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Volume 24, Issue No 4

Welcome to the fourth IDEST Torque of 2024. In this issue read about... a potential source for professional indemnity insurance; why we are insisting on only using official new style secure quadrants; recommendations on acceptable tests and competent persons; why trained may not mean competent; how tardy paperwork may lead to YOU being struck off; a brief outline of our successful open meeting at Stoney Cove; a breakthrough on eye test intervals; clarification of tracking gauge 250 uses / 3-years.

From the field... we hear of old Apeks valves resurfacing; further discussion of the recent hydro pot incident; other valve woes; a potential new cause of cylinder neck corrosion; some guidance on marketplace cylinders; and revisit sustained load cracking.

In industry news... we report a PSI-PCI Alert on Chinese Cylinders; discuss laser engraving or marking; advise valving torque for mini-cylinders; and reveal a potential job opportunity in Zanzibar.

Professional Indemnity Insurance

It is a requirement of the scheme that all Certified Technicians hold professional indemnity insurance. A copy of your insurance certificate should be sent to IDEST with your annual renewal paperwork. Our admin is frequently finding insurance certificates are missing in submissions and several centres when chased have expressed difficulty finding appropriate and affordable cover.



Dave has kindly done some follow-up investigation as his personal inspector cover comes via Gallagher www.ajg.com/uk. He posed the following question:

"I represent a body of individuals who inspect the internals of diving cylinders, cylinder threads, valve threads and valves for any damage prior to certification of the cylinders and valves. Everything follows ISO standards for inspection and practice. The individuals are also all certified under ISO/IEC 17024 and follow a single strict written procedure. They are regularly inspected to ensure their processes are in order."

And received the following response:

"You could get a PI for that. You would have to contact new business via email at UK.Wales.BusinessConnectEnquiry@ajg.com though"

The key here is to focus on inspection and testing, rather than diving. Dave estimates the cost is likely to be £150-£200. We hope this helps.

New style Quadrants only please!

The grace period of using up old quadrant labels has long passed. Please ensure you only use genuine IDEST quadrant labels, purchased direct from the IDEST. This is per clause 15 in the IDEST terms and conditions of association. Inspectors will expect to see genuine labels during future inspections. Current label lead time average is 10 working days (2 weeks).

The reason for this is to ensure uniformity, provide tamper resistance, and to make counterfeiting more difficult and more obvious.

We are receiving complaints from IDEST centres seeing recently fitted old IDEST labels, ones without the anti-peel or showing old standards etc. and have a growing rogues gallery of photographs of such labels. Please don't put us to the expense of having to contact you and tell you to stop. If you have any concerns or issues with using the genuine IDEST labels, then please get in touch with us. Otherwise, just do it!

The quadrant label is IDEST intellectual property, so third parties should not be printing these anyway. We recently acted against a company advertising printing of IDEST style quadrant labels, resulting in the removal of such from their website.

One of the perils of the old-style label was divers peeling them off and moving them between cylinders. Here is a blatant example:



Also please ensure that old labels are fully removed. One centre reported seeing a cylinder arrive for test with two quadrant stickers on it, one old and one new. Removal of labels is a required part of the external cylinder examination so no excuses on this really.

Can you accept that cylinder test?

Health and safety law requires that equipment used at work or in connection with work is properly maintained.

Breathing gas cylinders used at work or filled by a person who is at work must therefore be subject to a suitable inspection and test regime to ensure they are safe.



Recreational divers should note that this applies to their cylinders where they are filled by a person at work.

The relevant standards describing the inspection requirements for breathing gas cylinders are:

- BS EN ISO 18119. Gas cylinders. Seamless steel and seamless aluminium-alloy gas cylinders and tubes. Periodic inspection and testing
- BS EN ISO 11623. Gas cylinders. Composite construction periodic inspection and testing

These standards require that inspections and tests are carried out by a *competent person*. Although there is no unique legal definition of competence for cylinder testing, HSE considers that the following provide a suitable level of confidence in a cylinder inspector's competence for this task:

- Appointment by the Secretary of State for Transport for the purposes of inspection of gas cylinders and/or
- Working within the terms of a UKAS accredited scheme.

We therefore support and encourage our centres to decline to fill any cylinder where there is doubt as to the competence of the last test. If it was not tested by an IDEST centre, or VCA appointed test centre then you will need to take additional steps to confirm that the cylinder test is valid or refuse to fill the cylinder. See also our note below regarding trained versus competent.

The list of current IDEST certified centres is available on the IDEST website via the **centre map** tool. A list of current and past IDEST certified centres is available as a downloadable PDF in the **documents** section of the website.

References:

HSE information sheet DVIS11(rev1) Revised 02/20

HSE Bulletin No: ED 1-2018, Issue Date: 8th March 2018

Trained versus Competent

Training is an environment in which people practice techniques to acquire skills. Training typically uses a structured approach to enrich someone's knowledge by completing specific courses or on the job training where skills are given to put theory into practice.



Attending training and having the theoretical knowledge will not be sufficient to carry out a task safely and does not demonstrate that a worker is competent.

Competence and Training

Competence means demonstrating gained knowledge and skills to achieve the results required to carry out a specific job. Training certainly underpins competence and is the foundation for anyone, but Competence is having the experience and being measured which is done through assessments by supervisory organisations within the relevant industry.

In terms of a UKAS accredited scheme, competence also includes having the necessary tools, equipment and working procedures to carry out the inspection to the required standard.

There are several recognised and capable training organisations related to cylinder testing, but upon receipt of a cylinder for filling that was inspected outside of an IDEST or VCA appointed test centre you must consider more than just the training of the tester. **If in doubt we recommend declining to fill the cylinder.**

Old Apeks valves resurface

One of our centre's reports seeing old APEKS valves fitted to a cylinder that arrived for filling. The valves came in both A-clamp and DIN versions with blue or black handwheels.

These valves which date from 1980s both use a black plastic HP insert, spares for which have not been available for a very long time. Please refer to Technical Information Sheet T009



Even worse the cylinders were labelled for oxygen service. These valves with the black plastic HP insert were not oxygen compatible out the factory and needed a kit to change them that had a new green handwheel. In the centre's opinion *"the seats in these valves were always suspect and are generally cracked"*.

The reporting centre correctly refused to fill the cylinder despite it being tested by another IDEST centre.

The similar looking valves that use the AP4008 / AP0148 chrome brass service parts remain suitable for use.



We've discussed reusing used parts during valve service in previous editions. It leads into an area of subjective judgement that's best avoided when it comes to life support apparatus.

Likewise, no matter how well you can oxygen clean, **if the parts are not oxygen compatible then the apparatus must not be put into oxygen service.**

The opportunity here was to sell the diver a shiny new valve.

Paperwork and You!

Arriving with this edition is an open letter from our Administration Manager. See it [here](#) too.



One of our biggest uncontrolled costs is admin time spent chasing centres for their documentation during annual renewals and ahead of triennial inspections. This is entirely in YOUR hands!

We have stepped up our use of temporary and permanent suspensions. A temporary suspension may be issued while we feel there is active dialogue but after three months of Admin requesting paperwork from you it will turn into a full suspension.

Full suspension means from that point you will be struck off the active register, removed from the website and required to return of our IDEST cylinder punch. Your right to use the IDEST stamp and blue/green quadrant labels becomes invalid. Your customers, when they go to fill cylinders elsewhere, may be refused air/gas fills which you will have to explain. Should you wish to rejoin the scheme and continue testing the fee jumps up to £740.00 to reinstate you.

We are always sorry to see a centre leave, especially under a cloud, but your inaction reflects on the majority who do it correctly every year and can no longer be an excuse or tolerated.

Scheme fees

As above we are actively cracking down on centres with overdue inspections and issuing suspension and/or termination letters.



It is always sad to see a centre leave the scheme, and we are open to discussion where there are justifiable difficulties (such as ill health) but in fairness fully compliant scheme members we sometimes must draw a line.

One such case, High Pressure Services [9H], has repeatedly denied the opportunity for inspection since it became due in 2021. The last argument received before striking off was "*IDEST fees for an inspection are too expensive*".

A typical mainland UK triennial inspection is charged at around £600. The outline, amortised cost breakdown is as follows:

- £250.00 UKAS membership, audit and witness fees.
- £150.00 inspector fee
- £100.00 travel and expenses
- £50.00 admin, telephone and post
- £45.00 cylinder stamp (10-year lifespan)
- £55.00 insurance fees and residue

Obviously, these costs vary from centre to centre based upon distances to travel, admin time spent chasing or sorting paperwork etc. The actual UKAS cost is higher, but we've discounted above to take into account annual membership income.

Any surplus goes to fund other IDEST activities (committee attendance; centre conference, dive show stands, etc).

There are no shareholders or profit takers in IDEST, so we hope you agree we offer good value compared to going alone.

Per agreements signed by every centre, the IDEST stamp remains our property and must be returned when leaving the scheme. We will take action to recover these if the need arises.

One area where centres have a direct impact on our costs is admin. A good centre might require as little as 1 hour of admin time per year, whereas a 'problem' centre can be ten or more times that. See above how you can help.

Open meeting at Stoney Cove

An open invitation IDEST meeting was held at Stoney Cove, Leicestershire on Monday 19th August.



It was well attended and there were some highly informative and interesting presentations including:

- Daryl Woods from Ashford Instruments on master gauges and maintaining accuracy, and pressure gauges with electromechanical contacts.
- Mark Elliott of Mark Elliott Technical Services giving examples of commercial cylinder testing and control devices.
- Nick Clark on behalf of Neil Minto, IDEST Chief Engineer, on getting your paperwork correct, and the 250 use / 3-year thread gauge calibration waiver.
- Alistair Reynolds, membership secretary of IDEST Ltd, on the role and structure of IDEST Ltd, training & training centres.
- Nick Clark, IDEST Inspector, hosting a discussion of the IDEST website and Torque magazine.
- Dave Crockford, IDEST Chair, detailing BS/EN ISO 17020, VCA, 10-year testing, indicative costs, and is it for you!
- Dave Crockford on BSI PV3/7, Ultrasonic Examination – should we be worried!

Some interesting takeaways:

- For best practice a master gauge should be 4 times more accurate than the working gauge.
- Because 'alarm contact' gauges have electrical connections they must be CE marked.
- ISO 17020 Centre inspections will be required annually, the second inspection will be a desktop/telephone exercise to ensure your technicians are working within the scheme. The annual Inspection fee from IDEST will be £1,200 to cover both exercises but the single witness fee from UKAS is additional and chargeable at cost via IDEST.
- Automated ultrasonic testing is a long way from being capable enough and cheap enough to be of concern.

Copies of the presentations are available, please contact Admin.

Update on Visual acuity

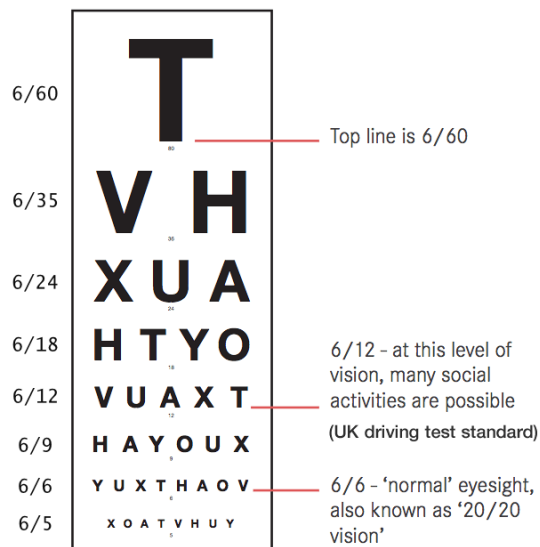
We are pleased to let you know that following fruitful discussions with UKAS regarding Section 6 of ISO 17020 and ISO 17024, resource requirements and personnel, we have agreement to return to a **2-year interval between eyesight tests**.

This is great news, not just for a cost saving, but it also falls better in line with NHS, optometrist and ophthalmologist norms for sight tests.

Going forward, during inspection please ensure you can evidence a sight test by a recognised optometrist or ophthalmologist that is dated within the last 2-years, or one of the following alternatives:

- a) HGV or PSV driving entitlement which must be active on license.
- b) Current HSE Diving at Work certification.
- c) Active Pilot's license

The vision standard required for inspectors, with correction if required, is normal vision - 6/6 on the Snellen scale:



The term 6/6 is used to describe 'normal' visual acuity where testing is done at 6 metres. Where imperial units prevail, this may be called 20/20 as testing is done at 20 feet. The first number refers to the distance at which the chart is viewed (six metres) and the second number refers to the distance at which a person with ideal vision can see a letter clearly. A person with 6/6 visual acuity (20/20) is the benchmark for what optometrists consider 'normal' vision.

Ophthalmologists are medically trained doctors that specialise in diseases and injuries in and around the eye. They act both as physicians, diagnosing and prescribing treatments, and surgeons, performing operations. They typically work in eye hospitals and hospital eye departments

Optometrists are trained to examine the eyes to detect defects in vision, signs of injury, ocular diseases or abnormality. All Optometrists are able to offer clinical advice, prescribe glasses or contact lenses and refer patients for further treatment. They

typically work in high street opticians, carrying out eye examinations

Dispensing opticians are only trained to advise on and fit glasses according to a prescription provided by an Optometrist or specialist Ophthalmologist.

Eye prescriptions in the UK include a variety of numbers and letters that indicate the type of vision correction needed. Here's what some of the common terms mean:

- SPH or Spherical: The strength of the correction required, measured in dioptres (D). A minus sign (-) indicates near-sightedness, while a plus sign (+) indicates far-sightedness.
- CYL or Cylinder: The amount of astigmatism, which is caused by an irregular cornea shape.
- AXIS: The position of the cylinder, which ranges from 1 to 180.
- PD or Pupillary distance: The distance between the centre points of your pupils.
- ADD: Indicates if you need a prescription for reading.
- PRISM: Shows if there's a muscle imbalance in your eye.
- BASE: The direction of the prism in your lens, BU (Base UP), BD (Base DOWN), BI (Base IN), or BO (Base OUT).

Hydro Pot Incident, follow-up

Further to our report of a hydro pot incident in the last edition of Torque we are grateful to Scott Waddell from Octopus Test Systems for providing some additional thoughts:

"I think the post implies the break on the small-bore HP hose was possibly the issue however one of the safety benefits of the small bore apart from the ease of manoeuvring the hose inside the test jacket is the fact that the small-bore acts like a snubber so reduces high flows upon any hose breakage. While I couldn't conclusively say it wasn't the hose barb breakage that caused it, I'd suggest this more likely occurred when the cylinder shot up in the air and pulled on the short hose so a consequence rather than the cause".



So perhaps it was the failure of the adaptor into the cylinder that was the primary cause. Either way it shows the importance of regular and thorough equipment checks on all parts of the hydro test system.

When did you last check your hydro test cylinder adapters using a thread gauge?

Scott also adds that small-bore hoses do "need a little more care and attention than their thicker rubber counterparts" and a solution called **Swift-Lift** (see photo) is available to reduce stress on the hose while handling cylinders. Contact Octopus Test Systems directly for further details at info@octopus-ts.com

Thread gauge 250 uses / 3-years

A brief additional comment regarding tracking thread gauges that are on a 3-year / 250 use between calibrations (whichever is reached sooner) **D047** permit.



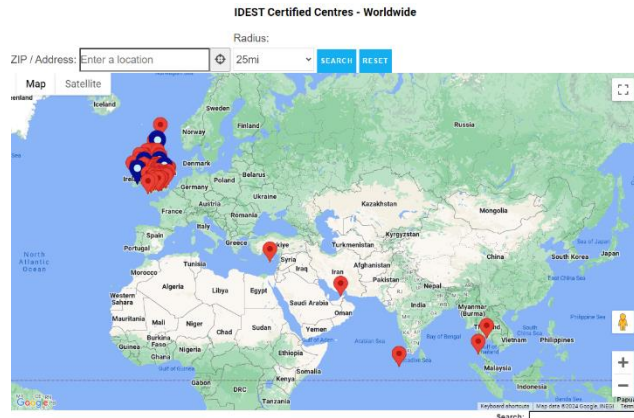
You may remember from the January edition this requires permission from the IDEST Chief engineer via a **D067** application form. If approved, you receive a **D047** permission letter for your records. You must then maintain the related **D043** thread gauge usage tracker sheet.

We'd just like to clarify that you only need to use one D043 tracker sheet per **type** of gauge.

For example, perhaps you occasionally use an M18 double ended plug gauge, and M18 go and not-go ring gauges as a set when inspecting a cylinder with an M18 neck thread. In such a case you can note the serial numbers of all three gauges on one form and track their use each time with a single cross on the form. We hope this makes things a little simpler for you.

Website lists of centres

A lookup of current IDEST centres is available on the website via the **Centre Map**. Enter a location into the 'ZIP/Address' box above the map and hit 'Search' to see nearby centres. Or enter the centre name or number in the 'Search' box below the map to find a specific centre.



Please try out the map and check your centre details are correct. Requests for any corrections or changes should be sent to torque@idest.co.uk.

We also host a downloadable list of current IDEST centres available in the **documents** section of the website.

Current IDEST Inspection & Test Centres

To identify the current IDEST Inspection and Test Centres, please refer to this list, or our Centres map. This list will be updated on a regular basis, as changes take place. [file date: 08/08/2024]

This is appended by a list of lapsed or suspended centres whose labels may remain valid in circulation until their expiry date. Lapsed or suspended centres may no longer issue IDEST certifications or labels after the date they left the scheme. **Cylinders with test labels issued after this date should not be filled.**

More valve woes

We are grateful to one of our centres sharing some recent experiences with valves that they found during PI / PIAT. The valves are old and have seen quite a lot of use, but the real problem lies elsewhere...

This 200-bar valve arrived fitted to a 232 bar cylinder.

That's not sound engineering practice and given more suitable valves are readily available it was correctly replaced.



These twinset valves were originally manufactured to DIN 477-6 for fitting into a cylinder neck with a 70° taper groove. They show clear signs that the shoulders have been machined off, so they fit the more common square groove cylinders. Such a modification outside of the manufacturer's specification means the valves are scrap.

This valve has identical grazes on both sides. It seems that someone has ground off metal so an A-Clamp can go over it. Again, an unauthorised and somewhat reckless modification like this means the valve is scrap.



It's good to share so please send photographs and descriptions of your own rogue's gallery to us at torque@idest.co.uk.

Cylinder neck corrosion

An equipment manufacturer participating in the standard committee for 'underwater breathing apparatus' has highlighted a potential emerging issue with cylinders. They report seeing more diving cylinders corroding at the neck between the valve and the cylinder. This is observed on both steel and aluminium cylinders.





They have found that cylinder manufacturers have stopped painting into the O ring groove. With diving this means that sea water always gets between the valve and the cylinder neck on the outside of the O ring, resulting in corrosion which invariably extends down the neck of the cylinder over time bringing more paint off.

This extreme example was kindly shared with us by a centre who found the O ring was in the process of extruding out through a heavily corroded area.



The cylinder manufacturer's cite ISO 13341 (Fitting of valves to gas cylinders) section 4.3 and 4.4 as the reason for them not giving any protection near the O ring groove.

4.3 Threads and sealing surface on both valve and cylinder shall be checked for cleanliness. Any remnants of old PTFE sealing tape or other sealants, paints and other contaminants shall be completely removed. Care should be taken to prevent any debris falling into the cylinder. Depending on the gas service and application, before fitting the valve, it shall be ensured that the internal surface of the cylinder is clean and dry

4.4 The top face of the cylinder, where a parallel thread is used, shall be free of paint, debris or other contamination so that the valve flange can rest directly on it when the cylinder has been valved.

We circulated a short questionnaire by email to technicians at the end of September. If you have not yet responded please do, so we can add to the information available to the committee, and potentially request an amendment or relaxation to the standard for underwater breathing gas cylinders.

Zanzibar opportunity

Perhaps paradise beckons for somebody...

It seems there is a potential long-term employment opportunity in Zanzibar and we are pleased to pass on this request in case anyone is looking for a new adventure.



A technical workshop for the SCUBA industry on the east coast of Africa, in Zanzibar, changed hands about a year ago. The new owners are looking for a qualified technician to manage their workshop.

The workshop's main focus is the inspection and maintenance of SCUBA cylinders, including full visual and hydrostatic inspections on over 2,100 aluminium and steel cylinders annually. In addition, the workshop also services SCUBA regulators and oxygen kits used by other dive centres.

Their ideal candidate would meet the following criteria:

- **Expertise in Cylinder Inspections:** This is the core of the business and will likely consume most of the workday. The technician will encounter various cylinder types, including 6351-T6, decades-old steel cylinders, fully galvanized PSTs, and more. They must recognize these differences and apply specialized inspection protocols when needed.
- **Experience with SCUBA Equipment Beyond Cylinders:** A strong understanding of SCUBA regulators and oxygen kits is an asset. The ability to perform inspections and handle independent maintenance is key.
- **Strong Work Ethic:** While the technician would report to the business owners, they will manage day-to-day operations independently. Self-sufficiency and the ability to ensure smooth and efficient workshop operations are vital.
- **Attention to Detail:** Precision and strict adherence to safety standards are critical, given the nature of the work.
- **Problem-Solving Skills:** The technician must be able to troubleshoot equipment issues. In Africa, spare parts can take weeks to arrive, so someone who is comfortable fixing issues like a leaky hydro-pump seal is highly desirable.
- **Flexibility:** The position is in Zanzibar, Africa, and the right candidate must be prepared to handle challenges like occasional power cuts and adapt to the local environment.

If anyone is interested in this role, please reach out to admin@idest.co.uk and we will pass on your contact details.

Market place cylinders

It is alarming to see the range of unregulated 'scuba' cylinders currently on sale in the online marketplace. Almost invariably these are far eastern vendors shipping direct to customers in the UK, EU and elsewhere.

Within 5 minutes we found sizes ranging from under 1 litre to over 11 litres, in Aluminium and Composite. Some claiming to be "CE certified" or "ISO approved", but as yet we have been unable to find relevant documentation to backup these claims. One certificate we found proudly displayed was for EN71-1 Safety of toys - Mechanical and physical properties!



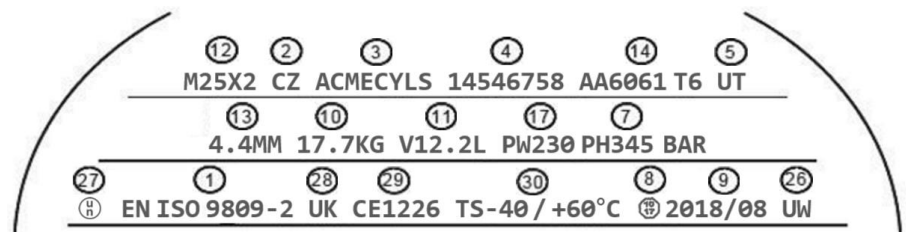
Scuba cylinders as pressure vessels and personal protective equipment come under strict regulations in regard to manufacturing standards and approvals.

The UK Pressure Equipment (Safety) Regulations PE(S)R implemented Directive 2014/68/EU on pressure equipment and assemblies (formerly 97/23/EC) which provides mandatory guidance for the design, manufacture and conformity assessment of pressure equipment. Cylinders themselves must be designed and constructed in accordance with relevant standards such as EN 12245; EN 12257; ISO 7866; ISO 9809; EN 1964; BS 5045 etc. The markings on the cylinder are also carefully defined in standards such as ISO 13769.

The policing of potentially unregulated cylinders being placed on the market in UK sits with HSE and Trading Standards, but the challenge far exceeds their resources.

So, what should one do when faced with a potentially unregulated cylinder? The short answer is, if in doubt, refuse to fill or undertake PI/PIAT of the cylinder.

If you wish to perhaps go a little further, then examination of the markings on the cylinder may be helpful. Typical markings for a scuba cylinder according to PED and as defined in BS EN ISO 13769 will be along these lines:



- | | |
|---------------------------------|---|
| 1 standard | 12 identification of cylinder thread |
| 2 country of manufacture | 13 minimum guaranteed wall thickness |
| 3 manufacturer's identification | 14 aluminium alloy* |
| 4 manufacturing serial number | 17 working pressure |
| 5 non-destructive examination* | 26 underwater use (composite cylinders) |
| 7 test pressure | 27 international mark(s) |
| 8 inspection stamp | 28 country of approval for 27 |
| 9 initial test date (YYYY/MM) | 29 notified body reference number |
| 10 empty weight | 30 max service pressure / temperature |
| 11 water capacity | |

*If applicable

Notified bodies can be checked on the Single Market Compliance Space [[here](#)].

Standards can be reviewed on the ISO website [[here](#)] or the BSI library [[here](#)].

If the cylinder importer or manufacturer can be identified, contact them and request a Declaration of Conformity according to Annex IV of Directive 2014/68/EU plus a cylinder drawing or other specification to facilitate inspection and test.

The easiest answer is only fill and test cylinders from recognisable bona-fide manufacturers. For others politely request the cylinder owner to contact their supplier and obtain evidence that an appropriate conformity assessment has been carried out by the manufacturer.

PSI-PCI Alert on Chinese Cylinders

News from around the world... following the addition of Xinjiang Shenhua Coal and Electricity, a Chinese aluminium manufacturer, to a US entity list over alleged forced labour links PSI-PCI, a US based cylinder inspection training company, issued the following alert on 24 July 2024:



"A leading industry expert has provided PSI-PCI with information obtained from their trade attorney's private investigative team regarding the cheap, easily accessible cylinders coming from China. It is important to be aware of the hidden cost of these cylinders.

Aside from the comparatively low quality of these Chinese cylinders, according to the report approximately 15-20% of Chinese aluminum is produced in the Xinjiang province using forced labor.

Made in America means something. We encourage you not to only consider the monetary cost of supporting China by buying these cheap cylinders but consider the human cost as well."

PSI-PCI issued further supplemental details on 6 August 2024:

*"Evidence of low quality
Because our business is Visual Cylinder Inspection® training, we are often queried for assistance when an inspection is conducted on these types of cylinders. Some of the issues identified include cylinder necks that are oblong, malformed threads, gross folds, flat spots in the crown, metal fragments at the base of the threads and less than required number of threads.*

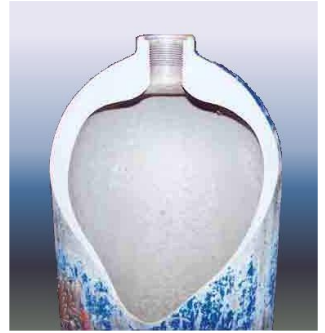
Often the aforementioned issues do not meet US DOT and Compressed Gas Association standards. When formally trained inspectors conduct diligent Visual Cylinder Inspections®, cylinders with issues are discovered and appropriate action is taken."

We invite any of our centres who inspect or test any cylinders manufactured in the far east to share their findings with us, good or bad. Send your reports to admin@idest.co.uk.

Sources: Alert on Chinese Sourced Scuba Cylinders; Supplemental Details on Recent Safety Alert; Business & Human Rights Resource Centre

Sustained Load Cracking revisited

Sustained Load Cracking (SLC) is a well-documented metallurgical phenomenon that occasionally develops in cylinders made from certain alloys when under stress for sustained periods of time. Breathing gas cylinder failures due to SLC are on record from as early as 1988 to as recently as 2017, with many involving serious injury or death.

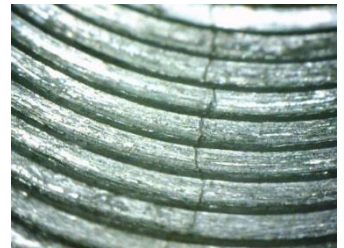


Cylinders susceptible to SLC were manufactured from Aluminium Alloys HE30/AA6082 and AA6351 by companies including Luxfer Gas Cylinders, Walter Kidde Company, CIG Gas Cylinders, Reynolds Tube Company Ltd with manufacture dates between 1963 and 1995. With the majority ceasing production by 1989.

Such cylinders will be stamped with any of the following markings:

- HE30, HOAL 1, HOAL 2, HOAL 3, HOAL 4, BS5045/3/B, BS5045/3/B/S, AA6351, P****X or P****P (as part of serial number)
- Small Luxfer cylinders with three-digit type number stamped around the base of the form 1**, 3** or 5**.

When this issue came to notice the industry and various safety agencies issued guidelines that cylinders with potential for SLC should be inspected every 2 years, and the inspection must include eddy-current testing, a non-destructive testing (NDT) method that uses electromagnetic induction to identify flaws in materials, using a recognised device such as Visual Plus™ and Visual Eddy™.



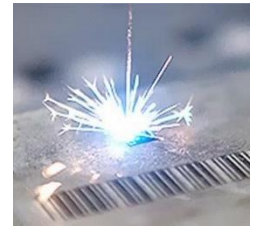
Finding a centre with the necessary equipment is quite rare these days but a few of our members (and some others) advertise this service.

We would remind anyone performing test on a cylinder manufactured from an alloy susceptible to SLC that these have a 40-year service life. **Inspection quadrants must not be dated beyond 40 years from the manufacture date of the cylinder, and the cylinders should be withdrawn from service on or before their 40th anniversary.**

It is important to note that aluminium cylinders made from the now ubiquitous AA6061 alloy do not exhibit SLC, nor do they require eddy-current testing. In fact, eddy-current testing is not recommended for these due to the potential for false positives.

Laser engraving or marking

With the proliferation of laser equipment and consequent reduction in equipment costs, coupled with many divers' penchant for decorating their cylinders, we are wondering how long it will be before a cylinder turns up with fancy laser engraving?



It seems laser marking and engraving are different processes. Laser marking applies just sufficient power to melt the target material and then let it cool in milliseconds causing localized changes on the surface. It is a change to the surface roughness that creates a permanent mark. Laser engraving, on the other hand, vaporizes the material. The laser beam penetrates deeper into the surface and removes the upper layers by sublimating them through a direct transition from solid to gaseous state.

So far only a few cylinder manufacturers have issued guidance on this subject and, all are against this sort of marking of diving cylinders. They foresee there are many variables to these processes which may cause unseen damage to gas cylinders.

Should such a circumstance arise during PI/PIAT our recommendation is to fail the cylinder.

Mini-Cylinder Valve Torque

We are pleased to pass on this advisory from AP Diving / Ambient Pressure Diving Ltd.

AP supply various products with small mini-cylinder 'crack' bottles. Due to their small volume (<0.5L) these fall outside the scope of BS EN ISO 18119 and the IDEST scheme, but as they can frequently be emptied fully underwater you may be asked to check one for water inside.

The valving torque for the 0.4L mini-cylinder is as per BS EN ISO 13341 as follows:

AP6 - 0.4 litre Aluminium Mini-Cylinder

Used with AP buoyancy devices (BCDs and wings) and 25kg Lift Bag with inflator

Valve Thread: M18 x 1.5

V: 0.4 litre, PW: 232 bar

Valve Torque: Minimum 85 Nm - maximum 100 Nm

The 0.1L mini-cylinder uses a smaller M14 thread which is not currently listed in BS EN ISO 13341 so AP Diving would like to inform all technicians of the valving torque as follows:

AP6W - 0.1 litre Aluminium Mini-Cylinder

Used with the AP SMBCi Surface Marker Buoy

V: 0.1 litre, PW: 232 bar

Valve Thread: M14 x 1.5

Valve Torque: **Minimum 25 Nm - maximum 40 Nm**

This is a manufacturer specified torque so please do not exceed it.



Missing Torque?

Have you missed any edition of Torque? Don't worry, all of the past issues can be downloaded from the document section of the **IDEST website**. Take a look!



IDEST Test Centre Update

We have had the following changes to the IDEST Test Centre listing since the last issue of Torque.

New centres

TSR Scuba, Yorkshire [C1]

Central Cylinder Testing, Rotherham [C2]

Blue Fin Diving, Sidcup [C5]

Leaving centres

J M Scuba Services, Leicestershire [6U], retired

Reinstated Centres

Sabre Safety Services, Aberdeen [8T].

Go Dive, Derby [B5] (name change to MSDS Marine)

Temporarily suspended centres

Sub-Aqua Services, Norfolk [9K]

Malakoff, Lerwick [6T]

Ipswich Scuba [8G] (formerly Galaxsea Divers)

Revolution Air Services, Gloucester [9J]

Fully suspended centres

Scuba Scene, Somerset [7Y]

Xambor Water Sports Ltd, Kent [9Y]

Emerald Diving Ireland Ltd, Meath [8Y]

High Pressure Services, Dover [9H]

Divestay Ltd, Berwickshire [9P] (closed testing operation)

The use of blue or green quadrants or the IDEST stamp to validate a cylinder test or inspection at any suspended centre is not recognised. Temporary suspension indicates that active dialog is underway in the hope of resuming testing in due course.

A final thought...

We hope you've enjoyed reading this issue of Torque. Please let [Alison](#) have your feedback on this issue and suggestions for topics in upcoming editions. Thank you!

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