

**27.04.2023**

**TAMILNADU MEDICAL SERVICES CORPORATION LTD.,**  
**ICB TENDER FOR SUPPLY AND INSTALLATION OF VENTILATORS**  
**FOR TERTIARY CARE HOSPITALS AT GOVT. RAJAJI HOSPITAL -**  
**MADURAI, GOVT. KILPAUK MEDICAL COLLEGE HOSPITAL -**  
**CHENNAI AND GOVT. COIMBATORE MEDICAL COLLEGE HOSPITAL**  
**- COIMBATORE IN TAMILNADU**

**PKG6/C1/ICB/TNUHP/ JICA/TNMSC/ENGG/ 2022, dt. 29.07.2022**

a) The following corrigendum are issued:-

| <b>Sl. No.</b> | <b>Tender document reference</b>  | <b>Instead of</b>   | <b>Read as</b>   |
|----------------|---|---|--|
| 1.             | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b>  | 1) c) Non- invasive ventilation should be possible in pressure modes.   | 1) c) Non- invasive ventilation should be possible in <b>volume and pressure modes.</b>  |
| 2.             | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b><br>2. Power -The ventilator should run on both mains and battery as below: | 2) b) Battery - Internal Battery with minimum one to two hour battery backup with onscreen battery power indication.    | 2) b) Battery - Internal Battery with <b>45 minutes or more</b> battery backup with onscreen battery power indication.                 |
| 3.             | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b>  | 4. Graphical Interface - All commands and settings should be through an integrated 10-inch colour touchscreen as below: | 4. Graphical Interface - All commands and settings should be through an integrated <b>minimum 12-inch</b> colour touchscreen as below: |

| Sl. No. | Tender document reference  | Instead of  | Read as  |
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| 4.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 4)b) The curve should be clear for easy viewing at a distance. It should differentiate the Spontaneous & Mandatory breaths with different color in the Flow curve (optional).           | 4)b) The curve should be <b>filled curves</b> for easy viewing at a distance. It should differentiate the Spontaneous & Mandatory breaths with different color in the Flow curve ( <b>standard supply</b> ).   |
| 5.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 4) c) Optional: Any loops from PV, FV, PF should be displayed in any combination such as:<br>i. Waveforms + loops<br>ii. Single loop on screen<br>iii. Waveform + loops + trends        | 4)c) Standard: Any loops from PV, FV, PF should be displayed in any combination such as:<br>i. 2 Waveforms + 2 loops simultaneously<br>ii. 1 waveform + 1 large loop simultaneously<br>iii. 1 Waveform + 2 loops + 2 graphical trends simultaneously                             |
| 6.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 9. There should be a day / night mode or bright display for easy viewing at night.  | 9. There should be a <b>day / night mode for easy viewing at night.</b>  |
| 7.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 11) a) Valve response time: The ventilator should have an extremely sensitive valve with response time $\leq 5$ msec for ensuring quick delivery of gases during spontaneous breathing. | 11) a) Valve response time: The ventilator should have an extremely sensitive valve with response time <b><math>\leq 10-25</math> msec</b> for ensuring quick delivery of gases during spontaneous breathing ( <b>to be shown in operating manual or technical data sheet</b> ). |
| 8.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b>  | 11) c) Oxygen cell -The ventilator should have low operating costs with a permanent / non consumable O2 sensor/Galvanic O2  | 11) c) Oxygen cell -The ventilator should have low operating costs with a <b>permanent / non-consumable O2 sensor</b> for FiO2 monitoring.   |

| Sl. No. | Tender document reference  | Instead of   | Read as   |
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|         | <b><u>Technical Specification for Ventilators</u></b>  | sensor for FiO2 monitoring. Same should be offered as standard. The O2 sensor should be covered under warranty / CAMC.   | Same should be offered as standard. The O2 sensor should be covered under warranty / CAMC.  |
| 9.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | d) In case consumable / electrochemical O2 cells are to be offered by a vendor, the same should be provided at free of charge for operational lifetime of equipment for 10 years.                                    | <b>d) Deleted.</b>  |
| 10.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 11) e) Humidifier: The ventilator should be supplied with a servo-controlled humidifier with: Dual limb Adult and pediatric hoses".  | 11) e) Humidifier: The ventilator should be supplied with a USFDA or European CE certified servo-controlled humidifier with Dual limb Adult and pediatric hoses". |
| 11.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 24. Basic Unit (220-240 V) with integrated 10- inch or more touch screen and integrated internal battery to power internal turbine / air source.   | 24. Basic Unit (220- 240 V) with integrated <b>12-inch</b> or more touch screen and integrated internal battery to power internal turbine / air source.           |
| 12.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b> | 26)c) O2 cell - should be non-consumable and should lifelong. In case consumable / electrochemical O2 cells are to be offered by a vendor, the same should be provided at free of charge for operational lifetime of | 26)c) The ventilator should have <b>permanent/ non-consumable O2 sensor.</b>  |

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|         |   | equipment for 10 years.   |  |
| 13.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><b><u>Technical Specification for Ventilators</u></b>  | ----  | <b>Add the following points at the end of technical specifications:</b><br><b>35. All disposable &amp; consumables should be supplied from the same manufacturers.</b><br><b>36. Automatic Tube Resistance Compensation - should be available for both endotracheal and tracheostomy patients with adjustable tube size (3.5 - 12 mm) in 0.5 mm increments in all ventilation modes.</b> |
| 14.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b> | <b>I. Conventional Ventilation</b><br><br><input type="checkbox"/> PRVC (Pressure regulated volume control) | <b>I. Conventional Ventilation</b><br><br><input type="checkbox"/> PRVC (Pressure regulated volume control) <b>or volume target/ limit.</b>  |

b) The following clarifications are issued:-

| Sl. No. | Tender document reference   | Points raised   | Clarification Furnished                                       |
|---------|---|---|---|
| 1.      | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b><br>3. Air source - integrated internal (turbine).<br>a. For delivering continuous flow upto 180 lpm or more. For | Requested to amend as:<br><br>a. For delivering continuous flow upto 240 lpm or more to achieve flow demand of the patient with 100% leak compensation in NIV pressure modes ventilation. | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference  | Points raised   | Clarification Furnished                                       |
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|         | achieving better leak compensation in NIV and flow demand of the patient.  |   |   |
| 2.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>4) a) At least 3 curves from pressure, flow, volume or Capnography (optional)</p>   | <p>Requested to amend as:</p> <p>At least 3 curves from pressure, flow, volume or Capnography (standard).</p>   | No Change. Hence, published technical specifications prevail. |
| 3.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>4)b) The curve should be clear for easy viewing at a distance. It should differentiate the Spontaneous &amp; Mandatory breaths with different color in the Flow curve (optional).</p> | <p>Request to amend as:</p> <p>The curve should be clear for each viewing at a distance. The visual alarm indication should be viewable at 360 degree position.</p>   | No Change. Hence, published technical specifications prevail. |
| 4.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>7. Integrated Graphical trend for 24 hours should be available for monitored parameters.</p> <p>8. Integrated Tabular trend also should be available.</p>                             | <p>Requested to amend as:</p> <p>7. Integrated Graphical trend for 7 days or more should be available for monitored parameters.</p> <p>8. Integrated Tabular trend also should be available for 7 days or more.</p> | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference   | Points raised   | Clarification Furnished                                       |
|---------|---|---|---|
| 5.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>7. Integrated Graphical trend for 24 hours should be available for monitored parameters.</p> <p>8. Integrated Tabular trend also should be available.</p>  | <p>Requested to amend as:</p> <p>7. Integrated Graphical trend for 72 hours should be available for monitored parameters.</p> <p>8. Integrated Tabular/graphical trend also should be available.</p>  | No Change. Hence, published technical specifications prevail. |
| 6.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>10. Flow Sensor:<br/>Flow sensor should be heated wire/ differential pressure/ ultrasonic or Proximal Sensor type or equivalent for higher accuracy and should be covered under warranty and CAMC.</p> | <p>Requested to amend as:</p> <p>The flow sensor should be heated wire / ultrasonic type for higher accuracy which has capable to calibrate within 5 seconds without disconnecting from the patient. Also, it should be easily replaceable without stopping the ventilation when patient is being ventilated.</p> | No Change. Hence, published technical specifications prevail. |
| 7.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>13. Modes of Ventilation - The ventilator should have the following ventilation modes as standard with quick touchscreen-based operation and through an encoder knob</p>                               | <p>Requested to amend as:</p> <p>a) Modes of Ventilation - The ventilator should have the following ventilation modes as standard with quick integrated touchscreen-based operation / change from one mode to another.</p> <p>b) The ventilator should have the</p>   | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference  | Points raised   | Clarification Furnished                                       |
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|         | for dual patient safety in case of touch screen failure / change from one mode to another:   | following ventilation modes as standard with quick knob / mouse touchscreen based operation and through an encoder facility for dual patient safety in case of touch screen failure / change from one mode to another.  |   |
| 8.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>b) Pressure control -PC - BIPAP/APRV/ equivalent mode as one mode from intubation to extubation, PC- AC.</p> <p>c)Sigh -pressure limited sigh/ volume oriented sigh to avoid volutrauma/ barotraumas.</p> | <p>Requested to amend as:</p> <p>b) Pressure control - PC - BIPAP (Psupport should be active in PEEP and should not be active in Ppeak to prevent Barotrauma), PC APRV(without Pressure support to prevent Barotrauma) and PC-AC.</p> <p>c) Sigh -pressure oriented sigh to avoid volutrauma / barotraumas. It Should be adjustable above the set PEEP (Not on Volume).</p> | No Change. Hence, published technical specifications prevail. |
| 9.      | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Ventilators</u></b></p> <p>17. MMV/ASV/ AVM/Auto Mode/PRVC-SIMV or equivalent single mode for ventilating from control mode to spontaneous.</p>  | <p>Requested to amend as:</p> <p>a) MMV/ASV/ Auto Mode or equivalent single mode for ventilating from control mode to spontaneous.</p> <p>b) ASV/AVM/Auto mode / PAV / NAVA single mode for ventilating from control mode to spontaneous.</p>   | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference   | Points raised  | Clarification Furnished                                       |
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| 10.     | Corrigendum dt. 05.04.2023<br><br><b><u>Section VI: Schedule of Requirements</u></b><br><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b><br>26) a) Reusable heated / differential flow sensor - 2 Nos, should be covered under warranty and CAMC. | Reusable Autoclavable Heated wire/ultrasonic Flow sensor - 10 Nos. (Supportive documents should be submitted for autoclavable material)  | No Change. Hence, published technical specifications prevail. |
| 11.     | Corrigendum dt. 05.04.2023<br><br><b><u>Section VI: Schedule of Requirements</u></b><br><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b><br><br>33. APRV mode: adjustment of P - high, P - low, T- high, T-Low                                    | Requested to amend as:<br>APRV mode:<br>adjustment of P - high, P - low, T- high, T-Low & without Psupport.  | No Change. Hence, published technical specifications prevail. |
| 12.     | Corrigendum dt. 05.04.2023<br><br><b><u>Section VI: Schedule of Requirements</u></b><br><br><b><u>3. Technical Specifications</u></b><br><br><b><u>Technical Specification for Ventilators</u></b>  | Requested to include the following additional points:<br><br>Non Invasive ventilation should be available in all the following Modes<br><br>1. VC-CMV<br>2. VC-AC<br>3. VC-SIMV<br>4. VC-SIMV/PS<br>5. VC-MMV/ASV/Automode<br>6. PC-AC<br>7. PC-BIPAP<br>8. PC-APRV<br>9. CPAP | No Change. Hence, published technical specifications prevail. |



| Sl. No. | Tender document reference   | Points raised  | Clarification Furnished                                       |
|---------|---|--|---|
| 13.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><b><u>Technical Specification for Ventilators</u></b>  | Requested to include the following additional points:<br><br>a) Should have built-in facility for spontaneous breathing trial.<br><br>b) Should have inbuilt animated lung / lung visualization tool in ventilator.<br><br>c) Should be able to ventilate the patient using single limb and dual limb circuit. | No Change. Hence, published technical specifications prevail. |
| 14.     | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b>   | Requested to remove this point.  | No Change. Hence, published technical specifications prevail. |
|         | Corrigendum dt. 05.04.2023<br><b><u>Section VI: Schedule of Requirements</u></b><br><b><u>3. Technical Specifications</u></b><br><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b><br><b><u>1. General Specification</u></b><br><br>2) Screen 14" to 17" TFT LCD touch screen.<br>7) Proximal flow sensor should be hot wire anemometer.<br>8) Distal flow sensor should be permanent.<br><br>11) Trends should be available for 72 hours. | Requested to amend as:<br><br>2) Screen 10" to 17" TFT LCD screen.<br><br>7) Proximal flow sensor should be hot wire anemometer or differential pressure sensor.<br><br>8) & 11) Requested to delete these points.   | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference   | Points raised  | Clarification Furnished                                       |
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| 15.     | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b></p> <p>3. Size of ventilator only:</p> <p>Width: 300-600 mm</p> <p>Height: 350-1500 mm</p> <p>Depth: 400-700 mm</p> <p>4. Weight – 20 - 30 kgs</p> <p>7. Proximal flow sensor should be hot wire anemometer.</p> | Requested to remove these points.  | No Change. Hence, published technical specifications prevail. |
| 16.     | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b></p>  | <p>Requested to remove the following points:</p> <ul style="list-style-type: none"> <li>• HFOV + CMV Mode</li> <li>• Pressure Control Mode</li> <li>• PC-Volume Guarantee</li> <li>• MMV</li> <li>• Volume controlled</li> <li>• Proportion pressure support (PPS)</li> <li>• PC-HFOV</li> <li>• Smart Pulmonary view</li> <li>• Automatic Tube compensation</li> <li>• Auto release (in PC-APRV)</li> <li>• HFO-Sigh</li> <li>• Medication Nebulization</li> <li>• Edi Monitoring</li> <li>• Pause Oscillation</li> </ul> | No Change. Hence, published technical specifications prevail. |
| 17.     | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p>   | Requested to delete these points   | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference  | Points raised                     | Clarification Furnished                                       |
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|         | <p><b><u>3. Technical Specifications</u></b></p> <p><b><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></b></p> <p>I. Conventional ventilation:</p> <p>a) PC (pressure controlled):</p> <p>-MMV – Mandatory minute ventilation</p> <p>b) VC (Volume Controlled)</p> <p>- SIMV</p> <p>-SIMV + PS</p> <p>c) Noninvasive ventilation</p> <p>-CPAP, CPAP with PS</p> <p>-Proportion pressure support (PPS)</p> <p>- NIPPV</p> <p>II. PC – HFOV</p> <p>III. HFOV + CMV</p> |                                   |   |
| 18.     | <p>Corrigendum dt. 05.04.2023</p> <p><b><u>Section VI: Schedule of Requirements</u></b></p> <p><b><u>3. Technical Specifications</u></b></p> <p><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u></p> <p>3. Enhancements</p> <p>-Apnea ventilation – Flow trigger</p> <p>-Sigh</p> <p>-Volume Guarantee (VG)</p> <p>-Smart Pulmonary view (Optional feature)</p>   | Requested to delete these points. | No Change. Hence, published technical specifications prevail. |

| Sl. No. | Tender document reference  | Points raised                   | Clarification Furnished                                       |
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|         | -Automatic Tube Compensation <sup>®</sup> (ATC)<br>-Auto Release (in PC – APRV) (Optional feature)<br>-HFO – Sigh<br>-Volume Guarantee for HFO (HFO – VG)  |                                 |   |
| 19.     | Corrigendum dt. 05.04.2023<br><u><b>Section VI: Schedule of Requirements</b></u><br><u><b>3. Technical Specifications</b></u><br><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u><br><u><b>6. Special Functions</b></u><br>g) Edi Monitoring (Optional feature)           | Requested to delete this point. | No Change. Hence, published technical specifications prevail. |
| 20.     | Corrigendum dt. 05.04.2023<br><u><b>Section VI: Schedule of Requirements</b></u><br><u><b>3. Technical Specifications</b></u><br><u>Technical Specification for Neonatal Ventilators with high frequency oscillatory ventilation</u><br><u><b>Suction support</b></u><br>d) VGA option should be available to export screen. | Requested to delete this point. | No Change. Hence, published technical specifications prevail. |

All other terms and conditions of the tender remain unaltered.

The above forms part of the bidding documents. The bidder shall upload the copy of this corrigendum duly signed by their authorized signatory, along with their bid.

**Sd/-**

**General Manager (E)**