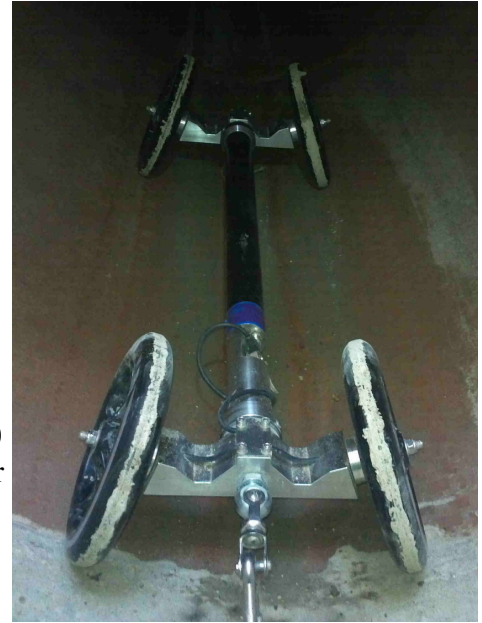


ABM - 90 Versatile Gyrometric System for 3D Pipeline Mapping by REDUCT



ABM 90 with small Invert Wheels ID 150 - 300 mm.



ABM 90 with large Invert Wheels ID 350 mm. to 1 meter

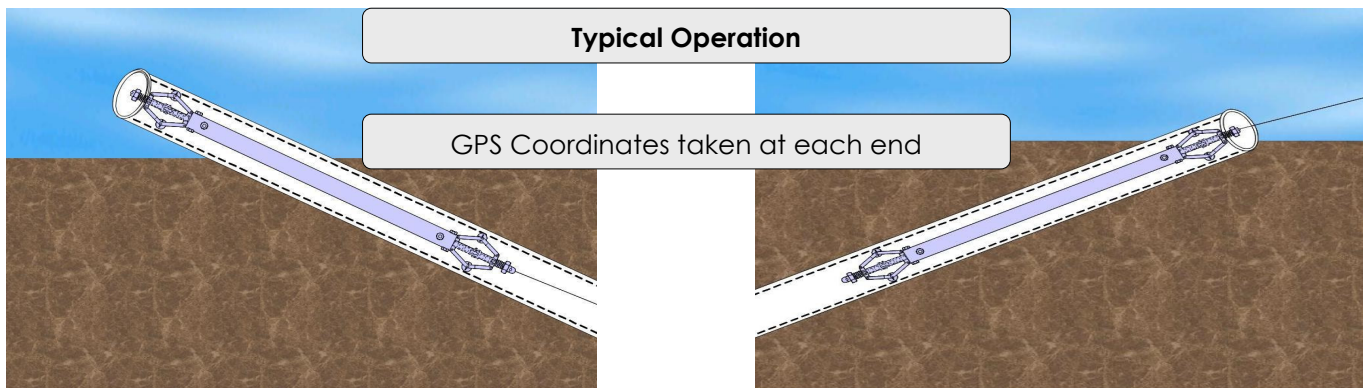
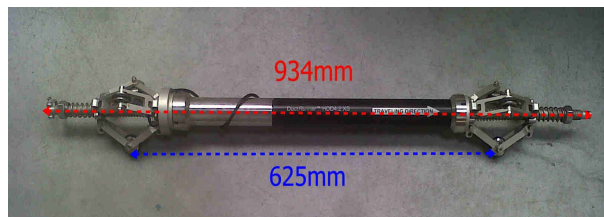


ABM 90 with Centralizing Wheels

- Quickly map all types of pipe in 3 D
- No excavation
- No measurements from the surface
- All sizes of pipe from **77 mm. I. D.**
- Up to **300 meters** length - any depth
- Good accuracy in three dimensions
- Measures under Buildings, Rivers, etc.
- Maps available in CAD or GIS format

Technical Specification

Pipe Sizes	77 mm. to 1.5 meters. ID		
Housing	51 cm.long.	Max tension	150 kg
Weight	1.5 kg	Max speed	3 m/sec
Inclination	+45 to -45deg.	Battery life	Li. Ion 4 hr

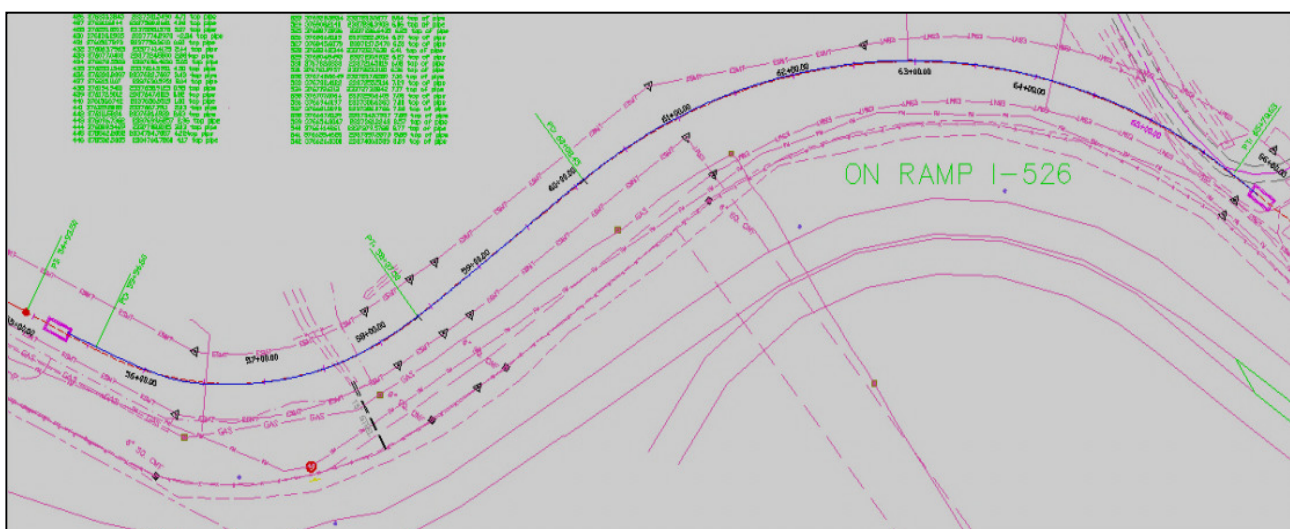


The **ABM 90** by **REDUCT** is a practical and cost effective solution to the problem of three dimensional mapping of all types of pipes, sewers and ducts **up to 200 meters in length**. It uses a patented technique employing an application-specific Inertial Measurement Module with **MEMS** rate-gyros, together with odometers and an inclinometer. The device is inserted in the pipe at a manhole or any access point, and pulled or pushed along the pipe to be mapped at about 1 meter per second. Pulling is by hand or with a winch. The result obtained is not only the horizontal track of the pipe, but also the depth and alignment. The **ABM 90** is unaffected by magnetic and electric fields, and it is completely waterproof so that it can be immersed and is not affected by variations of flow. Very simple to use, the device has no need for communication during measurement, and thus there is no electric cable. The positions of the access points is established independantly with precision, normally by GPS, and the resulting map is based on these points.

The data acquired are stored on-board and transferred to a computer once the device is removed from the pipe. The two software packages provided are used for managing the recording, transfer, analysis and display of the data. They help the operator optimise the result obtained, and present it in an easily interpreted form. Two output formats are possible: either Comma Separated Value .csv, which can be loaded directly into Excel, ArcView etc., or Script Format .scr, the default format for AutoCAD. The software can be loaded into any computer(s) running Windows. We offer an optional ruggedised Panasonic **Toughbook** portable computer for dedicated use.

The incertitude of the position obtained is somewhat dependant on the operating conditions, particularly the presence of sharp bends or roughness in the pipe, but in normal conditions it is of the order of <0.25%, for the horizontal, and <0.1% for the vertical, of the distance between the access points. The precision of the pipe position measurment can be improved by making several passes through the pipe, and typically two or four are made to obtain an accuracy of the order of 0,06% of the length, both in horizontal and vertical.

The **ABM-90** consists of a cylindrical measurement module which can be supported between pairs of angled (invert) wheels, both small and large, or a wide range of centralising wheels which can be adapted to pipe diameters from **77 mm. to 1.5 meters**. The centralizing wheels ensure that the **ABM** follows the centreline of the pipe to ensure good accuracy, whereas the invert wheels are more versatile and require less preparation.



Example of a plan prepared with the results supplied

A. T. M. S. is at your service for the mapping of any duct with **REDUCT** tools
For further information, please contact us on 07717763510 or
sales@advantechms.com