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Rotary Evaporators

Technical specifications

Model	Laborota 4000 eco	Laborota 4000/4001 efficient	Laborota 4010/4011 digital	Laborota 4002/4003 control	Laborota 20 control	VV Micro
Rotation speed (rpm)	20 - 270	20 - 270	20 - 270	20 - 270	6 - 160	80 - 200
Rotation speed setting	scale	scale	digital	digital	digital	scale
Hand / Motor lift	hand lift	LR 4000: hand lift LR 4001: motor lift	LR 4010: hand lift LR 4011: motor lift	LR 4002: hand lift LR 4003: motor lift	motor lift	no lift
Height adjustment speed	manual	LR 4000: manual LR 4001: 18 mm/s	LR 4010: manual LR 4011: 18 mm/s	LR 4002: manual LR 4003: 18 mm/s	45 mm/s	no
Height adjustment (mm)	140	140	140	140	200	no
Drive	capacitor motor	capacitor motor	capacitor motor	capacitor motor	capacitor motor	capacitor motor
Heating capacity (W)	1300	1300	1300	1300	4000	500
Temperature range heating bath (°C)	20 - 100	20 - 180	20 - 180	20 - 180	20 - 100 (H ₂ O) 20 - 180 (oil)	30 - 100
Temperature accuracy (K)	± 1	± 1	± 1	± 1	± 1	± 5
Overheat cut-off protection (°C)	110	190	190	190	210 (oil) / 110 (H ₂ O)	no
Bath temperature setting	digital	digital	digital	digital	digital	scale
Heating bath temperature control	micro processor	micro processor	micro processor	micro processor	micro processor	capillary tube
Variable temperature limiter	no	no	no	yes	no	no
Material heating bath	1.4404 / AISI 316 L	1.4404 / AISI 316 L	1.4404 / AISI 316 L	1.4404 / AISI 316 L	1.4404 / AISI 316 L	1.4301 / AISI 304
Diameter heating bath (mm)	240	240	240	240	400	139
Volume heating bath (l)	4.3	4.3	4.3	4.3	24 (H ₂ O), 22 (oil)	0.7
Display vapor temperature	no	no	digital	digital	digital	no
*required accessories			vapor temperature sensor	vapor temperature sensor		
Vacuum controller	no	no	no	yes	yes	no
*required accessories				VAC senso T		
Timer	no	no	no	yes	yes	no
Vacuum control program p const**	no	no	no	yes	yes	no
Vacuum control program p auto**	no	no	no	yes	no	no
Vacuum control program T _(auto)						
requires T _(auto) sensor	no	no	no	yes	yes	no
Remote control function					no	no
- Lift	no	LR 4001 only	LR 4011 only	LR 4003 only		
- Start rotation	no	no	no	yes		
- Start vacuum	no	no	no	yes		
Programmable ramps	no	no	no	yes	yes	no
Supply voltage *** (V/Hz)	230 V / 50/60 Hz 115 V / 50/60 Hz	230 V / 50/60 Hz 115 V / 50/60 Hz	230 V / 50/60 Hz 115 V / 50/60 Hz	230 V / 50/60 Hz 115 V / 50/60 Hz	3* 400 V / 50 Hz 3* 230 V / 60 Hz	230 V / 50/60 Hz 115 V / 50/60 Hz
Supply power (W)	1400	LR 4000: 1400 LR 4001: 1430	LR 4010: 1410 LR 4011: 1440	LR 4002: 1400 LR 4003: 1430	4500	530
Weight (without glass assembly) (kg)	17	LR 4000: 17 LR 4001: 18	LR 4010: 17 LR 4011: 18	LR 4002: 18 LR 4003: 19	ca. 120	6.9
Size (l x w x h) (mm)	396 x 440 x 360	396 x 440 x 360	396 x 440 x 360	396 x 440 x 360	1000 x 700 x 1580	167 x 235 x 360
Protection class (DIN EN 60529)	IP 20	IP 20	IP 20	IP 20	IP 20	IP 21
Operation conditions (°C)	0 - 40 at 80% rel. humidity	0 - 40 at 80% rel. humidity	0 - 40 at 80% rel. humidity	0 - 40 at 80% rel. humidity	0 - 40 at 80% rel. humidity	0 - 40 at 80% rel. humidity
Rate of evaporation (L/h) ΔT* 20/40 °C						
- Toluene	4.1 / 8.2	4.1 / 8.2	4.1 / 8.2	4.1 / 8.2	13.9 / 27.9	0.9 / 1.8
- Acetone	2.4 / 4.7	2.4 / 4.7	2.4 / 4.7	2.4 / 4.7	10.0 / 19.9	0.7 / 1.4
- Ethanol	1.6 / 3.2	1.6 / 3.2	1.6 / 3.2	1.6 / 3.2	7.2 / 14.4	0.4 / 0.8
- Water	0.5 / 1.0	0.5 / 1.0	0.5 / 1.0	0.5 / 1.0	2.2 / 4.4	0.13 / 0.27
Condensing surface (cm ²)	1200	1200	1200	1200	1.2 m ²	270

* difference between heating bath temperature and boiling temperature

** only in combination with vacuum systems *** others upon request, please specify for order

While you concentrate on research, we'll look after your support needs

The team at Heidolph is dedicated and committed about delivering the highest quality product and services to its customers, allowing you to concentrate on research. Take the walk with us and see for yourself.

- 24 hour service for all inquires
- Individual application support
- Short delivery time for standard equipment
- After sales service provided by your local dealer
- More than 80 distributors worldwide
- Priority technical service
- 3 year warranty



Rotary Evaporators

Heidolph Rotary Evaporators are especially used for standard distillations, crystallization, product concentration, powder drying and separation of one or several solvents.

High distillation rates and available vacuum/temperature programmability guarantee the fastest and most economical results for your application.

For pilot plants and industrial use, we recommend our large scale 20 liter rotary evaporator.

For small quantities, limited space requirements or teaching applications, we offer our 50-250 ml model VV micro.

Your benefit:

- Modular system including vacuum pumps and chiller
- Unique environmentally friendly vacuum control system
- High distillation rates even with low boiling solvents
- Long life graphite filled PTFE vacuum seal
- Non-sticking quick release vapor tube
- Small footprint of 470 x 580 mm for evaporator, pump and chiller
- Quiet electronic motor drive

Rotary Evaporators

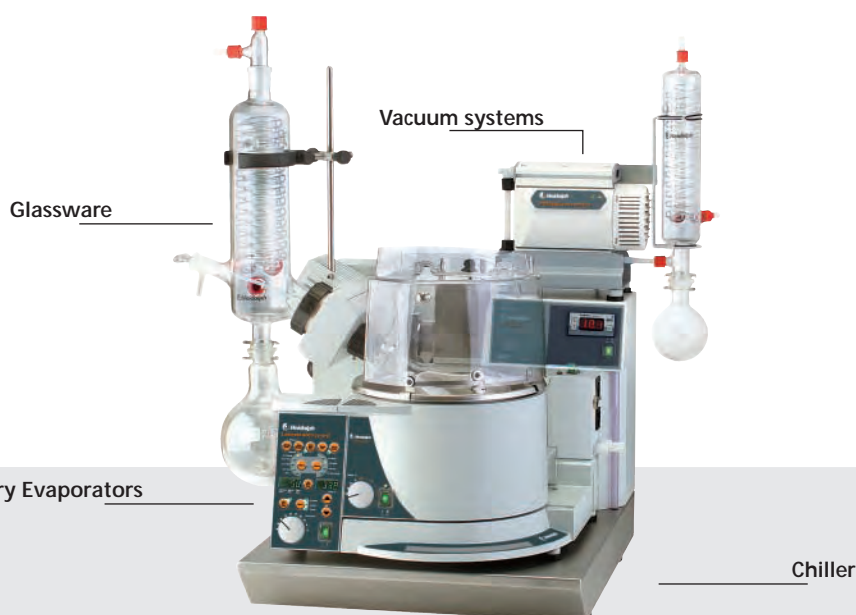
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Large Scale Rotary Evaporators

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Micro Evaporators

VV micro	Page 30
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Laborota 4000 Series - The Modular Concept

The Modular Concept

The modular concept consists of rotary evaporator, vacuum pump, controller and chiller

- All components are designed to function together
- High efficiency with limited space requirements
- Self contained design eliminates the need for water, dry ice and vacuum sources
- All evaporators can be upgraded for higher requirements
- Complete system available from one manufacturer

General Advantages

... of the Laborota 4000 series

Safety features

- For your protection against splashing water and steam, the operating panel is located in front of the evaporator for safe and easy access
- Drip shield over display protects user and control panel from spills
- Individual power switches for control panel and heating bath offers additional safety
- Heating bath features non-slip safety handles for safe and easy transport of bath
- Heating bath is constructed of an insulated double wall for your protection against burns and scalding
- No exposed heating coils inside the easy-to-clean heating bath
- Adjustable sliding safety guard hood always aligns with the bath and protects you in case of implosion
- Optional bath extension kit allows the bath to slide horizontally to accommodate a 3 liter flask and foam trap

Convenience features

- Long life graphite filled PTFE vacuum seal
- Non-sticking vapor tube removes easily eliminating broken glass
- Unique large bore vapor tube offers fast distillation rates
- One-piece vapor tube without additional sealing
- Flask ejector presses off sticking evaporation flasks
- Adjust and fix the height of your evaporating flask easily
- For your convenience, the angle of the evaporation flask can be adjusted from 10 ° to 85 ° quickly
- Superior results due to high torque (140 Ncm) drive
- Choice of manual or motor lift

Five condenser assemblies available with standard or safety-coated glassware

Maintenance free drive motor is quiet, brushless, sparkless and reliable

Long life graphite filled PTFE seal reduces down time

Special vapor tube clamp prevents sticking and breaking

Drip shield over display prevents spills from damaging user and the unit

Control panel is located in front for easy access

Patented sliding guard hood available for extra safety and convenience

Handles allow for easy and safe transport of the bath

Hand or motor lift is simple and keeps the glassware very stable

Modular system with optional integrated chiller and vacuum pump reduces bench space requirements (footprint is only 470 x 580 mm)



Standard range

Laborota eco

Economical model with hand lift & water bath

Includes all standard Laborota 4000 series features (see page 4 and 5) plus:

- Convenient large dial controls for adjustment of rotation speed (rpm) and heating bath temperature
- Rotation speed from 20 to 270 rpm
- Individual power switches for control panel and heating bath offer additional safety
- **Water bath:**
 - Temperature range from 20 to 100 °C
 - Temperature accuracy of the heating bath: ± 1 K
 - Available with 3 glassware assemblies

Laborota eco		
Glass	standard	coated
G1	519-03100-00	519-03110-00
G3	519-03300-00	519-03310-00
G5	519-03500-00	519-03510-00

* Standard joint size NS 29/32



Laborota 4000/G1
P/N 519-03100-00

Laborota efficient

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

For your routine distillation applications

Includes all standard Laborota 4000 series features (see page 4 and 5) plus:

- Convenient large dial controls for adjustment of rotation speed and heating bath temperature
- Rotation speed from 20 to 270 rpm
- Individual power switches for control panel and heating bath offers additional safety
- One heating bath for water and oil: 20 °C – 180 °C
- Digital bath temperature display as standard
- Set bath temperature on display, accuracy ± 1 °C
- Attachment for optional vacuum valve or Woulff Bottle
- Upgrade this model with the optional Vacuum controller, VAC control automatic, for automated distillation



Laborota 4000/G3
P/N 519-01300-00

Guard shield
P/N 591-00020-00
Guard hood
P/N 591-00010-00

Digital system

Laborota digital

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

For more complex distillations that require insight into process parameters

Includes all standard Laborota 4000 series features (see page 4 and 5) plus:

- Digital display for rotation speed, vapor temperature and bath temperature
- Digital display for vapor temperature ± 0.1 °C (Vapor temperature sensor included)
- Convenient large dial controls for adjustment of rotation speed and heating bath temperature
- Rotation speed from 20 to 270 rpm
- Individual power switches for control panel and heating bath offer additional safety
- One heating bath for water and oil: 20 °C – 180 °C
- Set bath temperature on display, accuracy ± 1 °C
- Attachment for optional vacuum valve or Woulff Bottle
- Upgrade this model with the optional vacuum controller, VAC control automatic for automated distillation



Laborota 4011/G6
P/N 519-51600-00

Glass	Laborota 4000		Laborota 4001		Laborota 4010		Laborota 4011	
	standard	coated	standard	coated	standard	coated	standard	coated
G1	519-01100-00	519-01110-00	519-11100-00	519-11110-00	519-41100-00	519-41110-00	519-51100-00	519-51110-00
G3	519-01300-00	519-01310-00	519-11300-00	519-11310-00	519-41300-00	519-41310-00	519-51300-00	519-51310-00
G4	519-01400-00	519-01410-00	519-11400-00	519-11410-00	519-41400-00	519-41410-00	519-51400-00	519-51410-00
G5	519-01500-00	519-01510-00	519-11500-00	519-11510-00	519-41500-00	519-41510-00	519-51500-00	519-51510-00
G6	519-01600-00	519-01610-00	519-11600-00	519-11610-00	519-41600-00	519-41610-00	519-51600-00	519-51610-00

* Standard joint size NS 29/32

Automated distillation control

Laborota control

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

Ideal for the most demanding applications that require precise operating parameters and the finest integrated vacuum control capabilities

Includes all standard Laborota 4000 series features (see page 4 and 5) plus:

- Set your required bath temperature, time and vacuum with the user-friendly digital control panel
- Digital display for rotation speed, vapor temperature, bath temperature and vacuum
- Evacuation can be stopped by the press of a button without opening the vacuum valve (Hold-Function)
- Start rotation, vacuum control and process timer all together with just one press of a button (Auto Start Stop Function)
- Set and program the 9 most common applications into memory
- Program your required vacuum changes in a ramp
- Process timer allows for unattended operations (during operation changeable between time counting and timer)
- One heating bath for water and oil: 20 °C – 180 °C
- Safety bath temperature backup system with additional control
- Attachment for optional vacuum valve or Woulff Bottle
- For reproducible results

For your safety:

- Safety switch-off in case of excessive pressure
 - System is ventilated
 - Elevator moves upwards (only Laborota 4003)
 - Rotation stops



Laborota 4003/G3
 P/N 519-31300-00

Automated Distillation

Built-in vacuum and vapor temperature controller with 3 programs for automated distillations

- **Program P_(const)** (control parameter is the pressure) for solvent separation. This program holds vacuum constant at any time during your distillation with the press of a button
- **Program T_(auto)** (control parameter is the vapor temperature) for gentle distillation. This program finds multiple vacuum levels automatically but stops your distillation at a variable minimum pressure
- **Program P_(auto)** automatically finds required vacuum and holds that level constant (combination from T_(auto) and P_(const))

	Laborota 4002		Laborota 4003	
Glass	standard	coated	standard	coated
G1	519-21100-00	519-21110-00	519-31100-00	519-31110-00
G3	519-21300-00	519-21310-00	519-31300-00	519-31310-00
G4	519-21400-00	519-21410-00	519-31400-00	519-31410-00
G5	519-21500-00	519-21510-00	519-31500-00	519-31510-00
G6	519-21600-00	519-21610-00	519-31600-00	519-31610-00

* Standard joint size NS 29/32

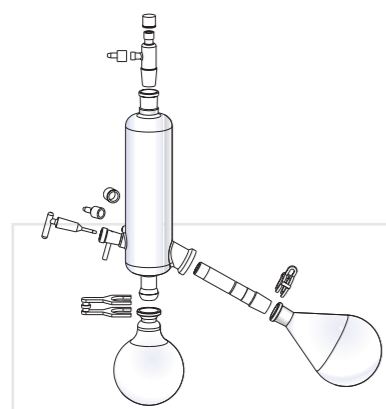
Required Accessories

- VAC senso T (refer to vacuum accessories on Page 13)
- Vacuum valve (refer to vacuum accessories on Page 13)
- Temperature sensor (refer to accessories on Page 12) or Vapor temperature sensor (refer to accessories on Page 12)

Glassware - Laborota 4000 series

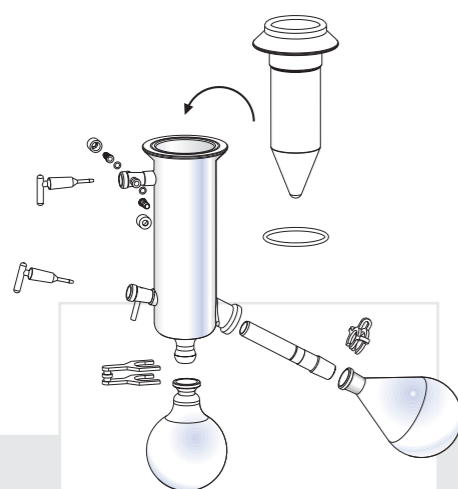
Your benefits

- Glassware set includes one 1000 ml evaporating flask and one 1000 ml receiving flask
- All glassware sets are also available with plastic safety coating (Surlyn® coated) for added safety
- Evaporating flasks and vapor tubes with the standard ground joint NS 29/32 are also available with NS 24/29 ground joints (please specify when ordering)
- Also available on request, Glassware sets for Soxhlet-Extraction and descending condensing system
- Glassware G3, G4 and G6 for automated distillation $T_{(auto)}/P_{(const)}$ for Laborota control
- All glassware sets feature GL 10 thread; the inlet tube can be connected with a threaded fitting



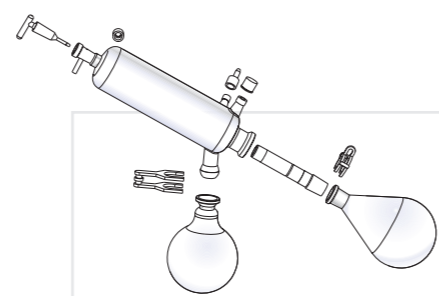
Glassware set G3

- Vertical condenser for all standard distillations, the alternative with the **smallest space requirement**



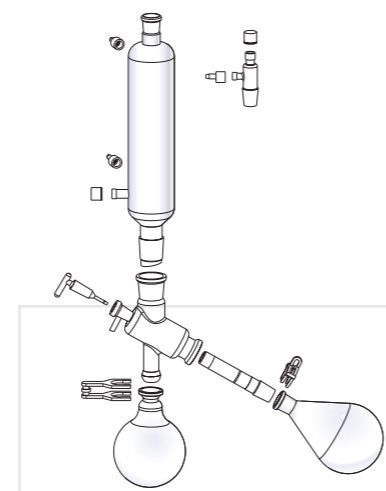
Glassware set G5

- Condensate trap for low-boiling solvents: **cooling by dry ice**



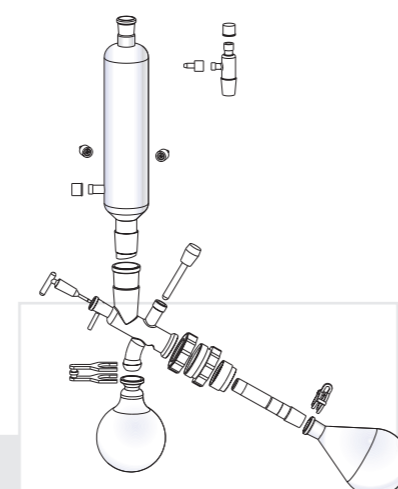
Glassware set G1

- Diagonal condenser **for all standard distillations**, the alternative with the most affordable price



Glassware set G4

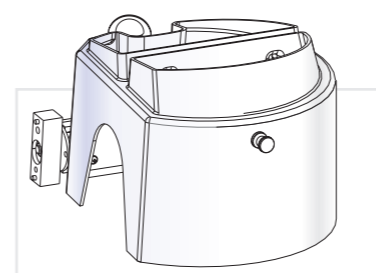
- Vertical condenser with a double jacket (intensive-action condenser) and centerpiece: **for high recovery rates**



Glassware set G6

- Vertical condenser; centerpiece with valve **for reflux distillation**

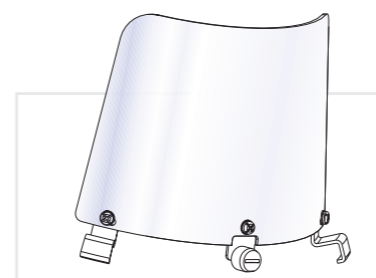
Accessories



Guard hood

P/N 591-00010-00

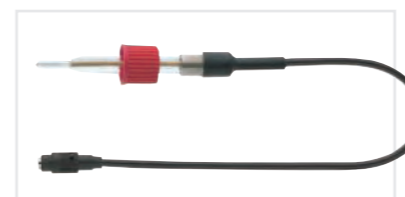
Strong polycarbonate guard hood to protect you from implosions. Excellent visibility to flask. Providing easy and immediate access to flask and bath



Guard shield

P/N 591-00020-00

Strong polycarbonate guard shield for your protection while changing flasks. Attached at the edge of the bath



Vapor temperature sensor

P/N 591-00030-00

for models 4010/4011 and 4002/4003



Remote control

P/N 591-00050-00

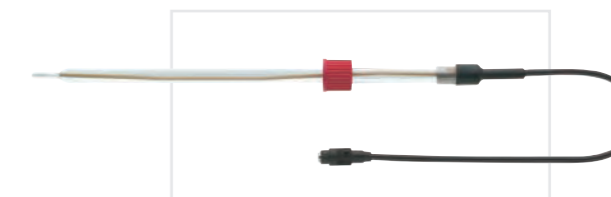
for models 4001/4011/4003



Bath extension plate

P/N 591-00090-00

For additional horizontal extension of the bath up to 210 mm. Recommended for 3 l flasks and foam brakes



Temperature sensor $T_{(auto)}$

P/N 591-00040-00

for models 4002 and 4003 only in combination with glassware G3, G4, G6

Heating bath liquid (5 L)

P/N 515-31000-00

With water mixable heating bath fluid for temperatures up to 240° C

Tube set

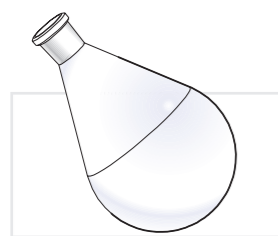
P/N 591-35000-00

Seal - 26 made of PTFE

P/N 23-30-01-01-30

Clamping sleeve 26

P/N 23-30-01-02-89



Evaporating flasks		NS 29/32	NS 24/29
Evaporating flasks*	(50 ml)	514-70000-00	514-70000-01
Evaporating flasks	(100 ml)	514-71000-00	514-71000-01
Evaporating flasks	(250 ml)	514-72000-00	514-72000-01
Evaporating flasks	(500 ml)	514-73000-00	514-73000-01
Evaporating flasks	(1000 ml)	514-74000-00	514-74000-01
Evaporating flasks	(2000 ml)	514-75000-00	514-75000-01
Evaporating flasks	(3000 ml)	514-76300-00	514-76300-01

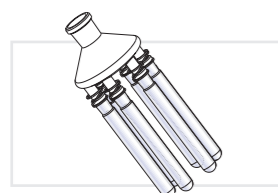
* Evaporating flask NS 14.5 incl. transition piece (NS 29 or NS 24)



Receiving flasks		standard	coated
Receiving flasks - S 35/20	(100 ml)	514-81000-00	514-81000-02
Receiving flasks - S 35/20	(250 ml)	514-82000-00	514-82000-02
Receiving flasks - S 35/20	(500 ml)	514-83000-00	514-83000-02
Receiving flasks - S 35/20	(1000 ml)	514-84000-00	514-84000-02
Receiving flasks - S 35/20	(2000 ml)	514-85000-00	514-85000-02
Receiving flasks - S 35/20	(3000 ml)	514-87000-00	514-87000-02



Powder flasks		NS 29/32	NS 24/29
Powder flasks 500 ml		514-73200-00	514-73200-01
Powder flasks 1000 ml		514-74200-00	514-74200-01
Powder flasks 2000 ml		514-75300-00	514-75300-01



	NS 29/32	NS 24/29
Spider with 6 distillation sleeves NS 14.5 (20 ml)	15-300-005-09	15-300-005-12
Spider with 12 distillation sleeves NS 14.5 (20 ml)	15-300-005-10	15-300-005-13
Spider with 20 distillation sleeves NS 14.5 (20 ml)	15-300-005-11	15-300-005-06



	NS 29/32	NS 24/29
Spider with 5 flasks NS (50 ml)	15-300-005-04	15-300-005-08
Spider with 5 flasks NS (100 ml)	15-300-005-07	15-300-005-05



	NS 29/32	NS 24/29
Evaporating cylinders 500 ml	514-00070-00	514-00070-01
Evaporating cylinders 1500 ml	514-00071-00	514-00071-00



	NS 29/32	NS 24/29
Foam brake with flask clamp	514-00004-00	514-00005-00

Vac control automatic

Upgrade your Laborota efficient and Laborota digital

- Control your house vacuum or any other vacuum source
- Features 3 Displays for actual, set vacuum and operating mode
- Process timer allows for unattended operations
- Reduces pressure during distillation
- Includes vacuum sensor and vent valve
- Controller finds automatically required vacuum and holds vacuum constant
- Power input: 13 W, Weight: 0.7 kg
- Dimensions: 145 x 85 x 85 (l x w x h / mm)



Vac control automatic
P/N 591-00340-00

Switchbox

Designed for all Laborota models

- Connect up to 3 rotary evaporators to one pump and control vacuum individually
- Pump switches off automatically at required vacuum
- Reduces energy consumption of pump
- Increases pump performance life
- Vacuum valve and non-return valve are required for every evaporator if you work with different pressures at the same time
- Delivery includes 3 non-return valves
- Weight: 0.6 kg
- Dimensions: 160 x 45 x 80 (l x w x h / mm)



Switchbox
P/N 591-00400-00

Vac senso T

Required for LABOROTA control models and 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, optionally purchased switch box connects to VAC senso T
- Space saving design attaches to rotary evaporator at the rear side of the heating bath
- All components in contact with vapor made of chemical resistant PTFE & PVDF
- Not required for rpm-regulated vacuum pump, ROTAVAC vario control
- Weight: 1.5 kg
- Dimensions: 180 x 155 x 65 (l x w x h / mm),



Vac senso T
P/N 591-00350-00

Vacuum valve

Required for Laborota models with valve regulated pumps

- External construction designed for easy cleaning
- Can be combined with the Woulff Bottle for one unit
- Not required for rpm-regulated vacuum pump, Rotavac vario control

Woulff Bottle (optional)

- Additional recovery of solvent in conjunction with condenser to protect vacuum valve and vacuum pump
- Direct connection to the vacuum valve
- Features connection to vacuum controller
- Space requirements of 250 ml



Vacuum valve
P/N 591-24000-00

Woulff Bottle
P/N 591-00071-00

Valve regulated vacuum pumps

Designed for all Laborota rotary evaporators

Rotavac valve control

- Two-stage diaphragm pump made from chemically resistant materials
- High suction capacity of 1.7 m³/h, for fast evacuation
- Suction capacity for up to 3 rotary evaporators at the same time
- The Rotavac valve control achieves an ultimate vacuum of 9 mbar
- The Rotavac valve control can be combined with a condensate cooler (P/N 591-00081-00)
- Power input: 180 W, Weight: 10.5 kg
- Dimensions: 245 x 295 x 185 (l x w x h / mm)

Rotavac valve control
(without accessories)
P/N 591-00130-00



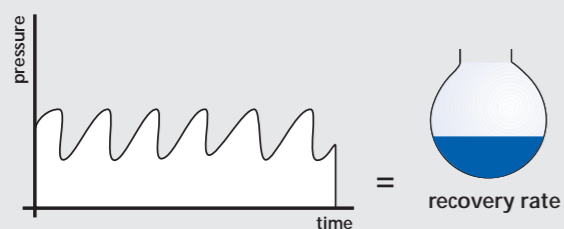
Rotavac valve tec

- Two-stage diaphragm pump made from chemically resistant materials
- Suction capacity at 50/60 Hz: 0.75/0.9 m³/h
- The Rotavac valve tec achieves an ultimate vacuum of 12 mbar
- The Rotavac valve tec can be combined with a condensate cooler (P/N 591-00083-00)
- Power input: 80 W, Weight: 6 kg
- Dimensions: 315 x 145 x 169 (l x w x h / mm)

Rotavac valve tec
P/N 591-00160-00



Valve regulated vacuum pump



RPM regulated vacuum pumps

Designed for all Laborota control

- Speed signal comes from the Laborota rotary evaporator
- Highest distillation rates possible while reducing process time by 30 %
- Improved solvent recovery up to 100 %, stable distillation conditions

- Significant noise and vibration reduction
- Minimal bench space requirements
- Includes power supply, vacuum sensor and valves

Rotavac vario control

Adjustable speed of the pump produces the most precise vacuum control

- Three-stage diaphragm pump is made from chemically resistant materials
- High suction capacity of 1.5 m³/h, for fastest evacuation
- The Rotavac vario control achieves an ultimate vacuum of 2 mbar
- The Rotavac vario control can be combined with a condensate cooler (P/N 591-00082-00)
- Power input: 170 W, Weight: 4.2 kg
- Dimensions: 235 x 290 x 175 (l x w x h / mm)



Rotavac vario control
P/N 591-00140-00

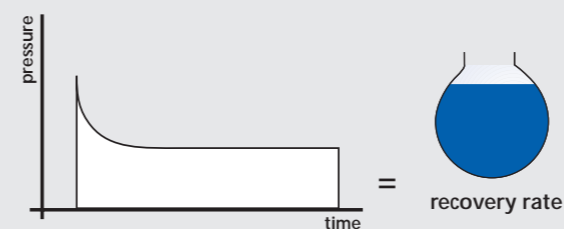
Rotavac vario tec

- Two-stage diaphragm pump is made from chemically resistant materials
- Suction capacity of 1.0 m³/h, for fast evacuation
- The Rotavac vario tec achieves an ultimate vacuum of 12 mbar
- The Rotavac vario tec can be combined with a condensate cooler (P/N 591-00083-00)
- Power input: 180 W, Weight: 4.0 kg
- Dimensions: 236 x 143 x 150 (l x w x h / mm)

Rotavac vario tec
(without accessories)
P/N 591-00170-00



RPM regulated vacuum pump

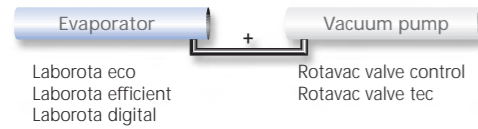


Equipment combination

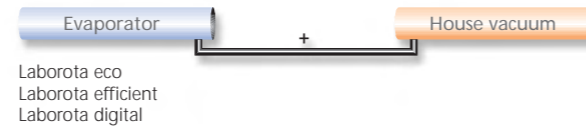
Configuration Tool

Laborota eco / efficient / digital

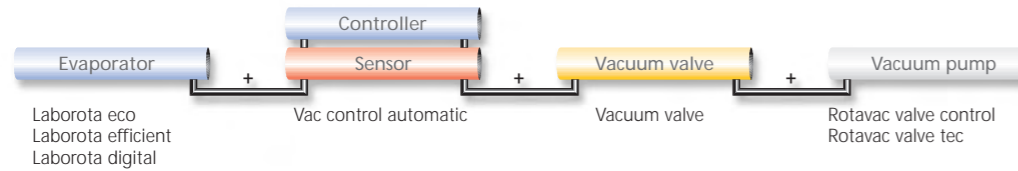
without controller with valve regulated vacuum pump



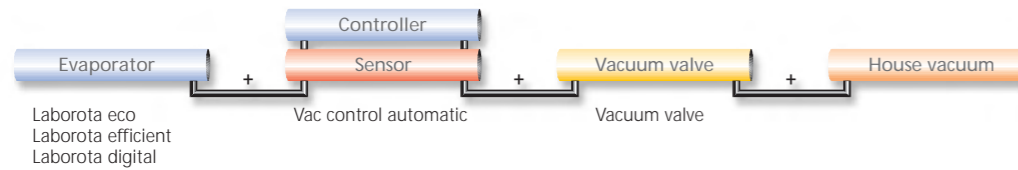
without controller with house vacuum



with controller and valve regulated vacuum pump

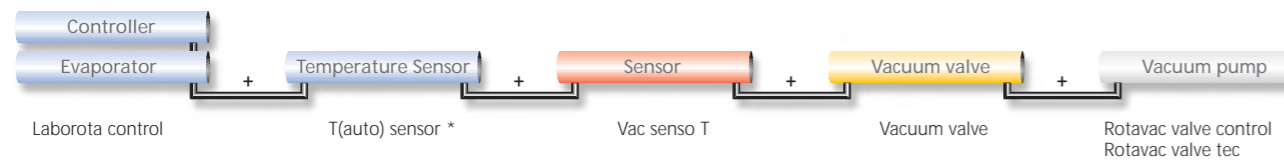


with controller and house vacuum

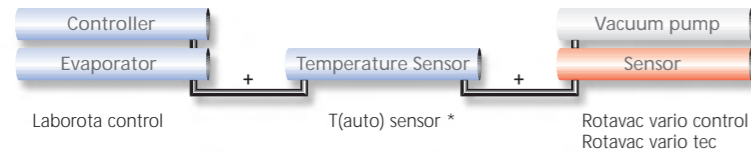


Laborota control

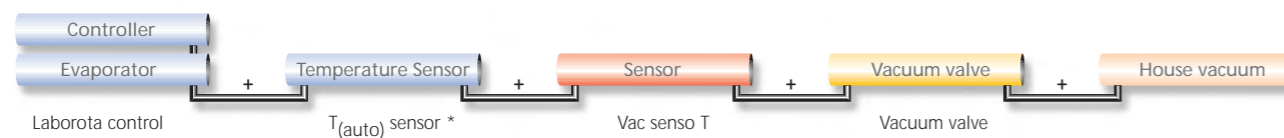
Rotary evaporator with valve regulated vacuum pump



Rotary evaporator with rpm regulated vacuum pump



Rotary evaporator with house vacuum



Choose the right evaporator model

Our Configuration Tool for the Laborota 4000 series helps you to find the most appropriate configuration for your specific application. This tool is designed to walk you through several questions concerning vacuum source, glassware set and accessories and upon completion, the Configuration Tool shows you which items we would recommend to meet your requirements.

At www.heidolph.com "Configuration Tool", you have the possibility to use the tool online.



Configuration Tool CD
P/N 27-001-004-02



* Only in combination with glassware G3, G4, G6

Complete Packages at a special price

Complete Packages BASIC

Economical packages with water bath

BASIC 1 T

- Laborota 4000 eco with water bath and hand lift incl. coated glassware set G1B, Vacuum pump Rotavac valve tec & tube set
P/N 519-93110-50

BASIC 1 TCM

- Same as BASIC 1 T, but in addition with chiller Rotacool mini
P/N 519-93117-50

BASIC 1

- Laborota 4000 eco with water bath and hand lift incl. coated glassware set G1B, Vacuum pump Rotavac valve control & tube set
P/N 519-93110-00

BASIC 1 cool

- Same as BASIC 1, but in addition with chiller Rotacool
P/N 519-93118-00

Complete Packages STANDARD

For standard distillations with unregulated vacuum

STANDARD 3 T

- Laborota 4000 efficient with heating bath incl. glassware set G1, Vacuum pump Rotavac valve tec & tube set
P/N 519-91100-50

STANDARD 3 TCM

- Same as STANDARD 3 T, but in addition with chiller Rotacool mini
P/N 519-91107-50

STANDARD 3

- Laborota 4000 efficient with heating bath incl. glassware set G1, Vacuum pump Rotavac valve control & tube set
P/N 519-91100-00

STANDARD 3 cool

- Same as STANDARD 3, but in addition with chiller Rotacool
P/N 519-91108-00

STANDARD 4 T

- Laborota 4000 efficient with heating bath incl. coated glassware set G3B, Vacuum pump Rotavac valve tec & tube set
P/N 519-91310-60

STANDARD 4 TCM

- Same as STANDARD 4 T, but in addition with chiller Rotacool mini
P/N 519-91317-60

STANDARD 4

- Laborota 4000 efficient with heating bath incl. coated glassware set G3B, Vacuum pump Rotavac valve control & tube set
P/N 519-91310-30

STANDARD 4 cool

- Same as STANDARD 4, but in addition with chiller Rotacool
P/N 519-91318-30

For standard distillations with regulated vacuum control

STANDARD 5 T

- Laborota 4000 efficient with heating bath incl. glassware set G3B, Vacuum pump Rotavac valve tec, Vacuum valve, Vacuum controller Vac control automatic & tube set
P/N 519-91310-50

STANDARD 5 TCM

- Same as STANDARD 5 T, but in addition with chiller Rotacool mini
P/N 519-91317-50

STANDARD 5

- Laborota 4000 efficient with heating bath incl. glassware set G3B, Vacuum pump Rotavac valve control, Vacuum valve, Vacuum controller Vac control automatic & tube set
P/N 519-91310-00

STANDARD 5 cool

- Same as STANDARD 5, but in addition with chiller Rotacool
P/N 519-91318-00



Complete Packages SUPERIOR

SUPERIOR 1 T

- Laborota 4002 control with heating bath incl. coated glassware set G1B, Temperature sensor T(auto), Vacuum valve, Vacuum pump Rotavac valve tec with condensate cooler, Vacuum sensor Vac senso T & tube set
P/N 519-61110-50

SUPERIOR 1 T cool

- Same as SUPERIOR 1 T, but in addition with chiller Rotacool
P/N 519-61118-50

SUPERIOR 1

- Laborota 4002 control with heating bath incl. coated glassware set G3B, Temperature sensor T(auto), Vacuum valve, Vacuum pump Rotavac valve control with condensate cooler, Vacuum sensor Vac senso T & tube set
P/N 519-61310-20

SUPERIOR 1 cool

- Same as SUPERIOR 1, but in addition with chiller Rotacool
P/N 519-61318-20

Complete Packages PREMIUM

Automated distillation with rpm-regulated vacuum control

Rotary Evaporator with **hand lift**, heating bath, glassware set, vacuum pump Rotavac vario tec incl. condensate cooler, temperature sensor T(auto) & tube set

PREMIUM 1 T	Laborota 4002 control with hand lift, glassware set G3	P/N 519-61300-40
PREMIUM 2 T	Laborota 4002 control with hand lift, glassware set G4	P/N 519-61400-40
PREMIUM 3 T	Laborota 4002 control with hand lift, glassware set G6	P/N 519-61600-40
PREMIUM 4 T	Laborota 4002 control with hand lift & coated glassware set G3B	P/N 519-61310-40
PREMIUM 5 T	Laborota 4002 control with hand lift & coated glassware set G4B	P/N 519-61410-40
PREMIUM 6 T	Laborota 4002 control with hand lift & coated glassware set G6B	P/N 519-61610-40

Automated distillation with rpm-regulated vacuum control

Rotary Evaporator with **hand- or motor lift**, heating bath, glassware set, vacuum pump Rotavac vario control incl. condensate cooler, temperature sensor T(auto) & tube set

PREMIUM 1	Laborota 4002 control with hand lift, glassware set G3	P/N 519-61300-00
PREMIUM 2	Laborota 4002 control with hand lift, glassware set G4	P/N 519-61400-00
PREMIUM 3	Laborota 4002 control with hand lift, glassware set G6	P/N 519-61600-00
PREMIUM 4	Laborota 4002 control with hand lift & coated glassware set G3B	P/N 519-61310-00
PREMIUM 5	Laborota 4002 control with hand lift & coated glassware set G4B	P/N 519-61410-00
PREMIUM 6	Laborota 4002 control with hand lift & coated glassware set G6B	P/N 519-61610-00
PREMIUM 7	Laborota 4003 control with motor lift, glassware set G3	P/N 519-71300-00
PREMIUM 8	Laborota 4003 control with motor lift, glassware set G4	P/N 519-71400-00
PREMIUM 9	Laborota 4003 control with motor lift, glassware set G6	P/N 519-71600-00
PREMIUM 10	Laborota 4003 control with motor lift & coated glassware set G3B	P/N 519-71310-00
PREMIUM 11	Laborota 4003 control with motor lift & coated glassware set G4B	P/N 519-71410-00
PREMIUM 12	Laborota 4003 control with motor lift & coated glassware set G6B	P/N 519-71610-00

PREMIUM 10 cool Same as PREMIUM 10, but in addition with chiller Rotacool P/N 519-71318-00

Chillers

Large Scale Rotary Evaporators

Rotacool

High cooling capacity - minimal bench space

- The only chiller designed specifically for rotary evaporators
- Minimal bench space due to unique "L" shape design
- Footprint of chiller: 470 x 580 mm
- Provides space of 470 x 405 mm for evaporator
- Temperature range: -10 °C 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 technology
- Precise temperature control of ± 0.5 °C
- Environmentally friendly CFC-free refrigerant



Short direct tubes from the chiller to the evaporator glassware



Rotacool
P/N 591-00200-00

Rotacool mini

The affordable model

- Chiller for all bench top evaporators
- Small Footprint of chiller: 225 x 450 mm
- Cooling temperature: 7 °C (not adjustable)
- Cooling capacity: at 7 °C, 370 W
- Environmentally friendly CFC-free refrigerant



Rotacool mini
P/N 591-00210-00

	Rotacool	Rotacool mini
Operating temperature [°C]	-10 to +40	7
Temperature accuracy [K]	± 0.5	± 1
Coolant charge [l]	2.5	2
Refrigerant	R 134 a (CFC-free)	R 507 (CFC-free)
Pump delivery rate max. [l/min]	10	12
Pump delivery pressure max. [bar]	0.3	0.3
Coolant connections [mm]	M 16 x 1/NW 7	M 16 x 1/NW 8
Stand area (w x d) [mm]	470 x 580	255 x 450

	Rotacool	Rotacool mini
Height overall/height of base [mm]	405 / 95	-
Supply voltage [V/Hz]	230 V/50 HZ 115 V/60 Hz	230 V/50 HZ 115 V/60 Hz
Connected load [W]	600	500
Weight [kg]	35	27
Protection class	IP 20	IP 20
Permissible ambient conditions	15 - 32 °C at 80% rel. air humidity	5 - 40 °C at 80% rel. air humidity

Your benefits

Heidolph's large scale rotary evaporators are available with 6, 10 or 20 liter evaporation flasks. Designed for standard distillations, reflux distillations, drying of powders and recycling of chemicals or solvents in large-scale laboratories, pilot plants and production facilities.

Control panel

- Separate bright digital displays indicate rotation speed, bath temperature, vacuum pressure, coolant temperature and vapor temperature
- Features individually programmable ramps for all parameters for optimal distillation settings
- Built-in process timer allows for unattended distillation
- Built-in vacuum/temperature controller
- Includes program T_(auto) for gentle distillations
- Integrated vacuum sensor and vacuum valve
- Standard RS 232 interface to program or monitor your distillation process



Control Panel

Evaporating flask and bath features

- Patented evaporating flask support system allows for one-person operation
- Coupling ring with torque indicator
- Included self-filling water bath system takes the worry out of running dry
- Emergency stop button automatically lowers bath, stops rotation, breaks vacuum and turns off the bath heaters
- Features water level regulation system in bath to avoid water from spilling over
- Available in water bath or oil bath configurations



Evaporating Flask

Collection features

- Patented receiver cassettes guard against glassware breakage while providing a self-standing flask support
- Receiving flasks feature reinforced bottom drain valves as standard
- Available with one or two receiving flasks



Receiving Flask

Other features

- Choice of 8 different glassware assemblies and various accessories
- Optional base unit provides you with fully maneuverable rotary evaporator while offering a storage space for glassware, solvents or accessories

For the Laborota 20 control safety and economy, we offer the certification according to GMP: Validation for Installation Qualification (IQ) and Operating Qualification (OQ).

Laborota 20 control

Glassware

Excellent user safety with transparent PMMA door

Guard hood

Non-fogging safety glass provides excellent user protection

Control panel

Features individually programmable ramps for all parameters

Evaporation Flask

Patented flask support system allows for one-person operation

Receiving flasks

Patented receiver cassettes guard against glassware breakage

Optional Base

Fully maneuverable optional base features removable panels for storage of glassware, solvents or accessories

Laborota 20 control safety

Highest safety - Ideal for large-scale distillations where maximum protection is needed

- Guard hood constructed of metal frame and safety glass covers the bath completely and provides excellent implosion protection
- Safety sensor stops rotation if the guard hood is opened accidentally
- Non-fogging safety glass provides clear visible monitoring of the process in your evaporation flask
- Patented receiving cassette system protects glassware while providing self standing flask support
- Easy access to receiving flasks via two latching doors
- Excellent user safety achieved by transparent high impact PMMA door covering the entire glassware assembly
- Safety cut-out in an overpressure situation, caused by glassware breakage or defective vacuum circuit

Laborota 20 control compact

The standard - Ideal for basic, routine large-scale distillations

- Comes with identical features as the Laborota 20 control safety but without some safety features

Excludes

- Glass-protection system (no safety cover, no protection for condenser and receiving flask)

Laborota 20 control eco

Most affordable model

- Comes with simplified control panel. Turning knobs for digital speed control and speed regulation
- Digital temperature monitoring for heating bath, temperature regulation with turning knob
- One heating bath for water and oil (temperature range 20 °C - 180 °C)
- For use with water: simple overflow regulation (constant water supply and overflow)
- Heating bath with bottom drain

Excludes

- Glass-protection system (no safety cover, no protection for condenser and receiving flask)
- Integrated vacuum control system (no vacuum controller, vacuum sensor, vacuum valve)
- Control panel features (no temperature indication of cooling water and vapour temperature, no timer, no ramp programming and no automatic distillation)
- RS 232 interface

Laborota 20 control automatic

Large Scale Evaporator designed for unattended use. The required product (solvate) is automatically re-filled and the condensate drained off. Self-filling water bath and electronic system allows for use over an unlimited time.

- Designed for 24 hr continuous use
- For unattended overnight and weekend applications
- Affordable alternative to 50 and 100 liter evaporators
- Particular suitable for solvent processing

This model features a large scale evaporator with the following standard options:

- **20 liter large scale evaporator**
 - Integrated vacuum sensor and vacuum valve
 - Automated Distillation with constant pressure (program $P_{(const)}$) or with vapor temperature control (program $T_{(auto)}$)
- **4-head vacuum pump, chemically resistant, rated at 3 m³/h, final pressure 9 mbar, 350 W connection power**
 - Vacuum pump comes with separator and exhaust waste vapor condenser

Distillation process:

1. Automatic product charging

- Drive head features weight sensor which is responsible for refilling the evaporation flask, according to the amount of solvent distilled off
- Adjustable max. and min. fill level of evaporating flask
- Charging of product controlled via solenoid valve with the help of the systems vacuum
- Autodetection of empty feeding tank

2. Automatic discharge of condensate

- The discharging from the vacuum system works in a quasi-continuous way
- Several times per minute the processor-controlled valve matrix releases out a small volume of condensate

3. End of Distillation

- Termination with the built-in timer
- After reaching an adjustable end pressure (only with $T_{(auto)}$)
- Terminating the distillation by hand

The following parameters are set on the Laborota 20 control automatic:

- Heating bath temperature
- Rotation speed
- Distillation time (duration)
- Distillation mode ($P_{(const)}$ or $T_{(auto)}$)
- Distillation pressure (program $P_{(const)}$) or temperature difference (program $T_{(auto)}$)
- Pressure level for termination (program $T_{(auto)}$)
- Max. fill level of evaporating flask
- Min. fill level of evaporating flask

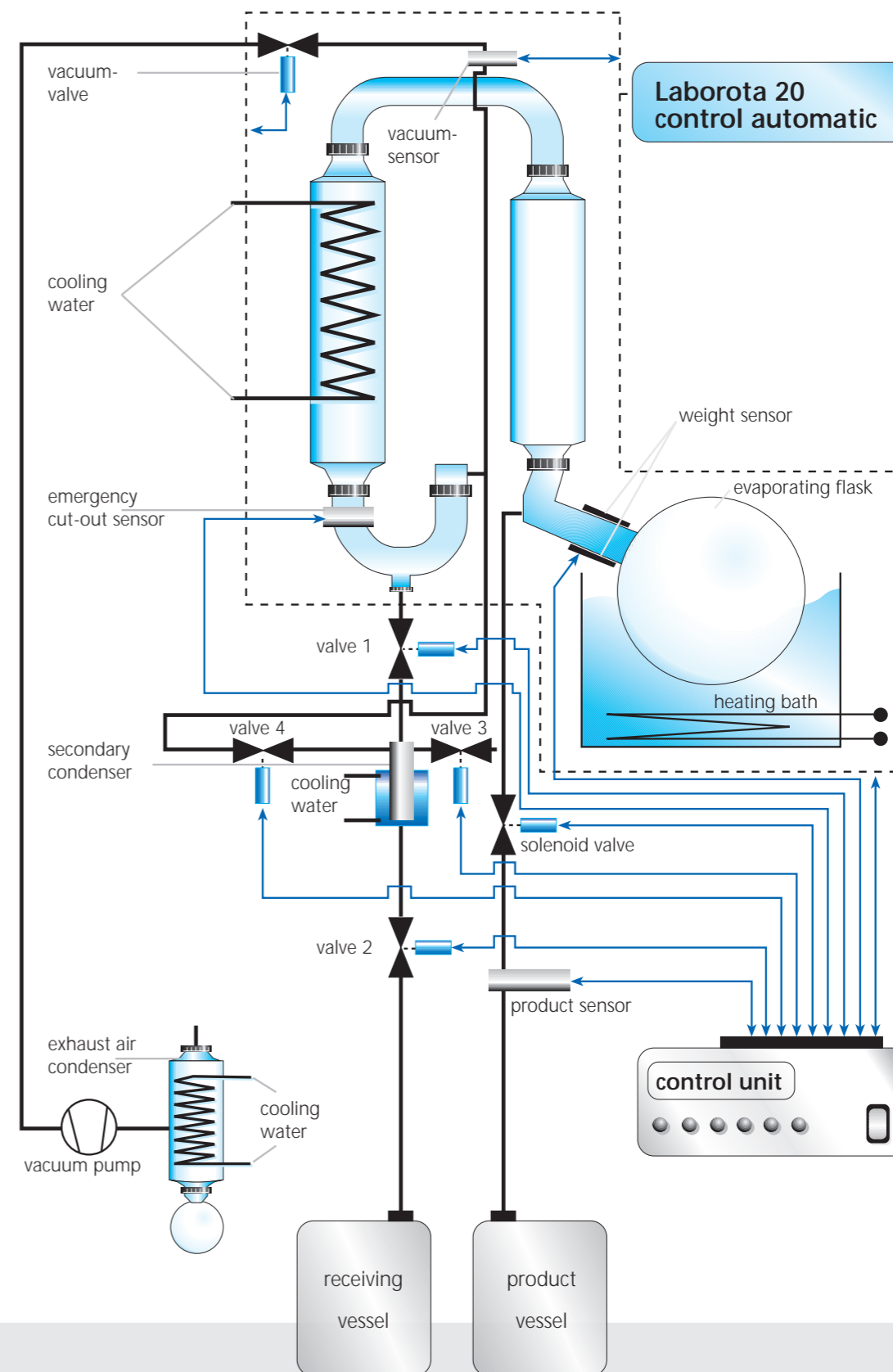
Pressure regulation:

Program $P_{(const)}$

- Program controls the pressure to a chosen level within the range of an adjustable hysteresis

Program $T_{(auto)}$

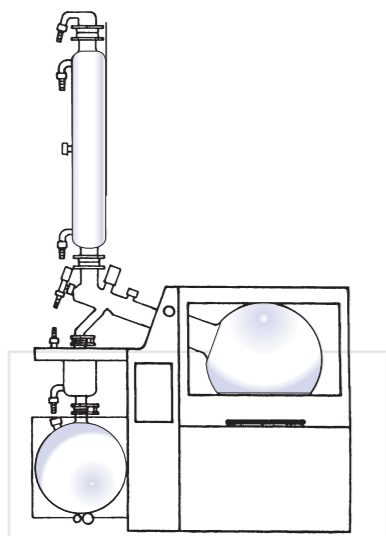
- Program finds and controls the distillation pressure according to vapor temperature in the condenser
- Pressure control reacts on a changing of vapor pressure
- Ideal for mixtures with changing vapor pressures
- Termination at an adjustable end pressure



	Glassware A	Glassware A2
• Safety version		
P/N (Water bath)	518-17100-00	518-17101-00
P/N (Oil bath)	518-17200-00	518-17201-00
• Economy version		
P/N (Water bath)	518-27100-00	518-27101-00
P/N (Oil bath)	518-27200-00	518-27201-00

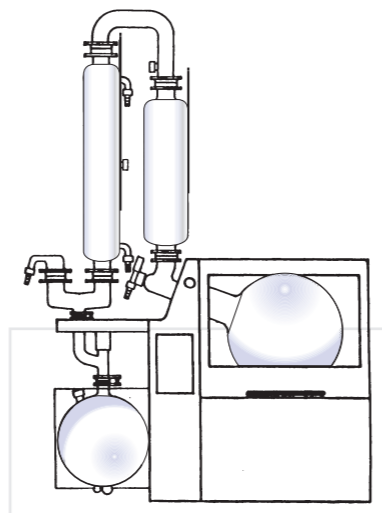
Glassware - Laborota 20 control

Glassware for all your applications



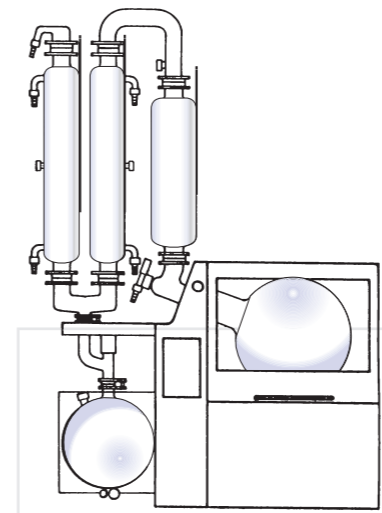
Glassware R

- This glassware assembly includes one ascending condenser, one 20 l evaporating flask, one 10 l receiving flask and is recommended **for all standard distillations**



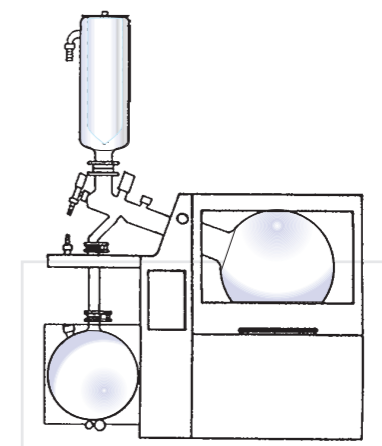
Glassware A

- This glassware assembly includes one descending condenser, one expansion vessel, one 20 l evaporating flask, one 10 l receiving flask and is recommended **for solvents that tend to splash and foam**



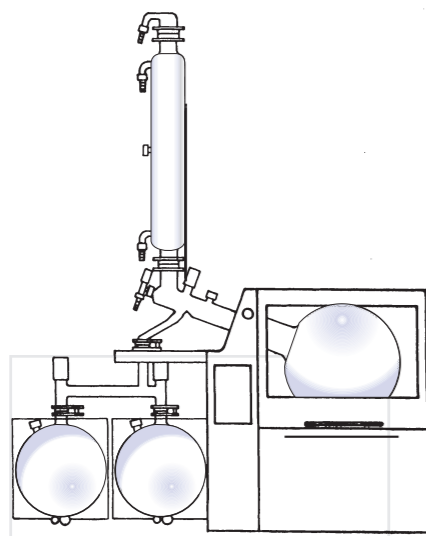
Glassware A2

- This glassware assembly includes one ascending, one descending condenser and one expansion vessel, one 20 l evaporating flask, one 10 l receiving flask **for low-boiling solvents and highest recovery rates**



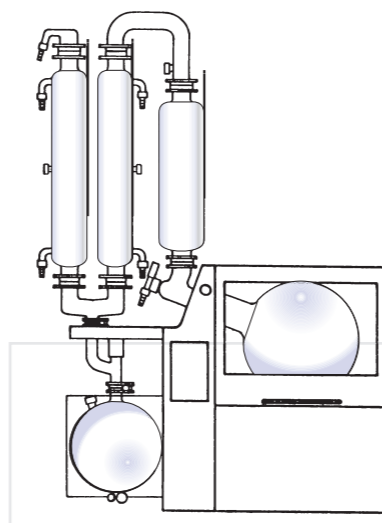
Glassware K

- Condensate trap **for low-boiling solvents; cooling by dry-ice.** Comes with one 20 l evaporating flask and one 10 l receiving flask



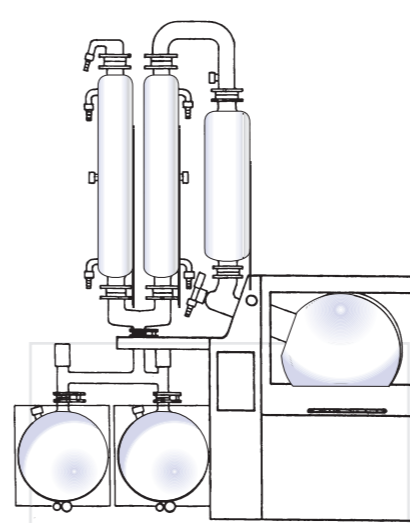
Glassware RC

- Identical to glassware assembly R and features two receiving flasks



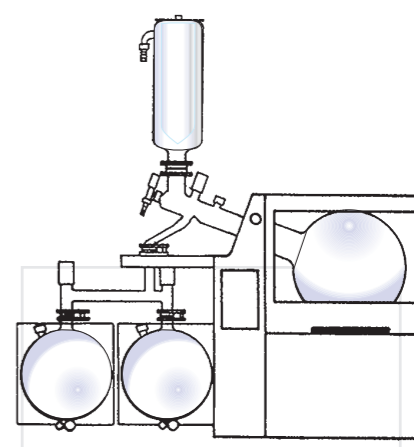
Glassware AC

- Identical to glassware assembly A and features two receiving flasks



Glassware A2C

- Identical to glassware assembly A2 and features two receiving flasks



Glassware KC

- Identical to glassware assembly K and features two receiving flasks

Also available: **Glassware Shorty (R or RC):** identical to Glassware R or RC but 320 mm shorter; distillation capacity remains the same, ideal **for hood applications or where height is restricted**

Order numbers - Laborota 20 control

Accessories - Laborota 20 control

Laborota 20 control safety

Glassware	Water bath	Oil bath
R	518-11100-00	518-11200-00
R Shorty	518-18100-00	518-18200-00
RC	518-12100-00	518-12200-00
RC Shorty	518-19100-00	518-19200-00
A	518-13100-00	518-13200-00
AC	518-15100-00	518-15200-00
A2	518-14100-00	518-14200-00
A2C	518-16100-00	518-16200-00
K	518-18102-00	518-18202-00
KC	518-19102-00	518-19202-00



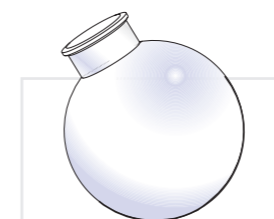
Laborota 20 control compact

Glassware	Water bath	Oil bath
R	518-21100-00	518-21200-00
R Shorty	518-28100-00	518-28200-00
RC	518-22100-00	518-22200-00
RC Shorty	518-29100-00	518-29200-00
A	518-23100-00	518-23200-00
AC	518-25100-00	518-25200-00
A2	518-24100-00	518-24200-00
A2C	518-26100-00	518-26200-00
K	518-28102-00	518-28202-00
KC	518-29102-00	518-29202-00



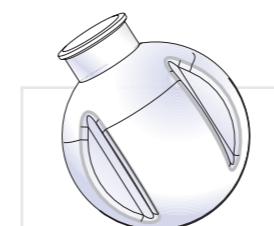
Laborota 20 control eco

Glassware	Heating bath for water & oil
R	518-31300-00
R Shorty	518-38300-00
RC	518-32300-00
RC Shorty	518-39300-00
A	518-33300-00
AC	518-35300-00
A2	518-34300-00
A2C	518-36300-00
K	518-38302-00
KC	518-39302-00



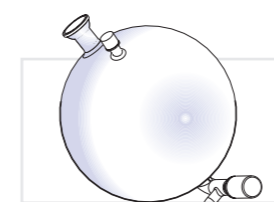
Evaporating flasks

	P/N
Evaporating flask 6 liters	15-300-003-20
Evaporating flask 10 liters	15-300-003-16
Evaporating flask 20 liters (included as a standard)	15-300-003-17

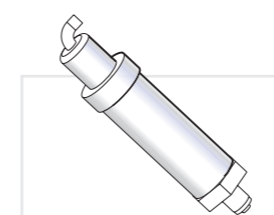


Powder flasks

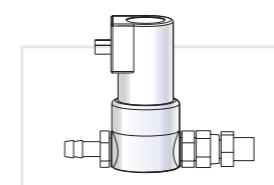
	P/N
Powder flask 10 liters	15-300-003-18
Powder flask 20 liters	15-300-003-19



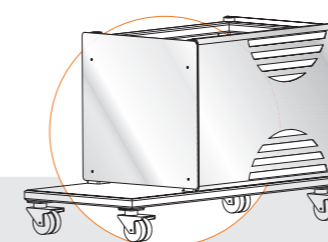
	P/N
Receiving flask with drain valves	15-300-004-11



	P/N
Vacuum sensor (included as a standard)	591-21000-00



	P/N
Vacuum valve (included as a standard)	591-20000-00



Base for Laborota 20 control
P/N 591-23000-00
Base for Laborota 20 control eco
P/N 591-23300-00



Vapor temperature sensor
P/N 14-014-003-06

Heating bath liquid (5 L)
P/N 515-31000-00
With water mixable heating bath
fluid for temperatures up to 240° C

Tube set
P/N 591-34000-00

Micro Evaporator - for small quantities

VV Micro

- Ideal for schools and universities
- Compact design allows it to fit in most laboratory and glove hoods
- Individual switches for rotation speed and bath temperature
- One condenser for standard and reflux distillation
- Simple changeover from reflux to standard distillation
- Adjustable bath temperature and rotation speed
- Temperature range water bath: from 30 °C to 100 °C
- Silicon sheeting surrounding the bath for your protection
- Evaporation rate up to 250 ml water per hour
- Comes with 3 sets evaporation and receiving flasks (50, 100, 250 ml)
- Supplied adapter accepts standard 14/20 evaporating flasks

VV Micro
P/N 511-12000-00



Reflux distillation

Standard distillation

Call or write for free service

- Application information
- Reference list
- Trials or demonstrations
- Literature



Heidolph Instruments GmbH & Co. KG
Walpersdorfer Str. 12 · 91126 Schwabach / Germany
Phone: (+49) 0 91 22 - 99 20 68 · Fax - 99 20 65
sales@heidolph.de · www.heidolph.com

www.heidolph.com