



# Application Note: PowerMax-PRO kW Push to Connect fittings.

## Introduction

In 2018 Coherent introduced the use of Push to Connect style fittings on the PowerMax-PRO kW sensor due to industry requests for a more internationally used fitting, and reduce the need for fitting removal after shipment. We found many cases where sensors were leaking due to many reasons including removal of hose from barbed connectors, improper or lack of PTFE thread tape, and simple improper torquing of the fittings. The purpose of this document is to identify the fittings and features of the fitting as well as proper preparations for leak proof functionality of the sensor.

It is recommended that you use the water fittings supplied by Coherent with these sensor models. Removal of fittings and replacement with fittings other than those provided can cause damage to the water ports on these sensors and could void the Warranty on the product.

## Pisco quick-fitting/Push to Connect type fittings


Coherent is using PISCO push to connect fittings. We provide two tubing size options for the fittings 3/8in and 10mm we found these to be the most common across the industry. In order to create a positive seal you want to make sure that you select the appropriate tubing size for the fitting that you are using.

### PowerMax-Pro Series kW Water-Cooled Sensors (PMP 1kW,3kW)


- Water port threads: 1/8" NPT
- Minimum water flow rate:
  - 1 GPM (4 LPM) at 1-3 kW
- Water pressure can be up to 50PSI to reach the desired flow rate.
- Sensor is leak tested with 90PSI high pressure nitrogen, after assembly.
- Included fittings: stainless push to connect for hose size 10mm or 3/8" ID

The following fittings are available at PISCO: <http://www.pisco.com/products/Fittings>

Parker has a 3/8 to 10mm tube union <https://ph.parker.com/us/en/push-to-connect-fittings>

Diameter	Part Number	Picture
3/8 I.D. hose 1/8 NPT	POC3/8-N1U	
10mm I.D. hose 1/8 NPT	PC10-N1U	

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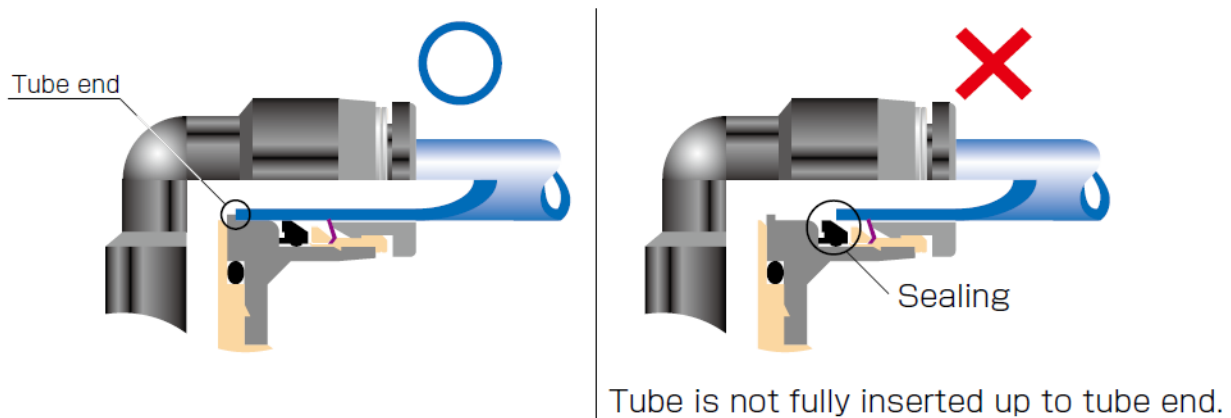
3/8 I.D. tube to 10mm tube	32PLP-10M-6	
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### Preparing your tubing for the Pisco fitting.

There are many tubing cutters on the market. The common design to all of them is they create a nice square edge. Sloppy angled cuts of the tube create limited engagement of the tube, and creates areas for water to escape, not to mention limits the fittings ability to hold the hose securely in place. Pisco offers a variety of tubing on their website. See more @ <http://www.pisco.com/OrderTubing>



Below you can get a visual of why it's important to have nice square cuts, and complete tube engagement



## Replacing or changing your PISCO fitting.

Should the need arise our fittings can be removed. Once the fitting is removed you must remove all old PTFE tape from the fitting to be installed as well as the thread in the housing. Loose tape particles can become entrapped and cause blockage. Use fresh PTFE tape on the fitting to be installed, NPT fittings are designed with gaps and imperfections as they are tapered. The PTFE is used to fill the gaps and create a seal. The tape should be started in the direction of the thread so that when screwing the fitting into the housing it does not naturally unravel the tape that you have applied. Use 2 to 4 wraps of PTFE on the threads taking care not to start the tape until after the first thread edge so that no tape gets shredded loose due to covering the beginning of the thread. When tightening the fitting tighten with your hand as tight as you can get it with your thumb and your forefinger. To finalize the torque, use a wrench and one to two full rotations and stop when you feel reasonable tension on the fitting. The specification torque on the fitting is 39.83in-lbs to 57.52in-lbs. (varies by PTFE tape and machining).

## Water flow test, check for leaks before powering on the sensor.

When we test the fittings for leaks at the factory we pressurize the sensor with 100PSI of nitrogen and allow the sensor to sit while monitoring for any bleed off for several minutes. While you may not be able to perform this check you can go to the next step of applying water flow. Hook the sensor up to a chiller and bring up the flow slowly and watch for any seeping of water especially around the fittings. If any seepage is noticed, shut off the water flow. Then with the Allen key, torque the fittings and try the pressure test once again.

For additional information on the Pisco fittings you can visit their website <http://www.pisco.com/>

## Contact Coherent

For assistance or additional information like you can't find the calibration cert for your sensor? Contact Coherent, we can get you a replacement.

contact Coherent Technical Support as follows:

- Contact your local Coherent Service Representative (or visit [www.Coherent.com](http://www.Coherent.com) to view a list of contacts worldwide)
- Send an e-mail to: [LSMservice@Coherent.com](mailto:LSMservice@Coherent.com)
- Call the Coherent Technical Support Hotline
  - Within the USA: 1-(800)-343-4912
  - Outside of the USA: 1-(408)-764-4042

To arrange for **warranty service or annual recalibration**, contact your regional Coherent service center to obtain a Return Material Authorization (RMA) number. Use the shipping box and packaging materials you retained to safely transport the sensor back to the factory, and ship to this address:

Coherent, Inc.  
Attn: RMA #  
27650 SW 95th Ave.  
Wilsonville, OR 97070