

The 300 AAC Blackout Low Visibility Carbine

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Advanced Armament Corp.



Photo: Stickman

Note: Some items in this document are not for retail sale.

Low Visibility Carbine

The 300 AAC Blackout as a Mk18/MP5/MP7 Replacement Low-Visibility Carbine.

The Low Visibility Carbine (LVC) is a 30 caliber weapon that is as quiet as an MP5-SD, but with 3x the range. It has more penetration and better terminal effects than an MP7. It is effective for CQB but has the ability to engage and eliminate threats to and beyond 300 meters.



Low Visibility Carbine

LVC uses 300 AAC Blackout Ammunition

OBJECTIVES:

- Create a reliable compact 30-cal solution for AR platform
- Utilize existing inventory magazines while retaining their full capacity
- Create the optimal platform for sound and flash suppressed fire
- Create compatible full power ammunition that matches 7.62x39 ballistics
- Work with subsonic and full power ammunition without requiring adjustable gas.
- Provide the ability to penetrate barriers with high-mass projectiles
- Provide all capabilities in a lightweight, durable, low recoiling package

Why not 7.62x39mm?

7.62x39mm was eliminated from consideration because:

- Extreme Cartridge Taper
 - Reduces reliability of feeding in AR Magazines
 - Reduces Magazine capacity
 - Exacerbates the AR Bolt's weaknesses
 - Requires a larger Bolt Face which reduces Bolt Locking Lug strength and induces higher bolt thrust.
- Limited Projectile Selection
 - 0.311" not a common option in most modern bullets
- Subsonic Compatibility
 - Case too large for subsonic/supersonic that will cycle AR with one gas setting.

Why 300 AAC Blackout?

300 AAC Blackout, a 7.62x35mm sized cartridge (300 BLK for short) is better because:

- Standard 5.56mm Case Head and Cartridge Taper
 - AR Magazines were designed to feed this taper
 - Maintains Full Magazine capacity
 - Only change from 5.56mm is the barrel
 - Minimizes strain on AR Bolt's weaknesses
 - Utilizes a standard AR Bolt Face, to retain Bolt Locking Lug strength
- Wide Projectile Selection
 - 0.308" possibly the most popular center fire rifle bullet in history
 - Wide Projectile Selection
- Proven Track Record
 - Pioneering work by JD Jones with the 300 Whisper,[®] and others with 300 Fireball and 300-221, have proven the concept.

Ancestors

The 8x35 Ribeyrolle (left) from 1917 foreshadowed the 300 AAC Blackout.

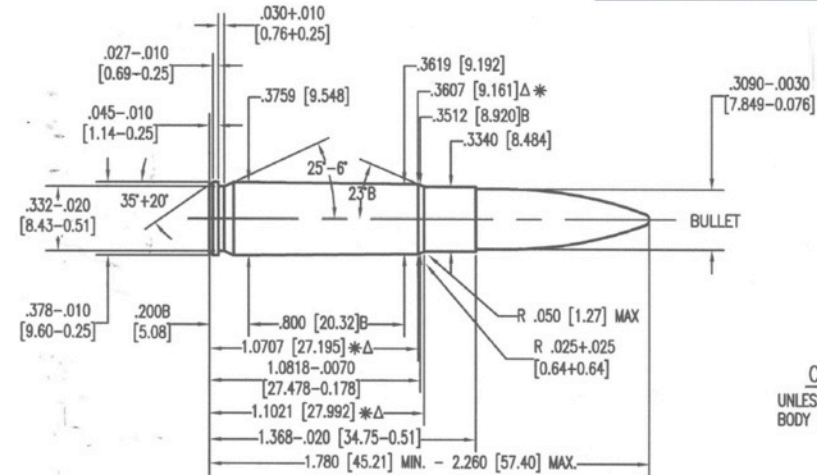


7.62x28mm, circa 1969, was a predecessor designed for the Colt IMP / GUU-4P Individual Multi-Purpose Weapon

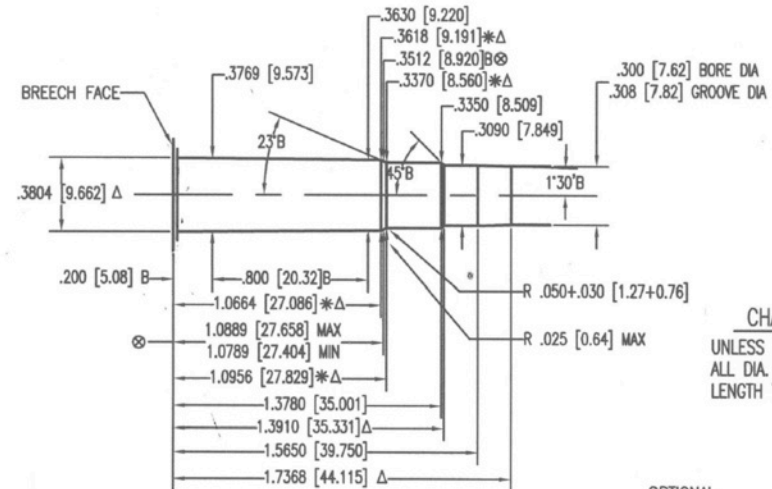


Low Visibility Carbine

300 AAC BLACKOUT



CARTRIDGE
UNLESS OTHERWISE NOTED
BODY DIA. -.005 [.13]



CHAMBER
UNLESS OTHERWISE NOTED
ALL DIA. +.002 [0.05]
LENGTH TOL. +.015 [0.38]

OPTIONAL:
Δ 5 GROOVES
Δ .146+.002 [3.71+0.05] WIDE
TWIST: 8 [203.2] R.H.

MIN. BORE & GROOVE
AREA: .0737 SQ. IN. [47.548 mm²]

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January 2011.

About 110 companies
are now making
300 AAC Blackout
Products.

Ammunition Size Comparison



300 BLK 125 Match, 300 BLK 220 Subsonic, 5.56mm, 7.62x39mm

Low Visibility Carbine

Size Comparison



Low Visibility Carbine

Compared to MP5-SD3

| | MP5-SD3 | 300 BLK PDW | HONEY BADGER |
|----------|-------------------------|-------------------------|-------------------------|
| WEIGHT | 7.9 lb. | 7.0 lb. * | 6.0 - 6.8 lb. ** |
| OAL | 26.4 / 31.7" *** | 25.75 / 34.25" **** | 24.25 / 28.5" ***** |
| BULLET | 115 grain at 900 fps | 220 grain at 965 fps | 220 grain at 900 fps |
| ACCURACY | 6 – 9 MOA at 100M | 1 – 3 MOA at 100M | 1 – 3 MOA at 100M |

300 BLK has over two times the energy at the muzzle and even more down range.

* With lower + CTR stock + H2 buffer + 762-SDN-6 suppressor, but no magazine or sights). 5.9 lb. without suppressor.

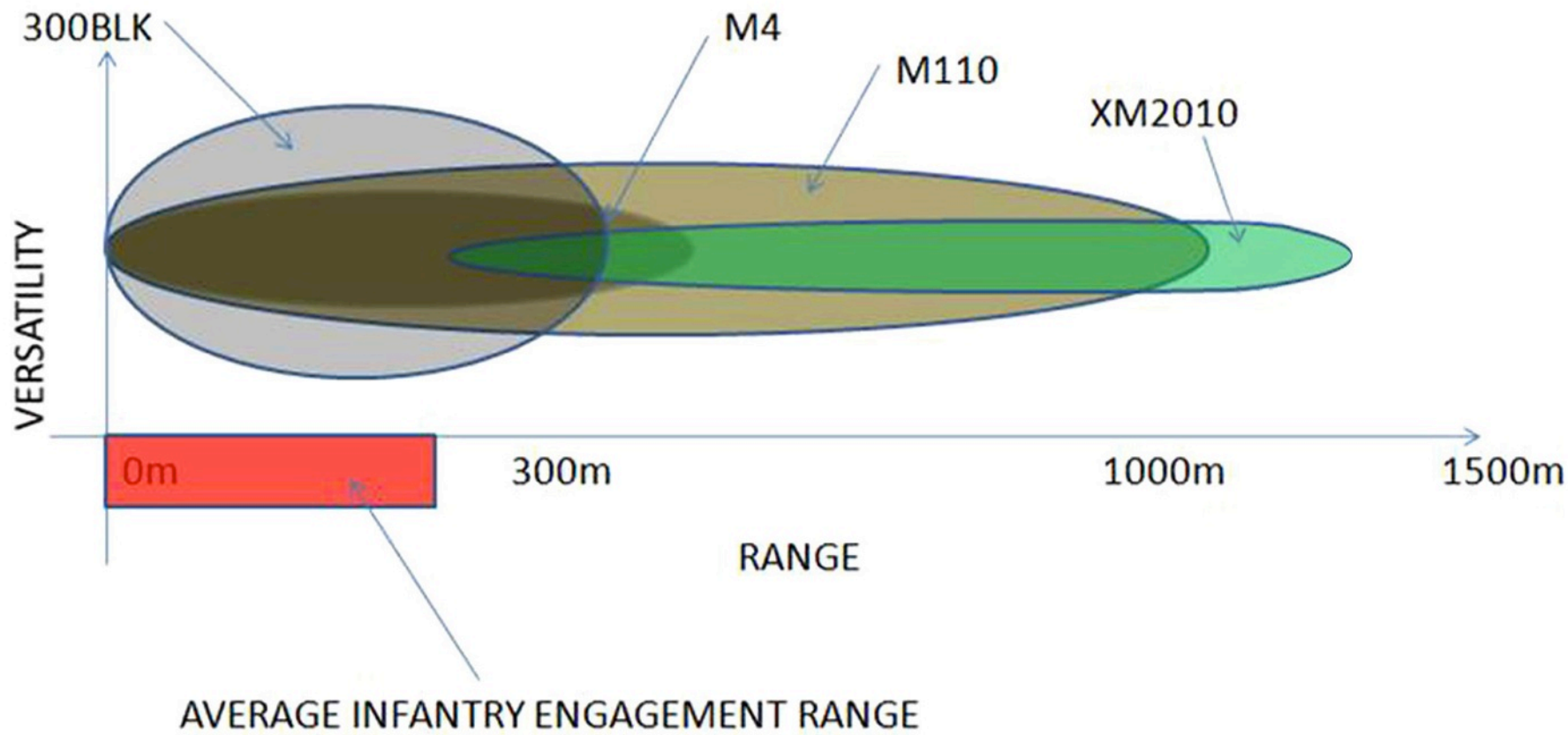
** depending on which sound suppressor and forearm length.

*** stock collapsed / stock extended.

**** M4 stock collapsed and no can / CTR stock extended.

***** Compact suppressor.

VERSATILITY vs. RANGE



Proven In Competition

SSG Daniel Horner of the USAMU used 300 AAC Blackout to win his 4th USPSA Multi-Gun National Championship.



Low Visibility Carbine

Conventional AR Configuration



Low Visibility Carbine

Max Effective Range

- The US Military rates the Max Effective Range of the M4 as 500 meters for a point target.
- If the max effective range of the M4 with M855 at 2900 fps is 500 meters, that has 100 inches of drop, 41 inches drift, and 291 ft-lbs of energy at that distance:
- A 16 inch 300 AAC BLACKOUT 125 grain at 2220 fps has:
 - 100 inches drop at 440 meters
 - 41 inches drift at 484 meters
 - 291 ft-lbs of energy at 700 meters.
- While the 300 AAC Blackout has far more energy, the military goes by hit probability. If we consider that the drift and drop range is correlated with hit probability, and discount the energy advantage of 300 BLK, we get 462 meters for equal hit probability.
- Using M4 military standards, the max effective range of 300 AAC Blackout from a 16 inch barrel is **460 meters**.
- From a 9 inch barrel (2050 fps):
 - 100 inches drop at 410 meters
 - 41 inches drift at 470 meters
 - 291 ft-lbs of energy at 625 meters, so **440 meter max effective range for a 9 inch**.
- 300 BLK from a 9 inch barrel has the same energy at the muzzle as a 14.5 inch barrel M4, and about 5% more energy at 440 meters.

123 grain AK-style bullet vs. 125 grain 300 BLK bullet
300 BLK bullet has less drag and fills out AR magazine for optimal feeding.
BC goes from 0.265 to 0.320



Low Visibility Carbine

More Down Range Energy than 7.62x39

- Lapua 123 grain 7.62x39mm - 712 Joules at 300 meters (0.280 BC, 16.5 inch barrel).
- UMC 115 grain 300 AAC Blackout - 777 Joules at 300 meters (0.300 BC, 16.0 inch barrel, 2295 fps muzzle velocity).
- Advantage – 300 BLK by 9.1%, even with slightly shorter barrel.
- Match 125 grain 300 BLK- 829 Joules at 300 meters (0.320 BC*, 16.0 inch barrel, 2220 fps muzzle velocity).
- Advantage – 300 BLK by 16.4%, even with slightly shorter barrel.

*Note that Sierra rates the BC as 0.338 but our radar data indicates that 0.320 may be more typical for 300 BLK velocities.

100 Yard Average of Average Radius Precision Based on Multiple Uppers and 5-shot Groups

| | 9" 1/7 5R | 12.5" 1/7 5R |
|-----------------------------------|---|---|
| 125 grain supersonic unsuppressed | 1.42 +- 0.91" (16 uppers, 2x5 shot groups each) | 1.20 +- 0.69" (8 uppers, 2x5 shot groups each) |
| 125 grain supersonic suppressed | 1.03 +- 0.66" (11 uppers, 2x5 shot groups each) | 0.84 +- 0.81" (6 uppers, 2x5 shot groups each) |
| 220 grain subsonic unsuppressed | 1.31 +- 1.09" (16 uppers, 2x5 shot groups each) | 1.37 +- 1.31" (16 uppers, 2x5 shot groups each) |
| 220 grain subsonic suppressed | 1.10 +- 0.77" (11 uppers, 2x5 shot groups each) | 1.40 +- 1.27" (6 uppers, 2x5 shot groups each) |

+ - value is two standard deviations.

Typical Velocities in Actual Rifles

| | 9" 1/7 5R | 12.5" 1/7 5R |
|------------------|-----------|--------------|
| 125 Unsuppressed | 2026 fps | 2147 fps |
| 125 Suppressed | 2032 fps | 2150 fps |
| 220 Unsuppressed | 968 fps | 1035 fps |
| 220 Suppressed | 1027 fps | 1067 fps |

Trajectory Table, 16 inch Barrel

| | 50 yards | 100 yards | 150 yards | 200 yards | 250 yards | 300 yards |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|
| 115 grain UMC 2295 fps, 0.290 BC 1345 ft-lbs | +1.6" 1186 ft-lbs | +3.3" 1041 ft-lbs | +2.9" 911 ft-lbs | 0.0" 795 ft-lbs | -5.8" 693 ft-lbs | -14.7" 602 ft-lbs |
| 125 grain Match 2215 fps, 0.338 BC 1362 ft-lbs | +1.7" 1220 ft-lbs | +3.5" 1090 ft-lbs | 3.0" 971 ft-lbs | 0.0" 864 ft-lbs | -5.9" 768 ft-lbs | -14.9" 681 ft-lbs |
| 125 grain AccuTip 2230 fps, 0.300 BC 1380 ft-lbs | +1.8" 1220 ft-lbs | +3.6" 1074 ft-lbs | +3.1" 943 ft-lbs | 0.0" 826 ft-lbs | -3.4" 761 ft-lbs | -15.3" 630 ft-lbs |
| 110 grain Barnes 2350 fps, 0.289 BC 1349 ft-lbs | +1.4" 1190 ft-lbs | +3.1" 1046 ft-lbs | +2.7" 916 ft-lbs | 0.0" 800 ft-lbs | -5.5" 697 ft-lbs | -14.0" 606 ft-lbs |
| 220 subsonic 1020 fps, 0.710 BC 508 ft-lbs | +3.3" 493 ft-lbs | 0.0" 479 ft-lbs | -12.1" 466 ft-lbs | -33.4" 454 ft-lbs | -64.1" 443 ft-lbs | -104.5" 432 ft-lbs |

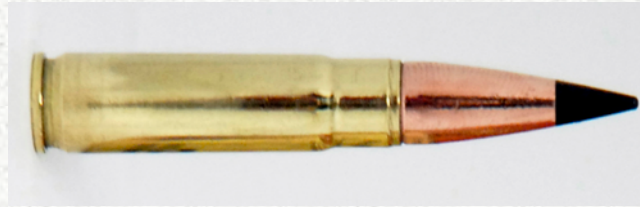
Max Point Blank Range and Energy at 300 Yards

| Weapon | Velocity (fps) | Bullet Weight (grains) | BC (psi) | Max PBR (+- 2.5", yards) | Energy (ft-lbs) |
|--------------------------|----------------|------------------------|----------|--------------------------|-----------------|
| 16" 300 BLK, 125 Match | 2215 | 125 | 0.338 | 211 | 690 |
| 14.5" M4, Mk262 | 2680 | 77 | 0.362 | 254 | 684 |
| 12.5" 300 BLK, 125 Match | 2150 | 125 | 0.338 | 204 | 637 |
| 14.5" M4, M855 | 2900 | 62 | 0.301 | 268 | 582 |
| 9" 300 BLK, 125 Match | 2030 | 125 | 0.338 | 193 | 570 |
| 9" 5.56mm, M855 | 2558 | 62 | 0.301 | 241 | 445 |
| HK UMP-45 | 935 | 230 | 0.142 | 96 | 250 |
| MP5-A2 | 1312 | 115 | 0.107 | 118 | 146 |
| HK MP-7, HP | 2296 | 30.9 | 0.112 | 179 | 62 |

Low Visibility Carbine

Sight height 2.6 inches above bore.
Data computed by QuickTarget

Barrier Blind



Barnes 300 AAC BLK 110gr TTSX

| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 20.5" | 0.585" | 98% |

Bare Gel



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 18.6" | 0.595" | 86.9% |

Plywood



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 21.1" | 0.594" | 98.7% |

Heavy Clothing



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 16.6" | 0.498" | 77.5% |

Glass (windshield)



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 18" | 0.663" | 98% |

Steel (car door)



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 19.7" | 0.581" | 98.3% |

Bare Gel @ 100 yards



| <u>Penetration</u> | <u>Avg. dia.</u> | <u>Rtd. Wt.</u> |
|--------------------|------------------|-----------------|
| 19.0" | 0.586" | 93.4% |

Wallboard



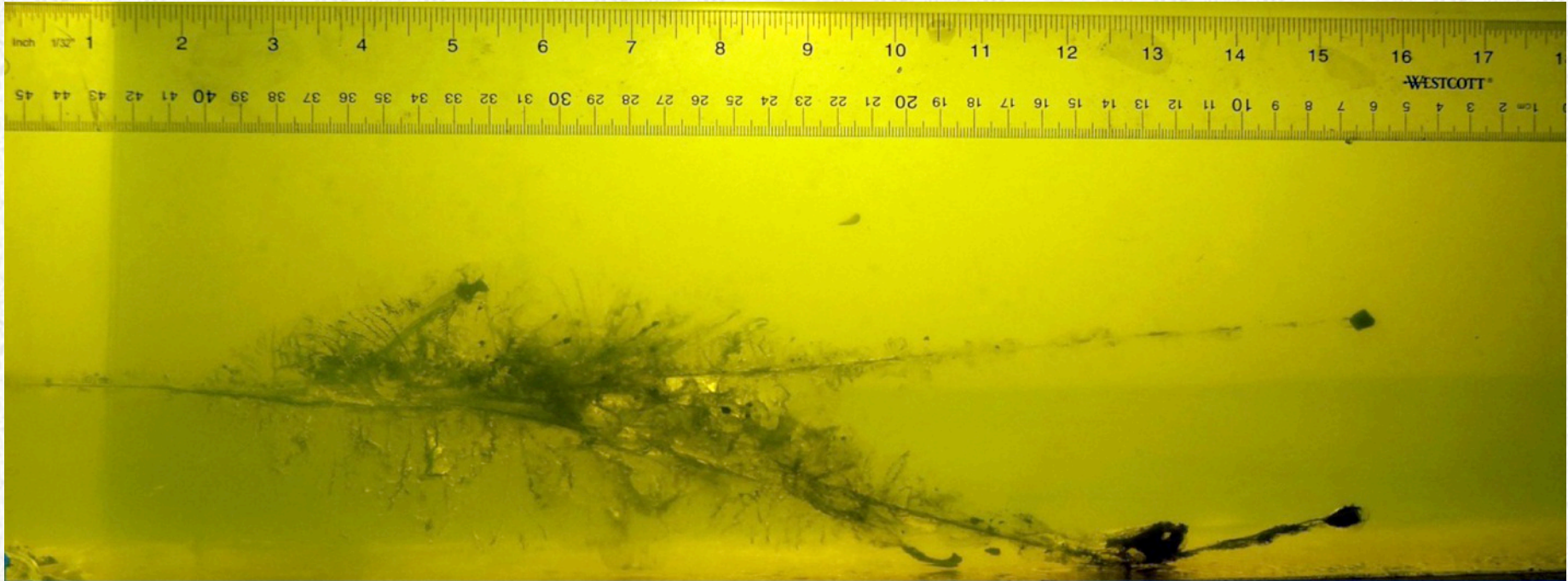
Bullet: Barnes 300 AAC 110gr TTSX
Average muzzle velocity: 2186 ft/s
Test Weapon: 9" 300 AAC BLK
Average for three shots on each test

Downrange Performance



20 inches of penetration at 300 yards (275 meters) from 9 inch barrel

110 grain TAC-RRLP



Muzzle velocity 2400 fps 16", 2190 fps 9", 1940 fps 6"

Impact at 1810 fps (200 meters 16" barrel, 130 meters 9", 50 meters 6")

Neck Length to Initial Yaw: 1.75"

Temporary Cavity Length: 7.0"

Temporary Cavity Diameter: 4.5"

Maximum Penetration: 16.25"



Low Visibility Carbine

Bullet Frontal Area

The difference in frontal area between 300 BLK and 5.56mm is much greater than the difference between 45 Auto and 9mm.

For example, going from 9mm up to 45 Auto is a 60.7% gain in area. Going from 5.56mm to 30 cal is an 89.1% gain in area.



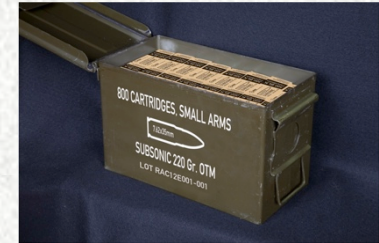
30 shots fired at 100 yards, Remington 115 grain UMC ammunition.

Cartridge Variations

- Remington 115 UMC – General Purpose.
- Remington 125 Premiere Match – target and combat.
- Remington 220 Subsonic – Low Sound Signature.
- Remington 125 AccuTip – LE/self defense/anti-terrorism.
- Barnes 110 T-TSX - LE/self defense/anti-terrorism.
- Barnes RRLP (jacketed frangible, mid 2012).
- SAAMI Proof – Production Testing.
- SAAMI Reference – For Ballistic Instrumentation Calibration.
- Dummy – Action Proving.

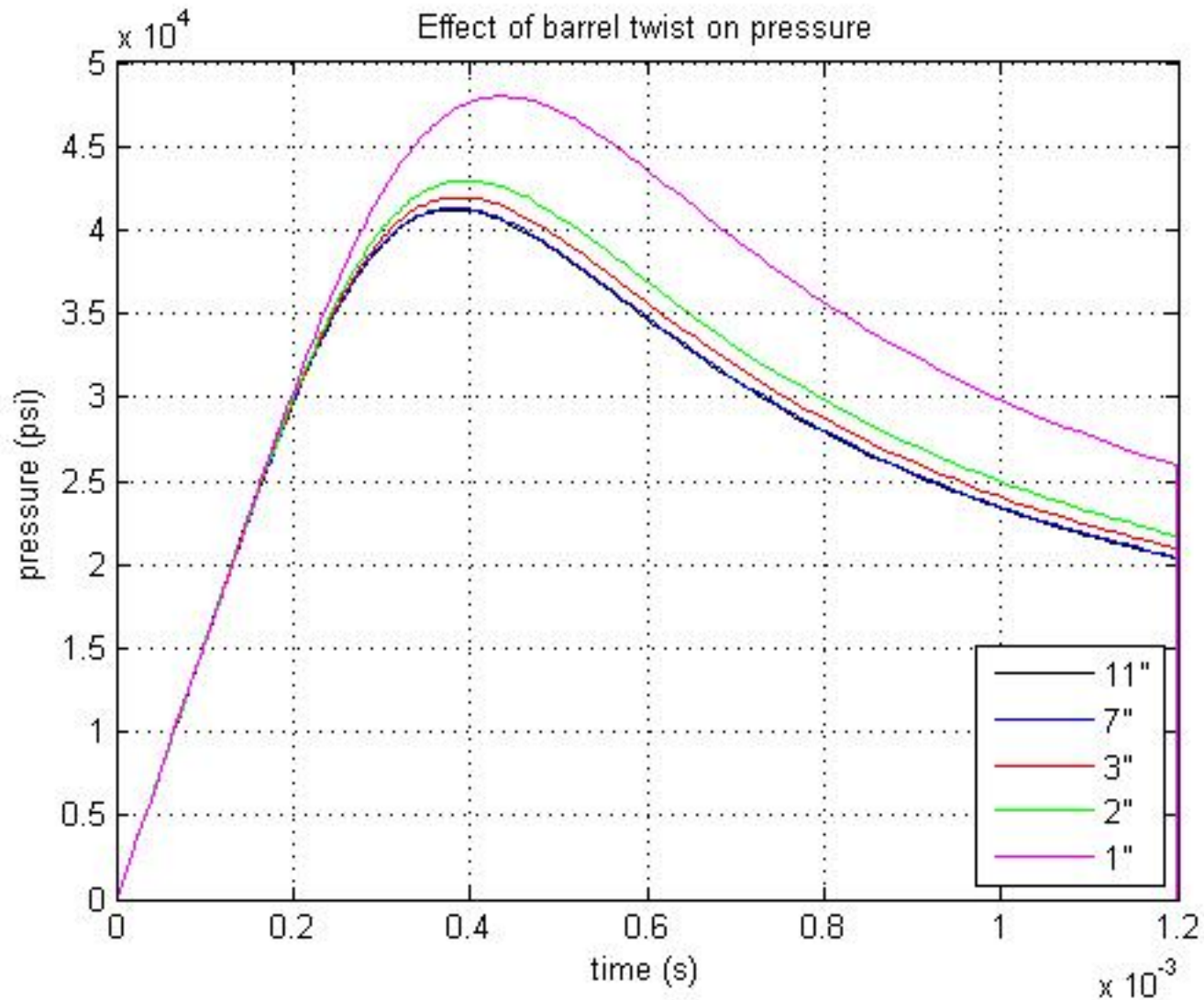
Military Packaging

- M2A1 metal cans each hold 800 rounds.
- Two cans per wire-bound plywood 1600 round crate.
- Up to 36 Crates (57,600 rounds) per pallet.



Low Visibility Carbine

Fast Twists – No Reason for Concern



Barrel Length Comparisons

More efficient in short barrels than 5.56mm

| | 5.56mm M193 | | | | | 300 BLK 110 Barnes | | | |
|---------------|-------------|--------|-----------|--------------|--|--------------------|--------|-----------|--------------|
| Barrel Length | fps | ft-lbs | Delta fps | Delta ft-lbs | | fps | ft-lbs | Delta fps | Delta ft-lbs |
| 4 | 1683 | 346 | N/A | N/A | | 1516 | 561 | N/A | N/A |
| 5 | 1962 | 470 | 279.0 | 124.2 | | 1701 | 707 | 185.0 | 145.4 |
| 6 | 2172 | 576 | 210.0 | 106.0 | | 1877 | 860 | 176.0 | 153.8 |
| 7 | 2339 | 668 | 167.0 | 92.0 | | 1973 | 951 | 96.0 | 90.3 |
| 8 | 2476 | 749 | 137.0 | 80.6 | | 2051 | 1027 | 78.0 | 76.7 |
| 9 | 2591 | 820 | 115.0 | 71.2 | | 2116 | 1094 | 65.0 | 66.2 |
| 10 | 2689 | 883 | 98.0 | 63.2 | | 2173 | 1153 | 57.0 | 59.7 |
| 11 | 2775 | 940 | 86.0 | 57.4 | | 2221 | 1205 | 48.0 | 51.5 |
| 12 | 2851 | 993 | 76.0 | 52.2 | | 2264 | 1252 | 43.0 | 47.1 |
| 13 | 2918 | 1040 | 67.0 | 47.2 | | 2303 | 1295 | 39.0 | 43.5 |
| 14 | 2978 | 1083 | 60.0 | 43.2 | | 2337 | 1334 | 34.0 | 38.5 |
| 15 | 3033 | 1123 | 55.0 | 40.4 | | 2369 | 1371 | 32.0 | 36.8 |
| 16 | 3083 | 1161 | 50.0 | 37.3 | | 2397 | 1403 | 28.0 | 32.6 |
| 17 | 3129 | 1196 | 46.0 | 34.9 | | 2423 | 1434 | 26.0 | 30.6 |
| 18 | 3172 | 1229 | 43.0 | 33.1 | | 2448 | 1464 | 25.0 | 29.7 |
| 19 | 3211 | 1259 | 39.0 | 30.4 | | 2470 | 1490 | 22.0 | 26.4 |
| 20 | 3247 | 1287 | 36.0 | 28.4 | | 2491 | 1515 | 21.0 | 25.4 |
| 21 | 3281 | 1315 | 34.0 | 27.1 | | 2511 | 1540 | 20.0 | 24.4 |
| 22 | 3318 | 1344 | 37.0 | 29.8 | | 2529 | 1562 | 18.0 | 22.2 |
| 23 | 3343 | 1365 | 25.0 | 20.3 | | 2546 | 1583 | 17.0 | 21.1 |
| 24 | 3371 | 1388 | 28.0 | 23.0 | | 2563 | 1604 | 17.0 | 21.2 |

Low Visibility Carbine

Comparative Sound Signatures (dry)

300 BLK 9" PDW, 220gr

135 dB HB-SD Short

300 BLK 9" PDW, 220gr

131 dB 762-SDN-6

300 BLK 9" PDW, 220gr

126 dB HB-SD Medium

300 BLK Honey Badger, 220 gr

124 dB full size HB



MP5-SD w/ HK Silencer

126 dB

M4 w/ KAC SOPMOD Silencer

138 dB

Mk23

139 dB

300 BLK Comparison to 10.3" 5.56mm AR

For cyclic rate gain – more compatible with suppressors than 5.56mm.



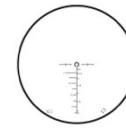
Average Rates of Fire

| | <u>Unsuppressed/Suppressed</u> | <u>Percent Increase</u> |
|------------------------------------|--------------------------------|-------------------------|
| 5.56mm CQBR | 737/985 | 34% |
| 9" 300 BLK 220 Subsonic | 680/790 | 16% |
| 9" 300 BLK 125 Match Supersonic | 815/960 | 18% |
| 12.5" 300 BLK 220 Subsonic | 706/813 | 15% |
| 12.5" 300 BLK 125 Match Supersonic | 805/936 | 16% |

Custom Scope/Reticle with FFP Optics



LEUPOLD® MARK 4® 1.5-5x20mm FRONT FOCAL PLANE RIFLESCOPE



300 Blackout Reticle

Designed for the dynamic needs of military, law enforcement and competition shooters, the Leupold® Mark 4® MR/T™ 1.5-5x20mm Front Focal Plane Rifle Scope provides the speed, precision and flexibility necessary for success in any situation—from point blank to beyond 700 meters. The illuminated front focal plane reticle provides quick target acquisition and a precise aiming point at low power, coupled with intuitive range estimation and shot correction at higher magnifications. The new hand-mounted illumination dial features 7 illumination settings with night vision compatibility and a tethered battery cap to prevent loss in the field. An off position between each numbered brightness setting

ensures long battery life and nearly instant return to the desired reticle intensity. Leupold's Handled Twilight Lens System™ with DiamondCoat 2™ and edge-blackened lenses offers astonishing edge-to-edge clarity, light transmission and scratch resistance. The locking fast focus eyepiece ensures a superior field of view, generous eyepiece and optimal reticle focus. A rugged 30mm main tube, twin bias spring erector system, and low profile 1/8 MOA per click M2 adjustments (with available elevation BDC) ensure maximum adjustment range and precision. The Mark 4 MR/T 1.5-5x20mm FFP is completely waterproof, fog proof, and is backed by the Legendary Leupold Mark 4 Warranty.

LEUPOLD® Mark 4 1.5-5x20mm FRONT FOCAL PLANE RIFLESCOPE

| | |
|------------------------------------|--|
| Reticle | 300 Blackout |
| Item Number & Finish | 113594 |
| Lens Coatings | Xtended Twilight Lens System™ with Edge Blackened Lenses and DiamondCoat 2™ |
| Adjustment Markings | Low profile M2, 1/2 MOA |
| Main Tube Diameter | 30mm |
| Special Features | Illuminated Reticle Night Vision Compatible Tethered Battery Cap Available ECC Dial |
| Environmental Protection | 2nd Generation Krytox/Aragon, Waterproof, Fog Proof |
| Eyepiece Design | Lockable Fast Focus |
| Actual Magnification | 1.5-4.7 |
| Linear Field of View (ft @ 100yds) | 65.7-23.7 |
| Linear Field of View (m @ 100m) | 21.9-7.9 |
| Exit Pupil (mm) | 10.3-3.3 |
| Eye Relief (in) | 4.4-3.6 |
| Eye Relief (mm) | 112.0-91.0 |
| Weight (ounces) | 15.0 |
| Weight (grams) | 425 |
| Length (in) | 9.6 |
| Length (mm) | 244 |
| Mounting Space (in) | 5.8 |
| Mounting Space (cm) | 14.7 |
| Objective Aperture (mm) | 20 |
| Elevation Adjustment Range (MOA) | 100 |
| Windage Adjustment Range (MOA) | 100 |



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TACTICAL OPTICS

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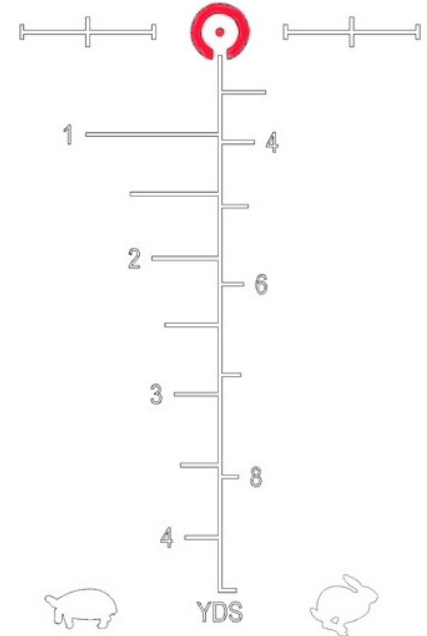


Photo: Stickman

Low Visibility Carbine



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