Necessary Tools

- Torque wrench
- Capillary bender for 1/8“ capillaries
- Capillary cutter 1/16“; 1/8“
- Open-end wrenches, size 10, 17
- Allen wrench, size 3
- Hose cutter

Level of Difficulty of the Assembly

Level 3 (1 = very easy to 7 = very difficult)

Duration: approx. 90-120 minutes

All figures are exemplary for 1/8" as well as 1/16".

Gradient Systems

There are two types of gradient systems: High Pressure Gradient systems (HPG) and Low Pressure Gradient systems (LPG). For a better gradient formation, a dynamic mixing chamber can be added to the HPG or LPG system.

- In the HPG system, two pumps form the gradient on the high pressure side.
- In the LPG system, the gradient is formed on the low pressure side. Therefore, a valve block is added to the pump.

Dynamic mixing chamber

Valve block with screws

1 Assembling the Valve Block to the Pump Head

To use the preparative system as LPG system, you must assemble a valve block.

Prerequisite: Device is switched off.

1.Unscrew the eluent inlet ① from the pump head.

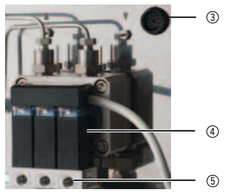
2.Push the seal rings onto screws ② .

3.Push the seal rings onto valve block ④ . Using the open-end wrench, screw the valve block to pump head.

4.Using the torque wrench, tighten the screws with a 7.5 Nm torque.

5.Connect the eluent hoses to the ports ⑤ of the valve block.

6.Insert the valve-block plug into the female connector ③ .



2 Connecting the Dynamic Mixing Chamber

To use the preparative system as a gradient system, you can connect a dynamic mixing chamber.

1.Place the dynamic mixing chamber ⑥ next to the system.

2.Connect capillaries to the dynamic mixing chamber.

3.Connect the dynamic mixing chamber to electricity.

3 Assembling the Holding Bracket

For different purposes you can assemble holding brackets to single devices.

1.Position the holding bracket onto the bore hole.

2.Using the Allen wrench, tighten the screws ⑦ .

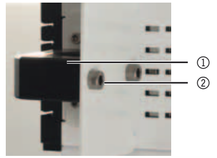
4 Assembling the Column

The holding bracket for columns includes screws besides the holding bracket itself.

1.Place the column ① inside holding bracket.

2.Attach the holding bracket to holes in the side panel and hold it with one hand.

3.Screw on the screws ② manually, then tighten with Allen wrench.



5 Inserting the Flow Cell

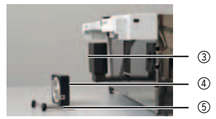
1.Unscrew the knurled-head screws ⑤ .

2.Pull out the slide ③ as far as it takes to take out the test cell.

3.Place the flow cell onto the slide and pay attention to the correct position of the hole.

4.Push the slide into the detector.

5.Insert the knurled-head screws and screw tight.



Capillaries and Fittings

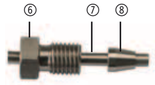
Materials	Pressure resistance
PEEK (1/8“)	200 bar
PEEK (1/16“)	400 bar
Stainless steel	400 bar

6 Sliding on the Fitting

Note: Pay attention that the capillary goes completely through the clamping ring.

1.Push the capillary ⑦ through the fitting ⑥ .

2.Push the clamping ring ⑧ onto the capillary tip.

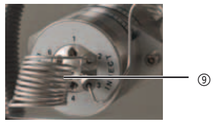


7 Connecting the Sample Loop to the Valve

To inject the sample, a sample loop needs to be connected to the valve.

1.Push the fittings onto both ends of the sample loop ⑨ .

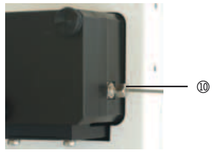
2.Connect the sample loop to ports 2 and 5 of the injection valve.



8 Connecting the Flow Cell

Caution! Damage to the flow cell caused by strongly tightened fittings!
Check the torque of screw fittings:
- 5 Nm for stainless-steel fittings
- 0.5 Nm for PEEK fittings

1.Using the torque wrench, tighten the fitting ⑩ .



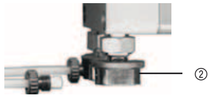
9 Connecting the Piston Backflushing

The connection of the piston backflushing is shown in the capillary plan and described in the pump user manual.

10 Connecting the Pump Head

The eluent flows through the eluent inlet or the inlets at the bottom of the valve block. The pump delivers the eluent through the outlets at the top of the pump head into the HPLC system.

- Insert the eluent hose into the fitting at the eluent inlet ① or to the inlets ② at the bottom of the valve block.



11 Connecting the Leak System

The leak systems drains escaping liquids into a waste bottle.

1.Push the funnel ③ into the center opening of the capillary guide ④ .

2.Attach the hose to the nozzle ⑤ . Afterwards, push the nozzle onto the funnel.

3.Attach the other end of the hose to one of the nozzles ⑥ of the leak tray.

4.Attach the nozzle to the waste hose at the bottom device.

5.Lead the waste hose to the waste container underneath the system.

Next steps: To control the system, either connect it to a computer with chromatography software or to the Control Unit.

12 Switching On the System

Caution! Power-cut hazard if overloading the electricity network. Switch on the devices one by one using the power switches and not using the power strip.

1.Connect the power adapters to the power supply.

2.Switch on the power switch to start the device.

Result: The devices run a self-test. The automatic piston backflushing starts flushing.

13 Bleeding the System

1.Open the bleed screw ⑦ of the pressure sensor.

2.Start the pump with the chromatography software or the Control Unit.

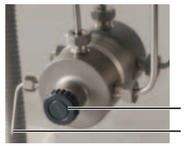
3.Collect the liquids draining from the capillary pipe ⑧ .

4.If the liquid flows without air bubbles, close the bleed screw.

5.Stop the pump with the chromatography software or the Control Unit.

Result: The device is ready for operation.

Next steps: Together with the Technical Support, conduct the IQ/OQ and the validation of the system.



V6800A

Location Requirements

Pay attention to the ambient conditions:

Temperature	10 – 40 °C
Air humidity	< 90 %

Power Supply

Pay attention to the following points concerning power supply:

Number of electric sockets	Dynamic mixing chamber 1 Gradient systems: HPG 4, LPG 3, isocratic: 3
Power consumption	220 V

Technical Data

Weight ASM 2.1L	12.7 kg
Dimensions in mm (width × height × depth)	361 × 158 × 523
Maximum power consumption	100 W

Weight UVD 2.1L	11 kg
Dimensions in mm (width × height × depth)	361 × 158 × 523
Maximum power consumption	70 W

Weight P 2.1L	19 kg
Weight with valve block	19.3 kg
Dimensions in mm (width × height × depth)	361 × 208 × 523
Maximum power consumption	Pump: 320 W Binary or ternary valve block: 5 W

Safety Information

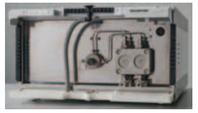
Caution!
Power-cut hazard if the permissible current strength is exceeded!
Do not overload power strips.
Switch on the devices one by one using the power switches.

Caution!
Possible defect of the device due to overheating!
Set up the HPLC system so it is protected against exposure to direct sunlight.
Leave a 30 cm space at the back of the device for air ventilation.

Assistant ASM 2.1L

Detector UVD 2.1L

Pump P 2.1L



System Layout

The devices of the preparative system can be assembled one on top of the other. For safety reasons, each device has four feet at its base panel, which fit into four depressions at the hood of another device.

We recommend to place the device in a certain order (from bottom to top):

① Eluent tray E 2.1L
② Assistant ASM 2.1L
③ Detector UVD 2.1L
④ Pump P 2.1L

Caution! Damage to the leak tray or front cover possible while carrying, setting up and installing a device. Grip the device at its sides near the middle when lifting or moving.

In case of the preparative pump, ask a second person for help.

AZURA

AZURA Preparative HPLC Systems

AZURA is a HPLC system for preparative applications, which are available as isocratic or gradient systems. The desired system is assembled from the AZURA elements that include pumps, detectors, and assistants. The assistants come equipped with up to three units, which are incorporated micro devices and offer many possibilities.

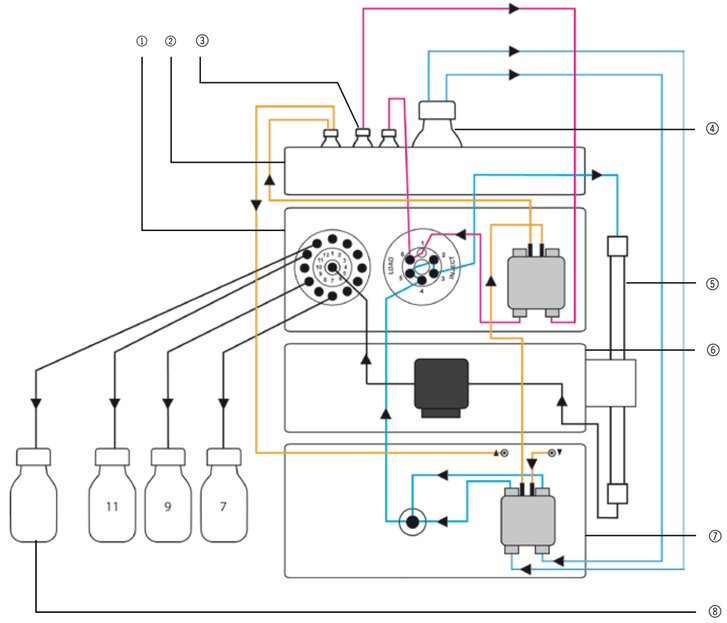
The isocratic system consists of a pump P 2.1L, a detector UVD 2.1L, and an assistant ASM 2.1L. For a low pressure gradient system, you additionally need a valve block. For a high pressure gradient system, you need an additional pump P 2.1L.

Operation

The preparative HPLC system can be operated with chromatography software or Control Unit CU 2.1. The Control Unit is a touch display for direct control and optionally available. When it is connected to a device, it automatically recognizes the device and provides the appropriate user interface. Note that you can control only one device at a time.

Isocratic System

The shown capillary plan gives an example on how to connect the capillaries in an isocratic system.
– Red shows the connection from feed pump to valve.
– Blue shows the connection from pump to valve and column.
– Black shows the way from column to fraction collection.
– Orange shows the piston backflushing connection.



Legend

① Assistant
② Eluent tray
③ Sample
④ Eluent bottle
⑤ Column
⑥ Detector
⑦ Pump
⑧ Waste

Translation of the original German edition of this manual.
2013-04-03

HPLC · SMB · Osmometry

Wissenschaftliche Gerätebau
Dr. Ing. Herbert KNAUER GmbH
Hegauer Weg 38
14163 Berlin, Germany

Telephone: +49-(0)30-809727-111
Fax: +49-(0)30-8015010
E-mail: info@knauer.net
Internet: www.knauer.net