



NPZ

NOVOSIBIRSK INSTRUMENT-MAKING PLANT, JSC

OPTICAL SIGHT

PO1/4

SERVICE MANUAL



INTRODUCTION

This Service Manual is intended to help the user in studying the design and the rules of operation of the PO1/4 optical sight.

This Service Manual contains:

- purpose;
- technical specifications;
- information on design and operation principles of the optical sight required for proper operation and the use of its technical capabilities to the maximum possible extent;
- list of possible malfunctions and methods of their elimination.

In view of the continuous work to improve the sight, its design may be subjected to some minor modifications not reflected in the Present Manual.

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OPTICAL SIGHT **PO1/4**

1 DESCRIPTION AND OPERATION

1.1 Sight purpose

The PO1/4 optical sight, named in full as optical sight with discrete magnification, (hereinafter referred to as the «sight») is designed to observe territory, to detect and recognize targets and for aiming hunting weapons of various types having top mounting seat of «Picatinny» rail type, at ambient temperature from minus 50 °C to 50 °C and relative air humidity of up to 100 % at temperature of 25 °C.

1.2 Specifications

Table 1

Parameters	Value
Magnification adjustment range, x	1 and 4
Field of view, deg <ul style="list-style-type: none">at 1x magnificationat 4x magnification	24° 6°
Field of view, m at 100 m <ul style="list-style-type: none">at 1x magnificationat 4x magnification	42,5 10,5
Exit pupil, mm <ul style="list-style-type: none">at 1x magnificationat 4x magnification	10,6 7,4
Eye relief, mm	70
Resolution limit, sec <ul style="list-style-type: none">at 1x magnificationat 4x magnification	60 15
Light transmission coefficient	0,8

Diopter adjustment, diopters	from -3 to +2
Power supply	1.5V 1x AA
Reticle moving range, mil <ul style="list-style-type: none"> • by horizon • by elevation 	±0-10 ±0-10
Adjustment value	1 cm at 100 m
Objective lens diameter, mm	32
Nitrogen Filling	+
Parallax min, "	60
Operating temperature, °C	from -50 to +50
Relative humidity at temperature 25°C	100%
Protection level	IP68
Overall dimensions, mm	182x90x71
Weight, kg	0,615

Sight withstands the load from firing impact of weapons of 5.6x39, 7.62x39, 7.62x54R, .223Rem., 308Win.

1.3 Complete Set

Table 2

Description	Quantity	Notice
Optical sight PO1/4	1	In bag. Without power supply. With caps on objective lens and eyepiece.
Power supply of AA type	1	
Service Manual	1	
Napkin	1	
Spanner	1	
Railtype Z*	1	
Bag	1	
Box	1	
Case*	1	
*Delivery set is governed by contract terms.		

1.4 Controls

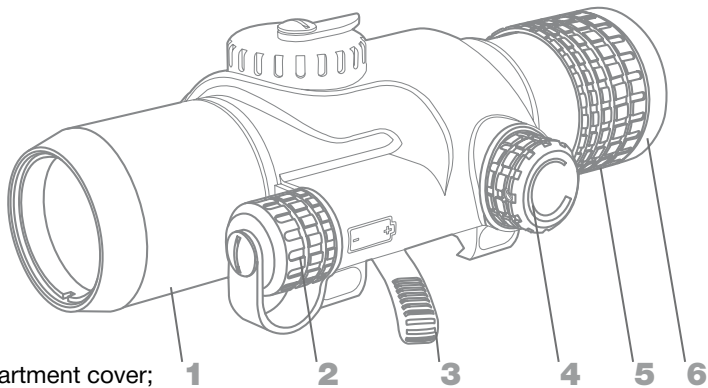


Figure 1

- 1** - objective;
- 2** - battery compartment cover;
- 3** - magnification switching lever;
- 4** - reticle illumination adjustment handwheel;
- 5** - eyepiece diopter adjustment handwheel;
- 6** - eyepiece.

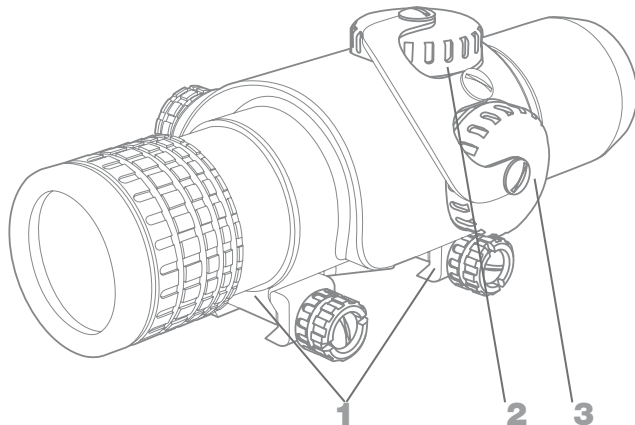


Figure 2

- 1** - bracket;
- 2** - cover of the windage adjustment handwheel
- 3** - cover of the elevation adjustment handwheel.

1.5 Field of view

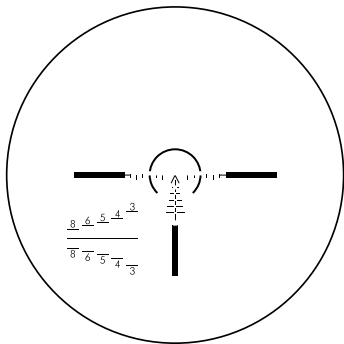


Figure 3
4x magnification

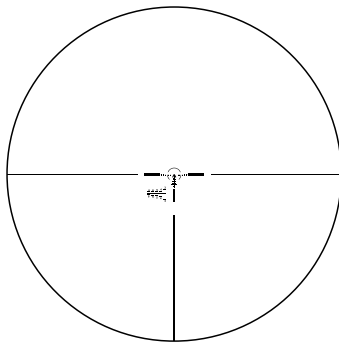


Figure 4
1x magnification

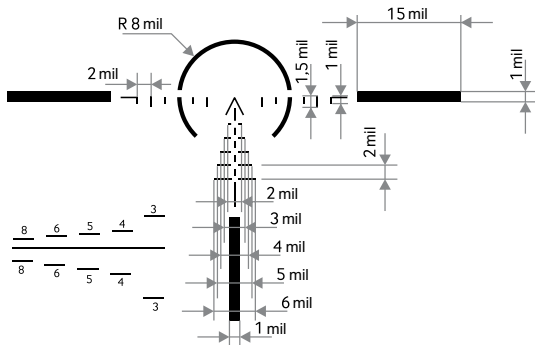


Figure 5

NOTE:

Reticle is located in the first focal plane, therefore reticle size does not change on both magnifications.

Rangefinding scale has a measuring distance range from 300 to 800 m with a step of 100 m and basic target height 1 and 1,5 m. Numbers from 3 to 8 of the rangefinding scale indicate ranges in hectometers.

To determine the distance to the target with a height of 1 m using by a rangefinding scale:

- align the bottom of the target projection with the continuous horizontal line of the rangefinding scale;
- align the top of the target projection with the closest stroke of the rangefinding scale;
- number above the target indicates the distance to the target in hectometers.

To determine the distance to the target with a height of 1,5 m using by a ranging scale:

- align the top of the target projection with the continuous horizontal line of the ranging scale;
- align the bottom of the target projection with the closest stroke of the rangefinding scale;
- number under the target indicates the distance to the target in hectometers.

2 INTENDED USE

2.1 Preparing Sight for Use

Inspect the sight visually:

No cracks or dents on the mechanical parts, or dirt, pop outs and buildups on optical parts, threaded connections loosening are allowed.



CAUTION! THE FOLLOWING IS NOT ALLOWED:

- to expose the sight to ingress of dirt or moisture into the sight;
- to store of the sight with power supply batteries inside;
- to touch optical parts of the sight with hands;
- to put away dust and from optical surfaces by anything except napkin wetted with alcohol;
- to hit the optical parts of the sight;
- to expose the sight to vibration and slipping of the sight when firing;
- to look at the sun through the sight.

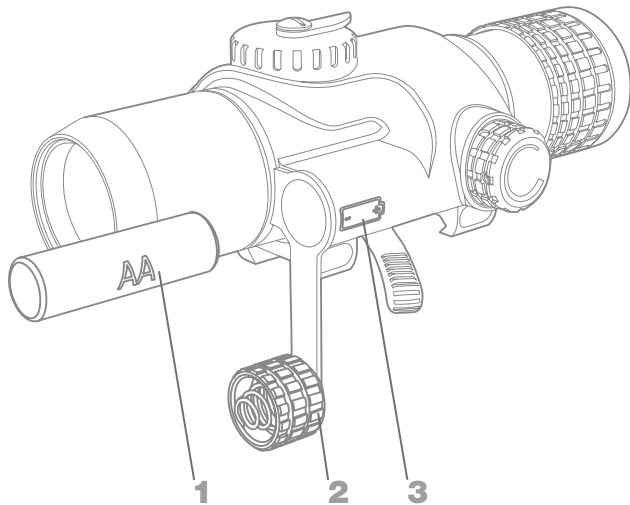


Figure 6

- 1** - battery of AA type;
- 2** - battery compartment cover;
- 3** - power supply source polarity.

2.2 Installation of battery

To install the battery proceed as follows:

- open the cover of the storage battery compartment;
- place battery of AA type into the battery compartment of the sight while observing the polarity specified on the battery compartment body;
- screw on the cover of the storage battery compartment.

2.3 Sight use

Reticle illumination adjustment

To activate the reticle illumination, proceed as follows:

- press the reticle illumination adjustment handwheel, then the maximum brightness reticle illumination will be activated.

To change the reticle illumination, proceed as follows:

- rotate the reticle illumination adjustment handwheel to achieve comfortable observation brightness.

To deactivate the reticle illumination, proceed as follows:

- press the reticle illumination adjustment handwheel and hold it pressed for 1 second, then release.

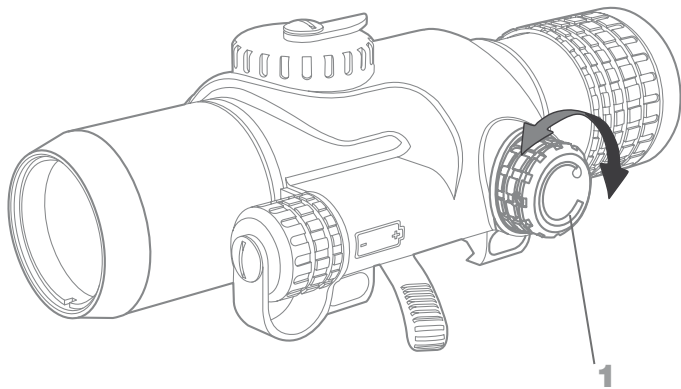


Figure 7

1 - reticle illumination
adjustment handwheel.

Change of visible magnification

To change visible magnification, proceed as follows:

- turn the magnification switching lever.

NOTE:

Position of the magnification switching lever relative to the magnification scale determines the actual magnification level.

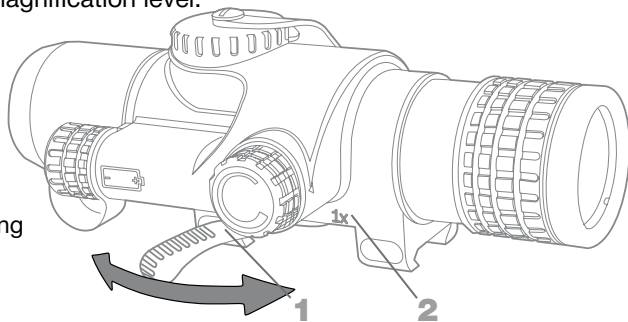


Figure 8

- 1** - magnification switching lever;
2 - magnification scale.

Eyepiece diopter adjustment

To adjust sharp image of an object under observation, proceed as follows:

- rotate the eyepiece diopter adjustment handwheel to achieve sharp image.

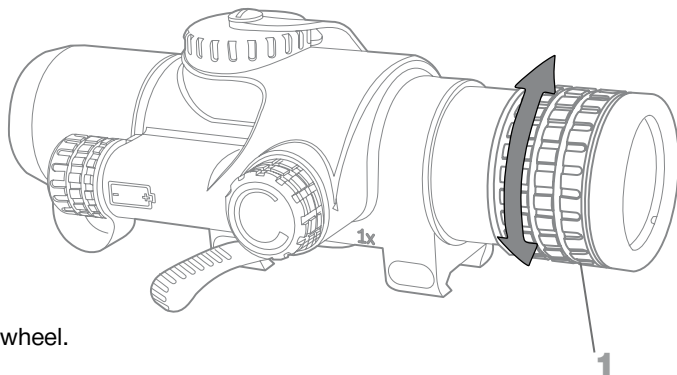


Figure 9

1 - eyepiece diopter adjustment handwheel.

Protective caps of the objective and eyepiece

In order to protect the objective and eyepiece lenses against mechanical damage, proceed as follows:

- put the protective cover onto the eyepiece and objective.

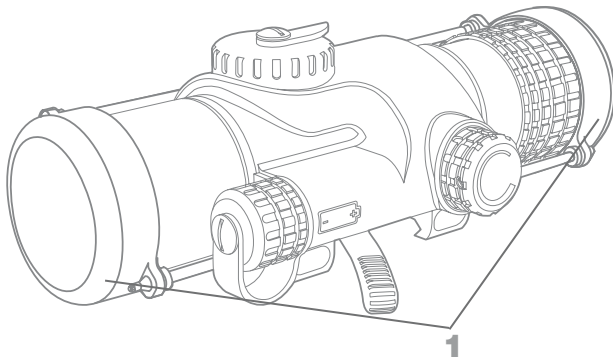


Figure 10
1 – protective cap.

2.4 Mounting sight on weapon

To mount the sight on a weapon, proceed as follows:

- loosen nuts of the bracket;
- align the bracket with the Picatinny rail on weapon;
- tighten nuts of the bracket.

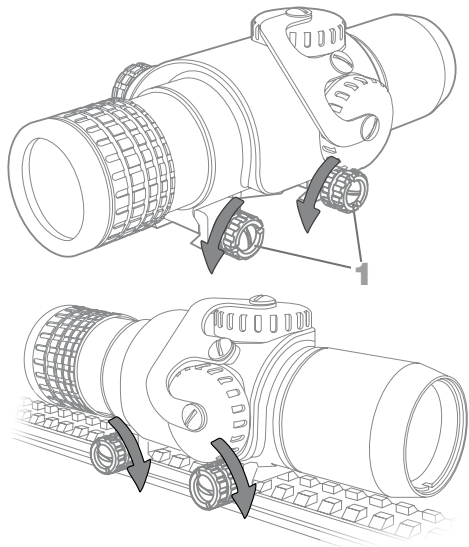


Figure 11

1 - nut of the bracket.

2.5 Sight adjustment on weapon

To adjust the sight on weapon, proceed as follows:

- place a target with the size of about (1x1) m at a distance of 100 m;
- using the sight, perform four single shots aiming thoroughly and uniformly at the aiming point;
- determine a mean point of impact (MPI) by holes in the target.

To determine MPI, proceed as follows:

- draw a straight line between two holes nearest to each other (1, 2 figure 12);
- divide the obtained interval in half and, from this point A, draw a straight line to the third hole (3);
- divide the obtained interval in three equal parts from the point B, nearest to the point A, draw a straight line to the fourth hole (4);
- divide the obtained interval in four equal parts;
- the obtained point C, nearest to the point B, will be a resultant MPI;

- if MPI diverges from the aiming point by more than 1 cm, adjust the sight with the use of the adjustment mechanism knobs;
- make control serial of shots.

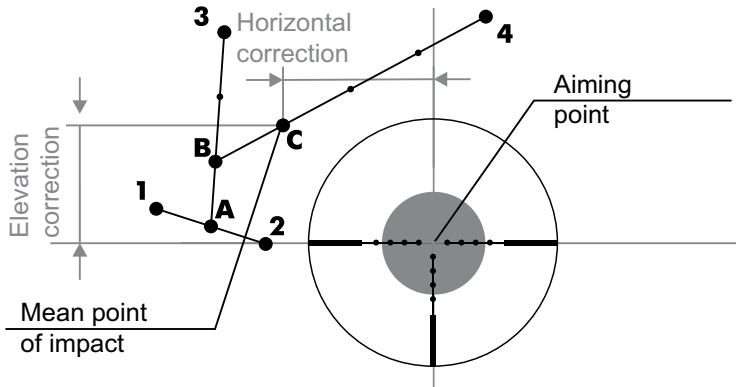


Figure 12

Sight adjustment

To adjust the sight, proceed as follows:

- unscrew cover of the adjustment handwheel;
- rotate the adjustment handwheel.

NOTE:

Adjustment value is 1 cm at 100 m.

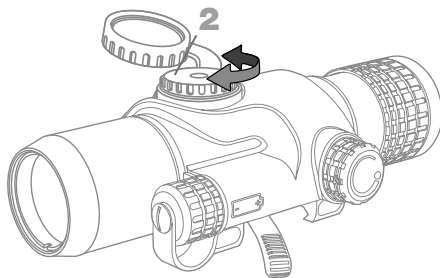
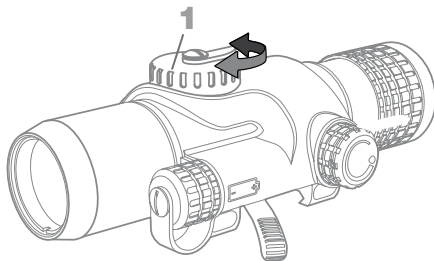


Figure 13

- 1** - elevation adjustment handwheel cover;
2 - elevation adjustment mechanism.

2.6 List of possible malfunctions

Table 3

Description of failure	Probable cause	Elimination method
Blurred image	Optics fogging	Wipe the optics with napkin wetted with alcohol
	Eyepiece diopter adjustment is disturbed	Adjust sharp image of the object under observation by means of the eyepiece diopter adjustment handwheel rotation
Reticle illumination is absent	Battery is discharged	Replace the battery
	The sight is faulty	Send the sight to repair

3 STORAGE

Storage Instructions:

- remove battery from the battery compartment of the sight
- put the sight into the box;
- store the sight in storage premises, where an air temperature ranging from 5 °C to 40 °C is maintained and with relative air humidity does not exceed 80 % during the whole period of storage.

4 TRANSPORTATION

Requirements to transportation and its conditions

Before transportation:

- before transportation put the sight into the box;
- put the box with the sight in a means of transport and fix the box to avoid any slips and concussion with other objects

The sight may be transported by any means of transport without distance limitations.



Requirements to transportation and its conditions:

CAUTION! DURING LOADING/UNLOADING AND TRANSPORTATION:

DO NOT throw or cant the package with the sight.

DO NOT keep the package with the sight under the rain.

5 ACCEPTANCE CERTIFICATE

PO 1/4 optical sight, serial number , is manufactured and accepted in accordance with the requirements of mandatory state requirements, current technical documentation and is found fit for operation.

Date of issue _____

Signatures _____

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