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MANUAL PREVIEW

Fairmont Railway

Operator's Manual

Railroad Car S2

Series F

Operator's Manual

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TO OPERATORS OF FAIRMONT S2 SERIES F MOTOR CARS

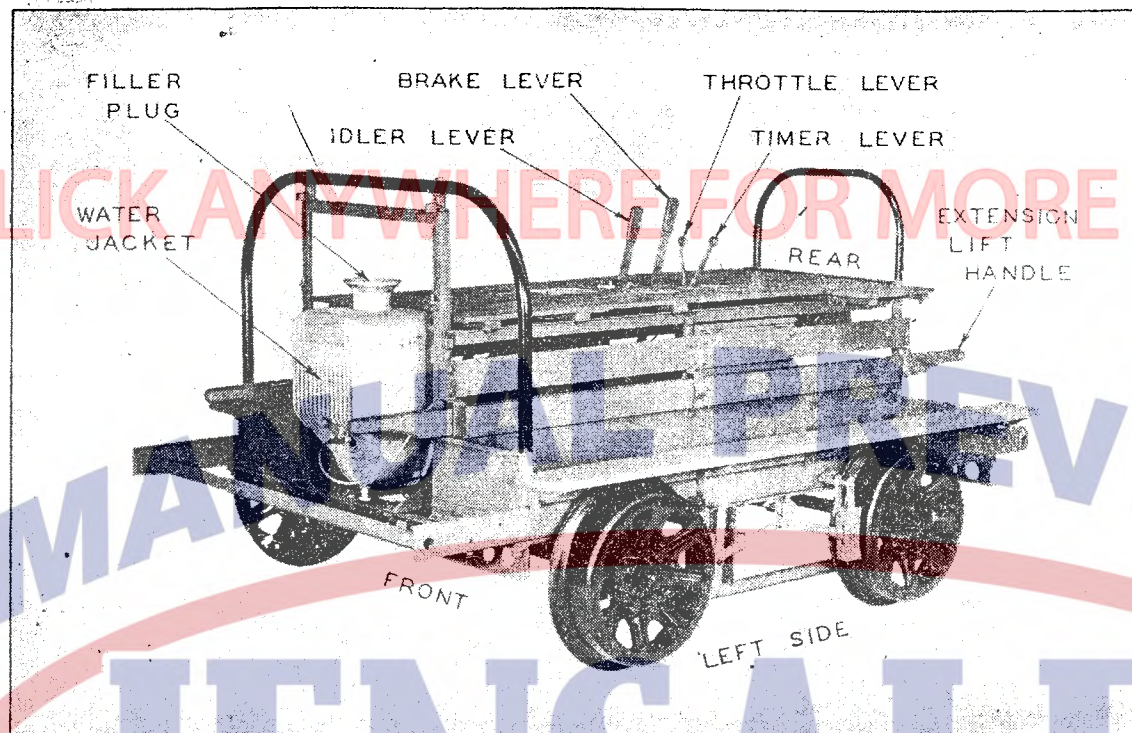
This bulletin contains instructions and spare parts for standard S2 series F group 1 and later motor cars having battery ignition and direct belt drive. Accessories, their main parts, and some maintenance tools are found on pages 48 through 52. Items used on cars having figures in the space on the name plate marked "Special" and different from those used on standard cars, are listed under that special car designation, see page 53.

Upon receipt of this book promptly fill in the car and engine record on page 20, and always mention these factory numbers when writing about the car or ordering parts. Take good care of this book so it is available for reference when making adjustments and repairs, or ordering spare parts.

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These illustrations show a general view, and the underside of a standard S2 series F car, with the more important parts pointed out. Reference is frequently made to these parts throughout the bulletin, and the user should thoroughly familiarize himself with them and their functions before placing the car in service or making adjustment and repairs.



weather. Mixing heavy oil in the gasoline in smaller proportions than recommended reduces the lubricating value of the mixture and lower engine efficiency and higher maintenance costs will result.

Good lubrication is assured by using oils of suitable viscosity having a fairly low pour test. Carbon deposits are also reduced and engines start easier. S. A. E. 30 oils of approximately the following viscosity characteristics are most satisfactory for year 'round use:

At 180° Fahrenheit 185 to 255.

At 210° Fahrenheit 50 to 63.

Oils up to S. A. E. 40 as follows, may be used if S. A. E. 30 is not obtainable:

At 180° Fahrenheit 255 to 450.

At 210° Fahrenheit 62 to 75.

Practically all refiners and oil companies can supply oils conforming to these specifications, and Fairmont Railway Motors, Inc., will gladly render assistance in selecting lubricants.

STARTING BATTERY IGNITION ENGINES

These instructions apply to direct belt drive and Hy-Drive cars. Engines on two speed transmission cars must be started counter clockwise to drive forward (engine ahead), and clockwise to drive backward. See two speed transmission bulletin.

The engine will run either forward or backward, but the timer control lever must be set differently for starting and operating in each direction, see instruction plate on car seat.

STARTING ENGINE FORWARD

Forward is with top of flywheels running clockwise or toward water jacket. Release idler lever, and set and lock the brake. Hook starting crank bearing to catch on right foot board, then slide crank through bearing and over end of crankshaft.

TO TEST IGNITION

Retard the spark by moving timer control lever toward the rear of car. Close switch and slowly crank the engine forward. The coil should buzz only while the timer contact points close. If it buzzes at any other time or does not buzz at all, there may be a short circuit or improperly connected wire, and a check should be made by following instructions on page 14. Finally open switch.

TO PRIME ENGINE

See that shutoff valve at gas tank is open and fuel flows to carburetor. Partly open the throttle by moving lever toward rear of car. Open carburetor needle valve 1½ to 2 turns from the closed position by turning control knob to the left.

Be sure ignition switch is open, then spin the engine several times with the crank while pulling up control knob to choke carburetor. This fills the cylinder and crankcase with fresh gas. In cold weather it can also be primed by injecting some of the fuel mixture through the priming cup on throttle valve cover. Choking the carburetor or priming is usually only necessary when starting a new or cold engine.

CRANKING ENGINE

Next release choke control knob, be sure spark is retarded, close switch, and firmly holding the starting crank engaged, quickly pull it upward in a clockwise direction. If engine does not start the first time, continue these upward pulls on the crank until it does, priming again if necessary. When the engine starts remove the starting crank. *Never spin the engine with switch on -- injury might result.*

**IDLING
ENGINE**

As soon as engine starts move timer control lever toward the front of the car to advance the spark, and slightly close the throttle so engine runs slowly until it warms up, then set carburetor needle valve to the best running position, about 1 to 1½ turns open. Never "race" a cold engine to warm it up, nor run it at high speed when the car is standing still.

**STARTING
ENGINE
BACKWARD**

Backward is with top of flywheels running anti-clockwise or away from water jacket. Retard the spark by moving timer lever toward the front of car.

Follow the preceding instructions for testing ignition, setting throttle, priming, and starting, but crank the engine anti-clockwise or backward. As soon as it starts, move the timer lever toward the rear of the car to advance the spark, and after warming up set needle valve to proper running position.

**TO STOP
ENGINE**

Open the switch. Just before engine stops turning open throttle to fill the engine with fresh gas and make starting easier.

**REVERSING
BATTERY
IGNITION
ENGINES**

To reverse a battery engine when running, without using starting crank, the belt must be free. Open ignition switch and leave timer advanced. Open throttle, and just before flywheels stop turning, close switch and engine will kick back and run in the opposite direction. Then reset timer lever.

**HANDLING
THE CAR**

Pull out extension lift handles when setting car on and off the track. Be careful not to strike axle pulley on rails. Use care in setting off at crossings, switches, and frogs so axles are not sprung by pinching wheels in flangeways.

**STARTING
THE CAR**

Always drive with the engine ahead in normal service. After starting and warming up the engine, seat passengers, operator facing ahead, and release brake. Gradually open the throttle and at the same time tighten the belt by slowly pushing idler lever ahead. This allows the belt to slip and act as a clutch.

**DRIVING
THE CAR**

After car gets under way, tighten idler enough to prevent belt slippage, and latch the lever. Use throttle to regulate speed, and for average conditions the spark should be well advanced.

Always drive a new car slowly and carefully until thoroughly familiar with the controls. A speed of 15 to 20 miles per hour for the first 500 miles is recommended.

If the car loses speed or the engine knocks on hard pulls with open throttle, partially retard the spark, and slip the belt a little if necessary. When coasting down light grades the belt can be released and throttle closed, thereby saving fuel. In descending heavy grades the engine can be used as a brake by leaving belt tight, closing throttle, and cutting off ignition. When coasting long distances, maintain slight throttle opening to furnish lubrication for internal engine parts.

**STOPPING
THE CAR**

First close the throttle, then retard the spark part way. Next release idler lever to slacken belt, and apply the brake. Shut off ignition to stop engine if car is to be removed from track.

**REVERSING
THE CAR**

To reverse a battery ignition car without cranking, release belt and bring car to a full stop, allowing the engine to run slowly. Then reverse the engine as explained previously, after which the car can be driven in the other direction.

LUBRICATION

The same grade of oil that is mixed in the gasoline is satisfactory for general lubrication of the car. Always mix 3/4

sure the lever can be latched in the first notch in the guide. Install replacement liners when old ones become badly worn. Be sure liners and bolts holding them do not touch other metal brake parts as electric signals might be operated.

COOLING SYSTEM

Use clean soft water in the cooling system if it is available. Check the water regularly and keep it up to the water level cock. Capacity is approximately nineteen quarts.

Cars can stand in freezing weather without harm to the jacket, providing water is not carried above the proper level. Before operating a car with frozen water in the jacket, run the engine slowly for a few minutes to thaw ice around the cylinder. For easiest starting in cold weather, drain water at night and re-fill with hot water the next morning. Anti-freeze solutions containing alcohol are not practical for section cars, but equal parts of either radiator glycerine, "Prestone," or "Zerex" can be used in section cars if water is added to replace evaporation losses.

After long service, lime and scale deposits from the water may cause overheating. These can be scraped off the cylinder walls and head after removing water jacket. The water jacket is held on the cylinder block by five studs with nuts and lockwashers, and a gasket prevents leakage. Water resistant packing is used around the cylinder head barrel, and tightening the packing washer nuts prevents leakage at this point.

FUEL SYSTEM

Inspect the fuel system regularly and see that the tank is securely held by the tank straps. At least once a year remove the tank from the car and thoroughly flush it out to remove sediment, water, and lint. The F8618 gas tank cap has an air vent to allow free flow of fuel to the carburetor. Never use F5115 condenser cap on the gas tank as it has no vent. Loops and bends in the fuel pipe sometimes cause "air locks" which prevent the flow of gasoline. Blowing in the tank will start the flow if fuel pipe is not clogged.

The carburetor strainer bowl should be taken off and cleaned at least once a month, oftener in winter. Be sure gaskets are in good condition when replacing bowl. This also applies to the strainer located below the fuel tank, standard on all but group 1 cars. Don't use heavy wrenches on fuel pipe couplings, float bowl, or strainer bowl.

Leaks at fuel pipe couplings can usually be stopped by tightening the brass nuts snugly. If this does not overcome leakage, cut off the ends of fuel pipe just back of the old sleeves, and apply new F8080 compression sleeves with the pipe extending about 1/8" through them. Then tighten coupling nuts firmly.

CAR FRAME AND HOUSING

Keep all frame bolts tight. In case frame members become damaged, straighten them; or if badly out of shape, replace. Raising the hinged seat top permits inspections and adjustments to be quickly and easily made.

ENGINE MOUNTING

Engines used in S2 series F cars are designated as type RQ. They are secured to the engine sills by alloy steel S. A. E. bolts with nuts and lock washers.