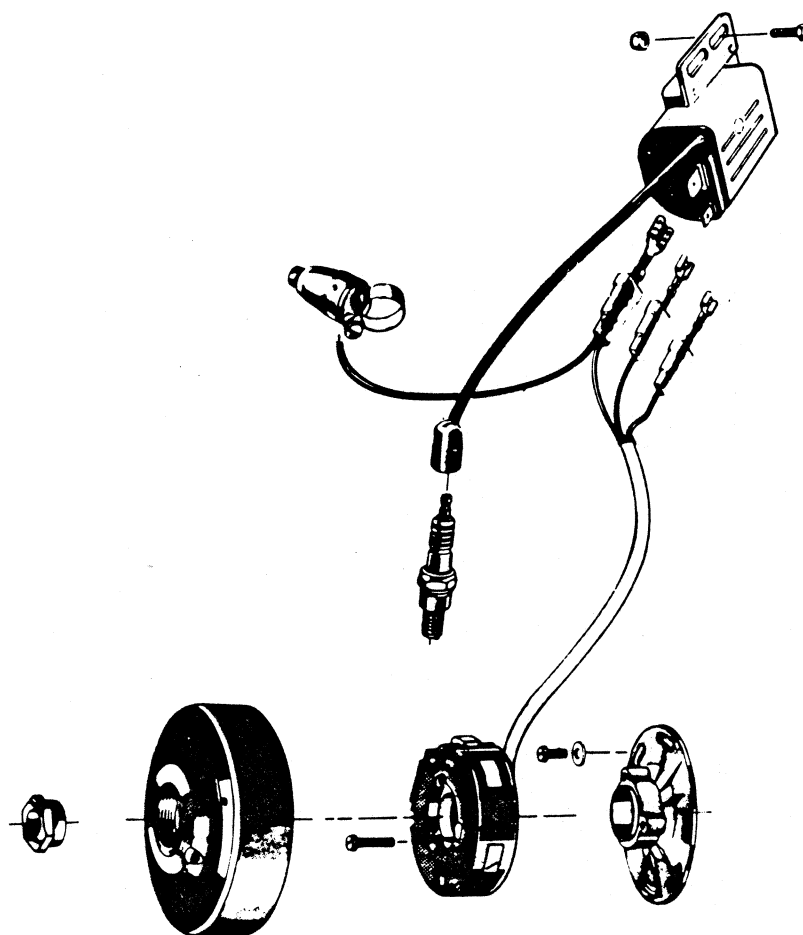


WORKSHOP MANUAL



IGNITION SYSTEM

Ignition system

This chapter covers the different types of ignition systems which have been mounted on Husqvarna motorcycles since 1974.

IA. Motoplat magnetos

All 125-175 cc models

All 250 CR models

360 cc ML 6 000 →

360 Aut ML 6 000 →

All 400 CR models

IB. Femsa magnetos

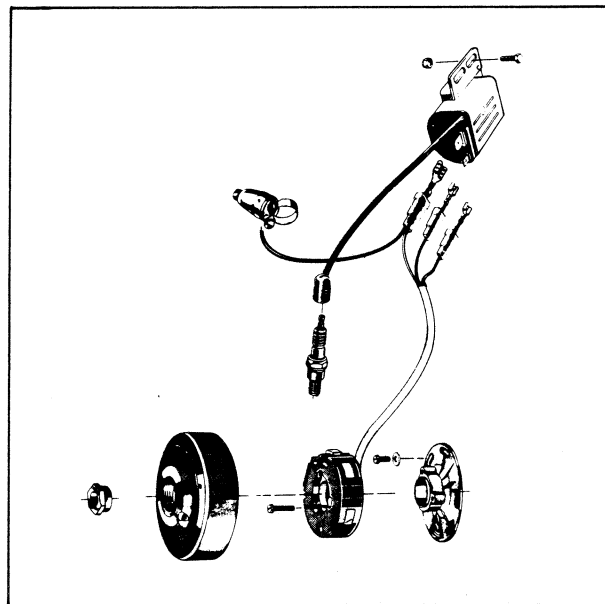
All 250 WR models

360 CR ML 0001-5999

All 400 WR models

All 450 cc models

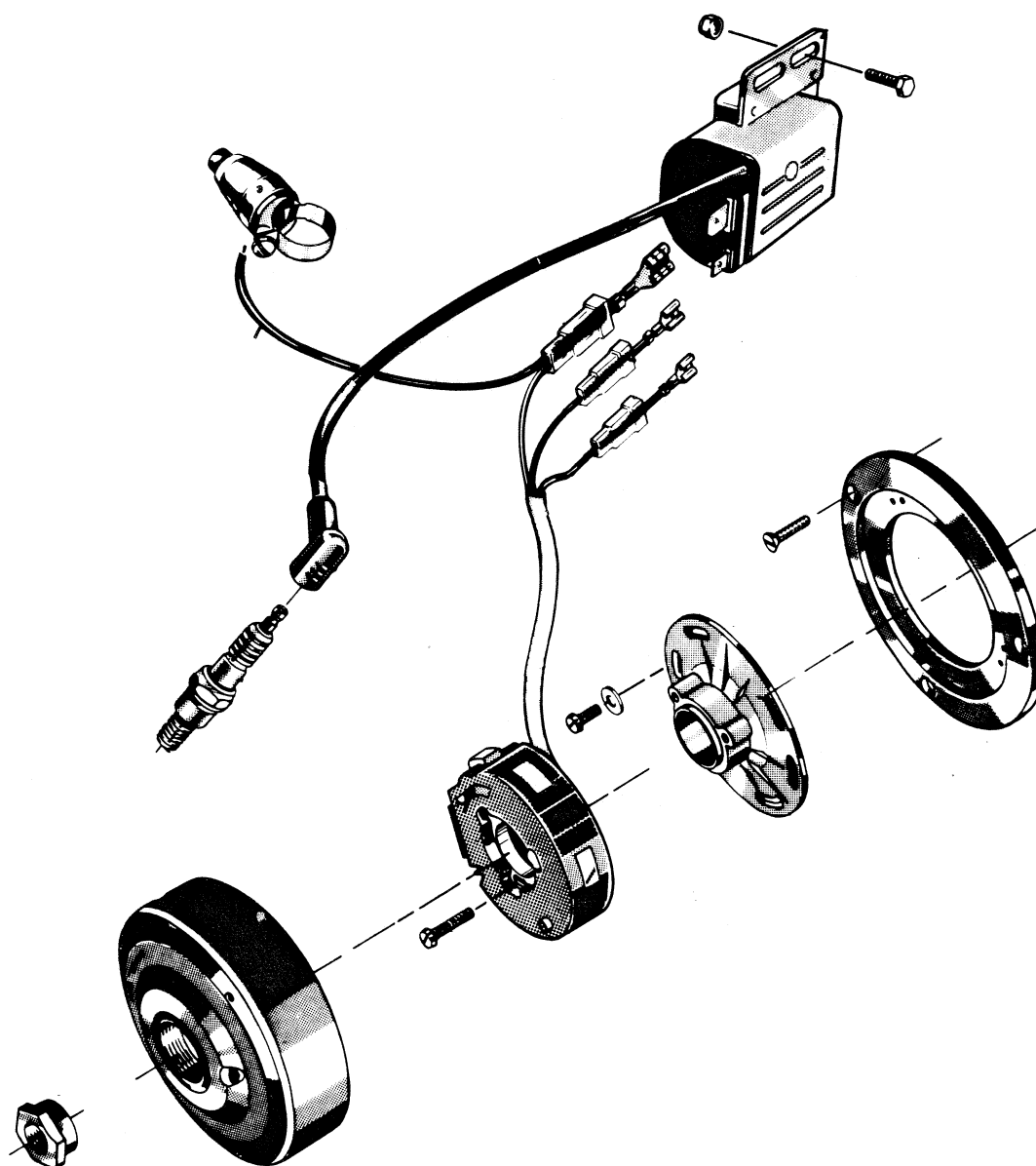
250-360 RT models



Motoplat magnetos

Function
Dismantling
Assembling
Searching ignition point
Timing
Time for repairs-maintenance

I A-3
I A-4
I A-6
I A-7
I A-7
I A-9



Function.

This ignition system has no mechanical contact breaker. Instead, the current is interrupted by a transistor which is magnetically actuated by the flywheel via a coil.

Since this ignition system has no moving parts (except the flywheel, of course), it is less sensitive to moisture and dirt and is more reliable than common conventional systems.

1. Alimentation coil condenser charging
2. Pick-up coil
3. Limiting resistor
4. Rectification diode
5. Thyristor
6. Condenser
7. Return diode damped waves
8. High Tension coil
9. Spark plug

When the flywheel rotates an alternating current is produced in the coil (1). The alternating current is rectificated by the diode (4) and is accumulated in the condenser (6).

A sinusoidal voltage is produced in the pickup coil (2). When this voltage reaches a certain level the thyristor opens.

When the thyristor closes the circuit the condensor is discharged through the primary circuit in the primary coil. This results in a short high voltaged current produced in the secondary coil (8).

The diode (7) extends the oscillating process between the condensor and the primary coil so enough arcduration time will be reached. See fig. 3.1.

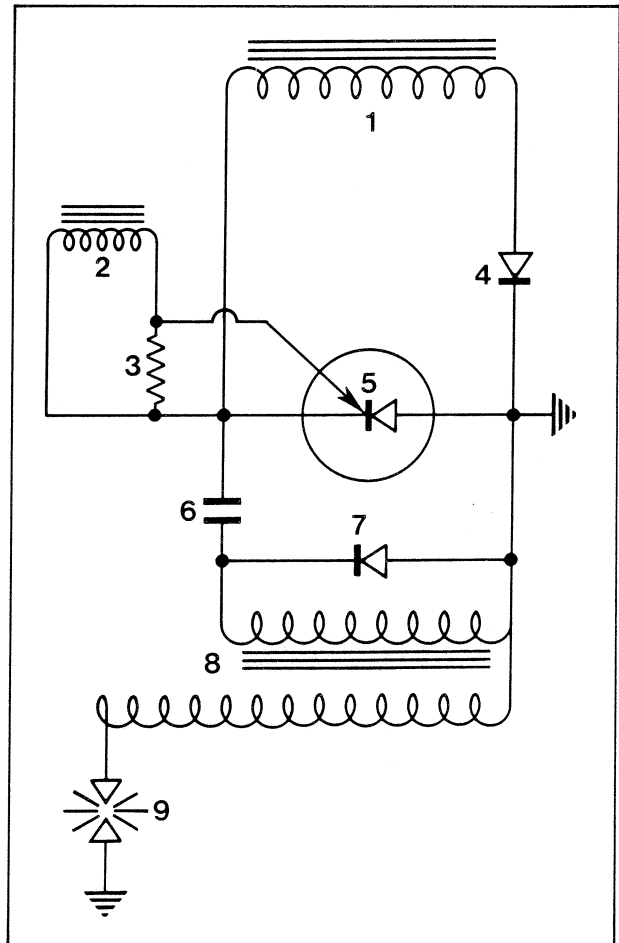


Fig. 3.1

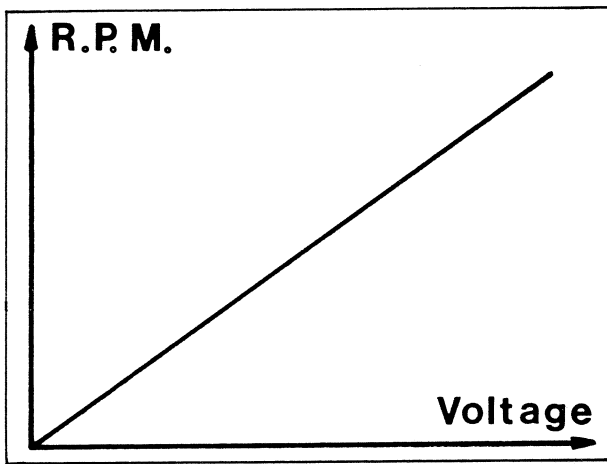


Fig. 4.1

The sinusoidal voltage, produced in the pick up coil, is proportional to the R.P.M. When this voltage has reached a certain level the thyristor is opened and the timing occurs. See fig. 4.1.

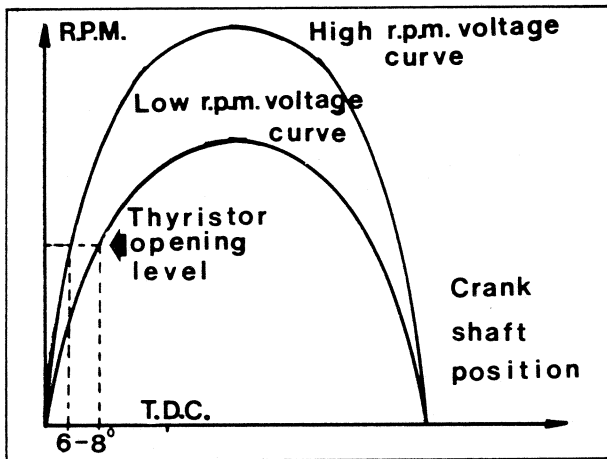


Fig. 4.2

As voltage and R.P.M. increases the graph curve gets more and more steep and the thyristor opening voltage is reached more and more early. This results in an automatically ignition advance for about 6-8° from the lowest to the highest R.P.M. See fig. 4.2.

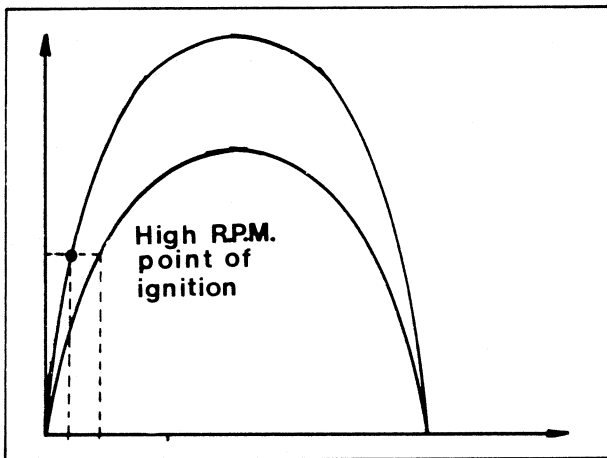


Fig. 4.3

The timing hole of the ignition system indicates the high R.P.M. point of ignition. See fig. 4.3.

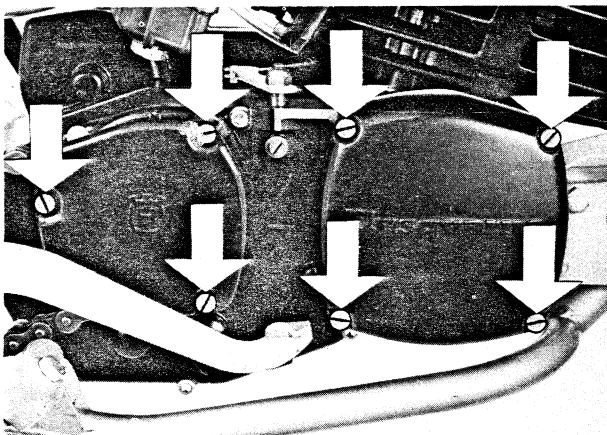


Fig. 4.4

Dismantling.

Remove the magneto-cover and the chain-cover by loosening the screws.

Apply the holding spanner and screw off the flywheel nut.
(Note: left-hand thread)

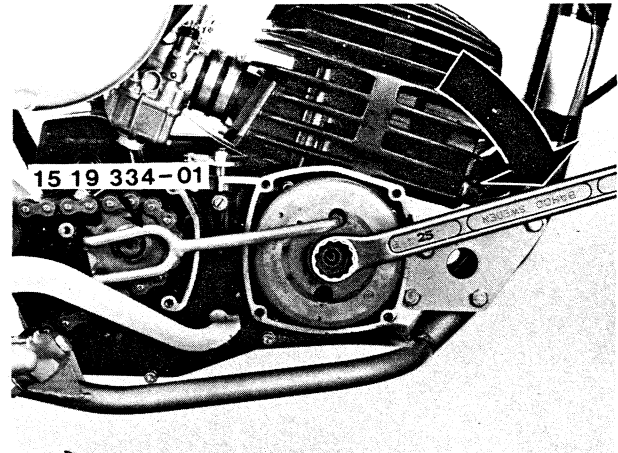


Fig. 5.1

Put the flywheel puller in position and pull off the flywheel. See fig. 5.2. Remove the key.
NOTE! The Ø 139 mm magneto is designed with a distance ring between the flywheel and the flywheel nut. This ring must be removed before the puller is assembled.

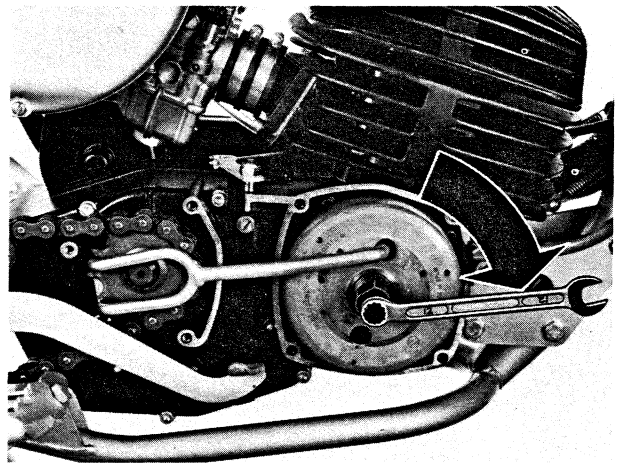


Fig. 5.2

Remove the stator with stator plate and mounting plate from the engine. See fig. 5.3.

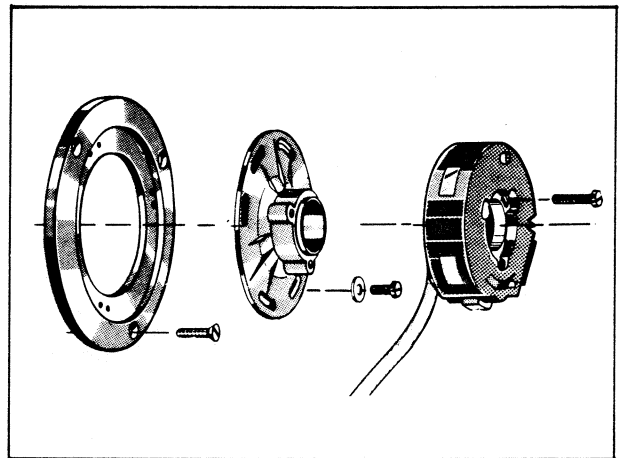


Fig. 5.3

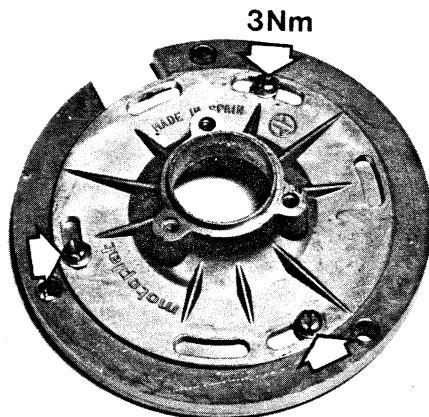


Fig. 6.1

Assembling.

Put the stator plate in position on the mounting plate as shown in fig. 6.1.

NOTE! The Ø 116 mm magneto without light coil and the Ø 139 mm magneto have the stator plates stuck to the stator. The Ø 139 mm magneto doesn't use any mounting plate.

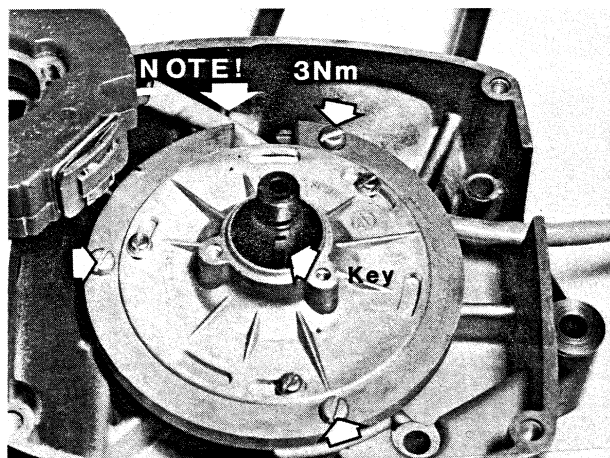


Fig. 6.2

Insert the key into the crank shaft. Assemble the mounting plate on the engine.

NOTE! The Ignition cable must be positioned as fig. 6.2 shows.

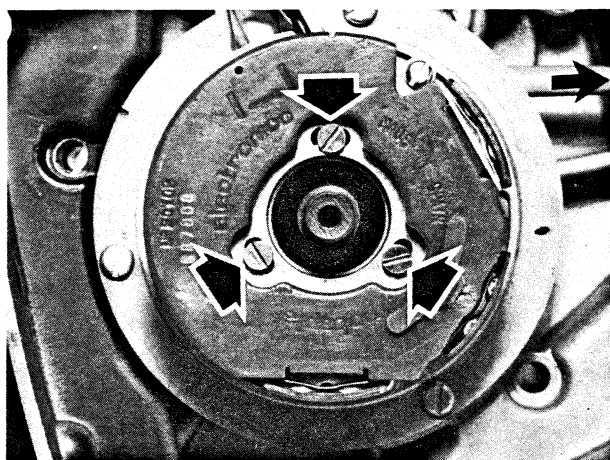


Fig. 6.3

Assemble the stator on the stator plate. Time the ignition system. See: Timing. Tighten the screws and stretch the ignition cable easily. See fig. 6.3.

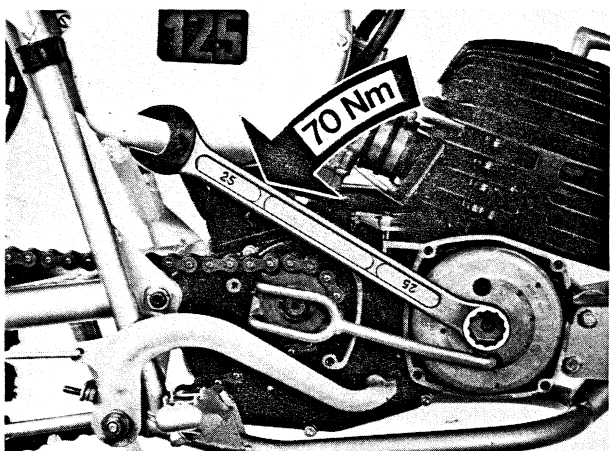


Fig. 6.4

Fit the flywheel and tighten the nut to 70 Nm. Connect the cables. NOTE! The Ø 139 mm magneto flywheel shall be tightened to 90 Nm. Put some Loctite 241 on the crank shaft cone before fitting the flywheel. Don't forget the distance ring on the Ø 139 mm magneto.

Tighten the flywheel nut three times, by assembling, after about 2 min. running and then after about 2 hours.

Searching ignition point.

Place the piston in top dead centre. Put a mark on the flywheel and a reference mark on the mounting plate. See fig. 7.1.



Fig. 7.1

Turn the flywheel backwards the prescribed number of degrees and put a new mark on the flywheel beside the reference mark on the mounting plate. See fig. 7.2.

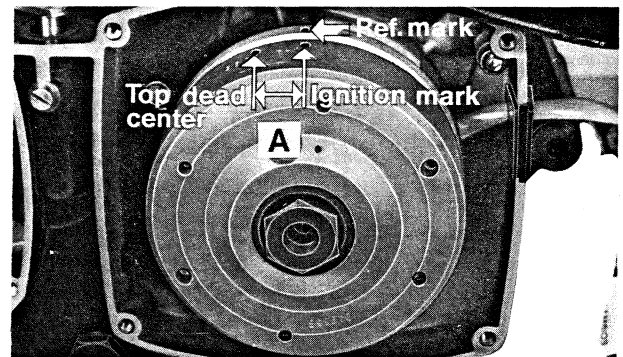


Fig. 7.2

Timing.

Remove the flywheel and loosen the screws so much that the stator moves easily. See fig. 7.3.

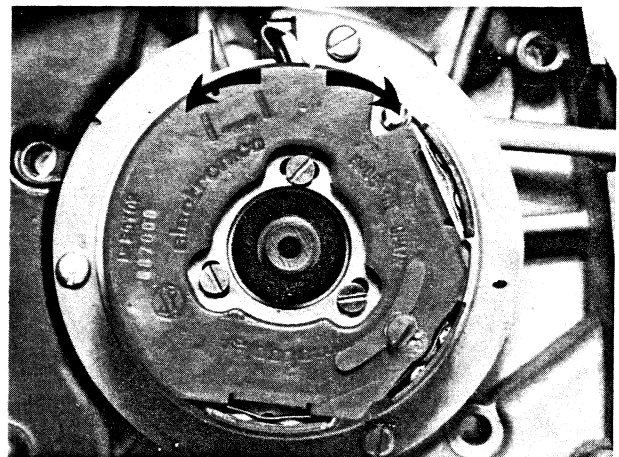


Fig. 7.3

Timing will be done by introducing the attached 2 mm pin through the hole in the flywheel and the hole in the stator (see fig.). As these holes coincide this will indicate the moment at which the spark jumps. See fig. 8.1.

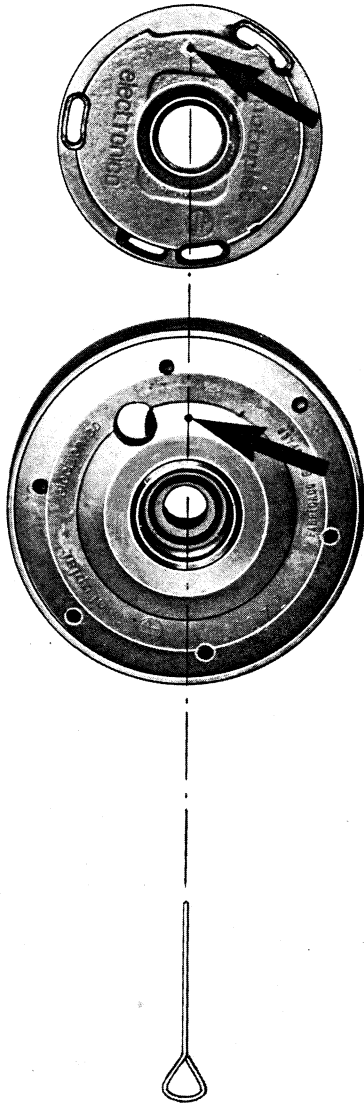


Fig. 8.1

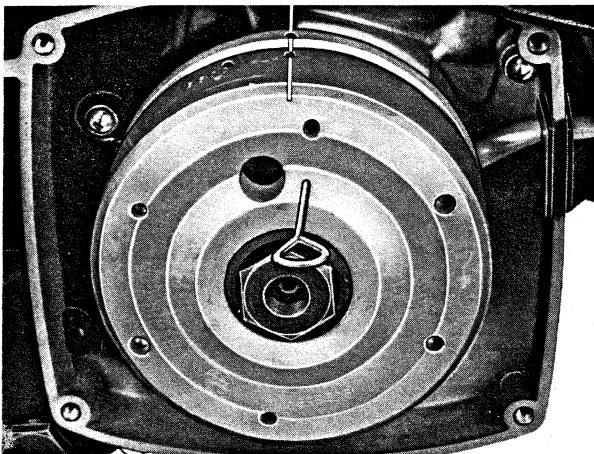


Fig. 8.2

Put the pin through the flywheel into the hole of the armature plate and turn the whole ignition system until the ignition mark in the flywheel and the mark in the crankcase are beside each other. See fig. 8.2.

NOTE! See to it that the armature plate moves easily so that the pin is not being deformed.

Remove the flywheel and fix the armature plate in this position.

Time for repairs-maintenance.

Before fitting a new flywheel grind it in with grinding compound.

NOTE! Remember to wipe the cones on crank shaft and fly wheel free from grinding compound.

Never attempt to stop the engine by removing the spark plug wire. Never kick engine over to test the spark without first grounding the high tension lead or attaching to a grounded spark plug.

If the ignition system doesn't spark, check all contacts and that the ignition coil is properly grounded. If in spite of this the sparks do still not appear, replace the magneto.

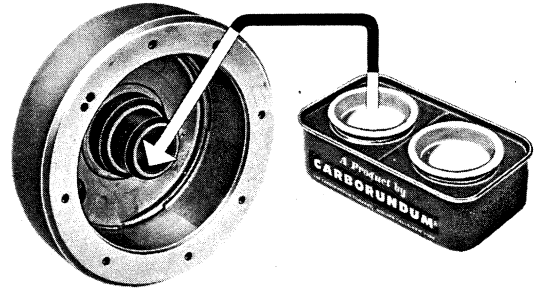
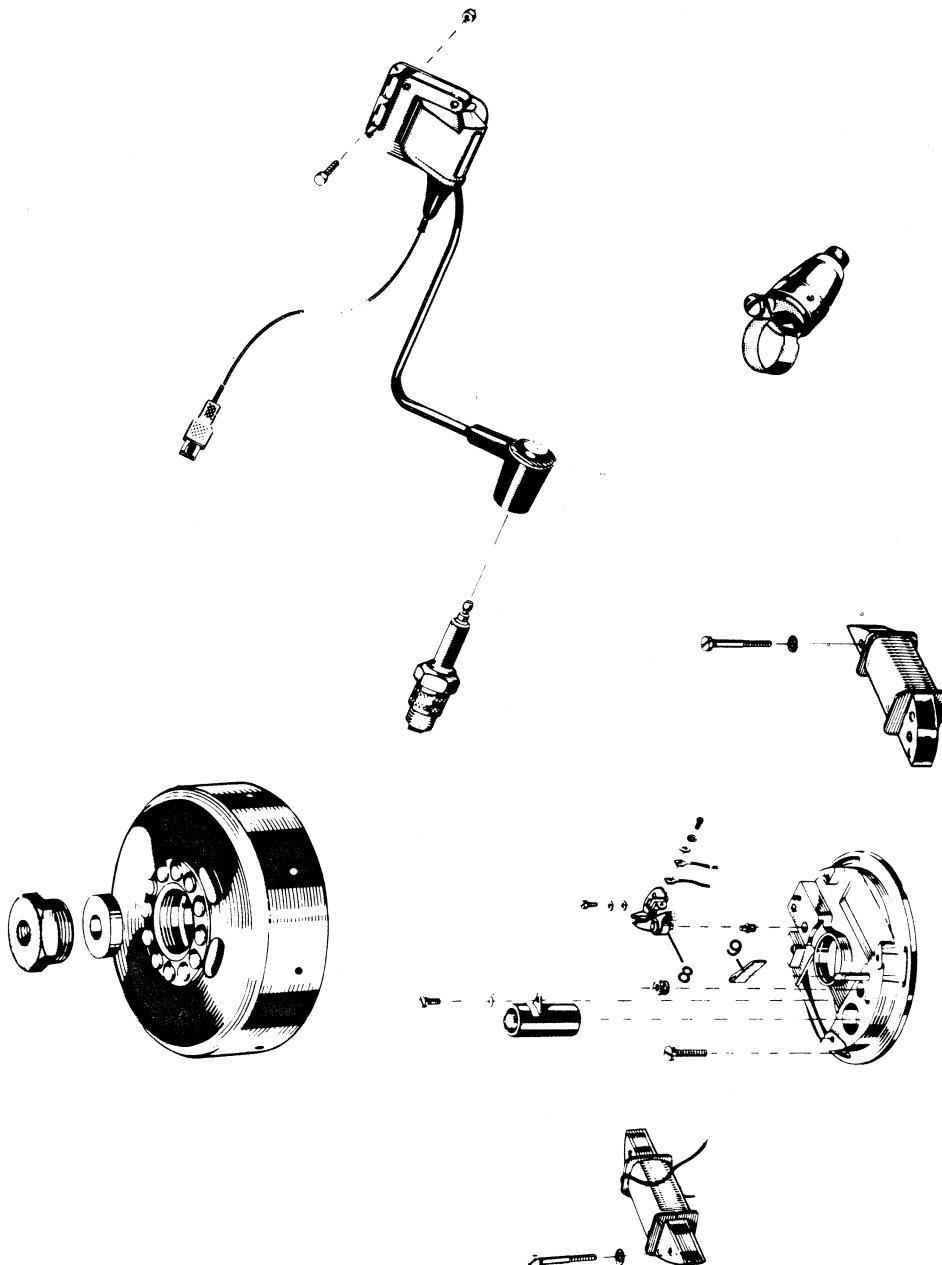


Fig. 9.1

Femsa flywheel magneto

Function	I B-3
Dismantling	I B-3
Replacing breaker points	I B-5
Replacing capacitor	I B-5
Replacing coils	I B-5
Assembling	I B-6
Searching ignition point	I B-6
Adjusting breaker points	I B-7
Time for repairs-maintenance	I B-8



Function

1. Ignition coil primary
2. Breaker points
3. Capacitor
4. Ignition coil secondary
5. Spark plug

As the permanent magnet of the flywheel passes the primary coil (1) pole pieces a current is generated in the coil. This current passes to begin with through the closed breaker (2).

When the current through the breaker reaches its maximum strength the breaker opens. The condenser (3) and the primary winding of the secondary coil (4a) now form an oscillation circuit which forms a brief high-voltage alternating current in the secondary winding of the ignition coil. See fig. 3.2.

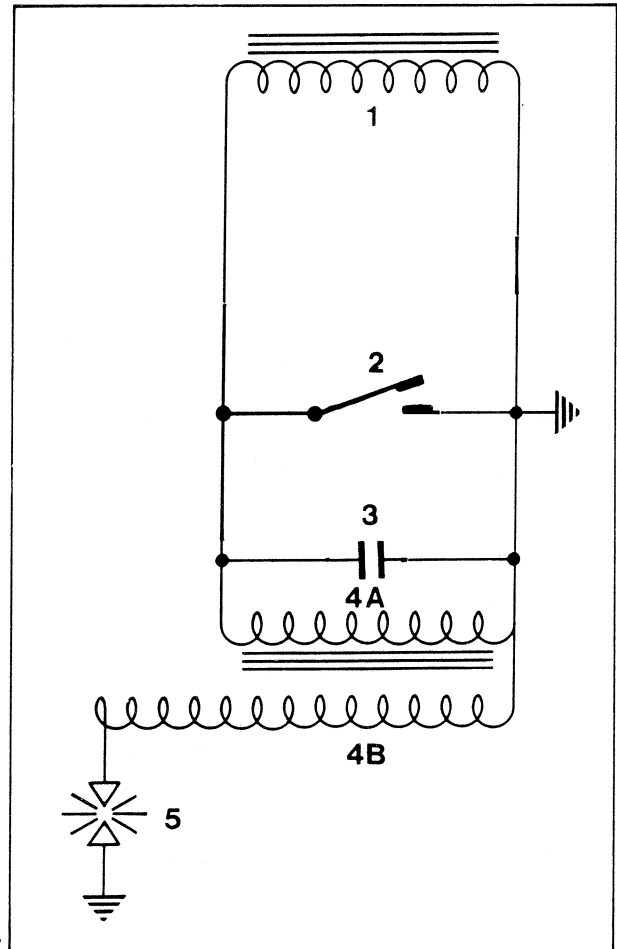


Fig. 3.1

Dismantling.

Remove the flywheel – and sprocket covers. See fig. 3.2.

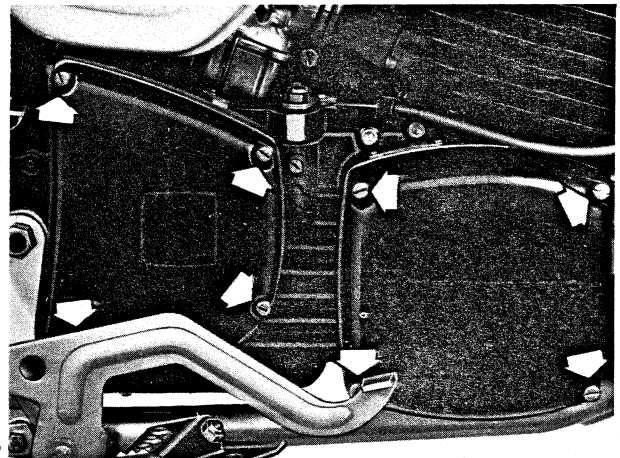
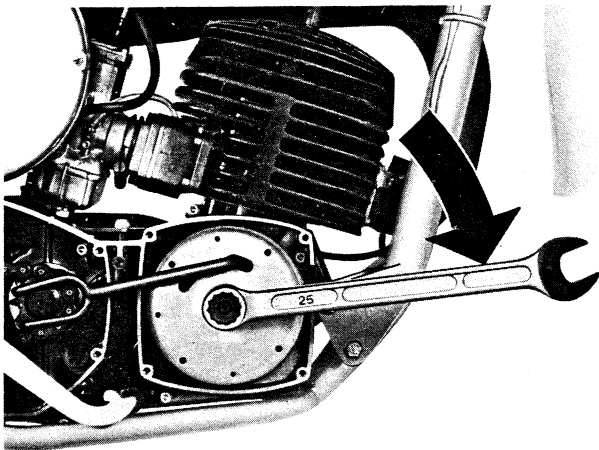
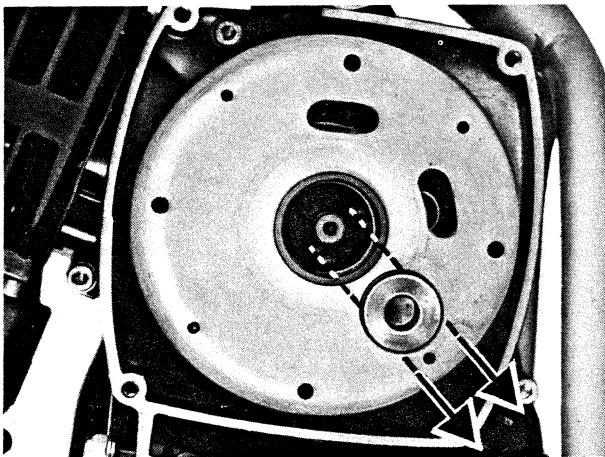


Fig. 3.2



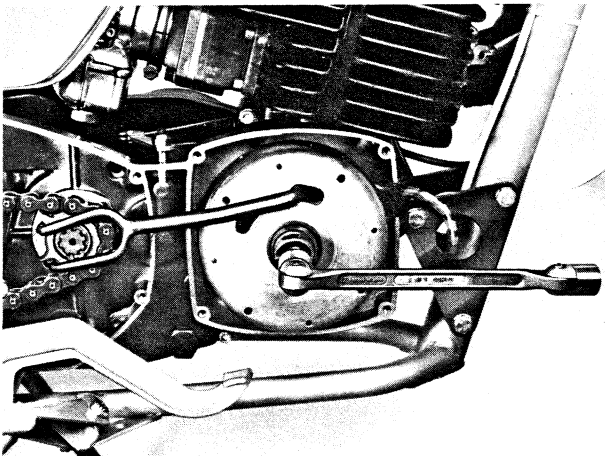
Connect the holding spanner between sprocket shaft and flywheel. Screw off the flywheel nut. See fig. 4.1.

Fig. 4.1



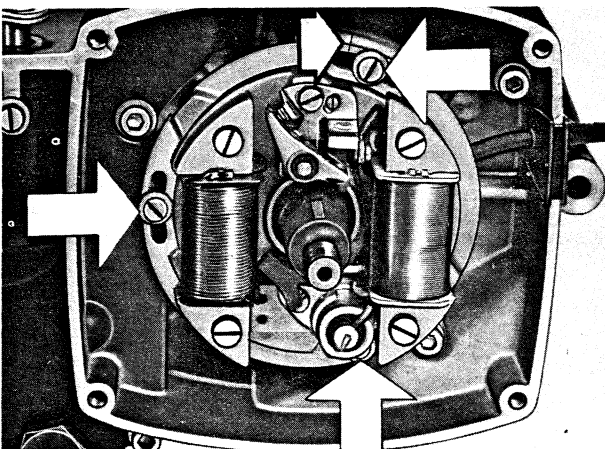
Remove the distance ring. See fig. 4.2.

Fig. 4.2



Assemble the puller and pull off the flywheel. See fig. 4.3.
NOTE! Make sure that the puller is screwed in fully.

Fig. 4.3



Disconnect the cables. Remove the armature plate by loosening the 3 screws. See fig. 4.4.
NOTE! Putting a mark on the armature plate and a reference mark on the engine makes assembling easier. See fig. 4.4.

Fig. 4.4

Replacing breaker points.

Remove the contact set holding screw. Lift up the contact set and loosen the screw which holds the cable connections. See fig. 5.1. Assemble in reverse order.

NOTE! Make sure that the contact set is positioned correctly over the excenter screw.

Concerning breaker point adjustment, see: Timing.

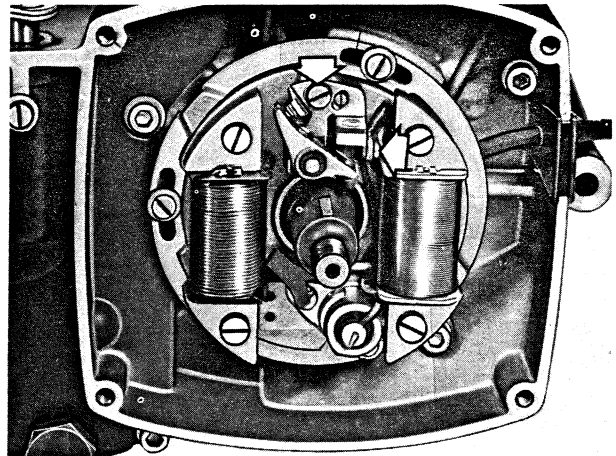


Fig. 5.1

Replacing capacitor.

Unscrew the capacitor holding screw and the cable connection holding screw and replace the capacitor. Assemble in reverse order.

NOTE! On Femsa magnetos with light coil the Ignition coil must be loosened when replacing the capacitor.

952

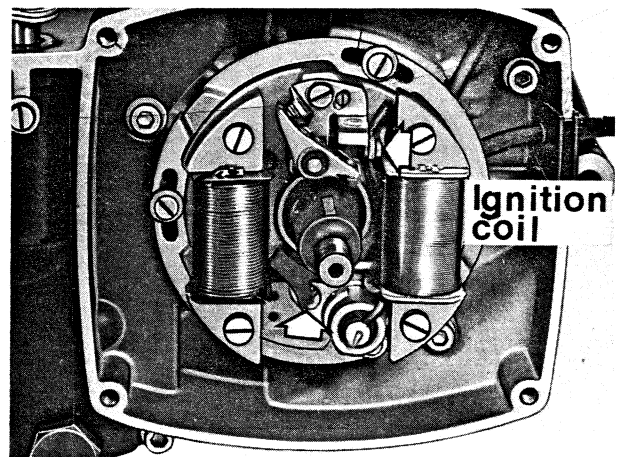


Fig. 5.2

Replacing coils.

Loosen the two ignition coil-holding screws and the cable connection holding screw. Replace the coil. When replacing the ignition coil and the light coil on Femsa magnetos with lighting system, the cable connections must be removed before replacing the coil.

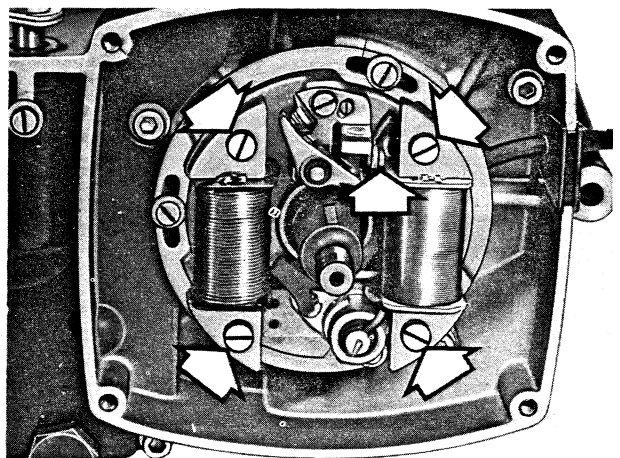


Fig. 5.3

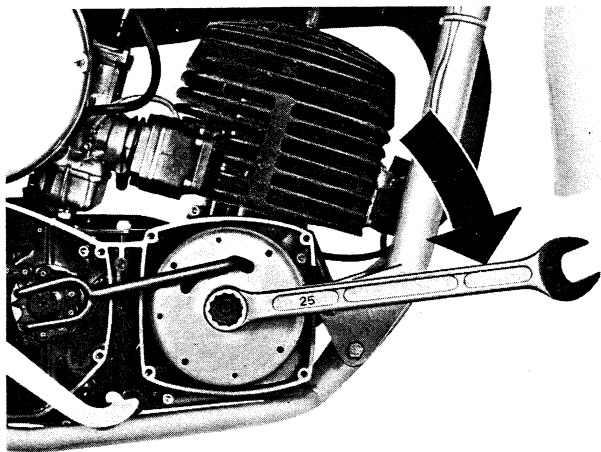


Fig. 6.1

Assembling.

Position the armature plate on the engine according to the two reference marks. See fig. 6.1. Connect the cables.

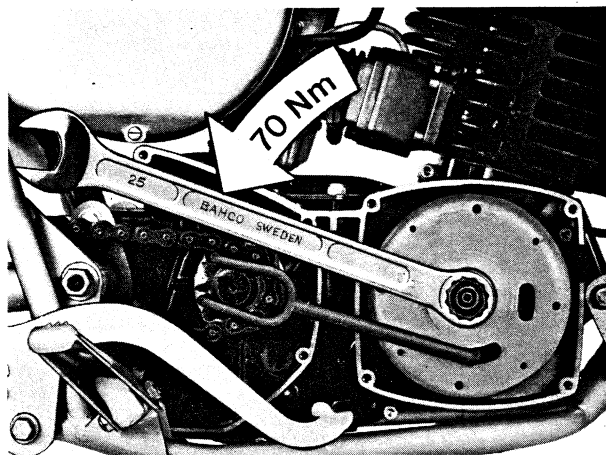


Fig. 6.2

Fit the flywheel and tighten the nut to 70 Nm.

NOTE! Put some locktite 241 on the crank shaft cone before fitting the flywheel.

Tighten the flywheel three times, after about 10 min. running and then after about 2 hours.

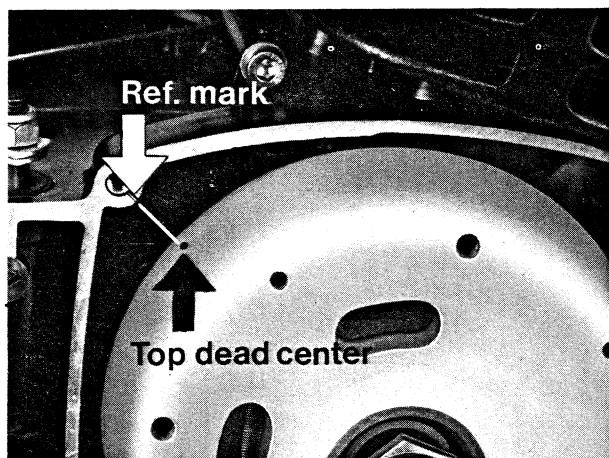


Fig. 6.3

Searching ignition point.

Place the piston in top dead centre. Put a mark on the flywheel and a reference mark on the engine. See fig. 6.3.

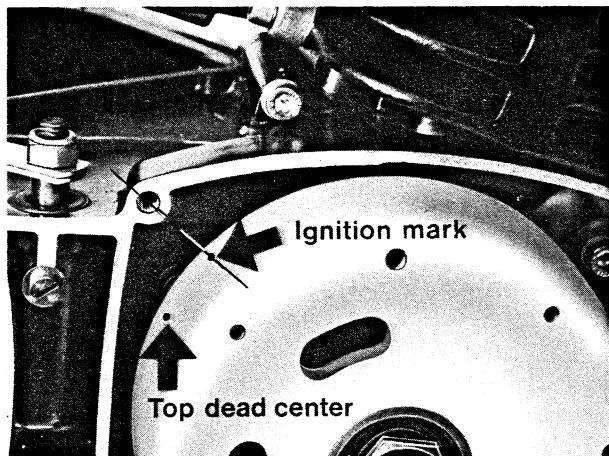


Fig. 6.4

Turn the flywheel backwards the prescribed number of degrees and put a new mark on the flywheel beside the reference mark on the engine. See fig. 6.4.

Adjusting breaker points.

Turn round the engine until the breaker points are fully open. Check that they are not worn down or burnt.

If necessary, clean the points with a breaker file.

Insert a feeler gauge between the points and check the gap. This should be 0.35–0.45 mm, see Fig. 7.1. Tighten up the locking screw after adjusting and check the contact breaker gap once again.

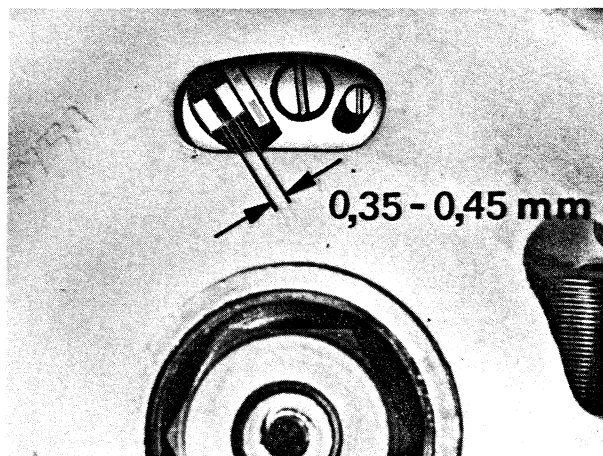


Fig. 7.1

Timing.

Make sure that the contact breaker gap is correct. Find the position at which the breaker points just begin to separate.

When the ignition advance is correctly adjusted, the ignition point mark on the periphery of the flywheel should come in line with the mark on the crankcase. If the reference mark comes *before* the mark on the crankcase (early ignition), turn the armature plate of the ignition system in the direction of rotation of the flywheel.

If it comes *after* the mark on the crankcase (late ignition), turn the armature plate against the direction of rotation.

After carrying out adjustment, tighten up the armature plate again and recheck the ignition advance setting.

The contact breaker gap is not affected by turning the armature plate. Check the flywheel nut for tightness.

NOTE! The nut has left-hand thread!

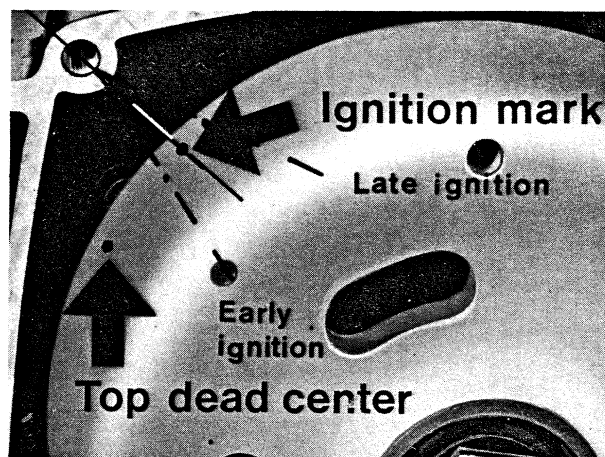


Fig. 7.2

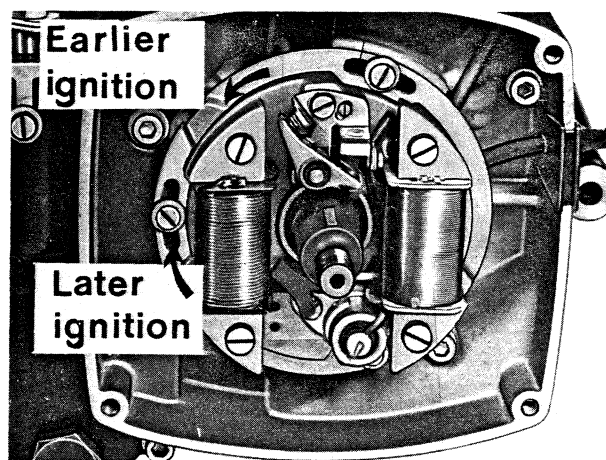


Fig. 7.3

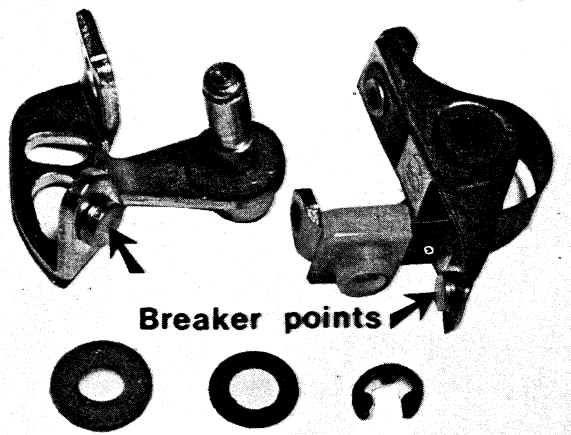


Fig. 8.1

Time for repairs—maintenance.

If the engine ignites irregularly on high "revs", the condenser must probably be replaced.

Worn out breaker points make the engine hard to start. Replace the breakers when the breaker points start to get burnt down as shown in fig. 8.1.

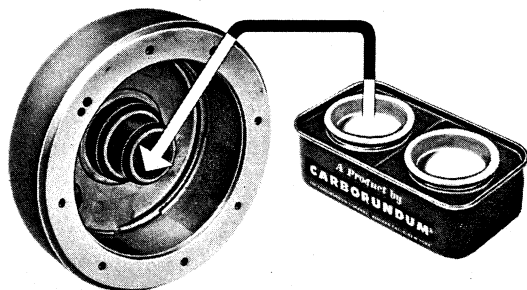


Fig. 8.2

Before fitting a new flywheel, grind it in with grinding compound.

NOTE! Don't forget to wipe the cones on the shaft and on the flywheel free from grinding compound. See fig. 8.2.

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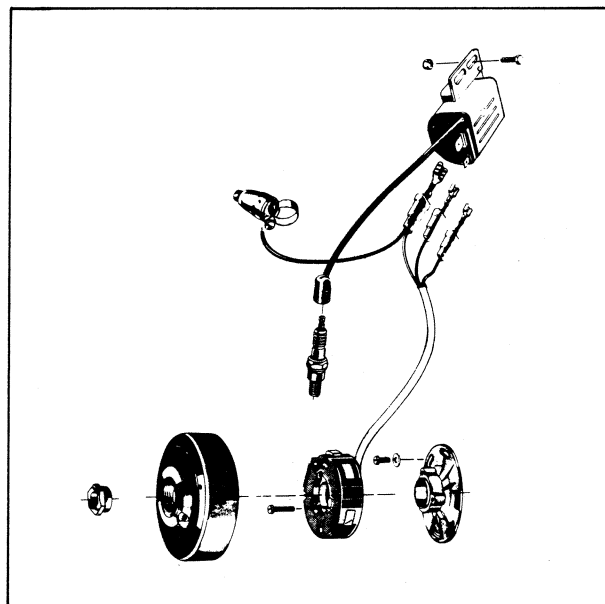
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