
HYDRA AA Automated Mercury Analyzer

PRE-INSTALLATION GUIDE



Part Number 150-00223
Revision C

Teledyne Leeman Labs
6 Wentworth Drive
Hudson, New Hampshire 03051
Tel: 603-886-8400
Fax: 603-886-9141
Website: <http://www.leemanlabs.com>

Introduction

The purpose of this guide is to assist new users in the preparation of their laboratory prior to the installation of the HYDRA AA Automated Mercury Analyzer. If anything is unclear with the information that is provided, please contact our Customer Support Department at 1-800-LEEMANS (1-800-533-6267).

Please retain a copy of the pre-installation guide for your records.

Receipt of the Instrument

Teledyne Leeman Labs HYDRA AA Automated Mercury Analyzers have successfully passed stringent Quality Control and Performance Specifications prior to shipment. The HYDRA AA is carefully packed to ensure safe travel to your lab, but occasionally damage may occur during shipping.

A visual inspection of the shipping container and boxes should be done before signing of the shipper's document. If any box is visibly damaged, make a note of this on the shipper's document then notify the shipping company **immediately**. Be assured Leeman Labs will work with you to correct any problems. However, if damage has occurred, correction of that damage will be at the expense of the responsible party as defined by the purchase order.

Please do not unpack any boxes without consulting the Leeman Labs Customer Support Department. The Leeman Labs Installation Engineer is responsible for the checkout of the shipment against the packing list. He or she cannot be responsible for this task, nor can Leeman Labs be responsible for any missing items, if boxes have been opened or removed before the arrival of the installation engineer.

Pre-installation Requirements

Introduction

The HYDRA AA Pre-installation Guide details the site parameters required for proper installation of the HYDRA AA Automated Mercury Analyzer. Ensure that your installation site meets these requirements before attempting to install the instrument.

Site Requirements

Check your site for the following requirements:

Electrical Requirements

Two duplex outlets @110V, 15A, 60 Hz or two duplex outlets @220V, 10A, 50 Hz. The computer and HYDRA AA should be plugged into the same outlet. Use of a surge protection power strip is recommended.

Gas Supply

A source of 99.999% pure Argon or Nitrogen @75-90 PSI (5.1-6.1 Atm). The gas connection must be located within 10 feet (3 m) of the HYDRA AA and must accept 1/4" (6.35mm) OD, 1/8" (3.18mm) ID urethane tubing.

Air Supply

The unit draws air into the chassis from the side opposite the autosampler. The air drawn in must be free of acid fumes. A minimum safe distance of the right side of the instrument to an acid vapor source is 60in./1.5m.

Venting

Access to exhaust ventilation of at least 25 CFM (11.8 L/sec). Ventilation should allow for connection of 1/4" (6.35mm) OD urethane tubing. May be clipped into existing hood.

Drain

Drain container capable of holding 2 liters of hazardous waste.

Bench Space

48" width, 27" depth, 18" height (1222 mm W, 686 mm D, 457 mm H), including computer and with printer stored on top of the HYDRA AA.

30" width, 17" depth, 13" height (762 mm W, 432 mm D, 330 mm H) , HYDRA AA alone.

Environmental Conditions

Temperature

The recommended nominal or average laboratory temperature is 15-30°C (60-86°F).

Temperature Variation

The temperature rate of change in the laboratory should be limited to 2°C (3.6°F) per hour, maximum daily change 10°C (18°F). This temperature variation allows for the most stable operation of the instrument. Greater temperature variations will affect instrument stability. Protection (such as blinds) from direct sunlight via windows is necessary.

Other causes of temperature shifts include:

Heat adjustments to the laboratory from morning to night, increase in room temperature due to direct sunlight, and automatic air conditioner adjustments.

Relative Humidity

Humidity plus heat plays a major role in operating stability. Humidity may vary between 20 and 80%, but must be a non-condensing environment.

The laboratory humidity range should be monitored to determine if additional climate controls are needed to prevent conductivity changes on detector assemblies.

Guidelines for Running Low ppt Samples

Analyzing mercury samples at the part per trillion level requires extra care. Please follow the guidelines listed below for the best performance.

- Use only fresh Teledyne Leeman Labs reagents for the digestion and analysis.
- For the preparation using the HYDRA PREP use only new, unused cups. If preparing the samples manually or running undigested mercury standards, use cups that have been leached in 1:1 HNO₃:H₂O for 30 minutes then rinsed thoroughly with deionized water.
- Use fresh Teledyne Leeman Labs pump tubing that has been run with rinse for 45 minutes to break in the tubing. The lever in the pump cassette should be pressed back completely.
- Clean the optical cell and windows carefully before analyzing low level samples. For instructions on how to clean the cell refer to the Scheduled Maintenance wizard under clean optical cell.
- Clean the mercury lamp with isopropyl alcohol - be careful not to get any fingerprints on the surface. Allow the lamp to warm up for approximately 5 minutes then adjust the lamp on the Control Tab.
- Start by running the HGPPT protocol which sets the operating parameters at optimum levels for ppt samples. If the HGPPT protocol does not exist, create a new one using the New Protocol in the pull down File menu in the Database application.
- In the Runner application optimize the gas flow for the highest instrument sensitivity. To perform optimization adjust the gas flow as follows:
 - Turn on gas
 - Turn on the pump with the sample tip in the rinse solution (2%-10% HCl).
 - Observe the bubbling in the liquid/gas separator.
 - Adjust the gas flow down slowly until the liquid/gas flow almost stops in the liquid/gas separator.
 - Set the gas flow up to 0.03LPM higher than the present setting.
 - This should yield a smooth bubbling action in the liquid/gas separator.
 - Increase the uptake time to make sure the signal is flat when read. Observe the chart recorder output while running a high level standard.
- Use only high purity Argon or Nitrogen (99.999%) gas as the carrier gas
- Make sure that the environment is free from mercury vapor or volatile organic material that may interfere with the analysis. Consult the article in American Environmental Laboratory (5/95) for recommendations about laboratory environments. Consult U.S. EPA method 1631 for sampling and laboratory conditions required to analyze in the single ppt range.
- At the time of this publication the best acid matrix for the analysis of mercury in the ppt levels is ultra pure hydrochloric acid. Recommended concentration of HCl is between 2% and 10%.

- If the preceding steps do not yield low enough detection limits, change the pump tubing to the following parts for higher sensitivity:

Sample pump tubing	309-00088-1	0.073" ID
Drain pump tubing	20-00280-1	dual 0.073" ID
- Detection limit is defined here as 3 times the standard deviation of running 10 blanks in ten separate autosampler cups.

If you have purchased installation from Teledyne Leeman Labs, please insure the site requirements from the previous page have been met. Complete the information on this page and either mail or fax it back to Teledyne Leeman Labs at (603) 886-4322 so installation can be scheduled.

Pre-Installation Completion Form

Operator's Name: _____
(PLEASE PRINT)

Company Name: _____

Address: _____

City: _____ State: _____ Zip _____

Telephone No.: _____ Extension: _____

Fax No.: _____

Email: _____

Your signature below indicates that all site requirements listed on the previous pages have been met.

Operator's Signature

Date

Install # _____

Please remove this page and return to Leeman Labs Customer Support Department, Leeman Labs, 6 Wentworth Drive, Hudson, N.H. 03051, or FAX to (603)886-4322.

The installation of the Hydra AA Automated Mercury Analyzer System will be scheduled upon receipt of the Pre-installation Completion Report.

READER'S COMMENT FORM

Guide Title: HYDRA AA Automated Mercury Analyzer Pre-installation Guide

Part Number: 150-00223

Please use this form to communicate your views about this pre-installation guide.

Please rate this installation guide:

	Excellent	Good	Fair	Poor
Clarity	_____	_____	_____	_____
Completeness	_____	_____	_____	_____
Ease of Use	_____	_____	_____	_____
Organization	_____	_____	_____	_____

If you have found errors in this installation guide, please list them with their appropriate page numbers:

Please provide us with the following information:

Your Name: _____

Company Name: _____

Address: _____

Please FAX your comments to us at 603-886-4322. Thank you for your assistance.