

## Rotating Magnet & Axial Magnet

### Benefits

#### Rotating Magnet (RM)

Uses:

- Initial approach of target bore
- Final approach during intersect
- Tracking parallel bores in tunnels
- Can be used vertically

#### Axial Magnet (AM)

Uses:

- Final approach during intersect
- Tracking parallel bores in tunnels
- Can be used vertically

#### Both the RM & AM

- Been used on the Final Approach of 500+ HDD Intersects
- Positively guided parallel freeze holes inside rail and auto tunnels
- Benchmarked crossings under golf courses, using a ParaTrack probe on Surface
- Measured parallel drilling positions in vertical boreholes

The Axial Magnet, shown below, is made for low field strength operations where close tolerance is required. These applications include final approaches for HDD intersects and close spaced boreholes in tunnels. Any bore may be guided offset from a known borehole. Vertical operations are possible where the AM Sub is raised and lowered on a wire line. Centimeter measurement accuracy is obtained when operated within specification.



The Rotating Magnet can be run as a Bit Sub used as a target for HDD Intersect Operations. The field strength may be changed by the operator and optimized for use on each job, based on that jobs unique characteristics used on an approach the Rotating Magnet's field can be seen up to 70 meters in front of the bit.

Used for the final approach, the RM gives centimeter accuracy of its relative position to the target bore.

The Rotating Magnet, optimized in a different way, can be used to accurately track parallel boreholes in horizontal tunnels or vertical holes.

The Axial Magnet when used on HDD Intersects, is used strictly as a final approach target due to its much lower field strength. It operates much the same as the Rotating Magnet and yields the same centimeter accuracy relative to the target bore.

Both tools may be used both vertically and horizontally to track parallel bores and inside tunnels.



Rotating Magnet Sources can be made to operate with any number of Rare Earth Magnets, as shown above. Since the field strength of magnetism drops off quickly, an optimum number is normally chosen for Initial Approach operations while a small number is chosen for final approaches.

### Specifications

Shock mounted triaxial accelerometers and magnetometers, temperature sensor and digitising circuitry contained in 1.750" diameter x 55.3" long beryllium copper pressure barrel. Telemetry and power via single conductor wire line.

Temperature Rating	85°C (185°F)
Pressure Rating	1200 bar (17404 psi)
Sensor Accuracy	
Inclination	± 0.1°
Azimuth	± 0.4°
Tool face	± 0.5°
Length	1256 mm (49")
Maximum Wire line Length	5000 m (16000')
RM and AM Subs	2 7/8" OD—9 1/2" OD
RM Initial Approach	Up to 70m
AM Final Approach	Up to 5m
RM & AM Accuracy	5cm at <3m depending on S/N Ratio

