

60mm ANTOS Commando Mortar 60mm Mortar bombs & 81mm Light Weight Mortar



IT&T
McLean, VA

60 mm ULTRALIGHT MORTAR ANTOS Commando



General description for ANTOS Commando

- **60mm ANTOS Commando is designed for:**
 - paratrooper and special units
 - APC (armored personnel carrier) crews, AFV (armour fighting vehicle) crews as an additional carried fire power
- **ANTOS Commando mortar features are:**
 - ultra compact design
 - ultra low weight
 - very short time needed to take up firing position and aim
 - high rate of fire and sufficient fire accuracy
 - high firing effect in the target area
 - minimum effect of muzzle pressure and acoustic wave to the gunner
 - low acoustic and luminous exposing effect
- The mortar is made of strong aluminum alloys and titanium and plastic alloys.

Current user



- ANTOS Commando is now deployed to several NATO elite forces
 - Czech, Poland, Jordan is already using it
- Currently great interest from other countries after successfully deployed in Afghanistan

Technical data

Calibre (according to NATO STANAG)	60.7 mm
Weapon length	905 mm
Barrel length	650 mm
Weapon weight	5.3 kg – with liquid sight 4.9 kg – with mechanical sight
Weight of storage package with weapon and accessories	19 kg
Elevation	(45 ÷ 85)°
Minimum range (+21°C, 85°, primary charge 0)	80 m
Maximum range (+ 21°C, 45°, full charge 1)	1230 m
Maximum operating pressure in the barrel	18 MPa
Temperature range for weapon use	(–30 ÷ +60)°C

MORTAR ASSEMBLY



LIQUID SIGHT

BARREL ASSEMBLY

CARRIER SLING

HANDGRIP WITH TRIGGER

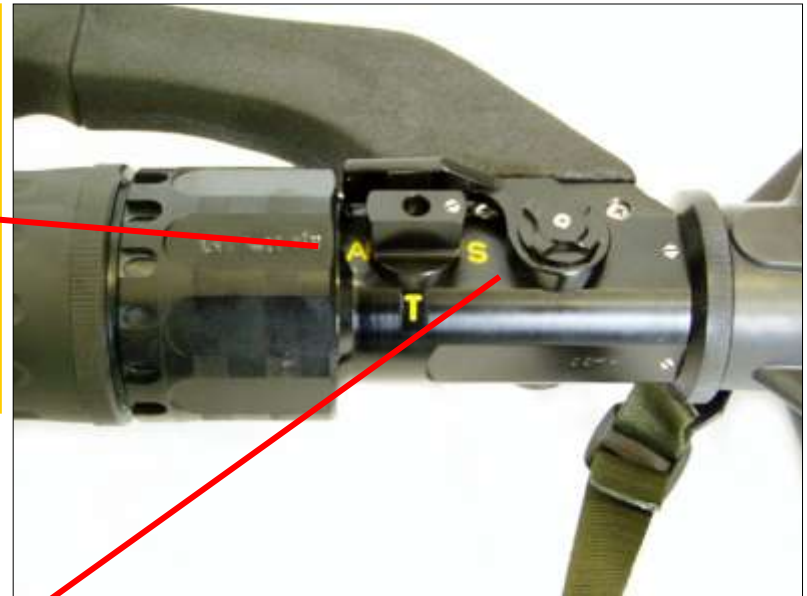
BREECH RING ASSEMBLY
WITH SAFETY AND FIRING
MECHANISM

BASE-PLATE ASSEMBLY

MORTAR CONTROLS

FIRE MODE SELECTOR with positions:

- A – AUTO (bomb fired after drop)
- T – TRIGGER (manual firing)
- S – SAFETY (firing pin blocked)



BOTH SIDED COCKING LEVERS for hand cocking of striking mechanism, with independent reciprocal movement.

MORTAR CONTROLS



TRIGGER LEVER on the handgrip for manual firing of the mortar bomb

MORTAR CONTROLS

LIQUID SIGHT

Liquid level against the scale shows directly the firing distance for both propelling charges.



MORTAR CONTROLS



MECHANICAL SIGHT

contains gear
mechanism and
pivoted bubble level

Mechanism for setting the position is located on the outside of the sight case together with dual sighting scales for both types of charges

MORTAR SET ASSEMBLY

Cleaning and lubricant WD-40 (spray)

Documentation

Spare parts pouch, tools and accessories.

Barrel cleaning brush



Wooden container for storage and transportation

Mortar

Carrying bag with sling

Barrel cleaning rod

MORTAR SET

Content of transport packing:



ADDITIONAL MORTAR ACCESSORIES



Ball and socket joint

Developed for easy mount of the mortar on the selected platform (e.g. vehicle hull).

- Ball joint assembly with the inner hole for mounting to the existing carrier of the mortar bed
- Spherical socket base for ball joint and locking mechanism to secure inserted weapon



81mm Light Weight Mortar



General description

- ARCUS M-81 LWM is 81mm Light Weight Mortar, intended to engage enemy troops in open terrain, in trenches or behind light shelters at distances up to 6,200m.
- The Mortar is designed to fire 81mm:
 - High Explosive
 - Target Practice
 - Smoke and Illuminating Mortar Bombs used with 81mm Smoothbore Mortars Hirtenberger M8-122 and M8-211.
- Features
 - Light weight less than: 43 kg
 - High Rate of fire: 16 rounds per minute
 - Crew of 4 persons
 - Easy to disassemble in light weight components suitable for carrying by 4 persons crew
 - Short time to set the Mortar from Transport condition to combat condition: (less than 30 min.)

Bipod

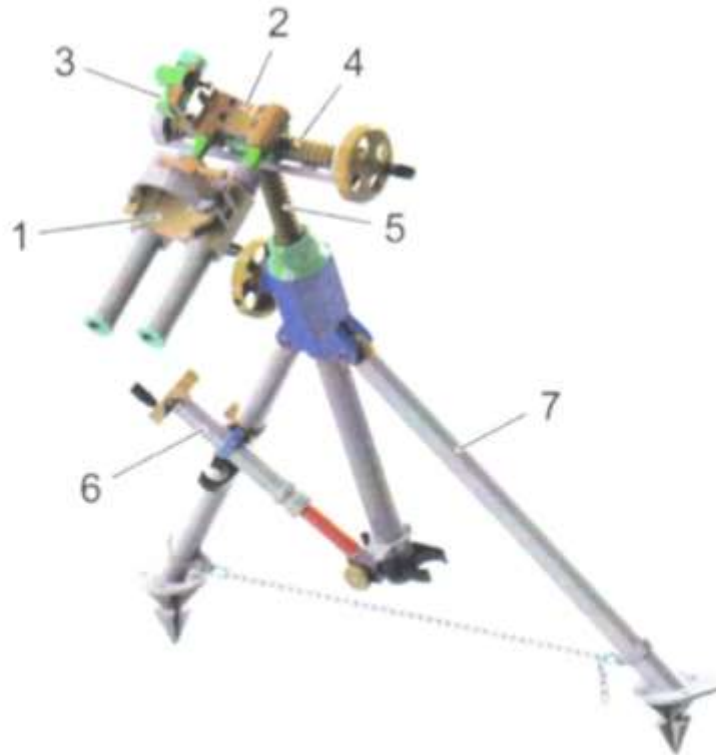


FIGURE 7 – Bipod assembly

1 – barrel hoop with buffers; 2 – traverse matrix carrier; 3 – sight holder; 4 – mortar traverse mechanism; 5 – mortar elevation mechanism; 6 – mortar tilt mechanism; 7 – supporting arms

Sight

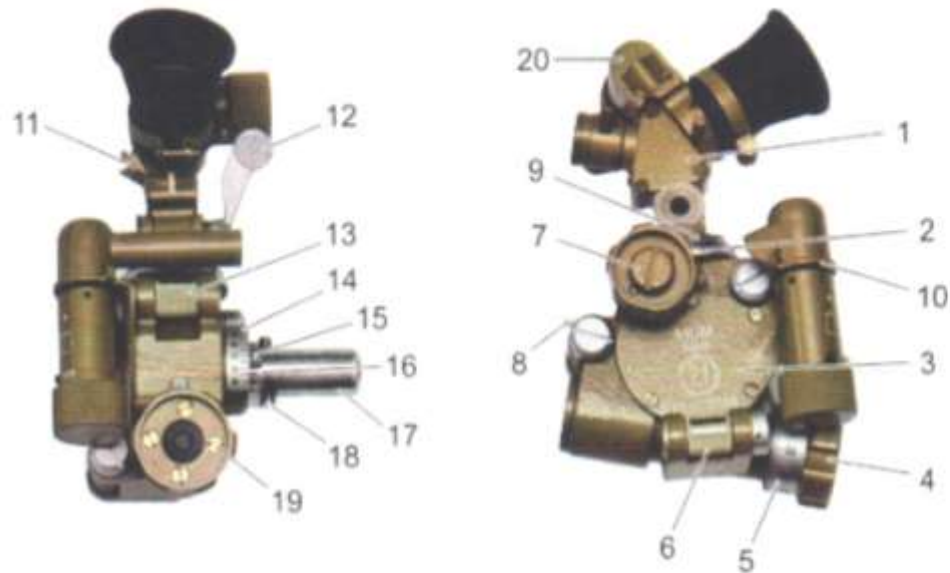


FIGURE 8 – Mortar Sight MUM-706 M 1/6400

- 1 – telescope; 2 – azimuth (bearing) gear; 3 – elevation gear; 4 – elevation knob; 5 – elevation fine scale ring; 6 – elevation bubble; 7 – adjusting screw of azimuth (bearing) fine scale ring; 8 – azimuth (bearing) scale clamp; 9 – azimuth (bearing) scale; 10 – bubble illuminator adapter (clamp); 11 – shield sight; 12 – telescope fixing handle; 13 – cross-level bubble; 14 – elevation scale ring; 15 – screw; 16 – elevation scale index; 17 – joint bolt; 18 – positioning pin; 19 – adjusting screws of elevation fine scale ring; 20 – reticle illuminator adapter (clamp)

Sight-General description

The mortar is equipped with optical-mechanical sight MUM-706 M 1/6400 with broken collimating telescope to set firing data. The sight has reticle illumination and additional lighting of bubble-levels to be used at night and under hard lighting conditions.

The sight uses circular division 1/6400 (mils). Gross azimuth scale of the sight is divided into 16 marked units corresponding to 400 mils with further smaller division by 100 mils between unmarked units. The units are marked 0, 4, 8, 12,60, which corresponds to 100 multiples of azimuth angle (0, 400, 800, 1200, 6000 mils). Azimuth (bearing) fine scale ring is divided into 10 marked units corresponding to 10 mils (units are marked 0, 10, 20, 30, 90) with further smaller division by 1 mil between unmarked units. The complete turn of azimuth (bearing) fine scale ring corresponds to one unmarked unit of gross azimuth (bearing) scale (100 mils).

Gross elevation scale of the sight is divided into 5 marked units corresponding to 200 mils with further smaller division by 100 mils between unmarked units. The units are marked 8, 10, 12, 14, 16, which corresponds to 100 multiples of elevation angle (800, 1000, 1200, 1400 and 1600 mils). Elevation fine scale ring is divided into 10 marked units corresponding to 10 mils with further smaller division by 1 mil between unmarked units. The units are marked 0, 10, 20, 30, 90. The complete turn of elevation fine scale ring corresponds to one unmarked unit of gross elevation scale (100 mils).

Technical data

- Caliber: 81 mm
- Maximum Range of Fire (with HE Mortar Bombs): 6,200 m
- Minimum Range of Fire: 165 m
- Maximum Muzzle velocity: 312 m/s
- Maximum Chamber Pressure: 1,350 kg/ cm²
- Operational Chamber Pressure: 900 kg/ cm²
- Elevation angle: 45 to 80 deg.
- Traverse angle on carriage: 6 deg.
- Traverse angle on base plate: 360 deg
- Maximum Rate of fire: 16 rnds /min
- Crew: 4 persons
- Mortar Weight in Combat Position: 42.8 kg
- Weight of Mortar Bomb: 4.150 kg

60mm MORTAR BOMBS

60mm MORTAR BOMBS

- HEF (TNT)
- HEI (Thermobaric HE)
- Smk (Red Phosphorus)
- Pract (Black Powder)
- Training Jumping
- HEI-HP (Thermobaric HE)
- Incendiary (Red Phosphorus)



60mm MORTAR BOMBS

- PDSQ fuze DM111M5
 - or MZ95A1
- Forged steel body
- Plastic fin assembly
- Base propellant charge
- 2 augmenting charges
- Total weight: 1.40 kg
- Maximum barrel pressure: 20 MPa



60mm PROPELLANT CHARGES

- Base charge (chrg 0): Double-based strip propellant NBL-35 (5 g)
- Two augmenting charges (chrg 1): Nitrocellulose foil (2x 1 g) + single based propellant S-032 (2x 3 g)
- Maximum pressure: 8.5 / 16.5 MPa
- Muzzle velocity: 73 / 120 m/s
- Chemical and ballistic shelf-life: more than 60 years at +25 °C



60mm HIGH EXPLOSIVE BOMBS SET-UP

60-HEF



60-HEI



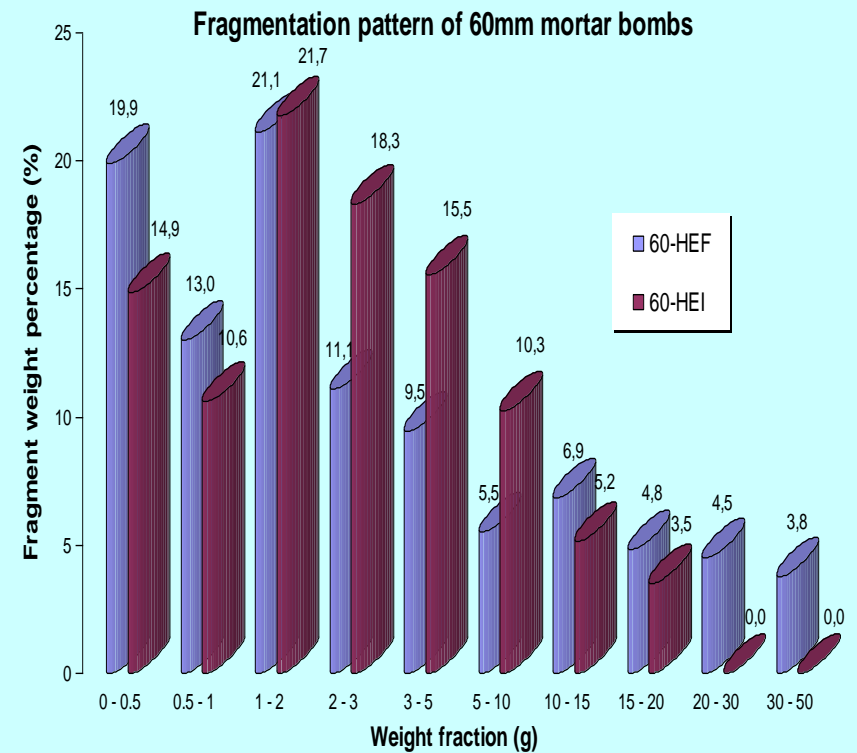
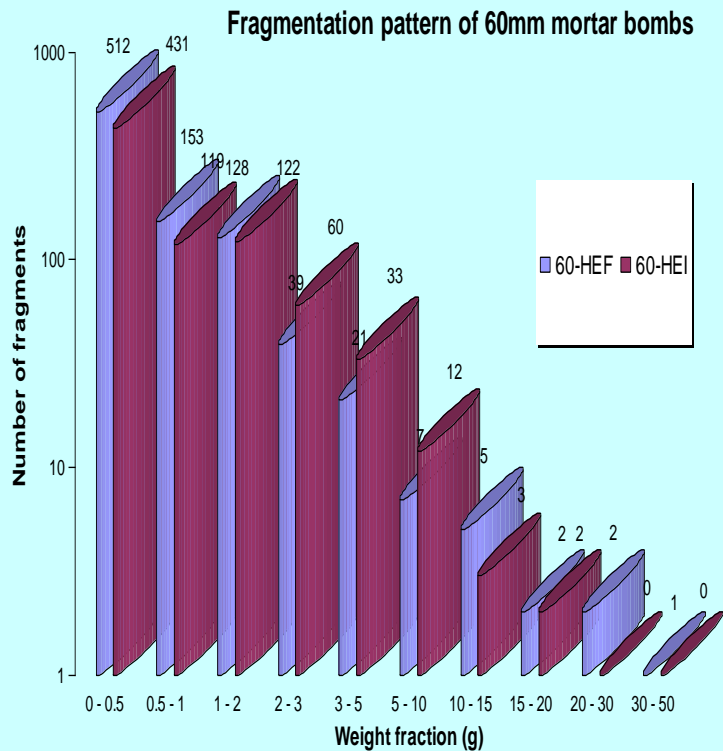
60mm HE BOMBS - EXLOSIVE FILLINGS

Bomb:	HEF	HEI
Explosive type:	TNT	thermobaric
Explosive weight:	212 g	265 + 8 g
Loading density:	1.60 g/ccm	2.03 g/ccm
Detonation velocity:	6850 m/s	7020 m/s
Detonation pressure:	19.2 GPa	21.1 GPa
Vacuum stability at 120 °C:	0.04 ml/g/40 h	0.50 ml/g/40 h
Impact sensitivity E_{50} :	>63.1 J	16.8 J
Friction sensitivity F_{50} :	1/10 at 360 N	1/10 at 360 N

60mm HE BOMBS - FRAGMENTATION PATTERN

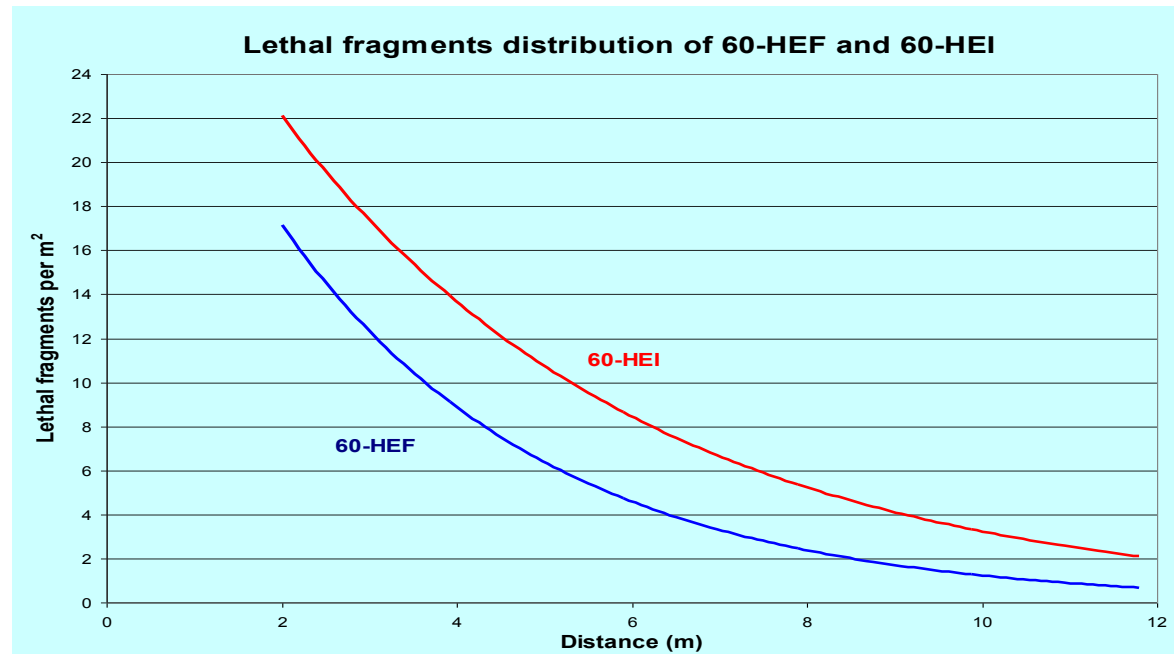
Bomb	HEF	HEI
Steel body weight	849 g	811 g
Number of fragments > 0.5 g	>350	>350
Weight fraction of fragments > 0.5 g	80 %	85 %
Number of fragments 2-10 g	>65	>100
Weight fraction of fragments 2-10 g	26 %	44 %

60mm HE BOMBS - FRAGMENTATION PATTERN

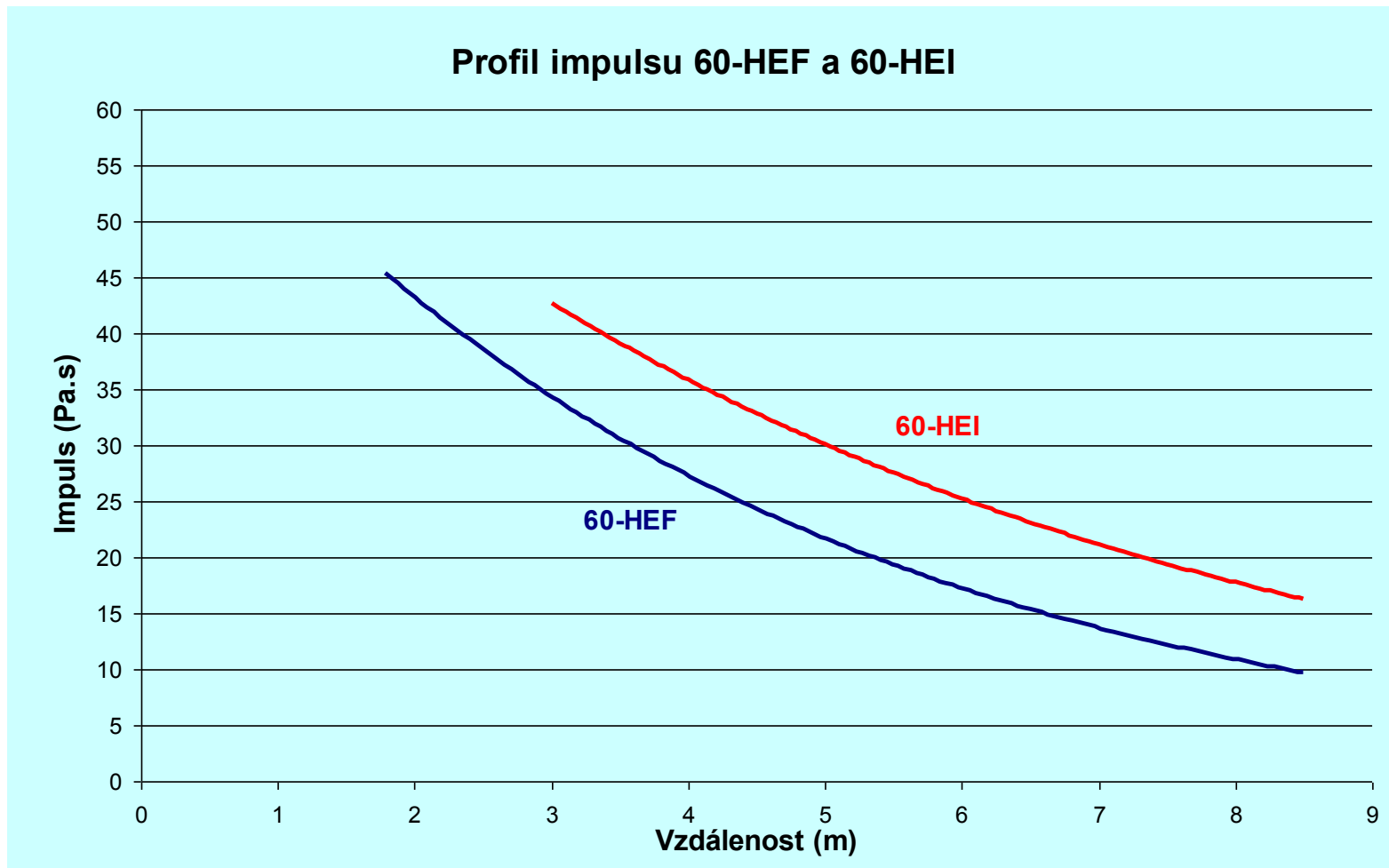


60mm HE BOMBS - LETHAL AREA

- 60-HEF lethal radius: 8.5 m
- 60-HEI lethal radius: 11.8 m
- 2 perforations on m^2 of 1-inch-thick pine wood (100 J energy)

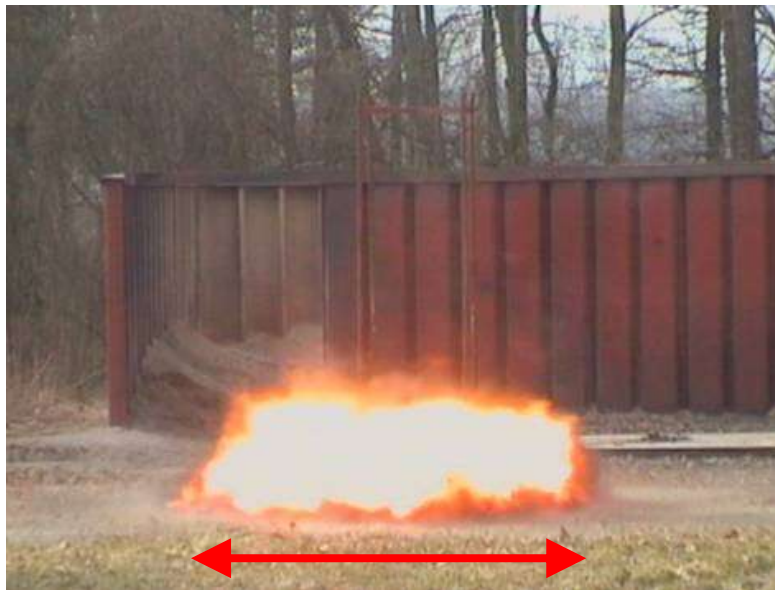


60mm HE BOMBS - AIR BLAST IMPULSE



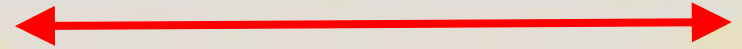
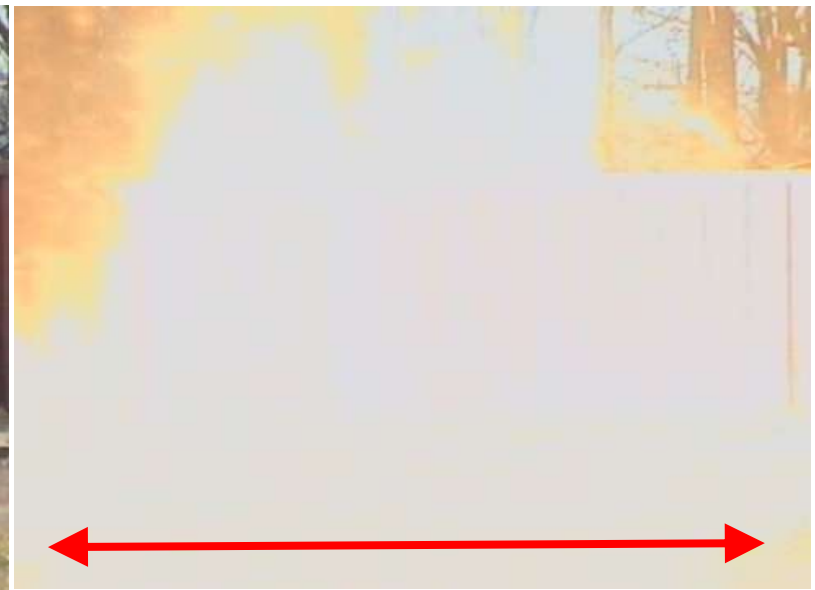
60mm HE BOMBS - INCENDIARY EFFECTS

60-HEF



3.5 m

60-HEI



8.5 m

60mm HE BOMBS - AIR BLAST SEQUENCE

0

40

80

120 ms

HEF:

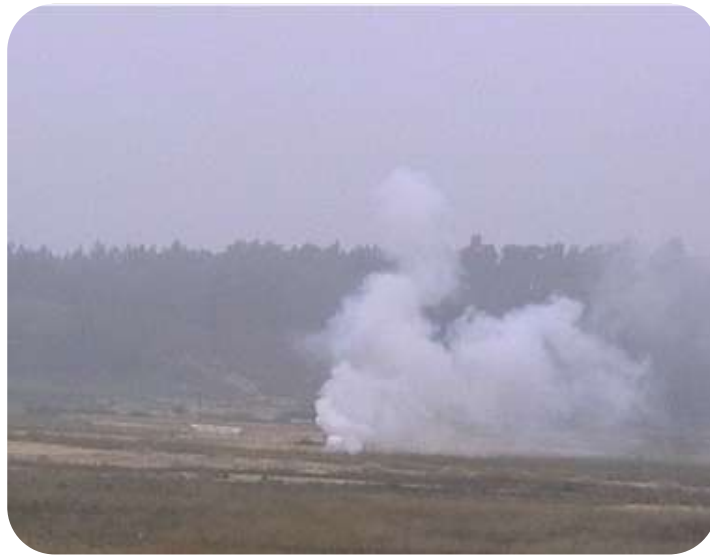


HEI:



60mm SMOKE BOMBS

- Pressed red phosphorus (230 g)
- Polymer microencapsulated RP for high chemical stability



60mm PRACTICE BOMBS

- Pressed black powder flash pellet (125 g)
- Low cost mz 35/36 fuze



60mm ILL / IR BOMBS

- 2 Types
- VIS and IR spectrum covered
- Special construction without fuse



60mm TRAINING BOMBS

Reduced range (1:3) training bomb

- 27 - 400 m range
- spot colour charge



Training jumping inert bomb

- multiple loading

ADDITIONAL SERVICES

- INSTRUCTORS COURSE
- TECHNICIANS COURSE
- PARTS CATALOGUE
- DOCUMENTATION (CBT)
- INTEGRATED LOGISTIC SUPPORT



Thank you

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