# When does it spark?

# or why are Morinis so sensitive with their idle motion?

Perhaps one or other before has wondered himself, why, when he has to wait with his own Morini at the traffic lights, he only can keep her running by permanent turn round at the gas handle, while the buddy on your side keeping a Moto Guzzi V35 Imola, folds his arms and simply let run his engine by it's self? OK, Carburetor beaten out and valves are leaky, then won't go anything, but isn't the Guzzi just as old, does her carburetor isn't beaten out just the same way, hasn't she the same leaky valves and one very similar engine concept?

#### My answer: Most V35 have a contact ignition!

Wasn't it always said that Morinis were very modern with their electronic ignition, and the fifties and seventies technology shall be better now? At the selection of an igniting plant many aspects have to be taken into account. I'm thinking about things here on the one hand like igniting energy, trigger voltage or spark burning time also to wear and maintenance liberty on the other hand. However. I would like to confine myself consciously in this short article on the moment of ignition i.e. the adjustment of the moment of ignition at different revolutions per minute. In an earlier magazine Franz has explained in an extensive report the emergence of an igniting altering curve with the Pickups. To this has to be added that the igniting boxes witch are ordered under the tank also provide her contribution for the adjustment

The altering curves of different Pickups and igniting boxes have I measured with an order from an adjustable electromotor, a Pickup, an igniting box and a degree plate. At the disposal I had 3 red Pickups for the 3  $\frac{1}{2}$  with 6 fitting igniting boxes for them as well as 2 igniting boxes for the 500s 3 black Pickups with each 2 igniting boxes for 3  $\frac{1}{2}$  and 500. in addition The series spread of the single components under each other turned out little relative, what surely declares himself from that the matching igniting boxes are from the same motor-cycle and probably were manufactured in the same rank. Also the igniting offset of my Pickups was in the area of 70 to 73 degree what absolutely is to tolerate. More interesting is the comparison of the igniting altering curves of different igniting boxes with their accompanying Pickup.



While the igniting adjustments vary only little at high motor speeds, 3 1/2 curves are, as well known, 2 degrees earlier then 500s curves, are the deviations in the engine speed range of 1000 to 2000 U/min, so at the standgas immense. If you compare the moment of ignition in this revelution range, with the static moment of ignition of an contact ignition you will considerable deviations. The immense Guzzimotor is throttled down by an extremely late moment of ignition in the standgas while the stopscrews of the carburetorslides are relatively far revolved in to hold the engine running.

The Morini would like to go higher with it's revelution, because the early moment of ignition, so that the slide must hang very deeply to limit the standgas revolutions. Has the slide hit out the engine pulls her mixture beside the fluttering slide, once more and once less.

From diagram 1 is obvious that the altering curves of the ignitingboxes of newer 500s engines are just fundamentally lower in the standgas and partial burden area than all other boxes. In the practice I have that an engine with these boxes allow a fundamentally stabler neutral and a driving more pleasantly in the partial burden business.



It asks the question how an optimal gate characteristic can look. For starting a moment of ignition surely is of advantage near the upper Point. Here in the stand gas area, the engine must be choked by the ignition so that a late moment of ignition is rational like a contact ignition The partial burden area should have a harmonic transition to the full throttle area to run the engine more pleasantly and more softly. At the full throttle area, the early adjustment has to be limited, so that knocking and with that engine troubles are avoided. As nearer you will go to the knocking border, as higher will be the engine performance. If one exceeds her, it will give pieces of firewood. at the next exit of a freeway. A coming down of the ignition adjustment at high revolutions, as it is to be seen at the series ignition, , causes through the construction of the Pickups like Franz has described, and after my opinion, it's only to restrict the engine performance.

Furthermore a revelution limiter can protect the mechanics of the engine, if at hot curves with high revolutions, the gear suddenly gets lost.

All modern motor-cycles are equipped with a Digital ignition since these requirements on the igniting-altering-curve can be fulfilled of no contact ignition and of electronic analogous ignitions only with not acceptable effort.

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## Translated by Peter.

(Please excuse my English, but at least I hope you will find this article as interesting as i found it in German.)