Ventilator Calibration & Verification Worksheet

Device Under Test (DUT): _____

Analyzer: _____

Student Information

Team Number	
Student Names:	
Date:	

Learning Outcomes

By completing this worksheet, students will be able to:

1. Explain the purpose of ventilator calibration and verification
2. Identify key ventilator parameters and acceptable tolerances
3. Interpret VT650 measurement data
4. Analyze calibration results and determine pass/fail status
5. Communicate findings using professional biomedical documentation

SECTION A – PRE-EQUIPMENT WORK (All Teams)

A1. Conceptual Understanding (Answer briefly.)

1. What is the primary purpose of ventilator calibration?

2. Why is tidal volume accuracy critical for patient safety?

3. List three risks of an uncalibrated ventilator.

    a.

    b.

    c.

A2. Parameter Identification

Parameter	Symbol	Unit	Typical Adult Range
Tidal Volume	VT		
Respiratory Rate	RR		
Inspiratory Time	Ti		
Peak Inspiratory Pressure	PIP		
Minute Volume	MV		

A3. Analyzer Familiarization (VT650)

1. What does the VT650 measure directly?

☐ Flow   ☐ Pressure   ☐ Volume   ☐ Oxygen   ☐ All of the above

2. Why must zeroing or baseline checks be done before testing?

SECTION B – DURING-EQUIPMENT HANDS ON

B1. Equipment-Handling – *While doing hands on*

Setting	Value Set	Remarks
Mode		
Tidal Volume (VT)		
Respiratory Rate (RR)		
I:E Ratio		
Sensitivity		

Measured values from VT650:

Parameter	Set Value	Measured Value	Difference
VT			
RR			
MV			
PIP			

B2. Non-Handling Teams – Observation Tasks

While observing the active team, answer:

1. Describe the connection setup in VT650.

2. Identify two potential connection errors that could affect results.
   1.

   2.

3. What safety checks were performed before starting ventilation?

B3. Real-Time Data Interpretation

Set different values in the DUT

Parameter	Set Value	Measured Value
VT		
RR		
MV		

1. Calculate percentage error for VT:

2. Does the value meet acceptable tolerance (±10%)?

SECTION C – POST-EQUIPMENT ANALYSIS

C1. Pass / Fail Evaluation

Parameter	Tolerance	Result (Pass/Fail)	Reason
VT	±10%		
RR	±5%		
MV	±10%		

C2. Troubleshooting Scenario

Scenario:

Measured VT is consistently 15% lower than the set value.

List three possible causes:

1.

2.

3.

C3. Clinical Impact Reflection

1. What could happen to a patient if delivered VT is lower than intended?

2. Why is verification as important as calibration?

SECTION D – DOCUMENTATION & COMMUNICATION

D1. Calibration Report Summary

The ventilator under test was evaluated using a gas flow analyzer : .

Measured parameters were compared against set values and tolerances.

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D2. Team Reflection

1. What did your team learn even without direct equipment handling?

2. Which role helped you understand ventilator testing the most?