
MACHINE FOR WASHING AND DISINFECTING MEDICAL INSTRUMENTS

TIVA10 – 1V can be equipped with one or two (pass-through model **TIVA10 - 2V**) that are automatically opened and closed.

On one side the trolley is loaded with the soiled instruments (decontaminated room), while on the other side (clean room) the trolley with the cleaned and disinfected instruments is removed at the end of the wash program. Special manual transport carts can be used to ease the trolleys loading and unloading operations.

The device is equipped with an electrically heated filtered air system. Air is forced inside the washing chamber by a powerful air pump for the drying phase and passes through an efficient steam condensing system when leaving the washing chamber.

This instrument washer can be equipped with a trolley recognition system (optional) which only allows specific programs to be started, depending on the tray that is being inserted. This ensures that all instruments are washed with care.

Water is heated by heating elements at the bottom of the chamber. This process can be speeded up using an (optional) boiler to heat purified water for the disinfection phase while the machine is carrying out previous washing phases.

Thanks to the LCD (70x50) graphic touch display located on both sides of the **TIVA10**, it is possible to choose the desired program or to enter the device programming menu. The LCD display also shows the current state of the machine, using animated graphics that appear on it.

An optical sensor placed on the touch panel commands the opening/closing of the sliding doors 5 liters liquid detergent drums are placed inside the base of the machine (max. 4 drums).

Technical Characteristics



STAINLESS STEEL QUALITY

The chamber is made of stainless steel AISI 316, the frame is made of stainless steel AISI 304.



GLASS DOORS

Doors are made of 2 panes of tempered glass to allow users to see inside the chamber during a program.



DOUBL-DOORS SYSTEM

The machine is designed with two interlocked doors: one to load the trolleys and the other, placed on the back, to unload the trolleys. The machine does not allow the two doors to be unlocked simultaneously but only one door at a time. The door in the unloading zone can be opened only when a cycle has been successfully completed.



COLD WATER SOFTENER

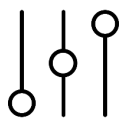
This system “softens” cold water that enters the washing chamber in order to reduce fouling in the machine’s plumbing circuit. Cold water passes through resins, reducing the limescale content of the water. The machine automatically regenerates the resins after they have been used several times (depending on the water hardness). Water flows through a vessel containing salts and then through the resins, regenerating them. This process is performed when a program starts.



FLOWMETERS FOR CHEMICALS

The dosing of the chemicals can be based on time or controlled by flowmeters. If flowmeters do not detect any liquid flowing, after a few seconds an alarm appears on the display, notifying the user that no liquid has entered the washing chamber.

Technical Characteristics



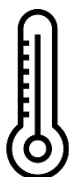
CHEMICALS LEVEL

The machine is equipped with sensors positioned in the chemicals suction nozzles. When the liquid level undergoes a threshold, a warning signal appears on the LCD display.



HEPA H14 FILTER

This kind of filter stops fine dust in the air with an efficiency of 99.995%. A prefilter that blocks larger particles of dust in order to prevent the HEPA filter from clogging and protect it. A pressure switch (pressure sensor) placed after the HEPA filter can detect filter's clogging. This causes a clogged HEPA filter alarm to be displayed. In this case, the filter must be replaced.



WASHING CHAMBER WATER HEATING

Water in the washing chamber is heated by 3 heating elements (total 10.5KW) with three-phase connection (standard). An optional coil carrying hospital facility steam at approximately 150°C can also be added to the heating elements at the bottom of the washing chamber. This speeds up the time required to heat water. This coil can also be used by itself, excluding the heating elements. Two independent PT1000 temperature sensors constantly monitor the temperature in the washing chamber.



PRINTER

The printer is located on the "clean side" where trolleys are unloaded at the end of a program.

The printer prints a ticket reporting the program that was completed, the time required to carry it out and the temperatures that were reached in each phase. It also indicates whether or not chemicals were used, their quantities and any alarms that may have taken place.

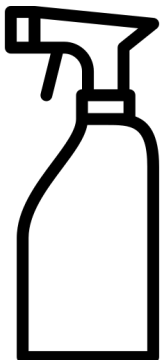
Technical Characteristics

WASHING TROLLEY RECOGNITION

The machine is able to understand whether a trolley is inserted or not. In fact, it is impossible to start a program if there are no trolleys in the washing chamber. The trolley recognition application must be added in order to recognize the type of trolley that is inserted. This application allows the machine to recognize the type of trolley being inserted. Therefore, when a trolley is inserted the machine automatically suggests which programs to use for that type of trolley. It is also possible to start a program which is not suggested by the machine. Properly setting the trolley recognition parameters can also disable programs which are not recommended for that type of trolley.

SPRAY ARM MONITORING

The first way to check if the spray arms are rotating is for the user to look through the machine's door: this has two large glazed windows for inspecting inside during washing. Every machine is also equipped with a dedicated pressure switch (pressure sensor). Other sensors can also be added to each spray arm to enhance monitoring capacity. The following section explains the two monitoring systems.



In order for the spray arms to properly rotate there must be enough pressure in the machine's plumbing system. A pressure sensor is installed to monitor the pressure in the machine's pipelines. If pressure drops, possibly causing the spray arms to stop, an alarm appears on the display. Another monitoring system is to install an application on the machine consisting of a sensor for each spray arm that checks whether the spray arm is rotating or is blocked. The machine is also able to detect if a spray arm is rotating slower than it should. If every spray arm is working properly, the display shows two green dots, one for each arm. If one spray arm rotates slower, then the dot on the display referring to that spray arm turns orange, without stopping the program. If the spray arm is blocked the system generates an alarm signal to make sure that the instruments are washed properly. A blocked spray arm may be caused by dirt in the arm or, more frequently, by instruments inside the carts that are not properly positioned, blocking the spray arm.

CONDUCTIVITY PROBE

This application monitors whether rinse water is pure prior to disinfection, meaning that the μS (micro- Siemens) value measured by the probe is lower than the value that is set for the kind of water being used.

Technical Characteristics

WASHING CHAMBER LIGHT

A spotlight can be installed inside the washing chamber for greater visibility during washing and for greater safety during trolleys loading and unloading procedures. This application includes a switch, installed in the peristaltic pump panel, that can turn the washing chamber light on at any time. The spotlight consists of a LED, granting great illumination with low energy consumption.

DRAIN COOLING

Throughout some program phases, during drainage, the machine discharges hot water at a temperature of roughly 90°C. The drain cooling application lowers the temperature of the discharged water to avoid heat damage to drain pipelines by automatically introducing cold water into the washing chamber during the drainage phase.

STEAM CONDENSING SYSTEM

The machine is equipped with a performing steam condensing system. This system starts to operate when steam starts forming inside the machine, during the disinfection phase. Steam is condensed inside a manifold to prevent it from exiting the washing chamber. This system also starts to operate to reduce steam releasing during the drying phase, when the temperature in the washing chamber is very high.

DRYING

Forced air is introduced into the washing chamber during the drying phase, pushed by a blower pump through a set of heating elements that heat it up to 130°C. Air, like water, exits from the spray arm nozzles in order to dry evenly both instruments and trays.

The drying phase takes place in a “smart” way: at the start, when the temperature inside the washing chamber is very high, air is pushed into the washing chamber with less force and at intermittent intervals to avoid the release of a great mass of steam formed in the washing chamber. Subsequently, when most of the steam has been diminished by the “steam – condensing” system, air is pushed with greater force and constantly in order to complete the drying phase. A pressure switch (pressure sensor) is installed to check for air leaks and make sure that the right pressure is constantly present inside the ducts carrying air to the washing chamber. An alarm signal on the display alerts the user of any air leak that may occur.

Technical Characteristics

TOUCHPAD KEYBOARD WITH GRAPHIC DISPLAY

The operator interacts with the machine with a touch-screen panel placed in the upper section of the machine. This keyboard can be used to carry out these procedures:

- Quick selection of the 3 main programs using the 1, 2, 3 keys;
- Selection of one of the 40 programs loaded in the machine (this 40 programs

include some free programs that can be set according to the customer needs) using the P+ key;

- Start a program by pressing the “Start” key;
- Reset an alarm using the “Reset” key;
- Enter machine programming mode using the “PRG” key;
- Enable or disable the drying phase in a program that includes this phase.

The color graphics display immediately shows the state of the machine by displaying animated graphics and texts. The display also shows the temperatures of the two probes positioned in the washing chamber and the probe of the drying air temperature as well as disinfection value A0, the time remaining to terminate the program and the number of the program that has been started.

ALARCHECK SYSTEM

This system helps understanding why an alarm has taken place and suggests how to deal with it without having to refer to the manual. In fact, when an alarm is triggered, the error number appears at the top of the display with an image that shows the error in the central part of the display along with an acoustic signal alert the operator. After a few seconds, a message appears that explains the possible causes that may have led to the alarm.

RS232 PORT

A RS232 port is geared on the mainboard that allows uploading programs from a PC into the machine and, vice versa, uploading the programs installed from the machine to the PC. It is also possible to copy the last alarms that took place in the machine onto the PC. This port also allows connecting a barcode scanner to the machine for instruments traceability.

Technical features

TECHNICAL FEATURES		TIVA10 – 1V / TIVA10 – 2V
Peso Weight	Kg	245
Width / Depth / Height	mm	680/700/1950
Load height (4 level trolley 8DIN)	mm	845
Main water pressure	Bar – l/min	2 - 5 bar - 10L /Min
Capacity washing pump	L/Min	620
Cold water connection	DN °C °F	12 (½") – 15 (¾" G-M) 5°-15° Max 7
Hot water connection	DN °C °F	12 (½") – 15 (¾" G-M) 45°-60° Max 7
demineralizzata Purified water connection	DN °C °F	12 (½") – 15 (¾" G-M) 5°-15° Max 7
Facility steam connection	DN °C °F	½½ G 150° / 3 – 5
Cold Water consumption for standard cycle	L	24
Hot Water consumption for standard cycle	L	48
Demineralized water consumption for standard cycle	L	24
Drain trap (Corrosion-proof and 93°C resistant pipe)	DN (Ø)	40mm
Chamber exhaust air connection	Ø	63mm
Chamber exhaust air flow rate	Mc/h	120
Heat loss	Kcal/h - W	600-700
Noise	dB(A)	56
Working temperature	°C	5-30
Max humidity of usage environment	%	90
Atmospheric pressure of usage environment	ATM	>0.8

Power and flow rates

	Voltage	Frequency	Installed power	Maximum absorbed power	Absorbed Current	Main Switch
TIVA10 – 1V TIVA10 – 2V	400V 3N~	50 Hz	16.7 kW	11.4 kW	16.5A	20A
	380V 3N~	60 Hz	16.7 kW	11.4 kW	19A	20A
	208V 3~	60 Hz	16.7 kW	11.4 kW	35A	40A
	220V N~	60 Hz	16.7 kW	11.4 kW	33A	40A
	230V N~	60 Hz	16.7 kW	11.4 kW	32 A	40A

Thermal disinfection with heating elements in the chamber that heat the water to approximately 92°C

TIVA10 – 1V	TIVA10 - 2V
1 display card with LCD	2 display cards with LCD
Single door with window	Double door with window

Electrical features

POWER AND FLOW RATES	TIVA10 – 1V TIVA10 - 2V
Washing pump power	0.8 kW
Drying pump power	0.8 kW
Chamber heating element power	10.5 kW
Total Power	16.7 kW
Air heating element power	4.5 kW
Various utilities power	100 W
Fan flow rate	150 m ³ /h
Washing pump flow rate	626 l/min

CHAMBER SPECIFICATION	TIVA10 – 1V TIVA10 - 2V
Volume	265 L
Height	800 mm
Width	560 mm
Depth	585 mm