



## Veterinary Anesthesia WorkStation Operating Manual

# USER/OWNER RESPONSIBILITY

**PLEASE READ THIS MANUAL BEFORE OPERATING THE WORKSTATION.**

This **Hallowell EMC** equipment is designed to function, as specified in this manual, when operated and maintained in accordance with supplied instructions. This equipment must be periodically checked, maintained and components repaired and replaced when necessary for equipment to operate reliably. Parts that have failed, in whole or in part, exhibit excessive wear, are contaminated, or are otherwise at the end of their useful life, should not be used and should be replaced immediately with parts supplied by **Hallowell EMC** or parts which are approved by **Hallowell EMC**. Equipment that is not functioning correctly should not be used. This equipment and any of its accessories or component parts should not be modified.

The user/owner of this equipment shall have the sole responsibility and liability for any damage or injury to patients or property (including the equipment itself) resulting from operation not in accordance with the authorized maintenance instructions, unauthorized repair or modification of the equipment or accessories, or from the use of components or accessories that have either been damaged or not authorized for use with this equipment by **Hallowell EMC**.

## WARNINGS AND CAUTIONS

Personnel operating the workstation must become thoroughly familiar with the instruction manual prior to using the **Hallowell EMC Model AWS™ Anesthesia WorkStation** with patients.

- **ELECTRIC SHOCK HAZARD - DO NOT** remove any of the WorkStation covers or panels. Refer all servicing to an authorized service technician.
- **DANGER** - Possible explosion hazard if the unit is used in the presence of flammable anesthetics.
- Before using the WorkStation, check that all connections are correct, verify that there is no leak in the system and that the unit is functioning properly.
- Any problems arising from an improperly functioning scavenging system is solely the user's responsibility.
- **THE MANUFACTURER ASSUMES NO LIABILITY FOR ANY MALFUNCTION OR FAILURE OF THE WORKSTATION IF THE UNIT'S SEAL IS BROKEN.**

# WARRANTY

The **Hallowell EMC Model AWS™ Veterinary Anesthesia Workstation** is covered under the warranty expressed on the warranty card attached to the unit at the time of sale to the end user, which reads as follows:

## LIMITED WARRANTY STATEMENT

### WHAT THIS WARRANTY COVERS:

HEMC offers you a limited warranty that the enclosed subscriber unit and its enclosed accessories will be free from defects in material and workmanship, according to the following terms and conditions:

1. The limited warranty for the product extends for TWELVE (12) MONTHS beginning on the date of purchase of the product with valid proof of purchase.
2. The limited warranty extends only to the original purchaser of the product and is not assignable or transferable to any subsequent purchaser. Only through a HEMC authorized Dealer the warranty can be transferred to the original end user.
3. The housing, bellows and cosmetic parts shall be free of defects at the time of shipment and, therefore, shall not be covered under these limited warranty terms.
4. Upon request from HEMC, the consumer must provide information to reasonably prove the date of purchase.
5. The customer shall bear the cost of shipping the product to the Customer Service Department of HEMC. HEMC shall bear the cost of shipping the product back to the consumer after the completion of service under this limited warranty.

### WHAT THIS WARRANTY DOES NOT COVER:

1. Defects or damages resulting from use of the product in other than its normal and customary manner.
2. Defects or damages from abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized connections, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of HEMC, including damage caused by shipping, blown fuses, spills of food or liquid.
3. Alleged defect or malfunction of the product during the applicable limited warranty period not reported by the end user to HEMC prior to the expiration of the warranty period as defined.
4. Products which have had the serial number removed or made illegible.
5. Damage resulting from use of non-HEMC approved accessories.
6. All plastic surfaces and all other externally exposed parts that are scratched or damaged due to normal customer use.
7. Products operated outside published maximum ratings.
8. Products used or obtained in a rental program.
9. Consumables (such as fuses).
10. This limited warranty is in lieu of all other warranties, expressed or implied either in fact or by operations of law, statutory or otherwise, including, but not limited to any implied warranty of marketability or fitness for a particular use.

### WHAT HEMC WILL DO:

HEMC will, at its sole discretion, either repair, replace or refund the purchase price of any unit that does not conform to this limited warranty. HEMC may choose at its discretion to use functionally equivalent reconditioned, refurbished or new units or parts.

### STATE LAW RIGHTS:

THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MARKETABILITY, IS LIMITED TO THE DURATION OF THE WARRANTY EXPRESSED HEREIN. HEMC SHALL NOT BE LIABLE FOR THE LOSS OF THE USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE, THIS PRODUCT OR FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTY OF MARKETABILITY APPLICABLE TO THIS PRODUCT.

Some states do not allow the exclusive of limitation of incidental or consequential damages or limitations on how long an implied warranty lasts; these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

### HOW TO GET WARRANTY SERVICE:

To obtain warranty service, you may contact us by telephone, fax or email at:

Tel. 1-413-445-4263, Fax. 1-413-496-9254 or [info@hallowell.com](mailto:info@hallowell.com).

Visit [www.hallowell.com](http://www.hallowell.com)

Correspondence may also be mailed to:

Hallowell EMC

35 Downing Industrial Park

Pittsfield, MA 01201

Prices, terms, and product specifications are subject to change without notice.

## RECEIVING PROCEDURES

1. Remove all components from the shipping carton. Retain and store both original shipping cartons for use in the event that the unit has to be shipped. (See “Returning For Service”).
2. Inspect the WorkStation and accessories for any signs of damage that may have occurred during shipping. If damage has occurred, immediately file a damage claim with the carrier.

Packed by \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Workstation SN \_\_\_\_\_

Recv'd by \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ SN verified \_\_\_\_\_

3. Check the items against the packing slip and report discrepancies immediately.

All WorkStations include and are shipped with the following:

- **Hallowell EMC Model AWS™**
- AWS accessory kit (PN 000A2777)  
Containing:
  1. PN 000A3401: AWS Breathing System Assembly, 24” that includes:
    - a. PN 152A1261: Endotracheal Tube Adapter, 2.5mm w/side port
    - b. PN 220A3264: Wye, AWS
    - c. PN 201A3364: Tube, Clear AWS BS 10mm x 24”
    - d. PN 152A1265: Endotracheal Tube Adapter, 8.5mm (two)
  2. PN 200A2692: Valve Disc, AWS (two)
  3. PN 152A1264: Endotracheal Tube Adapter, 6mm (two)
  4. PN 210A2845: Hex Key, 5/32”
  5. PN 210A2846: Cotton Tipped Applicator, 6”
- Power Cord (not included for export) (PN 110A1118)
- Warranty Card (DOCB0202)
- Operating Manual (DOCA3122). Found on CD Manual DOCA4948.

Numerous other optional parts may have been shipped with your order also. Please refer to the packing slip for details.

4. Please complete and return the enclosed Warranty Registration card.

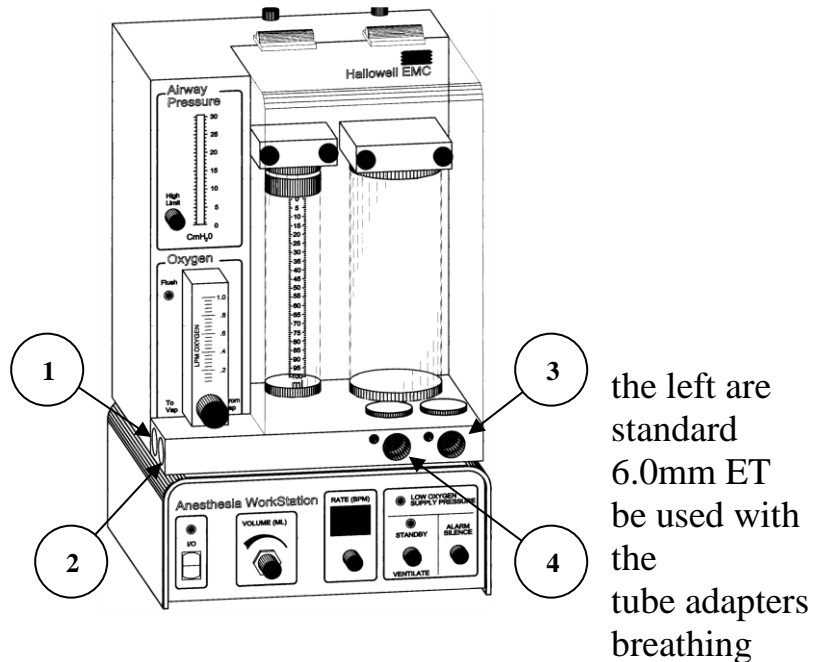
## Preparation and Setup

Set the AWS on your work surface. Place the vaporizer of your choice on the surface to the left of the WorkStation.

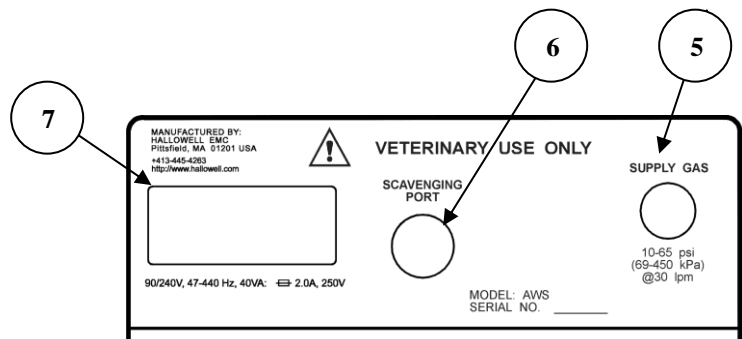
The connections to be made are:

- ✓ On the left side:
  1. **TO** the **VAP**orizer.
  2. **FROM** the **VAP**orizer.
- ✓ On the front:
  3. To the patient
  4. From the patient.

The four connections in the front and in 15mm tapered ports that will accept 15mm endotracheal tube adapters. Two adapters are supplied with the AWS to ¼" ID tubing (not supplied) to and from vaporizer. Two 8.5mm endotracheal are supplied to connect the 10mm system tubes to and from the patient wye.



- ✓ In the rear:
  5. **SUPPLY GAS.**
  6. **SCAVANGING PORT.**
  7. Electrical power.



The supply gas connection in the rear is a standard male DISS O<sub>2</sub> connector. The scavenging port will accept either the 19mm scavenger tubing or a 15mm ET adapter. The electrical power inlet is the standard IEC320 connector. The power supply in the AWS is a universal supply that will accept any standard power source as noted on the rear panel.

## **Filling the Absorber Canister:**

Open the AWS cover. Remove the two thumbscrews that hold the absorber top to the top mount on the chassis. Lift the canister from the unit and remove the top. Fill the canister with 300cc of CO<sub>2</sub> absorbent, replace the cover and return the canister to the unit. Secure the retaining screws and close the cover.

## **Functionality test:**

- Turn the VENTILATE/STANDBY switch to standby.
- Turn the AWS on.
- After a short pause a lamp test will run for 2 seconds, verify that all indicators, all display segments and decimal points illuminate. Also verify that the audio alarm sounds with the lamp test.
- Set the HIGH LIMIT safety, next to the airway pressure bar graph, to 25.
- Set the respiratory RATE in breaths-pre-minute (BPM) to 40.
- Turn the VOLUME control all the way down, fully clockwise.
- With the Vap and Patient connections occluded, use the FLUSH button to fill the breathing system until the floating puck in the ventilator tube reaches the top of the ventilator tube.
- Switch the VENTILATE/STANDBY switch to ventilate.
- Verify that the Low Breathing System Pressure (LO BSP) alarm sounds.
- Slowly, increase the VOLUME control until the peak inspiratory pressure (PIP) reaches about 15 cmH<sub>2</sub>O.
- Verify the system is leak free confirming that, with no fresh gas flow (FGF), the ventilator puck returns to the same position at the top for several cycles.

If the AWS does not perform as described above, DO NOT use the unit. Resolve the discrepancy or remove the unit for service.

## **Warm Up Period**

The breathing system chamber inside the hinged cover is heated to help keep the humidity of breathing gases at saturation near body temperature and to reduce condensation within the ventilator tube. It requires about 5 minutes for this chamber to come up to temperature. This will occur with the unit on and in the standby mode. Care should be taken to avoid opening the chamber during operation.

## Alarms

The AWS is equipped with the following alarms:

All alarms may be silenced for a maximum period of 3 minutes by pressing the **ALARM SILENCE** pushbutton. During that time, every 20 seconds a short reminder beep will sound indicating that an alarm condition still exists. If an alarm condition clears that had previously been silenced the “alarm silence” itself will also clear. Thus if the alarm condition goes away when it happens again the alarm will sound.

**Low Supply Pressure Alarm-** Although the AWS will operate to its declared specifications with an inlet pressure as low as 10 psig (69 kPa) the system will alarm when the supply pressure drops to 33 psig (227 kPa) or does not rise above 40 psig (275 kPa). The recommended input pressure is 50psi (345 kPa) and at NO time should exceed 65 psig (448 kPa)

**Low Breathing System Pressure Alarm-** This alarm sounds and the bargraph flashes on the very first breath in which the PIP does not rise 5 cmH<sub>2</sub>O from the baseline of the previous breath. This alarm auto resets when the condition clears.

**High Breathing System Pressure Alarm-** This alarm sounds should the airway pressure sensed equal the HIGH LIMIT setting. This causes the inspiratory cycle to be terminated and the expiratory phase to be entered along with a short audio indication and a flashing bargraph display.

## Cleaning and Maintenance

Use no alcohol on or near any plastic parts. Clean only with a damp cloth and mild detergent. All passages of the lower manifold block may be cleaned as needed with a 6” cotton tipped applicator. Access to some of the passages may be gained by removing the threaded plugs, two on the front and one on the right side. Both a sample of 4 applicators and the required Allen key are included.

Both the valve discs and valve seats of the inspiratory and expiratory valves located under the 2 domes in front of the CO<sub>2</sub> absorber tube should be cleaned as needed to prevent them from sticking due to dried condensation.

Talc may be used on all O-Rings for a smooth fit. A replacement O-Ring kit is available. HEMC Part # 180A3406.

**NO** O-ring lube should be used on the ventilator tube. Caution should be taken when handling the ventilator tube and puck to avoid touching the inside of the tube or the OD of the puck. Cleaning both with alcohol is recommended should the puck begin to drag within the tube.

NOTE: the puck and ventilator tube is a matched set of parts and must remain together as a set. Do not interchange one or the other from other WorkStations.

**Caution** should also be taken when removing and handling the ventilator tube. This tube is made of **GLASS** not plastic; tilting it too far during removal **will** cause the tube to break. This type of breakage will **not** be covered by our warranty.

## Miscellaneous

Note that two spare unidirectional valve discs have been included. These are the very small round plastic disks. They are marked with an “X” on each for better visibility.

A 200mL tube is available in the form of our 200mL AWS Attachment. HEMC Part #000A3393.

Replacement 100mL vent tubes are also available. HEMC Part #240A3267.

In the event that shipping the AWS is necessary, be sure to **REMOVE** all CO<sub>2</sub> absorbent and seal the AWS in a plastic bag. Double boxing the unit with plenty of packing material is requested.

## RETURNING FOR SERVICE

If the WorkStation has a problem, which cannot be resolved using the trouble shooting procedures, please call your dealer or **Hallowell EMC** immediately for assistance.

If **Hallowell EMC** determines that it is necessary to have the WorkStation returned to us for service, we will provide a RETURN AUTHORIZATION NUMBER to you.

In the event that shipping the AWS is necessary, be sure to **REMOVE** all CO<sub>2</sub> absorbent.

Please seal the unit in a plastic bag to prevent contamination from packing materials.

Use a box of sufficient size to allow for at least 3” of cushioning material such as bubble wrap or foam around the unit. Careful packing is essential. See Warranty.



# Specifications:

<b>OPERATIONAL CHARACTERISTICS</b>	
Rate .....	4-80 bpm
Tidal Volume .....	0-100 ml, option 0-200 ml (PN 000A3393)
I:E Ratio.....	1:2 (preset)
Supply Gas.....	Oxygen
Supply Gas Pressure .....	40-65 psig [275 – 448 kPa]
<b>Controls</b>	
Rate .....	Linear, 4-80 bpm
Volume .....	10-turn metering valve
Adjustable Pressure Limit.....	Linearly Adjustable, 10 - 30 cm H <sub>2</sub> O
<b>Indicators</b>	
Power On .....	Front Panel-mounted green LED
Standby Mode.....	Front Panel-mounted yellow LED
Alarm, Visual.....	Front Panel-mounted yellow LED
Alarm, Audio .....	Internal audio transducer
<b>PHYSICAL</b>	
Unit Weight .....	16 lbs [7.3 kg]
Dimensions .....	9"W x 10"D x 14.5"H [228mm W x 254mm D x 368mm H]
Power Requirements .....	90-240 Vac, 47-440 Hz