



The GF 2581 FlowtraMag is a full-bore plastic PVC in line style magnetic flowmeter. The PVC body with Titanium or *Hastelloy*® C electrodes has no moving parts, and is two to three times lighter in weight compared to traditional metal magmeters on the market. It is designed for high accuracy flow measurement in short pipe runs, making it an ideal solution for industrial applications where performance and ease of use are important.

The FlowtraMag design is factory calibrated with certificate at  $\pm 1\%$  of reading accuracy. It is offered in corrosion resistant materials to provide long-term reliability with minimal maintenance costs. The LED indicators show at-a-glance system status, including normal operation, zero flow and partially filled pipe detection.

The flow meter provides three different outputs; field selectable frequency or digital (S<sup>3</sup>L) as well as analog 4 to 20 mA in both passive and active configuration. The GF Config Tool Bluetooth® app supports iOS and Android for simple on-the-fly user configuration with in with instantaneous flow reading.

These versatile, easy-to-install meters deliver accurate flow measurement in pipe sizes of DN25 (1 in.), DN40 (1.5 in.), DN50 (2 in.), DN80 (3 in.) and DN100 (4 in.), optimized for performance in short pipe runs often associated with final effluent lines, well heads and water treatment skids.

## Features

- **No moving parts**
- **Lighter in weight compared to traditional metal magmeters**
- **Reduced straight run requirements, ideal for final effluent lines, wellheads and skids**
- **Factory calibrated with certificate ( $\pm 1\%$  of reading accuracy)**
- **Partially filled pipe detection status indicator**
- **Reverse flow direction configurable with 0252 Configuration Tool or GF Config Tool Bluetooth® App**
- **One device with three different outputs: field selectable Frequency or Digital (S<sup>3</sup>L), and analog 4 to 20 mA in both passive and active configuration**
- **On-the-fly configuration with GF Config Tool Bluetooth® App**
- **Bluetooth® 4.2 capable, support iOS and Android for simple user configuration with instantaneous flow reading**



(Titanium only)

## Applications

- **Chemical Processing/Production**
- **Cooling Tower**
- **Filtration Systems**
- **Water and Wastewater Treatment**
- **Municipal and Industrial Water Distribution**
- **Pool and Aquatics**
- **Process Control, Water Process Flow**
- **Reverse Osmosis**
- **Scrubber Systems**
- **Metal Recovery and Landfill Leachate**
- **Mining**



Patent #: US 10,712,184 B1  
Other U.S. and International Patents Pending

*Hastelloy*® is a registered trademark of Haynes International.

# Specifications

General		
Pipe Size Range	DN25, DN40, DN50, DN80, DN100	1 in., 1.5 in., 2 in., 3 in., 4 in.
Flow Range Titanium or <i>Hastelloy C</i>	0.02 to 10 m/s	0.07 to 33 ft/s
DN25 (1")	0.53 LPM to 266.35 LPM	0.14 to 70.36 GPM
DN40 (1.5")	1.36 LPM to 662.34 LPM	0.36 to 174.97 GPM
DN50 (2")	2.23 LPM to 1112.60 LPM	0.59 to 293.92 GPM
DN80 (3 in.)	5.11 LPM to 2493.75 LPM	1.35 to 658.78 GPM
DN100 (4")	8.72 LPM to 4357.83 LPM	2.30 to 1151.22 GPM
Minimum Conductivity	20 $\mu$ S/cm – water based	
Power Cable Wire	7.6 m (25 ft) 2-conductor shielded	
Output Cable Wire	7.6 m (25 ft) 5-conductor shielded	
Cable wires may be extended up to 305 m (1,000 ft), field splice or special order		
Wetted Materials		
Flow Tube Body	PVC	
Electrode	Titanium, grade 2 or <i>Hastelloy C-276</i>	
O-rings	FKM or EPDM	
Performance		
Accuracy	$\pm$ 1% of reading plus $\pm$ 0.01 m/s (0.033 ft/s), reference condition 50 $\mu$ S/cm and water based	
Repeatability	$\pm$ 0.5% of reading @ 25 °C (77 °F)	
Low Flow Cutoff	0.02 m/s (0.07 ft/s) (adjustable via GF Config Tool App or 0252 Configuration Tool)	
Electrical		
DC Power (Functional Rating)	24 VDC, max 24 W (12 to 32 VDC)	
Reverse Polarity Protected	Up to 35 VDC	
Over-Voltage Maximum Rating	35 VDC	
Current Output		
Passive (low power)	4 to 20 mA per ANSI-ISA 50.00.01 Class H	
Active Output	4 to 20 mA	
Passive / Active	User selectable	
Passive Loop Voltage	12 to 32 VDC	
Loop Accuracy	$\pm$ 32 $\mu$ A (@ 25 °C @ 24 VDC)	
Loop Resolution	5 $\mu$ A	
Loop Span	3.8 mA to 21 mA	
Error Condition	None, 3.6 mA or 22 mA	
Max. Cable	305 m (1,000 ft)	
Max. Loop Resistance	600 $\Omega$ @ 24 VDC	
	Compatible with PLC, PC or similar equipment	
Frequency Output		
Frequency	5 to 24 VDC, 50 mA max.	
Frequency Range	0 to 1500 Hz	
Max. Cable	305 m (1,000 ft)	
Max. Pull-up Voltage	30 VDC, 10k pull-up recommended	
	Compatible with GF 8900, 9900, 9950, and 0486 Profibus Concentrator	
Digital (S <sup>3</sup> L) Output		
Digital (S <sup>3</sup> L)	4.5 to 5.5 VDC	
	Serial ASCII, TTL level 9600 bps Compatible with GF 8900, 9900, 9950 and 0486 Profibus Concentrator	
Max. Cable Length	Application dependent	
Environmental Requirements		
Enclosure	NEMA 4X / IP65	
Relative Humidity	0 to 95% non-condensing	
Storage Temperature	-10 °C to 60 °C (14 °F to 140 °F)	
Operating Temperature		
	Ambient	-10 °C to 60 °C 14 °F to 140 °F
	Media	0 °C to 60 °C 32 °F to 140 °F
UL Environmental Rating	UL 50, Type 6P Storage	
Altitude	4,000 m	13,123 ft

### Pressure/Temperature Ratings

Maximum Operating Pressure	10 bar @ 23 °C (145 psi @ 73 °F)
DN25 (1"), DN40 (1.5"), DN50 (2")	3.5 bar @ 60 °C (51 psi @ 140 °F)
DN80 (3"), DN100 (4")	2.27 bar @ 60 °C (33 psi @ 140 °F)

### Shipping Weight -Titanium or Hastelloy C

DN25 (1")	3.4 kg	7.5 lbs
DN40 (1.5")	4.1 kg	9.1 lbs
DN50 (2")	4.5 kg	9.9 lbs
DN80 (3")	7.5 kg	16.5 lbs
DN100 (4")	8.3 kg	18.3 lbs

### Standards and Approvals

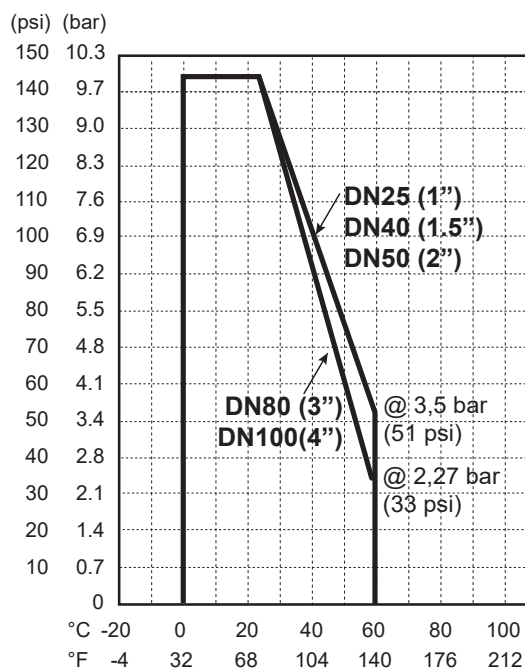
CE, FCC, NSF (Titanium only, does not include flange gaskets)
UL, CUL Recognized Component
RoHS compliant, China RoHS
Manufactured under ISO 9001, ISO 14001 and ISO 45001

## Temperature/Pressure Graph


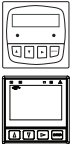
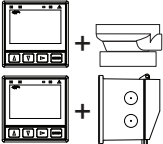

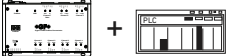

Note:

The pressure/temperature graphs 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.



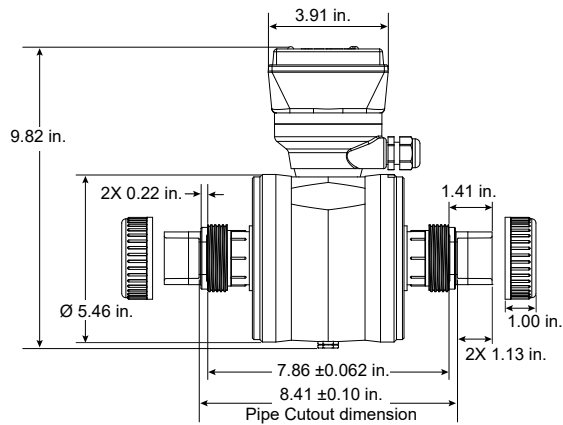
## System Overview

Stand-Alone	Panel Mount	Pipe, Tank, Wall	4 to 20 mA Output	Automation System
<b>GF 2581 FlowtraMag</b> 	GF Instruments - 8900 - 9900-1P - 9900-1BC - 9950 	GF Instruments - 9900-1 with 3-8050-1 Universal Mount Kit - 9900-1BC with Rear Enclosure 	- Customer Supplied Chart Recorder, Programmable Logic Controller or - Programmable Automation Controller 	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller 
	<b>GF 2581 FlowtraMag</b> - 3-2581PTXX-10X - 3-2581PHXX-10X 			

# Dimensions

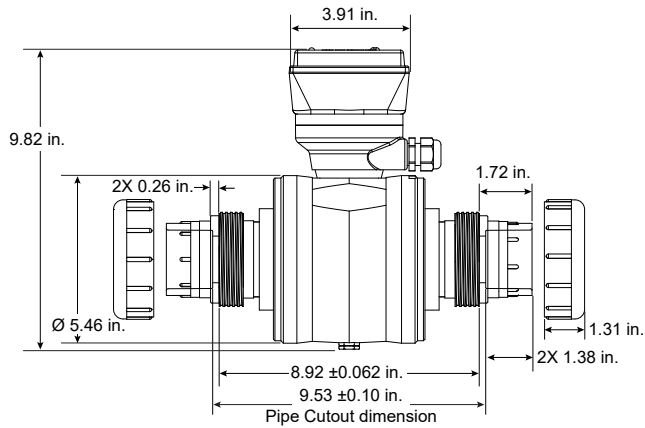
## 1 in.

ASTM Union ends and union nuts shown



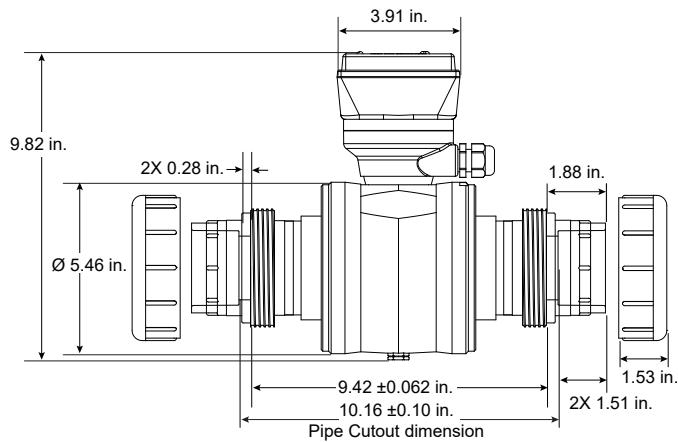
## 1.5 in.

ASTM Union ends and union nuts shown



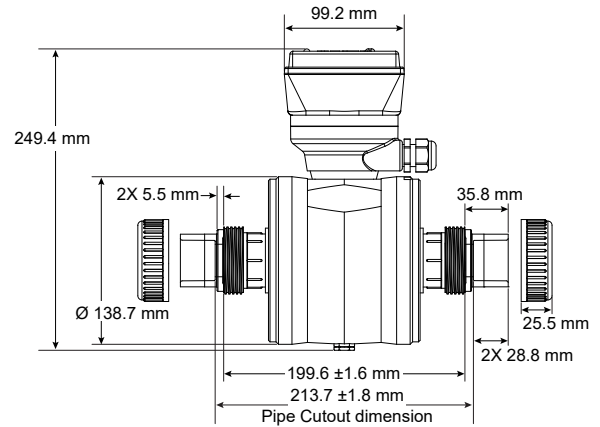
## 2 in.

ASTM Union ends and union nuts shown



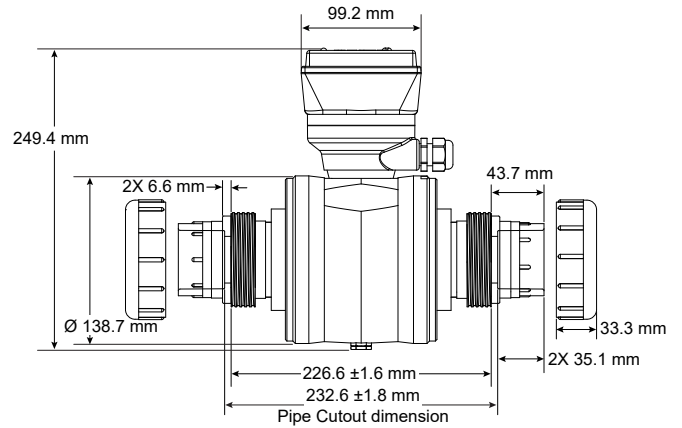
## DN25

Metric Union ends and union nuts shown



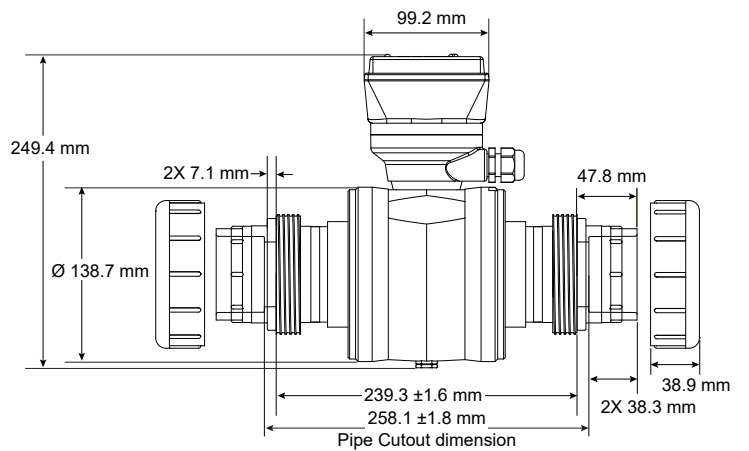
## DN40

Metric Union ends and union nuts shown



## DN50

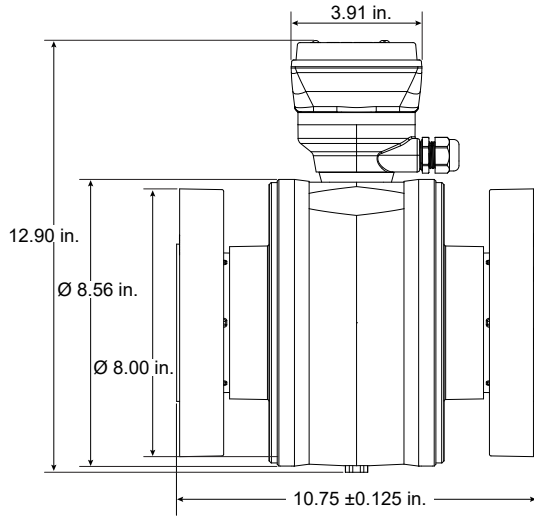
Metric Union ends and union nuts shown



# Dimensions

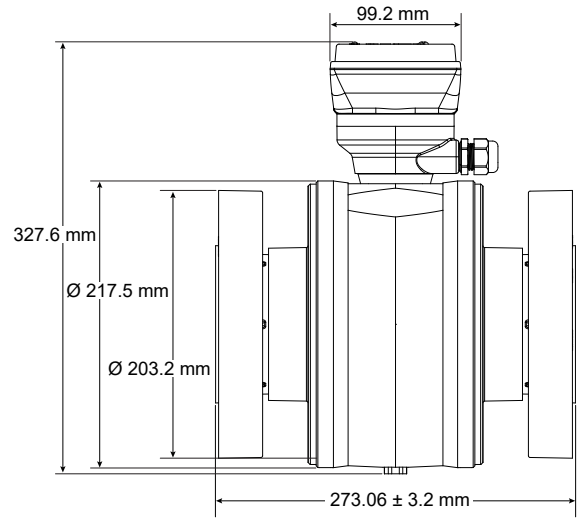
## 3 in.

Flange bolt kits and gaskets not shown (Sold separately)



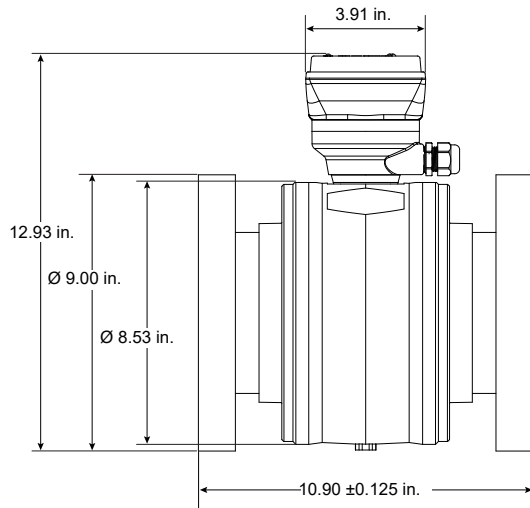
## DN80

Flange bolt kits and gaskets not shown (Sold separately)



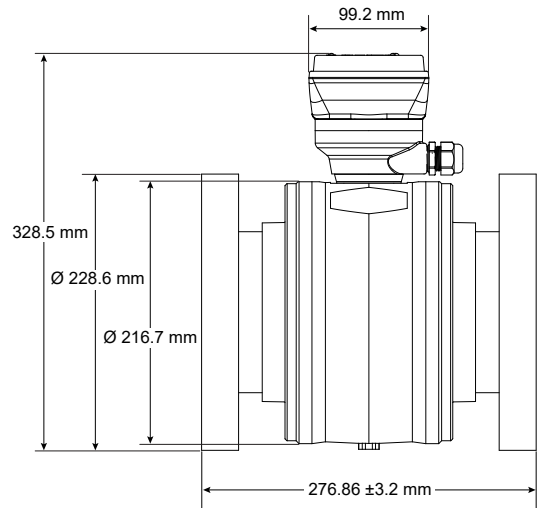
## 4 in.

Flange bolt kits and gaskets not shown (Sold separately)



## DN100

Flange bolt kits and gaskets not shown (Sold separately)



# GF Configuration Tool Bluetooth® App



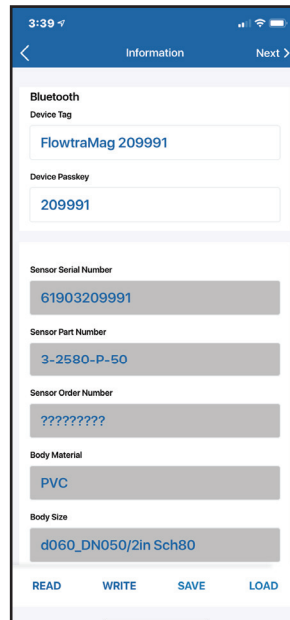
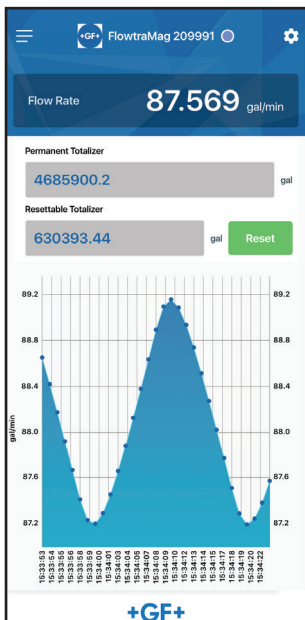
(example shows Menu)

**On-the-fly configuration, sensor Information at your fingertips**

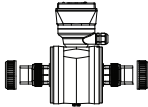
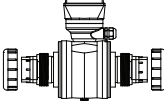
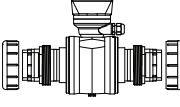
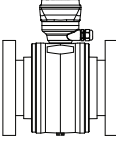
- **Bluetooth® 4.2 capable, support iOS and Android for simple user configuration**
- **Application setup**  
Set Averaging, Sensitivity, Low Flow Cut Off, Direction of Flow, Flow Units and Totalizer Unit
- **Name files**
- **Share and/or Save files**
- **Monitor flow and totalizer**
- **Loop adjustment is a live update**  
Set 4 mA, 20 mA, Error condition of the current output alarm (3.6 or 22 mA), adjust your 4 to 20 mA setting and select output mode
- **Calibration**  
Custom Calibration of Rate, Volumetric, Zero Flow Calibration

**Live Logging while connected to mobile / tablet device, set 1 sec or more increments**

**Sensor Information when you need it**  
Sensor information, Bluetooth Device Tag, Permanent Totalizer, Resettable Totalizer, Calibration Adjustment Factor, Zero Offset Adjustment



# Ordering Information

	Mfr. Part No.	Code	Description
	3-2581-PT01-101	<b>159 001 970</b>	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN25 (1 in.)
	3-2581-PT15-101	<b>159 001 971</b>	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PT02-101	<b>159 001 972</b>	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN50 (2 in.)
	3-2581-PT03-101	<b>159 001 973</b>	FlowtraMag, PVC, Titanium, FKM O-Ring, Flange, DN80 (3 in.)
	3-2581-PT04-101	<b>159 001 974</b>	FlowtraMag, PVC, Titanium, FKM O-Ring, Flange, DN100 (4 in.)
	3-2581-PH01-101	<b>159 001 975</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN25 (1 in.)
	3-2581-PH15-101	<b>159 001 976</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PH02-101	<b>159 001 977</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN50 (2 in.)
	3-2581-PH03-101	<b>159 001 978</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Flange, DN80 (3 in.)
	3-2581-PH04-101	<b>159 001 979</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Flange, DN100 (4 in.)
	3-2581-PT01-102	<b>159 001 980</b>	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN25 (1 in.)
	3-2581-PT15-102	<b>159 001 981</b>	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PT02-102	<b>159 001 982</b>	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN50 (2 in.)
	3-2581-PT03-102	<b>159 001 983</b>	FlowtraMag, PVC, Titanium, EPDM O-Ring, Flange, DN80 (3 in.)
	3-2581-PT04-102	<b>159 001 984</b>	FlowtraMag, PVC, Titanium, EPDM O-Ring, Flange, DN100 (4 in.)
	3-2581-PH01-102	<b>159 001 985</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN25 (1 in.)
	3-2581-PH15-102	<b>159 001 986</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PH02-102	<b>159 001 987</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN50 (2 in.)
	3-2581-PH03-102	<b>159 001 988</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Flange, DN80 (3 in.)
	3-2581-PH04-102	<b>159 001 989</b>	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Flange, DN100 (4 in.)

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-0252	<b>159 001 808</b>	0252 Configuration Tool (optional for configuring with PC)
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
5523-0224	<b>159 855 034</b>	Cable (per foot), 6 cond. w/shield, 22 AWG
<b>3-2581-PX01-10X Accessories</b>		
857 375 010	<b>857 375 010</b>	PVC 80 Type 375 Union FKM (SxS) 1 in. (ASTM)
1220-0218	<b>159 812 039</b>	1.234IDX.139 FKM O-ring RMS 1071 (1 in.) (2 required per unit)
897 375 010	<b>897 375 010</b>	PVC 80 Type 375 Union EPDM (SxS) 1 in. (ASTM)
1224-0218	<b>159 812 044</b>	NSF 1.234IDX.139 EPDM O-ring (1 in.) (2 required per unit)
161 375 904C	<b>161 375 904C</b>	Union End, PVC, PN16, d32DN25 (Metric)
<b>3-2581-PX15-10X Accessories</b>		
857 375 015	<b>857 375 015</b>	PVC 80 Type 375 Union FKM (SxS) 1.5 in. (ASTM)
1220-0327	<b>159 812 040</b>	1.725IDX.210 FKM O-ring RMS1071 (1.5 in.) (2 required per unit)
897 375 015	<b>897 375 015</b>	PVC 80 Type 375 Union EPDM (SxS) 1.5 in. (ASTM)
1224-0327	<b>159 812 045</b>	NSF 1.725IDX.210 EPDM O-RING (1.5 in.) (2 required per unit)
161 375 906C	<b>161 375 906C</b>	Union End, PVC, PN16, d50DN40 (Metric)
<b>3-2581-PX02-10X Accessories</b>		
857 375 020	<b>857 375 020</b>	PVC 80 Type 375 Union FKM (SxS) 2 in. (ASTM)
1220-0331	<b>159 812 041</b>	2.225X.210 FKM O-RING RMS1071 (2 in.) (2 required per unit)
897 375 020	<b>897 375 020</b>	PVC 80 Type 375 Union EPDM (SxS) 2 in. (ASTM)
1224-0331	<b>159 812 046</b>	NSF 2.225X.210 EPDM O-RING (2 in.) (2 required per unit)
161 375 907C	<b>161 375 907C</b>	Union End, PVC, PN16, d63DN50 (Metric)
<b>3-2581-PX03-10X Accessories</b>		
854-030	<b>854-030</b>	3 in. PVC80 Van-Stone Flange (S)
37X 002 117	<b>37X 002 117</b>	FKM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 3 in.
37X 002 008	<b>37X 002 008</b>	EPDM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 3 in.
37Z 000 068	<b>37Z 000 068</b>	Van Stone Flange 316SS Bolt Kit, 4-hole, 3 in. ASTM
721 790 113	<b>721 790 113</b>	DN80 Flange Adapter, PVC-U, Metric (Use with backing flange 721 700 013)
721 700 013	<b>721 700 013</b>	DN80 Backing Flange, PVC-U, Metric
749 440 713	<b>749 440 713</b>	DN80 FKM Profile Flange Gasket, Metric
748 440 713	<b>748 440 713</b>	DN80 EPDM Profile Flange Gasket, Metric
<b>3-2581-PX04-10X Accessories</b>		
854-040	<b>854-040</b>	4 in. PVC80 Van-Stone Flange (S)
37X 002 118	<b>37X 002 118</b>	FKM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 4 in.
37X 002 009	<b>37X 002 009</b>	EPDM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 4 in.
37Z 000 069	<b>37Z 000 069</b>	Van Stone Flange 316SS Bolt Kit, 8-hole, 4 in. ASTM
721 790 114	<b>721 790 114</b>	DN100 Flange Adapter, PVC-U, Metric (Use with backing flange 721 700 014)
721 700 014	<b>721 700 014</b>	DN100 V-Flange Ring PVC-U, Metric
749 440 714	<b>749 440 714</b>	DN100 FKM Profile Flange Gasket, Metric
748 440 714	<b>748 440 714</b>	DN100 EPDM Profile Flange Gasket, Metric