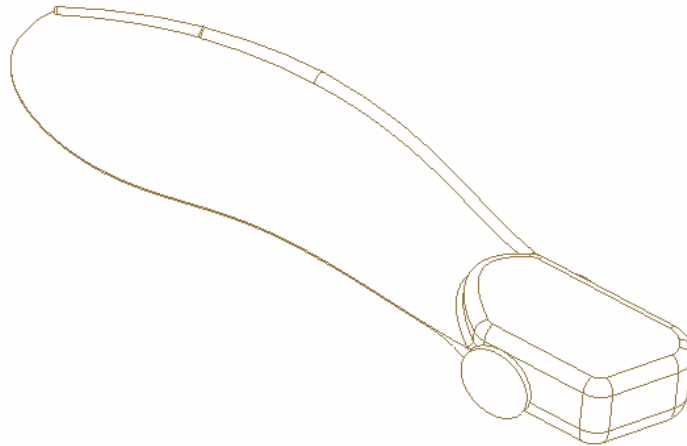


Assembly & Operational Manual

Harris Corporation Embedded Sensor Maple Seed Personnel Detection Device



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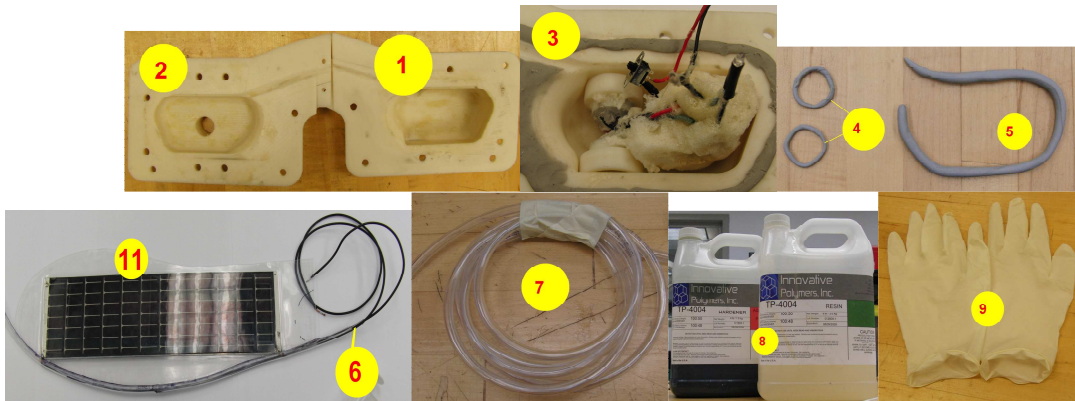
To Our Customers...

Congratulations on purchasing a Maple Seed Personnel Detector! This easy to follow guide will help you through the assembly process and achieve maximum satisfaction with our product. Please read this manual in its entirety before attempting assembly. **To ensure your safety and the safety of others, do not attempt to assemble a Maple Seed without prior knowledge of how to solder a circuit or the guidance of a trained professional.**

The Maple Seed Detector is activated by moving heat sources within a range of 15.24m (50 ft.) and by vibrations caused by nearby footsteps or vehicles. Upon activation the Seed will transmit event data to a receiver located nearby or far away.

Thank you for your purchase and enjoy using your new Maple Seed Personnel Detector!

**CAUTION! DO NOT ATTEMPT TO BUILD
THIS PRODUCT BEFORE CAREFUL
INSPECTION OF THESE INSTRUCTIONS**



Bill of Materials

1. Plastic Maple Seed Mold Bottom
2. Plastic Maple Seed Mold Top
3. Foam embedded assembled Sensor Circuit
4. 2 IR Sensor Gaskets
5. Mold buffer Gasket
6. Solar Cell Connection Wires with Spinal Rod
7. Spinal Tube
8. 1L un-mixed Polyurethane
9. Rubber Gloves
10. 4 Bolts with washers and nuts
11. Laminate Wing with embedded Solar Cell
12. Polyurethane Applicator



Not Included

- Crescent wrench
- Soldering Iron
- Solder
- Vacuum Chamber
- Clamps
- Vise

PREPARING THE MOLD

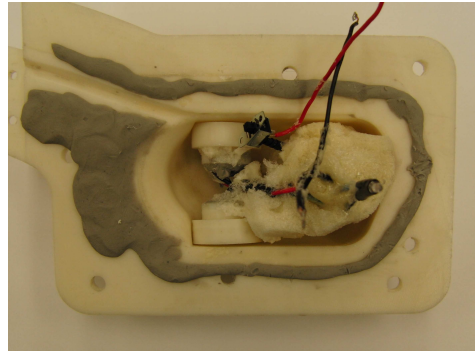
ITEMS NEEDED: 1, 2, 3, 4, 5

Step 1: Remove the adhesive strips from the Gaskets (4, 5).

Step 2: Fix the IR Sensor Gaskets (4) to the channels in the Mold Bottom (1).

Step 3: Fix the Mold buffer Gasket (5) to the top of the Mold Bottom (1).

Step 4: Place the Circuit (3) in the Mold Bottom (1) securing the IR Sensors snugly against the IR Sensor Gaskets (4).



WARNING! SOLDER CAN CAUSE SERIOUS BURNS IF NOT HANDLED SAFELY! WEAR PROTECTIVE EYEWEAR AND GLOVES WHEN USING A SOLDERING IRON!

WING AND SPINE ASSEMBLY

ITEMS NEEDED:

6, 7, 8, 9, 11, 12

Step 1: Insert the Solar Cell Connection Wires and Rod (6) into the Spinal Tube (7).

Step 2: Insert Laminate Wing (11) into the Spinal Tube (7).

Step 3: Solder the Connection Wires (6) from the Spine to the Leads on the Solar Cell (11).



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WING AND SPINE ASSEMBLY cont'd

CAUTION! THIS NEXT STEP REQUIRES HANDLING OF LIQUID POLYURETHANE WHICH BONDS TO SKIN! APPROPRIATE HANDWEAR IS RECOMMENDED. DO NOT SPILL!

- Step 4: Mix a small portion of Polyurethane (8) according to our MIXING GUIDELINES.
- Step 5: Use the Polyurethane Applicator (12) to inject Polyurethane (8) into both ends of the Spinal Tube (7). Ignore any air cavities that may result.
- Step 6: Use the Polyurethane Applicator (12) to apply Polyurethane (8) along the seam of the Spinal Tube (7) where it meets the Laminate Wing (11) on both sides.
- Step 7: Place the Wing and Spine Assembly in a vise until the Polyurethane (8) has cured for 24 hours. Clamp the Assembly on the Wing and not the Spine.

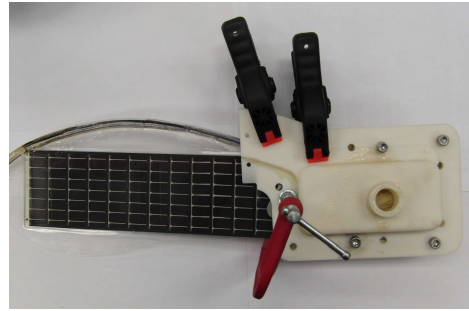
CAUTION! LIQUID POLYURETHANE BONDS TO SKIN! APPROPRIATE HANDWEAR IS RECOMMENDED. DO NOT SPILL!

FINAL MOLD **PREPARATION**

ITEMS NEEDED:

1, 2, 3, 6, 10

WARNING! SOLDER CAN CAUSE SERIOUS BURNS IF NOT HANDLED SAFELY! WEAR PROTECTIVE EYEWEAR AND GLOVES WHEN USING A SOLDERING IRON!



Step 1: Clamp the Wing and Spine Assembly to the Mold Bottom (1).

WARNING! SOLDER CAN CAUSE SERIOUS BURNS IF NOT HANDLED SAFELY! WEAR PROTECTIVE EYEWEAR AND GLOVES WHEN USING A SOLDERING IRON!

Step 2: Solder the like colored Wires (6) from the Spine to the Circuit (3).

Step 3: Unclamp the Wing and Spine Assembly from the Mold Bottom (1).

Step 4: Carefully Align the Wing markings to the markings on the Mold Bottom (1).

Step 5: Set and align the Mold Top (2) on the Mold Bottom (1).

Step 6: Place the Screws, Washers and Nuts (10) into the Mold Alignment Holes and fasten tightly.

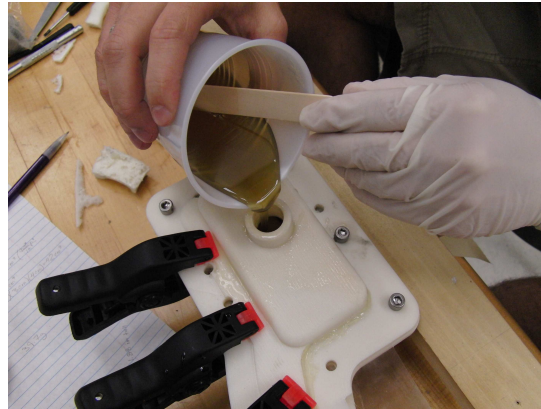
Step 7: Place several clamps on the Mold to ensure that it is sealed properly.

Step 8: Place the Mold Assembly on a level surface.

POURING THE SEED

ITEMS NEEDED: 1, 2, 8, 9

CAUTION! LIQUID POLYURETHANE BONDS TO SKIN! APPROPRIATE HANDWEAR IS RECOMMENDED. DO NOT SPILL!



- Step 1: Prepare the rest of the Polyurethane according to the MIXING GUIDELINES.
- Step 2: Carefully pour the Polyurethane (8) from the mixing cup, into the opening at the top of the Mold Assembly. Not all of the Polyurethane (8) will be needed.
- Step 3: Pitch the Mold Assembly from side to side to evacuate any air bubbles in the Polyurethane (8).

CAUTION! LIQUID POLYURETHANE BONDS TO SKIN! APPROPRIATE HANDWEAR IS RECOMMENDED. DO NOT SPILL!

- Step 4: Place Mold Assembly on level surface and let cure for 24 hours.
- Step 5: Once cured, remove all clamps and screws (10) from the Mold Assembly.
- Step 6: Delicately pry open the Mold with a flathead screw driver or similar wedge.
- Step 7: Carefully remove the Maple Seed from the Mold Bottom (1). Destruction of the Mold Bottom may be necessary.

MIXING GUIDELINES

ITEMS NEEDED: 8, 9

**CAUTION! LIQUID POLYURETHANE BONDS TO SKIN!
APPROPRIATE HANDWEAR IS RECOMMENDED.
DO NOT SPILL!**



- Step 1: Put on Rubber Gloves (9).
- Step 2: Into a disposable cup, pour a desired amount of Resin (Viscous clear material) and measure its mass.
- Step 3: Pour exactly $\frac{1}{2}$ the mass of the resin of hardener (wet murky liquid) into the cup and mix with a disposable mixer.
- Step 4: Place the cup into a vacuum chamber and vacuum to a pressure of -14.73psi (-30 in. Hg). Let the Polyurethane boil and mix for about 1.5 min (or until mixture reduces back to original volume).
- Step 5: Slowly open the release valve to the chamber to equalize the pressure.
- Step 6: Re-pressurize the mixture to -11.05psi (-22.5 in. Hg). Let the mixture de-gas for about one minute.
- Step 7: Slowly open the release valve to the chamber to equalize the pressure.

**CAUTION! LIQUID POLYURETHANE BONDS TO SKIN!
APPROPRIATE HANDWEAR IS RECOMMENDED.
DO NOT SPILL!**

OPERATIONAL GUIDE

Step 1: Drop Maple Seed(s) out of a plane.

Step 2: Collect data that Maple Seed sends to your computer.