A Type 95 Ha-Gō pictured in the arena at Tankfest last year. It could possibly be back for 2020. *THE TANK MUSEUM*

words **Mark Nash** pictures **as credited**

Japan's Lightweight TANK

In the west, Japanese tanks received little respect. **Mark Nash** believes they were not given a fair assessment

Since the island-hopping campaigns of the Pacific War, Japan's tanks were widely laughed off or looked down on as poor performers with inadequate armour and firepower. This is a harsh assessment and one that is simply incorrect, especially in the case of one of Imperial Japan's first bespoke light tanks, the Type 95 Ha-Gō.

One must remember when looking at the Ha-Gō that it was an early 1930s design, aimed at supporting infantry of the Imperial Japanese Army (IJA) in China during the Second Sino-Japanese War. In this theatre, it was an extremely effective vehicle as it faced an enemy without a large tank force. It was only later, during the Pacific War in the mid-1940s, when these tanks faced tougher enemy armour such as the American M4 Sherman, that they struggled.

The Type 95 Ha-Gō was one of Imperial Japan's most highly produced tanks. By 1943, around 2,300 were built. They were reliable and appreciated by their crews, their small size making them ideal for urban and jungle warfare. They would serve until the end of World War Two (for Japan, at least) through the colds of Northern China, the humid jungles of Burma, and the scorching, sun-baked islands of the Pacific.

In the early 1930s, Japan was modernising its military and needed a new, highly mobile tank for its fledgling mechanized corps. With a top speed of just 25km/h (15mph) the Type 89 in service was not fast enough so the military turned to Tomio Hara of the Army Technical Bureau. After gathering the opinions of infantry and cavalry units, which set out design requirements, Hara came up with a design for a tank that weighed 7 tonnes (7.7 tons) and had a top speed of 40km/h (25mph).

The general specifications were: 4.38m (14ft 4in) long, 2.06ms (6ft 9in) wide and 2.13m (7ft) tall. It was to be armed with a 37mm main gun in a fully rotating turret with a 6.5mm machine gun in the bow. Armour was to be at least 12mm thick to counter 7.7mm Armour-Piercing (AP) rounds. The powerplant would consist of the same 120hp Mitsubishi 6-cylinder diesel engine as the Type 89. Hara had already designed a new suspension system known as the 'bell-crank' suspension, which we will explore later.

Mitsubishi Heavy Industries was contracted to produce a prototype based on these requirements in 1933. It was completed by June 1934 and the new tank was put through a series of tests, including 700km (435 miles) endurance trials and gunnery tests. It was positively evaluated and praised for having excellent performance and sufficient durability. Initially, the prototype demonstrated a 43km/h (27mph) top speed, decent climbing ability, the ability to cross a 2m (6ft 6in) wide trench, and an operational range of 250km (155 miles). These were all well received, apart from the weight which had crept up to 7.5 tonnes (8.2

Several surviving examples have been preserved at museums around the world and always draw interest when on display.
THE TANK MUSEUM

ABOVE RIGHT: ***Japanese 16th Tank Regiment Type 95 Ha-Gō light tanks on Marcus Island, 1945.*** *US ARMY*

ABOVE: ***Japanese Type 95 Ha-Gō light tank halted by Australian two pounder gun anti-tank fire in the Battle of Muar, Malaya, circa 1942.***
WIKIMEDIA COMMONS / AUSTRALIAN WAR MEMORIAL

BELOW: ***The tank had a complement of three crewmen: a commander, a hull machine gunner, and a driver.*** *THE TANK MUSEUM*

'The cavalry was extremely happy with the vehicle as a mobile and manoeuvrable light tank'

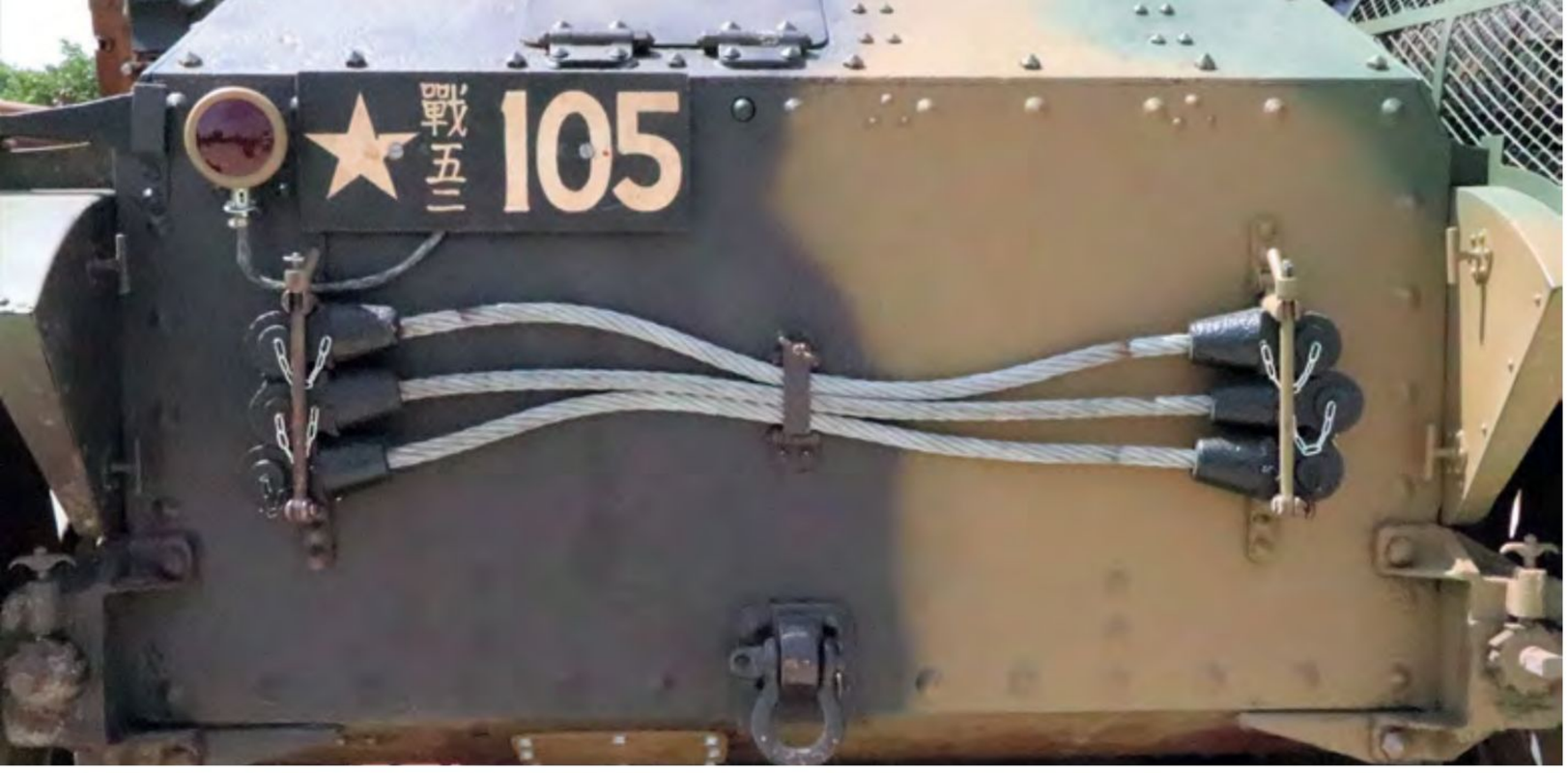
tons). After some alterations were made, this was reduced to 6.5 tonnes (7.1 tons). Following these alterations, the tank was sent for retrial. An average top speed of 45km/h (29mph) was attained, and a 370km (230 miles) operational trial was undertaken to confirm endurance.

In October 1934, the tank was sent to the Cavalry School for practical tests. The cavalry was extremely happy with the vehicle as a mobile and manoeuvrable light tank. The infantry, however, still wanting a tank that would provide support, was not as pleased, stating that the 37mm gun was inadequate and that 12mm of armour protection was not enough. The disagreement between branches resulted in a further period of testing between late 1934 and early 1935. The testing would be undertaken in Northern Manchuria, during the cold season, and fell under the responsibility of an independent mixed brigade of infantry and cavalry stationed in that area. The report suggested that the tank was ready for service and everyone was happy with its cold weather performance.

With the success of the tests and several requests from IJA units in the field, High Command finally recognized the tank's value. Construction of a second prototype was authorised in June 1935, which was completed by November. After the tank was received and accepted, it was designated the Type 95 after the Japanese Imperial Year (otherwise known as Kōki) 2595 (1935). One of the first things to change on the Ha-Gō was the crew compartment, and subsequently, the hull sides. The initial model had straight sides making it extremely narrow internally. The sides of the hull were rounded out, almost doubling the internal space allowing the crew to operate the vehicle a lot more comfortably. This modification is what gave the Ha-Gō its unique hull shape.

Infantry units remained unhappy with the amount of firepower and so a secondary 6.5mm machine gun was added to the turret in the five o'clock position. With these modifications, the final version of the tank had a weight of 7.4 tonnes (8.1 tons). Mitsubishi Heavy Industries began production in 1936, with mass production starting in 1938.

The Type 95 Ha-Gō was operated by a three-man crew, consisting of the driver, bow gunner and commander/gunner. The driver was located at the front-right, while the bow gunner was onthe driver's left and operated the bow machine gun installed in a ball-like mount. He had no hatch and had to enter or exit the vehicle through the turret. The commander was in the one-man, conical turret which was mounted slightly off to the left of the centre line. He was the most overworked of the crew having to command and direct the tank while also acting as loader and gunner of the 37mm and the five o'clock machine



gun. The commander had no internal radio to speak and instead had a speaking tube that led to the driver and bow gunner. For the most part, commanders would have to rely on signal flags to communicate with other vehicles.

An alarming feature of the Ha-Gō, at least by modern standards, is that the internal surfaces were covered in layers of asbestos. This served two purposes: one, as the tank would be operating in hot climates, it would help keep it cool, and two, it provided some padding to the internal surfaces giving the crew a little more comfort over rough terrain.

The main armament was a 37mm gun. On initial models, the specific gun used was the Type 34 37mm tank gun which had a muzzle velocity of 575 m/sec (1,900fps) and could penetrate 35mm armour at 300 metres with Armour Piercing (AP) rounds. The gun could also fire High-Explosive (HE) rounds, although the effect of the 37mm HE is highly questionable. Loading the gun would have been easy to do one-handed as the cartridges were rather small at around 13cm (5in) long, and 5cm (2in) in diameter. They were also light at just 700g (24oz). The Type 34 gun was simply a tank version of the 37mm infantry anti-tank gun of the same name which was issued to troops two years after the Ha-Gō tank's creation. For the tank, the gun was installed in a heavy-duty, non-geared mount. It was trained in elevation (around +25°) and depression (around -15°) manually by the commander. The turret was manually rotated by a hand-crank located to the right of the gun.

On earlier models of the Ha-Gō, the bow machine gun was the Type 91 6.5mm. This was a modified version of the Type 11 machine gun, an infantry weapon that was air-cooled and fed via a side mounted hopper. The Type 91 did away with the stock of the Type 11 and replaced it with an angled pistol grip, so it was more manoeuvrable inside the tank. This machine gun was later replaced by the Type 97 7.7mm heavy 'tank' machine gun. Again, this was an air-cooled gun, but it was fed from a top-loading magazine.

Both machine guns were mounted to the tank with a x1.5 telescopic sight which had a 30° field of view. Both were also fitted with a removable armoured cover that protected the external part of the barrel from shrapnel damage.

The machine guns were placed in ball-like mounts with a vertical and horizontal axis of traverse. The one behind the commander in the five o'clock position was placed here so that when the tank was in an infantry support role the commander could traverse the turret around and just use the machine gun without the 37mm. If required, either of the machine guns could be removed from and placed in position on the turret ring. It was often the commander's machine gun that was removed and placed here as it allowed all the tanks guns to face forwards at the same time.

The Type 95 was propelled by a 120hp Mitsubishi 6-cylinder diesel engine which propelled the tank to a top speed of 40 to 45km/h (24 to 29mph). The Japanese decision to use diesel engines in their tanks reportedly went back to when the army was testing British Mk E light tanks. During a trial, one of these petrol-engine tanks burst into flame, killing the entire crew.

The engine was installed in the rear of the vehicle, slightly off to the right with the exhaust protruding from the right

SPECIFICATIONS

Type Light Tank
Nationality Japan
Year 1936 to 1943
Production Run 2,300
Engine Mitsubishi 6-cylinder
Fuel Diesel
Power 120hp
Transmission Manual
Suspension Bell Crank
Crew 3

Dimensions
Length 4.38m
Width 2.06m
Height 2.06m
Weight 7.4 tonnes

THIS PAGE CLOCKWISE FROM TOP LEFT: ***A view showing the rear of the tank. The Type 95 was fitted with a 120bhp Mitsubishi A6120VDe air-cooled 6-cylinder diesel engine; Tools fixed to the outside for easy access; The commander was seated in the turret and was responsible for observation, loading, aiming, firing the main gun; One of the driving lights on the front.***
ALL PICTURES ANDREW STONE

A view from the rear of the exhaust with protective cage. *ANDREW STONE*

A Japanese Type 95 Ha-Gō captured by soviet troops after battle of Khalkhin Gol. *WIKIMEDIA COMMONS*

The tracks were driven through the front sprockets. *ANDREW STONE*

'During a trial, one of these petrol-engine tanks burst into flame'

of the engine bay, bent at a right angle, and was then fixed to the right rear fender. The transmission was located at the front of the vehicle with the drive wheels. This meant a prop shaft extended through the crew compartment, protected by a simple hood. The commander would have to step over and try not to trip on it as he was traversing the turret.

The Ha-Gō used a bell-crank suspension, which was also one of Tomio Hara's designs. The bell-crank suspension consists of bogies mounted on arms, which in turn are connected to a long spring on the side of the hull. The spring is protected by a long segment of piping, riveted to the hull-side. The bogies push against each other on this spring when passing over terrain, allowing the bogies to actuate. The Ha-Gō had four road wheels, with two large wheels per-bogie. There were advantages to the bell crank system. It was easy to produce and maintain. Also, it was mounted completely externally, meaning no internal space was taken up by the suspension system, unlike torsion bars or the Christie system. However, there were also downsides. The bogies had so much room to move that pitching was rather severe on the Ha-Gō. If the tank went over too deep a hole, there was a good chance it would get stuck. There were two return rollers, one above each bogie, and an idler wheel at the rear. The all-metal tracks were narrow at just 25cm (9.8in) across and there were around 98 links per-side.

Troops in Manchuria were the first to be equipped with the Ha-Gō where a unique problem arose. It was found that when crossing Kaoliang Fields (a staple crop in Manchuri), the sequence of furrows exactly matched the layout of the bogie wheels, resulting in severe pitching. This was fixed by the addition of small support rollers between the two larger wheels of the bogies. Because of where this modification was done, it became known as the 'Manchu' suspension. This feature was not required on Type 95s stationed in other theatres.

The Ha-Gō was both riveted and welded in construction and it was one of the first Japanese tanks to use welding in its construction. A feature which highlights the original infantry support role of the Ha-Gō is the infantry buzzer on the back of the vehicle. It consisted of a fake bolt head and infantry outside the tank would use it to get the attention of the tank commander. The Ha-Gō is one of the first ever tanks to have such a feature.

Entering service in the late 1930s, the Type 95 Ha-Gō is one of those rare vehicles that was in service from the start of World War Two until its end. In the early stages of the war, it was an effective light tank thanks to its small size, good mobility and light weight which allowed it to cross terrain impassable to heavier vehicles. The first time it faced enemy armour was in the late 1930s at the Battle of Khalkhin Gol. Pitched against the BT tanks of the Soviet Army, the Ha-Gō performed well, despite being outgunned by the 45mm armed BTs.

In 1941, the Ha-Gō faced US armour for the first time at Bataan in the Philippines. This was America's first tank-on-tank action of World War Two, with a tank platoon from the US 192nd Tank Battalion pitching M3 Stuart light tanks against Type 95s of the IJA 4th Tank Regiment. The tanks were evenly matched, both being armed with 37mm guns. The M3, however, had thicker armour but this did not stop the Japanese crews knocking out one of the M3s, and severely damaging the rest of the platoon.

Despite this early success, by 1942/43, the Ha-Gō was starting to become obsolete. In 1943, the United States Marine Corps, fighting the Japanese in the Pacific, began to field the M4 Sherman and the Ha-Gō was no match. As the war progressed and the Japanese began to fight a far more defensive campaign in the Pacific, the Ha-Gō began to see action as a defensive weapon, rather than offensive.

During the Battle of Iwo Jima, most Japanese tanks fielded were dug into defensive, 'hull-down' positions overlooking the invasion beaches. In the jungles of the Far East, the Ha-Gō was also having to face Australian-operated Matildas which were heavily armoured and armed with a 40mm gun. The Ha-Go also faced a few M3 Grant tanks operated by the British. While both these tanks had proved obsolete in the European theatre, their arms and armour were more than effective against the now under-armoured and under-gunned Japanese opponent.

Contrary to popular belief, the Ha-Gō's service did not end with Japan's defeat. The army of Thailand, which had effectively been press-ganged into supporting the Japanese Empire, purchased around 50 Ha-Gōs in the early 1940s. Here, they were operated under the designation of 'Type 83'. Remarkably, after the end of World War Two, the Thai army kept their Ha-Gōs in service until 1954. What is even more remarkable is that one of these is technically still in service with the Thai Army. It is kept as a show vehicle and is fully operational, making it one of only a small number of running Ha-Gōs remaining in the world. The restored Ha-Gō pictured here was photographed at The Tank Museum and is expected to run again at Tankfest later in the year.