



NIGHT VISION RIFLESCOPE
NVS 22-2XT

IMPORTANT INFORMATION

Read prior to activation.

You have purchased a sophisticated electronic device. To operate it properly, please read this manual fully.

<p>Ignoring operation procedures described in this manual will void your warranty.</p>

- **NEVER** Disassemble the unit. Device contains a source of high voltage, which may be hazardous to your health!
- **NEVER** Aim active unit towards intense light sources (i.e. lights, headlamps, campfires, the Moon, etc.)
- **NEVER** reverse the polarity of a battery
- **NEVER** connect the unit to external power source

- **ALWAYS** remove batteries when not in use for a long period of time
- **ALWAYS** keep the objective lenses covered other than when in use during the night operation
- **ALWAYS** store the unit in a warm dry place when not in use

WARNING: Use of this device may be restricted by the national regulations. Please consult with local authorities.

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1. BRIEF DESCRIPTION

1.1. Overview

NVS 22-2XT is a night vision attachment to a daytime weapon scope designed for precise aiming in darkness.

The device is equipped with a high-quality electro-optical image intensifier tube that amplifies light in the visible and IR spectrum providing for up to a 400-700 m effective observation range at low light. Observation range depends on the characteristics of the day scope NVS 22-2XT is attached to and actual observation conditions, such as available light, atmosphere transparency and target reflectivity. The observation range increases by brighter light, at moon night, or if the object is positioned against a light background, such as snow or grass. The range decreases at lower light, low atmosphere transparency, or if the object is positioned against dark background, such as plough-land, desert, stems of trees, etc.

1.2. Key features of NVS 22-2XT

- Installation of NVS 22-2XT in front of a day scope on a weapon does not affect the latter's zeroing and scope's tactical parameters
- Exit pupil of 35 mm fits a broad range of day scopes
- Accurate internal focus adjustment mechanism
- High quality image within the entire field of view
- Withstands large calibre recoil
- Supplied with MIL-STD-1913 Weaver / Picatinny mount
- Water-resistant design
- Can be equipped with optional powerful IR Illuminator
- Automatic bright light protection of image intensifier tube
- Low power consumption: two standard AA batteries ensure operation for 60 hours
- Compact and lightweight

2. DESIGN of NVS 22-2XT

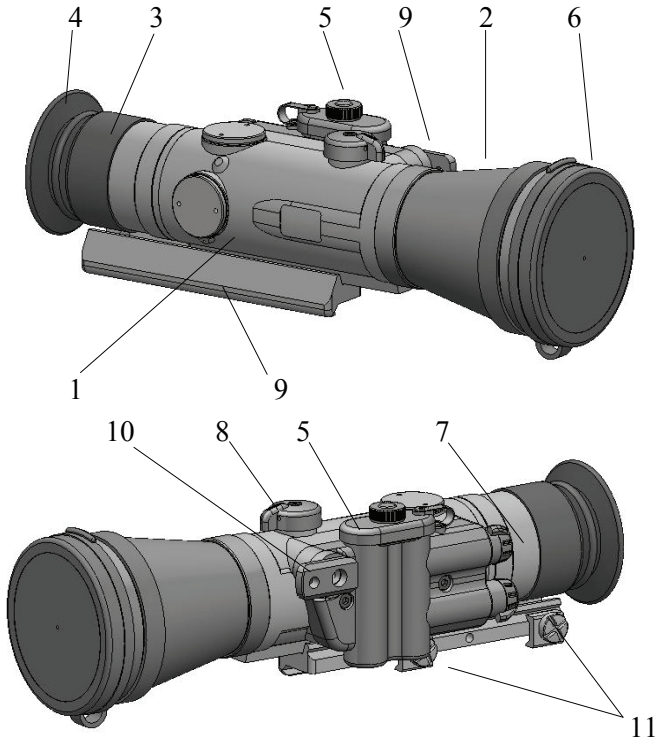


Fig.1

- 1 – Device body
- 2 – Objective lens
- 3 – Eyepiece
- 4 – Rubber eyepiece guard
- 5 – Battery compartment

- 6 – Objective lens cap
- 7 – On/Off switch
- 8 – Focus adjustment knob
- 9 – Weaver mount
- 10 – IR illuminator mount
- 11 – IR illuminator mount

3. SPECIFICATIONS

Optical	
Magnification, x	1
Field of view, degrees	8
Day Scope magnification, x :	
Acceptable	1-20
Recommended	3-5
Focus length, mm	110
F-number	1.6
Focus range	20 m to infinity
Image intensifier tube	
Type	18mm MCP
Gain, min	25,000
Resolution, lp/mm	54-64
Infrared illuminator (optional)	
Type	IR diode
Power, mW	75
Illumination angle, degree	8-10
Illumination spectrum, nm	805
Electrical parameters	
Power supply	2 AA batteries
Voltage, V	3
Continuous work time, h, min	60
Mechanical characteristics	
Dimensions, mm	258 x 80 x80
Weight, g	985
Environmental conditions	
Operating temperature range	-50°C to +50°C
Relative humidity	98%

NOTE: As the design is being continuously improved some parameters may differ from those given above.

4. DELIVERY SET

NVS 22-2XT is supplied with in the following set:

- Device	1 pc.
- Objective lens cap	1 pc.
- Rubber eyepiece guard	1 pc.
- Picatinny rail mount	1 pc.
- Operator's manual (this document)	1 pc.
- Warranty card	1 pc.
- Soft case	1 pc.
- AA Batteries	2 pcs.
<u>Optional accessories:</u>	
- IR illuminator	1 pc.
- Hard Case	1 pc.

5. OPERATION INSTRUCTIONS

WARNING!

Lens cover should be always on when switching on NVS 22-2XT in bright light conditions. Never aim the lens in the direction of bright light.

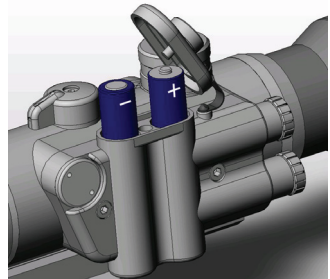
5.1. Battery installation

NVS 22-2XT requires two AA batteries.

Prior to installing the batteries make sure they are in good condition.

To install batteries unscrew the battery compartment cover 5 (Fig.1), insert batteries, observing correct polarity, and screw the cover back on.

NOTE: Alkaline batteries provide longer operation time and maximize the power of the IR illuminator.



5.2. Testing NVS 22-2XT in the daytime

Daytime mode of NVS 22-2XT was designed for testing purposes only. Image may be fuzzy.

To test the device in the daylight:

1. Turn switch 7 (Fig.1) into ON position.
2. Direct the device at an object within 10-20 m from the viewer.
3. Turning the focus knob 8 (Fig.1) adjust focus to obtain the sharpest image visible through the eyepiece.

NOTE: The device is not supposed to be directed at a bright source of light: bright lamps, the sun, welding glare, etc – doing so may result in permanent reduction of the light amplification ability of the device. To avoid the fatigue of the photocathode do not leave the stationary device switched on in the excessively bright environment (dawn, dusk, daylight, etc.) for more than 30 minutes.

5.3. Testing NVS 22-2XT at night

To test NVS 22-2XT in darkness:

1. Take off the lens cap 6 (Fig.1)
2. Turn on the device using switch 7 (Fig.1)
3. By turning knob 8 (Fig.1) and eye-piece 3 (Fig.1) obtain clear image of the object.

5.4. Testing NVS 22-2XT at night with day time scope

1. Install NVS 22-2XT (see Chapter 6 “INSTALLATION ON A RIFLE”)
2. Take off the lens cap 6 (Fig.1).
3. Turn on the device using on/off switch 7 (Fig.1). Greenish image must be seen through the daytime scope.
4. Select necessary zoom of the daytime scope. By turning knob 8 (Fig.1) of NVS 22-2XT acquire the target through daytime scope.

6. INSTALLATION ON A RIFLE

- 1) Loosen slightly the Clamp screw 11 (Fig. 1) of the adapter rail.
- 2) Place the NVS-22-2XT onto the Picatinny rail of the fire arm before objective of daytime scope at the minimal distance from it.
- 3) Tighten the fixing Clamp screws 11 (Fig. 1)

NOTE:

- Clamp screws may need to be tightened again after continuous shooting.
- Open the lens cap of the daytime scope prior to installation of NVS 22-2XT. With NVS 22-2XT mounted in front of the scope it may be impossible to take the scope lens cap off.



When mounted in front of the daytime riflescope, depending on the daytime riflescope and position of night vision attachment to the daytime riflescope the complete system may change zeroing (bore sighting) no more than 1MOA at 100 m.

This is related to changes in the weapon balance, light distortions in the image intensifier tube, technological limits in the adjustment of the riflescope attachment. This imprecision usually appears as fixed value and can be easily compensated by the adjustment mechanism of the

daytime riflescope. Thus, it is recommended to estimate if adjustment is required for a night vision sight in combination with daytime riflescope by bore sighting daytime riflescope with and without night vision attachment. Value of the required adjustment should be noted in clicks of the riflescope and shall be used each time when night vision sight is being used.

RECOMMENDATION:

Please make sure that night vision attachment is mounted on the rifle with the following tolerances related to position of daytime scope axis:

- maximum permissible misalignment of optical axes shall be within ± 1 mm in both vertical and horizontal planes
- maximum permissible misalignment of optical axes shall with ± 1 degree in both vertical and horizontal planes

Due to manufacturing process and design of image intensifier tubes, it is not always possible to eliminate boresight alignment of 1MOA at 100 m, which could appear during shooting. It is recommended to make 10-15 shots during the scope testing as an additional test before operation in real conditions.

7. STORAGE AND MAINTENANCE

Warning

If NVS 22-2XT has been kept for a long time at temperature lower than -40°C (-40°F), then prior to using the device must be warmed up at an ambient temperature of -10°C (14°F) to +40°C (104°F) with relative humidity below 80%.

NVS 22-2XT is a sophisticated precise optical instrument equipped with electronics. It should be handled with due care:

- Unit contains fragile components and sensitive optics. Avoid impacts, dust, moisture and sharp changes of temperature.
- Do not touch the optical surfaces other than for cleaning. Doing so may damage the anti-reflection coating.
- Clean optical surfaces with professional lens cleaning supplies.
- Use only soft clean cloth to clean the exterior of the device.
- Keep away from sources of heat, such as heating appliances, sunlight or central heating. Do not keep the device at temperatures higher than 60°C (140°F).
- Switch off the unit and remove the batteries during the extended periods of non-operation.
- Do not apply excessive force or pressure to the lens assembly, this may damage fragile elements and thread connections.
- Small dark and/or white marks may be seen in the field of view. This does not affect the operational capabilities of the device.
- Do not remove the cover from the lens other than for night-time operation.

8. TROUBLESHOOTING

8.1. The scope does not turn on

Check whether the batteries are installed properly. Check the charge of the batteries. Replace if they are weak. Do not mix old batteries with new ones.

8.2. The target does not appear in focus.

Bring the target to the center of the image. By turning the knob 8 (Fig.1) achieve the clearest target acquisition on the screen. If NVS 22-2XT is used with daytime scope re-focus it. Repeat the focusing of NVS 22-2XT and scope if necessary.

If the image still does not seem to be in focus, clean the lenses. They could be foggy or dusty.

8.3. Image has disappeared.

If the objective lens of switched on NVS 22-2XT are exposed to bright light it automatically shuts off to protect the image intensifier tube from overload. When it happens, turn the unit off, wait for a few seconds and turn it on again.

If the image has been lost at the moment of a shot, check contacts in the battery compartment.

8.4. Condensation accumulates on the parts

In order to avoid misting of the eyepiece lens at cold use the special protective cover.

8.5. Black dots on the screen

These are some blemishes in the image intensifier, which do not affect the performance or reliability of a night vision device. Blemishes may vary in size and number; they are inherent in the manufacturing process. Most of them are seen in the daytime only and become almost invisible during the night time.

9. WARRANTY

NEWCON warrants this product against defects in materials and workmanship for one year from the date of the original purchase, but no more than 12 months from the date of manufacturing. Longer warranty is available, subject to the terms of the specific sales contract. Should your Newcon product prove to be defective during this period, please deliver the product securely packaged in its original container or an equivalent, along with the proof of the original purchase date, to your Newcon Dealer.

Newcon will repair (or, at its option, replace with the same or comparable model), the product or part thereof, which, on inspection by Newcon, is found to be defective in materials or workmanship.

What This Warranty Does Not Cover:

NEWCON is not responsible for warranty service should the product fail as a result of improper maintenance, misuse, abuse, improper installation, neglect, damage caused by disasters such as fire, flooding, lightning, improper power supply, or service other than by a NEWCON Authorized Service.

Postage, insurance and shipping costs incurred while presenting your NEWCON product for warranty service are your responsibility.

If shipping from North America please include a cheque or money order payable to NEWCON OPTIK for the amount of \$25.00 to cover handling and return shipping.

10. CUSTOMER SUPPORT

Should you experience any difficulties with your Newcon Optik product, please, consult this manual first.

If the problem remains, contact our customer support department at +1(416) 663-6963 or toll free at 1-877-368-6666 (North America only). Our operating hours are 9am-5pm, Monday - Friday, Eastern Standard Time.

Under no circumstances should the equipment be sent to Newcon without authorisation from our technical support department.

Newcon accepts no responsibility for unauthorized returns.

To locate NEWCON Authorized Dealer call +1(416) 663-6963 or fax +1(416) 663-9065

Email: newconsales@newcon-optik.com

Web: www.newcon-optik.com

The defective products should be shipped to:

US Customers:

2331 Superior Ave. Cleveland, OH 44114, USA

From all other countries:

105 Sparks Ave., Toronto ON, M2H 2S5, CANADA

11. ACCEPTANCE CERTIFICATE

NVS 22-2XT unit serial number:

Image Intensifier Tube serial number: _____

	Minimum	Measured
Resolution, lines/mm	45	
Photocathode sensitivity, integral, $\mu\text{A}/\text{lm}$	400	
Light amplification	25,000	

The unit complies with all technical specifications and has passed the inspection.

Date of production: _____

Quality Inspector: _____

Quality Assurance Seal

