

ZOOM

FOCUS ON TECHNOLOGY



PRODUCT COMPARISON

DAILY Clutch.

A very smooth drive.



How it is made.

Main components of a clutch kit and its technical features.

The clutch is the mechanical link between the engine and the gearbox. Its main role is:

- To transmit torque and allow gear shifting
- To dampen engine vibrations, giving the driver optimal driving comfort
- To ensure a comfortable pedal effort and a smooth gear shift.

Clutch disc.

It is the actual connection between engine and **transmission and it directs the flow of power between engine and transmission along with the pressure plate and the flywheel**. Its large surface is made up of **friction material on both sides**, which is similar to the composition of the brake lining.

The wave design of the cushion plate allows the facings to compress when the pressure plate is engaged in order to provide a **smooth engagement of engine and transmission**.



Clutch cover assembly.

It provides the pressure needed to hold the clutch disc to the flywheel for proper power transmission.

The assembly has to be balanced and able to radiate the heat generated when the clutch disc is engaged.



Clutch release bearing.

The purpose of the clutch release bearing is to transfer the movement of the clutch release fork into the rotating diaphragm spring and clutch cover to disengage the clutch disc.



How they are tested.

The original IVECO clutch and three competitor clutches were tested by DEKRA, the independent German testing institute.

The tests were performed in DEKRA's network of laboratories to assess, by means of mechanical tests, the technical specifications and performance of the clutches. **To guarantee impartiality, the tests were conducted anonymously, without identifying the component manufacturers.**

Once these tests had been completed, chemical analyses were carried out (IR spectroscopy, EDS micro-analyses, thermogravimetric analyses and DSC thermal analysis) on the friction material of the clutch discs, to assess their resistance to wear and temperature, in addition to the composition of the materials used.



About Dekra.

DEKRA has been active in the field of safety for more than 90 years. Founded in 1925 in Berlin as Deutscher Kraftfahrzeug-Überwachungs-Verein e.V. (German Motor Vehicle Inspection Association), today it is one of the world's leading expert organisations.



The results.

The results of tests show that the IVECO Genuine clutch performs better than competitors in all the key areas

Comfort

Smooth driving in all conditions

Safety

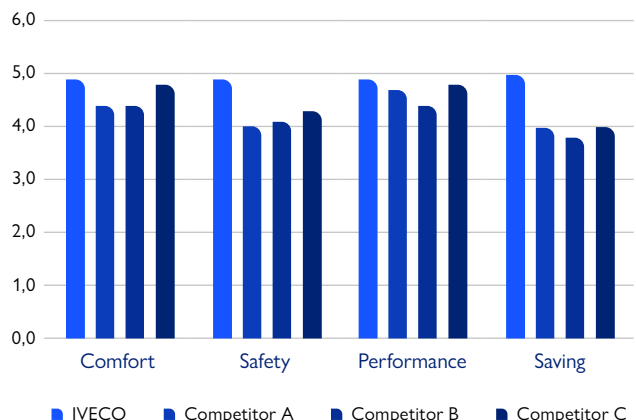
Top performance even in the most risky situations

Performance

Aligned to the top quality competitor, it ensures the best transmission to all driveline components

Saving

Extended vehicle lifetime



Comfort.

Smooth driving with no stress.

What does it mean to rely on comfortable driving?

- Smoother start (optimized disc friction and mechanism)
- Less noise at idle speed (pre-damper), when driving or in reverse gear (damper)
- Latest developments in friction material and technology adopted for OE parts are used on IVECO genuine clutches

That is why it is so important to always choose only original components: they guarantee the highest level of comfort in any situation.

Comfort on clutches has been **tested by a professional DEKRA driver and evaluated under SAE rating scale regulations.** The aim of the tests is to simulate both high traffic city mission and mountain mission that includes different slope climbs and descents (hill start in slopes 8%, 10%, 12%, reverse 10% and 18%) with a full load vehicle.

Driving tests have been run in our **IVECO Industrial Village test track** in Turin and based on the results, IVECO **reached the highest rating.**

Parameters considered:

Overheating smell
after strain



Smokiness
and slipping



Driver
feeling

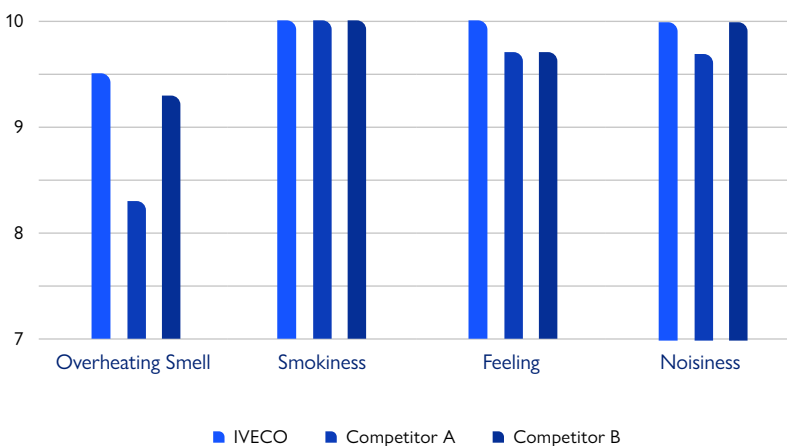


Noisiness



IVECO original clutches: guaranteed comfort.

IVECO original clutches reached the highest rating for all the parameters.



Total (out of 40 points)

IVECO	39,7
Competitor A	37,7
Competitor B	39,0

Score from 0 (low) to 10 (high) assigned by professional DEKRA driver after city and mountain mission tests.

**WHY GENUINE CLUTCHES?
MINIMIZED KNOCKS AND VIBRATIONS MEAN SMOOTH DRIVING**

Safety.

Only IVECO Genuine clutches come with an optimal guarantee, as well as offering real safety: they ensure top performance even in the most risky situations such as high slopes or reverse.

Results of tests performed by DEKRA show that IVECO clutches keep a lower temperature (°C) than competitors' ones in both circumstances: reverse 10% incline and high slopes 18% incline.

An adequate temperature range always ensures correct and safe clutch operation; **in the long run a high delta could lead to higher stress on the clutch and so to breakage, precisely in the most risky situations.**

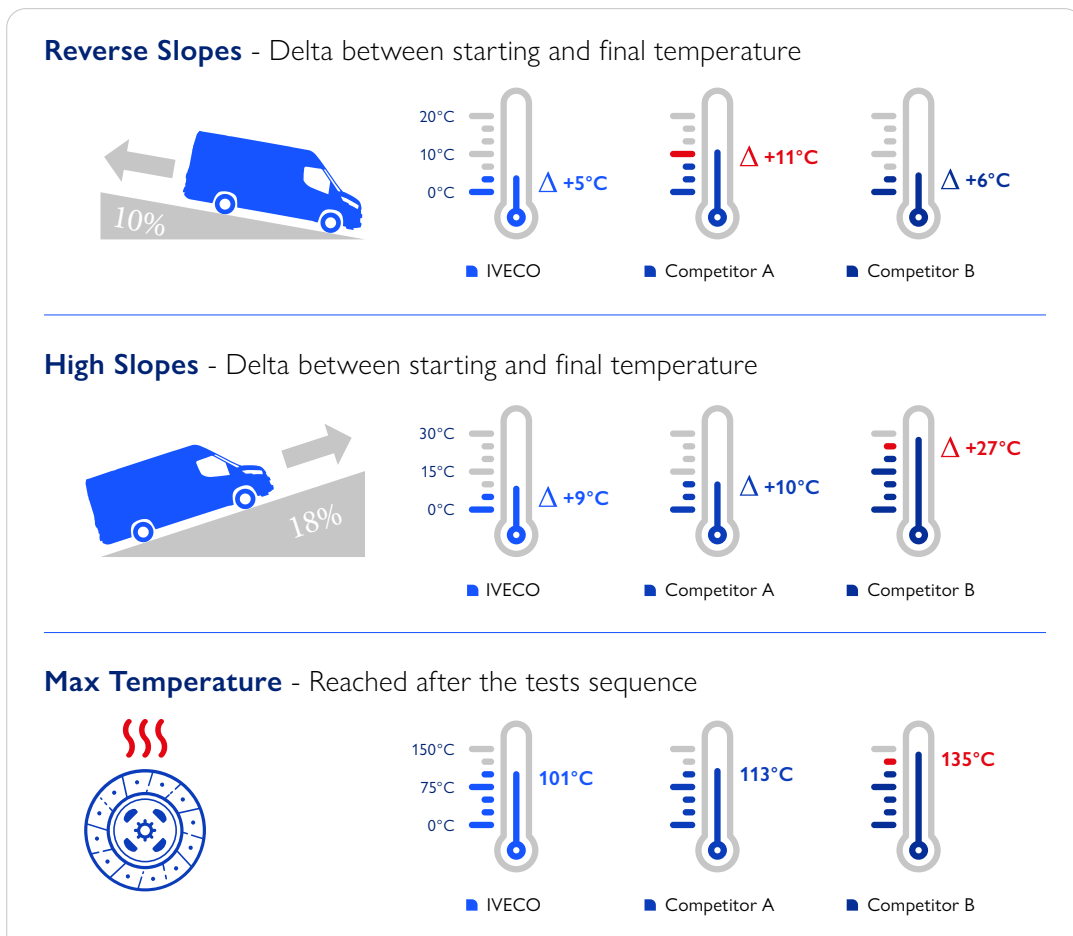
Extreme conditions temperature trends (°C).

In the graph below it is shown:

- Overall temperatures' increase reached by IVECO
- Competitors' clutches and the max temperature reached at the end of the tests sequence.

IVECO clutches keep always the lower temperature (°C).

The higher the temperature and the delta, the more the clutch is stressed and the sooner it might break.



**WHY GENUINE CLUTCHES?
ALWAYS RELIABLE, EVEN IN THE MOST RISKY SITUATIONS**

Performance.

Only genuine clutches are specifically designed to ensure the best performance for the vehicle.

The clutch is one of the powertrain elements subjected to very high stress and its correct functioning is vital to a vehicle's overall performance.

IVECO genuine clutches are not standard, but are designed and tuned for each vehicle, so they can guarantee the best performance during the driving.

Driving test.

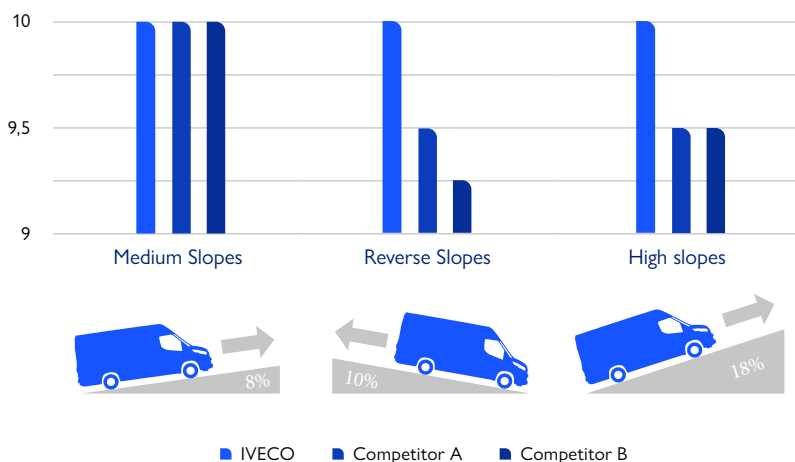
DEKRA has analysed PERFORMANCE results through the drive test, detecting the performance difference in terms of SLIPPING and RIFTS.

All the clutches have been **tested by a professional DEKRA driver and evaluated on SAE rating scale regulations**. The aim of the tests is to simulate both high traffic city mission and mountain mission that includes different slopes climbs and descents (hill start in slopes 8%, 10%, 12%, reverse 10% and 18%) with a full load vehicle.

Driving tests have been ran in our **IVECO Industrial Village test track** in Turin and based on the results, IVECO **reached the highest rating**.

Slipping / rifts.

DEKRA's professional driver has detected differences between clutches in terms of slipping and rifts while driving in different conditions and he has assigned ratings accordingly.



Total Rating

IVECO	30/30
Competitor A	29/30
Competitor B	28,5/30

Score from 0 (low) to 10 (high) assigned by professional DEKRA driver after city and mountain mission tests.

**WHY GENUINE CLUTCHES?
BEST SOLUTION IN TERMS OF EFFICIENCY AND COMFORT**



Saving.

Extended vehicle lifetime: no risk of extra repair or labour cost.

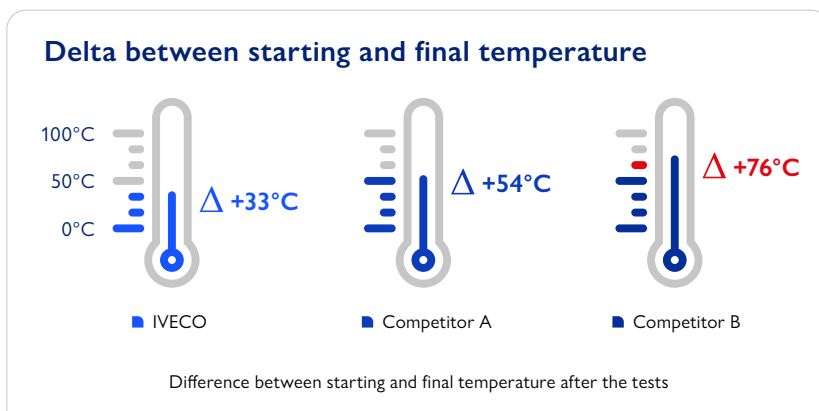
Choosing the Original Equipment offer is the guarantee to extend the lifetime of the vehicle: it is a component that **works in direct contact with the engine**, so choosing an original product also **ensures other critical components have a longer life**.
DEKRA tests have tested SAVING results by analysing fatigue temperature.

Overall temperature trend.

During driving tests in IVECO Industrial Village, clutch temperatures have been regularly checked and recorded.

When the temperature reaches high values, the physical and mechanical clutches' characteristics undergo significant degradation and components are subjected to greater stress which, in the long run, could lead to breakage or excessive wear.

The graph below shows the increase in temperature between the start and end of the tests.



Overall delta temperature: the graph shows the delta between the starting temperature of the clutches and the final one, reached at the end of all tests performed.

The smaller the difference, the less stress the clutch is subjected to, and the longer the potential durability.

**WHY GENUINE CLUTCHES?
GUARANTEED EXTENDED VEHICLE LIFETIME**

IVECO

Drive the road of change

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