

BRAKE SHOES

! It is lively recommended to carefully read this document in every part before beginning to work on the vehicle or the motor.

GENERAL INFORMATIONS

The motorbikes are equipped with an engine which has the function to give necessary power to move it winning the resistances at the motion and the inertias. They have also organs able to stop the motion or to hold it stopped, the brakes. The main function of the brakes is to stop a vehicle in motion, in a proportional space to its speed and its dimension, the stop space. Besides to stop vehicle, the brakes have the function to hold it in a stop position during its use. The energy that the vehicle has in the moment in which it is started the braking is transformed by brakes in heat and then dissipated in the atmosphere as air heating. The dissipation of the vehicle's energy during the braking causes high and fast overheatings in the parts of brakes and for this reason they have to be projected in order to resist in this extreme condition of work. The energy to dissipate depends from vehicle's dimensions and its squared speed and it can reach considerable values.

During the braking there is a transfer of weight from rear wheel to the front one, depending to vehicle's geometry, that is to say the height of the bary-centre and the pace, and the value of vehicle deceleration during the braking; for this reason the work that makes the front brake is greater than that of rear one and so its use, its importance and its dimensions are particularly important.

So, the braking system is an organ whose plan is strictly connected with vehicle's type and use.

The brakes that usually are mounted on motorbikes are two types: the brakes with cylinder and those with disc. In the past, all vehicles were equipped with brakes with cylinder. Now, the brake discs are on front wheel of about all vehicles while the brakes with cylinder are, some times, on rear wheel. On wheel it is possible mount one or two brake discs, it depends on performances required in braking.

In the braking system with cylinder, the braking is obtained by brake shoes, generally two, that are fixed to the vehicle's body through a shoes-holder and they are driven against a cylinder fixed on wheel by a mechanical control system.

So, the force that works on brake shoes is obtained by a mechanical with cam or hydraulic with piston control connected with brake lever placed on the handle-bar or near vehicle's foot-board. The force, in radial direction, that the brake shoes exert on the cylinder produces a tangential force to braking area of the cylinder that originates the braking couple on it to brake the vehicle's wheel by effect of friction.

The direction of braking couple that works on the disc is always opposite to spin speed of the cylinder. At the end of the braking, brake shoes return into their rest position by appropriate special keepings. The friction between the cylinder and the brake shoes

depends on the materials that make the braking area of cylinder and the work area of brake shoes. The first is made, generally, in steel while the second one with proper soles in special material, the friction material. The brake cylinder is generally made in pressure die-cast aluminium alloy in which is inserted a steel cylinder that is the braking area. The brake shoes are made with a pressure die-cast material in aluminium alloy on which is stucked the friction material with special adhesives for high temperatures.

The friction material is very particular, it's made by specialized firm as Adler SpA; it must have some peculiar characteristics: high and constant, when the use and environmental conditions change, friction coefficient, high usury resistance, high mechanical resistance, high thermic resistance and low heat's transmission coefficient; It has not to cause grippes on the disc's or cylinder's braking area. These materials are made, in general, by an organic matrix in which there are different components, each one has the function to assure the typical characteristics: fibres, powders, friction modifiers and special structural plastic resins for using in high temperatures. For more exasperated applications the friction material is made with metallic sinterized powders.

The plans of brakes and brake pads influence the drive safety and the vehicle performances. The choice of brake pads has to consider the model of vehicle in which they will be mounted.

! Use the type of brake shoes defined from the applicability table that can be found in the catalogue, on the pages of Web Site, www.adler.it, or demand it by e-mail at the address adige@adler.it.

ASSEMBLING INSTRUCTIONS

! The fitting and maintenance operations must be done exclusively by an authorized workshop.

The assembly of the brake shoes is generally an enough simple operation, it needs few minutes and it does not need of complex operations of preliminary disassembling.

The brake shoes' assembling and disassembling on the engine must be executed respecting all instructions and using all tools defined on the **Producer's Workshop Manual**.

It is advised to apply to a specialized mechanic for the assembling of brake shoes.

A wrong assembling of brake shoes can cause serious problems of drive safety and brake shoes' duration.

The braking area of cylinders must be in very good conditions and the internal diameter of cylinder must be smaller than the greatest value defined in the Producer's Workshop Manual. The braking area of cylinder in bad conditions or the internal diameter of cylinder too big can cause serious problems of drive safety and limit the braking performances.

If in the brake shoes' box there are some plates and/or fastening pivots of brake shoes, follow accurately the specific assembling instructions contained in the box.

The lack of use of plates and/or fastening pivots contained in the box can cause serious problems of drive safety and excessive fuel consumption.

If the original plates and/or the original fastening pivots of brake shoes are in a bad condition, it must replace them with items approved by vehicle producer. The non-replacement of plates and/or fastening pivots in a bad conditions can cause serious problems of drive safety and excessive/anomalous brake shoes consumption.

The replacement of brake shoes in the vehicle's brakes doesn't need generally the wheel's disassembling. In the case in which it is required during assembling of them it need verify the conditions of fastening nuts and washers, and lock up the wheel's fastening nuts, prescribed in the vehicle assembling instructions.

An use of damaged fastening nuts and washers or a wrong closing of the nuts can cause serious problems of drive safety.

The replacement of vehicle brake shoes need of a first moment of brakes use in less dangerous conditions in order to arrange brakes' work areas. The lack of this initial period can cause serious problems of drive safety and brake pads' duration.

Always replace brake disc in couple in the wheel. The replacement of only one can cause serious problems of drive safety and brake shoes' duration.

The replacement of brake shoes can need of a regulation of mechanical control system or the check of hydraulic control system liquid. The no-regulation or the no-check of control system can cause problems of drive safety or anomalous brake pads' usury.

The liquid of hydraulic brakes' control system must be replaced after the distances indicated in Vehicle Manual. The use of a due liquid can cause serious problems of drive safety.

The brakes and their components are items of vehicle safety and for this reason you have to keep them in perfect efficiency and control them before every use.

The brake shoes are mechanical organs exposed to strong temperature and mechanical solicitations.

It is very important to verify the condition of the brake shoes about every 5000 km or, however, every disassembling of the wheels or when the thickness of friction material is less than 2 mm. The presence of fissures and, in general, the bad condition of the brake disc can cause serious problems of drive safety and excessive fuel consumption.

GENERAL CAUTIONS

Before starting any maintenance or servicing on the vehicle, always follow a few general rules.

Make sure that the working place is clean, well aerated and perfectly lit.

Always switch the engine off before starting to work on the vehicle. Particularly, the engine must be switched off when operating in closed places without any exhaust gas vent system.

Lift the vehicle with a suitable equipment above a flat hard floor.

Always work in a clean area, wearing working clothes and safety garments or devices as prescribed by law. Keep off unauthorized persons, the young, particularly children.

Stop the engine, remove the key and wait for the engine and the exhaust system to cool to prevent burns. Pay attention to all engine or vehicle parts (i.e.: exhaust system, braking system) which may still be hot.

Pay the utmost attention to the presence of flames, heat sources or warm objects into the room: most of the liquids in the vehicle are generally highly inflammable.

Never swallow any vehicle or engine component or liquid. Particularly, liquids can be highly injurious or toxic.

Waste lubricant or components must be delivered only to the dedicated waste disposal centres; they must not be otherwise disposed of.

Always check that the packing is sealed and complete and there are no missing or damaged parts.

Always check the vehicle overall conditions before installing the brake pads.

It is specially recommended to always follow the instructions carefully for safety reasons. Any and every liability for any damage or injury to persons and/or property arising out of a wrong or inaccurate installation is hereby rejected. An improper use or the modification of the brake shoes, a wrong installation or the installation not in compliance with the prescribed instructions will automatically invalidate any product warranty.

The brake shoes are vehicle components for which homologation may be required according to the relevant laws in force.

The brake shoes are vehicle component subject to the approval of the vehicle manufacturer.

After the installation of the brake shoes the vehicle might require a new homologation.

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