New Vision
Dedal-NV

Dedal-460
Night vision riffle scope

User's manual

www.dedalnvoptivs.com

Device appearance

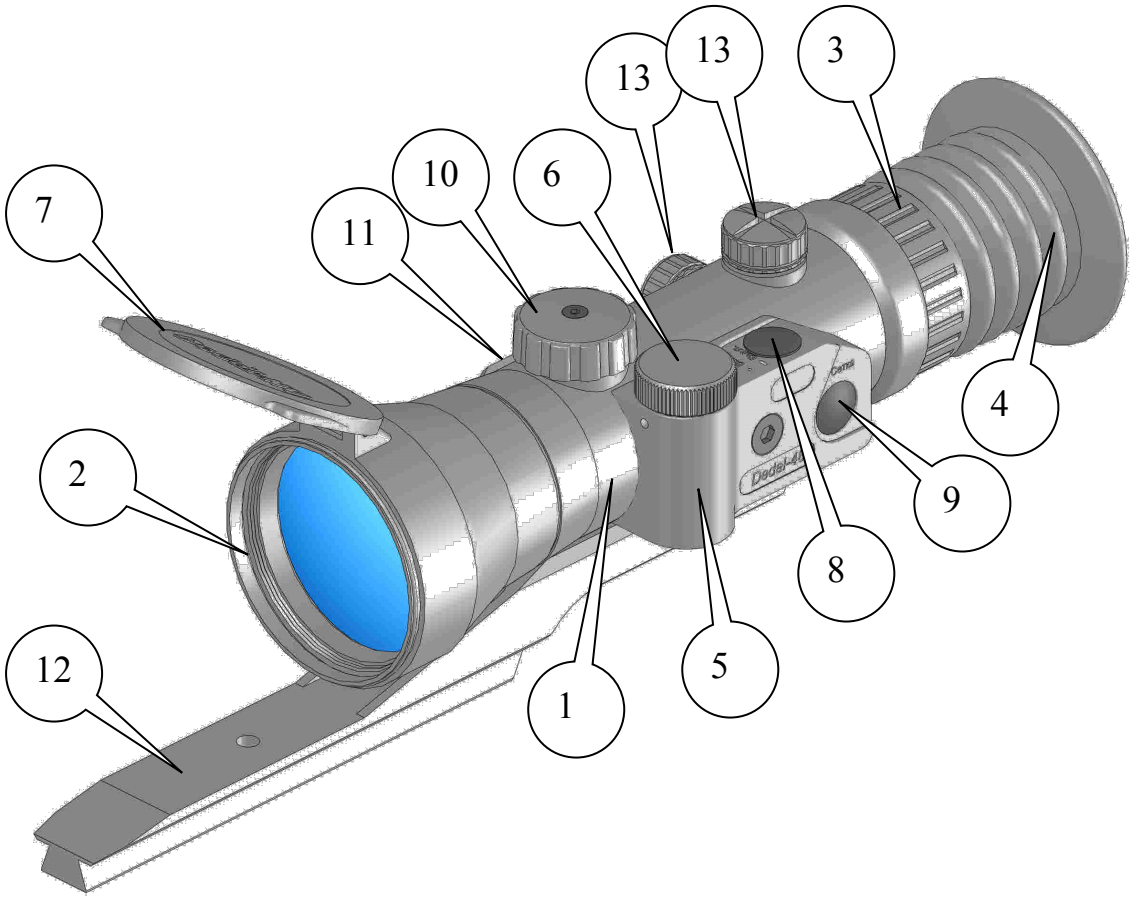


Fig. 1
Dedal-460 night vision riflescope

1 - Device body
2 - Objective
3 - Eyepiece
4 - Rubber eye-cup
5 - Battery compartment
6 - Battery compartment cover
7 - Objectives cover
8 - On/Off power button
9 - Button of reticle brightness adjustment
10 - Objective focusing handle
11 - Ground for IR installation
12 - Riffles mount
13 - Horizontal/vertical adjustment of aiming reticle

READ THE RULES OF STORAGE, UTILIZATION AND ADAPTATION OF THE DEVICE TO A RIFFLE BEFORE ITS ACTIVATION!

Infringement of rules of storage, adaptation and utilization of the device clarified in the operation manual may be a reason for cancellation of the warranty obligations of the manufacturer.

Overview

Dedal-460 night vision riffle scope is a modern, universal night vision device designed for a wide range of activities from professional to amateur activity:

- ***Night observation and hunting***
- ***Patrolling and safeguarding***
- ***Rescuing and searching works***
- ***Night photo and video shooting***

The device is equipped with high-quality electronic-optical image intensifier tubes (Gen. III) employing the principle of multiple intensification of the image brightness in the visible and IR radiation which guarantees great observation range.

Features

- *Lightweight*
- *3.7x magnification*
- *Gen. III*
- *Precision Mil Dot reticle with adjustable brightness*
- *High image quality over all field of view*
- *Special high light transmission optics*
- *Internal focusing of the objective*
- *Image focusing from 10 m to infinity*
- *Protection of the device against excess of a general level of light exposure*
- *Automatic brightness control*
- *Possibility of installation an additional IR-illuminator*
- *High quality image of photo/video*
- *Optional connecting of wireless remote control*
- *Possibility of adaptation to different types of hunting riffles*
- *Waterproof*
- *Low power consumption*

Contents

Specifications

	Dedal-460-DK2 **Dedal-460-DK3** **Dedal-460-DK3/bw**
General:	
Magnification, x	3.7
Objective	85mmF/1.6
Field of view, degree	8.5
Focus range, m	from 10 to infinity
Diopter setting, dptr	-3, +3
Eye relief distance, mm	50
Click size of removing mechanism	12mm/100m of a distance
Feed voltage, V	3
Power source	CR123A battery – 1 pc.
Battery life, h	min. 50
Overall dimensions, mm (without eye-cup and mount)	190x69x69
Weight (without mount), kg	0.560
Working conditions:	
Working temperatures range, °C	- 40 +50
Relative humidity, %	98
Image intensifier tube :	
	Tube type (Photocathode sensitivity (μA/Lm), resolution (Lp/mm), screen colour)
Dedal-460-DK2 Dedal-460-DK3 Dedal-460-DK3/bw	Gen.III (min. 1800, min.57) Gen. III (min. 1800, min.64) Gen. III (min. 1800, min. 64, black&white)

P.S.

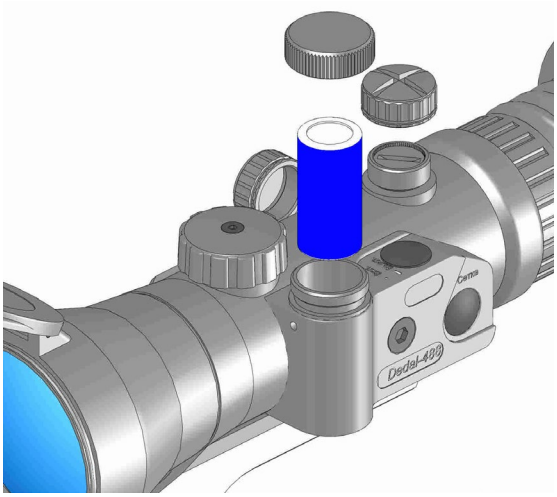
1. The screen may have separate black dots or small groups of dots allowed by the technology of tubes' production at the manufacturing plants.
2. Technical characteristics of the device can be improved without preliminary notice.
3. The logo may be changed from "Dedal-460" to "D-460" without preliminary notice.

Delivery set

Your Dedal-460 is supplied with the follow components:
- Device (with lens cup and rubber eye-piece) - 1 pc.
- Allen key for zeroing of windage/elevation adjustment mechanism (S1.5) - 1 pc.
- Optical cloth kit - 1 kit.
- Case - 1 pc.
- User's manual - 1 pc.
- Warranty Card - 1 pc.

Additional accessories (not included in a standard set):
- Riffles mount
- Photo/video adapters
- CR123A battery - 1 pc.

Batteries setting



Pic. 2

Your Dedal-460 works from one battery of CR123A type. Be sure that the battery is in good condition and it is installed in accordance with the picture on the battery compartment.
In order to replace battery it is necessary to turn off a cover of the battery compartment and replace old battery with new battery, keeping polarity of the batteries.

Function test in a daytime

In order to test operation of the device you can turn it on (ON button, (8), see pic.1) with the closed cover in a daytime. Cover of the device has a small hole enough to test the operating condition of the device. When the device is turned on the observed picture appears on the screen in a yellow-green color.

Note.
◄The device won't burn out even if you open the cover of the objective. When the light is excessively bright protection will be activated (automatic adjustment

of brightness) and the image will curtail. When the device is placed into a dark place the image will be restored in several seconds.

Caution.

◄The device is not supposed to be directed to the bright sources of light: bright lamps, the sun, welding and etc – it may result in the reduction of the coefficient of brightness magnification of the device.
In order to avoid the fatigue of photo-cathode it is not allowed to leave the device motionless in a turned on condition in the excessively bright illumination (in the morning, in the evening, in a daytime) for more than 30 minutes.

Use of the device at night

1. Take off (open) the cover of the objective (7, see pic.1).
2. Turn on the device – position ON of the switch (8). Green light should appear on the screen (passive mode).
3. Turning the eyepiece (3) reach the sharpest image of the reticle. The brightness of a reticle can be adjusted by the switch (9).
4. Choose the object of observation and focus the objective of the device with the handle (10) till the receipt of maximally clear, distinct and sharp image of the observed object.

Note.

◄Observation and identification range provided by the device depends on the value of natural night light, type of the objective used, transparency of the atmosphere and contrast between the target and background. The identification range increases in the conditions of good lightning, at moony night given outside illumination, if the target is situated on the light background (sand, snow). The identification range decreases in the conditions of weak lightning, low transparency of the atmosphere, if the target is situated on the dark background (plough-land, stems of trees, etc.).

Warning.

◄In order to exclude an accident when shooting, place an eye so, that the eye piece remained not deformed. At big caliber (energy of a departure of a bullet more than 4500 J) are necessary to place the device so, that the distance from eye piece to the nearest point of shooters face made at least 10-15mm.

5. When it's necessary to illuminate an object of supervision, establish an additional IR-illuminator on the ground (11). As a rule, (it depends from design of IR-illuminator), you can establish one of three modes on capacity of the illuminator (10, 30 or 100 %) and to adjust the position of IR-illuminator spot on the horizon, turning the illuminator in vertical plane.

6. Having finished the work, turn the ON / OFF switch (8) to the position OFF.

Note.

◄The device will automatically be switched off in 60 minutes after the last pressing of control buttons.

7. Close the cover of the objective after you have finished the work the device and put it in to the case.

Recomendation.

◄When the device is stored for a long time it is recommended not to leave batteries in the compartment of the device in order to avoid leakage of the batteries.

DO NOT FORGET TO TURN OFF THE DEVICE AFTER USE!

Adaptation to a hunters riffle

Your Dedal-460 night vision riflescope could be used as hunter's night vision scope.

RECOMMENDATION.

◄Use of night vision riflescopes may be restricted or prohibited by national or local regulations. Please consult with local authorities as to whether you are allowed using the Night Vision Attachment on your weapon legally in your area.

Your Dedal-460 night vision rifle scope can be used with different types of mountings, providing reliable fixation of the device on the particular rifles. Manufacturers of civil rifles do not possess uniform standards for a mounting place of optical devices, and as a result universal fastening device is not available. Therefore, D-460 supplies with the mount **WITHOUT hard fixing** to the device body.

For device adaptation (installation on screws and gluing, taking into account a comfortable and correct arrangement of shooter head) it is necessary to apply in JSC Dedal-NV or in a specialized rifle workshop, which has an experience of adaptation of the riflescopes of Dedal series. Or you can fulfill the fastening by yourself, if you possess enough qualification, following *"The rules of adaptation of "Dedal" night vision riflescopes". (You can get these rules at JSC Dedal-NV).*

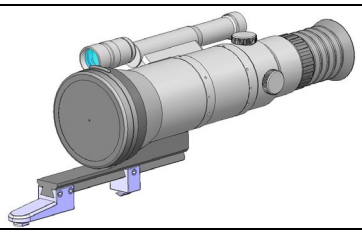
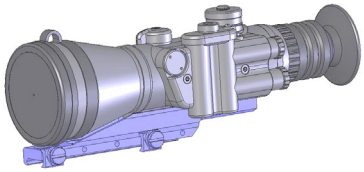
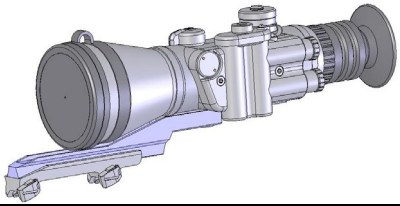
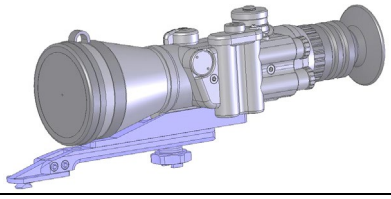
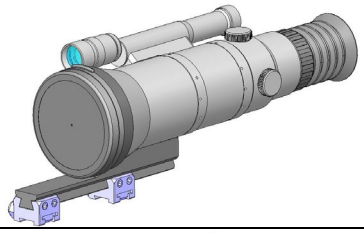
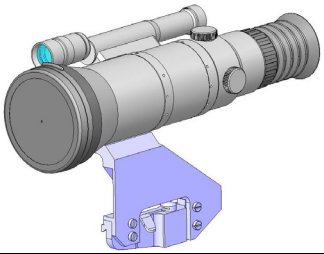
Attention.

◄During scope adaptation it's necessary to place the device so, that rubber eye piece will not be damaged by the comfort situation of a shooters head.

◄At big caliber (energy of a departure of a bullet more than 4500 J) are necessary to place the device so, that the distance from eye piece to the nearest point of shooters face made at least 10-15mm.

◄Wrong (or unqualified) adaptation, and also use of the fastening which has not been certificated in JSC Dedal-NV, can lead to the impact point removal during shooting.

Your Dedal-460 can be used with the various mount types, providing a reliable fixing of the device on a concrete riffle.
Examples of device adaptation:

	EAW (Apel) mount.
	Weaver rail mount (WP480-01).
	Blaser mount
	MAK mount
	11mm (F11) prism mount
	Side “Tiger” mount (SM480).

Type and dimensions of the reticle

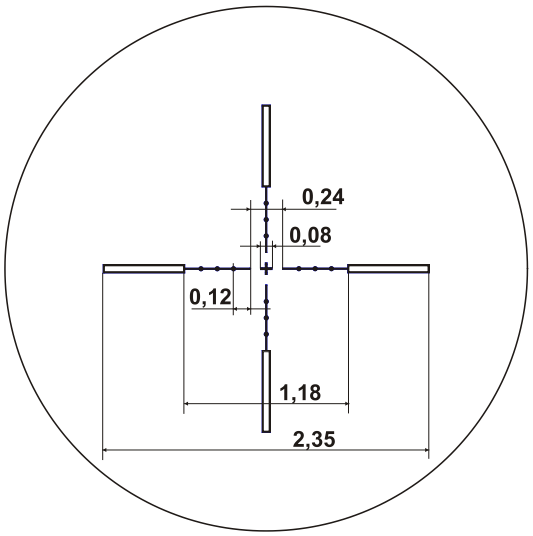


Fig.3

At fig.3 you can see draft of aiming reticle for Dedal-460-DK2, Dedal-460-DK3 rifle scopes.
The dimensions are indicated in meters at 100 m of a distance.
Aiming reticle type – Mil Dot.
The brightness of the reticle can be adjusted in one of 7 positions, pressing on toggle switch (9).

Definition of the distance to target

If you use Mil Dot reticle and you know the size of the target, you can calculate the distance to that target or correct lateral drift of the bullet (due to wind conditions).In order to do it:
1) Evaluate the actual vertical size of the target to be calculated.
2) Move the crosshair so that one side of the target above the horizontal line could match a Mil Dot matchmark (see Fig. 4).
3) Calculate the division quantity along the lengths (or height) of the target
5) The distance can be calculated as follows:

L = (H x 1000) / h,

Where:
L, means distance to the target, m,
H, means the actual height of the target, m,
h, means division quantity of target, measured along the reticle, mil.

On Fig. 4 you can see an example of such evaluation for Dedal-460: distance to a 1.5 m wild boar as per Mil Dot reticle (5, 10 and 15 divisions relevant).

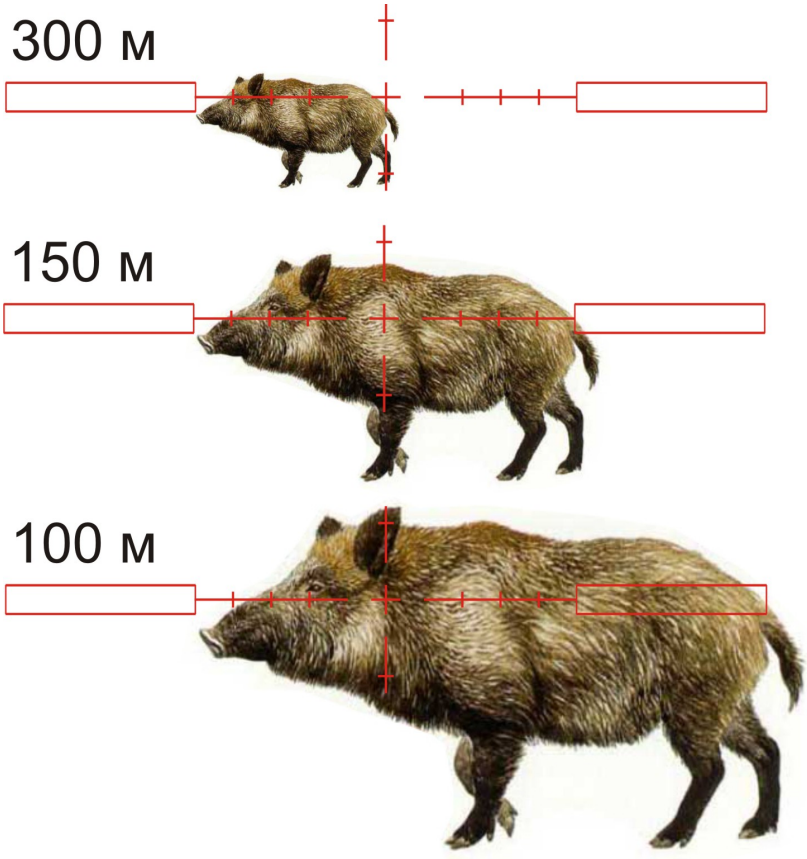


Fig.4

To define distance to the target with the sizes from 1 to 2 m it is possible according to the following table:

Distance to target, m					
	Actual lengths (or height) of target, m				
Number of divisions as per the reticle	1.00	1.25	1.50 (trophy wild boar)	1.75	2.00
2.0	500	625	750	875	1000
3.0	333	417	500	583	667
4.0	250	313	375	438	500
5.0	200	250	**300 (*)**	350	400
6.0	167	208	250	292	333
7.0	143	179	214	250	286
8.0	125	156	188	219	250
9.0	111	139	167	194	222
10.0	100	125	**150 (*)**	175	200

(*) – see relevant data on Fig. 5.

Adjustment of the scope on a riffle

Your device is equipped with removing mechanism of aiming match mark. Click size of removing mechanism is 12 mm on 100 m of a distance.

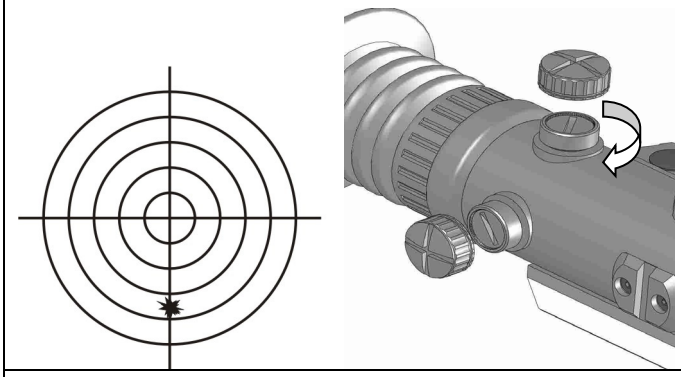
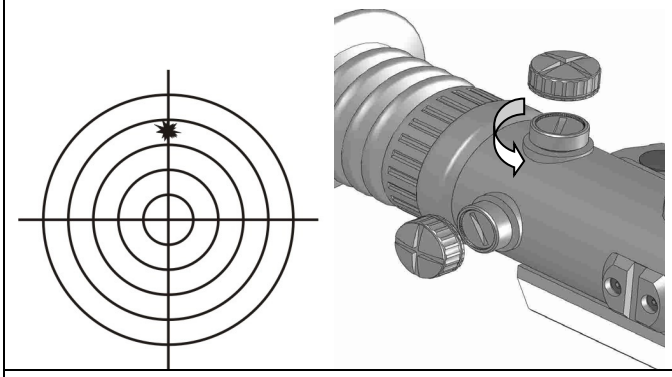
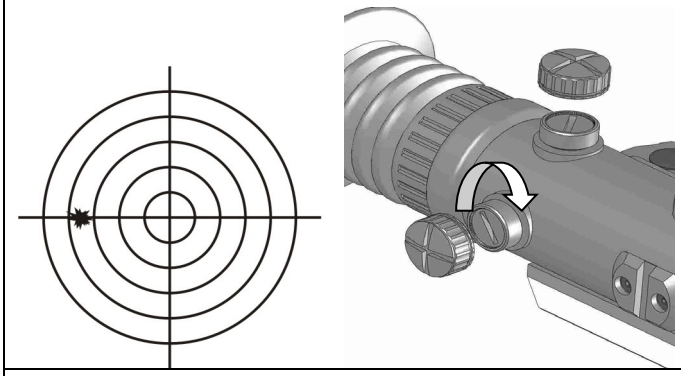
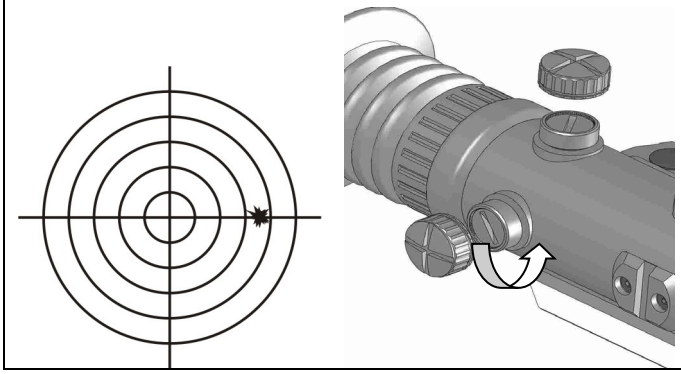
Before the adjustment of the scope its objective should be adjusted for a distant object (select infinity) in a dark time with the opened cover of the objective.

Adjustment of the scope can be performed in a daytime with the closed cover of the objective or in the twilight on the adjusted target or on the remote point.

Adjustment of the scope is performed in the following way:

- Fix the scope on the fit of the rifle;
- Set a panel with a target or select the point of aiming;
- Set the rifle on the aiming rest;
- Direct the rifle to the point of aiming by mechanical sight (bead with a slot) (if it is possible). At this stage it is suitable to apply laser of cold test shooting (LCTS) inserted in the barrel of the rifle, which indicates geometrical point of the barrel position. Such lasers are supplied by the JSC Dedal-NV.
- Unscrew the protective caps of the bias screws of the aimed reticle. Turning the bias screws of the reticle obtain the matching of reticle crosshairs with the aimed point, set by the mechanical sight or LCTS;
- Remove the rifle from aiming rest and take out LCTS;

Make 2-3 shots. Having examined the target make necessary corrections (for example, in order to move the hit point downwards and leftwards, screws of the mechanism should be turned contraclockwise, in the directions Down and Left correspondingly. The aiming point is moving upwards and rightwards)

When mean point of impact is below:	
	Turn the knob at the Up direction(clockwise)
When mean point of impact is above:	
	Turn the knob at the Down direction(contraclockwise)
When mean point of impact is in the left:	
	Turn the knob at the Right direction(clockwise)
When mean point of impact is in the right:	
	Turn the knob at the Left direction (contraclockwise)

– Make a control shot and find out whether the aiming point coincides with the bullet hit point. (Make the correction again if necessary);
– Set the protective caps into their places.

Recommendation.
◄Due to manufacturing process and design of image intensifier tubes, it is not always possible to eliminate all hidden defects, which could appear during shooting. It is recommended to make 10-15 shots during the scope testing to make additional test before operation in real conditions.

The device is ready to work.

Maintenance and storage rules

– Keep and carry the device in a closed box with a cover put on the objective.

– Protect the device from hits and direct influence of rain, snow and dust on the optical parts.

- Protect the box from moisture penetration and the device should be protected from direct sun influence. The device should be kept in a warm, dry place far from heating devices, batteries should be taken out. Storage temperature must not exceed 60°C.
- By a long storage of the device take out the batteries, in order to exclude the run out of batteries.
- The device doesn’t need a special technical service.
- In the case of need, you can clean optic details with a special optical cloth, included in the delivery set.

Troubleshooting

Dedal-460 does not work…
Make sure that the batteries have been installed and they are in good condition.

Dedal-460 cannot be focused…
Adjust the objective lens and eyepiece according to the instructions specified in the Operation section. If the device is not still focusing wipe and clean the optical parts.

The image has faded or disappeared completely…
Bright source of light can be a reason of the image reduction, loss of resolution or complete disappearance. This is an automatic protection system of the device. If Dedal-460 has been switched off automatically, turn the switch to the position OFF. The unit will be ready for use in one-two seconds.

Condensation effect…
In order to avoid misting of the eyepiece lens in cold time use special anti-damping covers (for example, for spectacles).

Some black dots are on the screen…
The image may contain small black dots or groups of black dots. Most of black dots can be seen only in daytime and in the operation mode the dots become almost invisible.

Shadow picture on the screen…
The device was working for a long time in the inactive condition during too high illumination.

Note

Actual Address: 18, Stromynka Str, Moscow, 107076, Russia.
Mail address: P/b 109, 107014, Moscow, Russia
Phone/fax: +7 (495) 617-05-96/97 **e-mail:** info@dedalnvoptics.com
Phone/fax: +7 (495) 961-27-49 http://www.dedalnvoptics.com