



3017M Quick Start Guide

DPD CHLORINE ANALYZER

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What's Included?

Item	Part #	Qty.
3017M Chlorine Analyzer	332266	1
Sample Pump Tube*	332405	1
Reagent Pump Tubes*	332268	2
Silicone Lubricant	331121	
Reagent Bottle Cap Assembly*	332270	2
1/2" ID Drain Tube, 6 ft.	327112	1
1/8" OD Sample Inlet Tube, 3 ft.	147901	1
3017M Operators Manual	332100	1
Accessories that may be included:		
Sample Inlet Device	327114	1
Kit - Total Chlorine Reagent or Kit - Free Chlorine Reagent	330006 330007	1
Reagent Mixing Instructions	330030	1

*Installed on the 3017M

Inspection

Remove the analyzer and Sample Inlet Device from the shipment boxes. Inspect the shipment for any damage or missing parts. Contact YSI Customer Support immediately to report any damage or discrepancies with the shipment. Any questions should be directed to YSI Customer Support at (800) 765-4974 or (937) 767-7241.

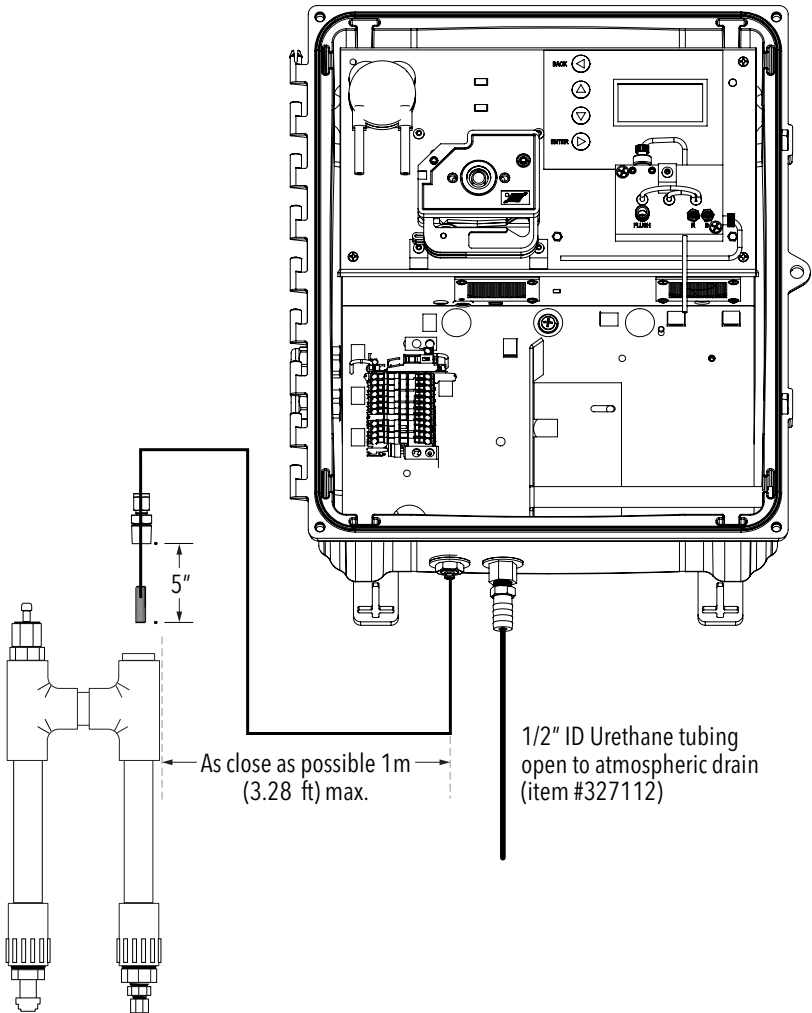


Figure 1: YSI 3017M DPD Chlorine Analyzer and Sample Inlet Device shown in the recommended installation configuration.



NOTE: Do not apply power to the unit until **all** of the following steps have been completed.

The 3017M was shipped from the factory as shown in Figure 2. It will be necessary to attach the mounting tabs, mount the analyzer, mix the reagents, position the sample pump tube, tension the reagent pump tubes and connect the analyzer to the sample.

Materials Required

- #1 Phillips screwdriver
- 1/16" (or smaller) flat-head screwdriver
- 3/8" drive ratchet
- 7/16" socket
- 7/16" wrench
- Scissors
- Rag or paper towels

Figure 2: The 3017M Chlorine Analyzer as it is shipped from the factory →

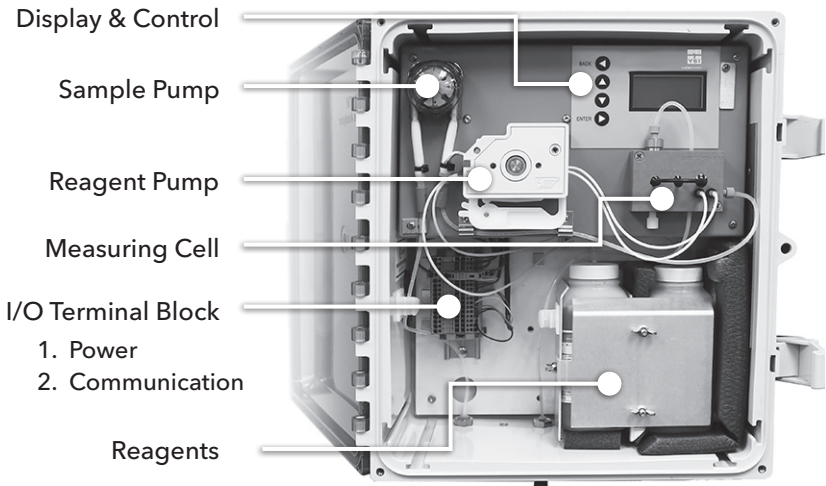
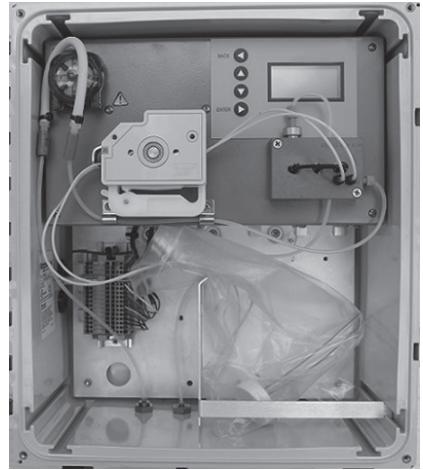


Figure 3: 3017M Chlorine Analyzer components

Mounting Instructions

1. Attach the enclosure's 4 mounting tabs to the back of the 3017M using the flat head screws in the hardware kit.
2. Mount the 3017M in the desired location with user supplied mounting hardware.
3. Install the Sample Inlet Device in its designated location (if applicable). Below and to the left of the analyzer is an ideal position. See **Figure 1**.
4. Power and RS 485/4 to 20 mA connections are made through the cable glands that are supplied with the analyzer. The cable glands can be found on the left-hand side of the analyzer.
5. Wire the main power and any other signal or alarm connections.
6. The terminal block connectors are opened by pushing the 1/16" screwdriver into the small, square opening adjacent to the opening for the wire. See **Figure 4**.

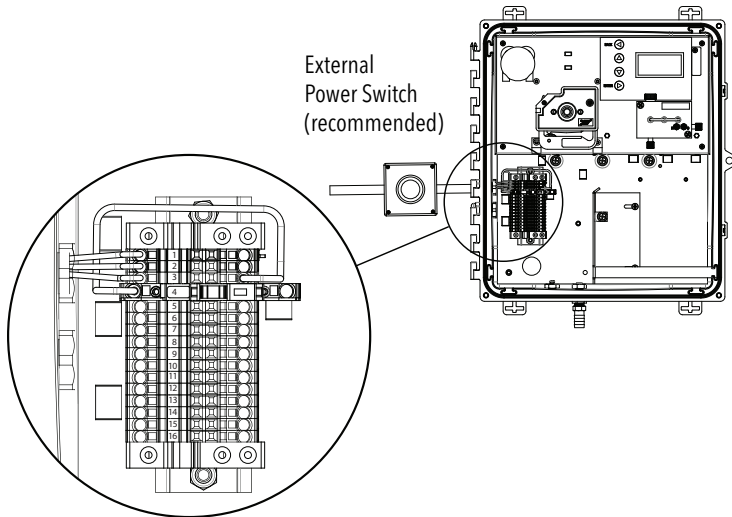


Figure 4: 3017M terminal block and external power switch
(Wiring reference table on next page)

Mounting Instructions, cont'd

Position	Connection/Purpose	Wire Color
1	AC Earth	Green/Green Yellow
2	AC Neutral (Line 2)	White/Blue
3	AC Line (Line 1)	Black/Brown
4	Fusible Link (0.5A)	Brown
5	RS 485-A	White
6	RS 485-B	Grey
7	RS 485 RTN	Purple
8	4-20 mA (-)	Blue
9	4-20 mA (+)	Green
10	ALARM1 (NC)	Yellow
11	ALARM1 (COM)	Orange
12	ALARM1 (NO)	Red
13	ALARM2 (NC)	Brown
14	ALARM2 (COM)	Black
15	ALARM2 (NO)	Pink
16	SPARE	---

6. Attach the 1/2" ID drain tube to the barbed fitting on the bottom of the analyzer. Refer to **Figure 5**.
7. Attach the 1/8" OD tubing to the sample inlet fitting (quick connect) on the bottom of the analyzer and connect the other end to the Sample Inlet Device or any other sample spot.

Mounting Instructions, cont'd

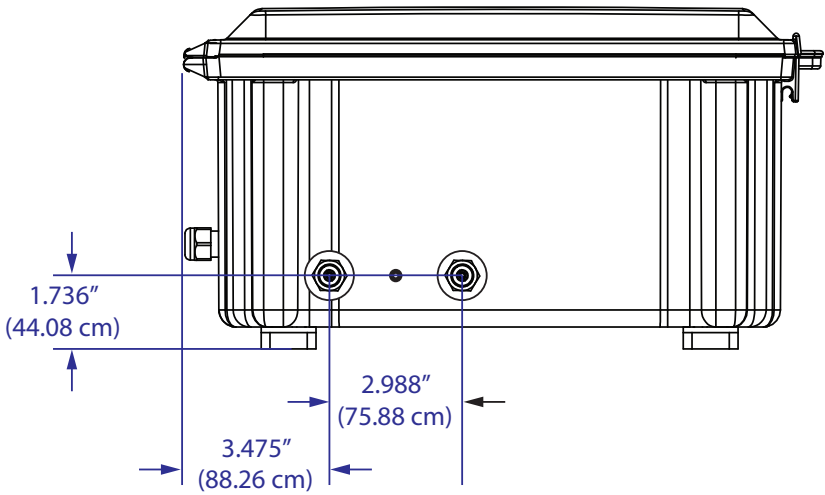


Figure 5: 3017M plumbing connections, bottom view

Reagent Preparation

1. Refer to YSI document 330030 for preparation of the reagents.
2. Install a reagent bottle cap assembly (item #332270) to the reagent containers.
3. Place the **indicator** reagent on the **right-hand side** of the enclosure (closest to the wall of the enclosure).
4. Place the **buffer** next to it (**left-hand side**). Refer to Figure 7.

NOTE: Only high purity, chlorine-free water should be used for the reagents. Deionized (DI) water, at a minimum, is acceptable.

Sample Inlet Device - Overview

The Sample Inlet Device (part #327114, see **Figure 6**) is a simple, easy-to-use device that serves as the interface between the sample tap and the 3017M Chlorine Analyzer. The Sample Inlet Device consists of inlet and outlet ports, a 60-micron filter for filtration of fine particles, if necessary, and a 20-psig pressure relief valve.

NOTE: The Sample Inlet Device is an optional accessory, and although it can add great benefits to the 3017M platform, it is not a required accessory. The following information pertains to the installation of the Sample Inlet Device, if this doesn't apply to your installation of the 3017M please skip to page 11.

Sample Inlet Device - Warnings

The selection of a representative sample is important for optimal performance of the analyzer and analytical results. The sample must be representative of the condition of the entire process. Erratic reading will be realized if the sample is drawn from a location that is too close to the point of chemical injection, if mixing is incomplete, or if the chemical reaction is incomplete.

Install sample line taps into the side or center of larger process pipes to minimize the chance of ingestion of sediment or air bubbles. A tap projecting into the center of a pipe is an ideal location. Opaque tubing is recommended if the tubing is exposed to sunlight in order to prevent algae growth.

Sample Inlet Device - Mounting Location

The ideal location for the Sample Inlet Device is below the 3017M Chlorine Analyzer and as close as practical to the 1/8-inch quick-connect fitting at the bottom of the analyzer. The installation location of the Sample Inlet Device should not exceed 3.25 ft. (1 m) from the analyzer. See **Figure 1**.

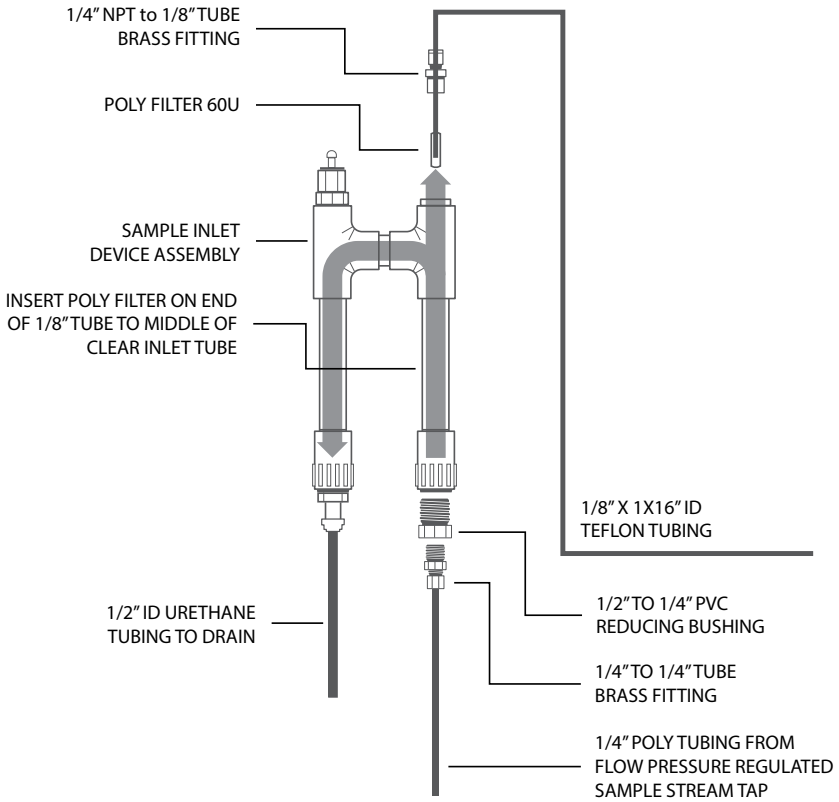


Figure 6: YSI 3017M Sample Inlet Device

Sample Inlet Device - Step-by-Step Installation Procedure

1

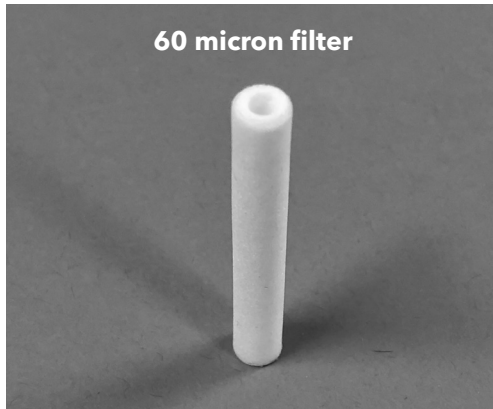
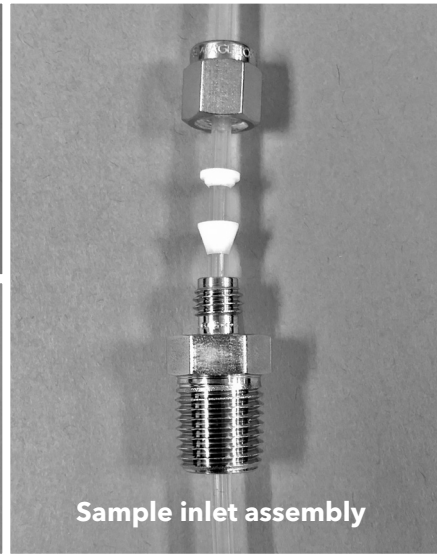
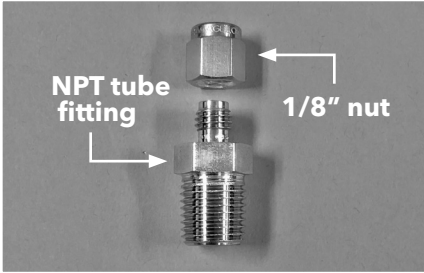
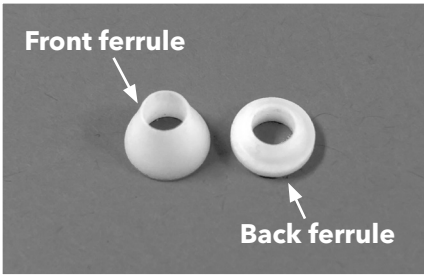
Mounting - Secure the Sample Inlet Device to the wall, panel, or other structure. A Sample Inlet Device mounting clip is supplied with the Sample Inlet Device kit. Other mounting options can be applied to the Sample Inlet Device but are not supplied by the manufacturer.

2

Plumbing - Push the 1/4-inch OD tubing into the inlet fitting. A stop will be felt when the tubing is properly seated in the fitting. Repeat this process for the outlet fitting. Route the outlet tubing to an atmospheric drain or sump.

Note: In normal flow applications, the inlet to the Sample Inlet Device can be on either side. In low flow and/or high particulate applications make sure the inlet is on the same side as the sample pick-up line.

1. Gently unscrew the 1/8-inch NPT tube fitting at the top of the Sample Inlet Device. This fitting has a Teflon® two-piece ferrule. Be sure not to lose the front and back ferrule when taking apart this fitting. Insert the sample pick-up line into the fitting.
2. Attach the 60 micron filter to the end of the sample pick-up line, if necessary. It is recommended that the 60 micron filter is used in any application that contains or has the potential to contain any particulate matter within the sample.
3. Thread the NPT tube fitting into the Sample Inlet Device. Position the sample pick-up line/filter approximately mid-way in the Sample Inlet Device. To secure the sample pick up line in place gently hand tighten (do not overtighten) the 1/8-inch nut on the NPT tube fitting.



3

Testing - Apply sample to the system and check for leaks. Ensure that the sample from the outlet of the Sample Inlet Device is flowing freely to the drain.

4

Installation of the Sample Inlet Device is complete.

Sample Pump Tube Installation

1. Refer to **Figure 7**.
2. Remove the cover from the sample pump by gently pulling on the bottom of the pump cover.
3. Position the tube so that the barbed fittings on each end are even. They will be adjusted in a later step.
4. Locate the package of silicone grease and cut a small opening across one corner of the package.
5. Apply a thin layer of the silicone grease to the section of the tube that will mount on the roller in the pump. A small bead of approximately 3 mm in diameter should be sufficient. Spread the grease along the section of the tube that will contact the pump tube rollers. Do not apply the grease in excess. There is sufficient grease in the startup kit for multiple pump tube installations. Remove any excess with a rag or paper towel.
6. Hold the pump tube over the roller, and gently push the roller onto the drive shaft of the pump motor.
7. Refer to **Figure 8**.
8. Snap the cover into place so that the roller stays in place.
9. Gently position the sample pump to remove slack on each tube.



Figure 7: Sample pump shown with cover off

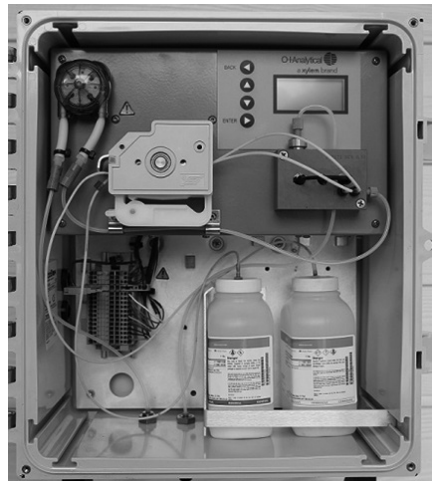


Figure 8: Completed pump tube installation

Reagent Tube Installation

1. Refer to **Figure 9**.
2. Tension the reagent pump tubes by depressing the tensioning levers downward three "clicks".
3. This completes the installation of the reagent pump tubes.

NOTE: Do not overtighten the reagent pump tubes. This will lead to permanent failure.

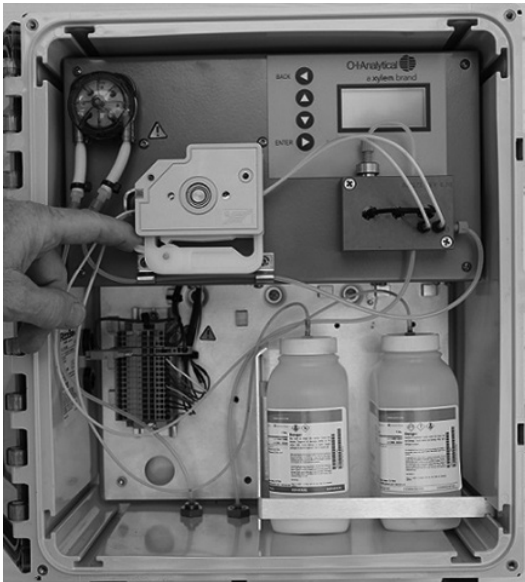
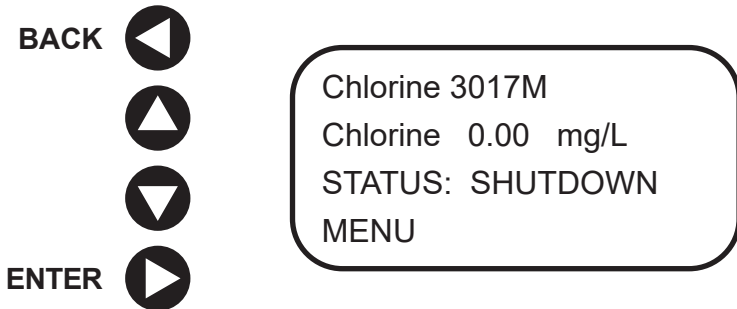


Figure 9: Tension lever - complete reagent pump tube installation

Startup and Operation

1. Ensure that the main power and the desired aqueous sample are available to the instrument.
2. Close the fusible link on the terminal block.
3. The analyzer will power on and initiate a self-test. Once the self-test is completed, the analyzer will come to SHUTDOWN mode. Power is not removed from the analyzer.



4. Using the UP or DOWN button, navigate to the PRIME function and press ENTER.
5. The sample pump and reagent pump will turn at a higher than normal speed to fill the sample and reagent lines with liquid.
6. Observe the outlet (waste) line of the measuring cell.
7. If chlorine is present in the water, the water at the outlet of the measuring cell should turn magenta when the sample and reagents begin to mix in the flowcell.
8. When no bubbles are present at the outlet of the measuring cell, the lines are fully primed with liquid.
9. Using the UP or DOWN button, select STANDBY and ENTER.
10. When you are ready for routine sample analysis, select STARTUP and ENTER.

Startup and Operation, cont'd

11. The STARTUP sequence consists of the following steps and will take several minutes:
 1. **PRIME:** The sample and reagent pumps will turn at a high speed to prime the lines with liquid.
 2. **RINSE:** The reagent pump will stop, and the sample pump will continue to turn and rinse the flowcell with sample.
 3. **AUTOGAIN SET:** The zero point, sample without reagent, is determined.
 4. **RUN:** The sample pump will return to the speed for normal operation.
 5. **INJECT REAGENT:** The reagent pump will start and run for the predetermined amount of time.
 6. **INTEGRATE:** The analyzer measures the absorption of light that corresponds to the concentration of the sample flowing through the flowcell.
 7. **CALCULATE VALUE:** The concentration of the sample is calculated against the calibration curve stored on the analyzer.
 8. **DISPLAY VALUE:** The concentration of the sample is displayed on the screen.
 12. The analyzer should cycle for 15 - 20 minutes (6 - 8 cycles) before making comparisons with reference methods and adjusting the analyzer output.
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- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

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