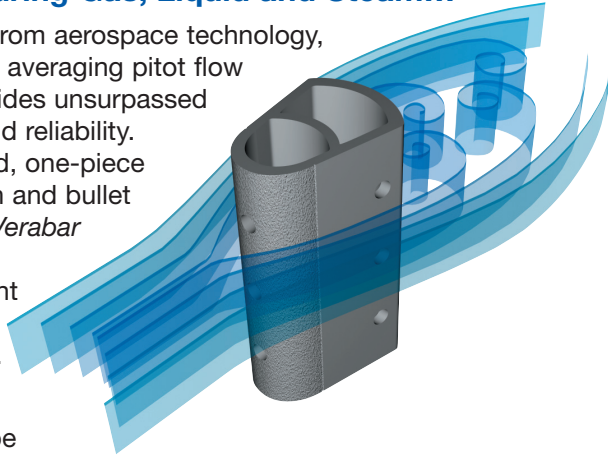


Differential Pressure Flow Sensors

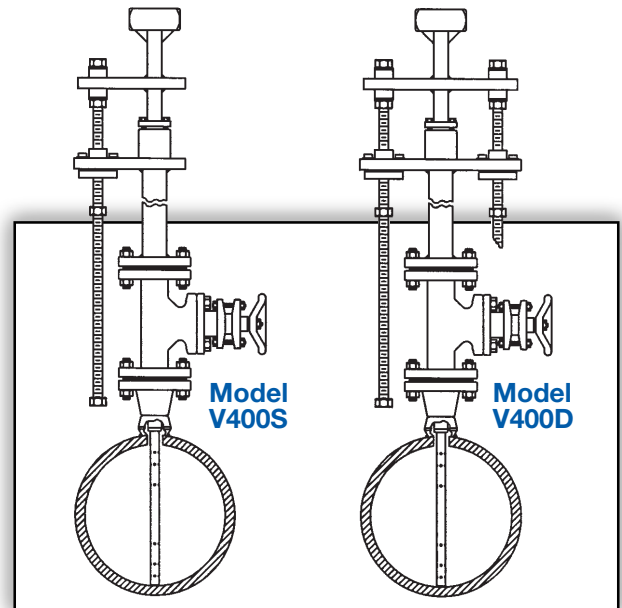
**V400 Screw Drive
Flanged Components**

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.



V400 Hot Tap	
Pipe Connection	Flanged
Mounting Type	Flanged ball or gate access valves
Features and Benefits	<ul style="list-style-type: none"> • Installation, insertion & retraction without system shutdown • Economical single threaded rod for most applications • Two threaded rods for high pressures • Synchro drive simultaneously rotates both rods (double rod drives only) • Patented, anti-seize orbital bearing aligns threaded rods and eliminates galling • Can mount to existing flanges or valves
Applications	<ul style="list-style-type: none"> • Air • Natural gas • Water (raw, cooling, feedwater) • Hydrocarbon liquids and gases • Hazardous fluids • Steam
Special Designs – Consult Factory	<ul style="list-style-type: none"> • Custom mounting, lengths, materials, instrument connections, etc. • Short straight run

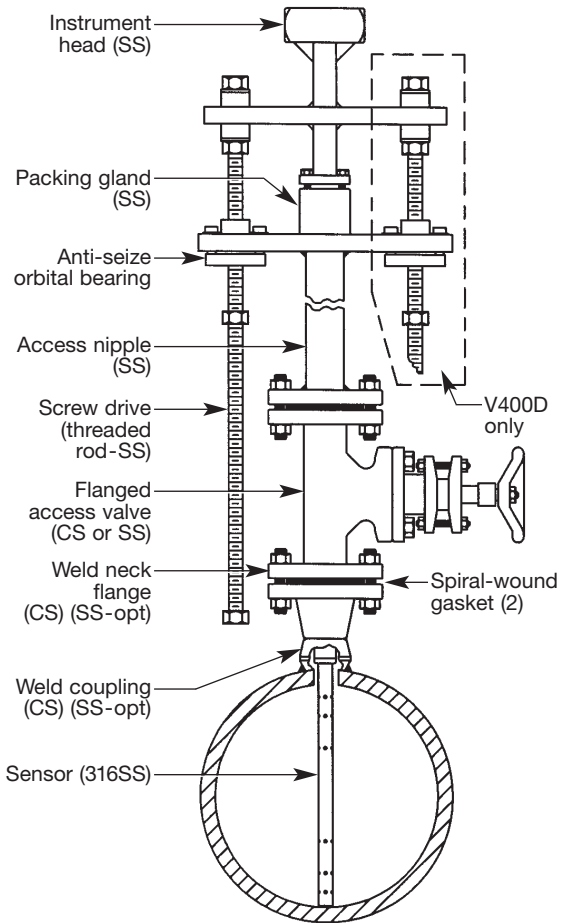
Temperature Pressure Limits (ANSI Class)*
150#
275 psig @ 100°F (19 Bars @ 38°C)
80 psig @ 800°F (5.5 Bars @ 426°C)
600#
1440 psig @ 100°F (99.3 Bars @ 38°C)
825 psig @ 800°F (56.9 Bars @ 426°C)

Model Specifications	V400S			V400D	
Sensor Code	05	10	15	10	15
Sensor Diameter	7/16" (11mm)	7/8" (22mm)	1-3/8" (35mm)	7/8" (22mm)	1-3/8" (35mm)
Accuracy	±1% of flow rate; ±0.5% if calibrated				
ANSI Class*	600#	150#	150#	600#	600#
Drive Rods	Single			Double	
Pipe Size	2" - 6" (50mm-150mm)	6" - 42" (150mm-1050mm)	12" - 60" (300mm-1500mm)	6" - 42" (150mm-1050mm)	12" - 60" (300mm-1500mm)
Instrument Connection	1/2" NPT	1/2" NPT or Direct Mount		1/2" NPT or Direct Mount	
Components Furnished	Weld coupling, weld neck flange, access valve, gaskets, studs & nuts				
Flange Size	1"	1-1/2"	2"	1-1/2"	2"

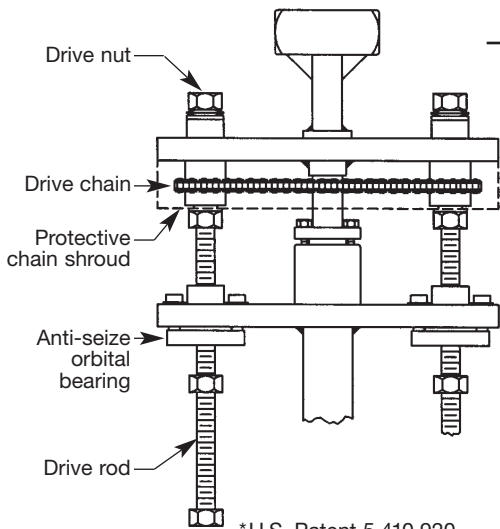
* DIN and JIS flanges available. Consult factory.

Verabar® Hot Tap Models

V400S (Single Rod) V400D (Double Rod)

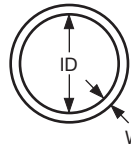


Synchro-Drive (Option SYN)

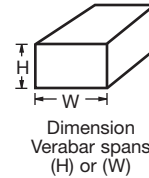


Furnish the following information:

1. Enter Pipe Dimensions or Duct Dimensions

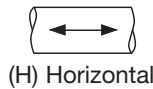


Pipe Size ____ Sch ____
Pipe ID ____ and
Wall ____ Pipe Mat'l ____



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

2. Pipe or Duct Orientation



3. Enter Flow Conditions

Fluid Name:		Maximum	Normal	Minimum	Units
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**.












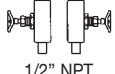
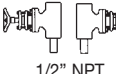
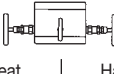
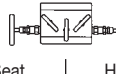
Synchro-Drive Description

- 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.

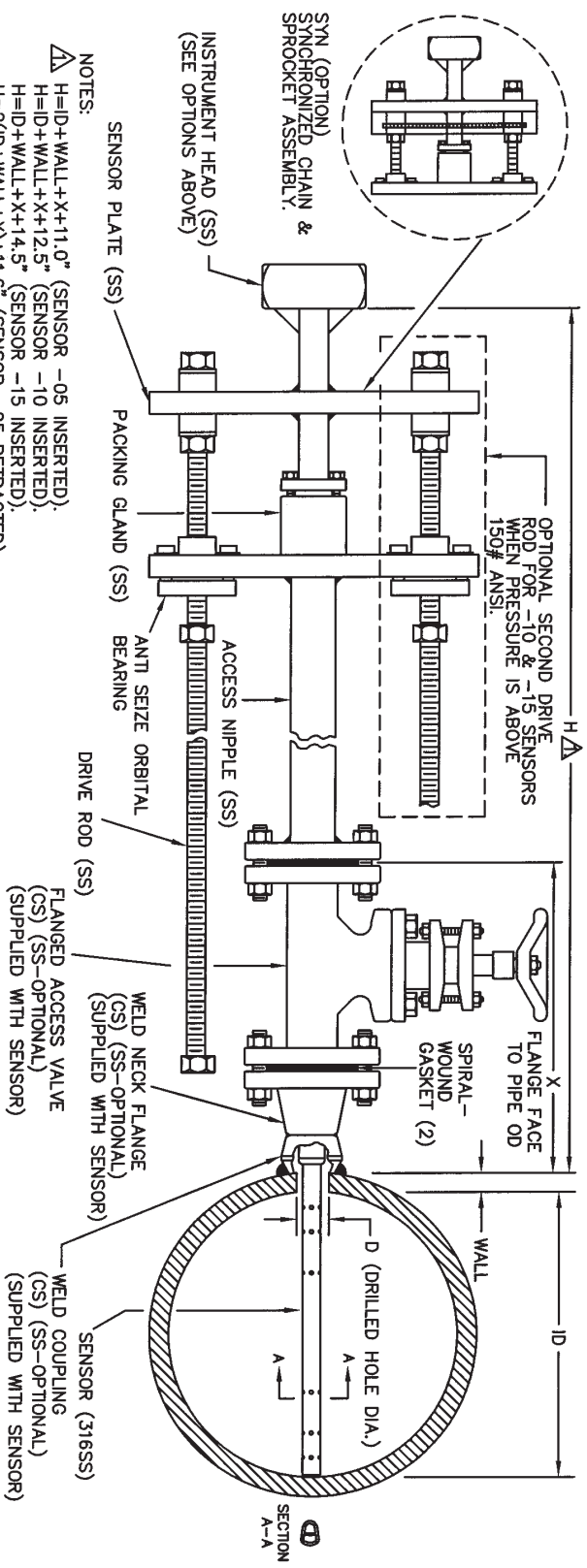
Ordering Information

Model	Hot Tap • Screw Drive						
V400S	Single Rod, Insert/Retract, General Purpose (05 Class 600#, 10 and 15 Class 150#)						
V400D	Double Rod, Insert/Retract, Higher Pressures (600# max.) (10 and 15 only)						
Pipe Size and Schedule or Exact ID and Wall Thickness							
Code	Sensor Pipe Size Range						
05	2" to 6" (50mm to 150mm)						
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				
05 (1")	10 (1-1/2")	15 (2")					
Code							
B4CF15 B4SF15	B6CF15 B6SF15	B8CF15 B8SF15	CS	150#			
B4CF30 B4SF30	B6CF30 B6SF30	B8CF30 B8SF30	CS	300#			
			SS	300#			
Gate Valve Flange							
Sensor (Valve Size)			Material & ANSI Class				
05 (1")	10 (1-1/2")	15 (2")					
Code							
G4CF15 G4SF15	G6CF15 G6SF15	G8CF15 G8SF15	CS	150#			
			SS	150#			
G4CF30 G4SF30	G6CF30 G6SF30	G8CF30 G8SF30	CS	300#			
			SS	300#			
G4CF60 G4SF60	G6CF60 G6SF60	G8CF60 G8SF60	CS	600#			
			SS	600#			
Optional							
Code	Options						
SYN	Synchronized Two Rod Drive System (Available for V400D-10 and V400D-15 sensors only)						
WPS	SS Wetted Components (Furnished with SS weld coupling, flanges & access nipple). Must be ordered with SS access valve.						
V400D	8"sch40	10	H	R	C2NC	G6CF30	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.

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

DIAGNOSTIC CODE	TRANSMOUNT	MASS TRANSMOUNT	MANIFOLD	3-VALVES	5-VALVES
F	INT RTD	RMT RTD	INTEGRAL	SOFT SEAT (F33C CS) / HARD SEAT (F33S SS)	SOFT SEAT (F53C CS) / HARD SEAT (F53S SS)



- NOTES:
- H=ID+WALL+X+11.0" (SENSOR -05 INSERTED).
 - H=ID+WALL+X+12.5" (SENSOR -10 INSERTED).
 - H=ID+WALL+X+14.5" (SENSOR -15 INSERTED).
 - H=2(ID+WALL+X)+11.6" (SENSOR -05 RETRACTED).
 - H=2(ID+WALL+X)+13.1" (SENSOR -10 RETRACTED).
 - H=2(ID+WALL+X)+15.1" (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 -05	SENSOR -10	SENSOR -15
SENSOR DIA.	7/16" (11mm)	7/8" (22mm)	1-3/8" (35mm)
FLANGE SIZE	1"	1-1/2"	2"
DIM 'D' DRILLED HOLE DIAMETER	1/2" (13mm)	1" (26mm)	1-1/2" (39mm)
DIM 'X' ANSI CLASS 150#	8.5" (216mm)	10.5" (267mm)	11.25" (286mm)
DIM 'X' ANSI CLASS 300#	10.25" (260mm)	11.75" (298mm)	13.0" (330mm)
DIM 'X' ANSI CLASS 600#	12.5" (318mm)	14.06" (357mm)	16.38" (416mm)

* '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: V400 SINGLE & DOUBLE ROD FLANGED

DATE	DWG NO.
09/20/01	SUB-3939
SCALE	REV A
NTS	PAGE 1 OF 1