Reliable. High Performance
Laboratory Steam Sterilizers

GETINGE
GETINGE GROUP

Lancer LSS Series. With people in mind.
Lancer is dedicated to laboratories. As a global leader in laboratory washing and sterilization products for life science and industrial laboratory applications we offer a complete line of products.

The Lancer LSS Series is designed for sterilization of various loads used in laboratory, research and animal care facilities.

With our extensive service network you will have the support you need, from installation through the entire lifetime of your products.

Our service organization of experienced professionals offer fast, responsive local coverage, ensuring maximum uptime and minimum total cost.
Our Lancer LSS Series is available with rectangular chambers from 160 to 670 liter volume to fit small to medium sized laboratories. Both single and double door configurations will allow for proper installation into your facility.

We know the challenges of laboratories and have developed a versatile sterilizer to support your daily businesses. Whether the load is solid goods, glassware or textiles, liquids in open or closed containers, or deactivation of micro-organisms, our sterilization processes provide reliable results and peace of mind.

World class engineering, first-class materials and reliable components account for a safe and efficient sterilizer with minimal downtime and extended lifetime.
Versatile and universal

- **A sterilizer to rely on**
  High quality materials and components provide high reliability. The stainless steel construction assures extended life cycle in harsh environments.

- **Operate anywhere you want**
  A steam generator is always included as standard so there is never a need for a central steam supply.

- **Maximum uptime**
  Designed for extended life-cycle operation, Lancer sterilizers are constructed of high-grade materials inside out. Operating components are oriented for easy access for preventive maintenance to minimize downtime.

- **Designed for your laboratory**
  Many sizes and configurations to facilitate proper installation into your facility. With a fully automatic vertical door and a favorable footprint it’s the right choice for laboratories.

- **Load whatever you want**
  Specially designed loading equipment to provide flexibility for different load types.
• **Control system with people in mind**
  The controller interface is designed to permit easy user access. Multiple displays are arranged on the graphical user interface to provide real-time cycle data in multiple formats.

• **Programmed to meet your requirements**
  Factory programmed Siemens Control System with pre-set cycles for most laboratory applications. Lancer provides a fascia printer and a batch report archive for storage of up to 10,000 cycles.

• **Verified performance**
  Individual test cycles are pre-programmed in accordance with industry standards and best practices to provide optimal performance.

• **Uncomprising safety**
  Full compliance with applicable norms and standards.
We raised the bar and provide a reliable sterilizer with high-grade materials. Chamber, door and jacket is made of AISI 316L stainless steel and withstands the biggest challenges. The entire piping is made of stainless steel and the process components are sourced from industry leaders. We do not compromise on quality as this is the basis for a long and trouble free operation.

No steam, no problem – the built-in electrical steam generator supplies the sterilizer with the required amount of steam. Cycles are factory pre-programmed, but widely adaptable to the specific requirements of your laboratory. The process list include cycles for common sterilization of solid and heat sensitive load at 121 °C and 134 °C. Liquids in open or closed containers can be processed along with the media preparation cycle operating below 100 °C. Processes for the deactivation of microorganisms and test cycles completes the list and makes this sterilizer a versatile machine.

Lancer provides a set of suitable loading equipment with each sterilizer as standard. The LSS 160 and LSS 180 models are equipped with L-rails and extendable shelves. The height adjustable shelves slide out half the length of the chamber for easy loading and unloading. Other models include a shelf rack and a loading trolley to enable smooth handling. All loading equipment has a robust design and is made of AISI 304 stainless steel.

We’re there when you need us – from installation through the entire lifetime of your sterilizer. Lancer has a comprehensive service organization to meet all you service needs. Our certified professionals offer fast, responsive local coverage with the support of our world-class experts, ensuring maximum uptime and minimum total cost.
Technical information

Configurations

<table>
<thead>
<tr>
<th>Model</th>
<th>Chamber Dimension</th>
<th>Single Door</th>
<th>Double Door</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Width</td>
<td>Height</td>
<td>Depth</td>
</tr>
<tr>
<td>LSS 160</td>
<td>350</td>
<td>670</td>
<td>700</td>
</tr>
<tr>
<td>LSS 180</td>
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<td>724</td>
</tr>
<tr>
<td>LSS 250</td>
<td>500</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>LSS 420</td>
<td>670</td>
<td>670</td>
<td>942</td>
</tr>
<tr>
<td>LSS 555</td>
<td>670</td>
<td>670</td>
<td>1245</td>
</tr>
</tbody>
</table>

Standards & Codes

- 2006/42/EC  Machinery Directive
- 2006/95/EC  Low Voltage Directive
- 2004/108/EC  EMC Directive
- 97/23/EC  Pressure Equipment Directive
- 2011/65/EU RoHS2  Restriction of Hazardous Substances Directive
- 2012/19/EU WEEE2  Waste Electrical and Electronic Equipment Directive
- Quality Management Systems - Requirements EN - ISO 9001
- Environmental Management Systems – Requirements with guidance for use, EN - ISO 14001
Backed by more than 100 years of experience, Getinge’s global reach and extensive installed base, provides us with the knowledge to assist our customers in planning for optimal and efficient workflows. In this way we help you maximize throughput and provide solutions for efficient production. With our premium equipment, project management, logistics, signature service, and training, you can count on Getinge – right from the start.

The Lancer LSS is a fully automatic steam sterilizer with pre-set cycles specifically for laboratory applications. The cycles employ mechanical air removal with a series of vacuum/pressure pulses to effectively remove air for assurance of sterilization.

Quality Statement

Confidence in the Getinge group is the most important quality criteria. This is the hallmark of all our external and internal commitments, activities and products. Products and services supplied by Getinge conform to the agreed terms and expectations. The achievement of these quality goals is the basis for continued competitive and successful enterprise.

Application

The sterilizer is designed for steam sterilization of hard goods and liquids in open and closed containers within the laboratory environment. The sterilization temperature range is from 90°C–135°C, depending on the selected cycle.
### Chamber size & volume

<table>
<thead>
<tr>
<th>MODEL</th>
<th>CHAMBER DIMENSIONS (mm)</th>
<th>CHAMBER VOLUME (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WIDTH</td>
<td>HEIGHT</td>
</tr>
<tr>
<td>LSS 160</td>
<td>350</td>
<td>670</td>
</tr>
<tr>
<td>LSS 180</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>LSS 250</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>LSS 420</td>
<td>670</td>
<td>670</td>
</tr>
<tr>
<td>LSS 555</td>
<td>670</td>
<td>670</td>
</tr>
<tr>
<td>LSS 670</td>
<td>670</td>
<td>670</td>
</tr>
</tbody>
</table>

### Installation

The Lancer LSS series is available in many configurations to facilitate proper integration into your facility.

**Number of Doors**
- Single Door
- Double Door [N/A for LSS 180]

**Service Access**
As a standard this sterilizer is serviced from both sides. Except LSS 160 and 180 the following service access alternatives can be chosen, as seen from Control Side.
- Both Side Service
- 100% Right Side Service
- 100% Left Side Service

**Installation Selection**
The Lancer LSS is as standard delivered as Cabinet Version with stainless steel side panels. Recessed installation between two walls or as mixed installation can be done without modification.

### Process and Instrumentation

**Steam Supply**
- Built-in Electrical Steam Generator
- Central Steam Supply

Included as standard is an automatic, integral, electrically heated steam generator which is mounted under the sterilizer chamber. Its pressure vessel is made of AISI 316L stainless steel, insulated with 25 mm chloride free mineral wool and enclosed in a rigid, removable aluminium sheet housing. The heating elements are made of stainless steel.

In case that central steam supply is chosen, the steam generator acts as a buffer and can be used in times when the central steam supply is not available.

**Pressure Gauges**
The sterilizer is provided with the following fascia mounted pressure gauges (in bar):

#### Control Side
- Chamber Pressure
- Steam Supply Pressure

#### Non-Control Side (if applicable)
- Chamber Pressure

Additional pressure gauges for jacket pressure and gasket pressure are located in the service area.
Sterilization Cycles

The sterilizer is equipped with a set of preprogrammed cycles. The eight (8) included cycles are for the following applications:

- Porous Load, Textiles
- Laboratory Glassware, Rubber
- Liquids in Open or Vented Containers
- Liquids in Closed Containers
- Discard of Fluids
- Discard of Mixed Goods
- Media Preparation
- Automatic Leak Rate Test

Lancer can also provide an optional Bowie & Dick Test program:

☐ Bowie & Dick Test

**Note!** Lancer does not take any responsibility for the sterilization result of processed goods. For detailed program description see page 7.

**Process Flow**

Loading and Unloading from the Control Side or the Non-Control Side is possible without restrictions.

**Cooling Phase**

Liquid loads will be cooled down after the sterilization phase. Depending on the type of load, one of two different methods for cooling are used.

**Natural cooling**

This method is applicable for liquids in open or vented containers. It is an effective method of liquid cooling, which takes energy from the liquid by boiling it off. A liquid loss of less than 5% due to evaporation cooling is to be expected.

**Jacket cooling**

This method is applicable for liquids in closed containers. Water is introduced into the jacket after the sterilization phase to indirectly cool down the load. Compressed air is admitted into the chamber during the cooling phase to prevent boil over or product damage.
**Mechanical**

**Chamber Design**

The sterilizer chamber, jacket and door are made from solid, high quality, type 316 L/W.Nr.1.4404 stainless steel. Internal surfaces are glass bead blasted to facilitate cleaning. All internal corners are radiused (also to aid cleaning). A stainless steel mesh strainer protects the drain port from blockage by debris. The sterilizer chamber is completely insulated with a chloride free mineral wool, encased in a rigid sheet aluminium housing. The chamber is mounted on a stainless steel framework with adjustable feet. The chamber is provided with one 1/2" threaded connection for pressure gauge (PT) and a 1" connection for test sensor (TT).

**Automatic, Vertically Sliding Door**

The door is fully automatic in operation and is raised and lowered by a motor. Door operation is controlled via push buttons on the control panel. A mechanical safety edge stops the door if it is obstructed while closing, thus protecting the operator and loading equipment. The door is automatically sealed, with safety interlock [for double door units].

In addition to the door safety systems, the chamber is provided with a pressure monitoring system that ensures that all chamber pressure has been relieved prior to allowing the door(s) to open. For liquid loads, the temperature must be at a safe value as well. As an ‘intrinsic safety’ feature, when the door seal is retracted the chamber is completely vented to atmosphere while the door is still retained in the fully closed and mechanically locked position. The fascia temperature never exceeds 55 °C.

**Pipes, Valves & Components**

All piping is made of stainless steel, some components can be made of copper or brass. All process valves are pneumatically operated piston valves. Safety valves are made of brass. All standard components are non-proprietary and can be easily sourced.

**Mechanical Vacuum Pump**

A highly efficient liquid ring vacuum pump, mounted on vibration isolators for quiet operation, is provided to effectively remove air from within the chamber. The vacuum pump is protected with a low water alarm.

**Air Filter**

A replaceable air filter is provided, for filtering of the compressed air, entering the chamber and door seal groove. The filtered air is used to pressurize the door seal groove, equalize the chamber pressure at the end of the sterilization cycle and to protect closed bottles from damage during the cooling phase. The filter separation efficiency is higher than 99,998% for particle size 0,2μm. The filter housing is made of stainless steel.
Control system

Lancer’s Standard Siemens Control System monitors and displays system functions and is supplied with colour touch screen panels as standard. The system also features a comprehensive alarm/alert system (service intervals, maintenance, etc.) and a password protected hierarchical menu structure to control system access.

The Siemens controls all system functions, monitors system operations, both visually and audibly alerts the operator of cycle malfunctions and, on demand, provides visual indication of the chamber temperature and pressure.

Operator Panels

The control system is operated via an easy-to-use “menu tree”. As default, the operator has access to the cycle selection, cycle start and door control. Operators can only run preprogrammed and tested cycles. Access to other functions, such as running test cycles, setting user defined parameters, calibration, service and maintenance is controlled using a pre-defined set of access levels preventing unauthorized changes to the system.

Control Side

- 7” colour touch screen
- 10” colour touch screen

Non-Control Side (if applicable)

- 4.3” colour touch screen

Operator panel location

The operator panel(s) are placed above the chamber door.

Main screen

![Main screen image]

Cycle Documentation

Sterilization cycle data is printed during the cycle and at cycle completion and includes all critical parameters. The printed cycle date includes pressure and temperature, cycle start time, date, both sterilizer and cycle number, and any alarm that occurred during the process. In case of printer failure during the cycle, the last cycle data can be reprinted.

Printer

A thermal printer is standard and mounted into the fascia on Control Side.
Control system (continued)

**Network Communication**
Lancer provides as standard a USB stick for storage of up to 10,000 cycles. The connection is in the service area on the back side of the Control Side panel. Furthermore the system provides network connection capabilities. Data can be send by one of the communication ways below:

- RS 232
- RS 485 (MODBUS)
- TCP/IP (MODBUS)

Remote Monitoring

**Temperature and Pressure sensors**
The Siemens Control System has a built-in linearization, to correct the individual characteristics of each type of sensor connected to the system.

- Chamber Temperature -1
- Chamber Temperature -2
- Liquid Reference Temperature -1
- Liquid Reference Temperature -2
- Chamber Pressure -1
- Chamber Pressure -2
- Steam Generator Pressure
- Jacket Pressure
- Air Pressure
- Steam Generator Temperature

The temperature sensors are Pt 100 and A class.

**Alarms**
In the event of a critical failure during the sterilization cycle, the process enters an alarm phase which will safely and automatically end the process. The range of alarms includes but is not limited to:

- High Pressure Chamber Temperature
- Low Water Level in Steam Generator
- High Pressure Steam Generator
- Error Chamber Temperature Sensor
- High Temperature Steam Generator
- Time Out Water Pump Operation

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**Electrical**

**Electrical Cabinet**
All electrical components such as terminals, contactors, etc. are housed in a IP54 classified cabinet. Other electrical components such as switches and valves are directly mounted on the sterilizer.

**Power Supply**

- 380VAC (±10%), 3 phase, 50Hz
### Sterilization Cycles

**P01 Porous load, textile**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Delivered</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>...........</td>
<td>........</td>
<td>...........</td>
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</table>

**P02 Laboratory glassware, rubber**

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<tbody>
<tr>
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**P03 Liquids in open or vented containers**

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**P04 Liquids in closed containers**

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</thead>
<tbody>
<tr>
<td>...........</td>
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</table>

**P05 Discard Fluids**

<table>
<thead>
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<th>Parameter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>...........</td>
<td>........</td>
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<td>........</td>
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</table>

**P06 Discard Mixed**

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>...........</td>
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**P07 Media Preparation**

<table>
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<tbody>
<tr>
<td>...........</td>
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</table>

**P08 Automatic leak rate test**

<table>
<thead>
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<th>Parameter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>...........</td>
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</table>
### Optional Cycle

#### Bowie & Dick test

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Delivery</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Negative protein</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Positive protein</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sterilization temperature°C</td>
<td>121 - 135</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>4. Sterilization time min</td>
<td>0 - 13</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. Production time min</td>
<td>0 - 60</td>
<td>3</td>
<td></td>
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</table>

### Specification of layout

<table>
<thead>
<tr>
<th>Model</th>
<th>Footprint Width</th>
<th>Footprint Height</th>
<th>Footprint Depth</th>
<th>Loading Height (LH)</th>
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<tbody>
<tr>
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<td>770</td>
<td>1950</td>
<td>1300</td>
<td>1235</td>
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<tr>
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<td>1300</td>
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<td>LSS 250</td>
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<td>1800</td>
<td>1600</td>
<td>1100 1800 1500</td>
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<tr>
<td>LSS 420</td>
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<td>1950</td>
<td>1600</td>
<td>1250 1950 1440</td>
</tr>
<tr>
<td>LSS 555</td>
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<td>1950</td>
<td>1800</td>
<td>1250 1950 1745</td>
</tr>
<tr>
<td>Description</td>
<td>Consumption / Cycle*</td>
<td>Peak / h</td>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------</td>
<td>----------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cold water / Water to Jacket</td>
<td>3 - 8 bar</td>
<td>3/4&quot; DN 20</td>
<td>500 liter</td>
<td>595 liter</td>
</tr>
<tr>
<td>Plant steam</td>
<td>2.5 - 2.7 bar</td>
<td>3/4&quot; DN 20</td>
<td>15 kg</td>
<td>17 kg</td>
</tr>
<tr>
<td>Compressed air</td>
<td>6 - 8 bar</td>
<td>3/8&quot; DN 10</td>
<td>515 liter</td>
<td>582 liter</td>
</tr>
<tr>
<td>Drain</td>
<td>1&quot; DN 25</td>
<td>515 liter</td>
<td>582 liter</td>
<td>669 liter</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>2x[380±10%]VAC 50Hz</td>
<td>10 A fuse</td>
<td>10 A fuse</td>
<td>10 A fuse</td>
</tr>
<tr>
<td>Power 2**</td>
<td></td>
<td>1.68 kW</td>
<td>1.74 kW</td>
<td>1.84 kW</td>
</tr>
<tr>
<td>Process time / Liquids load</td>
<td>3.40 h / 16 l</td>
<td>3.50 h / 18 l</td>
<td>3.15 h / 25 l</td>
<td>3.50 h / 42 l</td>
</tr>
<tr>
<td>Integral electrical steam generator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold water / Steam generator</td>
<td>3 - 6 bar</td>
<td>3/4&quot; DN 20</td>
<td>15 liter</td>
<td>17 liter</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>3x[380±10%]VAC 50Hz</td>
<td>32 A</td>
<td>63 A</td>
<td>63 A</td>
</tr>
<tr>
<td>Power 1***</td>
<td></td>
<td>10.29 kW</td>
<td>13.65 kW</td>
<td>14.70 kW</td>
</tr>
<tr>
<td>Chamber</td>
<td></td>
<td>160</td>
<td>180</td>
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</tr>
<tr>
<td>Heat generation</td>
<td></td>
<td>Service area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>600 kg</td>
<td>720 kg</td>
<td>750 kg</td>
</tr>
<tr>
<td>Notes: Sound power level ≤ 70 dBA</td>
<td></td>
<td>No</td>
<td>Revision</td>
<td>Date</td>
</tr>
<tr>
<td>Please refer to the sterilizer installation manual and sterilizer installation drawing before installing the equipment</td>
<td></td>
<td>1</td>
<td>first release</td>
<td>2015-07-07</td>
</tr>
<tr>
<td>* Equal load in closed bottles (10% of chamber volume in 500ml bottles)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>** Power consumption without steam generator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*** Power consumption with steam generator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All figures are indicative can vary according loads conditions except dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Language
Operator displays, user and service manuals are available in a selection of languages. Other information and manuals are in English.

☐ English  ☐ Dutch  ☐ French

Directives, Standards & Codes
The Lancer LLS sterilizer is designed to comply with the following requirements and standards:

- 2006/42/EC  Machinery Directive
- 2006/95/EC  Low Voltage Directive
- 2004/108/EC  EMC Directive
- 97/23/EC  Pressure Equipment Directive
- 2011/65/EU RoHS2  Restriction of Hazardous Substances Directive
- 2012/19/EU WEEE2  Waste Electrical and Electronic Equipment Directive
- Quality Management Systems – Requirements EN - ISO 9001
- Environmental Management Systems – Requirements with guidance for use, EN - ISO 14001

Loading Equipment
Lancer provides a set of suitable loading equipment with each sterilizer delivered. LSS 160 and LSS 180 models are equipped with L-rails and extendable shelves at three (3) levels. The shelves are allowed to slide out about half the length of the chamber for easy loading and unloading. The shelves are made of 304 stainless steel and can take a maximum load of XXX kg each.

LSS 250 up to LSS 670 are provided with one (1) shelf rack with sliding shelves to allow easy loading and unloading. Single door units include one (1) loading trolley, double door units include two (2) loading trolleys. Both the shelf rack and loading trolley is made of 304 stainless steel.

Disclaimer
This product specification should not be used for installation of equipment!
We reserve the right to correct clerical errors and the right to change this document without notification!

Legal manufacturer:
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SAN. VE TIC. A.S.

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Use the above details to contact us if this literature doesn't answer all your questions.

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.