GENERAL INFORMATION Trouble Shooting - Basic Procedures

#### **GENERAL INFORMATION**

**Trouble Shooting - Basic Procedures** 

\* PLEASE READ THIS FIRST \*

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### **ACCESSORIES & ELECTRICAL**

CHARGING SYSTEM TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC CHARGING SYSTEM TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Vehicle Will Not Start	

Dood bottomy	Charle bottome calls
Dead battery	Check battery cells, alternator belt tension
To a constant of the standard	and alternator output
Loose or corroded battery connections	Check all charging
	system connections
Ignition circuit or switch malfunction	Check and replace as
	necessary
Alternator Light Stays On With Engine Running	
Loose or worn alternator drive belt	Check alternator drive
	tension and condition,
	See Belt Adjustment in
	TUNE-UP article in the
	TUNE-UP section
Loose alternator wiring connections	Check all charging
	system connections
Short in alternator light wiring	See Indicator Warning
	Lights in STANDARD
	INSTRUMENTS in the
	ACCESSORIES &
	EQUIPMENT section
Defective alternator stator or diodes	See Bench Tests in
	ALTERNATOR article
Defective regulator	See Regulator Check in
	ALTERNATOR article
Alternator Light Stays Off With Ignition Switch O	
Blown fuse	See WIRING
Biowii ruse	DIAGRAMS
Defective alternator	See Testing in
Defective afternator	ALTERNATOR article
Defective indicator light bulb or socket	See Indicator Warning
Defective indicator right build of socket	Lights in STANDARD
	INSTRUMENTS in the
	ACCESSORIES &
	EQUIPMENT section
	LQUII MILITI SCCIOII

Alternator Light Stays OFF With Ignition Switch Of Short in alternator wiring	See On-Vehicle Tests
	in ALTERNATOR
	article
Defective rectifier bridge	See Bench Tests in
	ALTERNATOR article
Lights or Fuses Burn Out Frequently	
Defective alternator wiring	See On-Vehicle Tests
	in ALTERNATOR
	article
Defective regulator	See Regulator Check in
	ALTERNATOR article
Defective battery	Check and replace as
	necessary
Ammeter Gauge Shows Discharge	
Loose or worn drive belt	Check alternator drive
	belt tension and
	condition. See Belt
	Adjustment in TUNE-
	UP article in the
	TUNE-UP section
Defective wiring	Check all wires and
	wire connections
Defective alternator or regulator	See Bench Tests and
	On-Vehicle Tests in
	ALTERNATOR article
Defective ammeter, or improper ammeter wiring	See Testing in
connection	STANDARD
	INSTRUMENTS in the
	ACCESSORIES &
	EQUIPMENT section
Noisy Alternator	
Loose drive pulley	Tighten drive pulley
	attaching nut

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Loose mounting bolts	Tighten all alternator
	mounting bolts
Worn or dirty bearings	See Bearing
	Replacement
	ALTERNATOR article
Defective diodes or stator	See Bench Test in
	ALTERNATOR article
Battery Does Stay Charged	
Loose or worn drive belt	Check alternator drive
	belt tension and
	condition. See Belt
	Adjustment in
	appropriate TUNE-UP
	article in the TUNE-UP
	section
Loose or corroded battery connections	Check all charging
	system connections
Loose alternator connections	Check all charging
	system connections
Defective alternator or battery	See On-Vehicle Tests
·	and Bench Tests in
	ALTERNATOR article
Add-on electrical accessories exceeding	Install larger alternator
alternator capacity	_
Battery Overcharged-Uses Too Much Water	
Defective battery	Check alternator output
	and repair as necessary
Defective alternator	See On-Vehicle Test
	and Bench Tests in
	ALTERNATOR article
Excessive alternator voltage	Check alternator output
	and repair as necessary

### IGNITION SYSTEM TROUBLE SHOOTING

GENERAL INFORMATION Trouble Shooting - Basic Procedures

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

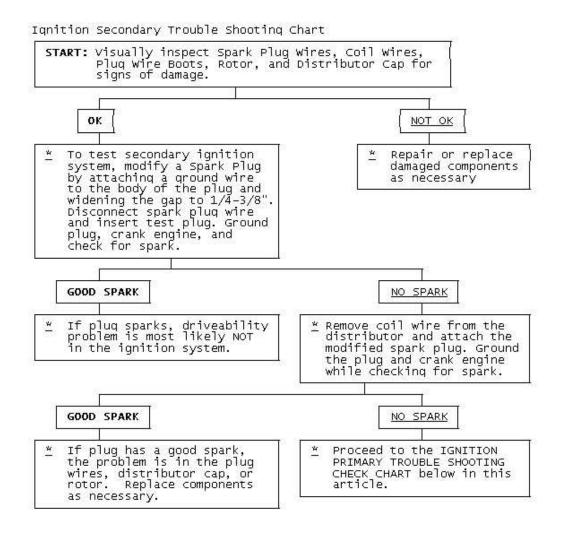
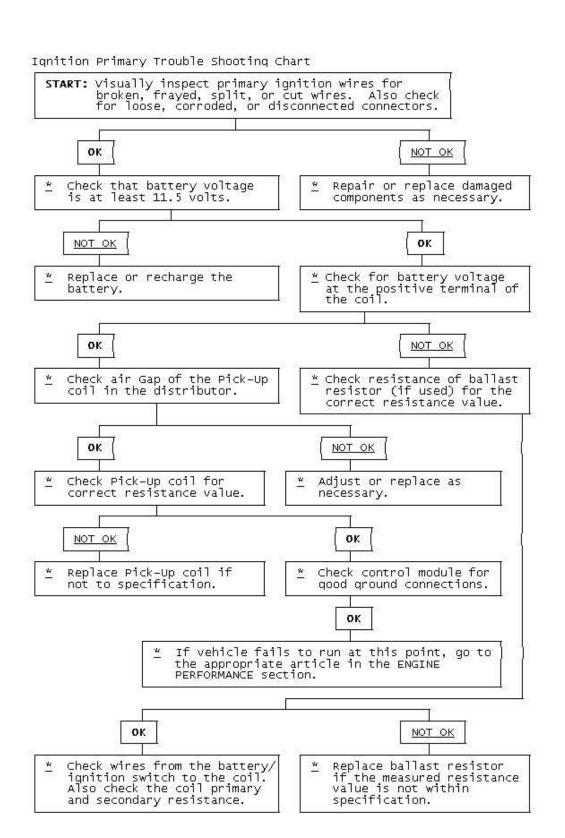


Fig. 1: Ignition Secondary Trouble Shooting Chart



GENERAL INFORMATION Trouble Shooting - Basic Procedures

## Fig. 2: Ignition Primary Trouble Shooting Chart

#### STARTER TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC STARTER TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION	
Starter Fails to Operate		
Dead battery or bad connections between starter	Check battery charge	
and battery	and all wires and	
	connections to starter	
Ignition switch faulty or misadjusted	Adjust or replace	
	ignition switch	
Open circuit between starter switch ignition	Check and repair wires	
terminal on starter relay	and connections as	
	necessary	
Starter relay or starter defective	See Testing in	
	STARTER article	
Open solenoid pull-in wire	Testing in STARTER	
	article	
Starter Does Not Operate and Headlights Dim		
Weak battery or dead cell	Charge or replace	
	battery as necessary	
Loose or corroded battery connections	Check that battery	
	connections are clean	
	and tight	
Internal ground in starter windings	See Testing in	
	STARTER article	

Grounded starter fields	See Testing in STARTERS
Armature rubbing on pole	See STARTER article shoes
Starter Turns but Engine Does Not Rotate	
Starter clutch slipping	See STARTER article
Broken clutch housing	See STARTER article
Pinion shaft rusted or dry	See STARTER article
Engine basic timing incorrect	See Ignition Timing in TUNE-UP article
Broken teeth on engine flywheel	Replace flywheel and check for starter pinion gear damage
Starter Will Not Crank Engine	
Faulty overrunning clutch	See STARTER article
Broken clutch housing	See STARTER article
Broken flywheel teeth	Replace flywheel and check for starter pinion gear damage
Armature shaft sheared or reduction gear teeth stripped	See STARTER article
Weak battery	Charge or replace battery as necessary
Faulty solenoid	See On-Vehicle Tests in STARTER article
Poor grounds	Check all ground connections for tight and clean connections
Ignition switch faulty or misadjusted	Adjust or replace ignition switch as necessary
Starter Cranks Engine Slowly	
Battery weak or defective	Charge or replace

	battery as necessary
Engine overheated	See ENGINE
	COOLING SYSTEM
	article
Engine oil too heavy	Check that proper
	viscosity oil is used
Poor battery-to-starter connections	Check that all between
	battery and starter are
	clean and tight
Current draw too low or too high	See Bench Tests in
	STARTER article
Bent armature, loose pole shoes screws or worn bearing	See STARTER article
Burned solenoid contacts	Replace solenoid
Faulty starter	Replace starter
Starter Engages Engine Only Momentarily	
Engine timing too far advanced	See Ignition Timing in
	TUNE-UP article
Overrunning clutch not engaging properly	Replace overrunning
	clutch. See STARTER
	article
Broken starter clutch	See STARTER article
Broken teeth on engine flywheel	Replace flywheel and
	check starter pinion
	gear for damage
Weak drive assembly thrust spring	See STARTER article
Weak hold-in coil	See Bench Tests in
	STARTER article
Starter Drive Will Not Engage	
Defective point assembly	See Testing in
	STARTER article
Poor point assembly ground	See Testing in
	STARTER article

Defective pull-in coil	Replace starter solenoid	
Starter Relay Does Not Close	Sololioid	
Dead battery	Charge or replace battery as necessary	
Faulty wiring	Check all wiring and connections leading to relay	
Neutral safety switch faulty	Replace neutral safety switch	
Starter relay faulty	Replace starter relay	
Starter Drive Will Not Disengage		
Starter motor loose on mountings	Tighten starter attach bolts	
Worn drive end bushing	See STARTER article	
Damaged engine flywheel teeth	Replace flywheel and starter pinion gear for damage	
Drive yolk return spring broken or missing	Replace return spring	
Faulty ignition switch	Replace ignition switch	
Insufficient clearance between winding leads to solenoid terminal and main contact in solenoid	Replace starter solenoid	
Starter clutch not disengaging	Replace starter clutch	
Ignition starter switch	Replace ignition switch contacts sticking	
Starter Relay Operates but Solenoid Does Not		
Faulty solenoid switch, switch connections or relay	Check all wiring between relay and solenoid or replace relay or solenoid as necessary	
Broken lead or loose soldered connections	Repair wire or wire connections as	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	necessary	
Solenoid Plunger Vibrates When Switch is Engaged		
Weak battery	Charge or replace	
	battery as necessary	
Solenoid contacts corroded	Clean contacts or	
	replace solenoid	
Faulty wiring	Check all wiring	
	leading to solenoid	
Broken connections inside switch cover	Repair connections or	
	replace solenoid	
Open hold-in wire	solenoid	
Low Current Draw		
Worn brushes or weak brush springs	Replace brushes or	
	brush springs as	
	necessary	
High Pitched Whine During Cranking Before Engine and Cranks Normally	Fires but Engine Fires	
Distance too great between starter pinion and	Align starter or check	
flywheel	that correct starter and	
	flywheel are being	
	used	
High Pitched Whine After Engine Fires With Key released. Engine Fires and Cranks Normally		
Distance too small between starter pinion and	Flywheel runout	
flywheel	contributes to the	
	intermittent nature	

### **AIR CONDITIONING & HEAT**

AIR CONDITIONING TROUBLE SHOOTING

WARNING: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC AIR CONDITIONING TROUBLE SHOOTING CHART

CONDITION	POSSIBLE CAUSE
Compressor Not Working	Compressor clutch circuit open.
	Compressor clutch coil inoperative.
	Poor clutch ground connection.
	Fan belts loose.
	Thermostatic switch inoperative.
	Thermostatic switch not adjusted.
	Ambient temperature switch open.
	Superheat fuse blown.
Excessive Noise or	Missing or loose mounting bolts.
Vibration	
	Bad idler pulley bearings.
	Fan belts not tightened correctly.
	Compressor clutch contacting body.
	Excessive system pressure.
	Compressor oil level low.
	Damaged clutch bearings.
	Damaged reed valves.
	Damaged compressor.
Insufficient or No	Expansion valve inoperative.
Cooling; Compressor	
Working	
	Heater control valve stuck open.
	Low system pressure.
	Blocked condenser fins.

GENERAL INFORMATION Trouble Shooting - Basic Procedures

<b></b>	Blocked evaporator fins.
	Vacuum system leak.
	Vacuum motors inoperative.
	Control cables improperly adjusted.
	Restricted air inlet.
	Mode doors binding.
	Blower motor inoperative.
	Temperature above system capacity.

#### HEATER SYSTEM TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC HEATER SYSTEM TROUBLE SHOOTING CHART

CONDITION	POSSIBLE CAUSE
Insufficient, Erratic, or No	Low Coolant Level
Heat	
	Incorrect thermostat.
	Restricted coolant flow through core.
	Heater hoses plugged.
	Misadjusted control cable.
	Sticking heater control valve.
	Vacuum hose leaking.
	Vacuum hose blocked.
	Vacuum motors inoperative.
	Blocked air inlet.
	Inoperative heater blower motor.
	-

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	Oil residue on heater core fins.
	Dirt on heater core fins.
Too Much Heat	Improperly adjusted cables.
	Sticking heater control valve.
	No vacuum to heater control valve.
	Temperature door stuck open.
Air Flow Changes During Acceleration	Vacuum system leak.
	Bad check valve or reservoir.
Air From Defroster At All	Vacuum system leak.
Times	
	Improperly adjusted control cables.
	Inoperative vacuum motor.
Blower Does Not Operate	Blown fuse.
Correctly	
	Blower motor windings open.
	Resistors burned out.
	Motor ground connection loose.
	Wiring harness connections loose.
	Blower motor switch inoperative.
	Blower relay inoperative.
	Fan binding or foreign object in housing.
	Fan blades broken or bent.

### **BRAKES**

#### **BRAKE SYSTEM TROUBLE SHOOTING**

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles

GENERAL INFORMATION Trouble Shooting - Basic Procedures

# available in the section(s) you are accessing.

# BRAKE SYSTEM TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION	
Brakes Pull Left or Right		
Incorrect tire pressure	Inflate tires to proper	
	pressure	
Front end out of alignment	See WHEEL	
	ALIGNMENT	
Mismatched tires	Check tires sizes	
Restricted brake lines or hoses	Check hose routing	
Loose or malfunctioning caliper	See DISC BRAKES or	
	BRAKE SYSTEM	
Bent shoe or oily linings	See DRUM BRAKES	
	or BRAKE SYSTEM	
Malfunctioning rear brakes	See DRUM, DISC	
	BRAKES or BRAKE	
	SYSTEM	
Loose suspension parts	See SUSPENSION	
Noises Without Brakes Applied		
Front linings worn out	Replace linings	
Dust or oil on drums or rotors	See DRUM, DISC	
	BRAKES or BRAKE	
	SYSTEM	
Noises With Brakes Applied		
Insulator on outboard shoe damaged	See DISC BRAKES or	
	BRAKE SYSTEM	
Incorrect pads or linings	Replace pads or	
	linings	
Brake Rough, Chatters or Pulsates		
Excessive lateral runout	Check rotor runout	
Parallelism not to specifications	Reface or replace rotor	
Wheel bearings not adjusted	See SUSPENSION	

Rear drums out-of-round	Reface or replace
	drums
Disc pad reversed, steel against rotor	Remove and reinstall
	pad
Excessive Pedal Effort	
Malfunctioning power unit	See POWER
	BRAKES or BRAKE
	SYSTEM
Partial system failure	Check fluid and pipes
Worn disc pad or lining	Replace pad or lining
Caliper piston stuck or sluggish	See DISC BRAKES or
	BRAKE SYSTEM
Master cylinder piston stuck	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Brake fade due to incorrect pads for linings	Replace pads or
	linings
Linings or pads glazed	Replace pads or
	linings
Worn drums	Reface or replace
	drums
Excessive Pedal Travel	
Partial brake system failure	Check fluid and pipes
Insufficient fluid in master cylinder	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Air trapped in system	See BRAKE
	BLEEDING or
	BRAKE SYSTEM
Rear brakes not adjusted	See Adjustments in
	DRUM BRAKES or
	BRAKE SYSTEM
Bent shoe or lining	See DRUM BRAKES

	or BRAKE SYSTEM
Plugged master cylinder cap	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Improper brake fluid	Replace brake fluid
Pedal Travel Decreasing	
Compensating port plugged	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Swollen cup in master cylinder	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Master cylinder piston not returning	See MASTER
	CYLINDERS or
	BRAKE SYSTEM
Weak shoe retracting springs	See DRUM BRAKES
	BRAKE SYSTEM
Wheel cylinder piston sticking	See DRUM BRAKES
	or BRAKE SYSTEM
Dragging Brakes	
Master cylinder pistons not returning	See MASTER
	CYLINDERS BRAKE
	SYSTEM
Restricted brake lines or hoses	Check line routing
Incorrect parking brake adjustment	See DRUM BRAKES
	BRAKE SYSTEM
Parking Brake cables frozen	See DRUM BRAKES
	BRAKE SYSTEM
Incorrect installation of inboard disc pad	Remove and replace
	correctly
Power booster output rod too long	See POWER BRAKE
	UNITS BRAKE
	SYSTEM
1	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Brake pedal not returning freely	See DISC, DRUM
Brane pedar not returning neery	BRAKES BRAKE
	SYSTEM
Brakes Grab or Uneven Braking Action	
Malfunction of combination valve	See CONTROL
	VALVE or BRAKE
	SYSTEM
Malfunction of power brake unit	See POWER BRAKE
	UNITS or BRAKE
	SYSTEM
Binding brake pedal	See DISC, DRUM
	BRAKES or BRAKE
	SYSTEM
Pulsation or Roughness	
Uneven pad wear caused by caliper	See DISC BRAKES or
	BRAKE SYSTEM
Uneven rotor wear	See DISC BRAKES or
	BRAKE SYSTEM
Drums out-of-round	Reface or replace
	drums

## **ENGINE MECHANICAL**

COOLING SYSTEM TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## COOLING SYSTEM TROUBLE SHOOTING

CONDITION & POSSIBLE CAUSE	CORRECTION
----------------------------	------------

Coolant Leak	Fill/Pressure Tes
Coolant Leak	System
A/C Condenser Fins Clogged	Remove/Clear
20	Condense
Radiator Fins Clogged	Remove/Clear
	Radiato
Thermostat Stuck Closed	Replace Thermosta
Clogged Cooling System Passages	Clean/Flush Cooling
	System
Water Pump Malfunction	Replace Water Pump
Fan Clutch Malfunction	Replace Fan Clutch
Retarded Ignition Timing	Reset Ignition Timing
Cooling Fan Malfunction	Test Cooling
	Fan/Circui
Cooling Fan Motor Malfunction	Test Fan Motor
Cooling Fan Relay Malfunction	Test Fan Relay
Faulty Radiator Cap	Replace Radiator Cap
Broken/Slipping Fan Belt	Replace Fan Bel
Restricted Exhaust	Repair Exhaus
	System
Corrosion	
Impurities In Coolant	Clean/Flush System
Coolant Leakage	
Damaged hose	Replace Hose
Leaky Water Pump	Replace Water Pump
Damaged Radiator Seam	Replace/Repair
	Radiato
Leaky Thermostat Cover	Replace Thermosta
	Cove
Cylinder Head Problem	Check Head/Head
	Gaske

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Leaky Freeze Plugs	Replace Freeze Plugs
Recovery System Inoperative	
Loose and/or Defective Radiator Cap	Replace Radiator Cap
Overflow Tube Clogged and/or Leaking	Repair Tube
Recovery Bottle Vent Restricted	Clean Vent
No Heater Core Flow	
Collapsed Heater Hose	Replace Heater Hose
Plugged Heater Core	Clean/Replace Heater
	Core
Faulty Heater Valve	Replace Heater Valve

#### GASOLINE ENGINE - MECHANICAL TROUBLE SHOOTING

#### NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

# BASIC GASOLINE ENGINE - MECHANICAL TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Lopes At Idle	
Intake manifold-to-head leaks	Replace manifold gasket, See ENGINES
Blown head gasket	Replace head gasket, See ENGINES
Worn timing gears, chain or sprocket	Replace gears, chain or sprocket
Worn camshaft lobes	Replace camshaft, See ENGINES
Overheated engine	Check cooling system,

	See COOLING
Blocked crankcase vent valve	Remove restriction
Leaking EGR valve	Repair leak and/or
	replace valve
Faulty fuel pump	Replace fuel pump
Engine Has Low Power	
Leaking fuel pump	Repair leak and/or
	replace fuel pump
Excessive piston-to-bore clearance	Install larger pistons,
	See ENGINES
Sticking valves or weak valve springs	Check valve train
	components, See
	ENGINES
Incorrect valve timing	Reset valve timing,
XX 1 C 1 1	See ENGINES
Worn camshaft lobes	Replace camshaft, See ENGINES
Dlaren had accleat	
Blown head gasket	Replace head gasket. See ENGINES.
Clutch slipping	Adjust pedal and/or
Clutch shipping	replace components,
	See ENGINES
Engine overheating	Check cooling system,
	See COOLING
Auto. Trans. pressure regulator valve faulty	Replace pressure
	regulator valve
Auto. Trans. fluid level too low	Add fluid as necessary
Improper vacuum diverter valve operation	Replace vacuum
	diverter valve
Vacuum leaks	Inspect vacuum
	system and repair as
	required
Leaking piston rings	Replace piston rings,

	See ENGINES
Faulty High Speed Operation	
Low fuel pump volume	Replace fuel pump
Leaking valves or worn	Replace valves and/or
	springs, See
	ENGINES
Incorrect valve timing	Reset valve timing,See
	ENGINES
Intake manifold restricted	Remove restriction
Worn distributor shaft	Replace distributor
Faulty Acceleration	
Improper fuel pump stroke	Remove pump and
	reset pump stroke
Incorrect ignition timing	Reset ignition timing,
	See TUNE-UP
Leaking valves	Replace valves, See
	ENGINES
Worn fuel pump diaphragm or piston	Replace diaphragm or
	piston
Intake Backfire	
Improper ignition timing	Reset ignition timing,
	See TUNE-UP
Faulty accelerator pump discharge	Replace accelerator
	pump
Improper choke operation	Check choke and
	adjust as required
Defective EGR valve	Replace EGR valve
Fuel mixture too lean	Reset air/fuel mixture,
	See TUNE-UP
Choke valve initial clearance too large	Reset choke valve
F 1 D . 1.6	initial clearance
Exhaust Backfire	
Vacuum leak	Inspect and repair

	vacuum system
Faulty vacuum diverter valve	Replace vacuum
	diverter valve
Faulty choke operation	Check choke and
	adjust as required
Exhaust system leak	repair exhaust system
	leak
Engine Detonation	
Ignition timing too far advanced	Reset ignition timing, See TUNE-UP
Faulty ignition system	Check ignition timing, See TUNE-UP
Spark plugs loose or faulty	Retighten or replace plugs
Fuel delivery system clogged	Inspect lines, pump and filter for clog
EGR valve inoperative	Replace EGR valve
PCV system inoperative	Inspect and/or replace
•	hoses or valve
Vacuum leaks	Check vacuum system
	and repair leaks
Excessive combustion chamber deposits	Remove built-up deposits
Leaking, sticking or broken valves	Inspect and/or replace valves
External Oil Leakage	
Fuel pump improperly seated or worn gasket	Remove pump,
	replace gasket and seat
	properly
Oil pan gasket broken or pan bent	Straighten pan and
_ <del>-</del>	replace gasket
Timing chain cover gasket broken	Replace timing chain
	cover gasket

Rear main oil seal worn	Replace rear main oil
	seal
Oil pan drain plug not seated properly	Remove and reinstall
	drain plug
Camshaft bearing drain hole blocked	Remove restriction
Oil pressure sending switch leaking	Remove and reinstall
	sending switch
Excessive Oil Consumption	
Worn valve stems or guides	Replace stems or
	guides, See ENGINES
Valve "O" ring seals damaged	Replace "O" ring
	seals, See ENGINES
Plugged oil drain back holes	Remove restrictions
Improper PCV valve operation	Replace PCV valve
Engine oil level too high	Remove excess oil
Engine oil too thin	Replace thicker oil
Valve stem oil deflectors damaged	Replace oil deflectors
Incorrect piston rings	Replace piston rings,
	See ENGINES
Piston ring gaps not staggered	Reinstall piston rings,
	See ENGINES
Insufficient piston ring tension	Replace rings, See
	ENGINES
Piston ring grooves or oil return	slots clogged Replace
	piston rings, See
	ENGINES
Piston rings sticking in grooves	Replace piston rings,
	See ENGINES
Piston ring grooves excessively worn	Replace piston and
	rings, See ENGINES
Compression rings installed upside down	Replace compression
	rings correctly, See
	ENGINES

Rebore cylinders or replace block
Replace oil ring expander and rail, See ENGINES
Replace intake gasket dowels
Replace main or connecting rod bearings, See ENGINES
·
Add oil to proper level
Replace sender or gauge
Remove and overhaul oil pump, See ENGINES
Remove and reinstall valve
Overhaul oil pump, See ENGINES
Remove restriction
Tighten oil inlet tube
Replace camshaft bearings, See ENGINES
Replace block or cylinder head
Add oil to proper level
Remove and replace with thicker oil

Excessive oil pump clearance	Reduce oil pump clearance, See ENGINES	
Oil pickup tube or screen blocked	Remove restrictions	
Main, rod or cam bearing clearance excessive	Replace bearing to reduce clearance, See ENGINES	
High Oil Pressure		
Improper grade of oil	Replace with proper oil	
Oil pressure relief valve stuck closed	Eliminate binding	
Oil pressure sender or gauge faulty	Replace sender or gauge	
Noisy Main Bearings		
Inadequate oil supply	Check oil delivery to main bearings	
Excessive main bearing clearance	Replace main bearings, See ENGINES	
Excessive crankshaft end play	Replace crankshaft, See ENGINES	
Loose flywheel or torque converter	Tighten attaching bolts	
Loose or damaged vibration damper	Tighten or replace vibration damper	
Crankshaft journals out-of-round	Re-grind crankshaft journals	
Excessive belt tension	Loosen belt tension	
Noisy Connecting Rods		
Excessive bearing clearance or missing bearing	Replace bearing, See ENGINES	
Crankshaft rod journal out-of-round	Re-grind crankshaft journal	
Misaligned connecting rod or cap	Remove rod or cap	

	and realign
Incorrectly tightened rod bolts	Remove and re-tighten
	rod bolts
Noisy Pistons and Rings	
Excessive piston-to-bore clearance	Install larger pistons,
	See ENGINES
Bore tapered or out-of-round	Rebore block
Piston ring broken	Replace piston rings,
	See ENGINES
Piston pin loose or seized	Replace piston pin,
	See ENGINES
Connecting rods misaligned	Realign connecting
	rods
Ring side clearance too loose or tight	Replace with larger or
	smaller rings
Carbon build-up on piston	Remove carbon
Noisy Valve Train	
Worn or bent push rods	Replace push rods,
	See ENGINES
Worn rocker arms or bridged pivots	Replace push rods,
	See ENGINES
Dirt or chips in valve lifters	Remove lifters and
	remove dirt/chips
Excessive valve lifter leak-down	Replace valve lifters,
	See ENGINES
Valve lifter face worn	Replace valve lifters,
	See ENGINES
Broken or cocked valve springs	Replace or reposition
	springs
Too much valve stem-to-guide clearance	Replace valve guides,
	See ENGINES
Valve bent	Replace valve, See
	ENGINES
	l

Loose rocker arms	Retighten rocker arms, See ENGINES
Excessive valve seat run-out	Reface valve seats, See ENGINES
Missing valve lock	Install new valve lock
Excessively worn camshaft lobes	Replace camshaft, See ENGINES
Plugged valve lifter oil holes	Eliminate restriction or replace lifter
Faulty valve lifter check ball	Replace lifter check ball, See ENGINES
Rocker arm nut installed upside down	Remove and reinstall correctly
Valve lifter incorrect for engine	Remove and replace valve lifters
Faulty push rod seat or lifter plunger	Replace plunger or push rod
Noisy Valves	
Improper valve lash	Re-adjust valve lash, See ENGINES
Worn or dirty valve lifters	Clean and/or replace lifters
Worn valve guides	Replace valve guides, See ENGINES
Excessive valve seat or face run-out	Reface seats or valve face
Worn camshaft lobes	Replace camshaft, See ENGINES
Loose rocker arm studs	Re-tighten rocker arm studs, See ENGINES
Bent push rods	Replace push rods, See ENGINES
Broken valve springs	Replace valve springs,

	See ENGINES
Burned, Sticking or Broken Valves	
Weak valve springs or warped valves	Replace valves and/or
	springs, See
	ENGINES
Improper lifter clearance	Re-adjust clearance or
	replace lifters
Worn guides or improper guide clearance	Replace valve guides, See ENGINES
Out-of-round valve seats or improper seat width	Re-grind valve seats
Gum deposits on valve stems, seats or guide	Remove deposits
Improper spark timing	Re-adjust spark timing
Broken Pistons/Rings	, , ,
Undersize pistons	Replace with larger
	pistons, See
	ENGINES
Wrong piston rings	Replace with correct
	rings, See ENGINES
Out-of-round cylinder bore	Re-bore cylinder bore
Improper connecting rod alignment	Remove and realign
	connecting rods
Excessively worn ring grooves	Replace pistons, See
	ENGINES
Improperly assembled piston pins	Re-assemble pin-to-
	piston, See ENGINES
Insufficient ring gap clearance	Install new rings, See
	ENGINES
Engine overheating	Check cooling system
Incorrect ignition timing	Re-adjust ignition
	timing, See TUNE-UP
Excessive Exhaust Noise	
Leaks at manifold to head, or to pipe	Replace manifold or
	pipe gasket

2007	Chr	/sler	Sebring	
------	-----	-------	---------	--

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Exhaust manifold cracked or broken	Replace exhaust
	manifold, See
	ENGINES

#### ENGINE PERFORMANCE

#### **CARBURETOR TROUBLE SHOOTING:**

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC COLD START SYMPTOMS TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Won't Start	
Choke not closing	Check choke
	operation, see FUEL
	SYSTEMS
Choke linkage bent	Check linkage, see
	FUEL SYSTEM
Engine Starts, Then Dies	
Choke vacuum kick setting too wide	Check setting and
	adjust see, FUEL
	SYSTEMS
Fast idle RPM too low	Reset RPM to
	specification, see
	TUNE-UP
Fast idle cam index incorrect	Reset fast idle cam
	index, see FUEL
	SYSTEMS
Vacuum leak	Inspect vacuum system

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	for leaks	
Low fuel pump outlet	Repair or replace	
	pump, see FUEL	
	SYSTEMS	
Low carburetor fuel level	Check float setting see	
	FUEL SYSTEM	
Engine Quits Under Load		
Choke vacuum kick setting incorrect	Reset vacuum kick	
	setting,see FUEL	
	SYSTEMS	
Fast idle cam index incorrect	Reset fast idle cam	
	index, see FUEL	
	SYSTEM	
Incorrect hot fast idle speed RPM	Reset fast idle RPM,	
	see TUNE-UP	
Engine Starts, Runs Up, Then Idles, Slowly With Black Smoke		
Choke vacuum kick set too narrow	Reset vacuum kick,	
	see FUEL SYSTEMS	
Fast idle cam index incorrect	Reset fast idle cam	
	index, see FUEL	
	SYSTEMS	
Hot fast idle RPM too low	Reset fast idle RPM,	
	see TUNE-UP	

## BASIC HOT START SYMPTOMS TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Won't Start	
Engine flooded	Allow fuel to
	evaporate

# BASIC COLD ENGINE DRIVEABILITY SYMPTOMS TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Stalls in Gear	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Choke vacuum kick setting incorrect	Reset choke vacuum kick, see FUEL
	SYSTEMS
Fast idle RPM incorrect	Reset fast idle RPM, see TUNE-UP
Fast idle cam index incorrect	Reset fast idle cam see FUEL SYSTEMS
Acceleration Sag or Stall	,
Defective choke control switch	Replace choke control switch
Choke vacuum kick setting incorrect	Reset choke vacuum kick see, FUEL SYSTEMS
Float level incorrect (too low)	Adjust float level, FUEL SYSTEMS
Accelerator pump defective	Repair or replace pump see FUEL SYSTEMS
Secondary throttles not closed	Inspect lockout adjustment, see FUEL SYSTEMS
Sag or Stall After Warmup	
Defective choke control switch	Replace choke control switch, see FUEL SYSTEMS
Defective accelerator pump	Replace pump, see FUEL SYSTEMS
Float level incorrect (too low)	Adjust float level, see FUEL SYSTEMS
Backfiring & Black Smoke	
Plugged heat crossover system	Remove restriction

# BASIC WARM ENGINE DRIVEABILITY SYMPTOMS TROUBLE SHOOTING CHART

GENERAL INFORMATION Trouble Shooting - Basic Procedures

CONDITION & POSSIBLE CAUSE	CORRECTION	
Hesitation With Small Amount of Gas Pedal Movement		
Vacuum leak	Inspect vacuum lines	
Accelerator pump weak or inoperable	Replace pump, see FUEL SYSTEMS	
Float level setting too low	Reset float level, see,FUEL SYSTEMS	
Metering rods sticking or binding	Inspect and/or replace rods, see FUEL SYSTEMS	
Carburetor idle or transfer system plugged	Inspect system and remove restriction	
Frozen or binding heated air inlet	Inspect heated air door for binding	
Hesitation With Heavy Gas Pedal Movement		
Defective accelerator pump	Replace pump, see FUEL SYSTEMS	
Metering rod carrier sticking or binding	Remove restriction	
Large vacuum leak	Inspect vacuum system and repair leak	
Float level setting too low	Reset float level, see FUEL SYSTEMS	
Defective fuel pump, lines or filter	Inspect pump, lines and filter	
Air door setting incorrect	Adjust air door setting, see FUEL	

#### DIESEL ENGINE TROUBLE SHOOTING

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to

problem symptoms. For model-specific Trouble Shooting,

GENERAL INFORMATION Trouble Shooting - Basic Procedures

refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

NOTE:

Diesel engines mechanical diagnosis is the same as gasoline engines for items such as noisy valves, bearings, pistons, etc. The following trouble shooting covers only items pertaining to diesel engines.

## BASIC DIESEL ENGINE TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Won't Crank	
Bad battery connections or dead batteries	Check connections
	and/or replace batteries
Bad starter connections or bad starter	Check connections
	and/or replace starter
Engine Cranks Slowly, Won't Start	
Bad battery connections or dead batteries	Check connections
	and/or replace batteries
Engine oil too heavy	Replace engine oil
Engine Cranks Normally, But Will Not Start	
Glow plugs not functioning	Check glow plug
	system, see FUEL
	SYSTEMS
Glow plug control not functioning	Check controller, see
	FUEL SYSTEMS
Fuel not injected into cylinders	Check fuel injectors,
	see FUEL SYSTEMS
No fuel to injection pump	Check fuel delivery
	system
Fuel filter blocked	Replace fuel filter
Fuel tank filter blocked	Replace fuel tank filter
Fuel pump not operating	Check pump operation
	and/or replace pump

Fuel return system blocked	Inspect system and
r der retarir system brocked	remove restriction
No voltage to fuel solenoid	Check solenoid and
	connections
Incorrect or contaminated fuel	Replace fuel
Incorrect injection pump timing	Re-adjust pump
	timing, see FUEL
	SYSTEMS
Low compression	Check valves, pistons,
	rings, see ENGINES
Injection pump malfunction	Inspect and/or replace
	injection pump
Engine Starts, Won't Idle	
Incorrect slow idle adjustment	Reset idle adjustment,
	see TUNE-UP
Fast idle solenoid malfunctioning	Check solenoid and
	connections
Fuel return system blocked	Check system and
	remove restrictions
Glow plugs go off too soon	See glow plug
	diagnosis in FUEL
	SYSTEMS
Injection pump timing incorrect	Reset pump timing, see
	FUEL SYSTEMS
No fuel to injection pump	Check fuel delivery
	system
Incorrect or contaminated fuel	Replace fuel
Low compression	Check valves, piston,
	rings, see ENGINES
Injection pump malfunction	Replace injection
	pump, see FUEL
	SYSTEMS
Fuel solenoid closes in RUN position	Check solenoid and

	connections	
Engines Starts/Idles Rough W/out Smoke or Noise		
Incorrect slow idle adjustment	Reset slow idle, see TUNE-UP	
Injection line fuel leaks	Check lines and connections	
Fuel return system blocked	Check lines and connections	
Air in fuel system	Bleed air from system	
Incorrect or contaminated fuel	Replace fuel	
Injector nozzle malfunction	Check nozzles, see FUEL SYSTEMS	
Engines Starts and Idles Rough W/out Smoke or No Warm-Up	ise, But Clears After	
Injection pump timing incorrect	Reset pump timing, see FUEL SYSTEMS	
Engine not fully broken in	Put more miles on engine	
Air in system	Bleed air from system	
Injector nozzle malfunction	Check nozzles, see FUEL SYSTEMS	
Engine Idles Correctly, Misfires Above Idle		
Blocked fuel filter	Replace fuel filter	
Injection pump timing incorrect	Reset pump timing, see FUEL SYSTEMS	
Incorrect or contaminated fuel	Replace fuel	
Engine Won't Return To Idle		
Fast idle adjustment incorrect	Reset fast idle, see TUNE-UP	
Internal injection pump malfunction	Replace injection pump, see FUEL SYSTEMS	
External linkage binding	Check linkage and	

	remove binding
Fuel Leaks On Ground	
Loose or broken fuel line	Check lines and
	connections
Internal injection pump seal leak	Replace injection
	pump, see FUEL
	SYSTEMS
Cylinder Knocking Noise	
Injector nozzles sticking open	Test injectors, see
	FUEL SYSTEMS
Very low nozzle opening pressure	Test injectors and/or
	replace
Loss of Engine Power	
Restricted air intake	Remove restriction
EGR valve malfunction	Replace EGR valve
Blocked or damaged exhaust system	Remove restriction
	and/or replace
	components
Blocked fuel tank filter	Replace filter
Restricted fuel filter	Remove restriction
	and/or replace filter
Block vent in gas cap	Remove restriction
	and/or replace cap
Tank-to-injection pump fuel supply blocked	Check fuel lines and
	connections
Blocked fuel return system	Remove restriction
Incorrect or contaminated fuel	Replace fuel
Blocked injector nozzles	Check nozzle for
	blockage, see FUEL
	SYSTEMS
Low compression	Check valves, rings,
	pistons, see ENGINES
Loud Engine Noise With Black Smoke	
1	1

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Basic timing incorrect	Reset timing, see FUEL SYSTEMS
EGR valve malfunction	Replace EGR valve
Internal injection pump malfunction	Replace injection pump, see FUEL SYSTEMS
Incorrect injector pump housing pressure	Check pressure, see FUEL SYSTEMS
Engine Overheating	
Cooling system leaks	Check cooling system and repair leaks
Belt slipping or damaged	Check tension and/or replace belt
Thermostat stuck closed	Remove and replace thermostat, see ENGINE COOLING
Head gasket leaking	Replace head gasket
Oil Light on at Idle	
Low oil pump pressure	Check oil pump operation, see ENGINES
Oil cooler or line restricted	Remove restriction and/or replace cooler
Engine Won't Shut Off	•
Injector pump fuel solenoid does not return fuel valve to OFF position	Remove and check solenoid and replace if needed

## **VACUUM PUMP DIAGNOSIS**

CONDITION & POSSIBLE CAUSE	CORRECTION
Excessive Noise	
Loose pump-to-drive assembly screws	Tighten screws
Loose tube on pump assembly	Tighten tube

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Valves not functioning properly	Replace valves
Oil Leakage	
Loose end plug	Tighten end plug
Bad seal crimp	Remove and re-crimp
	seal

#### FUEL INJECTION TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### BASIC FUEL INJECTION TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Won't Start (Cranks Normally)	
Cold start valve inoperative	Test valve and circuit
Poor connection; vacuum or wiring	Check vacuum and electrical connections
Contaminated fuel	Test fuel for water or alcohol
Defective fuel pump relay or circuit	Test relay and wiring
Battery too low	Charge and test battery
Low fuel pressure	Test pressure regulator and fuel pump, check for restricted lines and filters
No distributor reference pulses	Repair ignition system as necessary
Open coolant temperature sensor circuit	Test sensor and wiring
Shorted W.O.T. switch in T.P.S.	Disconnect W.O.T.

	switch, engine should
Defective ECM	Start Paplace ECM
	Replace ECM
Fuel tank residual pressure valve leaks	Test for fuel pressure drop after shut down
Hard Starting	drop arter shat down
Disconnected hot air tube to air cleaner	Reconnect tube and
Disconnected not an tube to an cleaner	test control valve
Defective Idle Air Control (IAC) valve	Test valve operation
Defective full All Collifor (IAC) valve	and circuit
Shorted, open or misadjusted T.P.S.	Test and adjust or
Shorted, open of misadjusted 1.7.3.	replace T.P.S.
EGR valve open	Test EGR valve and
EGK varve open	control circuit
Poor Ovygon concor signal	Test for shorted or
Poor Oxygen sensor signal	circuit
Incorrect mixture from PCV system	Test PCV for flow,
incorrect infixture from 1 C v system	check sealing of oil
	filter cap
Poor High Speed Operation	inter oup
Low fuel pump volume	Faulty pump or
25 w ruer pump vorume	restricted fuel lines or
	filters
Poor MAP sensor signal	Test MAP sensor,
	vacuum hose and
	wiring
Poor Oxygen sensor signal	Test for shorted or
	open sensor or circuit
Open coolant temperature sensor circuit	Test sensor and wiring
Faulty ignition operation	Check wires for cracks
	or poor con- nections,
	test secondary voltage
	with oscilloscope

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Contaminated fuel	Test fuel for water or
Contaminated ruci	alcohol
Intermittent ECM ground	Test ECM ground
Intermittent ECW ground	connection for
	resistance
Restricted air cleaner	Replace air cleaner
Restricted exhaust system	Test for exhaust
Restricted extraust system	manifold back
	pressure
Poor MAF sensor signal	Check leakage
1 001 WAT schsor signar	between sensor and
	manifold
Poor VSS signal	If tester for ALCL
Foor VSS signar	hook-up is available
	check that VSS
	reading matches
	speedometer
Ping or Knock on Acceleration	specdometer
Poor Knock sensor signal	Test for shorted or
1 oor imoon somsor signar	open sensor or circuit
Poor Baro sensor signal	Test for shorted or
1 0 0 1 2 0 1 0 0 0 1 1 0 1 0 1 0 1 0 1	open sensor or circuit
Improper ignition timing	See VEHICLE
	EMISSION
	CONTROL LABEL
	(where applicable)
Check for engine overheating problems	Low coolant, loose
Proceeding procedure	belts or electric
	cooling fan inoperative

NOTE: For additional electronic fuel injection trouble shooting information, see the appropriate article in the ENGINE PERFORMANCE section (not all vehicles have Computer Engine Control articles). Information is provided there for

GENERAL INFORMATION Trouble Shooting - Basic Procedures

diagnosing fuel system problems on vehicles with electronic fuel injection.

#### IGNITION SYSTEM TROUBLE SHOOTING

**NOTE:** 

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

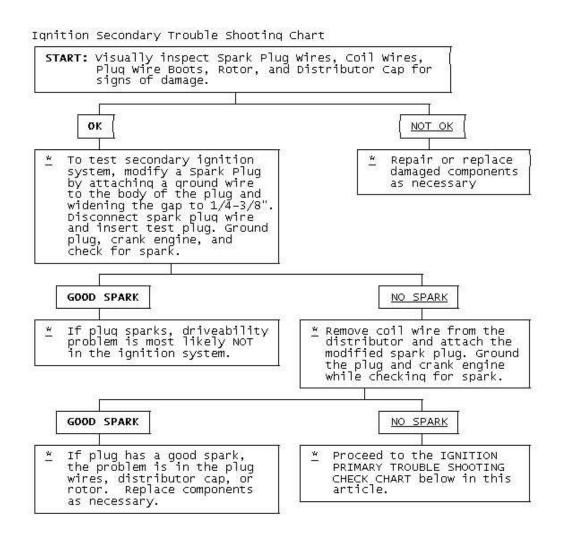
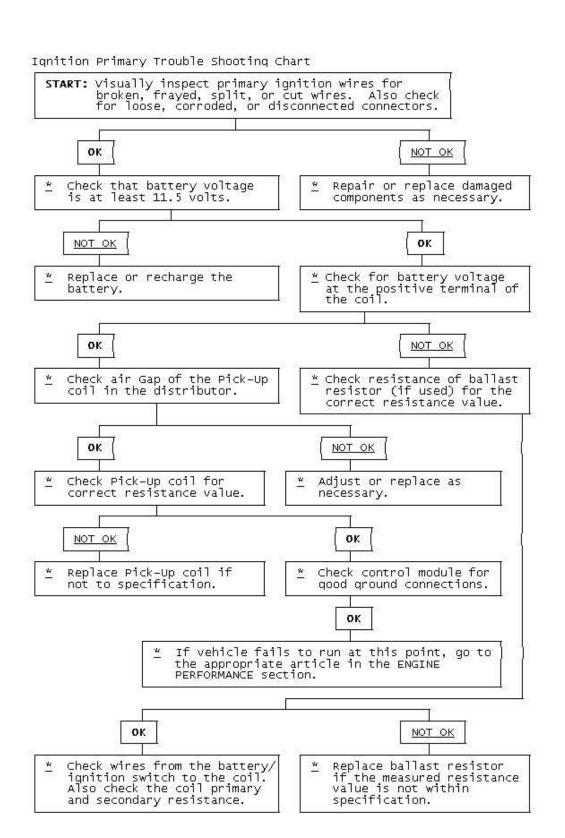


Fig. 3: Ignition Secondary Trouble Shooting Chart



GENERAL INFORMATION Trouble Shooting - Basic Procedures

## Fig. 4: Ignition Primary Trouble Shooting Chart

#### STARTER TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### BASIC STARTER TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION	
Starter Fails to Operate		
Dead battery or bad connections between starter	Check battery charge	
and battery	and all wires and	
	connections to starter	
Ignition switch faulty or misadjusted	Adjust or replace	
	ignition switch	
Open circuit between starter switch ignition	Check and repair	
terminal on starter relay	wires and connections	
	as necessary	
Starter relay or starter defective	See Testing in	
	STARTER article	
Open solenoid pull-in wire	See Testing in	
	STARTER article	
Starter Does Not Operate and Headlights Dim		
Weak battery or dead cell	Charge or replace	
	battery as necessary	
Loose or corroded battery connections	Check that battery	
•	connections are clean	
	and tight	
Internal ground in starter windings	See Testing in	
	STARTER article	

Grounded starter fields	See Testing in STARTERS
A mastuma muhhing on nola shags	
Armature rubbing on pole shoes	See STARTER article
Starter Turns but Engine Does Not Rotate	G GELLDEED : 1
Starter clutch slipping	See STARTER article
Broken clutch housing	See STARTER article
Pinion shaft rusted or dry	See STARTER article
Engine basic timing incorrect	See Ignition Timing in TUNE-UP article
Broken teeth on engine flywheel	Replace flywheel and
Broken teem on engine my wheel	check for starter
	pinion gear damage
Starter Will Not Crank Engine	pinion gear damage
Faulty overrunning clutch	See STARTER article
Broken clutch housing	See STARTER article
Broken flywheel teeth	Replace flywheel and
	check for starter
	pinion gear damage
Armature shaft sheared or reduction gear teeth stripped	See STARTER article
Weak battery	Charge or replace
vv cur outery	battery as necessary
Faulty solenoid	See On-Vehicle Tests
Tautty solohold	in STARTER article
Poor grounds	Check all ground
	connections for tight
	and clean connections
Ignition switch faulty or misadjusted	Adjust or replace
	ignition switch as
	necessary
Starter Cranks Engine Slowly	
Battery weak or defective	Charge or replace
	battery as necessary

Engine overheated	See ENGINE
8	COOLING SYSTEM
	article
Engine oil too heavy	Check that proper
	viscosity oil is used
Poor battery-to-starter connections	Check that all
	between battery and
	starter are clean and
	tight
Current draw too low or too high	See Bench Tests in
	STARTER article
Bent armature, loose pole shoes screws or worn bearings	See STARTER article
Burned solenoid contacts	Replace solenoid
Faulty starter	Replace starter
Starter Engages Engine Only Momentarily	
Engine timing too far advanced	See Ignition Timing
	in TUNE-UP article
Overrunning clutch not engaging properly	Replace overrunning
	clutch. See
	STARTER article
Broken starter clutch	See STARTER article
Broken teeth on engine flywheel	Replace flywheel and
	check starter pinion
	gear for damage
Weak drive assembly thrust spring	See STARTER article
Weak hold-in coil	See Bench Tests in
	STARTER article
Starter Drive Will Not Engage	
Defective point assembly	See Testing in
	STARTER article
Poor point assembly ground	See Testing in
	STARTER article

Defective pull-in coil	Replace starter solenoid
Starter Relay Does Not Close	solchold
Dead battery	Charge or replace battery as necessary
Faulty wiring	Check all wiring and connections leading to relay
Neutral safety switch faulty	Replace neutral safety switch
Starter relay faulty	Replace starter relay
Starter Drive Will Not Disengage	
Starter motor loose on mountings	Tighten starter attach bolts
Worn drive end bushing	See STARTER article
Damaged engine flywheel teeth	Replace flywheel and starter pinion gear for damage
Drive yolk return spring broken or missing	Replace return spring
Faulty ignition switch	Replace ignition switch
Insufficient clearance between winding leads to solenoid terminal and main contact in solenoid	Replace starter solenoid
Starter clutch not disengaging	Replace starter clutch
Ignition starter switch contacts sticking	Replace ignition switch
Starter Relay Operates but Solenoid Does Not	
Faulty solenoid switch, switch connections or relay	Check all wiring between relay and solenoid or replace relay or solenoid as necessary
Broken lead or loose soldered connections	Repair wire or wire
	1

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	connections as
	necessary
Solenoid Plunger Vibrates When Switch is Engaged	110000001
Weak battery	Charge or replace
Tream success	battery as necessary
Solenoid contacts corroded	Clean contacts or
	replace solenoid
Faulty wiring	Check all wiring
, and a grant of the state of t	leading to solenoid
Broken connections inside switch cover	Repair connections or
	replace solenoid
Open hold-in wire	Replace solenoid
Low Current Draw	1
Worn brushes or weak	Replace brushes or
	brush springs as
	necessary
High Pitched Whine During Cranking Before Engine and Cranks Normally	Fires but Engine Fires
Distance too great between starter pinion and	Align starter or check
flywheel	that correct starter
	and flywheel are
	being used
High Pitched Whine After Engine Fires With Key rele Cranks Normally	eased. Engine Fires and
Distance too small between starter pinion and	Flywheel runout
flywheel	contributes to the
	intermittent nature

#### TUNE-UP TROUBLE SHOOTING - GAS ENGINE VEHICLES

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to

GENERAL INFORMATION Trouble Shooting - Basic Procedures

# problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### BASIC SPARK PLUG TROUBLE SHOOTING CHARTS

CONDITION & POSSIBLE CAUSE	CORRECTION
Normal Spark Plug Condition	
Light Tan or Gray deposits	No Action
Electrode not burned or fouled	No Action
Gap tolerance not changed	No Action
Cold Fouling or Carbon Deposits	
Overrich air/fuel mixture	Adjust air/fuel
	mixture, see ENGINE
	PERFORMANCE
	section
Faulty choke	Replace choke
	assembly, see
	ENGINE
	PERFORMANCE
	section
Clogged air filter	Clean and/or replace
	air filter
Incorrect idle speed or dirty carburetor	Reset idle speed and/
	or clean carburetor
Faulty ignition wires	Replace ignition
	wiring
Prolonged operation at idle	Shut engine off during
	long idle
Sticking valves or worn valve guide seals	Check valve train
Wet Fouling or Oil Deposits	
Worn rings and pistons	Install new rings and
	pistons
Excessive cylinder wear	Rebore or replace

	block	
Excessive valve guide clearance	Worn or loose bearing	
Gap Bridged		
Deposits in combustion chamber becoming fused	Clean combustion	
to electrode	chamber of deposits	
Blistered Electrode		
Engine overheating	Check cooling system	
Wrong type of fuel	Replace with correct	
	fuel	
Loose spark plugs	Retighten spark plugs	
Over-advanced ignition timing	Reset ignition timing	
	see ENGINE	
	PERFORMANCE	
Pre-Ignition or Melted Electrodes		
Incorrect type of fuel	Replace with correct	
	fuel	
Incorrect ignition timing	Reset ignition timing	
	see ENGINE	
D 1 1	PERFORMANCE	
Burned valves	Replace valves	
Engine Overheating	Check cooling system	
Wrong type of spark plug, too hot	Replace with correct	
	spark plug, see	
	ENGINE PERFORMANCE	
Chinned Insulators	PERFURNIANCE	
Chipped Insulators	Charle for arran	
Severe detonation	Check for over-	
	advanced timing or combustion	
Improper gapping procedure		
Improper gapping procedure Rust Colored Deposits	Re-gap spark plugs	
Additives in unleaded fuel	Try different fuel	
Additives in unleaded ruei	Try different fuel brand	
	Urand	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Water In Combustion Chamber	
Blown head gasket or cracked head	Repair or replace head
	or head gasket

## NOTE:

Before diagnosing an electronic ignition system, ensure that all wiring is connected properly between distributor, wiring connector and spark plugs. Ignition problem will show up either as: Engine Will Not Start or Engine Runs Rough.

### BASIC ELECTRONIC IGNITION TROUBLE SHOOTING CHARTS

CONDITION & POSSIBLE CAUSE	CORRECTION
Engine Won't Start	
Open circuit between distributor and bulkhead connector	Repair circuit
Open circuit between bulkhead connector and ignition switch	Repair circuit
Open circuit between ignition switch and starter solenoid	Repair circuit
Engine Runs Rough	
Fuel lines leaking or clogged	Tighten fitting,
	remove restriction
Initial timing incorrect	Reset ignition timing
	see ENGINE
	PERFORMANCE
Centrifugal advance malfunction	Repair distributor
	advance
Defective spark plugs or wiring	Replace plugs or plug
	wiring
Component Failure	
Spark arc-over on cap, rotor or coil	Replace cap, rotor or
	or coil
Defective pick-up coil	Replace pick-up coil

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Defective ignition coil	Replace ignition coil
Defective vacuum unit	Replace vacuum unit
Defective control module	Replace control
	module

## BASIC ELECTRONIC IGNITION TROUBLE SHOOTING CHARTS - USING OSCILLOSCOPE PATTERNS

CONDITION & POSSIBLE CALISE

CONDITION & POSSIBLE CAUSE	CORRECTION
Firing Voltage Lines are the Same, but Abnormall	ly High
Retarded ignition timing	Reset ignition timing,
	see ENGINE
	PERFORMANCE
	section
Fuel mixture too lean	Readjust carburetor,
	see ENGINE
	PERFORMANCE
High resistance in coil wire	Replace coil wire
Corrosion in coil tower terminal	Clean and/or replace
	coil
Corrosion in distributor coil terminal	Clean and/or replace
	distributor cap
Firing Voltage Lines are the Same but Abnormally	y Low
Fuel mixture too rich	Readjust carburetor,
	see ENGINE
	PERFORMANCE
Breaks in coil wire causing arcing	Replace coil wire
Cracked coil tower causing arcing	Replace coil
Low coil output	Replace coil
Low engine compression	Determine cause and
	repair
One or More, But Not All Firing Voltage Lines are Higher Than Others	
Carburetor idle mixture not balanced	Readjust carburetor,
	see ENGINE

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	PERFORMANCE
EGR valve stuck open	Clean and/or replace
	valve
High resistance in spark plug wires	Replace spark plug
	wires
Cracked or broken spark plug insulator	Replace spark plugs
Intake vacuum leak	Repair leak
Defective spark plugs	Replace spark plugs
Corroded spark plug terminals	Replace spark plugs
One or More, But Not All Firing Voltage Lines Are I	Lower Than Others
Curb idle mixture not balanced	Readjust carburetor,
	see ENGINE
	PERFORMANCE
Breaks in plug wires	Replace plug wires
	causing arcing
Cracked coil tower causing arcing	Replace coil
Low compression	Determine cause and
	repair
Defective spark plugs	Replace spark plugs
Corroded spark plugs	Replace spark plugs
Cylinders Not Firing	
Cracked distributor cap terminals	Replace distributor cap
Shorted spark plug wire	Determine cause and
	repair
Mechanical problem in engine	Determine cause and
	repair
Defective spark plugs	Replace spark plugs
Spark plugs fouled	Replace spark plugs

## BASIC DRIVEABILITY PROBLEMS TROUBLE SHOOTING

CONDITION & POSSIBLE CAUSE	CORRECTION
Hard Starting	
Binding carburetor linkage	Eliminate binding

Binding choke linkage	Eliminate binding
Binding choke piston	Eliminate binding
Restricted choke vacuum	Check vacuum lines
	for blockage
Worn or dirty needle valve and seat	Clean carburetor, see
	ENGINE
	PERFORMANCE
Float sticking	Readjust or replace
	float see the ENGINE
	PERFORMANCE
	section
Incorrect choke adjustment	Reset choke
	adjustment see
	ENGINE
	PERFORMANCE
Defective coil	Replace coil
Improper spark plug gap	Regap spark plugs
Incorrect ignition timing	Reset ignition timing
	see ENGINE
	PERFORMANCE
Detonation	
Over-advanced ignition timing	Reset ignition timing
	see ENGINE
	PERFORMANCE
Defective spark plugs	Replace spark plugs
Fuel lines clogged	Clean fuel lines
EGR system malfunction	Check and repair EGR
	system
PCV system malfunction	Repair PCV system
Vacuum leaks	Check and repair
	vacuum system
Loose fan belts	Tighten or replace fan
	belts, see ENGINE

	PERFORMANCE
Restricted airflow	Remove restriction
Vacuum advance malfunction	Check distributor
	operation
Dieseling	
Binding carburetor linkage	Eliminate binding
Binding throttle linkage	Eliminate blinding
Binding choke linkage or fast idle cam	Eliminate binding
Defective idle solenoid	Replace idle solenoid
	see ENGINE
	PERFORMANCE
Improper base idle speed	Reset idle speed, see
	see ENGINE
	PERFORMANCE
Incorrect ignition timing	Reset ignition timing
	see ENGINE
	PERFORMANCE
Incorrect idle mixture setting	Reset idle mixture, see
	ENGINE
	PERFORMANCE
Faulty Acceleration	
Incorrect ignition timing	Reset ignition timing
	see ENGINE
	PERFORMANCE
Engine cold and choke too lean	Adjust choke and
	allow engine to warm-
	up
Defective spark plugs	Replace spark plugs
Defective coil	Replace coil
Faulty Low Speed Operation	
Clogged idle transfer slots	Clean idle transfer
	slots, see FUEL
Restricted idle air bleeds and passages	Disassemble and clean

	carburetor, see FUEL
Clogged air cleaner	Replace air filter
Defective spark plugs	Replace spark plugs
Defective ignition wires	Replace ignition wire
	see ENGINE
	PERFORMANCE
Defective distributor cap	Replace distributor cap
Faulty High Speed Operation	
Incorrect ignition timing	Reset ignition timing
	see ENGINE
	PERFORMANCE
Defective distributor centrifugal advance	Replace advance
	mechanism
Defective distributor vacuum advance	Replace advance unit
Incorrect spark plugs or plug gap	Check gap and/or
	replace spark plugs
Faulty choke operation	Check choke and
	repair as required
Clogged vacuum passages	Remove restrictions
Improper size or clogged main jet	Check jet size and
	clean, see FUEL
Restricted air cleaner	Check filter and
	replace as necessary
Defective distributor cap, rotor or coil	Replace cap, rotor or
	coil
Misfire at All Speeds	
Defective spark plugs	Replace spark plugs
Defective spark plug wires	Replace spark plug
	wires
Defective distributor cap, rotor, or coil	Replace cap, rotor, or
	coil
Cracked or broken vacuum hoses	Replace vacuum hoses
Vacuum leaks	Repair vacuum leaks

Fuel lines clogged	Remove restriction
Hesitation	
Cracked or broken vacuum	Replace vacuum hoses hoses
Vacuum leaks	Repair Vacuum leaks
Binding carburetor linkage	Eliminate binding
Binding throttle linkage	Eliminate binding
Binding choke linkage or fast idle cam	Eliminate binding
Improper float setting	Readjust float setting, see FUEL
Cracked or broken ignition wires	Replace ignition wires
Rough Idle, Missing or Stalling	
Incorrect curb idle or fast idle speed	Reset idle speed, see see ENGINE PERFORMANCE
Incorrect basic timing	Reset ignition timing see ENGINE PERFORMANCE
Improper idle mixture adjustment	Reset idle mixture, see ENGINE PERFORMANCE
Improper feedback system operation	Check feedback system see ENGINE PERFORMANCE
Incorrect spark plug gap	Reset spark plug gap, see ENGINE PERFORMANCE
Moisture in ignition components	Dry components
Loose or broken ignition wires	Replace ignition wires
Damaged distributor cap or or rotor	Replace distributor cap or rotor
Faulty ignition coil	Replace ignition coil
Fuel filter clogged or worn	Replace fuel filter

Damaged idle mixture screw	Replace idle mixture
	screw, see FUEL
Improper fast idle cam adjustment	Reset fast idle cam
	adjustment, see
	TUNE- see ENGINE
	PERFORMANCE
Improper EGR valve operation	Replace EGR valve
Faulty PCV valve air flow	Replace PCV valve
Choke binding or improper choke setting	Reset choke or
	eliminate binding
Vacuum leak	Repair vacuum leak
Improper float bowl fuel level	Reset float adjustment,
	see FUEL
Clogged air bleed or idle passages	Clean carburetor
	passages, see FUEL
Clogged or worn air cleaner filter	Replace air filter
Faulty choke vacuum diaphragm	Replace diaphragm,
	see ENGINE
	PERFORMANCE
Exhaust manifold heat valve inoperative	Replace heat valve
Improper distributor spark advance	Check distributor
	operation
Leaking valves or valve components	Check and repair
	valvetrain
Improper carburetor mounting	Remove and remount
	carburetor
Excessive play in distributor shaft	Replace distributor
Loose or corroded wiring connections	Repair or replace as
	required
Engine Surges	
Improper PCV valve airflow	Replace PCV valve
Vacuum leaks	Repair vacuum leaks
Clogged air bleeds	Remove restriction

EGR valve malfunction	Replace EGR valve	
Restricted air cleaner filter	Replace air filter	
Cracked or broken vacuum hoses	Replace vacuum hoses	
Cracked or broken ignition wires	Replace ignition wires	
Vacuum advance malfunction	Check unit and replace	
	as necessary	
Defective or fouled spark plugs	Replace spark plugs	
Ping or Spark Knock		
Incorrect ignition timing	Reset ignition timing	
	see ENGINE	
	PERFORMANCE	
Distributor centrifugal or vacuum advance	Check operation and	
malfunction	replace as necessary	
Carburetor setting too lean	Readjust mixture	
	setting, see ENGINE	
	PERFORMANCE	
Vacuum leak	Eliminate vacuum leak	
EGR valve malfunction	Replace EGR valve	
Poor Gasoline Mileage		
Cracked or broken vacuum	Replace vacuum hoses	
	hoses	
Vacuum leaks	Repair vacuum leaks	
Defective ignition wires	Replace wires	
Incorrect choke setting	Readjust setting, see	
	ENGINE	
	PERFORMANCE	
Defective vacuum advance	Replace vacuum	
	advance	
Defective spark plugs	Replace spark plugs	
Binding carburetor power piston	Eliminate binding	
Dirt in carburetor jets	Clean and/or replace	
	jets	
Incorrect float adjustment	Readjust float setting,	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

	see FUEL
Defective power valve	Replace power valve,
	see ENGINE
	PERFORMANCE
Incorrect idle speed	Readjust idle speed
Engine Stalls	
Improper float level	Readjust float level
Leaking needle valve and seat	Replace needle valve
	and seat
Vacuum leaks	Eliminate vacuum
	leaks

#### VACUUM PUMP - DIESEL TROUBLE SHOOTING

NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

NOTE:

Diesel engines mechanical diagnosis is the same as gasoline engines for items such as noisy valves, bearings, pistons, etc. The following trouble shooting covers only items pertaining to diesel engines.

### VACUUM PUMP (DIESEL) TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Excessive Noise	
Loose pump-to-drive assembly screws	Tighten screws
Loose tube on pump assembly	Tighten tube
Valves not functioning properly	Replace valves
Oil Leakage	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Loose end plug	Tighten end plug
Bad seal crimp	Remove and re-
	crimp seal

#### MANUAL TRANSMISSION

#### MANUAL TRANSMISSION TROUBLE SHOOTING

#### NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### MANUAL TRANSMISSION/TRANSAXLE TROUBLE SHOOTING

Condition	Possible Cause
Noisy In Forward Gears	Low gear oil level, Loose bell housing
	bolts, Worn bearings or gears
Clunk On Deceleration (FWD Only)	Loose engine mounts, Worn inboard
	CV joints, Worn differential pinion
	shaft, Side gear hub counterbore in
	case worn oversize
Gear Clash When Shifting Forward	Clutch Out Of Adjustment, Shift
Gears	linkage damaged or out of adjustment,
	Gears or synchronizers damaged, Low
	gear oil level
Transmission Noisy When Moving	Worn rear outputshaft bearing
(RWD Only) Quiet In Neutral With	
Clutch Engaged	
Gear Rattle	Worn bearings, Wrong gear oil, Low
	gear oil, Worn gears
Steady Ticking At Idle (Increases With	Broken tooth on gear
RPM)	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Gear Clash When Shifting Forward Gears	Worn or broken synchronizers
Loud Whine In Reverse	Normal condition (1)
Noise When Stepping On Clutch	Bad release bearing, Worn pilot
	bearing
Ticking Or Screeching As Clutch Is	Faulty release bearing, Uneven
Engaged	pressure plate fingers
Click Or Snap When Clutch Is	Worn clutch fork, Worn or broken
Engaged	front bearing retainer
Transmission Shifts Hard	Clutch not releasing, Shift mechanism
	binding, Clutch installed backwards
Will Not Shift Into One Gear, Shifts	Bent shift fork, Worn detent balls
Into All Others	
Locked Into Gear, Cannot Shift	Clutch adjustment, Worn detent balls
Transmission Jumps Out Of Gear	Pilot bearing worn, Bent shift fork,
-	Worn gear teeth or face, Excessive
	gear train end play, Worn
	synchronizers, Missing detent ball
	spring, Shift mechanism worn or out of
	adjustment, Engine or transmission
	mount bolts loose or out of adjustment,
	Transmission not aligned
Shift Lever Rattle	Worn shift lever or detents, Worn shift
	forks, Worn synchronizers sleeve
Shift Lever Hops Under Acceleration	Worn engine or transmission mounts
(1) Most units use spur cut gears in reverse and are noisy	

#### **POWERTRAIN**

#### **CLUTCH TROUBLE SHOOTING**

NOTE: This is GENERAL information. This article is not intended to

be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting

GENERAL INFORMATION Trouble Shooting - Basic Procedures

information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

#### BASIC CLUTCH TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Chattering or Grabbing	
Incorrect clutch adjustment	Adjust clutch
Oil, grease or glaze on facings	Disassemble and clean or
	replace
Loose "U" joint flange	See DRIVE AXLES
	article
Worn input shaft spline	Replace input shaft
Binding pressure plate	Replace pressure plate
Binding release lever	See CLUTCH article
Binding clutch disc hub	Replace clutch disc
Unequal pressure plate contact	Replace worn/misaligned
	components
Loose/bent clutch disc	Replace clutch disc
Incorrect transmission alignment	Realign transmission
Worn pressure plate, disc or flywheel	Replace damaged
	components
Broken or weak pressure springs	Replace pressure plate
Sticking clutch pedal	Lubricate clutch pedal &
	linkage
Incorrect clutch disc facing	Replace clutch disc
Engine loose in chassis	Tighten all mounting
	bolts
Failure to Release	
Oil or grease on clutch facings	Clean or replace clutch
	clutch disc
Incorrect release lever or pedal adjustment	See CLUTCH article

Worn or broken clutch facings	Replace clutch disc
Bent clutch disc or pressure plate	Replace damaged
	components
Clutch disc hub binding on input shaft	Clean or replace clutch
	disc and/or input shaft
Binding pilot bearing	Replace pilot bearing
Sticking release bearing sleeve	Replace release bearing
	and/or sleeve
Binding clutch cable	See CLUTCH article
Defective clutch master	Replace master cylinder
Defective clutch slave	Replace slave cylinder
Air in hydraulic system	Bleed hydraulic system
Rattling	
Weak or broken release lever spring	Replace spring and
	check alignment
Damaged pressure plate	Replace pressure plate
Broken clutch return spring	Replace return spring
Worn splines on clutch disc or input shaft	Replace clutch disc
	and/or input shaft
Worn clutch release bearing	Replace release bearing
Dry or worn pilot bearing	Lubricate or replace pilot
	bearing
Unequal release lever contact	Align or replace release
	lever
Incorrect pedal free play	Adjust free play
Warped or damaged clutch disc	Replace damaged
	components
Slipping	
Pressure springs worn or	Release pressure plate
Oily, greasy or worn facings	Clean or replace clutch
	disc
Incorrect clutch alignment	Realign clutch assembly

Warped clutch disc or pressure plate	Replace damaged
	components
Binding release levers or clutch pedal	Lubricate and/or replace release components
Squeaking	
Worn or damaged release	Replace release bearing
Dry or worn pilot or release bearing	Lubricate or replace assembly
Pilot bearing turning in crankshaft	Replace pilot bearing and/or crankshaft
Worn input shaft bearing	Replace bearing and seal
Incorrect transmission alignment	Realign transmission
Dry release fork between pivot	Lubricate release fork and pivot
Heavy and/or Stiff Pedal	1
Sticking release bearing sleeve	Replace release bearing and/or sleeve
Dry or binding clutch pedal hub	Lubricate and align components
Floor mat interference with pedal	Lay mat flat in proper area
Dry or binding ball/fork pivots	Lubricate and align components
Faulty clutch cable	Replace clutch cable
Noisy Clutch Pedal	
Faulty interlock switch	Replace interlock switch
Self-adjuster ratchet noise	Lubricate or replace self- adjuster
Speed control interlock switch	Lubricate or replace interlock switch
Clutch Pedal Sticks Down	
Binding clutch cable	See CLUTCH article
Springs weak in pressure plate	Replace pressure plate

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Binding in clutch linkage	Lubricate and free linkage
Noisy	
Dry release bearing	Lubricate or replace
	release bearing
Dry or worn pilot bearing	Lubricate or replace
	bearing
Worn input shaft bearing	Replace bearing
Transmission Click	
Weak springs in pressure	Replace pressure plate
	plate
Release fork loose on ball stud	Replace release fork
	and/or ball stud
Oil on clutch disc damper	Replace clutch disc
Broken spring in slave cylinder	Replace slave cylinder

#### **DRIVE AXLE - NOISE DIAGNOSIS**

#### **Unrelated Noises**

Some driveline trouble symptoms are also common to the engine, transmission, wheel bearings, tires, and other parts of the vehicle. Ensure cause of trouble actually is in the drive axle before adjusting, repairing, or replacing any of its parts.

#### Non-Drive Axle Noises

A few conditions can sound just like drive axle noise and have to be considered in pre-diagnosis. The 4 most common noises are exhaust, tires, CV/universal joints and wheel trim rings.

In certain conditions, the pitch of the exhaust gases may e gear whine. At other times, it may be mistaken for a wheel bearing rumble.

Tires, especially radial and snow, can have a high-pitched tread whine or roar, similar to gear noise. Also, some non-standard tires with an unusual tread construction may emit a roar or whine.

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Defective CV/universal joints may cause clicking noises or excessive driveline play that can be improperly diagnosed as drive axle problems.

Trim and moldings also can cause a whistling or whining noise. Ensure none of these components are causing the noise before disassembling the drive axle.

#### Gear Noise

A "howling" or "whining" noise from the ring and pinion gear can be caused by an improper gear pattern, gear damage, or improper bearing preload. It can occur at various speeds and driving conditions, or it can be continuous.

Before disassembling axle to diagnose and correct gear ke sure that tires, exhaust, and vehicle trim have been checked as possible causes.

#### Chuckle

This is a particular rattling noise that sounds like a stick against the spokes of a spinning bicycle wheel. It occurs while decelerating from 40 MPH and usually can be heard until vehicle comes to a complete stop. The frequency varies with the speed of the vehicle.

A chuckle that occurs on the driving phase is usually caused ive clearance due to differential gear wear, or by a damaged tooth on the coast side of the pinion or ring gear. Even a very small tooth nick or a ridge on the edge of a gear tooth is enough the cause the noise.

This condition can be corrected simply by cleaning the gear tooth nick or ridge with a small grinding wheel. If either gear is damaged or scored badly, the gear set must be replaced. If metal has broken loose, the carrier and housing must be cleaned to remove particles that could cause damage.

#### Knock

This is very similar to a chuckle, though it may be louder, and occur on acceleration or deceleration. Knock can be caused by a gear tooth that is damaged on the drive side of the ring and pinion gears. Ring gear bolts that are hitting the carrier casting can cause knock. Knock can also be due to excessive end play in the axle shafts.

GENERAL INFORMATION Trouble Shooting - Basic Procedures

#### Clunk

Clunk is a metallic noise heard when an automatic transmission is engaged in Reverse or Drive, or when throttle is applied or released. It is caused by backlash somewhere in the driveline, but not necessarily in the axle. To determine whether driveline clunk is caused by the axle, check the total axle backlash as follows:

- 1. Raise vehicle on a frame or twinpost hoist so that drive wheels are free. Clamp a bar between axle companion flange and a part of the frame or body so that flange cannot move.
- 2. On conventional drive axles, lock the left wheel to keep it from turning. On all models, turn the right wheel slowly until it is felt to be in Drive condition. Hold a chalk marker on side of tire about 12" from center of wheel. Turn wheel in the opposite direction until it is again felt to be in Drive condition.
- 3. Measure the length of the chalk mark, which is the total axle backlash. If backlash is one inch or less, drive axle is not the source of clunk noise.

#### **Bearing Whine**

Bearing whine is a high-pitched sound similar to a whistle. It is usually caused by malfunctioning pinion bearings. Pinion bearings operate at drive shaft speed. Roller wheel bearings may whine in a similar manner if they run completely dry of lubricant. Bearing noise will occur at all driving speeds. This distinguishes it from gear whine, which usually comes and goes as speed changes.

#### **Bearing Rumble**

Bearing rumble sounds like marbles being tumbled. It is usually caused by a malfunctioning wheel bearing. The lower pitch is because the wheel bearing turns at only about 1/3 of drive shaft speed.

#### **Chatter On Turns**

This is a condition where the entire front or rear of vehicle vibrates when vehicle is moving. The vibration is plainly felt as well as heard. Extra differential thrust washers installed during axle repair can cause a condition of partial lock-up that creates this chatter.

#### **Axle Shaft Noise**

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Axle shaft noise is similar to gear noise and pinion bearing whine. Axle shaft bearing noise will normally distinguish itself from gear noise by occurring in all driving modes (Drive, cruise, coast and float), and will persist with transmission in Neutral while vehicle is moving at problem speed.

If vehicle displays this noise condition, remove suspect parts, replace wheel seals and install a new set of bearings. Re-evaluate vehicle for noise before removing any internal components.

#### Vibration

Vibration is a high-frequency trembling, shaking or grinding condition (felt or heard) that may be constant or variable in level and can occur during the total operating speed range of the vehicle.

The types of vibrations that can be felt in the vehicle can d into 3 main groups:

- Vibrations of various unbalanced rotating parts of the vehicle.
- Resonance vibrations of the body and frame structures caused by rotating of unbalanced parts.
- Tip-in moans of resonance vibrations from stressed engine or exhaust system mounts or driveline flexing modes.

#### DRIVE AXLE - RWD TROUBLE SHOOTING

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing. For definitions of listed noises or sounds, see <a href="DRIVE AXLE-NOISE DIAGNOSIS">DRIVE AXLE-NOISE DIAGNOSIS</a> under POWERTRAIN.

## DRIVE AXLE (RWD) TROUBLE SHOOTING

Knocking or Clunking	
Differential Side Gear Clearance	Check Clearance
Worn Pinion Shaft	Replace Pinion
	Shaft
Axle Shaft End Play	Check End Play
Missing Gear Teeth	Check
	Differential/Replace
	Gear
Wrong Axle Backlash	Check Backlash
Misaligned Driveline	Realign Driveline
Clinking During Engagement	
Side Gear Clearance	Check Clearance
Ring and Pinion Backlash	Check Backlash
Worn/Loose Pinion Shaft	Replace
	Shaft/Bearing
Bad "U" Joint	Replace "U" Joint
Sticking Slip Yoke	Lube Slip Yoke
Broken Rear Axle Mount	Replace Mount
Loose Drive Shaft Flange	Check Flange
Click/Chatter On Turns	
Differential Side Gear Clearance	Check Clearance
Wrong Turn On Plates (1)	Replace Clutch
Wiong rum on rates	Plates
Wrong Differential Lubricant (1)	Change Lubricant
Knock Or Click	'
Flat Spot on Rear Wheel Bearing	Replace Wheel
	Bearing
Low Vibration At All Speeds	
Faulty Wheel Bearing	Replace Wheel
	Bearing
Faulty "U" Joint	Replace "U" Joint
Faulty Drive Shaft	Balance Drive Shaft

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Faulty Companion Flange	Replace Flange
Faulty Slip Yoke Flange	Replace Flange
(1) Limited slip differential only.	

#### FWD AXLE SHAFTS & CV JOINTS TROUBLE SHOOTING

#### NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

## BASIC FWD AXLE SHAFTS & CV JOINTS TROUBLE SHOOTING CHART

CONDITION	POSSIBLE CAUSE
Grease Leaks	CV boot torn or cracked
Clicking Noise on Cornering	Damaged outer CV
Clunk Noise on Acceleration	Damaged inner CV
Vibration or Shudder on Acceleration	Sticking, damaged or worn CV
	Misalignment or spring height

#### **STEERING & SUSPENSION**

MANUAL STEERING GEAR TROUBLE SHOOTING

#### NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

GENERAL INFORMATION Trouble Shooting - Basic Procedures

# BASIC MANUAL STEERING GEAR TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Rattle or Chucking Noise in Rack and Pinion	
Rack and pinion mounting bracket loose	Tighten all mounting
	bolts
Lack of/or incorrect lubricant	Correct as necessary
Steering gear mounting bolts loose	Tighten all mounting
	bolts
Excessive Play	
Front wheel bearing improperly adjusted	See FRONT
	SUSPENSION article
Loose or worn steering linkage	See STEERING
	LINKAGE article
Loose or worn steering gear shift	See MANUAL
	STEERING GEAR
	article
Steering arm loose on gear shaft	See MANUAL
	STEERING GEAR
	article
Steering gear housing bolts loose	Tighten all mounting
	bolts
Steering gear adjustment too loose	See MANUAL
	STEERING GEAR
	article
Steering arms loose on knuckles	Tighten and check
	steering linkage
Rack and pinion mounting loose	Tighten all mounting
	bolts
Rack and pinion out of adjustment	See adjustment in
	STEERING article
Tie rod end loose	Tighten and check
	steering linkage
Excessive Pitman shaft-to-ball nut lash	Repair as necessary

Poor Returnability	
Lack of lubricant in ball joint or linkage	Lubricate and service
	systems
Binding in linkage or ball joints	See STEERING
	LINKAGE and
	SUSPENSION article
Improper front end alignment	See WHEEL
	ALIGNMENT article
Improper tire pressure	Inflate to proper
	pressure
Tie rod binding	Inflate to proper
	pressure
Shaft seal rubbing shaft	See STEERING
_	COLUMN article
Excessive Vertical Motion	
Improper tire pressure	Inflate to proper
	pressure
Tires, wheels or rotors out of balance	Balance tires then
	check wheels and
	rotors
Worn or faulty shock absorbers	Check and replace if
	necessary
Loose tie rod ends or steering	Tighten or replace if
	necessary
Loose or worn wheel bearings	See SUSPENSION
	article
Steering Pulls to One Side	
Improper tire pressure	Inflate to proper
	pressure
Front tires are different sizes	Rotate or replace if
	necessary
Wheel bearings not adjusted properly	See FRONT
	SUSPENSION article

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Bent or broken suspension components	See FRONT
	SUSPENSION article
Improper wheel alignment	See WHEEL
	ALIGNMENT article
Brakes dragging	See BRAKES article
Instability	
Low or uneven tire pressure	Inflate to proper
	pressure
Loose or worn wheel bearings	See FRONT
	SUSPENSION article
Loose or worn idler arm bushing	See FRONT
	SUSPENSION article
Loose or worn strut bushings	See FRONT
	SUSPENSION article
Incorrect front wheel alignment	See WHEEL
	ALIGNMENT article
Steering gear not centered	See MANUAL
	STEERING GEARS
	article
Springs or shock	Check and replace if
	necessary
Improper cross shaft	See MANUAL
	STEERING GEARS
	article

#### POWER STEERING TROUBLE SHOOTING

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

GENERAL INFORMATION Trouble Shooting - Basic Procedures

# BASIC POWER STEERING TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Rattle or Chucking Noise	
Pressure hoses touching engine parts	Adjust to proper
	clearance
Loose Pitman shaft	Adjust or replace if
	necessary
Tie rods ends or Pitman arm loose	Tighten and check
	system
Rack and pinion mounts loose	Tighten all mounting
	bolts
Free play in worm gear	See POWER
	STEERING GEAR
	article
Loose sector shaft or thrust bearing adjustment	See POWER
	STEERING GEAR
Free play in pot coupling	See STEERING
	COLUMN article
Worn shaft serrations	See STEERING
	COLUMN article
Growl in Steering Pump	
Excessive pressure in hoses	Restricted hoses, see
	POWER STEERING
	GEAR article
Scored pressure plates	See POWER
~ ~	STEERING GEAR
	article
Scored thrust plates or rotor	See POWER
	STEERING GEAR
	article
Extreme wear of cam ring	See POWER
	STEERING GEAR
	article

Rattle in Steering Pump	
Vanes not installed	See POWER
	STEERING PUMP
	article
Vanes sticking in rotor	See POWER
	STEERING PUMP
	article
Swish noise in Pump	
Defective flow control valve	See POWER
	STEERING PUMP
	article
Groan in Steering Pump	
Air in fluid	See POWER
	STEERING PUMP
	article
Poor pressure hose connection	Tighten and check,
	replace if necessary
Squawk When Turning	
Damper "O" ring on valve spool cut	See POWER
	STEERING PUMP
	article
Moan or Whine in Pump	
Pump shaft bearing scored	Replace bearing and
	fluid
Air in fluid or fluid level low	See POWER
	STEERING PUMP
	article
Hose or column grounded	Check and replace if
	necessary
Cover "O" ring missing or damaged	See POWER
	STEERING PUMP
	article
Valve cover baffle missing or damaged	See POWER

	STEERING PUMP
	article
Interference of components in pump	See POWER
	STEERING PUMP
	article
Loose or poor bracket alignment	Correct or replace if
	necessary
Hissing When Parking	
Internal leakage in steering gear	Check valved
	assembly first
Chirp in Steering Pump	•
Loose or worn power steering belt	Adjust or replace if
	necessary
Buzzing When Not Steering	
Noisy pump	See POWER
	STEERING PUMP
	article
Free play in steering shaft bearing	See STEERING
	COLUMN article
Bearing loose on shaft serrations	See STEERING
	COLUMN article
Clicking Noise in Pump	
Pump slippers too long	See POWER
	STEERING PUMP
	article
Broken slipper springs	See POWER
	STEERING PUMP
	article
Excessive wear or nicked rotors	See POWER
	STEERING PUMP
	article
Damaged cam contour	See POWER
	STEERING PUMP

	article
Poor Return of Wheel	·
Wheel rubbing against turn signal	See STEERING
	COLUMN
	SWITCHES article
Flange rubbing steering gear adjuster	See STEERING
	COLUMN article
Tight or frozen steering shaft bearing	See STEERING
	COLUMN article
Steering gear out of adjustment	See POWER
	STEERING GEAR
	article
Sticking or plugged spool valve	See POWER
	STEERING PUMP
	article
Improper front end alignment	See WHEEL
	ALIGNMENT article
Wheel bearings worn or loose	See FRONT
	SUSPENSION article
Ties rods or ball joints binding	Check and replace if
	necessary
Intermediate shaft joints binding	See STEERING
	COLUMN article
Kinked pressure hoses	Correct or replace if
	necessary
Loose housing head spanner nut	See POWER
	STEERING GEAR
	article
Damaged valve lever	See POWER
	STEERING GEAR
	article
Sector shaft adjusted too tight	See ADJUSTMENTS
	in POWER
	STEERING GEAR

	article
Worm thrust bearing adjusted too tight	See ADJUSTMENTS
	in POWER
	STEERING GEAR
	article
Reaction ring sticking in cylinder	See POWER
	STEERING GEAR
	article
Reaction ring sticking in housing head	See POWER
	STEERING GEAR
	article
Steering pump internal leakage	See POWER
	STEERING PUMP
	article
Steering gear-to-column misalignment	See STEERING
	COLUMN article
Lack of lubrication in linkage	Service front
	suspension
Lack of lubrication in ball joints	Service front
	suspension
Increased Effort When Turning Wheel Fast Foaming,	Milky Power Steering
Fluid, Low Fluid Level or Low Pressure	
High internal pump leakage	See POWER
	STEERING PUMP
	article
Power steering pump belt slipping	Adjust or replace if
	necessary
Low fluid level	Check and fill to
	proper level
Engine idle speed to low	Adjust to correct
	setting
Air in pump fluid system	See POWER
	STEERING PUMP
	article

Pump output low	See POWER
	STEERING PUMP
	article
Steering gear malfunctioning	See POWER
	STEERING GEAR
	article
Wheel Surges or Jerks	
Low fluid level	Check and fill to
	proper level
Loose fan belt	Adjust or replace if
	necessary
Insufficient pump pressure	See POWER
	STEERING PUMP
	article
Sticky flow control valve	See POWER
•	STEERING PUMP
	article
Linkage hitting oil pan at full turn	Replace bent
	components
Kick Back or Free Play	
Air in pump fluid system	See POWER
	STEERING PUMP
	article
Worn poppet valve in steering gear	See POWER
	STEERING PUMP
	article
Excessive over center lash	See POWER
	STEERING GEAR
	article
Thrust bearing out of adjustment	See POWER
	STEERING GEAR
	article
Free play in pot coupling	See POWER
	STEERING PUMP

	article
Steering gear coupling loose on shaft	See POWER
	STEERING PUMP
	article
Steering disc mounting bolts loose	Tighten or replace if
	necessary
Coupling loose on worm shaft	Tighten or replace if
	necessary
Improper sector shaft adjustment	See POWER
	STEERING GEAR
	article
Excessive worm piston side play	See POWER
	STEERING GEAR
	article
Damaged valve lever	See POWER
	STEERING GEAR
	article
Universal joint loose	Tighten or replace if
	necessary
Defective rotary valve	See POWER
	STEERING GEAR
	article
No Power When Parking	
Sticking flow control valve	See POWER
	STEERING PUMP
	article
Insufficient pump pressure output	See POWER
* * * *	STEERING PUMP
	article
Excessive internal pump leakage	See POWER
	STEERING PUMP
	article
Excessive internal gear leakage	See POWER
- <del>-</del>	STEERING PUMP

	article
Flange rubs against gear adjust plug	See STEERING
	COLUMN article
Loose pump belt	Adjust or replace if
	necessary
Low fluid level	Check and add proper
	amount of fluid
Engine idle too low	Adjust to correct
	setting
Steering gear-to-column misaligned	See STEERING
	COLUMN article
No Power, Left Turn	
Left turn reaction seal "O" ring worn	See POWER
	STEERING GEAR
	article
Left turn reaction seal damaged/missing	See POWER
	STEERING GEAR
	article
Cylinder head "O" ring damaged	See POWER
	STEERING PUMP
	article
No Power, Right Turns	
Column pot coupling bottomed	See STEERING
	COLUMN article
Right turn reaction seal "O" ring worn	See POWER
	STEERING GEAR
	article
Right turn reaction seal damaged	See POWER
	STEERING GEAR
	article
Internal leakage through piston end plug	See POWER
	STEERING GEAR
	article

Internal leakage through side plugs	See POWER
	STEERING GEAR
	article
Lack of Effort in Turning	
Left and/or right reaction seal sticking in cylinder	Replace, see POWER
head	STEERING GEAR
	article
Wanders to One Side	
Front end alignment incorrect	See WHEEL
	ALIGNMENT article
Unbalanced steering gear valve	See POWER
	STEERING GEAR
	article
Low Pressure Due to Steering Pump	
Flow control valve stuck or inoperative	See POWER
	STEERING PUMP
	article
Pressure plate not flat against cam ring	See POWER
	STEERING PUMP
	article
Extreme wear of cam ring	Replace and check
	adjustments
Scored plate, thrust plate or rotor	See POWER
	STEERING PUMP
	article
Vanes not installed properly	See POWER
	STEERING PUMP
	article
Vanes sticking in rotor slots	See POWER
	STEERING PUMP
	article
Cracked/broken thrust or pressure plate	See POWER
	STEERING PUMP
	article

GENERAL INFORMATION Trouble Shooting - Basic Procedures

#### STEERING COLUMN TROUBLE SHOOTING

**NOTE:** 

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

### BASIC STEERING COLUMN TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Noise in Steering	
Coupling pulled apart	See STEERING
	COLUMNS article
Column not correctly aligned	See STEERING
	COLUMNS article
Broken lower joint	Replace joint
Horn contact ring not	See STEERING
	COLUMN article
Bearing not lubricated	See STEERING
	COLUMN article
Shaft snap ring not properly seated	Reseat or replace snap
	ring
Plastic spherical joint not lubricated	See STEERING
	COLUMN article
Shroud or housing loose	Tighten holding
	screws
Lock plate retaining ring not seated	See STEERING
	COLUMN article
Loose sight shield	Tighten holding
	screws
High Steering Shaft Effort	
Column assembly misaligned	See STEERING

	COLUMN article
Improperly installed dust shield	Adjust or replace
Tight steering universal joint	See STEERING
	COLUMN article
High Shift Effort	
Column is out of alignment	See STEERING
	COLUMN article
Improperly installed dust shield	Adjust or replace
Seals or bearings not lubricated	See STEERING
	COLUMNS article
Mounting bracket screws too long	Replace with new
	shorter screws
Burrs on shift tube	Remove burrs or
	replace tube
Lower bowl bearing assembled wrong	See STEERING
	COLUMN article
Shift tube bent or broken	Replace as necessary
Improper adjustment of shift levers	See STEERING
	COLUMN article
Improper Trans. Shifting	
Sheared shift tube joint	Replace as necessary
Sheared lower shaft lever	Replace as necessary
Improper shift lever adjustment	See STEERING
	COLUMN article
Improper gate plate adjustment	See STEERING
	COLUMN article
Excess Play in Column	
Instrument panel bracket bolts loose	Tighten bolts and
	check bracket
Broken weld nut on jacket	See STEERING
	COLUMN article
Instrument bracket capsule sheared	See STEERING
	COLUMN article

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Column bracket/jacket bolts loose	Tighten bolts and check bracket
Steering Locks in Gear	
Release lever mechanism	See STEERING
	COLUMN article

#### SUSPENSION TROUBLE SHOOTING

### NOTE:

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

### BASIC SUSPENSION TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Front End Noise	
Loose or worn wheel	See Wheel Bearing
	Adjustment in
	SUSPENSION
Worn shocks or shock mountings	Replace struts or strut
	mountings
Worn struts or strut mountings	Replace struts or strut
	mountings
Loose or worn lower control arm	See SUSPENSION
Loose steering gear-to-frame bolts	See STEERING
Worn control arm bushings	See SUSPENSION
Ball joints not lubricated	Lubricate ball joints &
	see Ball Joint
	Checking in
	SUSPENSION
Front Wheel Shake, Shimmy, or Vibration	

Tires or wheels out of balance	Check tire balance
Incorrect wheel alignment	See WHEEL
	ALIGNMENT
Drive shaft unbalanced	Check drive shaft
	balance
Loose or worn wheel bearings	See WHEEL
	ALIGNMENT
Loose or worn tie rod ends	See SUSPENSION
Worn upper ball joints	See Ball Joint
	Checking in
	SUSPENSION
Worn shock absorbers	Replace shock
	absorbers
Worn strut bushings	Replace strut bushings
Car Pulls to One Side	_
Mismatched or uneven tires	Check tire condition
Broken or sagging springs	See SUSPENSION
Loose or worn strut bushings	See SUSPENSION
Improper wheel alignment	See WHEEL
	ALIGNMENT
Improper rear axle alignment	Check rear axle
	alignment
Power steering gear unbalanced	See STEERING
Front brakes dragging	See BRAKES
Abnormal Tire Wear	·
Unbalanced tires	Check tire balance &
	rotation
Sagging or broken springs	See SUSPENSION
Incorrect front end alignment	See WHEEL
	ALIGNMENT
Faulty shock absorbers	Replace chock
	absorbers
Scuffed Tires	

GENERAL INFORMATION Trouble Shooting - Basic Procedures

Toe-In incorrect	See WHEEL
	ALIGNMENT
Suspension arm bent or twisted	See appropriate
	SUSPENSION article
Springs Bottom or Sag	
Bent or broken springs	See SUSPENSION
Leaking or worn shock absorbers	Replace shock
	absorbers
Frame misalignment	Check frame for
	damage
Spring Noises	
Loose "U" Bolts	See SUSPENSION
Loose or worn bushings	See SUSPENSION
Worn or missing interliners	See SUSPENSION
Shock Absorber Noise	·
Loose shock mountings	Check & tighten
	mountings
Worn bushings	Replace bushings
Air in system	Bleed air from system
Undercoating on shocks	Remove undercoating
Car Leans or Sways on Corners	
Loose stabilizer bar	See SUSPENSION
Faulty shocks or mountings	Replace shocks or
	mountings
Broken or sagging springs	See SUSPENSION
Shock Absorbers Leaking	
Worn seals or reservoir tube crimped	See SUSPENSION
Broken Springs	
Loose "U" bolts	See SUSPENSION
Inoperative shock absorbers	Replace shock
	absorbers

### WHEEL ALIGNMENT TROUBLE SHOOTING

GENERAL INFORMATION Trouble Shooting - Basic Procedures

### **NOTE:**

This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

### BASIC WHEEL ALIGNMENT TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Premature Tire Wear	
Improper tire inflation	Check tire pressure
Front alignment out of tolerance	See ALIGNMENT
	SPECS in WHEEL
	ALIGNMENT section
Suspension components worn	See SUSPENSION
	section
Steering system components worn	See STEERING
	section
Improper standing height	See WHEEL
	ALIGNMENT
Uneven or sagging springs	See SUSPENSION
	section
Bent wheel	See WHEEL
	ALIGNMENT
Improper torsion bar adjustment	See SUSPENSION
	section
Loose or worn wheel bearings	See WHEEL
	BEARING ADJ. in
	SUSPENSION section
Worn or defective shock	Replace shock
	absorbers
Tires out of balance	Check tire balance
Pulls to One Side	

Improper tire inflation	Check tire pressure
Brake dragging	See BRAKE section
Mismatched tires	See WHEEL
	ALIGNMENT
Broken or sagging spring	See SUSPENSION
	section
Broken torsion bar	See SUSPENSION
	section
Power steering valve not centered	See STEERING
	section
Front alignment out of tolerance	See WHEEL
	ALIGNMENT section
Defective wheel bearing	See WHEEL
	BEARINGS in
	SUSPENSION section
Uneven sway bar links	See SUSPENSION
	section
Frame bent	Check for frame
	damage
Steering system bushing worn	See STEERING
	section
Hard Steering	_
Idler arm bushing too tight	See STEERING
	LINKAGE in
	STEERING section
Ball joint tight or seized	See SUSPENSION
	section
Steering linkage too tight	See STEERING
	LINKAGE in
	STEERING section
Power steering fluid low	Add proper amount of
	fluid
Power steering drive belt loose	See STEERING

	section
Power steering pump defective	See STEERING
	section
Steering gear out of adjustment	See STEERING
	section
Incorrect wheel alignment	See WHEEL
	ALIGNMENT
Damaged steering gear	See STEERING
	section
Damaged suspension	See SUSPENSION
	section
Bent steering knuckle or supports	See SUSPENSION
	section
Vehicle "Wanders"	
Strut rod or control arm bushing worn	See SUSPENSION
	section
Loose or worn wheel bearings	See WHEEL
	BEARINGS in
	SUSPENSION section
Improper tire inflation	Check tire pressure
Stabilizer bar missing or defective	See SUSPENSION
	section
Wheel alignment out of tolerance	See Adjustment in
	WHEEL
D 1	ALIGNMENT section
Broken spring	See SUSPENSION
	section
Defective shock absorber	Replace shock
W	absorbers
Worn steering & suspension components	See SUSPENSION
Erent End Chimmy	section
Front End Shimmy	C111 - 1 - 1
Tire out of balance/round	Check tire balance

Excessive wheel runout	See WHEEL
	ALIGNMENT
Insufficient or improper caster	See WHEEL
	ALIGNMENT section
Worn suspension or steering components	See SUSPENSION
	section
Defective shock absorbers	Replace shock
	absorber
Wheel bearings worn or loose	See WHEEL
	BEARING ADJ. in
	SUSPENSION section
Power steering reaction Bracket loose	See STEERING
	section
Steering gear box (rack) mounting loose	See STEERING
	section
Steering gear adjustment loose	See STEERING
	section
Worn spherical joints	See SUSPENSION
	section
Toe-In Not Adjustable	
Lower control arm bent	See SUSPENSION
	section
Frame bent	Check frame for
	damage
Camber Not Adjustable	
Control arm bent	See SUSPENSION
	section
Frame bent	Check frame for
	damage
Hub & bearing not seated properly	See SUSPENSION
	section