

Flow Bench Terms Explained

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Saturday, 11 August 2007

There are some phrases, words or terms used in the sporting world that really deserve an explanation. By clearing up the "how and why" of these things, I hope to improve the understanding of proper flow testing.

The following are the most common questions we get.

CFM @ 28" This term is used to define the test pressure at which the CFM was reached. In order to duplicate a test, you always use the same test pressure. In some cases 10", 25", 36" and a few other pressures are used. The greater the pressure, the higher the CFM. 28" is generally accepted as the standard.

Test pressure Pressure can be expressed as positive or negative number and these are often referred to as depression for negative (vacuum) or plain pressure for the positive. Flow testing intakes is always done with vacuum and exhaust is done with pressure. So when you ask, "what was the test pressure?", you get your answer knowing that it's negative or positive based on the type of port, intake or exhaust.

Port and polish Often mis-used term. Back in the early days, a port was ground as large as you could get it and then polished to a mirror like finish with the thinking that smooth was better for air flow. It also looked pretty. When flow benches came on the scene, it was discovered that the polishing part was actually hurting the port. The greater the air speed, the more it hurt.

How can that be? There is this thing called a boundary layer which is actually caused by the friction of the air as it makes contact with the port wall. This friction causes the air to tumble at the point of contact. Compare this to a wave reaching the beach. The closer it gets to the sand, the higher the wave gets until it collapses. Now, with a polished surface, the air does the same thing but because of the drag caused by the polishing (yes, drag), the wave height becomes so high that it effectively reduces the size of the port. Eventually, the wave can no longer support itself and collapses, only to start over again. Now you have turbulence.

Air

needs a lubricant to eliminate this drag. The best lube for air is a cushion of "air". Fine scratches perpendicular to the direction of flow act as a tripping point for the air that contacts it. The air tumbles at every scratch forming what is called a "boundary layer" that about the same size high as the scratch is deep. The air flowing in the port uses this boundary layer as it's cushion or lube and therefor is more resistant to turbulence. You can demonstrate this to yourself by pushing your finger over a mildly abraded surface and then a piece of glass.

So

after all that, the "term ported and polished" has stuck with us even though "polishing" hasn't been done for over 20 years.

Depression A condition caused by too long a period of time away from the track!