

F-20 MEDIUM DUTY DRAINAGE GATE

- CAST IRON CONSTRUCTION
- AUTOMATIC OPERATION
- 20 FOOT SEATING HEAD MAXIMUM

The Waterman Model F-20 Cast Iron Automatic Drainage Gate has a cast iron frame and cover (flap) with machined finished seating surfaces. A minimum $2\frac{1}{2}^\circ$ seating angle and double pivoted links assure positive seating.

Hinge brackets, which can easily be field adjusted, allow the gate to be set for a very sensitive opening under low unseating pressure. Out-flow at practically full conduit capacity can be obtained.

Standard features include bronze hinge bushings, stainless steel hinge pins, studs and nuts with brass retainer washers and stainless steel spring pins. Links on all gates are flame cut from steel plate, then galvanized.

A lifting eye is cast as a part of the cover for manual operation.

Optional features available include bronze or stainless steel seats, monel or brass hinge pins, studs and nuts; graphite impregnated bronze bushings and lubrication fittings - or any combination thereof.

Standard shopcoat paint is an asphaltic base dipping enamel. All special coatings are available and include Epoxy and Coal Tar Paints or total galvanizing per ASTM A-123.

Anchor bolts are not included and should be ordered separately. Anchor bolts of galvanized steel, stainless steel, brass or monel are available as well as stainless steel machine bolts and tap-in expansion anchors.

- Cast Iron, Bronze, or Neoprene Seats
- Stainless Steel Studs, Nuts and Pins
- Square and Rectangular Opening
- Galvanized Steel Hinge Links
- Bronze Hinge Bushings
- Flatback Frame
- 20 Foot Seating Head Maximum
- Adjustable Linkage
- Minimum $2\frac{1}{2}^\circ$ Seat

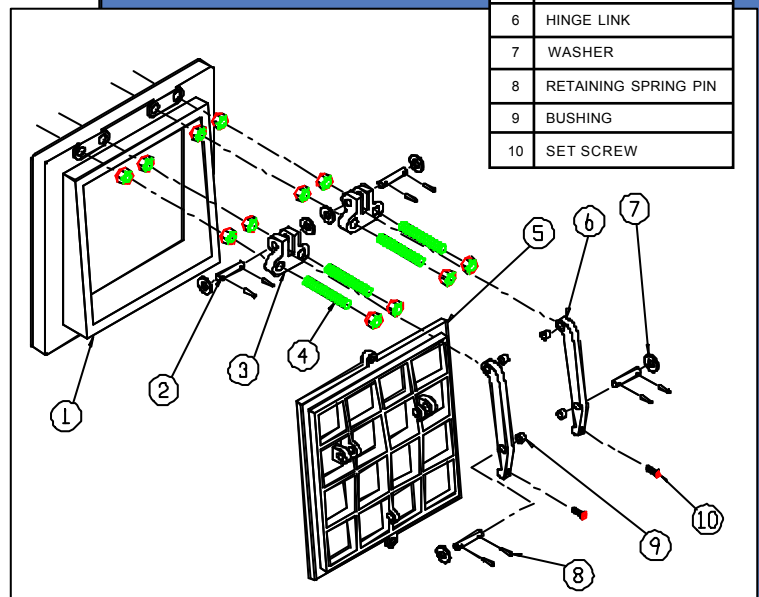
Optional:

- Monel Studs, Nuts and Pins
- Coal Tar, Epoxy, and other Special Coatings including Total Galvanizing
- Stainless Steel, Ductile Iron or Manganese Bronze Hinge Links

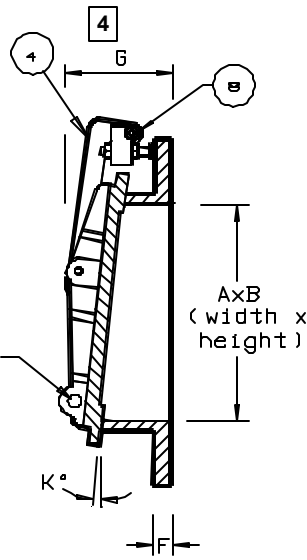
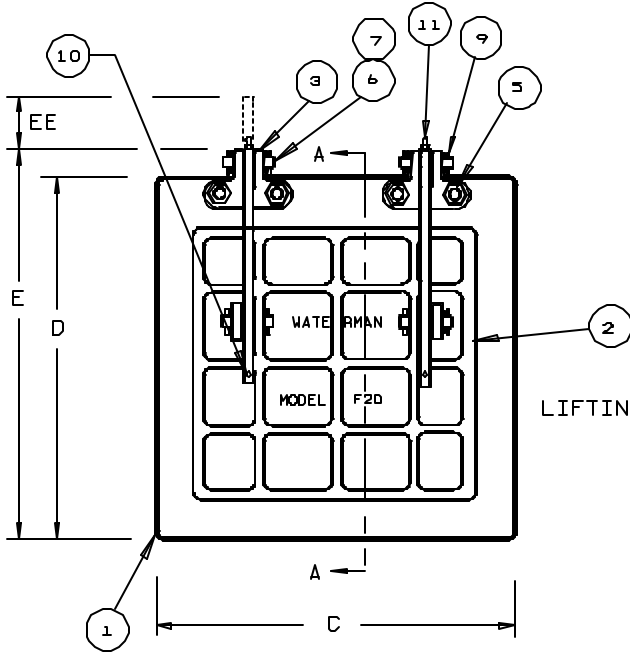


F-20f

PARTS LIST	
No.	Name
1	FRAME (flatback)
2	HINGE PINS
3	PIVOT LUG
4	STUDS and STUD NUTS
5	COVER (flap)
6	HINGE LINK
7	WASHER
8	RETAINING SPRING PIN
9	BUSHING
10	SET SCREW

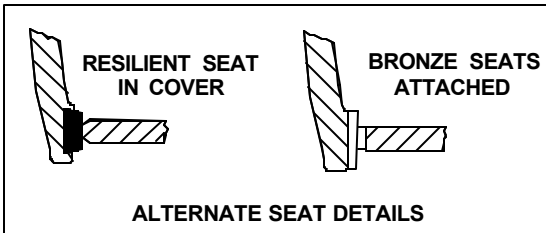


F-20-f DRAINAGE GATE



SECTION A-A

PARTS LIST	
No.	Name
1	FRAME
2	COVER
3	PIVOT LUG
4	HINGE LINK
5	HINGE STUDS & NUTS
6	HINGE PIN
7	HINGE BUSHING
8	WASHERS
9	SPRING PIN
10	SET SCREW
11	LUBE FITTING (optional)



1. For use with seating heads up to 20 feet.
2. Cast iron, standard; fabricated steel, optional.
3. For sizes other than shown, fabricated steel.
4. If grout pad mounting is used, add grout thickness to dimension.

GATE DIMENSIONS IN INCHES

A X B	C	D	E	EE	F	G	K*
12 X 12	19	19	20	3	5/8	3 1/2	5
18 X 18	25	25	26 1/2	3	3/4	5 1/2	5
18 X 24	26 1/2	32 1/2	34 1/2	3	7/8	8	2 1/2
18 X 36	27	45	47	3	1	9	2 1/2
20 X 20	27	27	22	3	3/4	5 1/2	2 1/2
24 X 18	32 1/2	26 1/2	28 1/2	3	7/8	8	2 1/2
24 X 24	30	30	32	3	7/8	8	2 1/2
30 X 18	38 1/2	26 1/2	28 1/2	3	1	8	2 1/2
30 X 30	38 1/2	38 1/2	40 1/2	3 1/2	7/8	8	2 1/2
36 X 24	45	33	35	3	1	8 1/2	2 1/2
36 X 30	45	38 1/2	35	3	1	8 1/2	2 1/2
36 X 36	45	45	47	3 1/2	1	9	2 1/2
36 X 48	45	57	61	3 1/2	1	9	2 1/2
42 X 30	51	38 1/2	40 1/2	3	1	8	2 1/2
42 X 42	51	51	53	4 1/8	1	8	2 1/2
48 X 24	58	34	36	3	1	10	2 1/2
48 X 30	58	40	45	3 1/2	1 1/4	10	2 1/2

* Degrees

GATE DIMENSIONS IN INCHES

A X B	C	D	E	EE	F	G	K*
48 X 36	58	45	47	3 1/2	1	10	2 1/2
48 X 48	58	58	62	4 7/8	1	10	2 1/2
48 X 60	57 1/2	70	64	6	1	11 3/4	2 1/2
54 X 36	64	46	47 1/2	3 1/2	1 1/4	9	2 1/2
54 X 54	64	64	68	6	1 1/8	10	2 1/2
60 X 30	69	39	44	3 1/2	1 1/4	10	2 1/2
60 X 36	69	45	47	3 1/2	1 1/4	9	2 1/2
60 X 48	69	57	61	4	1 1/4	8 1/8	2 1/2
60 X 60	70	70	74	6 1/8	1 1/4	10	2 1/2
72 X 48	82	58	62	6	1 1/4	10	2 1/2
72 X 54	82	64	68	10	1 1/4	10	2 1/2
72 X 60	82	70	74	10	1 1/4	10	2 1/2
72 X 72	82	82	86	10	1 1/2	10	2 1/2
84 X 60	96	72	74	10	1 1/2	12 1/2	2 1/2
84 X 84	96	96	99	10	1 1/2	12 1/2	2 1/2
96 X 60	108	72	75	10	1 1/2	12 1/2	2 1/2
96 X 96	112	112	115	10	1 3/4	20	2 1/2

* Degrees

NOTE: FOR PRELIMINARY DESIGN PURPOSES ONLY
DO NOT USE FOR INSTALLATION
UNLESS PART OF CERTIFIED & APPROVED SUBMITTAL

**TYPICAL SPECIFICATIONS
F-20 MEDIUM DUTY AUTOMATIC DRAINAGE (FLAP) (TIDE) GATES**

General

The flap gate shall be designed to allow free outflow and prevent backflow for maximum seating heads up to 20 feet. Gates shall be Waterman Model F-20 or equal.

Construction

The frame shall be cast iron of flatback design, with machined seating surface inclined from vertical at minimum of $2\frac{1}{2}^{\circ}$ degrees, to assure positive closure. For flatback gates mounted to thimbles, the gate flange shall be machined and drilled to match.

The cover shall be cast iron, cast in one piece, with reinforcing ribs designed to withstand the seating head specified. An integral cast on lifting eye shall be provided.

Seating surfaces for frame and cover shall be:

- a) Machined iron
- or
- b) bronze seats securely mounted and attached to frame and cover
- or
- c) a bronze seat securely mounted and attached to frame with neoprene seat bonded into dovetail groove in cover to cushion cover on closing.

All machined seats shall have a minimum 63 microinch finish.

The gate shall be provided with an adjustable, double pivoted hinge linkage so designed to permit complete seating, full opening, and with stops or other arrangements to prevent cover from rotating sufficiently to become wedged in the open position. Pivot lugs mounted to frame shall be adjustable to allow adjustment of hinge links without having to remove cover from gate. The hinge links shall be bronze bushed, structural steel (or high strength malleable iron or cast manganese bronze, or wrought stainless steel).

All assembly hardware shall be Type 18-8 stainless steel.

Finish

All cast iron shall be painted with manufacturer's standard shopcoat paint (or special paint). Structural steel hinge arms shall be galvanized. All bronze and stainless steel parts do not require further finish.

Materials

Frame and Cover - Cast Iron per ASTM A-126, Class B.

Pivot Lug - Ductile Iron per ASTM A-536, Gr. 65-45-12.

Hinge Link - Structural Steel per ASTM A-36, galvanized per ASTM A-123.

Bronze Bushings and Washers - Commercial Bronze.

Assembly Hardware and Pins - 18-8 Stainless Steel (Type 304).