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**ENMET**

Creative Gas Detection Solutions



## **AFS-100 Operation and Maintenance Manual**

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**Reference information:**

NOTE: [important information about use of instrument.]

**CAUTION:** [affects equipment – if not followed may cause damage to instrument, sensor etc...]

**WARNING:** [affects personnel safety – if not followed may cause bodily injury or death.]

## 1.0 Introduction

The **AFS – 100** System filters oil, water and solid particles from compressed air used for breathing. The single source to one to five users of high-flow requirement respirators, 20 cfm each. The **AFS – 100** does not filter carbon monoxide (CO) from breathing air, but it is compatible with electronic carbon monoxide monitors such as **ENMET** models CO-Guard, CO-Guard-MOS and ISA-300RAL.

**NOTE:** *All specifications stated in this manual may change without notice.*

### 1.1 Unpack

Unpack the **AFS – 100** and examine it for shipping damage. If such damage is observed, notify both **ENMET** customer service personnel and the commercial carrier involved immediately.

#### Regarding Damaged Shipments

**NOTE: It is your responsibility to follow these instructions. If they are not followed, the carrier will not honor any claims for damage.**

- This shipment was carefully inspected, verified and properly packaged at our company and delivered to the carrier in good condition.
- When it was picked up by the carrier at **ENMET**, it legally became your company's property.
- If your shipment arrives damaged:
  - Keep the items, packing material, and carton "As Is." Within 5 days of receipt, notify the carrier's local office and request immediate inspection of the carton and the contents.
  - After the inspection and after you have received written acknowledgment of the damage from the carrier, contact **ENMET** Customer Service for return authorization and further instructions. Please have your Purchase Order and Sales Order numbers available.
- **ENMET** either repairs or replaces damaged equipment and invoices the carrier to the extent of the liability coverage, usually \$100.00. Repair or replacement charges above that value are your company's responsibility.
- The shipping company may offer optional insurance coverage. **ENMET** only insures shipments with the shipping company when asked to do so in writing by our customer. If you need your shipments insured, please forward a written request to **ENMET** Customer Service.

#### Regarding Shortages

If there are any shortages or questions regarding this shipment, please notify **ENMET** Customer Service within 5 days of receipt at the following address:

**ENMET**  
680 Fairfield Court  
Ann Arbor, MI 48108  
734-761-1270/734-761-3220 Fax

### 1.2 Check Order

Check the contents of the shipment against the purchase order. Verify that the **AFS – 100** is received as ordered. If there are accessories on the order, ascertain that they are present. Check the contents of calibration kits. Notify **ENMET** customer service personnel of any discrepancy immediately.

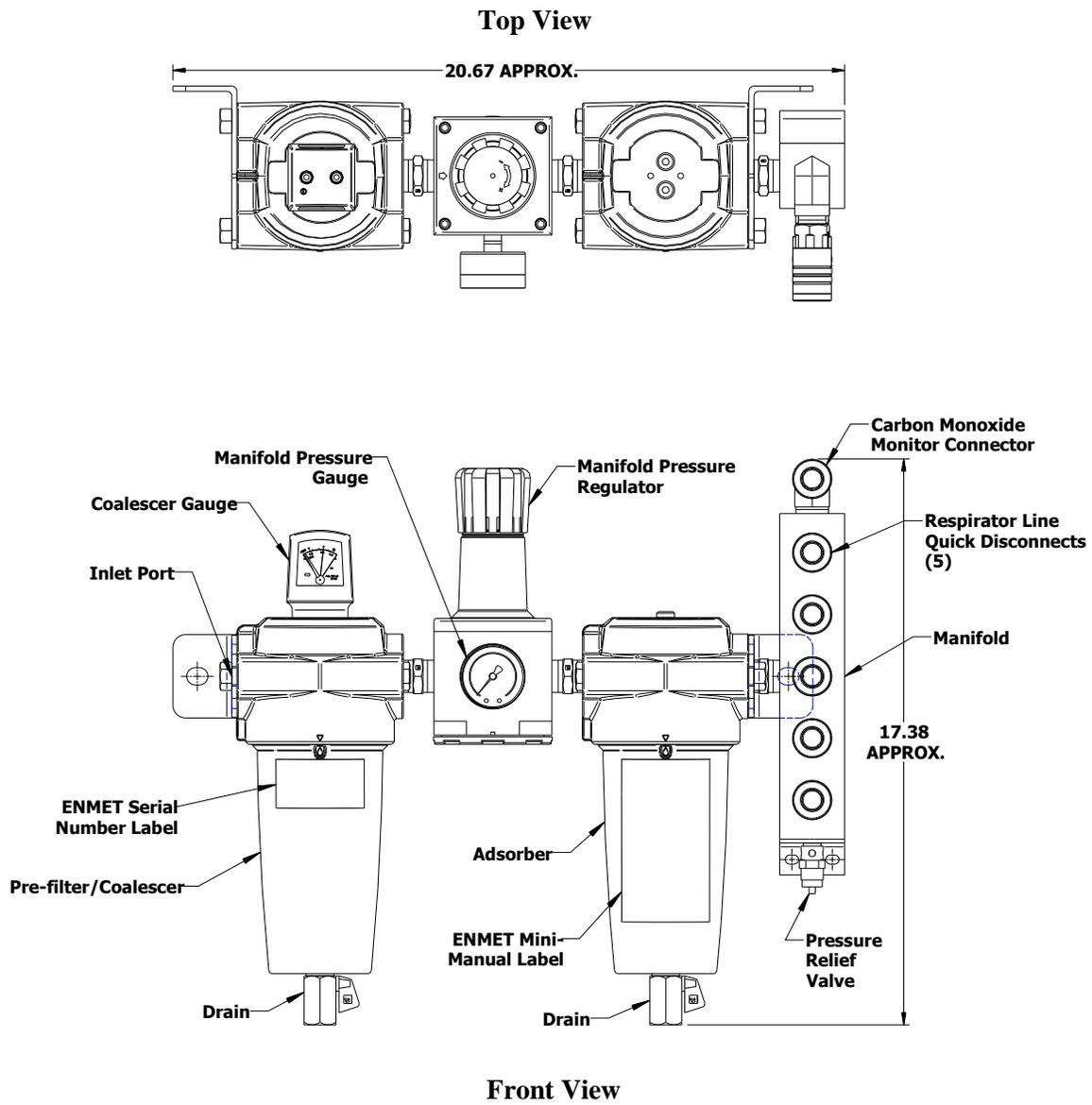
### 1.3 Serial Numbers

Each **AFS – 100** is serialized. These numbers are on tags on the equipment and are on record in an **ENMET** database.

## 2.0 Features

Refer to Figure 1 for component layout diagram.

Feature	Description
<b>Inlet Port</b>	¾ " NPT, female. The inlet pipe must be at least ¾ inch; we recommend one inch, or larger, with size reduced immediately before the panel connection. Quick-disconnect pneumatic connectors can be used at this point <i>ONLY IF</i> they do not restrict the flow rate excessively.
<b>Coalescer Gauge</b>	Indicates when filter needs to be replaced
<b>Prefilter</b>	Prefilter: removes large oil, water and solid particles from the compressed air. The prefilter extends the life of the Coalescer and adsorber filter elements.
<b>Prefilter Drain</b>	For periodically removing collected fluids in the prefilter bowl.
<b>Manifold Pressure Regulator</b>	For adjusting the pressure in the air distribution manifold. The pressure setting depends on the required manifold pressure and recommended respirator flow rate. Maximum pressure is 100 PSI. NOTE: The pressure relief valve sets this maximum. Any noisy hiss is a release of pressure coming from the valve, <i>NOT</i> the regulator, and indicates that a pressure adjustment is necessary because the 100 PSI maximum is exceeded.
<b>Manifold Pressure Gauge</b>	160 PSI pressure gauge; indicates manifold pressure, for setting the pressure for the particular respirator application.
<b>Manifold</b>	Provides uniform air distribution to four respirators and carbon monoxide monitor.
<b>Adsorber</b>	Removes odor from air system
<b>Adsorber Drain</b>	For periodically removing collected fluids in the adsorber bowl.
<b>Coalescer</b>	Coalescer filter: High-efficiency filter removes oil mist and fine (sub-micron) particles.
<b>Coalescer Drain</b>	For periodically removing collected fluids in the prefilter bowl.
<b>Respirator Line Quick Disconnects (5)</b>	For connecting respirator air lines. They are compatible with Hansen series 1000 quick-disconnects. Other fittings may be substituted; manifold holes are ½ " NPT
<b>Carbon Monoxide Monitor Connector</b>	Quick-disconnect for supplying an air sample to a carbon monoxide monitor.
<b>Pressure Relief Valve</b>	Spring-loaded relief valve activated by a manifold pressure of 100 PSI, to prevent overpressure of components attached to the filter panel.
<b>Name Plate / Mini Manual</b>	Labels include serial number for factory identification, cautions and short-form operation instructions.
<b>Mounting Plate(Optional)</b>	14-gauge steel mounting plate, to mount <b>AFS – 100</b> and optional CO monitor. Not shown in Figure 1.



**Figure 1: AFS – 100 Features**

### 3.0 Operation

Prior to use *ALWAYS* open valve on adsorber bowl and drain any fluid that has accumulated.

#### 3.1 Installation

Connect the respirators to the standard **AFS – 100** manifold. Use appropriate diameter air lines to provide sufficient pressure and flow. Air-line diameter should be at least  $\frac{3}{4}$ ”; we recommend 1” diameter lines. Quick-disconnect fittings on standard **AFS – 100** manifold are compatible with Hansen series 1000 quick-disconnect fittings. Other fittings may be substituted; manifold holes are  $\frac{1}{2}$ ” NPT.

Adjust the manifold pressure to yield the recommended pressure and flow rate to the respirators. Check the manifold pressure periodically.

#### 3.2 Flow Rate and Pressure

The air filtration panel can provide up to 100 CFM total air flow:

Incoming Air Pressure	Rate
Minimum recommended	100 PSI
Maximum allowable	230 PSI
Maximum manifold pressure	100 PSI

**CAUTION:** A greater manifold pressure causes the pressure relief valve to vent.

#### 3.3 Simultaneous Operation of Respirators

##### 3.3.1 High-Flow Requirement Respirators (Hoods)

Such as: 3M Hoods and Helmets – Softcap hoods, Economy Hoods, Whitecap abrasive and welding helmets. (Other manufactures such as Bullard and MSA also furnish high-flow requirements hoods.)

Air Flow: operating pressures range 50 to 90 PSI. Whitecap systems may include Vortex cooling and Vortemp heating; 20 CFM each.

Others: 15 CFM

Up to 4 ports may be used, depending on the type of respirator.

##### 3.3.2 Low-Flow Requirement Respirators (Face Mask)

Such as: American Optical, Scott, Bullard, Robert Shaw, MSA, SurvivAir, Norton, 3M, Pulmosan, Wilson (and others)

Air Flow: Operation pressure range 20 to 100 PSI.

Full or half-face mask respirators require 4 – 10 CFM.

All three available exit ports can be used to operate low-flow requirement respirators.

## 4.0 Maintenance

As the amount of matter collected in the prefilter/coalescer increases, the pressure from the input port to the prefilter/coalescer will drop. See section 4.1 for filter change procedure.

### 4.1 Filter Change

- De-pressurize the system.
- Replace coalescer element when the pressure drop from incoming to regulator is greater than 10 PSI. This filter retains fine particles and oil mist that pass the prefilter.
- Replace Adsorber when odor is unacceptable.

### 4.2 Fluid Drains

➔ There should not be more than one inch of liquid in the bottom of the coalescer/adsorber bowl.

➔ *NO fluid in Adsorber.*

Turn valve to open and drain the prefilter/coalescer and adsorber bowl. Prior to **EACH** use check and drain the adsorber bowl.

### 4.3 Cleaning Polycarbonate Filter Bowl

The adsorber bowl may need cleaning once in a while. Oil and other residues accumulate as they are filtered from compressed air.

- De-pressurize the system
- Remove the bowl guard and bowl.
- Clean the bowl. Use a mild soap and water only.
- Replace the bowl and guard.

**CAUTION:** Avoid bowl damage:

Do Not use chlorinated hydrocarbons, alcohol or other solvents.

Do Not exceed a pressure of 125 psi.

Do Not exceed a temperature of 110 F°.

Always operate with the bowl guard in place.

### 4.4 Lubricates

To avoid damage to the bowl, use only natural-based non-toxic compressor lubricants.

Do Not Use synthetic fluids, fire-resistant lubricants (i.e., Phosphate, Esther), oils containing detergents or other additives.

## 5.0 Replacement and Accessory Part Numbers

### 5.1 Replacement Parts and Kits

*ENMET* replacement part numbers:

Description	Part Number
Element Kit, Coalescer	73089-091
Element Kit, Adsorber	73089-092
Gauge, 160 PSI (Back Mount)	73089-054
Relief Valve	73060-012

### 5.2 Options and Accessories

#### 5.2.1 Optional Equipment Part Numbers

The filtration system and an *ENMET* CO monitor CO-Guard, CO-Guard-MOS or ISA-300RAL can be mounted on one support plate.

Description	Part Number
<b>Wall Mount Plate</b>	03462-002
<b>CO-Guard, Compact CO Monitor with electrochemical sensor</b>	03481-005
<b>CO-Guard-MOS, Compact CO Monitor with MOS sensor</b>	03481-040
<b>ISA-300RAL, Compact CO Monitor with electrochemical sensor</b>	03408-300
<b>ISA-300RAL, Compact CO and O2 Monitor with electrochemical sensor</b>	03408-301

## 6.0 Terms and Conditions

### 10.1 Ordering Information

Address orders to:

**ENMET**  
Attention: Customer Service Department  
680 Fairfield Court  
Ann Arbor, MI 48108

Email Orders: [orderentry@enmet.com](mailto:orderentry@enmet.com)

Phone: 734-761-1270

Fax: 734-761-3220

You may also contact our customer service department by email [info@enmet.com](mailto:info@enmet.com). MINIMUM ORDER IS \$50.00.

### 6.2 Shipping Terms

All shipments are F.O.B. ENMET's facility in Ann Arbor, MI, USA or Bowling Green, KY, USA. Shipping and handling charges are prepaid and added, and must be paid by the customer. Shipping and handling charges may be billed to VISA, MasterCard, American Express, or to the customer's preferred carrier account number. Delivery to the carrier constitutes delivery to the customer, and risk of loss passes to the customer at that time, however, title shall remain with ENMET until payment is received in full. Claims for shortages and damage must be made by the customer to the carrier within 5 days of receipt. **Refer to section "1.1 Unpack" for more information on this matter.**

A special service of \$50.00, or more, may be assessed on expedited shipments.

**NOTE:** Calibration gases are classified as Dangerous Goods for transportation purposes, and shipping companies charge a hazardous material fee for processing the documentation required for handling such items. Also, other restrictions apply to shipment of Danger Goods by air. Check with **ENMET** for clarification and additional information.

### 6.3 Payment

Open accounts must be established in advance with ENMET's accounting department.

Address Payments to:

**ENMET**  
680 Fairfield Court  
Ann Arbor, MI 48108

Phone: 734-761-1270

We accept payments by VISA, MasterCard, and American Express. Payment by credit card must be specified at time of order placement. Your credit card will be charged on the date of shipment.

**ENMET** invoices for products that are shipped on open account are due and payable 30 days from the date of shipment from the **ENMET** site. **ENMET** may institute collection services should any bona fide invoice remain unpaid with no payment schedule negotiated by the customer with the **ENMET** Accounting Department. Any cost incurred by **ENMET** for professional collection services or legal fees to collect on a customer invoice will be added to any future business conducted between **ENMET** and that customer.

### 6.4 Warranty Information and Guidelines

Equipment must be returned prepaid to the point of origin, and ENMET will prepay the return transportation charges. Transportation prepaid by ENMET will be by most economical means (e.g. FedEx Ground). If an expedient means of transportation is requested during the warranty period, the customer must pay the difference between the most economical means and the expedient mode. ENMET warrants new instruments to be free from defects in workmanship and material under normal use for a calibration and expendable parts such as filters, detector tubes, batteries, etc. In addition, some oxygen cells and other sensors are limited to a warranty period of six months from date of shipment. Refer to the instrument manual for specific warranty details. If the inspection by ENMET confirms that the product is defective, it will be repaired or replaced at no charge, within the stated limitations, and returned prepaid by FedEx Ground to any location in the United States. ENMET shall not be liable for any loss or damage caused by the improper use or installation of the product. The purchaser indemnifies and holds harmless the company with respect to any loss or damages that may arise through the use by the purchaser or others of this equipment. This warranty is expressly given in lieu of all other warranties, either expressed or implied, including that of merchantability, and all other obligations, or liabilities of ENMET which may arise in connection with this equipment. ENMET neither assumes nor authorizes any representatives or other persons to assume for it any obligation or liability other than that which is set forth herein. If a component is purchased and installed in the field, and fails within the warranty term, it can be returned to ENMET and will be replaced, free of charge. If the entire instrument is returned to ENMET with the defective item installed, it will be replaced at no cost, but the instrument will be subject to labor charges at half of the standard rate.

NOTE: When returning an instrument to the ENMET for service:

- o Be sure to include all paperwork (the "Request for Service" form).

- o Include any specific instructions.
- o For warranty service, include the date of purchase.
- o If you require an Estimate, please contact ENMET.

The “Request for Service” form is on the final page of this manual. This form can be copied or used as needed. For service requests, outside of the warranty period, please refer to the “Returning an Instrument for Service Instruction” found later in this section.

### 6.5 Return Policy

**All returns for credit must be approved by ENMET and identified with a “Return Material Goods” number.** Such returns are subject to a minimum of a \$50.00 or 20% restocking fee, whichever is greater. **Approval of equipment for return is fully at the discretion of ENMET.** All requests for return/exchange must be made no later than 30 days of the original shipping date from *ENMET*. The actual amount of any resulting credit will not be determined prior to a complete inspection of the equipment by *ENMET*. Calibration gas cylinders cannot be returned or restocked due to the Department of Transportation refill restrictions. Air Filtration Systems (AFS series & parts) cannot be returned or restocked because their internal surfaces and filters are not amenable to re-inspection.

**Certain products, such as stationary systems, or instruments with custom sensor configuration (non-standard) are built to order, and cannot be returned.** Cancellation of orders for custom-built products, prior to shipment, will result in the assessment of a cancellation fee. The amount of the cancellation fee will be based upon the size and complexity of the order, and the percentage of total cost expended prior to cancellation.

### 6.6 Returning an Instrument for Service Instructions

Contact the ENMET Service Department for all service requests.

Phone: 734-761-1270

Email: repair@enmet.com

Fill out the “Service Request Form” found at the end of this manual and return with your instrument for all needs. Please send your instrument for service to the site in which the product was purchased. A new “Service Request Form” may be requested if the one found in the manual is not available. All instruments should be shipped prepaid to ENMET.

Address for Service:

Michigan Location:

**ENMET**  
Attention: Service Department  
680 Fairfield Court  
Ann Arbor, MI 48108

Kentucky Location:

**ENMET**  
62 Corporate Court  
Bowling Green, KY 42103

Providing the “Service Request Form” assists in the expedient service and return of your unit and failure to provide this information can result in processing delays. *ENMET* charges a one hour minimum billing for all approved repairs with additional time billed to the closest tenth of an hour. All instruments sent to *ENMET* are subject to a minimum evaluation fee, even if returned unrepaired. Unclaimed instruments that *ENMET* has received without appropriate paperwork or attempts to advise repair costs that have been unanswered after a period of 60 days may, be disposed of or returned unrepaired COD and the customer will be expected to pay the evaluation fee. Serviced instruments are returned by UPS/FedEx Ground and are not insured unless otherwise specified. If expedited shipping methods or insurance is required, it must be stated in your paperwork.

**NOTE:** Warranty of customer installed components.

For Warranty Repairs, please reference *ENMET*'s “Warranty Information and Guidelines” (found earlier in this section).

**Mailing/Shipping Address:**

ENMET  
680 Fairfield Court  
Ann Arbor, MI 48108  
[repair@enmet.com](mailto:repair@enmet.com)



**Phone: 734.761.1270**  
**Fax: 734.761.3220**

**Service Request Form**

**Product Name or Number:**

**Product Serial Number:**

**Describe Problem or Needed Service:**

**Warranty Claim?**  Yes  No

**CUSTOMER INFORMATION**

**Billing Address:**

**Shipping Address:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Contact Name:**

**Phone #:**

**Email:**

**Fax #:**

**PO/Reference**

**#:**

**PAYMENT METHOD**

- COD  VISA/MasterCard  American Express

Card Number

Exp. Date

Security Code:

**Name as it Appears on Card:**

**RETURN SHIPPING METHOD**

- UPS Ground  UPS 3 Day Select  UPS Next Day Air  UPS ND Air Saver  UPS 2 Day Air

UPS Account #: \_\_\_\_\_

- FedEx Ground  FedEx Air Express Saver  FedEx Air Overnight Std.  FedEx Air 2 Day  FedEx Air Overnight P-1

FedEx Account #: \_\_\_\_\_

Insure Shipment:  Yes  No

Insurance \$  
Amount: \_\_\_\_\_