The following check list will be helpful in locating most operating troubles:

**IF ENGINE STARTS HARD**
1. Spark plugs in bad condition, or partially fouled.
2. Spark plug cables in bad condition and "leaking."
3. Circuit breaker points out of adjustment or in need of cleaning.
4. Battery nearly discharged.
5. Loose wire connection at one of battery terminals, or at coil or circuit breaker.
6. Carburetor not adjusted correctly.
7. Defective ignition coil.
8. Defective condenser.
9. Engine and transmission oil too heavy. (Winter operation.)
10. Engine ignition spark not timed properly.

**IF ENGINE STARTS BUT RUNS IRREGULARLY OR MISSES**
1. Spark plugs in bad condition, or partially fouled.
2. Spark plug cables in bad condition and "leaking."
3. Spark plug gap too close or too wide.
4. Circuit breaker points out of adjustment or in need of cleaning.
5. Condenser connections loose.
6. Defective ignition coil.
7. Defective condenser.
8. Battery nearly discharged.
9. Loose wire connection at one of battery terminals, or at coil or circuit breaker.
10. Intermittent short circuit due to damaged wiring insulation.
11. Water or dirt in fuel system and carburetor.
12. Gasoline tank cap vent plugged or carburetor vent line closed off restricting fuel flow.
13. Carburetor not adjusted correctly.
14. Weak or broken valve springs.

**IF CRANKING MOTOR DOES NOT OPERATE OR DOES NOT TURN ENGINE OVER.**
1. Ignition switch is not on.
2. Discharged battery, or loose or corroded connections.
3. Starter control circuit or solenoid defective.
5. Electric starter shaft pinion gear not engaging.

**IF ENGINE TURNS OVER BUT DOES NOT START**
1. Gasoline tank empty.
2. Gasoline valve shut off.
3. Gasoline line clogged.
4. Discharged battery or loose or broken battery terminal connection. Check by turning light switch "ON."
5. Fouled spark plugs.
6. Spark plug cables in bad condition and "leaking."
7. Badly oxidized ignition circuit breaker points.
8. Circuit breaker and/or ignition timing points badly out of adjustment.
9. Loose wire connection at one of battery terminals, or at coil or circuit breaker.
10. Defective ignition coil.
11. Defective condenser.
12. Clutch slipping and starter not turning engine over.
13. Sticking valves, or tappets too tight.
14. Engine flooded with gasoline as a result of over-choking.
15. Engine and transmission oil too heavy (winter operation).

**IF A SPARK PLUG FOULS REPEATEDLY**
1. Too cold a plug for the kind of service or for type of engine.
2. Piston rings badly worn or in bad condition otherwise.

**IF ENGINE PRE-IGNITES**
1. Excessive carbon deposit on piston head or in combustion chamber.
2. Too hot a spark plug for the kind of service or for type of engine.
3. Defective spark plugs.
4. Ignition timing too advanced.

**IF ENGINE OVERHEATS**
1. Insufficient oil supply, or oil not circulating.
2. Leaking valves.
3. Heavy carbon deposit.
4. Carburetor adjustment too lean.
5. Ignition timing too late.

**IF ENGINE DETONATES**
1. Unsuitable fuel (octane rating too low).
2. Heavy deposit of carbon on piston head and in combustion chamber (decreases combustion space, thereby increasing compression ratio. The higher the compression ratio, the higher the octane rating of fuel required).

**IF OIL DOES NOT RETURN TO OIL TANK**
1. Oil tank empty.
2. Scavenger pump gear key sheared.
3. Oil feed pump not functioning.
SECTION 1C
Product - Locating Troubles

IF ENGINE USES TOO MUCH OIL
1. Breather valve incorrectly timed.
2. Piston rings badly worn or in bad condition otherwise.
3. Chain oiler adjusting screw adjusted for an excessive amount of oil.
4. Oil leak to outside.

EXCESSIVE VIBRATION
1. Cylinder head bracket loose or broken.
2. Engine mounting bolts loose.
4. Front chain badly worn, or links tight as a result of insufficient lubrication.

IF GENERATOR DOES NOT CHARGE
1. Brushes badly worn.
2. Brushes sticking in holders.
3. Voltage regulator not grounded.
4. Voltage regulator incorrectly adjusted.
5. Defective voltage regulator.
6. Commutator dirty or oily.
7. Positive brush holder grounded.
8. Generator "A" terminal grounded.
9. Loose or broken wire in generator-battery circuit.
10. Broken field coil wire or loose terminal (both coils).
11. Commutator shorted
12. Defective armature.

IF GENERATOR CHARGING RATE IS BELOW NORMAL
1. Voltage regulator incorrectly adjusted.
2. Broken field coil wire or loose terminal (one coil).
3. Commutator worn and not turning true with shaft - throws brushes at high speed.
4. Commutator dirty or oily.
5. Brushes gummy and sluggish in holders.
6. Defective armature.

IF CARBURETOR FLOODS
1. Float set too high (1966 and earlier).
2. Inlet valve sticking.
3. Inlet valve and/or valve seat worn or damaged.
4. Dirt or other foreign matter between valve and its seat.
5. Carburetor float not located correctly in bowl - may be binding (1965 and earlier).
7. Excessive pumping of hand throttle grip.

IF TRANSMISSION SHIFTS HARD
1. Bent shifter rod.
2. Clutch dragging slightly.
3. Transmission oil too heavy (winter operation).
4. Shifter forks (inside transmission) sprung as a result of using too much force when shifting.
5. Corners worn off shifter clutch dogs (inside transmission) - makes engagement difficult.

IF TRANSMISSION JUMPS OUT OF GEAR
1. Shifter rod improperly adjusted.
2. Shifter forks (inside transmission) improperly adjusted.
3. Shifter engaging parts (inside transmission) badly worn and rounded.

IF CLUTCH SLIPS
1. Clutch controls improperly adjusted.
2. Insufficient clutch spring tension.
3. Worn and/or oil soaked friction discs.

IF CLUTCH DRAGS OR DOES NOT RELEASE
1. Clutch controls improperly adjusted.
2. Clutch spring tension too tight.
3. Friction discs gummy.
4. Clutch sprocket keys badly worn.
5. Clutch discs warped.

IF BRAKE DOES NOT HOLD NORMALLY
1. Brake shoe improperly adjusted.
2. Brake controls binding.
3. Brake linings impregnated with grease as a result of over-lubrication.
4. Brake linings badly worn.
5. Brake drum badly worn or scored.
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