

# NATO Infantry Weapons Standardization



**Per G. Arvidsson**

**Chairman**

**Weapons & Sensors Working Group**

**Land Capability Group 1 - Dismounted Soldier**

**NATO Army Armaments Group**

Tel: +46-8-782 4181, Fax: +46-8-782 6412

E-mail: [per.arvidsson@fmv.se](mailto:per.arvidsson@fmv.se)

Web-site: [www.fmv.se](http://www.fmv.se)



NATO  
+  
OTAN

*NATO Army Armaments Group*

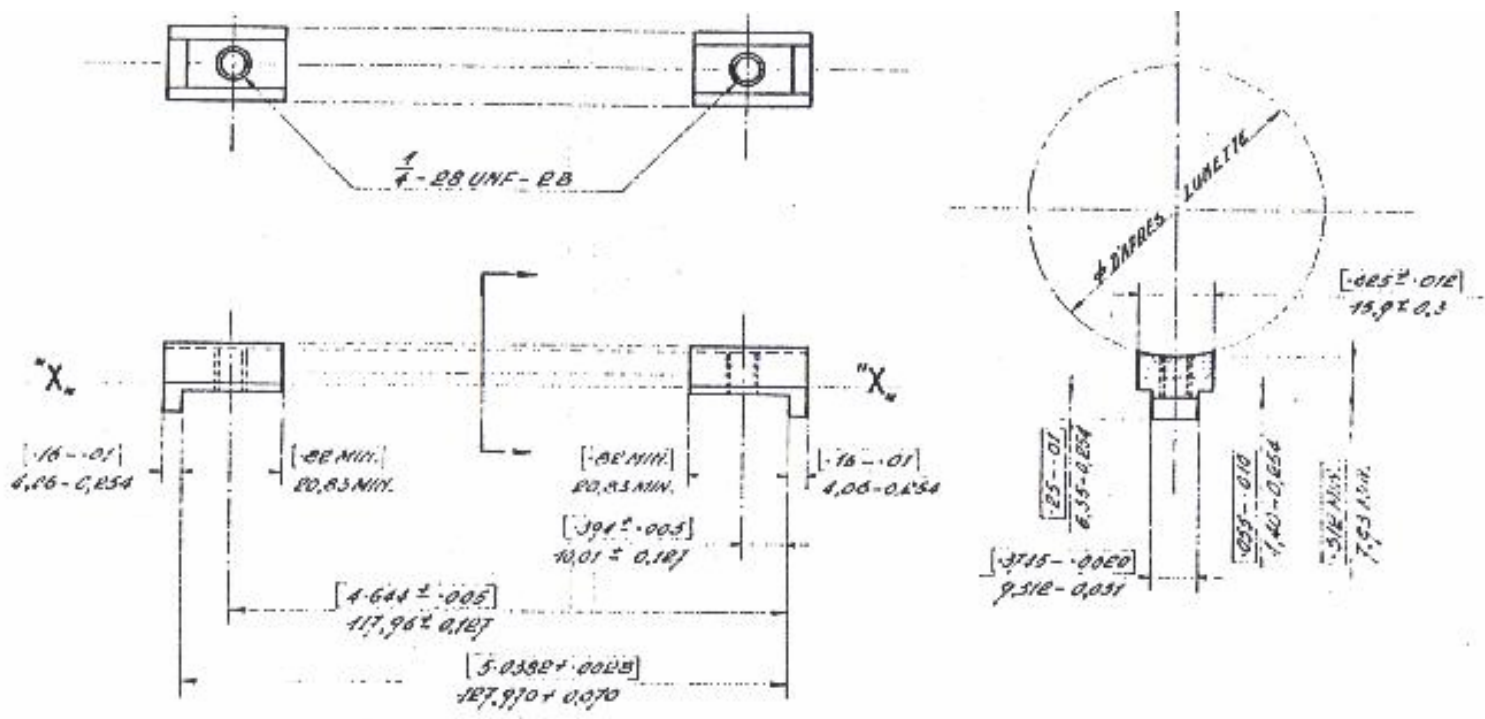


# Future NATO small arms?





# The first NATO infantry weapons STANAG



STANAG 2324 on "Rules governing the interchangeability of securing and holding devices for infra-red scopes on carbines, rifles and light machine guns" from 1961, cancelled in 1979.

# History of 5.56 NATO

- In 1970 NATO decided to try to standardize a common rifle and a second caliber to 7.62mm.
- During 1976-1979 they therefore performed mutual tests with rifles and ammunition in West Germany and Canada.
- The calibers tested were:
  - 5.56mm rounds with increased penetration from USA and BEL.
  - GBR 4.85mm round.
  - DEU 4.7mm caseless round.





# NATO rifle and ammunition trials 1976-1979



Country	Weapon	Caliber (mm)	Ammunition
Germany	G11	4.7	4.7 caseless
United Kingdom	4.85 IW	4.85	4.85
Belgium	FNC	5.56	SS109
Netherlands	MN 1 (Stoner 63)	5.56	M193
United States	M16A1	5.56	XM777
France	FAMAS	5.56	F1 brass and steel cased (M193 type)
United States (control)	M16A1	5.56	M193
Germany (control)	G3	7.62	7.62 NATO

# The results

- No weapon could be agreed upon.
- Some were in their prototype status.
- The BEL SS109 round was found to be the best, and was standardized as NATO's second rifle caliber in 1980.



# Proposed standardization



# There is no NATO rifle!

- During the tests the US M16A1 was a control weapon.
- You can often see reference to:
  - NATO magazine.
  - NATO flash hider.
  - NATO bayonet.
- There is currently no such thing!







# NATO Nominated Weapons

- NNW's are used as reference when new ammunition is standardized.
- As of 2008 the 5.56mm rifles are:
  - FNC, Belgium
  - G36, Germany
  - AR70/90, Italy
  - L85A2, United Kingdom
  - M16A2, USA
- A new NNW must work with all qualified 5.56mm ammunition designs.

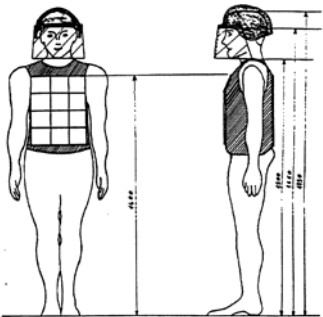


# 5.56mm NATO Ball Qualified Designs

NATO Design Number	Sponsoring Country	Head Stamp Initials	Publication Date	Manufacturer
AC/225-111A	USA	LC	30/06/1987	GOCO, Lake City, USA
		WCC		Olin Winchester USA
		TAA		205th Arsenal, Taiwan
AC/116-112A	BEL	FNB	14/11/1989	Fabrique Nationale, Belgium
AC/225-113A	ITA	SMI	12/04/1990	Europa Metall, Italy
AC/225-114A	GBR	RG	14/08/1995	Royal Ordnance, United Kingdom
AC/225-116A	BEL	FNB	16/11/1995	Giat Industrie, France
AC/225-117A	NLD	HP	15/05/1996	Hirtenberger, Austria
AC/225-118A	CAN	IVI	17/01/1997	GD-OTS, Canada
AC/225-120A	POR	FNM	31/08/1998	Indep, Portugal
AC/225-122A	ITA	GFL	11/01/1999	Fiocchi, Italy
AC/225-124A	GBR	RG	24/02/1999	Royal Ordnance, United Kingdom
AC/225-125A	DEU	DAG	10/03/2000	RUAG, Germany
		MEN		MEN, Germany
AC/225-126A	BEL, FRA	IMI	10/03/2000	IMI, Israel
AC/225-127A	SPA	SB	26/09/2000	Santa Barbara, Spain
AC/225-128A	NOR	CG	6/07/2004	NAMMO, Sweden
AC/225-130A	LIT	GGG	26/05/2005	GGG, Lithuania
AC/225-132A	GBR	RG	27/01/2006	BAE Systems Radway Green, United Kingdom
AC/225-133A	GBR	RG	30/01/2006	BAE Systems Radway Green, United Kingdom

# CRISAT

- During the early nineties an extensive work was performed by LG/3 (then named Panel III) called “Program for Collaborative Research Into Small Arms Technology” (CRISAT).
- Seven areas were studied.
- A report was published in 1994.
- The results were used to develop STANAG’s and the D/7 document “Infantry Small Arms Post-2000” (NATO AC/225(LG/3)D/7).



STANAG 4512

Dismounted personnel target

- US: Technology Area 1: Target Definition
- UK: Technology Area 2: Terminal Effects
- FR: Technology Area 3: Target Acquisition
- US: Technology Area 4: Materials
- GE: Technology Area 5: Propellants
- US: Technology Area 8: Power & Electronics Systems
- UK: Technology Area 9: Analysis of Effectiveness

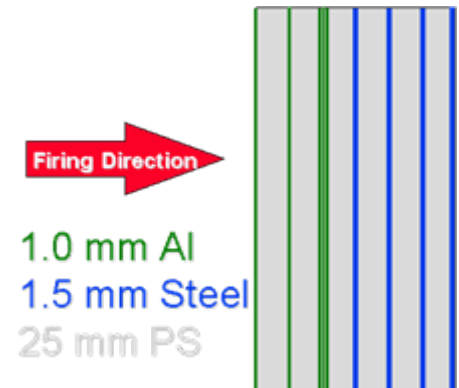
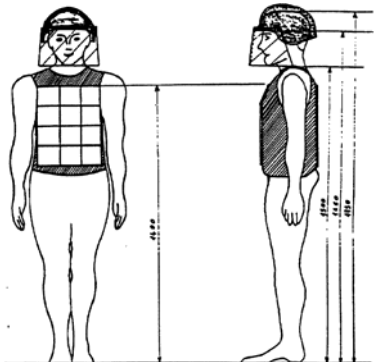


# LCG/1 STANAG's

<b>STANAG</b>	<b>Title</b>	<b>Prom. Date</b>
2310	Small Arms Ammo. (7.62mm)	11-76
2329	Links for 7.62mm Ammo (AOP-3)	04-82
4090	Small Arms Ammo. (9mm)	04-82
4172	Small Arms Ammo (5.56mm)	05-93
4173	25mm x 137mm AFV Cannon Ammo	04-86
4383	Small Arms Ammo. (12.7mm)	07-01
4403	Standard 40mm Grenades - High Velocity	
4498	Unarmoured Vehicles, Helicopters & Field Fortification Targets	04-04
4512	Dismounted Personnel Targets	04-04
4513	Incapacitation & Suppression	04-04
4536	Representative Building Targets	04-04
4619	Electrical connectivity standards for dismounted soldier systems	

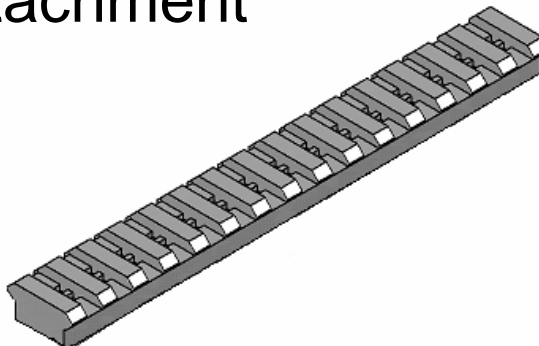
# STANAG 4512 dismounted personnel targets

- A “NATO protected” man is defined, but there is a lack of a “NATO unprotected man”.
- We are going to replaced the cold war Soviet body armor with:
  - Soft body armor.
  - Modern ceramic body armor.
- We will also standardize a witness pack for fragments. It will be based on the GBR BAE.



# New proposed standardizations

- Up until now all NATO small arms standardization has been ammunition.
- We will now recommend standardization of:
  - NATO Rail
  - NATO Magazines
  - NATO Muzzle Thread
  - NATO Flash Hider Diameter
  - NATO Bayonet Attachment
  - NATO Accessory Attachment



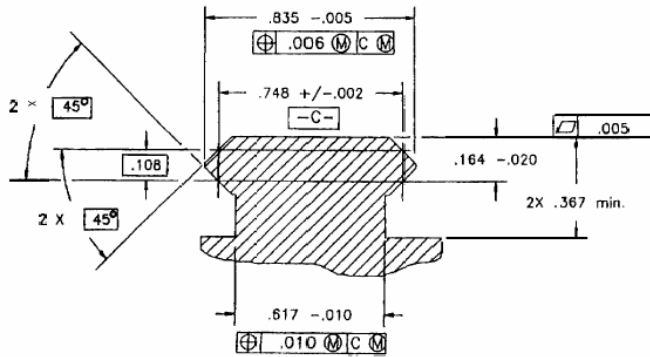
Participating industries:

- Aimpoint
- Beretta
- Colt
- Fabrique National
- Heckler & Koch

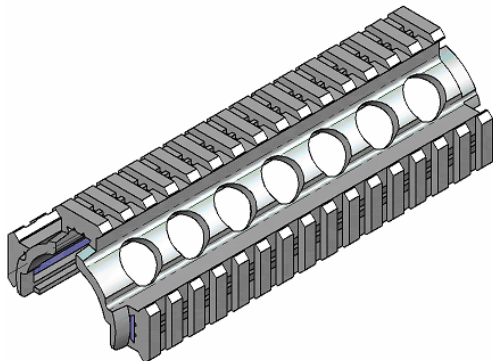
# Weapon rail history



Desert Storm 1991:  
Clamping and duct tape...



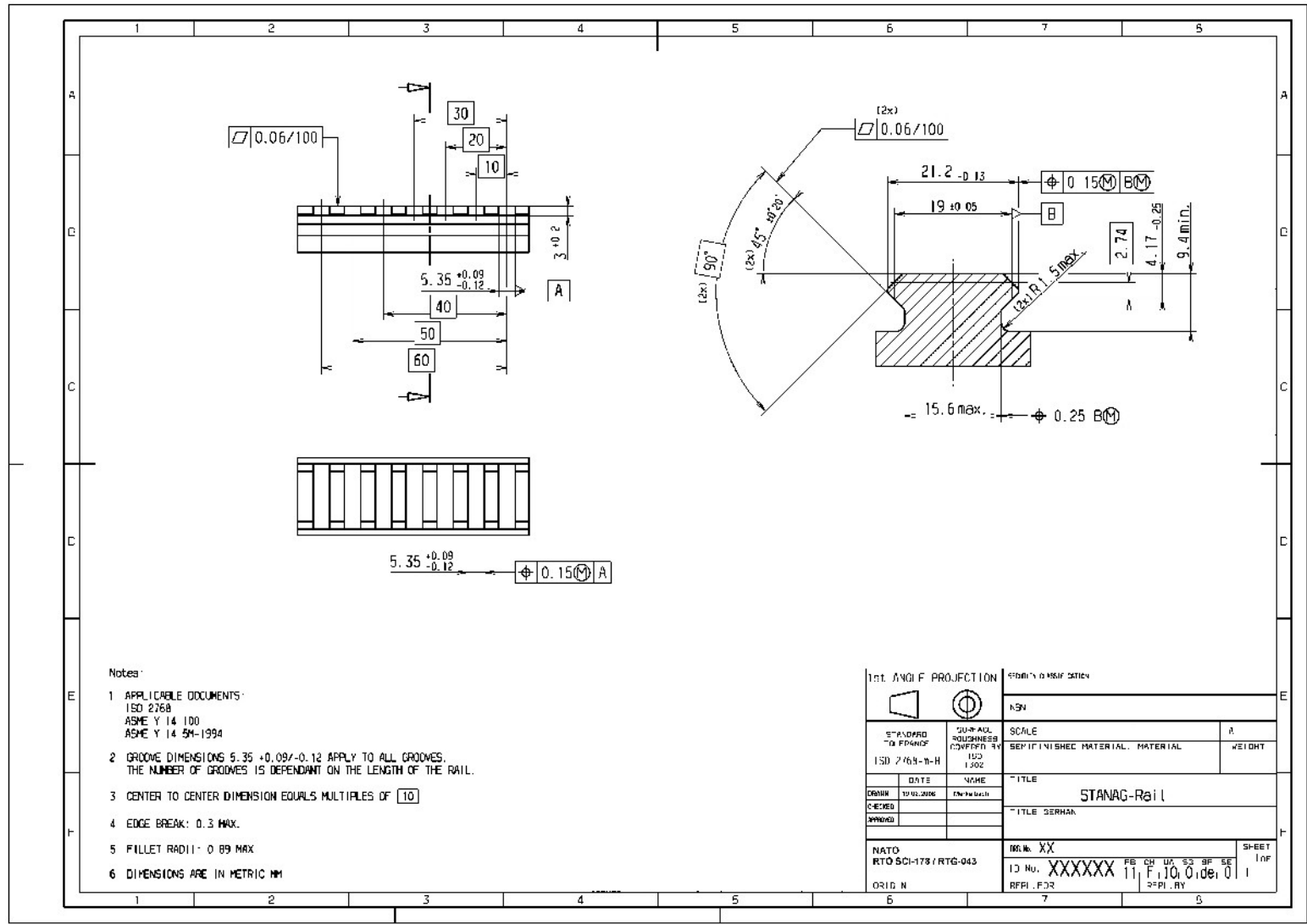
1995 US MIL-STD-1913



2010 Powered NATO Rail





# Proposed NATO rail



**Notes:**

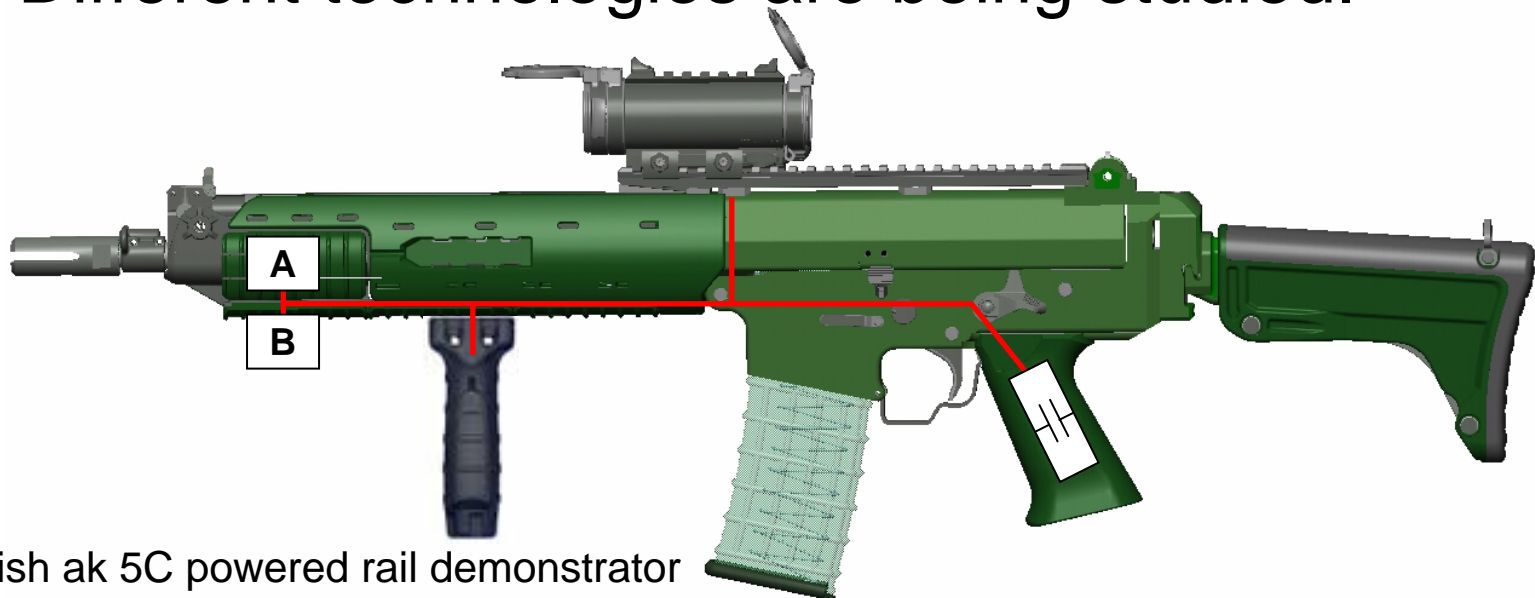
1. APPLICABLE DOCUMENTS:  
ISO 2768  
ASME Y 14.100  
ASME Y 14.5M-1994
2. GROOVE DIMENSIONS 5.35 ±0.09/-0.12 APPLY TO ALL GROOVES.  
THE NUMBER OF GROOVES IS DEPENDANT ON THE LENGTH OF THE RAIL.
3. CENTER TO CENTER DIMENSION EQUALS MULTIPLES OF 10
4. EDGE BREAK: 0.3 MAX.
5. FILLET RADIUS: 0.89 MAX.
6. DIMENSIONS ARE IN METRIC MM

1st. ANGI F PROJECTION		SPRINT'S 0.5MM/0.020IN	
 		NSN	
STANDARD TO REFERENCE	QUAL. ADJ. REQUIREMENTS CONFIRMED BY	SCALE	A
ISO 2768-M-H	ISO 1302	SEMI-FINISHED MATERIAL	WEIGHT
DRAWN	DATE	TITLE	
CHECKED	10/01/2006	STANAG-Rail	
APPROVED		TITLE SERHAN	
NATO RTG SCI-178 / RTG-043		REV. XX	SHEET 1 of 1
ORIG. N		IC No. XXXXXXXX	FB CH UK ES SP SE
		REFI. FDR	11 F.10.0.0.0.0.1



# The next step is the NATO powered rail

- Centralized power is the key for the future!
- CAN, DEU, SWE and USA have all placed contracts with companies to develop powered rail demonstrators.
- Different technologies are being studied.



Swedish ak 5C powered rail demonstrator

# Questions?

