TUNE-UP

Cressida
Land Cruiser
Supra

ENGINE IDENTIFICATION

Engines can be identified by prefix of engine serial number, stamped on right side of engine block. Engine code can also be found on front of valve cover.

Engine Model Number

Application	Engine Number
Cressida & Supra	4M-E
Land Cruiser	2F

COMPRESSION PRESSURE

Check compression pressure with engine at normal operating temperature, all spark plugs removed, throttle valve wide open and engine at cranking speed. Maximum variation between cylinders should not exceed 14 psi (1.0 kg/cm²). Standard and minimum pressures are as follows:

Compression Pressure

Application	Standard psi (kg/cm²)	Minimum psi (kg/cm²)
Cressida & Supra	156 (11.0)	128 (9.0)
Land Cruiser	149 (10.5)	114 (8.0)

VALVE CLEARANCE

NOTE – *Check or adjust valve clearance with engine at normal operating temperature.*

Valve Clearance Specifications

Application	Intake	Exhaust
Cressida & Supra	.011" (.28 mm)	.014" (.36 mm)
Land Cruiser	.008" (.21 mm)	.014" (.36 mm)

VALVE ARRANGEMENT

Cressida & Supra
Left Side – All Intake
Right Side – All Exhaust

Land Cruiser – E-I-I-E-E-I-I-E-E-I-I-E

SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
All Models	.031 (.8)	10-15 (1.4-2.1)

Spark Plug Type

Application	NGK	Nippondenso
Cressida & Supra	BPR5EA-L	W16EXR-U
Land Cruiser	BP5EA	W14EX-U

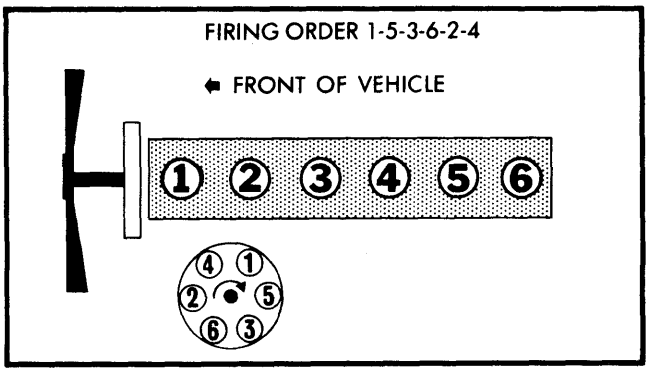

Fig. 1 Firing Order and Distributor Rotation (Cressida & Supra)

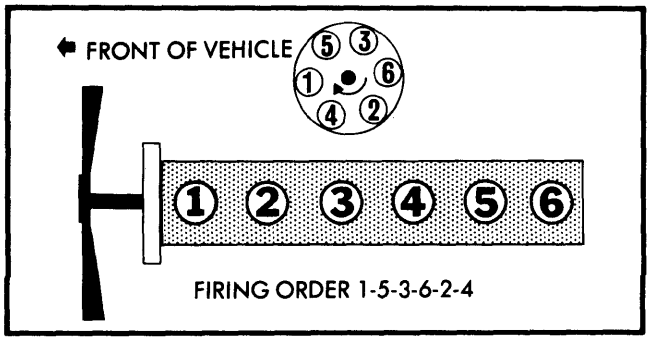

Fig. 2 Firing Order and Distributor Rotation (Land Cruiser)

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).

Resistance (Ohms) Per Wire

Application	Ohms
All Models	16,000-25,000

DISTRIBUTOR

All models with 6-cylinder engines are fitted with Nippondenso Transistorized Electronic Ignition Systems. The only in-service adjustment possible is to set the air gap.

Air Gap	.008-.016" (.2-.4 mm)

IGNITION TIMING

Check or adjust ignition timing with engine at normal operating temperature and choke fully open. Adjust idle speed. On Land Cruiser, disconnect distributor sub-diaphragm hose (farthest from distributor body). Turn distributor to adjust timing.

TUNE-UP (Cont.)

CAUTION — *Do not allow tachometer connector at distributor (−) terminal to touch ground or damage may occur to system.*

Ignition Timing Specifications

Application	RPM	Timing
Cressida & Supra	800	12° BTDC
Land Cruiser	800	7° BTDC

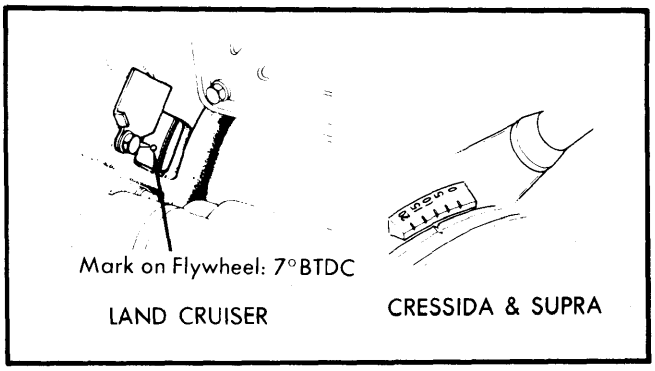

Fig. 3 Ignition Timing Marks

IDLE SPEED & MIXTURE

CARBURETED MODELS

1) With engine at normal operating temperature, choke valve fully open, all accessories off, all vacuum lines connected, ignition timing set to specifications and transmission in neutral, check that fuel level is aligned with dot on sight glass of carburetor float bowl. Adjust float level if necessary.

2) With air cleaner installed, adjust idle mixture screw until fastest idle RPM is obtained. Then, adjust idle speed screw until specified mixture adjustment RPM is achieved.

3) Repeat procedure until RPM cannot be increased by adjusting mixture screw. Set idle to specified initial idle RPM by adjusting idle speed screw in a clockwise direction.

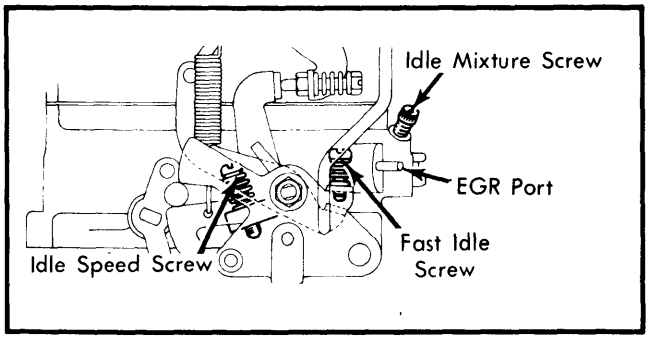

Fig. 4 Carburetor Adjustment Screw Locations

FUEL INJECTED MODELS

1) Remove rubber cap from the service connector at left front fender and connect an EFI Idle Adjusting Wiring Harness to it (Toyota 09842-14010).

2) Connect a voltmeter to the special wiring harness. Positive probe should go to the red lead; negative probe to black lead.

CAUTION — *Do not connect the voltmeter probes directly to the service connector.*

3) Warm up engine at 2500 RPM for 2 minutes. Voltmeter needle should fluctuate. If not, adjust idle mixture needle until it does. See *Fig. 5*.

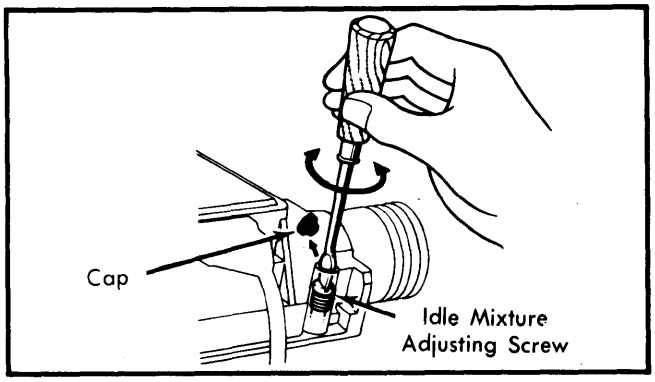

Fig. 5 Idle Mixture Adjusting Screw (Fuel Injected Models)

4) Set the idle speed to 800 RPM with idle speed adjusting screw. See *Fig. 6*.

5) Remove rubber cap from idle adjusting connector and short both terminals with a jumper wire. Warm engine at 2500 RPM for 2 minutes. Note voltage reading with engine at idle.

6) Remove the short-circuit wire and race engine to 2500 RPM once. Adjust idle mixture screw until the voltmeter needle fluctuation is centered on the voltage reading noted in step 5).

7) Remove voltmeter and wiring harness and replace rubber caps on connectors.

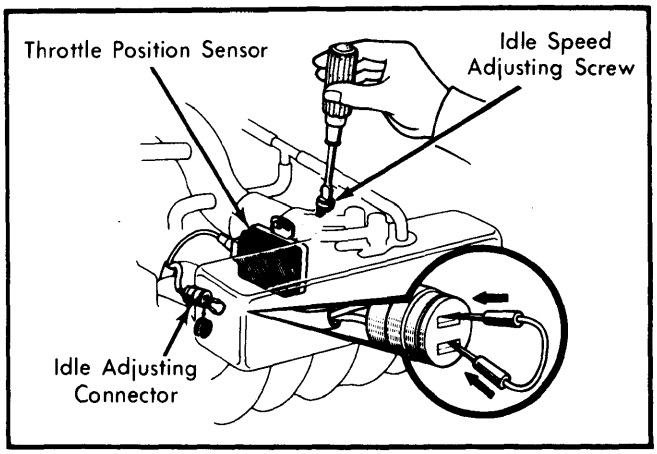

Fig. 6 Idle Speed Adjusting Screw and Connector (Fuel Injected Models)

Idle Speed Specifications

Application	Man. Trans.	Auto. Trans.
Cressida	.....	800
Supra	800	800
Land Cruiser	850	.....

TUNE-UP (Cont.)

COLD (FAST) IDLE RPM

NOTE – *There is no fast idle speed adjustment for Electronic Fuel Injection equipped vehicles.*

Land Cruiser – 1) Pull choke knob out fully. Disconnect and plug hose to distributor main diaphragm (hose closest to distributor cap). Disconnect hoses to VCV post "S" and EGR valve port "P". Use one hose to connect VCV pipe to EGR pipe. *See Fig. 8.*

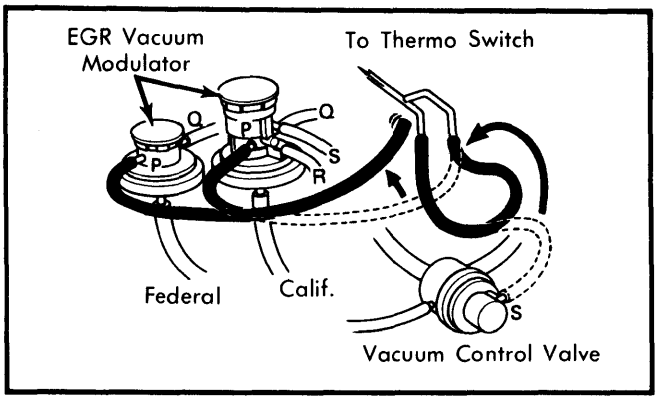

Fig. 7 Land Cruiser Vacuum Hose Routing for Fast Idle Adjustment

2) Start engine and adjust engine speed with fast idle screw. Engine should return to normal idle when choke knob is pushed in all the way. Reconnect hoses.

Fast Idle Specifications

Application	RPM
Land Cruiser	①1800

① – EGR, EVAP, and distributor diaphragm disconnected.

FUEL PUMP PRESSURE & VOLUME

Pressure
Cressida & Supra ..... ①33-38 psi (2.3-2.7 kg/cm²)
Land Cruiser ..... 3.4-4.8 psi (.24-.34 kg/cm²)

Volume
Land Cruiser ..... 2.5 pints in 30 sec.

① – Measured with vacuum hose at pressure regulator disconnected. With hose connected, 28 psi (2.0 kg/cm²)

EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

GENERAL SERVICING

IGNITION

DISTRIBUTOR

All models are equipped with Nippondenso Transistorized Electronic Ignition Systems.

Other Data & Specifications – *See Tune-Up article and appropriate article in DISTRIBUTORS & IGNITION SYSTEMS section.*

IGNITION COIL

Coil Resistance (Ohms @ 68°F)

Application	Primary	Secondary
Cressida & Supra	.5-.6	11,500-15,500
Land Cruiser	1.3-1.7	12,000-16,000

FUEL SYSTEMS

CARBURETORS

Application	Model
Land Cruiser	Aisan 2-Bbl.

Other Data & Specifications – *See Tune-Up and Asian Carburetors in FUEL SYSTEMS Section.*

FUEL INJECTION

Cressida and Supra Models are equipped with Bosch AFC fuel injection with oxygen sensor.

Other Data & Specifications – *See Tune-Up and Bosch AFC Fuel Injection in FUEL SYSTEMS Section.*

ELECTRICAL

BATTERY

Application	Amp. Hr. Rating
All	70

Battery Location – In engine compartment.

STARTER

All models are equipped with Nippondenso Starters.

Starter Specifications

Application	Volts	Amps	Test RPM
Cressida & Supra			
Conventional	11.0	50	5000
Reduction	11.5	90	3500
Land Cruiser	11.0	50	5000

GENERAL SERVICING (Cont.)

ALTERNATOR

Application	Rated Amp. Output
Cressida	55
Land Cruiser	
With Integral Regulator	55
With External Regulator	40
Supra	60

ALTERNATOR REGULATOR

All models are equipped with Nippondenso alternators and regulators. Some alternators are equipped with integrated circuit regulators (mounted integrally with alternator). Operating voltage for these regulators is 14.0-14.7 volts. Operating voltage for externally mounted regulators is 13.8-14.8 volts.

BELT ADJUSTMENT

Application	①Deflection
Alternator Belt	
Cressida & Supra	.4-.55" (10-14 mm)
Land Cruiser	.5-.6" (13-15 mm)
Air Pump Belt	
Land Cruiser	.3-.4" (8-10 mm)
Air Conditioning Belt	
Cressida & Supra	.4-.5" (10-13 mm)
Land Cruiser	.6-.7" (15-18 mm)
Power Steering Belt	
Cressida & Supra	.4-.5" (10-13 mm)
Land Cruiser	.43-.55" (11-14 mm)

① — Deflection is with 22 lbs. (10 kg) pressure applied midway on longest belt run.

FILTERS

Filter	Service Interval (Miles)
Oil Filter	
Cressida & Supra	Replace every 10,000
Land Cruiser	Replace every 7500
Air Filter	Replace every 30,000
Fuel Filter	Replace every 60,000

CAPACITIES

Application	Quantity
Crankcase (Includes Filter)	
Cressida & Supra	4.9 qts.
Land Cruiser	8.2 qts.
Cooling System	
Cressida & Supra	11.6 qts.
Land Cruiser (Includes Heater)	
Station Wagon	17.4 qts.
All Others	16.9 qts.
Man. Trans. (SAE 80W-90)	
Land Cruiser	6.6 pts.
Supra	5.6 pts.
Auto. Trans. (ATF Type F)	2.5 qts.
Differential (SAE 90)	
Cressida & Supra	3.0 pts.
Land Cruiser	5.2 pts.
Transfer Case (SAE 90)	3.6 pts.
Fuel Tank	
Cressida	
Sedan	17.2 gals.
Station Wagon	16.2 gals.
Land Cruiser	
Station Wagon	21.7 gals.
All Others	22.4 gals.
Supra	16.1 gals.