155 MM ARTILLERY
MODULAR CHARGE SYSTEM

RHEINMETALL
NITROCHEMIE

INTEROPERABILITY WITH ALL NATO STANDARD 39 AND 52 CAL. WEAPONS AND AMMUNITION CONFIGURATIONS

The 155 mm Artillery Modular Charge System has been developed closely with Rheinmetall Waffe Munition and was qualified into service with the German BWB in 1996 for use in all NATO standard 39 and 52 calibre gun configurations with associated projectiles complying with the Joint Ballistic Memorandum of Understanding (JBMoU). The DM82A1 low zone and the DM92 high zone module have an operational performance over the entire temperature range –46°C to +63°C. The modular charge system is in service with more than ten user countries (NATO and others) and in qualification with other customers. More than 1.5 million modules have been produced and fielded to date including operational deployment.

GENERAL PRODUCT INFORMATION

- Fully qualified with requirements of JBMoU
- Increased range to ›40 km with ER projectiles
- Bi-modular charge design low zone DM82A1 and high zone DM72/92 (high stow capacity, improved logistics)
- Unique ignition booster design enables safe ignition and prevents pressure waves and negative differential pressures in all loading conditions and temperatures
- Excellent LOVA/IM-characteristics
- Low barrel wear, low toxicity of ingredients
- Low standard deviations of the muzzle velocity at all charge levels
- Combustion without residues
- Low muzzle flash

ENVIRONMENTAL ROBUSTNESS C2 A1

Besides the proven interoperability in several gun systems, the modular charge system from Nitrochemie stands out due to its environmental robustness and durability under extreme environmental conditions.

The extremely demanding logistic and tactical rough handling testing has been extended to include A1 hot (+35°C to 71°C), C2 cold (–37°C to –46°C) climatic cycles and thermal shock at –51°C and +71°C in metal or plastic containers CT NC series. These tests were conducted by serveral independent governmental authorities of NATO and non-NATO users.

INSENSITIVE MUNITIONS COMPLIANCE

The modular charge system has been tested in accordance with the STANAG requirements for IM munitions including shaped charge attack from M77 bomblet sub-munitions and the 87 mm RPG7 shaped charge. In all tests, type IV to V reactions have been demonstrated.

Nitrochemie CT NC series packaging

DM82A1

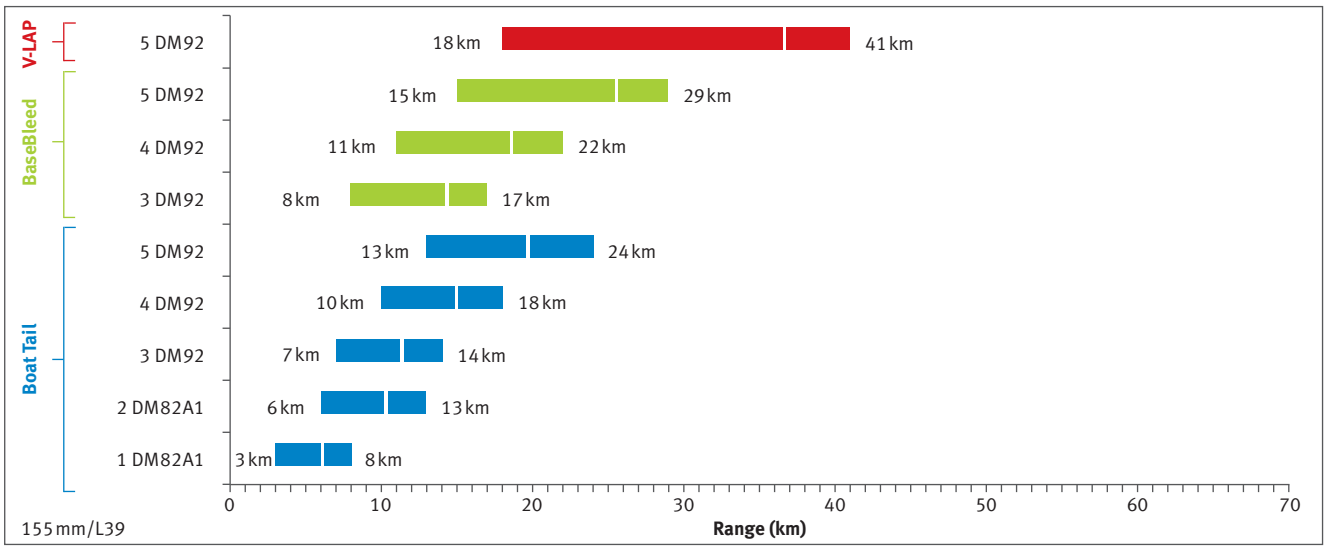
DM72/DM92

IM PERFORMANCE DM 72 (PACKAGED)				
Conducted test	**Reference**	**Essential criterion**	**Desirable criterion**	**DM72/DM92 demonstrated**
Standard liquid fuel fire	STANAG 4240	IV	V	V
Slow heating	STANAG 4382	III	V	V
Bullet attack	STANAG 4241	III	V	V
Shaped charge jet impact	MIL-STD-2105B 5.2.6.	III	V	IV–V
Shaped charge jet impact	against RPG7	III	V	V
Sympathetic reaction	against RPG7	III	IV	No reaction
Safety drop test	STANAG 4375	No reaction	No reaction	No reaction

BALLISTIC REQUIREMENTS FOR 39 CAL. GUN (FH70, M109, M777)

- Mean muzzle velocity 810 m/s (39 cal. gun, 5 modules, L15A1 projectile, 21°C)
- Demonstrated system compatibility: FH70, M109, M777A2, AS90
- Demonstrated projectile compatibility: US M107-family, German DM-family, South African Assegai-family, various Scandinavian Nammo projectiles, Turkish MOD 274, Spanish ER02A1-family, US Excalibur

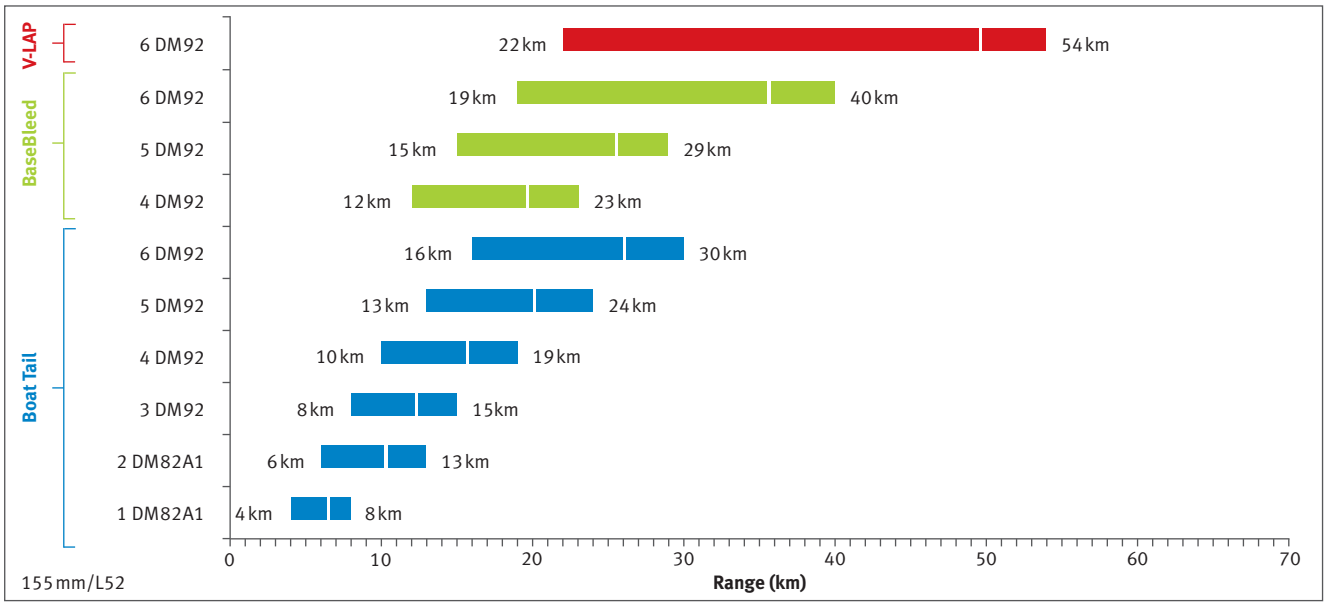
RANGE AND RANGE OVERLAP FOR 39 CAL. GUN (FH70, M109, M777)



BALLISTIC REQUIREMENTS FOR 52 CAL. GUN (PzH 2000)

- Mean muzzle velocity 945 m/s (52 cal. gun, 6 modules, L15A1 projectile, 21°C)
- Upper pressure limit at propellant proof 391 MPa at 63°C
- Demonstrated system compatibility: PzH 2000, Ceasar, Firtina, Archer, SIAC Howitzer, KRAB
- Demonstrated projectile compatibility: US M107-family, UK L15-family, German DM-family, South African Assegai-family, French LU211, various Scandinavian Nammo projectiles, Turkish MOD 274, Spanish ER02A1-family, Diehl/Leonardo Vulcano

RANGE AND RANGE OVERLAP FOR 52 CAL. GUN (PzH 2000)



Nitrochemie Aschau GmbH
Liebigstrasse 17
84544 Aschau am Inn, Germany

Nitrochemie Wimmis AG
Niesenstrasse 44
3752 Wimmis, Switzerland

info@nitrochemie.com
www.nitrochemie.com