



Sweden to Field Air Burst Grenade in 2011

Sweden has selected a Rheinmetall design for its next generation Air Burst Hand Grenade, designed to engage targets behind cover at up to five metres

The rationale for Sweden's acquisition of an Air Burst Hand Grenade (AB HGr) was very straightforward explained Ian Kinley, Product Manager, Special Ammunition at Sweden's Defence Material Administration (FMV).

"We realised that the ordinary fragmentation grenade had a serious advantage in that there was a very low probability that it would hit its target. It had a spherical distribution of fragments. When it burst on the ground, half the fragments went up into the air while the other half went down into the ground with no military purpose. There were a few fragments – just a few, that would be level with the ground and those alone constituted an effect."

That effect could be negated in its entirety by the introduction of a small obstacle. Kinley said, "We realised that we needed a hand grenade that could defeat targets behind obstacles, that were the same height as the targets themselves. This new hand grenade would defeat targets at 4-5m with the targets having Kevlar vest protection and similar."

The result was the AB HGr with FMV placing a contract



Testing found 98 percent of blast fragmentation from the new AB HGr to be found within a 5m radius © AJB

with Rheinmetall Waffe Munitions ARGES for the device in 2010. Final qualification is scheduled for March with the first serial deliveries required under the contract by the end of 2011.

Kinley said, "They look like an ordinary hand grenade, they handle like an ordinary hand grenade. You throw them as an ordinary hand grenade." That however is where the comparison ends. He continued, "They then roll around on the ground, come to a complete stop, erect themselves and jump to a height of 1.5-2m and explode. This airburst gives you an effect behind obstacles. Also, the target presents a greater surface giving them a higher hit probability. It also had another trick. As the hand grenade erects itself from the ground we know what is up and what is down. At the moment of airburst at the top of the trajectory, knowing what is up and down enabled us to make the fragmentation body cone direct all fragments downward in the most favourable direction. That means higher fragmentation density which results in higher incapacitation probability."

If more fragmentation moves in a favourable direction then there is less risk to the thrower and to nearby non-combatants. Another feature of the design which increases safety factors is the use of air-breaking fragments which when travelling beyond their intended blast radius – 4-5m and effective against body armour, reduce their velocity precipitously making them harmless or causing very little harm at ranges of 30m. The AB HGr also has a small upper fragmentation cone.

If the user wants to revert the grenade to a conventional grenade this is done by removing the plug screw at the base of the grenade before use. The AB HGr is handled in the same way as any other grenade with a safety ring and lever with a pull or twist and pull pin, pyrotechnical fuze system with a three delay time system with the grenade's body being comprised of a body with overmoulded

preformed fragments and a pressed explosive body.

The grade has a special conical shape of the body which directs fragments in a conical, downward dispersion pattern in such a way as to ensure a short safety distance.

In tests the AB HGr was detonated at a height of 2m against one square metre witness packs, compliant with STANAG 4190 at 2m and 4m protected by a Kevlar vest supplied by the FMV. The tests showed an incapacitation level of 1 against the first target and a level of 0.96 for the witness pack at 4m. An incapacitation level of 0.9 was deemed to have provided a heavy damage level sufficient that the target was incapacitated.

In fragmentation tests at 1.5m height, 98 percent of the total fragments were found within the 5m radius with the remaining two percent found in the range of 5-10m with no further fragments found beyond that point.

In safety tests in which the fragmentation payload was directed at a two square metre target at 30m distance, there was no penetration of a 0.8mm thick aluminium plate at that distance.

As part of its renewal of its hand grenade stocks, Sweden is also acquiring Rheinmetall's Expandable Hand Grenade 08 (EHGR 08), also recently developed. An offensive grenade, the EHGR 08 has been designed by Rheinmetall for bunker and cave fighting scenarios. It consists of a detonator core which then connects up to three explosive bodies. A single body provides 13psi of high pressure effect, two bodies 17psi and three bodies 28psi. As part of the company's development, a cutting charge variant is being developed with the same architecture. This can be stuck on a target with either magnet or adhesive foil in combination with one expandable explosive body which can penetrate a 30mm diameter hole in 15mm thick steel. ■