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# Standard Specification for Industrial and Commercial Steel Swing Gates[1]

This standard is issued under the fixed designation F900; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers detailed requirements for chain link fence gates, gate posts and accessories for both single and double swing-type gates for industrial and commercial application.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*[2]

A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

F1043 Specification for Strength and Protective Coatings on Steel Industrial Fence Framework

F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

F2200 Specification for Automated Vehicular Gate Construction

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *polymer—in this specification*, polymer is used to describe all types of vinyl, poly(vinyl-chloride) (PVC) or similar types of coatings other than zinc or aluminum.

## 4. Materials and Manufacture

4.1 *Materials*—The base materials of the gate frame shall be round or rectangular tubular members, welded at all corners or assembled with corner fittings. Gates assembled with corner fittings shall have adjustable truss rods 5⁄16 in. (7.9 mm) minimum diameter on panels 5 ft (1.5 m) wide or wider. Truss rods shall be the same base metal and finish as the gate frames.

4.1.1 The interior bracing, when needed, shall be the same metal and shape tubular material and finish as the gate frame, but need not be the same size.

4.2 *Manufacture*—Gate frames shall be fabricated and coated where necessary, as described in 4.2.1 through 4.2.5. For gates intended to be automated, manufacture shall conform to the applicable provisions of Specification F2200.

4.2.1 *Zinc-Coated Steel Frames* shall be in accordance with Specifications F1043 or F1083, or a combination thereof, and shall match that selected for any adjoining fence framework. Welded joints shall be coated in accordance with Practice A780.

4.2.2 *Polymer-Coated Steel Frames* shall be in accordance with Specification F1043 and shall match that selected for any adjoining fence framework. Welded joints on polymer-coated steel gate frames shall be coated in accordance with Practice A780. The painted areas shall then be top-coated to match the frame color.

4.2.3 *Chain Link Gate Fabric*—The fabric shall be as specified for the fence.

4.2.4 *Barbed Wire Top*—When specified, shall have the end members of the gate frame extended in height to accommodate three strands of barbed wire uniformly spaced and positioned so that the top strand is approximately 1 ft (300 mm) above the top horizontal member of the gate frame, except that the minimum height for barbed wire installed at the top of gates intended to be automated shall be in accordance with Specification F2200. Barbed wire shall be attached by suitable means to prevent wire from moving out of position and shall be supported by a gate frame member at maximum intervals of 8 ft (2.44 mm).

4.2.5 *Barbed Tape*—The minimum height for barbed tape installed at the top of gates intended to be automated shall be a minimum of 8 ft - 0 in.

[1] This specification is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.40 on Chain Link Fence and Wire Accessories.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 5. Dimensions, Mass, and Permissible Variations

5.1 Size of the gate opening shall be measured from the inside face to inside face of gate posts.

5.2 Dimensions and weights of gate frame members shall be in accordance with Table 1.

5.2.1 Gate frame shall be designed for the width built so that the outer member shall not sag in excess of the lesser of 1 % of the gate leaf width or 2 in. (50.8 mm).

5.2.2 For dimensions and weight of gate posts, see Table 2.

## 6. Gate Accessories

6.1 All gate hardware shall be of sufficient strength and durability to support the gate and repeated open-close cycles.

6.2 *Gate Hinges*—Hinges shall be pressed steel or malleable iron having a minimum zinc coating of 1.2 oz $ft^2$ and allow the gate to open and close without binding. The hinges shall be so designed to permit the gate to swing a full 180°. The user shall specify, one of the following directions of swing:

6.2.1 180° outward,

6.2.2 180° inward,

6.2.3 90° in and out.

6.3 *Single Gate Latch*—This latch shall be capable of retaining the gate in a closed position and shall have provision for a padlock.

6.4 *Double Gate Latch*—This latch shall be a drop rod or plunger bar arranged to engage the gate stop. Locking devices shall be constructed so that the center drop rod or plunger bar cannot be raised when the gate is locked. The latching devices shall have provision for a padlock.

6.5 *Gate Stops*—Gate stops shall be provided for all double gates and shall be suitable for setting in concrete for the center drop rod or plunger.

6.6 *Keepers*—Keepers shall be provided for each gate leaf over 5 ft (1.5 m) wide. Gate keepers shall consist of a mechanical device for securing the free end of the gate when in full open position.

6.7 All gate accessories to have a minimum zinc coating of 1.2 oz $ft^2$.

6.8 All gate posts shall be of sufficient strength so that the total deflection of the gate frame and the gate post at the end of the gate leaf shall not exceed the lesser of 2 % of the gate leaf width or 4 in. When necessary to meet this requirement due to the total weight of the gate leaf the next larger size post listed in Table 2 shall be used.

## 7. Keywords

7.1 drop rod; gate leaf; hinges; keepers; latch; plunger; polymer; truss rods

**TABLE 1 Gate Frame Members, Dimensions, and Weights**

NOTE 1—Gate leaf shall have vertical interior bracing at maximum intervals of 8 ft and shall have a horizontal interior member if fabric height is 8 ft or more. Additional horizontal, vertical or diagonal member or diagonal truss rods may be needed to comply with requirements of 5.2.1.

| Gate Fabric Height | Outside Dimensions, in. (mm) | Minimum Weight, lb/ft (kg/m) |
|---|---|---|
| 6 ft (1.8 m) or Less: | | |
| Round tubular (steel) | 1.66 (42.2) | 1.83 (2.72) |
| Rectangular tubular (steel) | 2.00 (50.81) | 2.52 (3.75) |
| Over 6 ft (1.8 m): | | |
| Round tubular (steel) | 1.90 (48.3) | 2.28 (3.39) |
| Rectangular tubular (steel) | 2.00 (50.8) | 2.52 (3.75) |
| Interior Bracing: | | |
| Round pipe (steel) | 1.66 (42.2) | 1.83 (3.39) |
| Rectangular pipe (steel) | 1.50 (38.1) | 1.84 (2.74) |

**TABLE 2 Typical Dimensions and Weight of Gate Posts**

NOTE 1—It is recommended that any questions regarding deflection of post be directed to the post manufacturer.

| Gate Leaf Width | | Outside Diameter of Pipe, in. (mm) | Minimum Weight, lb/ft (kg/m) |
|---|---|---|---|
| For Gate Fabric Height of 6 ft (1.8 m) or less: | | | |
| Up to and including 4 ft. (1.2 m) | Steel | 2.375 (60.3) | 3.11 (4.63) |
| Over 4 to 10 ft (1.2 to 3.7 m) | Steel | 2.875 (73.0) | 4.64 (6.91) |
| Over 10 to 18 ft (3.7 to 5.5 m) | Steel | 4.000 (101.6) | 6.56 (9.77) |
| For Gate Fabric Height Over 6 ft (1.8 m): | | | |
| Up to and including 6 ft (1.8 m) | Steel | 2.875 (73.0) | 4.64 (7.04) |
| Over 6 to 12 ft (1.8 to 3.7) | Steel | 4.000 (101.6) | 6.56 (9.77) |
| Over 12 to 18 ft (3.7 to 5.5 m) | Steel | 6.625 (168.3) | 18.02 (26.82) |
| Over 18 to 24 ft (5.5 to 7.3 m) | Steel | 8.625 (219.1) | 27.12 (40.36) |