

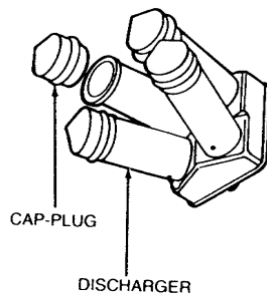
## Vehicle Smoke/ Fragmentation Launchers

The Morrow Project standardized very early on, in its development stages, on NATO standard 66 mm Smoke and Fragmentation, Vehicle Launched Grenades.

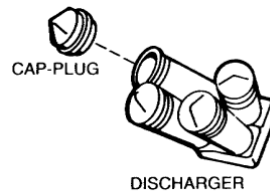
These electrically fired grenades are pre-aimed to cover a fan shaped area beginning 20 - 36 m in front of the launchers and ending approximately 50 - 100 m in front of the launchers (depending on the type of grenade used). The width of the fan is about 180° in total.

The two grenade launchers chosen for project use are the M257 and M259 Grenade launcher. Both are of a 4 tube design.

**M257**



**M259**



## Arming Firing Unit



## Description of Grenade Launchers

The M257 & M259 smoke grenade launcher consists of a pair of 4-tube dischargers, eight rubber caps (one for each tube), and an arming firing unit. Each discharger has an aluminum base and four aluminum tubes. The dischargers are mounted with the tubes positioned to launch the grenade to form an arc forward of the vehicle. The cap-plugs are used to cover the discharger tubes. The arming firing unit is positioned within close reach of the tactical vehicle commander or gunner.

## Functioning

The smoke grenade fired from the launchers are the Grenade, Launcher, Smoke: Screening, RP, UK L8A1/ L8A3 or Grenade, Launcher, Fragmentation: Anti-Personnel, RP, UK Fragmentation. Four grenades are muzzle-loaded into the tubes, of each discharger from the outside of the vehicle. A spring clip in the grenade base engages a bulb-shaped pin on the end of the electrical contact assembly in the bottom center of the discharger tube. Moving the toggle switch on the arming firing unit from OFF to ARM closes the electrical circuit between it and the vehicle's power supply. Pressing the FIRE button on the fire switch assembly of the arming firing unit closes the electrical circuit to the dischargers and launches a salvo of eight grenades. The grenades airburst to produce there effects.

## 66 mm Launched Grenades

Grenade, Launcher, Smoke: Screening, RP, (UK) L8A1/ L8A3

Used with the M257 & M259 Grenade Launchers, to provide a self-screening smoke capability for armored/ tactical vehicles.

The grenade consists of a rubber cylindrical body and a metal base. The rubber body contains 360 grams of red phosphorous/butyl rubber in a 95/5 proportion and a central plastic burster tube containing a burster charge of 15 grams of black powder. The metal base contains the electric clips, F92 squib type electric fuze, propellant charge (3.0 grams of black powder), and the delay assembly with delay composition (0.26 grams of black powder). The metal base contains eight gas propulsion holes covered by a metal foil diaphragm.



The L8A1/ L8A3 grenade is propelled from the launching device when an electrical current, at the firing clip, activates the electrical squib type fuze which ignites the propellant charge and simultaneously ignites the delay composition. Pressure builds up in the metal base, escapes through the propulsion holes and propels the grenade from the launching device. During the flight of the grenade, the delay composition burns for approximately 3/4 of a second and ignites the burster charge. The burster charge ignites the red phosphorous/butyl rubber smoke composition and ruptures the rubber grenade body. The ignited smoke composition disperses to produce a white smoke cloud within 2 to 6 seconds after firing at approximately 30 m from the launching device.

**Grenade, Launcher, Smoke: Screening, RP, UK L8A1/ L8A3**

Model: (UK) L8A1 or L8A3  
Type: Smoke (White)  
Weight: 0.68 kg  
Diameter: 6.63 cm  
Length: 18.49 cm  
Body: Cylindrical molded rubber  
Shelf Life: 3 years  
Range: 25 m  
Height of Burst: 6 m  
Screen Width: 35 m down wind (approx)  
Duration of Smoke Cloud: 3 minutes (minimum) with a 24 km/h wind  
  
Unit of Issue: 4 grenades per metal container.

Packing Data:

Metal Container;  
Weight(with contents): 6.04 kg  
Dimensions: 30.48 cm x 15.49 cm x 19.30 cm  
Cube: 0.10 cubic meters

**Grenade, Launcher, Fragmentation: Anti-Personnel, RP, UK V130  
Fragmentation**

Model: (HW) V130  
Type: Fragmentation  
Weight: 1.40 kg  
Diameter: 6.63 m  
Length: 18.50 cm  
Body: Cylindrical molded rubber  
Shelf Life: 3 years  
Range: 60 - 90 m  
Height of Burst: 2 m  
Lethal Burst Radius: 15 m  
Danger Burst Radius: 50 m  
Notes: The fragmentation grenade contains 1500 - 2000 steel ball bearings, embedded in a plastic matrix surrounding a central containing the bursting charge. The grenade is electrically fired and launched in the same manner as a smoke grenade, but bursts in the air, and distributes the fragments in an all-round pattern. It is an ideal anti-ambush device and is also valuable for defending vehicles against close-in infantry at ranges where the vehicle weapons cannot be brought to bear.

Unit of Issue: 4 grenades per metal container.

Packing Data:

Metal Container;  
Weight(with contents): 8.92 kg

Dimensions: 30.48 cm x 15.49 cm x 19.30 cm  
Cube: 0.10 cubic meters