

Parallax and Focusing

In order to obtain the best possible results from a telescopic sight, it must be in proper focus and free of parallax. Parallax is a likely topic of conversation in any group of shooters and many notions exist as to its cause and correction.

Parallax is the apparent movement of the reticule on the field of the scope when viewed from various positions through the eyepiece, and simply means that the reticule is not properly located at the focus of the lens system.

Low power telescopes such as used for hunting are often referred to as being "universal focus." Strictly speaking, this is not true, as every optical system has some parallax and some specific shooting distance at which there is no parallax. However, being negligible in amount from 75 yards to infinity, they can be permanently factory set. We normally set hunting scopes parallax free at 150 yards. The higher the power or closer the distance, the more critical the parallax adjustment becomes.

Before beginning a critical check for parallax, the adjustment of the ocular should be checked. Its position will determine focus of the reticule. The telescope should be pointed to a distant scene or sky with a white handkerchief draped over the objective. This will give a diffuse image and eliminates the possibility of straining to the eye to obtain a focus. The scope can be hand held as we are only concerned with contrast. After looking at a distant scene for several seconds, the user should

glance into the ocular of the telescope. If properly focused, the reticule will appear instantly sharp and distinct. If such is not the case, the ocular requires focusing. It is suggested that the eyepiece cell be unscrewed about $\frac{1}{4}$ " from its original position and advanced inwardly 2 or 3 turns at a time until the position is such that the reticule is immediately distinct to the eye. After the proper position is found, the eyepiece lock ring should be driven against the eyepiece cell. **Once the proper position of the eyepiece has been set, it should not be moved as it is not a parallax adjustment.**

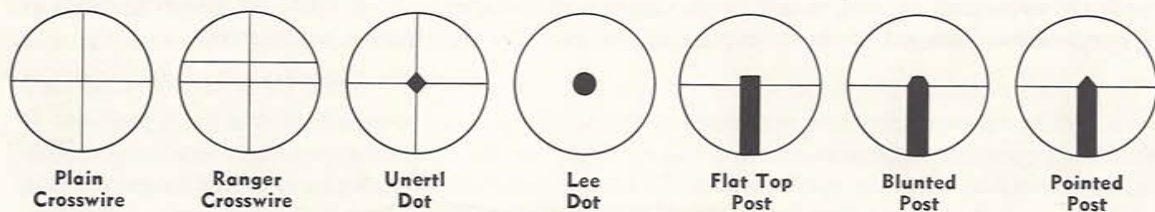
To test for parallax, the scope should be laid in a tripod, or if mounted on a gun, so supported that it will be vibration free and not require the use of hands to maintain it in a fixed position. It should be pointed at some immovable object or target located at exactly the range for which parallax is to be eliminated. With the eye located at the normal relief distance, the head should be moved side to side or up and down at right angles to the line of sight and observe if there is any relative motion between the reticule and the target. If any relative motion exists, adjust the calibrated sleeve until all motion ceases. Factory settings are supplied with each scope and are only meant to give approximate position and a departure of several divisions from the suggested setting may be necessary.

It is suggested that the user check and establish the correct parallax readings for each range at which he will use the scope so that he is certain his scope will be parallax free. These settings will generally not change, but it is a wise plan to occasionally recheck them.

It will be found that the optical system has the best resolution when the scope is free of parallax.

Reticules

The reticule in a telescope is a device for superimposing on the field of view some form of reference mark. It may be positioned at any focal plane within the instrument and can consist of an engraved glass plate or a metallic frame on which is mounted fine wires. All scopes of our manufacture use the latter type as there is always a perfectly clean field even after many years of use.



The plain crosswire is by far the most popular reticule. By the proper selection of size, it can be used for practically any kind of hunting or shooting. Target shooters generally use a reticule having a size which quarters the ten ring of the target. In any case, the reticule should be of adequate size to be instantly visible and comfortable to use. It is a mistaken belief that a finer reticule means better results, for actually too fine a wire can result in severe eye strain.

A variation of the standard plain crosswire is the Ranger Reticule which has two horizontal crosswires. By knowing the value by which the two wires are separated at a specific range (example 4" at 100 yards), the user can quite accurately estimate ranges. This reticule has found particular acceptance by the Varmint shooters. Reticules of this form are supplied at extra cost.

Center dot reticules are also excellent as a dot at the intersection of the wires gives a substantial aiming mark without objectionable obstruction in the field. Since it permits "holding over" without obstruction, it is particularly recommended for hunting and varmint shooting. Two types of dots are

available, the Unertl dot which has visible wires and a square form dot and the Lee full floating dot. The Lee dot is supported by extremely fine filaments which can be considered to be invisible and the dot is perfectly round. Lee dots are supplied only at extra cost. The Unertl dot is supported by visible wires and has the advantage that the shooter is always aware that the rifle-telescope combination is not being canted. Also, when the square form is centered on the target, there are visible segments of the ring which make extreme accuracy of centering possible. The Unertl dot is supplied at no extra cost.

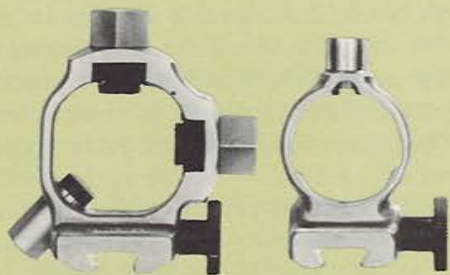
In the illustrations, the dots have been exaggerated for clarity. Any reticule (except Lee dots and Ranger) are considered standard and can be supplied for any model telescope of our manufacture.

The various forms of post reticules which can be supplied are most generally used for hunting telescopes.

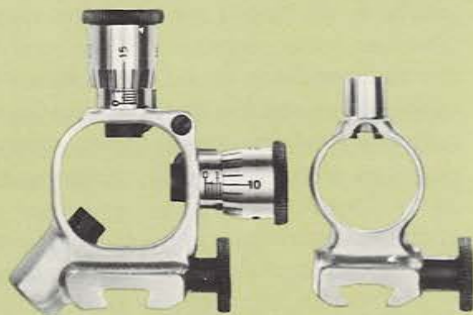
Extra reticules with case can be supplied for all telescopes of our manufacture which use external target or dehorned mounts.

RETICULE SUBTENDING CHART

Model	Power	No. 4 Wire	No. 5 Wire	No. 7 Wire	No. 9 Wire	No. 12 Wire
All Target and Varmint Telescopes	4X		.257"	.359"	.462"	.618"
	6X		.170"	.239"	.307"	.410"
	8X		.129"	.180"	.230"	.308"
	10X		.103"	.144"	.186"	.247"
	12X		.086"	.120"	.154"	.206"
	14X		.073"	.103"	.132"	.177"
	15X		.068"	.097"	.124"	.166"
Use 8X or 10X column for Vulture Scope which have external mounts.	16X		.064"	.090"	.116"	.155"
	18X		.057"	.080"	.103"	.137"
	20X		.051"	.072"	.093"	.124"
	24X		.043"	.060"	.077"	.105"
	30X		.034"	.048"	.062"	.078"
	36X		.029"	.040"	.052"	.068"
	Falcon	2 $\frac{3}{4}$ X	.480"	.600"	.840"	1.080"
Hawk	4X	.384"	.480"	.672"	.865"	1.150"
Condor	6X	.262"	.327"	.458"	.589"	.785"
Vulture	8X or 10X	.202"	.252"	.354"	.454"	.606"



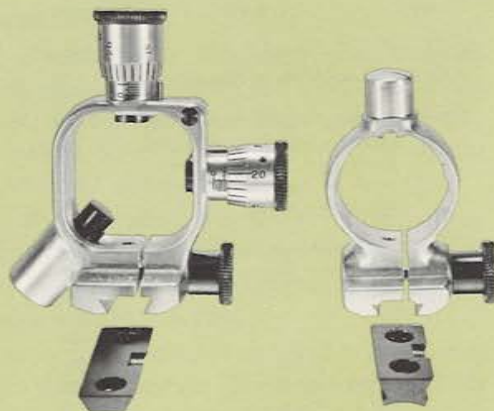
Dehorned Type



Target Type



**Posa Mount
(Cutaway View)**



Posa-Mount Type

Telescope Mounts and Bases

We offer two distinctive types of scope mounts for use with our telescopes, these being the recently introduced Posa-Mounts and the standard form. These differ only in the method of clamping the scope mount to the base.

The Posa-Mount system was specifically designed to improve the possible accuracy of externally mounted rifle telescopes and their ability to absorb the recoil of the newest high powered cartridges.

In the normal type of base configuration, the mount is held by a cup shaped screw engaging a similarly shaped slot in the scope mount base. The entire holding forces are exerted on the opposite and top faces of the base and the recoil shear is absorbed by the cup shaped binder.

The Posa-Mount system uses a split frame which has a binder screw that freely engages the base notch to form the recoil lug and then tightens the split mount frame. The mount clamps on all surfaces of the base. Instead of a weak cup to form the recoil lug, the mount now has a massive solid section which is fully backed up by the forged aluminum mount frame. No eccentric loading exists on the knurled binder screw.

Although the base section is identical to the heretofore standard base, they must be replaced with the Posa-Mount recoil notch type base. They cannot be used with standard bases as the mount frame cannot be tightened. Similarly, Posa bases cannot be used with standard scope mounts as the cupped binder will not lock.

Both the Posa-Mounts and our standard types are made from aluminum forgings and can be supplied in bright aluminum or black anodized finish. One click moves the adjusting face .0005" which, when used with a base separation of 7.2", will move the point of impact 1/4" at 100 yards. The target type rear mounts have a travel range of .200" and are read like a conventional microme-

ter. The thimbles can be zeroed by loosening the small set screws and rotating to the desired position and both adjustments can also be locked in position by the binder screw located between the two adjusting screws. Contact with the tube is made by a non-rotating cylindrical surface which is accurately ground. The axis of the cylinder is at right angles to the tube and perpendicular to the axis of adjustment. A spring loaded plunger preloads the scope tube against the two adjusting surfaces.

The dehorned mount is a more compact design as the large knobs and graduated thimbles are eliminated. While its accuracy of adjustment is equal to the target type, it is not as conveniently adjusted and range settings cannot be recorded. It is primarily intended for Varmint scopes.

Either the Posa-Mount or standard type are available in the target or dehorned form and for $\frac{3}{4}$, $\frac{7}{8}$ and 1" diameter tubes. Front mounts are milled for $\frac{1}{8}$ " Pope rib, although special sizes can be supplied on request.

All bases are made from steel and hardened for maximum strength and durability. The design and dimensions of the bases have been standardized among the various Arms and Telescope manufacturers. Generally, match rifles are equipped with bases by the manufacturer and most sporting arms come factory drilled and tapped so that it is simply necessary to screw on the proper bases.

We supply about 60 different styles of bases and can fulfill any requirements for standard or custom rifles. When ordering, specify make and model of rifle or use the standard base code. A complete base catalog can be supplied on request.

In keeping with our company policy of compatibility, the Posa-Mount system can be incorporated on any telescope mount of our manufacture. The mounts (preferably with the scope) must be sent to the factory for such conversion. When a mount modification is made, the user may either purchase a new set of bases or he may send the bases he has been using and have these gashed to fit the Posa-Mount clamp. Prices for conversion are given on price list.

Excepting the Programer-200, all telescopes are supplied with the standard type mounts, although the Posa-Mounts can be supplied if requested at a small extra cost.



UNERTL RIFLE TELESCOPES • Mr. John Unertl, Founder



*"There are only two individuals taking scopes
apart - - - the man who knows and the fool."*

EDWARD C. CROSSMAN,
IN HIS
"BOOK OF THE SPRINGFIELD"