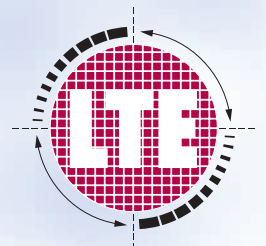


LTE Scientific Ltd.

Touchclave-R

The dynamic new range of cylindrical-section autoclaves from LTE Scientific



An Introduction to Touchclave-R

The New Touchclave-R range of low-cost cylindrical-chambered autoclaves has been designed with a large range of standard features not seen before on this type of sterilizer. These features ensure high productivity, short cycle times, performance, versatility and the reliability demanded by the busy laboratory.

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Products and Services from LTE Scientific

LTE Scientific is one of Europe's leading manufacturers of laboratory and process equipment and has been established since 1947.

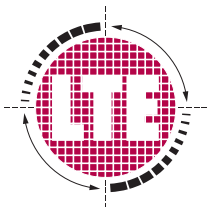
All LTE products are CE marked and are designed and built to the requirements of the ISO9001: 2000 and ISO13456 quality standards.

Other LTE products include:

- Square-chambered autoclaves from 150 to 10,000 litres
- Laboratory ovens
- Laboratory incubators
- Cooled incubators
- Freeze-dryers
- Drying cabinets
- Environmental rooms and photostability chambers
- Off-site stability storage and disaster recovery services
- Maintenance, calibration, validation, and upgrade services

LTE has a Service Centre which is UKAS accredited and is supported by a nation-wide network of highly trained service engineers. Outside the UK, our network of distributors employ LTE trained service engineers.

Please call our sales office on +44 (0) 1457 876221 for brochures and prices.



Touchclave-R Model Range

Submerged heaters within the chamber generate steam. The chamber water can be topped up periodically, either manually or automatically. Sensors prevent the cycle from starting or continuing if there is insufficient water.

Four chamber sizes are offered, including one bench top model. The three floor-standing sizes are offered in either front or top loading configuration, making seven models in all. The floor-standing models are moved on castors. All units will fit through a standard door.



Chamber sizes of the seven models in the Touchclave-R range are:

| | |
|-------------------------------------|--------------------------|
| Bench top | - 40 litres |
| Floor Standing Front Loading | - 60, 120 and 160 litres |
| Floor Standing Top Loading | - 60, 120 and 160 litres |

Full details of all range features and the control system can be found on pages 4-7.

A number of options are available for the Touchclave-R range to enhance the system's performance and versatility. The main options are described on page 6. A full list of options can be found on page 8.

Typical Loading Capacities

| | TCR/40/H | TCR/60/H | TCR/60/V | TCR/120/H | TCR/120/V | TCR/160/H | TCR/160/V |
|-------------------------|----------|----------|----------|-----------|-----------|-----------|-----------|
| 1/2 litre bottle | 14 | 21 | 18 | 48 | 42 | 63 | 63 |
| 1 litre bottle | 9 | 14 | 14 | 23 | 32 | 30 | 48 |
| 2 litre bottle | 5 | 8 | 6 | 13 | 14 | 18 | 14 |
| 1 litre flask | 2 | 4 | 8 | 13 | 16 | 18 | 24 |

Features

The Touchclave-R range of cylindrical-chambered autoclaves contains an exceptional array of high performance features. These features include,

- Simple 'push-n-seal' door with pneumatic door seal
- Touchscreen control system
- Air ballast to prevent container breakage and spillage
- Dynamic in-chamber load cooling
- Load-sensed process timer

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Standard Features and Benefits of Touchclave-R

'Push-n-Seal' Door

The unique door closure design requires **no operator effort**. No levers, no door bolts! Simply push the door closed and press start. Once the cycle has started the door will automatically lock and seal. At the end of the cycle, the seal will be retracted and the door released.

Pneumatic Door Seal

The specific design of this feature ensures that a perfect seal is created every time, therefore any subsequent door adjustment is avoided. A built-in compressed air supply pushes the seal out to the door face at the start of every cycle. At the end of the cycle, the seal retracts back into a seal groove, minimising the risk of damage to the seal.

Touchscreen Control System



This system is the standard operating platform across the whole LTE autoclave range. It incorporates a state-of-the-art touch-sensitive screen.

Using a series of on-screen prompts and icons, the system is both versatile and simple to use. See page 7 for full details.

Air Ballast

When processing fluids and media, especially in sealed containers, it is important to avoid boil-over or container breakage. With many autoclaves, the only way to do this has been to extend the cooling phase of the cycle. A better system is air ballasting, which maintains the chamber pressure by replacing the steam with air during 'cooling', so that cycle times are kept short. The Touchclave-R range is exceptional in its class for incorporating air ballast as standard.

Dynamic In-Chamber Load Cooling

A further new feature designed to maximise cycle efficiency is the in-chamber cooling system, which in addition to the external fan forces cool air directly into the chamber through a fine bacterial filter. This system cools the load more effectively than traditional methods of air cooling. Dynamic load cooling also assists in removing residual water from many load types.

Load Sensed Process Timing

An armoured load probe is fitted as standard. This monitors the temperature of the load and ensures that the sterilization phase commences at precisely the right time.

Controlled by Pressure

Controlling by pressure provides greater temperature stability in the chamber than controlling by temperature. This is important for certain media, which are sensitive to temperature over-shoot. Typical accuracy is $\pm 0.5^{\circ}\text{C}$.

Active Chamber Discharge

This low maintenance feature provides superior air removal from the autoclave chamber compared to the steam trap traditionally used. This in turn improves temperature accuracy within the chamber.

In-Chamber Heating

This low-cost system avoids the need for permanent plumbing (However, we recommend that autoclaves be discharged to a permanent drain where possible).

View or Print Last Cycle

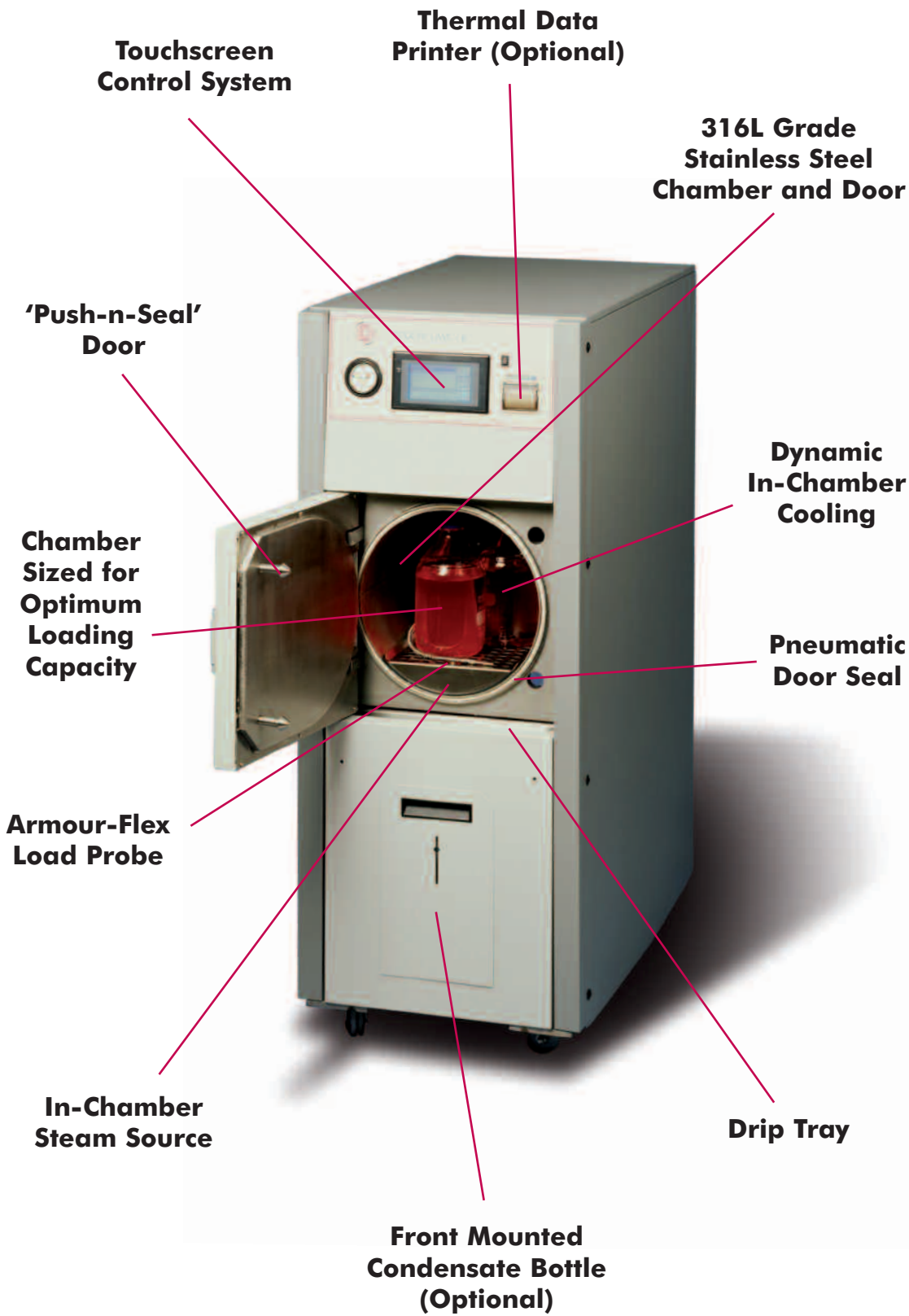
This useful feature allows the user to re-print the last cycle in the case of loss or damage to the previous print out or in the case where multiple copies are required. The cycle data may also be viewed on screen to save paper, or if a printer is not fitted.

40 Individual Users

The software retains up to 40 separate users with individual 'logons', enabling cycle trace ability. Four password-protected access levels are also included, ensuring only valid users can change or approve cycles.

F₀ Value

All Touchclave-R autoclaves display (and print if applicable) an F₀ value at the end of each cycle. F₀ is an industry benchmark, which calculates the equivalent exposure time a load has had at 121°C. A data sheet is available from LTE on this subject.



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Various options are available to further enhance this range. They include:

Vacuum System

Our optional pre and post vacuum system incorporates an efficient twin-headed diaphragm pump. The system offers vacuum air removal for improved sterilization efficiency and also aids the cooling phase by helping to dissipate heat more effectively, thus reducing overall cycle times. This option includes a steam condensate unit.

Printer

Our thermal data printer will keep a record of all cycle stages and display all relevant status messages.

Data Archiving

Many laboratories have an increasing need for long-term storage of thermometric records of sterilization processes. By adding the Internal Data Archiving option, you can store up to 5000 cycle profiles internally on a single flash card, which can then be printed off at any time. Our Remote Data Archiving option is additional and allows the cycle information to be stored directly on to a PC.

Automatic Water Fill

Actuated by a level sensor, this system monitors and 'tops up' the water level in the chamber automatically before each cycle, as an alternative to manual water fill.

Steam Condensate Unit

Our air-cooled condensate unit effectively cools all chamber discharge and prevents excessive steam output at the exhaust point.

Built-in Condensate Collection

A rear-mounted condensate bottle is supplied as standard (However, we recommend that autoclaves be discharged to a drain where possible). As an option, we can incorporate a special 'pull-out' drawer at the front of the unit for the condensate bottle. A steam condensate unit is included with this option.



Choice of Single or 3-Phase Power

Customers are offered greater flexibility depending on their site facilities. All Touchclave-R models are supplied with a single-phase electrical supply as standard. For customers with appropriate site facilities who wish to speed up the heat-up and overall cycle times, a boosted single phase or 3-phase supply option is offered. See page 8 for details.

Keep Warm Facility

Controls the temperature of the water reservoir within the chamber at the end of the sterilization cycle, allowing the processed media in the chamber to remain liquid for a period of time.

Category 3 Effluent Retention (Includes Steam Condensate Unit)

Where required, all models can be fitted with an effluent retention system and 0.2µ bacterial air inlet filter. This option requires a separate sealed drain for the autoclave. We strongly recommend the use of a vacuum system with cat. 3 applications.

Modem Link

A modem allows the LTE technical team to connect directly with the autoclave and view real-time data, enabling us to carry out rapid diagnosis of particular issues and offer appropriate advice. This facility can significantly reduce autoclave downtime.

Touchscreen Control System

Touchclave-R autoclaves incorporate our popular Touchscreen control system. This flexible and easy to use operating platform has been adapted to fit the specific requirements of the Touchclave-R range, thus offering a comprehensive control package together with the option to upgrade features to meet your particular needs.



This system gives users a choice of selecting from a menu of load-specific cycles or developing their own cycle profile from set templates. Eight cycles can be stored into the memory as standard.

Load Specific Cycles

Load-specific cycles are selected by pressing the appropriate on-screen cycle title icon and then following the on-screen instructions. The cycles are pre-programmed to optimise air removal and cooling profiles for each load type. The only parameters which require operator input are sterilizing temperature, sterilizing time, cooling temperature, boosted heat-up and print intervals.

There are also options to change the cycle title, select the user level to run and approve cycles and to specify whether batch codes are required.

Customised Cycles

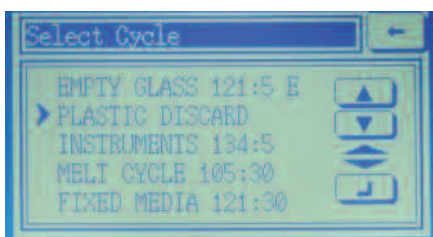
By selecting an empty cycle slot on the control panel, you may create your own cycle using one of the preset cycle templates. This allows you to tailor the autoclave to your own specific cycle needs.

Once the programs are stored in the memory, starting the cycle could not be easier. Pressing the start button brings a cycle menu up on screen, allowing the required cycle to be selected. If the cycle has been configured to be traceable, there is a prompt to input operator ID and Batch information at this stage. There is also a facility to program a delayed automatic cycle start, which is particularly useful for maximising the use of the sterilizer. During the cycle, information is constantly displayed on the touchscreen. Every stage of the cycle carries a different information screen.

A fully integrated thermal paper printer or chart recorder is available as an option.

Internal data archiving is available as an option, where up to 5000 cycles are stored and may be reprinted or viewed on screen whenever required. This is also available with a PC link so that cycles may be viewed 'live' with cycle traces, full cycle history and current machine status. RS232 is suitable for stand-alone machines, while RS485 is required when several machines are to have a remote data archive link.

On completing a successful cycle, the screen will show the 'Passed' display. If a fault occurs during the cycle, 'Failed' will be displayed on the screen. Details of the fault conditions are highlighted on a separate screen and can be accessed by the operator, but only acknowledged by those with a supervisor access code. All fault conditions will also be printed where applicable.



Touchclave Touchscreen Systems

Touchclave Touchscreen Systems incorporates a self-diagnostic system, which will highlight any abnormality in the cycle. As an option, a modem can be fitted to the control system allowing our technical team to view real-time cycle data from a remote location. This will enable us in many cases to advise quickly on operational issues, thus minimising possible 'down-time'.

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Technical and Ordering Information

Ordering Information

| Model | Chamber Litres | Loading | Chamber dims, mm | Overall dims, mm H x W x D | Weight Kg | Shelves /Positions |
|-----------|----------------|---------|------------------|----------------------------|-----------|--------------------|
| TCR/40/H | 40 | Front | 350 x 415 | 710 x 580 x 720 | 120 | 1/1 |
| TCR/60/H | 60 | Front | 350 x 625 | 1400 x 550 x 970 | 205 | 1/1 |
| TCR/60/V | 60 | Top | 350 x 625 | 1000 x 710 x 540 | 210 | 1/1 |
| TCR/120/H | 120 | Front | 500 x 610 | 1680 x 700 x 1170 | 260 | 2/2 |
| TCR/120/V | 120 | Top | 500 x 610 | 1050 x 890 x 650 | 265 | 1/1 |
| TCR/160/H | 160 | Front | 500 x 825 | 1680 x 700 x 1170 | 290 | 2/2 |
| TCR/160/V | 160 | Top | 500 x 825 | 1200 x 890 x 650 | 295 | 1/1 |

Options and Accessories

| | | Dimensions |
|------------------|--|-------------------------|
| TC/TDP/02 | Thermal Data Printer* | |
| TC/VAC/R1 | Vacuum System for 40 litre units* | |
| TC/VAC/R2 | Vacuum System for 60 litre units* | |
| TC/VAC/R3 | Vacuum System for 120 litre units* | |
| TC/VAC/R4 | Vacuum System for 160 litre units* | |
| TC/IDA/01 | Internal Data Archiving* | |
| TC/RDA/01 | Remote Data Archiving with RS232 Connection (PC to be supplied by others)* | |
| TC/RDA/02 | Remote Data Archiving with RS485 Connection (PC to be supplied by others)* | |
| TC/AWF/01 | Automatic Water Fill* | |
| TC/CON/01 | Condensate Unit | |
| TC/FIL/01 | Cat. 3 Effluent Retention Upgrade (Including 0.2µ Exhaust Filter)* | |
| TC/FCB/01 | Front Panel Mounted Internal Condensate Bottle with pull-out Compartment | |
| TC/BES/01 | Boosted Single Phase Heaters for TCR/40H* | |
| TC/BES/02 | Boosted Single Phase Heaters for TCR/60H* | |
| TC/BES/03 | Boosted Single Phase Heaters for TCR/60V* | |
| TC/BES/04 | Boosted 3-Phase Heaters for TCR/120H* | |
| TC/BES/05 | Boosted 3-Phase Heaters for TCR/120V* | |
| TC/BES/06 | Boosted 3-Phase Heaters for TCR/160H* | |
| TC/BES/07 | Boosted 3-Phase Heaters for TCR/160V* | |
| TC/KWF/01 | Media Keep Warm Facility* | |
| TC/MOR/R1 | Morrison Discard Box for TCR/60H, | 185 x 220 x 280 (HxWxD) |
| TC/MOR/R2 | Morrison Discard Box for TCR/120H, | 215 x 340 x 280 (HxWxD) |
| TC/MOR/R3 | Morrison Discard Box for TCR/160H, | 215 x 340 x 250 (HxWxD) |
| TC/MOR/R4 | Morrison Discard Box for TCR/60V, | 320 Dia. x 250 (H) |
| TC/MOR/R5 | Morrison Discard Box for TCR/120V, | 445 Dia. x 240 (H) |
| TC/MOR/R6 | Morrison Discard Box for TCR/160V, | 445 Dia. x 235 (H) |
| TC/MOR/R7 | Morrison Discard Box for TCR/160V, | 445 Dia. x 370 (H) |
| TC/MOR/R8 | Morrison Discard Box for TCR/40H, | 185 x 220 x 360 (HxWxD) |
| TC/BAS/R1 | Basket for TCR/60H, | 230 x 220 x 280 (HxWxD) |
| TC/BAS/R2 | Basket for TCR/120H, | 260 x 340 x 280 (HxWxD) |
| TC/BAS/R3 | Basket for TCR/160H, | 260 x 340 x 250 (HxWxD) |
| TC/BAS/R4 | Basket for TCR/60V, | 320 Dia. x 270 (H) |
| TC/BAS/R5 | Basket for TCR/120V, | 445 Dia. x 260 (H) |
| TC/BAS/R6 | Basket for TCR/160V, | 445 Dia. x 260 (H) |
| TC/BAS/R7 | Basket for TCR/160V, | 445 Dia. x 390 (H) |
| TC/BAS/R8 | Basket for TCR/40H, | 230 x 230 x 360 (HxWxD) |
| TC/MEM/01 | Increased Cycle Memory | |
| TC/MOD/01 | Modem Link | |
| TC/CBD/01 | Lockable Storage Cupboard/Support Stand for TCR/40H, Including 4 x Castors | |
| TC/HST/01 | Electric Hoist for all Top Loading Models | |

* Factory fitted

Site Services

Chamber sizes of the seven models in the Touchclave-R range are:

Water Softened potable water is acceptable. Otherwise check with LTE for suitability. For automatic water fill versions, connection is via a 15mm diameter water inlet.

Drain Not required on standard units although we always recommend connection to 100mm drain where possible.

Electrical See Table Below

| | Front Loading Models | | | | Top Loading Models | | |
|-----------------|----------------------|-------------|------------------|---------------------|--------------------|------------------|------------------|
| | TCR/40/H | TCR/60/H | TCR/120/H | TCR/160/H | TCR/60/V | TCR/120/V | TCR/160/V |
| 1-Phase | 2.5Kw / 13A | 5.0Kw / 20A | 7Kw / 32A | 7.5Kw / 35A | 5.0Kw / 20A | 6.5Kw / 30A | 7.5Kw / 35A |
| 1-Phase Boosted | 3.5Kw / 20A | 7Kw / 32A | N/A | N/A | 6.0Kw / 25A | N/A | N/A |
| 3-Phase | N/A | N/A | 9Kw / 20A per Ph | 10.5Kw / 20A per Ph | N/A | 9Kw / 20A per Ph | 9Kw / 20A per Ph |

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As a progressive company, LTE may modify or withdraw any product without prior notice. E&OE