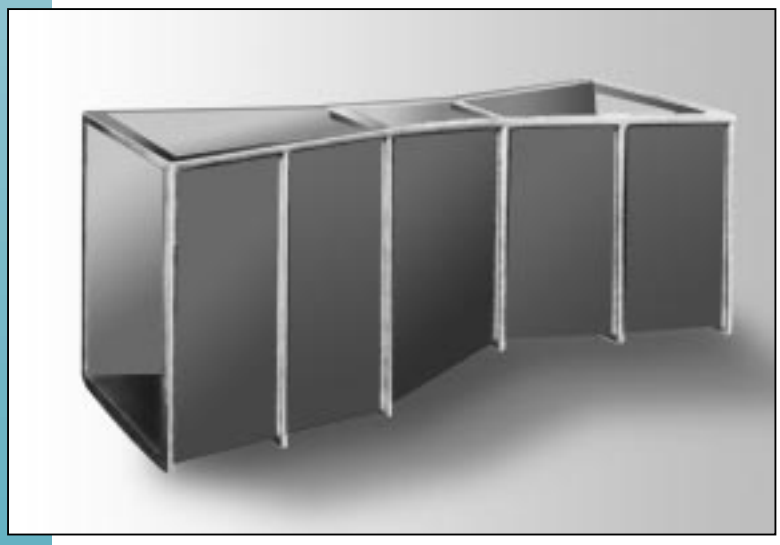
Eastech Flow Controls, Inc.

Parshall Flumes



Features

- Sturdy Reinforced Fiberglass Construction
- Sizes from 3”up to 36”
- Stilling Well Connection Available

Description

The Parshall flume is one of a large class of open channel primary elements known as critical flow venturi flumes. A distinguishing characteristic of the Parshall flume is the downward sloping invert of the throat. This feature gives the Parshall flume its ability to operate at higher ratios of downstream to upstream head than any other such device.

The Parshall flume manufactured by Eastech Flow Controls is a monolithic fiberglass reinforced polyester structure to assure maximum strength and accuracy of dimension while minimizing installation time. A staff gauge with 1/4” minor divisions in inches is standard. A 2” NPT stilling well connection is available as an option.

Application

The Parshall is recommended for those applications in which moderate concentrations of sand, grit or other heavy solids exist and fluid velocities entering the flume are subcritical. The flume operates with a small energy loss or change in channel grade, about one-fourth that of weirs having the same crest length. The flume is ideally suited for fluid measurement in irrigation channels or sewers.

Calibration

The Parshall flume exhibits reproducible head rise/flow rate characteristics throughout its size range. In order to assure the accuracy of the device, adherence to all dimensions for construction as well as free flow hydraulic conditions is required.

Ordering Guide and Dimensional Data (inches)

Model	W	A	B	C	D	E	F	G	K	N	Wt.	Wall thk.
PF-3	3	18.38	18.0	7	10.9	24.0	6.0	12.0	1.0	2.25	45	.25
PF-6	6	24.44	24.0	15.5	15.63	24.0	12.0	24.0	3.0	4.50	100	.25
PF-9	9	34.63	34.0	15.0	22.63	30.0	12.0	18.0	3.0	4.50	125	.25
PF-12	12	54.0	52.89	24.0	33.25	36.0	24.0	36.0	3.0	9.0	350	.375
PF-18	18	57.0	55.88	30.0	40.38	36.0	24.0	36.0	3.0	9.0	500	.5
PF-24	24	60.0	58.88	36.0	47.50	36.0	24.0	36.0	3.0	9.0	530	.5
PF-36	36	66.0	64.75	48.0	61.88	36.0	24.0	36.0	3.0	9.0	620	.5

Parshall Flumes

Sample Specifications

An Eastech Model _____ Parshall flume shall be installed as shown on the plans in accordance with the manufacturer's recommendations. The Parshall flume shall be of single-piece reinforced polyester construction with end flanges and reinforcing ribs providing secure and permanent anchorage.

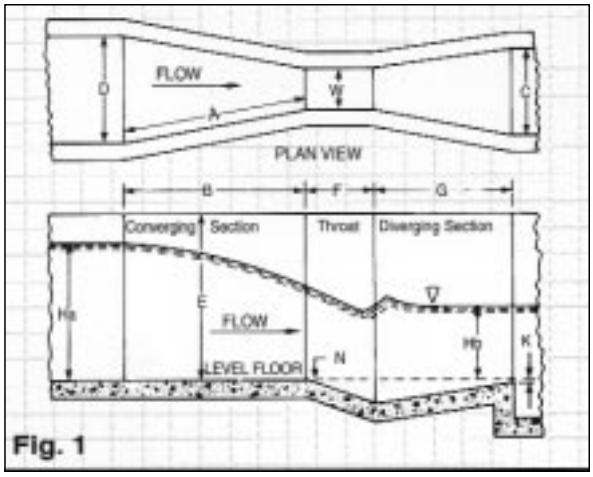


Fig. 1

Sizing

Selection of a Parshall flume should be made on expected flow rates; but for single point measurement to be valid, the design hydraulic gradient must insure that free flow conditions exist at all flow rates. Thus, the downstream fluid level must not exceed the values in Fig. 3 or single point measurement will not produce acceptable values.

The flume should be located in a straight reach of channel without bends or changes in alignment directly upstream and should have a well-distributed velocity profile. To assure free flow energy conditions exist, maintain the minimum and maximum flow rates as indicated for each flume size in capacity curve diagram. (Fig. 2)

Theoretical Discussion

The Parshall flume is an empirically derived and rated measuring device. The discharge capacities are rated for "free flow" conditions in which the submergence (ratio of downstream depth, to upstream depth Hb/Ha) is less than the percentage given in Fig. 3. As the downstream depth increases, flow condition is no longer critical, thus two depth measurement readings (at Ha and Hb) are necessary and a correction factor must be applied to obtain the correct discharge under these conditions. The following graph presents these corrections necessary to ensure true discharge values.

Parshall Flume Capacities

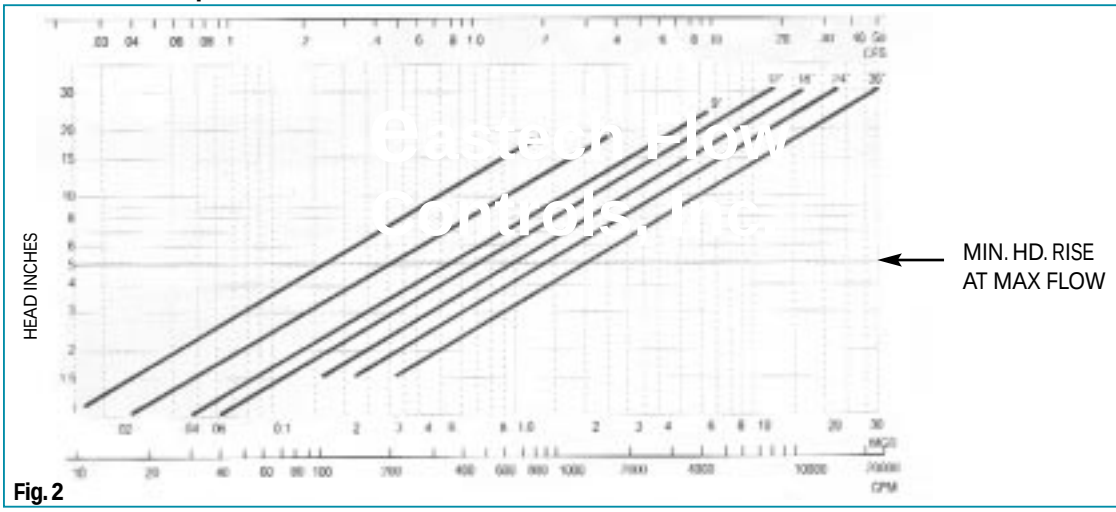


Fig. 2

Discharge curves for Parshall Flumes with free flow and with submerged conditions

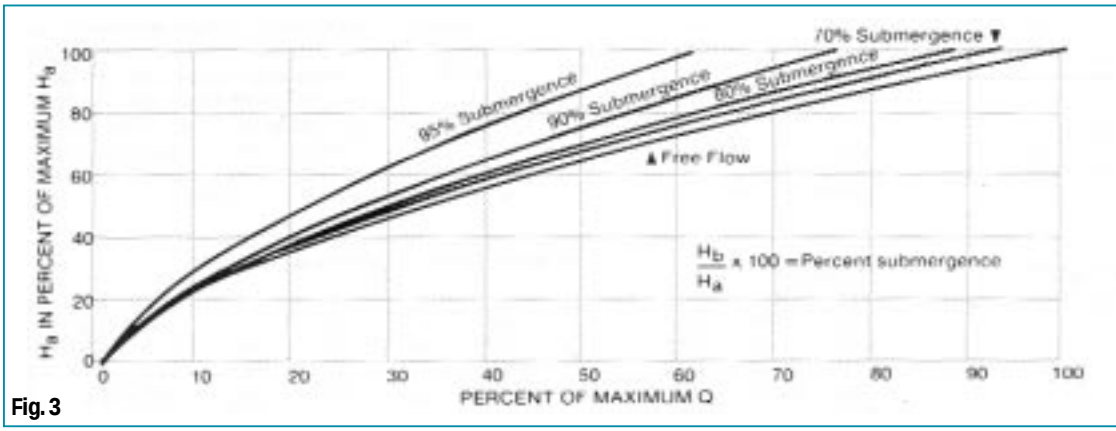


Fig. 3

eastech FLOW CONTROLS
4250 S. 76th E. Avenue • Tulsa, OK • 74145
918-664-1212 • 800-226-3569 • Fax: 918-664-8494 • email: eastechflow.com