

Instruction Sheet

Micromate® Triaxial Borehole Geophone

The Triaxial Borehole Geophone is designed to be lowered into a borehole to measure vertical, transverse and longitudinal ground vibrations.

Each Triaxial Borehole Geophone is coupled with a Micromate Base Unit and calibrated to the same industry standard as the Micromate Base Unit, namely:

- International Society of Explosives Engineers (ISEE-2017)
- Deutsches Institut für Normung (DIN 45669-1)
- Swedish Blasting (SS4604866)
- Swedish Pile Driving (SS025211)



Tools and Materials Required

- Micromate ISEE Base Unit (P/N: 721A2501) or
- Micromate DIN Base Unit (P/N: 721A2601) or
- Micromate Swedish Blasting Base Unit (P/N: 721A3601) or
- Micromate Swedish Pile Driving Base Unit (P/N: 721A3801)
- 30 m (100 ft) Triaxial Borehole Geophone (P/N: 721A2401) or
- 75 m (250 ft) Triaxial Borehole Geophone (P/N: 721A2402)
- Extension cables, as required
 - 10 m (33 ft) (P/N: 721A0803)
 - 30 m (100 ft) (P/N: 721A0801)
 - 75 m (250 ft) (P/N: 721A0802)
 - Custom Extension Cable Kit. (P/N: 721A3201)
- Steel cable to position the geophone into the borehole (third party)

Specifications

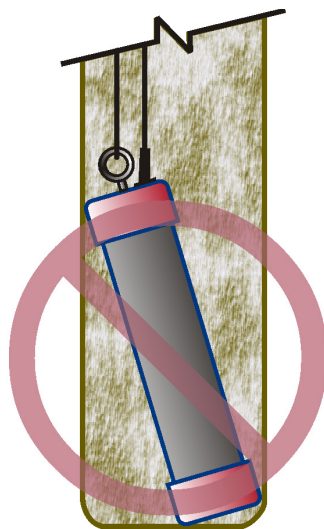
PART NUMBER	ISEE BOREHOLE GEOPHONE		DIN BOREHOLE GEOPHONE		SWB BOREHOLE GEOPHONE		SWP BOREHOLE GEOPHONE	
	721A2401 Coupled to the ISEE base unit	721A2402 Coupled to the ISEE base unit	721A2401 Coupled to the DIN base unit	721A2402 Coupled to the DIN base unit	721A2401 Coupled to the SWB base unit	721A2402 Coupled to the SWB base unit	721A2401 Coupled to the SWP base unit	721A2402 Coupled to the SWP base unit
RESPONSE STANDARD	ISEE - 2017		DIN 45669-1 CLASS 1		SS4604866 2011 (SWB)		SS025211 (SWP)	
FREQUENCY RANGE	2 - 250 Hz		1 - 315 Hz		5 - 300 Hz		2 - 150 Hz	
VELOCITY RANGE	Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)	
RESOLUTION	0.00788 mm/s (0.00031 in/s)		0.00788 mm/s (0.00031 in/s)		0.00788 mm/s (0.00031 in/s)		0.00788 mm/s (0.00031 in/s)	
SENSOR DENSITY	1.73 g/cc (108 lbs/ft³)		1.73 g/cc (108 lbs/ft³)		1.73 g/cc (108 lbs/ft³)		1.73 g/cc (108 lbs/ft³)	
CABLE LENGTH	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)
MAXIMUM CABLE LENGTH	1,000 m (3,250 ft)		1,000 m (3,250 ft)		1,000 m (3,250 ft)		1,000 m (3,250 ft)	
REQUIRED SOFTWARE	THOR Compliance		THOR Compliance		THOR Compliance		THOR Compliance	

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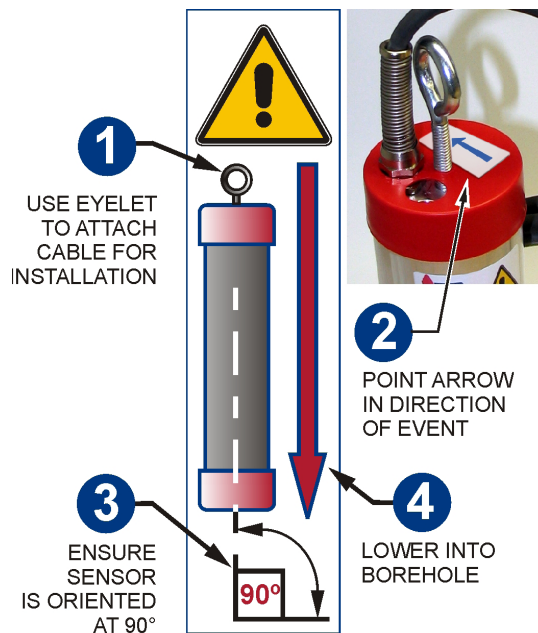
Physical Installation

Installing the Triaxial Borehole Geophone requires a minimum borehole diameter of 76.2 mm (3 inches).

1. Thread a steel cable through the Triaxial Borehole Geophone's mounting eyelet bolt and bind securely.
Note: DO NOT use the connecting cable to lower or raise the geophone as this may damage the cable.
2. Point the arrow located on the top of the geophone in the direction of the event.
3. Maintain this orientation while lowering into the borehole and ensure that the geophone is at a 90° angle.
4. Once positioned, connect the Triaxial Borehole Geophone cable and run a sensor check.
5. Maintaining the geophone's 90° angle, carefully fill in the hole with cement, grout, or sand to secure its orientation.
6. Repeat the sensor check to ensure the sensor has not moved and all channels still pass the test.



X **INCORRECT
INSTALLATION**



✓ **CORRECT
INSTALLATION**

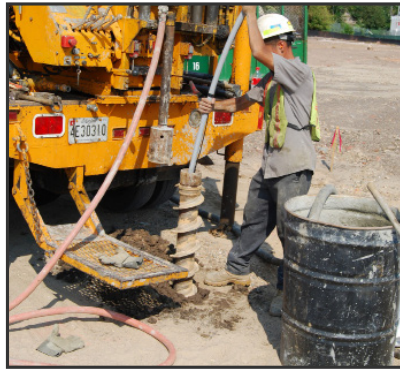
Monitoring Unit Setup

Configuring a Micromate Base Unit (ISEE, DIN, SWB, SWP) with a Triaxial Borehole Geophone follows the same procedure as the Standard Triaxial Geophone. For complete details, please refer to the Micromate Operator Manual and THOR Operator Manual.

Example Installation



1. Prepare the borehole geophone by wrapping the connections with electrical tape to keep them clean.



2. Drill the borehole and slide the borehole geophone into place.



3. Fill around the borehole geophone and cable with gravel pack.



4. Fill the hole with cement.



5. Hole filled with connectors ready.



6. Borehole geophone location clearly marked with monitoring unit placed in a secure lock box.

Warranty

Instantel products come with a one-year warranty. Monitoring units and sensors will have the warranty extended for a second year if they are returned to the Instantel factory for service and calibration within 30 days of the 'Next Calibration' date printed on the calibration label located on the product.

If within a period of one year from the date of shipment to a customer, the instrument fails to perform in accordance with Instantel's published specifications and the operator's manual, due to a defect in materials or workmanship, it will be repaired or replaced at Instantel's option, free of charge. This warranty is void if the equipment has been dismantled, altered or abused in any way. This warranty is nontransferable.

This warranty does not include any implied warranty of functionality for a particular purpose. Instantel assumes no responsibility for damages of any description resulting from the operation or use of its products. Since it is impossible to anticipate all of the conditions under which its products will be used either by themselves or in conjunction with other products, Instantel cannot accept responsibility for the results unless it has entered into a contract for services which clearly define such an extension of responsibility and liability.

Any shipments returned directly to Instantel Inc. must have our prior approval and all packages must display the Return of Material Authorization (RMA) number issued by Instantel. Shipping charges to Instantel's plant will be paid by the customer and those for return to the customer will be paid by Instantel.

To protect your warranty, you must complete and return a Warranty Registration Certificate, or complete the online Warranty Registration Form, within ten days of purchase. Products will be assumed out of warranty if there is no warranty card on file at Instantel. Retain this portion and the proof of purchase for your records.

EC Warning

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.