

# ENHANCE ICP PERFORMANCE AND PRODUCTIVITY WITH THE ASSIST

Assists  
you with

faster throughput  
improved accuracy  
better precision  
automatic dilution  
addition of internal standard

The Assist™ is an automated sample introduction system for ICP-OES or ICP-MS. It consists of purpose-built programmable syringe drives with an integrated valve system. The Assist delivers the highest level of accuracy, stability and sample throughput by controlling the delivery of both sample and internal standard, eliminating the inaccuracies and pulsations caused by peristaltic pumps.



## The Assist provides you with:

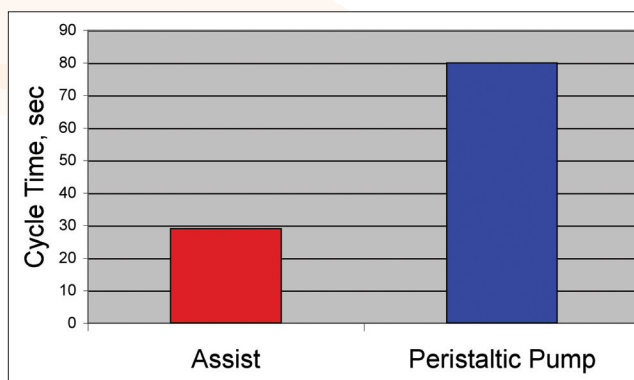
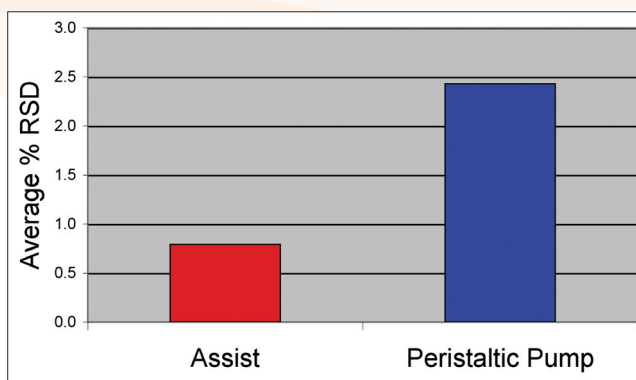
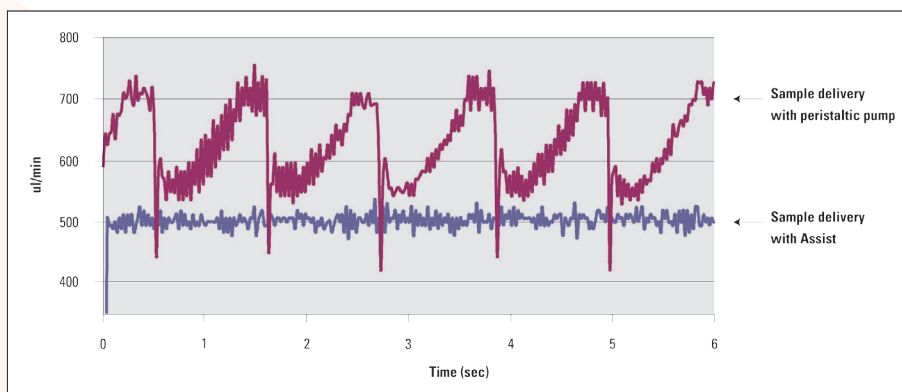
- **Twice the sample throughput.** The rinse time, stabilization time and the time for the sample to move from the autosampler to the nebulizer are all reduced. This reduces the time for a typical analysis by at least half.
- **Better precision.** The sample is delivered by a precisely controlled syringe, eliminating the signal pulsation problem which occurs with the usual peristaltic pump delivery system.
- **Better accuracy.** The internal standard is delivered by a second precision syringe drive, ensuring that the ratio of internal standard to sample is accurately maintained. The fluctuations in this ratio that occur when the internal standard is delivered by peristaltic pump are eliminated, greatly improving the analytical accuracy.
- **Automatic dilution.** The second syringe drive can also be used to deliver a diluent, enabling accurate dilution by a factor of up to 100:1 to be carried out automatically.
- **Reduced carryover.** The sample does not contact any peristaltic pump tubing or syringe barrel and the sample path is totally inert. This allows for a faster rinse and reduces carryover.
- **Low sample and internal standard usage.** The volumes required are substantially reduced, resulting in lower cost of reagents and less waste.
- **Flexibility in the selection of the ratio of sample to internal standard.** The syringe system allows you to use sample to internal standard ratios of up to 100:1 and still get accurate correction.
- **Longer life of consumables.** The lower sample volume and reduced analysis time mean that you save on consumables such as torches and ICP-MS cones as well as argon.
- **Compatibility.** The Assist software is configured to operate with almost all models of ICP-MS, ICP-OES and autosampler.
- **Configured to suit your application.** The Assist is a modular system of syringe drives and switching valves and it can be configured to suit your specific application.

### Assist Basic Package

### Faster throughput, better precision



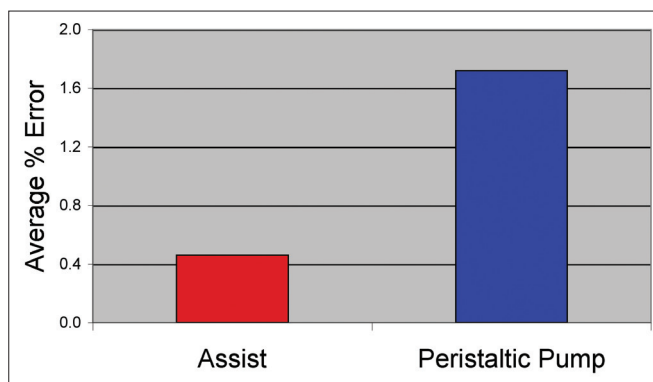
This system is used when inline delivery of internal standard is not required. It incorporates a single syringe drive and a single Niagara switching valve. It provides all of the benefits listed above with the exception of those relating to delivery of internal standard or diluent. In particular, it provides improved precision by eliminating pulsations from the peristaltic pump, as well as faster sample throughput.



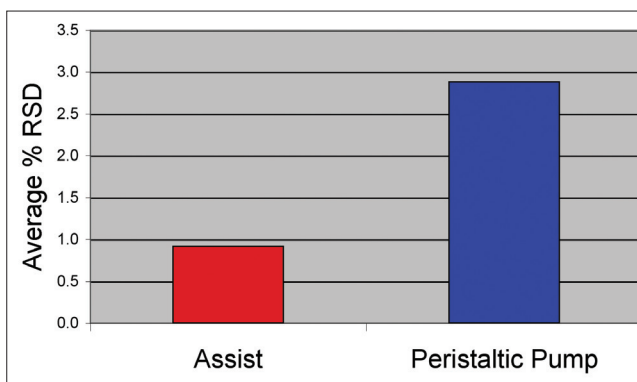
The RSD and cycle time are from the measurement of 22 masses on the Agilent 7500 ICP-MS.



This is the most common system. It incorporates two syringe drives and a Niagara switching valve. It provides for the inline delivery and mixing of the sample with internal standard or diluent.

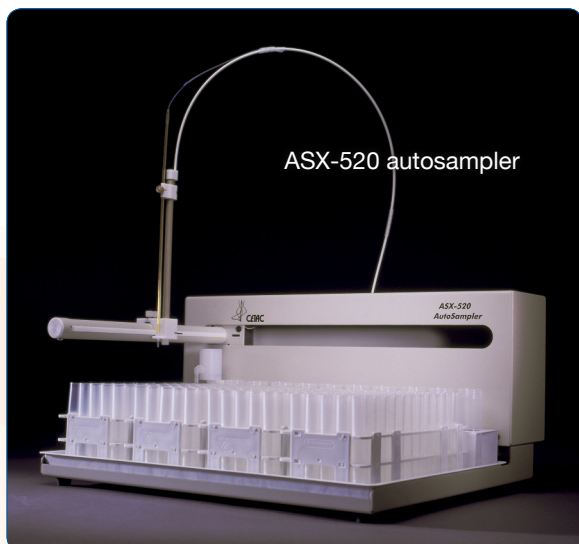


Average error in the measured concentration for 21 elements when the internal standard is delivered inline using the Assist compared with the standard delivery using the peristaltic pump. The ratio of internal standard to sample is 1:10.



Average RSD for inline dilution using the Assist and peristaltic pump. The dilution factor is 10:1.

The accuracy of the results when the Assist is used to deliver the internal standard is far better than when a peristaltic pump is used. And the precision for either inline dilution or inline addition of internal standard is far better with the Assist than with a peristaltic pump.



Looking to upgrade your old autosampler?  
We can package your Assist with a new one.

The ASX-520 is ideal for medium to high volume sample applications, featuring a metal-free liquid flow path and corrosion resistant coating on all metal parts. It can withstand the harshest chemical environments while maintaining unsurpassed accuracy. The EXR-8 increases the sample capacity to 720 samples.

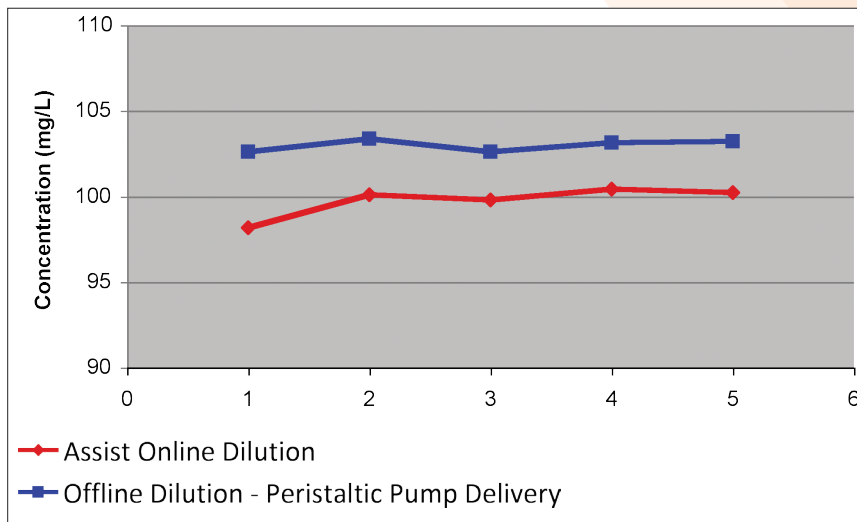
Accurate inline dilution, minimal carry over

Element and $\lambda$	Mean % Recovery	Mean Wash Concentration (ppm)
Ag 328	103	(-) 0.21
Al 308	99	(-) 0.17
B 249	99	(-) 0.21
Ba 233	101	(-) 0.01
Ca 317	107	0.84
Cd 228	101	(-) 0.06
Cr 357	101	0.12
Cu 327	101	(-) 0.17
Fe 259	101	(-) 0.03
K 766	102	0.00
Mg 279	100	(-) 0.14
Mn 257	101	(-) 0.16
Mo 202	101	(-) 0.09
Na 588	100	(-) 0.09
Ni 231	101	(-) 0.12
P 214	106	0.03
Pb 220	101	(-) 0.02
Si 212	101	0.01
Sn 283	101	(-) 0.03
Ti 334	101	(-) 0.18
V 310	101	(-) 0.19
Zn 213	107	(-) 0.47

Data obtained on a Varian Vista ICP-OES.



This system is configured specifically for the analysis of wear metals in raw (undiluted) lubricating oils by ICP-OES. It incorporates three syringe drives and a Niagara switching valve. It takes a sample of the oil, mixes it with a diluent such as kerosene and precisely delivers the diluted oil to the ICP spectrometer. It eliminates the need for manual dilutions and dramatically increases the speed of analysis. The cycle time can be under 30 seconds per sample.



This data shows the accuracy of dilution for five 100mg/L standards. The dilution factor is 10:1 and each point is the average for 21 elements. The data shows that the accuracy of inline dilution using the Assist is significantly better than manual dilution followed by peristaltic pump delivery.

Contact us for more information on how the Assist can increase the productivity and performance of your ICP-OES and ICP-MS.

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