

NWM DE KRUIITHOORN

NWM de Kruithoorn B.V.
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Break-up Ammunition



Applications and Safety

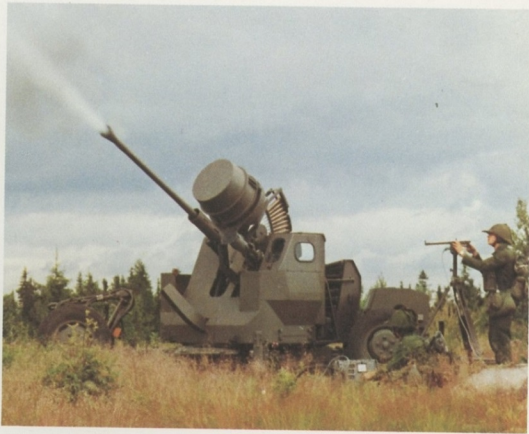
NWM Break-up ammunition can be used in guns with calibers ranging from 20 mm to 40 mm. The handling, feeding and firing of break-up rounds is identical with a target practice or live round.

Since forces on the gun are of the same magnitude as when firing live rounds the break-up ammunition is the solution for testing of guns after repair or overhaul. Break-up ammunition provides realistic training conditions for gunners because sound flash and smoke are the same as those in combat. Any aircraft can serve as a simulated target and attack trajectories can be flown just as they would be in combat.

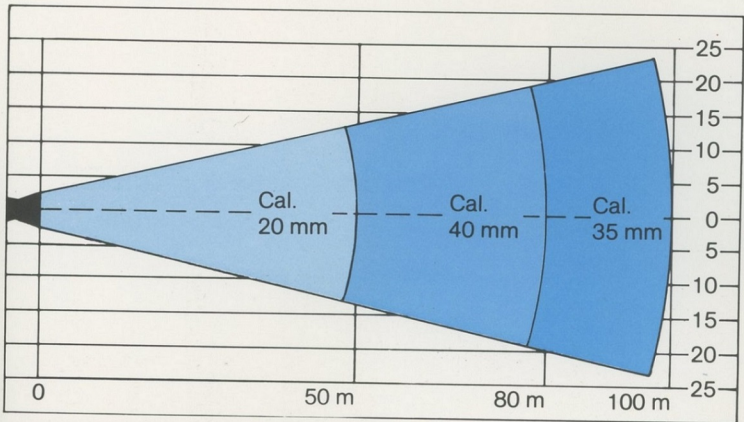
An area in front of the muzzle of only 50 to 100 meters long, depending on caliber, and a maximum of 20 meters wide is required as safety area. Such areas can usually be found around gun repairshops and training sites. The functioning and safety criteria can be guaranteed in extreme temperature conditions.



Dutch CA-1 A.A. System firing 35 mm break-up ammunition



40 L70 Gun firing 40 mm break-up ammunition



Safety area in front of the muzzle for different calibers when firing break-up cartridges



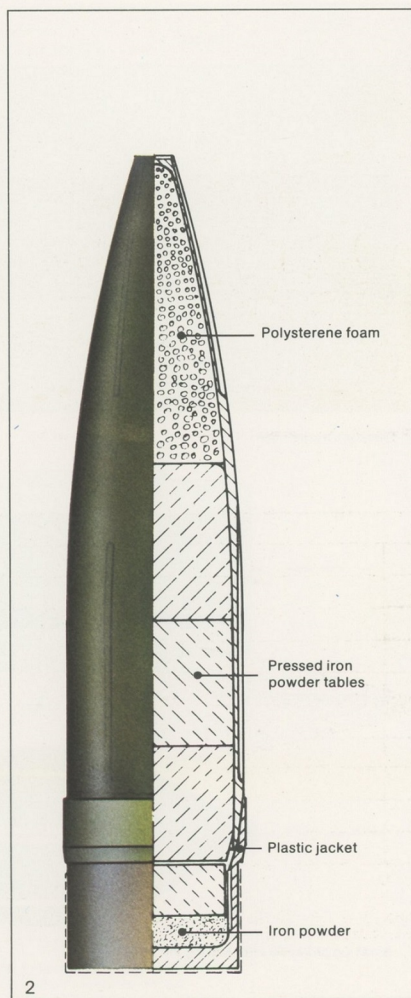
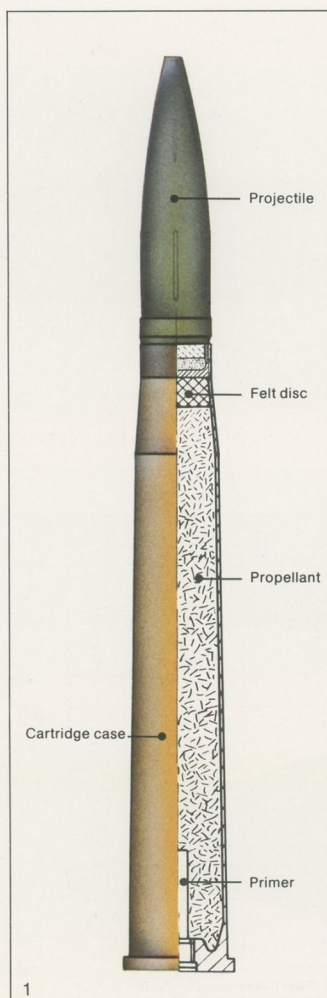
Twin Rheinmetall MK20-RH 202 A.A. System firing break-up cartridges

Technical Description of the Break-up round (Static)

The NWM break-up cartridge has approximately the same weight and dimensions as a training round. Cartridge case, primer and propellant are the same as for a live round. The projectile consists of a plastic jacket, made out of two parts friction-welded together.

The core of the projectile contains specially treated metallic powder. In the top of the projectile a foam polysterene cone is located. The projectile is glued into the case-mouth after inserting a felt disc to provide a separation between propellant and glue and to protect the base of the projectile against the hot gases during firing.

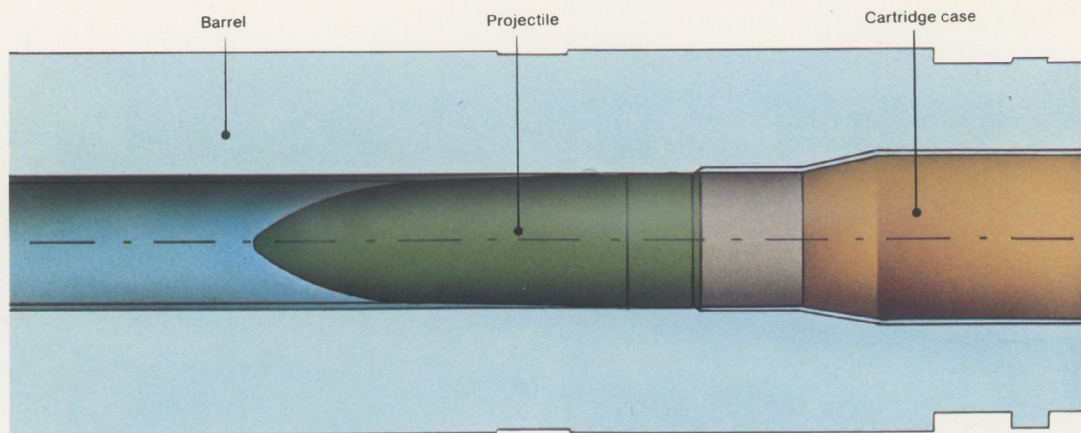
- 1
40L70 Break-up cartridge
- 2
40L70 Break-up projectile



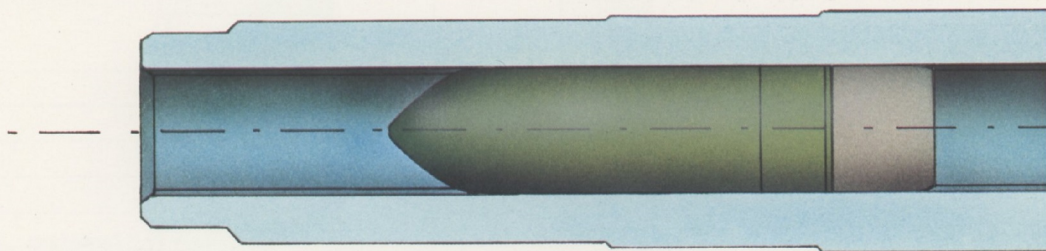
Technical Description of the Break-up round (Dynamic)

On firing the break-up projectile passes up the bore, taking up spin. Initial spin is imparted by the simulated-rotation band. When centrifugal forces on the iron powder increase almost the entire projectile-jacket is performing this function. As long as the barrel is supporting the plastic jacket, the jacket will remain intact.

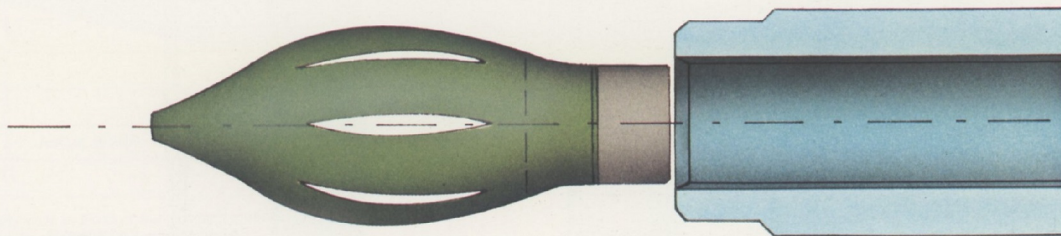
However, upon leaving the barrel, the jacket ruptures in longitudinal directions determined by serrations on its interior.



Cartridge in chamber

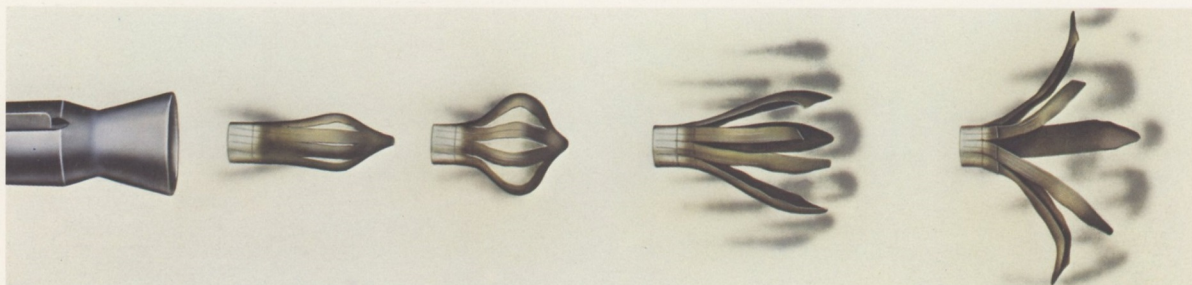


Break-up projectile in barrel

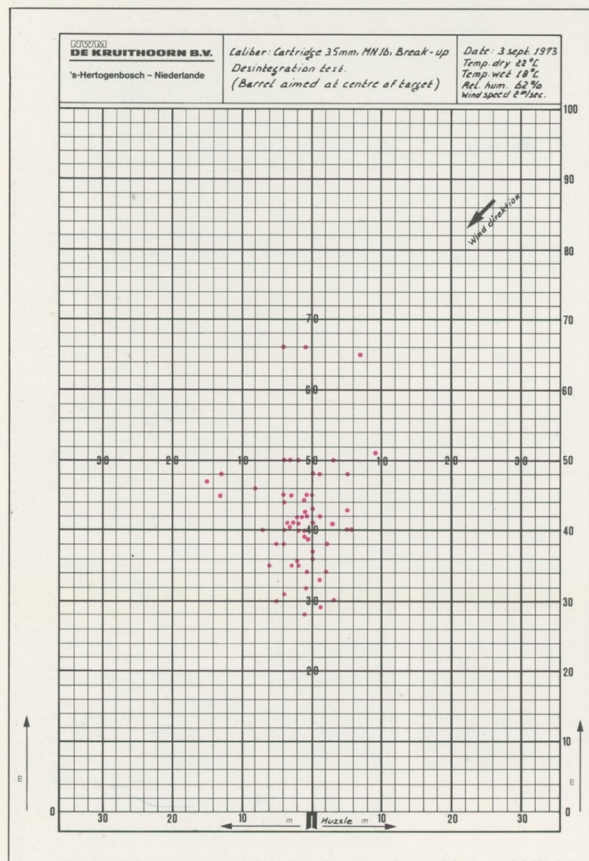


Break-up projectile after leaving the muzzle

These ruptures cause the jacket to open up completely giving maximum drag so that the jacket will fly only a short distance (as shown in the drawing below). The iron powder flows out of the jacket during this break-up process and spreads on the ground in a low density close to the gun muzzle.



The pictures show the different phases of the breaking-up of the projectile-time between pictures 0.00016 seconds.



Registration from showing a typical dispersion of the plastic fragments in relation to the muzzle of the weapon. Distances are in meters.

The Company

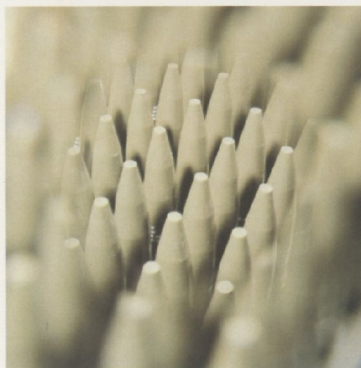
NWM De Kruithoorn B.V. is located in the south of the Netherlands at 's-Hertogenbosch, approximately one hour from Amsterdam Airport. Founded in 1948, the company has increased its personnel from an original staff of 20 to the present number of about 500 persons employed. Initially established for the production of cartridges for hunting weapons, production of military ammunition started in 1953 with a contract from the US Government for small arms ammunition.

NWM De Kruithoorn B.V. is an export-oriented company. More than 90% of the yearly production is exported to NATO- and other allied countries. An experienced team of qualified engineers and technicians guarantees the highest degree of workmanship and quality assurance.

The company meets the military quality assurance requirements specified in STANAG 4108 and has obtained the AQAP 1 Certificate on April 1, 1974. Furthermore a permanent team of the Dutch Military Inspectorate, which team also inspects and accepts material on request of other countries, is stationed at the plant.



NWM – Main office building



Series production of break-up Ammunition



Measuring technique in Firingtunnel

Special Advantages of the new Ammunition are:

- training possibilities with realistic performance and high safety
- limited danger area (50-100 yards in front of the muzzle, depending on the caliber)
- the same functioning of the guns as with live ammunition, even under extreme temperature conditions, -30°C (-22°F) till +40°C (+104°F)
- the same level of sound, flash and smoke
- no special barrel or adaptor required
- substantial savings in ammunition costs and in transportation of guns and personnel to firing ranges

NWM offers a wide Range of Break-up Cartridges, i.e.:

- 40 mm MN19 for Bofors 40 mm L70 guns
- 40 mm DM18A1 for Bofors 40 mm L60 guns
- 35 mm MN16 for Oerlikon guns
- 30 mm MN15 for Hispano Suiza HS831 and Rarden guns
- 25 mm MN14 for Oerlikon guns
- 20 mm DM78A1 for Hispano Suiza HS820 and Rheinmetall MK20 RH202 guns
- 20 mm MN13 for Oerlikon 5TG and 204 GK guns
- 20 mm MU10 for Vulcan Air Defence System



Types of NWM break-up ammunition

Subject to change without further notice
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