



# **TOM THUMB RESUSCITATION UNIT TT480**

## **SERVICING MANUAL**



**CE 0086**



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This manual is intended to provide information to help qualified maintenance personnel service and repair the Tom Thumb Infant Resuscitation Unit; TT480. General engineering knowledge and the ability to follow technical instructions are assumed, as are knowledge of oxygen flow rates and the characteristics of operational pressures.

The equipment needed to service the Tom Thumb is laid down in this Service manual. In addition, a calibrated manometer will be required for test and calibration of the unit.

Diagrammatic representations of disassembly and re-assembly are shown in this Service manual.

Servicing personnel must be aware of the potential clinical implications of incorrectly serviced equipment.

Service and calibration of units, to a flow of 10 Lpm, does not imply operational usage at this rate. Operational flow rate should be determined, at the time of usage, within the scope of individual organisations' resuscitation protocols, up to the maximum of 10 Lpm.

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## 1. Introduction.

### Service of the Tom Thumb Resuscitation Unit.

The Tom Thumb has been designed to require minimal service with very few replaceable items. The accuracy of the pressure gauge, adjustable valve and precision valve should be checked at least every 12 months or when the gauge at zero pressure reads outside the black band.

It is recommended that all hoses be checked every 3 months, for connections, damage and possible degrading and / or rupture of hose and coatings. The hoses should be replaced, regardless of condition, every 4 years (maximum).

It is recommended that all O-rings should be replaced every 2-3 years.

The adjustable valve has no user replaceable parts or parts that should suffer from wear; adjustment by the user is not recommended as specialist tools are required to dismantle and reset.

Setting of the adjustable valve pressure when carried out in accordance with the relevant procedure will ensure accuracy to  $\pm 2 \text{ cmH}_2\text{O}$ .

The precision valve is factory pre-set and sealed; adjustment by the user is not recommended, as specialist tools are required to dismantle and reset.

The precision valve pressure may have been set at manufacture to 20, 30, 40 & 50  $\text{cmH}_2\text{O}$  to a tolerance of  $\pm 2 \text{ cmH}_2\text{O}$ , dependent on customer requirements. Setting of the precision valve when carried out in accordance with the relevant procedure will ensure accuracy to  $\pm 2 \text{ cmH}_2\text{O}$ .

If the setting of either the adjustable valve or the precision valve is proven to be outside the required tolerance, the Tom Thumb should be returned to Viamed for servicing. Both valves require specialist tooling to dismantle and reset.

The Tom Thumb pressure gauge is accurate to  $\pm 2 \text{ cmH}_2\text{O}$  subject to a reading within the black band at zero pressure. If the gauge is removed, a single-use diamond copper washer, part no. 0330212, must be replaced.



**Do not re-use the original “Diamond Copper Washer”.**



## 2. 0310030 TT480 Servicing.

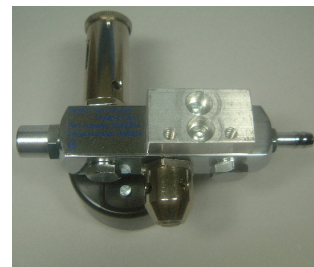
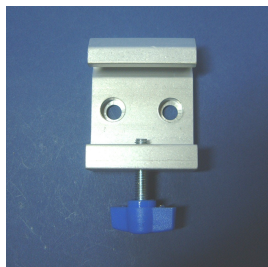
**Important: Use only oxygen-compatible grease and adhesive during assembly of Tom Thumbs. Do not use or allow organic greases to enter the Tom Thumb. Ensure all parts are clean before assembly.**

Equipment required. 12mm open-ended spanner, pick, isopropyl alcohol, kitchen tissue, PTFE tape, 3mm Allen key, 7/8 A/F spanner, 5/8 – 9/16 A/F spanner, O-Rings, diamond copper washer.

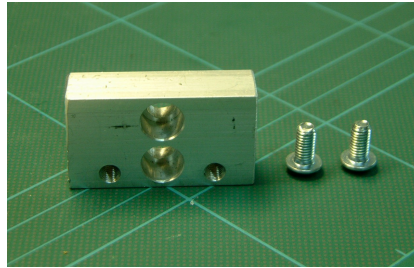
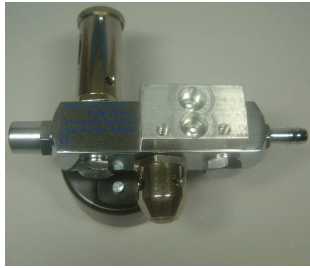
| Parts list. |                               |          |
|-------------|-------------------------------|----------|
| Qty.        | Description.                  | Part No. |
| If req'd    | Body block                    | 0330201  |
| 1           | Diamond copper washer         | 0330212  |
| If req'd    | Pressure gauge                | 0330203  |
| 1           | Thick O-ring – 1/16 section   | 0330213  |
| 6           | Thin O-ring – 1/16 section    | 0330214  |
| If req'd    | Flowmeter blocking bolt & nut | 0330206  |
| If req'd    | Precision valve               | 0330210  |
| If req'd    | Blanking bolt                 | 0330207  |
| If req'd    | Adjustable valve              | 0330211  |
| If req'd    | 15mm outlet                   | 0330219  |
| If req'd    | Serial number label           | 0390030  |
| If req'd    | Spacer block                  | 0330215  |
| If req'd    | Rail clamp                    | 0330055  |
| If req'd    | M4x10mm hex drive bolts       | 0330216  |
| If req'd    | "Tom Thumb" label             | 0390015  |
| If req'd    | Adjustable valve label        | 0390010  |
| as req'd    | Oxygen-compatible grease      | 0330220  |
| as req'd    | Oxygen-compatible adhesive    | 0330237  |

### Servicing.

1. Detach the rail clamp from the spacer block by removing the M4x10mm hex drive bolts.

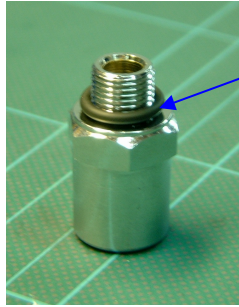


2. Detach the spacer block from the body block by removing the M4x10mm hex drive bolts.

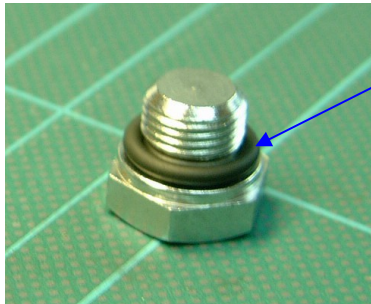




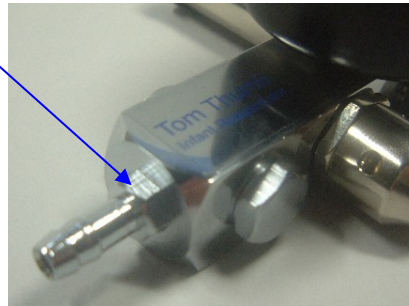
3. Unscrew the 15mm outlet from the threaded hole in the right face of the body block. Ensure the port, and threads, are free of foreign matter. Replace the thin O-ring (p/n 0330214) and refit the 15mm outlet.



4. Unscrew the blanking bolt from the right hand threaded hole in the bottom face of the body block. Ensure the port, and threads, are free of foreign matter. Replace the thin O-ring (p/n 0330214) and refit the blanking bolt.



5. Unscrew the 10mm inlet from the left hand face of the body block. Ensure the port, and threads, are free of foreign matter. Replace the thin O-ring (p/n 0330214) and refit the 10mm inlet.





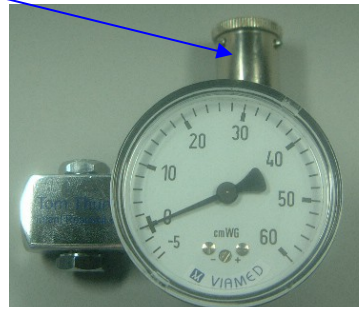
6. Unscrew and remove the precision valve. Ensure the port, and threads, are free of foreign matter. Disassemble the precision valve and re- grease the valve seat and valve screw – (see Valve Servicing Manual ). Remove the thin O-ring and replace with new O-ring (p/n 0330214). Refit the precision valve into the centre bottom threaded hole. Note older models may have PTFE tape instead of O-ring due to no recess in block, in such cases remove and replace the PTFE tape.



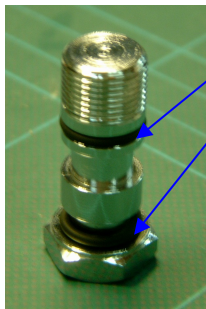




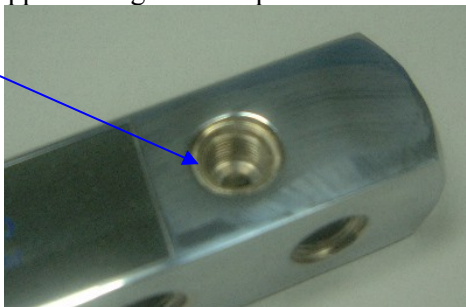
7. Unscrew the adjustable valve from the right hand threaded hole on the top face of the body block. Ensure the port, and threads, are free of foreign matter. Disassemble the adjustable valve and re-grease the valve seat and valve screw – (see Valve Servicing Manual). Replace the thin O-ring (p/n 0330214) and refit the adjustable valve.



8. Unscrew the Flowmeter blocking bolt and nut from the left hand non-threaded hole in the body block. Ensure the port, and threads, are free of foreign matter. Replace the thin O-ring (p/n 0330214), the thick O-ring (p/n 0330213), refit the blocking bolt.



9. **IF** pressure gauge can be removed without spanner, **OR** pressure gauge is not straight.
- a). Unscrew the pressure gauge. b). Ensure the port, and threads, are free of foreign matter. c). Insert a **new** diamond copper washer into the single threaded hole on the label side of body block. d). Screw in the pressure gauge and use the 14mm open ended spanner to tighten; the gauge should appear straight in comparison to the block and not able to be removed without the aid of tools.



#### Testing & Calibration: TT480.

1. Check the TT480 for damage.
2. Set the adjustable valve to minimum (fully counter clockwise).
3. Connect the inlet to the oxygen supply at a pressure of 4 bar.
4. Connect the digital manometer (on 0-100.0 mbar range) with T piece adapter to the Tom Thumb outlet.

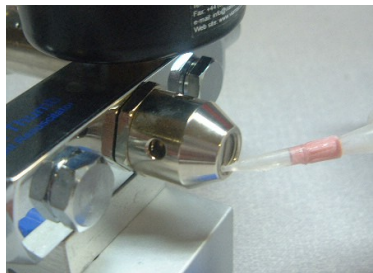




5. Set the flow of oxygen to 10 Lpm.
6. Check all mechanical connections between parts for leaks; use Snoop fluid and check for bubbling.
7. Check for minimum pressure out: Cover the T piece adapter port. Check the TT pressure gauge is less than 8.0 cmH<sub>2</sub>O. Check that the digital manometer reading is less than 7.8 mbar and record.
8. Set up the adjustable valve: Set the adjustable valve control to maximum. Cover the holes in the precision valve and the T piece adapter port. Alter the adjustable valve collar until a reading of 42 - 45 cmH<sub>2</sub>O is achieved on the TT pressure gauge. Ensure a reading of 42.0 – 45.0 mbar on the digital manometer and record. Slightly unscrew the adjustable valve and apply oxygen-compatible adhesive to the exposed threads. Retighten the adjustable valve with the adjustable spanner.



9. Check for TT pressure gauge sticking: Release and cover the T piece adapter port a number of times, ensuring that TT pressure gauge returns to 42 - 45 cmH<sub>2</sub>O. Uncover the precision valve holes.
10. Set up the precision valve: Cover the holes in the adjustable valve and the T piece adapter port. Ensure a reading on the TT pressure gauge of 2.0 cmH<sub>2</sub>O greater than the reading recorded at (8). Record the digital manometer reading. If a valid reading cannot be obtained, slightly unscrew the precision valve adjustable screw and apply oxygen-compatible adhesive to the exposed threads. Screw into the precision valve body until flush. Cover the holes in the adjustable valve and the T piece adapter port. Carefully adjust the precision valve screw in quarter turns to achieve a reading on the TT pressure gauge of 2.0 cmH<sub>2</sub>O greater than the reading recorded at (8) (Clockwise adjustment on precision valve screw to increase). Record the digital manometer reading.





11. TT pressure gauge accuracy check: Cover the T piece adapter port and set the flow to 30 cmH<sub>2</sub>O on the TT pressure gauge. Ensure a reading of 29 – 31 mbar on the digital manometer and record.
12. Turn the flowmeter and adjustable valve to minimum. Disconnect from oxygen supply and disconnect the digital manometer.
13. Clean the Tom Thumb with isopropyl alcohol. Replace labels as necessary.
14. Attach the TT480 Instructions for Use cards (p/n 0390006).



### 15. TOM THUMB CALIBRATION / SERVICE SHEET

|                     |            |                                                  |  |
|---------------------|------------|--------------------------------------------------|--|
| <b>Description.</b> | Tom Thumb. | <b>Serial No.</b>                                |  |
| <b>Model.</b>       | TT 480.    | <b>Time &amp; Date of Service / Calibration.</b> |  |

Record the manometer reading in millibars below, ensuring the TT480 meets the limits specified.

| Test Equipment | Test                                             | Specification                                                          | Reading     | Pass   |
|----------------|--------------------------------------------------|------------------------------------------------------------------------|-------------|--------|
|                |                                                  |                                                                        | Calibration | / Fail |
| Snoop liquid.  | Check all ports / connections for leaks.         | No bubbling.                                                           |             |        |
| Manometer      | Adjustable Valve:<br>@ 10 Lpm                    | Minimum:<br>< 8 cmH <sub>2</sub> O.                                    |             |        |
| Manometer      | Adjustable Valve:<br>@ 10 Lpm.                   | Tolerance:<br>> 42 & < 45 cmH <sub>2</sub> O.                          |             |        |
| Manometer      | Precision Valve:<br>@ 10 Lpm.                    | Maximum:<br>+2.0 cmH <sub>2</sub> O over the adjustable valve setting. |             |        |
| Manometer      | Pressure Gauge Test.<br>@ 30 cmH <sub>2</sub> O. | Tolerance:<br>>29 & <31 cmH <sub>2</sub> O                             |             |        |
| Visual check.  | Gauge cannot be removed without tools.           |                                                                        |             |        |
| Visual check.  | Gauge appears straight.                          |                                                                        |             |        |
| Visual check.  | All adjustable settings are set to a minimum.    |                                                                        |             |        |
| Visual check.  | Labels are attached.                             | CE Label.                                                              |             |        |
|                |                                                  | Serial Number Label.                                                   |             |        |
|                |                                                  | Tom Thumb Label                                                        |             |        |

| Service.                                   | Parts Replaced.                 |
|--------------------------------------------|---------------------------------|
| Changed O-Rings                            | Diamond Copper Washer           |
| Re-greased Adjustable Valve Internal Parts | Adjustable Valve                |
| Re-calibrated Tom Thumb                    | Adjustable Valve Internal Parts |
|                                            | Safety Valve                    |
|                                            | Safety Valve Internal Parts     |
|                                            | Pressure gauge                  |
|                                            | Pressure Gauge Face             |
|                                            | O-Rings                         |
|                                            | Outlet                          |
|                                            | Inlet                           |
|                                            | Blanking Bolts                  |
|                                            | Rail Clamp                      |
|                                            | Main Body Block                 |

Calibration: .....

Signed: .....