NEWCON™ OPTIK

Operation Manual

AN Series Binoculars

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

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1. BRIEF DESCRIPTION

The AN series of daytime binoculars includes

AN 8x30,

AN 7x50MC,

AN 7x50M22,

AN 10x50M22.

Though the binoculars differ in optical characteristics and some features, they all share a similar optical and mechanical design. Unless explicitly mentioned this manual refers to all models.

The binoculars are designed and manufactured to military specifications and provide excellent brightness, image clarity and true image color. The built-in range finding reticle, M22 standard, enables measurements of horizontal and vertical angles, as well as calculation of height, width of the target and distance to the target.

All binoculars are waterproof, shockproof and nitrogen filled. They are also rubber armoured and have a tripod socket.

The binoculars feature foldable rubber eye cups and long eye relief to provide for comfort viewing with glasses or mask. Though many binoculars feature fold down eye cups, only the ones featuring a long eye relief offer a truly full view while wearing glasses.

The AN 7x50MC has a built-in compass illuminated either by ambient light or by an internal light source powerd with two tablet batteries.

These binoculars meet the standards and requirements of GJB1240, GJB150 and MIL-STD810.

The user can be confident whether the instrument is used in the military, security, traffic control, marine, aviation, or any other application requiring reliable and powerful optical equipment.

2. SPECIFICATIONS

2.1 Shared specifications

Prisms	BAK4
Coating	FMC
Brightness index	50.4
Interpupillary adjustment distance	56-74 mm
M22 Reticle	Yes
Operating temperature range	–40°C … +70°C

All binoculars are waterproof and shockproof (will withstand a drop test from 1.8m).

2.2 Differences between the models

	8x30	7x50MC	7x50M22	10x50M22
Magnification	8x	7x	7x	10x
Objective lens diameter	30 mm	50 mm	50 mm	50 mm
Focus	3 m – inf.	4 m – inf.	5 m – inf.	6 m – inf.
Field of view	8°	7.2°	7.5°	6.5°
Apparent field of view	60°	52.5°	52.5°	65°
FOV @1000 m	132 m	132 m	132 m	114 m
FOV @1000 yd	396 ft	396 ft	396 ft	342 ft
Exit pupil	3.8 mm	7.14 mm	7.14 mm	5 mm
Eye relief	17 mm	23 mm	23 mm	18.5 mm
Weight	0.545kg	1.15 kg	1.56 kg	1.51 kg
Dimensions, LxHxW, mm	110x156 x55	209x157x 85	200x195 x70	195x180 x70

3. DESIGN AND APPEARANCE

3.1 Optical design

Optical design of the binoculars is presented on Fig. 1.

1 – objective lens	2 – erective prisms
3 – reticle lens	4 – eyepiece

AN 7x50MC contains an additional compass projector that brings light to illuminate the compass scale.

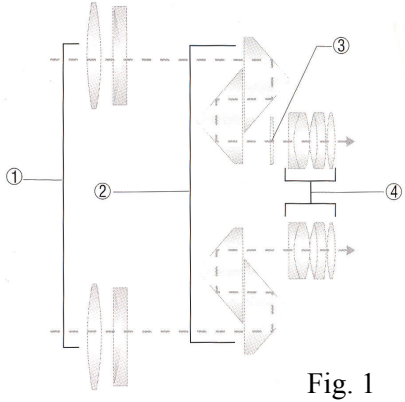

Fig. 1

The light from the object or target you are looking at enters the binoculars through the objective lens system (1, Fig. 1). Due to the objective lens, the image at this point is turned upside down. However, as the image passes through the prism system, (known as the erective prisms) (2, Fig. 1) it becomes right side up (erect) and changed from right to left, to left to right. After the prisms the image rays pass through the reticle lens (3, Fig. 1) and then through the eyepiece (4, Fig. 1).

3.2 Reticle

Reticle lens (3, Fig. 1) contains vertical and horizontal lines that constitute an M22 reticle. Though reticle scales may form a cross or upside down T (Fig. 2, A, B, C) they share the same scale division value: each small division on both vertical and horizontal lines is 5 mils and each big division is 10 mils (360º equals 6400 mils).

Reticle may have an addition scale composed of two lines (B, Fig.2).

A B C

Fig. 2

4. BODY ASSEMBLY

AN 7x50MC is shown as an example. Though all binoculars have similar design, only MC model has a built-in illuminated compass.

See next page for details.

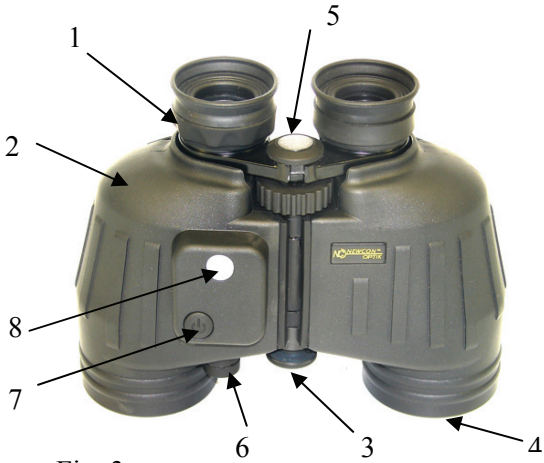

Fig. 3

1 – Eyepiece with built-in reticle and focus adjustment ring

2 – Binoculars body

3 – Tripod socket under a screwed in protective cup

4 – Objective lens with a protective cap on

5 – Interpupillary distance adjustment scale

6 – Battery compartment cover

7 – Compass illumination button

8 – Compass illumination projector window

5. DELIVERY SET

	Q-ty	Notes
Binoculars	1	
Carrying strap	1	
Lens cleaning cloth	1	
Soft case with carrying strap	1	
Eyepiece cup	1	AN 7x50M22 and AN 10x50M22 only
Tripod adapter	1	AN 7x50M22 and AN 10x50M22 only, for other models tripod adapter is optional
Manual	1	

6. OPERATION INSTRUCTIONS

6.1 Interpupillary distance adjustment

Prior to use you may like to adjust the binoculars to the distance between your eyes (interpupillary distance). Holding the binoculars in both hands rotate its halves until you see one round image.

Note: The image may not be clear at this step. You will focus it in the next step.

6.2 Focusing the binoculars

The binoculars may have central or independent focus.

Central focus

To focus the binoculars raise the instrument to your eyes and close your right eye. With your left eye open focus the image by rotating the central focus adjustment ring located in front of eyepieces. Use eyepiece focus adjustment ring to focus image for the right eye if necessary.

Independent focus

To focus the binoculars raise the instrument to your eyes and close your right eye. With your left eye open focus

the image by rotating eyepiece adjustment ring of the left eyepiece. Repeat the procedure for the other eye.

Note: You may like to remember your dioptre settings to set them every time you use the binoculars.

6.3 Measuring horizontal angle using the reticle

An M22 reticle built into these binoculars enables measuring height, distance and size of a target, as well as angle between two close targets. Though reticle appearance may differ from one model to another as described in 3.2, the description below is valid for all models.

When the angle between two targets is smaller than the angle measuring range (100 mils), aim the scale line at one end of the reticle at the target then read the value of the scale at which another target was located on the reticle. As shown in Fig. 4, the horizontal angle of

the target (tank) is 20 mils.

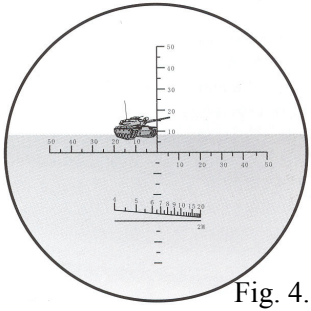

Fig. 4.

When the angle between two targets is larger than the angle measuring range (100 mils), it can be measured in several steps.

The horizontal angle of cruiser shown in Fig. 5, is 130 mils (60+70=130).

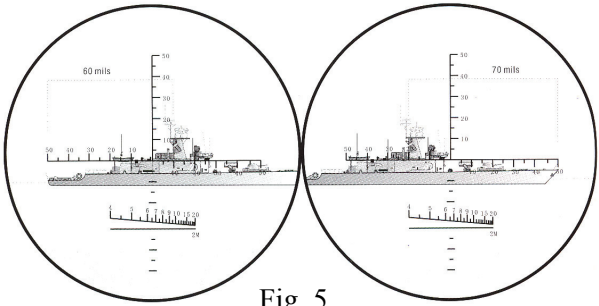

Fig. 5.

Vertical angle measurement is similar to horizontal angle measuring.

When height of the target is smaller than the reticle scale, its height can be obtained in one measurement.

The height of the beacon, shown in Fig. 6, is 65 mils.

For targets taller than the reticle scale, perform measurement in steps in the same way as it is described for the horizontal angle measurement.

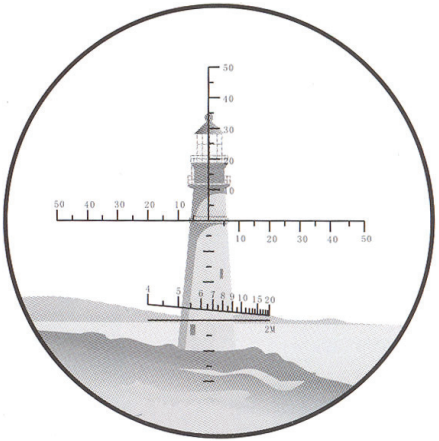

Fig. 6.

6.5 Using the reticle to calculate distance

To determine the distance to the target use the formula:

$$D = H/K,$$

where

D – distance to target in km,

H – estimated height of the target in m,

K – vertical angle of the target in mil.

First, estimate the height (or width) of the target, then measure target's horizontal (vertical) angle and calculate the distance.

For example:

Assuming an image of an adult human figure has a vertical angle of 10 mils and its height is 1.70m we can calculate the distance to it:

$$L=H/K=1.7/10=0.170 \text{ (km)} = 170 \text{ (m)}$$

6.6 Measuring distance directly using the reticle

If reticle of your binoculars has an additional scale shown at Fig.7 distance to a target may be measured directly.

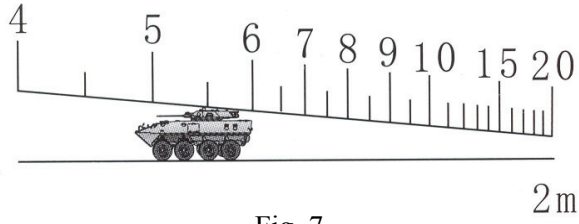

Fig. 7

Place the lower edge of the target at the horizontal line on the reticle. The reading of the scale at the point where target's 2 m level touches the scale is the distance in meters.

Assuming that vehicle on the Fig. 7 is 2 m high; the distance to it is 550m.

6.7 Calculating target's size using angle readings

To calculate height and width user will need to estimate the distance to the target and measure its horizontal and vertical angles. Then using the formula for distance measurement one can calculate target's height:

H=DxK,

where K is vertical angle in mils,

D is distance in meters and

H is height in meters.

For example: if distance to the target is 0.6 km and its horizontal angle is 30 mils and its vertical angle is 60 mils, using the formula you can calculate:

The height: H=0.6 x 30= 18 m

The width: W=0.6 x 60=36 m

6.8 Compass (MC model only)

The AN 7x50MC model has a built-in analogue compass, which is visible via the eyepiece (A, Fig.2).

This scale can be illuminated via a projector window (8, Fig.3). If natural illumination is not sufficient pressing the illuminator button (7, Fig.3) will lightup the scale from inside. Internal lighting is powered by two tablet batteries (LR 43 type).

If compass scale illumination by ambient light distracts observation – cover the projector window (8, Fig.3) with index finger.

7. STORAGE AND MAINTENANCE

The binoculars are precision optical instruments that should be carefully handled and properly maintained to keep them in a good working order.

Clean the lenses after each use with special optical cloth. Never wipe the lenses with fingers; grease may damage the optics coating. Never use anything to wipe the lenses except special optical cleaning cloth.

The eyepieces provide a wide dioptre adjustment; do not turn them beyond the factory set stop. Forcing eyepieces beyond this point will cause damage and make the binoculars inoperable.

Avoid any extreme vibration or shock of the binoculars. This may damage the internal optics.

Store the binoculars in a dry well ventilated place.

If you find the binoculars not working properly, do not attempt repairing it yourself as this may void any warranty. Always deliver the binoculars to a professional optics repair. If one is not readily available, then send it back to the factory.

8. WARRANTY

NEWCON warrants this product against defects in material and workmanship for one year from the date of the original purchase. 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 $15.00 to cover handling and return shipping.

9. CUSTOMER SUPPORT

Should you experience any difficulties with your NEWCON OPTIK product, consult the enclosed manual. If the problem remains unresolved, contact our customer support department at (416) 663-6963 or toll free at 1-877-368-6666. Our operating hours are 9am-5pm, Monday - Friday, Eastern Standard Time.
At no time should equipment be sent back to Newcon without following the instructions of our technical support department.

NEWCON OPTIK accepts no responsibility for unauthorized returns.
To locate NEWCON Authorized Dealer call:
Tel: (416) 663-6963 Fax: (416) 663-9065
Email: newconsales@newcon-optik.com
Web: www.newcon-optik.com

Defective products should be shipped to:
US Customers:
2498 Superior Ave. Cleveland, OH 44114 USA
From all other countries:
105 Sparks Ave., Toronto, ON M2H 2S5, CANADA

10. QUALITY CERTIFICATE

The binoculars serial number_____

complies with all technical specifications and has passed the inspection.

Date of production:

_____

Quality Inspector:

_____

Quality Assurance Seal

R.I.S – 7.11

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