



Z SEIS
Reservoir Seismic

Downhole Source
Crosswell Seismic

Z-Seis X-Series Downhole Source:

Z-Seis proprietary high power crosswell seismic source uses advanced materials technology and engineering design to provide high-power high-frequency output critical for crosswell imaging, with reliable operation under wellbore conditions.

- Surface programmable for optimal source signature and precise stacking of data
- High frequency output – up to 2000 Hz for very high resolution acquisition. (Can also be configured for higher frequency operation to 4000 Hz.)
- High power output for long-range imaging / unconsolidated rock environments.
- Experience base includes hundreds of surveys worldwide - mature and proven design
- Precise repeatability for time lapse surveys
- Fast acquisition: Data can be acquired with source moving
- Pressure compensated for operations in deep boreholes
- Rugged stainless steel construction
- No downhole electronics, motors or hydraulic systems simplifies operations and provides high reliability
- Non-clamping design: distributed energy for no damage to casing or cement

Operating Specifications

| | |
|----------------------------------|--|
| Frequency Range | 100-2000 Hz operating frequencies. |
| Well spacing. | 30 – 1000 m (100 – 3300 ft) cased hole to cased hole. Note: depends on noise, completion and formation attenuation characteristics. Open hole range will be higher. |
| Operating Envelope | 150° C (300° F) 68.9 MPa (10,000 psi) |
| Mechanical specifications | Diameter: 105 mm (4 1/8") Length: 5.24 m (17.2 ft) Weight: 168 kg (370 lbs) |
| Wireline connection | Single conductor 5/16" or 7/16" |



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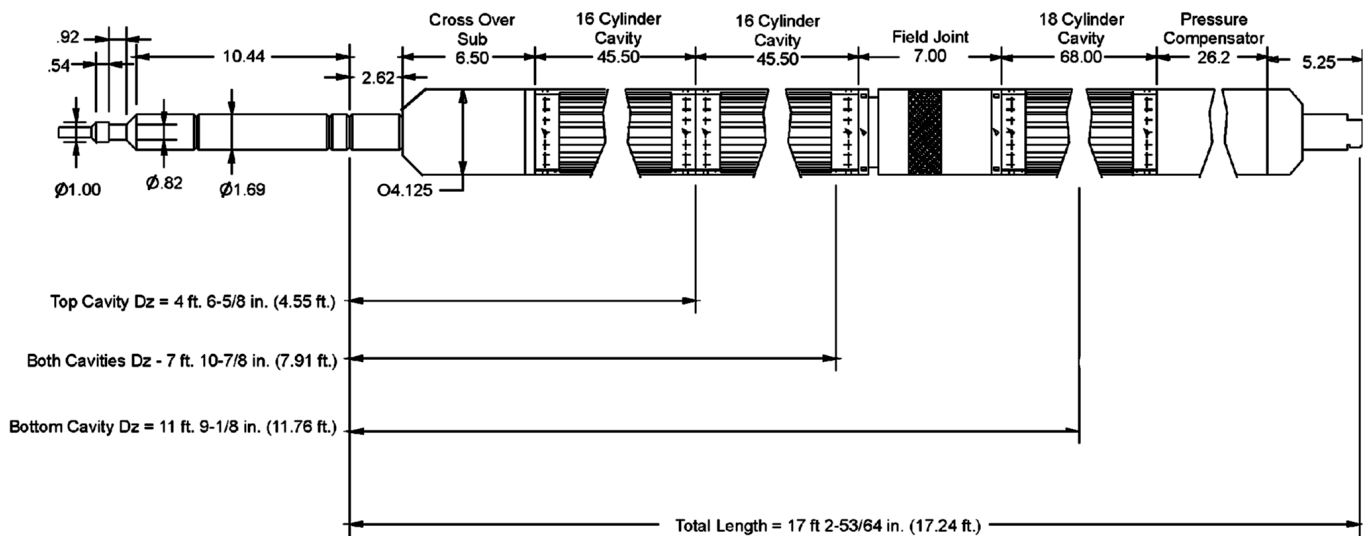


Z Seis Reservoir Seismic
6209 Windfern
Houston, Texas 77040 U.S.A.

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|--------------------------|----------------------------------|
| Source Type | Piezo-mechanical radiator |
| Sweep | Surface programmable |
| Length | 5.24 m (17.2 ft) |
| Diameter | 105 mm (4.125 in.) |
| Weight | 169.6 kg (380 lbs) |
| Input Drive | 1400 Vrms, 17 A |
| Frequency Output | 100 – 4000 Hz |
| Pressure Rating | 68.9 MPa (10000 psi) |
| Temperature Rating (max) | 150° C (300° F) |
| Duty Cycle (max) | 50% - 30% |

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