

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

COMMANDANT (MMT-2)
U.S. COAST GUARD
WASHINGTON, D.C. 20591

NVC 4-71
3 0 APR 1971

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 4-71

Subj: Valves employing resilient material


1. Purpose. The purpose of this circular is to clarify the Coast Guard's position regarding 46 CFR 56.20-15.
2. Background. Although resilient seated valves have been used for over 30 years in industry, only in the last decade has their application been expanded for shipboard use. The publication of the Navy's Military Specification MIL-V-22133 on 1 August 1960 and increased interest in the commercial shipbuilding industry led to the writing of NVC 9-61, "Valves Employing Resilient Material". The guidelines in this document were incorporated into Subchapter F, Marine Engineering, when it was amended by the Federal Register of 18 December 1968. However, during the transition stage the original intent of NVC 9-61 was misconstrued and for several years a stricter posture than was intended has been assumed toward valves employing resilient material, particularly resilient -seated butterfly valves.
3. Definition. Resilient seated valves are defined as valves of the following types:
 - a. Valves which employ a non-metallic diaphragm to shut off flow, with no metal-to-metal backup for valve seating.
 - b. Valves having non-metallic liners inserted or bonded into the body of the valve.
 - c. Valves which employ a substantial amount of resilient material to accomplish seating, with no metal-to-metal backup for valve seating in the event all the resilient material were destroyed from the heat of a fire.
4. Discussion. The present regulations, 46 C FR 56.20-15, describe two categories of valves employing resilient material, category "A" and category "B". Category "A" valves must provide effective closure of the line and prevent appreciable leakage out of the valve, either from around the stem or at the flange connections, should the resilient material be destroyed in a fire. Valves which use a flexible diaphragm of non-metallic material to close off the line would no longer provide effective closure of the line if the diaphragm were destroyed by heat from a fire. Additionally, packless valves or valves with extensive packing around the stem could allow appreciable leakage out of the valve into the surrounding space under fire conditions. A packless diaphragm valve would embrace both areas of concern, and is suitable only for category "B" applications.

NVC 9-61 embodied the above reasoning, but did not fully explain the thinking. For example, resilient seated butterfly valves do not pose the same leakage or closure problems as do packless diaphragm valves, and most of them are suitable for category "A" applications. However, some

designs exist for resilient seated butterfly valves which have unusually thick sections of rubber at either side of the resilient seat in order to have tight flange connections. Should all the resilient material be destroyed, these butterfly valves might have leakage rates which would be appreciable and would be unacceptable for certain category "A" applications.

Butterfly valves with metallic seats, such as those having an O-ring seal around the metallic disc or imbedded into the valve body, have more fire resistance than resilient seated butterfly valves. Such valves could accomplish closure with the resilient material destroyed and should not be classified or reviewed under the provisions of 46 CFR 56.20-15. Therefore, valves which are judged to fall outside of the resilient seated valve definition may be considered for service as positive shutoff valves required by 46 CFR 56.50-60(d) for systems subject to internal head pressure from tanks containing flammable, combustible, or hazardous materials.

5. Action. Resilient seated butterfly valves are intended for use in category "A" applications. New designs which employ more resilient material than presently allowable by the American Water Works Association Standard CS04-66 shall be evaluated by Commandant (MMT) to determine compliance with the intent of the regulations. Butterfly valves having metal to metal seating, with O-ring type sealing around the disc or inserted into the body, are not to be considered as "valves employing resilient material" and may be utilized as the positive shut-off valves required by 46 CFR 56.50-60(d). Questions regarding the appropriate definition of specific valves shall be forwarded to Commandant (MMT) for action.
6. Effective Date. -1 May 1971.


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DIST: (SDL No.92)

- A. None
- B. n(45); c(10); q(6); eg(3); bp(1)
- C. m(4); o(2)
- D. i(2); k(1)
- B. o(2)
- F. jp(1)

LIST CG-12