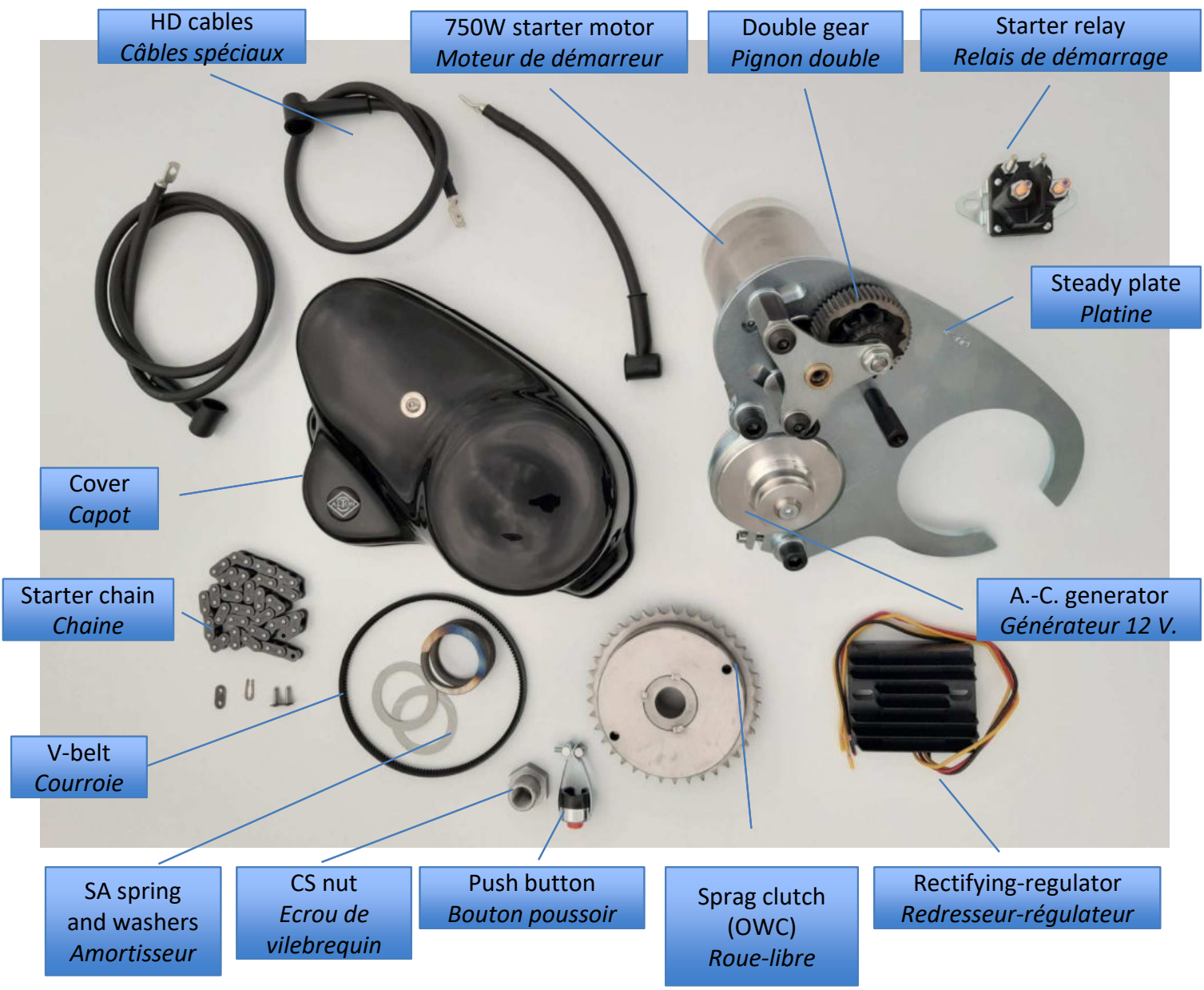
Starter for Velocette
Démarreur pour Velocette



FITTING INSTRUCTIONS
Instructions de montage

ALTON ZI de Kerscao 13 rue FOURASTIE F29480 LE RELECQ-KERHUON FRANCE
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Date	Kit number	PACKING LIST
	ESKV	

	Ref	Item	Qty		Visa
PRE-ASSEMBLED KIT	ESK01	Starter engine assembly	1		
	ESK01-01	Starter engine		1	
	ESK01-02	Starter engine cover		1	
	ESK01-03	M4 x 8 allen screw		2	
	ESK02	Layshaft assembly	1		
	ESK02-01	Shaft		1	
	ESK02-02	Pinion (50 teeth) - spur pinion (12 teeth) assembly		1	
	ESK02-03	Bush		2	
	ESK02-04	Clip		1	
	ESK02-05	Jam nut		1+1	
	ESK03	Mounting plate	1		
	ESK06	Additional plate	1		
	ESK05	Set of screws and fitting parts	1		
	ESK05-01	Hexagonal spacer (34 mm)		1	
	ESK05-02	Hexagonal spacer (24 mm)		2	
	ESK05-03	Hexagonal spacer		1	
	ESK05-04	M10 x 20 allen screw		1	
	ESK05-05	M10 x 25 allen screw		2	
	ESK05-06	Dia10 washer		5	
	ESK05-07	M6 x 15 allen screw + dia 6 washer for polyester cover		2 + 2	
	ESK05-08	Hexagonal spacer for starter motor		2	
	ESK05-09	Dome head screws M8x16 for starter motor		2	
	ESK11	AC generator + pulley + screw + washer + key	1		
	ESK12	AC generator clamp + allen screw M5x16	1		
BOX 1	ESK07	One way-clutch wheel assembly	1		
	ESK07-01	One-way clutch wheel		1	
	ESK07-02	Flange		1	
	ESK07-04	AC generator pulley		1	
	ESK07-05	Sprocket (38 teeth)		1	
	ESK07-06	Needle bearing		1	
	ESK07-07	Inner race		1	
	ESK08	Crankshaft nut	1		
	ESK09	Extractor for one way clutch wheel assembly	1		
		Allen screw M6x16	3		
	ESK10	SA spring + 2 washers	1		
	ESK13	V-belt (Y6 x 400mm)	1		
	ESK16	Handle bar push button	1		
	ESK20	Set of terminals	1		
	ESK21	Starter chain	1		
	ESK22	Removable link	1		
BOX 2	ESK17	Wire (starter to relay)	1		
	ESK18	Wire (relay to battery)	1		
	ESK19	Wire (battery to ground-earth)	1		
	ESK14	Rectifying regulator	1		
	ESK15	Starter relay	1		
BOX 3	ESK23	Polyester cover	1		

FITTING THE ELECTRIC STARTER KIT

WARNING

Fitting an electric starter kit (ESK) on a Velocette should not be considered as a cure to start a poorly maintained engine. Prior to fitment of the ESK, the ignition system and carburettor of the motorcycle should be set correctly.

Do not miss out any of the steps of the following instructions. In case of doubt, ask someone with more experience or contact Alton.
Phone +33 298 28 35 75 or +33 965 37 38 52 or E-mail alton-france@orange.fr

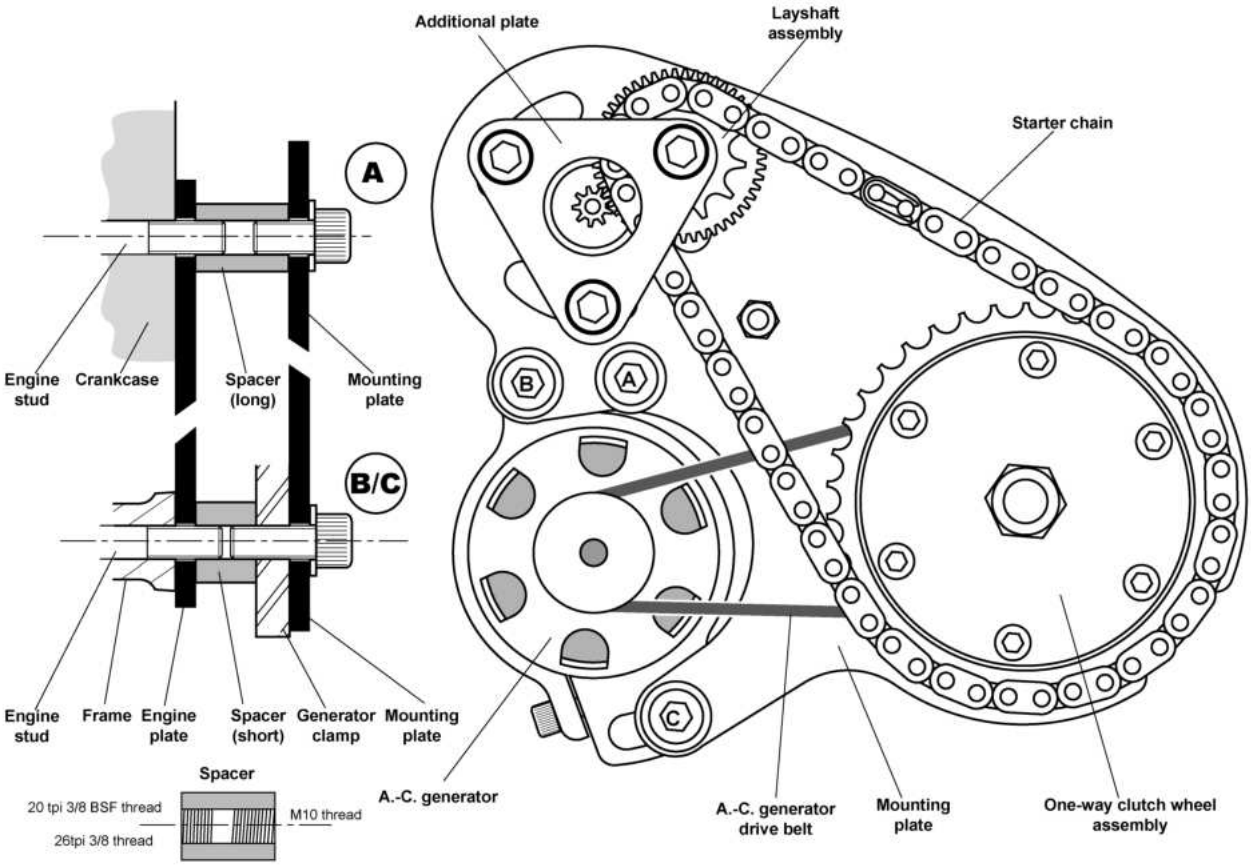
Battery : a YTX14BS (or larger) maintenance free battery has more starting power than others. A rating of 12 Ampere-hour (A-h) is the minimum capacity that should be used to provide sufficient starter motor speed.

STEP 0 : Check the packing list against all of the parts in the package. If any parts are damaged or missing please contact Alton.

STEP 1 : REMOVE THE FOLLOWING ORIGINAL PARTS

Remove outer case of dynamo belt drive.
Unscrew and remove crankshaft nut.
Remove dynamo drive (pulley and belt).
Remove shock absorber spring.
Remove dynamo.
Remove inner case of dynamo belt drive.
Unscrew and remove nuts and washers from left plate.

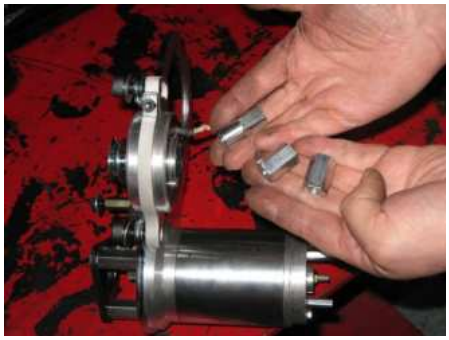
Your motorcycle is ready for the Electric Starter Kit.



STEP 2 : STARTER ENGINE, MOUNTING PLATE

There should be at least 5 MM of thread protruding from each stud on the left hand engine plate.

Spacers ESK05-01 and ESK05-02. Note the different lengthes (34 MM / 24 MM). Note there is M10 thread at one end of the spacer and 26 tpi 3/8 BCY thread at the opposite end.

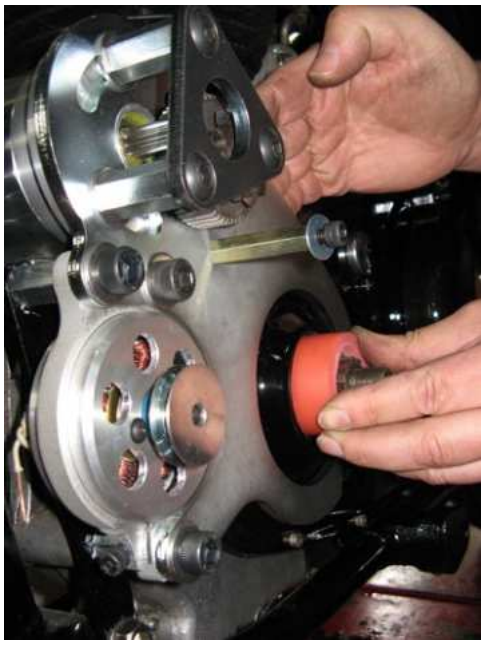


Do not add any washers between the spacers and the engine plate. Screw the three spacers on to the engine studs. The long spacer (ESK05-01) is for A stud and the two short spacers (ESK05-02) are for B and C studs. Tighten firmly.

Fit the engine starter assembly (ESK01) on to mounting plate (ESK03).
Fit the M10 Allen screws (ESK05-04 and ESK05-05) with washers (ESK05-07). The short Allen screw (20 MM) on A and the long ones (25 MM) on B and C. Tighten firmly M10 Allen screw (point A).

STEP 3 : ONE-WAY CLUTCH WHEEL ASSEMBLY

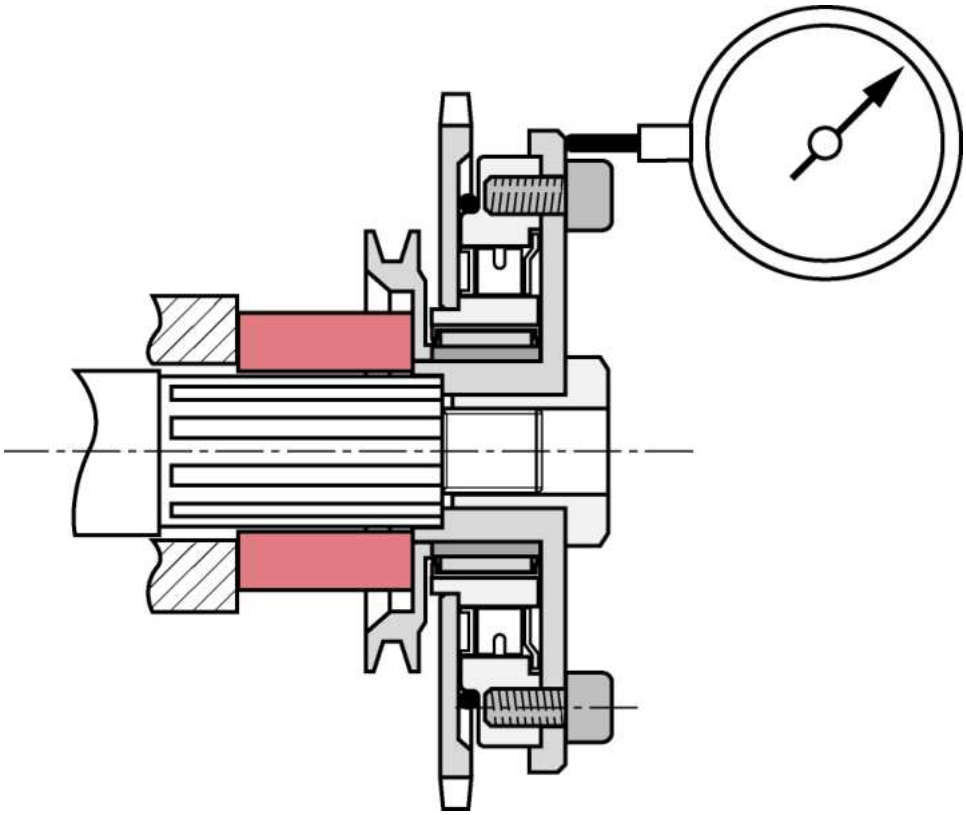
Fit shock absorber cam and red polyurethane spring (ESK10). This is supplied to replace original shock absorber spring.



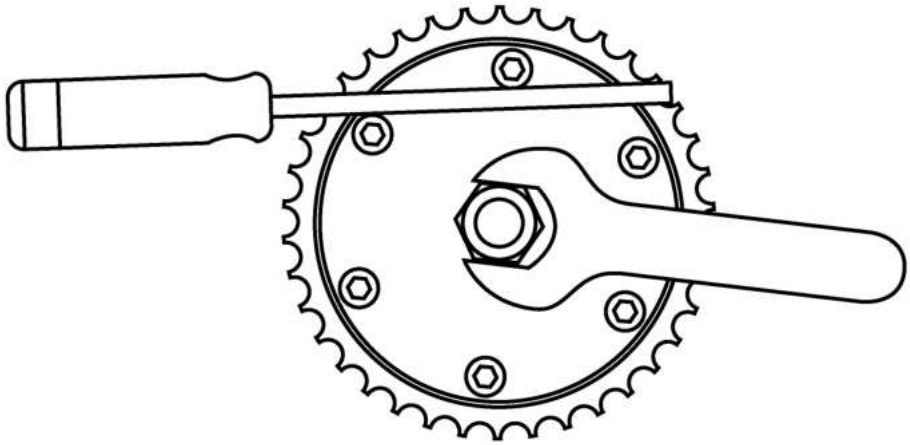
Choose the right splines so that 3 or 4 MM of the mainshaft splines protrude beyond the polyurethane cylinder. Fit A.-C. generator (ESK11) in its clamp (ESK12).

Fit the one-way clutch wheel assembly (ESK07). This should be done carefully as the ends of the splines are critical. Slight corrections with a file may be necessary to obtain the right position.

Dial gauge is recommended to control lateral runout. Lateral runout should not exceed 0.2 MM.



The following sketch shows how to hold the one-way clutch wheel assemby (ESK07) with a square section screw driver when you tighten (or untighten) the mainshaft nut (ESK08).



VERY IMPORTANT : Use the extractor (ESK09) *every time* you have to remove the one-way clutch wheel assembly (ESK07).

Fit mainshaft nut (ESK08) and tighten it firmly (use loctite on end of threads only).

STEP 4 : A.-C. GENERATOR BELT ADJUSTMENT

Fit generator belt (ESK13). Note that belt is long enough (400 MM) to be fitted or removed while the one-way clutch wheel asssembly is screwed on mainshaft.

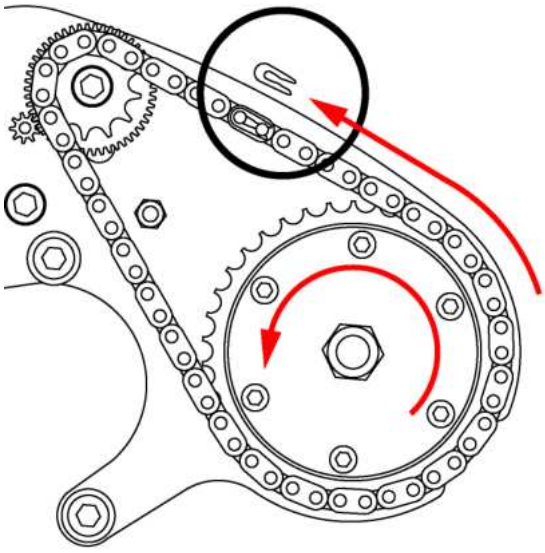
The two pulleys must be aligned. Move the A.-C. generator sideways in its clamp (ESK12) to obtain alignment. Check there is no interference between the belt and the starter chain.
Tighten firmly the M6 Allen screw of A.-C. generator clamp.

Adjust belt tension by rotating A.-C. generator and clamp around B.
Free movement at the middle of the belt's bottom run should be less than 5 MM. When tension is obtained tighten firmly M10 Allen screws (A, B and C).

STEP 5 : STARTER CHAIN

The pinion assembly should rotate with no wear on layshaft.

Fit the chain (ESK21) and the removable link (ESK22). Make sure the closed end points in the direction the chain travels in. The starter and chain drive the engine in an anticlockwise direction when viewed from the left.



Remove the additional plate (ESK06).
Remove layshaft clip.
Unscrew layshaft and the 2 hexagonal spacers (ESK05-06).
Adjust chain tension by rotating the starter engine in its craddle.

Free movement (extreme forward to extreme backward) at the middle of the chain's front run should be about 5 MM. When correct tension is obtained, tighten firmly layshaft and the hexagonal spacers (ESK05-06).

Fit clip on layshaft (ESK02-01).
Fit additional plate (ESK06) and its 3 allen screws (ESK05-10). Tighten firmly.

Note that when you adjust A.-C. generator belt, you have to unscrew the allen screws on B, C. It may be also necessary to unscrew the allen screw on A so that it will have some influence on starter chain tension. Check chain tension every time you adjust the belt tension. Double-check that everything is where and how it should be.

CHAIN ADJUSTMENT SHOULD BE DONE AGAIN AFTER 100 KM OF FIRST USE AND EVERY 3000 KM IN USE.

Grease chain starter pinion. Spray grease is recommended. A.C. generator belt must be kept free of grease.

STEP 6 : COVER

Fit cover (ESK23).
Fit M6 screw (ESK05-09) and washer (ESK05-08).
Maintain cover and tighten firmly

STEP 7 : A.-C. GENERATOR AND RECTIFYING-REGULATOR

To ensure conductivity, connections and extensions should be made by soldering appropriate terminals to the cable tails.

Connections :

1) Connect one of the yellow wires of the regulator to one wire from the A.-C.generator.

2) Connect the other yellow wire of the regulator to the other wire from the A.-C.generator.

3) Connect the red wire from the regulator to the negative side of the ammeter as shown in the wiring diagram provided.

4) The black wire from the rectifying-regulator passes to earth (ground).

Remarks :

The A.-C. generator has been designed so that a battery must be employed in the circuit. Failure to fit a battery or even should connectivity be disrupted to the battery for whatever reason will damage the rectifying-regulator unit with resultant irreparable damage to your Alton. A dead or weak battery will also cause damage to the system through overload and in so doing overheat thus damaging the internal components.

Should the use of your motorcycle be intermittent then either, charge the battery before intended use or install a permanent 'smart trickle charger' to the system to maintain the battery and also extend its life (Optimate or similar).

These units have already undergone extensive testing prior to delivery and any overload with the resultant damage caused by any of the above mentioned conditions will render the warrantee void.

The continuous cruising rating for your Alton is 90 watts, with an absolute maximum of 150 watts. Even at 90 watts output this is still 50% more than the best Lucas dynamo. One would expect a normal configuration to have a 45/55 watt headlight bulb, 21/5 watt stop/tail bulb, with an additional 10w for speedometer and side lights. Should the motorcycle have coil ignition, then one would expect this to use a further 10 to 15 watts of electricity. Adding those wattages together there is adequate power available for everything. The fitment of headlights akin to searchlights may not be the best for your bike or your pocket. Check your wattages – it is not rocket science.

Please pay careful attention to the system as it is before taking it apart, note and mark which terminal goes to earth as when you change to the new 12 volt battery this will become the negative (-ve) side. Likewise, the other battery terminal will now be the positive side (+ve) and feed the system. Any accidental or otherwise reversal of the battery leads will irreparably damage the rectifying-regulator. Solid-state electronics cannot tolerate such reversals of polarity, any such damage caused will not be covered by warrantee.

From a safety and operational point of view, your own and battery life can be prolonged by riding with lights 'on' at cruising speeds or over. Alton and system are designed to work this way.

STEP 8 : STARTER MOTOR, STARTER RELAY, BATTERY and PUSH BUTTON

To ensure conductivity, connections and extensions should be made by soldering appropriate terminals to the cable tails. Use heavy-cables supplied but no others.

The starter relay ESK15 must be fitted in the tool box.

Connections : refer to diagram

1) heavy-cable from the relay terminal to positive terminal of battery.
2) heavy-cable from the relay terminal to starter motor.
3) heavy-cable from negative terminal of battery to earth.
4) wire from relay terminal to starter push button on handlebar.
5) wire from relay terminal to ammeter.

Be sure of a perfect insulation of every connection. Double-check insulation of heavy cable connections. Protect wires from contact with earth or short circuit.

WARNING : be careful. Short circuit may cause big damage and even fire.

STEP 9 : STARTING

If you start a newly rebuilt engine for the first time, it is better to use the kick start to check that all is well and allow the moving part to run in.

During testing, the test engines were started both with and without using the exhaust valve lifter. Initially using the exhaust valve lifter (only during the very first engine revolutions) will make using the starter much easier. This method will improve lifespan of the battery and will allow more starting attempts in case of refractory engine. The ESK system is designed to cope with the loads placed upon electrical starting system and possible backfiring.

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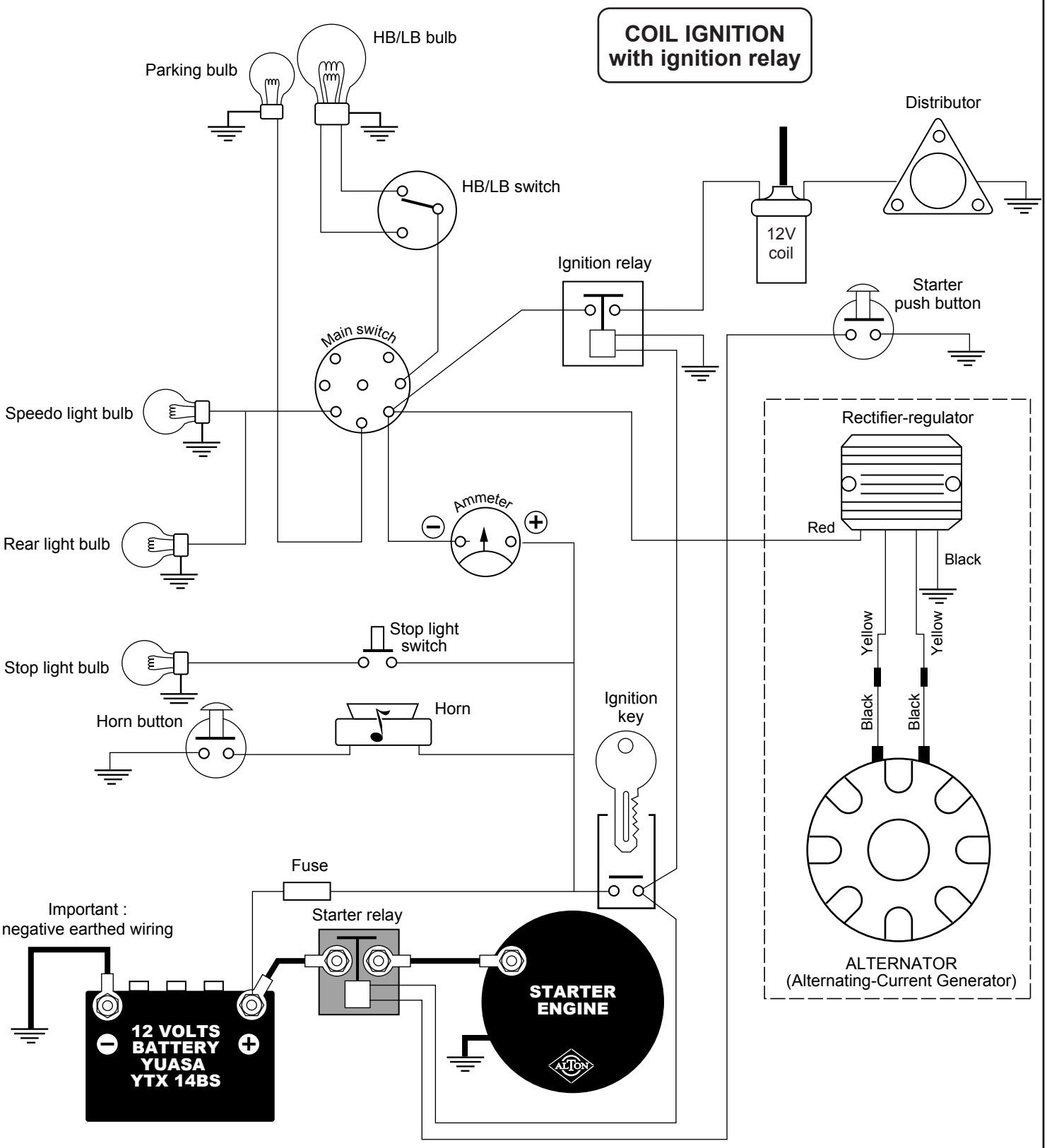
Doc Alton-ESK August 2007

Typical diagram for connecting the kit :
starter engine, starter relay, A.-C. generator and rectifier-regulator



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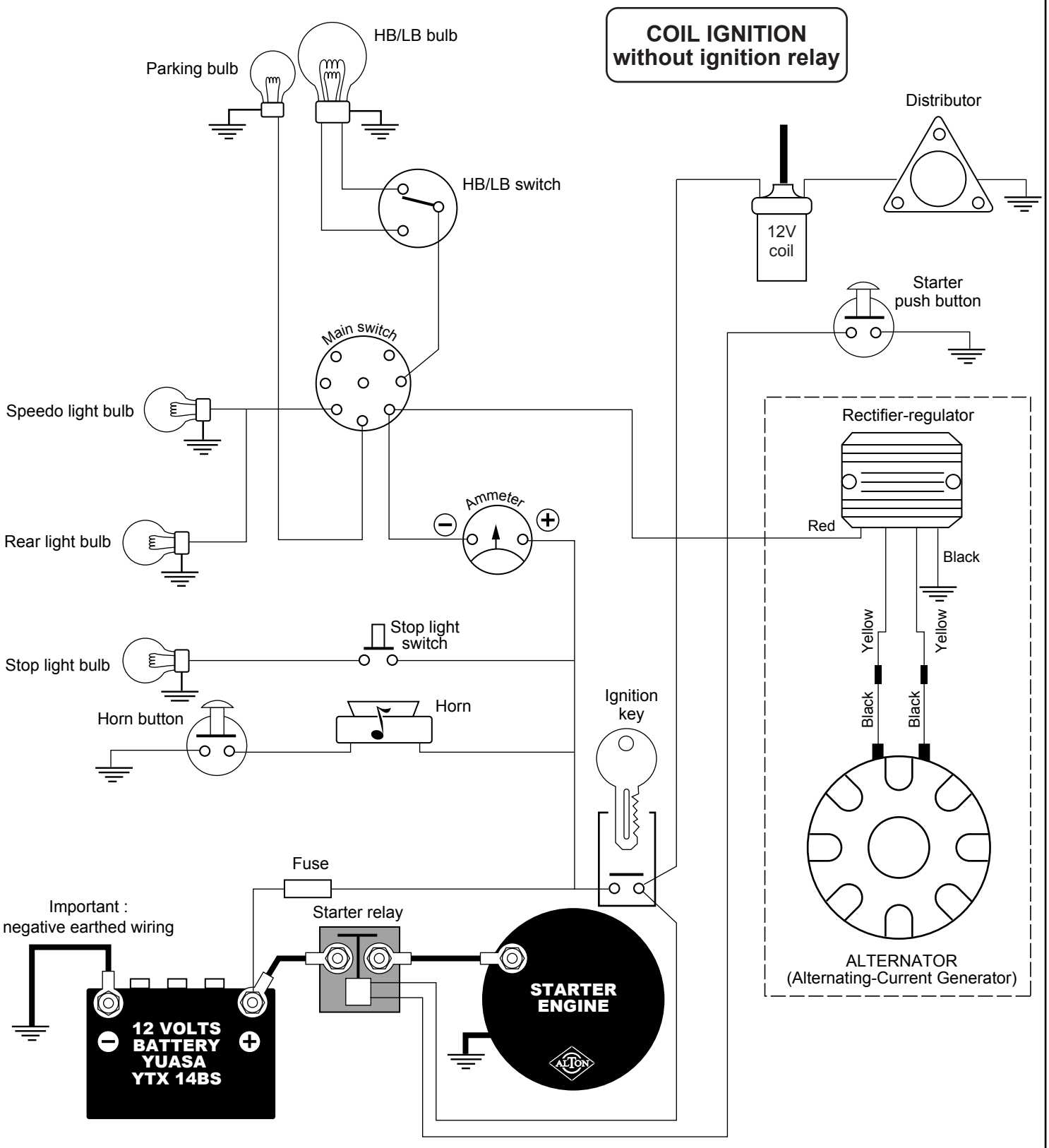

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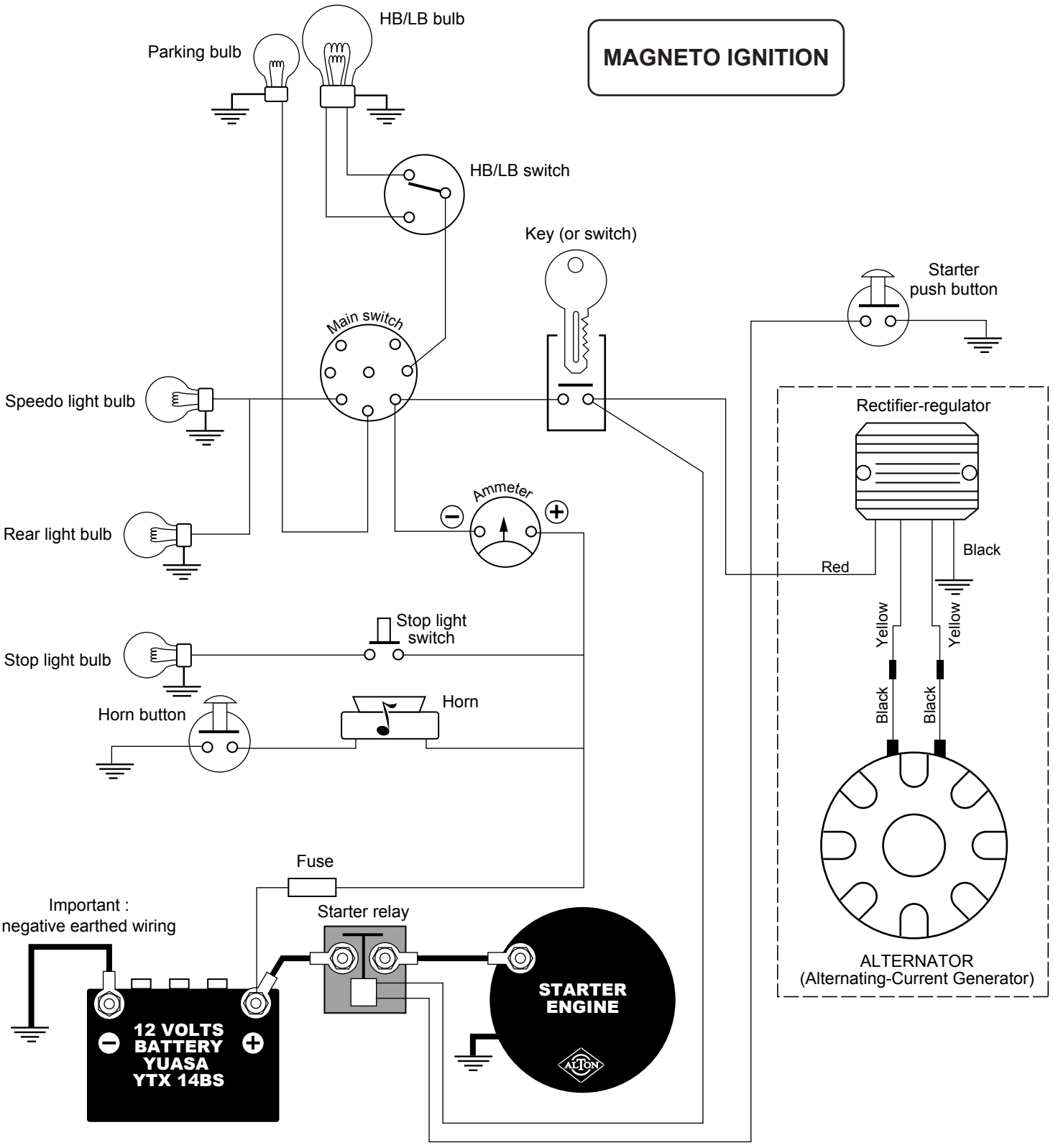

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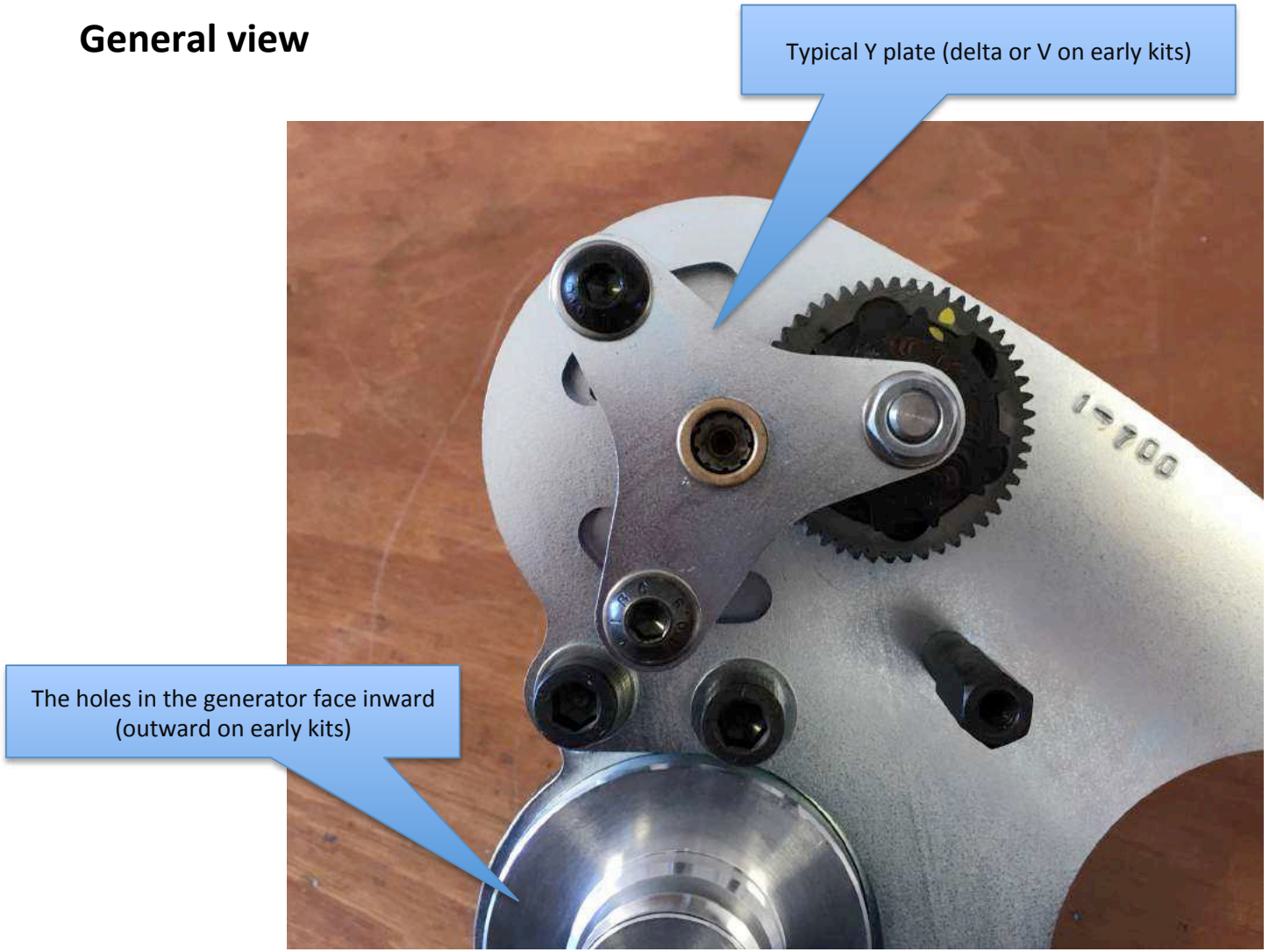
ALTON ESKV UPDATES

General view



ALTON ESKV

One-Way-Clutch assembly

Early type with its extractor

Actual model with extractor lever

ALTON ESKV

Primary drive shock absorber spring

Early model on the left (polyurethane)
On the right : actual model (steel) + washers for preload