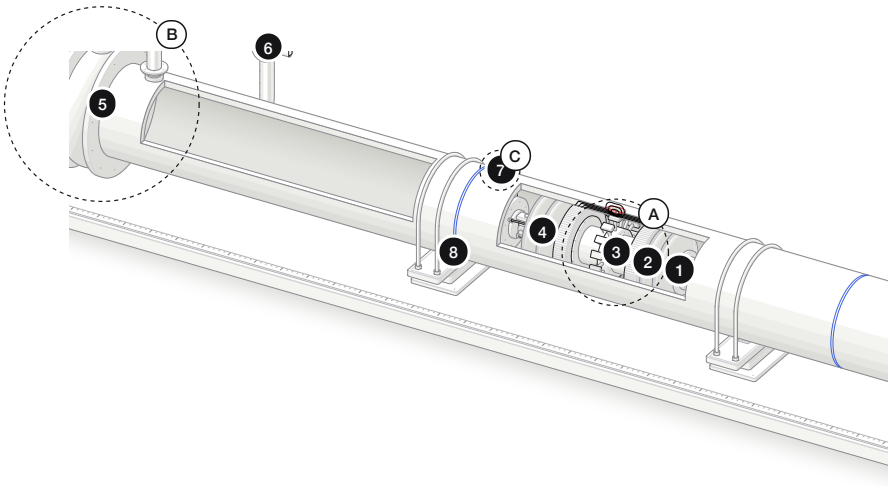


MFL pipeline run

AN-MFL-2
ILLUSTRATIVE, NOT TO SCALE
HOW IT WORKS · 1 / 3



How does a tool inside a pipe find metal lost from its wall?

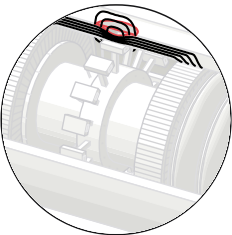
The tool is pushed along the pipe by the flow behind its cups. Magnets and steel brushes carry flux through the wall between two poles. Where the wall is thinner, some of that flux leaks out of the steel, and a ring of sensors riding the wall reads it. A recorder logs the reading against the odometer.

16	8
SENSORS IN THE RING	ROWS IN THE RECORD
6	3
GIRTH WELDS	METAL-LOSS FEATURES
2	
PASSAGE INDICATORS	

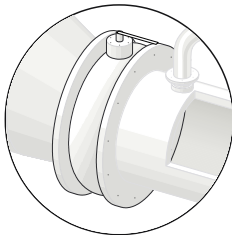
PARTS

- 01 **Drive cups**
Seal against the wall; the flow behind them pushes the tool along.
- 02 **Magnets and steel brushes**
Two poles that drive flux through the wall between them.
- 03 **Sensor ring**
Sensors on sprung arms ride the wall between the poles and read the leak.
- 04 **Line pipe, cut away**
Girth-welded spools; a window shows the wall in section.
- 05 **Trap valve**
Opened before the launch so the tool can leave the barrel.
- 06 **Mainline branch**
Carries the flow on into the line once the tool is away.
- 07 **Passage indicator**
A flag that falls as the tool goes by and stays down.
- 08 **Pipe support**
Post, cap, wear pad and two U-bolts holding the line.

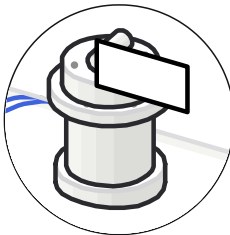
CLOSE-UPS



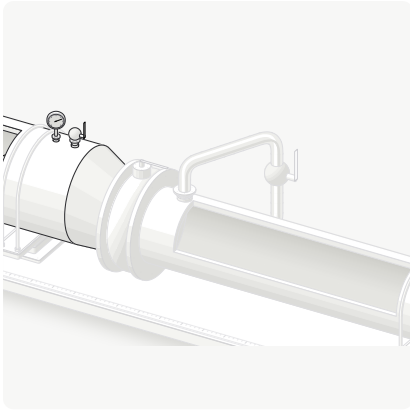
A Sensor ring
Sensors ride the wall on sprung arms, each with its lead.



B Trap valve
Open while the tool leaves the barrel.



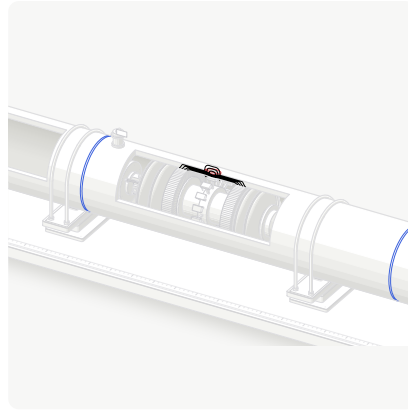
C Passage indicator
Its flag lies down once the tool has passed.



01

Launched from the trap

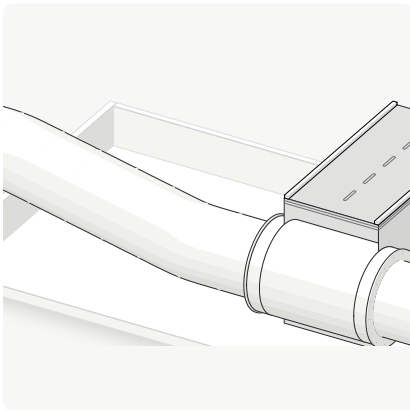
The tool waits in the launcher barrel. Flow through the kicker line pushes on its rear cups and it slides out through the trap valve into the line.



02

Flux leaks at the pit

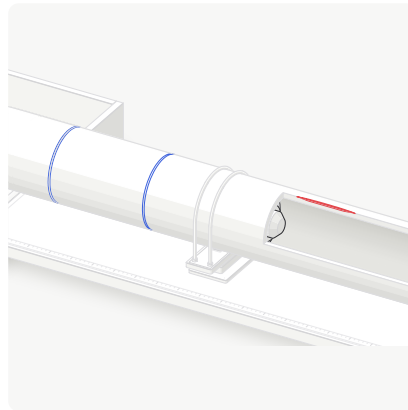
Between the poles the wall carries flux close to its limit. At the pit there is less steel, so some flux leaks out, more on the outside and a little into the bore where the sensors read it.



03

Under the road

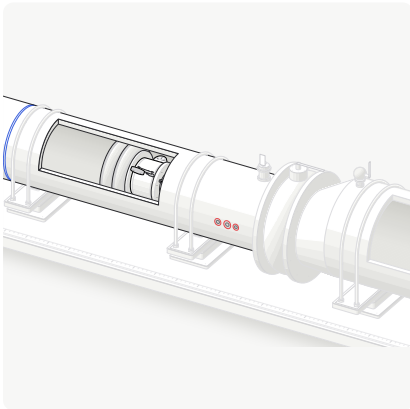
The line dips through gentle bends and runs in a casing under the road. The tool is out of sight, but the odometer keeps counting and the record keeps running.



04

Back on level pipe

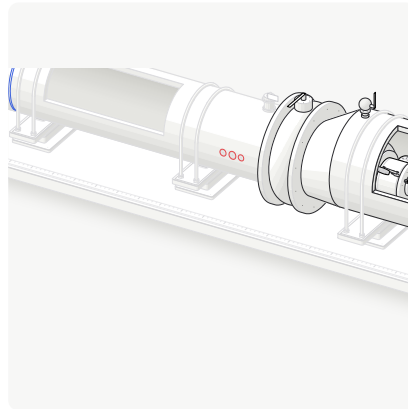
The tool comes back into view on the far side. The welds it passed under the road are already on the record, as marks on every row.



05

Pitting on the near side

A cluster of small pits on the side of the pipe answers only on the rows at that side, as a few close peaks.



06

Caught in the receiver

The tool slides into the receiver barrel and the valve behind it shuts. The record is complete, ready to be read.

WHY DO WELDS SHOW ON EVERY ROW?

A girth weld runs right round the pipe, so every sensor in the ring passes it at the same moment. Metal loss sits at one place round the pipe, so only the sensors near it see it. The same shapes, repeated weld after weld, also mark where along the pipe the tool has got to.

SPECIFICATION

Scale	Illustrative, not to scale	Rows	One per position round the pipe
Tool	Cups, magnets and brushes, sensor ring, joint, recorder, odometer wheels	Welds	Answer on every row at once
		Metal loss	Answers only on the rows near it
Record	Signal against odometer ticks, no units	Peaks	Qualitative: shape is not size