Area (m^2): 0.10
Valve Connection: 1"
Max. Flow Rate: 68.31 lpm / 18 gpm
Sand Required: 98 kg / 216.05 lbs
Dimensions: 390 mm x 390 mm x 1500 mm

Media	Purpose
Sand	Sediment and iron filtration
Manganese Greensand	Reduces iron, iron algae, bacteria. Reduces manganese. If there is 2 ppm of iron, also reduces up to 5ppm of hydrogen sulfide
Activated Carbon	Reduces tastes, odors, and most man-made pollutants (VOC)
Calcite/Corosex	Raises pH of most low pH water
Birm	Reduces iron and manganese when water has dissolved oxygen
Filter-Ag or crystalline quartz	Reduces turbidity or suspended solids
KDF55	Reduces chlorine, heavy metals; bacteriastatic
KDF85	Reduces iron, hydrogen sulfide; bacteriastatic
Chlorine	Used as a disinfectant to kill bacteria

Deep Bed Filter
HD 13350

aquasana | pro series

HIGH PERFORMANCE WATER FILTRATION *for Foodservice*

POWERFUL

Comprehensive high performance solutions designed for your needs

- Effectively reduces chlorine, chloramine, scale and cysts, such as cryptosporidium and giardia
- Improves taste of water, ice, soda, coffee and tea

GREEN

Sustainable for the environment and your budget

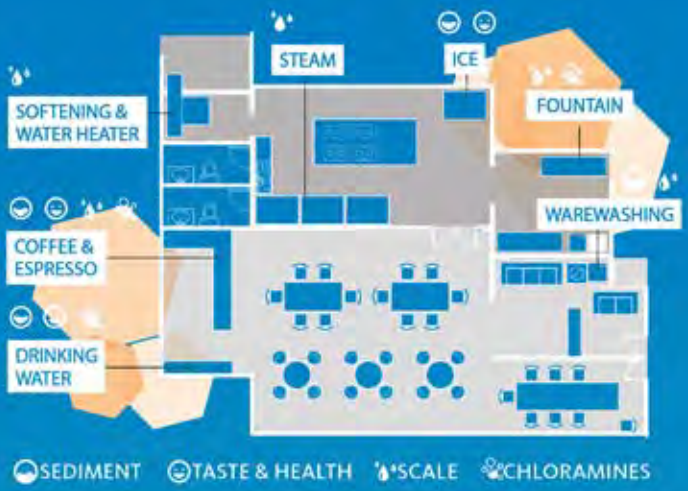
- Scale inhibitors extend life of kitchen equipment
- Equipment runs more efficiently saving energy and money

SIMPLE

Easy to use, easy to maintain

- Intuitive design and shut-off valves for easy maintenance
- Features our unique easy change housing for quick, painless replacements

How Can Aquasana Benefit Your Restaurant?



Our filtration cartridges feature carbon-based Chloramine and Chlorine reduction capabilities that improve the taste of water for sodas, coffee, tea and other water-based beverages.

In addition, our sub-micron filtration removes cysts – such as cryptosporidium and giardia – and other harmful contaminants that can impact the quality of your water.


FS-HF2-DI


FS-HF3-D2I


FS-HF2-DMU


FS-HF3-D2MU


FS-HF4-D2MUL

Model	Application	Flow Rates	Rated Capacities (Gal.)	Stages	Cartridges
FS-HF2-DI	Ice	1.7 / 1.3 / 1.0	3000 / 4500 / 6750	2	1 Sediment, 1 Ice
FS-HF3-D2I	Ice	3.4 / 2.6 / 2.0	6000 / 9000 / 13500	3	1 Sediment, 2 Ice
FS-HF2-DMU	Multi-Use	1.7 / 1.3 / 1.0	3000 / 4500 / 6750	2	1 Sediment, 1 Multi-Use
FS-HF3-D2MU	Multi-Use	3.4 / 2.6 / 2.0	6000 / 9000 / 13500	3	1 Sediment, 2 Multi-Use
FS-HF4-D2MUL	Combination	3.4 / 2.6 / 2.0	6000 / 9000 / 13500	4	1 Sediment, 2 Multi-Use, 1 Scale

Cartridge	5-Micron Filtration	0.5 micron filtration	Reduces chloramines, chlorine taste and odor, and other contaminants	Anti-microbial protection	Reduces scale
Sediment	Yes				
Multi-Use		Yes	Yes	Yes	
Ice		Yes	Yes	Yes	Yes
Scale					Yes

HYBRID WATER HEATERS

A.O. Smith
Innovation has a name.

SAVE ENERGY

With heat pump technology, you'll have great savings making it an ideal investment for the wise and practical. Check out our growing family of heat pump water heaters to match your hot water needs.

HOW HEAT PUMP WATER HEATERS WORK?

Heat pump water heaters capture heat and humidity from the surrounding air through the cooling coil and utilize it for heating potable water. Simply put, the heat is moved from where it is not needed to where it is wanted. This innovative advanced technology provides low cost hot water and free cooling (by-product).

WHY ARE HEAT PUMP WATER HEATERS AN ENVIRONMENTALLY FRIENDLY CHOICE?

- High efficiency with coefficient of performance (COP) up to 4
- No fossil fuels are used or burned at the source
- Ozone layer-friendly refrigerant R134a
- Uses less electricity than standard electric water heaters
- Contributes to space cooling at the same time
- Taps into heat sources typically discarded by other units for peak efficiency

HPI-40

HPI-50D

HPI Hybrid Series

GREEN CHOICE

- User Selectable Mode - Efficiency, Hybrid Turbo, Instant
- Backup Incoloy Heating Elements
- LCD User Interface
- Dehumidification
- Easy Maintenance
- High Density Insulation
- Ozone-Friendly R134A refrigerant
- Patented Blue Diamond® Glass Lined Tank
- AES Adaptive Energy Saving system
- Suitable for Outdoor Installation

HPI Hybrid Heat Pump						
Model	Gallon Capacity	Efficiency Power Input	Efficiency Heating Capacity	Backup Electric Power Input	Height (inches)	Diameter (inches)
HPI-40	40	540W	1.9kW	3kW	63.4	20.5
HPI-50D	47	510W	1.9kW	3kW	72.9	20.5

HPW Hybrid Series

GREEN CHOICE

- User Selectable Mode - Efficiency, Hybrid Turbo, Instant
- Micro Heat Pump Technology
- Blue Diamond Glass Lined Tank
- AES Adaptive Energy Saving System
- Glass-Lined Heating Element
- Wireless Remote Control
- High Density Insulation
- Programmable Schedule
- Hot Water Volume Display
- LED Display
- Ozone-Friendly R134A Refrigerant
- PS Pro-Safety Electric Leakage Protection
- IPX4 Water Proof Grade

HPW Hybrid Heat Pump						
Model	Gallon Capacity	Efficiency Pow er Input	Efficiency Heat- ing Capacity	Backup Electric Power Input	Length (inches)	Diameter (nches)
HPW-60	15	0.21kW	0.54kW	3kW	33.0	18.7
HPW-80	21.1	0.21kW	0.54kW	3kW	39.1	18.7

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GREEN CHOICE

Voltex Hybrid Electric Water Heater

The Voltex® hybrid electric heat pump water heater lives up to its impressive reputation. The Voltex line has larger storage capacities, which means more energy stored, resulting in increased savings. The consumer-friendly display is simple to operate and provides easy-to-understand feedback on operational status.

- Four Operating Modes: Efficiency, Hybrid, Electric, Vacation
- ENERGY STAR® qualified
- Backup Incoloy Heating Elements
- Dry Fire Protection checks that the tank is full of water before start up
- LCD User Interface with Advanced Diagnostics
- Dehumidification
- Coregard Anode Rod
- Easy Maintenance with washable heat pump filter
- 2” CFC-Free Foam Insulation
- Ozone Friendly R134A refrigerant
- UL Listed

DID You Know?

Heat pumps give out cool air. Ask about ducting options to reuse the cool air in a part of your house.

Model	Volume (gal)	UEF	Heat Pump Output kW	Electric kW	Height (in.)	Diameter (in.)
HPTU-50N	46	3.45	1.45	4.5	63	22
HPTU-66N	67	3.45	1.45	4.5	61	27
HPTU-80N	80	3.45	1.45	4.5	69	27

CAHP Light Commercial Hybrid Heater

GREEN CHOICE

A. O. Smith CAHP line of commercial heat pump water heaters brings the right mix of energy efficiency and affordability to the commercial water heating market. CAHP extends the MasterFit tradition of unmatched flexibility in heating capacity with a powerful Heat Pump module that guarantees continuous electrical and operating cost saving. This balance in design ensures an ROI worth evaluating for any commercial establishment that uses hot water in operations.

- Higher Capacity Heat Pump
- Outdoor Design
- User Selectable Mode - Efficiency, High Demand
- Backup Incoloy Heating Elements
- LCD User Interface with Advanced Diagnostics
- Dehumidification
- Easy Maintenance with washable heat pump filter
- 2” CFC-Free Foam Insulation
- Ozone Friendly R134A refrigerant

Model	Gallon Capacity	COP	HP	Heat Pump kW	Electric kW	Height (in.)	Width (in.)	Depth (in.)
CAHP-80	80	3.5	1.5	4.13	6-12	65.8	24.1	35.9
CAHP-120	120	3.5	1.5	4.13	6-12	67	28	39.1

A.O. Smith
Innovation has a name.

Wall-Hung Water Heaters

CEWH/ELJH

- Blue Diamond Glass-lined Tank
- High Density Insulation
- Pointer Type Thermometer
- Stepless Temperature Regulation Knob
- Anode Rod
- Temperature and Pressure Relief Valve
- Drain Valve

CEWHR-PE6

- Wired HD LED Touch Screen Control
- Blue Diamond Glass-lined Tank
- High Density Insulation
- Mode adjustable to Normal, Economy, or Instant
- Adaptive Energy Saving System (AES)
- Digital Temperature Control
- PS Pro-Safety Electric Leakage Protection (ELCB)
- Auto-standby
- IPX4 Waterproof Grade

Model	Volume (gal)	Wattage (kW)	Length (in.)	Diameter (in.)
ELJH-30	7.9	1.5	23.9	14.2
ELJH-40	10.5	2.0	28.0	14.2
ELJH-50	13.2	2.0	32.7	14.2
ELJH-80	21.1	2.0	33.9	18.3
ELJH-100	26.4	2.0	40.4	18.3
CEWH-40A1	10.5	2.5	28.0	14.2
CEWH-50A1	13.2	2.5	32.7	14.2
CEWH-60A1	15.8	2.5	27.3	18.3
CEWH-80A1	21.1	2.5	33.9	18.3
CEWHR-40PE6	10.5	1.2 / 2 / 3	28.3	15.6
CEWHR-50PE6	13.2	1.2 / 2 / 3	33.0	15.6
CEWHR-80PE6	21.1	1.2 / 2 / 3	34.0	18.3
CEWHR-100PE6	26.4	1.2 / 2 / 3	40.5	18.3

Point-of-Use Water Heater

Compact design that doesn't affect performance. These water heaters are great space savers that deliver hot water exactly where you want it.

EWH-10

MiniBot

HeatBot

- Blue Diamond Glass-Lined Tank
- Safety Valve
- Thermal Cut-off

Model	Gallon Capacity	Standard kW	Height (in.)	Width (in.)	Depth (in.)
SZS-3	0.79	3 / 4.5	12.5	9.3	9.0
EWH-10B2	2.6	2	13.8	13.8	11.1
SZS-15	3.96	2	16.1	15.6	14.6
SZS-25	6.6	2	19.2	17.5	16.1

Zip Tankless Electric Heater

Features:
Constant Temperature; Smart LED Display; Flow switch activated; Thermal cut-off; Easy-to-use touch controls; Top or bottom connect

Specifications:
kW: 5.5kW 230V
Rated Current: 24A
Min. Activating Flow: 1.2 lpm
Max. Working Pressure: 75 psi
Dimensions (HxWxD mm) 252 x 250 x 90
Connection: 1/2" BSP

Why A. O. Smith

146 Years
Established in 1874
Publicly Listed in USA
3B USD sales in 2019

R&D
Invented Glass Lining for Heaters
Blue Diamond and PermaGlas® Ultracoat
First Ultra High Efficiency Gas Heater
Most Advanced Water Purifiers

Green Technology
Energy saving ultra thick insulation
Cyclone Ultra-High Efficiency LPG Heaters
Hybrid heat pump heaters from 20 to 120 gallons
Ultra-low NOx operation for gas heaters

Global Company Global Leader
World's largest heater factory in Tennessee
Manufacturing facilities in USA, Mexico, Canada, Turkey, China, and India
#1 Market Share in North America and in China
Over 13,000 employees worldwide

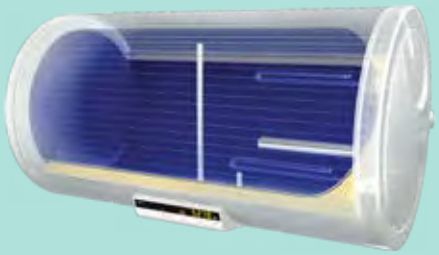
EnergySaver

ProMax

- Blue Diamond Commercial Grade Glass-Lined Tank
- DYNACLEAN™ diffuser tube helps reduce lime and sediment buildup while maximizing hot water output (made from long-lasting PEX cross-linked polymer)
- COREGARD™ anode rod with stainless steel core protects tank against corrosion longer than ordinary steel anodes.
- Durable, Tamper-resistant brass drain valve
- CSA/ASME certified T&P relief valve

Model	Storage (Gal.)	Standard kW	Height (in.)	Diameter (in.)
ProMax Compact				
EJC-6	6	2.5, 3	15.25	14.25
EJC-10	10	2.5, 3, 4.5, 6	18.25	16
EJCS-20	19	2.5, 3, 4.5, 6	24.75	18
EJCT-20	19.9	4.5	31.625	16
ProMax Short				
ECS-30X	30	6	39	20
ECS-40X	40	6	47.5	21.5
ProMax Lowboy				
ECLN-40X	38	6	31.75	24
ECL-50X	48	6	34	26
ProMax Lowboy Side-Connect				
ENJB-40	38	4.5	31.75	24
ProMax Tall				
ECT-52X	50	6	51.5	20
ECT-55X	55	6	48.5	22
ECT-66X	66	6	53	20.5
ECT-80X	80	6	52	22.5
EES Energy Saver				
EES-30	30	3.8, 6	37.0	20.5
EES-40	40	3.8, 6	45.3	20.5
EES-50	50	6	53.7	20.5
EES-80	80	6	57.9	24.0
EES-120	120	6	66.7	29.5

Choose A. O. Smith Heaters for Genuine Blue Diamond Glass Coating for Ultimate Corrosion Resistance



Abundant hot water is essential to a modern lifestyle, but water at high temperature is tough on the tank and internal components of a water heater. Effective protection against corrosive effects of hot water is essential in prolonging the life of a water heater.

In 1936, A.O. Smith Water Products Company was the first to patent a process for producing a “glass -lined” water heater tank, one of many A.O. Smith firsts in water heating technology. Now, we have raised the bar, with Blue Diamond protective coating.

At the heart of almost every water heater is a steel tank. A porcelain “glass lining” protects the tank against the corrosive effects of hot water. Our breakthrough Blue Diamond formula is enriched with a higher level of zircon, producing a lining that is harder and more water-resistant than any other in the industry.

The superior water resistance of Blue Diamond has been demonstrated in accelerated tests against glass lining samples taken from competitive water heaters.

These tests determined water resistance by measuring the rate at which each glass lining sample dissolved over the 20-week cycle. The results (expressed in milligrams [mg] of weight loss per square inch of lining surface) indicate how the glass lining will stand up to constant exposure to hot water. The lowest mg/sq. in. loss shows that Blue Diamond outlasts them all!

LP GAS-FIRED WATER HEATERS

GCR GCF FCG

Gas-Fired Storage Water Heaters

Gas-fired water heaters that are easy to install and use—a perfect replacement for your old and inefficient water heaters.

Model	Storage (US Gal.)	Input (Btu/hr)	Ignition Mode	Height (in.)	Diameter (in.)
GCR-30	30	32,000	Piezo	61.5	18
GCR-50	50	37,000	Piezo	60.75	22
GCF-50	50	40,000	Electronic	63.5	22
FCG-75	74	75,100	Piezo	61	26.5
FCG-100	98	75,100	Piezo	68.5	27.75

Water Heater Parts and Accessories

Wide selection of stocked parts:

- Burners
- Gas Valves
- Ignition Modules
- Igniters
- Flame Rods
- Thermocouples
- Pilot Tubes
- UI Modules
- Control Modules
- Thermostats
- Drain Valves
- Relief Valves
- Anode Rods
- Dip Tubes
- Manifolds
- Switches
- Transformers
- Heating Elements

Jet-flo

Tankless Gas Water Heater

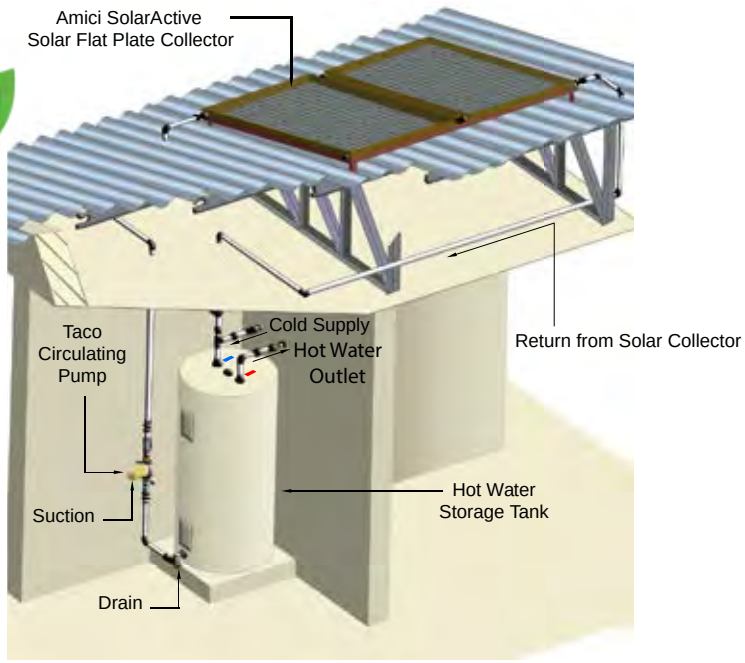
LP gas-fired tankless water heaters are common in Europe, China and increasingly so in the USA. Using LPG as energy source, they have the advantages of electric instant water heaters, the most common type of heater in the Philippines. Compared to an electric water heater, a gas-fired water heater roughly halves operating costs.

Model	JSD 12	JSD 24
Rated gas pressure	2800 Pa / 0.41 psi	
Suitable water pressure	0.025 Mpa - 0.8 Mpa / 3.6 psi - 116 psi	
Exhaust style	Flue style, natural draft	
Ignition type	Water-control automatic continuous pulse ignition	
Safety Device	With overheat protection	
Gas inlet connection	Diameter 9.5mm hose connection	
Cool water connection	½" NPT	
Hot water connection	½" NPT	
Rated hot water capacity	6 L/min. (Delta T=25k)	12 L/min. (Delta T=25k)
Rated heat load	12 kw	24 kw (Approximately 82,000 BTU)

SolarActive GREEN CHOICE

Take advantage of the Philippine sun to give you hot water. Unlike solar photovoltaic systems for electrical generation, solar thermal systems have the high efficiency criteria to make them viable solutions for renewable energy usage.

With Amici's SolarActive water heaters, only the collector panels stay on the roof. There's greater flexibility in installation and architectural design.



Product Specifications						
Storage (US Gal.)	# of Panels	Collector Panel Area (m2)	Panel Weight (kg)	Storage Model	Height (in.)	Diameter (in.)
50 Gallons	1	2	39	EES-50	57.34	20.9
80 Gallons	2	4	78	EES-80	61.6	24.5
120 Gallons	3	6	117	EES-120	66.75	28.34

Collector Specifications	
Type	FP2.0 with black chrome coating
Gross Area	2000mm x 1000mm x 82mm
Aperture Area	1.84m2
Absorber Area	1.73m2
Cover	4mm thickness, patterned temper glass > 87% transitivity
Absorber Construction	Ultrasonic Welding
Header Material	Copper
Absorber Efficiency	Copper Black Chrome with Absorptivity > 96% Emissivity
Fin Thickness	0.15mm
Operation Pressure	1.2Mpa
Casing Frame	Aluminum Alloy casing is 1.3mm thickness with electrophoresis coating
Back Plate	0.5mm thickness aluminum back plate with plastic foil
Sealing	EPDM

Hot Water Storage Tank	
Manufacturer	A.O. Smith Water Products
Insulation	Non-CFC foam insulation
Pressure	150 psi working pressure
Sacrificial Anode Rod	included
Internal Tank Construction	Glass-lined, fused to steel by firing at a temperature range of 1400 to 1600 °F
Heating Elements	Low watt density 1" screw-in type, with Incoloy sheath
Temperature & Pressure Relief Valve	Included; ASME rated

Temperature Differential Control

The temperature differential control senses heat in the solar collectors and tanks and then controls the circulating pump to regulate the movement of heat energy. When water temperature in the collector is higher than the temperature in the water tank, the controller activates the pump to move hot water to the tank.

Control Specifications	
Operating voltage	AC220V/AC ±10% 50HZ/60HZ
Power Consumption	≤3W
Working environment	-10 ℃ ~50 ℃ RH≤90%
Resolution	1 ℃ Accuracy: ±1 ℃

Solar Recirculating Pump	
Casing	Cast Iron / Bronze /Stainless Steel
Cartridge	Stainless Steel
Impeller	Non-Metallic
Shaft	Ceramic
Bearings	Carbon
Maximum Fluid Temperature	230 °F (110 °C)

ATMOR
Hot Water On Demand

Atmor 122PV Inverter Heater

- Smart Thermostatic Technology
- Digital Display
- DC Pump for quiet but powerful flow
- Dual Thermostat Protection
- Constant Pressure
- ELCB DP (Double Pole) for extra safety
- Luxurious Chrome Accessories
- Heating Capacity 3.5kW

Why Thermostatic?

Consistently Comfortable Shower
When you select your desired temperature through the heater's easy-to-use touch interface, the water heater automatically saves your preference for you.

Improved Energy Use
The low-to-high settings of conventional instant heaters control the electrical energy used to heat water. Because inlet water temperature changes every season, these heaters need to be constantly adjusted so as not to waste electricity.

Encourages Decreased Water Use
Thermostatic heaters will manage the temperature for you so that you get your desired water at your desired flow rate.

Less Operational Costs
Thermostatic heaters ultimately save you energy and water.

Atmor 102 Electronic Series

Atmor 102P

- DC Pump for quiet but powerful flow
- Electronic/flexible power settings
- Modern, Slim Design
- Designed for easy servicing
- Dual Thermostat Protection
- Built-in ELCB Dual Pole
- Luxurious Chrome Accessories

Atmor 102

- Electronic/Flexible power settings
- Modern, Slim design
- Designed for easy servicing
- Dual Thermostat Protection
- Built-in ELCB Dual Pole
- Elegant White and chrome shower accessories

Standard Features

- Splash-proof IPX5 Standard
- Heating Capacity 3.5kW
- 381 (H)*215*(W)*77(D)mm

Enjoy 100

- Modern, Slim design
- Mechanical 2-Power Settings
- Dual Thermostat Protection
- AirForce shower head included

AirForce Shower Head

- Stronger flow for less water and energy
- Rejuvenate skin cells - by increasing oxygen content in your water
- Provides air mixed with water
- Easy cleaning
- Available in white/red or white/gray colors

ATMOR
Hot Water On Demand

Atmor Thermoboost

- Smart Thermostatic Technology
- Digital Temperature Display
- Heats to exact desired temperature
- Touch buttons
- Prevents Flow of overheated water
- Magnetic Flow Switch Activated
- Heating Capacity: 5.5kW, 8kW, 10kW
- H 235 (mm) x W 289 (mm) D 104 (mm)

About Atmor

With over 40 years in instant heater technology, Atmor has established itself as a technology leader. Its products are designed in Israel and feature innovations such as:

- Smart Thermostatic Technology
- Temperature Stabilization Systems
- Digital Displays
- Shower Preference Memory

Atmor 800 Inline Heater for Pressurized/Multipoint Application

Features:

- Pressure Differential Flow Switch
- Built-in ELCB
- Dual Thermostat with Thermal Cut out
- Pressure relief device
- IP24
- 178 x 304 x 98mm
- kW, Breaker
- 3.5, 20A
- 5.5, 30A
- 8, 40A

TOP Electric Shower Head

- Built-in water filter at the inlet
- Integrated pressure relief valve
- Splash proof casing construction
- 2.0kW

TAP Instant Heater

- For kitchen or bathroom sink
- Easy temperature control
- Easy to install
- Heating Capacity: 3kW

Rain Shower Set

- Stainless Steel
- 100cm x 34cm
- For Single-point use
- Non-pressurized application

BlueWave

BW 405 Thermostatic

- Smart Thermostatic Technology heats to exact desired temperature
- Big Digital Display
- Electronic Stop/Start Control
- Shower Duration Display
- 4 Memory Settings
- Phased Shut Down
- Flow Stabilizer
- Heating Capacity: 5.5kW
- H 340 mm x W 238 mm x D 110 mm

BlueWave Sensa

Standard Features

- 3 Power Settings
- Replaceable Element
- Dual Thermostat Protection
- Splash-Proof

For single point / open vented
- Pressure Switch Activated
- 3.5 kW

For inline / multipoint
- PDFS venturi
- 3.5/5.5 kW

• Dimensions: H 185 mm x W 300 mm x D 110 mm

BlueWave 300 Series

BW 300

- 3 Power Settings
- Dual Thermostat Protection
- 3.5kW

Multipoint option
- PDFS Venturi Flow Switch
- Built in ELCB
- 3.5 or 5.5kW

BW 301

- 3 Power Settings
- Dual Thermostat Protection
- 3.5kW
- Flow Stabilizer
- Chrome Accessories

BW 302D

- 3 Power Settings
- Dual Thermostat Protection
- 3.5kw
- Flow Stabilizer
- Digital Temperature Display
- Phased Shutdown
- On/Off Button
- Chrome Accessories

Dimensions: H 340 mm x W 238 mm x D 110 mm

Open Vented Installation

*Open vented installation can provide hot water for a single tap in a certain residential/commercial unit.

Inline/Pressurized

*Inline/pressurized installation can provide hot water for multiple taps and showers.

A.O. Smith
Innovation has a name.

A.O. Smith Expansion Tanks

Model	Max Pressure (psi)	Volume (gal)	Conn. Size NPT	Height (in.)	Diameter (in.)
TW-5-1	150	2.1	¾"	11	7.9
TW-12-1	150	4.8	¾"	13.7	10.6
PMC-10	150	9.25	¾"	15.5	15.375

- Drawn steel construction
- Working Pressure: 150 psi
- Butyl Rubber Diaphragm

Product Preservers Anti-Scale System

The Product Preservers® Anti-Scale System provides active protection against scale formation on your water heater or steam generator. This system does not add chemicals to the water or require electricity. As water flows through the filter, hard water minerals form inactive scale crystals that do not stick to the heat exchanger or piping.

Virtually maintenance free, one simple filter change every 2 years ensure continuous protection against scale. Replacing the filter is easier, faster, and less frequent.

Product Preservers Powered Anode

The Powered Anode is an ideal solution for eliminating smelly water caused by sacrificial magnesium anodes or to replace aluminum anodes where aluminum hydroxide is a problem. The system is also great for new residential gas or electric 30-50 gallon water heater installations providing protection with virtually no maintenance required. Protect your investment with a permanent anode rod made of titanium and mixed metal oxide that will never be depleted unlike traditional sacrificial anodes.

Taco

Taco Industrial Flow Switches

- Fluorosilicone Seal
- 250 psi Maximum Service Pressure
- 250°F Temperature Rating
- Stainless steel Paddles and Trip Rods
- NEMA 1 and NEMA 4 Models
- For Use on 1" to 8" Diameter Pipe
- UL, CSA, CE Approved

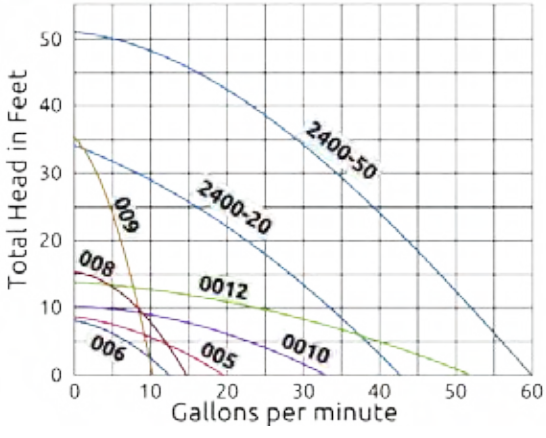
Taco Pressure Reducing Valve

- 10-50 psi dial-up pressure setting
- Replaceable cartridge for easy servicing
- Pressure balanced diaphragm
- Max inlet pressure: 250 psi
- Max temperature: 210 ^{0}F
- Each unit factory tested
- Body: Forged Brass
- Internal Parts: Stainless Steel and Engineered Plastics, Bronze, EPDM Seals
- Connection Size: $^{1}/_{2}$"

Taco Cartridge Circulators

- Max. Working Pressure: 125 psi
- RPM: 3250
- Stainless Steel Cartridge
- Non-Metallic Impeller
- Ceramic Shaft
- UL Listed
- IFC Model with integrated check valve

Product Specification					
Model	HP	Flow Range (GPM)	Head Range (ft)	Max. Fluid Temp	Casing Options
003	1/40	0 – 7	0 – 4.5	104°C	SS
005	1/35	0 – 19	0 – 9		SS
006	1/40	0 – 10	0 – 9		SS
007	1/25	0 – 23	0 – 10	110°C	SS
008	1/25	0 – 14	0 – 16		SS
009	1/8	0 – 10	0 – 35		SS
0010	1/8	0 – 32	0 – 10		SS
0011	1/8	0 – 31	0 – 31		SS
0012	1/8	0 – 52	0 – 14.5		SS
0013	1/6	0 – 34	0 – 33		SS
0014	1/8	0 – 32	0 – 22		CI, SS



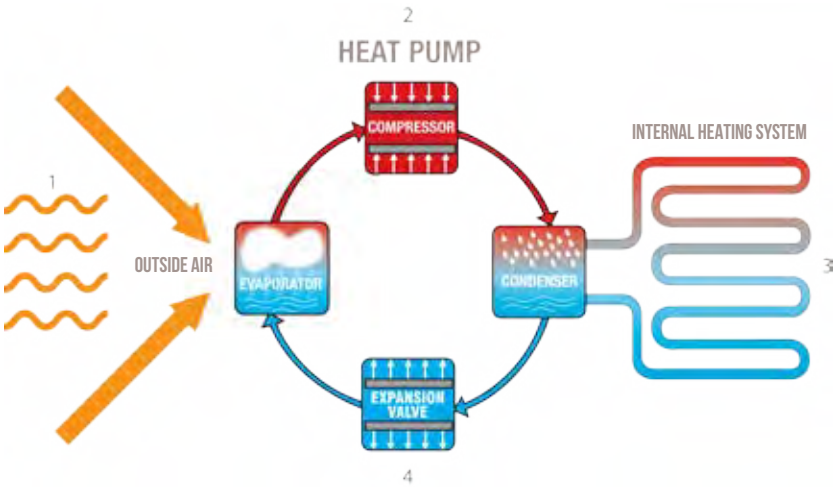
Innovation has a name.

SHPC AIR-TO-WATER Heat Pump

GREEN CHOICE

Our impressive line of environmentally friendly offerings has now been expanded to include one of the most energy-efficient and innovative commercial products on the market.

The electric commercial heat pump water heater works great when there is a large demand for hot water. Applications requiring significant hot water usage will maximize energy savings for the shortest payback periods. Best of all, heat pump heaters are three times more efficient than standard electric water heaters and up to four times more efficient than conventional gas water heaters.



Common applications

- Commercial : Restaurant/Kitchens
- Institutional : Hospitals, Hotels, Schools, Resorts
- Residential : Villas, Apartments, Guest houses
- Industrial : Factories, Laundries

Technical Specifications			
Models		SHPC-006	SHPC-012
Rated Heating Capacity	KW (BTUH)	17.5 (59,726)	33.6 (114,675)
Rated Input Power	KW	4.86	9.51
Performance Coefficient (COP)		3.6	3.53
Ambient Temperature Range	°C	10-43°C	
Rated Hot Water Output Temp.	°C	10-65°C	
Power Supply		230V/3N~/60Hz	380V/3N~/60Hz
Compressor	type	COPELAND (6HP)	COPELAND(6HP*2)
Condenser		tube in tube heat exchanger	
Evaporator			
Water Flow	m3/h	3.0	6.0
Water Pressure Drop	Kpa	45	47
Pipe Size	in	R1"	R1-1/4"
Fan Type		Axial fan	
Protections		1. High pressure and low pressure protection 2. High temperature protection 3. Compressor overload protection 4. Anti-single phase protection 5. Reverse phase protection	
Expansion Valve		Electronic expansion valve	
Refrigerant Type		R134a	
Refrigerant Quantity	Kg	3.5	3.5*2
Noise DB	A	≤62	≤66
Dimension LxWxH	mm	700x680x1300	1450x680x1300
Net Weight	Kg	180	380
Cabinet Material	Powder Coated		

Performance rating at:
1. Ambient temp.(DB/WB): 20C/15C
2. Hot Water temp. from 15C to 55C
3. Water side working pressure 1.0Mpa

Storage tank: Minimum 2000 & 4000 litre for SHPC-006 & 012 respectively
Circulation pump flow rate: 3500 LPH & 6500 LPH for SHPC-006 & 012 respectively
Recommended water hardness: Less than 300 ppm

With over 500 different commercial models, A. O. Smith is the largest manufacturer of commercial water heaters in the world. Including gas-fired, oil-fired and electric configuration, we've got you covered.

Configuration	Storage Capacity	Energy Input
Gas	34 - 600 gal	54,000 - 2,500,000 Btu/Hr
Oil	69 - 575 gal	140,000 - 2,500,000 Btu/Hr
Electric	5 - 10,000 gal	3 to 3,300 kW
Boiler		120,000 - 3,400,000 Btu/Hr
Tankless Gas		120,000 - 380,000 Btu/Hr

Cyclone Mxi

Now comes with modulating burner for higher levels of efficiency

20 Years of Cyclone

Cyclone Mxi Gas-Fired 95% Thermal Efficiency						
Model	Volume (gal)	Input (Btu/hr)	Vent Size (in.)	Conn. Size (in.)	Height (in.)	Diameter (in.)
BTH-120	60	120,000	3	1-½	55.5	27.8
BTH-250	100	250,000	3	1-½	76.5	27.8

YOU CAN'T CLONE A CYCLONE

Model	Volume (gal)	Input (Btu/hr)	Conn. Size (in.)	Height (in.)	Diameter (in.)
MasterFit Gas-Fired					
BTR-180	81	180,000	1-½	67.5	27.8
BTR-198	100	199,000	1-½, 2	75.0	27.8
BTR-250	100	250,000	1-½, 2	72.0	30.3
Conservationist Diesel-Fired					
COF-315	84	315,000	1-½	74.5	27.8
Dura-Power Electric					
DRE-52	52.9	9-36kW	1-¼	57.1	21.4
DRE-80	79.4	9-54kW	1-¼	64.2	25.3
DRE-120	113.7	9-54kW	1-¼	64.2	29.6

Hot Water Tanks

A. O. Smith is the market leading manufacturer of domestic hot water storage tanks in the USA. Our extensive selection has storage capacities from 80 gallons to 12500 gallons.

We have stocked standard sized jacketed and non-jacketed glass-lined storage tanks, but you can have yours built custom made, complete with jackets, insulation, special linings, manholes, hand holes, and lifting lugs.

Our single and dual coil indirect calorifiers are designed especially for renewable energy heating, to be used together with solar collectors and heat pump water heaters.

Model	Max Pressure (psi)	Volume (gal)	Length / Height (in.)	Diameter (in.)
Direct Hot Water Storage Tanks				
TJV120M	160	119	62.0	29.4
T350S	150	350	88.0	36.0
Indirect Calorifier				
	Tank / Coil			
IT-300	145 / 362	79.4	69.7	31.5
IT-500	145 / 232	132	80.5	29.9
IT-600	145 / 232	158.5	72.4	35.8
IT-1000	145 / 232	266.4	82.7	39.8
IT-2000	116 / 87	476.2	88.5	56.2
IT-3000	116 / 87	740.7	86.5	66.2

Pentair Water Pool and Spa® is the world's leading manufacturer of pool and spa equipment and accessories. Pentair's Sta-Rite® brand offers innovative products that make pool and spa ownership simpler, more enjoyable, and more energy efficient than ever before.

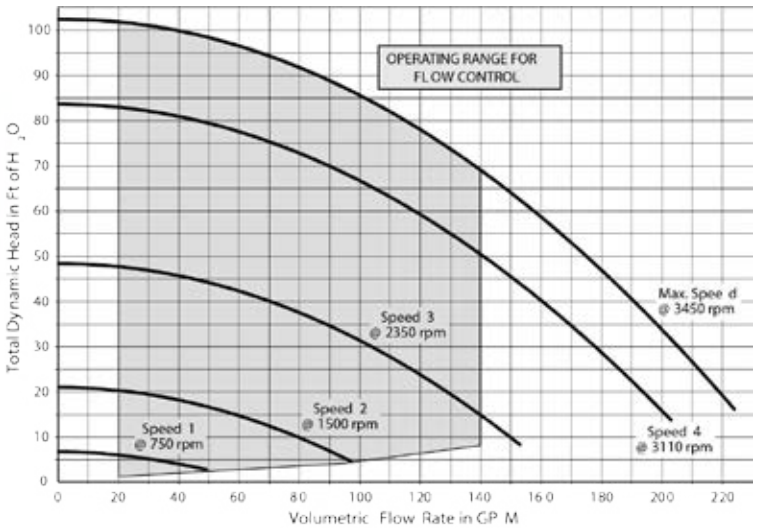
Intellipro XF VSF

GREEN CHOICE

IntelliPro XF VSF pump is the first variable speed and flow pump that adjusts to changes in flow system conditions to maintain its programmed flow rate. With the highest available performance and efficiency, it is perfectly suited for large and feature-rich pools with high flow demand.

3 Years Warranty

Model	Voltage	FLA	kW	HP	SF	SFHP	Port Size (NPT)
IntelliPro XF VSF	230	16	3.2	3	1.32	3.95	2.5 in. x 2.5 in. OR 3 in. X 3in.



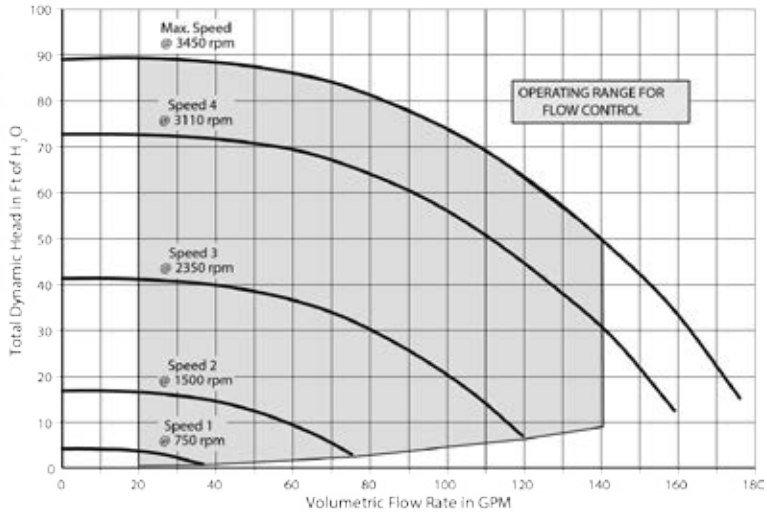
Intellipro VSF

GREEN CHOICE

IntelliPro VSF maintains its pre-programmed flow rate to run optimally throughout the entire filtration cycle. It's like having cruise control for your pump.

3 Years Warranty

Model	Voltage	FLA	kW	HP	SF	SFHP	Port Size (NPT)
IntelliPro VSF	230	16	3.2	3	1.32	3.95	2 in. x 2 in.



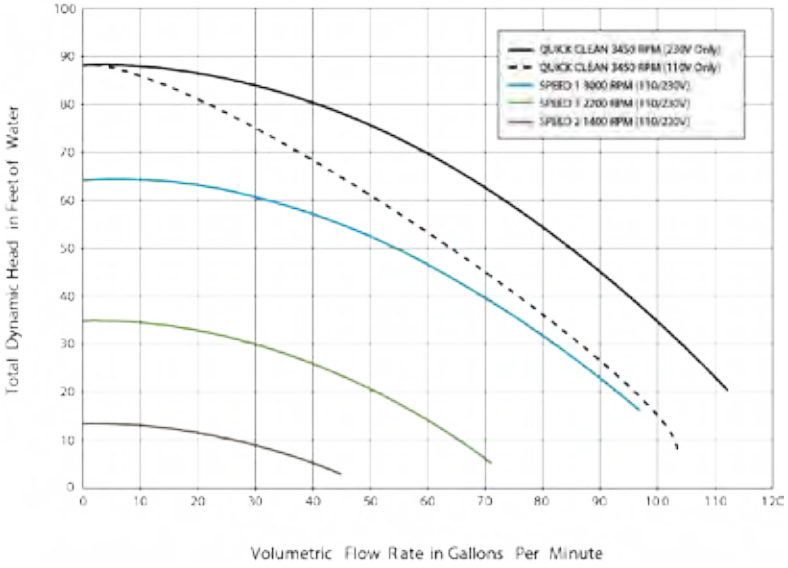
Supermax VS

GREEN CHOICE

The SuperMax VS Variable Speed Pump brings the remarkable energy cost savings of variable speed technology, reducing energy costs by up to 80%. It has an easy-to-read graphical display and a built-in timer.

2 Years Warranty

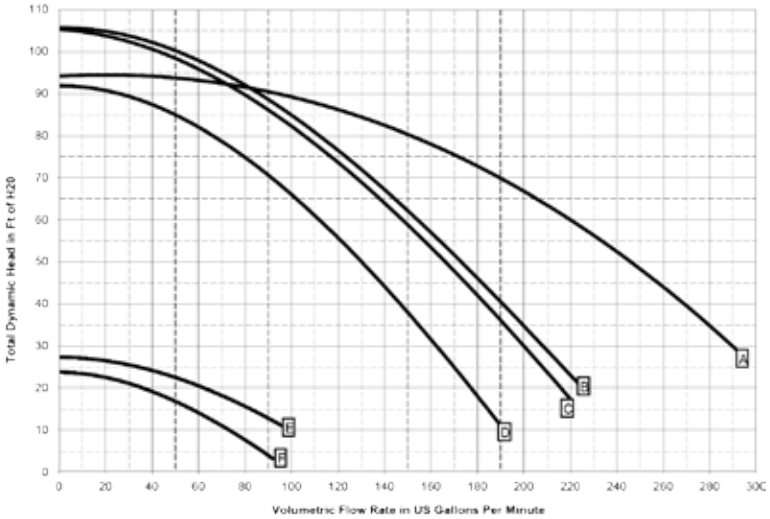
Model	Voltage	FLA	HP	SF	SFHP	Port Size (NPT)
Supermax VS	208-230	12.0-11.5	1.5	1.46	2.2	1-½"



Max-E-Pro XF

Max-E-Pro XF used the most advanced engineering tools available to elevate pool pump performance to the next level. The impeller design delivers a high level of precision concentricity for increased efficiency.

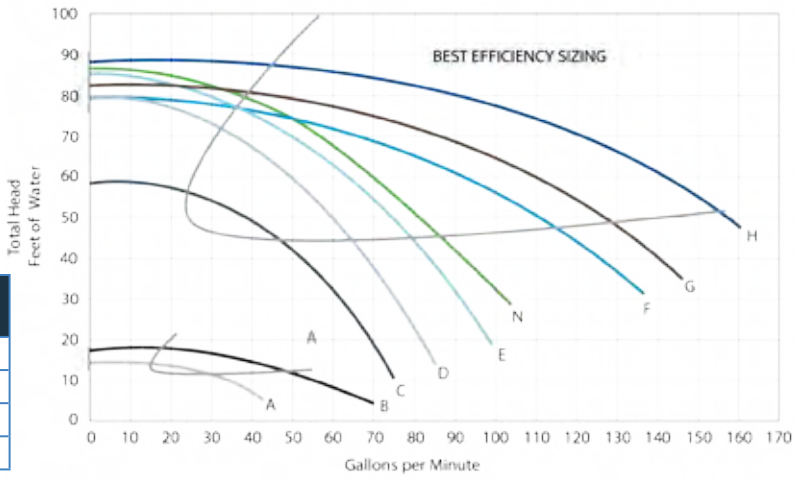
2 Years Warranty



Model	hp	gpm at 40ft head	FLA	Suction (in.)	Discharge (in.)	Legends
023010	3	190	13.6	2.5 or 3	2.5 or 3	B
023011	5	270	23	2.5 or 3	2.5 or 3	A
023031	5⁄3ph	270	13.4	2.5 or 3	2.5 or 3	A

Max-E-Pro

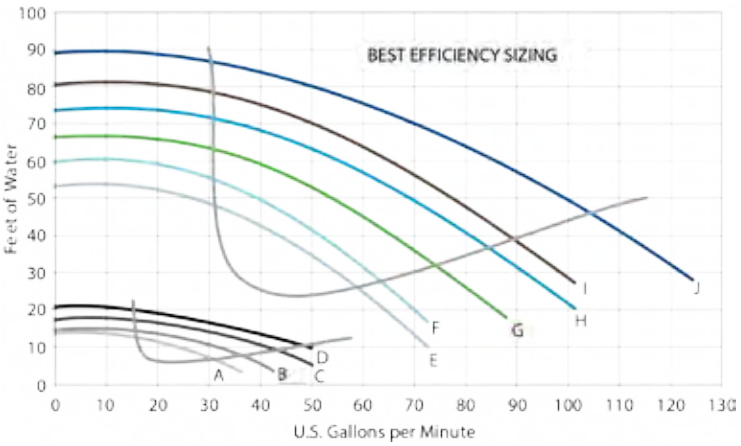
Max-E-Pro and Dyna-Pro features high efficiency, low maintenance, and maximum performance, more than you get from typical pool pumps. Built with quality construction using a one-piece pump housing constructed of Dura-Glas™, you can enjoy the performance advantage for many years.



Model	hp	gpm at 40ft head	FLA	Suction (in.)	Discharge (in.)	Legends
348150	1	85	8	2	2	E
348151	1.5	126	10.5	2	2	F
348152	2	141	11.2	2	2	G
348153	3	166	14.1	2	2	H

SuperMax

SuperMax features a commercial grade, 56 square flange motor for top performance in residential swimming pools. It has a quiet operation and economical performance. The benefits to pool professionals are its ease of installation and reliability. Union fittings are included and the pump easily drops in place.



Model	HP	gpm at 40ft head	FLA	Suction (in.)	Discharge (in.)	Legends
PHK2E6D-101L	0.75	52	5.4	1.5	1.5	F
348147	1	66	7.1	1.5	1.5	G
348148	1.5	81	8	1.5	1.5	H
348149	2	88	11.2	1.5	1.5	I

STA-RITE

Sta-Rite Posiclear RP Cartridge Filters

GREEN CHOICE

Cartridge filters can filter up to 20 microns. They are easy to use and maintain. During maintenance, the cartridge can be cleaned by simple hosing. For longer maintenance-free operation, choose oversized filters. Oversized filters mean more time before you have to clean the filter. The simple way of cleaning cartridge filters also saves water, compared to the automatic backwash operation of the sand filter.

Model	Effective Filtration Area (Sq. Ft.)	Flow Rate	Turnover Capacity (In Gallons)			Inlet/Outlet (in.)	Diameter (in.)	Height (in.)	Vertical Clearance (in.)
			8 hour	10 hour	12 Hour				
PXCRP150	150	75-150	72,000	90,000	108,000	2 x 2-½	15.5	40.5	76
PXCRP200	200	100-150	72,000	90,000	108,000	2 x 2-½	15.5	40.5	76

Posiclear RP

Sta-Rite D.E. Filters

Diatomaceous Earth (D.E.) offers the clearest water quality among filter media. Sta-Rite brings this clarity to your swimming pool through a varied family of cartridge-type and grid-type D.E. filters.

EasyClean

PLD70

PLDE36

PLDE48

S7MD

Model	Filter Area (Sq. Ft.)	Ideal gpm	Turnover in Capacity in gallons			DE Required (kg.)	Inlet/ Outlet/ Drain (in.)	Diameter (in.)	Height (in.)	Vertical Clearance (in.)
			6 hour	8 hour	10 hour					
EC60	15	30-45	-	28,800	36,000	0.68	1	15.5	25.5	39
EC90	30	45-60	-	43,200	54,000	1.36	1	15.5	40.5	76
PLD70	36	36-72	13-26,000	17-35,000	22-43,000	1.8	2	18.6	27.72	-
PLDE36	36	36-72	13-26,000	17-35,000	22-43,000	2.5	2	18.5	36	-
PLDE48	48	48-96	17-34,000	23-26,000	29-57,600	3.3	2	18.5	45.25	-
S7MD60	60	60-120	21-32,400	28-43,200	36-54,000	4.09	2	28.5	42	50
S7MD72	72	72-144	25-38,880	34-51,800	43-64,800	5	2	28.5	42	50

Celatom® Diatomaceous Earth Filter Aid

The World's Choice for D.E. filter media

EaglePicher's Celatom® D.E. filter media is the ultimate D.E. filter aid for your swimming pool. Also known as "water polisher," this D.E. can filter debris as little as 2-5 microns. It can efficiently clean cloudy swimming pools and make it clear while reducing the need to use chemicals and disinfectants. This is the reason why after 50 years, Celatom® D.E. filter media is still the world's choice for D.E. filtration.

Sta-Rite Sand Filters

Sand Filters use silica sand, zeolite or glass media. They do not depend on the continuous use of D.E. powder to clear your swimming pool. During maintenance, a simple and convenient backwashing is done through the multiport valve of the filter.

The convenience, large capacity, and reduced operational costs are what makes sand filters the popular choice for commercial swimming pools.

Crystal-Flo II

SRT Series

Model	Filter Area (Sq. Ft.)	Max GPM (Residential)	Max GPM (Commercial)	Turnover in Capacity in gallons			Sand Required (kg)	Inlet/ Outlet (in.)	Diameter (in.)	Height (in.)	Ecoclear kg	
				8 hour	10 hour	12 hour					Fine	Coarse
CFII 19 145360	1.9	40	*	19,200	24,000	28,800	68	1.5	19.5	37.75	38	13
CFII-24 145362	3.15	70	53	33,600	42,000	50,400	137	1.5	24	46.25	77	25.75
CFII-26 145363	3.5	75	56	36,000	45,000	54,000	160	1.5	26	48.75	90	30
SRT-30/750TM2	4.73	121	97	58,080	72,600	87,120	250	2	30	43	147.5	40
SRT-36/900TM2	6.78	149	119	71,512	89,400	107,280	400	2	36	48	240	60
SRT-36/900TM2-.5	6.78	174	139	83,520	104,400	125,280	475	2.5	36	48	240	60
SRT-42/1070TM2-.5	9.57	245	196	117,600	147,000	176,400	600	2.5	42	54	350	100
SRT-48/1200TM2-.5	12.16	300	245	144,000	180,000	216,000	750	2.5	68	70	442.5	120

ecoclear GREEN CHOICE

10 Years Warranty

EcoClear® is a new 100% recycled, environmentally-friendly media that lasts up to 3 times longer than traditional Silica sand. This product will save you money and give you a cleaner, healthier pool.

Features & Benefits

- Removes particles above 4 micron in size
- Discourages bacterial growth in filter tank
- Cost Benefits
- Reduced Backwashing
- Reduced water consumption by up to 25%
- Reduced Chemical use by up to 50%
- Strong and long lasting
- 100% Amorphous Fused Silicon Dioxide
- Outstanding performance
- 100% Recycled

Silica Sand

Zeolite

Silica sand, Zeolite, and Ecoclear Glass media are available. Silica sand can filter up to 20 microns in size while Zeolite can filter below 10 microns. Use Ecoclear Glass media for best filtration results with sand filters.

Replacement Filter Cartridges and Grid Elements

We have a wide variety of filter replacement cartridges and D. E. grid elements for common brands in the Philippines. Brands on stock include Sta-Rite, Pentair, Hayward, American Products, Jacuzzi, and Purex.

Pentair

EQ Commercial Swimming Pool Pumps

EQ Pump Series are all-plastic commercial grade pool pumps that are built specifically to deliver extraordinary performance for a wide range of commercial pool and water applications.

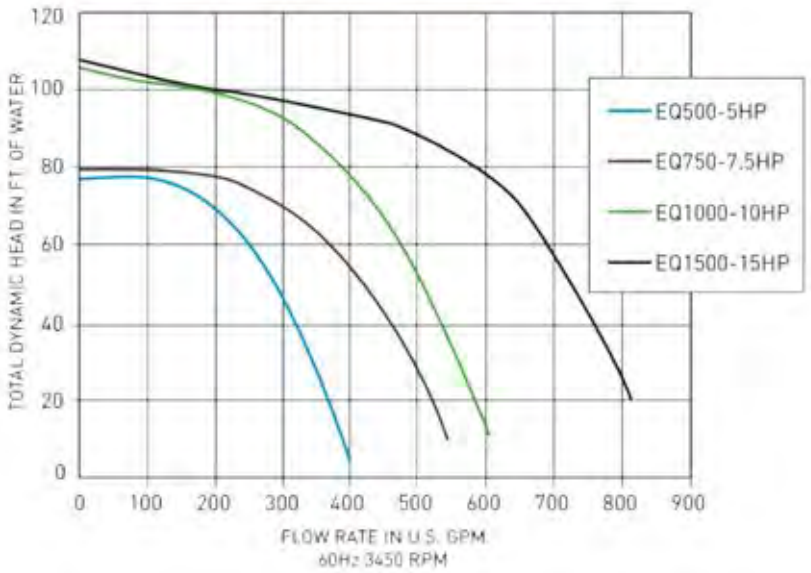
They are energy efficient, quiet, lightweight and corrosion resistant. It also has a unique impeller design that provides true breakthrough performance for a longtime.

Features

- Close-coupled for quiet, stable flow operation
- Clear Cam and Ramp™ Lid for added service convenience
- 6-inch suction and 4-inch discharge with strainer pot
- Compatible with Acu Drive™ XS Variable Frequency Drives
- NSF certified

Model	Voltage	Amps	Phase	Hp
EQK500	208-230/460	13.5-12.3/6.2	3	5
EQK750	208-230/460	20.1-18.3/9.1	3	7.5
EQK1000	208-230/460	27.1-24.3/12.2	3	10
EQK1500	208-230/460	40.0-36.0/17.8	3	15

EQ Series® Commercial Pump Performance Curve



SRT-C Commercial Sand Filters

SRT-C filters are corrosion proof filter tanks used for commercial pool, water park and aquarium application. They are to be installed below the level of the pool surface and as near as possible to the balance tank or the pool itself.

Tanks include:
12” x 16” ManHole Access, Tank Internals, Tank Drain, 6” Flanged connections, Gauge Panel – Manometer, Air release & Vacuum breaker, 50 psi operating pressure.

MODEL	Filter Area (m2)	Flow Rate		Pipe Flange (mm)	Sand Media (kg)	Dimensions (m)		
		m3/hr	GPM			Height	Width	Length
SRT-C 1500	1.5	63	277	100	2391	1.4	1.2	2
SRT-C 2000	2	84	370	100	2821	1.4	1.2	2.5
SRT-C 2500	2.5	105	462	100	3624	1.4	1.2	3
SRT-C 3000	3	126	554	100	4054	1.4	1.2	3.5
SRT-C 3500	3.5	147	647	100	4671	1.4	1.2	4
SRT-C 4000	4	168	739	100	5287	1.4	1.2	4.5

Sta-Rite UltraTemp® Pool Heat Pump

- 100% pure titanium heat exchanger assures corrosion-free performance for extra long life
- Digital controls with dual thermostats offer precise temperature control for pool/spa combinations and avoid over-heating and energy waste
- Self-diagnostic controls monitor and troubleshoot heat pump operation to ensure safer, dependable operation
- Long-life, corrosion-resistant composite cabinet maintains its appearance for years

DID You Know?

Heat pumps can also chill water. Try the H/C model.

Specifications	UltraTemp 70	UltraTemp 120	UltraTemp 120 3PH	UltraTemp 120 H/C
Heating Capacity	70,000 BTU	127,000 BTU	127,000 BTU	127,000 BTU
COP	5.9	5.7	5.7	5.7
Refrigerant Type	R-410A	R-410A	R-410A	R-410A
Pipe Size (inches)	2″	2″	2″	2″
Dimensions (in.) (HxWxD)	33.5 x 38.9 x 30.7	45.5 x 38.9 x 30.7	45.5 x 38.9 x 30.7	45.5 x 38.9 x 30.7

Sta-Rite Max-E-Therm Gas-fired Heater

- Lightweight, Compact design
- Environmentally friendly: low NOx
- Low operating cost: 84% efficiency rating
- Rustproof housing: sleek, matte black enclosure made of Duraglas

Model	Recovery (Btu/ hr)	Inlet/ Outlet (in.)	Height (in.)	Diameter (in.)	Approx. Weight (lbs)
SR200LP	200,000	2	30.03	32	138
SR333LP	333,000	2	30.03	32	138
SR400LP	400,000	2	30.03	32	138

*HD option for Heavy Duty Cupro-Nickel Heat Exchanger

Jet-Flo Inline Electric Heater

- 12 kW heating capacity providing recovery of 40,945 Btu/hr
- 1.5 in. water connection
- 0 – 50°C dial adjustment temperature setting
- Heavy duty magnetic contactors
- Pressure switch activated at 5 psi to prevent dry firing operation

Jet-Flo H30-R1 Spa Heater

- 3kW / 230V / 13A
- For 400 ltr. Spa

Bio-UV O'Clear 25 Complete Pool Chemistry

- 100% automatic pool chemistry — perfectly balanced chlorine and pH level for pools up to 100,000 L
- Low salt requirement — 500 ppm compared to 3000 ppm or higher with other brands
- No risk of allergies
- No chlorine smell, no salt taste
- Reduced corrosion risk
- Long UV lamp life - 13,000 hours or about 3 years

Max. Flow Rate: 110 gpm
UV Lamp: 1 x 87W
Connection: 75 mm

Bio-UV Pool Sanitizers

- Neutralize microorganisms not affected by chlorine and salt
- Drastically reduce chemical use
- Prolongs pool life
- No more red eyes, dry skin or damaged hair
- No unpleasant chlorine smell
- Reduced corrosion risk
- Long UV lamp life - 13,000 hours or about 3 years

Model	Connection	Max. Flow Rate gpm @ 30mj/cm2	Amps	Lamp Wattage	UV Power
Neo 12	D75	52	0.28A	65W	17.5W
E-40	63mm	110	0.5A	110W	36.3W

IntelliChem® Chemical Controller

The IntelliChem Chemical Controller automatically monitors pool pH and sanitizing levels and delivers just the right amount of chemicals. Its built-in Langelier Saturation Index calculator lets pool owners know when the water is in or out of balance.

- Minimizes chemical costs by adding chemicals with precision and only when needed to eliminate waste
- No more manual handling of chlorine and acid
- Protects your pool equipment from corrosion caused when pH swings in and out of balance

Maytronics pH Drive

Automatic pH dosing system for maintaining your pool's pH water balance.

Flow rate: 110 ml/min
Power: 6W
pH range: 0-14 pH

Sanitizer Comparison	Bio-UV		Maytronics			Pentair Sta-rite	
	UV Sterilizer	O'Clear	Ozone Swim	Ozone Swim Fusion	pH Drive	Intellichem	PNR Chlor
Features							
UV Sterilizer	Yes	Yes					
Ozone Generator			Yes	Yes			
Salt Chlorine Generator		Yes 500 ppm		Yes 3000-4000 ppm			Yes 3000-35000 ppm
Liquid Chlorine Dosing						Yes	
Muriatic Acid Dosing		Yes			Yes	Yes	
Benefits							
Protects against Giardia & Cryptosporidium	Yes	Yes	Yes	Yes			
Salt Water Pool		Yes		Yes			Yes
Reduced Chlorine	Yes	Yes	Yes	Yes			
Allergy-Less	Yes	Yes	Yes	Yes			
Super Clear Pool	Better	Better	Best	Best			
Automated Chlorine Management		Yes		Yes		Yes	Yes
Automated pH Level Management		Yes			Yes	Yes	
Pool Size (L)	<= 100k	<= 100k	<= 90k	<= 90k			<= 2000K

maytronics mineralSwim™

EXPERIENCE THE DEAD SEA

Recreate the relaxing, natural, healthy pool experience that people have enjoyed for thousands of years at the Dead Sea. The Mineral Swim System combines the benefits of magnesium-rich Dead Sea minerals with the natural ozone-to-oxygen purification process, fully endorsed by AHAVA - one of the World's great natural skincare brands. Ideal for general skin hydration and helpful for skin conditions such as psoriasis and eczema, Mineral Swim will leave your skin feeling rejuvenated.

- Pool water inspired by nature
- Crystal clear water
- Stimulates hydration
- Relaxes muscles
- Detoxifies & regenerates the skin
- Compatible with any existing pool system

maytronics ozoneSwim®

EXCEPTIONAL POOL PURIFICATION - The Choice is Crystal Clear

- Reduce chlorine levels by up to 80%
- Sensitive & Safe Sanitation
- Crystal Clear & Odour-Free
- Tried & Trusted
- Fewer chemicals required
- Easy on the Eye, Soft on the Skin
- Save Time, Money & Maintenance
- Healthier Pool Water

OZONE

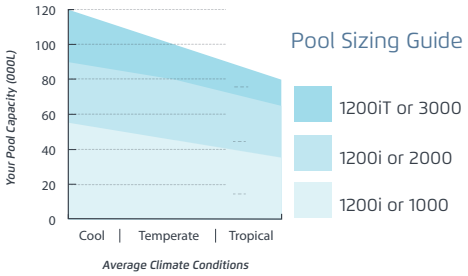
Add Ozone to your current system

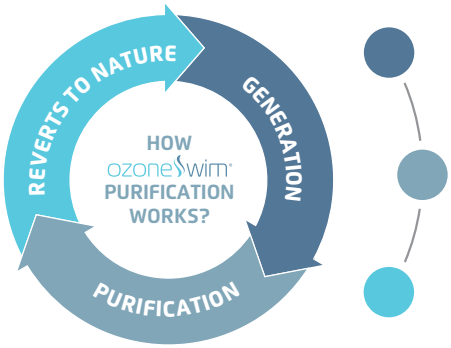
The 1200i Series works in conjunction with existing salt chlorinators, chemical dosing systems and tablet feeders.

OZONE SYSTEM

Mineral/Salt + Ozone = Total Solution

The 1000, 2000 & 3000 Series is designed to replace existing sanitisation systems. These units have the benefit of both salt/mineral Chlorination and Ozone purification.





1. GENERATION

Oxygen converted to pure Ozone

2. PURIFICATION

Ozone neutralises harmful contaminants

3. REVERTS TO NATURE

Ozone converts back to natural pure Oxygen, for a softer cleaner pool

maytronics | Dolphin GREEN CHOICE

Exceptional Experience

Dolphin robotic pool cleaners deliver automated, high-performance pool cleaning efficiently and effectively. Dolphin have consistently been at the forefront of innovation. With decades of expertise in automatic pool cleaners, every Dolphin combines advanced technologies with proven reliability so you can enjoy a constantly clean pool with little effort. Available for both residential and commercial pools.

E10 S100 S300i M400 M500 M600

	E10	S100	S300i	M400	M500	M600
Pool Length	8 m	10 m	12 m	12 - 14 m	12 - 15 m	up to 15m
Cycle Time	1.5 hours	2 hours	2 hours	2.5 hours	1.5 / 2.5 / 3.5 hours	1/1.5/2/2.5 hours
Waterline Scrubbing	No	No	Yes	Yes	Yes	Yes
Wall Climbing	No	Yes	Yes	Yes	Yes	Yes
Filter Type	Net Cartridge		Fine & Ultra-Fine Cartridge			
Swivel Cable	No	No	Yes	Yes	Yes	Yes
Caddy	No	No	Yes	Yes	Yes	Yes
Brushes	All Terrain PVC with Active Scrubbing		All Terrain PVC with Dual Active Scrubbing	Wonder Brushes with Triple Active Scrubber		All terrain PVC brushes with advanced dynamic active scrubber
Remote Control			Smartphone App Control		Smartphone App Control	
Warranty	24 months	24 months	24 months	36 months	36 months	36 months
Others				Weekly Timer	Gyroscope, Operation Delay, Full Filter Indicator, Weekly Timer	Gyroscope, Operation Delay, Weekly Timer, Pick Me Up Mode, PowerStream Mobility System, Filter Indicator

maytronics | Dolphin

TOP 10

REASONS CUSTOMERS BOUGHT A DOLPHIN ROBOTIC CLEANER

1. Save money on electricity - up to PHP ₱ 13,500 a year!
2. Does not get stuck! - less hassle!
3. Reduce backwash by 33% - saving water and chemicals!
4. Regain your skimmer box - your pool can work the way it was designed to!
5. Wall cleaning & climbing capability - total pool cleaning!
6. Scrubs & sweeps surface of pool - making it cleaner and healthier!
7. Systematic cleaning approach - gives you total pool coverage!
8. Industry leading warranty - a peace of mind investment!
9. Independent from pool filtration - reduced stress on equipment means longer lifespan!
10. Easy to clean & maintain - more time enjoying your pool & less time looking after it!

maytronics | Dolphin wave GREEN CHOICE

POWERHOUSE COMMERCIAL

W 20

- Efficiently cleans water in just 20cm (8 in) deep, perfect for water features and toddler paddling pools
- Compact size
- Saves manpower, minimise pool downtime; achieves outstanding results

wave 75

- For smaller sized pools 10 - 20m
- Heavy-duty cleaning performance
- Easy maintenance
- Accurate, full-coverage scanning
- High-capacity filtration

wave 100

- For mid-sized pools 15 - 25m
- Unique gyroscopic system for accurate, effective scanning
- Fully automated operation
- Effective brushing and filtering deliver heavy-duty cleaning

PRO EXPERT 2X2

- For larger aquatic pools 25 - 50m
- Easy maintenance for long-term effective use
- Full-coverage scanning & high-capacity filtration

wave 200 XL

- For mid-sized commercial pools
- Interactive MMI for easy operation, and intuitive programming and diagnosis
- Fast, efficient operation for uncompromising performance

wave 300 XL

- For commercial pools of any shape or type up to 60m long
- Optimised water suction
- Cycle time and cleaning modes allow for scanning programs to be set for up to 4 different pools

	W 20	Wave 75	Wave 100	Pro 2x2	Wave 200 XL	Wave 300 XL
Ideal Pool Size	Up to 15 m	Up to 20 m	Up to 25 m	Up to 50 m	20 - 50 m	Up to 60m
Cycle Time	1, 3 hours	2, 3, 4 hours	4, 6, 8 hours	4, 6, 8 hours	1 - 8 hours	1 - 8 m
Cable	18 m	24 m	30 m	40 m	42 m	43 m / 50 m
Surfaces Cleaned	Floor	Floor, Walls, Waterline	Floor, Walls, Waterline	Floor, Walls, Waterline	Floor	Floor
Water Depth	0.2 - 5 m	0.4 - 5 m	0.4 - 5 m	0.4 - 5 m	0.4 - 7 m	0.4 - 7 m
Weight	10 kg	10 kg	12 kg	19 kg	24 kg	26.5 kg
Warranty (Commercial Use)	2 years	2 years	2 years	2 years	2 years*	2 years*

Swimming pools are the focal point of your backyard. With Lighting and Water Effects you can add to the peace and tranquility of your poolside experience by allowing the pool to sparkle with personality.

IntelliBrite® 5G LED Lighting

The Intellibrite family of pool, spa and landscape lights gives you choice and control to get the ambiance that you love.

- Pool Color: 26W 12V
- Pool White: 40W , 48W, 55W depending on model
- Spa Color/White: 18W 12V
- Landscape Color: 15W 12V

IntelliBrite® Controller

With the Intellibrite controller, dazzling light shows are just a single push of a button away. Choose from 12 different colors and shows to set the mood. Intellibrite Controller works with Intellibrite 5g pool, spa and landscape lights as well as Globrite and MagicStream laminars.

GloBrite® Underwater LED Lights

GloBrite Shallow Water LED Lights are suitable for the shallow ends of your pool. They can be placed in as little as 4 in. of water horizontally or vertically.

- Color/White: 15W 12V
- Compatible with Intellibrite Controller

MicroBrite® LED Lighting

Give your pool the ultimate lighting upgrade. Pentair MicroBrite Color and White LED Lights provide exceptional brilliance, lighting uniformity and amazing colors. For new pool and spa designs, their compact size delivers the freedom to add dynamic lighting in places never before possible. Let your imagination take you to brighter places!

- 12V
- 150’ Cord

Other Pool, Spa and Fountain Lights

Transformers

WTP.50W

- IP Rating: IP68
- Input: 220V AC
- Output: 12V 60Hz
- Watts: 50W

WTP.150W

- IP Rating: IP68
- Input: 220V AC
- Output: 12V 60Hz
- Watts: 150W

WTP.350W

- IP Rating: IP66
- Input: 220V AC
- Output: 12V 60Hz
- Watts: 350W

MagicStream® Laminars

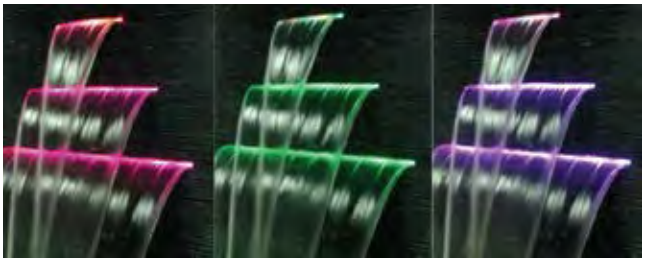
MagicStream® laminars create totally clear, uniform arcs of moving water that originate from either your pool deck or surrounding landscape. At night, these translucent streams are brilliantly colored with an LED light source. The result is a water effect that adds an elegant bit of entertainment to your poolscape.

- 16W 12V
- Compatible with Intellibrite Controller

Water Descents

Create relaxing waterfalls that fall into the pool. Optional RGB LED 12V lighting gives color to the waterfall.

- 300mm: 12V 4W
- 600mm: 12V 8W
- 900mm: 12V 12W
- 1200mm: 12V 17W



ColorVision Bubbler

ColorVision Bubbler combines GloBrite with the ColorVision Niche to create fountain-like water movement.

Deck Jet Water Effects

The standard Deck Jet comes with five interchangeable and adjustable water effect eyeballs. Streams can reach up to eight feet.

MagicStream Deck Jet II are installed flush and out of sight, allowing you to create different arc effects appearing from the pool deck. Height is adjustable up to 6 feet and water direction is adjustable 360 degrees.

Wave Ball

WONDERFUL WAVES

- Energy-efficient—uses maximum 4hp to produce wavesUnique and Fun Using resonance frequency to build up waves adding excitement to your pool experience
- Safe and Controlled—Can be configured easily, creating natural waves that are safe for children
- Customizable—With different colors and other added features to choose from

Ideal for pool 100m2 or greater, the Wave Ball is a floating sphere adorning your swimming pool that safely generates artificial waves.

The Wave Ball can be set to generate different kinds of waves, from slow and relaxing waves to fast agitated waves, and with height up to about 1 meter high.

Model	105FL	105F	130FL	130F	150FL	150F	165FL	165F	180F
Diameter (cm)	105	105	130	130	150	150	168	168	180
Height (cm)	86	86	114	114	128	128	149	149	149
Draft (cm)	25	30	31	38	36	41	46	52	55
Weight (kg)	180	210	330	420	500	580	780	800	1080
Power	3 x 12V CAS								
	1 x 230V + Ground			3 x 400V + Ground					
Max Consumption (kW)	0.5	0.7	0.7-1.1	1.2-1.8	1.7	1.9	2.5	3	Max 4.5
Min. Depth of Water (cm)	110	140	125	150	140	160	150	170	180
Ideal Pool Surface (m2)	35-110	40-410	60-200	60-240	70-350	80-400	100-500	100-600	130-800

Jet-flo Fountain Nozzles

Tulip Film/Bell Nozzle

Model	Size	Pressure (Kpa)	Discharge (m3/hr)	Water Height
NF8195	¾″	40	5.5	0.25
NF8205	¾″	40	5.5	0.25
NF8204	1″	50	7.3	0.25

Brass Straight Nozzle

Model	Size	Pressure (Kpa)	Discharge (m3/hr)	Water Height
NF8116	8mm	150	0.5-10	1-2
NF8115	10mm	150	0.1-10	1-3
NF8114	½″	150	0.3-1.5	1-4
NF8113	¾″	150	1-3	1-5
NF8112	1″	150	2-4	3-6
NF8111	1-½″	150	3-6	3-7

CYZB Foam Effect

Model	Size	Pressure (Kpa)	Discharge (m3/hr)	Water Height
CYZB NF8223	½″	80-150	2-4	0-5-2.0
CYZB NF8222	3-4″	80-150	4-9	1-3
CYZB NF8221	1″	150-200	9-15	1.5-4.0

CCQB Foam Effect

Model	Size	Pressure (Kpa)	Discharge (m3/hr)	Water Height
CCQB NF8233	3/4″	60-150	6-8	0.5-4 m
CCQB NF8232	1″	60-200	8-15	1.5-5.5 m
CCQB NF8231	1 ½″	80-200	15-18	2-7 m
CCQB NF8230	2″	80-250	20-25	2-12m

CBTB Foam Effect

Model	Size	Pressure (Kpa)	Discharge (m3/hr)	Water Height
CBTB NF8245	½″	30-150	2-4	1-2.5 m
CBTB NF8244	¾″	40-200	2-4	1-4 m
CBTB NF8243	1″	40-200	6-10	1-6 m
CBTB NF8242	1.5″	20-330	8-20	1-8 m
CBTB NF8241	2″	50-400	1-10	1-10 m

Fan Water Film Nozzle

Model	Size	Discharge (m3/hr)	Water Height	Dia.
NF8350	½″	2.5	0.2-0.6 m	0.4-0.8 m
NF8352	1	6-22	0.3-0.8 m	0.2-1.2 m

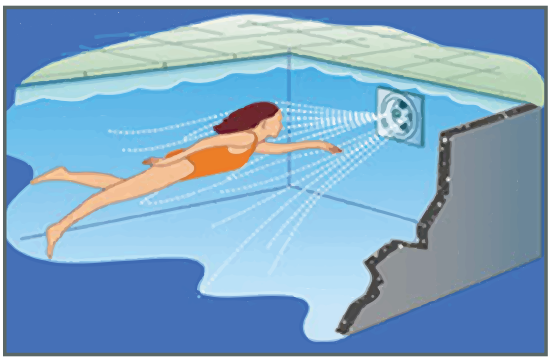
Multi-Jet Nozzle

Model	Size	Water Height
NF8140	2″	1-4 m

BADU

Burn calories, strengthen muscles, and soothe body aches by swimming against a current. Control the degree of your preferred workout—building your body, mind, and spirit along the way. Aquatic exercise is one of the best exercises you can do. Gentle and soothing swimming has historically been a superior method for staying in shape. Now you can convert a part of your pool to a space-saving athletic corner and enjoy all the benefits of this exceptional water therapy. The BaduJet counter swim units are a great addition to your fitness regimen, best for therapeutic and aquatic wellness areas.

Submerged Counterswim Units



BADU JET Smart

The compact submerged unit is installed in the pool wall. The direction nozzle control and stepless regulation of the water and air flow allow you to adapt the unit to suit your needs—whether underwater massage, bubble bath, wavepool and others.

- Flow Rate: 45 m3/hr (198 gpm)
- Electrical: 1.6 kW 1PH 60Hz

Wave

Badu Jet Wave is an instant classic counter swim unit that brings waves in your pool. The Badu Jet Wave is powerful enough for the advanced swimmer and brings fun or exercise.

- Flow Rate: 54 m3/hr (237 gpm)
- Electrical: 2.2 kW 1PH 60Hz

A Red Dot Design awardee, Badu Jet Vogue brings elegant design in the world of fitness swimming. The Badu Jet Vogue transforms a section of your pool into a water treadmill designed for the advanced swimmer.

- Flow Rate: 54 m3/hr (237 gpm)
- Electrical: 2.2 kW 1PH 60Hz

Badu Jet Primavera is the most powerful submerged counter swim unit. This is the perfect fit for the sports enthusiast looking for a healthy dose of swimming exercise.

- Flow Rate: 75 m3/hr (330 gpm)
- Electrical: 3.0 kW 1PH 60Hz

Over-the-Wall Counterswim Units

Luxury and relaxation becomes more affordable, even with the Badu Jet's reputation for reliability and innovation. Badu Jet Active Over-the-wall counter swim unit converts a small part of your pool into a personal excercise machine. Badu Jet Active is equipped with a swivel jet nozzle and bubble bath function for more relaxation options.

- Flow Rate: 20 m3/hr (88 gpm)
- Electrical: 0.75 kW 1PH 60Hz

BADU®Jet riva

Badu Jet Perla and Riva are designed for the active lifestyle. By placing them over a small segment of the pool wall, you can convert a small part of your pool into a continuous water treadmill. They feature an adjustable swivel jet that creates counter pressure or a relaxing underwater massage.

Perla
- Flow Rate: 54 m3/hr (237 gpm)
- Electrical: 1.6 kW 1PH 60Hz

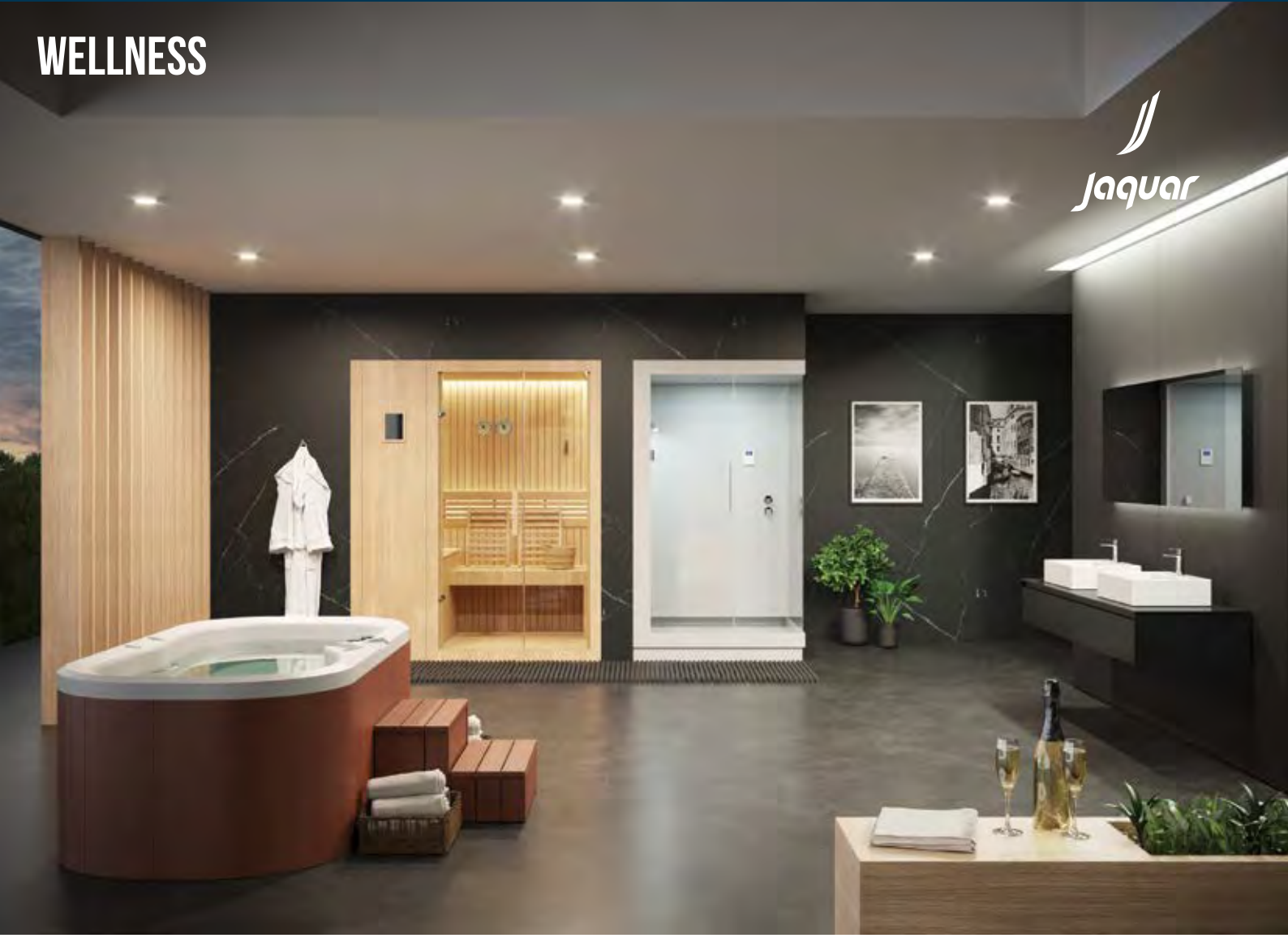
Riva
- Flow Rate: 54 m3/hr (237 gpm)
- Electrical: 2.2 kW 1PH 60Hz

Accessories

Wireless Remote

Massage Accessories for floor and wall connection for a full body massage experience.

Underwater mirror allows you to check your stroke or swimming form.



WHY SETTLE FOR JUST A BATHROOM?

CREATE A COMPLETE WELLNESS ZONE AT HOME!

Water, air, heat and light can work wonders for your body, and your mind. Create a Complete Wellness Zone in your home and heal the harm inflicted on you everyday by high-stress city life. Come home to the soothing power of Hydromassage, Airpool jets, dry heat, cleansing steam, Chromotherapy lights and much, much more. All backed by the assurance of Jaquar, India's most trusted bath brand.*

WHIRLPOOLS I SPAS I SAUNAS I STEAM CABINS I SHOWER PANELS I SHOWER ENCLOSURES

*Jaquar Syndicated Research Neilsen '13, Percept '16

Tolo Steam Generator

Model	kW	Room Volume (m3)	Heating Element (N x kW)	Voltage/Current (V/A)	Breaker (A)	Dimension (L x W x H) (mm)
TOLO-45 KEY	4.5	3.5-5.5	3x1.5	220-240/18.2	25	425 x 160 x 315
TOLO-60 KEY	6	5-7	3x2.0	220-240/27.3	40	425 x 160 x 315
TOLO-90 KEY	9	8-11	6x1.5	220-240/42	50	475 x 185 x 450

Model	kW	Room Volume (m3)	Heating Element (N x kW)	Voltage/Current (V/A)	Breaker (A)	Dimension (L x W x H) (mm)
TOLO-4.0 AIO	4	3-5	2x2.0	220-240/18.2	25	425 x 160 x 35
TOLO-6.0 AIO	6	5-7	3x2.0	220-240/27.3	40	425 x 160 x 35
TOLO-9.0 AIO	9	8-11	6x1.5	220-240/42	50	475 x 185 x 150

Steam Generator Accessories

Steam Head

Sauna Door

Sauna Aromatherapy

Colored Lights

Tolo Dry Sauna Heater

Model	kW	Voltage/Current (V/A)	Dimensions H x W x D mm	Sauna Room Dimensions		Minimum Distance to (mm)			Stone (Kg)
				Volume m3	Min. Height m	Side Wall	Floor	Ceiling	
TOLO-A30	3.0	220-240/13.6	565 x 399 x 279	2-4	1.9	50	180	1100	12
TOLO-A45	4.5	220-240/20.5		3-6	1.9	80	180	1100	18
TOLO-A60	6.0	220-240/27.3		5-9	1.9	100	180	1100	18
TOLO-A90	9.0	220-240/40.9		9-13	1.9	130	180	1100	20

Sauna Accessories

Sauna Stones

Pail and Ladle

Sand Timer

Thermohygrometer

OTHER EQUIPMENT AND ACCESSORIES

Pool Maintenance and Safety


Algae Brush


Pool Brush


Corner Brush


Leaf Rake


Leaf Scoop


Leaf Scoop Deluxe


Vacuum Head 19”


Vacuum Head


Telescopic Pole


Vacuum Hose


Hose Adapter


Life Hook

Pool Chemicals

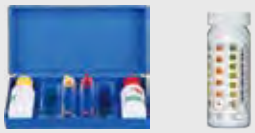

Copper Algaecide


Algaecide 60


Pool Clarifier


Chlorine


Dry Acid


Test Kit and Strips


Floating Chlorinator


Inline Chlorinator

Valves and Plumbing


Praher Multiport Valve


PVC Slide Valve Kit


Two-way Check Valve


Union


Blue-White Flow Meter

Surrounding Equipment

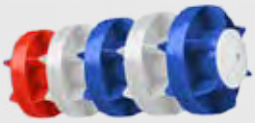

Grab Rail


Grating Tile


Step Ladder


Rope Float

Competition Equipment


Lane Floats


Starting Block

OTHER EQUIPMENT AND ACCESSORIES

White Goods and Pool Fittings


Sta-Rite Skimmer


Skimmer


Wide Skimmer


StarGuard Main Drain


Frame and Grate


9x9 Frame Grate


Main Drain


Plug


Suction Fitting


Deckbox


Return Eyeball, Straight/Slotted


Hydrostatic Valve


Gutter Drain


Adjustable Inlet Fiting

Spa Fittings


Manifold


Spa Jet Straight


Spa Jet


Spa Jet T-Type


Spa Jet Chrome


Bath Drain


Air Regulator


Air Regulator


Air Nozzle


Air Button

Spa Pumps


XDA Spa Pump


WDH Spa Pump

Air Blowers


Spa Blowers


Santanna Blower


Ring Blower

Specialty Pumps


Fountain Pump


Pond and Aquarium Pumps

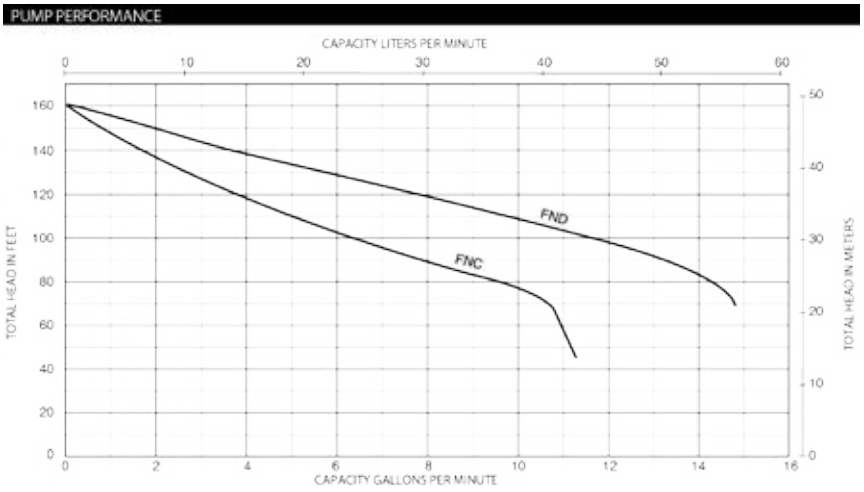

Dosing Pumps

SHALLOW WELL JET PUMPS

FN Series

Cast Iron Shallow Well Jet Pumps

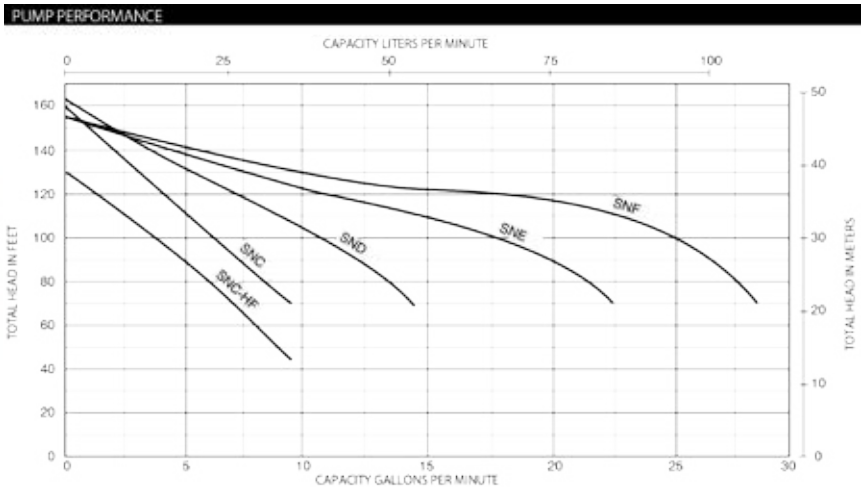
- Max. Liquid Temperature: 140°F
- FNC Max. Inlet Pressure: 60 PSI
- FND Max. Inlet Pressure: 50 PSI
- Max. Inlet PSI + Pump Discharge PSI: Not to exceed 100 PSI
- Body and Base: Close-grained cast iron
- Nozzle: High-strength polycarbonate
- Venturi: Polycarbonate
- Impeller: Noryl®
- Diffuser: Reinforced polypropylene
- Shaft: One-piece threaded stainless steel



SN Series

Cast Iron Shallow Well Jet Pumps

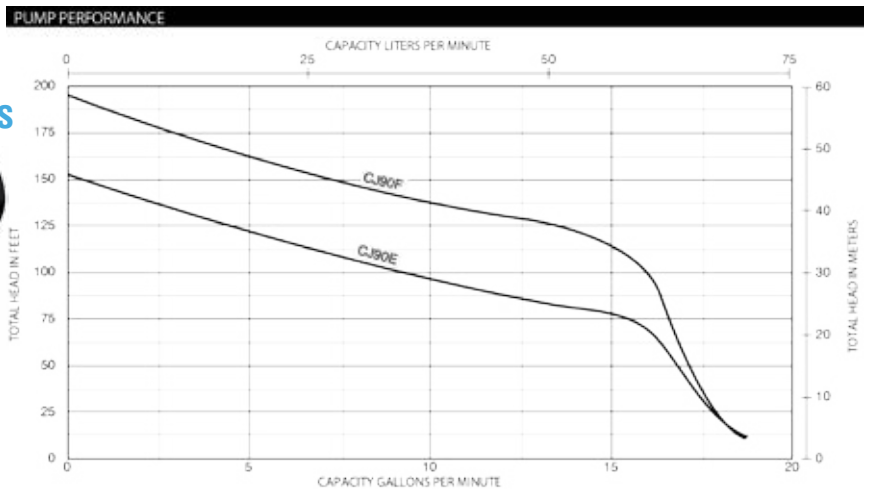
- Max. Liquid Temperature: 140°F
- Max. Inlet Pressure: 50 PSI
- Body: Close-grained cast iron
- Nozzle: High-strength Lexan®
- Venturi: Lexan
- Impeller: Noryl®
- Diffuser: Reinforced polypropylene
- Shaft: One-piece threaded, 416 grade stainless steel
- Base: Steel, 12 gauge



CJ Series

Stainless Steel Shallow Well Jet Pumps

- Maximum Liquid Temperature Limits: 122°F (50°C)
- Max. Inlet Pressure: 50 PSI
- Body: 304 Stainless steel
- Jet Assembly, Diffuser, Impeller: Noryl®
- Shaft: One-piece threaded, 416 grade stainless steel
- Base: Polypropylene



Standard Features for All Shallow Well Jet Pumps

- Built-in Jet: High-strength nozzle and venturi for maximum resistance to corrosion and abrasion; Clean-out plug provided
- Mechanical Shaft seal: Precision lapped and highly polished carbon-ceramic, stainless steel construction
- Balanced Rotor: Die-cast under high pressures for uniform performance and greater efficiency, dynamically balanced
- Heavy-Duty Ball Bearings: Shielded permanently lubricated bearings, extensively tested to ensure extended life and smooth, quiet operation
- Pump and motor shaft: Stainless steel for maximum corrosion resistance; one-piece threaded shaft for positive impeller drive and alignment
- Dust-proof cover
- Pressure Switch: Adjustable cut-in and fixed differential (20 PSI)

Model	HP	SWITCH SETTING	SUCTION	DISCHARGE
FN Series				
FNC	½	30-50	1-¼"	1"
FND	¾	30-50	1-¼"	1"
SN Series				
SNE	1	30-50	1-¼"	1"
SNF	1-½	30-50	1-¼"	1"
CJ Series				
CJ90E	1	30-50	1-¼"	1"
CJ90F	1-½	40-60	1-¼"	1"

FL Series

Cast Iron, Self-priming Convertible Jet Pumps

- Body and Base: Close-grained cast iron
- Impeller: Lexan®
- Diffuser: Reinforced polypropylene
- Shaft: One-piece threaded 416 stainless steel
- Pressure Switch Pre-Set: 30–50 PSI
- Suction Ports: Drive-over-Suction

ProJet™ HL and SL Series

Cast Iron, Self-priming Convertible Jet Pumps

- Body and Seal Plate: Close-grained cast iron
- Impeller: High-strength Noryl®
- Diffuser: Reinforced polypropylene with brass wear ring
- Shaft: One-piece threaded 416 stainless steel
- Base: Steel, 12 gauge
- Max. Liquid Temperature: 140°F
- Max. Inlet Pressure: 50 PSI
- Pressure Switch Pre-Set: 30-50 PSI
- Suction Ports: “Suction-over-Drive”
- Pressure Gauge Included for HL Models

Standard Features for Self-priming Convertible Jet Pumps

- Quality Construction: Close Grained cast iron body and base, specially treated for corrosion resistance
- Built-in Jet: High-Strength polycarbonate nozzle and venturi for maximum resistance to corrosion and abrasion; Clean-out plug provided for ease of service
- Precision-Molded Diffuser: Pump primes faster, handles more air, with multi-port, precision-molded, reinforced polypropylene diffuser
- Mechanical Shaft seal: Precision lapped and highly polished carbon-ceramic, stainless steel construction
- Dynamically Balanced Rotor: Die-cast under high pressures for uniform performance and greater efficiency
- Heavy-Duty Ball Bearings: Shielded permanently lubricated bearings, extensively tested to ensure extended life and smooth, quiet operation
- Pump and motor shaft: Stainless steel for maximum corrosion resistance; one-piece threaded shaft for positive impeller drive and alignment
- Dust-proof cover: All electrical components are protected from dirt, dust and insects by a dust-proof canopy

Model	HP	JET NO.	USES VENTURI	USES NOZZLE	Pumping Depth in Feet											MAX. PUMP SHUT-OFF PRESSURE-PSI	
					20′	30′	40′	50′	60′	70′	80′	90′	100′	110′	120′	JET AT 20 FT. DEPTH	JET AT MAX. DEPTH
Deep well (40psi) 2″ single pipe																	
HLE	1	9AP	J32P-29	J34P-44	11.7	11.1	9.8	6.8								69	57
		8AP	J32P-18	J34P-42	6.7	5.8	5.3	4.7	4.5	4.1	3.8	3.1	2.6	2.0	1.6	129	72
SLE	1	10AP	J32P-24	J34P-44	10.5	10.0	8.1	6.2								96	79
		54AP	J32P-22	J34P-44	6.0	5.3	4.8	4.2	4.1	3.7	3.5	2.8	2.1	1.6		95	53
FLD	¾	54AP	J32P-22	J34P-44	7.4	6.3	5.2	3.9	2.5	2.0						82	54
Deep well (40psi) 3″ single pipe																	
HLE	1	54CP	J32P-22	J34P-44	9.5	8.5	7.4	6.9	6.5	6.0	5.4	4.8	4.2	3.6	2.9	127	54
SLE	1	18CP	J32P-34	J34P-44	13.0	11.5	9.9	8.7	7.5	6.6	5.4					106	80
		54CP	J32P-22	J34P-44	8.5	7.7	6.7	6.3	5.8	5.4	4.8	4.0	3.7	3.4	2.7	122	73
		57CP	J32P-33	P122-10B	18.0	15.4	12.8	10.8								81	68
FLD	¾	9CP	J32P-26	J34P-41	9.4	8.0	6.6									77	68
		54CP	J32P-22	J34P-44	8.0	6.9	5.7	4.8	3.8	3.2						94	70

MS Series

Cast Iron Vertical Deep Well Jet Pumps

- Body: Rugged cast iron
- Pump and Motor Shaft: 416 stainless steel
- Impellers: Noryl®
- Diffuser: Close-grained cast iron

Features

- Automatic Pressure Regulator: Faster acting and quieter design eliminates “hunting” for correct drive pressure. New, improved stem and guide are precisely molded to assure efficient, trouble-free performance on all deep wells
- Quality Construction: Close-grained cast iron pump body and base are specially treated to resist corrosion
- Noryl Impellers: Precision-molded for perfect balance
- Pressure Switch: High quality. Differential and cut-in/cut-out pressure settings are adjustable
- Mechanical Shaft Seal: Precision-lapped and highly polished carbon-ceramic, stainless steel construction
- Dustproof Cover: All electrical components are protected from dirt, dust and insects by a dustproof canopy
- Dynamically Balanced Rotor: Rotor is diecast under high pressures for uniform performance, greater efficiency
- Heavy-Duty Ball Bearings: Permanently lubricated sealed bearings are extensively tested to ensure extended life and smooth, quiet operation
- Pump and Motor Shaft: Stainless steel for maximum corrosion resistance; one-piece threaded shaft for positive impeller drive and alignment

Model	HP	MAX. PRESS. REG. SETTING	PIPE TAPPING SIZES			MOTOR VOLTAGE
			SUCTION	DRIVE	DISCHARGE	
MSD	3/4	40 PSI	1-¼″	1″	1″	115/230
MSE	1	60 PSI	1-¼″	1-¼″	1″	115/230
MSF	1-½	85 PSI	1-¼″	1-¼″	1″	230
MSG	2	95 PSI	1-¼″	1-¼″	1″	230

PUMP PERFORMANCE (Capacity in gallons per minute)DEEP WELL (40 PSI) 2″ SINGLE PIPE

Model	HP	JET NO.	USES VENTURI	USES NOZZLE	PUMPING DEPTH IN FEET																MAX. PUMP SHUT-OFF PRESS. PSI	
					30′	40′	50′	60′	70′	80′	90′	100′	110′	120′	130′	140′	180′	200′	220′	240′	260′	JET AT MIN. DEPTH	JET AT MAX. DEPTH
MSD	¾	12AP	J32P-24	J34P-42	10.0	8.3	6.1	4.7	3.8	2.0	1.4											79	50
		8AP	J32P-18	J34P-42	5.5	5.4	5.2	5.0	4.4	4.3	4.1	3.7	3.1	2.4	2.1	1.4						135	73
MSE	1	12AP	J32P-24	J34P-42	12.1	11.3	11.2	10.0	8.8	7.6	6.5	5.6	3.3	1.8								118	80
		8AP	J32P-18	J34P-42	5.5	5.5	5.3	5.3	5.2	5.1	5.0	5.0	5.0	5.0	4.5	4.2	2.0					198	126
MSF	1-½	12AP	J32P-24	J34P-42	12.2	12.0	12.0	12.0	11.5	11.2	9.7	8.3	6.8	5.5	4.2	3.3						162	110
		8AP	J32P-18	J34P-42	5.5	5.5	5.5	5.5	5.5	5.3	5.2	5.1	5.0	5.0	5.0	4.8	4.3	3.5	2.7	1.7		266	158
MSG	2	12AP	J32P-24	J34P-42	12.2	12.0	12.0	12.0	11.7	11.2	11.0	10.3	8.3	7.5	6.3	5.3						193	139
		8AP	J32P-18	J34P-42	5.5	5.5	5.5	5.5	5.5	5.3	5.2	5.2	5.1	5.1	5.0	4.8	4.7	4.3	3.7	3.2	2.5	312	192

PUMP PERFORMANCE (Capacity in gallons per minute) DEEP WELL (40 PSI) 3″ SINGLE PIPE

Model	HP	JET NO.	USES VENTURI	USES NOZZLE	PUMPING DEPTH IN FEET																			MAX-PUMP SHUT-OFF PRESSURE PSI	
					30′	40′	50′	60′	70′	80′	90′	100′	110′	120′	130′	140′	180′	200′	220′	240′	260′	280′	300′	320′	JET AT MIN. DEPTH.	JET AT MAX DEPTH
MSD	¾	23CP	J32P-24	J34P-42	10.2	8.4	6.8	5.8	4.5	3.1	2.1	1.1													80	46
		17CP	J32P-29	J34P-44	12	10.4	8.5	6.6	4.3	2.1															77	50
		16CP	J32P-18	J34P-42	5.5	5.4	5.3	5.2	4.7	4.3	4.1	3.7	3.1	2.7	2.3	1.9									137	75
MSE	1	23CP	J32P–24	J34P-42	12.1	11.7	11.6	11.1	10.2	9.2	7.8	6.4	5.0	4.0	3.0										120	76
		16CP	J32P-18	J34P-42	5.5	5.5	5.5	5.4	5.3	5.3	5.2	5.1	5.1	5.0	4.8	4.5	3.3	2.7	2.0	1.3	1.0				200	97
MSF	1-½	23CP	J32P–24	J34P-42	12.2	12.2	12.2	12.2	11.7	11.3	10.7	9.9	9.0	8.3	7.0	4.0	1.3								164	95
		22CP	J32P–20	J34P-42	7.7	7.7	7.7	7.5	7.5	7.4	7.3	7.3	7.2	7.2	7.0	7.0	4.3	4.0	3.2	2.2					210	110
		16CP	J32P-18	J34P-42	5.5	5.5	5.5	5.5	5.5	5.5	5.3	5.2	5.2	5.1	5.0	5.0	4.9	4.7	4.0	3.8	3.0	2.3	1.7		268	132
MSG	2	23CP	J32P–24	J34P-42	12.2	12.2	12.2	12.2	11.8	11.3	11.2	11.1	11.0	10.0	8.7	7.0	4.0	2.0							195	110
		22CP	J32P–20	J34P-42	7.7	7.7	7.7	7.5	7.5	7.4	7.3	7.3	7.2	7.2	7.0	7.0	5.3	5.0	4.7	4.0	3.0	2.2			250	128
		16CP	J32P-18	J34P-42	5.5	5.5	5.5	5.5	5.5	5.5	5.3	5.3	5.2	5.1	5.1	5.0	5.0	4.8	4.7	4.5	4.3	4.0	3.3	2.7	314	172

HS Series Signature 2000

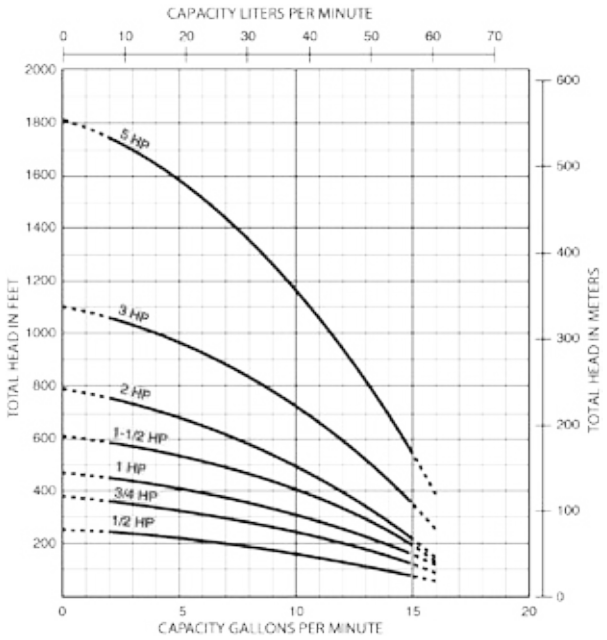
Stainless Steel Sumersible Pumps

- Shell: Stainless steel
- Diameter: 3-⅞”
- Discharge: Stainless steel
- Discharge Bearing: Nylatron®
- Intermediate Bearing: (On larger units) polycarbonate, nitrile rubber and stainless steel
- Impellers: Acetal
- Diffusers: Polycarbonate
- Suction Caps: Polycarbonate with stainless steel insert
- Thrust Pads: Proprietary spec
- Shaft and Coupling: Stainless steel
- Intake: Stainless steel
- Intake Screen: Polypropylene
- Cable Guard: Stainless steel
- Check Valve: Acetal
- Agency Listings: CSA

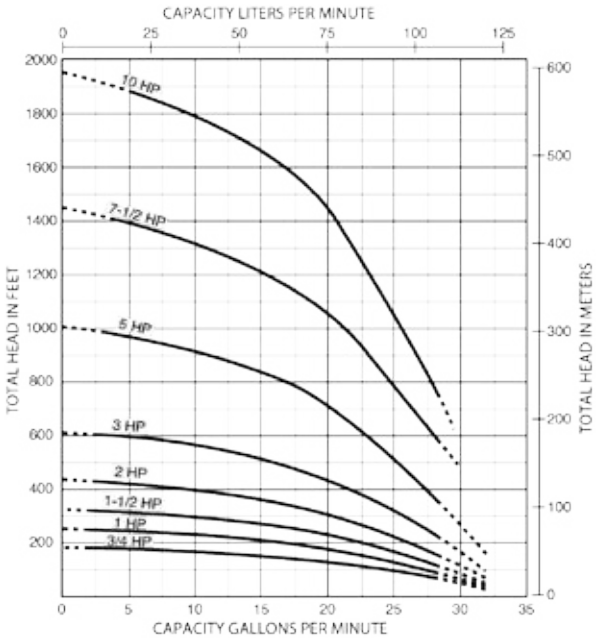
Features

- SignaSeal™ Staging System – Harder-than-sand ceramic wear surface and floating impeller design greatly reduces problems with abrasives, sand lock-up and running dry
- Discharge and Intake – 300 grade stainless steel for durability in aggressive water
- Discharge Bearing – Exclusive self-lubricating Nylatron® bearing resists wear from sand
- Shaft – Positive drive from 7⁄16” hexagonal heavy-duty 300 grade stainless steel
- Coupling – Stainless steel press fit to pump shaft
- Shell – Highest grade, heavy-walled stainless steel
- Hardware – All screws, washers and nuts are 300 grade stainless steel
- Check Valve–Durable internal spring-loaded check valve
- Cable Guard – Stainless steel guard protects motor leads
- Intake Screen – Corrosion-proof

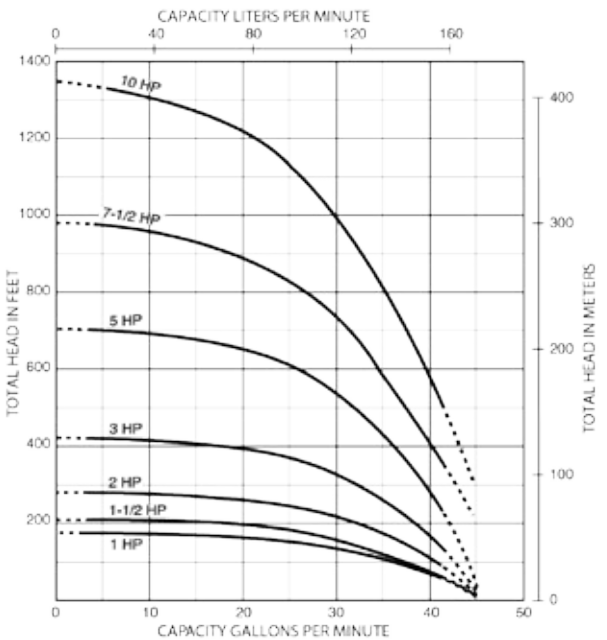
PUMP PERFORMANCE – 10 GPM



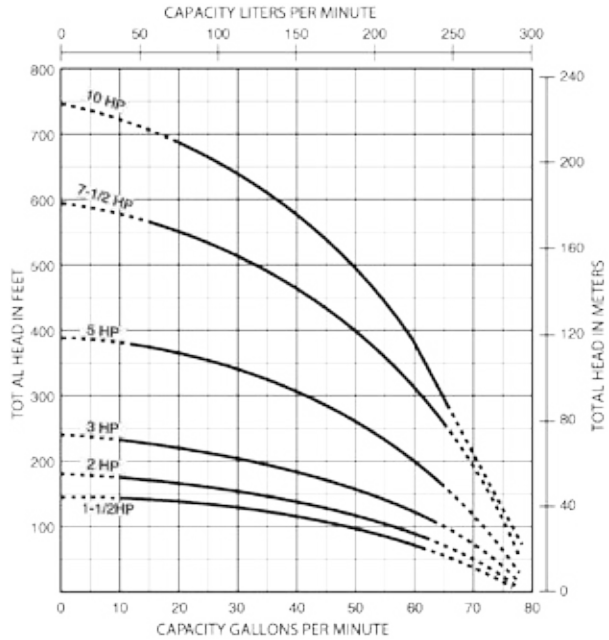
PUMP PERFORMANCE – 20 GPM



PUMP PERFORMANCE – 30 GPM



PUMP PERFORMANCE – 50 GPM



J/JB Series

General Purpose Centrifugal Pumps

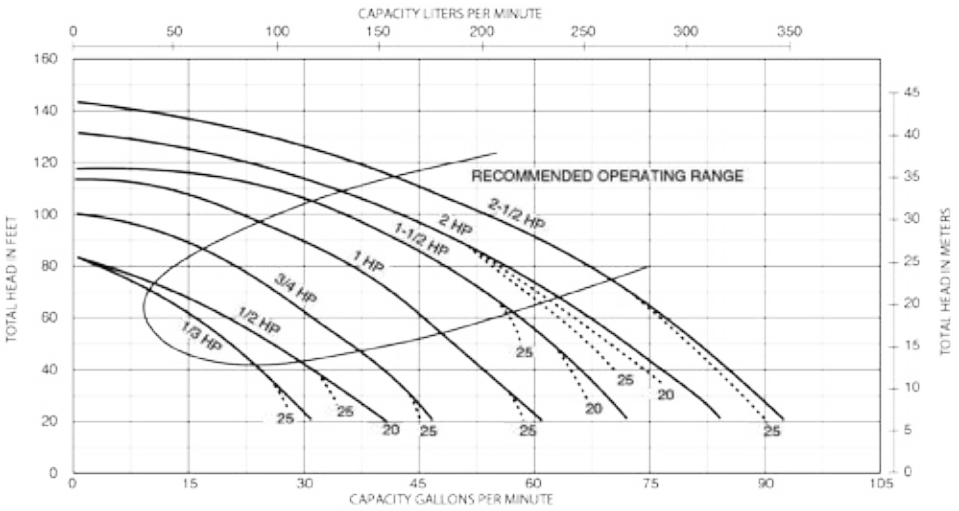
- Maximum Case Pressure. 125psi
- Body and Seal Plate: Close-grained cast iron
- Base: Steel 12 gauge
- Impeller: J Series – Noryl
- Impeller: JB Series – Silicon bronze
- Shaft: 416 stainless steel
- Mechanical Seal: Carbon/ceramic, Buna-N

Features

- Heavy-duty motors and four position discharge
- Easy Serviceability: All models include replaceable wear ring and feature back pull-out design
- J Series with Noryl Impellers: Working temperatures to 140°F
- JB Series with Silicon Bronze: Rated for temperatures to 225°F

Model	HP	Pipe Tapping Sizes			
		Suction	Dis-charge	Motor Voltage	Phase
JHE	1	1-¼″	1″	115/230	1
JHF	1-½	1-¼″	1″	115/230	1
JHG	2	1-½″	1-¼″	115/230	1
JHHG	2-½	2″	1-½″	115/230	1
JHE3	1	1-¼″	1″	208-230/460	3
JHF3	1-½	1-¼″	1″	208-230/460	3
JHG3	2	1-½″	1-¼″	208-230/460	3
JHHG3	2-½	2″	1-½″	208-230/460	3

PUMP PERFORMANCE: HIGH HEAD



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

DS2 Series

Self-priming Centrifugal Pumps

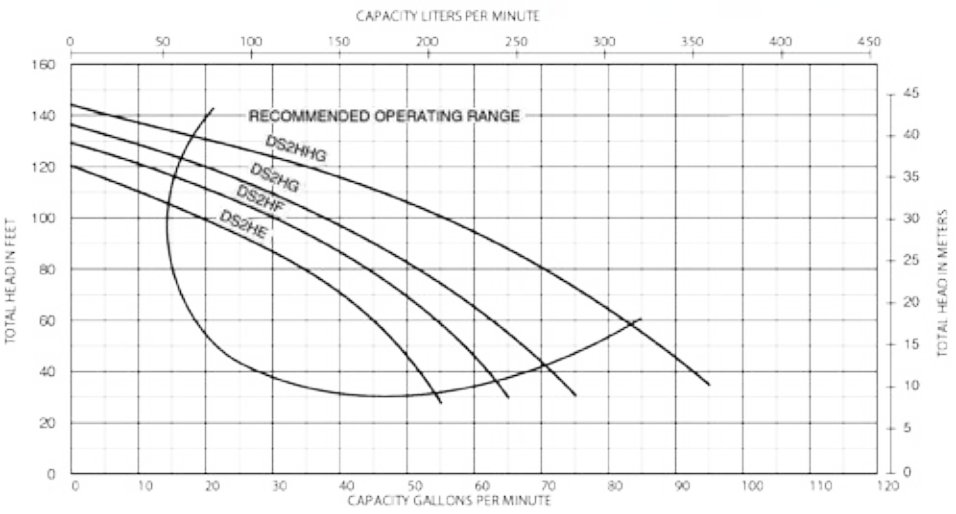
- Body and Base: Close-grained cast iron
- Impeller: Lexan® or Noryl®
- Diffuser: Polypropylene
- Shaft: Stainless Steel

Features

- Rugged Construction: Heavy-Duty Motors, easy service design
- Easy Serviceability: Normal wearing parts are easily accessible for service and replacement, without disturbing piping or mounting.
- Heavy-Duty Motors: Designed for continuous operation. Capacitor start, will not cause electrical interference with TV or other appliances. Nationally known motors have ball bearing. stainless steel shaft, For single and three phase operation, 3450 RPM.

Model	HP	Suction	Discharge	Motor Voltage	Phase
DS2HF	1-½	2″	1-½″	115/230	1
DS2HG	2	2″	2″	230	1

PUMP PERFORMANCE



D Series

Self-priming Centrifugal Pumps

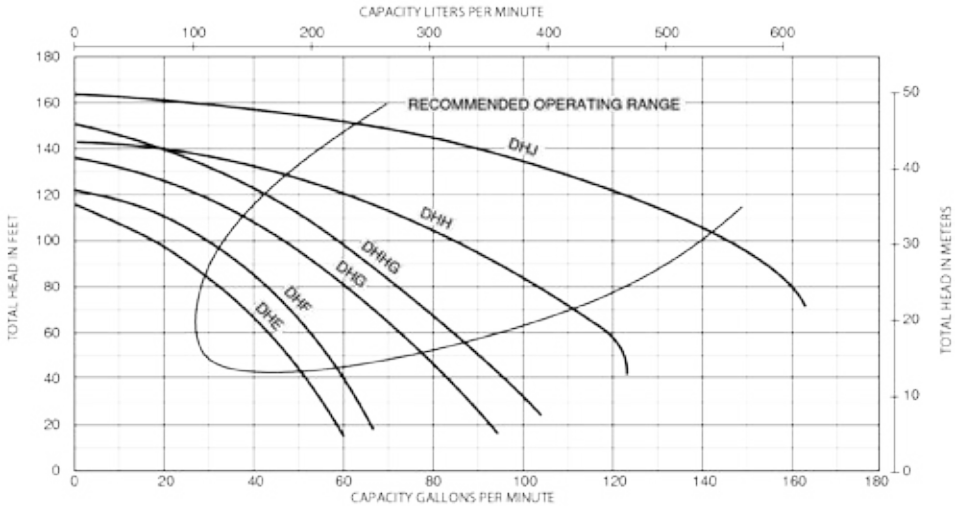
- Body and Base: Close-grained cast iron
- Impeller: Noryl® on 1 through 2-½ HP, bronze on 3 and 5 HP
- Diffuser: Cast iron
- Shaft: 1 through 2-½ HP: 416 stainless steel; 3 and 5 HP: Carbon steel inside removable shaft sleeve of stainless steel.
- Max Inlet Pressure: 20 PSI
- Max Discharge Pressure: 100 PSI
- Max Liquid Temperature: 60°C/140°F
- Max Ambient Air Temperature: 40°C/104°F

Features

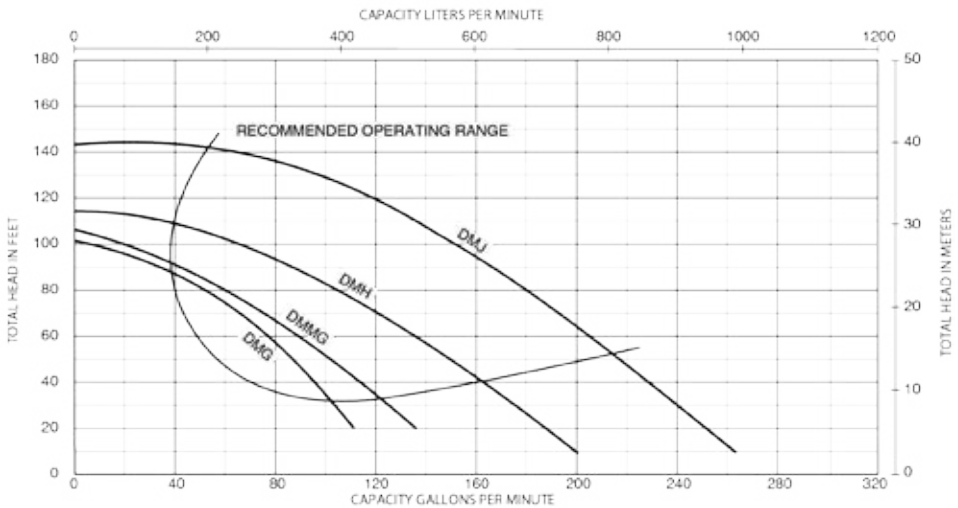
- Easy Serviceability: Normal wearing parts are easily accessible for service and replacement, without disturbing piping or mounting
- Heavy-Duty Motors: Designed for continuous operation. Capacitor start, will not cause electrical interference with TV or other appliances; Nationally known motors have ball bearing, stainless steel shaft; For single and three-phase operation, 3450 RPM

Model	HP	Top Discharge	Motor Voltage
DHG	2	2″	230 - 1PH
DHH	3	1 1/2″	230 - 1PH
DHH3	3	1 1/2″	208-230/460 - 3PH
DHJ	5	2″	230 - 1PH
DHJ3	5	2″	208-230/460 - 3PH
DMH	3	2″	230 - 1PH

PUMP PERFORMANCE: HIGH HEAD



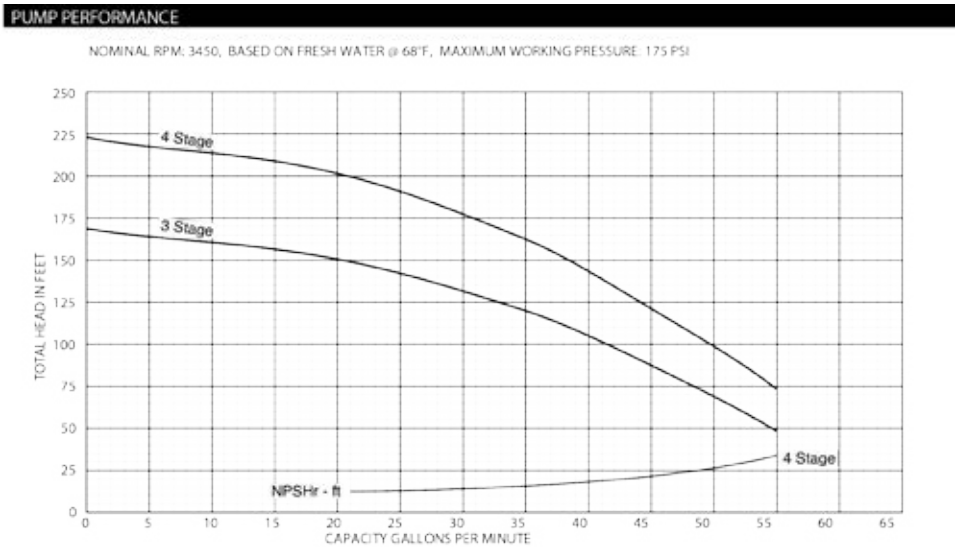
PUMP PERFORMANCE: MEDIUM HEAD



SSHM Pro-Storm Series

Self-priming Multi-stage Pumps

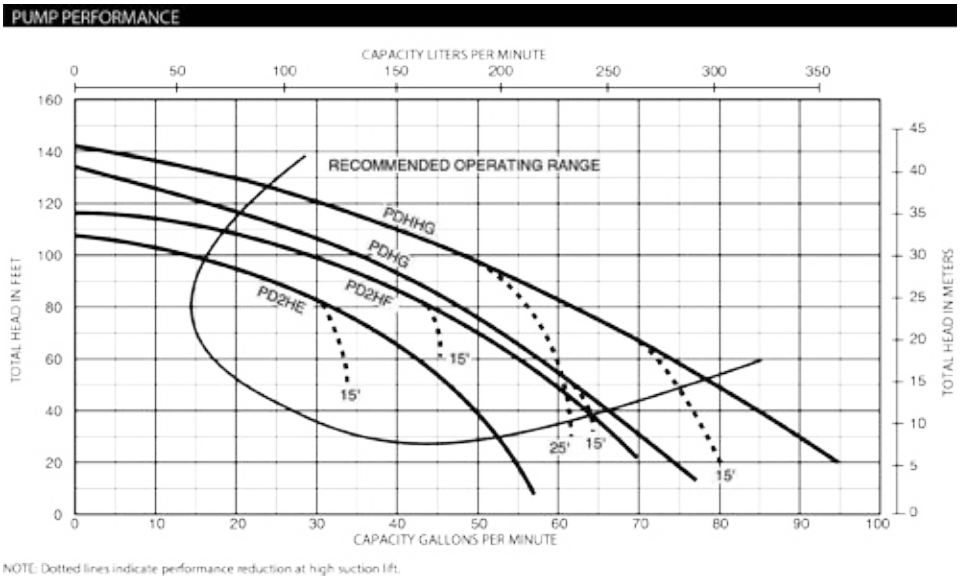
- Heavy-Duty 2 HP Motor rated for continuous duty
- Suction: Close-grained Cast Iron 1-1/2" NPT
- Discharge: Close-grained Cast Iron 1-1/4" NPT
- Outer Shell: Polished 304 Stainless Steel
- Shaft: 303 Stainless Steel
- Impellers and Diffusers: Noryl®
- Maximum Inlet Pressure 20PSI
- Maximum Discharge Pressure 130PSI
- Maximum Suction Lift: 15 feet



PD Series

Corrosion-resistant Self-priming Sprinkler Pumps

Model	HP	Suction	Discharge	Motor Voltage
PD2HF	1-½	2"	1-½"	115/230
PDHG	2	2"	2"	115/230



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

HP/HPS Series Signature 2000®

High Pressure Booster Pumps

- Signal Seal Staging System: Ceramic wear surface with Sta-Rite's independent floating impellers gives first class performance, superior sand handling and thrust management staging system
- Acetal Impellers: Precision-molded for perfect balance
- Precision-Molded Diffusers: Polycarbonate; high resistance to corrosion and abrasion
- Mechanical Shaft Seal: Carbon-ceramic, Buna-N, stainless steel construction
- Pump and Motor Shaft: Stainless steel 304 grade

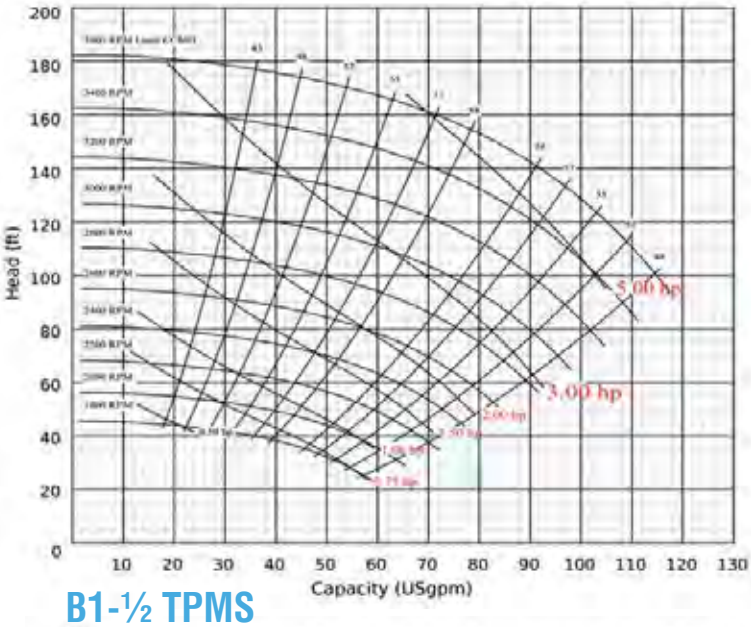
Model	GPM	Stages	HP	Total Head in Feet																				
				75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550
HP7C	7	9	½	10.8	10.3	9.6	9.2	8.5	7.8	7.0	6	4.9	3.5	1.5									
HP7E	7	16	1	11.8	11.7	11.4	11.2	10.9	10.6	10.3	10	9.6	9.2	8.7	8.3	7.6	7.2	6.5	6.0	5.2	4.4	3.5	2.2
HP10F	10	14	1.5						14.7	14.3	13.8	13.3	12.6	12.1	11.4	10.6	10	9.1	8.2	7.5	6.2	5.1	4
HP20E	20	7	1	27.5	26.7	24.6	22	20	17.5	14	8												
HP20F	20	9	1.5			27	26	24	22.5	20	17.6	15	10.1	5									
HP20G	20	11	2			27.5	27	25.8	24.2	22.9	22	19.8	17.6	15.3	12.5	9	5						
HP20H	20	15	3										27.7	27	26.5	25	23.5	22.4	20.9	18.8	16.3	12.8	9
HP30E	30	5	1	38.5	36.3	32.6	28.1																
HP30G	30	7	2	42.7	40.1	37.5	34.6	31.3	27.8	21.9													

BERKELEY® Type B Centrifugal Pumps

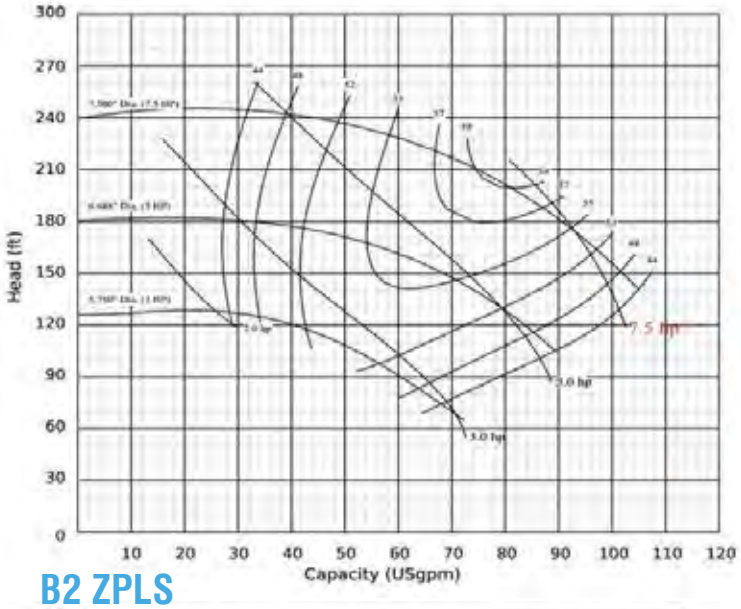
Berkeley's Type B close-coupled end-suction centrifugal pumps are ideal for most applications requiring high performance, easy maintenance.

- Cast iron construction with unique back pull-out
- NEMA motors: efficient, low maintenance & quiet performance
- High quality, self-lubricating mechanical shaft seal with corrosion resistant metal parts provides maintenance-free operation and maximum abrasion resistance without leaking
- Motor bracket is precision machined for proper component sealing
- Replaceable stainless steel shaft sleeve provides maximum corrosion resistance and protects shaft from wear
- Discharge may be rotated to any of four positions

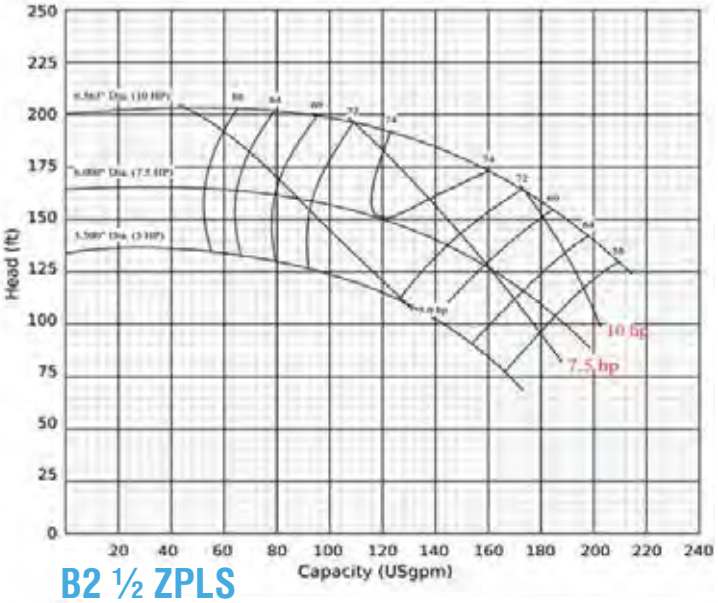
B1-½ TPLS



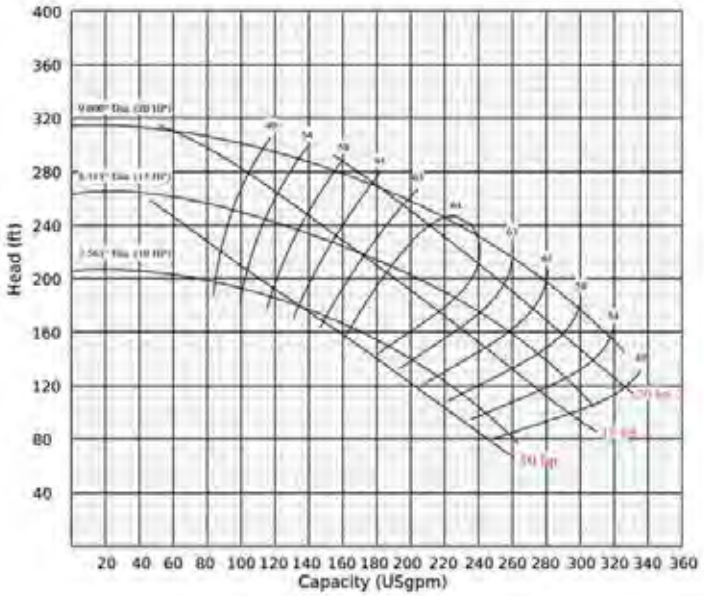
B1 WPS



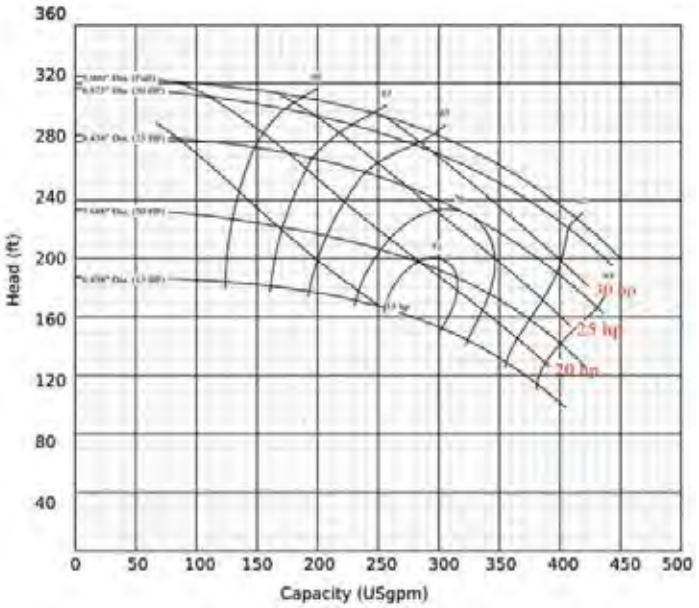
B1-½ TPMS



B2 ZPLS



B2 ½ ZPLS



Jet-Flo Inverter Pump System

Features

- All-in-one booster pump set / stainless steel multi-stage pump, valve, pressure tanks, and inverter (VFD)
- User-adjustable Constant Water Pressure: No water hammer in piping system
- Compact Design saves space: Low noise operation to uplift standard of living
- Saves Electricity Cost: Inverter (VFD) will change motor speed depending on water volume consumption
- Dry-run Detection: Protects motor from burnout if water shortage occurs
- Rust-free Water: Main pump parts are rust-free material to ensure safe and clean water supply

Operating Conditions

- Ambient Temperature: 0~+40°C
- Liquid Temperature: 0~+60°C
- Relative Humidity: Max. 85 %(RH)
- Before using the pump, be sure the inlet pressure setting is lower than the factory preset activation point
- Water Quality: Drinking water, tap water, or other non-corrosive clean liquids without abrasives

Applications

- Automatically boost water pressure to the house, villa, apartment, restaurant, school, beauty shop, etc.
- Automatically boost water pressure to garden sprinkler, heater, toilet, washing machine, reverse osmosis device.

What is an Inverter or Variable Frequency Drive?

An Inverter drive or Variable Frequency Drive (VFD) is a frequency or speed controller that allows the user to control the speed of pumps and motors to rotate at varying speeds depending on the demand of the system or process that it carries out.

Why use an Inverter Drive?

Without the inverter drive your pump or motor will either be at full speed or switched off. Its main purpose is to control a process accurately. Take water boosting systems for example, controlling the speed of the pump ensures constant pressure anytime.

Compared with traditional water tower and high tank way, constant pressure ensures the required pressure and flow rate by controlling the speed of the pump as necessary. This translates to significant energy savings and increased life expectancy.

Benefits of using an Inverter Drive?

- Energy savings
- Improved control
- Reduced wear and less maintenance
- Reduced stress on pipework, valves and associated systems
- Better motor protection

Product Specifications

Model	# of Pumps	HP	Inlet/Outlet (inches)	GPM			
				40 psi	50 psi	60 psi	70 psi
CP-WLD-CMF2-30T	1	3/4	1 x 1	10.5	5		
CP-WLD-CMF2-40T	1	1	1-1/4 x 1	15	12	8.5	
CP-WLD-CMF2-50T	1	1	1-1/4 x 1	17	15	12	
CP-WLD-CMF4-40T	1	1.5	1-1/4 x 1	32	28	24	
CP-WLD-CMF8-15T	1	2	1-1/2 x 1-1/4	43	30		
CP-B603-CMF8-15T	2	2	1-1/2 x 1-1/4	43	30		
CP-B603-CMF8-20T	2	2.5	1-1/2 x 1-1/4	50	43	31	
CP-B603-CMF8-25T	2	3	1-1/2 x 1-1/4		54	46	40
CP-B603-CM12-15T	2	3	1-1/2 x 1-1/2	65	60	54	46

Pump Controls and Accessories

Electronic Pump Controls

Pressure Switch

Flow Switch

Tank Volume Control

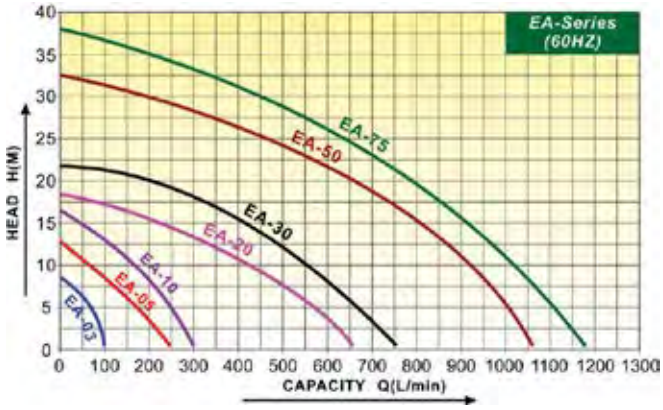
Float Switch

Pressure Gauge

EA Sump Pumps

Features

- Dry motor with overload protector
- Superior abrasion resistant double mechanical seal
- Oil seal mounted outside of seal chamber stops solids gathering around seal faces
- Equipped with SUS304 strainer to prevent impeller from being blocked or damaged by sewage or solids



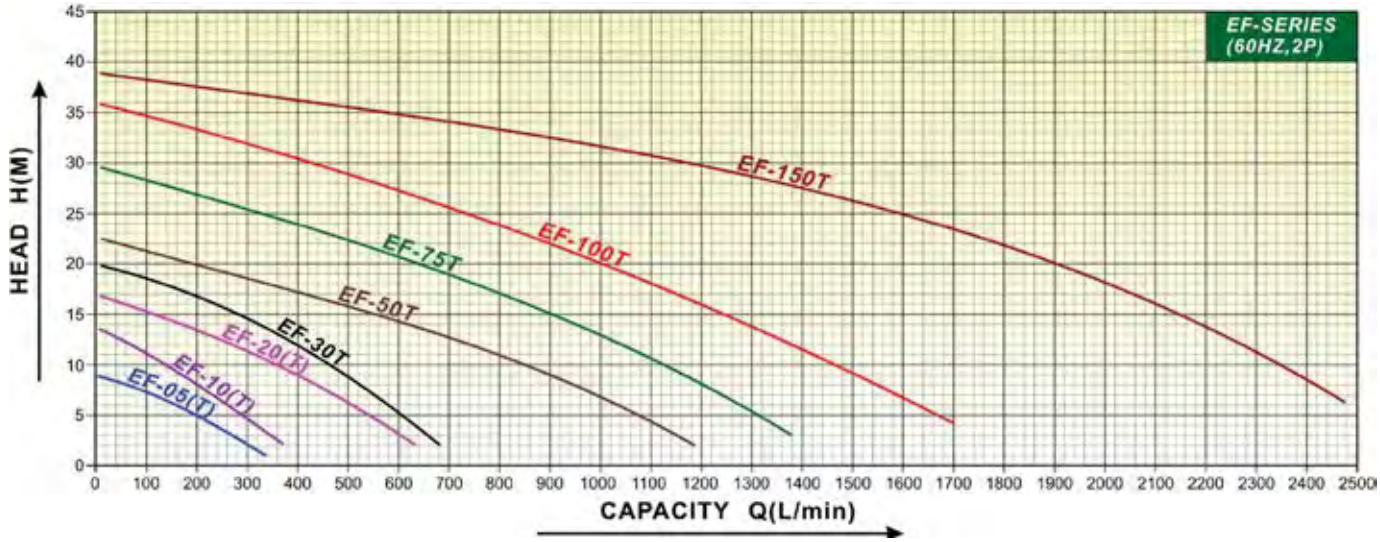
EF Sewage Pumps

Features

- Non-clogging impeller minimizes abrasives wear and allows large solid passage
- Dry motor with overload protector
- Superior abrasion resistant double mechanical seal
- Oil seal mounted outside of seal chamber stops solids gathering around seal faces

Applications

- Wastewater drainage from all industries
- Sewage drainage from hotels, restaurants, schools, malls, and public facilities
- Fishery, animal husbandry, stock farm, piggery, fecal sewage tank in wastewater treatment plant
- Drainage of wastewater containing fibrous additives from leather factory, dyeing factory and food processing factory



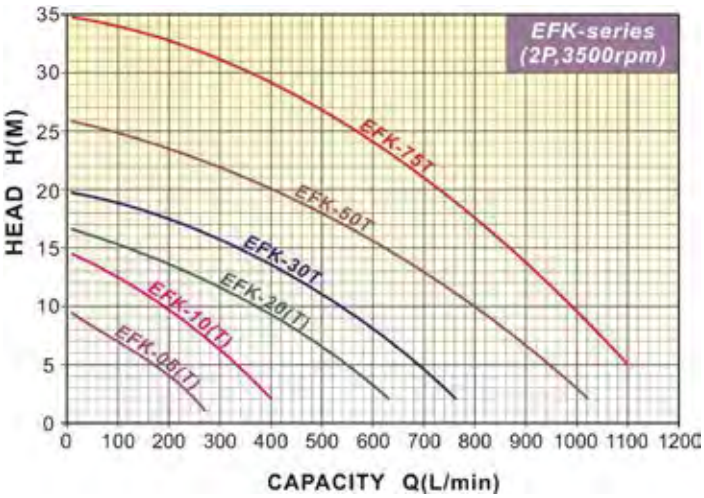
EFK Submersible Cutter Pumps

Features

- Impeller is tipped with tungsten cutter to cut off hard objects and prevents impeller from being damaged by hard articles
- Epoxy resin cable base, 2p dry motor, C3 deep groove bearing, dual mechanical seals, auto-cut protector

Applications

- Sewage drainage from hospitals, schools, husbandry, buildings, stock farm, plants, subway tunnel, etc.
- Dewatering wastewater containing hard objects like sticks, excrement, tiny gravel, etc.



A.O. Smith
Innovation has a name.

A. O. Smith Diaphragm Pump Tanks

Features

- Multiple Head Construction adds structural strength
- Permanently Bonded Interior Epoxy Coating
- Durable Butyl Diaphragm ensures long life
- Positive Lock Retention System eliminates air loss or water leaks in tank
- Electrostatic Powder-coated Exterior for maximum sunlight (UV) resistance with Zinc Phosphate Undercoat for highest corrosion resistance
- UL Listed, NSF/ANSI 61 Certified
- Working Pressure: 100 psi

Model	Volume (gal)	Conn. Size NPT	Length / Height (in.)	Diameter (in.)	Drawdown in Gallons		
					20-40	30-50	40-60
MDX-5	4.6	¾ M	14.8	11	1.7	1.4	-
MDX-7	7.3	¾M	21.1	11	2.7	2.3	-
MDXH-20	20	1 M	27.2	15.4	7.4	6.2	5.4
MDX-20	20	1 F	32.8	15.4	7.4	6.2	5.4
MDX-32	31	1 F	45.5	15.4	11.4	9.6	8.4
MDX-52	52	1-¼ F	38.7	23.4	19.2	16.1	14.0
MDX-86	86	1-¼ F	59.0	23.4	31.8	26.7	23.2
MDX-119	119.5	1-¼ F	61.3	26.0	44.2	37.0	32.3

Pre-Pressurized Diaphragm Operation

A. O. Smith export pump tanks are designed for installation flexibility and years of trouble-free service. Smooth, dependable diaphragm design and operation provides precise control of system operation cycles. Free-standing and in-line vertical tanks are available, as well as horizontal tanks with universal pump mounting bracket. Every A. O. Smith tank is made in the U.S.A.

Higher Drawdown Than Competition!

The industry's most popular "standard" tank size is the 44-gallon. A. O. Smith offers 52-gallon tanks in the same price range. A 52-gallon tank delivers 18% higher drawdown than standard!

In-Line Tanks

In-Line Series tanks, available in 2, 4.6, and 7.3-gallon sizes and are designed to be supported by system piping.

Pre-Pressurized Pump Tank Operation Cycles

Delivery Cycle
Pump remains shut off while air pressure in top chamber forces diaphragm downward, delivering water to system.

Start-up Cycle
Diaphragm is pressed against the bottom of the chamber.

Fill Cycle
Water is pumped into the reservoir, which forces the diaphragm upward into the air chamber.

Hold Cycle
Pump-cutoff pressure is attained. Diaphragm reaches its uppermost position. Reservoir is now filled to its rated capacity.

STA-RITE®

Sta-Rite Pro-Source Composite Fibrewound Tank

Features

- Rugged Fiberglass-wound Outer Shell
- Replaceable Heavy-gauged PEU Air Cell
- HDPE Inner Liner blocks UV energy
- 300-Grade Stainless Steel Connection
- Top-Mount Access for easy servicing
- Easy and Light Installation
- Rotatable Base with Quick-Connect
- NSF/ANSI 61 Certified
- Working Pressure: 125 psi
- Suitable for installation near sea coast

Our line of pressure tanks are captive air types that completely separate air from water. These designs have several advantages over the conventional galvanized iron or stainless steel tanks:

- Waterlog is eliminated - Less Maintenance
- Durability
- Water quality – Water is contained in NSF-approved membrane or tank lining
- Space Saving – Full capacity drawdown means smaller tanks for the same capacity as conventional tanks

Model	Volume		Conn. NPT Size (in.)	Dimensions (In.)		Dimensions (cm)		Drawdown in Gallons		
	Gallon	Liter		Height	Diameter	Height	Diameter	20-40	30-50	40-60
PSC-48-14	47.1	178	1	44.4	24	112.8	61	16.0	14.1	12.2
PSC-80-23	70.6	301	1	43.6	21	110.7	53	27.1	23.8	20.7
PSC-119-35	119.7	453	1-¼	75.4	24	191.5	61	40.7	35.9	31.1

WellForce Membrane Tanks

Features

- Replaceable Membrane
- High Quality Tiered EPDM Membrane
- Stainless Steel Flange Cover
- Stainless Steel Connections
- Built-in Air Pressure Gauge for 100 L and above
- Epoxy powder paint
- Reinforced Legs
- Max. Operating Pressure: 10 Bars (16 and 25 Bars as options)
- Pre-Charge: 4 bars
- Tanks CE 97/23 Certified
- Membrane Certified under: DIN 4807-3, NSF-61, WRAS, BS-6920
- Operating Temperature: EPDM: -20ºC to 100ºC (-4ºF to 212ºF); Butyl: -10ºC to 70ºC (-4ºF to 158ºF)

Model	Volume (gal)	Vol (liters)	Conn. DN Size (in.)	Height (in.)	Diameter (in.)	Height (mm)	Diameter (mm)
WF2410HE	6	24	1	17	13.5	430	340
WF10010VE	26	100	1	39	18	990	460
WF15010VE	39	150	1	43	20	1080	500
WF20010VE	52	200	1	44	24	1120	600
WF30010VE	79	300	1¼	49	25	1250	640
WF50010VE	132	500	1¼	59	30	1490	750
WF75010VE	198	752	2	76	31	1920	800
WF85010VE	224	850	2	80	31	2020	800
WF100010VE	264	1000	2	85	31	2150	800
WF150010VE	396	1500	2	93	38	2350	960
WF200010VE	528	2000	2 ½	96	43	2450	1100

SuperTank Stainless Storage Tanks

Model	Capacity		Diameter	Body Length	Total Height
	Gallons	Liters	Inches	Inches	Inches
SRP-125	125	480	30	36	45.48
SRP-130	132	500	28	48	44.16
SRP-160	160	600	30	48	45.48
SRP-210 L	206	784	33	48	44.21
SRP-210 H	210	800	38	36	53.52
SRP-260	260	1000	38	48	53.52
SRP-310	309	1168	41	48	56.52
SRP-400	400	1500	41	60	56.52
SRP-450	450	1700	48	48	64.2
SRP-525	526	2000	48	60	64.2
SRP-700	700	2651	56	60	72.48
SRP-850	853	3228	56	72	72.48
SRP-1000	1003	3797	56	84	72.48

WNR Vertical Turbine

Wellforce WNR vertical turbine series can be used as fire pump or transfer pump in commercial and light commercial environment.

Flow Rate: Up to 2400 m3/hr (10.5k gpm)
Head: Up to 175m (575 ft.)
Motor: Vertical Hollow Shaft: 7.5 - 750 Hp

Evergush Fire Pump

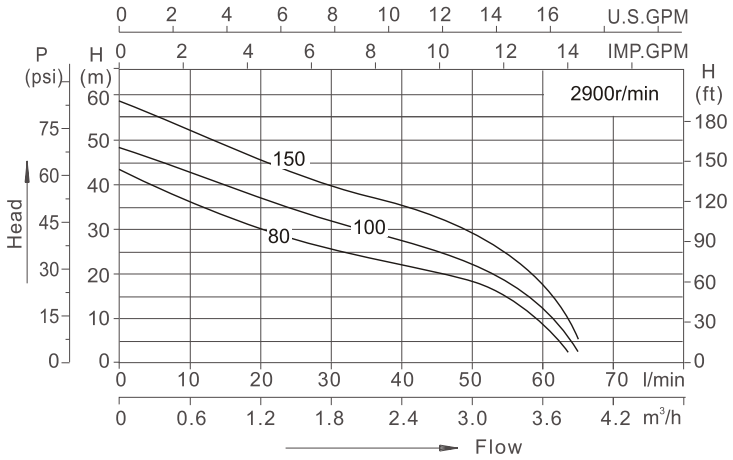
Evergush fire pump is an all-in-one fire pump assembly that includes the main pump, motor, control panel, priming tank, pressure tank, flow meter, gate valves, check valves, etc. It's assembled on a skid and is easy and convenient to install.

Vertical Multi-stage Pumps

	HP	m3/hr	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.7
CVF1-2	0.5	m	17	16.7	16.5	16	15	14.5	13.5	13	12	10
CVF1-13	1.5		110	108	106	103	97.5	95	88	84.5	78	65
	Hp	m3/hr	1	1.5	2	2.5	3	3.5	4	4.5		
CVF2-7	2		88	82	77	74	63	56	47	35		
	HP	m3/hr	1.5	2	2.5	3	3.5	4	4.5	5		
CVF3-2	0.5		17.5	17	16	15	13.5	12	10	7.5		
CVF3-4	0.75	m	35	34	32	30	27	24	20	15		
CVF3-11	2		96	92	88	83	75	66	55	42		
	HP	m3/hr	2.5	3	4	5	6	7	8	9		
CVF4-12	5	m	156	150	145	136	122	109	96	74		
	HP	m3/hr	2	3	4	5	6	7	8	9	10	
CVF5-2	0.75		19	18	17.5	16.5	15	14	12	10	8	
CVF5-9	3	m	84	81	78	74	68	62	54	45	36	
CVF5-12	4		112	108	104	99	91	83	72	60	48	
	HP	m3/hr	7	8	9	10	11	12	13	14	15	16
CVF10-1	1		14	13.5	13.3	12.5	12	11.5	11	10	9.5	8
CVF10-2	2		28	27	26	25.5	24	23	22	20	19	16
CVF10-3	3		43	41	40	38	36	35	33	30	28	24
CVF10-4	4	m	57	55	53	51	48	47	44	40	37	32
CVF10-6	5		82	82	80	77	73	70	66	60	56	48
CVF10-9	7.5		128	124	120	115	109	106	99	90	84	72
	HP	m3/hr	10	12	14	15	16	18	20	22	24	26
CVF15-5	10		92	89	87	86	83	80	74	69	62	53
CVF15-8	15	m	146	143	140	138	133	128	119	110	98	85
CVF15-10	20		183	179	175	172	167	160	149	138	123	106
	HP	m3/hr	8	10	12	14	16	18	20	24	26	28
CVF20-6	15	m	82	80	78	77	73	70	66	55	48	40

Economy Jet Pumps

Jet Series



	HP	S x D	Rated Flow m3/hr	Rated Head (m)	Rated Flow GPM	Rated head ft
Jet-100	1	1 x 1	2.4	25	10.5	82
Jet-150	1.5	1 x 1	2.4	32	10.5	104

Centrifugal Pumps

BLC Series

CMF

CM

Single Stage																				
Model	HP	S x D	Head Ft	16	25	30	35	40	45	50	55	60	65	70	75	80	90	100	110	120
BLC50/0.25	⅓	1 ¼ x 1	GPM	21	15	10	5													
BLC70/ 0.37	½	1 ¼ x 1			28	24	21	18	15	10										
BLC100/55	¾	1¼ x 1					34	33	28	23	17	12								

Multistage																					
Model	HP	S x D	Head Ft	40	45	50	55	60	65	70	75	80	90	100	110	120	130	140	150	160	200
CMF2-20	½	1 x 1	GPM	17	15	13	12	10	9	7	5	2									
CMF2-50	1	1 X 1												17	15	14	13	12	10	9	4
CMF2-30	¾	1 x 1						17	15	13	12	11	9	7	3						
CMF4-30	1¼	1¼ x 1				37	36	35	34	33	32	31	28	26	22	18	13	9			
CMF4-40	1 ½	1¼ x 1										37	36	35	34	33	32	31	24	23	8
CMF8-15	2											52	45	40	35	28	20	13			
CM8-15	2	1½ x 1¼										52	45	40	35	28	20	13			
CM12-10	2	2 x 2																			
CM12-15	3	1½ x 1½											68	63	57	49	40	28			
CM 16-30	5	2 x 2										125	116	111	102	84	75	71	62	40	
			Head Ft	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	245	
CMF2-50	1	1 X 1	GPM		17	15	14	13	12	10	9	8	7	6	5						
CM8-20	2.5	1½ x 1¼		53	52	45	41	37	32	27	19										
CMF8-25	3	1½ x 1½					54	52	49	45	41	38	30	28	20	19	8				
CM8-25	3	1½ x 1¼					54	52	49	45	41	38	30	28	20	19	8				

Sizing Tables Based on Collected Data and ASHRAE Requirements

Dormitories					
Number of Persons	Gals Required 2 Hour Period 140 °F Water 3 gpm		Gals Required 2 Hour Period 140 °F Water 5 gpm		Minimum Storage Capacity (US Gal.)
	40 °F Inlet 100 °F TR	60 °F Inlet 80 °F TR	40 °F Inlet 100 °F TR	60 °F Inlet 80 °F TR	
1 – 10	125	100	200	160	100
11 – 15	187	150	299	239	150
16 – 20	250	200	400	320	200
21 – 25	277	220	443	354	225
26 – 30	300	240	480	384	240
31 – 40	320	264	512	410	280
41 – 50	350	280	560	448	310
51 – 75	412	330	659	527	400
76 – 100	500	400	800	640	430
101 – 125	625	500	1000	800	475
126 – 150	750	600	1200	960	510
151 – 175	875	700	1400	1120	560
176 – 200	1000	800	1600	1280	600
201 – 250	1250	1000	2000	1600	650
251 – 300	1500	1200	2400	1920	720
301 – 350	1750	1400	2800	2240	800

Hotels				
Number of Units (1 ½ Persons/Unit)	Actual Number of Persons	Gals Required 2 Hour Period 140 °F Water		Minimum Storage Capacity (US Gal.)
		40 °F Inlet 100 °F TR	60 °F Inlet 80 °F TR	
1 – 3	4	50	45	50
4	6	66	56	60
5 – 6	9	100	85	72
7 – 8	12	132	112	85
9 – 10	15	165	140	100
11 – 15	22	230	196	113
16 – 20	30	300	255	130
21 – 25	37	370	315	148
26 – 30	45	450	382	162
31 – 35	52	520	442	175
36 – 40	60	570	485	188
41 – 45	67	600	510	200
46 – 50	75	650	552	210
51 – 75	112	840	714	255
76 – 100	150	1050	892	300
101 – 125	187	1272	1080	325
126 – 150	225	1350	1148	360
151 – 175	262	1575	1340	395
176 – 200	300	1800	1530	410
201 – 250	375	2250	1912	500
251 – 300	450	2700	2295	600
301 – 350	525	3150	2678	700

Operating Cost Comparison of Electric,LPG/Gas, Cyclone Heaters and Heat Pump Water Heaters												
Cost Comparison Per 1000 Gallons of Hot Water at 70 F Temperature Rise												
Water Heater Type	Electric Water Heater	Operating Cost	Standard Gas Water Heater	Operating Cost	Cyclone Commercial Gas Water Heater (BTH120 - BTH250)	Operating Cost	CYCLONE Commercial Gas Water Heater (BTH300-BTH500)	Operating Cost	COF Diesel Water Heater	Operating Cost	Heat Pump Water Heater	Operating Cost
BTU REQUIREMENT: 577,500 BTU												
Primary Source	ELECTRICITY		LPG		LPG		LPG		DIESEL		ELECTRIC	
Efficiency	95.00%		80.00%		94.00%		96.00%		80.00%		400.00%	
Cost at Different Cost of Primary Heat Source	Cost/kWh Php	Cost/1000 gal Php	Cost/kg LPG Php	Cost/1000 gal Php	Cost/kg LPG Php	Cost/1000 gal Php	Cost/kg LPG Php	Cost/1000 gal Php	Cost/ L Diesel Php	Cost/ 1000 gal Php	Cost/ kWh Php	Cost/ 1000 gal Php
	6	1015	50	802	50	683	50	668	40	789	6	254
	6.5	1100	52	834	52	710	52	695	40.5	799	6.5	275
	7	1184	54	866	54	737	54	722	41	809	7	296
	7.5	1269	56	898	56	765	56	749	41.5	819	7.5	317
	8	1354	58	930	58	792	58	775	42	829	8	338
	8.5	1438	60	963	60	819	60	802	42.5	839	8.5	360
	9	1523	62	995	62	846	62	829	43	849	9	381
	9.5	1607	64	1027	64	874	64	856	43.5	858	9.5	402
	10	1692	66	1059	66	901	66	882	44	868	10	423
	10.5	1777	68	1091	68	928	68	909	44.5	878	10.5	465
	11	1861	70	1123	70	956	70	936	45	888	11	465
	11.5	1946	72	1155	72	983	72	963	45.5	898	11.5	486
	12	2030	74	1187	74	1010	74	989	46	908	12	508
	12.5	2115	76	1219	76	1038	76	1016	46.5	918	12.5	529
	13	2200	78	1251	78	1065	78	1043	47	927	13	550
	13.5	2284	80	1283	80	1092	80	1069	47.5	937	13.5	571
	14	2369	82	1315	82	1120	82	1096	48	947	14	592
	14.5	2453	84	1348	84	1147	84	1123	48.5	957	14.5	613
	15	2538	86	1380	86	1174	86	1150	49	967	15	635
	16	2707	88	1412	88	1201	88	1176	49.5	977	16	677
	17	2877	90	1444	90	1229	90	1203	50	987	17	719
	18	3046	92	1476	92	1256	92	1230	50.5	997	18	761
	19	3215	94	1508	94	1283	94	1257	51	1006	19	804
	20	3384	96	1540	96	1311	96	1283	51.5	1016	20	846

Projected Operating Cost Calculation Per Year

_____ Gallons of Hot Water Used Per Year at 70 °F rise / 1,000

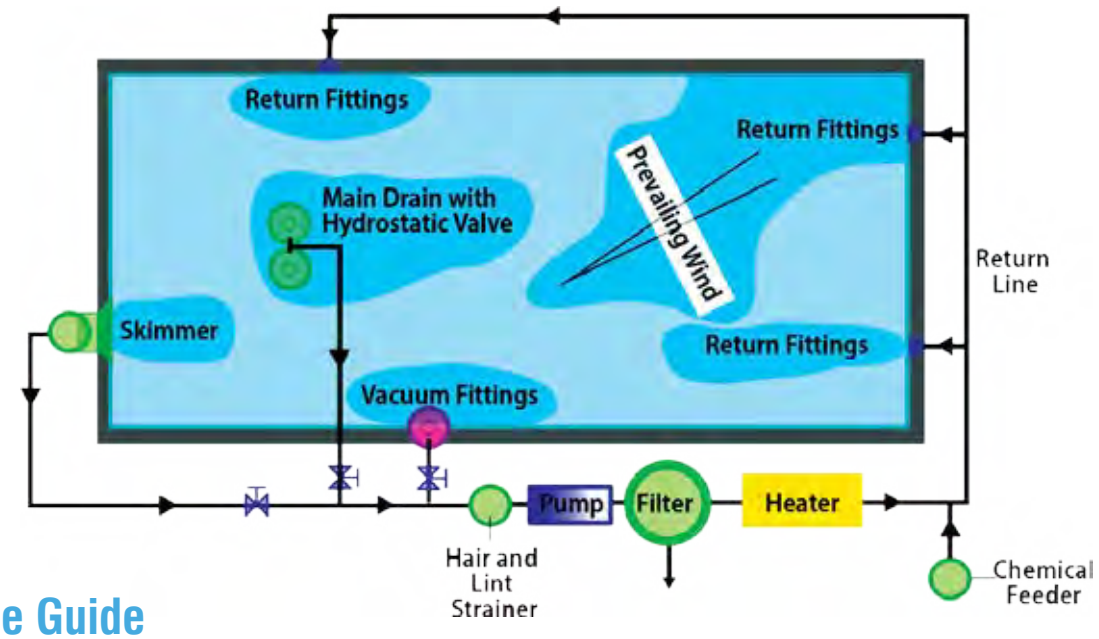
X _____ Cost per 1000 Gallons (See Table above – use most realistic utility costs)

= _____ Projected Operating Cost Per Year

Water Heater Recovery

Recovery Capacities-LPG					
Input Rating Btu/hr	GPH Recovery at given temperature rise				
	60 F	70 F	80 F	90 F	100F
30000	48.5	41.6	36.4	32.3	29.1
32000	51.7	44.3	38.8	34.5	31.0
35000	56.6	48.5	42.4	37.7	33.9
37000	59.8	51.3	44.8	39.9	35.9
40000	64.6	55.4	48.5	43.1	38.8
50000	80.8	69.3	60.6	53.9	48.5
60000	97.0	83.1	72.7	64.6	58.2
70000	113.1	97.0	84.8	75.4	67.9
75100	121.4	104.0	91.0	80.9	72.8
80000	129.3	110.8	97.0	86.2	77.6
90000	145.5	124.7	109.1	97.0	87.3
100000	161.6	138.5	121.2	107.7	97.0

Recovery Capacities-Electric					
Input Rating W	GPH Recovery at given temperature rise				
	60 F	70 F	80 F	90 F	100F
1500	9.8	8.4	7.4	6.6	5.9
2500	16.4	14.0	12.3	10.9	9.8
3000	19.7	16.8	14.7	13.1	11.8
3500	22.9	19.7	17.2	15.3	13.8
4000	26.2	22.5	19.7	17.5	15.7
4500	29.5	25.3	22.1	19.7	17.7
5000	32.8	28.1	24.6	21.8	19.7
5500	36.0	30.9	27.0	24.0	21.6
6000	39.3	33.7	29.5	26.2	23.6
7500	49.1	42.1	36.8	32.8	29.5
12000	78.6	67.4	59.0	52.4	47.2
15000	98.3	84.2	73.7	65.5	59.0
18000	117.9	101.1	88.4	78.6	70.7
24000	157.2	134.7	117.9	104.8	94.3
30000	196.5	168.4	147.4	131.0	117.9
36000	235.8	202.1	176.9	157.2	141.5



Pool Chlorine Guide

Directions: For new or newly-refilled pools, add 10 oz. of chlorine per 10,000 gallons of pool water. Then run the filtration system for 24 hours. Adjust ph to 7.4 - 7.6 and test for chlorine residual. Do not allow bathers to swim when chlorine residual is above 2.00 PPM. Then simply follow the chlorine dosage shown below.

Superchlorination: Should pool water appear cloudy or dirty, add 20 oz. of chlorine concentrate per 10,000 gallons, allowing the pool filter to run so as to turn the pool water over in the pool. This process should be repeated until the pool water is clear and sparkling. Normal chlorination is not necessary during this process. Do not allow bathers when chlorine residual is over 2.00 PPM.

Daily Dosage		
Pool Capacity (US Gal)	Unstabilized Pool Water	Stabilized Pool Water
5000	⅛ kg	1⁄16 kg
10000	1⁄6 kg	1⁄12 kg
15000	¼ kg	⅛ kg
20000	⅖ kg	⅕ kg
25000	½ kg	¼ kg
50000	1 kg	½ kg

Managing PH Level

Raising PH With Soda Ash (WHEN PH LEVEL IS UNDER 7.4-7.6, ADD THIS AMOUNT OF SODA ASH THEN RETEST.)							
PH \ Gallon	1000	5000	10000	15000	20000	25000	50000
7.2 – 7.4	1⁄24 lbs	1⁄12 kg	1⁄6 kg	¼ kg	⅓ kg	½ kg	1 kg
7.0 – 7.2	1⁄20 lbs	⅛ kg	¼ kg	⅓ kg	½ kg	⅔ kg	1⅛ kg
6.6 – 7.0	1⁄12 lbs	1⁄6 kg	⅓ kg	½ kg	⅔ kg	1 kg	2 kg
Under 6.7	⅛ lbs	¼ kg	½ kg	⅔ kg	1 kg	1⅛ kg	2 ¼ kg

Lowering PH with Dry Acid / Sodium Bisulfate (WHEN PH LEVEL IS OVER 7.6, ADD THIS AMOUNT OF ACID THEN RETEST.)							
PH \ Gallon	1000	5000	10000	15000	20000	25000	50000
7.6 – 8.0	0.2 oz	1 oz	2 oz	3 oz	4 oz	5 oz	10 oz
Over 8.0	1 – 1.5 oz	2 – 3 oz	4 – 6 oz	6 – 9 oz	8 – 12 oz	10 – 15 oz	12 – 18 oz

Salt Requirement When Using Chlorine Generator

For Residential (small/medium bather load): 0.5 gr/hr for every 1 m³ pool
(considering running time 8hrs / day)
For Commercial (high bather load): 1 gr/hr for every 1 m³ pool
(considering running time 24hrs/day)

Examples:

1. Resort commercial pool size 400m³, you will need 1 gr/hr x 400 = 400 gr/hr. You can use 9 unit of SM45.
2. Private house pool size 60m³, you will need 0.5 gr/hr x 60 = 30 gr/hr. You can use 1 unit \ SM35

To raise		How much salt to add
1 ppm	=	1 gr / m3
1000 ppm	=	1 Kg/m3
2000 ppm	=	2 Kg/m3
3000 ppm	=	3 Kg/m3
4000 ppm	=	4 Kg/m3

Ideal ppm to maintain at all time = 4000ppm

Steamer / Sizing

Power kW	Room Size cbm
3.0	2-3
4.5	3.5-5.5
6.0	5-7
9.0	8-11
12.0	11-14
15.0	13-18
18.0	16-22
22.5	19-26
24.0	22-30

Average Flow Rates

Average Flow Rate Requirements by Various Fixtures	
Shower	4 to 6 GPM
Bathtub	4 to 8 GPM
Toilet	4 to 5 GPM
Lavatory	1 to 3 GPM
Kitchen sink	2 to 3 GPM
½″ hose and nozzle	200 GPH
¾″ hose and nozzle	300 GPH
Lawn sprinkler	120 GPH

Average Amount of Water Required by Various Home and Yard Fixtures	
Drinking fountain, continuously flowing	50 - 100 gal. per day
Each shower bath	60 gal.
To fill bathtub	30 gal.
To flush toilet	6 gal.
To fill lavatory	2 gal.
To sprinkle ¼″ of water on each 1000 sq. feet of lawn	160 gal.
Dishwasher - per load	3 gal.
Automatic washer - per load	50 gal
regeneration of domestic water softener	50-100 gal.

Pipe Friction Loss Charts 1/2” to 1-1/4” I.D.

Loss of Head in Feet due to Friction per 100 Feet of Pipe

½"					¾″					1″					1-¼″				
Flow gpm	Velocity Plastic ft/sec	Plastic C=140 ID .622″	Steel C=100 ID .622″	Copper C=130 ID .625″	Flow gpm	Velocity Plastic ft/sec	Plastic C=140 ID .824″	Steel C=100 ID .824″	Copper C=130 ID .822″	Flow gpm	Velocity Plastic ft/sec	Plastic C=140 ID 1.049″	Steel C=100 ID 1.049″	Copper C=130 ID 1.062″	Flow gpm	Velocity Plastic ft/sec	Plastic C=140 ID 1.380″	Steel C=100 ID 1.380″	Copper C=130 ID 1.368″
0.5	0.5	0.314	0.582	0.35	1.5	0.9	0.61	1.13	0.7	2	0.74	0.322	0.595	0.345	4	0.9	0 .304	0.564	0.364
1	1.1	1.14	2.1	1.26	2	1.2	1.04	1.93	1.21	3	1.1	0.68	1.26	0.732	5	1.1	0.46	0.853	0.545
1.5	1.6	2.38	4.44	2.67	2.5	1.5	1.57	2.91	1.82	4	1.5	1.15	2.14	1.24	6	1.3	0.649	1.2	0.765
2	2.1	4.1	7.57	4.56	3	1.8	2.21	4.08	2.56	5	1.9	1.75	3.42	1.88	7	1.5	0.86	1.59	1.02
2.5	2.6	6.15	11.4	6.88	3.5	2.1	2.93	5.42	3.4	6	2.2	2.45	4.54	2.63	8	1.7	1.1	2.04	1.31
3	3.2	8.65	16	9.66	4	2.4	3.74	6.94	4.36	8	3.0	4.16	7.73	4.5	10	2.1	1.67	3.08	1.98
3.5	3.7	11.5	21.3	12.9	4.5	2.7	4.66	8.63	5.4	10	3.7	6.31	11.7	6.77	12	2.6	2.33	4.31	2.75
4	4.2	14.8	27.3	16.4	5	3.0	5.66	10.5	6.57	12	4.5	8.85	16.4	9.47	14	3.0	3.1	5.73	3.64
4.5	4.8	18.3	33.9	20.4	6	3.6	7.95	14.7	9.22	14	5.2	11.8	21.8	12.6	16	3.4	3.96	7.34	4.68
5	5.3	22.2	41.2	24.8	7	4.2	10.6	19.6	12.2	16	5.9	15.1	27.9	16.2	18	3.9	4.93	9.13	5.81
5.5	5.8	26.6	49.2	29.5	8	4.8	13.5	25	15.7	18	6.7	18.7	34.7	20.1	20	4.3	6	11.1	7.1
6	6.3	31.2	57.8	34.8	9	5.4	16.8	31.1	19.5	20	7.4	22.8	42.1	24.4	25	5.4	9.06	16.8	10.7
6.5	6.9	36.2	67	40.2	10	6.0	20.4	37.8	23.7	22	8.2	27.1	50.2	28.8	30	6.4	12.7	23.5	15
7	7.4	41.5	76.8	46.1	11	6.6	24.4	45.1	28.2	24	8.9	31.9	59	34	35	7.5	16.9	31.2	20
7.5	7.9	47.2	87.3	52.5	12	7.2	28.6	53	33.2	26	9.7	36.9	68.4	39.7	40	8.6	21.6	40	25.6
8	8.4	53	98.3	59.4	13	7.8	33.2	61.5	38.5	28	10.4	42.5	78.5	45.5	50	10.7	32.6	60.4	38.7
8.5	9.0	59.5	110	66	14	8.4	38	70.5	44.2	30	11.1	48.1	89.2	51.6	60	12.9	45.6	84.7	54.1
9	9.5	66	122	73.5	16	9.6	48.6	90.2	56.6	35	13.0	64.3	119	68.7	70	15.0	61.5	114	72.2
9.5	10.0	73	135	81	18	10.8	60.5	112	70.4	40	14.8	82	152	88	80	17.2	77.9	144	92.4
10	10.6	80.5	149	89.4	20	12.0	73.5	136	83.5	45	16.7	102	189	109	90	19.3	96.6	179	115

Tank Sizing

Conventional Tank Volume Equivalence			
Conventional tank size	Captive Air Tank Equiv. Capacity		
	20-40 psi	30-50 psi	40-60 psi
21Gal	7.7 gal	6.5 gal	5.67 gal
42 Gal	18 gal	14 gal	11 gal
82 Gal	34 gal	27 gal	22 gal
120 Gal	50 gal	39 gal	32 gal
220 Gal	92 gal	72 gal	58 gal
315 Gal	132 gal	103 gal	83 gal
525 Gal	220 gal	171 gal	139 gal

Captive Air Type Pressure Tank Drawdown Multiplier								
Pump off	Pump Start Pressure - PSI							
PSI	10	20	30	40	50	60	70	80
20	0.26							
30	0.41	0.22						
40		0.37	0.18					
50		0.46	0.31	0.15				
60			0.40	0.27	0.13			
70			0.47	0.35	0.24	0.12		
80				0.42	0.32	0.21	0.11	
90				0.48	0.38	0.29	0.19	0.10
100					0.44	0.35	0.26	0.17

Water Hardness

		American	German	Grains per gallon	English	French
	mmol/L	ppm, mg/L	dGH, °dH	gpg	°e, °Clark	°fH
mmol/L	1	0.009991	0.1783	0.171	0.1424	0.09991
ppm, mg/L	100.1	1	17.85	17.12	14.25	10
dGH, °dH	5.608	0.05603	1	0.9591	0.7986	0.5603
gpg	5.847	0.05842	1.043	1	0.8327	0.5842
°e, °Clark	7.022	0.07016	1.252	1.201	1	0.7016
°fH	10.01	0.1	1.785	1.712	1.425	1
Example 1: 1 mmol/L = 100.1 ppm; Example 2: 1 ppm = 0.056 dGH.						

Classification	hardness in mg/L	hardness in mmol/L	hardness in dGH/°dH	hardness in gpg	hardness in ppm
Soft	< 17.1	< 0.171	< 0.9591	< 1	< 17.1
Slightly hard	17.1– 60	0.171– 0.60	0.9591 – 3.37	1-3.50	17.1– 60
Moderately hard	61–120	0.61–1.20	3.38 – 6.74	3.56 –7.01	60 –120
Hard	121–180	1.21–1.80	6.75–10.11	7.06-10.51	120 –180
Very hard	≥ 181	≥ 1.81	≥ 10.12	≥ 10.57	> 181

CONVERSION TABLES

Temperature		
Kelvin	Celsius	Fahrenheit
0	-273	-459.4
273	0	32
310.5	37.5	99.5
373	100	212

Fahrenheit	Celsius	Celsius	Fahrenheit
20	-6.67	0	32
30	-1.11	5	41
40	4.44	10	50
50	10	15	59
60	15.56	20	68
70	21.11	25	77
80	26.67	30	86
90	32.22	35	95
100	37.78	40	104
110	43.33	45	113
120	48.89	50	122
130	54.44	55	131
140	60	60	140
150	65.56	65	149
160	71.11	70	158
170	76.67	75	167
180	82.22	80	176
190	87.78	85	185
200	93.33	90	194
210	98.89	95	203
220	104.44	100	212

Pressure Equivalence									
psi	Bar	kPa	ft of Water	m of Water	ft of Water	m of Water	Bar	kPa	psi
1	0.07	6.9	2.31	0.7	1	0.3	0.03	2.99	0.43
10	0.69	68.97	23.1	7.04	5	1.52	0.15	14.93	2.16
14.5	1	100	33.5	10.21	10	3.05	0.3	29.86	4.33
20	1.38	137.93	46.2	14.08	15	4.57	0.45	44.78	6.49
30	2.07	206.9	69.3	21.12	20	6.1	0.6	59.71	8.66
40	2.76	275.86	92.4	28.16	25	7.62	0.75	74.64	10.82
50	3.45	344.83	115.5	35.2	30	9.14	0.9	89.57	12.99
60	4.14	413.79	138.6	42.25	40	12.19	1.19	119.42	17.32
70	4.83	482.76	161.7	49.29	50	15.24	1.49	149.28	21.65
80	5.52	551.72	184.8	56.33	60	18.29	1.79	179.13	25.97
90	6.21	620.69	207.9	63.37	70	21.34	2.09	208.99	30.3
100	6.9	689.66	231	70.41	80	24.38	2.39	238.84	34.63
110	7.59	758.62	254.1	77.45	90	27.43	2.69	268.7	38.96
120	8.28	827.59	277.2	84.49	100	30.48	2.99	298.55	43.29
130	8.97	896.55	300.3	91.53	110	33.53	3.28	328.41	47.62
140	9.66	965.52	323.4	98.57	120	36.58	3.58	358.26	51.95
150	10.34	1034.48	346.5	105.61	130	39.62	3.88	388.12	56.28
160	11.03	1103.45	369.6	112.65	140	42.67	4.18	417.97	60.61
180	12.41	1241.38	415.8	126.74	150	45.72	4.48	447.83	64.94
200	13.79	1379.31	462	140.82	160	48.77	4.78	477.68	69.26
220	14.504	1516.85	508.2	154.93	170	51.82	5.08	507.54	73.59
240	16.551	1654.74	554.4	169.02	180	54.86	5.37	537.39	77.92
250	17.24	1724.14	577.5	176.02	190	57.91	5.67	567.25	82.25
300	20.69	2068.97	693	211.23	200	60.96	5.97	597.1	86.58

Volume							
Liters	Gallons, US (gal)	Gallons, US (gal)	Liters	Gallons, US (gal)	m^3	cbm	Gallons, US (gal)
1	0.26	2	7.58	1000	3.79	1	263.85
3	0.79	4	15.16	2000	7.58	5	1319.26
6	1.58	6	22.74	3000	11.37	10	2638.52
10	2.64	10	37.9	4000	15.16	15	3957.78
20	5.28	15	56.85	5000	18.95	20	5277.04
24	6.33	20	75.8	6000	22.74	25	6596.31
30	7.92	30	113.7	7000	26.53	30	7915.57
40	10.55	32	121.28	8000	30.32	40	10554.09
50	13.19	40	151.6	9000	34.11	50	13192.61
60	15.83	45	170.55	10000	37.9	60	15831.13
80	21.11	50	189.5	15000	56.85	70	18469.66
100	26.39	55	208.45	20000	75.8	80	21108.18
150	39.58	66	250.14	25000	94.75	90	23746.7
200	52.77	75	284.25	30000	113.7	100	26385.22
300	79.16	80	303.2	35000	132.65	150	39577.84
500	131.93	100	379	40000	151.6	200	52770.45
750	197.89	120	454.8	45000	170.55	250	65963.06

Power								
HP	KW	BTU/hr	KW	BTU/hr	HP	BTU/hr	KW	HP
1/40	0.02	63.65	0.28	955.64	0.38	30000	8.79	11.78
1/35	0.02	72.75	0.5	1706.5	0.67	35000	10.25	13.74
1/25	0.03	101.84	0.62	2116.06	0.83	36000	10.55	14.13
1/8	0.09	318.26	0.83	2832.79	1.11	40000	11.72	15.7
1/6	0.12	424.35	0.95	3242.35	1.27	50000	14.65	19.63
0.25	0.19	636.52	1	3413	1.34	65000	19.04	25.52
1/3	0.25	848.7	1.5	5119.5	2.01	66700	19.54	26.19
0.4	0.3	1018.44	2	6826	2.68	75100	22	29.49
0.5	0.37	1273.05	2.5	8532.5	3.35	76000	22.27	29.84
0.6	0.45	1527.66	3	10239	4.02	100000	29.3	39.26
0.75	0.56	1909.57	3.8	12969.4	5.09	120000	35.16	47.11
1	0.75	2546.1	4	13652	5.36	150000	43.95	58.89
1.5	1.12	3819.15	4.5	15358.5	6.03	175000	51.27	68.71
2	1.49	5092.2	5.5	18771.5	7.37	180000	52.74	70.67
2.5	1.87	6365.25	5.6	19112.8	7.5	199000	58.31	78.13
3	2.24	7638.29	6	20478	8.04	200000	58.6	78.52
3.5	2.61	8911.34	6.5	22184.5	8.71	250000	73.25	98.15
4	2.98	10184.39	7.5	25597.5	10.05	280000	82.04	109.93
5	3.73	12730.49	8	27304	10.72	300000	87.9	117.78
7.5	5.6	19095.74	8.5	29010.5	11.39	315000	92.29	123.67
10	7.46	25460.98	9	30717	12.06	333000	97.57	130.74
15	11.19	38191.47	9.5	32423.5	12.73	350000	102.55	137.42
20	14.92	50921.96	11	37543	14.74	385000	112.8	151.16
25	18.65	63652.45	12	40956	16.08	400000	117.2	157.05
30	22.38	76382.94	15	51195	20.1	500000	146.5	196.31
40	29.84	101843.92	18	61434	24.12	650000	190.45	255.2
50	37.3	127304.9	21	71673	28.14	750000	219.75	294.46
60	44.76	152765.88	27	92151	36.18	1000000	293	392.62
75	55.95	190957.35	30	102390	40.2	1250000	366.25	490.77
100	74.6	254609.8	36	122868	48.24	1500000	439.5	588.92
150	111.9	381914.7	48	163824	64.32	1750000	512.75	687.08
250	186.5	636524.5	54	184302	72.36	2000000	585.99	785.23

Power Cable Sizing for Electric Heaters					
Wattage	Amperage (AMPs)			Cable Size	
	1Ø 220V	1Ø 230V	1Ø 240V	AWG	mm^2
2kW	9.1	8.7	8.3	#14	2.0
2.5kW	11.4	10.9	10.4	#14	2.0
3.3kW	13.6	13.0	12.5	#14	2.0
3.5kW	15.0	14.3	13.7	#12	3.5
3.8kW	17.2	16.5	15.9	#12	3.5
4.5kW	20.5	19.5	18.8	#12	3.5
5.5kW	25	23.9	22.9	#10	5.5
6.5kW	29.5	28.2	27.0	#10	5.5
7.5kW	34.1	32.6	31.3	#10	5.5
8.5kW	38.6	37.0	35.4	#8	8.0
9.5kW	43.2	41.3	39.6	#8	8.0

CONVERSION TABLES

Conversion Table			
Length		**Volumetric Flow**	
1 Millimeter (mm)	0.001 m	1 Cubic Meter Per Second (m3/s)	15850 gpm
1 Centimeter (cm)	10 mm	1 Cubic Meter Per Hour (m3/hr)	4.403 gpm
1 Centimeter (cm)	0.3937 in	1 Liter Per Second	15.85 gpm
1 Meter (m)	100 cm	1 Liter Per Second	127.13 cu ft per hour
1 Inch (in)	2.54 cm	1 Liter Per Minute	0.26417 gpm
1 Inch (in)	25.4 mm	1 Gallon Per Minute, US (gpm)	227 liters per hour
1 Foot (ft)	12 in	1 Gallon Per Minute, US (gpm)	60 gph
1 Foot (ft)	30.48 cm	1 Gallon Per Minute, US (gpm)	1440 gpd
1 Foot (ft)	0.3048 m	1 Gallon Per Minute, US (gpm)	8.02 cu ft per hour
1 Yard (yd)	3 ft	1 Cubic Foot Per Second	448.8 gpm
1 Yard (yd)	0.9144 m	1 Cubic Foot Per Hour	0.1247 gpm
1 Mile	1.609 km	**Pressure**	
Area		1 Bar	14.5 psi
1 Square Meter (m2)	10.764 sq ft	1 Bar	100,000 pascals
1 Hectare	10000 m2	1 Pound Per Square Inch (psi)	2.31 ft of water @ 4°C
1 Square Inch (sq in)	0.000645 m2	1 Pound Per Square Inch (psi)	27.72 in of water @ 4°C
1 Square Foot (sq ft)	0.0929 m2	1 Inch of Water	0.0361 psi
Volume		1 Foot of Water	0.433 psi
1 Cubic Meter (m3)	1000000 cm3	1 Meter of Water	1.42 psi
1 Cubic Meter (m3)	1000 l	1 Kilopascal	0.01 bars
1 Liter (l)	0.001 m3	**Energy**	
1 Cubic Inch (cu in)	0.016 l	1 Joule (J)	1 Watt Second (Ws)
1 Cubic Foot (cu ft)	1728 cu in	1 Kilojoule (kJ)	1000 J
1 Cubic Foot (cu ft)	7.48 gal	1 Watt Hour (wh)	3.6 kJ
1 Gallon, US (gal)	3.79 l	1 Watt Hour (wh)	3.415 Btu
1 Gallon, US (gal)	231 cu in	1 Calorie (cal)	4.187 J
1 Gallon, Europe (gal)	4.55 l	1 Kilocalorie (kcal)	1.163 wh
1 Ounce, Fluid (fl oz)	0.03 l	1 British Thermal Unit (Btu)	252 cal
Mass		1 British Thermal Unit (Btu)	0.293 wh
1 Gram (g)	0.035 oz	1 Kilogram of LPG	45,000 Btu
1 Kilogram (kg)	2.2 lbs	1 Gallon (US) of Diesel	139,000 Btu
1 Kilogram (kg)	1000 g	1 Cubic Foot of Natural Gas	1,000 Btu
1 Kilogram (kg)	35.274 oz	**Power**	
1 Ounce (oz)	28.35 g	1 Kilowatt (kW)	1.34 hp
1 Pound (lb)	16 oz	1 Horsepower (hp)	0.746 kW
1 Pound (lb)	0.4536 kg	1 Ton Refrigeration	12,000 Btu/hr
1 Ton	2000 lbs	1 Boiler Horsepower	33,475 Btu/hr
Density vs ppm		1 Boiler Horsepower	9.811 kW
1 mg/L	1 ppm	1Btu/hr	0.00029307107kW
Water Volume vs Mass		1kW	341Btu/hr
1 Liter	1 kg	**Efficiency**	
1 Cubic Meter	2204 lbs	Efficiency	Pow. Output / Pow. Input
1 Cubic Foot	62.37 lbs	Motor Efficiency	HP Output / kW Input
1 Gallon, US (gal)	8.33 lbs	Hp	Torque ft (lbs x rpm) / 33000
0.12 gallons, US (gal)	1 lb	Water Hp	gpm x TDH / 3960
Temperature		Brake Hp	Water HP / Pump Eff.
K to °C	T K – 273	**Electrical**	
°C to °F	(T°C x 9/5) + 32	Voltage	V = I x R
°F to °C	(T°F - 32) x 5/9	Power	W = V x Ampere
Area Formulas		**Volume Formulas**	
Square	S x S	Box	L x W x H
Rectangle	L x W	Sphere	4/3 π x r3
Circle	π x r^2	Cylinder	π x r2 x Height
Triangle	½ (Height x Base)	Pyramid	1/3 x Base Area x Height

Copper Pipes															
Copper Size (in.)		¼	⅜	½	⅝	¾	1	1 ¼	1 ½	2	2 ½	3	3 ½	4	5	6
Outside Diameter (in.)		⅜	½	⅝	¾	⅞	1.13	1.38	1.63	2.13	2.63	3.13	3.63	4.13	5.13	6.13
Wall Thickness (mm)	Type K	0.035	0.049	0.049	0.049	0.065	0.065	0.065	0.072	0.083	0.095	0.109	0.120	0.134	0.160	0.192
	Type L	0.030	0.035	0.040	0.042	0.045	0.050	0.055	0.060	0.070	0.080	0.090	0.100	0.114	0.125	0.140
	Type M		0.025	0.028		0.032	0.035	0.042	0.049	0.058	0.065	0.072	0.083	0.095	0.109	0.122

Copper Wire Sizing						
AWG	Metric Size (mm2)	Wire Diameter in inches	Wire Diameter in inches	Temperature Rating of Conductor		
				60°C (140°F)	75°C (167°F)	90°C (194°F)
				Ampacity		
20	0.5180	0.8118	0.0320			
18	0.8230	1.0237	0.0403			14
16	1.3100	1.2909	0.0508			18
14	2.0800	1.6277	0.0641	20	20	25
12	3.3100	2.0525	0.0808	25	25	30
10	5.2600	2.5880	0.1019	30	35	40
8	8.3700	3.2638	0.1285	40	50	55
6	13.3000	4.1153	0.1620	55	65	75
4	21.2000	5.1895	0.2043	70	85	95
2	33.6000	6.5438	0.2576	95	115	130
0	53.5000	8.2514	0.3249	125	150	170
00 (2/0)	67.4000	9.2659	0.3648	145	175	195
000 (3/0)	85.0000	10.4038	0.4096	165	200	225
0000 (4/0)	107.0000	11.6840	0.4600	195	230	260
Ambient Temperature				Correction Factors		
21 – 25°C	70 – 77°F			1.08	1.05	1.04
26 – 30°C	78 – 86°F			1.00	1.00	1.00
31 – 35°C	87 – 95°F			0.91	0.94	0.96
36 – 40°C	96 – 104°F			0.82	0.88	0.91
41 – 45°C	105 – 113°F			0.71	0.82	0.87
46 – 50°C	114 – 122°F			0.58	0.75	0.82
51 – 55°C	123 – 131°F			0.41	0.67	0.76
56 – 60°C	132 – 140°F				0.58	0.71
61 – 70°C	141 – 158°F				0.33	0.58
71 – 80°C	159 – 176°F					0.41

Minimum Free Area Each Opening			
Outdoor Air Through Two Openings		Outdoor Air Through One Opening	
BTU/hr	SQ INCH	BTU/hr	SQ INCH
4,000	1	3,000	1
8,000	2	6,000	2
12,000	3	12,000	4
16,000	4	15,000	5
20,000	5	21,000	7
40,000	10	42,000	14
80,000	20	84,000	28
100,000	25	102,000	34
150,000	37.5	150,000	50
200,000	50	198'000	66
250,000	62.5	246'000	82
300,000	75	294,000	98
350,000	87.5	342,000	114
400,000	100	390,000	130
450,000	112.5	438,000	146
500,000	125	486,000	162
550,000	137.5	534,000	178
600,000	150	582,000	194
650,000	162.5	630,000	210
700,000	175	678,000	226
800,000	200	810,000	270

Minimum Air Flow for Combustion	
BTU/hr	CFM
1,000	13
10,000	125
20,000	250
30,000	375
40,000	500
50,000	625
60,000	750
70,000	875
80,000	1,000
90,000	1,125
100,000	1,250
150,000	1,875
200,000	2,500
250,000	3,125
300,000	3,750
350,000	4,375
400,000	5,000
450,000	5,625
500,000	6,250
550,000	6,875
600,000	7,500

Galvanic Compatibility								
	Titanium	Copper	Brass/Bronze	S.S.	Lead	Iron	Aluminum	G.I.
Titanium (-0.3)	0	0.05	0.1	0.2	0.4	0.55	0.6	0.9
Copper (-0.35)	0.05	0	0.05	0.15	0.35	0.5	0.55	0.85
Brass/Bronze (-0.4)	0.1	0.05	0	0.1	0.3	0.45	0.5	0.8
S. Steel (-0.5)	0.2	0.15	0.1	0	0.2	0.35	0.4	0.7
Lead (-0.7)	0.4	0.35	0.3	0.2	0	0.15	0.2	0.5
Iron (-0.85)	0.55	0.5	0.45	0.35	0.15	0	0.05	0.35
Aluminum (-0.9)	0.6	0.55	0.5	0.4	0.2	0.05	0	0.3
G. Iron (-1.2)	0.9	0.85	0.8	0.7	0.5	0.35	0.3	0
	For harsh environments, such as outdoors, only these metals are allowed to be joined together							
	For normal environments such as during storage in warehouses							
	For controlled environments wherein temperature and humidity are managed							
	Never directly join these metals							

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