



*Hamo 210*

*Hamo 420*

**Industrial and cGMP conform Cleaning Equipment**

# Hamo 210/420

## Unique solutions for your critical Cleaning Process

Hamo Cleaning equipment for industrial and life sciences fields are special cleaning equipment designed to process critical components such as, fermentation containers, big bottles, glassware, components of filling and packing-machines, mixers, cones, palettes, boxes, tableting-tools, and other parts from the pharmaceutical, diagnostic, cosmetic and food industries.

## Cleaning Equipment with maximum Flexibility

Hamo Cleaning equipment are available in various sizes, to accommodate many different sizes of cleaning goods:

### Hamo 210

Chamber usable dimensions W x D x H, mm (inches):  
640 x 640 x 640/1000 mm (25,2x25,2x25,2/39,4)

### Hamo 420

Chamber usable dimensions W x D x H, mm (inches):  
1290 x 800 x 700/1000 (50,8 x 31,5 x 27,6/39,4)  
or twice: 640 x 800 x 700/1000 (25,4 x 31,5 x 27,6/39,4)

### Chamber

The chamber and tubing are designed to fully drain. The chamber ceiling and the chamber are designed with slopes to achieve a quick and full emptying.

On request the chamber is equipped with internal lighting, to monitor the process during cleaning.

### Glass-Doors

The units are executed in a single door-version, or as double-door if wash load shall be introduced through the machine into an higher classified room.

The doors are made out of double-walled hardened glass, with surrounding silicon-seals.

### Load- and Unloading

By means of an external transport trolley the machines are loaded and unloaded. Automated systems with feed- in and feed-out roller conveyors are also available.



### *Dosing Pumps*

Up to four detergents or additives are dosed (monitored by a flow-meter) into the machine; the dosing volume set values are part of the wash-cycle setting; the pumps are integrated in the machine.

### *Utilities*

All media-supplies (except drain) are from above:

- The electrical and pneumatic supply
- Up to three separate water supplies
- Up to 4 additives/detergents
- Clean-air supply (eg for blow-out of process-piping)

### *Service Friendliness*

The machine concept allow easy access through doors to the control cabinet, to the dosing systems, the sensors, and the water-sample-probes.

### *Energy Efficiency*

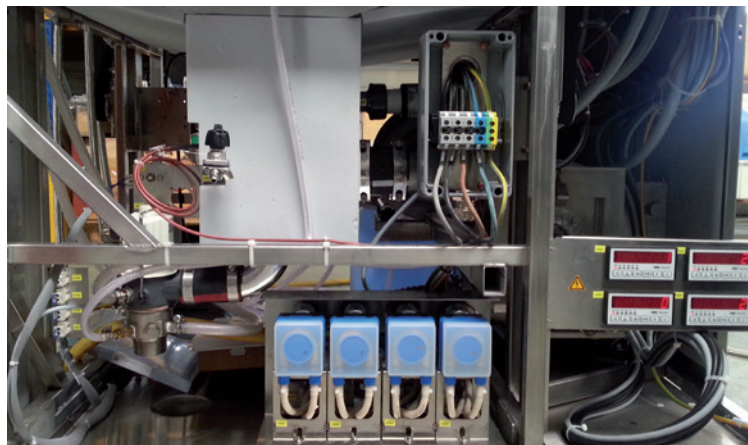
Hamo machines are built according the latest technologies to reduce the loss of energy and the use of resources. The double walled chamber are asbestos and chlorine free insulated, which reduces the heat loss to a minimum. The innovative pump and spray system reduces the use of water to an absolute minimum.

### *Safety*

The machines are built to the latest safety guidelines: Main switch and safety circuits, pressure monitoring of the pneumatic supply, door-opening only if chamber temperature is below safety level, dripping pan with alarm, etc.

### *Machine Documentation*

The machine is shipped with a detailed machine documentation according CE, containing eg: Manual, spare part list, lay-out, P&ID-plans, data-sheets, CE-conformity declaration, electrical-diagram, pneumatic diagram etc.



## Process-Safety / Reproducibility

### Control

The machine is controlled via a modern Control-system which stands for reliability and flexibility. The visualization (HMI) runs on a touch screen.

The cleaning cycles are individually configured to be adapted to the soiling and the specific requirements of the wash-load.

The integrated user management on the software allows easy configuration of the access-levels of each user-group. Specific user-group have different access-rights; therefore configuration or changes on cleaning-processes can only be made by authorized personal.

### Job-Report / Load-Documentation

cGMP and state of the art quality methods request the documentation of the cleaning processes and their critical parameter.

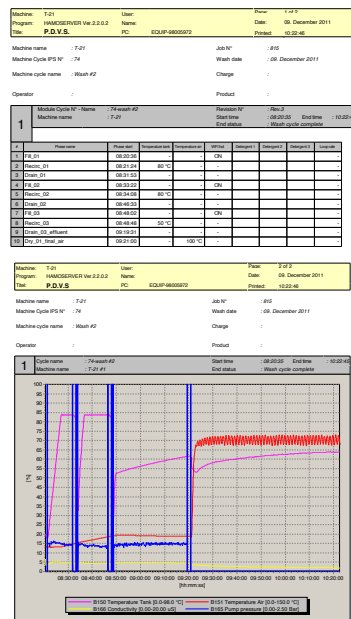
The job-report and /or the load-documentation can therefore be printed by a local printer.

### PDVS and Process-Monitoring-Options

The PDVS (Process Data Validation System) for Water-Temperature, the drying temperature as well for the dosing-flowmeters for two detergents are installed default on the standard machine.

Process-independent and redundant measuring probes monitor the critical parameters with alarm.

Optionally the PDVS can be extended to more parameters, such as eg conductivity in tank, PH-measurement, pump-pressure measuring, and two more detergent-volumes or temperatures.



### Calibration

Machines working in a qualified environment have to be maintained and calibrated on a regular base.

The components in Hamo machines allow easy maintenance and quick calibration in accordance with the latest regulations.





### *Tank Independent Finals Rinse System (IDRS)*

A final rinse system in sanitary execution , using directly supplied water for rinsing without contacting the tank or the pump; it can also be used to blow off with clean air.

### *Drying*

The dryer of the standard machine sucks the air through a H13 filter and blows the air then with a side-channel-blower into the chamber and the wash-system.

At the pharmaceutical-Version the air is (optionally) pre-filtered F8 and is – just before entering the chamber and the wash-system- again filtered via a filter HEPA H13 (Filter-monitoring system optionally available).

### *Qualification Support Package*

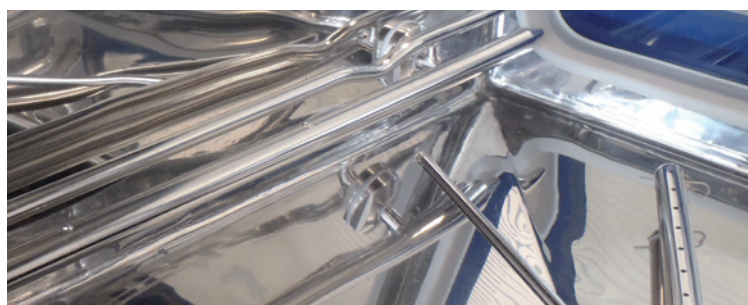
Hamo can offer the customer a full qualification support package in the form of extensive professional support-documentation as well as with qualification-services. This service results in a massive reduction of time and cost for IQ, OQ and PQ as well as for calibration and maintenance.

### *Regulation / Quality Assurance*

Design and manufacturing are by a quality system ISO 9001 and a team with high quality experience. The manufacturing process is guidelined by reviews and milestones which guarantee the requirements of FDA, EMA, cGMP as well(optional) GAMP.

### *IQ/OQ und FAT/SAT*

During factory acceptance test, based on the standard FAT protocols the machines are checked on conformity according the URS/FS. Trained Hamo personal set up, install, start-up, calibrate the equipment; also they can execute installation qualification IQ and Operational qualification IQ as well they can support any performance qualification PQ.



## Customized Racks / Application Laboratory

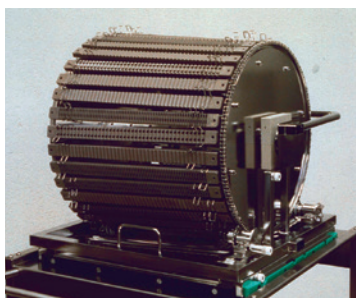
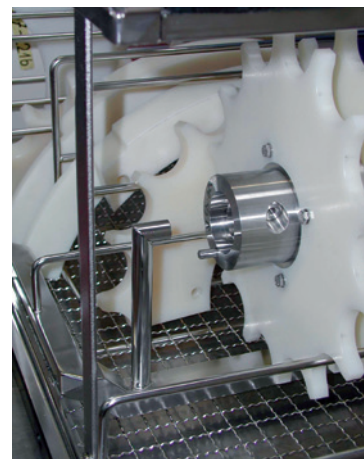
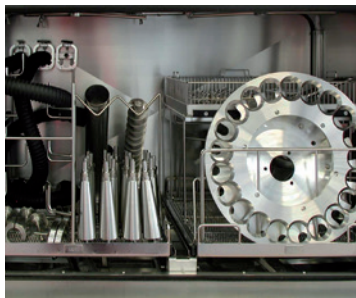
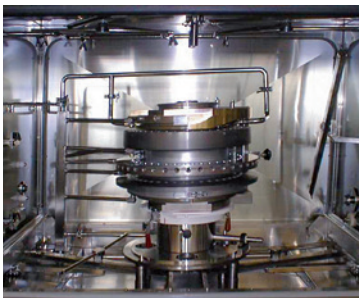
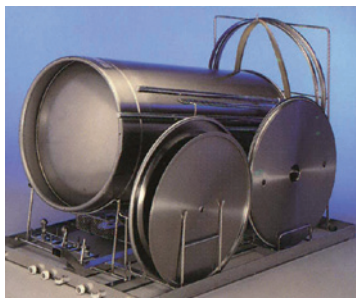
### Racks

Hamo have specialized personnel with long experience in industrial and pharmaceutical cleaning capable of developing customized racks.

This experience paired with intense cooperation with our customers, allow innovative and creative solutions.

In special-xecution all racks are completely in stainless steel 316L, electro polished and are delivered with the requested documentation and the necessary certificates.

Hamo also offers racks for existing Hamo machines.



### Application Laboratory

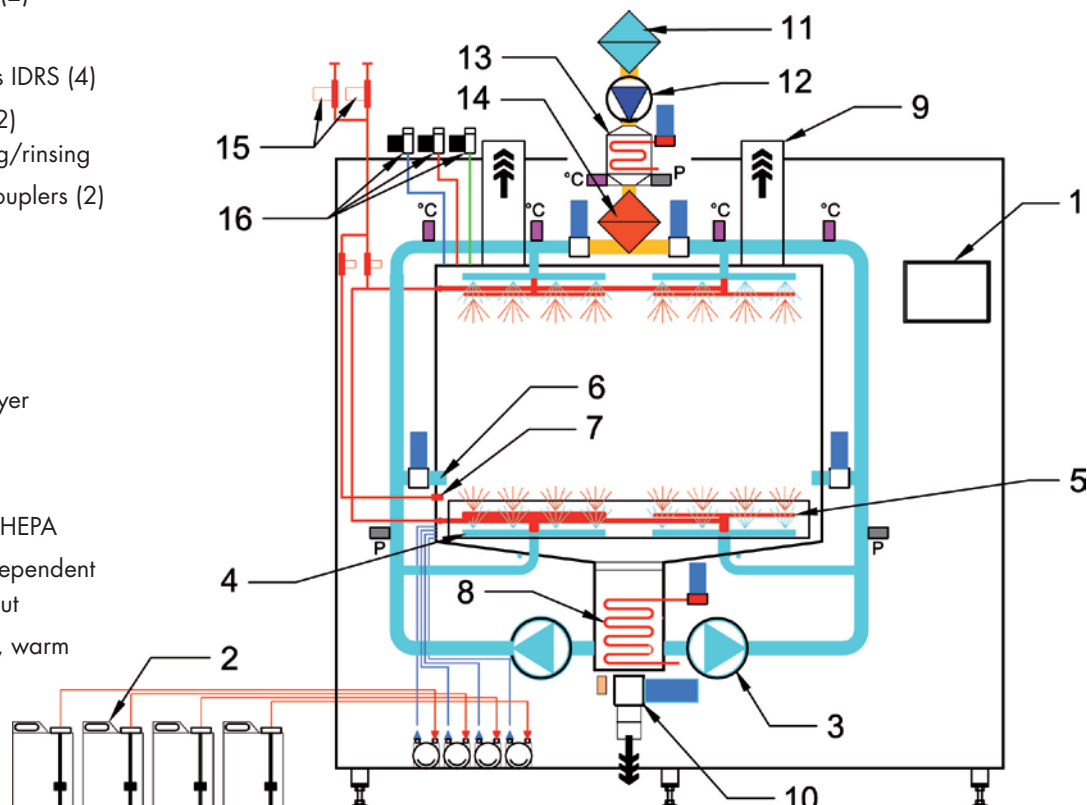
New cleaning cycles are developed in the application laboratory.

Customized cleaning processes will be (on request together with the customer) tested and documented.

## Technical Data

Hamo	210	420
External Dimension mm (inches)		
Width	1200 (47,2)	2200 (86,6)
Height	1800 (70,9)	1800 (70,9)
Height with open door	2550 (100,4)	2650 (104,3)
Depth	900 (35,4)	1100 (43,3)
Usable Dimension mm	640 x 640 x 640	1290 x 800 x 700
WxDxH (inches)	(25,2 x 25,2 x 25,2)	(50,8 x 31,5 x 27,6)
or twice mm		640 x 800 x 700
WxDxH (inches)		(25,2 x 31,5 x 27,6)
Special Height mm (inches)	1000 (39,4)	1000 (39,4)
Certificates	Material certificate 2.2, optional 3.1	
Material	Stainless steel in contact with wash media AISI 316L / 1.4401 / 1.4404 / 1.4435 electro polished	
Electric	3 x 400 V, 50 Hz	
Water	Four different water (eg Tap water, WFI, Demi, Osmose etc)	
Pneumatic	6–8 bar, oil free	
Dampf	Saturated steam 2–6 bar (optional)	
Steam	50 l/min gravity	

- 1 Control(HMI)
- 2 Containers (4) for detergent and additives
- 3 Circulating pumps (2)
- 4 Sprayarms (4)''
- 5 Option: Sprayarms IDRS (4)
- 6 Contact couplers (2)  
for internal washing/rinsing
- 7 Option: Contact couplers (2)  
for IDRS
- 8 Water heater
- 9 Air extraction (2)
- 10 Drain valve
- 11 Air suction filter dryer
- 12 Ventilator dryer
- 13 Air heater dryer
- 14 Sterileairfilter H13 HEPA
- 15 Valves for tank independent  
rinsing and blow out
- 16 Water supply cold, warm  
and pure water





## Your Competence-Center for Precision Cleaning



Amsonic CleanLine

Hamo/Amsonic offers a wide range of water-based and closed circuit A3 solvent based cleaning units that provide thorough cleaning processes for various industrial sectors:

### Water-Based Precision Cleaning Equipment (Ultrasonic)

#### Amsonic CleanLine / AquaLine

High performance-Ultrasonic-Precision-Cleaning equipment

#### Amsonic FlexLine / TTC

Ultrasonic compact equipment and table top machines



Hamo 200

### Water-Based Spray Cleaning systems

#### Hamo 200

Compact spray-cleaning and drying equipment for various application

#### Hamo 210 / 420 / 840

Spray-cleaning equipment for life sciences application



Hamo PG 800

### Pharma-Conform Spray Cleaning systems (cGMP)

#### Hamo PG 800 / 1300

Pharma-Conform (cGMP) Cleaning equipment in single or double door execution (Bio Seal)

#### Amsonic Hamo HPM

High pressure cleaning systems (>80 bar) for pharmaceutical application



Amsonic 4000

### Solvent-Based Precision Cleaning Equipment

#### Amsonic 4000 / 4100 / 4400

Solvent-based Ultrasonic equipment (Class A3)  
Cleaning under vacuum, above or below flame-point

### Detergents / Additives

#### Amsonic PreciClean / Hamo liquid

Water based detergents



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