

ICOS has a long experience in the treatment of closures for containers normally used in the pharmaceutical industry.

This new range of ICOS equipment shows a series of innovative features that satisfy the strict standards of the pharmaceutical industry (FDA, cGMP, GAMP 5, etc.).

This range of machines is made up of two main categories:

CLOSURE WASHER TYPE "LT": the "LT" operating process consists of the washing, rinsing, siliconizing, drying and cooling phases.

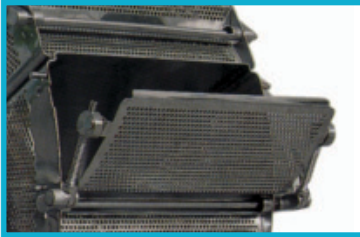
CLOSURE PROCESSOR TYPE "LST": the "LST" process, in addition to the washing, rinsing, siliconizing, drying and cooling phases also includes the sterilizing phase. The complete process makes it possible to eliminate needless intermediate handling of the product that may cause its contamination.



FIELD OF APPLICATION

These machines are designed for the complete treatment of closure devices for pharmaceutical products such as: rubber stoppers, plastic stoppers, droppers, pistons, aluminium caps and other similar components.

LOADING SIDE - TYPE LST 20-40-80



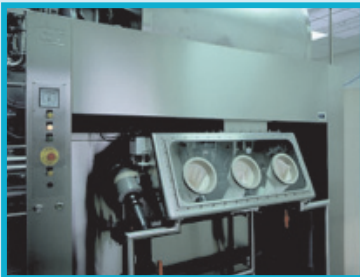
DETAIL OF BASKETS



UNLOADING SIDE - BIO-SEAL FRAME +
UNLOADING INTO SEALED CONTAINERS



UNLOADING SIDE - BIO-SEAL FRAME + BAGS
SEALER



UNLOADING SIDE - BIO-SEAL FRAME +
UNLOADING INTO BAGS THROUGH VHP ISOLATOR

MAIN FEATURES

- Distribution of load in separate baskets for a better final results. Washing by simultaneous combination of basket rotation and fluid-bed action are guaranteed by a recycling pump and spray nozzles. The suspended particles are skimmed off by side overflow drains
- **Uniformity of siliconization guaranteed by recycling pump action**
- **Siliconizing evenness guaranteed by recycling pump**
- **Sterilization at 121° C**
- Drying by HEPA filtered hot air
- Chamber can be completely inspected through loading door
- Automatic opening and closing of basket doors
- Chamber doors made in accordance with requirements for sterile environments
- Possibility of automatic application of load
- Possibility of interfacing the unloading door with a VHP isolator
- Various automatic unloading possibilities
- Machine equipped with connections for validation tests

CONSTRUCTION FEATURES

The machine body and associated safety devices are manufactured and tested in compliance with the standards required by the country of destination. Unless there is a specific request, the machines and systems are manufactured in compliance with the CE Standards.

- Machine body completely of AISI 316L stainless-steel construction, with the exception of the jacket, which, in the standard version, is made of AISI 304 stainless steel
- Piping made of AISI 316L stainless steel with tri-clamp ferrules
- Support frame of AISI 304 stainless steel
- External panelling made of AISI 304 stainless steel
- All machine components of sanitary type
- Machine body insulated with ceramic material and with external facing of sheet stainless steel
- Chamber inside surface, tubing, baskets and all parts in contact with the product polished to a degree of roughness $\leq 0.5 \mu\text{m}$
- Unloading door equipped with a system of interfacing with clean area (bio-seal frame)
- Automatic unloading of treated material with possibility of using various systems

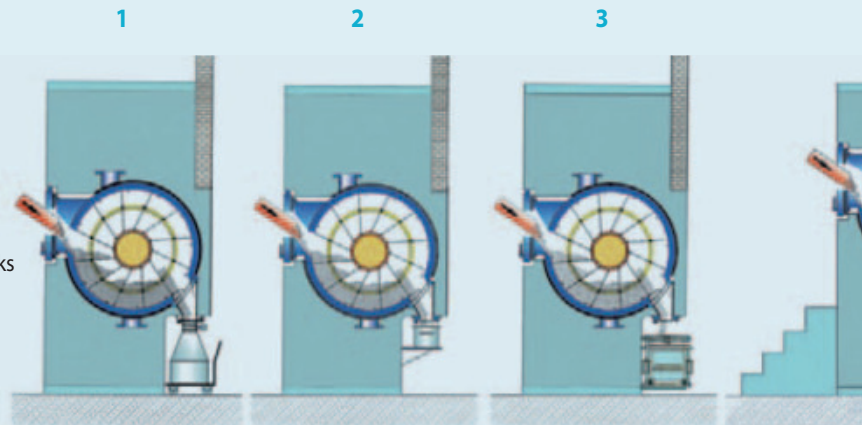


LOADING SIDE - TYPE LST 120-180-240



LOADING & UNLOADING IN ONE SIDE - TYPE LT 20

1. Manual loading - automatic unloading into wheeled tanks
2. Manual loading - automatic unloading into containers
3. Manual loading - automatic unloading into clean bags
4. Manual loading - automatic unloading into clean bags through VHP isolator
5. Automatic loading - automatic unloading into wheeled tanks
6. Automatic loading - automatic unloading into containers
7. Automatic loading - automatic unloading into clean bags
8. Automatic loading - automatic unloading into clean bags through VHP isolator



CLOSURE PROCESSING EQUIPMENT

LT
LST
Series



CONTROL BOARD

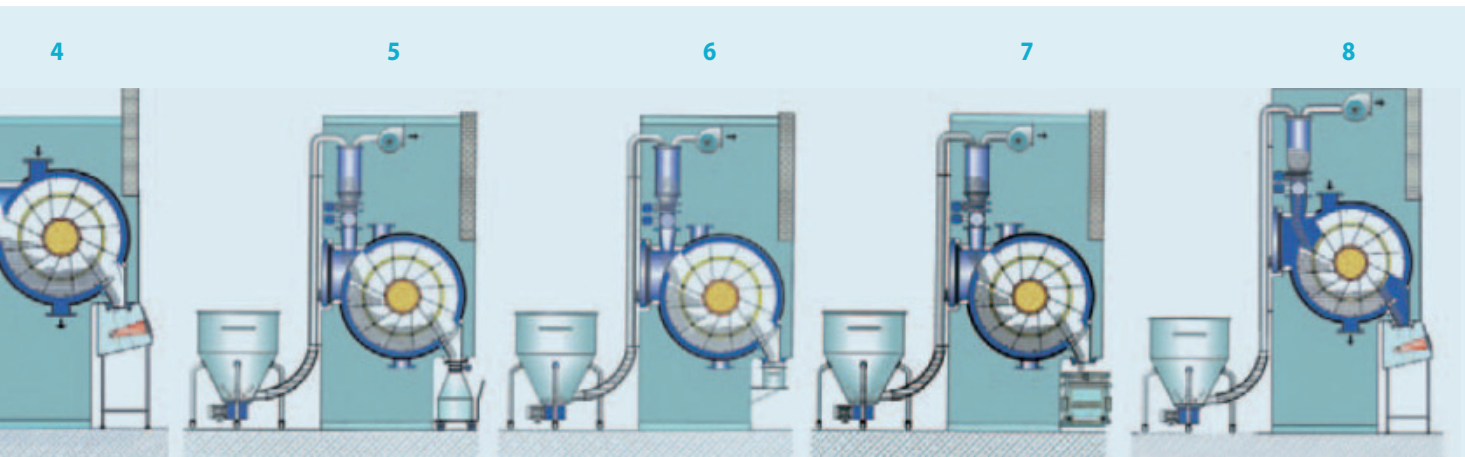
CONTROL SYSTEM

The machines of the "LT" and "LsT" series are provided with a control system consisting of a programmable controller (PLC), operating panel (OP) or industrial computer (PC) and printer.

The control system manages the machine and its basic parameters, such as temperatures, F0, pressures, times and level control; it allows an easy interfacing with the operator and makes it possible to customize the process cycles and the maintenance operations.

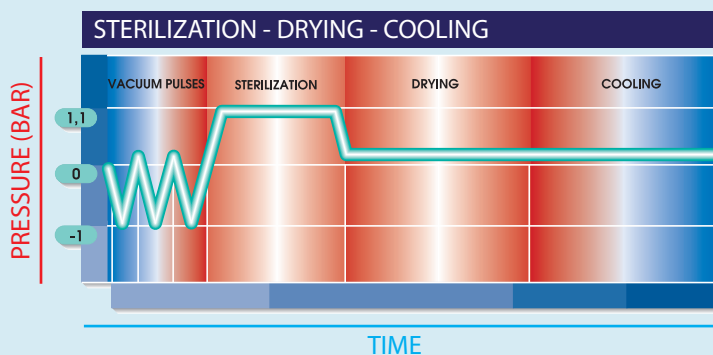
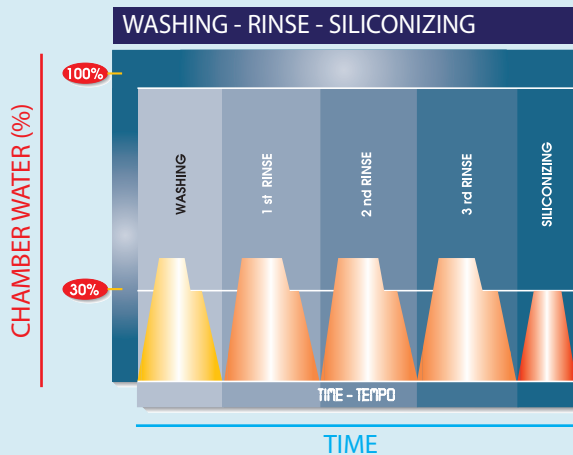
In addition, the system produces complete process documentation and assists operator in the machine validation operations.

Note: A full description of the control system is contained in the brochure.



CLOSURE PROCESSING EQUIPMENT

LT
LST
Series



PROCESS DATA

The process consists of combined phases and actions designed to provide maximum process flexibility. The choice of times and phase succession make it possible to obtain the most appropriate cycle for the characteristics of the material to be processed.

PHASES

loading of material

washing

overflow

drain

dripping

1st rinse

overflow

drain

dripping

2nd rinse

overflow

drain

dripping

3rd rinse

overflow

drain

dripping

siliconizing

drain

dripping

sterilization

drying

cooling

product discharge

ACTIONS

through prearranged system

rotation, fluid bed, detergent

rotation, water diffuser

rotation, water spraying

rotation

rotation, fluid bed

rotation, water diffuser

rotation, water spraying

rotation

rotation, fluid bed

rotation, water diffuser

rotation, water spraying

rotation

rotation, fluid bed

rotation, water diffuser

rotation, water spraying

rotation

rotation, fluid bed, silicone

rotation, water spraying

rotation

steam at 121 °C

sterile air at max. 130°C

sterile air at 20 °C

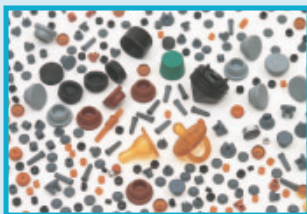
in a clean environment by means of prearranged system

LT SERIES - WASHING, SILICONIZING AND DRYING MACHINES FOR PHARMACEUTICAL CLOSURES

Type	Overall dimensions (mm / inches)			Number of baskets	Useful baskets volume (litres / cu. ft.)	Total baskets volume (litres / cu. ft.)
	Width	Height	Lenght			
LT 20	2000 / 78.5	2600 / 102	1020 / 40	2	20 / 0.7	60 / 2.1
LT 40	2200 / 86.5	2600 / 102	1160 / 45.5	4	40 / 1.4	120 / 4.2
LT 80	2600 / 102	2600 / 102	1330 / 52	8	80 / 2.8	240 / 8.4
LT 120	2600 / 102	2600 / 102	1550 / 61	12	120 / 4.2	360 / 12.7
LT 180	2800 / 110	2800 / 110	1700 / 67	18	180 / 6.3	540 / 19
LT 240	3000 / 118	3000 / 118	1930 / 76	20	240 / 8.4	720 / 25.4

LST SERIES - WASHING, SILICONIZING, STERILIZING AND DRYING MACHINES FOR PHARMACEUTICAL CLOSURES

Type	Overall dimensions (mm / inches)			Number of baskets	Useful baskets volume (litres / cu. ft.)	Total baskets volume (litres / cu. ft.)
	Width	Height	Lenght			
LST 20	2400 / 94.5	2600 / 102	1020 / 40	2	20 / 0.7	60 / 2.1
LST 40	2600 / 102	2600 / 102	1160 / 45.5	4	40 / 1.4	120 / 4.2
LST 80	2800 / 110	2600 / 102	1330 / 52	8	80 / 2.8	240 / 8.4
LST 120	3000 / 118	2600 / 102	1550 / 61	12	120 / 4.2	360 / 12.7
LST 180	3200 / 126	2800 / 110	1700 / 67	18	180 / 6.3	540 / 19
LST 240	3400 / 134	3000 / 118	1930 / 76	20	240 / 8.4	720 / 25.4



ICOS RESERVES THE RIGHT TO MAKE PRODUCT CHANGES WITHOUT PRIOR NOTIFICATION



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