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TOYOTA SPRINTER TRUENO 1983-1987

TOYOTA SPRINTER TRUENO

Model	AE86 (GT-APEX)
Engine Name	4A-GEU
Displacement	1587cc
Maximum Output	130ps/6600rpm
Maximum Torque	15.2kg-m/5200rpm
Overall Length	4205mm
Overall Width	1625mm
Overall Height	1335mm
Wheelbase	2400mm
Vehicle Weight	940kg



The 3-door hatchback coupe of the Sprinter Trueno. The 3-door coupe is equipped with the 4A-GE engine and is referred to as the "AE86 (Hachiroku)."



The Sprinter Trueno, featuring retractable headlights, distinguished itself from its sibling car, the Corolla Levin. The look significantly changes when the headlights are raised.

This is the 2-door notchback coupe "XL," equipped with the 3A-U engine, and designated as "AE85."





The Independent Roots of the Sprinter Trueno from the Corolla.

The name "AE86 Trueno" combines the model designation and the trim name. From the 1980s onwards, tuning magazines began using model designations to refer to cars, and this gradually spread. Using the model designation allows for the distinction of generations, which is especially useful in tuning magazines that focus on used cars, as the car name alone doesn't specify which generation it belongs to. The addition of the trim name "Trueno" is necessary because there are both "Corolla Levin" and "Sprinter Trueno" under the "AE86" designation, and without this trim name, one cannot determine which model it refers to.

For a long time, the "Corolla" and "Sprinter" were sold as sibling models, but they were not initially developed as such. The first-generation Corolla was introduced at the Tokyo Motor Show in October 1966 and went on sale in November of the same year.

It started as a two-door sedan, and the following year, four-door sedans and light vans were added, leading to increased popularity and sales. As sales

grew, there was a demand for a sportier version of the Corolla, which led to the creation of the "Corolla Sprinter" with a fastback coupe body. Thus, the first Sprinter was a derivative model of the Corolla.

The first-generation Corolla was sold through the dealership chain known as Publica. Over time, this chain was renamed the Corolla dealership. Meanwhile, although the Corolla Sprinter was a derivative model, it was not sold through the Publica chain but was introduced as a key model in the newly established Toyota Auto dealership network.

In 1970, the Corolla underwent a full model change to become the second generation. At this time, the Corolla Sprinter became independent as simply "Sprinter." Following this, the second-generation Corolla and Sprinter (though there may be differing opinions on calling this Sprinter the second generation) introduced sport models such as the "Corolla Levin" and "Sprinter Trueno". This model is the root of the AE86.

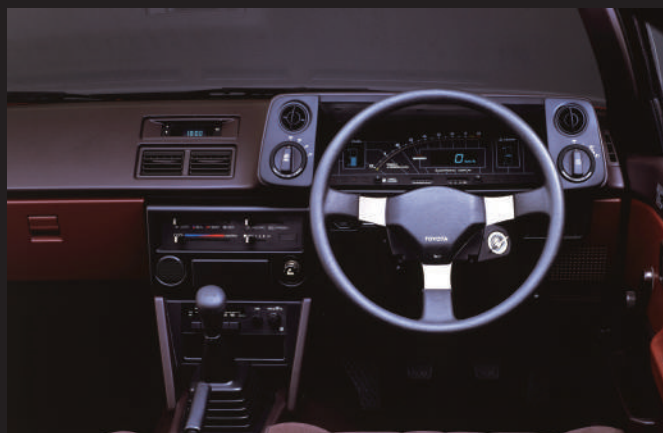
Performance of the 4A-GE Engine Installed in the Fourth-Generation AE86

The first-generation Levin & Trueno models were equipped with the 2T-G

engine at the front and featured the 2T engine series. The Levin & Trueno with the 2T engine existed until the third generation, known as the TE71, with all Corolla & Sprinter models adopting the FR layout. In 1983, they underwent a full model change, transitioning to the fourth generation and becoming the AE85 and AE86.

The AE85 was equipped with a 1.5-liter SOHC 3A-U engine, while the AE86 featured a 1.6-liter DOHC 4A-GE engine. The Levin & Trueno name was carried on by two models: the 3-door hatchback and the 2-door notchback coupe, both retaining the FR layout. However, the other variants, including the 4-door sedan and 5-door hatchback, switched to an FF layout. It may seem odd that the same model series included both FF and FR layouts, but Toyota had previously done the same with models like the Corona and Carina. This reflects the transitional period when FF layouts were becoming more widespread, even in compact cars.

The basic chassis is the same as the third generation, meaning that the AE86 can be described as having the 4A-GE engine mounted on the platform of the third generation, wrapped in a new body. The origin of the 2T engine used up



In the cockpit, controls are concentrated around the three-spoke steering wheel. On the right side, there is a headlamp switch that pops up when pushed and turned.



The sports seats feature adjustable side support. By gripping the pump located on the left side of the seat, the driver can adjust the lumbar support.

to the third generation lies in the T engine, which appeared in the second-generation Corolla in 1970. The T engine is a 1.4-liter OHV four-cylinder with a carburetor for fuel supply. Due to the age of its basic design, the 2T series, which is rooted in this T engine, was at the end of its service life. The newly adopted 4A-GE was developed with a DOHC head featuring four valves per cylinder, based on fuel injection.

The bore and stroke of the 4A-GE are 81.0×77.0 mm, making it an oversquare type. The crankshaft of the early 4A-GE was semi-counterweighted, and the compression ratio was 9.4. It was designed for regular gasoline, and the fuel supply system was electronically controlled EFI. While modern engines often inject fuel into each cylinder individually, at that time, port injection was still mainstream, and the early 4A-GE mounted in the AE86 also used port injection.

The early version of the 4A-GE engine features a mechanism called T-VIS. T-VIS provides two intake manifolds for each cylinder. Since the 4A-GE is a four cylinder engine, this results in a total of eight intake manifolds. One of these manifolds is equipped with a butterfly valve that opens and closes according

to engine RPM. At mid to low RPM, the valve remains closed, allowing for the use of one manifold, which generates swirl effects and secures torque in that range.

On the other hand, at high RPM, the valve opens, utilizing both manifolds to maximize peak output. The maximum output of the 4A-GE installed in the AE86 is 130 ps at 6600 rpm, with a maximum torque of 15.2 kg-m at 5200 rpm (both figures are gross values).

Commonalities and Improved Brake System from the Previous Model

As mentioned earlier, the chassis shares similarities with the third generation, including a common wheelbase of 2400 mm. The suspension system features independent strut suspension at the front and a fixed four-link setup with lateral rods at the rear.

What stands out in the AE86 is the brake configuration. All grades have ventilated disc brakes at the front, while the rear features both solid disc and leading & trailing drum brakes, with the latter used only in the GT grade of the coupe body.

Considering high-speed deceleration and heat dissipation, disc brakes are advantageous. However, drum brakes

possess a self-servo characteristic, allowing the brake shoes to stick to the drum upon contact. This enables the rear tires to lock up relatively easily when the handbrake is pulled at lower speeds, making them popular in events like gymkhana, rally, and dirt trials.

The coupe body offers high rear body rigidity, giving it an edge in such competitions, while the hatchback excelled in aerodynamics, making it advantageous in circuit racing.

The Differences Between the Functionally Identical Sibling Cars, Levin and Trueno

The "Corolla Levin" and "Sprinter Trueno" of the "AE86" are functionally identical, but they have significant differences in their exteriors. The Corolla Levin uses rectangular composite headlights, while the Sprinter Trueno features retractable headlights with rectangular sealed beams.

At that time, most headlights were standard items, with four main types: round and rectangular, in both two-light and four-light configurations. Headlights that deviated from these standard forms were called composite headlights. This made it easy to distinguish between the two models.

Additionally, due to the different



The electronic display, which was standard on the early model 3-door "GT-APEX," became an optional feature in the later model.

Originally, it had a ducktail, but in the later model, a rear spoiler was added on top of it to improve aerodynamics.



headlamp designs, the Corolla Levin has a grille, whereas the Sprinter Trueno features a grilleless nose with slits. In the later models, the design of the rear combination lamps also differed.

The AE86 was available in several grades: the 2-door notchback coupe came in the basic "GT" and the higher-end "GT-APEX" versions. The 3-door hatchback offered the mid-level "GTV" and "GT-APEX" trims. The 3-door GT-APEX was equipped with a digital meter as standard, while the 2-door GT-APEX offered it as an option, incorporating elements of a specialty car into the GT-APEX models.

The popularity of the AE86 spread worldwide with its appearance in "Initial D"!

It is common for the used car market to see a drop in prices for older models when new models are released. However, this is often not the case for sports cars. When the AE86 underwent a full model change to the AE92, which included a switch from rear-wheel drive (FR) to front-wheel drive (FF), the used car prices for the AE86 remained relatively high.

The popularity of the AE86 saw a significant boost with the serialization of Shuichi Shigeno's manga "Initial D" in Weekly Young Magazine (published by Kodansha) starting in 1995. The protagonist, Takumi Fujiwara, drives an AE86 Trueno. Takumi, whose family runs a tofu shop, had been delivering tofu in his father Bunta Fujiwara's AE86 Trueno since his junior high school days. Bunta was a legendary street racer, and Takumi developed his racing skills, eventually becoming a legendary driver like his father. The AE86 Trueno prominently features the words "Fujiwara Tofu Shop (Private)" on its door, which left a strong impression on readers.

Originally, the production numbers for the AE86 Corolla Levin were significantly higher, and it was more popular compared to the Sprinter



The Sprinter Trueno, featuring the painted lettering "Fujiwara Tofu Shop," as depicted in "Initial D."

Trueno.

The Sprinter Trueno's production numbers were just a little more than half of the Levin's. However, because the protagonist in "Initial D" drove a Sprinter Trueno, its popularity soared. The lower production numbers also meant that the AE86 Trueno became more valuable due to its rarity, driving up its used car market prices.

The "Initial D" manga gained popularity and was adapted into an anime in 1998, followed by an animated movie in 2001. The manga's serialization in 1995 coincided with the early days of the internet in Japan, and information about Japan began to spread globally. "Initial D" grew popular, especially in Asia, and was even made into a live-action movie in Hong Kong. The "Initial D" phenomenon then spread worldwide.

Today, there are many AE86 fans not only in Asia but also in the United States, with numerous enthusiasts creating replica models of the Fujiwara Tofu Shop car. The trend of adorning car doors with the "Fujiwara Tofu Shop (Private)" lettering highlights the significant influence of "Initial D."



Equipped with the newly developed 4A-GEU DOHC engine, featuring 4 valves per cylinder for a total of 16 valves.

On the lower right of the front meter, there are switches for the parking lights, rear defogger, rear wiper, and fog lamps.



To ensure head clearance for occupants, the ceiling has a contoured shape.



The 3-door hatchback is shown in an open position, featuring a large rear gate that wraps around to the side of the body.

Except for some specifications of the 2-door model, the rear seats feature a split-fold design. The ends of the backrest are rounded, providing ample space around the shoulders.



The 4A-G Engine Used Across Various Generations

The engine adopted with the debut of the AE86 Levin & Trueno is the "4A-G." The early models featured a four-valve-per-cylinder design and included a variable intake system called T-VIS, which installed a butterfly valve on one side of the intake manifold to create a swirl effect. The compression ratio was 9.4, and the fuel used was regular gasoline. This engine type was also installed in the mid-engine MR2 and the four-wheel drive Levin & Trueno (AE92). The engine specifications were 130 ps/15.2 kg-m (gross) and 120 ps/14.5 kg-m (sub sequentially net).

In 1989, with a minor change to the Levin & Trueno, the compression ratio was increased to 10.3. By using premium gasoline, power was boosted to 140 ps/

15.0 kg-m.

The significant change for the 4A-GE came in 1991 when the Levin & Trueno underwent a full model change to "AE101." This new version adopted a five-valve system with three intake valves, raising the specifications to 160ps/16.5kg-m. By the time of the AE111 in 1995, the output increased further to 165 ps/16.5 kg-m.

While these were naturally aspirated, there was also a supercharged version known as the 4A-GZ. Initially, it produced 145ps/19.0kg-m using regular gasoline, but the specifications were eventually upgraded to 170 ps/21.0 kg-m when using premium gasoline.



The 4A-GE engine adopted in the Sprinter Trueno has undergone changes over the years, leading to improvements in performance.