Signet 515 Rotor-X Paddlewheel Flow Sensors

Standard Sensor (with red cap)

Integral Sensor

Wet-Tap Sensor

Features

- **Flow rate range 0.3 to 6 m/s (1 to 20 ft/s)**
- **Wide Turndown Ratio of 20:1**
- **Highly repeatable output**
- **Simple, economical design**
- **Installs into pipe sizes DN 15 to DN 900 (0.5 to 36 in.)**
- **Self-powered/no external power required**
- **7.6m (25 ft.) cable for Standard and Wet-Tap Sensors**
- **Chemically resistant materials**
- **Easy to replace rotor**

Description

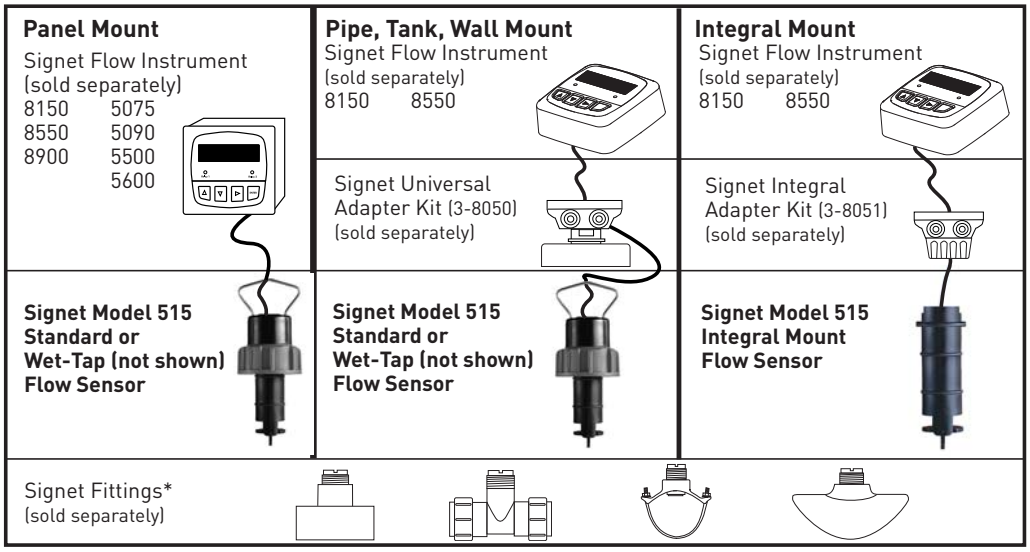
Simple to install with time-honored reliable performance, Signet 515 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance. The output signal of the Model 515 is a sinusoidal frequency capable of driving a self-powered flowmeter (Model 3-5090). The wide dynamic flow range of 0.3 to 6 m/s (1 to 20 ft/s) allows the sensor to measure liquid flow rates in full pipes and can be used in low pressure systems.

The Model 515 sensors are offered in a variety of materials for a wide range of pipe sizes and insertion configurations. The many material choices include PP and PVDF make this model highly versatile and chemically compatible to many liquid process solutions. Sensors can be installed in up to DN900 (36 in.) pipes using Signet's comprehensive line of custom fittings. These custom fittings, which include tees, saddles, and weldolets, seat the sensor to the proper insertion depth into the process flow. The sensors are also offered in configurations for wet-tap and intrinsically safe installation requirements.

Applications

- **Pure Water Production**
- **Filtration Systems**
- **Chemical Production**
- **Liquid Delivery Systems**
- **Pump Protection**
- **Scrubber Systems**
- **Water Monitoring**
- **Not suitable for gases**

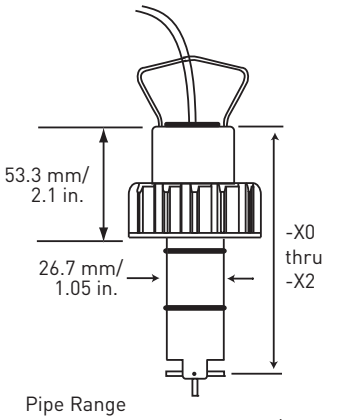
System Overview **(For overview of Wet-Tap System, see 3719 product page)**



* See Fittings section for more information.

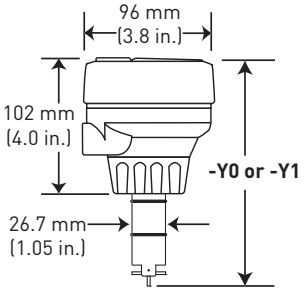
Dimensions

515 Standard Mount Sensor



Pipe Range
0.5 to 4 in.: **-X0** = 104 mm/4.1 in.
5 to 8 in.: **-X1** = 137 mm/5.4 in.
10 in. and up: **-X2** = 213 mm/8.4 in.

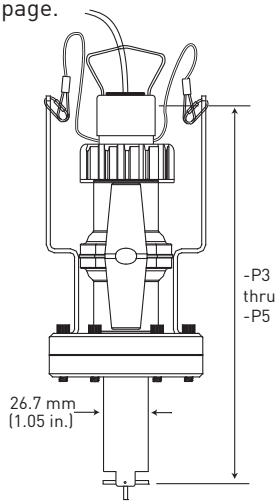
515 Integral Mount Sensor shown with Transmitter (sold separately)



Pipe Range
0.5 to 4 in. **-Y0** = 152mm (6.0 in.)
5 to 8 in. **-Y1** = 185mm (7.3 in.)

515 Wet-Tap Mount Sensor with 3519 Wet-Tap Valve

See more information on the 3519 Wet-Tap Valve, refer to the 3519 product page.



Pipe Range
0.5 to 4 in. **-P3** = 297 mm/11.7 in.
5 to 8 in. **-P4** = 333 mm/13.1 in.
10 in. and up **-P5** = 409 mm/16.1 in.

Specifications

General

Flow Rate Range:
0.3 to 6 m/s (1 to 20 ft./s)
Pipe Size Range:
DN 15 to DN 900 (0.5 to 36 in.)
Linearity: ±1% of full range
Repeatability: ±0.5% of full range
Min. Reynolds Number Required: 4500

Wetted Materials

- Sensor Body:
  Glass-filled PP (black) or PVDF (natural)
- O-rings:
  FPM-Viton® (std)
  optional EPDM or FFPM-Kalrez®
- Rotor Pin:
  Titanium, Hastelloy-C or PVDF; optional ceramic, Tantalum, or stainless steel
- Rotor:
  Black PVDF or Natural PVDF; optional Tefzel® with or w/o Fluoroloy B® sleeve

Electrical

Frequency:
19.7 Hz per m/s nominal
(6 Hz per ft/s); sinusoidal
Amplitude:
3.3 V p/p per m/s nominal
(1 V p/p per ft/s)
Source Impedance: 8KΩ
Cable Type:
2-conductor twisted pair with shield (22 AWG)
Cable Length:
7.6m (25 ft) standard/60m (200 ft) maximum

Max. Pressure /Temperature Ratings

Standard and Integral Sensor:

- PP: 12.5 bar @ 20°C,
  1.7 bar @ 90°C
  (180 psi @ 68°F, 25 psi @194°F)
- PVDF: 14 bar @ 20° C,
  1.4 bar @ 100°C
  (200 psi @ 68°F, 20 psi @ 212°F)

Operating Temperature:

- PP: -18°C to 90°C (0°F to 194°F)
- PVDF: -18°C to 100°C (0°F to 212°F)

Wet-Tap sensor

- PP: 7 bar @ 20°C, 1.4 bar @ 66°C
  (100 psi @ 68°F, 20 psi @ 150°F)

Operating temperature:
-18°C to 66°C (0°F to 150°F)
Max. wet-tap sensor removal rating:
1.7 bar @ 22°C (25 psi @ 72°F)

See Temperature & Pressure Graphs for more information.

Shipping Weight

P51530-X0	0.454 kg	1 lb.
P51530-X1	0.476 kg	1.04 lbs.
P51530-X2	0.680 kg	1.50 lbs.
P51530-X3	0.794 kg	1.75 lbs
P51530-X4	0.850 kg	1.87 lbs.
P51530-X5	1 kg	2.20 lbs.
3-8510-X0	0.23 kg	.50 lbs.
3-8510-X1	0.23 kg	.50 lbs.

Standards and Approvals

- CE
- FM Class I, II, III/Div. 1/groups A-G
- Manufactured under ISO 9001:2000 for Quality and ISO 14001:2004 for Environmental Management

Application Tips:

- Use PVDF Rotor Pin for use in Deionized Water.
- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments. See Accessories section for more information.
- Use a sleeved rotor in abbrasive liquids to reduce wear.
- Sensor plugs can be used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing particles use only Signet Magmeters
- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.

Please refer to Wiring, Installation, Accessories and Fittings sections for more information.

Ordering Information

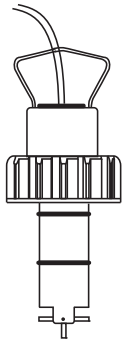
Model 515 Standard Mount Paddlewheel

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 60 m/200 ft (standard cable length is 7.6 m/25 ft) by connecting the sensor through a standard junction box. Use Signet fittings for proper seating of the sensor into the process flow.

Sensor Part Number			
P51530	Flow Sensor for use with remote mount instrument		
	Body/Rotor/Pin material-Choose one*		
	- H	Polypropylene/Black PVDF/Hastelloy-C	
	- P	Polypropylene/Black PVDF/Titanium	
	- S	Polypropylene/Black PVDF/Natural PVDF	
	- T	Natural PVDF/Natural PVDF/Natural PVDF	
	- V	Natural PVDF/Natural PVDF/Hastelloy C	
		Pipe size - Choose one	
		0	0.5 to 4 in.
		1	5 to 8 in.
		2	10 to 36 in.
		↓	
P51530	**- P**	**0**	**Example Part Number**

Mfr. Part No.*	Code	Mfr. Part No.*	Code
P51530-H0	**198 801 659**	P51530-T0	**198 801 663**
P51530-P0	**198 801 620**	P51530-T1	**198 801 664**
P51530-P1	**198 801 621**	P51530-V0	**198 801 623**
P51530-P2	**198 801 622**	P51530-V1	**198 801 624**
P51530-S0	**198 801 661**	P51530-V2	**198 801 625**

Model 515 Standard Paddlewheel Flow Sensor



*Model 515 Ordering Notes:

1) Most common part number combinations shown. For all combinations, refer to the Part Number Index.

2) Other rotor and pin materials are available for purchase and can be easily replaced in the field. See Accessories section.

Model 515 Integral Mount Paddlewheel

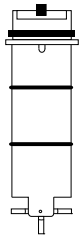
When choosing this style of sensor, the instrument is mounted directly onto the sensor for a local display. See Guideline below for instructions.

Sensor Part Number			
3-8510	Flow Sensor for integral mounting on the 8150 or 8550 instrument using the 3-8051 adapter (instrument and adapter sold separately)		
	Body/Rotor/Pin material-Choose one*		
	- P	Polypropylene/Black PVDF/Titanium	
	- T	Natural PVDF/Natural PVDF/Natural PVDF[1]	
	- V	Natural PVDF/Natural PVDF/Hastelloy C[1]	
		Pipe size - Choose one	
		0	0.5 to 4 in.
		1	5 to 8 in.
		↓	
3-8510	**- P**	**0**	**Example Part Number**

[1] PVDF available 0.5 in. to 4 in. only

Mfr. Part No.*	Code	Mfr. Part No.*	Code
3-8510-P0	**198 864 504**	3-8510-T0	**159 000 622**
3-8510-P1	**198 864 505**	3-8510-V0	**198 864 506**

Model 515 Integral Mount Paddlewheel Flow Sensor



Guideline: Combining a 515 Integral mount flow sensor with an integrally mounted instrument

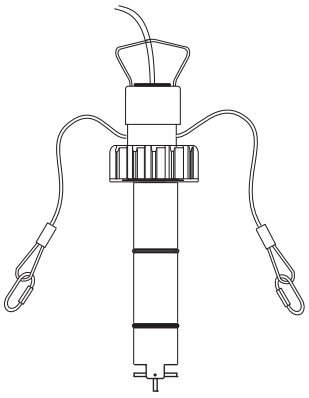
Once an integral mount sensor is chosen, it can be mounted directly to an instrument by following these guidelines:

a) Order the integral adapter kit 3-8051 (sold separately) to connect the sensor to an instrument.

b) Order an instrument (sold separately). The following instrument part numbers are compatible: 3-8550-1, 3-8550-2, 3-8550-3, 3-8150-1.

c) Assembling the sensor with the integral adapter and instrument is quick and simple. These parts can also be ordered as an assembled part. See "Integral Mount" data sheet for more information.

Signet 515 Wet-Tap Sensor with the 3519 Wet-Tap Valve

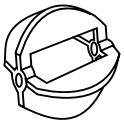


***Model 515 Ordering Notes:**

1) Most common part number combinations shown. For all combinations, refer to the Part Number Index.

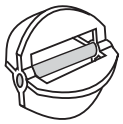
2) Other rotor and pin materials are available for purchase and can be easily replaced in the field. See Accessories section.

Rotor



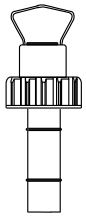
Rotor Pin

Sleeved Rotor (pin not included)

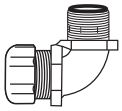


Sensor Cap

Sensor Plug



Conduit Adapter Kit



Ordering Information (continued)

Model 515 Wet-Tap Mount Paddlewheel Flow Sensor

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 60m (200 ft) by connecting the sensor through a standard junction box. Standard cable length is 7.6 m (25 ft). This style of sensor uses the 3519 Wet-Tap valve only (see individual product page for more information).

Sensor Part Number			
P51530	Flow Sensor for wet-tap mounting with the 3519 Wet-Tap Valve (sold separately)		
	Body/Rotor/Pin material*		
	- P	Polypropylene/Black PVDF/Titanium	
		Pipe size - Choose one	
		3	0.5 to 4 in.
		4	5 to 8 in.
		5	10 to 36 in.
		↓	
P51530	**- P**	**3**	**Example Part Number**

Mfr. Part No.*	Code
P51530-P3	**198 840 310**
P51530-P4	**198 840 311**
P51530-P5	**198 840 312**

Guideline: Combining a 515 Wet-Tap Sensor with a 3519 Wet-Tap Valve

a) Sensor can be mounted in a 3519 Wet-Tap Valve (sold separately)

b) Assembling a sensor with a 3519 Wet-Tap valve is quick and simple. These parts can also be ordered as complete assemblies. See 3519 product page.

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Rotors		
M1538-2	**198 801 181**	Rotor, PVDF Black
P51547-3	**159 000 474**	Rotor, PVDF Natural
M1538-4	**198 820 018**	Rotor, Tefzel®
P51550-3	**198 820 043**	Rotor and Pin (matched set), PVDF Natural
3-0515.322-1	**198 820 059**	Sleeved Rotor, PVDF Black
3-0515.322-2	**198 820 060**	Sleeved Rotor, PVDF Natural
3-0515.322-3	**198 820 017**	Sleeved Rotor, Tefzel®
Rotor Pins		
M1546-1	**198 801 182**	Pin, Titanium
M1546-2	**198 801 183**	Pin, Hastelloy-C
M1546-3	**198 820 014**	Pin, Tantalum
M1546-4	**198 820 015**	Pin, Stainless Steel
P51550-3	**198 820 043**	Rotor and Pin, PVDF Natural
O-Rings		
1220-0021	**198 801 186**	O-Ring, FPM-Viton®
1224-0021	**198 820 006**	O-Ring, EPR
1224-0205	**159 000 836**	O-Ring, EPDM (Europe only)
1228-0021	**198 820 007**	O-Ring, FFPM-Kalrez®
Miscellaneous		
P31536	**198 840 201**	Sensor Plug, Polypro
P31536-2	**159 000 649**	Sensor Plug, PVDF
P31542	**198 801 630**	Sensor Cap, Red
P31934	**159 000 466**	Conduit Cap
P51589	**159 000 476**	Conduit Adapter Kit
5523-0222	**159 000 392**	Cable (per foot), 2 cond. w/shield, 22 AWG
3-8051	**159 000 187**	Transmitter Integral Adapter (see system overview for graphics)
6400-9001	**159 001 466**	Intrinsic Safety Barriers (2 required)