

# 2002 ENGINE PERFORMANCE

## Service & Adjustment Specifications

### INTRODUCTION

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.

### CAPACITIES

#### FLUID CAPACITIES

Application	Quantity
Automatic Transmission/Transaxle (Fluid Type)	
Optima (SK ATF SP-III or Diamond ATF SP-III)	8.2 Qts. (7.8L)
Rio (SK ATF SP-III)	6.2 Qts. (5.9L)
Sedona (Diamond ATF SP-III)	8.5 Qts. (8.0L)
Spectra (SK ATF SP-III or Diamond ATF SP-III)	5.7 Qts. (5.4L)
Sportage (M-III or Dexron II)	7.2 Qts. (6.8L)
Cooling System (Includes Heater)	
Optima	
2.4L	7.7 Qts. (7.3L)
2.7L	9.1 Qts. (8.6L)
Rio	6.3 Qts. (6.0L)
Sedona	8.2 Qts. (7.7L)
Spectra	6.3 Qts. (6.0L)
Sportage	8.0 Qts. (7.5L)
Crankcase (With Filter) <sup>(1)</sup>	
Optima	
2.4L	4.6 Qts. (4.3L)
2.7L	4.8 Qts. (4.5L)
Rio	3.4 Qts. (3.2L)
Sedona	4.5 Qts. (4.3L)
Spectra	4.2 Qts. (4.0L)
Sportage	4.4 Qts. (4.3L)
Differential (Sportage) <sup>(2)</sup>	
Front	1.3 Qts. (1.2L)
Rear	1.6 Qts. (1.5L)
Manual Transmission/Transaxle	
Optima <sup>(3)</sup>	2.2 Qts. (2.1L)

Rio <sup>(2)</sup>	2.9 Qts. (2.8L)
Spectra <sup>(3)</sup>	2.8 Qts. (2.7L)
Sportage <sup>(3)</sup>	
2WD	1.7 Qts. (1.6L)
4WD	1.3 Qts. (1.2L)
Transfer Case	
Sportage <sup>(3)</sup>	1.8 Qts. (1.7L)
(1) Use API Service SG-rated oil. (2) Use SAE 80W-90 API Service GL-4 or GL-5 rated oil. (3) Use SAE 75W-90 API Service GL-4 or GL-5 rated oil.	

QUICK-SERVICE

SERVICE INTERVALS & SPECIFICATIONS

REPLACEMENT INTERVALS

Component	Normal Service Miles	Severe Service Miles
Air Filter		
Except Sedona	30,000	<sup>(1)</sup> 30,000
Sedona	25,000	20,000
Camshaft Timing Belt		
Except California	60,000	60,000
California	<sup>(2)</sup>	<sup>(2)</sup>
Coolant (Except Sedona)	30,000	30,000
Sedona	62,000	62,000
Differential (Sportage)		
Front & Rear	22,500	15,000
Fuel Filter		
Optima & Rio	60,000	60,000
Sedona & Spectra	45,000	30,000
Sportage	30,000	30,000
Oil & Filter		
Except Sedona	7500	5000
Sedona		
Oil	7500	3000
Filter	15,000	6000
Spark Plugs		

Except Sedona	30,000	30,000
Sedona		
RC10PYP4 Type	25,000	25,000
PFR5N-11 & RC10PYPB4 Type	60,000	60,000
Transaxle Fluid		
Optima, Sedona & Spectra		
Automatic	105,000 <sup>(3)</sup>	30,000
Manual	6000	60,000
Rio		
Automatic	30,000	30,000
Manual	30,000	30,000
Transmission Fluid (Sportage)		
Automatic & Manual	22,500	15,000
Transfer Case (Sportage)	22,500	15,000
(1) Service as necessary if operated in dusty conditions.		
(2) Inspect every 60,000 and 90,000 miles. Replace every 105,000 miles.		
(3) Inspect, add or replace as necessary.		

**BELT ADJUSTMENT**

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Application	(1) Deflection - In. (mm)
Optima 2.4L	
A/C Compressor	
New Belt	11/32-7/16 (9-11)
Used Belt	33/64-35/64 (13-14)
Generator	
New Belt	15/64-17/64 (6-7)
Used Belt	5/16-7/16 (8-11)
Optima 2.7L	(2)
Rio & Spectra	
All Belts	
New Belt	5/16-11/32 (8-9)
Used Belt	11/32-25/64 (9-10)
Sedona	
A/C Compressor & Generator	
New Belt	(3)
Old Belt	

	(3)
Power Steering	
New Belt	11/32-7/16 (9-11)
Old Belt	33/64-35/64 (13-14)
Sportage	
A/C Compressor	
New Belt	17/64-11/32 (7-9)
Used Belt	5/16-25/64 (8-10)
Generator	
New Belt	15/64-15/16 (6-8)
Used Belt	17/64-11/32 (7-9)
Power Steering	
New Belt	5/16-25/64 (8-10)
Used Belt	11/32-7/16 (9-11)
(1) Deflection is with 22 lbs. (10 kg) pressure applied midway on longest belt run.	
(2) Equipped with automatic belt tensioner.	
(3) Specification is not available from manufacturer.	

MECHANICAL CHECKS

ENGINE COMPRESSION

Check engine compression with engine at normal operating temperature at specified cranking speed, all spark plugs removed, and throttle wide open.

COMPRESSION SPECIFICATIONS

Application	Specification
Compression Pressure <sup>(1)</sup>	
Optima	
2.4L	178 psi (1227 kPa) @ 250-400 RPM
2.7L	<sup>(2)</sup> 170 psi (1200 kPa)
Rio	184 psi (1275 kPa) @ 300 RPM
Sedona	<sup>(2)</sup> 170 psi (1200 KPa)
Spectra	193 psi (1331 kPa) @ 300 RPM
Sportage	163 psi (1124 kPa) @ 270 RPM
(1) With engine at normal operating temperature.	
(2) At cranking speed. Cranking RPM not available from manufacturer.	

**VALVE CLEARANCE**

**NOTE:** All models are equipped with hydraulic valve lash adjusters. No adjustments are required.

**IGNITION SYSTEM**

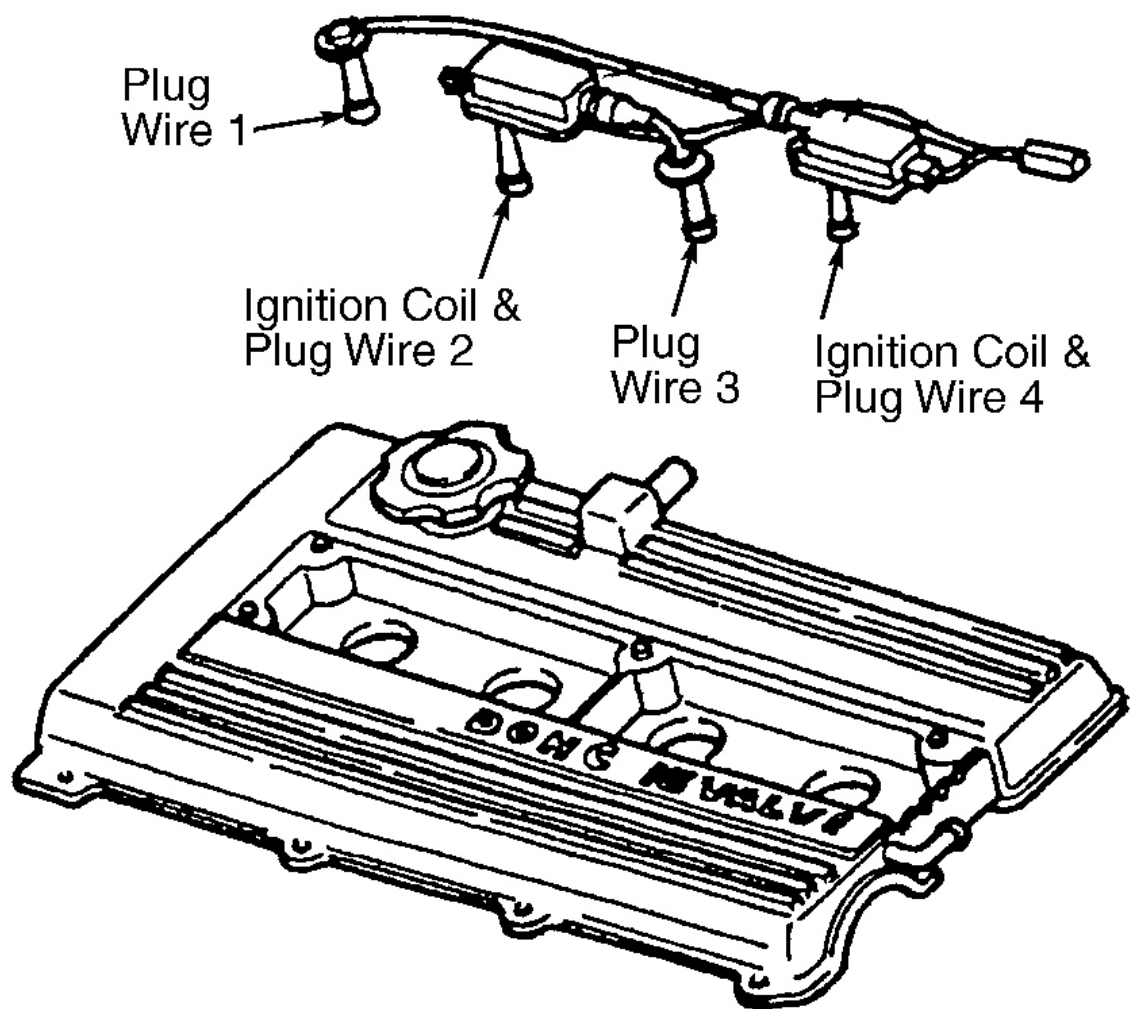
**IGNITION COIL**

**IGNITION COIL RESISTANCE - Ohms @ 68°F (20°C)**

Application	Primary	Secondary
Optima		
2.4L	.78	20,000
2.7L	.74-.81	13.300-15.300
Rio	.60-.80	11,000-15,000
Sedona	.78	13.000
Spectra & Sportage	.45-.55	13,000-15,000

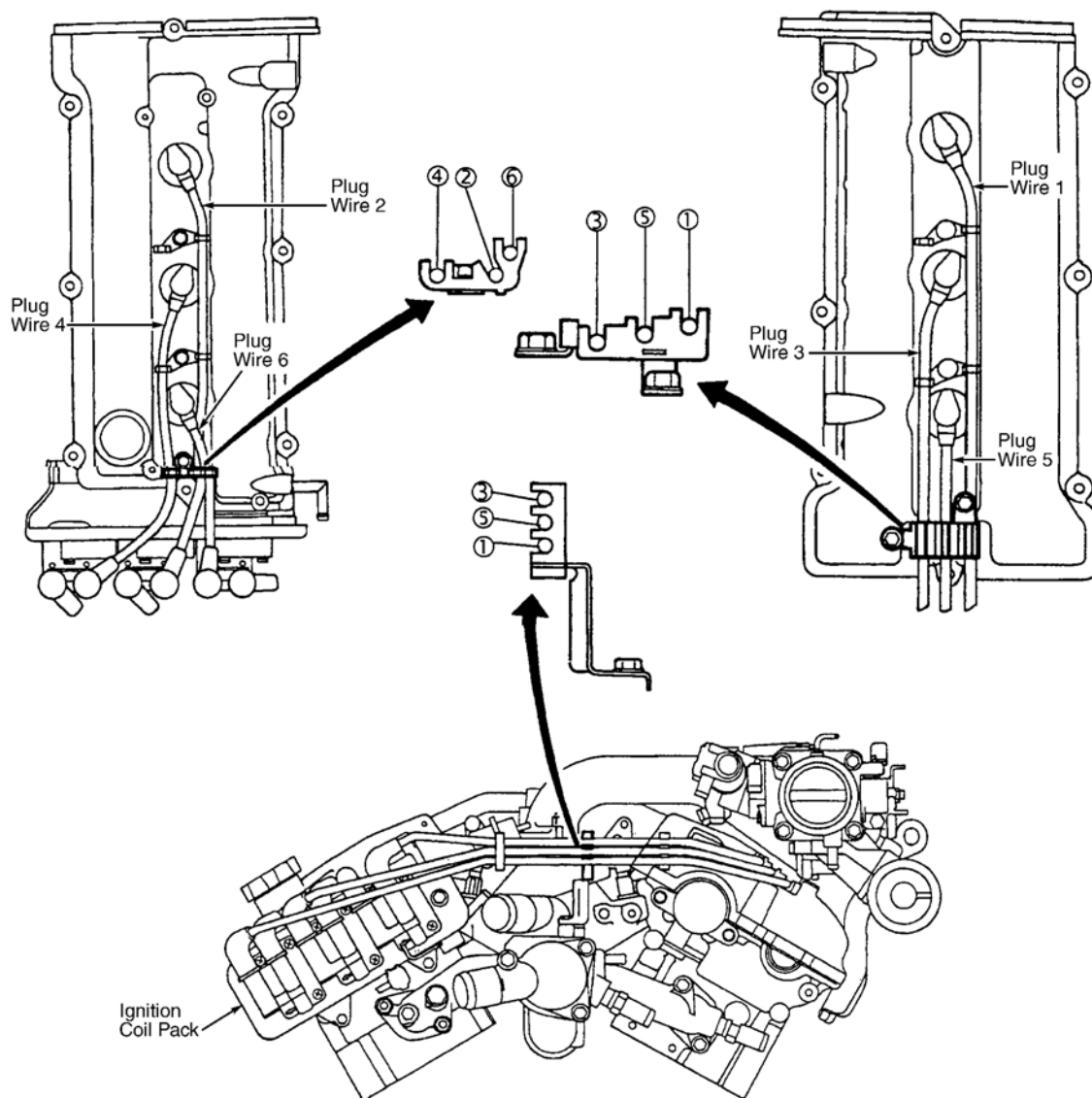
**HIGH TENSION WIRE RESISTANCE**

High tension wire resistance should not exceed 10,000 ohms per foot. To identify and locate spark plug wires and ignition coils, see **Fig. 1 -Fig. 4** .



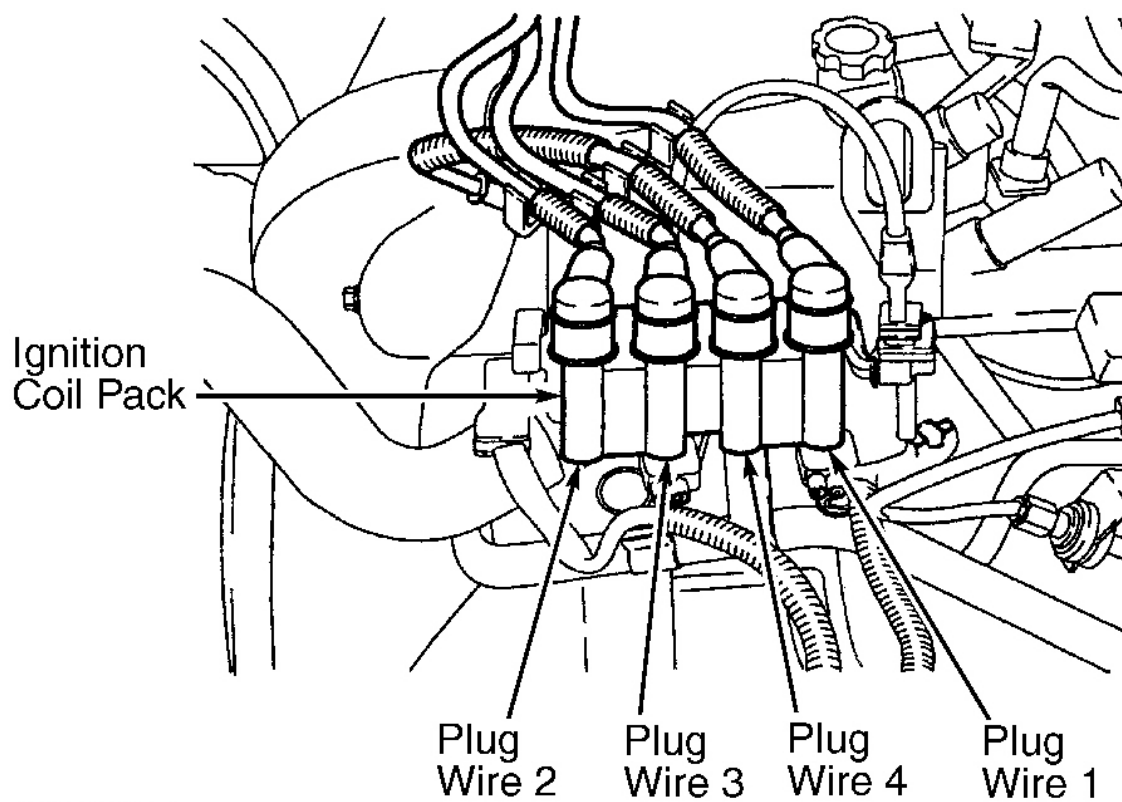
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**Fig. 1: Identifying & Locating Plug Wires & Ignition Coils (Optima 2.4L, Spectra & Sportage)**  
Courtesy of KIA MOTORS AMERICA, INC.



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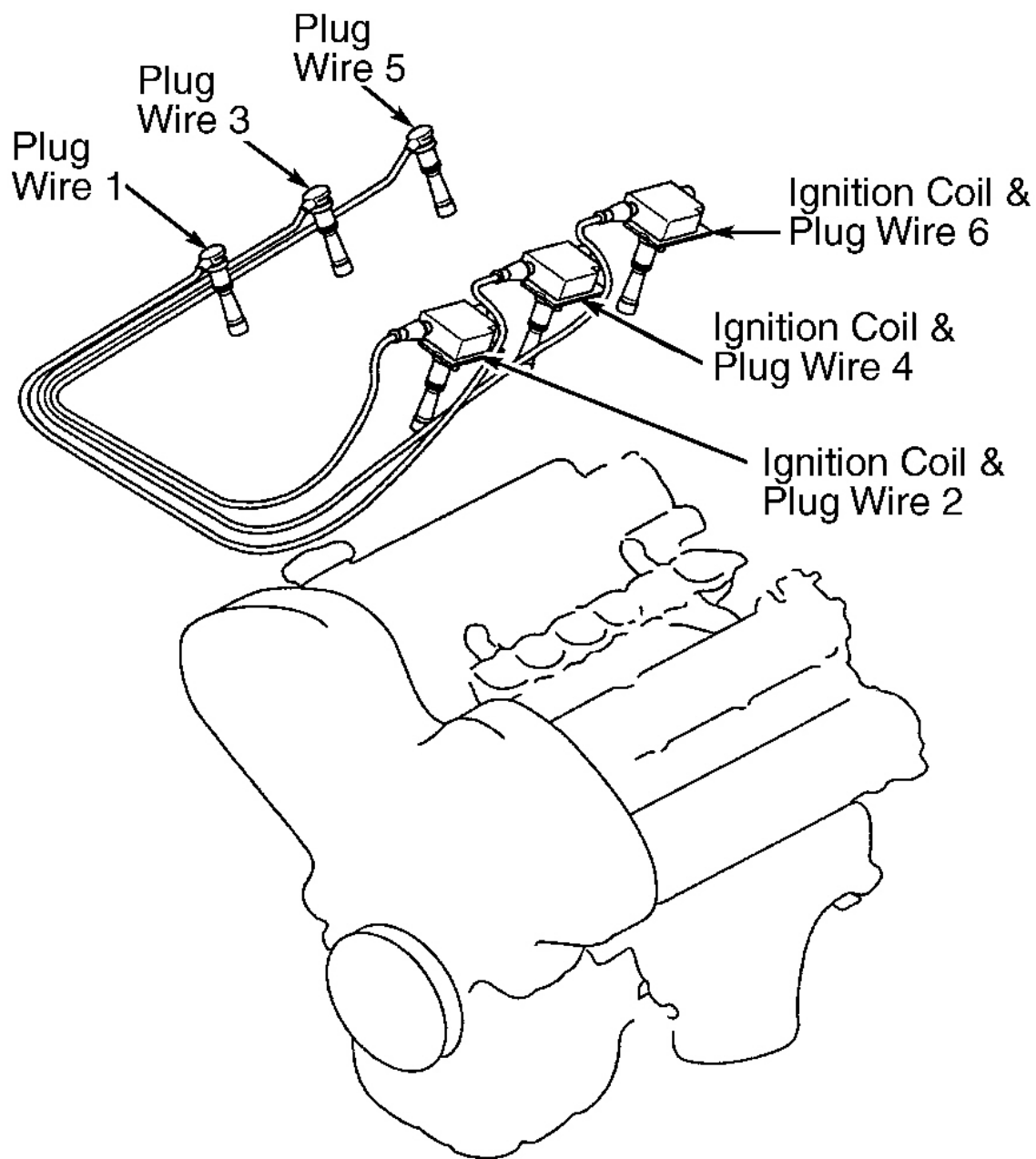
**Fig. 2: Identifying & Locating Plug Wires & Ignition Coils (Optima 2.7L)**  
 Courtesy of KIA MOTORS AMERICA, INC.



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**Fig. 3: Identifying & Locating Plug Wires & Ignition Coils (Rio)**  
Courtesy of KIA MOTORS AMERICA, INC.





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**Fig. 4: Identifying & Locating Plug Wires & Ignition Coils (Sedona)**  
 Courtesy of KIA MOTORS AMERICA, INC.

## SPARK PLUGS

### SPARK PLUG TYPE

Application	Type
Optima	
2.4L	NGK PGR5C-11 or Champion RN10PYP4
2.7L	NGK PFR5N-11

Rio & Spectra	NGK BKR6E
Sedona	NGK PFR5N-11 or Champion RC10PYP4, RC10PYPB4
Sportage	NGK BKR6E-11

**SPARK PLUG SPECIFICATIONS**

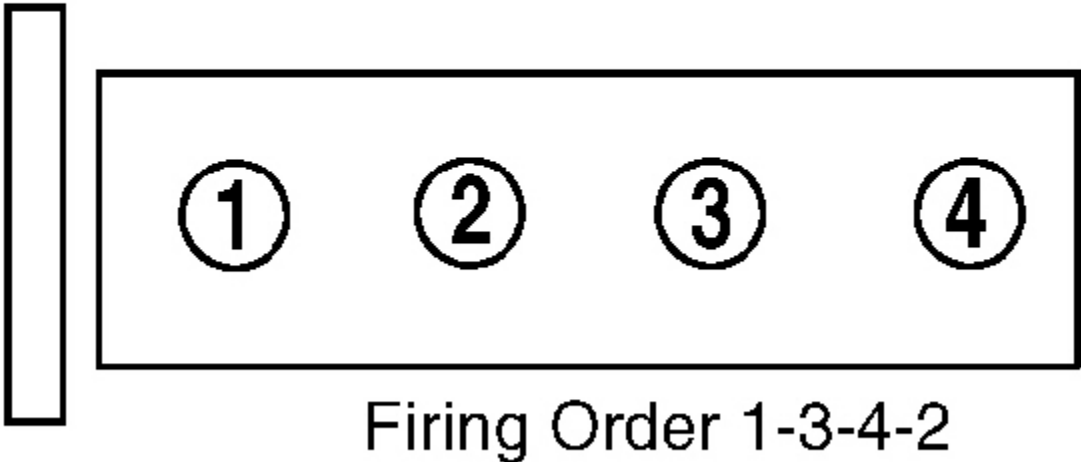
Application	Gap In. (mm)	Torque Ft. Lbs. (N.m)
Optima		
2.4L	.039-.043 (1.0-1.1)	18-22 (25-30)
2.7L	.039-.043 (1.0-1.1)	15-22 (20-30)
Sedona	.039-.043 (1.0-1.1)	15-22 (20-30)
Rio & Spectra	.028-.032 (0.7-0.8)	18-22 (25-30)
Sportage	.039-.043 (1.0-1.1)	18-22 (25-30)

**FIRING ORDER**

For firing order information, see **Fig. 5** or **Fig. 6** .

FRONT OF VEHICLE (RWD)

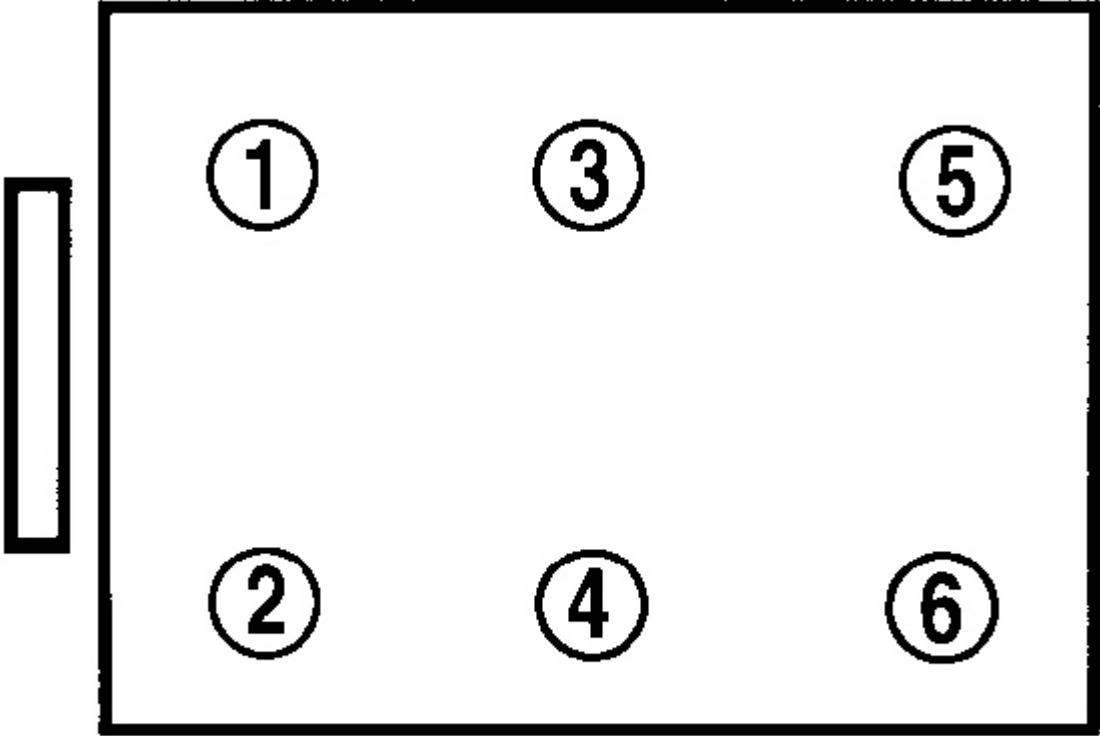
FRONT OF VEHICLE (FWD)



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**Fig. 5: Firing Order (4-Cylinder Engines)**

FRONT OF VEHICLE ↓



Firing Order 1-2-3-4-5-6

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**Fig. 6: Firing Order (V6 Engine)**

**IGNITION TIMING**

**BASE IGNITION TIMING**

Application	(1)(2) Degrees BTDC @ Idle
Optima	
2.4L	3-7
2.7L	7-17
Rio	1-11
Sedona	8-12
Spectra	(3)
Sportage	0-12

(1) With engine at normal operating temperature and all electrical loads off.

(2) Ignition timing is computer controlled and is not adjustable.

(3) 5 degrees ATDC to 15 degrees BTDC.

FUEL SYSTEM

FUEL PUMP

FUEL PRESSURE SPECIFICATIONS

Application	psi (kPa)
Optima	
Fuel Line Pressure <sup>(1)(2)</sup>	
Regulator Vacuum Connected	37 (255)
Regulator Vacuum Disconnected	46-49 (320-340)
Rio & Spectra	
Maximum Pressure <sup>(1)</sup>	65-94 (450-650)
Fuel Line Pressure <sup>(3)</sup>	46-51 (320-350)
Holding Pressure <sup>(4)</sup>	Greater Than 25 (180)
Sedona	
Fuel Line Pressure <sup>(1)(2)</sup>	
Regulator Vacuum Connected	39 (270)
Regulator Vacuum Disconnected	46-49 (320-340)
Sportage	
Maximum Pressure <sup>(5)</sup>	Greater Than 43 (340)
Fuel Line Pressure <sup>(2)(6)</sup>	
Regulator Vacuum Connected	34 (235)
Regulator Vacuum Disconnected	42 (292)
Holding Pressure <sup>(7)</sup>	Greater Than 21 (150)
<div>(1) With pressure gauge connected to main fuel line with adapter.</div> <div>(2) Engine at idle.</div> <div>(3) With pressure gauge connected to fuel rail service port.</div> <div>(4) With pressure gauge connected to fuel rail service port. Minimum pressure 15-25 minutes after ignition is turned off.</div> <div>(5) With pressure gauge connected to fuel filter and pressure gauge outlet hose plugged.</div> <div>(6) With pressure gauge connected to fuel rail service port.</div> <div>(7) With pressure gauge connected to fuel rail service port. Minimum pressure 5 minutes after ignition is turned off.</div>	

**INJECTOR RESISTANCE**

**INJECTOR RESISTANCE**

<b>Application</b>	<b>(1) Ohms</b>
Optima	13-16
Rio	13.5-15.5
Sedona	13-16
Spectra	14.5
Sportage	12-16
(1) With temperature at 68°F (20°C).	

**IDLE SPEED**

**IDLE SPEED SPECIFICATIONS**

<b>Application</b>	<b>(1)(2) RPM</b>
Optima	
2.4L	700-900
2.7L	600-800
Rio	700-800
Sedona	600-800
Spectra	750-850
Sportage	770-870
(1) Base idle speed is controlled by PCM and is not adjustable (except Sedona).	
(2) With engine at normal operating temperature and all electrical loads off.	

**THROTTLE POSITION SENSOR**

**NOTE:** For information on Throttle Position (TP) sensor adjustment procedure, on applicable models, see **THROTTLE POSITION SENSOR** in **ON-VEHICLE ADJUSTMENTS** article.

**THROTTLE POSITION SENSOR CONTINUITY SPECIFICATIONS**

<b>Application</b>	<b>(1) Specification (Volts)</b>
Optima	
2.4L	0.3-0.9 To 4.0-4.6
2.7L	0.25-0.8 To 4.0-4.4
Rio	0.2-0.8 To 4.0-4.8
Sedona	0.3-0.9 To 4.0-4.6
Spectra	0.3-0.9 To 4.0-4.4

Sportage

0.4-0.6 To 4.1-4.3

(1) Reading is from idle position to wide open throttle position.