

2002 ENGINE PERFORMANCE

Service & Adjustment Specifications

INTRODUCTION

NOTE: Before using service and adjustment specifications, check for any related Technical Service Bulletins (TSBs).

NOTE: References to California models apply to California emission vehicles, which may be verified by underhood Emission Control label. California emissions may be available in other states.

Use this article to quickly find specifications related to servicing and on-vehicle adjustments. This is a quick-reference article to use when you are familiar with an adjustment procedure and only need a specification.

SERVICE PRECAUTIONS

PRIUS

WARNING: When performing any inspection or service procedure on this vehicle, ensure following service precautions are followed to prevent personal injury or death due to the extremely high voltage.

The following service precautions must be followed:

- Ensure ignition is off and ignition key is removed from ignition before performing any inspection or service procedure in engine compartment, as engine may automatically start and shut off when ignition is on and READY light is illuminated. READY light is displayed just above the shift lever position indicator on instrument cluster at center of instrument panel.
- Read all service and warning labels in engine compartment before performing any procedures in engine compartment.
- All high-voltage wiring harness connectors contain Orange connectors. DO NOT touch any wiring harness that contains Orange connectors.
- High-voltage battery and other high-voltage components may be identified by HIGH VOLTAGE caution labels on them. DO NOT touch these components.
- If necessary to inspect or service high-voltage system, ensure ignition is off. Remove service plug and wait at least 5 minutes to ensure high voltage is fully discharged before touching any high-voltage wiring harness, connectors or components. Service plug is located on service plug assembly at driver's side front corner of trunk compartment, near high-voltage battery. For illustration of service plug location, See **SERVICE PRECAUTIONS** in ON-VEHICLE ADJUSTMENTS - 4-CYLINDER article. Ensure service plug is stored in a location in which no one may install service plug while technician is working on the vehicle.
- If necessary to touch any high-voltage wiring harness, connectors or components, ensure service plug is

removed and battery voltage or less exists at electrical connector. Use Toyota insulated gloves when touching any high-voltage wiring harness, connectors or components. Ensure insulated gloves are dry and in good condition and that no holes exist in insulated gloves. Test by applying air pressure to insulated glove before touching any high-voltage wiring harness, connectors or components.

- DO NOT wear any metal objects while working on vehicle which may accidentally drop and cause a short circuit.
- If any high-voltage wiring harness connector is disconnected, ensure terminal on wiring harness connector is wrapped with tape to prevent wiring harness connector from contacting any surface.
- If servicing high-voltage system, place sign on roof of vehicle to indicate to other technicians that high-voltage system is being serviced.

CAPACITIES

CAUTION: Some transaxles may require that differential be filled separately from transaxle. A separate quantity of lubricant is required for differential. See appropriate FLUID CAPACITIES table.

WARNING: On Prius, read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .

FLUID CAPACITIES (AVALON)

Application	(1) Quantity
Automatic Transaxle (Dexron-III ATF)	
Drain & Refill	5.0 Qts. (4.7L)
Dry Fill	8.5 Qts. (8.0L)
Crankcase (Includes Filter) (2)	5.0 Qts. (4.7L)
Cooling System (Includes Heater) (3)	9.5 Qts. (9.0L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
(1) Approximate quantity is listed.	
(2) Use an API SJ energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	

FLUID CAPACITIES (CAMRY)

Application	(1) Quantity
Automatic Transaxle (Toyota Type "T-IV" ATF)	
2.4L 4-Cyl.	
Drain & Refill	4.1 Qts. (3.9L)
Dry Fill	8.7 Qts. (8.2L)
3.0L V6	
Drain & Refill	3.7 Qts. (3.5L)

Dry Fill	9.1 Qts. (8.6L)
Crankcase (Includes Filter) ⁽²⁾	
2.4L 4-Cyl.	4.0 Qts. (3.8L)
3.0L V6	5.0 Qts. (4.7L)
Cooling System (Includes Heater) ⁽³⁾	
2.4L 4-Cyl.	6.6 Qts. (6.2L)
3.0L V6	9.7 Qts. (9.2L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	
2.4L 4-Cyl.	2.6 Qts. (2.5L)
Power Steering Fluid (Dexron-III ATF)	1.1 Qts. (1.0L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	

FLUID CAPACITIES (CAMRY SOLARA)

Application	⁽¹⁾ Quantity
Automatic Transaxle	
2.4L 4-Cyl. (Toyota Type "T-IV" ATF)	
Drain & Refill	4.1 Qts. (3.9L)
Dry Fill	8.7 Qts. (8.2L)
3.0L V6 (Dexron-III ATF)	
Drain & Refill	5.0 Qts. (4.7L)
Dry Fill	8.5 Qts. (8.0L)
Crankcase (Includes Filter) ⁽²⁾	
2.4L 4-Cyl.	4.0 Qts. (3.8L)
3.0L V6	5.0 Qts. (4.7L)
Cooling System (Includes Heater) ⁽³⁾	
2.4L 4-Cyl.	6.6 Qts. (6.2L)
3.0L V6	9.7 Qts. (9.2L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	
2.4L 4-Cyl.	2.6 Qts. (2.5L)
3.0L V6	4.4 Qts. (4.2L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	

FLUID CAPACITIES (CELICA)

Application	(1) Quantity
Automatic Transaxle (Toyota Type "T-IV" ATF)	
1.8L (1ZZ-FE)	
Drain & Refill	3.1 Qts. (2.9L)
Dry Refill	7.3 Qts. (6.9L)
1.8L (2ZZ-GE)	
Drain & Refill	4.3 Qts. (4.1L)
Dry Refill	8.0 Qts. (7.6L)
Crankcase (Includes Filter) (2)	
1.8L (1ZZ-FE)	3.9 Qts. (3.7L)
1.8L (2ZZ-GE)	4.8 Qts. (4.5L)
Cooling System (Includes Heater) (3)	
1.8L (1ZZ-FE)	
A/T	5.9 Qts. (5.6L)
M/T	6.0 Qts. (5.7L)
1.8L (2ZZ-GE)	
A/T	6.1 Qts. (5.8L)
M/T	6.2 Qts. (5.9L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	
1.8L (1ZZ-FE)	2.0 Qts. (1.9L)
1.8L (2ZZ-GE)	2.4 Qts. (2.3L)
Power Steering Fluid (Dexron-III ATF)	1.1 Qts. (1.0L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	

FLUID CAPACITIES (COROLLA)

Application	(1) Quantity
Automatic Transaxle	
3-Speed (Dexron-III ATF)	
Drain & Refill	2.6 Qts. (2.5L)
Dry Refill	5.8 Qts. (5.5L)
4-Speed (Dexron-III ATF)	
Drain & Refill	3.3 Qts. (3.1L)
Dry Refill	8.0 Qts. (7.6L)
Crankcase (Includes Filter) (2)	3.9 Qts. (3.7L)
Cooling System (Includes Heater) (3)	
A/T	6.0 Qts. (5.7L)

M/T	6.1 Qts. (5.8L)
Differential ⁽⁴⁾	
3-Speed A/T (Dexron-III ATF)	1.5 Qts. (1.4L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	2.0 Qts. (1.9L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
(1) Approximate quantity is listed.	
(2) Use an API SJ energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	
(4) On 4-speed A/T and all M/T, differential fluid is included in transaxle capacity.	

FLUID CAPACITIES (ECHO)

Application	(1) Quantity
Automatic Transaxle (Toyota Type "T-IV" ATF)	
Drain & Refill	3.1 Qts. (2.9L)
Dry Fill	7.3 Qts. (6.9L)
Crankcase (Includes Filter) ⁽²⁾	3.9 Qts. (3.7L)
Cooling System (Includes Heater) ⁽³⁾	
A/T	4.5 Qts. (4.3L)
M/T	4.7 Qts. (4.4L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	2.0 Qts. (1.9L)
Power Steering Fluid (Dexron-III ATF)	.74 Qt. (.70L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	

FLUID CAPACITIES (HIGHLANDER)

Application	(1) Quantity
Automatic Transaxle (Toyota Type "T-IV" ATF)	
2WD	
2.4L 4-Cyl.	
Drain & Refill	3.5 Qts. (3.3L)
Dry Refill	
With Air Cooled Oil Cooler	9.5 Qts. (9.0L)
Without Air Cooled Oil Cooler	9.1 Qts. (8.6L)
3.0 V6	
Drain & Refill	3.3 Qts. (3.1L)
Dry Refill	

With Air Cooled Oil Cooler	9.3 Qts. (8.8L)
Without Air Cooled Oil Cooler	8.9 Qts. (8.4L)
4WD	
Drain & Refill	4.1 Qts. (3.9L)
Dry Refill	
With Air Cooled Oil Cooler	9.2 Qts. (8.7L)
Without Air Cooled Oil Cooler	8.8 Qts. (8.3L)
Crankcase (Includes Filter) ⁽²⁾	
2.4L 4-Cyl.	4.0 Qts. (3.8L)
3.0L V6	5.0 Qts. (4.7L)
Cooling System (Includes Heater) ⁽³⁾	
2.4L 4-Cyl.	6.8 Qts. (6.4L)
3.0L V6	9.9 Qts. (9.4L)
Differential (API GL-5 Gear Oil) ⁽⁴⁾	
4WD	
Rear Axle	1.0 Qt. (.9L)
Power Steering Fluid (Dexron-III ATF)	
2.4L 4-Cyl.	
With Towing Package	1.0 Qt. (.9L)
Without Towing Package	.85 Qt. (.80L)
3.0L V6	.85 Qt. (.80L)
Transfer Case (SAE 80W-90/API GL-5 Gear Oil)	1.0 Qt. (.9L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	
(4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

FLUID CAPACITIES (LAND CRUISER)

Application	⁽¹⁾ Quantity
Automatic Transmission (Dexron-III ATF)	
Drain & Refill	3.7 Qts. (3.5L)
Dry Refill	12.4 Qts. (11.7L)
Crankcase (Includes Filter) ⁽²⁾	7.2 Qts. (6.8L)
Cooling System (Includes Heater) ⁽³⁾	
With Front Heater Only	15.5 Qts. (14.7L)
With Front & Rear Heater	16.3 Qts. (15.4L)
Differential	

Front Axle (API GL-5 Gear Oil) ⁽⁴⁾	1.8 Qts. (1.7L)
Rear Axle	
With Limited Slip Differential (LSD) (Hypoid Gear Oil For LSD API GL-5) ⁽⁴⁾	3.5 Qts. (3.3L)
With Rear Differential Lock (API GL-5 Gear Oil) ⁽⁴⁾	3.4 Qts. (3.2L)
Without Rear Differential Lock (API GL-5 Gear Oil) ⁽⁴⁾	3.5 Qts. (3.3L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
Transfer Case (SAE 75W-90/API GL-5 Gear Oil)	1.4 Qts. (1.3L)
(1) Approximate quantity is listed. (2) Use an API SJ or SL energy conserving engine oil. (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

FLUID CAPACITIES (MR2)

Application	⁽¹⁾ Quantity
Crankcase (Includes Filter) ⁽²⁾	3.9 Qts. (3.7L)
Cooling System (Includes Heater) ⁽³⁾	11.0 Qts. (10.4L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	
With Limited Slip Differential (LSD)	1.9 Qts. (1.8L)
Without Limited Slip Differential (LSD)	2.0 Qts. (1.9L)
Sequential Manual Transaxle Reservoir Fluid ⁽⁴⁾	⁽⁵⁾
Power Steering Fluid (Toyota Power Steering Fluid EH)	.63 Qt. (.60L)
(1) Approximate quantity is listed. (2) Use an API SJ or SL energy conserving engine oil. (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (4) There are 2 types of manual transaxles used. A standard type manual transaxle and a sequential manual transaxle. Standard type manual transaxle is a common transaxle in which the driver operates the clutch and shifts the transaxle. Sequential manual transaxle is an electronic controlled manual transaxle in which clutch is operated and transaxle is shifted hydraulically by moving shift lever forward or backward. Sequential manual transaxle may be identified by shift lever pattern and uses a special fluid in the fluid reservoir. Shift lever pattern consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used. (5) Capacity is not available from manufacturer. Use only Sequential M/T Fluid (08886-02206).	

FLUID CAPACITIES (PRIUS) ⁽¹⁾

Application	⁽²⁾ Quantity

Crankcase (Includes Filter) ⁽³⁾	3.9 Qts. (3.7L)
Cooling System	
Engine Cooling System (Includes Heater) ⁽⁴⁾	5.2 Qts. (4.9L)
Inverter Cooling System ⁽⁴⁾⁽⁵⁾	2.7 Qts. (2.6L)
Power Steering Fluid	⁽⁶⁾
Transaxle Unit (Toyota Type "T-IV" ATF)	4.9 Qts. (4.6L)
(1) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS. (2) Approximate quantity is listed. (3) Use an API SJ or SL energy conserving engine oil. (4) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (5) This is coolant used for cooling the inverter system. Coolant reservoir is located on top of engine, near inverter. (6) This vehicle does not use power steering fluid as an electric steering gear assembly is used.	

FLUID CAPACITIES (RAV4)

Application	⁽¹⁾ Quantity
Automatic Transaxle (Toyota Type "T-IV" ATF)	
2WD	
Drain & Refill	3.5 Qts. (3.3L)
Dry Refill	9.1 Qts. (8.6L)
4WD	
Drain & Refill	4.1 Qts. (3.9L)
Dry Refill	8.8 Qts. (8.3L)
Crankcase (Includes Filter) ⁽²⁾	4.4 Qts. (4.2L)
Cooling System (Includes Heater) ⁽³⁾	
A/T	6.6 Qts. (6.2L)
M/T	6.7 Qts. (6.3L)
Differential (API GL-5 Gear Oil) ⁽⁴⁾	
4WD	
Rear Axle	1.0 Qt. (.9L)
Manual Transaxle (SAE 75W-90/API GL-5 Gear Oil)	
2WD	2.6 Qts. (2.5L)
4WD	3.6 Qts. (3.4L)
Power Steering Fluid (Dexron-III ATF)	.75 Qt. (.71L)
Transfer Case (SAE 90/API GL-5 Gear Oil)	.95 Qt. (.90L)
(1) Approximate quantity is listed.	

- (2) Use an API SJ or SL energy conserving engine oil.
- (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.
- (4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.

FLUID CAPACITIES (SEQUOIA)

Application	(1) Quantity
Automatic Transmission (Dexron-III ATF)	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	13.0 Qts. (12.3L)
Crankcase (Includes Filter) (2)	6.6 Qts. (6.2L)
Cooling System (Includes Heater) (3)	
With Front Heater Only	12.4 Qts. (11.7L)
With Front & Rear Heater	14.1 Qts. (13.4L)
Differential	
Front Axle (SAE 75W-90/API GL-5 Gear Oil)	1.2 Qts. (1.1L)
Rear Axle (API GL-5 Gear Oil) (4)	3.9 Qts. (3.7L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
Transfer Case (SAE 75W-90/API GL-5 Gear Oil)	1.3 Qts. (1.2L)
(1) Approximate quantity is listed.	
(2) Use an API SJ or SL energy conserving engine oil.	
(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.	
(4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

FLUID CAPACITIES (SIENNA)

Application	(1) Quantity
Automatic Transaxle (Dexron-III ATF)	
Drain & Refill	5.0 Qts. (4.7L)
Dry Fill	8.5 Qts. (8.0L)
Crankcase (Includes Filter) (2)	5.0 Qts. (4.7L)
Cooling System (Includes Heater) (3)	
With Rear Heater	11.0 Qts. (10.4L)
Without Rear Heater	10.0 Qts. (9.5L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
(1) Approximate quantity is listed.	
(2) Use an API SJ energy conserving engine oil.	

(3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant.

FLUID CAPACITIES (TACOMA)

Application	(1) Quantity
Automatic Transmission (Dexron-III ATF)	
2WD	
PreRunner	
2.7L 4-Cyl. (3RZ-FE) & 3.4L V6	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	10.7 Qts. (10.1L)
Except PreRunner	
2.4L 4-Cyl. (2RZ-FE)	
Drain & Refill	2.5 Qts. (2.4L)
Dry Refill	6.9 Qts. (6.5L)
3.4L V6	
Drain & Refill	1.7 Qts. (1.6L)
Dry Refill	7.6 Qts. (7.2L)
4WD	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	10.7 Qts. (10.1L)
Crankcase (Includes Filter) (2)	
2WD	
PreRunner	
2.7L 4-Cyl. (3RZ-FE)	5.7 Qts. (5.4L)
3.4L V6	5.5 Qts. (5.2L)
Except PreRunner	
2.4L 4-Cyl. (2RZ-FE)	5.8 Qts. (5.5L)
3.4L V6	5.7 Qts. (5.4L)
4WD	
2.7L 4-Cyl. (3RZ-FE)	5.7 Qts. (5.4L)
3.4L V6	5.5 Qts. (5.2L)
Cooling System (Includes Heater) (3)	
2WD	
PreRunner	
A/T	
2.7L 4-Cyl. (3RZ-FE)	8.7 Qts. (8.2L)
3.4L V6	10.5 Qts. (10.0L)
M/T	
2.7L 4-Cyl. (3RZ-FE)	8.8 Qts. (8.3L)
3.4L V6	10.7 Qts. (10.1L)

Except PreRunner	
A/T	
2.4L 4-Cyl. (2RZ-FE)	8.2 Qts. (7.8L)
M/T	
2.4L 4-Cyl. (2RZ-FE)	8.5 Qts. (8.0L)
3.4L V6	10.3 Qts. (9.7L)
4WD	
A/T	
2.7L 4-Cyl. (3RZ-FE)	8.7 Qts. (8.2L)
3.4L V6	10.5 Qts. (10.0L)
M/T	
2.7L 4-Cyl. (3RZ-FE)	8.8 Qts. (8.3L)
3.4L V6	10.7 Qts. (10.1L)
Differential	
2WD (API GL-5 Gear Oil) ⁽⁴⁾	
PreRunner	
Short Wheel Base	
With Rear Differential Lock System	2.8 Qts. (2.7L)
Without Rear Differential Lock System	2.7 Qts. (2.6L)
Long Wheel Base	
With Rear Differential Lock System	3.1 Qts. (2.9L)
Without Rear Differential Lock System	2.6 Qts. (2.5L)
Except PreRunner	
2.4L 4-Cyl. (2RZ-FE)	1.4 Qts. (1.3L)
3.4L V6	2.7 Qts. (2.6L)
4WD	
Front Axle (SAE 75W-90/API GL-5 Gear Oil)	1.2 Qts. (1.1L)
Rear Axle (API GL-5 Gear Oil) ⁽⁴⁾	
Short Wheel Base	
With Rear Differential Lock System	2.8 Qts. (2.7L)
Without Rear Differential Lock System	2.7 Qts. (2.6L)
Long Wheel Base	
With Rear Differential Lock System	3.1 Qts. (2.9L)
Without Rear Differential Lock System	2.6 Qts. (2.5L)
Manual Transmission (SAE 75W-90/API GL-5 Gear Oil)	
2WD	2.7 Qts. (2.6L)
4WD	
2.7L 4-Cyl. (3RZ-FE)	2.6 Qts. (2.5L)
3.4L V6	2.3 Qts. (2.2L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)

Transfer Case (SAE 75W-90/API GL-5 Gear Oil)	1.1 Qts. (1.0L)
(1) Approximate quantity is listed. (2) Use an API SJ or SL energy conserving engine oil. (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

FLUID CAPACITIES (TUNDRA)

Application	(1) Quantity
Automatic Transmission (Dexron-III ATF)	
3.4L V6	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	10.7 Qts. (10.1L)
4.7L V8	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	13.0 Qts. (12.3L)
Crankcase (Includes Filter) (2)	
3.4L V6	5.5 Qts. (5.2L)
4.7L V8	6.5 Qts. (6.2L)
Cooling System (Includes Heater) (3)	
A/T	
3.4L V6	10.5 Qts. (10.0L)
4.7L V8	12.3 Qts. (11.6L)
M/T	10.5 Qts. (10.0L)
Differential	
2WD	
With Limited Slip Differential (LSD) (Hypoid Gear Oil For LSD API GL-5) (4)	3.3 Qts. (3.1L)
Without Limited Slip Differential (LSD) (API GL-5 Gear Oil) (4)	4.0 Qts. (3.8L)
4WD	
Front Axle (SAE 75W-90/API GL-5 Gear Oil)	1.2 Qts. (1.1L)
Rear Axle	
With Limited Slip Differential (LSD) (Hypoid Gear Oil For LSD API GL-5) (4)	3.1 Qts. (2.9L)
Without Limited Slip Differential (LSD) (API GL-5 Gear Oil) (4)	3.7 Qts. (3.5L)
Manual Transmission (SAE 75W-90/API GL-5 Gear Oil)	
2WD	2.7 Qts. (2.6L)
4WD	2.3 Qts. (2.2L)
Power Steering Fluid (Dexron-III ATF)	1.1 Qts. (1.0L)

Transfer Case (SAE 75W-90/API GL-5 Gear Oil)	1.1 Qts. (1.0L)
(1) Approximate quantity is listed. (2) Use an API SJ or SL energy conserving engine oil. (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

FLUID CAPACITIES (4RUNNER)

Application	(1) Quantity
Automatic Transmission (Dexron-III ATF)	
2WD	
Drain & Refill	1.7 Qts. (1.6L)
Dry Refill	7.6 Qts. (7.2L)
4WD	
Drain & Refill	2.1 Qts. (2.0L)
Dry Refill	10.8 Qts. (10.2L)
Crankcase (Includes Filter) (2)	5.5 Qts. (5.2L)
Cooling System (Includes Heater) (3)	
With Rear Heater	9.5 Qts. (9.0L)
Without Rear Heater	8.5 Qts. (8.0L)
Differential	
2WD (API GL-5 Gear Oil) (4)	2.9 Qts. (2.8L)
4WD	
Front Axle	
With Automatic Disconnecting Differential (SAE 75W-90/API GL-5 Gear Oil)	1.2 Qts. (1.1L)
Without Automatic Disconnecting Differential (API GL-5 Gear Oil) (4)	1.2 Qts. (1.1L)
Rear Axle (API GL-5 Gear Oil) (4)	
With Rear Differential Lock System	2.9 Qts. (2.8L)
Without Rear Differential Lock System	2.6 Qts. (2.5L)
Power Steering Fluid (Dexron-III ATF)	.85 Qt. (.80L)
Transfer Case (SAE 75W-90/API GL-5 Gear Oil)	1.3 Qts. (1.2L)
(1) Approximate quantity is listed. (2) Use an API SJ or SL energy conserving engine oil. (3) Use Toyota Long Life coolant or equivalent ethylene-glycol type coolant. (4) Use SAE 80W or 80W-90 gear oil in temperatures less than 0°F (-18°C), or SAE 90 gear oil in temperatures of 0°F (-18°C) or more.	

QUICK-SERVICE

WARNING: On Prius, read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.

REPLACEMENT INTERVALS (AVALON, CAMRY, CAMRY SOLARA, CELICA, COROLLA, ECHO, MR2, PRIUS & SIENNA)

Component	Months	Miles
A/C Air Filter ⁽¹⁾		
Avalon & Camry ⁽²⁾		
Normal Service	12	15,000
Severe Service	8	10,000
Air Filter	24	30,000
Automatic Transaxle Fluid ⁽²⁾⁽³⁾		
Avalon, Camry, Camry Solara, Corolla & Sienna		
Normal Service	(4)	(4)
Severe Service	(5)	(5)
Celica & ECHO		
Normal Service	(4)	(4)
Severe Service	48	60,000
Coolant	24	30,000
Engine Oil & Filter ⁽²⁾		
Normal Service	6	7500
Severe Service	4	5000
Manual Transaxle Fluid		
Normal Service	(4)	(4)
Severe Service	24	30,000
Spark Plugs		
Avalon, Camry, Camry 2.4L 4-Cyl., Celica, Corolla, MR2 & Prius	96	120,000
Camry Solara 3.0L V6	48	60,000
ECHO	24	30,000
Sienna	48	60,000
Timing Belt ⁽⁶⁾		
Avalon, Camry 3.0L V6, Camry Solara 3.0L V6 & Sienna	72	90,000
Valve Clearance ⁽⁷⁾	48	60,000
⁽¹⁾ A/C air filter may also be referred to as cabin air filter. A/C air filter is located behind glove box, in filter case assembly, just above blower motor assembly. Different interval is required for normal service and severe service. Severe service is described as		

- (2) using cartop carrier, trailer towing, operating for short trips of less than 5 miles in freezing temperatures, extensive idling or low speed driving for long distances, or operating in rough, muddy or dusty conditions.
- (3) If transaxle has separate differential fluid reservoir on the transaxle, change differential fluid when changing transaxle fluid.
- (4) Service interval is not available from manufacturer.
- (5) Inspect fluid every 12 months or 15,000 miles. Replace fluid every 24 months or 30,000 miles.
- (6) Timing belt used only on models listed. All other models use timing chain.
- (7) Manufacturer recommends listening for valve noise from excessive valve clearance. Adjust valve clearance if valve noise exists.

REPLACEMENT INTERVALS (HIGHLANDER, LAND CRUISER, RAV4, SEQUOIA, TACOMA, TUNDRA & 4RUNNER)

Component	Months	Miles
A/C Filter ⁽¹⁾		
Highlander & RAV4 ⁽²⁾		
Normal Service	18	22,500
Severe Service	8	10,000
Air Filter	24	30,000
Automatic Transaxle/Transmission Fluid ⁽²⁾		
Highlander & RAV4		
Normal Service	(3)	(3)
Severe Service	48	60,000
Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner		
Normal Service	(3)	(3)
Severe Service	(4)	(4)
Coolant	24	30,000
Engine Oil & Filter ⁽²⁾		
Normal Service	6	7500
Severe Service	4	5000
Front Differential Fluid (4WD) ⁽²⁾		
Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner		
Normal Service	(3)	(3)
Severe Service	12	15,000
Manual Transaxle/Transmission Fluid ⁽²⁾		
RAV4, Tacoma & Tundra		
Normal Service	(3)	(3)
Severe Service	24	30,000

Rear Differential Fluid ⁽²⁾		
Highlander & RAV4		
With Limited Slip Differential		
Normal Service	48	60,000
Severe Service	12	15,000
Without Limited Slip Differential		
Normal Service	(3)	(3)
Severe Service	12	15,000
Land Cruiser		
With Limited Slip Differential		
Normal Service	24	30,000
Severe Service	12	15,000
Without Limited Slip Differential		
Normal Service	(3)	(3)
Severe Service	12	15,000
Sequoia		
Normal Service	(3)	(3)
Severe Service	4	5000
Tacoma, Tundra & 4Runner		
Normal Service	(3)	(3)
Severe Service	12	15,000
Repack Front Wheel Bearings		
Land Cruiser	24	30,000
Spark Plugs		
Highlander, Land Cruiser & RAV4	96	120,000
Sequoia, Tacoma, Tundra & 4Runner	24	30,000
Timing Belt ⁽⁵⁾		
Highlander V6, Land Cruiser, Sequoia, Tacoma V6, Tundra & 4Runner	72	90,000
Transfer Case Fluid (4WD) ⁽²⁾		
Highlander & RAV4		
Normal Service	(3)	(3)
Severe Service	12	15,000
Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner		
Normal Service	(3)	(3)
Severe Service	24	30,000
Valve Clearance ⁽⁶⁾	48	60,000
(1) A/C air filter may also be referred to as cabin air filter. A/C air filter is located behind glove box, in filter case assembly, just above the blower motor assembly.		

- (2) Different interval is required for normal service and severe service. Severe service is described as using cartop carrier, trailer towing, operating for short trips of less than 5 miles in freezing temperatures, extensive idling or low speed driving for long distances, or operating in rough, muddy or dusty conditions.
- (3) Service interval is not available from manufacturer.
- (4) Inspect fluid every 12 months or 15,000 miles. Replace fluid every 24 months or 30,000 miles.
- (5) Timing belt used only on models listed. All other models use timing chain.
- (6) Manufacturer recommends listening for valve noise from excessive valve clearance. Adjust valve clearance if valve noise exists.

BELT ADJUSTMENT - Tension In Lbs. (kg) Using Belt Tension Gauge (4-CYLINDER)

Application	New Belt	(1) Used Belt
Camry & Camry Solara		
Drive Belt	(2)	(2)
Celica & Corolla		
Drive Belt	(2)	(2)
ECHO		
A/C	110-154 (50-70)	77-100 (35-45)
Generator	121-143 (55-65)	55-88 (25-40)
Power Steering	100-121 (45-55)	55-77 (25-35)
Highlander & MR2		
Drive Belt	(2)	(2)
Prius (3)		
A/C	99-121 (44-55)	57-77 (26-35)
Water Pump	99-121 (44-55)	57-77 (26-35)
RAV4		
Drive Belt	(2)	(2)
Tacoma		
A/C	135-185 (61-84)	80-120 (36-54)
Generator	116-169 (53-76)	66-88 (30-40)
Power Steering	135-180 (61-82)	85-120 (39-54)

- (1) Used belt is a belt in operation at least 5 minutes.
- (2) Automatic belt tensioner is used. Adjustment is not required.
- (3) Read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.

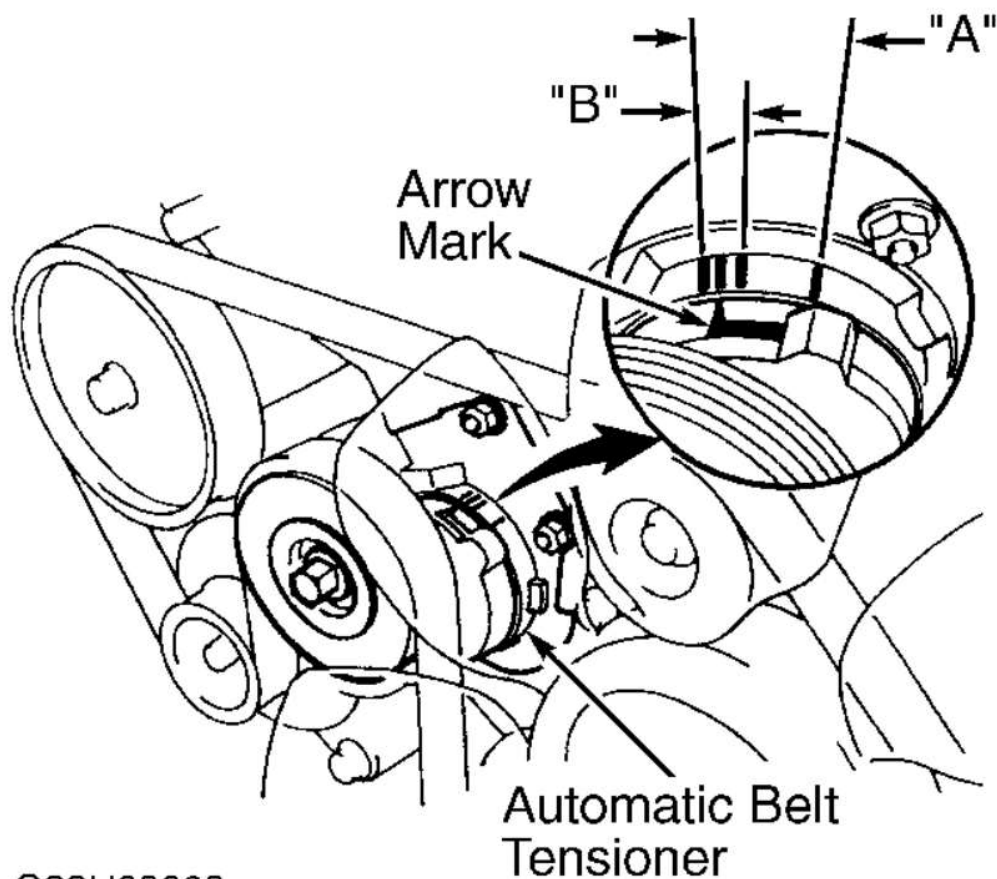
BELT ADJUSTMENT - Tension In Lbs. (kg) Using Belt Tension Gauge (V6)

Application	New Belt	(1) Used Belt
-------------	----------	---------------

Avalon		
A/C	143-187 (65-85)	66-110 (30-50)
Generator	170-180 (77-82)	95-135 (43-61)
Power Steering	120-185 (54-84)	95-135 (43-61)
Camry		
A/C	138-192 (63-87)	66-110 (30-50)
Generator	138-192 (63-87)	66-110 (30-50)
Power Steering	146-190 (66-86)	73-117 (33-53)
Camry Solara		
A/C	138-192 (63-87)	99-121 (44-55)
Generator	170-180 (77-82)	95-135 (43-61)
Power Steering	150-185 (68-84)	95-135 (43-61)
Highlander		
A/C	138-192 (63-87)	66-110 (30-50)
Generator	138-192 (63-87)	66-110 (30-50)
Power Steering	146-190 (66-86)	73-117 (33-53)
Sienna		
A/C	138-192 (63-87)	66-110 (30-50)
Generator	170-180 (77-82)	95-135 (43-61)
Power Steering	150-185 (68-84)	95-135 (43-61)
Tacoma & 4Runner		
A/C	135-185 (61-84)	80-120 (36-54)
Generator	140-180 (64-82)	80-120 (36-54)
Power Steering	135-180 (61-82)	85-120 (39-54)
Tundra		
A/C	135-185 (61-84)	80-120 (36-54)
Generator	135-185 (61-84)	80-120 (36-54)
Power Steering	135-180 (61-82)	85-120 (39-54)
(1) Used belt is a belt in operation at least 5 minutes.		

BELT ADJUSTMENT - Tension In Lbs. (kg) Using Belt Tension Gauge (V8)

Application	New Belt	(1) Used Belt
Land Cruiser, Sequoia & Tundra		
Drive Belt	(2)	(2)
(1) Used belt is a belt in operation at least 5 minutes.		
(2) Automatic belt tensioner is used. Adjustment is not required. Belt must be replaced if arrow mark on automatic belt tensioner is not within area "A". See Fig. 1 .		



G99H08028

Fig. 1: Locating Arrow Mark On Automatic Belt Tensioner (Land Cruiser, Sequoia & Tundra 4.7L)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

MECHANICAL CHECKS

ENGINE COMPRESSION

Check engine compression with engine at cranking speed with battery fully charged, engine at normal operating temperature, electrical connector disconnected at ignition coil if ignition coil is not removed for access to spark plugs, all spark plugs removed and throttle wide open.

WARNING: On Prius, read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .

NOTE: On Prius, when checking engine compression, connect Toyota hand-held tester to data link connector No. 3 located below driver's side of instrument panel and follow scan tool instructions to select cranking mode. This will automatically set cranking speed to 250 RPM and set throttle at wide open position.

ENGINE COMPRESSION SPECIFICATIONS (4-CYLINDER)

Application	Specification
Normal Compression Pressure	
Camry & Camry Solara	198 psi (13.9 kg/cm ²)
Celica	
1.8L (1ZZ-FE)	218 psi (15.3 kg/cm ²)
1.8L (2ZZ-GE)	203 psi (14.3 kg/cm ²)
Corolla	218 psi (15.3 kg/cm ²)
ECHO	213 psi (15.0 kg/cm ²)
Highlander	198 psi (13.9 kg/cm ²)
MR2	184 psi (13.0 kg/cm ²)
Prius ⁽¹⁾	106 psi (7.4 kg/cm ²)
RAV4	184 psi (13.0 kg/cm ²)
Tacoma	178 psi (12.5 kg/cm ²)
Minimum Compression Pressure	
Camry & Camry Solara	142 psi (10.0 kg/cm ²)
Celica	
1.8L (1ZZ-FE) & 1.8L (2ZZ-GE)	145 psi (10.2 kg/cm ²)
Corolla	145 psi (10.2 kg/cm ²)
ECHO	156 psi (11.0 kg/cm ²)
Highlander	142 psi (10.0 kg/cm ²)
MR2	145 psi (10.2 kg/cm ²)
Prius	77 psi (5.4 kg/cm ²)
RAV4	145 psi (10.2 kg/cm ²)
Tacoma	128 psi (9.0 kg/cm ²)
Maximum Variation Between Cylinders	
Camry & Camry Solara	14 psi (1.0 kg/cm ²)
Celica	
1.8L (1ZZ-FE)	14 psi (1.0 kg/cm ²)
1.8L (2ZZ-GE)	16 psi (1.1 kg/cm ²)
Corolla, ECHO, Highlander, MR2, Prius, RAV4 & Tacoma	14 psi (1.0 kg/cm ²)
Read service precautions before proceeding with service procedure. See SERVICE	

(1) PRECAUTIONS .**ENGINE COMPRESSION SPECIFICATIONS (V6)**

Application	Specification
Normal Compression Pressure	
Avalon	218 psi (15.3 kg/cm ²)
Camry	213 psi (15.0 kg/cm ²)
Camry Solara	218 psi (15.3 kg/cm ²)
Highlander	213 psi (15.0 kg/cm ²)
Sienna	218 psi (15.3 kg/cm ²)
Tacoma, Tundra & 4Runner	174 psi (12.2 kg/cm ²)
Minimum Compression Pressure	
Avalon	145 psi (10.2 kg/cm ²)
Camry	142 psi (10.0 kg/cm ²)
Camry Solara	145 psi (10.2 kg/cm ²)
Highlander	142 psi (10.0 kg/cm ²)
Sienna, Tacoma, Tundra & 4Runner	145 psi (10.2 kg/cm ²)
Maximum Variation Between Cylinders	
All Models	14 psi (1.0 kg/cm ²)

ENGINE COMPRESSION SPECIFICATIONS (V8)

Application	Specification
Normal Compression Pressure	
Land Cruiser, Sequoia & Tundra	192 psi (13.5 kg/cm ²)
Minimum Compression Pressure	
Land Cruiser, Sequoia & Tundra	142 psi (10.0 kg/cm ²)
Maximum Variation Between Cylinders	
Land Cruiser, Sequoia & Tundra	14 psi (1.0 kg/cm ²)

VALVE CLEARANCE

WARNING: On Prius, read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS** .

VALVE CLEARANCE SPECIFICATIONS (4-CYLINDER) (1)

Application	In. (mm)
Camry & Camry Solara	

Intake	.007-.011 (.19-.29)
Exhaust	.012-.016 (.30-.40)
Celica	
1.8L (1ZZ-FE)	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
1.8L (2ZZ-GE)	
Intake	.003-.007 (.08-.19)
Exhaust	.008-.013 (.22-.33)
Corolla & ECHO	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
Highlander	
Intake	.007-.011 (.19-.29)
Exhaust	.012-.016 (.30-.40)
MR2	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
Prius ⁽²⁾	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
RAV4	
Intake	.007-.011 (.19-.29)
Exhaust	.012-.016 (.30-.40)
Tacoma	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
(1) Adjust valve clearance with engine cold. Verify valve clearance listed with valve clearance listed on underhood label (if available). If valve clearance on underhood label differs from valve clearance listed, use specification on underhood label.	
(2) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .	

VALVE CLEARANCE SPECIFICATIONS (V6) ⁽¹⁾

Application	In. (mm)
Avalon, Camry, Camry Solara, Highlander & Sienna	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
Tacoma, Tundra & 4Runner	
Intake	.006-.009 (.15-.23)

Exhaust	.011-.014 (.29-.35)
(1) Adjust valve clearance with engine cold. Verify valve clearance listed with valve clearance listed on underhood label (if available). If valve clearance on underhood label differs from valve clearance listed, use specification on underhood label.	

VALVE CLEARANCE SPECIFICATIONS (V8) ⁽¹⁾

Application	In. (mm)
Land Cruiser, Sequoia & Tundra	
Intake	.006-.010 (.15-.25)
Exhaust	.010-.014 (.25-.35)
(1) Adjust valve clearance with engine cold. Verify valve clearance listed with valve clearance listed on underhood label (if available). If valve clearance on underhood label differs from valve clearance listed, use specification on underhood label.	

IGNITION SYSTEMS

IGNITION COIL

IGNITION COIL RESISTANCE - Ohms (4-CYLINDER)

Application	Primary	Secondary
Camry, Camry Solara, Celica, Corolla, ECHO, Highlander & MR2	(1)	(1)
Prius ⁽²⁾	(1)	(1)
RAV4 & Tacoma	(1)	(1)
(1) Ignition coil resistance is not available from manufacturer.		
(2) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .		

IGNITION COIL RESISTANCE - Ohms (V6)

Application	Primary	Secondary
Avalon & Camry	(1)	(1)
Camry Solara		
Aisan Ign. Coil ⁽²⁾		
Cold ⁽³⁾	.70-.94	10,800-14,900
Hot ⁽⁴⁾	.85-1.10	13,100-17,500
Diamond Ign. Coil ⁽²⁾		
Cold ⁽³⁾	.70-.94	6800-11,700
Hot ⁽⁴⁾	.85-1.10	8600-13,700
Highlander & Sienna	(1)	(1)

Tacoma, Tundra & 4Runner		
Cold ⁽³⁾	.67-1.05	9300-16,000
Hot ⁽⁴⁾	.85-1.23	11,700-18,800
(1) Ignition coil resistance is not available from manufacturer. (2) This is manufacturer of ignition coil. (3) Cold is with temperature of 14-122°F (-10-50°C). (4) Hot is with temperature of 122-212°F (50-100°C).		

IGNITION COIL RESISTANCE - Ohms (V8)

Application	Primary	Secondary
Land Cruiser, Sequoia & Tundra	(1)	(1)
(1) Ignition coil resistance is not available from manufacturer.		

CAMSHAFT POSITION SENSOR**CAMSHAFT POSITION SENSOR RESISTANCE**

Application	Ohms
Avalon	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
Camry	
2.4L 4-Cyl. & 3.0L V6	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
Camry Solara	
2.4L 4-Cyl.	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
3.0L V6	
Denso Sensor ⁽³⁾	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
Wabash Sensor ⁽³⁾	
Cold ⁽¹⁾	1690-2560
Hot ⁽²⁾	2145-3010
Celica & Corolla	

Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
ECHO	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
Highlander, Land Cruiser & MR2	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
Prius ⁽⁴⁾	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
RAV4, Sequoia, Sienna, Tacoma, Tundra & 4Runner	
Cold ⁽¹⁾	835-1400
Hot ⁽²⁾	1060-1645
(1) Cold is with temperature of 14-122°F (-10-50°C). (2) Hot is with temperature of 122-212°F (50-100°C). (3) This is manufacturer of camshaft position sensor. (4) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS.	

CRANKSHAFT POSITION SENSOR

CRANKSHAFT POSITION SENSOR RESISTANCE

Application	Ohms
Avalon	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
Camry & Camry Solara	
2.4L 4-Cyl.	
Cold ⁽¹⁾	985-1600
Hot ⁽²⁾	1265-1890
3.0L V6	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
Celica & Corolla	
Cold ⁽¹⁾	1630-2740

Hot ⁽²⁾	2065-3225
ECHO	
Cold ⁽¹⁾	985-1600
Hot ⁽²⁾	1265-1890
Highlander	
2.4L 4-Cyl.	
Cold ⁽¹⁾	985-1600
Hot ⁽²⁾	1265-1890
3.0L V6	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
Land Cruiser & MR2	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
Prius ⁽³⁾	
Cold ⁽¹⁾	985-1600
Hot ⁽²⁾	1265-1890
RAV4	
Cold ⁽¹⁾	985-1600
Hot ⁽²⁾	1265-1890
Sequoia, Sienna, Tacoma, Tundra & 4Runner	
Cold ⁽¹⁾	1630-2740
Hot ⁽²⁾	2065-3225
(1) Cold is with temperature of 14-122°F (-10-50°C). (2) Hot is with temperature of 122-212°F (50-100°C). (3) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .	

HIGH TENSION WIRE RESISTANCE

HIGH TENSION WIRE RESISTANCE

Application	Maximum Ohms
Avalon, Camry, Camry Solara 2.4L 4-Cylinder, Celica, Corolla, ECHO, Highlander, Land Cruiser, MR2, Prius, RAV4, Sequoia, Sienna, Tacoma 2.4L 4-Cyl. & 2.7L 4-Cyl., & Tundra 4.7L V8	(1)
Camry Solara 3.0L V6, Tacoma 3.4L V6, Tundra 3.4L V6 & 4Runner	25,000 Per Wire

(1) Distributorless Ignition System (DIS) is used with ignition coil mounted on the spark plug. No high tension wires are used.

SPARK PLUGS

SPARK PLUG TYPE (4-CYLINDER)

Application	NGK No.	Denso No.
Camry & Camry Solara	IFR6A11	SK20R11
Celica		
1.8L (1ZZ-FE)	IFR5A11	SK16R11
1.8L (2ZZ-GE)	IFR6A11	SK20R11
Corolla	IFR5A11	SK16R11
ECHO	BKR5EYA	K16R-U
Highlander	IFR6A11	SK20R11
MR2	IFR5A11	SK16R11
Prius ⁽¹⁾	IFR5A11	SK16R11
RAV4	IFR6A11	SK20R11
Tacoma	BKR5EYA-11	K16R-U11
(1) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS.		

SPARK PLUG TYPE (V6)

Application	NGK No.	Denso No.
Avalon & Camry	IFR6A11	SK20R11
Camry Solara	BKR6EKP11	PK20TR11
Highlander & Sienna	IFR6A11	SK20R11
Tacoma, Tundra & 4Runner	BKR5EKB-11	K16TR11

SPARK PLUG TYPE (V8)

Application	NGK No.	Denso No.
Land Cruiser	IFR6A11	SK20R11
Sequoia & Tundra	BKR6EYA	K20R-U

SPARK PLUG SPECIFICATIONS (4-CYLINDER)

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
Camry & Camry Solara	.043 (1.10) ⁽¹⁾	14 (19)
Celica & Corolla	.043 (1.10) ⁽¹⁾	13 (18)
ECHO	.031 (.80)	13 (18)
Highlander	.043 (1.10) ⁽¹⁾	14 (19)
MR2	.043 (1.10) ⁽¹⁾	19 (26)

Prius ⁽²⁾	.043 (1.10) ⁽¹⁾	13 (18)
RAV4	.043 (1.10) ⁽¹⁾	14 (19)
Tacoma	.043 (1.10)	15 (20)
(1) Engine is equipped with irridium-tipped spark plugs. DO NOT attempt to adjust spark plug gap.		
(2) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS.		

SPARK PLUG SPECIFICATIONS (V6)

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
Avalon & Camry	.043 (1.10) ⁽¹⁾	13 (18)
Camry Solara	.043 (1.10) ⁽²⁾	13 (18)
Highlander & Sienna	.043 (1.10) ⁽¹⁾	13 (18)
Tacoma, Tundra & 4Runner	.043 (1.10) ⁽²⁾	13 (18)
(1) Engine is equipped with irridium-tipped spark plugs. DO NOT attempt to adjust spark plug gap.		
(2) Engine is equipped with twin ground electrode patinum-tipped spark plugs. DO NOT attempt to adjust spark plug gap.		

SPARK PLUG SPECIFICATIONS (V8)

Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
Land Cruiser	.043 (1.10) ⁽¹⁾	13 (18)
Sequoia & Tundra	.031 (.80)	13 (18)
(1) Engine is equipped with irridium-tipped spark plugs. DO NOT attempt to adjust spark plug gap.		

FIRING ORDER & TIMING MARKS**FIRING ORDER**

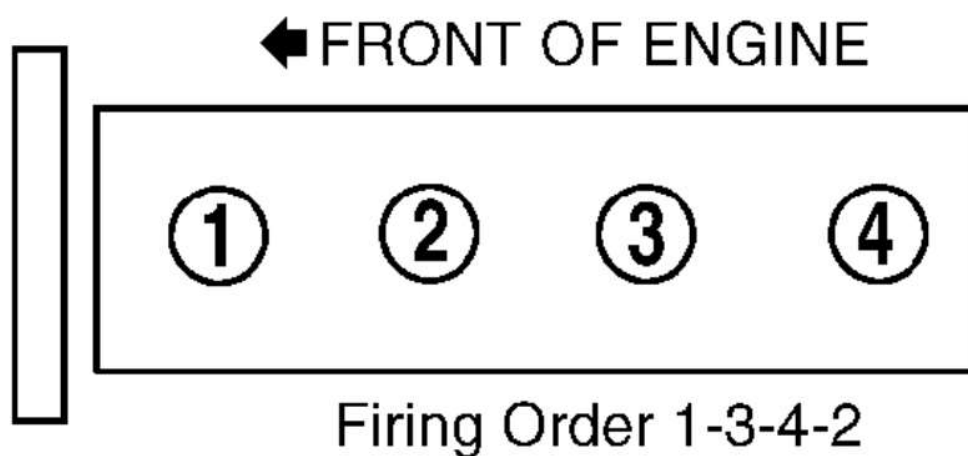
Application	Firing Order
4-Cylinder ⁽¹⁾	
Camry & Camry Solara	(2)(3) 1-3-4-2
Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4 & Tacoma	(2)(3) 1-3-4-2
V6 ⁽⁴⁾	
Avalon	(5) 1-2-3-4-5-6
Camry	(6) 1-2-3-4-5-6
Camry Solara	(5) 1-2-3-4-5-6
Highlander	(5) 1-2-3-4-5
Sienna	(5) 1-2-3-4-5-6
Tacoma, Tundra & 4Runner	(7) 1-2-3-4-5-6

V8 (8)

Land Cruiser, Sequoia & Tundra

(2) **Fig. 4** 1-8-4-3-6-5-7-2

- (1) Cylinder No. 1 is located at timing chain end of engine. Cylinder No. 4 is located at flywheel end of engine.
- (2) System uses a Distributorless Ignition System (DIS) with ignition coil on spark plug for each cylinder.
- (3) See **Fig. 2**.
- (4) Cylinder No. 1 is front cylinder on right side of engine when viewed from flywheel end of engine. Cylinder No. 2 is front cylinder on left side of engine when viewed from flywheel end of engine. Cylinders No. 1, 3 and 5 are on right side of engine. Cylinders No. 2, 4 and 6 are on left side of engine.
- (5) System uses a Distributorless Ignition System (DIS) with 3 ignition coils. Two cylinders fire simultaneously using same ignition coil. See **Fig. 3**.
- (6) See **Fig. 5**.
- (7) System uses a Distributorless Ignition System (DIS) with 3 ignition coils. Two cylinders fire simultaneously using same ignition coil. See **Fig. 6**.
- (8) Cylinder No. 1 is front cylinder on left side of engine when viewed from flywheel end of engine. Cylinder No. 2 is front cylinder on right side of engine when viewed from flywheel end of engine. Cylinders No. 1, 3, 5 and 7 are on left side of engine. Cylinders No. 2, 4, 6 and 8 on right side of engine.



G00015044

Fig. 2: Identifying Cylinder Numbering & Firing Order (4-Cylinder)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

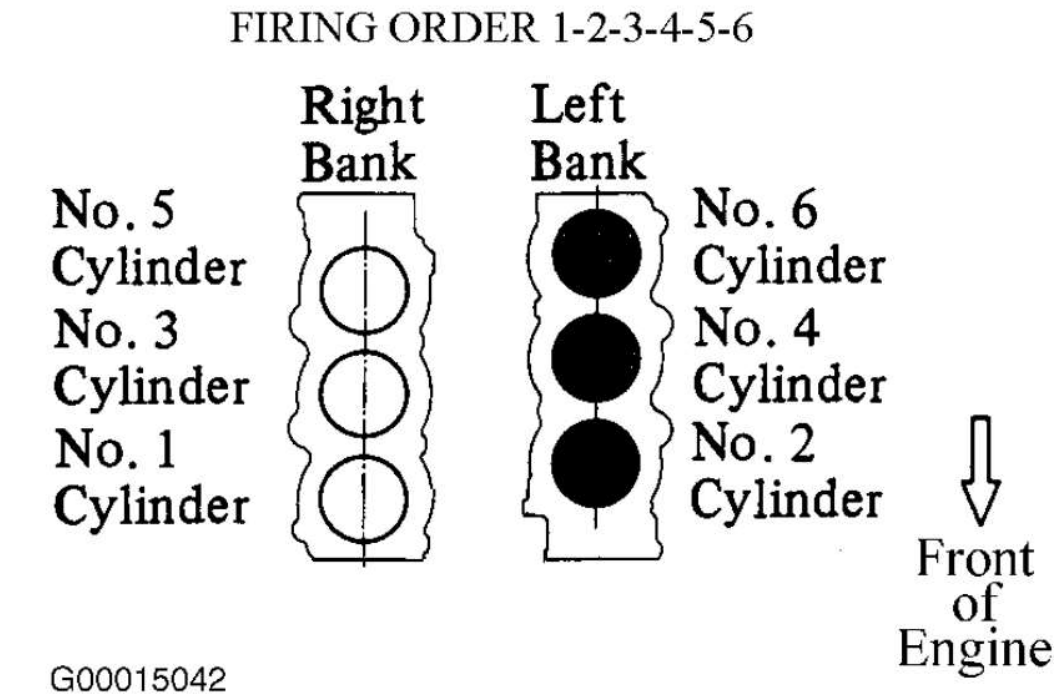


Fig. 3: Identifying Cylinder Numbering & Firing Order (Avalon 3.0L, Highlander 3.0L & Sienna 3.0L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

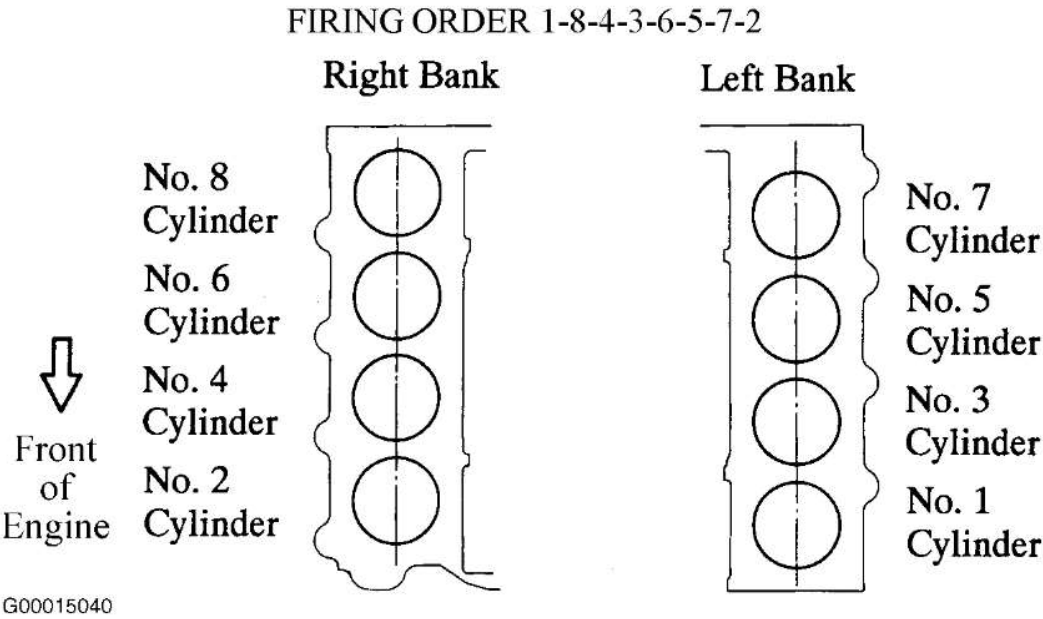


Fig. 4: Identifying Cylinder Numbering & Firing Order (4.7L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

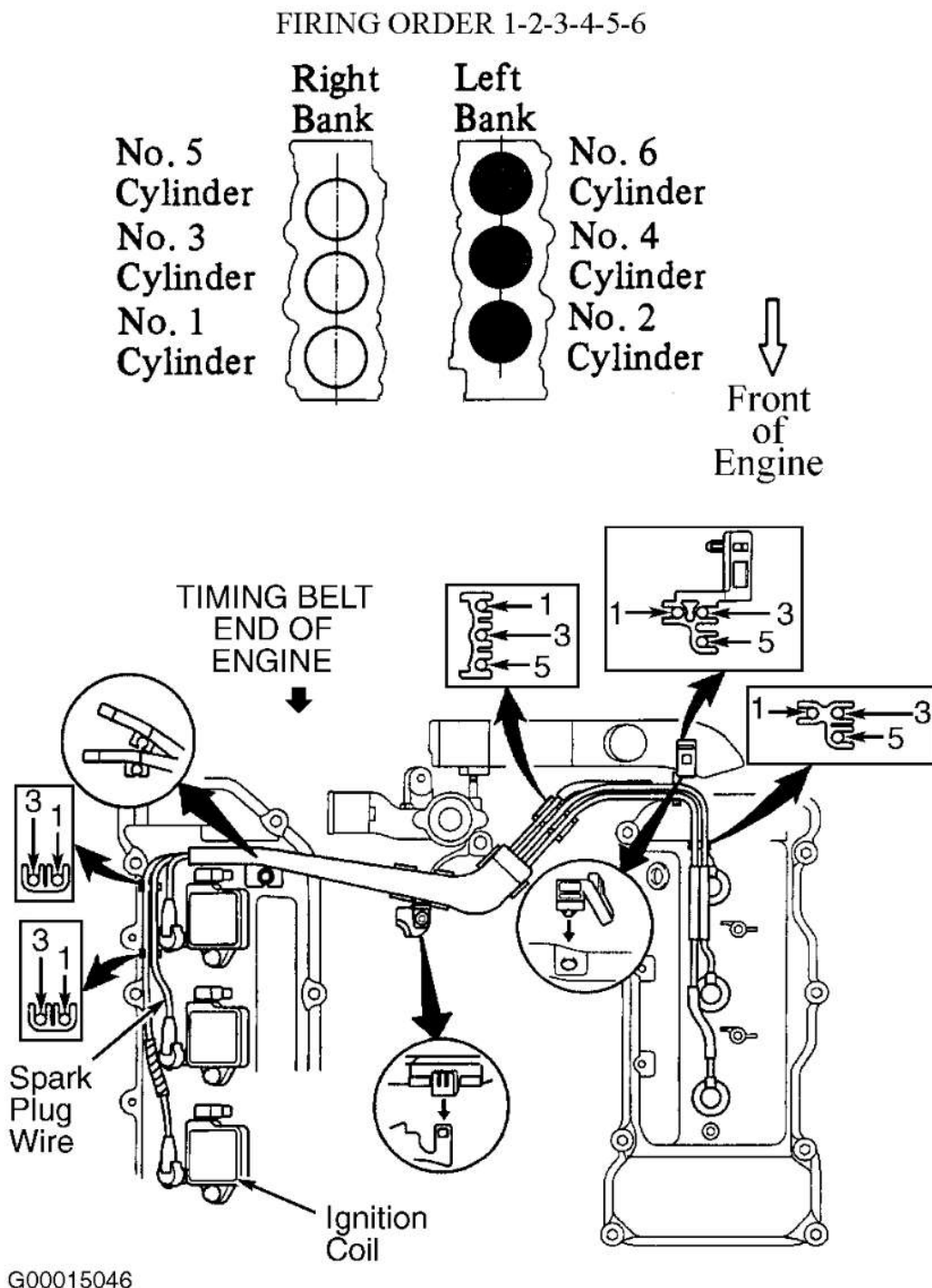
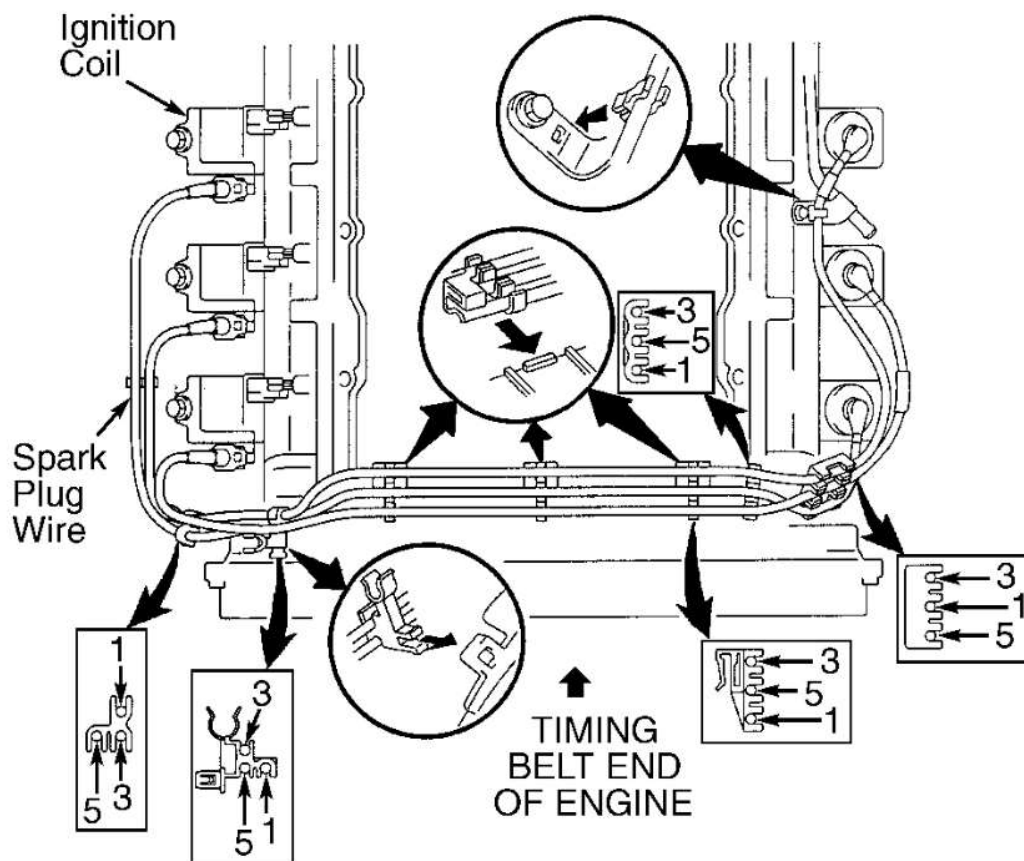
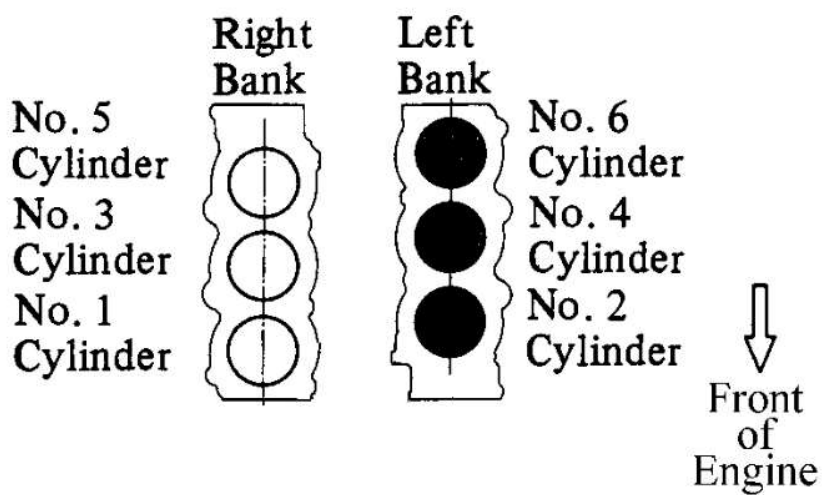


Fig. 5: Locating Ignition Coils & Identifying Spark Plug Wire Routing (Camry 3.0L)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FIRING ORDER 1-2-3-4-5-6



G00015045

Fig. 6: Locating Ignition Coils & Identifying Spark Plug Wire Routing (Tacoma 3.4L, Tundra 3.4L & 4Runner 3.4L)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

IGNITION TIMING

NOTE: All models, timing marks are located on crankshaft pulley and front cover.

WARNING: On Prius, read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.

IGNITION TIMING (Degrees BTDC @ Idle) (4-CYLINDER) ⁽¹⁾

Application	Base Timing	ECM Controlled Timing
Camry & Camry Solara	(2) 8-12	(3) 5-15
Celica		
1.8L (1ZZ-FE)	(2) 10-18	(4)
1.8L (2ZZ-GE)	(2) 8-12	(4)
Corolla	(5) 8-12	(6) 6-15
ECHO	(2) 8-12	(4)
Highlander	(2) 8-12	(3) 5-15
MR2	(2) 8-12	(3) 6-15
Prius ⁽⁷⁾	(2) 7-15	(4)
RAV4	(2) 8-12	(3) 5-15
Tacoma	(2) 3-7	(3) 4-17

(1) Check with engine at normal operating temperature, transaxle/transmission in Neutral (except Prius, in Park on Prius), parking brake applied, and A/C and all accessories off.

(2) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals No. 4 (CG) and 13 (TC) on data link connector No. 3.

(3) With jumper wire removed from data link connector No. 3.

(4) Information is not available from manufacturer.

(5) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals TE1 and E1 on data link connector No. 1.

(6) With jumper wire removed from data link connector No. 1.

(7) Read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**. Check with transit in inspection mode and transaxle in Park.

IGNITION TIMING (Degrees BTDC @ Idle) (V6) ⁽¹⁾

Application	Base Timing	ECM Controlled Timing
-------------	-------------	-----------------------

Avalon	(2) 8-12	(3) 10-25
Camry	(4) 8-12	(5) 7-25
Camry Solara	(6) 8-12	(3) 7-24
Highlander	(4) 8-12	(5) 7-24
Sienna	(6) 8-12	(3) 7-24
Tacoma	(4) 8-12	(5) 3-19
Tundra	(4) 8-12	(5) 12.5-22
4Runner	(6) 8-12	(3) 3-19

(1) Check with engine at normal operating temperature, transaxle/transmission in Neutral, parking brake applied, and A/C and all accessories off.

(2) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals TE1 and E1 on data link connector No. 1.

(3) With jumper wire removed from data link connector No. 1.

(4) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals CG and TC on data link connector No. 3.

(5) With jumper wire removed from data link connector No. 3.

(6) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals E1 and TC on data link connector No. 1.

IGNITION TIMING (Degrees BTDC @ Idle) (V8) ⁽¹⁾

Application	Base Timing	ECM Controlled Timing
Land Cruiser	(2) 5-15	(3)(4)
Sequoia	(5) 5-15	(4)(6)
Tundra	(5) 8-12	(4)(6)

(1) Check with engine at normal operating temperature, transmission in Neutral, parking brake applied, and A/C and all accessories off.

(2) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals TC and E1 on data link connector No. 1.

(3) With jumper wire removed from data link connector No. 1.

(4) Information was not available from manufacturer.

(5) With Jumper Wire (SST 09843-18020 or SST 09843-18040) installed between terminals CG and TC on data link connector No. 3.

(6) With jumper wire removed from data link connector No. 3.

FUEL SYSTEMS

FUEL PUMP

NOTE: Fuel pump performance measures fuel pressure, not regulated fuel pressure.

FUEL PUMP PERFORMANCE (4-CYLINDER)

Application	(1) Pressure psi (kg/cm ²)
Camry, Camry Solara, Celica, Corolla, ECHO, Highlander & MR2	44-50 (3.1-3.5)
Prius (2)	44-50 (3.1-3.5)
RAV4	44-50 (3.1-3.5)
Tacoma	38-44 (2.7-3.1)
(1) Check fuel pressure with engine off and using Toyota hand-held tester connected to data link connector No. 3 with ignition on to activate fuel pump or by connecting battery voltage to terminals on electric fuel pump. (2) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS.	

FUEL PUMP PERFORMANCE (V6)

Application	(1) Pressure psi (kg/cm ²)
Avalon, Camry, Camry Solara, Highlander & Sienna	44-50 (3.1-3.5)
Tacoma, Tundra & 4Runner	38-44 (2.7-3.1)
(1) Check fuel pressure with engine off and using Toyota hand-held tester connected to data link connector No. 3 with ignition on to activate fuel pump or by connecting battery voltage to terminals on electric fuel pump.	

FUEL PUMP PERFORMANCE (V8)

Application	(1) Pressure psi (kg/cm ²)
Land Cruiser, Sequoia & Tundra	38-44 (2.7-3.1)
(1) Check fuel pressure with engine off and using Toyota hand-held tester connected to data link connector No. 3 with ignition on to activate fuel pump or by connecting battery voltage to terminals on electric fuel pump.	

REGULATED FUEL PRESSURE (4-CYLINDER)

Application	At Idle W/Vacuum psi (kg/cm ²)	At Idle W/O Vacuum psi (kg/cm ²)
Camry, Camry Solara, Celica, Corolla, ECHO, Highlander & MR2	(1)	(1)
Prius (2)	(1)	(1)
RAV4	(1)	(1)
Tacoma	(3)	(3)
(1) Fuel pressure should be 44-50 psi (3.1-3.5 kg/cm²) with engine idling. Fuel pressure regulator is not vacuum controlled, as fuel pressure regulator is mounted on electric fuel pump in the fuel tank.		

- (2) Read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.
- (3) Check vacuum hose routing for fuel pressure regulator to determine if fuel pressure regulator is vacuum controlled. If vacuum hose is connected to engine vacuum and not vented to the air cleaner assembly, fuel pressure regulator is vacuum controlled. If vacuum hose is vented to air cleaner assembly and not to engine vacuum, fuel pressure regulator is not vacuum controlled. On models with vacuum controlled fuel pressure regulator, fuel pressure should be 31-37 psi (2.2-2.6 kg/cm²) with engine idling and vacuum applied, and 38-44 (2.7-3.1 psi 2.7-3.1 kg/cm²) without vacuum with engine idling. On models without vacuum controlled fuel pressure regulator, fuel pressure should be 38-44 psi (2.7-3.1 kg/cm²) with engine idling.

REGULATED FUEL PRESSURE (V6)

Application	At Idle W/Vacuum psi (kg/cm ²)	At Idle W/O Vacuum psi (kg/cm ²)
Avalon, Camry, Camry Solara, Highlander & Sienna	(1)	(1)
Tacoma, Tundra & 4Runner	(2)	(2)
(1) Fuel pressure should be 44-50 psi (3.1-3.5 kg/cm²) with engine idling. Fuel pressure regulator is not vacuum controlled, as fuel pressure regulator is mounted on electric fuel pump in the fuel tank. (2) Check vacuum hose routing for fuel pressure regulator to determine if fuel pressure regulator is vacuum controlled. If vacuum hose is connected to engine vacuum and not vented to the air cleaner assembly, fuel pressure regulator is vacuum controlled. If vacuum hose is vented to air cleaner assembly and not to engine vacuum, fuel pressure regulator is not vacuum controlled. On models with vacuum controlled fuel pressure regulator, fuel pressure should be 33-38 psi (2.3-2.7 (kg/cm²) with engine idling and vacuum applied, and 38-44 psi (2.7-3.1 kg/cm²) without vacuum with engine idling. On models without vacuum controlled fuel pressure regulator, fuel pressure should be 38-44 psi (2.7-3.1 kg/cm²) with engine idling.		

REGULATED FUEL PRESSURE (V8)

Application	At Idle W/Vacuum psi (kg/cm ²)	At Idle W/O Vacuum psi (kg/cm ²)
Land Cruiser, Sequoia & Tundra	(1)	(1)
(1) Fuel pressure should be 38-44 (2.7-3.1 kg/cm²) with engine idling. Fuel pressure regulator is not vacuum controlled.		

FUEL PUMP RESISTANCE

Application	Ohms @ 68°F (20°C)
All Models	.2-3.0

FUEL INJECTOR RESISTANCE

FUEL INJECTOR RESISTANCE

Application	Ohms @ 68°F (20°C)
Avalon, Camry, Camry Solara, Celica, Corolla, ECHO, Highlander, Land Cruiser & MR2	13.40-14.20
Prius ⁽¹⁾	13.40-14.20
RAV4, Sequoia & Sienna	13.40-14.20
Tacoma	
2.4L 4-Cyl. & 2.7L 4-Cyl.	12.00-16.00
3.4L V6	13.80
Tundra	
3.4L V6 & 4.7L V8	13.40-14.20
4Runner	13.80
⁽¹⁾ Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS .	

IDLE SPEED & MIXTURE**IDLE SPEED SPECIFICATIONS (4-CYLINDER) ⁽¹⁾**

Application	RPM
Camry	
A/T	610-710
M/T	650-750
Camry Solara	
A/T	600-700
M/T	650-750
Celica	
1.8L (1ZZ-FE)	
A/T	700-800
M/T	650-750
1.8L (2ZZ-GE)	
A/T	700-800
M/T	750-850
Corolla	650-750
ECHO	
A/T	650-750
M/T	600-700
Highlander	600-700
MR2	650-750
Prius ⁽²⁾	950-1050
RAV4 & Tacoma	650-750

- (1) Check with engine at normal operating temperature, transaxle/transmission in Neutral (except Prius, in Park on Prius), parking brake applied, air cleaner and all air intake hoses installed, all vacuum hoses installed, electronic fuel injection system wiring connectors properly installed, ignition timing properly set, electric cooling fan off (if equipped), and A/C and all accessories off.
- (2) Read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**. Check with transit in inspection mode and transaxle in Park.

IDLE SPEED SPECIFICATIONS (V6) ⁽¹⁾

Application	RPM
Avalon	600-700
Camry	550-650
Camry Solara, Highlander, Sienna, Tacoma, Tundra & 4Runner	650-750
(1) Check with engine at normal operating temperature, transaxle/transmission in Neutral, parking brake applied, air cleaner and all air intake hoses installed, all vacuum hoses installed, electronic fuel injection system wiring connectors properly installed, ignition timing properly set, and A/C and all accessories off.	

IDLE SPEED SPECIFICATIONS (V8) ⁽¹⁾

Application	RPM
Land Cruiser, Sequoia & Tundra	650-750
(1) Check with engine at normal operating temperature, transmission in Neutral, parking brake applied, air cleaner and all air intake hoses installed, all vacuum hoses installed, electronic fuel injection system wiring connectors properly installed, ignition timing properly set, and A/C and all accessories off.	

DASHPOT SPECIFICATIONS

DASHPOT SPECIFICATIONS ⁽¹⁾

Application	RPM
Tacoma 3.4L V6 M/T	1800-2200
(1) Check with engine at normal operating temperature.	

THROTTLE OPENER

THROTTLE OPENER SPECIFICATIONS ⁽¹⁾

Application	RPM
Avalon	1100-1700
Camry Solara	
3.0L V6	900-1950
Sienna	900-1950
Tacoma	

2.4L 4-Cyl. & 2.7L 4-Cyl.	1200-1500
3.4L V6	900-1950
Tundra	
3.4L V6	900-1950
(1) Check with engine at normal operating temperature and throttle opener vacuum hose disconnected and plugged.	

FUEL CUT SYSTEM

FUEL CUT SPECIFICATIONS ⁽¹⁾

Application	Fuel Return RPM
Avalon	1200
Camry	(2)
Camry Solara	
2.4L 4-Cyl.	
A/T	1500
M/T	1200
3.0L V6	1200
Celica, Corolla & ECHO	1400
Highlander	(2)
Land Cruiser	1000
MR2	1400
Prius ⁽³⁾	1400
RAV4 & Sequoia	1400
Sienna	1200
Tacoma	
2.4L 4-Cyl. & 2.7L 4-Cyl.	
A/T	1500
M/T	1400
3.4L V6	
A/T	1200
M/T	1000
Tundra	
3.4L V6	
A/T	1200
M/T	1000
4.7L V8	1000
4Runner	1500
(1) Check with engine at normal operating temperature and A/C off.	

(2) Information is not available from manufacturer.

(3) Read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.

THROTTLE POSITION SENSOR

NOTE: Throttle position sensor is not adjustable. For testing procedures, see appropriate **SYSTEM & COMPONENT TESTING** article.

WARNING: On Prius, read service precautions before proceeding with service procedure. See **SERVICE PRECAUTIONS**.

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (AVALON) ⁽¹⁾

Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-6300
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900

(1) Apply vacuum to throttle opener before checking throttle position sensor TP sensor.

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (CAMRY)

Terminals	Ohms
VC & E2	(1) 1200-3200

(1) Resistance at 68°F (20°C).

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (CAMRY SOLARA)

Application	Throttle Position	Terminals	Ohms
2.4L 4-Cyl.		VC & E2	(1) 1200-3200
3.0L V6 ⁽²⁾			
.....	Fully Closed	VTA & E2	200-6300
.....	Fully Open	VTA & E2	2000-10,200
.....		VC & E2	2500-5900

(1) Resistance at 68°F (20°C).

(2) Apply vacuum to throttle opener before checking throttle position sensor.

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (CELICA, COROLLA & ECHO)

Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-5700

Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (HIGHLANDER)

Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-5700
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5000

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (LAND CRUISER)

Terminals	Ohms
VC & E2	(1) 1250-2350
(1) Resistance at 68°F (20°C).	

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (MR2)

Throttle Position	Terminals	Ohms
Models With Standard Type Manual Transaxle ⁽¹⁾		
Fully Closed	VTA & E2	200-5700
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900
Models With Sequential Manual Transaxle Transaxle ⁽¹⁾		
....	VC & E2	(2) 1200-3200
(1) There are 2 types of manual transaxles used. A standard type manual transaxle and a sequential manual transaxle. Standard type manual transaxle is a common transaxle in which the driver operates the clutch and shifts the transaxle. Sequential manual transaxle is an electronic controlled manual transaxle in which clutch is operated and transaxle is shifted hydraulically by moving shift lever forward or backward. Sequential manual transaxle may be identified by shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used. (2) Resistance at 68°F (20°C).		

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (PRIUS) ⁽¹⁾

Terminals	Ohms
VC & E2	(2) 1200-3200
(1) Read service precautions before proceeding with service procedure. See SERVICE PRECAUTIONS. (2) Resistance at 68°F (20°C).	

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (RAV4)

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Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-5700
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (SEQUOIA)

Terminals	Ohms
VC & E2	(1) 1250-2350
(1) Resistance at 68°F (20°C).	

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (SIENNA) (1)

Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-6300
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900
(1) Apply vacuum to throttle opener before checking throttle position sensor.		

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (TACOMA) (1)

Throttle Position	Terminals	Ohms
Fully Closed	VTA & E2	200-5700
Fully Open	VTA & E2	2000-10,200
.....	VC & E2	2500-5900
(1) Apply vacuum to throttle opener before checking throttle position sensor.		

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (TUNDRA)

Application	Throttle Position	Terminals	Ohms
3.4L V6 (1)	Fully Closed	VTA & E2	200-5700
.....	Fully Open	VTA & E2	2000-10,200
.....		VC & E2	2500-5900
4.7L V8		VC & E2	(2) 1250-2350
(1) Apply vacuum to throttle opener before checking throttle position sensor.			
(2) Resistance at 68°F (20°C).			

THROTTLE POSITION SENSOR RESISTANCE SPECIFICATIONS (4RUNNER)

Terminals	Ohms
VC & E2	(1) 1200-3200
(1) Resistance at 68°F (20°C).	