

BREACHING & URBAN WARFARE DEVICES

Gad Mischori

*RAFAEL – Armament Development Authority Ltd.
Haifa 31021, P.O.B. 2250, Israel
gadm@rafael.co.il*

Abstract

Urbanization is one of the global most distinctive phenomenon. This process affects also the nature of combat scenario while more and more military operations take place in urban areas, as it was expressed in the last 15 years in Iraq, Afghanistan, the Balkan, Chechnia, Somalia and during the Israeli-Palestinian conflict. Military Operations in Urban Terrain (MOUT) introduces many challenges into different combat scenarios, LIC (Low Intensity Conflict) and complex anti-terror operations. In the late stages of the urban combat phase of operation, as well as during the survivability and sustained operations (SASO) phase of the urban fight, military forces are often operating at close quarters against an ambiguar enemy [1]. In this kind of asymmetric war, the enemy gains the advantage by using simple munitions and relies on the natural protection of three dimensional urban structures. Mission forces are usually divided into small self-reliant groups (bubbles) that confront the complexity of the urban battlefield. Traditional weapons are insufficient for this scenario. This paper presents RAFAEL's breaching devices family which offers an innovative and unique solution for variety of targets and challenges within the Urban terrain.

1. Introduction

Military forces face a complicated challenge during MOUT. The enemy is relying on structures, the most common urban sign, as a shelter and a base of operation. In this context, breaching systems are critical and crucial for military forces. The existence of these relevant breaching systems enables the troops to overcome the enemy advantages pertaining to the use of structures within the urban terrain. The purpose of these systems should be to assist the troops in the team-company level to fulfil their missions.

RAFAEL (a leading multi discipline Defence Company in Israel) has developed a variety of breaching products – rifle launched, shoulder launched and static hand emplaced munitions – to assist the forces in urban warfare confrontations. These products can solve door entry problems, create mobility corridors through walls and structures as well as defeat urban structures, bunkers and light armored vehicles. The disposable, with fire from enclosure (FFE) capability, shoulder launched systems are developed together with DND (Dynamit Nobel Defence GmbH) of Germany, a subsidiary of RAFAEL, based on the company's Panzerfaust 90 launcher.

RAFAEL's and DND's new breaching solutions create a new modern spectrum of operational solutions for military forces to surprise the enemy and reduce risk to friendly forces, eliminate collateral damage and ensure that innocent people will not be hurt. Thus while keeping and even increasing the forces safety and survivability.

2. The Breaching Devices Family

The breaching systems family enables:

2.1 Doors Breaching

A reality of urban combat is that, typically, enemy combatants don't stand out in the streets and face down clearly superior firepower. Much more likely, the enemy uses buildings for

protection, essentially creating urban fortresses. Raids on such facilities are extremely dangerous. The warfighters are interested to have the capability to get inside safely, and, once inside quickly get to the people and weapons that are there [1]. Doors are initial part of structures. RAFAEL's solution (SIMON, GREM) (*Fig.1*) offers breaching all types of doors, eliminating risk to the operator and reducing injury to personnel near the door while surprising the enemy. These lightweight, rifle launched munitions are typically fired between 15m to 30m from the door (*Fig.2*). The warhead contains a minimum amount of IM explosive that is initiated by a mechanical fuze at impact. The door is breached by the action of expanding shock waves and usually left open on its hinges. The devices are easy to use, safe to the operator, create no collateral damage and require minimum training.



Fig. 1. SIMON Doors Breaching Rifle Grenade



Fig. 2. SIMON mounted on a rifle

2.2 Mobility Corridors

The streets and alleies within the urban terrain are considered as killing zones. To assist the forces in moving safely RAFAEL and DND developed the MATADOR (Pzf 90) WB (Wall Breaching) (*Fig. 3*), used especially for making a man-size hole to create a mobility corridor in a variety of walls that typify urban structures (*Fig. 4*). MATADOR WB is a disposable shoulder launched weapon with FFE (Fire From Enclosure) capability using the Davis Gun launching method. It incorporates a novel EFR (Explosively Formed Ring) warhead. The warhead is initiated at stand-off distance from the wall enabling the blast and liners to expand, cutting and breaching the wall. The breaching is surgical thereby maintaining the structural soundness and mission force safety. Its weight is 12.5 kg (27.6 lbs) and its operational distance is 20m to 120m. The munition is ergonomic and requires minimum training.



Fig. 3. MATADOR (Pzf 90) WB



Fig. 4. The wall breaching effect

2.3 Behind Walls Defeat Capability

The enemy feels secure and safe inside the structures he uses. The combatants need new small arms that are highly lethal and easy to use inside urban spaces. They need a system that can defeat the enemy behind walls, a light, wall-buster weapon that incapacitates an enemy inside urban structures [2].

The MATADOR (Pzf 90) AS (Anti Structure) (Fig. 5) and the URBAN STAR (Fig. 6) are designed for striking enemy forces located within structures and defeating them. The MATADOR AS is a shoulder-launched, fully disposable munition with FFE capability. It is multi-purpose and specially adapted for MOUT. An advanced tandem warhead fitted with a multi-mode fuze provides it with the capability to destroy structures, fortified positions and light armor vehicles. It also provides a mouse holing capability. Its effective range is from 14m to 400m, and it is highly accurate to minimize collateral damage.

The system weight is 10 kg (22 lbs). The munition is ergonomic and requires minimum training.

The URBAN STAR is a hand-placed munition with tandem warhead similar to MATADOR AS. It can be operated against structures providing lethality effect behind walls as well as other tasks such as cratering roads and runways or creating foxholes. Its total weight is 6 kg (13.2 lbs) and can be quickly emplaced against a wall or on a roof using its quick-deployment integral tripod. It can be initiated by any standard ignition device similar to a demolition block. It does not contain any primary explosives so it does not incorporate any fuze; this is a unique safety feature that makes it very safe to operate.



Fig. 5. MATADOR (Pzf 90) AS



Fig. 6. URBAN STAR hand-placed munition

2.4 Destroying Bunkers and Light Armoured Vehicles (LAV)

Fortified positions, as well as bunkers and LAV are commonly used by the enemy within the urban terrain. The MATADOR (Pzf 90) MP (Multi-Purpose) (Fig. 7) is a shoulder launched weapon with Fire From Enclosure (FFE) capability that fully meets MIL-STD-1474D requirements of firing five times a day with single hearing protection. It is designed for destroying bunkers and light armored vehicles (Fig. 8). It has engagement capability of 17 to 500 meters. Its targeting device incorporates an advanced laser range finder (ELRF) with night vision capability combined with a FleXight. It can be operated in two modes: penetrating mode against fortified targets and HESH mode against light armored vehicles or urban structures. Target detection is automatically performed, not requiring any gunner involvement. Munition weight is 11.3 kg (24.9 lbs) not including targeting device. The munition is ergonomic and requires minimum training.



Fig. 7. MATADOR (Pzf 90) MP



Fig. 8. Bunker defeat and incapacitation

References

- [1] Bryden, W., A., *Assured Urban Operations*, Military Technology, MILTECH 3/2006.
- [2] Scales, R., H., *Urban Warfare: A Soldier's View*, Military Technology, MILTECH 3/2006.