

SECTION 11 - TROUBLESHOOTING

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Engine

Problem: Engine will not start or is hard to start (Compression too low)	
Condition	Remedy
1. Valve clearance out of adjustment 2. Valve guides worn - seated poorly 3. Valves mistimed 4. Piston rings worn excessively 5. Cylinder bore worn 6. Spark plug seating poorly 7. Starter motor cranks too slowly - does not turn	1. Adjust clearance 2. Repair - replace guides 3. Adjust valve timing 4. Replace rings 5. Replace - rebore cylinder 6. Tighten plug 7. See Electrical in this section
Problem: Engine will not start or is hard to start (No spark)	
Condition	Remedy
1. Spark plug fouled 2. Spark plug wet 3. Magneto defective 4. CDI unit defective 5. Ignition coil defective 6. High-tension lead open - shorted	1. Clean - replace plug 2. Clean - dry plug 3. Replace magneto 4. Replace CDI unit 5. Replace ignition coil 6. Replace high tension lead
Problem: Engine will not start or is hard to start (No fuel reaching the carburetor)	
Condition	Remedy
1. Gas tank vent hose obstructed 2. Carburetor inlet needle defective 3. Fuel hose obstructed 4. Fuel screens obstructed 5. Gas tank valve clogged or defective 6. Electric fuel pump defective	1. Clean vent hose 2. Replace needle 3. Clean - replace hose 4. Clean - replace inlet screen - valve screen 5. Clean - replace valve 6. Replace pump
Problem: Engine stalls easily	
Condition	Remedy
1. Spark plug fouled 2. Magneto defective 3. CDI unit defective 4. Carburetor jets obstructed 5. Valve clearance out of adjustment	1. Clean plug 2. Replace magneto 3. Replace CDI unit 4. Clean jets 5. Adjust clearance
Problem: Engine noisy (Excessive valve chatter)	
Condition	Remedy
1. Valve clearance too large 2. Valve spring(s) weak - broken 3. Rocker arm - rocker arm shaft worn 4. Camshaft worn	1. Adjust clearance 2. Replace spring(s) 3. Replace arm - shaft 4. Replace camshaft

Problem: Engine noisy (Noise seems to come from piston)	
Condition	Remedy
1. Piston - cylinder worn	1. Replace - service piston - cylinder
2. Combustion chamber carbon buildup	2. Clean chamber
3. Piston pin - piston pin bore worn	3. Replace - service pin - bore
4. Piston rings - ring groove(s) worn	4. Replace rings - piston
Problem: Engine noisy (Noise seems to come from timing chain)	
Condition	Remedy
1. Chain stretched	1. Replace chain
2. Sprockets worn	2. Replace sprockets
3. Tension adjuster malfunctioning	3. Repair - replace adjuster
Problem: Engine noisy (Noise seems to come from clutch)	
Condition	Remedy
1. Crankshaft splines - bearings worn	1. Replace crankshaft - bearings
2. Countershaft - hub splines worn	2. Replace countershaft - hub
3. Clutch plate teeth worn	3. Replace clutch plate(s)
4. Driven - drive clutch plates distorted - broken	4. Replace clutch plate(s)
5. Clutch dampers weak	5. Replace dampers
Problem: Engine noisy (Noise seems to come from crankshaft)	
Condition	Remedy
1. Bearing worn - burned	1. Replace bearing
2. Lower rod-end bearing worn - burned	2. Replace bearing
3. Connecting rod side clearance too large	3. Replace thrust washer(s)
Problem: Engine noisy (Noise seems to come from transmission)	
Condition	Remedy
1. Gears worn - rubbing	1. Replace gears
2. Splines worn	2. Replace shaft(s)
3. Primary gears worn - rubbing	3. Replace gears
4. Bearings worn	4. Replace bearings
5. Bushing worn	5. Replace bushing
Problem: Engine noisy (Noise seems to come from secondary-transmission/left-side cover)	
Condition	Remedy
1. Gears - shaft(s) worn	1. Replace gears - shafts
2. Bearing(s)/bushing(s) damaged	2. Replace bearing(s)/bushing(s)
Problem: Engine noisy (Noise seems to come from secondary bevel gear and final driven shaft)	
Condition	Remedy
1. Drive - driven bevel gears damaged - worn	1. Replace gears
2. Backlash excessive	2. Adjust backlash
3. Tooth contact improper	3. Adjust contact
4. Bearing damaged	4. Replace bearing
5. Gears worn - rubbing	5. Replace gears
6. Splines worn	6. Replace shaft(s)
7. Final driven shaft thrust clearance too large	7. Replace thrust washer(s)

Problem: Secondary-transmission will not shift or shift back	
Condition	Remedy
<ol style="list-style-type: none"> 1. Sliding dog broken - worn 2. Gearshift fork broken - worn 3. Hi/Low shift lever out of adjustment 4. Gearshift cam worn 5. Cam stopper spring weak 6. Gearshift fork shaft worn 	<ol style="list-style-type: none"> 1. Replace dog 2. Replace fork 3. Adjust lever 4. Replace cam 5. Replace spring 6. Replace shaft
Problem: Engine idles poorly	
Condition	Remedy
<ol style="list-style-type: none"> 1. Valve clearance out of adjustment 2. Valve seating poor 3. Valve guides defective 4. Rocker arms - arm shaft worn 5. Magneto defective 6. CDI unit defective 7. Spark plug fouled - gap too wide 8. Ignition coil defective 9. Float out of adjustment 10. Jets obstructed 11. Pilot screw setting improper 	<ol style="list-style-type: none"> 1. Adjust clearance 2. Replace - service seats - valves 3. Replace guides 4. Replace arms - shafts 5. Replace magneto 6. Replace CDI unit 7. Adjust gap - replace plug 8. Replace ignition coil 9. Adjust float height 10. Clean jets 11. Adjust pilot screw
Problem: Engine runs poorly at high speed	
Condition	Remedy
<ol style="list-style-type: none"> 1. High RPM “cut out” against RPM limiter 2. Valve springs weak 3. Valve timing out of adjustment 4. Cams - rocker arms worn 5. Spark plug gap too narrow 6. Ignition coil defective 7. Float level too low 8. Air cleaner element obstructed 9. Fuel hose obstructed 	<ol style="list-style-type: none"> 1. Shift into higher gear - decrease speed 2. Replace springs 3. Adjust timing 4. Replace cams - arms 5. Adjust gap 6. Replace ignition oil 7. Adjust float height 8. Clean element 9. Clean - prime hose
Problem: Exhaust smoke dirty or heavy	
Condition	Remedy
<ol style="list-style-type: none"> 1. Oil (in the engine) overfilled - contaminated 2. Piston rings - cylinder worn 3. Valve guides worn 4. Cylinder wall scored - scuffed 5. Valve stems worn 6. Stem seals defective 	<ol style="list-style-type: none"> 1. Drain excess oil - replace oil 2. Replace - service rings - cylinder 3. Replace guides 4. Replace - service cylinder 5. Replace valves 6. Replace seals

Problem: Engine lacks power	
Condition	Remedy
1. Valve clearance incorrect	1. Adjust clearance
2. Valve springs weak	2. Replace springs
3. Valve timing out of adjustment	3. Adjust timing
4. Piston ring(s) - cylinder worn	4. Replace - service rings - cylinder
5. Valve seating poor	5. Repair seats
6. Spark plug fouled	6. Clean - replace plug
7. Rocker arms - shafts worn	7. Replace arms - shafts
8. Spark plug gap incorrect	8. Adjust gap - replace plug
9. Carburetor jets obstructed	9. Clean jets
10. Float level out of adjustment	10. Adjust float height
11. Air cleaner element obstructed	11. Clean element
12. Oil (in the engine) overfilled - contaminated	12. Drain excess oil - change oil
13. Intake manifold leaking air	13. Tighten - replace manifold
14. Cam chain worn	14. Replace cam chain
Problem: Engine overheats	
Condition	Remedy
1. Carbon deposit (piston crown) excessive	1. Clean piston
2. Oil low	2. Add oil
3. Octane low - gasoline poor	3. Drain - replace gasoline
4. Oil pump defective	4. Replace pump
5. Oil circuit obstructed	5. Clean circuit
6. Gasoline level (in float chamber) too low	6. Adjust float height
7. Intake manifold leaking air	7. Tighten - replace manifold
8. Coolant level low	8. Fill - examine system for leaks
9. Fan malfunctioning	9. Check fan fuse - replace fan
10. Fan switch malfunctioning	10. Replace fan switch
11. Thermostat stuck - closed	11. Replace thermostat
12. Radiator hoses - cap damaged - obstructed	12. Clear obstruction - replace hoses

Drive

Problem: Power not transmitted from engine to wheels

Condition	Remedy
1. Rear axle shaft serration worn - broken	1. Replace shaft

Problem: Power not transmitted from engine to either front wheel

Condition	Remedy
1. Secondary drive - driven gear teeth broken	1. Replace gear(s)
2. Propeller shaft serration worn - broken	2. Replace shaft
3. Coupling damaged	3. Replace coupling
4. Coupling joint serration worn - damaged	4. Replace joint
5. Front drive - driven bevel gears broken - damaged	5. Replace gear(s)
6. Front differential gears/pinions broken - damaged	6. Replace gears - pinions
7. Sliding dog/shaft/fork worn - damaged	7. Replace gear(s)
8. Front drive axle worn - damaged	8. Replace axle
9. Front drive axle serration worn - damaged	9. Replace axle

Fuel System

Problem: Starting impaired	
Condition	Remedy
<ol style="list-style-type: none"> 1. Starter jet obstructed 2. Starter jet passage obstructed 3. Starter body - carburetor leaking air 4. Starter valve not operating properly 	<ol style="list-style-type: none"> 1. Clean jet 2. Clean passage 3. Tighten - adjust - replace gasket 4. Check - adjust valve
Problem: Idling or low speed impaired	
Condition	Remedy
<ol style="list-style-type: none"> 1. Slow jet obstructed - loose 2. Slow jet outlet obstructed 3. Low speed fuel screw setting incorrect 4. Starter valve not fully closed 5. Float height incorrect 	<ol style="list-style-type: none"> 1. Clean - tighten jet 2. Clean outlet 3. Adjust screw 4. Adjust valve 5. Adjust float height
Problem: Medium or high speed impaired	
Condition	Remedy
<ol style="list-style-type: none"> 1. High RPM “cut out” against RPM limiter 2. Main jet obstructed 3. Needle jet obstructed 4. Throttle vacuum piston not operating properly 5. Filter obstructed 6. Float height incorrect 7. Starter valve not fully closed 	<ol style="list-style-type: none"> 1. Shift into higher gear - decrease RPM speed 2. Clean main jet 3. Clean needle jet 4. Check piston operation 5. Clean filter 6. Adjust float height 7. Adjust valve
Problem: Overflow and fuel level fluctuations	
Condition	Remedy
<ol style="list-style-type: none"> 1. Float valve worn - damaged 2. Float valve spring broken 3. Float not working properly 4. Float valve dirty 5. Float height too high - too low 	<ol style="list-style-type: none"> 1. Replace valve 2. Replace spring 3. Adjust float height - replace float 4. Clean valve 5. Adjust float height

Electrical

Problem: Spark absent or weak	
Condition	Remedy
<ol style="list-style-type: none"> 1. Ignition coil defective 2. Spark plug defective 3. Magneto defective 4. CDI unit defective 5. Pick-up coil defective 	<ol style="list-style-type: none"> 1. Replace ignition coil 2. Replace plug 3. Replace magneto 4. Replace CDI unit 5. Replace pick-up coil
Problem: Spark plug fouled with carbon	
Condition	Remedy
<ol style="list-style-type: none"> 1. Mixture too rich 2. Idling RPM too high 3. Gasoline incorrect 4. Air cleaner element dirty 5. Spark plug incorrect (too cold) 6. Valve seals cracked - missing 7. Oil rings worn - broken 	<ol style="list-style-type: none"> 1. Adjust carburetor 2. Adjust carburetor 3. Change to correct gasoline 4. Clean element 5. Replace plug 6. Replace seals 7. Replace rings
Problem: Spark plug electrodes overheat or burn	
Condition	Remedy
<ol style="list-style-type: none"> 1. Spark plug incorrect (too hot) 2. Engine overheats 3. Spark plug loose 4. Mixture too lean 	<ol style="list-style-type: none"> 1. Replace plug 2. Service cooling system 3. Tighten plug 4. Adjust carburetor
Problem: Magneto does not charge	
Condition	Remedy
<ol style="list-style-type: none"> 1. Lead wires/connections shorted - loose - open 2. Magneto coils shorted - grounded - open 3. Regulator/rectifier shorted - punctured 	<ol style="list-style-type: none"> 1. Repair - replace - tighten lead wires 2. Replace magneto coils 3. Replace regulator/rectifier
Problem: Magneto charges, but charging rate is below the specification	
Condition	Remedy
<ol style="list-style-type: none"> 1. Lead wires shorted - open - loose (at terminals) 2. Stator coils (magneto) grounded - open 3. Regulator/rectifier defective 4. Electrolyte low 5. Cell plates (battery) defective 	<ol style="list-style-type: none"> 1. Repair - tighten lead wires 2. Replace stator coils 3. Replace regulator/rectifier 4. Add distilled water 5. Replace battery

Problem: Magneto overcharges	
Condition	Remedy
1. Internal battery short circuited	1. Replace battery
2. Regulator/rectifier resistor damaged - defective	2. Replace resistor
3. Regulator/rectifier poorly grounded	3. Clean - tighten ground connection
Problem: Charging unstable	
Condition	Remedy
1. Lead wire intermittently shorting	1. Replace lead wire
2. Magneto internally shorted	2. Replace magneto
3. Regulator/rectifier defective	3. Replace regulator/rectifier
Problem: Starter button not effective	
Condition	Remedy
1. Battery charge low	1. Recharge - replace battery
2. Switch contacts defective	2. Replace switch
3. Starter motor brushes not seating	3. Repair - replace brushes
4. Starter relay defective	4. Replace relay
5. Emergency stop - ignition switch off	5. Turn on switches
6. Wiring connections loose - disconnected	6. Connect - tighten - repair connections
Problem: Battery "sulfation" (Acidic white powdery substance or spots on surfaces of cell plates)	
Condition	Remedy
1. Charging rate too low - too high	1. Replace battery
2. Battery electrolyte excessive - insufficient	2. Keep electrolyte to prescribed level
3. Specific gravity too high - too low	3. Charge battery - add distilled water
4. Battery run-down - damaged	4. Replace battery
5. Electrolyte contaminated	5. Recharge - replace battery
Problem: Battery discharges too rapidly	
Condition	Remedy
1. Electrolyte contaminated	1. Replace battery
2. Specific gravity too high	2. Charge battery - add distilled water
3. Charging system (charging operation) not set properly	3. Check magneto - regulator/rectifier - circuit connections - adjust for specified charging operation
4. Cell plates overcharged - damaged	4. Replace battery - correct charging system
5. Battery short-circuited	5. Replace battery
6. Specific gravity too low	6. Recharge battery
Problem: Battery polarity reversed	
Condition	Remedy
1. Battery incorrectly connected	1. Reverse connections - replace battery

Steering/Suspension

Problem: Handling too heavy or stiff	
Condition	Remedy
1. Front wheel alignment incorrect 2. Lubrication inadequate 3. Tire inflation pressure incorrect 4. Tie rod ends seizing 5. Linkage connections seizing	1. Adjust alignment 2. Lubricate appropriate components 3. Adjust pressure 4. Replace tie rod ends 5. Repair - replace connections
Problem: Steering oscillation	
Condition	Remedy
1. Tires inflated unequally 2. Wheel(s) wobbly 3. Wheel hub cap screw(s) loose - missing 4. Wheel hub bearing worn - damaged 5. Tie rod ends worn - loose 6. Tires defective - incorrect 7. A-arm bushings damaged 8. Bolts - nuts (frame) loose	1. Adjust pressure 2. Replace wheel(s) 3. Tighten - replace cap screws 4. Replace bearing 5. Replace - tighten tie rod ends 6. Replace tires 7. Replace bushings 8. Tighten bolts - nuts
Problem: Steering pulling to one side	
Condition	Remedy
1. Tires inflated unequally 2. Front wheel alignment incorrect 3. Wheel hub bearings worn - broken 4. Frame distorted 5. Shock absorber defective	1. Adjust pressure 2. Adjust alignment 3. Replace bearings 4. Repair - replace frame 5. Replace shock absorber
Problem: Steering impaired	
Condition	Remedy
1. Tire pressure too high 2. Steering linkage connections worn 3. Cap screws (suspension system) loose	1. Adjust pressure 2. Replace connections 3. Tighten cap screws
Problem: Tire wear rapid or uneven	
Condition	Remedy
1. Wheel hub bearings worn - loose 2. Front wheel alignment incorrect	1. Replace bearings 2. Adjust alignment
Problem: Steering noise	
Condition	Remedy
1. Caps screws - nuts loose 2. Wheel hub bearings broken - damaged 3. Lubrication inadequate	1. Tighten cap screws - nuts 2. Replace bearings 3. Lubricate appropriate components

Problem: Suspension too soft	
Condition	Remedy
1. Spring(s) weak 2. Shock absorber damaged	1. Replace spring(s) 2. Replace shock absorber
Problem: Suspension too stiff	
Condition	Remedy
1. A-arm-related bushings worn	1. Replace bushing
Problem: Suspension noisy	
Condition	Remedy
1. Cap screws (suspension system) loose 2. A-arm-related bushings worn	1. Tighten cap screws 2. Replace bushings
Problem: Rear wheel oscillation	
Condition	Remedy
1. Rear wheel hub bearings worn - loose 2. Tires defective - incorrect 3. Wheel rim distorted 4. Wheel hub cap screws loose 5. Auxiliary brake adjusted incorrectly 6. Rear suspension arm-related bushing worn 7. Rear shock absorber damaged 8. Rear suspension arm nut loose	1. Replace bearings 2. Replace tires 3. Replace rim 4. Tighten cap screws 5. Adjust brake 6. Replace bushing 7. Replace shock absorber 8. Tighten nut

Brakes

Problem: Braking poor	
Condition	Remedy
1. Pad worn 2. Pedal free-play excessive 3. Brake fluid leaking 4. Hydraulic system leaking air 5. Master cylinder/brake cylinder seal worn	1. Replace pads 2. Adjust free-play 3. Repair - replace hydraulic system 4. Bleed hydraulic system 5. Replace seal(s)
Problem: Brake lever travel excessive	
Condition	Remedy
1. Hydraulic system entrapped air 2. Brake fluid low 3. Brake fluid incorrect 4. Piston seal - cup worn	1. Bleed hydraulic system 2. Add fluid to proper level 3. Replace with correct fluid 4. Replace seal - cup
Problem: Brake fluid leaking	
Condition	Remedy
1. Connection joints loose 2. Hose cracked 3. Piston seal worn	1. Tighten joints 2. Replace hose 3. Replace seal

NOTES