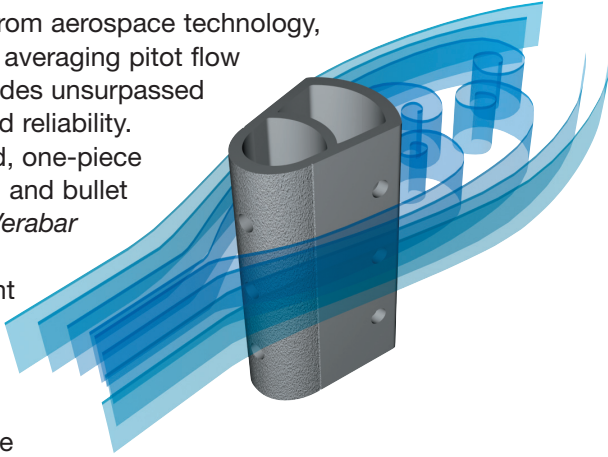


## Differential Pressure Flow Sensors

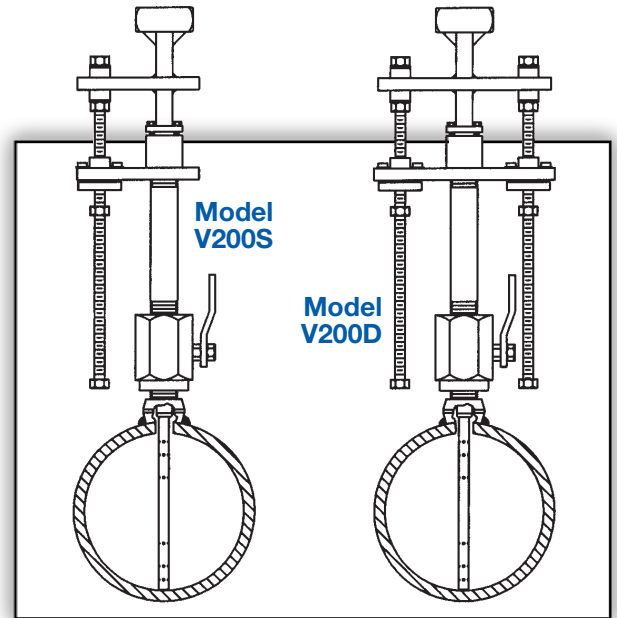
## V200 Screw Drive Threaded Components

### 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.



V200 Hot Tap	
<b>Pipe Connection</b>	Threaded (NPT)
<b>Mounting Type</b>	Ball or gate access valve
<b>Features and Benefits</b>	<ul style="list-style-type: none"> <li>• Most commonly used hot tap model</li> <li>• Installation, insertion &amp; retraction without system shutdown</li> <li>• Economical single threaded rod for most applications</li> <li>• Two threaded rods for high pressures</li> <li>• Synchro drive simultaneously rotates both rods (double rod drives only)</li> <li>• Patented, anti-seize orbital bearing aligns threaded rods and eliminates galling</li> <li>• Can mount to existing valves</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Air (compressed, combustion)</li> <li>• Natural gas</li> <li>• Water (raw, cooling, feedwater)</li> <li>• Steam</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>

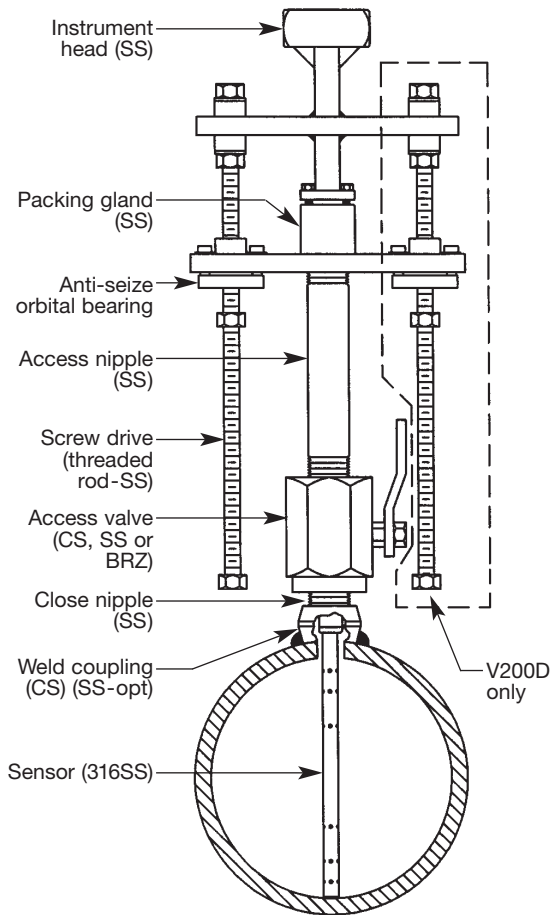
Temperature Pressure Limits (ANSI Class Rating)*
<b>150#</b>
275 psig @ 100°F (19 Bars @ 38°C)
80 psig @ 800°F (5.5 Bars @ 426°C)
<b>600#</b>
1440 psig @ 100°F (99.3 Bars @ 38°C)
825 psig @ 800°F (56.9 Bars @ 426°C)

Model Specifications	V200S			V200D	
<b>Sensor Code</b>	05	10	15	10	15
<b>Sensor Diameter</b>	7/16" (11mm)	7/8" (22mm)	1-3/8" (35mm)	7/8" (22mm)	1-3/8" (35mm)
<b>Accuracy</b>	±1% of flow rate; ±0.5% if calibrated				
<b>ANSI Class*</b>	600#	150#	150#	600#	600#
<b>Drive Rods</b>	Single			Double	
<b>Pipe Size</b>	2"-6" (50mm-150mm)	6"-42" (150mm-1050mm)	12"-60" (300mm-1500mm)	6"-42" (150mm-1050mm)	12"-60" (300mm-1500mm)
<b>Instrument Connection</b>	1/2" NPT	1/2" NPT or Direct Mount		1/2" NPT or Direct Mount	
<b>Components Furnished</b>	Weld coupling, close nipple, access nipple and valve				
<b>Weld Coupling Size</b>	3/4" NPT	1-1/4" NPT	2" NPT	1-1/4" NPT	2" NPT

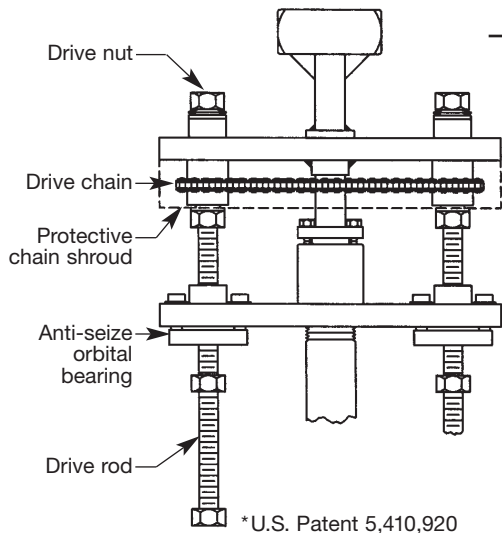
\* DIN and JIS flanges available. Consult factory.

# Verabar® Hot Tap Models

## V200S (Single Rod) V200D (Double Rod)

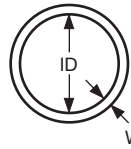


## Synchro-Drive (Option SYN)

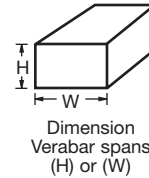


Furnish the following information:

### 1. Enter Pipe Dimensions or Duct Dimensions

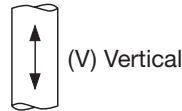
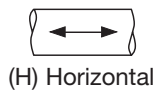


Pipe Size \_\_\_\_ Sch \_\_\_\_  
Pipe ID \_\_\_\_ and  
Wall \_\_\_\_ Pipe Mat'l \_\_\_\_



Height (H) \_\_\_\_  
Width (W) \_\_\_\_  
Wall \_\_\_\_  
Duct Mat'l \_\_\_\_

### 2. Pipe or Duct Orientation



### 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**.





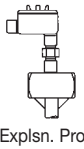

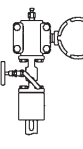
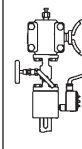

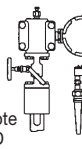




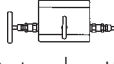
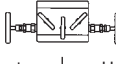
### Synchro-Drive Description

- Designed for pressures greater than ANSI Class 150#, Synchro-Drive is equipped with two drive rods that are coupled together by a protected chain drive system. Turning either drive nut simultaneously rotates both rods.

### Synchro-Drive Benefits

- 95% faster and easier insertion and retraction.
- Equal load distribution over both rods maintains sensor alignment and eliminates binding.

# Ordering Information

Model	Hot Tap • Threaded Pipe Connections and Components						
<b>V200S</b>	Single Rod, Insert/Retract, General Purpose ( <b>05</b> Class 600#, <b>10</b> and <b>15</b> Class 150#)						
<b>V200D</b>	Double Rod, Insert/Retract, Higher Pressures (600# max.) ( <b>10</b> and <b>15</b> only)						
<b>Pipe Size and Schedule or Exact ID and Wall Thickness</b>							
	<b>Code</b>	<b>Sensor Pipe Size Range</b>					
	<b>05</b>	2" to 6" (50mm to 150mm)					
	<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)</b> (Transmitter sold separately)							
 <b>Remote Mount Transmitter</b> (1/2" NPT)				 <b>Direct Mount Transmitter</b> (Flanged 450°F/232°C Max.)†			
Parallel	Regular	RTD*	Valve	Transmount	Mass Transmount*	Manifold	
		 Explsn. Proof	 Integral		 Integral RTD	 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>M</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	
<b>C2NC</b> (CS) <b>C2NS</b> (SS)		<b>C2GC</b> (CS) <b>C2GS</b> (SS)		<b>F3SC</b> (CS) <b>F3SS</b> (SS)		<b>F3HC</b> (CS) <b>F3HS</b> (SS)	
				<b>F5SC</b> (CS) <b>F5SS</b> (SS)		<b>F5HC</b> (CS) <b>F5HS</b> (SS)	
<b>Mounting Assembly — Select Valve Type &amp; Material</b> (Includes valve, close nipple & weld coupling)							
<b>Sensor (Valve Size NPT)</b>						Type, Material & Rating	
<b>05</b> (3/4")	<b>10</b> (1-1/4")	<b>15</b> (2")					
<b>Code</b>							
<b>B3B</b>	<b>B5B</b>	<b>B8B</b>				Ball, Brz., 600 psig @ 100°F, 100 psig @ 400°F (max.)	
<b>B3C</b>	<b>B5C</b>	<b>B8C</b>				Ball, CS, 1000 psig @ 100°F, 100 psig @ 400°F (max.)	
<b>B3S</b>	<b>B5S</b>	<b>B8S</b>				Ball, SS, 1000 psig @ 100°F, 100 psig @ 400°F (max.)	
<b>G3C</b> <b>G3S</b>	<b>G5C</b> <b>G5S</b>	<b>G8C</b> <b>G8S</b>				Gate, CS, ANSI Class 600# Gate, SS, 1200 psig @ 100°F, 660 psig @ 800°F	
<b>Code</b> <b>Options</b>							
<b>SYN</b>		Synchronized Two Rod Drive System (Available for V200D-10 and V200D-15 sensors only)					
<b>WPS</b>		SS Wetted Components (Furnished with SS weld coupling, close & access nipple). Must be ordered with SS access valve.					
<b>V200D</b>	<b>8"sch40</b>	<b>10</b>	<b>H</b>	<b>R</b>	<b>C2NC</b>	<b>B5C</b>	<b>SYN</b>
<b>Typical Model Number</b>							

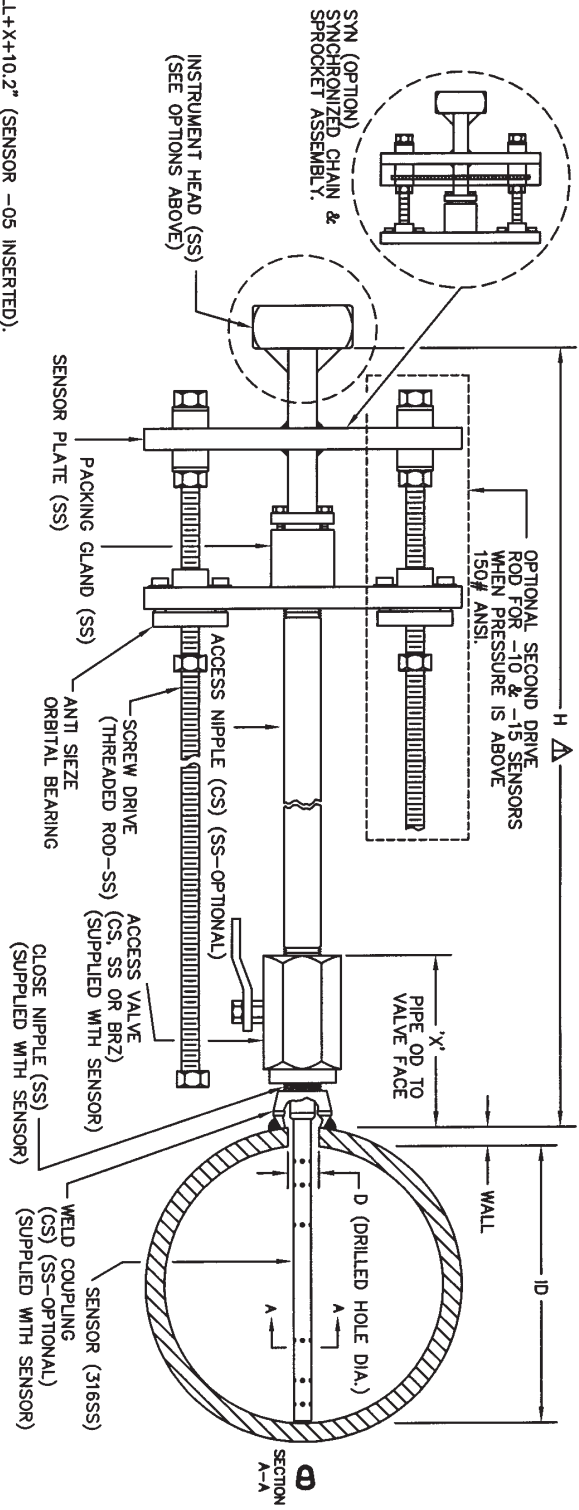
\* For high pressure (>500psig) or high temperature (>500°F), remote mount RTD in a thermowell is preferred.

† Assuming adequate heat dissipation for transmitter.

PARALLEL	REGULAR	RTD	VALVE	NEEDLE	GATE
1/2" NPT	1/2" NPT	X PROOF	INTEGRAL	1/2" NPT	1/2" NPT
CODE P	CODE R	CODE D	CODE T	CODE S	CODE SS
1/2" NPT	1/2" NPT	X PROOF	INTEGRAL	1/2" NPT	1/2" NPT
CODE P	CODE R	CODE D	CODE T	CODE S	CODE SS

TRANSMOUNT	MASS TRANSMOUNT	MANIFOLD	3-VALVES	5-VALVES
INT RTD	RMT RTD	INTEGRAL	SOFT SEAT	SOFT SEAT
CODE F	CODE G	CODE E	CODE M	CODE M
INT RTD	RMT RTD	INTEGRAL	SOFT SEAT	SOFT SEAT
CODE F	CODE G	CODE E	CODE M	CODE M



- NOTES:
- △ H=ID+WALL+X+10.2" (SENSOR -05 INSERTED).
  - H=ID+WALL+X+11.6" (SENSOR -10 INSERTED).
  - H=ID+WALL+X+13.6" (SENSOR -15 INSERTED).
  - H=2(ID+WALL+X)+10.1" (SENSOR -05 RETRACTED).
  - H=2(ID+WALL+X)+11.4" (SENSOR -10 RETRACTED).
  - H=2(ID+WALL+X)+13.3" (SENSOR -15 RETRACTED).
  - ADD 1.5" TO 'H' FOR -10 SYNCHRO DRIVE.
  - ADD 1.75" TO 'H' FOR -15 SYNCHRO DRIVE.
2. INSTRUMENT HEAD AND ACCESS VALVE ORIENTATION FOR SHOWN 90 DEGREES FROM ACTUAL ORIENTATION FOR CLARITY.

ITEM	SENSOR	SENSOR	SENSOR	PRESSURE RATING
SENSOR DIA.	7/16" (11mm)	7/8" (22mm)	1-3/8" (35mm)	-
COUPLING SIZE	3/4" NPT	1-1/4" NPT	2" NPT	-
DIM 'D' DRILLED HOLE DIAMETER	1/2" (13mm)	1" (26mm)	1-1/2" (39mm)	-
DIM 'X*' FOR BRONZE BALL VALVE	5.6" (142mm)	7.2" (183mm)	8.4" (213mm)	600PSI ● 100F/100PSI ● 400F
DIM 'X*' FOR CS BALL VALVE	6.2" (157mm)	7.6" (193mm)	9.1" (231mm)	1000PSI ● 100F/100PSI ● 400F
DIM 'X*' FOR SS BALL VALVE	6.0" (152mm)	7.7" (196mm)	9.1" (231mm)	1000PSI ● 100F/100PSI ● 400F
DIM 'X*' FOR CS GATE VALVE	6.5" (165mm)	7.7" (196mm)	10.1" (257mm)	ANSI CLASS 600#
DIM 'X*' FOR SS GATE VALVE	6.0" (152mm)	7.7" (196mm)	8.8" (224mm)	1200PSI ● 100F/660PSI ● 800F

\* '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: V200 SINGLE & DOUBLE ROD THREADED

DATE 09/20/01 DWG NO. SUB-3936

SCALE NTS REV A PAGE 1 OF 1