

Inside the Sentry Digital Firesafe

Introduction

This paper describes and illustrates the construction and operation of a Sentry brand safe that was purchased in 2003/4. This small safe opens using a key and a code entered on a digital keypad. This paper is not a replacement for the instruction manual, but is information designed to help in understanding the operation and in maintaining the unit. This information is provided for your use only, with the understanding that there is no warranty that this information is complete or accurate. All work done on the safe by you is at your risk, and may void any warranty.

Operation

The safe door is secured by six deadbolt latches that engage between the door and the safe, two on each side, and one each on top and bottom. Here's what is hidden inside the door: The six latches are geared together via a wheel gear that operated by the entry handle. Two interlocks prevent opening the door -- a key operated pin block and a solenoid operated by the electronic combination. When the door is open, another mechanical latch interlock holds the door latches retracted. (See photos at the end of this paper showing all items located inside the door.)

To open the door, insert the key, turn CW and pull out the cylinder, thus withdrawing the pin block inside the door. This removes one of the blocks on the door mechanism. Remove the key if desired. If the key mechanism is pushed in (key or no key), the cylinder latches "IN" and activates the pin block.

To remove the second interlock (the solenoid), enter the combination code. When correctly entered, the electronics causes the solenoid to operate, withdrawing the solenoid block on the door mechanism. If the door is not opened in about five seconds, the solenoid releases, and the combination must be reentered. (NOTE: low batteries or bad battery contacts can interfere with this step. Be sure your batteries are fresh.)

At this point, the handle can be turned down (CCW) which rotates the interior wheel, which via rack and pinions withdraws the six door latches allowing the door to open. If the door is fully opened while the handle is down, a simple leaf spring presses the lower right door latch (lower left, interior) toward the front, and the latch arm drops over a slight ledge where it is help by the spring. This prevents the handle from rising and the door latches from springing back to their outward engaged positions. When the door is closed, a plastic pin then presses inward on the door, lifting the latch support, and releasing the latch, allowing all latches to engage and the handle to rise.

Access to the door mechanisms

When the door is opened, the inside of the door is a plastic panel with key hangers and an envelope slot. The plastic panel is a pain to remove. First, operate the lock to retract the door latches as far as possible. Facing the back of the door, along the left inner edge you will find two plastic dimples. Press the upper left one inward, and insert a putty knife between the door and panel and pry the panel gently around the upper door latch and the plastic dimple. Do the same at the lower left. Then pry the bottom of the panel around the bottom door latch. Move up the right side of the panel. Here there are no dimples showing, but they are present inside, so you will pry the panel past them. Finally, do the top of the panel.

As you remove the panel, go slow, be careful: the panel has projections that hold various of the mechanism parts in place. When you move the mechanism or touch things, be careful not to disturb their positions or remove parts until you have figured out how it works.

Maintenance

- Check that there are no burrs on the solenoid plunger that would cause it to stick in either position and that it works smoothly.
- Oil the key and housing so that it operates smoothly

- Check the edges of the Withdraw block for burrs, and file or sand as needed
- Battery or battery holder terminals may be dirty or corroded. Clean them with tuner cleaner from Radio Shack. If the green led dims significantly immediately after the combination is entered and the solenoid energized, the batteries are bad or there are bad connections.
- The safe shown in the pictures had its handle broken off during a failed robbery attempt. We repaired the handle by drilling several 1/8" holes into the handle and into the stub, roughing both surfaces, then using PC7 epoxy liberally on the pins and joint, and allowing fully to cure.

(by John L Menke, Menke Scientific, 2010)

