

# WHAT IGNITION COIL IS "CORRECT" FOR MY MG TF?

Rev 29-Apr-2025

I gathered this info about TF coils from the TD/TF Workshop Manual, two TF Service Parts Lists, Lucas Batteries Equipment and Spares 1939, Lucas Equipment and Spare Parts 1945–1960, Lucas Technical Courses, and threads on the MG Enthusiasts BBS internet forum.

## Two coils were used on TFs

The "correct" original coil depends on when the TF was built.

- Lucas Q12 coils were used in T-ABCDFs until November or December 1954.
- Lucas LA12 coils replaced Q12 coils sometime after TF7973 between late November 1954 and early January 1955.

## Lucas Q12

Used until late 1954 (Nov or Dec.)

Painted black case, bitumen solid filled coil.

Taller and smaller diameter than the LA12 coil used in later TFs.

TD/TF WSM: Q12 Service #45020. (see WSM LA12 next page)

Lucas Parts List: Service # 45020A in MG "Midgets" 1946-1954.



I have not found MG documents that define the date or chassis number when Lucas LA12 coils replaced Lucas Q12 coils.

> David Sheward's TF-1500 #TF7427 built 11&12-Oct-1954 had an original Q12 coil

> J C Mitchell's TF-1500 #TF7973 built 12-Nov-1954 had an original Q12 coil.

1) Reproduction Q12: Moss #143-210.

<https://mossmotors.com/coil-screw-type-h-t-connection>

2) Reproduction Q12: Holden #030.005

[https://www.holden.co.uk/p/12\\_volt\\_coil\\_screw\\_in\\_lead](https://www.holden.co.uk/p/12_volt_coil_screw_in_lead)

3) Reproduction Q12: From-the-Frame-Up # EL214

[https://fromtheframeup.com/products/el214-coil-q12-new?\\_pos=1&\\_sid=c0fbd1b17&\\_ss=r](https://fromtheframeup.com/products/el214-coil-q12-new?_pos=1&_sid=c0fbd1b17&_ss=r)



## Lucas LA12

First used late Nov-Dec 1954 or Jan 1955  
(sometime after TF7973.)

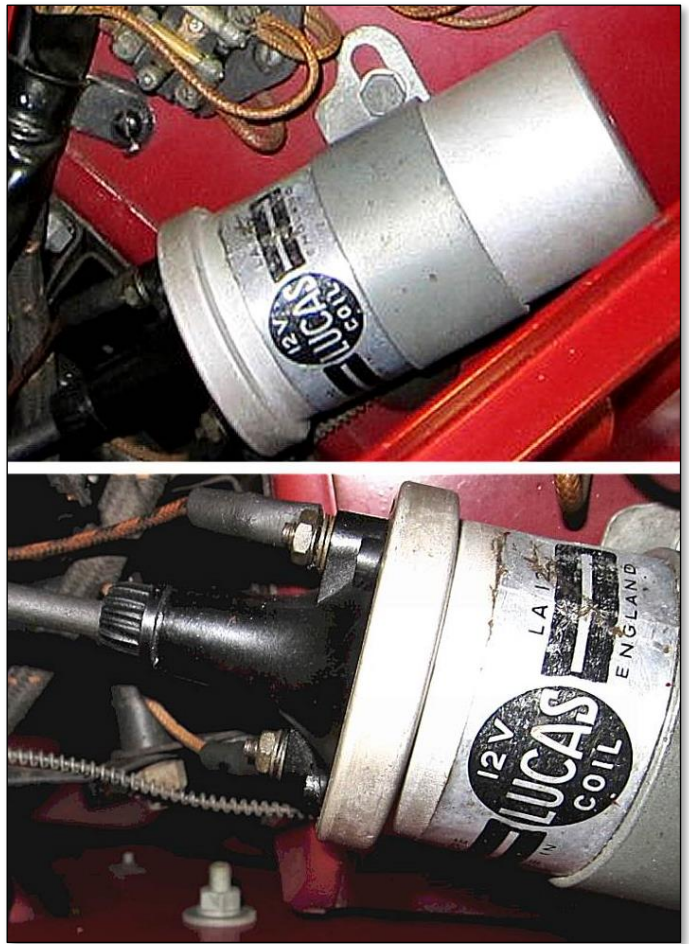
Natural aluminum case, oil filled coil.

Shorter, fatter, and usually hotter to the touch  
than Q12 coil.

Lucas Parts List shows Service No. 45053A in  
MG "Midgets" 1955 only.

I don't know the chassis number and date when  
LA12 coils were first installed. The WSM states  
"on later models ... LA12 (Part No. 2A536) is  
fitted as standard."

> TF9052, built 25-Jan-1955, has the original  
LA12 coil that was installed at Abingdon. Photos  
right.



1) Coil similar to LA12: British Parts Northwest #GCL101

<https://www.bpnorthwest.com/mg/mg-tc-td-tf/engine-electrical/ignition-coil-w-screw-in-ht-lead.html>

2) Coil similar to LA12: Moss #543-020

<https://mossmotors.com/coil-ignition-screw-in-coil-wire-aftermarket>

3) Coil similar to LA12: Holden #030.004

[https://www.holden.co.uk/p/12\\_volt\\_coil\\_screw\\_in\\_lead\\_with\\_lucas\\_label](https://www.holden.co.uk/p/12_volt_coil_screw_in_lead_with_lucas_label)

Reproduction metal foil decal for the coil:

Moss #36-5019, labeled "HA12"

<https://mossmotors.com/36-5019-sticker-lucas-coil>



## More coil information

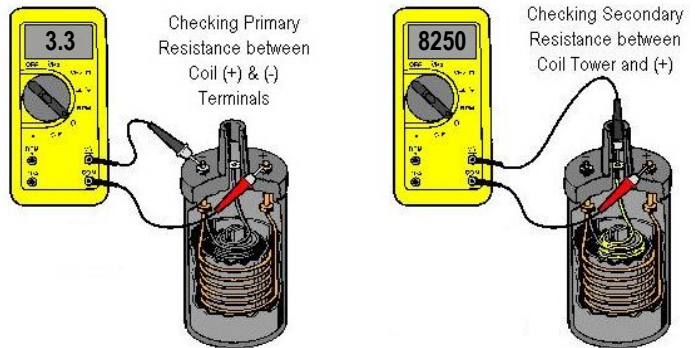
Lucas coils for T-series MGs were wound for positive earth, which requires about 10% less high-tension voltage. Lucas also made negative earth coils that produced similar spark polarity as Positive Earth coils. They are not in the Lucas Service Parts Lists.

### Modern Coil Low-Tension Connection to Distributor Points

- *Positive Ground:* "CB" or "+" to contact breaker points. "SW" or "-" toward ignition switch.
- *Negative Ground:* "SW" or "-" to contact breaker points. "CB" or "+" toward ignition switch.

The coil for your TF should be a non-ballasted coil. The resistance between the two primary (low tension) terminals on a non-ballasted coil is around 3.2 ohms. The secondary (high tension) resistance between the center high voltage terminal and the + low tension terminal is much higher.

The primary resistance in an internally ballasted coil is around 1.6 ohms.



## Coil Science

Resistance reflects of the amount and the gauge of the wire. The late Bob Jeffers posted these resistances and coil science in 2006, 2007, and 2009 on mg-cars.org.uk:

> Q12:	Primary = 4.39 ohms	Secondary = 5,190 ohms
> LA12:	Primary = 3.3 ohms	Secondary = 8,250 ohms
> SA12:	Primary = 2.6 ohms	Secondary = 10,050 ohms
> SP12:	Primary = 3.2 ohms	Secondary = 8,660 ohms

The more important numbers are the inductance of the primary and the secondary. They can tell the turns ratio. The turns ratio determines the output voltage.

The turns ratio is the square root of the quantity: secondary inductance divided by the primary inductance.  $\sqrt{[(\text{secondary inductance}) \div (\text{primary inductance})]}$

The turns ratio calculates to:	Q12 = 48.7:1 = $\sqrt{[(26.9 \text{ henrys}) \div (11.33 \text{ millihenrys})]}$
	LA12 = 70.9:1 = $\sqrt{[(55.3 \text{ henrys}) \div (11.00 \text{ millihenrys})]}$
	SA12 = 85.7:1 = $\sqrt{[(76.3 \text{ henrys}) \div (10.39 \text{ millihenrys})]}$
	SP12 = 89.1:1 = $\sqrt{[(64.2 \text{ henrys}) \div (8.09 \text{ millihenrys})]}$

If we assume 400 volts peak on the primary, then the maximum secondary voltages are:

Q12:	400(48.7)=19,480 volts peak
LA12:	400(70.9)=28,360 volts peak
SA12:	400(85.7)=32,280 volts peak
SP12:	400(89.1)=35,640 volts peak

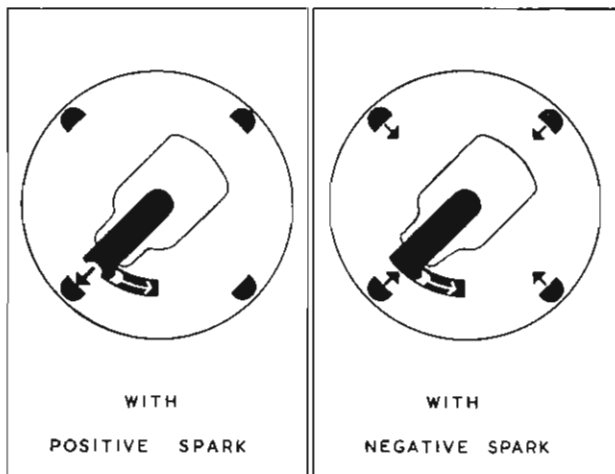
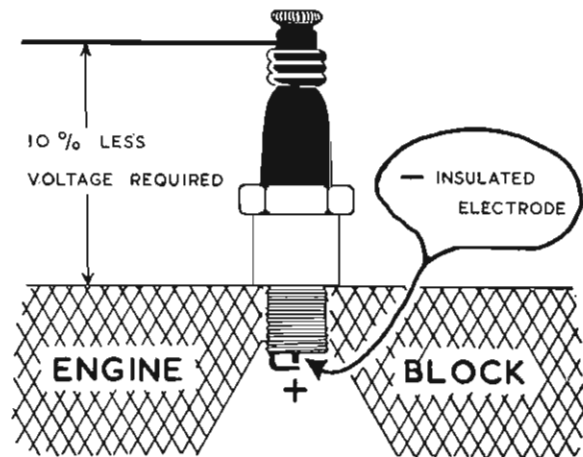
Lonnie Cook  
TF681, TF7211

### THE 'NEGATIVE SPARK.'

Coils are normally wound to give a *positive* earth spark — that is, the spark plug insulated electrode is *negative* with respect to the engine block or earth. We usually refer to this as a 'negative spark.'

Several distinct advantages are obtained. We have the same sparking efficiency at considerably lower voltages — approximately a 10% reduction in the H.T. voltage required to break down the gap. By lowering the voltage, the strain on the insulation throughout the high-tension circuit is considerably reduced — i.e. cable insulation, distributor cap and all mouldings and plugs.

We will point out that if the external connections to the SW and CB terminals of the coil are reversed, current will flow in the opposite direction through the coil, reversing the H.T. spark polarity. In addition the auto-transformer action is lost.



### ROTOR WEAR.

A further advantage gained with this *negative* spark is little or no wear of the rotor arm. The picture on the left shows how metal is transferred from the rotor to the fixed electrode on each spark. With the *negative* spark on the right, the metal transference is in the opposite direction and wear is divided evenly between the four fixed electrodes.

### NEGATIVE EARTH COIL.

Standard Lucas coils are all wound for use with *positive earth* battery : but special coils are available for use on negative earth systems, such coils being connected internally to give a similar spark polarity to those used with the *positive earth system*.

In emergency the negative earth coil can be used on a positive earth vehicle.





## SECTION C

### THE IGNITION EQUIPMENT

Description and Specification of Equipment.

Section No. C.1	Locating the cause of uneven firing.
Section No. C.2	Testing low-tension circuit.
Section No. C.3	The high-tension cables.
Section No. C.4	The sparking plugs.
Section No. C.5	The contact breaker.
Section No. C.6	Distributor lubrication.
Section No. C.7	Removal of the distributor.
Section No. C.8	Replacing the distributor and timing the ignition.
Section No. C.9	Dismantling the distributor.
Section No. C.10	The condenser.
Section No. C.11	Fitting new distributor bushes.
Section No. C.12	Reassembling the distributor.
Section No. C.13	Modified distributor fixing.
Section No. C.14	Distributors with high-lift cams.

#### GENERAL DESCRIPTION

The coil ignition equipment is provided with an automatic advance mechanism which relieves the driver of the necessity of adjusting the timing. The advantages are particularly evident when accelerating and during hill climbing, since the danger of knocking or pinking through excessive advance is very much reduced.

The automatic advance device is housed in the distributor unit, and consists of a centrifugally operated mechanism by means of which the ignition is advanced in proportion to the engine speed.

Like the rest of the electrical equipment, it is wired on the "positive earth" system, which results in longer sparking plug life.

##### *Distributor type*

The distributor is a Lucas Model D2A4, Service No. 40162 on early models and No. 40367 on later

models with high-lift cams. (See Section C.14.) In "TF" engines the service number is 40367A. These identification marks are stamped on the side of the distributor. When ordering replacements, always quote these numbers.

##### *Ignition coil type*

The coil is a Lucas Model Q12, Service No. 45020. These identification marks are stamped on the base of the ignition coil. When ordering, always quote these numbers. On later models a fluid-filled coil, Lucas No. LA12 (Part No. 2A536) is fitted as standard.

##### *Sparking plugs*

The standard sparking plugs for the M.G. "TD" Midget on engines prior to No. XPAG/TD2/22735 are Champion L.10S, 14 mm.,  $\frac{1}{2}$  in. reach.

Engines from No. XPAG/TD2/22735 onwards are fitted with the Champion NA.8, 14 mm.,  $\frac{3}{4}$  in. reach plug.

# Lucas Equipment & Spare Parts 1945-1960 Master Catalogue

**M.G.** 'Midget' 1946-55: MGA 1956-59: MGA 1600 1959-60

Ammeter .. .. .	1946-50	*369269	Generator (temporary alternative)	1960	*22704A	LAMPS, Head, Export— <i>continued</i>		
	1951-53	36153A		1958-60	22295A			
	1954-55	36181B/D		1958-60	*22483D			
					069248			
Battery .. .. .	1946-49	SG9A	Horn .. .. .	1946-49	*69011F	R.H.D., dip left .. .. .	1949-51	*50821D
	1950-55	GT9A		1950-55	69046A/F		1951	*50995A
	1956-59	SG9E		1955-60	*69012F		1952	*51014A
	1959-60	STGZ9E		1950-55	69047A/F		1952	*50985A
Bulb holder, panel light ..	1951-55	39007A	Low note .. .. .	1955-60	31269A	" " " " Later .. .. .	1953	51078A
	1960	554734		1953	76205A/D		1954	51344A
		987		1954-60	39507A		1955-59	51344B
				1951-53			1959-60	51344D/F
Bulb " " " " .. .. .	1946-54	*45020A	High note .. .. .	1946-48	*545145	L.H.D., dip right .. .. .	1949-51	*A50821D
	1955	*45053A		1949	56040A		1951	*50775D
	1956-60	*45054		1946-48	*545138		1952	51016E
		D/M		1949	*56042A		1952	50877B
Coil, ignition .. .. .	1946-47	*37031A	Inspection lamp sockets ..	1960	52337A	" " " " Later .. .. .	1953	*51080A
	1948-49	37057E		1949-53	*55063B		1954-55	*51345A & B
	1950-52	37065E		1960	55128B		1956-60	*51345D/F
	1952-55	*37138A/D		1954-60	55128E			
Control box .. .. .	1956-59	37182A/H	30 m.p.h. warning .. .. .	1960	056117	Head, Export Europe (not France) .. .. .	1949-50	*B50821D
	1959	37182J		1949			1951	*50996A
	1960	37183K		1946-48	*50103A		1952	*51015E
	1960	37182K & L		1948	*50102A		1952	50986D
" " " " (Twin Cam) ..	1958-60	*37189J	Flasher, rear .. .. .	1949	*50474A	ditto .. .. .	1953	*51079E
				1949	*50475A		1954-59	51346B/E
				1949	*50458A			
				1949	*50490A			
" " " " (Police Car) ..	1946-49	*40048A/F	Fog (optional) .. .. .	1949-51	*50821D	Head, Export Sweden ..	1950-51	*A50821D
	1950-52	40162A/E		1949-51	*50798D		1951	*50775E
	1953	40368D/E		1951	*50995A		1952	*51016E
	1953-55	40367D/E		1952	*51014A		1952	50877B
Distributor .. .. .	1956	40488A	" " " " (U.S.A.) .. .. .	1953	*51078E	" " " " Later .. .. .	1953	51405A
	1956-59	40510A		1954-55	51344A		1954-60	51467A
	1959-60	40510B/D & F		1956-59	51344B		1960	*58499A/B
	1960	40510E & H		1959-60	51344D/F			
" " " " (Twin Cam) ..	1960	40718A	Bracket .. .. .	1949	*50458A	Head, Export U.S.A. ..	1958-60	51533D/F
				1951	*50995A		1949	56040A
				1952	*51014A		1956	574825
				1953	*50985A		1957-60	573914
Flasher unit .. .. .	1954-56	*35003A	Head, Home .. .. .	1954-55	51344B	Lens .. .. .	1956-60	573915
	1957-60	35010A		1956-59	51344D/F		1956-60	573916
				1959-60			1949-60	53093E/J
							1960	53836B
Fuse box .. .. .	1952-55	033240	R.H.D., dip left (L.H.)	1946-47	*50103A	" " " " Later .. .. .		
	1956-60	033239		1946-47	*50102A			
				1948	*50474A			
				1948	*50475A			
Generator .. .. .	1946-49	22452A	" " " " non-dip (R.H.)	1949	*50458A	Head, Export France ..	1959-60	58272A/B
	1950-52	*22257A		1949	*50490A		1954-55	51411A
	1952-55	22265A/B		1949	*50458A		1956-59	51411B
	1956	22258D/E		1949	*50458A		1959-60	58273A/B
" " " " Later .. .. .	1956-59	22258E/F	" " " " vertical dip ..	1949-51	*50821D	Head, Export Sweden ..	1959-60	58451A/B
	1960	22700D		1949-51	*50798D		1950-51	*A50821D
				1951	*50995A		1951	*50775E
				1952	*51014A		1952	*51016E
" " " " Later .. .. .			" " " " non-dip (R.H.)	1953	*50985A	" " " " Later .. .. .	1952	50877B
				1954-55	51344A		1953	51405A
				1956-59	51344B		1954-60	51467A
				1959-60	51344D/F		1960	*58499A/B
" " " " Later .. .. .			" " " " dip left .. .. .	1949	*50458A	Head, Export N. America (except U.S.A.) .. .. .	1958-60	51533D/F
				1951	*50995A		1949	56040A
				1952	*51014A		1956	574825
				1953	*50985A		1957-60	573914
" " " " Later .. .. .			" " " " non-dip (R.H.)	1954-55	51344A	Cover .. .. .	1956-60	573915
				1956-59	51344B		1956-60	573916
				1959-60	51344D/F		1949-60	53093E/J
							1960	53836B
" " " " Later .. .. .			" " " " vertical dip .. .. .	1949	*50458A	Map reading .. .. .		
				1951	*50995A		1949	56040A
				1952	*51014A		1956	574825
				1953	*50985A		1957-60	573914
" " " " Later .. .. .			" " " " non-dip (R.H.)	1954-55	51344A	Lens .. .. .	1956-60	573915
				1956-59	51344B		1956-60	573916
				1959-60	51344D/F		1949-60	53093E/J
							1960	53836B
" " " " Later .. .. .			" " " " dip left .. .. .	1949	*50458A	Gasket .. .. .		
				1951	*50995A		1949-60	53093E/J
				1952	*51014A		1960	53836B
				1953	*50985A			
" " " " Later .. .. .			" " " " non-dip (R.H.)	1954-55	51344A	Number plate illumination ditto .. .. .		
				1956-59	51344B			
				1959-60	51344D/F			

\* See Supersession Chart

L.H. .. Left hand

R.H. .. Right hand

L.H.D. .. Left hand drive

R.H.D. .. Right hand drive

*continued*

Note. Before ordering Steering Column Controls refer to the detailed parts section (P)



# SERVICE PARTS LIST

M.G. MIDGET (Series "TF")

DESCRIPTION	No. off per Car	Commencing Chassis No. TF501		Part No.	Comm. Chassis No. TF	Part No.	Comm. Chassis No. TF	REMARKS
		Part No.	Illus. No.					
<b>Electrical Equipment and Instruments—continued</b>								
<b>Cable assembly—revolution counter, including :—</b> (LHD)	1	<b>ACG5083</b>						
Cable—inner (LHD)	1	ACG5084						
Cable—outer (LHD)	1	ACG5085						
Protection tube—revolution counter cable	1	500877						
Grommet—revolution counter drive	1	134995						
<b>Reduction box—dynamo (revolution counter), including :—</b>	1	<b>A1239</b>						
Attachment	1	A1239/1						
Driving spindle	1	A1239/101						
Nut	1	A1239/102						
Collar	1	A1239/103						
Sleeve	1	A1239/104						
Screw—collar	1	A1239/105						
<b>Ignition barrel lock, including :—</b>	1	<b>A894</b>						
Key	2	A894/100						} Always quote key number on order
Tag	2	ADG646						
Eyelet	2	136899						
Flasher unit	1	ACG5086						
Switch (less lever)—flasher light	1	138405						
Lever—flasher light switch	1	132137						
Horn—low note	1	A1340						
Horn—high note	1	A1341						
Bracket—horn	2	ACG5050						
Push button—horn	1	ACG5029						
Starter switch	1	138354						
Coupling—starter switch	1	138173						
<b>Regulator box, including :—</b>	1	<b>138458</b>						
Cover	1	300980						
Clip	1	A1321/101						
<b>Ignition coil, including :—</b>	1	<b>A302</b>						
Terminal nut	2	A302/100						
Cap	1	A302/101						
Acorn nut—ignition coil	1	68725						
Washer—ignition coil	1	138598						
Fuse box	1	138490						
Relay box	1	138612						
Battery (GTW9A/2)	1	138486						
Battery (GTZ9A/2) (E)	1	138487						
Screw—battery lug	2	S33/100						
Cushion—battery	1	138656						
Clamp—battery	1	131957						
Bolt	2	136691						
Packing—rubber	2	131959						
Tray	1	500805						
<b>Windscreen wiper assembly, including :—</b>	1	<b>ADG740</b>						
Motor and gearbox	1	AKG451						
Cover (bakelite)	1	AKG452						
Brush gear	1	A1304/3						
Brush set	1	68115						
Guide wheel and plate	1	AKG453						

TF Service Parts List May 1954

## SERVICE PARTS LIST

### M.G. MIDGET (Series "TF")

DESCRIPTION	No. off per Car	Commencing Chassis No. TF501		Part No.	Comm. Chassis No. TF	Part No.	Comm. Chassis No. TF	REMARKS
		Part No.	Illus. No.					
<b>Electrical Equipment and Instruments—continued</b>								
Horn—low note	1	3H713						] Fin. at Chassis No. TF8145
Horn—high note	1	3H714						
Bracket	2	7H5291						
Cover	2	7H5124						
Contact set	2	7H5126						
Diaphragm	2	17H5002						
Resistance	2	17H5008						
Sundry parts	2 sets	17H5001						
Horn—low note	1			1B9007	] 8146			
Horn—high note	1			1B9008				
Bracket	2			17H5410				
Cover	2			17H5409				
Contact set	2			7H5126				
Diaphragm—low note	1			17H5411				
Diaphragm—high note	1			17H5440				
Resistance and terminal block	2			37H5199				
Sundry parts	2 sets			17H5001				
Push-button—horn	1	2H3383						
Starter switch	1	3H949						
Coupling—starter switch	1	3H950						
Regulator box	1	17H5336						
Cover	1	7H5522						
Clip	1	7H5128						
Resistance	1	7H5066						
Ignition coil	1	2A536						
Terminal nut	2	87H5000						
Cap	1	17H5118						
Acorn nut	1	8H2695						
Washer	1	8H2696						
Fuse box	1	3H1910						
Relay box	1	3H1454						
Battery (GTW9A/2)	1	N.S.P.						
Screw—battery lug	2	186111						
Cushion—battery	1	183656						
Clamp—battery	1	181957						
Bolt	2	186691						
Packing—rubber	2	181959						
Tray	1	500805						
AMENDMENTS								