
***HYDRA AF GOLD PLUS* Automated Mercury Analyzer**

PRE-INSTALLATION GUIDE



Part Number 150-00221
Revision 3

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Introduction

The purpose of this guide is to assist new users in the preparation of their laboratory prior to the installation of the Hydra AF Gold Plus 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

Leeman Labs Hydra AF Gold Plus Automated Mercury Analyzers have successfully passed stringent Quality Control and Performance Specifications prior to shipment. The Hydra AF Gold Plus 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 AF Gold Plus Preinstallation Guide details the site parameters required for proper installation of the Hydra AF Gold Plus 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

Three outlets @110V, 15A, 60 Hz or three outlets @220V, 10A, 50 Hz.

Gas Supply

One line for 99.999% pure Argon @ 60 PSI (4.1 Atm). The gas connection should accept 1/4" (6.35mm) OD, 1/8" (3.18mm) ID LDPE tubing. The gas regulator should be a high purity type with stainless steel diaphragm. All gas connections provided by the user must be limited to the following materials: Stainless Steel, Brass, Copper, Polypropylene, Fluoropolymers. Elastomers are not to be used.

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 providing there is adequate ventilation.

Venting

Access to exhaust ventilation of at least 25 CFM (11.8 L/sec). Exhaust lines are provided at a length of 10 ft (3m) to reach the user provided exhaust. Instrument must be within 6 ft (1.8m) of the ventilation. Ventillation should allow for connection of two 1/4" (6.35mm) OD urethane tubings. May be clipped into existing hood.

Site Requirements (continued)

<u>Drain</u>	Drain container capable of holding 6 liters of hazardous waste.
<u>Bench Space</u>	65" width, 27" depth, 24" height (1650 mm W, 686 mm D, 610 mm H), including computer . 25" width, 19" depth, 19" height (635 mm W, 482 mm D, 482 mm H) , HYDRA AF GOLD PLUS alone .
<u>Weight Loading</u>	The instrument weighs approximately 65 lbs./29.5Kg.
<u>Thermal Loading</u>	The instrument outputs approximately 300Watts of heat or 1000 BTU/hr. The computer and printer thermal outputs are based on the customers particular system that is to be installed.
<u>Muffle Furnace</u>	A muffle furnace should be available for proper conditioning of the soda lime dryer prior to analytical running of the sub-ppt method.

Environmental Conditions

<u>Temperature</u>	The recommended nominal or average laboratory temperature is 15-30°C (60-86°F).
<u>Temperature Variation</u>	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. Protection (such as blinds) from direct sunlight via windows is recommended. 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. The instrument should not be in direct flow from a HVAC vent.

Environmental Conditions (continued)

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 to prevent conductivity changes on detector assemblies. Attention - combination of **high humidity and acid vapors** will greatly reduce the life of the analyzer.

Mercury contamination

To obtain results meeting U.S. EPA Method 1631 great care must be taken in the laboratory cleanliness. The limiting factors are laboratory air quality, reagent purity, gas purity, and sample handling. It is important to take these into consideration by reading method 1631. A simple test of instrument blank with the site gas will be determined upon installation. This will give a good baseline of blank capability. The other factors affecting blank will have to be addressed by the user in cooperation with Teledyne Leeman Labs.

Guidelines for Running in the sub ppt levels

Running mercury samples at the part per trillion level requires some 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 fresh cups. If preparing the samples manually or running undigested mercury standards, use cups that have been leached in 1:1 HCl: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.
- When running in a mode without gold amalgamation lower the gas flow and increase the pump rate in the protocol to increase sensitivity. The default protocols should be a good starting point.
- When running in a mode with gold amalgamation lower the gas flow and increase the uptake time. The lowering of the gas flow will yield less dilution of the Hg gas from the traps. The increase in uptake time will deposit more Hg on the trap. Both techniques increase the sensitivity of the analysis. The default protocols should be a good starting point.
- 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 1631B for sampling and laboratory conditions required to analyze in the single ppt range.
- Prior to preparing the bromine chloride oxidation reagent muffle the KBr at 200°C for 1 hour.
- After packing the soda lime scrubber muffle the tube, quartz wool, and soda lime assembly at 200°C for 1 hour.
- Sparge the stannous chloride solution with Hg free helium or argon for at least 12 hours prior to use.
- Use the purest HCl acid that can be afforded.
- 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, Teledyne Leeman Labs, 6 Wentworth Drive, Hudson, N.H. 03051, or FAX to (603)886-4322.

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

READER'S COMMENT FORM

Guide Title: HYDRA AF_GOLD PLUS Automated Mercury Analyzer Preinstallation Guide

Part Number: 150-00221

Please use this form to communicate your views about this preinstallation 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.