The TRIUMPH Corporation

SERVICE BULLETIN

September 18, 1967 67/8

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Comprehensive Test and Troubleshooting Instructions for all 6 and 12 Volt Battery Ignition Models ("B" & "C" Range from 1963) using Lucas RM19 A.C. Equipment.

There are five basic tests that should be performed when there is doubt that the motorcycle's electrical system is functioning properly. These are in order:

1. Battery and Ground Connection Test
2. Charge Rate Test: (D.C. current input to battery).
3. Alternator Output Test: - A.C. voltage output of alternator
4. Rectifier Output Test: - D.C. voltage output from rectifier
5. Zener Diode Test

It is absolutely essential that a well charged, properly rated battery be in the motorcycle's wiring system for these tests.

Although this bulletin emphasizes the use of a Tri-Cor model "750" test set, any reliable electrical test instrument may be used as long as a one ohm resistor of at least 100 watts rating is used in parallel with the A.C. or D.C. voltmeter when required. Be sure when making any test connections that the loose leads and wires are not in a position to short together or to ground.

By referring to the three schematic drawings on page H10 of the latest CD411 (white cover with blue printing), it is apparent that the same basic electrical system is used in all coil ignition (from 1963) Triumphs whether they are 6 or 12 volt equipped machines. Rotor, stator, and rectifier are or can be the same for 6 or 12 volt equipped models. The actual voltage output of the alternator is controlled by the internal resistance of the battery.

Test #1: Battery and Ground Connection Test

1. Set the voltmeter switch to D.C. Turn the load resistor OFF. Turn the motorcycle lights on for 10-15 seconds, then immediately after turning the lights off:
2. Check the voltage between the positive (+) and negative (-) battery terminals. The voltmeter must read at least 6.0 or 12.0 volts for either 6 or 12 volt batteries. If the battery does not read these minimum voltages, it must be replaced or recharged before the rest of the testing is continued.
3. Leave the black (-) voltmeter wire attached to the negative battery terminal and move the red (+) voltmeter wire to a good clean ground point on the motorcycle frame. This voltage reading and the one obtained in step #2 must be the same. If they are not, the battery is not grounded properly. Check the

fuse with an ohmmeter or test light to verify that it is good. Also, check the connections at the battery, frame and fuse holder to see that they are clean and tight.

Once it has been determined that a well charged, properly grounded battery is connected in the motorcycle's electrical system proceed as follows:

Test #2: D.C. Charge Rate

1. Disconnect the wires from the middle terminal of the rectifier.
2. Disconnect the wire to the Zener diode (if fitted) and tape or place it where it cannot short to ground.
3. Connect the red ammeter lead to the Brown/White wires removed from the rectifier.
4. Connect the black ammeter lead to the middle rectifier terminal.
5. Start the engine and observe the ammeter. With the engine at approx. 3,000 RPM (45 mph in 4th gear) you should obtain at least these MINIMUM readings:

500cc: All to H40527 — 500cc: All from H40528

650cc: 6T up to DU5824
TR6 & T120 up to DU24874 — 650cc: 6T-DU5825-DU24874 — 650cc: All from DU24875

	6 VOLT	12 VOLT	12 VOLT
OFF	2.5 amps	4.8 amps	4.8 amps
PILOT	2.0 amps	NOT NECESSARY*	NOT NECESSARY*
HEAD (High Beam)	1.75 amps	1.8 amps	NOT NECESSARY*

If the readings on the chart above are obtained, then the basic battery charging system is good. The trouble then will lie in a short somewhere in the wiring system, or else the Zener diode will shorted or open (see Test #5).

If these readings are not obtained, a quick check should be made to see if there is continuity between the battery and rectifier. Proceed as follows:

1) Turn the load resistor OFF. Turn the voltmeter switch to D.C.
2) Leave the engine shut off and turn the ignition key on.
3) Connect the red voltmeter lead to ground.
4) Connect the black voltmeter lead to the rectifier end of the Brown/White wire that connects to the middle rectifier terminal.

The D.C. voltage obtained should be within 1/2 volt of the battery voltage. If it is not, there is a short, open or poor connection in the wiring between the battery and the rectifier. Look for the open possibility first by checking for continuity thru the ammeter. If the voltage obtained compares favorably with the battery voltage then the trouble lies elsewhere in the charging system and you should proceed with test #3 as follows:

* These readings are not necessary because in these positions the headlight switch has no effect on the current output of the alternator for these model motorcycles.

Test #3: Alternator Output Test

1. Connect all wiring back to normal.
2. Disconnect the three alternator stator leads (Green/Yellow, Green/Black, Green/White) at the alternator side of the connectors under the engine.

Continued.....

3. Set the voltmeter switch to A.C.. Turn the load resistor switch on.

4. Connect either voltmeter lead to the White/Green wire.

5. Start the engine and run it approx. 3,000 RPM.

By connecting the other voltmeter lead to the following three combinations of wires, at least the following MINIMUM readings should be noted:

All "B" & "C" Range 6 or 12 Volt

Green/Black	4.0
Green/Yellow	6.5
Green/Black and Green/Yellow (connected together)	8.5

Lower readings than these minimum figures indicate a stator malfunction or demagnetized rotor. The stator can be checked for malfunctions as follows:

For the following open and short tests use an ohmmeter or electrical circuit test light (such as Tri-Cor #233).

To check the stator:

Shorted Winding Test:

There should be no continuity between any stator lead and the metal stator frame (or a good clean ground on the engine).

Open Winding Test:

There should be continuity between any combination of two of the three stator leads.

If all three A.C. voltage readings are zero or low and the stator checks out OK, the rotor is demagnetized or not turning with the crankshaft. It will be necessary to pull the primary cover and check the rotor at this point. If the rotor is properly attached to the crankshaft, then it is demagnetized and will have to be replaced.

NOTE: Reversed battery polarity can demagnetize the rotor and damage the rectifier. All A.C. equipped Triumphs have a positive (+) ground.

If test #3 fails to point out any trouble then proceed as follows:

Test #4: Rectifier Output Test

1. Reconnect all wiring to normal.

2. Disconnect the wire to the Zener diode (if fitted) and tape or place it where it cannot short to ground.

3. Disconnect the Brown/White wire at the middle terminal of the rectifier.

4. Turn the load resistor switch ON. Set the voltmeter switch to D.C..

5. On all 6 volt models and 12 volt 6T models, disconnect the Green/Yellow alternator stator wire from the alternator side of the connector under the engine. Using a double connector (Lucas #850641), connect this

Continued.....

The TRIUMPH® Corporation

SERVICE BULLETIN

TO ALL EASTERN TRIUMPH DEALERS: January 1, 1967 67/1

Suggested "Flat Rate " Labor Time Schedule for Triumph Unit Construction Motorcycles. This schedule is offered as a guide to all dealers.

* OPERATION NUMBER	OPERATION TITLE	SUGGESTED NUMBER OF HOURS ALL TWIN MODELS "B" & "C" RANGE	SUGGESTED NUMBER OF HOURS SINGLE CYL. "A" RANGE
1	Remove & install Engine/Gearbox Unit	4	2-1/2
2	Rebuild Engine/Gearbox Unit	12	8
3	"Top End" Rebuild	5	3
4	Engine Tune-up	1-3/4	1-1/4
5	Replace Oil Pump	1	1
6	Overhaul Primary Drive	1-1/2	1
7	Rebuild Gearbox & Primary Drive	3-1/2	3
8	Rear Drive Chain	1/4	1/4
9	Replace & Rebuild Front Wheel Assembly	1	1
10	Replace & Rebuild Rear Wheel Assembly	1-1/2	1-1/2
11	Wheel Repair	1-3/4	1-3/4
12	Replace Gas Tank	1	3/4
13	Replace Oil Tank	1	1
14	Replace Front Frame Section	9	6
15	Replace Damaged Front Fork Assembly	2	2
16	Overhaul Front Fork	1-1/2	1-1/2
17	Replace Wiring Harness	2-1/2	2-1/2
18	Electrical Test	1/2	1/2

* See description of "Operation Details".

Continued.....

OPERATION DETAILS

1. Remove and install engine/gearbox unit.

   Remove unit from frame, clean up frame and engine plates. Clean oil tank. Install new or reconditioned engine, tune-up and road test.

2. Rebuild engine/gearbox unit.

   Completely dismantle engine, gearbox and inspect all parts. Replace parts as necessary including cleaning prior to reassembly. Complete reassembly ready for installation in frame. Cylinder rebore and crankshaft regrind not included in rebuild time.

3. "Top End" Rebuild.

   Dismantle to crankcase level. Check pistons, cylinder bore and pin bushings. Replace parts as necessary. Cylinder rebore not included in rebuild time.

   Dismantle cylinder head and rocker boxes. Reface valve seats and grind valves. Assemble, adjust and road test.

4. Engine Tune-Up.

   Adjust Valve clearance, clean and adjust contact points, check ignition timing (Use TRI-COR IGNITION TIMER). Clean, and adjust carburetor. Clean and adjust spark plugs. Road test.

5. Replace Oil Pump.

   Dismantle to gain access to oil pump. Clean or replace pump. Assemble and check ignition timing.

6. Overhaul Primary Drive.

   Dismantle primary drive and clutch. Clean and replace parts including alternator if necessary. Assemble, adjust and road test.

7. Rebuild Gearbox and Primary Drive.

   Dismantle gearbox and primary drive. Clean, check and replace parts as required. Make adjustments as required and road test.

8. Rear Drive Chain.

   Lubricate and adjust rear chain. Adjust rear brake control.

9. Replace and Rebuild Front Wheel Assembly.

   Remove front wheel. Transfer bearings, brake parts, tire and tube from damaged wheel to new "wheel less internals". Assemble and adjust brake.

10. Replace and Rebuild Rear Wheel Assembly.

    As front wheel. Transfer bearings, brake parts, sprocket, etc., from damaged wheel to new "wheel less internals". Assemble and adjust rear chain and brake.

Continued.....

Operation Details Continued:

11. Wheel Repair.

Replace wheel rim and spokes as required. True and align wheel.

12. Replace Gas Tank.

Replace gas tank. Transfer accessories including taps and fuel.

13. Replace Oil Tank.

Remove oil tank. Clean oil tank and filter or replacement with new. Assemble.

14. Replace Front Frame Section.

Dismantle. Fit new front frame. Assemble, adjust and road test.

15. Replace Damaged Front Fork Assembly.

Remove fork assembly, Transfer accessories. Assemble. Adjust head bearings and road test.

16. Overhaul Front Fork.

Remove lower legs, replace bearings, oil seals and rubber boots as necessary. Assemble. Check head bearing adjustment, add oil and road test.

17. Replace Wiring Harness.

Removal of wiring harness. Does not include work on any other electrical components. Assemble new harness.

18. Electrical Test.

Test all Electrical components using TRI-COR Test Set following written instructions. This does not include making repairs or replacements.

DON - REVISE THE BOOK FROM THIS BULLETIN

The TRIUMPH Corporation

Parts - Tools - Accessories Bulletin

January 24, 1967 — Bulletin No.66-2P

SUBJECT: Replacement Parts Catalog No.5 for 1967 "B" Range Twins

Listed below are important corrections and additions that should be made in this catalog immediately.

IMPORTANT NOTE: Always check the remarks column at the far right of each odd-numbered page in the parts catalog for additional information when ordering. This column identifies the particular model the part fits if it is not universal, and starting engine numbers for parts changed during the model run.

Page No.	Ref. No.	Corrections and Additions
12.		DELETE: CP188 Carton Pack (order individual items).
		DELETE: CP97 Carton Pack (order individual items).
		DELETE: E6387 Piston. Part number incorrect. 7.5-1 CR Piston not stocked.
		NOTE: E6868 and E6867 Pistons are complete with rings and circlips and are in effect "Carton Pack" piston assemblies.
		ADD: CP168/64 Fork Rebuilding Kit.
		ADD: GS/B/66-67 Overhaul Gasket Set.
13		NOTE: Triumph paint stocked only in aerosol containers.
17	14 & 15	DELETE: Individual Rings not available. Use CD460 Ring Set.
	23	DELETE: 54215824 Rotor. Order 54213901 Rotor which is interchangeable.
25	17	DELETE: E5914 Aluminum Adaptor. Use E3583 Steel Adaptor.
		ADD: E5347 Sleeve for head bolts passing through inlet tract.
27	26	CHANGE: 42539 to 425359.
		ADD: E4849 Dowel Pin, exhaust camshaft to auto-advance unit.
		ADD: 425370 Base Plate, for contact breaker assembly.
		ADD: 54933228 Lead, contact set to coil.
29		ADD: T1604 Heavy Duty Index Plunger Spring.
31	11	CHANGE: T1846 to T1845.
	16	CHANGE: T489 to E489.
39	11	NOTE: F7357 Prop Stand Complete, fitted to TR6R and T120R
41	15	DELETE: 64054506. Not fitted to U.S. Models.
	20	DELETE: SA 253/5. Not fitted to U.S. Models.
	41	CHANGE: W11 to W1467.
	43	CHANGE: 31437 to 5403323L.
		ADD: 64054465 Damper Unit for 64054164 Suspension Unit.

Page No.	Ref. No.	Corrections and Additions
42	19	NOTE: Illustration incorrect - round type rubber fitted.
47		ADD: E4204 Leg Guard .....2) ADD: E4207 Clip .....4) ADD: F4715 Screw .....4) TR6C ADD: E2351 Plain Washer .....4) ADD: F3799 Self-locking Nut ...4)
49	10	NOTE: F6728 Lock not supplied with H2100 Top lug.
	11	ADD: D623 Key (state serial number). Key numbers run from EJR1 to EJR50.
51	3	NOTE: F6728 Lock not supplied with H2099 Top Lug.
53	26 & 27	DELETE: W1734 Linings, W129 Rivets not stocked. Use CP205 Carton Pk.
55	27 & 28	DELETE: NW243 Linings, W129 Rivets not stocked. Use CP39/AM2. " "
57		DELETE: Entire Page. Q.D. Wheel not fitted to U. S. Models.
59	1	DELETE: F7004 Gas Tank. Not fitted to U.S. Models.
	7	DELETE: F5398 Styling Strip. Not fitted to 1967 Models.
	11	DELETE: TR6R from remarks column.
		NOTE: Correct part numbers for gas tanks are as follows: TR6R - F7003 MG/AW TR6C - F6728 MG/AW T120R & T120TT - F6728 Aub/AW (from engine number DU48157) T120 & T120TT models up to engine number DU48156 were fitted with the F6728 Aubergine/Gold gas tank. However, the factory has discontinued this color scheme, and as our stock is exhausted here, only the F6728 Aubergine/ Alaskan White will be supplied.
61	10	DELETE: E4594 not stocked. Use CD31 Tubing.
63	14	DELETE: F6431. Not stocked. Use F6432.
	15	CHANGE: F5764 to F6866 Cloth Element. Fitted to T120R, T120TT.
67	5	DELETE: H1482. Not fitted to U.S. Models.
	20	DELETE: F5984 Rear Mudguard. Not fitted to U.S. Models.
	22	NOTE: Use F7850 Lifting Handle on models fitted with F5424 with exaggerated bend not permitting use of CD464 or CD469.
	1 & 20	NOTE: Specify year, model, and color scheme when ordering painted parts.
		DELETE: F5924 Rear Number Plate. Not fitted to U.S. Models.
69	1	DELETE: H1871 Handlebar. Not fitted to U.S. Models.
	13	DELETE: 18/1004. Not fitted to U.S. Models.
	13	DELETE: 18/999. Not fitted to U.S. Models.
	28	DELETE: 18/1000. Not fitted to U.S. Models.
		ADD: 54941009 Lead, for horn push and dip switch.
	41 & 42	NOTE: Sold only as a unit under part number 18/838/839.
71	1	CHANGE: D565 to D466T.
	5	DELETE: D558. Not fitted to U.S. Models.
	5	CHANGE: D559 to D330T.
	12 - 19	DELETE: D499 and components. Not fitted to U.S. Models.

Page No.	Ref. No.	Corrections and Additions
73	8	CHANGE: D311 to DA311.
	10	DELETE: D87. Not stocked.
	16	CHANGE: DA50/1 to D662/3. Models fitted with the new T2436 Mainshaft require the use of the new D662/3 clutch center extractor. The D662/3 extractor also works on older models and therefore supersedes the DA50/1. Tri-Cor CD222 pullers in stock here have been modified to fit these late models also. Older CD222 pullers can be modified to fit by removing the taper at the bottom of the inside bore of the tool. DA50/1 pullers will not work on models fitted with the T2436 mainshaft and cannot be modified to fit.
	17	DELETE: D296. Not stocked.
	27	DELETE: D261. Not fitted to U.S. Models.
	30	DELETE: D527. Use CD367.
74	38	CHANGE: Reference No.38 "O" Ring Seal to Reference No.3.
77		DELETE: Entire Page. Not fitted to U.S. Models.
80	2 & 3	NOTE: Illustration numbers reversed.
81	1	DELETE: SSM5001/00 Speedometer Head KPH. Not fitted to U.S. Models.
	18	DELETE: E5156. Not available.
	19	DELETE: E5155. Not available.
	26	DELETE: E6124. Not available.
		ADD: 31-315-135 Brass fitting for instruments at cable connection.
		ADD: E5758 Body, for E5756 Tachometer Gearbox.
		NOTE: Smiths speedometers are standard equipment on all 1967 "B" Range Models. VDO Enduro speedometers are available if desired, but at dealer's or customer's expense. See Tri-Cor Accessory Catalog for ordering information.
83	13	CHANGE: 31071 to 31107.
		ADD: 54441104 Clip, at ends of 45149 coil.
		ADD: 54441946 Lamination, for 45149 coil.
		ADD: 54523480 Headlight Shell, for 59699 Headlamp.
85	8	DELETE: 100104. Use 54100776.
	18	DELETE: D262. Use D105T.
	28	DELETE: 54937976 H.T. Lead. Not stocked.
	29	DELETE: 842183 H.T. Lead. Not stocked.
	35	CHANGE: 70197 to 70183.
		ADD: 423947 Bracket, for 45110 coil.
87	8	ADD: 54520540 Adaptor Unit, complete with leads. 554602 not supplied with leads as illustrated.
	32 - 42	DELETE: 53454 and components. Not fitted to 1967 Models.
	50	DELETE: 127684. Use 110714.
	54	ADD: Part number D622 (specify key number).
		ADD: 54523508 Headlight Shell, for 59734 Headlamp.
		ADD: 54130041 Nut, for 31899 Ignition Switch.
		ADD: 54938986 Fuse Assembly.
		ADD: CD392, 30 amp Fuse (box of five). CD447, 20 amp Fuse (box of five).

The TRIUMPH Corporation

SERVICE BULLETIN

April 7, 1967 67/2

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: 1966 and Early 1967 - 650cc "B" Range Twins
Service Problem --- Loose Pivot Bolt at Swinging Arm Bearing

We urge all dealers to watch for this condition which can cause serious problems if preventive maintenance is not taken when the trouble first develops.

SYMPTOM: A loose condition at the swinging arm bearing can be detected by putting the machine on the center stand and gripping the rear tire at a point just below the tip of the rear fender to feel for side play or looseness at the rear suspension pivot point.

CAUSE: If the pivot bolt, F6150 for 1966 models and S591 (unified thread) for 1967 models is not sufficiently tight it can work loose in spite of the fact that the tab washer F5944 and the lock nut (NT297 for 1966 or S545 for 1967) is still in place. In severe cases the bolt can back off until the head presses the rubber oil return line against the inside surface of the right hand rear engine plate. This will cut off the return oil to the tank, causing severe wet-sumping that can lead to a major failure (burned out connecting rod bearings).

CURE: Remove both engine plates and also the lock nut and tab washer on the left hand end of the bolt. Then tighten the pivot bolt to 45 foot pounds torque and carefully check the swinging arm for any loose condition. If this corrects the trouble, clean the threads on the bolt, apply Loctite and while holding the bolt tight, assemble the lock nut and tighten it to 45 foot pounds torque.

CAUTION: If the machine has been operated for considerable mileage with a loose pivot bolt, the hole in the frame lug just under the head of the bolt can become enlarged and this will prevent proper tightening of the assembly and could cause further serious trouble as it will allow the right hand end of the bolt to "work" forward and back in the frame. This will cause bad handling at high speeds. We suggest that you send us a report if you have a frame where this condition exists as we can suggest a method of repair to avoid the need of replacing the complete front frame section.

The subject trouble has occurred with 1966 models in the engine number range between DU39100 and DU44394. Also some difficulty with loose pivot bolts was experienced with early 1967 models between engine numbers DU44394 and DU48157.

NOTE: Always check your customers' machines for this serious loose condition whenever you have the opportunity. Keep a record of those that are corrected. The arm should be free to swing, but without any looseness or end play.

THE TRIUMPH CORPORATION

The TRIUMPH Corporation

SERVICE BULLETIN

April 7, 1967 67/3

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: 1966 and early 1967 - 650cc and 500cc Triumph twin models with 12 volt battery ignition system.

Service Problem --- Ignition trouble with models that have Lucas coils. 1966 - TR6/R and T100/R models. Also 1967 - TR6/R (1967 - T100/R models have Siba coils).

SYMPTOM: Loss of power and serious over-heating that could lead to a piston seizure. Owner complains that engine is "bogging-down" as though brakes are dragging or engine seizing, at engine speed of approx. 3700 RPM.

CAUSE: A "maverick spark" can occur during the inlet cycle. This "extra" spark will cause premature burning of the inlet charge (mixture) to produce over-heating and loss of power. The spark is caused by a voltage surge when the points close. It usually happens with Lucas 12 volt coils. It is not likely to happen with the Siba coils fitted to 1966 - '67 T120/R and 1967 - T100/R models.

To check for this condition, try to eliminate the symptom by unplugging the three alternator leads at the junction block. If this eliminates the symptom you can be reasonably certain that the over-heating or piston seizure is caused by this "extra" unwanted spark.

CURE: Replace the original ignition cam 54441729 by the new type (54419124). This new cam has a much longer dwell when the points are closed and is known as the "160° cam". The longer dwell allows the points to close much earlier and at a time when combustion cannot occur.

We can supply the 160° cam (54419124) from stock. The older style (54441729) should only be used for 6 volt battery ignition models up to and incl. 1965. If you fit the new 160° cam to a 6 volt model it would cause extra drain on the battery.

Note For Ordering: We suggest that you order a few of the new 160° contact breaker cams immediately. If you will return to us the original equipment cams (short dwell) we will replace them free-of-charge with the new type. At the same time if you will return to us any early sleeve and action plates, we will also supply free-of-charge replacements of the latest type part #54415751. This sleeve and action plate can be identified by the black finish and it has the smallest slot (for the locating pin) which reduces distortion of the taper that can cause a "wobble" of the contact breaker cam.

CAUTION: None of the information in this Service Bulletin applies to A.C. ignition models such as the T100/C, TR6/C or the T120/TT Special.

1967 - T120/R models after Engine No. DU51771 and T100/R models after Eng. No. H51616 have the new 160° ignition cam fitted at the factory.

THE TRIUMPH CORPORATION

The TRIUMPH Corporation

SERVICE BULLETIN

1967 "A" RANGE TIGER CUB 200cc

BULLETIN No. 5 April 26, 1967

SUBJECT: Important Service Information 1967 - T20/M Tiger Cub Models

1. Ignition Timing

All 1967 - T20/M models were fitted with a 7:1 compression ratio piston and it has been found that these machines often run better with an ignition timing of 32° fully advanced, instead of the 36° timing recommended for earlier models.

2. Forks "Topping" on Full Extension

Some early production Cubs showed this symptom which was caused by the damping sleeve H1896 being fitted upside down. All 1967 Cubs shipped from Baltimore after December 7, 1966 were corrected. If you encounter this complaint, we suggest that you remove the damping sleeve and re-install it correctly with the large inside diameter facing upwards. If we receive a blue labor adjustment card we will issue you a credit of $5.00 to cover the labor.

3. Improved Gears

Mainshaft first gear (T2328) and layshaft first gear (T2326) with K/S ratchet were fitted at the factory after engine number 3855. Also, these new improved kickstart and M/S first gear were fitted to an earlier group of engine numbers shipped to dealers from Baltimore after December 7, 1966.

NOTE: The two new gears mentioned above have a different shape of tooth and pitch diameter from the original gears and thus they must always be installed in pairs. There is no change in the number of teeth of each gear, but there is a difference in the shape of the teeth. In the new layshaft low gear, it is also noticeable that the holes in the side face of the gear are smaller and of a different shape in order to strengthen the gear to prevent breakage under a heavy kickstart load.

4. Valve Clearance

After engine number 5004 a standard camshaft with "ramp" cams was fitted to the T20/M model and the valve clearance for any machine after that number should be adjusted to .010" for best performance.

5. A.C. Ignition

If a T20/M develops a hard starting symptom and the spark at kickstart speeds is weak, it is well to remove the primary cover to check the position of the alternator rotor. With the piston on top center, the keyway in the drive side shaft located at 3 o'clock should always be used to drive the rotor.

The TRIUMPH Corporation

SERVICE BULLETIN

This bulletin supersedes bulletin No. 62/9 May 4, 1967 Bulletin No. 67/4

GEAR RATIO CHART FOR TRIUMPH "B" RANGE TWINS with Unit Construction Engine

Use this chart for all "B" Range 650cc models with unit construction engine from DU101.

All these models have 29T engine sprocket and 58T clutch sprocket.

Gearbox Sprocket	Rear Wheel	Ratio	Gearbox Sprocket	Rear Wheel	Ratio	Gearbox Sprocket	Rear Wheel	Ratio
15	43	5.73	16	43	5.37	17	43	5.06
15	44	5.87	16	44	5.50	17	44	5.18
15	45	6.00	16	45	5.62	17	45	5.29
15	46	6.13	16	46	5.75	17	46	5.41 ****
15	47	6.27	16	47	5.87	17	47	5.53
15	48	6.40	16	48	6.00	17	48	5.65
15	49	6.53	16	49	6.12	17	49	5.76
15	50	6.67	16	50	6.25	17	50	5.88
15	51	6.80	16	51	6.37	17	51	6.00
15	52	6.93	16	52	6.50	17	52	6.12
15	53	7.07	16	53	6.62	17	53	6.24
15	54	7.20	16	54	6.75	17	54	6.35
15	55	7.33	16	55	6.87	17	55	6.47
15	56	7.47	16	56	7.00	17	56	6.59
15	57	7.60	16	57	7.12	17	57	6.71
15	58	7.73	16	58	7.25	17	58	6.82
15	59	7.87	16	59	7.37	17	59	6.94
15	60	8.00	16	60	7.50	17	60	7.06
18	43	4.78	19	43	4.53	20	43	4.30
18	44	4.89	19	44	4.63	20	44	4.40
18	45	5.00	19	45	4.74	20	45	4.50
18	46	5.11 **	19	46	4.84 *	20	46	4.60 ***
18	47	5.22	19	47	4.95	20	47	4.70
18	48	5.33	19	48	5.05	20	48	4.80
18	49	5.44	19	49	5.16	20	49	4.90
18	50	5.56	19	50	5.26	20	50	5.00
18	51	5.67	19	51	5.37	20	51	5.10
18	52	5.78	19	52	5.47	20	52	5.20
18	53	5.89	19	53	5.58	20	53	5.30
18	54	6.00	19	54	5.68	20	54	5.40
18	55	6.11	19	55	5.79	20	55	5.50
18	56	6.22	19	56	5.89	20	56	5.60
18	57	6.33	19	57	6.00	20	57	5.70
18	58	6.44	19	58	6.11	20	58	5.80
18	59	6.56	19	59	6.21	20	59	5.90
18	60	6.67	19	60	6.32	20	60	6.00

**1963-67 120/C & TR6/C

*1963-67 T120/R & TR6/R

*** 1963 6T

**** T120/C "TT SPEC"

The TRIUMPH Corporation

SERVICE BULLETIN

"A" RANGE TIGER CUB 200cc

BULLETIN No. 6 June 1, 1967
Supersedes Bulletin No. 62/8

SUBJECT: Kit of Racing Valve Springs for Tiger Cub Models

The special "single" racing valve spring (CD252) has given excellent service in our 500cc "C" Range racing engines. Based on this experience, we have now developed a successful similar combination for the Tiger Cub engine. The new racing valve spring for T20 models is identified by red paint. An inner spring should NOT be used with this spring and it can only be used with the parts shown below. Parts can be ordered separately or as a kit.

CD302 TIGER CUB RACING VALVE SPRING KIT Price $6.00B

Consists of the following:

Qty.	Description
2	Racing valve springs (red paint identification)
2	Special lower spacers
2	Top collars
4	Taper keepers

IMPORTANT NOTE:

When fitting CD302 racing valve spring kit it is important to check the following points carefully:

1. Remove sharp corners from the top and bottom curved inside edges of the steel keepers where they contact the valve stem.

2. The special lower valve spring spacer, CD284, is a snug fit in the spring.

3. With valves assembled to the head, carefully check the length of the special valve spring. It should measure no more than 1-5/32" and no less than 1-1/8" with all parts assembled and valve on seat.

When setting up a Tiger Cub for racing, we suggest using the subject valve spring kit and also our replacement racing exhaust valve, E3147KE.

NOTE: DO NOT use the CD252 spring in Tiger Cub. Use ONLY the CD298 with red paint as shown above.

The TRIUMPH Corporation

SERVICE BULLETIN

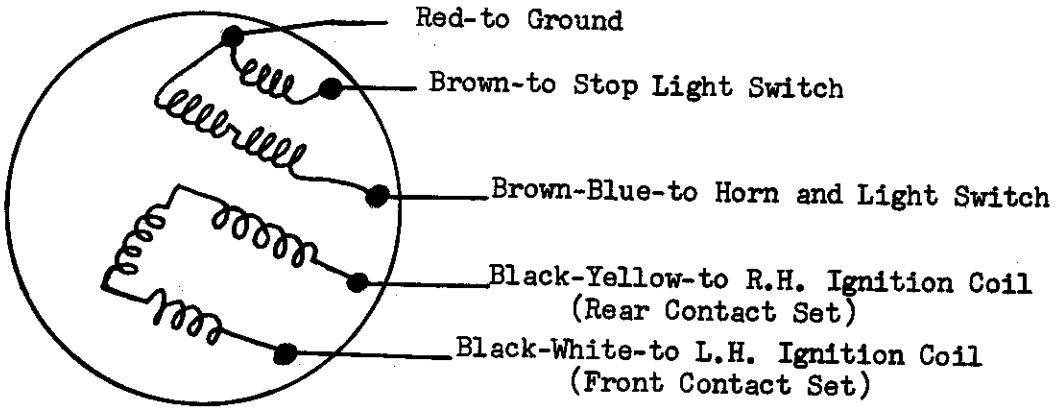
August 24, 1967 67/5

TO ALL EASTERN TRIUMPH DEALERS:

SUBJECT: Revised Internal Connections and Test Procedure - 47197 Stator Fitted as Standard equipment to latest 1967 Triumph models with Direct A.C. Ignition (no battery) T120/TT, TR6/C, T100/C and T20/M.

Refer to the wiring diagram for A.C. Ignition models on page H27 of your latest CD411 Workshop Manual. This is the 1967 manual with white loose leaf binder and blue printing on the cover.

The internal stator connections shown in Fig. H29 (on page H27) apply to the earlier 47188 stator. The NEW encapsulated stator, part number 47197, has revised internal connections as shown in the sketch below.



Note that the Brown wire to the stop light is no longer connected to the ignition windings.

Refer to page H21 in your CD411 Workshop Manual. Average A.C. voltage figures for 47188 stator should be 5.0, 2.0 and 5.0 from left to right in the lower column under alternator output. To obtain these readings, you must unplug all alternator leads, and run the engine at 3,000 RPM using an outside power source (a battery and pair of battery ignition coils).

When testing the new encapsulated stator, part number 47197, these output figures remain the same, but must be obtained by making the following connections:

	A.C. Volts (with 1 ohm resistor)
A - Red and Brown/Blue	5.0
B - Black/Yellow and Black/White	2.0
C - Red and Brown	5.0

These A.C. voltage readings may be taken with any Tri-Cor test set. A 1 ohm resistor is built into the test set.

Continued.....

To Test Stator for Shorted Windings:

1. Using an ohmmeter or electrical circuit test light (such as Tri-Cor #233) there should be no continuity between any stator lead and the metal stator frame.
2. There should be no continuity between a Black/Yellow or Black/White wire and any of the other three leads.

To Test Stator for Open Windings: (Use ohmmeter or test light as above)

1. There should be continuity between the Black/Yellow and Black/White leads.
2. There should be continuity between any combination of two of the Red, Brown and Brown/Blue leads.

Very truly yours,

THE TRIUMPH CORPORATION

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

August 24, 1967 67/6

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Wet-Sumping on "A", "B", & "C" Range Triumphs

Wet-sumping can occasionally be a problem on some Triumph motorcycles.

Symptoms of wet-sumping are:

1. Excessive oil emitting from crankcase breather tube and resulting high oil consumption.
2. Smoking exhaust.

To verify that a wet-sumping condition exists, run the engine until it is thoroughly warm. Within five minutes after engine shutoff drain the sump. Measure the amount of oil that drains out. An amount of oil over 100cc indicates a wet-sumping condition and corrective measures should be taken.

Possible causes of wet-sumping are:

1. Foreign material preventing ball check valve from seating in the scavenge side of oil pump (most common cause).
2. Poor check valve ball seat.
3. Air leak in crankcase oil scavenge pipe.
4. Air leak in oil pump to crankcase joint.
5. Porous crankcase casting.
6. Air leak at E4539 1/4 W plug bottom of engine ("B" Range) or at T1553 Phillips screw plug at bottom of engine ("A" Range).
7. Blockage in return oil line - could be caused by mis-aligned E3763 oil junction block gasket.
8. Oil pressure relief valve piston in full bypass position due to a stuck piston or broken or missing spring.
9. Restriction in oil tank vent pipe.

Scavenge Suction Test (for checking above causes #1 thru #6)

Obtain from any auto parts store a vacuum gauge calibrated in inches of mercury. Attach a length of standard Triumph oil line to it and proceed as follows:

1. Run engine until it is thoroughly warm.
2. Remove the oil sump cap and screen.
3. Connect hose from vacuum gauge to oil scavenge pipe.
4. Run engine at a fast idle - gauge should read a vacuum of 18-26 inches of mercury.
5. Stop engine and observe gauge. The needle should gradually - not immediately - drop to zero.

Continued.....

If the Scavenge Suction Test is Satisfactory

1. Check oil pressure relief valve assembly and also check oil pressure (see #8).
2. Check the return system from the pump to the oil tank and also the tank vent (see #7 & #9).

To check for a blocked or restricted oil return to the tank: (see item #7)

1. On "B" & "C" Range oil tanks using a hand chuck and 7/64" and 15/64" drill bits, run the drill bits into the return tube and rocker feed tube (if fitted) at the bottom of the tank to see that both tubes are free from internal burrs and restrictions that can occur at their welded joints.

   On "A" Range oil tanks use 7/64" and 5/32" drill bits to check these two tubes in the same manner for restrictions.

2. After doing the above, blow out the return oil line and the return tube in the oil tank with compressed air.

If the Above Test is Not Satisfactory

1. Remove oil pump - clean thoroughly and see that ball seats are concentric and free from pits or grooves. Re-assemble pump, tighten check valve caps securely and re-install pump with a new gasket.

To check for sump pick up tube leakage or case porosity, fill a good "pumper" type oil can (*) with solvent and squirt thru a folded rag into pickup tube. Back pressure should prevent pumping solvent out of the can in a few pumps. If the solvent can still be pumped with no evidence of substantial back pressure, obviously there is a leak in the pickup tube or crankcase scavenge oil passageways.

It is good insurance to check the oil pressure and scavenge suction on every new motorcycle at set-up and after all major overhauls.

See appropriate workshop manual for specifications and instructions for checking oil pressure.

* To be sure that your oil can is O.K. for this test, fill it with solvent and block the outlet tube. After one or two pumps the can should "liquid lock". If you can still pump the can, the pump mechanism is suffering from excessive blow-by and the can will not suffice for this test.

Very truly yours,

THE TRIUMPH CORPORATION

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

August 24, 1967 67/7

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Exhaust Tappet Lubrication System for 650cc Twins

Starting with 1966 model "B" Range twins (after Eng. #DU24875) the exhaust tappets have been pressure lubricated with oil to reduce exhaust camshaft and tappet wear.

Up to Eng. #DU63042 this lubrication system has used exhaust tappets with a 9/32" flat on the stem and a special dowel containing a metering jet in the front of the timing cover.

Starting with Eng. #DU63043 the exhaust tappet stem flats have been shortened to 3/32" to give a "timed" effect and the dowel/metering jet in the timing cover has been removed and replaced with the T989 hollow dowel previously used before DU24875.

To summarize the parts changes:

Eng. #DU24875 - DU63042		Identifying Feature
Exhaust Tappets - Racing	E6490	9/32" length of flat on stem
Standard	E6329	
Timing cover dowel (complete with metering jet)	E6800/3	
OR		
Timing cover dowel (complete with metering jet)	E6348	

From Eng. #DU63043		
"Timed" Exhaust Tappets - Racing	E8801	3/32" length of flat on stem
Standard	E8895	
Timing Cover Dowel	T989	Plain hollow tube with no metering jet.

You must keep the dowel and tappets together as they are listed. It would be wise when doing major work on an engine from DU24875 - DU63042 to replace the tappets and dowel/metering jet with the latest parts used in all "B" Range engines beginning with DU63043.

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

September 18, 1967 67/8

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Comprehensive Test and Troubleshooting Instructions for all 6 and 12 Volt Battery Ignition Models ("B" & "C" Range from 1963) using Lucas RM19 A.C. Equipment.

There are five basic tests that should be performed when there is doubt that the motorcycle's electrical system is functioning properly. These are in order:

1. Battery and Ground Connection Test
2. Charge Rate Test: (D.C. current input to battery).
3. Alternator Output Test: - A.C. voltage output of alternator
4. Rectifier Output Test: - D.C. voltage output from rectifier
5. Zener Diode Test

It is absolutely essential that a well charged, properly rated battery be in the motorcycle's wiring system for these tests.

Although this bulletin emphasizes the use of a Tri-Cor model "750" test set, any reliable electrical test instrument may be used as long as a one ohm resistor of at least 100 watts rating is used in parallel with the A.C. or D.C. voltmeter when required. Be sure when making any test connections that the loose leads and wires are not in a position to short together or to ground.

By referring to the three schematic drawings on page H10 of the latest CD411 (white cover with blue printing), it is apparent that the same basic electrical system is used in all coil ignition (from 1963) Triumphs whether they are 6 or 12 volt equipped machines. Rotor, stator, and rectifier are or can be the same for 6 or 12 volt equipped models. The actual voltage output of the alternator is controlled by the internal resistance of the battery.

Test #1: Battery and Ground Connection Test

1. Set the voltmeter switch to D.C. Turn the load resistor OFF. Turn the motorcycle lights on for 10-15 seconds, then immediately after turning the lights off:
2. Check the voltage between the positive (+) and negative (-) battery terminals. The voltmeter must read at least 6.0 or 12.0 volts for either 6 or 12 volt batteries. If the battery does not read these minimum voltages, it must be replaced or recharged before the rest of the testing is continued.
3. Leave the black (-) voltmeter wire attached to the negative battery terminal and move the red (+) voltmeter wire to a good clean ground point on the motorcycle frame. This voltage reading and the one obtained in step #2 must be the same. If they are not, the battery is not grounded properly. Check the

fuse with an ohmmeter or test light to verify that it is good. Also, check the connections at the battery, frame and fuse holder to see that they are clean and tight.

Once it has been determined that a well charged, properly grounded battery is connected in the motorcycle's electrical system proceed as follows:

Test #2: D.C. Charge Rate

1. Disconnect the wires from the middle terminal of the rectifier.
2. Disconnect the wire to the Zener diode (if fitted) and tape or place it where it cannot short to ground.
3. Connect the red ammeter lead to the Brown/White wires removed from the rectifier.
4. Connect the black ammeter lead to the middle rectifier terminal.
5. Start the engine and observe the ammeter. With the engine at approx. 3,000 RPM (45 mph in 4th gear) you should obtain at least these MINIMUM readings:

500cc: All to H40527 — 500cc: All from H40528

650cc: 6T up to DU5824
TR6 & T120 up to DU24874 — 650cc: 6T-DU5825-DU24874 — 650cc: All from DU24875

	6 VOLT	12 VOLT	12 VOLT
OFF	2.5 amps	4.8 amps	4.8 amps
PILOT	2.0 amps	NOT NECESSARY*	NOT NECESSARY*
HEAD (High Beam)	1.75 amps	1.8 amps	NOT NECESSARY*

If the readings on the chart above are obtained, then the basic battery charging system is good. The trouble then will lie in a short somewhere in the wiring system, or else the Zener diode will shorted or open (see Test #5).

If these readings are not obtained, a quick check should be made to see if there is continuity between the battery and rectifier. Proceed as follows:

1) Turn the load resistor OFF. Turn the voltmeter switch to D.C.
2) Leave the engine shut off and turn the ignition key on.
3) Connect the red voltmeter lead to ground.
4) Connect the black voltmeter lead to the rectifier end of the Brown/White wire that connects to the middle rectifier terminal.

The D.C. voltage obtained should be within 1/2 volt of the battery voltage. If it is not, there is a short, open or poor connection in the wiring between the battery and the rectifier. Look for the open possibility first by checking for continuity thru the ammeter. If the voltage obtained compares favorably with the battery voltage then the trouble lies elsewhere in the charging system and you should proceed with test #3 as follows:

* These readings are not necessary because in these positions the headlight switch has no effect on the current output of the alternator for these model motorcycles.

Test #3: Alternator Output Test

1. Connect all wiring back to normal.
2. Disconnect the three alternator stator leads (Green/Yellow, Green/Black, Green/White) at the alternator side of the connectors under the engine.

Continued.....

3. Set the voltmeter switch to A.C.. Turn the load resistor switch on.

4. Connect either voltmeter lead to the White/Green wire.

5. Start the engine and run it approx. 3,000 RPM.

By connecting the other voltmeter lead to the following three combinations of wires, at least the following MINIMUM readings should be noted:

All "B" & "C" Range 6 or 12 Volt

Green/Black	4.0
Green/Yellow	6.5
Green/Black and Green/Yellow (connected together)	8.5

Lower readings than these minimum figures indicate a stator malfunction or demagnetized rotor. The stator can be checked for malfunctions as follows:

For the following open and short tests use an ohmmeter or electrical circuit test light (such as Tri-Cor #233).

To check the stator:

Shorted Winding Test:

There should be no continuity between any stator lead and the metal stator frame (or a good clean ground on the engine).

Open Winding Test:

There should be continuity between any combination of two of the three stator leads.

If all three A.C. voltage readings are zero or low and the stator checks out OK, the rotor is demagnetized or not turning with the crankshaft. It will be necessary to pull the primary cover and check the rotor at this point. If the rotor is properly attached to the crankshaft, then it is demagnetized and will have to be replaced.

NOTE: Reversed battery polarity can demagnetize the rotor and damage the rectifier. All A.C. equipped Triumphs have a positive (+) ground.

If test #3 fails to point out any trouble then proceed as follows:

Test #4: Rectifier Output Test

1. Reconnect all wiring to normal.

2. Disconnect the wire to the Zener diode (if fitted) and tape or place it where it cannot short to ground.

3. Disconnect the Brown/White wire at the middle terminal of the rectifier.

4. Turn the load resistor switch ON. Set the voltmeter switch to D.C..

5. On all 6 volt models and 12 volt 6T models, disconnect the Green/Yellow alternator stator wire from the alternator side of the connector under the engine. Using a double connector (Lucas #850641), connect this

Continued.....

Green/Yellow wire to the Green/Black wire under the engine so the Green/Black - Green/Yellow wires from the alternator connect to the Green/Black wire of the main wiring harness. This connection bypasses the ignition and light switches for test purposes and feeds the full A.C. output of the alternator to the rectifier.

6. Connect the red voltmeter lead to the rectifier mounting stud.

7. Connect the black voltmeter lead to the middle (D.C.) rectifier terminal.

8. Start the engine. At approx. 3,000 RPM the D.C. voltage should be from 8.0 - 9.0 volts on all 6 and 12 volt models.

9. Change the red voltmeter lead to a good ground on the frame. The D.C. voltage reading should be the same as in step #8. If it is lower, the rectifier is poorly grounded to the frame. Check that the red ground wire is attached to the rectifier mount stud. Replace the rectifier if steps #8 or #9 yield no or low voltage.

NOTE: If the rectifier mount unit has to be tightened be sure to hold the hex bolt head at the plate end of the rectifier while tightening.

On 12 volt equipped motorcycles, a 5th test is sometime necessary to determine if the Zener Diode is functioning properly. Proceed as follows:

ZENER DIODE TEST:

1. Reconnect all wiring to normal.

2. Disconnect the wire to the Zener diode.

3. Connect the red voltmeter lead to a good ground.
Connect the black voltmeter lead to Zener diode terminal.
Turn the load resistor OFF. Set the voltmeter switch to D.C.

4. Connect the red ammeter lead to the Zener diode terminal.
Connect the black ammeter lead to the Zener diode wire terminal.

5. On 6T's with 12 volt systems, connect the Green/Black and Green/Yellow alternator leads together as in Step #5 of the rectifier test.

6. Start the engine and gradually increase the engine speed from an idle. Observe the voltmeter and ammeter as follows:

   1. When the voltmeter reads 12.75 volts the ammeter must read zero.

   2. When the ammeter reads 2 amps., the voltmeter should read between 13.5 and 15.5 volts.

Failure to conform to either test indicates a replacement diode should be fitted.

NOTE: When fitting a new diode, be sure the ground wire is attached in back of the heat sink. Never allow any foreign material to come between the heat sink and the diode. Always tighten the Zener diode unit to a torque of 17-24 lb. inch (1½ - 2 lb. ft).

By performing these four or five simple tests, the basic charging system's efficiency can be established.

If these tests fail to show any trouble then the fault must be a short or open in the wiring harness, switches, or lights. By comparing the schematic drawings with the wiring diagrams found in CD446 or CD411, you can easily troubleshoot the system with an ohmmeter, voltmeter, or test light and pinpoint the trouble.

The TRIUMPH Corporation

SERVICE BULLETIN

September 21, 1967 67/9

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Tachometer Drive Thimble Replacement

In the event that the E4700 tach drive thimble in the exhaust camshaft of all unit construction "B" or "C" Range twins (from 1963) becomes inoperative, follow the steps outlined below to avoid dismantling the engine to install a new tach drive plug in the exhaust camshaft.

Proceed as follows:

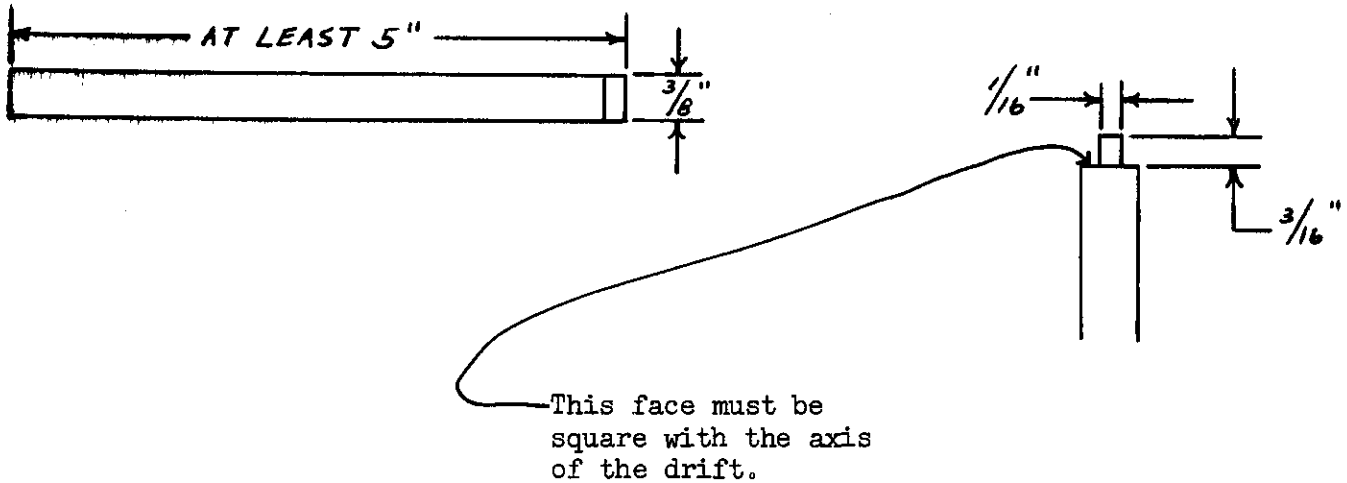
1) Remove the tach drive gearbox or the cable adaptor from the crankcase.

2) Using a 3/8" pin punch, drive the old tach drive thimble (E4700) at least 1" into the exhaust camshaft. The exhaust camshaft is not hollow all the way thru and the old thimble will not be able to get out of the camshaft once the complete repair job is effected.

3) The drive thimble ears that are broken off when the thimble is punched into the camshaft should be retrieved with a magnet if possible.

4) Thread the new repair drive plug (E7050) thru the threaded tach drive hole in the crankcase and into the camshaft as far as possible.

5) Using a drift constructed as shown below, drive the E7050 drive plug into the camshaft until it is just flush with the end of the shaft. Be careful not to drive this plug in too far as the drive gear blade must be engaged adequately with the drive plug slot.



Continued.....

6) Refit the tach drive gearbox or cable adaptor to the crankcase. Be sure to use a CD454 Stato-Seal between the tach drive gearbox and crankcase.

7) Before connecting the tach cable be sure that the cable is properly lubricated and works freely. Also, be sure that the brass "cup" ferrule (#31-315-135) is installed on the tach (or speedo)* at the end of the cable connection part of the tach. Without this ferrule the tach cable will be "locked" and either the cable or the tach drive blade will break.

* Applies to all magnetic speedos and tachs fitted since 1964.

Very truly yours,

THE TRIUMPH CORPORATION

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

September 21, 1967 67/10

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Gearbox Mainshaft and Swinging Arm Bolt Threads "B" & "C" Range Motorcycles

The threads of the subject parts have been changed from C.E.I. to Unified.

"B" Range Only

Swinging Arm Bolt & Nut

	Bolt	Nut		Fitted
Old Type:	F6150	NT297	9/16" x 20 CEI Thread	1963-66 models
New Type:	S620	S545	9/16" x 18 Unified Thread	This new bolt replaces S591 fitted to early '67 models

Some of the old type swinging arm bolts have "brazed-on" heads. We recommended that these bolts be replaced with the new improved one piece S620 bolt. The new S620 bolt can be fitted to all frames beginning with 1963 as the two threads are sufficiently similar to work in the narrow (5/16") frame lug. Check Service Bulletin 67/2 for correct installation.

Standard Ratio Gearbox Mainshafts

"B" Range	Mainshaft	K/S Nut	Clutch Nut	Thread
Old Type:	T914	NT297	T1047	9/16" x 20 CEI at both ends
New Type:	T2436	S594	S586	9/16" x 18 UNF at both ends
"C" Range				
Old Type:	T1948	T2009	T1047	9/16" x 20 CEI both ends
New Type:	T2275	S594	S586	9/16" x 18 UNF both ends

The new gearbox mainshafts use a self-locking nut on the clutch end and require a deeper clutch puller to accommodate an increase in length of the threaded shaft. All CD222 pullers in our stock will fit the new mainshafts.

We have reports of failures of kickstarter end of the new T2436 mainshaft. We will replace any such failed part under guarantee.

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

September 22, 1967 67/11

TO ALL EASTERN TRIUMPH DEALERS:

SUBJECT: Fork Bushings in Late Model Twins

We have reports of excessive wear of the sintered iron (gray color) fork bushings H441 and H443.

When doing repair work on any 1967 "B" or "C" Range Triumph, particularly those machines that have seen rough usage in Scrambles, etc., always check for play in the front stanchion tubes that could be caused by worn stanchion tube bushings.

To check for this condition, raise the front end of the motorcycle until the front wheel is off the ground. Hold the two bottom members next to the front wheel axle and check for excess front to back movement of the bottom members.

Replace all worn bushings and be sure to check bearing surface of stanchion tubes and inside surface of bottom sliding members. If these surfaces are damaged the parts must be replaced. Any damage caused by worn sintered iron bushings can be claimed under guarantee.

If you have front forks apart for any reason, always replace the gray colored sintered iron bushings with the bronze H441 and H443 bushings. It is always good practice to polish the stanchion tubes with fine emery cloth when the forks are disassembled for any reason.

Always use your Tri-Cor CD475 stanchion tube tool when reassembling the stanchion tubes to the fork lugs.

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

September 22, 1967 67/12

TO ALL EASTERN TRIUMPH DEALERS:

SUBJECT: Unified Thread Changeover

As the existing threaded parts on all Triumph motorcycles are gradually modified to a unified thread it becomes a matter of necessity to know the threads you are dealing with.

Most threads on Triumphs conform to the Cycle Engineers Institute or Whitworth thread standards. Unified threads have been in use in America for some time and are gradually being adopted in all English countries. A table of common thread sizes is shown below listing common CEI, Whitworth and Unified thread sizes.

THREADS PER INCH

		UNIFIED		WHITWORTH	
Size	Cycle Engineers Institute (C.E.I.)	Unified Fine (UNF)	Unified Coarse (UNC)	British Standard Fine (BSF)	British Standard Whitworth (coarse) (BSW)
1/4"	26	28	20	26	20
5/16"	26	24	18	22	18
3/8"	26	24	16	20	16
7/16"	26	20	14	18	14
1/2"	20	20	13	16	12
9/16"	20	18	12	16	12
5/8"	20	18	11	14	11

A Craftsman thread gauge (#9M4048) is available from any Sears Roebuck store for $2.49 and contains all T.P.I.'s shown above. Always check thread sizes when there is a doubt about the proper fastener to use.

Very truly yours,

THE TRIUMPH CORPORATION

Service Manager

Rod Coates:bjh

The TRIUMPH Corporation

SERVICE BULLETIN

BULLETIN #20 September 26, 1967

Service Notes on 1963 Thru 1967 "B" & "C" Range Models

CD474 ENGINE LOCKING TOOL

Many dealers have asked how this tool should be used. There are two ways to employ this tool when doing major engine work.

1) With the cylinder head off, bolt the square bar across the top of the cylinder barrel so the pistons will be blocked by the bar.

2) With the cylinder barrel off and the pistons removed from the connecting rods, pass the 11/16" dia. bar thru the connecting rod pin bushes. Place the square bar lengthwise under the round bar on the top of the crankcases so its ends rest over the tappet guide block holes in the crankcase.

TIMING COVER GASKETS

Some dealers are still not aware that we offer top quality gaskets for unit construction 650cc and 500cc timing covers. Use of these gaskets saves time, allows cleaner work, and prevents any leakage from the timing covers. The part numbers for these parts are:

650cc - CD338 timing cover gasket
500cc - CD451 timing cover gasket

FUSE RATINGS

Once again - we recommend using a 20 amp fuse on all model Triumphs in place of the original equipment 35 amp fuse. Wires can sometimes be damaged by a direct short if the 35 amp fuse is used in the electrical system.

NEW TRI-COR WRENCHES

We no longer supply Bonney and King Dick tools and are now selling Stahlwille wrenches and sockets. These tools are made of chrome alloy steel and are top quality German made wrenches. The same sizes are available as shown on page 29 of your latest Tri-Cor accessory catalog. An order blank is enclosed - order a sample set of these tools now - they are a compliment to any mechanic's tool box.

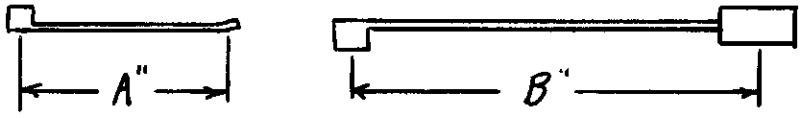
WORKSHOP MANUALS

If you don't have the latest CD411 Workshop Manual (identified by "from engine #DU44394" on the title page) for 650cc motorcycles order one now. These manuals contain information on the 1967 - 650'c and have complete coverage on model changes from 1963-1967. We also have a good stock of the CD446 Workshop Manuals for 500cc models. Both of these manuals are a necessity for any Triumph dealer and are also a popular accessory sales item.

Continued.....

ADAPTORS FOR TORQUING CYLINDER BASE NUTS

It is necessary to torque the cylinder base nuts on all 650cc and 500cc Triumph engines to avoid cylinder distortion and loosening of the cylinder barrel. To make the necessary adaptor wrenches use the CD515 box wrench as a start. Cut off the 5/16W end on one wrench and the 1/4W end of the other. Braze an old 3/8" drive socket to the cut end of each wrench. Now carefully grind down the outside of the box end of each wrench so they will fit the cylinder base nuts on 650cc and 500cc engines. Measure the center to center length of your adaptor wrench and torque wrench in inches. Add these two lengths together and plug the sum into the formula for computing the new torque you will use with the longer lever arm. Use the answer as the new torque with the adaptor attached in as straight a line as possible to the torque wrench. Do not let the adaptor to torque wrench angle exceed 10°.



A" + B" = SUM

$X \text{ lb. ft.} = \frac{300}{SUM}$ (lb. ft. x 12 = lb. in.)

We recommend a torque of 25 lb. ft. when the engine is COLD as a proper cylinder base nut torque figure on both 650 and 500cc engines. This is the torque figure to use with no adaptor. Your new torque figure (Xlb.ft.) will be less than 25 lb. ft. due to the added leverage of the torque wrench with the adaptor attached to it.

NEW ELECTRICAL TEST SET

Our new Tri-Cor "750" Electrical Test Set is now available for use on all model Triumphs. No shop is complete without one of these test sets. Model 102 Test Sets are no longer sold by Tri-Cor. Use the new "750" Test Set in conjunction with our latest Service Bulletin 67/8 for complete testing of all Lucas RM19 A.C. electrical systems. Dealer price on this new Electrical Test Unit will be $35.00.

FRONT TIRES

Many owners and dealers report an improvement in handling and braking when using a 3.25-19 Dunlop K70 tire on the front wheel. Try one for yourself and see the difference!

Quick Tips Column:

1) Always balance rear wheels for increased riding smoothness on all model motorcycles.
2) Use Permatex Super 300 gasket cement on the high gear splines to stop oil seepage from the transmission at the countershaft sprocket.
3) Use thin white pushrod rubbers (E1497RT or E3547) under all E732 filler/adjuster plugs to stop oil seepage from these points.
4) On all 650's replace the aluminum strap that ties the alternator lead wires to the right frame tube under the engine with a rubber John Bull clip (#CD405) to prevent a possible electrical short.
5) Have you checked and repacked the wheel bearings on your high mileage customers' motorcycles? Wheel bearings should be repacked with a good quality grease every 12,000 miles!

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates:bjh

Service Manager

The TRIUMPH Corporation

SERVICE BULLETIN

September 27, 1967 67/13

TO ALL EASTERN TRIUMPH DEALERS

SUBJECT: Gear Ratio Chart for Triumph "C" Range Unit Construction Twins

This chart covers all "C" Range 500cc models from 1959 beginning with H5485. All these models have a 26T engine sprocket and a 58T clutch sprocket. All gear ratios shown are with gearbox in fourth gear.

	COUNTERSHAFT SPROCKET					
Rear Wheel Sprocket	15T	16T	17T	18T	19T	20T
43	6.39	5.99	5.64	5.33	5.04	4.79
44	6.54	6.13	5.77	5.45	5.16	4.90
45	6.68	6.27	5.90	5.57	5.28	5.02
46	6.84	6.41	6.04	5.70	5.40	5.13
47	6.98	6.55	6.17	5.82	5.52	5.24
48	7.14	6.69	6.30	5.95	5.64	5.35
49	7.28	6.83	6.43	6.07	5.76	5.47
50	7.44	6.97	6.56	6.20	5.87	5.58
51	7.58	7.11	6.69	6.32	5.99	5.69
52	7.73	7.25	6.82	6.44	6.10	5.80
53	7.87	7.38	6.95	6.56	6.22	5.91
54	8.02	7.52	7.08	6.69	6.34	6.02
55	8.17	7.66	7.21	6.81	6.45	6.13
56	8.32	7.80	7.34	6.94	6.57	6.24
57	8.47	7.95	7.48	7.06	6.69	6.35
58	8.62	8.08	7.61	7.19	6.81	6.46
59	8.76	8.22	7.74	7.31	6.92	6.58
60	8.92	8.36	7.87	7.44	7.04	6.69

RC:bjh

Service Department

The Triumph Corporation

SERVICE BULLETIN

October 23, 1967 67/14

TO ALL EASTERN TRIUMPH DEALERS:

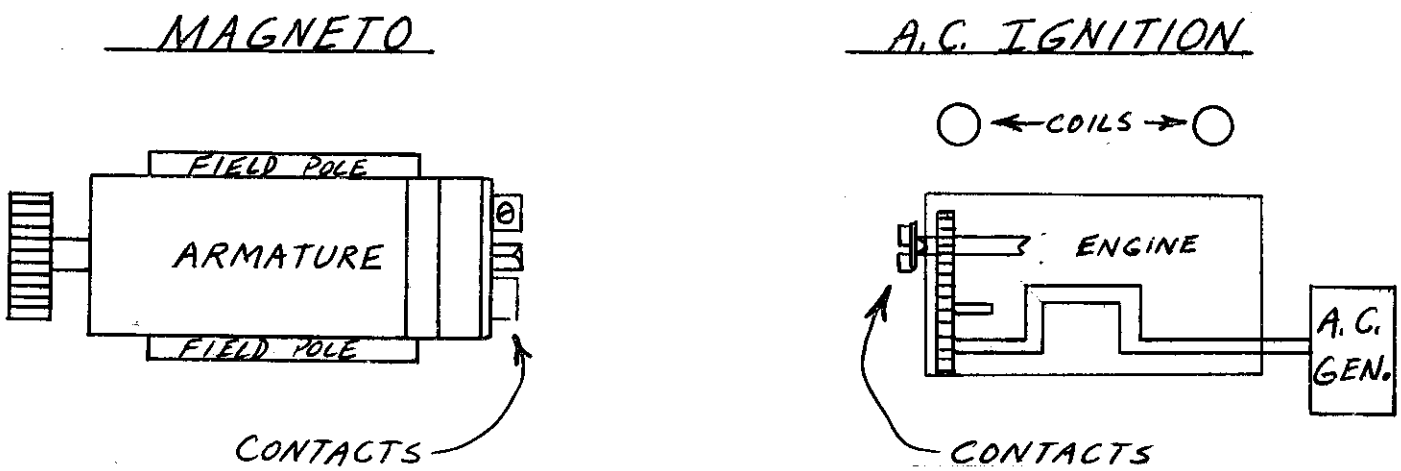
SUBJECT: A. C. Ignition (E. T.) & A. C. Lighting System - Lucas RM19 Equipment

A. C. Ignition (Energy Transfer)

There are several important principles to remember when dealing with the A. C. ignition system:

1. A magneto is basically an A. C. Generator with a switch (the contacts) and a high tension coil connected to it.

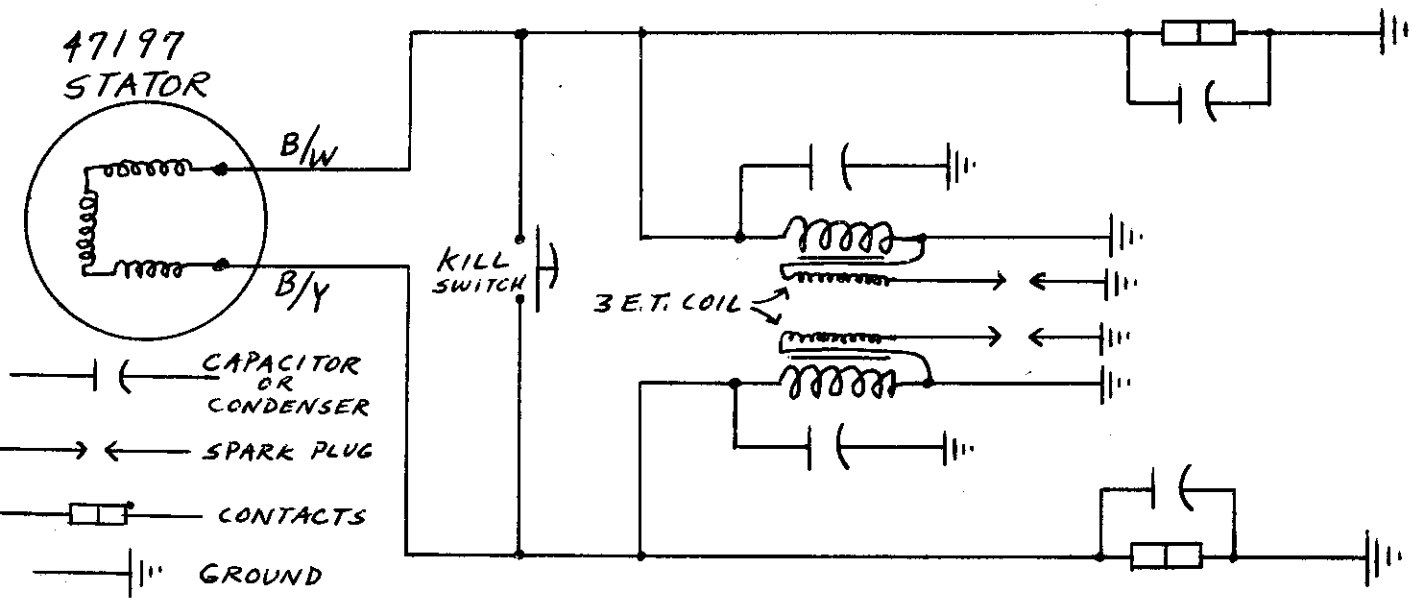
2. On pre-1963 Triumph models, the Lucas magneto was a one-piece self-contained unit in which the contacts were directly connected to the A. C. generator part of the magneto. In the A. C. ignition system the A. C. generator part of the magneto is in the primary - i.e., the rotor and stator; and the contacts and high tension coils are respectively on the end of the exhaust camshaft and on the frame.



The point is that the relationship between the A. C. generator part of the A.C. ignition system and the contacts is variable. These parts are not directly connected in a self-contained unit as is the case with Lucas or other magnetos. By changing the relative position of the rotor and stator or the timing between the contacts and rotor/stator unit, the performance of the A.C. ignition system can be drastically altered. The manufacturer of the motorcycle and electrical system specify the relationship of these parts and it is EXTREMELY IMPORTANT that this relationship not be altered for proper performance of the ignition system.

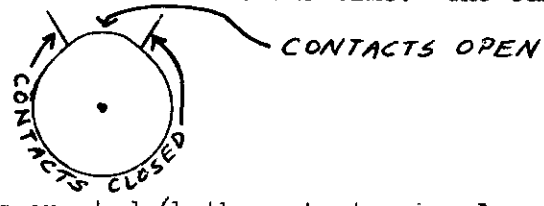
Now let us examine an A.C. ignition circuit using the latest encapsulated stator #47197 for our example:

A.C. IGNITION SCHEMATIC

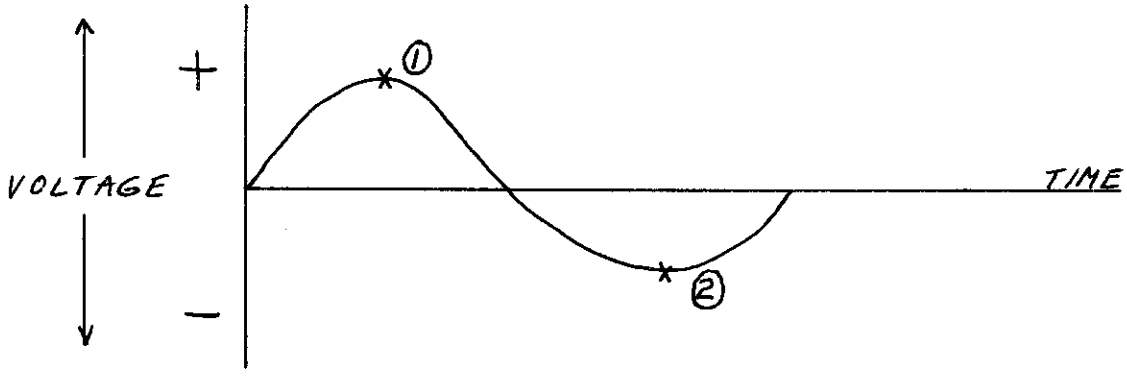


The stator windings must form a closed circuit (thru ground) in order that the rotor/stator can generate an A.C. voltage output. Remember a basic rule of electricity - electric current always takes the path of least resistance.

Bear in mind that the A.C. ignition cam has a very short "open" time and it is possible for both sets of contacts to be closed at one time. The cam is shaped approximately as shown:



When a complete path thru ground is created (both contact sets closed), an A.C. voltage is generated by the alternator (rotor/stator unit). A voltage versus time graph of this A.C. voltage output is shown below:



For maximum efficiency, the rotor/stator and the ignition contacts must be timed so that the points open very close to the point where the generated A.C. voltage is a maximum, i.e., points 1 & 2. This correct timing is assured if the rotor is timed to the engine crankshaft correctly.

There are three holes drilled in all latest rotors (#54213901) to accurately time the rotor to the stator. For optimum performance, the position in which the rotor is fitted MUST correspond with the number of degrees before top center that you wish to time the ignition at. Referring to the figures below:

"S" --- 37° B. T. D. C.
"M" --- 39° B. T. D. C.
"R" --- 41° B. T. D. C.

Looking at the A.C. Ignition schemati the ignition system functions as follows:

With both sets of contacts closed, A.C. is generated in the stator windings. This A.C. flows thru one set of contacts, thru ground, and thru the other set of contacts back to the stator to complete the circuit. Notice that the current takes the path of least resistance (in theory) and does not flow thru the relatively high impedance primary winding of the coil when the contacts are closed.

When one cylinder's contacts open the only path thru which the current can travel to ground and complete the circuit is thru the primary winding of that cylinder's coil. With the one set of contacts open, current leaves the stator, flows thru the coil's primary winding to ground; thru ground back thru the other set of contacts and back to the stator. The current flowing in the primary of the 3 E.T. coil induces a high voltage in the secondary winding of the coil. It is this high secondary voltage that is dissipated across the spark plug gap as a spark. An important point to remember here that applies to any ignition system is that the coil will only develop as much voltage as is necessary to "fire" the spark plug. The other cylinder fires in a similar manner when its contacts open.

When the kill button is pushed, current will again take the path of least resistance and flow from the stator thru the kill button and back to the stator. In effect, the coils and contacts are short circuited and the engine will not fire.

From the above explanation, it is obvious that the contacts play a critical role in the ignition system's efficiency. Indeed, the efficiency of one cylinder's ignition depends heavily on the other cylinder's contact set! As a result of this, it is EXTREMELY IMPORTANT that both sets of contacts be clean and properly gapped. Current must flow thru one or both sets of contacts at all times; therefore these contacts must offer as little resistance to current flow as possible. MAKE SURE YOUR FEELER GAUGE IS CLEAN when gapping contacts. Also, all the wiring and connections in the ignition system must be good. There can be no frayed or pinched wires, or dirty or poorly soldered connections any where in the wiring.

Troubleshooting A.C. Ignition is remarkably easy once you understand how the system functions. It is more involved than battery ignition troubleshooting however because you must run the engine from another ignition source while you check the alternator's (ignition winding) A.C. voltage output. Proceed as follows:

1. Be sure the rotor/stator timing (S, M, or R) corresponds with the ignition timing (37°, 39°, or 41° B.T.D.C.) you desire.

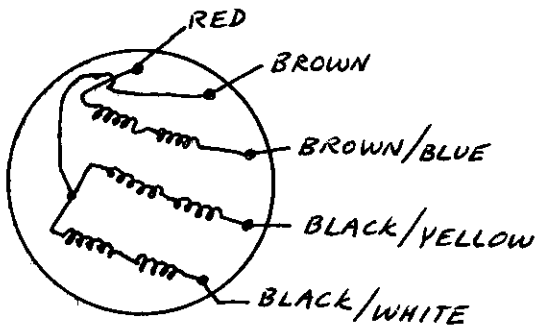
2. Check that the range of the auto-advance mechanism is the proper 5° (10 crankshaft degrees). This 5° will always be stamped on the back of the proper sleeve and action plate for A.C. ignition (#5441574?). Do not try to use an auto advance mechanism with over a 5° range as the A.C. ignition system is not designed to function properly over a larger advance range.

3. Be sure that the contacts are clean and gapped properly (.016-.014"). Check that the spark plugs in the engine are clean and properly gapped (.020"). Time the contacts to open at either 37°, 39°, or 41° B.T.D.C. corresponding to the way the rotor is timed. Check that excessive runout or wobble of the ignition cam is not opening the contacts prematurely. The contacts should be closed all the way around the heel of the cam.

For normal servicing of an A.C. ignition equipped motorcycle, the above 3 steps are all you should have to do to the ignition for the engine to run properly. If the engine will not fire at all or misfires when running, you must proceed as follows:

1. Disconnect all 5 stator leads from the alternator side of the connector under the engine. Using an ohmmeter or Tricor #233 test light, check the stator for shorts or opens as follows:

47188 STATOR

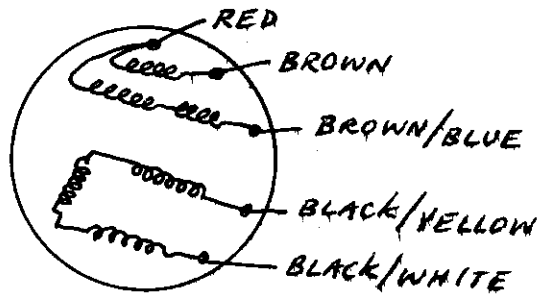


SHORTED WINDING TEST:

1. There should be no continuity between any stator lead and the metal stator frame or a good clean ground on the engine.

2. There should be no continuity between the Red or Brown/Blue lead and any of the other 3 leads (Brown, Black/Yellow, or Black/White).

47197 STATOR



SHORTED WINDING TEST:

1. There should be no continuity between any stator lead and the metal stator frame or a good clean ground on the engine.

2. There should be no continuity between a Black/Yellow or Black/White lead and any of the other 3 leads (Brown, Brown/Blue, or Red).

OPEN WINDING TEST:

1. There should be continuity between any combination of the Brown, Black/Yellow, or Black/White leads.

2. There should be continuity between the Red and Brown/Blue leads.

OPEN WINDING TEST:

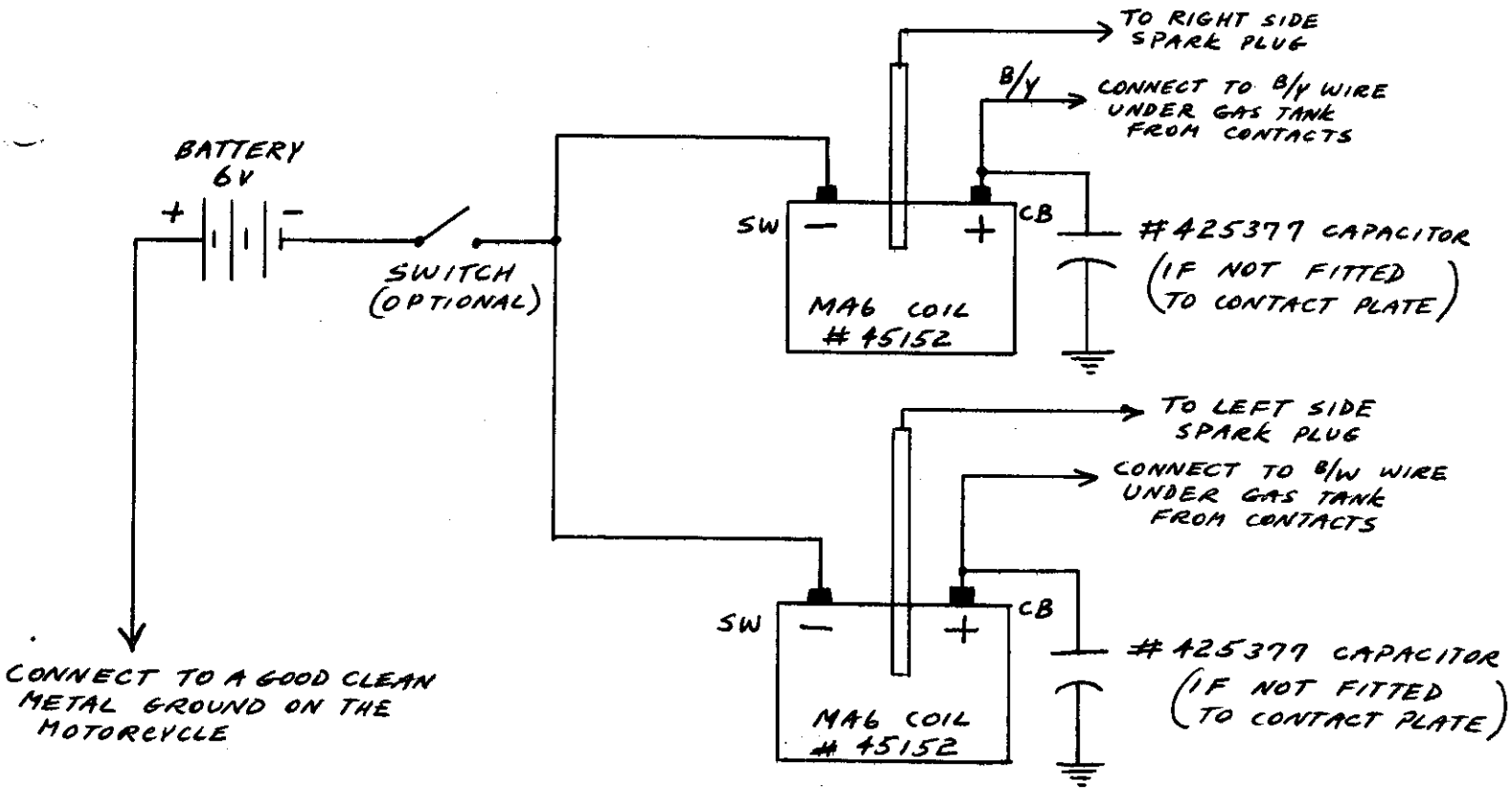
1. There should be continuity between any combination of the Red, Brown, or Brown/Blue leads.

2. There should be continuity between the Black/Yellow and Black/White leads.

By performing the above tests, you have checked the complete stator (both ignition and lighting windings) for shorts and opens. If the stator fails any one of these tests, you must replace it before proceeding further.

It is extremely unlikely that there is anything wrong with the alternator if the stator passes the above tests. To be dead certain however, you must make the following test of the alternator's A.C. voltage output.

To perform this test, you must make up a "power pack" to run the engine on while the stator is disconnected from the ignition system. Complete instructions are to be found in the CD411 or CD446 workshop manuals; however, the simple diagram for this "power pack" is shown below. It will be easy to construct the "power pack" from this diagram.



USE 16ga WIRE

IMPORTANT -- Run the engine only long enough to make the necessary test readings with this "power pack." The MA6 ignition coils are not designed to be run with such a long dwell ignition cam as the A.C. ignition cam. The long dwell will cause excessive current in, and overheating of the primary winding of the 6V coils.

ALTERNATOR IGNITION WINDING OUTPUT TEST:

Using a Tri-Cor "750" electrical test set or an equivalent test set that MUST contain a 1 ohm at least 100 watt resistor in it, do the following:

1. Turn the voltmeter switch to A.C.
   Turn the load resistor ON.

2. Connect one voltmeter lead to the Black/Yellow lead from the stator.

3. Connect the other voltmeter lead to the Black/White lead from the stator.

4. Start the engine and run it at 3000 rpm (approximately 45 mph in 4th gear). Note the A.C. voltmeter reading. For both 47188 and 47197 stators, you must have a minimum output of 2.0 volts A.C.

5. If you have a 47188 stator, change one voltmeter lead from the Black/Yellow lead to the Brown lead. The reading obtained here should also be a minimum of 2.0 volts A.C.

If you have the required readings, the stator is positively good.

If you do not have a minimum of 2.0 volts A.C., then this indicates a faulty stator, demagnetized rotor, or that the rotor is not turning with the crankshaft. It will be necessary to remove the primary cover and check the rotor at this point. If it is turning with the crankshaft and is not demagnetized, then the stator must be replaced.

With the "power pack" removed and the good stator's ignition leads (B/Y, B/W) connected back into the motorcycle's wiring system, the ignition system should perform well at this point. If it does not, then further testing will be necessary to isolate the bad coil or capacitor that is causing the problem.

There are only 3 possible troubles a capacitor can have: it can be shorted, open, or leaky. Test as follows using an ohmmeter or, for the short test, a Tri-Cor #233 test light.

CAPACITOR SHORT TEST:

There should be no continuity between the lead and metal case of the capacitor.

CAPACITOR OPEN TEST: Using only an ohmmeter

Place one ohmmeter lead against the capacitor case and connect the other ohmmeter lead to the capacitor lead. Reverse the connections and you should see the ohmmeter needle "kick" slightly as the capacitor discharges. Use the highest resistance range of your ohmmeter for this test -- i.e., R x 10K.

CAPACITOR LEAKINESS TEST:

This test can only be made with a capacitor tester. It is highly unlikely the capacitor is leaky.

COIL TESTS:

As a quick check on the coils, use an ohmmeter to determine if the primary or secondary winding is open.

1. Primary Open Test:

   There should be continuity between the Lucar terminal and the bare ground wire.

2. Secondary Open Test:

   There should be continuity with some resistance between the bare ground wire and the metal pin in the spark plug wire hole of the coil.

At this time it is a good idea to insert the spark plug wire back into its coil hole and check for continuity again between the plug end of the spark plug wire and the coil ground wire. If, or once you have continuity between these points, 3M or flexseal the lead to the coil.

It is improbable that the coil will pass these tests and the bike still run poorly due to ignition trouble. As a final check however, if necessary substitute a new coil if one cylinder of the engine still fires erratically.

One final possibility of trouble lies at the kill button. Remove it from the electrical system by disconnecting the B/Y and B/W wires at the connecters under the gas tank. There should be no continuity thru the switch when the button is released and continuity thru the switch when it is depressed. The battery ignition kill switch (brown button, instead of black as on the A.C. ignition models) grounds the two leads in addition to connecting them together, and can be used on the A.C. ignition system if need be.

A.C. LIGHTING SYSTEM

A.C. lighting is straightforward once the system is understood.

ALTERNATOR LIGHTING WINDING OUTPUT TEST:

Again, the first thing to check is the A.C. voltage output of the stator's lighting windings. Proceed as follows using the Tri-Cor "750" test set:

1. Disconnect the lighting winding leads under the engine from the alternator side of the connecter. These 2 or 3 leads are the Red, Brown on the 47197 stator, and Brown/Blue leads. (You have already checked the Brown lead on the previous alternator output test if you have the 47188 stator.)

2. Turn the voltmeter switch to A.C.
   Turn the load resistor ON.

3. Connect one voltmeter lead to the Red stator lead.

4. Connect the other voltmeter lead to the Brown/Blue stator lead.

5. Start the engine and run it at 3000 rpm. On the 47197 stator, switch the voltmeter lead from the Brown/Blue to the Brown stator lead after taking the first voltage reading. You should observe the following minimum A.C. voltage readings;

	Red - Brown/Blue	-- 5.0 volts A.C.
(47197)	Red - Brown	-- 5.0 volts A.C.

If these minimum voltages are obtained, the stator's lighting winding output is O.K. Any lighting fault must lie in a short or open somewhere in the motorcycle's wiring system. By following the wiring diagrams in the workshop or owner's manuals, you can easily isolate and repair the fault.

If you have not already done so in the previous tests, check the stator for opens or shorts. Look for a non-rotating or demagnetized rotor if the stator checks O.K. If the rotor is magnetized and turning with the crankshaft and you still have no or low A.C. voltage output, the stator will have to be replaced.

GENERAL COMMENTS ON A.C. LIGHTING

Generally, two problems arise with the A.C. lighting system - either too much A.C. voltage output which blows bulbs or too little A.C. voltage output which results in dim lighting. Unfortunately, for a given load, the A.C. output of the alternator is solely dependent on engine RPM in the Lucas direct lighting system.

The most important thing to remember when working with the A.C. lighting system is to make sure that the correct wattage light bulbs are being utilized in the electrical system. These are:

6V Headlight	--	24/24 watts Lucas #166
6V Stop & Taillight	--	6/18 watts Lucas #384

Use of higher wattage light bulbs than these above will result in dimmer lighting throughout the engine's rpm range.

On the non-encapsulated 47188 stators, use of a higher wattage stop light than the Lucas #384 will place an additional load on the stator's ignition windings and may cause stalling or misfiring of the engine when the stop light is on. Additionally, on these 47188 stators it should be obvious that any short to ground in the stop light circuit will cause ignition trouble. The electrical advantage of the 47197 encapsulated stator is that the stop light winding is no longer connected to the ignition windings.

Faster and better service to your customer and increased profits will result from an understanding of the preceding description of the A.C. ignition and lighting systems. Study the descriptions and diagrams until the operating and testing PRINCIPLES are committed to memory.

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates

Rod Coates:ib

Service Manager

The TRIUMPH Corporation

SERVICE BULLETIN

November 21, 1967 67/15

TO ALL EASTERN TRIUMPH DEALERS:

SUBJECT: Roller Bearing(E2879) Fitted to the Crankshaft Drive Side on "B" Range 650cc Engines beginning with DU24875.

Many dealers have trouble removing the roller bearing outer race from the drive side crankcase of 650cc engines since 1966. The race is too light to develop enough inertia to drop out of the case when the hot case is knocked against a block of wood.

Here is the best method of quickly removing the bearing race without damaging the crankcase.

1) Remove the crankshaft oil seal E3876.
2) Measure 7/32" from the inside edge of the 2-1/8" diameter hole on the outside of the crankcase and center punch two spots opposite each other. The distance between the two punch marks will be 2-9/16".
3) Using a 5/32" drill bit sharpened to a shallow angle, drill at the two center punch marks until the drill bit bottoms against the hardened bearing race.
4) Heat the crankcase around the bearing race using at least a #5 torch tip.
5) When the crankcase is hot, use a 1/8" pin punch to alternately punch the bearing race on either side until it falls out.
6) Before installing the new bearing outer race you MUST drill through the two holes and carefully remove any burrs from the inside face. The new race must drop all the way in its housing and cover the two holes you have drilled.
7) Reheat the crankcase and drop the new replacement bearing race in place.

NOTE: NEVER interchange the outer bearing race with another roller and inner race assembly. Each outer race is finish ground to fit its own roller assembly.

Very truly yours,

THE TRIUMPH CORPORATION

Rod Coates

Service Manager

Rod Coates:mm

The TRIUMPH Corporation

SERVICE BULLETIN

BULLETIN #22 December 18, 1967

Service Hints and Tips for 1968 Twin Models

Strobe Light Timing

Fully advanced ignition timing can easily be checked using Tri-Cor CD458 or equivalent Strobe timing light. Proceed as follows:

1. Remove three screws and access plate from primary chaincase.
2. Lock crankshaft at 38° BTDC and scribe a line on encapsulated surface of stator to correspond with the existing timing mark on rotor.
3. Start engine, increase speed until strobe light indicates contact breaker cam is fully advanced (usually about 2500 RPM). Timing markes on rotor and stator should line up at full advance. Readjust contact point gap (.015") or rotate point plate to correct the timing and check both cylinders.
4. All 1968 models have a 38° timing notch in the flywheel. "B" Range notch is accessible after removing plug at bottom front of crankcase. 1968 "C" Range models have two 3/16" diameter holes in the flywheel accessible by removing plug in crankcase behind cylinder. One 3/16" diameter hole ("C" Range only) locates TDC, the other 38° before TDC.

   The 1968 breaker plate assembly is improved for 1968. Each set of contact points has two eccentric screws. One eccentric screw enables you to quickly adjust the point gap. The other eccentric screw enables you to "reposition" the contact point assembly separately to obtain correct ignition timing. You can now be sure of having both the contact gap AND the ignition timing correct.

NOTE: If you reposition the contact point assembly, it is a good idea to recheck the point gap. Also, note that the 1968 ignition cam has a mark on the face of the cam to be used as a handy uniform reference point when adjusting each point gap.

CAUTION: The 1968 contact breaker cam and auto advance assembly is 1/8" longer than the previous type and we will soon supply a new adjustable puller CD523 to use in place of the early D484T puller.

Steering Damper Kit Part No. CD488---------- List Price $7.44A

We can supply this kit of parts to fit 1968 - T120/R, TR6/R and T100/R models. Be sure to specify the part number CD488 when ordering.

1968 Zener Diode Heat Sink Bracket

You may experience trouble with the early 3/32" thick zener diode heat sink bracket breaking. These thin brackets should be replaced with the new stronger 1/8" thick bracket H2236 which we will supply to you free-of-charge upon request.

Tachometer Drive Gearbox Lubrication

On set-up and service work, be sure to check the lubrication of the tach drive gearbox. The gears should be coated with a light grease such as Lubriplate.

Headlight Bulbs

We have some new 12 volt headlight bulbs (Part #446) that have filaments with greater strength to resist vibration. We would be glad to supply a sample free bulb for test if you have an owner who has recently experienced repeat failures of headlight bulbs.

Exhaust Adaptors

Now is the time of year to replace any aluminum exhaust adaptors that were fitted as original equipment to all 650cc "B" Range twins from engine number DU22582 in 1965 to engine number DU41563 in 1966 production. For further information on this important service problem, refer to Blue Bulletins #17 July 19, 1966 and #18 August 8, 1966.

Many dealers have failed to replace the aluminum adaptors with the steel type. We are still offering the steel adaptors, Part No. E3583 free-of-charge if you will send us the engine numbers of those machines that you have corrected.

One dealer reports a lot of time wasted checking for a mysterious "knock" in the engine which he finally discovered to be caused by a loose aluminum exhaust adaptor allowing the exhaust pipe clamp to rattle against the cylinder head at certain engine speeds. Engine vibration and serious damage to cylinder head can be caused by loose adaptors.

We can salvage a head with damaged exh. port threads with a special heli-coil insert. The cost of this repair, ($6.00) cannot be claimed under guarantee, but is cheaper than replacing the cylinder head. This repair is limited to the Tiger Cub and "B" Range twins.

Successful dealers always contact Triumph owners during Dec., Jan. and Feb. to take care of important service jobs so the customer's machine will be "ready to go" in March. Here are three typical jobs that will "pay off" for both dealer and owner at this time of year.

	Reference Service Bulletin
1. Replace aluminum exhaust adaptors with steel type. (Supplied free-of-charge to customer)	Blue #17 & 18 "Exhaust Adaptors" and "Repair Tool"
2. Service the swinging arm pivot bearing. (All 650cc models from 1963 thru 1967). Check for loose condition, damaged threads and early type pivot. Fit the latest improved type bolt S620 with unified thread. Use special thick washers, F7675, if necessary.	Yellow 67/2 & 67/10 "Swinging Arm Bearing & Bolt"
3. For Bushings. Check for loose condition of the upper and lower fork bushings H441 & H443. If the sintered iron (gray color) fork bushings are fitted to a Triumph twin used for Scrambles rapid wear can take place and this can ruin the stanchion tubes as well as the lower sliding tubes and cause extensive damage. Whenever you service a fork assembly ALWAYS replace iron bushings with the bronze type.	Yellow 67/11 "Fork Bushings"

Spark Plug Heat Range

It is recommended that on all 1967 & 1968 "B" Range motorcycles spark plugs of Champion N3 heat range be used. Comparable plugs of other brands are:
KLG FE100, Lodge 3HLN, Autolite AG901, Bosch W260T2 and NGK B7E.

Main Jet Size

It is recommended by the factory that the main jet size on all 1967 & 1968 "B" Range Triumphs fitted with the new concentric type carburetor, be increased by one size. Individual tuning requirements vary from one machine to another, but we suggest you start by fitting the following jet sizes on models shown below:

	930 Type Concentric Carburetors
TR6/R and TR6/C	230 Main Jet
T120/R	220 Main Jet

The carburetor needle should initially be set in the middle position.