"VEBER" Telescopic Sights

Distinctive features	Designation
Constant multiplicity	4x40
Constant multiplicity	4x42
Constant multiplicity, sighting mark backlighting	4x42 E
Constant multiplicity	6x40
Constant multiplicity	6x42
Constant multiplicity, sighting mark backlighting	6x42 E
Constant multiplicity	8x50
Constant multiplicity, sighting mark backlighting	8x50 E
Variable multiplicity	1,5-4,5x32
Variable multiplicity, sighting mark backlighting	1,5-4,5x32 E
Variable multiplicity, sighting mark backlighting	1,5-6x42 E, WA
Variable multiplicity, sighting mark backlighting, parallax correction	3-9x50 E, AO
Variable multiplicity, sighting mark backlighting, parallax correction, enhanced accuracy of corrections applied when shooting	4-16x50 E, AO 4-16x50 E, SF 6-24x50 E, AO 6-24x50 E, SF

code designations:

E – sighting mark backlighting

AO – parallax adjustment, SF – side focusing

WA – wide-angle

Brief Recommendations for Selection of a Sight

Those sights featuring constant multiplicity (magnification) are used under conditions strictly regulated by angle dimensions of the aim and its mobility. The smaller the dimensions of an aim, the less mobile it is, – the higher the sight multiplicity should be selected.

Those sights featuring variable multiplicity widen the boundaries of conditions under which easiness of sighting would be ensured. It would be important to select a sight having the range of multiplicity complying most with the expected conditions of hunting. The shorter the possible

distance to the aim, and the higher the speed of its motion, – the lesser the magnification of a sight should be.

The larger is the diameter of the objective of a sight, the more light it "collects". Hence, such a sight would allow performing sighting more confidently in case of poor illumination of an aim. Unfortunately such sights always feature large overall dimensions and weight.

Sighting mark backlighting of a "day-night" type (for backlighting of the mark's central element) used in the "Veber" sights allows one to distinguish well the sighting mark during dusk, and at the same time provides aim's high visibility when shooting in case of a clear sunny weather. CR 2032 3V power supply unit is used in the sights with sighting mark backlighting.

Results of shooting when using sights with large (Ø50 mm and larger) objectives are subject to the effect of inaccuracy resulted from parallax. When shooting at large-sized aims such inaccuracy would be insignificant. However, shooting at small targets within a wide range of distances would be more efficacious when using a sight equipped with parallax correction system (3-9x50 E, AO, 4-16x50 E, AO, 4-16x50 E, SF, 6-24x50 E, AO, 6-24x50 E, SF).

Parallax and Its Effect As Regards Accuracy Of a Shot

An effect of visible relative displacement of the aim's image and the sighting mark, with shifting of the shooter's eye within the boundaries of output lens of the sight (zone of vision of an image through the eye-piece of the sight) is called parallax.

Parallax (and the inaccuracy of sighting caused by the same) would be equal to zero if the aim is located at a distance equal to the range (as a rule, 100 metres) for which the objective has been adjusted (regulated).

In case where this condition is not complied with, – the closer is the shooter's eye to the centre of the output lens, – the lesser is the effect of parallax as regards the accuracy of a shot.

Conditions of Sight's Handling and Use

For the purpose of provisioning of a durable and reliable operation of the sight and retaining of the right for its warranty servicing, one would be required to observe the following:

- protect the outer surfaces of lenses from hard mechanical impacts, remove soiling by means of soft motions of flannel napkin or cotton-wool wad dampened with purified alcohol, while avoiding contact with the parts of the housing;

- monitor the condition of electrical battery within the power supply unit used for sighting mark's backlighting, timely replace the same with a new one, undertake to remove the battery in case of lengthy breaks in shooting;

- avoid shots and unskilled mounting of the sight on a weapon, resulting in deformations of the housing;

- bear in mind that the company recommends application, and guarantees faultless and durable operation of the "Veber" sights on weapons with barrel energy of up too 3800 Joules (30-06 Springfield);

- be informed that the sights types 1,5-4,5x32 E; 1,5-6x42 E, WA; 3-9x50 E, AO 4-16x50 E, AO and SF and 6-24x50 E, AO and SF have been manufactured according to airtight version and filled with inert gas, which protects these from ingress of moisture inside the sight's housing and condensation of moisture on the internal surfaces of optical parts during variations of temperature of ambient air. When using sights of non-airtight versions of manufacture, one should protect the same from abrupt fluctuations of temperature, in order to avoid condensation of moisture.

Mounting of the Sight on a Weapon

In case you are not confident as regards your own ability to skilfully accomplish the work, – please apply for assistance of an expert.

Mounting of the sight is to be performed with the help of special steel brackets to be selected according to the type of a weapon and the diameter of the sight's objective. When selecting these brackets one should bear the following important criteria in mind:

1. the bracket should provide maximal closeness of sight to the weapon;
2. reliability of the brackets has been an important parameter: the fastening should stand impact loads during operation.

Prior to mounting the sight, the mechanisms used for applying height and lateral corrections should be set to middle position. For that purpose it would be necessary to remove protective caps and turn the knobs (grooved heads) of the mechanisms clockwise against stop, and then back, for an angle corresponding to one half of maximum value of the applied corrections, individually for each mechanism (see table "Technical parameters").

The most important requirements towards placement of sight with respect to the weapon when mounting are as follows:

- the greatest possible degree of parallelism between the axes of the sight and the channel of the barrel (deviations are allowable for both vertical and horizontal up to ¼ of maximum values of corrections for the respective mechanism);

- the remoteness of sight's eye-piece from the shooter's eye for a distance equal to the value of overhanging length of output lens (see the table "Technical parameters");

- constancy (unambiguity) of reciprocal locations of the sight and weapon during shooting.

Sight Alignment

Various devices (collimator, laser) are available for "cold" alignment (zeroing in) of the sight, which allow to perform preliminary (rough) installation of the sighting mark.

Final alignment is only performed during shooting under the conditions which extremely exclude the influence of external subjective factors.

If the bullet's point of hit appears above the sighting point – then turn the knob (grooved head) used for applying of height corrections in clockwise direction, for so many clicks, as would correspond to overshoot of the point of hit, considering that 1 click of the mechanism gives correction of ¼" for 100 yards (~ 7 mm for 100 m). (4-16x50 and 6-24x50 E, AO and SF sights represent an exception, where the multiplication factor makes $^1/_8$" for 100 yards for 1 click turning).

If the bullet's point of hit appears below the sighting point – then applying of correction would be made by turning the same knob in counter-clockwise direction.

Alignment of sight in horizontal direction is performed in a similar manner, with the use of the mechanism for applying of lateral corrections.

If the bullet's point of hit appears to the right of the point of sighting – then turn the knob used for applying of lateral correction in clockwise direction.

If it appears to the left of the same – in counter-clockwise direction.

Dioptric Correction

This correction is to be performed individually by each shooter. It is applied by means of turning the dioptric correction ring on the eye-piece, until obtaining a sharp image of the sighting mark.

The ranges of dioptric correction for all the "Veber" sights are specified in the table "Technical parameters".

Variation of Multiplicity (Magnification)

To set a desirable value, turn the power ring. The multiplicity dial on the ring allows to easily read out the set value using a dot-shaped notch available on the sight's housing. For the purpose of provisioning better orientation when changing multiplicity, the soft rubber covering of the adjusting ring has a ledge.

Backlighting of the Sighting Mark

The sights types 4x42 E, 6x42 E, 8x50E, 1,5x4,5E, 1,5-6x42 E, WA, 3-9x50 E, AO 4-16x50 E, AO and SF and 6-24x50 E, AO and SF are equipped with sighting mark backlighting.

The backlighting power supply unit is located on top of eye-piece part of the sight's housing. The compartment for electrical battery is located under a threaded cover provided with a radial groove (to fit a large-diameter coin).

The illumination reticle adjustment ring, when turned for 1 revolution, has 12 fixed positions. Dial faces available of the scale allow to easily monitor the set level of luminosity (positions "1" ÷ "11"), or switching-off of the backlighting (position "0").

Tuning Out of Parallax

The sights types 3-9x50 E, AO, 4-16x50 E, AO and SF, 6-24x50 E, AO and SF are equipped with parallax correction system, which allows to re-adjust the objective for any distance, from 10÷25 m to ··· ∞, by means of simple turning of the ring available on the same.

If the distance of shooting is known: The correction of parallax is to be performed according to the scale of range by setting to the appropriate division of the scale against immovable notch available on the sight's housing.

If the distance is unknown: Set maximum multiplicity on the sight, fix the directed position of the sight and turn slowly the ring on the objective, while looking through the eye-piece, until obtaining of a sharp image of the aim. Further, while continuing to turn the ring and simultaneously moving the eye from one side to another within the boundaries of output lens, obtain elimination of parallax.

Using the Sighting Mark for Aim Distance Measurement

The measurement of aim distance would be possible in case where dimensions of the aim are known (at least, approximately), as well as linear dimensions of the elements of your sighting mark (see table).

In those sights featuring constant multiplicity the dimensions of elements of the sighting mark are invariable. For the purpose of distance measurement it would be necessary to calculate the ratio between one of dimensions of the aim to the linear dimension of any element of the mark, and divide the obtained result by the ratio (to be determined visually, by imposing) of their images. By means of multiplying by 100 we shall obtain value of distance to the target, in metres.

For example, if the length of an aim L=140 cm, and dimension A=140 cm, and the ratio between their images

$\frac{l}{a} = \frac{1}{2}$, then, the distance to the aim would be

$$D = \frac{\frac{L}{A}}{\frac{l}{a}} * 100 = \frac{1}{\frac{1}{2}} * 100 = 200\,m$$

In those sights featuring variable multiplicity the image of sighting mark is not changed with variation of magnification. Therefore, while determining distance to an aim having large angular dimensions, it would be necessary to set a small magnification, because the linear dimensions of the elements of sighting mark would then be sizeable and more commensurable against the dimensions of the aim.

As the dimensions of an aim are decreased, the multiplicity is to be progressively increased, while obtaining the condition of commensurability (equality) of images of any element of the mark and the aim. As a rule, the value of gap between internal edges of coarse lines of the mark, the value defined by the parameter "A", shall be selected for that purpose.

In case where with variation of the magnification of the sight, one obtains equality between the **lengths of images** of the aim and the element "A", then the distance is determined (in metres) from the ratio between the **length of the aim** in centimetres and the value of linear dimension "A" in cm, taken from the table, multiplied by 100.

Technical parameters

Model	4x42	4x42 E	6x40	6x42	6x42 E	8x50 E	8x50	1,5-4,5x32	1,5-4,5x32E	1,5-6 x42E, WA	3-9 x50 E,AO	4-16 x50 E, AO& SF	6-24 x50 E, AO& SF
Magnification	4	4	6	6	6	8	8	1.5-4.5	1.5-4.5	1.5-6	3-9	4-16	6-24
Input lens (objective) (mm)	42	42	40	42	42	50	50	32	32	42	50	50	50
Output lens (mm)	10.5	10.5	6.7	7	7	6.25	6.25	21.3-7.1	21.3-7.1	28-7	16.7-5.6	3.3-9.5	8.3-2.1
Remoteness of the output lens from the eye-piece (mm)	85	85	75	95	95	80	80	80		80	90	90	80
Linear field of vision (m/100 m)	7,9	7	6,5	6,5	5,7	4	4.3	16,4-5,7		17,6-5,3	8,8-3,2	6,2-2,0	4,23-1,24
Range of dioptric correction (dioptres)	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3	+-3
Dusk number (DIN 58388)	13	13	15.5	15.9	15.9	20	20	6.9-12	6.9-12	7.9-15.9	12.2-21.2	14,1-28,3	17.3-34.6
Value of correction for hit point with applying of correction of 1 click inches/100 yards	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	¼" (7)	1/8" (3.5)	1/8" (3.5)

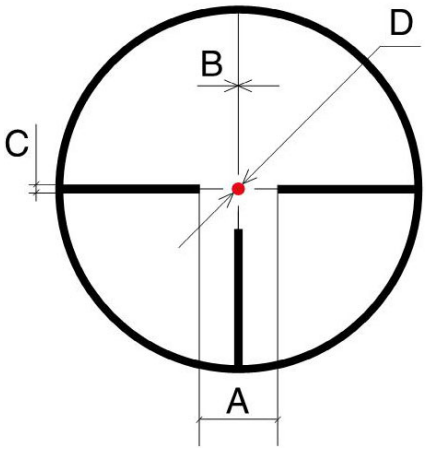
(mm/100 m)													
Maximum value of applied height corrections (H) and lateral corrections (L) (m/100 m)	2.1	2.1	2.4	2.4	2.6	2.3	2.6	3		2.8	3.2	2 1.8	1.6 1.3
Power supply unit		CR 2032			CR 2032	CR 2032			CR 2032	CR 2032	CR 2032	CR 2032	CR 2032
Dimensions (mm): - overall length - maximum diameter - length of mounting part - diameter of mounting part	310 53,5 148 30	310 53,5 150 30	315 47 155 25,5	320 54 155 30	320 54 155 30	320 57 158 30	320 57 158 30	280 39 120 25,5		320 54 135 30	340 62 125 30	370 57 155 30	400 62 170 30
Weight (g)	500	580	320	500	550	590	540	410			720	920	780

Enclosure

Linear dimensions of the elements

of sighting mark (cm/100 m) sights featuring constant multiplicity

 # 6



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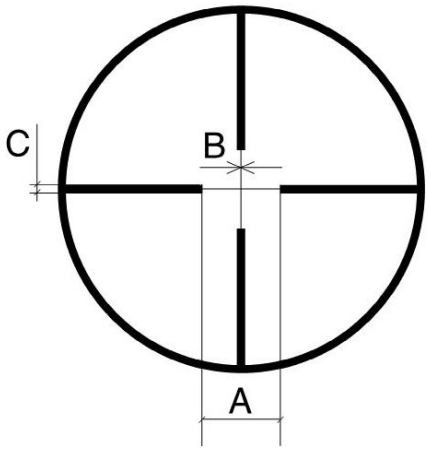


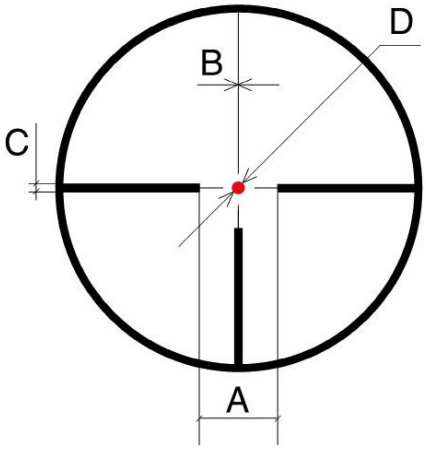
Sight	4x40	4x42	4x42 E	6x40	6x42	6x42 E	8x50 E	8x50
A	97	114	106	62	62	62	43	38
B	2,7	2	2,6	1	1	1,5	1.25	1.25
C	8	7,5	20	4	4	10	9.5	2.5
D			5			3	2.5	

Enclosure

Linear dimensions of the elements

of sighting mark (cm/100 m) sights featuring variable multiplicity

 # 6



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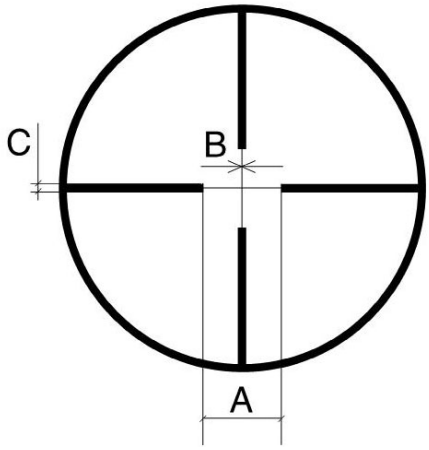


Sight 1,5 – 4,5 x 32 E

Magnification	1,5	2	2,5	3	3,5	4	4,5
A	220	160	120	97	84	72	66
B	1,2	0,9	0,7	0,53	0,47	0,4	0,3
C	3,6	2,6	2	1,6	1,4	1,2	1

Sight 1,5 – 4,5 x 32 E

Magnification	1,5	2	3	4
A	146	112	86	77
B	5,6	4,3	3,3	2,9
C	21	16,1	12,4	11,1
D	7	5,4	4,2	3,8

Sight 1,5 – 6 x 42 WA

Magnification	1,5	2	3	4	5	6
A	146	112	86	77	67	60
B	5,6	4,3	3,3	2,9	2,5	2,2
C	21	16,1	12,4	11,1	9,7	8,7
D	7	5,4	4,2	3,8	3,3	3

Sight 3 – 9 x 50 E, AO

Magnification	3	4	5	6	7	8	9
A	100	77	60	53	44	38	33
B	3	2,4	1,85	1,5	1,3	1,1	0,9
C	16,6	12.8	10	8,8	7,31	6,32	5,5
D	6	4,3	3,3	2,6	2,3	2	1,9

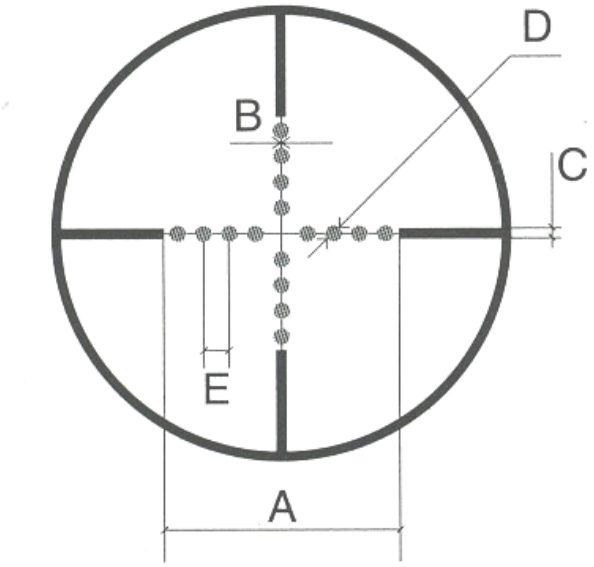
Sight 6 – 24 x 50 E, AO and SF

Magnification	6	8	10	12	14	16	18	20	22	24
A	54	45	36,7	30,8	26,4	23,5	20,7	17,7	15,8	14,1
B	1,8	1,5	1,2	1	0,9	0,8	0,7	0,6	0,5	0,47
C	9,7	8,1	6,6	5,6	4,8	4,2	3,7	3,2	2,8	2,7
D	3,5	2,9	2,4	2	1,7	1,5	1,35	1,2	1	0,9

Enclosure

Linear dimensions of the elements

of sighting mark Mil-dot (cm/100 m) sight 4-16x50 and 6-24x50 E, AO



4-16x50

Magnification	4	5	6	7	8	9	10	12	14	16
A	195	185	170	150	128	115	102	85	73	63
B	1	0,95	0,87	0,8	0,67	0,59	0,52	0,44	0,37	0,32
C	5	4,7	4,36	3,85	3,3	2,95	2,62	2,18	1,87	1,6
D	4	3,76	3,49	3,08	2,65	2,36	2,1	1,74	1,5	1,3
E	20	18,5	17,0	15,0	12,8	11,5	10,2	8,5	7,3	6,3

6-24x50

Magnification	6	8	10	12	14	16	18	20	22	24
A	170	128	102	85	73	63,8	56,7	51	46,4	42,54
B	1,21	0,91	0,73	0,61	0,52	0,45	0,4	0,36	0,33	0,3
C	6,3	4,73	3,78	3,15	2,7	2,36	2,1	1,89	1,72	1,58
D	3,76	2,82	2,25	1,88	1,61	1,41	1,25	1,13	1,02	0,94
E	17,0	12,8	10,2	8,5	7,3	6,4	5,7	5,1	4,6	4,25