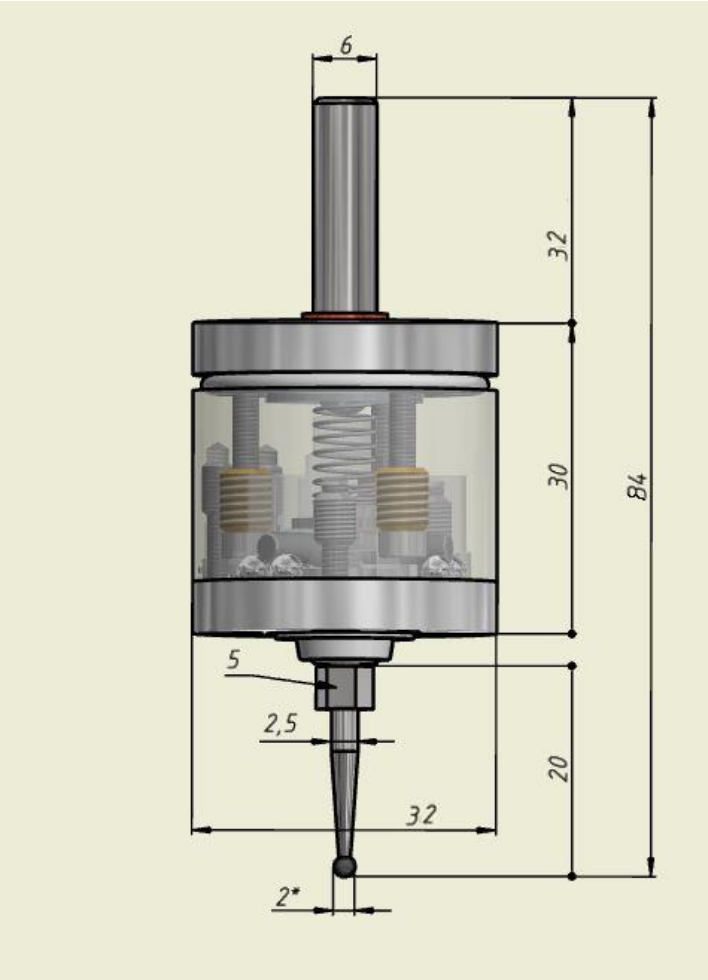
Purpose.

Touch probe **Probe** is designed to determine the exact coordinates of objects mounted on a CNC milling machine. The CNC system generates these coordinates when the Probe stylus touches the object and uses them to link the processing program to the workpiece location, to measure lengths, diameters, to search for hole centers, etc. The device can be used with various CNC systems: LinuxCNC, Mach3, embedded systems on industrial machines, etc. The device is connected to the CNC system via a cable (see section Connection).

Specifications.

Unidirectional repeatability	< 0.003 mm
Search directions	±X, ±Y, -Z
Permitted deviation stylus in XYZ directions	±4mm
Contact force in XY	min 0.5N max 0.8N
Contact force in Z	2N
Power supply for ver.4.3 and below	+3v...+5v
Power supply for ver.4.5	+5v...+12v
Power supply for ver.4.6 and higher	+5v...+24v
Current consumption	<4mA



* All sizes are for reference. The diameter of the ball (tip of the stylus) is approximate, in fact it can differ from the specified within ± 0.02 mm, spherical irregularity <0.003 mm.

Adjustment.

It is necessary to adjust the probe before starting the measurement. The probe is installed in the spindle, a check indicator is placed near to it (Fig. 1)
The indicator should be sensitive to a weak effect of 0.3-0.5N (for example, most lever indicators have this property).
The axis of the spindle is rotated by hand and the amplitude of the deflection of the stylus ball from the axis of rotation is controlled by the indicator.

Fig.1

The deviation is eliminated by turning the adjusting screws M2.5 (the screws are recessed into the holes indicated by the green arrows in Fig. 2) with a 2mm hex key from the kit. When adjusting, both tightening and loosening of the screws are used.

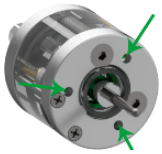


Fig.2

It is recommended to hold for a short lever of the key , so as not to develop excessive force (Fig. 3). It will be necessary to perform several cycles of spindle axis rotation--control-- adjustment in order to achieve a minimum deviation acceptable for a particular measurement.

Fig.3

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Connection.

Be careful!
1. Reversing the polarity when power will damage the sensor.
2. Probe is an NPN-NC sensor, i.e. output normally closed **to ground**. Connection to controllers with PNP inputs, i.e. designed for short-circuited **to power** PNP sensors, it is possible only with the help of special npn-to-pnp converter, otherwise, both the sensor and the controller may be damaged.

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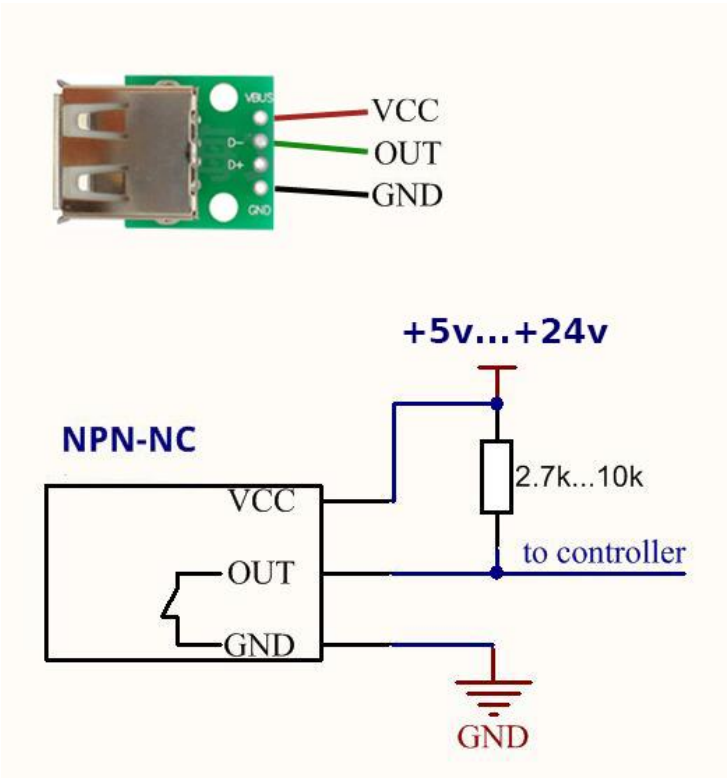
Below is a diagram of the connection to the machine. (Attention! Power supply for previous versions v4.4 and earlier + 3v ... + 5v). If you do not use the supplied USB adapter and cut off the USB plug from the cable, then the color of the wires inside the cable corresponds to the colors of the connections shown below:


VBUS
D-
D+
GND
VCC
OUT
GND
+5v...+24v
NPN-NC
VCC
OUT
GND
2.7k...10k
to controller
GND