



2003 350Z – Engine

Mark Actual  
To Confirm

Notes

## VQ35DE

### Engine Oil

With Oil Filter

Without Oil Filter

SAE 5W-30 API SG/SH I & II or SJ, Energy Conserving Oil

5.0 qt

4-5/8 qt

### Radiator Fill

Coolant Type

Coolant Capacity

Ethylene Glycol

9-1/4 qt

### Tune up

#### Spark Plugs

Standard Type

Hot Type

Cold Type

Plug Gap

(Platinum)

PLFR5A-11

PLFR4A-11

PLFR6A-11

0.043 in. (1.1mm)

### Ignition Timing

15° ± 5° btdc

### Idle Speed

650 ± 50 rpm

### Idle Mixture Ratio

0.7 – 9.9 % CO

### Valve Clearance

cold

#### Intake

0.010 - 0.013 in  
(0.26 - 0.34 mm)

#### Exhaust

0.011 - 0.015 in  
(0.29 - 0.37 mm)

hot (176° F)

0.012 - 0.016 in  
(0.304 - 0.416 mm)

0.012 - 0.017 in  
(0.308 - 0.432 mm)

### T/Position Sensor 1

T/V Closed

T/V Open

More than 0.36 V

Less than 4.75 V

### T/Position Sensor 2

T/V Closed

T/V Open

Less than 4.75 V

More than 0.36 V

### Compression

Standard

Minimum

Diff Between Cyl.

185 psi

142 psi

14 psi

### Fuel System

#### Fuel Pressure @ Idle

51 psi

#### Recommended Fuel

91 Octane

#### Fuel Pump Ω

At 77°F (25°C)

Approx. 1.0 Ω

#### Fuel Injector Ω

At 77°F (25°C)

13.5 – 17.5 Ω

### Sensors

#### Mass Air Flow Sen

Supply Volt.

Output Volt. Idle

11 - 14 V

1.1 - 1.5 V

#### Mass Air Flow

At Idle

2500 rpm

2.0 - 6.0 gm/sec

7.0 -20.0 gm/sec

**Coolant Temp Sensor  $\Omega$** 

68°F (20°C)	2.1 - 2.9 k $\Omega$	<input type="text"/>
122°F (50°C)	0.68 - 1.00 k $\Omega$	<input type="text"/>
194°F (90°C)	0.236 - 0.260 k $\Omega$	<input type="text"/>

**O<sub>2</sub> Sen Heater 1  $\Omega$** 

At 77°F (25°C)	3.3 - 4.0 $\Omega$	<input type="text"/>
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**O<sub>2</sub> Sen Heater 2  $\Omega$** 

At 77°F (25°C)	5.0 - 7.0 $\Omega$	<input type="text"/>
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**Intake Air Temp Sensor**

77°F (25°C)	1.94 - 2.06 k $\Omega$	<input type="text"/>
176°F (80°C)	0.295 - 0.349 k $\Omega$	<input type="text"/>

**Camshaft P/Sen POS/Phase**

At 77°F (25°C)	Except 0 $\Omega$ or infinite $\Omega$	<input type="text"/>
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**Crankshaft P/Sen POS/Phase**

At 77°F (25°C)	Except 0 $\Omega$ or infinite $\Omega$	<input type="text"/>
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**Fuel Tank Temp Sensor**

68°F (20°C)	2.3 - 2.7 k $\Omega$	<input type="text"/>
122°F (50°C)	0.79 - 0.90 k $\Omega$	<input type="text"/>

**Throttle Control Motor  $\Omega$** 

At 77°F (25°C)	Approx. 1 - 15 $\Omega$	<input type="text"/>
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**Electrical****Ignition System**

Firing Order	1-2-3-4-5-6
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**Battery Specs.**

Type USA	80D23L	
Capacity (V/AH)	12 V/ 52 AH	
Cold Crank Current	582 A @ 0°F (-18°C)	<input type="text"/>

**Charging System**

Alternator Type	<b>A3TG0191</b>	
Nom. Rated Out	12 V/ 110 A	
Reg. Volt	14.1 - 14.7 V	
Hot Out Amp	More than 37 A /1300 rpm	<input type="text"/>
	More than 92 A /2500 rpm	<input type="text"/>
	More than 103 A /5000 rpm	<input type="text"/>

**VQ35DE**

<b>EPA Mileage Estimate</b>	<b>A/T</b>	<b>M/T</b>
(city/highway)	19/26	20/26



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2003 350Z – Engine

## **PREPARATION**

**Make sure that the following parts are in order.**

1. Battery
2. Ignition system
3. Engine oil and coolant levels
4. Fuse
5. ECM harness connector
6. Vacuum hoses
7. Air intake system (Oil filler cap, oil level, etc.)
8. Fuel pressure
9. Engine compression
10. Throttle valve
11. Evaporative emission canister purge control valve.

**Note:**

- On A/C equipped vehicles, turn A/C "Off" for testing.
- Transmission should be in "Park" or "Neutral".
- "CO" probe should be inserted into exhaust approximately 16 inches.
- Turn off headlamps, heater blower, rear defogger, etc.
- Front wheels pointed straight.
- Perform inspection with cooling fans "Off".



2003 350Z – A/T

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Notes

## RE5R05A

Trans Code **90x72**

A/T Fluid Type Nissan **Matic 'J'** ONLY (P/N 999MP-MTJ00P)

Oil Capacity 10 7/8 qt

A/T Cooler Type Fin Type Structure

### Up-Shift Schedule Range (at normal operating temp.) mph(km/h)

	Half Throttle	Full Throttle		
D <sub>1</sub> → D <sub>2</sub>	29 - 31 (46 - 50)	36 - 39 (58 - 62)	<input type="text"/>	<input type="text"/>
D <sub>2</sub> → D <sub>3</sub>	44 - 49 (71 - 79)	56 - 61 (90 - 98)	<input type="text"/>	<input type="text"/>
D <sub>3</sub> → D <sub>4</sub>	66 - 73 (107 - 117)	84 - 90 (135 - 145)	<input type="text"/>	<input type="text"/>
D <sub>4</sub> → D <sub>5</sub>	84 - 90 (135 - 145)	125 - 131 (201 - 211)	<input type="text"/>	<input type="text"/>

### Complete Clutch Lock-Up mph(km/h)

	Lock-up ON	Lock-up OFF	
Closed Throttle	35 - 40 (56 - 64)	33 - 38 (53 - 61)	<input type="text"/>
Half Throttle	104 - 109 (168 - 176)	81 - 86 (131 - 139)	<input type="text"/>

### Slip Lock-Up mph(km/h)

	Lock-up ON	Lock-up OFF	
Closed Throttle			
Slip Lock-up ON (D5)	27 - 32 (44 - 52)	25 - 30 (41 - 49)	<input type="text"/>
Slip Lock-up OFF (D4)	23 - 28 (37 - 45)	21 - 26 (34 - 42)	<input type="text"/>

### Stall Rpm

R, D, 2, 1 position	2,650 - 2,950 rpm	<input type="text"/>
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### Line Pressure psi(kg/cm<sup>2</sup>)

	At Curb Idle	At Stall rpm		
R - Position	57 - 64 (4.0 - 4.5)	247 - 274 (17.3 - 19.3)	<input type="text"/>	<input type="text"/>
D,M - Position	54 - 61 (3.8 - 4.3)	190 - 218 (13.3 - 15.3)	<input type="text"/>	<input type="text"/>

### A/T Fluid Temp. Sensor

Condition	ATF Temp Sensor 1	ATF Temp Sensor 2		
32° F (0° C)	3.2 V	3.2 V	<input type="text"/>	<input type="text"/>
68° F (20° C)	2.5 V	2.4 V	<input type="text"/>	<input type="text"/>
176° F (80° C)	0.8 V	0.65 V	<input type="text"/>	<input type="text"/>



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2003 350Z – A/T

## PRECAUTIONS

- Before performing any diagnostic test, vehicle should be driven for approximately 10 minutes to raise transmission to the proper operating temperature of 122° to 176°.
- During stall testing, never hold throttle wide open for more than 5 seconds at a time. Extended stall testing can overheat transmission and cause serious damage.
- Nissan **Matic 'J'** ATF is the only fluid accepted for warranty, service contracts and goodwill repairs.
- Before performing any internal repairs, thoroughly clean the outside of the transmission case to prevent contamination.
- Use lint free cloth or towels for wiping parts. Common shop towels can leave contaminating fibers on the transmission parts and cause improper transmission operation.
- When servicing the valve body, valves, sleeves, plugs, etc. should slide along the bores in the valve body under their own weight.
- Before assembly, apply a coat of ATF to all internal transmission parts. Use petroleum jelly to protect o-rings and seals, or to hold bearings and washers in place during assembly.

**Important Note:** Nissan **Matic 'J'** must be used in performing repairs paid by Nissan for the 2003 and later 350Z, such as warranty, service contract, or good-will repairs. There will not be reimbursement for repairs when non-genuine Nissan **Matic 'J'** is used.



2003 350Z – M/T

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**Notes**

## FS6R31A

Detailed specifications not available at this time.

**Please contact TECH LINE for 350Z M/T issues.**



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2003 350Z – M/T

## **PRECAUTIONS**

- Nissan does not recommend flywheel resurfacing. If flywheel is not within specification, replacement is recommended.
- Refill transmission with the proper viscosity and amount of gear lube for the anticipated temperatures.
- To help prevent clutch judder, avoid excessive grease to clutch disc splines, input shaft and throwout bearing. Be sure to clean off any excessive grease.
- On rear wheel drive vehicles, inspect the shift control lever bushing for wear and proper alignment prior to reinstallation of a removed transmission.
- To avoid transmission contamination, inspect the shift lever dust boot for cracks or damage, and replace if needed. Install plastic wire ties to insure a tight fit of the boot to the shifter and housing.
- Before reinstallation of a removed transmission, inspect the engine to transmission alignment dowels for damage. Damaged dowels can cause misalignment of the engine to transmission, and this can cause the transmission to jump out of gear.



2003 350Z – Heater & A/C

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Notes

## AIR CONDITIONER

### Compressor

Make Calsonic Kansei V-6  
Type V-6 Variable Displacement

### Compressor Clutch

Disc-to-Pulley Clearance 0.010 - 0.024 in (0.25 - 0.60 mm)

### Refrigerant

Type HFC-134a (R134a)  
Capacity 1.21 lb (0.55 kg)

### Refrigerant Oil

Type Nissan Type "S" Lub.  
Capacity 6.0 fl oz  
Oil to AddPer  
Evaporator 2.5 oz (75 ml)  
Condenser 1.2 oz (35 ml)  
\*Liquid Tank 0.3 oz (10 ml)  
Large Refrig. Leak 1.0 oz (30 ml)  
Compressor  
(\*Add only if comp. is not replaced.)

### Performance Test

#### Recirculating-to-Discharge Air Temp

	Recirc. Air Temp. at Blower Assy. Inlet F° (C°)	Discharge Air Temp. at Center Ventilator F° (C°)		
Relative Humidity 50 - 60 %	59°(15°)	37 - 39° (2.8 - 3.9°)		
	68°(20°)	42 - 46° (5.3 - 7.7°)		
	77°(25°)	48 - 54° (8.9 - 12.0°)		
	86°(30°)	55 - 62° (18.2 - 22.0°)		
	95°(35°)	65 - 72° (18.2 - 22.0°)		
60 - 70 %	59°(15°)	39 - 43° (3.9 - 6.0°)		
	68°(20°)	46 - 50° (7.7 - 10.0°)		
	77°(25°)	54 - 58° (12.0 - 14.4°)		
	86°(30°)	62 - 68° (16.7 - 19.8°)		
	95°(35°)	72 - 79° (22.0 - 26.0°)		

#### Ambient Air Temp-to-Operating Pressure

Air temperature F° (C°)	Relative Humidity 50-70%			
	High-pres.	Low-pres.		
59°(15°)	87 - 111.7 psi	23.9 - 31.9 psi		
68°(20°)	92.8 - 121.8 psi	24.7 - 34.1 psi		
77°(25°)	114.6 - 149.4 psi	26.8 - 37.0 psi		
86°(30°)	152.3 - 194.3 psi	29.7 - 42.1 psi		
95°(35°)	153.0 - 195.0 psi	34.8 - 48.6 psi		





2003 350Z – Heater & A/C

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Notes

## PERFORMANCE TEST CONDITIONS

- Vehicle indoors or in the shade
- Doors closed
- Windows open
- Hood open
- Temperature on "Max" setting
- Discharge air on "Face Vent"
- Recirculation switch on "Recirc"
- Fan speed on "High"
- A/C switch "On" and verify A/C Clutch engagement
- Engine speed at idle
- Operate the A/C system for 10 minutes before taking measurements

### Precautions:

1. When removing the compressor, store it in the same position as it is mounted in the vehicle. Failure to do so may cause lubricant to enter the low pressure chamber and cause compressor damage.
2. Allow components stored in cool areas to warm to area temperatures before removing seals. This prevents condensation from forming inside A/C components.



2003 350Z – Suspension

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To Confirm

Notes

**WHEEL ALIGNMENT (UNLADEN)**

**Suspension Inspection**

**Ball Joint End Play**

Axial End Play 0 in (0 mm)

**Front Wheel Bearing**

Axial End Play 0.0020 in (0.05 mm) or less

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**Rear Wheel Bearing**

Axial End Play 0.0020 in (0.05 mm) or less  
Wheel Runout Max. Lateral / Radial Runout:  
0.012 in (0.3 mm) or less


**Wheel arch Height (Unladen)**

	<b>Front Height (Hf)</b>	<b>Rear Height (Hr)</b>
Front 225/50 R17 & Rear 235/50 R17	26.81 in (681 mm)	27.56 in (700 mm)
Front 225/45 R18 & Rear 245/45 R18	26.89 in (683 mm)	27.80 in (706 mm)


**Front Wheel Alignment**

<b>Toe-in</b>	<b>Range</b>	<b>Nominal</b>
Total toe-in	0.0 - 0.08 in (0 - 2 mm)	0.04 in (1 mm)

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**Front Wheel Turning Angle (full turn)**

In/Wheel Range	35.9° - 39.9° (35°55' - 39°55')
In/Wheel Nominal	38.9° (38°55')
Out/Wheel Nominal	30.7° (30°40')


**Camber**

Range	-1.33° to 0.17 (-1°20' to 0°10')
Nominal	-0.58° (-0°35')
Lt/Rt Difference	0.75° (0°45') or less

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**Caster**

Range	7.58° - 8.92° (7°35' - 8°55')
Nominal	8.17° (8°10')
Lt/Rt Difference	0.75° (0°45') or less

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**Kingpin Inclination**

Range	4.33° - 5.83° (4°20' - 5°50')
Nominal	5.08° (5°05')

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**Rear Wheel Alignment**

**Camber**

Range	-2.08° to -1.08° (-2°05' to -1°05')
Nominal	-1.58° (-1°35')

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**Total Toe-in**

	<b>Range</b>	<b>Nominal</b>
17 Inch Tire	0.008 - 0.071 in (0.2 - 1.8 mm)	0.039 in (1.0 mm)
18 Inch Tire	0.043 - 0.106 in (1.1 - 2.7 mm)	0.075 in (1.9 mm)

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**W/Lug Nut Torque**

73-93 ft-lb (10-12 kg-m)



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2003 350Z – Suspension

## **PRELIMINARY INSPECTION**

- Check tires for wear and proper inflation
- Check wheel runout
- Check front wheel bearings excessive play
- Check front suspension for excessive play
- Check steering linkage for excessive play
- Check struts for leakage and condition
- Check vehicle for proper ride height

### **Precautions**

1. When installing rubber parts, final tightening must be carried out under unladen conditions with the tires on the ground.
2. Recheck alignment after installing removed suspension components.



2003 350Z – Brakes

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To Confirm

Notes

## BRAKE SYSTEM

### Standard System

Brake Model Code	Front Disc Brake CLZ25VD	Rear Disc Brake AD14VE				
Brake Fluid	DOT 3 (Recommended)					
Master Cyl. Bore Dia.	1.0626 in (26.99 mm)					
Cylinder Bore Dia.	2.252 in (57.2 mm)	1.6874 in (42.86 mm)				
Brake Pad Dimensions						
Length	4.94 in (125.6 mm)	3.268 in (83.0 mm)				
Width	1.81 in (46.0 mm)	1.299 in (33.0 mm)				
Thickness	0.43 in (11.0 mm)	0.335 in (8.5 mm)				
Brake Pad Wear Limit						
Min. Thickness	0.079 in (2.0 mm)	0.079 in (2.0 mm)				
Brake Rotor Dimensions						
Outer Diameter	11.665 in (296.0 mm)	11.50 in (292.0 mm)				
Standard Thickness	0.945 in (24 mm)	0.63 in (16 mm)				
Brake Rotor Repair/Wear Limits						
Max. Runout	0.0014 in (0.035 mm)	0.0039 in (0.1 mm)				
Min. Thickness	0.886 in (22.0 mm)	0.55 in (14 mm)				
Max. Thk. Variation	0.0006 in (0.015 mm)	0.0006 in (0.015 mm)				

### Brembo System

Brake Model Code	Front Disc Brake OPB27VA	Rear Disc Brake OPB13VB				
Brake Fluid	DOT 3 (Recommended)					
Master Cyl. Bore Dia.	1.0626 in (26.99 mm)					
Cylinder Bore Dia.	1.50 in x 2 + 1.73 in x 2 (38 mm x 2 + 44 mm x 2)	1.575 in x 2 (40.0 mm x 2)				
Brake Pad Dimensions						
Length	4.61 in (117.1 mm)	3.016 in (76.6 mm)				
Width	2.098 in (53.3 mm)	1.77 in (45.0 mm)				
Thickness	0.366 in (9.3 mm)	0.358 in (9.1 mm)				
Brake Pad Wear Limit						
Min. Thickness	0.079 in (2.0 mm)	0.079 in (2.0 mm)				
Brake Rotor Dimensions						
Outer Diameter	12.76 in (324 mm)	13.07 in (332.0 mm)				
Standard Thickness	1.181 in (30.0 mm)	0.87 in (22.0 mm)				
Brake Rotor Repair/Wear Limits						
Max. Runout	0.0020 in (0.050 mm)	0.0028 in (0.07 mm)				
Min. Thickness	1.118 in (28.4 mm)	0.795 in (20.2 mm)				
Max. Thk. Variation	0.0006 in (0.015 mm)	0.0006 in (0.015 mm)				

**Brake Pedal Dimen.**

Height (from dash panel top surface)	M/T: 6.06 - 6.46 in (154 - 164 mm) A/T: 6.38 - 6.77 in (162 - 172 mm)	<input type="text"/>
Depressed Height	M/T: 3.54 in (90 mm) or more A/T: 3.74 in (95 mm) or more	<input type="text"/>
Pedal Free Play	0.12 - 0.43 in (3.0 - 11.0 mm)	<input type="text"/>
Switch Clearance	0.0291 - 0.0772 in (0.74 - 1.96 mm)	<input type="text"/>

**Brake Booster**

Input Rod Length	<b>Vacuum Type</b> 4.92 in (125 mm)	<input type="text"/>
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**Parking Drum Brake**

Inside Diameter	<b>DS17HG</b> 6.77 in (172 mm)	<input type="text"/>
Wear Limit Diameter	6.81 in (173 mm)	<input type="text"/>

**Brake Shoe Dimension**

Thickness	0.126 in (3.2 mm)	<input type="text"/>
Wear limit thickness	0.059 in (1.5 mm)	<input type="text"/>

**Parking Brake Control**

Number of Notches	6 - 7	<input type="text"/>
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**Wheel Lug Nut**

	73-93 ft-lb (10-12 kg-m)	
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2003 350Z – Brakes

## **PRECAUTIONS**

1. Never reuse drained brake fluid.
2. Be careful not to splash brake fluid on painted surfaces.
3. Use clean brake fluid to clean or wash master cylinder wheel cylinders, and disc brake calipers parts.
4. Mineral oils such as gasoline and kerosene should not be used. They can cause damage to rubber parts of the hydraulic system.
5. Use flare nut wrench when removing or installing brake line fittings.
6. Always torque brake lines.
7. Always replace brake pad shims when replacing brake pads.

### **Warning:**

Clean brake pads and shoes with a dust collector to minimize the hazard of airborne particles or other materials.



## 2003 350Z – Electrical

### ELECTRICAL

#### Wire Color Code

B = Black	BR = Brown
W = White	OR = Orange
R = Red	P = Pink
G = Green	PU = Purple
L = Blue	GY = Gray
Y = Yellow	SB = Sky Blue
LG = Light Green	CH = Dark Brown
DG = Dark Green	

When a wire color is striped, the base color is given first, followed by the stripe color. Example L/W = Blue with white stripe

#### Battery specification:

Type	80D23L
Capacity	12 V / 52 AH
Cold cranking current	582 A
Load test at 3 × AH for 15 seconds.	

#### Battery charging rates:

Amps	Time
50	1 hour
25	2 hours
10	5 hours
5	10 hours

Do not charge battery over 50 ampere rate.

Do not "quick charge" a fully discharged battery.

If battery electrolyte temperature rises above 140°F, stop charging.

#### Starter:

Type	S114-880 Hitachi Gear reduction type
No-load current	Less than 90 A
No-load RPM	More than 2,880

#### Alternator:

Type	A3TG0191 Mitsubishi
Nominal Rating	12 V / 110 A
Output current A/RPM	More Than 37 / 1,300
(with 13.5 V applied)	More Than 92 / 2,500 More Than 103 / 5,000
Regulated Output Voltage	14.1 - 14.7

## Oil Pressure Switch:

Oil pressure PSI	Engine Speed (rpm)
More Than 14	Idle
More Than 43	2000
More Than 57	6000

## Bulb Specifications:

### Exterior

Item	Wattage (12V)
Headlamp Low	35 (D2R) - XENON
High	55 (H7) - XENON
Low	55 (H7) - Halogen
High	55 (H1) - Halogen
Front Turn Signal	21 (amber)
Rear Turn Signal	21
Parking Lamp	5
Stop/Tail Lamp	21/5
Center Stop Lamp	LED
Back-up Lamp	21
License Plate Lamp	5

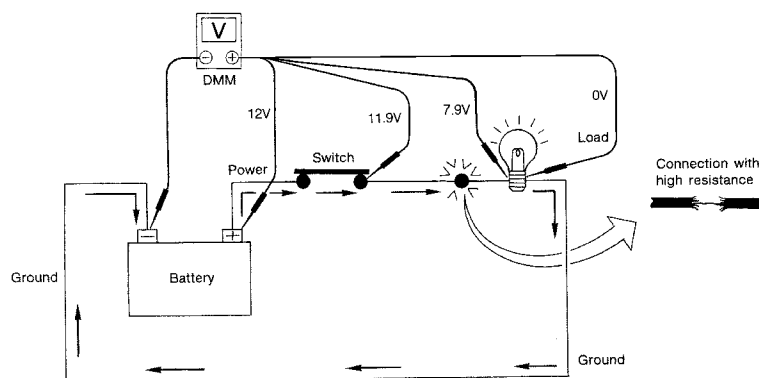
### Interior

Item	Wattage (12V)
Rear Floor Box Lamp	1.4
Ashtray Lamp	1.4
Spot Lamp	8
Luggage Room Lamp	5
Vanity Mirror Lamp	1.32

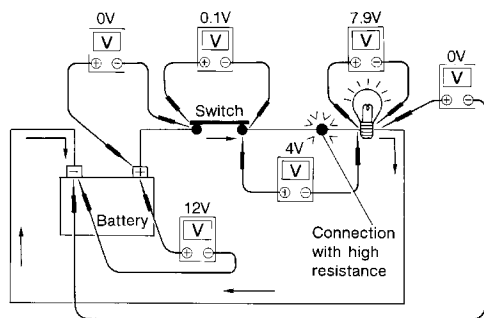
## How to perform voltage drop test: See Illustrations

Symptom: Dim bulb or no operation

0 (zero) ohm  
resistance  
between switch  
and bulb



AGI069



1. Connect the voltmeter as shown, starting at the battery and working your way around the circuit.
2. An unusually large voltage drop will indicate a component or wire that needs to be repaired. In the illustration, the poor connection causes a 4 volt drop.

The chart that follows illustrates some maximum allowable voltage drops. These values are given as a guideline, the exact value for each component may vary.

COMPONENT	VOLTAGE DROP
Wire	negligible <.001 volts
Ground Connections	Approx. 0.1 volts
Switch Contacts	Approx. 0.3 volts

AGI055





2003 350Z – Electrical

## BATTERY CONDITION

### Battery Sulphation:

A battery will be completely discharged if it is left unattended for a long time and the specific gravity becomes less than 1.100. This may result in sulphation on the cell plates. To determine if a battery has been sulfated, note its voltage and current when charging. If low current and higher voltage are observed in the initial stages of charging a sulfated battery is likely. A sulfated battery may sometimes be brought back into service by means of a long slow charge, 12 hours or more.

### Checking Battery Specific Gravity With Hydrometer

Hydrometer temperature correction

Battery electrolyte temp. °C (°F)	Add to specific gravity reading
71 (160)	0.032
66 (150)	0.028
60 (140)	0.024
54 (129)	0.020
49 (120)	0.016
43 (110)	0.012
38 (100)	0.008
32 (90)	0.004
27 (80)	0
21 (70)	-0.004
16 (60)	-0.008
10 (50)	-0.012
4 (39)	-0.016
-1 (30)	-0.020
-7 (20)	-0.024
-12 (10)	-0.028
-18 (0)	-0.032

Corrected specific gravity	Approximate charge condition
1.260 - 1.280	Fully charged
1.230 - 1.250	3/4 charged
1.200 - 1.220	1/2 charged
1.170 - 1.190	1/4 charged
1.140 - 1.160	Almost discharged

- Do not quick charge a fully discharged battery.
- After charging, if the specific gravity of any two cells varies more than .050, the battery should be replaced.