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Ultra-Flow CIP Systems

An Efficient CIP Alternative in a Compact, Portable Design

The patented **Sani-Matic Ultra-Flow CIP** is a self-contained, portable system that is easily programmed to accommodate a wide variety of single-use, recirculated CIP applications. Designed for highly critical cleaning situations, the Ultra-Flow can supply a wide range of CIP flow rates and pressures while meeting cGMP and ASME-BPE standards.

In contrast to a conventional CIP system - which must maintain a significant quantity of water in the supply tank to prevent pump cavitation - the Ultra-Flow needs a mere 6 gallons of water to maintain satisfactory head pressure. The eductor return system draws solutions back without the need for a return pump and separates air from the wash and rinse solutions.

The ideal solution for:

- Installations with limited floor space
- Facilities with limited water and drain utilities
- Process vessels with low and/or small outlets
- Plants without permanent supply and return lines
- Replacement of existing or outdated CIP systems

Advantages of the Ultra-Flow:

- Eliminates need for return pumps and a large surge tank
- Reduces water and chemical usage
- Reduces cycle time
- Eliminates pooling and solution build-up in the process tank
- Self-cleaning
- Minimizes heat-up times
- Eliminates cross contamination through high turbulence

Two Models Available to Meet Your Cleaning Needs:

Ultra-Flow 110

- Compact, space saving, portable design – 74″L x 33″W x 80″H
- Operates within a wide range – up to 110 gpm @ 60 psig
- Electric or steam heating available
- For process tank diameters up to 10′
- For process line diameters up to 3″

Ultra-Flow 110 Utility Requirements

- Instrument Air – ½″ NPT, 10 scfm @ 90 psig
- Water Supply – two 1″ tri-clamps, WFI, DI, potable and ≤ 10 gpm @ 25 psig, 20˚-80˚C
- Drain – 2″ tri-clamp (programable to meet application)
- Dry Weight (approx.) – 1000 lbs
- Electrical Power (with 15 kW electric heater) – 50 amps @ 460 VAC, 3 Ph, 60 Hz
- Electrical Power (with steam heat) – 27 amps @ 460 VAC, 3 Ph, 60 Hz
- Plant Steam – 1½″ flange, 540 lbs/hr @ 50 psig
- Plant Condensate – 1″ flange
- CIP Supply – 2″ tri-clamp, 0 - 110 gpm @ 60 psig
- CIP Return – 2″ - 3″ tri-clamp, 0 - 110 gpm @ 11′ of head @ 80ºC

Ultra-Flow 45

- Compact, space saving, portable design – 62″L x 24″W x 73″H
- Operates within a wide range – up to 45 gpm @ 55 psig
- Electric heating included
- For process tank diameters up to 4′
- For process line diameters up to 2″

Ultra-Flow 45 Utility Requirements

- Instrument Air – ½″ NPT, 10 scfm @ 90 psig
- Water Supply – two 1″ tri-clamps, WFI, DI, potable and ≤ 10 gpm @ 25 psig, 20˚-80˚C
- Drain – 2″ tri-clamp (programable flow rate to meet application)
- Dry Weight (approx.) – 900 lbs
- Electrical Power (with standard 12 kW electric heater) – 27 amps @ 460 VAC, 3 Ph, 60 Hz
- Electrical Power (with optional 24 kW electric heater) – 43 amps @ 460 VAC, 3 Ph, 60 Hz
- CIP Supply – 1 ½″ tri-clamp, 0 - 45 gpm @ 55 psig
- CIP Return – 2″ tri-clamp, 0 - 45 gpm @ 8.5′ of head @ 80ºC

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P:800.356.3300 F:608.222.5348 sanimatic.com 1915 S. Stoughton Rd., Madison, WI 53716

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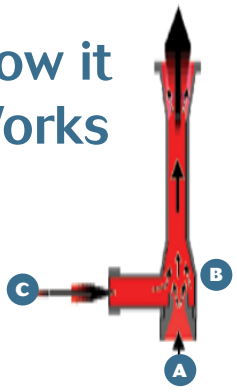
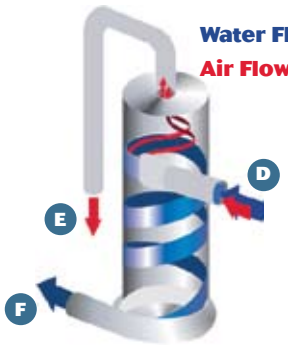
How it Works



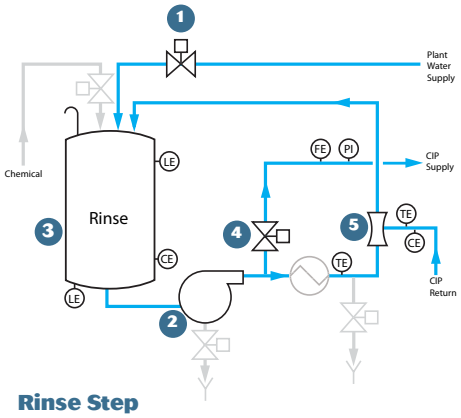
Eductor



Air Separation Chamber

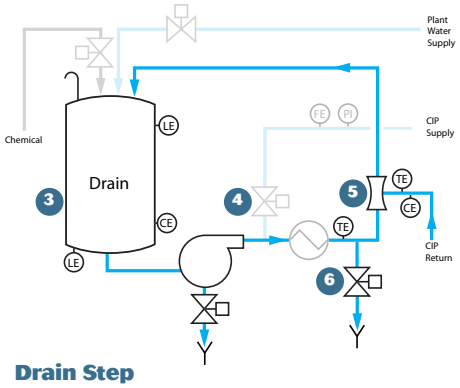
Eductor Return System

- **A** Motive solution is pumped to the eductor through this nozzle.
- **B** Vacuum is created within the eductor through a series of velocity changes. The velocity of the solution exiting the nozzle is reduced in the wide body and then increased again as solution exits the top of the eductor.
- **C** A mixture of air and solution (in the return line) rushes in to satisfy the vacuum within the eductor. The volume of both air and liquid is greater than that being supplied to the vessel.
- **D** Returned air and solution enters the chamber through top port.
- **E** Centrifugal action spins the solution around the walls of the chamber, forcing air to be released upward through the center of the vortex and out of the vent.
- **F** Solution exits back to the pump from the bottom port.



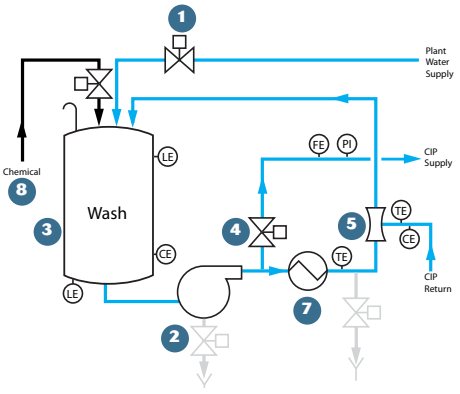
Rinse Step

The separator tank (**3**) is filled through one of the two separator tank water fill valves (**1**). The supply pump (**2**) draws the water from the separator tank (**3**) and delivers the solution to the process through the discharge control valve (**4**) at a programmed flow rate. At the same time, solution is pumped through the eductor (**5**) and back into the separator tank (**3**) inlet, thereby creating a vacuum at the CIP return connection. The high turbulence created within the Ultra-Flow prevents the settling of any solids and provides self-cleaning of the system. The rinse step is followed by a drain step. Typically, a series of 3-4 rinse/drain steps are utilized for the final rinse proven by low conductivity at the CIP return connection.



Drain Step

The discharge control valve (**4**) is closed and solution from the separator tank (**3**) is pumped through the eductor (**5**) and back into the separator tank (**3**) inlet, thereby creating a vacuum at the CIP return connection. Returning solutions create a high-level condition in the separator tank (**3**) causing the drain control valve (**6**) to bleed solution to drain at a set flow rate until the process and separator tank (**3**) are empty.



Wash Step

The separator tank (**3**) is filled through one of the two separator tank water fill valves (**1**). The supply pump (**2**) draws the water from the separator tank (**3**) and delivers the solution to the process through the discharge control valve (**4**) at a programmed flow rate. At the same time, solution is pumped through the eductor (**5**) and back into the separator tank (**3**) inlet, thereby creating a vacuum at the CIP return connection. The high turbulence created within the Ultra-Flow prevents the settling of any solids and provides self-cleaning of the system. CIP solution temperatures are elevated utilizing a heater (**7**) in the recirculation loop. Chemical solutions (**8**) are injected into the highly turbulent separator tank (**3**) and controlled through conductivity.

Optional Documentation

- (FRS) Functional Requirement Specifications
- (HDS and SDS) Control System Design Specification
- (FAT) Factory Acceptance Test report
- (SAT) Site Acceptance Test document
- (IQ/OQ) Installation and Operation Qualification
- Traceability matrix
- ISA Data Sheet
- Cleaning and passivation report
- Weld video record (Boroscope)

Controls/Programming

- Allen Bradley CompactLogix (standard)
- Ethernet communication
- PanelView OIU
- 40 editable cleaning cycle programs
- Report ticket printer available
- UL listed, 304SS, NEMA 4X enclosure

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