1974-79 TUNE-UP PROCEDURES
Triumph 4-Cylinder

Spitfire, TR7

ENGINE IDENTIFICATION

Engine number is stamped on engine boss on left side of engine block, below cylinder No. 4 on Spitfire. On TR7, number is stamped on center of cylinder head, between carburetors.

ENGINE CODES

Application	Code
1974-75 Models	
Spitfire	FK, FM
TR7	CL
1976-79 Models	
Spitfire	
Federal	FM XXXX U
Calif.	FM XXXX C
TR7	
Federal	CL XXXX U
Calif.	CL XXXX C

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle Identification Number is stamped on a metal plate attached to the driver's door on TR7 and to door post on Spitfire. Number is also stamped on a small plate and mounted on left corner of instrument panel, and visible through the windshield.

ENGINE COMPRESSION

Check compression with engine at normal operating temperature, spark plugs removed and throttle wide open. Crank engine through at least 4 compression strokes before taking reading. All cylinders should be within 10 psi (.70 kg/cm²) of each other.

ENGINE COMPRESSION SPECIFICATIONS

Application	Minimum psi (kg/cm²)
All Models	145 (10.2)

VALVE CLEARANCE

Spitfire - 1) Disconnect battery negative cable. Remove valve cover and spark plugs. Check valve clearance with engine cold. Valves are numbered from front to rear.

2) Turn crankshaft until appropriate valves in first column are open, then check and adjust valves listed in second column. See VALVE CLEARANCE ADJUSTMENT SEQUENCE table.

3) To adjust valves, loosen lock nut and turn slotted adjusting pin clockwise to decrease clearance or counterclockwise to increase clearance. Tighten lock nut when clearance is correct.

VALVE CLEARANCE ADJUSTMENT SEQUENCE

Valves Open	Adjust Valves
No. 8 & No. 6	No. 1 & No. 3
No. 4 & No. 7	No. 5 & No. 2
No. 1 & No. 3	No. 8 & No. 6
No. 5 & No. 2	No. 4 & No. 7

TR7 - 1) Disconnect negative battery cable and remove camshaft cover. Loosen camshaft bearing cap nuts and retighten to 10-14 ft. lbs. (14-19 N.m). Check and record clearance between cam heel and tappet. Maximum clearance is present when cam is in vertical position.

2) If clearance is not within specifications, remove camshaft and individually lift out each tappet and adjusting shim. Measure thickness of adjusting shim removed and record thickness.

3) Add to this, the measured valve clearance and subtract the specified clearance from the total. This will offer you the thickness of adjusting shim necessary to bring the clearance within specifications.

4) Install tappets and add shims as needed. Install camshaft and tighten bearing caps. Recheck valve clearance, and, when correct, reinstall camshaft cover.

VALVE CLEARANCE SPECIFICATIONS

Application	Clearance In. (mm)
Spitfire	.010 (.25)
TR7	
Intake	.008 (.20)
Exhaust	.018 (.50)

VALVE ARRANGEMENT

E-I-I-E-E-I-I-E - Front-to-rear.

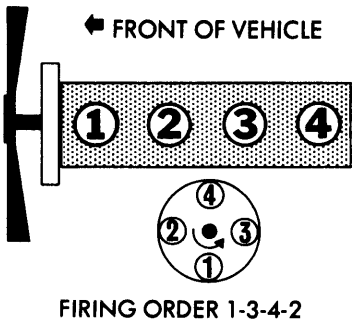

Fig. 1: Spitfire Firing Order & Distributor Rotation

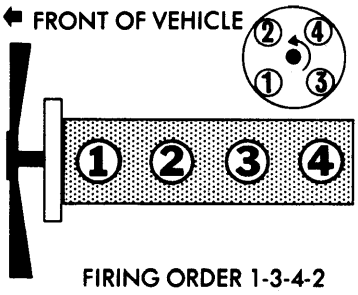

Fig. 2: TR7 Firing Order & Distributor Rotation

SPARK PLUGS

SPARK PLUG SPECIFICATIONS

Application	Specification
Gap	.024-.026" (.61-.66 mm)
Torque	20 ft. lbs. (27 N.m)

SPARK PLUG TYPE

Application	Champion No.
All Models	N12Y

HIGH TENSION WIRE RESISTANCE

Carefully remove high tension wires from spark plugs and distributor cap. Using an ohmmeter, check high tension wire resistance while gently twisting wires. If resistance is not to specifications, or fluctuates from infinity to any value, replace high tension wire(s).

HIGH TENSION WIRE RESISTANCE

Application	Ohms
All Models	25,000-30,000

DISTRIBUTOR

Models are equipped with Delco-Remy distributors or Lucas Opus electronic ignition system.

1974-79 TUNE-UP PROCEDURES
Triumph 4-Cylinder (Cont.)

DISTRIBUTOR SPECIFICATIONS

Application	Specification
Air Gap	[1] .014-.016 (.35-.40 mm)
Point Gap	.014-.016 (.35-.40 mm)
Dwell Angle	38-40°
Breaker Arm Spring Tension	19-24 ozs. (540-680 g)
Condenser Capacity	.18-.23 mfd.

[1] – Electronic ignition system only.

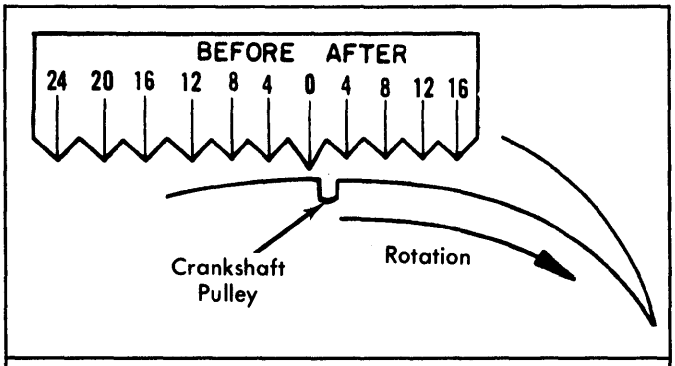

Fig. 3: Ignition Timing Marks

IGNITION TIMING

Warm engine to normal operating temperature. Check or adjust ignition timing with idle speed at specification and distributor vacuum hose disconnected and plugged. If necessary, loosen distributor hold-down clamp and rotate distributor.

IGNITION TIMING SPECIFICATIONS

Application	RPM	Timing
1974-76 Models	800-850	2°ATDC
1977-79 Models		
Federal	700-900	[1] 10°BTDC
Calif.	700-900	2°ATDC

[1] – With distributor vacuum hose disconnected and plugged.

IDLE SPEED & MIXTURE

1) Remove air cleaner and fresh air duct (dual carburetor models only). Ensure oil in carburetor damper is 1/4" below top of damper tube. Warm engine to normal operating temperature. Connect tachometer and exhaust gas analyzer to vehicle. Back off on fast idle adjusting screw until it no longer contacts fast idle cam.

2) On models with a single carburetor, adjust idle speed to specifications by adjusting throttle adjusting screw. *See Fig. 4.* On models with dual carburetors, use an airflow meter and synchronize carburetors. Adjust idle speed to specifications by adjusting throttle adjusting screw on each carburetor an equal amount.

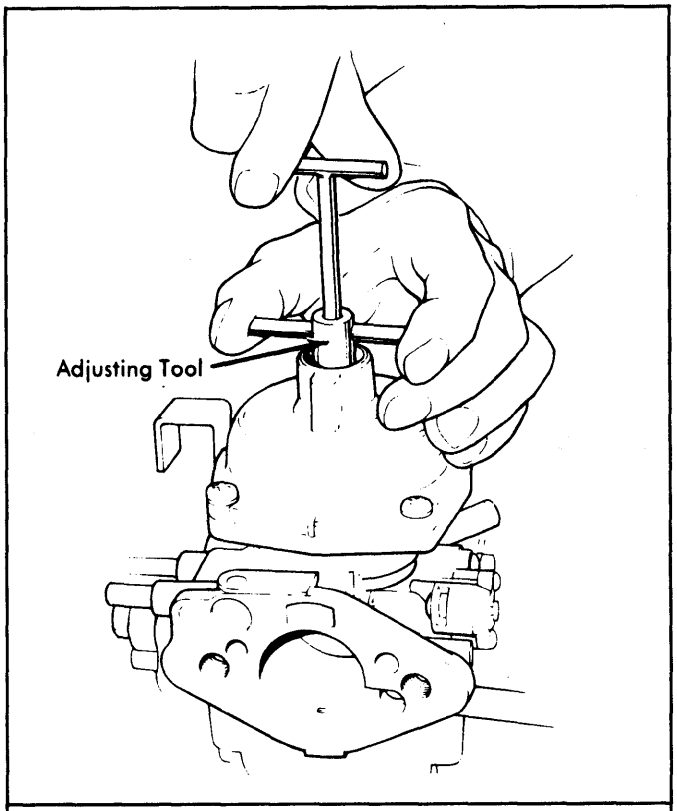

Fig. 5: Idle Mixture Adjustment

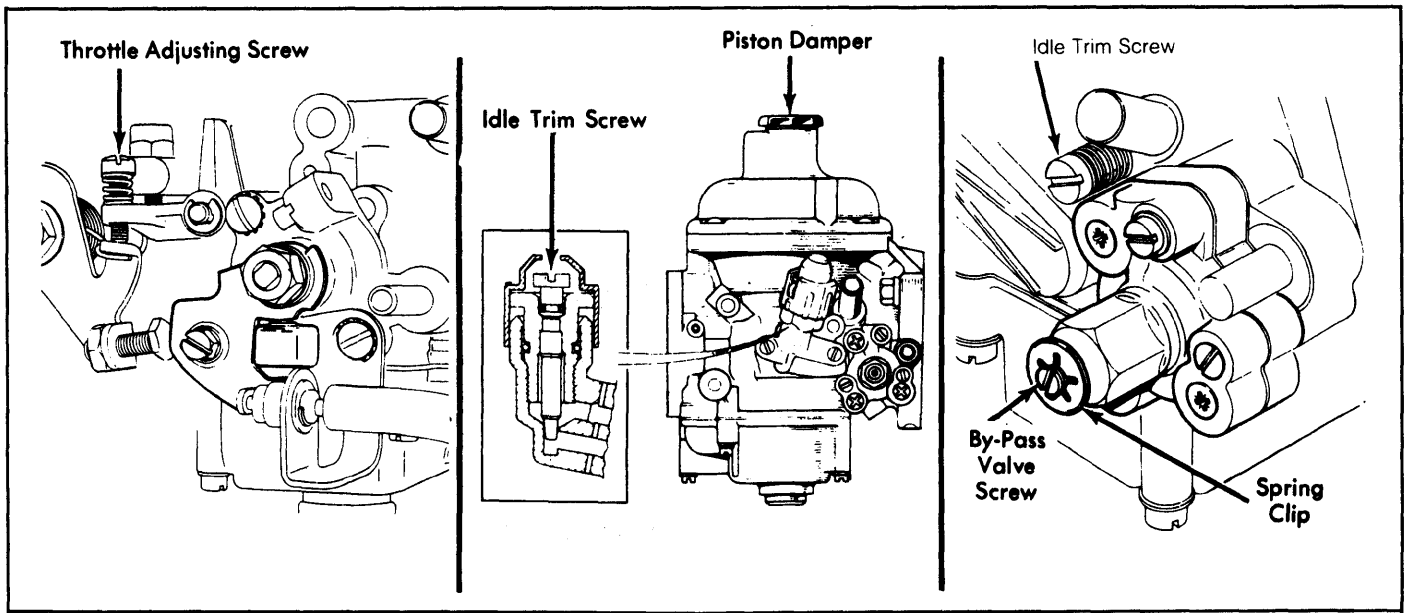

Fig. 4: Idle Speed, Mixture & Decel Valve Adjusting Screws

1974-79 TUNE-UP PROCEDURES
Triumph 4-Cylinder (Cont.)

3) On all models, stop engine and disconnect and plug air pump outlet hose. Start engine and check CO% level. If CO% level is incorrect, adjust idle trim screw(s) until CO% level is within limits. If CO% level cannot be adjusted within limits by adjusting the idle trim screw(s), go to next step.
4) Remove piston damper from carburetor(s). *See Fig. 5*. Then, carefully insert Needle Adjuster (S 353) into damper until outer adjuster engages air valve and inner portion engages hexagon in needle.
5) Hold outer adjuster stationary and turn inner portion clockwise to richen mixture or counterclockwise to lean mixture until CO% level is within limits. Remove adjuster and reinstall damper. Recheck CO% level and idle RPM and adjust as necessary.

IDLE SPEED & CO% LEVEL SPECIFICATIONS

Application	Idle RPM	[1] CO%
1974-76 Models		
Spitfire	800-850	0.5-2.5
TR7	700-900	1.0-2.0
1977 Models		
Spitfire	700-900	0.5-6.0
TR7	700-900	2.0-6.0
1978-79 Models		
Spitfire	700-900	3.0-7.0
TR7	700-900	3.0-7.0

[1] - With air injection pump disconnected.

COLD (FAST) IDLE RPM

1974 Models - Check choke cable adjustment. Adjust gap between fast idle cam and screw to .020-.025" (.51-.64 mm). *See Fig. 6*. Start engine and pull out choke control until cam pivot, cable trunnion, and fast idle screw are in alignment. Fast idle speed should be within specifications. If not, adjust as necessary.
1975-77 Models With Manual Choke - 1) Warm engine to normal operating temperature. Ensure that choke cam lever on carburetor(s) return to full stop position. If necessary, adjust choke cable.

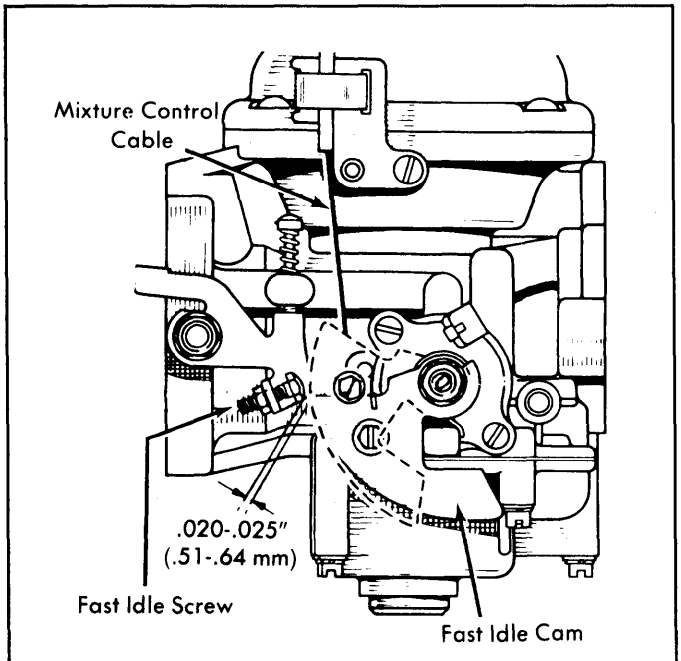

Fig. 6: Fast Idle Speed Adjustment

2) Pull choke knob out about 1/4" (6.4 mm) or until fast idle cam(s) engage(s) spring loaded detent ball(s). Loosen lock nut on carburetor(s) and turn fast idle screw to obtain correct idle RPM. Tighten lock nut and push in choke knob fully.
1977-79 Models With Automatic Choke - Remove choke cover and throttle stop screw until gap between base circle of cam and fast idle pin is .035" (.89 mm) on TR7,.020" (.50 mm) on Spitfire.

FAST IDLE SPECIFICATIONS

Application	RPM
Spitfire	
Cold Setting	1100-1300
Warm Setting	1700-1900
TR7	
Cold Setting	1300
Warm Setting	1600

DECEL VALVE ADJUSTMENT

1976-78 Models - 1) With engine at normal operating temperature, disconnect and plug distributor vacuum retard line. Engine speed should increase to approximately 1300 RPM.
2) If engine speed increases to 2000-2500 RPM, decel valve will need to be adjusted. To adjust, turn by-pass valve adjusting screw until speed drops to 1300 RPM, then turn screw an additional 1/2 turn to fully seat valve. *See Fig. 4*.

FUEL PUMP

FUEL PUMP SPECIFICATIONS

Application	Specification
Pressure	
Spitfire	2.5-3.8 psi (.17-.26 kg/cm²)
TR7	2.5-3.5 psi (.17-.24 kg/cm²)

EXHAUST EMISSION SYSTEMS

See appropriate articles in EXHAUST EMISSION SYSTEMS section.

IGNITION SYSTEM

DISTRIBUTOR

Models are equipped with Delco-Remy distributors or Lucas Opus electronic ignition system.
Other Data & Specifications - See Delco-Remy Distributor or Lucas Opus Ignition System article in DISTRIBUTORS & IGNITION SYSTEMS section.

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Resistance (Ohms)
Primary	1.30-1.45

FUEL SYSTEMS

CARBURETORS

CARBURETORS

Application	Model
All Models	Zenith-Stromberg 1-Bbl.

Other Data & Specifications - See appropriate Zenith-Stromberg Carburetor article in FUEL SYSTEMS section.