

# Combat laser sniper gun technology



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ONE SHOT ONE KILL is how Sniper Gun works. The term Sniper was foremost used in 1824 in the sense of word Sharpshooter. The chief intent of this gun is to destruct valuable marks at drawn-out scope. In most of the instances, mark agencies human existences ( enemy soldiers, armed terrorists and felons ) . The scope of such arm is between 100 to 1000 metres and it is particularly used in military and particular operations. Basically there are three types of sniper rifles: Military, Police/Law Enforcement and Special Task Sniper Rifles. Some of the best Snipers in universe are M24, USA ; Dragunav SVD, Russian ; Heckler and Koch XM-8, Germany and Vidhwansak AMR, Indian. Main aim of this reappraisal is to supply an penetration about types of sniper guns, their building, mechanism and how we can do them better utilizing Laser, Infra red, GPS system, Sniper sensors and Laser guided slugs to do sniper a complete solution for Army.

## Introduction

It has been hundred old ages now and Sniper is still the favourite plaything of Army. This is because of the design and capablenesss of this arm system and specialised Scopess, butt stocks and bipod agreements doing sniper more unsafe. However, proper preparation and experience can distinguish sniper from true crisp taw work forces. Sniper is now the ultimate closer, a true modern-day ninja which makes its ain manner few stat mis off. Sniper rifles come in a powerful array of automatic and bolt-action manners and makes. Most of the snipers are modified with specialised telescopic sights

offering the best in accuracy-inducing biotechnologies. Sniper rifles have more late been fielded in the highly-lethal point 50 qualities round which is capable of perforating engine blocks and can go forth the human organic structures covered in organic structure armour. It is the best soldier as it has alone advanced in kick, specialized ammo and extremely proficient sight. Normally have this image of a sniper working entirely behind enemy lines, a sniper is merely made better by the usage of a spotter and together they make a sniper squad following the mark through his ain range and naming out accommodations in flight and air current age as needed. This working in unison provides a most powerful and lethally concealed component to any war. Consequently, it does non take excessively much experience to be trained in being a sniper type component on the opposite side. It so becomes a instance of the huntsman going the hunted [ 1 ] .

## **History of Sniper**

Use of Sniper goes back to every bit early as Sixteenth Century ; sniper ' s first victim was Takeda Shingen in Japan. In Britain Sir Lord Brooke, senior Parliamentarian was killed during English Civil War by sniper. Similarly this arm was besides used in American War OF Revolution. The first Rifle Regiments was formed by British Army during Napoleonic War. Use of such arm than started going the demand of ground forces as it was extremely accurate and was modified easy harmonizing to its demand. During American Civil War US Sharp taws who were trained under Colonel Hiram Berdnam killed more enemy than any other Union Army with their point fifty two caliber sniper rifle. In the same war Sg. Ben Powell sniped Major General John Sedgwick at a distance of 798 yd during conflict of Spotsylvania Court

House. This arm was so used for blackwashes due to its high scope purpose by felons. Twentieth century changed the mentality of sniper. These guns were the chief arms in WORLD WAR I and II. Junior Lieutenant Vasily Zaytsev ( World War II ) – credited of killing 225 German soldiers during the Battle of Stalingrad. Gunnery Sergeant Carlos Hathcock has achieved 93 confirmed putting to deaths but believed to besides hold over 200 unconfirmed putting to deaths in Vietnam War. He held the record of longest confirmed putting to death at a distance of 2, 250A m ( 2, 460A yd ) ( made with a scoped M2 Browning machine gun ) for 35 old ages until 2002. Canadian soldier Corporal Rob Furlong, once of ( Operation Anaconda, Afghanistan ) holds the record for the longest-ever recorded and confirmed sniper putting to death at 2, 430A m ( 2, 657A yd ) utilizing a point 50 quality ( 12. 7A millimeter ) McMillan TAC-50 rifle. Blessing of scientific discipline and engineering has changed the mentality of Military Weapons and these arms are transforming to new degree by every birth [ 2, 3 ] .

## **Basic Construction**

### **Main parts of sniper gun**

Main parts of sniper gun are:

Barrel and Receiver

Bolt with Bolt Support

Safety Lever Assembly

Magazine

Butt

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Upper Band Assembly

Hand Guard L. H. Assembly

Hand Guard R. H. Assembly

Sight Leaf Assembly

Front-Sight Base and Body Assembly

These can be farther split into assorted parts which are shown in Figure 1 and enlisted in Table 1 [ 4 ] .

Figure. 1

**Table 1: Assorted parts of sniper gun**

**Sr no**

**Components**

**Sr no**

**Components**

1

Bolt Support

21

Front Sight Body

2

Open firing Pin

22

Front

3

Screen

23

Pusher

4

Steering Rod

24

Front Sight Base

5

Steering Bushing

25

Barrel

6

Thunderbolt

26

## Upper Band Assembly

7

Extractor Pin

27

Band Axle Pin

8

Open firing Pin Stud

28

Oil Seal Assembly

9

Extractor Spring

29

Hand Guard

10

Extractor

30

Upper Band with Spring

11

Tax return Spring

31

Magazine Body Assembly

12

Sight Leaf Slide

32

Magazine Spring

13

Sight Leaf

33

Magazine Cover

14

Hand Guard, L. H

34

Sight Leaf Assembly

15



Pusher Spring

35

Follower

16

Gas Tube Latch

36

Receiver

17

Gas Chamber

37

Accidental Shot Safety Device

18

Gas Piston

38

Open firing & A ; Trigger Mechanism

19

Gas Tube

39

Cover Axle Pin

20

Gas Regulator

40

Butt Assembly

## **MECHANISM OF WORKING**

Sniper chiefly works on the undermentioned mechanism:

a. Fire and Trigger Mechanism

B. Cover and Retracting Mechanism

Working of Sniper is really simple and basic ; it is a ego recharging arm. This recharging depends upon the energy obtained from pulverization gas which arc channeled from barrel dullard to piston gas. Upon fire, a certain sum of the pulverization gases following the slug flows through the port in the barrel dullard wall into the gas chamber, exerts force per unit area upon the forepart wall of the gas Piston and throws back the Piston with thruster and, accordingly, the bolt support into the rearward place. As the bolt support travels rearward, the bolt opens the barrel dullard ; the Cartridge instance gets removed from the cartridge chamber and ejected out of the receiving system. The bolt support compresses the return springs and cocks the cock ; i. e. engages it with the auto-safety cocking Cam. The bolt support and the

bolt return to the front place under the action of the retracting mechanism ; as a consequence, the bolt feeds the following cartridge from the magazine into the cartridge chamber and closes the barrel dullard, while the bolt support disengages the auto-safety sear from the cock. The hammer gets cocked. The bolt gets locked, after it has been turned to the left and its lockup Lugs engaged with deferrals of the receiving system. To fire a shooting, it is necessary to let go of the trigger and imperativeness it anew. After the trigger has been released, the rod modes frontward and its hook prosecute the sear and, if pressed, the rod hook turns the sear and disengages it from the cock cocking Cam.

The cock actuated by the mainspring turns round its pin and strikes the fire pin. The latter travels frontward and impinges the primer. Therefore, a shooting is fired. With the last cartridge fired and the bolt returned to the rearward place, the magazine follower lifts the bolt gimmick ; the latter engages the bolt to halt the bolt support in the rearward place. Therefore, it is necessary to lade the rifle anew. The rifle has a gas regulator, which serves to alter kick velocities of traveling parts. Under conditions of proper serving with the parts lubricated, the gas regulator is set at division

a. On firing during a long clip without cleansing and lubricating and heavy soilure of the rifle, arrest may happen uncomplete kick of the moving parts. In this instance the regulator is set at division.

B. To alter the regulator from one places to another usage the rim of the cartridge instance or the cartridge [ 4 ] .

## **PRESENT SENARIO OF SNIPER**

Science and Technology has lead to the development of new paradigm progress arm system. Some of the best snipers with their specifications in the universe are given in Table 2.

**Table 2: Comparison of different types of Sniper guns [ 5-58 ] .**

**Name Of Sniper Gun**

**Type**

**In Service**

**Discrepancies**

**Weight**

**Action**

**Effective Range**

**Feed System**

**Istiglal Anti-Material Rifle ( 5-13 )**

Anti-materiel rifle

2008-present

12. 7x108mm

44. 0 pound ( 20. 0 kilogram )

Recoil-operated, revolving bolt

3, 000A m ( 9, 843A foot )

10-round detachable box magazine

## **FAMAE FD-200 ( 14 )**

Designated Marksman Rifle

2000-present

Sodium

5. 10A kilogram

Gas operated

800 m

SIG 542 compatible magazines

## **7. 62 Tkiv 85 ( 15 )**

Sniper rifle

1984-present

Sodium

7A kilogram ( 15. 4A pound )

Bolt action

800A m ( 875A yd )

5-round magazine, loaded with 5-round courser cartridge holders

## **Accuracy International Arctic Warfare ( 16 )**

Sniper rifle

1982-present

Sodium

6. 5A kilogram ( 14. 3A pound )

Bolt-action

850A m/s ( 2, 790A ft/s )

10-round detachable box magazine

## **Accuracy International AS50 ( 16 )**

Anti-materiel rifle, Sniper rifle

2006-present

1 AS50

27 pound ( 12. 2 kilogram )

Direct encroachment

1, 500 m

5 or 10 unit of ammunition detachable box

## **JNG-90 ( 17-20 )**

Sniper rifle

2008-present

Sodium

Sodium

Revolving bolt

1000 m

Sodium

## **KNT-308 ( 21 )**

Sniper rifle

2008-presnt

Sodium

Sodium

bolt action

1000+ m

5-round detachable box

## **AMP Technical Services DSR-1 ( 23-27 )**

Bolt action rifle

2000-presnet

DSR-1 Subsonic ( 7. 62x51mm NATO )

5. 9A kilogram ( unloaded ) without range )

Bolt-action

800A m -875A yd

5 unit of ammunition detachable box magazine

## **Brugger & A ; Thomet APR ( 28 )**

Sniper rifle

2005-present

APR308P, APR308S, APR338

7. 1-8. 2kg

Bolt-action, manually operated

1000-1038 yd

10-round detachable box magazine

## **Armalite AR-50 ( 29 )**

Bolt action rifle

1997-1999

Armalite AR-30 ( smaller quality )

15. 5kg

Bolt action



Sodium

1 slug

## **AWC G2 ( 30-31 )**

Sniper Rifle

1990s-present

G2, G2A, G2FA

Sodium

Gas-Operated, revolving bolt

Sodium

20 unit of ammunition magazines

## **Barrett M82 ( 32 )**

Anti-materiel rifle

1989-present

M82A1, M82A1A, M82A1M, M82A2, M82A3, M107

13. 5-14kg

Recoil-operated, revolving bolt

1, 800A m ( 5, 906A foot )

10-round detachable box magazine

## **Blaser 93 Tactical ( 33 )**

Sniper rifle

1993-present

Blaser LRS 2

Blaser Tactical 2

5kg

Bolt action

Sodium

5-rounds detachable box magazine

## **Bor rifle ( 34 )**

Sniper rifle

2007-present

Alex Tactical Sport

Alex-338

6. 1kg

Bolt- action

800m

10-round detachable box magazine

## **CheyTac Intervention ( 35 )**

Sniper rifle

2001-present

Sodium

14kg

Turn bolt

2000m

7-round detachable box

## **CZ 700 sniper rifle ( 36 )**

Sniper rifle

Sodium

6. 2kg

Bolt Action

Sodium

10-round detachable box

## **C3A1 ( 37-39 )**

Sniper rifle

1972-2003

Sodium

7. 2kg

Manually operated bolt action

800m

5 unit of ammunition detachable box

## **Timberwolf**

**( 40 )**

Sniper rifle

2005-present

Sodium

7. 1kg

Manually operated bolt action

1500m

5 unit of ammunition detachable box

## **Desert Tactical Arms Stealth Recon Scout ( 41 )**

Sniper rifle

2008-present

Sodium

5. 2-5. 6kg

Bolt action

Sodium

5-7 unit of ammunition detachable box

## **WKW Wilk ( 42 )**

Sniper rifle

2005-present

Sodium

16. 1kg

Manually operated rotary bolt action

3000m

7 unit of ammunition detachable box

## **VKS Sniper ( 43 )**

Sniper rifle

2002-present

Sodium

7kg

Sodium

600m

5 unit of ammunition detachable box

## **United States Marine Corps Designated Marksman Rifle ( 44 )**

Sniper rifle

2001-present

Sodium

4. 0-4. 5kg

Gas operated, revolving bolt. Semi automatic

600-800m

5, 10, and 20 unit of ammunition detachable box

## **United States Navy Mark 12 Mod X Special Purpose Rifle ( 45-47 )**

Sniper rifle

2002-present

4. 5kg

Gas operated, revolving bolt. Semi automatic

600 paces

20 or 30 unit of ammunition STANAG magazine

## **United States Army Squad Designated Marksman Rifle ( 48 )**

Sniper rifle

2004-present

Sodium

4. 5kg

Gas-operated ( direct encroachment )

660yard

20 or 30 detachable box

## **T93 sniper rifle ( 49 )**

Sniper rifle

2005-present

Sodium

5kg

Bolt action

Over 800m

5 unit of ammunition internal magazine

## **M110 Semi-Automatic Sniper System ( 50-52 )**

Sniper rifle

2008-present

Sodium

6. 5kg

Gas-operated, revolving bolt

1000m

10 or 20 detachable box

## **Heckler & A ; Koch HK417 ( 53 )**

Battle rifle

Sodium

Attacker

Recce ( 16 " barrel – criterion and accurized )

Sniper ( 20 " barrel – accurized

3. 87-4. 23kg

Gas-operated, revolving bolt

Sodium

10 or 20 detachable box



## **FN Special Police Rifle**

**( 54 )**

Sniper rifle

2004-present

A1, A1a, A2, A4, A3 G, A5 M

4. 9-7. 5kg

Bolt action

Sodium

7. 62×51 millimeter ( . 308 Winchester ) : 4-round detachable box magazine  
or 5-round internal box magazine

. 300 Winchester Short Magnum:

3-round internal box magazine

## **Dragunov SVU ( 55 )**

Sniper rifle

1994-present

SVU-A

3. 6kg

Gas operated, revolving bolt

Sodium

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10 or 20-round detachable box magazine

## **Vidhwansak Anti Material Rifle ( 56-57 )**

Anti-material rifle

2007-present

Sodium

25kg

Manual bolt action

1800m

Magazine

## **Promotions IN SNIPER**

### **Sniper Location & A ; Gunshot Detection Systems**

Snipers have become the 2nd greatest cause of human deaths in combat in present wars. Military personnels are frequently most vulnerable in stationary environments, such as when on margin or a Forward Operation Base ( FOB ) . Until late, sniper sensing and location systems were employed chiefly on vehicular and inactive installings, when manning guard towers, or out at nomadic checkpoints.

Two versions of gunshot locaters were discussed here. Both are being addressed by the US military, in an effort to better response effectivity and cut down exposure to onslaughts by sniper and little weaponries ambuscades. Gunshot locaters besides improve the war combatant ' s

situational apprehension in exigency state of affairs, peculiarly when reacting to scupper state of affairs. The Boomerang acoustic law sensing system was developed by BBN to supply warning over sniper menaces. Today, over 1, 000 Boomerang systems are operational worldwide and procurance of 8, 000 extra systems is presently afoot. Initially, the system was installed on vehicles, but the most recent sweetenings, a inactive installing kit and portable system, complements the Boomerang to cover more manners of operation. Boomerang automatically provides immediate indicant of hostile fire or sniper onslaughts and localizes the law ' s place, leting rapid, informed and co-ordinated response. The system can be installed on an single vehicle ( manned or unmanned ) , at a checkpoint, or be scaled up for full margin security of a forward runing base. The ability to place seditious firing locations rapidly eliminates random patrol deployments and exposure to unknown hostile fire. ( Figure ) [ 58 ] .

The inactive installing kit is contained in a man-portable bundle, supplying rapid installing in impermanent or fixed sites. It is equipped with interfacing, to enable interoperability with distant arm Stationss and EO/IR detectors presently fielded in theatre. Furthermore, several Boomerang detectors can be integrated and networked, to supply better and more precise coverage of fixed sites. Gunshot qui vives can be integrated and presented into situational consciousness images, such as the Blue Force Tracking. Acoustic processing is non the lone solution for gunshot sensing. Gunshot signature can be identified, located and processed even faster utilizing electro-optical agencies. Two Israeli systems are supplying such capablenesss Rafael ' s Spotlight M and IAI/Elta ' s Short-Wave Infrared ( SWIR ) are sensors-based

and a Transeunt Event Detection ( TED ) system, developed by a new subordinate called OptigO. They are designed to cover a broad country, triping an instant dismay and menace location when a individual shooting is fired [ 58 ] .

## **LASER Guided Bullet**

A little quality laser-guided slug holding a self-contained counsel system is disclosed including on-board optical maser detectors and navigational circuits capable of observing a optical maser mark signature, finding the divergence of the slug from an optimal projectory along which the slug would impact a hostile mark, and bring forthing an electrical signal to piezo electric maneuvering control surfaces to consequence a alteration in the class of the slug. The guided slug utilizes a plurality of symmetrically arranged optical maser detector elements which are positioned about a longitudinal axis of the slug. The optical maser detector elements map to convey optical radiation from the optical maser mark beam to photo sensor elements housed within the slug. The electrical signals from the exposure sensor elements are so amplified and processed by semiconducting material logic circuits to bring forth the maps required by the maneuvering control surfaces to interpret the slug to the optimal flight. Electrical power for the counsel system is provided by a illumination Li polymer battery which is interconnected with the navigational circuits to bring forth the maps of the system. The guided slug is fired from a preciseness, smooth bore weapon utilizing a conventional spread outing gas cartridge and is effectual at ranges up to 3, 000 metres and beyond. A slug counsel system for steering an in-flight slug along an optimal flight along which said slug would impact a

optical maser identified mark, said system comprising: optical maser beam observing agencies contained within said slug and being capable of having optical maser beam energy reflected from said mark and converting said energy to electrical urges ; logic circuit agencies contained within said slug holding agencies in this responsive to acknowledge of said urges for finding the divergence of said slug from said optimal flight and for bring forthing disciplinary signals in response to said urges ; maneuvering control means holding agencies in this responsive to said disciplinary signals in a mode to trip said maneuvering control means so as to debar air flow about said slug, said control means including at least deployable flap means being externally extensile from said slug to debar air flow about said slug to leave a correctional impulse to interpret said slug to said optimal flight, said slug being fired from a preciseness, smooth-bored arm thereby non leaving axial spin to said slug in the mode of a rifle ; and power supply agencies contained within said slug being inter connectable to said logic circuit and said maneuvering control means to supply sufficient electrical power to bring forth the maps required by said system [ 59 ] .

### **6. 3 Next-Generation Can't-Miss Snipers**

Snipers are already lifelessly accurate, nailing marks from a 1000 metres off and more. A But a heavy crosswind can throw off even the surest shot. A This is why the armed forces has started a largely-secret, crash plan to construct optical maser gun sights that compensate for the environment giving snipers deadly preciseness at 2000 metres range, in winds up to 40 stat mis per hour. A If it works out as planned, Defense Department research workers think the Scopess will hike a sniper ' s kill-rate by tenfold, or more, and allow

snipers prosecute and draw the trigger in less than one second. Today, the bureau notes, a 10mph air current could bring forth a miss even at 400 metres while in other instances the divergence could be much worse, transcending 3 metres at 1200 metres range. The first method ( to grossly, grossly oversimplify ) , is to hit out a series of 1000s of optical maser pulsations, making a profile of the Eddies in the local ambiance as the light bouncinesss back. A The 2nd involves utilizing use a high-velocity camera to take an image of the target. A The Eddies distort the stage of the visible radiation in that picture. A The range, through a series of algorithms, can take those into history for the sniper squad. Algorithms for the 2nd attack have already been developed and field tested at University of Maryland ' s Intelligent Optics Laboratory, Pentagon paperss show, assisting mark objects 2300 metres off [ 60 ] .

## **Super Sniper: Next War ' s Secret Weapon**

It ' s likely non the game changing, secret arm of the war. But it could assist win the following 1: a stealing sniper range for unseeable assassination. A Battles are progressively about taking out a few choice enemies, non big Numberss of enemies. Such device allows you to turn up, mark and kill a topic. Heat haze normally throws off snipers. But SRVS changes heat haze from an obstructor into a agency of heightening the position. An consequence called turbulence induced micro lensing agencies that every blink of an eye the heated air acts as a series of lenses ; at a given minute you may be able to look right through them and see a exaggerated position of the scene beyond. The fast one is to utilize digital engineering to place the lucky parts or lucky frames when a clear position appears and piece them

into a complete image. The terminal consequence is a portable device 35 centimetres long and weighing two kg with an unprecedented capableness. This sniper range can crush the ‘ diffraction bound, ‘ which defines the best that any other optical device can make in conditions of terrible heat haze, no lupus erythematosus. Specifically, the SRVS will be good plenty to positively ID persons at sniping scope:

a. With an aperture non to transcend 6 centimeters, demonstrate that full graduated table facial images run intoing ANSI INCITS 385-2004 can be right identified by trained perceivers ( 90 % right designation ) at a distance of 1 kilometers ( stand foring a 3x betterment over current public presentation ) .

B. Show better-than-diffraction-limited super-resolution imagination at a velocity of non less than 1 Hz where human topics traveling at 1 m/s can be right identified by trained perceivers ( 90 % right designation ) at a distance of 1 kilometers.

The skittish facet of the SRVS is that even if the mark is looking right at you, they wo n’t see a thing because of the heat haze. A sniper utilizing one of these will be a genuinely unseeable bravo, with the ideal engineering for picking off high-value marks. The paradigm is supposed to be ready for early 2011, with finished units being delivered to Special Operations units in 2011 terminal. There are presently a figure of anti-sniper systems ( a. k. a. sniper sensing systems, a. k. a. gunshot sensing systems ) that have been designed and developed for usage by military foot forces [ 61 ] .

## **Decision**

Sniper is the term of excellence in the Army. Howitzers accurately fire in surplus of 28 kilometres, armored combat vehicles kill out to four kilometres, choppers gunship missiles kill out to eight kilometres. The maximal scope of foot little weaponries battles, nevertheless, has shrunk significantly over the past century. Some of the standard foot rifles of World Wars I and II had sights that ranged out to more than 2, 000 paces ( 1800 metres ) , and foot soldiers trained to prosecute country marks even out to those scopes. But with the acceptance of the smaller quality, higher speed. 223 bullets as the foot criterion for many states, the maximal preparation and therefore effectual scope of foot little weaponries has dropped off to 300 metres or less. Such promotions can give metempsychosis to new definition of Sniper which will alter the whole mentality, and remainder will be HISTORY. Such sniper will able to observe, blow the mark good beyond 3000 metre scope and will be most effectual in antagonistic terrorist act. Thus we can forestall another 26/11- Mumbai onslaughts and salvage life of inexperienced persons.