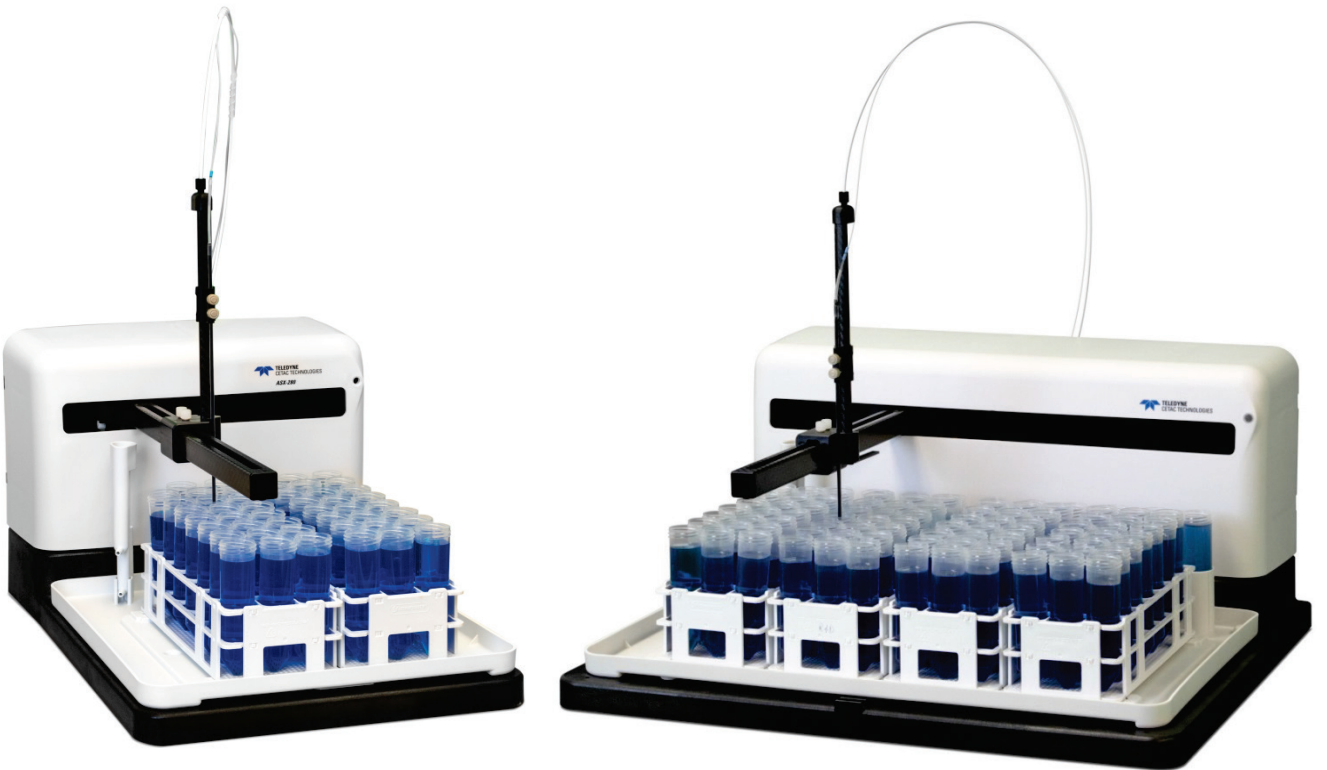




**TELEDYNE**  
**CETAC TECHNOLOGIES**  
Everywhereyoulook™

## ASX-560 / ASX-280 Autosampler



## Quick Installation Guide

Manual Part Number **480216** Rev 3

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## Overview

This guide will help you install your new autosampler with a simple configuration.

The *Operator's Manual*, which you can find on the included CD, provides more information on every aspect of setting up the autosampler for your application.

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

### WARNING

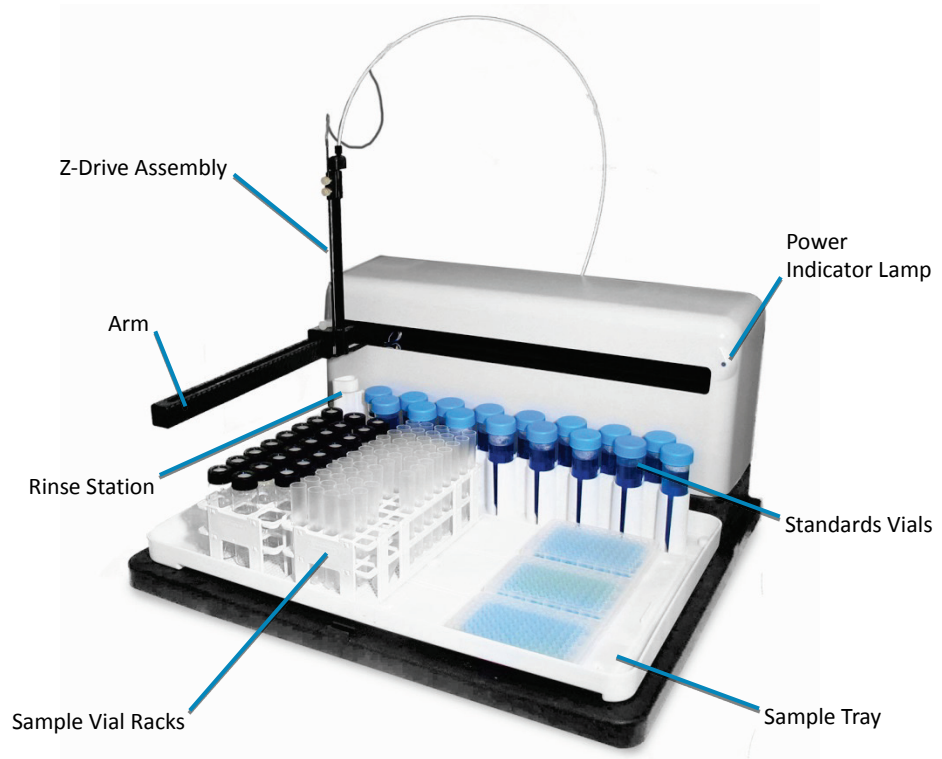
#### CHEMICAL INJURY HAZARD

**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.**

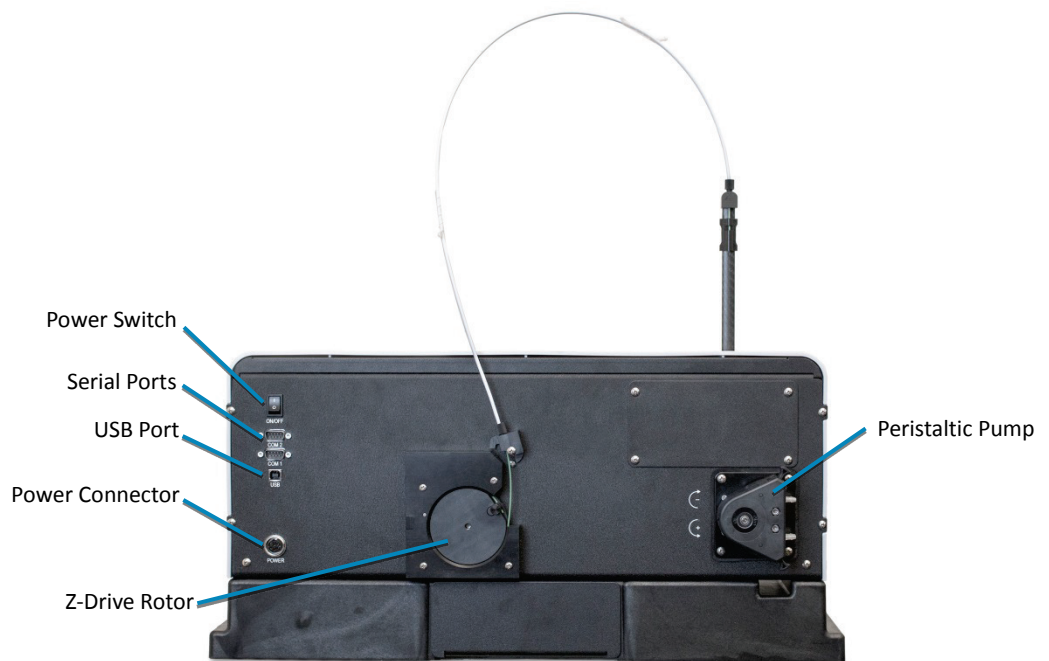
#### MECHANICAL AND ELECTRICAL HAZARDS

**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 CD) for notices and safety information.**

## Autosampler Components



**Figure 1** Autosampler—Front View



**Figure 2** Autosampler—Back View

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## Step 1: Choose a Location

Place the autosampler close to the ICP-MS or other analytical instrument. 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 *Operator's Manual*.

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## Step 2: Unpack the Autosampler

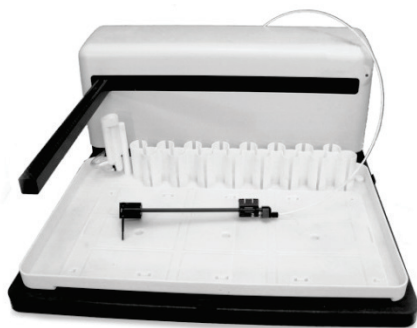
- 1 Inspect all components for shipping damage.
- 2 Place the tray on the autosampler base.
- 3 Mount the rinse station.

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## Step 3: Mount the Z-Drive

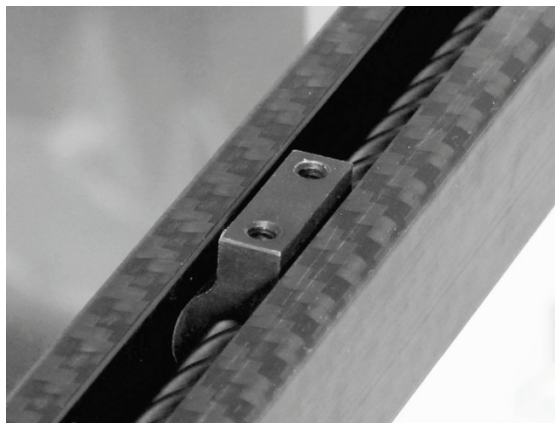
The Z-drive moves the probe up and down. The Z-drive is shipped detached from the autosampler.

- 1 Carefully unpack the Z-drive.



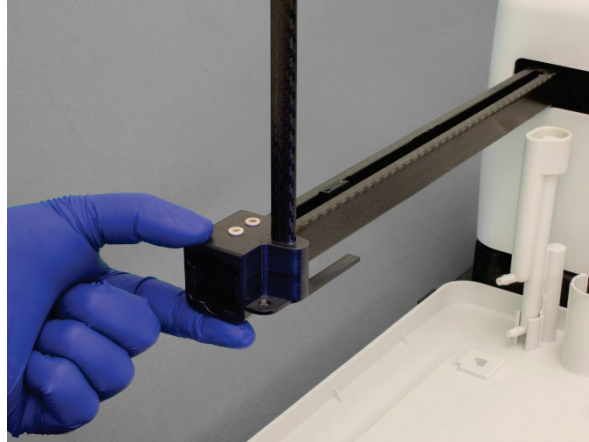
**Figure 3** Z-Drive Before Installation

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



**Figure 4** Y-Axis Carriage

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



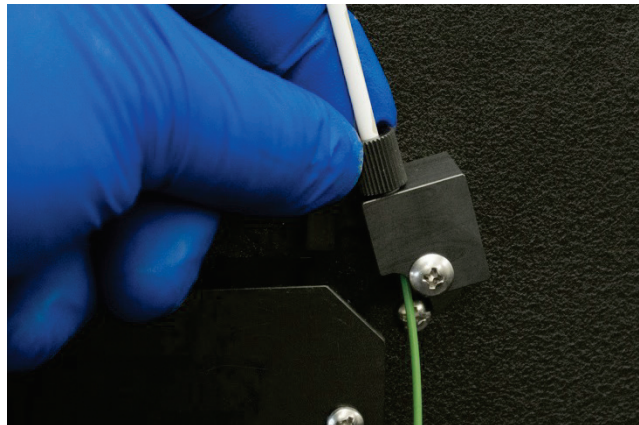
**Figure 5** Sliding the Z-drive Onto the Arm

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



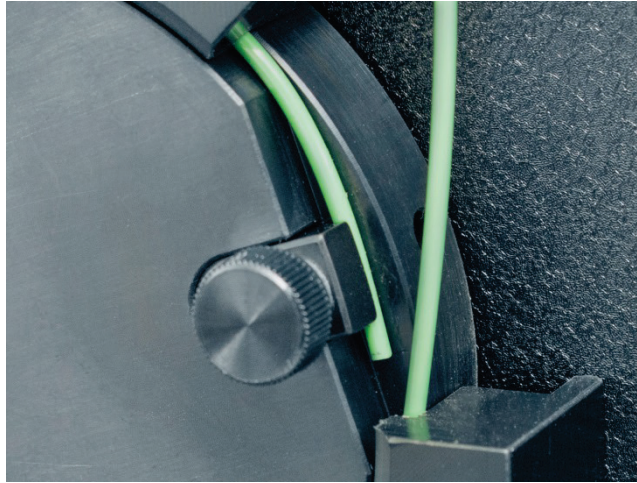
**Figure 6** Securing the Z-Drive

- 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.



**Figure 7** Guide Block with Nut

- 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, with about 2 mm of cable extending past the clamp.



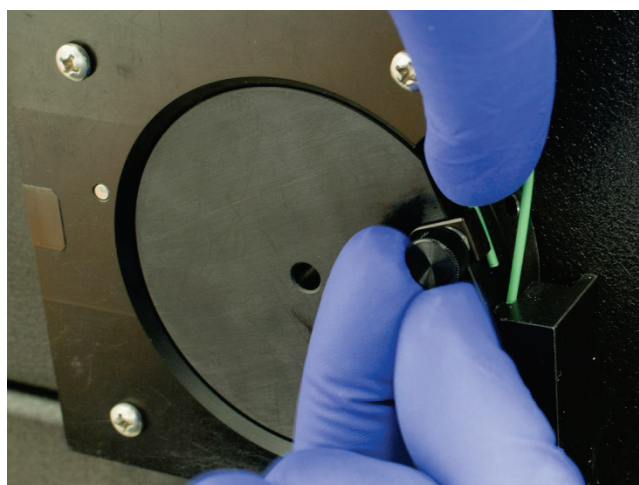
**Figure 8** Position of Cable on Rotor

- 8 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.



**Figure 9** Z-Drive at Top Position With Gap

- 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.



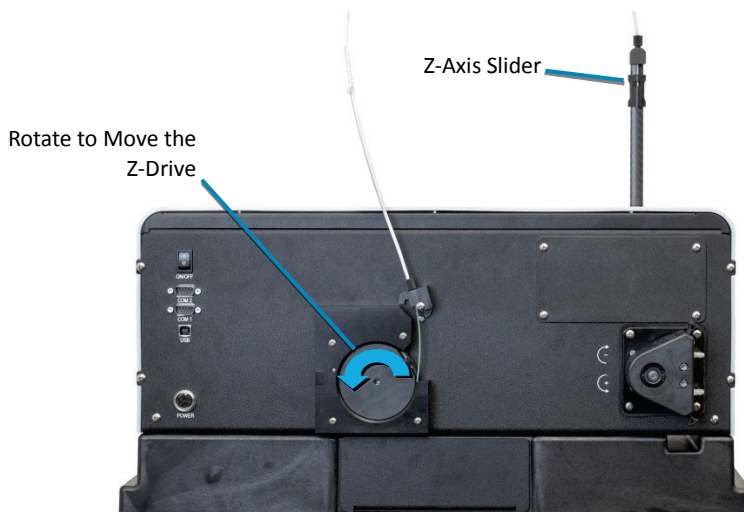
**Figure 10** Securing Cable to Rotor

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

- 10 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.

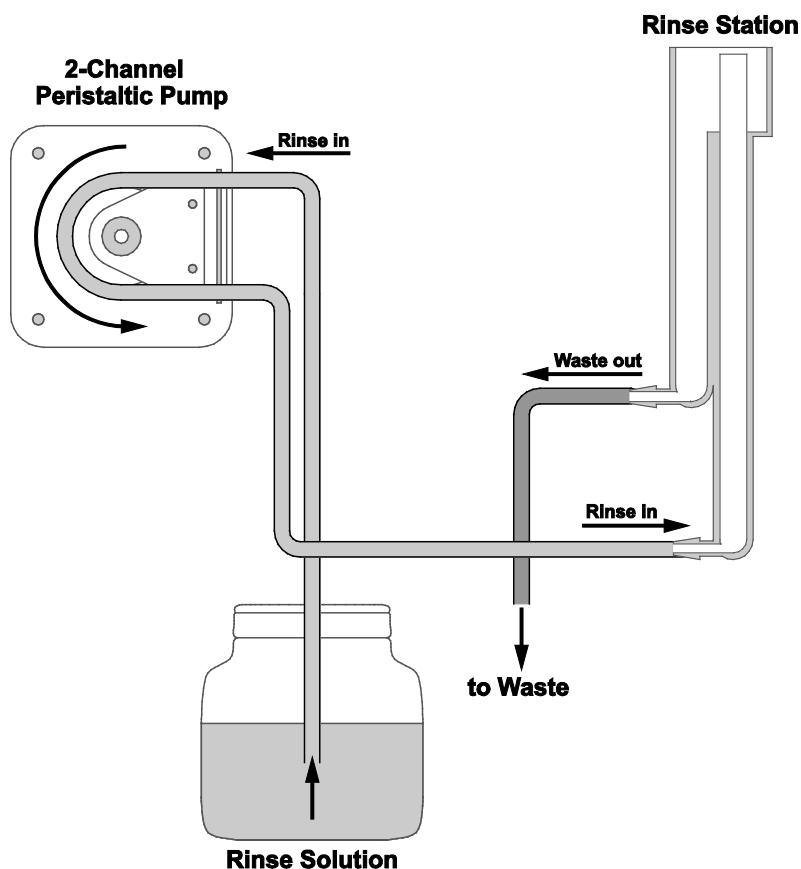


**Figure 11** Z-Drive Rotor

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

## Step 4: Connect the Rinse Station

The simplest arrangement is for one channel of the peristaltic pump to supply rinse solution to the rinse station, while the used rinse solution drains by gravity. Other tubing arrangements are discussed in the *Operator's Manual*.



**Figure 12** Gravity Drain Rinse Arrangement

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.

- 1 Verify that the supplied tubing material is compatible with the rinse solution you are using. Most autosamplers are supplied with Tygon® tubing. Contact CETAC if you need different tubing material.
- 2 Locate one of the pieces of adapter tubing.



**Figure 13** Adapter Tubing



- 3 Connect the smaller end of the adapter tubing to the fitting at the bottom of the pump, closest to the back of the autosampler.



**Figure 14** Connecting the Pump Output

- 4 Connect the larger end of the tubing to the bottom fitting of the rinse station.



**Figure 15** Connecting the Rinse Station Input

- 5 Use an appropriate length of the smaller  $\frac{1}{8}$  inch (3.2 mm) ID tubing to connect the rinse solution source to the fitting at the top of this channel.



**Figure 16** Connecting the Rinse Solution Source to the Pump

- 6** Connect up to 1.8 meters of the larger  $\frac{3}{16}$  inch (4.8 mm) ID tubing between the outlet fitting of the rinse station and the waste container. Carefully press the tubing straight in to avoid breaking the fitting.



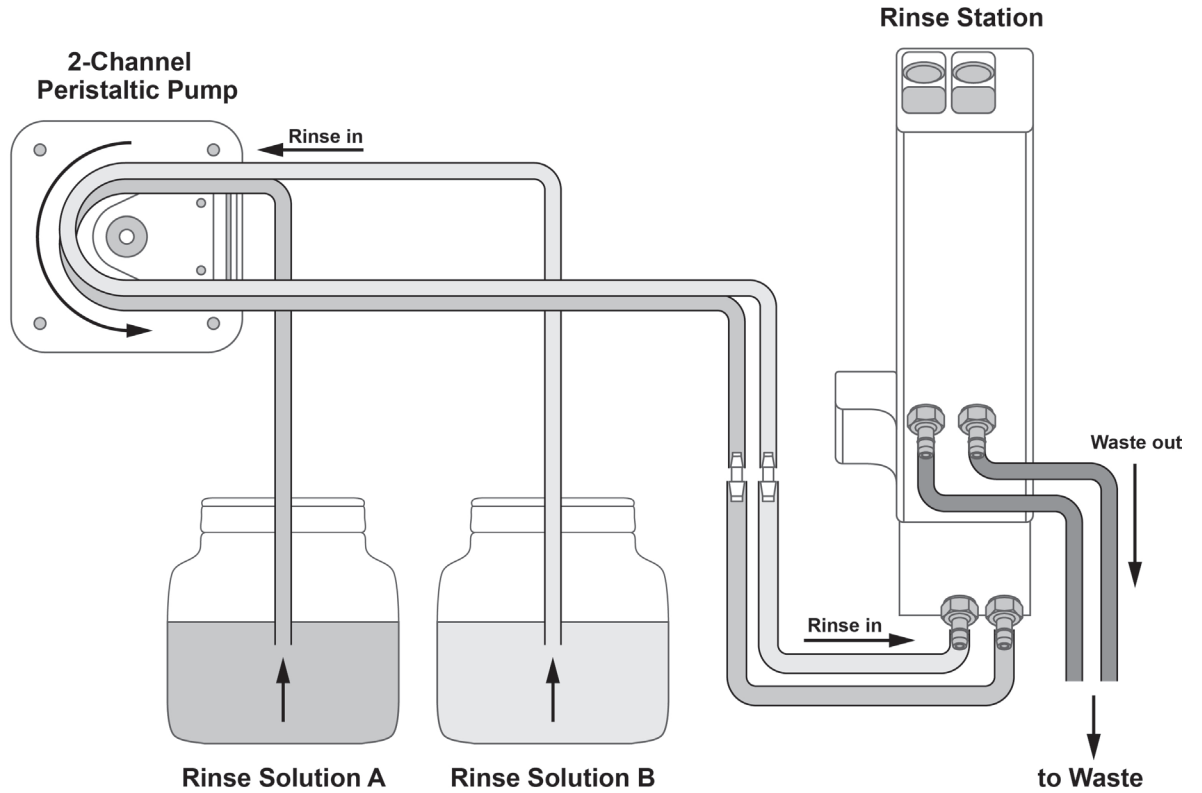
**Figure 17** Connecting the Rinse Station Drain

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.

### (Optional) Connecting a Dual Rinse Station

A dual rinse station can be used to reduce sample contamination and carryover.

In the simplest arrangement, one channel of the peristaltic pump supplies rinse solution to both tubes the rinse station, while the used rinse solution drains from both tubes by gravity. Other tubing arrangements are discussed in the *Operator's Manual*.

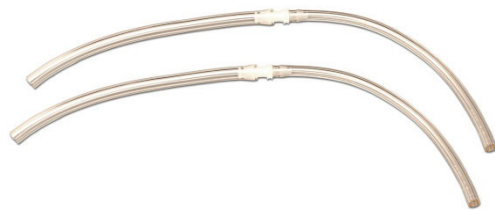


**Figure 18** Dual-Rinse Gravity Drain Tubing Arrangement



**Figure 19** Dual Rinse Station

- 1 Locate the two pieces of adapter tubing.



**Figure 20** Adapter Tubing

- 2 Route the adapter tubing through the “tunnel” under the autosampler head, with the smaller end facing the peristaltic pump and the larger end facing the rinse station.
- 3 Connect the tubing to the bottom two connectors of the rinse station.
- 4 Connect the tubing to the fittings at the bottom of the pump.
- 5 Use an appropriate length of the smaller  $\frac{1}{8}$  inch (3.2 mm) ID 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.

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.

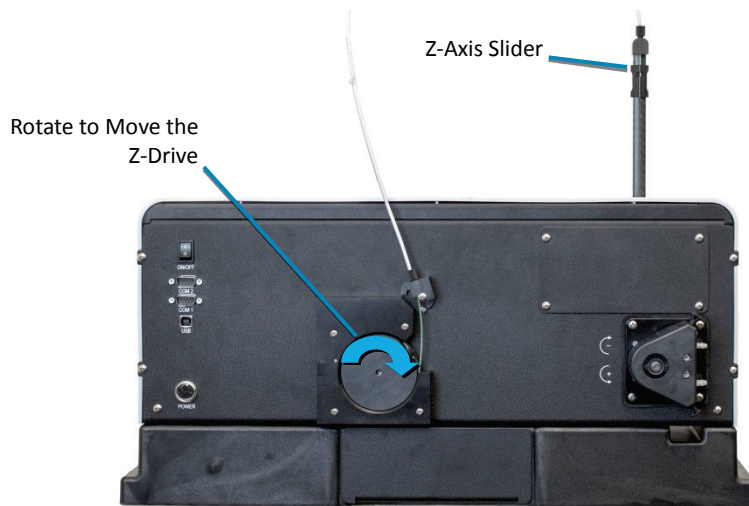
- 7 Once the autosampler has been set up and connected to a computer, use the ASX Dashboard software to enable the dual-rinse option and set the pump flow rate to at least 30 mL/min.

## Step 5: Install the Sample Probe

### NOTE

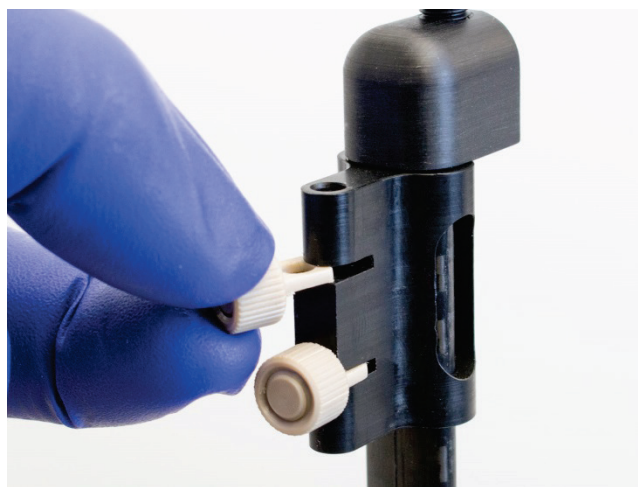
To prevent contamination, wear gloves when handling the probe.

- 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.



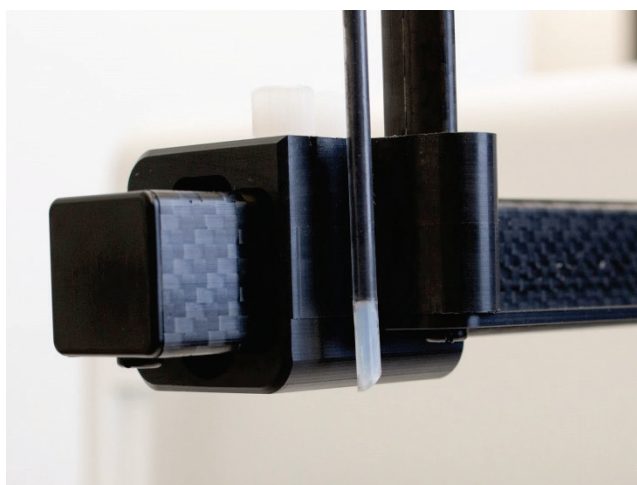
**Figure 21** Raising the Z-Axis Slider

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



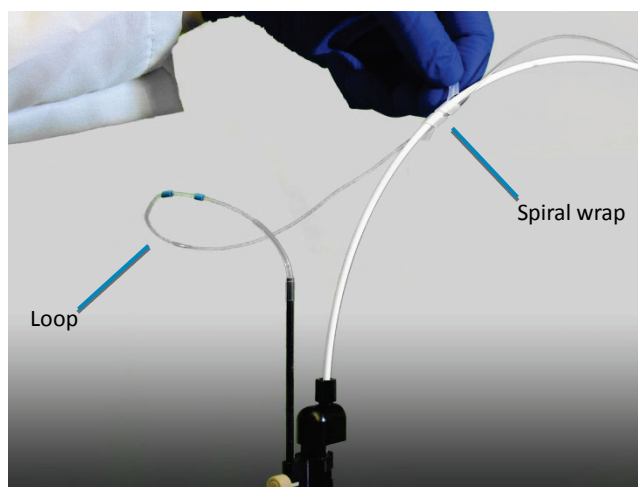
**Figure 22** Installing the Probe Clamps

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



**Figure 23** Adjusting the Probe Height

- 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.



**Figure 24** Positioning the Sample Tubing

- 8** Optional: Moisten a Kimwipes® wiper with 10% HNO<sub>3</sub> 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.

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## Step 6: Connect the Sample Tubing to the Analytical Instrument

One end of the sample transfer tubing is pre-connected to the sample probe.

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.

- 1 Determine the length of the sample transfer tubing you need, and cut it to size.
- 2 Connect the free end of the sample transfer tubing to the inlet of the analytical instrument's peristaltic pump.

If an enclosure is present, connect the trimmed tubing from the sample probe to the inside bulkhead using the nut and ferrule provided with the enclosure. Then attach tubing from the outside bulkhead to the input of the analytical instrument.

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## Step 7: 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.



**Figure 25** Power Supply

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

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## Step 8: Connect the Host Computer

You can use a USB or serial cable.

### USB Connection

- 1 Connect the USB cable between the host computer and the autosampler.
- 2 Allow Windows to search for a driver. In most cases, the driver will be found online and installed automatically. In some cases, you may need to install a driver from the CD; see the *Operator's Manual* for information.

The USB 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.

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## Step 9: Test the Connection

- 1 Install the ASX Dashboard software from the CD.
- 2 Use the IQ-OQ utility (part of the ASX Dashboard software) to test autosampler operation.
- 3 Use the Autosampler Config utility to adjust the speed of the autosampler.
- 4 Use the manual controls in the ICP-MS software (or other instrument control software) to verify that the software is communicating with the autosampler.