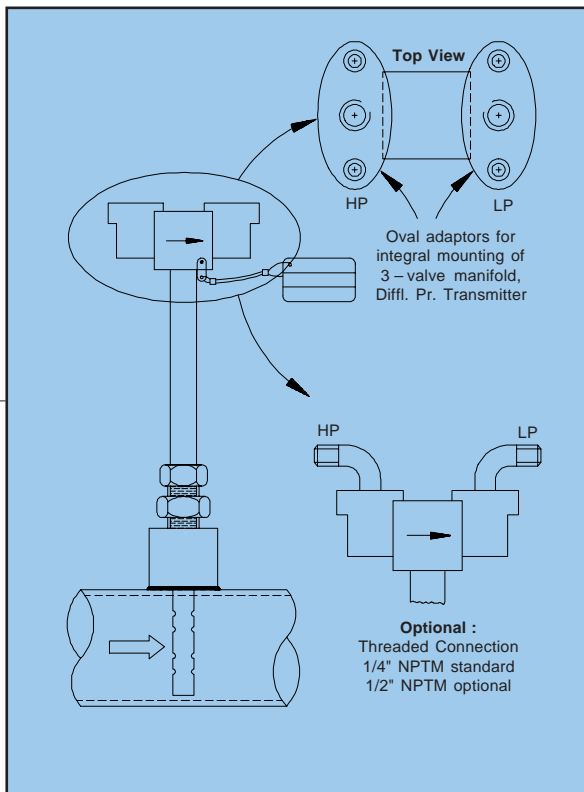




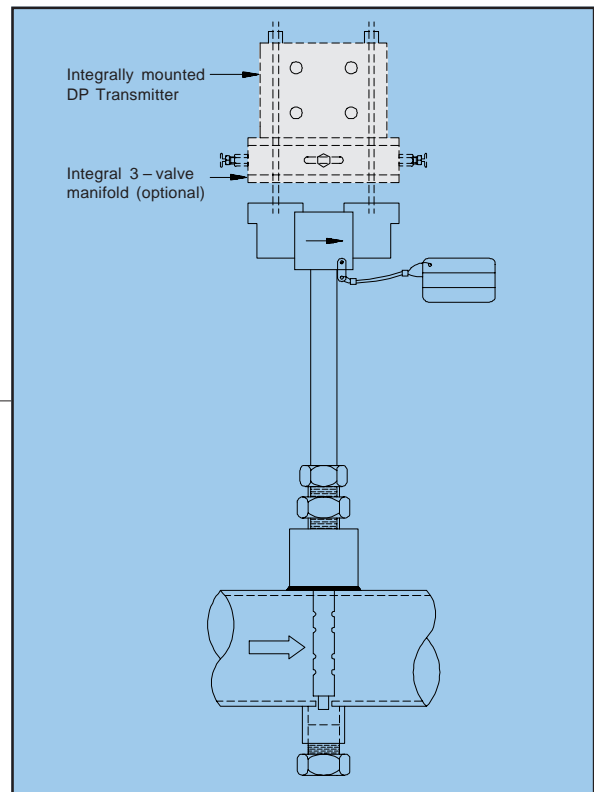
DELTA TUBE — FLOW RATE SENSOR

301
302

- GAS, LIQUID AND STEAM APPLICATIONS ●
- DIRECT INSERTION TYPE (THREADED CONNECTION) FLOW SENSOR ●
- LOW PERMANENT PRESSURE LOSS ● HIGH ENERGY CONSERVATION ●



301, 302 WITH SINGLE SUPPORT



301, 302 WITH DOUBLE SUPPORT

The Delta tube® is a low cost, low maintenance, high accuracy flow sensor for use on steam, gas and liquid flow applications. Manufactured based on proven design of Mid-West, USA, these are rugged in construction, and simple to install. The flow sensor is a multi-ported averaging pitot tube which spans the entire flow profile and produces differential pressure which has square root relationship with flow rate. Based on pipe or duct size the Delta tube is constructed so that strategically located sensing ports continually sample the impact and static pressures produced by the Delta tube's obstruction of the flow stream profile. Within the probe the impact pressures sensed by the upstream are continually averaged in an isolated plenum chamber. Similarly the static pressures sensed by the downstream ports are averaged in a second isolated plenum chamber.

All conventional secondary instruments can be used for direct measurement, or transmission of the differential pressure produced by the Delta tube which is proportional to square of flow rate.

The models 301 and 302 are direct insert type Delta tubes which can be directly screwed on to the thread-o-let welded on the pipe. These are suitable for line sizes ranging from 3" to 36" as standard. For higher line sizes please consult factory. Material of construction of probe and head is 316 SS as standard. Attaching hardware can be either of CS or 316 SS.

Many other versions of Delta Tubes are also available to suit various applications such as in-line series, flange mounted type, duct mounted type or wet tap type (with retractable facility) vide models 300, 341, 342, 343, 307, 308, 311, 312, 321, 322, 331, 332, & 323.

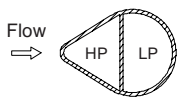
Delta Tubes offer excellent advantages compared to conventional primary flow elements — such as low installation cost, low permanent pressure loss and hence high energy conservation.

The process connection head of the delta tube has been designed to facilitate integral mounting of a 3-valve manifold and so the transmitter as well. Please refer schematic diagram shown above.

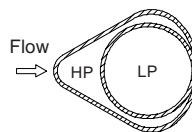
GENERAL SPECIFICATIONS

Basic Model No.	301 or 302	Optional : Threaded connection 1/4" NPTM std; 1/2" NPTM optional.
Design	Mid-west, Michigan USA	
Mounting Type	Direct insertion — Threaded connection	
Probe Details		
Profile	Pear bar	
Size	1/2" nominal dia for 301; 1" nominal dia for 302	
Material	316 SS	
Head Material	316 SS	
Pressure and Temperature Rating	For Model 301 Delta tube 2980 PSIG at 40°C, 2540 PSIG at 370°C For Model 302 Delta tube 1550 PSIG at 40°C 1200 PSIG at 430°C	
Support	Single or Double	
Process Connection	Standard : Oval adaptors for integral mounting of 3 valve manifold and / or Differential Pressure Transmitter.	
Attaching Hardware Details		
For Top Support		
Thread-o-let	CS or 316 SS, 1/2" NPTF for 301 and 1 1/4" NPTF for 302	
Hexagonal Nipple	CS or 316 SS, 1/2" NPTM for 301 and 1 1/4" NPTM for 302	
Packing (includes Ferrule & nut)	CS or 316 SS	
For Bottom Support		
Thread-o-let	CS or 316 SS, 1/4" NPTF for 301 and 1/2" NPTF for 302	
Pipe Plug	CS or 316 SS, 1/4" NPTM for 301 and 1/2" NPTM for 302	
Accuracy	± 1% actual flow	

PROBE CONSTRUCTION AND PROFILE



Pear Shaped Profile
 Delta Tube Size : 1/2"
 Applicable for Model : 301



Pear Shaped Profile
 Delta Tube Size : 1"
 Applicable for Model : 302

ORDERING INFORMATION

BASIC MODEL NO.	301	A	G	0	0	H	0
	302						
ATTACHING HARDWARE MATERIAL							
Carbon Steel		A					
316 Stainless Steel		B					
PIPE SIZE							
3" _____ G	16" _____ P						
4" _____ H	18" _____ Q						
6" _____ J	20" _____ R						
8" _____ K	24" _____ S						
10" _____ L	30" _____ T						
12" _____ M	36" _____ U						
14" _____ N							
PIPE SCHEDULE							
Schedule 40				0			
Schedule 80				1			
All others (Customer to specify)				9			
CONSTRUCTION							
Single support				0			
Double support				1			
PROCESS PIPE ORIENTATION *							
Horizontal						H	
Vertical						V	
OPTIONS							
None (standard)							0
Special (Customer to specify)							X

Note : * Generally the Probe Orientation is Vertical in the process line. If it is different, customer to specify clearly with a sketch.
For more technical information on theory, sizing, selection, installation, etc., please ask switzer brochure on "Delta Tube Flow Elements".

Prior notification of changes in specification is impracticable due to continuous development.

FOR **SWITZER'S** OFFICES IN INDIA

CHECK AT:

<http://www.switzerinstrument.com/offices.htm>

Manufactured with
 Know-how from
Mid-West®
 Instrument
 MICHIGAN, USA