

# RD550

## Water pipe locator



Operation Manual | Issue 2 | June 2009



**Radiodetection**  
AN SPX COMPANY

# Preface

## Before you begin

Thank you for your interest in Radiodetection's RD550 water monitoring system.

Please read this user manual before attempting to use the RD550 system.

Radiodetection products, including this manual, are under continuous development. The information contained within is accurate at time of publication; however the RD550, this manual and all its contents are subject to change.

Radiodetection Limited reserves the right to modify the product without notice and some product changes may have taken place after this user manual was published.

Contact your local Radiodetection dealer or visit [www.radiodetection.com](http://www.radiodetection.com) for the latest information about the RD550 product family, including this manual.

## Important notices

### General

This instrument, or family of instruments, will not be permanently damaged by reasonable electrostatic discharge and has been tested in accordance with IEC 801-2. However, in extreme cases temporary malfunction may occur. If this happens, switch off, wait and switch on again. If the instrument still malfunctions, disconnect the batteries for a few seconds.

### Safety

This equipment should be used by fully qualified and trained personnel only. Reduce audio level before using headphones to avoid damaging your hearing.

 **WARNING! This equipment is NOT approved for use in areas where hazardous gases may be present.**

## Training

Radiodetection provides training services for most Radiodetection products. Our qualified instructors will train equipment operators or other personnel at your preferred location or at Radiodetection headquarters.

For more information go to [www.radiodetection.com](http://www.radiodetection.com) or contact your local Radiodetection representative.

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# Section 1 – Introduction

## 1.1 Overview

The RD550 is an electronic valve made of high-quality light materials and designed for the material-independent location of underground pipes. Opening and closing the valve creates a compression wave inside the pipe. The pressure differences resulting from operating the RD550 create an acoustically audible noise impulse at the surface. The strongest noise impulse at the highest frequency can be measured directly above the pipeline. The intensity of the noise and thus the pressure wave on the pipeline created by the RD550 is adjustable through an interchangeable plug. The RD550 can be adjusted to permanent impulse or interval impulse. This allows the operator to distinguish between background noise and noise impulses.

**Table 1.1 Pressures with maximum impulses**

Material	Comments	Distance sensor (m )	Rest pressure (bar)	RD550 pressure min. / max.
Plastics	DN 40 house pipeline, RD550 inside the house	0	3.7	0.2 / 5.4
Plastics	DN 100 main pipeline, RD550 mounted to hydrant	55	4.4	3.9 / 5.0
Cast iron	DN 125 main pipeline, RD550 mounted to hydrant	0	3.7	0.8 / 6.0
Cast iron	DN 125 main pipeline, RD550 mounted to hydrant	55	3.7	3.0 / 4.5

The measurements were measured and recorded using a high-resolution pressure logger that records 100 pressure values per second. The analysis is shown on page 3.

**NOTE:** The operation must check that the pipeline can withstand the above pressure values with every stroke of the RD550. Radiodetection cannot assume responsibility for pipeline damages or any other subsequent damages.

## Section 2 – Operating the RD550

The operator should follow the instructions listed below to achieve the best results when operating the RD550.

No.	Description
1	Standpipe connections should consist of valve-free standpipes only.
2	When mounting the RD550 make sure that the outlet is not directed upwardly.
3	The RD550 inlet is located at the long side of the RD550. The GEKA clutch should be checked for operation after each procedure. Make sure that the GEKA clutch is tightened correctly in place.
4	The safety rope (part of the kit) has to be fixed that in the case of a GEKA clutch failure no damages will occur.
5	The connecting cable (part of the kit) has to be connected to a 12 volt battery (at least 20Ah). You will hear a short audible signal when plugging in the cable. The cable should not be extended.
6	Open the water pressure for the RD550. Make sure that the RD550 valve is completely open and water comes out of the RD550 outlet at the RD550 front side. The outlet has a GEKA clutch. The water can be withdrawn by a hose (minimum $\varnothing = 1''$ , maximal hose length 2 m). Make sure that the hose outlet is not directed upwards.
7	The equipment is now ready for operation. The operator can select from the modes of operation by turning the adjusting knob.
8	The impulse intensity is adjusted by the high-quality steel screw. The operator will get the minimum impulse intensity by turning the screw in a clockwise direction. The maximum impulse intensity will be achieved by turning the screw in a counter-clockwise direction. Adjust the impulse intensity when the RD550 is switched on.
9	The pipe can now be calibrated by a ground microphone (RD544 or RD545). The operator will get the best result if he evaluates the maximum noise level and the highest noise frequency respectively.
10	Make sure that the RD550 is completely empty before packing it into the transport box so that no water will run out of the RD550.

The RD550 is equipped with an alarm that will transmit an audible noise if any of the malfunctions below occurs:

1	Poor connection between pole terminal and battery
2	Poor battery performance or insufficient battery capacity
3	Poor water run-off in the hose
4	Internal malfunction
5	The number of signals indicates the following: 1 signal: equipment ready for operation. 2 signals: coil does not function – check battery. 4 signals: coil is not fully operative – check battery. 5 signals: coil is not in start position – spring rupture.

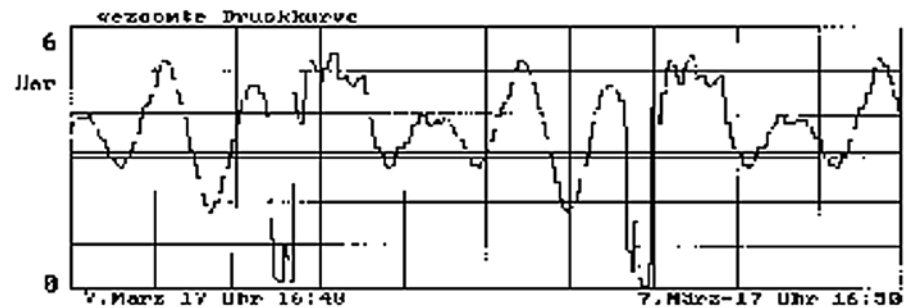
## Section 3 – Maintenance

The RD550 can be exposed to extreme stress and needs to be checked by Radiodetection every 300 operating hours or once a year. This maintenance scheduling is necessary to maintain the reliability of the equipment by checking and replacing consumable parts.

## Section 4 – Example measurements

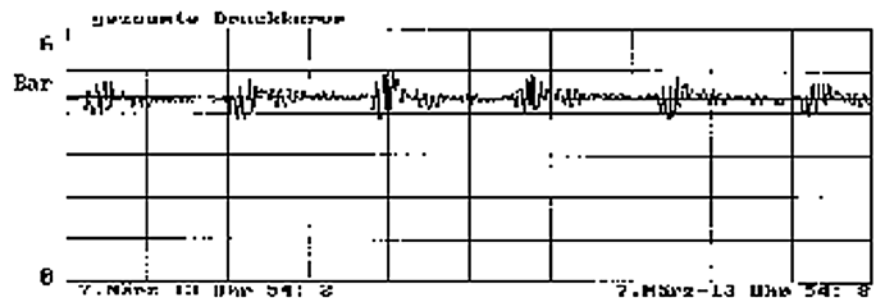
### Graph 1:

Platics, DN 40 house pipeline,  
RD550 inside the house,  
Pick-up mounted on RD550



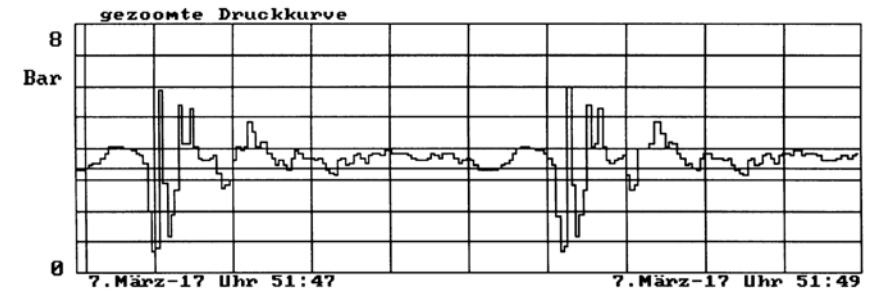
### Graph 2:

Platics, DN 100 main pipeline,  
RD550 mounted on hydrant,  
Pick-up distance 55 m



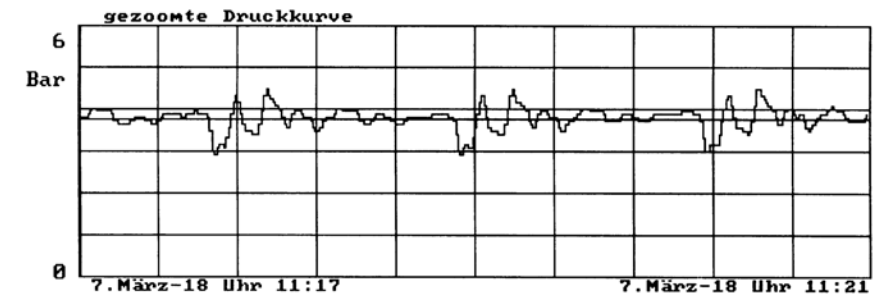
### Graph 3:

cast iron, DN 125 main pipeline,  
RD550 mounted on hydrant,  
Pick-up mounted on RD550



### Graph 4:

Cast iron, DN 125 main pipeline,  
RD550 mounted on hydrant,  
Pick-up distance 55 m



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