

Signet 515/2536 Rotor-X Flow Sensors

Instructions for all versions of: 515/8510-xx and 2536/8512-xx



3-0515.090

E 8/04

English



SAFETY INSTRUCTIONS

1. Depressurize and vent system prior to installation or removal.
2. Confirm chemical compatibility before use.
3. Do not exceed maximum temperature/pressure specifications.
4. Wear safety goggles or faceshield during installation/service.
5. Do not alter product construction.



1. Specifications

General Data

Flow Rate Range: 515: 0.3 to 6 m/s (1 to 20 ft/s)
 2536: 0.1 to 6 m/s (0.3 to 20 ft/s)

Pipe Size Range: DN15 to DN1000 (½ in. to 12 in.)

Linearity: ±1% of full range

Repeatability: ±0.5% full range

Cable Length: 7.6 m (25 ft) standard
 515: 60 m (200 ft.) maximum
 2536: 305 m (1000 ft) maximum

Cable Type: 2-conductor twisted pair w/shield (22 AWG)

Minimum Reynolds Number Required: 4500

Cap Material: Glass Filled Polypropylene
 515: Red
 2536: Blue

Wetted Materials:

- Sensor Body: Glass filled Polypropylene (black) or PVDF (natural)
- O-Rings: FPM (Std) or EPDM or FFKM
- Pin: Titanium or Hastelloy-C or PVDF; other material options available
- Rotor: Black PVDF or natural PVDF; optional Tefzel® with or w/o Fluoraloy B® sleeve

Shipping Weight:

-X0 0.454 kg (1 lb)
 -X1 0.476 kg (1.04 lbs)
 -X2 0.680 kg (1.50 lbs)
 -X3 0.794 kg (1.75 lbs)
 -X4 0.850 kg (1.87 lbs)
 -X5 1.0 kg (2.20 lbs)
 3519 1.3 kg (2.86 lbs)

515 Sensor

Signal:
 Frequency: 19.7 Hz per m/s nominal (6 Hz per ft/s)
 Amplitude: 3.3 V p/p per m/s nominal (1 V p/p per ft/s)
 Source Impedance: 8 kΩ

2536 Sensor

Signal:
 Frequency: 49 Hz per m/s nominal (15 Hz per ft/s nominal)
 Supply voltage: 3.5 to 24 VDC regulated
 Supply current: <1.5 mA @ 3.3 to 6 VDC
 <20 mA @ 6 to 24 VDC
 Output Type: Open collector transistor, sinking
 Output current: 10 mA max.

Fluid Conditions

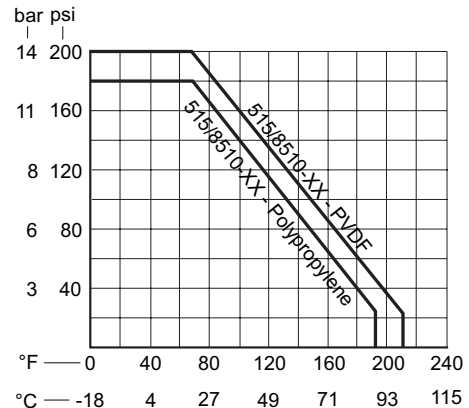
Rotor-X Sensor Pressure/Temperature Ratings:

Polypropylene Body:

- 12.5 bar (180 psi) max. @ 20 °C (68 °F)
- 515: 1.7 bar (25 psi) max. @ 90 °C (194 °F)
- 2536: 1.7 bar (25 psi) max. @ 85 °C (185 °F)

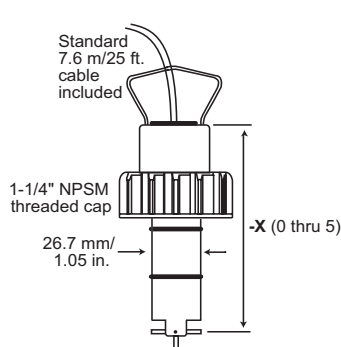
PVDF Body:

- 14 bar (200 psi) max @ 20 °C (68 °F)
- 515: 1.7 bar (25 psi) max @ 100 °C (212 °F)
- 2536: 1.7 bar (25 psi) max @ 85 °C (185 °F)



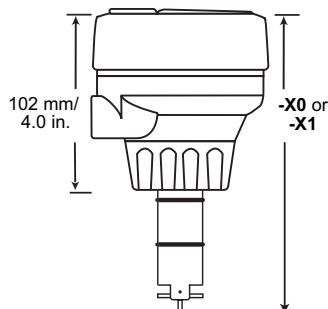
Dimensions

515/2536 Sensor

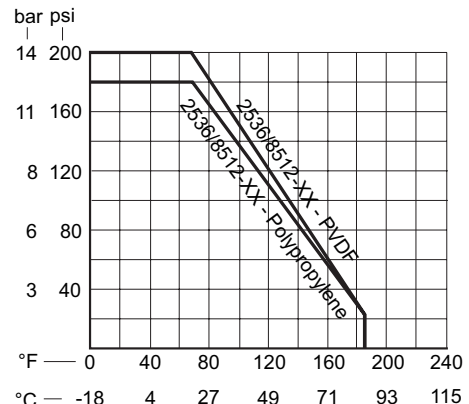


Pipe Range:
 1/2 to 4 in. -X0 = 104 mm/4.1 in.
 5 to 8 in. -X1 = 137 mm/5.4 in.
 10" and up -X2 = 213 mm/8.4 in.
 1/2 to 4 in. -X3 = 297 mm/11.7 in.
 5 to 8 in. -X4 = 332 mm/13.1 in.
 10" and up -X5 = 408 mm/16.1 in. } Wet-tap Lengths

8510-XX/8512-XX Integral Sensor shown with Transmitter and Integral Adapter Kit (sold separately)



-X0 = 152 mm/6.0 in.
 -X1 = 185 mm/7.3 in.

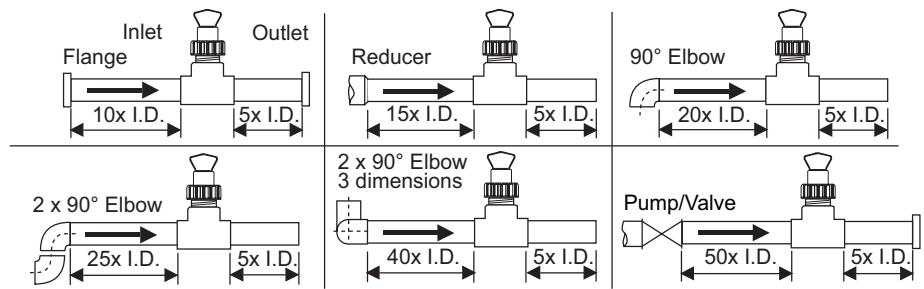


Standards & Approvals

- Manufactured under ISO 9001 and ISO 14001
- CE
- 515 Only: FM Class I, II, III/Div. I/Groups A-G

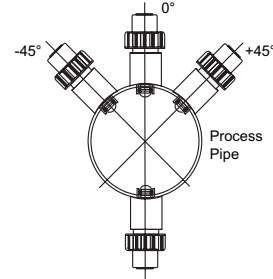
2. Location of Fitting

Recommended sensor upstream/downstream mounting requirements



3. Sensor Mounting Position

- Horizontal pipe runs: Mount sensor in the upright (0°) position for best performance. Mount at a maximum of 45° when air bubbles are present (pipe must be full). Do not mount on the bottom of the pipe when sediments are present.
- Vertical pipe runs: Mount sensor in any orientation. Upward flow is preferred to ensure full pipe.



4. Standard Sensor Installation

- Lubricate the sensor O-rings with a silicone lubricant (e.g. GE silicone compound #G632 or equivalent). Do not use

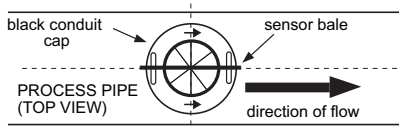


Figure A

- any petroleum based lubricant that will attack the O-rings. Using an alternating/twisting motion, lower the sensor into the fitting, making sure the installation arrows on the black cap are pointing in the direction of flow, see Figure A.

- Engage one thread of the sensor cap then turn the sensor until the alignment tab is seated in the fitting notch. Hand tighten the sensor cap. DO NOT use any tools on the sensor cap or the cap threads and/or fitting flange threads will be damaged, see Figure B.

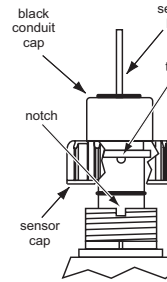


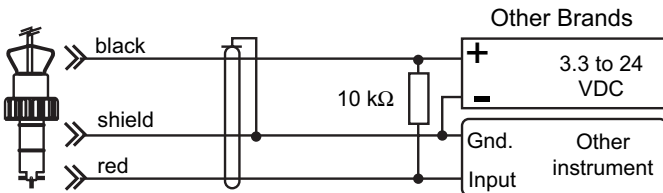
Figure B

5. Sensor Wiring

Technical Notes

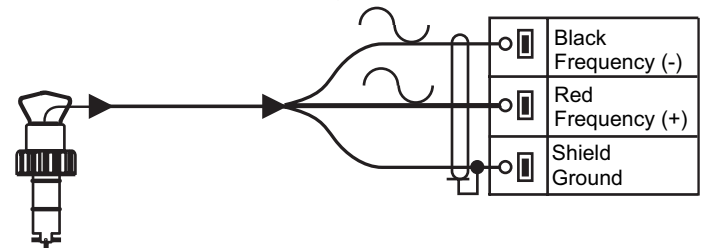
- Use 2-conductor shielded cable for cable extensions.
- Cable shield must be maintained through cable splice.
- Refer to your instrument manual for specific wiring details.

2536 Sensor Connections to Other Brand Instruments

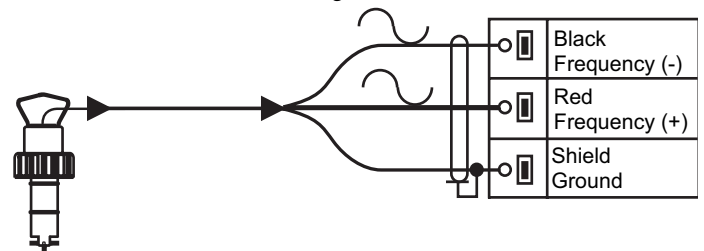


- DC sensor power supplied from Signet instrument.
- 10KΩ Pull-up resistor may be required for non Signet brand instrument.

515 Sensor Connections to Signet Instruments

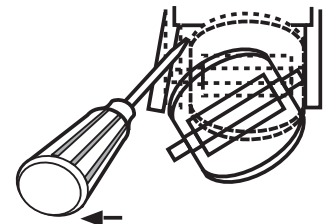


515 Sensor Connections to Signet Instruments














6. Rotor Replacement Procedure

- To remove the rotor, insert a small screwdriver between the rotor and the ear of the sensor.
- Twist the screwdriver blade to flex the ear outward enough to remove one end of the rotor and pin. DO NOT flex the ear any more than necessary! If it breaks, the sensor cannot be repaired.
- Install the new rotor by inserting one tip of the pin into the hole, then flex the opposite ear back enough to slip rotor into place.



9. Signet Fittings

Type	Description	Type	Description
Plastic tees 	<ul style="list-style-type: none"> • 0.5 to 4 inch versions • PVC or CPVC 	Iron, Carbon Steel, 316 SS Threaded tees 	<ul style="list-style-type: none"> • 0.5 to 2 in. versions • Mounts on threaded pipe ends
PVC Glue-on Saddles 	<ul style="list-style-type: none"> • Available in 10 and 12 inch sizes only • Cut 2-1/2 inch hole in pipe • Weld in place using solvent cement 	Carbon steel & stainless steel Weld-on Weldolets 	<ul style="list-style-type: none"> • 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe
PVC Saddles 	<ul style="list-style-type: none"> • 2 to 4 inch, cut 1-7/16 inch hole in pipe • 6 to 8 inch, cut 2-1/8 inch hole in pipe 	Fiberglass tees & saddles: FPT  FPS 	<ul style="list-style-type: none"> • 1.5 in. to 8 in. PVDF insert • > 8 in. PVC insert • Special order 12 in. to 36 in.
PP Clamp-on Saddles 	<ul style="list-style-type: none"> • Available in 10 and 12 inch sizes only • Cut 2-1/8 inch hole in pipe 	Metric Wafer Fitting 	<ul style="list-style-type: none"> • For pipes DN 65 to 200 mm • PP or PVDF
Iron Strap-on saddles 	<ul style="list-style-type: none"> • 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe • Special order 12 in. to 36 in. 	Metric Union Fitting 	<ul style="list-style-type: none"> • For pipes from DN 15 to 50 mm • PP or PVDF

515/8510-XX Ordering Information		2536/8512-XX Ordering Information		Product Description
Part No.	Code	Part No.	Code	
P51530-P0	198 801 620	3-2536-P0	198 840 143	Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), to 4 Inch Pipe
P51530-P1	198 801 621	3-2536-P1	198 840 144	Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 Inch Pipe
P51530-P2	198 801 622	3-2536-P2	198 840 145	Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 Inch Pipe
P51530-P3	198 840 310	3-2536-P3	159 000 758	Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), 1/2 to 4 Inch Pipe
P51530-P4	198 840 311	3-2536-P4	159 000 759	Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 Inch Pipe
P51530-P5	198 840 312	3-2536-P5	159 000 760	Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 Inch Pipe
P51530-V0	198 801 623	3-2536-V0	198 840 146	Sensor, PVDF (natural), Hastelloy Rotor Pin, PVDF Rotor (natural), 1/2 to 4 Inch Pipe
P51530-V1	198 801 624	3-2536-V1	198 840 147	Sensor, PVDF (natural), Hastelloy Rotor Pin, PVDF Rotor (natural), 5 to 8 Inch Pipe
P51530-V2	198 801 625	N/A	N/A	Sensor, PVDF (natural), Hastelloy Rotor Pin, PVDF Rotor (natural), 10 to 36 Inch Pipe
P51530-T0	198 801 663	3-2536-T0	198 840 149	Sensor, PVDF (natural), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 1/2 to 4 Inch Pipe
P51530-T1	198 801 664	N/A	N/A	Sensor, PVDF (natural), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 5 to 8 Inch Pipe
3-8510-P0	198 864 504	3-8512-P0	198 864 513	Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black), 1/2 to 4 Inch Pipe
3-8510-P1	198 864 505	3-8512-P1	198 864 514	Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 Inch Pipe
3-8510-T0	159 000 622	3-8512-T0	198 864 518	Sensor, Integral, PVDF (nat.), Hastelloy Rotor Pin, PVDF Rotor (nat.), 1/2 to 4 In. Pipe
3-8510-V0	198 864 506	3-8512-V0	198 864 516	Sensor, Integral, PVDF (nat.), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 1/2 to 4 In. Pipe
3519/515-P3	159 000 819	3519/2536-P3	159 000 822	Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 1/2 to 4 In. Pipe
3519/515-P4	159 000 820	3519/2536-P4	159 000 823	Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 5 to 8 In. Pipe
3519/515-P5	159 000 821	3519/2536-P5	159 000 824	Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 10 to 36 In. Pipe
Accessories				
M1538-2	198 801 181	3-2536.320-1	198 820 052	Rotor, PVDF Black
P51547-3	159 000 474	3-2536.320-2	159 000 272	Rotor, PVDF Natural
M1538-4	198 820 018	3-2536.320-3	159 000 273	Rotor, Tefzel®
P51550-3	198 820 043	3-2536.321	198 820 054	Rotor and Pin, PVDF Natural
3-0515.322-1	198 820 059	3-2536.322-1	198 820 056	Sleeved Rotor, PVDF Black
3-0515.322-2	198 820 060	3-2536.322-2	198 820 057	Sleeved Rotor, PVDF Natural
3-0515.322-3	198 820 017	3-2536.322-3	198 820 058	Sleeved Rotor, Tefzel®
M1546-1	198 801 182	M1546-1	198 801 182	Rotor Pin, Titanium
M1546-2	198 801 183	M1546-2	198 801 183	Rotor Pin, Hastelloy-C
M1546-3	198 820 014	M1546-3	198 820 014	Rotor Pin, Tantalum
M1546-4	198 820 015	M1546-4	198 820 015	Rotor Pin, Stainless Steel
P51545	198 820 016	P51545	198 820 016	Rotor Pin, Ceramic
1220-0021	198 801 186	1220-0021	198 801 186	O-Ring, FPM
1224-0021	198 820 006	1224-0021	198 820 006	O-Ring, EPDM
1228-0021	198 820 007	1228-0021	198 820 007	O-Ring, FFKM
P31536	198 840 201	P31536	198 840 201	Sensor Plug, Polypro
P31536-1	198 840 202	P31536-1	198 840 202	Sensor Plug, PVDF Metric
P31536-2	159 000 649	P31536-2	159 000 649	Sensor Plug, PVDF
P31542	198 801 630	P31542	198 801 630	Sensor Cap, Red (for use w/515)
---	---	P31542-3	159 000 464	Sensor Cap, Blue (for use w/2536)
P31934	159 000 466	P31934	159 000 466	Conduit Cap
P51589	159 000 476	P51589	159 000 476	Conduit Adapter Kit
5523-0222	159 000 392	5523-0222	159 000 392	Cable (per foot), 2 cond. w/shield, 22 AWG

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George Fischer Signet, Inc., 3401 Aerojet Avenue, El Monte, CA 91731-2882 U.S.A. • Tel. (626) 571-2770 • Fax (626) 573-2057
For Worldwide Sales and Service, visit our website: www.gfsignet.com • Or call (in the U.S.): (800) 854-4090

