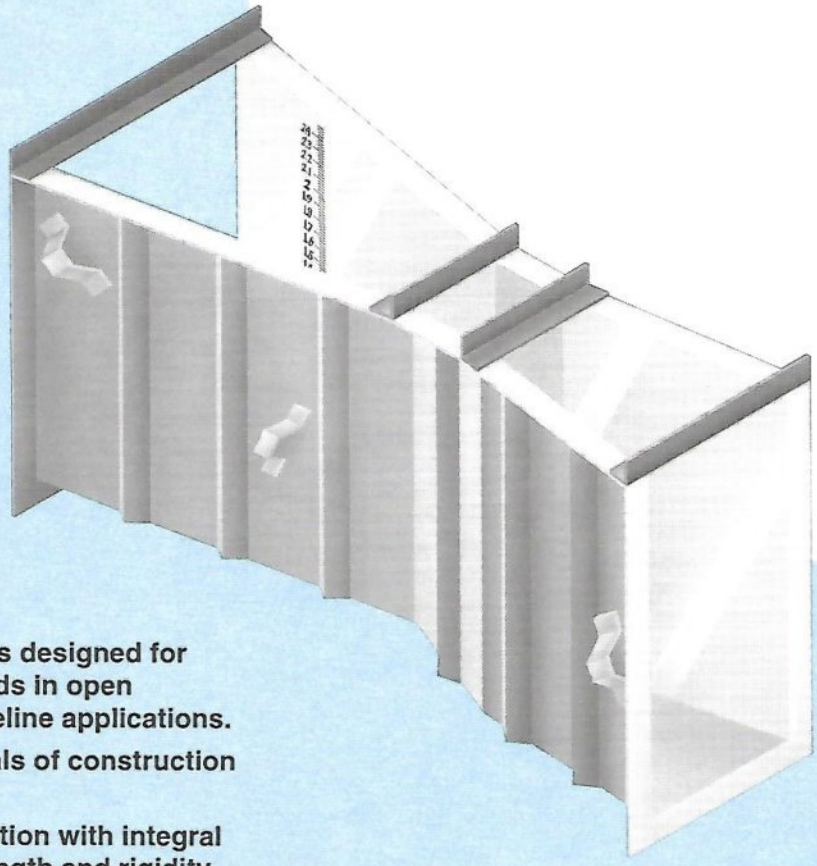
ENGINEERED FIBERGLASS COMPOSITES INC.

FIBERGLASS REINFORCED POLYESTER PARSHALL FLUMES



High quality Parshall flumes designed for use in the metering of liquids in open channels. Also used in pipeline applications.

Corrosion resistant materials of construction for long life.

Molded one-piece construction with integral stiffening ribs for high strength and rigidity.

Smooth gelcoat finish on interior surface to reduce friction and debris build-up.

Light weight (vs other materials of construction) for ease of installation.

Dimensions & capacities are per those contained in the Water Measurement Manual (second edition).

Numerous optional equipment items are available for use with flow meter.

Sizes available from 1" through 96".

Fast delivery on most sizes.

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PARSHALL FLUMES

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CONSTRUCTION DATA, CHARACTERISTICS AND FEATURES

The Parshall flume is a particular form of the venturi flume which was developed in the 1920's by Dr. Ralph L. Parshall. The constricted throat of the flume creates a measurable head which is related to a discharge or flow. A Parshall flume has a number of advantages over other types of primary devices such as low head loss, ability to withstand varying degrees of submergence and its self-cleaning capabilities.

Discharge through a Parshall flume can occur for two conditions of flow, i.e., free flow and submerged flow. Free flow occurs when there is insufficient backwater depth to reduce the discharge rate. Free flow conditions produce a hydraulic jump downstream from the entrance of the flume. Free flow discharge is measured at the H_a location ("$^2/_3$A" dimension) in the converging section. Submerged flow occurs when the water surface downstream from the flume is high enough to reduce the discharge and cause a backwater effect within the flume. Submerged flow requires the depth measurement at the H_a location in the converging section and at the H_b location in the throat section. The point at which the flow changes from free flow to submerged flow varies from size to size and is typically referred to as the submergence ratio (the ratio of the downstream depth to the upstream depth H_b/H_a, expressed as a percentage). The Water Measurement Manual and a number of other publications provide detailed discussions on submerged flow. Although instrumentation and calibration curves are available for submerged flow conditions, it is generally recommended that Parshall flumes be designed and selected for free flow conditions.

EFC Parshall flumes are well suited for measurement of liquids containing solids that settle under gravity head conditions. The smooth interior surface and unbroken flow lines prevent debris build-up and create low head loss.

EFC Parshall flumes are of molded one-piece construction, consisting of the converging, throat and diverging sections. The flumes are fabricated with polyester resin, reinforced with glass fibers (minimum 30% content by weight). The interior surface has a smooth white isophthalic gelcoat finish containing U.V. inhibitors.

EFC Parshall flumes have the following characteristics:

- High strength
- Corrosion resistant
- Dimensionally accurate
- Light weight
- Easy installation
- Economical
- Virtually maintenance free

EFC Parshall flumes are designed to be self supporting. Integral reinforcing ribs are provided on the sides and floor for strength and rigidity. Integral $2^1/_2$" wide flanges are provided all around for rigidity and stability. Pultruded fiberglass spreader bars (tie bars) are provided across the top flanges to maintain the flume's dimensional characteristics during shipment, installation and operation. Integral fiberglass anchor clips are provided on the sides to help secure flume in place during installation.

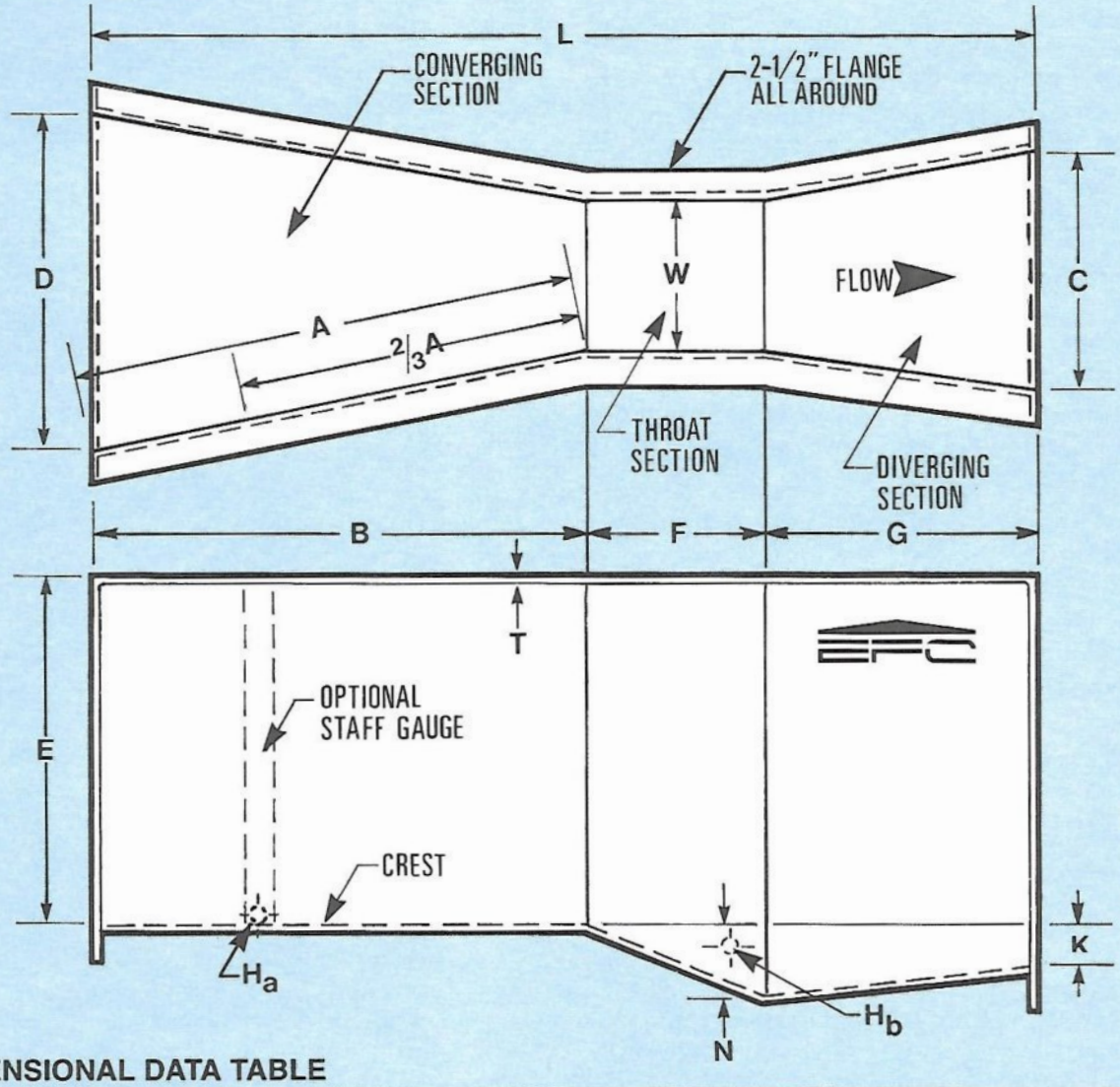
EFC Parshall flumes can be supplied with numerous optional equipment items and can be modified for special applications. The most common optional equipment items and modifications are listed on the back page.

CAPACITIES AND WEIGHTS

Throat Width	Recommended Maximum Free Flow Discharge			Recommended Maximum Head Height	Basic Weight (lb.)	Shipping Weight (lb.)
	CFS	MGD	GPM			
1"	0.182	0.117	82	8"	12	16
2"	0.363	0.235	163	8"	15	20
3"	1.86	1.20	835	18"	38	48
6"	3.91	2.53	1755	18"	65	75
9"	8.87	5.73	3981	24"	80	100
12"	16.1	10.41	7226	30"	235	275
18"	24.6	15.90	11041	30"	255	300
24"	33.1	21.39	14856	30"	275	325
30"	41.7	26.96	18721	30"	370	435
36"	50.4	32.57	22621	30"	395	455
48"	67.9	43.88	30476	30"	455	525
60"	85.6	55.32	38420	30"	515	595
72"	103.5	66.89	46454	30"	715	835
84"	121.4	78.46	54488	30"	800	950
96"	139.5	90.16	62612	30"	890	1065

MGD = CFS x 0.6463 *GPM = CFS x 448.83*

DIMENSIONAL DATA



DIMENSIONAL DATA TABLE

W	A	2/3 A	B	C	D	E	F	G	L	N	K	T
1"	1'-2 9/32"	0'-9 17/32"	1'-2"	0'-3 21/32"	0'-6 19/32"	0'-9"	0'-3"	0'-8"	2'-1"	1 1/8"	3/4"	3/16"
2"	1'-4 5/16"	0'-10 7/8"	1'-4"	0'-5 5/16"	0'-8 13/32"	0'-9"	0'-4 1/2"	0'-10"	2'-6 1/2"	1 11/16"	7/8"	3/16"
3"	1'-6 3/8"	1'-0 1/4"	1'-6"	0'-7"	0'-10 3/16"	2'-0"	0'-6"	1'-0"	3'-0"	2 1/4"	1"	3/16"
6"	2'-0 7/16"	1'-4 5/16"	2'-0"	1'-3 1/2"	1'-3 5/8"	2'-0"	1'-0"	2'-0"	5'-0"	4 1/2"	3"	3/16"
9"	2'-10 5/8"	1'-11 1/8"	2'-10"	1'-3"	1'-10 5/8"	2'-6"	1'-0"	1'-6"	5'-4"	4 1/2"	3"	3/16"
12"	4'-6"	3'-0"	4'-4 7/8"	2'-0"	2'-9 1/4"	3'-0"	2'-0"	3'-0"	9'-4 7/8"	9"	3"	1/4"
18"	4'-9"	3'-2"	4'-7 7/8"	2'-6"	3'-4 3/8"	3'-0"	2'-0"	3'-0"	9'-7 7/8"	9"	3"	1/4"
24"	5'-0"	3'-4"	4'-10 7/8"	3'-0"	3'-11 1/2"	3'-0"	2'-0"	3'-0"	9'-10 7/8"	9"	3"	1/4"
30"	5'-4 1/4"	3'-6 3/4"	5'-3"	3'-6"	4'-6 3/4"	3'-0"	2'-0"	3'-0"	10'-3"	9"	3"	5/16"
36"	5'-6"	3'-8"	5'-4 3/4"	4'-0"	5'-1 7/8"	3'-0"	2'-0"	3'-0"	10'-4 3/4"	9"	3"	5/16"
48"	6'-0"	4'-0"	5'-10 5/8"	5'-0"	6'-4 1/4"	3'-0"	2'-0"	3'-0"	10'-10 5/8"	9"	3"	5/16"
60"	6'-6"	4'-4"	6'-4 1/2"	6'-0"	7'-6 5/8"	3'-0"	2'-0"	3'-0"	11'-4 1/2"	9"	3"	5/16"
72"	7'-0"	4'-8"	6'-10 3/8"	7'-0"	8'-9"	3'-0"	2'-0"	3'-0"	11'-10 3/8"	9"	3"	3/8"
84"	7'-6"	5'-0"	7'-4 1/4"	8'-0"	9'-11 3/8"	3'-0"	2'-0"	3'-0"	12'-4 1/4"	9"	3"	3/8"
96"	8'-0"	5'-4"	7'-10 1/8"	9'-0"	11'-1 3/4"	3'-0"	2'-0"	3'-0"	12'-10 1/8"	9"	3"	3/8"

The following standard items of construction are not shown:
A. Integral reinforcing ribs on sides and floor.
B. Pultruded FRP spreader bars across top flanges.
C. Integral FRP anchor clips on sides.

OPTIONS

Embedded fiberglass staff gauge calibrated in feet, tenths and hundredths of a foot (standard calibrations) with numbering on each tenth of a foot increment.

Embedded fiberglass staff gauge calibrated in inches and 0.25 inch increments with numbering on each inch increment.

Integral (attached) 12" I.D. fiberglass stilling well (6", 8" and 10" I.D. sizes are also available).

Fiberglass NPT connection for remote stilling well or other uses (various sizes are available).

Stainless steel bracket for support of level sensor (ultrasonic) instrumentation.

Stainless steel bubbler tube with compression fitting for connection to flow meter tubing (various sizes are available).

Cavity (recess) in sidewall and/or floor for flush mounting of flow sensing instrumentation.

Fiberglass inlet and outlet end adapters for pipeline applications (available on 1" to 18" flumes).

Nested (dual range) flumes or modified flume for field nesting.

Nonstandard depth of flume, i.e., special wall height ("E" dimension).

Nonstandard resin for high temperature or special chemical resistance.

Additional laminate (wall) thickness ("T" dimension).

ORDERING INFORMATION

When ordering please provide the following information:

- ❑ Throat width of flume
- ❑ Wall height of flume (if nonstandard).
- ❑ Laminate (wall) thickness of flume (if specified).
- ❑ Optional equipment items - include required size and location (if applicable). Please specify location as right or left hand side looking downstream.
- ❑ Flumes with inlet and outlet adapters require size and elevation of caulking collars or pipe stubs.

If your flume was quoted direct by EFC please advise quotation number. This will greatly reduce the amount of information required during order placement.

SAMPLE SPECIFICATIONS

A Parshall flume shall be supplied and installed within the flume channel as shown on the specification drawings. The flume shall be a molded one-piece unit consisting of the converging, throat and diverging sections. Flume shall be of fiberglass reinforced polyester construction having a smooth white isophthalic gelcoat finish on the interior surface. Flume shall be provided with integral reinforcing ribs and fiberglass spreader bars to help maintain the flume's dimensional characteristics during shipment, installation and operation. Integral fiberglass anchor clips shall be provided to help secure unit in place during installation. Interior dimensions shall conform to those shown in the Water Measurement Manual (second edition) as published by the U.S. Dept. of the Interior. Flume shall have a throat width of _____ inches and be provided with the following options:

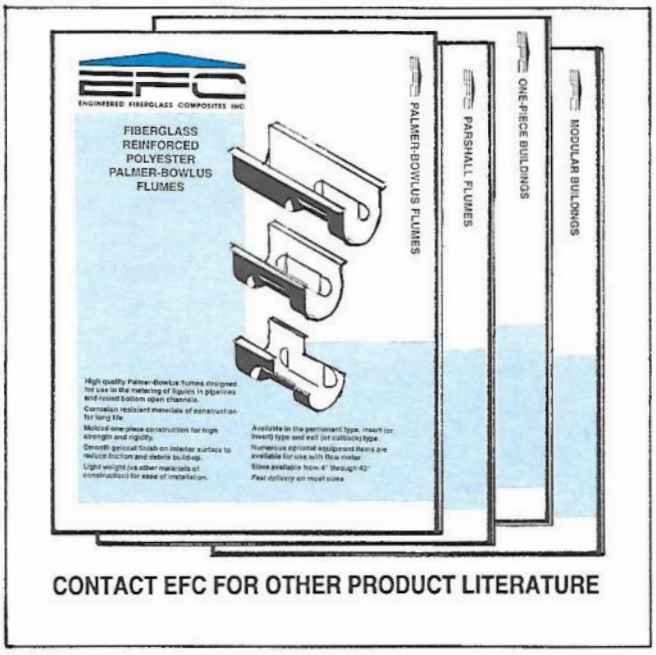
_____

_____

_____

_____

Flume shall be manufactured by Engineered Fiberglass Composites Inc.



CONTACT EFC FOR OTHER PRODUCT LITERATURE

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