



ROTARY VACUUM EVAPORATOR

RVO 004

User manual

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1. INTRODUCTION

1.1 Instrument use and specification

The RVO 002 S rotary vacuum evaporator is used for evaporation under low pressure at a preset temperature of the heating bath (if the bath is a part of the delivery) and under permanent and in advance specified stirring of the evaporated solution. The exhausted vapours condense in a vertical cooler and are collected in a flask. This ensures that the evaporated solution cannot be damaged and therefore impaired.

1.2 Technical information

Rotation speed	10 to 150 rpm
Bath temperature	max. 95°C
Regulation accuracy	±10°C
Power supply	230V, ±10%, 50Hz
Power input	max.50 VA
Bath input	max.2000 VA
Weight without glass	8 kg
Dimensions (w x h x d)	600 x 950 x 390 mm (including glass)

2. TECHNICAL DESCRIPTION

The instrument consists of a stand, head with rotating housing, cooler's holder, pipe, adapter of the bulb condenser, flask with a ball joint, round-bottomed flask, inlet pipe with a valve, flexible and fixed clamp.

For complete list of basic accessories see paragraph 7.1

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3. PUTTING INTO OPERATION

3.1 Unpacking the instrument

Remove the instrument from the transport packing, check the instrument surface and all the items according to the delivery note. Please contact the manufacturer or your dealer in case of instrument damage or a missing part.

Notification: Coat the glass joints with silicone vaseline prior to assembly.

3.2 Mounting the instrument

1. Screw the bar of the cooler's holder into the nut in the head with the rotating housing, insert the housing with the openings and grooved nuts and the cooler's holder itself.
2. Insert the pipe into the head with the rotating housing from the side of the heating bath until the pipe joint snaps behind the ring in the rotating housing. Insert the arresting rod into the opening in the rotating housing and tighten the nut of the housing.
3. There is a fixed housing with a nut on the opposite side of the head with the rotating housing. Unscrew nut (1), insert on the recessed part of the ball adapter (2) and insert securing ring (3) until it snaps behind the recessed part of the ball adapter. Check if Gufero packing (4) coated with silicone vaseline is placed by the open side outside the recess. Check if flat packing (5) is inserted in the housing and carefully insert the ball adapter with Gufer and the nut on glass pipe (6). Insert the ball adapter until the end stop and tighten it carefully with nut (1). The half-ball joint of the ball adapter points downward.
4. Coat all the joints on the other glass parts finely with silicone vaseline.
5. Insert the cooler into the joint in the top part of the ball adapter and also into the cooler's holder. The top cooler's outlet serves for connecting the subpressure source, other outlets are for cooling water.
6. Attach the flask with the ball joint to the ball joint using the fixed clamp and tighten it.
7. Insert the round-bottomed flask on the pipe and secure with the flexible clamp.
8. Insert the inlet pipe with the cock (cock is closed) into the ball adapter.
9. Connect the bushing.
10. Pour water into the heating bath; adjust the end stop of the stand for the round-bottomed flask being immersed in the liquid. The maximum amount of the liquid is approximately 20 mm below the edge of the heating bath.

Notification: A glass part with a visible crack or another defect must not be used!

3.3 Operating the instrument

The instrument is put into operation by connecting the network switch. The round-bottomed flask starts rotation after turning on the switch. The speed of rotation is controlled by the rotary knob.

The height of immersion into the heating bath is arrested with a bolt on the telescopic stand.

4. MAINTENANCE

4.1 Maintaining the instrument surface

Aggressive substances must not stay on the instrument surface otherwise the instrument paint might be impaired. Clean the surface with a soft swab that may be moist but not wet. Usual washing means can be used for cleaning. Grease the Gufero packing slightly with silicone vaseline after about 80 operational hours (or more frequently, if necessary). Notification: Disconnect the instrument from the network when cleaning with a wet swab!

4.2 Replacing the packing

Remove the cooler, the inlet pipe with the cock and the flask with the ball joint, loosen the nut of the ball adapter and remove the adapter carefully. Remove the Gufero packing, clean the ball adapter, coat the new packing slightly with silicone vaseline and mount into the ball adapter. The packing cavity points outside the ball adapter. If necessary, also replace the flat packing between the ball adapter and the head with the rotating housing. Carry out the assembly according to point 2.2.

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5. DEFECTS AND TROUBLESHOOTING

5.1 Leak (required pressure is not obtained)

The main cause of a leak is faulty packing assembly. First check if all the joints are properly inserted. If yes, then you must dismantle the glass parts, check the packing in the ball adapter and replace the flat packing or the complete packing, as appropriate. Mount carefully according to instructions, activate the rotation and turn on the suction pump.

5.2 Other failures

The instrument does not react after being turned on. Check the fuse or replace for a new one of the same parameters, as appropriate. Check that the rotation is not hindered (turning by hand), turn on and off the network switch.

6. SAFETY AND OPERATION CONDITIONS

6.1 Safe operation

Securing the rotation of the evaporated sample: Overcurrent protection of the driving motor. If the resistance against rotation exceeds a specified limit, the power supply of the driving motor is disconnected. Securing the bath heating: With thermal fuse during overheating above 200°C.

6.2 Operating conditions

The instrument is designed for work under standard laboratory conditions at temperatures from 10 to 30°C and air humidity to 80%. It is forbidden to handle a bath heated to a temperature higher than 40°C.

Attention! Be especially careful when replacing a round-bottomed flask after increasing the concentration of the evaporated sample. If the flask cannot be removed easily from the cone, carry out further operation only after cooling the bath.

7. ACCESSORIES AND SPARE PARTS

7.1 Basic accessories (comes with evaporator)

Inlet cord

Glass assembly

Round bottom flask (1000 or 2000 ml) NZ29/32

Receiving flask (1000 or 2000 ml) KS 35/20

Suck pipe

Ball adapter

Vertical condenser

Filling pipe with a valve

3 pieces of GL14 connection fitting

Sealing: 2 pieces of gufero sealing 35/20/10

flat sealing

Fixed clip

PA vacuum tubing

7.2 Other accessories

7.2.1 Glass accessories

4SKL0021	Evaporating flask 50 ml, joint NZ29/32
4SKL0025	Evaporating flask 100 ml, joint NZ29/32
4SKL0022	Evaporating flask 250 ml, joint NZ29/32
4SKL0023	Evaporating flask 500 ml, joint NZ29/32
4SKL0004	Evaporating flask 1000 ml, joint NZ29/32
4SKL0003	Evaporating flask 2000 ml, joint NZ29/32
4SKL0012	Evaporating flask 4000 ml, joint NZ29/32 (only RVO400)
4SKL0017	Receiving flask 250 ml, joint KS35/20
4SKL0024	Receiving flask 500 ml, joint KS35/20
4SKL0006	Receiving flask 1000 ml, joint KS35/20
4SKL0034	Receiving flask 2000 ml, joint KS35/20
4SKL0005	Vertical condenser
4SKL0033	Diagonal condenser
4SKL0020	Dry ice trap
4SKL0001	Filling pipe with a valve - short
4SKL0002	Filling pipe with a valve - long
4SKL0008	Ball adapter
RO3212	Suck pipe
4SKL0016	Test tube 20 ml, joint NZ14/23
4SKL0009	Flask 100 ml, joint NZ14/23
4SKL0010	Flask 250 ml, joint NZ14/23
4SKL0019	Spider with 3 sleeves NZ14/23 (max. flask 250ml)

4SKL0018	Spider with 5 sleeves NZ14/23 (max. flask 100ml)
4SKL0011	Spider with 6 sleeves NZ14/23 (max. flask 20ml)
4SKL0014	Foam trap NZ29/32 - NZ14/23
4SKL0015	Foam trap NZ29/32 - NZ29/32
4SKL0035	Adapter NZ29/32 - NZ14/23

7.2.2 Spare parts, other accessories

RO1520	Safety bath shield
1TOO0007	Gufero sealing
1TG24524	Flat sealing
RO1080	Fixed clip (for KS32/20)
RO1041	Elastic clip (for NZ14/23)
4SKL0026	Straight fitting GL 14
4SKL0027	Cap nut GL 14
90000013	Tubing coupler
5HAD0003	PA Vacuum tubing
90000036	Vacuum pump (VM20D recommended) Spare diaphragms and sealing for VM20D Heating bath - stainless steel
3VOD0003	Inlet cord Fuses: T 10 A, T 3.15 A , T 0.5 A

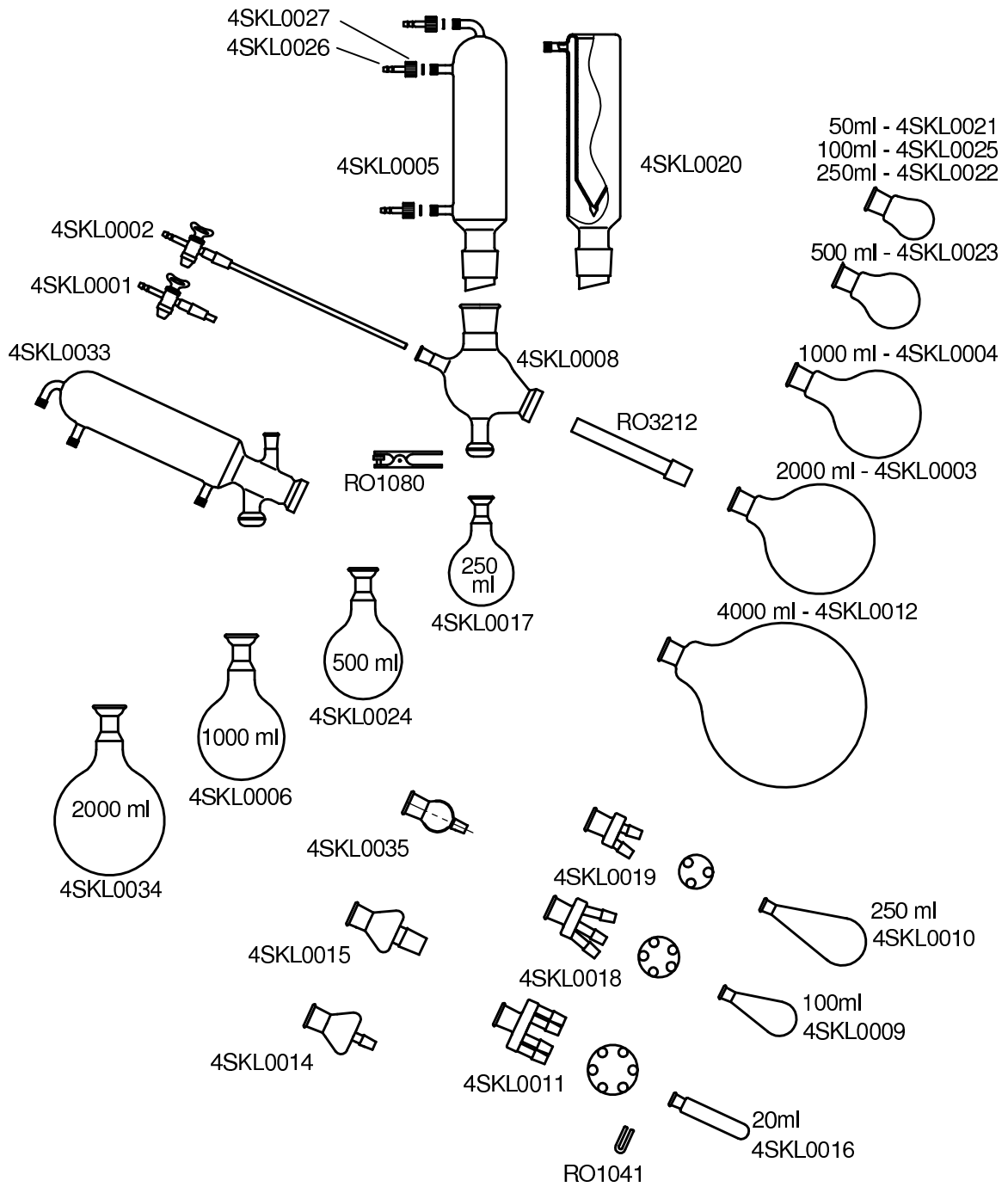


Fig. 1. Glass accessories overview

8. CONCLUSION

8.1 Carrying out of repairs

The manufacturer or an organization commissioned by it carries out all the repairs within the warranty limit and after its expiration. Unless stated otherwise in the delivery note, please contact the manufacturer with all the requirements for repairs.

8.2 Warranty

A warranty will be provided for the product by the manufacturer for a period of one year after handing it over to the buyer. The instrument may be used only in the manner described in these instructions for use. The instrument must not be used in a manner different from that indicated in these instructions, otherwise the safety of operation may be affected. The manufacturer does not accept responsibility for damage arising by non-fulfilment of the requirements of these instructions.

8.3 Waste disposal

When the instruments operating life is over dispose it in respect to valid regulations, also it can be returned to the vendor or producer for liquidation.

Warning: Instrument contains parts (PCB's) which are rated as hazardous waste.

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