Night sight PN-18K

Service manual

АЛ3.812.264 РЭ

CONTENTS

Service manual is made to help you learn how to use and handle night sight PN-18K.

The service manual contains its designation, technical features, information about construction and operation of night sight PN-18K, necessary to handle it properly and make the most of its capabilities, and it also contains information about possible failures and methods of their elimination.

CAUTION! It is strongly prohibited to switch on the sight in the day time without the cover with light filter being set on and direct at bright shining objects-sun, welding and etc, and observe bright shining objects at night – direct headlamp light, flame and etc.

1 DESCRIPTION AND OPERATION

1.1 Designation

1.1.1 Night sight PN-18K (hereinwith – the sight) is made for shooting from hunt weapon «Tiger», «Tiger-1», «Tiger -9», «Tiger-9-1», «Saiga», «Saiga-5,6», «Saiga – 5,6», «Saiga-5,6C», «Saiga-9», «Saiga-9-1», «Saiga-9-2», «Saiga-20», «Saiga-20K», «Saiga-20C», «Saiga –M3», «Saiga-308», «Saiga-308-1», «Saiga-308-2», «Saiga-410», «Vepr», «Los-7», «Los-7-1», «Bars-4», «Bars-4-1», and from the gun with «Picatinny» strap («Weaver rail»), from the gun with the strap «Stownera», and apart from that there is a adaptor strap so that the customer can set the sight on the gun himself.

1.1.2 The sight is equipped with the Image Intensifier tube (hereinwith IIT) Gen2+ or Gen3, which provides recognition range of 350-450 meters. The sight with IIT Gen 2+ is made for using under natural night illumination conditions at (3-5)x10-3 lx, i.e in star light without clouds and moon light. The sight with IIT Gen3 is made for using under illumination at (3-5) x 10-4 with clouds and without the moon.

1.1.3 The sight is used at ambient temperature from +40 to -40°C and at relative humidity up to 98% at the temperature 25°C.

1.2 Technical features

1.2.1 The main technical features of the sight and those of the IIT must correspond to table Таблица 1

Table 1

Feature	Value
Focal Length, mm	100,1
Magnification, x	3,5
Field of view, deg	9
Eye relief, mm *)	50-70
Eyepiece aperture	1:1,53
Focus range, m **)	350

*) The sight is equipped with two eye shields, which make it easy to orientate with the regard to eye relief.

**) The optional variants of the sight PN-18K, PN-18K-01, PN-18K-02, PN-18K-03, PN-18-04, PN-18-K-05 don't have focus adjustment and they can be adjusted at the different focus range.

The optional variants of the sight PN-18K-06, PN-18K-07, PN-18K-08, PN-18K-09, PN-18K-10, PN-18K-11 have focus range from 20m to infinity.

Continue the table 1

Feature	Value
Dioptric adjustment, dptr	from -4 to +5
Power supply source voltage,V	1,2-1,5
Time of continuous operation	
without highlight	15
with highlight	3,5
Photocathode sensitivity, mA/lm	350-540 (2^{+}); 700(Gen3);
Resolution, lp/mm	45-64
Gain	25000

1.2.2 The variable technical features of the different modifications of the sight PN-18K with the regard to the bracket and IIT are given in the table2.

Table 2

Sight modifica-tions	IIT Gen	Recognition range	Dimensions	Weight, kg not more	Notes
PN-18K, PN-18K-06	2+ 3	350 450	280x79x190	1,5	Tiger», «Tiger-9», «Saiga-5,6C», «Saiga-20C» «Saiga-9-2» «Saiga-M3» «Saiga-308-2», «Vepr» (figure 1a)
PN-18K-01 PN-18K-07	2+ 3	350 450	280x79x190	1,5	«Tiger-1», «Tiger -9-1», «Saiga», «Saiga -5,6», «Saiga-20», «Saiga-410», «Saiga-9», «Saiga-9-1», «Saiga-308-1», «Vepr» (figure 2)

Continue the table 2

Sight modifications	IIT Gen	Recognition range	Dimensions	Weight, kg not more	Notes
PN-18K-02, PN-18K-08	2+ 3	350 450	280x79x131	1,4	«Los-7», «Los-7-1», «Bars-4», «Bars-4-1» (figure 3)
PN-18K-03 PN-18K-09	2+ 3	350 450	312x79x134	1,4	The gun with strap «Picatinny» (figure 4)
PN-18K-04, PN-18K-10	2+ 3	350 450	280x79x106	1,25	With adaptor strap (figure 5)
PN-18K-05, PN-18K-11	2+ 3	350 450	280x79x140,5	1,4	The gun with strap «Stownera» (figure 6)

1.2.3 The sight provides target acquisition and recognition and aimed shooting at direct shot distance under natural night illumination.

Recognition range of the sight depends on the natural night illumination

level, atmosphere transparency and the contrast between target and background. If the level is high, at moonlit night, if there are external highlights, if the target is located at the light background (sand, snow), the recognition range goes up. In low light, at cloudy weather, at low atmosphere transparency if the target is located at the dark background (field, trees and etc), the recognition range goes down.

1.3 Sight compounds

1.3.1 The delivery set should correspond to that mentioned in the table 3.

Table 3.

Name	Quantity
Sight PN-18K	1
Bag	1
Charge unit tester YK-316	1

Continue the table 3.

Name	Quantity
Spanner	1
Eye shield	1
Napkin	1
Service manual	1

1.4 Operation

1.4.1 The operation of the sight is based on the principle of the low brightness image intensifying, which is made by the objective on the photocathode of the IIT, and as a result the image is getting bright enough to look at it through the eyepiece.

1.4.2 The sight consists of the objective, IIT, eyepiece, one power supply source, which is placed on the cover, built in IR lighter and a bracket, which is used to place the sight on the gun.

1.4.3 The cover 1 is set on the objective 2 (figure 1a), which simultaneously protects the objective from damage and makes sure the sight operates in the

day time and at dusk.

The focusing of the objective is made by turning the flywheel 3 (the sights without focusing have a bib instead of the flywheel).

1.4.4 The laying of the sharp image is made by turning the ring with the knurl A, located on the eyepiece 8.

1.4.5 The rubber eyeshield 9 on the eyepiece makes its use rather convenient and protect the eyes.

1.4.6 The position of the switch 11 for the sight to be switched on with highlight off is marked with red dot; the position "off" is marked with "OFF"; the switching on of the IR lighter 13 is marked "*". The field of view of the eyepiece should shine green with black aiming signs of the reticle within 3-4 seconds after the sight was turned on.

The switch on of the highlight of the reticle by red light guide and brightness adjustment is made by turning the flywheel 10.

1.4.7 The adjustment of sight in the direction "L-R" (Left-Right) and in the elevation "U-D" (Up-Down) is made by turning the flywheel which are closed with protective covers 5,7.

1.4.8 The connecting pipe 6 is used for nitrogen purging.

1.4.9 The polarity of the power supply source is shown on the cover 12 of the sight.

1.4.10The bracket 1 with side fastening are for fitting of the sights PN-18K, PN-18K-06 on the carbine «Tiger», «Tiger -9», «Saiga-5,6C», «Saiga-20K»,«Saiga-20C», «Saiga-9-2», «Saiga –M3», «Saiga-308-2», «Vepr», (figure 1b), and for the fitting of the sights PN-18K-01, PN-18K-07, on the carbines «Tiger-1», «Tiger-9-1», «Saiga», «Saiga-5,6», «Saiga-20»,

«Saiga-410», «Saiga-9», «Saiga-9-1», «Saiga-308», «Saiga-308-1», «Vepr», (figure 2). In order to achieve this do the following:

- fold back the lever 5 (figure 1b);
- put the sight on the gun and push it forward along the strap 2 until the bracket 1 sets against the strap 2:
- turn the lever 5 up to the stop, it should snap to the bracket 1;
- make sure everything is set on properly.

In order to adjust the fastening of the sight on the gun it is necessary to do the following:

- remove the sight from the gun
- move the latch 3, having released it from the screw head;
- shift the lever 5 for such a number of teeth, which make sure the sight is

fixed and does not rock on the gun;
- put the latch 3 back
- make sure everything is set on properly.

1.4.11 The brackets 1 with upper fastening are used for fitting of the sights PN-18K-02, PN-18K-08, for carbines «Los-7», «Los-7-1», «Bars-4», «Bars -4-1» (figure 3), and for the fitting of the sights PN-18K-03, PN-18K-09, on the gun with «Picatinny» strap («Weaver rail») (figure 4). In order to do this it is necessary to set the sight on the strap of the gun, push it forward up to the stop and tighten the nuts 2 with spanner 3 (figure 3).

1.4.12 Adaptor strap A (figure 5) let adapt the sights PN-18K-04, PN-18K-10 to a specific model of the gun. In order to do this appeal to the manufacturer or workshop.

1.4.13 Bracket 1 (figure 6) is used for fitting of the sights PN-18K-05, PN-18K-11 on the gun with strap «Stownera».

In order to do this it is necessary:
- remove the nut 2 from the bracket 1;
- set the sight on the prism, located at the gun's lever;
- push the sight forward up to the stop
- put the nut 2 and tighten it.

1.5 Measurement tools and accessories

1.5.1 The spanner 3 (figure 3), which is supplied together with the sight, is used to tighten the nuts 2 (figures 3,4) while mounting the sight on the gun.

1.5.2 The napkin is used for cleaning the outer surfaces of the optical parts and the cleaning of the contacts of the power supply sources.

1.5.3 The charge unit tester YK-316 (figure 7) is used to test the charge level of the power supply sources R6 GOST 28135-89 (AA).

The front panel of the YK-316 is equipped with 4 light guides, with digits standing for voltage in volts.

In case you need to check the charge level of the power supply sources, please put it into the YK-316, minding the polarity. The lit light guides will show charge level in the power supply sources. In case all the four light guides are on the voltage at the contacts should be at least 1,4 V.

In case one or none light guide is on it is necessary to replace the power supply source with the new one.

1.5.4 The bag is used for transporting of the sight.

2 OPERATION

2.1 Restrictions

2.1.1 For the sight to operate smoothly it is **prohibited**:

- to switch on the sight in the day time and at dusk without cover 1 (figure 1a) with light filter;

Attention! The day light will break down the sight!

- point the gun at the bright sources of light (fireplace flame, searchlight, headlights and etc) even with the cover with light filter being put on.

2.1.2 In case bright shining objects appear in the field of view of the sight switch off the sight.

2.1.3 Once the work is done switch off the sight.

2.1.4 No short circuit is allowed between the power supply sources and metal objects.

2.1.5 It is strongly recommended to remove the power supply source out of the sight and store it in the pocket so that the sight does not suddenly switch on. This would also make the battery life longer in case the temperature is below zero.

2.2 Preparation for using

2.2.1 In order to make the sight ready for operation and check its capacity for work in the day time it is necessary:

- to mount the sight on the gun;

Rocking of the sight on the gun, its slipping while shooting is not allowed.

- mount the cover 1 (figure 1a) with light filter on the objective 2;
- remove cover 4 and put the power supply source inside, mind the polarity;
- close the cover 4;
- switch on the sight;
- turning the flywheel 10, try to achieve necessary contrast in the field of view of the eyepiece.

The aiming is carried out by the upper aiming mark.

2.2.2 The gun with sight should be shaken down before using.

The shake down is carried out in the day time and only with the cover with light filter being installed on the objective the following way:

- set the target size 1m x 1m at the distance of 100 m.
- pot 3-4 times, trying to aim thoroughly with the upper aiming mark at the

dark spot in the centre of the target;

- Find the mean point of impact (MPI).

2.2.3 If the MPI does not coincide with the dark spot and is more than 3,5 cm aside, it is necessary to adjust the sight in elevation "U-D" and in direction "L-R". One turn of the flywheel moves the MPI by 3,5 cm with the distance amounted to 100m.

REMARQUE – If shake down takes place at the other distance, then the value of one flick is changed proportionate and amounts to:

At 50m -1,75 cm.

At 200m -7,0 cm.

The figure 8 shows, that MPI of three holes is located 24 cm above the aiming mark and 17,5 cm to the left. In order to shift the MPI to the centre of the target it is necessary to turn the flywheel of the elevation scale by 24/3,5=7 (approximate number of flicks) downwards and the flywheel of the windage scale by 17,5/3,5=5 («flicks») to the right.

2.2.4 Once the changes are made make control shooting, the precision of the gun with sight should be as good as that of the gun without one.

After the shake down don't make any other amendments to the sight settings.

2.2.5 While shooting at the distance of more than 100 m, do make the shake down as well but check the aiming mark that corresponds to the distance to the target.

3 MAINTENANCE

3.1 Instructions

3.1.1 Keep the sight clean, protect it from dust and dirt. The outer surfaces of the optical parts should always be clean.

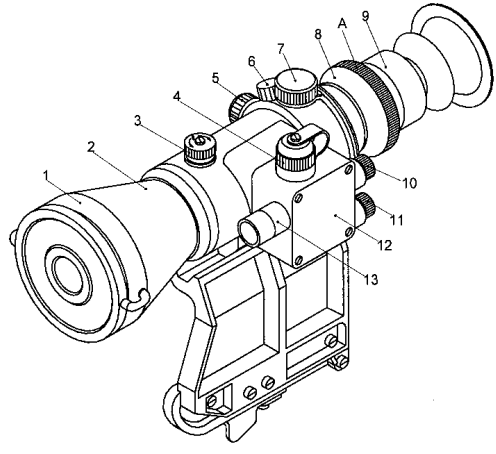
For the sight to operate smoothly it is **prohibited**:

- to disassemble the sight;
- switch on the sight in the day time and at dusk without the cover with light filter;
- use the other power supply sources;
- store the sight with the power supply source in it.

The maintenance should include the following procedures:

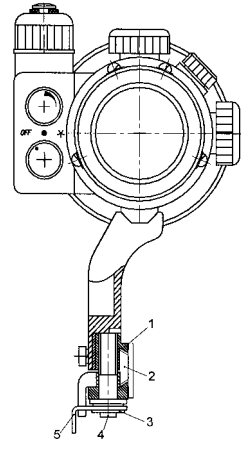
- removing, dust, dirt and moisture from the sight;
- checking of the contacts of the power supply sources;
- removing fat from the surface with clean napkin, if there is to much dirt use alcohol.

a) the look



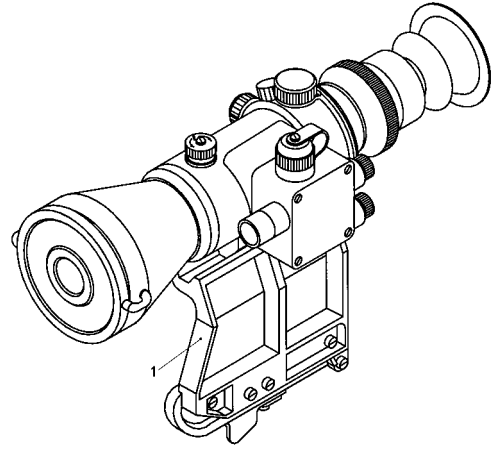
1.- cover 2.- objective; 3- flywheel; 4-cover; 5-cover;
6-connecting pipe; 7-cover; 8-eyepiece; 9- eye shield; 10- flywheel; 11-switch; 12- cover; 13-IR illuminator

b) the mounting on the gun



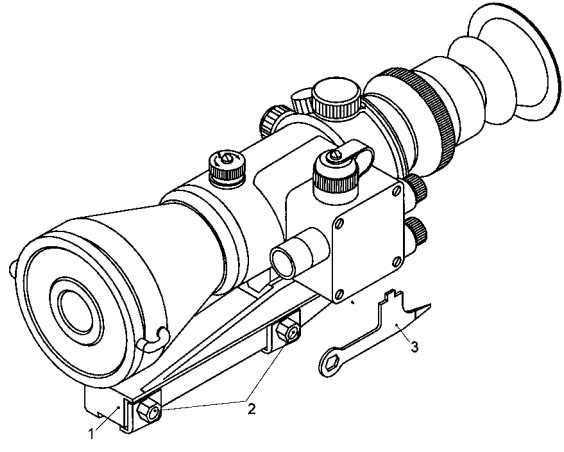
1.bracket; 2- the mount seat of the gun;
3. latch; 4-screw; 5-handle

Figure 1- **The look of the sights PN-18K and PN-18K-06**



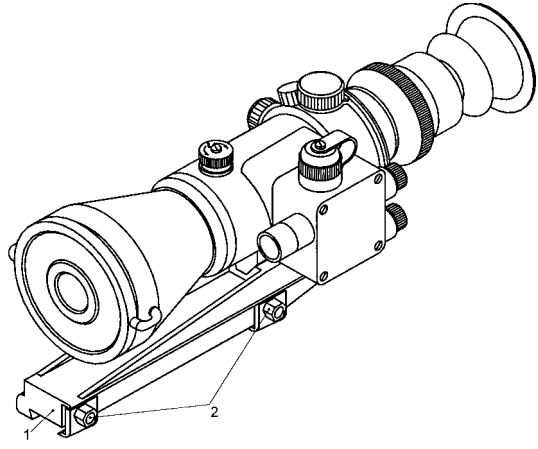
1 bracket

Figure 2- **The look of sights PN-18K-01 and PN-18K-07**



1-bracket; 2-nuts

Рисунок 3 **– The look of the sights PN-18K-02 и PN-18K-08**



1-bracket; 2 – гайки

Figure 4- **The look of the sights PN-18K-03 and PN-18K-09**

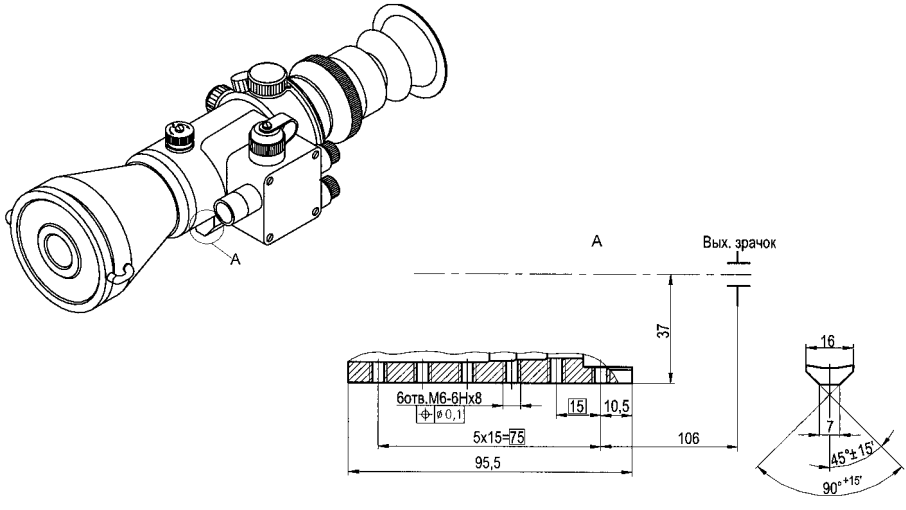
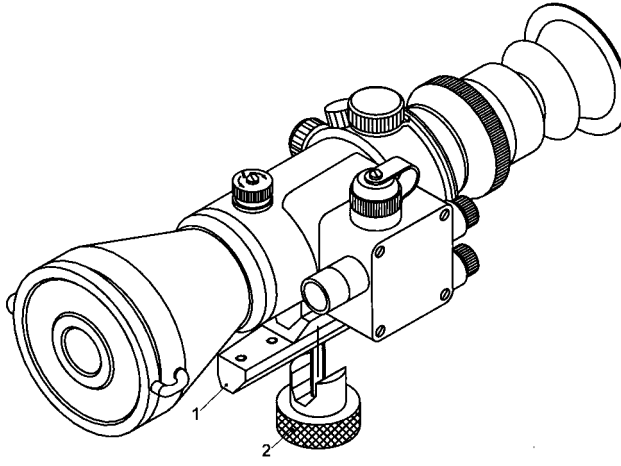


Figure 5 – **The look of the sights PN-18K-04 and PN-18K-10**



1-bracket; 2 – гайка

Figure 6- **The look of the sights PN-18K-05 and PN-18K-11**

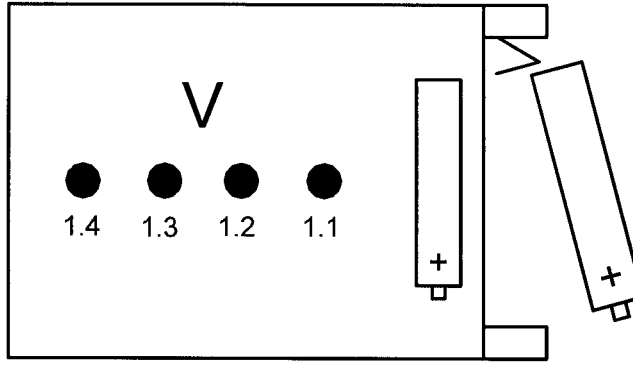


Figure 7 – **The scheme of installing of the power supply source in YK-316**

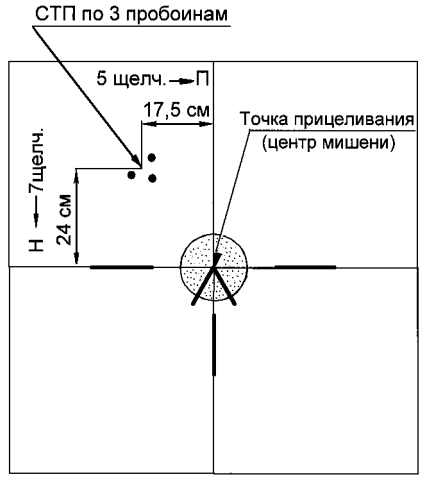


Figure 8 – Target for shake down

3.2 Safety precautions

3.2.1 Make sure the sight is fastened properly on the gun to avoid injuries.

3.2.2 Don't squeeze the eye shield too much while using the sight. Squeeze the eye shield until you will see the clear picture of the field of view not to hurt the eyes.

3.2.3 In order to be environmental friendly it is strongly recommended to waste the used power supply source only in the special places.

4 POSSIBLE FAILURES AND METHODS OF THEIR ELIMINATION

4.1 In case there are failures it is necessary to check the following:

- the fastening of the sight on the gun;
- make sure the cover with light filter is set on the objective;
- make sure there is no dust, dirt, oil, hoar and water on the objective and eyepiece;
- make sure the power supply sources are not discharged;
- make sure the sight is on;
- make sure the power supply sources are installed properly.

Pay special attention to the cleanness of the contacts of the power supply sources.

4.2 The possible failures are listed in the table 4 as well as instructions for their elimination.

Table 4 – The list of possible failures.

Failure	Possible reason	Methods of elimination
The image intensifier does not shine or shines weakly.	The power supply source is discharged. The power supply source is installed incorrectly The IIT is out of order	Replace the power supply source with a new one. Install it correctly, mind the polarity. Send the sight to the work shop
The brightness of the picture, once it achieves its maximum goes down suddenly, or the image has oscillating brightness, which makes it difficult to work with the sight.	There is too much light	Put the cover with light filter on the objective.
The picture of the terrain is vague.	The outer surfaces of the eyepiece, and objective are misted over or dirty	Wipe the outer surfaces of objective and eyepiece with the napkin.

Continue the table 4

Failure	Possible reason	Methods of elimination
The picture of the terrain is vague. There are flashes and blinking in the field of view.	The inner surfaces of the objective, eyepiece, and photocathode of IIT are misted over.	Send the sight into the workshop to dry it out and get rid of depressurization
There are dark spots in field of view of the sight which make it difficult to use the sight	The IIT is damaged by high level of light. The photocathode surface is damaged.	Send the sight into the workshop
The reticle shines weakly or it does not shine at all	1.The highlight is out of order 2.The power supply source is discharged	1.Send the sight into workshop 2.Change the power supply source

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