



Bioscience, Inc.

Environmental Products & Services

ISO 9001:2015 Certified

Ampulmatic®-10 Purge Gas Accessory Operation and Maintenance Manual



Bioscience, Inc.

2201 Hangar Place, Suite 200

Allentown, PA 18109

Phone: (484) 245-5232 Fax: (484) 245-5236

bioscience@bioscienceinc.com

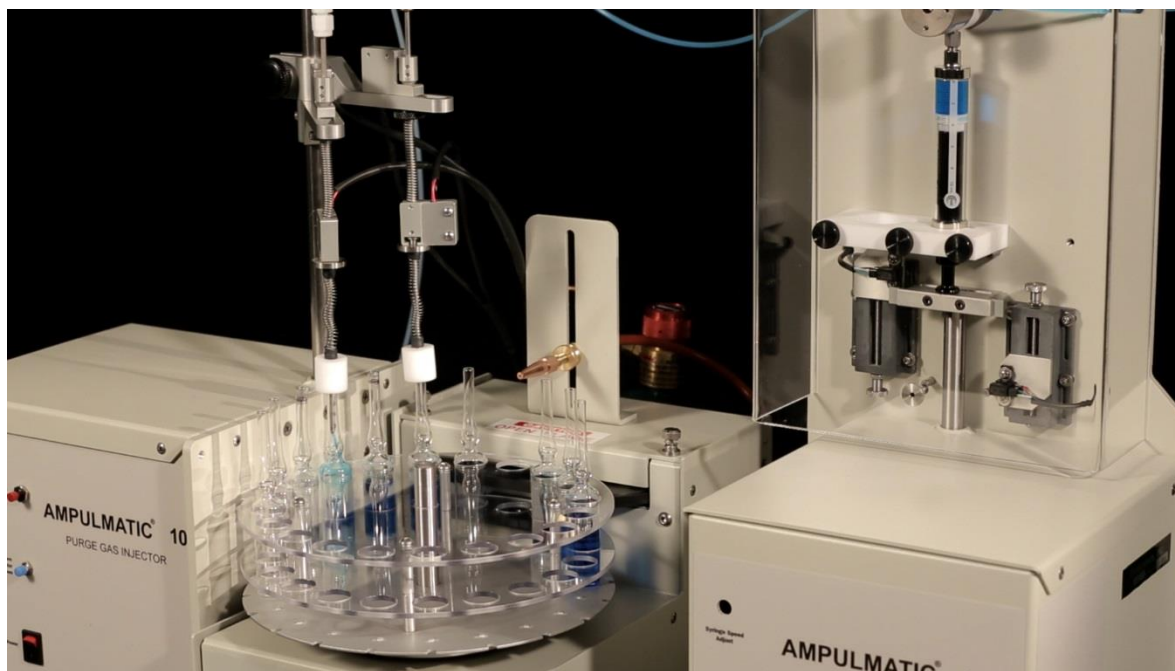
www.bioscienceinc.com

Original Version (in English)

Revised April 19, 2018

Contents

| Section-Page | Title |
|---------------------|--|
| 1-1 | Introduction |
| 2-1 | Statement of Warranty |
| 3-1 | Model Description |
| 3-2 | Ampulmatic-10 Purge Gas Injector Front View |
| 3-3 | Ampulmatic-10 Purge Gas Injector Connections |
| 3-4 | Ampulmatic-10 Purge Gas Injector Purge Head |
| 4-1 | Unit Specifications |
| 5-1 | Setup |
| 5-2 | Adjusting Purge and Filling Heads |
| 5-3 | Additional Adjustments |
| 6-1 | Maintenance |
| 7-1 | Ampule Glass and Size |
| 8-1 | Troubleshooting Guide |



Introduction

Thank you for choosing the Ampulmatic®-10 Purge Gas Injector accessory. Bioscience, Inc. has striven to create the most reliable, easy-to-maintain and easy-to-use instrument available for bench scale ampule purging and sealing. This equipment has been tested extensively in our labs and in the field to ensure that the components and systems are reliable.

We have gone to extra lengths to be sure that should something become misaligned, require adjustment or need to be replaced, it is easily accessed and addressed. The Ampulmatic-10 Purge Gas Injector accessory has been designed with a good deal of flexibility to adapt to a wide range of ampule types, sizes and sources worldwide.

We have had extensive experience dealing with the unique sealing problems of our customers over several decades and are proud to be the leader in bench-scale ampule sealing. We will be happy to work with you to furnish custom solutions to your specific sealing problems at your request.

For maximum value and ease of startup, please proceed as follows:

1. Inspect the carton and the unit for shipping damage. Notify the carrier immediately if damage is found.
2. Use the "Accessory Check List" attached to this manual when unpacking the unit to verify that the complete unit has been received. Do not discard packing materials until everything has been accounted for.
3. Reference the Ampulmatic-10 Operation and Maintenance Manual for base unit setup instructions.
4. Carefully follow directions in the "Setup" section of this manual.
5. Follow the recommended preventive maintenance measures found in the "Maintenance" section of this manual for long equipment life.
6. Keep this manual in a practical location for ready reference.
7. If you have any questions, please contact our Technical Service department at 484-245-5232, 800-627-3069, or bioscience@bioscienceinc.com.

All Rights Reserved

The information contained in this manual is the exclusive property of Bioscience, Inc. and has been provided solely to enable the users of the equipment described herein to operate and maintain such equipment. Any other use of this information, or the reproduction or transmission of all or any portion of this manual, without prior written consent of Bioscience, Inc. is expressly prohibited.

Statement of Warranty

The Ampulmatic®-10 Purge Gas Injector accessory is warranted against faulty workmanship or the use of defective materials for a period of 365 days from the date of shipment. This warranty is the only warranty made by Bioscience, Inc. (Manufacturer) and is in lieu of all other warranties, expressed or implied, except as to title and can be amended only by a written instrument signed by the Manufacturer. The Manufacturer provides no warranty to the Customer, either express or implied nor for title. Manufacturer further disclaims any warranty of merchantability or fitness for a particular purpose in connection with the customer's purchase of units of any Product under this agreement. The liability of the Manufacturer under this warranty is limited solely to replacing, repairing, or issuing credit (at Manufacturer's discretion) for any device which is returned by the customer during the period provided for above, provided that (a) Manufacturer's product is returned properly packaged in the package made per specifications equal to or better than Manufacturer's original carton specifications, (b) Manufacturer is promptly notified in writing upon discovery of such defects by customer, and customer obtains return authorization from Manufacturer to ship the unit, (c) the defective unit is returned to Manufacturer, transportation charges prepaid by customer, (d) warranty card, with date of receipt of product and signed by the customer, is returned to the Manufacturer within 30 days of purchase, and (e) Manufacturer's examination of such unit shall disclose, to its good faith satisfaction, that such defects have not been caused by misuse (including the filling and/or sealing of corrosive materials), neglect, improper shipping or installation, repair, alteration, or accident. In no event shall Manufacturer be liable for loss of profits, loss of use, or damages of any kind based upon a claim for breach of warranty.

All claims under this warranty will be made directly to Manufacturer. Faulty units are to be shipped prepaid to the Manufacturer's designated location. Manufacturer shall prepay transportation charges when repaired units are returned and bill customer unless the units are found defective under this warranty. Manufacturer shall pay return freight of units found defective under warranty. Claims with the freight carrier for damages in shipment shall be made by the party of destination.

For your records, please record: Ampulmatic-10 Purge Gas Injector Serial No. _____

Complete, Detach and Return Within 30 Days of Receipt

User's Name _____ User's Signature _____

Title _____ Ship Date _____

Company _____ Receipt Date _____

Address _____ Warranty Received at Bioscience _____

_____ Have you set up your new Purge Gas Injector? _____

Phone _____ Fax _____ Have you operated your Purge Gas Injector? _____

Purge Gas Injector Serial No. _____

Comments (Sales, Delivery, Manual, Instructions)

Model Description

The Purge Gas Injector accessory is designed to insert a tube (purge tube) into an ampule through which an inert purge gas may be introduced. This accessory can also be used with the Ampulmatic-10 Liquid Filler accessory to automatically fill ampules with precisely measured liquid volumes.

The purge tube is inserted when an ampule is positioned directly beneath it and removed prior to the ampule moving to the next position. The interface between the Purge Gas Injector module and the Ampulmatic-10 base unit prevents the purge gas head from lowering unless the carousel is in the proper position and prevents carousel advance if the purge gas head is lowered. Two switches are built into the purge gas head. The lower switch senses when the tube is inserted into an ampule (and is used to allow a dispenser to fill the ampule only when an ampule is in the proper position).

If the purge tube hits the edge of an ampule, the upper switch will trigger an alarm to indicate that proper purging may not have occurred. Although the centering fixture (the Teflon piece mounted on a spring) can normally accommodate ampules off-center, the tube may conceivably land on the edge of the ampule and jam. The upper spring allows the tube to “give” and should prevent ampule breakage. If the ampule can be removed prior to sealing, it can be re-purged and sealed.

The red pushbutton on the front of the gas purge module resets the alarm. Please refer to the photo below for the Purge Gas Injector accessory, Liquid Filler accessory, and its relationship to the Ampulmatic-10 base unit.

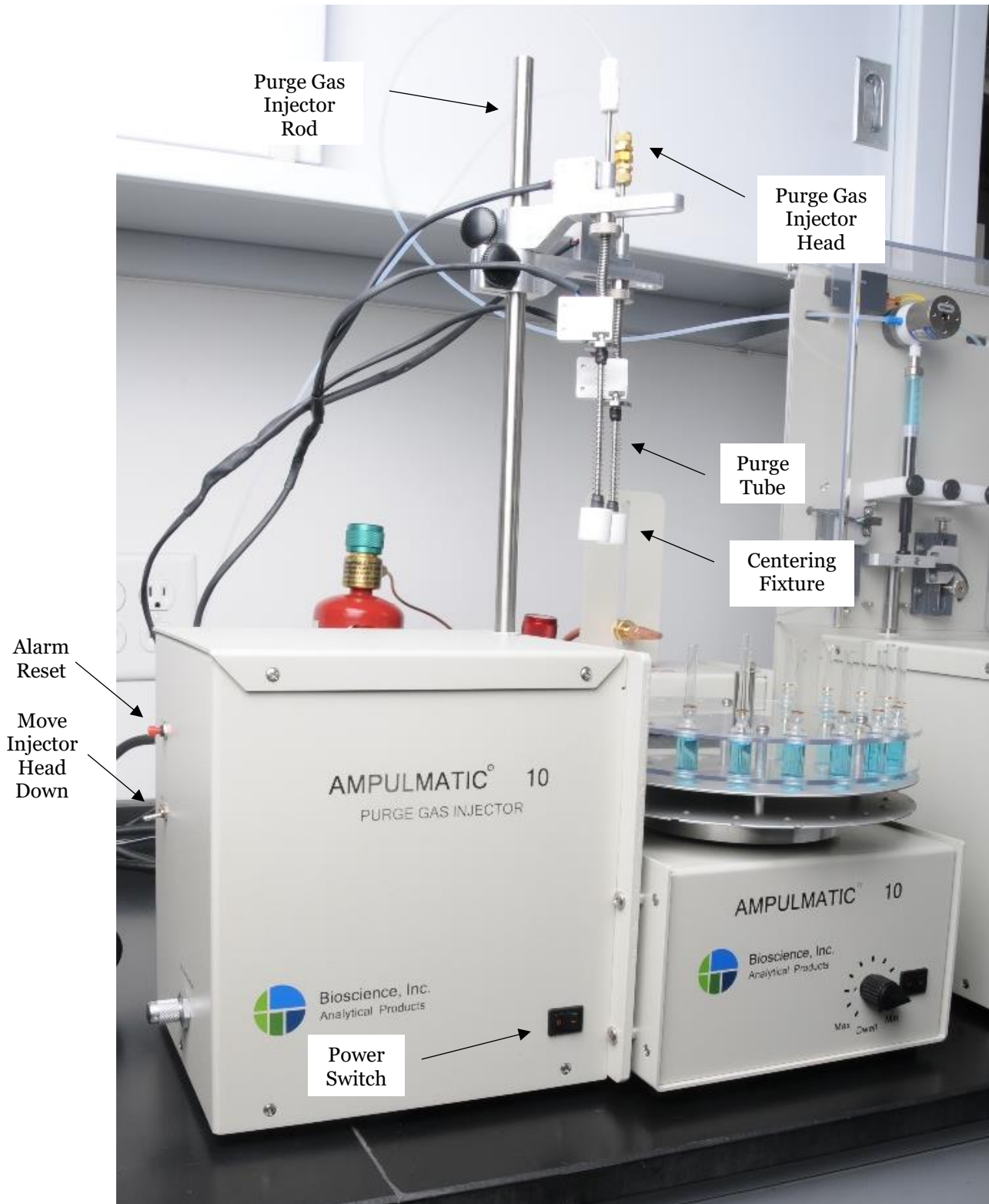


Purge Gas Injector
Accessory

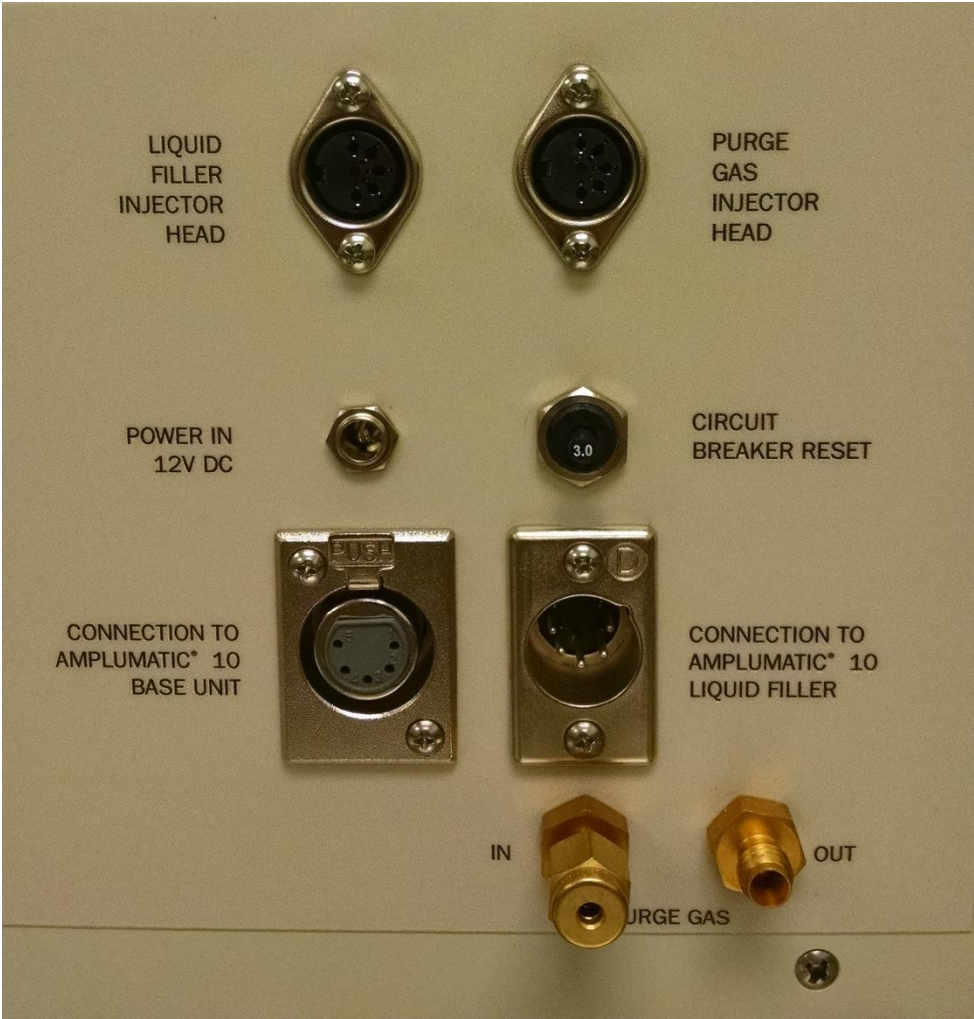
Ampulmatic-10
Ampule Sealer

Liquid Filler
Accessory

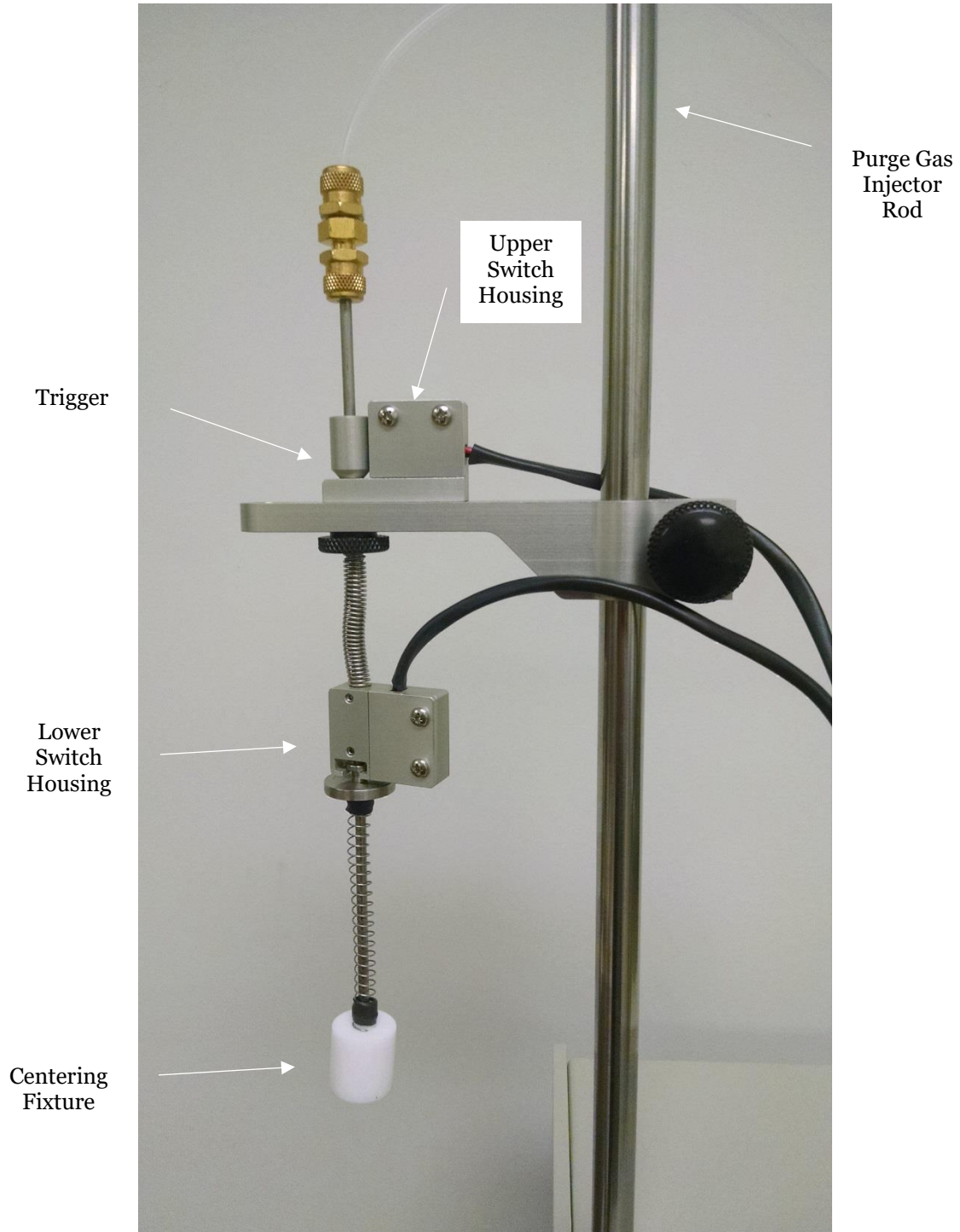
Ampumatic-10 Purge Gas Injector Front View



Ampulmatic-10 Purge Gas Injector Connections



Ampulmatic-10 Purge Gas Injector Purge Head



Unit Specifications

Overall Dimensions

The overall dimensions of the Ampulmatic-10 Purge Gas Injector accessory are 6"W x 16"H x 8"D (15.2 cm W X 40.6 cm H X 20.3 cm D).

Shipping Weight

The shipping weight of the Ampulmatic-10 Purge Gas Injector accessory is approximately 22 lbs (9.98 kg).

Electrical Requirements

All electrical parts are UL listed/approved. The Ampulmatic-10 Purge Gas Injector operates internally on 12 VDC. This voltage can be supplied by the power transformer furnished with your unit from a power source of from 100 to 240 VAC (50-60 Hz).

Materials of Construction

Outside Body Powder Coated Aluminum

Note: Corrosive liquids must be tested in advance of filling and/or sealing for compatibility with the materials of construction of the Ampulmatic-10 base unit and its accessories. Special materials for corrosive resistant Ampulmatic-10 models are available by request.

CAUTION: Do not operate the Ampulmatic-10 ampule sealer with corrosive liquids that are incompatible with the materials of construction of the unit.

Operating Conditions:

Acoustic Noise: <70db(A)
Atmospheric Pressure: 760-1080mBar
Storage Temperature: Between 5°C to 40°C
Operating Temperature: Between 5°C to 40°C
Altitude: Less than 2000m
Humidity Conditions: Between 30% to 90% (non-condensing)

Country of Origin

The Ampulmatic-10 Purge Gas Injector accessory is manufactured by Bioscience, Inc. in the USA.

Setup

Follow the instructions for setting up the Ampulmatic-10 base unit located in the Ampulmatic-10 Operation and Maintenance Manual.

The Ampulmatic-10 base unit and the Purge Gas Injector module have separate power supplies (the Purge Gas Injector module uses the higher amperage supply of 5A). The switch on the front of the gas purge module controls power to the gas purging accessory only. Do not turn this switch on until alignment adjustments have been made to avoid damaging or breaking ampules.

Reference the “Model Description” section of this Manual during the setup process.

Note: Use appropriate Personal Protective Equipment (PPE) when operating the Ampulmatic-10 System. Review the Safety Data Sheets of all chemicals being filling and/or sealed with this equipment. Recommended PPE includes eye protection and heat resistant gloves. See the Safety Accessory section of this manual for more information.

CAUTION: Make sure the power cord is unplugged before opening the case for any reason!

After the Ampulmatic-10 has been set up, gas supplies connected and the flame adjustments made, the gas purging accessory may be set up.

1. Attach the Purge Gas Injector accessory to the Ampulmatic-10 base unit with four 10-32 screws provided, inserting a spacer over each screw before inserting the screw into the mounting holes of the Ampulmatic-10 base unit. This process is easier if you lay the base unit on its side, with the Purge Gas Injector on top.
2. Attach the interface cable (labeled “Connection to Ampulmatic 10 Base Unit”).
3. Mount the Purge Gas Injector Head on the Purge Gas Injector Rod. Tighten the knob to clamp the head to the rod. Height and position will be adjusted later.
4. Attach the cable from the Purge Gas Injector Head to the connector on the back of the Purge Gas Injector module (labeled “Purge Gas Injector Head”).
5. Connect the plastic tubing from the Purge Gas Injector Head to the purge gas compression fitting.
6. Connect a supply of purge gas (typically nitrogen or argon) to the compression fitting next to the purge gas outlet. Supply should provide 10 to 15 psig at most. Gas flow can be regulated using the metering valve on the side of the Purge Gas Injector module.



Caution: Do not bend over the Purge Gas Injector module when power is on. Sudden raising of the Purge Gas Injector Rod may cause injury!

7. Insert power cord connector into power inlet on Purge Gas Injector module.

Adjusting Purge Gas and Liquid Filler Injector Heads

Adjustments will need to be made for each ampule size to be used.

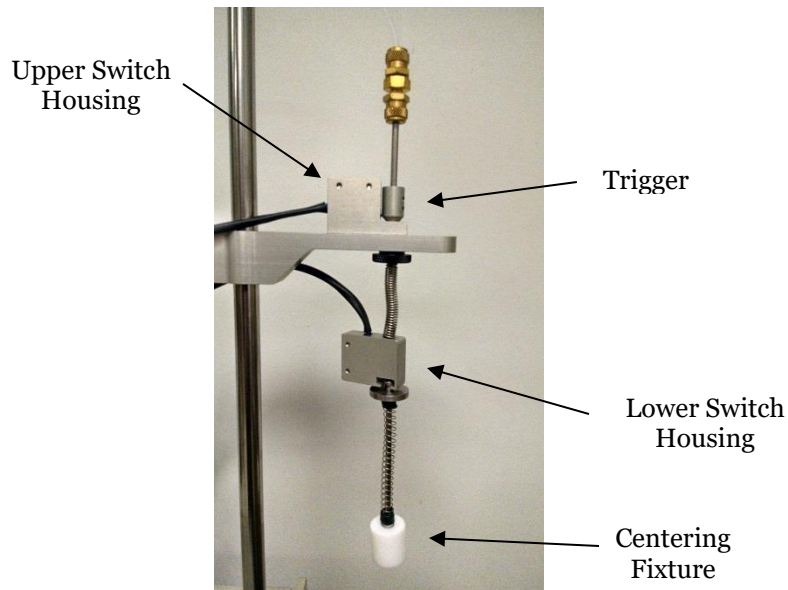
1. Place the correct carousel on the turntable with no ampules in the carousel. Turn on the Ampulmatic-10 base unit power to rotate the carousel. When it stops at a sealing position, turn off the Ampulmatic-10 base unit power.
2. Insert an ampule into the carousel two holes before the sealing position.
3. Adjust the position of the Purge Gas Injector Head by loosening the knob securing the head to the Purge Gas Injector Rod. Place the Purge Gas Injector Head well above (~3 inches) the ampule.
4. Lower the Purge Gas Injector Head by turning on power to the Purge Gas Injector module, then press the “Move Injector Head Down” pushbutton switch and hold until head is fully down. Turn off the Purge Gas Injector module power.
5. While the Purge Gas Injector Head is down, adjust the position so that the Purge Tube enters the ampule and the end of the Purge Tube is in the flared portion of the ampule neck. Tighten the knob securely to maintain the Purge Gas Injector Head position.

Note: If installing Liquid Filler Injector Head in addition to Purge Gas Injector Head, attach the Liquid Filler Injector Head onto the Purge Gas Injector Rod first, placing it below the Purge Gas Injector Head. Position the Liquid Filler Injector Head four holes before the sealing position. Follow steps 3-5 for alignment.

6. Turn Purge Gas Injector module power on. The Purge Gas Injector Head will rise to its default (up) position.
7. Raise and lower the Purge Gas Injector Head with the manual “Move Injector Head Down” pushbutton several times to make sure the centering fixture allows the tube to enter the ampule. Add several ampules behind the first one (carousel rotation is clockwise) and turn on power to the Ampulmatic-10 base unit. Verify that the Purge Gas Injector Head enters the ampules automatically.
8. Fill the carousel with empty ampules and check for correct operation. Visually inspect ampules before use to discard any broken or distorted ampules. Defective ampules may cause improper operation. This unit is designed to accept normal variance in glassware, however, ampules should be of high quality and uniformity for best results.
9. Replace empty ampules with filled ampules. Light the flame and begin sealing. Check the seal on the first few ampules and adjust flame or dwell time if necessary. You can stop the carousel rotation at any position by turning off the Ampulmatic-10 base unit power. The Purge Gas Injector module does not need to be turned off.

Additional Adjustments

The centering fixture has been factory set for proper position. However, the user should verify that the tip of the stainless steel tubing is just above the conical portion of the Teflon centering piece when the Purge Gas Injector Head is in the raised position. As the Purge Gas Injector Head encounters the ampule, the conical portion guides the ampule tip to the center and allows the tube to enter. If adjustment is required, loosen two set screws on the switch housing, raise or lower the switch housing until the tube end is just above the conical indentation.



The spring between the lower switch housing and the upper switch housing should be slightly compressed to maintain contact between the trigger and switch. When contact is broken (the tubing is raised) the alarm will sound. Push the alarm reset button to stop the alarm signal. If false alarms occur, increase the compression on the spring. Loosen two set screws on the trigger, raise the tubing slightly and retighten the set screws.

Maintenance

The Ampulmatic-10 Purge Gas accessory was designed to require a minimum amount of maintenance. However, following the recommended maintenance procedures and intervals will ensure that you obtain the highest level of reliability and fluid injection accuracy.

Daily (Before Use)

- Ensure Purge Gas Injector Head is positioned correctly above ampule for injection.
- Clean Purge Tube if it has contacted any liquid in an ampule to prevent cross contamination.
- Ensure that the Purge Tube has not bent due to hitting the edge of an ampule or a sealed ampule. A bent Purge Tube may cause inconsistent entry into ampules or may jam switches.

Every 1,000,000 injection cycles or 2,500 hours of operation or 10 years, whichever comes first

- Replace relays on electronics board

Ampule Glass and Size

The type of glass and size of ampules are important factors to consider in getting the best results with your sealer. In general, the smaller the ampule and the weaker the glass, the more important the positioning and adjustment of the filler heads. To get more consistent seals with volatile substances carefully follow the directions in the main manual. Small ampules (< 2 ml) made of soft glass (other than borosilicate) will require careful alignment of the accessory filler heads and possible adjustment of the loading of the integrated filler head spring to avoid ampule breakage. Soft glass is not recommended due to the rapid heating and cooling during flame sealing; seals will tend to be brittle and crack easily especially when volatile substances are being sealed.

Standard carousels are designed for Wheaton gold band ampules or equivalent. Ampule samples or specifications should be provided to Bioscience to confirm compatibility. Custom carousels are available for non-standard ampule sizes.

Troubleshooting Guide

Ampulmatic-10 base unit does not advance after connecting Purge Gas accessory.

OR

Ampulmatic-10 base unit advances, but Purge Gas Injector Head does not go down into ampules.

OR

Ampulmatic-10 base unit advances, Purge Gas Injector Head go down into ampules, but Purge Gas Injector accessory does not release gas.

- Check to make sure Purge Gas Injector Head for gas injection is connected to appropriate port on the rear of the Purge Gas Injector module.
- Check to make sure cable is connected between Ampulmatic-10 base unit and Purge Gas Injector accessory.
- Check to make sure power is connected to Purge Gas Injector accessory and Purge Gas Injector accessory is turned on.
- Check to make sure that the Purge Gas Injector accessory is plugged into a power source of 5 amps.
- Check to make sure the Purge Gas Injector Head for gas injection is dropping down into ampule and that the purge gas metering valve is properly set.

Discoloration of metals and/or painted surfaces of the Purge Gas Injector module.

Stop operation. Check compatibility of all solutions with the materials of construction of the Purge Gas Injector module before continuing. Contact Bioscience, Inc. for information on corrosion-resistant replacement parts.