ASPIRE™ Products LLC

MAKERS OF THE EMST150™

Calibration of the EMST150 - finding the desired pressure

The EMST150 is a pressure-threshold handheld calibrated device that includes a one-way, spring-loaded valve with an adjustable external dial. The valve blocks the flow of air until enough pressure is produced. Once the targeted pressure is produced, the valve opens and air begins to flow through the device. **The dial allows adjusting the pressure amount in a range between 24 and 150 cm H2O.** The pressure-threshold load is based on the patient's maximum expiratory pressure (MEP) obtained through a pressure manometer.

During training the pressure threshold device is adjusted incrementally to progressively increase the resistance (progressive overload). The expiratory force must be sufficient to open the spring-loaded valve and allow the air flow. The pressure released valve requires a consistent flow of air to remain open. If the expiratory force is inadequate, the valve will not open and no air will flow through the device. These mechanics may serve as a biofeedback during the use of the device. The "dose" of EMST is typically defined in terms of the number of repetitions per set, with 5 sets completed each day, for 5 days per week with the device resistance set at 75% of the patient's MEP and progressed each week

How to find the "number" on the device that corresponds to 75% of MEP

1, Set (move) the small screw on the knob to sit on (just above) the number 30. This is 30cmH20. (See figure 1)

2, One full turn will take the device to 60cmH20. The screw will be sitting on (just above) the number 60, (see figure 2

3, Now, because the tension is increasing with the pressure, the number of full turns to increase +30cmH20 increases as well. Keeping that in mind, One full turn from 60 will bring the device to 75cmH20 (the screw will sit halfway between 60 and 90).

4, The same principle applies between 90 and 120cmH20. Two full turns are need to increase the pressure 30cmH20. Again, keeping that in mind, one turn from 90 will bring the device to 105cmH20. A second full turn will get you to 120cmH20.

WHAT THIS TRANSLATES TO :

30 up to to 60cmH20 ——>. 1/4 turn = 7.5cmH20——> 1 full turn =30cmH20

From 60 to 90cmH20—·—> 1/4 turn = 3.75 cmH20—-> 1 full turn = 15cmH20

From 90 to 120cmH20 ——> 1/4 turn = 3.75cmH20—-> 1 full turn =15cmH20

From 120 -150 ———> 1/4 turn is again= 7.5cmH20—-> 1 full turn = 30cmH20

Pressure (from-to)	1 full turn =	1/4 turn =
(30-60) cmH20	30 cmH20	7.5 cmH20
(60-90)cmH20	15 cmH20	3.75 cmH20
(90-120) cmH20	15 cmH20	3.75 cmH20
(120-150) cmH20	30 cmH20	7.5 cmH20

TIP: If you are looking for exact values, this table will help you. However, through discussions with clinicians utilizing the device, and well as with those doing research using the EMST150 , and based on the average of the numbers in the table above, we have found that using the value of **6cmH20 to represent each 1/4 turn** is the easiest method, while achieving similar results.

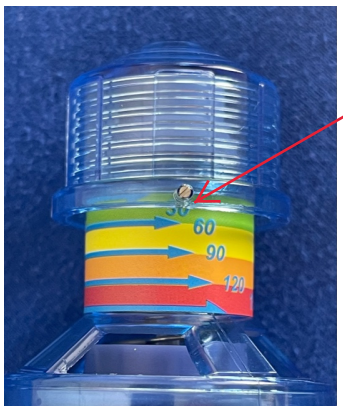

Figure 1

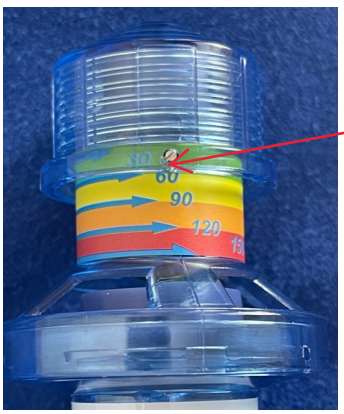

Figure 2