Russian Medium Tank

T-55A

AMPS Atlanta Club Project 2011

T-54 / T-55 Series Tanks

The layout of the T-54 is conventional, with the main armament comprising a 100mm rifled gun. The T-54 has been used more than any other tank since the Second World War. It is intended for combat actions involving tanks, combat vehicles, armoured personnel carriers and other armored enemy targets. The T-55 combines a high velocity gun with exceptional long-range endurance. The T-55 has a fully tracked, five-road-wheeled chassis with a low-silhouetted hull and a dome shaped turret.

The T-54 series tanks first appeared in 1949 as replacements for the T-34 tank of World War II. The first T-54 prototype was completed in 1946 with first production beginning in 1947. The T-54 was continuously improved and modified, and, when sufficient changes had been made, the tank was redesignated T-55. The T-55 was introduced in 1958 and incorporates all the refinements and improvements of the fully developed T-54 series without being radically different in design or appearance. The T-55A appeared in the early 1960s. Production continued in the Soviet Union through 1981 and was also undertaken in China (as the Type 59), Czechoslovakia and Poland.

Large numbers are still in service, although by the 1980s the T-54/55 had been replaced by the T-62, T-64, T-72, and T-80 as the primary main battle tank in first-line Soviet tank and motorized rifle units. Used in the invasion of Hungary in 1956, Czechoslovakia in 1968, and Syria in 1970, it was the main Arab tank in the 1967 and 1973 wars with Israel. During the 1970s, the T-54 saw combat in Vietnam, Cambodia, and Uganda.

DESCRIPTION:

- The T-55 medium tank has a fully tracked, five-road wheeled chassis with a space between the first and second road wheels and no return rollers. It has a low-silhouetted hull with a dome-shaped turret mounted over the third road wheel. The 100-mm rifle-bore main gun has a bore evacuator at the muzzle. A 7.62-mm coaxial machine gun and 7.62-mm bow machine gun are also mounted. The later T-55A version lacks the bow machine gun.
- The T-55 is distinguishable from the other T-54 models in that it lacks the right-hand cupola and the turret dome ventilator located in front of that cupola on the T-54. Most T-55s also lack the turret-mounted 12.7-mm AA machine gun of the T-54, and all T-55s mount an infrared gunner's searchlight above and to the right of the main gun. This searchlight, however, is not a distinguishing feature, since it has been retrofitted to many T-54 and T-54A tanks.

CAPABILITIES:

- The T-55 combines a high-velocity gun with a highly mobile chassis, a low silhouette, and exceptional long-range endurance. Improvements over the T-54 include a larger V-12 water-cooled diesel engine with 580 hp rather than 520 hp, increased cruising range of 500km (up to 715 km with two 200-liter auxiliary fuel tanks which can be carried on the rear) rather than 400 km (600 km with auxiliary tanks). The T-55 also has two-plane stabilization of the main gun rather than vertical stabilization only, and a basic load for the main gun of 43 rounds rather than 34.
- The T-55, which can ford depths of 1.4 meters without preparation, has snorkel equipment which enables it to cross depths of up to 5.5 meters at a speed of 2 km/hr. This equipment takes about 1 5 to 30 minutes preparation but can be jettisoned immediately on leaving the water. All T-55s have the PAZ radiation detection system, and the T-55A also has an anti-radiation liner. Some T-55s also may have been retrofitted with a full NBC collective protection system (air filtration and overpressure). A dense smoke screen can be generated by injecting vaporized diesel fuel into the exhaust system.
- T-55s with "bra armor", semi-circular add-on armor, have turret protection increased to 330 mm (KE) and 400-450 mm (CE). Other improvements available include a hull bottom reinforced against mines, better engines, rubber track pads, and a thermal sleeve for the gun. The 1K13 sight is both night sight and ATGM launcher sight; however, it cannot be used for both functions simultaneously. Optional sights and fire control systems include the Israeli El-Op Red Tiger and Matador FCS, Swedish NobelTech T-series sight, and German Atlas MOLF. The Serbian SUV-T55A FCS, British Marconi Digital FCS, South African Tiger, and Belgian SABCA Titan offer upgraded function. One of the best is the Slovenian EFCS-3 integrated FCS.
- A variety of thermal sights is available. They include the Russian/French ALIS and Namut-type sight from Peleng. There are thermal sights available for installation which permit night launch of ATGMs.

- The first operational active protection system [APS], named Drozd, was developed by the Soviet Union between 1977 and 1982. This system was installed on some 250 naval infantry T-55As (redesigned T-55ADs) in the early 1980s, and was designed for protection from ATGMs and antitank grenades. It used primitive millimeter-wave radar sensors on each side of the turret to detect incoming rounds. A filter in the radar processor was intended to ensure that the system responded only to targets flying at speeds typical of ATGMs. These are engaged by one or more short-range rockets carrying fragmentation warheads (similar to mortar rounds), fired from four-round launchers (one on each side of the turret). Drozd provides maximum overlap and protection only to the forward 60° portion of the turret, leaving the sides and rear vulnerable. The tank crew can change the orientation of the system by rotating the turret.
- Drozd suffered from several shortcomings. Its radar was unable to determine threat elevation levels adequately, and the self-defense rockets would almost certainly have caused unacceptably high levels of collateral damage - particularly to accompanying dismounted infantry.

LIMITATIONS:

- The T-55 is most effective against light to medium armor vehicles. The basic ammunition load for the main gun is 43 rounds. External fuel cells make the tank very vulnerable, as does its thin armor protection. The T-55 has a limited ability to depress the main gun, hindering the tank's fires in defilade from high ground. In addition the gunner's primary sight is slaved to the main gun, which does not allow the gunner to acquire targets in a hull-down posture.
- Although the half-egg shaped turret of the T-55 has good ballistic qualities, it provides cramped working conditions for the crew, resulting in a slow rate of fire; and the protection afforded by its low silhouette (1 meter lower than the M60) is counterbalanced by its poor armor protection which is thin by western standards. By the same standards, its gun control equipment is also crude. It shares the disadvantage of most Soviet tanks in having limited ability to depress the main gun, thus not being capable of firing effectively from defilade and being forced to expose itself to engage targets. Ammunition and fuel are stored in vulnerable positions. The lack of a turret basket presents loading difficulties, and there is limited ready ammunition. The driver, commander, and gunner are all in line.
- The T-55 is not airtight. Although crew members are protected from radioactive dust by the filtration system, they must wear individual protective masks and clothing to guard against chemical and biological agents. The tank must thus pass through contaminated areas rapidly and then be decontaminated before it is fully operational.
- The tank can be made watertight for fording water obstacles up to 1.4 meters deep (5.5 meters with snorkel). However, it may take up to half an hour to prepare a medium tank unit for a snorkeling operation, and entrance and exit points may also require preparation.

VARIANTS

The T-54/55 tanks have been produced in greater quantity than any other tank in the world. Seven main production models have been widely used throughout the Warsaw Pact and in many other countries. The T-54/55 series has been manufactured in Czechoslovakia and Poland as well as in China where it is known as Type 59. Due to its long service in the armed forces, many various versions and modifications were developed, both by the original manufacturer and by licensed producers later on, e.g. T-54, T-54/55, OT-54/55, T-54A, T-54B, T-54M, T-55, T-55A, T-55M, T-55AD, T-55MV and others. More than a dozen countries have produced upgraded T-55 variants with similar capabilities in protection and lethality. Due to gradual modernizations, there have been a number of upgrades concerning mobility and immediate protection for the vehicle itself and for the crew. Many countries have upgraded to a larger main gun.

- T-54: There are numerous differences between early production T-54 vehicles and later models with some having a wider mantlet and turret undercut at the rear. These are sometimes referred to as the T-54 (1949), T-54 (1951) and T-54 (1953).
- T-54A: This model has a fume extractor for the 100mm gun, stabilization system and deep fording equipment.
- T-54AK: Command tank (Polish model is the T-54AD). Has additional radios and a radio range of 100 miles.
- T-54M: T-54 upgraded to the T-55M standard. See T-55M.
- T-54B: First model to have infra-red night vision equipment. This is the model used in the above stats.

- T-55: T-54 with new turret and numerous other improvements, late production models have a 12.7mm AA MG. Improvements over the T-54 include a larger V-12 water-cooled diesel engine and an increased cruising range of 500 rather than 400 kilometers (600 kilometers with auxiliary tanks). The cruising range can be extended to 715 kilometers with two 200-liter auxiliary fuel tanks which carried on the rear. The T-55 used a completely different turret from the T-54, the most obvious difference being that the T-55 was now without the roof top mushroom ventilator dome and instead has two D-shaped roof panels. Early T-55s also did not mount the loader's 12.7mm DShK AA MG and the loader's hatch was flush mounted with little or no rise above the surrounding turret armor.
- T-55A added an NBC protection system. T-55A used a new anti-radiation lining and PAZ/FVU chemical filtration system upgrade on the same turret. The lining caused the turret hatches to be thicker and no longer flush with the turret surface. Notable features are much larger combing on the commander's and gunner's hatch, and a large blister on the driver's hatch. The T-55A Model 1970 did begin to receive the 12.7mm MG agin, but in a different position than on the T-54.
- T-55M added the Volna fire control system (with ATGM launcher), improved gun stabilization and sights, improved engine, new radio, and increased protection. That included side skirts, smoke grenade launchers, applique armor, and fire protection.
- T-55AM added bra armor, an armor band around the turret for 180° coverage. The T-55AM designation is sometimes used to indicate a T-55A vehicle with the 12.7mm DShK MG on its new fitting on the loader's hatch.
- T-55AM2B: Czech version of T-55AMV with Kladivo fire control.
- T-55AM2: Variant does not have ATGM capability or Volna FCS.
- T-55AM2P: Polish version of T-55AMV but with Merida FCS.
- T-55AMD: Variant with the Drozd APS instead of ERA.
- T-55AD Drozd: Variant with Drozd but not Volna FCS and ERA.
- T-55AMV The -AMV upgrade means substitution of ERA for the bra armor. Variants ending with -1 denote replacement of the engine w/V-46 engine from T-72 MBT. The Ukraine and Syria will upgrade to the T-55AMV standard.
- T-72Z Safir-74 - An Iranian upgrade to the T-54/T-54 that may have been applied to Iraqi T-54s captured in the Iran-Iraq War. This has a number of improvements including a 105 mm M68 rifled tank gun, computerised fire-control system and a new power pack which consists of a diesel engine, fully automatic transmission and cooling system.
- The MT-55A armored bridgelayer (Mostní tank) is a specially converted T-55A medium tank chassis, with the turret removed and replaced by a special bridge launching equipment. The converted T-55A chassis differs only by the arrangement of the compartments in the hull. The bridge tank is intended for an easy and rapid crossing of antitank barriers (trenches) and other obstacles with the purpose of facilitating the passage of mechanised and tank units. The bridge launching equipment is controlled by a system of hydraulic cylinders; the distribution of hydraulic oil can be controlled both manually by mechanical levers and automatically. The pressure of the liquid is provided by high-pressure piston pumps powered by the tank engine. All mechanisms of the MT-55 used for laying and recovering of the bridge can be controlled by the crew from the inside of the tank, with hatch covers closed. To start the launching procedure, the vehicle stops short of the gap; subsequently, the bridge swings forward and down while its two sections open like scissors.
- The VT-55A recovery tank is a special armored tracked vehicle mounted on the T-55A tank chassis. It is intended primarily for towing of crashed or damaged equipment in various terrain conditions, for recovery of equipment out of all kinds of impossible positions, with a tractive power up to 75 MPa. Its built-in crane can lift loads up to 1.5 ton. Other applications of the VT-55A include material handling, like transportation of spare parts up to 3 tons to damaged equipment. The vehicle is divided into driver´s, commander´s, winch, and engine and gear compartments. It is equipped with an NBC protection. The crew consists of a commander, driver/engineer and slinger.

The following two pages show photos of six of the more common T-55 variants.

T-55A

T-55AM2

T-55AM2B

T-55AMV

T-55AVLB

VT-55

Current Using Countries (all models of T-55)

Afghanistan, Albania, Algeria, Angola, Azerbaijan, Bangladesh, Belarus, Bosnia, Bulgaria, Cambodia, Cent. African Rep., Chad, China, Congo, Croatia, Cuba, Czech Republic, Egypt, Ethiopia, Finland, Georgia, Guinea, Hungary, India, Iran, Iraq, N Korea, Laos, Lebanon, Libya, Macedonia, Malawi, Mauritania, Mongolia, Mozambique, Namibia, Nicaragua, Nigeria, Pakistan, Peru, Poland, Romania, Russia, Slovakia, Slovenia, Somalia, Sri Lanka, Sudan, Syria, Tanzania, Togo, Uganda, Ukraine, Uzbekistan, Vietnam, Yemen, Yugoslavia, Zambia, Zimbabwe

Aftermarket Accessories

Photoetch
Eduard
Aber
Lion Roar

Resin Conversions
CMK – Engine, Interior, AM2 Kladivo, Dozer
Legend – AM2B, Tiran 5, Type 59
Real Model – A5M

Barrels
Jordi Rubio
RB Barrels
Model Point

Tracks
ModelKasten
Fruilmodel

Build Schedule

Section I.
Introduction to the T-55 family of tanks and associated vehicles. We will also review the aftermarket items available and the references that will be used with this project.

Section II.
Instruction steps 1 - 4

Section III.
Instruction steps 5 – 9 plus plumbing and wiring.

Section IV.
Instruction steps 10 – 11

Section V.
Instruction sections 12 - 14

Section VI.
Instruction sections 15 - 17

Section VII.
Painting and markings

References:

Inside the Great Tanks, Hans Halberstadt, The Crowood Press, 1997

T-54 and T-55 Main Battle Tanks 1944 – 2004, Steve Zaloga and Hugh Johnson, Osprey New Vanguard, 2004

Modelling the T-55 Main Battle Tank, Nicola Cortese, et. al., Osprey Publishing, 2005

Centurion vs. T-55 - Yom Kippur War 1973, Simon Dunstan, Osprey Publishing, 2009

Toadman's Tank Pictures T-55A CD, by Chris "Toadman" Hughes

Magazines: Military Miniatures in Review Nos. 32, 34; AFV Modeler Nos. 20, 26, 37; Military Modelcraft International Oct. 2009, April 2010; Military Modelling Feb./Mar. 2003; Model Military International Mar. 2007