

Part 642 – Specifications

Chapter 3 – National Standard Material Specifications

Material Specification 572—Flap Gates, Metal

A. Scope

This specification covers the quality of metal flap gates for water control.

B. Class and Type of Gate

The class of gate is expressed as the numerical value of the seating head that the gate must be built to withstand. For this purpose, the head must be expressed in terms of feet of water measured to the center of the gate. Gates must be of the specified type as defined below:

(i) Light Duty

- Type MLF-1—Cast iron or cast steel fitted with unbushed linkage systems and galvanized steel fasteners, or with bronze bushed linkage systems and bronze or stainless steel fasteners.

(ii) Moderate Duty

- Type MMF-1—Cast iron or cast steel fitted with bronze seat facings, bronze bushed linkage systems, and bronze or stainless steel fasteners.

(iii) Heavy Duty:

- Type MHF-1—Have gray cast iron frames and flaps and are fitted with naval bronze seat facings, gray cast iron or high-strength bronze hinge arms, bronze bushings, bronze hinge pins, and bronze fasteners.
- Type MHF-1R—The same as Type MHF-1 gates except that the frame is fitted with a rubber seat facing instead of a metal seat facing.
- Type MHF-2—Have gray cast iron frames and flaps and are fitted with stainless steel seat facings, gray cast iron or stainless steel hinge arms, and stainless steel bushings, hinge pins, and fasteners.
- Type MHF-2R—The same as Type MHF-2 gates except that the frame is fitted with a rubber seat facing instead of a metal seat facing.
- Type MHF-3—Have austenitic gray cast iron frames, flaps, and hinge arms and are fitted with nickel-copper alloy seat facings, bushings, hinge pins, and fasteners.
- Type MHF-3R—The same as Type MHF-3 except that the frame is fitted with a rubber seat facing instead of a metal seat facing.

C. Quality of Material

Material in flap gates and appurtenances must conform to the requirements of the applicable specifications listed below for the alloy, grade, type, or class of material and the condition and finish appropriate to the structural and operational requirements:

Material	ASTM specifications
Cast iron and gray cast iron	A48, Class 30, or A126, Class B
Cast steel	A27 or A148
Structural steel shapes, plates, and bars	A36

Material	ASTM specifications
Carbon steel bars	A108 or A575
Stainless steel	A240, A276, A269, A582; Type 302, 303, 304, or 304L
Austenitic gray cast iron	A436
Castings, nickel and nickel-alloy	A494
Carbon steel sheets and strips	A1011
Bronze bar, rods, shapes, and naval bronze	B21 or B98
Red brass	B43
Silicon bronze	B98 or B584
Phosphor bronze	B103 or B139
Manganese bronze	B138 or B584
Nickel-copper alloy plate, sheet, strip	B127
Nickel-copper alloy rod, bar	B164
Cast bronze	B584
Rubber gaskets and seals	D395, D412, D471, D572, or D2240

D. Frame

The frame must be cast iron or cast steel for light and moderate duty gates and as specified for heavy duty gates, and of the specified type. For moderate and heavy duty gates, the rear face must be machined as required to match the specified attaching means. For the heavy duty gate, a groove must be machined on the perimeter of the front face to receive the seat facing.

E. Flap

(1) For light and moderate duty gates, the flap must be cast iron or cast steel and must be built to withstand the seating head expressed by the gate class designation as defined in section 2 of this specification.

(2) For heavy duty gates, the flap must be built to withstand the seating head expressed by the gate class designation as defined in section 2 of this specification. A groove must be machined on the perimeter of the face to receive the seat facing.

F. Linkage System

The linkage system by which the flap is mounted onto the frame must be double-pivoted type for gates more than 8 inches in diameter. It must be designed to prevent the flap from folding inside of the seat and wedging in the open position. For the moderate heavy duty gates, the top pivot must be so designed as to allow adjustment of gate alignment and sensitivity.

G. Seat Facings

(1) Light duty gates—All facings must be machined to a smooth finish to ensure proper contact.

(2) Moderate duty gates—Seat facings must be securely attached by welding or other approved means and machined to a smooth finish to ensure proper contact.

(3) Heavy duty gates—Metal facings must be pressed or impacted into machined dovetailed grooves on the flap and frame or securely attached in the seat grooves by means of studs, set screws, or other approved means. Facings must be machined to a smooth finish to ensure proper contact. Rubber facings must be pressed into a dovetailed groove in the frame.

H. Wall Thimble

(1) Where a wall thimble is specified for moderate and heavy duty gates, it must be of the same cast iron used in the gate frame and of the section, type, and depth specified. The front flange must be machined to match the gate frame and drilled and tapped to accurately receive the gate attachment studs.

(2) Gaskets or mastic to be installed between the thimble and the gate frame must conform to the recommendations of the gate manufacturer and be furnished with the thimble.

I. Galvanizing

Unless otherwise specified, cast steel and fabricated steel parts must be galvanized in accordance with Material Specification 582.

J. Painting

When specified, gates and accessories must be painted by the designated paint system.

K. Installation Instructions

Submit the manufacturer's complete installation data, instructions for adjustments, and drawings or templates showing the location of anchor bolts for each gate.

L. Certification

The supporting data submitted to the engineer must include the name of the manufacturer, the manufacturer's model number (for standard catalogue items), or the seating head for which the gate is designed together with such drawings and specifications as may be necessary to show that the gate conforms to the requirements of this specification.