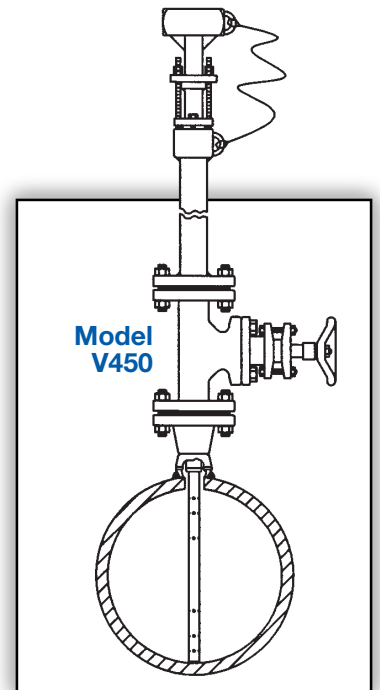
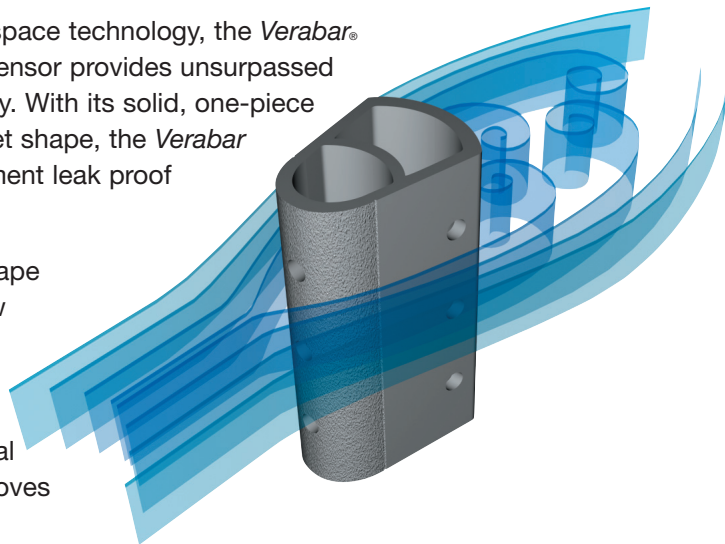


The Most Accurate and Reliable Technology for Measuring Gas, Liquid and Steam...

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.

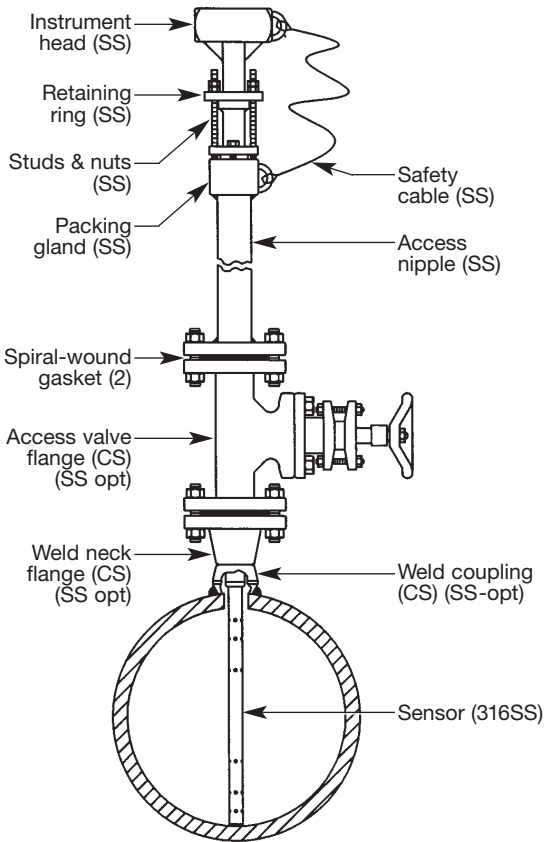


V450 Hot Tap	
Pipe Connection	Flanged
Mounting Type	Flanged ball or gate access valves
Features and Benefits	<ul style="list-style-type: none"> • Lowest cost flanged hot tap model • Installation, insertion & retraction without system shutdown • Hand insertion and retraction for low pressures (no threaded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

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

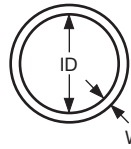
Verabar® Hot Tap Models

V450 Low Pressure

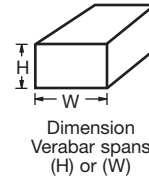


Furnish the following information:

1. Enter Pipe Dimensions or Duct Dimensions

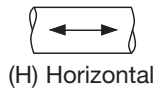


Pipe Size ____ Sch ____
 Pipe ID ____ and
 Wall ____ Pipe Mat'l ____



Height (H) ____
 Width (W) ____
 Wall ____
 Duct Mat'l ____

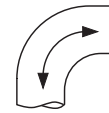
2. Pipe or Duct Orientation



(H) Horizontal



(V) Vertical



Short
 Straight Run
 Consult Factory

3. Enter Flow Conditions

Fluid Name:		Maximum	Normal	Minimum	Units
Flow Rate					
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

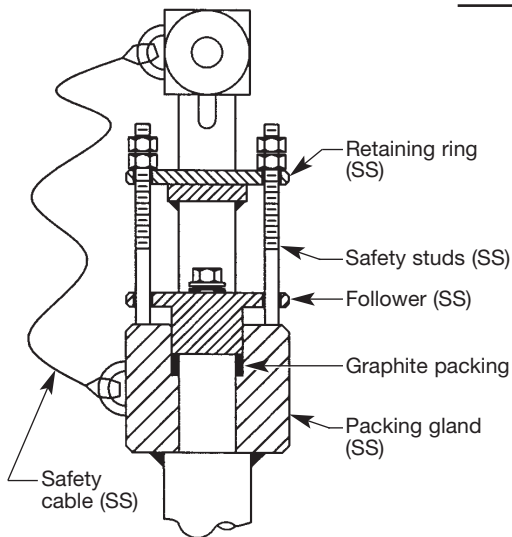
Use the Ordering Information table on Page 3 to determine your model number.

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

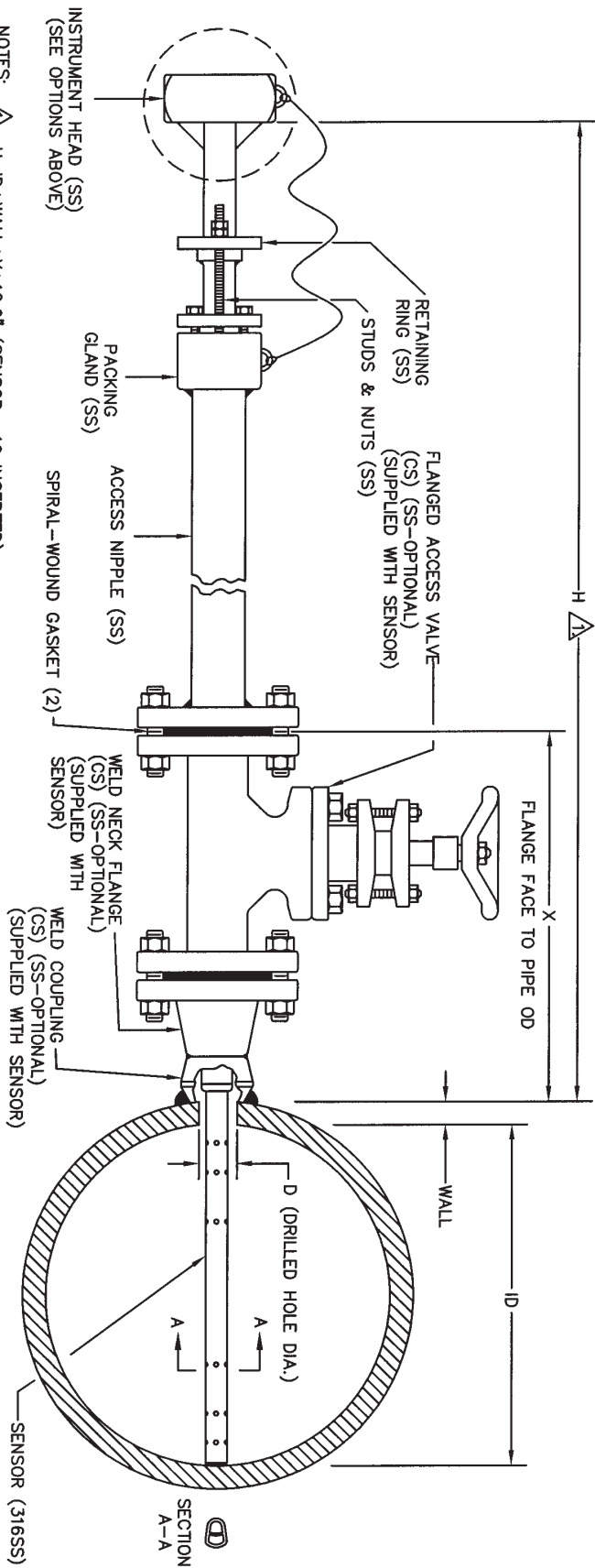
Model	Hot Tap • Low Pressure Hand Insertion					
V450	Hand Insert/Retract, Low Pressure					
Pipe Size and Schedule or Exact ID and Wall Thickness						
Code	Sensor Pipe Size Range					
10	6" to 42" (150mm to 1050mm)					
15	12" to 60" (300mm to 1500mm)					
Code	Pipe Orientation					
H	Horizontal		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

* 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 CLARITY, SHOWN 90 DEGREES FROM ACTUAL ORIENTATION FOR CLARITY.

ITEM	SENSOR	SENSOR
SENSOR DIA.	7/8" (22mm)	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	NTS
REV A	PAGE 1 OF 1