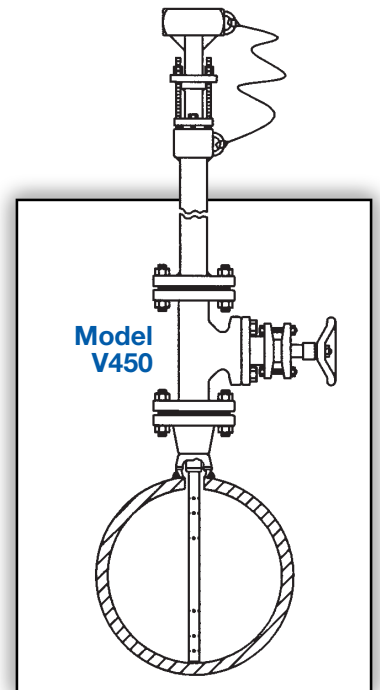
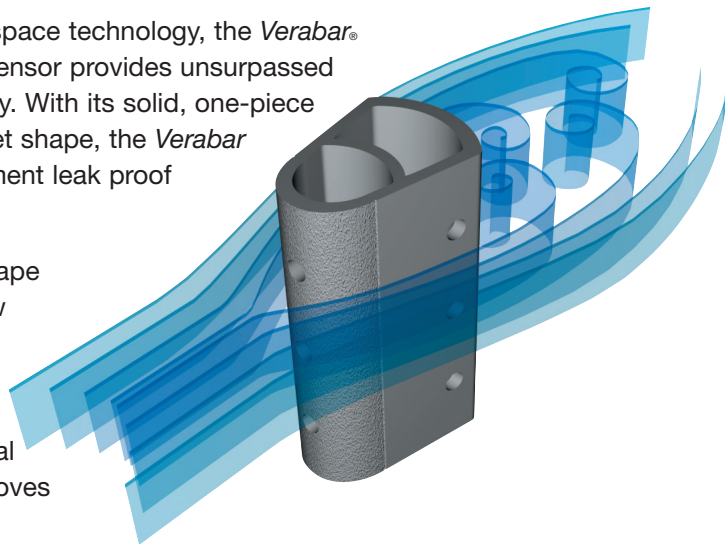


**The Most Accurate and Reliable Technology for Measuring Gas, Liquid and Steam...**

Developed from aerospace technology, the Verabar® averaging pitot flow sensor provides unsurpassed accuracy and reliability. With its solid, one-piece construction and bullet shape, the Verabar makes flow measurement leak proof and precise.

The unique sensor shape reduces drag and flow induced vibration. The location of the low-pressure ports eliminates the potential for clogging and improves signal stability.

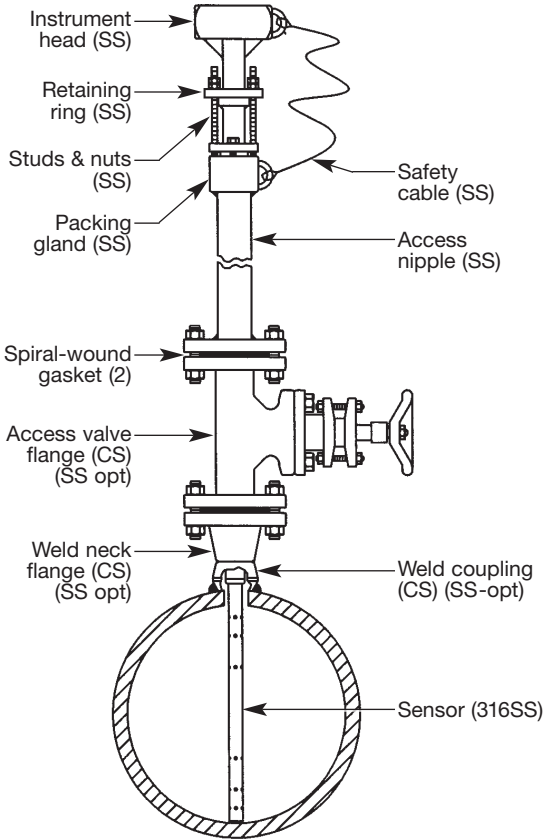


<b>V450 Hot Tap</b>	
<b>Pipe Connection</b>	Flanged
<b>Mounting Type</b>	Flanged ball or gate access valves
<b>Features and Benefits</b>	<ul style="list-style-type: none"> <li>• Lowest cost flanged hot tap model</li> <li>• Installation, insertion &amp; retraction without system shutdown</li> <li>• Hand insertion and retraction for low pressures (no threaded rods)</li> <li>• Retaining ring loads sensor to the opposite wall</li> <li>• Can mount to existing flanges or valves</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Low pressure</li> <li>• Air</li> <li>• Stack/flue gas</li> <li>• Water</li> <li>• Hydrocarbon and other gases</li> </ul>
<b>Special Designs – Consult Factory</b>	<ul style="list-style-type: none"> <li>• Custom mounting, lengths, materials, instrument connections, etc.</li> <li>• Short straight run</li> </ul>

<b>Model Specifications</b>	<b>V450</b>	
	<b>10</b>	<b>15</b>
<b>Sensor Code</b>	10	15
<b>Sensor Diameter</b>	7/8" (22mm)	1-3/8" (35mm)
<b>Accuracy</b>	±1% of flow rate; ±0.5% if calibrated	
<b>Max Pressure</b>	30 psig (2.1 Bars)	10 psig (0.7 Bars)
<b>Pipe Size</b>	6" - 42" (150mm-1050mm)	12" - 60" (300mm-1500mm)
<b>Instrument Connection</b>	1/2" NPT or Direct Mount	
<b>Components Furnished</b>	Weld coupling, weldneck flange, access valve, gaskets, studs & nuts	
<b>Flange Size</b>	1-1/2"	2"

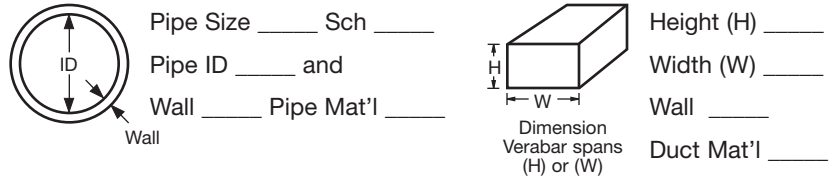
# Verabar® Hot Tap Models

## V450 Low Pressure

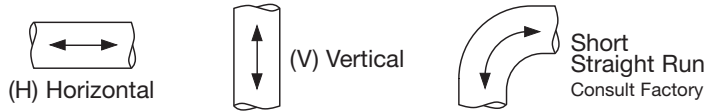


Furnish the following information:

### 1. Enter Pipe Dimensions or Duct Dimensions



### 2. Pipe or Duct Orientation



### 3. Enter Flow Conditions

Fluid Name:		Maximum	Normal	Minimum	Units
<b>Flow Rate</b>					
All Fluids	Temperature @ Flow				
	Pressure @ Flow				
Gas	Specific Gravity, or Molecular Weight				
Liquid	Specific Gravity				
Steam	Veracalc Program can calculate Density from Temperature and Pressure				

### 4. Select Model from Page 3

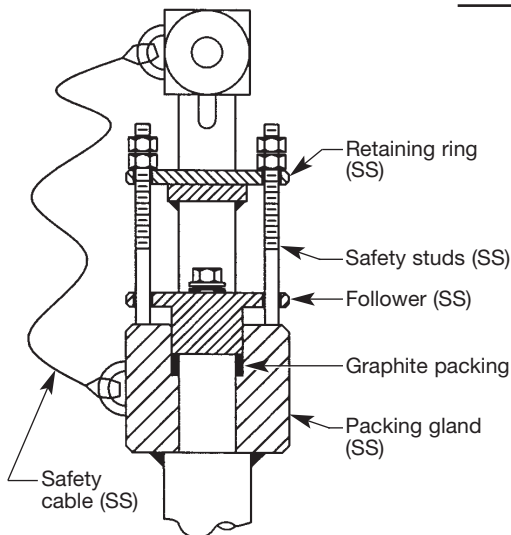
Use the Ordering Information table on Page 3 to determine your model number.

### 5. Flow Calculation



All Verabar applications require a flow calculation to verify the DP, pressure and temperature limits, structural limits and to size the transmitter. The Veracalc PC Program is for use by representatives and end users. It is easy to operate and **includes steam tables**.

## Model V450



### Retaining Hardware

- Eliminates drive rods
- Safety cable limits retraction length to ensure proper sealing of packing gland
- Retaining ring loads sensor to opposite pipe wall

# Ordering Information

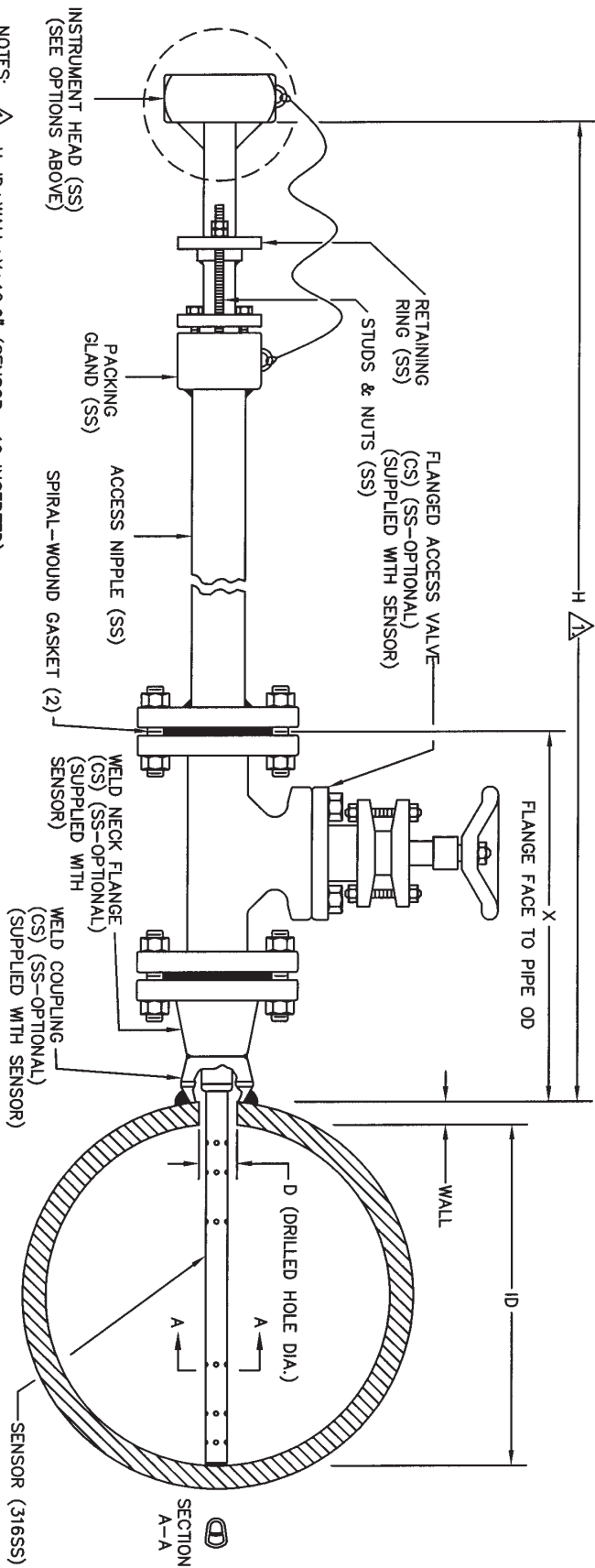
<b>Model</b>	<b>Hot Tap • Low Pressure Hand Insertion</b>					
<b>V450</b>	Hand Insert/Retract, Low Pressure					
<b>Pipe Size and Schedule or Exact ID and Wall Thickness</b>						
<b>Code</b>	<b>Sensor Pipe Size Range</b>					
<b>10</b>	6" to 42" (150mm to 1050mm)					
<b>15</b>	12" to 60" (300mm to 1500mm)					
<b>Code</b>	<b>Pipe Orientation</b>					
<b>H</b>	Horizontal					
<b>V</b>	Vertical					
<b>Instrument Connections (Select Remote or Direct Mount) (Transmitter sold separately)</b>						
<b>Remote Mount Transmitter (1/2" NPT)</b>				<b>Direct Mount Transmitter (Flanged 450°F/232°C Max.)†</b>		
Parallel	Regular	RTD*	Valve	Transmount	Mass Transmount*	Manifold
		Explsn. Proof	Integral		Integral Remote RTD	Integral
<b>P</b>	<b>R</b>	<b>D</b>	<b>T</b>	<b>F</b>	<b>G</b>	<b>E</b>
<b>Instrument Valves (Opt.)</b>			<b>Manifolds (Optional)</b>			
<b>Remote Mount</b>			<b>Direct Mount</b>			
Needle	Gate	3-Valve		5-Valve		
1/2" NPT	1/2" NPT	Soft Seat	Hard Seat	Soft Seat	Hard Seat	
<b>C2NC (CS)</b> <b>C2NS (SS)</b>	<b>C2GC (CS)</b> <b>C2GS (SS)</b>	<b>F3SC (CS)</b> <b>F3SS (SS)</b>	<b>F3HC (CS)</b> <b>F3HS (SS)</b>	<b>F5SC (CS)</b> <b>F5SS (SS)</b>	<b>F5HC (CS)</b> <b>F5HS (SS)</b>	
<b>Mounting Assembly — Select Valve Type, Material &amp; ANSI Class (Includes valve, WN flange, weld coupling, spiral-wound gaskets, studs &amp; nuts)</b>						
<b>Ball Valve Flange</b>						
<b>Sensor (Valve Size)</b>		<b>Material &amp; ANSI Class</b>				
10 (1-1/2")	15 (2")					
<b>Code</b>						
<b>B6CF15</b> <b>B6SF15</b>	<b>B8CF15</b> <b>B8SF15</b>	CS	150#			
		SS	150#			
<b>Gate Valve Flange</b>						
<b>Sensor (Valve Size)</b>		<b>Material &amp; ANSI Class</b>				
10 (1-1/2")	15 (2")					
<b>Code</b>						
<b>G6CF15</b> <b>G6SF15</b>	<b>G8CF15</b> <b>G8SF15</b>	CS	150#			
		SS	150#			
<b>Code</b>	<b>Options</b>					
<b>WPS</b>	SS Wetted Components (Furnished with SS weld coupling, flanges & access nipple). Must be ordered with SS access valve.					
<b>V450</b>	<b>8"sch40</b>	<b>10</b>	<b>H</b>	<b>R</b>	<b>C2NC</b>	<b>B6CF15</b>
<b>Typical Model Number</b>						

\* For high pressure (>500psig) or high temperature (>500°F), remote mount RTD in a thermowell is preferred.  
 † Assuming adequate heat dissipation for transmitter.

EMOUNT CODE	PARALLEL	REGULAR	RTD	VALVE	VALVE	NEEDLE	GATE
P	1/2" NPT	1/2" NPT	X PROOF	INTEGRAL	S	1/2" NPT C2GC (CS) C2GS (SS)	1/2" NPT C2GC (CS) C2GS (SS)

DIORIENT CODE	TRANSMOUNT	MASS TRANSMOUNT	MANIFOLD
F	INT RTD	RMT RTD	INTEGRAL

MANIFOLDS	
3-VALVES SOFT SEAT F3SG (CS) F3SS (SS)	5-VALVES SOFT SEAT F5SG (CS) F5SS (SS)
HARD SEAT F3HG (CS) F3HS (SS)	HARD SEAT F5HG (CS) F5HS (SS)



- NOTES:
- $H = ID + WALL + X + 12.6"$  (SENSOR -10 INSERTED);  
 $H = ID + WALL + X + 14.4"$  (SENSOR -15 INSERTED);  
 $H = 2(ID + WALL + X) + 13.2"$  (SENSOR -10 RETRACTED);  
 $H = 2(ID + WALL + X) + 15.0"$  (SENSOR -15 RETRACTED).
  - INSTRUMENT HEAD AND ACCESS VALVE ORIENTATION FOR SHOWN 90 DEGREES FROM ACTUAL ORIENTATION FOR CLARITY.

ITEM	SENSOR	SENSOR
SENSOR DIA.	-10 7/8" (22mm)	-15 1-3/8" (35mm)
FLANGE SIZE	1-1/2" NPT	2" NPT
DIM 'D' DRILLED HOLE DIAMETER	1" (26mm)	1-1/2" (39mm)
DIM 'X' ANSI CLASS 150#	10.5" (267mm)	11.25" (286mm)
DIM 'X' ANSI CLASS 300#	11.75" (299mm)	13.0" (330mm)
DIM 'X' ANSI CLASS 600#	14.06" (357mm)	16.38" (416mm)
MAX. PRESSURE RATING	30 PSI	10 PSI

\*'H' & 'X' DIMENSIONS ARE APPROXIMATE (FOR SIZING PURPOSES ONLY).

CUSTOMER: \_\_\_\_\_  
 PROJECT: \_\_\_\_\_  
 ORDER NO: \_\_\_\_\_  
 TAG NO: \_\_\_\_\_  
 PIPE SIZE & SCHEDULE: \_\_\_\_\_  
 CATALOG NO: \_\_\_\_\_  
 SERIAL NO: \_\_\_\_\_  
 CERTIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

VERABAR MODEL: V450  
 HAND INSERTION, FLANGED

DATE	DWG NO.
09/20/01	SUB-3940
SCALE	REV A
NTS	PAGE 1 OF 1