Acoustic Leak Detector

DF Junior

USER MANUAL

Revision	Date	Author	Reason for revision	Signature
03				
02				
01	24/02/2013	JLO	Visuals update	BLA
00	05/07/2008	BLA	Creation	GSE

Qualified personnel:

The equipment described in this documentation should only be handled by personnel qualified for each specific task. The instructions given by the documentation relating to this task must be observed, particularly the safety directives and warnings. Qualified personnel, due to their training and experience, are able to recognise the hazards related to operating this equipment, and to avoid them.

The following points should be taken into account:

HYDREKA products should only be used for their intended applications, as specified in the catalogue and in the corresponding technical documentation. If they are used in combination with other manufacturers' products and components, then such products and components must be approved by HYDREKA. The correct and safe operation of HYDREKA products implies proper transport, storage, positioning, installation, commissioning, utilisation and maintenance. Environmental conditions must be acceptable and the instructions in the various applicable documents should be observed.

Liability disclaimer:

The compliance of the contents of the present document has been checked and confirmed. However, a certain deviation can never be excluded, and we therefore accept no liability concerning overall compliance. Any error found in this manual will be taken into account and the appropriate corrections will be incorporated in the next issue.

Contents

1 INTRODUCTION TO THE DF JUNIOR EQUIPMENT :

Your DF JUNIOR includes as follows

- CSH 196 piezoelectric sensor
- A mechanical component in combination with the sensor including :
  - Two extension rods
  - One tip
  - One sensor support
  - One handle
  - Two cable attachments
  - One power magnet with 200 Newton (20 Kg force) power rating
- A high fidelity earphone set
- A receiver box with carrying strap
- A suitcase type carryng-case

DESCRIPTION OF THE RECEIVER BOX :

1. Adjustment knob for display sensitivity
2. Earphone volume adjustment knob
3. Sound on/off push button
4. Battery test push button
5. Waterproof cover and earphone connector
6. Sensor connector
7. Display

2 USER MANUAL

2.1 Power supply

The power supply in the DF JUNIOR casing is provided by four type R6 1.5V batteries.
Recommended batteries : Alkaline manganese 2 AH capacity enabling approximately 40 hours operation.
The batteries must be inserted as indicated on the stickers at the bottom of the casing. Be sure to position the batteries in relation with the fabric ribbon provided, for easier removal.

2.2 Battery set

The push button (4) with the following marking + enables the batteries to be tested.

If the batteries are OK, the needle on the display will move up to 80%. This test must be performed in a regular manner, from time to time.

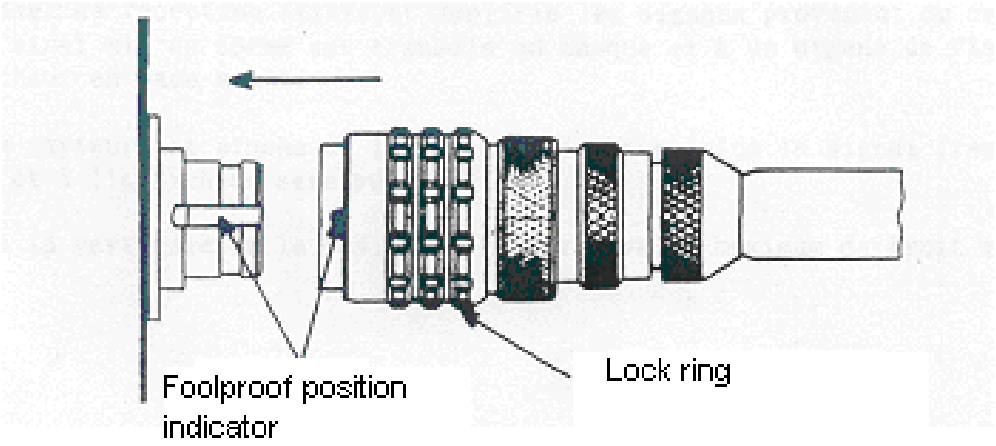
2.3 Start/Stop function

It is the introduction of the JACK type connector on the earphones which provides the on/off function.

Earphones disconnected : « unit stopped », storage position.
Earphones connected : « unit operating »
The JACK connection point on the casing is provided with a watertight connector cover.

2.4 Connecting the sensor

Whatever the adaptations fitted around the sensor, and described under section 2.7, the sensor cable must always be connected to the unit through its positive lock-type connector.



This connector is also fitted with a foolproof position indicator.

Locking is obtained by sliding the black ring on the connector in the direction indicated on the diagram.

2.5 The four controls on the front face

a) Push button for battery test

Pressing the button informs the user on the condition of the batteries. If the needle on the display moves up to 80%, the batteries are OK.

b) Sound on/off push button

For the earphones to operate this button must be continuously pressed in. Releasing the button stops the sound in the earphones.

c) Volume adjustment button in the earphones

The button is graduated from 0 to 9. It adjusts the intensity of the sound received in the earphones.

d) Adjustment button for display sensitivity

The button is graduated from 0 to 9. It adjusts the sensitivity and the deviation of the display needle. The information as visualised is in proportion with the intensity of the incoming sound.

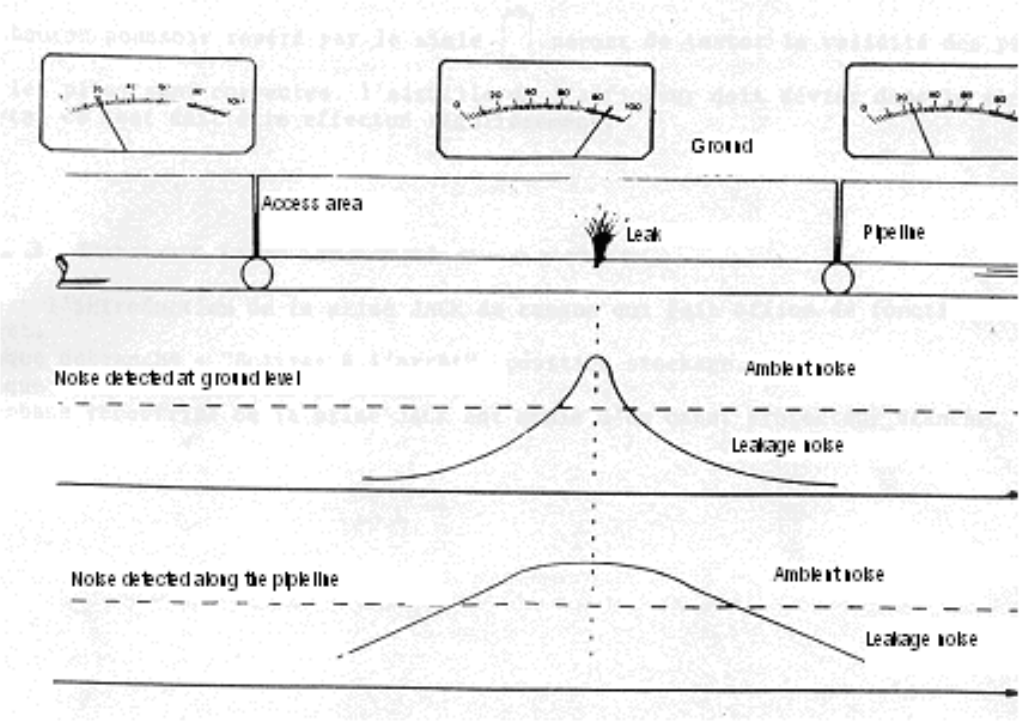
2.6 Leak detection, the principle involved

The sensor is a piezoelectric accelerometer which is sensitive to mechanical vibrations, and thus to noise generated by a fluid leaking from a pipeline.

The receiving unit (or amplifier) filters and amplifies the signals forthcoming from the sensor. The signal is transmitted to the earphones and to a visualisation component : the display on the front face.

The closer the sensor is to the leak detected, the more powerful the signal transmitted to the earphones and to the display.

Is it in a position directly above the point where the maximum sound level is detected that the leak occurs.



2.7 Optimising the DF JUNIOR

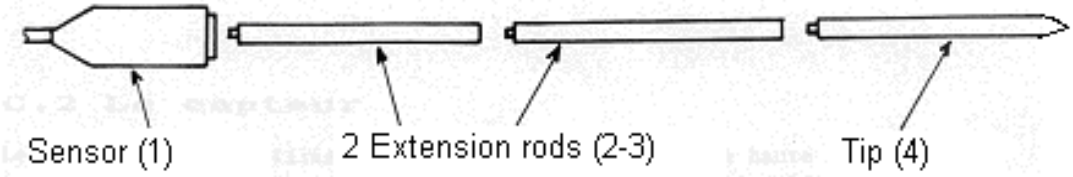
The DF JUNIOR leak detector uses one single sensor which is adapted in relation with the type of ground.

a) Direct adaptation on the pipelines

By screwing the magnet onto the tip of the sensor and placing the assembly on the pipeline, if the pipeline is easily accessed

b) Adaptation with a tip

Contact with pipelines which are not easy to access is made possible by the use of one or two extensions rods, and the tip



c) Adaptation for soft ground

The same rods mounted on the sensor can be pushed into soft ground.

d) Adaptation for hard ground

This is the most common form of use.

Screw the magnet onto the sensor.

Locate the assembly on the sensor support.

Screw the two extension rods onto the support, and then the handle which enables the assembly to be held.

The sensor cable is held against the rod with two plastic attachments.

3 PRECAUTIONS

3.1 The receiver box

- Test condition of batteries in order to avoid measurement-errors due to excessively worn-out batteries.
- Take care not to leave the earphones connected when the instrument is not used.
- Take care not to insert batteries incorrectly, the battery condition test will inform you of this faulty insertion.
- Make sure that the battery compartment always stays dry, and that the contacts are always clean.
- Remove the batteries if the unit is being used at long intervals.

3.2 The sensor

The sensor which you use is a highly accurate measurement instrument, the performance of which is widely recognised. This instrument requires careful handling.

4 TECHNICAL CHARACTERISTICS

4.1 Sensor and accessories

- Piezoelectric accelerometer CSH 196 type sensor
- Sensitivity 10 V/g
- Frequence range at 10 % : 5 khz
- Dimensions : 60 mm x 30 mm diameter
- Watertight sensor : stainless steel construction
- Impact resistant
- Magnet 200 Newtons (20 kg force) force rating
- Tip, extensions, and sensor support in stainless steel
- Temperature limits :

  storage [-20, + 90°]

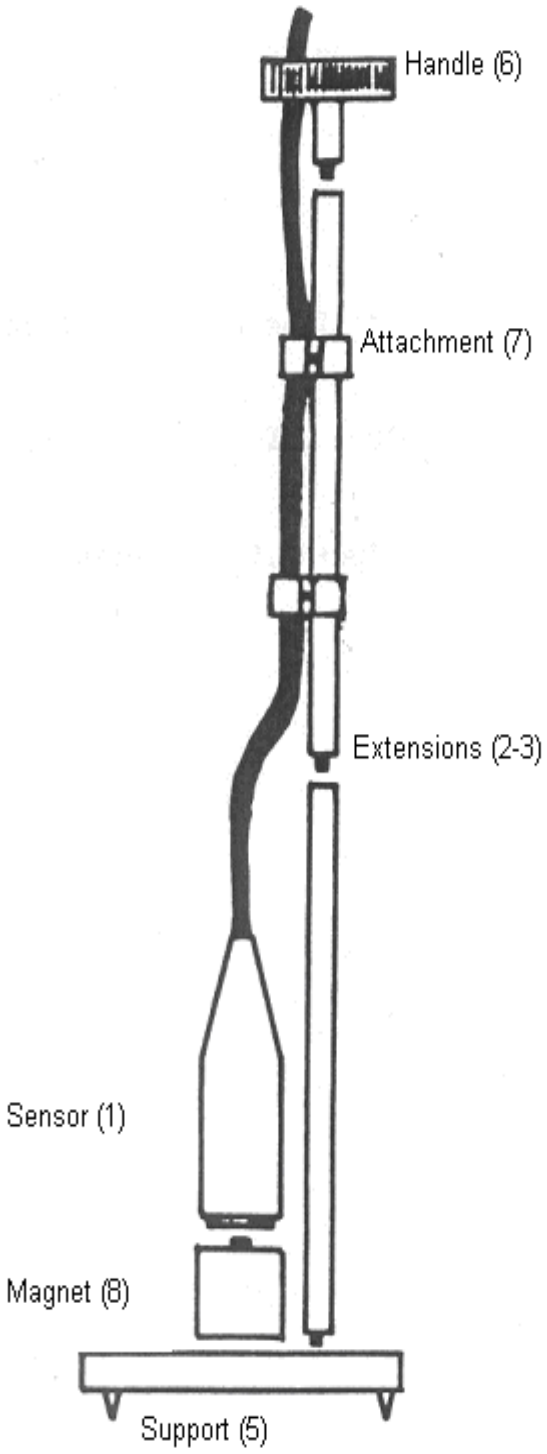
  in operation [-10, +70° C]

4.2 Earphones

- Passing band 25 Hz at 17 Khz
- Impedance : 2 x 8 Ω
- Weight 380 g, cable lenght : 2 m
- Temperature limits: storage [- 30, + 70° C]

  in operation [- 10, +55° C]

ADAPTATION FOR HARD GROUND



4.3 Receiver box

The box includes :

- An electronic component : 100 Hz – 5 Khz filter, slope at 20 dB/oct.
  Signal shaping and amplifier
  Diode protection against polarity
  inversion polarity
- A power supply casing for type R6 1.5V batteries
  Average battery-life : 40 hours
- Volume : 180 x 90 x 80
- Weight : 700 g
- Drip resistance : standard IP44
- Temperature limits : storage [-20, +70°C] in operation [0, + 60°C]

NOTES

HYDREKA www.hydreka.com

34, route de Saint Romain - 69450 St Cyr au Mont Or – France

Tél. +33 (0)4 72 53 11 53 - Fax +33 (0)4 78 83 44 37

Email : hydreka@hydreka.fr

A HALMA COMPANY