



# cGMP Cleaning Systems

## VCD Fact Sheet

# Automation

## Application

For an efficient and thorough cleaning of various containers and drums. Pre-selection of different uses:

- Container cleaning
- Drum cleaning
- Outside cleaning

The complete cleaning device VCD and its procedure are designed, manufactured and documented according to the current GMP and security technical demands, concerning the personal security as well as the unit protection.

## Description

The type VCD is an automatic cleaning device, fully covered and equipped with a programmable PLC and a touch panel for operation and visible observation of the cleaning process. It is a solution for a flexible process in response to requests in the automatic internal cleaning process of containers and drums. The cleaning device provides up to eight menu-driven programmable cycles. The overall dimensions with the maximum lifted connecting plate for the automatic connection to the containers averages (length and height of the extension can be customized):

- 2000 mm x 2100 mm up to  
3100 mm x 1100 mm (W x H x D)

The overall dimensions excluding lifting device for spray nozzle and automatic container seal:

- 1200 mm x 1800 mm x 1100 mm  
(W x H x D)

Container dimensions, standard:

- 1200 mm x 1000 mm up to  
2000 mm x 1200 mm (W x H x D)

Maximal vertical height difference between containers:

- 1000 mm height

# Dosing

# Outside Cleaning

# Inside Cleaning

# Drying

# Qualification

# Validation





# Müller Cleaning Systems

## CIP/COP for containers and drums

### Features

**Control System.** A programmable logic controller PLC with all essential components and a colored contact sensitive touch panel provides a secure and quick operation of the cleaning machine. The eight programmable start buttons are easily connectable to the cleaning programs. Programmable logic arrays make it possible to choose the parameters of cleaning medium, time, temperature and other key process parameters.

**Automatic connection to the container hole.** A vertical rising medium connecting plate with rotating spray nozzle and drying air distributor is automatically driven by two pneumatic double action cylinders. Autolevelling of the connecting plate covering a height difference of 1000 mm maximum is possible. This allows the cleaning of different high containers.

**Automated tightening.** The fully automated container sealing takes place over a pneumatically radial tightening gadget which is positioned at the extension and placed on the container opening. A pressure sensor monitors the container tightening.

**Inlet ports for process medium.** The inlet ports are arranged at the same central place, at the side of the cleaning system. These standard ports include the electrical and pneumatic connections as well as four mediums (for example three water qualities and one process steam for melting).



**Service doors and panels.** Two service doors on the front side provide access to the electrical and pneumatic components, the detergent pumps and their storage area. The panel on the back provides access to all other components.

**Detergent pumps.** The provision of up to two diaphragm detergent pumps, including injection valve, level sensor and suction lance with screen and also storage place for detergent containers is standard. The metered detergent volume can be set by adjusting the stroke length of the tappet. The dosing time is set in the cleaning program.

**Instrumentation tags.** The tags are marked clearly.

**Factory acceptance test (FAT).** The standard factory acceptance test includes the verification of the standard configuration and the accessories on the basis of the user requirement specification (URS). Installation and operation tests (IQ/OQ) are held according to the Müller Cleaning Solutions standard protocol.

**Validation documentation.** The VCD cleaning device is provided with the following standard documents:

#### Operator manual with technical documentation

- Operating instructions
- CE-conformity declaration
- Spare parts list
- Layout plan
- P&ID-diagram
- Spec sheets
- Electro diagram
- Pneumatic diagram

#### Qualification documentation

- Introduction
- Project information and description
- Order confirmation
- Specification of the whole device
- Project drawings
- Parts data sheets with certificates (2.2) and CE-conformity
- Parts list
- System test report (protocol for FAT)

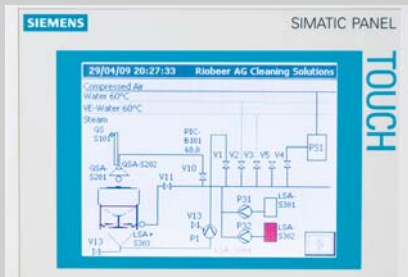
## Safety features

- Main switch
- Emergency stop
- Pressure monitoring of the compressed air inlet
- Monitoring of the sealing and hub of the cleaning container with the aid of a proximity switch and the compressed air inlet
- Safety function button; made for the arm extension lowering with media and container sealing plate
- Different access control levels (password protected)

## Cleaning programs

The cleaning programs are changeable over a multiple choice drop down menu. The cleaning program configuration is simplified over predefined phases.

- Pre-washing
- Washing
- Neutralization
- Rinsing
- Evaporation (if available)
- Air-cleaning
- Drying
- Cooling



There are predefined selection screens for the mentioned phases:

- Which water quality (cold, warm or purified water) depending on the installation
- Which detergent; dosing feeder 1 or 2 (not possible in the rinsing process)
- Phase length; entering "minutes" in the time frame.
- Overtravel phase time (emptying of residue)
- Phase temperature (depending on the machine configuration)
- Phase conductivity (depending on the machine configuration)
- Phase recirculation: yes or no (depending on the machine configuration)

The generated and saved cleaning program can be connected with an access key.

## Optional features

These features are for your individual requirements and are part of the standard configuration.

**Recirculation system for cleaning medium** to save water and detergent; consisting of disposal and fill control, feed tank with an integrated level control, radial pump, conductivity and pump pressure measuring head; the pump pressure capacity is defined by the container size; easy-mounting and dismantling with clamp connections.

**Inline heating device** to heat once through and / or re-circulated cleaning media with a temperature control by the cleaning program. Equipped with a PT100 temperature sensor (electrical or steam heated).

**Drying system** for the inside drying of affiliated containers with filtered (H13) and heated air (electrical or steam heated); temperature and time are adjustable by the cleaning program.

**Cleaning rack** to clean up barrels instead of containers; rack with an injector for the inside cleaning and a flexible connection to the cleaning machine.

**Outside cleaning with a hand pistol** to clean the external equipment of the wash goods.

## Construction

All components of the cleaning system in contact with process medium are constructed of 316L stainless steel. Sealing is provided with FDA certificates. The welding process meets GMP standards. All wetted parts are 100% penetration welded, using argon shielding gas. All connections, excluding steam connection, are done by means of clamps. The frame, cabinet and fastener are made of 304L stainless steel. The piping is sloping and fully drainable. A lance with rotating 360° spray nozzle is integrated in the connecting plate to the container. Levelling legs are included to facilitate the installation. The whole cleaning device is easily movable with a manual lift truck.



## Utility requirements

- **Plant compressed air**, dry and oil free. pressure 7 bar, compressed air hose 8 mm i.D.
- **Electricity**, 3 x 400 V, 50/60 Hz, 32 A (with options up to 64 A)
- **Water**, flow rate 35 l/min pressure of 2 bar. Three different water qualities connectable. Connection Clamp diameter 50.5 mm, pipe DN 25.
- **Steam (if needed)**, flow rate 1kg/min with pressure of 1 bar
- **Drainage**, floor drain with pipe 50 mm

## Preventive maintenance

A global network of skilled service specialists can provide periodic inspections and adjustments to verify low-cost performance. Müller representatives can provide annual maintenance agreements.

## Standards:

- FDA  
21 CFR part: 110, 210, 211, 177, 11
- Machinery Directive
- Electromagnetic Compatibility Directive
- Low Voltage Directive
- Safety of Machinery
- GAMP 5

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