

Manual: Collimation TILO-M™ -series

The TILO-M™ series was developed exclusively for military and government customers. It also has the option of being used as a clip-on thermal in front of riflescopes. For this a collimation is necessary. This can also

be done if the rifle scope is not mounted on the weapon. For the beginning, this is even recommended. However, in order to obtain particularly precise results, it is advisable to shoot with the rifle after precollimation. Small

deviations can then be corrected in the fine collimation. If the TILO-M is used as a clip-on, it is usually mounted upside down. The symbol display can also be reversed in the settings menu (see manual).



The various keys of the TILO™ labeled



The TILO-M™ mounted upside down on a rifle scope

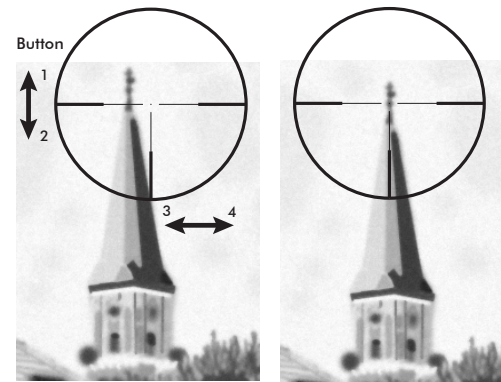
Precollimation

1. Take the rifle scope, which has preferably already been adjusted to the weapon, and point it at an object that is visible in both the visible and thermal image spectrum. This can be e.g. a halogen lamp, but also a church spire. The object should be at least 50m away. Align the telescopic sight so that it is in alignment with the object.



2. Now attach the rifle scope in this position so that this alignment is maintained in the following steps. This can be done, for example, by means of a trestle or by a second person holding the rifle scope reliably in position.
3. Now open the collimation menu of the TILO-M™ by selecting
 - a. Press and hold keys 1 and 4 simultaneously for one second,
 - b. Press and hold the 1 key to select the IMG submenu,
 - c. briefly press key 1 and
 - d. Press and hold the 1 button to select and start the collimation menu COLL.
4. Now attach the TILO-M™ with the camera adapter to the riflescope. Ideally, the object should already be in the center of the crosshairs when magnifying. If this is the case, please continue with 6.
5. If the object is not yet in the center, press keys 1 and 2 to move the image vertically and keys 3 and 4 to move the image horizontally until coverage is reached.

6. By briefly removing the TILO-M™, check whether the object is still in the center of the visible spectrum. Repeat this step if necessary.

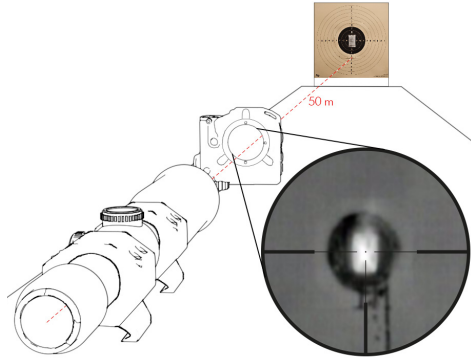


7. Press and hold button 2 to switch to zoom level 2× and also collimate according to 5. here. Repeat 6. until all the zoom levels are collimated.
8. Press and hold the 4. button to save the settings.

Note that the 0.8 zoom level is automatically deactivated by the collimation process, as collimation is not possible at this zoom level. This is done to reliably prevent the shooter from accidentally selecting the 0.8 level. However, it can be reactivated manually afterwards.

Fine collimation

After completion of the pre-collimation, the TILO-M™ rifle scope system can be mounted on the firearm. Now a hit pattern with a radius of approx. 12 cm per 100 m should be achieved. In order to improve this to 6 cm, fine collimation is then carried out. Shot distances of 50–200 m are useful here.



1. Switch to the collimation menu (see precollimation 3.) and fire test shots at the target.



2. If, for example, the hit group is to the right of the target, press the right key (3) to correct it. If it is too high, press the down key (2) to correct the error.

Increment of different TILO-Ms™

The following table shows the step size of the keystrokes for each device and zoom level. The success is

One keystroke corresponds to _cm:

TILO-6M™	Zoom level			
	1×	2×	4×	8×
25 m	1,5	0,8	0,8	0,8
50 m	3	1,5	1,5	1,5
100 m	6	3	3	3

TILO-3M™	Zoom level			
	1×	2×	4×	8×
25 m	3	1,5	1,5	1,5
50 m	6	3	3	3
100 m	12	6	6	6

checked step-by-step by trial shots until no improvement can be observed in the selected zoom level.

TILO-3M 2×™	Zoom level			
	2×	4×	8×	16×
25 m	1,5	0,8	0,8	0,8
50 m	3	1,5	1,5	1,5
100 m	6	3	3	3

Tips and tricks for thermal image targets



Chemical hand warmers are particularly suitable for indoor use.

Outdoors, targets with a strong black-and-white contrast have proven their worth when exposed to the sun.



Sprayed water, which produces evaporative cooling, has also proven to be a good negative contrast.

Steel targets, possibly with a coating of lacquer, are also suitable as targets, as they represent hits as a clearly visible bright spot. This effect can also be observed at short distances when firing at cardboard targets. The thicker the better. At distances of more than 50 m, however, no hits are usually visible in the thermal image. An optical feedback (spotting scope, camera, etc.) is required for shooting.