

BikesMedia

Everything About Two Wheelers

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Disadvantages Of
**Motorcycle
Carbon
Disc
Brakes**

Motorcycle
ECU Remapping
All you
need
to know



Yamaha
FZ25

VS

Ktm
**Duke
250**

Shootout



Ducati
Supersport



Overview

AND

Supersport S



First
Ride
Review



BikesMedia

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Honda Cliq
First Ride Review



BikesMedia
On the cover
Yamaha FZ25
Vs
Ktm Duke 250
SHOOTOUT

New HONDA CLIQ

First Ride Review



The Japanese brand Honda Two-wheeler which consistently been serving to its customers since past many decades, from premium motorcycles to regular motorcycles and scooters Honda has created a benchmark. It has marked many of its products as the legendary products, which people seek them by their names. Premium racing brands like Honda CBR 1000R and CBR 600 have urged the riders to own them who look for powerful motorcycles. Products like

Unicorn, Shine, and recently launched Hornet have truly dominated the market. Honda has never left any segment to rule over and thus the resplendent product named Activa has been ruling the market of scooters. In fact, the segment of scooters in India is being known by this product (Honda Activa) since long.

With the unilateral success of these scooters, Honda has decided to keep on working on the same segment and let the riders get some new experience within this segment. Honda Navi, launched in 2016, was the result of it. But somehow this particular concept didn't get much response from the riders or we can say the Monkey Bike (Honda Navi) couldn't impress the scooter seeking customers. So, Honda had decided to work upon different concept. So what if the Navi's concept was not much impressive, no issues with that we'll bring something new within the same segment, within the same technology (Honda's perspective). And thus the all new Honda Cliq has got introduced to the market, for the riders.



Style & Design

The Honda's new concept takes you over immediately as soon as you look at the scooter. Yes, the new Cliq has got completely different looks and it does not resemble to any of its previous products. The scooter we got had beautiful color combination of red and white. It actually looked cool. The new design of Cliq has seriously gained the attention of many people. It is actually a small scooter (comparatively with other scooters) and many passerby were seeking for the name of it. Many of them have asked whether it is a battery driven scooter and some of them have actually grinned on both of us (the scooter & me).

A tall and little bulky guy on a small scooter made people laugh, though I got the feeling of being a celebrity, (Pun intended). The beautiful full fiber body of the scooter has got ample of leg space and a broad foot-board. Beautiful matte finish colors and a completely different design of the scooter makes it stands apart.



Instrument Cluster And Switchgear

The instrument cluster is the direct lift from the Activa and there is nothing new or special about it. The console is fitted on the body of the scooter and it is fixed on to it, this simply means it does not move along with the handlebar. The Cliq has got a naked handlebar which actually the other scooters haven't got till the date.

While noticing the switchgear, there is a self start switch which is placed on the right side of the handle bar and on the left there is a Horn Switch, Indicators Switch and the Upper/Dipper switch for the headlamp. The scooter has got different headlamp, taillight and front indicators yet equipped with regular filament bulbs and the rear indicators are not much impressive as there is nothing new in that. The quality of the switchgear was OKAY.

Ergonomics



belongings safely and easily. Well this isn't it, the Cliq has got a spacious dickey below the seat and the phone charging slot. It has got rubber coated foot pegs on both the sides for the pillion and a sturdy grab bar at the back (above the taillight) to hold on to it.

Engine And Performance



The 109 cc engine churns out the power of 8.2 PS at 7000 rpm and 8.9 NM of torque at 5500 rpm. Well this is the technical term which most of the people don't care about, all they want to know how exactly it felt to the reviewer. As a reviewer I must say it has got really a butter smooth engine with no vibrations even at high rpm. It also sounds like regular Honda's scooters and the power is enough for daily commute. Being a lightweight scooter the power to weight ratio at Cliq is better than to any of its compatriots, hence you get good acceleration.

Having the kerb weight of just 102 kg, the Cliq is absolutely compatible for ladies and senior citizens. Its wide though short seat can give the rider an easy and comfortable ride but the pillion might have to face trouble while on board with a tall rider. The spacious Honda Cliq offers much space in the front side so that anyone can keep their

Discussing about the engine's specification, the all new Honda Cliq has got no different engine but the 110 cc air cooled engine derived from Honda's ongoing products Activa and Dio. Honda hasn't actually worked on the technology of the Cliq's engine but has tremendously worked on its looks. Also previously launched Monkey Bike (Navi) was equipped with the same engine, as the new Cliq is a different version of it, so it has got the same specifications too.

Brakes & Suspension



The patented technology of Honda is being noticed in its almost every scooter and so does in the all new Honda Cliq. Yes, we are talking about the Combi Brake System (CBS). We all are very well aware about this technology because Honda has been serving this technology through many of its ongoing products since a couple of years.

Basically it is the technology, introduced to increase the safety measures while riding. Running on more than the average speed and braking in emergency won't trouble the rider by skidding and slipping around because the CBS technology enables both the brakes perform simultaneously, even if the rider is using only single brake. This technology helps reducing chances of accidents while applying brakes in emergency.

The Cliq has got 130 mm drum brakes in the front and 130 mm drum at the rear which are very responsive for a lightweight scooter. Apart from the drum brakes at both the ends the all new Honda Cliq has got Spring Loaded Hydraulic Suspensions in the front and at the rear. The suspensions actually helped me passing through the bad roads and the roads filled with potholes. They also helped me to lean the scooter on the bends, although we can only lean it till a certain level.





Well talking about leaning the vehicle the most important tool for that are the tyres. Both the front and rear tyres of Cliq are 90/100-10 53J sized tyres and the best part is they are tubeless. So here one more problem has been solved, the trouble of dragging the punctured vehicle. The grip provided by the tyres is good and it gives the confidence while riding in different road conditions.

Verdict



As discussed earlier that the Honda CLIQ isn't a regular scooter in size and shape and can fulfill the needs of all sorts of people including ladies and senior citizens who want to own a handy scooter for city cruising. Lightweight scooter is the term that is truly made for the all new Honda Cliq. The new Cliq has got some cons like quality of switchgear could have been improved. Having the price tag of just INR 42,999/ (ex- showroom) makes this scooter the cheapest one in the market.

Specifications

GENERAL:

Price	42,499 (ex-showroom, Delhi)
Launched	Jun, 2017

ENGINE:

Engine Displacement	109.19 CC
Engine Type	Air cooled, 4 stroke
Number Of Cylinders	1
Valves Per Cylinder	2
Max Power	8.2 PS @7000 rpm
Max Torque	8.9 Nm @5500 rpm
Bore x Stroke	50.0 x 55.6 mm
Fuel Type	Petrol
Starter	Electric-Kick

TRANSMISSION:

Transmission Type	Auto
Number Of Gears	-
Final Drive	Direct

WHEELS & TYRES:

Front Tyre (Full Spec)	90/100-10 53J Tubeless
Rear Tyre (Full Spec)	90/100-10 53J Tubeless

BRAKES:

Front Brake Type	130 mm Drum
Rear Brake Type	130 mm Drum

SUSPENSION:

Suspension Front	Spring Loaded Hydraulic
Suspension Rear	Hydraulic Suspension

DIMENSIONS:

Overall Length	1745 mm
Overall Width	695 mm
Overall Height	1039 mm
Wheelbase	1241 mm
Ground Clearance	154 mm
Kerb Weight	102 kg
Fuel Capacity	3.5 Litres

HONDA
The Power of Dreams

BADE KAAM KI



Yamaha FZ25 Vs Ktm Duke 250 Shootout

The competition for the 250cc motorcycle lineup is getting heavier day by day, the manufacturers have found out the secret that the market is moving away from 100-150cc segment motorcycles to 200+ segment motorcycles. So we thought we must compare the best in class motorcycles from Yamaha and KTM. Both of the motorcycles gave us a great experience, but a competition always has only one winner. Let's find out who wins this comparo.



Looks and design

Yamaha FZ25

The front section of the motorcycle looks similar to the new Duke 390, except for the fact that the 390 gets a full LED lighting system and this doesn't. The indicators are well integrated and are flexible too. The trellis frame is the most attractive part seen on any Duke. The side profile is similar to the Duke 390, with a visible split trellis frame painted in orange and black colors. The wheel rims are painted in black color unlike the Duke 390 that gets them in orange color.

The rear section gets clear LED tail lamps. The rear also gets an integrated grab rail making it easier for the pillion. The rear tire gets a hugger, but is not very effective during rainy days, the water gets sprayed all over the pillion's clothes and the motorcycle too. The footpegs are supported with hard rubber that feels grippy enough. The Duke 250 gets a metal tank where the FZ 25 gets a plastic.



Ktm Duke 250

On the other hand, the FZ25 looks taller than the Duke 250. The FZ 25 grabs a lot of eyes out on the roads. It has a nice huge superbike feel to it. The split headlamps with LED lights and DRLs give the motorcycle an appealing look. The tail lamp is transparent and looks stunning. The indicators look a little bulky and outdated when compared to the Duke 250. The muscular chiseled tank looks more impressive than the tank on the Duke 250. The footpegs are similar to the ones on the Duke 250 and do their job pretty well. I personally liked the mirrors on the FZ because they provided better visibility and were easier to operate.



Switchgear and instrument

Yamaha FZ25

The FZ25 gets a fully digital meter console which includes a Speedometer, Tachometer, Fuel gauge, Odometer, two Trip meters, Fuel Reserve Trip meter, Clock, Instant fuel economy and Average fuel economy indicator. What the FZ25 lacks are the side stand and gear shift indicators. There is nowhere the FZ's instrument panel is going to beat the Duke 250. The FZ 25 lacks the side stand sensor, distance to empty and much more. I liked the way the pass light is integrated to the high beam low beam switch.

Ergonomics

Ktm Duke 250

The Duke 250 is built around a new tubular trellis frame that has a bolt on sub frame. It feels easy to ride the motorcycle even under heavy traffic. It has been well designed that balancing it can be done with ease, eliminating the need to keep the foot down very often under slow moving traffic conditions. The motorcycle weighs 161kgs and has a tank capacity of 13.5 liters. It has a saddle height of 830mm, ground clearance of 185mm and a wheelbase of 1357mm.

Yamaha FZ25 Vs Ktm Duke 250

Yamaha FZ25

The center set foot pegs and upright handlebars make the city rides nice and comfortable on the Yamaha FZ 25. The seat feels nice and soft even under heavy traffic conditions. The motorcycle flickers and maneuvers without any effort or pains. There was a minimal ache in the palms too in the traffic. The motorcycle measures 2015mm in length, 770mm in width, 1075 mm in height with a seat height of 795mm. The motorcycle will suit a rider of any kind and size. The pillion seat is broader and softer on the FZ25.

Ktm Duke 250

The Duke 250 retains the standard instrument panel that is seen on most other KTM motorcycles, the instrument panel is loaded with hell a lot of features such as a speedometer, tachometer, gear shift indicator, trip, average fuel economy, clock, trip meter and so much more. KTM have also added loads of sensors to the motorcycle like lean angle sensor, side stand sensor, and much more. The quality of the buttons are pretty decent and do the work just fine. The headlamp switch has been removed for the AHO feature.

Engine and performance

Ktm Duke 250

Duke 250 is powered by a 249cc single cylinder, four stroke, liquid cooled engine that produces 29.60 bhp at 9,000 rpm and a peak torque of 24Nm at 7,500 rpm. The engine is mated to a 6-speed gear box which is assisted by a Slipper Clutch. The torque in the Duke 250 kicks in earlier than the FZ25, it feels so much more aggressive to ride the motorcycle. There is juice almost at every possible power band.

The vibrations kick in at 6000 RPM and dampen out by 7500 RPM. The vibrations are more felt on the mirrors and foot pegs. The vibration felt on the handlebar is comparatively lesser than the FZ25. The way this motorcycle is throttled defines the ride quality, the smoother you throttle it, the better it gets.

Yamaha FZ25

The engine on the new FZ25 is a 249cc, single cylinder, SOHC, 4-stroke unit that is oil-cooled, and fuel injected. It comes with 4-row core oil cooler. The engine produces a maximum power output of 20.69Ps at 8,000RPM and 20Nm torque at 6,000RPM. The engine is mated to a 5-speed gearbox. The engine on the FZ 25 is smoother and there is a punch of torque from as low as 3500, this makes the rider that his ride is filled with torque when ever he rides it. The lack of the 6th gear is because Yamaha wanted the rider to feel the torque in every gear.

Once you ride the Duke 250 and then you move to the FZ 25, I am sure your foot will search for the 6th gear, because you want another gear to feel some more power and take more juice out of the motorcycle. The inclusion of the 6th gear would have let the FZ25 gain a better top speed and would have been really helpful for cruising conditions.

Brakes and suspension



Yamaha FZ25

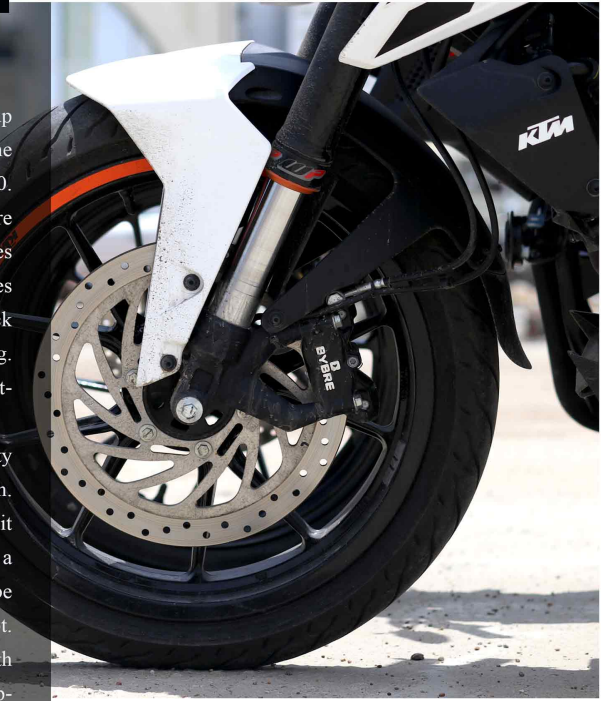
The front end receives a 282mm disc brake and the rear wheel has a 220mm disc brake. The front brakes have a good bite and feedback, the rear brakes feel slow and progressive and lack that bite and feel that the front brakes provide. I hope Yamaha will do something for the brakes on this otherwise fantastic motorcycle.

The FZ25 is featured with telescopic fork suspensions up front and the rear gets a mono shock suspension with a suspension travel of 130mm and 120mm respectively. The suspension is a major plus point, the ride feels soft and plush, the suspensions seamlessly absorb all the potholes and bumps on the roads.

Ktm Duke 250

The Ktm Duke 250 gets a 300mm disc up front and a 230mm disc at the rear. It is the same braking system used in the Duke 200. They lack out on the sintered pads that are offered on the Duke 390. The Front brakes do a pretty good job, but the rear brakes need some improvement, they tend to lock up too much under aggressive braking. KTM could have offered ABS and Metzeler tires at least as an optional variant.

The suspension quality was pretty pleasing for both the rider and the pillion. The mono shock used for the rear felt a bit towards the stiffer side. The front gets a 43mm WP Upside Down Forks, to be honest, I did like the front suspension a lot. Both the suspensions have a travel length of 150mm. The suspensions happily dampened out the pot holes without any hassle.



Verdict

If you are a person who is a family man and wants a cost cutting 250cc smooth performer, then I would say the Yamaha FZ 25 would make a great motorcycle at a price tag of INR 1.20 Lakh (Ex-showroom). If you are a youngster like me, the Duke 250 it is. The FZ25 is still a great motorcycle for youngsters, but it just lacks the punch that the Duke 250 provides. Priced at INR 1.73 Lakh (Ex-showroom) the overall winner of this shootout is the Ktm Duke 250 because it is just worth for each and every penny that is invested on it.

DUCATI SUPERSPORT AND SUPERSPORT S

Ducati launched their much awaited Supersport and Supersport S models in India through a press launch today. The two variants are very much similar to each other with only a couple of differences. On the launch, Sergi Canovas commented that the Supersport is an exciting model for both novice and expert riders which provides excellent road performance coupled with easy handling and versatility. The Supersport is now the seventh new model from Ducati been launched this year. Here's an overview of the Supersport and Supersport S in terms of looks and design, engine, performance, electronics and equipment.



LOOKS AND DESIGN

The Ducati Supersport and Supersport S are two motorcycles that look exactly the same with a naked eye. The motorcycle shares its base design cues with the elder and meaner machine, the Panigale. Yet it doesn't mean the design would meet the expectations of an ardent fan of the Panigale series. As the seating position is a bit tourer friendly, it doesn't do justice to the name Supersport.

The looks and design of the motorcycle might not be everyone's cup of tea, though one might get used to the subtle design with time. The front end is sharp and pointed with the LED DRL's, headlight assembly and air intake vents making it a unique view. The side fairing is large and sculpted with a big fuel tank. The trellis frame of the motorcycle is visible on either sides, as it's mounted on the engine making it a stress member. The rear end is an usual Ducati, slim and chiseled along with a single sided swingarm. The overall design is based more on aerodynamic efficiency as the motorcycle is very compact and sleek.



The Supersport and Supersport S comes equipped with a 937cc Testastretta 11° twin cylinder engine which churns out 110 hp at 9,000 rpm and 93 Nm of torque at 6,500 rpm respectively. The transmission is a 6 speed manual unit on both the variants while the Supersport S gets an additional Quick shifter. The fuelling is done by EFI with large 53mm throttle bodies which is controlled by a ride by wire system. The clutch is a wet multiplate mechanically operated unit with slipper action on over-run.

ENGINE AND PERFORMANCE



SUPERSPORT

New
Crankcase
Cylinder heads
Generator cover
External coils
Ride by Wire system



937 cc Testastretta 11°

Displacement
937 cc

Bore x Stroke
94 x 67.5 mm

Compression ratio
12.6± 0.5 :1

Throttle body
Ø 53 mm/2 in



ELECTRONIC PACKAGE

The Supersport and Supersport S comes with numerous electronic rider aids which includes three different riding modes viz. Sport, touring and Urban, Bosch 9MP ABS and multi level Ducati traction control system. The Supersport S has some more racing oriented rider aids that includes a fully adjustable Öhlins suspension and Ducati up/down Quick shifter. These two are available as accessories for the base variant Supersport as well.



BRAKES, CHASSIS AND SUSPENSION

The bike has a tubular steel trellis frame with the engine as its stress member. The base variant has a fully adjustable 43mm USD Marzocchi forks up front and a progressive linkage with adjustable Sachs monoshock at the rear. The Supersport S comes shod with fully adjustable 48mm USD Öhlins forks at the front and fully adjustable Öhlins monoshock at the rear end. Braking duties are carried out by two 320mm semi floating discs with radially mounted 4 piston Brembo M4-32 calipers. The rear is equipped with a single 245mm disc and a 2 piston caliper.



FINAL IMPRESSION

The Ducati Supersport and Supersport S sits just below the Panigale 959 in India. The new motorcycles are a great addition to the Indian line up as they lock horns against Kawasaki Ninja 1000 and the Suzuki GSX-S1000F. The Ducati Supersport and Supersport S are priced at Rs. 12,08,000 INR and Rs. 13,39,000 INR (ex-showroom India) respectively.

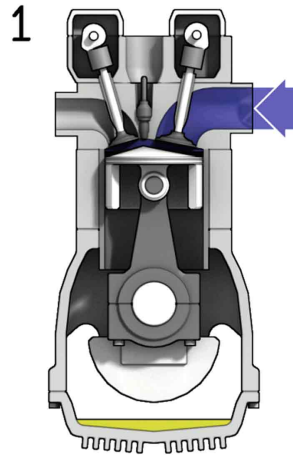
Difference Between 4 Stroke And 2 Stroke Petrol Engines

We all are well aware that the world has moved on from the old school 2 strokes to modern 4 stroke machines. The reasons behind it are vastly due to fuel efficiency and cleaner emissions at the cost of outright power. The power factor is the most important advantage of two stroke engines, as there is one power stroke for each cycle whereas the 4 stroke counterpart produces one power stroke in each cycle. The cycle followed by 2 and 4 stroke engines are entirely different and that makes the reason behind this write up. What follows is a detailed differentiation between the two engines.

The Engine Cycles

Before coming to the cycles of 2 and 4 stroke engines it is important to know about the working of the actual engines. Below are the two models of both engines shown.

A four stroke petrol engine-

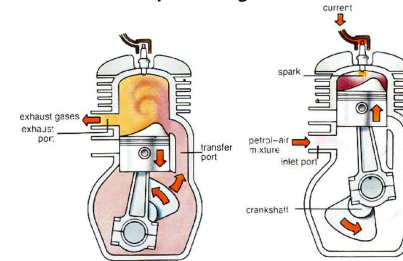


A four stroke engine is based on the Otto cycle. According to the Otto cycle, the four strokes which make one cycle is as follows.

- * Stroke 1 - Intake (Piston moves from up to down).
- * Stroke 2 - Compression (Piston moves down to up).
- * Stroke 3 - Power (Spark plug works in this stroke. Piston moves from up to down).
- * Stroke 4 - Exhaust (Piston moves down to up).

The valves open and close accordingly to the position of the piston. The intake valve/valves open during the stroke 1 and exhaust valve/valves open during stroke 4. The valves remain closed during the compression and power strokes. The valves are operated by using a timing chain and rocker arms.

A two stroke petrol engine-



As the name suggests, these engines perform intake, compression, power and exhaust strokes in just two stroke of the piston, i.e; in one full rotation of the crankshaft.

- * Stroke 1 - End of combustion and beginning of compression happens together.
- * Stroke 2 - Intake and exhaust occurs simultaneously.

This cycle is achieved by using three ports on the cylinder instead of having valves on the engine head. The piston is also uniquely designed in such a way that it helps the internal process. The inlet port gets the fuel mixture from the carburetor while the exhaust port releases the combusted exhaust gases. The third port is unique and is placed on the same level as the exhaust port at the bottom dead center (the maximum possible downward position the piston could reach).

A two stroke Honda NSR500 used by Mick Doohan in Premier class racing.



Environmental Pollution

The first and foremost problem with two stroke engines is that it produces a large amount of carbon emissions through the exhaust. This is because of the mixing of fresh air fuel mixture in the exhaust gases. And that's the reason why two stroke machines produce a white fume of smoke. This partial amount of fuel getting mixed with the exhaust gases is ungovernable in most cases, which is the reason why 2 strokes are inefficient. That's why the world has moved on to much environment friendly 4 stroke engines, at a cost of having monstrous powerful engines.

During the first stroke, the end of combustion takes place followed by the beginning of compression. On the next stroke, intake and exhaust occur simultaneously. Instead of having actual valves, the piston itself acts like a valve by sliding over the appropriate ports over each stroke. The transfer ports move the fresh fuel mixture to the combustion chamber and also helps in the process of scavenging. The 2 stroke racing engines need to have a unique exhaust design in order to achieve the maximum scavenging possible, where the pipe has an expansion chamber before exhausting the gases. Looking at the picture below would make you clear regarding the internal ports.

By: Aravind Rb

Disadvantages Of Motorcycle Carbon Disc Brakes



It'd be very cliché to start this article with the saying "Every cloud has a silver lining". So we'll try to begin this with a different saying "different strokes for different folks", only the difference is the strokes here are types of brakes and the folks are the different kinds of riders. As the title, in this article, we are going to talk about why carbon brakes are not particularly useful in everyday life.

How Carbon Disc Brakes Came Into Existence

The only thing that comes to mind when we hear the word carbon fibers are body panels in a car or a bike, something which is lightweight and very strong. For years the racing industries have used carbon-carbon brakes and have achieved superb performance. The weight of the material becomes a really big factor in choosing it as a go to material for increased performance along with its high tensile strength and excellent heat tolerance.

The aviation industry was the first one to use carbon on carbon brakes, particularly for the military and later for commercial air crafts. The presence of carbon brakes resulted in a substantial reduction in rolling weight, which gave better fuel economy. The high heat tolerance coupled with their unbeatable service life justified the carbon brakes in this case. Later, carbon-carbon brakes would make its way into the racing starting from early 90's in Moto GP.

People naturally thought that these brakes can bring a 300-ton plane to a halt then it can surely stop a motorcycle very effectively.

So that's why today we have fairly sophisticated carbon disc brakes, which can easily be found in several, track only motorcycles. As even after all this time these brakes haven't made their way onto our everyday naked or sports bike. So let's see why.

Disadvantages Of Carbon Disc Brakes

- They are super costly, a full braking setup of carbon brakes with 4 brake pads can set you back a couple of grand easily (in dollars) that coupled with the fact that they won't last very long is the reason they haven't made their way outside the track. Though the carbon in its raw material form is very cheap it's the continuous processing which increases the cost so much.
- The life of the carbon brakes depends upon the brakes' application unlike steel, whose life depends on the amount of kinetic energy they absorb, the weight of the bike and the degree of braking application.
- The wear on the carbon disc brakes will be more with a number of short small brakes' application rather than one big application, and in the real world's stop and go traffic they will be a disaster.
- The ability of the carbon brakes to tolerate a huge amount of heat isn't actually used on normal roads as the temperature at which the normal disc brakes start glowing faint red/orange at 480 degrees Celsius. When it turns bright orange, it is at the temperature of 932.22 degree Celsius.

Everyday vehicles hardly go so fast such that their brakes reach a temperature of 400 degree Celsius and for carbon rotors this is the normal operating temperature at which they give peak performance, they get stronger as they are heated which may sound really awesome on paper but in reality achieving this kind of heat in the brakes continuously is not possible. I said continuously because of its one-quarter the density of steel which means it cools much quicker than steel.

Conclusion

Carbon has its own charms there is no denying that but in the mass production market of today's motorcycle industry, people want the best bang for their buck. In a country like India we still expect from bikes like Dominar 400 and RC 390 to

give us a good fuel economy, I am not saying that it's a bad thing, in fact if it were not for the Indian audiences' demand of better mileage with superb performance then countries like Columbia and Malaysia would never even get to see brands like Pulsar or the Apache.

But the carbon disc brakes

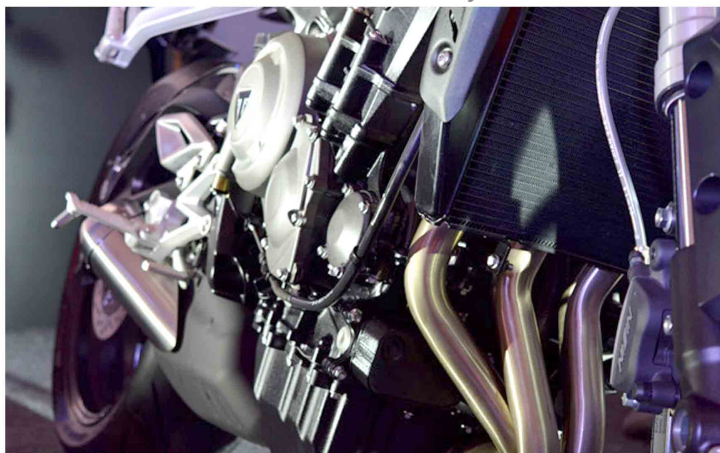
are on the far side of the spectrum

where they very often change their rotors while we hardly change brake pads. Still, we Indian will find a way around this too as we have made bikes which can go 170 km/hr even though their cost is below Rs.1.5 lakh and that's no easy feat.

It all started in old grand days when motorcycle engines had carburetors; a kick-start to fire up the engine, turning a couple screws gives a noticeable performance gains. Today, in this modern era where Fuel Injection System has taken over good old Carburetors, the power delivery is managed by Engine Control Unit (ECU) that electronically controls a series of actuators on an internal combustion engine to ensure optimal engine performance.

Motorcycle ECU Remapping

All you need to know



ECU Programming

Just like carburetor tuning, this is not an easy process. ECU tuning is an art of cracking the factory restrictions and making it better, which is something similar to jail breaking/rooting a Smartphone and enhancing its performance. The greater the RPM, more the ignition timing would advance. Programming an ECU is removing things like low RPM power restrictions, closed loop fuel maps, errors when upgrading parts and a plenty of other options.

ECU's chip stores programs as maps that controls the injectors on factors such as how much fuel to supply, when to fire the spark plugs, also monitoring every possible aspect involved in running of an engine. With the default factory settings, the ECU is setup for use with balanced performance and fuel economy; by remapping the ECU, we can make an engine run more efficiently or create more power by increasing efficiency of the engine.

Throttle restrictions are removed and this gives a considerable power gain in lower gears. Timing retard is also removed to make engine rev faster. But, the most important parameter is to find the proper ignition timing and air/fuel ratio at every rpm. Also, it is not just about smoothness and power, in some cases the rider may opt for a better fuel economy.

Just like our PC has software (drivers), which controls the computer hardware (DVD Drive, Speakers, Graphic cards, etc), an ECU also has a piece of "software" or program loaded into it, which controls the hardware components of an engine, this program is often referred to as a MAP. Although a map file extracted from an ECU will actually contain several maps, Eg. Boost map, Fuel pressure map, Injection quantity map, lambda map, etc, which we will address in the later part of this article.

Understanding ECU Maps



For the engine to run, it will need a Quantity of fuel injected at a time when adequate amount of air is available for the fuel to burn. This leaves the Engine ECU with number of parameters to consider:

1. Rider requirement
2. Amount of air available
3. Engine temperature
4. Intake air temperature
5. Fuel temperature

So, the ECU needs maps to decide on:

1. Injection quantity as requested by the accelerator
2. Injection duration as calculated from the injection quantity
3. Injection start as calculated from the duration

Technical jargon involved in ECU remapping:

- OBD – On Board Diagnostic
- MIL – Malfunction Indication Light
- DTC – Diagnostic Trouble Codes
- BDM – Background Debug Menu
- MCU - Micro Controller

Difference between Chipping and Remapping

Chipping is an outdated version of remapping. In past, we would program a new chip and solder it inside the ECU to replace the current chip, as this would have new characteristics when added to it. Today, we simply remap or reprogram the ECU's chip in our motorcycle without replacing it. This is mostly done via the vehicle ODB port (On Board Diagnostic port). The factory settings are first backed up and then replaced with the custom-made performance data.

How To Remap An ECU

The ECU is removed from the motorcycle and connected to a programmer using a diagnostic cable. The remapping software is installed in a laptop. The software allows access to the programming in the ECU and by changing the field options we can change how the ECU carries out its instructions.

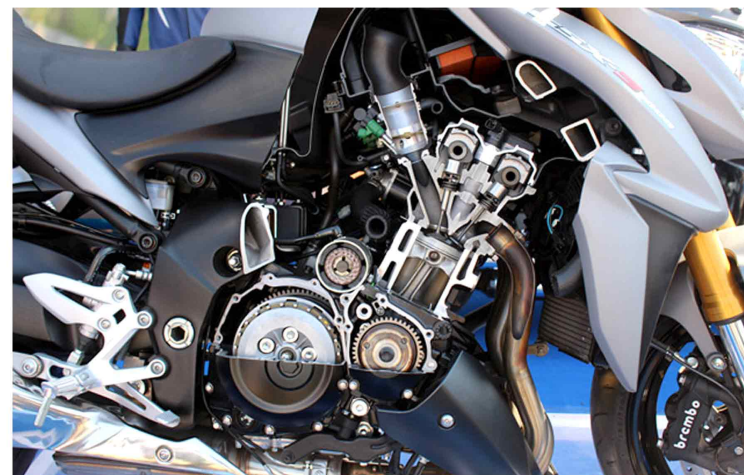
We can access the entire ECU management program, which are the important parameters in delivering performance:

- Access to top speed limiter
- Idle speed can be increased/decreased
- Rev limits can be increased
- Access to Fuel & ignition maps
- Eliminate factory throttle restrictions
- Injector phase adjustment
- Eliminate Fuel cut off (Deceleration)
- Access to top speed limiter
- Idle speed can be increased/decreased
- Rev limits can be increased
- Access to Fuel & ignition maps
- Eliminate factory throttle restrictions
- Injector phase adjustment
- Eliminate Fuel cut off (Deceleration)

ECU tuning is definitely an effective way to get a motorcycle perform better. Remapping an ECU will result in about 10–15% increase in power and 15–20% increase in torque than a factory-tuned ECU. Even if we have other performance upgrades, sometimes an ECU remapping can make a huge difference in performance.

Effects Of ECU Remapping

If the motorcycle is ridden in an enthusiastic way after the remap has been done, then the fuel economy will not increase (and in some cases may decrease). If, however, the rider modifies their riding style to make the most of the increased power and torque throughout the rev range then fuel economy can be optimized. A good example of this could be that the improvement in torque produced by the engine after remapping means the rider no longer has to downshift to maintain speed on an incline or may not have to change gear as frequently in traffic conditions. All these things add up to an improvement in fuel economy.



Pros-

- Remove restricted throttle opening
- Remove factory time retard
- Improve throttle response throughout the rev range
- Increase RPM limiter
- Remove top speed limiter
- Reduce excessive engine braking
- Improved engine tractability

Cons-

- Warranty void
- Added power can cause failure of parts
- Engine damage from improper parameters i.e detonation, knock, too lean, too rich etc.
- Lowered fuel consumption in some cases
- Increased emission levels
- Engine overheating
- Reduced resale value of the vehicle

Why Don't Manufacturers Do It?

Manufacturers generally sell a vehicle that covers various markets, with different tax and emission regulations; different climatic conditions; different fuel ratings; different operating altitudes, etc. A manufacturer has to take all these factors into consideration and make substantial compromises in the vehicle operation.

Summing It Up

There are several things we need to bear in mind about getting the ECU remapped. Extra performance is not the only thing we can get from a map. The economy of the bike can often be increased as well, but it depends on how the motorcycle is ridden. Many people feel it is a worthwhile upgrade, but we will have to weigh the pros and cons ourselves. I hope you guys understand it better.

Ducati Desmosedici Stradale V4 Engine



An Insight

What is a V4? It's a type of engine consisting of 4 cylinders in a V shape. You may have heard about the Parallel Twin on Yamaha's R3. They work their magic in a phenomenal way but coming to the MotoGP, You need something more than good old' magic. You need something evil. You need witchcraft and that is what actually this Engine is, the all new Ducati Desmosedici Stradale V4. Just the name of this thing makes it sound like the big monster created by an insane scientist.

Engine Specs and their Translation

- **1,103 cc 4-cylinder 90-degree V4, rearward by 42 degrees.**

Translation- Larger Engine capacity. The 90 degree V4 configuration makes the engine compact and provides better mass centralization. This optimization of weight results in the installation of large radiators and forward focused swingarm pivots.

- **Compression ratio 14:1**

Translation- Higher the Compression Ratio greater is the power produced by the engine. Higher compression ratios place the fuel and the air into a small area, combining it with adiabatic heat generated from compression, resulting in greater evaporation and mixing of the fuel droplets in the combustion chamber.

- **Power > 210 HP @ 13,000 RPM and Torque>120 NM @ 8,750 to 12,250 RPM.**

Translation- "Our Yamaha will never go as quick on a straight as the Ducati!" quoted Valentino Rossi in the 2007 MotoGP season about "GP7" an earlier generation Desmosedici engine. So you can only imagine how fast the new engine will be.

- **Counter-rotating Crank shaft**

This opposite rotating motorcycle component decreases the gyroscopic effect as the heavy crankshaft doesn't act upwards, which in turn prevent the power wheelies and also helps in improved handling and an aid in quick direction.

- **Twin Pulse firing sequence, crank pins offset at 70 degree**

Translation- This means that the twin cylinder stroke at the same time, same as that on Desmosedici GP, this sequence gives Desmodici Stradale a unique signature sound. Twin pulse also generates easy to handle power delivery and optimizes out of the corner traction.

- **Variable height air Intake horns and injectors**

Translation- Proper air intake across the rev range results in improved power delivery and handling. Oval throttle bodies consist of two injectors; one above the butterfly and one below it, this completes the fueling system.



Other specs include:

- Bore X stroke 81 x 53.5 mm
- EURO 4 emission norms
- DOHC with 4 Valves per cylinder
- Wet multi-plate clutch
- Semi-dry sump lubrication with four oil pumps
- 6-Speed gear box with DQS up/down system
- 24,000 km "Desmo-service" maintenance interval

The engine weighs in at just 64.9 kg; Desmosedici Stradale is just 2.2 kg heavier than super Quadro twin which has a cubic capacity of 1285 cc. The origin of this engine has its roots in the soul Ducatis of V4 MotoGP engine. The dimension and the geometry of its cylinder heads are identical in both the GP version and this engine.

The forward pivoted swingarm also means that the engine has been designed as a structural chassis element. The upper crankcase and rear cylinder bank head of the main frame incorporate attachment points. The function of the crank case also includes acting as a rear suspension and swingarm attachment points.

History behind the Revs

The story goes that many years ago Ducati abandoned the Grand Prix completely as the 500cc class consisted only 2-Stroke motorcycles whose spot was removed from the company's stable long ago. In 2002, Rules changed, 4-stroke machinery was introduced this was the chance when for the company which was eagerly waiting for a comeback in the game.

Initially the company thought of creating a 'Super Twin', as it was an advantage over 3,4, or 6 cylinder bikes because of weight reduction but in order to produce more than 230 HP the engine had to be revved really high @ 17,000 RPM (Approx) giving the rise to the requirement of a very short stroke and a very large bore. This would be a problem in combustion.

Enter the Desmosedici engine, where the Desmosedici, an Italian word translates into Desmodromic distribution with sixteen valves. As there are four Cylinders with 4 Valves per cylinder and 2 of those cylinders together on one side making a V design with the other two cylinders. The Desmosedici Stradale is derived from the Ducati Desmosedici GP. This is the brief history of how that revolutionary engine came to be which in turn gave a birth to Stradale V4.

The bike was revealed at Mugello during Italian GP, and then subsequent seasons starting from 2003 to all the way to 2016 saw regular improvement on the bike but the surprise came in 2004 when Ducati announced that a low volume race replica (RR) version will be made whose reservations will begin in June 2006. This was the first time when a true MotoGP bike will be made with all the necessary safety features to be driven on public roads. The bike came to be known as Desmosedici RR which had a top speed of 188 mph.

In the 2007 MotoGP rules were changed to cap the maximum displacement in motors to 800cc. Ducati made the GP7 bike in response which had 4 cylinders, 225 HP, and a top speed north of 330 km/h. GP8 saw an improvement in the improved mid and top range.

The next big change came about in 2010 which introduced the "BIG-BANG firing order" which refers to the design of the engine resulting in the power strokes occurring simultaneously or in very close succession.

MotoGP rules were again changed in 2012 to which Ducati responded by making engine capacity to 1000 cc later In 2016, the GP16 bike was introduced by Ducati which till that date was again the fastest one in a straight line. The liquid-cooled, 90-degree V4, 4 strokes with 16-valves Desmodromic DOHC did its job exceptionally well as a result in the 10th round of the season in Austria, Ducati dominated all of the sessions.

Final Thoughts

So to summarise what the big deal about Stradale V4 engine is that it helped Ducati to stay at the top of the game through many seasons in MotoGP, it proved to faster every other bike on the track and it is feared even by The Valentino Rossi himself. To achieve even a single of the above-mentioned tasks is an astoundingly difficult feat. But Ducati has done it in the form of Ducati Panigale V4 and now the ultra-rich among you will get a chance to feel that rich MotoGP heritage comprising of enough power and torque to pass any hypercar you see on the road when it is finally unveiled at EICMA show in Milan in November.

So for the things related to bikes and upcoming EICMA, stay tuned to BikesMedia.

Steelbird Launches "SBA-2" Helmets



Steelbird Hi-tech India Limited, takes a step forward with the "SBA-2 helmets" designed especially for the ultra protection of the raiders. The biggest selling point of this helmet is its visor. The SBA-2 boasts one of the longest visors in the industry.

The model is designed in Italy, synergizing superior quality and effective performance where in it also meets the European standards. The helmet is available in exciting and vibrant decals designed by the famous Bargy Design in Italy.

The interiors utilize advance air-ventilation system to keep fresh during the long rides and hot weather. The EPS is in two parts with air channels for the ventilation. The air ventilation system facilitates ample airflow and circulation inside the helmet hence allowing the riders to enjoy the ride with maximum comfort; SBA-2 also has a special Stainless Steel mesh at the back vent of the helmet.

The visor is iridium coated and is available in 4 colors which are Gold, Blue, Rainbow and Silver. The visor also has a locking system to lock properly when completely down. Furthermore, for enhanced safety of the riders, SBA-2 also offers the options of three layers of protection which is visor, mouth guard and chin guard EPS.

Riders have a three non- painted colour options to choose from which are Red, white and Black. Making the selection horizon more exciting there is also hand painted 3 tone Flag option available as well. Additionally the model is available in Glossy/Matt colours too which are Matt Black, Glossy Black, Matt Silver, Matt Maroon, Matt Desert Storm, Matt Battle green, Matt Yamaha Blue, Matt Sports Red, and Matt Honda Grey. So the riders will surely be spoiled with choices.

Priced at starting from INR 2399 to 2699 SBA-2 model is extremely pocket friendly and is available at all Steelbird outlets and on steelbirdhelmet.com.



SBA-2 model has the longest visor in the helmet industry it ensures more safety for the riders. The model meets European standards. It offers utmost protection and is the most compact helmet in the world. The model is available in exciting and vibrant decals designed by the famous Bargy Design in Italy. SBA-2 is surely an amalgamation of style and world class safety standards.

says Mr. Shailendra Jain,
Global Group Head - Sales &
Marketing, Steelbird Helmets.

BikesMedia

Everything About Two Wheelers