

Catalogue Index

1. General Overview	2
2. Technical Specifications	2
3. Construction Specifications	3
4. How to use the Binoculars	5
5. Tripod Mounting	10
6. Binoculars and accessories	11
7. Storage and Maintenance	11

1. General Overview

1.1 Product Description

These 7 × 50 binoculars are a floating model with illuminated compass. They have one ranging tool. The eyepiece Mills Reticle Scale can be used to estimate your distance from an object if its size is known, or vice versa. The optics are precision crafted for brightness and clarity of image.

1.2 Model 7 × 50 with digital compass

2. Technical Specification

2.1 Optical performance

Magnification: 7x

Field of view at 7x: (132m/1000m)

Exit pupil diameter: 6.8mm

Exit pupil distance: 22 mm (Long eye relief for eyeglass wearers)

Diopter adjusting range : -5 ~ +5 DIOPTER

Interpupillary distance: 55.5 ~ 73mm

Resolution: $\leq 5''$

2.2 Size and mass

Size(length x width x height):213 × 85 × 160mm

Weight: Binoculars: $\leq 1.13\text{kg}(2.49\text{lbs})$

Complete product: $\leq 1.43\text{kg}(3.15\text{lbs})$

3. Construction Specifications

3.1 Optical system

3.1.1 Basic binocular construction

Basic binocular optical construction, as shown in figure 1, consist of (1) the objective lens, (2) the Porroprisms, the reticle and (4) the eyepiece. Reticle (3) and the chip of digital compass (5) are built into the right half of the binoculars body.

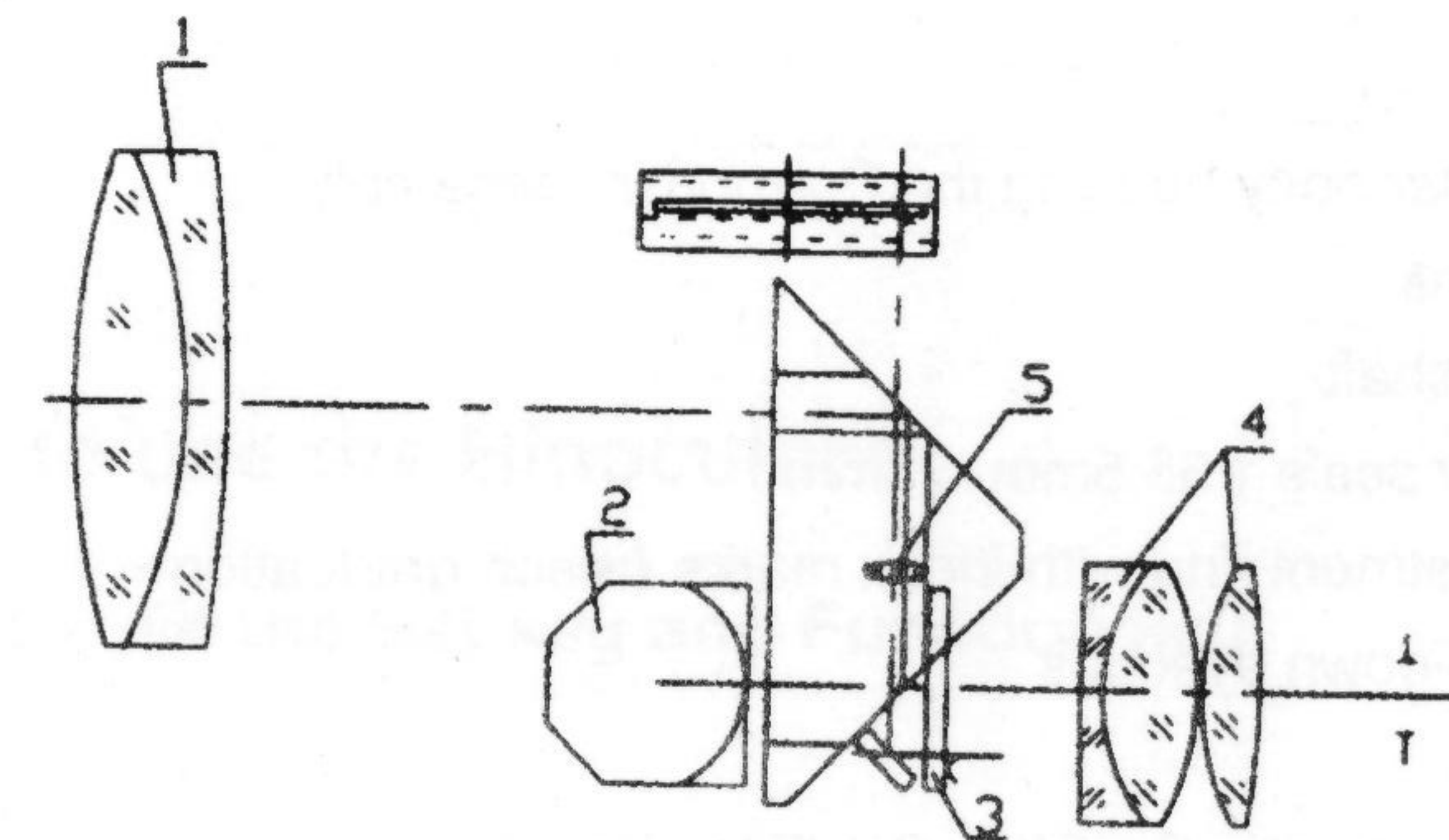


Fig. 1

3.1.2 How Binoculars work

The light from the object or target you are looking at enters the binoculars through the Objective lens system (item 1,fig.1). Due to the objective lens, the rays are converged to an upside down image. Then the light rays of the image passes through the prism system (known as the Porroprism) (item 2, fig.1) and are reversed to erect the image at the reticle (item 3, fig.1). This image is magnified by the eyepieces (item 4, fig.1), so that the observer can now see the distant object.

3.1.3 Reticle Scale (See Fig.3)

There are vertical and horizontal lines on the reticle (item 3, fig.1). Each small division on both vertical and horizontal lines represents 5 mils and each numbered division represents 10 mils (one perigon=6400 mils) .

So “10” on the scale is equal to 10 mils.

3.2 Body assembly (Fig.2)

The binoculars consist of two identical telescopes. Each half consists of the following:

1. Eyepiece
2. Main binocular body housing the Porroprism assembly
3. Objective lens
4. Connecting shaft
5. Interpupillary scale (55.5mm~73mm)
6. Diopter adjustment ring with index marks (each graduation = 1 diopter)
7. Rubber fold-down eyecups
8. Set key
9. Compass illuminator On/Off switch/Function key
10. Battery compartment
11. Dust cover for objective lens
12. Dust cover for eyepieces

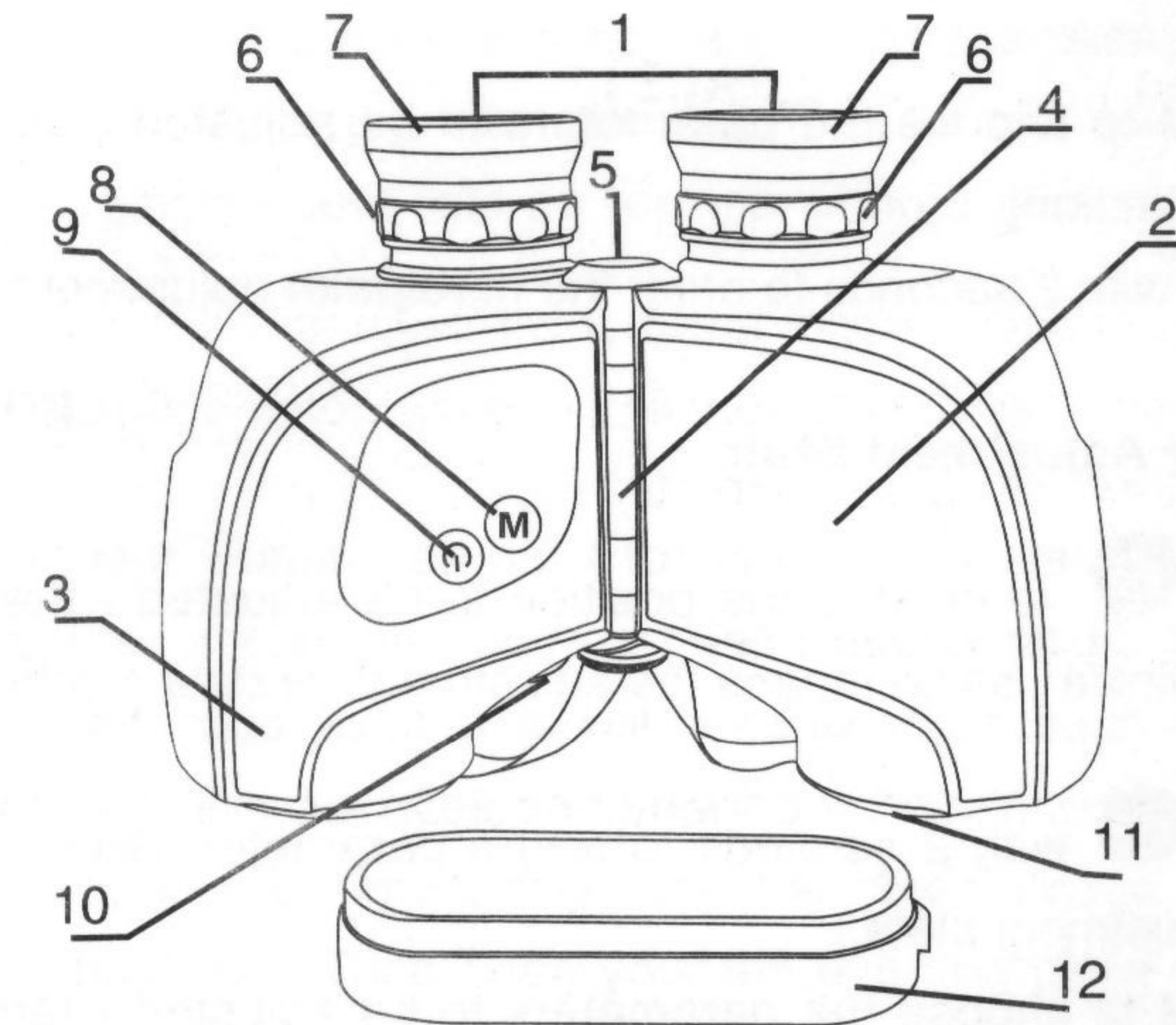


Fig. 2

4. How to use the Binoculars

4.1 How to use the Set key and Function key

M—Set key

Ⓜ —On/Off switch/Function Key

(1) Work Mode

Short press M to set Backlight Brightness

Long press M with 2 seconds to enter the parameter setting mode

Short press Ⓜ for Thermometer/Compass switch

(2) Parameter Setting Mode


Long press Ⓜ with 2 seconds to exit the parameter setting mode, return to


work mode.

Short press M to choose the parameters to be adjusted (temperature unit / magnetic declination).

Long press M with 2 seconds to enter the parameter adjustment state.

(3) Parameter Adjustment State

Short press  to choose the position to be adjusted (the corresponding position will twinkle , all on means the adjustment for data symbols).

Long press  with 2 seconds to return parameter setting mode from the parameter adjustment state.)

Short press M to choose the parameters to be adjusted (temperature unit / magnetic declination).

Long press M with 2 seconds to save parameters and return to parameter setting mode.

4.2 How to focus the binoculars

4.2.1 Interpupillary adjustment

First adjust the binoculars so that both eyepieces are directly in front of your eyes. This is done by holding the binoculars with both hands and bending the main binocular body housing until you can see one single circular image.

Note: the image will not be clear. You will adjust for clarity in the next step. You must first set the binoculars interpupillary distance to fit your eyes. The setting for your eyes will be indicated on the interpupillary scale (fig.2,5) . Note this scale setting for quicker resetting later.

4.2.2 Rubber fold-down eyecups.

These are long eye relief binocular. They allow the eyeglass wearer to see normal images without removing their glasses. These convenient eyecups fold down for use with glasses and fold up for use without glasses. Lightly press eyecups to fold them down easily.

4.2.3 Focusing

In order to get a clear image, you must focus the binoculars. This model has two individual diopter adjustment rings on each telescope so you can adjust the optics to your individual eyes. You will need to adjust each eyepiece. After placing the binoculars to your eyes and viewing an object, close you left eye. Rotate the right diopter adjustment rings until the object image appears sharp and clear in your right eye. Then open your left eye and close your right eye. Rotate the left diopter adjustment rings until the object image appears sharp and clear in your left eye.

If you share your binoculars with another person, note the diopter index mark setting at the base of the eyepieces first (fig.2,6) . Then you can simply return the eyepieces to those settings when you next use the binoculars to view an object at the same distance.

4.3 How to use the Mils Reticle to estimate distance

4.3.1 What is View Angel ?

The view angle of an object is the angle from your binoculars to the edges of the object. It is calculated in mils using the Mils Reticle on your binoculars. Using this measurement you can calculate the distance to an object where the height or width of that object is known. This measurement is taken either horizontally or vertically and known as Horizontal View Angle or Vertical View Angle.

4.3.2 How to calculate the Horizontal View Angle of an object

Where the object fits within the horizontal scale range (-40~+40 mils) inside the binocular, line one edge of the object up with a point on the horizontal scale line and read the value from where the other edge meets the horizontal scale. In fig.4 the right edge of the sail boat is at zero and the left edge at 20 so the horizontal view angle is 20 mils. (10 on the scale = 10 mils, 20 = 20 mils etc) .

4.3.2a How to calculate View Angle when the object is larger than the scale

When the object is larger than the scale , choose a midpoint, take the view angle of this point and multiply by 2.

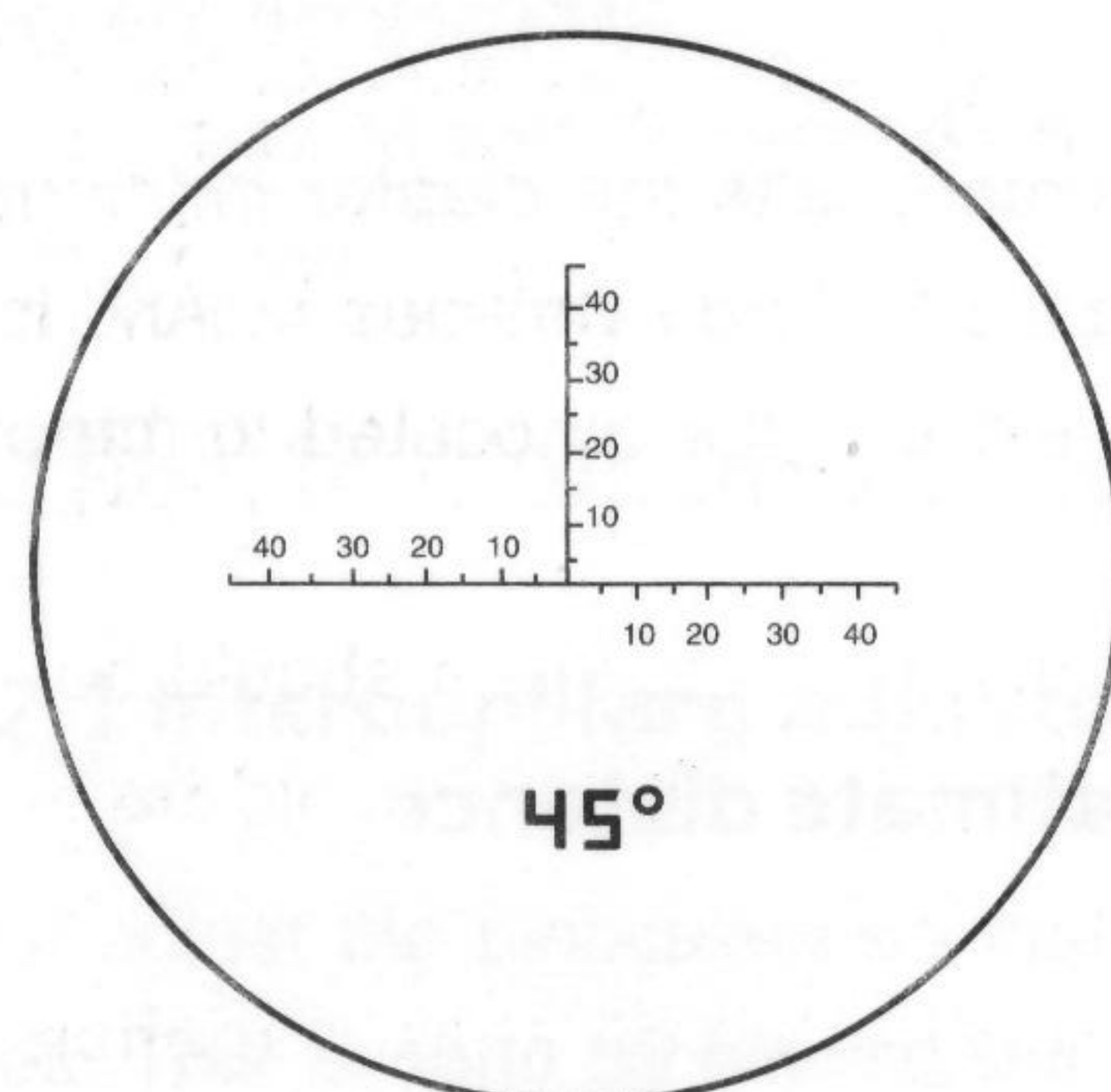


Fig.3

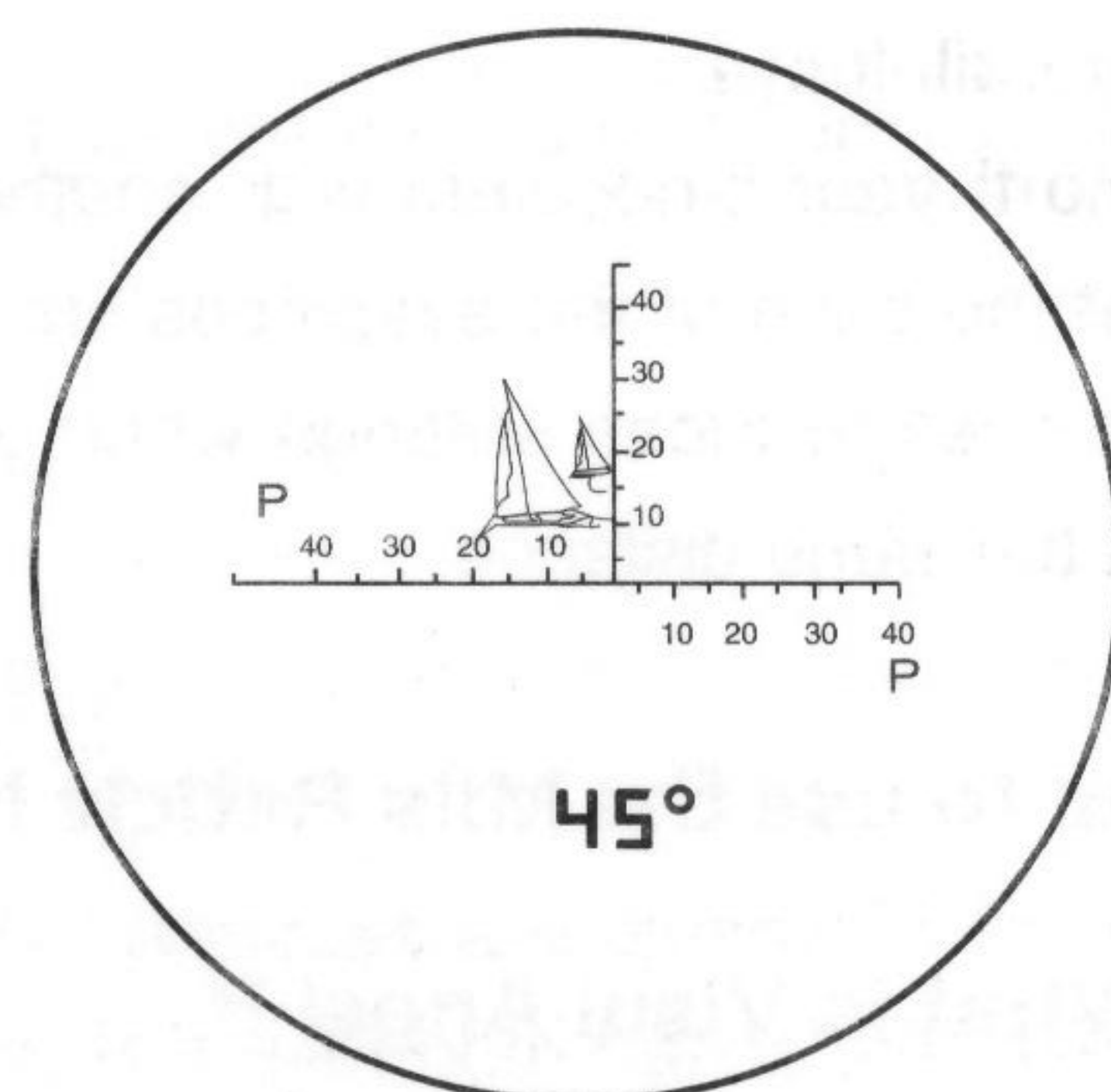


Fig. 4

4.3.3 How to calculate the Vertical View Angle of an object

Use the same method as outlined in 4.3.2a but use the vertical scale.

In fig.5 the base of the light house meets the vertical scale at zero and the top of the lighthouse meets the scale at 40 so the vertical view angle is 40 mils.

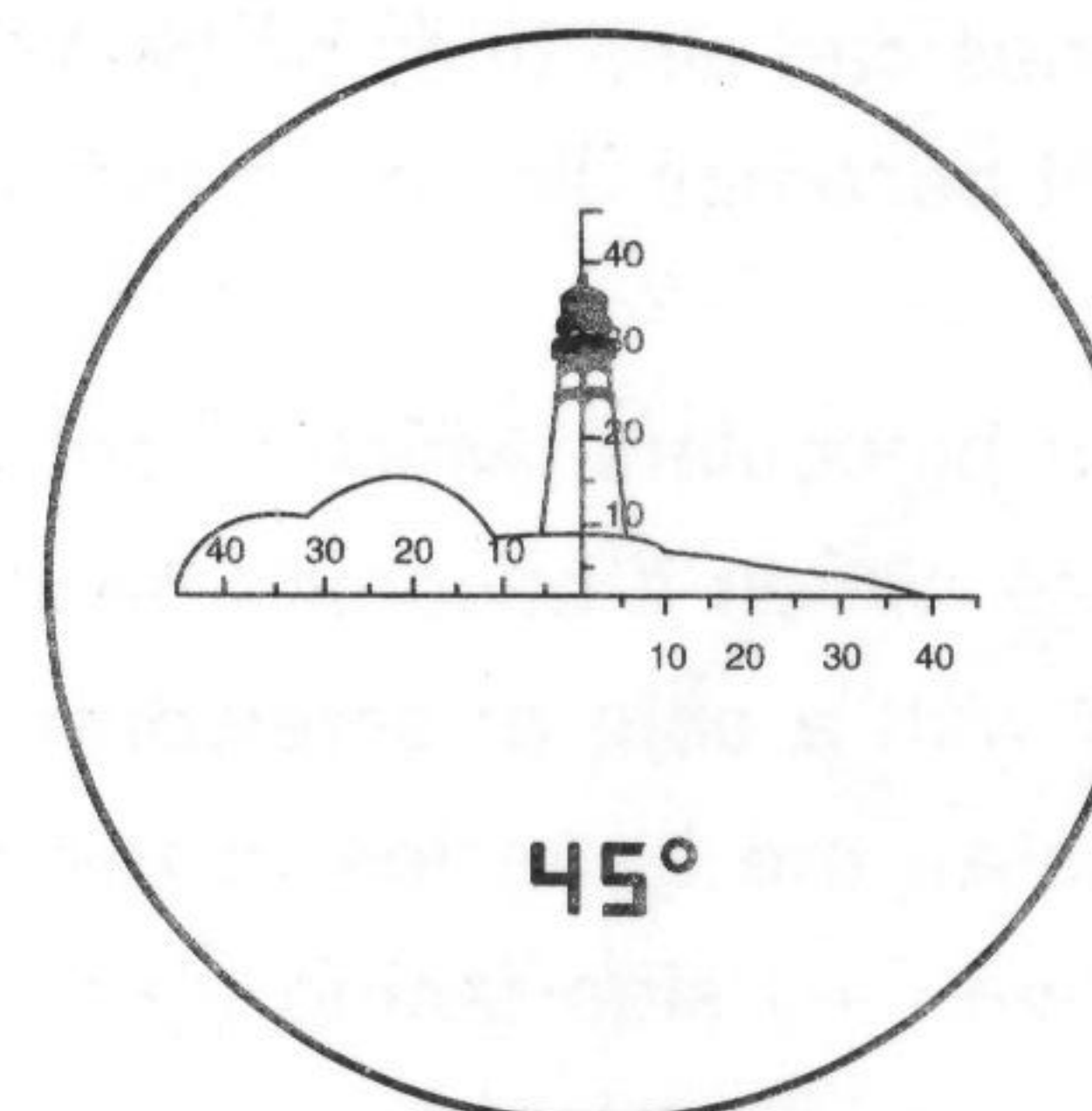


Fig. 5

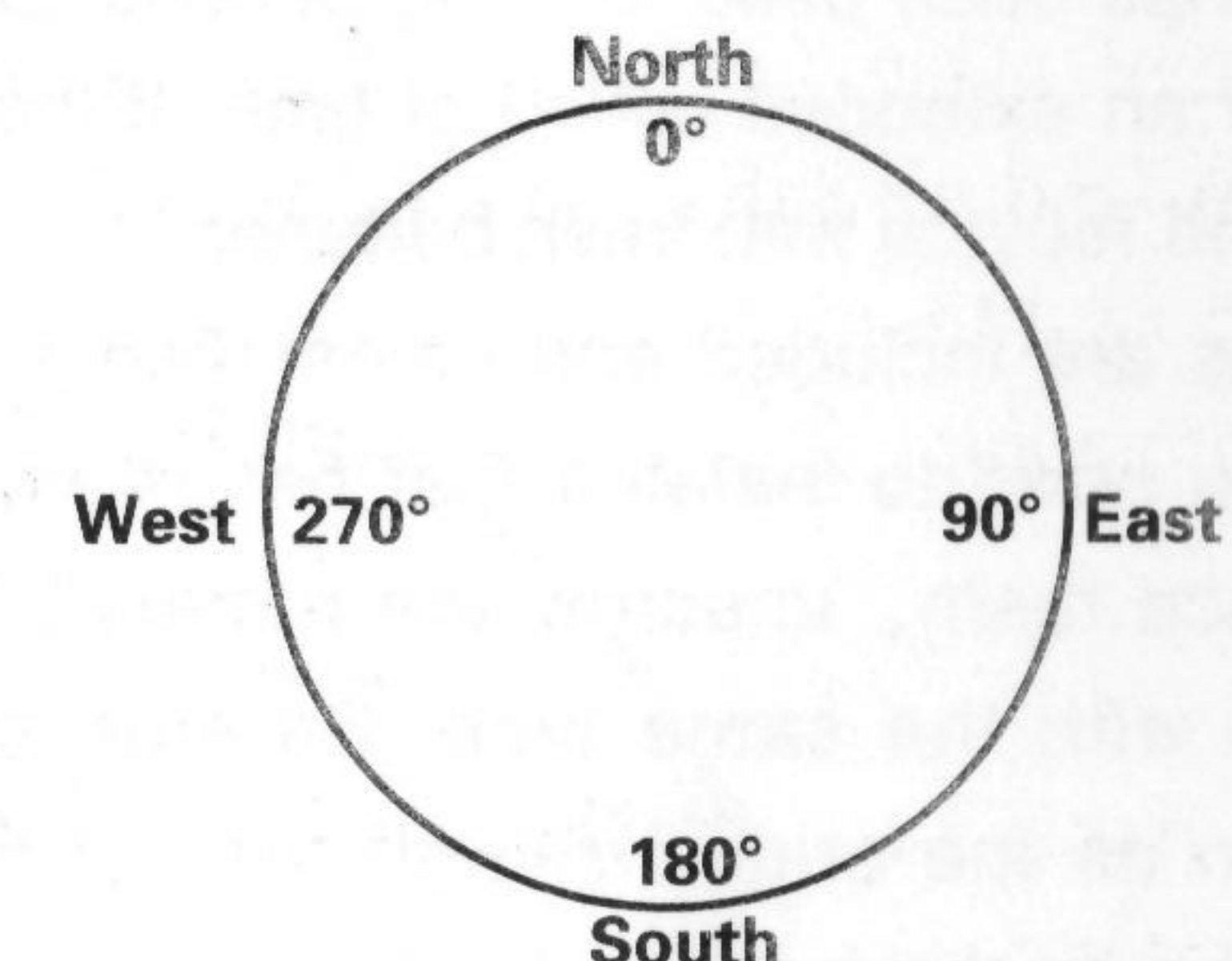


Fig. 6

4.4 How to use the digital compass

The azimuth angle and temperature can be measured through the digital compass built into the right half of the body. It shows the azimuth of the object relative to the observer. Each graduation of the compass equals one degree. When the object lies to the north, the compass shows 0 (degrees) . And it will increase when you turn clockwise. 90° means the object is located to the east, 180° means south and 270° means west.

In order to ensure precise angle measurements, the binoculars should be kept horizontal and level when reading the compass. The object should be in the middle of the reticle.

And it can show the temperature anywhere, the temperature variation will change according to your location.

The graduations of the compass need to be illuminated by pressing the illumination button whatever day or night, and the temperature or compass figures will be illuminated in red. About the operating method please see 4.1.

4.5 Changing the batteries

The batteries for the digital compass will be exhausted if the internal lighting

system has been used for long periods. Batteries can also become weak if not used for an extended period of time. If the light becomes dim, open the battery cover and replace with fresh batteries.

Batteries are included and uninstalled in your binoculars, which is put in the bag, you need to install it first before you use. When it becomes necessary to replace them, unscrew the battery cover with a coin or screwdriver and replace with the same type. Be sure to install the batteries in the same direction as the originals, with the flat positive (+) side facing up towards the cover on the battery. Screw the battery cover back on tightly and press the illuminator button to test the light. The figures should be visible on the compass location (you may need to cover the right objective lens if you are outside in bright light) .

Please note: The battery (model: CR-2, 3v) should be replaced at the same time. The battery should be taken out if the binoculars will not be used for a long time. Batteries left in the binoculars for extended periods of time without being used may leak and cause damage to the binoculars.

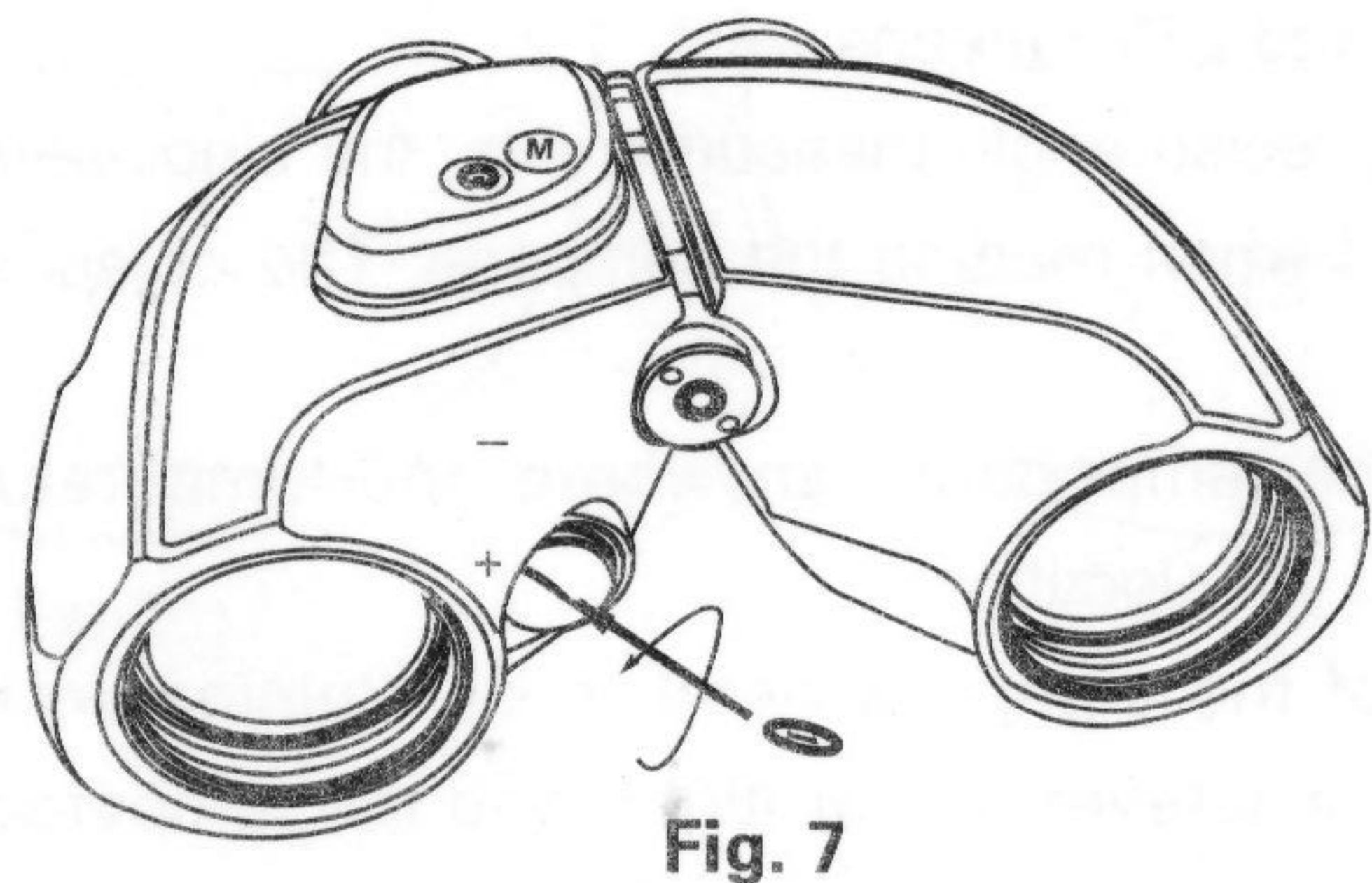


Fig. 7

5. Tripod Mounting

A threaded socket for a tripod attachment is located at the base of the binoculars hinge (fig.8) Insert a binoculars tripod adapter, and attach your tripod screw to

the base of the adapter.

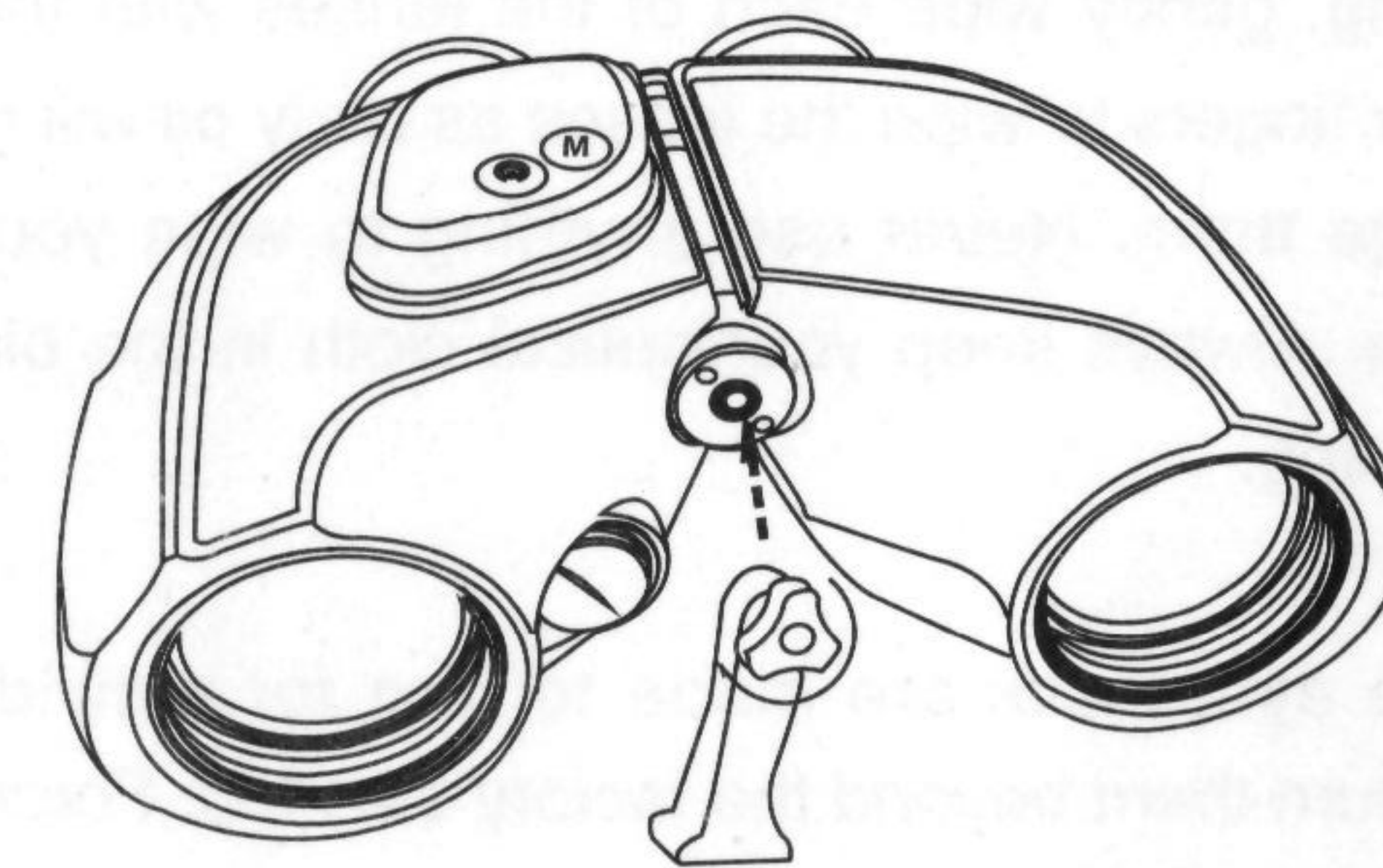


Fig.8

6. Binoculars and accessories

7 × 50 binoculars	1pc
Carrying strap	1pc
Eyepiece cap	1pc
Lens cleaning cloth	1pc
Instructions	1copy
Soft case with carrying strap	1pc
Objective Lens Cap	2pcs
Battery	1pc

7. Storage and maintenance

Binoculars are a precision optical instrument. They should be carefully handled and maintained in order to keep them in good working order.

7.1 General Maintenance

7.1.1 Lenses: Always clean the lenses after each use and before you replace the binoculars in the carry case. After each use, brush any dust or dirt from the lenses. After brushing, gently wipe each of the lenses with the special optical cloth. Never use your fingers to wipe the lenses as body oil will get on the lenses and possibly damage them. Never use anything to wipe your lenses except special optical cloths. Always keep your optical cloth in the binocular case for easy access for cleaning.

7.1.2 Although the eyepieces are made to turn for individual eye diopter adjustments, do not turn them beyond the factory set stop. Forcing it beyond this point will damage the eyepiece optics and make the binoculars unworkable.

7.1.3 After using, always remember to turn the diopter adjustment to its "0" position to avoid damaging the ocular system.

7.1.4 Avoid any extreme shaking or dropping the binoculars. This may damage the internal optics and prisms. Store the binoculars in a dry and well-ventilated place.