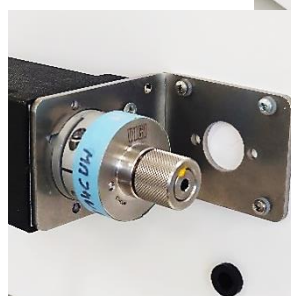
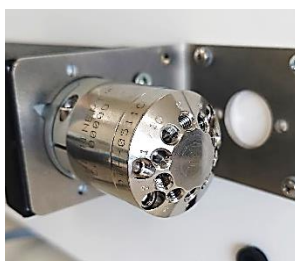


Valves for DECADE Elite

Installation guide

250.7001, Edition 1, 2024



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Symbols

The following symbols might be used in this guide or may be found on the instrument:



The warning sign denotes a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in severe injury, loss of life or damage or destruction of parts of or all the equipment. Do not proceed beyond a warning sign until the indicated conditions are fully understood and met.



A device or system marked with CE fulfills the product specific requirements described in the European directives. This is confirmed in a Declaration of Conformity.



This symbol indicates to read the user manual and all safety instructions before using the instrument.



The attention sign signals relevant information. Read this information.

Intended use

A valve for use in an (Ultra) High Performance Liquid Chromatography system with a DECADE Elite Electrochemical Detector is intended to alter the flow path, with the purpose of for example injection of sample, or flushing the system.

Operation of a valve may involve the use of hazardous materials including corrosive fluids and flammable liquids under head-space pressure. The instrument should only be operated by users with the following expertise:

- Completed degree as chemical laboratory technician or comparable vocational training
- Fundamental knowledge of liquid chromatography and equipment
- Participation in an installation of the system performed by the manufacturer or a company authorized by the manufacturer and suitable training on the system and chromatography software.
- Knowledge and experience in the safe handling of toxic and corrosive chemicals and knowledge of the application of fire prevention measures prescribed for laboratories.



Information on safety practices is provided with your instrument and operation manuals. Before using your instrument or accessories, you must thoroughly read and understand these safety practices. This manual is written for laboratory technicians/scientists skilled in the art, who use the valve for (U)HPLC analysis. The instrument may not be serviced by the end-user, only by service engineers authorized by the manufacturer.



Unskilled, improper, or careless use of this instrument can create hazards which can cause death, serious injury to personnel, or severe damage to equipment and property. Observe all relevant safety practices at all times. Only use the device for applications that fall within the scope of the specified intended use. Else the protective and safety equipment of the device could fail.

CHAPTER 1

Introduction

Congratulations on your purchase of a valve for use with the DECADE Elite. There are different versions of manual injectors and electrically actuated injectors and valves for installation on the left side panel of a DECADE Elite/Lite electrochemical detector. The different chapters in this manual describe the installation and connection of the different versions of valves, and it starts with instructions for installation of the dedicated brackets.



This manual covers the installation, set-up, and operation of the valve only. Detailed operation instructions for other peripheral LC equipment and parts such as flow cells, pumps, auto samplers, valves, column heaters etc. are described in the manuals shipped with this instrumentation.



For optimal performance the flow path of a valve with metal parts (e.g. metal sample loop) should be passivated with a 15% nitric acid solution for 20 minutes and then rinsed clean with water before first use.

Unpacking

Inspect the *transport box* for possible damage as it arrives. Immediately inform the transport company in case of damage, otherwise she may not accept any responsibility. Keep the transport box as it is designed for optimum protection during transport and it may be needed again. Carefully unpack the kit and inspect it for signs of damage or incompleteness (checklist).



Figure 1 Example of a valve kit content from an electrical valve.

Contact your supplier in case of damage or if not all marked items on the checklist are included.

Tools

The following tool may be necessary for the installation and connection of a valve:

- Phillips screw driver
- Allen key 9/64"

CHAPTER 2

Installation of the mounting bracket

An electrically actuated valve can be secured to the left side of the DECADE Elite with a dedicated bracket.

Manual injector valves come factory mounted on the dedicated bracket.

In case of installation of multiple valves and/or a flow splitter, then the large valve mounting panel needs to be installed first, see instructions document *Valve mounting panel installation instruction (pn. 250.0030E)*.

Installation of bracket

- Mount the external valve bracket (p/n 250.0019) on the DECADE Elite with the included screws and o-rings using a Philips screwdriver

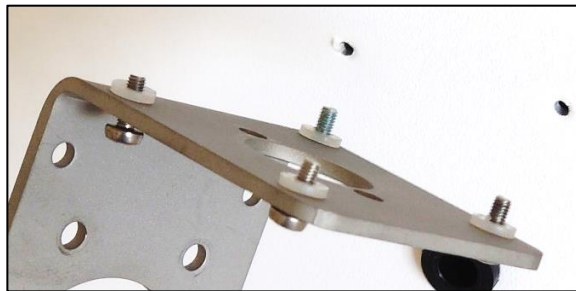


Figure 2 Secure the screws to the bracket with the plastic O-rings from the kit.

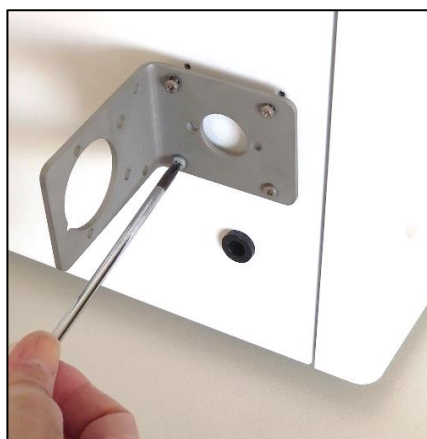


Figure 3 Use a Philips screwdriver to attach the bracket to the designated point on the left side of the detector.

CHAPTER 3

Installation of an electrically actuated valve

The valve can be attached to the valve bracket (previous chapter), but the standard attached bracket needs to be removed first.

Installation of valve

- Detach the standard valve bracket from the valve.

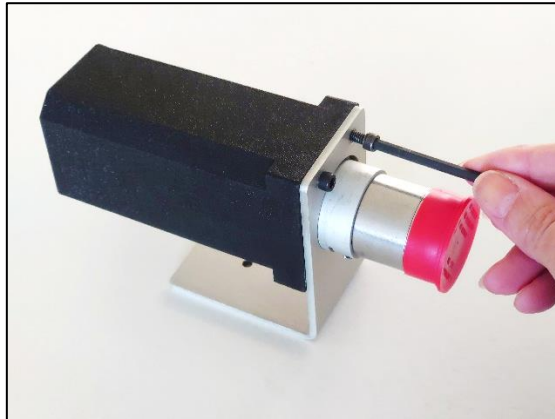


Figure 4 Use an Allen key 9/64" or a screwdriver to disconnect the standard bracket from the valve

- Insert the valve into the valve bracket (installation instructions in previous chapter).

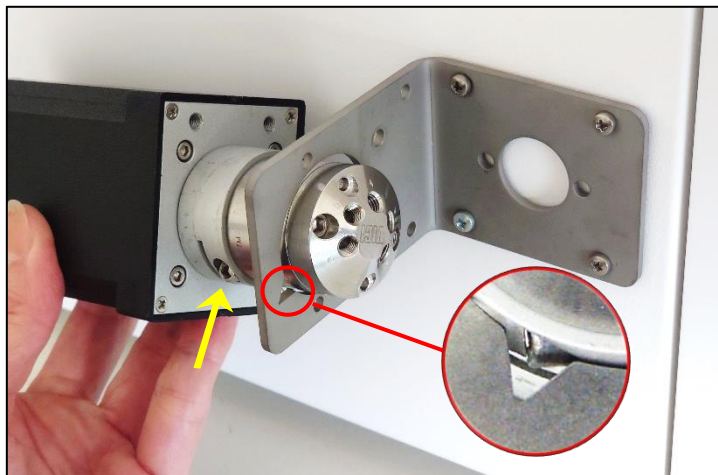


Figure 5 Note the special indentation in the bracket to accommodate the passage of the protruding valve clamp ring screw.

- Secure the valve to the bracket with the 2 screws.

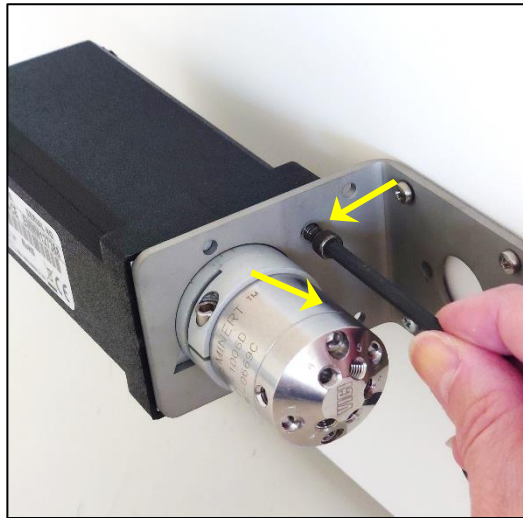


Figure 6 Secure the valve on the valve bracket with 2 screws.

Optional - adjustment of valve orientation

Make sure that (vertical) port 1 of the valve is positioned upward. If it needs adjustment, disconnect the valve from the actuator and adjust the valve orientation.

- Loosen the valve clamp ring with an Allen key 9/64" and detach the valve.

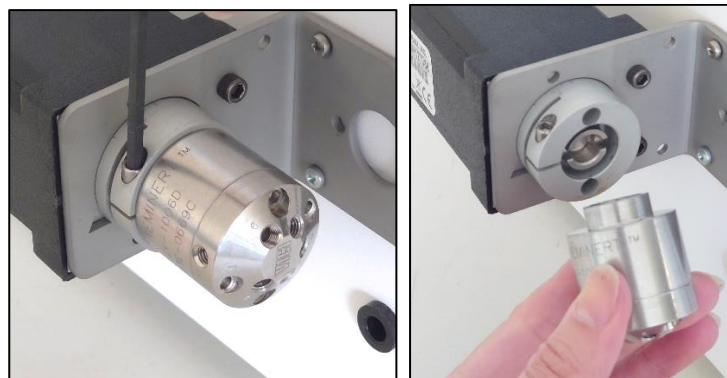


Figure 7 The valve clamp ring secures the valve to the actuator.

- Pry the middle ring out of the valve clamp ring and reinsert it in a 90° turned position.



Figure 8 Changing the valve connection orientation in the valve clamp ring.

- The valve can now be reattached with port nr 1 pointing upward.

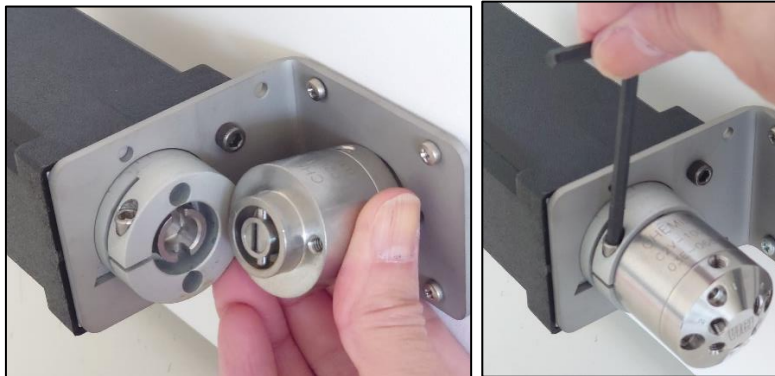


Figure 9 Attach the valve back on the actuator and secure it by tightening the valve clamp ring screw.

CHAPTER 4

Cable connections for electrically actuated valve

For digital control of the valve through the DECADE Elite (or software controlling the DECADE Elite), make the connections between the valve and the DECADE Elite with the provided cables. The manual controller is provided for direct control over the valve and position feedback to the display.

- Make the cable connections with the supplied cables as in Fig 10 and 11.



Figure 10 Cables from the valve kit and connection to the DECADE backpanel.

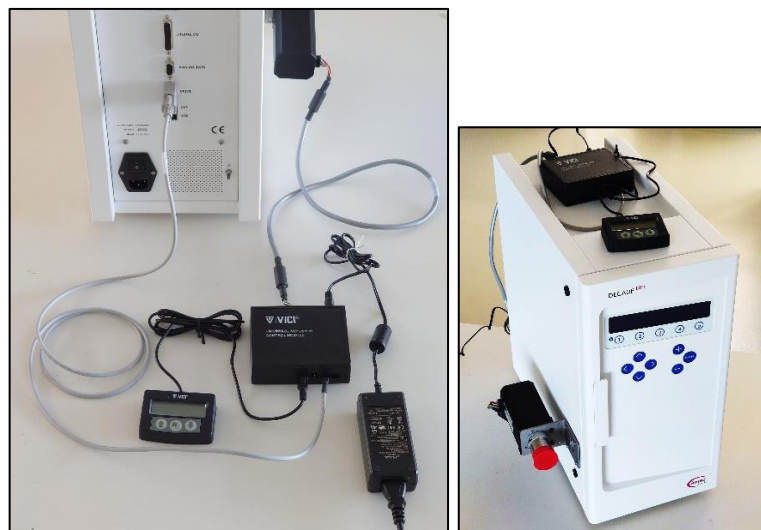


Figure 11 Overview of connections between the valve and the DECADE Elite (l), and after accommodating the controller (r).

CHAPTER 5

Initializing an electrically actuated valve

Before using the valve, the communication settings have to be set and the valve needs to be initialized with the use of the manual controller. When it is initialized, then the valve can be switched between positions using the manual controller or through software (check the relevant software manual for instructions how to control a Vici valve).

Configuring the RS232 communication of the valve

- Hold the Home button of the manual valve controller pressed (about 5 sec) until the Main menu appears.



Figure 12 Open the Main Menu of the valve controller by holding the Home button



- Set the communication to RS232, and **Legacy Mode**



Figure 13 Set the RS232 communication to legacy mode

Initializing the valve positions (automated option)

When powering up, the default position in the display is POS: A, even if the valve would be in a different position (or not initialized yet). In such case, pressing the up arrow will change the display to POS: EP (error position) and initialization is needed. This can be done automatically:

- Hold the Home button of the manual valve controller pressed until the Main menu appears.



Figure 14 Open the Main Menu of the valve controller by holding the Home button pressed (about 5 sec) until the Main Menu opens

- Set the valve to 'Two Position' and With Stops 'Yes' (factory defaults).



Figure 15 Set the valve configuration

- Press the Mode/Home button. At this point the valve will audibly switch a few times and then it is initialized.



Figure 16 After automated initialization, the valve is defaulted to POS A

Initializing the valve positions (manual option)

If the automated initialization procedure is not giving results, the alternative way is the manual option:

- Alternately press the up and down buttons about 3-4 times, which will make the valve switch positions in a slow manner until the valve position has been established. When initialization is ready, the valve switching sound will be audibly higher pitched and the valve is then ready for use.



Figure 17 Alternately press the up and down buttons to switch between POS A and B on screen and thus initializing the valve.

Resetting the valve positions

In case the initialization needs to be done again, the valve position can be reset in this way:

- Disconnect the valve actuator from the control module and press the up or down button on the manual controller. The display will change to POS: EP.
- Reattach the cable again and restart the initialization.



Figure 18 When switching the valve with a disconnected cable between the actuator and control module, the valve position becomes unknown, and the display shows POS: EP (error position).

CHAPTER 6

Installation of a manually actuated valve

A valve with manual switch is factory mounted on a bracket and has a dedicated connector to transfer the injection trigger.

- Connect the valve to the left side panel of the DECADE Elite/Lite with the provided screws and O-rings.



Figure 19 Attach the manual pre-mounted valve to the DECADE Elite/Lite

- Connect the valve cable to the back of the DECADE Elite/Lite detector and restart the detector to invoke recognition.

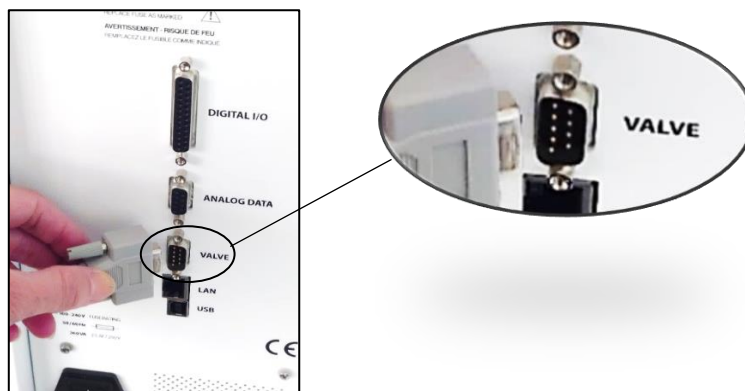


Figure 20 Connect the valve cable to the back of the detector.

- For configuration of the valve in the detector or in chromatography software, refer to the DECADE Elite/Lite user manual 175_0010, Chapter 11

APPENDIX A

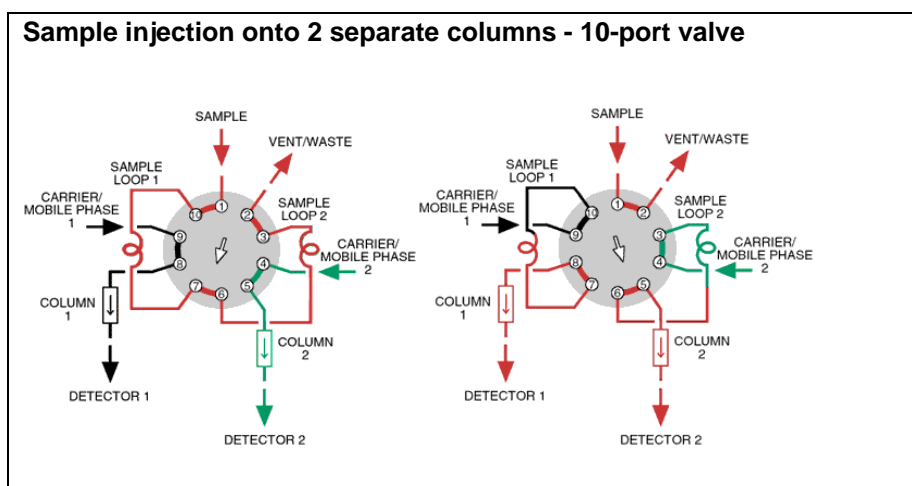
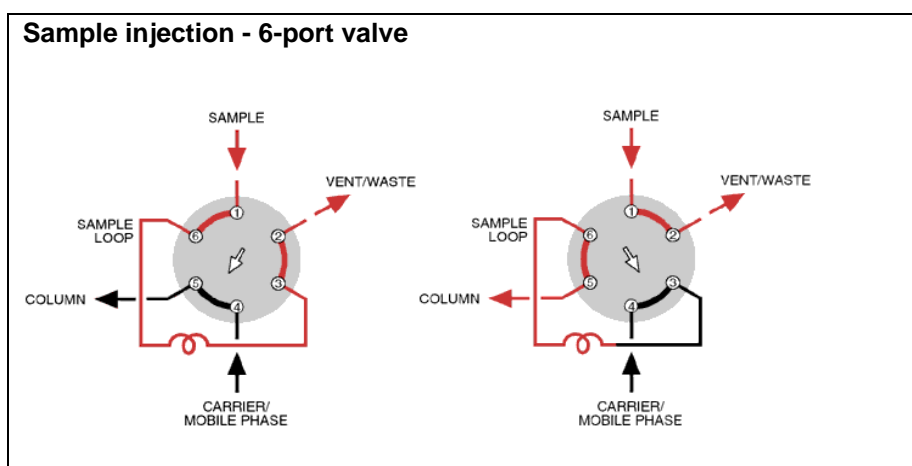
LC connections at the valve

The exact configuration of LC connections at a valve depends on the specific application for which the valve is used. Please refer to the specific application note or LC connection kit installation guide for further information. Guides and application notes can be downloaded from the Antec Scientific website:

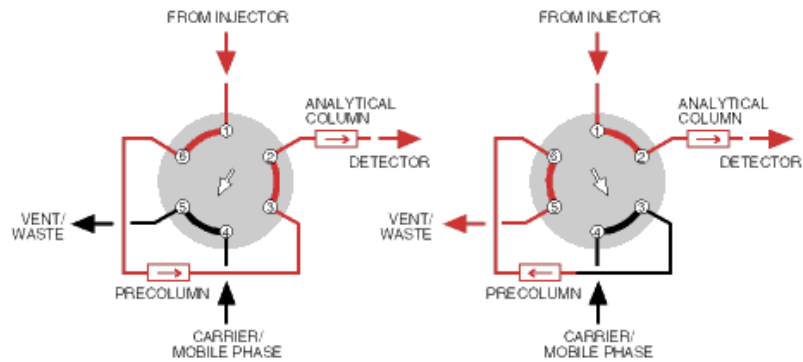
www.AntecScientific.com

Below is a collection of various 2-position valve configurations:

- position A:  ; position B: 



Backflush of precolumn to vent - 6-port valve



Sample injection onto 3 separate columns - 14-port valve

