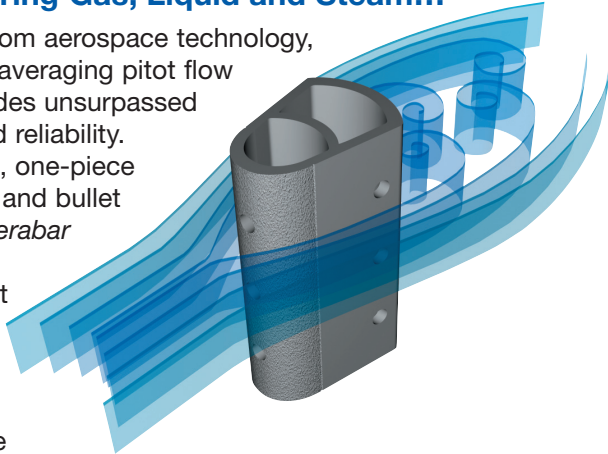


Differential Pressure Flow Sensors

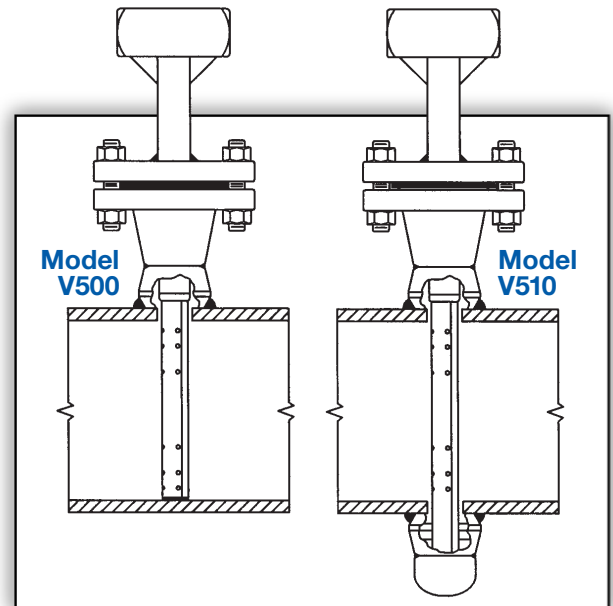
V500 Single Support V510 Double Support Flanged Components

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.



| V500 Single Support V510 Double Support | |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pipe Connection | Flanged |
| Mounting Type | Flanged up to ANSI Class 2500# |
| Features and Benefits | <ul style="list-style-type: none"> All welded mounting Preferred mounting in power, petrochemical and refining industries Can mount to existing flanges |
| Applications | <ul style="list-style-type: none"> Air Natural gas Hydrocarbon liquids and gases Water (raw, cooling, feedwater) Hazardous fluids Steam Large pipes and ducts |
| Special Designs – Consult Factory | <ul style="list-style-type: none"> Custom mounting, lengths, materials, instrument connections, etc. Short straight run |

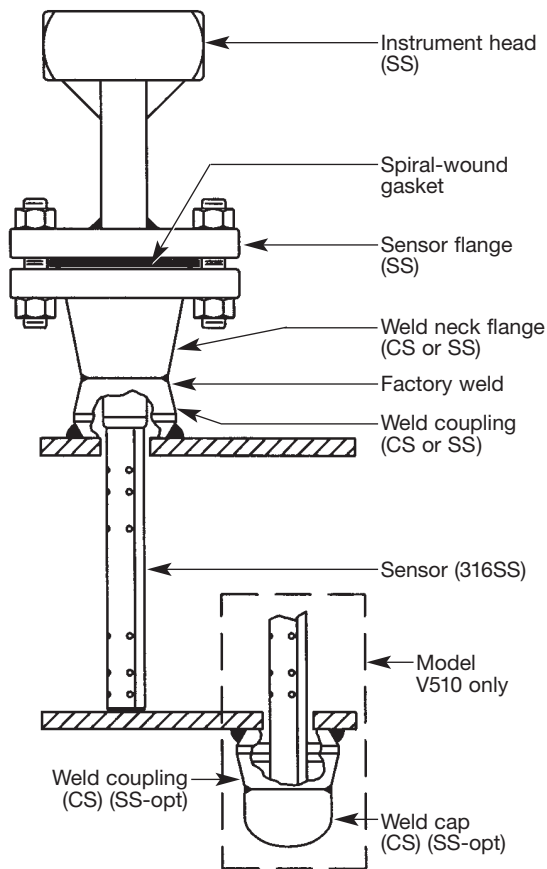
| Temperature Pressure Limits (ANSI Class)* |
|----------------------------------------------|
| 150# |
| 275 psig @ 100°F (19 Bars @ 38°C) |
| 80 psig @ 800°F (5.5 Bars @ 426°C) |
| 300# |
| 720 psig @ 100°F (49.6 Bars @ 38°C) |
| 410 psig @ 800°F (28.3 Bars @ 426°C) |
| 600# |
| 1440 psig @ 100°F (99.3 Bars @ 38°C) |
| 825 psig @ 800°F (56.9 Bars @ 426°C) |
| 1500# |
| 3600 psig @ 100°F (248.2 Bars @ 38°C) |
| 190 psig @ 1500°F (13.1 Bars @ 815°C) |
| 2500# |
| 6000 psig @ 100°F (413.7 Bars @ 38°C) |
| 315 psig @ 1500°F (21.7 Bars @ 815°C) |

| Model Specifications | V500 and V510 | | |
|------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------|
| Sensor Code | 05 | 10 | 15 |
| Sensor Diameter | 7/16" (11mm) | 7/8" (22mm) | 1-3/8" (35mm) |
| Accuracy | ±1% of flow rate; ±0.5% if calibrated | | |
| ANSI Class* | 150#, 300#, 600#, 1500# and 2500# | | |
| Pipe Size | 2"-6" (50mm-150mm) | 6"-48" (150mm-1200mm) | 12"-192" (300mm-5000mm) |
| Instrument Connection | 1/2" NPT or Socket Weld | 1/2" NPT, Socket Weld or Direct Mount | |
| Components Furnished | Weld coupling, weldneck flange, gasket, studs & nuts V510 includes additional weld coupling and pipe cap. | | |
| Flange Size | 1" | 1-1/2" | 2" |

* DIN and JIS flanges available. Consult factory.

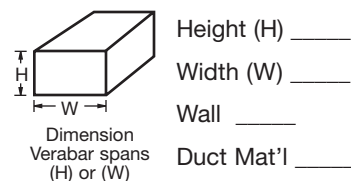
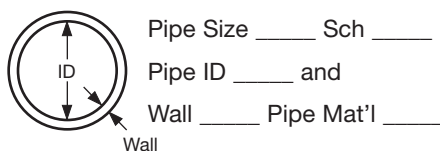
Verabar® Flanged Models

V500 (Single Support) V510 (Double Support)

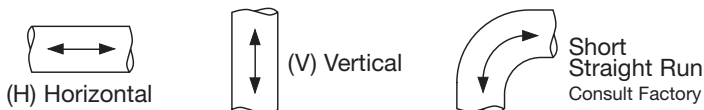


Furnish the following information:

1. Enter Pipe Dimensions or Duct Dimensions



2. Pipe or Duct Orientation



3. Enter Flow Conditions

| Fluid Name: | | Maximum | Normal | Minimum | Units |
|------------------|----------------------------------------------------------------------|---------|--------|---------|-------|
| 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

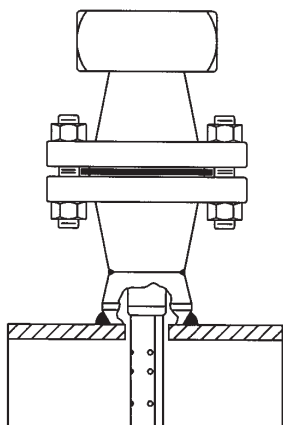
Use the Ordering Information table on Page 3 to determine your model number.

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**.

Applications up to ANSI Class 2500#



High Pressure and Temperature Head Option

Unique Design Features

High Pressure Threaded (HPT) and High Pressure Socket (HPS) designs offer the highest possible pressure and temperature capabilities. When pressure containment and safety are primary concerns, the HPT/HPS has the strongest and safest design in the industry.

As with all Veris designs, it meets ANSI/ASME B31.1 and can be supplied with code welding (ASME Section IX), hydrostatic testing, N.A.C.E. and material traceability.

Applications

Main Header Steam Lines
















Used for high pressure and temperature applications such as main header steam lines.

For these applications, pipe mounting assemblies are available in chrome-moly material (ASTM A182 F11, F22 & F91).

Other Applications

- High pressure and temperature gasses and liquids
- Natural gas transmission lines
- Boiler feed water lines
- Oil well injection lines

Ordering Information

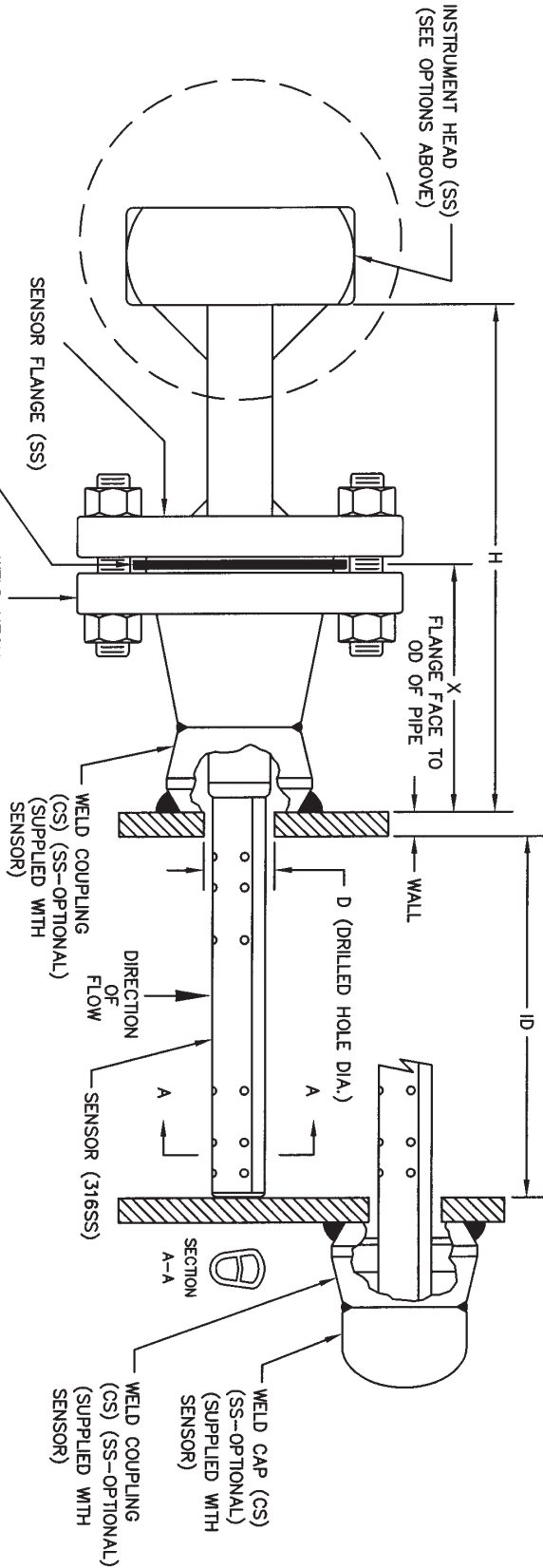
| Model | Flanged | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--|
| V500 | Single Support | | | | | | |
| V510 | Double Support | | | | | | |
| 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 48" (150mm to 1200mm) | | | | | | |
| 15 | 12" to 192" (300mm to 5000mm) | | | | | | |
| 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 Material & Rating (Includes SS sensor flange, WN flange, weld coupling, spiral-wound gaskets, studs & nuts) | | | | | | | |
| Sensor (Flange Size) | | | Mating Flange Material & ANSI Class | | | | |
| 05 (1") | 10 (1-1/2") | 15 (2") | | | | | |
| Code | | | | | | | |
| F415C F415S | F615C F615S | F815C F815S | CS | 150# | | | |
| | | | SS | 150# | | | |
| F430C F430S | F630C F630S | F830C F830S | CS | 300# | | | |
| | | | SS | 300# | | | |
| F460C F460S | F660C F660S | F860C F860S | CS | 600# | | | |
| | | | SS | 600# | | | |
| High Pressure Instrument Head (ANSI Class 1500# & 2500#) | | | | | | | |
| HPT | 1/2" NPT | | | | | | |
| HPS | Socket Weld | | | | | | |
| High Pressure Mounting Assy (HPT & HPS Connections) | | | | | | | |
| Sensor (Flange Size) | | | Mating Flange Material & ANSI Class | | | | |
| 05 (1") | 10 (1-1/2") | 15 (2.5" or 3") | | | | | |
| Code | | | | | | | |
| F4150C F4150S F4150F11 F4150F22 | F6150C F6150S F6150F11 F6150F22 | F10150C F10150S F10150F11 F10150F22 | CS | 1500# | | | |
| | | | SS | 1500# | | | |
| | | | F11 | 2500# | | | |
| | | | F22 | 2500# | | | |
| F4250C F4250S F4250F11 F4250F22 | F6250C F6250S F6250F11 F6250F22 | F12250C F12250S F12250F11 F12250F22 | CS | 2500# | | | |
| | | | SS | 2500# | | | |
| | | | F11 | 2500# | | | |
| | | | F22 | 2500# | | | |
| Typical Model Number | | | | | | | |
| V500 | 8"sch40 | 10 | H | R | C2NC | F615C | |

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

† Assuming adequate heat dissipation for transmitter.

| CODE | EMOUNT | PARALLEL | REGULAR | RTD | VALVE | NEEDLE | GATE |
|------|--------|----------|----------|---------|----------|------------------------------------|------------------------------------|
| | | | | | | | |
| | | 1/2" NPT | 1/2" NPT | X PROOF | INTEGRAL | 1/2" NPT C2NG (CS) C2NS (SS) | 1/2" NPT C2GC (CS) C2GS (SS) |

| CODE | TRANS MOUNT | MASS TRANS MOUNT | MANIFOLD | MANIFOLDS |
|------|-------------|------------------|----------|-------------------------------------------------|
| | | | | |
| | F | G | M | 3-VALVES SOFT SEAT F3SG (CS) F3SS (SS) |
| | | E | | HARD SEAT F3HG (CS) F3HS (SS) |
| | | | | 5-VALVES SOFT SEAT F5SG (CS) F5SS (SS) |
| | | | | HARD SEAT F5HG (CS) F5HS (SS) |



NOTES:
1. CONTACT VERIS FOR DIMENSIONAL DRAWING FOR HIGH PRESSURE THREADED (HPT) & HIGH PRESSURE SOCKET (HPS)

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

| ITEM | SENSOR -05 | SENSOR -10 | SENSOR -15 |
|--------------------------|--------------|---------------|---------------|
| SENSOR DIA. | 1/2" (13mm) | 7/8" (22mm) | 1-3/8" (35mm) |
| FLANGE & COUPLING SIZE | 1" | 1-1/2" | 2" |
| DIM D* DRILLED HOLE DIA. | 1/2" (13mm) | 1" (26mm) | 1-1/2" (39mm) |
| DIM H** ANSI CLASS 150# | 6.7" (170mm) | 7.9" (200mm) | 9.3" (235mm) |
| DIM H** ANSI CLASS 300# | 7.3" (186mm) | 8.4" (214mm) | 9.8" (249mm) |
| DIM H** ANSI CLASS 600# | 7.8" (198mm) | 9.1" (230mm) | 10.6" (268mm) |
| DIM X* ANSI CLASS 150# | 3.31" (84mm) | 3.81" (97mm) | 4.06" (103mm) |
| DIM X* ANSI CLASS 300# | 3.56" (90mm) | 4.06" (103mm) | 4.31" (110mm) |
| DIM X* ANSI CLASS 600# | 3.81" (97mm) | 4.38" (111mm) | 4.69" (119mm) |

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

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

VERABAR MODEL: V500/V510
FLANGED CONNECTION

DATE: 09/20/01
SCALE: NTS
REV: A
PAGE: 1 OF 1