Type 2536 Rotor-X Paddlewheel Flow Sensor



PVC Sensor
(gray body and cap)



Standard Sensor
(blue cap)



Integral
Sensor



Wet-Tap Sensor

Product description

Simple to install with time-honored reliable performance, type 2536 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance. The type 2536 has a process-ready open collector signal with a wide dynamic flow range of 0.1 to 6 m/s (0.3 to 20 ft/s). The sensor measures liquid flow rates in full pipes and can be used in low pressure systems.

The type 2536 sensors are offered in a variety of materials for a wide range of pipe sizes and insertion configurations. The many material choices including PP and PVDF make this type highly versatile and chemically compatible to many liquid process solutions.

Sensors can be installed in DN15 to DN900 (½ to 36 in.) pipes (except the 2536 PVC versions, which can be installed in DN15 to DN100 (½ to 4 in.) pipes), using GF '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.

Features

- Operating range 0.1 to 6 m/s (0.3 to 20 ft/s)
- Wide turndown ratio of 66:1
- Open-collector output
- Highly repeatable output
- Simple, economical design
- Installs into pipe sizes DN15 to DN900 (½ to 36 in.)
- PVC 2536 version DN15 to DN100 (½ to 4 in.) for concentrated Sodium Hypochlorite 12.5% applications
- High resolution and noise immunity
- Test certificate included for -X0, -X1
- Chemically resistant materials

Certified to NSF/ANSI 61 & 372

(3-2536-PX version only)

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Applications

- Pure Water Production
- Filtration Systems
- Chemical Production
- Liquid Delivery Systems
- Pump Protection
- Scrubber/Gas Stacks
- Gravity Feed Lines
- Not suitable for gas
- Sodium Hypochlorite transfer/injection/batching (3-2536-G0)

Specifications

General		
Operating Range	0.1 to 6 m/s	0.3 to 20 ft/s
Pipe Size Range	DN15 to DN900	½ to 36 in.
PVC Sensor Body	DN15 to DN100	½ to 4 in.
Linearity	±1% of max. range @ 25 °C (77 °F)	
Repeatability	±0.5% of max. range @ 25 °C (77 °F)	
Min. Reynolds Number Required	4500	
Wetted Materials		
Sensor Body	Glass-filled PP (black), PVDF (natural) or PVC (gray)	
O-rings	FKM (std) optional EPR (EPDM) or FFKM	
Rotor Pin	Titanium, Hastelloy-C or PVDF; optional Ceramic, Tantalum or Stainless Steel	
Rotor	Black PVDF or Natural PVDF; optional ETFE, with or w/o carbon fiber reinforced PTFE sleeve for rotor pin	
Electrical		
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal
Supply Voltage	5 to 24 VDC ±10%, regulated	
Supply Current	<1.5 mA @ 3.3 to 6 VDC	<20 mA @ 6 to 24 VDC
Output type	Open collector, sinking 10 mA max.	
Cable type	2-conductor twisted pair with shield, 22 AWG	
Cable Length	7.6 m (25 ft) can be extended up to 305 m (1'000 ft) maximum	
Max. Temperature/Pressure Rating - Standard and Integral Sensor		
PP	12.5 bar @ 20 °C	180 psi @ 68 °F
	1.7 bar @ 85 °C	25 psi @185°F
PVDF	14 bar @ 20 °C	200 psi @ 68 °F
	1.7 bar @ 85 °C	25 psi @ 185 °F
PVC	12.5 bar @ 20 °C	180 psi @ 68 °F
	6.9 bar @ 60 °C	100 psi @ 140 °F
Operating Temperature		
PP	-18 °C to 85 °C	0 °F to 185 °F
PVDF	-18 °C to 85 °C	0 °F to 185 °F
PVC	0 °C to 50 °C	32 °F to 122 °F
Max. Temperature/Pressure Rating - Wet-Tap Sensor		
PP	7 bar @ 20 °C	100 psi @ 68 °F
	1.4 bar @ 60 °C	20 psi @ 140 °F
Operating Temperature	-18 °C to 60 °C	0 °F to 140 °F
Max. Wet-Tap Sensor Removal Rating	1.7 bar @ 22 °C	25 psi @ 72 °F

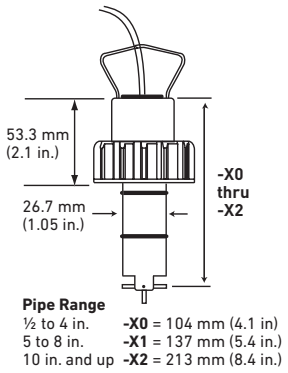
Shipping Weight		
3-2536-X0	0.454 kg	1.00 lb
3-2536-X1	0.476 kg	1.05 lb
3-2536-X2	0.680 kg	1.50 lb
3-2536-X3	0.780 kg	1.72 lb
3-2536-X4	0.800 kg	1.76 lb
3-2536-X5	0.880 kg	1.94 lb
3-8512-X0	0.35 kg	0.77 lb
3-8512-X1	0.37 kg	0.81 lb

Standards and Approvals
CE, UKCA, FCC, NSF (3-2536-PX only)
RoHS compliant, China RoHS
Manufactured under ISO 9001, ISO 14001 and ISO 45001

See pressure-temperature diagrams for more information.

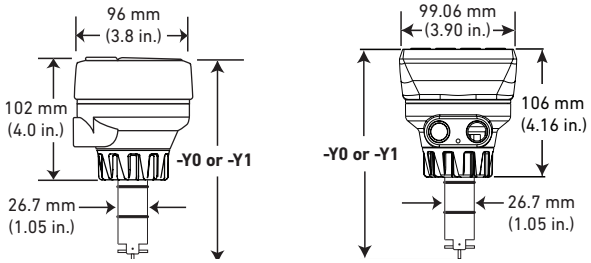
Dimensions

Standard Mount



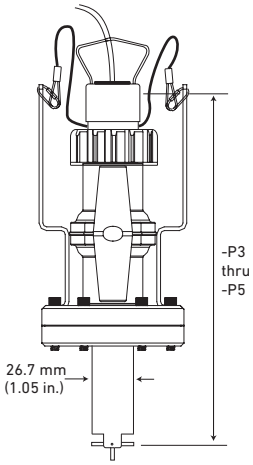
PVC Mount
(0.5 to 4 in. pipe range only)

Integral Mount



(shown with Transmitter sold separately)

Wet-Tap Mount Sensor with 3519 Wet-Tap Valve



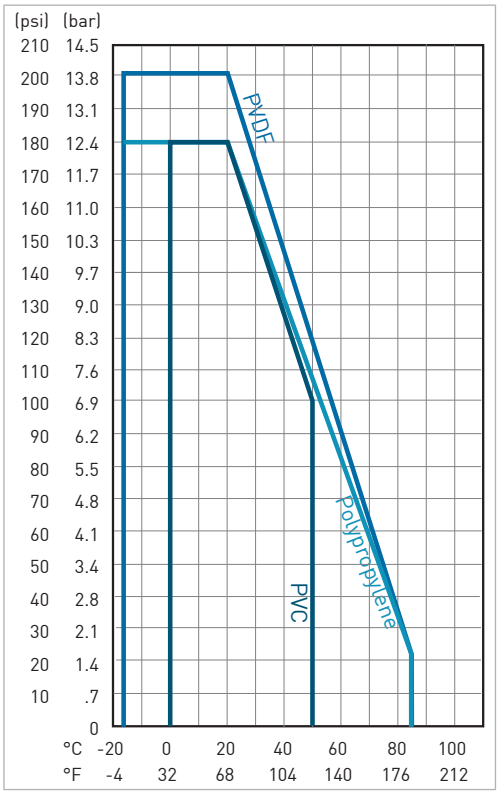
(See 3519 product page for more information)

Pipe range		Pipe range		Pipe range	
0.5 to 4 in.	-X0 = 104 mm (4.1 in.)	0.5 to 4 in.	-Y0 = 152 mm (6.0 in.)	0.5 to 4 in.	-P3 = 297 mm (11.7 in.)
5 to 8 in.	-X1 = 137 mm (5.4 in.)	5 to 8 in.	-Y1 = 185 mm (7.3 in.)	5 to 8 in.	-P4 = 333 mm (13.1 in.)
10 in. and up	-X2 = 213 mm (8.4 in.)			10 in. and up	-P5 = 409 mm (16.1 in.)

Pressure-temperature diagrams

Note

The pressure-temperature diagrams are specifically for the GF sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



System Overview

Panel Mount	Pipe, Tank, Wall Mount		Field (Integral) Mount	Automation System
GF Instruments - 9900 - 9900-1BC - 9950	GF Instruments - 9900-1P with Rear Enclosure - 9900-1BC with Rear Enclosure - 9900 with 3-8050-1 Universal Mount Kit - 9950 with 3-8050-1 Universal Mount Kit		GF Instruments - 9900-1 with 3-8051-X Integral Mount Kit	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller
Type 2536 PVC, Standard, Wet-Tap or 8512 Integral Mount Flow Sensors				
GF Fittings				All sold separately

Application Tips

- 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 abrasive liquids to reduce wear.
- Sensor plug can be used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing ferrous particles, use GF 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.

Ordering Information

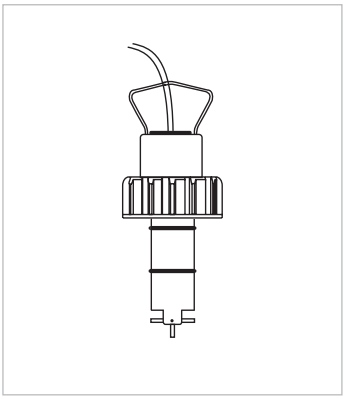
Ordering Notes

1. Most common part number combinations are shown. For all other combinations contact factory.
2. Other rotor and pin materials are available for purchase from the factory and can be easily replaced in the field. See Accessories section.

Type 2536 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 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). Use GF fittings for proper seating of the sensor into the process flow.

Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for use with remote mount instrument				
DN15 to DN100 - ½ to 4 in.				
3-2536-P0	198 840 143	Polypropylene	Black PVDF	Titanium
3-2536-T0	198 840 149	Natural PVDF	Natural PVDF	Natural PVDF
3-2536-G0	159 001 959	PVC	Black PVDF	Titanium
3-2536-V0	198 840 146	Natural PVDF	Natural PVDF	Hastelloy-C
DN125 to DN 200 - 5 to 8 in				
3-2536-P1	198 840 144	Polypropylene	Black PVDF	Titanium
3-2536-V1	198 840 147	Natural PVDF	Natural PVDF	Hastelloy-C
DN250 - DN900 - 10 to 36 in.				
3-2536-P2	198 840 145	Polypropylene	Black PVDF	Titanium

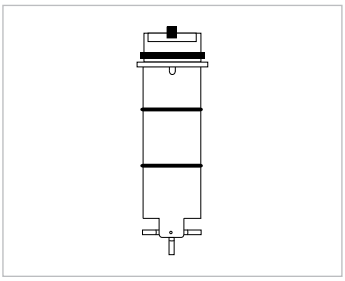


Type 2536 Integral Mount Paddlewheel

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

See guidelines below for instructions.

Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow sensor for integral mounting on the 8150 instrument using the 3-8051-X Flow Sensor Integral Mount Kit (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-8512-P0	198 864 513	Polypropylene	Black PVDF	Titanium
3-8512-T0	198 864 518	Natural PVDF**	Natural PVDF	Natural PVDF
3-8512-V0	198 864 516	Natural PVDF**	Natural PVDF	Hastelloy-C
DN125 to DN200 - 5 to 8 in. (PP only)				
3-8512-P1	198 864 514	Polypropylene	Black PVDF	Titanium



**Natural PVDF available ½ in. to 4 in. only

Guidelines: Combining a 2536 integral mount flow sensor with an integrally mounted instrument

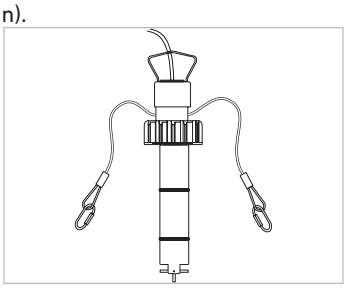
Option 1

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

a) Order the 3-8051-X flow sensor integral mounting kit (sold separately) to connect the sensor to an instrument.
b) Order a field mount transmitter (sold separately). The following part numbers are compatible: 3-9900-1.
c) Assembling the sensor with the integral adapter and instrument is quick and simple.

Type 2536 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 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal 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).



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for wet-tap mounting with the 3519 Wet-Tap Valve (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-2536-P3	159 000 758	Polypropylene	Black PVDF	Titanium
DN125 to DN200 - 5 to 8 in.				
3-2536-P4	159 000 759	Polypropylene	Black PVDF	Titanium
DN250 to DN900 - 10 to 36 in.				
3-2536-P5	159 000 760	Polypropylene	Black PVDF	Titanium

Guideline: Combining a 2536 Wet-Tap Sensor with a 3519 Wet-Tap Valve

a) Once a sensor is chosen, it 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.

Additional ordering information

Additional possible configurations are listed below. For variants, combinations, and orders, please contact the local GF sales company.

Example Part Number **3-2536-2231-025-1**	Sensor Body Material	Rotor Material	Pin Material	O-ring Material		Cable Length		Sensor Length
3-2536-					-		-	
Sensor Body Material								
Black Polypropylene	1							
PVDF	2							
Rotor Material								
PVDF, black		1						
PVDF, natural		2						
ETFE		3						
Sleeved Black PVDF		4						
Sleeved Natural PVDF		5						
Sleeved ETFE		6						
Pin Material								
Titanium			1					
Hastelloy-C			2					
Stainless Steel			3					
Tantalum			4					
Ceramic			5					
PVDF, natural*			6					
O-ring Material								
FPM (FKM)				1				
EPR (EPDM)				2				
FFKM				3				
Cable Length								
7.6 m (25 ft)						025		
15.2 m (50 ft)						050		
22.8 m (75 ft)						075		
30.5 m (100 ft)						100		
Sensor Length**								
DN15 to DN100 (0.5 to 4 in.)								0
DN125 to DN200 (5 to 8 in.)								1
DN250 to DN900 (10 to 36 in.)								2

* Only available with Natural PVDF Rotors
** PVDF only available in sensor lengths X0 and X1

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Rotors		
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
3-2536.322-1	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
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
P51545	198 820 016	Pin, Ceramic
O-Rings		
1220-0021	198 801 000	O-ring, FKM (2 required per sensor)
1224-0021	198 820 006	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	198 820 007	O-ring, FFKM (2 required per sensor)
Miscellaneous		
P31536	198 840 201	Sensor plug, Polypropylene
P31542-3	159 000 464	Sensor cap, Blue
3-2536.555	159 500 532	Sensor cap, Gray
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
3-2536.321	198 820 054	PVDF Natural, Rotor kit (rotor and pin)
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 (for use with 8510 and 8512)
3-8050.390-3	159 310 116	Retaining nut replacement kit, NPT, PP (for use with 8510 and 8512)
3-8050.390-4	159 310 117	Retaining nut replacement kit, NPT, PVDF (for use with 8510 and 8512)
3-8051	159 000 187	Transmitter integral adapter (for use with 8510 and 8512)
3-8051-1	159 001 755	Transmitter integral mounting kit, NPT, PP (for use with 8510 and 8512)
3-8051-2	159 001 756	Transmitter integral mounting kit, NPT, PVDF (for use with 8510 and 8512)