

Head Position, Diopter Interval and Lint

by Heinz Reinkemeier

A basic requirement for good aiming is the position of your head on the back of the rifle stock. Your eye can only move and perceive with absolute precision when it is stabilized in a secure position.

Your cheekbone must therefore comfortably rest on the back of the rifle stock; your neck and face should be relaxed, and your line of sight must fall directly through the center of the sight aperture.

The comfortable and centric position of your eye can be repeatedly checked with the following test. Close your eyes and breath calmly from your abdomen. Find the the most comfortable resting position for your head and then open your eyes. Your line of sight should immediately fall through the center of the sight aperture without any corrective adjustments.

Discrepancies can be eliminated by adjusting the cheek-piece. This is no problem with the well-known free rifles for men and the recent sport rifles for women (since 1st January 1997), since their stocks have ingenious mechanisms that enable vertical, lateral and rotational adjustments by hand. However, to shoot an air rifle in the standing position requires a very fine touch, since the adjustment of most air rifle stocks is still quite complicated and requires several attempts.

The 'correct' interval between the eye and the diopter is described in most specialized literature as 5 to 8 centimeters, "not too far and not too close". But who has a ruler with him when aiming?

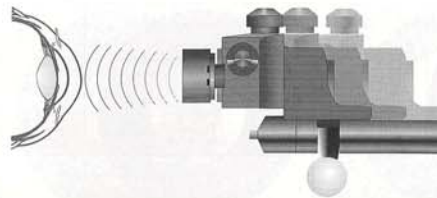
It is more reasonable to determine the distance by the target picture. The front sight tunnel should fill about 1/3 of the iris aperture, since the light conditions are thus more favorable.

If the eye is closer to the diopter, it becomes more difficult to hold the

front sight tunnel exactly in the center of the aperture. This results in displaced shot patterns. If the interval is larger, as shown in figure 1c, the rim of the iris creates shadows on the target picture and clouds the contrast.

As a shooter, you should develop a feeling for the interval or better yet for the relation between the aperture and front sight tunnel which suits you best. With each adjustment of the diopter, your eye should immediately find its distance. You can then use the diopter to determine the position of your head on the back of the stock. If you shift the diopter by a centimeter, your head should automatically shift for the next shot. In this way, the position of the diopter will help you regulate the position of your head on the back of the stock. This is useful as soon as your head should be shifted to change the balance of your aiming position, such as when the starting point is shifted.

It is important that the cheek-piece is aligned with the barrel's axis. Slanted cheek-pieces give rise to undesirable lateral shifts in your balance and the position of your eye when you move your head back and forth.



If you see the same target picture with every shot, the interval between the eye and diopter is constant. If the diopter is shifted, your head will shift with it. That makes sense in order to alter somewhat the balance of the sighting position. Pushing the diopter forwards usually sinks the initial point.

Wenn Du bei jedem Schuß das gleiche Zielbild siehst, ist damit automatisch der Abstand Auge - Diopter konstant. Verschiebst Du das Diopter, wird der Kopf folgen. Das macht Sinn, etwa um die Balance des Anschlags zu ändern. Ein Vorschieben des Diopters senkt in der Regel den Nullpunkt.

Si ton image de visée reste la même à chaque coup tiré, l'intervalle oeil - dioptré devient donc automatique et constant. Si tu déplaces le dioptre, ta tête suivra également. Il est bon de modifier l'équilibre de la position de tir. Un déplacement vers l'avant du dioptre incline généralement le point de départ.

Si su imagen de mira no cambia con cada nuevo disparo, el intervalo ojo - mira se vuelve así automático y constante. Si usted cambia la posición de la mira, la postura de su cabeza cambiará automáticamente. No está mal cambiar el balance de la posición de apuntar. Un desplazamiento hacia adelante de la mira inclina generalmente el punto de partida.



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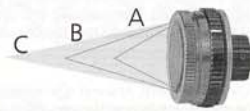
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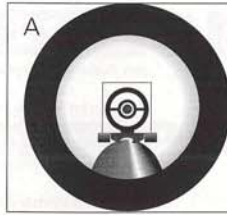


A further, medium and closer interval... A favorable distance is one that gives you a target picture as shown in the sketch. The short, simple iris allows adequate space for the eye, and lint can be easily removed.

Weiter, mittlerer und naher Abstand... Günstig ist eine Distanz, die Dir ein Zielbild wie in der Zeichnung liefert. Die kurze, einfache Iris läßt dem Auge Raum und ist leicht zu "entfusseln".

Intervalle grand, moyen et proche... La distance favorable est celle qui garantit une image de visée comme dans le dessin. L'iris petite et simple à la fois laisse suffisamment de champ à l'oeil et est facile à "dépeussier".

Intervalo grande, medio y cercano... La distancia favorable es la que garantiza una imagen de mira como en el dibujo. El simple y pequeño iris deja un espacio adecuado para el ojo, y puede despolvarse fácilmente.

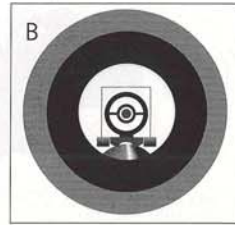


1 a) Recommended distance from the iris aperture: the front sight tunnel cuts out about one third of the circle.

Empfehlenswerter Abstand zur Irisöffnung: Der Korntunnel nimmt etwa ein Drittel des Ausschnitts ein.

Distance recommandée de l'ouverture de l'iris: le tunnel du guidon remplit environ un tiers du cercle.

Distancia recomendada de la apertura del iris: el túnel de la mira central llena cerca de un tercio del círculo.

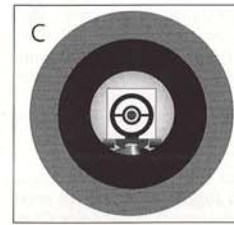


1 b) Further away from the iris, the frame of light is narrower. Less can be recognized in the surrounding field. Shooters wearing glasses are often unable to get any closer to the target picture.

Weiter von der Iris entfernt wird der Lichtrahmen enger. Im Umfeld ist weniger zu erkennen. Brillen-träger kommen oft nicht näher ans Bild.

Plus éloigné de l'iris, le cadre de lumière est plus étroit. L'encadrement est plus difficile à percevoir. Les tireurs portant des lunettes sont bien souvent dans l'impossibilité de se rapprocher davantage de l'image de visée.

Más lejos del iris, el marco de luz es más estrecho. Resulta más difícil percibir el campo que lo rodea. Los tiradores con lentes a menudo no pueden llegar más cerca a la figura del blanco.

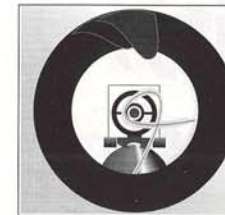


1 c) Too narrow. The rim forces shadows and blurs into the target picture, and the wind vanes can no longer be seen.

Zu eng. Die Umrandung drängt Schatten und Unschärfen ins Zielbild, Windfahnen sind nicht mehr aufzufassen.

Trop étroit. L'encadrement crée des ombres et des taches floues sur l'image de visée, et les girouettes ne sont plus visibles.

Demasiado estrecho. El marco crea sombras y manchas en la figura del blanco.



1 d) Many target pictures are blurred, because the iris aperture is clouded. This may be caused by damaged lamellas which have loosened from the integrated system and project into the sector of the circle with their tips. Only a new iris diaphragm can usually help in this case. Dirt and fibers are magically attracted by the housing unit of the diopter optics because plastic materials are statically charged. Blowing strongly through the aperture can help in this case. To check this, you should look through the aperture with a magnifying glass - on a regular basis!

Viele Zielbilder sind unscharf, weil die Irisöffnung getrübt ist. Als Ursache kommen verletzte Lamellen in Frage, die sich aus dem Verbund gelöst haben und mit ihrer Spitze in den Kreis ausschnitt ragen. Hier hilft meist nur eine neue Irisblende. Schmutz und Fasern werden vom Gehäuse der Di-

opteroptik magisch angezogen, weil sich Plastikmaterialien statisch aufladen. Hier hilft kräftiges Durchblasen. Zur Überprüfung solltest Du mit einer Lupe in die Öffnung blicken. Regelmäßig!

Les images de visée sont bien souvent floues parce-que l'ouverture de l'iris est obscurcie. Ceci peut être occasionné par des lamelles endommagées qui se sont détachées du système intégré et font saillie dans le secteur du cercle avec leurs pointes. Seul un nouveau diaphragme-iris peut aider dans ce cas. Poussière et fibres sont magiquement attirés par le boîtier du dioptre parce-que les matières plastiques sont chargées statiquement. Souffler fortement à travers l'ouverture peut aider dans ce cas. Pour le vérifier, tu devrais regarder à travers l'ouverture avec une loupe - régulièrement!

Muchas figuras de blancos se ven indefinidas a menudo, porque la apertura del iris está nublada. Esto puede ser causado por laminillas dañadas que se han zafado del sistema integrado y se han proyectado en el sector del círculo con sus puntas. Sólo un nuevo diafragma del iris puede ayudar en este caso. El polvo y las fibras son atraídas mágicamente por la caja de las miras ópticas porque los materiales plásticos están cargados estáticamente a través de la apertura. Para revisar esto, usted debería mirar a través de la apertura con un lente de aumento - normalmente!

CALL FOR ENTRIES

UIT WORLD CUP in Munich, GER

May 20th to 26th 1997

<p>Preliminary Competition Schedule</p> <p>Tuesday, May 20th Arrival of delegations</p> <p>Wednesday, May 21st Training</p> <p>Thursday, May 22nd Free Rifle 3x40 shots, Final Free Pistol, Final Running Target slow run</p>	<p>Friday, May 23rd Free Rifle 60 shots prone, Final Sport Rifle 3x20 shots, Final Rapid Fire Pistol 1st day Running Target fast run, Final</p> <p>Saturday, May 24th Air Pistol 40 shots, Final Air Rifle 60 shots, Final Rapid Fire Pistol 2nd day, Final</p> <p>Sunday, May 25th Air Pistol 60 shots, Final Air Rifle 40 shots, Final Sport Pistol 1st day</p>	<p>Monday, May 26th Departure of delegations</p> <p>For further information please contact: German Shooting Federation, UIT World Cup Munich phone: +49 - 611 468 0730 fax: +49 - 611 468 0749</p>
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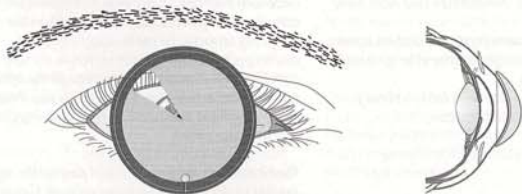
Visual Acuity, Contrast and Turning the Iris

by Heinz Reinkemeier

Whoever is farsighted or nearsighted or has a corneal distortion (astigmatism) should wear shooting glasses. An eye specialist can make a reliable diagnosis.

If you wear glasses for shooting, the position of your glasses is very important in the different aiming positions. The lens must be worn in such a way that your line of sight falls vertically through the center of the lens, since the desired corrections of your defective vision are only 100% effective in the center. In the case of an astigmatism, you must also heed the angle of the lens. A ground-in point often indicates the recommended bottom side. An assistant should help you to adjust your glasses in the aiming position. If need be, you can do this yourself with a sidemirror placed next to you. During dry training within your own four walls at home, you have the time as well as the peace and quiet to adjust your lens accurately. Apart from this, you should also make markings on your frame to indicate the correct seating of the glasses.

Since the three aiming positions require three different head positions, this also means three separate positions for your glasses. While the top-notch shooters nowadays often carry three complete sets of glasses with them, the normal shooter has to make due with only one pair. When selecting among the various products, you should also closely heed, how complicated it is to adjust the lens.



The lens of the shooting glasses must be carefully aligned, so that you look through the axis.

Das Glas der Schießbrille muß sorgfältig ausgerichtet werden, damit Du durch die Achse blickst.

Le verre des lunettes doit être ajusté correctement, afin que ton regard se pose directement sur l'axe.

Los lentes deben ajustarse con precisión de tal manera que su mirada caiga directamente a través del eje.



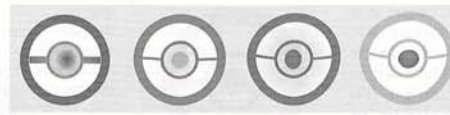
A contact lens always sits right and floats on the cornea of the eye. Every shooter should test contact lenses. Whoever can wear them evades many problems

Eine Kontaktlinse sitzt immer richtig, sie schwimmt auf dem Scheitel des Auges. Jeder Schütze sollte Kontaktlinsen testen. Wer sie trägt, umgeht viele Probleme.

Une lentille de contact s'ajuste toujours correctement; elle flotte sur le sommet de l'oeil. Tous les tireurs devraient tester les lentilles de contact. Ceux qui les supportent évitent bien des problèmes.

Una lente de contacto se ajusta siempre correctamente; flota en la coronilla del ojo. Todos los tiradores deberían probar las lentes de contacto. Los que las soportan, evitan muchos problemas.

The iris aperture regulates the incidence of light. The brighter the surroundings and the target are illuminated, the smaller the diameter should be. An adjustable iris aperture is recommended that allows the invariable adjustment of brightness in the target picture, especially between 0.8 and 2.0 millimeters.



2 a)

A target picture only exists on paper. In reality, you usually perceive clouded areas, deformations and blurs. Only when these defects occur on a regular basis and start to increase should you begin to wonder why. It is usually the exceptionally long sighting time which threatens to wear out your retina. If blurs occur during the first few seconds of training, it is time to pay a visit to the eye doctor.

Ein optimales Zielbild gibt es nur auf dem Papier. In Wirklichkeit wirst Du meist Trübungen, Verformungen und Unschärfen wahrnehmen. Erst wenn die Mängel regelmäßig werden und zunehmen, solltest Du zu grübeln beginnen. Meist ist es die überlange Zielzeit, die Deine Netzhaut auszuleiern droht. Sollten die Schleier schon in der ersten Sekunde des Trainings auftauchen, wird es Zeit für eine Visite beim Augenarzt.

Une image de visée optimale existe seulement sur le papier. En réalité, tu perçois le plus souvent des ténisures, déformations et taches floues. Ce n'est que lorsque ces imperfections apparaissent régulièrement et augmentent que tu devrais commencer à te creuser la tête. C'est bien souvent le temps de mise en joue exceptionnellement long qui menace d'user ta rétine. Si des taches floues surgissent pendant les premières secondes d'entraînement, il est alors temps de consulter un spécialiste des yeux.

Una imagen óptima del blanco existe solo en teoría. En realidad usted usualmente percibe áreas nubladas, deformaciones y manchas. Sólo cuando estos defectos ocurren normalmente y empiezan a aumentar, deberá usted preguntarse porqué. Es casi siempre el demasiado largo tiempo para apuntar lo que amenaza con cansarle la retina. Si le ocurren manchas durante los primeros segundos del entrenamiento, es tiempo de visitar al oftalmólogo.

While adjusting the iris aperture, it is important to obtain the optimal contrast for the ring of light between the bull's eye and the front sight ring, since this small, bright ring is the most decisive surface when you are aiming.

If the iris aperture is too wide, the target picture will be outshined, and its contours will be difficult to recognize. If the light passage is too narrow, the ring of light darkens and clouds your perception. The ideal compromise is found, as usual, through trial and error. The aperture should be widened and narrowed by turning it back and forth in increasingly smaller rings, until you finally find the optimal contrast for your eye. This adjustment should then be tested once or twice to make sure that you have found the optimal contrast. Occasional breaks during this process will refresh your eye.

CHRISTIAN KLEES,
winner of a
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Unfortunately, the optimal contrast is not always satisfactory. On cloudy days or when the sun shines directly on the target, the 'optimal' adjustment can be quite poor. In such cases, you can test various filters or vary the size of the front sight. On 50 meter ranges, however, you will seldomly be able to obtain an absolutely clear visibility. Most of the time, you will have to work with minor imperfections.



2 b)
The perfect picture: optimal black and white contrast, fully covered surfaces, well proportioned circles and symmetrical intervals. Through the selection of the iris aperture and the size of the front sight, you can come close to the optimal contrast. Further improvements can be achieved with filters. Your holding ability is responsible for the symmetry...

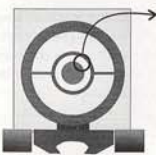
Das Traumbild: Optimaler schwarzweiß Kontrast, voll gedeckte Flächen, ebennmäßige Kreise, symmetrische Abstände. Dem optimalen Kontrast erzielen. Für die Symmetrie sorgt Dein Haltevermögen.

nächst Du Dich durch die Wahl der Irisöffnung und der Korngröße an. Filter können weitere Verbesserungen erzielen. Für die Symmetrie sorgt Dein Haltevermögen.
L'image parfaite: contraste blanc et noir optimal, surfaces entièrement couvertes, cercles réguliers, intervalles symétriques.

A travers le choix de l'ouverture de l'iris et de la taille du guidon, tu te rapproches du contraste optimal. Des améliorations supplémentaires peuvent être obtenues avec les filtres. Ta technique de maintien est responsable de la symétrie.

La figura perfecta: contraste óptimo negro y blanco, superficies cubiertas totalmente, círculos bien proporcionados e intervalos simétricos.

A través de la selección de la apertura del iris y del tamaño de la mira frontal, usted puede acercarse al contraste óptimo. Más mejoras pueden lograrse con filtros. Su habilidad para mantenerse es la responsable de la simetría...

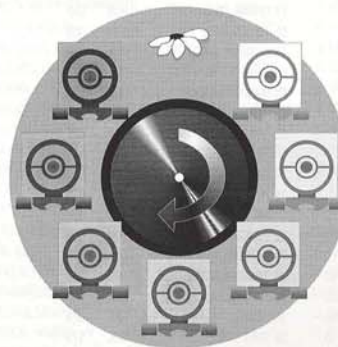


2 c)
The ring of light between the front sight and the bull's eye is the most decisive surface. It should have maximum sharpness and maximum contrast. You must consider that your eye can only focus sharply for a few seconds.

Der Lichtring zwischen Korn und Spiegel ist die entscheidende Fläche. Sie sollte maximale Schärfe und maximalen Kontrast haben. Denke daran, daß Dein Auge nur Sekunden wirklich scharf sieht.

L'anneau de lumière entre le guidon et le visuel noir est la surface déterminante. Elle devrait être d'un contraste et d'une netteté maximums. Songe que ton oeil ne peut accommoder très nettement que pendant quelques secondes.

El anillo de luz entre la mira frontal y la diana es la superficie más decisiva. Deberá tener un máximo de contraste y un máximo de nitidez. Usted deberá considerar que su ojo puede únicamente afocar con precisión durante unos cuantos segundos.



2 d)
The most important tool for regulating contrast is the iris. By narrowing or widening this synthetic pupil, the ring muscle of the eye is relieved and its accuracy is far surpassed. During sighting shots or in the course of shooting a series, readjustments should constantly be made, since the eye tires, and the brightness changes. Variation alone provides a stimulation of the visual cells. The regulation should become almost automatic just like shifting your feet or clicking the diopter - and always done with a very smooth touch.

Wichtigstes Werkzeug zur Regulation des Kontrastes ist die Iris. Durch Verengung oder Erweiterung dieser künstlichen Pupille wird der Ringmuskel des Auges entlastet und in seiner Genauigkeit weit übertroffen. Beim Probeschießen, aber auch im Verlauf der Serie solltest Du immer wieder nachregulieren. Weil das Auge ermüdet oder weil sich die Helligkeit ändert. Abwechslung allein sorgt schon für eine Stimulation der Sehzellen. Die Regulation sollte fast automatisch laufen, wie das Versetzen der Füße oder das Klicken des Diopters. Und immer mit Fingerspitzengefühl.

L'instrument le plus important pour régulariser le contraste est l'iris. A travers le resserrement ou l'agrandissement de cette pupille synthétique, le muscle orbiculaire de l'oeil est allégé et largement surpassé dans son degré d'exactitude. Pendant le tir d'essai, mais également au cours des séries, des ajustements devraient être effectués, car l'oeil se fatigue et la luminosité change. La seule diversion assure une stimulation des cellules visuelles. La régulation devrait devenir presque automatique, tout comme le déplacement du pied ou le dé clic du dioptre - et chaque fois avec un certain doigté.

La herramienta más importante para regularizar el contraste es el iris. Por medio del estrechamiento o ensanchamiento de esta pupila sintética, el músculo orbicular del ojo se aligera y su precisión se sobrepasa. Durante los tiros de ensayo, y también en el curso de una competencia, deberán efectuarse ajustes, ya que el ojo se fatiga y la luminosidad cambia. La sola variación causa un estímulo a las células visuales. La regulación debería volverse casi automática, como el desplazamiento de un pie o el "clic" de la mira - y siempre efectuado con un toque muy suave.

Call for Entries

UIT WORLD CUP in Seoul, KOREA May 7th to 15th 1997

Preliminary Competition Schedule

Wednesday, May 7th	9.00 - 15.00 Training	16.00 Opening Ceremony
Thursday, May 8th	9.00 - 10.45 Air Rifle 60 shots, Final: 13.00	11.00 - 12.15 Air Rifle 40 shots, Final: 14.00
Friday, May 9th	9.00 - 10.45 Air Rifle 60 shots, Final: 13.00	11.00 - 12.15 Air Rifle 40 shots, Final: 14.00
Saturday, May 10th	9.00 - 10.45 Air Rifle 60 shots, Final: 13.00	11.00 - 12.15 Air Rifle 40 shots, Final: 14.00
	9.00 - Trap 50 targets, Final: 15.30	

Sunday, May 11th

9.00 - 11.15 Sport Rifle 3x20 shots, Final: 13.30	12.00 - 13.15 Free Rifle 60 shots prone, Final: 15.00
9.00 - 14.00 Double Trap 150 targets, Final: 16.00	9.00 - 14.00 Double Trap 120 targets, Final: 17.00

Monday, May 12th

9.00 - 12.30 Free Rifle 3x40 shots, Final: 16.30	13.30 - 15.30 Free Pistol, Final: 17.30
9.00 - 11.00 Sport Pistol 1st day	9.00 - 14.00 Running Target slow run
9.00 - 15.00 Rapid Fire Pistol 1st day	

Tuesday, May 13th

9.00 - 11.00 Sport Pistol 2nd day, Final: 13.30	9.00 - 13.00 Running Target fast run, Final: 14.30
11.30 - 15.00 Rapid Fire Pistol 2nd day, Final: 16.30	9.00 - 15.00 Skeet 75 targets

Wednesday, May 14th

9.00 - 14.00 Skeet 50 targets, Final: 15.00	Departure of delegations (rifle, pistol)
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Thursday, May 15th

Departure of delegations (shotgun)

For further information please contact:

Organizing Committee,
UIT World Cup Seoul 1997,
c/o Korea Shooting Federation,
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