OPERATING INSTRUCTIONS

Lyman Scopes

hunting & target

INTRODUCTION

Your Lyman rifle scope has been manufactured with the utmost care from the finest materials available. The Lyman lifetime warranty, backed by a full century of service to the shooter, is an indication of the integrity and care with which your scope was manufactured.

CARE AND INSTALLATION

Lyman scopes are designed to provide generations of service with minimum maintenance required by you, our customer.

LENS CLEANLINESS

As with all precision optical goods, it is vital that the exposed elements of the optical system be protected from dirt and grime. We recommend that lens covers be installed whenever the scope is not in use.

If dust or dirt should accumulate on a lens, carefully remove it using a soft hair brush such as is sold to clean camera lenses. If dust or dirt has formed a film on the lens, it may be cleaned by wiping with a soft tissue or cotton swab moistened with pure alcohol or a good grade glass cleaner. Dry with a soft tissue.

MOUNTING YOUR LYMAN SCOPE

Most rifles produced today are drilled and tapped at the factory for rifle scope mounts. Install the mounts on the rifle then install the scope loosely in the rings. With the scope free to move, position the rifle to your shoulder in a normal shooting position. Carefully move the scope forward or backward to you until you obtain the optimum eye relief. This position is when you see the full field of view.

Rotate the scope until the reticle lines are in the desired vertical and horizontal position, then secure the ring mount screws.

We recommend the use of a thread sealant such as "Loc-Tite" or fingernail polish on mount and ring screws to prevent their vibrating loose on heavy recoiling rifles.

RETICLE FOCUS

Lyman scopes are pre-set for reticle focus at the factory. However, due to the fact that individual eyes vary in their ability to focus on an object at a given distance, we recommend that you set the reticle focus on your scope for your own eyes using the following procedure.

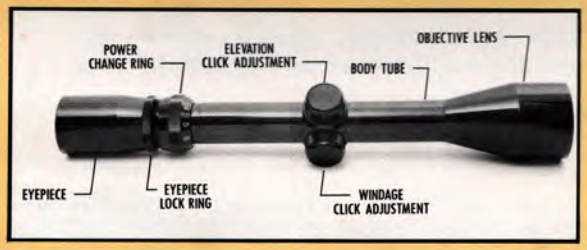


Fig. 1

Reticle focus is accomplished by loosening the eyepiece lock ring (refer to figure 1) and rotating the eyepiece several turns away from the lock ring.

With the rifle scope pointed skyward (not at a target or object) rotate the eyepiece until the reticle appears clear and distinct.

Rest your eye by viewing a distant object for a few moments and repeat the above process, readjusting the eyepiece if necessary.

The reticle should appear clear and distinct the moment it is viewed. When you are satisfied, tighten the lock ring. The reticle of your rifle scope is now in focus for your eyes.

PARALLAX

Parallax in a rifle scope occurs when an object, at a given distance say 250 yards, does not focus exactly on the reticle plane. "One reason parallax exists is when a scope is not properly focused for the range at which it is being used."

Parallax is eliminated when the objective lens is adjusted to cause image of the object being viewed to focus exactly on the reticle.

Rifle scopes cannot be manufactured to be parallax free for all ranges simultaneously, therefore, Lyman hunting scopes are pre-set, at the factory, to be parallax free at 100

PARALLAX CONTINUED

yards. We have found this setting to be the optimum setting for hunting rifle scopes.

Lyman target and varmint scopes of higher magnification have the additional feature of an external parallax adjustment.

To adjust one of these precision scopes to be parallax free at an exact range, such as would be required for target shooting, the following procedure is to be used.

1. Place the rifle in a rested steady position such that the target is viewed through the scope.

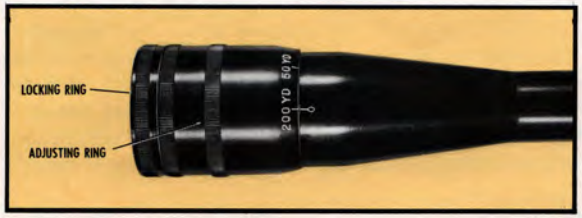


Fig. 2

2. Loosen the objective lens locking ring (Fig. 2).
3. With the objective lens pointing away from you, rotate the yardage selector sleeve to your right for distances less than 100 yards or to your left for distances greater than 100 yards.
4. An object is in exact focus with the reticle when it is viewed to be perfectly stationary with respect to the reticle. To test for this adjustment, move your head from side to side while viewing the object through the scope. If the object continues to move, with respect to the reticle, additional minor adjustment is required.

   Once all image movement has been eliminated, lock the objective lens locking ring. Your scope is now parallax free for the image being viewed.

If a high power rifle scope is to be used for varmint shooting, the afore mentioned procedure is not practical and the following procedure for eliminating parallax is recommended.

Lyman high power scopes have graduations engraved on the objective lens adjusting sleeve.

By using the adjusting procedure described, set the graduation to the anticipated range of your hunt. The following rules are applicable.

50 yard setting - parallax free from, 50-100 yards

100 yard setting - parallax free from, 100-200 yards

200 yard setting - parallax free from, 200 yards to infinity.

PRESIGHTING

Prior to zeroing in at the range, much ammo and trouble can be saved if you bore sight your rifle. This can best be accomplished by use of collimator or by securing your rifle on a bench and bore sighting the scope.

Pre-sighting with a colliminator is the most precise way to pre-sight your rifle scope.

Fig. 3A Fig. 3B Fig. 3C

A colliminator emits a reticle image in rays parallel with the bore. Your first view may well be as shown in Figure 3A. Adjust the windage and elevation controls until the image appears as Figure 3B. The scope sight line and bore are now parallel. Prior to firing your first shot, you must compensate for expected bullet drop at 100 yards. This is best accomplished by adjusting the elevation control up by 3 to 4 clicks. Your image through the colliminator will now appear as Figure 3C.

BORE SIGHTING

If a colliminator is not available, your scope may be pre-sighted by Bore Sighting.

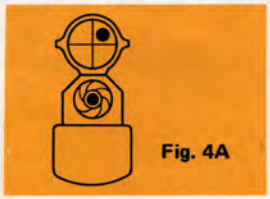


Fig. 4A

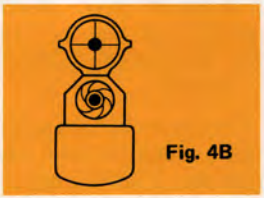


Fig. 4B

Remove the bolt from the rifle and secure the rifle on a bench or table. While viewing through the bore of the rifle, point it at a distant target such that the target appears concentric with the bore, Figure 4A. Now without disturbing the position of the rifle, view the target through the scope. Adjust the windage and elevation controls until the target is centered in the reticle. Figure 4B.

Re-check these positions until you are satisfied that the rifle is bore sighted, then add in three or four clicks of elevation.

ZEROING IN

Final zeroing of your rifle is accomplished at the range by carefully firing several shots from a rested position at the target.

Fig. 5A

You will note a group, Figure 5A printed on the target. To precisely shift this group to the center of the target, measure both the vertical and horizontal displacement from the center, then adjust both the windage and elevation controls until the desired point of impact is achieved.

Example: Figure 5A shows a group 3″ low and 4″ right of center. The click adjustment on your scope yields ½ inch of adjustment at 100 yards. You would, therefore, rotate the elevation control 6 clicks up and the windage control 8 inches toward the left. (Fig. 6).

Zeroing in for one specific range is only one portion of the task. If you are to become efficient with your

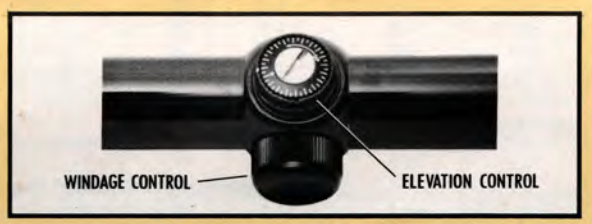


Fig. 6

rifle scope combination a thorough understanding of what happens when the bullet leaves the muzzle is required.

When a bullet is fired from a level rifle barrel, it begins to drop immediately upon leaving the muzzle. This drop is caused by the effects of gravity and air resistance acting on the bullet. A rifle sighted in without any compensation for this drop is generally unsatisfactory for our use.

We, therefore, elevate the muzzle of the rifle to compensate for bullet drop, and cause the bullet to strike an object at a given distance. This elevation of the muzzle causes the bullet to fly along a curved route which we refer to as the bullet path or trajectory.

The trajectory or bullet path is now in the form of a long sloping arc. The terminal point of the arc is referred to as the zero point of impact.

At the approximate mid-point of the arc, the bullet reaches its highest point during its flight. It is this highest point which is commonly called mid-range of the trajectory curve.

Table 1 is a listing of popular factory cartridge. The mid-range height is given under each range column. To use this table, proceed as follows:

Assume that you are using a 30/06 rifle firing a 180 grain bullet. You want your rifle to be right on or zeroed for 200 yards, but you can only use a 100 yard range to sight in the rifle.

If you look under the 200 yard column for your caliber and bullet weight you will see that for a 200 yard zero, the mid-range height will be 2.9″. Now sight in your rifle to have a point of impact of 3″ high at 100 yards.

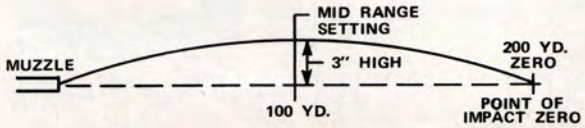
Your rifle is now sighted in to be right on at 200 yards.

It should be noted that Table 1 is provided only as a reference. The figures presented are based on the mid-range trajectories of factory bullets. In as much as barrel length and muzzle velocities will vary from gun to gun, these figures are presented only as a rough guide.

The best results will always be obtained if you fire your rifle over all the ranges for which you intend to use it, noting the specific point of impact at each range.

TABLE 1
MID-RANGE TRAJECTORY

See Zeroing in Pages 6 & 7



CALIBER	BULLET WEIGHT	50 YARDS 100 YD. ZERO	100 YARDS 200 YD. ZERO	150 YARDS 300 YD. ZERO
22 Hornet	45	0.8	4.3	13
218 Bee	46	0.7	3.8	11.5
219 Zip	56	0.6	2.9	8.3
222 Rem.	50	0.5	2.5	7.0
222 Rmg.	55	0.5	2.3	6.1
225 Win.	55	0.4	1.8	4,8
22-250	55	0.3	1.6	4.4
220 SW	48	0.3	1.4	3.8
243 W	80	0.4	1.8	4.7
243 W	100	0.5	2.2	5.5
6 MM Rem.	90	0.4	2.0	5.0
250/3000	87	0.6	2.5	6.4
250/3000	100	0.6	2.7	6.7
256 Win.	60	0.8	4.0	12.0
257 RBTS	87	0.5	2.2	5.7
257 RBTS	100	0.6	2.8	7.1
264 W. Mg.	100	0.4	1.6	4.2
264 W. Mg.	140	0.5	2.0	4.9
270 W.	100	0.4	1.8	4.8
270 W.	130	0.5	2.1	5.1
280 Rem.	100	0.4	1.8	4.5
280 Rem.	150	0.6	2.5	6.1
284 W.	125	0.5	2.1	5.3
284 W.	150	0.6	2.5	6.3
7 MM Mag.	160	0.5	2.1	5.18
7 x 57	140	.5	2.5	6.14
30-30	170	1.2	4.6	12.5
300 H & H	150	0.5	2.1	5.2
300 W. Mag.	150	0.4	1.9	4.8
300 W. Mg.	180	0.5	2.1	5.3

CALIBER	BULLET WEIGHT	50 YARDS 100 YD. ZERO	100 YARDS 200 YD. ZERO	150 YARDS 300 YD. ZERO
30/06	150	0.6	2.6	6.7
30/06	180	0.7	2.9	6.9
30/06	220	0.8	3.7	9.2
300 Sav.	180	0.9	4.1	10.5
303 Brit	180	0.7	3.3	8.2
308 Win.	150	0.6	2.6	6.5
308 Win.	180	0.8	3.1	7.4
308 Win.	200	0.8	3.6	9.0
32 Spl.	170	1.0	4,8	12.5
8 x 57	150	0.6	2.6	6.5
338 W mg.	200	0.5	2.4	6.0
338 W. Mg.	250	0.7	3.0	7.4
348 Win.	150	0.6	2.9	7.1
348 Win.	200	0.8	3.8	10.0
35 Rem.	150	0.9	4.6	13.0
35 Rem.	200	1.2	6.0	16.5
350 Rem. Mg.	200	0.7	3.0	7.7
350 Rem. Mg.	250	0.8	3.6	9.0
358 Win.	250	1.0	4.4	11.0
375 H & H	270	0.7	2,9	7.1
375 H & H	300	0.7	3,3	8.3
44 Rem. Mg.	240	1.6	8.4	27.6
444 Mln.	240	1.0	5.3	15.6
45-70	405	2.9	13.0	—
458 Win.	500	1.1	4.8	12.0

RETICLE STYLES


STANDARD CROSSWIRE


#3 CENTER RANGE


#4 CENTER RANGE


#5 POST AND CROSSWIRE


#6 POST


DOT

RETICLE SUBTENTION

LISTED BELOW ARE RETICLE SUBTENTIONS, IN INCHES AT 100 YARDS FOR VARIOUS SCOPE MODELS

RETICLE	1.75-5 VARIABLE	3-9 VARIABLE	2-7 VARIABLE	2½ POWER	3 POWER	4 POWER	6 POWER	6x SL	8x & 8x SL	10x & 10x SL	20x LWBR	25x LWBR
#7 STANDARD CROSSWIRE	2″ at 1.75x 1¼″ at 5x	½″ at 9x 1½″ at 3x	2″ at 2x 1¼″ at 7x	2″	2″	1¼″	½″	½″	3/10″	¼″	—	.125″
#4 CENTER RANGE	2″ at 1.75x 1″ at 5x	¼″ at 9x ¾″ at 3x	2″ at 2x 1″ at 7x	1″	¾″	½″	½″	½″	¼″	¼″	—	—
#5 POST AND CROSSWIRE	—	—	—	2″	1½″	1½″	1½″	1½″	1¼″	1″	—	—
#6 TAPERED POST	—	—	—	2″	1½″	1½″	1½″	1½″	1¼″	1″	—	—
#3 CENTER RANGE	—	—	—	2½″	2″	1½″	1″	1″	¾″	¾″	—	—
#7 FINE CROSSWIRE	—	—	—	—	—	—	—	—	—	—	.175″	.100″
#7 EXTRA FINE CROSSWIRE	—	—	—	—	—	—	—	—	—	—	.125″	.062″
4 MINUTE DOT	—	—	—	4″	4″	4″	—	—	—	—	—	—
3 MINUTE DOT	—	—	—	3″	3″	3″	3″	3″	—	—	—	—
2 MINUTE DOT	—	—	—	2″	2″	2″	2″	2″	2″	2″	—	—
1 MINUTE DOT	—	—	—	—	—	—	1″	1″	1″	1″	1″	—
½ MINUTE DOT	—	—	—	—	—	—	—	—	½″	½″	½″	.600″
¼ MINUTE DOT	—	—	—	—	—	—	—	—	—	—	¼″	.300″
⅛ MINUTE DOT	—	—	—	—	—	—	—	—	—	—	—	.125″

SPECIFICATIONS

SCOPE MODEL	MAGNIFICATION	FIELD OF VIEW AT 100 YARDS (FEET)	EYE RELIEF (INCHES)	INTERNAL ADJUSTMENT (CLICK VALUE) (INCHES AT 100 YDS)	OVER-ALL LENGTH (INCHES)	OUTSIDE DIAMETER OBJECTIVE	OUTSIDE DIAMETER EYEPIECE	TUBE DIAMETER	WT. OZ.
1.75x to 5x Variable	1.75x 5x	47½' 18'	3"	¼"	12"	1.500	1.435	1"	11
3x to 9x Variable	3x 9x	39.3' 13.1'	3.75" 3.25"	½"	12"	1.800	1.415	1"	11.5
2x to 7x Variable	2x 7x	49' 10'	3¼" 3"	½"	11⅝"	1.500	1.570	1"	10½
2½x	2.5x	43'	3.5"	1"	10½"	1.000	1.440	1"	8¾
3x	3x	35'	3.5"	⅞"	11"	1.000	1.440	1"	9
4x	4x	30'	3.5"	¾"	12"	1.440	1.440	1"	10
6x	6x	20'	3.5"	½"	13⅞"	1.735	1.440	1"	12¾
6x SL	6x	20'	3¼"	½"	14"	1.840	1.440	1"	14
8x	8x	14'	3.5"	1/3"	14⅜"	1.840	1.550	1"	13
8x SL	8x	14'	3.5"	1/3"	14⅜"	1.840	1.550	1"	14
10x	10x	12'	3.5"	3/10"	15½"	1.840	1.550	1"	13½
10x SL	10x	12'	3.5"	3/10"	15½"	1.840	1.550	1"	14½
20x LWBR	20x	5½'	3"	⅛" or ¼"	17⅛"	1.840	1.550	1"	16
25 LWBR	25x	4'8"	3"	⅛" or ¼"	17"	2.200	1.550	1"	19