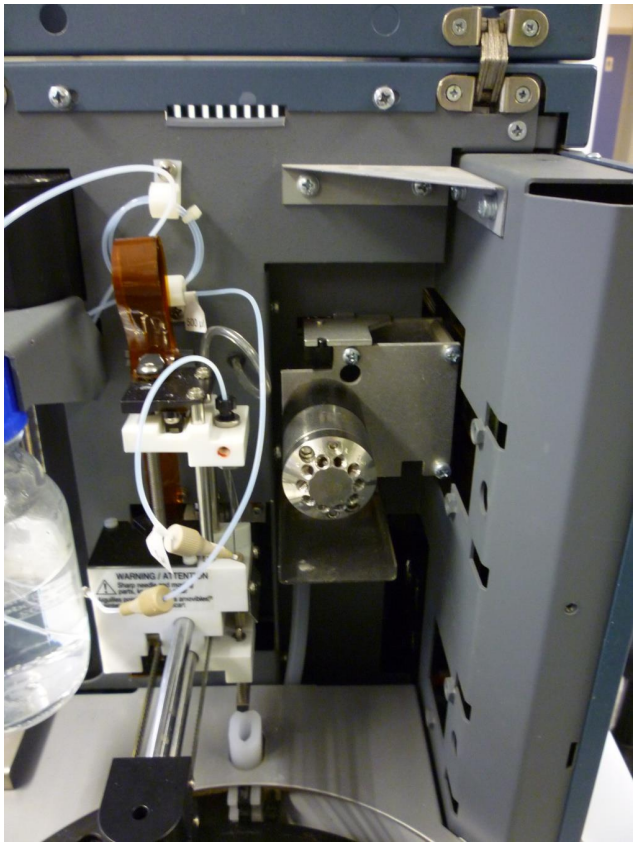
AS100 autosampler

Valve replacement

181.7034, Edition 2, 2012



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Symbols

The following symbols are used on the equipment:

Consult the manual for further safety instructions The sign warns about a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in injury or loss of life.

Frame or chassis ground terminal

The following pictograms are used in this manual:

Caution. The sign warns about a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in injury or loss of life.

Caution, risk of electric shock or other electrical hazard (high voltage) The sign warns about a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in injury or loss of life.

Safety practices

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

Electrical hazards

- Removal of panels may expose users to dangerous voltages. Disconnect the AS 100 from all power sources before removing protective panels.
- Always replace blown fuses with fuses of the size and rating indicated on the fuse panel and holder. Refer to Appendix B of this manual for more information on fuses.
- Replace or repair faulty insulation on power cords.
- Check that the actual power voltage is the same as the voltage for which the AS 100 is wired. Make sure power cords are connected to correct voltage sources.
- The AS 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.

Other precautions

The AS 100 has sharp needles and moving parts care should be taken to prevent personal injury or damage to parts of the AS 100.

Table of contents

C H A P T E R 1

Introduction

This instruction describes the disassembly and installation of a valve actuator assembly of the AS 100. The procedure is written for trained and qualified service engineers, who are experienced with the AS 100 and Clarity data system software. For more details on adjustments, assembling and troubleshooting use the service manual (p/n 181.0020) as reference.

Before you start, be sure you have read and understood the procedure and the information.

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C H A P T E R 2

Removing the valve-actuator assembly

Tools

The list bellows gives an overview of the tools needed for the installation of Valve – actuator assembly.

Service tools

Philips screwdriver #1*
Philips screwdriver #2 (long shaft)
Hex key 2 mm*
Hex key 2.5mm

This section describes Removing the valve actuator assembly. Please follow all the steps in this procedure carefully:

Make sure that the mains cable is disconnected before opening the machine.

Opening the AS 100

Figure 1. *Front view of AS 100.*

Front side:

- Remove the screws encircled in red (straight line) with a Philips screwdriver.
- Remove the screws encircled in green (dotted line) using an Hex/Allen key.

Figure 2. *Back view of AS 100.*

Back side:

- Remove the screws encircled in red (straight line) with a Philips screwdriver.

Subsequently, remove the top and side panels of the AS 100.

Figure 3. *Side view (right side) of AS 100.*

- Remove the screw encircled in red (straight line) with a Philips screwdriver. Now the back-plane can pivot for better access to the electronics compartment.
- Make sure that the needle arm unit is in its home position and pull AS 100 back plane backwards to open up the unit. See photo-graph on the next page.

Do not force the back plane so far backwards that the flex print (brown plastic print connected to needle unit PCB) is subjected to extreme tension. This may damage the flex print.

Figure 4. *Opening electronics compartment of the AS 100 (red circle: flex print).*

Disconnecting Flex print from PCB

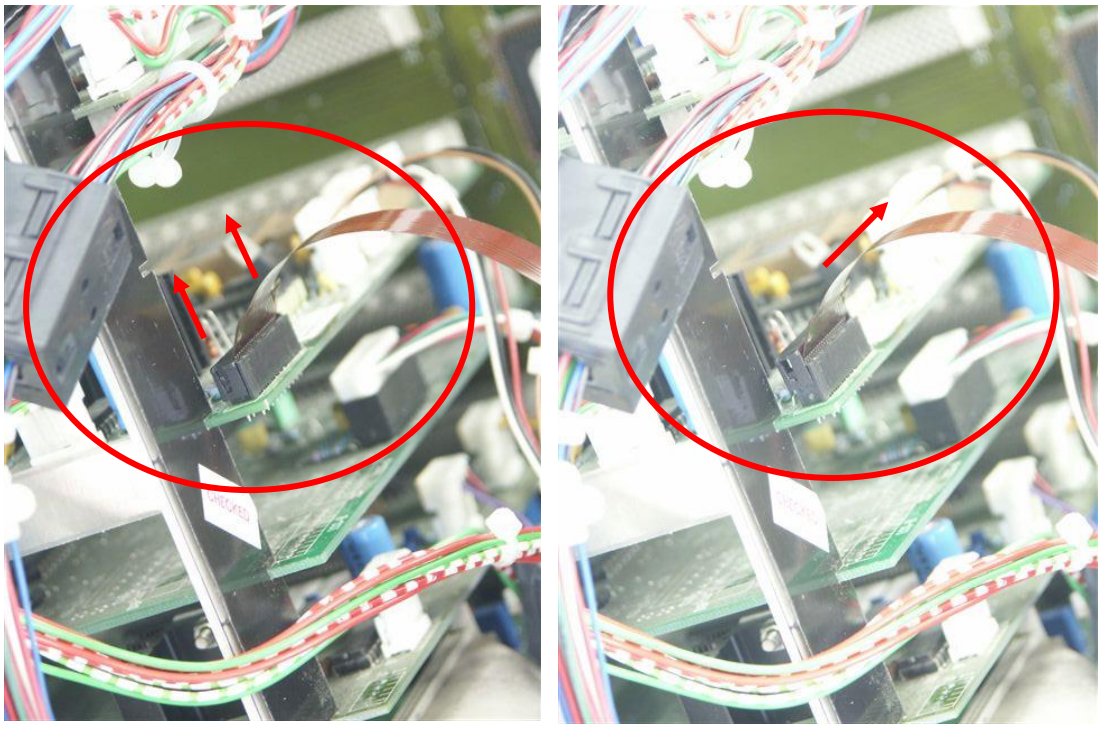

Figure 5. *disconnecting flex print from needle arm PCB. Left: closed PCB connector. Right: opened PCB connector).*

- Hold the sides of the PCB connector between thumb and pointing finger and pull top part of the PCB connector up in the directions marked by the arrows.
- Pull the flex print out of the opened PCB connector.

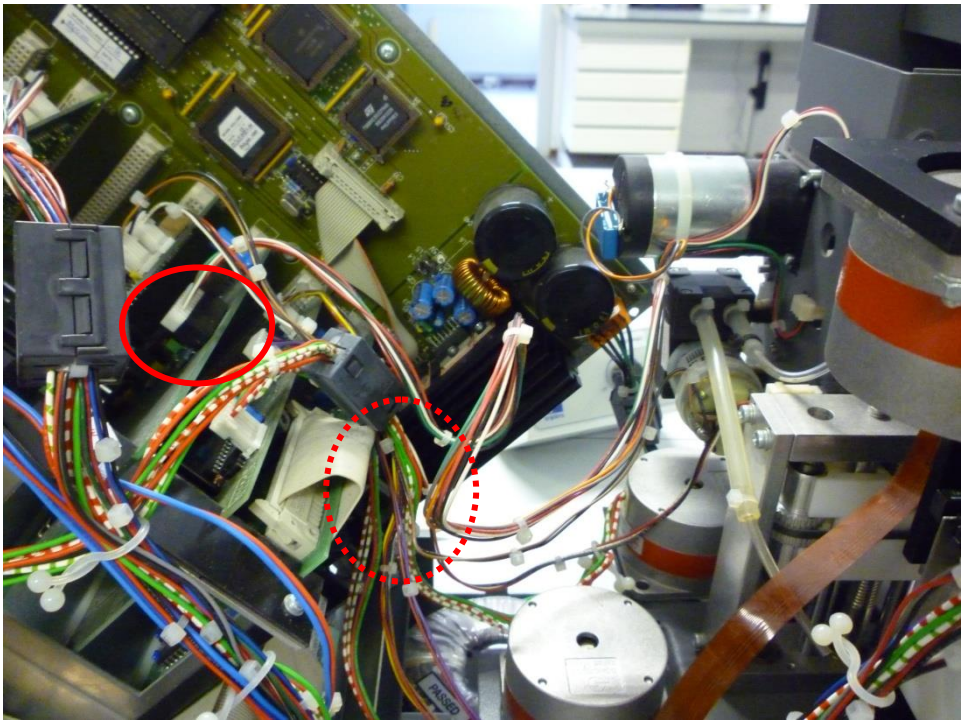

Figure 6. *Removing the valve cable from the cable tree and remove valve connector from valve PCB.*

- Open plastic twister from the cable tree holding the valve cable (dashed circle) and remove valve cable from the cable tree.
- Disconnect the valve connector from the valve PCB board (red circle).
- Remove the connectors to the optical sensor (red circles in picture below).

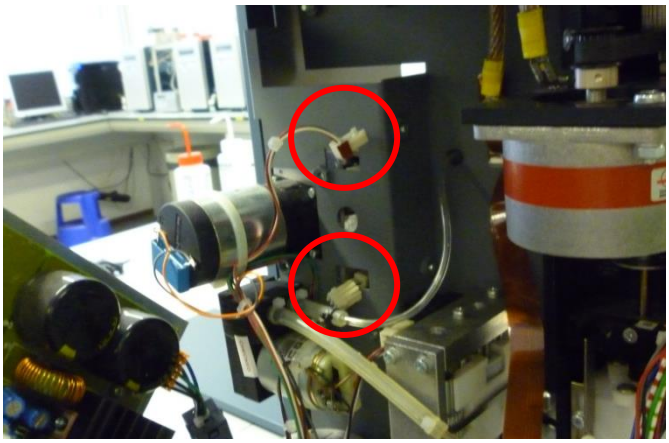

Figure 7. *Removing connectors of optical valve sensors.*

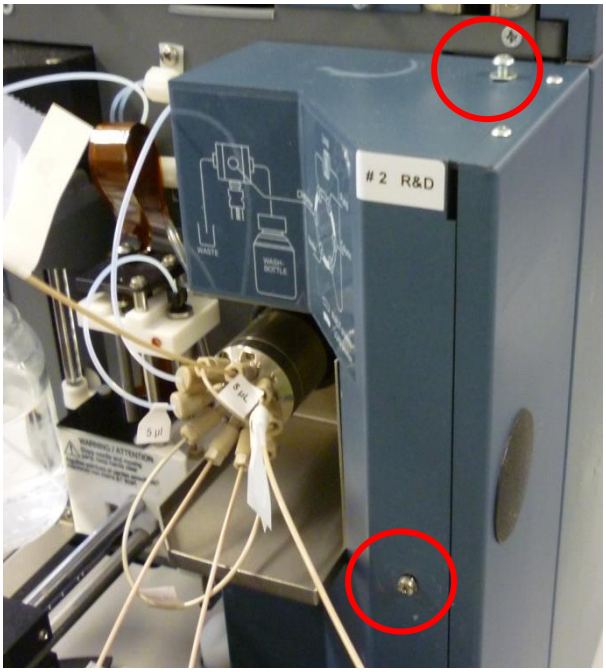

Figure 8. *Removing front panel holding the valve.*

- Remove the two screws encircled in red to loosen front panel holding the valve.
- Remove all tray segments directly in front of the front panel.
- Remove all tubing connections from the valve.
- Remove the black rubber ring around the valve.

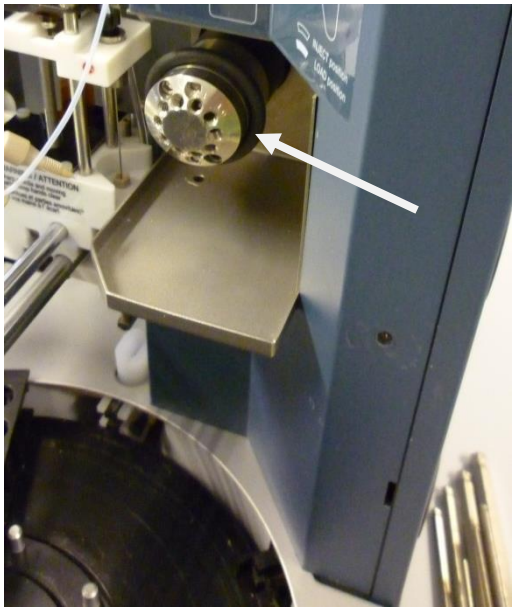

Figure 9. *Unit with tray segments removed, tubing removed. Black rubber ring is indicated with arrow.*

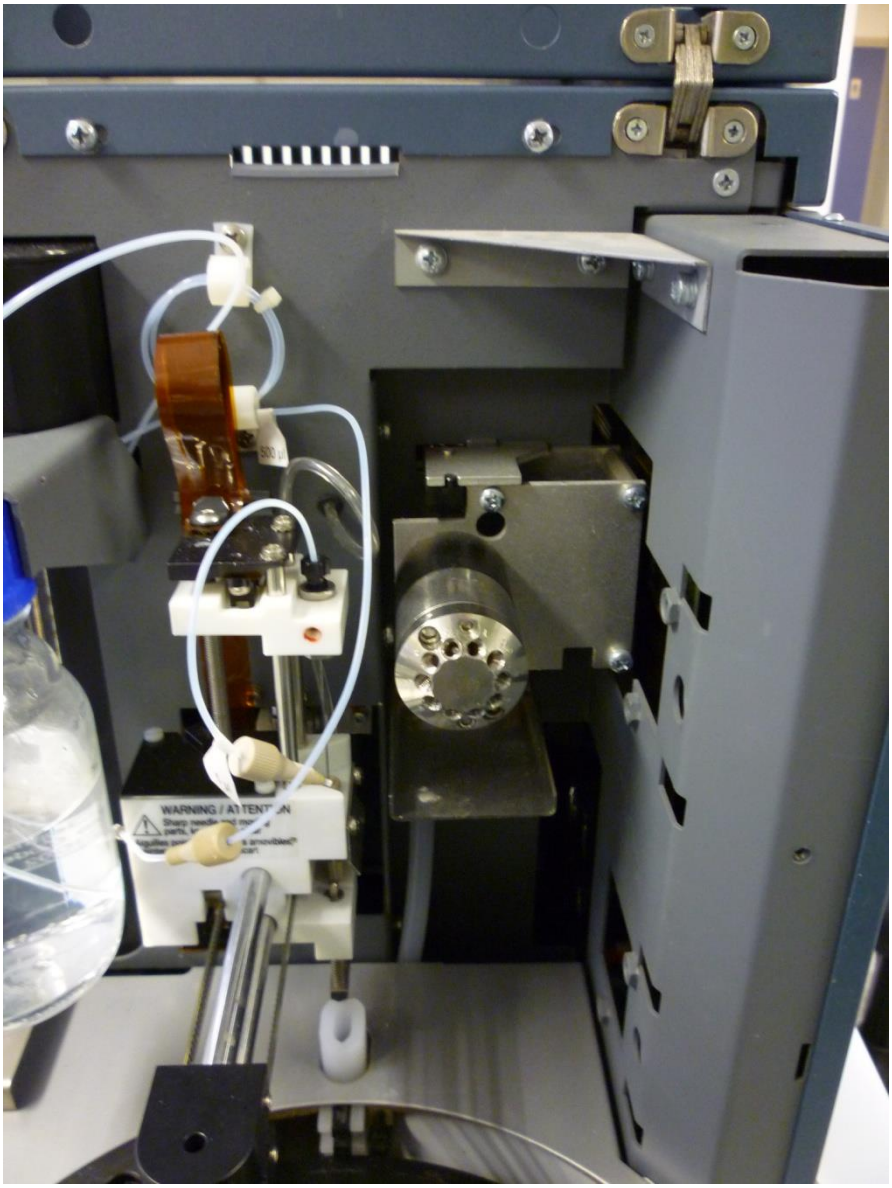

Figure 10. *Unit with front panel removed.*

- Remove the front panel holding the valve by pulling towards you.

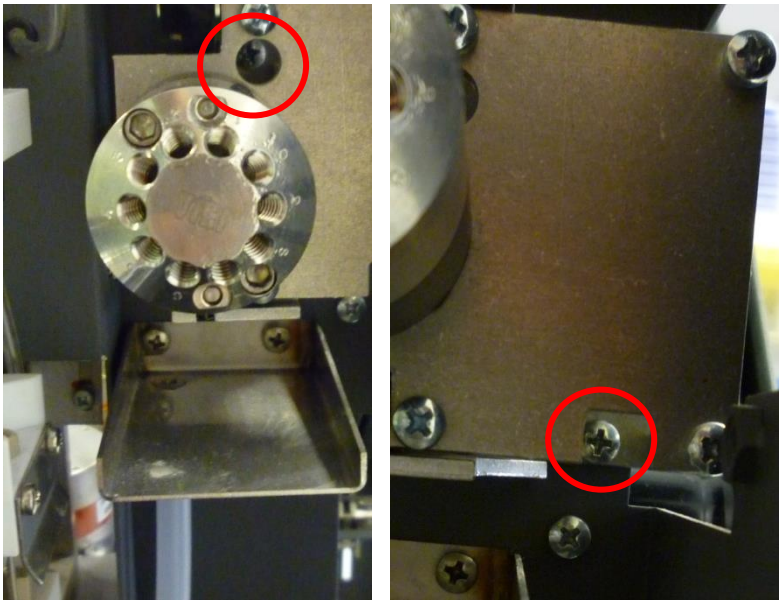

Figure 11. *Philips screws fixing valve to AS frame. Left side: screw located above valve. Right side: screw below valve on right side.*

- Remove the two Philips screw indicated on the two photos above (red circles).
- The valve assembly can now be removed from the front side of the sampler (pull valve towards you and guide the cables throught the valve opening in the AS frame.

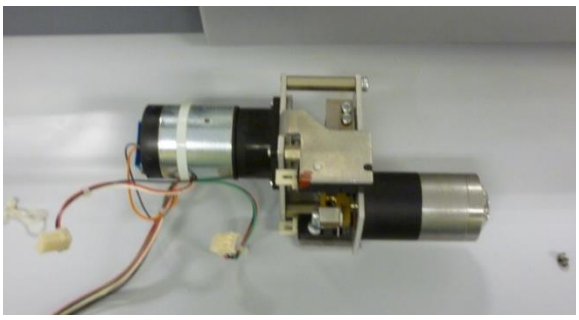

Figure 12. *AS 100 valve- actuator assembly.*

To install a new valve – actuator assembly follow the procedure in the reverse order.

Do <u>not</u> close the AS 100 unit or mount the covers before performing some basic start-up test to see if the unit boots up without errors!

C H A P T E R 3

Replacing the valve of a AS 100 valve-actuator assembly

Remove the AS 100 valve-actuator assembly as described in the previous section.

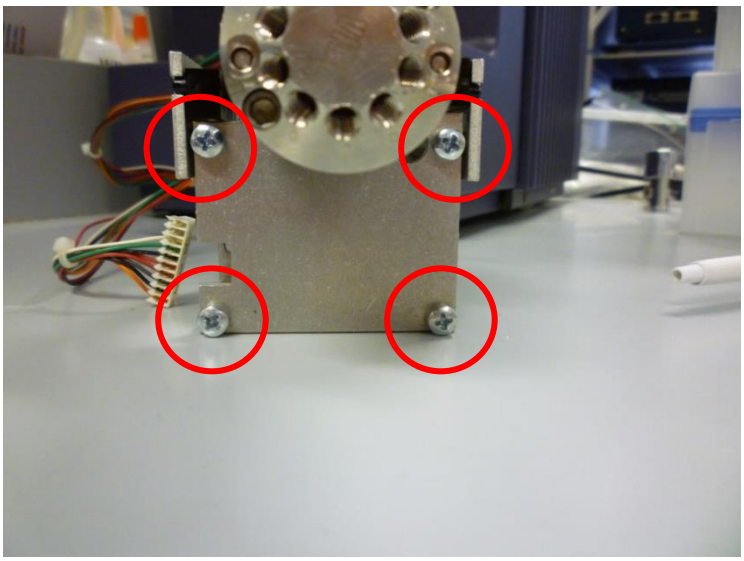

Figure 13. *AS 100 valve- actuator assembly front side.*

- Remove the screws encircled in red (straight line) with a Philips screwdriver.
- Remove the valve with front plate from the actuator.

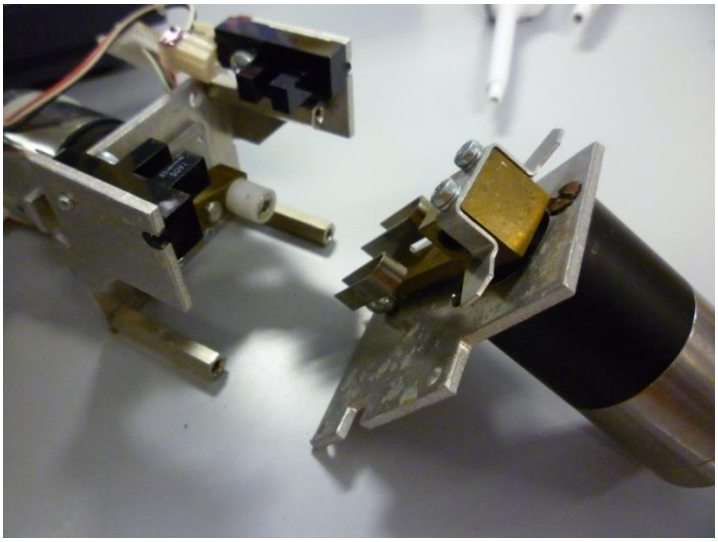

Figure 14. *AS 100 valve with front plate removed from actuator.*

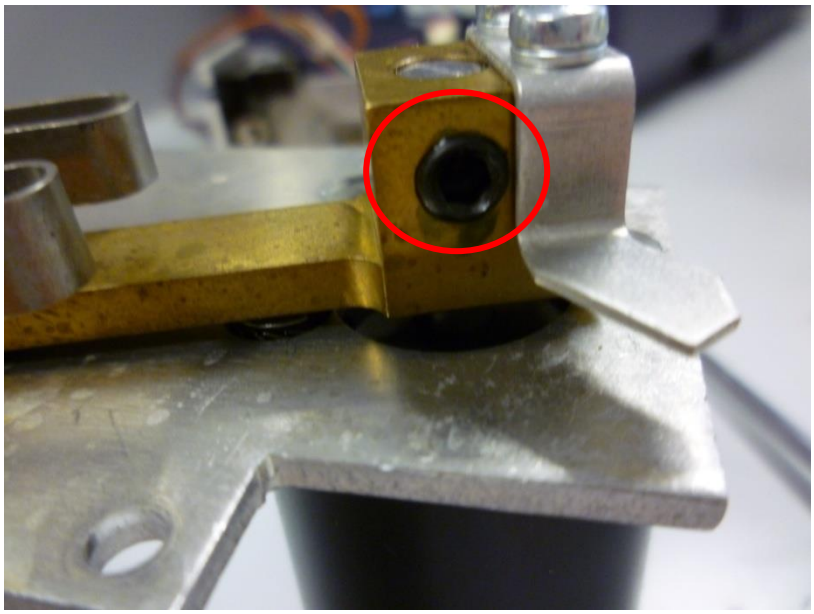

Figure 15 *Allen screw fixing the valve axis.*

- Remove the allen screws encircled in red.
- Remove the bronze colored arm from the valve axis. Note that some force is required to remove the arm because the axis is additionally glued with a bit of loctite. Use a flat head screwdriver (between the arm and the front plate to gently exert some force below the arm to lift it from the axis.

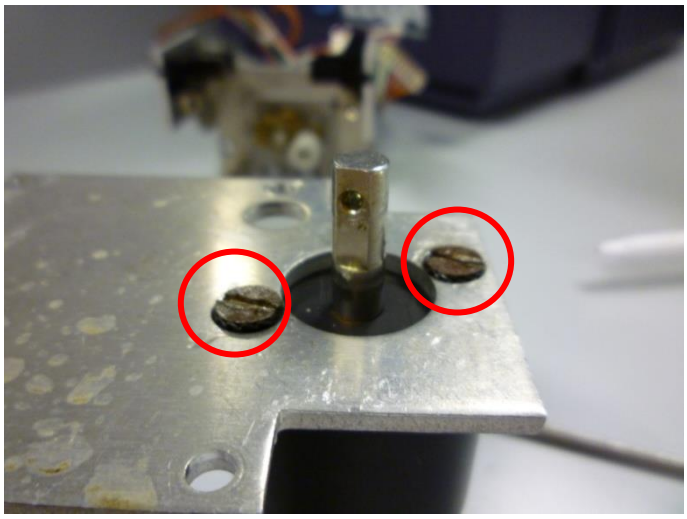

Figure 16 *Screw fixing the valve body to the actuator front plate.*

- Remove the screws encircled in red to unmount the valve from the actuator front plate. Note that it may require some force because these screws are also glued with some loctite.

The valve can now be replaced with a new valve. Mount the new valve by following the steps in this section in the reverse way. Glue the two screws (fig 16) and the allen screws (figure 15) with a bit of loctite glue to extra secure them.

After re-assembling the AS 100 valve-actuator assembly please follow the steps in the previous section (‘removing the valve-actuator assembly’) in the reverse order.

Do <u>not</u> close the AS 100 unit or mount the covers before performing some basic start-up test to see if the unit boots up without errors!

When the valve itself was replaced from the AS 100 valve-actuator assembly <u>ALWAYS</u> perform a Performance Qualification or Analytical test to assure that the valve is operation properly! See the AS 100 service manual (pn 181.0020) or Antec PQ documentation (pn 180.0028).