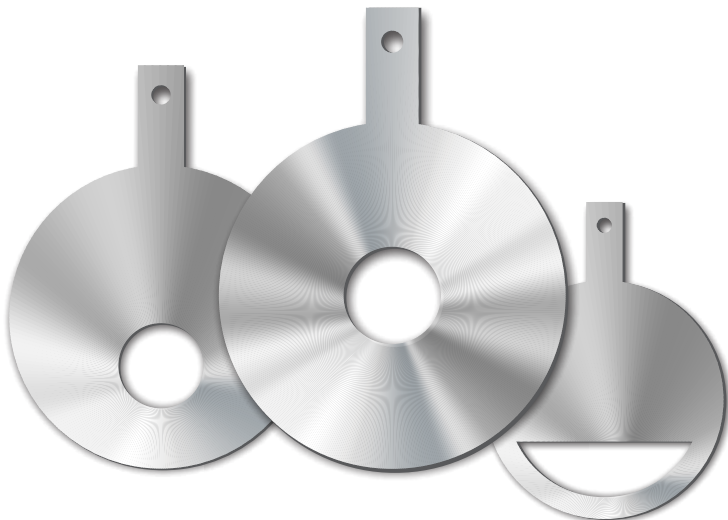


FLUID METERING



Lambda Square – Decades of Fluid Metering Experience

Lambda Square provides complete flow measurement systems for gas, liquid and steam flow measurement. Secondary instrumentation is available including indicating gauges, manifolds, transmitters, recorders, and totalizers with a complete line of options.



One example of our many products – standard and custom Orifice Plates

A Complete Range of Products

- ◆ **ORIPAC - Flow Metering System**
- ◆ **Orifice Plates**
- ◆ **Venturi Tubes**
- ◆ **Orifice Flanges**
- ◆ **Meter Tubes**
- ◆ **ASME Flow Nozzles**
- ◆ **Manifolds**
- ◆ **Straightening Vanes**
- ◆ **Elbow Flow Meters**
- ◆ **Seal Pots/Condensate Chambers**
- ◆ **Holding Blocks**
- ◆ **Restriction Unions**
- ◆ **Sanitary Plates**
- ◆ **Single Chamber Fittings**
- ◆ **Dual Chamber Fittings**



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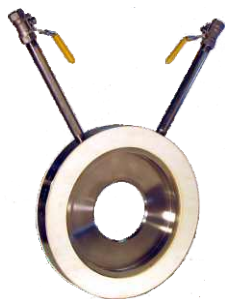
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ORIPAC FLOW METERING SYSTEM

About the ORIPAC SYSTEM

The ORIPAC Series is a complete orifice plate flow metering package incorporating an orifice plate with a unique holder or carrier ring containing metering taps and integral gaskets.

Unlike a standard orifice plate, the ORIPAC is a true primary element including the various components for differential pressure measurement. It was designed for use wherever there is an application for a conventional flow orifice plate. It can also be used in place of other primary differential producers for efficiency and cost effectiveness.



Standard size units available from stock and customized units are available to meet specific field requirements including flange rating, pipe schedule and differential pressure. Installation is accomplished simply by slipping the self-centering ORIPAC between standard 150# flanges (orifice flanges are not required).

The ORIPAC is available for most line sizes and meets or exceeds AMSE, AGA and ISO standards.

ORIPAC Installation Instructions

General: Many of the installation problems associated with standard orifice plates have been eliminated by the use of the ORIPAC. Simply follow these instructions for an accurate and reliable meter.

Pipe Requirements: Upstream and downstream pipe requirements are contingent upon two factors: (a) Beta Ratio:-ratio of the orifice bore "b" divided by the inlet bore (pipe I.D.) (b) The type of fitting or disturbance upstream of the ORIPAC. For most applications, 10 pipe dia. upstream & 5 dia. downstream are sufficient. (5 pipe dia. up and 2 dia. down are acceptable for non-critical application.) Refer to additional piping requirement sheet for specific scenarios.

Installation Tips: (a) If possible, do not install a valve upstream if it is going to be throttled. Install on the downstream a minimum of 6 diameters from the ORIPAC. (b) The use of straightening vanes is not necessary for most applications.

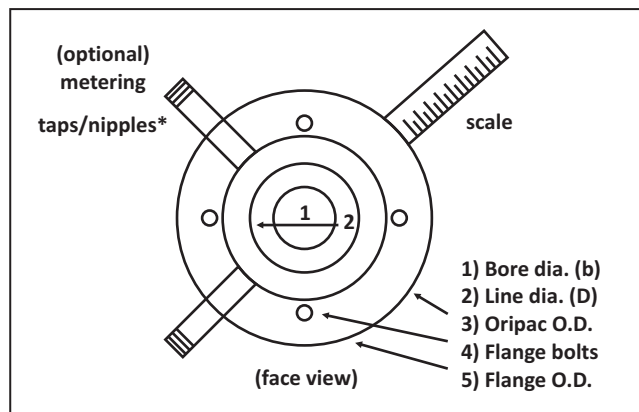
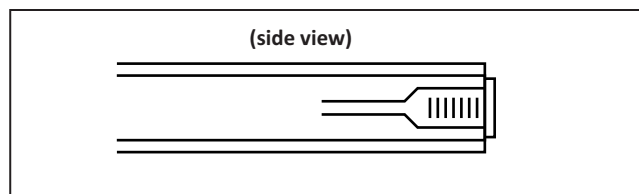
Actual Installation: (a) Insert bolts through bottom half of the flange bolt circle. (b) Slide ORIPAC between flanges (make sure arrow on ORIPAC faces in the direction of flow) (c) Make sure pressure connections are properly positioned. ORIPAC can be installed vertically or horizontally. For horizontal liquid lines, install the ORIPAC with the connections on or under the horizontal center line. For horizontal air or gas lines, install with the connections on or above the horizontal center line. They should also be correctly oriented so as to not be blocked by bolts when remainder of bolts are inserted: (d) Add rest of bolts and nuts leaving all bolts loose so ORIPAC is free to move. (e) If necessary, the ORIPAC can be centered using a steel ruler to measure the total side to side movement and set ORIPAC at half way point all around. (f) Lubricate & tighten bolts alternating diametrically. (g) Check to insure the ORIPAC is installed with the arrow facing in the same direction as flow.

ORIPAC MODEL 5300	
Unitized Stainless Steel Construction	For Water, Air, Steam, Corrosive Fluids, High-Pressure & High-Temperature Fluids

ORIPAC MODEL 4150	
Fiberglass Ring with Stainless Steel Plate	For Water, Air, & Gases

ORIPAC MODEL 4150-P	
All PVC or CPVC Construction	For Low Pressure Gases

ORIPAC MODEL 4150-T	
All Teflon (PTFE) Construction	For Corrosive Gases & Liquids



***Bolts should be 1.25" longer than standard make up flange bolts to accommodate ORIPAC thickness.**

Optional Connection Kit:

Includes 1/4" PVC Extension Nipples with 1/4" Port Ball Valves - FNPT Ends.



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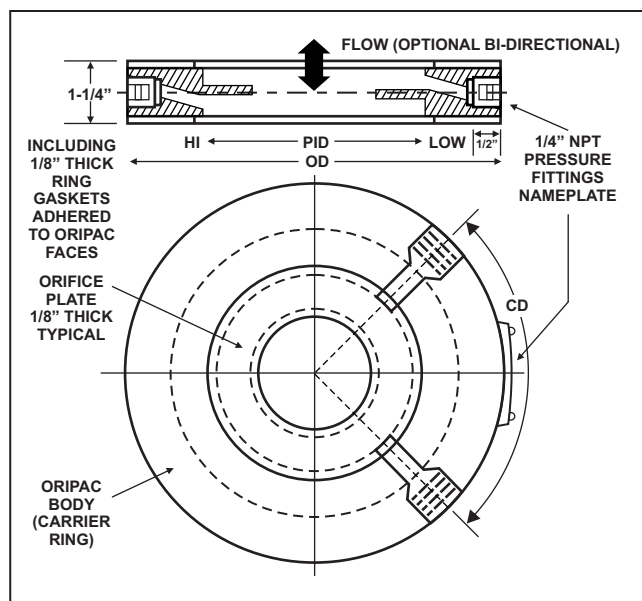
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ORIPAC FLOW METERING SYSTEM

Dimensional Drawing:

All dimensions can be customized as required.

- Weight: Varies with line size. (See chart)
- Pressure: Limited only by pipe and flange rating restrictions. (ISO, 300, 600, 900, ANSI, 1500, 2500#)
- Temperature: 0° F to +140° F (dependant on material and gasketing)
- Head Loss: Similar to standard orifice plates. (See ref. sheet TM-100 or refer to tech support sheet)
- Fluids: Most liquids, gases. High temperature, corrosive, etc.
- Line Sizes: 1/4" to 24" standard. Specials to 60". Custom fabrications available.
- Installation: Standard ANSI flange, any rating (orifice flanges not required)
- Accuracy: 0.6% of full scale flow. (Refer to tech support sheet)
- Pipe Requirements: Refer to installation sheet or TM120. General requirements 10 Dia up and 5 Dia down
- Bore: Concentric standard, eccentric, quadrant edge, segmental, multi bore available. Drain or vent hole available on concentric bores



NOTE: High pressure tap shown on cross section for illustration only

The Importance of Installation

The importance of proper pressure tap connections for orifice plate installations is often minimized or overlooked in the field. Faulty connections nullify the precision of the machining in the manufacture of the orifice plate and calibration accuracy of the secondary instrument. An ORIPAC, properly installed, will provide satisfactory, low-cost service over a wide capacity range.

Lambda Square has developed the ORIPAC to combine accuracy of measurement with certainty of correct installation.

The many advantages in their installation and operation clearly indicate the superiority of the ORIPAC for the majority of conditions under which an orifice installation is suitable.

Line Size (D)	Oripac Outside Diameter (OD)	Pipe Inside Diameter (PID)	Tap Location (CD)	Weight (Pounds)
0.25"	1.890"	0.364"	4.5	1
0.50"	1.890"	0.622"	4.5	1
0.75"	2.250"	0.824"	4.5	1
1.00"	2.625"	1.049"	4.5	1
1.25"	3.000"	1.380"	4.5	1
1.50"	3.375"	1.610"	4.5	1
2.00"	4.125"	2.067"	4.5	1
2.50"	4.875"	2.469"	4.5	1
3.00"	5.375"	3.068"	4.5	2
4.00"	6.875"	4.026"	4.5	2
5.00"	7.750"	5.047"	4.5	2
6.00"	8.750"	6.065"	4.5	3
8.00"	11.000"	7.891"	4.5	4
10.0"	13.374"	10.020"	4.5	5
12.0"	16.125"	12.000"	4.5	5
14.0"	17.750"	14.000"	4.5	7
16.0"	20.250"	16.000"	4.5	8
18.0"	21.625"	18.000"	4.5	9
20.0"	23.875"	20.000"	4.5	18
24.0"	28.250"	24.000"	4.5	12

DIMENSIONS IN INCHES | Thickness = 1.25" On All Line Sizes



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ORIPAC FLOW METERING SYSTEM

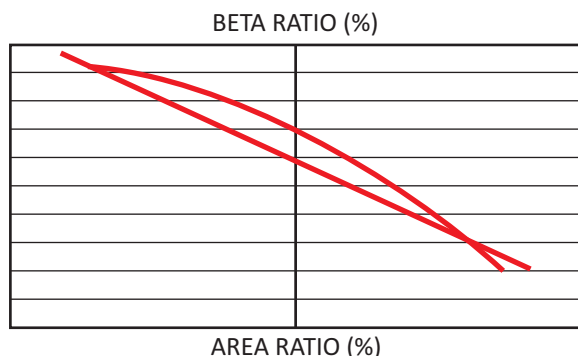
The ORIPAC utilizes the corner tap proportions as defined in ISO 5167. The ASME Fluid Meters Research Committee has suggested that the dimensionless coefficient equation developed by the International Standards Organization (ISO) and presented in ISO 5167 is significantly better for the broad spectrum of flow measurement applications throughout process industries.

The coefficient values used in the ORIPAC bore calculations represent the same confidence level assigned to the flange and radius taps widely accepted in fluid flow measurement.

The accuracy assigned to the coefficient values is $\pm 0.6\%$ full scale flow for d/D (Beta) values 0.2 to 0.6 and $\pm \beta\%$ for Beta values 0.6 to 0.75 (i.e. β of 0.7 would have an uncertainty value of $\pm 0.7\%$ full scale flow).

Accuracy of the differential signal produced by the ORIPAC equals or exceeds that of a properly manufactured and installed flange or radius tap orifice meter.

HEAD LOSS: Overall Pressure Loss Across Thin-Plate Orifices



The above curved graph shows pressure loss generated by the ORIPAC. For example, a 0.6 Beta Ratio (d/D) would show a loss of 62%. This is also shown on the linear graph area ratio $(d/D)^2 = .38$ with a loss of 62%.

As a quick check reference, use the formula:

Headloss = $1 - \text{Beta Ratio}^2$ eg: $1 - .62^2$ or $1 - .38 = 62\%$ of the differential pressure.

ORIPAC CAPACITY REFERENCE (WATER AT 60°F) STD SCH PIPE

Line Size (Inches)	Inches of Water Differential	Maximum Full Scale Flow Rate In GPM Beta Ratio	
		0.23	0.75
1"	20"	0.8	10.5
	320	3.2	42
1 1/4	20	1.2	13
	320	5	72
1 1/2	20	1.8	23.5
	320	7.2	94
2	20	3.2	41.6
	320	12.9	167
2 1/2	20	5	65
	320	20	260
3	20	7	95
	320	28	375
4	20	13	170
	320	52	670
5	20	20	260
	320	80	1050
6	20	29	375
	320	116	1500
8	20	52	670
	320	208	2680
10	20	80	1050
	320	320	4200
12	20	116	6000
	320	460	2050
14	20	160	2050
	320	640	8500
16	20	206	2700
	320	820	10800



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ORIPAC FLOW METERING SYSTEM

Suggested Specifications:

GENERAL: This specification describes a differential pressure type of metering primary for the main line metering of air or gas in a _____" pipe. The orifice plate flow meter "ORIPAC Model 4150-P" wafer type unit shall include high & low metering taps utilizing a "corner tap" configuration. Orifice primary shall meet or exceed ASME requirements for corner style metering taps with regards to accuracy, tolerances & calculations. A flow vs differential pressure curve shall be provided for each set of flow conditions.

MOUNTING: The orifice metering primary shall be suitable for installation between standard ANSI flanges (any rating/material) mounted on standard pipe (any material). The unit shall be "self centering" within the bolt circle of the flanges. No alignment of the orifice shall be necessary. Drilling and or tapping of the main or flanges will not be allowed or required. The overall laying length shall be 1.25" including pre-attached ring type 1/8" thick Buna "N" Gaskets. Other gasket materials available upon request.

CAPACITY: Normal flow rate of ____SCFM or ____PPH or ____GPM at a differential pressure to be determined by Lambda Square Inc. at pressures & temperatures provided by engineer and calculated by Lambda Square Inc., Orifice Flow Calculating Software.

MATERIALS OF CONSTRUCTION: The ORIPAC Model 4150-P primary element shall be monolithic (single piece) constructed entirely of PVC. Metering connections shall be 1/8" or 1/4" NPT female taps. Hose barb connections or extension nipples may be threaded to high & low pressure connections if desired.

ACCURACY: The orifice primary shall be precision calculated, bored and bench calibrated to ASME & ISO specifications yielding a predictable accuracy of +/- 0.6 % of full scale flow. Calculations shall be performed by Lambda Square, Inc. to determine exact differential & headloss at full scale & normal flow conditions.

Accuracy must be substantiated by flow calibration data obtained on metering the same flow elements. Flow calibration data must replicate line size, comparable flow range and Reynolds #. Certified calibration must have been performed in at least three physically independent and recognized flow calibration facilities. Calculation formulas shall be based on ASME guidelines. The orifice primary shall be tested under similar conditions for at least 10 years and shall be equal in all respects to ORIPAC Model 4150-P as manufactured by Lambda Square, Inc. of Babylon, NY.

METER PERFORMANCE: Calculations for pressure loss may be performed in conjunction with the ORIPAC flow calculations by Lambda Square, Inc. The overall pressure loss and differential pressure shall be determined at maximum & normal flow conditions. The permanent headloss shall be within the requirements of the application, and determined by the engineer in conjunction with Lambda Square, Inc.



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ORIPAC FLOW METERING SYSTEM

THE ORIPAC ADVANTAGE

Integrated metering taps properly located and predrilled – Used with standard ANSI flanges - orifice flange unions eliminated. No drilling/tapping pipe.

Full faced integral gasket pre-attached – Precludes potential alignment problems during installation.

Self-centering within standard flanges – ORIPAC O.D. sits snug within bolt circle of specified flange rating insuring concentricity - centering devices or additional components eliminated.

"Corner" type metering taps – Established coefficient accuracy values.

Solid-state PVC construction – Use of superior high-tech materials eliminating rusting and plugging of sensing ports.

Custom Manufacture (able to meet specific temp and pressure requirements) – Standard configurations available from stock, custom units available in different materials, thickness and configuration to meet specific requirements for harsh applications.

Proven through a wide and varied range of applications and installations since 1984 – Ten (10) year history of reliability and accuracy.

Sized for specific pipe schedules or special inside pipe diameters including US/Metric, etc – Insures accuracy by eliminating pipe inside diameter to ORIPAC inside diameter mismatches.

Available with any bore size to produce any specific differential pressure – Ability to match range on an existing d/p transmitter or indicating gage without recalibration or replacement.

Orifice bore calculated to match specified "headloss" requirements – Exact differential pressure values and overall system head loss can be calculated and pre-determined.

Orifice bore styles available include Concentric, Eccentric, Segmental, Quadrant edge, multiple bore – Able to address challenging flow applications including: low viscosity fluids, gasses containing liquids, limited pipe runs, etc.

Drain hole at bottom or vent hole at top available for orifice plate. Additional tap can be installed for drainage purposes – Orifices may require a drain at bottom of orifice to allow passage of condensate. Air in liquid lines may require a vent hole at top of orifice.

Bi-directional flow capabilities – Orifice plate available without bevel to accommodate flow in both directions.

Orifice plate thickness option – Thickness of orifice plate provided according to ASME/AGA specs standard. Can be provided with special plate thickness to address high pressure lines, thick bore "critical flow" requirements, etc.

Available for any flange material or rating (125/150#, 250/300#, 600#, 900#, 1500#, 2500#) DIN Ratings or custom flange requirements – Eliminate potential flange rating mismatches, no need for additional centering devices - ideal for use within lightweight duct flanges.

Ideal for light weight duct measurement – Mounts between thin angle or plate flanges for lightweight installation.

Can be used within cast iron standard flanges. (Orifice flanges not available in cast iron) – Simple orifice device now available for cast iron piping without welding.

Can be sized for restriction or pressure drop control in conjunction with flow measurement – Eliminate additional throttling valve by combining flow meter and restrictor as one integral unit.

Port size (Pizometer through hole) can be increased if required – Reducing the chance of plugging in lines containing particulates, solids, etc.

Metering Taps drilled "straight through" to the pipe I.D. – Easily accessible and cleaned using pipe cleaner or rod out kit.

Can be used with Lambda flange mount bracket for installing instrumentation – Option for direct mount installation of manifold transmitter or indicating gage offering consolidated installation (Remote mount also available)

Pre-attached nameplate – Serial #, Tag #, ID, Bore and other information available. Also available: SS attachment w/SS wire or w/RTJ type nameplate holder.

Flexible readout options – Can be used with any Transmitter, Gage, Manifold arrangement.

Standard valve kit available – Includes nipples and shutoff valves to streamline installation.



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ORIFICE PLATES

INDUSTRY-STANDARD TYPES and CUSTOM CONFIGURED ORIFICE PLATES

Sizes available: 1/4" and up

Materials: 304 / 316 Stainless, MONEL, Exotics

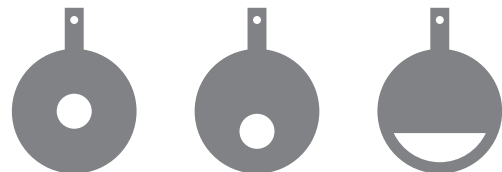
Standards Apply: AGA | API | ASME | ISA | ISO 5167

Every piece quality-checked



FOR ALL INDUSTRIES and APPLICATIONS

**CUSTOM PRECISION FABRICATION
DESIGN and APPLICATION ASSISTANCE**



**Every feature of Lambda Square Orifice Plates
can be customized to your requirements!**

**MATERIAL · DIMENSIONS · BORE · COUNTERBORE
FLOW EDGE · BEVEL · TAB · ID INFO**

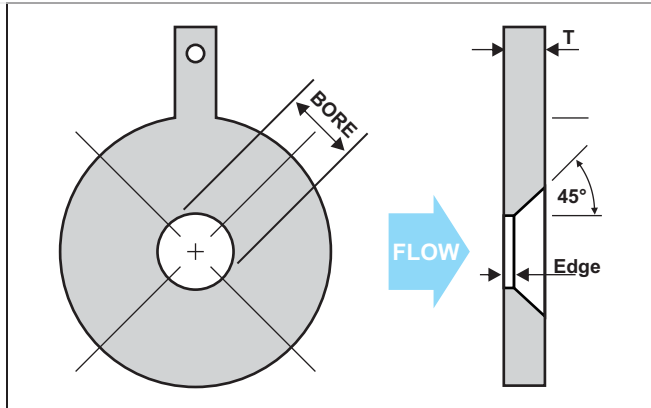


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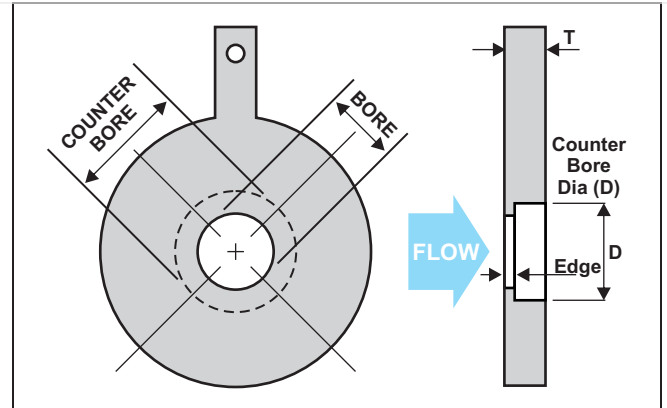
ORIFICE PLATES

Illustrations are representative of only a few of the possible configurations.



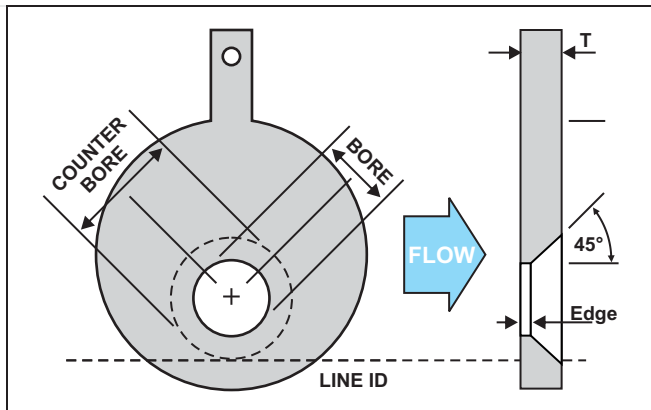
Square Edge Concentric Bore & Bevel

Concentric orifice with a square edge. Edge thickness is limited with a downstream beveled bore. Most common and economical type of orifice plate.



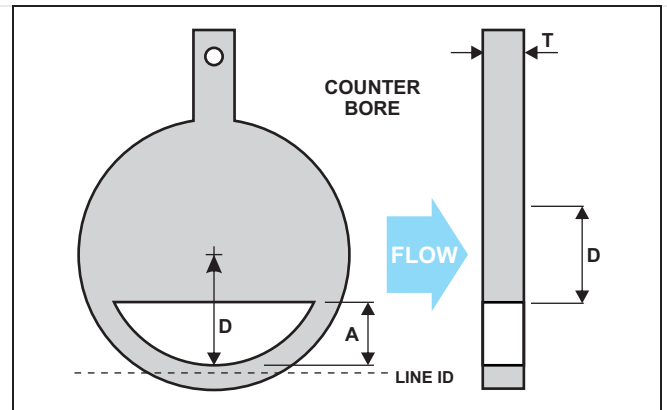
Square Edge Concentric Bore & Counterbore

Square edged orifice. Throat is reduced by upstream counterbore.



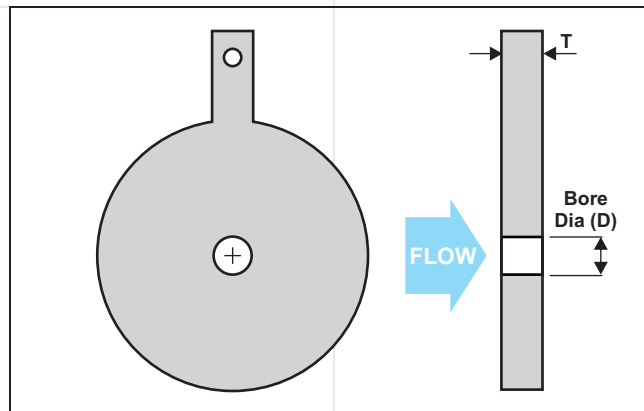
Eccentric Bored Orifice

Popular in water treatment, oil, and paper industries – anywhere flow contains solids and for slurries. Bore edge is typically inscribed in a circle 98% of line ID.



Segmental Bore Orifice

For flows with entrained solids or heavy sediments. Bore may be at the bottom or top of pipe depending on type of flow and type of unwanted materials.



Restriction Bore

Not for flow measurement. Drops pressure and reduces flow. No bevel and no limit to Beta ratio.



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RTJ ORIFICE PLATES

Ring Type Joint (RTJ) orifice plates are recommended for clean liquids, gases and low velocity steam flows.

RTJ orifice plates incorporate integral gaskets for installation between ring-type joint flanges. Based on proven technology, there are no moving parts and they are suitable for high-temperature and high-pressure applications.

Plate thickness depends on line size and differential pressure and should be sufficient to prevent the plate from deforming under operating conditions.

RTJ type orifice plates may be machined in one piece, or alternatively from two pieces, with an orifice plate screwed onto a carrier ring/gasket.

- Orifice plates can be made in accordance with customer drawings as required.
- RTJ type orifice plates can be supplied complete with ANSI B16.36 orifice flanges.
- Plate and handle are either one-piece seamless design or the handle is welded to the plate – depending on size and ASME class.
- Flange ASME class and other standard info is stamped on the handle.



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SEAL POTS

Seal Pots/Condensate Chambers

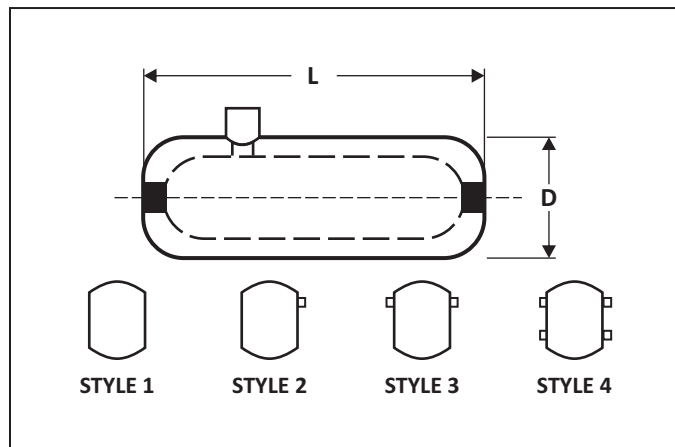
Condensate chambers are used as a barrier between the main line and the secondary instruments in the measurement of steam or other vapors which condense to a liquid state insuring compatibility with the secondary instruments. They can also be used to cool down very high temperature liquids. Seal pots are installed where the line fluid is corrosive or viscous to the extent where it cannot be permitted to contact the secondary instrument (transmitter or gage) thereby acting as a liquid barrier between the line fluid and the condensate.

Material: Available in carbon steel, stainless steel, P22 and other alloy steel and other materials. Standard pipe sizes are 2" through 6" and pressure ratings for carbon steel as indicated on the enclosed chart. Connection fittings are NPT or welded socket adaptors. Chambers can be hydrostatically tested and x-rayed upon request. ISO and ISA standards are typically followed unless otherwise specified. Welding can be to ANSI 1331.1 code if required.

Typical industry applications include: refineries, power plants, chemical & petrochemical, steel plants and other process industries.

Installation: Either vertical or horizontal lines between the primary (Flow Meter) and the secondary (transmitter/gage) to act as steel or barrier to the line fluid permitting direct sensation of the flow conditions. Units should be mounted at the same level minimizing possible error that could arise due to unequal head of fluid in the connecting pressure lines.

Initial sizing of the required liquid level in the seal pots is function of the flow parameters. The basic rule of thumb is that the level in the chambers should equal the total volume of condensate in the transmitter and the sensing lines. This also complies with ASME requirements. Exact capacity is also contingent on a number of other issues including: relative humidity, dew point, pressure, flow rate, etc. Standard maintenance includes draining/filling as necessary.



Connections are 3000# or 6000# welded half couplings, NPT or socket weld. Connections available in any quantity or arrangement.

Sizes: 2" – 6" Standard

Schedules: STD SCH, XH, XXH, (others available)

Please provide the following information for a specific quotation:

Pipe Size and Schedule

Material

Style (Refer to drawing): Location and Number of Taps

Quantity Required



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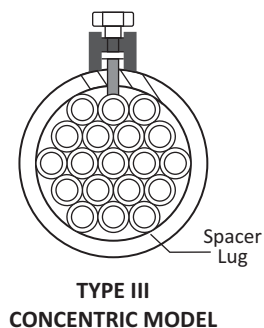
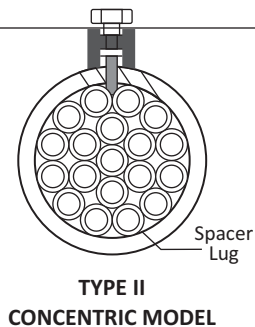
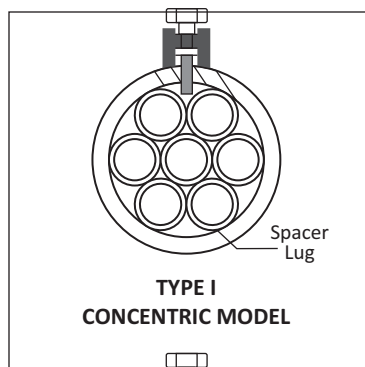
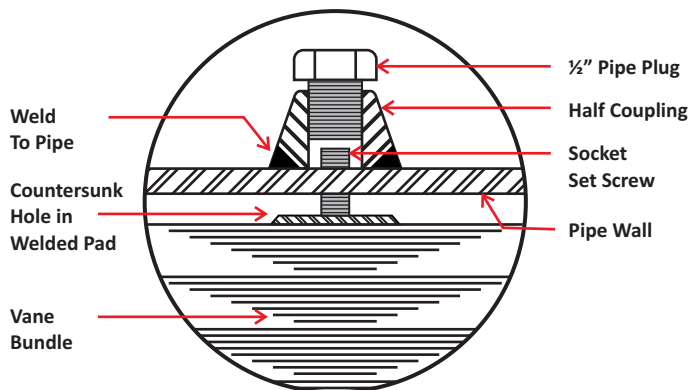
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STRAIGHTENING VANES

Straightening Vanes

(Tube Bundle Type)

Installed upstream of flow meter when adequate upstream pipe run section can not be met. Proper installation will straighten out flow profile to increase metering accuracy. Available in carbon steel, stainless steel and other alloys. Perforated plate and vane type flow straighteners also available.



Line Size	Vane Type	Line I.D.	Vane Length	Vane O.D.	Tube O.D.*	Tube Wall	No. of Tubes	Screw Size	Approximate Weights		Flange O.D.
									Flange Model	Line Model	
			A	B	D	E			LBS.	LBS.	C
2	I	2.067	6	1 31/32	21/32	.095	7	1-3/8 x 3/4	3	2	3 5/8
2	I	1.939	6	1 29/32	21/32	.095	7	1-3/8 x 3/4	3	2	3 5/8
3	II	3.068	8	2 7/8	19/32	.049	19	1-3/8 x 3/4	4	3	5
3	II	2.900	8	2 3/4	9/16	.049	19	1-3/8 x 3/4	4	3	5
4	II	4.026	10	3 31/32	13/16	.049	19	1-3/8 x 3/4	8	7	6 3/16
4	III	3.826	10	3 3/4	3/4	.049	19	1-3/8 x 1	8	7	6 3/16
5	II	5.047	12	4 27/32	1	.049	19	1-1/2 x 1	11	9	7 5/16
6	II	6.065	12	5 15/16	1 7/32	.049	19	1-1/2 x 1	21	19	8 1/2
6	II	5.761	12	5 5/8	1 5/32	.049	19	1-1/2 x 1	21	19	8 1/2
8	II	7.625	16	7 15/32	1 1/2	.065	19	1-1/2 x 1	37	35	10 5/8
8	II	7.981	16	7 29/32	1 5/8	.065	19	1-1/2 x 1	37	35	10 5/8
10	III	10.136	20	10	2	.083	19	1-1/2 x 1	57	54	12 3/4
10	II	10.020	20	9 3/4	2	.083	19	1-1/2 x 1	57	54	12 3/4
12	III	12.090	24	11 7/8	2 3/8	.083	19	2-1/2 x 1 1/4	81	77	15
12	III	11.374	24	11 1/4	2 1/4	.095	19	2-1/2 x 1 1/4	81	77	15
12	II	11.938	24	11 5/8	2 3/8	.083	19	2-1/2 x 1 1/4	81	77	15
14	III	13.25	28	13 1/8	2 5/8	.083	19	2-1/2 x 1 1/4	105	100	16 1/4
14	II	13	28	12 3/4	2 5/8	.083	19	2-1/2 x 1 1/4	105	100	16 1/4
16	III	15.250	30	15	3	.188	19	2-1/2 x 1 1/4	274	268	18 1/2
16	II	15.500	30	14 18/32	3	.188	19	2-1/2 x 1 1/4	274	268	18 1/2
18	II	16.876	36	16 23/32	3 7/16	.188	19	2-1/2 x 1 1/4	386	378	21
20	II	19.250	40	18 27/32	3 7/8	.188	19	2-1/2 x 1 1/4	477	468	23
24	II	23.250	48	23 1/8	4 3/4	.188	19	2-1/2 x 1 1/2	704	693	27 1/4
26	III	25.250	52	25	5	.188	19	2-1/2 x 1 1/2	814	796	29 1/2
30	III	29.250	60	28 3/4	5 3/4	.188	19	2-1/2 x 1 1/2	1295	1273	33 3/4
34	II	33.250	68	32 13/16	6 3/4	.250	19	2-1/2 x 1 1/2	1880	1860	38
36	III	35.250	72	35	7	.188	19	2-1/2 x 1 1/2	1582	1559	40 1/4



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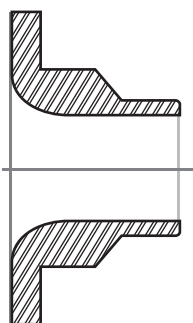
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FLOW NOZZLES

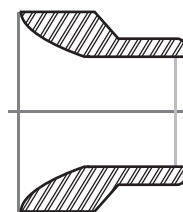
Flow Nozzles

Used for Gas, Liquid and Steam Flow Measurement

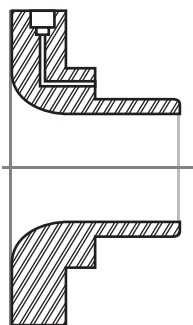
Standard Sizes: 1/8" - 60", All Flange Ratings. Available in stainless steel, carbon steel, brass, fiberglass, spun aluminum, PVC, Hastalloy, Monel and other materials. Available in all line sizes and throats. Sized for standard, critical or sonic flow conditions. Also can be provided as part of an ASME nozzle meter run with piping, flanges, calibration, etc.



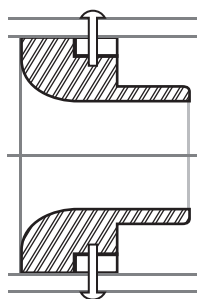
The "**STANDARD**" **FLANGE FLOW NOZZLE** style is the most commonly used Flow Nozzle. It is designed to be inserted between pipe flanges. A special machined shoulder on the back side of the flange assures the proper alignment of the nozzle with the pipe I.D. This style Flow Nozzle utilizes pipe wall taps whose location is determined by the Beta Ratio.



The "**WELD-IN**" **FLOW NOZZLE** style is designed to be installed permanently in a pipe section. This nozzle has a specially machined step on its outside diameter that is used to align a beveled inlet and outlet bored pipe section. This type nozzle is widely used where high temperature and pressure applications prohibit the use of pipe flanges such as in power plant and feed water installations. Pipe wall taps are utilized with this style.



The "**TAPPED**" **TYPE FLANGED FLOW NOZZLE** is similar to the "FLANGE" style, but includes a downstream tap (usually a 1/2" connection) provided in the flange of the nozzle. This style nozzle is recommended in smaller line sizes where the downstream tap may interfere with the pipe weld or downstream mounting flange.



The "**HOLDING RING**" **FLOW NOZZLE** style is designed so that the welding of dissimilar materials is eliminated. A special holding ring and locating pins are made of the same material as the pipe that the nozzle is to be installed in. This allows for the nozzle to be offered in a wide range of materials. This style is not recommended for line sizes below 4 Inches.

"Throat tap" type flow nozzles also available.



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VENTURI FLOW METERS

Model 2300 Venturi Flow Meter

When Low Headloss is a Priority!

The Model 2300 offers short laying length, easy installation, high accuracy, and very low permanent pressure loss. It is corrosion-resistant and carries minimal maintenance requirements, making it as economical as it is accurate and consistent.

These easy to install, low maintenance devices provide reliable performance and minimal headloss for a wide range of municipal and industrial applications.

Made of dimensionally stable fiberglass-reinforced vinyl ester epoxy – ensuring accurate flow measurement and long life.

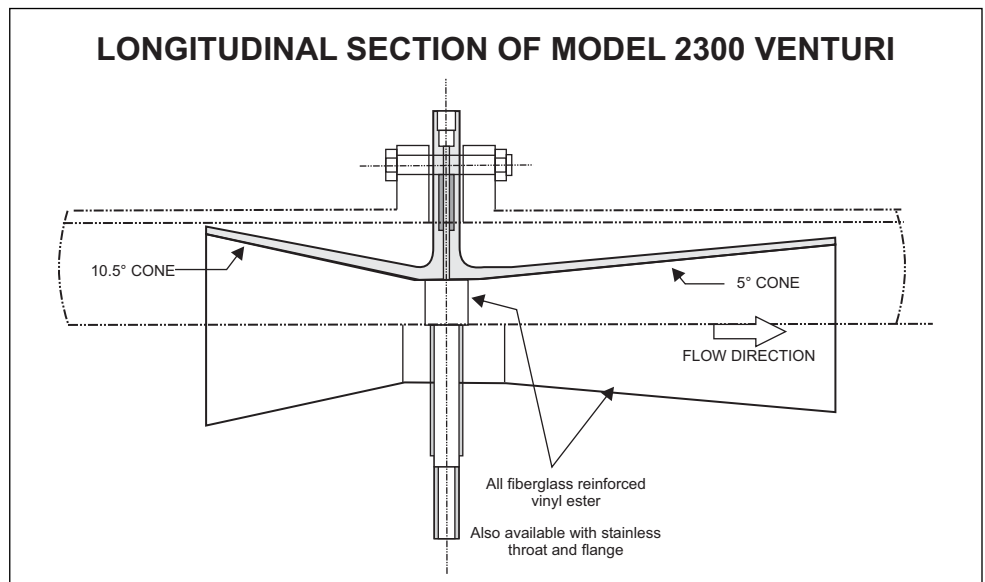
Highly corrosion resistant, self-scouring, and accommodates a wide range of line fluids, line pressures and temperature conditions up to 350°F.

It can be supplied with bronze, stainless steel, or other metal throat materials.

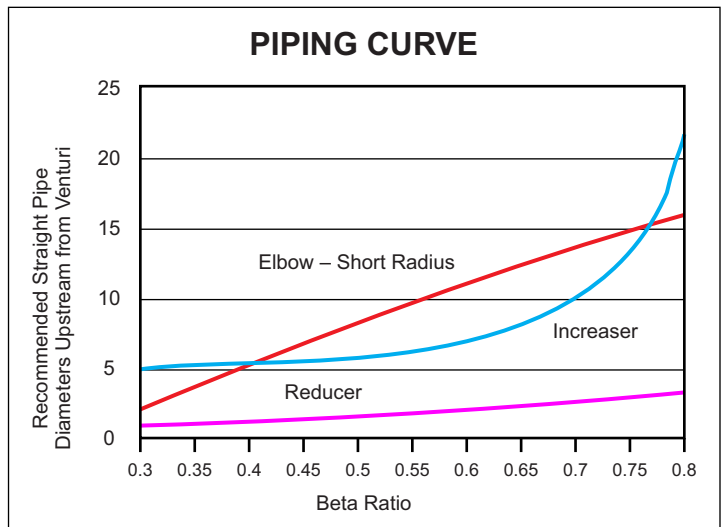
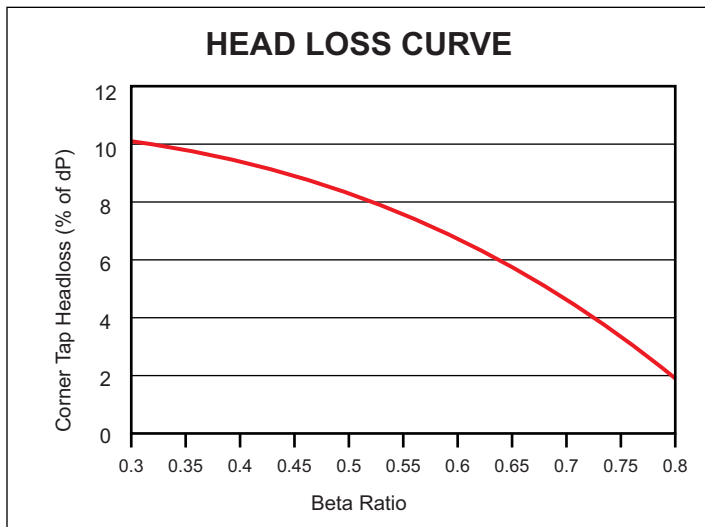
The carbon steel holding flange is coated with vinyl ester epoxy and has 316 stainless steel pressure connections. The Model 2300 comes ready to install with neoprene flange gaskets to fit pipes from 3/4" to 120".

Features

- Very Low Permanent Pressure Loss
- Low Cost 1/3 the Cost of Cast Iron
- Corrosion Resistant
- Excellent Flow Measurement
- Accurate
- Easy Installation
- Minimal Maintenance - *Set it and forget it!*
- Long Service Life



A wide range of standard and custom sizes for your application!



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VENTURI FLOW METERS

Model 2350 Venturi Flow Meter

For Tight Space Requirements!

The very short-laying length Model 2350 provides high accuracy and low permanent pressure loss while minimizing space requirements. The flow conditioning within the inlet section allows for closer coupling with upstream pipe fittings.

These easy to install, low maintenance devices provide reliable performance and minimal headloss for a wide range of municipal and industrial applications.

A wide range of standard and custom sizes for your application!

Made of dimensionally stable fiberglass-reinforced vinyl ester epoxy – ensuring accurate flow measurement and long life.

Highly corrosion resistant, self-scouring, and accommodates a wide range of line fluids, line pressures and temperature conditions up to 350°F.

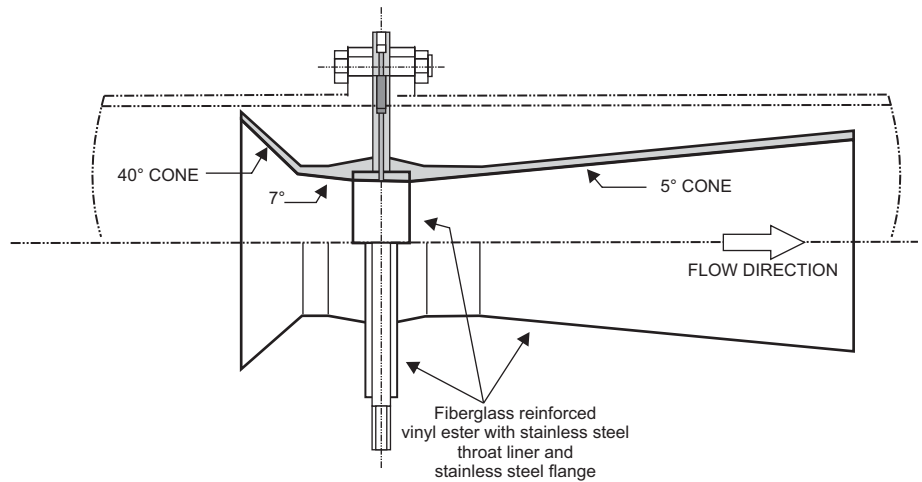
It can be supplied with bronze, stainless steel, or other metal throat materials.

The carbon steel holding flange is coated with vinyl ester epoxy and has 316 stainless steel pressure connections. The Model 2350 comes ready to install with neoprene flange gaskets to fit pipes from 3/4" to 120".

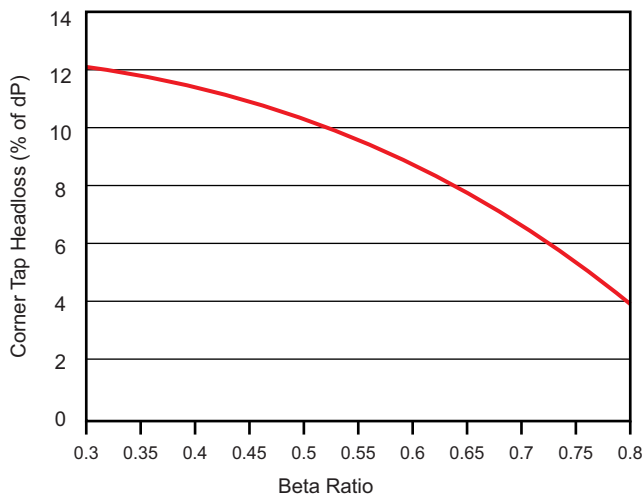
Features

- Short Laying Length
- Low Permanent Pressure Loss
- Low Cost – 1/3 the Cost of Cast Iron
- Corrosion Resistant
- Easy Installation Between ANSI Flanges
- Minimal Maintenance – *Install it and forget it*
- Consistent Accuracy
- Long Service Life!

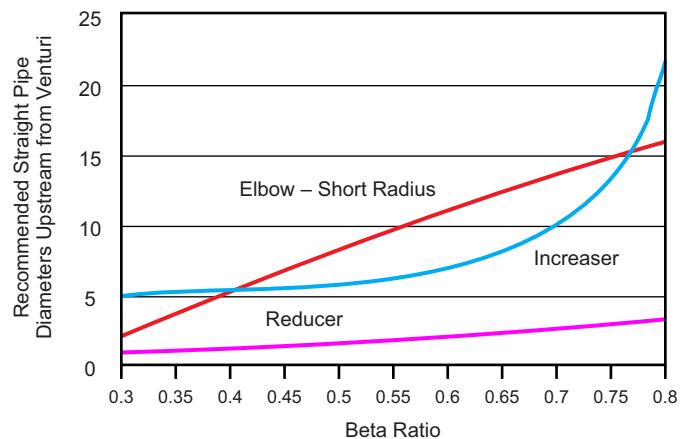
LONGITUDINAL SECTION OF MODEL 2350 VENTURI



HEAD LOSS CURVE



PIPING CURVE



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