User Instructions

Antennas for flow products

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed.

	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/98/EC), European electrical equipment users must now return old or end-of-life equipment to the Producer for disposal at no charge to the user. ***Note:*** *For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxillary items for proper disposal.*

Product components

Make sure that all components have been received. If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

Required equipment/software

Make sure that the following requirements are available:

- FL900 Series flow logger with modem option or Sigma 930T
- Remote host computer operating FSDATA or Telogers for Windows server software
- Portable computer operating FSDATA, FloWare or Telogers for Windows
- Activated wireless account

FL900 Series Flow Logger

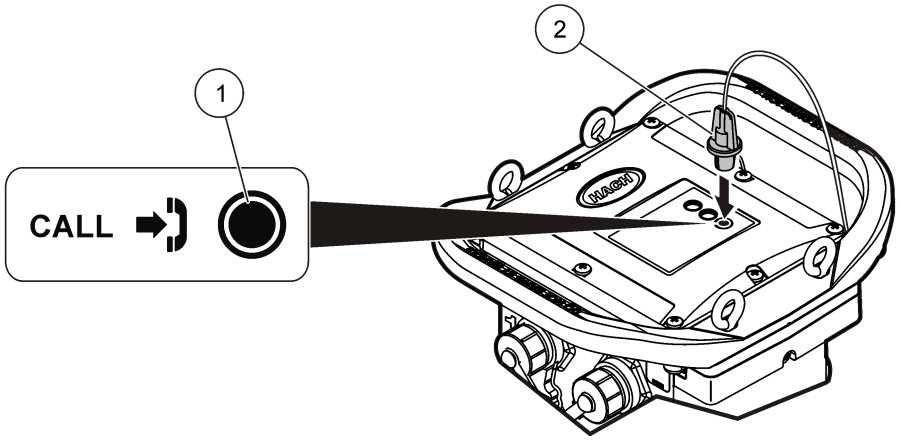
Verify the telemetry (wireless option)

The user can manually send a call to the server to make sure that the network communication is good.

1. Temporarily attach the antenna to the logger to test the antenna and the cell coverage at the site location before installation.
2. Touch the magnet to the call initiation target (Figure 1). The modem LED indicator changes to green.
3. Look at the modem LED indicator during the call (45 to 90 seconds) and wait for a change:
   - LED goes off—the connection to the server is good.
   - LED flashes red—the connection to the server failed.

   Note: *If the connection failed, refer to the instrument user manual for more information.*

Figure 1 Call the server



1	Call initiation target	**2**	Magnet

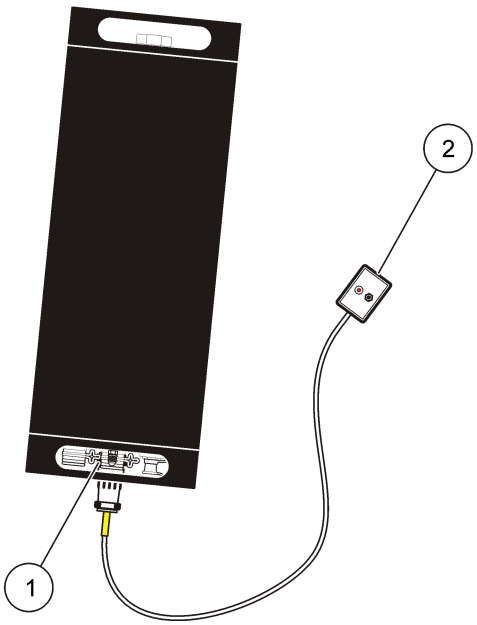
930T Flow meter

Verify the wireless connection

The tamper button is used to examine if the wireless connection is working.

1. Temporarily attach the antenna to the logger to test the antenna and the cell coverage at the site location before installation.
2. Attach the tamper module to the RS232 connector on the flow meter (Figure 2).
3. Push the tamper button to start a cellular call from the flow meter to the remote host computer.
4. Go to the event log in Telogers for Windows to make sure that the data was successfully downloaded from the flow meter to the remote host computer. Refer to the 930T documentation for further information about telemetry troubleshooting.

Figure 2 Tamper module connected to the 930T Flow meter



1	RS232 connector	**2**	Tamper module

Installation

⚠WARNING

Electromagnetic radiation hazard. To meet the requirements of the FCC Grant, CE Mark and other regulatory bodies, do not use or install the device with an antenna that is not supplied by the manufacturer. Make sure that all antennas are kept at a minimum distance of 20 cm (7.9 in.) from all personnel in normal use.

NOTICE

Test the antenna and cell coverage at the site location before installation.

NOTICE

Make sure that the flow meter is programmed to call the host PC before installation.

Half wave antenna

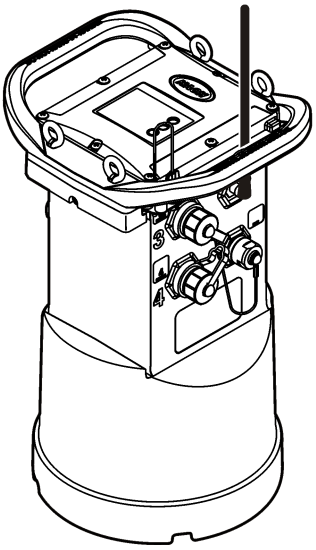
NOTICE

The half wave antenna is intended for above-ground use.

1. Unpack the antenna (Figure 3).
2. Bend the antenna at the joint to a 90 degree angle between the antenna and the swivel fitting.
3. Put the antenna extension inside of the logger handle (Figure 4).
4. Align the threads from the antenna fitting to the antenna receptacle on the logger. Hand-tighten by turning the swivel end.

Figure 3 Half wave antenna

Figure 4 Half wave antenna attached



Traffic rated manhole lid antenna

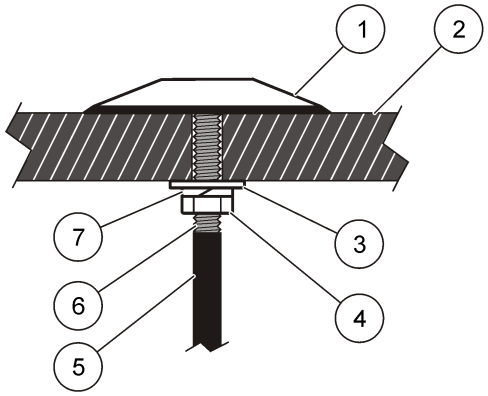
Required tools:

- 31.75 mm (1¼ in.) open-end wrench
- Large nylon Ty-wrap cable ties

1. Unpack the antenna (Figure 5) or disassemble the antenna from the instrument.
2. Make sure that the manhole lid has a 25.4 mm (1 in.) hole for the antenna neck to fit into.
   Note: *Do not use the pick hole. Use a drill, motor oil for lubrication and increasing size drill bits to drill the 25.4 mm (1 in.) hole if needed. Make sure that the location of the hole does not coincide with the ribs on the underside of the manhole lid.*
3. Remove the manhole lid and put the lid in a stable position where the lid top and bottom are accessible.
4. Remove the nut and washers from the threaded neck on the base of the antenna (Figure 6).
5. Put the antenna cable and neck through a hole on the manhole lid until the base of the antenna is against the top of the manhole lid.
6. Install the flat washer, then the lock washer and then the nut on to the threaded neck of the antenna.
7. Tighten the nut with the open-end wrench until both washers are flush against the base of the manhole lid and the antenna is tight (Figure 6).
8. Connect the antenna cable to the instrument connector labeled "Antenna". To make sure proper transmission, hand-tighten the connections.
9. Attach any excess cable to the access ladder or another non-obstructing location with Ty-wrap cable ties.
10. Replace the manhole lid.

Figure 5 Traffic rated manhole lid antenna

Figure 6 Manhole lid installation



1	Antenna top	**5**	Antenna cable
2	Manhole lid	**6**	Antenna threaded neck
3	Flat washer	**7**	Lock washer
4	31.75 mm (1¼ in.) nut		

Wing Quad antenna

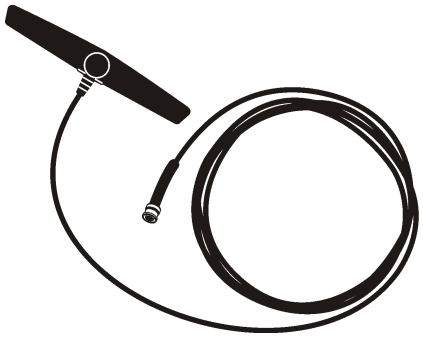
The Wing Quad antenna can be attached to an interior wall or to a window for a longer term deployment or the antenna can be attached to a manhole lid for a short term deployment.

Required tools:

- Large nylon Ty-wrap cable ties

1. Unpack the antenna (Figure 7).
2. To attach the antenna to a window or a wall, remove the adhesive backing and push the antenna to a clean surface.
3. To attach the antenna to a manhole, make sure that the manhole lid has a hole large enough for the antenna connector to fit into.
   Note: *Do not use the pick hole. Use a drill, motor oil for lubrication and increasing size drill bits to drill the 1" hole if needed. Make sure that the location of the hole does not coincide with the ribs on the underside of the manhole lid.*
4. Remove the manhole lid and put the lid in a stable position where the lid top and bottom are accessible.
5. Put the antenna cable and neck through a hole on the manhole lid until the base of the antenna is against the top of the manhole lid.
6. Attach the antenna to the manhole lid with heavy tape or tar tape.
7. Connect the antenna cable to the instrument connector labeled "Antenna". To make sure proper transmission, hand-tighten the connections.
8. Attach any excess cable to the access ladder or another non-obstructing location with Ty-wrap cable ties.
9. Replace the manhole lid.

Figure 7 Wing Quad antenna



Traffic rated in-road/burial antenna

Required tools:

- Asphalt saw or auger: saw capable of cutting 127 mm (5 in.) in diameter and 76.2 mm (3 in.) deep into a road surface or ground
- Asphalt chisel
- Hammer drill with 19.1 to 25.4 mm (¾ to 1 in.) asphalt drill bit (for antenna cable installation)
- Sakrete asphalt mix (Asphalt patch)
- Bondo; Mar-Hyde P606 Traffic Detector Wire Loop Sealer or equal
- Shovel, if placing in the ground

The traffic rated in-road/burial antenna is intended for burial beneath the road surface or ground adjacent to a manhole or vault that is being monitored (Figure 9).

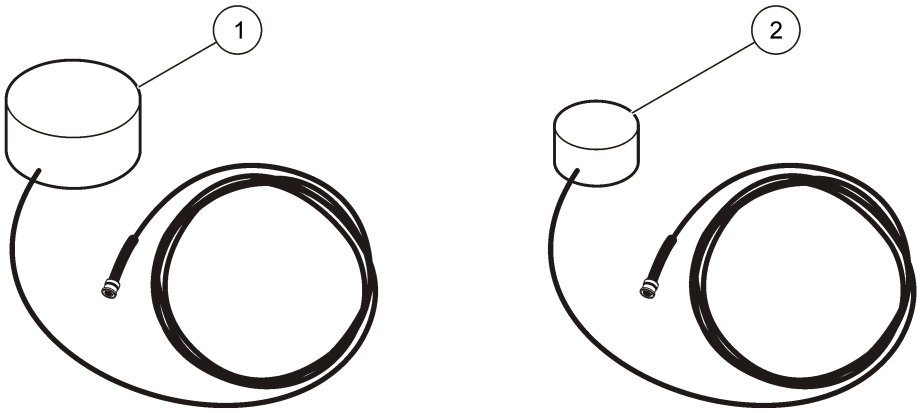
NOTICE

The antenna should be installed in the road approximately 152.4 to 203.2 mm (6 to 8 in.) inches from the manhole or vault containing the flow meter.

1. Unpack the antenna (Figure 8) or disassemble the antenna from the instrument.
2. Excavate a hole or trench in the road surface or ground approximately 127 mm (5 in.) in diameter (or square) and 76.2 mm (3 in.) deep.
3. Select the closest position from the excavated hole to the manhole. Drill a 19.1 to 25.4 mm (¾ to 1 in.) hole from the selected position to the manhole. Make sure to drill the hole below the steel manhole cover support ring (Figure 9, List item. on page 7).
4. Put the antenna cable through the drill hole into the manhole or vault.
5. Install the antenna in the excavated hole. Pull the antenna cable taut. Locate the antenna so that the ceramic side of the antenna is approximately 6.4 (¼ in.) to 12.7 mm (½ in.) maximum below the road or ground surface. Make sure the antenna sits safely in the hole.
6. Attach the antenna cable to the antenna connector.
7. Make sure that the antenna is working by placing a call from the instrument (refer to Verify the wireless connection on page 2).
8. When the operation of the antenna is confirmed, permanently bury the antenna.
    a. Insert asphalt mix around the antenna and pack it in place. Make sure the antenna is sitting firmly on a solid base and cannot be rocked back and forth.
    b. Install the asphalt mix around the antenna. The mix should be level with the road surface but not over the antenna surface.
    c. Pour the Bondo sealer on and over the asphalt mix and over the top of the antenna. There should be no more than 6.4 mm (¼ in.) of Bondo sealer over the top of the antenna.

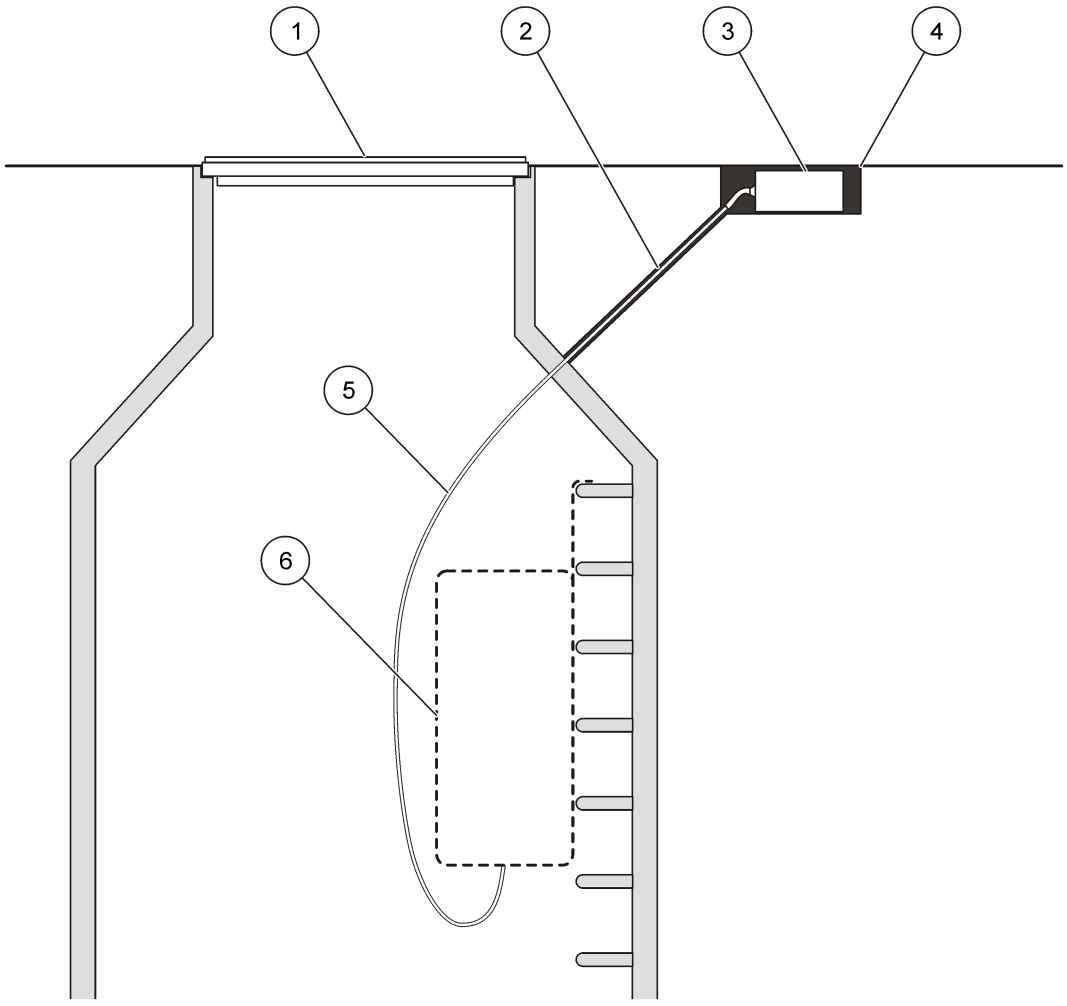
d. Connect the desired sensors and options to the flow meter. Calibrate the sensors and install the flow meter in the manhole.

Figure 8 Burial antennas



1	Traffic rated in-road/burial antenna (Verizon)	**2**	Traffic rated in-road/burial antenna (Sprint)

Figure 9 Burial antenna assembly



1	Manhole cover	**4**	Trench or hole for antenna
2	19.1 to 25.4 mm (¾ to 1 in.) hole	**5**	Antenna cable
3	Antenna	**6**	Flow meter

Replacement Parts

Note: *Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.*

Description	Item no.
Half wave, 824-894 & 1850-1990 MHz, 3 dBi	5228400
Half wave European, 870-960 & 1710-1880 MHz, 3dBi	5255300
Traffic rated manhole lid quad, 824-896 & 1850-1990 MHz, 3 dBi	5255400
Wing Quad, 824-960 & 1710-2170 MHz, 2.15 dBi	6241804
Traffic rated in-road/burial antenna (Verizon), 824-896 MHz, 3 dBi	6246200
Traffic rated in-road/burial antenna (Sprint), 1850-1990 MHz, 3 dBi	6683000

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