

(1) *Positive shutoff valves.* The closed valve must pass less than 10 ml/hr (0.34 fluid oz/hr) of liquid or less than 3 l/hr (0.11 cubic ft/hr) of gas per inch nominal pipe size through the line after removal of all resilient material and testing at full rated pressure. Packing material must be fire resistant. Piping subject to internal head pressure from a tank containing oil must be fitted with positive shutoff valves located at the tank in accordance with §56.50-60(d). Otherwise positive shutoff valves may be used in any location in lieu of a required Category A or Category B valve.

(2) *Category A valves.* The closed valve must pass less than the greater of 5 percent of its fully open flow rate or 15 percent divided by the square root of the nominal pipe size (NPS) of its fully open flow rate through the line after complete removal of all resilient seating material and testing at full rated pressure; as represented by the formula: $(15\% / \text{SQRT} \times (\text{NPS}))$ (Fully open flow rate). Category A valves may be used in any location except where positive shutoff valves are required by §56.50-60(d). Category A valves are required in the following locations:

(i) Valves at vital piping system manifolds;

(ii) Isolation valves in cross-connects between two piping systems, at least one of which is a vital system, where failure of the valve in a fire would prevent the vital system(s) from functioning as designed.

(iii) Valves providing closure for any opening in the shell of the vessel.

(3) *Category B valves.* The closed valve will not provide effective closure of the line or will permit appreciable leakage from the valve after the resilient material is damaged or destroyed. Category B valves are not required to be tested and may be used in any location except where a Category A or positive shutoff valve is required.

(c) If a valve designer elects to use either a calculation or actual fire testing instead of material removal and pressure testing, the calculation must employ ISA-S75.02 (incorporated by reference; see 46 CFR 56.01-2) to determine the flow coefficient (C_v), or the fire testing must be conducted in accord-

ance with API 607 (incorporated by reference; see 46 CFR 56.01-2).

[CGD 95-028, 62 FR 51200, Sept. 30, 1997, as amended by USCG-2003-16630, 73 FR 65176, Oct. 31, 2008]

§ 56.20-20 Valve bypasses.

(a) Sizes of bypasses shall be in accordance with MSS SP-45 (incorporated by reference; see 46 CFR 56.01-2).

(b) Pipe for bypasses should be at least Schedule 80 seamless, and of a material of the same nominal chemical composition and physical properties as that used for the main line. Lesser thickness may be approved depending on the installation and service conditions.

(c) Bypasses may be integral or attached.

[CGFR 68-82, 33 FR 18843, Dec. 18, 1968, as amended by USCG-2003-16630, 73 FR 65176, Oct. 31, 2008]

Subpart 56.25—Pipe Flanges, Blanks, Flange Facings, Gaskets, and Bolting

§ 56.25-5 Flanges.

Each flange must conform to the design requirements of either the applicable standards of Table 56.60-1(b) of this part, or of those of Appendix 2 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01-2). Plate flanges must meet the requirements of §56.30-10(b)(5) of this part and the material requirements of §56.60-1(a) of this part. Flanges may be integral or may be attached to pipe by threading, welding, brazing, or other means within the applicable standards specified in Table 56.60-1(b) of this part and the requirements of this subpart. For flange facing gasket combinations other than those specified above, calculations must be submitted indicating that the gaskets will not result in a higher bolt loading or flange moment than for the acceptable configurations.

[CGD 77-140, 54 FR 40605, Oct. 2, 1989, as amended by USCG-2002-13058, 67 FR 61278, Sept. 30, 2002; USCG-2003-16630, 73 FR 65176, Oct. 31, 2008]