Installation Guide

The AZURA® GPC Cleanup System

GPC Cleanup (Gel Permeation Chromatography) is primarily employed for general cleanup tasks on a wide range of sample matrices such as foodstuffs, tissues, plants and environmental samples. The separation of components takes place according to their molecular weight due to the heterogeneous pore size of the stationary phase. High-molecular substances interfering with subsequent analysis are efficiently removed.

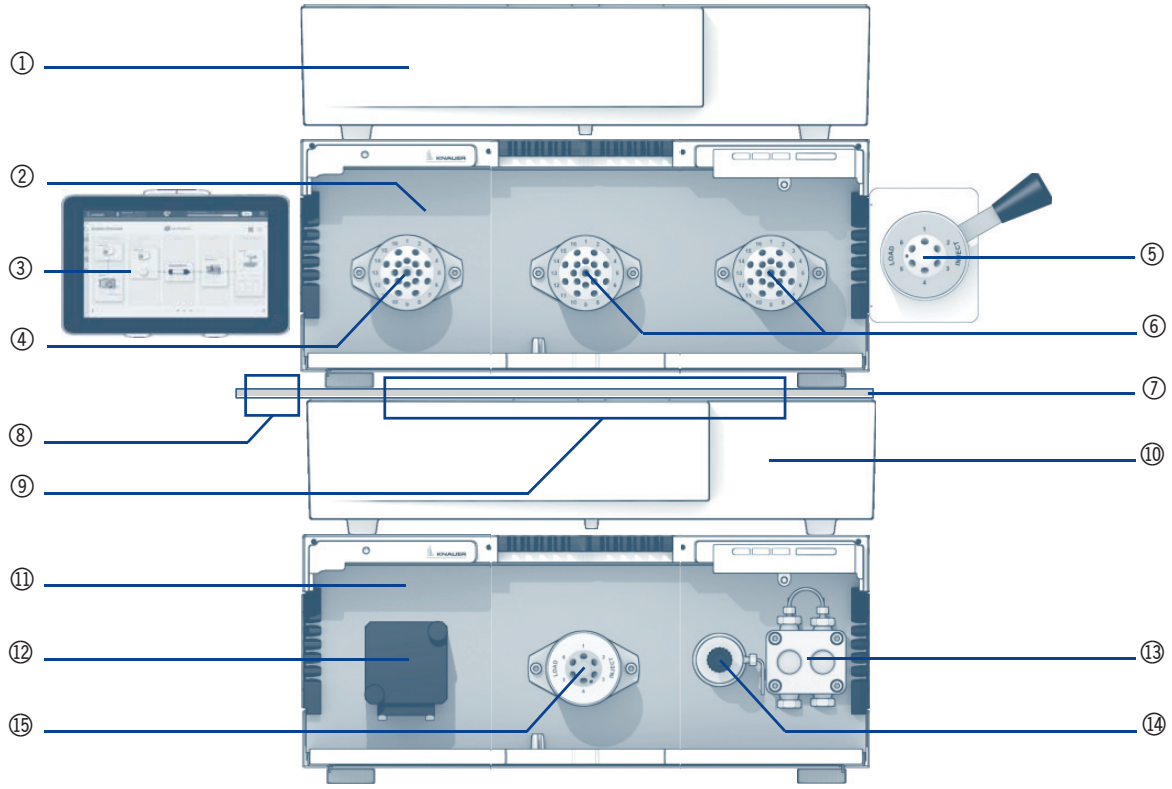
Based on the versatile AZURA® device platform the GPC Cleanup System can be customized to fulfill special requirements.

The AZURA® GPC Cleanup System is operated with Mobile Control Chrom. This intuitive user interface is run on a tablet directly mounted at the system. It automatically recognizes devices and facilitates system configuration. Due to block programming methods are created fast with minimal number of clicks. Mobile Control Chrom makes sample loop loading easily manageable by synchronously switching both valves at the push of a button.

Document No. V50043

System layout

The layout of the GPC Cleanup System is depicted in the illustration below. The table lists the included devices and states their functions in the GPC process. See the last page for information about tubing connections.



Legend	Device	Function
①	**Eluent tray**	Storing eluent bottles
②	**Assistant I**	
③	Mobile Control Chrom	Tablet with device control software
④	16 Port Mulitposition valve	Fractionation
⑤	Manual injection valve	Sample loop loading or column bypassing/selection
⑥	16 Port Mulitposition valves	Sample loop selection
⑦	**GPC tubing guide**	
⑧	Fraction tubing guide	Sorting fraction tubings
⑨	Sample loop guide	Sorting sample loops
⑩	**Eluent tray**	Storing sample loops
⑪	**Assistant II**	
⑫	Detector	Detection
⑬	Pump	Eluent delivering
⑭	Pressure sensor	
⑮	6 Port 2 Position valve	Column bypassing/selection or sample loop loading

Startup

The GPC Cleanup System is set up, installed and commissioned by KNAUER or a company authorized and contracted by KNAUER.

For detailed information about the operation of the individual devices, please read the corresponding chapters in the respective instructions.

Note: KNAUER recommends that future users are present during setup and commissioning of the module, to familiarize themselves with the GPC Cleanup System and its handling.

Operating modes

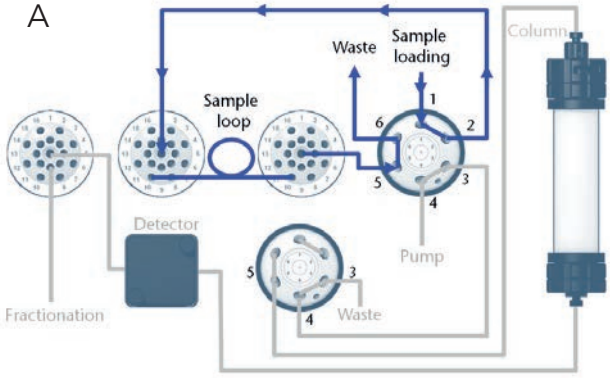
A. Loading samples

1. Set the injection valve to Load (1) position.
2. Address the sample loop you want to load (start with position 1) by switching the two sample loop selection valves.
3. Rinse the sample loop tubing with solvent. Optionally empty tubing by injecting air.
4. Load the individual sample through the injection port of the injection valve with 3x excess of the sample loop volume.
5. At the end of sample loop loading, switch the two sample loop selection valves to the next position. The loaded loop is now closed.
6. Rinse the tubing and valves with solvent. Optionally empty tubing by injecting air.
7. Repeat procedure for all required sample loops.
8. After sample loop loading: Switch the two sample loop selection valves to waste (position 16 with short tubing) and rinse with solvent to remove air.

Note: For each loading, make sure that the same position is set for both sample loop selection valves. If both valves are not switched simultaneously, the flow must be stopped. Otherwise strong pressure spikes can occur and may cause the pump to stop.

Note: To prevent air bubbles to enter the sample loop do not remove the syringe before switching both sample loop selection valves to next or washing position (position 16 with short tubing).

A



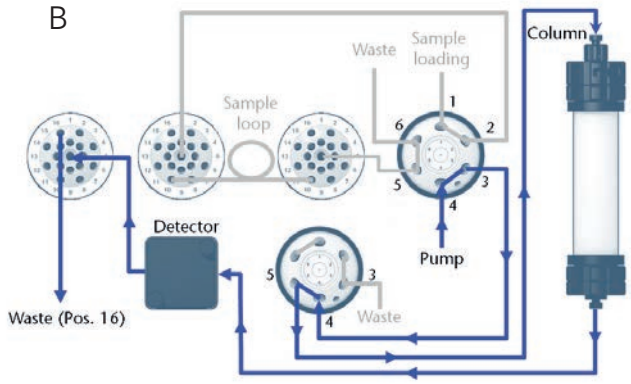
B. Equilibrating column

Before the sample cleanup the GPC column has to be equilibrated with the desired eluent. Procedure:

1. Set the injection valve to Load position.
2. Set column bypass valve to Inject position to integrate the column into the flow.
3. Switch fractionation valve to designated Waste position.

Note: It is suggested for the column equilibrating step to use position 16 of the fractionation valve as waste.

B

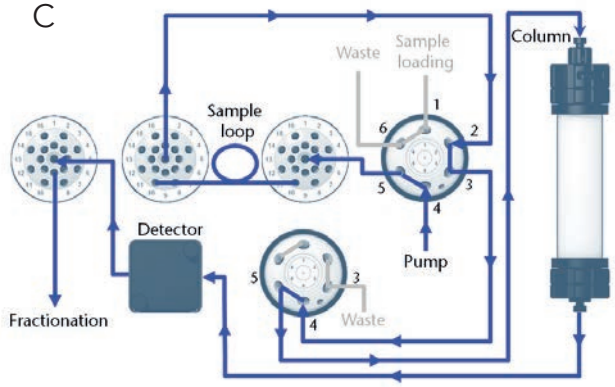


C. Running the GPC

After sample loops have been filled, the samples are processed one after the other. Procedure:

1. Set the injection valve to Inject position.
2. Select the individual sample loops by setting the two sample loop selection valves.
3. Set the column bypass valve to Inject position to integrate the column into the flow.
4. Switch the fractionation valve to collect fractions.

C

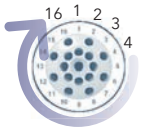


6 Port 2 Position valve

Load (1) Inject (2)

Positions for column bypass / manual injection valve

16 Port Multiposition valve



Sample loop selection valves / fractionation valve

Tubing connections

After installation of single devices according to their respective manual the GPC system ist set up. Lastly, tubings are connected with the system as highlighted in different colours.

NOTICE

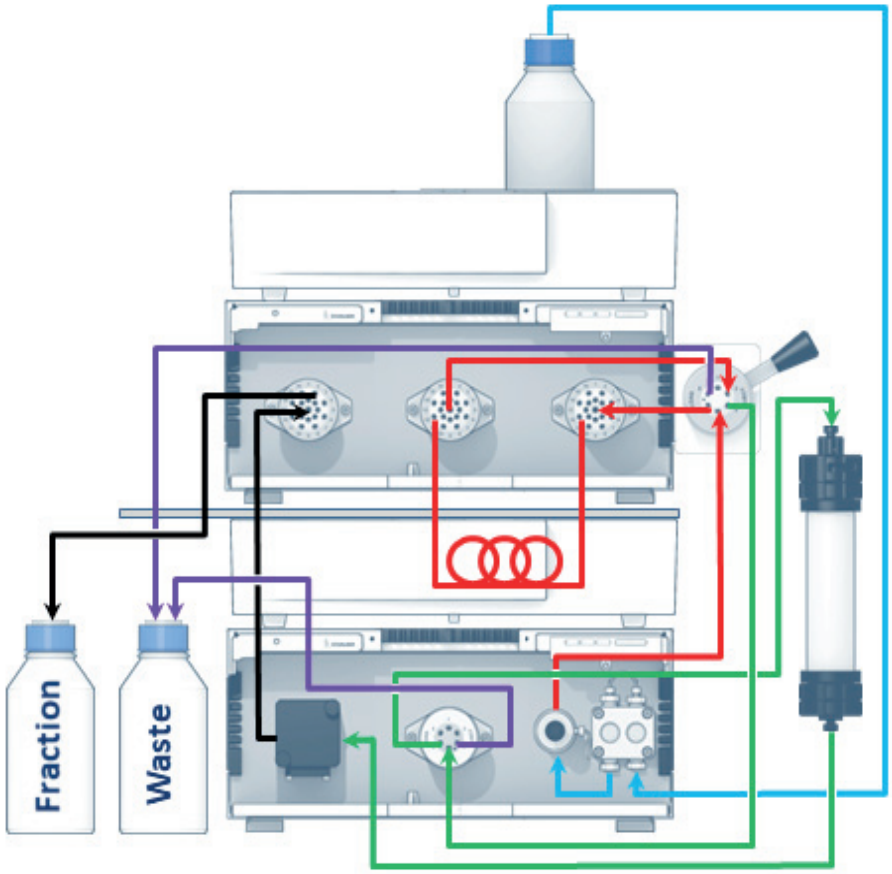
Component defect

Damage to Tefzel® capillary may occur when certain parts are used which are not suitable with Tefzel®. Do not use stainless steel ferrule 1/16" in combination with stainless steel fitting 12 mm UNF10/32 on Tefzel® tubings, though both parts are included in the Accessory Kit for 6-Port/3-Channel Injection Valve (order number F1357).

Note: The inlet tubing of the AZURA® Pump P 4.1S included in FPGA is too short for the AZURA® GPC Cleanup System. Use a longer inlet tubing included in A50041.

Note: In case of a fluctuating detector signal which results from degassing in the flow cell, use a tubing with a low inner diameter of 0.25 mm between detector and fractionation valve.

Note: Depending on your preferences, the manual valve and electrical 6 Port 2 Position valve can be exchanged to function as column bypassing/selection and sample injection.



Legend

- from eluent bottle via pump to pressure sensor
- from pressure sensor via manual injection valve (6 Port 2 Position valve) to sample loop selection valves (16 Port Multiposition valves)
- from manual injection valve via column bypass valve (6 Port 2 Position valve) and column to detector
- from detector via fractionation valve (16 Port Multiposition valve) to fraction bottle
- to waste bottle

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KNAUER Wissenschaftliche Geräte GmbH
Hegauer Weg 38
14163 Berlin, Germany

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