

# TUNE-UP - 4-CYL

## 1988 Toyota Celica

1988 TUNE-UP PROCEDURES  
Toyota 4 Cylinder

Camry, Celica, Corolla, MR2, Pickup, Tercel, Van, 4Runner

### ENGINE IDENTIFICATION

On Camry and Celica, engine code is stamped on rear of engine block. The Van has the engine code stamped on right side of engine block. All other models have the engine code stamped on left side of engine block.

#### ENGINE CODE TABLE

Application	Code
Camry .....	3S-FE
Celica	
Non-Turbo .....	3S-FE & 3S-GE
Turbo .....	3S-GTE
Corolla, FX & FX-16	
Carbureted .....	4A-C & 4A-F
EFI .....	4A-GE
MR2 .....	4A-GE
Pickup & 4Runner	
Carbureted .....	22R
EFI	
Non-Turbo .....	22R-E
Turbo .....	22R-TE
Tercel	
Sedan .....	3E
Wagon .....	3A-C
Van .....	4Y-E

### ENGINE COMPRESSION

Check compression pressure with engine at normal operating temperature. Unplug distributor and ignition coil. If equipped, unplug cold start injector connector, solenoid resistor, and fuel injector connectors. Remove all spark plugs, hold throttle valve wide open, and operate engine at cranking speed.

#### COMPRESSION SPECIFICATIONS TABLE

Application	Specification
Compression Ratio	
Camry & Celica	
3S-FE .....	9.3:1
3S-GE .....	9.2:1
3S-GTE .....	8.5:1
Corolla, FX & FX-16	
4A-C .....	9.0:1
4A-F .....	9.5:1
4A-GE .....	9.4:1
Pickup & 4Runner	
22R & 22R-E .....	9.3:1
22R-TE .....	7.5:1

MR2 .....	9.4:1
Tercel Sedan .....	9.3:1
Tercel Wagon .....	9.0:1
Van .....	8.8:1
Normal Compression Pressure	
Corolla, FX & FX-16	
4A-F .....	191 psi (13.4 kg/cm <sup>2</sup> )
4A-C & 4A-GE .....	178 psi (12.5 kg/cm <sup>2</sup> )
Pickup & 4Runner	
22R & 22R-E .....	171 psi (12.0 kg/cm <sup>2</sup> )
22R-TE .....	149 psi (10.5 kg/cm <sup>2</sup> )
Tercel Sedan .....	185 psi (13.0 kg/cm <sup>2</sup> )
All Others .....	178 psi (12.5 kg/cm <sup>2</sup> )
Minimum Compression Pressure	
Corolla, FX & FX-16	
4A-F & 4A-GE .....	142 psi (10.0 kg/cm <sup>2</sup> )
4A-C .....	128 psi (9.0 kg/cm <sup>2</sup> )
Pickup & 4Runner	
22R & 22R-E .....	142 psi (10.0 kg/cm <sup>2</sup> )
22R-TE .....	121 psi (8.5 kg/cm <sup>2</sup> )
All Others .....	142 psi (10.0 kg/cm <sup>2</sup> )
Maximum Variation	
Between Cylinders .....	14 psi (1.0 kg/cm <sup>2</sup> )

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## VALVE CLEARANCE

NOTE: Van engine is equipped with hydraulic lifters. No adjustment is necessary.

### CAMRY, CELICA, COROLLA (W/4A-F & 4A-GE) & MR2

1) With engine cold, remove valve cover. Set No. 1 cylinder at TDC of compression stroke by turning crankshaft pulley and aligning groove with "0" mark on timing belt cover.

2) Ensure that rocker arms on cylinder No. 1 are loose and those on cylinder No. 4 are tight. Measure and record intake valve clearance of cylinder No. 1 and 2, and cylinder No. 1 and 3 exhaust valves.

3) Turn crankshaft clockwise one revolution (360 degrees) and align groove with "0" mark on cover. With cylinder No. 4 at TDC, measure and record intake valve clearance of cylinder No. 3 and 4, and cylinder No. 2 and 4 exhaust valves.

4) To adjust valves, turn crankshaft pulley to position lobe on valve being adjusted upward. Using Valve Clearance Adjuster (SST 09248-55010), press down on valve lifter. Use a small screwdriver to remove adjustment shim.

5) Using a micrometer, measure thickness of shim just removed. Select a new shim that will give correct valve clearance. Shims are available from .0984" (2.500 mm) to .1299" (3.300 mm) thicknesses, in .002" (.05 mm) increments.

### COROLLA (W/4A-C), PICKUP, TERCEL & 4RUNNER

1) Check/adjust valve clearance with engine at normal operating temperature (cold on Tercel Wagon). Remove valve cover and set No. 1 cylinder at TDC of compression stroke. Check that rocker arms for No. 1 cylinder are loose and those for No. 4 are tight.

2) Adjust intake valve(s) on cylinders No. 1 and 2, and exhaust valve on cylinders No. 1 and 3. Turn crankshaft one complete revolution (360 degrees). Adjust intake valve(s) on cylinders No. 3 and 4, and exhaust valves on cylinders No. 2 and 4.

VALVE CLEARANCE SPECIFICATIONS TABLE

Application	In. (mm)
Camry & Celica (W/3S-FE)	
Intake .....	.007-.011 (.19-.29)
Exhaust .....	.011-.015 (.28-.38)
Celica (W/3S-GE & 3S-GTE) & MR2	
Intake .....	.006-.010 (.15-.25)
Exhaust .....	.008-.012 (.20-.30)
Corolla (W/4A-C)	
Intake .....	.008 (.20)
Exhaust .....	.012 (.30)
Corolla (W/4A-F & 4A-GE)	
Intake .....	.006-.010 (.15-.25)
Exhaust .....	.008-.012 (.20-.30)
Tercel Sedan .....	.008 (.20)
Tercel Wagon	
Intake .....	.007 (.18)
Exhaust .....	.011 (.28)
Pickup & 4Runner	
Intake .....	.008 (.20)
Exhaust .....	.012 (.30)

## VALVE ARRANGEMENT

### CAMRY, CELICA, COROLLA & MR2

Intake Side - All intake.  
Exhaust Side - All exhaust.

### PICKUP & 4RUNNER

Right Side - All Intake.  
Left Side - All Exhaust.

### TERCEL SEDAN

I-I-E-E-I-I-I-I-E-E-I-I (Front-to-rear).

### TERCEL WAGON

I-E-E-I-I-E-E-I (Front-to-rear).

### VAN

E-I-I-E-E-I-I-E (Front-to-rear).

## IGNITION SYSTEM

### DISTRIBUTOR

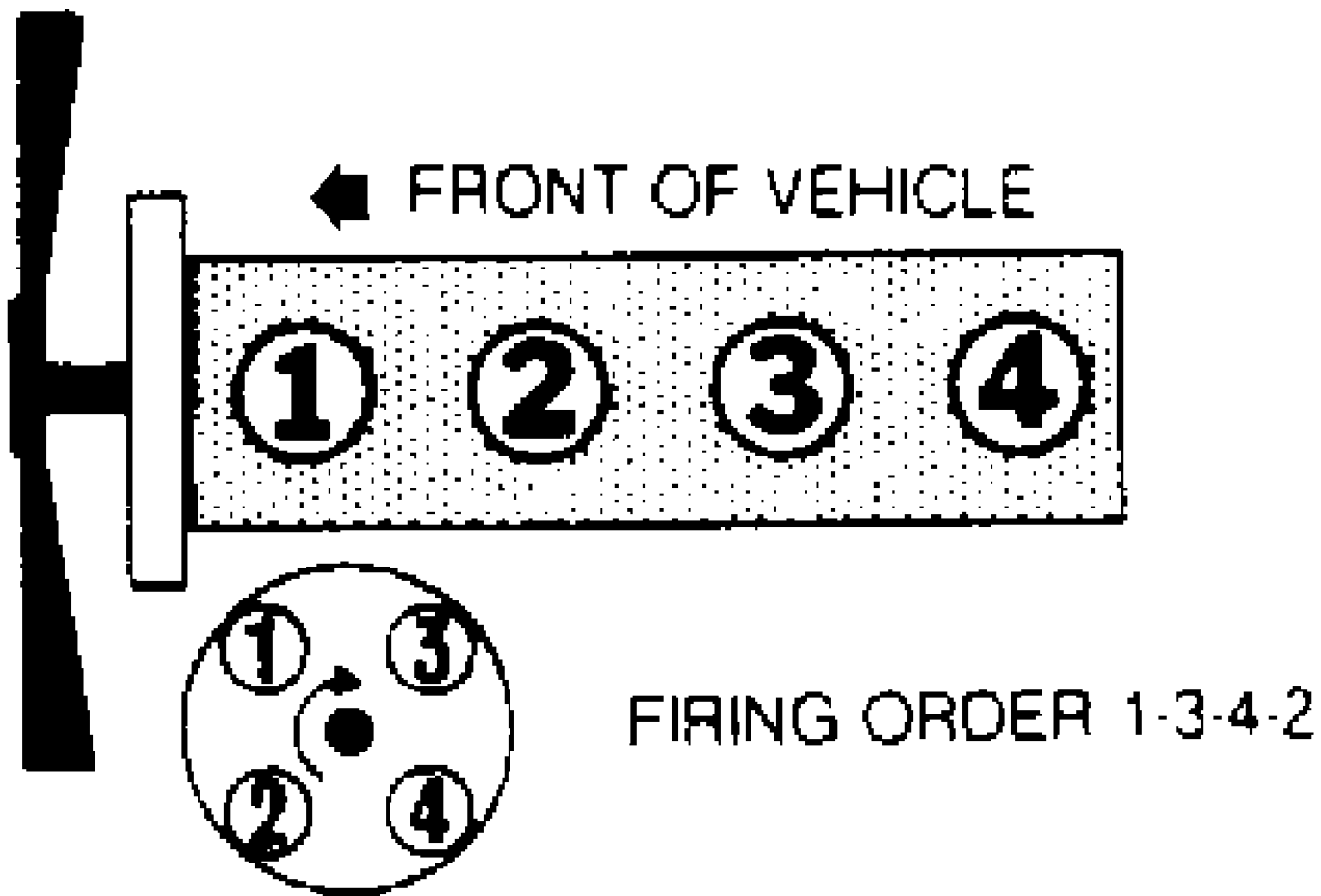
The Corolla 4A-C and 4A-F engines, as well all Tercel models, use Nippondenso Integrated Ignition Assembly (IIA) distributors. The Pickup and 4Runner 22R engine use Nippondenso electronic ignition, with conventional mechanical/vacuum advance mechanisms.

All other models are equipped with Nippondenso Electronic Spark Advance (ESA) distributors. Measure pick-up coil air gap with a

non-magnetic feeler gauge. Move pick-up coil, if necessary, to correct air gap.

DISTRIBUTOR PICK-UP COIL AIR GAP TABLE

Application	In. (mm)
All Models .....	.008-.016 (.2-.4)



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Fig. 1: Firing Order & Distributor Rotation - Pickup & 4Runner

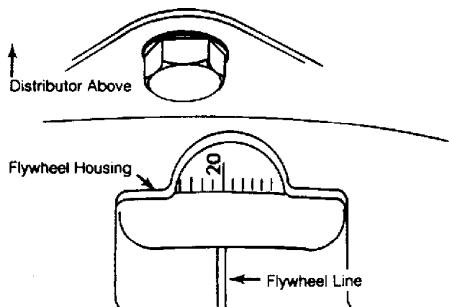


Fig. 2: Firing Order & Distributor Rotation - Van

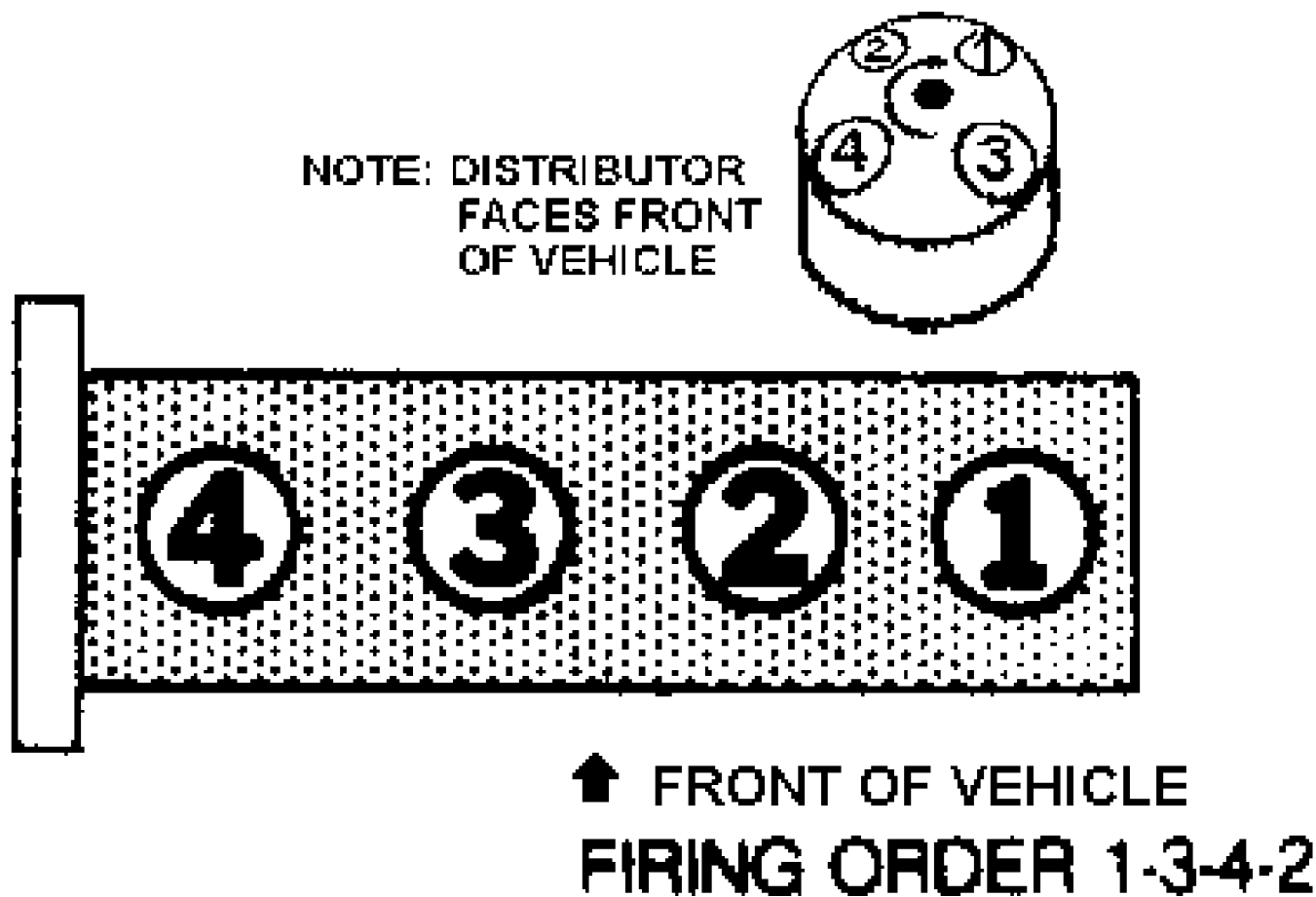


Fig. 3: Firing Order & Distributor Rotation - MR2

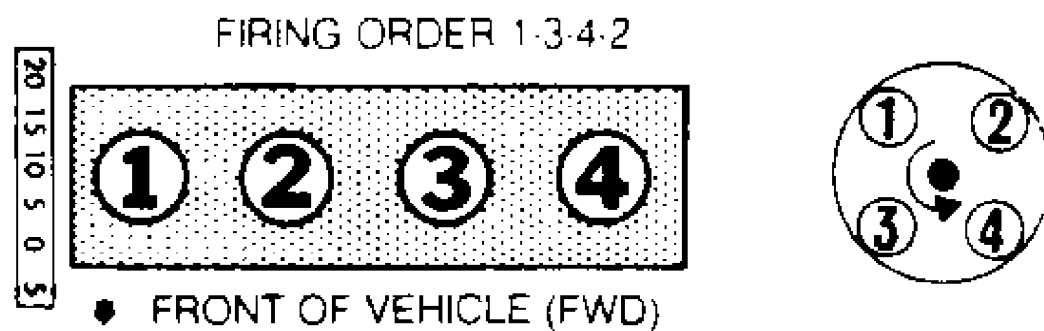


Fig. 4: Firing Order & Distributor Rotation - All Other Models

**IGNITION COIL**

**IGNITION COIL RESISTANCE TABLE**

Application	(1) Primary	(1) Secondary
Camry & Celica		
3S-FE .....	.4-.5 .....	7,700-10,400
3S-GE & 3S-GTE .....	.4-.5 .....	10,200-13,800
Corolla		
4A-F .....	1.3-1.5 .....	10,200-13,800
4A-GE .....	.4-.5 .....	10,200-13,800
Corolla FX & FX-16		
4A-C .....	.4-.5 .....	7,700-10,400
4A-GE .....	.5-.7 .....	11,000-16,000
Pickup & 4Runner		
22R .....	.4-.5 .....	8,500-11,500
22R-E & 22R-TE .....	.5-.7 .....	11,400-15,600
MR2 .....	.5-.7 .....	11,000-16,000
Tercel Sedan .....	.4-.5 .....	10,200-13,800
Tercel Wagon .....	.4-.5 .....	7,700-10,400
Van .....	1.2-1.5 .....	7,700-10,400

(1) - Ohms @ 68°F (20°C)

## HIGH TENSION WIRE RESISTANCE

### HIGH TENSION WIRE RESISTANCE TABLE

Application	Ohms (Maximum)
All Models .....	25,000

## SPARK PLUGS

### SPARK PLUG TYPE TABLE

Application	NGK	Nippondenso
Camry & Celica		
3S-FE .....	BCPR5EY11 .....	Q16R-U11
3S-GE .....	BCPR5EP11 .....	PQ16R
3S-GTE .....	BCPR5EP8 .....	PQ16R8
Corolla		
4A-C & 4A-GE .....	BCPR5EP11 .....	PQ16R
4A-F .....	BCPR5EY11 .....	Q16R-U11
MR2 .....	BCPR5EP11 .....	PQ16R
Pickup & 4Runner .....	BPR5EY .....	W16EXR-U
Van .....	BPR5EP11 .....	P16R
Tercel Sedan & Tercel Wagon .....	BPR5EY11 .....	W16EXR-U11

### SPARK PLUG SPECIFICATIONS TABLE

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
Pickup & 4Runner .....	.031 (.8) .....	13 (18)
All Others .....	.043 (1.1) .....	13 (18)

## IGNITION TIMING

1) Engine must be at operating temperature. Connect timing light to engine. Connect tachometer to negative terminal of coil, engine check connector, or remove rubber cap and connect probe to service connector on distributor (if equipped).

CAUTION: Some tachometers may not be compatible with ignition system. Consult tachometer manufacturer before connecting tach to system. DO NOT allow tachometer terminal to become grounded as this can damage igniter and/or coil.

2) Adjust idle speed to specification. Install jumper wire, to fix idle speed, across terminals "E1" and "T" of engine check connector (if equipped). Check base ignition timing. Remove jumper wire and check advance timing.

3) On Tercel, Corolla 4A-C and 4A-F engines, and Pickup and 4Runner 22R engine, disconnect and plug distributor vacuum hose(s). Adjust timing by turning distributor.

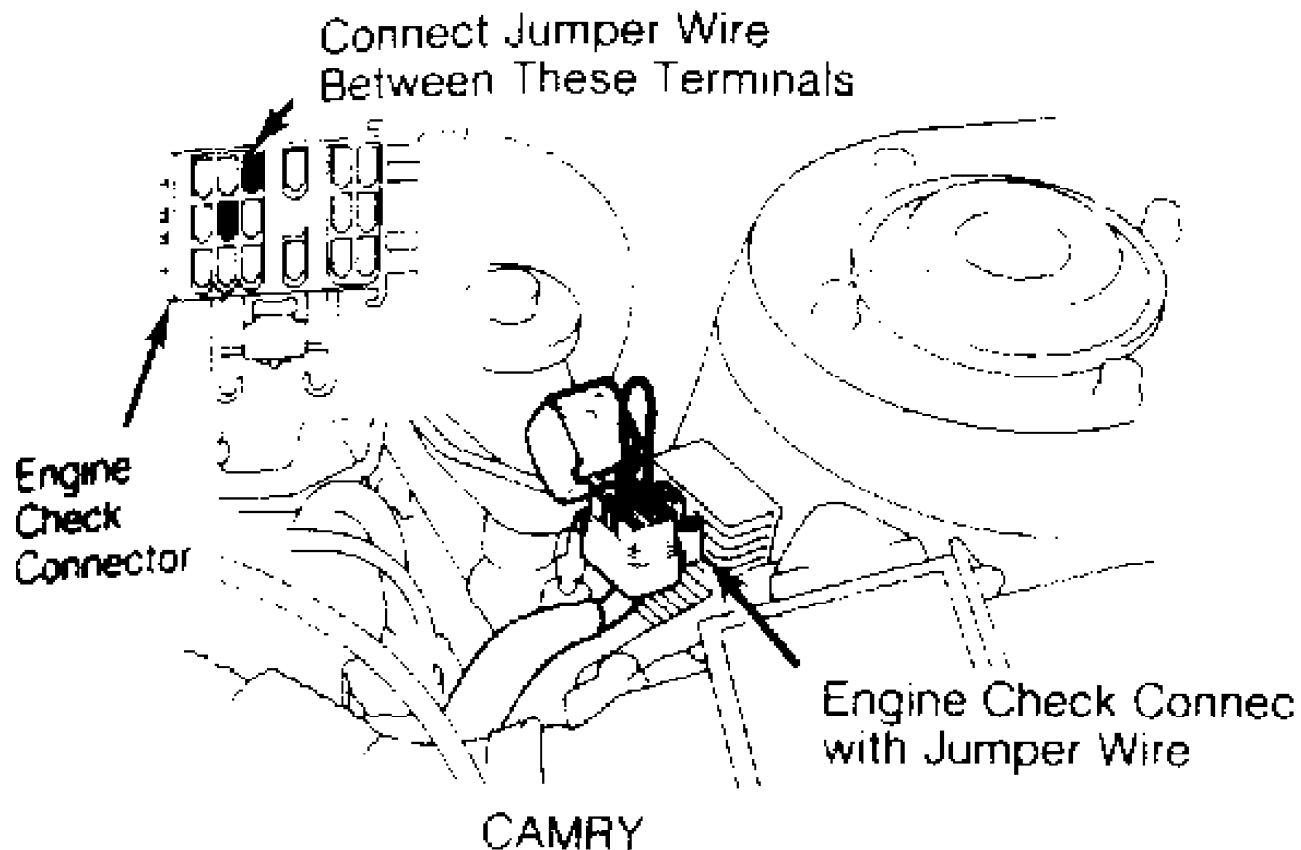


Fig. 5: Ignition Timing Adjustment (CAMRY)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.

# Connect Jumper Wire Between These Terminals

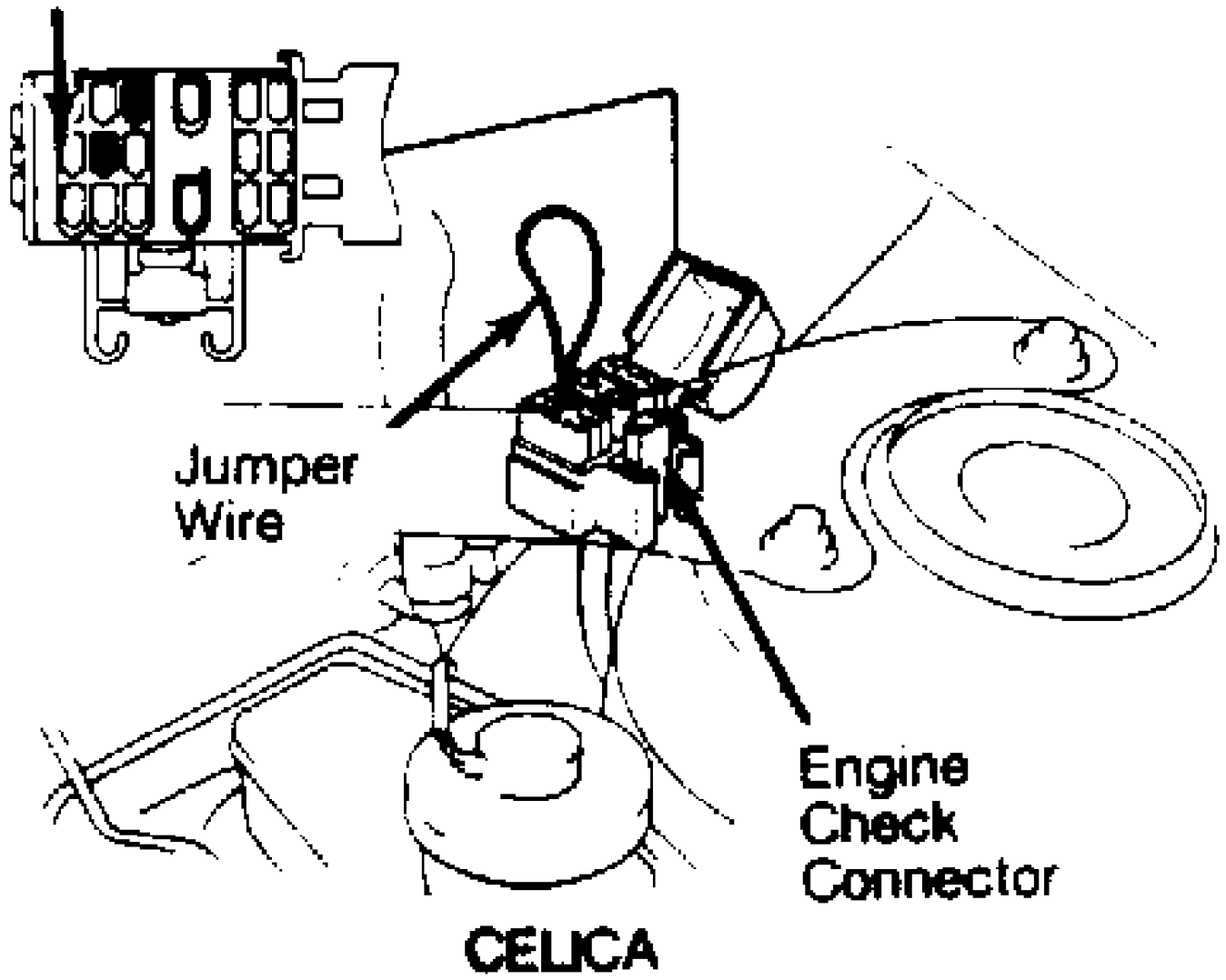


Fig. 6: Ignition Timing Adjustment (CELICA)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.

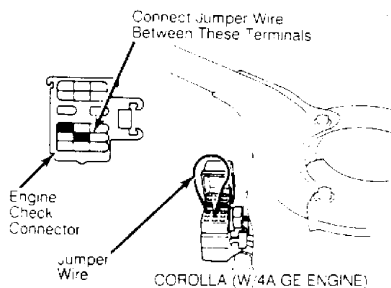


Fig. 7: Ignition Timing Adjustment (COROLLA)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.



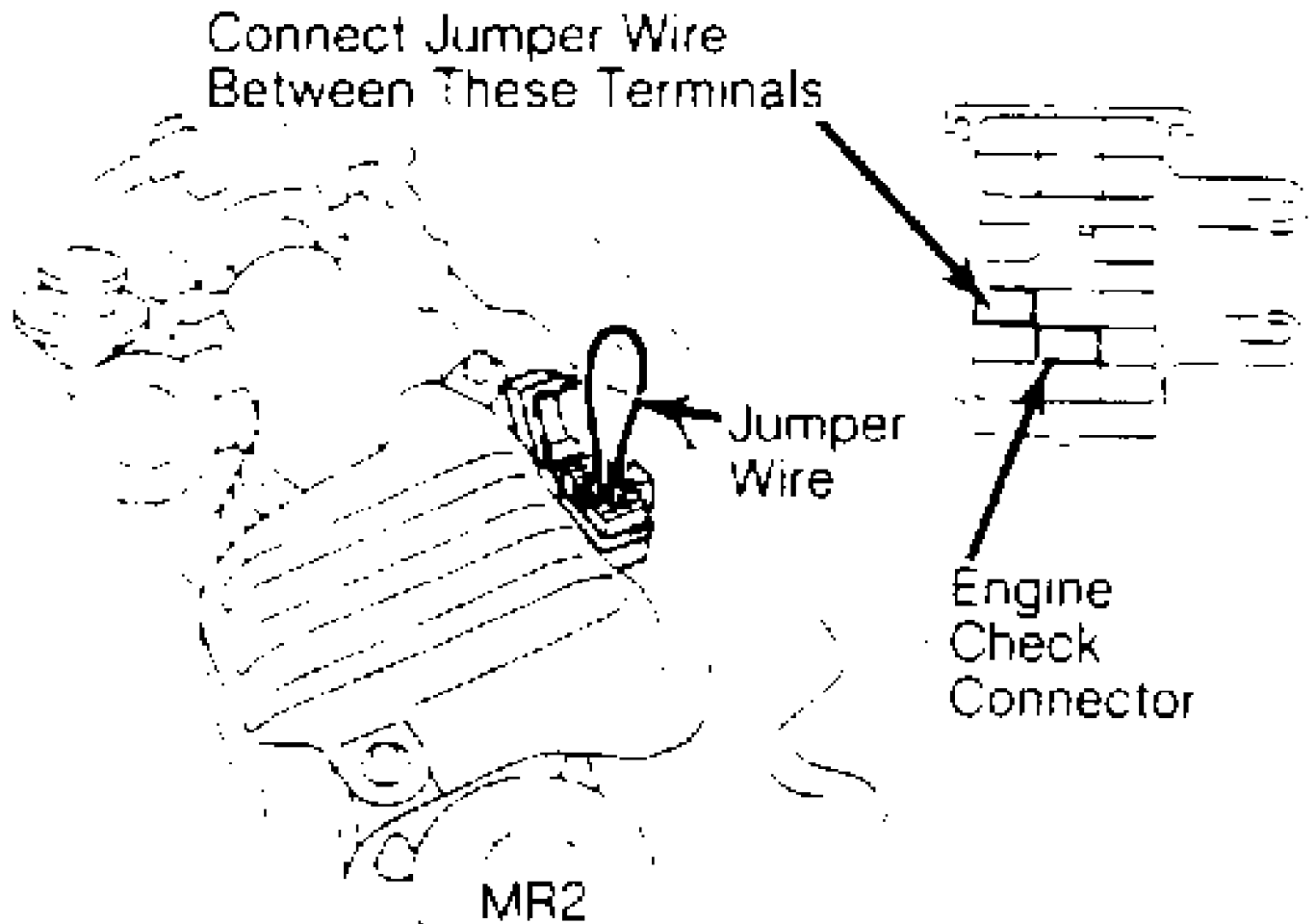


Fig. 8: Ignition Timing Adjustment (MR2)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.

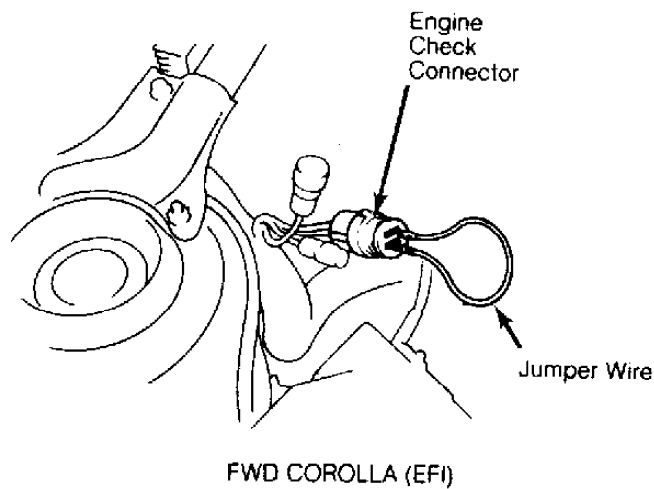


Fig. 9: Ignition Timing Adjustment (FX & FX-16)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.

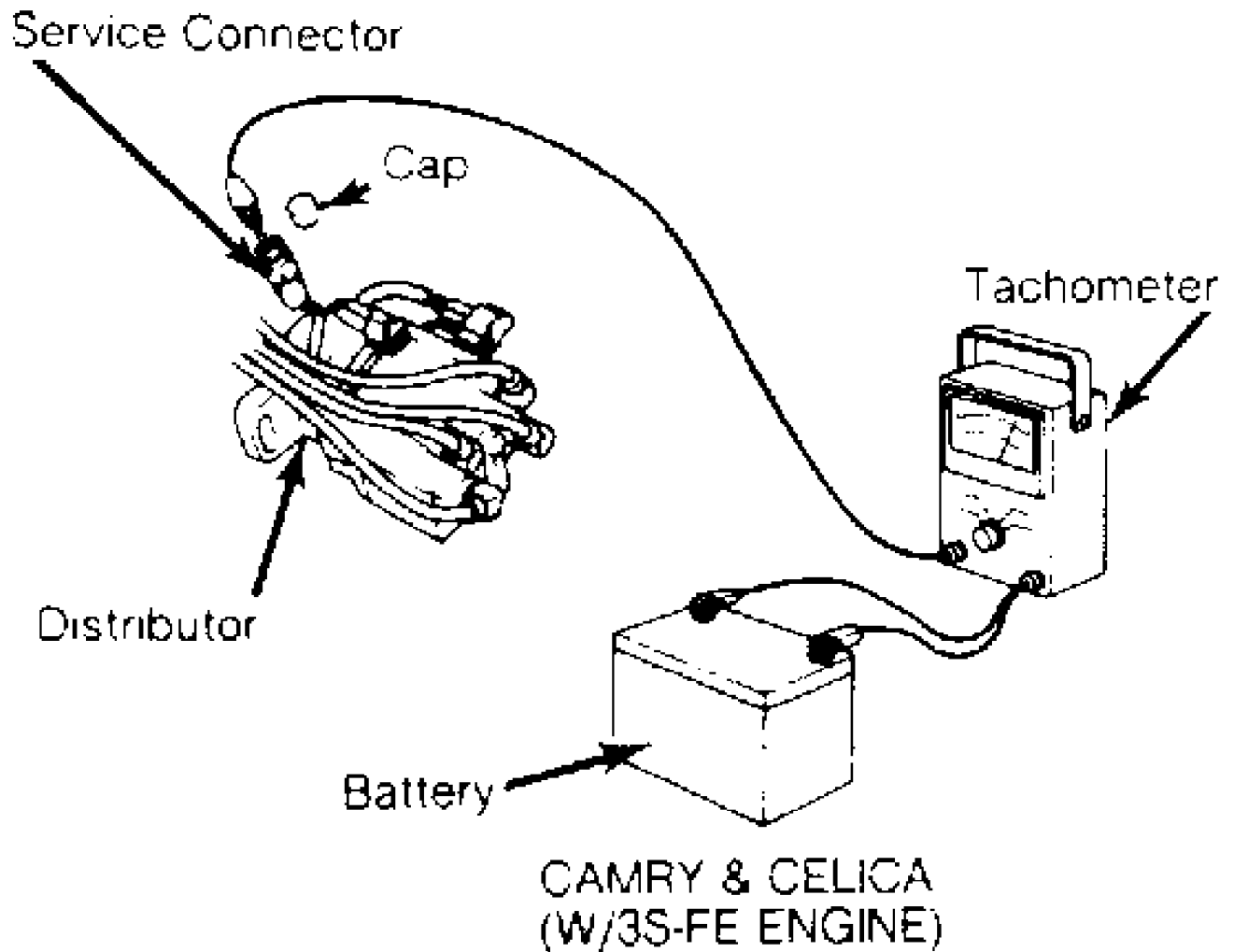


Fig. 10: Tach Hook-Up For Idle Speed & Ign Tim Adj (CAMRY, CELICA W/35-FE ENG)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

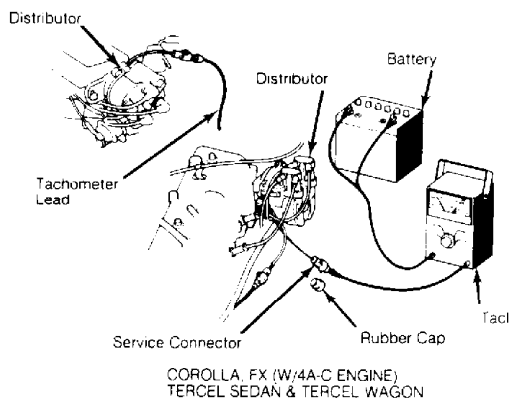
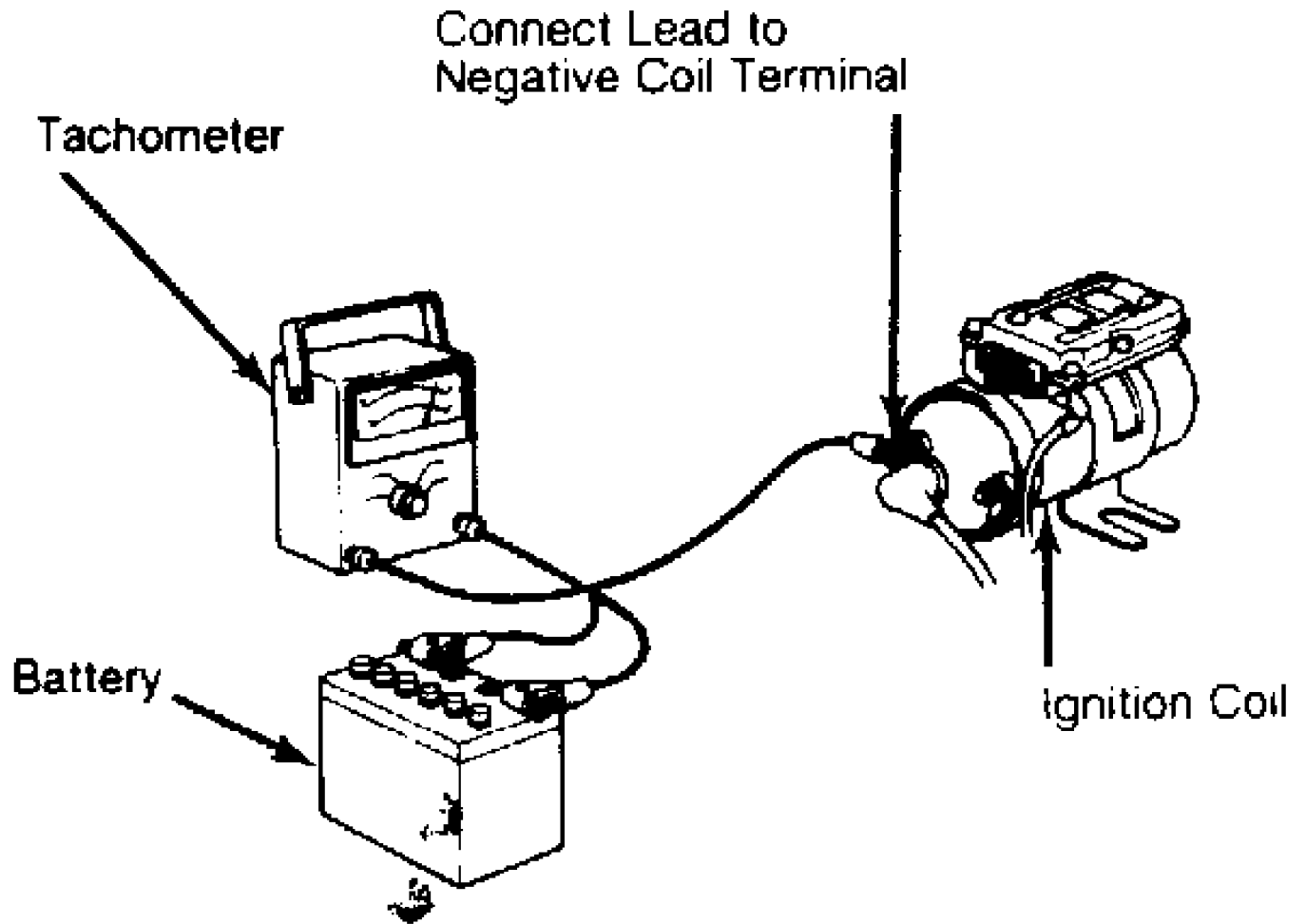
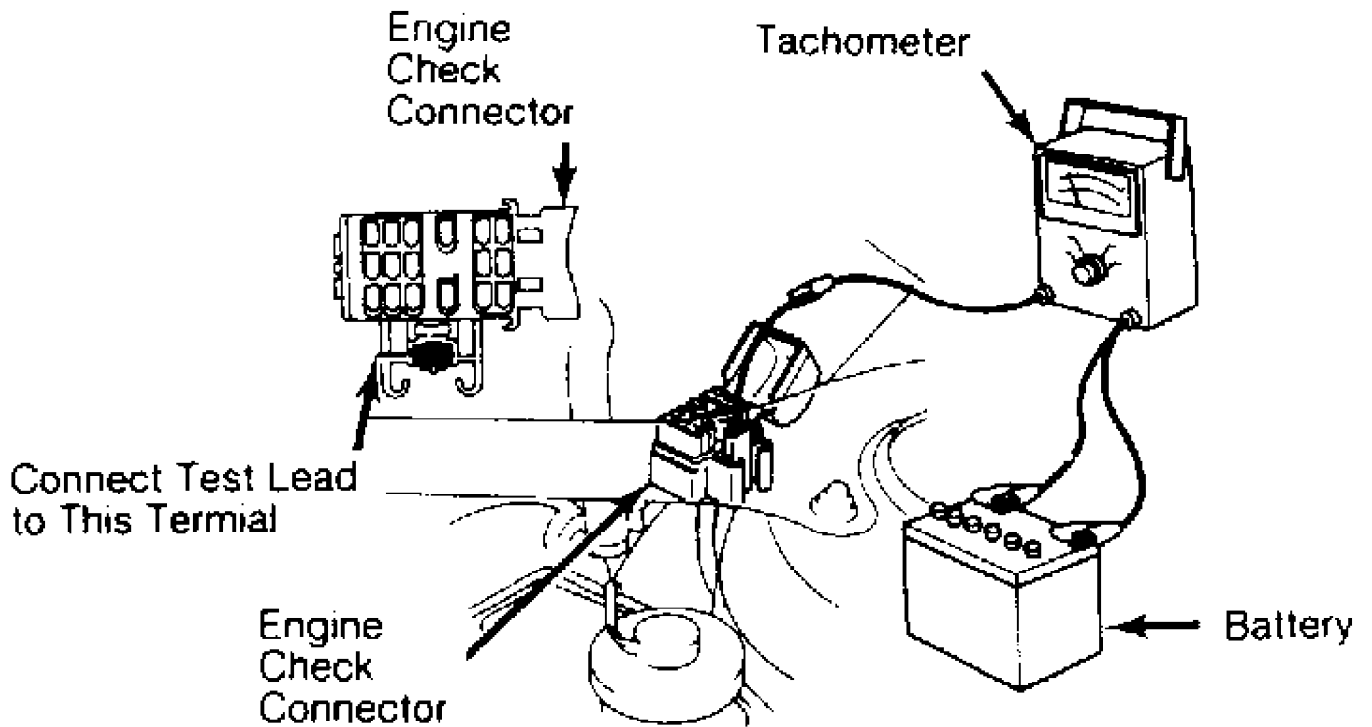


Fig. 11: Tach Hook-Up For Idle Speed & Ign Tim Adj (COROLLA FX W/4A-C ENG) TERCEL SEDAN/WAGON  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



RWD COROLLA (EFI),  
PICKUP & 4RUNNER (EFI  
& EFI TURBO) & MR2

Fig. 12: Tach Hook-Up For Idle Speed & Ign Tim Adj (COROLLA & FX16 [W/4A-GE ENG] PICKUP & 4RUNNER [W/22R-TE ENGINE] & MR2 )  
Courtesy of Toyota Motor Sales, U.S.A., Inc.



### CELICA (W/3S-GE ENGINE)

Fig. 13: Tach Hook-Up For Idle Speed & Ign Tim Adj. (CELICA W/3S-GE ENG)

Courtesy of Toyota Motor Sales, U.S.A., Inc.

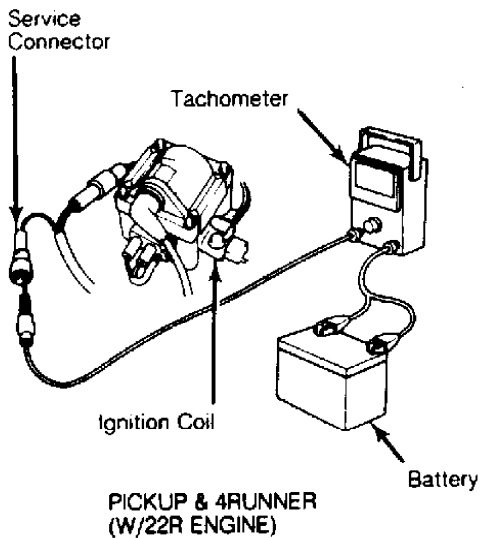
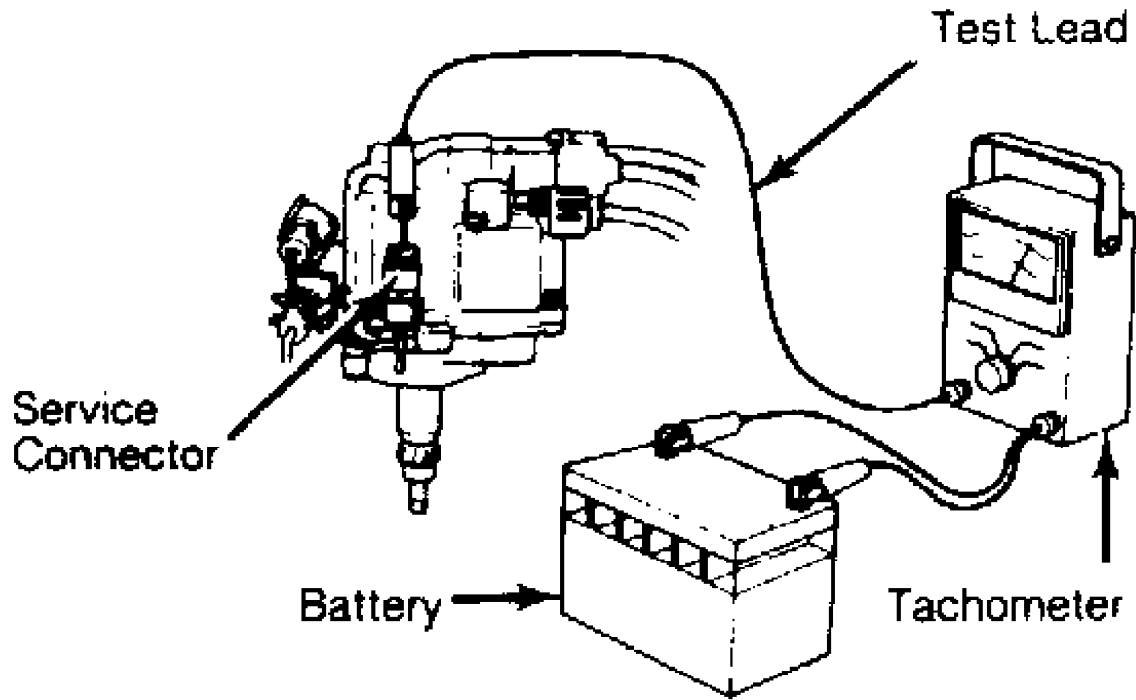


Fig. 14: Tach Hook-Up For Idle Speed & Ign Tim Adj (P/U & 4RUNNER W/22R ENG)

Courtesy of Toyota Motor Sales, U.S.A., Inc.



VAN

Courtesy of Toyota Motor Sales, U.S.A., Inc.

Fig. 15: Tach Hook-Up For Idle Speed & Ign Timing Adjustments. (VAN)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

IGNITION TIMING TABLE

Application	Base Timing Degrees BTDC @ RPM	Advance Timing Degrees BTDC @ RPM
Camry & Celica		
3S-FE .....	10 @ 650	13-22 @ Idle
3S-GE & 3S-GTE .....	10 @ 700	14-19 @ Idle

Corolla, FX & FX-16			
4A-C	5 @ 650 (1)	.....	13 @ 950
4A-F	5 @ 650 (1)	.....	10-16 @ 900
4A-GE	10 @ 800	.. (2)	More than 12 @ Idle
MR2	10 @ 800	.. (2)	More than 12 @ Idle
Pickup & 4Runner			
22R	0 @ 700 (3)	.....	.....
22R-E	5 @ 750	.....	10-14 @ Idle
22R-TE	5 @ 800	.....	10-14 @ Idle
Tercel Sedan	3 @ 700 (4)	.....	12-18 @ 950
Tercel Wagon			
Auto. Trans.	5 @ 800 (5)	.....	13 @ 950
Man. Trans.	5 @ 650 (6)	.....	13 @ 950
Van			
Auto. Trans.	12 @ 750	.....	20 @ Idle
Man. Trans.	12 @ 700	.....	20 @ Idle

- (1) - At 750 RPM on automatic transaxle models.
- (2) - More than 16 degrees BTDC at idle on manual transaxle models.
- (3) - Maximum allowable timing setting is zero degrees BTDC at 950 RPM.
- (4) - At 900 RPM on automatic transaxle models.
- (5) - At 900 RPM on models with power steering.
- (6) - At 800 RPM on models with power steering.

## FUEL SYSTEM

### CARBURETOR

Corolla 4A-C and 4A-F engines, Pickup and 4Runner 22R engine, and Tercel models use Aisan 2-barrel carburetors.

### FUEL INJECTION

Camry, Celica, Corolla 4A-GE engine, Pickup and 4Runner 22R-E and 22R-TE engines, and Van are equipped with Bosch AFC electronic fuel injection.

### FUEL PUMP

NOTE: Fuel pump specifications for carbureted engines not available from manufacturer.

#### FUEL PUMP PERFORMANCE TABLE

Application	(1) Pressure psi (kg/cm <sup>2</sup> )	(2) Pressure psi (kg/cm <sup>2</sup> )
Camry & Celica		
3S-FE	38-44 (2.7-3.1)	... 33-37 (2.3-2.6)
3S-GE & 3S-GTE	... 33-38 (2.3-2.7)	... 27-31 (1.9-2.2)
Corolla, FX-16 & MR2		
Pickup & 4Runner	38-44 (2.7-3.1)	... 30-33 (2.1-2.3)
22R-E	38-44 (2.7-3.1)	... 33-37 (2.3-2.6)
22R-TE	33-38 (2.3-2.7)	... 27-31 (1.9-2.2)

- (1) - With pressure regulator vacuum hose disconnected and plugged.
- (2) - With vacuum hose connected to pressure regulator.

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## **IDLE SPEED & MIXTURE**

### **COLD (FAST) IDLE RPM**

Corolla & Tercel Wagon (Carbureted)

1) After setting idle and mixture, stop engine. Remove air cleaner. On California models, disconnect and plug both air suction hoses and hot idle compensation hose.

2) On all models, disconnect 2nd hose from top on Thermal Vacuum Switching Valve (TVSV) and plug nipple on valve to cut vacuum to choke opener and EGR system. Valve is mounted on thermostat outlet and can be identified by 4 hoses attached in a row. On Corolla, a single hose is also attached on side of valve.

3) Hold throttle valve slightly open. Push choke valve closed and release throttle valve. Without touching accelerator, start engine. Set fast idle to specifications by turning fast idle adjusting screw.

Pickup & 4Runner (Carbureted)

Disconnect and plug hoses at choke opener diaphragm and EGR valve. Hold throttle valve slightly open, push choke valve closed, and release throttle valve to set fast idle cam. Without touching accelerator, start engine. Set fast idle to specifications by turning fast idle adjusting screw.

Tercel Sedan

After setting idle and mixture, stop engine. Disconnect and plug vacuum hose from EGR valve. Start engine. Hold throttle valve slightly open and release throttle valve to set fast idle cam. Check fast idle speed with cooling fan off. Set fast idle to specifications by turning fast idle adjusting screw.

### **COLD (FAST) IDLE SPEED SPECIFICATIONS TABLE**

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Application	RPM
Tercel Sedan	
Auto. Trans. ....	2800
Man. Trans. ....	3000
All Other Models ....	3000

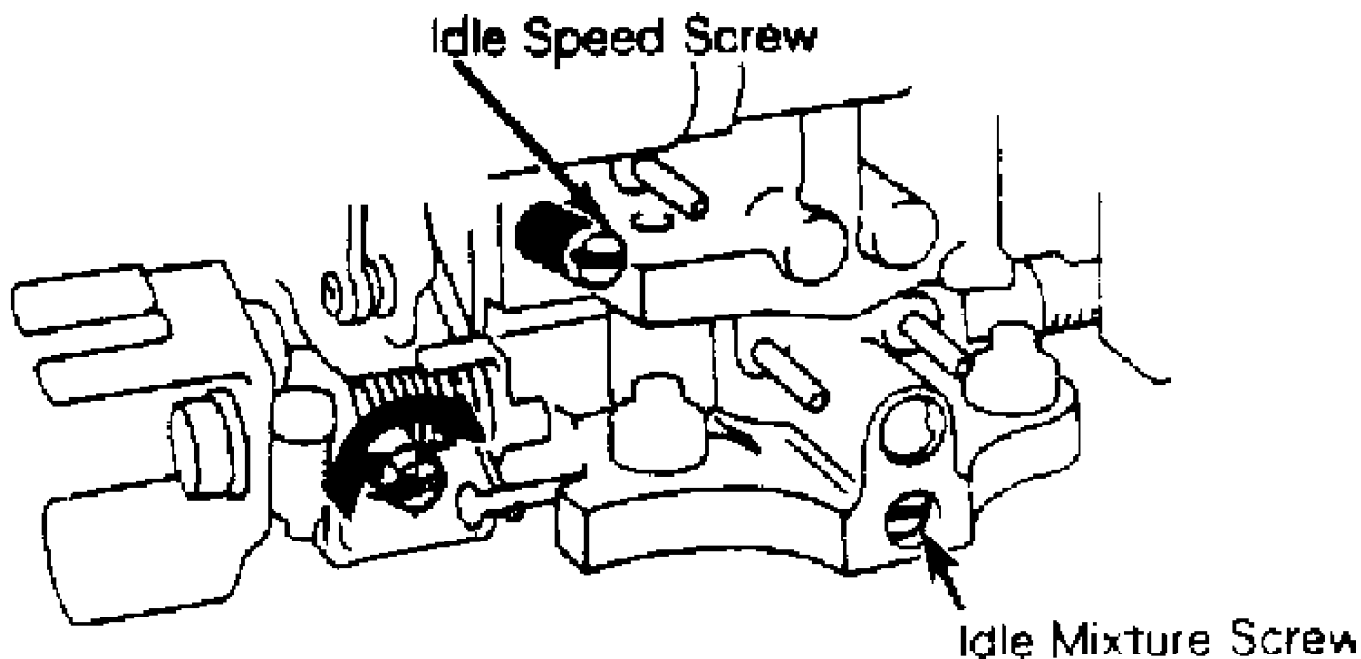
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### **IDLE SPEED**

Carbureted Engines

1) Engine must be at normal operating temperature. Adjust idle speed with air cleaner installed, choke fully open, all accessories off, electric cooling fan off (if equipped), transmission in Neutral, and all emission system vacuumlines connected.

2) Connect tachometer to negative terminal of coil, engine check connector, or remove rubber cap and connect probe to service connector on distributor (if equipped). See Fig. 6. Set idle speed to specifications using adjusting screw. See Fig. 16.



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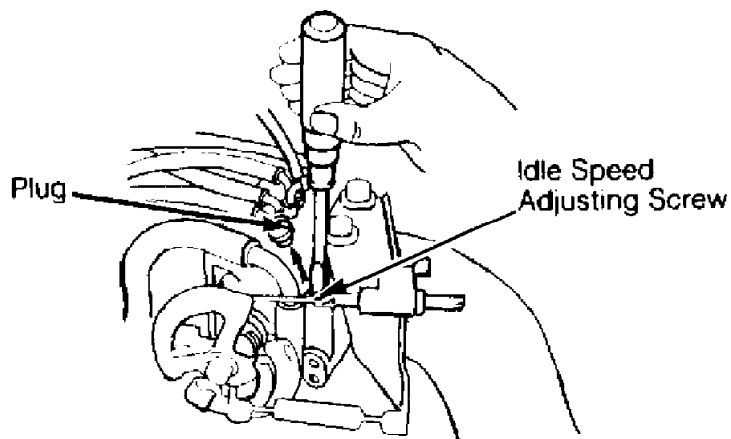
Fig. 16: Carburetor Adjusting Screws  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

**Fuel Injected Engines**

1) Adjust idle speed with air cleaner installed, all air intake system hoses connected, all vacuum lines connected, EFI system wiring connectors tight, transmission in Neutral, all accessories off, and electric cooling fan off (if equipped).

2) Engine must be at normal operating temperature. Connect tachometer to negative terminal of coil, or remove rubber cap and connect probe to service connector on distributor (if equipped).

3) Increase and hold engine speed at 2500 RPM for 2 minutes. Release throttle and set idle by turning idle speed adjusting screw. See Fig. 17.



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Fig. 17: Adjusting Idle Speed On Fuel Injected Engines  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

**IDLE SPEED SPECIFICATIONS TABLE**

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Application	Idle RPM
Camry .....	(1) 650
Celica	
3S-FE .....	(1) 600-700
3S-GE & 3S-GTE .....	750
Corolla, FX & FX-16	
4A-C & 4A-F	
Man. Trans. ....	650
Auto. Trans. ....	750
4A-GE .....	800
MR2 .....	800
Pickup & 4Runner	
22R .....	700
22R-E .....	750
22R-TE .....	800
Tercel Sedan	
Auto. Trans. ....	900
Man. Trans. ....	700
Tercel Wagon	
Auto. Trans. ....	(2) 800
Man. Trans. ....	(3) 650
Van	
Auto. Trans. ....	750
Man. Trans. ....	700

- (1) - Idle speed with jumper wire removed is 650-750 RPM.  
(2) - Models with power steering set to 900 RPM.  
(3) - Models with power steering set to 800 RPM.

## IDLE MIXTURE & CO LEVEL

**NOTE:** Mixture adjustment is not a part of normal tune-up procedure and should not be performed unless carburetor is disassembled or vehicle fails emissions testing. Idle mixture on fuel injected models is computer controlled and is not adjustable. Idle mixture and CO level can only be checked.

### Idle Mixture (Carbureted)

1) Place transmission in Neutral and check that fuel level in carburetor sight glass is about midway. Remove carburetor from engine. Carefully drill a .256" (6.5 mm) hole in center of idle mixture screw plug. Use a .295" (7.5 mm) drill to pry out plug.

**CAUTION:** There is only .04" (1.0 mm) clearance between plug and screw.

2) Remove mixture screw. If top or tapered portion of mixture screw is damaged, replace screw. Install and fully seat mixture screw.

3) Back out mixture screw 3-3 1/2 turns. Install carburetor. Start engine and adjust idle speed. Adjust maximum (lean drop) RPM by turning idle mixture screw. See IDLE MIXTURE SPECIFICATIONS (CARBURETED) table.

**NOTE:** On Corolla and Tercel, insert a small screwdriver between EGR valve and EGR vacuum modulator bracket.

4) Set idle speed using idle speed adjusting screw. Continue adjustments until maximum (lean drop) speed will not rise any further. Adjust idle RPM by turning idle mixture screw. Install replacement mixture screw cap and protective cover (if equipped).

### Idle CO Level (Carbureted)

1) Ensure air cleaner is installed. Check that all vacuum hose are connected, carburetor fuel level is even with sight glass, and choke is fully opened.

2) Ensure transmission is in Neutral and all accessories are off. Connect tachometer to engine. With engine at normal operating temperature, ensure ignition timing is correct.

3) On Corolla 4A-F engine and Tercel Sedan, connect voltmeter negative lead to terminals "E1" and positive lead to "VF" of engine check connector. See Figs. 18-21. Run engine at 2500 RPM for about 90 seconds and note voltmeter reading. Voltmeter needle should fluctuate between 1.6-4 volts (1.3-3.7 on Tercel Sedan) at least 8 times in 10 seconds.

4) On all models, insert HC/CO meter into exhaust pipe and measure exhaust emissions. Make sure to complete testing within 3 minutes. If fluctuation is incorrect, check intake manifold for leaks. If necessary, check feedback carburetor system.

#### Fuel Injected Engines

1) Ensure air cleaner is installed. Check that all air intake system and vacuum hose are connected, EFI system wiring connectors are tight, transmission is in Neutral, and all accessories are off.

2) Connect tachometer to engine. With engine at normal operating temperature, ensure ignition timing is correct. Short terminals "E1" and "T" of engine check connector to fix idle speed. See Figs. 18-21.

3) Connect voltmeter negative lead to terminals "E1" and positive lead to "VF" of engine check connector. See Fig. 9. Run engine at 2500 RPM for about 90 seconds and note voltmeter reading.

4) Voltmeter needle should fluctuate between 0-5 volts (0-7 on Pickup and 4Runner) at least 8 times in 10 seconds. Insert HC/CO meter into exhaust pipe and measure exhaust emissions.

5) Make sure to complete testing within 3 minutes. If fluctuation is incorrect, check air induction system for leaks. If necessary, check fuel injection system.

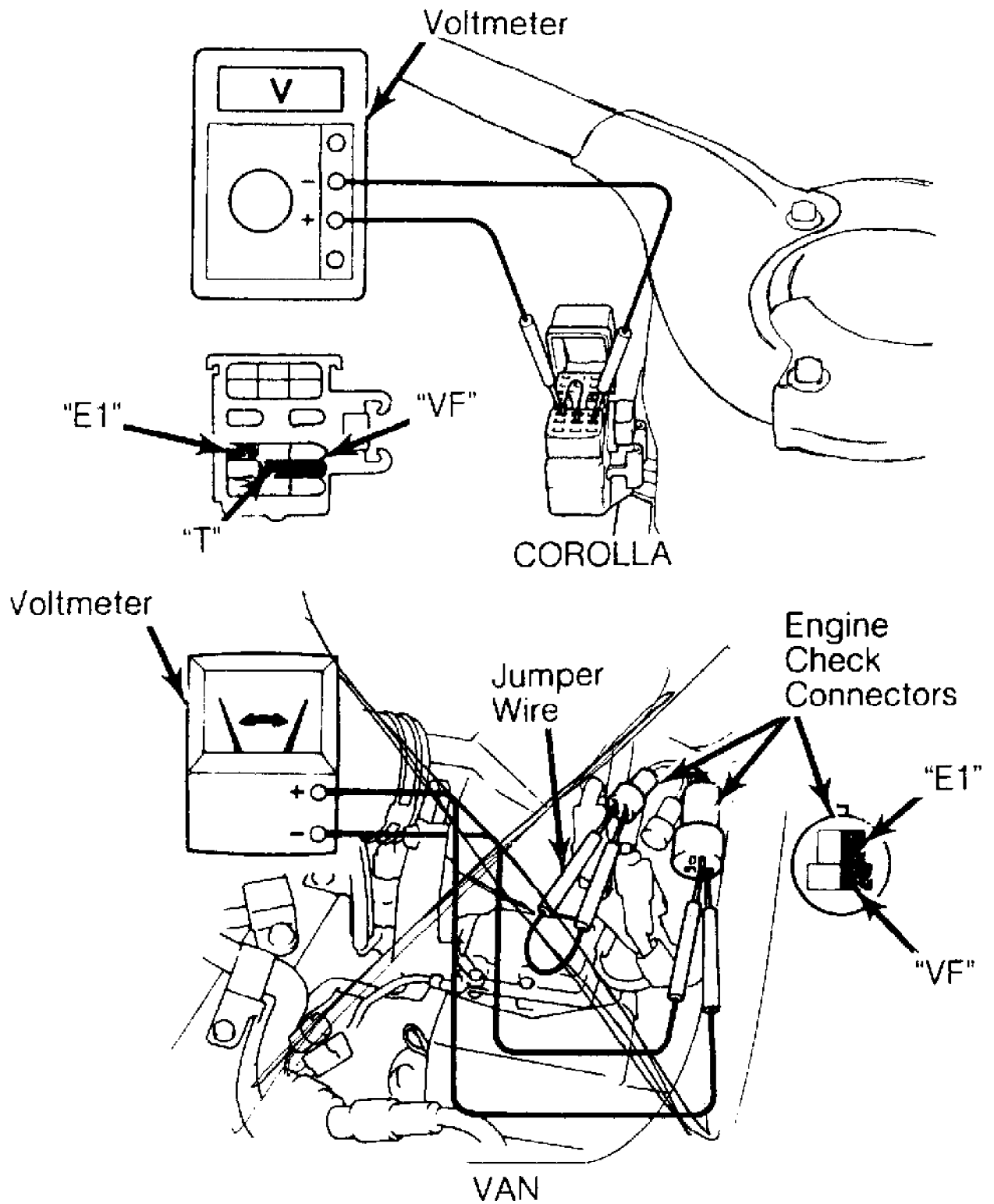


Fig. 18: Checking Idle Mixture (COROLLA)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

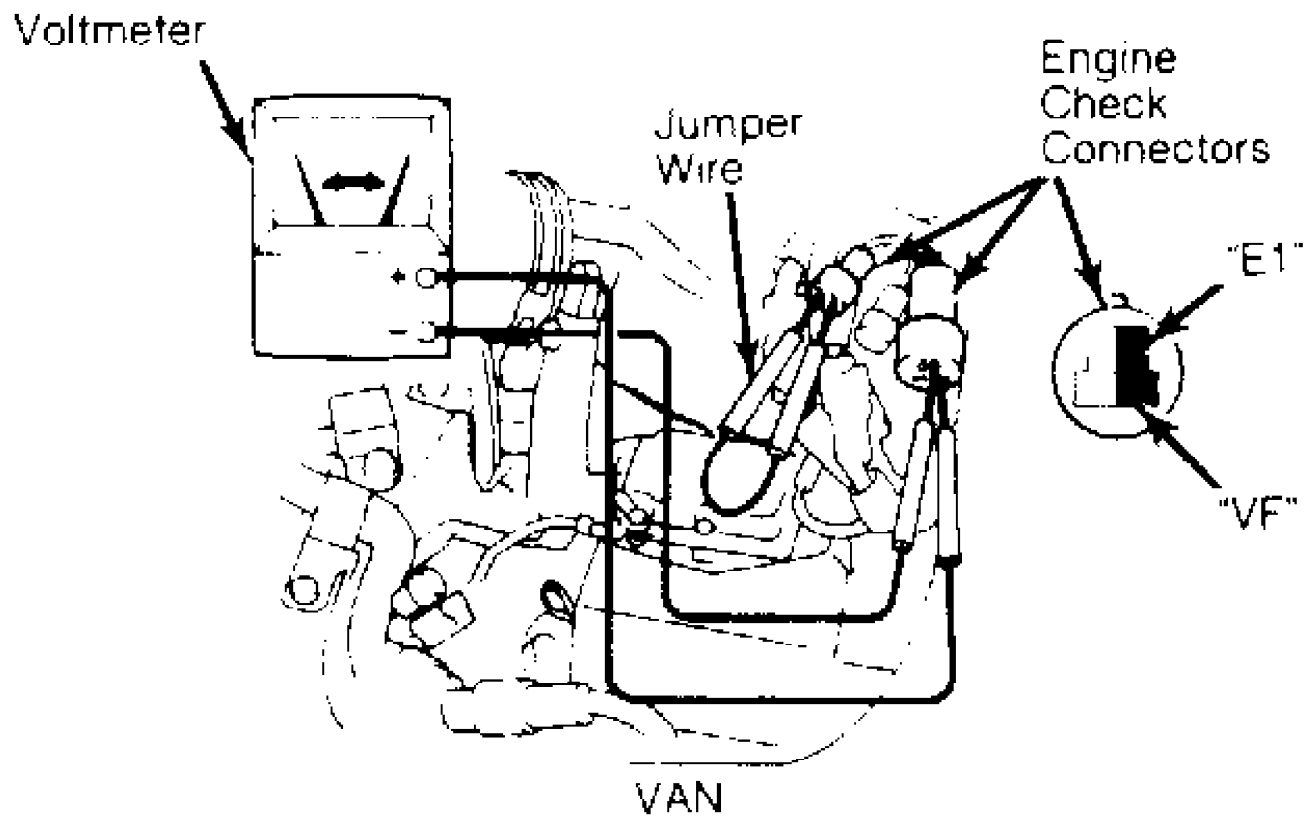


Fig. 19: Checking Idle Mixture (VAN)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

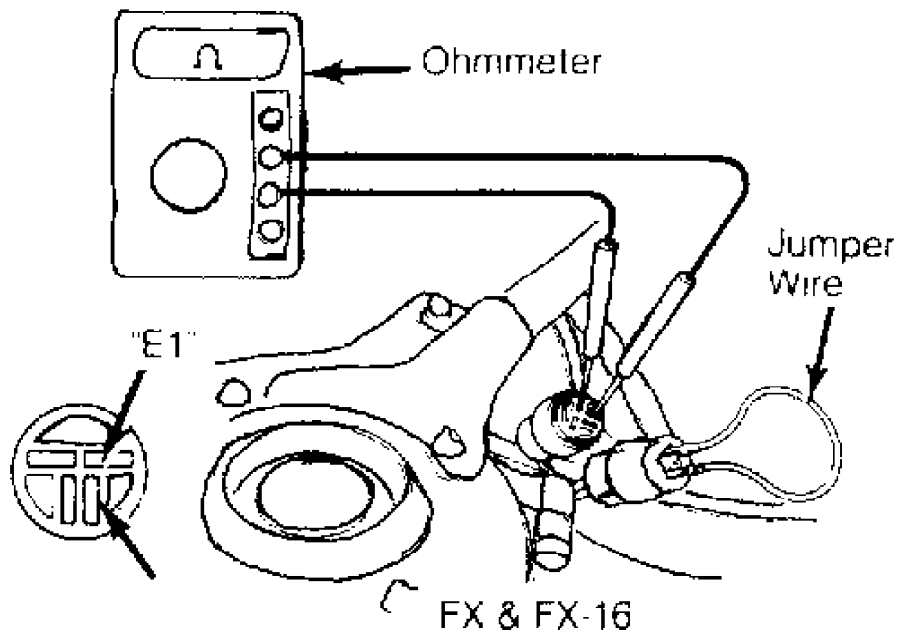


Fig. 20: Checking Idle Mixture (FX & FX 16)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

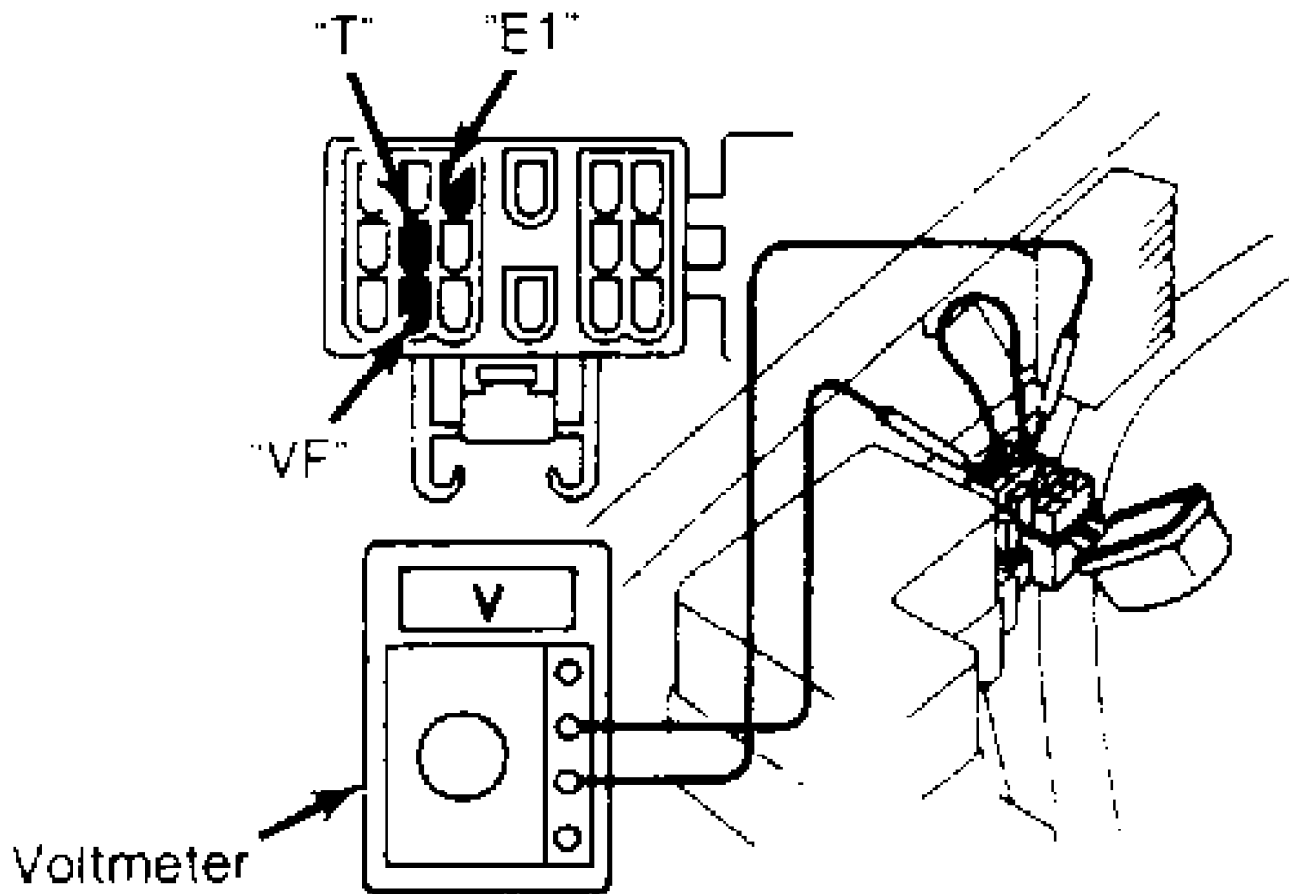


Fig. 21: Checking Idle Mixture (ALL OTHER MODELS [PICK-UP SHOWN])  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

IDLE MIXTURE SPECIFICATIONS (CARBURETED) TABLE

Application	Lean Drop RPM	Idle RPM
Corolla		
Auto. Trans. ....	700	750
Man. Trans. ....	700	650
Pickup & 4Runner ....	740	700
Tercel Sedan		
Auto. Trans. ....	950	900
Man. Trans. ....	750	700
Tercel Wagon		

Auto. Trans. ....	700	.....	(1)	800
Man. Trans .....	700	.....	(2)	650

- (1) - Models with power steering set to 900 RPM.  
(2) - Models with power steering set to 800 RPM.

## THROTTLE POSITIONER

Corolla & Tercel (Carbureted)

1) With engine at normal operating temperature, connect tachometer. Remove air cleaner and disconnect 2nd hose from top on Thermal Vacuum Switching Valve (TVSV) and plug nipple.

2) On Corolla 4A-F engine and Tercel Wagon, disconnect and plug vacuum hose to throttle positioner diaphragm. See Fig. 22. Start engine and check engine speed. If necessary, turn throttle positioner screw.

NOTE: Ensure cooling fan is off during throttle positioner adjustment.

3) On Corolla 4A-C engine and Tercel Sedan, place throttle positioner on 1st step. Start engine and check engine speed. If necessary, turn throttle positioner screw.

4) Reconnect top vacuum hose and disconnect and plug bottom vacuum hose. Place throttle positioner on 2nd step and adjust engine speed. Reconnect vacuum hose to diaphragm. Ensure engine speed returns to idle speed within 2-6 seconds.

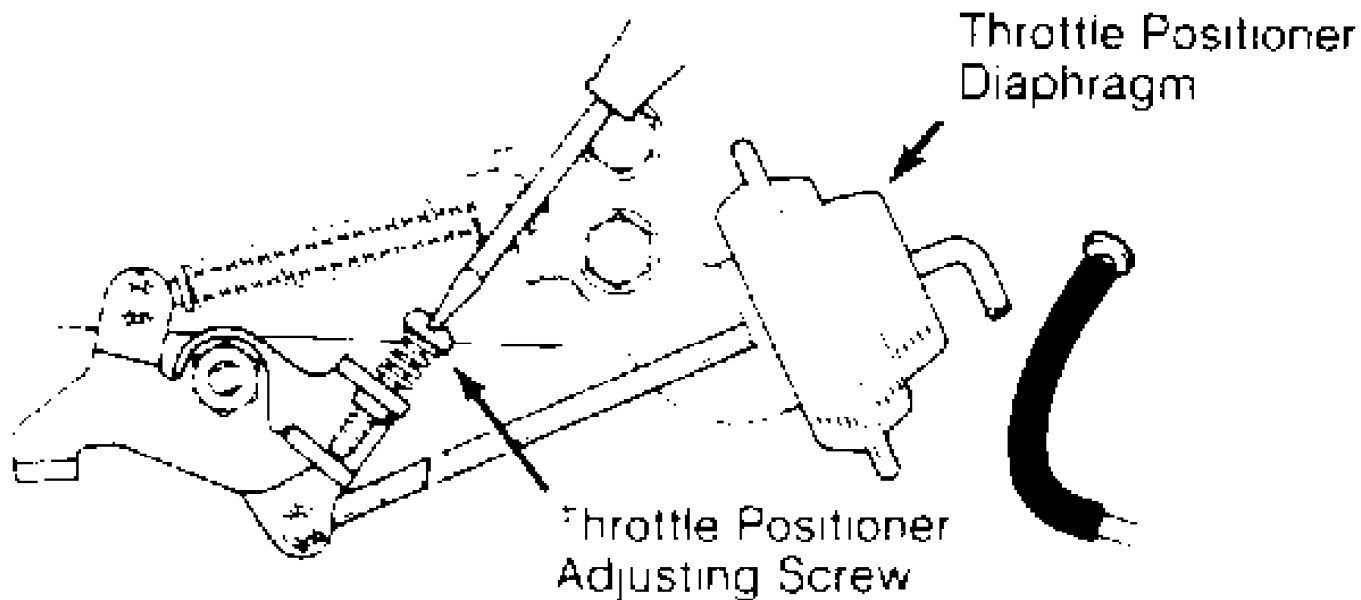


Fig. 22: Throttle Positioner Adjustment  
Courtesy of Toyota Motor Sales, U.S.A., Inc.

### THROTTLE POSITIONER SPECIFICATIONS TABLE

Application	Speed (RPM)
Corolla	
4A-F Engine .....	900
4A-C Engine	
1st Step .....	(1) 800

2nd Step .....	(1) 1400
Tercel Sedan	
1st Step .....	1100
2nd Step .....	1800-2200
Tercel Wagon .....	1400

(1) - Increase by 100 RPM for automatic transaxle equipped models.

## DASHPOT ADJUSTMENT

Corolla, MR2, Pickup, Van & 4Runner

1) Start engine and warm to operating temperature. Connect a tachometer to engine. Run engine to 3000 RPM. On Celica, Pickup and 4Runner, pinch vacuum hose going to dashpot.

2) On Corolla and MR2, disconnect vacuum hose and cap dashpot fitting. On Van, remove dashpot cover, filter and screen. Place a finger over vacuum hole. Release throttle. Check and adjust dashpot jamnut or stop screw to dashpot RPM specification.

### DASHPOT (RPM) SPECIFICATION TABLE

Application	RPM
Corolla (EFI) & MR2 .....	1800
Pickup & 4Runner .....	2000
Van .....	1900

## THROTTLE POSITION SENSOR (TPS) ADJUSTMENT

Camry & Celica (Fuel Injected)

1) Loosen mounting screws. Disconnect TPS connector. On Camry Electronically Controlled Transaxle (ECT) equipped models and Celica 3S-GE engine, connect ohmmeter between terminals "IDL" and "E2". See Figs. 23-25. Insert a .024" (.60 mm) feeler gauge between throttle stop screw and lever.

2) On Camry non-ECT models and Celica 3S-FE engine, connect ohmmeter between terminals "IDL" and "E1". Insert a .028" (.70 mm) feeler gauge between throttle stop screw and lever.

3) On all models, turn TPS clockwise until ohmmeter reads continuity. Tighten mounting screws. Using specified feeler gauge, recheck adjustment. See THROTTLE POSITION SENSOR ADJUSTMENT table. Remove ohmmeter and connect TPS.

### THROTTLE POSITION SENSOR ADJUSTMENT TABLE

Clearance Between Lever & Stop Screw	Ohmmeter Reading At Terminals
Camry & Celica	
With ECT (1)	
.020" (.50 mm) .....	Continuity
.028" (.70 mm) .....	No Continuity
Without ECT (2)	
.020" (.50 mm) .....	Continuity
.035" (.90 mm) .....	No Continuity
Corolla & MR2	
.014" (.35 mm) .....	Continuity
.023" (.59 mm) .....	No Continuity
Pickup, Van & 4Runner	
.022" (.57 mm) .....	Continuity

.033" (.85 mm) ..... No Continuity

- (1) - Use these values on Celica 3S-GE and 3S-GTE engine.
- (2) - Use these values on Celica with 3S-FE engine.

Corolla & Tercel Sedan (Carbureted)

- 1) On Corolla, connect ohmmeter positive lead to TPS connector and negative lead to carburetor body. Start and warm engine to normal operating temperature.
- 2) With engine running at idle, slowly open throttle, and check idle speed at which ohmmeter shows continuity. Continuity should be indicated at 1800 RPM setting. If not, turn adjustment screw on TPS.
- 3) On Tercel Sedan, connect voltmeter positive lead to TPS connector and negative lead to carburetor body. Start and warm engine to normal operating temperature.
- 4) With engine running at idle, slowly open throttle, and check idle speed at which voltage drops from 12 to zero volts. Voltage should change at 1400 RPM setting. If not, turn adjustment screw on TPS.

Corolla, MR2, Pickup, Van & 4Runner (Fuel Injected)

- 1) Loosen mounting screws. Disconnect TPS connector. Connect ohmmeter between terminals "IDL" and "E2" ("E1" on Van).
- 2) On Van, insert .022" (.57 mm) feeler gauge between throttle stop screw and lever. On all other models, use a .019" (.47 mm) feeler gauge. See Figs. 23-25.
- 3) On all models, turn TPS clockwise until ohmmeter reads continuity. Tighten mounting screws. Using specified feeler gauge, recheck adjustment. See THROTTLE POSITION SENSOR ADJUSTMENT table. Remove ohmmeter and connect TPS.

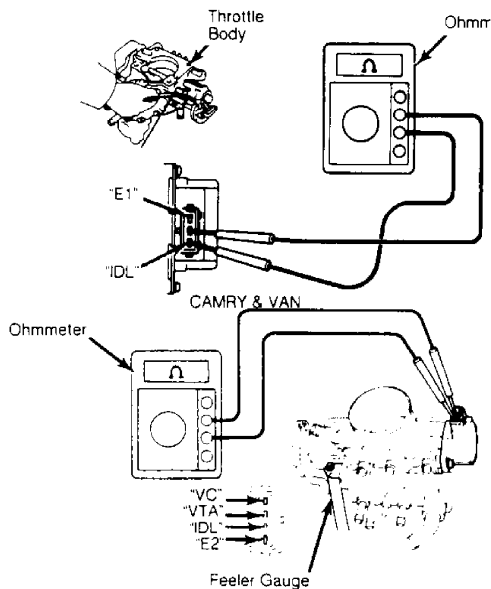


Fig. 23: Checking TPS Adjustment (VAN AND CAMRY)  
Courtesy of Toyota Motor Sales, U.S.A., Inc.



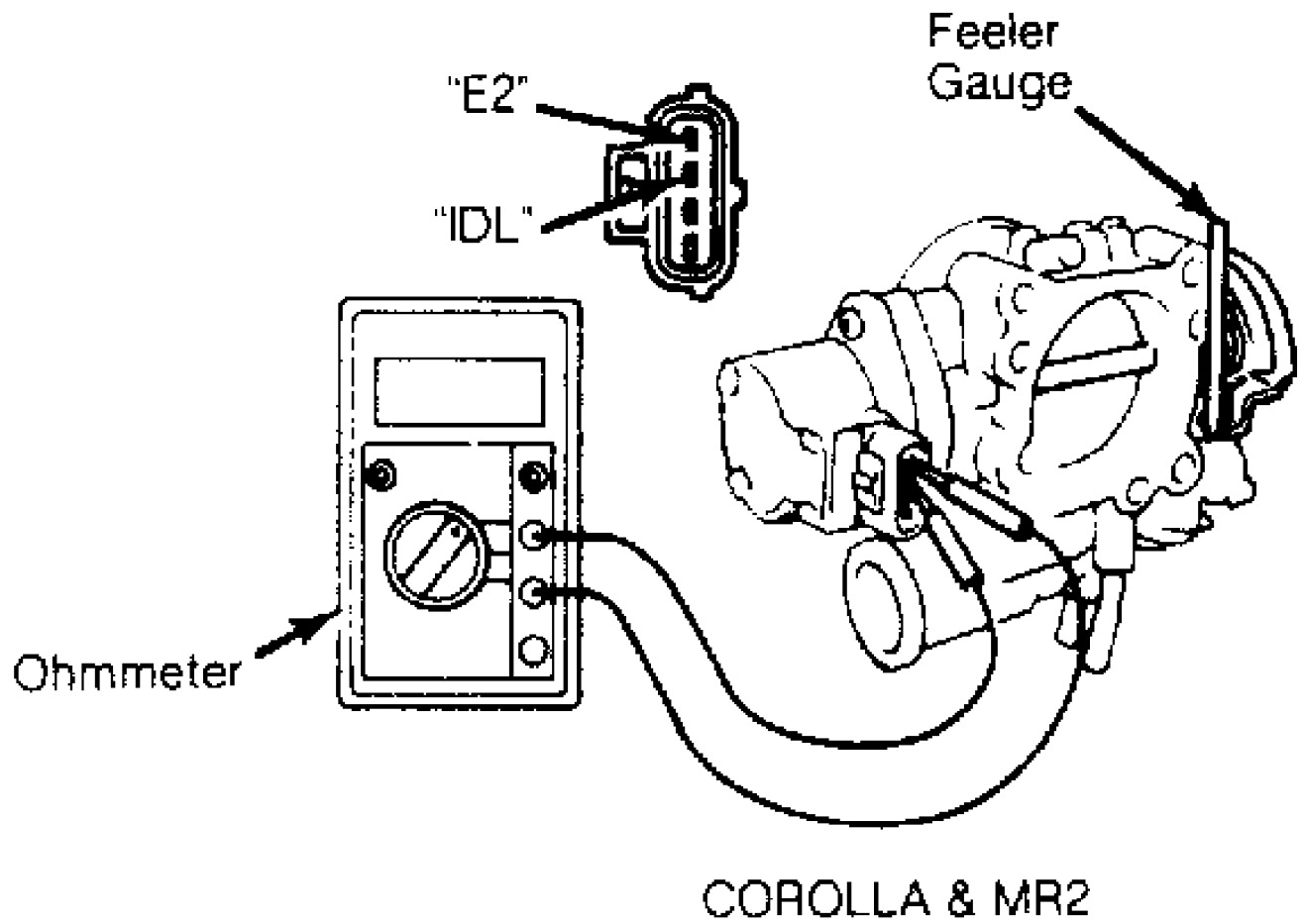


Fig. 24: Checking TPS Adjustment (COROLLA & MR2)  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

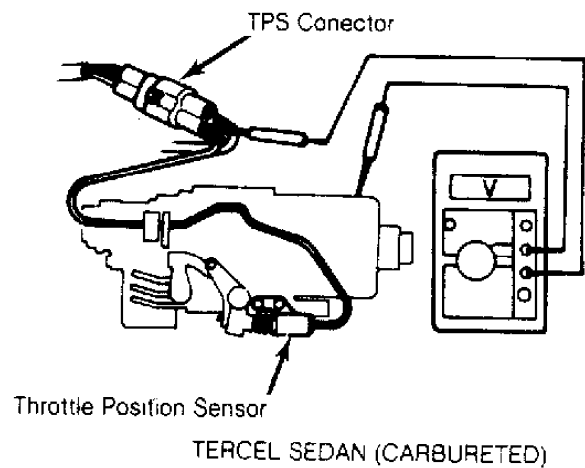


Fig. 25: Checking TPS Adjustment (TERCEL SEDAN [CARURATED])  
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

**GENERAL SERVICING**

## BATTERY

BATTERY SPECIFICATIONS TABLE

Application	Amp Hr. Rating
Corolla, Pickup & 4Runner	50
Camry & Celica	
3S-FE	60
3S-GE & 3S-GTE	40
Corolla FX, FX-16, Tercel, MR2 & Van	60

## SERVICE INTERVALS

REPLACEMENT INTERVALS TABLE

Component	Interval (Miles)
Air Filter	30,000
Coolant (Radiator)	60,000
Fuel Filter	60,000
Oil Filter	10,000
Oxygen Sensor	80,000
Spark Plugs	30,000
Timing Belt	60,000

## ADJUSTMENTS

BELT ADJUSTMENT TABLE (1)

Application	New Belt	Used Belt
Camry & Celica		
Alternator		
Without A/C	125 (57)	95 (43)
With A/C	175 (79)	130 (59)
Power Steering	125 (57)	80 (36)
Corolla	175 (79)	115 (52)
Corolla FX & FX-16		
A/C & Power Steering	125 (57)	80 (36)
Alternator	160 (73)	125 (57)
MR2		
Alternator	175 (79)	115 (52)
A/C	160 (73)	105 (48)
Pickup & 4Runner		
V-Ribbed		
A/C	160 (73)	100 (45)
Non-A/C	105 (48)	80 (36)
Conventional	125 (57)	80 (36)
Tercel Sedan		
Alternator	160 (73)	100 (45)
A/C & Power Steering	165 (75)	110 (50)
Tercel Wagon	125 (57)	80 (36)
Van		
V-Ribbed	175 (79)	115 (52)
Conventional	125 (57)	80 (36)

(1) - Tension in Lbs. (Kg) Using Burroughs Tension Gauge

## CAPACITIES

### CAMRY & CELICA FLUID CAPACITIES TABLE

Application	Quantity
Crankcase (Includes Filter)	
3S-FE & 3S-GE .....	4.1 qts. (3.9L)
3S-GTE .....	3.8 qts. (3.6L)
Cooling System (Includes Heater)	
Engine .....	6.6 qts. (6.2L)
3S-GTE Intercooler .....	1.7 qts. (1.6L)
Man. Trans. (SAE 75W-90 or 80W-90)	
2WD .....	2.7 qts. (2.6L)
4WD & 3S-GTE .....	5.2 qts. (5.0L)
Auto. Trans. (Dexron II)	
Transaxle .....	2.6 qts. (2.5L)
Differential .....	1.7 qts. (1.6L)
4WD Rear Differential (SAE 80W-90) .....	1.2 qts. (1.1L)

### COROLLA, FX & FX-16 FLUID CAPACITIES TABLE

Application	Quantity
Crankcase (Includes Filter)	
4A-C & 4A-F .....	3.5 qts. (3.3L)
4A-GE .....	3.9 qts. (3.7L)
Cooling System (Includes Heater)	
4A-F .....	5.9 qts. (5.6L)
4A-C & 4A-GE .....	6.3 qts. (6.0L)
Man. Trans. (SAE 75W-90) .....	2.7 qts. (2.6L)
Auto. Trans. (Dexron II)	
3-Speed .....	2.6 qts. (2.5L)
4-Speed .....	3.3 qts. (3.1L)
Differential .....	1.5 qts. (1.4L)

### TERCEL SEDAN & WAGON FLUID CAPACITIES TABLE

Application	Quantity
Crankcase (Includes Filter) .....	3.5 qts. (3.3L)
Cooling System (Includes Heater) .....	4.9 qts. (4.6L)
Man. Trans. (SAE 75W-90 or 80W-90)	
Sedan .....	2.5 qts. (2.4L)
Wagon .....	(1) 4.1 qts. (3.9L)
Auto. Trans. (Dexron II)	
Sedan .....	2.6 qts. (2.5L)
Wagon .....	4.4 qts. (4.2L)
Differential .....	1.5 qts. (1.4L)
Rear Differential (SAE 80W-90) .....	.1 qts. (1.0L)

(1) - Includes differential.

### MR2 & VAN FLUID CAPACITIES TABLE

Application	Quantity
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Crankcase (Includes Filter)	
MR2 .....	3.5 qts. (3.3L)
Van .....	3.7 qts. (3.5L)
Cooling System (Includes Heater)	
MR2 .....	13.6 qts. (12.9L)
Van	
2WD .....	8.9 qts. (8.4L)
4WD .....	7.9 qts. (7.5L)
Man. Trans. (SAE 75W-90 or 80W-90)	
MR2 & Van 2WD .....	2.7 qts. (2.6L)
Van 4WD .....	2.3 qts. (2.2L)
Auto. Trans. (Dexron II)	
MR2 .....	3.3 qts. (3.1L)
Van .....	2.5 qts. (2.4L)
Transfer Case (SAE 90)	
Van Differentials (SAE 75W-90)	
2WD .....	1.5 qts. (1.4L)
4WD Front .....	1.3 qts. (1.2L)
4WD Rear .....	1.9 qts. (1.8L)

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PICKUP & 4RUNNER FLUID CAPACITIES TABLE

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Application	Quantity
Crankcase (Includes Filter) .....	4.5 qts. (4.3L)
Cooling System (Includes Heater)	
Auto. Trans. ....	9.6 qts. (9.1L)
Man. Trans. ....	8.9 qts. (8.4L)
Man. Trans. (SAE 75W-90 or 80W-90)	
Non-Turbo .....	2.3 qts. (2.2L)
Turbo .....	2.7 qts. (2.6L)
4WD .....	3.2 qts. (3.0L)
Auto. Trans. (Dexron II)	
2WD .....	2.5 qts. (2.4L)
4WD .....	4.8 qts. (4.5L)
Transfer Case	
Man. Trans. (SAE 90) .....	1.7 qts. (1.6L)
Auto. Trans. (Dexron II) .....	.8 qts. (.8L)
Differential (SAE 80W or 80W-90)	
Front .....	(1) 1.7 qts. (1.6L)
Rear .....	2.3 qts. (2.1L)

(1) - Use 1.9 quarts (1.8L) on cab and chassis models, and 1-ton models.

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