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(b) *Dents, cuts, digs and gouges.* For evaluation procedures, see CGA C-6 (IBR, see § 171.7 of this subchapter).

(1) For dents at welds or that include a weld, the maximum allowable depth is ½ inch. For dents away from welds, the maximum allowable depth is ¼ of the greatest dimension of the dent, but in no case may the depth exceed one inch.

(2) The minimum thickness remaining beneath a cut, dig, or gouge may not be less than that prescribed in the applicable specification.

(c) *Weld or structural defects.* Any cargo tank with a weld defect such as a crack, pinhole, or incomplete fusion, or a structural defect must be taken out of hazardous materials service until repaired.

(d) *Leakage.* All sources of leakage must be properly repaired prior to returning a tank to hazardous materials service.

(e) *Relief valves.* Any pressure relief valve that fails to open and reclose at the prescribed pressure must be repaired or replaced.

(f) *Liner integrity.* Any defect shown by the test must be properly repaired.

(g) *Pressure test.* Any tank that fails to meet the acceptance criteria found in the individual specification that applies must be properly repaired.

[Amdt. 180-2, 54 FR 25032, June 12, 1989, as amended at 68 FR 75764, Dec. 31, 2003]

§ 180.413 Repair, modification, stretching, rebarrelling, or mounting of specification cargo tanks.

(a) *General.* Any repair, modification, stretching, rebarrelling, or mounting of a cargo tank must be performed in conformance with the requirements of this section.

(1) Except as otherwise provided in this section, each repair, modification, stretching, or rebarrelling of a specification cargo tank must be performed by a repair facility holding a valid National Board Certificate of Authorization for use of the National Board “R” stamp and must be made in accordance with the edition of the National Board Inspection Code in effect at the time the work is performed.

(i) Repairs, modifications, stretchings, and rebarrellings performed on non-ASME stamped speci-

fication cargo tanks may be performed by:

(A) A cargo tank manufacturer holding a valid ASME Certificate of Authorization for the use of the ASME “U” stamp using the quality control procedures used to obtain the Certificate of Authorization; or

(B) A repair facility holding a valid National Board Certificate of Authorization for use of the National Board “R” stamp using the quality control procedures used to obtain the Certificate of Authorization.

(ii) A repair, modification, stretching, or rebarrelling of a non-ASME stamped cargo tank may be done without certification by an Authorized Inspector, completion of the R-1 form, or being stamped with the “R” stamp.

(2) Prior to each repair, modification, stretching, rebarrelling, or mounting, the cargo tank motor vehicle must be emptied of any hazardous material lading. In addition, cargo tank motor vehicles used to transport flammable or toxic lading must be sufficiently cleaned of residue and purged of vapors so any potential hazard is removed, including void spaces between double bulkheads, piping and vapor recovery systems.

(3) Each person performing a repair, modification, stretching, rebarrelling or mounting of a DOT specification cargo tank must be registered in accordance with subpart F of part 107 of this chapter.

(b) *Repair.* The suitability of each repair affecting the structural integrity or lading retention capability of the cargo tank must be determined by the testing required either in the applicable manufacturing specification or in § 180.407(g)(1)(iv). Each repair of a cargo tank involving welding on the shell or head must be certified by a Registered Inspector. The following provisions apply to specific cargo tank repairs:

(1) DOT 406, DOT 407, and DOT 412 cargo tanks must be repaired in accordance with the specification requirements in effect at the time of repair;

(2) MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 cargo tanks must be repaired in accordance with either the most recent revision of the original

specification or with the DOT 406 specification in effect at the time of repair;

(3) MC 304 and MC 307 cargo tanks must be repaired in accordance with either the most recent revision of the original specification or with the DOT 407 specification in effect at the time of repair;

(4) MC 310, MC 311, and MC 312 cargo tanks must be repaired in accordance with either the most recent revision of the original specification or with the DOT 412 specification in effect at the time of repair;

(5) MC 338 cargo tanks must be repaired in accordance with the specification requirements in effect at the time of repair; and

(6) MC 330 and MC 331 cargo tanks must be repaired in accordance with the repair procedures described in CGA Technical Bulletin TB-2 (IBR, see §171.7 of this subchapter) and the National Board Inspection Code (IBR, see §171.7 of this subchapter). Each cargo tank having cracks or other defects requiring welded repairs must meet all inspection, test, and heat treatment requirements in §178.337-16 of this subchapter in effect at the time of the repair, except that postweld heat treatment after minor weld repairs is not required. When a repair is made of defects revealed by the wet fluorescent magnetic particle inspection, including those repaired by grinding, the affected area of the cargo tank must again be examined by the wet fluorescent magnetic particle method after hydrostatic testing to assure that all defects have been removed.

(c) *Maintenance or replacement of piping, valves, hoses, or fittings.* After each repair, maintenance or replacement of a pipe, valve, hose, or fitting on a cargo tank, that component must be installed in accordance with the provisions of the applicable specification before the cargo tank is returned to service.

(1) After maintenance or replacement that does not involve welding on the cargo tank wall, the repaired or replaced piping, valve, hose, or fitting must be tested for leaks. This requirement is met when the piping, valve, hose, or fitting is tested after installation in accordance with §180.407(h)(1).

A hose may be tested before or after installation on the cargo tank.

(2) After repair or replacement of piping, valves, or fittings that involves welding on the cargo tank wall, the cargo tank must be pressure tested in accordance with the applicable manufacturing specification or §180.407(g)(1)(iv). In addition, the affected piping, valve, or fitting must be tested in accordance with paragraph (c)(1) of this section.

(3) Hoses on cargo tanks in dedicated liquefied compressed gas, except carbon dioxide, service are excepted from these testing requirements, but must be tested in accordance with §180.416(f).

(d) *Modification, stretching, or rebarrelling.* Modification, stretching or rebarrelling of a cargo tank motor vehicle must conform to the following provisions:

(1) The design of the modified, stretched, or rebarrelled cargo tank motor vehicle must be certified in writing by a Design Certifying Engineer as meeting the structural integrity and accident damage protection requirements of the applicable specification.

(2) Except as provided in paragraph (d)(2)(v) of this section, all new material and equipment affected by modification, stretching, or rebarrelling must meet the requirements of the specification in effect at the time such work is performed, and all applicable structural integrity requirements (§178.337-3, §178.338-3, or §178.345-3 of this subchapter). The work must conform to the requirements of the applicable specification as follows:

(i) For specification MC 300, MC 301, MC 302, MC 303, MC 305 and MC 306 cargo tanks, the provisions of either specification MC 306 or DOT 406 until August 31, 1995 and, thereafter to specification DOT 406 only;

(ii) For specification MC 304 and MC 307 cargo tanks, the provisions of either specification MC 307 or DOT 407 until August 31, 1995 and, thereafter to specification DOT 407 only;

(iii) For specification MC 310, MC 311, and MC 312 cargo tanks, the provisions of either specification MC 312 or DOT 412 until August 31, 1995 and, thereafter to specification DOT 412 only;

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(iv) For specification MC 330 cargo tanks, the provisions of specification MC 331; and

(v) For specification MC 338 cargo tanks, the provisions of specification MC 338. However, structural modifications to MC 338 cargo tanks authorized under § 180.405(d) may conform to applicable provisions of the ASME Code instead of specification MC 338, provided the structural integrity of the modified cargo tank is at least equivalent to that of the original cargo tank.

(3) The person performing the modification, stretching, or rebarrelling must:

(i) Have knowledge of the original design concept, particularly with respect to structural design analysis, material and welding procedures.

(ii) Assure compliance of the rebuilt cargo tank's structural integrity, venting, and accident damage protection with the applicable specification requirements.

(iii) Assure compliance with all applicable Federal Motor Carrier Safety Regulations for all newly installed safety equipment.

(iv) Assure the suitability of each modification, stretching and rebarrelling that affects the lading retention capability of the cargo tank by performing the tests required in the applicable specification or § 180.407(g)(1)(iv).

(v) Any modification that changes information displayed on the specification plate requires the installation of a supplemental specification plate, nameplate, or both containing the information that reflects the cargo tank as modified, stretched or rebarrelled. The plate must include the name of the person or facility doing the work, DOT registration number, date work is completed, retest information, and any other information that differs from the original plate. The supplemental plates must be installed immediately adjacent to the existing plate or plates.

(vi) On a variable specification cargo tank, install a supplemental or new variable specification plate, and replace the specification listed on the original specification plate with the words "see variable specification plate."

(4) A Registered Inspector must certify that the modified, stretched, or

rebarrelled cargo tank conforms to the requirements of this section and the applicable specification by issuing a supplemental certificate of compliance. The registration number of the Registered Inspector must be entered on the certificate.

(e) *Mounting of cargo tanks.* Mounting a cargo tank on a cargo tank motor vehicle must be:

(1) Performed as required by paragraph (d)(2) of this section and certified by a Design Certifying Engineer if the mounting of a cargo tank on a motor vehicle chassis involves welding on the cargo tank head or shell or any change or modification of the methods of attachment; or

(2) In accordance with the original specification for attachment to the chassis or the specification for attachment to the chassis in effect at the time of the mounting, and performed under the supervision of a Registered Inspector if the mounting of a cargo tank on a motor vehicle chassis does not involve welding on the cargo tank head or shell or a change or modification of the methods of attachment.

(f) *Records.* Each owner of a cargo tank motor vehicle must retain at the owner's principal place of business all records of repair, modification, stretching, or rebarrelling, including notation of any tests conducted to verify the suitability of the repair, modification, stretching, or rebarrelling made to each cargo tank during the time the cargo tank motor vehicle is in service and for one year thereafter. Copies of these records must be retained by a motor carrier, if not the owner of the cargo tank motor vehicle, at its principal place of business during the period the cargo tank motor vehicle is in the carrier's service.

[68 FR 19288, Apr. 18, 2003; 68 FR 52372, Sept. 3, 2003, as amended at 68 FR 75764, Dec. 31, 2003]

§ 180.415 Test and inspection markings.

(a) Each cargo tank successfully completing the test and inspection requirements contained in § 180.407 must be marked as specified in this section.

(b) Each cargo tank must be durably and legibly marked, in English, with the date (month and year) and the type