Heating and cooling thermostats for economical thermostating in the laboratory at temperatures from -40 up to 200 °C









Application examples

- Precise temperature regulation in quality assurance and analytics
- Sample preparation in chemistry and pharmacy
- Temperature control in electronics and life sciences
- Cooling in material tests



Precise, economical, flexible

The thermostats of the LAUDA Ecoline Staredition combine optimum technological performance with the greatest possible efficiency in a broad temperature range. The equipment range is impressive because of its high performance combined with extensive safety functions. The heating and cooling thermostats are compliant with the highest precision requirements with a temperature stability of up to \pm 0.01 K. For precise temperature display, all equipment offers individually adjustable 1-point calibration and adjustment. The E 200 and E 300 control heads have 2-point adjustment as standard, off the shelf features.

Your advantages at a glance

+	The Ecoline advantages	Your benefits
	• Three control heads combined with various heating and cooling baths result in 47 unit variations	• The right solution for every application
	 Five-level Vario pump offers optimum application-related power setting Adjustable, continuous flow rate switch between internal and external circulation 	 Minimised energy input and quick adaptation of pump power to applica- tions and different bath sizes Convenient working even at room tem- perature, without cooling Optimum circulation and temperature distribution in the external circuit and inside the bath
	 Intelligent compressor control via the cooling mechanism Automatic adjustment of cooling capacity on 300 and 500 W devices 	 Extension of equipment life Energy and cost saving Improvement of temperature stability
	 Electronic low-level protection integrated in the pump without float Patented heat triggering 	 No blocking of the float No discharge of interference pulses into the power supply system (flicker standard) despite high heating capacity
	 Standard pump connection on heating and cooling thermostats Cooling coil as standard feature on heating thermostats 	 For external temperature control of measuring and analysis instruments, sepa- ration processes and bioreactors as well as semiconductor production processes Cooling water or external cooling may be connected immediately

Ecoline Staredition Control head E 100

The E 100 devices are the basic models of the LAUDA Ecoline Staredition range. They are ideal for all standard tasks up to 150 $^{\circ}$ C demanding high temperature stability.



Ecoline Staredition Control head E 200

The E 200 devices which make up the Ecoline Staredition comply with increased demands on the thermostating process. User-friendliness, performance and safety functions meet the requirements of today's laboratories. The basic equipment and capacity range are the same as for the E 100 range.





E 100

- 1,5 kW heating power, up to 150 °C
- Large LCD display for actual and set values, setting and display resolution of 0.1 °C
- Easy input of set value for temperature and Vario pump via three function keys
- Automatic safety and warning function in case of low liquid level in the bath
- Overtemperature protection with automatic cut-out (safety class III, FL for operation with flammable liquids)
- Audible error alarm
- Malfunction indicator with automatic diagnosis
- Calibration and adjustment option



- E 200 also with:
- 2,25 kW heating power, up to 200 °C
- Two-line display
- Basic programmer for the reliable automation of temperature variations and test series, 20 temperature/time segments with loop, change and pause function
- Clear display of the set and actual temperature values and the operation states in the two-line display, accurate to within 0.05 °C, selectable resolution of 0.1/0.01 °C
- Data exchange with PC via the standard RS 232 and RS 485 interfaces
- Remote display "malfunction" via neutral contact
- 2-point factory adjustment as standard feature

Ecoline Staredition Control head E 300

The E 300 devices are the top models of the LAUDA Ecoline Staredition range. They are perfect for the demanding user who looks to take advantage of the many benefits of state-of-the-art thermostats. The LAUDA Ecoline Staredition offers high-tech and maximum functionality for various applications at an attractive, economical price. The basic equipment is the same as those from the E 100/E 200 control heads.

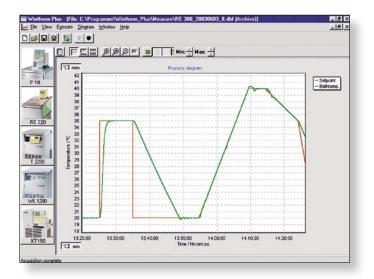




E 300 also with:

- Programmer for up to 150 temperature/time segments, divided into 5 programs with loop, change and pause function
- Back-lit display, selectable 0.05/0.01 °C display resolution
- Connections for external control as standard feature
- Heating devices with supply voltage outlets for solenoid valve for the controlled cold water cooling or for connecting a through-flow cooler
- Screw-on nipples with M 16x1 thread
- Analogue, freely-programmable inputs and outputs (0...10 V) or (0/4...20 mA) for peripheral devices
- Comes with the LAUDA Wintherm Plus PC software as standard offering (for details, please see page 89)
- Remote control as an optional accessory

Ecoline Staredition Wintherm Plus



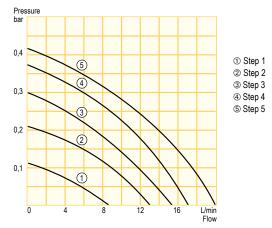


- All LAUDA Ecoline Staredition thermostats with the E 300 control head come equipped with the Wintherm Plus software as a standard feature. It enables the simultaneous and mixed use of LAUDA thermostats via the serial interface.
- For further details about the software, please see page 89.
- Please visit http://www.lauda.de/software_en for a demo version of the software.

Ecoline Staredition Immersion thermostats

Those looking for thermostats that are powerful and compact have come to the right place with these long-lasting immersion thermostats. With the screw clamp received as a standard accessory, they can be fitted to almost any bath with a wall thickness of up to 25 mm and a minimum bath depth of 150 mm. Thanks to their small design they require little space.

Pump characteristics Heat transfer liquid: Water





Immersion thermostat E 300

Temperature range 20...200 °C

Recommended accessories Baths · cooling coil · pump kit · mounting rod



All technical data from page 90 Other power supply variants on page 100







Technical features		E 100	E 200	E 300
Working temperature range	°C	20150	20200	20200
Temperature stability	±Κ	0.02	0.01	0.01
Heater power	kW	1.5	2.25	2.25
Pump pressure max.	bar	0.4	0.4	0.4
Pump flow max.	L/min	20	20	20
Bath depth	mm	150 min.	150 min.	150 min.
Usable immersion depth	mm	100 min.	100 min.	100 min.
Cat. No. 230 V; 50/60 Hz		LCE 0221	LCE 0222	LCE 0223

Ecoline Staredition Baths

LAUDA offers with its Ecoline Staredition series a variety of different immersion thermostats – and matching baths. They are available in various materials and bath volumes and thus form a complete custom-made solution for all thermostating tasks up to 200 °C.

There is a series of transparent baths made of high-quality polycarbonate for viewing the objects being subjected to thermostating, and these can be used up to 100 °C. We offer two types of stainless steel baths: First – cost-effective baths made of deep-drawn stainless steel that can be used up to 150 °C, second – high-quality baths with special insulation for use up to 200 °C, with built-in drain tap and sturdy carrying handles. Both vessels have an exterior made from durable, powder-coated sheet steel.



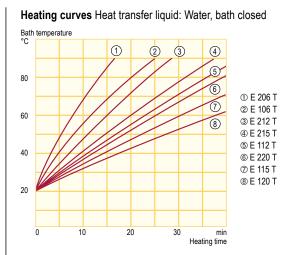
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Transparent Baths up to 100 °C		006 T	012 T	015 T	020 T	
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Material		polycarbonate*	polycarbonate*	polycarbonate*	polycarbonate*	
Temperature max.	°C	100	100	100	100	
Volume max.	L	7	13	15	20	
Int. Dimensions (W x D x H)	mm	130x420x160**	300x315x160	416x130x310	300x490x160	
Cat. No.		LCZ 0628	LCZ 0629	LCZ 0630	LCZ 0631	
Stainless steel up to 150 °C		003	011	019	025	
Material		stainless steel	stainless steel	stainless steel	stainless steel	
Temperature max.	°C	150	150	150	150	
Volume max.	L	3.5	12	18	25	
Int. Dimensions (W x D x H)**	mm	135x240x150	300x329x150	300x505x150	300x505x200	
Cat. No.		LCZ 0620	LCZ 0621	LCZ 0622	LCZ 0623	
Stainless steel up to 200 °C		006	012	020	026	040
Material		stainless steel				
Temperature max.	°C	200	200	200	200	200
Volume max.	L	5.5	13	20	26	40
Int. Dimensions (W x D x H)	mm	150x260x160	300x305x160	300x480x160	300x480x200	300x750x200
Cat. No.		LCZ 0624	LCZ 0625	LCZ 0626	LCZ 0627	LCZ 029

Ecoline Staredition Heating thermostats with transparent bath and control head E 100 and E 200

LAUDA Ecoline Staredition thermostats with the E 100 and E 200 control heads (see also p. 22). The devices have 1.5 kW (E 100) or 2.25 kW (E 200) heating power. The temperature ranges for the transparent polycarbonate baths are from 20 to 100 °C. Their filling volumes range from 5 to 20 liters.







Temperature range 20...100 °C

Standard accessories Closing plugs

Recommended accessories Racks · bath cover (only E 115 T · E 215 T)

Heating thermostat E 212 T

All technical data from page 90

Other power supply variants on page 100

Technical features		E 106 T	E 112 T	E 115 T	E 120 T
Working temperature range	°C	20100	20100	20100	20100
Temperature stability	±Κ	0.02	0.02	0.02	0.02
Heater power	kW	1.5	1.5	1.5	1.5
Pump pressure max.	bar	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17
Bath volume	L	57	913	1015	1420
Bath opening/depth	mm	130x285*/160	300x175/160	275x130/310	300x350/160
Cat. No. 230 V; 50/60 Hz		LCM 0091	LCD 0261	LCD 0263	LCD 0265

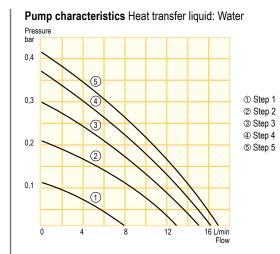
Technical features		E 206 T	E 212 T	E 215 T	E 220 T
Working temperature range	°C	20100	20100	20100	20100
Temperature stability	±Κ	0.01	0.01	0.01	0.01
Heater power	kW	2.25	2.25	2.25	2.25
Pump pressure max.	bar	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17
Bath volume	L	57	913	1015	1420
Bath opening/depth	mm	130x285*/160	300x175/160	275x130/310	300x350/160
Cat. No. 230 V; 50/60 Hz		LCM 0092	LCD 0262	LCD 0264	LCD 0266

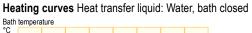
Applications Advantages Control heads Devices Accessories

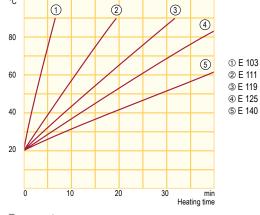
* Dimensions of bath opening are slightly smaller than the overall product dimensions.

Ecoline Staredition Heating thermostats with stainless steel bath and control head E 100

LAUDA Ecoline Staredition thermostats are available with baths of highquality stainless steel, whether this involves the lower-priced variations that can be used up to 150 °C or high-quality versions with insulation for temperatures up to 200 °C. The E 100 units have a heating capacity of 1.5 kW and a temperature range from 20 up to 150 °C. The devices include the full Ecoline Staredition safety standards: With two safety circuits, selfdiagnosis, overtemperature and low level protection. They are also suitable for operation with flammable liquids (Safety class III, FL).





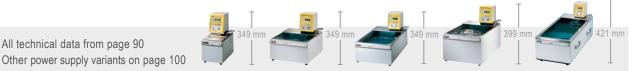


Temperature range 20...150 °C

Standard accessories Bath cover (only E 103) · closing plugs

Recommended accessories

Racks · rising platforms · bath cover (on E 111 models and larger)



Technical features E 103 E 111 E 119 E 140 E 125 Working temperature range °C 20...150 20...150 20...150 20...150 20...150 Temperature stability ±Κ 0.02 0.02 0.02 0.02 0.02 kW 1.5 1.5 1.5 1.5 1.5 Heater power 0.4 0.4 0.4 Pump pressure max. bar 0.4 0.4 Pump flow max. L/min 17 17 17 17 17 Bath volume 2.5...3.5 9...12 12...18 19...25 30...40 L Bath opening*/depth 135x105/150 300x190/150 300x365/150 300x365/200 300x613/200 mm Cat. No. 230 V; 50/60 Hz LCB 0691 LCB 0693 LCB 0695 LCB 0697 LCB 0706

* Dimensions of bath opening are slightly smaller than the overall product dimensions.

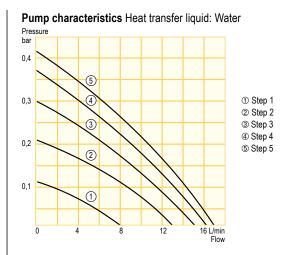
All technical data from page 90



Heating thermostat E 103

Ecoline Staredition Heating thermostats with stainless steel bath and control head E 200

With the high-performance E 200 devices, you can thermostat with 2.25 kW of heating capacity, ranging up to a temperature of 150 °C, and still fall back on a high degree of operating comfort like two-line display, a programmer and interfaces.

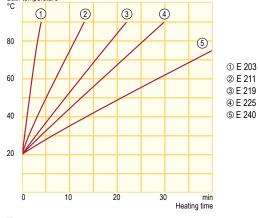




Heating thermostat E 211

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Heating curves Heat transfer liquid: Water, bath closed

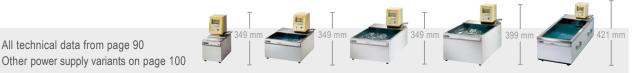


Temperature range 20...150 °C

Standard accessories Bath cover (only E 203) · closing plugs

Recommended accessories

Racks \cdot rising platforms \cdot bath cover (on E 211 models and larger)



Technical features		E 203	E 211	E 219	E 225	E 240
Working temperature range	°C	20150	20150	20150	20150	20150
Temperature stability	±Κ	0.01	0.01	0.01	0.01	0.01
Heater power	kW	2.25	2.25	2.25	2.25	2.25
Pump pressure max.	bar	0.4	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17	17
Bath volume	L	2.53.5	912	1218	1925	3040
Bath opening*/depth	mm	135x105/150	300x190/150	300x365/150	300x365/200	300x613/200
Cat. No. 230 V; 50/60 Hz		LCB 0692	LCB 0694	LCB 0696	LCB 0698	LCB 0707

* Dimensions of bath opening are slightly smaller than the overall product dimensions.

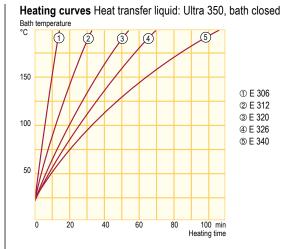
Ecoline Staredition Heating thermostats with stainless steel bath and control head E 300

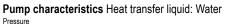
The E 300 devices are the top units of the LAUDA Ecoline Staredition heating thermostats. They allow thermostating up to 200 °C. Their stainless steel baths are provided as a standard feature with special insulation, drain tap and carrying handles for additional comfort. The bath volumes range from 3.5 to 40 liters.

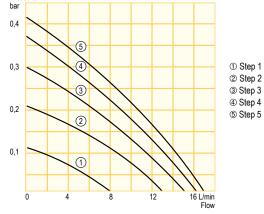


Heating thermostat E 326

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Temperature range 20...200 °C

Standard accessories

Bath cover \cdot nipples \cdot screw caps \cdot closing plugs

Recommended accessories Solenoid valve for cooling water control



Technical features		E 306	E 312	E 320	E 326	E 340
Working temperature range	°C	20200	20200	20200	20200	20200
Temperature stability	±Κ	0.01	0.01	0.01	0.01	0.01
Heater power	kW	2.25	2.25	2.25	2.25	2.25
Pump pressure max.	bar	0.4	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17	17
Bath volume	L	3.55.5	813	1320	1926	3040
Bath opening/depth	mm	150x130/160	300x175/160	300x350/160	300x350/200	300x613/200
Cat. No. 230 V; 50/60 Hz		LCB 0699	LCB 0700	LCB 0701	LCB 0702	LCB 0732

Ecoline Staredition Cooling thermostats with stainless steel bath and control head E 100

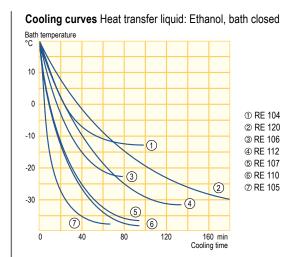
Despite its small external dimensions, the RE 107 cooling thermostat is particularly efficient and has a working temperature range of down to -35 °C, and the RE 110 and RE 105 have a working temperature range of down to -40 °C with increased cooling capacity. The RE 105 is only designed for external thermostating, and thanks to its small internal volume, produces very quick temperature changes.



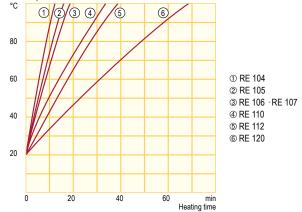
Cooling thermostat RE 104

All technical data from page 94

Other power supply variants on page 101



Heating curves Heat transfer liquid: Kryo 20, bath closed Bath temperature



Technical features		RE 104	RE 105	RE 106	RE 107
Working temperature range*	C°	-10150	-40150	-20150	-35150
Temperature stability	±К	0.02	0.04	0.02	0.04
Heater power	kW	1.5	1.5	1.5	1.5
Cooling output at 20 °C	kW	0.18	0.50	0.20	0.30
Pump pressure max.	bar	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17
Bath volume	L	34.5	34.5**	46	46
Bath opening/depth	mm	130x105/160	200x200/40	150x130/160	150x130/160
Cat. No. 230 V; 50 Hz		LCK 0861 (50/60 Hz)	LCK 1903	LCK 0864 (50/60 Hz)	LCK 1867

*

Technical features		RE 110	RE 112	RE 120
Working temperature range*	°C	-40150	-30150	-30150
Temperature stability	±Κ	0.04	0.04	0.04
Heater power	kW	1.5	1.5	1.5
Cooling output at 20 °C	kW	0.50	0.30	0.35
Pump pressure max.	bar	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17
Bath volume	L	79.5	912	1420
Bath opening/depth	mm	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz	-	LCK 1882	LCK 1870	LCK 1873***

* Working temperature range is equal to ACC range. ** Only suitable for external application. *** Without bath cover

Ecoline Staredition Cooling thermostats with stainless steel bath and control head E 200

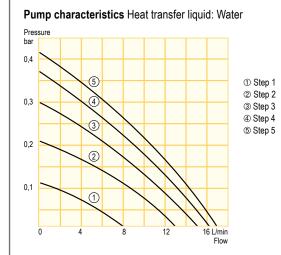
The Ecoline Staredition cooling thermostats in models RE 2XX and RE 3XX have automatic adjustment of cooling capacity starting at 0.3 kW at 20 °C. The E 200 devices have an even higher level of user-friendliness than the E 100 devices. The RE 204 has an extremely small footprint. The RE 207 is particularly efficient and has a working temperature range down to -35 °C, the RE 210 and RE 205 have an increased cooling capacity and a working temperature range down to -40 °C. Thanks to the larger baths, both models RE 212 and RE 220 are excellently suited to handle internal bath applications with large sample sizes or quantities.



Cooling thermostat RE 204

All technical data from page 94

Other power supply variants on page 101



Cooling and heating curves on page 32

Temperature range -40...200 °C

Standard accessories Bath cover (except with RE 120, RE 220) · closing plugs

Recommended accessories for all cooling thermostats Tubes · rising platforms

Technical features		RE 204	RE 205	RE 206	RE 207
Working temperature range*	°C	-10200	-40200	-20200	-35200
Temperature stability	±Κ	0.01	0.02	0.01	0.02
Heater power	kW	2.25	2.25	2.25	2.25
Cooling output at 20 °C	kW	0.18	0.50	0.20	0.30
Pump pressure max.	bar	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17
Bath volume	L	34.5	34.5**	46	46
Bath opening/depth	mm	130x105/160	200x200/40	150x130/160	150x130/160
Cat. No. 230 V; 50 Hz		LCK 0862 (50/60 Hz)	LCK 1901	LCK 0865 (50/60 Hz)	LCK 1868

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Technical features		RE 210	RE 212	RE 220
Working temperature range*	°C	-40200	-30200	-30200
Temperature stability	±К	0.02	0.02	0.02
Heater power	kW	2.25	2.25	2.25
Cooling output at 20 °C	kW	0.50	0.30	0.35
Pump pressure max.	bar	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17
Bath volume	L	79.5	912	1420
Bath opening/depth	mm	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz	-	LCK 1883	LCK 1871	LCK 1874***

* Working temperature range is equal to ACC range. ** Only suitable for external application. *** Bath cover optional

Applications Advantages Control heads Devices Accessories

Ecoline Staredition Cooling thermostats with stainless steel bath and control head E 300

The E 300 cooling thermostats come complete with external control, analogue inputs and outputs with standard signals and an intuitive programmer function. The RE 310 and RE 305 have a working temperature range down to -40 °C. The RE 305 is ideal for the thermostating of external systems, and is capable of very rapid temperature changes.

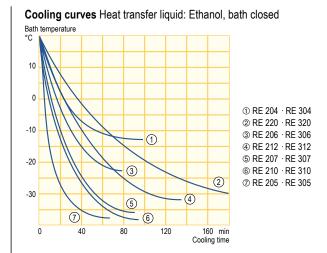


Cooling thermostat RE 305

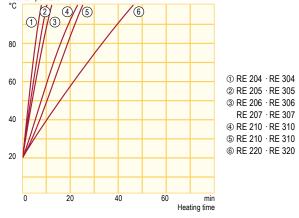


All technical data from page 94

Other power supply variants on page 101



Heating curves Heat transfer liquid: Kryo 20, bath closed Bath temperature



Technical features		RE 304	RE 305	RE 306	RE 307
Working temperature range*	C°	-10200	-40200	-20200	-35200
Temperature stability	±Κ	0.01	0.02	0.01	0.02
Heater power	kW	2.25	2.25	2.25	2.25
Cooling output at 20 °C	kW	0.18	0.50	0.20	0.30
Pump pressure max.	bar	0.4	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17	17
Bath volume	L	34.5	34.5**	46	46
Bath opening/depth	mm	130x105/160	200x200/40	150x130/160	150x130/160
Cat. No. 230 V; 50 Hz		LCK 0863 (50/60 Hz)	LCK 1902	LCK 0866 (50/60 Hz)	LCK 1869

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Technical features		RE 310	RE 312	RE 320
Working temperature range*	°C	-40200	-30200	-30200
Temperature stability	±К	0.02	0.02	0.02
Heater power	kW	2.25	2.25	2.25
Cooling output at 20 °C	kW	0.50	0.30	0.35
Pump pressure max.	bar	0.4	0.4	0.4
Pump flow max.	L/min	17	17	17
Bath volume	L	79.5	912	1420
Bath opening/depth	mm	200x200/160	200x200/200	300x350/160
Cat. No. 230 V; 50 Hz		LCK 1884	LCK 1872	LCK 1875

* Working temperature range is equal to ACC range. ** Only suitable for external application

Ecoline Staredition accessories

Bath covers, stainless steel

CatNo.:	Description	suitable for
HDQ 079	Bath cover, 1-part, with handle	E 111 · E 211
LCZ 0632	Bath cover, 2-parts, with 2 handles	E 119 · E 219
		E 125 · E 225
LCZ 0633	Bath cover, 2-parts, with 2 handles	RE 120 · RE 220 · RE 320

Test tube racks

Polypropylene up to 95 °C

CatNo.:	Description	Qty. Tubes	Ømm	
UE 047/UE 041	rack yellow/white	21	30	
UE 046/UE 040	rack yellow/white	24	25	
UE 045/UE 039	rack yellow/white	40	20	
UE 048/UE 042	rack yellow/white	60	16	
UE 043/UE 037	rack yellow/white	90	13	

Test tube racks

Stainless steel up to 150 °C

CatNo.:	Description	Qty. Tubes	Ømm	
UE 038	test tube rack (stainless steel)	12	20	

Platform, stainless steel

Fixed on one side of the bath, with eight height adjustable steps

CatNo.:	Description	Usable area/mm suitable for	
LCZ 0645	platform	115 x 70 1 x E 103 · E 203 · RE	X04
LCZ 0648	platform	110 x 260 1 x E 106 T · E 206 T	
LCZ 0646	platform	120 x 120 1 x RE X06 · RE X07	
LCZ 0647	platform	170 x 180 1 x RE X12	
LCZ 0680	platform	170 x 180 1 x RE X10	
LCZ 0635	platform	$\begin{array}{llllllllllllllllllllllllllllllllllll$	



Order the detailed LAUDA accessories brochure and the heat transfer liquids brochure free of charge. This and additional product information can also be found at **www.lauda.de**

