

Moto and motors

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Street **motor motorcycle**, vehicle to two or three wheels for the transport of persons and goods. As the automobile has had origin from carrozze on which has been mounted to you **motor** to vapor or explosion, therefore the first **moto** (without **fairing bodywork**) nacquero from bicycles and tricycles equips you of **motor**. Such application was tried in the 1885 from Daimler with insufficient result; of the same year it is the tricycle to vapor De Dion-Bouton and Trepardoux; in the 1887 Félix Millet costruì a tricycle to two places equipped with rotating **motor** to star to five cylinders, junior clerk directly on the axis of the front wheel; the same Millet in 1893 mounted its **radial engine** to the posterior wheel of a bicycle, realizing così a vehicle that already was approached remarkably the modern motorcycle; its power was of approximately 3 HP to 180 turns to the first minute: the explosive mixture was ignited from one spark electrical worker produced from a device to coil of induction, invented anch'esso from Millet; the electricity generator was one battery to sulfuric acid; the lubrication oil fell to drops in the tube that carried the explosive mixture to the center of the drive wheel; the oil distributed to così in all the organs; the brake was to retropedale. The **moto** of Millet participated to one of the first race automotive: Paris-Bordeaux.

From that moment little the problems were little resolved several in order to reach the modern **motor**, by now exclusively moved from a **internal-combustion engine**; they were studied the position of the **motor** and the transmission, was introduced the change of speed, was adopted the elastic staples and equips the vehicles to you with brakes to expansion.

Main types of modern **motorcycles**. The **motorcycle** is a bicycle that has endured light mechanical modifications and on which it has been mounted an auxiliary **motor**; it differs structurally from the traditional bicycle in how much often is equipped of shocks-absorber, of pneumatici to us to increased section, wider and comfortable saddleback and sturdier chassis; the transmission of the moto happens to chain or by means of loyal seam with the **motor** and that it drags for friction on the tire the posterior wheel (the connection rulloruota can be melted setting in action a lever and the vehicle can così be used as one common bicycle). The **ciclomotori** can be with **fairing bodywork** or without **fairing bodywork**, it equips you of change and clutch or automatic clutch or of shifter automatic rifle of speed. The **ciclomotore** has rolled of approximately 50 cm³ and catches up advanced speeds also to the 50 km/h.



The **motor scooter** is a particular type of **moto**, of easier and sure use. It has in fact an open chassis and low wheels, that it facilitates the climb and the reduction from the vehicle; completely it is careened and fortified of front shield fender; the commandos are re-united on the handle-bar and solo the posterior brake is to pedal; it is equipped of **motor** to 2 times of piston displacement until to 200 cm³ normally and can catch up advanced speeds to the 100 km/h.

The **motorcycle** (the **motor** for excellence with **fairing bodywork** or without **fairing bodywork**) is equipped of these main characteristics: chassis in metallic tubes or printed publication sheet; fortified high wheels pneumatici actions to us sopportare high speed and remarkable sollecitazioni; complex suspension-shocks-absorber particularly cured in order to guarantee one held of road adapted to the performances of the vehicle; change of march with commando to pedal; tank of the fuel between saddleback and steering. Endowed E' of **motor** to 2 or 4 times with piston displacement that in the greater part of the cases varied from 125 to 500 cm³; come but constructed also **motorcycles** with piston displacement of beyond 1000 cm³.

To the **motorcycle** a carrozzino can be placed side by side, with aerodynamic sagomatura, and fortified of an equal wheel to that one of the **motorcycle** that rests on the opposite side to that one of attack.

The **three-wheeler van** and the **van** are vehicles to three wheels composed from a **motorcycle** lacking in posterior wheel and suspension, to whose truncated chassis comes applied cassone or a closed van fortified of two wheels with axle shafts, differentiate them, transmission with cardanic tree and suspensions of automotive type; a vehicle for transport is obtained così goods of capacity until to 15 q, limited cost and with good dowries of maneuverability, adapted especially for the shunting of light necks in the city; small three-wheeler vans and vans are obtained using in place of the **motorcycle** the **motor scooter**.

The **moto** (with **fairing bodywork** or without **fairing bodywork**) is composed of chassis and organs of suspension, **motor** with change of speed and organs of transmission, steering, arrange refraining comprising also the wheels, the tank of the fuel, the saddleback and organs accessories.

The part that more characterizes the **motor** and of it defines the category is the **motor** that, independently from the fact to be to 2 or 4 times, can be mono or pluricilindrico. This last one, from 2-3-4 cylinders, is a balanced



motor more than that single cylinder one: transmitting little vibrations it gives a comfort of advanced march. The typical **motor** from **moto** to 2 or 4 times has been in order much time the monocylinder, than still today it enjoys several favors for its certain dowries constructive semplicità and facility of maintenance. The power is in relation to the piston displacement, the compression ratio (volume of cilindro+ volume of the combustion chamber/the chamber volume of explosion) and to the number of the turns to the first minute. With a high compression ratio the power is elevated but the **motor** turns out little elastic and needs of a change more relationships. Generally the varied compression ratio from 6 to for the **motors** of tourist and sport use, until 13 and more for the **motors** from competition.

A subdivision for the 2 and 4 times can hold account of the disposition and the number of the cylinders: vertical **motors** mono and pluricilindrici or leggermente tilt to you in ahead; mono and horizontal pluricilindrici; bicylindrical contrapposti; bicylindrical to V with the driving-axle parallel to the axes of the wheels; bicylindrical to V with longitudinal driving-axle.

The **internal-combustion engine** is cooled for tradition to the direct wind of the race or to air forced on the superficial of the cylinders, like in the **motorscooters** and the **ciclomotori**. The cooling to water, revealed in passed much complex, returns to be taken in consideration in particular for the **motors** to 2 times from competition.

The transmission of the movement from the **motor** to the drive wheel happens with a series of mechanical devices that are in the order: the primary chain, that it connects the **motor** to the clutch; the group clutch, that it transmits the movement to the change of speed; the change, than with its relationships allows to take advantage of the power of the **motor**; the secondary chain, that it transmits the **moto to the** posterior wheel. The primary chain can be replaced from a brace of gears when the axes of the **motor** and the clutch are a lot draw near to you. The clutch is nearly always of the type to multiple discs; in the **ciclomotori** it can be also automatic. The change of speed, to gears in oil bath, realizes from 2 to 5 speeds according to the type of **motorcycle**. The secondary chain or engine can be replaced from a system of tree with cardanic joints.

The chassis is the complex of tubes and attices that, with the front staple and forcellone the posterior oscillating, gives to stability and consistency to the **moto**; it can come realized also in printed publication sheet. The front and posterior suspensions are today always of the type to Coil spring with shock-absorber to simple or double effect. The steering, of the type to handle-bar, door several the organs of commando: the skillful grip handle commands for spin the opening of the valve of feeding of the carburetor; the skillful staple lever commands, by means of flexible cable, the front brake; the correspondent left lever sets in action the clutch. The push-buttons of the acoustic announcer and the commutator of the lights are had moreover.

The **motorscooters** they are equips you of rotary left grip handle for the commando of the change of speed: such operation comes executed with the same hand that sets in action the clutch. In the greater part of the **motorcycles** the maneuver of the change is commant instead from a pedal. The brakes can be to drum or disc; first they have ganasce to expansion and, second the use which the **moto** is destined, they can vary from simplest with a single plate portaceppi, until most complex with 2 plates and 2 cams of commando for plate. They are directly commands with one lever to you by hand the front one and a pedal to rigid means of flexible cable or of barretta the posterior one. The Disc brakes are to hydraulic commando and that concurs to multiply the effort exercised from the pilot: brakes do not lack to double disc with mechanical commando.

The **moto** has only wheels of type to beams with circles of steel or in light alloy; they are to full disc in the **motorscooters** and the **three-wheeler vans**. The tires are generally with striped outrider those front directional ones and design to small dowels variously sagomati and recorded those posterior ones. You there are then particular tires us second the employment which the **motor** is destined: for cross-country vehicle they are to large dowels rather adapted to make taken on muddy and unconnected lands; for speed they are with studied section so as to obtain an adequate one wrap of slanted **motor** support also. Characteristic of the **motor** it is however the employment of covers with different section on the two wheels for conferirgli a better adaptation to various cargos sopportare.

The tank of the fuel is placed to higher level of the carburetor having been the feeding for fall: an appropriate tap allows to close the feeding to **motor** detention.

The saddleback for or two persons is equipped of motivatings force or one covered layer of gommapiuma of skin or plastic.

The instrumentation of a **moto**, for space and weight reasons, is reduced to the essential thing: tachimetro, contagiri and, very rarely, ammeter. other accessories are the mudguards, the paragambe, the noise suppressor of drainage, the tubes of protection in order protect **motor** and pilot in fall case, fairings and windshield of varied transparent type with the advanced one of various heights. The lighting system system is constituted of a front floodlight to three lights and of two posterior red lights (one marks it the braking of the **motor**): such lamps receive the current electrical worker to 6 or to 12 volts, from they fly magnet or from one battery.

While for the automobile the ignition to spinterogeno universal is employed from decades, on the **motor** one can be found greater variety of systems. Spinterogeno of outline a classic it is gone more and more diffusing, therefore like the alternator to the place of the dynamo. On the pluricilindrici **motors** it is preferred to mount one brace of contacts and one coil for every cylinder anzichè to rerun to the distributor with the rotary brush (cap).

For rolled lowlands and the 2 times it is used fly magnet-alternator: it is a directly mounted alternator on the drive shaft that takes advantage of as they fly the weight of magnets and incorporates also heads some platinate of the ruttore; the coil for high tension is allogata preferibilmente outside for sottrarla to the heat of the **motor**.

The experienced ignition electronic on some moto from race has been adopted recently also for some models of series (Kawasaki 500; 3 cylinders) and on some **ciclomotori**. E' scomparso the magnet in how much introduced the disadvantage not to work correctly to the high regimes of spin. The starter is executed setting in action an appropriate pedal with return motivating force; in particular it is stretched today to equip to the moto of large piston displacement of starter electrical worker of automotive type. Types with **dinamotore** do not lack however, that is apparatuses that work from current generators if places in spin (dynamo) or from **motor** if it feeds to you from the battery.

The carburetors from **moto** only differ from those automotive ones in some particular: the valve of feeding of the carburetor, as an example, is of the type to saracinesca anzichè to butterfly. Today carburetors to monoblock are used mount to you elastically; some manufacturer adopts carburetors to depression in which the movement of the valve it is put into effect for means of an sensitive membrane to the pressure variations that they are generated in the breaking in culvert. The feeding to injection is used alone on the **motors** from race for sidecars. The lubrication of the **motors** to 4 times happens like in the automobiles with a pump that sendes the oil in

pressure to the bench supports, to the crank buttons and therefore to the walls of the cylinder; appropriate pipages directly carry the oil to the axis to cams and the other organs of the distribution. The oil can be in the sottocoppa of **motor** Carter or in a separate tank (**motor** to dry Carter), typical of the English production. For the **motors** to 2 times the lubrication happens for means of the oil miscelato with the benzine (mixture). Of running use it has become the lubrication with oil pump to regulated variable capacity from the grip handle of the gas: the oil inhaled from an appropriate tank is sended under pressure to the bearings of bench, to the connecting rod and the walls of the cylinder.

The opening of the valves in the **motors** to 4 times is operated from one or more aces to disposed cams in the head or in the base of the **motor**. In this last case, most frequent for semplicità and economy, the valves are commant with system "to auctions and balances". The cams only supply at the opening of the valves in as far as the closing of the same ones are deputies the motivatings force, of concentrico type or to pin.

The commando of the axis or the aces to cams in head happens with one chain set in action from the drive shaft or, more very rarely, with one fallad of gears; more complex realizations do not lack less but dliffuse, like which a coaxial little tree with the cylinder and fortified of one adopts brace of helicoidal gears to the two ends. A realization much complex for the absolute precision demanded to the mechanism is a special commando of closing of the valves called "desmodromico" who consists in making to close the valves by means of a second cam.

[Suzuki Gsxr 600, Gsxr 750, Gsxr 1000](#)

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