ALEXYS OR 100

Organiser rack

service manual

CE

DECLARATION OF CONFORMITY

The manufacturer hereby declares that the product

ALEXYS® OR 100 / 110 organiser rack type 184

to which this declaration relates, is in conformity with the following directives:

Safety (73/23/EEC)

Safety requirements for laboratory equipment (Class I, Installation cat. II, Pollution degree 2)	EN61010-1:2001

Immunity (89/336/EEC)

Electromagnetic immunity	EN61326-1: 1997 + A1: 1998 EN61000-4-2, EN61000-4-3, ENV50204, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

Emissions (89/336/EEC)

Electromagnetic emission	EN61326-1: 1997 + A1: 1998 EN55011 (Class B), EN61000-3-2, EN61000-3-3

Attention

Use manufacturer-supplied power and I/O cable(s) only to connect all other devices with the OR 100 / 110. Manufacturer will not accept any liability for damage, direct or indirect, caused by connecting this instrument to devices, which do not meet relevant safety standards.

June 18, 2008

Symbols

The following symbols are used on the rear panel and oven compartment of the OR 100 / 110:

Consult the manual for further safety instructions

Frame or chassis ground terminal

The following pictograms are used in the OR 100 / 110 manual:

Caution

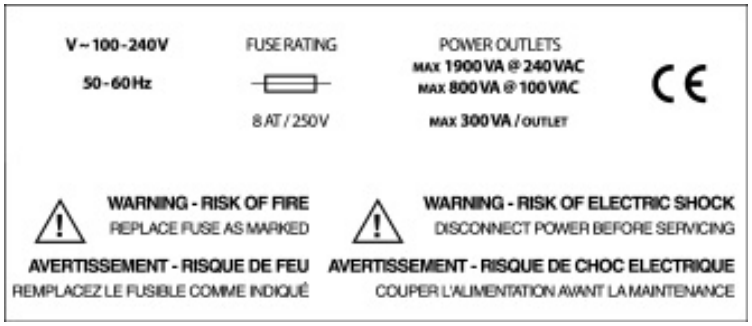
Caution, risk of electric shock or other electrical hazard (high voltage)

Safety practices

The following safety practices are intended to ensure safe operation of the equipment.

Electrical hazards

The removal of protective panels on the OR 100 / 110 can result in exposure to potentially dangerous voltages. Therefore, disconnect the instrument from all power sources before disassembly. Unqualified personnel should not open the instrument.



The LC 100 must only be used with appliances and power sources with proper protective grounding.

Take precautions against electrostatic discharge during installation/removal of boards, EPROM's or other electrical components at all time to prevent damage of the circuit boards.

Replace blown fuses with fuses of proper type and rating as stipulated on the side panel and specified in the installation section of this manual. The fuse holder is integrated in the mains connector. Ensure that the instrument is never put in operation with fuses of a different type. This can cause fire.

Connect the detector to a grounded AC power source, line voltage 100 – 240 VAC, frequency 50/60 Hz. The instrument should be connected to a protective earth via a ground socket. The power source should exhibit minimal power transients and fluctuations. Replace faulty or frayed power cords.

The OR 100 / 110 is equipped with 8 AC power outlets at the back panel, divided in two blocks of 4. The maximum power, which can be drawn from these power outlets, is 1900 Watt at 240VAC, 960 Watt at 120V and 800 Watt at 100 VAC. The maximum rated power per outlet is 300 Watt.

Do not exceed the maximum rated power, this can cause fire or other potentially dangerous situations. It is advised to use the outlets only to connect ALEXYS system components, such as the LC 100 pump, AC 100 controller, AS 100 autosampler and DECADE II™ electrochemical detector.

Tools

Tools necessary to perform the service described in the manual:

1. Phillips screw driver
2. Hex key 3 mm

Spare parts and service availability

Manufacturer provides operational spare parts of the instrument and current accessories for a period of five years after shipment of the final production run of the instrument. Spare parts will be available after this five years period on an ‘as available’ basis.
Manufacturer provides a variety of services to support her customers after warranty expiration. Repair service can be provided on a time and material basis. Contact your local supplier for servicing. Technical support and training can be provided by qualified chemists on both contractual and as-needed basis.

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C H A P T E R 1

Integrated dual-channel degasser

Removing the protective covers

Fig. 1.Right side: Front view of the OR 100 organizer rack. Left side: The OR 110 is identical but is lacking the alumina frame on the left side with the bottle rack.

The integrated dual-channel degasser can be accessed by removal of the right side panel.

1. Remove the two aluminium covers at the front- side of the pulse damper and degasser (figure 1). Gently pull on the covers until they release (snap-in connectors).
2. Remove the two screws located on the rear side (Figure 2A) using a phillips screwdriver.
3. Remove the four screws located on the front (Figure 2B) of the OR 100 / 110.

Fig. 2A. Back view of the OR 100 organizer rack.

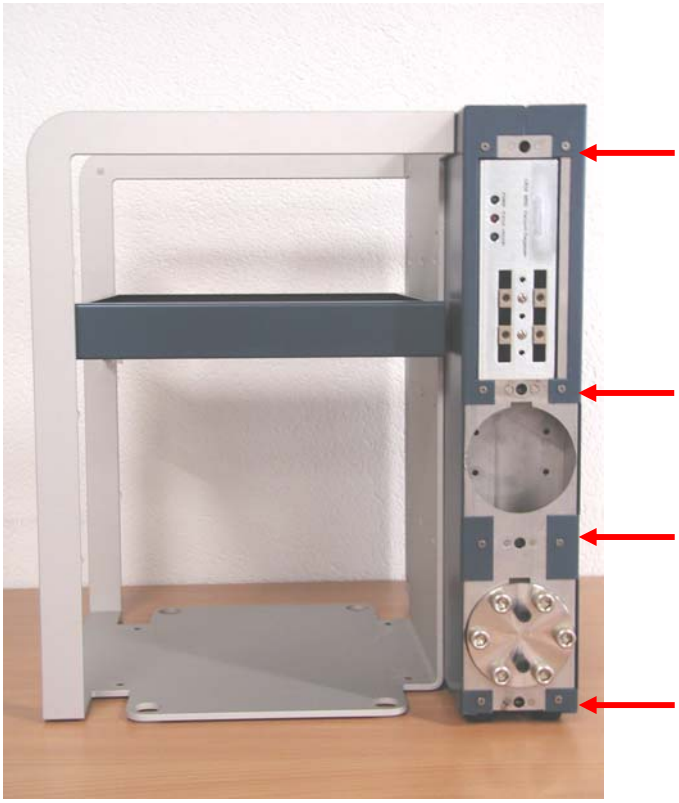

Fig. 3. Front view of the OR 100 organizer rack with alu covers removed.

4. Remove the side panel by gently pulling on the lower part of the panel and lifting up the panel.

Caution: side panel is connected with a grounding wire on the bottom side of the panel.

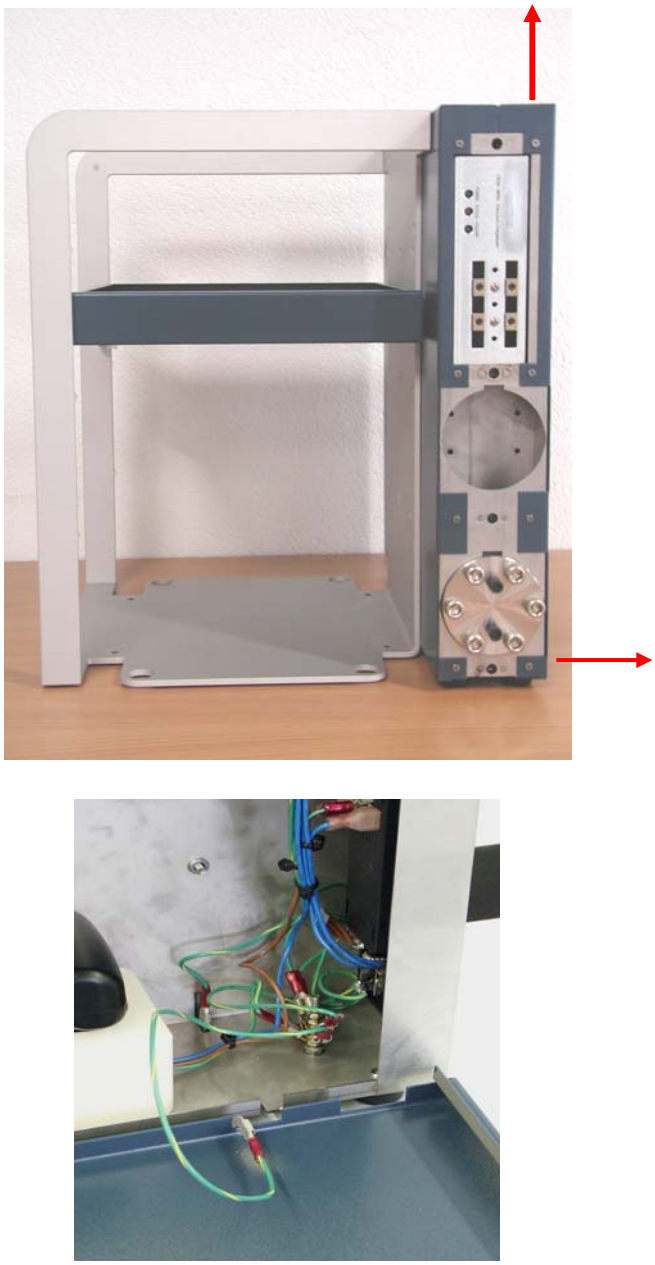

Fig. 4. removing the side panel of the OR 100 organizer rack.

Replacement of vacuum chamber cartridge

1. Disconnect the two vacuum tubings (Figure 4, B) from the vacuum chamber cartridge (Figure 4, A)
2. Remove screw (Figure 4, C) at the front of the degasser to release cartridge.
3. Install new cartridge.

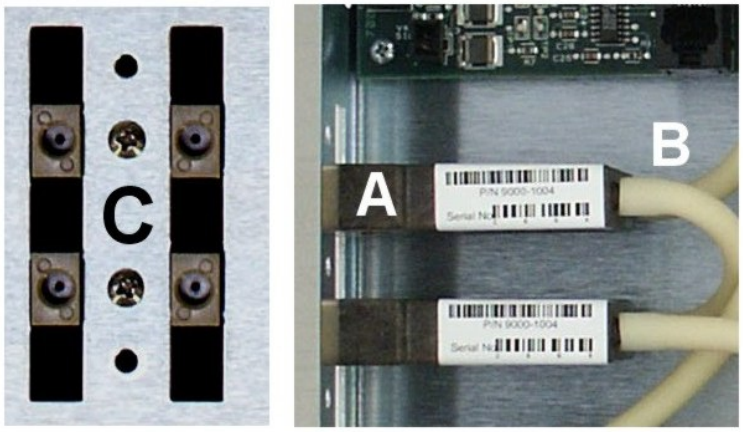

Figure 4. Left-side: front view vacuum degasser cartridge. Right-side: side view of vacuum chamber cartridge.

4. Fix screw to retain cartridge.
5. Reconnect vacuum tubing as depicted in figure 4.
6. Continue at point 5 of the reassembly procedure on the next page.

Replacement of complete degasser unit

1. Loosen the two lower mounting screws (Figure 5, B) of the degasser a few turns. Remove the two top screws completely (Figure 5, A).
2. Move the degasser slightly upwards to release the degasser from the organizer rack.
3. Disconnect degasser power cable located at position (Figure 5, C).
4. Replace degasser.

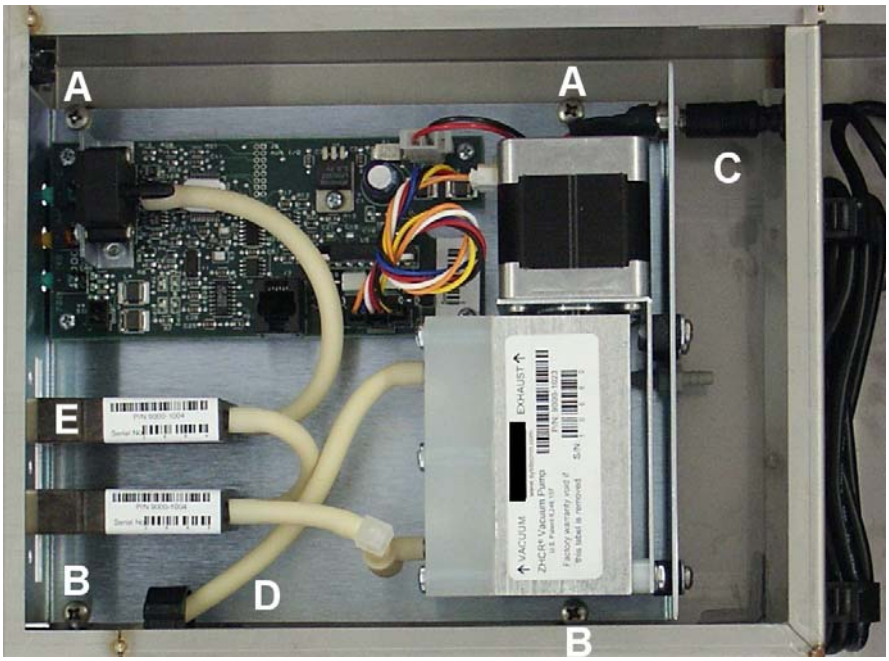

Fig. 5. side view of the dual-channel degasser mounted in OR 100 / 110.

5. Continue with the reassembling procedure in the next section.

Reassembly

1. Reconnect degasser power cable (Figure 5, C)
2. Insert degasser by positioning the botton screws (B) into the mounting slits in the degasser frame.
3. Insert the two top screws and fasten them (Figure 5, A).
4. Fasten the two bottom screws (Figure 5, B).
5. Insert the exhaust tubing ((Figure 5, D) into the black clamp fixed on the bottom of the degasser compartment.

6. Reconnect the ground cable to the side panel in case it was disconnected.
7. Reinstall the side panel. First insert the top part of the panel into the guiding slit on top of the rack (located in the middle). Subsequently push the lower part of the side panel gently into place.
8. Use the 4 M3 screws with a flat head to mount the side panel at the front side.
9. Use the other 2 M3 screws with the nylon rings to fix the panel at the back side.
10. Reinstall the two aluminium front covers.

Testing the degasser

1. Power-up the degasser.
2. Wait for half a minute, to allow the degasser to pump down the vacuum chambers to the appropriate vacuum level.
3. When the required vacuum level is reached the yellow status LED should switch off and the green vacuum LED should be on.
4. In case of a system leak or fault the yellow status LED does not switch off, but starts blinking after a while. In such a situation re-check if all vacuum tubings and vacuum chambers are installed correctly.

C H A P T E R 2

OR 100 / 110 2nd pulse damper option

Fig. 6. OR 100 with second pulse damper option installed.

Installation

1. Remove the side panel on the right-side of the OR 100 / 110 as described in the section "Removing the protective covers".
2. Insert the second pulse damper in the compartment via the front side of the OR 100 / 110. (entrance in compartment located above the first pulse damper). See figure 7 on the next page.

Fig. 7. installation of the second pulse damper.

3. Fix the pulse damper to the back side of the compartment using the supplied hex screws and nylon rings. The screws should be fixed in the same manner as shown in figure 8.

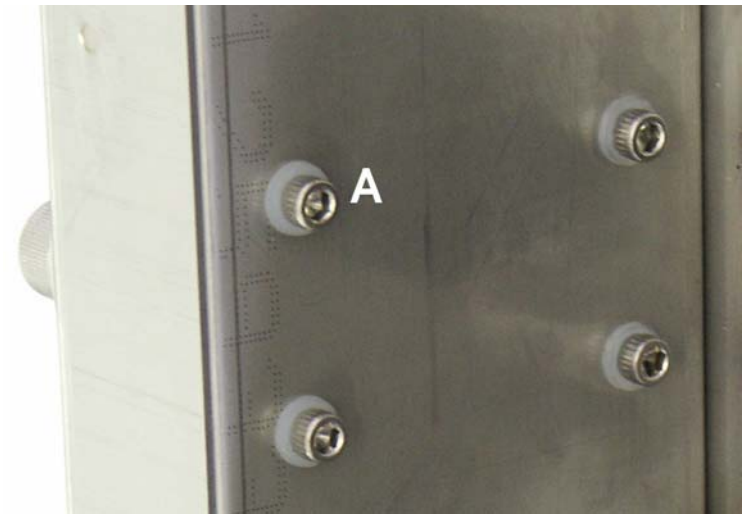

Fig. 8. Back-side of pulse damper compartment. View of retaining screws of pulse damper.

Reassembly

1. Reconnect the ground cable to the side panel in case it was disconnected.
2. Reinstall the side panel. First insert the top part of the panel into the guiding slit on top of the rack (located in the middle). Subsequently push the lower part of the side panel gently into place.
3. Use the 4 M3 screws with a flat head to mount the panel at the front side.
4. Use the other 2 M3 screws with the nylon rings to fix the panel at the back side.
5. Reinstall the top aluminium cover of the degasser on the front side of the OR 100 / 110.
6. Install the new aluminium cover for the pulse dampers supplied in the kit. This cover has two holes to facilitate both pulse dampers.
7. For the installation of the liquid connections, follow the instructions mentioned in the OR 100 / 110 manual (184.0010) and the LC connection kit install guide (180.7002).

CAUTION: Never create large and sudden pressure drops in the HPLC system because this will damage the internal diaphragm of the pulse damper resulting in leakage.

8. After installation of tubing and the system is running, check the front side of the puls dampers and the drain located on the bottom of the pulse damper compartment for leakage.

C H A P T E R 3

Trouble shooting guide

All ALEXYS system components are off

Possible cause	Remedy
No power	Plug in power cord
Power switch off	Turn power switch on
Faulty fuses	Replace fuses
Divergent mains voltage	Check line voltage,

Degasser LEDs are off

Possible cause	Remedy
No power	Plug in power cord
Power switch off	Turn power switch on
Faulty OR 100 / 110 mains fuses	Replace fuses
Divergent mains voltage	Check line voltage

Degasser yellow status LED flashing

Possible cause	Remedy
Yellow LED is flashing	System leak or fault. Replacement of vacuum chamber cartridge or degasser unit.

Air bubbles in FEP/PTFE tubing

Possible cause	Remedy
Loose fittings	Check and if needed tighten the input and output 1/8” fittings on the solvent ports
Mixing of solvents requires more capacity of degasser	Connect both channels to double capacity
Flow rate too high	Connect both channels to double capacity
Degasser not functioning	Switch on degasser
Damaged PTFE tubing	Replace FEP/PTFE tubing

No solvent flow through degasser

Possible cause	Remedy
Air in pump head	Prime/ purge the pump head
Blocked 0.2 µm in-line filter	Replace filter
Blocked degasser solvent port caused by unfiltered or buffered mobile phases	Use a different degasser channel or flush/back flush the channel with water or other appropriate solvent (MeOH, iso-propanol. Note: draw the solvent through the channel to dissolve salts or remove particles.

Regular baseline oscillations

Possible cause	Remedy
Malfunctioning pump (regular pattern)	Check pump (seals, valves)
Back pressure too low for pulse damper	For optimal dampening of flow pulsations a backpressure of at least (7 MPa = 70 bar =1000 psi) is needed. Use backpressure regulator or restriction capillary *between pulsdemper and injector* to increase pressure
Pulse damper defect (internal membrane ruptured)	Replace/repair pulse damper

Leakage of mobile phase via OR 100 / 110 drain (bottom plate)

Possible cause	Remedy
Internal leakage of degasser vacuum chambers	Replace vacuum chamber cartridge
Internal leakage of pulse damper	Replace/repair pulse damper

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C H A P T E R 4

Accessories

Table I. Accessories OR 100 / 110 organiser rack.

Part no	Description
184.0010	OR 100 user manual
184.0202	OR 100 glass bottle kit
184.0204	OR 100 mobile phase tray drain
184.0510	Vacuum chamber cartridge, 480 uL
250.0004	Pulse damper repair kit
250.0007	OR 100 2nd pulse damper option
250.0115	Fuses 8AT/250V
250.0116	Mains cable (EUR)
250.0140	OR 100 power cord, 0.6 m
250.0141	OR 100 power cord, 1.8 m
250.0143	OR 100 power cord, 5m
250.0144	OR 100/110 - LC 110 power cord
250.1550	Ferrule for OR 100 degasser
250.1552	Nut for OR 100 degasser
250.1554	Ferrule for OR 100 pulse damper
250.1556	Nut for OR 100 pulse damper