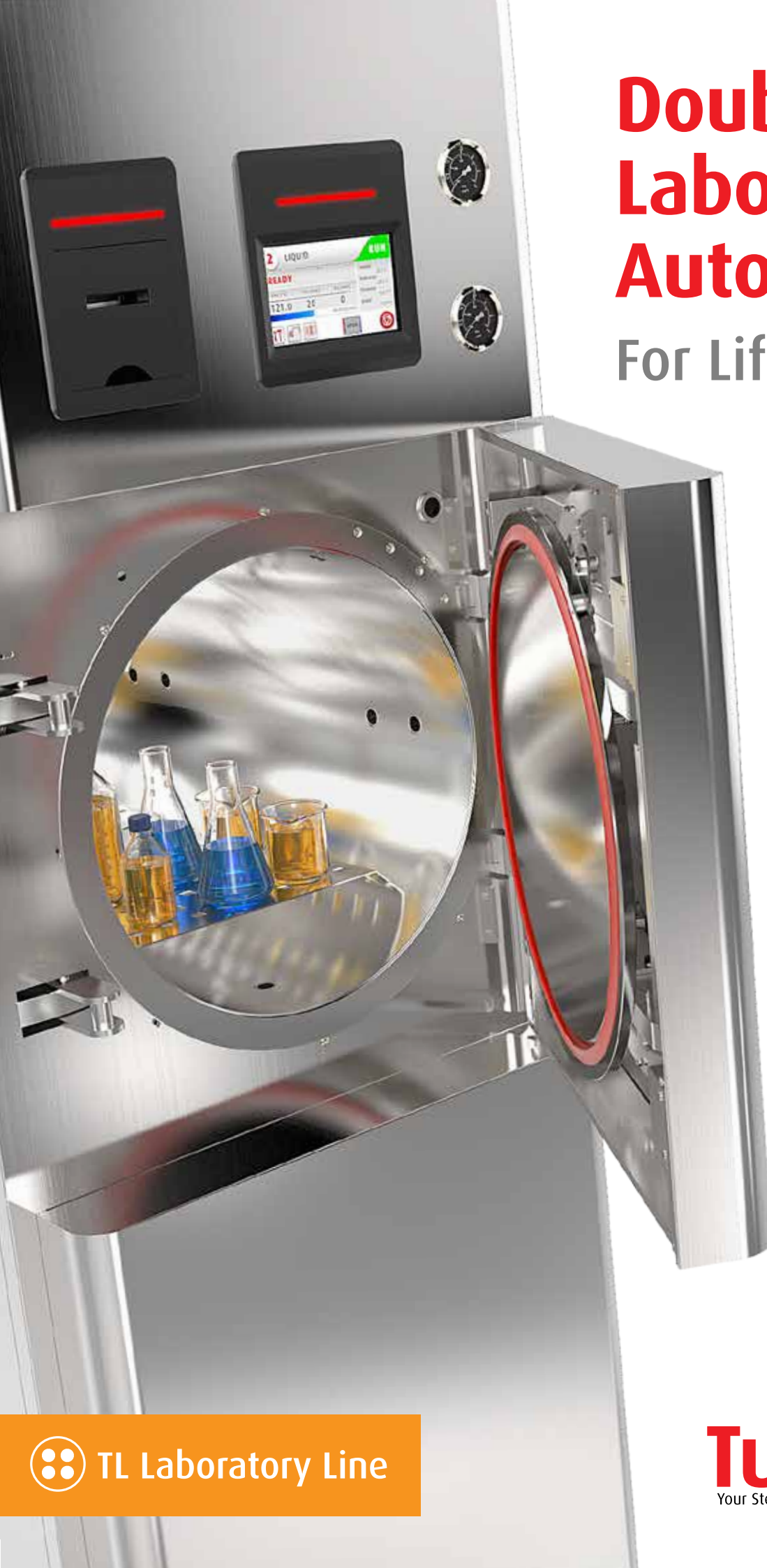


# Double Door Laboratory Autoclaves

For Life Sciences



 TL Laboratory Line

  
**Tuttnauer**  
Your Sterilization & Infection Control Partners



## Pass-Through Autoclaves for Separate Areas

### Advanced Laboratory Autoclaves

Tuttnauer laboratory autoclaves have been designed to provide high quality repeatable performance and accountability for a wide range of applications used in modern laboratories, which include:

- Liquid sterilization (using two flexible PT100 probes) with various cooling options
- Tips and Glass sterilization
- Instrument sterilization (wrapped or unwrapped)
- Biohazard and Waste sterilization
- Agar preparation
- Specialized customized cycles

### Experience since 1925

For over 90 years Tuttnauer, as a family-owned business, has been an industry leader satisfying customer expectations with top quality, high performance products and a dedicated service support team. Tuttnauer sterilization & infection control products are trusted at over 350,000 installations worldwide including Laboratories, Pharmaceutical Facilities, Hospitals and Clinics.

# Double Door Laboratory Autoclave

## Built-In Printer

Documents detailed history of each cycle

## USB Data Connection

Save cycle data files on your PC with no additional software or specialized hardware.

## 316L Stainless Steel Chamber

Corrosion resistant chamber

## Coiled Jacket

Keeps the chamber warm during cycles and supports cooling

## Built-in 9kW Steam Generator

Fast heat-up for efficient cycles

## Vacuum Pump

Efficient air removal and complete drying

## 7" Touch screen on both sides

Full color display in multiple languages

## Pressure Gauges

Chamber & Steam Generator Pressure

## Automatic Locking Doors

Doors locked and released automatically with electric-motor system

## Swivel Wheels

Easy to move autoclave for installation & service



# Advanced Control System for Your Laboratory

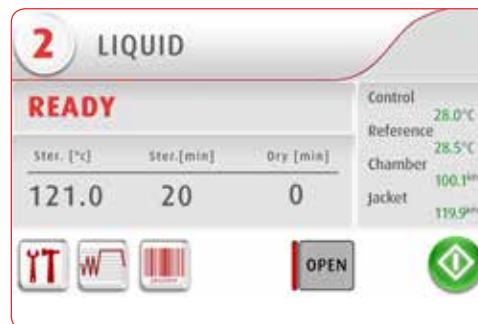
Take Advantage of Tuttnauer's state-of-the-art Control System with Multi-Color Display

## Features

- Two PT100 sensors according to IEC 61010-2-040 art. 7.106/3
- Two real-time clocks (RTC) for cross-checking timing accuracy
- Stores the last 200 cycles in built-in memory
- F<sub>0</sub> software control (option)
- Sterilization Temperature range 105°C to 138°C
- Isothermal Temperature range from 70°C to 95°C (optional)
- Ethernet connection port for PC and network access
- Multiple access levels and user passwords to control access/operation of the autoclave
- Controller & Software 21 CFR part 11 compliance (optional)
- PID (Proportional Integral Differential) pressure control
- Diagnostic In/Out test (enables technician to check each system component separately)
- Paperless independent chart recorder (option) that measures temperature and pressure independent of autoclave control system.

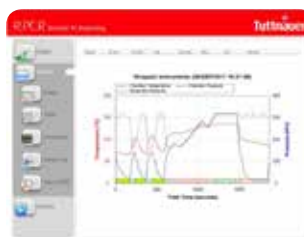
## Sophisticated Touch Screen HMI

- 7" multi-color touch screen panel on both doors
- Multi-color display for easier reading
- Quick access to important information
- 26 Languages
- Built-in view of historical cycle data



## R.P.C.R Software

Automatic recording software (optional) for recording cycle information to any PC on your network via Ethernet. Generate reports: graphs of cycle data, numeric cycle data, cycle print-outs, and more.



## Cycle Programs

30 program cycles are available with each autoclave. Up to 8 cycle programs are factory set according to optional features. The remaining cycles are fully customizable by the user.

### Standard Cycles

- Pre and Post vacuum cycles
- Solid and glassware loads at 134°C or 121°C for delicate loads (plastics)
- Liquid loads and waste liquids at 121°C
- Hollow, porous and textile loads at 134°C
- Waste: hollow, porous and textile at 121°C

### Test Cycles

- Air leakage test cycle
- Bowie & Dick steam penetration test at 134°C

### Optional Cycles

#### Media Processing Cycles

#### Isothermal Processing

For preparing agar and other biological media with a temperature range from 60°C to 95°C that allows for gentle heating and cooling.

#### Holding Temperature

Special program with programmable holding temperature at the end of the cycle to prevent cooling of media.

#### Biohazard Air Filter

- During air removal all exhaust air is filtered through a 0.2 µm biological filter to prevent contamination of the laboratory
- Biohazard solid loads at 134°C and liquid loads at 121°C

#### Special Custom Cycles

Tuttnauer is able to provide specifically customized cycles, including: material stress test, ageing test, varnish test, and others.

## 5075TLC-PVG-2A

155 Liter Chamber Volume

## 50100TLC-PVG-2A

205 Liter Chamber Volume

### Standard Autoclave Features

- 7" Touch screen both sides
- 2 Automatic hinged doors
- 9kW Built-in steam generator
- Built-in vacuum pump
- 316L Chamber
- Coiled jacket
- Fast cooling system
- 304 Stainless steel housing
- 2 Flexible temperature probes
- Built-in printer
- Built-in wheels
- Base plate shelf



## Technical Specification

| Models          | Chamber Volume (Liter) | Chamber Dimensions ØxD (mm) | External Dimensions WxHxD (mm) | Power (kW) | Voltage (V)   | Frequency (Hz) |
|-----------------|------------------------|-----------------------------|--------------------------------|------------|---|----------------|
| 5075TLC-PVG-2A  | 155                    | 500 x 810                   | 840 x 210 x 1010               | 9          | 380 (3- phase)<br>208 (3-phase)<br>230 (3-phase)<br>230 (1- phase)* | 50 - 60        |
| 50100TLC-PVG-2A | 205                    | 500 x 1050                  | 840 x 210x 1250                |            |   |                |

\* requires additional 1-to-3 phase switch-box

### Schott Duran Flasks (ml) Loading Capacity Standard base tray / **Optional 2 Trays**

| Model            | 250 | 500 | 1000 | 2000 | 5000 |
|------------------|-----|-----|------|------|------|
| 5075TL Standard  | 49  | 36  | 23   | 15   | 8    |
| 5075TL 2 Trays   | 105 | 64  | 21   | 10   | 4    |
| 50100TL Standard | 63  | 40  | 30   | 17   | 10   |
| 50100TL 2 Trays  | 137 | 82  | 29   | 14   | 7    |

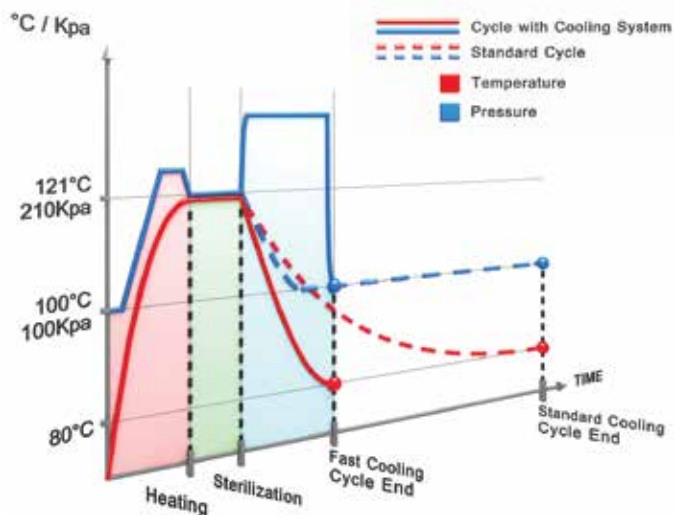
### Erlenmeyers Flasks (ml) Loading Capacity Standard base tray / **Optional 2 Trays**

| Model            | 250 | 500 | 1000 | 2000 | 5000 |
|------------------|-----|-----|------|------|------|
| 5075TL Standard  | 36  | 21  | 14   | 8    | 3    |
| 5075TL 2 Trays   | 67  | 40  | 11   | 8    | 3    |
| 50100TL Standard | 48  | 28  | 17   | 12   | 4    |
| 50100TL 2 Trays  | 91  | 54  | 15   | 11   | 4    |

# Liquid Loads

## Liquid Load Fast Cooling Applications

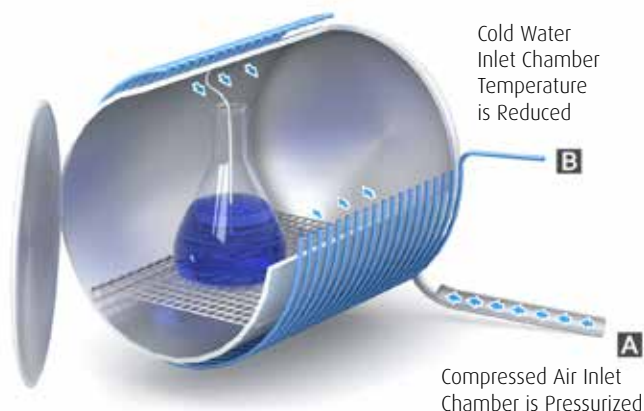
Sterilizing liquid requires longer heating and cooling times for completing a cycle, especially with sensitive liquid loads. When time is critical, advanced optional fast cooling features are available with Tuttnauer's laboratory autoclaves that prevent a sudden drop in chamber pressure which can cause liquids to boil over.



## Fast Liquid Cooling

After sterilization is completed, compressed air is passed through a microbiological filter into the autoclave chamber in order to prevent a drop in pressure. This prevents load deformation, cracks or spills. Cold water is then circulated through cooling pipes that rapidly reduces the chamber temperature and that of the liquid load to a safe temperature.

Tuttnauer's fast liquid cooling technology reduces cycle time by as much as 75% and minimizes load exposure to high temperatures.



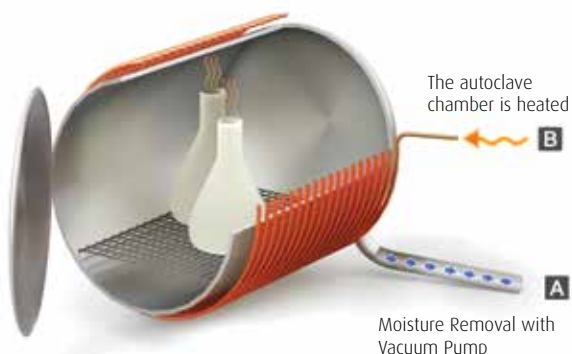
## Glassware, Hollow and Tip Applications

Efficient air removal is an important requirement for sterilizing hollow loads such as laboratory glassware, hollows, tips and textiles. Post vacuum moisture removal after sterilization also assists in fast drying of your sterilized loads.

### Fast and Efficient Heat-up

#### Immediate Steam and Efficient Air Removal

During the heat-up phase air is efficiently removed from the chamber by a strong vacuum pump. Steam, that is immediately available from the built-in steam generator, is then injected into the autoclave for immediate chamber heating.



### Complete Drying

#### Chamber Heating and Post Vacuum

Highly efficient drying is achieved by uniformly heating the chamber wall of the autoclave. The chamber is heated by passing steam through a coiled pipe around the chamber. The post vacuum stage reduces the boiling point which speeds up drying. This results in faster and complete drying, and guarantees that even the most difficult loads such as textiles, porous loads, hollow instruments and tips, will dry.

## Biological Seal

### For 50100TL model

The bio-shield provides a complete hermetic seal for maximum biological containment between differently qualified zones. The bio-shield system meets the BSL3 bio-safety level using a combination of stainless steel plates and flexible neoprene wall seal.

- **Jacket Frame** – A fully welded metal flange with threaded studs surrounds the jacket. A counter plate is attached to the flange using the nuts provided. Any necessary fittings for electrical connections pass through this section of the bio-shield via specially sealed conduits.
- **Wall Frame** – A wall frame is built into the concrete wall of the building. Continuous neoprene sealing is used to seal the sterilizer completely in the aperture in the wall.



## Biohazard and Waste Sterilization Features

Working with biohazard media can be dangerous to laboratory staff and the environment. The advanced TL autoclave line provides an optional sterilization solution for the treatment of biohazard media. Prior to sterilization, during the air removal stage, all effluent is passed through a 0.2 µm biological filter that filters the exhaust air. During the sterilization phase, condensate does not leave the autoclave chamber, and the condensate and biological filter are sterilized. As a result, laboratory staff are protected from risk of contamination. Tuttnauer provides solid waste containers for holding waste during the sterilization cycle.



## Baskets

Stainless steel wire baskets and containers in different sizes for all autoclave models.



## Loading Equipment

The 316L loading carts are designed to roll from the transfer carriage onto the rails for easy handling of heavy loads. To ensure safety and ease-of-use the carriage is equipped with a lock to prevent sliding of the cart. Swivel wheels with wheel brakes maximize mobility in limited space.

The loading cart is available with one or two shelves.



## Standards

Tuttnauer pressure vessels are both ASME and PED certified. All ASME certified vessels are inspected by an independent authorized ASME inspector.

- DIN 58951-2:2003 Steam Sterilizers for Laboratory Use

### Directives & Guidelines:

- PED 97/23/EC Pressure Equipment Directive
- 2002/95/EC RoHS Directive
- 2006/95/EC Electrical equipment
- 2004/108/EC Electromagnetic compatibility
- 2006/42/EC Machinery Directive
- 2002/96/EC WEEE Directive
- ANSI / AAMI – ST55: 2010 Table Top steam sterilizer
- EN 13060: 2004+A2: 2010 Small steam sterilizer

### Safety and EMC Standards:

- EN 61010-1: 2010 Safety requirements for laboratory use
- EN 61010-2-40: 2005 Safety requirements for sterilizers
- EN 61326-1: 2013 Electrical Equipment for EMC Requirements
- EN 17665-1: 2006 Sterilization of health care products – moist heat

### Pressure Vessel and Steam Generator Construction Standards:

- ASME Code, Section VIII, Division 1, Unfired Pressure Vessels
- ASME Code, Section I, for Boilers

### Quality System Compliance:

- ISO 9001:2008 (Quality Systems)
- EN ISO 13485: 2012 Quality Management System
- Canadian MDR (CMDR) SOR/98-282 (2015), consolidated
- In compliance with FDA QSR 21 CFR part 820 & part 11

### More from Tuttnauer:

Featuring Tuttnauer's range of cleaning, disinfection and sterilization solutions



Bulk Laboratory Autoclaves



Horizontal Laboratory Autoclaves



ELV - Vertical Laboratory Autoclaves



EL - Benchtop Laboratory Autoclaves

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## TL Laboratory Line

International Sales and Marketing  
E-mail: [info@tuttnauer.com](mailto:info@tuttnauer.com)  
[www.tuttnauer.com](http://www.tuttnauer.com)

Tuttnauer Europe b.v.  
Hoeksteen 11, 4815 PR  
P.O.B. 7191, 4800 GD Breda  
The Netherlands  
Tel: +31 (0) 765 423 510, Fax: +31 (0) 765 423 540  
E-mail: [info@tuttnauer.nl](mailto:info@tuttnauer.nl)

Tuttnauer USA Co.  
25 Power Drive,  
Hauppauge, NY 11788  
Tel: +800 624 5836, +631 737 4850 Fax: +631 737 0720  
E-mail: [info@tuttnauerusa.com](mailto:info@tuttnauerusa.com)

  
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