



System Description **CapSnap[®] Adapta[®] Expandable Water Bottling Systems**

Integrated bottle washing, filling and capping systems for 275-550 bottles per hour, 5-gallon (18.9 liter) and other common plastic bottles. The basic operating speed of each model is user adjustable over a wide range, and the maximum capacity can be increased easily from 275 to 450 or 550 BPH by installation of upgrade kits with no increase in floorspace required. Upgrades normally require only a day or two to install. Adapta™ systems have components that are NSF listed and certified, and meet or exceed CE, IBWA and FDA standards. Adapta™ systems are the only integrated bottling lines to offer the buyer a choice of filler “close-coupled” to the washer discharge or “independent” (connected to washer by covered conveyor). Refer to layout diagrams supplied separately.

System Can Include:

BOTTLE WASHER

- HJ-209 (2-wide, 270-550 BPH) straight-through design for 5-gallon and 3-gallon round (10.75" diam.) plastic bottles
- Heavy gauge stainless steel (304 and 316L) construction including piping, headers, removable twist lock spray nozzles, bottle carriers, carrier chains, drive sprockets, dual removable pump inlet strainers and all other wetted parts
- Manual load with automatic unload (automatic load option recommended for 550 BPH and up)
- Separate recirculated wash, recirculated rinse, sanitizer and final rinse cycles
- Adjustable sanitizer and final rinse cycle times to minimize waste water
- Fully integrated control panel with dedicated PLC, Allen Bradley or equivalent standard, but other options available.
- Choice of true touch-screen operator interface or industrial push-pull controls
- 3 HP wash pump, 2 HP rinse pump
- Heavy duty auto resetting safety clutch
- High capacity wash and rinse tanks
- Fully automatic adjustable indexing system
- Large removable tank access doors
- Tempered safety glass viewing windows on both sides
- Internal pulsating compressed air blow off jets to minimize solution carryover
- Standard auto-regulating electric wash solution heating system (other heating options available)
- 2" insulated washer shell
- **PATENTED HydroJet X-Stream™ HIGH PRESSURE WASHING SYSTEM** - Boosts inside the bottle washing pressure to 60-75 PSI (4 bar+) for 3x the pressure and up to 6x the flow rate of competitive bottle washers. Detergent wash solution is re-circulated for zero loss and maximum washing efficiency.

FILLER/CAPPER WITH INTEGRATED FILTERED AIR ENCLOSURE

- Sanitary 1-head (<=275 BPH) or 2-head (<550 BPH) automatic in-line filler for 5-gallon plastic bottles
- High volume low pressure delivery system
- Filler pump controlled by a VFD to control fill rate at various stages of filling, and to prevent over-pressurization on bottles improving bottle life.
- Exclusive sanitary overflow recovery system prevents the loss of product water
- Top quality stainless steel pump with sanitary fittings and wash-down rated motor
- Pneumatically actuated bottle lifting plate to reduce conveyor loading and increase bottle life
- PLC controlled pneumatic control panel
- Stainless steel centrifugal feeder bowl for cap orientation, includes sanitary 0.5 micron air filtration system
- Stainless steel cap hopper holds up to 1000 caps
- Cap level control in feeder bowl activates supply from hopper
- Height adjustable cap chute
- Cap spray-off system (functions as sanitizer if supplied with ozonated product water)

- Pneumatically actuated cap pressure pad
- Integrated enclosure with clear polycarbonate side panels and positive pressure 10 micron air filtration system
- Safety interlock shutoff switches on enclosure doors

CONVEYOR SYSTEM

- Heavy duty stainless steel power conveyor, plus top quality aluminum gravity roller conveyor
- 4.5" wide SS table-top style track with aluminum guide rails and self-lubricating UHMW track guide
- 1.5 HP wash down rated (water-proof) drive motors
- Fully integrated motor starters and wiring
- Heavy duty aluminum conduit
- Dust cover from washer discharge to filler inlet
- Conveyor Drips Pans and Lexan side covers to completely enclose bottles are available as options.

ADDITIONAL STANDARD FEATURES

- Auto-unload system at washer discharge standard on all Adapta models.
- Full color touch-screen operator interface on main control cabinet allows change of production speed, fill time and other key functions, and provides instant visual readout of system diagnostics, system fault and corrective action instructions.
- Thermostatically controlled Vortex compressed air cooling system maintains proper PLC operating environment without loss of waterproof integrity.
- Status indicating light tower
- Audible start alarm
- All wiring and components comply with UL, CE and NEC codes and standards
- Electrical enclosures and all exposed components are NEMA 4X rated (waterproof, corrosion proof)

Options and Accessories:

"INDEPENDENT" OR "CLOSE-COUPLED" FILLER/CAPPER

Adapta™ systems can be ordered with the filler/capper independent from the washer (recommended) or with the filler/capper "close-coupled" to the washer (monoblock style). In the close-coupled configuration, the washer unload section is completely enclosed and directly coupled to filler. Clean bottles automatically unload into a pre-filler chamber and transfer directly into the adjacent filler/capper. In the independent configuration, the bottles transfer to the filler/capper on covered conveyor, allowing more flexibility in filler/capper placement, as well as more bottle accumulation for most efficient system operation, especially at higher speed. Conveyor lengths included with close-coupled configurations may vary from specifications.

MULTIPLE BOTTLE OPTIONS

Adapta™ systems will accommodate all common bottle sizes. Certain modifications are required. Changeover is semi-automatic, and requires only a few minutes to perform. Options available:

- 5-gallon round + 3-gallon round (10.75" diam.)
- Other bottle sizes, types and combinations available

PRE-RINSE STATION

Uses pressurized overflow rinse water to clean loose debris from exterior of bottles prior to entering wash compartment. Dedicated drain safely removes debris from the system. Extends wash solution life. Solenoid valve interrupts operation during bottle cycling to prevent spray-out and water loss.

SINGLE-POINT DRAIN and SUPPLY CONNECTIONS

Factory installed SS water supply and drain piping simplifies washer installation, operation and maintenance.

- 2.5" Tri-Clover sanitary butterfly valves on wash and rinse tank drains
- Tank drains and overflows connected to a single 2.5" drain line
- 1" ball valves on tank inlets with both inlets connected to a single 1" fitting
- All stainless steel with Tri-Clamp sanitary connectors and Teflon gaskets on drain lines

BOTTLE WASHER AUTOMATIC LOADING

Automatic loading is available for all Adapta™ models, and is recommended for operation at 450 BPH and above. Requires additional power conveyor. Automatic load mechanism is standard on 450 and 600 BPH models.

ADDITIONAL POWER CONVEYOR

Adapta™ systems' standard layouts include adequate conveyor for efficient operations. Additional conveyor is required for automatic washer loading.

OZONE SYSTEM

Ozone product water treatment systems. To ensure 0.2-0.4 PPM ozone residual (IBWA guideline), water to be treated should not exceed temperatures of 72° F (22° C). TDS, organic contaminants and pH may also affect residual.

- Ozone generators from 1.0-7.0 pounds per day (19-130 g/hr) capacity
- Stainless steel (316 L) contact tank:
 - 300 gallon capacity
 - Automatic level controls
 - 4 cylindrical type diffusers and manifold
 - Safety check valve
 - 18" diameter manway with removable 1" thick clear acrylic viewport
- Tank valve and pipe package for connection between tanks and Cap Snap fillers:
 - Sanitary butterfly tank drain valve
 - 3" tee with cover plate and pipe isolation valve
 - Interconnecting piping between tanks, plus up to 20' connecting pipe from tanks to fill pump inlet

All stainless steel with Tri-Clamp connectors and Teflon gaskets

HYPER-OZONATOR

Supplies heavily ozonated water (up to 1.5 PPM) to bottle washer for sanitizing bottle interior following recirculated rinse cycle. Can also be used to supply ozonated water for final rinse. NSF certified and listed to criteria C2 and federal standard 3, sanitization efficacy test method 7.2.2.2. Ozone generator required.

- Ozone contact tank with infeed water level control
- Dual diffuser rods and venturi ozone injector
- Stainless steel pump
- Dual ozone gas flow meters
- Contact tank and pump mounted on a common pedestal, and factory wired and plumbed to the bottle washer.

FINAL RINSE PUMP

Required to supply clean (or product) water under 20-30 PSI pressure to final rinse stage of bottle washer. Not necessary if other pressurized water source is used or if HZ-2 Hyper-Ozonator™ is used for final rinse as well as sanitize stage.

- 1 HP stainless steel pump mounted on pedestal base
- Integrated motor starter factory wired to washer
- Factory plumbed with stainless steel piping from pump to final rinse connection

BOTTLE WASHER INTERIOR LIGHTS

Greatly improve interior visibility during operation and maintenance, and enhance "showcase" appearance. NEMA 4X rated (pressure wash-down corrosion resistant).

DC-600 D-CAPPER

Semi-automatic free-standing decapper allows a single operator to remove NonSpill™ caps from 5-gallon and 3-gallon bottles at speeds up to 600 BPH. Pneumatically actuated – no electrical connection required, maximizing portability, and simplifying installation. All stainless steel construction.

DC2200 D-CAPPER

Fully automatic model designed for over conveyor mounting. Removes and discards NonSpill™ caps from empty 5-gallon bottles prior to washing. Speed up to 2,200 BPH (up to 3,200 BPH for duplex model) for bare bottle operation with proper accumulation. Recommended for systems of 600 BPH and up with automatic washer loading. Minimum 10' conveyor required for proper operation. Fits most standard conveyors. Application should be reviewed with Cap Snap to assure successful installation.

Bottle-backup sensor prevents back-up on discharge conveyor

Built-in sensor allows bottles without caps to pass through

- Pneumatic height adjustment (optional) for different bottle sizes
- Audible alarm sounds if cap is not removed completely

- Alarm signal can be used to activate bottle ejector (optional)
- 30" (+/-2") conveyor track height (additional charge for other height)
- Compressed air required (15 CFM @ 90 PSI)
- 120VAC/1ph/60 Hz (extra cost for other supply)
- Bottles-in-crate conversion (optional, reduces rated capacity to 1600 BPH)
- Automatic bottle ejector (optional) removes bottle from discharge conveyor if de-capper fails to remove cap

VOLTAGE CONVERSION

Standard power supply for the Adapta™ system is 460V/3Ø/50-60Hz. There is an extra charge for voltage other than 460V (e.g. 208V, 240V, 380V, 415V).

SPARE PARTS KITS

All essential or recommended spare parts for normal service under specified conditions. Available kits:

- Adapta™ System Minimum (2 yr.)
- Adapta™ System Extensive (5 yr.)
- Ozone System (generator and contact tank)
- HZ-2 Hyper-Ozonator™

Adapta™ Model	AA275	AA450	AA550
Capacity (BPH, 5-gallon bottles)	275	450	550
Bottle Washer Model	HJ-209	HJ-209	HJ-209
Bottles Wide	2	2	2
Pre-Rinse	OPT	OPT	OPT
Automatic load	OPT	INCL	INCL
Filler/Capper Model	FCR1-IL	FCR2-IL	FCR2-IL
Fill Heads	1	2	2
Recommended Ozone System	EO3 3.5lb	EO3 3.5lb	EO3 3.5lb

OTHER OPTIONS AND EQUIPMENT AVAILABLE

- Leak Detector
- Wash solution heating options – steam plate coil or external process heaters
- External mounted sanitizer recirculation methods
- FDA compliant fill rooms
- Robotic bottle loading systems
- CIP systems
- Metric mechanical packages
- PLC options
- Floor level cap hopper with automatic elevator
- RO Systems
- Shrink band applicators
- Laser coding devices
- Contaminant detection devices

System Operation

The time-tested industry standard PortaPlant™ and the new expandable Adapta™ systems, manufactured by the Cap Snap Water Equipment Group of Midbrook, Inc. are completely integrated modular water bottling lines for 5-gallon (19 liter) and other refillable bottles. A wide range of models are available, each designed to include the bottle washer, filler, capper and interconnecting conveyor system in a highly efficient layout which can be operated by a minimum number of personnel.

Standard Adapta™ system configurations are available for capacities of 275, 450, 550 bottles per hour (BPH), while the larger PortaPlant™ systems are for 900, 1000, 1200, 1500, 1800, 2100, 2400 and 3000 BPH. In addition to the standard models, Cap Snap can provide custom installations with appropriate combinations of components for any capacity. All systems,

options and accessories are engineered to the most exacting standards, and are completely assembled and tested at the factory prior to shipment.

Adapta™ and PortaPlant™ bottle washing components were the first ever to receive NSF certification and listing, and meet or exceed all applicable IBWA, FDA, BWCA, CE and other standards for water bottling operations.

Operating Sequence

1. Washing. Operation begins with the bottle washing process which consists of four stages (five if optional pre-rinse is included) within the washer. Some stages require multiple consecutive stations, while others require only one station.

Empty bottles are loaded into the washer in a convenient horizontal position. Manual bottle loading is standard for the Adapta™ systems (up to 550 BPH). Automatic loading is standard for PortaPlant™ systems, and is optionally available for the Adapta™. Automatic loading is recommended for speeds of 550 BPH and up. After loading, the bottles move to the successive wash, recirculated rinse, sanitize and final rinse stations, stopping at each for a preset dwell time. Dwell time is operator adjustable. The total process time should include at least one minute of wash time. The bottles advance one consecutive station at a time, stopping precisely at each. Compressed air nozzles are provided after the main wash and final rinse stations to remove accumulated water from the top of the bottles.

- a. Main wash.** Wash detergent solution is heated by electric heaters or steam coils inside the wash tank, or by an external solution heater. Non-caustic detergents, available from Cap Snap, are recommended for plastic bottles. The main wash pump recirculates the solution under high pressure through special quick-disconnect stainless steel spray nozzles. Multiple nozzles direct the spray inside and outside each bottle, with no less than 6 gallons per minute (GPM) flow rate to the inside. At least four and as many as eight wash stations are provided, depending on the washer model. One station may be fitted with the exclusive CapSnap® patented HydroJet X-Stream™ high pressure washing system. The Hydro-Jet™ system boosts washing pressure to greater than 60 PSI, allowing over 3 times the pressure and 6 times the wash power of competitive designs. The wash solution drains back into the wash tank where it is filtered and recirculated.
- b. Recirculated rinse.** Semi-fresh rinse water is recirculated from the rinse tank. The bottles are thoroughly sprayed inside and out to remove any residual wash solution. The water drains back into the rinse tank where it is filtered and recirculated. A constant supply of fresh water filling into the rinse tank from the final rinse keeps the detergent residual in the rinse water at a very low level. Overflow rinse water goes to the waste drain, or (optionally) to a pre-rinse station prior to waste.
- c. Sanitize.** Ozonated water, chlorinated water or commercial sanitizing agents may be used to sanitize the inside of the bottle. The solution is introduced from an external reservoir via a pump to the sanitizer solenoid valve on the washer. The valve opens for a few seconds during each cycle, long enough for sanitizer solution to contact all interior surfaces of the bottle. The spray time is operator adjustable. Any excess sanitizer drains into the rinse tank, helping to maintain sanitary conditions throughout the rinse process. (Please refer to information regarding the exclusive Cap Snap Hyper-Ozonator™ system for bottle sanitizing.)
- d. Final rinse.** Fresh or product water is sprayed into the bottle to remove all semi-fresh rinse and sanitizer solution residual, leaving the bottle completely clean and ready for filling. If filling with distilled or purified water, only product water is recommended for final rinse, otherwise any clean source can be used. Following final rinse, excess water accumulated on the base of the overturned bottle is blown off by compressed air, reducing waste.

In washers fitted with the pre-rinse option, overflow recirculated rinse water is piped to the first wash station (normally unused in standard Cap Snap bottle washer models), and used to spray loose dirt and debris off the bottle exterior. The water from this stage exits the system via a dedicated drain. The Pre-rinse option extends the life of the wash detergent solution. Pre-rinse is not available for "X" model washers (W-9X, etc.)

2. Filling. After washing, the bottles automatically unload onto the filler infeed conveyor. The filler may be close-coupled to the bottle washer or independent and connected by covered conveyor. Fill times for 5-gallon bottles can be as low as 6-8 seconds. A special overflow recovery system prevents overflow onto the conveyor and the floor, and recovers valuable product water for return to the fill pump. Fill timing can be operator controlled to within 0.1 seconds.

3. Capping. After filling, the bottles proceed through the capper. The Adapta™ and PortaPlant™ systems use different capping techniques, each designed especially for the speed of service required. The cap hoppers (included) hold over 500 caps (Adapta™) or 1000 caps (PortaPlant™) for automatic feeding of the orientor. The exclusive Cap Snap spinner orientor system ensures proper cap placement, while a special water jet sprays the inside of each cap just prior to pressing on the

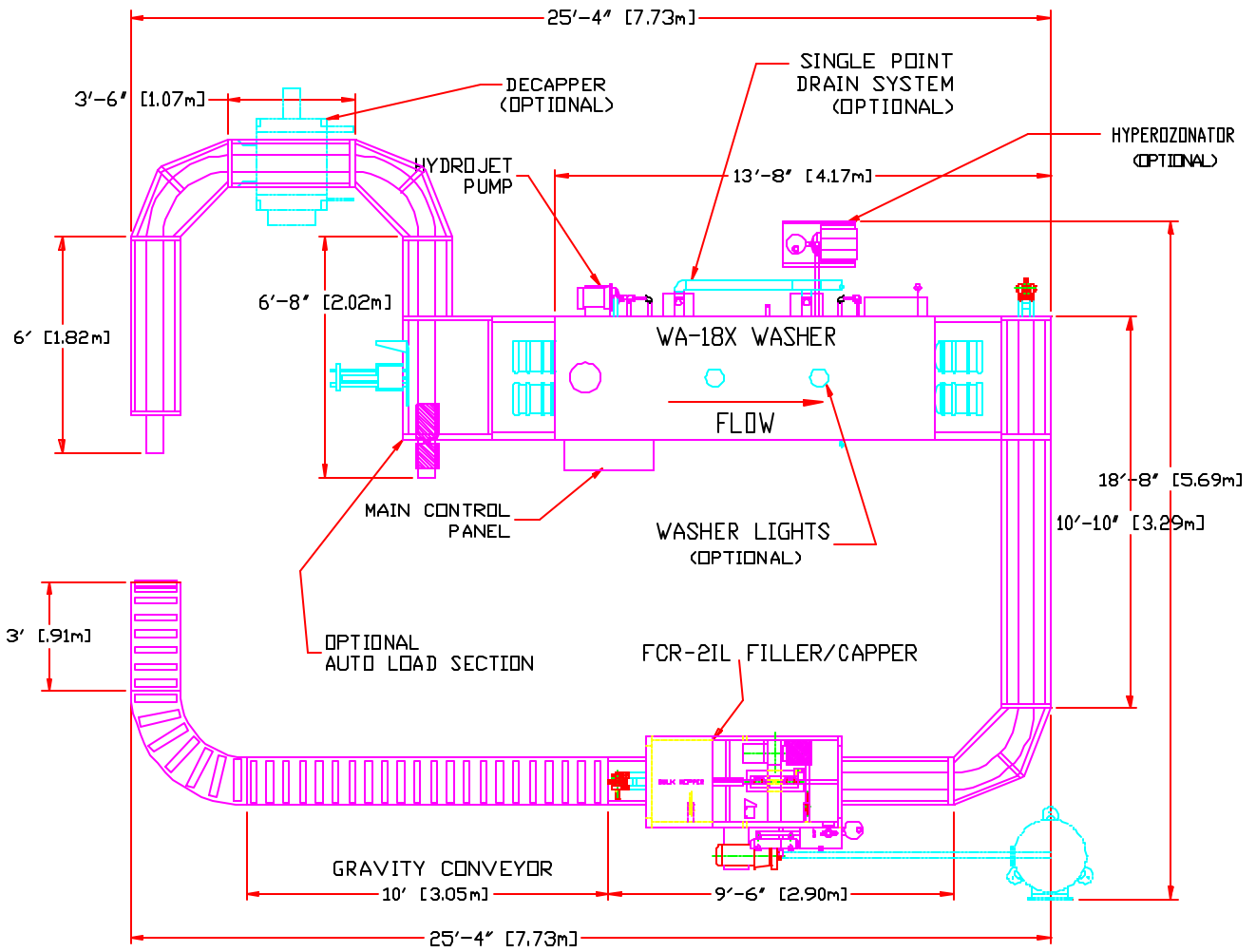
bottle. The cap spray primarily lubricates the cap for easier seating on the bottle, and may also remove loose debris. Using ozonated water in the cap spray may offer some degree of cap sanitization as well.

The filling and capping operations in the Adapta™ systems are self-contained in a special clear enclosure with positive pressure air filtration. Filled and capped bottles are automatically conveyed from the filler and capper to the unload section of the conveyor system for convenient off-loading of full bottles onto waiting pallets, crates or racks. Cap Snap's exclusive new Robo-Loader™ robotic rack loading and unloading, crate loading and unloading, and palletizing/depalletizing system is available from Cap Snap for large capacity bottling lines.





Typical plan view for Adapta 550



CapSnap Equipment is approved, listed, and certified by:

