NEWCON™ OPTIK

Operation Manual

NC 3-12x50
DAYTIME RIFLE SCOPE

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

IMPORTANT INFORMATION
Read prior to activation.

NC 3-12x50 is the sophisticated optical riflescope. To operate it properly, please read this manual carefully. Ignoring operation procedures described in this manual will void your warranty.

- **NEVER** disassemble the unit.
- **NEVER** reverse the polarity of a battery.
- **NEVER** connect the unit to external power sources.
- **ALWAYS** remove battery when the unit not in use for a long period.
- **ALWAYS** keep the objective lenses covered when not in use**.**
- **ALWAYS** store the unit in a warm dry place.

Precautions

NC 3-12x50 is the sophisticated precise optical instrument equipped with electronics.
It should be handled with due care:

- Unit contains fragile components. 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 a soft clean cloth to clean the exterior of the riflescope.
- Store the unit away from sources of heat, such as heating appliances, sunlight or central heating.
- Switch off the unit and remove the battery during extended periods of non-operation.
- Do not store the riflescope at temperatures higher than 60^0C (140^0F).
- Do not apply excessive force or pressure to the lens assembly, movable parts and threaded connections.

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DEVICE APPEARANCE

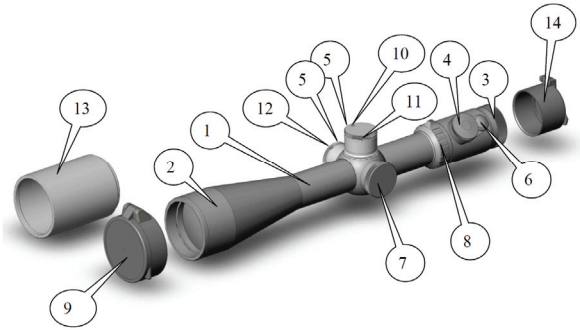

Figure 1

For numbering see the next page.

The manufacturer reserves the right to implement design and specification improvements from time to time without notice.

Figure. 1

1 - Body of the riflescope
2 - Objective lens
3 - Eyepiece
4 - Battery compartment
5 - Internal windage/elevation adjustment knobs
6 - Reticle brightness adjustment switch
7 - Parallax adjustment knob
8 - Magnification adjustment ring
9 - Objective lens cover
10 - Zeroing setscrew
11 - Fixation screws of the elevation adjustment
12 - Fixation of the windage adjustment
13 - Optional Hood
14 - Eyepiece cover

1. BRIEF DESCRIPTION

NC 3-12x50 is the daytime riflescope with variable magnification, which is designed for being used on various kinds of weapons.
The Mil-dot reticle of the riflescope is positioned in the focal plane of the eyepiece (second focal plane), thus providing permanent size of the reticle regardless of the riflescope variable magnification. This creates favorable conditions for acquisition of small targets at long distances, due to the fact that the reticle covers only small portion of the target at large magnification.
The riflescope is equipped with central system parallax adjustment, which works for ranges from 50 meters to infinity.
The reticle is highlighted with red LED with seven modes of brightness.
The riflescope incorporates windage adjustment (the multi-revolving scheme) and elevation (single-revolving scheme), allowing to adjust shooting ballistics in wide range.

2. DELIVERY SET

Standard delivery set of NC 3-12x50 includes:

- Device	- 1 pc.
- Objective lens cover	- 1 pc.
- Eyepiece cover	- 1 pc.
- Cleaning cloth	- 1 pc.
- Allen key for setting zero	- 1 pc.
- Battery CR2032	- 1 pc.
- Manual	- 1 pc.

Optional accessories:

- Hood	- 1 pc.
- Rings for installation on a weapon	- 2 pc.
- Hard transportation case	- 1 pc.

3. TECHNICAL SPECIFICATIONS

Magnification, x	3 to 12
Objective lens diameter, mm	50
Field of view, º	6.8 to 1.7 (from 11.9m to 3m @100m)
Exit pupil, mm	12.5 to 4.1
Diopter adjustment	+3, -3
Eye relief distance, mm	100
Reticle battery, V	CR 2032 (3 V)
Battery life, h	15 to 100
Adjustment mechanism, step	10mm @100m
Elevation range	±1.7m @100m
Maximum windage range	± 0.6m @100m
Working windage range	±0.27m @100m
Operational temperature, ^{o}C	-50° … +50°
Relative humidity, %	Up to 98
Dimensions (without mount), mm	347x77x77
Mounting ring diameter, mm	30
Weight (without mount), kg	0.78

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4. TYPE AND SIZE OF THE RETICLE

Reticle description.

The riflescope incorporates black illuminated reticle as shown on the Fig. 2.

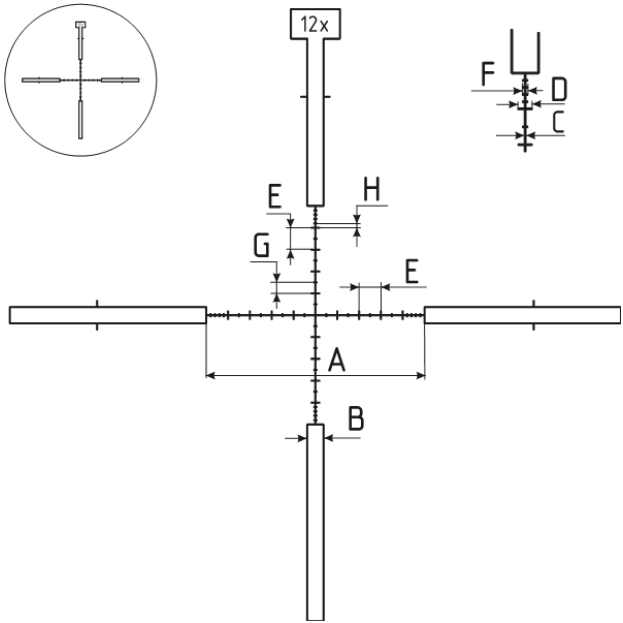

Figure 2

The central part of the reticle represents Mil-Dot grid with added additional vertical and horizontal markings in made with variable step. Such pattern corresponds to the TMR grid. The grid has breakdown for a finer step (of 0.2 thousands of a distance) on the edges. This is necessary for exact estimation of shooting distance for ranges from 500 to 1000 meters and above. The additional markings allow distance measuring more precisely and, consequently, improve accuracy of shooting comparing with regular Mil-Dot reticles.
Brightness of a reticle is adjusted by the switch (6). Consequent pressing of the switch changes brightness from non-illuminated reticle to maximum illumination with four different brightness steps.
The reticle is located in the second focal plane, and its sizes do not change with change of the riflescope magnification, however, the size of the reticle does change relatively to the observation object depending on magnification.
The segments of the reticle (A, B, C, D, E, F, G, H) can be described by two equally correct methods.

Method 1.
Reticle segments are described in angular units as thousands of a distance or mils (1 mil).

Note
1 mil represents the angular measure of a distance and constitutes:

1 mil = 1 t.d. (one thousands of a distance),
or = 10 sm at 100 m of a distance,
or = 3.438*MOA (Minute of Angle).

The segment E on the Fig.2 = 1 mil (=1 t.d.) is the distance between large dots.
The size of the segments of the reticle in the Table. 2 are given in mils.

TABLE 2

	A	B	C	D	E	F	G	H
Size in t.d. (or mil)	10	0.75	0.05	0.4	1.0	0.15	0.5	0.2

Method 2.
Reticle segments are described in centimeters at 100m distance with 12x magnification.
The segment E (Fig. 2) equals to 10 cm at 100 m distance for 12x magnification.
The size of the segments of the reticle in the Table. 3 are given in cm @100m for magnification 12x.

TABLE 3

	A	B	C	D	E	F	G	H
Size in cm @100m distance	100	7.5	0.5	4.0	10	1.5	5	2

The segments of the reticle for other magnification settings are given in the Table 4 (all numbers are measured in cm @100m).

TABLE 4

Magnification, x	**A**	**B**	**C**	**D**	**E**
3	400	28.0	2.0	10.0	40.0
4	300	21.0	1.5	7.50	30.0
6	200	14.0	1.00	5.00	20.0
8	150	10.5	0.75	3.8	15.0
10	120	8.4	0.60	3.0	12.0
12	100	7.0	0.50	2.5	10.0

It's possible to determine segments size for any magnification with the formula:

$$\text{Size of the segment at 100 m (with magnification V)} = \frac{[\text{specified size at 12x}] \times 12}{\text{Selected magnification V}}$$

Example:
Let's find size of the segment (E) of the thin cross hair at 100 m distance with 8 x magnification.
The specified step at 100 m distance and 12x magnification is10cm.
Now we shall calculate its size at 8x magnification:
E = (10 x 12): 8 = 15 cm at 100 m.

The distance to the target also influences the corresponding sizes of the reticle.

Size of the segment = (calculated size of reticle @100m) x K,

where K- adjustment for particular distance and equals to:
= 0.5 – for 50 m distance,
= 1.0 – for 100 m distance,
= 2.0 – for 200 m distance,
= 3.0 – for 300 m distance (etc).

Example:
Let's find size of the segment (E) of the thin cross hair at 300 m distance with 8 x magnification.
The specified step at 100 m distance and 8x magnification is15cm. At 300m it is equal to:
E=15x(300:100) = 45 cm

Determining distance to the target (for 12x magnification only).

By using the Mil-dot reticle and knowing the size of the target, it is possible to determine distance to the target with enough accuracy that is required to acquire the target (or make windage adjustment to compensate the bullet drop).

Procedures:

1) Make sure that the riflescope is set to 12x magnification;
2) Estimate real horizontal (or vertical) size of the target, to which you will be determining distance;
3) Look at the cross hair of the riflescope so that one dimension of the target is visible through the Mil-dot reticle (see Fig. 3),
4) Count number of divisions in length (or height) of the target (the more precise is your knowledge of the size of the target, the more accurately you can determine distance to the target, which is very important for small targets located at distances of more than 450m),

5) Distance can be determined by the following formula:

L= (H x 1000) / h,

where L – distance to the target, m;
H – real length (or height) of the target, m;
h – number of the segments of the reticle that cover the chosen dimension of the target.

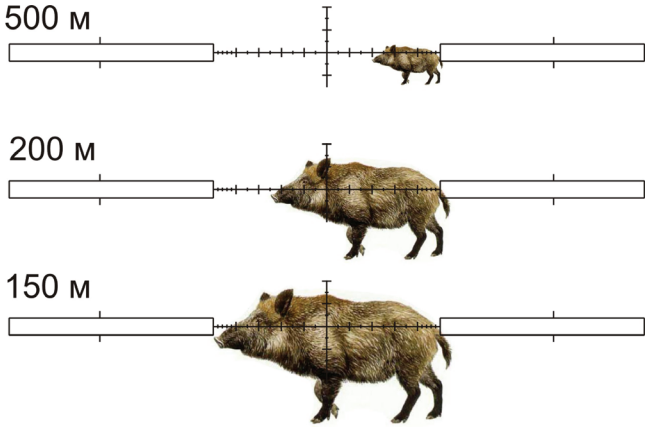

Figure 3
(see also TABLE 6)

The Figure 3 shows an example of distance estimation to a boar, which is 1.5 meters in length. Also, it is possible to determine distances to targets with size of the target being from 30 cm to 2 m using Tables 5 and 6.

TABLE 5

Distance to the target, m							
	Real length (or height) of the target, cm						
Number of segments (in mils or t.d.)	30	40	50	60	70	80	90
1.00	300	400	500	600	700	800	900
1.25	240	320	400	480	560	640	720
1.50	200	267	333	400	467	533	600
1.75	171	229	286	343	400	457	514
2.0	150	200	250	300	350	400	450
2.5	120	160	200	240	280	320	360
3.0	100	133	167	200	233	267	300
3.5	86	114	143	171	200	229	257
4.0	75	100	125	150	175	200	225
4.5	67	89	111	133	156	178	200
5.0	60	80	100	120	140	160	180
5.5	55	73	91	109	127	145	164
6.0	50	67	83	100	117	133	150
6.5	46	62	77	92	108	123	138
7.0	43	57	71	86	100	114	129
7.5	40	53	67	80	93	107	120
8.0	38	50	63	75	88	100	113
8.5	35	47	59	71	82	94	106
9.0	33	44	56	67	78	89	100
9.5	32	42	53	63	74	84	95
10.0	30	40	50	60	70	80	90

TABLE 6

Distance to the target, m					
	Real length (or height) of the target, m				
Number of segments (in mils or t.d.)	1.00	1.25	1.50	1.75	2.00
2.0	500	625	750	875	1000
2.5	400	500	600	700	800
3.0	333	417	500 (*)	583	667
3.5	286	357	429	500	571
4.0	250	313	375	438	500
4.5	222	278	333	389	444
5.0	200	250	300	350	400
5.5	182	227	273	318	364
6.0	167	208	250	292	333
6.5	154	192	231	269	308
7.0	143	179	214	250	286
7.5	133	167	200 (*)	233	267
8.0	125	156	188	219	250
8.5	118	147	176	206	235
9.0	111	139	167	194	222
9.5	105	132	158	184	211
10.0	100	125	150 (*)	175	200

correspond to the example with the boar on the Figure 3

5. INSTALLATION ON THE WEAPON

Installation of the NC 3-12x50 on the weapon includes mounting and gluing of the fixation rings (Ø30mm) in accordance with the installation manual of the ring manufacturer.
The Ø30mm fixation rings must be firmly attached to the riflescope body with a two-componential epoxy glue.

WARNING:
Do not over tighten fixation rings. Over tightening can lead to deformation of the riflescope, and this will prevent parallax adjustment mechanism to work correctly.
If screws of the front fixation rings are tightened with excessive force, the parallax adjustment knob will rotate with effort. In this case it is necessary to loosen screws of the fixation ring to restore the normal way of parallax knob rotation.
It is recommended to allow negative inclination of the riflescope towards the rifle barrel in the range of 0-0.5 degrees to allow wider range of the elevation adjustment. Such precaution will provide longer range shooting.

The riflescope NC 3-12x50 can be supplied with fixation mounts for exact weapon model or without them depending on the particular order.

6. BATTERY INSTALLATION

The riflescope operates with one CR2032 battery. Be sure that the battery is brand new and is installed with correct polarity ("–"sign goes inside the battery compartment).
To install the battery, unscrew the battery compartment cover (4, Fig 1), insert the battery observing polarity, and screw the cover back.

7. RETICLE ILLUMINATION

The reticle illumination is digitally controlled by the switch (6, Fig.1). A short pressing of this switch sets the reticle to the illumination position, which was set the last time when the riflescope was used.
The reticle illumination is adjusted by pressing and depressing the switch. You can choose among seven possible illumination levels. If the battery is discharged, the reticle will blink being turned on.

The reticle illumination turns off automatically after 30 minutes from the last pressing of the switch. Before turning off, the reticle blinks during several seconds. In order to turn the reticle illumination off manually, it is necessary to press and hold the switch during 2 seconds.

8. USING THE NC 3-12x50 RIFLESCOPE

Operating procedure:

1) Mount the unit on the corresponding landing place of the weapon and install the battery;
2) Open objective and eye protection caps;
3) Achieve maximum sharpness of the reticle image by rotating the eyepiece (3, Fig.1);
4) Check the riflescope for correct parallax adjustment. To do so, chose a target for aiming and swing your eye from side to side relatively to the eyepiece. If the reticle displaces from the aiming point, rotate the knob (7, Fig.1) and repeat the action. The riflescope is free from parallax, if the center of the reticle is not displaced relatively to the target with eye swinging;
5) Rotate magnification adjustment ring (8, Fig.1) to achieve the required magnification;

6) If necessary, turn on the switch (6, Fig.1) to get the reticle illuminated. You should see the red illuminated outline of the reticle. Switch (6, Fig.1) also controls the reticle brightness.

Riflescope is ready for operation.

After operation:

1) Switch off the illumination – by returning the switch (6, Fig.1) to OFF position;
2) Close objective and eyepiece caps;
3) Remove the riflescope from the weapon if it is required by conditions for transportation.

WARNING:

If you are store the riflescope for long period of time without operation remove the battery from the battery compartment to prevent battery leakage.

9. ADJUSTMENT ON THE WEAPON

The riflescope is equipped with tactical multi-revolving reticle adjustment mechanism. Screws of the adjustment mechanism are terminated with knobs (5, Fig.1) with the horizontal and vertical scales, which allow precise determining of the clicks and turns of the knob(s).

Adjustment is performed as follows:

1) Mount the riflescope to the weapon;
2) Find a target or choose a point of aim;
3) Lock the weapon on the shooting stand;
4) Aim the weapon at the target using iron sights installed on the weapon (if it is possible). At this stage you can use laser boresighting riflescope (LBS, to be purchased separately), which is inserted into the barrel of the weapon and points to the geometrical point of the barrel extension:
5) By rotating the windage/elevation adjustment knobs, achieve overlapping of the cross hair with the aiming point indicated by the iron sight or LBS;
6) Take the weapon from the stand and remove LBS;

7) Make 3-4 single shoots, carefully and in the same manner aiming at the target;
8) Determine grouping of shots and position of mean impact point in accordance with the shooting instructions (grouping of shots is considered normal if it falls under grouping standard for this type of weapon without a riflescope);

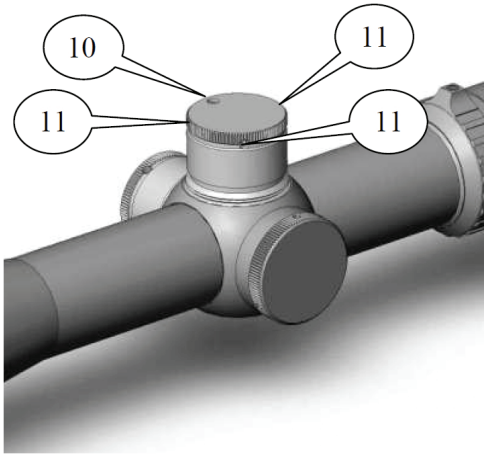

Figure 4

9) Make necessary adjustments, if required, according to the pictograms shown on the windage/elevation knobs.The step of one click as shown on the knobs is 10mm at 100m distance.
10) Execute a control shot and make sure that the aiming point of the riflescope coincides with a hit point of the bullet (perform adjustments once again, if necessary);
11) The zeroed position of the knobs must be fixed (this procedure is called “to set a zero”). In order to do so, loosen the three setscrews (11, Fig. 4) with the hexagon key on each knob. Turn the knob without clicks until the zero marking coincides with the marking on the riflescope body. Tighten the setscrews with the same key;
12) The setscrew (10, Fig.4) stops rotation of the knob on the “-2” or “-4” clicks position counting from “0” position of the knob. If you adjustment mechanism is not mechanically locked at the “minus” position, rotate the setscrew (10) clockwise by 4-5 full cycles. If the screw rotates too easily, lock it with the locking substance or paint.

The riflescope is ready for use.

10. STORAGE AND MAINTENANCE

Protect the riflescope from direct impacts.
If there is dirt on optical surfaces, wipe optics with clean cloth.
Do not use corrosive liquids such as Acetone for riflescope cleaning (wiping with Alcohol is allowed).

Long-tem storage and transportation of the riflescope should be performed in a transportation case with objective and eyepiece covers closed for protection and without a battery.
It is allowed to store the riflescope in the dry non-maintained premises. The storage temperature must not exceed +60 ^{0}C.

11. TROUBLESHOOTING

Unit does not focus.
Rotate the eyepiece as described above in this manual. If the riflescope cannot be focused, wipe optical components with a clean optical cloth.

Illumination of the reticle is not working.
Make sure the battery is installed correctly and not discharged.

Condensation on the riflescope.
Use special anti-fogging liquids like the ones for eyeglasses during cold weather conditions.

Boresighting problems.
Make sure that the riflescope is mounted correctly. Make sure that riflescope is securely glued in the fixation rings, and that the fixation rings are attached to the weapon securely without slack.

12. WARRANTY

NEWCON warrants this product against defects in material and workmanship for one year from the date of the original purchase. 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.

13. 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
The defective products should be shipped to:

From the USA only:
2498 Superior Ave. Cleveland, OH 44114

From all other countries:
105 Sparks Ave., Toronto, ON M2H 2S5, CANADA

14. ACCEPTANCE CERTIFICATE

Riflescope NC 3-12x50
The unit meets all technical specifications and has passed the quality assurance inspection.

Production date:_____

Unit serial number:

_____

Quality Inspector:

_____

Quality Assurance Seal

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