



# SILENT KNIGHT

## IntelliKnight Smoke Detector Cleaning and Testing Instruction

This document contains information necessary to properly test and clean analog photoelectric and ionization smoke detectors connected to an IntelliKnight Fire control panel. Testing and cleaning the SLC devices must be done in accordance with NFPA 72 and local ordinances. Proper testing and cleaning can also increase the reliability and longevity of the smoke and heat sensors.

### Equipment Needed

The following is a list of the equipment necessary to test and clean a photoelectric and ionization smoke, and heat sensor.

### Testing Equipment

- TSE-A100 Smoke Sensor Tester.
- HDT-380 Heat Sensor Tester.

### Cleaning Equipment

#### For the Photoelectric Smoke Sensor

- NSRT-A100 cover removal tool.
- A small soft bristled brush.
- Rubbing alcohol.
- Clean dry compressed air.

#### For the Ionization Smoke Sensor

- NSRT-A100 cover removal tool.
- A vacuum.
- Soap solution (1 tsp. Lemon Joy to 1 gallon of water).
- Distilled water.

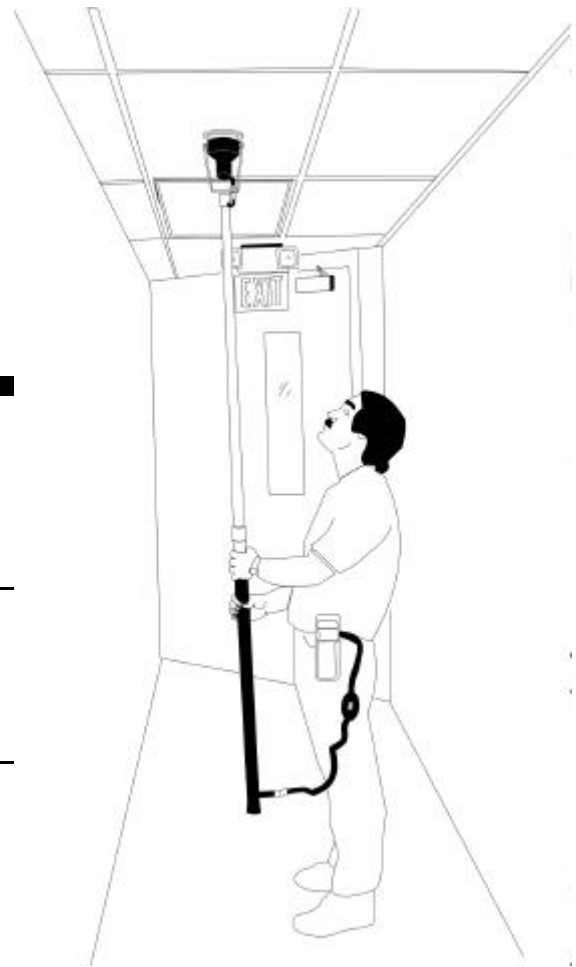


Figure 1: Using the HDT-380 Heat Sensor Tester



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## Manual Cleaning

The following instruction describes how to manually clean the photoelectric and the ionization smoke detectors.

### Cleaning the Photoelectric Smoke Sensor

The following instructions explain how to clean the photoelectric smoke sensor. Figure 2 identifies the components of the sensor.

Follow these steps to disassemble, clean and reassemble the sensor.

1. Remove the sensor from its base.
2. Use the NSRT-A100 to remove the outer cover from the sensor body. See “Cover Removal Instructions” on page 4.
3. With outer cover removed, place the the sensor body in your left hand.
4. Gently twist the Chamber Cover counter clockwise until the Cover Tabs clear the Tab Catches. See Figure 2.
5. Swab the the optical unit with rubbing alcohol using the small soft bristled brush.
6. Use the clean dry compressed air to dry the optical unit and to remove any remaining particles.
7. Clean the chamber cover and outer cover in the same manner.
8. Replace the Chamber cover over the optical unit by aligning the alignment arrows and gently turning clockwise until the chamber cover snaps in place. See Figure 2.
9. Reassemble the smoke detector. See “Cover Replacement Instructions” on page 4.
10. Return the sensor to its base.

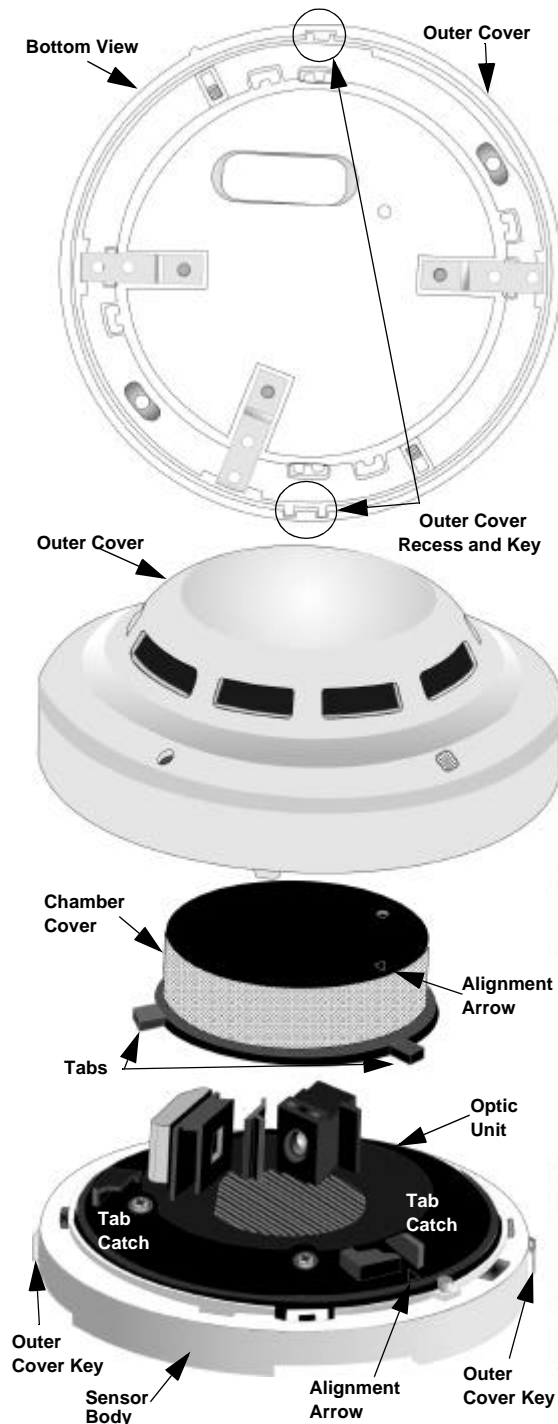


Figure 2: Photoelectric Sensor Components

## Cleaning the Ionization Smoke Sensor

The following instructions explain how to clean the ionization smoke sensor. Figure 3 identifies the components of the sensor.

Follow these steps to disassemble, clean and reassemble the sensor.

1. Remove the sensor from its base.
2. Use the NSRT-A100 to remove the outer cover from the sensor body. See “Cover Removal Instructions” on page 4 .
3. Vacuum the outer chamber and insect screen. Remove any foreign matter from the sensor. See Figure 3.
4. Submerge the outer cover into the soap solution and scrub with the soft bristled brush.
5. Rinse the outer cover with distilled water.
6. Blow dry the outer cover with clean dry compressed air.
7. Reassemble the smoke detector. See “Cover Replacement Instructions” on page 4.
8. Return the sensor to its base.

## Cleaning the Duct Detector

The following instructions explain how to remove the housing cover from a duct detector and clean either a photoelectric or an ionization smoke detector.

1. Unscrew the four duct detector cover screws. See Figure 7.
2. Remove the smoke detector from its base.
3. Clean the smoke detector.

For photoelectric sensors refer to “Cleaning the Photoelectric Smoke Sensor” on page 2.

For ionization sensors refer to “Cleaning the Ionization Smoke Sensor” on page 3.

4. Return the sensor to its base.

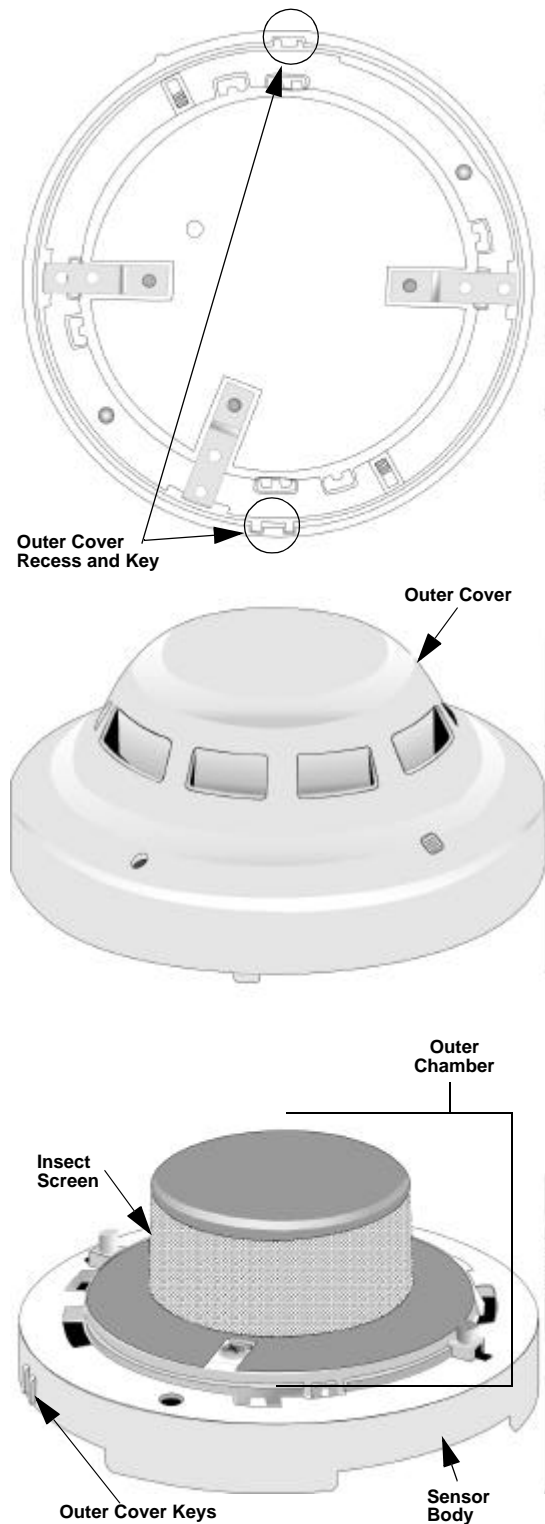


Figure 3: Ionization Sensor Components

## NSRT-A100 Instruction

This section explains how to remove and replace the outer cover for the photoelectric and ionization sensors using the NSRT-A100 tool.

### Cover Removal Instructions

Follow these steps to remove a sensor cover:

1. Place the sensor on the NSRT-A100 tool aligning the locator as shown in Figure 4.
2. Grasp the sensor firmly and rotate the sensor clockwise (about a 30° turn).

The contact blades on the sensor will engage on the NSRT-A100 brackets, which will prevent further rotation.

The sensor body is now disengaged from the outer cover.

3. Pull the sensor outer cover up and away from the NSRT-A100 tool.

### Cover Replacement Instructions

Follow these steps to replace the outer cover of the sensor onto the sensor body

1. Place the outer cover nose down on a flat surface.
2. Align the outer cover recesses with the outer cover keys. (See Figure 2 and Figure 3.)

*Note: There are two orientations possible, however only one way will fit.*

3. With the outer cover keys aligned with outer cover recesses press down firmly on the back of the sensor.

The sensor will snap into the outer cover.

4. Return the sensor to its mounting base.

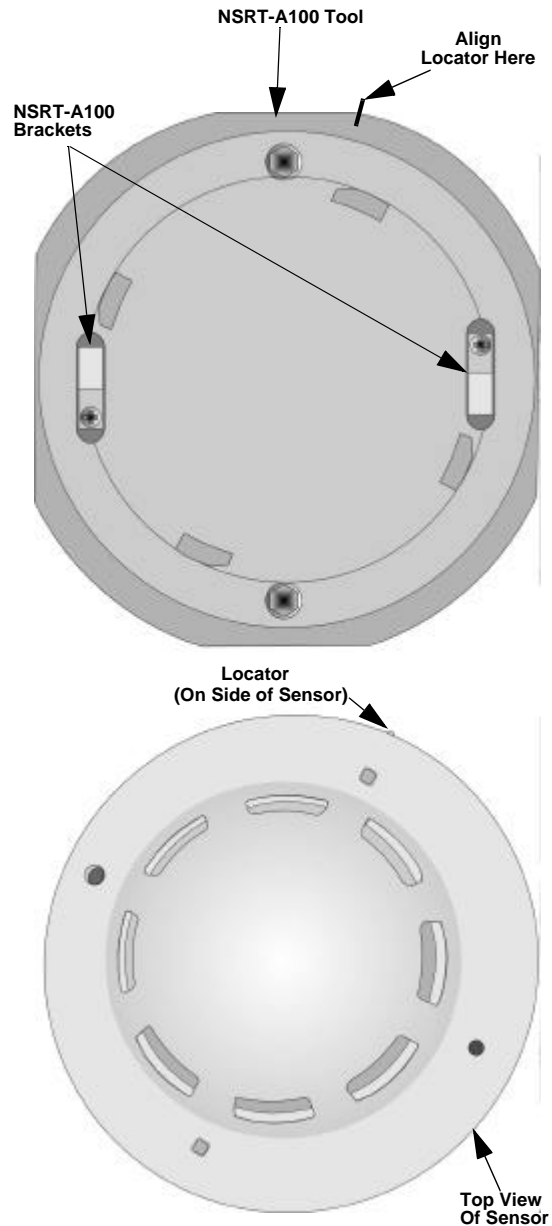


Figure 4: NSRT-A100 Tool and Sensor Locator

## Testing Smoke Sensors

This section contains information on how to prepare, operate and storing the TSE-A100 for the testing of photoelectric smoke sensors.

### Preparing the TSE-A100

Follow these steps to assemble and start-up the TSE-A100.

1. Remove two parts of the TSE-A100 (smoke and fan & battery tubes) from the carrying case.
2. Screw the smoke and the fan & battery tubes together.
3. Unscrew the combustion chamber access cover and slide the combustion chamber out of the fan & battery tube.
4. Unscrew the punk stick retainer.
5. Insert a punk stick.
6. Ignite the punk stick with a lighter or match.
7. Screw the punk stick retainer back into the combustion chamber.
8. Screw the combustion chamber back into the fan & battery tube.

### Testing photoelectric sensors

After the TSE-A100 has been properly prepared, follow these steps to test a smoke detector.

**Note:** Allow the punk stick to burn for 30 to 60 seconds after igniting to provide adequate smoke generation.

1. Rotate the combustion chamber so the power indicator screw lines up with the number two.

**Note:** The fan powers up and a steady flow of smoke is released from the tip of the TSE-A100. If not check the batteries.

2. Extend the tip of the TSE-A100 to within 6 to 8 inches (extends from 5.25 to 14.1 feet) of the sensor.
3. Hold test by the sensor until it alarms. See Figure 6.

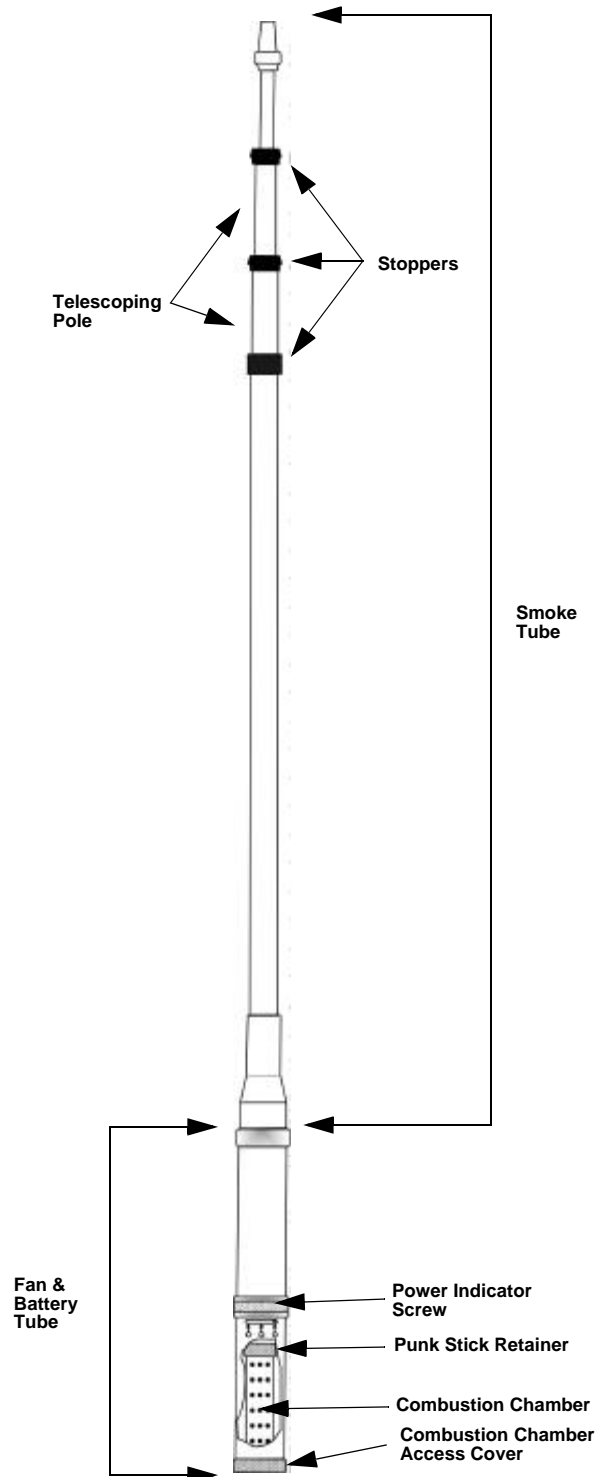


Figure 5: TSE-A100 Smoke Tester

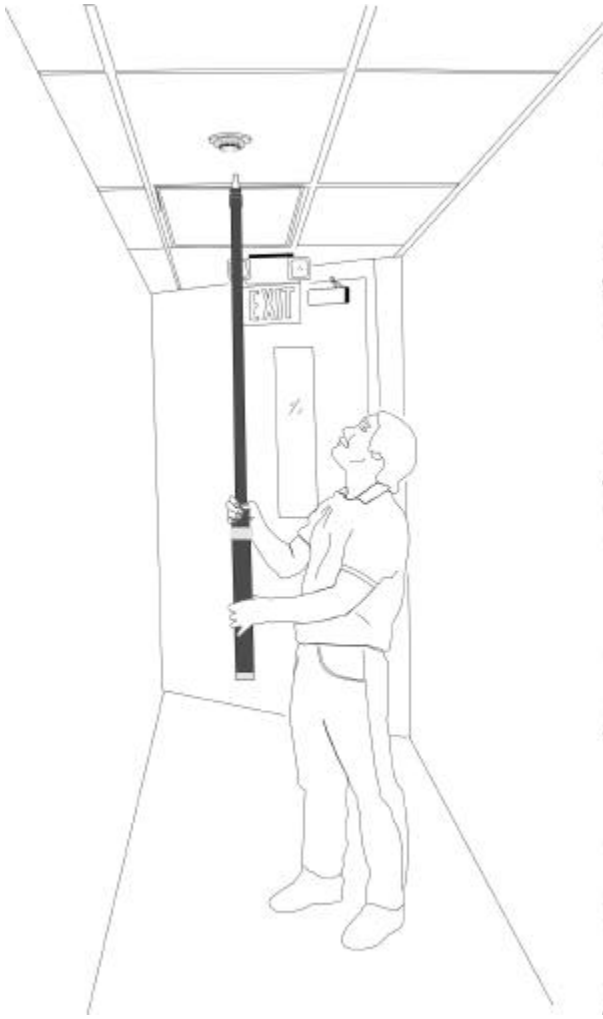


Figure 6: Operating the TSE-A100 Smoke Tester

## Storing the TSE-A100

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Follow these steps to properly store the TSE-A100.

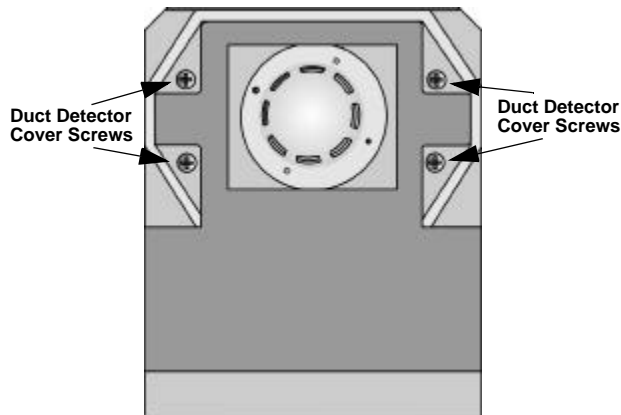
1. Rotate the combustion chamber so the power indicator screw lines up with the number one. See Figure 5.
2. Unscrew the combustion chamber access cover and slide the combustion chamber out of the fan & battery tube. See Figure 5.
3. Unscrew the punk stick retainer. See Figure 5.
4. Extinguish the punk stick.
5. Screw the punk stick retainer back into the combustion chamber. See Figure 5.
6. Screw the combustion chamber back into the fan & battery tube. See Figure 5.
7. Unscrew the smoke tube from the fan & battery tube. See Figure 5.
8. Return the TSE-A100 parts to the carrying case.

## Testing a Duct Detector

The SD505-ADH automatically performs a sensitivity test every three hours. The sensitivity test is performed automatically so there is no need for a remote test station. The status of each individual duct detector is available at the main or remote LCD annunciators. Since the specific duct detector that is in alarm or trouble is displayed on the annunciators it is not necessary to have a remote indicator light. (Per exception listed in NFPA code section 5-10.6.8 1996 edition.)

To Manually test the duct detector:

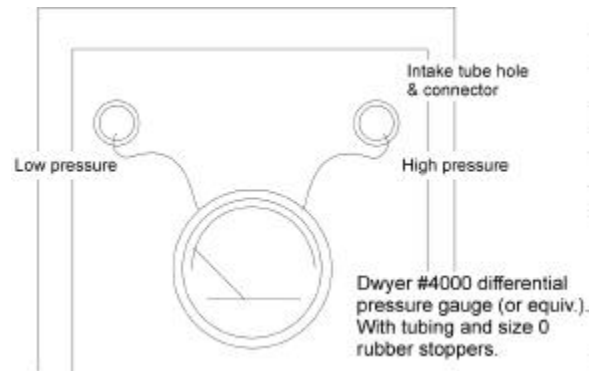
1. Unscrew the four duct detector cover screws. See Figure 7.



**Figure 7: Duct Detector Cover Screw Locations**

2. Verify the proper air sampling rate with a differential pressure gauge (Dwyer Model 4000 or equivalent).

The pressure differential between the inlet tube and the exhaust tube should be greater than 0.08" and less than 1.0' of water. See Figure 8.



**Figure 8: Dwyer Model 4000**

3. Test the smoke detector

For photoelectric and ionization sensor use the TSE-A100 tester. See "Testing Smoke Sensors" on page 5.

For heat sensors use the HDT-380 Heat Sensor Tester. See "Testing Heat Sensors" on page 8.

4. Replace the duct detector cover and secure it down with the four duct detector cover screws. See Figure 7.

## Testing Heat Sensors

Follow these steps to test heat sensors with the HDT-380 heat sensor tester.

**Warning!:** Do Not use the HDT-380 to test non-restorable heat sensors or detectors.

1. Connect the power connector from the HDT-380 into the battery pack. See Figure 9 and Figure 10.
2. Extend the adjustable aluminum pole of the HDT-380 up to the heat sensor. See Figure 10.
3. Tighten the friction lock to hold pole to its extended position.
4. Place the HDT-380 over the heat sensor. See Figure 1.
5. Turn the HDT-380 power switch on. See Figure 10.

The red LED at the bottom of the HDT-380 will turn on when the power switch is turned on.

6. When the sensor alarms (about 5 to 15 seconds) remove the HDT-380 from the sensor and turn the power switch off.
7. Return the HDT-380 to its carrying case when all sensors are tested.

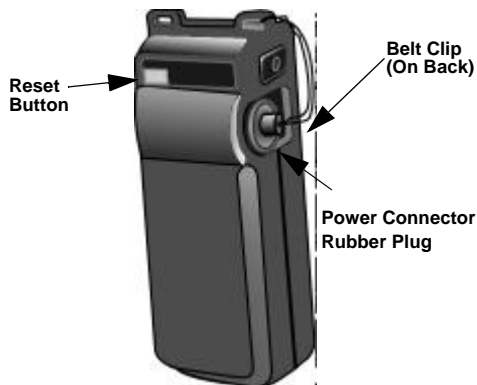


Figure 9: HDT-380 Battery Pack

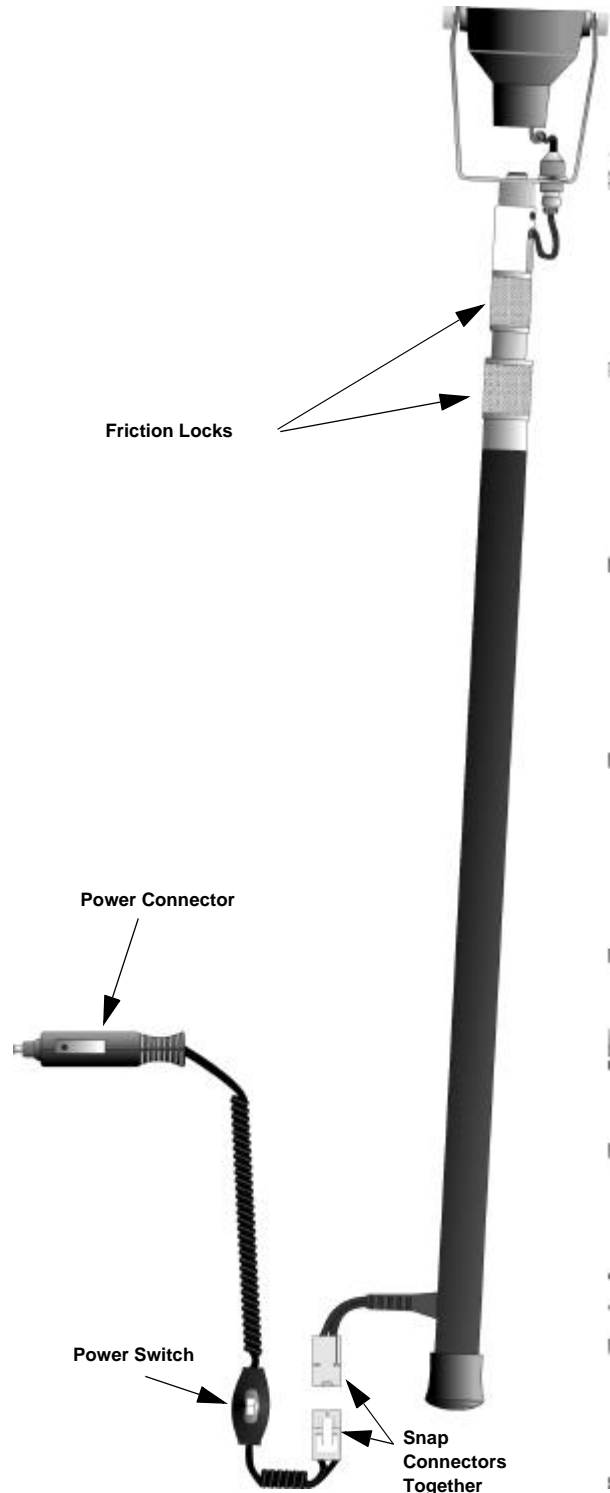


Figure 10: HDT-380 Components