



# FLOW METERING EQUIPMENT

## Model AHL Ellipse® Pitot Tube Annular High Pressure Hot Tap Flow Meter

Preso's patented elliptical design outperforms and provides greater accuracy than traditional differential pressure flow measurement devices. This differential pressure flow meter is designed with a series of ports facing the upstream velocity pressures, as well as flow sensing ports strategically located ahead of the trailing edge flow separation.

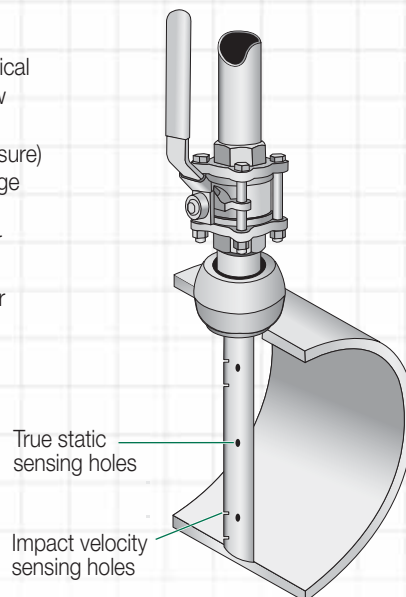
### Features

- Hot-tap model installs without system shutdown
- Single point pipe entry for DP, temperature and static pressure
- No dampening software required
- Lowest pressure loss in industry (typically 3% of DP in a 12" line) due to its patented aerodynamic profile
- Optional NIST traceable calibration

### Benefits

- Accuracy:  $\pm 0.75\%$  of reading
- Repeatability:  $\pm 0.1\%$  of reading
- Turndown Ratio: 17:1; no vacuum effects
- No moving parts equals long, trouble-free service life
- True static pressure measurement rather than a calculated value
- Overcomes loss of accuracy caused by fluid separation at the sensor body

The multi-ported, self averaging flow element consists of an elliptical shape with two independent flow sensing chambers. The impact velocity sensing holes (high pressure) are located along the leading edge and the true static sensing holes (low pressure) are on the exterior probe side. Model AHL comes with instrument shut-off valves or optional integral manifold valve for direct transmitter mount.



### Specifications

<b>Applications:</b>	Air, Liquids and Gases
<b>Pipe Sizes:</b>	2 to 30 inches (50 to 760 mm)
<b>Pressure:</b>	800 PSI (5515 kPa) max. Consult factory for higher pressure
<b>Temperature:</b>	800 °F (426 °C) max. Consult factory for higher temperature
<b>Accuracy:</b>	$\pm 0.75\%$ of reading
<b>Turndown Ratio:</b>	17:1 with no vacuum effect
<b>Standard Components:</b>	T-type head, 316 SS 1/4" or 1/2" FNPT connection CS 3000 lb. weld fitting – ASTM A105 316/316L SS Ellipse sensor Instrument valves (2 per sensor) 1/4" or 1/2", CS 316 SS ID tag with wire 150 lb. 316/316L SS sensor flange CS packing chamber with molythane or graphite packing gland CS packing chamber flange, 150 lb. with SS cap 316-SS isolation ball valve, NPT threaded CS threaded nuts and bolts CS nipples, schedule 40
<b>Reynolds Number:</b>	Greater than 75,000 maintains most accurate flow measurements Less than 75,000 consult factory for estimated results
<b>Resonance:</b>	Less than 0.8 but greater than 1.2. If greater than 0.8, use double support. System shutdown is required when the double support option is used. Select larger diameter Ellipse to avoid double support.



**1-800-632-7337**

**www.preso.com**

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## Part Number Construction

**PAHL (7/8")**

**PAHL1 (1-1/4")**

**Pipe Size\*  
(PAHL)**

- A) 2 inch
- B) 2-1/2 inch
- C) 3 inch
- D) 3-1/2 inch
- E) 4 inch
- F) 5 inch
- G) 6 inch
- H) 8 inch
- I) 10 inch
- J) 12 inch
- K) 14 inch

**Pipe Size\*  
(PAHL1)**

- A) 12 inch
- B) 14 inch
- C) 16 inch
- D) 18 inch
- E) 20 inch
- F) 24 inch
- G) 30 inch

### Schedule

- |        |        |        |
|--------|--------|--------|
| A) Std | G) 100 | L) XXH |
| B) 20  | H) 120 | M) 5S  |
| C) 30  | I) 140 | N) 10S |
| D) 40  | J) 160 | O) 40S |
| E) 60  | K) XH  | P) 80S |
| F) 80  |        |        |

\*For larger pipe sizes, see the AHF brochure.

### Pipe Orientation

- A) Horizontal
- B) Vertical

### Probe Material

- 1) 316/316L-SS
- 2) Monel®
- 3) Inconel®
- 4) Hastelloy®
- X) Other (consult factory to review application)

### Instrument Connection

- A) 1/2" NPT
- B) 1/2" Socket
- C) TT3 (Integral 3 Valve Trans-Mount)
- D) TT5 (Integral 5 Valve Trans-Mount)
- E) Transmitter Flange Connection

### Insertion Mechanism/ Isolation Ball valve

- A) CS cage nipple & rods
- B) SS cage nipple & rods
- C) CS gear drive, cage nipple & rods
- D) SS gear drive, cage nipple & rods  
(Note: SS gear drive - SS for housing & wetted parts only)
- X) Other

### Packing Material

- 1) Molythane (-65 °F to 200 °F, 140 °F in water and high water-based fluids)
- 2) Viton®/Fluorocarbon (-20 °F to 400 °F)
- 3) Graphoil (1200 °F)
- 4) EPDM (-65 °F to 300 °F, 400 °F in steam)
- 5) Fluoromyte (-65 °F to 300 °F)
- X) Other

### Pipe Mounting

- 1) A105 CS 3000#
- 2) 316/316L SS 3000#
- 3) Supplied separately by Preso

NOTE: Ensure that DP falls within range noted on chart below. Double Supports are not recommended for Hot Tap/Wet Tap models.

### Instrument Valve

- A) 1/2" Needle CS
- B) 1/2" Needle SS
- C) 1/2" Gate CS
- D) 1/2" Gate SS
- Z) Not required

NOTE: Transmitter Flange Connection Options available when Option E under Instrument Connection is selected. (consult factory for information)

### RTD

- 1) 100 Ohm RTD 3 wire w/ Explosion Proof Head
- 2) 100 Ohm RTD 3 wire, Integral w/Aluminum Head
- Z) Not required

### AHL "A" Dimensions (inches)

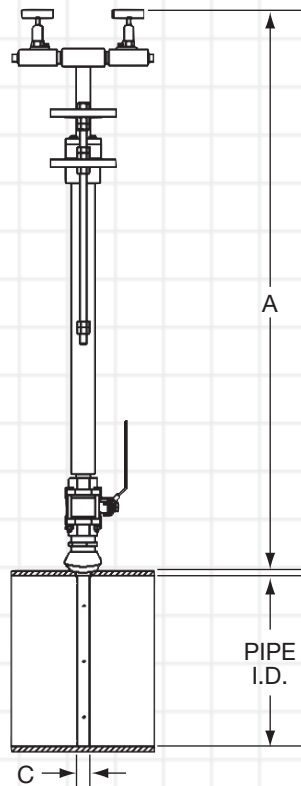
	Size	Inserted	Retracted
SCH. STANDARD	2"	29-1/2"	38-1/2"
	2-1/2"	30"	39-1/2"
	3"	30-1/2"	40-1/2"
	3-1/2"	31"	41-1/2"
	4"	31-1/2"	42-1/2"
	5"	32-1/2"	44-1/2"
	6"	33-3/8"	46-1/2"
	8"	35-3/8"	50-1/2"
	10"	37-3/8"	54-1/2"
	12"	39-3/8"	58-1/2"
	14"	41-3/8"	61-3/4"

### AHL1 "A" Dimensions (inches)

	Size	Inserted	Retracted
SCH. STANDARD	12"	42-1/8"	61-3/4"
	14"	44-1/8"	65"
	16"	46-1/8"	69"
	18"	48-1/8"	73"
	20"	50-1/8"	77"
	24"	54-1/8"	85"
	30"	60-1/8"	97"

### Probe Width

	C
AHL	.875
AHL1	1.25



### Maximum Allowable DP (Inches of Water Column)

Pipe Size (inches)	Single Support Probe Size		Double Support Probe Size*	
	7/8"	1-1/4"	7/8"	1-1/4"
2	880	—	2380	—
2-1/2	525	—	1568	—
3	396	—	1283	—
3-1/2	283	—	1117	—
4	197	—	980	—
5	153	—	757	—
6	126	—	689	—
8	114	360	512	—
10	100	240	315	960
12	87	175	250	700
14	53	147	195	585
16	—	113	—	450
18	—	90	—	360
20	—	74	—	295
24	—	68	—	270
26	—	50	—	215
30	—	34	—	155

Note: Probe with optional gear drive not pictured. Contact factory for more information.



FLOW METERING EQUIPMENT

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