

SMALL ARMS

DEFENSE

JOURNAL

VOL 14, NO 2 | MAR/APR 2022



State of the Art

**ACCURACY INTERNATIONAL TAKES
PRECISION TO THE NEXT LEVEL**

**SLOVENIA'S MODULAR RIFLE
TINCK ARMS PERUN X SERIES**

**DON'T WASTE YOUR RANGE TIME
TODD HODNETT TALKS PRECISION
TRAINING**



**THE
BIGGEST
GUN SHOW WEST
OF THE ROCKIES!**

**OVER
2,500
TABLES!**

SAR WEST

GUN SHOW



DECEMBER 2-4, 2022

ARIZONA STATE FAIRGROUNDS – PHOENIX, AZ

SARWESTSHOWS.COM

Organized by *Small Arms Review* in conjunction with Crossroads of the West.

For SAR West table reservations, call 702-565-0746 or email office@smallarmsreview.com.

AX ELR MULTI CALIBRE

Calibre kits | .50 BMG | 10.36 x 77 (.408) | 9.5 x 77 (.375)



AX MKIII LA MULTI CALIBRE

Calibre kits | .338 LM | .338 Norma | .300 Norma | .300 Win Mag | .308 Win | 6.5 Creedmoor



Engineered to endure constant military deployment, next gen. Accuracy International AX multical sniper systems are the pinnacle of over 40 years' battle-honed development. Armed with a quick-fire calibre kit (barrel + bolt + magazine), a system can be repurposed in minutes with zero compromise to accuracy; simply by using the hex key housed under the cheekpiece. Mission accomplished.

www.accuracyinternational.com



Incorporating:
NATSEC
ASIA 2022



28-31 MARCH 2022
MITEC, KUALA LUMPUR

ADVANCING INTO A NEW ERA OF DEFENCE AND SECURITY



FULLY SUPPORTED BY



A MEMBER OF ENDORSED BY OFFICIAL PUBLICATION OFFICIAL ONLINE MEDIA PARTNER OFFICIAL E-SHOW DAILY NEWS & WEB TV OFFICIAL NAVAL MEDIA STRATEGIC PARTNER ORGANISED BY



Scan This QR Code
For Visitor
Registration



Scan This QR Code
To Download
DSA 2022 Brochure

For further information, kindly contact DSA & NATSEC Asia 2022 Sales Office:
DSA EXHIBITION AND CONFERENCE SDN BHD (423338-H)

V06-3A-05, Signature 2,
Sunway Velocity, Lingkaran SV,
55100 Kuala Lumpur, Malaysia

T: +603 2702 7700
E: enquiry@dsaexhibition.com

Malaysia & Asia Sales
Ezwan Effendy
T: +6010 828 9690
E: ezwan@dsaexhibition.com

Hazdi Hasrul
T: +6019 220 9690
E: hazdi@dsaexhibition.com

Sponsorship / Branding
Peter McKenna
Sponsorship Producer
E: info@official-events.net

Norliza Manap
E: norliza@dsaexhibition.com

MD 1505

CALIBERS: 5.56 NATO .300 BLK 7.62x39



ALL NEW



EVERYTHING YOU NEED FROM A COMPACT FIREARM

Maxim Defense PDX ingenuity in a standard AR-15 package. The new MD-1505 features a 5.5" barrel and was engineered to bring our top-tier PDX package to an even more affordable price point - with all the reliability enhancements found in our PDX.

The MD-1505 is equipped with the patented Maxim HATEBRAKE™, reducing recoil and decreasing flash signature while pushing gasses and concussion waves down range. The HATEBRAKE improves overall performance in short barrel firearms.

For comfort and versatility every MD-1505 features our free-floating Slimline Handguard providing a monolithic-like upper receiver platform and M-Slot compatibility on five sides.

Available with SCW Stock, SCW Brace, or SCW Pistol System for the ultimate in compactness, comfort, and versatility.



MAXIM
DEFENSE®

www.MAXIMDEFENSE.com

CONTENTS

MAR/APR 2022 | VOLUME 14 | NUMBER 2



52



64

SUBSCRIBE TODAY

SMALL ARMS

DEFENSE

JOURNAL

1 Year—\$39⁹⁵ (6 Issues) **2 Years—\$74⁹⁵** (12 Issues)

Go to chipotlepublishing.com/subscriptions to subscribe.
You will have the option to bundle with *Small Arms Review!**

SMALL ARMS DEFENSE JOURNAL publishes 6 issues per year. Please allow 4-8 weeks for delivery of your first issue. Prices are for subscriptions to a U.S. address. Go to chipotlepublishing.com/subscriptions to see international subscription pricing. *Subscribers to **SAR** get access to the smallarmsreview.com archives.





ON THE COVER

A British Royal Marine carrying an **Accuracy International AX ELR** multi-calibre anti-materiel rifle configured in .50BMG with a **Schmidt & Bender PMII 5-25x56** scope with a **Spuhr** mount.

PHOTO: Accuracy International

See Story on page 14



www.sadefensejournal.com

PUBLISHER

Chipotle Publishing, LLC

GENERAL MANAGER

Deborah Shea

PUBLISHER

Megan Vukodinovich

EDITOR-IN-CHIEF

TECHNICAL EDITOR

Dan Shea

SENIOR EDITOR

Rob Curtis

ART DIRECTOR

Adam Bucci

PRODUCTION COORDINATOR

Rachel Hoefing

TECHNICAL CONSULTANT

Frank Iannamico

DISTRIBUTION

Sara Lund

ADVERTISING

Megan Vukodinovich

Jayne Wynes

+1.702.565.0746

adv@sadefensejournal.com

CONTRIBUTING WRITERS

Robert Bruce

Todd Burgreen

Alton P. Chiu

Dr. Philip H. Dater

Leszek Erenfeicht

Paul Evancoe

Michael Heidler

Heebum Hong

Jean Huon

Frank Iannamico

N.R. Jenzen-Jones

Richard D. Jones

George Kontis, P.E.

Julio A. Montes

Ronaldo Olive

Christopher M. Rance

Dan Shea

Michael Smallwood

Miles Vining

Oleg Volk

Tony Williams

Jason M. Wong, JD

FEATURES

- 14 STATE OF THE ART**
SNIPING PRECISION FROM THE UK'S LEADING RIFLE MANUFACTURER
RICHARD D. JONES
- 26 DATA-DRIVEN DIDACTICS**
A LOOK AT THE MANTISX LASER TRAINING SYSTEM
ALTON P. CHIU
- 34 SHOW REPORT: ADEX**
HEEBUM HONG
- 42 PEN GUNS OF KABUL**
MATHEW MOSS
- 46 TOP GUN?**
FRENCH MATERIAL TOPS U.S. IN GUN BARREL LIFE TEST
GEORGE KONTIS
- 52 DON'T WASTE YOUR RANGE TIME**
TODD HODNETT TALKS PRECISION TRAINING
TODD HODNETT
- 58 PREFERRED PLATFORM**
AN OVERVIEW OF TURKEY'S ASSORTMENT OF AR-PATTERN RIFLES
DCURAI GAMA
- 62 TORONTO POLICE SEIZE PKC GLOCK WITH 3D-PRINTED FRAME**
IVAN T./ARES
- 64 SLOVENIA'S MODULAR RIFLE**
TINCK ARMS PERUN X16 AND PERUN X17
PIERANGELO TENDAS

COLUMNS

- 8 NEW PRODUCTS**
- 76 INDUSTRY NEWS**

CHIPOTLE PUBLISHING, LLC

631 N. Stephanie St. #282

Henderson, NV 89014

T: 702.565.0746 | F: 702.567.2425

office@sadefensejournal.com

www.chipotlepublishing.com

For *Small Arms Defense Journal* article submissions, please contact Rachel Hoefing at: rachel@chipotlepublishing.com. For *Small Arms Defense Journal* New Products submissions, please send to: newproducts@chipotlepublishing.com.

Small Arms Defense Journal is published by Chipotle Publishing, LLC, 631 N Stephanie St. #282, Henderson, NV 89014 USA. Telephone: +1.702.565.0746 Fax: +1.702.567.2425. Email: office@sadefensejournal.com. Copyright ©2022. All material contained in *Small Arms Defense Journal* is copyrighted, and no portion may be reproduced in any way without the written permission of the publisher. US subscriptions are USD \$39.95 for 1 year (6 issues). 1 year international first class is USD \$69.95. Subscription prices are subject to change without notice.

Small Arms Defense Journal is not responsible for the misuse of any information contained in this publication. We do not endorse any item or practice offered in any ad or article in this publication. The opinions expressed are those of the individual writers. For advertising information, writer's guidelines or to subscribe, call +1.702.565.0746. Publisher assumes all North American Rights upon acceptance and payment of all manuscripts. Printed in the USA.



LEUPOLD & STEVENS, INC.

Patrol 6HD 1-6x24

Leupold's new **Patrol 6HD 1-6x24**, the company's latest low power variable optic, is designed to help defend your ground. The ultra-lightweight, low-profile design of the Patrol 6HD deploys quickly, while its 1-6x magnification lets you engage targets anywhere—from tight corners to open fields.

"The Patrol 6HD is a true 1x power tactical optic, designed to help get you on target fast when it counts," says John Snodgrass, tactical product line manager for Leupold & Stevens, Inc. "It offers the best combination of durability, low-light performance and edge-to-edge clarity of any LPVO on the market."

Two models will be available at launch, both with a 30mm maintube and second focal plane configuration. One features 0.25-MOA adjustments using a traditional capped dial and is equipped with an Illuminated FireDot Duplex reticle. The other still has 0.25-MOA adjustments but comes equipped with Leupold's CDS-ZL2 dial system,

allowing two full two turns of elevation adjustment with a locking dial and making it compatible with the company's Custom Dial System. The CDS-ZL2 model has an Illuminated CM-R2 reticle.

The Patrol 6HD optical system delivers the light transmission, glare reduction, and resolution that professional guides and shooters demand. An anti-cant in-scope electronic reticle level, meanwhile, simplifies mounting and improves long-range accuracy. Its lightweight design disperses recoil energy for unrivaled durability, and a removable throw-lever allows for quick magnification changes in the heat of the moment. It is waterproof and fogproof, and its superior ruggedness has been verified through Leupold's Punisher testing process.

The Patrol 6HD is designed, machined, and assembled in the company's Beaverton, Ore., factory—and backed by a lifetime guarantee.

MSRP: \$1400-1500

leupold.com



TASMANIAN TIGER

TT Medic Assault Pack MKII L

The **TT Medic Assault Pack MKII L** is the largest TT medic backpack designed with an intelligent and clear interior divider system.

Tasmanian Tiger, a tactical nylon line of products distributed exclusively for the U.S. market by Pro-force Equipment, Inc., is pleased to announce it now has a third size of its tried and tested medic backpack: the TT Medic Assault Pack MKII L. At 1150 cubic inches, this is the largest TT medic backpack designed with an intelligent and clear interior divider system. It measures about 1.57 inches (one MOLLE strip) deeper than the two smaller, previous models.

The TT Medic Assault Pack MKII L has laser-cut MOLLE on the front and sides and a large handle for carrying when open. The bottom features attachments ideal for storing a rescue blanket. The light, padded shoulder strap carrying system can be removed and stowed in a pocket with hook-and-loop panels in the back if needed. These length adjustable stowable shoulder straps also make carrying large body armor possible.

The TT Medic Assault Pack MKII L can also be converted for plate carriers and vests using the adapter straps supplied with it for direct attachment. The stowable carrying handles help to quickly transport it in emergencies. The pack also features an inner detachable plate with elastic loops and internal variation fixation points to store medical equipment, a scissors bag, and clear inside pockets identified by colored hook-and-loop fastening. There are also integrated visual markers. Available in Black, Olive, and Coyote.

MSRP: \$229

tasmaniantigerusa.com



**UNSTOPPABLE.
DAY OR NIGHT.**



AMC® UH-1® GEN II
HOLOGRAPHIC SIGHT

- NIGHT-VISION COMPATIBLE
- LARGER VIEWING WINDOW
- ZERO IMAGE DISTORTION



**UNLIMITED.
UNCONDITIONAL.
LIFETIME WARRANTY.**

We will repair or replace the product.
Absolutely free—no matter the cause.

Learn more at vortexoptics.com.

© 2020 Vortex Optics. ® Registered Trademark and ™ Trademark of Vortex Optics.

NEW PRODUCTS



FOXFURY

Taker B52

The FoxFury **Taker B52** is a retrofittable, front-mounted 2,000 lumen LED light for ballistic shields. This strobe-capable shield light provides tactical officers panoramic lighting and immediate situation assessment to see and respond faster. The Taker B52 is equipped with a single pressure switch that activates the light and changes modes.

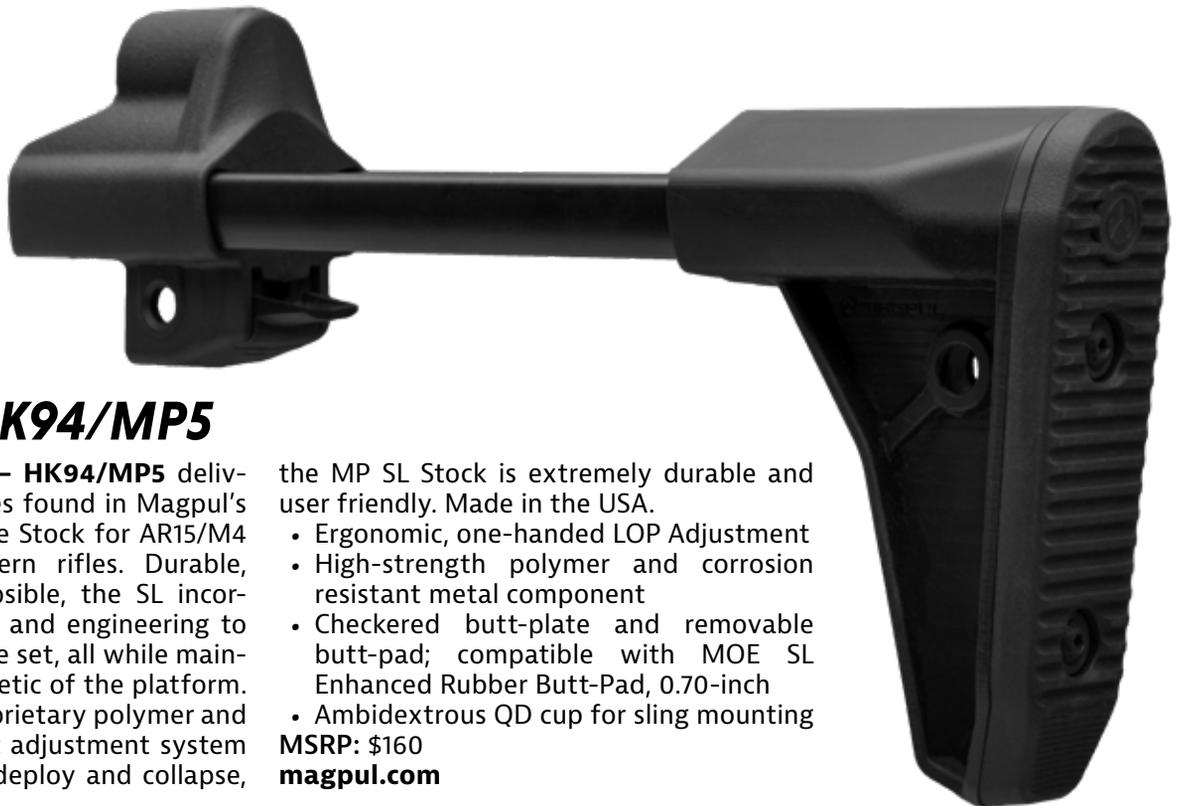
This light provides up to 2,000 lumens, is powered by two 18650 batteries, and has three tactical settings: momentary, disorienting Turbo-Strobe, and continuous on.

"The Taker B52 Ballistic Shield Light was created to provide a less-lethal impact and support for tactical officers in uncertain scenarios," says Mario Cugini, CEO, FoxFury Lighting Solutions. "It maximizes protection for the officer in the line of duty and aims to de-escalate the conflict. Implementation of the latest generation LEDs and a redesigned battery pack improve

brightness and overall operational efficiency."

MSRP: \$500

foxfury.com



MAGPUL

SL Stock – HK94/MP5

The Magpul **SL Stock – HK94/MP5** delivers the modern qualities found in Magpul's original MOE SL Carbine Stock for AR15/M4 carbines to MP5-pattern rifles. Durable, lightweight, and collapsible, the SL incorporates Magpul design and engineering to provide a robust feature set, all while maintaining the iconic aesthetic of the platform. Constructed of our proprietary polymer and featuring an ergonomic adjustment system that makes it easy to deploy and collapse,

the MP SL Stock is extremely durable and user friendly. Made in the USA.

- Ergonomic, one-handed LOP Adjustment
- High-strength polymer and corrosion resistant metal component
- Checkered butt-plate and removable butt-pad; compatible with MOE SL Enhanced Rubber Butt-Pad, 0.70-inch
- Ambidextrous QD cup for sling mounting

MSRP: \$160

magpul.com



LMT

Estonia R20 RAHE

Lewis Machine and Tool's most recent large-scale contract the **R20 RAHE** or "Hail", is an accurate, reliable, and modern weapon system designed for any engagement. Ready for any fight, the Estonian Defence Force picked the MARS-L and H for long-term reliability.

- MARS-L lower receiver featuring fully ambidextrous controls
- New AXLE Euro 2-stage trigger group
- 6-position buffer tube with Magpul SL-K stock and QD end plate
- LMT gen 2 pistol grip
- MRP-L 9.25in monolithic MLOK upper receiver featuring

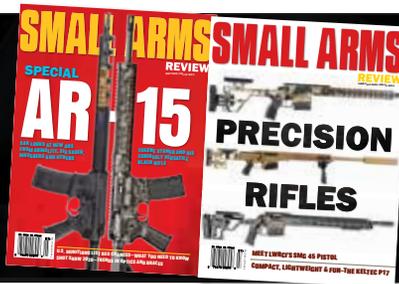
- multiple QD sling mounts
- NON-NFA 14.3in 5.56 NATO chrome lined, 1:7 twist, piston barrel pinned and welded with EDF specified flash hider/suppressor mount to an overall length of 16.25in
- Full Auto gen 2 piston BCGEDF specified piston gas block with bayonet lug and single position gas plug
- Ambidextrous charging handle
- Front and rear folding back up iron sights
- EDF-specified Blue Force Gear Vickers sling in OD green
- Ships with manual, one magazine and M-Lok rail covers

MSRP: \$3,499

lmtdefense.com

SUBSCRIBE TODAY

SMALL ARMS REVIEW



1 Year
\$39⁹⁵

1 Year-\$39⁹⁵ (10 Issues)

2 Years-\$74⁹⁵ (20 Issues)

PAYMENT: VISA MASTERCARD AMEX DISCOVER CHECK* # _____ EXP _____

NAME _____ CVV _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

EMAIL _____ PHONE _____

(Your information will be kept confidential and not made available to any third party)

SMALL ARMS REVIEW publishes 10 issues per year. Please allow 4-8 weeks for delivery of your first issue. Form is for U.S. addresses. Or you can place your order at chipotlepublishing.com/subscriptions, where international subscriptions and pricing info are also available. Subscribers to **SAR** get access to the smallarmsreview.com archives. *Make checks payable to **Chipotle Publishing, LLC**

Mail this form to: **SUBSCRIPTIONS**, Chipotle Publishing, LLC, 631 N. Stephanie St. #282, Henderson, NV 89014 or call (702) 565-0746

NEW PRODUCTS



SPARTAN ARMOR SYSTEMS

Leonidas Legend Berry Compliant Plate Carrier

Enhanced with lightweight Squadron laser-cut laminate material over a Cordura 500D body, this second generation of **Leonidas Legend** plate carrier is built to last. The Leonidas Legend features effective thin and lightweight high density foam standoffs for air circulation, enhanced shoulder pads, quick release cummerbund and many more upgrades.

With enhanced padding in the front, back and shoulders, the Leonidas Legend is designed to minimize fatigue and maximize comfort during extended duty use. The tough, but soft, spacer mesh helps this carrier breathe while facilitating heat dissipation. The fully adjustable (and removable) cummerbund provides seven levels of adjustment, allowing for a variety of body types ranging from L to 3XL.

The Leonidas Legend comes standard with MOLLE side

plate pouches capable of holding 6x6-inch or 6x8-inch armored side plates. Each shoulder pad also features multi-directional laser-cut webbing to allow for greater freedom in mounting and retainment options. First Spear Tubes are integrated into the cummerbund to allow for faster donning and removal of the carrier. The top zippered admin pouch is capable of holding smartphones up to 6.5 inches long. Additional storage is also provided by way of the front kangaroo pouch which is retained by hook-and-loop. The Leonidas Legend plate carrier is proudly made in the USA and is 100% Berry Compliant, making it an ideal choice for law enforcement, military or concerned citizens alike.

MSRP: \$350

spartanarmorsystems.com



Ministry of Defence
Thailand



Power of Partnership

Tri-Service Asian Defense & Security Exhibition, Conference and Networking Event



29 Aug - 1 Sep 2022

IMPACT Exhibition and Convention Center,
Bangkok, Thailand



10th
EDITION

Organised by:



For more information please contact:

Ms. Yaowalak Chuvichien, Project Manager

+66 (0) 2036 0500 ext 212

Yaowalak@asiandefense.com

www.asiandefense.com

Officially Support by:



Strategic Partner:

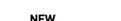
Official Publication
and Official Show-
Daily Publisher:

Official Online
Show daily:

Official Bilingual
Show daily:

Official News Online
and Web TV:

Supporting Publication:



+66 (0) 2036 0500

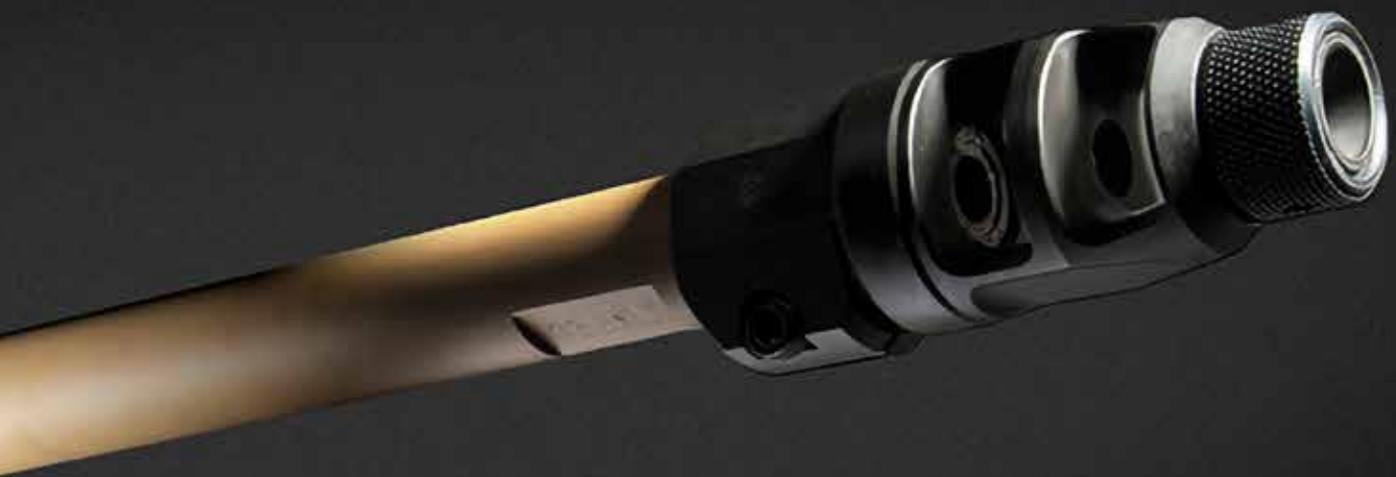
info@asiandefense.com

@DefenseThailand

Defense Security Thailand

#DefenseThailand





State of the Art



AK MKIII base line configuration fitted with bipod.

Sniping Precision from the UK's Leading Rifle Manufacturer

Story by Richard D. Jones | Photography by Accuracy International

The internationally recognized brand name of Accuracy International or 'AI' as it is frequently identified as, is a United Kingdom based manufacturer of world class sniper and precision target rifles located on the south coast of England, adjacent to the historic British naval base at Portsmouth.

The company first came to note in the mid-1980's when it was successfully chosen to replace the British army's in-service L42A1 sniper rifle. The L42A1 was, essentially, an upgraded .303 No4 (T) sniper rifle that entered service in WWII and was later converted to 7.62 x 51 mm NATO in 1954. The winning competitor, which was based on the newly formed companies' Precision

Marksman (PM) rifle, became the Rifle, Sniper L96A1 in British service as noted in the book, "The Green Meanie" by Steve Houghton, it saw significant international sales to various armies, including the Swedish armed forces who, having expressed an interest in adopting the baseline gun, requested various changes for use in extreme cold weather resulting in the Artic Warfare, or "AW", model which became the model of choice for many users in a number of caliber and firmly establishing AI as a principal manufacturer of military and law-enforcement sniper rifles.

The company has continued to develop new model variants in response to expanded user requirements driven by a very significant

uptick in use of the sniper in recent military operations together with a concurrent surge in the capability of day/night sights and other accessories which have led to an increasing number of model types designed to meet the needs of today's military and law-enforcement user. All AI development is based on a culture of continuous improvement and employee involvement, which includes building-in quality at the design stage in full consultation with the user throughout the production process and compliance with the ISO 9001 quality management system. To ensure control is exercised over every aspect of quality and production, all major components are now manufactured in-house in a newly



AK MKIII showing large double-chamber muzzle brake.

built facility adjacent to the original site which continues to be the headquarters building with inspection and storage/distribution facilities. Smaller and more specialized components which are not economically or practical to manufacture in-house are outsourced as required.

To meet what is now the relatively fast changing requirements, compared with those at the turn of the present century of both the military and law-enforcement user, AI now offer as part of their current product range their AX MKIII and AX50 ELR models.

AX MKIII

The AX MKIII is the latest edition of multi-caliber sniper rifle to be offered by AI which has been designed to meet current operational needs in Europe and around the world. Derived from the successful AXMC multi-caliber rifle series and is a variant of the AXSR produced for the US market, sharing many of the features of the latter.

The primary caliber of the AX MKIII as supplied is .338 Lapua Magnum (LM) (8.6×70 mm), but additional multi-caliber conversion kits are available to allow the user to adjust

the rifle to a specific mission configuration. The AX MKIII proofed steel action with AI's "Quickloc" barrel system is bolted to an aluminum chassis, and a full-width recoil lug prevents movement and ensures zero is reliably maintained. Attached to the chassis is a free-floating octagonal tube, that acts as the rifle's forend, with full length 30 MOA (minute of angle) STANAG 4694/Mil Std 1913 rail which features AI's patented KeySlot mounting system for quickly and securely attaching rails to take a variety of accessories. The forend unit is easily removed using a hexag-

onal key that's stored in the cheek-piece.

The system of operation is bolt-action. The AX MKIII bolt is of improved design with six locking-lugs with a 60° short-throw bolt. Lifting the bolt handle from the closed, fired position achieves two things, one the action is re-cocked and primary extraction of the fired cartridge case occurs. Cocking the action on bolt opening permits a more rapid repeat shot in an emergency and avoids the extra effort required to close the bolt on those designs which cock the action on closing often causing unnecessary muzzle movement as the result of the extra effort required.

All AI barrels are manufactured from stainless steel with a plain threaded muzzle for the attachment of a muzzle-brake. For consistent critical cold-shot performance the 27-inch match grade, free-floating barrel is screwed into the action using a large diameter thread. An improved design of bolt with 6-lugs having a 60° lift is fitted with the proven AI leaf spring extractor. A two-stage trigger is fitted which is adjustable for reach and trigger weight between the limits of 3.3 pounds and 4.4 pounds. The trigger group is easily and quickly removed for cleaning via two socket head screws for cleaning. All important safety is provided by a three-position ambidextrous safety lever, with "Safe and locked", trigger locked to allow manipulation of the bolt for clearing the weapon, and "Fire". In the unlikely event of a case failure, two pressure release ports to minimize blowback are located on top of the breech.

The principal features of the base line model AX MKIII stocking arrangements are a right, side-folding stock which folds over the bolt to minimize the overall rifle width for storage and transportation, and to prevent damage to the bolt from rough handling in transit. The height adjustable cheekpiece is designed to allow the use of night vision equipment or optical sights with a large objective lens, the adjustable buttpad provides a length-of-pull (LOP) adjustment of 1.9 inches, which



AK MKIII stock arrangement, showing adjustable cheekpiece, buttpad adjustable for 'length of pull', which can be further increased by use of optional 10 mm spacers. Lower portion shows the rail adjustable rear-grip, to which a buttspike may be fitted. Two sling mounting points can be seen on upper tang and front face of the buttpad.



AK MKIII stock in folded position - note protection given to bolt by wrap-around arrangement of stock.



Paddle type magazine release which is common to both models of the AK MKIII and AX ELR.



The AX MKIII ambidextrous three-position safety. Note cutaway magazine housing on right hand side to facilitate insertion in cramped or restricted positions.

can be increased by the use of spacer inserts. The adjustable cheekpiece and buttpad are purposely designed to allow the shooter to individually configure the rifle to their physical requirements without the use of tools. A horizontal rear grip is fitted to the lower stock, which can also be fitted with a quick-adjust butt spike (or monopod) as an optional extra. A rubber type non-slip AR type pistol-grip is fitted to the lower rear of the chassis, which can be changed to suit individual hand sizes. An integral Arca-Swiss type mounting rail is located under the forend for firing the rifle from a tripod. There are two purpose-designed barricade supports on the AX MKIII, the front edge of lower forend and the front face of the magazine well, both of which are used to provide a more stable firing position when pushed up against a hard surface for support. It has been noted that in the past shooters have used the magazine for this purpose, which could potentially cause stoppages and ultimately damage to the magazine. The left side of the magazine well is cut-away for ease



Stowage of hexagonal key used to adjust height of cheekpiece and for barrel removal.

of magazine insertion in cramped or restricted space conditions. An ambidextrous magazine release of the paddle type is located at the rear of the magazine well. A detachable double-chamber, muzzle-brake is fitted as standard. Four flush cup sling points are fitted, two on the stock and one each repositionable on each side of the KeySlot forend tube.

AX MKIII detachable magazines are of CIP length and double-column, all magazines are of the same external dimension, being internally adjusted to fit the form of various other alternate calibers, this arrangement allows for the use of a single-size magazine well irrespective of caliber, avoiding the need for a magazine well adaptor and reduces the number of components that need to be changed when swapping calibers. AX MKIII magazines are of steel construction with polymer follower and are given a special coating for durability and corrosion resistance, magazine springs and followers are removable for cleaning. Magazine capacity is 10 rounds for all calibers and can also be top loaded through the rifle ejection port.

AX MKIII - Caliber availability, with barrel length/rifling twist

.338 Lapua Magnum	20/27in	1:9.35in
	(Base line caliber)	
.338 Norma Magnum	20/24/27in,	1:9.35in
.300 Norma Magnum	20/24/26in	1:8in
.300 Winchester Magnum	24/26in	1:11in
.308 Winchester	20/24/26in	1:12in
6.5 Creedmoor	20/24/26in	1:8.5in

AX ELR (Extreme Long-Range)

The AX ELR - Multi-Caliber Anti-Material Rifle is the most recent rifle of its type and caliber from AI and is a successor to their highly successful earlier AX 50 design. The AX ELR can be seen as the big brother of the AX MKIII, as both share the same design philosophy and multi-caliber functions. As offered, the AX ELR is configured to fire the .50 BMG (Browning Machine Gun) cartridge also widely known by its metric designation of 12.7 x 99 mm. Additional calibers are available on request.

Apart from the caliber, the larger size AX ELR differs in detail from the AX MKIII series as follows: It is fitted with a 45 MOA STANAG 4694/Mil Std 1913 action and forend rail. The bolt is of improved design with a bolt body diameter of 30 mm with a 6 lug, 60° short-throw bolt lift and fitted with the proven Al leaf spring extractor. To ensure consistent "cold shot" performance the free-floating barrel of the AX ELR is fitted to the action body by a large 37 mm diameter thread secured by a barrel clamp screw. In the unlikely event of a case failure, two pressure release ports to minimize blowback are located on top of the breech. The detachable muzzle-brake has been enlarged to triple-chamber size to accommodate the increase in caliber, the design of which has been optimized to reduce recoil, muzzle-flash and dust dispersion.

Stock design and mounting points are the same as for the AX MKIII, but with three flush cup sling-points fitted, one on the upper stock and one each repositionable on each side of the KeySlot forend tube. One barricade support is provided on the front face of the lower forend, rather than the two pro-



On the AX MKIII the flat bottomed forend grip features an Arca-Swiss style tripod mounting rail.



Shown is the AX MKIII ambidextrous safety-lever and bolt handle that cocks on open.



At top left can be seen the AX ELR three-position shroud style horizontal safety-lever which differs from that of the AX MKIII which pivots around a central axis. In the rear position bolt is locked in the closed position the firing pin is withdrawn and is blocked from moving forward. In the center or middle position, the bolt is unlocked, the firing pin is withdrawn and is blocked from moving forward.



vided with AX MKIII. The magazine capacity is again a double-stacked 10 rounds for all three calibers currently offered. Magazines are steel with durable protective coating and polymer follower, and like the AX MKIII, the left side of the magazine well is cut-away for ease of magazine insertion in cramped or

restricted space conditions.

AX ELR - Caliber availability, with barrel length/rifling twist:

.50 BMG	27in	1:15in
	(Base line calibre)	
.408 CheyTac	29in	1:12in
.375 CheyTac	29in	1:12in

The use of identical stocking arrangements for the AX MKIII and AX ELR and operating characteristics reduce operator training requirements, improved safety and handling, and a muscle-memory development in harsh operating conditions.

Changing calibers: The process of changing calibers has been



Emergency back-up sights are available for both the AX MKIII and AX ELR. Shown here is the folding backsight for the .338 Lapua Magnum AX MKIII. Sight markings are from 200-600 meters in 100 meter increments. The aperture port with red '2' is for quick or night alignment. The sight is adjustable for 'windage'.



Emergency back-up front sight for the AX MKIII which is adjustable for elevation. Front and rear sight bases are intended for mounting on a STANAG4694/Mil Std 1913 rail.



Right-hand side view of the base line model of AX ELR.

reduced to the minimum effort required, consistent with practicality and safety and is intended to be performed by the operator, no special tools or armorer assistance is required. AI's 'Quick-loc' barrel change system uses a hexagonal key stored in the cheekpiece (also used to remove

the octagonal tube/forend), to loosen the threaded barrel retention screw located on the right-hand side of the receiver below the breech area, the fitted barrel is unscrewed and then simply replaced with another of choice. The breech end of the barrel is threaded with a large diameter

thread with pre-set headspace. The firing pin and shroud are universal and only the bolt body needs to be changed depending on caliber. Having selected the appropriate caliber bolt body, the firing pin and shroud are inserted into the new bolt body and secured using a simple bayonet type fitting to



Left-hand side view of the AX ELR mounted on bipod, note cheekpiece is raised to provide head support at the correct level for the firer when using large objective lens optical sights.



The folding stock on both models folds to the right via a vertical hinge pin on the right side, when opened the extended stock is held securely place by a spring-loaded plunger.

OPTIONAL ACCESSORIES

- STANAG 4694/Mil Std accessory rails to attach to AI's KeySlot mounting system.
- Quick adjust butt spike
- Handstop with sling loop and flush-cup
- Suppressor
- Slings
- Transit cases, available in four tactical colors.
- Cleaning kit
- Back-up folding front and rear sights
- Buttpad spacers

complete the caliber change. Adding the requisite caliber magazine, the rifle is ready for use in the new caliber in a matter of minutes.

All major components of both rifles receive a protective Cera-kote advanced ceramic polymer firearm coating finish, enhancing corrosion resistance and durability. Currently, four colors are offered to meet individual user/terrain requirements: dark earth, AI pale brown, green, black and elite sand. **SADJ**

TECHNICAL SPECIFICATIONS

AX MKIII

Length (with 27in barrel and tactical muzzle-brake)	Stock Extended: 49.4in Stock folded: 40.55in
Weight	16.84lb with empty magazine, standard accessory rails, no scope, no bipod, with tactical muzzle-brake and 27in barrel.

Magazine capacity	10 x rounds, all calibres.
--------------------------	----------------------------

AX ELR

Length (with 27in barrel and tactical muzzle-brake and two 10mm spacers)	Stock Extended: 54.45in Stock folded: 45.08in
Weight	16.84lb with empty magazine, standard accessory rails, no scope, no bipod, with tactical muzzle-brake and 27in barrel.

Magazine capacity	10 x rounds, all calibres.
--------------------------	----------------------------



18-20 MAY 2022
Sands Expo, Singapore

Milipol Asia-Pacific

The Region's Leading International Event
For Homeland Security

www.milipolasiapacific.com

Incorporating

Commercial Security Asia

www.comsecasia.com

**The World's Leading Network
For Homeland Security Events**



PARIS (FRANCE)



DOHA (QATAR)



SINGAPORE



Supporting
Organisation



Organised By



Data-Driven

A Look at the MantisX Laser Training System

Story & Photography by Alton P. Chiu

Live- and dry-fire practice improves marksmanship when coupled with proper self-diagnostics, but that in itself is an acquired skill. Mantis products provide quantitative feedback that helps novices develop diagnostic skill while allowing seasoned students to explore different techniques in a data-driven fashion.

Laser Academy and the AR-15-specific Blackbeard fires a laser, scored on an accompanying app, to show the impact during dry-fire. MantisX is an accelerometer that helps diagnose problems, such as flinching, and even records the draw path from holster so users can find areas to improve upon there. In short, the former tools show where the shot went, and the latter shows how it got there. This article examines, first, the hardware and software, before evaluating them in use.

Mantis X10 Description

There are three models in the MantisX line of devices; the X2 is the base model that supports only dry-fire on pistols and rifles. The X3 adds live fire tracking. The X10, reviewed here, adds shotgun and archery to the list of features; the software also includes holster analysis, which we'll discuss later.

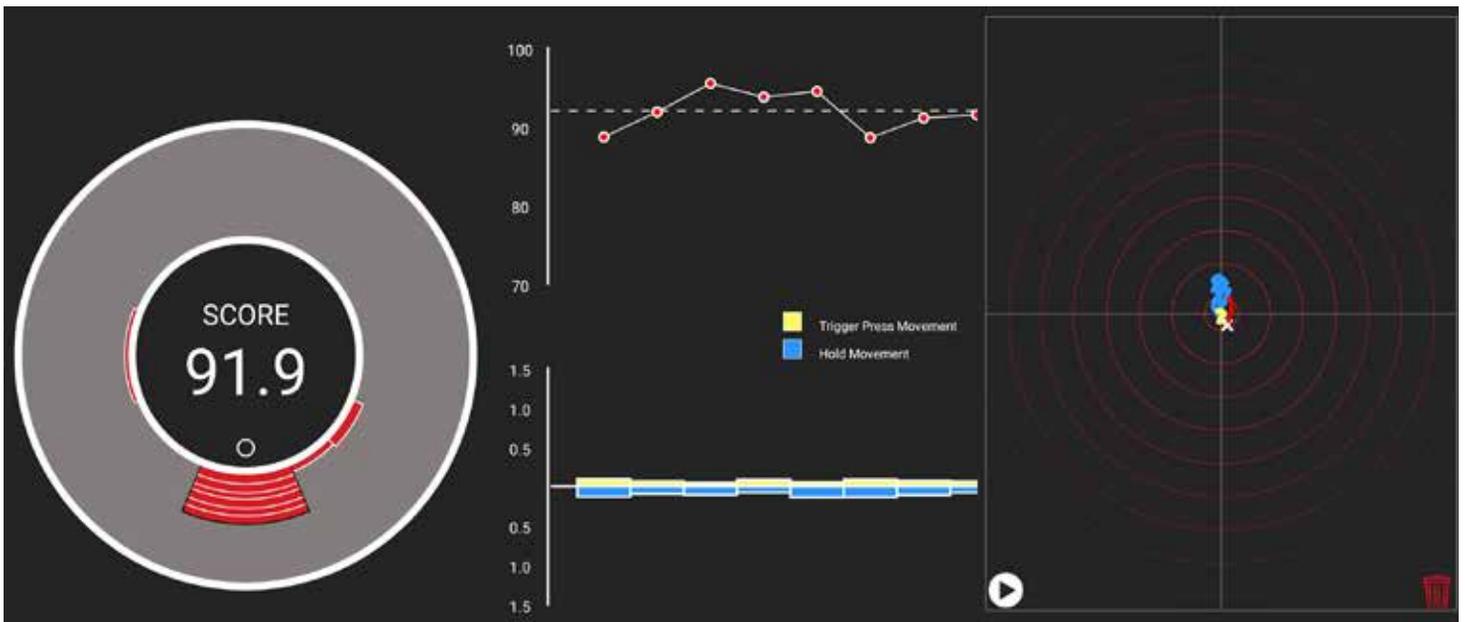
The hardware is a Bluetooth-enabled accelerometer attached to the firearm using a Picatinny rail interface that's paired to the MantisX smartphone app. It can be mounted facing



Didactics



Blackbeard battery in lower, laser emitter replaces BCG (*left*). 9mm laser training cartridge (*middle*). Mantis X10 mounted on magazine (*right*).



MantisX typical display. Wheel (left), Score vs Shot (top middle), Movement vs Shot (bottom middle), Trace View (right).

forward or backward, as long as the corresponding option is selected in the app. Its internal battery is recharged through a micro-USB connection. When mounted to a couple of Beretta M9A1 frames, there is a tiny amount of fore and aft movement, but that seems to have no effect in use. For pistols without railed dust covers, or holsters that cannot accommodate a pistol with the unit installed, one can use an optional MantisX magazine floor plate adapter that has a Picatinny rail on it. Barrel clamps are also available as accessories to mount the unit of rifles and shotguns.

The software half comes in form of the MantisX app available on Google Play for Android and App Store for iOS devices. Connecting the hardware to a mobile device requires both Bluetooth and location settings to be enabled; the purpose of the latter is perplexing, as well as battery-draining. Signing into a MantisX account allows the user to collate training history from multiple devices and sessions. An account is not required, but history from different users (for example, a husband and wife) are commingled, making trends harder to identify.

The app offers drills and courses. Drills work individual skills such as reloads and primary hand only. Courses require users to complete a set of drills within the allotted time or with a minimum score; more advanced courses raise the bar.

The core scoring algorithm measures movement during the following

three phases.

- Movement during sight alignment and sight picture acquisition, prior to application of trigger pressure.
- Movement while pressing trigger.
- Movement after the trigger breaks.

These phases are marked as blue, yellow, and red, respectively, in trace view of the app, with an "X" marking where the shot broke. As MantisX is only an accelerometer, it determines the bullseye as an average of sample data 0.15 to 0.25 seconds before the trigger breaks. In short, the score is driven by the gun's movement during the trigger press, regardless of sight alignment and sight picture. The implications of the system are discussed later in this article.

Feedback is presented in four ways:

- A "wheel" showing a polar plot of deviation between "X" and the bullseye for all shots, as well as possible problems with the trigger input. The user must take care to select the correct type of firearm, dominant hand, mounting direction, and mounting location of the device for appropriate feedback clues.
- Two scores per shot evaluating trigger movement, both before and during the trigger press, per shot.
- Trace view in cartesian coordinates, showing bullseye, "X", and movement of aforementioned three phases.
- Live trace view, showing movement as it happens.

The wheel is useful for spotting

trends; the accompanying graphic shows I tend to drive the pistol low, either from "heeling" due to excessive pinkie pressure or due to recoil anticipation. Trace view isolates the shot of interest for further investigation. I didn't find the other two views to add much, although trigger movement per shot is sometimes helpful for finding trends.

Laser Academy Description

The system uses a caliber-specific laser training cartridge that emits a laser from the bore onto a special target with a QR code for scoring by a smartphone running the app. This way, the user can tell where that shot would have impacted.

The training cartridge comes in 9x19, .40 S&W, .45 ACP, .380 ACP and 5.56/.223 Rem. The training cartridge has a step for controlling headspace and O-rings fore and aft to account for dimensional tolerance. Mantis recommends lightly lubricating these O-rings to prevent damage when inserting and removing the cartridge from the chamber. This soft interface could theoretically result in a drifting zero, but any such error is masked by the shooter's movements. There is no mechanical zeroing provision in the cartridge, but the app can apply an offset in the software to zero the laser's point of impact.

The cartridge requires three LR626 batteries to emit a red Class 3A, eye-safe laser when the firing pin strikes a button at the rear of the cartridge. These cartridges are not compatible

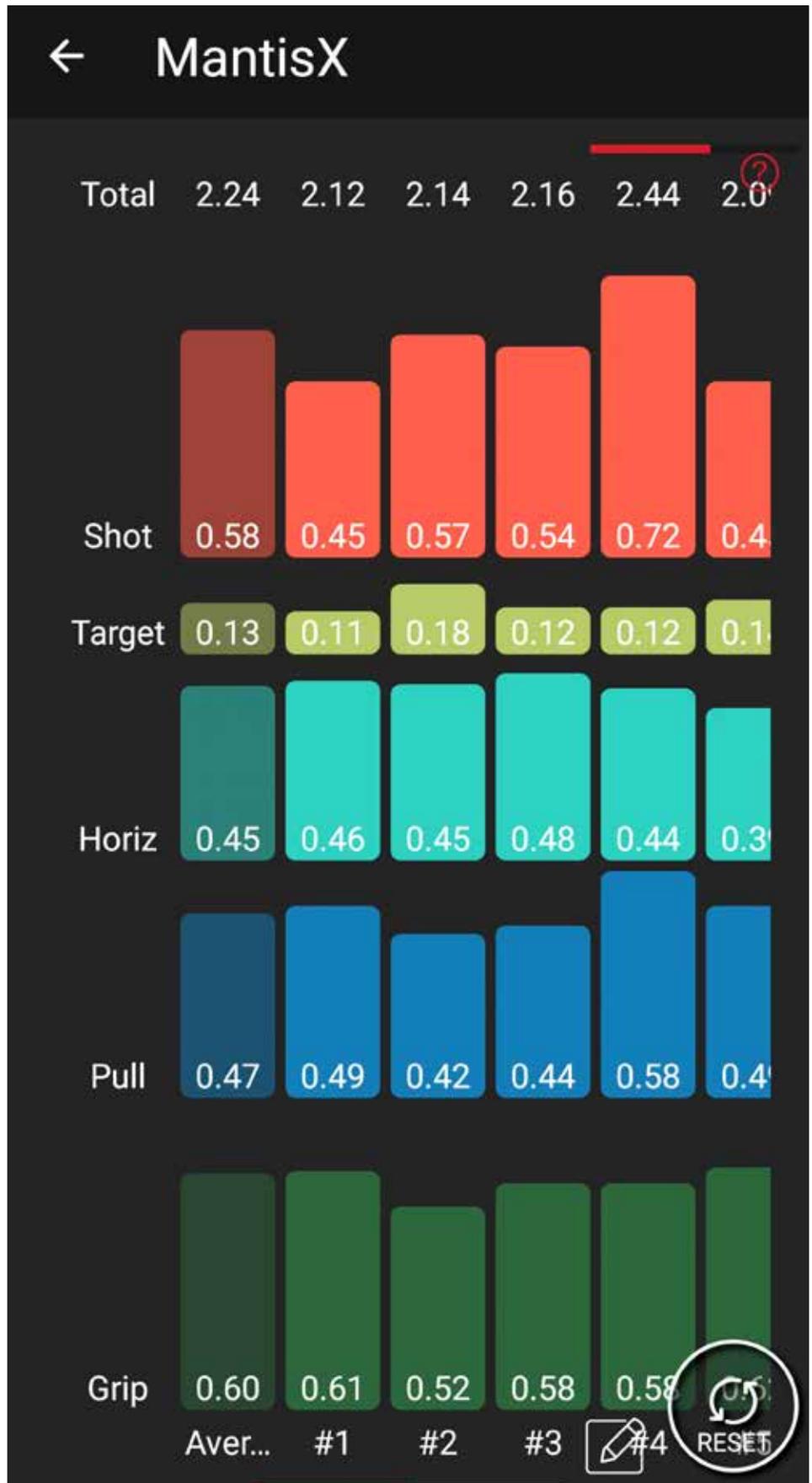
with Ruger SR series or Hi-Point pistols. The 9x19mm training cartridge works in my HK MP5K in addition to pistols, although the action must be manually re-cocked for every shot. This annoyance is addressed in the AR-15 specific Blackbeard.

The cartridge has no groove for the extractor to engage, so one can manipulate the slide to reset the action of a Glock without ejecting the training cartridge. To remove the training cartridge, use the provided wooden dowel to push it out.

The portable training kit comes with small tripod, smartphone holder, 5 x7-inch targets, one training cartridge of choice and the wooden rod used to push the training cartridge out of the chamber. Being a gorilla, I promptly stripped out the plastic 1/4-20 male screw of the tripod. The standard training kit adds a larger tripod that extends to standing height as well as 8 x 11-inch targets. The larger tripod uses twist-to-lock height adjustments and is very lightweight. For daily use, I prefer a heavy duty tripod like a Manfrotto 3051.

Like MantisX, the Laser Academy has its own app to be used with special QR marked targets so the scoring zones on IDPA target, or the correct target can be recognized in "hunt" mode. Some drills, such as bullseye, call for specific targets, and some targets without an accompanying drill (e.g., dot torture) can be shot in open training mode. Courses work the same way as the basic MantiX app and are a collection of drills held to a standard. Some drills, such as hunt and "holster draw", are locked behind "pro" modes. Purchasing only the laser training cartridge or the Blackbeard module plus smart targets will only allow training with open shooting, bullseye 5-shot, duel-single shot, and from guard/low ready – single rep drills. Pro drills come with the portable or standard kit. To help clearing and resetting the drill, one can put up a control target where shooting the marked box starts and stops the drill.

Zeroing is performed in the software. Because the cartridge is not guaranteed to seat in the chamber in the same orientation every time, and because of the soft nature of O-rings, one should recalibrate the system at each use. The app provides a tutorial where point of aim on screen is carefully selected (I prefer corners for a sharp reference), calibration shot fired,



MantisX holster analysis, time breakdown.

and the difference between selected point of aim and point of impact is computed. This delta is applied for all subsequent shots for scoring. When

changing distance or perspective dramatically, I found recalibration was necessary. To minimize perspective distortion, I placed my phone close to

the pistol.

While minor windage variation rarely shows up at dry fire distances, height-over-bore is very evident and requires calibration to remove for pistol training or set as desired for rifle training. For an iron-sighted pistol with minimal height-over-bore, I desire a converging zero where point-of-aim equals point-of-impact since that closely mimics live fire results. For rifles with significant height-over-bore, I elected to bake-in the necessary offset so I can train using CQB holdovers.

Blackbeard for AR-Style Rifles

Blackbeard is a device for AR-style rifles that functionally replaces the bolt-carrier group with a laser training cartridge while automatically resetting the hammer for follow-up shots. It replaces the bolt-carrier group and charging handle while the battery for resetting the hammer is shaped like a 20-round magazine and takes the place of the rifle's magazine. Both are bright red and easily recognizable as training devices.

Unlike the laser training cartridge, the Blackbeard device can be mechanically zeroed, but only at a limited range due to the diameter of the host rifle's .22 caliber bore (the exact range varies based on barrel length). Through the rifle ejection port, the Blackbeard laser is switched on continuously for zeroing. I elected to approximately center the windage and elevation and left the fine adjustment up to the software. Blackbeard pairs with the Laser Academy app, but be aware that "Pro" drills are locked unless purchased with a Laser Academy kit, or purchased separately in-app.

Mantis X10 In Use

The app presents daily challenges to drive engagement and keep things fresh. To give some examples where MantisX measurements enabled a data-driven approach, I found the Compressed Surprise Break drill useful when helping a novice find proper finger placement on the trigger face. The novice had yet to develop the diagnostic skill of memorizing the sight picture when the trigger breaks, and thus was unable to tell whether he was pulling left or right. X10 provided the data to adjust without guessing. Similarly, I could easily call his shots when shooting a scoped rifle thanks to magnification and fine crosshairs but had trouble with iron-sighted ri-

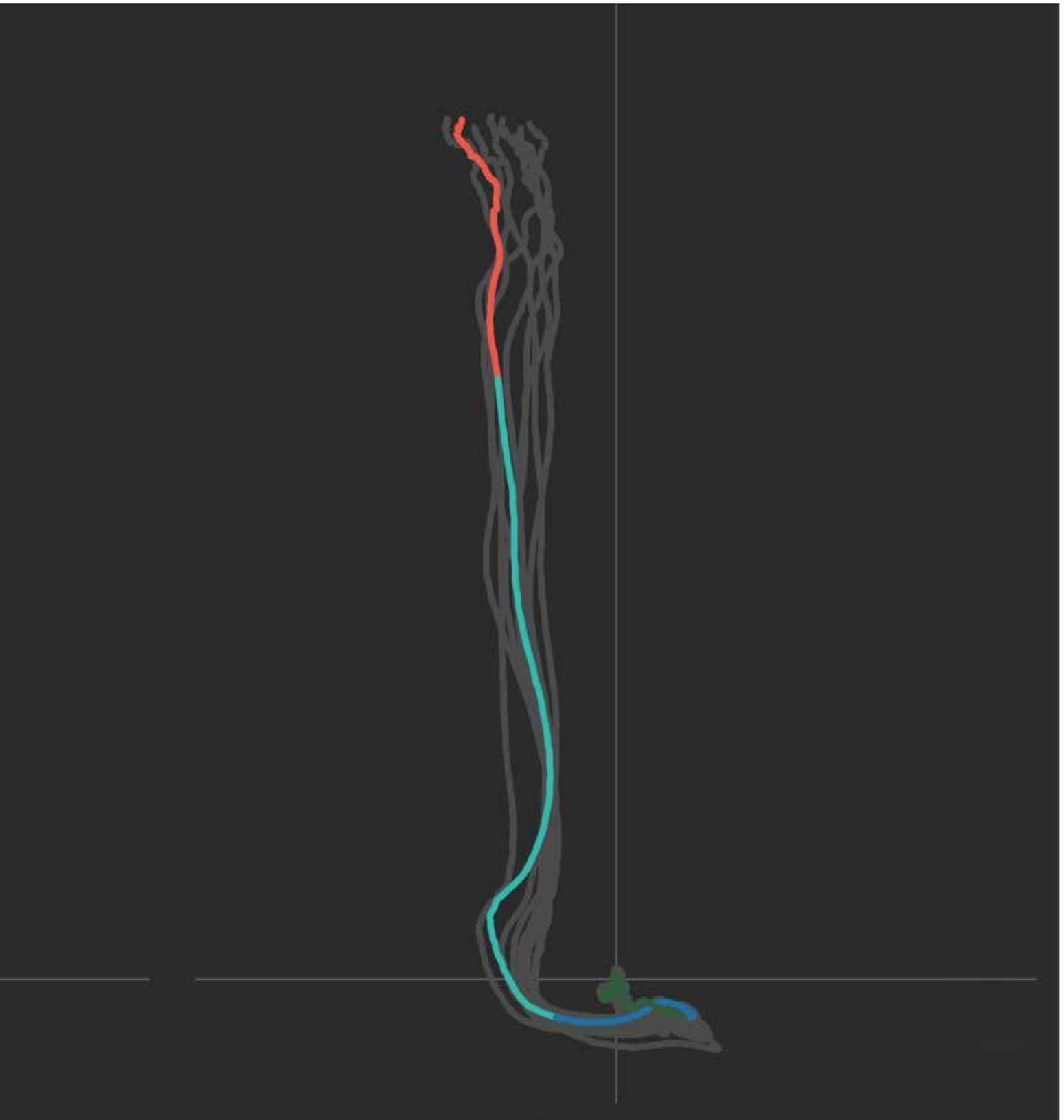
MantisX holster analysis, trace view. Pulling gun horizontally with inconsistent movement (*left*), more straight out of holster with consistent movement (*right*).



fles. X10 helped me find his natural respiratory pause, and gain confidence that changes in his sight picture due to the lighting angle on the front sightpost led to a different point of impact, rather than flinching or not breathing correctly.

Holster analysis, only available with the X10 version, maps the path

of the pistol in space from holster to trigger break, separating actions down to grip, pull (draw), horizontal (presentation), target acquisition, and shot. The time is broken down into each phase where one can recognize areas of improvement. Trace view maps the draw path where I recognized a horizontal movement

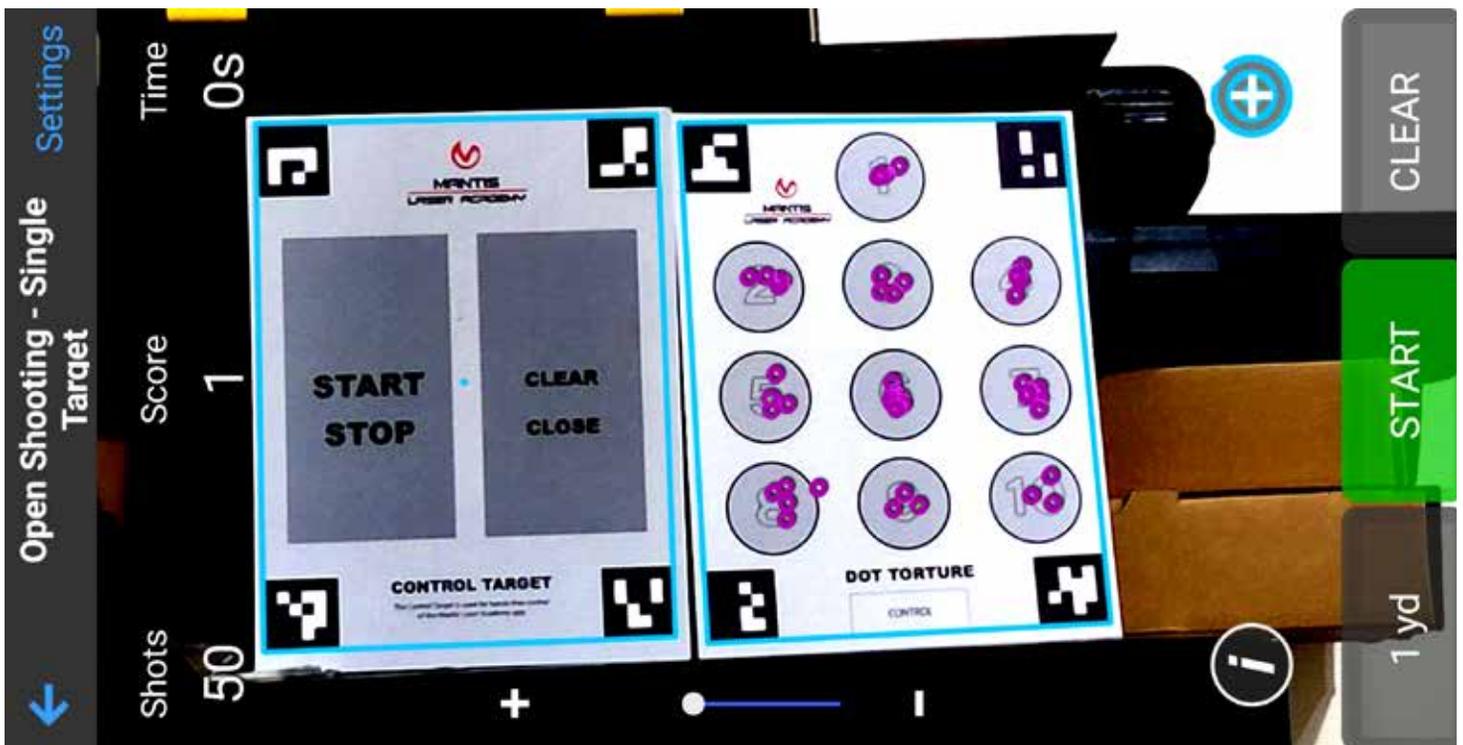


immediately after clearing the holster (on the chart, it's the scalloped shape at the lower portion of turquoise line) and in-holster because I was pulling the pistol away from my body. This twisted the holster, adding friction and slowing the draw, as well as adding distance to the draw path and costing time. Slowing myself down

and focusing on the draw, I was able to reduce the variations and shrink the scallop. While many repetitions are necessary to convert that into speed, there is now data to analyze why something did, or did not, work.

For verifying accurate shot placement, I found MantisX more useful in the bullseye context than for dynam-

ic movements, such as drawing from a holster. As previously discussed, the algorithm selects the bullseye using data 0.15-0.25 seconds prior to trigger break. I aggressively roll the double-action trigger on my Beretta 92 while presenting, and trigger often break while the pistol is moving since I rely on proper sight picture,



Laser Academy, open training. Control Target to start/stop drill (left), Dot Torture target (right).

vice the end of presentation to trigger the shot. This causes a low score that does not bear out in live fire or in the Laser Academy app. I observed diagnostic tips of heeling and pushing (in anticipation of recoil). While that makes sense in the bullseye context, and why the advice was given to user (I was still presenting the gun, usually up and out, when trigger broke), they do not apply in this context. The MantisX has no concept of sight alignment and sight picture, so it assumes a steady gun as having achieved those; this assumption is correct for bullseye but not for more dynamic work.

In essence, the scoring algorithm trains users for the perfect bullseye shot with no mechanism for determining "good enough", nor does it account for the fact that a moving gun (e.g. from recoil) with proper sight picture will still acceptably hit the point-of-aim. Users must recognize that different scenarios call for different optimization cost functions; a 600-meter rifle shot should penalize trigger disturbance more than time, but a gunfight-in-a-phone-booth should emphasize time more than a funky trigger pull. When used in conjunction with the Laser Academy app, users see a more complete picture and can make informed decisions for what's an acceptable trade-off in a given situation.

Laser Academy and Blackbeard in Use

Because the Laser Academy app relies on the smartphone camera to recognize the laser, my experience may not be universally applicable across all devices. The app had difficulty coping with high contrast scenes. In a brightly lit room from direct sun, the app had trouble picking up the laser. When trying to use weapon lights, the app cannot cope with high contrast. Similarly, visible pointers from my ZenitCo Perst-3 and SureFire XVL2-IRC lasers registered as hits when keyed, causing interference with the training laser. To train active aiming with night vision devices, one must rely on MantisX alone or use IR pointers in a moderately lit room with daylight filter-equipped goggles.

The ability to instantly train inside one's own dwelling with no travel time or cost allowed me to experiment and try techniques newly I discovered online. For example, I learned my limits with point shooting. Without these tools, this would only be possible with live fire and a pile of ammunition.

The ability to shoot multiple times while walking with Blackbeard was also instrumental in helping me practice shooting on the move. However, it does not reset the trigger as fast as a reciprocating bolt during live fire. This causes users to feel distinct "clicks" through the trigger face. When rapid firing, I wasn't bothered

as my finger aggressively moves forward to prepare for the next shot. Those who shoot to reset may feel differently, as the cue for "ready to shoot" is feeling for the reset click, and the clicks from Blackbeard may cause confusion. In precision shooting, I'm accustomed to pinning the trigger to the rear. Blackbeard reset motions were not an impediment, but just something to get used to.

While working on speed, these tools kept me honest. Like racing a car, one might feel faster with tense muscles and abrupt inputs. However, a timer coupled with trajectory analysis, or a target show that smooth and deliberate movements keep the car on the racing line, and hits in the A-zone.

Conclusion

Mantis provides a suite of tools for users to dry-fire at home and hone their skills in a data-driven manner. Laser Academy and Blackbeard show where the shot landed, while MantisX shows how the shot got there. The analytic nature of MantisX and immediate feedback from Laser Academy lowers the barrier of entry into effective training and speeds up the learning process. Students of marksmanship, no matter their skill level, can benefit from these aids. With MantisX, user must be cognizant of its limitation, least it overly slows one down. **SADJ**

Scan the QR code



ARMS AND SECURITY

XVIII INTERNATIONAL EXHIBITION

September 27-30, 2022
Ukraine, Kyiv

General Information Partner



Special Information Partner



Technical Partner



INTERNATIONAL EXHIBITION CENTRE
Ukraine, Kyiv, Brovarskiy Ave., 15
Livoberezhna underground station

+38 044 201 11 63
✉ zbroya@iec-expo.com.ua
www.iec-expo.com.ua

SHOW REPORT: ADEX

Story & Photography by Heebum Hong

SNT Motiv's improved STC-16 Carbine, which is now under army test for potential next-gen special operations carbine.





Improved SNT Motiv STC-16 has upgraded, mostly ambidextrous controls. The bolt stop is also ambidextrous.

Aerospace-Defense Expo (ADEX) is a biannual defense exhibition in South Korea. Originally started as the Seoul Air Show, it soon became an airshow plus defense expo. While displaying many aerospace products, it also has many non-aerospace items.

The last ADEX was ADEX 2019, which was the last pre-COVID defense expo in Korea. While COVID disrupted many things, as it did everywhere else, in 2020 another defense expo, DX Korea, managed to open, albeit on a reduced scale. And, in 2021, ADEX also managed to happen, also, albeit on a smaller scale.

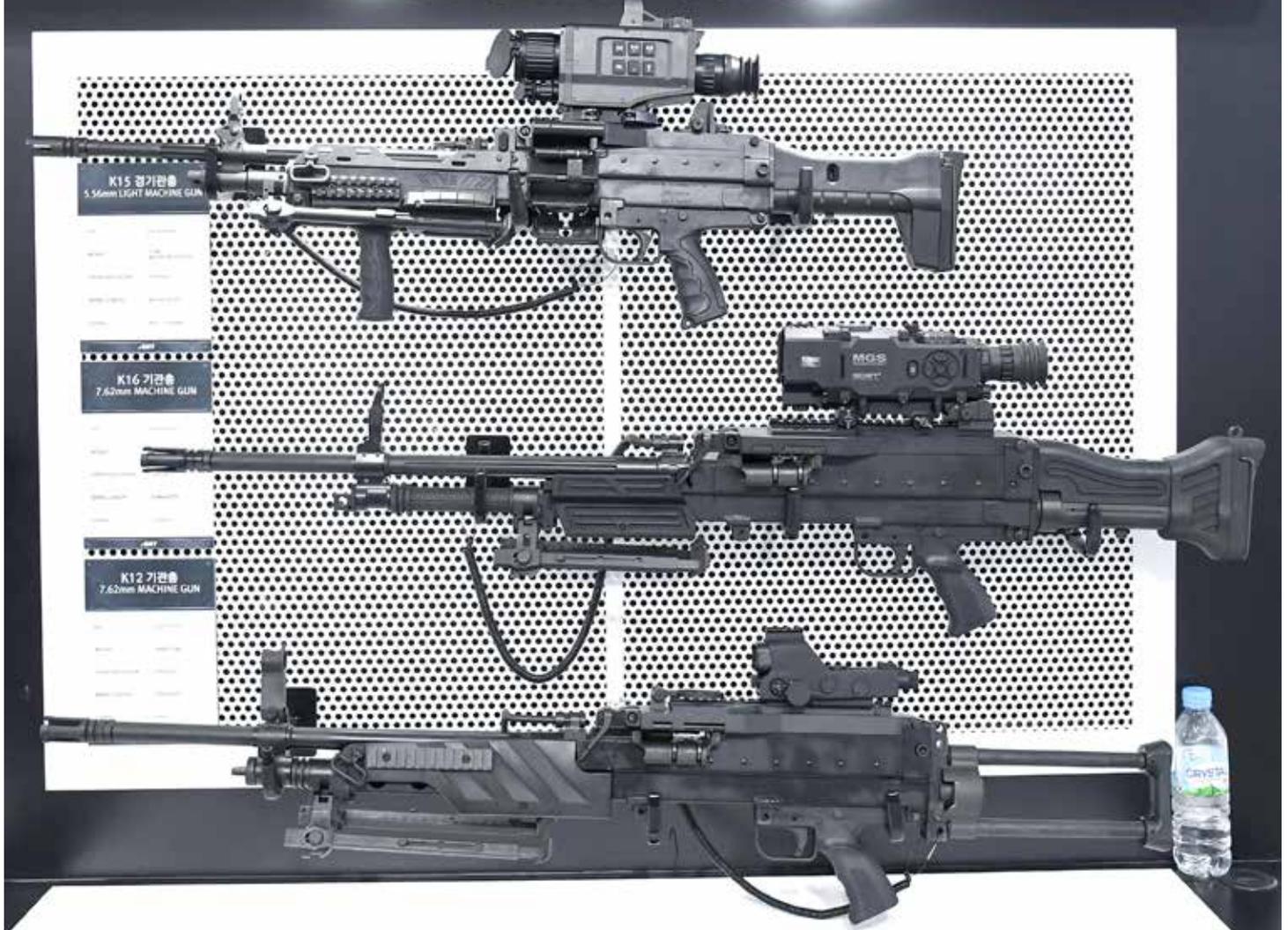
Even with a reduced scale, it's still a big show; with 440 companies representing 28 countries, it hosted 120,000 visitors during its five days, showing products that ranged from supersonic stealth fighters to tanks,



The mag catch is ambidextrous on the improved SNT Motiv STC-16.

SHOW REPORT: ADEX

MACHINE GUNS



The SNT Motiv K-16 medium machine gun (middle).

missiles, and drones. But, among the big-ticket items, there were plenty of small arms system represented.

As you may already know, South Korea has its own certified military small arms manufacturers; SNT Motiv (formerly known as Daewoo Precision) and Dasan Machineries. During 2020, Dasan won the contract for the Republic of Korea (RoK) Army Special Warfare command's carbine program with its DSAR-15PC carbine.

But, in summer 2021, things changed drastically; Dasan was reportedly caught stealing military secrets during their Special Operations Carbine trial. During ADEX, the South Korean Defense Acquisition Program Administration (the agency that han-



SNT Motiv's STSM-21 SMG



SNT Motiv's STSR-20 .50 cal. semi-auto, anti-material sniper rifle

dles RoK military procurement) and the Korean military discussed the fate of Dasan's contract.

This gave SNT Motiv, the makers of the STC-16 carbine that failed to win the carbine competition against Dasan's DSAR-15PC, a glimmer of hope. Since the new carbine program was already a hurried attempt to replace the RoK's obsolete K1A carbines, the Korean military doesn't appear to have many options moving forward. One option might be choosing a further refined S&T Motiv STC-16.

SNT Motiv STC-16

It was against this backdrop that SNT Motiv displayed its improved STC-16. It features improved controls (ambidextrous and redesigned selector, magazine catch, bolt stop, etc.), a redesigned receiver, updated handguard, and redesigned gas regulator. In early January 2022, Dasan dropped out of the competition, and S&T Motiv's improved STC-16 is now undergoing military testing. SNT Motiv says this version is improved so much that it performs like a different gun when compared to the previously submitted version.



The SNT Motiv STSM-21 has newly developed delayed blowback mechanism.



Dasan's DSAR-10 lightweight .308 rifle.

SHOW REPORT: ADEX



Dasan's XR-21(7.62x51) and XR-22 (.277 Fury) battle rifles.

SNT Motiv K16

An improved STC-16 was not the only thing we found at SNT Motiv's booth. First, the new K16 machine gun. The K16 is a new medium machine gun adopted by the Korean army. The RoK army used the M60 family of medium machine guns for armored vehicles and aircraft, and the K3 light machine gun in infantry roles. But the K3 is too weak for platoon-and-above levels. So, while K3 (as a squad automatic weapon role) would be replaced by the 5.56mm K15 light machine gun, the M60 family would be replaced by the K16 series.

The K16 is based upon the K12, which was developed and manu-

factured for RoK Army helicopters. It's a typical 7.62x51mm machine gun weighing around 23 pounds. Since it's for infantry, it features an adjustable buttstock and a pistol grip. Not only for infantry, the K16 is offered as the K16D and K16E, vehicle crew/aircraft door gunner and co-axial variants, respectively.

SNT Motiv STSR-20

SNT Motiv also displayed a new anti-material sniper rifle, the STSR-20. It's surprisingly similar to the Barrett M82 series of weapons, using the same .50 caliber ammunition. It's being developed under the requirements given by the RoK army special forces, and it's still in

its prototype stage.

SNT Motiv 6.8 SPC K2C1

They also displayed a 6.8mm version of their K2C1 rifles as their counterpart to the U.S. Army's Next Generation Squad Weapon (NGSW) program, but since it's chambered in 6.8 SPC and not 6.8 NGSW (as specified by the U.S. Army), we don't know why they are calling it a "counterpart" to NGSW.

SNT Motiv STSM-21

Another interesting weapon they displayed was the STSM-21 submachine gun. It's also an improved version, based upon the one displayed at last year's DX Korea. While generally similar, it featured improved



Dasan's XK-17 medium machine gun.

controls (charging handle, selector, magazine catch), redesigned magwell, and above all the other things, a new operating mechanism.

The previous STSM-21 prototype used a direct blowback system, which had a cyclic rate of around 1,100 rounds/min. The updated version features a new delayed blowback system, which is similar to CMMG's radial delayed blowback mechanism with a rotating bolt. With it, the gun feels somewhat similar to an MP5, or other delayed blowback submachine gun.

While the mood in SNT Motiv's booth was upbeat, the mood in Dasan's booth was considerably less so. Unlike last year, their military contract was on the verge of collapse (which it did after ADEX), and their company president was now convicted of cheating on that government contract, they had every reason

to be gloomy. Despite this, they presented a few new items.

Dasan XR-22

Unlike SNT Motiv, Dasan introduced an NGSW-related product, the XR-22. This is basically a piston-driven AR-10-based rifle using the 6.8x51mm SIG Fury round. While it features a long barrel (more than 20 inches), it is designed as select-fire battle rifle, so we can expect other carbine variants, as well. They also showed their XR-21; basically the same gun, but chambered in 7.62x51mm.

Dasan DSAR-10L

Another weapon shown was DSAR-10L. This is semi-auto only .308 rifle, but with a lightweight design and material. One version has a carbon fiber M-Lok handguard and weighs around 6.6 pounds, almost as light as an M16A1.

Dasan XK-17

While Dasan competed against

SNT Motiv for light- and medium-machine gun contracts and eventually lost, they haven't stopped developing their machine gun program. They brought their new machine gun, the XK-17, to the show. It's similar to the M240L in appearance, but internally it is more similar to a PKM or a Maximi, using a rotating bolt. Also, it featured a short feed cover that leaves optics undisturbed during reloading.

Kongsberg M72EC

While we had no foreign small arms companies displaying at the show, the Norwegian company Kongsberg displayed its M72EC anti-tank weapon. The M72EC is the latest version of the M72 LAW family with increased penetration performance, pretty similar to the AT4's (M136) penetration performance. Korean army still retained some Turkish made HAR-66 (a variant of the M72 family), but the chance of

SHOW REPORT: ADEX



Kongsberg M72EC

the Korean army actually adopting the M72EC is not that high due to its preference for indigenous infantry weapons.

That's it from ADEX 2021 in terms of small arms, but this show also features almost everything from drones to stealth fighters. It would be worth

attending future shows if you're interested in the Korea and Asian defense markets. **SADJ**

ADEX: Show Master Info

Location

Seoul, South Korea

Website

seouladex.com

Next Show

17~22 Oct 2023

Hotel Hints

There's not much tourist/business accommodations around the site. You can find some in SeongNam city, closest municipality around the site, but we recommend taking hotels in southern areas of Seoul, since it's not that far from the site and way more choice.

Power & Plug Types

220v, with EU-compatible two-prong plug

Public Safety

Very good. Almost no need to worry about crime, even very late at night.

Currency Type

Korean Won(KRW): 1\$=around 1,190 KRW
Price rate almost similar to US.

Getting Around

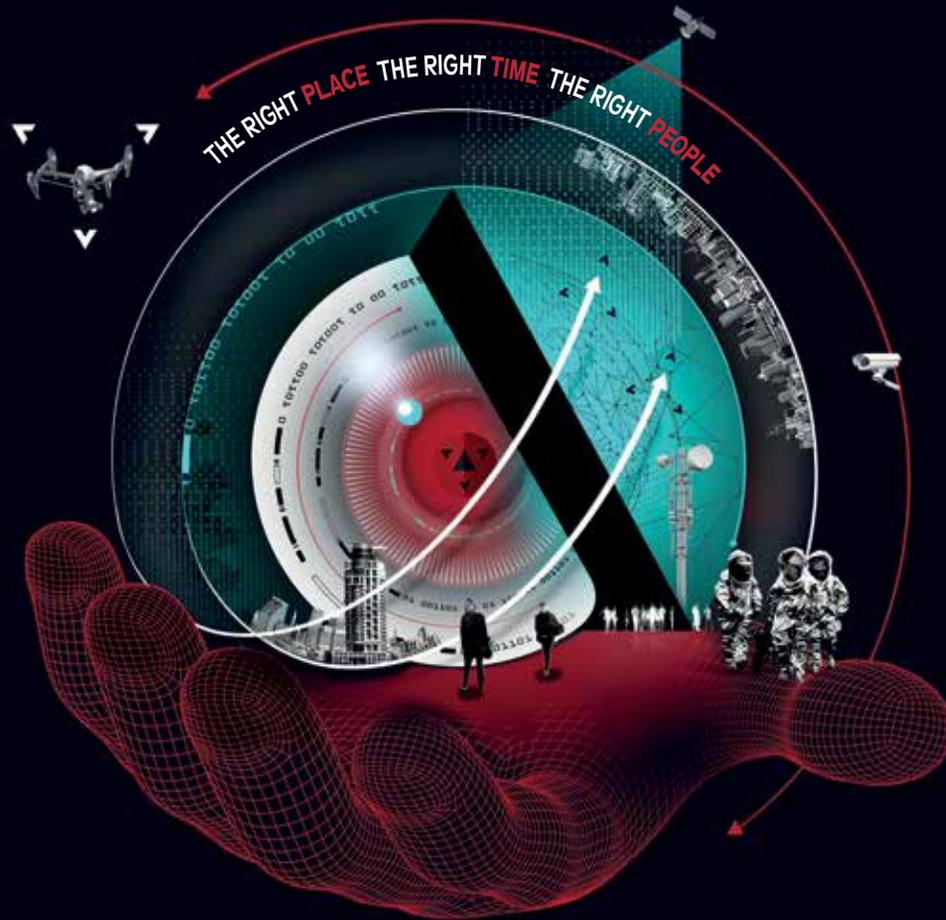
Buses and subway available. Using No.8 subway line and take off at Moran station or No.3 subway line and take off at Pangyo station. You can use shuttle service or using taxi from the station to the site(Seoul Air Port). Using rental car is possible but very difficult due to severe lack of parking spaces

COVID Quarantine

You need to monitor the quarantine regulation on the internet, since it can be changed. At press time you need to have PCR test result within 48hrs before your flight and have to have 10 days self-quarantine upon arrival.

NOTE: All information subject to change. Go to seouladex.com for up-to-date information.

ISRAEL'S **LARGEST** HLS, DEFENCE & CYBER **EXHIBITION**



MARCH 21-23

2022

TEL-AVIV **ISRAEL**

ISDEF
ISRAEL DEFENSE & HLS EXPO

www.isdefexpo.com



Confiscated detonators and Pen Guns

Pen Guns of K

By Mathew Moss

In recent weeks we've seen a lot of interest in Afghan pen guns stemming from an AFP story picked up by numerous outlets reporting on pen guns confiscated in Kabul. The clandestine nature of the pen guns, no doubt, piquing international interest. AFP or Agence France-Presse is an international news agency and the story was picked up by news outlets around the world including the U.S., Europe, the Middle East and Asia.

According to the AFP report Kabul's Criminal Investigation Department (CID) confiscated 48 of these pen guns along with several "sticky bombs", which were reportedly intended to be planted under vehicles. According to Interior Ministry spokesperson Tariq Arian, "the terrorists wanted to use these weapons in complex-target killings in the capital. The discovery of the hideout prevented a number of targeted killings in Kabul."

According to Arian, the con-

fiscated cache of weapons also included, "Two machine guns, four magnetic mines, and a 9-meter-long incendiary device." Arian shared a number of photographs on his twitter account, shared here, they also include what appear to be a large number of detonators.

Interestingly, Afghanistan's interior ministry has not shared any photographs of the confiscated pen guns on its social media pages. The ministry frequently posts images of arrested



TARIQ ARIAN/AFGHAN MINISTRY OF THE INTERIOR

abul

suspects and captured weapons and explosives. The news of the pen gun confiscation was not featured on the ministry's website either.

Despite the 48 pen guns reportedly discovered, just 17 are shown in the photographs released. However, some of the other weapons captured are also absent from the images. The design of the single-shot pen guns is simple, they appear to have a linear striker which is pulled to the rear by the placement of a single round of ammunition. Cocking is done via the metal bulb or the plunger on the bottom version. The



SILAH REPORT REFERENCE DATABASE

Examples of .32 caliber novelty pen guns made in Kobani, Syria. Note the simple construction of the receiver body, with the front tube being unscrewed to allow the placement of a single round of ammunition. Cocking is done via the metal bulb or the plunger on the bottom version.



BADAR ARMS COMPANY

A pen gun from Darra, manufactured by the Badar Arms Company. The basic design appears to be very similar with an in-line striker.

user than releases the striker, allowing it to go forward and ignite the cartridge inside the pen. The caliber of the pen guns is unclear although from the images available it appears to be a small diameter round – perhaps .22 caliber or .25 ACP (6.35×16mmSR).

The Afghan National Police operation took place on 19th-20th September, following a recent surge in assassination attempts. An unnamed CID official told the AFP that, “more than 40 people have been killed in targeted assassinations in the past six months in Kabul alone,” it is believed that these assassinations are being

carried out by Taliban-linked groups. The single-shot, small caliber pen guns are believed to have been used in a number of these assassinations. The nature of the weapons means that while they are useful clandestine tools they also require the user to be very close to their target – directly in contact, in some cases.

Although pen guns can definitely be used as tools of covert assassination, within the wider regions of Central Asia and the Middle East they tend to be more often of a novelty among gunmakers and collectors. Examples shown below were fabricated by a

gunsmith in the Syrian city of Kobani, chambered in .32 ACP.

Similar designs to that confiscated in Kabul have been seen for sale in Darra Adamkhel, and in Kabul, for many years. The origins, however, of the recently confiscated weapons have not been confirmed.

* * *

This article originally appeared at [Silah Report](#), a project of Armament Research Services (ARES) monitoring arms and munitions developments in the Middle East, North Africa, and Central Asia. More original material is available at [silahreport.com](#)



The Honorary Patronage
of the President
of the Republic of Poland
Andrzej Duda

Strategic partner
 **PGZ**

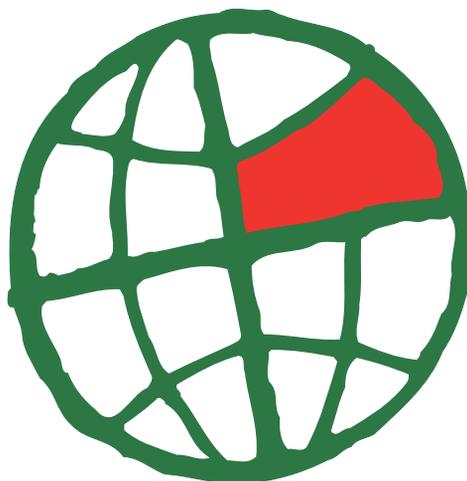
 **Targi Kielce**
exhibition & congress centre

30
YEARS

m s p o



■ RELATIONS ■ CONTACTS ■ BUSINESS



International Defence Industry Exhibition
6-9 / 09 / 2022

www.mspo.pl



M240 test gun with 250 round compliments ready for testing.

Top Gun?

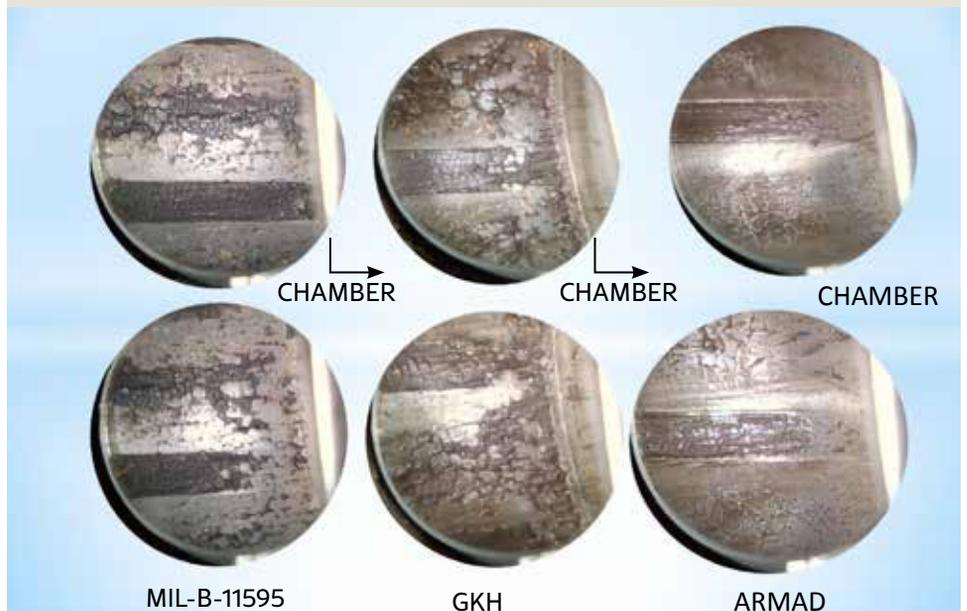
French Material Tops U.S. in Gun Barrel Life Test

By George Kontis
Photography by Aubert and Duval

In the early 2010s, two French metallurgists at Aubert & Duval (A&D) steel company proposed a study to develop a new steel alloy for gun barrels. Their goal was to develop a new high strength steel which would allow barrel designers to reduce barrel weight and extended barrel life — especially for high rate of fire applications.

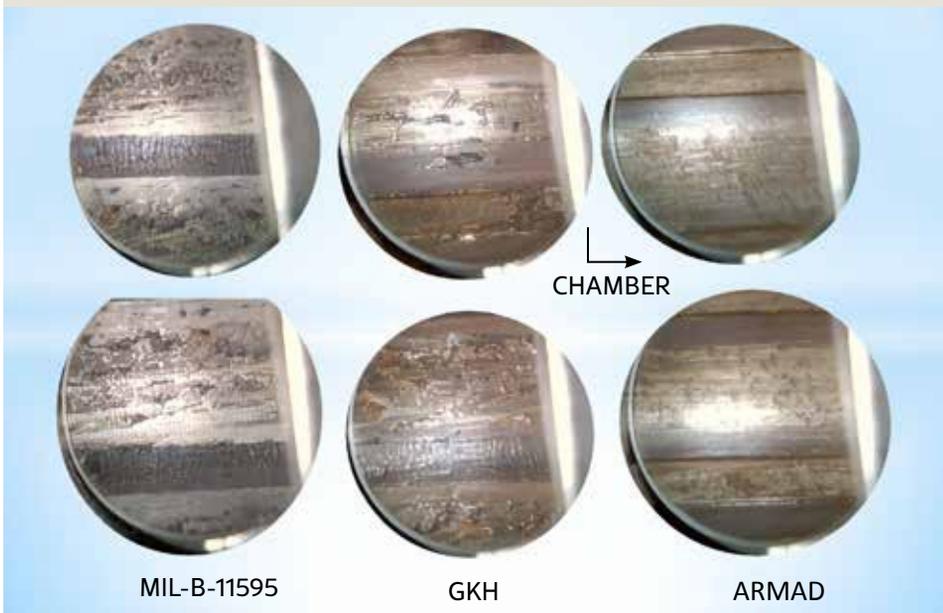
It was a gutsy undertaking because their idea was to use different amounts of the exact same elements found in almost all current gun barrels. Alloys with these elements have demonstrated little advancement since World War II. They had no plans to incorporate any of the refractory elements like cobalt, tungsten, and tantalum, even though studies have shown these elements can be useful in extending barrel life. Rather, they planned to improve on an existing

THROAT after 20 thousand rounds



Comparative bore damage at throat shows minimum wear for ARMAD after 20 thousand rounds.

THROAT + 25mm



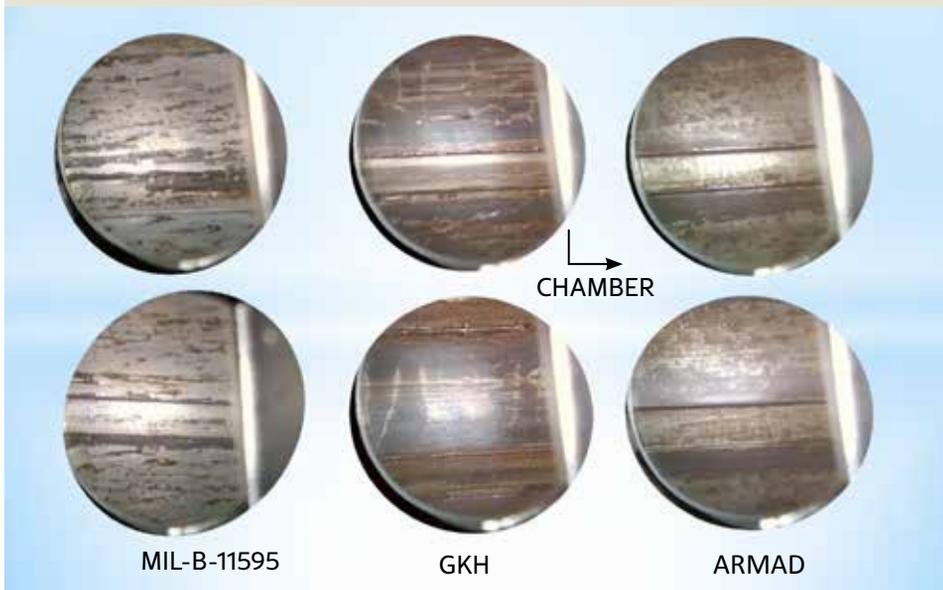
MIL-B-11595

GKH

ARMAD

ARMAD exhibits less bore damage than GKH or Mil-B-11595 after 20 thousand rounds.

THROAT + 50mm



MIL-B-11595

GKH

ARMAD

ARMAD exhibits less bore damage than GKH or Mil-B-11595 after 20 thousand rounds.

hammer forge grade gun barrel steel, GKH. The development of GKH having been undertaken by A&D in cooperation with the Austrian hammer forge manufacturer, GFM.

With high levels of chromium and molybdenum, GKH demonstrated its ability to maintain high strength at elevated temperatures. GKH had become a combat proven barrel material and a

preferred alloy for high rate-of-fire applications. The two metallurgists convinced A&D management they could make an even better steel and received financial backing for the development.

ARMAD and GKH

After a seven-year effort, the typical time required for the development of any new alloy, ARMAD was introduced. The two metallurgists

received U.S. and foreign patents on its formulation and production process. While the chemical makeup of ARMAD is almost identical to GKH, ARMAD's chemistry was tailored to have a 77° F higher tempering temperature. This would allow the barrel to reach higher temperature levels before hitting the tempering temperature—a critical point where a steel will not return to its original hardness after cooling. All steels simultaneously lose strength and hardness as temperature increases so this relationship, called "hot hardness", is recorded. A higher hot hardness means the barrel will retain strength at high temperature and gives barrel designers the opportunity to make lighter barrels for severe firing schedules. By fine tuning the chemistry of ARMAD, they were able to achieve a 27% improvement over GKH.

From a metallurgical standpoint, the properties of ARMAD promised to be superior to any barrel steel used by U.S. manufacturers, or those from anywhere else, for that matter. Yet there was one concern. To achieve these improved properties, barrels would need to be fabricated at a higher hardness level than barrels currently produced today. Before the drilling operation, barrel stock is held within a prescribed Rockwell C (Rc) hardness range, which is generally between Rc 28-Rc 32. (As points of reference, the hardness of a hand file is Rc 60 and steel is considered "dead soft" at Rc 20 and below.) The improved properties of ARMAD could only be achieved if the finished barrel was nominally at Rc 41. Machining at the preferred lower hardness level and hardening afterwards is possible but distortion would be inevitable. Who would want a machine gun with a crooked barrel?

Barrel Maker Challenge

When A&D announced their new steel had to be machined at Rockwell C 41, comments from barrel manufacturers were not encouraging. While some claimed gun drilling the bore would not be possible, others were convinced the rifling button would break free from its attachment rod and become stuck in the bore. Those who rifled by cutting a single groove at a time were worried the higher hardness material would be too hard to cut. Hammer forge barrel makers feared they would break expensive

hammers, even though these forges are designed to cease operation if hammering loads are too high.

While these were all very legitimate concerns, ARMAD's impressive mechanical properties at the higher hardness enticed a few to make investigative trials. Some were motivated by funding from A&D. In the end, they found they could drill and ream with only minor machine adjustments. Button rifled and cut rifled barrels were produced and hammer forgers reported success, as well.

With manufacturing methodology proven, it was time for comparative trials. A&D decided they would pit ARMAD and GKH against the U.S. government's best gun barrel steel, CrMoV, from the governing specification Mil-B-11595. CrMoV is available commercially as 41V45 and is highly regarded in the sporting industry. Aubert & Duval has facilities for manufacturing huge cannon barrel tubes but no capability at all in building small arms barrels. A&D needed to find a reliable company who could produce machine gun barrels and conduct an independent test to evaluate barrel life.

Ohio Ordnance Works Selected for Trials

A well-respected manufacturer, Ohio Ordnance Works of Chardon, Ohio, agreed to the undertaking. Besides .50 caliber and 5.56mm machine guns, Ohio Ordnance Works builds the 7.26mm M240 (Mag-58) machine gun and has a solid reputation worldwide for quality and performance. They agreed to produce and test M240 barrels from ARMAD, GKH, and Mil-B-11595. Given the manufacturing unknowns in producing the harder ARMAD barrels, it would be a "best effort" project to provide either cut rifled or button rifled barrels, whichever rifling technology worked best.

After making minor machining adjustments for the harder ARMAD material, Ohio Ordnance delivered barrels by both button and cut rifling. Four barrels with hard chrome plated bores were presented for the 60,000-round test: ARMAD barrels at Rc 40 and Rc 45, a GKH barrel at Rc 28 and a Mil-B-11595 barrel at Rc 30. To test 20,000 rounds per barrel, one of the four had to be saved for another day, and the Rc 40 ARMAD barrel was selected over the harder Rc 45 barrel. The reasoning was simple. The softer of these would be easier to manufacture and thus more



Barrels readied for testing.



A&D Sales Manager, John Tracy, links ammunition for 250 round compliments.



Test barrels at completion of 60,000 round test.



Muzzle velocity measured every 250 rounds.

attractive to a wider range of manufacturers. Additionally, testing at the lower hardness level would validate any life improvement with expectations of equal or better performance at higher hardness levels.

Testing

In order to compare barrel life between different materials, it is of paramount importance to subject barrels to the same exact test. The endurance test schedule from the M240 prescribed in the governing military specification was selected as it is considered a gold standard test for barrel life evaluation. It is a test Ohio Ordnance Works has conducted numerous times.

Each barrel would be subjected to the same firing schedule for 20,000 rounds with periodic targeting, and muzzle velocity recordings. Each barrel was to be fired 250 rounds in 10-12 round bursts followed by a few seconds cooling. When 250 rounds were reached, the barrel would be removed and cooled to ambient temperature before continuing the test.

Per the specification, a barrel is considered to have failed when it reaches one of three criteria: One, if the average muzzle velocity drops more

than 200 feet/sec (61 m/s) below the average of the first ten rounds fired through the barrel. Two, if 20% of the rounds exhibit yaw of 15° or more, and three, If the extreme spread of impacted rounds measured on a 100 meter target exceed specification.

While these three failure criteria are used by the government and manufacturers, in the field this level of testing is impractical. Armorers are supplied with two simple plug type gages for insertion into either end of the barrel. One gage measures wear at the throat and muzzle and the other is for wear at the bore. The gages are marked with lines for "Warning" and "Reject" so the armorer can determine barrel failure or can estimate remaining barrel life. The test protocol used by Ohio Ordnance Works requires these field gages be used at the firing range to gauge wear throughout the test. Every 1250 rounds the distance from the end of the barrel to the "Reject" mark was recorded.

Results

The Armorer gages did prove useful for most of the testing. After 20,000 rounds, none of the barrels showed any signs of muzzle wear. Wear at the throat, where the projec-

tile is first launched, is usually a very high-wear area but the hard chrome plate was successful in minimizing wear, in spite of the throat being the region subjected to the highest pressure, temperature, and high speed gas. Over the course of testing, the throat region of GKH and Mil-B-11595 steel wore at about the same rate, while even after 20,000 rounds, the ARMAD barrel was only beginning to show signs of wear.

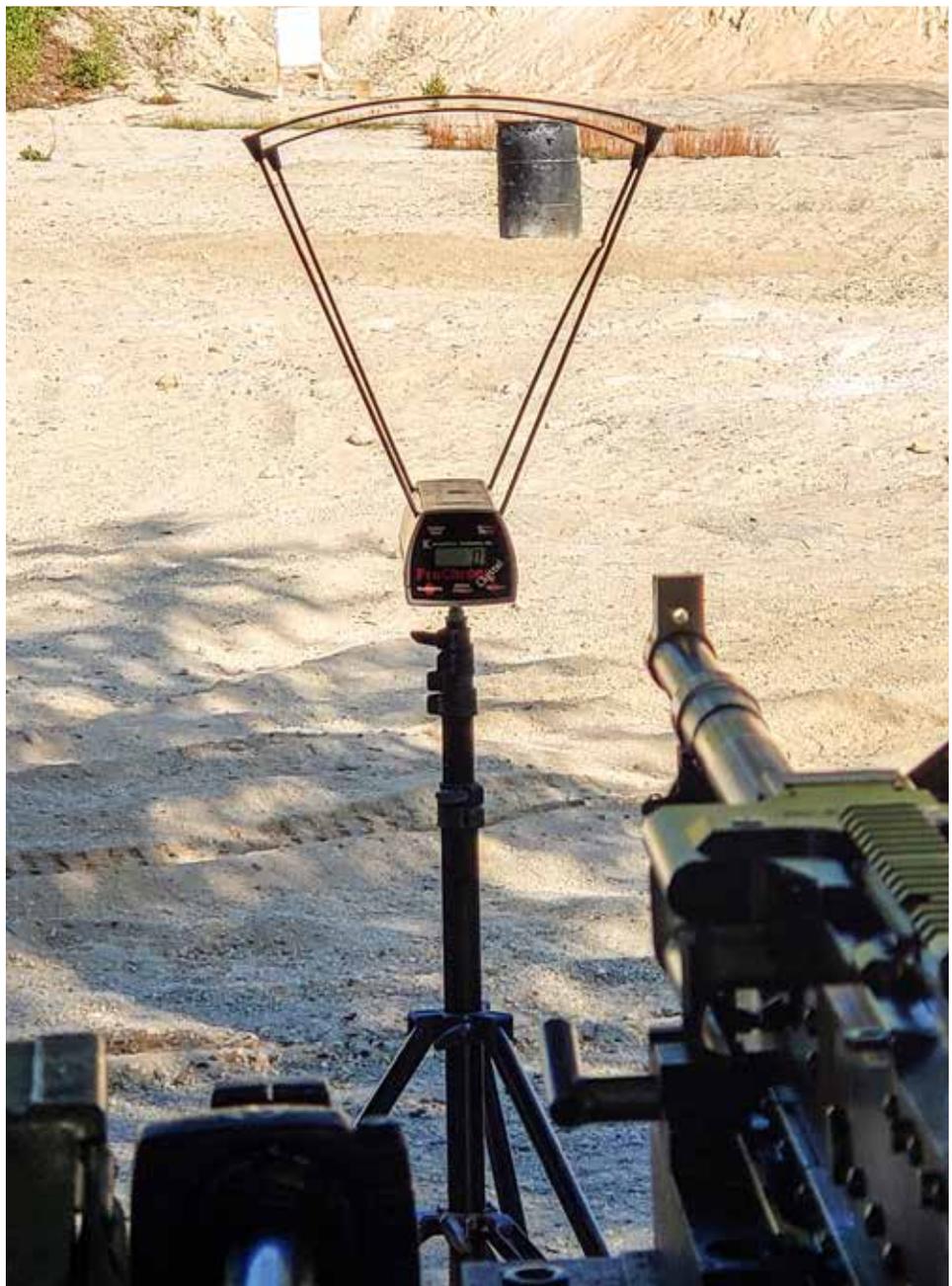
Bore wear measurements on the ARMAD again showed very minimal wear while the GKH and Mil-B-11595 wore at about the same rate up until 15,000 rounds. Here is where the Mil-B-11595 barrel took a turn for the worse. The bore gage could not be fully inserted to the maximum wear point due to bore damage and the pieces of chrome plating which had lifted but were still attached to the bore. Even after a thorough cleaning of the bore the debris could not be cleared for a good measurement. While muzzle velocity did not decrease in this barrel, some projectiles were unable to achieve gyroscopic stability, indicated by holes in the target which were no longer round. The Mil-B-11595 barrel was failing.

Coming back to the governing specification for failure, velocity, yaw, and accuracy, all of the barrels remained within specification for the three failure criteria at 15,000 rounds. The Mil-B-11595 barrel was failing but had not yet reached the yaw failure point. At 20,000 rounds, the GKH and, in particular, the ARMAD barrel were still going strong while the Mil-B-11595 barrel had finally failed due to excessive yaw.

Conclusions

The ARMAD barrel demonstrated superior performance over its predecessor, GKH, and bested Mil-B-11595 by a significant margin. How much longer could either of the two surviving barrels last? It's a good question, and A&D is seeking additional support to fund further testing to determine this. If bore measurements are any indication, three or more times longer seem totally within the realm of possibility.

Barrel producers were surprised at their ability to work with the harder ARMAD material and are now working with firearms manufacturers who have requested this harder material. Others, who want to avoid the environmental concerns of hard chrome plating, want to experiment with



Test set-up at 100 meter range with chronograph.



Barrels readied for testing.



Barrels cooled to ambient after every 250 round compliment.



Throat erosion gauging.

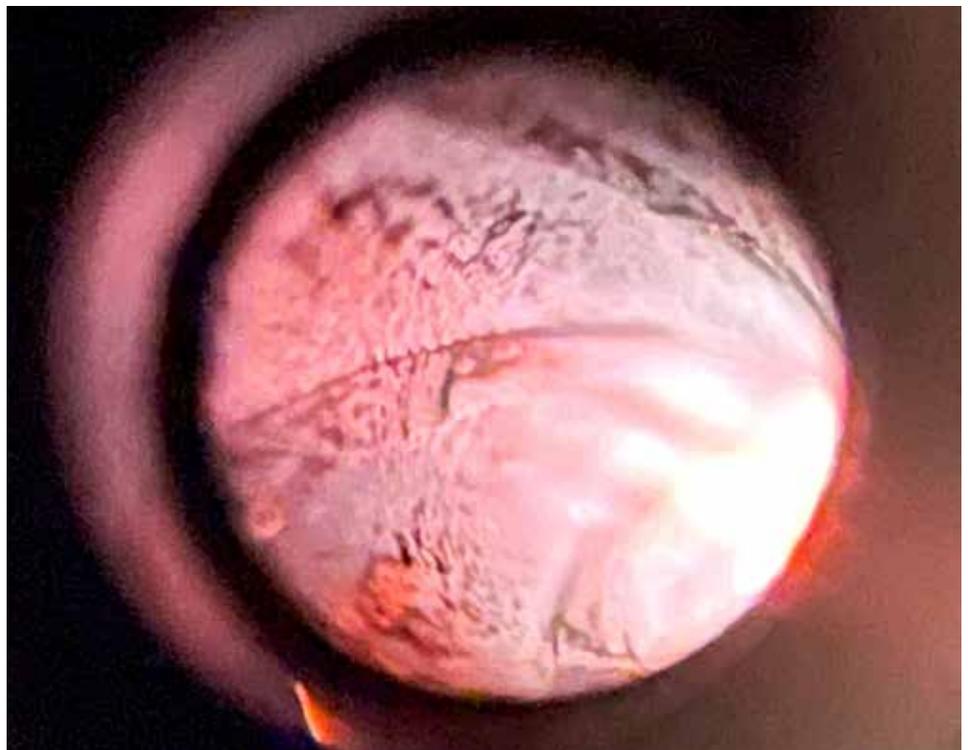


Plug gauges used to observe wear progression in throat, bore, and muzzle.

nitriding the bore, as both GKH and ARMAD are nitriding grade steels.

The list of projects undertaken over the last 75 years with the objective of developing better gun barrels include refractory metal liners, heat resistant materials flow formed over mandrels, promising new bore coatings, powder metal barrels, and even barrels with ceramic liners. None have been able to displace 1940's steel alloys either because they are too expensive or simply didn't work.

And yet, along came a team of metallurgists from Aubert & Duval, using the same exact elements as in the old 20th century steel to develop a stronger and longer lasting gun barrel alloy. How was it possible? It came about through the use of 21st century metallurgy and processing technology. When I asked the A&D team what new development they were working on now, the answer came back: "Well, the next generation steel after ARMAD, of course." **SADJ**



Extensive bore wear observed in Mil-B-11595 barrel after 20k rounds.

Shooting with the use of tripods offers a great time to shoot groups at 100 and see what is really happening as you make adjustments.



Don't Waste Yo

Todd Hodnett Talks Precision Training

By Todd Hodnett

I talk to guys all the time that tell me they just never get enough time on the range. It's hard to take care of work and family and still spend the needed time to build your skills. This is nothing new, so we need to make the most of the time we spend on the range by training properly.

Most shooters don't optimize their training hours spent on the range. The key to good training is isolating one skill at a time. This is how you build fundamentals ...and no one gets away from the fundamentals. Top shooters just own the fundamentals and apply them correctly at a higher percentage.



ur Range Time

So, let's break that down.

When working on wind calling, I want to be sure the feedback from the result of the shot can only be from my wind call. This means I need to isolate what's going on during the shot. This means shooting from a solid, prone position. One has to know

that a miss is because the wind call was wrong, and by how much. If you have too many variables in play, you'll never know what caused the error. Working from a bench might be okay, but shooting from positional props is not anything that I would do during a wind session because it adds too

many variables to the shot.

I love positional shooting and working through different props and techniques. It's problem solving with an immediate result and it's super fun to figure out something that fixes a problem. When I want to work on positional shooting, I go to the 100-meter bay

The Kestrel 5700AB is the best place to learn ballistics based on adjustments you control. You can learn anywhere you are, not just on the range.



and make sure I can see the exact result of my shot on paper. I want to see exactly how much I'm off if I miss and when I make a correction, I can measure the result of the correction I made to my position. Knowing the result of a correction in your position is huge. Just because you hit a target doesn't mean the change you made is going to work consistently well for you. A 10% hit rate still hits 10 out of 100 shots. Don't decide what you need to do based on a single hit on steel. Put it on paper and measure the result.

When you get right down to it, long range shooting is not that hard. We have certain things we to manage; ammo, optics, accuracy of the weapon, our technique, pre shot routine, knowledge of ballistics, knowledge of the shooting environment (wind, etc.). Let's talk through each one.

Ammo

Know your standard deviation (SD) and extreme spread (ES) and understand the meaning of these at distance. Meaning, don't blame yourself for an errant shot if the ES for that shot was thru the roof. We have tools like Magnetospeed and Labradar that tell us this in training. If you really want to shoot long range, ammo is the number one thing you have to have right.

Optics

I would rather spend more money on my scope than my gun. If you don't have a capable scope that dials correctly and returns to zero, you cannot be successful shooting at distance. Plus, the capability to remove parallax is huge when you're shooting long range. I hear people say you parallax doesn't matter. This is true if your target is close and big. But that's not long-range shooting, is it? Take your scope and go to the 100-meter range and get purposely dial in bad parallax and see how much reticle movement there is on target when you move your head around in the scope. Don't touch the gun! Look through the scope and it's easy to see .3 mils up and down error on the target. That's a .6 mil group at distance, right at 2 MOA. Most shooters I know would not be happy shooting at the size targets we shoot at with a 2 MOA group. High-end scopes cost money, and, on good quality scopes, you do get what you pay for. To me the scope is the most important piece of shooting equipment. A high dollar custom rifle will never be able to show you what

it's capable of with a bad scope. So, make sure you run a tall target test and make sure your scope tracks. This is huge and most people don't really know if their scope tracks. They just assume they are good because they spent a lot of money. Just because you spent \$2500 on a scope, doesn't mean it's infallible. We test scopes all the time that don't track and we aren't testing cheap scopes. How can you get the most out of your training if you don't know if your misses are you, the ammo, the gun or the scope?

Weapon

Most guns on the market today are good enough. We don't have to spend seven grand on a custom gun to get a great gun. I love the Tikka and Bergara rifles as well as what I consider the best rifle around, the Barrett MRAD. But if I go hunting, and want a specific rifle for weight and accuracy, then I may go to Proof Research. But for the training side, make sure your rifle has a good trigger. There are a lot of good triggers on the market. Dry-fire and know when it's going to break. I am not a big fan of the old school "it should be a surprise." I want to gently squeeze the trigger to a point that I "know" the next slightest pull will break the shot. Not "well if I keep pulling, it will go off in a minute." This is what we tell a student that doesn't have the time behind his gun; know the gun. This is what training will give them. The surprise break is **not** a technique. When a student is flinching or jerking the trigger, we hear people say just squeeze and let it be a surprise, but this is not what a mature shooter needs incorporate. They should know their weapon and know exactly when the shot will break because they have spent time on that gun. Try just dry-firing for a bit and then shoot one live and then dry-fire some more. This doesn't mean that all guns are equal. Some guns are just not capable of long-range accuracy. Do your research, as there are plenty that are capable.

Technique

I think we over-do the next couple of items. We train so these things are second nature. For example, I want to lay directly in line with my weapon. But I realize that this is something that isn't practical in the field. But we train our brains on what we are looking for and how to correct for different conditions. This is also what I mentioned earlier in positional shooting at 100 meters. Find out what works by

"Don't decide what you need to do based on a single hit on steel. Put it on paper and measure the result."

measuring the results and keep notes. Also, I would dry-fire while practicing in different positions.

Pre-Shot

Like I said, sometimes this is overdone. Some guys think they are cool if they have a 19-step pre-shot routine. So, what happens when they need to make a fast shot? I keep my pre-shot regimen very basic:

- Gather current environmental data.
- Assess wind. These top two should be real time all the time.
- Range the target and find the elevation and windage hold.
- Set the optic's magnification for the shot. Each shot is different. Use lower power magnification for closer shots so you can see the impact.
- Level the gun. This is huge for long range shooting and be sure to check on follow up shots.
- Visually check the turrets. This is something we should do for every shot.
- Adjust parallax. Make sure the target is clear and check for reticle movement while you move your head slightly up and down. If the ocular lens is set correctly, you should be good to go.
- Slightly load the bipod. Use a load that you can re-create anywhere.
- Check vegetation movement of wind direction confirmation all the way to the target through the scope.
- Shoot. Follow through the scope and watch your impact.

Ballistics

I see a lot of guys still using data books in the old school way. Now, if this is for a newer shooter, I can understand what they might get by doing this. But I would hope that my more senior shooters understand the effects of environmentals by now.

Remember "know what matters and when it matters."

Does humidity matter? Not unless it's extremely high and very hot.

How often do you need to gather environmentals? When shooting at supersonic distance, not very often. But, at subsonic distance, it matters more. It's a time-of-flight problem based on aerodynamic drag.

Understand the effects of SD and ES on your ammo.

Muzzle velocity temperature tables based on temperature sensitivity of the powder. This is huge in shooting long range and not managed nearly well enough. This information is especially important if you travel for hunting or competitions.

Wind

This is the big one because it's really the only unknown we have. To me this is the true long-range shooter's nemesis. We can work our positional stuff out and get really good at 100-meters which will transfer over to the range. We can gain knowledge of ballistics, even by studying our ballistic engine and the effects certain variables we plug in have on the resulting hold. By the process of shooting correctly we can learn to shoot good groups, but only time in the wind allows a true long-range shooter to master this one true challenge of long-range shooting. Don't just shoot until you hit and move on to the next target and repeat. That's not getting the most out of your training time on the range. Take a shot and find the reason you missed and what you didn't account for. Pick another target and try to account for what you think you did wrong and continue the process.

Long range shooting is full of knowns and sometimes we don't account for all of them correctly but winds are the one thing we have to continually keep sharp on. From what I have watched, most shooters miss because they don't account for the correct cosine.

When I teach, we do a lot of shooting where we only fire one shot at a target, hit or miss, and move on to the next target. The guys admit they learn a lot more than the way they use to train, which was shoot until you hit and then re-engage.

Mindset

From what I see, shooters don't spend enough time building specific skill sets and gaining the knowledge



Training in the wind is the best thing you can do for long range shooting.

of “why”. Why this happens or that happens, the cause and effect. Proper testing is all about removing variables and finding answers based off known results. I hate to see shooters spend all their time and money repeating the same old day on the range, doing the same stuff and not getting any better. You hear the word plateau, but I believe this is just a point of progress, that you can reach with the style of training you are doing.

Next chance you get range time, try isolating different skills. When I schedule out a week of training for military groups, I always check the weather first and plan what range and what skill we’ll be working on each day. If I get a day of light winds,

“Wind is our biggest problem and guys don’t like to shoot when the winds are higher because they realize their true wind calling capability.”

we will focus on mil-ing targets, as this skill seems to be lost quickly, and shooters don’t spend enough time practicing this skill. We’ll also work

on positional shooting. But if we get winds like we normally do, we focus on wind calls.

I have had guys that said they want to get off the ground and shoot all week from tripods. Then we hit the range and the wind is 30 mph and that doesn’t last long. I always say let’s get to a point where we are hitting 70% of our wind calls and then move up out of the prone. Wind is our biggest problem and guys don’t like to shoot when the winds are higher because they realize their true wind calling capability. I’ve watched shooters get really good at wind calling in a week of shooting in the wind. So, give it a try next time. Isolate your training and watch your skill grow. **SADJ**



CHIPOTLE
PUBLISHING, LLC

The Smith & Wesson **MODEL 76** **SUBMACHINE GUN**



\$49⁹⁵

Frank Iannamico

The Definitive Guide!

This 268-page hardcover book presents the most thorough and up-to-date compendium on the Model 76 and most variants. This deep-dive informational work touches upon the Model 76's history and development, various versions and licensing, the caseless ammunition program, magazines, parts and accessories, troubleshooting and other topics, all assembled by authoritative writer Frank Iannamico. Get your copy today!

Go to chipotlepublishing.com or call 702-565-0746 to order.



Turkish Polis Özel Harekât with a SIG Sauer 516.

SOCIAL MEDIA VIA AYBARS

Preferred Platform

An Overview of Turkey's Assortment of AR-Pattern Rifles

By DCURAIGAMA

More than 65,000 5.56 x 45mm rifles have been delivered to Turkish security forces according to the head of Turkey's Presidential Defense Industry, İsmail Demir. With 65,000 rifles being a substantial number of AR-15 patterned rifles, it is fair to infer that this trend will continue and succeed the primary platforms currently in Turkish service like the license-built MKE HK33s and G3A3s. In this article we will examine some of the most prominently used AR-15 patterned rifles currently in use with Turkey's police and armed forces.

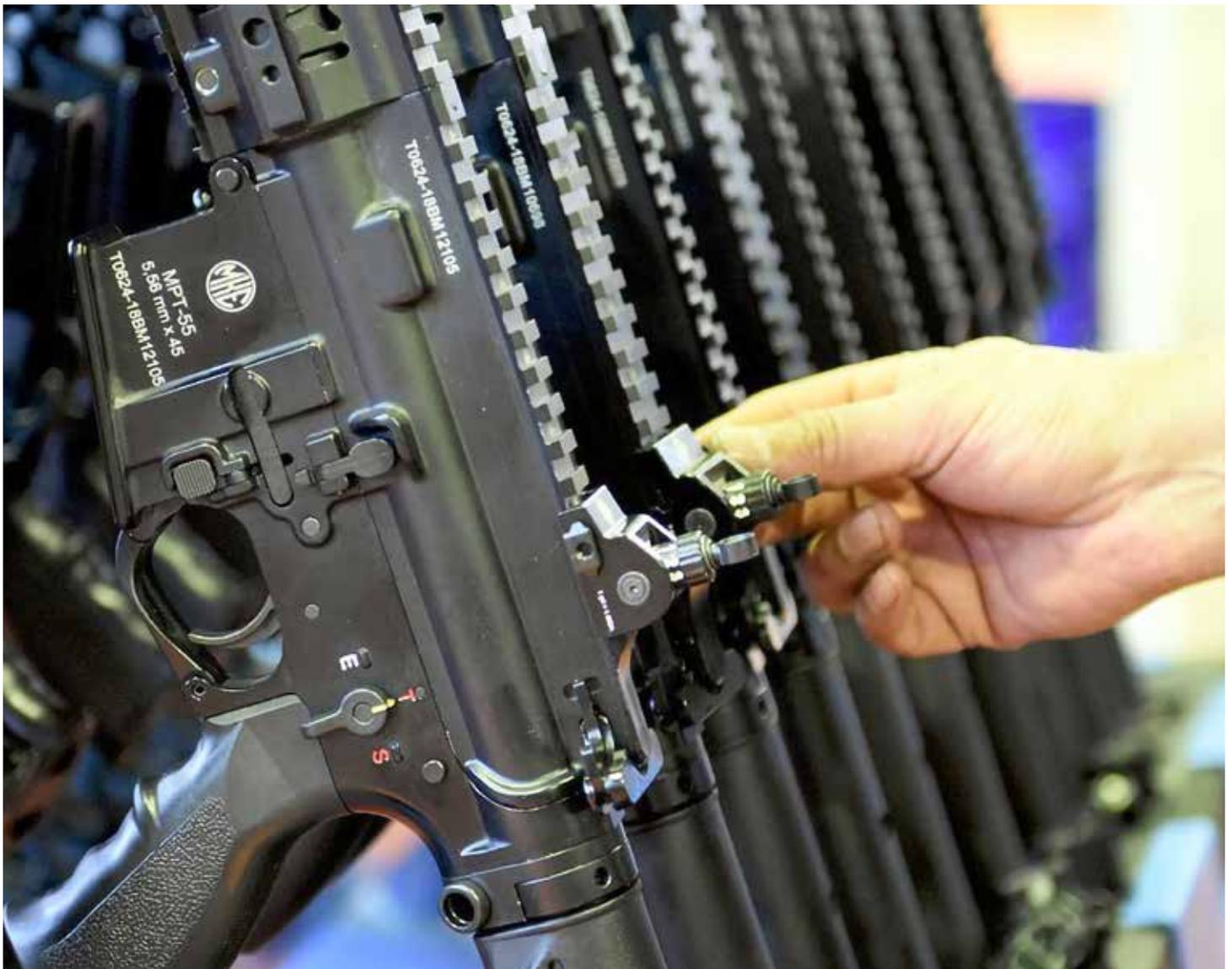
The most numerous of the 5.56x45mm AR-type weapons systems entering Turkish service is the

MPT-55 rifle which was developed by MKE in Turkey. It's effectively a scaled down version of the 7.52x51mm MPT-76 self-loading rifle. In the past, Turkey sourced foreign 5.56x45mm chambered AR platforms for its security agencies. Polis Özel Harekât, Turkey's police tactical unit, purchased a sizable amount of SIG 516 5.56x45mm rifles and appears to be their primary service rifle. Turkish Army Özel Kuvvetler Komutanlığı special forces operators sport German imported HK 416A5s, as well as older M110 SASS self-loading rifles, in their distinctive green-brown color scheme

These samples of AR-15 pattern rifles are only a few that have been

introduced. Companies such as Sarsılmaz and Kalekalip have provided Turkish law enforcement and military agencies with more AR pattern rifles produced domestically. The decision to usher in domestic AR platforms was ostensibly influenced in part by restrictive sanctions placed on the Turkish government affecting further procurement and maintenance of its current selection of foreign arms, such as the HK 416. Aside from MKE's MPT-55, it will be of interest to more closely examine the domestically made and issued AR platforms made by Kalekalip and Sarsılmaz.

Kalekalip is a defense and aerospace manufacturing company and



FATİH GÖKMEN/ANADOLU AJANSI

MKEK MPT-55 rifles.

is one of the manufacturers contracted by MKE to produce MPT-76 rifles for the Turkish Armed Forces. Kalekalip also has a series of their own AR rifles called the KCR family of rifles. KCR rifles run on a gas piston system and fire at around 750-900 rounds per minute. It is available in three barrel lengths: 14.5 inch, 11 inch, and 7.5 inch. KNT rifles are chambered in both 5.56×45mm and 7.62×39mm, designated as the KCR556 and the KCR739 respectively. Turkish Jandarma (Turkey's Gendarmerie General Command) has been documented using KCR556 rifles in the 11 inch configuration since 2018, in either black or tan color schemes offered from the factory.

Sarsılmaz has also provided Polis Özel Harekât units with their SAR 223P rifles. Feedback of the initial SAR 223Ts proved to be unsatisfactory, so



DEFENCE TURK

A Kale KCR 739 chambered in 7.62×39mm at the IDEF 2018 expo.



Sarsilmaz SAR223T

the SAR 223P was developed using the input from the special police teams who field-tested the SAR 223T.

Both the 223Ts and 223Ps come in 10.5 inch and 14.5 inch barrel lengths and fire at 700-900 rounds per minute. The SAR 223P has a slightly longer overall length at 35.4 inches as opposed to the 223T model being 34.6 inches, though the biggest difference is their respective gas system. SAR 223T rifles operate on a delayed blowback action and its 223P counterpart utilizes a gas piston system. Currently only Police Special Action

agents field Sarsilmaz rifles.

One thing that is interesting to note is Turkey's preference for gas piston AR rifles over the traditional direct impingement actions used in US AR-15/M16/M4 type rifles. Overall, seeing Turkish arms manufacturers adding AR-15 platforms will be interesting to observe in the future. Whether the rifles are MPT-55s or KCR556s, it is clear to see that the Turkish security forces are preparing to have these rifles succeed the roller delayed blowback HK33 and G3A3 self-loading weapons that have been a mainstay with Turk-

ish forces for decades. Though with any military procurement process, time will tell as to when all of Turkey's roller delayed series will be fully succeeded in service and we look forward to charting how this transition will develop. **SADJ**

This article originally appeared at [Silah Report](#), a project of Armament Research Services (ARES) monitoring arms and munitions developments in the Middle East, North Africa, and Central Asia. More original material is available at [silahreport.com](#).



Sarsilmaz SAR223P



TORONTO POLICE SERVICE

The PKC Glock-type self-loading pistol with 3D-printed frame seized by the Toronto Police Service in April 2020.

Toronto Police seize PKC Glock with 3D-printed frame

By Ivan T./ARES

In April 2020, the Toronto Police Service seized what appears to be a Glock-type self-loading pistol. To the uninitiated, this may appear to be a modified facto-

ry-made Glock handgun, but it is in fact a craft-produced firearm constructed using a 3D-printed frame. It is most likely what's known as a 'parts kit conversion' or 'parts kit

completion' (PKC) build, in which the slide, barrel, and trigger components are of commercial origin, while the frame is produced using a 3D printer. PKC designs are gen-



IVAN T./ARES

This CAD rendering showing how rail inserts may be arranged within a 3D-printed Glock frame.

erally favored where commercial parts can be readily acquired, but complete firearms—or key components, such as the frame or receiver—are legally controlled.

The frame used in this particular PKC build appears to be a 'BTB G26' model. This is a 3D-printable frame that accepts a Glock 26 slide and barrel but uses a Glock 19 locking block and incorporates craft-produced internal rails modelled after those of the Glock 19. The two screws visible at the top-left of the image hold in place the rails (most

likely crafted from aluminum) which guide the slide as it reciprocates. The slide and other visible components, such as the trigger, are not factory-original Glock components either. Instead, these are produced by aftermarket parts manufacturers, often available at a lower price than genuine Glock components. Some of these components are specifically marketed for use with 80% lowers, which are used in PKC builds that do not involve 3D printing.

The layer lines that are usually visible on 3D-printed Glock frames are

hard to spot on this example, but a trained eye will notice these around the takedown lever. Taken together with the tell-tale steps on the underside of the frame, these indicate that the frame was printed with its top down to the print bed. The frame appears to be hand-stippled.

The production of 3D-printed pistol frames, and the nature of PKC builds, more generally, is discussed in ARES' latest report, Desktop Firearms: Emergent Small Arms Craft Production Technologies and can be found at armamentresearch.com. SADJ



The Perun X16 is a modular firearm design, based on a modified AR-15 lower receiver, manufactured by TINCK Arms of Slovenia.



Slovenia's Modular Rifle

Tinck Arms Perun X16 and Perun X17

Story by Pierangelo Tendas | Photography by Tinck Arms

TINCK d.o.o. is a company headquartered in the town of Cerklje na Gorenjskem in western Slovenia, approximately thirty kilometers from the Italian border. Active since 2007 in the field of hydro-electric turbines, it made its debut on the firearms market in 2019 with the Perun X16.

Announced with little fanfare outside of their home country of Slovenia – let alone outside of Europe – the Perun X16 was initially offered as a modularity kit for AR-style rifles and carbines. Albeit not exactly drop-in, and still in its infancy, the Perun X16, and its more recent higher-caliber variant, the Perun X17, show an incredible amount of versatility and are perfectly in line with what the market generally considers to be the new or next generation of both modern sporting rifles and service rifles.

Most important of all, the Perun X16, and the recently introduced Perun X17, are already available on the civilian market in Slovenia, both as ready rifles and as modularity kits for AR lower receivers. The kits are compatible with both semi-automatic and select-fire lower receivers, meaning that it could, potentially, represent an interesting alternative for those law enforcement, military and government customers seeking to modernize their existing stocks of M16 and M4 rifles.

The God of Thunder

The Perun X16 and X17 are named after the highest deity of the traditional Slavic pantheon – a typical example of an ancient European god of thunder, roughly equivalent to Thor in Norse myths. Perun was worshiped all through modern-day eastern Europe, from the Balkans – with Perun's name being today somewhat common in south Slavic toponymy – all the way to (at least) Novgorod, in modern-day Russia.

For Tinck Arms to christen their creation in the name



The Perun X16 monolithic upper receiver is machined out of 7075-T6 aluminum alloy and features a sturdy set of steel guides.

of the ancient Slavic god of thunder, the message to be conveyed was, of course, that of power. And indeed, the Perun X16 and Perun X17 were designed, and are built to be not only sturdy, but also incredibly well performing in

terms of accuracy and reliability.

Let's go straight to the point: the Perun X16 and Perun X17 are conversion modularity kits for the AR platform, which can also be ordered as complete, factory-ready rifles from

TINCK Arms also manufactures dedicated lower receivers for the Perun X16 and Perun X17.





The Perun X16 monolithic upper receiver is machined out of 7075-T6 aluminum alloy and features a sturdy set of steel guides.

Tinck Arms. Respectively, the Perun X16 is based on the AR-15 lower receiver, while the Perun X17 is based on the AR-10 lower.

Technically speaking, the Perun X16 and X17 use a hybrid

short-stroke and direct gas impingement system, featuring a patented bolt carrier group to which a standard AR-15 or AR-10 rotating bolt can be installed. The design of the dedicated bolt carrier group is very reminiscent of the



The charging handle of the Perun X16 and Perun X17 platforms is located right above the handguard and can be reversed to left-handed or right-handed use.



From top to bottom: Perun X16 in 16-inch rifle configuration, chambered in 7.62×39mm, built on a modified Aero Precision lower receiver, featuring a FAB Defense buttstock on a standard M4-type buffer tube; Perun X16 in 11.5-inch carbine configuration, chambered in 5.56×45mm, built on a modified unmarked 80% receiver, featuring a Remington ACR-E stock on a KDG SAS stock adapter kit; Perun X16 in 14.5-inch mid-length configuration, built on a TINCK Arms purpose-built receiver, chambered in 5.56×45mm, featuring a FAB Defense stock on a standard M4-type buffer tube and a Law Tactical GEN-3M folding stock adapter.

Israeli IWI Tavor and X95 bullpup rifles, with an integrated recoil buffer on top.

The Perun X16 and Perun X17 modularity kits consist of a monolithic upper receiver (dubbed a “compact chassis” by the company) machined out of 7075-T6 lightweight aluminum alloy, hard-coat anodized in black according to MIL-A-8625 Type III specifications, and featuring hardened steel guides and a non-reciprocating charging handle that’s located just above the handguard and configurable for left-handed or right-handed users.

The Perun X16 and Perun X17 upper receivers are meant to use any AR-15 or AR-10 barrel, barrel nut, and free-float

handguard. The uppers come from the factory with a full-length, MIL-STD-1913 Picatinny top rail for optics, and a dedicated machined 6063-T6 aluminum M-LOK compatible handguard.

In some versions – depending on the overall length, as we’ll see later – a short Picatinny rail segment is located in the gap between the front portion of the upper receiver and the muzzle area.

Complete Perun X16 and Perun X17 rifles are delivered by Tinck Arms with the company’s own lower receivers; the modularity kits will install on any MIL-SPEC AR-15 variant lower – be it a semi-auto civilian model or a select-fire



The Perun X16 in pistol configuration, featuring an 8-inch barrel and a rear Picatinny interface for armbraces or stocks.

version – and with on any standard AR-10 lower respectively. That’s an advantage for users who are already familiar with the AR-10 and AR-15 platforms, as they will be able to retain their favorite controls configuration and won’t need to familiarize with any new control other than the forward charging handle.

The conversion system, however, is not drop-in. For the Perun X16 and X17 modularity kits to be installed on a standard AR-10 or AR-15 lower receiver, a substantial part of the lower behind the rear takedown pin, basically the buffer extension mounting ear, must be cut off.

The Perun X16 and Perun X17 are buffer-less systems, in that the buffer is integral to the bolt carrier and thus a dedicated recoil buffer and its tube aren’t necessary anymore; this, however, also means that the conversion of a lower receiver to fit the Perun X16 or Perun X17 upper is permanent. Once you go Perun, you can’t go back (unless you buy a new lower).

Multi-barrel, Multi-caliber

The Perun X16 and Perun X17 are available in multiple barrel lengths and calibers. As of today, the Perun X16 is



CAD drawing of the Perun X17: an 18-inch barrel platform, the Perun X17 is available in .308/7.62mm and 6.5 Creedmoor.



The Perun X16 upper receiver is composed of three parts: the monolithic upper proper, hosting the proprietary bolt carrier group, and to which the barrel is secured; the handguard; and the top rail assembly, which includes the non-reciprocating charging handle guide.

offered in a pistol version with an 8.5-inch barrel; a carbine version, with an 11.5-inch barrel; a mid-length version, with a 14.5-inch barrel; and finally, a rifle version, with a 16-inch barrel. The Perun X17 is instead available only in a full-length rifle version, with an 18-inch barrel.

Caliber compatibility will also vary; the Perun X16 can be configured in .223 Remington, 5.56×45mm NATO, 7.62×39mm M43, .300 AAC Blackout, 6.5 Grendel, and 9mm Luger. All versions will use MIL-SPEC AR-15 lowers and feed through STANAG 4179 compatible magazines, with an exception made for the 9mm variant, which requires a dedicated 9mm AR lower receiver and bolt head, and feed from Glock magazines (early prototypes used Colt 9mm SMG mags).

The Perun X17, on the other hand, will feed from SR-25 pattern magazines, and will be offered in .308 Winchester, 7.62×51mm NATO, and 6.5 Creedmoor, covering both the roles of a battle rifle and a designated marksman's rifle.

All models feature an interface at the rear of the upper receiver, where a standard AR-15 buffer tube can be attached – either with or without a side-folding option – to install a standard collapsing AR stock. Moving the

stock interface to the upper puts it more in line with the rearward movement of the bolt carrier, with a positive effect on control, and eliminates a common point of failure for factory polymer lowers or 3D-printed lowers, which should make the Perun X16 and Perun X17 even more desirable for AR builders.

Additionally, all variants of the platform are compatible with the Kinetic Development Group SCAR Adaptable Stock kit (SAS) – a mounting interface initially conceived to install Bushmaster/Remington ACR-E stocks on FN SCAR series rifles. This means that both the Perun X16 and the Perun X17 can easily mount any MIL-SPEC collapsible M4 buttstock or a ACR side-folding adjustable stock, arguably one of the best designs currently available on the international markets.

On all variants, the ejection window is located only on the right side of the receiver and is not reversible. A massive brass deflector and the design of both the ejection port and the proprietary bolt carrier group ensure that spent cases are ejected well away from the shooter's face, even when firing from the left shoulder. With the right control configuration, the Perun X16 and Perun X17 are fully ambidextrous platforms.



Polenar Tactical – Europe’s biggest gun channel on YouTube – was the first to get some trigger time with the Perun X16 in all its versions. In this photo, Žiga Polajnar handles the Perun X16 in various configurations.

An Ongoing Process

Ever since it was first announced, the Perun X16 and Perun X17 platform has undergone some steady but significant improvement, spurred by the experiences of the first testers. The adoption of a dedicated handguard – at least for the factory rifles – allows Tinck Arms to maintain

constancy in a feature that has a key impact on accuracy, leaving the barrel free to float.

Still, the Perun X16 and Perun X17 remain compatible with a wide array of AR components such as bolts, trigger groups, safeties, controls, gas blocks, and gas systems: the proprietary bolt carrier group can be used



CAD drawing of the Perun X16: the system can be configured in multiple barrel lengths and calibers.



The Perun X16 is manageable, soft-recoiling, and the peculiar design of the upper assembly removes all stress from the lower, making it perfect for polymer or 3D printed lower receivers.

with the user's choice of a direct gas impingement or a piston-driven system. Builders will not be forced to shift from the system they are already using and that they've grown to know and trust.

Likewise, any military, law enforcement or Government military customer that should decide to upgrade their M16 rifles and M4 carbines to the Perun X16 or Perun X17 will still be able to make use of their existing stocks of spare parts. The modifications required for AR lowers to fit the Perun upper are extensive enough that they will need to be carried on at depot level, and yet simple enough that tens of thousands of existing rifles can be converted in relatively little time.

The inherent level of accuracy of the Perun X16 and Perun X17 depend on the type of barrel being used. The system is compatible with AR-15, AR-10, M16 and M4 barrels of the given lengths, so that builders will be able to install any barrel of their choice, depending on their demands and preferences as well as on the level of accuracy they intend to reach.

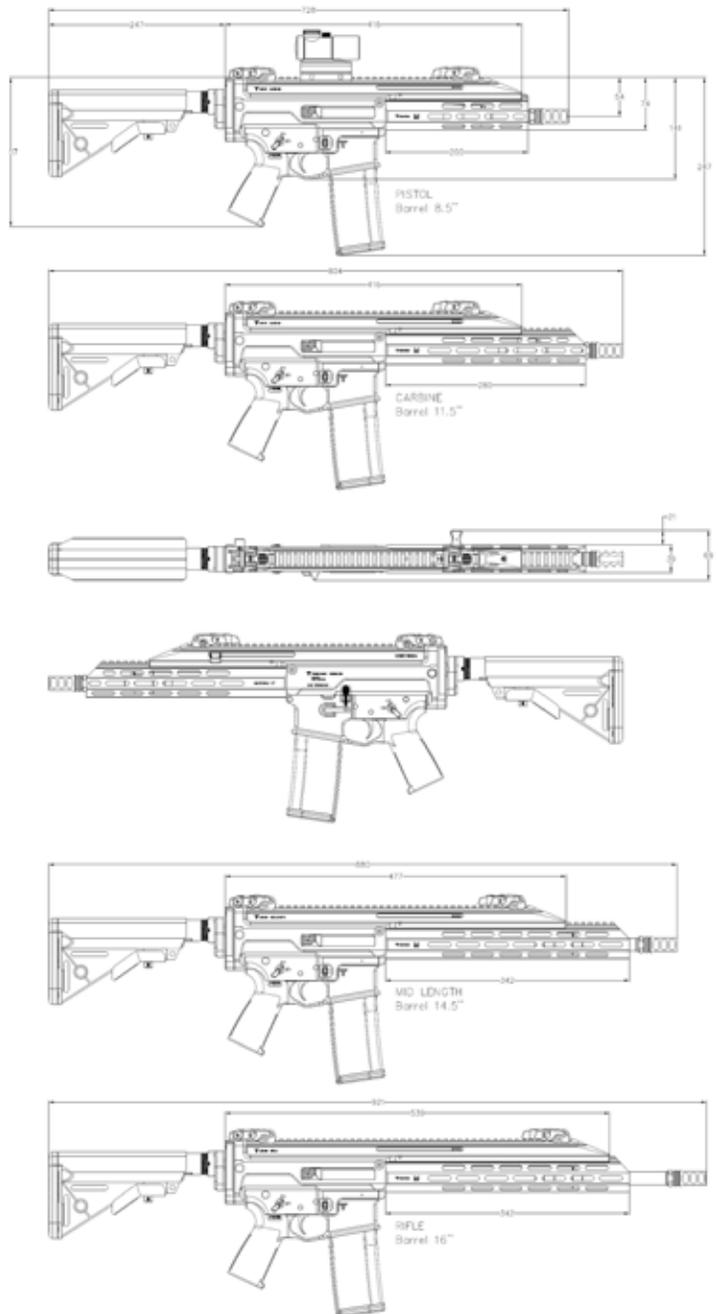
Changing caliber on your Perun X16 or Perun X17 is as easy as changing the barrel, bolt head, and magazine. It still requires complete tear-down of the rifle, as it doesn't have a quick barrel change option, but is still a pretty straightforward process that both builders on the civilian markets and armorers in military, law enforcement and

TECHNICAL SPECIFICATIONS

Manufacturer	TINCK d.o.o., Platiševa Ulica 39, 5282 Cerklno, Slovenia
Model	Perun X16 and Perun X17
Type	Semi-automatic rifle, assault rifle, battle rifle, pistol-caliber carbine, conversion kit
Calibers	<ul style="list-style-type: none"> .223 Remington, 5.56×45mm NATO, .300 AAC “Blackout”, 7.62×39mm M43, 6.5 Grendel, 9×19mm (Perun X16) .308 Winchester, 7.62×51mm NATO, 6.5 Creedmoor (Perun X17)
Action	Semi-automatic or select-fire, gas-operated, hybrid short stroke & direct impingement system
Trigger system	Single action, select-fire or semi-automatic; compatible with AR-15/M16/M4 trigger groups
Safety	Manual safety on lower receiver
Capacity	Magazine and caliber dependent
Sight systems	Full-length top MIL-STD 1913 Picatinny rail for optics
Barrel length	<ul style="list-style-type: none"> 8.5in, 11.5in, 14.5in, 16in (Perun X16) 18in (Perun X17)
Total length	Configuration dependent
Weight (empty)	Configuration dependent
Materials	Machined monolithic 7075-T6 aluminum alloy upper receiver; 7075-T6 lower receiver; 6063-T6 handguard
Finishes	Numerous available

PERUN X16 Options

Calibre: .223, AAC .300, 7.62×39mm, 9×19mm



government entities know very well how to go through.

The full modularity, however, also means that there is no fixed overall length and weight for the Perun X16 and Perun X17 platforms. All proportions are completely configuration-dependent, based on the blend of caliber, lower receiver, barrel type and length, stock, and other components that the user will pick, regardless of the basic planned versions and even outside of them. The system is, as Tinck Arms itself puts it, infinitely hackable.

Room for (more) Improvement?

The Perun X16 and Perun X17 haven't so far been distributed widely outside of Slovenia, but the vast expertise of both the manufacturing company and the vast majority of users who have had a chance to get some trigger time on the platform were instrumental in providing the necessary feedback to pass from the prototype stage to the production stage without excessive hiccups.

Additional feedback will undoubtedly come from inter-

national civilian and professional users as soon as distribution kicks off, but still, some may argue that there is additional potential for improvement of the system. To begin with, the Perun X16 is compatible only with MIL-SPEC AR-15 lowers; this means that it cannot be coupled with dedicated non- MIL-SPEC lowers that would allow the use of AKM magazines in 7.62×39mm caliber.

Aficionados of the old ComBloc intermediate cartridge will have to stick (for now, at least) with 7.62×39mm AR magazines, which may have been drastically improved from the previous generations, but are still far from the epitome of reliability.

Not to mention, AKM magazines are plentiful, relatively cheap, and like the AK platform itself, they're popular in eastern Europe where the Perun X16 comes from. But then



The Perun X16 in its carbine configuration, with an 11" barrel and a Remington ACR-E stock attached to the upper receiver via a Kinetic Development Group SCAR Adaptable Stock (KDG SAS) interface system.

again, it could also be considered a small price to pay to maintain the use of a single lower receiver for all calibers.

The fact that the lower receiver needs modification is a drawback of the platform; other conversion uppers – such as the Faxon Firearms ARAK-21 or the Brownells BRN-180 – are all easy to drop-in on unmodified lowers.

One may argue that the evolution of 3D printing technology and the peculiar architecture of the Perun X16 and Perun X17 that removes essentially all stress from the lower may make this a moot point, but while this may (and it's a big "may") be valid for the US, it is by no means valid in Europe and in other areas where receivers – both lowers and uppers – are subject to regulation.

In those countries where the acquisition and possession of functional firearm components – not just entire firearms – is subject to licensing, registration, or both, and where end users cannot build a firearm for themselves, but must pass through a licensed builder or gunsmith, having to modify a functional firearm component such as a lower receiver could involve additional legal hiccups and potentially hamper the diffusion and popularity of the platform.

For those jurisdictions, the only valid option would be to either import the Perun X16 or Perun X17 as a complete rifle from Tinck Arms, or for importation and distribution to be taken up by a company that also has the necessary firearms manufacturing licenses and can assemble them into complete firearms by modifying 80% lowers in-house.

Last, but not least, expanding the caliber compatibility list – at least for certain markets – could be desirable. 5.45×39mm 7N6 cartridge is becoming increasingly popu-

lar in the United States (not as much in western Europe, despite the market appeal of modern sporting rifles), and other suitable calibers for Tinck Arms to consider may include 6.8mm SPC II, .450 Bushmaster, and the slew of hybrid 6.8mm calibers developed for the NGSW program, including True Velocity's 6.8mm TVCM composite-cased round and SIG Sauer's 6.8×51mm, a.k.a. .277 FURY.

Either way, it should be left to Tinck Arms to weigh these options as the Perun X16 and Perun X17 platforms proceed to a wider distribution. The platform has several inherent advantages which are unique to its design and would inevitably be redimensioned by any modification to the architecture of the upper receiver or any forced rethinking of the overall conception tied to the adoption of new chamberings.

The Perun X16 and Perun X17 could easily become simple drop-in conversions, but that would make them "just another" conversion. And neither we, nor Tinck Arms want that to happen.

The project is still young; it has a long way to go and evolve, and so far, it's doing so without either jumping the gun – literally – or dragging out for too long, both mistakes that the industry makes all too often and that unavoidably bring ruin and failure upon an otherwise sound and promising design.

The natural growth and evolution process must make its course, and we'll just let it happen and watch closely. The Perun X16 and Perun X17 platforms surely show a lot of promise, and their future may need to be steered towards a better direction at a certain point but should never be forced. **SADJ**

THE VICKERS MACHINE GUN

Pride of the Emma Gees



DOLF L. GOLDSMITH

Formerly The Grand Old Lady of No Man's Land: The Vickers Machinegun

Now Available!

\$129.95
PLUS S&H
RETAIL EDITION

Call our offices at 702-565-0746
to order your copy today.

 **CHIPOTLE**
PUBLISHING, LLC



Elbit Systems and Roboteam Introduce ROOK

New Multi-payload 6X6 Unmanned Ground Vehicle

Elbit Systems and **Roboteam** launch ROOK, a multi-payload military 6x6 Unmanned Ground Vehicle (UGV) that features unique design and built-in autonomy suite offering a combination of greater capacity, improved maneuverability and must-have on-field agility that are key for greater mission effectiveness.

The ROOK UGV was developed based with the operational experience accumulated through fielding of the 4x4 PROBOT UGV systems in several countries including the U.S., France, Israel and the U.K.

The ROOK was designed from scratch as a robotic UGV platform in compliance with applicable Military Standards, applying modular box structure that enables in-the-field component replacement with no need for qualified technician or OEM lab maintenance and efficient upgrades and modification without OEM involvement. A built-in TORCH-X Robotic and Autonomous (RAS) application provides ROOK with full autonomy and the capability to efficiently navigate rough terrain during

both day and night to deliver supplies, evacuate casualties, perform intelligence gathering missions (including by dispatching on-board VTOLs), and operate as a remote weapon system.

With a weight of 2645 pounds, low center of gravity and ground clearance of 9.5 inches, ROOK is capable of carrying up to a 2645 pound payload while maintaining superior maneuverability and transferability. Full compliance with the UGV Interoperability Profile (IOP) turns ROOK into a multi-payload platform providing users with seamless plug and play payload integration.

Using modular hybrid energy configuration of batteries and an optional internal generator, ROOK provides operational endurance of up to eight drive hours and a speed of 18 miles per hour. ROOK is operated either via the TORCH-X RAS application or through an all-weather, 7-inch ruggedized display unit, enabling a single operator to control several unmanned systems.

Learn more at elbitsystems.com.

“FoxFury has provided safety lighting solutions for over 16 years to the public safety industry. The partnership with ATL | YUNEEC and the H520E platform is ideal as it provides unlimited possibilities to assist critical missions easily. Using the Payload Delivery System®, H520E operators can deliver medical packages and other essential items while the D100 spotlight uses 2,300 lumens of directed light from up to 200’ to identify objects or persons in need.”

– Mario Cugini, CEO, FoxFury Lighting Solutions



YUNEEC & FoxFury Expand Public Safety Drone Solutions

ALT Americas | YUNEEC and FoxFury Lighting Solutions are pleased to announce their expanded partnership adding the Payload Delivery System and D100 Spotlight solutions to the H520E for first responders.

“We have already commenced selling the Payload Delivery System and D100 solutions to its val-

ue-added resellers, Public Safety, and First Responder entities across the US with great results”, said Phil Mann, General Manager of ATL Americas | YUNEEC.

The H520E hexacopter provides the best stability in winds up to 45 mph and has the ability to sustain the loss of a motor and com-

plete its mission. Coupled with plug and play payloads, the H520E offers a 1-inch SONY Sensor camera, FLIR Boson Thermal cameras, and an up to 30x optical camera. “With FoxFury’s tools we can add first aid, or communications delivery day or night now,” said Mann.

Learn more at us.yuneeec.com.



Elbit Systems Awarded \$106 Million Contract

Will Supply SIGMA Self-Propelled Howitzer Gun Systems to an Asia-Pacific Country

Elbit Systems announced recently that it was awarded a contract valued at approximately \$106 million to supply SIGMA fully automatic self-propelled howitzer gun systems to a country in Asia-Pacific. The contract will be fulfilled over a five-year period.

SIGMA is a 155mm/52 caliber, self-propelled howitzer capable of automatic loading and laying of the gun system, rapid in-and-out action times and high rate of

fire. It offers a protected cabin for a crew of three. Depending on the mission, SIGMA is capable of automatically selecting and loading the required projectile, propellant and fuse and laying the gun to optimally engage targets.

Bez halel (Butzi) Machlis, President and CEO of Elbit Systems, says, "The SIGMA system effectively addresses the growing need of armed forces to enhance the effectiveness of their artillery

formations and reduce life-cycle costs while improving precision, rapidity, autonomy, survivability and connectivity. The SIGMA system is based on the know-how and experience accumulated by Elbit over decades in supplying artillery systems to numerous customers, including the new 155mm fully automatic self-propelled howitzer gun systems for the Israel Defense Forces."

Learn more at elbitsystems.com.

2022

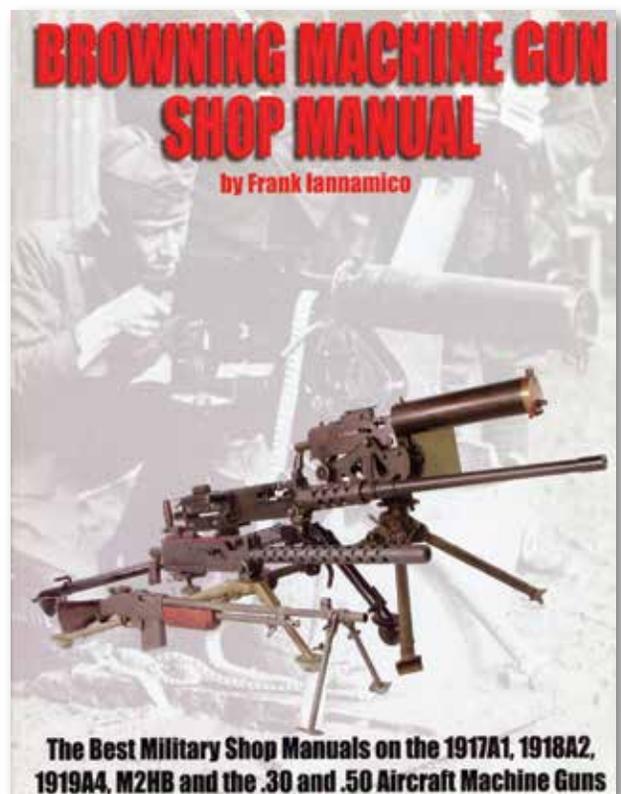
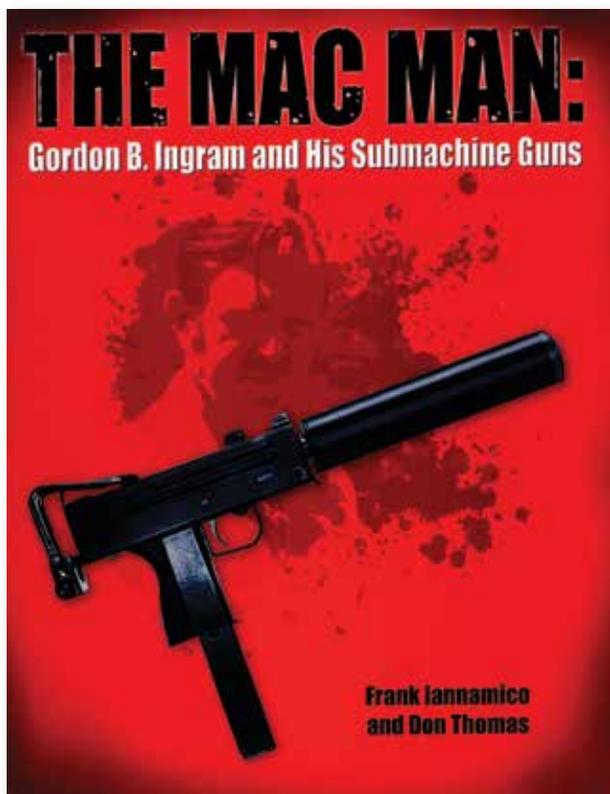
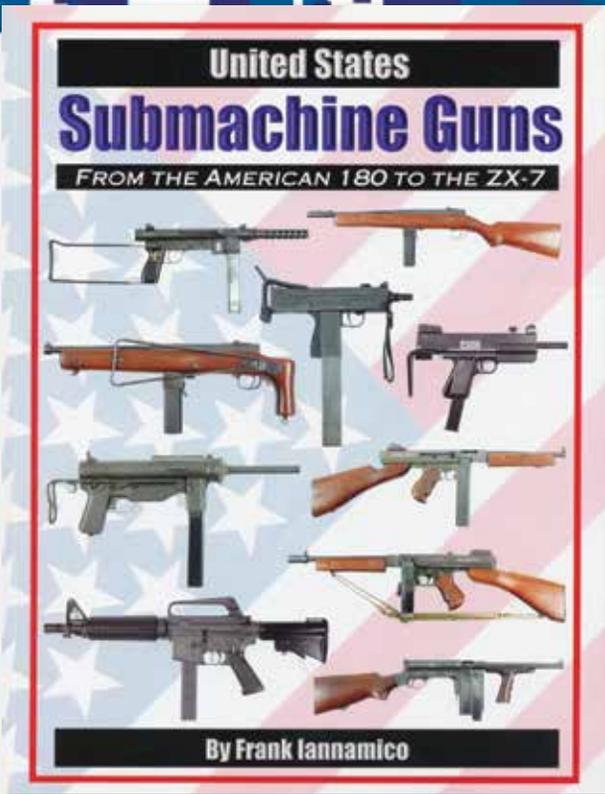
EUROSATORY

13-17 JUNE 2022 / PARIS

THE DEFENCE & SECURITY GLOBAL EVENT



2018 key figures



These titles and more available on our website!

Go to chipotlepublishing.com or call 702-565-0746 to order.



CHIPOTLE

PUBLISHING, LLC

702.565.0746



THE XIIITH EDITION

OF THE SPECIAL OPERATIONS FORCES EXHIBITION & CONFERENCE

SOFEX JORDAN 2022

 31ST OCTOBER- 03RD NOVEMBER

 THE AQABA GATE AVIATION
KING HUSSEIN INTERNATIONAL AIRPORT

BOOK YOUR STAND TODAY, CONTACT SALES@SOFEXJORDAN.COM
WWW.SOFEXJORDAN.COM



MODERN DAY MARINE®

MAY 10-12, 2022

**WALTER E. WASHINGTON
CONVENTION CENTER, D.C.**

JOIN US FOR THE 42ND ANNUAL MODERN DAY MARINE EXPO

300+ companies, product demonstrations and industry briefings covering the latest in emerging military equipment, vehicles, technology and training systems.

To showcase your products and services, please contact:
Jaymie Nielsen at 980.328.8801 or jaymie.nielsen@emeraldtx.com

For more information, please visit moderndaymarine.com

FOLLOW US:



[moderndaymarine](https://www.facebook.com/moderndaymarine)



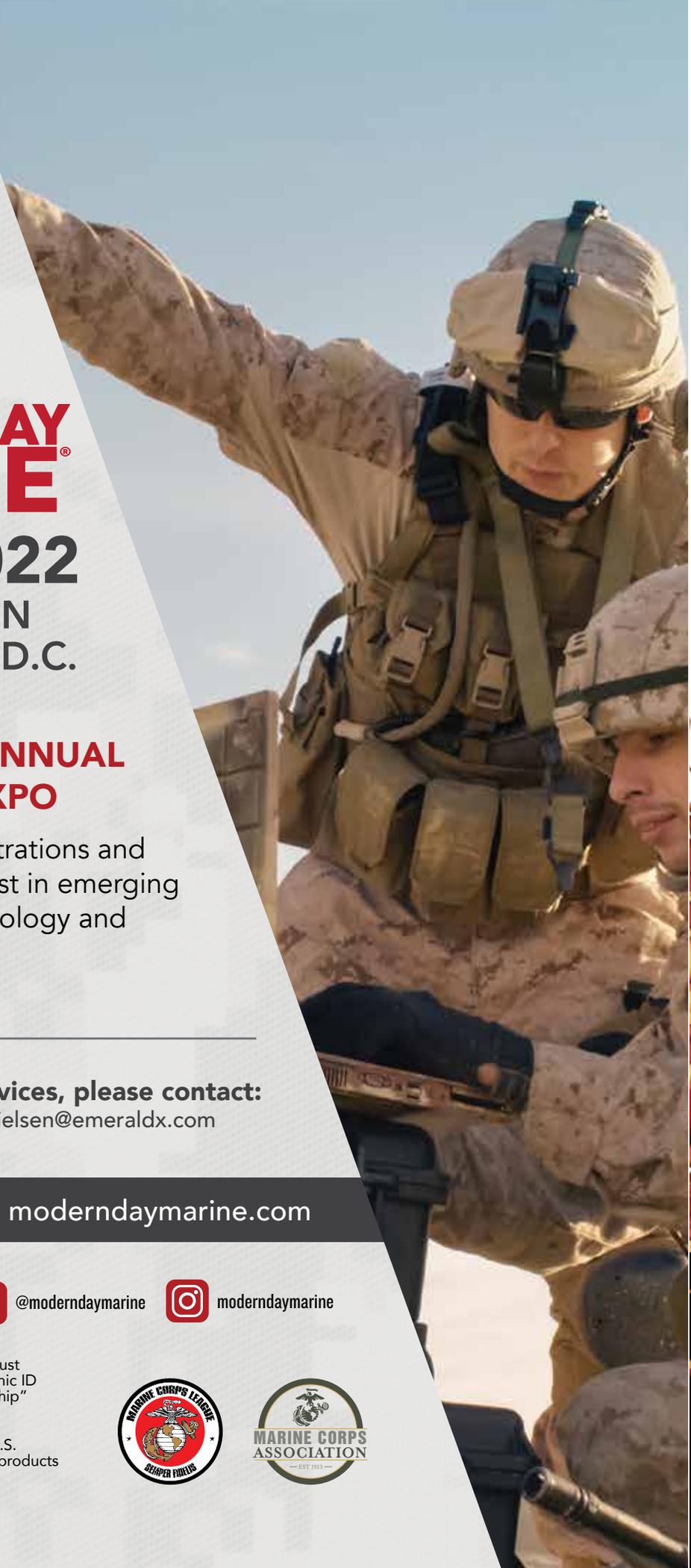
[@moderndaymarine](https://twitter.com/moderndaymarine)



[moderndaymarine](https://www.instagram.com/moderndaymarine)

Modern Day Marine is not open to the public. All registrants must provide proof of identity with a Government issued photographic ID and must demonstrate that they have an "identifiable relationship" with the Marine Corps.

The Department of Defense, the Department of the Navy, or U.S. Marine Corps does not endorse any company, sponsor or their products or services.





- **FOREIGN WEAPONS & MUNITIONS**
- **DEFENSE CONTRACTING**
- **MK-19/M2HB REBUILD PROGRAMS**
- **IMPORT/EXPORT**
- **ARMORER/OPERATOR TRAINING**
- **CONSULTING**
- **BROKERING**
- **FOREIGN TRADE ZONE**



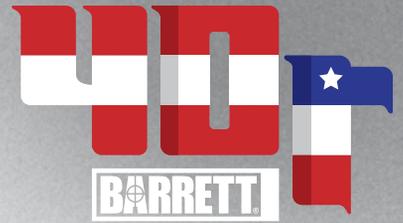
Armorer/Operator training available for government agencies, law enforcement, military personnel, and others.

PHOENIX **DEFENCE**

702.208.9735

INFO@PHOENIXDEFENCE.COM
WWW.PHOENIXDEFENCE.COM

THE LEADER IN LONG RANGE



A LEGACY TO DEFEND

FOUR DECADES OF ICONIC FIREARMS. The M107A1[®] is more than a simple evolution of its predecessor. Critical components re-engineered to be lighter, stronger, and more accurate. The result? A high-performance rifle that has successfully engaged targets at distances exceeding 1760 yards.

barrett.net