

Instruction manual

Type 2551 Wet-Tap Magmeter Flow Sensor

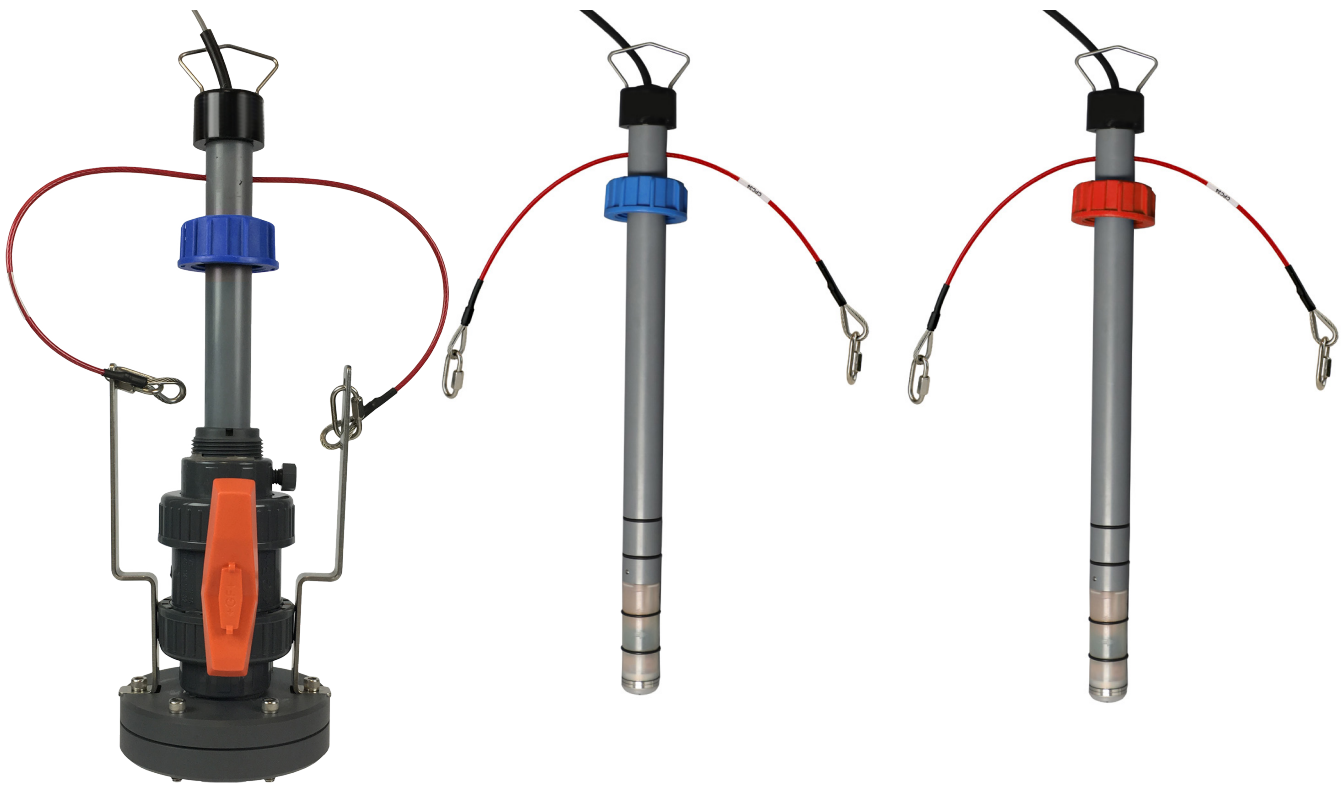


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1 Intended use

The Type 2551 Wet-Tap Magmeter is a magnetic flow sensor for precise and simple measurements in pipe sizes from DN15 to DN900 (½ to 36 inches). Together with the type 3519 Wet-Tap ball valve, it is designed for Wet-Tap applications, whereby the type 2551 Wet-Tap Magmeter is automatically properly aligned and maintains the correct insertion depth in the pipe.

With the Type 3519 Wet-Tap Ball Valve, the Type 2551 Wet-Tap Magmeter can also be installed or removed without draining the pipe.

Use not in accordance with the intended use

Any use other than that described in the intended use is not in accordance with the intended use and is therefore not permitted. If unsuitable products are installed or used in safety-relevant applications, unintended operating conditions may occur in the application that can cause personal injury and/or property damage.

Only use the product in safety-relevant applications if this use is expressly specified and permitted in the product documentation. GF Piping Systems AG accepts no liability for damage resulting from improper use. The risks associated with improper use lie solely with the user.

2 Warranty

Refer to your local GF 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.

GF 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).

3 About this document

Original instruction manual

Disclaimer

The technical data within this document is not binding. It does not constitute expressly warranted characteristics, guaranteed properties or guaranteed durability. It is subject to modification. Our General Terms of Sale apply.

Observe instruction manual

The instruction manual is part of the product and an important component within the safety concept. Non-observance may lead to severe injuries.

- ▶ Read and observe instruction manual.
- ▶ Always have instruction manual available by the product.
- ▶ Give instruction manual to all subsequent users of the product.
- ▶ Commissioning, use and disassembly by qualified personnel only!
- ▶ Product and accessories shall only be put into operation by persons who have the required training, knowledge or experience.
- ▶ Regularly instruct personnel on all questions regarding the local regulations applying to occupational safety and environmental protection, especially for pressurized pipes.

4 Safety Information

- ▶ Depressurize and vent system prior to installation or removal.
- ▶ Do not exceed maximum temperature / pressure specifications.
- ▶ Wear safety goggles or faceshield during installation/service.
- ▶ Do not alter product construction.

Meaning of the signal words

⚠ WARNING! Possible danger!

Non-observance may result in serious injuries.

⚠ CAUTION! Dangerous situation!

Non-observance may result in minor injuries.

NOTICE! Avoid the situation!

Non-observance will lead to a risk of damage to property.



Electrostatic Discharge (ESD) / Electrocutation Danger

Alerts user to risk of potential damage to product by ESD, and/or risk of potential of injury or death via electrocution.



Personal Protective Equipment (PPE)

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

Chemical Compatibility

The retaining nuts of Magmeters 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.

5 Specifications

General

Pipe size range.....DN15 to DN900 (½ in. to 36 in.)
Flow RangeMinimum: 0.05 m/s (0.15 ft/s)
(Bi-directional)Maximum: 10 m/s (33 ft/s)
Linearity±1% of reading +0.01 m/s (0.033 ft/s)
Repeatability.....±0.5% of reading @ 25 °C (77 °F)
Minimum Conductivity20 µS/cm

Materials

Sensor body.....PVDF with CPVC extension
Polypropylene with CPVC extension

Wetted Materials

-V3, -V4, -V5PVDF and Hastelloy-C
O-rings.....FKM (standard) EPDM, FFKM (optional)

⚠ CAUTION!

Check chemical compatibility!

The user is responsible for determining the chemical suitability of the wetted materials.

- ▶ Check for chemical compatibility of wetted parts.

Power Requirements

4 to 20 mA.....21.6 to 26.4 VDC, 22.1 mA max.
Frequency5 to 26.4 VDC, 15 mA max.
Digital.....5 to 6.5 VDC, 15 mA max.

Current output (4 to 20 mA)

Loop Accuracy.....32 µA max. error (25 °C @ 24 VDC)
Temp. drift.....± 1 µA per °C max.
Power supply rejection.....± 1 µA per V
Isolation:Low voltage < 48 VAC/DC from electrodes and aux power

Frequency output

Max. Pullup Voltage.....30 VDC
Compatible with types 9900, 9950-1/-2, 9950-10/-11

Digital (S³L) Output

Serial ASCII, TTL level 9600 bps
Compatible with types 9900, 9950-1/-2, 9950-10/-11,
0486 Profibus Concentrator

Maximum cable.....300 m (1,000 ft)
Error condition22.1 mA
Max Loop Resistance300 Ω
Compatible with PLC, PC or similar equipment

Environmental Requirements

Storage Temperature-20 °C to 70 °C (-4 °F to 158 °F)
Relative Humidity0 to 95% (non-condensing)
Operating Temperature (with Wet-Tap Valve):
Ambient.....-10 °C to 70 °C (14 °F to 158 °F)
Media0 °C to 65 °C (32 °F to 149 °F)
Operating Pressure (with Wet-Tap Valve):
Maximum6.9 bar (100 psi) @ 0 °C (32 °F)
.....1.4 bar (20 psi) @ 65 °C (149 °F)
Wet-Tap Sensor Removal Rating:
Maximum1.7 bar (25 psi) @ 22 °C (72 °F)

Standards and Approvals

- CE

UKCA

RoHS compliant

China RoHS (visit www.gfps.com for details)

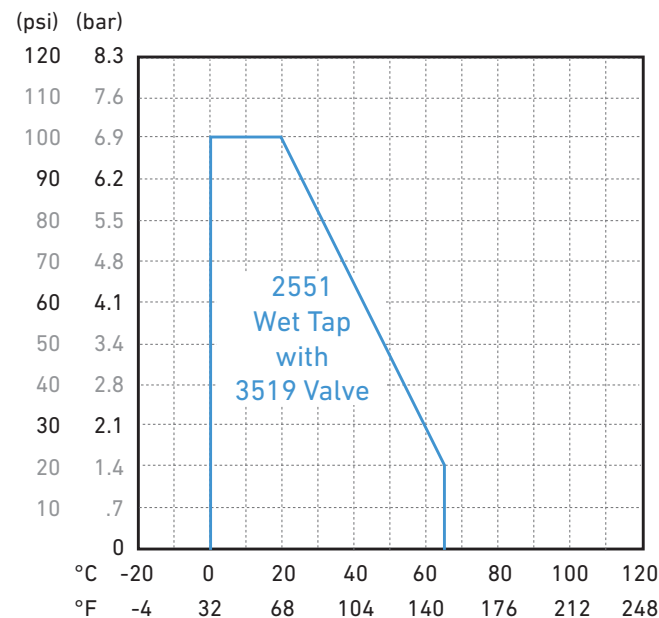
Manufactured under ISO 9001, ISO 14001 and ISO 45001
- Declaration of Conformity according to FCC Part 15

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

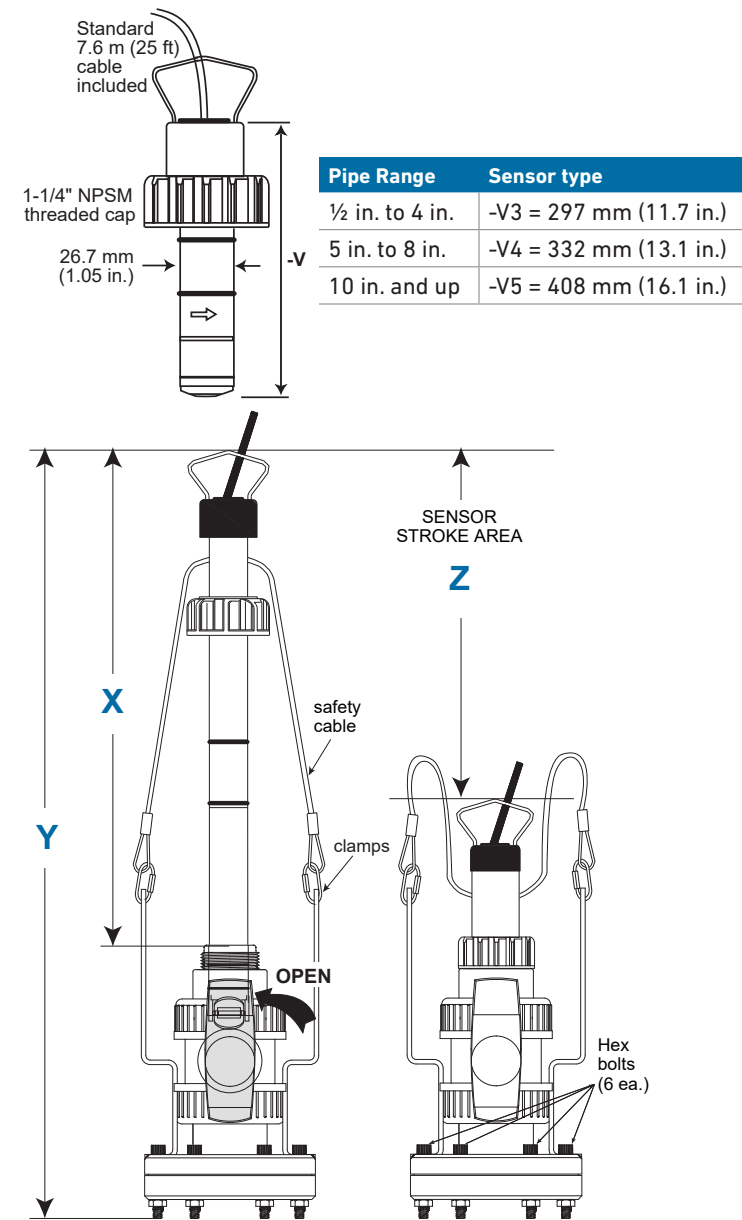
(1) This device may not cause harmful interference, and,

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

Operating Pressure/Temperature PT-Diagram



Dimensions











Pipe Range	Sensor type
1/2 in. to 4 in.	-V3 = 297 mm (11.7 in.)
5 in. to 8 in.	-V4 = 332 mm (13.1 in.)
10 in. and up	-V5 = 408 mm (16.1 in.)

Sensor type	Sensor length X	Total length Y	Sensor stroke area Z
3-2551-V3-1x	297 mm (11.7 in.)	737 mm (29 in.)	197 mm (7.75 in.)
3-2551-V4-1x	332 mm (13.1 in.)	762 mm (30 in.)	229 mm (9 in.)
3-2551-V5-1x	408 mm (16.1 in.)	813 mm (32 in.)	305 mm (12 in.)

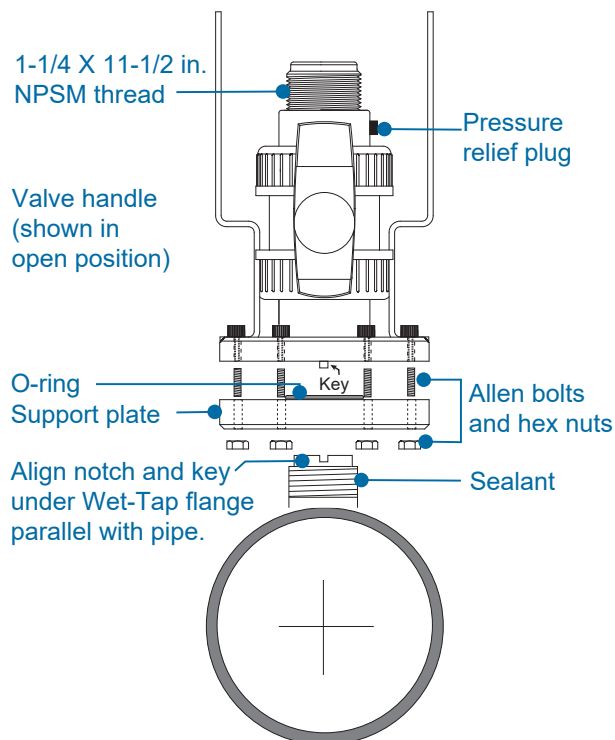
6 Pipe Fittings Installation

GF offers a wide selection of installation fittings that control the position of the Magmeter electrodes in relation to the dimensions of the pipe. You will find a complete list of order numbers for installation fittings in the Calibration Tables.

Pipe Fittings

Type	Description
	<ul style="list-style-type: none"> 0.5 in. to 2 in. versions MPVC or CPVC
	<ul style="list-style-type: none"> 10 in. and 12 in. only Cut 2½ in. hole in pipe Weld in place using solvent cement
	<ul style="list-style-type: none"> 2 in. to 4 in., cut 1-7/16 inch hole in pipe 6 in. to 8 in., cut 2-1/8 in. hole in pipe
	<ul style="list-style-type: none"> 2 in. to 4 in., 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.
	<ul style="list-style-type: none"> 0.5 in. to 2 in. versions Mounts on Threaded pipe ends
	<ul style="list-style-type: none"> 2 in. to 4 in., cut 1-7/16 inch hole in pipe Over 4 inch, cut 2-1/8 inch hole in pipe
	<ul style="list-style-type: none"> 1.5 in. to 2 in. PVDF insert
	<ul style="list-style-type: none"> For pipes from DN 15 mm to 50 mm PP or PVDF

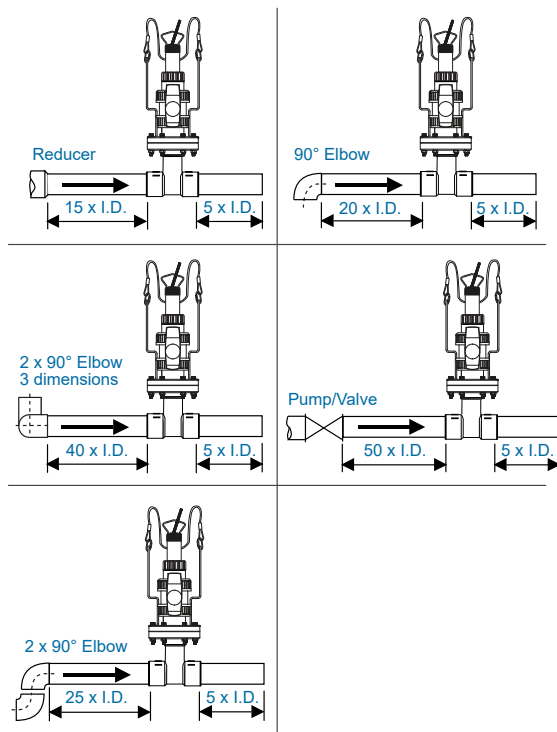
The 3519 Wet-Tap Valve mounts directly onto standard GF installation fittings. The 3519 Wet-Tap consists of a flange and support plate that threads onto the pipe fitting insert, and a PVC ball valve through which an extended length sensor is inserted into the pipe.



Selecting a Location

Location of Saddle or Fitting

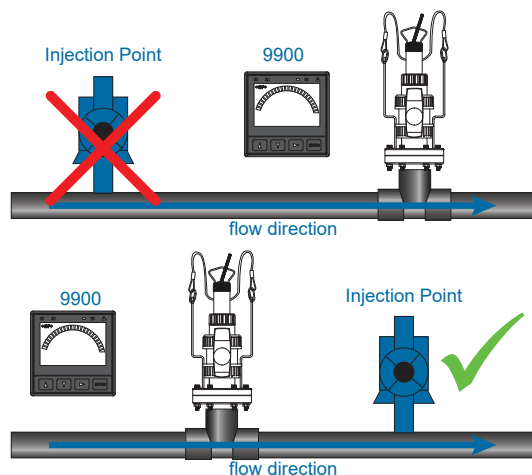
To ensure the flow velocity profile is fully developed, without distortion from piping system components, please adhere to the recommended straight run geometry.



Injection points

Chemical injection systems can temporarily alter the fluid conductivity and cause anomalies in the magmeter measurement.

- To avoid this problem, install the magmeter UPSTREAM of the injection point.



Horizontal pipe Runs

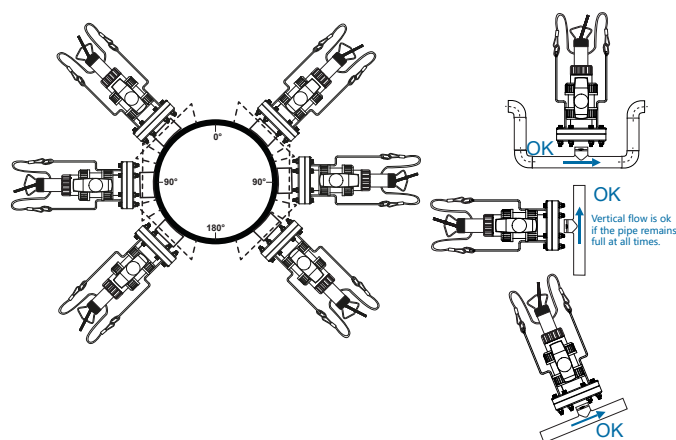
To minimize adverse effects of air pockets or sediment, avoid mounting the flow sensor at the top of the pipe (0°), or bottom of the pipe (180°).

Vertical Pipe Runs

Mount flow sensors in any direction. To ensure pipe is flowing full, with some back pressure, it's highly recommended the fluid flow is upward.

Gravity and Discharge Lines

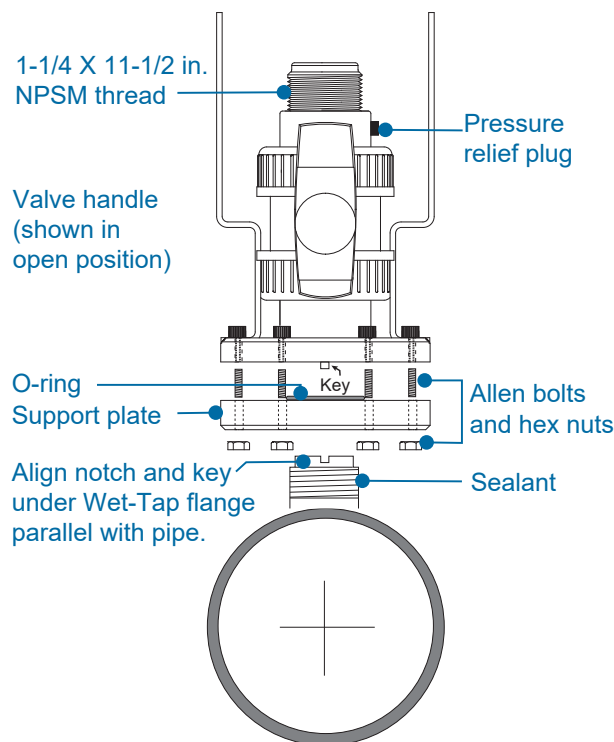
It's recommended to install a trap to ensure pipe is full during flow conditions, and to minimize air pockets.



7 Wet-Tap Valve Installation

Wet-Tap Assembly Installation

The 3519 Flow Wet-Tap Assembly attaches directly to GF installation fittings to enable flow sensor removal without system shutdown. It consists of a flange and support plate which thread onto the pipe fitting insert, and a PVC all valve through which an extended length flow sensor is inserted into the pipe.



⚠ CAUTION!

The 3519 Flow Wet-Tap Valve may only be installed into a non-pressurized systems 0 bar (0 psig).

⚠ CAUTION!

Hand Tighten Only!

Tools that may damage plastic parts.

- Do not use any tools that may damage plastic parts.



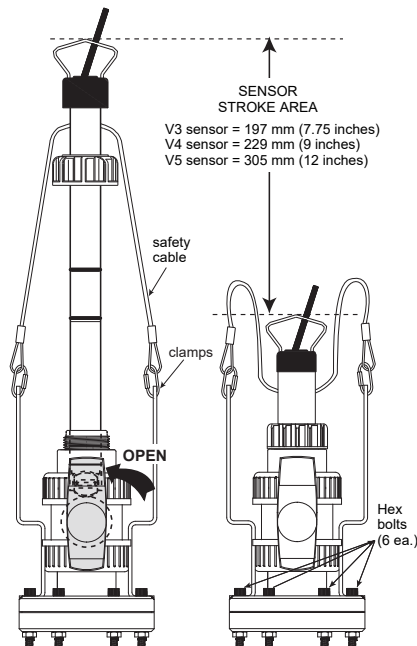
1. Remove six hex nuts and bolts from the Wet-Tap flange.
2. Separate the support plate from the main assembly. Be sure, that the O-ring is properly seated in the support plate groove.
3. Apply sealant to the pipe fitting insert threads to prevent leaks. To eliminate any leakage, the valve can be sealed to the fitting using one of these two methods:
 - a. Use a silicone RTV such as "GE Sealants and Adhesives Silicone II"
 - b. Use a PVC cement such as Christy's "Red Hot Blue Glue" (for PVC fittings) or a similar PVC pipe cement.

NOTICE!

This will permanently bond the valve to the installation fitting and the fast-drying period will not allow for errors in the installation process.

4. Screw support plate onto pipe fitting insert (O-ring side facing up). It must be threaded completely down until the notches at the top of the pipe fitting insert are exposed.
5. Mount the main Wet-Tap Assembly on the support plate. Make certain the alignment keys on the flange mate with the notches on the pipe fitting insert.
6. Loosen support plate (holding the main Wet-Tap Assembly in place) until it resists slightly. Loosen an additional ¼-turn to seat O-ring.
7. Replace the six hex nuts and bolts to secure the Wet-Tap Assembly in place.
 - Adjust the support plate position as necessary to align the bolts.
 - Tighten the bolts crosswise and gradually to apply even pressure.
 - Ensure the two flange surfaces remain parallel during tightening to maintain a proper seal.
8. Check the pressure relief plug on Wet-Tap Assembly. It must be closed finger tight to prevent leaks.
9. Close ball valve by turning the handle to the fully closed position (parallel with pipe).

Flow Sensor Installation



⚠ WARNING!

Do not change safety cables!

Safety cables are factory installed at precise length.

- DO NOT attempt to service or replace safety cables.

⚠ WARNING!

High system pressure!

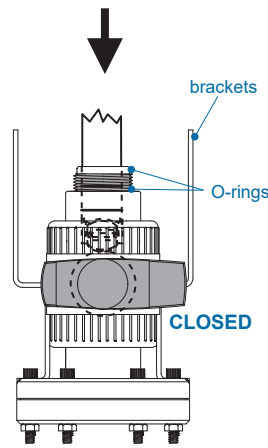
System pressure must be 172.37 kPa (25 psi) or less prior to sensor insertion or removal.

⚠ CAUTION!

Hand Tighten Only!

Tools that may damage plastic parts.

- Do not use any tools that may damage plastic parts.

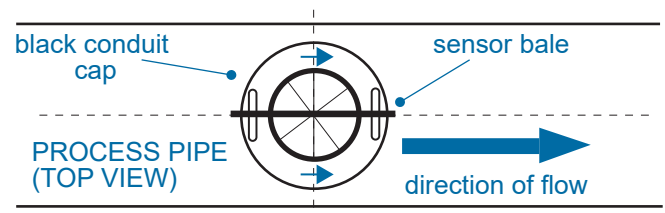
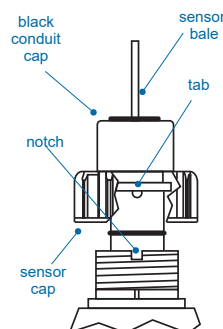


1. Lubricate O-rings with a non-petroleum based viscous lubricant (grease) compatible with the system.
2. Carefully insert the sensor into the 3519-valve assembly until the first two O-rings seat inside the bore.

NOTICE!

Do not damage the sensor tip on closed ball valve.

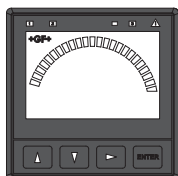
3. Using the clamps, attach the sensor safety cable to the 3519 assembly brackets (hand tighten only).
4. Pull the flow sensor upward to remove slack in the safety cables.
5. Open the ball valve.
6. Using a twisting motion, lower the flow sensor into the 3519 assembly.
 - a. Turn the sensor so the arrows on the black conduit cap point in the direction of flow.
 - b. When properly aligned, the sensor bale will be parallel with the pipe.
7. Align the tabs under the sensor cap with the notches on the fitting insert and hand tighten the sensor cap.



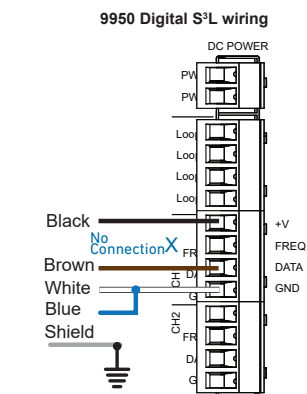
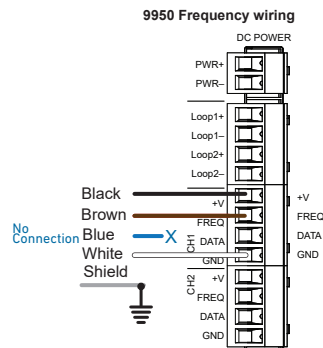
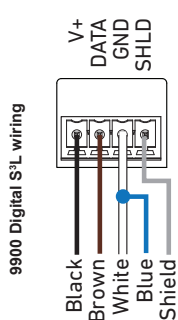
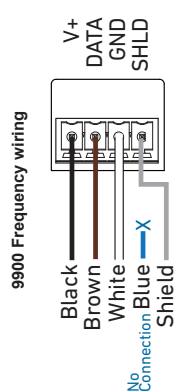
8 Wiring

Transmitter Wiring

Single Channel Transmitter
Type 9900

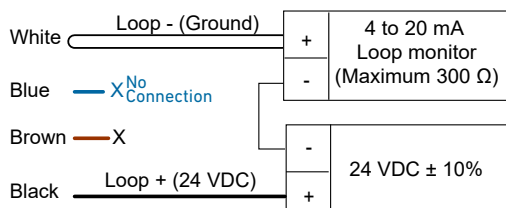


Multi Channel Transmitter
Type 9950

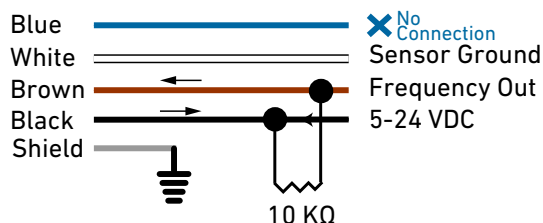


Analog Wiring

4 to 20 mA wiring



Non-GF instrument wiring



Grounding

The 2551 Wet-Tap Magmeter is unaffected by moderate levels of electrical noise. However, in some applications it may be necessary to ground portions of the system to eliminate electrical interference. The grounding requirements will vary with each installation.

One or more of the following steps may be applied if the 2551 Magmeter is affected by electrical noise:

1. Grounding wire connection

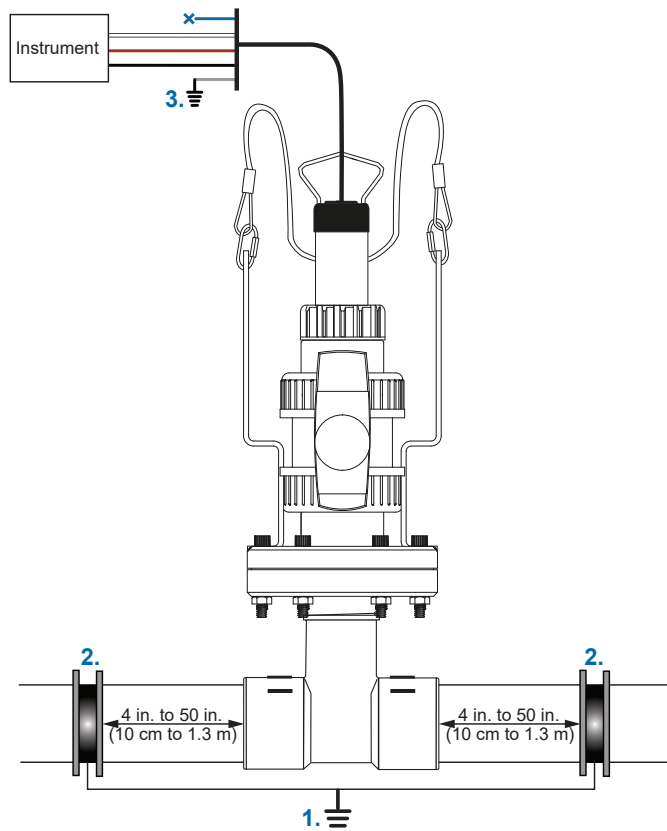
- Connect the grounding wire from the magmeter output cable directly to a local Earth ground using a wire (14 AWG 2.08 mm² recommended).

2. Fluid grounding devices

- Install fluid grounding devices immediately upstream and downstream of the Magmeter.
- Use grounding rings, metal clamps or grounding electrodes as grounding devices.
- Fluid grounds must be in direct contact with the fluid, and as near to the Magmeter as possible.

3. Shield termination

- The shield from the output cable must be terminated at the remote instrument only.
- Do not connect the shield to the Magmeter end.
- The shield must be connected at only one end to prevent ground loops.



9 Calibration and Configuration

Calibration and Software Configuration

No calibration is necessary to begin using the 3-2551-XX-Wet-Tap electrode. The application and performance settings are pre-set to meet the requirements of most applications.

The Wet-Tap assembly application and performance settings can be customized using the GF 3-0252 Configuration tool and software. Refer to the GF 3-0252 Configuration Tool manual for details to adjust the following parameters.

- 4 to 20 mA Span: Factory setting 0 to 5 m/s. Can be customized to any range.
- Noise Rejection Filter: Factory set for 60 Hz. Can be changed to 50 Hz.
- Low Flow Cutoff: Factory setting is 0.05 m/s. Can be customized to any velocity.
- Averaging: Factory setting is 14 seconds. Can be customized from 0.1 seconds to 100 seconds.
- Sensitivity: Factory settings is 25% of full scale. Can be customized to any % of full scale.

Even the most carefully engineered flow systems may experience erratic and unstable conditions. If the instability is communicated to the output functions, the results may create problems for control devices.

To alleviate these issues, the 2551 provides two adjustments that operate in tandem. The information here will help in determining the appropriate settings for any specific application.

Averaging and Sensitivity

AVERAGING

The AVERAGING setting dictates the time over which the magmeter will average the flow signal.

The LCD display is updated every second. With averaging at 14 seconds, the flow rate on the display is an average of the previous 14 seconds input.

Short averaging times provide the fastest display and output response to changes in the flow rate.

Higher averaging times help to smooth the display and current output where the flow in the pipe is erratic or unstable due to installation limitations.

SENSITIVITY

The SENSITIVITY setting determines how the 2551 responds to sudden surges in the flow rate. It “overrides” the Averaging function just long enough to allow an actual change in flow rate to be displayed, then resumes the averaging. The result is a smooth flow display and a quick response to large shifts in the flow rate. The settings for Sensitivity represent a percentage of the magmeter’s maximum range, or 10 meters per second (m/s). Example: A sensitivity setting of 25% means that the flow rate must change instantly and by more than 2.5 ms before the function is enabled.

⚠ CAUTION!

Changed sensor characteristics!

If used as part of a tuned closed loop control system, the SENSITIVITY function changes the response characteristics of the magmeter.

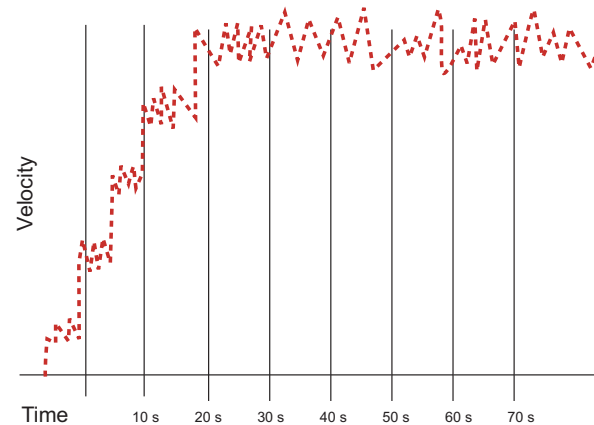
► Such a change may be undesirable.

NOTICE!

If the AVERAGING function is set to zero, the SENSITIVITY function is ineffective.

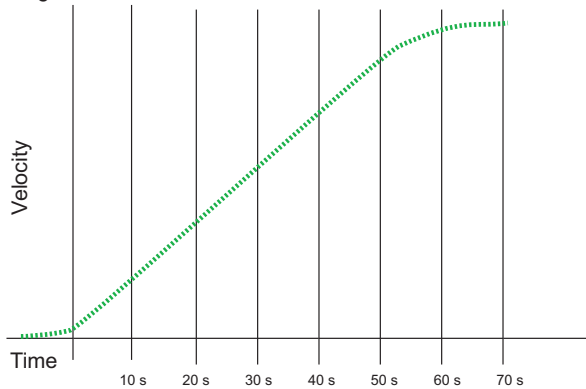
No Averaging

With AVERAGING set to zero, the flow rate will be displayed immediately and with no filtering. This line represents the actual output of the flow sensor as it responds to unstable flow conditions in the pipe.



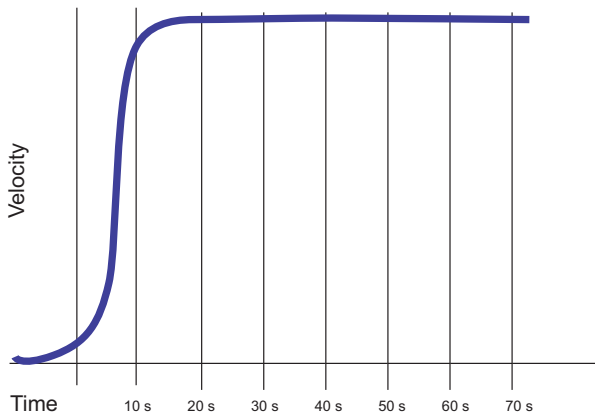
Averaging Only

With AVERAGING set to 50 seconds and SENSITIVITY still set to zero the flow rate is stabilized, but a sharp change in flow rate is not represented on the display or at the output for 50 seconds or longer.



Averaging and Sensitivity

With AVERAGING at 50 seconds and SENSITIVITY set to 25%, the flow rate is stabilized, while the sudden shift in flow is reflected very quickly.



10 Flow Sensor Removal

1. Unscrew the sensor cap. (DO NOT use any tools that may damage plastic parts).
2. Carefully pull the flow sensor upward with a twisting motion until the safety lanyards are fully extended.
3. Close the ball valve.
4. Loosen the relief plug to depressurize the sensor area.
5. Disconnect the sensor safety cable clamps from the 3519 assembly brackets.
6. The sensor can now be safely removed.

⚠ WARNING!

High system pressure!



System pressure must be 172.37 kPa (25 psi) or less prior to flow sensor insertion or removal.

- Stay clear of sensor stroke area and safety cable during sensor removal.
- Check the six (6) Hex bolts prior to unscrewing the sensor cap. If bolts are loose, tighten securely before proceeding.

11 Maintenance

The 2551 Magmeter requires very little maintenance. There are no user-serviceable components in the Magmeter.

- If the fluid contains deposits and solids that may coat the electrodes, a regular cleaning regimen is recommended.
- Do not use abrasive materials on the metal electrodes. Clean with soft cloth and mild detergent only.
- Use a cotton swab and mild detergent to remove deposits on the metal electrodes at the tip of the sensor.
- Lubricate O-rings: Each time the Wet-Tap Sensor is removed and reinstalled, a non-petroleum-based, viscous lubricant (grease) compatible with the system must be applied to the O-rings. The condition and position of the O-rings have to be checked regularly. Discontinue operation and replace them immediately if they are damaged, deformed or worn to prevent leakage or damage to the sensor.
- See the following Tech Tip to learn how to prevent Biofilm.

Environmental Recommendations:

- When used properly, this product presents no inherent danger to the environment.
- Please follow local ordinance when disposing of this or any product with electronic components.

Tech Tip

Managing Biofilm in Aquatic Systems

In systems prone to biofilm buildup – such as aquariums or aquaculture facilities – users have reported a gradual decrease in flow readings as an indication of electrode fouling.

Based on field reports, slightly loosening the retaining nut and rotating the sensor 90° can help dislodge biofilm using the system's internal fluid flow. This allows cleaning without fully removing the sensor from the Wet-Tap valve assembly, making the process significantly quicker and easier.

According to user feedback, this method has reduced maintenance time compared to traditional flow sensors that require full removal and disassembly for cleaning.

NOTICE!

This field method is provided for reference only. It is not a recommended or guaranteed procedure. Users must follow facility safety protocols and assess all risks before working on pressurized systems.

12 Ordering Information

Frequency or Digital (S³L) output

Mfr. Part No.	Code	Description
3-2551-V3-11	159 002 208	Wet-Tap Magmeter, Frequency/S ³ L output, PVDF/Hastelloy-C, 0.5 to 4" pipe
3-2551-V4-11	159 002 214	Wet-Tap Magmeter, Frequency/S ³ L output, PVDF/Hastelloy-C, 5 to 8" pipe
3-2551-V5-11	159 002 220	Wet-Tap Magmeter, Frequency/S ³ L output, PVDF/Hastelloy-C, 10 to 36" pipe

4 to 20 mA output

Mfr. Part No.	Code	Description
3-2551-V3-12	159 002 209	Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 0.5 to 4" pipe
3-2551-V4-12	159 002 215	Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 5 to 8" pipe
3-2551-V5-12	159 002 221	Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 10 to 36" pipe

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-3519	159 000 757	PVC Wet-Tap Valve (sensor not included)
1220-0021	198 801 000	O-ring, FKM (4 required per sensor)
1224-0021	198 820 006	O-ring, EEPR (EPDM) (4 required per sensor)
1228-0021	198 820 007	O-ring, FFKM (4 required per sensor)

13 K-Factors

K-Factors and Full Scale Current Values



PVC Tees and Clamp-on Saddles

Pipe Size (In.)	Fitting Type	K-Factor Gallons	K-Factor Liters	GPM at 20 mA Factory Setting	LPM at 20 mA Factory Setting
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SCH 80 PVC-U TEES FOR SCH 80 PIPE

1/2	MPV8T005	2277.0	601.58	12	45
3/4	MPV8T007	1407.6	371.90	22	84
1	MPV8T010	861.17	227.52	37	139
1 1/4	MPV8T012	464.91	122.83	66	248
1 1/2	MPV8T015	331.43	87.56	90	342
2	MPV8T020	192.89	50.96	151	572

SCH 80 PVC TEES FOR SCH 80 PIPE

2 1/2	PV8T025	131.46	34.73	217	820
3	PV8T030	82.52	21.80	338	1278
4	PV8T040	44.78	11.83	588	2225

SCH 80 CPVC TEES FOR SCH 80 PIPE

1/2	MCPV8T005	2496.03	659.45	12	45
3/4	MCPV8T007	1381.48	364.99	22	84
1	MCPV8T010	857.98	226.68	37	139
1 1/4	MCPV8T012	445.17	117.61	66	248
1 1/2	MCPV8T015	325.56	86.01	90	342
2	MCPV8T020	206.07	54.45	151	572

SCH 80 PVC CLAMP-ON SADDLES FOR SCH 80 PIPE

2	PV8S020	193.83	51.21	151	572
2 1/2	PV8S025	138.01	36.46	217	820
3	PV8S030	83.89	22.16	338	1278
4	PV8S040	40.88	10.80	588	2225
6	PV8S060	22.53	5.95	1333	5045
8	PV8S080	12.52	3.31	2335	8838
10	PV8S100	7.94	2.10	3673	13905
12	PV8S120	5.71	1.51	5197	19672

SCH 80 PVC CLAMP-ON SADDLES FOR SCH 40 PIPE

2	PV8S020	180.01	47.56	172	651
2 1/2	PV8S025	123.72	32.69	245	927
3	PV8S030	75.81	20.03	378	1433
4	PV8S040	41.87	11.06	652	2469
6	PV8S060	19.71	5.21	1480	5601
8	PV8S080	11.73	3.10	2557	9680
10	PV8S100	7.43	1.96	4032	15262
12	PV8S120	5.23	1.38	5725	21671



Polypropylene True Union Tees and Wafer PVDF True Union Tees, PVC True Union Tees

Pipe Size (In.)	Fitting Type	K-Factor Gallons	K-Factor Liters	GPM at 20 mA Factory Setting	LPM at 20 mA Factory Setting
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POLYPROPYLENE FITTINGS (DIN/ISO, BS, ANSI)

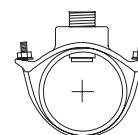
DN15	PPMT005	2192.73	579.32	16	62
DN20	PPMT007	1327.81	350.81	24	98
DN25	PPMT010	737.16	194.76	43	162
DN32	PPMT012	453.46	119.81	66	250
DN40	PPMT015	275.03	72.66	104	392
DN50	PPMT020	164.17	43.35	164	623

PVDF FITTINGS (DIN/ISO, BS, ANSI)

DN15	SFMT005	1946.49	514.26	16	62
DN20	SFMT007	1158.05	305.96	28	106
DN25	SFMT010	749.09	197.91	46	174
DN32	SFMT012	439.51	116.12	77	292
DN40	SFMT015	248.93	65.77	121	456
DN50	SFMT020	146.85	38.80	202	766

PVC FITTINGS (DIN/ISO, BS, ANSI)

DN15	PVMT005	2067.76	546.30	18	68
DN20	PVMT007	1136.61	300.29	28	106
DN25	PVMT010	716.52	189.31	46	174
DN32	PVMT012	446.07	117.85	72	272
DN40	PVMT015	278.83	73.67	113	428
DN50	PVMT020	159.36	42.10	179	677



Iron Saddles

Pipe Size (In.)	Fitting Type	K-Factor Gallons	K-Factor Liters	GPM at 20 mA Factory Setting	LPM at 20 mA Factory Setting
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SCH 80 IRON SADDLE ON SCH 80 PIPE

2	IR8S020	194.85	51.48	151	572
2 1/2	IR8S025	142.28	37.59	217	820
3	IR8S030	87.53	23.13	338	1278
4	IR8S040	40.62	10.73	588	2225
5	IR8S050	29.28	7.74	930	3521
6	IR8S060	22.30	5.89	1333	5045
8	IR8S080	12.52	3.31	2335	8838
10	IR8S100	7.94	2.10	3673	13905
12	IR8S120	5.65	1.49	5197	19672

SCH 80 IRON SADDLE ON SCH 40 PIPE

2	IR8S020	185.35	48.97	172	651
2½	IR8S025	127.47	33.68	245	927
3	IR8S030	76.62	20.24	378	1433
4	IR8S040	40.23	10.63	652	2469
5	IR8S050	27.32	7.22	1024	3877
6	IR8S060	19.71	5.21	1480	5601
8	IR8S080	11.61	3.07	2557	9680
10	IR8S100	7.36	1.94	4032	15262
12	IR8S120	5.18	1.37	5725	21671


Carbon Steel Tees and Weld-o-Lets
Stainless Steel Tees and Weld-o-Lets
Galvanized Iron Tees

Pipe Size (In.)	Fitting Type	K-Factor Gallons	K-Factor Liters	GPM at 20 mA Factory Setting	LPM at 20 mA Factory Setting
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CARBON STEEL TEES ON SCH 40 PIPE

½	CS4T005	1572.66	415.50	15	58
¾	CS4T007	1086.73	287.11	27	102
1	CS4T010	582.34	153.86	44	168
1¼	CS4T012	377.48	99.73	76	289
1½	CS4T015	267.79	70.75	104	394
2	CS4T020	167.85	44.35	172	651

STAINLESS STEEL TEES ON SCH 40 PIPE

½	CR4T005	1601.26	423.05	15	58
¾	CR4T007	937.78	247.76	27	102
1	CR4T010	606.18	160.15	44	168
1¼	CR4T012	279.68	73.89	76	289
1½	CR4T015	147.65	39.01	104	394
2	CR4T020	111.90	29.56	72	651

STAINLESS STEEL WELDOLETS ON SCH 40 PIPE

2½	CR4W025	106.31	28.09	245	927
3	CR4W030	72.27	19.09	378	1433
4	CR4W040	36.84	9.73	652	2469
5	CR4W050	29.28	7.73	1024	3877
6	CR4W060	20.29	5.36	1480	5601
8	CR4W080	11.73	3.10	2557	9680
10	CR4W100	7.45	1.97	4032	15252
12	CR4W120	5.24	1.39	5725	21671

CARBON STEEL WELDOLETS ON SCH 40 PIPE

2½	CS4W025	105.70	27.93	245	927
3	CS4W030	70.68	18.67	378	1433
4	CS4W040	36.38	9.61	652	2469
5	CS4W050	29.28	7.73	1024	3877
6	CS4W060	20.29	5.36	1480	5601
8	CS4W080	11.73	3.10	2557	9680
10	CS4W100	7.45	1.97	4032	15252
12	CS4W120	5.24	1.39	5725	21671

GALVANIZED IRON TEES ON SCH 40 PIPE

1	IR4T010	558.50	147.56	44	168
1¼	IR4T012	334.45	88.36	76	289
1½	IR4T015	248.97	65.78	104	394
2	IR4T020	146.00	38.57	172	651

**Bronze and Copper Tees and Brazolets**

Pipe Size (In.)	Fitting Type	K-Factor Gallons	K-Factor Liters	GPM at 20 mA Factory Setting	LPM at 20 mA Factory Setting
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BRONZE TEES ON SCH 40 PIPE

1	BR4T010	582.34	153.86	44	168
1¼	BR4T012	330.54	87.33	76	289
1½	BR4T015	254.76	67.31	104	394
2	BR4T020	157.36	41.58	172	651

COPPER TEES FITTING ON COPPER PIPE SCH K

½	CUKT005	2459.19	649.72	11	42
¾	CUKT007	1108.02	292.74	22	84
1	CUKT010	649.87	171.70	40	150
1¼	CUKT012	422.03	111.50	62	236
1½	CUKT015	281.43	74.35	88	333
2	CUKT020	136.02	35.94	154	583

COPPER TEES FITTING ON COPPER PIPE SCH L

½	CUKT005	2406.30	635.75	11	42
¾	CUKT007	1174.77	310.37	22	84
1	CUKT010	672.28	177.62	40	150
1¼	CUKT012	402.84	106.43	62	236
1½	CUKT015	294.99	77.94	88	333
2	CUKT020	149.63	39.53	154	583

COPPER/BRONZE BRAZOLET ON SCH 40 PIPE

2½	BR4B025	117.31	30.99	245	927
3	BR4B030	78.62	20.77	378	1433
4	BR4B040	45.13	11.92	652	2469
5	BR4B050	32.79	8.66	1024	3877
6	BR4B060	22.73	6.01	1480	5601
8	BR4B080	13.14	3.47	2557	9680
10	BR4B100	8.34	2.20	4032	15262
12	BR4B120	5.87	1.55	5725	21671

14 Troubleshooting

Symptom	Possible Cause	Solution
Output is erratic and unstable.	Magmeter installed too close to upstream obstruction.	Relocate the magmeter to have straight uninterrupted pipe upstream of the sensor for at least 10 x the pipe diameter.
	Magmeter located in area exposed to air bubbles/pockets.	Eliminate air bubbles in the pipe.
	Magmeter is installed in pipe backwards.	Remove the magmeter and reinstall with the flow direction arrow on the sensor body pointed DOWNSTREAM.
	Electrical noise is interfering with the measurement.	Review the grounding of the magmeter and the pipe. Install adequate Earth ground to allow the Magmeter to operate properly.
	Electrodes are coated with solids.	Carefully clean the electrodes. Refer to sensor manual for details.
	New sensor; metal surface not properly conditioned.	Soak sensor overnight in fluid.
Output is not 0 when flow is stopped.	Electrodes not adequately conditioned.	Soak sensor overnight in fluid.
	Vibration or other movement in pipe causes Magmeter to detect flow.	Increase the Low Flow Cutoff.
	Electrical noise interference.	Modify grounding to protect the Magmeter from interference.
	Defective Magmeter.	Return to factory for service.
4 to 20 mA current output is incorrect.	Loop device not scaled same as Magmeter.	Use 3-0252 Setup tool to re-span the Magmeter to match Loop device.
		Re-span Loop device to match Magmeter.
	Defective Magmeter.	Return to factory for service.
Frequency output is inoperative.	2551 is wrong model.	Frequency / (S ³ L) model: 3-2551-XX-11
Digital (S ³ L) output is inoperative.	Wiring is not correct.	Check wiring, make corrections.
Loop output is inoperative.	Frequency input to other manufacturer's flow instrument does not have pull-up resistor.	Install 10 kΩ resistor.
Output is 22.1 mA.	Conductivity is less than 20 μS/cm (the fluid is too clean for Magmeter).	Unsuitable application for Magmeter.
	Electric component failure.	Return 2551 to factory.

Excellence in Flow

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