Step 1: Driving Circuit Leak Test		
Setup: a) Connect the inspiratory and expiratory limbs of the Cerebrus system to the corresponding inspiratory and expiratory ports of the driving ventilator b) Occlude the patient Y of each secondary circuit	Performance: I. Perform a standard low P leak test using an anesthetic gas machine	PASS • Leak < 500 mL
Step 2: Secondary Circuit Leak Test		
Setup: a) Connect test lungs to the end of each secondary circuit* b) Set driving ventilator to initial system setup up parameters c) Begin ventilation on test lungs * *Anesthetic gas machine (AGM) breathing bags can be used as test lungs**	Performance I. Allow the test lungs inflate and deflate II. Allow 2 minutes of ventilation III. Note the total volume returned to the ventilator IV. Allow the lungs to ventilate for an additional 2 minutes	PASS • Each test lung visually inflates and deflates with each respiratory cycle of the driving ventilator • Volume return to the ventilator remains constant for 2 minutes after the total volume was noted
Step 3: Fresh Gas Flow Check		
Setup: a) Ensure the fresh gas flows to each secondary circuit is attached b) Set each fresh gas flow to 4 L/min	Performance I. With each fresh gas flow set to 4 L/min allow 2 minutes of ventilation II. After 2 minutes note the total volume returned to the ventilator III. Change the fresh gas flow on Lung A to 15 L/min while holding lung B at 4 L/min	PASS (all conditions must be met) • breath-delivery bag inflates and deflates with each respiratory cycle of the driving ventilator • Increased volume returned to driving ventilator AND increased lung expansion of Lung A following Step VI

	IV. Ventilate for 2 minutes V. Note the total volume returned to the ventilator VI. Note any change in the observed inflation in Lung A VII. Return fresh gas flow on Lung A to 4 L/min VIII. Repeat steps (III – VII) with lung B set to 15 l/min and lung A held at 4 L/min	• Increased volume returned to driving ventilator AND increased lung inflation of Lung B following Step VIII
Step 4: Secondary Circuit Independence		
Setup: a) Set driving ventilator to initial system setup up parameters b) Set fresh gas flow to 4 L/min c) Begin ventilation on test lungs	Performance: I. Allow system to ventilate for 2 minutes II. Measure the tidal volume or visually observe the approximate inflation of each lung III. Decrease the compliance in Lung A IV. Ventilate for 1 min V. Measure the tidal volume lung B or visually observe the approximate inflation of Lung B VI. Return the compliance of Lung A to baseline VII. Repeat steps (III – VI) using Lung B	PASS • No major changes in measured tidal volume or observed inflation of lung B when lung A compliance is decreased AND • No major changes in measured tidal volumes or observed inflation of lung A when lung B compliance is decreased
Step 5: Manometer Check		
Setup: a) Set driving ventilator to initial system setup parameters b) Ensure manometer is installed into the sampling port of the HME filter distal to the patient Y	Performance: I. Note the nadir (lowest reading) on the manometer II. Note the zenith (highest reading) on the manometer **Please refer to the instructions on how to read the manometer**	PASS • Nadir occurs at end expiration (PEEP) and the manometer reads at least 5 cm H_2O* PEEP may be higher than 5 cm H_2O due to intrinsic PEEP generated by the constant fresh gas flow. Higher fresh gas flow rates lead to higher intrinsic PEEP

c) Ensure each secondary circuit is attached to a test lung d) Ensure the PEEP valves on each secondary expiratory limb is set to 5 cm H_2O e) Set fresh gas flow rates for each secondary circuit is set to 4 L/min		• Zenith (peak inspiratory pressure) occurs with each inspiration ○ Peak inspiratory pressure does not equal the driving pressure of the ventilator
Step 6: Disconnect Alarm		
Setup: a) Set driving ventilator to initial system setup up parameters b) Set fresh gas flow to 4 L/min for each secondary circuit c) Begin ventilation on test lungs	Performance: I. Allow lungs to ventilate for 2 minutes to reach steady state II. Set volume alarms according to instructions on ALARM SETTING III. Disconnect Lung A IV. Reconnect Lung A V. Disconnect Lung B VI. Reconnect Lung B	PASS • Disconnect of Lung A results in low volume alarm AND • Disconnect of Lung B results in low volume alarm
Step 7: Pop-Off Valve Integrity AND Occlusion Alarm		
a) Set driving ventilator to initial system setup up parameters b) Set fresh gas flow to 8 L/min for each secondary circuit c) Begin ventilation on test lungs	Performance: I. Allow lungs to ventilate for 2 minutes to reach steady state II. Set volume alarms according to instructions on “Alarm Settings” III. Clamp Lung A distal to secondary circuit Y IV. Note peak pressure on Lung A as measured by inline manometer V. Unclamp Lung A VI. Allow lungs to ventilate until volume alarm ceases VII. Clamp Lung B distal to secondary circuit Y	PASS • Clamping of Lung A results in: • Low volume alarm • Peak inspiratory pressure as measured by inline manometer = 45 cm H_2O AND • Clamping of Lung B results in: • Low volume alarm • Peak inspiratory pressure as measured by inline manometer = 45 cm H_2O

	VIII. Note peak pressure on Lung B as measured by inline manometer IX. Unclamp Lung A X. Allow lungs to ventilate until volume alarm ceases	
Step 7: Clamps		
	Performance: I. Locate clamp at each patient bedside	Pass: • 1 clamp at each patient bedside is easily identified and located