

Refrigerated/heated circulating baths » Optima™ refrigerated heated baths and circulator range

# Optima™ refrigerated baths and circulator range

A collection of high performance refrigeration units which can be combined with any of 4 Optima™ heated circulators to deliver outstanding temperature performance for routine and sophisticated applications requiring accurate temperature control in the range of -47°C to 100°C. Grant also offer the LTC4 (TX150-R4) which is available as a kit with the heated circulator, refrigeration unit and insulated tubing\* to form a ready to use system.




- Choice of two base refrigeration units and four heated circulators, temperature range -47°C to 100°C (model dependent)
- Stability of up to  $\pm 0.01^\circ\text{C}$
- 3 years warranty, 4 years with the LTC4
- No spill valved front drain
- Safe - water freeze protection thermostat and 27 bar high pressure switch
- 3 preset programs



\* Temperature range of hosing supplied: -40°C to 100°C (can be cut to length as required).

## Grant R series refrigeration units – models and specifications





● = standard

			R4	R5	LTC4
					
			h: 550mm d: 515mm w: 393mm weight: 40.6kg	h: 610mm d: 590mm w: 414mm weight: 48.3kg	h: 755mm d: 515mm w: 390mm weight: 42.9kg
Temperature range with T100 heating circulator	°C		0 - 100	0 - 100	-
Temperature range with TC120 heating circulator	°C		-20 to 100	-20 to 100	-
Temperature range with TX150 heating circulator	°C		-30 to 100	-47 to 100	-30 to 100
Temperature range with TXF200 heating circulator	°C		-30 to 100	-47 to 100	-
Refrigerant			R134a	R404a	R134a
Capacity	L		20	12	20
Cooling power	@ 20°C	W	900	1100	900
	@ 0°C	W	500	1050	500
	@ -10°C	W	300	800	300
	@ -20°C	W	180	580	180
	@ -30°C	W	40	370	40
	@ -40°C	W	-	130	-
	@ -47°C	W	-	25	-
Electrical power (maximum)	120/230V	W	780 (60 Hz)/850 (50 Hz)	- /1400 (50 Hz)	2280 (60 Hz)/2850 (50 Hz)
Relay control*			●	●	●
Working Area (d x w)	mm		230 x 305	260 x 115	230 x 305
Min/max liquid depths	mm		85/140	125/180	85/140

\* Relay output to enable control of refrigeration system or external device.

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## Grant Optima™ heated circulators

			General purpose digital		Advanced digital	
			T100	TC120	TX150	TXF200
						
			h: 333mm d: 172mm w: 120mm weight: 2.1kg	h: 333mm d: 172mm w: 141mm weight: 2.3kg	h: 342mm d: 172mm w: 141mm weight: 2.6kg	h: 342mm d: 172mm w: 141mm weight: 2.6kg
Stability (DIN 12876)	water @ 10°C	±°C	0.1	0.1	0.1	0.1
Setting resolution		°C	0.1	0.1	0.1 (0.01 with Labwise)	
Programs			-	-	1 x 30 segments Labwise™ required	10 x 100 segments
Safety	Over temperature		fixed	adjustable cut-out		
Alarms (can be configured to switch a relay)			-	high (no relay)	high and low	high and low
Language capability			-	-	EN, FR, DE, IT, ES	EN, FR, DE, IT, ES
Height above tank rim		mm	200	200	200	200
Depth below tank rim		mm	135	135	135	135
Display			4 digit LED		Full colour QVGA TFT	
Timer			-	1 min to 99 hrs, 59 mins		
Calibration points			2		5	
Communication interface			-		USB, RS232, Temperature probe	
Heater power	W 120/230V		1440/1290		1445/1840	
Electrical power (50-60 Hz)	W 120/230V		1500/1400		500/2000	




## Grant Optima™ Heated circulator pumps (integral)

Maximum pressure	water	mbar	-	210	310	530
Maximum flow	water	L/min	-	16	18	22 (adjustable flow rate)
Pump connector	6mm bore		-	fits 9 mm inner diameter tubing		
Pump connector	11mm bore		-	fits 15 mm inner diameter tubing		







## Refrigerated / heating circulating baths » Options and accessories

Options and accessories			
<b>Labwise™ PC software</b> (optional)			
Allows two-way communication for status display, programming and data capture (see page 3.1, for more information). USB cable provided	-		
<b>External probes</b>			
<b>TXPEP</b> plastic probe	-	•	•
<b>TXSEP</b> stainless steel probe	-	•	•
<b>Vertical turbine pumps</b> (optional) - when pump is fitted, available working area is reduced.			
Low noise, compact design. Supplied with pipe connections and special lid for fitting to tank, pipe bore 12.7 mm.			
<b>VTP1</b> maximum pressure 1000 mbar maximum flow 9 L/min			Required only where application demands a higher pressure than that delivered by the internal pump to maintain flow.  Note: The optional VTP pumps will transfer additional heat to the baths and reduce the net cooling power of the refrigeration unit. when ordering a VTP pump, please specify which refrigeration base unit it is to be used with.
<b>VTP2</b> maximum pressure 1650 mbar maximum flow 12 L/min			
<b>Heat exchange coil</b>			
<b>CW5</b> Other sizes of heat exchange coil can be made to your specification, contact us for further information			Temperature range: 2°C above the temperature of the coolant Coil Øxl (mm): 77x55 Pipe bore inlet/outlet (mm): 7
<b>Hose Kits</b>			
<b>HOSE100</b> General purpose hose kit: -40°C to 100°C <b>HOSE200</b> High temperature hose kit: -50°C to 200°C			Hose kit 2 x 2m, assembled with Optima™ pump outlet plate and simple hose clips, no tools required (can be cut to length as required)

## High pressure pumps (optional)

		VTP pumps		Heat exchange coil
		VTP1	VTP2	CW5
				
Maximum pressure	water mbar	1000	1650	-
Maximum flow	water L/min	9	12	-
Pipe bore	inlet/outlet mm	12.7	12.7	7
Electrical connection		10 amp IEC	10 amp IEC	-
Power consumption	W	30	40	-
Power output to liquid @ 20°C	W	15	22	-
Safety		thermal fuse	thermal fuse	-
Temperature range	°C	-	-	2°C above coolant temperature
Coil Øxl	mm	-	-	77 x 55

# Options and accessories

Options and accessories								
• = compatible	LT ecocool™ 100	LT ecocool™ 150	LT ecocool™ 200	T100-R4/R5	TC120-R4/R5	TX150-R4/R5	TXF200-R4/ R5	LTC4
Labwise™ software (see section 3 for further information) 	-	•	•	-	-	•	•	•
Temperature probes, 3m cable								
<b>TXPEP</b> plastic probe	-	-	-	-	-	•	•	•
<b>TXSEP</b> stainless steel probe	-	-	-	-	-	•	•	•
<b>PEP</b> plastic probe	-	•	•	-	-	-	-	-
<b>SEP</b> stainless steel probe	-	•	•	-	-	-	-	-
<b>VTP1-LT</b> maximum pressure 1000 mbar maximum flow 9 L/min 	•	•	•	-	-	-	-	-
<b>VTP2-LT</b> maximum pressure 1650 mbar maximum flow 12 L/min 	•	•	•	-	-	-	-	-
<b>VTP1-PLR4/VTP1-PLR5</b> maximum pressure 1000 mbar maximum flow 9 L/min 	-	-	-	•	•	•	•	•
<b>VTP2-PLR4/VTP2-PLR5</b> maximum pressure 1650 mbar maximum flow 12 L/min 	-	-	-	•	•	•	•	•
<b>CW5</b> heat exchange coil 	•	•	•	•	•	•	•	•
<b>IQOQ</b> documentation	IQOQ LT ecocool™ 100	IQOQ LT ecocool™ 150	IQOQ LT ecocool™ 200	IQOQ T100 + IQOQ R4 IQOQ T100 + IQOQ R5	IQOQ TC120 + IQOQ R4 IQOQ TC120 + IQOQ R5	IQOQ TX150 + IQOQ R4 IQOQ TX150 + IQOQ R5	IQOQ TXF200 + IQOQ R4 IQOQ TXF200 + IQOQ R5	IQOQ LTC4
<b>PQ</b> documentation	PQ LT ecocool™ 100	PQ LT ecocool™ 150	PQ LT ecocool™ 200	PQ T100 + IQOQ R4 PQ T100 + IQOQ R5	PQ TC120 + IQOQ R4 PQ TC120 + IQOQ R5	PQ TX150 + IQOQ R4 PQ TX150 + IQOQ R5	PQ TXF200 + IQOQ R4 PQ TXF200 + IQOQ R5	PQ LTC4 + IQOQ LTC4
<b>Extended warranty 1 year EWC1</b>	•	•	•	•	•	•	•	•
<b>Extended warranty 2 years EWC2</b>	-	-	-	•	•	•	•	-

# Options and accessories

Pump connectors (optional)	Part number	
	Replacement plastic pump inlet/outlet connector. Fits tubing 9mm inner dia. Temp range -50°C to 200°C.	<b>P-M6</b>
	Replacement plastic pump inlet/outlet connector. Fits tubing 15mm inner dia. Temp range -50°C to 200°C.	<b>P-M11</b>
	Metal pump inlet/outlet connector, dual seal super rapid 4mm. Fits semi rigid tubing 4mm outer dia. Temp range -20°C to 100°C.	<b>M-SR4</b>
	Metal pump inlet/outlet connector, dual seal super rapid 6mm. Fits semi rigid tubing 6mm outer dia. Temp range -20°C to 100°C.	<b>M-SR6</b>
	Metal pump inlet/outlet connector, dual seal super rapid 8mm. Fits semi rigid tubing 8mm outer dia. Temp range -20°C to 100°C.	<b>M-SR8</b>
	Metal pump inlet/outlet connector, hose barb 7mm. Fits flexible tubing 7mm inner dia. Temp range -40°C to 120°C.	<b>M-HB7</b>
	Metal pump inlet/outlet connector, hose barb 9mm. Fits flexible tubing 9mm inner dia. Temp range -40°C to 120°C.	<b>M-HB9</b>
	Metal pump inlet/outlet connector, hose barb 12mm. Fits flexible tubing 12mm inner dia. Temp range -40°C to 120°C.	<b>M-HB12</b>
	Metal pump inlet/outlet plate, 1/4 " BSP/G1/4 female. Temp range -50°C to 200°C.	<b>M-UC</b>
	General purpose hose kit, includes 2 x 2m general purpose insulated hosing -40 to 100°C, assembled with LT ecocool™/Optima™ pump outlet plate and simple hose clips, no tools required. Can be cut to length. 10mm ID, 14mm OD.	<b>HOSE100</b>
	High temperature hose kit, includes 2 x 2m high temperature insulated hosing -50 to 200°C, assembled with LT ecocool™/Optima™ pump outlet plate and simple hose clips, no tools required. Can be cut to length. 8mm ID, 11mm OD.	<b>HOSE200</b>