

**CANADA
TECH**

**TEMPERATURE PILOT
Assembly Procedure**



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I. Introduction Overview

The major purpose of this manual is to inform users on how to use and maintain the Canada Tech Temperature Pilot Gauge and Carrier. The user will find information on operation, maintenance, and troubleshooting.

Canada Tech offers a wide range of oilfield related memory devices. Some of these include downhole memory gauges utilizing both Peizo-Resistive and quartz transducers, surface readout pressure recorders, surface pressure loggers and various products utilized by the slimline / wireline industry. These products have been developed and manufactured to obtain the highest accuracy and resolution in the industry.

A. Components

A set of Temperature Pilot gauge and Carriers comes complete with the following items:

- 2 Pilot Electronics
- 2 Pilot Electronics Housings
- 2 Battery housings
- 2 Bullnoses
- 1 Repair Maintenance Kit (contains extra O-rings and Crush rings)
- 1 Data Download Box (RS232 Serial or USB – customer specific)
- 1 Data Download Cable (RS232 Serial or USB)
- 1 USB Drivers Disk (only needed with USB Communications)
- 1 Interface Power Supply (only needed with RS232 Communications)
- Gauge Calibration files and Certificates
- 1 Tool Box Program CD

**(Crossover not needed with this Carrier)

B. Extra Accessories:

- Pelican Case
- Lithium Batteries
- Battery Tester
- Torque Wrench
- 1 1/8" Crowfoot

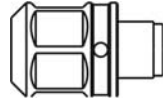
Canada Tech software requires an IBM compatible 60 MHz Pentium computer or better, along with Microsoft Windows.

II. Assembly Procedure and Operation

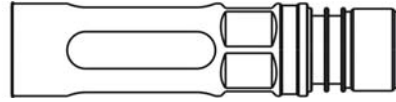
A. Step-By-Step

The following is a step by step procedure to assemble the *Temperature Pilot Carrier with the Temperature Pilot*.

1. Hold the *Bull Nose* firmly. Thread onto the *Temperature Pilot Housing* and tighten securely with 1 1/8" wrench.

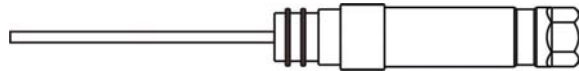


Bullnose



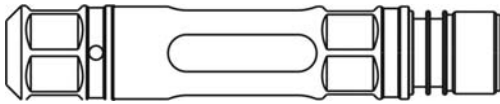
Temperature Pilot Housing

2. Install Backup V90 016 O-rings onto Pilot Housing.



3. Place a new crush ring metal seal onto the *Temperature Pilot*. The crush ring should be installed with the flat side of the crush ring mating against the *Temperature Pilot* and beveled side mating against the *Pilot Housing*.

NOTE: Used crush rings cannot be guaranteed to seal effectively therefore it is encouraged to change the crush ring each time the *Pilot* is removed.



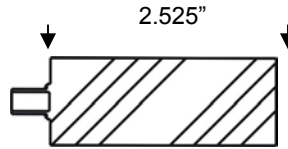
Metal Seal

Temperature Pilot

4. Thread the *Temperature Pilot* into the *Pilot Housing* and using the torque wrench and a 11/16" socket, torque the *Temperature Pilot* to 130ft*lbs.



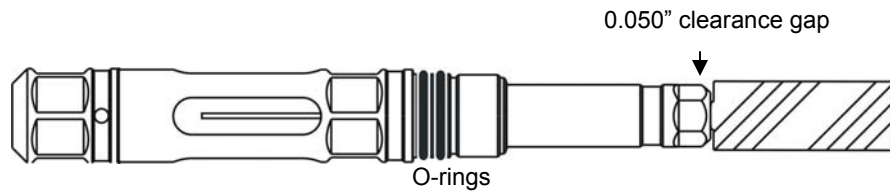
5. Install single C size lithium high temperature (rated to 150°C) cell. The cell must have a four prong LEMO connector and must not measure more than 2.525" in length from shoulder of connector to end of battery. There should be approximately 0.050" clearance for heat expansion of the battery.



This can be checked by loosely installing the battery and then installing the battery barrel. Now remove the battery barrel and inspect the gap in the plug junction between the battery and the *Temperature Pilot*.

***Caution must always be taken when handling lithium batteries

6. Install two 212 V90 (viton of 90 durometer) O-rings on the *Pilot Electronics Housing*.



7. Lightly grease the o-rings on the *Pilot Housing* with Dow Corning 55 High temperature o-ring silicone lubricant to help prevent cutting the o-rings when installing battery barrel.
8. Install battery barrel and tighten securely.
Option: To activate the metal to metal seal, install battery barrel and torque to 100lbs using a torque wrench with a 1 1/8" open ended wrench (crowfoot).



9. Tool is now assembled and ready for use.



B. After the Gauge is Removed from the Well

1. The Carrier and Gauge should be allowed the **cool** sufficiently before working with it.
2. **Loosen the battery housing** from the electronics housing using a 1 1/8" wrench.



3. Slowly **remove the battery housing** from the Battery and Pilot Electronics Housing.
4. Remove the battery from the Pilot Electronics Housing by gripping the battery as close to the pin as possible and pull straight off of the electronics housing. ***Do not twist the battery!!** It is now time to start downloading the information recorded by the gauge.

B. Communication with the Gauge

To start communicating with the gauge, the following procedure is recommended:

1. **Attach the female end of the 9 pin serial cable**, which was provided with gauges, **to an empty parallel port in the back of the computer**. Attach the male end of the cable to the Serial Data Download Box. The Serial Data Download Box is an electric interface adapter, which allows communication between the computer and the gauge. If you are using the USB Download Box, connect the USB cable to the USB port on the computer. With the USB connection, no interface power supply is needed. With the USB connection, no interface power supply is needed. Make sure the USB Drivers are installed on the computer for the USB connection to work. A USB Driver disk is provided with the complete package or you can find the latest driver on our website www.canadatech.com >>> Support >>> Downloads >>> USB Drivers.



2. **Line up the red dot on the interface box to the red dot on the gauge and insert carefully.** They will only connect this way. Do not force or twist!! If the connection is difficult, stop and look to see what the obstruction might be. Clear all obstructions and try the connection again. When these three components are connected together, the gauge is said to be in *Communication Mode*. This mode is used to program the tool, download file, and upload calibration information and other related operations through the software. The power consumption in this mode is 8mA. Once again, for USB connections, line up the red dot on the interface box to the red dot on the gauge and insert carefully, but no interface power supply is needed.
3. **Connect the interface power supply to the communication box** by lining up the red dots on the communication box and the red dot on the power supply. You will know if the connection is ready when the LED on the battery pack flashes red on and then off. If the flashing does not occur, try this connection again. This is not need with USB connections.
4. Open the program Tool Box. Refer to Tool Box Manual for connection and operation instructions.

III. Servicing of the Gauge

1. After all data is downloaded from the tool, carefully disconnect all components.
2. Clean and lubricate the tool after use. Replace all o-rings and crush rings after every run to protect the gauge from potential damage caused by failure.

A. Cleaning the Transducer

1. Remove the Pilot after every run and clean the pressure ports. If the pressure ports get plugged, then the gauge may not read accurately.

B. Lubricating the Gauge Threads

1. The threads on the top of the Pilot should be lubricated with the proper lubricant, such as Dow Corning 55-O-ring lubricant. This should be done prior to usage.

***It should be noted that the gauge does contain electronics and should be treated gently whenever possible. Store gauges in their storage cases when not in use.**

***Never submerge the tool in fluid unless it is completely assembled.**