

# Signet 515/2536 Rotor-X Flow Sensors



3-0515.090 Rev T 06/13

# Operating Instructions

# 515 Sensor (with red cap) 8510 Integral Sensor

# **Description**

#### Operating Instructions for all versions of 515/8510 and 2536/8512

Simple to install with time-honoured reliable performance, Signet 515 and 2536 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance.

Signet 515 and 2536 sensors measure liquid flow rates in full pipes and can be used in low pressure systems.

- The many material choices including PP and PVDF make this model highly versatile and chemically compatible with many liquid process solutions.
- Sensors can be installed in DN15 to DN900 (½ to 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 installation requirements.

# 2536 Sensor 8512 Integral



# 515/8510 Advantages:

- Flow rate range 0.3 to 6 m/s (1 to 20 ft/s)
- Installs into pipe sizes DN15 to DN900 (½ to 36 in.)
- Wide Turndown Ratio of 20:1
- Sinusoidal frequency output capable of driving a self-powered flowmeter (Model 5090)
- · Self-powered
- Highly repeatable output
- · Chemically resistant materials
- Easy to replace rotor

#### 2536/8512 Advantages:

- Flow rate range 0.1 to 6 m/s (0.3 to 20 ft/s)
- Installs into pipe sizes DN15 to DN900 (½ to 36 in.)
- Wide Turndown Ratio of 66:1
- Open-collector output
- High resolution and noise immunity
- · Chemically resistant materials
- · Easy to replace rotor



# **Warranty Information**

Refer to your local Georg Fischer Sales office for the most current warranty statement.

All warranty and non-warranty repairs being returned must include a fully completed Service Form and goods must be returned to your local GF Sales office or distributor. Product returned without a Service Form may not be warranty replaced or repaired.

Signet products with limited shelf-life (e.g. pH, ORP, chlorine electrodes, calibration solutions; e.g. pH buffers, turbidity standards or other solutions) are warranted out of box but not warranted against any damage, due to process or application failures (e.g. high temperature, chemical poisoning, dry-out) or mishandling (e.g. broken glass, damaged membrane, freezing and/or extreme temperatures).

# **Product Registration**

Thank you for purchasing the Signet line of Georg Fischer measurement products.

If you would like to register your product(s),

you can now register online in one of the following ways:



- Visit our website www.gfsignet.com and click on Product Registration Form
  - If this is a pdf manual (digital copy), click here
  - Scan the QR Code on the left

# **Safety Information**

- 1. Depressurize and vent system prior to installation or removal.
- 2. Confirm chemical compatibility before use.
- 3. DO NOT exceed maximum temperature or pressure specs.
- ALWAYS wear safety goggles or faceshield during installation and/or service.
- 5. DO NOT alter product construction.



#### Warning / Caution / Danger

Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death



#### Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Signet products.



#### **Pressurized System Warning**

Sensor may be under pressure, take caution to vent system prior to installation or removal. Failure to do so may result in equipment damage and/or serious injury.



#### **Hand Tighten Only**

Overtightening may permanently damage product threads and lead to failure of the retaining nut.



#### Do Not Use Tools

Use of tool(s) may damage product beyond repair and potentially void product warranty.



#### **Note / Technical Notes**

Highlights additional information or detailed procedure.

# **Chemical Compatibility**

Georg Fischer Signet products are manufactured in a variety of wetted materials to suit various liquids and chemicals.

All plastic materials including typical piping types (PVC, PVDF, PP and PE) are more or less permeable to contained media, such as water or volatile substances, including some acids. This effect is not related to porosity, but purely a matter of gas diffusion through the plastic.

If the plastic material is compatible with the medium according to the application guidelines, the permeation will not damage the plastic itself. However, if the plastic encloses other sensitive components, as is the case with GF Signet plastic paddlewheel sensors, these may be affected or damaged by the media diffusing through the plastic body and rotor.

Failures of PVDF paddlewheel sensors when used in hot nitric acid applications have been reported. PVDF is known to allow for substantial permeation of nitric acid constituents without being damaged itself. No clear guideline can be given here, since the damaging effect to the sensor is highly dependent on temperature, pressure and concentration.

Utilizing sensors in applications with aggressive substances is possible. On special request GF Signet can provide sensors with a different internal resin encapsulation (potting) that will delay the damaging effect of acids to the sensors.

For all Special Product inquiries or to place an order, please email **signet-specialproduct@georgfischer.com**.





#### **Paddlewheel Retaining Nuts:**

Red (515) and Blue (2536)

The retaining nuts of paddlewheel sensors are not designed for prolonged contact with aggressive substances. Strong acids, caustic substances and solvents or their vapor may lead to failure of the retaining nut, ejection of the sensor and loss of the process fluid with possibly serious consequences, such as damage to equipment and serious personal injury. Retaining nuts that may have been in contact with such substances, e.g. due to leakage or spilling, must be replaced.

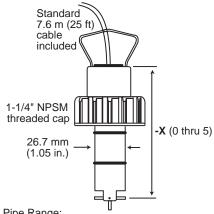
Signet 515/2536 Rotor-X Flow Sensors +GF+

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# **Dimensions**

#### 515/2536 Sensor



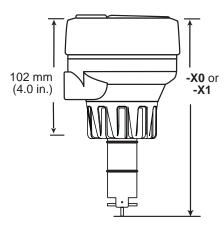
Pipe Range:

10 in. and up

**-X**0 = 104 mm (4.1 in.) 1/2 in. to 4 in. 5 in. to 8 in. **-X**1 = 137 mm (5.4 in) 10 in. and up **-X**2 = 213 mm (8.4 in.) -X3 = 297 mm (11.7 in.) -X4 = 332 mm (13.1 in.) Wet-tap 1/2 in. to 4 in. 5 in. to 8 in.

-**X**5 = 408 mm (16.1 in.) 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.)

# **Specifications**

| Specifications               |   |
|------------------------------|---|
| General Flow Rate Range: 515 | . 0.3 to 6 m/s (1 to 20 ft/s)                       |
|                              | . 0.1 to 6 m/s (0.3 to 20 ft/s)                     |
| Pipe Size Range              | . DN15 to DN900 (½ in. to 36 in.)                   |
| Cable Length                 | . 7.6 m (25 ft) standard                            |
| 515                          | . 60 m (200 ft) maximum                             |
| 2536                         | . 305 m (1000 ft) maximum                           |
| Cable type                   | shield (22 AWG)                                     |
| Minimum Reynolds Number      | 4500  |
| Materials:                   | 1000  |
| Cap Material                 | Glass Filled Polypropylene                          |
|                              | 515: Red  |
|                              | 2536: Blue  |
|                              |   |
| Wetted Materials:            |   |
| Sensor Body                  | . Glass Filled Polypropylene                        |
| O Dingo                      | (black) or PVDF<br>. FPM (Std), EPR (EPDM) or       |
| U-Rings                      | FFPM (Std), EPR (EPDM) or FFPM optional             |
| Pin                          | . Titanium, Hastelloy-C or PVDF;                    |
|                              | optional Ceramic,                                   |
|                              | Tantalum, or Stainless Steel                        |
| Rotor                        | . Black PVDF or Natural PVDF;                       |
|                              | optional ETFE with or without                       |
|                              | carbon fiber reinforced PTFE                        |
| Chinning Waight              | sleeve for rotor pin                                |
| Shipping Weight:<br>-X0      | 0.454 kg (1 lb)                                     |
| -X0                          |   |
| -X2                          | . 0.680 kg (1.50 lbs)                               |
| -X3                          | . 0.794 kg (1.75 lbs)                               |
| -X4                          | . 0.850 kg (1.87 lbs)                               |
| -X5<br>3519                  |   |
| 3319                         | . 1.3 kg (2.00 lbs)                                 |
| Performance                  |   |
| Linearity                    |   |
| Decree to 1979               | @ 25 °C (77 °F)                                     |
| Repeatability                | . ±0.5% maximum range<br>@ 25 °C (77 °F)            |
|                              | @ 25 C (77 F)                                       |
| Electrical                   |   |
| 515 Sensor                   |   |
| Frequency                    |   |
|                              | (6 Hz per ft/s)                                     |
| Amplitude                    |   |
| Course Impedance             | (1V p/p per ft/s)                                   |
| Source Impedance             | . O K12   |
| 2536 Sensor                  | 40.11   |
| Frequency                    | . 49 Hz per m/s nominal<br>(15 Hz per ft/s nominal) |
| Sunnly Voltage               | . 5 to 24 VDC ±10% regulated                        |
| Supply Current               |   |
|                              | <20 mA @ 6 to 24 VDC                                |
| Output Type                  |   |
|                              | 10 m A maximum                                      |

# Environmental Requirements Pressure/Temperature Ratings

Standard and Integral Sensors:
Polypropylene Body ........... 12.5 bar (180 psi) max

| i diypi opyiciic body | 12.0 bai (100 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)                 |
| Operating Temperature | -18 °C to 66 °C (0 °F to 150 °F) |
| PVDF Body             | 14 bar (200 psi) max.            |
|                       | @ 20 °C (68 °F)                  |

Operating Temperature ..... -18 °C to 100 °C (0 °F to 212 °F)

#### Wet-Tap Sensor:

#### **Standards and Approvals**

- CE (2536 Only)
- Manufactured under ISO 9001 for Quality, ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety.
- RoHS Compliant

6 China RoHS (Go to www.gfsignet.com for details)

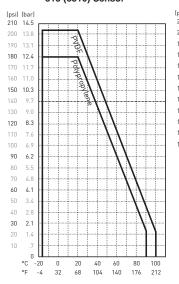
This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

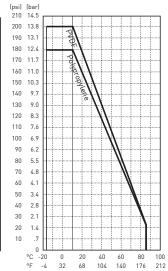
(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.





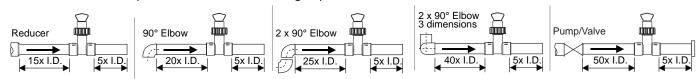
#### 2536 (8512) Sensor



Output Current...... 10 mA maximum

# **Location of Fitting**

Recommended sensor upstream/downstream mounting requirements.



# **Sensor Mounting Position**

#### Horizontal pipe runs:

- Mount sensor in the upright (0°) position for best performance (pipe must be full).
- Mount at a maximum of 45° when air bubbles are present.
- <u>Do not</u> mount on the bottom of the pipe when sediments are present.

#### Vertical pipe runs:

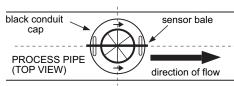
- Mount sensor in any orientation.
- Upward flow is preferred to ensure full pipe.

#### **Standard Sensor Installation**

- Lubricate O-rings with a non-petroleum based, viscous lubricant (grease) compatible with the system.
- 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.



notch senso

black

conduit

Figure A

Figure B

**Process** Pipe

sensor

tab

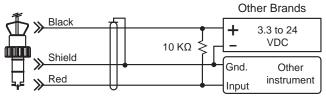
bale

# **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

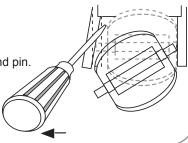


 DC sensor power supplied from Signet instrument. 10  $\mbox{K}\Omega$  Pull-up resistor may be required for non-Signet brand instrument.

#### 515 Sensor Connections to Black Signet Instruments Frequency (-) Red Frequency (+) Shield Ground 2536 Sensor Connections to Black Signet Instruments 5 VDC Red Frequency in

# **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.



Shield

Ground

# **K-Factors**

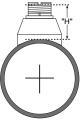
A **K-Factor** is the number of pulses a sensor will generate for each engineering unit of fluid that passes the sensor. K-factors for water are listed below in U.S. gallons and liters. For example, in a 1-inch PVC pipe, the 515 paddlewheel generates 172.07 pulses per gallon of water passing the rotor. K-factors are listed for pipes up to 12 inches. For pipes over 12 inches, consult your Signet distributor.

| PIPE          |               | 515/85     | 510-XX      | 2536/8512-XX |             |
|---------------|---------------|------------|-------------|--------------|-------------|
| SIZE<br>(IN.) | FITTING       | LITERS     | U.S.<br>GAL | LITERS       | U.S.<br>GAL |
| SCH 80        | PVC TEES FOR  | SCH 80 PV  | C PIPE      |              |             |
| 1/2           | MPV8T005      | 137.42     | 520.12      | 271.37       | 1027.1      |
| 3/4           | MPV8T007      | 78.61      | 297.52      | 154.08       | 583.19      |
| 1             | MPV8T010      | 45.46      | 172.07      | 88.65        | 335.53      |
| 1-1/4         | MPV8T012      | 24.19      | 91.54       | 47.24        | 178.79      |
| 1-1/2         | MPV8T015      | 16.44      | 62.22       | 32.08        | 121.42      |
| 2             | MPV8T020      | 9.60       | 36.32       | 18.87        | 71.44       |
| SCH 80        | PVC TEES FOR  | SCH 80 PV  | C PIPE      | •            |             |
| 2-1/2         | PV8T025       | 5.7683     | 21.833      | 11.359       | 42.994      |
| 3             | PV8T030       | 3.5775     | 13.541      | 7.0414       | 26.652      |
| 4             | PV8T040       | 2.0147     | 7.6258      | 3.9645       | 15.006      |
| SCH 80        | CPVC TEES FOR | R SCH 80 C | PVC PIPE    |              |             |
| 1/2           | MCPV8T005     | 137.42     | 520.12      | 271.37       | 1027.1      |
| 3/4           | MCPV8T007     | 78.61      | 297.52      | 154.08       | 583.19      |
| 1             | MCPV8T010     | 45.46      | 172.07      | 88.65        | 335.53      |
| 1-1/4         | MCPV8T012     | 24.19      | 91.54       | 47.24        | 178.79      |
| 1-1/2         | MCPV8T015     | 16.44      | 62.22       | 32.08        | 121.42      |
| 2 MCPV8T0     |               | 9.60       | 36.32       | 18.87        | 71.44       |
| SCH 80        | PVC SADDLES   | FOR SCH 8  | 0 PVC PIP   | E            |             |
| 2             | PV8S020       | 8.5812     | 32.480      | 17.633       | 66.739      |
| 2-1/2         | PV8S025       | 5.7683     | 21.833      | 11.359       | 42.994      |
| 3             | PV8S030       | 3.5775     | 13.541      | 7.0414       | 26.652      |
| 4             | PV8S040       | 2.0147     | 7.6258      | 3.9645       | 15.006      |
| 6             | PV8S060       | 1.0997     | 4.1623      | 2.1994       | 8.3246      |
| 8             | PV8S080       | 0.6263     | 2.3705      | 1.3253       | 5.0164      |
| 10            | PV8S100       | 0.4042     | 1.5300      | 0.808        | 3.0600      |
| 12            | PV8S120       | 0.2801     | 1.0600      | 0.571        | 2.1600      |
| SCH 80        | PVC SADDLE O  | N SCH 40 F | VC PIPE     |              |             |
| 2             | PV8S020       | 7.2259     | 27.350      | 14.452       | 54.700      |
| 2-1/2         | PV8S025       | 4.9866     | 18.874      | 9.8175       | 37.159      |
| 3             | PV8S030       | 3.3389     | 12.638      | 6.2608       | 23.697      |
| 4             | PV8S040       | 1.7776     | 6.7282      | 3.5552       | 13.456      |
| 6             | PV8S060       | 0.9854     | 3.7297      | 1.9708       | 7.4594      |
| 8             | PV8S080       | 0.5688     | 2.1527      | 1.1966       | 4.5292      |
| 10            | PV8S100       | 0.3567     | 1.3500      | 0.740        | 2.8000      |
| 12            | PV8S120       | 0.2536     | 0.9600      | 0.523        | 1.9800      |

| PIPE          |                                   | 515/8510-XX |             | 2536/8512-XX |             |  |  |
|---------------|-----------------------------------|-------------|-------------|--------------|-------------|--|--|
| SIZE<br>(IN.) | FITTING                           | LITERS      | U.S.<br>GAL | LITERS       | U.S.<br>GAL |  |  |
| CARBON        | CARBON STEEL TEES ON SCH 40 PIPE  |             |             |              |             |  |  |
| 1/2           | CS4T005                           | 97.808      | 370.20      | 199.74       | 756.00      |  |  |
| 3/4           | CS4T007                           | 56.027      | 212.06      | 115.90       | 438.69      |  |  |
| 1             | CS4T010                           | 37.289      | 141.14      | 75.768       | 286.78      |  |  |
| 1-1/4         | CS4T012                           | 16.025      | 60.655      | 32.026       | 121.22      |  |  |
| 1-1/2         | CS4T015                           | 11.982      | 45.350      | 24.079       | 91.139      |  |  |
| 2             | CS4T020                           | 7.0717      | 26.767      | 14.391       | 54.468      |  |  |
| STAINLES      | SS STEEL T                        | EES ON S    | CH 40 PIP   | E            |             |  |  |
| 1/2           | CR4T005                           | 94.838      | 358.96      | 193.98       | 734.20      |  |  |
| 3/4           | CR4T007                           | 53.530      | 202.61      | 108.88       | 412.10      |  |  |
| 1             | CR4T010                           | 33.590      | 127.14      | 66.764       | 252.70      |  |  |
| 1-1/4         | CR4T012                           | 16.357      | 61.910      | 33.849       | 128.12      |  |  |
| 1-1/2         | CR4T015                           | 10.676      | 40.410      | 20.428       | 77.320      |  |  |
| 2             | CR4T020                           | 5.8917      | 22.300      | 12.095       | 45.780      |  |  |
| GALVANI       | ZED IRON T                        | EES ON S    | CH 40 PIP   | E            |             |  |  |
| 1             | IR4T010                           | 27.619      | 104.54      | 56.277       | 213.01      |  |  |
| 1-1/4         | IR4T012                           | 16.639      | 62.979      | 33.751       | 127.75      |  |  |
| 1 1/2         | IR4T015                           | 12.335      | 46.688      | 24.941       | 94.401      |  |  |
| 2             | IR4T020                           | 7.7832      | 29.459      | 15.699       | 59.420      |  |  |
| BRONZE        | TEES ON S                         | CH 40 PIPE  | <b>E</b>    |              |             |  |  |
| 1             | BR4T010                           | 27.619      | 104.54      | 56.277       | 213.01      |  |  |
| 1-1/4         | BR4T012                           | 16.639      | 62.979      | 33.751       | 127.75      |  |  |
| 1-1/2         | BR4T015                           | 12.335      | 46.688      | 24.941       | 94.401      |  |  |
| 2             | 2 BR4T020 7                       |             | 29.459      | 15.699       | 59.420      |  |  |
| COPPER        | TEE FITTING                       | GS ON CO    | PPER PIP    | E SCH K      |             |  |  |
| 1/2           | CUKT005                           | 117.10      | 443.21      | 242.50       | 917.84      |  |  |
| 3/4           | CUKT007                           | 56.052      | 212.16      | 113.15       | 428.27      |  |  |
| 1             | CUKT010                           | 33.600      | 127.18      | 67.749       | 256.43      |  |  |
| 1-1/4         | CUKT012                           | 23.307      | 88.218      | 46.615       | 176.44      |  |  |
| 1-1/2         | CUKT015                           | 15.049      | 56.962      | 30.565       | 115.69      |  |  |
| 2             | CUKT020                           | 7.7595      | 29.370      | 16.746       | 63.385      |  |  |
| COPPER        | TEE FITTINGS ON COPPER PIPE SCH L |             |             |              |             |  |  |
| 1/2           | CUKT005                           | 109.49      | 414.41      | 226.74       | 858.22      |  |  |
| 3/4           | CUKT007                           | 50.485      | 191.09      | 101.91       | 385.74      |  |  |
| 1             | CUKT010                           | 31.662      | 119.84      | 63.841       | 241.64      |  |  |
| 1-1/4         | CUKT012                           | 22.576      | 85.451      | 45.152       | 170.90      |  |  |
| 1-1/2         | CUKT015                           | 14.573      | 55.160      | 29.598       | 112.03      |  |  |
| 2             | CUKT020                           | 7.5575      | 28.605      | 16.310       | 61.74       |  |  |

# **H-Dimensions**

The plastic sensor insert in the Weldolet fitting MUST be removed during the welding process. When reinstalled, it is important that the insert be threaded to the proper height ("H" dimension).



| Weldolet    | "H" dimension |      |     | Weldolet    | "H" din | nension |
|-------------|---------------|------|-----|-------------|---------|---------|
| part number | mm inches     |      | ]   | part number | mm      | inches  |
| CS4W020     | 60.45         | 2.38 | ]   | CS4W240     | 105.66  | 4.16    |
| CS4W025     | 62.99         | 2.48 | ]   | CS4W360     | 104.14  | 4.10    |
| CS4W030     | 62.73         | 2.47 | ]   |             |         |         |
| CS4W040     | 62.23         | 2.45 | ]   | CR4W020     | 60.45   | 2.38    |
| CS4W050     | 82.29         | 3.24 | ]   | CR4W025     | 62.99   | 2.48    |
| CS4W060     | 78.99         | 3.11 | ] [ | CR4W030     | 62.73   | 2.47    |
| CS4W080     | 73.15         | 2.88 | ]   | CR4W040     | 62.23   | 2.45    |
| CS4W100     | 143.00        | 5.63 | ]   | CR4W050     | 82.29   | 3.24    |
| CS4W120     | 137.16        | 5.25 | ]   | CR4W060     | 78.99   | 3.11    |
| CS4W140     | 129.54        | 5.40 |     | CS4W080     | 73.15   | 2.88    |
| CS4W160     | 123.19        | 4.85 |     | CR4W100     | 143.00  | 5.63    |
| CS4W180     | 116.84        | 4.60 | ]   | CR4W120     | 137.16  | 5.40    |
| CS4W200     | 111.25        | 4.38 |     |             |         |         |

| PIPE          |             | 515/8510-XX |             | 2536/8512-XX |             |
|---------------|-------------|-------------|-------------|--------------|-------------|
| SIZE<br>(IN.) | FITTING     | LITERS      | U.S.<br>GAL | LITERS       | U.S.<br>GAL |
| STAINL        | ESS STEEL V | WELDOLE1    | S ON SCH    | 40 PIPE      |             |
| 2-1/2         | CR4W025     | 4.9670      | 18.800      | 9.9339       | 37.600      |
| 3             | CR4W030     | 3.2153      | 12.170      | 6.4306       | 24.340      |
| 4             | CR4W040     | 1.8388      | 6.9600      | 3.6777       | 13.920      |
| 5             | CR4W050     | 1.3897      | 5.2600      | 2.8692       | 10.860      |
| 6             | CR4W060     | 0.9749      | 3.6900      | 1.9868       | 7.5200      |
| 8             | CR4W080     | 0.5627      | 2.1300      | 1.1466       | 4.3400      |
| 10            | CR4W100     | 0.3567      | 1.3500      | 0.7292       | 2.7600      |
| 12            | CR4W120     | 0.2536      | 0.9600      | 0.5125       | 1.9400      |
| CARBO         | N STEEL WE  | LDOLETS     | ON SCH 4    | PIPE         |             |
| 2-1/2         | CS4W025     | 4.9670      | 18.800      | 9.9339       | 37.600      |
| 3             | CS4W030     | 3.2153      | 12.170      | 6.4306       | 24.340      |
| 4             | CS4W040     | 1.8388      | 6.9600      | 3.6777       | 13.920      |
| 5             | CS4W050     | 1.3897      | 5.2600      | 2.8692       | 10.860      |
| 6             | CS4W060     | 0.9749      | 3.6900      | 1.9868       | 7.5200      |
| 8             | CS4W080     | 0.5627      | 2.1300      | 1.1466       | 4.3400      |
| 10            | CS4W100     | 0.3567      | 1.3500      | 0.7292       | 2.7600      |
| 12            | CS4W120     | 0.2536      | 0.9600      | 0.5125       | 1.9400      |
| COPPE         | R/BRONZE B  | RAZOLET     | S ON SCH    | 40 PIPE      |             |
| 2-1/2         | BR4B025     | 4.9670      | 18.800      | 9.934        | 37.600      |
| 3             | BR4B030     | 3.2153      | 12.170      | 6.431        | 24.340      |
| 4             | BR4B040     | 1.8388      | 6.9600      | 3.678        | 13.920      |
| 5             | BR4B050     | 1.3897      | 5.2600      | 2.869        | 10.860      |
| 6             | BR4B060     | 0.9749      | 3.6900      | 1.987        | 7.5200      |
| 8             | BR4B080     | 0.5627      | 2.1300      | 1.147        | 4.3400      |
| 10            | BR4B100     | 0.3567      | 1.3500      | 0.729        | 2.7600      |
| 12            | BR4B120     | 0.2536      | 0.9600      | 0.513        | 1.9400      |
| SCH 80        | IRON SADDI  | ES ON SC    | H 80 PIPE   |              |             |
| 2             | IR8S020     | 8.5495      | 32.360      | 17.099       | 64.720      |
| 2-1/2         | IR8S025     | 5.8705      | 22.220      | 11.223       | 42.480      |
| 3             | IR8S030     | 3.5456      | 13.420      | 6.980        | 26.420      |
| 4             | IR8S040     | 2.0238      | 7.6600      | 3.884        | 14.700      |
| 5             | IR8S050     | 1.5482      | 5.8600      | 3.218        | 12.180      |
| 6             | IR8S060     | 1.0806      | 4.0900      | 2.230        | 8.4400      |
| 8             | IR8S080     | 0.6156      | 2.3300      | 1.295        | 4.9000      |
| 10            | IR8S100     | 0.4042      | 1.5300      | 0.808        | 3.0600      |
| 12            | IR8S120     | 0.2801      | 1.0600      | 0.571        | 2.1600      |
|               | IRON SADD   | E ON SCH    | 40 PIPE     |              |             |
| 2             | IR8S020     | 7.0859      | 26.820      | 14.172       | 53.640      |
| 2-1/2         | IR8S025     | 4.9670      | 18.800      | 9.934        | 37.600      |
| 3             | IR8S030     | 3.1678      | 11.990      | 6.135        | 23.220      |
| 4             | IR8S040     | 1.8098      | 6.8500      | 3.503        | 13.260      |
| 5             | IR8S050     | 1.4082      | 5.3300      | 2.917        | 11.040      |
| 6             | IR8S060     | 0.9934      | 3.7600      | 1.913        | 7.2400      |
| 8             | IR8S080     | 0.5627      | 2.1300      | 1.162        | 4.4000      |
| 10            | IR8S100     | 0.3567      | 1.3500      | 0.740        | 2.8000      |
| 12            | IR8S120     | 0.2536      | 0.9600      | 0.523        | 1.9800      |

# **K-Factors DIN Pipes**

| PIPE    | FITTING        | 515/8510-XX |            | 2536/8512-XX |          |
|---------|----------------|-------------|------------|--------------|----------|
| SIZE    | SIZE   FITTING |             | U.S. GAL   | LITERS       | U.S. GAL |
| POLYPE  | ROPYLENE I     | FITTINGS    | (DIN/ISO A | ND BS AN     | D ANSI)  |
| DN 15   | PPMT005        | 127.23      | 481.55     | 251.75       | 952.87   |
| DN 20   | PPMT007        | 73.207      | 277.09     | 148.77       | 563.10   |
| DN 25   | PPMT010        | 37.300      | 141.18     | 77.042       | 291.60   |
| DN 32   | PPMT012        | 22.071      | 83.540     | 44.709       | 169.22   |
| DN 40   | PPMT015        | 13.544      | 51.265     | 27.450       | 103.90   |
| DN 50   | PPMT020        | 7.8193      | 29.596     | 16.060       | 60.789   |
| PVDF F  | ITTINGS (DI    | N/ISO AND   | BS AND A   | ANSI)        |          |
| DN 15   | SFMT005        | 111.19      | 420.87     | 218.56       | 827.26   |
| DN 20   | SFMT007        | 60.277      | 228.15     | 129.42       | 489.87   |
| DN 25   | SFMT010        | 36.116      | 136.70     | 74.915       | 283.55   |
| DN 32   | SFMT012        | 20.950      | 79.294     | 41.899       | 158.59   |
| DN 40   | SFMT015        | 11.490      | 43.490     | 22.980       | 86.980   |
| DN 50   | SFMT020        | 6.8450      | 25.908     | 13.312       | 50.385   |
| PVC FIT | TINGS (DIN     | /ISO) - EUI | ROPE ONL   | Y            |          |
| DN 15   | PVMT005        | 128.45      | 486.18     | 256.90       | 972.37   |
| DN 20   | PVMT007        | 64.160      | 242.85     | 128.32       | 485.69   |
| DN 25   | PVMT010        | 39.270      | 148.64     | 78.540       | 297.274  |
| DN 32   | PVMT012        | 22.490      | 85.125     | 44.980       | 170.249  |
| DN 40   | PVMT015        | 13.700      | 51.855     | 27.400       | 103.709  |
| DN 50   | PVMT020        | 7.8600      | 29.750     | 15.720       | 59.500   |
|         |                |             |            |              |          |

# Signet Fittings

| Туре                        | Description   | Туре   | Description  |
|-----------------------------|---|--|--|
| Plastic tees                | 0.5 to 2 inch versions     MPVC or CPVC   | Iron, Carbon Steel,<br>316 SS Threaded<br>tees   | 0.5 to 2 in. versions     Mounts on threaded pipe ends                         |
| PVC<br>Glue-on<br>Saddles   | 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 | 2 to 4 inch, cut 1-7/16 inch hole     Over 4 inch, cut 2-1/8 inch hole in pipe |
| PVC<br>Clamp-on<br>Saddles  | 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 FPT                              | • 1.5 in. to 2 in. PVDF insert   |
| Iron<br>Strap-on<br>saddles | 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 14 in. to 36 in. | Metric<br>Union<br>Fitting                       | For pipes from DN 15 to 50 mm     PP or PVDF                                   |

# Ordering Information

# 515/8510-XX

| Mfr. Part No. | Code        | Description  |
|---------------|-------------|--|
| P51530-H0     | 198 801 659 | Sensor, Polypropylene, Hastelloy-C, Black PVDF; 0.5 to 4 inch                          |
| P51530-P0     | 198 801 620 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), 0.5 to 4 inch           |
| P51530-P1     | 198 801 621 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch              |
| P51530-P2     | 198 801 622 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 inch            |
| P51530-P3     | 198 840 310 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), 0.5 to 4 inch  |
| P51530-P4     | 198 840 311 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch     |
| P51530-P5     | 198 840 312 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 inch   |
| P51530-S0     | 198 801 661 | Sensor, polypropylene, PVDF (natural), Black PVDF; 0.5 to 4 inch                       |
| P51530-T0     | 198 801 663 | Sensor, PVDF (natural), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 0.5 to 4 inch        |
| P51530-T1     | 198 801 664 | Sensor, PVDF (natural), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 5 to 8 inch          |
| P51530-V0     | 198 801 623 | Sensor, PVDF (natural), Hastelloy-C Rotor Pin, PVDF Rotor (natural), 0.5 to 4 inch     |
| P51530-V1     | 198 801 624 | Sensor, PVDF (natural), Hastelloy-C Rotor Pin, PVDF Rotor (natural), 5 to 8 inch       |
| P51530-V2     | 198 801 625 | Sensor, PVDF (natural), Hastelloy-C Rotor Pin, PVDF Rotor (natural), 10 to 36 inch     |
| 3-8510-P0     | 198 864 504 | Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black), 0.5 to 4 inch            |
| 3-8510-P1     | 198 864 505 | Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch               |
| 3-8510-T0     | 159 000 622 | Sensor, Integral, PVDF (nat.), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), 0.5 to 4 inch |
| 3-8510-V0     | 198 864 506 | Sensor, Integral, PVDF (nat.), Hastelloy-C Rotor Pin, PVDF Rotor (nat.), 0.5 to 4 inch |
| 3-3519/515-P3 | 159 000 819 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 0.5 to 4 inch      |
| 3-3519/515-P4 | 159 000 820 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 5 to 8 inch        |
| 3-3519/515-P5 | 159 000 821 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 10 to 36 inch      |

# Replacement Parts 515/8510

| M1538-2      | 198 801 181 | Rotor, PVDF Black                  |
|--------------|-------------|------------------------------------|
| P51547-3     | 159 000 474 | Rotor, PVDF Natural                |
| M1538-4      | 198 820 018 | Rotor, ETFE                        |
| P51550-3     | 198 820 043 | Rotor and Pin, 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, ETFE                |
| P31542       | 198 801 630 | Sensor Cap, Red (for use with 515) |
|              |             |                                    |

# **Ordering Information**

# 2536/8512-XX

| Mfr. Part No.     | Code        | Description  |
|-------------------|-------------|--|
| 3-2536-P0         | 198 840 143 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), ½ to 4 inch           |
| 3-2536-P1         | 198 840 144 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch            |
| 3-2536-P2         | 198 840 145 | Sensor, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 inch          |
| 3-2536-P3         | 159 000 758 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black), ½ to 4 inch  |
| 3-2536-P4         | 159 000 759 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch   |
| 3-2536-P5         | 159 000 760 | Sensor, Wet-Tap, Polypropylene, Titanium Rotor Pin, PVDF Rotor (black) 10 to 36 inch |
| 3-2536-V0         | 198 840 146 | Sensor, PVDF (natural), Hastelloy-C Rotor Pin, PVDF Rotor (natural), ½ to 4 inch     |
| 3-2536-V1         | 198 840 147 | Sensor, PVDF (natural), Hastelloy-C Rotor Pin, PVDF Rotor (natural), 5 to 8 inch     |
| 3-2536-T0         | 198 840 149 | Sensor, PVDF (natural), PVDF (nat.) Rotor Pin, PVDF Rotor (natural), ½ to 4 inch     |
| 3-8512-P0         | 198 864 513 | Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black), ½ to 4 inch            |
| 3-8512-P1         | 198 864 514 | Sensor, Integral, PP, Titanium Rotor Pin, PVDF Rotor (black) 5 to 8 inch             |
| 3-8512-T0         | 198 864 518 | Sensor, Integral, PVDF (nat.), PVDF (nat.) Rotor Pin, PVDF Rotor (nat.), ½ to 4 inch |
| 3-8512-V0         | 198 864 516 | Sensor, Integral, PVDF (nat.), Hastelloy-C Rotor Pin, PVDF Rotor (nat.), ½ to 4 inch |
| 3-3519/2536-P3    | 159 000 822 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), ½ to 4 inch      |
| 3-3519/2536-P4    | 159 000 823 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 5 to 8 inch      |
| 3-3519/2536-P5    | 159 000 824 | Sensor & Wet-Tap Assy., PP, Titanium Rotor Pin, PVDF Rotor (black), 10 to 36 inch    |
| Davida a successi | D           |  |

# Replacement Parts 2536/8512

| 3-2536.320-1 | 198 820 052 | Rotor, PVDF Black                    |
|--------------|-------------|--------------------------------------|
| 3-2536.320-2 | 159 000 272 | Rotor, PVDF Natural                  |
| 3-2536.320-3 | 159 000 273 | Rotor, ETFE                          |
| 3-2536.321   | 198 820 054 | Rotor and Pin, PVDF Natural          |
| 3-2536.322-1 | 198 820 056 | Sleeved Rotor, PVDF Black            |
| 3-2536.322-2 | 198 820 057 | Sleeved Rotor, PVDF Natural          |
| 3-2536.322-3 | 198 820 058 | Sleeved Rotor, ETFE                  |
| P31542-3     | 159 000 464 | Sensor Cap, Blue (for use with 2536) |

#### Accessories 515/8510 & 2536/8512

| ACCC35011C3 515/0510 & 2550/0512 |             |   |
|----------------------------------|-------------|---|
| M1546-1                          | 198 801 182 | Rotor Pin, Titanium                               |
| M1546-2                          | 198 801 183 | Rotor Pin, Hastelloy-C                            |
| M1546-3                          | 198 820 014 | Rotor Pin, Tantalum                               |
| M1546-4                          | 198 820 015 | Rotor Pin, Stainless Steel                        |
| P51545                           | 198 820 016 | Rotor Pin, Ceramic                                |
| 1220-0021                        | 198 801 186 | O-Ring, FPM                                       |
| 1224-0021                        | 198 820 006 | O-Ring, EPDM                                      |
| 1228-0021                        | 198 820 007 | O-Ring, FFKM                                      |
| P31536                           | 198 840 201 | Sensor Plug, Polypropylene                        |
| P31934                           | 159 000 466 | Conduit Cap                                       |
| P51589                           | 159 000 476 | Conduit Adapter Kit                               |
| 5523-0222                        | 159 000 392 | Cable (per foot), 2 conductor with shield, 22 AWG |
| 3-8050                           | 159 000 184 | Universal mount kit                               |
| 3-8050-1                         | 159 000 753 | Universal junction box                            |
| 3-8050.390-1                     | 159 001 702 | Retaining Nut Replacement Kit, NPT, Valox®        |
| 3-8050.390-3                     | 159 310 116 | Retaining Nut Replacement Kit, NPT, PP            |
| 3-8050.390-4                     | 159 310 117 | Retaining Nut Replacement Kit, NPT, PVDF          |
| 3-8051                           | 159 000 187 | Transmitter integral adapter (for 8510 and 8512)  |
|                                  |             |   |

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