

In This Issue

- Volume 24, Issue No 3
- Website technical issue
- Gauge Solutions feature
- Competition Survey results
- Stamp Marking
- Composite test intervals
- Valve CE marking, follow-up
- Equipment for sale
- Hydro Pot Incident
- Valve marking information
- Torque wrench myths
- Cylinder and valve drawings
- ISO 17020 Announcement
- Gauge Comparison Sheet
- ISO 18119 amendment
- Sending documents to IDEST
- Valve servicing
- Reports from the field
- IDEST Test Centre Update

Contact Us

Website:

<http://www.idest.co.uk>

Chairman:

dave.crockford@idest.co.uk

Chief Engineer:

neil.minto@idest.co.uk

Webmaster / Torque:

torque@idest.co.uk

Administration Office:

admin@idest.co.uk

Volume 24, Issue No 3

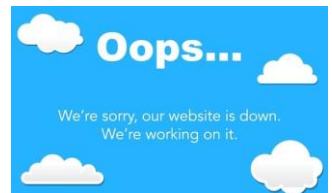
Welcome to the third IDEST Torque of 2024. In this issue read about... Why our website disappeared for a few days. Which one of our centres was chosen for a feature article by a world leading gauge solutions company. Our advice on stamp marking. Discussion of composite cylinder test intervals. A follow-up to our article on 'New valve CE marking'. Information from RINA on valve markings. Ways to access current cylinder and valve drawings. Our first reveal on plans for ISO 17020. How we've improved our gauge comparison chart template. Our preferred format for documents. Our position on valve servicing.

Tales from the field include a frightening Hydro Pot Incident where fortunately no-one was hurt, and general unease about non IDEST stickers. On the light side we dispel a few torque wrench myths with the help of a YouTube channel.

And find out our competition survey results, **and the winners!**

IDEST Website, technical issue

We apologise, the IDEST website was down from 15-May to 23-May. This was due to a behind the scenes automatic update of a 'plug-in' that stopped the website from loading.



To increase the nuisance the failure prevented our normal administrative access to the website too. It wasn't just us, many thousands of WordPress based websites were impacted. Eventually we were able to regain access and patch the faulty plug-in to restore normal operation.

World Leading Gauge Solutions feature

We were elated to see one of our Centres, Poole Diving [7Z], featured by the Original Gauge Company in a post on Facebook...

Link: [Ensuring Dive Safety with Precision and Perfection!](#)



The excellent article explores the critical role gauges and calibration services play in safeguarding the lives of divers and highlights the risk of mismatched threads.

Well done to Kevin. It just shows the possibilities to spread the safety message.

Competition Survey results

We would like to thank the 29 people who responded to the IDEST online survey. Two people were extra keen and completed the survey twice making 31 responses in total. In summary:



- Over 90% read Torque cover to cover
- Over 70% read on a desktop or laptop
- Over 90% read their own copy
- Over 87% are aware past issues are on the IDEST website

Respondents generally like Torque for its information, updates, tips, and to hear from other centres.

Suggestions for improvements included - more case studies of concerns, issues or incidents found by centres; more on training centre accomplishments; more knowledge sharing, best places to buy spares, parts, etc.

Future article requests shared a lot of common ground with above suggestions, of note were - equipment recommendations, new tools and systems for carrying out cylinder testing; how leaving the EU will affect things in the future; a feature article about each centre; new manufactures of cylinders, valves, manifolds, who is importing them, spare parts etc

Regarding IDEST most respondents were positive, feeling IDEST performs a useful role in representing the industry and promoting safety.

In terms of what IDEST does well consensus points towards - dealing with legislation; liaising with statutory bodies; reducing costs for centres; technical support etc.

Suggestions for IDEST included - more action against 'cowboys'; answering tricky questions quicker; periodic spot checks on centres; star ratings for inspection, test and inspection, and training centres etc.

And finally other suggestions included - digitised reporting; regulator servicing scheme; centre only forum; group level discounted calibration rates etc.

- - - - -

If you don't receive your own copy of Torque by email, then please drop a message to [Admin](#) and ask to be put on the distribution list.

If you'd like to read more case studies of concerns, issues or incidents found by centres then why not get the ball rolling by sharing your own by dropping an email to torque@idest.co.uk

And so, to our competition WINNERS! We were so pleased with the entries we extended the prize pot to include two runners up.

1st Prize	Carl Baggott	£100.00
2nd Prize	Kevin Craddock	£50.00
3rd Prize	Andrew Bailey	£25.00

If you are one of our lucky winners then please contact [Admin](#) when placing your next order for tools, goods or products in the IDEST shop to claim your prize.

Stamp Marking

A response in our survey asked for further discussion around stamp marking. In the last Torque we gave a summary of the requirements of BS EN ISO 13769:2018 Gas cylinders, Stamp marking, so we won't repeat that here, but we do have some observations from our inspectors...



IDEST stamp YY/MM

For painted steel and aluminium cylinders, whilst a few centres can successfully stamp through paint layers, most centres opt to prepare the stamping area by removing the paint first. A commonly observed and effective tool for this is a Dremel fitted with a flap wheel sanding disc.

One factor in our experience significant to the quality and clarity of the result is how the cylinder is secured during stamping. We see cylinders stamped while standing vertically on workbenches, horizontally loose or in clamps, or sometimes even on the floor. Generally, the better secured the cylinder the better the result.

Stamps do wear out so keep an eye on this. High quality stamps from a recognised tool maker will typically outlast and outperform lower cost alternatives. Hardness at the stamping end should typically be in the range 58-62 HRC. Keep stamps clean.



Choose a mallet with a flat face and a mass that compliments your strength and wrist action. Consider using a brass head mallet to prolong the life of your stamps.

Necessarily stamping on a curved surface makes things harder, so it's all in the technique... hold the stamp low down, firmly and perpendicular to the impact spot; strike the stamp once, precisely and consistently to avoid smudging or double impressions. Take care to line up adjacent numerals. In this way you should achieve a clear and legible impression.

Steel cylinders are commonly zinc coated so often an anti-corrosion treatment is required to finish the job. Materials observed include zinc sprays, paint pens, rust stop, red oxide primers, black Hammerite etc. Sometimes applied inside a temporary masking tape border these frequently look nice in the centre. Examination at the next test interval will show true field corrosion resistance performance. Some of the best appear to be high-quality zinc sprays.

Finally, don't forget your PPE - wear filter masks, safety glasses and ear defenders at appropriate times when sanding, stamping and spraying.

When it comes to composite cylinders best results appear to be achieved by centres using self-adhesive inspection labels with date applied followed by a clear self-adhesive waterproof over label.

Composite cylinder test intervals

We encountered some discussion recently regarding periodic test intervals for composite cylinders, periods being mooted were 3, 5 and 10 years. Hopefully we can clear this up...



The dates of the first hydrostatic pressure test (carried out during manufacture) and the first required periodic inspection are marked on a composite cylinder during manufacture. On recent cylinders the frequency marked is typically every five years.

Historically, that was not always the case. For example, some early Luxfer composite cylinders were marked at manufacture with 3-year inspection interval. As field experience was gathered Luxfer issued a notification to recommend a *"retest period of 5 years for our carbon composite cylinders marked in accordance with any approval as based on the European Standard EN12245"*

BS EN ISO 11623:2023, Annex A is very clear – *"For cylinders used for underwater operations and self-contained breathing apparatus, the retest period shall not exceed 5 years"*.

Our guidance is that the periodic test interval (PIAT) of composite cylinders used in diving is whichever is the earliest of the manufacturer's stipulations, or 5-years.

But what about visual inspection? BS EN ISO 11623:2023, Table A.2 is very clear for composite cylinders with steel liners - 2.5 year interval for visual. It is less helpful for aluminium-alloy and non-metallic liners as these are not explicitly clarified with regard to *'underwater operations'*.

Use in diving and the underwater environment are challenging for composite cylinders, which is why not all composite cylinders are approved for use in diving, and special manufacturing techniques and certifications apply to those that are.

One to note is that carbon is on the opposite end of the galvanic series in relation to aluminium. If carbon is in direct contact with the aluminium, in the presence of salt water, it can cause the aluminium to corrode very quickly. Hence liners in diving cylinders are specially barrier coated before the carbon fibres are applied. The external glass fibre protective layers also plays an essential role in the safety and life of a diving cylinder.

Our guidance is that periodic inspection interval (PI) of composite cylinders used in diving should be 2.5 years, regardless of the liner material (unless local regulations stipulate otherwise).

Also be aware that many composite cylinders have a limited life. Cylinders with a limited life such as 15, 20 or 30 years will be designated by a marking on the cylinder, for example FINAL or FIN with a date. The cylinder should not be filled or used after this date. Non-limited life cylinders may be marked NLL or similar.

New valve CE marking, follow-up

Our January article titled "New valves must be CE marked" caused some controversy, especially within the recreational dive sector. Following a robust challenge, we circled back to VCA and HSE and were gratified when they unequivocally supported our guidance and provided a convincing examination of the relevant legislation. The explanations are too lengthy and complex to reproduce in full here so here is a quick summary:



- The requirements are not retrospective so do not affect older valves already in use.
- DfT are responsible for the carriage regulations (CDG) which require conformity with ADR.
- Receptacles for breathing apparatus are in scope of ADR.
- It is the ADR relaxation in the form of Special Provision 655 that permits breathing apparatus that conform to PED to be deemed to meet the requirements of ADR.
- Valves are not mentioned in SP655 and strictly wouldn't benefit from this relaxation.
- The interval between tests (per packing instruction P200 in 4.1.4.1, on which SP655 depends) is 10 years. Hence the requirement for an ADR inspection every 10 years.

It is therefore a firm requirement that 'new' valves are certified to ISO 10297:2024 and compliance is marked accordingly via a Pi, Rho (in GB) or CE, UKCA (in GB) symbol, and we see numerous examples from SOS, Scubatec, MDE and other manufacturers.



One of the counter arguments was that 'recreational' divers are outside the scope of ADR. This has some merit for private individuals, but staff at commercial dive shops, professional instructors and others in the industry are most certainly "at work" and therefore completely within the scope. Ignoring the requirements may give rise to considerable liability, not to mention personal safety issues.

A final positive outcome from this story is that Nautech have submitted their valve to a highly regarded UK certification laboratory for testing which should mean the necessary markings will be added very soon. A great result for all concerned.

Equipment for sale

We have been informed by Gary Steenvorden, ex Divestay Ltd [9P] that he has all his test equipment for sale. This includes Octopus systems cut off, wet pot and hoist etc. He is looking for £3000 collected from St Abbs area. We are happy to connect interested parties with Gary and wish him well for the future.

FOR SALE

Hydro Pot Incident

We are very grateful to Ken Scott at Moray Firth Dive Centre [7V] for sharing a recent incident so we can all look for lessons to apply for ourselves.

Ken was checking his master gauge against the working gauge using a 300-bar cylinder and recording the variation on the sheet. A pretest to WP had gone perfectly with no leaks in the system. During the planned run up to 470-bar, at a pressure of 400 bar, the small-bore hose connection from the pot to cylinder broke in two. The force was such that not only did the relief plate burst, but the pot lid lifted all the quick release clamps too.

Fortunately, Ken operates his controls well away to the side of the pot and so was not injured.



Examination showed:

1. Small bore hose had snapped at the small metal part, not the actual hose.
2. The adaptor that screws into the pot was still firmly in the pot and no damage to the pot threads.
3. Relief plate had shattered
4. The adaptor into the cylinder was still in the cylinder however when removed from the cylinder the first 5 threads were seen to be stripped bare.
5. Cylinder threads gauged perfectly and were undamaged.
6. Pot O-ring split
7. Pot lid dented.
8. Quick release clamps no longer have any tension.



There is no clear explanation for why the small-bore hose fitting failed. Being less than 2-years old it was considered low risk and not yet included in the regular routine equipment inspections.

Ken is considering going back to the thicker hoses even though they are harder to move in the pot, and reviewing if the quick release clamps have strong enough holding force.

Bad enough when contained within a volumetric hydro pot, but consider how this might have played out in a proof test system?

This is exactly why we insist all proof test systems are equipped with a screen to protect the operator, and we recommend that flexible hose lengths are kept as short as possible with whip checks fitted.

Please use this incident to review what might happen if a similar failure were to occur in your test equipment. Consider your equipment design, inspection regimen, maintenance intervals etc

This sort of sharing is so helpful to us as a community. If you have any observations or experiences to share, please let us know by email to torque@idest.co.uk. Articles can be made anonymous upon request.

New valve marking information

A centre contacted us to clarify a Scubatec valve marking that says "25P".



Following discussion with the importer Beaver Sports it became apparent that this stands for 25mm parallel thread (M25 equivalent).

A document produced by RINA (Registro Italiano Navale) was supplied which gives some valuable information:

[RINA] Valve Marking, updated as of 26.2.21

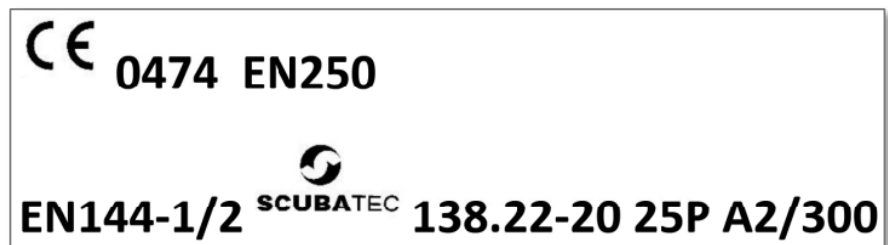
CE _ _ _ _ (four digits for the certification body: 0474 for RINA)
EN250 (complies with directive for open-circuit self-contained compressed air underwater breathing apparatus)
EN144-1 (complies with directive for inlet thread)
EN144-2 (complies with directive for outlet thread)

18P Inlet thread is 18 x 1.5, P=Parallel
25P Inlet thread is 25 x 2.0, P=Parallel

A1/232 bar Outlet thread is DIN 5/8G 232 bar
A2/300 bar Outlet thread is DIN 5/8G 300 bar

These may be combined into a single line, such as

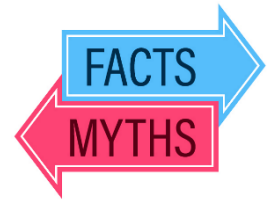
EN144-1/2 --Logo-- Lot# . Week-Year Inlet Outlet / WP



The text above is transcribed exactly from the RINA document, we would of course say "BSP G5/8" rather than DIN 😊. If you see something unfamiliar then don't forget you can contact IDEST for technical advice.

Torque wrench myths

We enjoyed watching this 20-minute video on torque wrench myths which covers some interesting topics including hand position, adapters, extensions, resetting, anti-seize etc



Link: [You're Using a Torque Wrench Wrong: MythBusting 10 Do's & Dont's](#)

The key takeaways are:

- Always hold torque wrench at mid-point of its handle
- Lubricant on threads may affect the final torque
- Use adapters and extensions at 90 degrees (or do the maths)
- Reset to lowest value for best life and accuracy of your wrench

The lubrication observation, while not surprising, is interesting. We often see centres applying a high-quality oxygen safe lubricant (such as Dow Corning Compound 111, or Christo-Lube) to the valve threads before assembly.

Whether this is appropriate comes down to the manufacturer's guidance. We found documents from Luxfer, Catalina and Scubapro that all specify a small quantity of lubricant to the valve threads, and there seems wide agreement that this is helpful to reduce galvanic corrosion at least on aluminium cylinders.

Accessing Cylinder & Valve Drawings

We are frequently asked if we can create a central repository for cylinder and valve drawings.



Whilst this might sound a tempting prospect it would be a significant burden on our limited resources to keep it up to date with new offerings and design changes.

By far the best source for drawings is the manufacturer and/or importer. Only they have access to the latest drawings and change history.

Martin at Beaver Sports has advised that drawings of all cylinders they distribute can be found on their website www.beaversports.co.uk on each type and size of Cylinder in the 'Documents & Downloads' section under the product image. We've checked and it looks a very comprehensive set of documents. And if you can't find what you want, they will accept enquiries by phone.

Another key source of information is Faber Cylinders. In this case you should register on the Faber Website <https://divefaber.com> to obtain a free login and password to access their substantial database.

ISO 17020 Announcement

Hopefully everyone is aware that IDEST currently holds an ISO/IEC 17024 accreditation from UKAS as a *body certifying persons against specific requirements*. This is what makes our technician certifications recognisable and meaningful.



For a while now we have been working toward achieving accreditation from UKAS to ISO/IEC 17020:2012. This standard specifies requirements for the competence of bodies performing inspection and for the impartiality and consistency of their inspection activities.

The set of requirements IDEST must achieve to become a "Type A Inspection Body" is categorized into five major groups:

- **General requirements:** Impartiality and independence, confidentiality
- **Structural requirements:** Administrative needs, organization and management
- **Resource requirements:** Personnel, facilities and equipment, subcontracting
- **Process requirements:** Inspection methods and procedures, handling inspection items and samples, inspection records, inspection reports and inspection certificates, complaints and appeals, complaints and appeals processes
- **Management system requirements:** Management system documentation, control of documents, control of records, management review and internal audits, corrective and preventive actions



This endeavour is a significant effort so why would we embark on such a journey? In simple terms, having ISO/IEC 17020 accreditation from UKAS will allow IDEST to certify centres and technicians for the inspection and test of diving cylinders falling within the ADR agreement for the carriage of dangerous goods by road, specifically the testing every ten years of pressure vessels for containment of gases under pressure.

Centres currently operate within our scheme and are therefore recognisable to each other. An ISO/IEC 17020 certification would be recognisable at the regulatory level. Testing by centres fulfilling our requirements and holding our certification would be recognised by Vehicle Certification Agency (VCA) acting as the eyes and ears for Department for Transport (DfT). This would enable qualifying centres to carry out 10-year ADR testing and such like on cylinders used and transported in the industrial, commercial, educational, and military arena.

Work will be required by centres to achieve compliance so this will be an optional additional certification on top of scheme membership. There will also be additional fees to cover the costs of IDEST maintaining the UKAS accreditation. Assessment of centres/technicians is undertaken annually rather than the current triennially for ISO/IEC 17024. The more frequent assessment will also incorporate your ISO/IEC 17024 certification upon the triennial anniversary at no additional cost to your annual assessments.

We had hoped to make this announcement once we had achieved accreditation. Unfortunately, there have been several personnel changes at UKAS causing significant disruption to their workflow.

One area we can act on now is submission of company details of those who are seriously interested in being an assessed part of the Type A inspection body in our submission to UKAS. A few of you have indicated your desire but **if you are serious in gaining this additional VCA approval then please ask to be placed on the 'submission list'** ASAP. Contact our chairman at dave.crockford@idest.co.uk or on 07970 297989 as soon as possible to discuss further. You will then be part of our initial submission to UKAS. Should you not be ready now, you can be added as an extension to scope in the future

We have a tentative indication of when our application will proceed as September/October 2024 in conjunction with our annual audit for ISO/IEC 17024. We will keep you informed of this exciting new venture.

Valve servicing

Valve inspection and service is an important part of both PI and PIAT. We were recently advised of a case where a valve failed within 2 days of a cylinder being returned from test by an IDEST centre. It was alleged that the internals of the valve were not serviced, and or suitable replacement parts not used.



IDEST policy is quite straightforward, during inspections we expect to see valves stripped into component parts, cleaned, inspected, serviced and reassembled using appropriate tools and manufacturer approved service parts.

Any deviation from this draws the inspector into the subjective area of judging whether a part is in adequate condition to be reused, and that 'grey area' is not a comfortable place to be.

This is life support equipment and service parts are generally low-cost items compared to labour and time involved so why wouldn't you use them?

A complete branded manufacturers service kit is an easy pass from an inspector's perspective, but we do understand some centres prefer bulk stocking of individual valve seats, o-rings etc. This is acceptable but please be prepared to evidence the source and suitability of the parts during the inspection.

Gauge Comparison Sheet update

Issues with master / working gauge comparison, and other routine tool checks are activities that frequently arise as issues during inspections. So, let's clarify our expectations:

The form is titled 'MASTER GAUGE / WORKING GAUGE COMPARISON SHEET'. It features a table with the following structure:

MASTER GAUGE READING	WORKING GAUGE READING	DIFFERENCE
0		
10		
100		
150		
200		
250		
300		
350		
400		
450		
500		
550		
600		
650		
700		

Below the table, there are fields for 'Visual inspection of tools' with checkboxes for 'fit for use' and 'corrective action required', and a 'Comparison Date' field.

- We expect to see a completed master / working gauge comparison chart on display near the working gauge of the hydro test equipment.
- The chart must have been completed and dated no more than 1 month prior.
- The maximum reading attained should be in accordance with the maximum working pressure of the hydrostatic test system (typically 700 bar).
- The chart should show values recorded on both rising and falling readings.
- Once readings are obtained, the operator should confirm the total errors of indication of the working gauge do not exceed +/- 1% of its full scale (Class 1, at 20 °C).
- The master gauge should be isolated after the comparison is completed.
- The operator should be able to explain how any divergence between the gauges is taken into account when setting the target pressure during cylinder testing.

Regarding other routine tool checks we expect the centre to have a documented inventory or checklist of the tools and equipment related to cylinder testing. These tools should be checked at an appropriate interval, and the date and outcome of the check recorded.

Things to check might include - Cylinder Dismantling Equipment; Hydraulic Test Rig (especially hose and fittings); Master Gauge; Working Gauge; Hot Air Dryer; Torque Wrench; Thread Gauges; Crane Lift; Ultrasonic Cleaner; Small tools; Spares inventory etc.

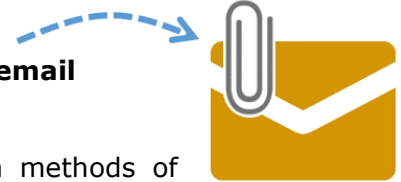
Some of our centres combine their routine tool check with their master / working gauge comparison. This is an excellent approach, so we are amending our sample D011 comparison template to add a simple tick box as follows:

Visual inspection of tools fit for use corrective action required

Other approaches remain acceptable, but we think sharing this may help streamline some centres, and aid a clean pass at their next inspection.

Sending documents to IDEST

Please help our inspectors and admin team by sending any requested documents, photos etc to IDEST as **email attachments**.



Whilst there are many social media methods of contacting and sending information these are highly inconvenient to extract the information into our online document management system. And please ensure all that photos are in an orientation and resolution that allows us to read without turning our laptops on their head or reaching for a magnifying glass.

It puts us in a much better frame of mind arriving at a centre knowing that they provided timely and neatly ordered paperwork, instead of having to arduously chase and dig out every detail – you have been warned 😊.

Reports from the field

Neil called in on Mike Morgan at Puffin Divers, Oban, Scotland and gained some valuable field feedback.



Whilst Puffin Divers are not an IDEST Centre (they do not inspect or test cylinders) they do recognise the value of an IDEST label on cylinders arriving at their filling station.

In fact, Mike recounted experience and concern regarding non IDEST centres fitting incorrect valves and O2 clean stickers to new cylinders when there was manufacturing oil residue within cylinder.

He also commented about poor quality paint stripping and repainting over cylinder markings, poor quality paint removal for marking tested cylinders, the proliferation of generic stickers etc.

His valuable input helped inspire some of the articles in this edition. We also agreed to help raise his other concerns at the next British Diving Safety Group (BDSG) meeting.

It is not for IDEST to dictate what cylinders filling stations should accept or not, but it is gratifying to have evidence that the IDEST sticker is seen as valued assurance of quality by those outside of our scheme.

Again, we remind all cylinder fillers to verify the "serviceable condition of individual cylinders before filling" (in accordance with their training, BS EN ISO 24431:2016 and other relevant guidance). Indeed, Annex A *requires* cylinders presented for filling without a residual pressure to be internally examined. Other suspicions, such as unrecognised labelling, unusual valves etc. may also mean further examination is prudent.

ISO 18119 amendment, don't panic!

BS EN ISO 18119:2018+A1:2021 will have a second amendment released soon. This is one of the 'mandatory' standards that all Centres should have. Due to our relationship with the Standards committee, we have seen the upcoming changes and do not expect them to be of relevance to IDEST centres. Evidencing the A1 version during inspections will remain acceptable until further notice.



When it comes to amendments to standards (i.e. +A1, +A2 etc) we would draw members attention to the ISO web shop. The ISO organisation frequently publish a document containing only the amendments, and at a much lower cost than the full new standard. Again during inspections the Centre showing both the original standard and the amendment document will be acceptable.

Missing Torque?

Have you missed any edition of Torque? Don't worry, all of the past issues can be downloaded from the members 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

Innovative Technologies Asia (A9), Phuket
Dive St Abbs (B8)

Leaving centres

Divestay Cylinder Testing, closure (9P), Eyemouth
SDS Watersports, liquidated (2Z), Sheffield

Temporarily suspended centres

Sub-Aqua Services [9K]
Malakoff [6T]
Ipswich Scuba [8G] (formerly Galaxsea Divers)
Revolution Air Services [9J]

Suspended centres

Sabre Safety [8T]
Scuba Scene [7Y]
Xambor Water Sports Ltd [9Y]

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.

For a list of valid certified IDEST inspection centres always refer to the IDEST website.



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!

E&OE