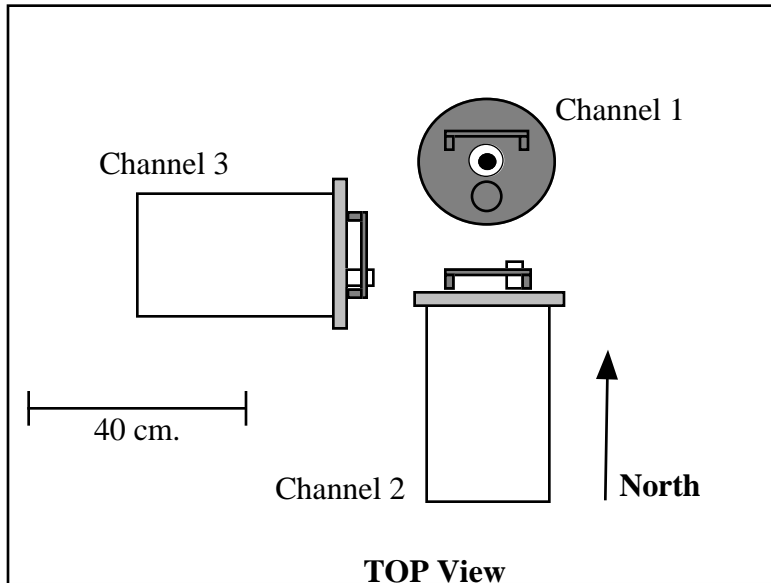


**Appendix B**  
**Summary Sheet for PASSCAL Sensor**

## Teledyne S-13 Seismometer



**Channel Order**  
**(positive voltage on DAS channel means ground moved in given direction)**

- 1 Up (faceplate in positive direction)
- 2 North
- 3 East

**Sensitivity**

629 Volts / meter / second

**Calibration constant**

**Typical DAS parameters:**

**Gain** 32  
**Cal Amplitude** 0.050 Volts  
**Cal Interval** 5 seconds  
**Cal Step Size** 6 seconds

**Physical Characteristics:**

**Size** (3) cyl 16.7 cm diameter, 37.8 cm height

**Weight** (3) 11 kg.

**Shipping Weight** 95 lbs      **Size** 18x24x14 inches

**Power consumption**                      (Rbox)

None, passive sensor

**Frequency Response:**

**Natural Freq.** 0.75 - 1.1 Hertz, nominally 1.0 Hz.

**Damping** 0.707 critical

**Zeros** two at zero

**Poles** -4.44 + 4.44*i*

-4.44 - 4.44*i*

**Installation Tips:**

- 1) The sensors will produce cross-coupling effects due to induced magnetic fields if they are mounted too close to one another. The orientation above is meant to minimize this. Three separate holes is another solution.
- 2) The sensor must be unlocked (the LOCK knob). Don't fiddle with the period adjustment (+ ...- knob).
- 3) To center the vertical, you adjust the spring tension. This adjustment is a turn or two, do NOT keep turning the knob or you'll bust the sensor.
- 4) To center the horizontals, turn the foot on the tail. This adjusts the levelness of the cylinder.

It is possible to convert verticals to horizontals and vis versa, but it is a fair amount of delicate work. Please consult the PASSCAL Instrument Center before opening any sensor package.

**Burial Installations:**

The holes(s) should be 0.5 meter deep. Use sand to seat a patio block firmly in a level position. The weight of these sensors makes it very difficult to place the sensors directly in soil. Cover the sensor cavity with a board, plastic bucket, whatever and bury the cavity with 6-12 inches of soil. If precipitation is likely to flood the hole cover the surface with a 6x8 tarp with some rocks on top.

**Cabling Notes:**

PASSCAL supplies one cable assembly for a set of three S-13's. The length is 5 meters containing a breakout of the individual channels 1.5 meters from the sensor end. You must be sure to connect the plug for the correct channel into the sensor oriented in that direction. The other end connects to the DAS sensor input. Calibration coils are wired in series. The connector to mate with the sensor is MS3102C-14S-6P.