

# Eddy current flaw detector «Eddycon C»

## Quick start guide



## CONTENTS











P.







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# 1 CONTROLLERS OF EDDYCON C FLAW DETECTOR

1.1 The flaw detector is operated by one operator who has a corresponding level of qualification and has studied the present “Quick start guide”.

## ASSIGNMENT OF KEYBOARD BUTTONS

	<p>1</p> <ul style="list-style-type: none"> <li>- automatically puts a displayed signal from lift-off (or from any interference) in horizontal position;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>2</p> <ul style="list-style-type: none"> <li>- changes the parameter variation step;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>3</p> <ul style="list-style-type: none"> <li>- increases the selected parameter;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>4</p> <ul style="list-style-type: none"> <li>- changes the frequency;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>5</p> <ul style="list-style-type: none"> <li>- moves up through the menu;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>6</p> <ul style="list-style-type: none"> <li>- decreases the selected parameter;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<ul style="list-style-type: none"> <li>- cancels the selection;</li> <li>- in the mode of name editing – selects a digit/letter;</li> <li>- pressing the button results in displaying the firmware version in "SETTINGS" menu;</li> <li>- deletes point in “CALIBRATION” menu;</li> <li>- freezes the display in the test menu</li> </ul>
	<p>8</p> <ul style="list-style-type: none"> <li>- moves down through the menu;</li> <li>- in the mode of name editing – selects a digit/letter</li> </ul>
	<p>9</p> <ul style="list-style-type: none"> <li>- confirms the selection;</li> <li>- in the mode of name editing – selects a digit/letter;</li> <li>- pressing the button in "TEST" menu results in saving of current setup as a default one (if the current item is above the ALARM item);</li> <li>- adds point in “CALIBRATION” menu</li> </ul>
	<ul style="list-style-type: none"> <li>- quick access to "TEST" menu</li> </ul>

	<ul style="list-style-type: none"> <li>- quick access to "SETTINGS" menu</li> </ul>
	<ul style="list-style-type: none"> <li>- quick access to "VIEW" menu</li> </ul>
	<ul style="list-style-type: none"> <li>- quick access to "MEMORY" menu;</li> <li>- confirms the saving of the entered name of the file or folder while operating in "MEMORY" menu</li> </ul>
	<ul style="list-style-type: none"> <li>- quick access to "CALIBRATION" menu</li> </ul>
	<ul style="list-style-type: none"> <li>- automatically sets the parameters of single coil (parametric) ECP with switched on Single input;</li> <li>- sets the number of rounds while operating with eddy current rotary scanner</li> </ul>
	<ul style="list-style-type: none"> <li>- switches On/Off the instrument</li> </ul>

## 2 SETTINGS OF «TEST» MENU

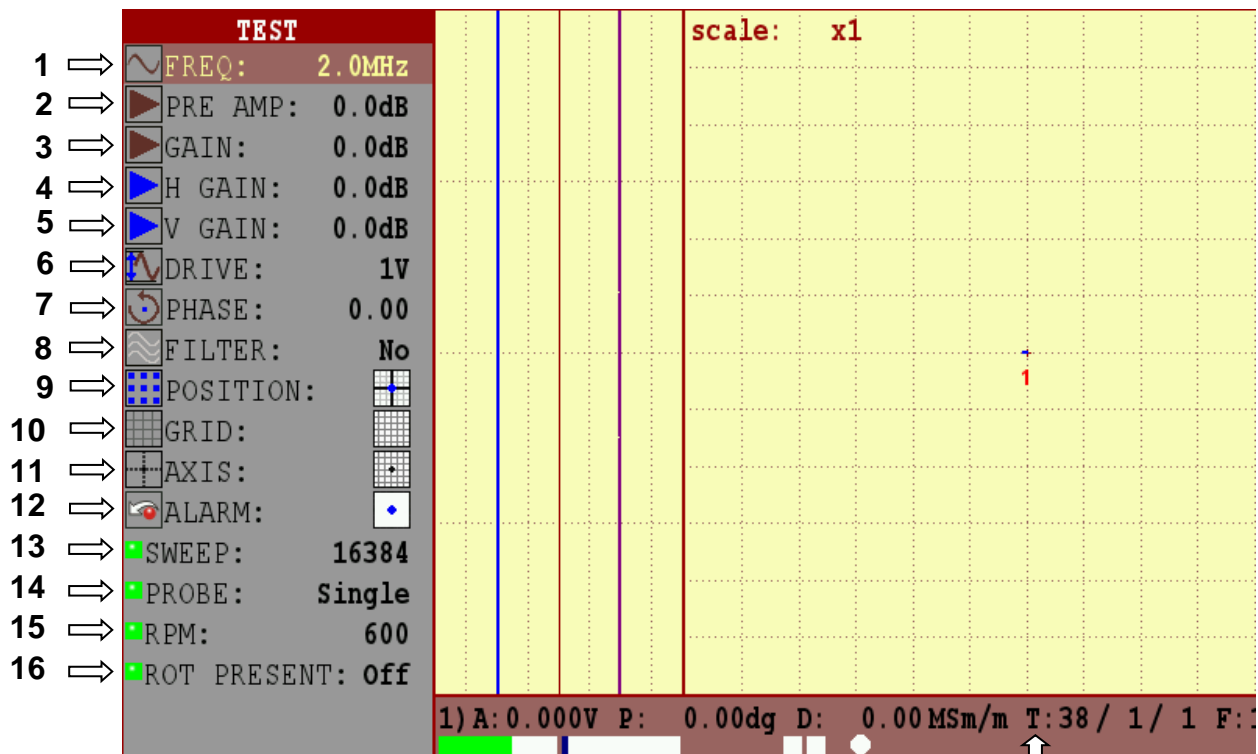


FIGURE 1 - Settings of «TEST» menu

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- Navigation menu:

1. **FREQ** – test frequency. Operating frequency of ECP.

2. **PRE AMP** – preamplifier gain. It is used to amplify weak signals.

3. **GAIN** – main gain. It is used to amplify weak signals.

4. **H GAIN** – horizontal gain. It is used for visual separation: the signal from the defect and the signals from the noises.

5. **V GAIN** – vertical gain. It is used for visual separation: the signal from the defect and the signals from the noises.

6. **DRIVE** – probe drive level. It is used for electromagnetic field excitation and formation of eddy currents in the object of testing. More often it is used the voltage value of 4 V and 6 V is applied while carrying out testing through a layer of nonconducting gap (for example – paint coating, etc.).

7. **PHASE** – phase adjustment. It is used for visual repositioning of eddy-current signal in the complex plane.


8. **FILTER** – filter type. Filters are used to reduce various kinds of noise and improve the quality of eddy-current signal for analysis.











**AVRG** – averaging filter (particular case of LP filter). It is used to reduce noisiness and high-frequency noise impact.


**LP** – low pass filter. It is used to reduce noisiness of eddy-current signal and filter out high-frequency noise.


**HP** – high pass filter. It is used to filter out low frequency noise (eg - signals that occur: 1) when changing the ECP turning angle at manual testing, 2) in case of changing the gap between ECP and the object of testing, 3) in case of change of electromagnetic properties of the material, etc.).







**BP** – band pass filter. It is used to create bandwidth of useful eddy-current signals - signals from defects and to filter out low-frequency and high-frequency signals from noise. It is more often used at automated or mechanized testing with a constant ECP moving speed relative to the object of testing.

9.  **POSITION** – spot position. Changing the position of the center of the complex plane on the screen of the flaw detector. It is used to increase the usable space on the screen of the flaw detector.

Can be set in the following positions:  – complex plane center,  – in the right center of the screen,  – in the right upper corner,  – in the upper center of the screen,  – in the left upper corner,  – in the left center of the screen,  – in the left bottom corner,  – in the bottom center of the screen,  – in the right bottom corner,  – per-channel display when operating in double frequency mode.

10.  **GRID** – grid. Different types of the screen markup to improve the visual analysis of signals.

11.  **AXIS** – axis. On / off position of the display of coordinate axes on the screen of the flaw detector.

12.  **ALARM** – activation and setting of frames (threshold levels). Types of frames:  – frames are switched off,  – circle frame type,  – threshold frame type,  – sector frame type,  – trapezium frame type.

13. **SWEEP** – number of points in a screen scan.

14. **PROBE** – type of connector.

**Single (Lemo 00)** – for connection and operation with single coil probe.

**Refl (Lemo 16)** – for connection and operation with Reflection type probe.

**Bridge (Lemo 16)** – for connection and operation with Bridge type probes.

15. **RPM** – rounds per minute for the eddy current rotary scanner.

16. **ROT PRESENT** – type of connected rotary eddy current scanner.

17. Parameters of the occupancy of the input circuit.

Parameter "T: .../.../..." shows:

1) The value of a signal amplitude at the input of the receiving circuit expressed in % of the maximum possible;



2) Input circuit is not balanced, after performing the balancing in %.

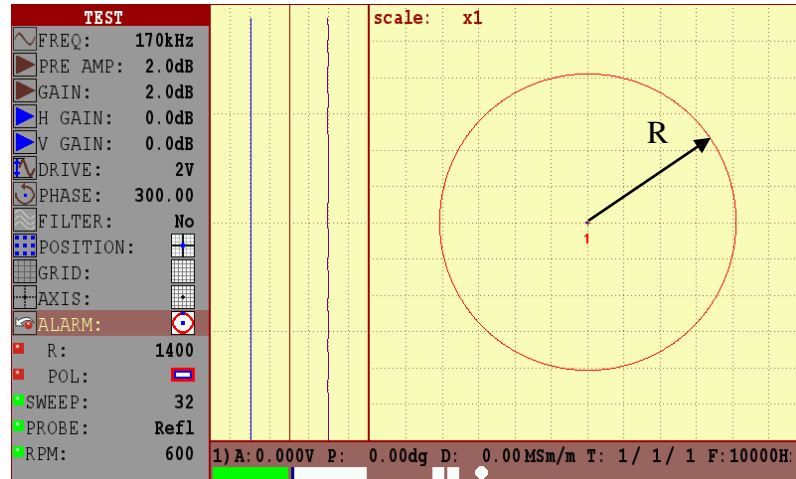
Current value of the occupancy of the input circuit expressed in % of the maximum possible.

### 3 INSTRUCTIONS FOR USE

#### 3.1 THRESHOLD LEVELS SETUP

- **Setup of "Circle" type frame**



To set up circle type frame, operator should select "Type:  " in special item of settings ALARM – .

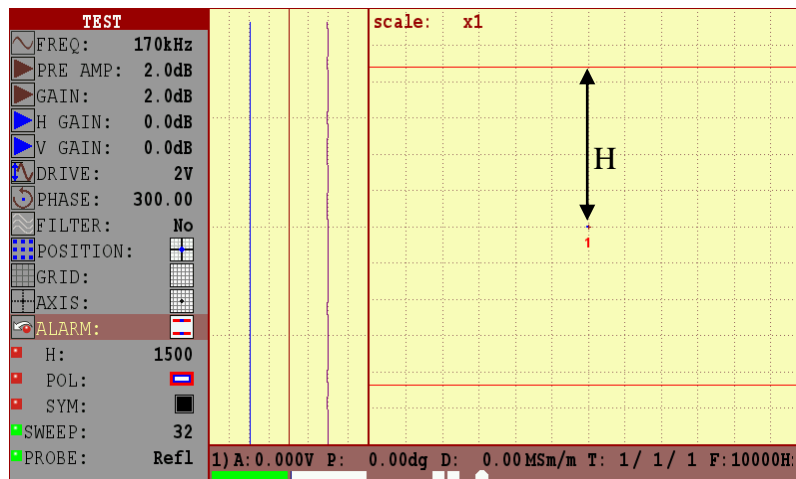


**FIGURE 2 – Setup of "Type:  " of threshold level**

"R:" parameter variation allows changing of the inner radius of threshold level.

- **Setup of "Level" type frame**

To set up threshold type frame, operator should select "Type:  " in special item of settings ALARM – .





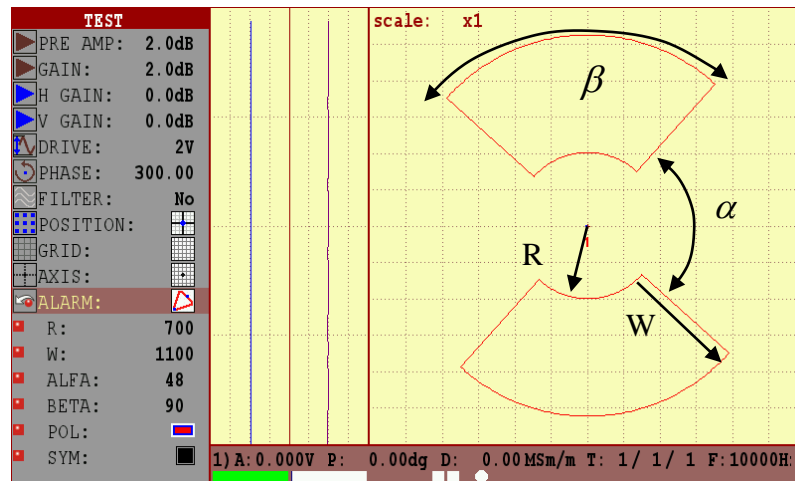
**FIGURE 3 – Setup of "Type:  " of threshold level**



"H:" parameter variation allows changing of the height of the threshold level.

- **Setup of "Sector" type frame**

To set up sector type frame, operator should select "Type:  " in special item of settings ALARM – .



**FIGURE 4 – Setup of "Type:  " of threshold level**

"R:" parameter variation allows changing of the inner radius of threshold level.

"W:" parameter variation allows changing of the width of threshold level.

" $\alpha$ :" parameter variation allows changing of turning angle of threshold level relative to the complex plane center.

" $\beta$ :" parameter variation allows changing of turning angle of threshold level.

Select the frame polarity "Pol:", which makes the alarm trigger:

 – the signal gets beyond the limits of the threshold level;



 – the signal is within the limits of the threshold level.

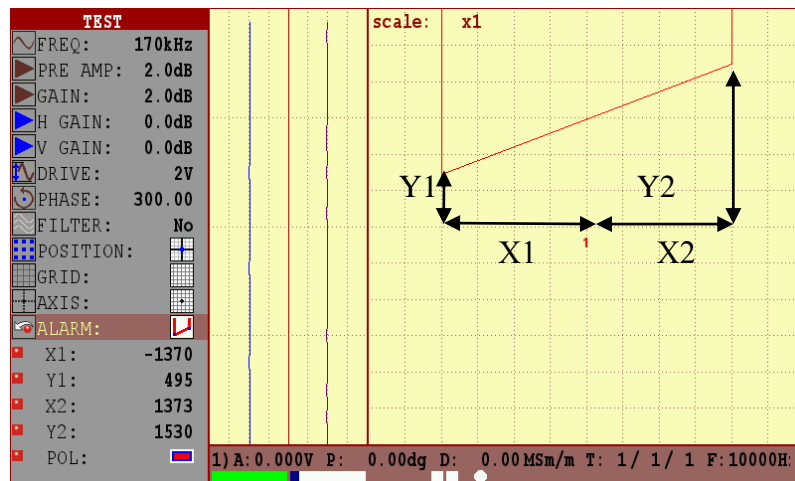
If the symmetrical displaying of threshold level on the position "Symm:" with



buttons is required, this parameter can be activated.

- **Setup of "Trapezium" type frame**

To set up trapezium type frame, operator should select "Type:  " in special item of settings ALARM – .



**FIGURE 5 – Threshold level setup of "Type: **"

"X1:" parameter variation allows changing of the angle position of threshold level in X1-direction.

"X2:" parameter variation allows changing of the angle position of threshold level in X2-direction.

"Y1:" parameter variation allows changing of the angle position of threshold level in Y1-direction.




"Y2:" parameter variation allows changing of the angle position of threshold level in Y2-direction.

Select the frame polarity "Pol:" which makes the alarm trigger:

- the signal gets beyond the limits of the threshold level;
- the signal is within the limits of the threshold level.

### 3.2 SINGLE COIL PROBE

3.2.1 Connect the ECP to the flaw detector using a connecting cable.

№	Connecting cable	Connector to Eddycon C	Connector to ECP	Connector view
1	Lemo 00-Lemo 00	Lemo 00	Lemo 00	 <p style="text-align: center;"><b>Lemo 00</b></p>
2	Lemo 00-Lemo 00	Lemo 00	Lemo 00	 <p style="text-align: center;"><b>Microdot</b></p>
3	Lemo 00-BNC	Lemo 00	BNC	 <p style="text-align: center;"><b>BNC</b></p>



Single coil  
(parametric) eddy  
current probe (ECP)  
connector

## FIGURE 6 – Eddycon C eddy current flaw detector. Right side panel






**Note.** Changing of the following parameters is performed using the


buttons ,  and .



3.2.2 Select parameter "PROBE"- "Single" type (pos. 14, FIGURE 1).

3.2.3

3.2.4 Set the ECP frequency " FREQ" (pos. 1, FIGURE 1) in a range specified in the registration certificate for the ECP.

3.2.5 Set the ECP drive " DRIVE" (pos. 6, FIGURE 1) not more than 2 V, if the object of testing has no paint coating. If the object of testing has heavy paint coating, then it is allowed to set the parameter of the ECP drive ( DRIVE) more than 2 V, but this increasing should not lead to the overshoot of the input circuit occupancy (over-occupancy).

3.2.6 Press  button to select the capacitor.


3.2.7 If the materials to be tested are of aluminum or titanium alloys, then it is recommended to select the position of the center of the complex plane in the lower right corner (fourth quadrant) - . In case of ferromagnetic materials testing it is recommended to select the position of the center of the complex plane in the bottom center of the screen - .

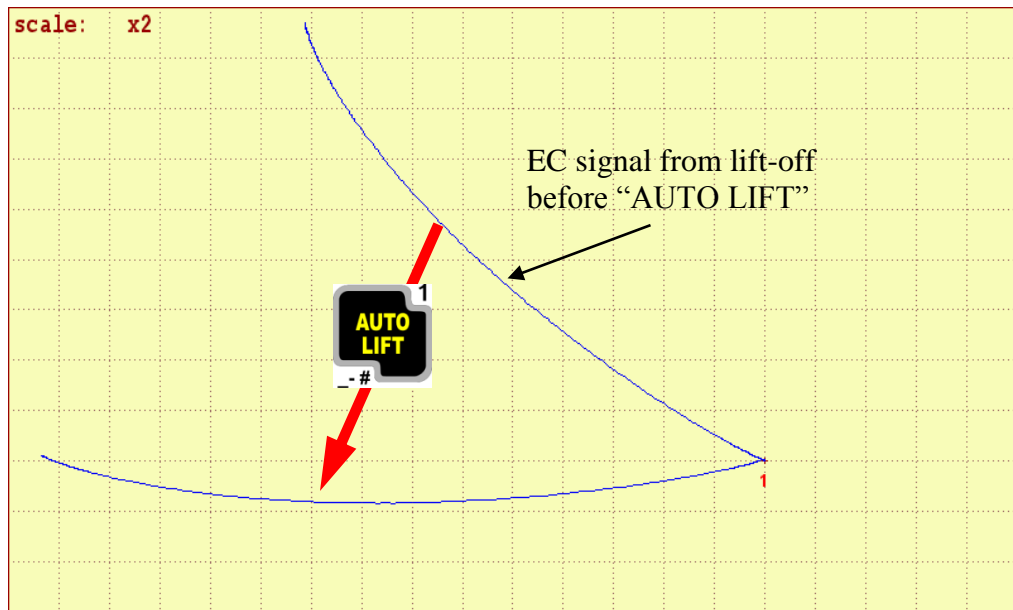
3.2.8 Place the ECP onto the flaw-free area of a calibration block.



FIGURE 7

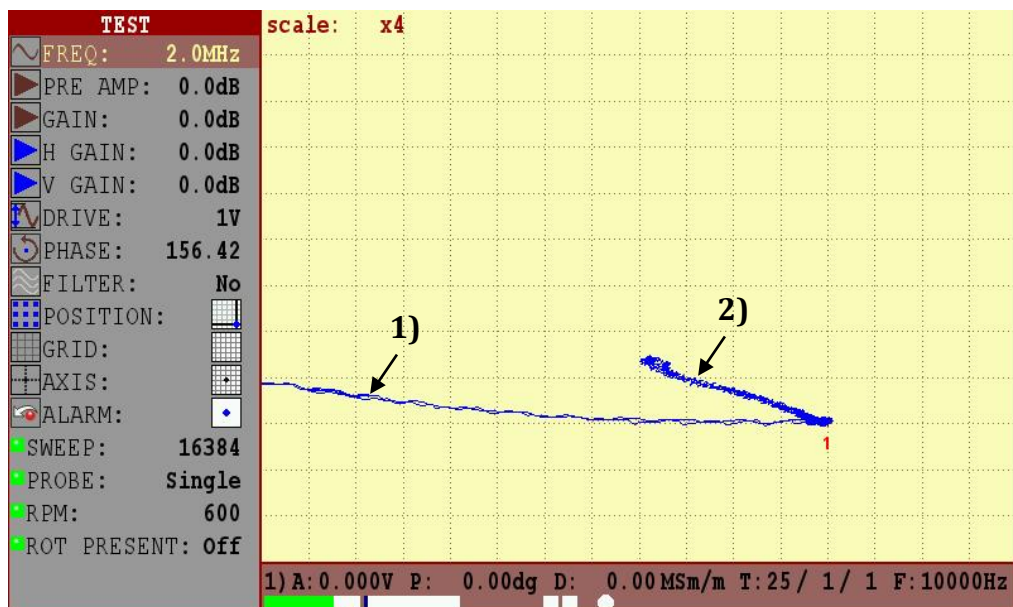
3.2.9 Press  button to balance the ECP.

3.2.10 Put a signal from a lift-off in the horizontal plane. For this, it is necessary to decline the ECP from the vertical axis at an angle of 15-45 ° or pick the ECP up. While the vector end is deviated, press  button.



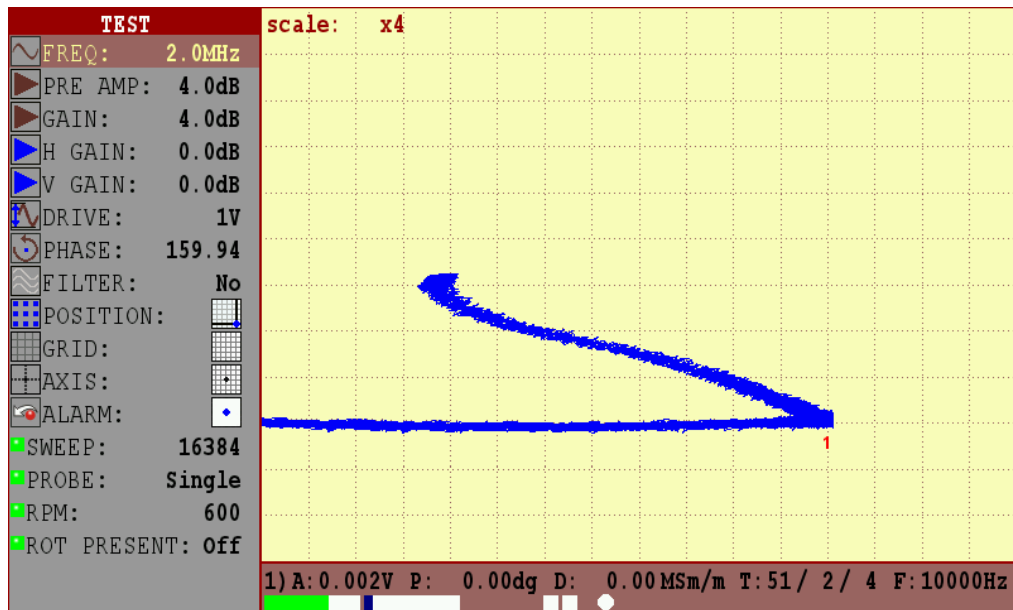
**FIGURE 8 – Operations with signal from lift-off**

In case if the first attempt to put the signal from the lift-off horizontally failed, it is necessary to repeat the steps described above, or put the lift-off signal manually using the phase change (⌚ parameter). The signal from a defect should be appeared in the first or second quadrant of the complex plane.



**FIGURE 9 – The signal from: 1) lift-off, 2) defect**

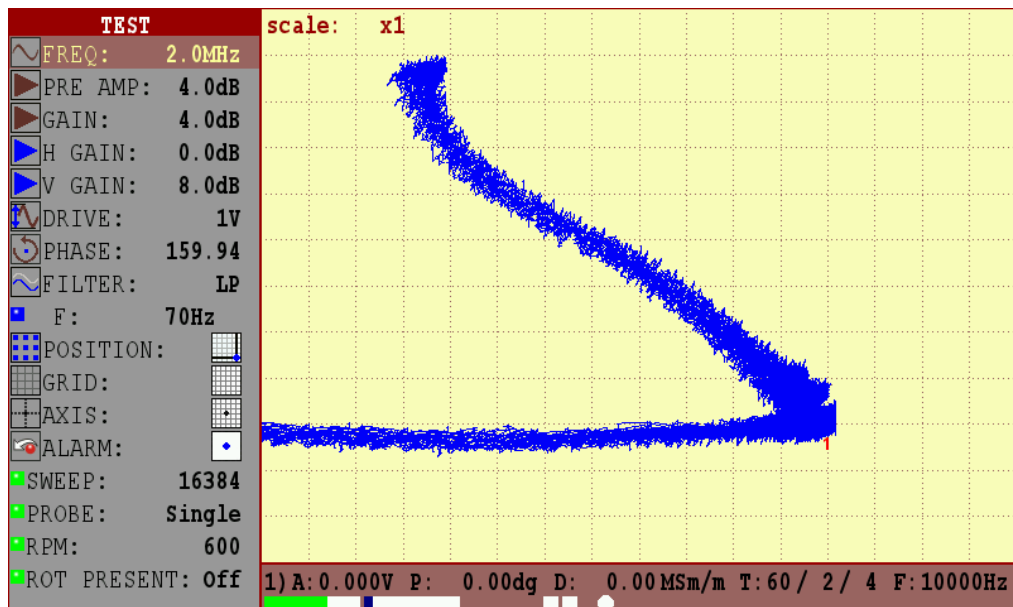
3.2.11 Increasing the gain on preamplifier “▶ PRE AMP” and gain “▶ GAIN” you should maximize the signal amplitude, but at the same time monitor behind parameters of the input circuit (pos. 17, FIGURE 1).



**FIGURE 10 – Operations with preamplifier “PRE AMP” and gain “GAIN”**

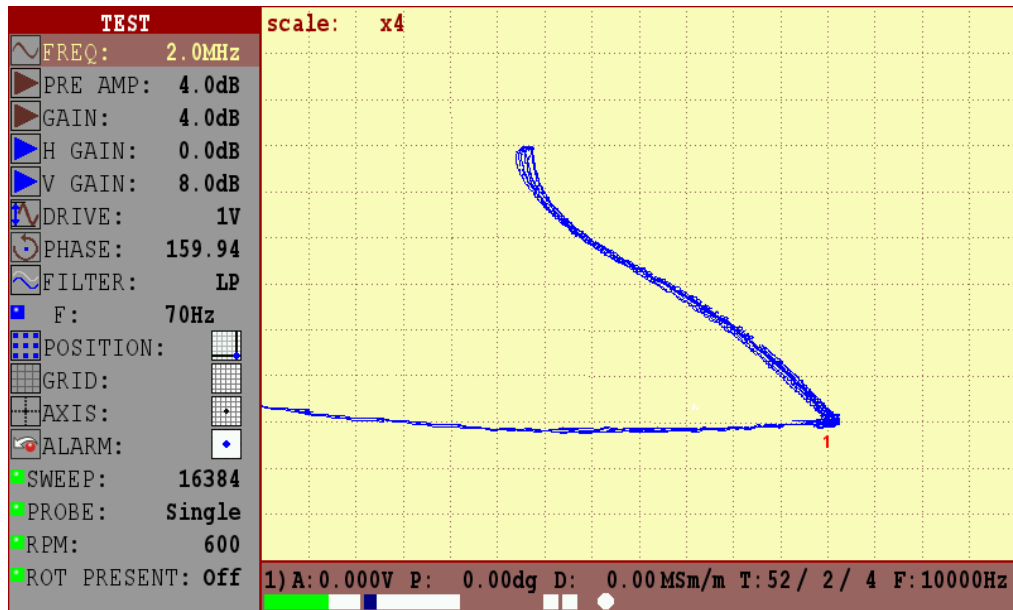
3.2.12 After changing any parameter that affects the absolute value of the signal it is necessary to perform balancing by pressing **NULL F1** button.

3.2.13 While testing materials of aluminum and titanium alloys, it is recommended to use the vertical gain "V GAIN" for the visual spread of signals from the lift-off and signals from a defect in a phase.




**FIGURE 11 – Operations with "V GAIN"**



3.2.14 To suppress high frequency noise it is recommended to activate LP filter.





**FIGURE 12 - Operations with LP filter**

3.2.15 Select the required type of a threshold level.

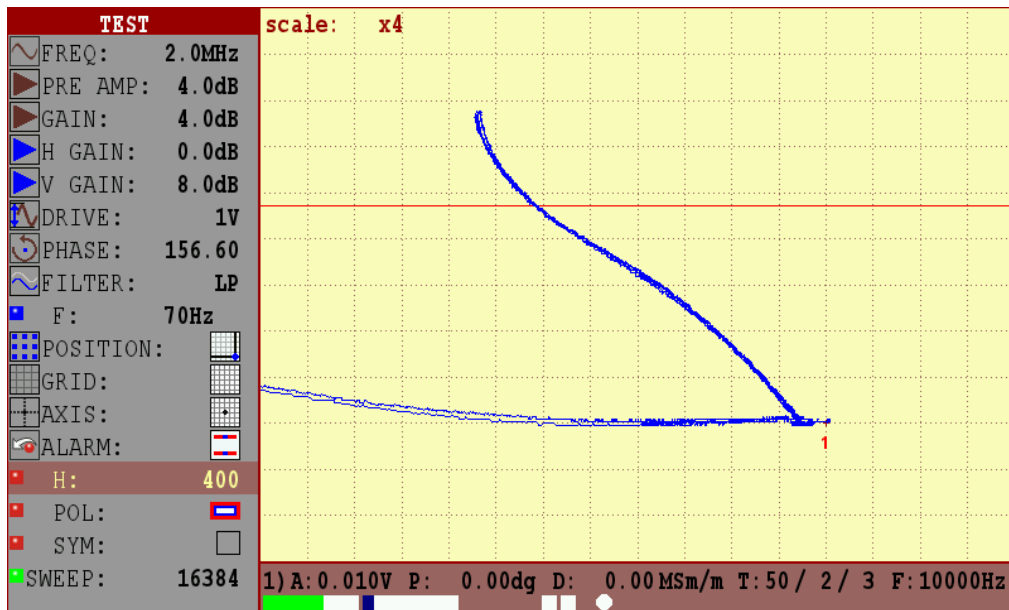
3.2.15.1 Setting will be demonstrated on the example of threshold level type “ - level”.

3.2.16 Select at  ALARM position the type of threshold level “ - level”.


3.2.17 Move the probe across the artificial defect at calibration block for several times and visually set up the ALARM relative to the signal from the defect.


3.2.18 To change the height of the level press the  button on the position  ALARM and after moving to " H " parameter, change it to the required size.

3.2.19 After the ALARM is properly set up, the light alarm while detecting the defect will trigger on the flaw detector keypad (digital indicators on the display) and sound alarm (if it has not been turned off in "SETTINGS" menu).



**FIGURE 13 - Operations with threshold**





3.2.20 In case of need of automatic screen clearing, click the  button and at the parameter "Persistence" choose the time after which the screen is cleared.

3.2.21 By repeated pressing of  button, it is possible to select a convenient type of the signals display on the screen of the flaw detector.



### 3.3 REFLECTION, DIFFERENTIAL PROBE

3.3.1 Connect the ECP to the flaw detector using a connecting cable.

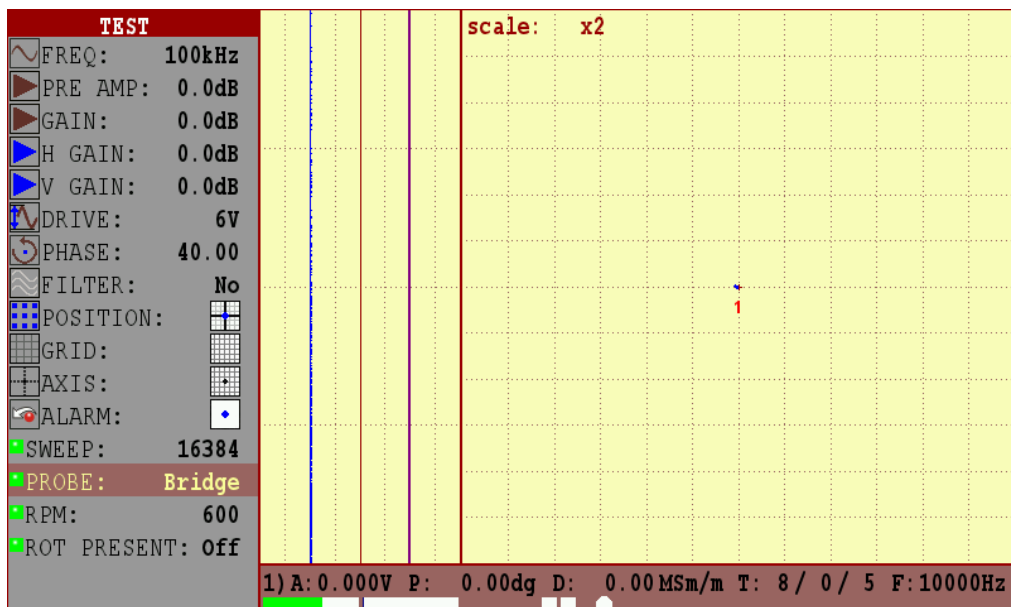
№	Connecting cable	Connector to Eddycon C	Connector to ECP	Connector view
1	Lemo 16-Lemo 04 (Reflection)	Lemo 16	Lemo 04	 <p style="text-align: center;"><b>Lemo 04</b></p>
2	Lemo 16-Lemo 04 (Bridge)	Lemo 16	Lemo 04	 <p style="text-align: center;"><b>Lemo 04</b></p>
3	Lemo 16 - Lemo Triax (Reflection)	Lemo 16	Lemo Triax	 <p style="text-align: center;"><b>Lemo Triax</b></p>
4	Lemo 16 - Lemo Triax (Bridge)	Lemo 16	Lemo Triax	 <p style="text-align: center;"><b>Lemo Triax</b></p>



**FIGURE 14 – Eddycon C eddy current flaw detector. Right side panel**

3.3.2 Select parameter "PROBE"- "Reflection" or "Bridge" type (in the "TEST" menu).

3.3.3 Setting will be demonstrated on the example of «Bridge» type probe.



**FIGURE 15 – Operations with probe type**

3.3.4 Set the ECP frequency "FREQ" (pos. 1, FIGURE 1) in a range specified for the ECP in the registration certificate.

3.3.5 Set the ECP drive "DRIVE" (pos. 6, FIGURE 1) recommended for the ECP in the registration certificate.

3.3.6 Place the ECP onto the flaw-free area of a calibration block.

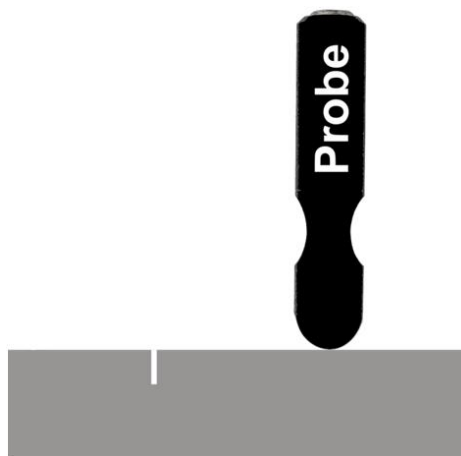



FIGURE 16

3.3.7 Press  button to balance the ECP.

3.3.8 Increasing the gain on preamplifier "PRE AMP" and gain "GAIN" you should maximize the signal amplitude, but at the same monitor behind parameters of the input circuit (pos. 17, FIGURE 1).

3.3.9 After changing any parameter that affects the absolute value of a signal it is necessary to perform balancing by pressing  button.

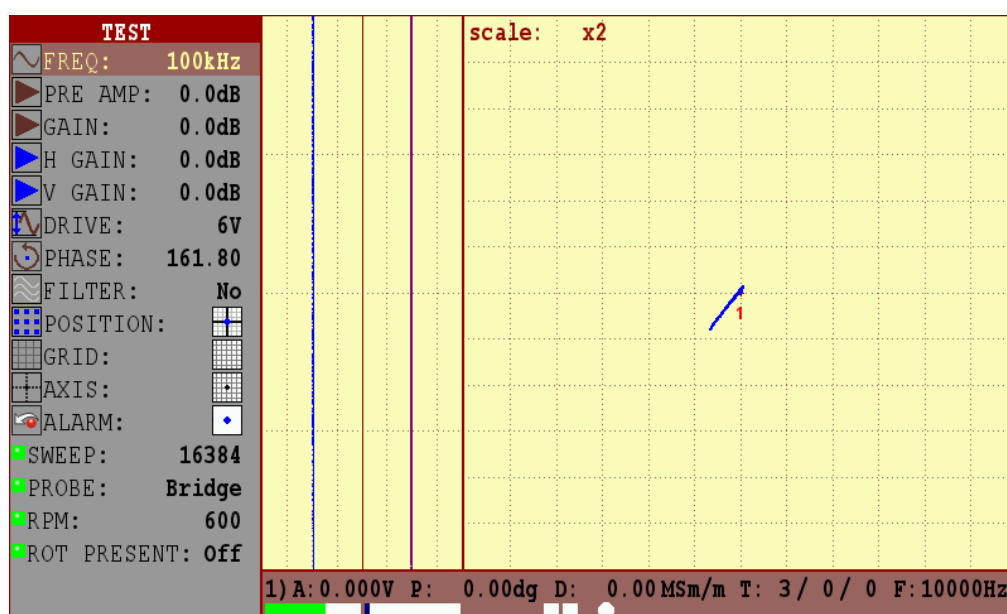
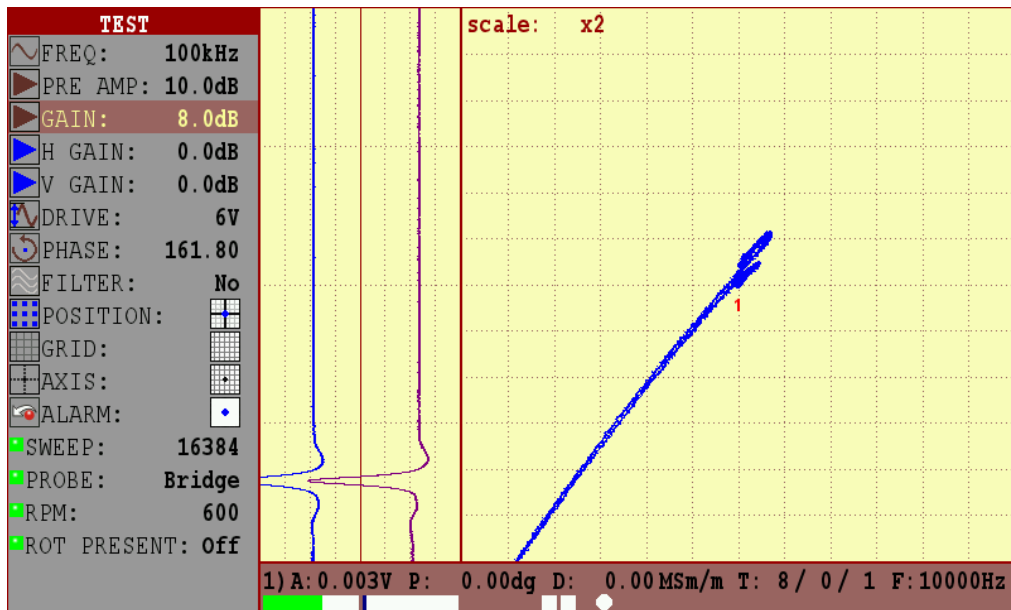




FIGURE 17 – The signal from the defect before applying the gain

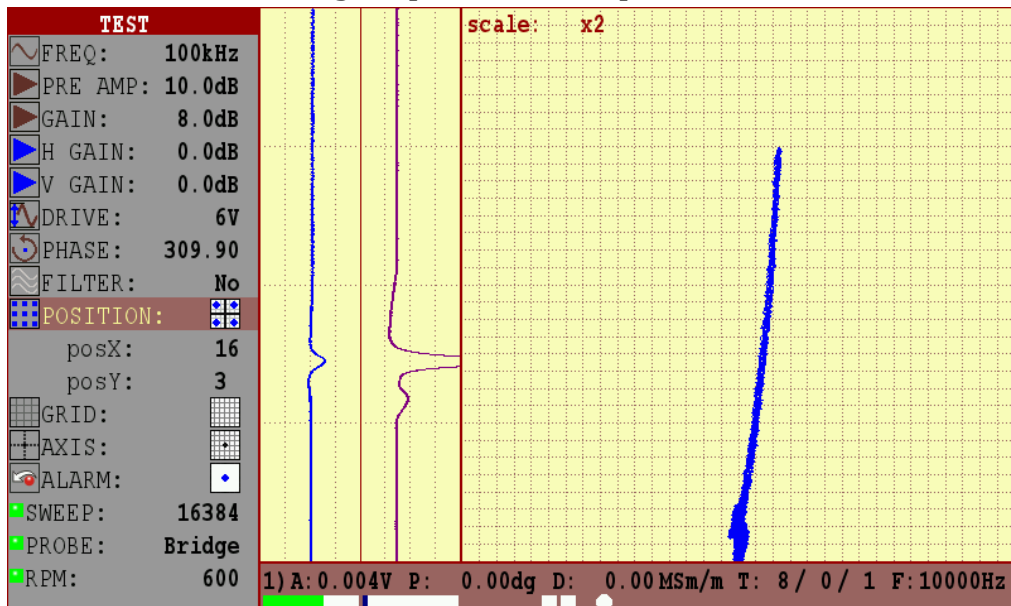


**FIGURE 18 – The signal from the defect after applying the gain**

3.3.10 It is recommended that the signal from the defect should be placed in the first or second quadrant of the complex plane.


3.3.11 For convenience, it is recommended to select the position of the center of the complex plane in the middle of the screen  complex plane center, or at the bottom center of the .



3.3.12 To correct the ECP signal phase use  parameter.





**FIGURE 19 – The signal from the defect after adjusting the phase and repositioning the center of the complex plane**

3.3.13 Select the required type of a threshold level.

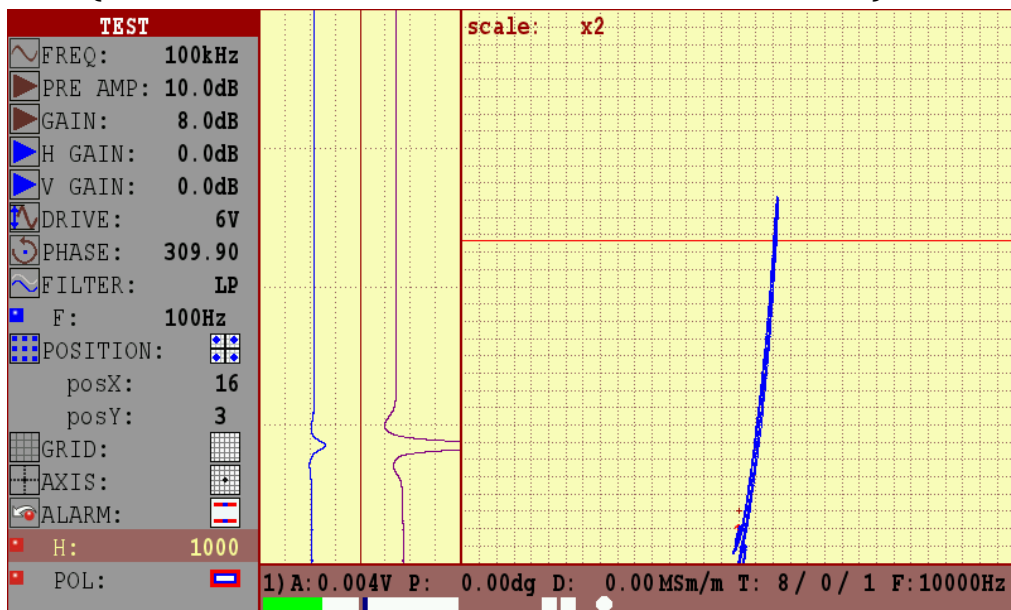
3.3.14 Setting will be demonstrated on the example of the threshold level type “ – level”.

3.3.14.1 At the position  ALARM select the type of the threshold level “ – level”.


3.3.14.2 Move the probe across the artificial defect at calibration block for several times and visually set up the ALARM relative to the signal from the defect.

3.3.14.3 To change the height of the level, press the  button at the position  ALARM, and having moved to the “H” parameter, change it to the required size.

3.3.15 Move the probe across the artificial defect at calibration block for several times and visually setting up the ALARM relative to the signal from the defect. After the ALARM is properly set up, the light alarm while detecting the defect will trigger on the flaw detector keypad (digital indicators on the display) and sound alarm (if it has not been turned off in "SETTINGS" menu).




**FIGURE 20 – Threshold level set up**

3.3.16 In case of need of automatic clearing of the screen, click the  button and on the parameter "Persistence" choose the time, after which the screen is to be cleared.

3.3.17 Repeatedly pressing the  button, one can select a user friendly type of the signals displaying on the screen of the flaw detector.

### 3.4 ROTATION PROBE

3.4.1 Connect the rotary scanner to the flaw detector using the connection cable.

№	Connecting cable	Connector to Eddycon C	Connector to rotary scanner	Connector view
1	Lemo 16 - Lemo 16 (ROTARY)	Lemo 16	Lemo 16	 <p data-bbox="1225 1025 1378 1066"><b>Lemo 16</b></p>



Universal connector for eddy current probe (ECP) and eddy current rotary scanner

## FIGURE 21 – Eddycon C eddy current flaw detector. Right side panel

3.4.2 Connect the ECP to the rotary scanner. Approximate marks on the case of the probe and scanner should coincide.

3.4.3 Without applying excessive force insert the ECP into the scanner. In case, when carrying out the connection you feel that the mating connectors rest at each other, but the marks on the cases match, you must slightly decline the ECP from the vertical axis and insert the ECP until it stops. When the ECP is properly installed into the scanner, the rubber o-rings should not be seen.



**Note.** If the ECP is inserted into the scanner too tightly, it is necessary to extract the ECP and remove one or several o-rings from it.

3.4.4 At "ROT PRESENT" position, set up "On".

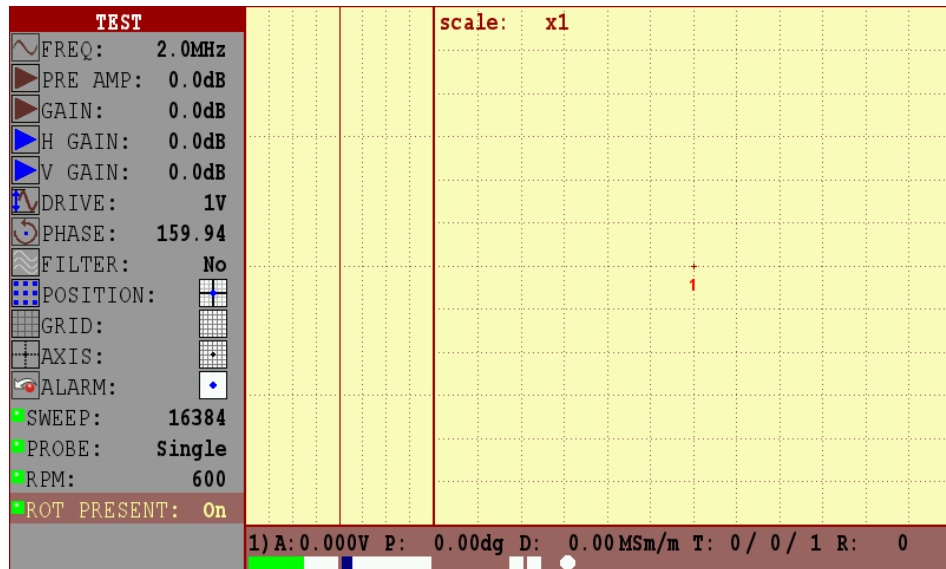


FIGURE 22 – The rotary scanner set up

3.4.5 In displayed menu choose the type of the rotary scanner and press



button.

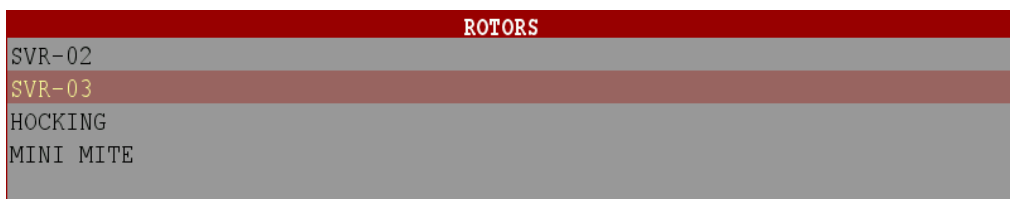


FIGURE 23 – The rotary scanner selection



3.4.6 Set the ECP frequency "FREQ" (pos. 1, FIGURE 1) in a range specified in the registration certificate for the ECP.

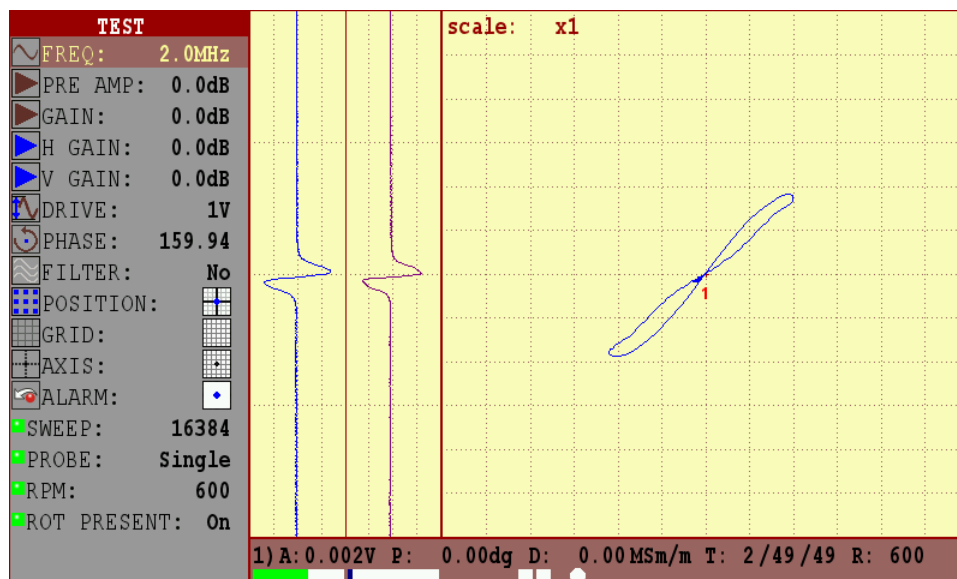
3.4.7 Set the ECP drive "DRIVE" (pos. 6, FIGURE 1) recommended in a registration certificate for the ECP.

3.4.8 Set the required rounds for the scanner (RPM).

3.4.9 Put the ECP into the hole of the calibration block.

3.4.10 For activation press the switched on/off button on the case of the rotary scanner.

3.4.11 Press  button to balance the ECP.



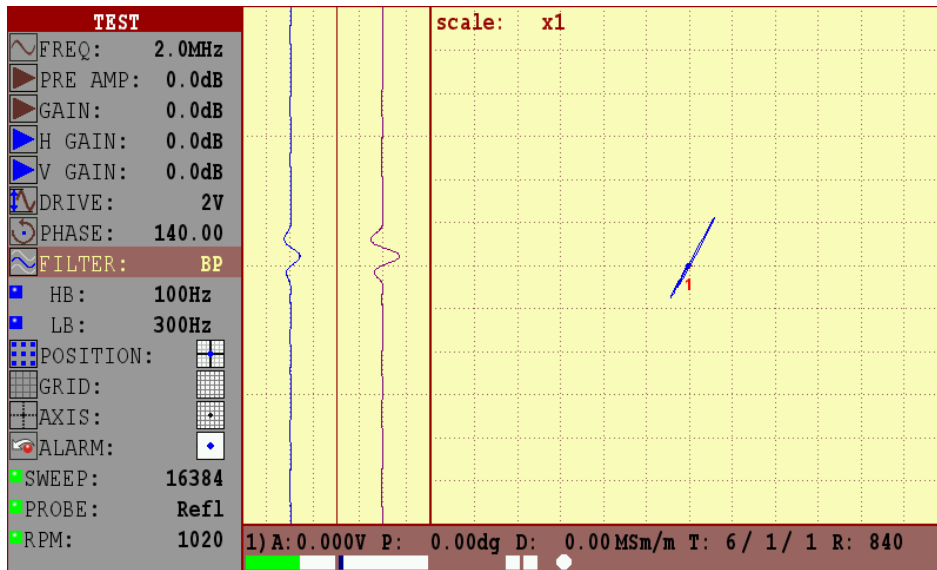
**FIGURE 24 – Basic rotary scanner signal (without filtering)**

3.4.12 Select the Bandpass filter (BP) and perform its setting. First of all, minimize the distortion signals from ECP in the hole by setting the "HB" parameter, and then proceed to the "LB" setting. The filter is set by trial and error.



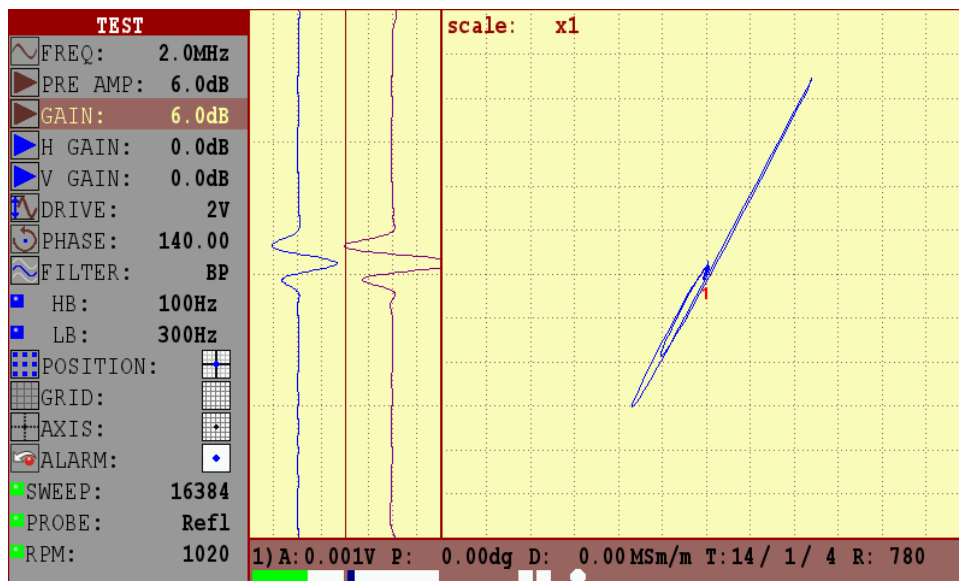
**Note.** To start the operation, the following parameters of the filter can be set:

- HB – 100 Hz;
- LB – 300 Hz.




**FIGURE 25 – Basic rotary scanner signal (with BP filtering)**

3.4.13 Increasing the gain on preamplifier “ PRE AMP” and gain “ GAIN” maximize the signal amplitude, but at the same monitor behind parameters of the input circuit (pos. 17, FIGURE 1).




**FIGURE 26 – Operation with preamplifier “ PRE AMP” and gain “ GAIN”**

3.4.14 It is recommended, the signal from the defect to be placed in the first or second quadrant of the complex plane. To correct the ECP phase use parameter.



3.4.15 After changing any parameter that affects the absolute value of the signal it is necessary to perform balancing by pressing  button.

3.4.16 Select the required type of a threshold level.

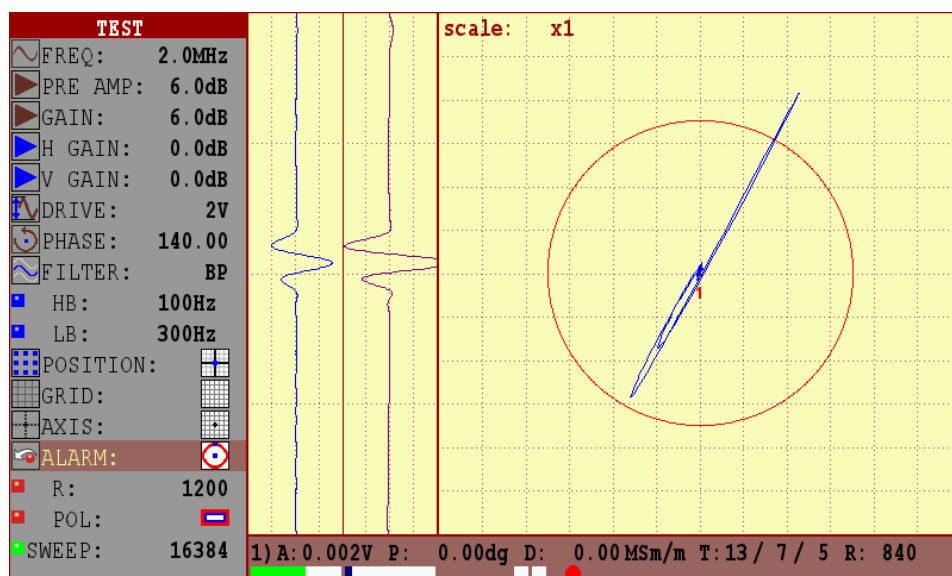
3.4.16.1 Setting will be demonstrated on the example of threshold level type " - circle".

3.4.17 Select at the position  ALARM the threshold level type " - circle".


3.4.18 During the ECP rotation in a hole perform the ALARM setup. Visually set the ALARM relative to the signal from a defect.

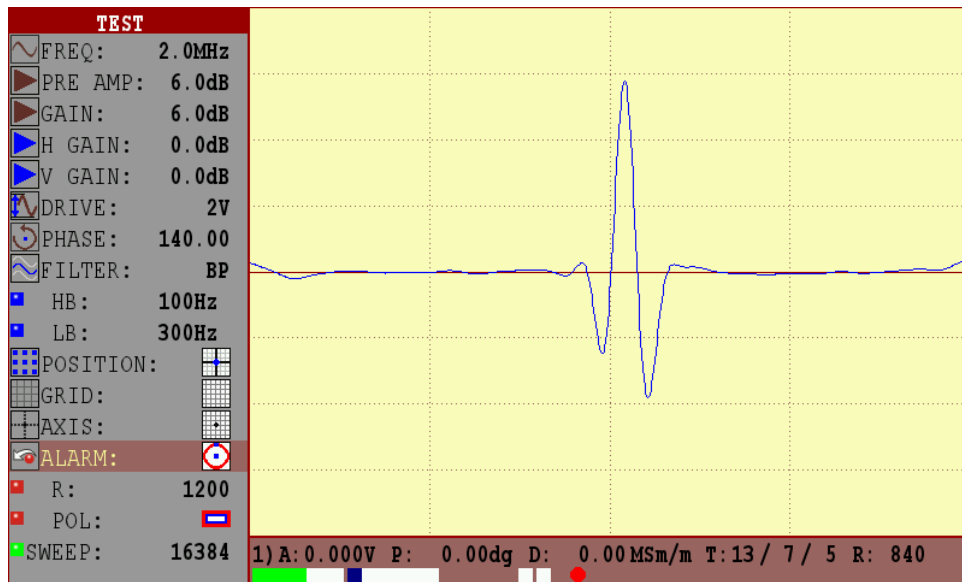
3.4.19 To change the radius of the circle, press the  button at the position  ALARM and after moving to the parameter "R", change it to the required size.

3.4.20 After the ALARM is properly set up, the light alarm will trigger on the flaw detector keypad when detecting the defect (digital indicators on the display) and sound alarm (if it has not been turned off in "SETTINGS" menu).



**FIGURE 27 - Operation with threshold**


3.4.21 Repeatedly pressing the  button, one can select a convenient type of the signals on-screen display of the flaw detector.



**FIGURE 28 - Different display types**

### 3.5 "CONDUCTIVITY" measurement

3.5.1 Connect the ECP "CP-13" to the flaw detector using the connection cable.

Nº	Connecting cable	Connector to Eddycon C	Connector to rotary scanner	Connector view
1	Lemo 16 - Lemo 04 (CONDUCTIVITY)	Lemo 16	Lemo 04	 <b>Lemo 04</b>



**FIGURE 29** - Eddycon C eddy current flaw detector. Right side panel

#### 3.5.2 Setting up the device for measuring the conductivity and the thickness of non-conductive coatings

3.5.2.1 To use the Eddycon C for Conductivity measurement requires the following:


- Eddycon C flaw detector;

- Standard 60 kHz Probe (CP-13) and Cable (Lemo 16 - Lemo 04 Conductivity).
- Conductivity standards of known value in a range from 0.59 MS/m (1,02 % IACS) to 63,8 MS/m (110 % IACS).

3.5.3 Connect the flaw detector with cable and the eddy current probe CP-13 for measuring the electrical conductivity.







**ATTENTION!** THE INSTRUMENT SETUP AND ELECTRIC CONDUCTIVITY MEASUREMENT SHOULD BE CARRIED OUT AT AN AMBIENT AND TEST OBJECT TEMPERATURE OF 20 ° C (68 ° F). BEFORE CARRYING OUT THE SETTING UP PROCEDURE AND ELECTRIC CONDUCTIVITY MEASUREMENT, IT IS REQUIRED THAT THE INSTRUMENT TO BE OPERATED AT LEAST OF 15 MINUTES AT A TEMPERATURE OF 20 ° C (68 ° F).

3.5.4 Press the  button for entering the instrument menu «SETTINGS» and choose «Test mode» - «CONDUCTIVITY».

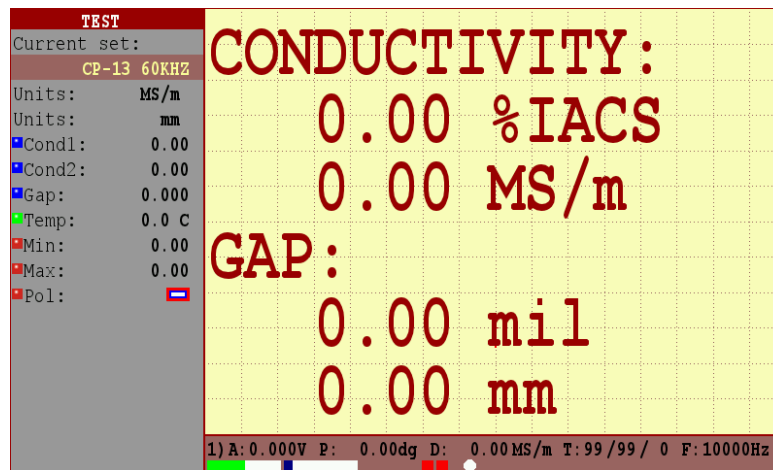
SETTINGS	
Test Mode	Conductivity
Max smp frequency	10kHz
Double frequency mode	<input type="checkbox"/>
Scale	x1/8
Extra gain	0dB
Persistence	Off
Color scheme	Light
Brightness	50%
Rounds	1
Sound	<input type="checkbox"/>
Language	En
TRIGGERING	INT
Cenc pulse/mm	100
N smp/mm	1
DATE/TIME:	
year	1970
month	1
day	1
hours	0

**FIGURE 30 - «CONDUCTIVITY» Test Mode**

3.5.5 Press  button to enter the «TEST» menu.

3.5.6 In the menu «TEST» under the position «Current set», choose by ,  buttons the appropriate setting for the measurement at a specified frequency and press the  button to activate the settings.

«CP13 – 60 kHz»;  
«CP13 – 480 kHz».



**FIGURE 31 – Choosing and activating settings of «CP13 – 60 KHZ»**

3.5.7 After settings activation make calibration at standard samples (calibration blocks).



**Note** – For setting up procedure, use certified calibration blocks only.

3.5.8 To determine the material by its conductivity the calibration blocks should generate the range of the conductivity, wherein the first block value is lower and the second block value is higher than the conductivity of the material being measured.

Conductivity measurement tolerances are:

- $\pm 0.5$  % IACS [ $\pm 0.3$  MS/m] for the conductivity range from 0.9 % to 62 % IACS [0.5 to 36 MS/m];
- $\pm 1.0$  % IACS [ $\pm 0.6$  MS/m] for the conductivity range from 62 % to 110 %.

Tolerances for coating thickness measurement:

- $\pm 1$  mil [ $\pm 0.0254$  mm] for the thickness range of 0-20 mil [0-0.508 mm].



**Note** – The narrower the range is, formed by the calibration blocks, the more accurate is the measurement.

3.5.9 Before beginning the calibration:

- at positions of Cond 1 (the lower conductivity value) and Cond 2 (higher conductivity value), set up the parameter values of calibration blocks

conductivity, which should be calibrated, using the




and





buttons;

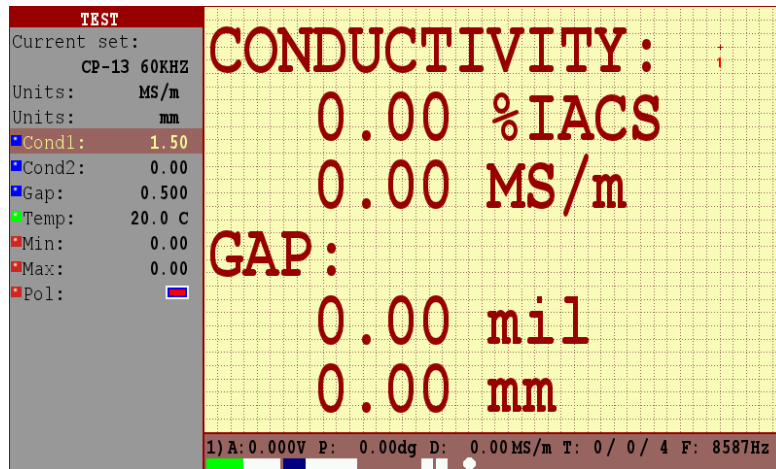
- at position Gap, set up the gap value of 20 mil [0.5 mm];
- at position Temp, set up the temperature value of 20 °C (68 °F).

3.5.10 To set up the coatings thickness measurement there must be used the 20 mil [0.5 mm] film thickness. Gap value of 20 mil [0.5 mm] is to be set.


3.5.11 For beginning the calibration, press the  button and follow the instructions displayed on the screen of the flaw detector.

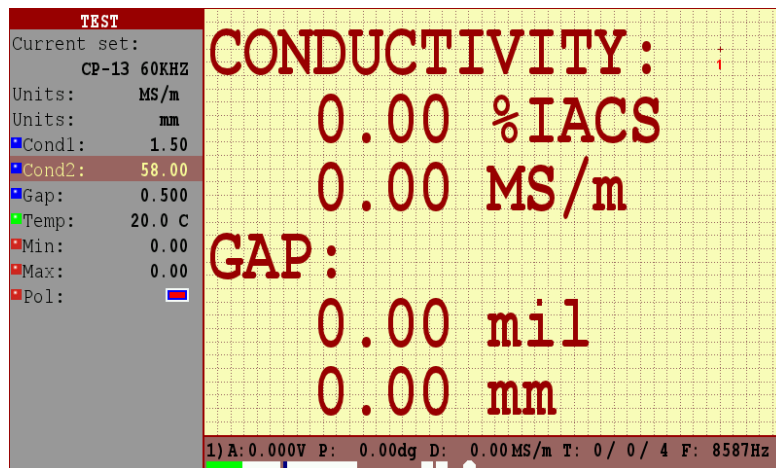
3.5.12 Hold the eddy current probe in the air at a considerable distance from metal objects and press .

3.5.13 Set the eddy current probe on the sample with Cond 1 conductivity and press .




**FIGURE 32 – Entering the conductivity value for the sample Cond 1**

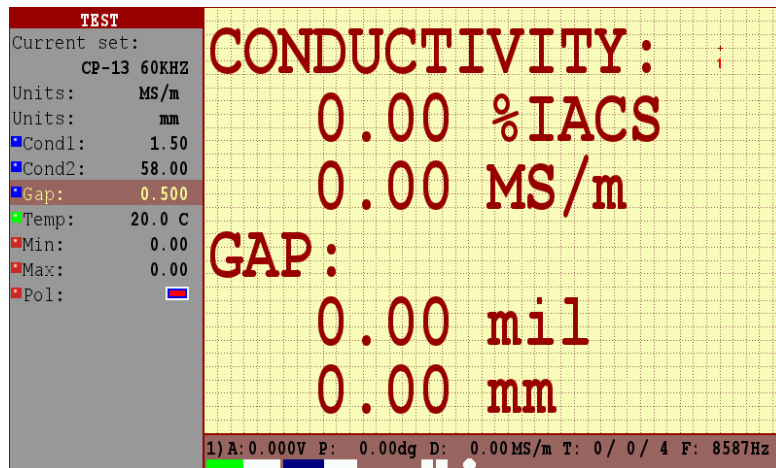
3.5.14 Set the eddy current probe on the sample with Cond 2 conductivity and press .



**FIGURE 33 – Entering the conductivity value for the sample Cond 2**

3.5.15 To put on the sample with Cond 1 conductivity the gap element (20 mil [0.5 mm]), set the eddy current probe on the sample and press .





**FIGURE 34 – Entering the gap value for setting on the Cond 1 sample**

3.5.16 After carrying out the setting up procedure, you can proceed with the measurement of electric conductivity at real objects. During the operation it is required periodically to check the accuracy of measurement of electric conductivity at calibration blocks.

3.5.17 In case, the value measured at calibration block differs from the nominal one and exceeds the measurement tolerance, then it is required to reactivate the operating setup and perform the adjustment at calibration blocks.



**Note.** In case, the ambient and test object temperature will be different from 20 °C (68 ° F), then the displayed value will be with an error.

### 3.5.18 Setting up the threshold level in the mode of electric conductivity measurement

- set up the low value of electric conductivity ■ Min;
- set up the high value of electric conductivity ■ Max;
- set up the trigger logic for threshold level:
  - ▢ – light and sound ALARM shall trigger, when the measured value of electric conductivity gets into the middle of a selected range
    - Min – ■ Max;
  - ▢ – light and sound ALARM shall trigger, when the measured value of electric conductivity gets beyond the selected range
    - Min – ■ Max.

### 3.5.19 Measuring Conductivity and Coating Thickness with the Eddycon C

#### **Guidelines for successful operation:**

- For accurate measurement of conductivity the surface coating thickness should be 0.5 mm (0.020 inches).
- The surface to be measured should be flat, or of the same curvature as the calibration standards. Where curved surfaces must be measured, additional error may be introduced.
- Measurement close to edges and on thin materials may give erroneous results.
- Check on a known consistent material to establish the influence of these effects.
- The coating thickness measurement function does not require further calibration, it should be accurate to better than 10 % of the displayed value on base materials having a conductivity between approximately 1 % and 100 % IACS.
- The electric conductivity measurement should be carried out at an ambient and test object temperature of 20 ° C (68 ° F).