



Technology Committee Bulletin

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Compressed Natural Gas (CNG) Container Visual Inspection Advisory

CNG fuel containers (cylinders) require a visual inspection for damage or deterioration at least every 36 months or 36,000 miles, whichever comes first. A qualified inspector will note cuts, cracks, gouges, abrasions, discoloration, broken fibers, loose brackets, damaged gaskets or isolators, heat damage or other problems, and recommend proper action to assure safety.

In addition to the regular 3-year/36,000 mile inspection, CNG containers should undergo a visual examination for damage or deterioration after a motor vehicle accident or fire.

Almost all CNG vehicle fuel containers now in use meet Federal Motor Vehicle Safety Standard 304 (*Compressed Natural Gas Fuel Container Integrity*) and/or the natural gas vehicle (NGV) industry standard ANSI/CSA NGV2 (*Basic Requirements for Compressed Natural Gas Vehicle Fuel Containers*).^{*} Both of these standards specify a detailed visual examination every three years. NGV2 further states that the inspection follow the procedures in Compressed Gas Association (CGA) pamphlet C-6.4 (*Methods for External Visual Inspection of Natural Gas Vehicle and Hydrogen Vehicle Fuel Containers and Their Installations*) and the container manufacturer's recommendations. However the container shall not be removed from the vehicle unless damage or deterioration is seen on the exposed container surface.

C-6.4 sets out visual inspection requirements and rejection criteria in detail. Contact the container manufacturer directly to determine its inspection recommendations. The manufacturer's name, address and telephone number

^{*} Earlier cylinders were generally built to US Department of Transportation (DOT-PHMSA [was RSPA]) specifications. DOT-PHMSA does not have inspection authority over these cylinders for NGV service. These cylinders should have the same detailed visual inspection as later NGV2 and FMVSS 304 cylinders. Use of hydrostatic testing is not encouraged by the NGV industry although the DOT exemption may specify it.

will be on the container label which should be legible without removing the container.

A qualified inspector should perform the visual inspection of a natural gas vehicle (NGV) fuel container. A qualified inspector must:

- have a minimum of two years experience conducting container inspections, or
- be supervised by someone with two years experience, or
- be approved by the container manufacturer, or
- be certified as an inspector by an organization with NGV training centers, an “authority having jurisdiction” or a state or nationally recognized certification testing organization.

A qualified inspector must also have:

- knowledge of the types of containers used in CNG vehicle systems, and damage allowances for each type, and
- understanding of inspection requirements, tests, procedures, etc., and
- the container manufacturer’s current inspection guidelines, and
- basic knowledge of compressed gases and containers.

For specific details on necessary NGV fuel container inspector qualifications see §5 of CGA pamphlet C-6.4.

Inspectors should also be familiar with the National Fire Protection Association (NFPA) *Vehicular Fuel Systems Code* (NFPA 52), and determine whether local or state regulations may also need to be followed.

If your fleet does not have a qualified inspector, some CNG vehicle manufacturers, local gas utilities and container manufacturers offer container inspection services by qualified inspectors. If yours do not, a list of CSA-certified inspectors is available by clicking on “Certified Cylinder Inspector Search” at <http://www.csa-america.org/>. CSA is the only nationally recognized organization certifying CNG container inspectors in the US and Canada. Key in your state or province two-letter abbreviation, hit “Search” and a list will come up. Click on a name for that person’s contact information.

If you would like to be trained and CSA-certified as a qualified CNG container inspector, go to <http://www.csa-america.org/> and click on “Becoming a Certified CNG Cylinder Inspector” for more information.

For more information on CNG cylinder inspection, see <http://www.cleanvehicle.org/technology/cylinder.shtml>.

Training Materials and Sources:

Standards:

ANSI/CSA NGV2 – Basic Requirements for Compressed Natural Gas Vehicle Fuel Containers – CSA America, 8501 E. Pleasant Valley Rd., Cleveland, OH 44131-5516, 216-524-4990, <http://www.csa-america.org/>.

CGA C-6.4 - Methods for External Visual Inspection of Natural Gas Vehicle and Hydrogen Vehicle Fuel Containers and Their Installations - Compressed Gas Association, 4221 Walney Rd., Chantilly, VA 20151, 703-788-2700, www.cganet.com.

Federal Motor Vehicle Safety Standard (FMVSS) 304 - Compressed Natural Gas Fuel Container Integrity - 49 CFR 571.304 – This standard can be purchased from the Superintendent of Documents, Government Printing Office, found in any law library and is available on the web at <http://www.access.gpo.gov/nara/cfr/cfr-table-search.html>.

NFPA 52 – Vehicular Fuel Systems Code – National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, 617-770-3000, www.nfpa.org.

Training Materials:

Compressed Natural Gas (CNG) Cylinders: Tips for General Visual Inspection and Care, GRI-96/0426, (Report & Poster), Gas Technology Institute, 1700 South Mount Prospect Road, Des Plaines, IL 60018-1804, 847-768-0500, www.gastechnology.org.

Cylinder Care and Maintenance Handbook, GTI-01/0119, Gas Technology Institute, 1700 South Mount Prospect Road, Des Plaines, IL 60018-1804, 847-768-0500, www.gastechnology.org.

Training Organizations:

- National Alternative Fuels training Consortium, <http://www.naftc.wvu.edu/>, 304-293-7882
- AFV International, <http://home.att.net/~w.mcglinchey/wsb/html/view.cgi-contact.html-.html>, 740-205-2107
- Natural Gas Vehicle Institute, <http://www.ngvi.com/>, 800-510-6484
- Advanced Transportation Technology, <http://www.attcolleges.org/>, 562-938-3067
- Energy Transfer Technology, <http://www.energytransfertechnology.com>, 360-576-6300
- Phoenix Energy, <http://www.phoenixenergycorp.net/>, 205-453-0241

The manufacturer or converter of your vehicle, the manufacturer of your cylinders, or your local gas utility.