



Understanding Our Services

Testing Infrastructure

Nordco's Cyl-Sonic division has been approved by special permit to perform 100% ultrasonic examination testing in lieu of hydrostatic testing. This special permit – DOT SP-14920 – is current and available for review on the US Department of Transportation website.

Our Cyl-Sonic special permit defines the requirements for your ultrasonic testing procedures, including:

- Each cylinder must be examined by a standardized (calibrated) UE system, using an appropriate reference cylinder and test setup.
- A copy of the operating test procedure for performing UE testing of cylinders must be at each facility performing cylinder re-qualifications.
- The system must be calibrated and re-calibrated at the start and end of the test interval.
- The rotational speed of the reference cylinder must be sufficient to allow all simulated defects to be detected, measured, and recorded.
- The rotational speed of cylinder being tested cannot exceed the rotational speed used during the calibration process.
- The pulse rate must be adjusted to ensure a minimum of 10% overlap for each helix.

Cyl-Sonic also provides customers with a copy of the operator manual for each product model. The manual explains machine setup and operation. In addition, Cyl-Sonic supplies customers with a copy of required ultrasonic testing procedures.

Technical Support

Cyl-Sonic offers you two types of technical support:

- **Remote access** - The Cyl-Sonic support team can remotely connect and take control of your system for the purpose of diagnosing software and hardware issues. If on-site support is required, a member of the Cyl-Sonic support team is dispatched to your facility to locate and fix the problem.
- **Telephone support** - The Cyl-Sonic support team works with your staff to diagnose software and hardware issues. If on-site support is required, the support team dispatches a technician.

Oversight

Our Cyl-Sonic special permit requires Nordco's Senior Review Technologist (SRT) to conduct mandatory oversight required to perform periodic requalification of compressed gas cylinders using ultrasonic examination.

Nordco achieves this through several means such as annual on-site audits, assessments, and surveillances, which include:

- Witnessing operators/processes conducting duties and UE (surveillance observations)
- Assessing compliance to regulatory requirements, in particular, the processes required by the special permit
- Confirm UE system performance
- Document and record the audit results. All results are reported to the customer; failing results are reported to DOT.

In addition, our proprietary Niche oversight software allows us to perform administrative functions, screen customer testing data for specific criteria, and generate auditing reports. Please note that all testing data and reports are kept for 10 years, even if your oversight contract is less than 10 years.

Using Niche, Cyl-Sonic oversight staff can perform the following administrative functions:

- Set up users and check operator certification levels and expiration dates
- Set up testing sites

Using Niche, Cyl-Sonic oversight staff can also screen customer testing data for the following:

- Cylinder testing records by operator
- Serial or date errors
- 3AL or LER errors

Finally, using Niche, Cyl-Sonic oversight staff generate the following audit reports::

- Monthly/annual production reports
- Monthly failure reports and failure summaries
- Shift reports and shift detail analysis
- DOT annual reports

Training

Cyl-Sonic offers multiple levels of training. Level I and Level II training classes are in accordance with the American Society for Non-Destructive Testing (ASNT) Recommended Practice ASNT-TC-1A.

- **Level I** - Includes 40 hours of classroom training, covering ultrasonic testing theory and principles; also includes examinations for Level I ASNT certification.
- **Level II** - Includes 40 hours of hands-on, product-specific training, covering efficient and accurate system usage; also includes examinations for Level II ASNT certification.
- **Advanced** - Includes a review of critical theory, system diagnostics (diagnosing head and pressure issues), understanding system electronics, and "if/then" troubleshooting scenarios.
- **Maintenance** - Includes a review of maintenance procedures, such as how to zero the probe head or diagnose bad boards.

Maintenance

Cyl-Sonic offers multiple system maintenance options, including:

- **On-Site** - A Cyl-Sonic technician, specially trained in diagnosing and repairing Cyl-Sonic systems, will come to your site and perform repairs on your system. This service may result from technical support calls or customer-identified maintenance needs.
- **Preventive Maintenance** - A Cyl-Sonic technician will perform the following procedures (preventive maintenance testing takes approximately one full day per system):
 - Perform a visual inspection
 - Check all system voltages
 - Verify operation accuracy (job setups)
 - Confirm measurement compliance with ASTM E317
 - Replace any failing parts
- **Refurbishment** - A Cyl-Sonic technician will inspect and replace any failing, corroded, or damaged key system parts.

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Calibration Standards

The Cyl-Sonic special permit defines the requirements for the reference cylinder, known as the calibration standard. The UE reference cylinder is a cylinder (or cylinder section), used as a standard reference, that has similar acoustic properties, surface finish, and metallurgical conditions as the cylinders being tested.

As part of the Cyl-Sonic special permit requirements to provide appropriate calibration standards for different cylinder types, Cyl-Sonic offers 16 calibration standards (five aluminum and eleven steel), including three exemption standards.

Our calibration standards meet the following requirements:

- A known minimum design wall thickness (t_{min}), less than or equal to the cylinder being tested.
- For cylinders less than or equal to 6 inches in diameter, the standard has the same nominal diameter as the cylinder being tested.
- For cylinder greater than 6 inches in diameter, the standard conforms to the ranges shown below.

Outside Diameter	Min. OD (inches)	Max. OD (inches)
7.00	6.30	10.50
7.50	6.75	11.25
9.00	8.10	13.50
9.25	8.33	13.88
10.00	9.00	15.00
12.00	10.80	18.00

All Cyl-Sonic calibration standards include the following artificial defects:

- Two minimum thickness wall patches (t_{min}), representing wall thinning.
- Two longitudinal defects, including one inside diameter flaw and one outside diameter flaw.
- Two circumferential defects, including one inside diameter flaw and one outside diameter flaw.
- One flat bottom hole, representing pitting. The depth ($1/8''$ or $1/4''$) is dependent on the cylinder diameter (33% of t_{min}). The standard may include additional flat bottom holes based on the desired periodicity levels.

