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GRENADIER GUIDE



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Center for Army Lessons Learned

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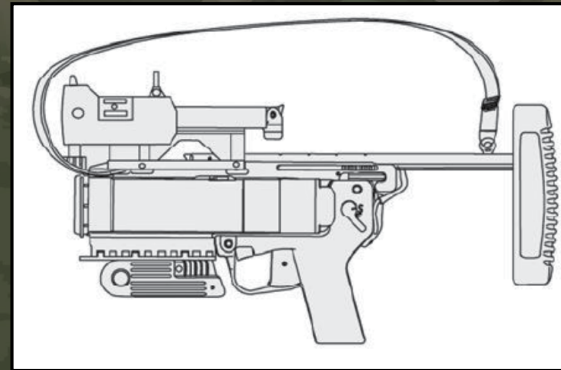


Reference:
TM 3-22.31, 40-mm Grenade Launchers, November 2010

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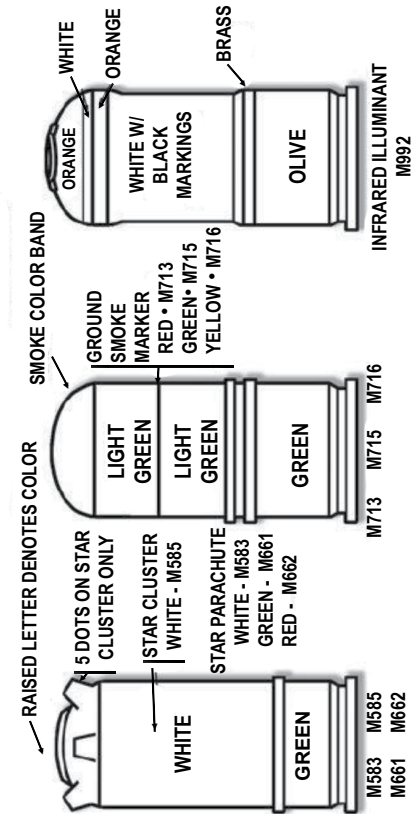
M320/M320A1



Caliber: 40 mm x 46 mm
Weight: 5 lbs., 7 lbs. (w/stock)
Length: 11.18 in. (no stock)
14.37 in. (retracted)
19.69 in. (extended)
8.46 in. (barrel)
Muzzle Velocity: 236 feet per second
Trigger Pull: 11.25 - 15.75 lbs.
Effective Range: 150 m point target
350 m area target
Max Range: 400 m (at 45 degrees)

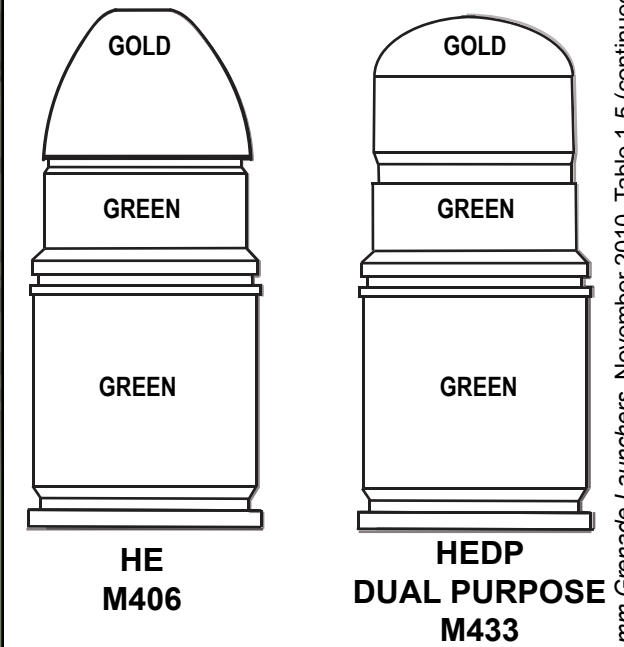
TM 3-22.31, 40-mm Grenade Launchers, November 2010, Figure 1-1

Pyrotechnic Signal and Spotting Round



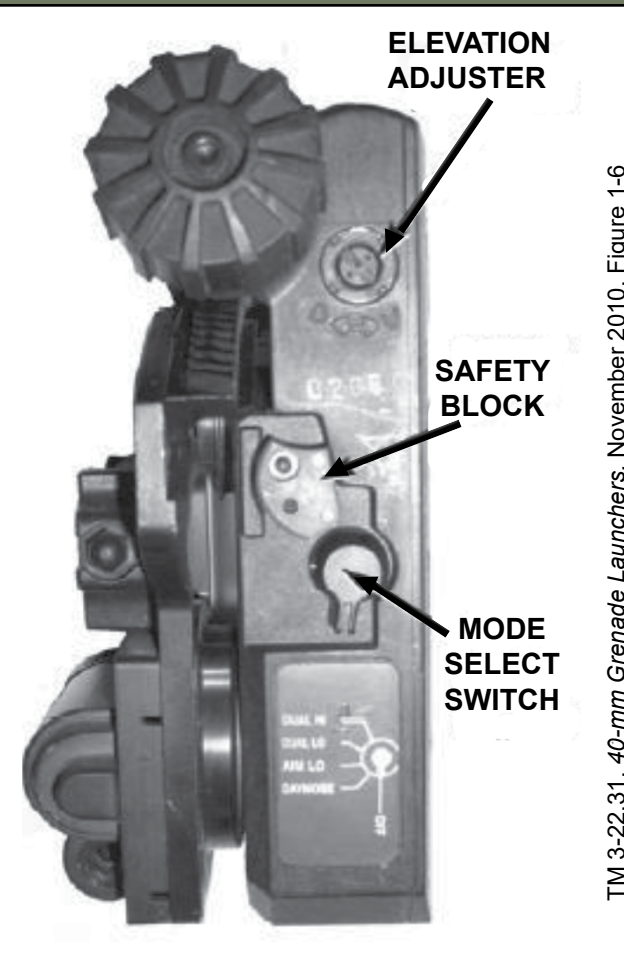
TM 3-22.31, 40-mm Grenade Launchers, November 2010, Table 1-5

High-Explosive (HE) Service Round

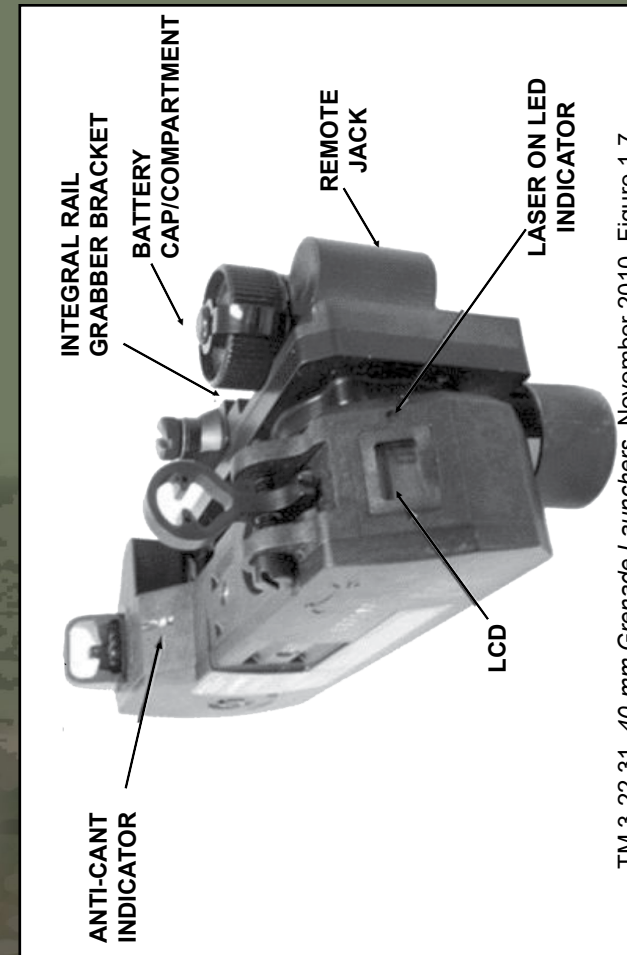


WARNING
THE DANGER RADIUS OF THE HE SERVICE ROUND IS 165 METERS. M406 AND M433 ROUNDS ARM WITHIN 14 TO 27 METERS.

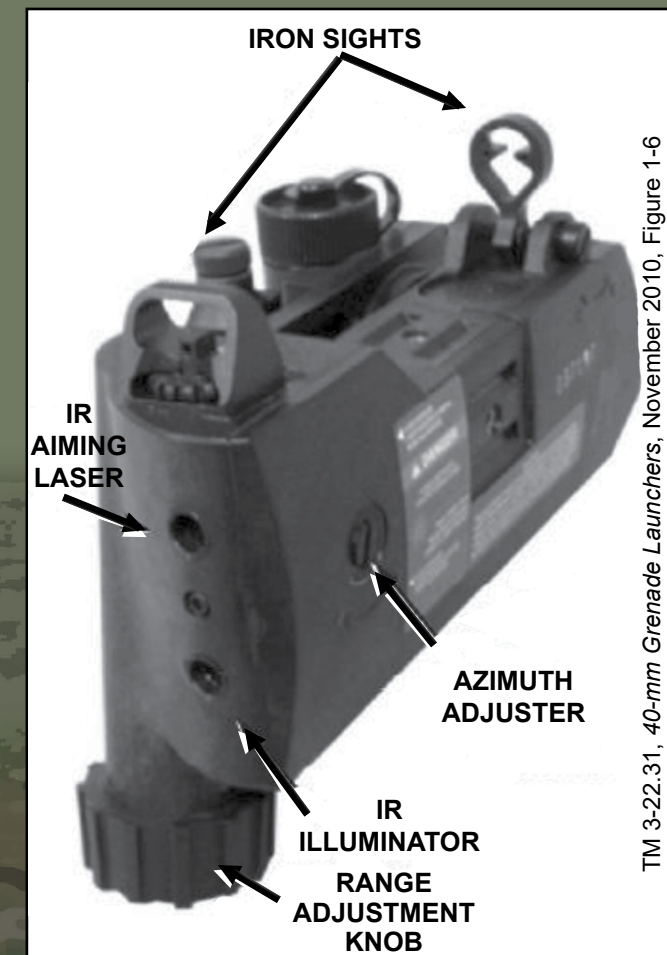
TM 3-22.31, 40-mm Grenade Launchers, November 2010, Table 1-5 (continued)



TM 3-22.31, 40-mm Grenade Launchers, November 2010, Figure 1-6



TM 3-22.31, 40-mm Grenade Launchers, November 2010, Figure 1-7



TM 3-22.31, 40-mm Grenade Launchers, November 2010, Figure 1-6

Day/Night Sight (DNS)

Weight: 15.5 ounces
Range: 400 m
Accuracy: plus or minus 5 m
Batteries: One 123 A-size

Azimuth/Elevation Adjuster (used to zero)

Range adjustment knob: 5 m increments
IR illuminator: Provides night illumination
IR aiming laser: Used to aim at night
Anti-cant Indicator: green (good) red (bad)

DNS Mode Selection

Note: IR lasers visible with night vision only

- OFF
- DAY Display: day
- Display and backlights on, no laser
- AIM LOW Display: AL
- Low power IR aiming laser only
- DUAL LOW Display: dL
- Low power IR aiming laser and illuminator
- DUAL HIGH Display: dH
- High power IR aiming laser and illuminator

Duties and Responsibilities

- The M320 is the grenadier's PRIMARY weapon system, the M4 is the SECONDARY.
- The M4 should only be used if the target is too close to use the M320.
- Know leaf-sight increments without looking.
- Keep ammunition clean and dry.
- Aluminum casing is easily dented; dented grenades cause chamber/extraction issues.
- Identify 40 mm grenades by shape and color. Know all minimum safety constraints.
- Understand how to sense and adjust fire.

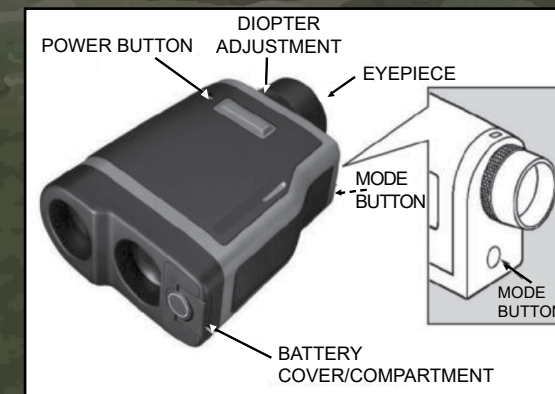
Grenadier Knowledge

ALWAYS take HE over HEDP unless a light armor threat is expected. HE has a superior fragmentary pattern to cause casualties. The HEDP sacrifices fragmentary pattern for light armor penetration and has a higher failure (dud) rate, HE = big boom HEDP = small boom.

Do not under-mount the M320. Always carry it in the standalone configuration. Under-mounting decreases the effectiveness of both the M4 and the M320. The increased weight unbalances the weapon and increases fatigue during carry. Added bulk impedes firing positions and decreases accuracy. Used as a standalone, the M320 is more accurate, easier to operate, allows the grenadier to focus on one weapon system, and it is easier to grab the M320 if the grenadier becomes a casualty. Grenadiers patrol with M4 at the ready (to react to immediate and/or short range contact) and have M320 holstered for rapid transition.

Always use the sights and buttstock.

Laser Range Finder (LRF)



- The LRF provides rapid and precise ranging capability out to one mile (1,600 m).
- The LRF uses a 9-volt battery.
- The LRF has seven times magnification.
- The mode button allows yard/meter selection and brush/tree targeting mode.
- Performance depends on target; LRF can range a large reflective surface further than a small, distorted target (brush, people, etc.).
- Atmospheric conditions (rain, snow, and fog) can also affect LRF performance.
- Use LRF on something large near the target.

TM 3-22.31, 40-mm Grenade Launchers, November 2010, Figure 1-8

Fire Control Measures

Pre-planned fire control measures are critical to the effective use of grenade launchers.

Leaders provide:

- Engagement criteria
- Target priority
- Munition selection criteria (HE? Smoke?)
- Limits of fire (such as being near friendlies)

Sensing and Adjusting Fire

Grenadiers sense where the round landed relative to the target. Then adjust elevation and deflection to hit the target.

Elevation (range):

Short. Impact between you and target

Over. Impact beyond target

Target. Impact hits the target

Range correct. Impact left/right, range good

Doubtful. Impact left/right, range unknown

Deflection (deviation/direction):

Right/left of target

On-line with the target

Grenadier Knowledge

Smoke

- Smoke can be used for direct fire control (lift/shift).
- Smoke obscures enemy vision and masks friendly movements (including breaking contact).

Illumination/IR Illumination

- Illumination can be used for direct fire control (lift/shift).
- Avoid using illumination during friendly air support, hanging parachute flares will interfere with the aircrew's night vision.
- IR illumination requires night vision devices to see.
- Wind will shift direction of a parachute flare.

High Explosive/High Explosive, Dual Purpose (HE/HEDP)

- HE flushes enemy out of cover.
- HE fixes the enemy in place.
- HEDP used for lightly armored vehicles.
- HE provides small blast/overpressure.
- HE simulates indirect fire if used in succession.

Kit Setup and Grenadier Loadout

Holsters allow the M320 to be easily accessible without interfering with handling the grenadier's M4 during movement.

Bandoleers carry grenades without altering the grenadier's kit. It is easier to pass off or recover grenades using a bandoleer.

Whether using a bandoleer or a mount on the chest, grenadiers must be able to access both grenades and magazines without issue. Grenadiers must be able to identify what type of grenade is where on his kit without looking. Do not use illumination by accident!

Example Loadout (13 Grenades):

9 HE, 4 smoke
(mission dependent)

12 in the bandoleer, 1 HE in the tube
HE on the right, smoke on the left

Legend

DNS	day/night sight
HE	high explosive
HEDP	high explosive, dual purpose
in.	inches
LRF	laser range finder
m	meters
mm	millimeters