

Federal State Unitary Enterprise  
Production Amalgamation  
“Novosibirsk Instrument-Making Plant”



# PN-11K Night Vision Binocular

Service Manual

AL3.803.118 RE



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## **Introduction**

The Service Manual gives an information about PN-11K Night Vision Binocular (hereinafter referred to as the Binocular) and service rules. The Service Manual describes the Binocular designation, specifications, principle of operation and possible troubles.

# 1 Description of the Night Vision Binocular

## 1.1 Designation

1.1.1 The Night Vision Binocular is designed for terrestrial observation and reconnaissance in natural night starlight or moonlight illumination and in total darkness with the aid of built-in infrared illuminator.

1.1.2 Operating temperature, °C -35...+35

Relative humidity at temperature 25 °C 80%

1.1.3 The Binocular is powered with one AA battery.

## 1.2 Specifications

1.2.1 Identification range for man-sized target, m 350

1.2.2 Magnification, x: 5

1.2.3 Field of view for each branch, deg: 11

1.2.4 Range of focus, m 10...∞

1.2.5 Diopter adjustment range of eyepieces, d ±5

1.2.6 Eye relief, mm 15

1.2.7 Exit pupil, mm 18

1.2.8 Image intensifier gain (for generation 2+ II tube)	20000
1.2.9 Battery life without illuminator using, h	10
at temperature from 0 to 35 °C	2
at temperature from -35 to 0 °C	1.5
1.2.10 Supply voltage, V	202×130×64
1.2.11 Overall dimensions, mm	1500
1.2.12 Weight, g	

### 1.3 Package

The Binocular should be equipped according to table 1.

Table 1

Name	Quantity	Remarks
Night Vision Binocular	1	
Diaphragm	2	
Napkin	1	
Strap	1	

### Continuation of the table 1

Name	Quantity	Remarks
Bag	1	
Soft Cover	1	
Service Manual	1	

## 1.4 Design

1.4.1 The PN-11K Night Vision Binocular consists of two identical electro-optical branches intensifying weak image up to visible level. The Binocular consists of two systems each one is a vision tube.

The Binocular comprises the objective lenses, image intensifiers, eyepieces, supply cell and infrared illuminator in the metal body.

The objective lenses and eyepieces are provided with the focus adjustment rings 2 (Figure A.1) and diopter adjustment rings 3. The top lever 5 at the top ensures the range focusing from 10 m to  $\infty$  (Figure A.1). The removable diaphragms on the lenses are intended for operation in twilight and daytime conditions. The rubber eyeshields 4 (Figure A.1) make the operation convenient and guard eyes against

injures. The binocular and infrared illuminator are activated by button ON at the top of the housing 1 (Figure A.1). At the bottom there are the cover 4 of battery compartment 3 with batteries AA, adjustable strap 5 (Figure A.2) and infrared illuminator 2 engaged when natural object illumination is insufficient.

## **2 Operation**

### **2.1 Operation restrictions**

**2.1.1 WARNING: Daylight can damage the Binocular switched on. It is strictly prohibited to switch on the Night Vision Binocular in daylight or local highlight conditions without the protective diaphragms on the lenses! Do not aim the Binocular at bright illuminated objects in dark time!**

### **2.2 Use**

2.2.1 Remove the cover 4 (Figure A.2).

2.2.2 Insert a battery into the battery compartment 3 according to polarity designated on the cover 4 (Figure A.2).

2.2.3 Set the cover 4. In day light and in twilight switch binocular only with protective diaphragms.



2.2.4 Press the button ON (Figure 1A) for 1.5 second at least (remember that the diaphragms must be put on in daylight and twilight conditions). When the image intensifier will shine adjust the eyepieces focus. In best position the honeycomb patterns of image intensifier screen is viewed.

2.2.5 Adjust the lenses focus with the range focusing lever 5.

2.2.6 If the illumination is insufficient press again the button ON for 1.5 second at least to activate the infrared illuminator. The red spot within the user's field of view indicates the infrared illuminator operation. To switch off the IR illuminator press the button ON again (for 1.5 sec at least). When the illuminator is switched off the red spot disappears.

2.2.7 Short pressing on the button ON switches off the Binocular totally regardless of illuminator's mode. If the battery is discharged the red spot will blink, indicating the need of battery replacement.

2.2.8 The Binocular is provided with the automatic brightness control and highlight cut-off circuits. If a viewed object illumination exceeds the admissible level the image intensifier gain is reduced up to total switching off. In last case switch off the Binocular in order to avoid a damage of image intensifiers.

2.2.9 The Binocular operation can be continued when illumination conditions become tolerable.

## **2.3 Troubleshooting**

2.3.1 In the case of a trouble check the follows:

- whether the polarity of the battery is proper;
- whether the battery is operable;
- whether the contacts of battery and battery compartment are clean;
- whether the lenses and eyepieces free of dirt, dust, oil and water.

The table lists the possible troubles and methods of their elimination. If the mentioned methods do not eliminate a problem send the binocular to local repair shop.

Table 2

Trouble	Possible cause	Method of elimination
The screens of image intensifiers do not shine or shine weak. The red spot blinks in the field of view	Battery is discharged. Incorrect polarity of battery	Replace the battery. Insert the battery properly
The image brightness rises to maximum and falls down or fluctuates disturbing the viewing. No image at all	Light overload	Put the protective diaphragms on the objective lenses
Image is degraded and blurred	Outer optical surfaces of lenses or eyepieces are sweated or dirtied	Wipe the lenses and eyepieces with flannel or cotton wool

## **3 Maintenance**

### **3.1 Safety precautions**

3.1.1 The Binocular is safe to handle due to its principle of operation, design, components and materials used.

3.1.2 To avoid a pollution of environment it is recommended to refuse all used supply cells only in the places assigned for waste utilization.

### **3.2 Maintenance rules**

3.2.1 Prevent the Binocular against dirt, impacts and temperature shocks. After operation in dirty weather the Binocular should be cleaned and dried out. Avoid to expose the binocular to frosty air. When using in frosty weather keep the Binocular under outer clothing and take out it for a time of viewing only.

If the Binocular have been brought indoor from a frost air do not open the bag or take out the Binocular within one hour. Protect the Binocular against sustained exposition of direct sunlight. Prevent an invasion of direct sunlight into the lenses.

The Binocular should be stored in a dry heated room at temperature no less than 5° far from heaters. The battery is to be removed from the battery compartment of stored Binocular. The contacts of battery compartment should be free of corrosion. The optical surfaces can be cleaned by means of dry napkin or cotton wool wetted with alcohol.

## 4 Acceptance certificate

4.1 PN-11K Night Vision Binocular, serial № \_\_\_\_\_, meets the requirements of technical documentation and is ready for operation.

Date of issue \_\_\_\_\_

Signatures \_\_\_\_\_  
(stamp)

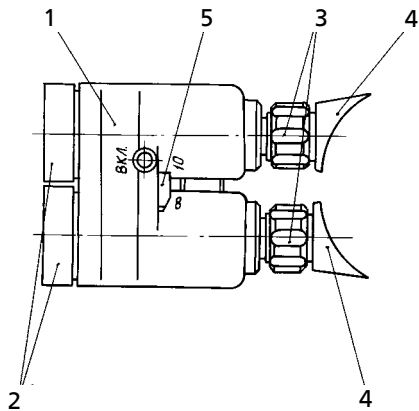
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## **ANNEX A**

### **List of figures**

Figure A.1 – The Night Vision Binocular (top view)

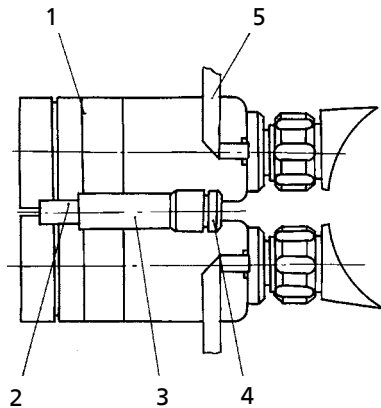
Figure A.2 – The Night Vision Binocular (bottom view)



1 – body; 2 – lenses; 3 – eyepieces; 4 – eyeshields; 5 – lever

**Figure A.1 – The Night Vision Binocular (top view)**





1 – body; 2 – IR illuminator; 3 – battery compartment; 4 – cover; 5 – strap

**Figure A.2 – The Night Vision Binocular (bottom view)**