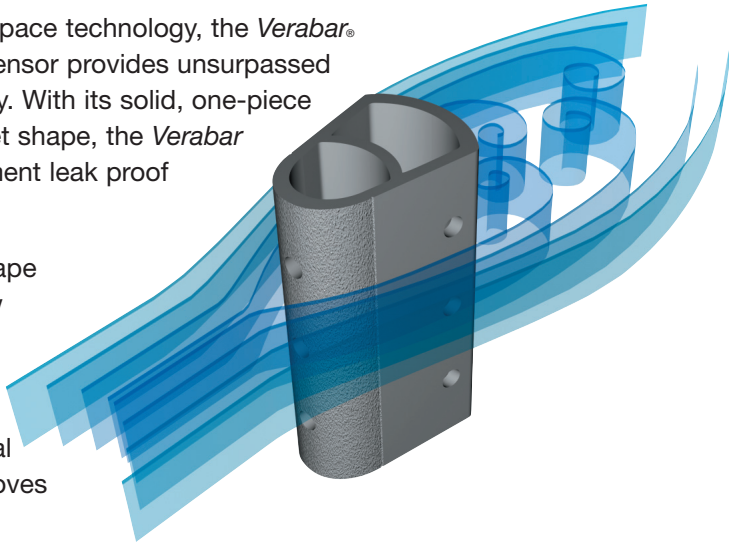
Differential Pressure Flow Sensors

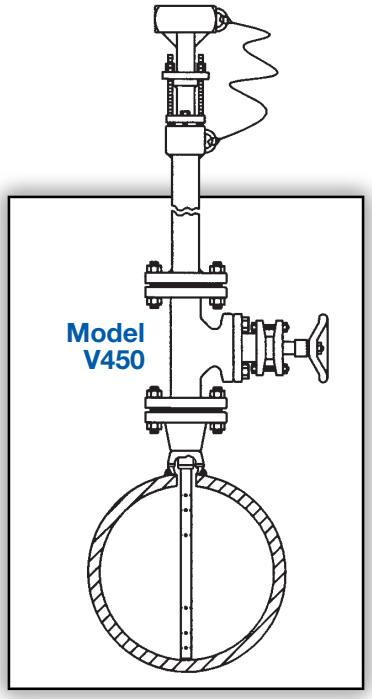
V450 Low Pressure Hand Insertion
Flanged Components

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.



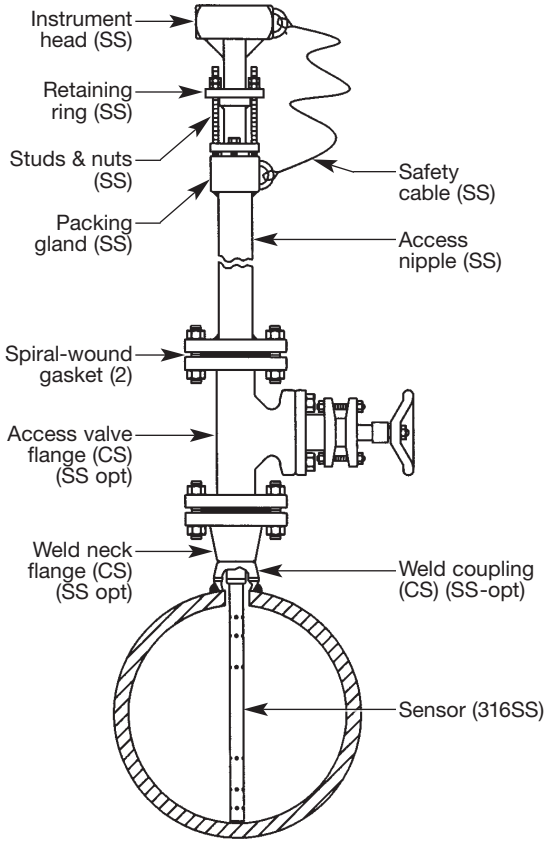


V450 Hot Tap	
Pipe Connection	Flanged
Mounting Type	Flanged ball or gate access valves
Features and Benefits	• Lowest cost flanged hot tap model • Installation, insertion & retraction without system shutdown • Hand insertion and retraction for low pressures (no threaded rods) • Retaining ring loads sensor to the opposite wall • Can mount to existing flanges or valves
Applications	• Low pressure • Air • Stack/flue gas • Water • Hydrocarbon and other gases
Special Designs — Consult Factory	• Custom mounting, lengths, materials, instrument connections, etc. • Short straight run

Model Specifications	V450	
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"

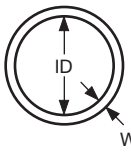
Verabar® Hot Tap Models

V450 Low Pressure

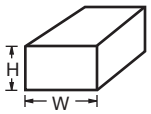


Furnish the following information:

1. Enter Pipe Dimensions or Duct Dimensions



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



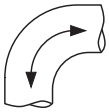
Dimension Verabar spans (H) or (W)

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				

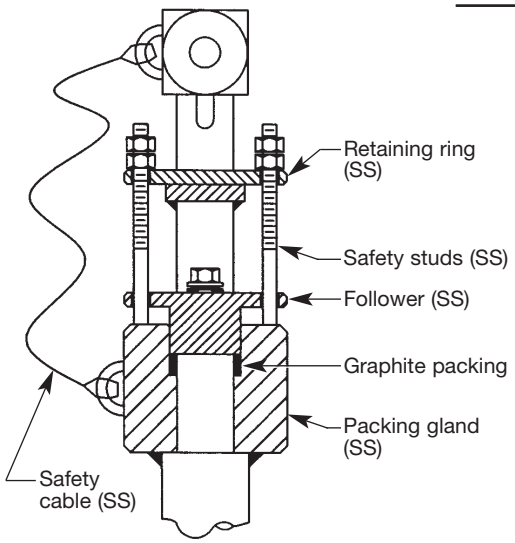
4. Select Model from Page 3

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

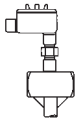
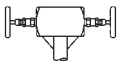
Pipe Size and Schedule or Exact ID and Wall Thickness

Code	Sensor Pipe Size Range
10	6” to 42” (150mm to 1050mm)
15	12” to 60” (300mm to 1500mm)

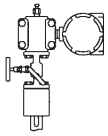
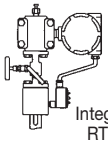
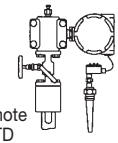
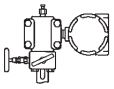
Code	Pipe Orientation
H	Horizontal
V	Vertical

Instrument Connections (Select Remote or Direct Mount)
(Transmitter sold separately)

Remote Mount Transmitter (1/2” NPT)

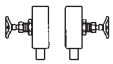
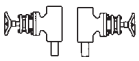
Parallel	Regular	RTD*	Valve
		 Explsn. Proof	 Integral
P	**R**	**D**	**T**

Direct Mount Transmitter (Flanged 450°F/232°C Max.)†

Transmount	Mass Transmount*		Manifold
	 Integral RTD	 Remote RTD	 Integral
F	**G**	**E**	**M**

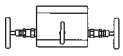
Instrument Valves (Opt.)

Remote Mount

Needle	Gate
 1/2” NPT	 1/2” NPT
C2NC (CS) **C2NS** (SS)	**C2GC** (CS) **C2GS** (SS)

Manifolds (Optional)

Direct Mount

3-Valve		5-Valve	
 Soft Seat	Hard Seat	 Soft Seat	Hard Seat
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			
B6CF15 **B6SF15**	**B8CF15** **B8SF15**	CS SS	150# 150#
Gate Valve Flange			
Sensor (Valve Size)		Material & ANSI Class	
10 (1-1/2”)	**15** (2”)		
Code			
G6CF15 **G6SF15**	**G8CF15** **G8SF15**	CS SS	150# 150#

Code	Options
WPS	SS Wetted Components (Furnished with SS weld coupling, flanges & access nipple). Must be ordered with SS access valve.

Optional

V450	8”sch40	10	H	R	C2NC	B6CF15	Typical Model Number

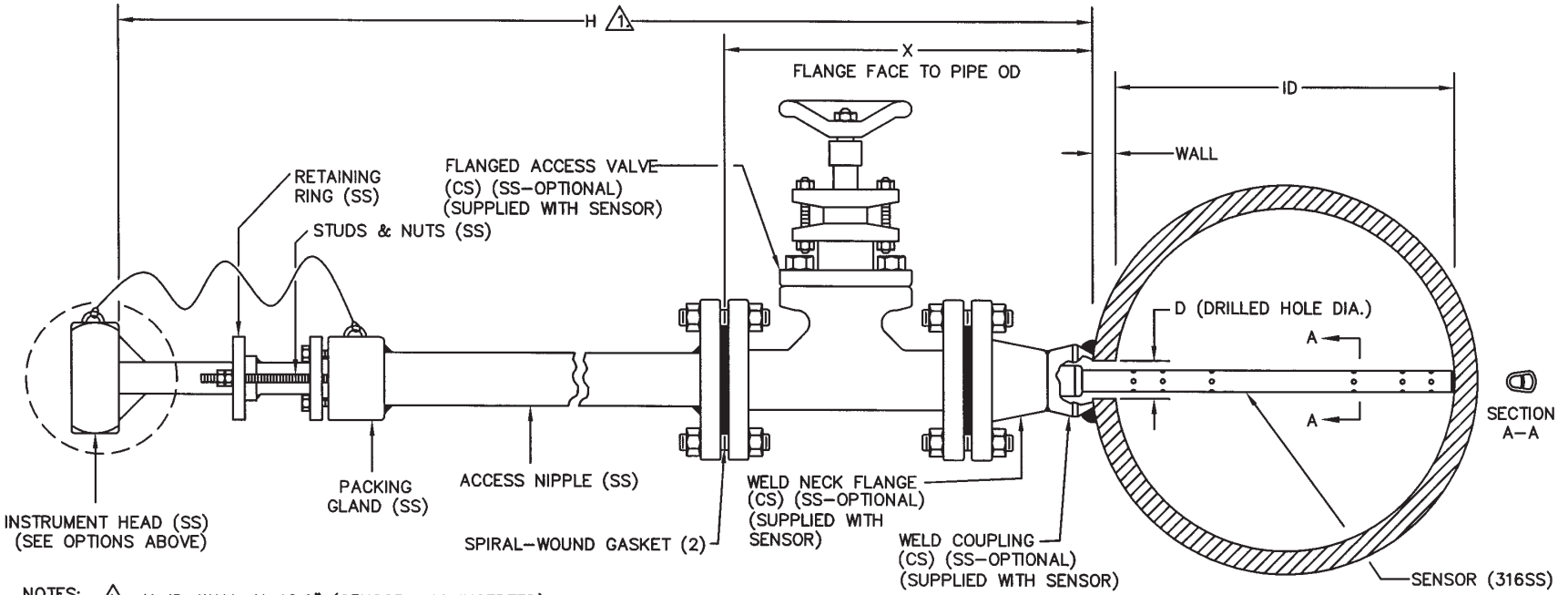
* For high pressure (>500psig) or high temperature (>500°F), remote mount RTD in a thermowell is preferred.
† Assuming adequate heat dissipation for transmitter.

REMOTE MOUNT	PARALLEL	REGULAR	RTD	VALVE
	1/2" NPT	1/2" NPT	X PROOF	INTEGRAL
CODE	P	R	D	T

VALVES	NEEDLE	GATE
	1/2" NPT	1/2" NPT
	C2NC (CS) C2NS (SS)	C2GC (CS) C2GS (SS)

DIRECT MOUNT	TRANSMOUNT	MASS TRANSMOUNT		MANIFOLD
		INT RTD	RMT RTD	INTEGRAL
CODE	F	G	E	M

MANIFOLDS	3- VALVES		5-VALVES	
	SOFT SEAT	HARD SEAT	SOFT SEAT	HARD SEAT
	F3SC (CS) F3SS (SS)	F3HC (CS) F3HS (SS)	F5SC (CS) F5SS (SS)	F5HC (CS) F5HS (SS)



NOTES:

1. 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).
2. INSTRUMENT HEAD AND ACCESS VALVE ORIENTATION SHOWN 90 DEGREES FROM ACTUAL ORIENTATION FOR CLARITY.

ITEM	SENSOR -10	SENSOR -15
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: _____

VERIS, inc.
6315 MONARCH PARK PLACE
NIWOT, CO 80503
PHONE: 303-652-8550
FAX: 303-652-8552

VERABAR MODEL: V450
HAND INSERTION, FLANGED

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