

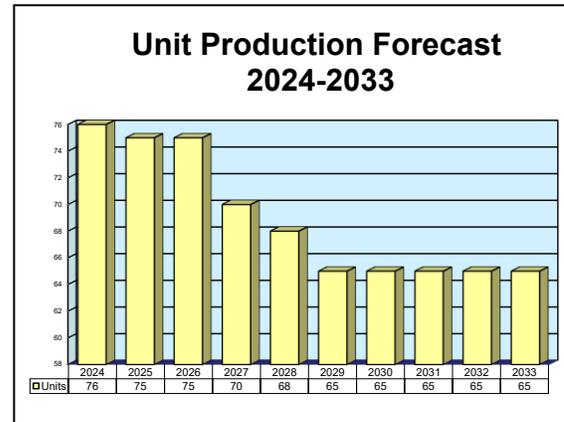
# ARCHIVED REPORT

For data and forecasts on current programs please visit [forecastinternational.com](http://forecastinternational.com) or call +1 203.426.0800

## Chinese Tanks

### Outlook

- The Type 98/99 will remain among the most prolific tank programs in the world
- NORINCO has launched a determined effort to build greater brand/product recognition on the export market
- Forecast reflects ongoing Type 98/99 serial production for PLA requirements



### Orientation

**Description.** Main battle tanks.

**Sponsor.** The People's Liberation Army sponsors the development and PLA procurement of main battle tanks.

**Status.** Development through serial production.

**Total Produced.** Since the introduction of the Type 69-I and through 2023, we estimate that the PRC State Arsenals (under the auspices of NORINCO) produced 7,740 tanks, as follows:

- Type 69-I: 186
- Type 69-II: 3,087
- Type 79: 808
- Type 80: 328
- Type 80-II: 234
- Type 85-II: 611
- Type 85-IIM: 1,001
- Type 85-III: 7
- Type 90-II: 5

- Type 98/99: 1,473

In Pakistan, Heavy Industries Taxila produced 250 Type 69-IIMPs and 358 Type 85-IIAPs under license.

**Application.** Armored mobile weapons systems, optimized for high-speed offensive and breakthrough operations, as well as defensive fire support.

**Price Range.** Chinese tanks currently available on the international market carry the following estimated unit prices, in 2024 U.S. dollars:

- Type 80-II: \$3.524 million
- Type 85-IIM: \$4.108 million
- Type 85-III: \$4.928 million
- Type 90-II: \$5.151 million
- Type 98/99: \$5.818 million
- MBT-3000: \$6.991 million

The People's Republic of China offers the Type 90-II for export only, through China North Industries Corp (NORINCO).

## Chinese Tanks Archived MAR

### Contractors

#### Prime

|  |  |
|--|--|
| <b>China North Industries Corp (NORINCO)</b>             | http://www.norinco.cn, 12A Guang An Men Nan Jie, PO Box 100053, Beijing, China, Tel: + 86 10 6352 9988, Fax: + 86 10 6354 0398, Email: norinco@norinco.cn, Prime |
| <b>Heavy Industries Taxila, Heavy Mechanical Complex</b> | http://www.hmc.com.pk/, Hattar Rd, Taxila, Taxila, Pakistan, Tel: + 92 51 51 9314130 7, Fax: + 92 51 9314151, Email: techdte@micro.net.pk, Licensee              |

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 75 Glen Road, Suite 302, Sandy Hook, CT 06482, USA; rich.pettibone@forecast1.com

### Technical Data

**Note.** *In this section of the report, we list the Chinese tank programs in reverse order, discussing the newest design first.*

**Crew.** The Type 69 series, Type 79, and Type 80 series feature a four-man crew: commander, gunner, loader, and driver.

The Type 85 series, Type 90-II, Type 98, and MBT-3000 feature an automatic loader, thus requiring only a three-man crew (commander, gunner, and driver).

**Armor.** The Type 69 series, Type 79, and Type 80 series feature conventional rolled homogeneous steel armor, with single-piece casting turrets.

The Type 85 series, Type 90-II, and Type 98 feature welded turrets. The Type 90-II, Type 98/99, and MBT-3000 also feature a modular armor suite, reportedly with a layer of neutron-absorbing armor on the interior of the turret.

#### MBT-3000/VT-4

**Design Features.** The tank features a 125mm smoothbore main armament with an automatic loader and is manned by a three-man crew.

**Ammunition.** The Chinese version of the Russian 125mm 2A46 smoothbore ordnance is compatible with

all Chinese, Russian, and Eastern European 125mm ammunition. The ordnance is also compatible with a laser-guided missile, reportedly similar to the Russian 9K119 Refleks (AT-11 Sniper).

**Dimensions.** The following data reflect the MBT-3000 developmental prototypes; the data are subject to change as information on the production-standard tank becomes available. The fuel capacity is estimated. The width is with the side skirts fitted.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Length        | 10.10 m         | 33.13 ft          |
| Width         | 3.5 m           | 11.48 ft          |
| Height        | 2.40 m          | 7.87 ft           |
| Combat weight | 48.00 tonnes    | 52.91 tons        |
| Fuel capacity | 1,450 liters    | 383.04 gal        |

**Performance.** The following data are provisional; the automotive performance data reflect use on a paved road.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 68 kmph         | 42.25 mph         |
| Maximum range | 500 km          | 310.268 stat mi   |
| Step          | 1.20 m          | 3.93 ft           |
| Trench        | 2.7 m           | 8.85 ft           |
| Slope         | 40%             | 40%               |
| Gradient      | 60%             | 60%               |
| Fording       | 3.5 m           | 11.48 ft          |

## Chinese Tanks Archived MAR

**Engine.** Unspecified turbocharged diesel powerplant generating 956 kilowatts (1,300 hp).

**Gearbox.** Unidentified automatic transmission configuration.

**Suspension and Running Gear.** Torsion bar suspension, with six dual-tired roadwheels and probably three track return rollers on each side. The drive sprocket mounts to the rear. The first, second, and sixth roadwheel stations feature hydraulic shock dampers.

### Armament

**Main Armament.** The MBT-3000 mounts a 125mm smoothbore tank gun like that utilized by the Type 98/99. This ordnance features a fume extractor, a thermal sleeve, and an automatic loading system.

The MBT-3000 possesses full fire-on-the-move capability.

**Secondary Armament.** One coaxially mounted 7.62x54mm machine gun; one roof-mounted 12.7x107mm Type 54 machine gun operated through an indigenous remotely controlled weapons system (RCWS).

**Fire Control.** The MBT-3000 features a fully image-stabilized, computer-based fire control suite, digitized navigation and tactical awareness capabilities, and electric gun control mechanisms.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope and thermal imaging suites.



PLA Type 98/99 Main Battle Tank

Source: Max Smith

### Type 98

**Design Features.** The tank features a 125mm smoothbore main armament with an automatic loader and is manned by a three-man crew.

**Ammunition.** The Chinese version of the Russian 125mm 2A46 smoothbore ordnance is compatible with

all Chinese, Russian, and Eastern European 125mm ammunition. The ordnance is also compatible with a laser-guided missile, reportedly similar to the Russian 9K119 Refleks (AT-11 Sniper).

## Chinese Tanks Archived MAR

**Dimensions.** The following data reflect the Type 98 developmental prototypes; the data are subject to change as information on the production-standard tank becomes available. The fuel capacity is estimated. The width is with the side skirts fitted.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Length        | 10.11 m         | 33.17 ft          |
| Width         | 3.5 m           | 11.48 ft          |
| Height        | 2.31 m          | 7.57 ft           |
| Combat weight | 49.98 tonnes    | 55.09 tons        |
| Fuel capacity | 1,400 liters    | 372.34 gal        |

**Performance.** The following data are provisional; the automotive performance data reflect use on a paved road.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 67 kmph         | 41.61 mph         |
| Maximum range | 440 km          | 273.2 stat mi     |
| Step          | 85 cm           | 2.79 ft           |
| Trench        | 3.1 m           | 10.17 ft          |
| Slope         | 32%             | 32%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

**Engine.** 150HB 883-kilowatt diesel engine. This powerplant generates 895.2 kilowatts (1,200 hp), with a power-to-weight ratio of 17.91 kilowatts per tonne (21.78 hp/ton).

The Improved Type 98 mounts a 1,119-kilowatt (1,500-hp) diesel engine with a power-to-weight ratio of 21.52 kilowatts per tonne (26.17 hp/ton).

**Gearbox.** Unidentified manual transmission with two side gearboxes and a coaxial side transmission. The transmission features one reverse and seven forward gears.

**Suspension and Running Gear.** Torsion bar suspension, with six dual-tired roadwheels and probably three track return rollers on each side. The drive sprocket mounts to the rear. The first, second, and sixth roadwheel stations feature hydraulic shock dampers.

### Armament

**Main Armament.** The Type 98 mounts a new-design 125mm smoothbore tank gun, apparently a Chinese version of the Russian 2A46 ordnance. This ordnance features a fume extractor, a thermal sleeve, and an automatic loading system. After firing, the ordnance automatically returns to the index position (+4°) for loading through the horizontal wedge-type breech mechanism.

Armor Piercing Fin Stabilized (APFS) ammunition generates a muzzle velocity of 1,760 meters per second (5,774.2 fps) from this 50-caliber ordnance. The Type 98 carries 40 rounds of 125mm ammunition, with 20 to 24 rounds in the automatic loader.

**Secondary Armament.** One coaxially mounted 7.62x54mm machine gun; one pintle-mounted 12.7x107mm Type 54 machine gun on the turret roof. The Type 98 carries 500 rounds of 12.7x107mm ammunition and 3,000 rounds of 7.62x54mm ammunition. Each side of the turret mounts five electrically operated smoke grenade launchers.

**Fire Control.** The Type 98 features an image-stabilized, computer-based fire control suite. The system reportedly consists of a ballistic computer and stabilized laser rangefinder integrated with the gunner's two-axis stabilized sight. The system automatically receives inputs from tilt and cant sensors, as well as a crosswind sensor. The Type 98 has a day/night fire-on-the-move capability.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

### Type 90-II

**Design Features.** Like the Type 98, the Type 90-II features a smoothbore 125mm main armament with an automatic loader and is manned by a three-man crew.

NORINCO offers this tank (essentially an improved Type 85-IIM) for export only.

**Ammunition.** Same as the Type 98.

**Dimensions.** The following data reflect the Type 90-II developmental prototypes; the data are subject to change. The width is with the side skirts fitted.

## Chinese Tanks Archived MAR

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Length        | 10.07 m         | 33.04 ft          |
| Width         | 3.5 m           | 11.48 ft          |
| Height        | 2.37 m          | 7.76 ft           |
| Combat weight | 48.08 tonnes    | 52.99 tons        |
| Fuel capacity | 1,400 liters    | 372.34 gal        |

**Performance.** The following data are provisional; the automotive performance data reflect use on a paved road.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 63 kmph         | 39.1 mph          |
| Maximum range | 445 km          | 276.3 stat mi     |
| Step          | 85 cm           | 2.79 ft           |
| Trench        | 3.1 m           | 10.17 ft          |
| Slope         | 32%             | 32%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

**Engine.** Perkins Condor CV12-1200 TCA liquid-cooled supercharged V-12 diesel engine. This powerplant generates 895.2 kilowatts (1,200 hp), with a power-to-weight ratio of 18.62 kilowatts per tonne (22.65 hp/ton).

**Gearbox.** ESM 900 automatic gearbox, with four forward and two reverse gear s.

**Suspension and Running Gear.** Torsion bar suspension, with six dual-tired roadwheels and three track return rollers on each side. The drive sprocket mounts to the front. The first, second, fifth, and sixth roadwheel stations feature hydraulic shock dampers.

### Armament

**Main Armament.** Same as the Type 98. The Type 90-II carries a total of 39 rounds of 125mm ammunition, with 22 rounds in the automatic loader.

**Secondary Armament.** Same as the Type 98. Each side of the turret mounts six electrically operated smoke-grenade launchers.

**Fire Control.** The image-stabilized fire control suite of the Type 90-II is a further advanced version of the suites found on the Type 80 and Type 85 tanks. The system consists of a ballistic computer and stabilized laser rangefinder integrated with the gunner's two-axis stabilized sight. The system automatically receives inputs from tilt and cant sensors, as well as a crosswind sensor. The Type 90-II has a day/night fire-on-the-move capability.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

### Type 85-III

**Design Features.** This tank is a greatly improved version of the Type 85 series. The main improvement is the tank's 125mm smoothbore cannon. It is equipped with an automatic loader and manned by a three-man

crew. The Type 85-III also features a more powerful engine and an improved, composite-based modular armor suite.

**Ammunition.** Same as the Type 90-II.

**Dimensions.** The following data reflect the Type 85-III as armed with the 125mm smoothbore main armament. Long-range fuel tanks account for the increased length.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Length        | 10.43 m         | 34.22 ft          |
| Width         | 3.40 m          | 11.15 ft          |
| Height        | 2.20 m          | 7.22 ft           |
| Combat weight | 41.71 tonnes    | 45.98 tons        |
| Fuel capacity | 1,400 liters    | 372.34 gal        |

**Performance.** The automotive performance data reflect use on a paved road. With preparation, this tank can ford 5 meters (16.4 ft) of water.

## Chinese Tanks Archived MAR

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 65 kmph         | 40.4 mph          |
| Maximum range | 580 km          | 360.2 stat mi     |
| Step          | 80 cm           | 2.63 ft           |
| Trench        | 2.7 m           | 8.86 ft           |
| Slope         | 40%             | 40%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

**Engine.** An unspecified transverse-mounted, supercharged V-type diesel engine. This powerplant generates 745.7 kilowatts (1,000 hp), with a power-to-weight ratio of 17.88 kilowatts per tonne (21.74 hp/ton).

**Gearbox.** An unspecified planetary-type gearbox, with one reverse and seven forward gears. The driver can operate this unit in a manual, semi-automatic, or automatic mode.

**Suspension and Running Gear.** Torsion suspension, with six dual-tired roadwheels and three track return rollers on each side. The drive sprocket mounts to the rear. The first, second, fifth, and sixth roadwheel stations feature hydraulic shock dampers. The steel tracks feature replaceable rubber pads.

### Armament

**Main Armament.** Same as the Type 90-II. The Type 85-III carries a total of 42 rounds of 125mm ammunition.

**Secondary Armament.** Same as the Type 90-II.

**Fire Control.** The Image-Stabilized Fire Control System (ISFCS) 212 fire control suite of the Type 85-III tank consists of a ballistic computer with several sensor inputs. The system integrates a laser rangefinder with the gunner's and commander's second-generation day / night sights. These sights are stabilized in two planes, and include second-generation image intensification. The fire control system automatically receives inputs from the tilt and cant sensors, as well as a crosswind sensor. The Type 85-III has a day/night fire-on-the-move capability.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

### Type 85-II, Type 85-IIA, Type 85-IIM (Type 88 Series)

**Design Features.** The Type 85-II series represents a further development of the basic Type 80 main battle tank. The Type 85-II series also reflects the shift to a welded steel turret, compound armor, and a collective nuclear, biological, and chemical (NBC) protective suite.

The Type 85-II and Type 85-IIA mount the same 105mm rifled ordnance as the Type 80; the Type 85-IIM mounts the 125mm smoothbore ordnance of the Type 90-II and Type 98.

**Ammunition.** The 105mm ordnance of the Type 85-II and Type 85-IIA fires all Chinese-design

or NATO-standard 105mm rifled ammunition. NORINCO-produced 105mm ammunition types include:

- Armor Piercing Fin Stabilized Discarding Sabot-Tracer (APFSDS-T)
- High Explosive Anti-Tank - Tracer (HEAT-T)
- High Explosive Squash Head (HESH)
- High Explosive (HE)

The 125mm smoothbore ordnance of the Type 85-IIM fires the same ammunition as the Type 90-II and Type 98 tanks.

**Dimensions.** The following data reflect the Type 85-IIM. The Type 85-II and Type 85-IIA are similar, but the Type 85-IIA tank is slightly shorter and weighs 39.5 tonnes (43.54 tons).

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Length        | 10.28 m         | 33.72 ft          |
| Width         | 3.45 m          | 11.32 ft          |
| Height        | 2.30 m          | 7.55 ft           |
| Combat weight | 41.02 tonnes    | 45.22 tons        |
| Fuel capacity | 1,400 liters    | 372.34 gal        |

**Performance.** The automotive performance data reflect the Type 85-IIM on a paved road; the performance of the Type 85-II and Type 85-IIA is similar. The fording figure is without preparation.

## Chinese Tanks Archived MAR

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 57 kmph         | 35.4 mph          |
| Maximum range | 480 km          | 298.08 stat mi    |
| Step          | 80 cm           | 2.63 ft           |
| Trench        | 2.7 m           | 8.86 ft           |
| Slope         | 40%             | 40%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

**Engine.** An unspecified supercharged V-12 diesel engine. This powerplant generates 544.6 kilowatts (730 hp), with a power-to-weight ratio of 13.28 kilowatts per tonne (15.14 hp/ton).

**Gearbox.** An unspecified manually operated gearbox.

**Suspension and Running Gear.** Same as the Type 85-III.

### Armament

**Main Armament.** The Type 85-II and Type 85-IIA mount a 105mm rifled tank gun – possibly a version of the ubiquitous BAE Systems (RO Defence/Royal Ordnance) L7 – featuring a fume extractor. The Type 85-II carries 46 rounds of 105mm ammunition, while the Type 85-IIA carries 44 rounds.

The Type 85-IIM mounts the same 125mm main armament as the Type 85-III.

**Secondary Armament.** Same as used by the Type 85-III.

**Fire Control.** The ISFCS 212 of the Type 85 series tanks consists of a ballistic computer and laser rangefinder integrated with the gunner's sight. The system automatically receives inputs from tilt and cant sensors and a crosswind sensor.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

### Type 80, Type 80-II (Type 88 Series)

**Design Features.** The Type 80 series represents the second generation of Chinese main battle tank design. New elements appearing on the Type 80 series include a computerized fire control suite, a

laser rangefinder, passive night vision devices, main armament stabilization, and torsion bar suspension.

**Ammunition.** Same 105mm ammunition used by the Type 85-II and Type 85-IIA.

**Dimensions.** The following data reflect the basic Type 80. Data for the Type 80-II are in parentheses where different. The height is with the Type 54 machine gun mounted.

|               | <u>SI Units</u>  | <u>U.S. Units</u>  |
|---------------|------------------|--------------------|
| Length        | 9.33 (9.34) m    | 30.61 (30.64) ft   |
| Width         | 3.37 m           | 11.06 ft           |
| Height        | 2.29 m           | 7.51 ft            |
| Combat weight | 38 (38.5) tonnes | 41.88 (42.43) tons |
| Fuel capacity | 1,400 liters     | 372.34 gal         |

**Performance.** The automotive performance data reflect the basic Type 80 on a paved road. The Type 80-II offers essentially the same performance.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 57 kmph         | 35.4 mph          |
| Maximum range | 430 km          | 267.03 stat mi    |
| Step          | 80 cm           | 2.63 ft           |
| Trench        | 2.7 m           | 8.86 ft           |
| Slope         | 40%             | 40%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

## Chinese Tanks Archived MAR

**Engine.** Type 12150L-7BW supercharged diesel engine. This powerplant generates 544.6 kilowatts (730 hp), with a power-to-weight ratio of 14.33 kilowatts per tonne (17.43 hp/ton). The engine features a smoke-generating system.

**Gearbox.** An unspecified manually operated gearbox. Unconfirmed reports suggest the Type 80-II may employ a semi-automatic unit.

**Suspension and Running Gear.** Torsion bar suspension, with six dual-tired roadwheels and three track return rollers on each side. The first, second, fifth, and sixth roadwheel stations feature hydraulic shock dampers.

### Armament

Main Armament. Same as used by the Type 85-IIA.

Secondary Armament. Same as used by the Type 85-IIA. The Type 80 series carries 500 rounds of 12.7x107mm ammunition and 2,250 rounds of 7.62x54mm ammunition. Each side of the turret mounts four electrically operated smoke-grenade launchers.

**Fire Control.** Like the Type 85 series, the Type 88 series tanks feature the ISFCS 212 fire control suite. The ISFCS consists of a ballistic computer and laser rangefinder integrated with the stabilized gunner's sight. The system automatically receives inputs from tilt and cant sensors and a crosswind sensor.

Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

### Type 79 and Type 69-I/69-II

**Design Features.** The Type 79 is essentially a Type 69-II mounting the 105mm rifled tank gun of the Type 80 and Type 85-II/Type 85-IIA.

**Ammunition.** The Type 79 fires the same 105mm ammunition as the Type 80 and Type 85-II/IIA. The Type 69 series fires standard Chinese- and Soviet-production 100mm ammunition.

**Dimensions.** The dimensional data reflect the basic Type 69-II; Type 79 data are in parentheses where different.

|               | <u>SI Units</u>  | <u>U.S. Units</u>  |
|---------------|------------------|--------------------|
| Length        | 8.66 m           | 28.41 ft           |
| Width         | 3.3 m            | 10.82 ft           |
| Height        | 2.81 m           | 9.21 ft            |
| Combat weight | 37 (37.5) tonnes | 40.78 (41.33) tons |
| Fuel capacity | 935 liters       | 248.67 gal         |

**Performance.** The automotive performance data reflect the Type 69-II on a paved road; the Type 69-I and Type 79 offer essentially the same level of performance.

|               | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------|-----------------|-------------------|
| Maximum speed | 50 kmph         | 31.1 mph          |
| Maximum range | 430 km          | 267.03 stat mi    |
| Step          | 80 cm           | 2.63 ft           |
| Trench        | 2.7 m           | 8.86 ft           |
| Slope         | 40%             | 40%               |
| Gradient      | 60%             | 60%               |
| Fording       | 1.4 m           | 4.59 ft           |

**Engine.** Type 12150L-7BW V-12 diesel engine. This powerplant generates 432.7 kilowatts (580 hp), with a power-to-weight ratio of 11.69 kilowatts per tonne (14.22 hp/ton).

**Gearbox.** An unspecified manually operated gearbox.

**Suspension and Running Gear.** Torsion bar suspension, with five dual-tired roadwheels. There are no track return rollers. The drive sprocket mounts to the rear.

### Armament

Main Armament. The first 154 Type 69-I tanks mounted an indigenous smoothbore 100mm gun. The unsatisfactory performance of this ordnance led the Chinese to integrate a rifled 100mm cannon into subsequent models, designated Type 69-II. Both the Type 69-I and Type 69-II carry 44 main armament rounds.

The Type 79 mounts the same 105mm rifled tank gun as the Type 80 and Type 85-II/IIA. The Type 79 carries 30 main armament rounds.

## Chinese Tanks Archived MAR

**Secondary Armament.** Same as used by the Type 80. The Type 69 tanks also mount an additional 7.62x54mm machine gun at the bow position. The Type 69-I and Type 69-II carry 500 rounds of 12.7x107mm ammunition and 3,400 rounds of 7.62x54mm ammunition.

**Fire Control.** The Type 69-I fire control system features a laser rangefinder, and is optimized for the 100mm smoothbore ordnance mentioned above.

The Type 69-II and Type 79 employ the Tank Simplified Fire Control System. The TSFCS consists of the Tank Gunner's Sight-A gunner's sight, the Tank Laser Rangefinder-1A, and a ballistic computer.

The L option of the TSFCS integrates the laser rangefinder with the gunner's sight.

A further enhanced C option of the TSFCS features additional inputs and a more powerful ballistic computer.

The commander's station features a Model 69 infrared sight; the gunner's station features a similar Model 70 infrared sight. Both the commander's and gunner's stations feature vision blocks; the driver's station features a night-driving periscope.

## Variants/Upgrades

**Variants.** The basic Type 69-II tank has spawned several specialized variants, including:

- Type 653 ARV. An armored recovery vehicle featuring a hydraulically operated front-mounted dozer blade, a hydraulically operated crane on the rear of the vehicle, a winch with a 70-tonne (77.16-ton) capacity, and associated recovery/repair equipment.
- Type 84 AVLB. An armored-vehicle-launched bridge that deploys an 18-meter (59.05-ft) span over the front of the vehicle.

The Type 69 also serves as the basis for three self-propelled anti-aircraft artillery systems:

- The Type 80 mounts the twin 57mm ZSU-57-2 cannon mount in place of the turret. The Type 80 requires a crew of six; it is operational with the PLA.
- Two undesignated 37mm systems are available. One is a clear-weather system, featuring a two-man turret. The other is an all-weather system, integrating a surveillance radar and laser-rangefinder-based fire control suite. Neither of these systems has entered serial production.

**Modernization and Retrofit Overview.** A number of fire control and other modernization options developed for the Type 59 tank are also available for the Type 69 series tanks.

**NORINCO T-Series Modification Packages.** While China North Industries Corp (NORINCO) originally offered upgrades for the Type 59 only, more recent programs for Type 69 series tanks have been

introduced. NORINCO offers eight upgrade packages called Concepts; each Concept features a combination of four of eight available Compositions. The overall program breaks out in the following manner:

| <u>Concept</u> | <u>Composition</u> |
|----------------|--------------------|
| I              | 1, 3, 5, 6         |
| II             | 1, 4, 5, 6         |
| III            | 2, 3, 5, 6         |
| IV             | 2, 4, 5, 6         |
| V              | 1, 3, 5, 7         |
| VI             | 1, 4, 5, 7         |
| VII            | 2, 3, 5, 7         |
| VIII           | 2, 4, 5, 7         |

The available Compositions are as follows:

- Composition 1 integrates a new 100mm rifled tank gun featuring a thermal sleeve and new ammunition types.
- Composition 2 integrates a new 105mm rifled tank gun featuring a thermal sleeve, a fume extractor, and new ammunition types.
- Composition 3 integrates the light-spot injection system and a bidirectional stabilized armament-laying (aiming) system.
- Composition 4 integrates the ISFCS with a bidirectional stabilized armament-laying system. This Composition offers two types of fire control and two types of armament laying.
- Composition 5 integrates additional fire control sighting equipment for night fighting.
- Composition 6 integrates add-on armor and armored skirts, smoke-grenade launchers, and a fire detection/suppression system.

## Chinese Tanks Archived MAR

- Composition 7 integrates explosive reactive armor (ERA) on the hull, turret, and side skirts.
- Composition 8 is available for integration of a fire detection/suppression system and smoke-grenade launchers.

## Program Review

**Editor's Note.** Since the early 1980s, the tank development and production effort in the People's Republic of China has yielded at least 11 different tank designs:

- Type 69
- Type 69-II
- Type 79
- Type 80
- Type 80-II
- Type 85-II

- Type 85-IIA
- Type 85-IIM
- Type 85-III
- Type 90-II
- Type 98/99

Making matters worse for the outside observer, the People's Liberation Army (PLA) maintains a perplexing (and often repetitive) method of designating equipment. For example, the Type 80 and Type 85 tanks have myriad designations; these tanks also collectively carry the Type 88 designation.

The following table may help to clarify PLA tank designations. We exclude the Type 90-II, as NORINCO offers this tank for export only.

| <u>Standard Designation</u> | <u>Alternative Designation</u> | <u>Remarks</u>                                   |
|-----------------------------|--------------------------------|--|
| Type 79                     | Type 69-III or WZ121D          | Possibly upgraded Type 69-II                     |
| Type 80                     | Type 88 or Type 69-III         | Revealed in 1985                                 |
| Type 80-II                  | Type 88 or Type 88-II          | Almost identical to Type 80                      |
| Type 85-II                  | Type 88A                       | Based on Type 80 chassis                         |
| Type 85-IIA                 | Type 88A                       | Less ammunition storage                          |
| Type 85-IIM                 | Type 88C                       | Integrates 125mm ordnance                        |
| Type 85-IIAP                | ?                              | For export to Pakistan                           |
| Type 85-III                 | ?                              | Latest version of Type 85                        |
| Type 90-II                  | VT1A or upgraded MBT-2000      | MBT-2000; codeveloped with Pakistan as Al-Khalid |
| Type 96                     | VT2                            | Early designation of Type 98                     |
| Type 96A                    | ?                              | Modular armor; Type 85 variant                   |
| Type 98                     | WZ123                          | Primary Chinese MBT design                       |
| Type 98/99G                 | ZTZ-99 or WZ123                | Type 99G domestic                                |
| MBT-3000                    | VT-4                           | Latest MBT design                                |

**Background.** Main battle tank development in the People's Republic of China has generally followed the lead of the former Soviet Union. This trend began with the introduction of the Type 59 tank, which is virtually a copy of the Soviet T-54A. In 1953, the Soviet Union began providing a limited number of T-54 tanks to the People's Republic of China. In 1958, the PRC began licensed production of the T-54A, type-classified the Type 59. Serial production continued through 1989, with a total production run of about 8,000 units.

### Description

**Type 69 Series.** In the mid-1960s, the PRC began developing an enhanced version of the Type 59 for PLA requirements; serial production of the Type 69 began in 1981. The initial production model (subsequently designated the Type 69-I) suffered from the poor

performance of its smoothbore 100mm ordnance. After an initial production run of only 154 tanks, the Chinese switched to the Type 69-II, mounting a rifled version of the 100mm ordnance.

### *Type 69: First of the Line*

The Type 69 is essentially a further development of the basic Type 59, featuring the new 100mm ordnance, improved fire control, and an improved night vision suite. The interior layout of the Type 69 is identical to that of the Type 59. The driver sits in the left-forward part of the hull; the powerplant and gearbox mount in the rear of the vehicle. In the cast turret, the commander and gunner sit to the left of the ordnance; the loader sits to the right.

## Chinese Tanks Archived MAR

### *Type 90-II: Western Technology*

The location of the original Tank Laser Rangefinder-1A unit over the main armament made it vulnerable to battle damage; the retrofit Tank Simplified Fire Control System-Laser integrates the laser rangefinder with the gunner's sight inside the tank. The Type 69 features armored side skirts and optional long-range fuel tanks mounted at the rear of the tank. NORINCO has exported the Type 69-II in large numbers.

**Type 79.** Originally developed under a modernization and retrofit program for the Type 69-II, the Type 79 mounts a 105mm main armament, which is almost certainly a version of the L7, possibly acquired through Israel. Further distinguishing features of the Type 79 are the addition of towing eyes and the rectangular window forward of the gunner's position. While some Type 79 tanks are apparently modernized Type 69s, most Type 79 tanks were rolled out as new-production tanks.

**Type 80 Series.** First revealed in 1985, the Type 80 tank has only recently completed its production run. This tank exhibits the conventional interior layout (driver's station in the left-forward hull, fighting compartment in the center, and engine/gearbox to the rear). Like the Type 79, the Type 80 series mounts the 105mm main armament.

#### *Type 80 Series: 'Fire on the Move'*

The commander can slew the turret or override the gunner's action. The Type 80 features a fire-on-the-move capability. The tank also features an automatic fire detection/suppression system and an overpressure-type NBC protection system with individual stations.

**Type 85 Series.** In 1989, the PLA revealed two further developments of the Type 80 series. Also, Pakistan produced the Type 85-II under license.

#### *Type 85 Series: Further Developments*

This design series features a welded turret and can mount additional composite armor or explosive reactive armor (ERA). The Type 85-II and Type 85-IIA mount the 105mm ordnance; the Type 85-IIM and Type 85-III mount the 125mm smoothbore ordnance with the automatic loading system. Serial production of the Type 85-IIM for PLA procurement only recently ended. The Type 85-III has completed operational trials and is available for orders.

**Type 90-II.** In October 1991, the PRC revealed the Type 90-II as an export-only product. This tank represents a major step forward in Chinese tank design, exhibiting a significant integration of Western tank technology.

The Type 90-II exhibits a conventional interior layout. The design integrates Russian and Western technology, resulting in a platform considerably more sophisticated than previous Chinese designs. The Image-Stabilized Fire Control Suite (with its Western technology) significantly enhances the tank's hit probability, both while stationary and on the move. A modular armor suite with composite armor enhances survivability. The tank also features a neutron-absorbing liner and infrared reflecting paint.

The powerplant design (a British engine and French gearbox) simplifies maintenance. Crews can remove the complete powerpack in 30 minutes.

**Type 98.** The Chinese began development of project WZ123 in 1989; low-rate initial production (LRIP) of the Type 98 under this project commenced in 1998. The Type 98 is also sometimes identified as the Type 99.

#### *Type 98: the PLA's New Standard*

Resembling a T-72 with a new-design turret, the Type 98 mounts the same 125mm ordnance as the Type 85-III. However, the Type 98 reportedly features a much more advanced fire control suite. The Type 98 is clearly the most sophisticated main battle tank to enter PLA service.

The Type 98 exhibits a conventional T-72-style interior layout. The driver sits in the center-front of the hull; the powerplant and gearbox mount in the rear of the hull. The driver's station features a single-piece hatch cover and an adjustable seat suspended from the compartment roof. The driver uses three periscopes for driving. The middle periscope is interchangeable with a passive night vision device.

In the two-man turret, the commander sits to the right of the ordnance; the gunner sits to the left. The commander's station features a single-piece hatch cover, five observation periscopes, and a stabilized 360° day/night panoramic sight with a laser rangefinder. The commander's station also features a pintle-mounted 12.7x107mm heavy machine gun on the turret roof. The gunner's station features a single-piece hatch cover and a roof-mounted stabilized day/night sight with a laser rangefinder.

The Type 98 mounts an active defense system, using a high-powered laser to directly attack weapon optics as well as the enemy gunner. The turret-mounted system is integrated with a laser warning device through the tank's fire control suite. Available images of the Type 98 indicate that the laser weapon can be elevated for use against rotary-wing aircraft.

## Chinese Tanks Archived MAR

The turret of the Type 98 is significantly larger than that of earlier Chinese tanks. It exhibits a lengthened forward arc, possibly to enhance the level of protection. The Type 98 features a power-to-weight ratio that compares favorably with other modern tanks.

The latest and most advanced development of the Type 98/99 design is designated the Type 99A. The variant is outfitted with modular composite frontal armor and improved imaging and fire control systems. Some media and defense sources further delineate the various vehicle builds included under the Type 99A designation umbrella as the Type 99A1 and Type 99A2, primarily for purposes of clarity.

In June 2012, NORINCO unveiled the MBT-3000 at the Eurosatory Land Defense and Security Exhibition in Paris.

Reports indicate that some of the MBT-3000's initial design elements may be derived from the latest Type 98/99 variants currently deployed with the People's Liberation Army Ground Force (PLAGF), but the MBT-3000 is essentially a new and distinct armored vehicle that possesses more advanced capabilities and systems than the PLAGF's currently active MBTs. The design features a modified hull and enhanced fire control and imaging systems.

In 2014, Chinese state media unveiled a new tank design intended for mountain warfare at high altitudes.

## Funding

---

The People's Republic of China Ministry of National Defense, through the People's Liberation Army, funds the development and PLA procurement of the tanks discussed in this report.

## Worldwide Distribution/Inventories

---

**Export Potential.** Overall, the various Chinese tank designs suffer from a mixed record on the international market. Although the Type 69-II earned the People's Republic of China a good deal of export revenue, Chinese tanks in general have nonetheless suffered from a reputation for troublesome components, especially powerplants. The Type 79 and Type 90-II have yet to score any success on the international market; still, the Type 85-IIAP did rather well through the Pakistani coproduction agreement.

This mixed record, combined with the international glut of main battle tanks, does not bode particularly well for the potential of the Type 98 on the international market.

**Countries.** Bangladesh; Iran; Iraq; Myanmar; Pakistan; People's Republic of China; Tanzania; Thailand; and Zimbabwe.

## Forecast Rationale

The People's Liberation Army Ground Force (PLAGF) is currently undertaking an ambitious campaign to overhaul and/or replace its vast but aging armored inventories with vehicles of a higher operational and technical standard.

Although the PLAGF fields the largest active armored fleet of any military, a significant majority of the service's armored stocks are still made up of the outmoded Type 59 design.

Over the past decade, the PLAGF and Chinese contractors have made considerable progress not only in the retrofit and modernization of existing armored stocks but also – and perhaps more importantly – in the steady development and procurement of increasingly modern and capable indigenous MBT designs.

The continual evolution of China's MBT development and the scale of procurement afforded by the PLAGF's requirements should ensure that the PLAGF will field a progressively more potent armored force over the coming decades.

### *Playing with the Big Boys*

As China has steadily developed more advanced indigenous weapons systems, NORINCO has begun to adapt its marketing strategy accordingly, even if bulk sales are likely to remain its primary source of export revenue.

This shift has primarily resulted in NORINCO placing more prominent marketing emphasis on the capabilities and name recognition associated with individual defense products, establishing a clearer sense of hierarchy within the contractor's available product line, and

## Chinese Tanks Archived MAR

attempting to build a more recognizable and cohesive NORINCO brand image, forged in the same vein as those of leading Western European, Asian, and North American defense contractors.

Still, NORINCO's entry into the advanced MBT market is also fraught with considerable challenges, as the company will need to prove that these more expensive – but largely unproven – new products can challenge those offered by long-established competitors such as Russia's Uralvagonzavod or Germany's Krauss-Maffei Wegmann.

### *Export Potential*

Pakistan, which previously cooperated with NORINCO on development of the MBT-2000/Al-Khalid MBT

project, has reportedly expressed interest in the potential procurement or licensed production of the new tank.

Despite these more ambitious designs, however, the majority of Chinese tanks sold on the export market remain surplus stocks of older models being phased out of active service with the PLAGF.

For cash-strapped customers seeking to enlarge or modernize their armored inventories, NORINCO offers highly appealing bulk procurement packages of retrofitted MBTs that allow the purchasers to meet their requirements at an affordable cost.

Chinese contractors have increasingly pursued the African defense market as a promising outlet for both new-build and surplus military vehicles.

## Ten-Year Outlook

| ESTIMATED CALENDAR YEAR UNIT PRODUCTION      |           |                 |      |      |      |                 |      |      |             |      |      |       |
|--|-----------|-----------------|------|------|------|-----------------|------|------|-------------|------|------|-------|
| Designation or Program                       | Thru 2023 | High Confidence |      |      |      | Good Confidence |      |      | Speculative |      |      | Total |
|  |           | 2024            | 2025 | 2026 | 2027 | 2028            | 2029 | 2030 | 2031        | 2032 | 2033 |       |
| <b>China North Industries Corp (NORINCO)</b> |           |                 |      |      |      |                 |      |      |             |      |      |       |
| <b>Type 98</b>                               |           |                 |      |      |      |                 |      |      |             |      |      |       |
|  | 1,473     | 76              | 75   | 75   | 70   | 68              | 65   | 65   | 65          | 65   | 65   | 689   |
| <b>Total</b>                                 | 1,473     | 76              | 75   | 75   | 70   | 68              | 65   | 65   | 65          | 65   | 65   | 689   |