

Rotary Evaporators, Heidolph

General properties of the Laborota 4000 series

Safety

- Control panel is below the handles for the heating bath, for protection from vapour and splashes
- All heating baths have handles with anti-slip pads for protection against scalds
- Heating baths with double wall for your protection against burns and insulation against heat loss
- No open heating coil in the bath for protection against burns and for quick cleaning
- Optional safety cover protects you from implosions and splashes and can be adjusted horizontally with the bath
- Extension plate for an expanded horizontal adjustment (up to 210 mm) for highest stability
- Upon request, glass sets for implosion protection also with completely transparent plastic coating (Surlyn® coated)

Operation comfort

- Long-life and highly resistant vacuum seal made of PTFE with graphite filling
- Guaranteed no blocking of the glass hollow shafts in the drive due to non-sticking plastic grippers
- Set-up to push off stuck pistons
- Fixing the max. immersion depth to any height with one movement
- The angle of the evaporator piston can be changed from 10° to 85° with one movement
- All models available with hand lift or motor lift upon request
- Long life-span, 3 year warranty

① Laborota 4000 eco

- Low-cost model with hand lift & water bath
- Big, easy-to-operate turning knobs to set the rotation speed and the heating bath temperature
- Rotation speed from 20 to 270 1/min
- Safety due to separate main switch for temperature and rotation speed
- Water bath: temperature range from 20 – 100°C, control accuracy from $\pm 2,5^\circ\text{C}$
- Available with 3 glass sets

Article	Version	Glassware	
		standard Order No.	coated Order No.
Laborota eco 4000/HB/G1	diagonal condenser	10 41 90310	10 41 90311
Laborota eco 4000/HB/G3	vertical condenser	10 41 90330	10 41 90331
Laborota eco 4000/HB/G5	condensation trap	10 41 90350	10 41 90351

② Laborota efficient

Laborota 4000 efficient with hand lift / Laborota 4001 efficient with motor lift

- Big, easy-to-operate turning knobs to set rotation speed and heating bath temperature
- Rotation speed 20 – 270 1/min
- Universal heating bath for water and oil: temperature range 20°C to 180°C, control accuracy $\pm 1^\circ\text{C}$
- Safety due to separate main switch for temperature and rotation speed
- Exact display of the set target temperature in the display
- Automatic distillation control can be added with optional vacuum control Vac control automatic

Laborota efficient	Version	Glassware	
		standard Order No.	coated Order No.
4000/HB/G1	diagonal condenser	57 41 90110	10 41 90111
4000/HB/G3	vertical condenser	57 41 90130	10 41 90131
4000/HB/G5	condensation trap	57 41 90150	10 41 90151
4000/HB/G6	reflux distillation	57 41 90160	10 41 90161
4001/HB/G1	diagonal condenser	57 41 91110	10 41 91111
4001/HB/G3	vertical condenser	57 41 91130	10 41 91131
4001/HB/G5	condensation trap	57 41 91150	10 41 91151
4001/HB/G6	reflux distillation	57 41 91160	10 41 91161

③ Laborota digital

Laborota 4010 digital with hand lift / Laborota 4011 digital with motor lift

As Laborota 4000 / 4001 but with:

- Digital display of the rotation speed, vapour temperature and heating bath temperature
- Accuracy of the vapour temperature display: $\pm 0,1^\circ\text{C}$
- Vapour temperature probe already included



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Laborota digital	Version	Glassware	
		standard Order No.	coated Order No.
4010/HB/G1	diagonal condenser	57 41 94110	10 41 94111
4010/HB/G3	vertical condenser	57 41 94130	10 41 94131
4010/HB/G5	condensation trap	57 41 94150	10 41 94151
4010/HB/G6	reflux distillation	57 41 94160	10 41 94161
4011/HB/G1	diagonal condenser	57 41 95110	10 41 95111
4011/HB/G3	vertical condenser	57 41 95130	10 41 95131
4011/HB/G5	condensation trap	57 41 95150	10 41 95151
4011/HB/G6	reflux distillation	57 41 95160	10 41 95161

④ Laborota control

Laborota 4002 control with hand lift / Laborota 4003 control with motor lift

As Laborota 4010 / 4011 but with:

- Integrated vacuum control with 3 programmes for automatic distillation
- **Programme P_(const)** (control parameter: pressure) for vacuum control for material separation. With this programme, the vacuum can be kept at a constant level by means of the push of a button at any time during evacuation
- **Programme T_(auto)** (control parameter: vapour temperature) for vacuum control for distillation of solution mixtures. This programme automatically cancels distillation if a defined end pressure is not met.
- The **Programme P_(auto)** automatically looks for the required vacuum for a boiling point and keeps it at a constant level (combination of T_(auto) and P_(const))
- Digital setting of the required bath temperature, of the vacuum, the timer function and the control parameters for automatic distillation
- Digital display of the rotation speed, bath temperature, vacuum and vapour temperature
- Safety temperature for heat bath, for overheat protection, separately selectable
- With a push of a button, rotation, vacuum control and timer can be started
- Up to 9 data records of frequently used distillation parameters can be saved
- The required change of the vacuum can be programmed as ramp

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Laborota control	Version	Glassware	
		standard Order No.	coated Order No.
4002/HB/G1	diagonal condenser	57 41 92110	10 41 92111
4002/HB/G3	vertical condenser	57 41 92130	10 41 92131
4002/HB/G5	condensation trap	57 41 92150	10 41 92151
4002/HB/G6	reflux distillation	57 41 92160	10 41 92161
4003/HB/G1	diagonal condenser	57 41 93110	10 41 93111
4003/HB/G3	vertical condenser	57 41 93130	10 41 93131
4003/HB/G5	condensation trap	57 41 93150	10 41 93151
4003/HB/G6	reflux distillation	57 41 93160	10 41 93161

Rotacool chillers

Maximal performance in minimal space.

- The only chiller designed specifically for rotary evaporators
- Minimal bench space thanks to unique L-shape design
- Chillers base 470 × 580 mm
- Provides space of 470 × 405 mm for the evaporator
- Temperature range -10°C up to +40°C
- Cooling capacity:
 - at 15°C 400 W
 - at 0°C 300 W
 - at -10°C 270 W
- Small quantity of circulating coolant required due to innovative control
- High control accuracy (± 0.5 K)
- CFC-free

Article	Order No.
⑤ Rotacool chiller	56 41 00200

Rotacool chillers

- Circulation cooler for all standard rotary evaporators
- Little need for space: 225 × 450 mm
- Cooling temperature (fixed): 7°C
- Temperature consistency: 1°C
- CFC-free

Article	Order No.
⑥ Rotacool mini chiller	10 41 10021

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Vacuum pumps

Vacuum pump Rotavac valve tec

- Valve-controlled vacuum pump suitable for all Heidolph rotary evaporators
- 2-tier membrane pump made of chemical-resistant material
- Suction power at 50Hz 0.75 m³/h (at 60Hz 0.9 m³/h)
- Maximum end pressure 12 mbar
- Can be combined with a condensate cooler to condense residue solvents

Vacuum pump Rotavac valve control

- Valve-controlled vacuum pump suitable for all Heidolph rotary evaporators
- Sufficient suction power for 3 rotary evaporators at the same time
- 2-tier membrane pump made of chemical-resistant material
- High suction power from 1.7 m³/h, for quick evacuation
- Maximum end pressure of 9 mbar
- Can be combined with a condensate cooler to condense residue solvents

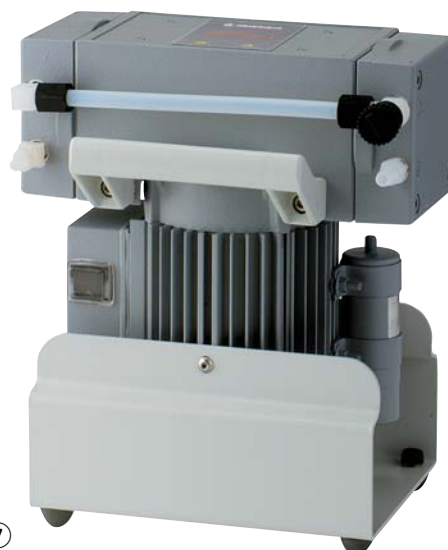
Vacuum pump Rotavac vario tec

- Revolution-controlled vacuum pump suitable for combination with Laborota control 4002 / 4003
- 2-tier membrane pump made of chemical-resistant material
- Suction power of 1.0 m³/h, for quick evacuation
- Maximum end pressure 12 mbar
- Automatic adjustment of the suction volume to the distillation process
- 30% shortened process times
- Optimal solvent recovery of up to 100%
- Low-noise, low-vibration
- Can be combined with a condensate cooler to condense residue solvents

Vacuum pump Rotavac vario control

- Revolutions-controlled vacuum pump suitable for combination with Laborota control 4002 / 4003
- 3-tier membrane pump made of chemical-resistant material
- High suction power of 1.5 m³/h, for quick evacuation
- Maximum end pressure of 2 mbar
- Automatic adjustment of the suction volume to distillation process
- 30% shortened process times
- Optimal solvent recovery of up to 100%, no delay in boiling
- Low-noise, low-vibration
- Can be combined with a condensate cooler to condense residue solvents

Article	Order No.
⑦ Rotavac valve control	56 41 10130
⑧ Rotavac vario control	56 41 10140
Condensate cooler for Rotavac valve control	56 41 10081
Condensate cooler for Rotavac vario control	56 41 10082
⑨ Vacuum pump Rotavac valve tec	10 41 10016
⑩ Vacuum pump Rotavac vario tec	10 41 10017
Condensate cooler for Rotavac valve & vario tec	10 41 10008



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Vacuum controller Vac control automatic

Vacuum controller for retrofitting to Laborota efficient and digital

- For controlling your house vacuum or any other existing vacuum pumps
- Timer for distillation period
- Reduces pressure during distillation
- Convenient mounting with lift column
- Includes vacuum sensor and valve
- Controller automatically finds required vacuum and holds vacuum constant
- Connections for vacuum valve and switchbox, which are available as accessories

Article	Order No.
⑪ Vac control automatic	56 41 10340

Accessories

Switchbox

Connect up to 3 rotary evaporators to one pump and control vacuum individually.

- Vacuum pump switches off automatically when no vacuum required
- Reduces energy consumption of pump
- Increases pump performance life
- Vacuum valve and check valve are required for every evaporator if you work with different pressures at the same time

Vac senso T

Required for Laborota control models with valve regulated pumps.

- Includes power supply for vacuum valve, vacuum sensor and vent valve
- Controls vacuum with an accuracy of $\pm 0.5\%$
- Opens vacuum valve at the end of the application
- Vacuum valve is connected to Vac senso T, connection for switchbox is integrated
- All components in contact with vapor are made of chemical-resistant PTFE, PVDF and stainless steel 1.4305

Vacuum valve

Required for Laborota control models with valve regulated pumps.

- External construction designed for easy cleaning
- Can be combined with the Woulff Bottle to make one unit (optional)
- For separating condensate after the condenser in order to protect the valves of the vacuum pump

Woulff Bottle

- For separating condensate after the condenser in order to protect the valves of the vacuum pump
- Easy connection along side the lift column
- Direct connection to the vacuum valve
- Third connection for the vacuum line to the vacuum controller
- Capacity of 250 ml

Article	Order No.
Switch box	56 41 00040
Vac senso T	56 41 00035
Vacuum valve	56 41 00024
Woulfe bottle	56 41 00070

Accessories for Laborota 4000 series

Article	Order No.
Vapor temperature sensor for Laborota efficient	10 41 10003
Temperature sensor T(auto) for Laborota control	10 41 10004
Guard hood Strong guard hood to protect you from implosions	10 41 10001
Guard shield for your protection while changing flasks	10 41 10002
Tube set consists of 5 meters vacuum hose and 6 meters water hose	10 41 13500
Extension kit for heating bath	10 41 10009
Heating bath liquid 5 l with water mixable, max. temperature 240°C, 5 l	51 41 93100



⑪

Complete systems

- Different package solutions adapted to the customers' requirements
- Attractive price advantage against modular orders of individual components
- Simplified order process via only one article number
- Perfectly adjusted system components
- Package include all accessories necessary for operation

Complete packages PREMIUM

Automatic distillation with revolution-controlled vacuum control

All PREMIUM packages include:

- a rotary evaporator Laborota 4002 or 4003 with universal heating bath and glass set
- revolutions-controlled vacuum pump with condensate cooler Rotavac vario tec or vario control
- temperature cooler T(auto)
- coil set



Article	Version	Order No.
Premium 1 T	LR 4002, vertical condenser, Rotavac vario tec	10 41 86130
Premium 3 T	LR 4002, reflux condenser, Rotavac vario tec	10 41 86160
Premium 4 T	LR 4002, vertical condenser (coated), Rotavac vario tec	10 41 86131
Premium 6 T	LR 4002, reflux condenser (coated), Rotavac vario tec	10 41 86161
Premium 4 TCM	LR 4002, vertical condenser (coated), Rotavac vario tec, Rotacool mini	10 41 86132
Premium 1	LR 4002, vertical condenser, Rotavac vario control	10 41 96130
Premium 3	LR 4002, reflux condenser, Rotavac vario control	10 41 96160
Premium 4	LR 4002, vertical condenser (coated), Rotavac vario control	10 41 96131
Premium 6	LR 4002, reflux condenser (coated), Rotavac vario control	10 41 96161
Premium 7	LR 4003, vertical condenser, Rotavac vario control	10 41 97130
Premium 9	LR 4003, reflux condenser, Rotavac vario control	10 41 97160
⑫ Premium 10	LR 4003, vertical condenser (coated), Rotavac vario control	10 41 97131
Premium 10 cool	LR 4003, vertical condenser (coated), Rotavac vario control, Rotacool	10 41 97132
Premium 12	LR 4003, reflux condenser (coated), Rotavac vario control	10 41 97161

Further packages from the categories BASIC (low-cost packages with water bath), STANDARD (standard applications) and SUPERIOR (automatic distillation with valve-controlled vacuum control) available upon request!

