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TABLE OF CONTENTS

SAFETY

Safety is of the first importance in the discharge of duty.

Always operate and maintain your equipment with common sense and care.

For your safety and others, assign one employee to complete all necessary maintenance and to record all checks performed in log book.

Early detection of mechanical failure will prevent unnecessary hazards.

Thinking clearly of your moves, will prevent accidents.

You are responsible for your safety, let's keep it accident-free and safe.

FORWARD

A Planned Preventive Maintenance Program is required to receive safe, efficient operation from your T.M.C.

Neglecting Operator Maintenance will only result in an unsafe, unreliable T.M.C.

1. MAINTENANCE CATEGORIES

Categories of your T.M.C. inspections are:

Daily

Weekly

Monthly

Semi-annually

Remember

Safety never takes a holiday!

2. DAILY INSPECTIONS

&

MAINTENANCE

2.1 BRAKES:

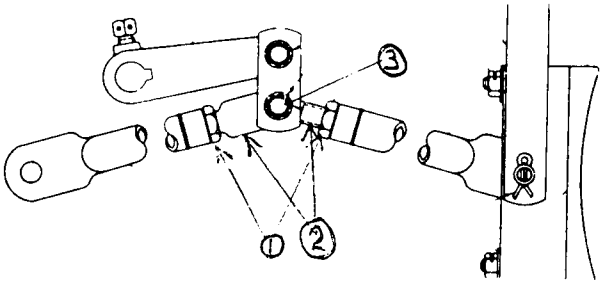
a) Alway check your brakes to make certain they are in top notch condition. If in doubt as to their condition - REPLACE THEM.

b) Check brake shoes and wheels to make sure they are clean and free from grease and creosote.

c) Check to see that brake linkage works smoothly and propertly.

d) Check to see that all brakes make contact with the wheels evenly.

2.2 ADJUSTING BRAKES



A) Loosen Jam Nuts "1".

B) Disconnect adjustable toggles "2" by removing pin "3".

C) Unscrew the eyebolt or yoke "2" on each toggle 2 or 3 turns

D) Reconnect parts.

E) Try the brake and if necessary, make further adjustments until all four shoes take hold equally.

F) Be sure brake lever can be latched in the first notch in the guide.

G) Tighten Jam Nuts.

2.3 Check gasoline Level.

2.4 Inspect Gas Tank for leaks and cracks.

DON'T TAKE CHANCES - IF cracks are evident , DISCARD TANK.

2.5 WHEELS

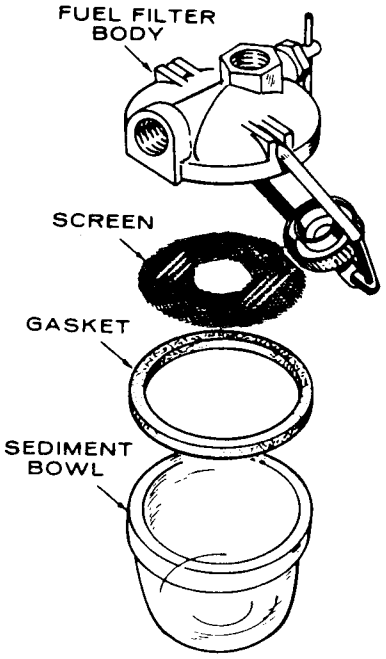
Make sure wheel bolts & hub nuts are tight. Make sure cotter pin is in place.

Check for wheel wobble by moving track unit back & forth.

Wheel wobble can be caused by a bent axle, bent wheel, or unevenly tightened wheel nuts.

2.6 SEDIMENT BOWL

If foreign material (water, dirt, etc.) is visible, clean and dry, making certain screen and gasket are in place when re-installing.



2.7 RAIL SWEEPS

Check to ensure they are snug. Always use your sweeps when travelling.

2.8 DRIVE CHAIN

a) Check alignment of chain - it must be straight from transmission to idler sprocket to rear axle sprocket.

b) Keep chain tight by adjusting idler sprocket.

c) Keep chain lubricators full using engine oil - 5W-30.

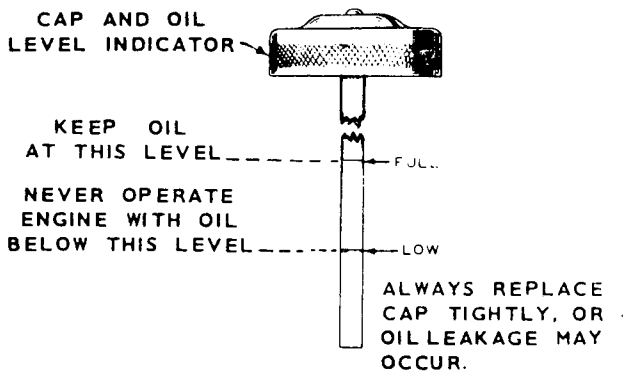
2.10 LIGHTS

Check all lights and make sure they work.

2.11 GENERAL ENGINE CHECK

Check engine generally for leaking oil, loose bolts and belts.

2.12 CHECK ENGINE OIL



NEVER OVERFILL - Too much oil is as bad as not enough.

2.13 **LOG**

YOUR

INSPECTION

2.13.1

DAILY INSPECTIONS & MAINTENANCE

	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
BRAKES																																			
GASOLINE LEVEL																																			
GAS TANK																																			
WHEELS																																			
SEDIMENT BOWL																																			
RAIL SWEEPS																																			
DRIVE CHAIN																																			
TRANSMISSION LEVER																																			
LIGHTS																																			
ENGINE OIL																																			
GEN. ENGINE CHK.																																			

INSPECTED BY: _____ DATE: _____

FOREMAN'S SIGNATURE: _____ DATE: _____

3. WEEKLY INSPECTIONS

&

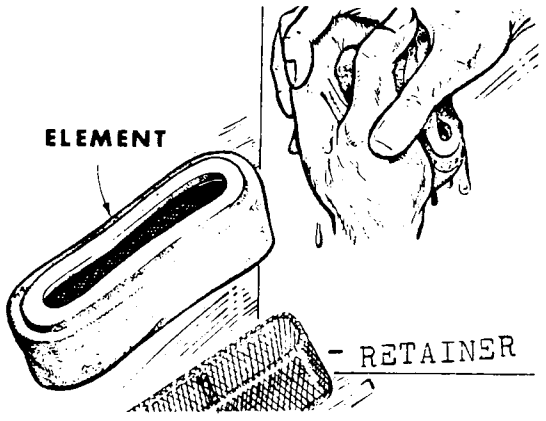
MAINTENANCE

3.1 AIR CLEANER

The purpose of air cleaners is to filter dust & dirt from the air to protect the carburator.

TO MAINTAIN AIR CLEANER:

a) Remove Element.
b) Wash element in kerosene, diesel or fuel oil or varsol.
c) Dry element.
d) Dip element in clean engine oil.
e) Squeeze element dry.
f) Reinstall element.
g) If element is worn out or torn, replace.



3.2 BATTERY

a) Check water level - add if necessary.
b) Keep battery terminal connections clean & tight.
c) Make certain battery is secure.

BATTERY SAFETY PRECAUTIONS:

When working with batteries use extreme care to avoid spilling or splashing the electrolyte.

Electrolyte contains sulphuric acid which can destroy clothing and cause serious chemical burns.

If any electrolyte is spilled or splashed on clothing, body, or other surface, neutralize it immediately with a solution of baking soda and water, then flush with plenty of clean water.

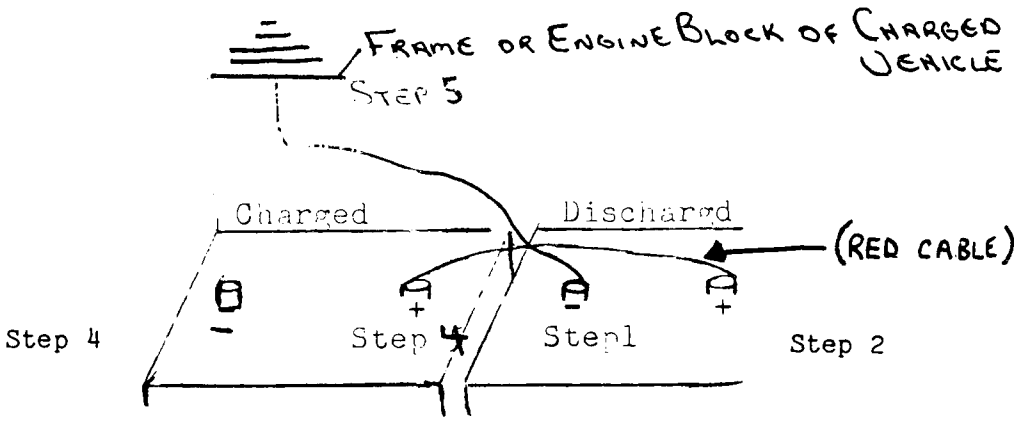
While batteries are being charged, highly explosive hydrogen gas forms in each cell. Some of the gas escapes through the filter openings and may form an explosive atmosphere around the battery. This explosive atmosphere may exit for several hours. Sparks, open flame or even a lighted cigeratte can ignite this gas, causing an internal explosion and possibly serious peronsal injury.

The following precautions must be taken to prevent an explosion:

1) DO NOT SMOKE OR PERMIT OPEN FLAME NEAR ANY BATTERY BEING CHARGED OR WHICH HAS BEEN RECENTLY CHARGED.

2) DO NOT DISCONNECT LIVE CIRCUITS AT BATTERY TERMINALS BECAUSE A SPARK USUALLY OCCURS WHEN A LIVE CIRCUIT IS BROKEN. CARE MUST ALWAYS BE TAKEN WHILE CONNECTING OR DISCONNECTING ANY BATTERY CHARGER, MAKE CERTAIN ITS POWER SWITCH OR ELECTRICAL PLUG IS PULLED BEFORE MAKING OR BREAKING CONNECTIONS.

3.3



The following steps must be taken when boosting a discharged Battery from a fully charged Battery or an explosion may occur:

1) Place Black clamp of booster cables on the negative (-) of the discharged Battery.

2) Place Red clamp of booster cable on the positive (+) of the discharged Battery.

3) Make sure the other ends of the booster cables do not touch each other.

4) Place RED clamp of booster cable on the POSITIVE(+) of the charged battery

5) Place BLACK clamp of booster cable to the FRAME OR ENGINE BLOCK OF CHARGED VEHICLE.

6) Keep away from the discharged battery.

7) Start engine.

IF ELECTRICAL ARC WELDING IS REQUIRED ON YOUR T.M.C. DISCONNECT BATTERY TERMINALS.

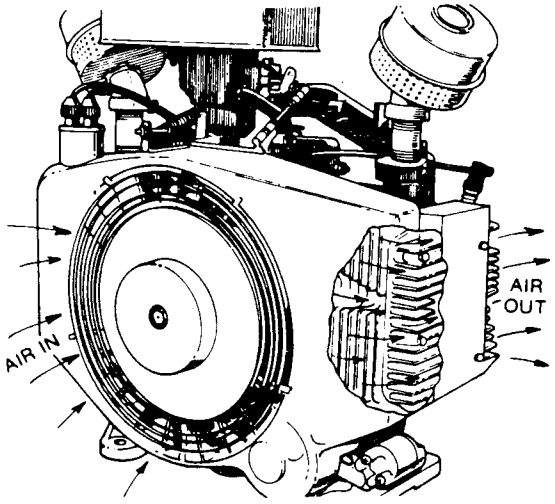
ALWAYS REMOVE THE NEGATIVE (-) TERMINAL FIRST.

3.4 CLUTCH

Adjust linkage so clutch lever or pedal has approximately 1/2" (inch) of free travel when clutch is engaged.

3.5 COOLING SYSTEM

Check and clean cooling fins. Remove dust, dirt or oil which have accumulated. Plugged or clogged cooling fins can cause overheating and engine damage.



3.6 CHAIN & SPROCKETS

Check for wear. Make sure sprockets are tight on axle and transmission.

3.7 EXHAUST SYSTEM

Engine Exhaust Gas (Carbon Monoxide) is DEADLY.

Carbon Monoxide is an ordorless, colorless gas that can cause unconsciousness, and is potentially lethal.

If you experience any of the following sysmptons, get fresh air immediately:

a) Dizziness

b) Intense headache

c) Weakness, Sleepiness

d) Vomitting

e) Muscular Twitching

f) Throbbing in Temples.

The best protection against carbon monoxide inhalation is a weekly inspection of the exhaust system.

If leaks are evident, contact the Work Equipment Supervisor in your area immediately.

3.8 GENERAL

Inspect entire T.M.C. for loose nuts and bolts - pay particular attention to Engine Motor Mounts.

Examine gas connections.

Check for loose electrical connections.

Check Door Latches, making sure they work freely and smoothly (SOME DAY YOU MAY HAVE TO GET OUT IN A HURRY.)

Clean any accumulated dirt from car.

Inspect your tools.

3.9 **LOG**

YOUR

INSPECTIONS

3.9.1

WEEKLY INSPECTIONS & MAINTENANCE

	JAN.					FEB.				MAR.				APRIL				MAY					JUNE				JULY				AUG.				SEPT.				OCT.				NOV.				DEC.			
	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AIR CLEANER																																																	
BATTERY																																																	
CLUTCH																																																	
COOLING SYSTEM																																																	
CHAIN & SPROCKETS																																																
EXHAUST SYSTEM																																																
GENERAL																																																

INSPECTED BY: _____ DATE: _____

FOREMAN'S SIGNATURE: _____ DATE: _____

4. MONTHLY INSPECTION

&

MAINTENANCE

4.1 BEARINGS, AXLES & WHEELS

Raise the unit up on blocks and make a thorough inspection of:

a) Bearings - check for wear & looseness.

b) Axles - check for bends and cracks.

c) Wheels - check for cracks - tap lightly with hammer; if wheel has a dull ring, then wheel most likely has a crack.

Be especially careful with ice-cutting wheels.

DONT'T TAKE CHANCES WITH BEARINGS, AXLES OR WHEELS.

If in doubt, contact the Work Equipment Supervisor in your area, or change suspect parts.

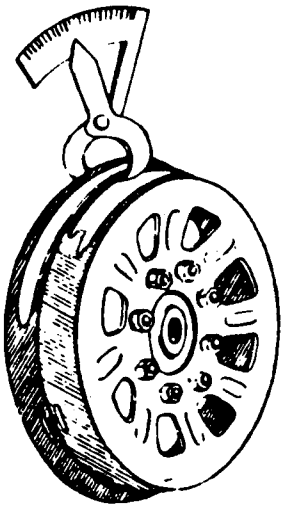
4.2 CALLIPER WHEELS

Once a month, wheels must be callipered for wear and recorded on Form 1212. Wheels wear out quicker than most people think. When a wheel wears out, the flange breaks away from the wheel. Calliper wheels at the round part between the flan and whell, is where most of the wear occurs. Hold callipers straiht out, at right angles to the face of the wheel to get a true reading.

Callipers are graduated or measured in 1/16, 1/4, 1/2 and 1 inches. When wheel measures 1/8" or less, replace the wheel with a new one.

Always callipher wheels in at least two places as wheels often wear unevenly. Remember - Push car and trailer wheels must also be callipered.

After recording on to Form 1212, keep this form in the toolhouse, Send form to Supervisor once a year.



4.3 GREASE ENTIRE T.M.C.

a) Main axle bearing

b) Centre bearing

c) Brake shaft bearing

d) Idler sprocket

e) Differential axle.

4.4 CHANGE ENGINE OIL

4.5 CHECK TRANSMISSION OIL LEVEL

To check oil level:

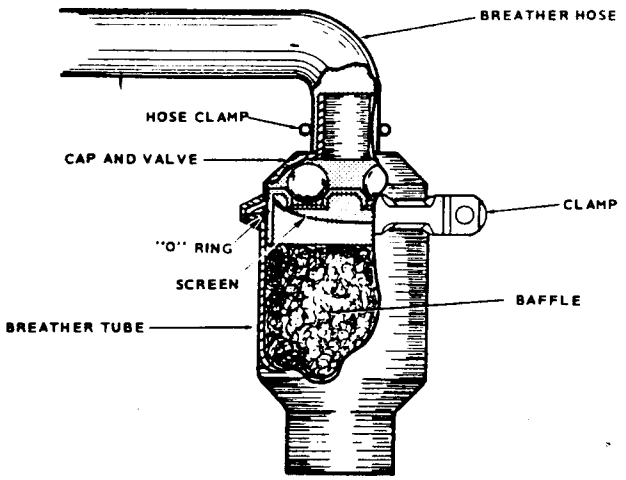
1) Remove level plug on side of transmission.

2) If oil drips out, oil level is alright.

3) If oil does not come out, fill by removing upper plug (use 85-90W Oil) pour oil into transmission until oil starts to flow from centre plug.

4. Replace both plugs.

4.6 CLEAN CRANKCASE BREATHER



1) Remove the rubber cap from the crankcase tube.

2) Pry the valve out of the cap.

3) Wash valve in fuel oil or diesel fuel.

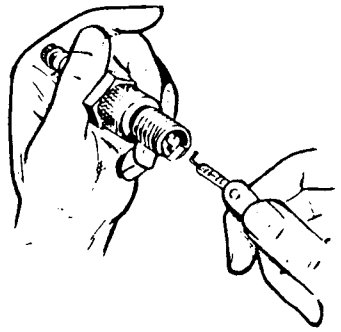
4) If defective, replace.

5) Pull the baffle out of the breather tube and clean.

6) Reinstall.

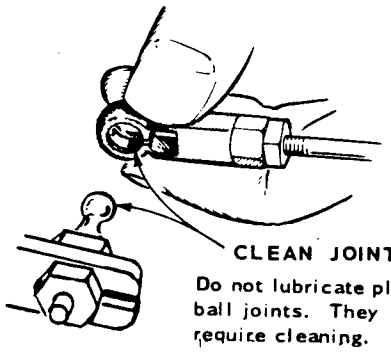
4.7 CHECK SPARK PLUGS

Be sure to set gap 0.025". If spark plug is discolored, has fouled, or the porcelain is chipped or cracked, replace the plug with a new one.



4.8 GOVERNOR LINKAGE

The linkage must be able to move freely through its entire travel. Clean the plastic joints. Inspect the linkage for binding, excessive slack and wear.



CLEAN JOINT

Do not lubricate plastic ball joints. They only require cleaning.

4.9 **LOG**

YOUR

INSPECTION

4.9.1 MONTHLY INSPECTIONS & MAINTENANCE

	J	F	M	A	M	J	J	A	S	O	N	D
BEARINGS, AXLES & WHEELS												
CALLIPER WHEELS												
GREASE ENTIRE TMC												
CHANGE ENGINE OIL												
CHECK TRANSMISSION OIL LEVEL												
CLEAN CRANKCASE BREATHER												
CHECK SPARK PLUG												
GOVERN LINKAGE												

INSPECTED BY: _____ DATE: _____

FOREMAN'S SIGNATURE: _____ DATE: _____

5. SEMI ANNUAL INSPECTION

&

MAINTENANCE

5.1 CHANGE SPARK PLUBS

5.2 CHANGE BREAKER POINTS (if required)

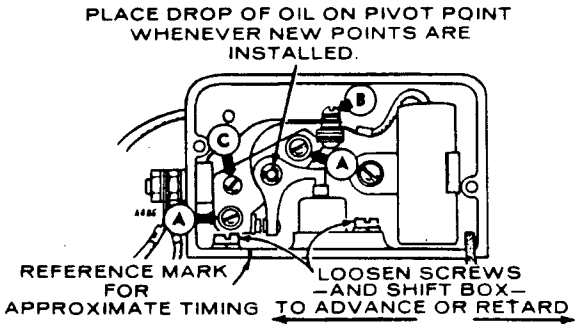
A) Remove the two screws and the cover on the Breaker box.

B) Remove the two spark plugs so engine can be easily rotated by hand.

C) Remove the two mounting screws "A" and pull out of the box just far enough so screw "B" can be removed. Replace points with a new set but do not completely tighten mounting screws "A".

D) Rotate the engine clockwise (facing flywheel) by hand until points are fully open. Turn screw "C" until point gap measures .020 inch with a flat thickness gauge.

E) Place a drop of oil on the point's pivot point.



SET - .020

5.3 COMPLETE CLEANING OF COOLING SYSTEM

5.4 FLUSH GAS TANK

On request, the Work Equipment Supervisor of your area will assist you with the maintenance of your T.M.C.

5.5 LOG YOUR INSPECTIONS

5.5.1 SEMI ANNUAL INSPECTION & MAINTENANCE

	JAN - JUNE	JULY - DEC
CHANGE SPARK PLUGS		
CHANGE BREAKER POINTS		
COMPLETE CLEANING OF COOLING SYSTEM		
FLUSH GAS TANK		

PERFORMED BY: _____ DATE: _____

FOREMAN'S SIGNATURE _____ DATE: _____

6. STARTING YOUR T.M.C.

After you have completed your 12 daily inspections and maintenance, you are ready to start your T.M.C.

1. Always start the T.M.C. on the track on which you are to run.

2. Set and Lock Brakes.

3. Place Transmission in Neutral.

4. Depress clutch.

5. Set throttle at slow.

6. Put ignition on.

7. Push Start Button.

Do not push Start Button for more than 15 seconds at one time when starting.

7. RUNNING YOUR T.M.C.

1) Lower Rail Sweeps.

2) Always drive with engine ahead in normal service.

3) After warming up engine, seat passengers, operate facing ahead.

4) Depress clutch pedal or lever and shift "Forward" and "Reverse" lever to Forward.

5) Also with clutch pedal or lever depressed, shift "High" and "Low" lever to low, then release brake.

6) Test brakes immediately after unit is put in motion.

7) After car gets underway, use throttle to regulate speed.

8) Accelerate to a speed of 10 to 15 mph, close throttle, depress clutch and shift "High"-"Low" shift lever to "High", release clutch and open throttle. Carefully shift back to "Low" for heavy grades and slow speeds.

9) Always run in "High" wherever possible. Do not operate the car at speeds above 15 mph when in Low gear, as excessive engine speeds should be avoided.

REMEMBER

A SPEED OF 25 MPH IS MAXIMUM.

8. STOPPING YOUR T.M.C.

1. Close throttle & apply hand brake, depressing clutch before bringing T.M.C. to a complete stop.

2. Shift "High" - "Low" lever to neutral position.

3. Shut off ignition.

9.

SOME

DO'S

1. DO your maintenance.
2. DO be safety conscious.
3. DO use extreme care at all times
4. DO make sure you can stop in less than half the distance you can see.
5. DO test brakes before you really need them.
6. DO get home safely everyday.

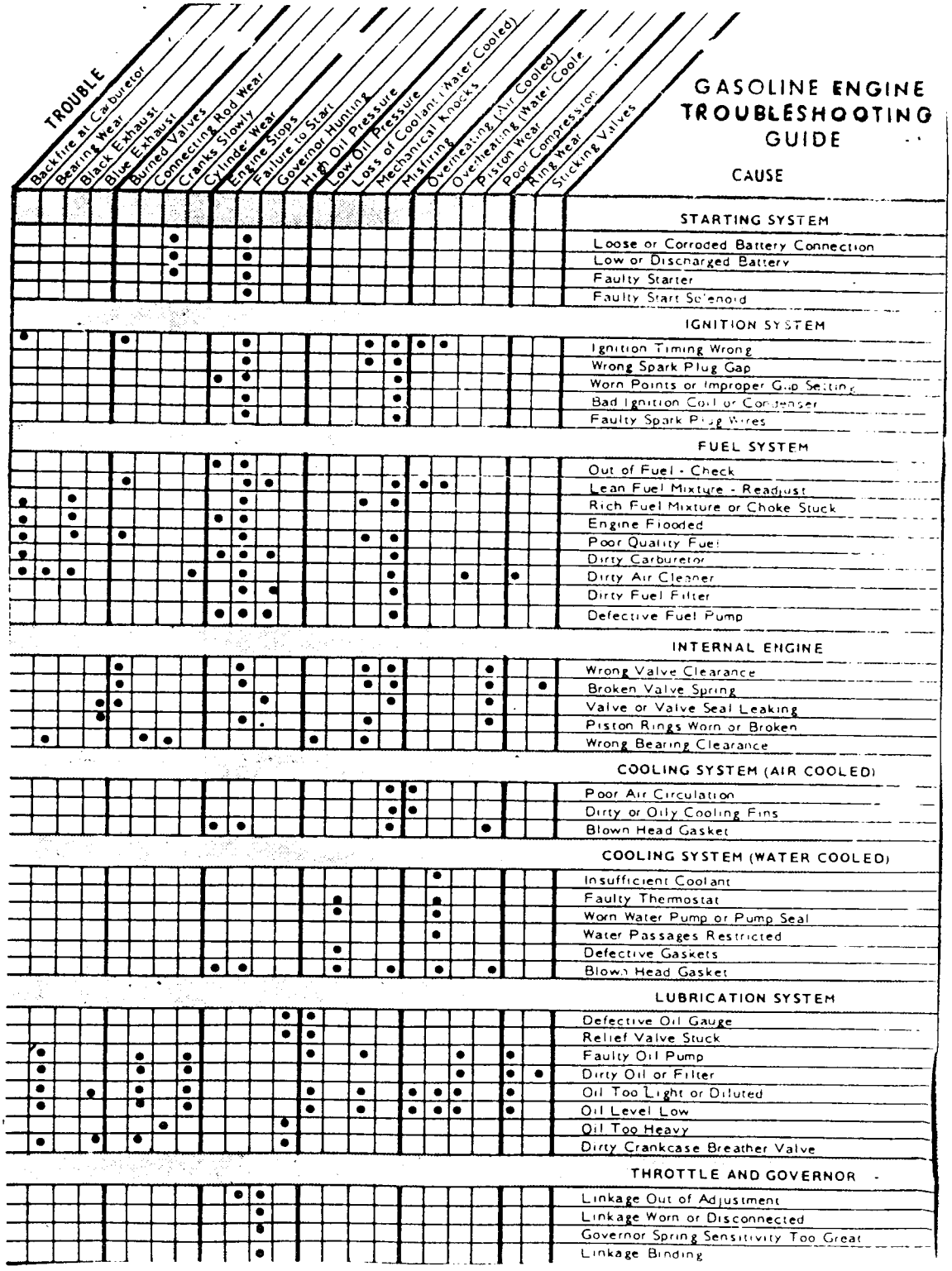
DON'TS

1. DON'T push T.M.C. by placing hand on windshield.
2. DON'T neglect maintenance.
3. DON'T leave your ignition switch on when engine is not running
4. DON'T push T.M.C. if you are alone.
5. DON'T take chances.
6. DON'T be afraid to ask for help maintaining your T.M.C.

10. QUICK REFERENCE CHECK

Spark Plug Gap	.025
Breaker Point Gap	.020
Transmission Oil	85W-90
Engine Oil Summer	10W-30
Winter	10W-30
WINTER N.O.O. DIVISIONS	0W-30
Chain Lubricator Oil	5W-30

11.


GASOLINE ENGINE TROUBLESHOOTING GUIDE
TROUBLE
CAUSE
Backfire at Carburetor
Bearing Wear
Black Exhaust
Blue Exhaust
Burned Valves
Connecting Rod Wear
Cranks Slowly
Cylinder Wear
Engine Stops
Failure to Start
Governor Hunting
High Oil Pressure
Low Oil Pressure
Loss of Coolant (Water Cooled)
Mechanical Knocks
Misfiring
Overheating (Air Cooled)
Overheating (Water Cooled)
Piston Wear
Poor Compression
Ring Wear
Sticking Valves
STARTING SYSTEM
Loose or Corroded Battery Connection
Low or Discharged Battery
Faulty Starter
Faulty Start Solenoid
IGNITION SYSTEM
Ignition Timing Wrong
Wrong Spark Plug Gap
Worn Points or Improper Gap Setting
Bad Ignition Coil or Condenser
Faulty Spark Plug Wires
FUEL SYSTEM
Out of Fuel - Check
Lean Fuel Mixture - Readjust
Rich Fuel Mixture or Choke Stuck
Engine Flooded
Poor Quality Fuel
Dirty Carburetor
Dirty Air Cleaner
Dirty Fuel Filter
Defective Fuel Pump
INTERNAL ENGINE
Wrong Valve Clearance
Broken Valve Spring
Valve or Valve Seal Leaking
Piston Rings Worn or Broken
Wrong Bearing Clearance
COOLING SYSTEM (AIR COOLED)
Poor Air Circulation
Dirty or Oily Cooling Fins
Blown Head Gasket
COOLING SYSTEM (WATER COOLED)
Insufficient Coolant
Faulty Thermostat
Worn Water Pump or Pump Seal
Water Passages Restricted
Defective Gaskets
Blown Head Gasket
LUBRICATION SYSTEM
Defective Oil Gauge
Relief Valve Stuck
Faulty Oil Pump
Dirty Oil or Filter
Oil Too Light or Diluted
Oil Level Low
Oil Too Heavy
Dirty Crankcase Breather Valve
THROTTLE AND GOVERNOR
Linkage Out of Adjustment
Linkage Worn or Disconnected
Governor Spring Sensitivity Too Great
Linkage Binding

12. COMMONLY NEEDED PARTS

PART	CN STOCK NO.
Head Light	10-10-420
Tail Light Lens	10-41-235
Flashing Light	10-33-664
Flashing Light Bulb	10-44-745
Horn	10-48-441
Horn Button	10-58-587
Light Switch	10-08-552
Ignition Switch	10-51-930
Breaker Points	10-48-374
Coil	10-14-944
Alternator	10-38-693
Voltage Regulator	10-54-639
Alternator Belt	10-38-697
Starter	10-48-829
Brake Shoe Liner MT14	10-06-013
Brake Shoe Liner MT19	10-07-836
Brake Shoe Liner MT14	10-39-624
Brake Shoe Liner MT19	10-07-564
Chain	10-54-098
Chain Damper	10-47-892
Clutch	10-34-742
Sprocket Axle	10-47-890
Axle Rear MT14	10-40-359
Axle Front MT14	10-04-358
Axle Rear MT19	10-04-354
Axle Front MT19	10-04-353