



Don't MOD your Percentages

Cylinder Markings – A suggestion for Standardisation

As a tech and cave instructor as well as someone who often guides tech and cave dives I have seen a massive variety in the way people mark stage and deco cylinders. By and large the community has come to a consensus on the markings for the side of the cylinder but there is a massive variance for the markings on the top. So where and what is marked and why. Answering the why raises questions about should it be!

Side of the cylinder.

- What:** *MOD*. Thankfully 95% of us are agreed to just have the MOD (Maximum Operating Depth) in nice big letters. That's it for the side, no other info needed.
- Why:** Basically so can my teammates see I am breathing something safe for the depth and pull my reg if not while kindly giving me something to breathe that won't kill me.
- Keep?** Yes, all divers can from time to time make basic errors and our teammates are our spare and hopefully working brains,
- How** Big Numbers on something easily readable in the dive conditions – use reflective or even permanent numbers at least 3 inches or 8cm high. Place so it's the right way up and on the outside when worn – obvious I know but you'd be surprised how many get this wrong. Place after you rig the cylinder so jubilee bands don't obscure the marking.

Top of The Cylinder

- What:** *NAME*
- Why:** seems fair, easier on the boat or back of van when gearing up, you know you analysed that one, if staging cylinders during a dive you can pick up the one you analysed. The rigging (eg mine are sidemount rigged) will suit you.
- Keep?** Yes, we need to know we analysed the contents and if our name isn't on the cylinder we may not have done if we pick up a similar un-named tank.
- How:** See my suggestion for a top mark. Clear but not really needed to see when wearing, only when donning or handling



What: *GAS PERCENTAGE*. The percentage of O₂ and possibly helium in the cylinder we have just analysed

Why: So I can verify my analysis and calculate the MOD. Some divers also claim that by marking the percentage they can calculate PO₂'s they would use in an emergency on the fly.

Keep? Yes, because we need to know for MOD and to verify the analysis against the requested mix. However we don't need this info in the dive. If you are in an emergency and not sure what to breathe and have no other choices (no team mate, nothing left in backgas etc – which means your FU's are world record level) then breathe the one with the deepest MOD till you die or get shallow enough to breathe something more suitable. If passing to someone else – same applies, then if percentage is on the cylinder they may be able to programme into their computer – just in case you were naughty and failed to gas match.

How: See my suggestion for a top mark, but critically much smaller than the MOD and preferably out of sight during the dive.

RANT

I hate seeing percent and MOD marked in the same size numbers. Because it's too easy to confuse the two if under stress. The MOD is all you need to know because it's answering the question – "Can I breathe this cylinders contents for my current depth?" Don't think you will do good Daltons triangle calcs while holding your breath at 50m. See my suggestion for marking to avoid this confusion.

Let's take a common marking. 50% and 21m. if we mark as many do "50 and 21" in the same size letters, under stress we may get confused, can I breathe this at 50 or 21. Is it air (21%) or 50% deco gas. This gets worse when we mark trimix eg. 30/30 MOD 36. Potentially three equally sized numbers. Now the closeness of these won't in all likelihood kill you, but your deco will be affected.

In response to the 'I would never make that mistake' responses to this – read more of Gareth Locks stuff including the excellent Under Pressure book.

What: *MOD* (Maximum Operating Depth)

Why: So I can see I am breathing something safe for the depth and switching to a safe, breathable gas

Keep? Yes, it is the most important info on the cylinder.

How: Big Numbers (double the size of the gas percentage) on something easily readable in the dive conditions – use reflective or even permanent numbers at least 2 inches or 6cm high. Readable while wearing the cylinder without any juggling about. (if using rotations then should be readable when 'on-top'.



What: *DATE*. Today's date, fill date or date of analysis – see confusing already!

Why: The rationale for this is that you should mark the date analysed, or filled or to be dived or all three because you then know when it was filled/analysed or what day today is – confusing much..... ?

Keep? No, as you can see already there is some confusion about what date is marked anyway and you should analyse before every dive. The practice of leaving full, rigged, reg on tanks with a previous day's label on and trusting the marking is one you have to resolve for yourself if acceptable, however if you de-rig cylinders / take off reg then take off the label and swap for a name only marking if not being refilled. Analyse and relabel the next day. If being refilled mark your name and requested content (add please and 10 bucks for the gas blender)

How: In your checklist – tick for today's checklist you have verified the cylinder contents and MOD and pressure

Note: If you don't think you should analyse every day please google Sheek Exley.

What: *PRESSURE*. The fill pressure

Why: Supposedly to verify you checked it. Although temperature, gauge variance and more can screw this up from 7.00 am to 9.00am, or equivalent.

Keep? No, you have a gauge on the cylinder – use it after reg installed, check pressure again in team check and verify with team IMMEDIATELY before the dive when you actually breathe from the cylinder so you know you are diving with a working cylinder. (if you don't do this please read more stuff from Gareth Lock)

How: Don't – read your gauge.

OK – a few other less common ones

FILLERS NAME – No, should be in gas log at dive centre that you signed. Anyway the filler has zero responsibility for the contents. You analyse and you calculate MOD. Even for air fills. Even check air fills for Helium – humans can FU and tech gas monkeys (I know I am one) can put 10/70 in the wrong twinset very easily. We do try hard not to though...

ANALYSED BY - - No, if it's your cylinder your name is already on it and you should not put your name on it unless you analysed it. Do not trust someone else's analysis, even if signed by your local deity.

FILL DATE – No, gases do not have a meaningful best before date. See comments on date above and the need to analyse before you dive. The fill date holds zero useful info. Tanks need O2 clean each



year anyway so if the tank is out of date, so is the gas... there, all you breathe will be less than one year old.

SUGGESTED MARKING PROTOCOL

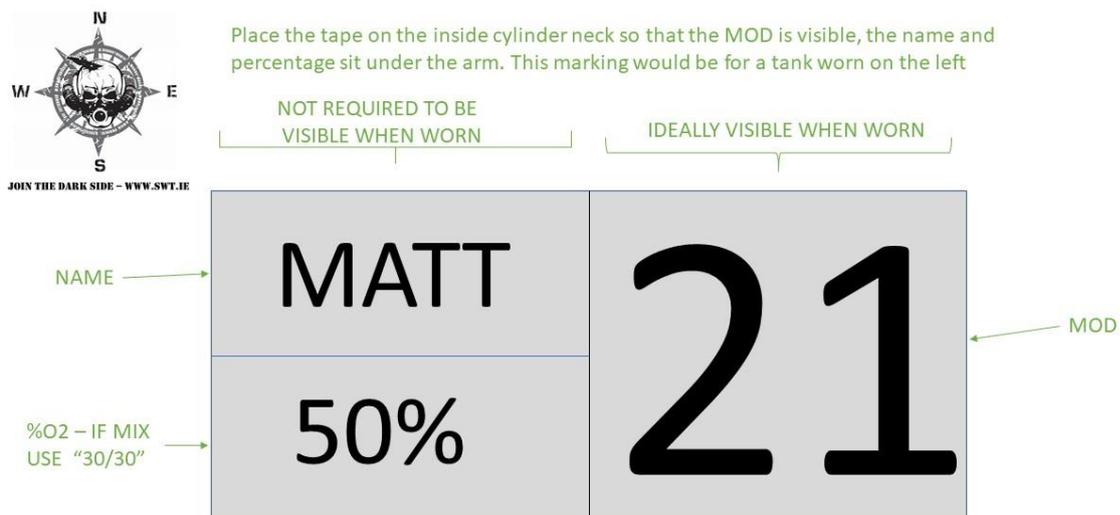
Below is an image representing the usual practice of marking the top of a cylinder with Duct tape – works for me, but if you want to get custom tape printed please do and then send all your spare cash that you don't know what to do with to my dive charity – 'Matt wants to go to Bikini'

It contains the only three bits of info I have argued that need including. It's set up for the top of a cylinder destined to be worn on the left side – not discussing lean left/right / all left stacking / trailing here. Another day!

As you can see the MOD is very prominent and even handwritten in my spider scrawl it stays that way.

The percentage number is written small and the name is clear and away from the MOD. If you get to know your kit and stage rigging it will become a habit to stick this tape where the MOD stays viewable in use and the rest sits further under the arm and isn't distracting.

Top of the cylinder





Side of the cylinder



In Summary

In the underwater environment, simple is not only good, but in times of stress is lifesaving. The argument that the MOD is the only number that really matters is 'won' already by the community acceptance that we should mark that on the side of the cylinder only.

Confusion made possible by having two numbers with two different meanings on top of the cylinder (MOD and %age) written in the same hand and same size can easily be eliminated as in the example above.

Adding extra information onto the cylinder is only obscuring the important stuff, having to be read and eliminated when looking for the MOD. There really for no important reason for any of the 'extra' info when on the dive or even on the boat or truck.

KISS

Matt

Matt Jevon, M.Sc. F.loD is a Full Expedition level Trimix and Cave instructor on OC and CCR with TDI and ANDI. He is the JJ-CCR and Divesoft Liberty Sidemount instructor and dealer for Ireland. Matt's personal diving has included cave exploration in the Philippines, wreck projects in Croatia and Ireland as well as being one of the inaugural dirty dozen in Truk! Matt has held accreditations as an interdisciplinary sports scientist, sports psychologist with BASES and was a British Olympic Registered Strength and Conditioning Coach and invitee on the Olympic Psychology Advisory Group. Matt works in high performance business as a board advisor and non-exec, high performance sport and is a partner in South West Technical Diving in Ireland. www.swt.ie and writes the Facebook page Psychological Skills for Diving