Signet 2551 Magmeter

3-2551.090 (Limited release 7/04)

Limited Release

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

Specifications

Wetted Materials:
- Sensor body, Electrodes, Grounding ring:
  - -P0, -P1: Polypropylene and 316L Stainless Steel
  - -T0, -T1: PVDF and Hastelloy-B
- O-rings: FPM standard; optional materials: EPDM, Kalrez®
- Case: PBT
- Protection rating: NEMA 4X/IP65 (When properly installed)

Power Requirements
- 4 to 20 mA: 24 VDC ±10%
- Frequency: 5 to 24 VDC
- S³L: 4.5 to 6.5 VDC
- Reverse polarity and short circuit protected

Performance
- Pipe size range: -P0, -T0: ½ to 4 in.
  -P1, -T1: 5 to 8 in.
- Flow Range Minimum: 0.05 m/s (0.15 ft/s)
  Maximum: 10 m/s (33 ft/s)
- Linearity: ±(1% reading +0.1% of max range)
- Repeatability ±0.5% of reading @ 25°C
- Minimum Conductivity: 20 µS/cm

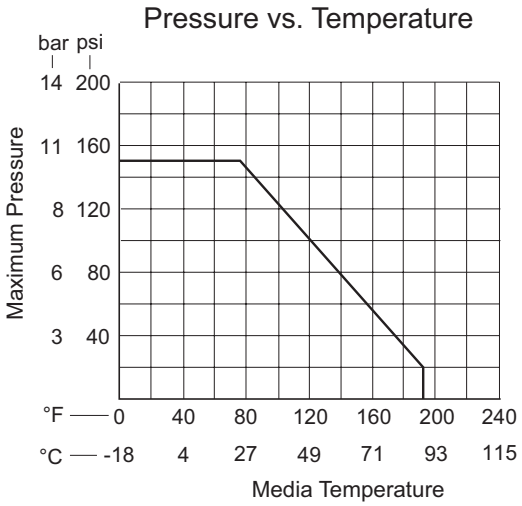
Output Specifications
Current output (4 to 20 mA)
- Bi-directional Output
- Loop Accuracy: 32 µA max. error (@ 25°C @ 24 VDC)
- Temp. drift: ±1 µA per °C max.
- Power supply rejection: ±1 uA per V
- Isolation: Low voltage <48 VAC/DC from electrodes and auxilary power
- Maximum cable: 300 m (1000 ft.)
- Error condition: 22 mA

Frequency output:
- Max. Pullup Voltage: 30 VDC
- On state voltage drop: <0.8 V @ 20 mA
- Short Circuit Protected: ≤30 V @ 0Ω pull-up for one hour
- Reverse Polarity Protected -40 V
- Overvoltage Protected to 40 V with pullup resistor
- Max. Current Sink: 50 mA, current limited
- Maximum cable: 300 m (1000 ft.)
- Compatible with Signet 5075, 5500, 5600, 8550, 8900

S³L Output:
- Serial ASCII, TTL level 9600 bps
- Maximum cable: Per S³L guidelines
- Compatible with Signet 8900

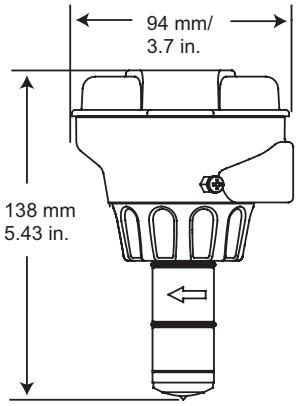
Environmental Requirements
- Storage Temperature: -20°C to 70°C (-4°F to 158°F)
- Relative Humidity: 0 to 95% (noncondensing)
- Operating Temperature
  Ambient: -10° to 70°C (14°F to 158°F)
  Media: 0° to 85°C (32°F to 185°F)

Max. operating pressure: 10.3 bar @ 25°C (150 psi @ 77°F)
1.4 bar @ 85°C (20 psi @ 185°F)

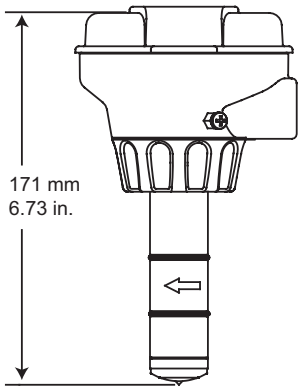


Tests, Approvals & Standards
- CE
  EN 61326: Immunity and Emissions for Control Equipment
- Complies with NEMA 4X / IP65 requirements

Dimensions



2551 Magmeter
for ½ in. to 4 in. pipe

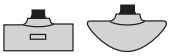


2551 Magmeter
for 5 to 8 in. pipe

Installation: Pipe fittings

George Fischer Signet 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 K-factor table on page 8.

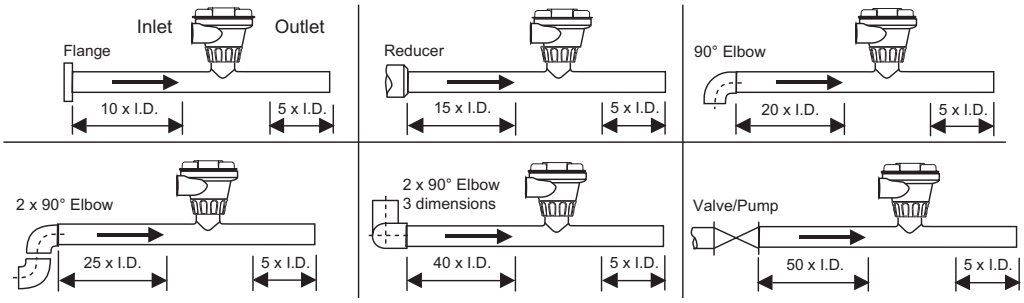
Type	Description
Plastic tees 	• 0.5 to 4 inch versions • PVC or CPVC
Metric Union Fitting 	• For pipes from DN 15 to 50 mm • PP or PVDF
PVC Saddles 	• 2 to 4 inch, cut 1-7/16 inch hole in pipe • 6 to 8 inch, cut 2-1/8 inch hole in pipe
Iron Strap-on saddles 	• 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe

Type	Description
Iron, Carbon Steel, 316 SS Threaded tees 	• 0.5 to 2 in. versions • Mounts on threaded pipe ends
Carbon steel & stainless steel Weld-on Weldolets 	• 2 to 4 inch, cut 1-7/16 inch hole in pipe • Over 4 inch, cut 2-1/8 inch hole in pipe
Fiberglass tees & saddles:  FPT FPS	• 1.5 in. to 8 in. PVDF insert • > 8 in. PVC insert
Metric Wafer Fitting 	• For pipes DN 65 to 200 mm • PP or PVDF

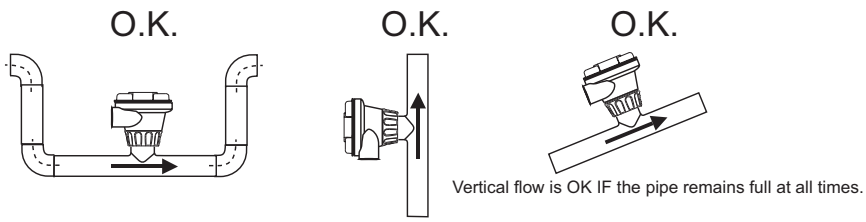
Location of Fitting

- The 2551 requires a full pipe and a fully developed turbulent flow profile (Reynolds number > 4500).

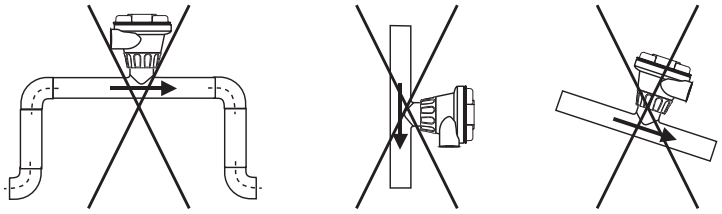
Select a location with sufficient distance of straight pipe immediately upstream of the sensor.



These configurations guarantee that the 2551 sensor will not be exposed to air bubbles when the system is in operation. These installations are recommended only if the system is designed to keep the 2551 sensor wet at all times.

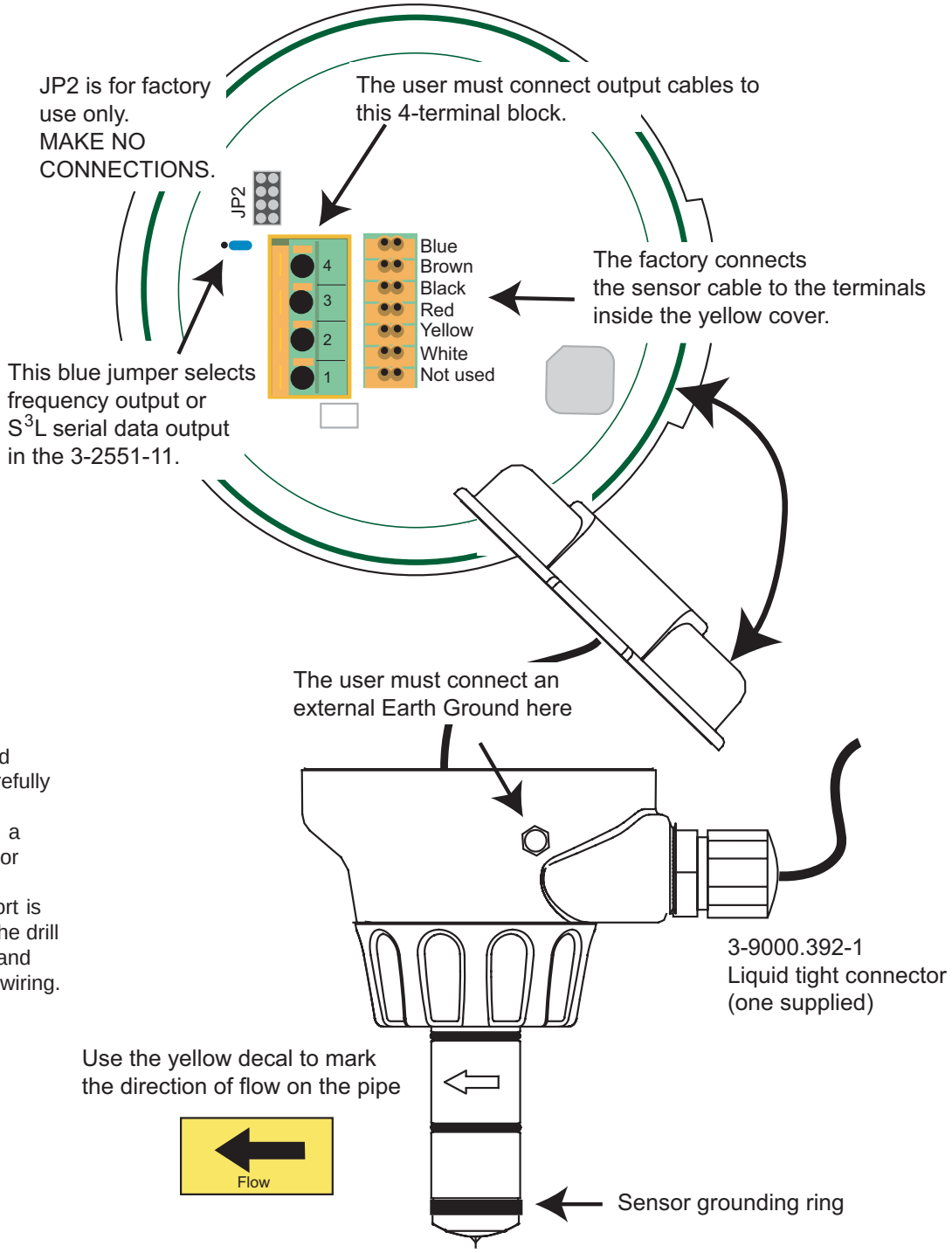


Avoid these situations unless you are certain that the sensor will not be exposed to air bubbles.



- If the piping system has entrained air pockets, take steps to locate the sensor so the air pockets will not contact the electrodes.
- In vertical installations, assemble the 2551 so the conduit ports are facing downward. This prevents condensation inside the conduit from being directed into the 2551 electronics housing.

- WARNING! If the second conduit port is used, carefully drill the opening. The plastic material is too strong to be punched out.
  Secure the magmeter in a vise to prevent damage or injury.
  The plastic inside the port is very thin. Do not allow the drill to penetrate too deeply and damage the magmeter wiring.



- WARNING! If the second conduit port is used, carefully drill the opening.
  Secure the magmeter in a vise to prevent damage or injury.
  The plastic inside the port is very thin. Do not allow the drill to penetrate too deeply and damage the magmeter wiring.

Important:

- The directional arrow on the body of the sensor must be pointed DOWNSTREAM.
- The FLOW arrow decal can be placed directly on the pipe to identify the direction of flow.
- Use a cable gland or a liquid tight connector to seal the cable ports from water intrusion.
- The yellow housing may be reversed to align the conduit ports as required.
- If the magmeter is installed on a vertical pipe, the conduit ports should be turned to point downward. This will prevent condensation from being channeled into the enclosure.
- Use plumber's tape or a suitable sealant on cable ports.

Grounding

Sensor conditioning
The magmeter output signal may be unstable immediately after installation. Allowing the sensor to soak in a full pipe (or in tap water) for 24 hours will stabilize the performance.

- Very low conductivity fluids may require a longer conditioning period.

The 2551 Magmeter is unaffected by moderate levels of electrical interference. However, in some applications it may be necessary to take extra measures to eliminate electrical interference. The additional grounding measures will vary with each installation.

The following recommendations should be applied in sequence until the interference is eliminated.

① The ground terminal on the outside of the yellow housing is connected internally to the grounding ring at the tip of the sensor. Connect a wire (14 AWG/1.5 mm^2 recommended) from this terminal directly to a local Earth ground.

If the interference persists, apply step #2:

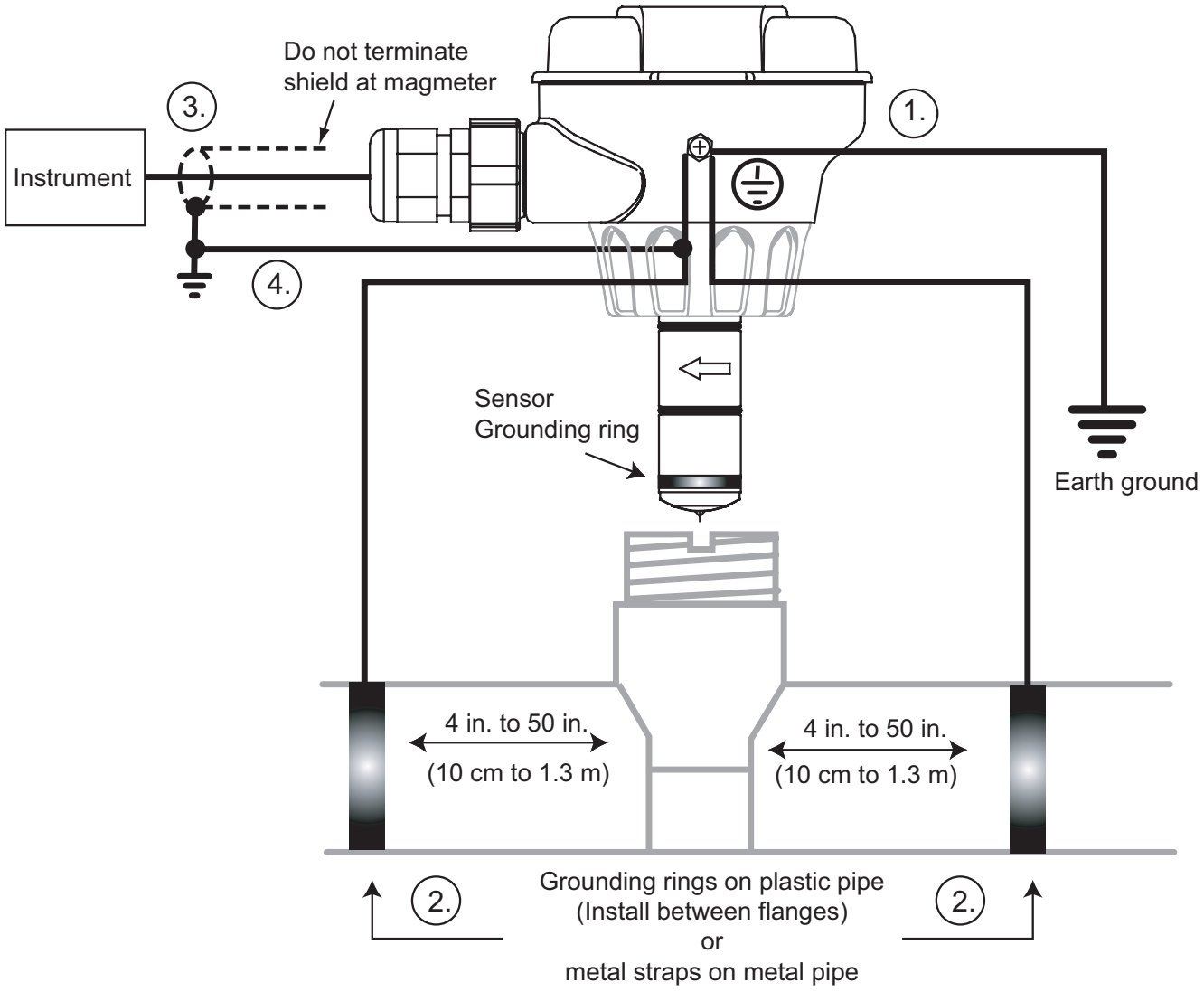
② Install fluid grounding devices immediately upstream and downstream of the Magmeter.
Connect the fluid grounds to the Earth ground terminal on the 2551.
Use flanged grounding rings or metal electrodes on plastic pipes, or metal clamps on metal pipes.
Fluid grounds must be in direct contact with the fluid, and as near to the Magmeter as possible.

If the interference persists, apply step #3:

③ The shield from the output cable must be terminated at the remote instrument ONLY.
This shield must not be connected at both ends!

If the interference persists, apply step #4:

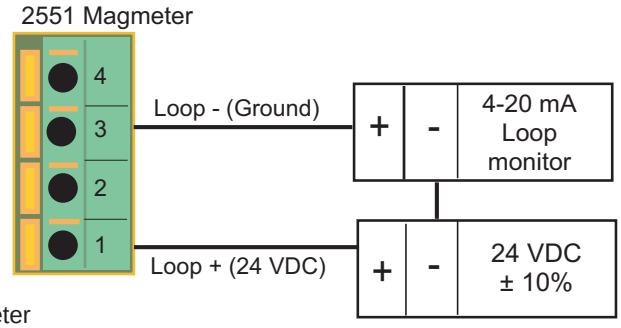
④ Connect an additional wire (minimum AWG 14/1.5 mm^2) from the remote instrument ground to the magmeter ground terminal.



Wiring the 3-2551-12: 4-20 mA output

The 2551-12 Magmeter provides a passive 4-20 mA loop output.

- External loop power (24 VDC) is required.
- The 4-20 mA output is factory calibrated so 4 - 20 mA = 0 - 5 m/s (4-20 mA = 0 -16.4 ft/s).



Factory standard scaling for 4-20 mA

All Magmeters are shipped from the factory with the 4-20 mA output scaled for 0 to 5 m/s. Refer to the charts to determine the 20 mA setpoint for a specific pipe size and fitting.

Custom Scaling the 4-20 mA output

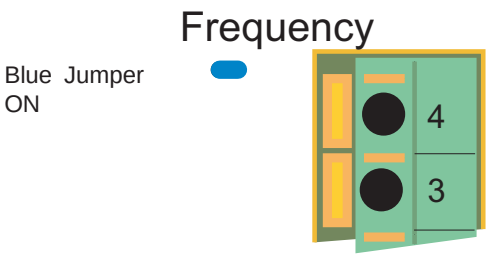
To change the 4-20 mA output span, it is necessary to purchase the Magmeter Spanning Tool (3-2551.390). See pages 8-9 for complete information.

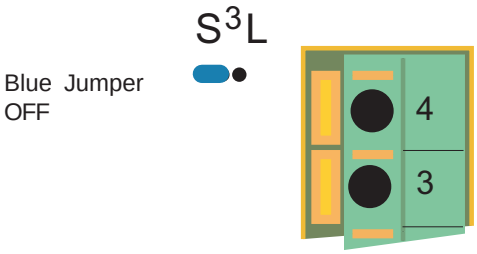
PIPE SIZE (IN.)	FITTING TYPE	20 mA = (GPM)	20 mA = (L/m)
SCH 80 PVC TEES FOR SCH 80 PVC PIPE			
½	PV8T005	13.10	49.60
¾	PV8T007	20.97	79.38
1	PV8T010	34.21	129.50
1¼	PV8T005	67.10	253.99
1½	PV8T005	92.54	350.25
2	PV8T005	145.15	549.38
2½	PV8T005	228.20	863.74
3	PV8T005	363.55	1376.04
4	PV8T005	669.88	2535.49
SCH 80 PVC TEES FOR SCH 80 CPVC PIPE			
½	CPV8T005	12.02	45.49
¾	CPV8T007	21.72	82.19
1	CPV8T010	34.97	132.34
1¼	CPV8T012	67.39	255.07
1½	CPV8T015	92.15	348.78
SCH 80 PVC SADDLES FOR SCH 80 PVC PIPE			
2	PV8S020	154.77	585.81
2½	PV8S025	217.38	822.78
3	PV8S030	357.62	1353.60
4	PV8S040	733.88	2777.74
6	PV8S060	1331.85	5041.06
8	PV8S080	2395.41	9066.64
SCH 80 PVC SADDLES FOR SCH 40 PVC PIPE			
2	PV8S020	166.66	630.81
2½	PV8S025	242.49	917.82
3	PV8S030	395.71	1497.76
4	PV8S040	716.56	2712.19
6	PV8S060	1521.92	5760.46
8	PV8S080	2558.12	9682.50
POLYPROPYLENE FITTINGS (DIN/ISO ,BS, ANSI)			
DN15	PPMT005	13.68	51.78
DN20	PPMT007	22.59	85.52
DN25	PPMT010	40.70	154.04
DN32	PPMT012	66.16	250.41
DN40	PPMT015	109.08	412.86
DN50	PPMT020	191.24	723.83
PVDF FITTINGS (DIN/ISO ,BS, ANSI)			
DN15	SFMT005	15.41	58.34
DN20	SFMT007	25.91	98.05
DN25	SFMT010	40.05	151.58
DN32	SFMT012	68.26	258.36
DN40	SFMT015	120.52	456.16
DN50	SFMT020	204.30	773.26
PVC FITTINGS (DIN/ISO ,BS, ANSI)			
Metric PVC fittings available only from George Fischer sales			
DN15	**PVMT005**	**14.51**	**54.91**
DN20	PVMT007	26.39	99.90
DN25	PVMT010	41.87	158.47
DN32	PVMT012	67.25	254.56
DN40	PVMT015	107.59	407.23
DN50	PVMT020	188.26	712.55

PIPE SIZE (IN.)	FITTING TYPE	20 mA = (GPM)	20 mA = (L/m)
CARBON STEEL TEES ON SCH 40 PIPE			
½	CS4T005	19.08	72.20
¾	CS4T007	27.61	104.49
1	CS4T010	51.52	194.99
1¼	CS4T012	79.48	300.81
1½	CS4T015	112.03	424.02
2	CS4T020	178.73	676.48
STAINLESS STEEL TEES ON SCH 40 PIPE			
½	CR4T005	18.74	70.91
¾	CR4T007	31.99	121.08
1	CR4T010	49.49	187.32
1¼	CR4T012	107.26	405.99
1½	CR4T015	203.19	769.06
2	CR4T020	268.09	1014.73
GALVANIZED IRON TEES ON SCH 40 PIPE			
1	IR4T010	53.71	203.31
1¼	IR4T012	89.70	339.51
1½	IR4T015	120.49	456.07
2	IR4T020	205.48	777.76
BRONZE TEES ON SCH 40 PIPE			
1	BR4T010	51.52	194.99
1¼	BR4T012	90.76	343.53
1½	BR4T015	105.74	400.23
2	BR4T020	245.11	927.75
COPPER TEES FITTING ON COPPER PIPE SCH K			
½	CUKT005	12.20	46.17
¾	CUKT007	27.08	102.48
1	CUKT010	46.16	174.73
1¼	CUKT012	71.09	269.06
1½	CUKT015	106.60	403.47
2	CUKT020	220.55	834.78
COPPER TEES FITTING ON COPPER PIPE SCH L			
½	CUKT005	12.47	47.19
¾	CUKT007	25.54	96.66
1	CUKT010	44.62	168.90
1¼	CUKT012	74.47	281.87
1½	CUKT015	101.70	384.92
2	CUKT020	200.50	758.89
SCH 80 IRON SADDLE ON SCH 80 PIPE			
2	IR8S020	153.96	582.75
2½	IR8S025	210.86	798.10
3	IR8S030	342.72	1297.20
4	IR8S040	738.58	2795.54
5	IR8S050	1024.43	3877.48
6	IR8S060	1345.58	5093.03
8	IR8S080	2395.41	9066.64
SCH 80 IRON SADDLE ON SCH 40 PIPE			
2	IR8S020	161.85	612.61
2½	IR8S025	235.36	890.83
3	IR8S030	391.54	1481.99
4	IR8S040	745.72	2822.57
5	IR8S050	1098.24	4156.83
6	IR8S060	1521.92	5760.46
8	IR8S080	2584.23	9781.30

Wiring the 3-2551-11 for Frequency or S³L output

The 3-2551-11 Magmeter can be configured to provide a frequency output to connect to most flow instruments, or it can be configured to provide the serial data output (S³L) used by the 8900 Multi-Parameter Controller.

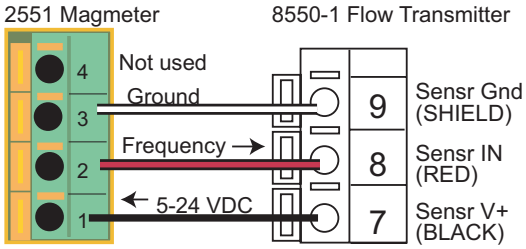




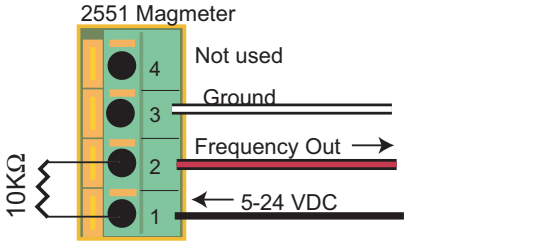
- For frequency output place the BLUE JUMPER over both pins.
- For serial (S3L) output remove the BLUE JUMPER (place it over a single pin for storage.)

Wiring: Frequency output

- The 5 to 24 VDC power requirement is provided by all Signet flow instruments. No additional power is required.



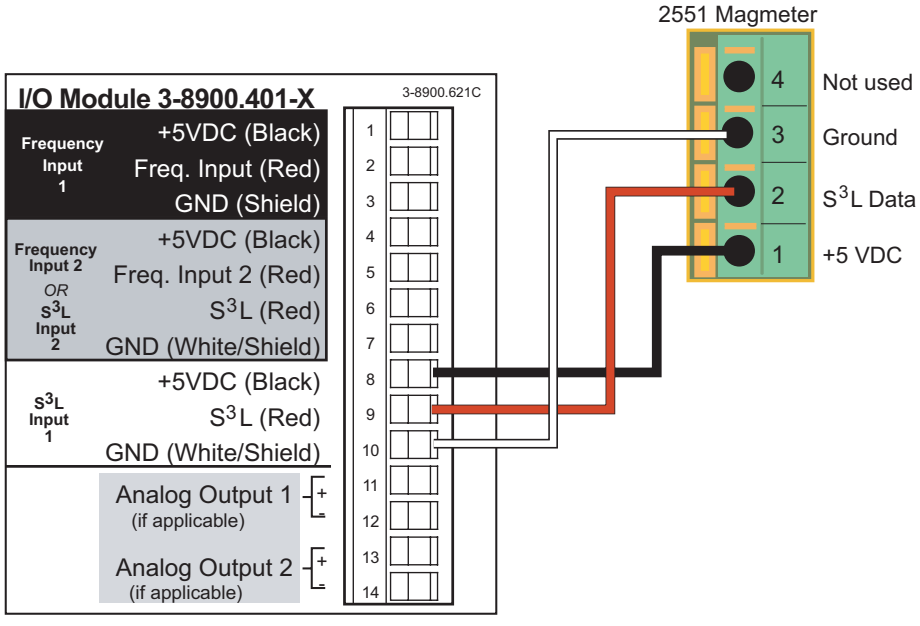
- If the flow instrument is not a Signet model, the 5 to 24 VDC power requirement must be provided to the 2551.
- Install a 10 KΩ pull up resistor between terminals 1 and 2.



Install a pull-up resistor when connecting the 2551 Magmeter to other manufacturer's flowmeters.

Wiring: S³L output

- The 2551 receives 5 VDC power from the 8900. No additional power is required.



Calibration Data: K-factors*

PIPE SIZE (IN.)	FITTING TYPE	PULSE / U.S. GAL	PULSE / LITER
SCH 80 PVC TEES FOR SCH 80 PVC PIPE			
½	PV8T005	2289.37	604.85
¾	PV8T007	1430.41	377.92
1	PV8T010	876.86	231.67
1¼	PV8T012	447.06	118.11
1½	PV8T015	324.19	85.65
2	PV8T020	206.69	54.61
2-1/2	PV8T025	131.46	34.73
3	PV8T030	82.52	21.80
4	PV8T040	44.78	11.83
SCH 80 PVC TEES FOR SCH 80 CPVC PIPE			
½	CPV8T005	2496.03	659.45
¾	CPV8T007	1381.48	364.99
1	CPV8T010	857.98	226.68
1¼	CPV8T012	445.17	117.61
1½	CPV8T015	325.56	86.01
SCH 80 PVC SADDLES FOR SCH 80 PVC PIPE			
2	PV8S020	193.83	51.21
2½	PV8S025	138.01	36.46
3	PV8S030	83.89	22.16
4	PV8S040	40.88	10.80
6	PV8S060	22.53	5.95
8	PV8S080	12.52	3.31
SCH 80 PVC SADDLES FOR SCH 40 PVC PIPE			
2	PV8S020	180.01	47.56
2½	PV8S025	123.72	32.69
3	PV8S030	75.81	20.03
4	PV8S040	41.87	11.06
6	PV8S060	19.71	5.21
8	PV8S080	11.73	3.10
CARBON STEEL TEES ON SCH 40 PIPE			
½	CS4T005	1572.66	415.50
¾	CS4T007	1086.73	287.11
1	CS4T010	582.34	153.86
1¼	CS4T012	377.48	99.73
1½	CS4T015	267.79	70.75
2	CS4T020	167.85	44.35
STAINLESS STEEL TEES ON SCH 40 PIPE			
½	CR4T005	1601.26	423.05
¾	CR4T007	937.78	247.76
1	CR4T010	606.18	160.15
1¼	CR4T012	279.68	73.89
1½	CR4T015	147.65	39.01
2	CR4T020	111.90	29.56
GALVANIZED IRON TEES ON SCH 40 PIPE			
1	IR4T010	558.50	147.56
1¼	IR4T012	334.45	88.36
1½	IR4T015	248.97	65.78
2	IR4T020	146.00	38.57
BRONZE TEES ON SCH 40 PIPE			
1	BR4T010	582.34	153.86
1¼	BR4T012	330.54	87.33
1½	BR4T015	283.71	74.96
2	BR4T020	122.39	32.34

PIPE SIZE (IN.)	FITTING TYPE	PULSE / U.S. GAL	PULSE / LITER
COPPER TEES FITTING ON COPPER PIPE SCH K			
½	CUKT005	2459.19	649.72
¾	CUKT007	1108.02	292.74
1	CUKT010	649.87	171.70
1¼	CUKT012	422.03	111.50
1½	CUKT015	281.43	74.35
2	CUKT020	136.02	35.94
COPPER TEES FITTING ON COPPER PIPE SCH L			
½	CUKT005	2406.30	635.75
¾	CUKT007	1174.77	310.37
1	CUKT010	672.28	177.62
1¼	CUKT012	402.84	106.43
1½	CUKT015	294.99	77.94
2	CUKT020	149.63	39.53
SCH 80 IRON SADDLE ON SCH 80 PIPE			
2	IR8S020	194.85	51.48
2½	IR8S025	142.28	37.59
3	IR8S030	87.53	23.13
4	IR8S040	40.62	10.73
5	IR8S050	29.28	7.74
6	IR8S060	22.30	5.89
8	IR8S080	12.52	3.31
SCH 80 IRON SADDLE ON SCH 40 PIPE			
2	IR8S020	185.35	48.97
2½	IR8S025	127.47	33.68
3	IR8S030	76.62	20.24
4	IR8S040	40.23	10.63
5	IR8S050	27.32	7.22
6	IR8S060	19.71	5.21
8	IR8S080	11.61	3.07
POLYPROPYLENE FITTINGS (DIN/ISO ,BS, ANSI)			
DN15	PPMT005	2192.73	579.32
DN20	PPMT007	1327.81	350.81
DN25	PPMT010	737.16	194.76
DN32	PPMT012	453.46	119.81
DN40	PPMT015	275.03	72.66
DN50	PPMT020	156.87	41.45
PVDF FITTINGS (DIN/ISO ,BS, ANSI)			
DN15	SFMT005	0.00	0.00
DN20	SFMT007	0.00	0.00
DN25	SFMT010	749.09	197.91
DN32	SFMT012	439.51	116.12
DN40	SFMT015	251.42	66.42
DN50	SFMT020	146.85	38.80
PVC FITTINGS (DIN/ISO ,BS, ANSI)			
DN15	PVMT005	2067.76	546.30
DN20	PVMT007	1136.61	300.29
DN25	PVMT010	716.52	189.31
DN32	PVMT012	446.07	117.85
DN40	PVMT015	278.83	73.67
DN50	PVMT020	159.36	42.10

*** Signet is constantly adding calibration data for more pipes.**
If you do not find your pipe listed here, please contact the factory

• Use the K-factors PER LITER when using the 2551.390 Setup Tool.

Custom System Setup

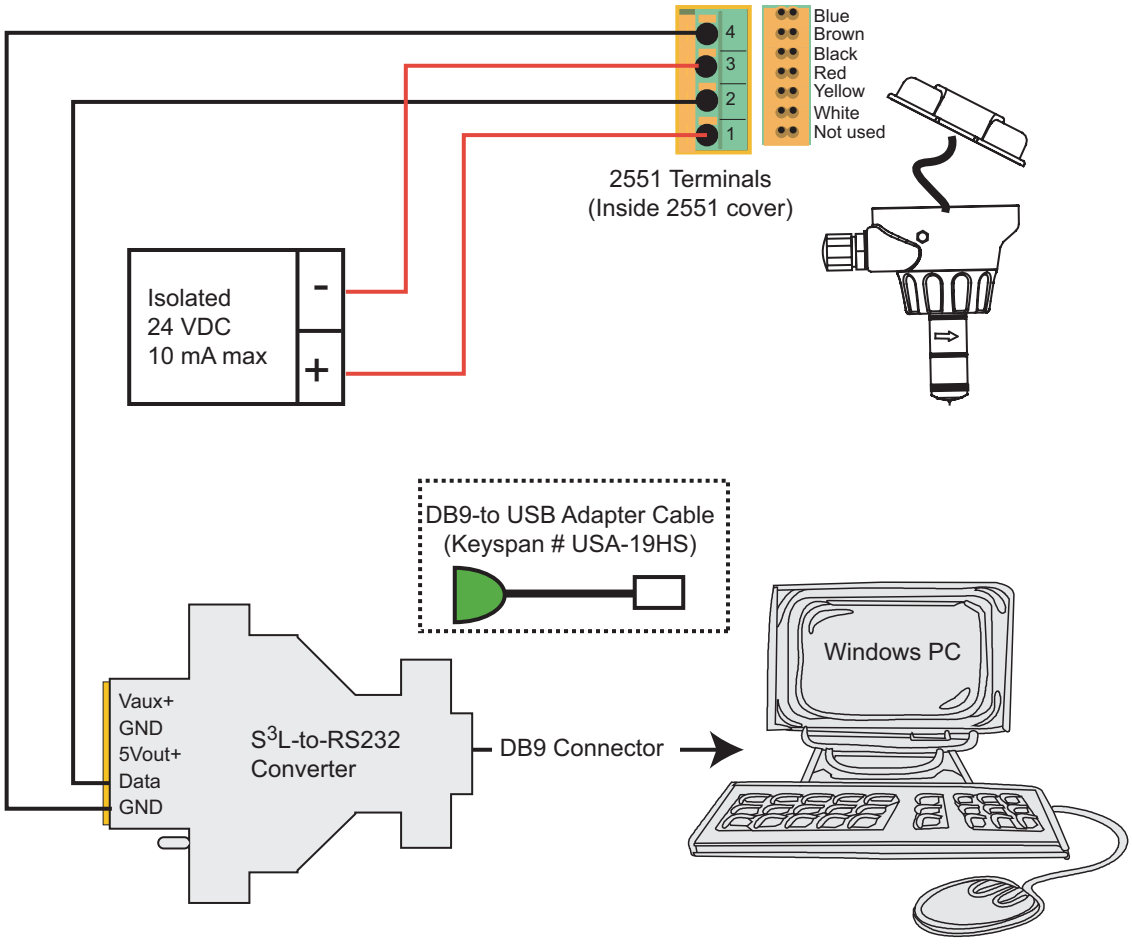
The 3-2551.391 Setup tool enables all of the settings in the 2551 to be customized in the field for a specific application.

Equipment required:

- 3-2551.390 Magmeter Setup Tool (Includes one RS232 Converter and one CD-ROM with 2551 Set-up software)
- 24 VDC ISOLATED power source
- Personal computer with the following:
  Intel Pentium or Higher or AMD 1800 or Higher
  CD ROM Reader capable of reading ISO 9660 Format
  Free Disk Space Of 400 KB
  Windows 98, 2000, 2000 Pro, XP, XP Pro
- DB9 serial-to-USB converter cable
  (required only for computers that do not have a DB9 serial port available.)
- Pipe data (id, K-factor from page 7)
- Measurement Preferences (engineering units, timebase)

Wiring Instructions:

1. Remove the cover from the magmeter.
2. Connect the 2551 output terminals 2 and 4 to the input terminals of the RS232 Interface.
3. Connect the isolated 24 VDC power source to the 2551, terminals 1 and 3.
4. Connect the DB9 serial output connector from the RS232 Interface to the computer.
   Note: If the computer does not have an available DB9 serial port, use a serial-to-USB converter cable. Signet recommends cable model USA-19HS by Keyspan. (www.keyspan.com)



Software Installation Instructions

1. Insert the CD-ROM into a computer that is running on Win98, Win2000, or Win XP.
2. Navigate to Explorer and open the CD drive.
3. Double-click the setup.exe file and follow the instructions to install the program.
4. Open the Program (2551setupv2.exe.)
5. Set each field in the display window for the application requirements. The following page discusses each setting.

Step 1: Application Settings:

Flow/Velocity Units (factory set: Meters)

- Select the engineering units that will be used to measure this flow rate: meters, feet, cubic meters, liters, cu. ft., U.S. gallons, Imperial gallons.

Timebase (factory set: Seconds)

- Set the timebase for this flow measurement: seconds, minutes, hours

Pipe ID (Inside Diameter) (factory set: 44.0)

- Enter the inside diameter of the pipe.

ID Units: (factory set: millimeters)

- Select inches or millimeters for the dimensions of the pipe.

K-Factor (factory set: 65.7665)

- The number of pulses generated by the Magmeter as one unit of fluid passes by the sensor is the K-factor.
- The K-factor MUST be entered in PULSES PER LITER. See K-Factor charts on page XX of the 2551 Magmeter Instruction manual.

Step 2: Loop Settings (4-20 mA sensors Only)

- Enter the flow rate at 4 mA. (Factory set: zero)
- Enter the flow rate at 20 mA. (Factory set: 5 m/s)
- When the RESTORE FACTORY SETTINGS button is pressed, the 20 mA setpoint will be restored to the equivalent of 5 m/s, in terms of the Flow units and Timebase selected above.

Step 3: Performance Settings

Averaging Time in Seconds (factory set: 14 seconds)

- Set the time the magmeter will use as the averaging period. The Magmeter display is updated every second. With averaging at 14 seconds, each display is an average of the previous 14 seconds input.
  Use higher averaging times to smooth the display and current output where the flow in the pipe is erratic, as where the Magmeter installation is less than ideal.

Quick Response Sensitivity (Factory set: 25% of flow rate)

- Set the percentage of change in the flow rate required to allow the Magmeter to bypass the AVERAGING and jump to a new flow rate immediately. A change in flow rate of less than the selected percentage of the old flow rate will be averaged so the output is smooth. A change of greater than the percentage will override the AVERAGING and allow the output to jump to the new rate quickly.

Noise Rejection Frequency (Factory set: 60 Hz)

- Set according to local AC power specifications.

Low Flow Cut-off (Factory set: 1% of 20 mA setting)

- Set the flow rate where the magmeter display will be forced to zero, and current output will be forced to 4 mA.

Sensor Information

Serial Number, Sensor Type:

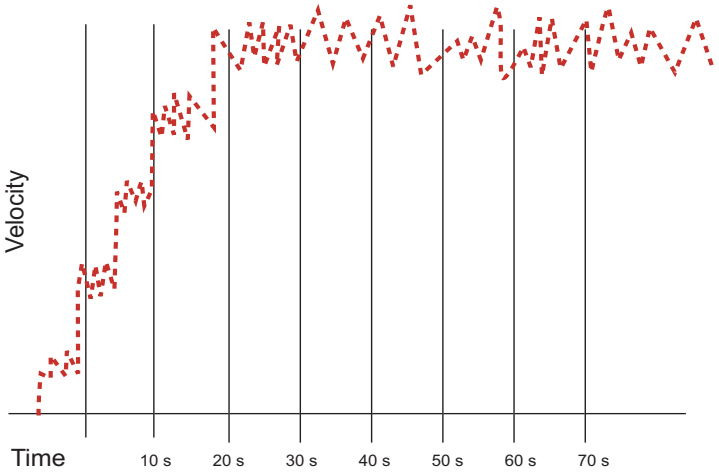
- Information for these fields is read from the Magmeter when you press the Read Sensor Settings button.

Messages

- The information here changes as you move through the setup program. Take note of the messages. They will explain the features and warn of potential problems.

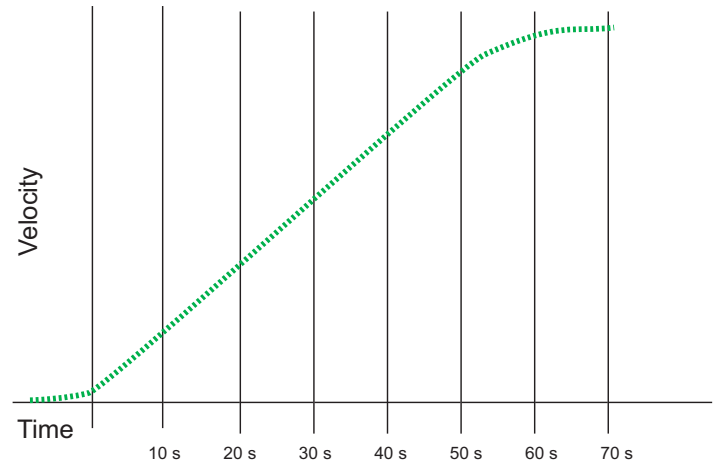
Controls

- Read Sensor Settings: Read values from the magmeter into this setup display.
- Restore Factory Settings: Restores factory settings to this setup display. (Restores Loop and Performance settings.)
- Write Settings to Sensor: Copies all of the settings in this setup display into the Magmeter.



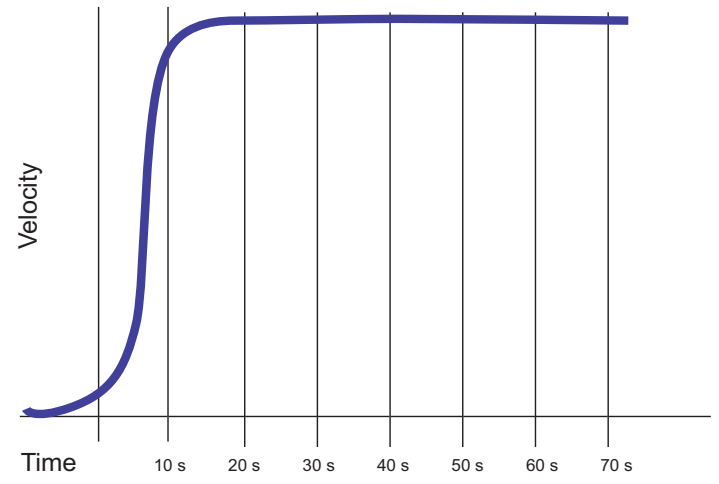
No AVERAGING, no SENSITIVITY

With AVERAGING set to 0 (zero) the SENSITIVITY is ineffective, and the flow rate may be very unstable. This will cause the output signals to respond erratically.



AVERAGING Only

With AVERAGING set to 60 seconds and SENSITIVITY set to zero the flow rate is stabilized, but a sharp change in flow rate is not represented for 60 seconds or longer.



AVERAGING and SENSITIVITY

With AVERAGING at 60 seconds and SENSITIVITY set to 25%, the flow rate is stabilized, but the sudden shift in flow is reflected very quickly.

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 schedule 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.

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.

Troubleshooting

Symptom	Possible Cause	Solution
• Output is erratic and unstable.	• Magmeter installed too close to upstream obstruction. • Magmeter located in area exposed to air bubbles/pockets. • Magmeter is installed in pipe backwards. • Electrical noise is interfering with the measurement. • Pipe is empty, magmeter electrodes are exposed to air. • New sensor, metal surface not properly conditioned.	• Relocate the magmeter to have straight uninterrupted pipe upstream of the sensor for at least 10 x the pipe diameter. • Eliminate air bubbles in the pipe. • Remove the magmeter and reinstall with the flow direction arrow on the sensor body pointed DOWNSTREAM. • Review the grounding of the magmeter and the pipe. Install adequate Earth ground to allow the magmeter to operate properly. • Soak sensor overnight in fluid.
• Output is not 0 when flow is stopped.	• Electrode not adequately conditioned. • Defective magmeter	• Soak sensor overnight in fluid. • Return to factory for service.
• No output.	• Loop power not connected correctly. • Defective magmeter	• Connect 24 VDC ±10% connected to loop terminals 1 and 3. • Return to factory for service.
• 4-20 mA current output is incorrect.	• 4-20 mA is not scaled properly. • Defective magmeter	• Use 3-2551.390 Setup tool. • Return to factory for service.
• Frequency output is inoperative • S^3L output is inoperative.	• 2551 is wrong model. • Blue jumper not in correct position. • Wiring is not correct. • Frequency input to other manufacturer's flow instrument does not have pull-up resistor.	• Frequency model is 3-2551-11. • Place blue jumper correctly. (pg 5) • Check wiring, make corrections. • Install 10kΩ resistor. (pg. 5)
• No flow rate, current output is 22 mA.	• The fluid is too clean for magmeter. • Electronic component failure.	• Unsuitable application for magmeter. • Return to factory for service.

Notes

Ordering Information

Model 2551 Insertion Magmeter Ordering Matrix

3-2551 Sensor and Sensor Electronics

Sensor (Transducer) Choose one	
-P0	Insertion Magmeter, PP, DN15 to DN100 (½ to 4 in.)
-P1	Insertion Magmeter, PP, DN125 to DN200 (5 to 8 in.)
-T0	Insertion Magmeter, PVDF, DN15 to DN100 (½ to 4 in.)
-T1	Insertion Magmeter, PVDF, DN125 to DN200 (5 to 8 in.)

Sensor Electronics - Choose one	
-11	Frequency or S^3L output, no display
-12	4 to 20 mA output, no display

3-2551	**-P0**	**-11**	Example of complete system part number

Replacement Parts and Accessories

Replacement Transducers

3-2551-P0	PP/316L SS, ½ to 4 in. pipe,
3-2551-P1	PP/316L SS, 5 to 8 in. pipe
3-2551-T0	PVDF/Hastelloy-B, ½ to 4 in. pipe
3-2551-T1	PVDF/Hastelloy-B, 5 to 8 in. pipe

Electronics modules

3-2551-11	Magmeter Electronics, Freq. or S^3L output
3-2551-12	Magmeter Electronics, 4-20 mA output
3-2551.390	Magmeter Setup Tool

O-Rings

1220-0021	198 801 186	O-ring, FPM (Viton®)
1224-0021	198 820 006	O-ring, EPDM
1228-0021	198 820 007	O-ring, FFPM (Kalrez®)

+GF+

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