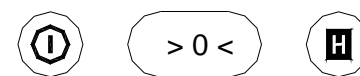
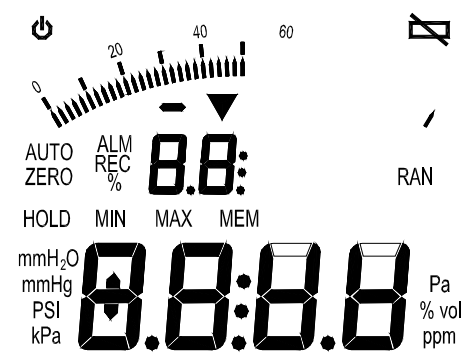


 seitron



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OVERVIEW

The PRESSOTEST is a portable digital manometer which has been designed for hydraulic systems. As well as all the standard manometer functions, PRESSOTEST also features a digital auto-zero function, hold function, six different measurement units, overflow and underflow alarms, minimum and peak alarms with programmable thresholds, date and time display clock, programmable automatic switch off function.

PRESSOTEST's distinguishing characteristic is that it carries out UNI 7129 (new systems) and UNI 11137 (existing systems) gastight tests and prints out the results on an infrared ray printer. It also features a Data Logger which records and prints instantaneous, minimum, mean and peak values at programmable time intervals.

PRESSOTEST has very low energy consumption levels and is powered by six 1.5V AAA batteries.

TECHNICAL SPECIFICATIONS

Supply : 9V, 6x1,5V AAA alkaline batteries
Input: 10 mA
Measuring range: ± 130 hPa
Measurement units: Pa, hPa, kPa, PSI, mmHg, mmH₂O
Accuracy : $\pm 1\%$ readout value P > 15 hPa
 ± 0.1 hPa -15 hPa < P < 15 hPa
 $\pm 1.5\%$ readout value P < -15 hPa
Including linearity, repeatability and hysteresis
Resolution: According to the unit and measuring range:

Unit	Interval	Resolution
Pa	± 9999	1
hPa	± 99.99	0.01
	elsewhere	0.1
kPa	± 9.999	0.001
	elsewhere	0.01
PSI	± 1.885	0.001
mmHg	± 9.999	0.008
	elsewhere	0.01
mmH ₂ O	± 999.9	0.1
	elsewhere	1

Sensor type: semiconductor
Overload: 750 hPa
Display: 2 x LCD 4 digits + sign.
Protection level: IP30
Operating temperature: 0°C .. +40°C
Storage temperature: -10°C .. +50°C
Humidity: 20% .. 80% RH non condensing
Auto switch off: Programmable from 1 to 30 mins
Case: Material: ABS V0 self-extinguishing
Colour: Dark blue Pantone 5534
Size: 87 x 162 x 41mm (L x A x P)
Weight: ~ 264 gr.


START UP

Preliminary operations

Before use please take the following steps:

- Insert batteries (included) in the battery housing unit ensuring correct polarity. To remove battery housing protection panel press gently downwards on the plastic lever (c in fig. 2).
- Connect silicon tubes (supplied) to the instrument's input (b in fig. 1) and output (a in fig. 1).

Battery check and replacement

If battery tension goes below the 6.5V threshold the low battery icon  will appear in the display's top righthand corner. To replace batteries follow the instructions in the paragraph above.

PRESSURE MEASUREMENT

The manometer has two pressure connections which can be used to measure:

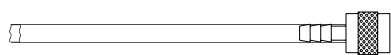
Pressure measurements: apply pressure to be measured to the positive (righthand) connection and leave the other connection open.

Vacuum measurements: apply pressure to be measured to the negative (lefthand) connection and leave the other connection open.

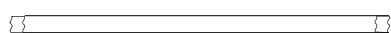
Differential pressure measurements: use both connections and visualise the pressure difference between the positive (righthand) connection and the negative (lefthand) connection. For pressure peak readings apply greater pressure to the positive connection.

ACCESSORIES SUPPLIED

PRESSOTEST comes complete with the following accessories:



Rauclair pipe, internal \varnothing 4mm, length 30cm, with 9mm \varnothing female pipe fitting.



Silicon pipe internal \varnothing 4mm, length 90cm.



Silicon pipe internal \varnothing 7mm, length 15cm.



Brass pipe 4 x 5mm, length 16cm.

CALIBRATION

Our manometers leave the factory complete with a test certificate to show they have passed their final test and correspond to their declared precision performance as measured against a test sample instrument calibrated to international standards. Calibration certificates are available on request showing single calibration values. The manufacturer advises recalibration every 12 months under normal operational conditions.

Within the parameters of ongoing product development the manufacturer reserves the right to alter technical data and performance without prior warning. Consumers are guaranteed against product conformity defects under European directive 1999/44/CE and under the manufacturer's own warranty. Sales points can supply the complete text of the warranty on request.

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OPERATION

Keyboard description

Switching on/off

To switch PRESSOTEST on or off press the ' ' key for at least 2 seconds.

Measurement unit

The 'UNIT' key edits the pressure measurement unit. All the most common measurement units are available: **Pa, hPa, kPa, PSI, mmHg, mmH₂O**. The set measurement unit will remain valid after the instrument has been switched off.

Autozero

The '> 0 <' key activates the autozero procedure. During autozero the instrument samples the input pressure and sets it as the zero reference for the following measurements. During this procedure the display will read 'auto-zero' and the numbers in the lower display will flash.

Hold

The 'H' key activates the 'HOLD'

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Confirm/ Cancel

The 'SET' key confirms operations. It must be pressed each time a function is activated or to confirm a parameter.

The 'ESC' key cancels current operations. This key can be used to interrupt a gastight test or to reset the previous parameters.

Configuration menu/ Memory menu

The 'MEM' key accesses the memory where the configuration parameters and the results from the functions in the Func menu are stored. Access to either of these areas depends on the active menu.

To access configuration parameters press the 'MEM' key on the pressure measurement screen (main screen), which is accessed by pressing 'ESC' several times. To access function results press the 'MEM' key on the function selection screen which is accessed from the pressure measurement screen by pressing the 'FUNC' key and the arrow keys. In both cases visualise values using the horizontal arrow keys once the memory area has been accessed.

Instrument configuration parameters are described below:

' buZZ ' Activates the auditory alerts (buzzer).

' toff ' Activates automatic switch off (time off). PRESSOTEST will switch off automatically after the time set by the last key pressure. Set from 1.. 30 minutes or Off. Approaching switch off is signalled by 5 beeps at one second intervals. The 'ϕ' icon in the top lefthand corner of the display shows that the automatic switch off function is activated. This function is temporarily suspended during gastight tests and Data Logging.

' ASuP ' Activates the peak alarm.

' LSuP ' Sets the peak alarm threshold. The alarm is triggered when pressure exceeds the set threshold. The threshold can be set between -9999 and +9999, and may include numbers with decimal points. The threshold is associated to a measurement unit that can be edited using the ' UNIT ' key.

' AlnF ' Activates the minimum alarm.

' LinF ' Sets the minimum alarm threshold. The alarm is triggered when the pressure falls below the set threshold. The threshold can be set between -9999 and +9999, and may include numbers with decimal points. The threshold is associated to a measurement unit that can be edited using the ' UNIT ' key.

' Pout ' Sets printout speed:
Slow: the instrument waits until the printer has printed each line before sending the data for the next line.
Fast: all the data is sent to the printer.

Date Sets the clock date

' year
day . month

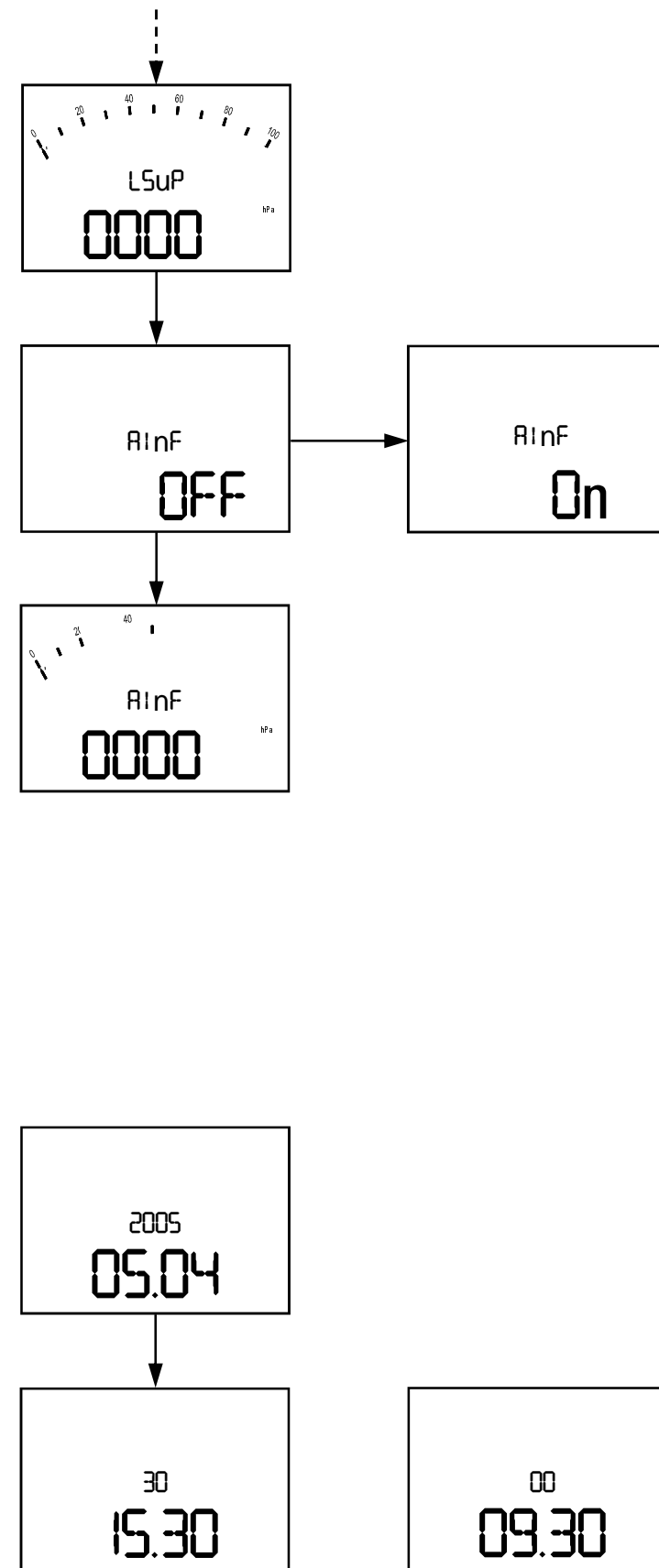
Time Sets the clock time

' seconds
hour : minutes

Print function

To print align the black panel on the right of the instrument with the printer sensor and press the 'PRINT' key. This function can be activated from both the pressure measurement screen, where either the current pressure measurement or the blocked value in Hold can be printed, and the gastight test results display and Data Logger screens, for printouts for the systems owners.

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Set peak alarm threshold (the alarm goes off if the pressure exceeds the threshold). Decimal values are allowed. The 'UNIT' key edits the threshold measurement unit.

Set minimum alarm.

Set minimum alarm threshold (the alarm goes off if the pressure falls below the threshold). Decimal values are allowed. The 'UNIT' key edits the threshold measurement unit.

Set printout speed.

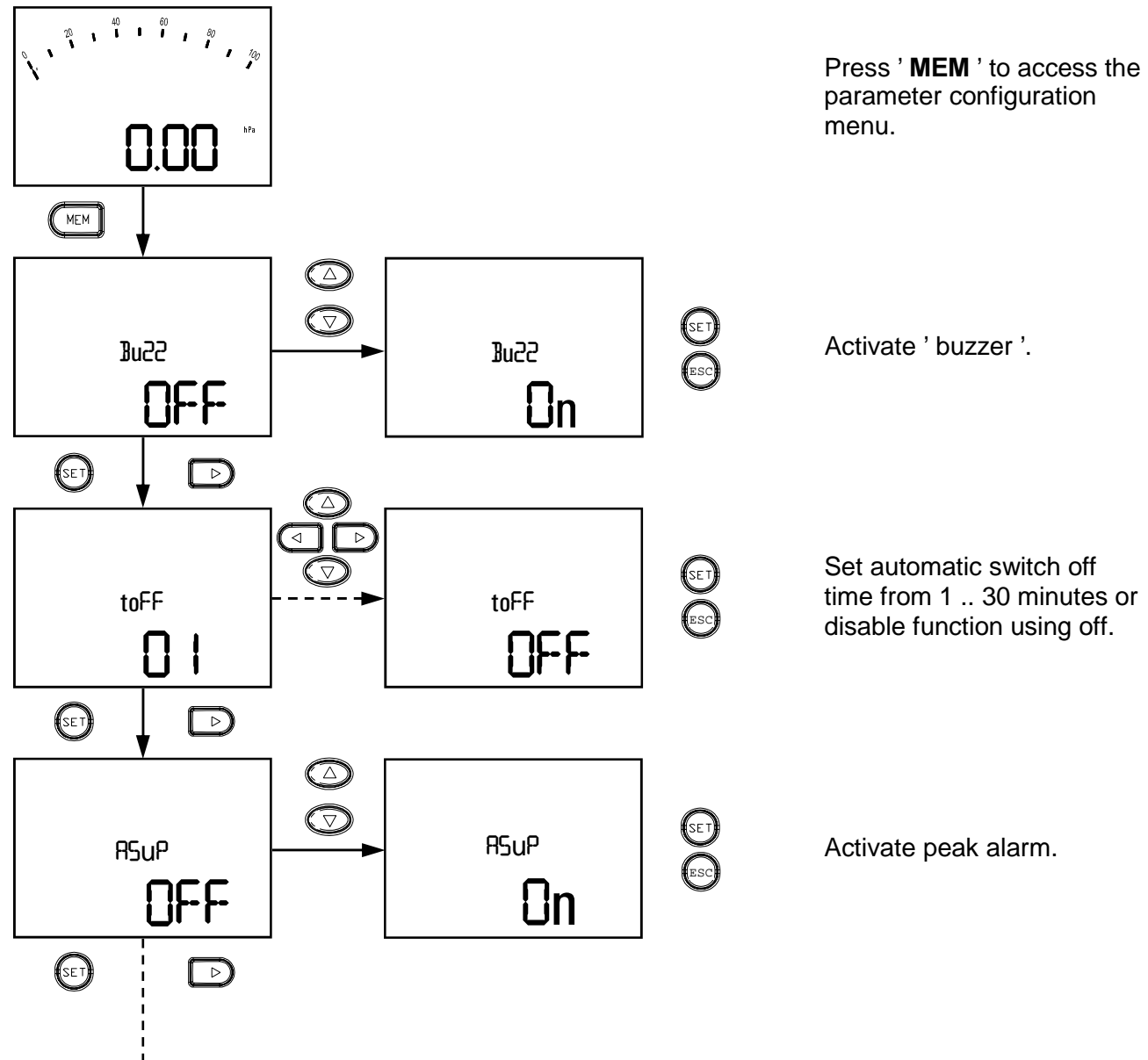
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Flow chart - functions menu

Procedure for inserting parameters:

- Press key Δ or ∇ to activate the edit mode (parameter flashes).
- Press Δ or ∇ to edit.
- If the parameter is numeric press \leftarrow or \rightarrow to edit the flashing figure.
- If numbers with decimal points are in the consented range press \leftarrow or \rightarrow to place the decimal point in the position required.
- Press 'SET' to confirm or 'ESC' to cancel.

Parameter configuration example



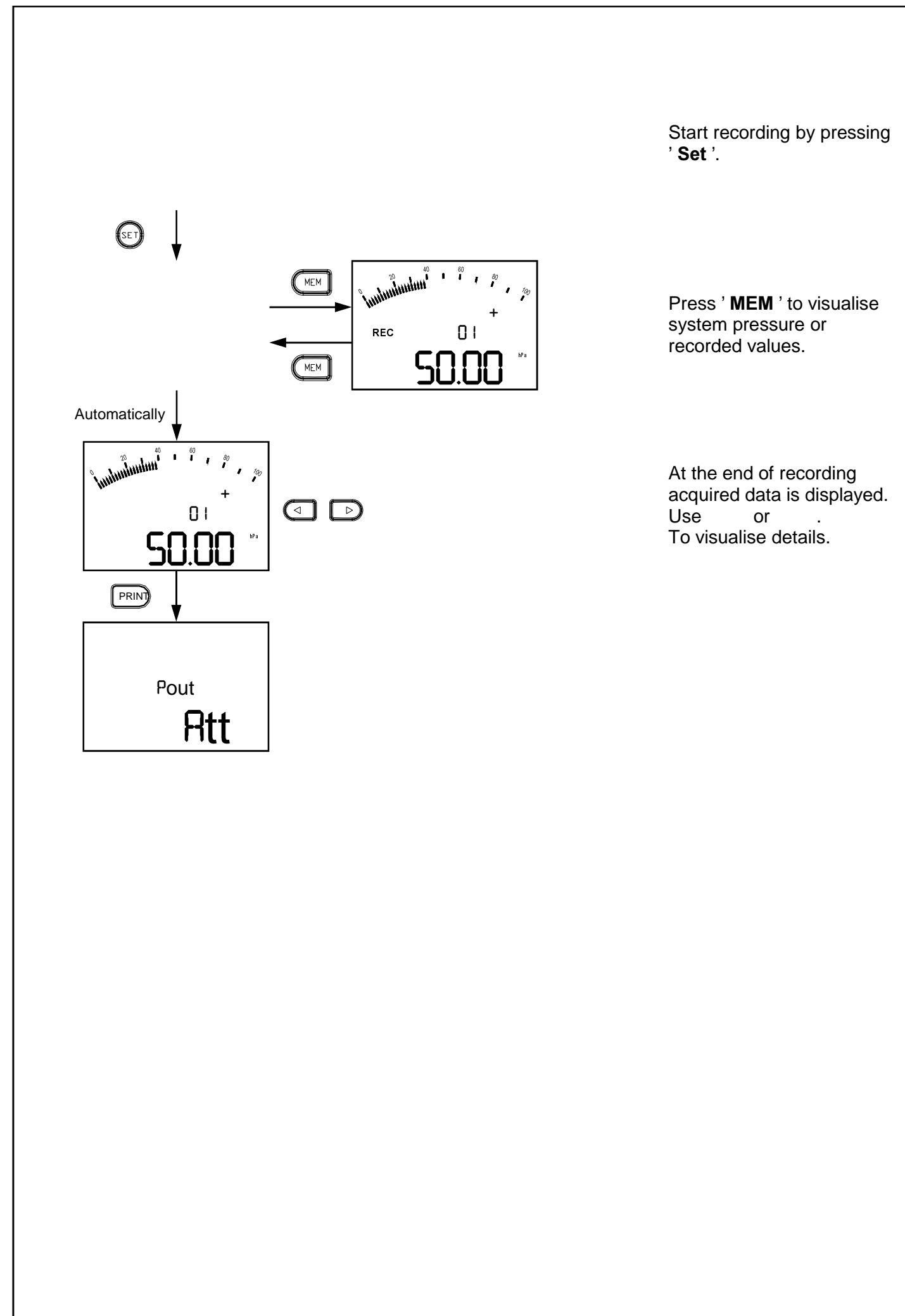
An important point to bear in mind with regards the sequence of settings for a gastight test is that the values inserted are saved and retrieved for carrying out the test only if the test itself is started. This stores the test data until a new test is carried out, but has the disadvantage that if a screen is cancelled by pressing 'ESC' it goes back to the beginning of the whole sequence and causes the loss of the data previously recorded.

Below is a table showing a summary of the lengths required to construct a 25 dm³ system with the most commonly used pipes.

Steel			Copper		
Diam mm	Vol dm ³ /m	Length m/25dm ³	Diam mm	Vol dm ³ /m	Length m/25dm ³
3/8	0,125	200	12,0	0,079	320
1/2	0,203	125	14,0	0,113	220
3/4	0,370	70	15,0	0,133	190
1	0,585	45	16,0	0,154	160
1 1/4	1,017	25	18,0	0,201	125
1 1/2	1,378	18	22,0	0,283	90
2	2,213	11	28,0	0,491	50
2 1/2	3,727	6,7	35,0	0,804	30
3	5,138	4,9	42,0	1,194	21
4	8,704	2,9	54,0	1,963	12,7
5	13,20	1,9	64,0	2,826	8,8
6	18,88	1,3	76,1	3,968	6,3
			88,9	5,526	4,5
			108,0	8,167	3,1

Table 1: Volumes

The system priming screen is visualised after the test parameters have been recorded. The upper display shows the message 'PomP', indicating the operator should start pumping gas, alternating with the pressure to reach. The lower display reads off the system pressure. The test must be carried out using the positive pressure connection: if a negative pressure value is detected during pressurisation the display will visualise an error message 'Err' to show the wrong connection is being used. Test pressures must be as close as possible to the specific reference conditions shown in the table 'Reference standard pressures' depending on the system's combustible gas and the test gas used. Because it is virtually impossible to accurately meet these conditions, the instrument evaluates the 'q mis' leakage amount in the measurement conditions, then adjusts this value in order to calculate the 'q rif' amount according to the reference conditions. In order to evaluate the piping safety conditions the correct parameter that must be taken into account is the leakage amount in the reference conditions 'q rif'.



Start recording by pressing 'Set'.

Press 'MEM' to visualise system pressure or recorded values.

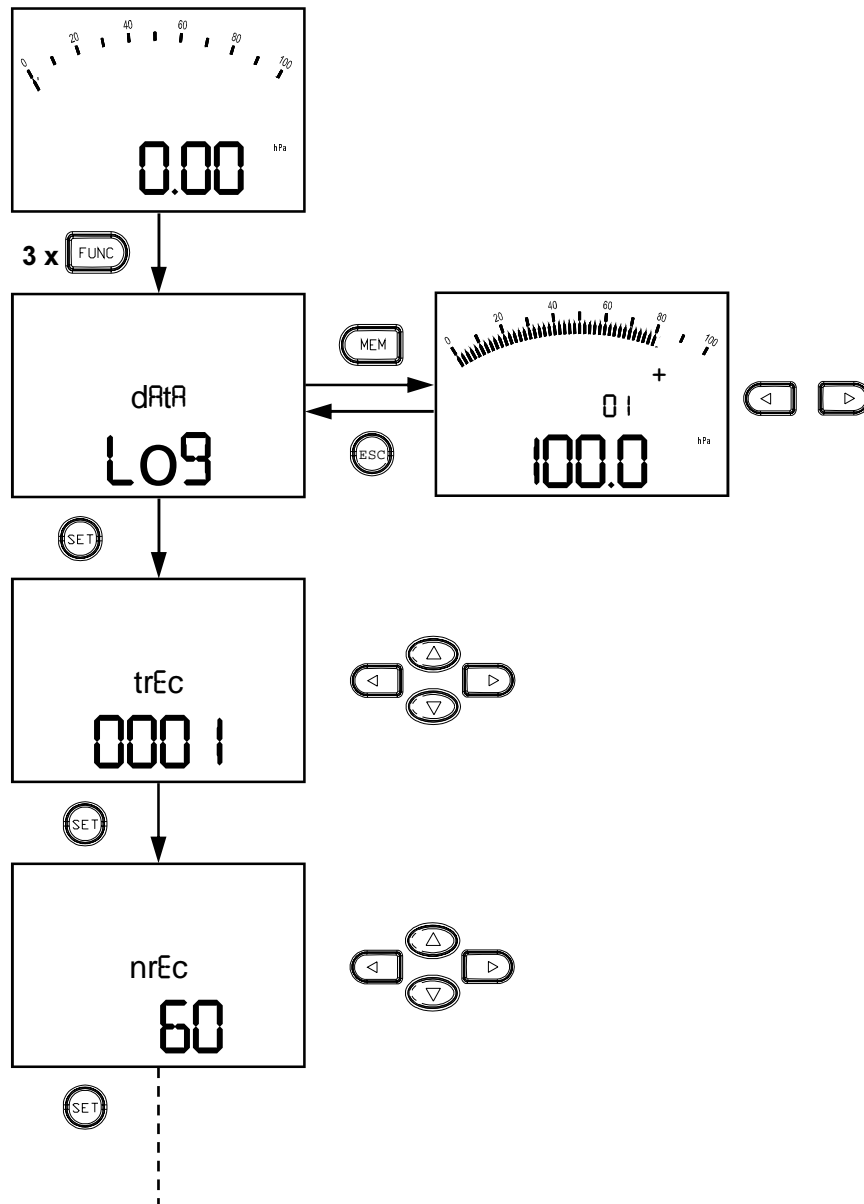
At the end of recording acquired data is displayed. Use or . To visualise details.

Flow chart - functions menu

Procedure for inserting parameters:

- Press key Δ or ∇ to activate the edit mode (parameter flashes).
- Press Δ or ∇ to edit.
- If the parameter is numeric press \leftarrow or \rightarrow to edit the flashing figure.
- If numbers with decimal points are in the consented range press \leftarrow or \rightarrow to place the decimal point in the position required.
- Press 'SET' to confirm or 'ESC' to cancel.

Data Logger Function



Press 'Func' three times to select the data logger function.

Press 'Set' to start data logger, or press 'MEM' to retrieve the results of the previous test.

Insert recording time in minutes.

Insert the number of samples.

Combustible gas	Test gas	Pressure [Pa]
Gcit (Town gas)	combustible gas	1000
	air	5000
GnAt (Methane)	combustible gas	2200
	air	5000
GPL (LPG)	combustible gas	5000*
	air	5500*

The values indicated do not have to be precisely observed. For test purposes it is sufficient that the system is close to those required.

* LPG reference standards are currently being defined; the values shown are those proposed by some testers.

Table 2: Reference pressures

After the system has been primed the test gas stabilisation phase is started by pressing 'SET'. The display visualises the pressure measured in the system and the residual stabilisation time. The stabilisation phase is automatically terminated when the time set has expired or can be interrupted by pressing the 'SET' key.

After stabilisation the actual gastight test is run by evaluating the fall in the system's pressure over a 1 minute interval. During the test the display visualises the pressure and the test time remaining. Pressing the 'MEM' key will show the fall in pressure from the beginning of the test.

Running the test automatically saves the parameters involved and deletes data from previous tests. The flashing 'REC' icon shows the data is being recorded.

At the end of the test the results are displayed automatically:

tEst: 'Si' Positive test result. The system is approved to run.
 '30GG' Limited positive test result. The system is approved for a maximum of 30 days running.
 'No' Negative test result. The system is not approved to run.
 'Err' Non valid test result.

Comb: System combustible gas.
GR5: Test gas used.
Uol: System volume in dm^3 .
P1: System pressure at start of test.
P2: System pressure at end of test.
dP: $P1 - P2$ pressure difference. When pressure is falling dP is negative.
Q M15: Leakage amount in the measurement conditions (in dm^3/h).
Q R1F: Leakage amount adjusted according to reference conditions (in dm^3/h).
 ---: Date of test.
 ---: Time test run started.

Test results can be printed on a printer with infrared ray linkup by pressing the 'PRINT' key. During printout a screen with the description 'Pout' and the message 'Att' is visualised. This screen is automatically exited on completion. The printout function is not available during test runs.

Test results are retained in the memory even after the instrument has been switched off, until a new test run overwrites them.

Saved parameters can be retrieved by pressing 'Mem' in the 'UNI 11137' test selection screen and can be visualised and printed like those just run.

UNI 7129: Gastight tests for new or reconditioned systems

The UNI 7129 norm test is required to approve new systems or reconditioned systems that have been unused for a period of maintenance. For the UNI 7129 gastight test with PRESSOTEST prime the system to a pressure of at least 100mBar with inert gas, stabilise the test gas for at least 15 minutes and then wait 15 minutes while the instrument evaluates the fall in pressure in the system. The system is considered gastight if the pressure fall is less than 10 Pa.

Select the **UNI 7129** norm and press **'SET'** to start the test, select the time interval for the test gas stabilisation phase from a range of 15 .. 99 minutes.

Once the time interval for the stabilisation of the test gas has been set the system priming screen is displayed. The upper display shows the message **'PomP'**, indicating the operator should start pumping gas, alternating with the pressure to reach. The lower display reads off the system pressure.

The test must be carried out using the positive pressure connection: if a negative pressure value is detected during pressurisation the display will visualise an error message **'Err'** to show the wrong connection is being used.

After the system has been primed the test gas stabilisation phase is started by pressing **'SET'**. The display visualises the pressure measured in the system and the residual stabilisation time. The stabilisation phase is automatically terminated when the time set has expired or can be interrupted by pressing the **'SET'** key.

After stabilisation the actual gastight test is run. The UNI 7129 requires the evaluation of the fall in pressure in the system over a 15 minute interval. During the test the display visualises the pressure and the test time remaining. Pressing the **'MEM'** key will show the fall in pressure from the beginning of the test. Running the test automatically saves the parameters involved and deletes data from previous tests. The flashing **'REC'** icon shows the data is being recorded.

At the end of the test the results are displayed automatically:

tEst: 'Si' Positive test result. The system is gastight.
 'No' Negative test result. The system leaks.
 'Err' Non valid test result.

P1: System pressure at start of test.

P2: System pressure at end of test.

dP: P1 - P2 pressure difference. When pressure is falling dP is negative.

'2005'

--- : Date of test.

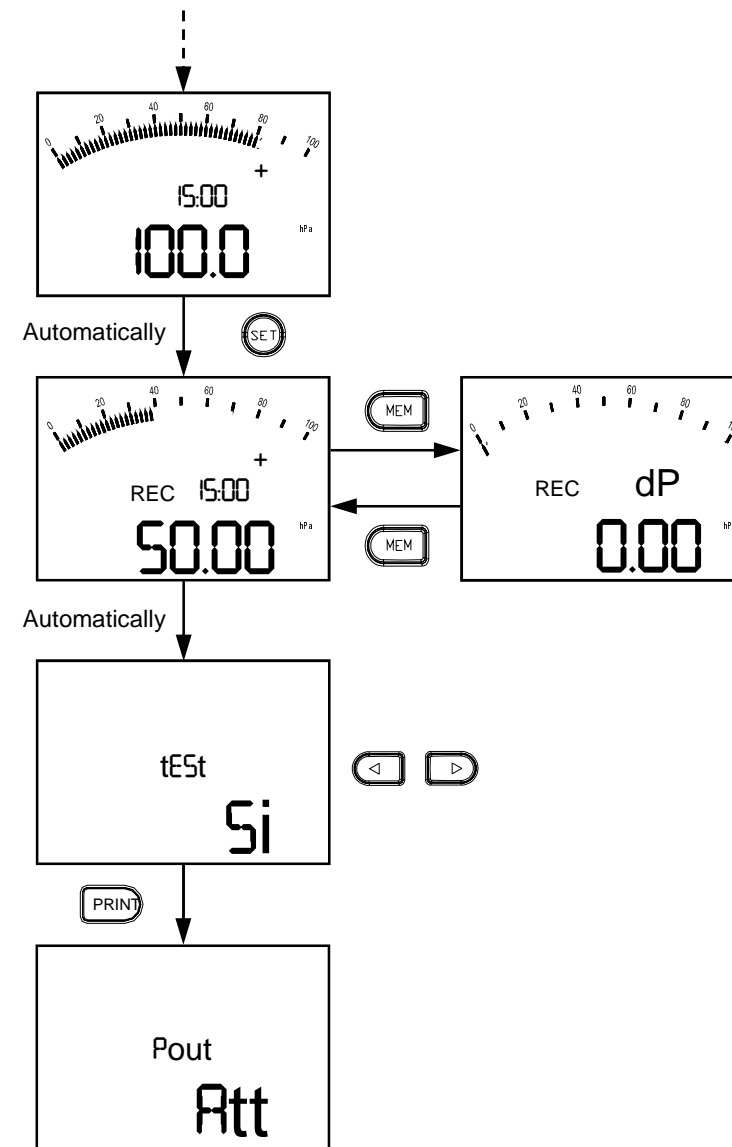
--- : Time test run started.

Test results can be printed on a printer with infrared ray linkup by pressing the **'PRINT'** key. During printout a screen with the description **'Pout'** and the message **'Att'** is visualised. This screen is automatically exited on completion. The printout function is not available during test runs.

Test results are retained in the memory even after the instrument has been switched off, until a new test run overwrites them.

Saved parameters can be retrieved by pressing **'Mem'** in the **'UNI 7129'** test selection screen and can be visualised and printed like those just run.

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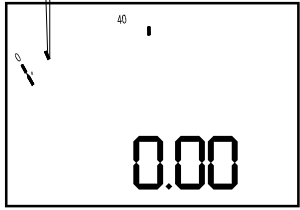
Start the test gas stabilisation.
 Press **'Set'** to stop stabilisation before allotted time expires.

Wait to run gastight test.
 Press **'MEM'** to display system pressure or pressure change at the start of the test.

At the end of the test the result is displayed automatically. Use **<** or **>** to visualise test details.

Align printer with the manometer and press **'PRINT'** to print test results. After printing press **'ESC'** to return to pressure measurements.









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Flow chart - functions menu

Procedure for inserting parameters:

- Press key  or  to activate the edit mode (parameter flashes).
- Press  or  to edit.
- If the parameter is numeric press  or  to edit the flashing figure.
- If numbers with decimal points are in the consented range press  or  to place the decimal point in the position required.
- Press ' **SET** ' to confirm or ' **ESC** ' to cancel.

UNI 1137: Gastight test existing systems

Press ' **Func** ' to select
UNI 1137gastight test.



Select test for systems up
to 25 dm³ or insert the
system volume in dm³.
On the volume data
insertion screen volume
measurement can be
carried out as described on
page 5.

Insert the combustible gas
used for the system:
Gcit - GnAt - GPL
(Town gas - natural gas -
LPG.).