

## DYNEO DD-310F Refrigerated / heating circulator

Refrigerated circulators of the DYNEO series distinguish themselves with a great price-performance ratio. The instruments offer high heating/cooling capacities for short heat-up and cool-down times. The refrigerated circulators work precisely and reliably even at higher ambient temperatures up to +40 °C. Either in basic research, in material testing or in technical systems – the DYNEO refrigerated circulators offer functional solutions for every requirement and budget.

### Alternatively with natural refrigerant

The DYNEO DD-310F is alternatively available with natural refrigerant. Order No. 9 021 713.N1



### Product features

- For internal and external applications
- Optimized cooling coil design saves space in the bath tank
- Powerful and infinitely adjustable pressure pump
- Flow rate 27 l/min, pressure 0.7 bar
- Easy switching between internal and external circulation
- Large color TFT display, multilingual interface
- Central rotary knob (controller) simplifies operation
- Integrated programmer
- Integrated external Pt100 connection
- USB connection
- RS232 interface or analog interfaces (optional)
- Integrated drain makes emptying liquid easy and safe.
- Bath cover included with delivery
- Removable ventilation grid
- Space-saving cooling coil design provides more usable space in the bath tank
- For internal and external applications
- Powerful cooling machines

### Performance values

115V/60Hz (Nema N5-15 Plug)	
Heating capacity kW	1
Viscosity max. cST	50
Pump capacity flow rate l/min	8 ... 27
Pump capacity flow pressure psi	1.5 ... 10.2
Power A	12

Refrigerant variants

Order No. 9021713.N1.02

Cooling capacity (Ethanol)

°C	20	0	-10	-20	-30
kW	0.3	0.27	0.21	0.12	0.02

\*Performance specifications measured in accordance with DIN12876. Cooling capacities up to 20 °C measured with ethanol; over 20 °C with thermal oil unless otherwise specified. Performance specifications apply at an ambient temperature of 20 °C. Performance values may differ with other bath fluids.

Refrigerant stage 1

Refrigerant R290

Filling volume g 25

Global Warming Potential for R290 3

Carbon dioxide equivalent t 0

Order No. 9021713.S1.02

Cooling capacity (Ethanol)

°C	20	0	-10	-20	-30
kW	0.3	0.27	0.21	0.12	0.02

\*Performance specifications measured in accordance with DIN12876. Cooling capacities up to 20 °C measured with ethanol; over 20 °C with thermal oil unless otherwise specified. Performance specifications apply at an ambient temperature of 20 °C. Performance values may differ with other bath fluids.

Refrigerant stage 1

Refrigerant R449A

Filling volume g 60

Global Warming Potential for R449A 1397

Carbon dioxide equivalent t 0.084

Technical data

Available voltage versions

Order No.	9 021 713
Available voltage versions:	
9021713.N1.01	100V/50-60Hz (Nema N5-15 Plug) (R290)
9021713.S1.01	100V/50-60Hz (Nema N5-15 Plug) (R449A)
9021713.N1.02	115V/60Hz (Nema N5-15 Plug) (R290)
9021713.S1.02	115V/60Hz (Nema N5-15 Plug) (R449A)
9021713.N1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R290)
9021713.S1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R449A)

Bath

Bath tank	Stainless steel
Bath cover	integrated
Usable bath opening in. (W x L / D)	5.1 x 5.9 / 5.9

9021713.N1.33.chn	200-230V/50-60Hz (CN Plug) (R290)
9021713.S1.33.chn	200-230V/50-60Hz (CN Plug) (R449A)
9021713.N1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R290)
9021713.S1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R449A)
9021713.N1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R290)
9021713.S1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R449A)

### Cooling

Cooling of compressor	1-stage Air
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### Other

Classification	Classification III (FL)
IP Code	IP 21
Pump function	Pressure Pump
Pump type	Immersion Pump
User Interface Language	Chinese, English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish

### Electronics

Interfaces	Alarm output optional, RS232 optional, Reg/Eprog optional, Standby-Input optional, USB
External pt100 sensor connection	integrated
Integrated programmer	8x60 steps
Temperature control	PID3
Absolute temperature calibration	3 Point Calibration
Temperature display	3.5" TFT Display
Temperature setting	Shaft Encoder
Electronic Timer hr:min	00:00 ... 99:59

### Dimensions and volumes

Weight lbs	60.4
Barbed fittings inner diameter	8/12 mm
Dimensions in. (W x L x H)	9.1 x 15.7 x 25.6
Filling volume l	3 ... 4
Pump connections	M16x1 male

### Temperature values

Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-30 ... +200
Temperature stability °C	±0.01
Ambient temperature °C	+5 ... +40

### Included in delivery

2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)

### All Benefits



**Handle with ease.**  
Makes day-to-day work easy. Comfortably move your CORIO around by using the ergonomic handles (front and rear).



**Highly precise**  
PID Temperature control with drift compensation and adjustable control parameters, temperature stability ±0.01...±0.02 °C



**Turn. Push. Go.**  
Easy operation of all parameters using the central controller.



**USB.**  
Remote control made easy using the integrated USB interface.



**RS232.**  
Standard connection using the serial RS232 interface.



**Analog I/O.**  
Analog interfaces for integration into process control systems (optional).



**Process stability.**  
Early warning - visual and acoustic - of critical states increases process stability.



**Connection. Easy.**  
Inclined pump connections (M16×1) facilitate the connection of applications. Each unit includes 2 barbed fittings of 8/12 mm diameter each.



**100 % Cooling capacity**  
'Active Cooling Control' for cooling available throughout the entire working temperature range, fast cool-down even at higher temperatures



**Brilliance. In color.**  
Large color display with vivid luminance is easy to read, even from a large distance.



**Information. Everything clear.**  
Information in plain text on a large color screen.



**Multi-lingual.**  
Operation in multiple languages.



**Programmer. Integrated.**  
The integrated internal programmer makes it possible to automatically run temperature time profiles.



**Powerful. Adjustable.**  
Strong pressure pump, continuously adjustable.



**Temperature. Under control.**  
External Pt100 sensor connection for precise measurement and control directly in the external application.



**Fill level. Monitored.**  
Fill level indicator on the display for heat-transfer liquid.



**Process. Under control.**  
Full control of the dynamic, access to all important control parameters for individual process optimization.



**Stable. Mobile.**



**Wide range.**  
Refrigerated and heating circulator in various combinations, circulator in various sizes. Maximum flexibility through large selection of accessories.



**ATC3. Calibration.**  
'Absolute Temperature Calibration' for compensating a physically caused temperature difference, 3-point calibration.