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The **Casatronic Ducati** electronic ignition system is the new, replacement ignition for the previous system produced by IDM. **Ducati Energia** are world leaders in their field and the name is also synonymous with the Lambretta brand as they supplied most of the OE ignitions fitted as standard by Innocenti to their production scooters.

The **Casatronic Ducati** has been designed, tested, developed and prototyped as a joint collaboration between the engineers at **Rimini Lambretta Centre** and the technicians at **Ducati Energia**, on behalf of **Casa Lambretta**. After 2 years of development, the result is a fully digital, 12V electronic ignition kit with various mappings ready-installed into the (various) CDI units, thus offering you complete reliability, better performance, better lighting and all with the total assurance of quality that you associate with the two brands **Casa Lambretta** and **Ducati Energia**.

The principal advantages of the **Casatronic Ducati** ignition are as follows:

- 12V with a true 120W output. Solid lights are available even from very low revs
- AC and DC output
- digital system with variable advance
- single spark per rotation
- 12-pole stator plate
- internal pick-up
- CNC manufactured and balanced flywheel
- die-cast stator plate base
- die-cast fan
- incredibly easy to fit
- no setting of the ignition timing required
- plug 'n' play wiring connections
- European manufacture and quality
- choice of small or large cone flywheels
- choice of flywheel weights (2.2kg or 2.8kg)
- choice of CDI mappings between *Standard* or *Sport* (and *Race* version upon request)

What advantage does the Casatronic Ducati ignition offer over a system that produces 2 sparks per rotation?

Systems that produce two sparks must 'waste' one spark per revolution when used with a single cylinder engine and the power generated by the ignition is obtained from just half a rotation of the flywheel, which obviously limits the spark intensity. This can make engines seem to run much richer at low speeds and on partial throttle openings, although in reality this is simply due to the weaker spark produced at these engine revs. The **Casatronic Ducati** ignition produces a single spark using electrical power obtained from a full 360° degree engine revolution. This ignition is digital and not analogue; therefore the electrical signal is much more precise and consistent. **The end result is an engine that runs much cleaner right across the rev range, responds much faster and has much better lighting and power supply.**

What setting do I use for a SIP speedometer / rev counter?

The commonly used speedo / rev counters produced by SIP have a choice of various settings when installing. The setting you must use with a Casatronic Ducati ignition is 'P6'. The reason for this is that although the **Casatronic Ducati** ignition is 12 pole, the magnets of the flywheel cover two coils on the stator plate at any one time, so the '6 signals per rotation' ('P6') is the setting to use.



Which CDI should I choose?

There are two CDI units to choose from. The **Standard** CDI unit (Casa Lambretta part code X907, with the number '401135' stamped on the outside of the actual CDI) is the choice for all Lambretta scooters with a standard (i.e low revving) type engine. *This includes kits such as the 'Casa 185' or the 'BGM195', which are not high-revving when used with a 'Clubman' 'box' type exhaust.*

The **Sport** CDI unit (Casa Lambretta part code X908, with the number '401136' stamped on the outside of the actual CDI) is the choice for Lambretta scooters with a kitted (higher revving) engine, covering everything from a 'BGM 195' with an expansion chamber, to an 'Imola 186', to an 'RB250', through to a 'SST265 Touring' motor.

Example: if you have a 'BGM195 kit and a 'Clubman' 'box' type exhaust on your engine, you should choose the Standard type CDI, as the engine is not high revving. If on the other hand you had the same 'BGM 195' kit, but had an expansion chamber exhaust fitted - so consequently the engine will rev a lot higher - we advise you to choose the Sport CDI, as this is better suited to a higher revving engine (see the graph at the end of this File).

There is a third **Casatronic Ducati** ignition with a 1.4kg weight flywheel for use exclusively with the high powered 'SSR265 Scuderia' engines. The Casa Performance code for these Race ignition kits is X904. The special **Race** CDI is has the number '401137' stamped on the outside. These are available exclusively from Rimini Lambretta Centre, or from authorised Casa Performance dealers, upon request.

Why are the Casatronic Ducati flywheels balanced?

All Lambretta ignitions produced by IDM use flywheels that are not balanced. Balancing a flywheel makes an engine run much more smoothly, increases bearing and crankshaft life and makes a scooter much more pleasurable to ride. For these reasons all **Casatronic Ducati** flywheels are balanced.

Why don't I have to set the timing?

One of the biggest revelations of the **Casatronic Ducati** ignition system is not needing to set the timing. The reason is simple; all known large-frame Lambretta Series 1 LI, S2, S3, GP/DL, Serveta and new generation engine casings (CasaCase, Gran Turismo, UNI, misano etc.) have the position of the 3 x threaded holes for

the fixing bolts of the stator plate in the same place, in relation to where the crankshaft woodruff key is on the crank taper when in the Top Dead Centre ('TDC') position.

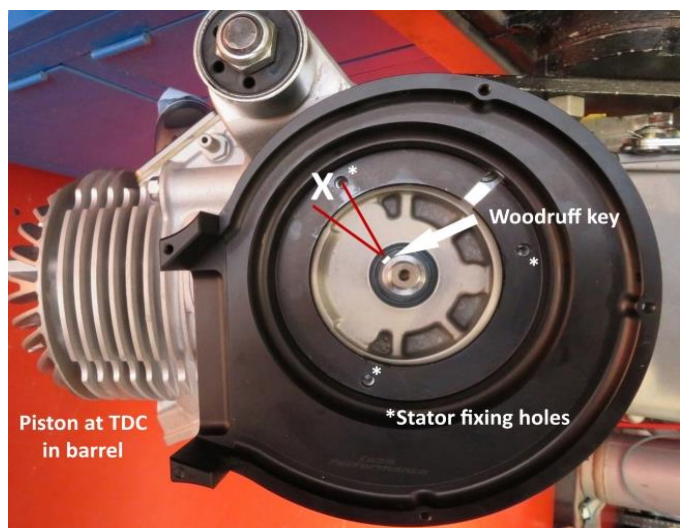
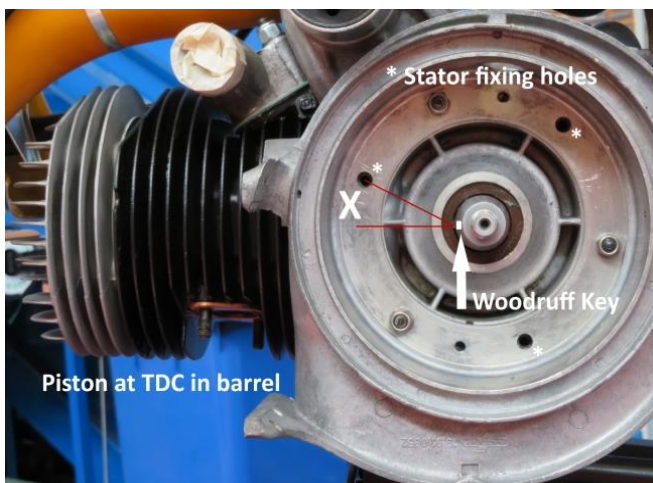
The trigger for the ignition within the actual **Casatronic Ducati** flywheel is always going to be in the same place, as its position in relation to the crankshaft is governed by the position of the woodruff key. Therefore the ignition firing point is always going to be at the same point in relation to the position of the piston at that moment.

Example: in the two photos below, there are two engines which are both at TDC.

In the photo of the Innocenti GP engine that has a standard crankshaft, at TDC the woodruff key is perfectly in alignment with the conrod pin. The 3 x threaded holes for the fixing bolts of the stator plate are a specific number of degrees in a clock-wise direction on every LI-series engine.

In the second pic is a **CasaCase** engine. These have the woodruff key on the crankshaft moved around 40° to the right compared to other engines. The 3 x threaded holes for the fixing bolts of the stator plate are also moved around to the right by 40°. Despite this, the alignment of the woodruff key in the TDC position in relation to the 3 x threaded holes for the fixing bolts of the stator plate is still 'X'.

Even though there are differences in position of the woodruff keys of the two engines, the correspondence of the trigger within the **Casatronic Ducati** flywheel, in relation to the position of the pick-up on the stator plate, will be exactly the same.



CASATRONIC DUCATI FITTING INSTRUCTIONS



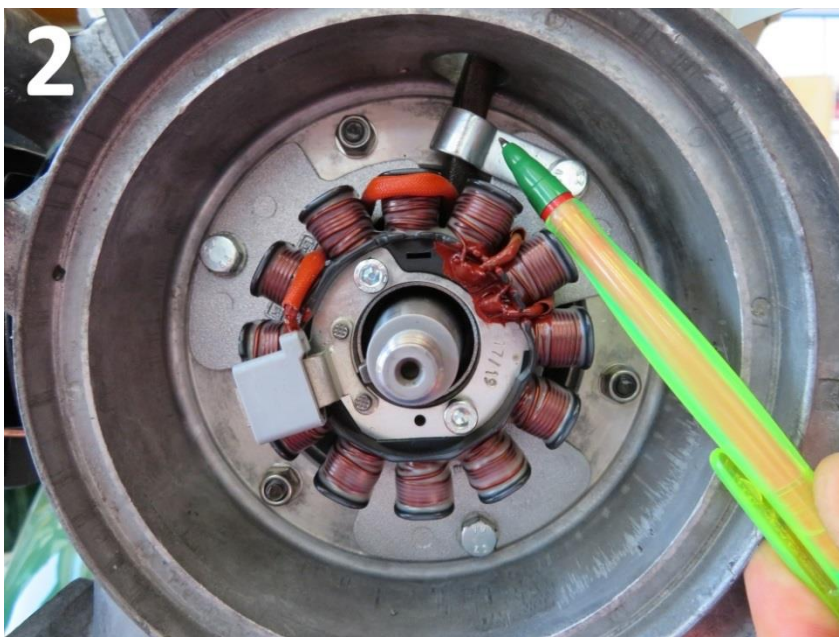
Unpack your **Casatronic Ducati** ignition system. The parts contained within the kit are:

- Flywheel
- Stator plate
- CDI
- Voltage regulator (with both AC and DC outputs)
- 2 x mounting brackets for CDI and voltage regulator
- Wiring harness
- Flywheel holding tool
- HT lead
- Cooling fan
- LT wires fixing plate
- Flywheel nut and washer
- Fasteners and hardware

Remove your old ignition, if fitted, and thoroughly clean the entire area with a suitable detergent, such as brake cleaner. Carefully check all visible components are in perfectly serviceable condition. Particular attention must be given to the condition of the crankshaft taper and the seat of woodruff key. If they are not in perfect condition, repair or replace them.



1) Insert stator plate wiring through the hole in the magneto flange as per **Pic. 1**.



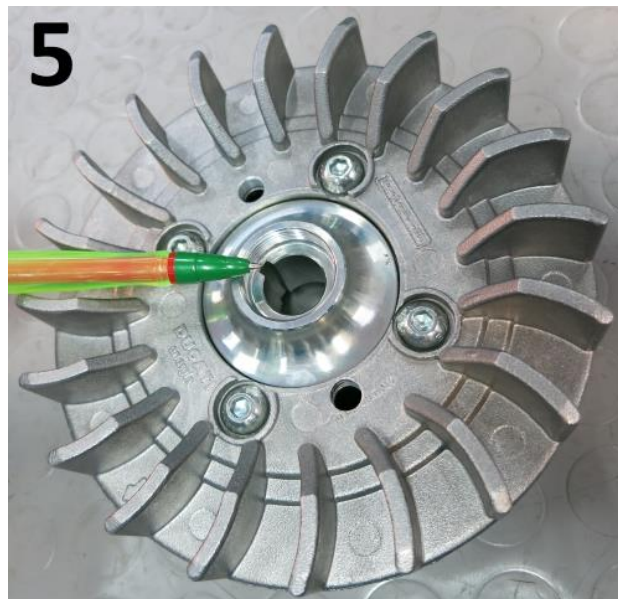
2) Fix the stator plate using the original 3 bolts and washers. Attention must be given to the wiring retaining plate to ensure that it does not damage the sleeving. See **Pic. 2**.



3) Insert the LT wires fixing plate into the grooved recess of the rubber bung as per **Pic. 3**.



4) Fix the plate to the magneto housing using the original 4mm screws and washers as per **Pic. 4**.



5) The woodruff key must be aligned with the recess in the flywheel as indicated in **Pic. 5** when inserting the flywheel onto the crankshaft taper.



6) Fit the washer and the nut to the crankshaft, as per **Pic. 6**. *Remember this has a left-hand thread!*



7) Using the special tool to block the flywheel, tighten the nut to **68Nm (50lbs-ft)**, as per **Pic. 7**.



8) The **Casatronic Ducati** ignition comes supplied with a separate, small wiring harness with simple, push-in waterproof connectors to connect up the stator plate directly to both the regulator and the CDI unit.



9) The round connector plug from the stator plate has corresponding holes for the pins of the supplied wiring harness, as can be seen in **Pic. 9**. There is also a groove external recess so it is literally impossible to misalign.



10) Connect the two plugs together as per **Pic. 10**.



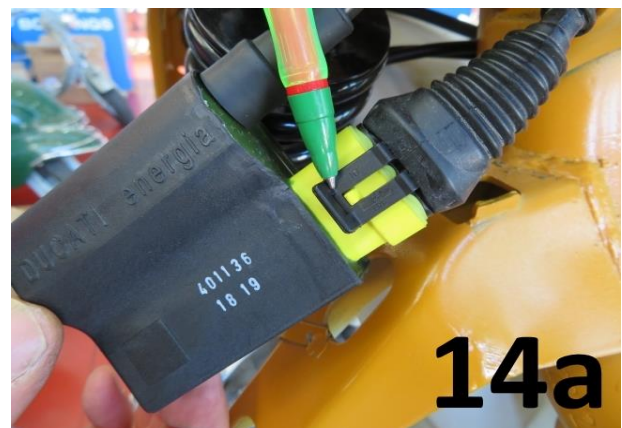
11) Clamp the wiring harness to the scooter's frame. Leave the wiring from the magneto flange slightly curved, with a little excess in length to allow for suspension movement, as per **Pic. 11**.



12) Pass the plug-in connector for the CDI between the top of the main frame tube and the metal plate that supports the seat crest pressing. See **Pics. 12 + 12a**. If the connector cannot physically pass between the main tube and the flat plate (as there are variations between some Lambretta models), pass it over the top through to the other side and then slide the wiring down into the gap. *There may be some differences between Lambretta models.*



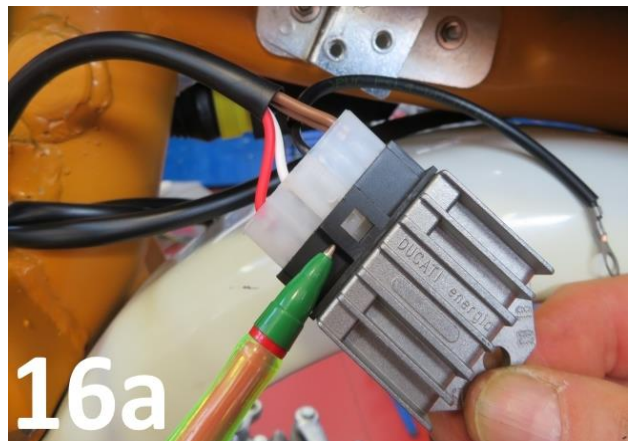
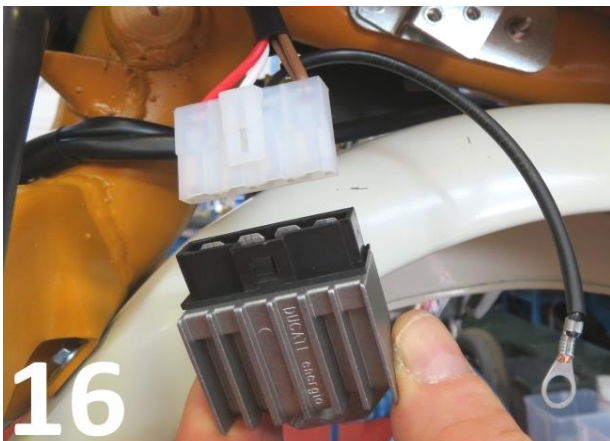
13) Fit the 2 brackets for mounting the CDI and the Voltage regulator to the frame, as per **Pics. 13 + 13a**. The 2 brackets are identical and must be mounted as per the pics. *At the time of writing (August 2019), currently supplied brackets are solely for Series 3 machines. Designated brackets for Series 1 + 2 machines will be available shortly.*



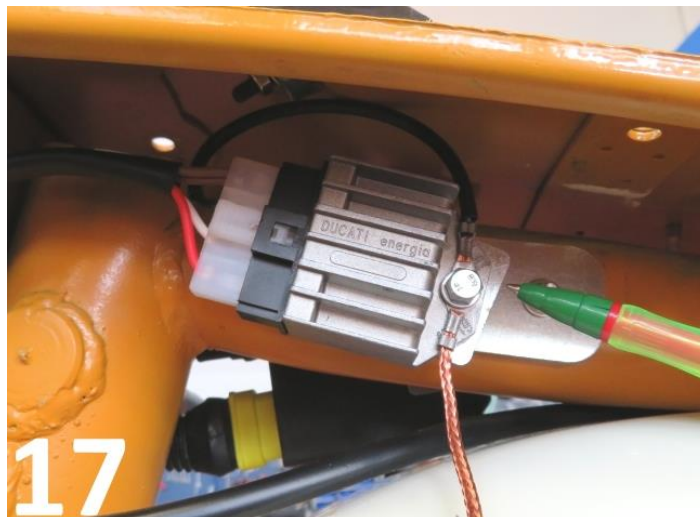
14) Insert the plug-in connector for the CDI into its socket, ensuring that the retaining clip is fully seated home, as per **Pics. 14 + 14a**.



15) Mount the CDI to its brackets using the supplied 5mm bolts and washers, as per **Pic 15**. This type of CDI does not have an external earth wire. *This is easier to do with the rear suspension unit removed.*



16) Insert the plug-in connector for the voltage regulator into its socket, ensuring that the retaining lug is fully seated home, as per **Pics 16 + 16a**.



17) Mount the Voltage regulator to its brackets using the supplied 5mm bolt and washer, as per **Pic 17**. This bolt can also accommodate the earth wires from both the voltage regulator and the braided earth wire that connects to the flywheel cowling.



18) There are 3 wires from the wiring harness. They are:

- **Green** = to be connected to green(s) from the scooter's wiring loom. This is the wire that needs to be connected to kill switch, or button, on the handlebars.
- **Brown** = this supplies regulated **12V AC** current for all lighting. For original type non-battery looms this needs to be connected to the brown, pink and purple wires. For original battery-type looms this needs to be connected to the brown wire only. For simplified looms, this needs to be connected to the brown.
- **Red** = this supplies regulated **12V DC** current for charging the battery (if fitted). For original type non-battery looms this red wire needs to be isolated. For original battery-type looms this need to be connected to red, purple and grey wires.

The scooter used in the photos has a simplified (non-battery) wiring loom with a single green wire for the kill switch and a single brown wire for all the AC lighting. The red battery charging wire is isolated and not used.

*At the time of writing (August 2019), Casa Lambretta is about to manufacture a special round junction box specifically for use with the **Casatronic Ducati** ignition. This new junction box is designed to be used with both AC and DC systems.*



19) Pass the HT lead along the desired routing of your scooter and cut it to length, allowing a little excess for suspension movement. Fit the spark plug cap. See **Pics. 19 + 19a**.

Fit 12V bulbs.

You're now ready to start your scooter and enjoy the best electronic ignition ever manufactured for largeframe Lambretta scooters!

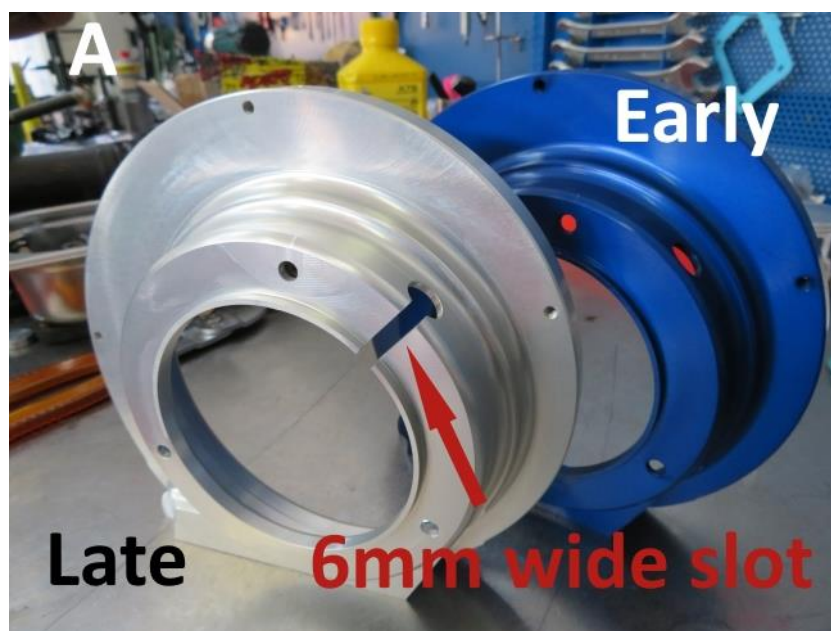
IMPORTANT! Although the Casatronic Ducati ignitions are plug'n' play, in most cases they will make your engine run much 'cleaner'.

What does this mean? We have seen that in a lot of cases where an engine has been running a different ignition system - and above all those manufactured by 'IDM' (i.e. the previous version of the Casatronic or a Varitronic) - once you have fitted a **Casatronic Ducati** ignition, you'll instantly feel that your engine now runs better with a much cleaner throttle response. This is noticeable above all at low-mid range throttle positions, where an engine that previously seemed rich (or 'boggy') but was in fact running like this due to the low-powered ignition and NOT due to overly rich jetting. The **Casatronic Ducati** ignitions will give you a much better idea of how your engine is really set up, as the fuel is now being burnt much more efficiently.

Therefore once you have fitted your Casatronic Ducati ignition, check the low-mid range throttle positions to ensure that the carburation settings are right, especially on larger cc engines.

Differences to note when fitting the Casatronic Ducati ignition system to a CasaCase or CasaCooler

The backplate used on all **CasaCase** and **CasaCooler** magneto flanges manufactured until July 2019 only has a hole for the LT stator wiring to pass through, which is smaller than the round plug-in connector of the **Casatronic Ducati** ignition system and consequently cannot pass through it. Therefore a slot must be cut into the backplate.



You need to remove the backplate from your engine and make a 6mm wide slot as indicated in **Pic. A**. The slot must be cut from the existing hole inwards, towards the centre of the large central aperture. All current production backplates for **CasaCase** engines and **CasaCooler** magneto flange kits now have this slot incorporated as standard.



Gently squash the wires inside the sleeving at the point seen in **Pic. B**, so that they are in line. Now insert the sleeving into the slot of the backplate, right through to the main exit hole as seen in **Pic.C**, keeping the wires in line whilst doing so.



Now gently pull the sleeving through the main hole, doing so from one side, and then the other (see **Pic. D**), until the lip of the cast-in grommet of the actual sleeving pops through the hole, as can be seen in **Pics. E + F**. Using a little silicon spray will assist greatly in doing this.



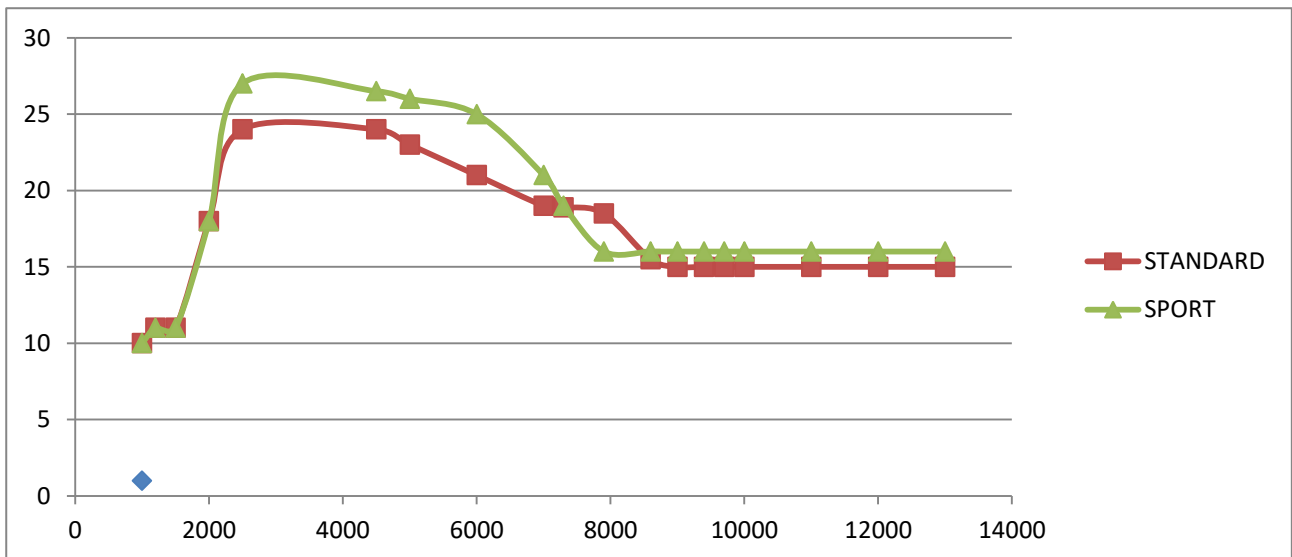
Now refit the backplate and stator plate to the engine (see **Pic. G**).



Technical information for CDIs

This graph shows the different maps for the *Standard* and the *Sport* CDIs.

RPM	1000	1200	1500	2000	2500	4500	5000	6000	7000	7300	7900	8600	9000	9400	9700	10000	11000	12000	13000
STANDARD	10	11	11	18	24	24	23	21	19	18,9	18,5	15,5	15	15	15	15	15	15	15
SPORT	10	11	11	18	27	26,5	26	25	21	19	16	16	16	16	16	16	16	16	16



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