



*The Sevier River, in Leamington Canyon Utah
Early November, 2021*

Flume Designs Headgate

Summary

The Types

1. Long Throated
 - Ramp Flumes
2. Short Throated
 - Cutthroat
 - Parshall
 - The Montana

Construction and Design

1. Galvanized steel 14, 11, 12 gauge.
2. Stainless steel screws and nuts
3. Stainless steel stilling well tap, if provided
4. Stainless steel gauge plate or plates in both cfs and feet.
5. Large galvanized steel wings to help set flume into dirt ditch and "seal" around it.
6. Instructions and rating table

Custom

Do you have an idea or specialty application for measuring water? We will gladly discuss and help you find that solution.

Flumes - Spring 2024

Short Throated								
	Model	Main Body Material	Throat Size (in)	Body Length (in)	Max Flow (cfs)	Status	Price Status	Retail *
Cutthroat	GBECT-08	14 gauge galvanized	8	36	3	1 In Stock	2024 Spring	\$715.00
	GBECT-16	14 gauge galvanized	16	36	6	3 In Stock	2024 Spring	\$810.00
	GBECT-16s	14 gauge stainless	16	36	6	Custom	Estimated	\$1,544.00
	GBECT-12	12 gauge galvanized	12	54	8	Custom	2023 Spring	\$1,475.00
	GBECT-24	12 gauge galvanized	24	54	16	Custom	Estimated	\$1,755.00
The Montana	GBESP-09	12 gauge galvanized	9	34	7.75	1 In Stock	2023 Spring	\$1,200.00
	GBESP-12	12 gauge galvanized	12	52 7/8	9.7	Custom	Estimated	\$1,285.00
	GBESP-18	12 gauge galvanized	18	55 7/8	15	Custom		\$1,485.00
The Parshall	GBE-Par-09	12 gauge galvanized	9	34	7.75	Custom	Estimated	\$1,695.00
	GBE-Par-12	12 gauge galvanized	12	52 7/8	9.7	Custom		\$1,990.00
	GBC-Par-18	12 gauge galvanized	18	55 7/8	15	Custom		\$3,250.00
Long Throated								
Ramp Flume	GBERF-1275 - 272	14 gauge galvanized	12.75	65	4.5	1 In Stock	2024 Spring	\$1,400.00
	GBERF-1875 - 272	14 gauge galvanized	18.75	65	6.55	1 In Stock	2024 Spring	\$1,520.00
	GBERF-2475 - 272	14 gauge galvanized	24.75	65	8	Custom	Estimated	\$1,720.00

Great Basin Environmental flumes are 14 and 12 gauge steel, while some of the competition is 16 gauge.

*** Prices are subject to change - reserve your flume!**

Not Assembled For Shipping

All Preformed Metal Parts, Screws, Bolts, Fittings, Sealant, & Staff Plates,
Provided With Instructions, Rating Equations, Tables, & Charts

Assembly Available - Call For Details

Note: The custom order pricing is only an estimate and will be finalized when ordered. 50% down on all custom orders.

Long Throated Flumes

Ramp Flume



A Great Basin ramp flume model GBERF 1875-272
This model comes with a stilling well tap



USBR Ramp Flume Comments

Long Throated Flumes, Comments & Advantages - Ramp Flumes

"Long-throated flumes are coming into general use because they can be easily fitted into complex channel shapes as well as simple shapes (Replogle, 1975; Bos et al., 1991). Long-throated flumes have many advantages compared to other measuring devices, including Parshall flumes. Longthroated flumes are more accurate, cost less, have better technical performance, and can be computer designed and calibrated. Thus, long-throated flumes are preferred over Parshall flumes for new installations. However, some states may have laws or compact agreements mandating the use of Parshall flumes in certain situations."

Summary of Long-Throated Flume Advantages

The main advantages of long-throated flumes are:

(1) "Provided that critical flow occurs in the throat (not excessively submerged), a rating table can be calculated with an error less than +2 percent. This calculation can be done for any combination of a prismatic throat and an arbitrarily shaped approach channel."

(2) "Long-throated flumes can have nearly any desired cross-sectional shape and can be custom fitted into most canal-site geometries. The throat cross section can be shaped in such a way that the complete range of discharge can be measured accurately."

(3) "Long-throated flumes can be made into portable devices that fit conveniently into open channels with considerably less complicated construction forming."

(4) "The required head loss over the long-throated flume to obtain a unique relationship between the upstream sill-referenced head and the discharge is small. This head-loss requirement may be estimated with sufficient accuracy for any of these flumes placed in any channel."

(5) "Because of their gradual converging transition, these flumes have few problems with floating debris and sediment. Field observations have shown that the flume can be designed to pass sediment transported by channels with subcritical flow."

(6) "Provided that the throat is horizontal in the direction of flow, a rating table can be produced that is based on post-construction dimensions. This horizontal orientation is required to allow an accurate rating table to be made to compensate for deviations from design."

(7) "Under similar hydraulic and other boundary conditions, long-throated flumes are usually the most economical of all structures for accurately measuring flow."

(8) "Long-throated flumes are amenable to selection, design, and calibration by computer techniques."

"Although Parshall flumes are in extensive use in many western irrigation projects, they are no longer generally recommended because of the advantages of long-throated flumes..." (8.10)

References:

Bos, M.G., J.A. Replogle, and A.J. Clemmens.(1991) Flow Measuring Flumes for Open Channel Systems. American Society of Agricultural Engineers. Republication of book by same title, originally by John Wiley & Sons, New York, 1984, 321 pp.

Replogle, J.A. (1975) "Critical Flow Flumes with Complex Cross Sections." In Irrigation and Drainage in an Age of Competition for Resources. Specialty Conference Proceedings, American Society of Civil Engineers, pp. 366-388.

WATER MEASUREMENT MANUAL, A WATER RESOURCES TECHNICAL PUBLICATION: A guide to effective water measurement practices for better water management, Chapter 8.8, (2001), U. S. Department of the Interior Bureau of Reclamation, In Cooperation with - USDA, NRCS, ARS

Short Throated Flumes



Stainless Staff & Name Plate
Montana Flume GBESP-09



Model GBECT-12



Model GBECT-16



Stainless
Model GBECT-16s

The
Montana
Model GBESP-09



Short Throated Flumes

Great Basin Environmental manufactures two types of short throated flumes, the Cutthroat and the family of Parshall's.

The Cutthroat

The Cutthroat is very economical in the smaller sizes we carry, and are competitive with the ramp flumes as the size increases. These flumes have a distinctive hour glass shape and a flat bottom. In general, if you can use a Parshall in your ditch you can use a cutthroat while spending considerably less. Accuracy is generally good and comparable to a Parshall, if the flume is set correctly. We sell more cutthroat flumes than any other type. The GBECT-16 in galvanized is the number 1 seller!



The Parshall

The full bodied Parshalls are the most expensive of all the flumes we fabricate. We do have an alternative on hand, the Montana version of the Parshall.

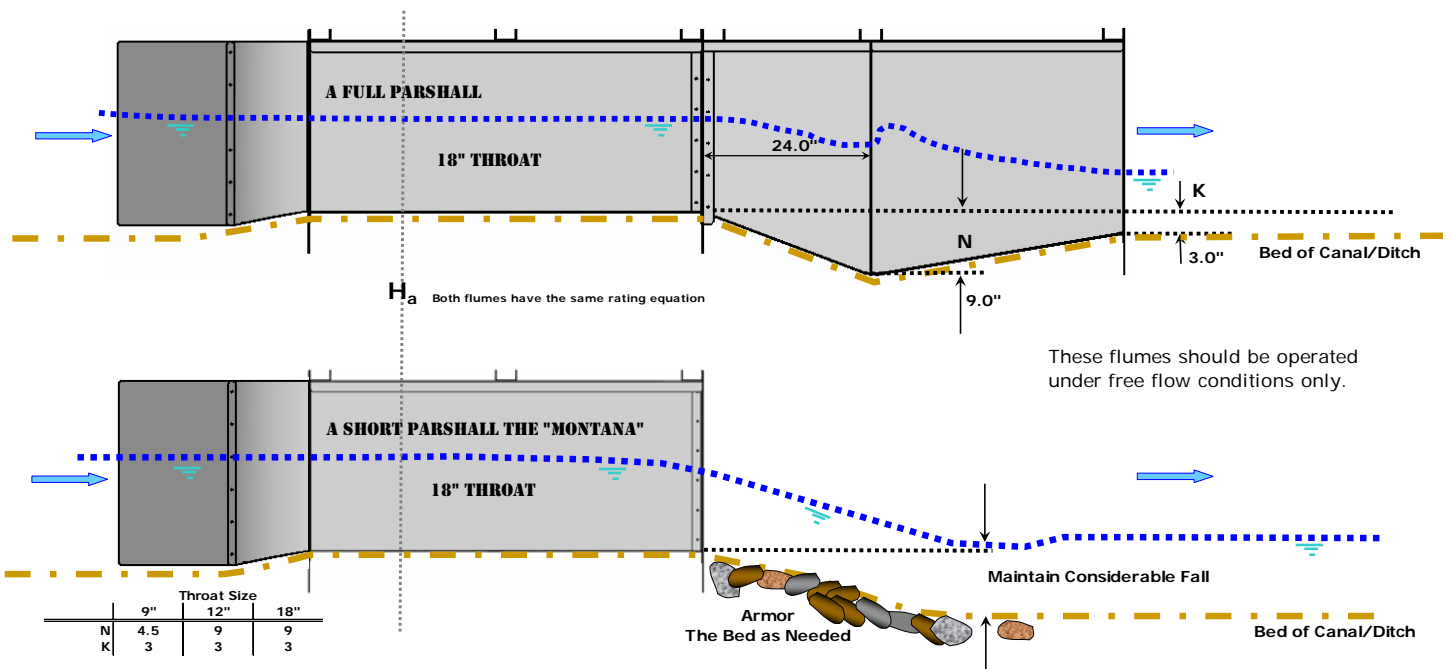


Figure 1. The Parshall family of flumes. An 18 inch Parshall.

Figure 1, shows the longitudinal profile of the Parshall family. The Montana flume has the same rating equation and table as the full Parshall but must be set with fall on the downstream side of

the flume. A Montana is an excellent option if you have the right ditch configuration. Study Figure 1.

All flume types have advantages and disadvantages. For example, some flume types are more sensitive to submergence than others, but none should be operated submerged. In a general sense, a cutthroat and the Montana are the most sensitive and should only be installed in free flow conditions, while the ramp flumes are the most resistant. Hence, know thy ditch and thy flume type with a good installation, for the best operation.

What You Need to Know For Selection of A Flume

1. Size of ditch - width and depth.
2. Water right quantity and range of flows you expect.
3. Slope of ditch.
4. Sediment loading and amount of trash.
5. Correct installation parameters.
6. State law

With that information we can help you narrow your choice as to type and size.

Headgate

It goes up

It goes down

What else can we say?

- It's mostly galvanized
- It has a wheel
- The opening is 20x21 inches
- It has optional 8 inch wings
- Stainless steel bolts and nuts
- UHMW graphite impregnated bearing
- Grease zerks - food grade lithium only!

Cost?

a tiny, measly -

\$775

Until June 1st

15 in stock





GREAT BASIN
ENVIRONMENTAL
& AQUATICS