



# K9 Thunder / K10 ARV

155mm/52Cal. Self-Propelled Howitzer

Ammunition Resupply Vehicle

The Most Advanced Artillery System

**Hanwha Defense USA**



# SUPERIOR FIREPOWER

## The most advanced artillery system

K9 Thunder 155mm/52Cal. Self-Propelled Howitzer meets the requirements of 21st century artillery warfare:

- ▶ Deep fire support with its longer firing range
- ▶ High rate of fire and accuracy
- ▶ High level of mobility and protection giving sustainable fire support in all kinds of combat environments



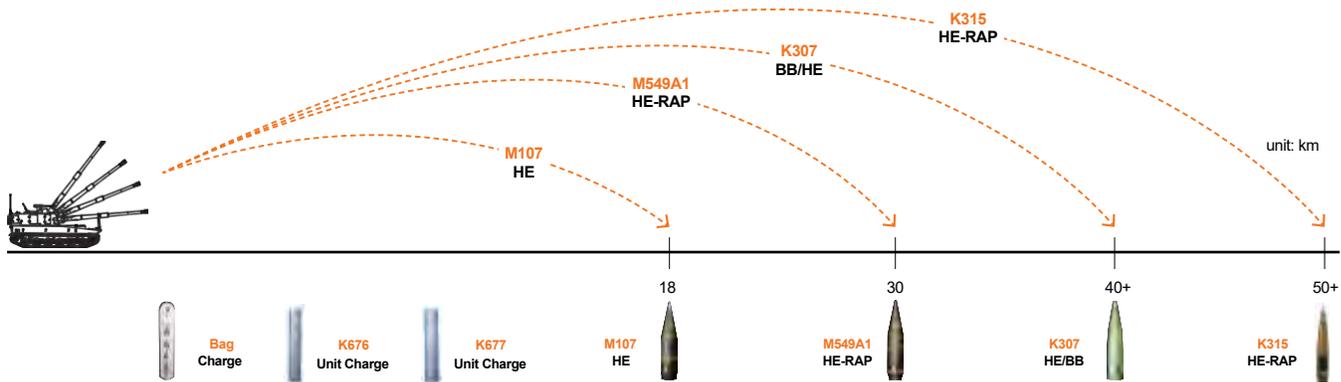
## Shoot & Scoot

K9 Thunder has been designed and developed to meet the up-to-date tactical concept of 'Shoot & Scoot.' K9 Thunder fires its first round within 30 seconds while stopped and 60 seconds while in movement as soon as it receives firing information from the Fire Direction Center (FDC). After completing its mission, K9 Thunder quickly moves away from the primary position prior to the enemy's counter fire, and implements the next mission.



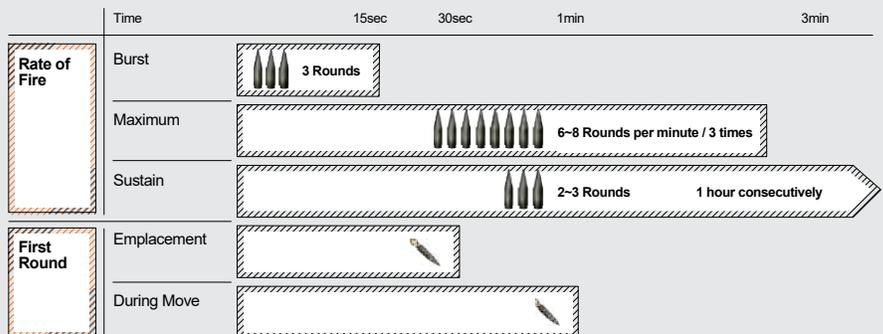
## Longer Firing Range

Compatible with NATO 155mm standard ammunitions with 23L combustion chamber volume conforming to JBMoU.



## Higher Rate of Fire

A burst rate of fire of 3 rounds can be achieved in less than 15 seconds, with a maximum rate of fire from 6 to 8 rounds a minute for three minutes. Sustained rate of fire is from 2 to 3 rounds a minute for one hour.





# HIGHER MOBILITY

1,000hp diesel engine delivering a power-to-weight ratio of 21.6hp and hydro-pneumatic suspension system that provides K9 Thunder with capability to maneuver and fulfill its missions in diverse environments and terrains.



## Powerpack

- 1,000hp engine delivers a high power-to-weight ratio
- Road speed : max 67km/h



## Hydro-pneumatic Suspension Unit

- Quicker stabilization between firing
- Improved field travelling performance
- Significantly minimizes shock and vibration to cabin, reducing crew fatigue



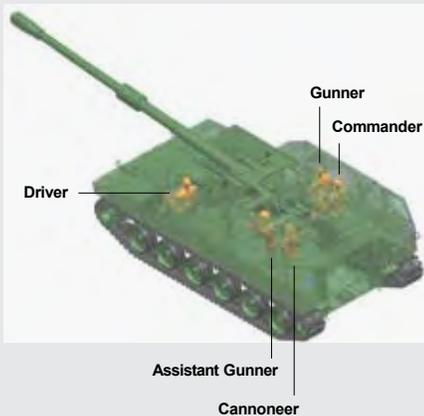
## Track vs Wheel

Tracked vehicle provides bigger footprint delivering greater traction in soft ground areas



# BETTER PROTECTION

K9 Thunder protects the on-board crew and equipment against 155mm shell fragments, 14.5mm armor piercing shells and anti-personnel mines. In NBC warfare situations, a sustainable mission is guaranteed through the vehicle's air purification system and gas masks.



## Safety in design

- Health and safety design considerations to ensure ergonomics of crew cabin
- Men in-the-loop automation process delivers safety and lowers risk of physical injuries
- Automated loading system to eliminate heavy lifting

## Smaller crew, less fatigue

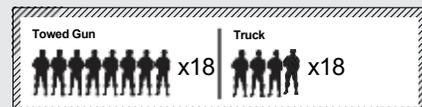
With an on-board automatic control system, K9 Thunder requires a minimum number of crew for its operation. K9 Thunder can fulfill its mission with 4 to 5 crews.

\*K9 battalion: 18 K9 Thunder and 9 K10 ARV

**K9 + K10 / 99 soldiers**



**Towed Gun + Truck / 216 soldiers**





# PROVEN RELIABILITY

K9 Thunder is the world's best 155mm/52Cal. SPH in terms of the volume of production. K9 Thunder is serving as one of the main conventional deterrent forces in the Korean Army and numerous allied militaries around the world. K9 Thunder has proved its superiority in combat, demonstrations and evaluation tests in a wide range of environments, such as extreme weather conditions in jungles, deserts and severe cold areas. Its compatibility with NATO standard ammunitions proves its excellent conformity with other field artillery units.





## Largest Number of 155mm/52Cal. SPH

- Most deployed SPH in the world in its class.
- The only SPH system continuously running in mass production

## Ceaseless action without boundaries

- Outstanding reliability demonstrated in the desert
- Successful tropical climate trials
- Successful record in cold environment tests



## Specifications

### General

Cannon length	155mm, 52 caliber
Number of Crew	4~5
Combat Weight	46.3ton
Length (with armament)	12m
Width	3.4m
Height	3.5m
Fire Control	Automatic
Ammunition Loading	Automatic

### Performance

Maximum Speed	67km/h
Ground Clearance	over 0.41m
Gradient	60%
Side Slope	30%
Vertical Obstacle	0.75m
Trench	2.8m
Fording	1.5m
Crusing Range	over 360km

### Engine

Model	MT881Ka-500
Horsepower (Gross)	1,000hp
Power-to-Weight Ratio	21.6hp/ton

### Transmission

Model	X1100-5A3
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### Fire Power

Range (with K307 HE/BB)	over 40km
Firing Rate	
· Burst	3 round/15 sec
· Maximum	6~8 rounds/min for 3 minutes
· Sustain	2~3 rounds/min for 1 hour
First Round	
· Emplacement	within 30 seconds
· Movement	within 60 seconds
On-board Ammunition	48 rounds

# NEXT GENERATION K9A2

Next Generation K9A2 utilizes K9 Thunder's chassis with a new, fully automated turret equipped with:

- ▶ Electric turret driving system (DC power)
- ▶ Autoloader
- ▶ Automatic ammunition handling system
- ▶ Automatic fuze setter
- ▶ Fault/failure diagnostics

The new autoloader system increases the rate of fire and reduces the number of crew needed on-board. The mission capability is significantly improved with less crew fatigue while maintaining the same drive power of the original K9 Thunder.

## Specification Comparison

		K9A1 Thunder	K9A2
Maximum Rate of Fire		6 rounds/min for 3 minutes	9 rounds/min
Initial Deployment Time		30 sec	20 sec
Ammunition load		48 rounds	40 ~ 48 rounds
Ammunition Handling System	Projectile Charge	Automatic	Fully Automatic
	Fuze Setter	Manual	
Crew		4 ~ 5	2 ~ 3





# K10 ARV

K10 Ammunition Resupply Vehicle fulfills the requirements of the substantially increased amount of ammunition used in modern warfare to supply the K9 Thunder enabling its tactical requirements of a higher firing rate and Shoot & Scoot.

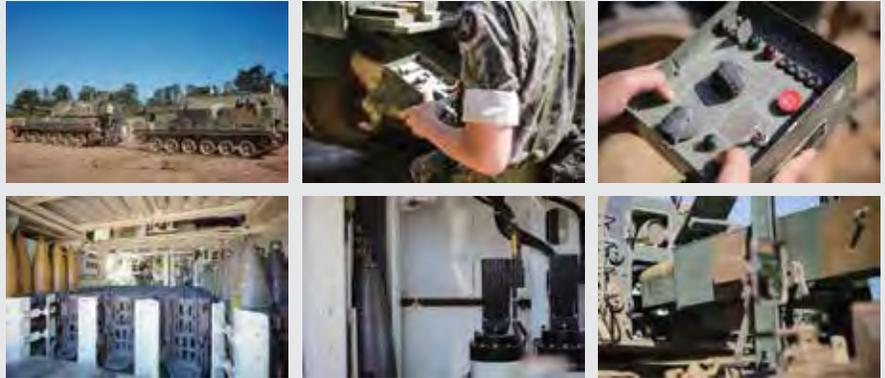
It has a fully automated resupplying capability to maximize the efficiency of artillery forces, and shares the same chassis, powerpack and suspension with K9 Thunder for efficiency in logistics support and tactical movement.



## Optimized for sustainable fire operations

The electrically driven fully automatic transfer system consists of magazines for ammunition storage, loading and reloading, manipulator, mover, telescopic conveyor and an automated inventory management system. It allows any kind of ammunition to be transferred at 12 rounds per minute.

The vehicle carries 104 projectiles, 504 modular charges, and only three crew members are needed for its operation.



## Performance Comparison

K10 ARV, when compared with a cargo truck, has a high level of protection that is equivalent to the K9 Thunder. The fully automated system guarantees its high performance in any battlefield conditions, no matter how severe. In a resupplying mission, the operator is able to select the specific kind of projectiles and charges through manipulator and mover. Even in darkness, the resupplying mission is not disturbed.

	K10 ARV	Cargo Truck (5ton)
<b>Protection</b>	Same protection level with K9 Thunder with steel armor plate <ul style="list-style-type: none"> <li>• 155mm HE fragment</li> <li>• Anti-personnel mine</li> <li>• 14.5mm AP shell</li> </ul>	No protection
<b>Mobility</b>	Same mobility as K9 Thunder <ul style="list-style-type: none"> <li>• 1,000hp diesel engine</li> </ul>	Poor mobility in various terrains
<b>Resupplying</b>	Fully Automatic	Manual

<b>48rds</b>	<b>K10 ARV</b> under 18min <b>Cargo Truck</b> under 67min
<b>18rds</b>	<b>K10 ARV</b> under 7min <b>Cargo Truck</b> under 20min
<b>Endurance</b>	<b>K10 ARV</b> 304rds/day <b>Cargo Truck</b> N/A (Increased crew fatigue)

# INTEGRATED LOGISTICS SUPPORT (ILS)

## ILS element developed since deployment

All ILS Elements are being optimized based on the field data that have been collected and analyzed every 3 years since the K9 Thunder was developed and deployed.

## Supportability Analysis

Various elements of SA have been applied to accomplish K9 ILS including: test & support equipment, spare parts & inventory, facility / utility, level of repair, criticality, etc.

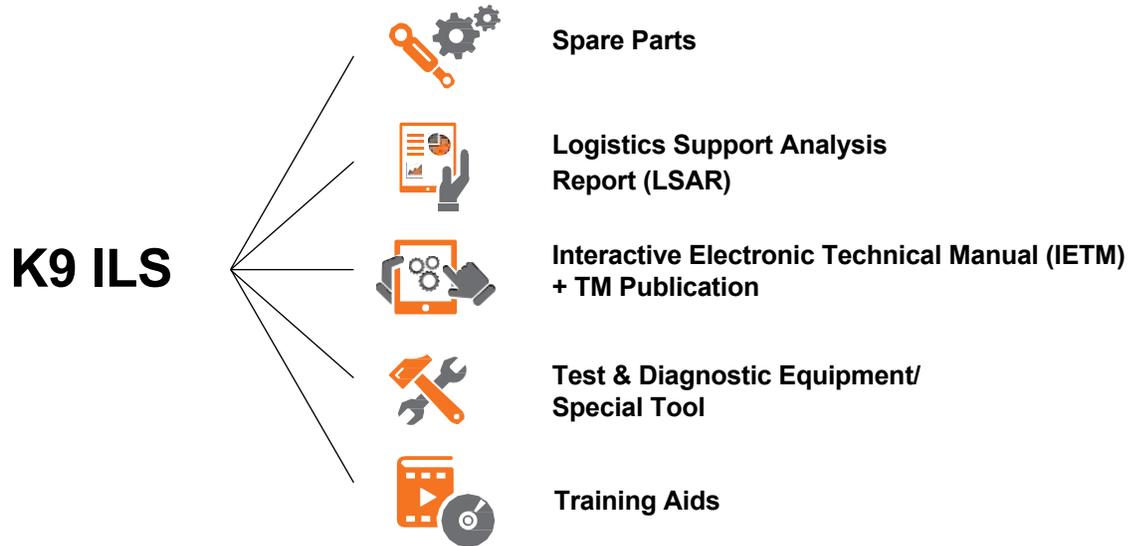
- Facilities and equipment for production
- Trainings, ILS packages and ammunition

## Low Life Cycle Cost

Hanwha provides full system support throughout the life cycle for maintenance of the K9 Thunder through proven ILS package.

## K9 User Club

K9 user countries hold joint workshops to share their operational best practices for K9 Thunder.





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