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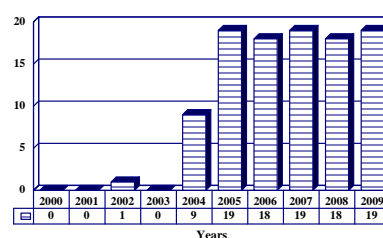
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# Type 75 SPH Kai 155 mm Self-Propelled Howitzer - Archived 4/2000

## Outlook

- The Type 75 SPH Kai is expected to enter serial production around 2003
- A total of 103 systems are forecast to be manufactured in the coming 10 years
- This system has some modernization and retrofit potential in the outyears

10 Year Unit Production Forecast  
2000 - 2009



## Orientation

**Description.** A tracked 155 millimeter self-propelled artillery system.

**Sponsor.** The development and eventual procurement of the Type 75 SPH Kai is being sponsored by the Japanese Defense Agency, Japanese Defense Agency Bureau of Equipment, Japanese Ground Self-Defense Force, through the Technical Research and Development Institute, Setagaya-ku, Tokyo, Japan.

**Contractors.** This system is being developed and is to be manufactured by Mitsubishi Heavy Industries, Tokyo, Japan. Major subcontractors include Nihon Seiko Jyo/Japan Iron Works.

**Licensees.** None.

**Status.** The development of this system is ongoing, with the first prototype/developmental system being tested and evaluated.

**Total Produced.** As of January 1, 2000, one prototype/developmental Type 75 SPH Kai system had been manufactured.

**Application.** General mobile artillery support for the field army at the battalion level.

**Price Range.** Because of the ridiculously low annual procurement rate and the associated high production costs associated with the development and production of armored fighting vehicles in Japan, the unit price of the Type 75 SPH Kai is most likely among the highest of comparable systems in the world. A reliable source puts the expected unit price of the Type 75 SPH Kai at \$8.032 million in equivalent 2000 United States dollars.

## Technical Data

**Crew.** The Type 75 SPH Kai will probably have a crew of four to six depending on the type of automatic loading system; the crew will consist of a commander, layer, radio operator and driver.

**Muzzle Brake.** The 155 millimeter cannon used on the Type 75 SPH Kai will probably have a double-baffle type as used on the FH 155-1 towed artillery system.

**Recoil System.** Hydropneumatic.

**Breech Mechanism.** Semi-automatic vertically sliding wedge.

**Ammunition.** As it is based on the ordnance of the FH 155-1 towed artillery system, this new self-propelled artillery system will be compatible with all United States/NATO standard 155 millimeter ammunition

types. These include High Explosive, High Explosive Base Bleed, High Explosive Rocket Assisted Projectile, Smoke, Illumination, various carrier projectiles, and other types. In addition, research indicates that new Japanese pattern 155 millimeter ammunition is also being developed for this system.

**Dimensions.** Although based on the Type 89 mechanized infantry combat vehicle, most of the following technical data are provisional and based on our recent analysis. It is possible that a 52 caliber version of the cannon will be used in production systems.

	<u>SI units</u>	<u>US units</u>
Length overall	7.23 meters	23.72 feet
Width	2.75 meters	9.02 feet
Height	2.94 meters	9.65 feet
Combat weight	17.3 tonnes	19.06 tons
Fuel capacity	419 liters	111.44 gallons
Ordnance caliber	155 millimeters	6.10 inches
Ordnance length	39 calibers/6.02 meters	39 calibers/19.75 feet

**Performance.** As the power rating of the engine of the Type 75 SPH Kai is unknown at this time, the speed and range of the vehicle are estimated. The ordnance range is with the standard High Explosive ammunition. In early 1999, evidence indicated that the Japanese will use the 52 caliber version of the FH 155-1 cannon (developed by Rheinmetall Industrie) on this new self-propelled artillery system. If this is true, the maximum range will be 40,000 meters (43,744 yards) when firing Base Bleed projectiles at the maximum charge.

	<u>SI units</u>	<u>US units</u>
Maximum speed	74 kilometers per hour	45.95 miles per hour
Maximum range	327 kilometers	203.47 statute miles
Step	65 meters	2.13 feet
Trench	1.8 meters	5.91 feet
Slope	35%	35%
Gradient	60%	60%
Fording	80 centimeters	2.63 feet
Elevation	+65°	+65°
Depression	-5°	-5°
Traverse	360°	360°
Maximum ordnance range	30 kilometers	32,808.33 yd
Maximum rate of fire	6 rounds per minute	6 rounds per minute
Sustained rate of fire	2 rounds per minute	2 rounds per minute

**Engine.** Mitsubishi will almost certainly provide the as yet unspecified diesel engine which has an expected power rating of around 231.26 kilowatts (310 horsepower). The power-to-weight ratio with this engine is 13.37 kilowatts per tonne (16.26 horsepower per ton). A 24-volt electrical system with four 12-volt 100-ampere-hour batteries is the probable standard electrical fit. An auxiliary power unit, almost certainly diesel-powered, is expected to be fitted to this new artillery system.

**Gearbox.** This system will use an unspecified (probably of Mitsubishi origin) automatic unit with one reverse and four forward gear ratios.

**Suspension and Running Gear.** The Type 75 SPH Kai will use a torsion bar-type suspension with seven dual-tired roadwheels and three return rollers on each side. The number and type of shock dampers is unknown at this time.

**Fire Control.** Details of the fire-control suite used on the Type 75 SPH Kai are unknown at this time. However, most of the available evidence indicates that the Japanese intend this new self-propelled artillery system to be autonomous in operation. The level of electronics technology should be at least equal to that of the Panzerhaubitze 2000 or M109A6. An automatic

navigation and positioning system will almost certainly be included in this system's fire-control suite.

## Variants/Upgrades

**Variants.** No variants are known to be planned for this new artillery system.

**Modernization and Retrofit Overview.** Not applicable at this time, as this artillery system has yet to enter serial

production. However, in order to maintain its effectiveness, some modernization and/or retrofit programs will most likely be developed for this system.

## Program Review

**Background.** In 1983, the Technical Research Institute of the Japanese Self-Defense Force began development of a new 155 millimeter self-propelled howitzer which would eventually replace the Type 75, 201 of which were manufactured and are in service. It was decided to use the ordnance of the tri-national FH 155-1 towed howitzer as the basis of the new system, as it was already being manufactured under license in Japan by Japan Iron Works. The FH 155-1 is covered in a separate report in this book. The new self-propelled artillery system was given the provisional designation of Type 75 SPH Kai.

**Description.** As of early 2000, only the minimal amount of information had been released on the Type 75 SPH Kai program. The technical details of the system, especially regarding fire control, are largely

unknown. The Type 75 SPH Kai integrates the ordnance of the FH 155-1 towed artillery system with the chassis of the new Type 89 Mechanized Infantry Combat Vehicle. The turret of the new artillery system was developed by the Japanese Self-Defense Force Technical Research Institute. Development began in 1983. The Type 75 155 millimeter SPH Kai is not expected to be in initial operational service until late 2002 at the earliest.

**52 Caliber Cannon?** In early 1999, evidence indicated that the Japanese will use the 52 caliber version of the FH 155-1 cannon (developed by Rheinmetall Industrie) on this new self-propelled artillery system. If this is indeed true, the maximum range will be 40,000 meters (43,744 yards) when firing Base Bleed projectiles at the maximum charge.

## Funding

The development and procurement of the Type 75 SPH Kai is being funded by the Japan Ministry of Defense through the Ground Defense Force.

## Recent Contracts

Not available, as contractual information is not released.

## Timetable

This timetable is for the Type 75 SPH Kai only and not the Type 75 or Type 74.

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1983	Development and design initiated
Early	2000	Development and testing of prototypes ongoing

## Worldwide Distribution

**Export Potential.** Production of the first Type 75 was limited to Japan. The Japanese Constitution forbids exporting of weapons.

**Countries.** **Japan** (one prototype).

## Forecast Rationale

By far the most interesting event related to the Type 75 SPH Kai program was the possibility (uncovered around two years ago) that the 52 caliber version of the FH 155-1 ordnance could be the basis of the new self-propelled artillery system. However, our research continues to be hampered by a lack of available information which also limits our ability to forecast the time frame and rate of production of this program. But it is certain that the writing is on the wall for all short-barreled (39 caliber) 155 millimeter artillery systems, and Japan is not expected to remain with such technology much longer.

The information that we have been able to uncover prompts us, once again, to slip the expected serial production of this system. While the development program is apparently moving ahead with no major problems, we have yet to see the slightest hint of a procurement effort. Based on all our data gathered during the course of our research into this program, we forecast that the serial production of this system should commence in 2003, with the initial operating capability now forecast for 2004. A total procurement objective of 190 systems is projected; the reduced number, as compared to the earlier Type 75, is attributable to the increased capability of the new system.

## Ten-Year Outlook

### ESTIMATED CALENDAR YEAR PRODUCTION

Ordnance	(Engine)	High Confidence Level				Good Confidence Level				Speculative			Total 00-09
		through 99	00	01	02	03	04	05	06	07	08	09	
MITSUBISHI HEAVY INDUSTRIES													
TYPE 75 SPH KAI <sup>(a)</sup>	UNKNOWN	1	0	0	1	0	9	19	18	19	18	19	103
Total Production		1	0	0	1	0	9	19	18	19	18	19	103

(a) The through 2002 production is for the initial prototype and development systems.