



TELEDYNE
CETAC TECHNOLOGIES
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ASX-560 / ASX-280 Autosampler



Installation Guide for Cytiva ÄKTA™ Systems

Manual Part Number **480237** Rev 3

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Teledyne CETAC Technologies
Customer Service & Support
14306 Industrial Road
Omaha, Nebraska 68144, USA

Phone (800) 369-2822 (USA only)

Phone (402) 733-2829

E-mail cetacservice@teledyne.com

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Overview

This guide will help you install your new autosampler and associated software in order to connect with the Cytiva ÄKTA system.

The *ASX-560/ASX-280 Autosampler Operator's Manual*, which you can find on the included USB flash drive, provides more information on every aspect of setting up the autosampler for a standard ICP application.

This guide shows common versions of the ASX-560 autosampler. The ASX-560 holds 4 racks; the ASX-280 holds 2 racks. Your autosampler may have different racks, a different probe, or other minor differences from what is shown.

WARNING

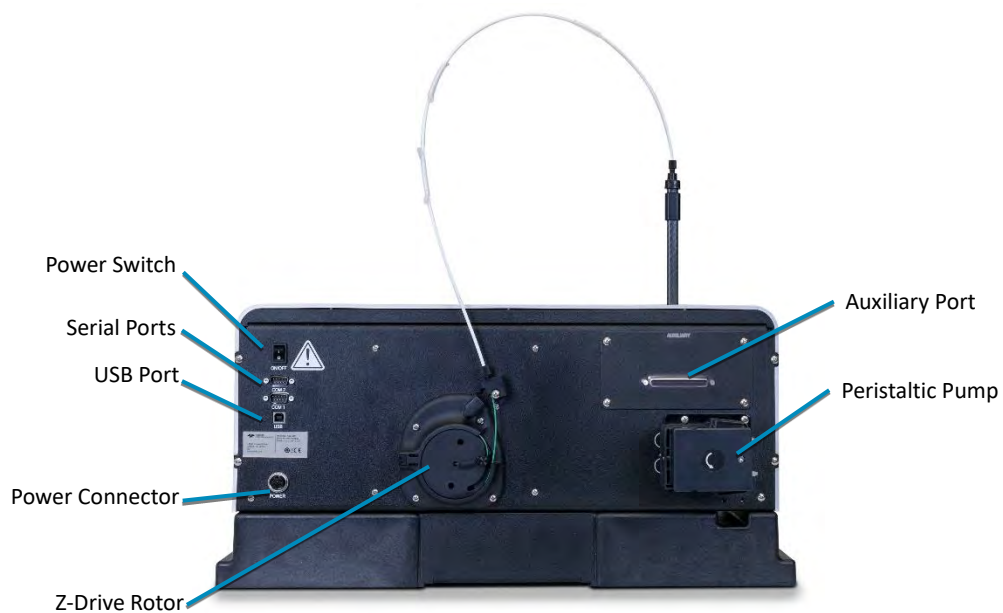
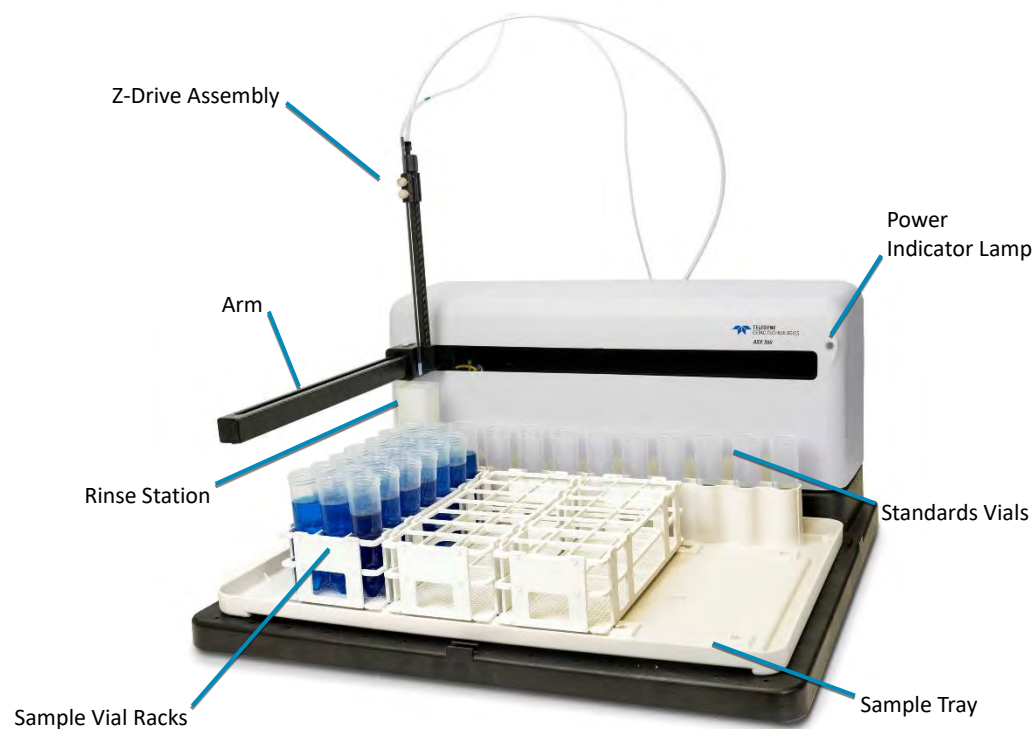
CHEMICAL INJURY HAZARD

The autosampler is intended for use only by qualified operators who have been trained in safe laboratory practices. Make sure you know the hazards associated with all of the chemicals you are using and take the appropriate precautions. Exposure to laboratory chemicals may result in serious injury.

MECHANICAL AND ELECTRICAL HAZARDS

The autosampler has moving parts which can pinch or puncture you. The autosampler also has electrical components which could pose a shock or fire hazard. This *Quick Installation Guide* assumes that you are familiar with autosampler safety. See the *Autosampler Safety Manual* (included with the autosampler) and the *Operator's Manual* (on the USB flash drive) for notices and safety information.

Autosampler Components



Before You Begin

You must have a ÄKTA I/O box, supplied by Cytiva, before you can connect the autosampler.

Step 1: Choose a Location

Place the autosampler close to the ÄKTA system. Place the autosampler where space, liquid waste, and power requirements can be met. If you have not already evaluated the intended location for the autosampler, see the *ASX-560/ASX-280 Operator's Manual* on the USB flash drive.

Step 2: Unpack the Autosampler

NOTICE

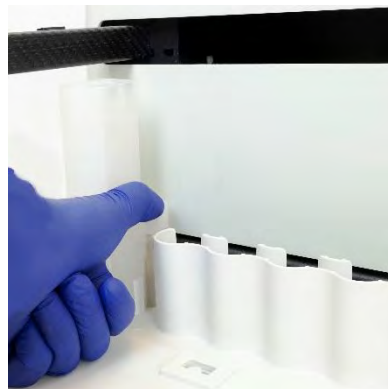
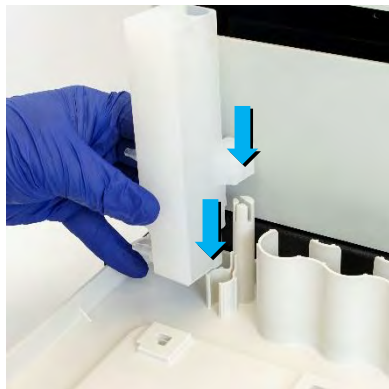
Do not lift the autosampler by its arm. The arm contains precision mechanical components which may be damaged if the arm is bent or twisted.

Instead, lift the autosampler by grasping the sides of the white cover.



- 1 Inspect all components for shipping damage.
- 2 Place the tray on the autosampler base.
- 3 Mount the rinse station.

Line up the dual rinse station then press it very firmly until it is completely seated.



Step 3: Install the ASX Dashboard Software

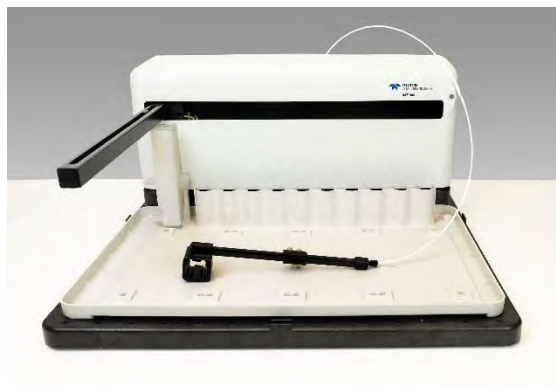
- 1 On the included USB flash drive, double-click the ASX Dashboard installation file and follow the prompts to complete the installation.

You do not need to run the software yet. The installation includes a USB driver which Windows will use when you connect the autosampler to the PC.

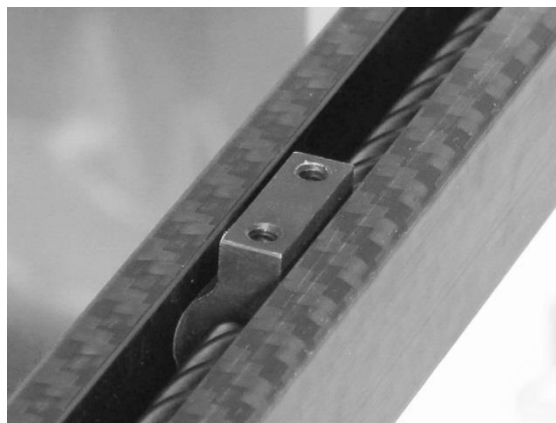
Step 4: Mount the Z-Drive

The Z-drive moves the probe up and down. The Z-drive is shipped detached from the autosampler.

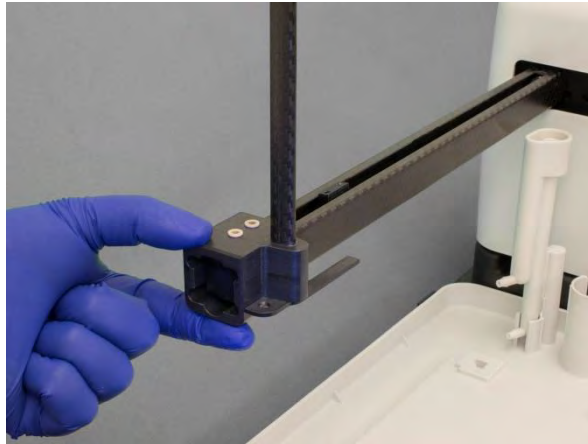
- 1 Carefully unpack the Z-drive.



- 2 Find the Y-axis carriage on the arm of the autosampler. The Z-drive will be attached to this carriage.



- 3** Slide the Z-drive onto the arm until the two holes align with the matching holes in the Y-axis carriage.



- 4** Secure the Z-drive to the carriage using the two thumbscrews. Tighten the thumbscrews using your fingers.



- 5** Feed the cable through the rear guide block and around the rotor; then tighten the nut to secure the cable sleeve to the guide block.



- 6** Turn the rotor clockwise as far as it will go.

- 7 Finish sliding the cable around the rotor on the back of the autosampler. Loosen the thumbscrew on the rotor to allow the cable to pass through the clamp.
- 8 Position the cable with your fingertip while you rotate the rotor counterclockwise until about 2 mm of cable extends past the clamp.



- 9 Hold the cable flat against the rotor and secure the cable by tightening thumbscrew on the rotor. The thumbscrew should be as tight as possible using just your fingers.



- 10** Turn the rotor clockwise as far as it will go and verify that there is a small gap between the Z-axis slider and cap at the top of the Z-drive (approximately 1-3 mm). Adjust the cable a bit if necessary.

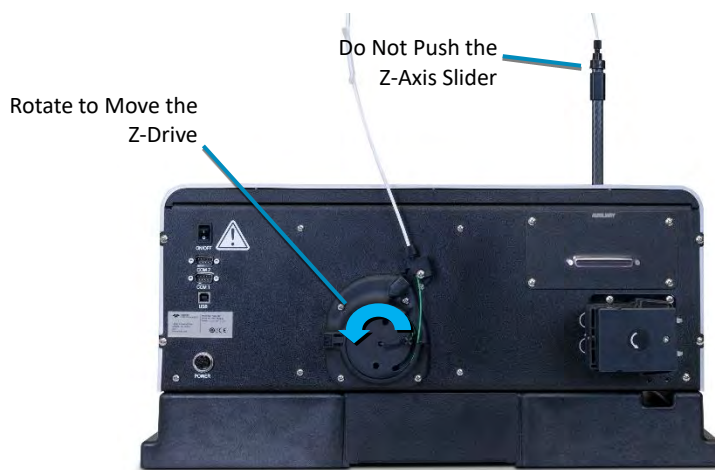


The cable is pre-cut to the proper length and does not need to be trimmed when properly installed.

- 11 Rotate the Z-drive rotor back and forth to ensure that the Z-drive moves up and down freely.

CAUTION

Never push the Z-axis slider to move it up or down. Pushing on the Z-axis slider can kink the drive cable. Instead, rotate the Z-drive rotor on the back of the autosampler.



If the rotor does not rotate freely, STOP and determine which part is sticking (see the *Operator's Manual*).

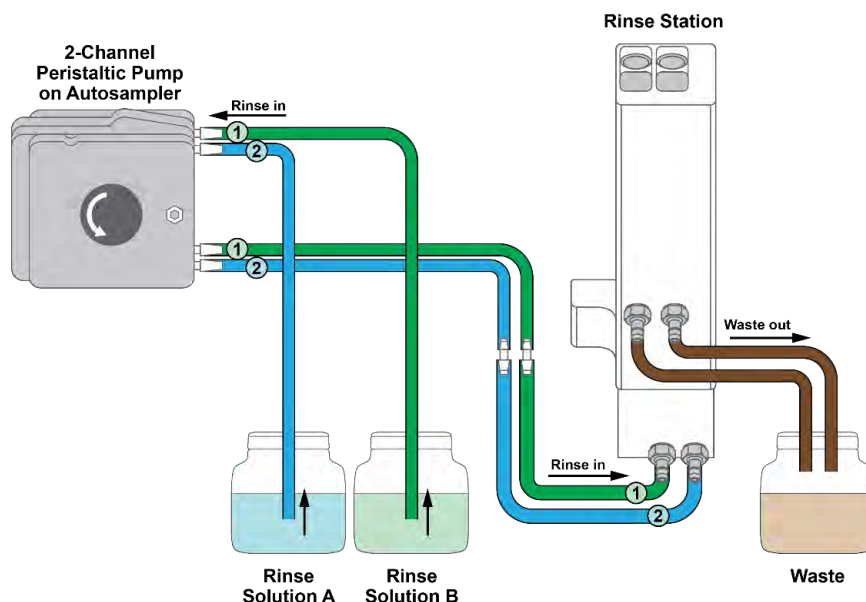
Step 5: Connect the Rinse Station

Note that the inlet of the rinse station is at the *bottom* of the rinse station. Depending on your application, the waste rinse solution may be returned to the rinse solution container and recycled, or it may be directed to a separate waste container.

Normally a dual rinse station is used. Dual rinse reduces sample contamination and carryover. A single rinse station can be used if a higher rinse flow rate is required.

The used rinse solution drains from both tubes by gravity. Therefore, the waste container for the used rinse solution must be *below* the bottom of the autosampler's rinse station.

The rinse solution can come from one container, or it can come from two different containers. Other tubing arrangements are discussed in the *Operator's Manual*.



- 1 Verify that the supplied tubing material is compatible with the rinse solution you are using. Tygon® tubing is supplied; contact CETAC if you need different tubing material.
- 2 Install peristaltic pump tubing which has 2 mm ID tubing on both channels. (On Teledyne CETAC tubing cartridges, this is indicated by black endplates.) See the *Operator's Manual* for instructions on how to install the tubing.
- 3 Locate the two short pieces of rinse and waste tubing. They should be about 41 cm (16 inches) long. Connect the larger ends to the *lower* fittings of the rinse station and route them through the “tunnel” under the autosampler head.
- 4 Connect the tubing to the fittings at the bottom of the pump.
- 5 Use an appropriate length of tubing to connect the rinse solution source(s) to the fittings at the top of the pump.

- 6 Connect two pieces of $\frac{3}{16}$ inch (4.8 mm) ID drain tubing to the upper connectors of the rinse station.

When first setting up the system, use two separate drain tubes. If the flow rate is low enough, and if the waste container is very close to the autosampler, it may be possible to join the tubes with a Y connector.

Ensure that the tubing outlet is placed so that it will remain above the surface of the liquid in the waste container. If the end of the tube is immersed, the waste solution might back up and overflow. If necessary, cut the tubing to a shorter length.

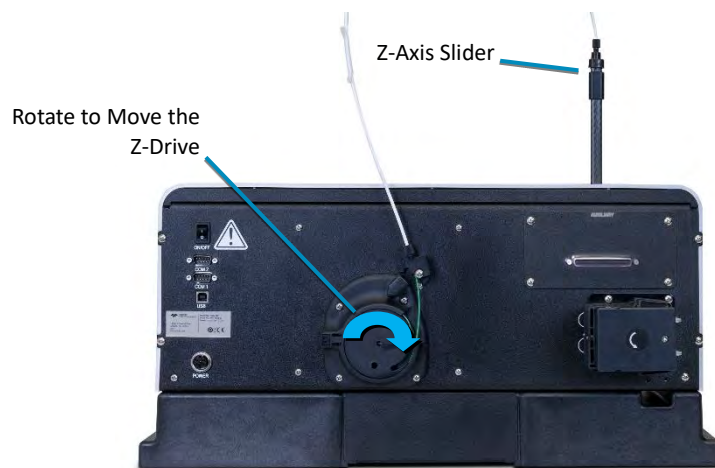
- 7 Once the autosampler has been set up and connected to a computer, use the ASX Dashboard software to enable the dual-rinse option and adjust the timing and flow rate.

Step 6: Install the Sample Probe

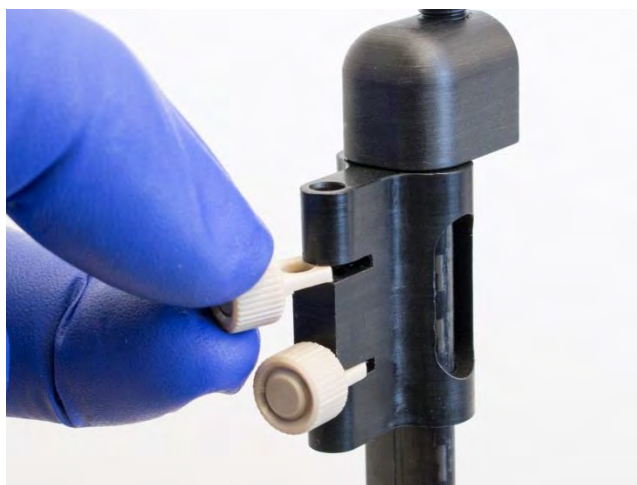
NOTE

To prevent contamination, wear gloves when handling the probe.

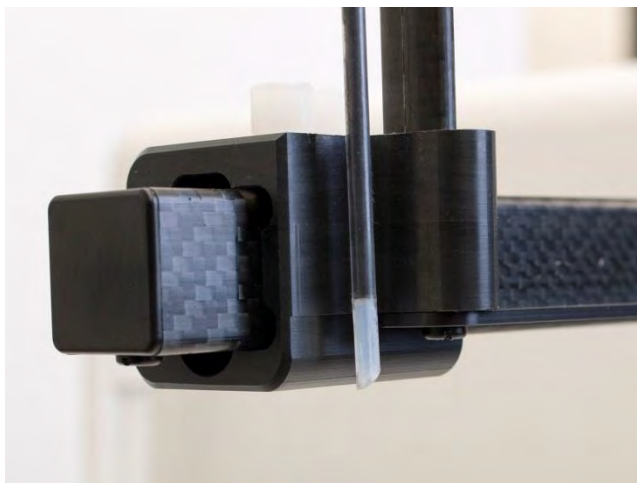
- 1 Shut down and unplug the autosampler.
- 2 Rotate the rotor on the back of the autosampler to move the Z-axis slider to the top of the Z-drive.



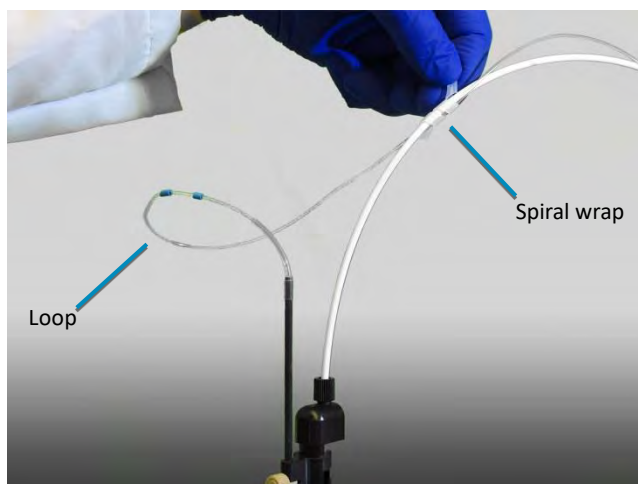
- 3 Loosen the nuts of the two probe clamps.
- 4 Insert the clamps onto the Z-axis slider.



- 5** Guide the probe straight down until the tip of the probe is level with the bottom of the Z-Drive.



- 6** Tighten the probe clamps.
- 7** Use the provided spiral wraps to secure the sample tube to the Z-drive cable. There should be just a little curve to the free sample tube when the probe is lowered, and an untangled loop when the probe is raised. Check that the tubing will not be stretched and will not snag on an obstacle when the probe is moved to the far corner sample positions.



- 8** Optional: Moisten a Kimwipes® wiper with 10% HNO₃ and wipe the probe to remove any aqueous or inorganic contamination from the surface. Then moisten a new Kimwipes wiper with a chromatography grade solvent such as n-propanol, isopropanol, or hexane and wipe the probe again to remove any oil. Let the probe air dry. Be careful not to touch the probe without gloves—residue from handling the probe can cause the surface tension properties of the probe surface to change and can lead to material dripping off the probe during use. Periodic cleaning may be necessary depending on the application.

Step 7: Connect the Sample Tubing to the Analytical Instrument

One end of the sample transfer tubing is pre-connected to the sample probe. The other end of the tubing should be connected to the sample inlet port of the ÄKTA instrument.

The tubing should be long enough to allow the sample probe to move easily to every position. On the other hand, keep the tubing as short as possible to minimize carryover between samples.

Step 8: Connect the Power Supply

The autosampler is powered by the included external power supply. Ensure that you position the autosampler so that the power cord is not blocked and can be quickly disconnected if needed.

- 1 Turn the power switch on the autosampler OFF.
- 2 Check the plug on the power cord to verify that it is of the correct type for your country.
- 3 Plug the power cord into a power outlet.
- 4 Plug the power cord into the power supply.



- 5 Plug the power supply into the POWER connector on the autosampler.
- 6 Turn the power switch on the autosampler ON.

Step 9: Connect the Host Computer

Use either a serial cable or a USB cable (not both).

USB Connection

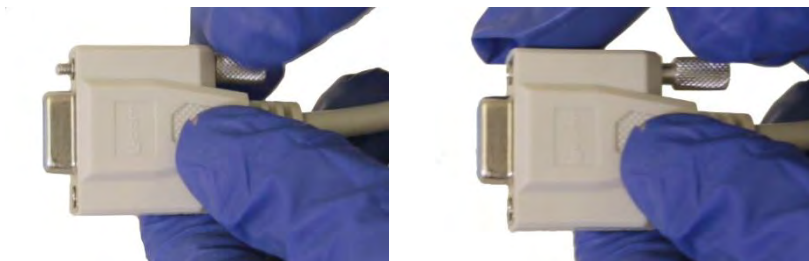
- 1 Power on both the computer and the autosampler.
 - 2 Connect the USB or serial cable between the host computer and the autosampler.
 - 3 Allow Windows to search for a driver. Windows will automatically find the driver which was installed with the ASX Dashboard software. The driver will make the USB port emulate an RS-232 COM port.
-

Serial Connection

- 1 Connect the serial cable from the serial port on the host computer to the COM1 port on the autosampler.

Step 10: Connect ASX 560 I/O Board to ÄKTA I/O Box

- 1 Find the custom cable which is supplied with the autosampler. Turn the thumbscrews counterclockwise until the screws are no longer protruding.



- 2 Connect the 37-pin end of the custom cable to the **AUXILIARY** port on the back of the autosampler. Secure the cable with the thumbscrews.



- 3 Connect the 9-pin end of the custom cable to the **Digital In/Out** port on the ÄKTA I/O box. Secure the cable with the thumbscrews.



Step 11: Configure the Autosampler Speed

- 1 Open the ASX Dashboard software, then click **Configuration** to adjust the configuration of the autosampler.



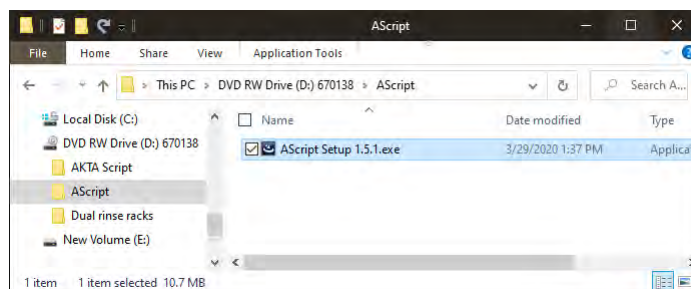
- 2 Change the settings for the X/Y and Z speed from 2 to 4. Then change the pump speed to its maximum value of 100% and click **Write** to update the firmware.
- 3 Exit Autosampler Config.

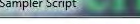
Step 12: Install the AScript Software

You will need to know:

- The serial number of your autosampler (can be found on the back of the autosampler).
- The COM port number of the autosampler. COM 1-3 are serial connections and USB connections are COM 4 and above. If you use a USB connection, the USB driver software will automatically assign a COM port number when you plug in the autosampler for the first time.

- 1 On the included USB flash drive, select the AScript installer file and follow the installation process through to completion.

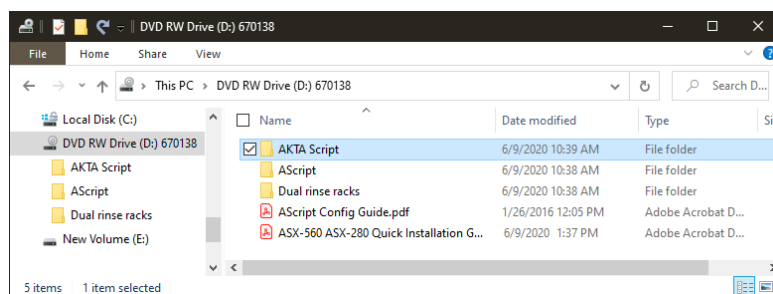


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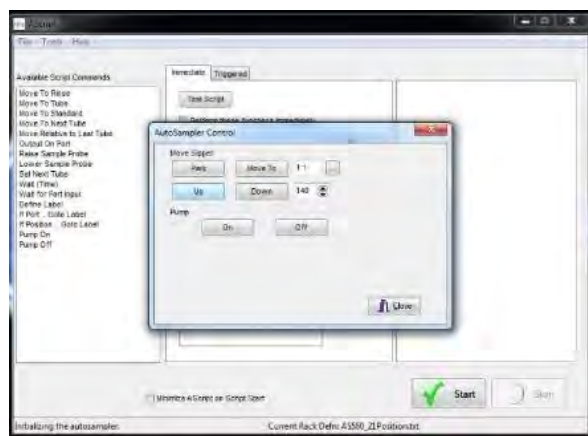
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- The screenshot shows a Windows Explorer window titled 'RaidDef-Flas'. The address bar displays '\\\\localhost\\RaidDef-Flas'. The left sidebar shows the navigation pane with 'Favorites', 'Libraries', and 'Computer' sections. The main pane displays a list of files and folders with columns for Name, Date modified, and Type. The files are listed as follows:
- | Name | Date modified | Type |
|-------------------|------------------|---------------|
| AS380_900position | 14-12-2013 20:52 | Text Document |
| A2000_215position | 04-08-2009 15:35 | Text Document |
| A5000_240position | 04-08-2009 15:38 | Text Document |
| A5000_400position | 04-08-2009 15:08 | Text Document |
| A5000_400position | 04-08-2009 15:36 | Text Document |
| A5000_900position | 04-08-2009 15:36 | Text Document |
| A5000_215position | 08-12-2013 17:58 | Text Document |
| A5000_240position | 08-12-2013 17:58 | Text Document |
| A5000_400position | 08-12-2013 17:04 | Text Document |
| A5000_600position | 04-12-2013 21:43 | Text Document |
| A5000_900position | 04-12-2013 21:47 | Text Document |
| A5000_120position | 26-06-2007 12:06 | Text Document |
| A5000_900position | 20-10-2009 17:38 | Text Document |

- 5 On the USB flash drive, open the AKTA script folder and copy the script to a convenient folder.



- 6 Test the movement and communication between the PC and the autosampler by selecting **Tools** then **Autosampler Controls**. Test the rack configuration by moving to a specific vial location.



Step 13: Running a Script in AScript

- 1 From the menu bar, select **File** then **Open Script**. Select the script copied from the USB flash drive and click **OK**.
- 2 Select the **Triggered** tab and the script will be displayed here.
- 3 Click **Start** and you will be asked how many vials you want to analyze. The number of vials will correspond to the number of samples you wish to run in Unicorn. If you have CIP between samples the number of vials will be double the number of sample tubes.



Step 14: Running the Unicorn method

- 1 Program your Unicorn method. After equilibration insert the **CETAC sample application**, and **post sample application S1 wash reset** phases. These ensure loading via the autosampler and washing of the sample line. If you wish to CIP (clean in place) between samples insert **Wash NaOH Cetac** and **post CIP S1 wash and reset** phases.
- 2 Set up the scouting picking sample ID as your scouting variable and save the method.
- 3 Run after starting the AScript.

Note that with no CIP, the number of sample tubes is the number of samples. With CIP, the number of sample tubes is 2 x the number of samples (sample, NaOH, Sample, NaOH, etc.). You will need this number when you begin the AScript.