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Product Specifications

The RTE and EX Series feature superior cooling and heating power, expansive temperature ranges, powerful force and suction pumps, and sophisticated digital control technology to ensure reliable and stable control of your liquid temperature procedures.

NESLAB RTE Series and EX Series of Bath Circulators

Ideal for cooling and heating below, at, or above ambient temperatures







RTE Series -40°C to +200°C and EX Series +15°C to +200°C typical applications:

- **Lasers**
- **Condensers**
- **Rotary evaporators**
- **Reaction vessels**
- **Calibration**
- **Analytical instrumentation**
- **Gel electrophoresis**



Captures Results

Meet the NESLAB power performers: the RTE Series of refrigerated bath circulators and the EX Series of heating bath circulators. Featuring powerful cooling and heating, expansive temperature ranges, and sophisticated controller technology, these robust compact units offer the ultimate in temperature stability and reliability for either external circulation or in-bath applications.

An industrial-grade force and suction pump provides the pressure necessary to circulate fluid long distances to both open containers and closed loop systems. This gives you the flexibility to meet a wide range of application needs.

Both the RTE and EX Series provide excellent agitation in the bath for improved uniformity and stability. The SmartSense controller ensures that your RTE and EX system is performing at its peak.

Economical Investment

An RTE and EX system is a smart investment. With capabilities that meet a wide range of application needs, these robust systems are designed to reliably achieve results.

Thermo Electron Corporation has a well-established reputation in temperature control through its NESLAB and HAAKE product lines. Formerly independent companies, NESLAB and HAAKE have joined forces within Thermo to provide proven temperature control technology along with global service and support. With over 75 years of extensive industry experience, Thermo professionals worldwide continue to develop and support the solutions that help you analyze, detect, measure, and control your application with increasingly advanced precision.

NESLAB RTE Series Specifications

	RTE 7	RTE 10	RTE 17	RTE 740
Temperature range	-25ºC to + 150ºC	-25ºC to + 150ºC	-25ºC to + 150ºC	- 40ºC to + 200ºC
Temperature stability	±0.01ºC	±0.01ºC	±0.01ºC	±0.01ºC
Cooling capacity				
60 Hz	500 watts at 20ºC	500 watts at 20ºC	500 watts at 20ºC	800 watts at 20ºC
230V/50 Hz	500 watts at 20ºC	500 watts at 20ºC	500 watts at 20ºC	700 watts at 20ºC
Heater				
60 Hz	800 watts	800 watts	1600 watts	800 watts
230V/50 Hz	2000 watts	2000 watts	2000 watts	2000 watts
Bath volume*				
gallon	1.9	2.6	4.5	1.9
liter	7	10	17	7
Pumping performance				
50 Hz/60 Hz (LPM)	15 LPM @ 0' head	15 LPM @ 0' head	15 LPM @ 0' head	15 LPM @ 0' head
50 Hz/60 Hz (GPM)	4 GPM @ 0' head	4 GPM @ 0' head	4 GPM @ 0' head	4 GPM @ 0' head
Pump	force/suction	force/suction	force/suction	force/suction
Pump head				
50 Hz/60 Hz	Max head 16' (4.9M)	Max head 16' (4.9M)	Max head 16' (4.9M)	Max head 16' (4.9M)
Unit dimensions				
H x W x D in	23.62 x 9.25 x 17.5	23.62 x 11.38 x 18.88	26.62 x 11.38 x 18.88	26.62 x 11.38 x 18.88
H x W x D cm	60.0 x 23.5 x 44.5	60.0 x 28.9 x 47.9	67.6 x 28.9 x 47.9	67.6 x 28.9 x 47.9
Bath opening/Bath depth				
W x L x D in	6.62 x 7.25 x 6	8.75 x 9.38 x 6	8.75 x 9.38 x 9	6.62 x 7.25 x 6
W x L x D cm	16.8 x 18.3 x 15.2	22.4 x 23.9 x 15.2	22.4 x 23.9 x 22.9	16.8 x 18.3 x 15.2
Power requirements				
115V, 60 Hz	12 amps	12 amps	16 amps	16 amps
100V, 50-60 Hz	12 amps	12 amps	16 amps	16 amps
230V, 50 Hz	12 amps	12 amps	12 amps	12 amps
Unit weight				
lb	59.5	67.25	70.25	87
kg	27	30.5	31.9	39.5

*Bath reservoir volume is measured to midpoint of designated fill lines.
Note: A remote sensor option allows you to control the temperature in an external vessel. The sensor comprises a resistance temperature detector (RTD) with a tether. The standard tether is 6 ft. long, and a variety of lengths and diameters are available to suit most any application need.
Stability, pump performance and cooling capacity specifications to +5ºC were determined using water. Other specifications were determined using fluid with specific heat of 0.6, ambient 20ºC. We do not recommend the use of flamable liquids. Specifications subject to change without notice.

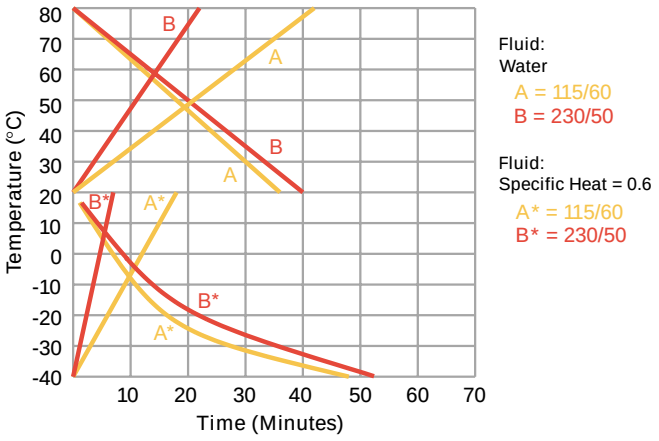


NESLAB RTE Series family

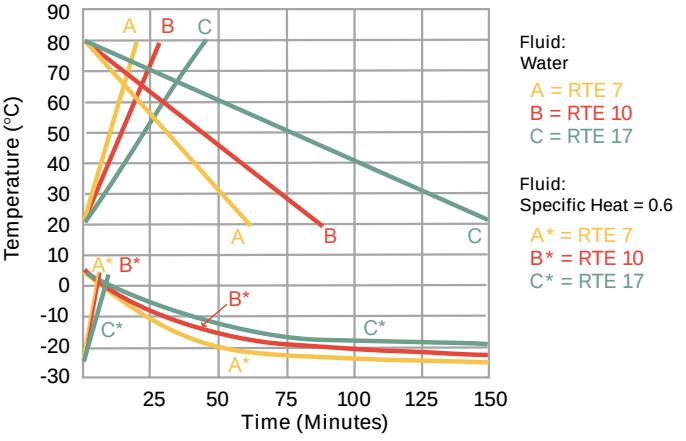
Thermo

NESLAB RTE Series Performance Curves

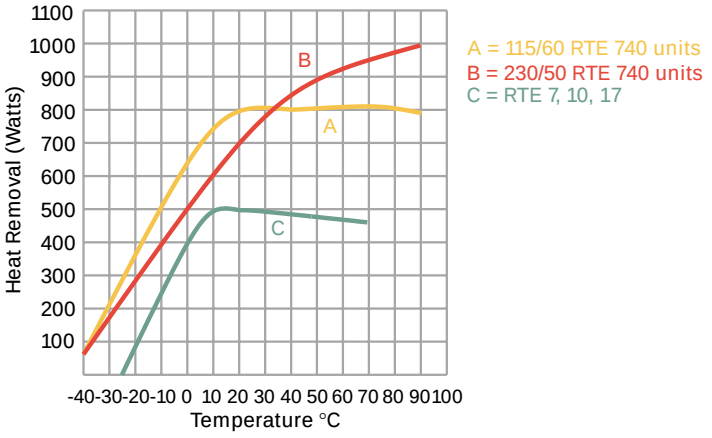
RTE 740



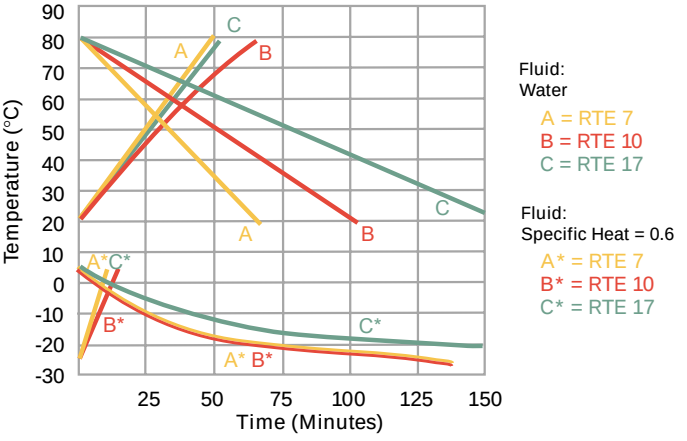
RTE 7, 10, 17 230V/50 Hz Units



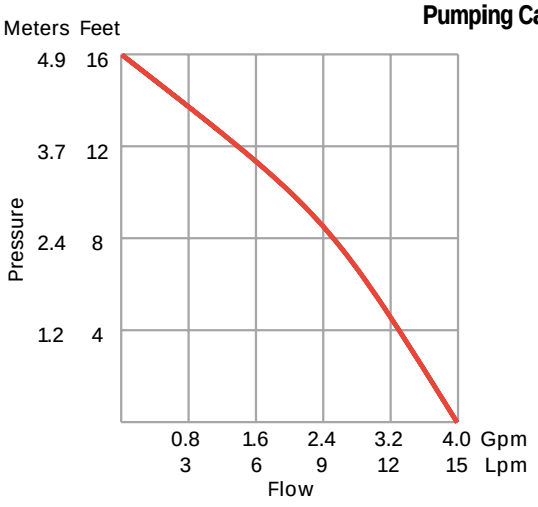
Cooling Capacity



RTE 7, 10, 17 115V/60 Hz Units



Pumping Capacity



NESLAB EX Series Specifications

	EX 7	EX 10	EX 17	EX 35
Temperature range	Ambient +12ºC to 200ºC	Ambient +12ºC to 200ºC	Ambient +12ºC to 200ºC	Ambient +12ºC to 200ºC
Temperature stability	±0.01ºC	±0.01ºC	±0.01ºC	±0.01ºC
Heater				
60 Hz	800 watts	800 watts	1600 watts	1600 watts
50 Hz	2000 watts	2000 watts	2000 watts	2000 watts
Bath volume*				
gallon	1.9	2.6	4.5	9.3
liter	7	10	17	35
Pumping performance				
50Hz/60 Hz (LPM)	15 LPM @ 0' head	15 LPM @ 0' head	15 LPM @ 0' head	15 LPM @ 0' head
50Hz/60 Hz (GPM)	15 GPM @ 0' head	15 GPM @ 0' head	15 GPM @ 0' head	15 GPM @ 0' head
Pump	force/suction	force/suction	force/suction	force/suction
Pump head				
50 Hz/60 Hz	Max head 16' (4.9M)	Max head 16' (4.9M)	Max head 16 '(4.9M)	Max head 16' (4.9M)
Unit dimensions				
W x L x D in	14.62 x 9.25 x 17.5	14.62 x 11.38 x 18.25	17.62 x 11.38 x 18.25	20.62 x 11.38 x 25.38
W x L x D cm	37.2 x 23.5 x 44.5	37.1 x 28.9 x 46.4	44.8 x 28.9 x 46.4	52.4 x 28.9 x 64.5
Bath opening/Bath depth				
W x D x L in	6.62 x 7.25 x 6	8.62 x 9.38 x 6	8.75 x 9.38 x 9	8.75 x 15.5 x 12
W x D x L cm	16.8 x 15.2/23.9	22.4 x 15.2/23.9	22.4 x 15.2/23.9	22.4 x30.5/39.4
Power requirements				
115V, 60 Hz	9 amps	9 amps	16 amps	16 amps
100V, 50-60 Hz	9 amps	9 amps	16 amps	16 amps
230V, 50 Hz	10 amps	10 amps	10 amps	10 amps
Unit weight				
lb	26.4	32.0	35.6	52.7
kg	12.0	14.5	16.1	23.9

*Bath reservoir volume is measured to midpoint of designated fill lines.
Stability, pump specifications to 90ºC were determined using water. Other specifications were determined with silicon oil. Reservoir volume measured to midpoint of designated fill line. Bath opening measured to tank top. Flammable fluids should never be used with these units. Specifications subject to change without notice.

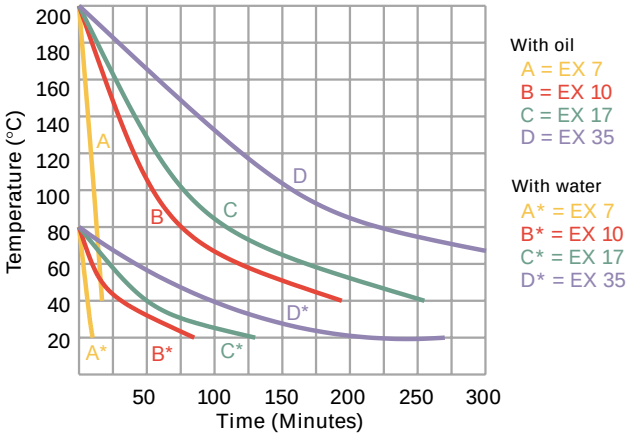


NESLAB EX Series family

Thermo

NESLAB EX Series Performance Curves

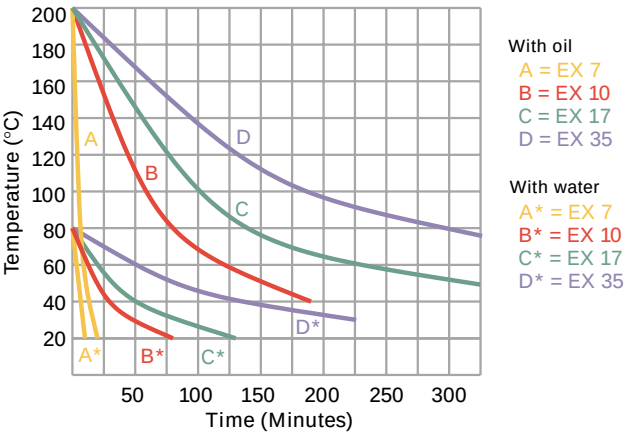
Ramp Down 230V/50 Hz Units



With oil
A = EX 7
B = EX 10
C = EX 17
D = EX 35

With water
A* = EX 7
B* = EX 10
C* = EX 17
D* = EX 35

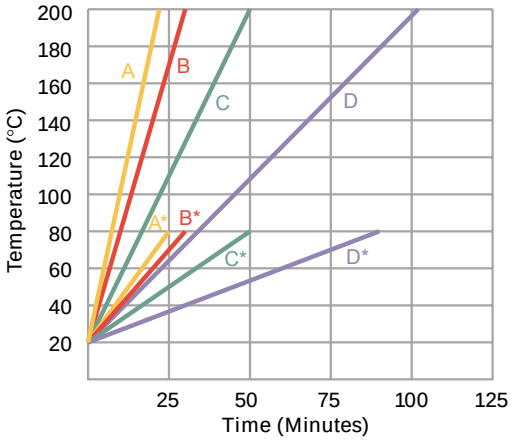
Ramp Down 115V/60 Hz Units



With oil
A = EX 7
B = EX 10
C = EX 17
D = EX 35

With water
A* = EX 7
B* = EX 10
C* = EX 17
D* = EX 35

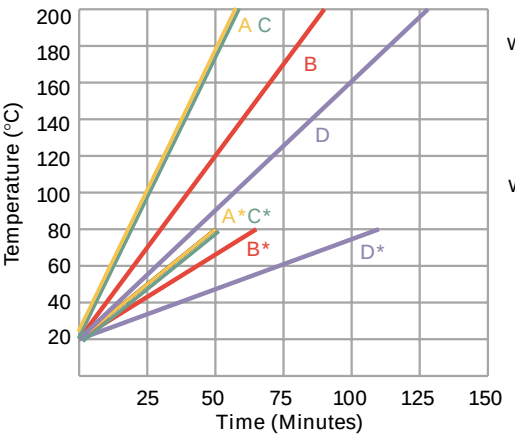
Ramp Up 230V/50 Hz Units



With oil
A = EX 7
B = EX 10
C = EX 17
D = EX 35

With water
A* = EX 7
B* = EX 10
C* = EX 17
D* = EX 35

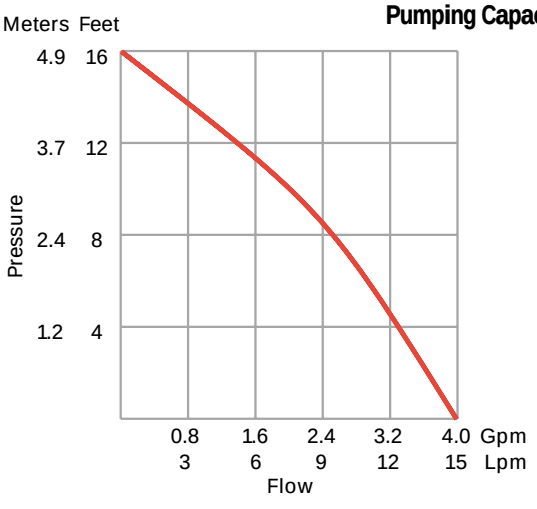
Ramp Up 115V/60 Hz Units



With oil
A = EX 7
B = EX 10
C = EX 17
D = EX 35

With water
A* = EX 7
B* = EX 10
C* = EX 17
D* = EX 35

Pumping Capacity



NESLAB RTE Series and EX Series Features

Feature	Benefit
Full range cooling (RTE Series only)	Allows compressor to operate over entire temperature range
Front grille (RTE Series only)	Allows quick access to the condenser for routine cleaning
Refrigeration system (RTE Series only)	Provides CFC-free refrigeration system for precise temperature control and optimum stability
Tap water cooling coil (EX Series only)	Maintains temperatures near ambient or for rapid cool down from elevated temperatures
Circulating pump	Combines a strong flow rate with unmatched pressure to circulate farther, even through small I.D. tubing delivering consistent flow when working with dense or viscous fluids
Force and suction pump	Provides versatility of circulating through a closed system, open system, or two applications
Heater	Offers rapid heating with no waiting
Stainless steel bath	Convenient easy cleaning. Compatible with a wide range of fluids
Hydro-seal lid with nitrogen purge port	Minimizes moisture build up during low temperature operation
Bath drain	Allows for fast fluid changes
Digital temperature controller	Provides precise setpoint and readout to a resolution of 0.01°C
Handles	Provides easy moving
Low level shut-off device	Prevents unit damage and protects your application
RS-232 and RS-485	Connects to computer directly
Compact design	Maximizes valuable benchtop area
Automatic load reset	Compensates for changes in the bath load, eliminating shifts in setpoint accuracy
Digital display	Offers the user a simple operation and ensures accuracy and reproducibility of procedures
Two-year warranty	Offers peace of mind

Digital Controllers



Digital One
- bright LED digital display
- user selectable resolution
- 0.1°C or 0.01°C
- user adjustable low temperature and high temperature alarm limits
- user selectable fault conditions
  - continuous run with visual alert
  - shut down with visual alert
- Compatible with optional auto-refill device
- low reservoir fluid level shut-off



Digital Plus

Same great features as the Digital One controller plus we've added:
- remote sensor port
- RS-232 and RS-485 communications ports
- on/off timer with clock
- audible safety alarm with mute
- temperature offset display



Digital Plus with Analog 1/0 port

Same great features as the Digital Plus with the added ability to communicate via analog (voltage) signal to:
- monitor set point
- change set point
- monitor fault status

Thermo

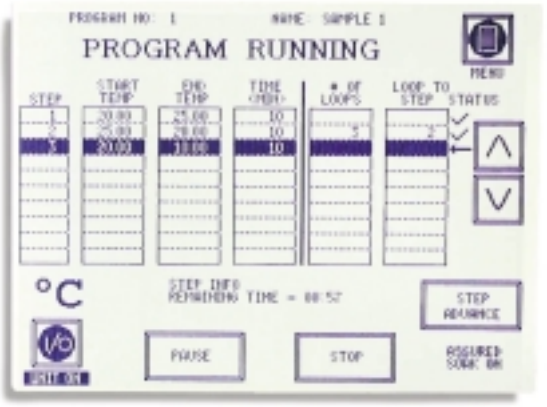
NESLAB RTE Series and EX Series Software Accessories

Feature	Benefit
NESLAB NEScom software	Allows you to easily program and automate your entire temperature control process from a PC
RPC remote programming controller	Transforms your Digital Plus controller into one of the most feature-packed controllers available. The easy-to-read, 120mm x 90mm touchscreen uses icons for quick function selection. Includes an RS-232 port for future software upgrade. Comes complete with wall-mounting bracket, power cord and 6' connector cable.



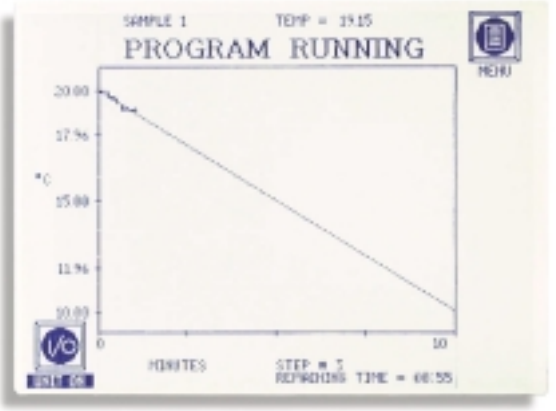
RPC main screen

Monitor, control and change
- internal sensor temperature
- temperature setpoint
- remote sensor temperature
- on/off timer
- temperature offset
- temperature alarm limits
- readout resolution



RPC program running screen

Multistep programming
- 16 savable programs with alphanumeric naming
- 16 steps per program
- time range of 0 to 6500 minutes per step
- step looping
- step to function
- simple spreadsheet format



RPC chart screen

Chart screen
- visual graph of current ramp step

NESLAB RTE Series and EX Series Accessories

Feature	Benefit
Reservoir refill system	Attaches easily to the rear of the RTE to conserve space. Runs your equipment worry free and unattended. Automatically refills your bath from a pressured fluid source when the fluid in the bath drops below an acceptable limit due to evaporation. Specify voltage requirements
Anti reservoir overflow device	Connects to your bath circulator's drain line to prevent an accidental overflow of fluid in the reservoir
Remote sensors	Allow remote temperature control of the application. It will maintain the setpoint at any place in the recirculating fluid path. The sensors are platinum RTDs and are compatible with RTE Series and EX Series bath circulators when used with a Digital Plus Controller. Different diameters and lengths are available
Plumbing kits	
Tygon	Allows circulation between -25ºC and +100ºC and includes 25' of tygon tubing, 25' of tubing insulation, and 4 hose clamps
Silicone	Allows circulation between -100ºC and +100ºC and includes 25' of silicone tubing, 25' of tubing insulation, and 4 hose clamps
Test tube racks	Offers convenient handles for easy and safe placement or removal. Made of stainless steel for durability
Stainless steel leveling device*	Ensures that the fluid level in the external container remains constant
Flow controller**	Quick and easy set up for external circulation to open container
Ground fault circuit controller	Plugs your RTE unit or EX unit in to the GFCI accessory to provide extra electrical protection when a GFCI wall outlet is not available. May only be used with 115 Volt, 60 Hz units
Ethylene glycol	Allows circulation to temperatures down to -30°C in a 50/50 blend when mixed with water
Chloramine-T algicide	Restricts growth of algae to protect equipment and instrumentation
Silicone oil	Designed for use in high temperature applications from 35°C to 150°C

*Used with standard ring stand
**Necessary to operate stainless steel leveling device



FTC 350 — FlowThru cooler for the NESLAB EX Series can achieve temperatures as low as -10°C

USA
25 Nimble Hill Rd.
Newington, NH 03801
Tel. 800 258 0830
info.tc.us@thermo.com

France
16 Avenue du Québec - Silic 765
91963 Courtaboeuf Cedex
Tel. +33 (0) 1 60 92 48 00
info.tc.fr@thermo.com

United Kingdom
Unit 5, The Ringway Centre
Basingstoke, Hampshire
RG21 6YH
Tel. +44 (0) 870 609 9254
info.tc.uk@thermo.com

Benelux
Takkebijsters
4817 BL Breda
Tel. +31 (0) 76 5 87 98 88
info.tc.nl@thermo.com

International/Germany
Dieselstr. 4
76227 Karlsruhe
Tel. +49 (0) 721 4 09 44 44
info.tc.de@thermo.com

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