

# Model 644 Survey Cart Assembly Guide

Designed for use with the SIR® 4000 and UtilityScan® with SIR® 4000

Mobilizing your system on the GSSI Model 644 survey cart allows you to cover ground much more easily and conveniently than with the conventional system configuration. The cart can accommodate the 270 MHz, 400 MHz, 900 MHz, 1 GHz, 1.6 GHz, and 2.6 GHz antennas. The 644 cart incorporates a unique antenna capsule design that protects these antennas from the elements and renders the antennas weatherproof. It also incorporates a survey wheel for high-precision distance measurements. Please read through the entire assembly manual before assembly.

**Tools Required:** Philips Head Screw Driver.

**Helpful Hint:** For best results always calibrate your survey wheel at the beginning of every job. See your SIR® 4000 User’s Manual or UtilityScan® Quick Start Guide for instructions on survey wheel calibration.

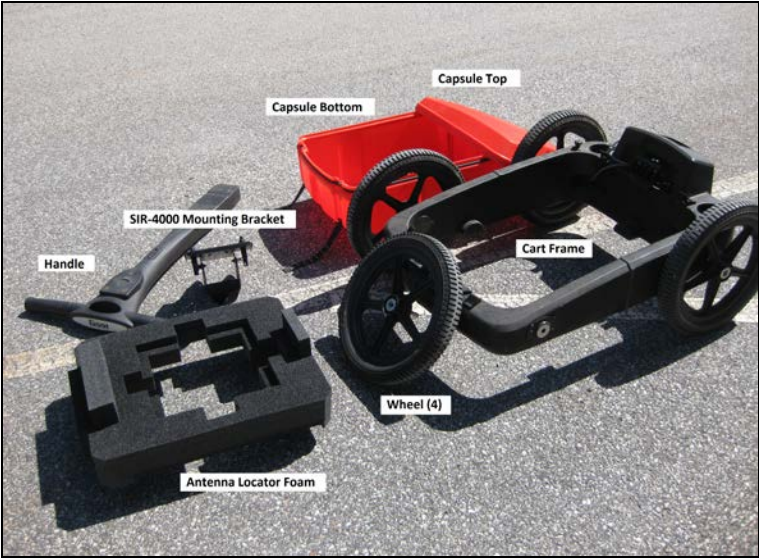


Figure 1: Cart components.

**1 Wheel Assembly:** Attach wheels to cart frame. Line up the flat side of the “D” shaped axle rod with the corresponding flat part of the “D” shaped hole on the cart frame. Slide the rod into the cart frame while keeping the blue button at the center of the wheel hub depressed.



Step 1: Attach wheels.

**2 Handle Assembly:** Slide the handle bottom into the handle receiver on the cart frame. Flip the handle locking lever up to the closed position to secure the handle in place (Step 2). You will also need to attach the SIR 4000 mounting bracket to the handle top. The three screws used for attachment are already in the handle top.



Step 2: Attach handle.

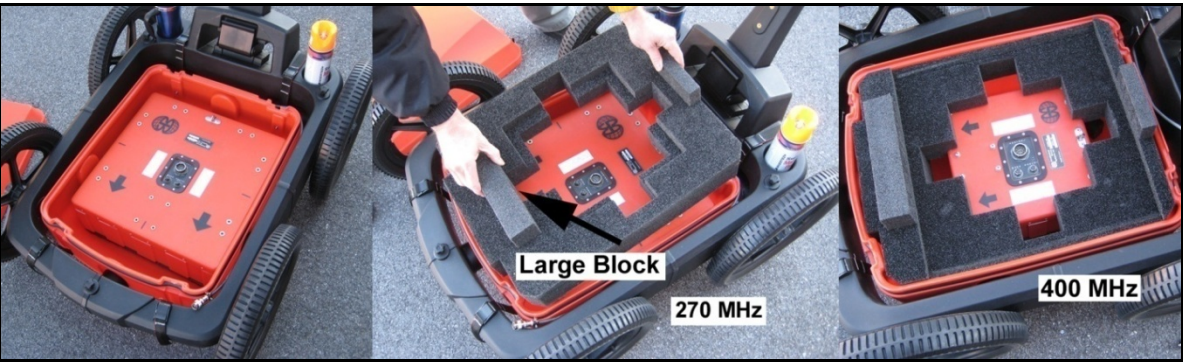
**3 Capsule Assembly:** Place the capsule bottom into the frame and thread the nylon support straps through the buckles on the cart frame corners. Each stitched line is 1 inch (2.54 cm) apart. The capsule bottom is a replaceable item and it is OK for it to drag on the ground. You will extend its life by adjusting the nylon support straps so much of the weight is taken by the straps and the bottom is just slightly in contact with the ground. If you are working in rough terrain then you should adjust the straps for maximum travel to allow the capsule to follow the ground surface topography.



Step 3: Attach capsule bottom.

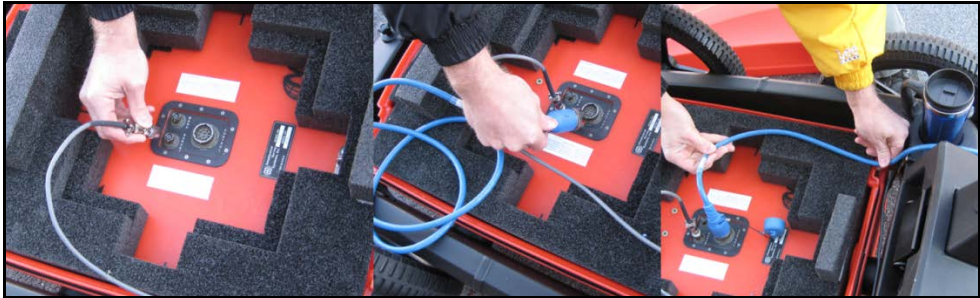
## Mount the Antenna

**4 Insert Antenna:** Place either the 400 MHz (Model 5103) or the 270 MHz (Model 5104) antenna into the capsule bottom with the arrows pointing forward. Then place the Antenna Locator Foam over the top of the antenna. The large foam block should be facing forward. To use the Antenna Locator Foam with the 400 MHz antenna, simply flip it over so that the stepped cutout is facing down.



Step 4: Place antenna.

- 5 Attach Cabling:** Attach the survey wheel cable and control cable to the antenna. The Mark port on the antenna is not used with the cart. Run the cables through the channels at the rear of the antenna capsule.



Step 5: Attach cabling.

- 6** Place the capsule top on the capsule bottom so that the GSSI logo faces forward. Clip the metal latches at the four corners of the capsule to secure the two halves together. Make sure that the cables are correctly run through the cable ports at the rear of the capsule. Run the control cable through the right-hand port and the survey wheel through the left-hand port.

**Helpful Hint:** Attaching the latches is easier if you lift the capsule slightly.



Step 6: Attach capsule top.

Attach the SIR® 4000

- 7** First, unscrew the top two and middle two screws on the back of the SIR 4000 to attach the mounting plate. Screw the plate on to the back and set the two holes along the back of the plate into the mounting screws on the handle mount. Pull in on the back two levers until they snap into place. This will keep the SIR 4000 steady. It can then be angled with the thumbscrew/pull key duo by the handle mount thumbscrews. Then run the control cable through the cable restraint on the back of the handle and attach to the SIR 4000.



Step 7: Attach SIR 4000.

Field Use

- The Model 644 Cart incorporates two wells at the rear of the cart frame to hold paint cans or beverages (not included).
- The Model 644 Cart renders the antennas weatherproof. Coupled with the SIR 4000, the system is weatherproof.
- When marking anomalies in the field, the proper mark location is identified by a molded ridge on the side of the cart frame. Note that the data is located directly under the center of the antenna, so GSSI recommends that you mark both the left and right side of the cart so that you know where the mid-point is after moving the cart.



Optional Use of Higher Frequency Antennas

The Model 644 Cart can also be used with the 900 MHz (Model 3101), 1.5 GHz (Model 5100), 1.6 GHz (Model 5100B), 1.0 GHz (Model 5101) and the 2.6 GHz (Model 52600) antennas. Use with these antennas requires the High Frequency Antenna Foam Insert (HFAFI). The HFAFI is sold separately. It is GSSI part number **FG640/INSERT-SM**.

**Note:** If you are using the Model 644 Cart with the 1.6 GHz, 1.0 GHz or 2.6 GHz, you will need the survey wheel adaptor cable. This is GSSI part number **FG62X/5100B CBL**. Contact your GSSI Sales Representative for more information.



High frequency antenna foam insert.

- 1** Push the antenna head into the HFAFI so that the white plate faces up as shown.
- 2** Flip the antenna and HFAFI assembly upside down so that the white plate of the antenna now faces the bottom of the antenna capsule. Place the electronics box on top of the antenna and take care not to coil the blue plastic cable around the bottom of the antenna.
- 3** Place the Antenna Locator Foam that is used with the 400 and 270 MHz antennas on top of the HFAFI to secure it in place.
- 4** Attach cabling and Capsule Top as described in the above Assembly Instructions.

**Note:** To use the 900 MHz (Model 3101), flip the HFAFI over to the 3101 side. Ensure that the 900 MHz antenna is positioned in such a way as to allow access to the antenna connectors at the rear of the antenna.

