

## Maintenance Checklist

### VM-2500 Series Capnographs

The Viamed VM-2500 Series capnographs and pulse oximeters are permanently factory calibrated. The maintenance and calibration-free technology (gas analyzer and SpO<sub>2</sub> module) integrated into the VM-2500 Series ensures a robust measurement function throughout the lifetime of the monitor and no routine calibration is required. However, a basic maintenance plan is highly recommended.

To document the maintenance, use the following checklist.

Details of the device components	
<b>Device</b>	Device Model (REF on rear label) <input type="checkbox"/> VM-2500-S <input type="checkbox"/> VM-2500-M <input type="checkbox"/> VM-2500-MG
<b>External power supply</b>	<input type="checkbox"/> male black connector on the cable and female on the device (Rev. 1) <input type="checkbox"/> orange connector on the cable, metal connector on the device (Rev. 2) <input checked="" type="checkbox"/> female black connector on the cable and male on the device (Rev. 3)
<b>SpO<sub>2</sub> Sensor</b>	<input type="radio"/> SC 6500 <input type="radio"/> SCP 6500 <input type="radio"/> W 6500 <input type="radio"/> Disposable
<b>Serial Number (SN)</b> The serial numbers of the modules can be found in the device menu: Setup>Service Menu (enter PIN code)> System information > Device information	<b>Device</b> (SN on device rear label): <b>A1809150028</b> <b>SpO<sub>2</sub> Sensor</b> (SN on cable): <b>N/A</b> <b>SpO<sub>2</sub> Module</b> (SN in Service Menu): <b>SW1218 V2.04.0001</b> <b>CO<sub>2</sub> Module</b> (SN in Service Menu or on device housing): <b>HW 1.0 SW 2.0.6.9</b>
<b>Firmware Version</b> Factory updates are possible, starting from v7.5	Version (Start-up-Screen at switch on): <b>9.1</b>

<b>Comments</b>		
<b>Result</b>	<input checked="" type="checkbox"/> Pass VM-2500-M & VM-2500-MG: Steps 1 – 5 VM-2500-S: Steps 1 - 6	<input type="checkbox"/> Fail <b>Don't use the device to monitor patients! Perform repair or return to Viamed.</b>
<b>Date</b>	<b>Assessor H.Froehlich</b>	

Test step	Target state	Result	Comment
<b>1. Visual inspection</b>			
Housing, display, keypad	No damages or defects	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Sensors and cable	No exposed optical components, wires or other damage to the sensor	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	No cable or sensor returned.
External power supply (cable & connector)	No damage or defects	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	No external power supply returned.
Label & transparent protective foil	Label and the transparent protective foil are intact. Clean and affixed to the rear of the device.	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Screw lock	Fixed to upper right-hand screw	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
<b>2. Power Supply Options (AA batteries, Li-Poly rechargeable battery, external power supply)</b> (switch on with each supply option - confirm measurement readings: SpO <sub>2</sub> at finger; EtCO <sub>2</sub> by breathing through airway adapter - switch off)			
Only 4 AA Batteries	switch on – measurement - switch off	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Only Li-Poly	switch on – measurement - switch off	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Only ext. power supply	switch on – measurement - switch off	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
External power supply & Li-Poly	switch on – measurement - switch off	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Comments: (Pixel defects, etc.)			
<b>3. SpO<sub>2</sub> - Function testing with a simulator</b>			
SpO <sub>2</sub> at simulator setpoint 82% (Nellcor R' curve)	82% SpO <sub>2</sub> (± digits)	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	value: 82
Pulse rate at simulator setpoint 75 bpm	75 beats/min (± digits)	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	value: 75
SpO <sub>2</sub> low alarm	Audible and visual	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Comments:			
<b>4. CO<sub>2</sub> - Measurement</b> (If a breath simulator is not available then alternatively use a reference device) Select Mode on the VM-2500: <i>Main Menu &gt;Setup&gt; Service (enter PIN code) &gt; Maintenance &gt; Check gas accuracy.</i> Calibration gas (5% ±0.1vol% CO <sub>2</sub> , 20.9% O <sub>2</sub> balance N <sub>2</sub> )			
5vol% CO <sub>2</sub> calibration gas + airway adaptor	EtCO <sub>2</sub> : <b>4.7 – 5.3 vol%</b> FiCO <sub>2</sub> : <b>0.0 – 0.3vol%</b>	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	value: EtCO <sub>2</sub> / FiCO <sub>2</sub> 4.9
Breaths per minute	setpoint (± 1 digit)	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	value: 10

Test step	Target state	Result	Comment
<b>5. Alarms &amp; Data Download</b> (switch on device with SpO <sub>2</sub> Sensor attached to a finger, breath through airway adapter)			
Remove SpO <sub>2</sub> Sensor from finger	Alarm sound and message "SpO <sub>2</sub> Probe off!"	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Breathe three times through airway adapter and wait 20s	Alarm sound and message "Apnoea !!"	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Download data to PC with VM-2500 PC-Software	Successful data download to PC	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	PC-SW version 1.11
Delete all data	All stored data in the device is deleted	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Comments:			
<b>6. Check pressure – ISA module (Only for sidestream capnograph VM-2500-S)</b>			
On the device select: <i>Main Menu &gt; Setup&gt;Service (enter PIN code) &gt; Maintenance &gt; Check pressure</i>			
Compare displayed ambient pressure value with the actual local barometric pressure value	actual barometric pressure ±5 kPa	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	
Compare displayed cuvette pressure with ambient pressure	cuvette pressure is 1 to 5 kPa lower than displayed ambient pressure	<input checked="" type="checkbox"/> pass <input type="checkbox"/> fail	Ambient pressure: 101 kPa  Cuvette pressure: 96 kPa
Comments:			