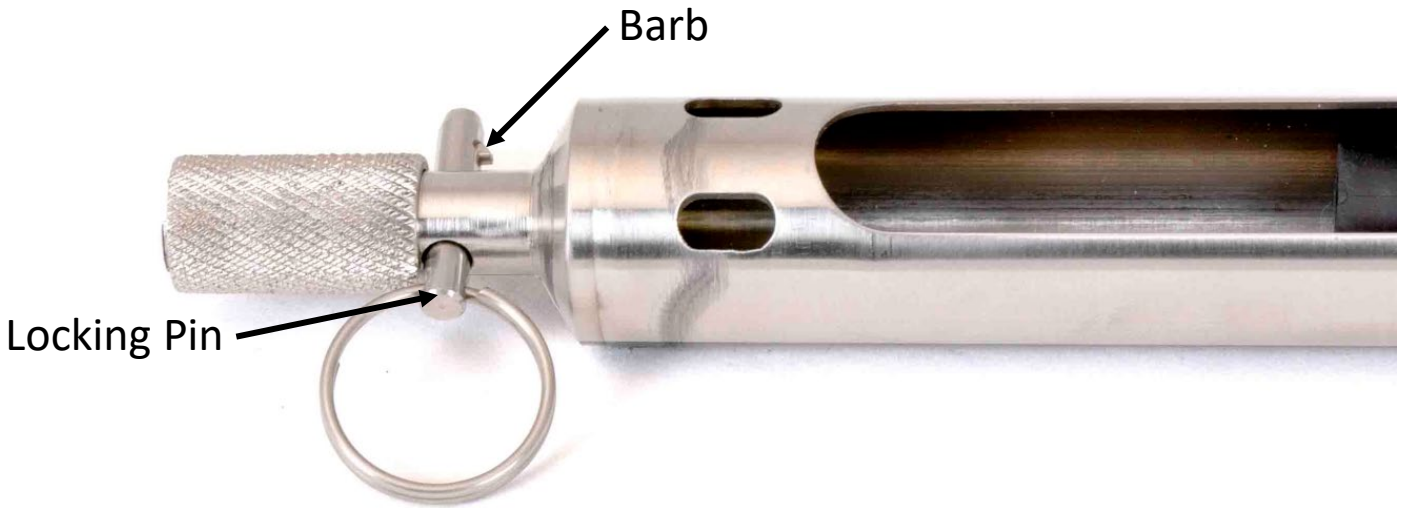
Installing Model 6180 Vertical In-Place Inclinometer Systems

Quick-Connector Operation

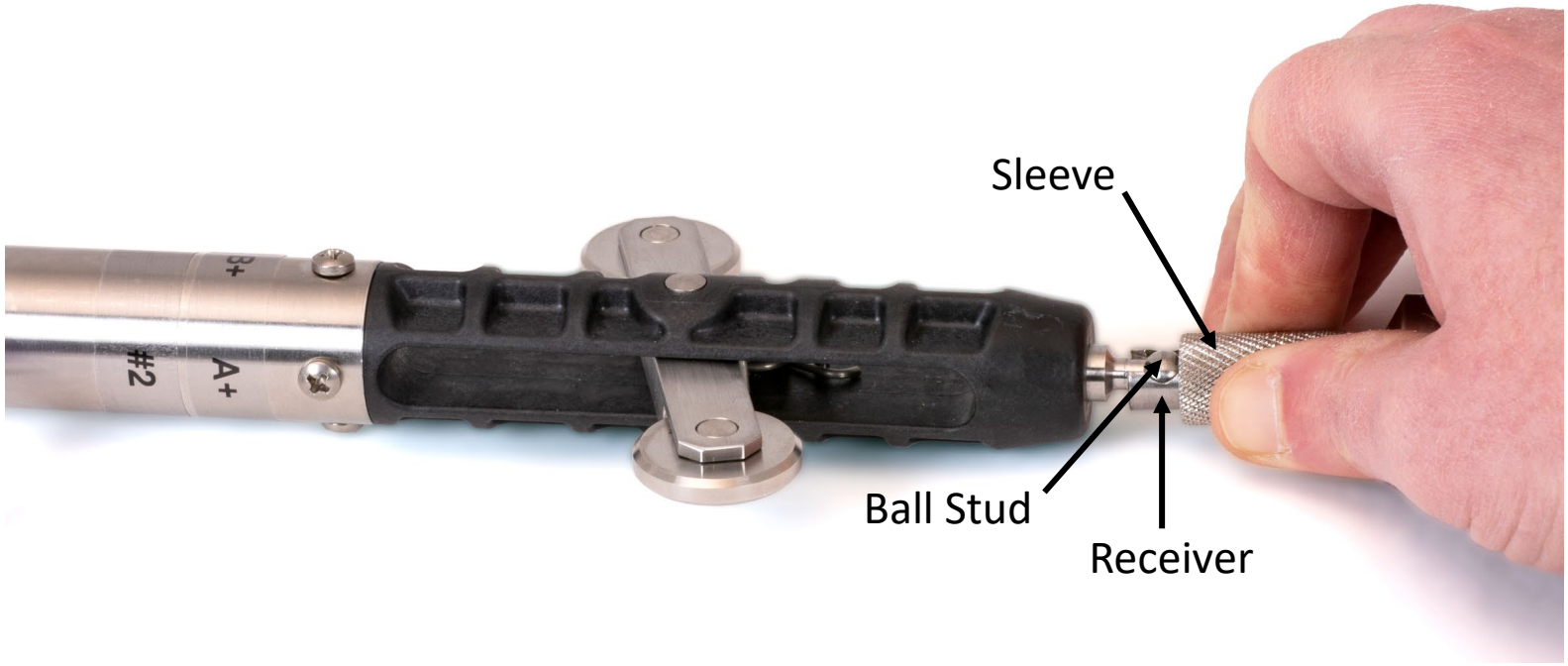
- The Model 6180 Vertical In-place Inclinometer System uses quick-connect ball joints for easy, toolless sensor assembly
- To operate the quick-connectors:

1. Hold down the barb on the locking pin, and remove the pin from the sensor



Quick-Connector Operation

2. Retract the sleeve and position the ball stud in the receiver



3. Return the sleeve to to its original position

4. Reinsert the locking pin

Preliminary Tests

- Prior to installation, check the sensors for proper operation

1. Lay the sensors out, in order, on a clean dry surface
2. Connect the male end of the sensor cable to the female connector of the next sensor in the string
   (Use the orientation dots on the two connectors to align the internal pins correctly)

Preliminary Tests

3. Connect the readout cable to the male connector of top sensor and then to a Model 8020-38 Addressable BUS converter, PC, readout, or datalogger

   For automated, remote data collection, use Model 8900 GeoNet Data hosting system to read the 6180

   For readout cables with bare leads, refer to wiring table below

Conductor Color	Function
Red	Power
Black	Ground
White	RS-485+ Data High
Green	RS-485- Data Low

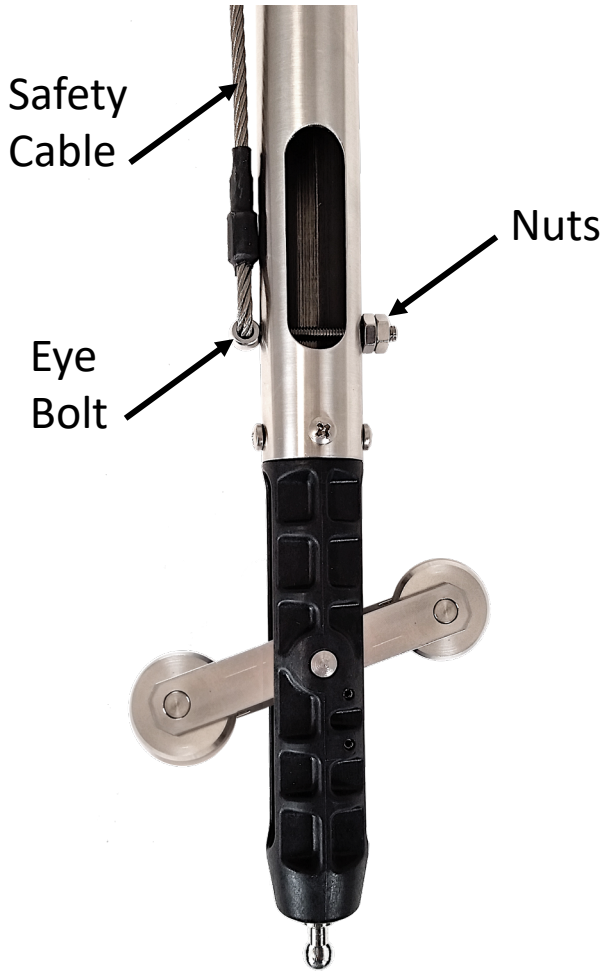
Preliminary Tests

4. Select a sensor and hold it in a steady, vertical position
5. Sensors oriented near vertical will provide readout values close to those shown on the calibration report for an inclination of 0°
6. Tilting the sensor in the A+ or B+ direction, as marked on sensor, should increase the reading, tilting the sensor toward A- or B- should decrease the reading
7. Verify the temperature reading is close to ambient
8. Repeat steps four through seven with the remaining sensors
9. Once the preliminary tests are complete, disconnect the string from the readout device and disconnect the sensor cables

   (If a sensor is malfunctioning, refer to the Instruction Manual)

String Assembly

1. Locate the bottom sensor (only sensor with wheels on top and bottom of sensor)
2. Slide the eye bolt of the safety cable through the connection holes on the sensor
3. Thread two nuts onto the eye bolt and tighten against one another using two 5/16" wrenches
4. Secure the other end of the safety cable to the top of the casing (or other stable point)

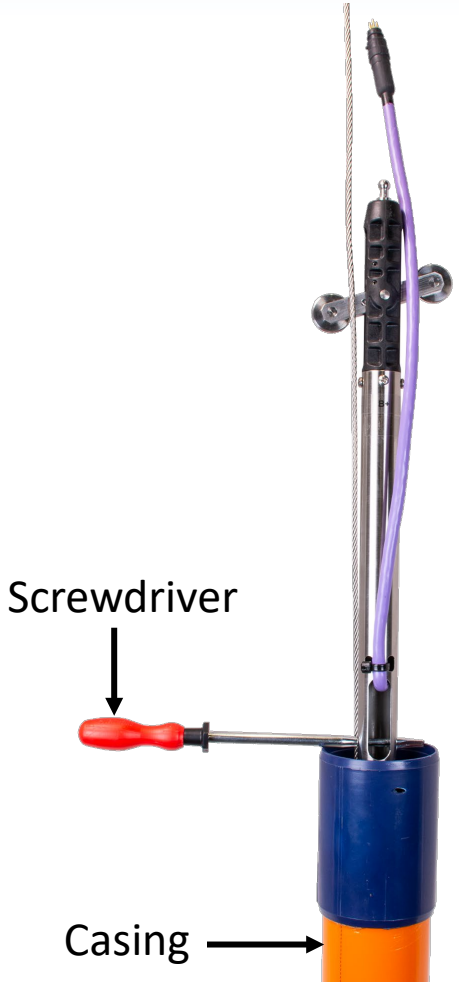


String Assembly (Continued)

5. Suspend the bottom sensor inside the casing by inserting a screwdriver (or something similar) into the support holes

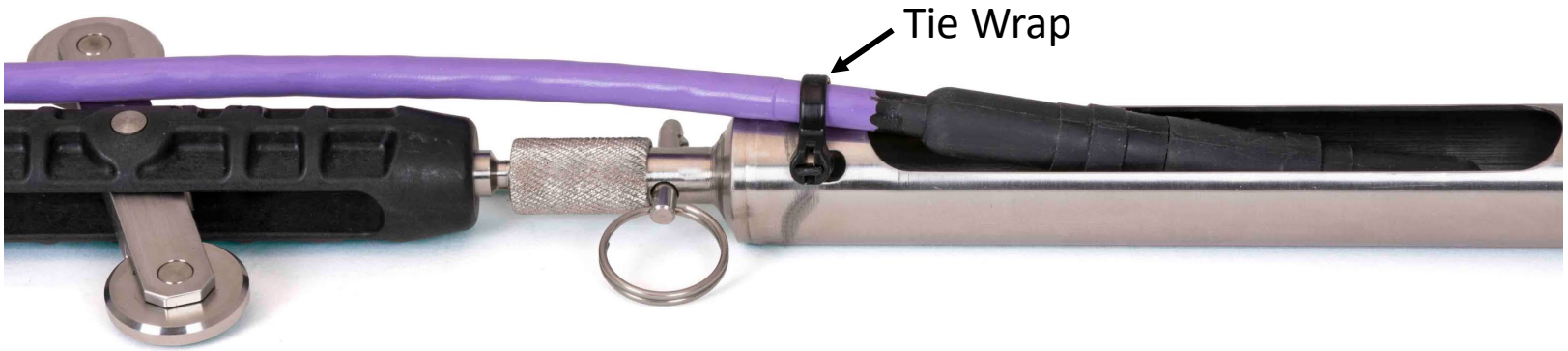
   GEOKON recommended pointing the A+ reading in the direction of the anticipated movement, e.g., towards the excavation being monitored, or downslope in slope stability applications

⚠ All sensors in the string *must* be oriented in the same direction



String Assembly (Continued)

6. Connect the next sensor in the string (sensors are numbered) to the bottom sensor using the quick-connector as previously described
7. Connect the sensor cables as previously described (Connectors can be taped together for extra security if desired)
8. Secure the sensor cable of the bottom sensor to the tube of the second sensor using one of the provided tie wraps

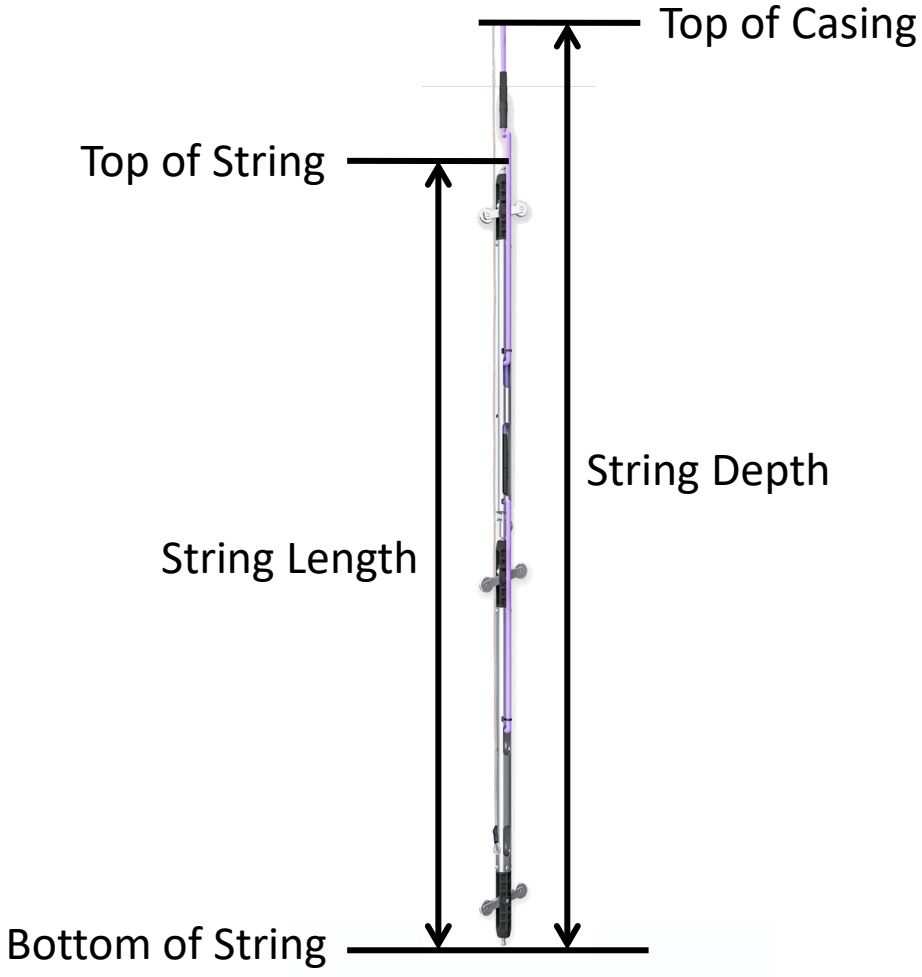


String Assembly (Continued)

9. Remove the screwdriver from the bottom sensor and insert it into the support holes of the second sensor
10. Carefully lower the string until the screwdriver is resting on the top of the casing
11. Connect and lower the rest of the sensors in the string in a similar manner
12. Connect the readout cable to the top sensor and then to the readout, datalogger, etc., in the same manner as for the preliminary tests

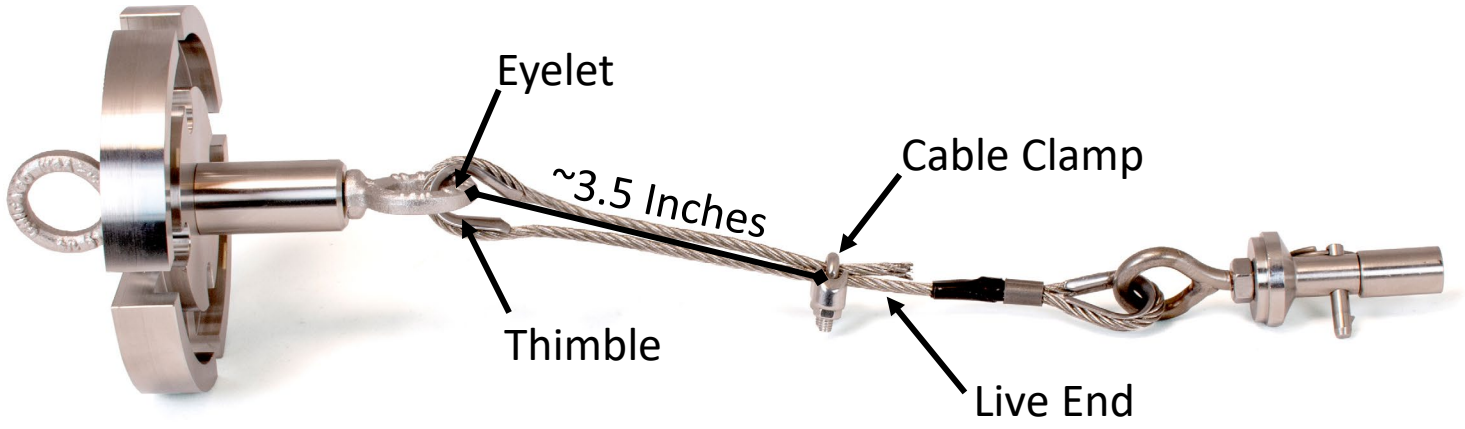
Suspension Bracket Assembly

1. Calculate the “Suspension Cable Length” by taking the string length (combined length of all sensors) and subtracting it from the desired string depth (depth from the top of the casing to the bottom of the string)



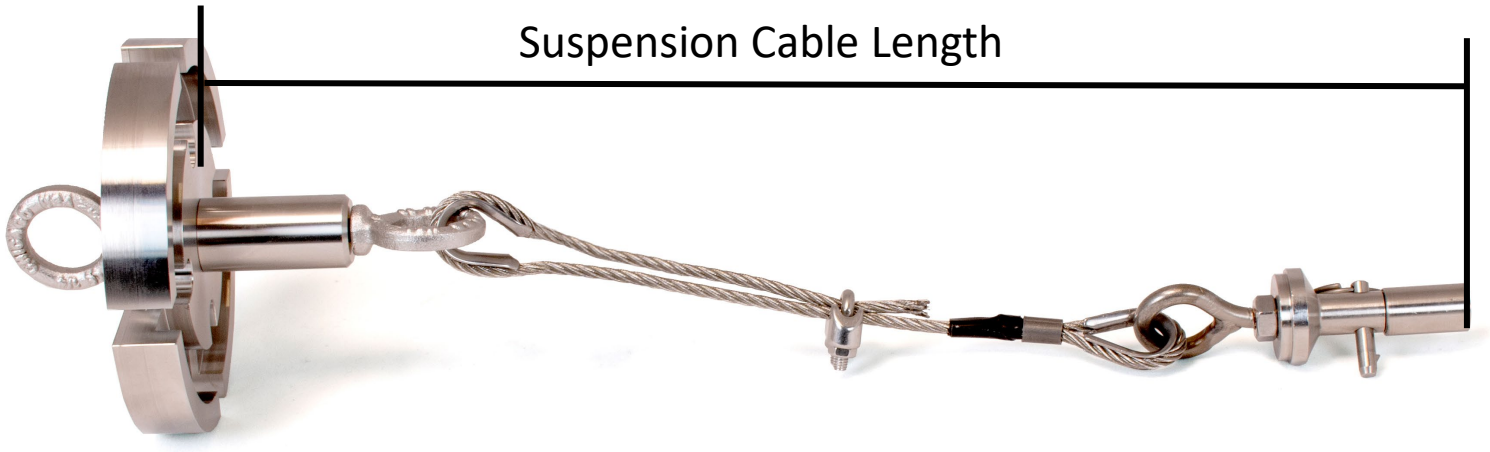
Suspension Bracket Assembly (Continued)

2. Pull the end of the suspension cable through the bottom eyelet of the suspension bracket
3. Loosely attach a cable clamp approximately 3.5" from the eyelet, with the open end facing the “live end” of the cable
4. Hook the u-shaped, metal thimble onto the bottom eyelet and seat the suspension cable in the channel of the thimble



Suspension Bracket Assembly (Continued)

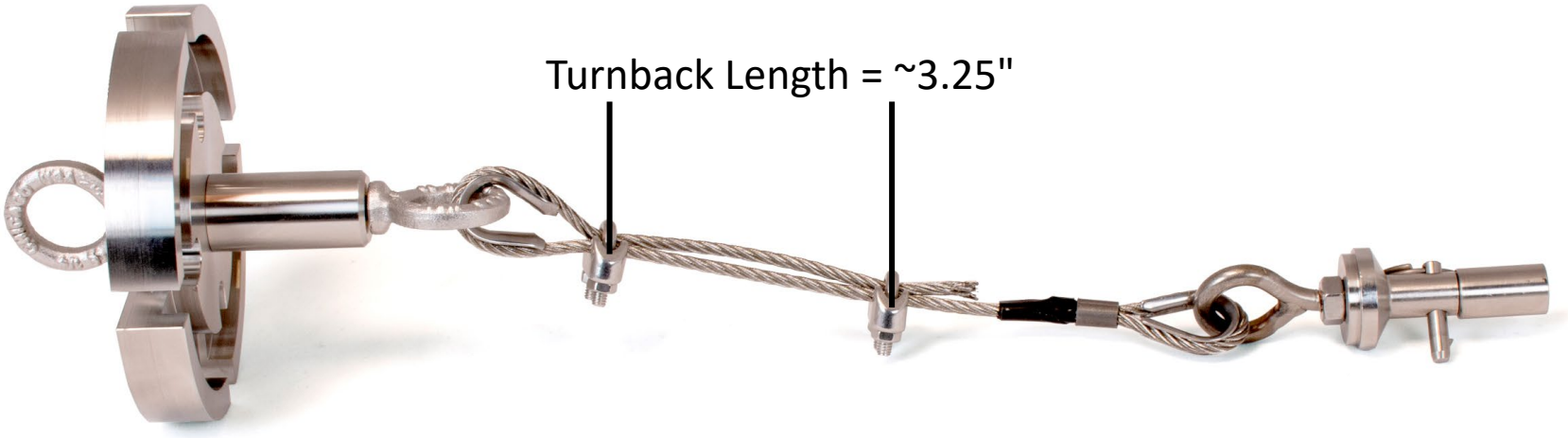
5. Adjust the distance between the shoulder of the suspension bracket and the end of the suspension receiver so that it is equal to the calculated Suspension Cable Length



6. Tighten the cable clamp nuts so that they grip the cable firmly, but do not tighten them with a wrench yet

Suspension Bracket Assembly (Continued)

7. Install a second cable clamp near the base of the thimble
8. Adjust the first cable clamp so the “turnback length” measures approximately 3.25"



Suspension Bracket Assembly (Continued)

9. Apply tension to the cable to remove any slack, then check the Suspension Cable Length to make sure it is still correct
10. Tighten all four cable clamp nuts to a torque specification of 4.5 ft-lbs
11. If desired, a third cable clamp can be installed between the first two for extra security
12. Trim any excess from the cable so that the “dead end” is approximately 3/8" from the bottom cable clamp
    (As an alternative, wrap the end of the cable with tape, and then tape it to the main length of the suspension cable)
13. Attach the suspension receiver to the top sensor using the quick-connector

Suspension Bracket Assembly (Continued)

14. Remove the screwdriver from the top sensor and lower the string until the suspension bracket is resting on the casing (The top rim of the casing needs to be relatively square to ensure the suspension bracket seats properly)

15. Readings may be taken immediately after installation, however, GEOKON recommends evaluating the data over a period of time to determine when the string has sufficiently stabilized and when the zero readings should be established

For more information…

- Consult the Model 6180 instruction manual and data sheet
- Instruction manuals and data sheets are available for download at: www.GEOKON.com/Downloads
- Please visit www.GEOKON.com/Tutorials for more tutorials