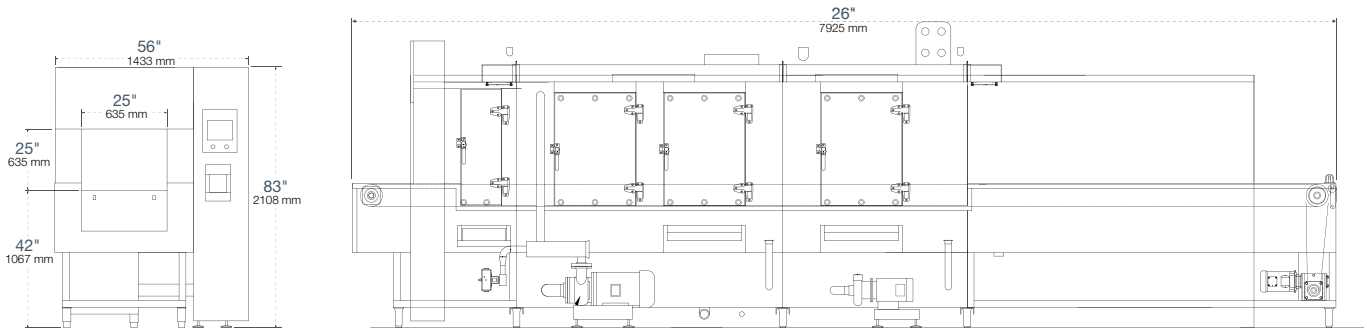




**Product specification**  
**Getinge Vivus Tunnel Washer**

# Getinge Vivus Tunnel Washer

## Product specification



VT 2450 washer

## Base Getinge Vivus Tunnel Washer

### • Dimensions

Model	Belt Width	Tunnel Opening (W × H)	External Size (w × h × d)
VT 2450	24" (610 mm)	25" × 25" (635 × 635 mm)	41" × 83" × 26" (1041 × 2108 × 7925 mm)
VT 3650	36" (914 mm)	37" × 25" (940 × 635 mm)	53" × 83" × 26" (1346 × 2108 × 7925 mm)
VT 4850	48" (1219 mm)	49" × 25" (1245 × 635 mm)	64" × 83" × 26" (1626 × 2108 × 7925 mm)

### • Location of Controls and Service Access

Right Hand Controls and Service  
Left Hand Controls and Service

### • Washer Features/Sections

18" (457 mm) Load Section, 30" (762 mm) Pre-Wash Section, 78" (1981 mm) Wash Section, 54" (1372 mm) Rinse Section and 84" (2134 mm) Dryer Section, and a 48" (1219 mm) Powered Run-out Unload Conveyor the tunnel washer is floor mounted

### • Cycle Functions

Loading, Pre-Wash, Detergent Wash, Rinse, Drying in continuous process.



*Drawings display front and side of VT 2450 washer.  
(right hand controls and service shown)*

## General Specifications

All over the world equipment from Getinge supports the Life Science industry in their efforts to discover and produce cures. With insight into issues you face every day in the vivarium, we provide the best solutions to your challenges and serve as a partner that you can always rely on.

Getinge's worldwide reach and extensive installed product base provides the knowledge necessary to assist our customers in planning for optimal and efficient processes. With our premium equipment, consumables, project management, logistics, validation, service and training, you can count on Getinge – right from the start.

Getinge Vivus Tunnel Washers are automatic, heavy duty, conveyor, hydro-spray washers designed for continuous high volume processing and efficiency.

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## Intended Use

For use in research animal care laboratories and facilities to clean and dry metal or plastic cages, utensils, and water bottles. Units are floor-mounted and may be recessed through one or two walls or installed freestanding. The washer can operate as a stand-alone unit or in combination with an integrated bedding dump station and/or bedding dispenser.

## Standard Safety Features

**Personal Safety Systems** – An emergency cable system is provided at both the load and unload ends of the unit to terminate all process and conveyance functions. Processing is resumed by resetting the emergency stop system, and selecting the starting cycle. All emergency conditions are audibly and visually annunciated at the load end.

Door Safety Switches are included on all the service access doors. If the doors are not securely closed or if they are opened during machine operation, all operation is immediately suspended and an alarm message identifying the open door appears on the operator screen. Processing is resumed by properly closing the door, acknowledging the alarm condition and selecting the cycle start.

**Non-fusible Electrical Disconnect Switch** – A UL/CSA approved, non-fusible three-pole, electrical disconnect switch is provided in the primary control box to provide additional protection to the facilities personnel. The disconnect switch incorporates a handle mechanism mounted through the control box access panel and is sealed to NEMA 4X tightness rating. The handle must be turned to the 'OFF' position, which disconnects the incoming electrical service prior to accessing the internal control box components.

**Screen Safety Cap Switch** – If the cap on the self-flushing debris strainer is incorrectly or insecurely installed, or missing altogether, the unit will not begin operation and the operator is notified via an alarm message on the control panel. Once properly sealed, the alarm message can be cleared and the cycle resumed by the operator.

## Features and Benefits

The Getinge Vivus Tunnel Washer includes a suite of features and benefits designed for performance and operator safety.

**Automatic Five-Phase Treatment Cycle** – The standard treatment cycle consists of a prewash, an agent wash, a recirculated rinse, a non-recirculated fresh hot tap water rinse and a hot air dryer system. The agent wash and recirculated rinse treatments are recirculated under pump pressure. The cycle, once activated is completely automatic, requiring only an operator to load and unload the cages.

**Wash and Rinse Treatment Temperature Guarantee** – An agent wash and/or recirculated rinse temperature guarantee may be performed to ensure that minimum treatment temperatures are attained and maintained. Should the temperature guarantee setpoints not be attained or maintained, the conveyor belt will temporarily stop until the treatment solution reaches the setpoint temperature. All temperature guarantee variances are announced to the operator. This level of control guarantees process efficiency and repeatability.

**Automatic Self-Cleaning Debris Filters** – The output of the recirculation pump is provided with a self-cleaning debris filter having perforation smaller than the spray jet orifices to reduce plugged jets. The filter working with the large debris holding screen is designed to entrap debris from the recirculated solution and to automatically backflush debris to drain on a programmable time interval. The self-cleaning debris filter is standard on the wash pump and available as an option on the rinse pump. The filters maximize machine uptime while reducing maintenance activities.

**Effluent Cooling** – Effluent is automatically cooled to <140°F (60°C) in order to comply with municipal codes for wastewater disposal.

**Final Rinse Temperature Guarantee** – Provides guarantee that a minimum final rinse temperature programmable to 195°F (91°C) is attained and maintained. Should the final rinse temperature setpoint not be attained or maintained, the variances are announced to the operator and the conveyor belt is stopped until the setpoint is reached, assuring process control and repeatability.

**Removable Spray Headers/Hydraulic Hold Down System** – To maximize uptime and minimize maintenance, headers are easily removed for cleaning, with no tools required. Jet sizing and spray header throttle valves allow for positive hydraulic pressure. This, along with uniform jet placement, provides proper hold down of the light plastic cages and steel pans on the conveyor belt.

**Water Conservation** – The final rinse water is sprayed through the jet system and collected in the recirculated rinse tank. The recirculated water is then used as makeup water for the prewash, saving water and conserving energy.

**Descale Cycle** – To minimize maintenance activities, a programmed descale is standard, allowing for periodic descaling of the entire wetted interior of the unit.

**Forced Air Dryer Section** – Provides an insulated, stainless steel 84" (2134 mm) long dryer section designed specifically to remove excess water from animal cages in preparation for bedding fill. The system consists of a steam-to-air heat exchanger, 15HP regenerative blower, air filter, a single upper air knife and three lower air knives. Clean fresh air from the unload end is forced through the knives at an exit velocity of 22,000 ft./min. (112 m/s) at a user programmable temperature range of 180–230°F (82–110°C). The upper air knife can be manually adjusted based on the load size to decrease the distance to the outer surfaces, improving the ability to remove excess water from the outside of the product. Dryer performance has been validated to remove 99% of residual water by weight from standard mouse cages at 4ft./min. (0,02 m/s).

## Quality Statement

Confidence in Getinge group is the most important quality criteria. This is the hallmark of all of our external and internal commitments, activities, and products. Products and services supplied by Getinge conform to agreed terms and

expectations. The achievement of these quality goals is the basis on which we stay competitive and help you maintain successful enterprise operations.

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## Standards & Codes

UL508A

ASME Code section VIII, Div 1

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## Operation

Items to be cleaned are loaded manually, in an inverted position, on the conveyor belt at the load end of the washer. The items are conveyed automatically through the process treatments and discharged at the unload end for removal.

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## Treatment Schedule

**Prewash** – Hot Water from the recirculated rinse tank is directed through the lower jet spray headers under pump pressure to remove debris from cages. Cold water is added to the upper header to condense steam and cool drain water. The water solution is not recirculated and it is directed to drain.

**Agent Wash** – Hot detergent solution from the wash tank is recirculated through the wash jet spray header under pump pressure and retained in the wash tank. Wash temperature is programmable to 190°F (88°C).

**Recirculated Rinse** – Hot water from the rinse tank is recirculated through the rinse spray headers and powers the prewash lower header under pump pressure and is retained in the rinse tank. Rinse temperature is programmable to 190°F (88°C).

**Non-Recirculated Final Rinse** – Hot water from the house supply is heated by a steam heat exchanger and directed through a separate final rinse jet spray header under house supply pressure and retained in the rinse tank for the recirculated rinse and prewash. Final rinse temperature is controller selectable to 205°F (96°C).

**High Pressure Heated Air Dryer** – Fresh air from the clean side is drawn through a finned steam coil and directed through flat air knives. The dryer temperature is PLC programmable (drying temperature can be guaranteed). Moisture is removed by exhausting chamber air to the facility exhaust system.

# Getinge Vivus Tunnel Washer

## Ordering information

### Make your selections:

= Standard selection

= Optional selection

### Model/Size

The Getinge Vivus Tunnel Washer comes standard in three belt sizes to choose from (Select One):

	Model	Belt Width	External Size (w × h × d)
<input type="checkbox"/>	VT 2450	24" (610 mm)	41" × 83" × 26" (1041 × 2108 × 7925 mm)
<input type="checkbox"/>	VT 3650	36" (914 mm)	53" × 83" × 26" (1346 × 2108 × 7925 mm)
<input type="checkbox"/>	VT 4850	48" (1219 mm)	64" × 83" × 26" (1626 × 2108 × 7925 mm)
<input type="radio"/>	Custom – Consult Factory		

### Location of Service Access / Controls

The washer is available in right hand service access control or left hand service access/control to suit your individual application.

- Right Hand Service Access and Control
- Left Hand Service Access and Control
- Control Panel – Remotely Installed

### Wall Trim Options

The washer is available with several installation panel options.

- Freestanding - Standard
- Installation Wall Trim Panels (1'-8")
- Cross-contamination Panels (1'-2')

### Voltage Supply

Select the electrical connection needed.

- 480 Volt, 3-phase, 60Hz - Standard
- 208 Volt, 3-wire, 3-phase, 60Hz
- 208 Volt, 4-wire, 3-phase, 60Hz
- 240 Volt, 3-wire, 3-phase, 60Hz
- Define electrical connection \_\_\_\_\_

## Accessories – Load End

The washer is available with several load end options.

- 18" (457 mm) Standard Load – Standard
- Integrated Bedding Disposal Station – an integrated scraping station can be provided at the load end of the unit, with all wet waste being swept through a commercial insinkerator® unit to the drain – (see sales rep for details)
- Vacuum Bedding Disposal – (see sales rep for details)

## Accessories – Unload End

The washer is available with several unload end options.

- 48" (1219 mm) Powered Unload Table – Standard
- Additional Powered Unload Table Length – 2' - 8'

## Control System Options

An industrial-grade, fully modular programmable logic control panel with a color touchscreen operator interface provides user-friendly access to all machine functions. Individual treatment routines can be named and programmed by supervisory personnel with complete flexibility as to treatment phases, times, temperatures, and chemicals. The programming function as well as service functions are access-restricted functions and protected by pin codes, which limit the operator's accessibility.

**Automatic Conveyor Stop** – A photoelectric switch is located at the end of the discharge conveyor to automatically stop the conveyor drive when an item reaches the end of the conveyor. A visual alarm indicates a stopped conveyor to load operators.

**Automatic Sump Water Level Control** – The agent wash and recirculated rinse tanks are equipped with automatic solution level controls to ensure proper solution levels for pump protection and process performance. A low tank level condition terminates all processes and conveyance functions and is announced to the operator. A low tank will automatically fill to the required level and automatically resume process functions.

**Agent Injection Ports with Electrical Contacts** – Agent injection ports and signals from the controller are provided for installation of automatic agent injection systems.

There are 4 agent injection ports in the wash section and three in the rinse section, all are ½" NPT. In addition to the injection ports each tank contains a 1 × 1" (25,4 × 25,4 mm) port probe.

- Enhanced Communication – Ports are provided to enable RS232 communication with a third-party reporting software. – Standard
- Ethernet Communication
- Printer – A panel-mounted printer with paper return is provided to record all pertinent cycle information in real time

## Equipment Optional Features

- Exhaust Fan: If building exhaust is inadequate, an integral fan can be provided.
- Vent Condenser: In a situation where insufficient connection to building exhaust nor sufficient ventilation to the outside are possible, a condensing appliance is provided to reduce the temperature and moisture content of the exhaust stream in order to effectively utilize the existing systems. Engineering should be consulted.
- Seismic Restraints: Appropriately designed and sized, stainless steel anchor brackets are provided to be bolted to the floor after unit installation in order to comply with local seismic area codes.
- Integral Air Compressor: A small oil-less air compressor can be provided if building compressed air is unavailable. The compressor can be integral to the unit or remotely mounted.
- Bedding Dump Station and Dispensing Controls: An electrical connection is required for use with a dump station or bedding dispenser.
- Effluent Neutralization – Monitored: During normal machine operation the pH will be displayed on the HMI. When tank draining is selected, all solutions shall be neutralized prior to discharge and corrected as necessary. High and Low pH setpoints shall be selectable within the range of 2 to 14, and no effluent shall be drained from the tanks if it is outside of the selected range. All functionality will be under control of the unit's central CPU, and all pH information shall be displayed on the HMI and shall be printable.
- Knock Down Shipment - The unit is full assembled and tested at the factory and then shipped disassembled to fit through a 48" x 84" (1219 x 2134 mm) door for entry into existing facilities

## Materials and Construction

**All Stainless Steel, Contamination-Free Construction** – The unit base, chamber, tanks and doors are of 304 stainless steel construction. The chamber and tank interiors are smooth to eliminate crevices for the potential build-up of debris and contamination. The unit can accommodate the use of both acid and alkaline solutions.

**Insulated Cabinet Construction** – The top and sides of the washer cabinet are insulated with two-inch thick (2", 50 mm) rigid fiberglass insulation. The top insulation is covered by aluminum foil and the sides are covered by stainless steel jacket.

**Side-Hinged Chamber Access Doors** – Removable, side hinged, gasketed and sealed doors are provided for easy access to the chamber interior. Each door is equipped with a safety switch to terminate and prohibit all processing functions until the doors are fully closed.

**Stainless Steel Flat Wire Conveyor Belt** – The washer is equipped with a stainless steel, flat-wire, belt-powered drive with an adjustable overload clutch to prevent damage to processed items. The upper conveyor belt is supported by heavy duty stainless steel tracks with belt guides to prevent belt wear. The conveyor is equipped with self-aligning ball bearings and utilizes catenary sag for self-tensioning. This reduces belt wear and increases sprocket life. The lack of manual tension adjustment reduces service and increases useful life of belt and drive parts. Belt speed is adjusted in the controller and ranges from 0 to 10 ft./min. (0,05 m/s).

**Fully Welded Construction** – Each section is a fully welded module, with sections welded together at final site assembly to provide long, leak-free service.



# Utility Requirements

	VT 2450	VT 3650	VT 4850
Electrical	60Hz, 3-phase, 20 kW	60Hz, 3-phase, 20 kW	60Hz, 3-phase, 22 kW
	208V – 3 wire 208V – 4 wire 240V 480V		
Steam	2½" FPT 30–80 psi (206-551 kPa) 1200 lb./hr max (544 kg)	2½" FPT 30–80 psi (206-551 kPa) 1400 lb./hr max (635 kg)	2½" FPT 30–80 psi (206-551 kPa) 1800 lb./hr max (816 kg)
Condensate	1" FPT		
Hot Water	1" FPT, 35 psi (241 kPa) 140–180°F (60–82°C) 6–8 gpm (23-30 l/min)	1" FPT, 35 psi (241 kPa) 140–180°F (60–82°C) 6–8 gpm (23-30 l/min)	1" FPT, 35 psi (241 kPa) 140–180°F (60–82°C) 8–10 gpm (23-30 l/min)
Drain	2" FPT (50,8 mm) 140°F (60°C) max 10 gpm (38 liters/min)	2" FPT (50,8 mm) 140°F (60°C) max 10 gpm max (38 liters/min)	2" FPT (50,8 mm) 140°F (60°C) max 12 gpm max (45 liters/min)
Exhaust	12" Dia. (305 mm) 1200 SCFM (2028 m3/h) 180°F (82°C) Saturated	12" Dia. (305 mm) 1800 SCFM (3042 m3/h) 180°F (82°C) Saturated	18" Dia. (305 mm) 2000 SCFM (3380 m3/h) 180°F (82°C) Saturated
Compressed Air	½" FPT, 80 psi (552 kPa) 2 SCFM (3,4 m3/h)		
Cold Water	1" FPT, 35 psi (241 kPa)		

### Notes to Utilities Table:

- A disconnect switch shall be installed by others in accordance with all NEC and local electrical codes.
- Condensate shall be connected by others to a non-pressurized gravity main. The maximum condensate lift shall not exceed 15 feet (4,6 m).
- Steam pressure is not to exceed 80 psi dynamic and 90 psi static. Pressure fluctuation not to exceed +/- 10% of set pressure after installation. Peak flow rates are dependent on sight conditions and are sized for optimal performance. Variations in water and steam pressure could impact cycle times respectively. Factory shall be consulted for steam pressures below 30 psi (206 kPa) dynamic
- Hot water consumption will vary with the options supplied.
- Drain shall be installed by others such that there is an air gap between the discharge point and the floor drain, or otherwise in strict accordance with local plumbing codes.
- Exhaust connection shall be made by others using non-corroding materials, and all ductwork shall be sealed and pitched towards the machine. Any low points shall have individual lines installed. Effluent vapor is 180°F (82°C), 100% saturated air. The vent connection is a 12" inside diameter. 1/2" static pressure at point of machine connection required.

	VT 2450	VT 3650	VT 4850
Shipping Weight	4800 lb. (2180 kg)	6000 lb. (2720 kg)	8000 lb. (3630 kg)
Cage Capacity	(Based on typical 4 FPM (0,02 m/s) belt speed)		
Standard Mouse	960/hr	1600/hr	2160/hr
Standard Rat	400/hr	576/hr	720/hr
Tank Capacity			
Wash	100 Gals (379 liters)	160 Gals (606 liters)	160 Gals (606 liters)
Rinse	70 Gals (265 liters)	100 Gals (379 liters)	100 Gals (379 liters)
Heat Radiation			
Typical Door End	7000 btu/hr	8000 btu/hr	9000 btu/hr
Typical Service Side	40000 btu/hr	50000 btu/hr	50000 btu/hr
Typical Blank Side	2000 btu/hr	2000 btu/hr	2000 btu/hr





With a firm belief that every person and community should have access to the best possible care, Getinge provides hospitals and life science institutions with products and solutions aiming to improve clinical results and optimize workflows. The offering includes products and solutions for intensive care, cardiovascular procedures, operating rooms, sterile reprocessing and life science. Getinge employs over 10,000 people worldwide and the products are sold in more than 135 countries.



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