



J. COSTA[®]



MANUAL

J.COSTA VARIATOR

The J.Costa variators revolutionised the world of automatic motorbikes by introducing a **totally different and disruptive design** to the market, which also brought a previously **unseen increase in performance**.



After more than 20 years in the market, thousands of variators sold, many tests and adjustments, J.Costa variators have been refined to become the best variator for automatic transmission motorbikes.

With a dedicated R&D team specifically dedicated to designing and building new variators to deliver high levels of performance with the highest quality and reliability.

J.Costa variators are manufactured and are suitable for use on urban roads and open roads.

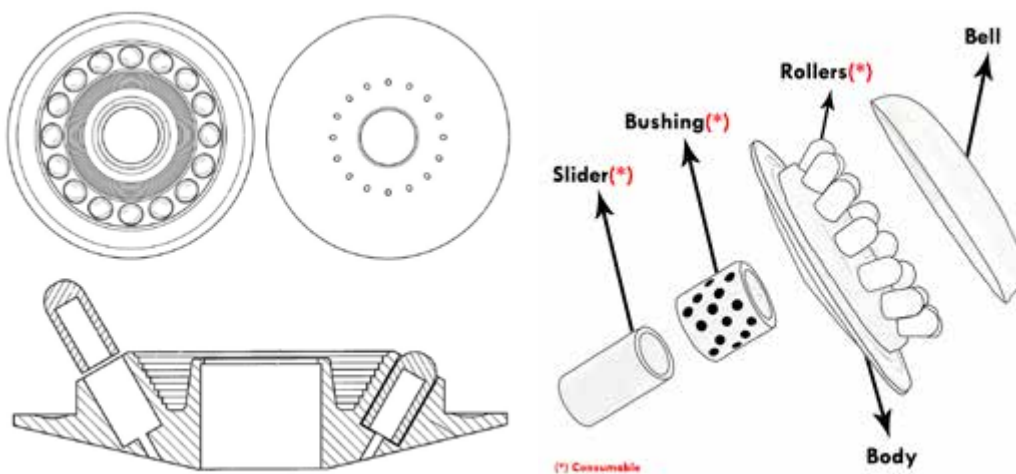
WHY J.COSTA VARIATOR?

DESIGN

J.Costa variators are different from other variators on the market because of their **unique design** and **transversal operation**. The design of the variator simplifies that of a conventional one, reducing the number of components and increasing the speed of operation.

Inside the variator there are a series of **heat sinks** that reduce the internal temperature and improve operation without loss of performance with extended use.

Each variator model is designed for a specific scooter model, providing better **power delivery** and **optimising the transmission system** to get the full power from the engine.



J.Costa variators do **not generate residues** inside the crankcase cover, keeping the whole transmission unit of an automatic motorbike in better condition.

All the variators are designed for **“Plug&Play” installation**, with no need to rectify or change parts to adapt the transmission, always respecting the indications established by the manufacturer. This greatly simplifies the assembly and maintenance process of the inverter.

The differential points of a J.Costa variator are the **high quality of the materials** used in its manufacturing process and its original patented design.

WHY J.COSTA VARIATOR?

MANUFACTURING

In contrast to other manufacturers, J.Costa inverters are **manufactured by CNC** machining. This gives the inverter a high level of precision, as the tolerances are much tighter.

Once machined, they receive a ceramic treatment to increase the **hardness and durability** of the inverter.



The variator bell is made of **stainless steel** by deep drawing, capable of withstanding the pressure exerted by the masses.



The central bushing is made of **bronze with graphite inlays** for dry lubrication without the need for grease or oil.

The J.Costa masses are the key element that will provide more acceleration or more top speed depending on the weight of the masses. They are made from a **plastic compound combining Kevlar and carbon fibre**.



The slider receives a **titanium nitride** treatment to increase its hardness and durability, and an **anti-friction treatment** to improve its performance.

J.COSTA vs ORIGINAL

The variator of the scooter is the gearbox of a normal motorbike. Therefore, the main function of the variator is basically to change the gear ratio.

The differences between the J.Costa variator and the original can be seen at a first glance.

The J.Costa variator, being a totally different system to the original one, allows us to work on increasing the performance of the scooter.

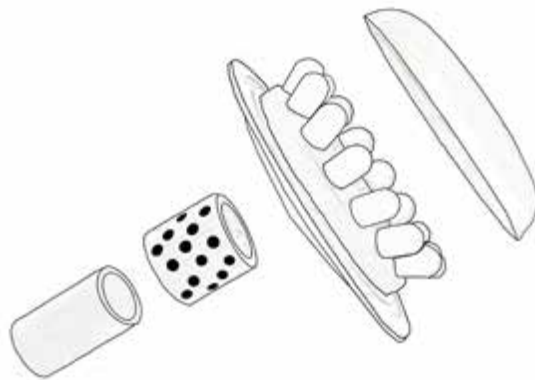
With the J.Costa variator, you can work with the bell to change this ratio, achieving a balance between acceleration and top speed.



ASSEMBLY RECOMMENDATIONS

- The bell housing is not grooved, so the variator must be tightened with a torque spanner to the torque marked by the manufacturer, see also our instructions.
- The bushing is encrusted with graphite (dry lubrication) so the variator must be mounted without grease, oil or lubricant.
- It is recommended that the transmission of the bike is fully stock to obtain the full performance of the J.Costa variator.
- Mount the original washers in the same position, unless otherwise indicated in our instructions, section “Technical specifications”.
- For the maintenance of the bushing, follow the instructions in the assembly instructions.

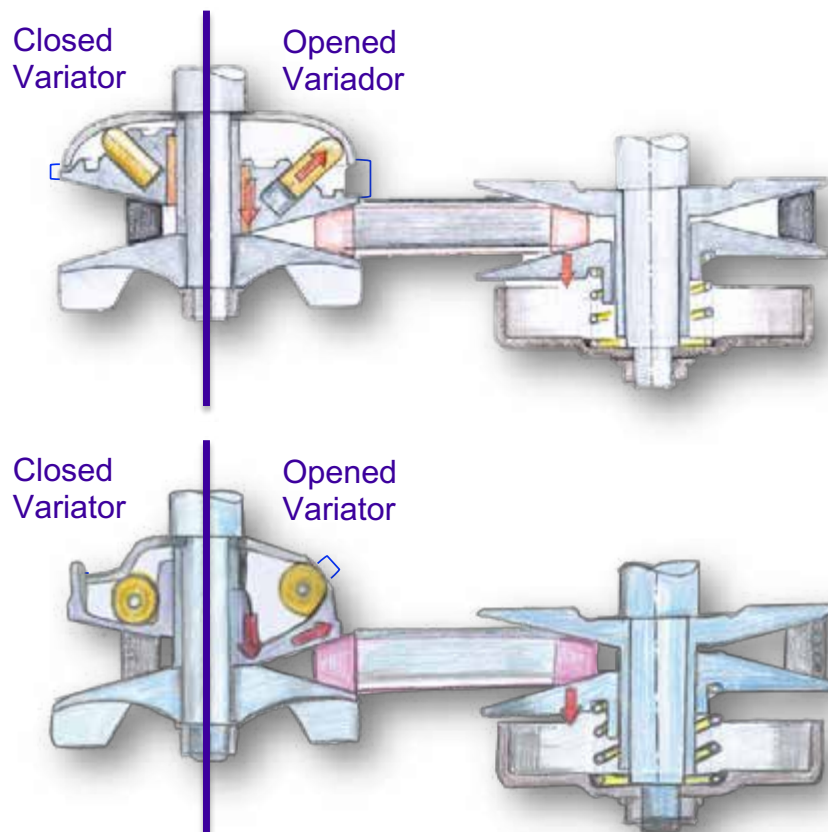
HOW IT WORKS?



The variator works in a **TRANSVERSE** way

Thanks to the centrifugal force, the variator opens and closes transversally.

The centrifugal force allows the bell and body to be frictionless and therefore the pulley has an immediate reaction when opening or closing the gas.

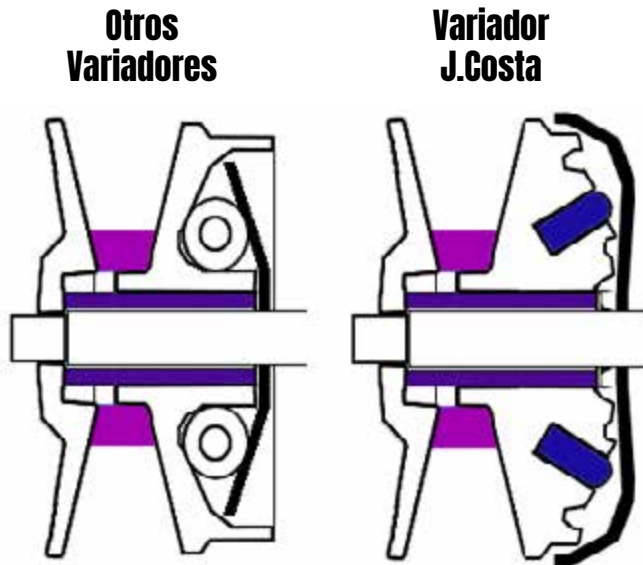


The fact that the origin type variator has a mechanically guided bell (increasing friction) tends to slow down the reaction of the system.

The centrifugal force causes the pulley and the drive to move equally, causing the belt to rise so that the drive can transmit its power.

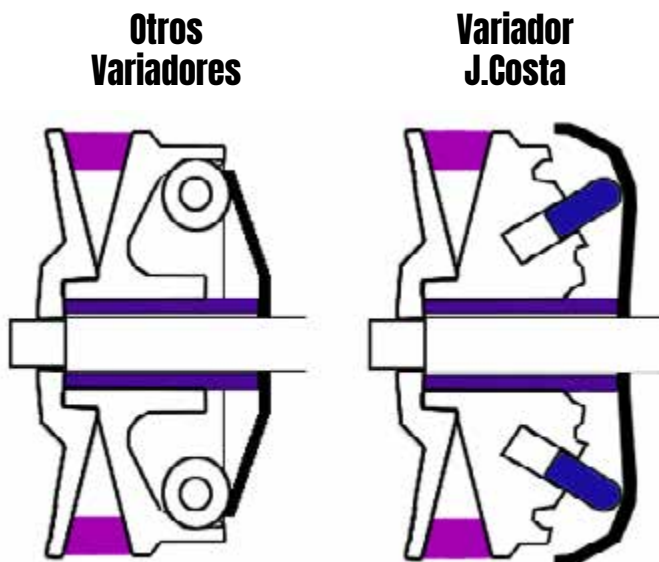
HOW IT WORKS?

Variador cerrado



With the J.Costa variator we have a shorter first gear thanks to the angle of the hood. The bell allows us to make thousands of combinations to get the maximum performance.

Variador abierto



The most important thing about the bell part is that it allows us to increase the number of gears, i.e. to change the gear ratio.

The fact that the rollers have a longer travel and that the rollers, thanks to the transverse work, can come out more, means having a longer sixth gear and therefore increasing the top speed.

HOW DOES IT DEVELOP?



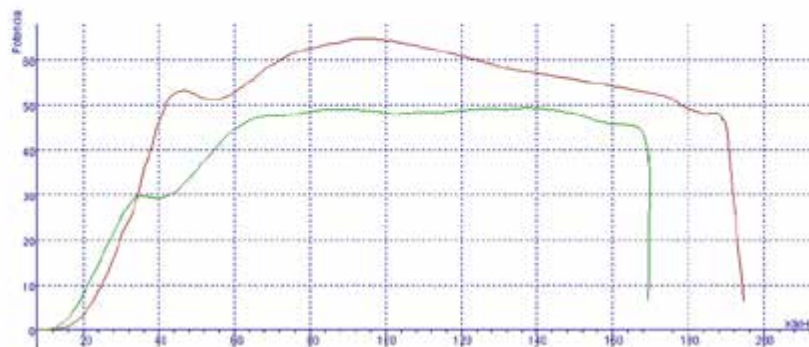
We are looking for the engine torque, i.e. the RPM where the engine has the maximum power.

Therefore, the variator will always work at the RPM where the engine has its power, its maximum hp delivery.


From this point onwards, the weight of the rollers is used to ensure that it is at the specific RPM and the gear ratio is adjusted with the bell, thus achieving a balance between first and sixth gear.



NOMBRE DEL ENSAYO	POT. MAX.	PARR. MAX
IMAX S50 SERIE 2020	48.4 (53.3) / 137.3	15.2 (15.5) / 92.3
TMAX S50 XRP 2020	64.8 (69.7) / 94.5	23.1 (23.3) / 81.8




ADVANTAGES




Acceleration

J.Costa variator always works with a shorter first gear.




Less vibration

Due to the mechanical non-friction, the drive has a greater smoothness.




Media increase

The variator is regulated so that it always works in its maximum power range.



Consumption reduction

The J.Costa variator allows you to maintain a constant speed with lower open gas.



Gas touch

The fact of not having a mechanical part causes the gas and the drive to act simultaneously.

What does the J.Costa variator transmit us?

- Running without stress, with a little throttle, the bike gets more speed without the feeling of “flat out”.
- Thanks to a greater throttle response and a faster engine response, we can achieve greater agility and safety, as well as fast and safe overtaking.
- A feeling of freedom, of speed, of being able to go to the end of the world.
- In addition to its shifting function and thanks to its patented system, J.Costa allows you to control the bike at all times. The power curve is completely linear, from start-up to top speed, the variator delivers performance at all times.

Thanks to the unique transverse system, its functionality with the bell and rollers, it provides all these extra features and benefits for the SCOOTER.

- Performance may vary according to **the engine capacity** of the scooter. The larger the engine, the better the performance.
- For 125cc scooters, the most notable results are **acceleration and mid-range recovery**.



J.COSTA Variator



+31,68%
Efficiency

MAINTENANCE

ROLLERS

It is very easy to identify when to replace the masses of the variator, as when riding the bike you will notice that the bike revs up but lacks thrust or that the power has decreased.

On visual inspection, we can see that **the roller tips have flattened due to friction** with the variator bell, and the hole at the end of the pulley is no longer visible. In this way, by looking at the **wear indicator**, we will know the remaining life of our weights.

Under normal conditions, it is estimated that the rollers should be changed approximately **every 2 oil changes** of our scooter.

Indicador de desgaste



BUSHING

It is the element that withstands the most friction and at the same time guarantees the correct operation of the variator.



To identify when the bushing of our JCosta variator must be replaced, we must pay attention to the tolerance or clearance between the bolt and the bushing. If it is greater than 0.2mm, the bushing must be replaced with a new one.

It is estimated that the bushing should be replaced approximately every 4 oil changes (after 16.000km).

SLIDER

The slider should only be replaced by a new one if the outer walls of the slider are damaged. To do this, carry out a visual inspection of the condition of the slider or check the tolerance between the slider and the new bushing.

BELT

Inspecting the tension of the transmission will indicate belt wear. This is particularly important on the J.Costa XRP ranges, as it can withstand more power than the standard belt.

If a J.Costa PRO is fitted, the belt should always be replaced with the original belt or with the same specifications as the manufacturer's specifications.

MODELS

Within the J.Costa variators, we can find two different ranges: The **J.Costa PRO** and the **J.Costa XRP**.

Both differ from the previous ranges by the leap in technologies applied in their development, quality of materials and dynamic improvements.

One of the most noticeable improvements is the **insertion of heat sinks** that not only increase the longevity of the components, but also help to prevent the variator from fatigue and lower performance in extreme use.



The **J.Costa PRO variators** are designed to take advantage of all the power generated by the engine, thus increasing the performance and power curve.

With the range of J.Costa PRO variators, we will increase between **10% and 20% the performance** of our scooter.

It is the most extensive series of variators, as it manages to optimise the response of the vehicle **without increasing fuel consumption**.

The **J.Costa XRP variator** range is the most extreme. It is the most racing version suitable for open road traffic.

The J.Costa XRP variators feature a series of **specific Kevlar reinforced belts** to withstand the increased power.

This range of variators is only available for Yamaha T-MAX, BMW C600 and C650 and KYMCO AK550.



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www.jcosta.com - www.itscooter.es

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