

RHEINMETALL

AIRCRAFT CANNON BK27

TAKING RESPONSIBILITY IN A CHANGING WORLD

RHEINMETALL

The BK27 aircraft cannon is a single-barrelled, gas-operated revolver cannon with electric firing in the NATO calibre 27 mm x 145 in accordance with STANAG 3820. The weapon was first developed as part of the MRCA (Multi-Role Combat Aircraft) programme in the late 1960s and has been in series production since 1970. To date, over 4,000 cannons have been manufactured and series production continues. The BK27 is the standard armament for European combat aircraft. The associated ammunition comprises air-to-air, air-to-ground, multi-purpose and training rounds, with the option to fire a mix of different types of ammunition.

The BK27 and its variants are in service in the following countries:

- Austria
- Brazil
- Brunei
- Colombia
- Czech Republic
- Germany
- Hungary
- Italy
- Kuwait
- Oman
- Qatar
- Saudi Arabia
- South Africa
- Spain
- Sweden
- Thailand
- Turkey
- Ukraine
- United Arab Emirates
- United Kingdom

LINKLESS AMMUNITION FEEDING



LINKED AMMUNITION FEEDING



The variant of the BK used in the Tornado and Gripen utilises a belt-fed ammunition feed system. The requirement for a closed system that can be certified independently of its installation and eliminates the issues associated with ammunition feeding and spent cartridge cases led to the development, implemented in the Eurofighter, of a linkless ammunition feed system with cartridge return to the vacated spaces in the ammunition feed chain. This system also enabled a significant reduction (approx. 60 per cent) in the installation volume. The result is a low-risk, modularly adaptable cannon system, which has since also been implemented in the Gripen NG. The BK27 can be installed in any position in the various carrier systems.

The BK27 has been and continues to be used in

- Eurofighter Typhoon
- Saab JAS 39 Gripen
- Gripen E/F NG
- Panavia Tornado
- Alpha Jet (decommissioned)
- MLG27 naval light gun





KEY FEATURES

- Low weight
- Reduced installation volume
- High precision
- Very high rate of fire from the first shot
- Very high muzzle velocity
- Superior range of ammunition

TECHNICAL DATA	
Calibre	27mm x 145
Principle	Gas powered revolver cannon
Weight	Approx. 100 kg
Weight incl. LAB Eurofighter	152 kg (200 rounds)
Weight incl. LAB Gripen NG	144 kg (150 rounds)
Reliability	20,000 MRBF (Mean Rounds between Failure)
Muzzle speed	1,100 m/s
Rate of fire	1,800 rpm
Ammunition feeding system	Belted or linkless
Recoil force	28 kN
	9 kN with recoil damper



FAP 27 MM x 145 AMMUNITION/PEB327 (DM113)

Frangible armour piercing

- This ammunition is specifically designed for use in the BK27 aircraft (revolver) cannon, to defeat “soft” and “hard” targets, without recourse to the use of conventional high explosives and fuzes.
- The complete round consists of a lacquered steel cartridge case and electric primer, loaded with triple base propellant with a projectile containing a payload of a core of “Frangible” tungsten alloy surrounded by a large number of tungsten alloy spheres and fitted with a sintred iron driving band.
- On impact, the payload penetrates the outer skin of the target and then progressively breaks up and expands as it passes through the remaining structure, releasing a highly energetic fragment cloud deep inside the target with devastating effects.
- The round can be deployed in both the air-to-air and air-to-ground roles and has the same trajectory as the existing inservice 27 mm x 145 ammunition. Due to its design concept, the FAP round is intrinsically safe through feeding and firing, with the additional advantage of reduced risk from ricochets, as the payload breaks up on ground impact.
- Dual use – combat and practice ammunition.
- Reduced life cycle cost (hazard class as per TP).

MAIN FEATURES	
Performance	Defeats hard and soft targets
Firing mode	Single shot and burst firing
Safety	Insensitive munition (no HE)
Environment	No toxic elements
Transport/Storage	UN Classification 1.2C
Gun/System	BK27/MLG27 Light Naval Gun System

TECHNICAL DATA	
Total length of round	243 mm
Mass of round	approx. 516 g
Mass of projectile	260 g
Propellant	Triple base type
Muzzle velocity	1,025 m/s
Cartridge case	Steel
Temperature range (functional)	–40°C to +70°C
Dispersion	≤0.5 mil



FAPDS 27 MM x 145 AMMUNITION/PEB299 (DM63)

Frangible armour piercing discarding sabot

- The “Frangible” concept was developed to defeat “hard” and “soft” targets, without recourse to the use of conventional high explosives and fuzes.
- Based on the well proven Rheinmetall subcalibre technology, employing aluminum alloy sabot with integrated driving band, the FAPDS ammunition benefits from an extremely short time of flight to tactical ranges, thereby increasing accordingly hit probability.
- On impact, the frangible tungsten alloy core penetrates the outer skin of the target and then progressively breaks up as it passes through the remaining structure, thereby releasing a highly energetic fragment cloud, which causes damage deep inside the target and ensures a high kill probability.
- The short time of flight and devastating effects of the frangible core against a wide range of targets, makes FAPDS the essential choice for naval and terrestrial threat environment. FAPDS is not qualified for aircraft but for the use with the naval gun mount MLG27.

MAIN FEATURES	
Performance	Short time of flight
	Enhanced probability of hit
	Defeats hard and soft targets
Firing mode	Single shot and burst firing
Safety	Insensitive munition (no HE)
Environment	No toxic elements
Transport/Storage	UN Classification 1.2C
Gun/System	Light Naval Gun System MLG27

TECHNICAL DATA		
Total length of round		242.5 mm
Mass of round		approx. 498 g
Mass of projectile		180 g
Propellant		EI type
Muzzle velocity		1,100 m/s
Cartridge case		Steel
Temperature range (functional)		–30°C to +50°C
Dispersion		≤0.5 mil
Penetration	2,000 m	D1-Target/60° NATO (Attack helicopter)

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TP 27 MM x 145 AMMUNITION/DM28

Target practice

- This ammunition is specifically designed for use in the BK27 mm aircraft (revolver) cannon to train aiming and firing the weapon system.
- The complete round consists of a lacquered steel case and an electric primer, loaded with triple base propellant. The projectile consists of a projectile jacket and ballistic cap made of steel.
- This round has been developed for all air and ground training purposes. The design of this type of ammunition combines all advantages e.g. the same external ballistics with the same trajectory as for all full calibre 27 mm x 145 ammunition.
- Ballistically matched to combat ammunition.
- Handling, loading and weapon function identical to combat ammunition ensuring a realistic training.

MAIN FEATURES	
Performance	Matches combat ammunition trajectory
Firing mode	Single shot and burst firing
Safety	Insensitive munition (no HE)
Environment	No toxic elements
Transport/Storage	UN Classification 1.2C
Gun/System	BK27 Eurofighter TYPHOON, Tornado MRCA, Gripen/Light naval gun system MLG27

TECHNICAL DATA	
Total length of round	243 mm
Mass of round	516 g
Mass of projectile	260 g
Propellant	Triple base type
Muzzle velocity	1,025 m/s
Cartridge case	Steel
Temperature range (functional)	–40°C to +70°C
Dispersion	0.5 mil



RECOCKING CARTRIDGE DM72A1

Recocking round for pyrotechnic loading mechanism

- The BK27 is a gas-operated aircraft cannon. In the event of a misfire, there is no gas pressure available to drive the firing cycle. To prevent a loading malfunction, the BK27 is fitted with a pyrotechnic loading mechanism. This loading mechanism holds up to five DM72A1 recocking rounds.
- If the weapon control system detects a misfire, one of the recocking cartridges is ignited, and the resulting gas pressure drives the weapon's breech cycle. The misfired cartridge is ejected and a new cartridge is fed into the firing position.

TECHNICAL DATA	
Propellant	NC type
Primer cap	Electric
Total length	47 mm
Mass	17 g
Generated pressure	745–795 bar
Temperature range (functional)	–46°C to +63°C
Transport/Storage	UN Classification 1.4C)
Gun/System	BK27/Tornado, Eurofighter, Gripen

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