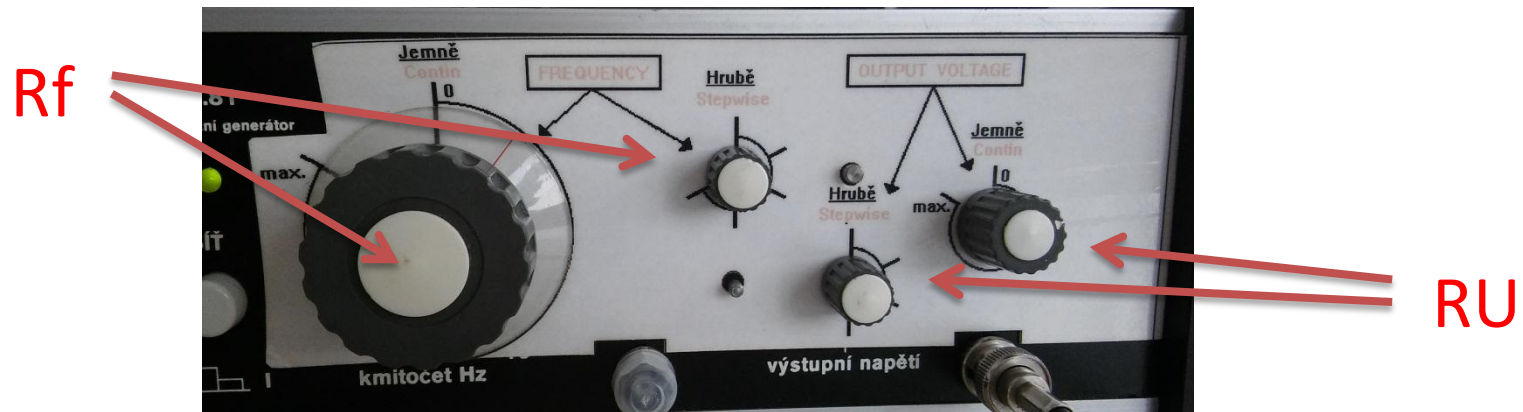# Graphic instructions

1. Select any voltage U and the frequency f of output signal by using rotary controllers

(Rf - freguency and RU - voltage)

- As a first step it is necessary to adjust the image of signal on the oscilloscope screen into a suitable form. This is done by using rotary converters deflection factor (1) and time base (2). Only use step-shifter (gray) to adjust the signal, not a smooth adjustment (red).
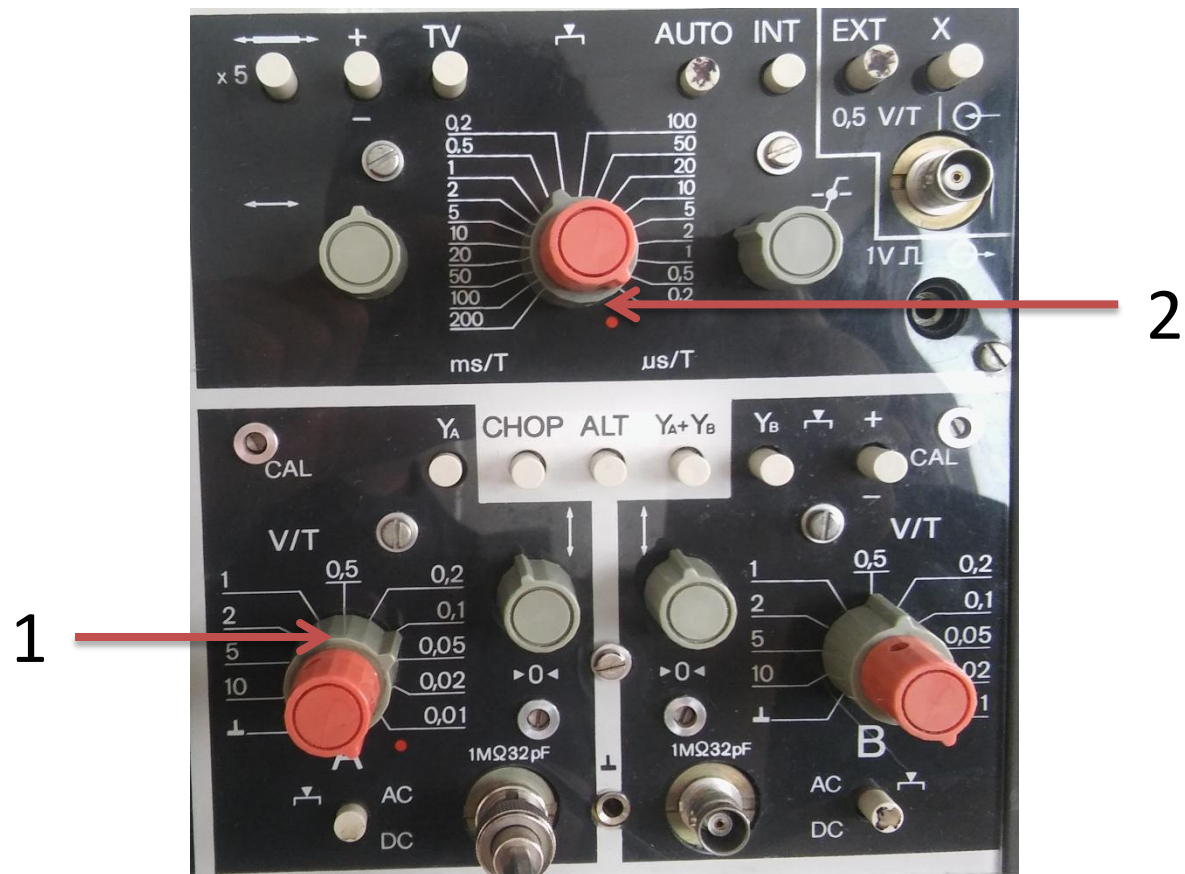
Vertical axis – voltage U

- Adjust of amplitude - The first step is to modify the signal vertical size that its amplitude is ideally more than half the size of the maximum raster range of the oscilloscope screen, but this range does not exceed that range.
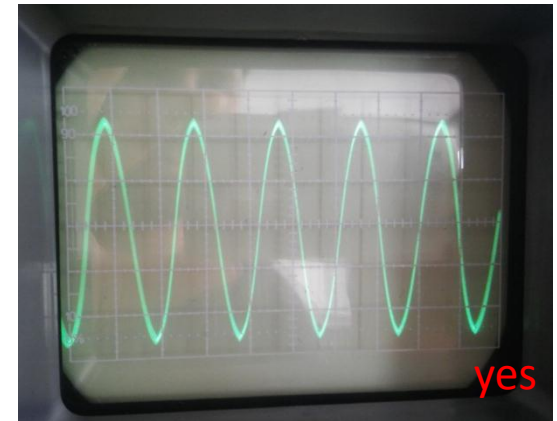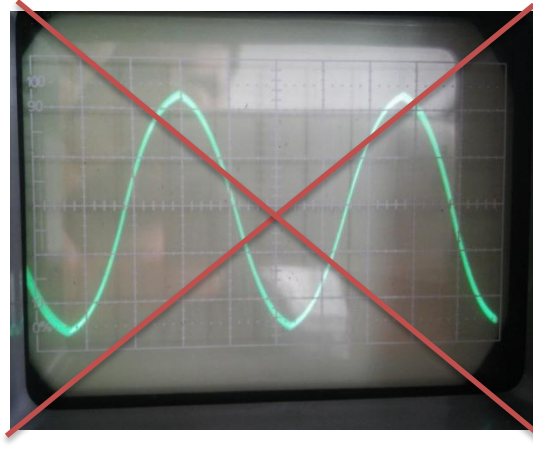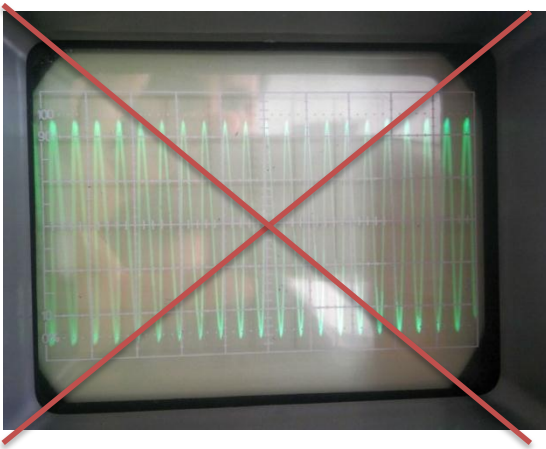

yes
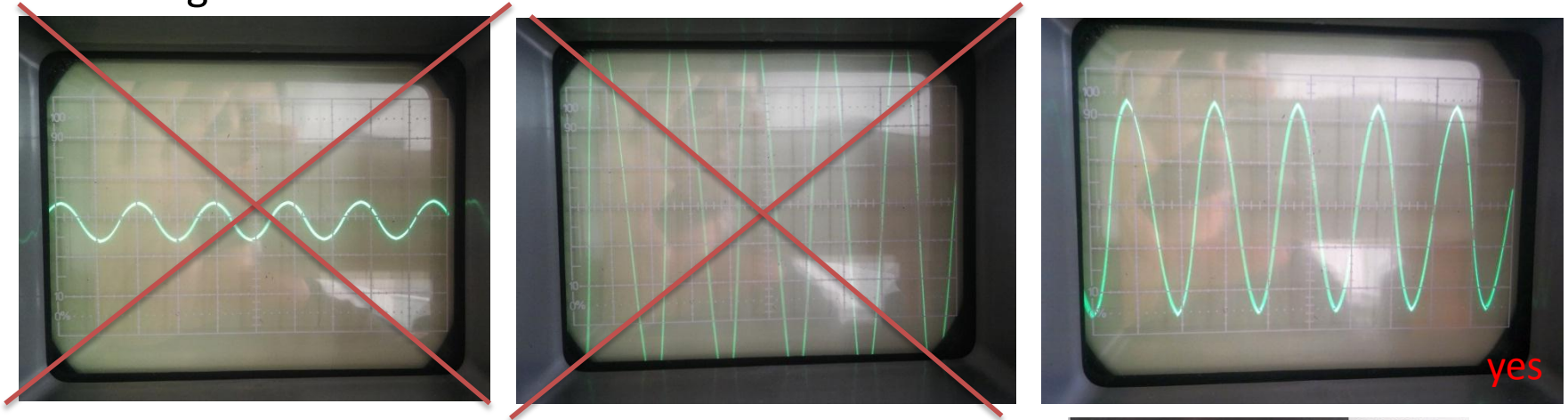
The adjustment is made by changing the position of the rotary deflection switch(1)

The y axis (vertical) signal shift enables the rotary controller marked with the symbol
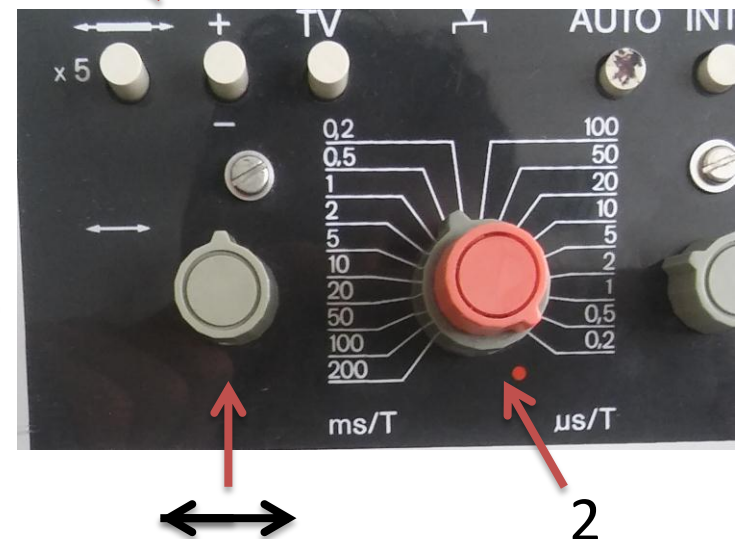
Horisontal axis – time, frequency

- Adjust the number of periods: to modify the signal in x-axis so that an appropriate number of periods are displayed.


yes

The adjustment is made by changing the position of the rotary timer changer (2)

The x axis (horisontal) signal shift enables the rotary controller marked with the symbol ←→

2

Measuring and calculation of voltage value

- After selecting a suitable deflection factor (see Adjust of amplitude), we determine the voltage according to the formula U = S * Y, where Y denotes the number of vertical raster parts (big division) corresponding to the height of the trace of the displayed waveform (from minimum to maximum), and S is the deflection factor (V/division) set by the calibrated switch (1).
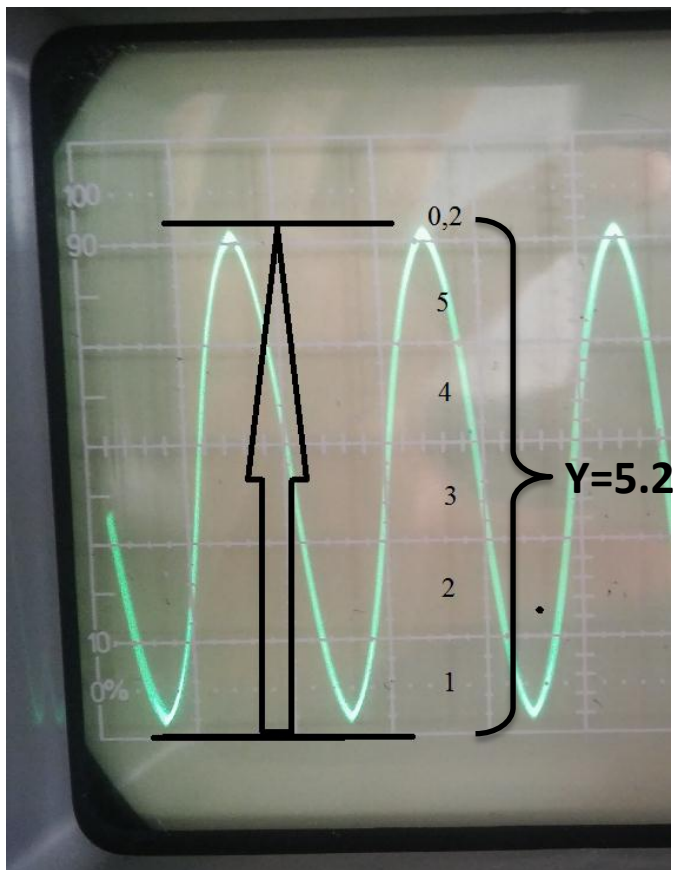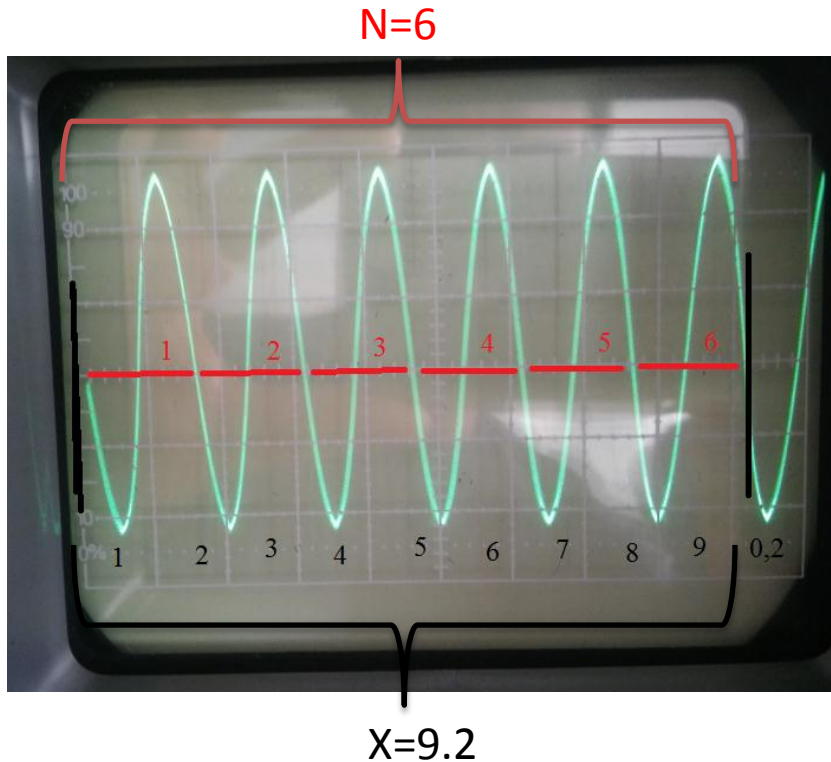

in present **example - Y corresponds to 5.2**

- S is setting as 0.1 (V/division)

S=0.1
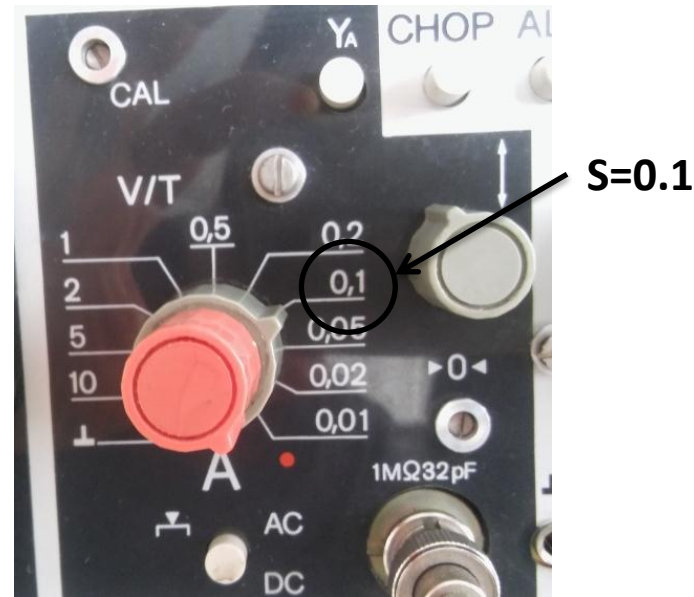
The voltage by using formula S*Y (5.2*0.1) = **0,52 V**.

Measuring and calculation of frequency

- When the appropriate value of the time base is select, it can be determine the value of the signal frequency by using the formula F = N / X * T, where N denotes the number of selected wavelengths of the displayed waveforms, X is the number of horizontal raster parts (big division) corresponding to the number of selected full periods N, and T denotes the value of the time base (s/division) set by calibrated switch (2)

N=6

X=9.2

In present example: N = 6 (6 full periods), X = 9.2 (big division corresponding to 6 full periods) and T = 0.5 ms/division (value of time base).

T value is necessary converse to s/division.

The frequency of signal according the formula F=N/X*T is equal to $6/9.2*0.5*10^{-3}$ = 1304 Hz