

# Diffusion Tubing Installation

The new diffusion tubing assembly for use with the Thermo Scientific Orion 2111LL and 2111XP sodium monitors provides superior locking ability to maximize uptime and prevent against costly blowouts. The newly designed HDPE locking mechanism is precisely engineered to remain connected under variable temperature conditions and pressure fluctuations. The new style diffusion tubing assembly is now suspended in the headspace of the reagent bottle- decreasing the rate of consumption of reagent and saving you time and money.

**WARNING:** Diisopropylamine (DIPA) is hazardous. Refer to the MSDS for DIPA, available at [www.thermo.com/water](http://www.thermo.com/water). Use protective glasses and gloves. Refer to bottle label for precautions. Installation of DIPA reagent requires a fume hood or well-ventilated area. ▲

## Recommendations

If monitor is offline or sample is shut off from the instrument for a prolonged period of time be sure to follow the Shutdown & Start-Up Procedures in the 2111LL or 2111XP User Guide.

1. Unscrew thumbnut and remove reagent bottle from the reagent manifold.
  - New instruments will ship with a rubber coated glass reagent bottle and complete diffusion tubing assembly installed. Only installation of reagent is necessary for first time start up.
2. Twist open reagent bottle, separating glass bottle, reagent bottle adapter assembly and plastic cap to reagent bottle.
3. Unscrew the fittings from base of the reagent bottle adapter assembly. Dispose of used diffusion tubing assembly accordingly.

## Tips Before Installation

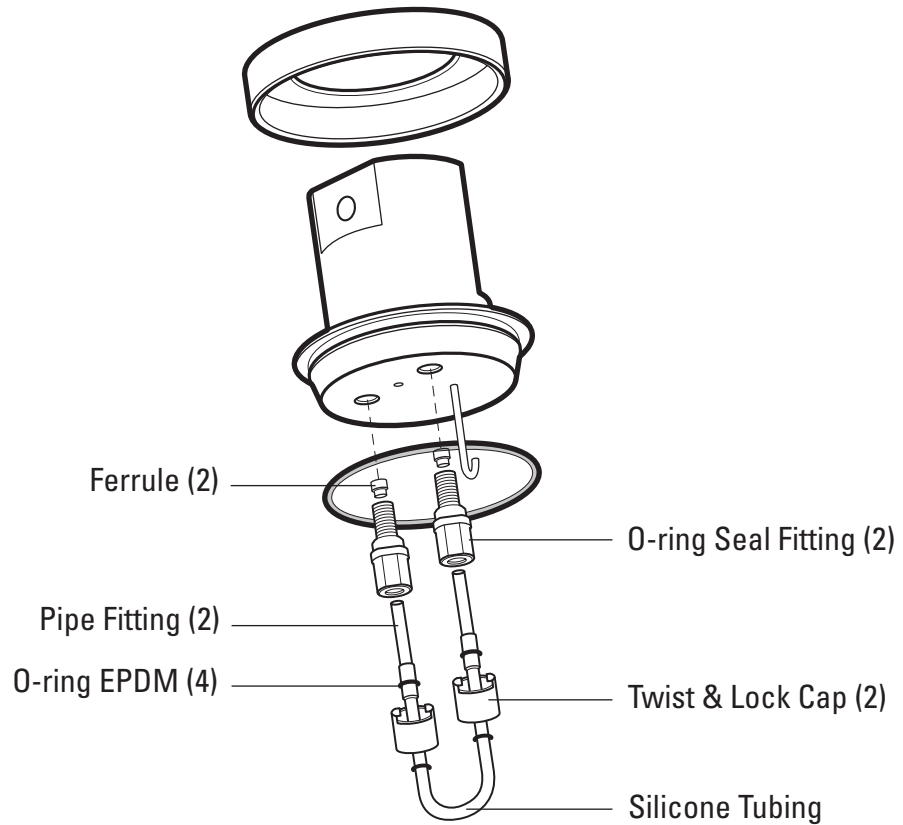
The diffusion tubing ships fully assembled for quick and easy installation. Occasionally the assembly will loosen during shipment.

- Be sure to check the diffusion assembly for completeness of components prior to installation upon the reagent bottle cap.
- Do not use Teflon tape during installation
- Twisting of the clear silicone tubing will compromise tubing integrity and may cause ruptures. Be careful to avoid kinks and twisting during installation.

Description	Quantity
O-ring Seal Fitting	2
Twist and Lock Cap	2
Pipe Fitting	2
O-Ring EPDM	6
Ferrule	4
Silicone Tubing	1

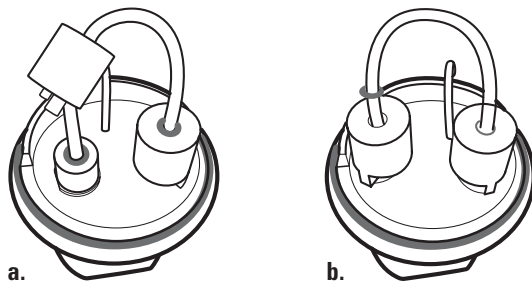
## Installation

1. Make sure that ferrule is in correct orientation- large end of ferrule is at end of PVC barb. The ferrule should also be completely connected to diffusion tubing PVC barb. See **Figure 1**.



**Figure 1**  
**Diffusion Tubing Assembly**

2. Carefully thread the O-ring seal fitting and ferrule tightly into the reagent bottle adapter to create a suitable seal. The fitting can be tightened with a wrench.
3. Slide down and seat O-ring in top of seal fitting. See **Figure 2a**.
4. Slide twist lock cap down over O-ring fitting compressing and rotate 90 degrees to lock in place. See **Figure 2b**.
5. Slide second O-ring down and seat in top of the twist lock cap recess.

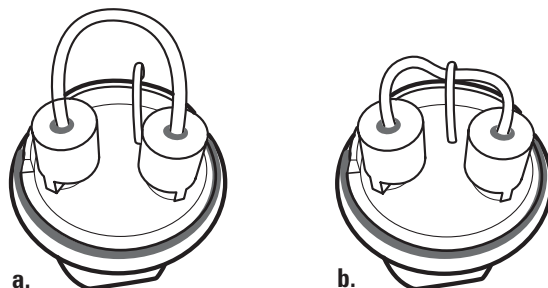


**Figure 2a and 2b**

a.

b.

6. Repeat steps 1-5 for the other side of bottle adapter. Final assembly should appear as shown in **Figure 3a**.
  - Avoid twisting or kinks in Silicone tubing prior to installation in Diisopropylamine Reagent.
7. Carefully bend tubing to secure over hook on reagent bottle adapter. See **Figure 3b**.



**Figure 3a & 3b**

## Troubleshooting

- Check to make sure that PVC pipe is aligned properly with ferrule at base of O-ring seal fitting..
- Check to make sure that O-ring seal fitting is tight and there is not a large gap between the reagent bottle adapter.
- Check to make sure that the twist lock cap is in correct orientation- rotated 90 degrees from flat surface of O-ring seal fitting.
- Check to make sure that ferrule is oriented in the proper direction- large end of ferrule is at end of PVC pipe. **See Figure 1.**
- This ferrule may fall off in bag during shipment, so two additional ferrules have been added to the packaged assembly. Be careful to remove the additional ferrules from packaging before discarding.

## Ordering Information

Cat. No.	Description
211194	Diffusion tubing kit (1 complete assembly with O-rings)
211190	Diisopropylamine (DIPA) reagent (1 x 0.8 L bottle) with (1) diffusion tubing kit
211191	Diisopropylamine (DIPA) reagent (6 x 0.8 L bottles) with (6) diffusion tubing kits
211192	Sodium consumables kit for one year - includes Diisopropylamine (DIPA) reagent (6 x 0.8 L bottles) with (6) diffusion tubing kits (211194), (1) reagent bottle adapter (2111RBA), (1) standard solutions kit (19.1 ppm, 192 ppm, and etch solution), (1) sodium electrode, (1) reference electrode, (5) 2 oz bottles reference filling solution, (1) O-ring kit, (1) check valve, (1) set of 100 pipette tips, (1) restriction tube assembly, (2) 60 micron inlet filters, and (1) filter gasket
2111MK	Maintenance kit includes: (2) electrode cables, (1) diffusion tubing kit, (1) sample filter, (1) O-ring kit, (1) check valve, (1) sensing tube, (1) shut off valve, (1) restrictor tubing assembly, (1) air filter, (1) inlet tubing assembly, (1) reagent bottle cap and adapter

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