IVECO

ZOOM

FOCUS ON TECHNOLOGY

PRODUCT COMPARISON

Heavy-Duty

Range Clutches.

A new driving experience.

in collaboration with DEKRA

Genuine Parts
HIGH PERFORMANCE

How
it is made.

The clutch.

The clutch is the mechanism that is used to establish and interrupt the connection between the engine and the transmission. It is a key component in the correct operation of the gearbox and for guaranteeing the transmission of power.

- Enable the vehicle to start off thanks to the gradual transmission of torque
- Guarantee that the driver enjoys an optimal driving experience as it dampens engine vibrations
- Ensure comfortable pressure on the pedal and smooth gear changes

Clutch disc.

The clutch disc effectively connects the engine and the transmission, and it directs the flow of power together with the pressure plate and the flywheel.
The discs in the IVECO clutch kit have homogeneous surfaces to guarantee optimal performance.
The surface made with friction material on both sides - similar in composition to that of the brake pads - and the wave-like design of the shock absorber plate enable uniform compression of the friction surfaces when the pressure plate is engaged to obtain a smooth transmission.

Pressure plate.

This component provides the pressure required to hold the clutch disc directly against the flywheel to guarantee power is transmitted correctly, and ensure that the clutch does not slip while preventing any loss of power transmitted from the engine.
It must be correctly balanced and able to dissipate the heat generated when the clutch disc is engaged, to avoid any microfusion or alteration in performance of the clutch.

Thrust bearing.

This is used to transmit thrust from the fork. After the pedal is activated, the thrust fork then pushes the bearing against the central springs of the pressure plate, lifting the disc which, no longer in contact with the flywheel, releases the clutch. A malfunction on the thrust bearing will adversely affect gear shifting.
If the thrust bearing malfunctions, this compromises correct gear changes.

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.

DEKRA

The results.

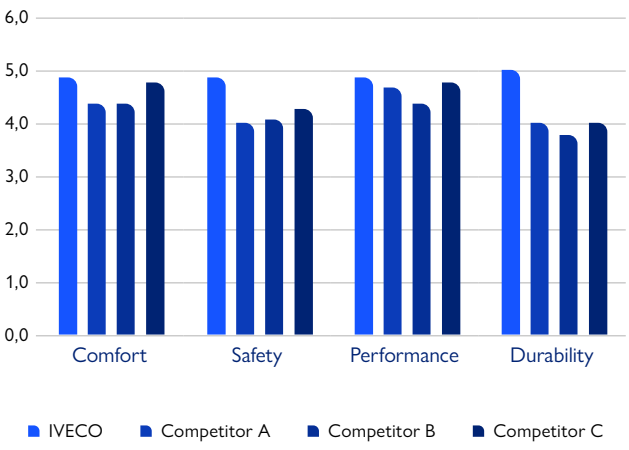
The test results showed that the original IVECO clutch performs better than the competition in all key areas:

Comfort
Smooth drive in all conditions

Safety
Excellent performance even in adverse situations

Performance
Guarantees optimum transmission
to all components involved

Durability
Longer vehicle service life



Comfort.

A new driving experience: comfort guaranteed.

Original IVECO Clutches are designed to guarantee optimum performance in terms of efficiency and comfort while driving: they are created by the same experts who develop your IVECO vehicles.
By means of the various tests conducted by DEKRA, including chemical analyses for glass transition (DSC), compression testing (elastic modulus of the pressure plate) and dimensional analyses of the friction surfaces, it was established that:

- The optimal heat resistance and chemical composition of IVECO clutches delays the production of fumes due to overheating
- The high load applied to the pressure plate guarantees constant contact is maintained between the disc and the flywheel, thereby minimising slippage in any condition
- The ergonomic design of the mechanism enables the driver to apply optimal pressure to the pedal, resulting in a smoother vehicle start-off as the loads on the pedal and the friction between the discs are optimised
- The contact surfaces of IVECO clutch discs are evenly rough, resulting in uniform wear and low noise while driving

PARAMETERS:

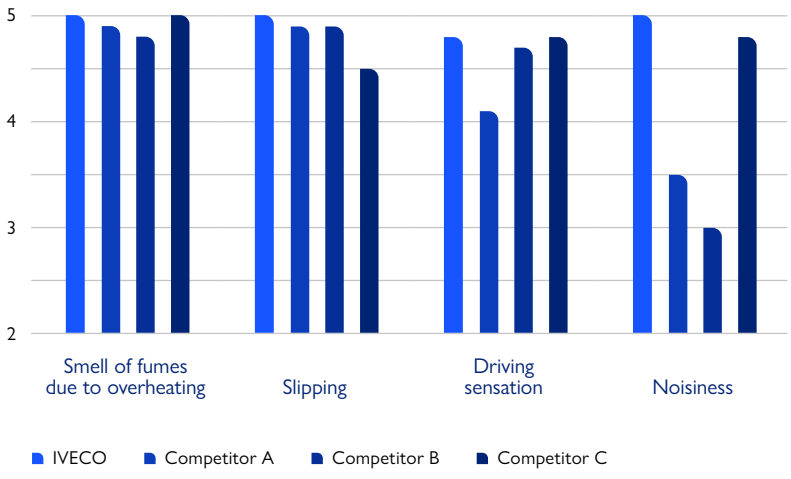
OVERHEATING SMELL
after strain

SLIPPING

DRIVER SENSATION

NOISINESS

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



Final Evaluation

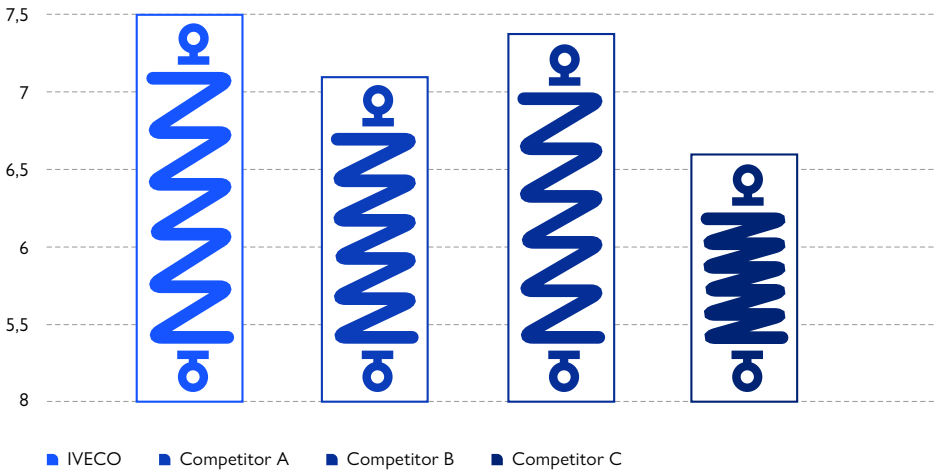
IVECO	*4,9*
Competitor A	*4,4*
Competitor B	*4,4*
Competitor C	*4,8*

IVECO CLUTCHES OFFER THE BEST SOLUTION IN TERMS OF COMFORT THANKS TO THE OPTIMAL HEAT RESISTANCE AND UNIFORM ROUGHNESS OF THE DISCS.

Safety.

The results of the tests conducted by DEKRA show that IVECO clutches prove responsive and reliable even under adverse conditions. In fact, the correct values for rigidity and maximum load enable optimal clutch engagement and disengagement, making gear changes completely safe, ensuring the ideal transmission of power.
To ensure complete safety on the road, it is necessary to guarantee adherence between the components by applying a high compression force between the clutch disc and other transmission components.
IVECO clutches achieved the highest compressive load value in the mechanical test.

Compressive load [kn]



Maximum load

IVECO	*7,5*
Competitor A	*7,1*
Competitor B	*7,4*
Competitor C	*6,6*

IVECO CLUTCHES ARE THE IDEAL CHOICE IN TERMS OF SAFETY THANKS TO THEIR OPTIMAL WEAR RESISTANCE WHICH MAKES THESE MECHANICAL COMPONENTS HIGHLY RELIABLE IN ALL SITUATIONS.

Performance.

The clutch is a component which is under constant strain and it plays a key role in vehicle performance.

The mechanical tests and chemical analyses conducted by DEKRA have shown how IVECO clutches are able to guarantee excellent adherence between the clutch disc and the flywheel thanks to high friction coefficients and a mechanism which works in optimal conditions. In these tests, IVECO achieved the top ranking for its performance.

The Rmax roughness index (the maximum roughness of the surface profile) was also analysed: the greater the irregularities, the less uniform the distribution of friction.

Other Rmax values indicate suboptimal performance including:
A reduction in the friction surfaces between components
- A concentration of loads with consequent increase in temperature
- An increase in the speed of wear of the clutch

The low rmax [µm] value of iveco clutches is a guarantee of the product's optimum performance.

THE IVECO CLUTCH KIT HAS BEEN CREATED TO MAXIMISE EFFICIENCY IN THE POWER TRANSMISSION PHASE, GUARANTEEING OPTIMUM RESULTS IN TERMS OF PERFORMANCE.

Durability.

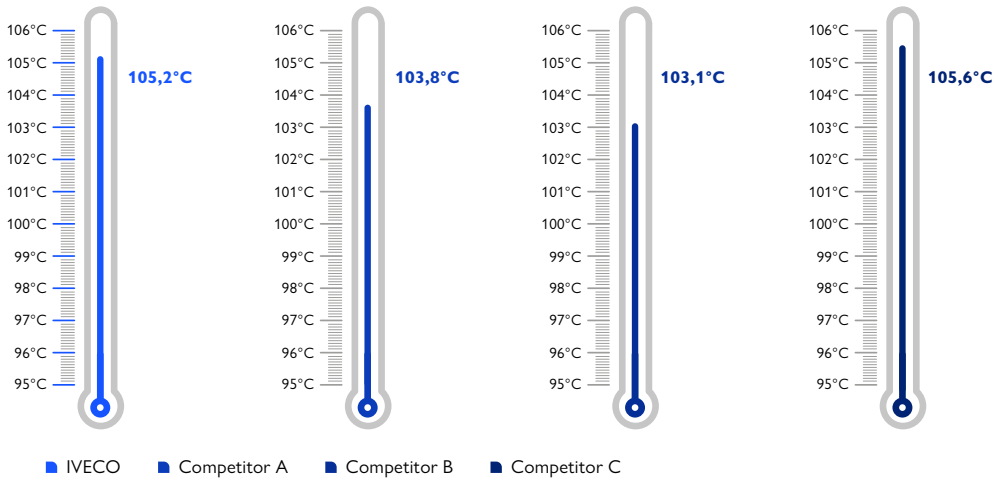
IVECO clutches are made with special compounds which guarantee optimal resistance to wear and to high temperatures.

The chemical analyses conducted by DEKRA on the samples confirm that IVECO clutches have the highest percentage of wear resistant materials. The high content of fibreglass and copper-based metallic fibres inside the component guarantee optimal performance throughout the life cycle of the product.
In particular, IVECO clutches contain up to more than 20% more glass- and copper-based fibres than the competition – an optimal result in terms of savings.

Percentage of wear-resistant materials (%)

High temperatures can result in the compound in clutches to degrade more quickly, reducing the service life of the component.
Products like clutches, which need to guarantee high mechanical performance and which offer rigid characteristics, must have a glass transition temperature which is higher than ambient temperature.
Chemical analyses were therefore performed by DEKRA which show how IVECO clutches withstand high temperatures – indeed IVECO clutches are among the most resistant to high temperatures – a guarantee that IVECO products last longer, thereby reducing costs.

Glass transition temperature



UNBEATABLE DURABILITY WHICH HELPS TO SIGNIFICANTLY CUT COSTS.

IVECO

Drive the road of change

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