

GLOSSARY

◆ How To read the numbers

Fixed Power Ex. 4x32

The first number of 4 indicates the magnification (You may call it power, also.), and the second number of 32 indicates the diameter of the objective.

Variable Power Ex. 3-9x40

The 3 to 9 scope magnifies the image from 3 to 9 times closer than the actual object through the eye. The last number of 40 indicates the diameter of the objective.

◆ Objective Diameter

This is the diameter of the objective lens incorporated at the end of the scope. If the objective becomes larger, the more light will come into the scope for brighter view.

◆ Parallax Adjustment System

This is the device that allows for bringing the target image and reticle into focus together at various distances. JOL offers two(2) types of adjustment method.

Adjustment Objective(AO)
Side(Saddle) Focus(SF)

◆ Reticle

Reticle is an aiming device incorporated in a scope and there are several types of reticles such as Mil-dot reticle, center dot reticle, cross hair reticle, four posts reticle, etc.

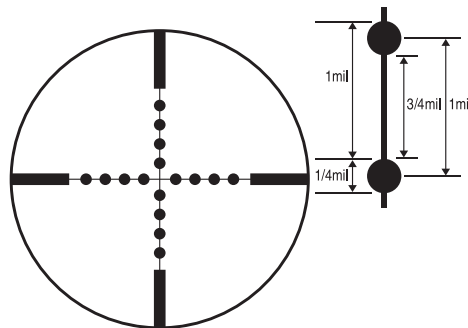
◆ First Focal vs. Second Focal Plane

If the reticle is placed in the first (front) focal plane, as the magnification is increased, both the target image and the reticle will get larger. This is particularly suitable for the scope with the range-finding reticle. If it is placed in the second (rear) focal plane, as the magnification

is increased, only the target image will be enlarged while the reticle size remaining the same throughout the entire magnification.

◆ Mil-Dot

Mil stands for Milliradian, a Mil is one way an angle can be measured. It is equal to 1/6400 of a circle, and it measures 3.6 inches at 100 yards, or 36 inches at 1,000 yards. For long distance shooting, 1 Mil equals to 1 yard at 1,000 yards, or 1 meter at 1,000 meters. 1Mil equals 3.4348 minutes of angle (MOA) 1Mil in the reticle is the distance from the center of one dot to the center of the next. Contrary to popular belief, the distance between the dots on the reticle measure .75 Mil instead of 1 Mil.



◆ Windage and Elevation (click values)

These measurements indicate the distance traveled of the point of impact at 100 yards up, down, left or right. Example: if the click value is .25 and the elevation adjustment is moved four clicks to the right, then the point of impact change will be 1 inch higher on the target.

◆ Focusing System at the eyepiece

This is the mechanism by which the scope is focused to obtain a clear, bright image.

◆ Speed Focus

This is to promptly focus on the target without unlocking and setting the ocular. Also called as "rapid focus" or "fast focus".

◆ Eye Relief

This indicates the maximum distance between the eyepiece (ocular) and the eye to see a full field of view without straining the eyes.

◆ Exit Pupil

Measured in millimeters by dividing the objective diameter by the magnification, it is the bright circle of light viewable in the eyepiece. The larger the circle, the brighter the image. Example: 3-9 x 42 rifle scope, $(42/3) = 14\text{mm}$ at low power, $(42/9) = 4.7\text{mm}$ at high power.

◆ Field of View

The viewable distance, from edge to edge, at 100 yards or meters. Also measured in angles of degree.

◆ Tube Diameter

Most popular diameter is either 1 inch or 30mm. A large diameter tube collects and transmits more light to the eye.

◆ Fully Multi Coated

All air to glass surfaces are coated with multiple layers to increase the amount of light that reaches the eye. JOL's type "H" coat ensures over 95% light transmission.

Riflescopes OWNER'S MANUAL

JOL



Thank you for choosing "HAKKO" riflescopes made by Japan Optics Ltd. Your new scope is the finest example of JOL's rugged and durable construction, and precision bright optics based on our long experiences in the rifle scope industry since 1959, when Hakko Company was founded. Today, we are reorganized as Japan Optics Ltd. for our dedication to craftsmanship and fine quality. We at Japan Optics ensure that every optic meets their high standards so that you may enjoy complete confidence every time out.

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INSTRUCTIONS

(1) Focusing

Look through the eyepiece about three or four inches from your eye at a flat, featureless and bright area like a wall or open sky.

CAUTION VIEWING THE SUN CAN CAUSE SERIOUS EYE INJURY, NEVER LOOK AT THE SUN WITH THIS PRODUCT OR EVEN THE NAKED EYE.

If the reticle does not appear sharp, turn the Eyepiece Focus (either direction) a few times until the reticle appears in sharp focus.



(2) Pre-Zeroing

Pre-zeroing can be done with an optical or laser bore sighter. Please refer to its own instruction manual for usage. Using this type of bore sighter, you can save time and ammunitions for zeroing. For your information, JOL has the following bore sighters available on the market for your selection.

◆ **Magnet type Bore Sighter Model MSS-II**
(standard round magnet)

◆ **Magnet type Bore Sighter Model MSS-III**
(rectangular magnet which can be used for scope with high mounts)

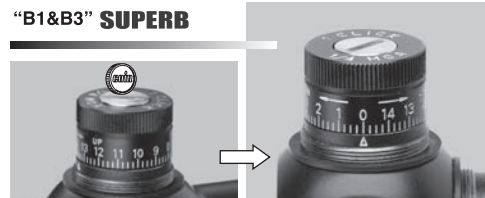
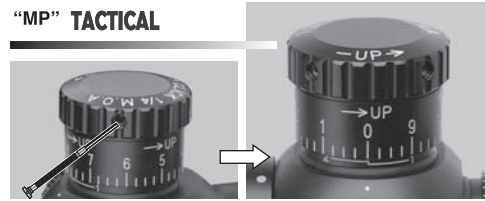
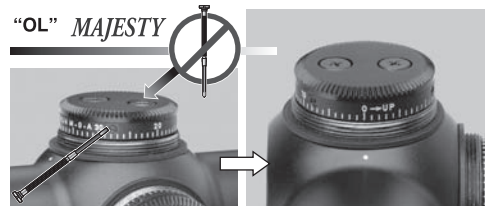
◆ **Laser Bore Sighter HL7-I** (plastic arbor)

◆ **Laser Bore Sighter HL-7-II** (metal arbor)

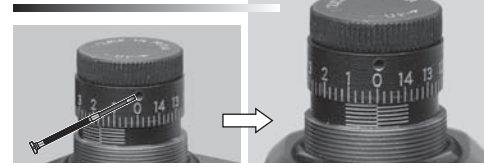
(3) Zeroing

CAUTION IF YOU USED A BORE SIGHTER SUCH AS MAGNET TYPE OR LASER TYPE OR ANY OTHER BORE OBSTRUCTING DEVICE, REMOVE IT BEFORE PROCEEDING. DO NOT FIRE LIVE OR EVEN BLANK AMMUNITION WITH AN OBSTRUCTED BARREL. AN OBSTRUCTION CAN CAUSE SERIOUS DAMAGE TO THE GUN AND POSSIBLE PERSONAL INJURY TO YOURSELF AND OTHERS NEARBY.

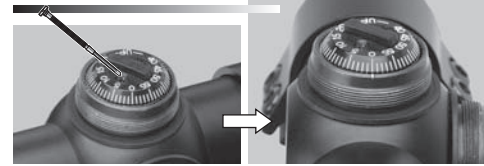
- If the scope is variable power, turn the zoom ring to the highest power.
- Remove the windage and elevation dial caps.
- If the scope is equipped with Adjustment Objective (AO) or Saddle Focus (SF), set the focus to 100.
- Test fire three rounds. Check the target for bullet strike.
- Adjust windage and elevation screws as needed to bring the center of reticle to the center of the three bullet strikes. Repeat this procedure (above step iv & v) twice, and the scope should be sighted in.
- Once the scope is sighted in, loosen the retaining screws as shown below, rotate the windage / elevation dial zero to the dot mark, and retighten the retaining screws.



"TS" PINPOINT



"BH" Golden Eagle



(4) Windage and Elevation

As sighting through the scope, you can adjust the windage and elevation as follows.

- If the bullet hits under the target, rotate the elevation adjustment counterclockwise (in the direction of the arrow marked "UP").
If the bullet hits high, rotate the elevation adjustment clockwise (in the opposite direction of the arrow marked "UP").
- If the bullet hits to the left of the target, rotate the windage adjustment counterclockwise (in the direction of the arrow marked "R").
If the bullet hits to the right of the target, rotate the windage adjustment clockwise (in the opposite direction of the arrow marked "R").

(5) Parallax Correction

To be parallax free, the target image must be focused onto the reticle. This condition can be met only at the range for which the scope is focused. Targets that are either nearer or further away will cause parallax, which is seen as apparent movement of the reticle against the target. The small amount of parallax exhibited in general purpose hunting scopes and at normal hunting ranges is insufficient to be of concern. For precision shooting, parallax is not tolerable and can be eliminated at all ranges with an adjustable focusing system. Several models have

a focusable objective lens for parallax correction at user selectable ranges. To take advantage of this feature, if provided on your scope, rotate the objective focusing ring or side focus knob to the desired distance setting.

(6) Care for Riflescope

Your new riflescope requires very little maintenance.

Its optical performance will be kept best when the exposed optical surfaces are occasionally wiped clean with the lens cloth provided.

Maintain the metal surfaces clean by removing any dirt, dust or sand with a soft brush to avoid scratching the finish. Then, wipe them down with a damp cloth followed by a dry cloth and finished by a silicone cloth for better luster and corrosion resistance.

(7) Coil Spring System

Located and fixed lower at the saddle of erector tube, this is for elevation and windage micro-adjustment and keeps a point of the impact secured against the heavy recoil.

No adjustment to the spring is required.

