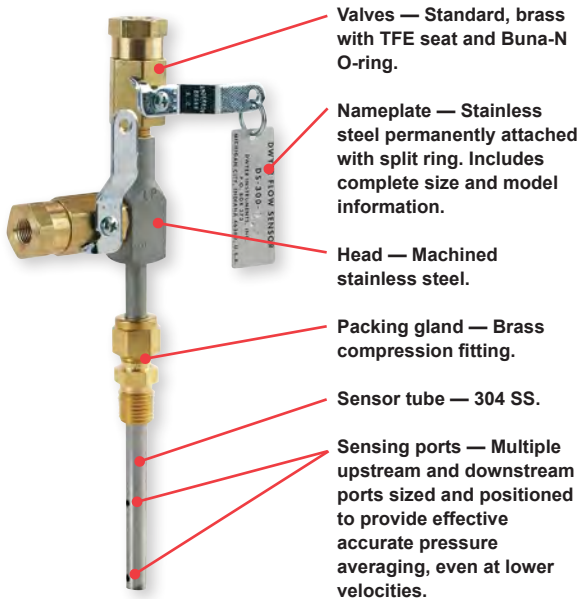


**Dwyer**  
SERIES DS

# IN-LINE FLOW SENSORS

Use with the Dwyer® Differential Pressure Gages or Transmitters



**Valves** — Standard, brass with TFE seat and Buna-N O-ring.

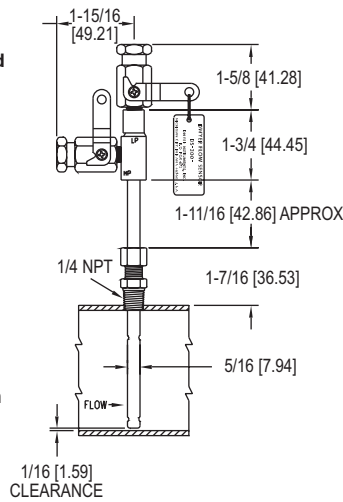
**Nameplate** — Stainless steel permanently attached with split ring. Includes complete size and model information.

**Head** — Machined stainless steel.

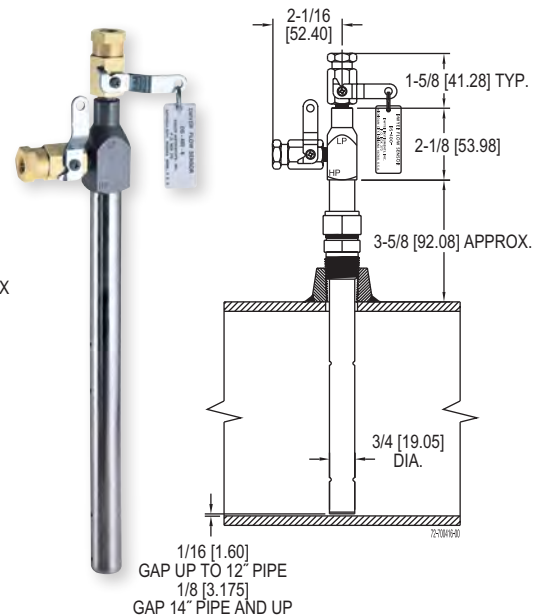
**Packing gland** — Brass compression fitting.

**Sensor tube** — 304 SS.

**Sensing ports** — Multiple upstream and downstream ports sized and positioned to provide effective accurate pressure averaging, even at lower velocities.



Series DS-300



Large 3/4 Inch Diameter for Extra Strength in Lengths to 24 Inches

Series DS-400

The **Series DS In-Line Flow Sensors** are two Series of averaging Pitot tubes for compatible gases and liquids that provide accurate and convenient flow rate sensing, for schedule 40 pipe, when purchased with suitable differential pressure gage with appropriate range. The Series DS-300 Averaging Flow Sensors are designed to be inserted in the pipeline through a compression fitting and available for pipe sizes from 1 to 10" (2.5 to 25.4 cm). Accessories include adapters with 1/4" SAE 45° flared ends compatible with hoses supplied with the Model A-471 Portable Capsuhelic® Gage Kit. The Series DS-400 Averaging Flow Sensors are designed for insertion lengths up to 24" (61 cm) and include a pair of 1/8" NPT x 1/4" SAE 45° flared adapters which are compatible with hoses used in the Model A-471 Portable Capsuhelic® Gage Kit. The supplied solid brass mounting adapter has a 3/4" dia. compression fitting to lock in required insertion length and a 3/4" male NPT thread for mounting in a threaded branch connection (not included).

## FEATURES/BENEFITS

- Multiple sensing point measurement and built-in averaging capability eliminates the need for "traversing" the flowing stream with single point velocity pressure measurement saving time
- Extremely reliable, proven technology, Pitot tubes, have been used in flow measurement for years
- All models include convenient and quick-acting quarter-turn ball valves to isolate the sensor for zeroing with 1/8" female NPT valve assembly process connections.
- Furnished with instrument shut-off valves on both pressure connections with 1/8" female NPT connections rated at 200 psig (13.7 bar) and 200°F (93.3°C)
- Where valves are not required, they can be omitted at reduced cost
- The Series DS-400 Averaging Flow Sensors are quality constructed from extra strong 3/4" dia. stainless steel to resist increased forces encountered at higher flow rates with both air and water
- Economical flow indication when used with appropriate differential pressure gage
- Rugged construction yields, non-clogging, stable design

## SPECIFICATIONS

**Service:** Compatible gases or liquids.  
**Wetted Materials:** Sensor tube: 304 SS; Compression fitting: brass.  
**Temperature Limit:** 200°F (93.3°C).  
**Pressure Limit:** 200 psig (13.78 bar) at 200°F (93.3°C).  
**Pipe Sizes:** DS-300: 1 to 10" (2.5 to 25.4 cm); DS-400: 6 to 24" (15.2 to 61 cm).  
**Process Connections:** DS-300: 1/4" male NPT compression fitting included; DS-400: 3/4" male NPT compression fitting included.  
**Piping Connections:** DS-300: 1/8" female NPT; optional 1/8" female NPT x 1/4" SAE 45 flared adapter sold separately; DS-400: 1/8" female NPT with 1/8" female NPT x 1/4" SAE 45 flared adapters include.  
**Weights:** Consult factory.

## APPLICATIONS

- Remediation
- Natural, flare, flue, stack gas
- Boiler feedwater
- Cooling water
- Superheated, saturated, or geothermal steam
- Combustion or compressed air
- Oil flow monitoring

USA: California Proposition 65  
 ⚠ WARNING: Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# IN-LINE FLOW SENSORS

Use with the Dwyer® Differential Pressure Gages or Transmitters

## HOW TO ORDER

Merely determine the pipe size into which the flow sensor will be mounted and designate the size as a suffix to Model DS-300. For example, a flow sensor to be mounted in a 2" pipe would be a Model No. DS-300-2".

For non-critical water and air flow monitoring applications, the chart below can be utilized for ordering a stock Capsuhelic® differential pressure gage for use with the DS-300 flow sensor. Simply locate the maximum flow rate for the media being measured under the appropriate pipe size and read the Capsuhelic® gage range in inches of water column to the left. The DS-300 sensor is supplied with installation and operating instructions, Bulletin F-50. It also includes complete flow conversion information for the three media conditions shown in the chart below. This information enables the user to create a complete differential pressure to flow rate conversion table for the sensor and differential pressure gage employed. Both the Dwyer® Capsuhelic® gage and flow sensor feature excellent repeatability so, once the desired flow rate is determined, deviation from that flow in quantitative measure can be easily determined. You may wish to order the adjustable signal flag option for the Capsuhelic® gage to provide an easily identified reference point for the proper flow.

Capsuhelic® gages with special ranges and/or direct reading scales in appropriate flow units are available on special order for more critical applications. Customer supplied data for the full scale flow (quantity and units) is required along with the differential pressure reading at that full flow figure. Prior to ordering a special Capsuhelic® differential pressure gage for flow read-out, we recommend you request Bulletin F-50 to obtain complete data on converting flow rates of various media to the sensor differential pressure output. With this bulletin and after making a few simple calculations, the exact range gage required can easily be determined.

| MODEL CHART   |                  |            |               |
|---------------|------------------|------------|---------------|
| Model         | Description      | Model      | Description   |
| DS-300-1"     | 1" pipe size     | DS-400-6"  | 6" pipe size  |
| DS-300-1-1/4" | 1-1/4" pipe size | DS-400-8"  | 8" pipe size  |
| DS-300-1-1/2" | 1-1/2" pipe size | DS-400-10" | 10" pipe size |
| DS-300-2"     | 2" pipe size     | DS-400-12" | 12" pipe size |
| DS-300-2-1/2" | 2-1/2" pipe size | DS-400-14" | 14" pipe size |
| DS-300-3"     | 3" pipe size     | DS-400-16" | 16" pipe size |
| DS-300-4"     | 4" pipe size     | DS-400-18" | 18" pipe size |
| DS-300-6"     | 6" pipe size     | DS-400-20" | 20" pipe size |
| DS-300-8"     | 8" pipe size     | DS-400-24" | 24" pipe size |
| DS-300-10"    | 10" pipe size    |            |               |

| OPTIONS              |                              |
|----------------------|------------------------------|
| To order add suffix: | Description                  |
| -LV                  | DS-300 or DS-400 less valves |

| RANGE CHART             |                        |                                             |        |        |        |        |      |      |       |       |       |
|-------------------------|------------------------|---------------------------------------------|--------|--------|--------|--------|------|------|-------|-------|-------|
| Gage Range<br>(in w.c.) | Media<br>@ 70°F        | Full Range Flows by Pipe Size (Approximate) |        |        |        |        |      |      |       |       |       |
|                         |                        | 1"                                          | 1-1/4" | 1-1/2" | 2"     | 2-1/2" | 3"   | 4"   | 6"    | 8"    | 10"   |
| 2                       | Water (GPM)            | 4.8                                         | 8.3    | 11.5   | 20.5   | 30     | 49   | 86   | 205   | 350   | 560   |
| 2                       | Air @ 14.7 PSIA (SCFM) | 19.0                                        | 33.0   | 42.0   | 65.0   | 113    | 183  | 330  | 760   | 1340  | 2130  |
| 2                       | Air @ 100 PSIG (SCFM)  | 50.0                                        | 90.5   | 120.0  | 210.0  | 325    | 510  | 920  | 2050  | 3600  | 6000  |
| 5                       | Water (GPM)            | 7.7                                         | 14.0   | 18.0   | 34.0   | 47     | 78   | 138  | 320   | 560   | 890   |
| 5                       | Air @ 14.7 PSIA (SCFM) | 30.0                                        | 51.0   | 66.0   | 118.0  | 178    | 289  | 510  | 1200  | 2150  | 3400  |
| 5                       | Air @ 100 PSIG (SCFM)  | 83.0                                        | 142.0  | 190.0  | 340.0  | 610    | 820  | 1600 | 3300  | 5700  | 10000 |
| 10                      | Water (GPM)            | 11.0                                        | 19.0   | 25.5   | 45.5   | 67     | 110  | 195  | 450   | 800   | 1260  |
| 10                      | Air @ 14.7 PSIA (SCFM) | 41.0                                        | 72.0   | 93.0   | 163.0  | 250    | 410  | 725  | 1690  | 3040  | 4860  |
| 10                      | Air @ 100 PSIG (SCFM)  | 120.0                                       | 205.0  | 275.0  | 470.0  | 740    | 1100 | 2000 | 4600  | 8100  | 15000 |
| 25                      | Water (GPM)            | 18.0                                        | 32.0   | 40.5   | 72.0   | 108    | 173  | 310  | 720   | 1250  | 2000  |
| 25                      | Air @ 14.7 PSIA (SCFM) | 63.0                                        | 112.0  | 155.0  | 255.0  | 390    | 640  | 1130 | 2630  | 4860  | 7700  |
| 25                      | Air @ 100 PSIG (SCFM)  | 185.0                                       | 325.0  | 430.0  | 760.0  | 1200   | 1800 | 3300 | 7200  | 13000 | 22000 |
| 50                      | Water (GPM)            | 25.0                                        | 44.0   | 57.5   | 100.0  | 152    | 247  | 435  | 1000  | 1800  |       |
| 50                      | Air @ 14.7 PSIA (SCFM) | 90.0                                        | 161.0  | 205.0  | 360.0  | 560    | 900  | 1600 | 3700  | 6400  |       |
| 50                      | Air @ 100 PSIG (SCFM)  | 260.0                                       | 460.0  | 620.0  | 1050.0 | 1700   | 2600 | 4600 | 10000 | 18500 |       |
| 100                     | Water (GPM)            | 36.5                                        | 62.0   | 82.0   | 142.0  | 220    | 350  | 620  | 1500  |       |       |
| 100                     | Air @ 14.7 PSIA (SCFM) | 135.0                                       | 230.0  | 300.0  | 505.0  | 800    | 1290 | 2290 | 5000  |       |       |
| 100                     | Air @ 100 PSIG (SCFM)  | 370.0                                       | 660.0  | 870.0  | 1500.0 | 2300   | 3600 | 6500 | 15000 |       |       |

| ACCESSORIES |                                                                                                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model       | Description                                                                                                                                                                                                                                    |
| A-160       | Threaded branch connection, 3/8" NPT, forged steel, 3000 psi                                                                                                                                                                                   |
| A-161       | Brass bushing, 1/4" x 3/8"                                                                                                                                                                                                                     |
| A-471       | Portable Kit. For portable operation, the A-471 Capsuhelic® Portable Gage Kit is available complete with tough polypropylene carrying case, mounting bracket, 3-way manifold valve, two 10' high pressure hoses, and all necessary fittings. ❶ |
| 631B        | Capsuhelic® Wet/Wet Differential Pressure Transmitter. Low pressure transmitter for use with DS-300/400 flow sensors. Use Series 631B Capsuhelic® Wet/Wet Differential Pressure Transmitter. ❷                                                 |



Capsuhelic® Gage Shown  
Installed In A-471 Portable Kit



Series 631B

USA: California Proposition 65  
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

❶ See page 31 (Series 4000)  
❷ See page 82 (Series 631B)