



Test Standard of Shifting Gear Shock On Accelerating

KES T – G322

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1. Scope of application

This standard shall be applied to the gasoline, rotary, diesel, LPG car.

2. Purpose

The purpose of this standard shall be to estimate engine rpm by the electric load on/off of the power steering and etc. at basic idle state and prevent from idle instability, engine stalling and etc.

The load is electric load of an air conditioner, an power steering (Headlight, heater, brake, rear defogger) and drive range of auto transmission system.

3. Test preparation

3.1 Preparing a test car

- (1) Mount an air conditioner and power steering at a test car fully and check, adjust each belt tension.
- (2) Check the specifications related with an engine
Refer to engine design issue, engine adjustment method (Adjustment standard) for engine check, and adjustment method.
Especially, carry out feeling test for idle state (Adjusting idle, compensating system of idle and etc)

3.2 Preparing measuring equipment

Principally, estimate by change of rotating system, but prepare following measuring equipment to estimate each state of engine parts.

- (1) Rotating system
It is desirable to take one with analogue output terminal.
(Except for one mounted at a car)
- (2) Negative pressure
This is one with an output terminal.
- (3) Computer monitor

This is only for the car that it is possible to mount.

(4) Thermometer

I.C thermometer (For checking test condition)

(5) Pen recorder

For recording each data

(6) Stop watch

Measuring leaving time and test progress time

4. Test condition and test method

4.1 Test condition

(1) Air condition

Low temperature	-15°C and 0°C	} are standard.
Room temperature	+15°C ~ +20°C	
High temperature	+30°C and 37°C	

However, in the case of different condition, a little change is acceptable.

To maintain the condition regularly, it is desirable to use environment chamber.

(2) Altitude condition (High-altitude chamber test)

- ① It is measured at the altitude of 0 meter and 1000 meter in this country.
- ② It is measured at the altitude of 0 meter and 1650 meter in America (Field test at the place at the altitude more than 2000 meter.
- ③ It is measured at the other place considering altitude condition.

(3) Test fuel condition

- ① Measure it using the fuel suitable to each country.
- ② Deciding the fuel for summer and winter

Principally, use the fuel suitable to the season.

Also, consider most severe condition using the fuel for summer and winter.

(4) Road slope condition

Estimate at flat road, slope road (1/3 ~ 1/4)

However, it is desirable to use defined air condition of slope road.

(Estimate also at slope stand including above condition for 4-wheel drive car.)

(5) Check at the upper and lower limit of each condition

Carry out individual estimation and complex estimation at the upper and lower condition of each condition.

- ① Idle rpm (Including idle compensating system)
- ② Idle fuel amount
- ③ Ignition angle and injection time
- ④ Intake, exhaust shutter valve (Diesel engine)
- ⑤ Carry out test deciding from above test results of ①~ ④ for Carburetor float level, engine airflow meter injector, back pressure set, and fuel pressure.

(6) Test condition

- ① Carry out test at the state of warmed engine. (Between returning choke valve and fully warmed)
- ② Principally use a lapped engine. (In the case of problem, estimate also the engine that not lapped.)
- ③ Estimate rotating change on operating each load
Each load is air conditioner, power steering, electric load, drive range of auto transmission, intake shutter, exhaust shutter and etc.
- ④ Estimate strong and weak side of each load (Air conditioner, power steering and etc.) at the same time.
- ⑤ Principally, close a bonnet and estimate by measuring engine rotation.

4.2 Test method

4.2.1 Test method for M/T car

(1) Idle test at the state of stalling

Estimate rpm change on turning each load on/off at the idle state. (Test method)

- ① Estimate repeating each load on/off.
- ② Estimate brake on/off repeatedly (3 times)
- ③ Estimate each load individually and complexly