ÄKTA avant and ÄKTA pure

Instructions

Install optional inlet valves

Scope

This document provides instructions on how to install:

ÄKTA™ avant 25	ÄKTA avant 150
Inlet valve V9-A2 (28957221)	Inlet valve V9H-A2 (28979303)
Inlet valve V9-B2 (28957223)	Inlet valve V9H-B2 (28979315)
Inlet valve V9-S2 (28957225)	Inlet valve V9H-S2 (28979320)
Inlet valve V9-X1 (28957227)	Inlet valve V9H-X1 (28979326)
Inlet valve V9-X2 (28957234)	Inlet valve V9H-X2 (28979328)

ÄKTA pure™ 25	ÄKTA pure 150
Inlet valve V9-IA kit (29012263)	Inlet valve V9H-IA kit (29050945)
Inlet valve V9-IB kit (29012370)	Inlet valve V9H-IB kit (29050946)
Inlet valve V9-IAB kit (29011357)	Inlet valve V9H-IAB kit (29089652)
Sample inlet valve V9-IS kit (29027746)	Sample inlet valve V9H-IS kit (29050943)
Inlet valve V9-X1 (28957227)	Inlet valve V9H-X1 (28979326)
Inlet valve V9-X2 (28957234)	Inlet valve V9H-X2 (28979328)

Description

Introduction

The modular design of the ÄKTA™ instruments allows different combinations of inlet valves.

ÄKTA avant configuration

In the ÄKTA avant standard configuration, 7 inlet ports are available for each inlet valve. To increase the number of inlets, an extra Inlet valve can be installed that increases the number of inlets to 14 for one of the valves. This optional configuration may be convenient when, for example, a larger number of samples will be used.

The table below lists the available inlet valves.

ÄKTA avant 25		ÄKTA avant 150	
Valve name	**Valve label**	**Valve name**	**Valve label**
Inlet valve V9-A2	**V9-I2**	Inlet valve V9H-A2	**V9H-I2**
Inlet valve V9-B2	**V9-I2**	Inlet valve V9H-B2	**V9H-I2**
Inlet valve V9-S2	**V9-S2**	Inlet valve V9H-S2	**V9H-S2**

ÄKTA pure configuration

For the ÄKTA pure instrument, several inlet valve configurations are available with different combinations of the inlet valve modules **V9-IA** or **V9H-IA** (seven inlet ports), **V9-IB** or **V9H-IB** (seven inlet ports), **V9-IAB** or **V9H-IAB** (two A and two B inlet ports) and Sample inlet valve **V9-IS** or **V9H-IS** (seven sample inlet ports).

The table below lists the available inlet valves.

ÄKTA pure 25		ÄKTA pure 150	
Valve name	**Valve label**	**Valve name**	**Valve label**
Inlet valve A	**V9-IA**	Inlet valve A	**V9H-IA**
Inlet valve B	**V9-IB**	Inlet valve B	**V9H-IB**
Inlet valve AB	**V9-IAB**	Inlet valve AB	**V9H-IAB**
Sample inlet valve	**V9-IS**	Sample inlet valve	**V9H-IS**

The possible combinations are:

- one Inlet valve A,

- one Inlet valve B,
- Inlet valve A and Inlet valve B,
- Inlet valve AB together with Inlet valve A or Inlet valve B,
- one Inlet valve AB,

  or

- no installed inlet valves.

Sample inlet valve **V9-IS** or **V9H-IS** can be used together with any of the combinations listed above.

General Inlet valves

There are also general Inlet valves, Inlet valve V9-X1, V9H-X1, V9-X2, and V9H-X2, which can be used to increase the number of inlets on both ÄKTA avant and ÄKTA pure.

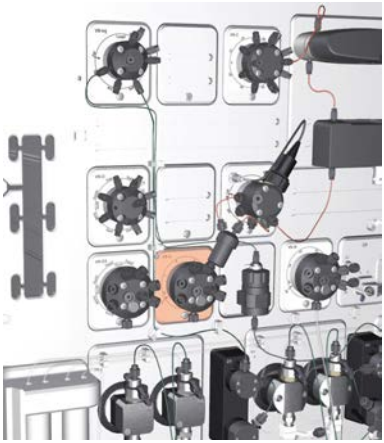
Note: *The general Inlet valves and Inlet valves V9-IAB and V9H-IAB lack built-in air sensors.*

Location

The inlet valves can be installed in different positions.

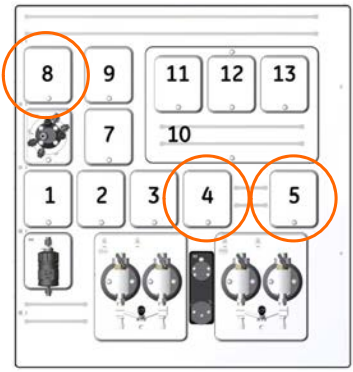
ÄKTA avant

An extra Inlet valve (**V9-I2** or **V9H-I2**) or Sample inlet valve (**V9-S2** or **V9H-S2**) can be installed in the lower free position as illustrated below. To obtain an optional flow path, it is also possible to move the standard valves to other positions.



ÄKTA pure

The illustration and table below indicates the recommended locations for the inlet valves that can be used with ÄKTA pure.



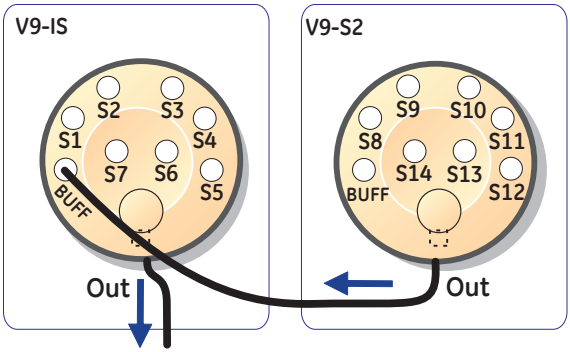
ÄKTA pure		Recommended location	Constraints
Valve name	**Valve label**		
Inlet valve AB	**V9-IAB** or **V9H-IAB**	• 4 • 5, if Inlet valve AB is used in combination with Inlet valve A	Possible combinations: • Inlet valve A and Inlet valve B • Inlet valve AB together with Inlet valve A or Inlet valve B • One Inlet valve AB or • No installed inlet valves.
Inlet valve A	**V9-IA** or **V9H-IA**	4	
Inlet valve B	**V9-IB** or **V9H-IB**	5	
Sample inlet valve	**V9-IS** or **V9H-IS**	8	Sample inlet valve (**V9-IS** or **V9H-IS**) requires Sample pump (**S9** or **S9H**). Cannot be used at the same time as Mixer valve (**V9-M** or **V9H-M**).

ÄKTA pure		Recommended location	Constraints
Valve name	**Valve label**		
Inlet valve V9-X1 or V9H-X1	**V9-IX** or **V9H-IX**	Any free position	No constraints
Inlet valve V9-X2 or V9H-X2	**V9-IX** or **V9H-IX**	Any free position	Inlet valve V9-X2 or V9H-X2 requires Inlet valve V9-X1 or V9H-X1.

Flow paths in ÄKTA avant

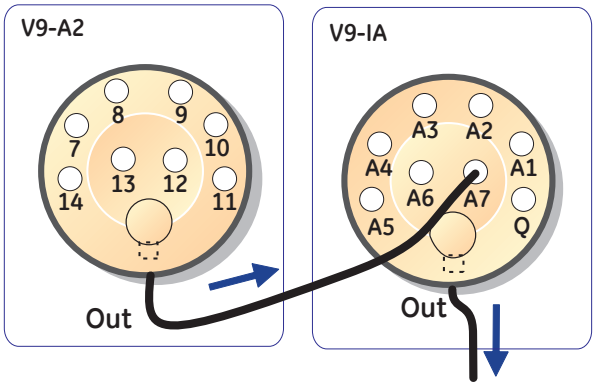
Extra sample inlet valve

The illustration below shows an optional flow path when an extra sample inlet valve is installed. The flow is directed from the **Out** port of the extra Inlet valve (**V9-S2** or **V9H-S2**), to the buffer port **BUFF** of the Inlet valve (**V9-IS** or **V9H-IS**) and leaves the valve through the **Out** port to the Sample pump. In the software, 14 sample inlets can now be selected.



Extra inlet valve

The illustration below shows an optional flow path when an extra inlet valve is installed. The flow is directed from the **Out** port of the extra valve, Inlet valve (**V9-I2** or **V9H-I2**) , to port **A7** of Inlet valve (**V9-IA** or **V9H-IA**) and leaves the valve through the **Out** port to the system pump A. In the software 14 A inlets can now be selected.



Inlet valves X1 and X2

Inlet valve X1 and Inlet valve X2 are inlet valves that can be used to create different flow paths. They can be combined with any of the other inlet valves or be used on their own. The valves can be placed anywhere, depending on the desired valve purpose.

Note: *To create methods with the use of the valves,* ***Text Instruction*** *mode has to be selected in the* ***Method Editor****. The valves will be visible in the* ***Instruction Box*** *for* ***Flow path****.*

ÄKTA avant

ÄKTA avant 25		ÄKTA avant 150	
Valve name	**Valve label**	**Valve name**	**Valve label**
Inlet valve V9-X1	**V9-IX**	Inlet valve V9H-X1	**V9H-IX**
Inlet valve V9-X2	**V9-IX**	Inlet valve V9H-X2	**V9H-IX**

For ÄKTA avant, the inlet valves X1 and X2 can for example be used to increase the number of inlets to the Quaternary valve.

For ÄKTA avant 25, the recommended tubing is FEP, o.d. 1/8", i.d. 1.6 mm with Tubing connector, 5/16" with Ferrule (yellow), 1/8".

For ÄKTA avant 150: the recommended tubing is FEP, o.d. 3/16", i.d. 2.9 mm with Tubing connector, 5/16" + Ferrule (blue), 3/16".

Tubing length depends on location.

ÄKTA pure

ÄKTA pure 25		ÄKTA pure 150	
Valve name	**Valve label**	**Valve name**	**Valve label**
Inlet valve V9-X1	**V9-IX**	Inlet valve V9H-X1	**V9H-IX**
Inlet valve V9-X2	**V9-IX**	Inlet valve V9H-X2	**V9H-IX**

For ÄKTA pure 25, the recommended tubing is FEP, o.d. 1/8", i.d. 1.6 mm with Tubing connector, 5/16" with Ferrule (yellow), 1/8".

For ÄKTA pure 150: the recommended tubing is FEP, o.d. 3/16", i.d. 2.9 mm with Tubing connector, 5/16" + Ferrule (blue), 3/16".

Tubing length depends on location.

Installation

Introduction

Optional modules are easy to install in the instrument. The existing module or dummy module is removed with a Torx™ T20 screwdriver and the cable is disconnected. The cable is then connected to the optional module, which is subsequently inserted into the instrument. The newly installed module is then added to the ***System properties*** in UNICORN™.

Node ID

All of the available optional modules are preconfigured to give the desired function. However, the function of a module can be changed by changing its Node ID. Node ID is a unit number designation that is used by the instrument to distinguish between several units of the same type.

In a troubleshooting situation it may be useful to check a module's Node ID.

Note: *The function of a module is defined by its Node ID, not by its physical position.*

Node ID for inlet valves

The table below lists Node ID for the optional inlet valves used in ÄKTA avant and ÄKTA pure.

Module	Label	Node ID
Inlet valve V9-A2 or V9H-A2	**V9-I2** or **V9H-I2**	12
Inlet valve V9-B2 or V9H-B2	**V9-I2** or **V9H-I2**	13
Inlet valve V9-S2 or V9H-S2	**V9-S2** or **V9H-S2**	14
Inlet valve V9-IA or V9H-IA	**V9-IA** or **V9H-IA**	0
Inlet valve V9-IB or V9H-IB	**V9-IB** or **V9H-IB**	1
Inlet valve V9-IAB or V9H-IAB	**V9-IAB** or **V9H-IAB**	3
Sample inlet valve V9-IS or V9H-IS	**V9-IS** or **V9H-IS**	2
Inlet valve V9-X1 or V9H-X1	**V9-IX** or **V9H-IX**	15
Inlet valve V9-X2 or V9H-X2	**V9-IX** or **V9H-IX**	16

Check/change Node ID

The Node ID is set by positioning the arrows of the two rotating switches at the back of the valve. Use a screwdriver to set the arrows of the switches to the desired number.

Step	Action
1	Disconnect power from the instrument by switching off the instrument **Power** switch.
2	Remove the existing or dummy module from the instrument according to *Hardware installation of a module, on page 9*.
3	• The first rotating switch, labeled **A** sets the tens. • The second switch, labeled **B** sets the units. • Example: for Node ID **6**,

Step	Action
	the **A** switch is set to **0** and the **B** switch to **6**.

4	Check the Node ID and compare it with the listed Node IDs in the table above.
5	Install the inlet valve in the instrument.

Hardware installation of a module

The instruction below describes how to install a module in the instrument.

Note: *The illustrations show the principle how to install an optional module. The position of the module on the instrument and the used type of module will depend on the module being installed.*

CAUTION

Disconnect power. Always switch off power to the ÄKTA instrument before replacing any of its components, unless stated otherwise in the user documentation.

Step	Action
1	Disconnect power from the instrument by switching off the instrument **Power** switch.

Step	Action
2	Loosen the connectors and remove the tubing from the existing module. ***Note:*** *This step does not apply for a dummy module.*
3	Loosen the module with a Torx T20 screwdriver.

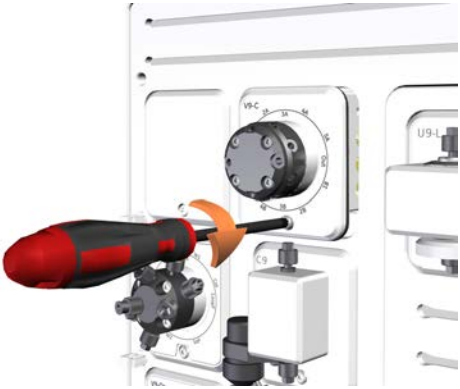
4	Remove the module.

Step	Action
5	Disconnect the cable and secure it in the slit.

6	Connect the cable to the module to be installed.

7	Insert the module.

Step	Action
8	Fasten it with a Torx T20 screwdriver.



Note: *A warning message is displayed at start up if a module has been installed in the instrument but not added to the current system configuration in UNICORN.*

Software configuration

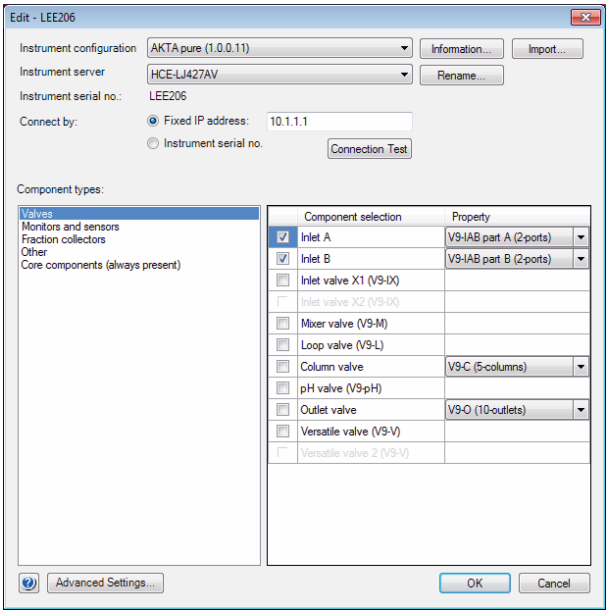
When a new module has been installed, the ***System Properties*** for the system has to be updated in UNICORN. The system will restart automatically when the configuration has been changed and the system can be reconnected.

Follow the instructions below to update the system in UNICORN.

Step	Action
1	• In the ***Administration*** module, choose ***Tools***: ***System Properties*** or click the System Properties icon to open the dialog. *Result*: The ***System Properties*** dialog is displayed. • Select the system of interest in the ***System Properties*** dialog. • Click the ***Edit*** button. ***Note:*** *Only active systems can be edited.*

Step	Action

Result: The ***Edit*** dialog is displayed.



2

- Select ***Valves*** from the ***Component types*** list.

  Result: All available valves are shown in the ***Component selection*** list.
- Click the checkbox to select the added inlet valve.
- When applicable, choose the appropriate Property for the selected inlet valve.

  Note:
  Instrument modules are referred to as ***Components*** *in UNICORN.*

3 Click the ***OK*** button to apply the changes.

Connect tubing

ÄKTA avant

- Connect tubing from port **7** of one of the standard inlet valves (Inlet valve A or Inlet valve B) to port **Out** of the extra Inlet valve (**V9-I2** or **V9H-I2**).

  and/or

- Connect tubing from port **BUFF** of the standard Sample inlet valve to port **Out** of the extra Sample inlet valve (**V9-S2** or **V9H-S2**).

The tables below shows recommended tubing and connectors.

ÄKTA avant 25

Tubing label	Connection between the extra Inlet valve and...	Tubing	Connector	Tubing length (mm)
InA2	Inlet valve A	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	250
InB2	Inlet valve B			350
InS2	Sample inlet valve			200

ÄKTA avant 150

Tubing label	Connection between the extra Inlet valve and...	Tubing	Connector	Tubing length (mm)
InA2	Inlet valve A	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	250
InB2	Inlet valve B			350
InS2	Sample inlet valve			200

Note: *For runs with small volumes of sample, the sample inlet tubing can be changed.*

ÄKTA pure

The table below shows the tubing and connectors.

ÄKTA pure 25

Tubing label	Description	Tubing	Connector	Tubing length (mm)
A1-**A2** and **B1**-**B2**	Inlets to Inlet valve AB	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	1500
A1-**A7**	Inlets to Inlet valve A	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	1500
B1-**B7**	Inlets to Inlet valve B	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	1500
InA	From Inlet valve A or Inlet valve AB to System pump A	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	300
InB	From Inlet valve B or Inlet valve AB to System pump B	FEP, o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	300
InS	Sample inlet valve to Sample Pump	FEP o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	580
S1-**S7**	Inlets to Sample inlet valve	FEP o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	1000
Buff	Buffer inlet to Sample inlet valve	FEP o.d. 1/8", i.d. 1.6 mm	Tubing connector, 5/16" with Ferrule (yellow), 1/8"	1000

ÄKTA pure 150

Tubing label	Description	Tubing	Connector	Tubing length (mm)
A1-**A2** and **B1**-**B2**	Inlets to Inlet valve AB	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	1500
A1-**A7**	Inlets to Inlet valve A	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	1500
B1-**B7**	Inlets to Inlet valve B	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	1500
InA	From Inlet valve A or Inlet valve AB to System pump A	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	300
InB	From Inlet valve B or Inlet valve AB to System pump B	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	300
InS	Sample inlet valve to Sample Pump	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	580
S1-**S7**	Inlets to Sample inlet valve	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	1000
Buff	Buffer inlet to Sample inlet valve	FEP, o.d. 3/16", i.d. 2.9 mm	Tubing connector, 5/16" + Ferrule (blue), 3/16"	1000

Note: *For runs with small volumes of sample, the sample inlet tubing can be changed.*

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