

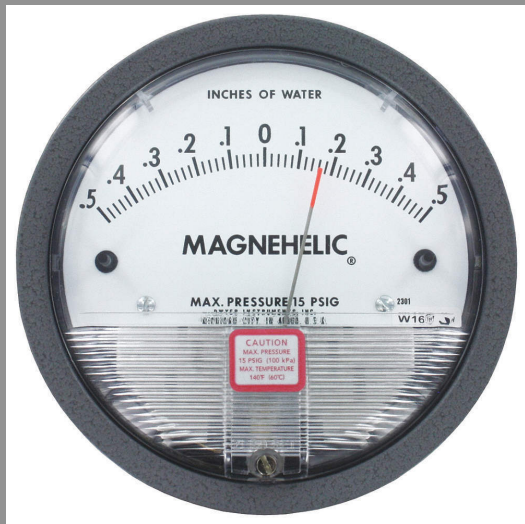
How to set up your test bench to measure cracking pressure

How to measure the cracking pressure or inhalation effort of a second-stage scuba regulator.

Differential pressure gauge

Differential pressure gauges are commonly used for measuring differential pressure.

In the scuba diving industry, they are used to measure the cracking pressure or inhalation effort of a second-stage scuba regulator.



To define this cracking pressure or inhalation effort only a little bit of inhalation is required to open the valve of a second stage regulator. This means that as soon as the rubber seat of the poppet separates itself from the sharp edge of the orifice air starts flowing.

This moment the air starts flowing is called “cracking pressure”.

This inhalation effort of vacuum has been given a number by their manufacturer and can be found in the service manuals of the type of regulator you are testing.

How do we set up our test bench / Differential pressure gauge to measure the cracking pressure?

We start by calibrating the Differential pressure gauge,

- Make sure the Differential pressure gauge is only used in its upright position.
- Locate the small screw on the bottom of the Differential pressure gauge.
- Gently turn it to the left or right till the red pointer of the Differential pressure gauge is in the “0” position.
- Now it’s ready for use.



First, we connect the black plastic stint on the end of the red rubber hose into the test bench adapter for the Differential pressure gauge by pushing it in. (The black part can be removed after testing by pushing the red ring on the connector).



Resort test bench



Professional test bench



Standard test bench

The other end of the red rubber hose is connected to the regulator by sliding the black rubber part over the mouthpiece of the second stage regulator (before connecting make sure the original mouth piece from the regulator is removed).



The white part with the hole in the middle of the test bench analog Differential pressure gauge adapter is used to breath in and out during the cracking pressure test.

Measuring the cracking pressure

The cracking pressure or inhalation effort can be measured in two different ways.

- Measuring with only the use of a Differential pressure gauge.
- Measuring with a Differential pressure gauge in combination with an intermediate pressure gauge.

The intermediate pressure gauge can be used by connecting your inflator hose to the test panel you are using.

If you happen to have a digital Differential pressure gauge you also have the possibility of connecting a separate Intermediate pressure gauge for inflator hose.

Option 1:

Take the mouthpiece adapter and inhale as slowly as possible, during this inhalation keep watching the Differential pressure gauge.

The moment when a light airflow is created is called “cracking pressure”.

Write down the number indicated by the Differential pressure gauge when this first flow of air occurs.

In the service manual of every brand’s second stage regulator, the ideal cracking pressure is stated. If the value measured by you deviates greatly, it is the intention that you adjust the setting off your second stage regulator in such a way that it tests the value indicated in the manual.

Please note: sometimes it is impossible to come even close to this number this means you have to check your second stage regulator on broken or leaking parts or wrongly assembled parts.

Option 2:

This is the same procedure as in option 1 only in this option you will also attach your inflator hose to the test bench (or an inflator hose manometer).



This test can be done with the first stage connected to a dive cylinder.

We recommend using a 232 Bar bench mount attached to your workbench to make handling all the hoses and watching your meters a lot easier.

Now repeat option 1 and at the same time also watch your intermediate pressure gauge.

The moment the first air flow occurs the pressure in your intermediate pressure gauge will drop, at this moment your Differential pressure gauge shows the cracking pressure.

Please note: to adjust your second stage regulator to the cracking pressure specified in the service manual you also have to put your intermediate pressure on the manufacturer’s specifications.

Useful information

Our Differential pressure gauges are all using the measurement indication in “inches of water”

In case you have a service manual that is giving you the measurements in “Mbar” or “millimeters of water” there are several calculators to be found on the internet to recalculate these to “inches of water”.

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