

Fairmont

BNW #1155

ST-H-1

Motor Car

SERVICE INSTRUCTIONS AND PARTS LISTS

IMPORTANT

Before placing a motor car in service read the starting and operating instructions in this book.

Bulletins enclosed in these covers sometimes apply to more than one series of the same class of car, therefore be sure to consult the sections which refer to the car and engine being used.

When this book is received, complete the motor car record inside this front cover. Mention factory engine and car serial numbers when ordering parts or writing about the car.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.

DISTRICT OFFICES

Chicago

Philadelphia

Washington, D. C.

St. Louis

St. Paul

IN CANADA: Fairmont Railway Motors, Ltd., Toronto, Ont.

INSTRUCTIONS FOR ORDERING PARTS

When this book is received complete the following motor car record from the FAIRMONT name plate on the car, and on the engine water jacket. The engine number is also stamped on top of the crankcase. Always mention these factory serial numbers when writing about the car or ordering parts. Don't give railroad numbers.

Factory Car No. 211089 Class ST-2 Series H

Group L Special

Factory Engine No. 96340 Type RQ H.P. 8-11

Group D Special

**TO INSURE PROMPT AND CORRECT SHIPMENT
of parts on orders, be sure to give us:**

- (1) Quantity of each part wanted
- (2) Symbol number of part as shown in this book
- (3) Description of part as shown in this book
- (4) Factory serial numbers recorded above
- (5) Car gauge if other than 56½" standard
- (6) State whether shipment is to be by mail, UPS, or freight

If in doubt as to a part wanted, send full description or a sketch, or send old part with order.

All parts are shipped f.o.b. factory, transportation charges to be paid by customer.

TO OPERATORS OF FAIRMONT ST2 SERIES H MOTOR CARS

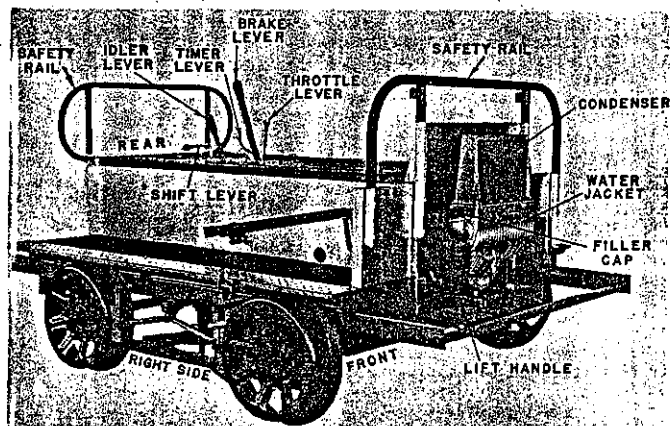
This bulletin contains instructions and spare parts for standard ST2 series H group 1 and later motor cars having battery ignition and belt drive. Accessories, their main parts, and some maintenance tools are found on pages 46 through 50. Items used on cars having figures in the space on the name plate marked "Special" and different from those used on standard cars, are listed under that special car designation, see page 51.

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.

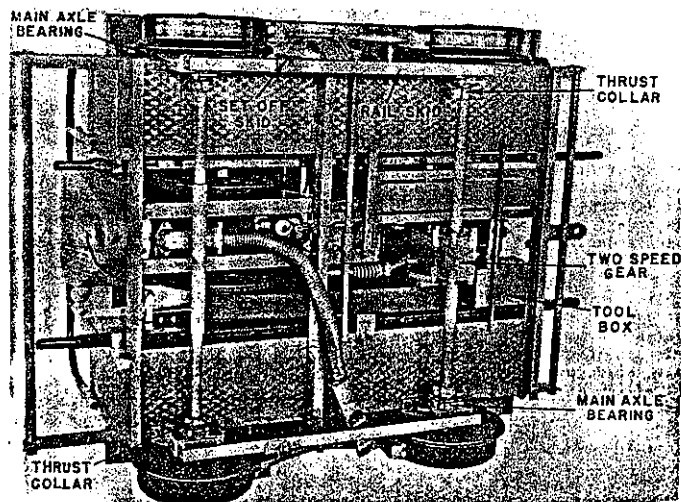
TABLE OF CONTENTS

Air Cleaner - Oil Bath Type (accessory)	49
Air Cleaner - Open Screen Type (maintenance)	16
Air Cleaner - Open Screen Type (spare parts)	31
Ammeters (accessory)	50
Axles and Axle Bearings (instructions)	9
Axles and Axle Bearings (spare parts)	9
Battery Ignition (instructions)	37
Battery Ignition (spare parts)	13, 14
Brake (instructions)	35
Brake (spare parts)	11
Cab Top (accessory)	39
Canvas Cover (accessory)	47
Car Complete less Engine	48
Car Frame and Housing (instructions)	43
Car Identification	12
Carbon Deposits	20
Carburetor (instructions)	19
Carburetor - Type C8 (spare parts)	16
Carburetor (control parts)	29
Condenser, Cooling (spare parts)	31
Connecting Rod (instructions)	25
Connecting Rod (spare parts)	16
Cooling System (instructions)	24
Cooling System (spare parts)	12
Couplers (accessory)	25
Crankshaft and Roller Bearings (instructions)	49
Crankshaft and Roller Bearings (spare parts)	17-19
Cylinder and Crankcase (spare parts)	27
Differential Axle (instructions)	25
Differential Axle (spare parts)	9
Endless Cord Belt Drive (instructions)	37
Endless Cord Belt Drive (spare parts)	9
Engine and Mounting (instructions)	39
Engine and Mounting (spare parts)	12
Extension Lift Handles	43
Flywheels (instructions)	45
Flywheels (spare parts)	17
Frame and Deck (spare parts)	27
Fuel System (instructions)	43
Fuel System (spare parts)	12
General Suggestions - Safety First	31
	8

Generator and Lights - no battery (accessory)	48
Generator, Lights, and Storage Battery (accessory)	48
Gongs (accessory)	49
Hand Lantern - Dry Cell (accessory)	50
Housing (spare parts)	45
How the Engine Operates	13
How to Order	20
Insulation - Wheel Hubs (instructions - see wheels)	37
Insulation - Wheel Hubs (spare parts)	37
Lubrication	3
Mixing Oil and Gasoline	5, 1
Oil Recommendations	1
Operating the Car	1
Piston (instructions)	2
Piston (spare parts)	2
Preparing Car for Service	3
Pulleys (instructions)	3
Pulleys (spare parts)	4
Rail Skids (spare parts)	4
Rail Sweeps (accessory)	4
Reversing Engine (battery ignition)	1
Roller Bearings - Engine (instructions)	2
Roller Bearings - Engine (spare parts)	2
Safety First - General Suggestions	4
Set Off Skids (parts)	2
Side Bearing Casings (spare parts)	1
Side Bearing Casings (removal - see crankshaft and roller bearings)	2
Side Exhaust (parts)	4
Side Steps - Hinged (accessory)	1
Spark Coil (instructions)	3
Spark Coil (spare parts)	1
Spark Plug (instructions)	3
Spark Plug (see battery ignition equipment)	6,
Starting and Stopping Engine	2
Starting Crank (parts)	4
Step Plates (parts)	1
Throttle (instructions)	3
Throttle (control parts)	3
Throttle (spare parts)	1
Thrust Collars (adjustment - see wheel alignment)	3
Thrust Collars (spare parts)	3
Timer - Weatherseal (instructions)	1
Timer - Weatherseal (spare parts)	1
Timer Control (spare parts)	1
Tool Box (spare parts)	1
Tools (accessory)	1
Tools (spare parts)	1
Turntable (accessory)	1
Two Speed Gear (instructions)	1
Two Speed Gear (parts)	1
Two Speed Gear Controls	1
Water Jacket (spare parts)	21-
Weight and Numerical Part Index	9,
Wheels (instructions)	10,
Wheels (spare parts)	10,
Wheel Alignment	10,
Windshields (accessory)	10,



These illustrations show a general view, and the underside of a standard ST2 series H 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.



PREPARING CAR FOR SERVICE

Inspect everything for possible damage in transit. If in bad condition make a full report to supervising officials at once. Be sure switch button on car seat is down, then attach high tension cable to spark plug and connect the loosened wire in battery box. If not sure where to attach this wire see diagram on page 14. Examine all bolts, nuts, and electrical connections for tightness. See that all cotter pins are spread open.

Be sure grease is up to level of filler plug in gear case. Two pounds are required when case is empty. Use SAE 90 transmission grease at all times.

Fill the grease gun with a grease which will not congeal at 40° below zero and will not flow at temperatures of 275°. All major oil companies can furnish such lubricant. Then, lubricate the four main axle bearings, drive axle center bearing, idler pulley, idler arm pivot, differential axle and brake shaft bearings.

Remove filler cap from water jacket, open water level cock on right side, and pour in clean water up to this level. About thirteen quarts are required. A small carton of rust preventative is included in the tool box with each new unit and it is recommended this be regularly used, *except do not use with permanent anti-freeze mixtures.*

Remove gas tank filler cap at rear of car and fill tank with oil and gasoline mixed according to instructions on this page, then replace filler cap. When filling tank, strain fuel through a fine mesh screen funnel or clean cloth free from lint. Open shutoff valve under gas tank. Open drain cock under carburetor, see that gasoline flows, then close it tight.

The spark and throttle levers stand vertically. The right hand one is the throttle, the left one the timer control. The carburetor control knob located at the left front corner of control panel turns to open or close the needle valve, and pulls up to choke carburetor. ST2 series H cars are equipped with a push-pull ignition switch located at front of control panel. The switch is in the "on" position when the switch button is pulled up from the control panel and in the "off" position when pushed down. Transmission shift lever extends through rear seat top directly back of control panel. When lever is straight back, transmission is in low gear. Move lever 90° to left (clockwise) to shift into high gear.

Finally set car on the track and operate the controls to become familiar with them. Release brake and belt levers, and see that car rolls freely. Be sure wheels and axles run true, and brake shoes do not drag.

MIXING OIL AND GASOLINE

S. A. E. 30 gas engine or automobile cylinder oil will give good results all year 'round in nearly any climate. We do not recommend the use of an oil heavier than S. A. E. 40. Measure 3/4 pint of oil for each gallon of gasoline (1 part oil and 11 parts gasoline by measure) and stir the mixture thoroughly. Best results are obtained by using gasoline with a minimum lead content. Don't use poor oil or reduce the proportions recommended. Never pour oil and gasoline in the tank separately -- they will not mix properly.

When "breaking in" new engines, add 1/4 pint more oil per gallon to the mixture during the first 500 miles of operation, so closely fitted parts wear in smoothly. If gasoline and oil are supplied mixed, add an extra 1/4 pint of oil to each gallon.

OIL RECOMMENDATIONS

Non-detergent, straight mineral oils properly refined from either asphalt or paraffin base crudes furnish the best lubrication. They should not contain acids, alkalis, or impurities in injurious quantities. Detergent oils commonly sold for automotive use may cause excessive deposits of foreign matter on spark plugs and in combustion chamber and ports.

In general the lower viscosity oils give cleaner results, easier starting, and provide a higher factor of safety. Heavy oils have high viscosities and they form excessive carbon and do not flow freely in cold 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.

S.A.E. 30 oils of approximately the following viscosity characteristics are most satisfactory for year 'round use:
At 130° F. 185 to 265. At 210° F. 50 to 63.

Oils up to S.A.E. 40 as follows, may be used if S.A.E. 30 is not obtainable:
At 130° F. 255 to 450. At 210° F. 62 to 75.

All refiners and oil companies can supply oils conforming to these specifications.

STARTING BATTERY IGNITION ENGINES

These instructions apply to ST2-H two speed gear cars. 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 belt lever, set gears in either high or low to prevent their spinting and clashing and set the brake. Hook starting crank bearing to catch on right step plate, 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. Pull up switch button and slowly crank 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 (push down).

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 1-1/2 to 2 turns from the closed position by turning control knob to the left.

Be sure ignition switch is open (down), 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 (pull up), 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 1 1/2 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 (push down) 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 (push down) ignition switch and leave timer advanced. Open throttle, and just before flywheels stop turning, close (pull up) 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 gear case 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 belt lever ahead. This allows the belt to slip and act as a clutch.

If load is too heavy for high gear shift to low. After starting a heavy load in low and reaching a speed of from 10 to 12 miles per hour, close throttle and release belt but do not use brake. Then firmly move shift rod to the high gear position, tighten belt and open throttle to bring car up to speed. Shift back into low for heavy grades and similar conditions.

Always run in high wherever possible. Do not operate the car at speeds above 15 miles per hour when in low gear, as excessive engine speeds should be avoided.

DRIVING THE CAR

After car gets under way, tighten belt enough to prevent 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.

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 belt 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 Always mix 3/4 pint of oil with each gallon of gasoline. This mixture lubricates all internal moving parts of the engine.

Once a week force some grease into the fittings on the main axle bearings and brake shaft bearings. Grease the differential axle each day or two.

Maintain the grease level in the case up to the level plug, using SAE 90 gear lubricant at all times. Occasionally drain and flush the case, and refill with fresh oil.

GENERAL SUGGESTIONS-- SAFETY FIRST Inspect the car before starting out each day, and make sure it is in good operating condition. Once a week clean the entire car thoroughly, examining gasoline joints, electrical connections, bolts, screws, etc., and tighten all loose parts.

When making inspection see that:

- (1) Wheel tires are not worn dangerously thin.
- (2) Wheels and axles run true.
- (3) Axle end nuts are secured by cotters.
- (4) Wheel hub bolts are tight.
- (5) All wheels are tight on axles.
- (6) All pulleys are aligned and belt runs true.
- (7) Brake is in first class working condition.

Maximum capacity of car is 1800 lbs. at ordinary speeds. Load baggage and tools carefully to prevent their working into moving parts or falling off the car.

Drive slowly with car under full control where there is not a clear view ahead, over road crossings, through gangs of workmen, through railroad yards, and over frogs and switches. Don't drive during rain or snow storms or foggy weather unless necessary, and then only with a lineup and extra precaution. When following other motor cars or trains remain 500 feet or more behind. Adhere strictly to local railroad motor car rules.

GENERAL CARE OF GEAR CASE

For extensive repairs or adjustments to the two speed gear it is advisable to remove the drive wheel, axle and bearing assembly from the car, after disconnecting belt lever control linkage. To remove gear case from axle the wheels, axle bearings and thrust collars must be taken off the axle. Smooth all burrs and rough spots on axle and remove the large covers. Gear case can then be slipped off the axle towards the right.

Care should be taken not to damage the oil seals in the covers when dismantling gear case, and also to see that they seat properly on the shafts when reassembling.

Adjust axle shaft and pulley shaft bearings by adding or removing shims from under the covers. Do not set bearings tight, they should have .003 to .005 inch end play.

ENDLESS CORD BELT DRIVE

Always leave the belt slack when car is not in use. The endless cord belt is "endless" and it must not be cut or laced. Properly cared for it will give many thousands of miles service. Never use belt dressing on the belt. If the belt glazes over and slippage cannot be overcome by increasing belt tension, scrub the inner belt face with a rag saturated in gasoline from the fuel tank. Also clean pulley faces, then dust a little tire talc or powdered soapstone on belt and pulleys.

TO CHANGE BELTS

Release belt. Remove belt lever shaft support gusset, unbolt belt lever from lever arm and disconnect linkage. Belt can then be slipped off the pulleys and removed. Then install new belt, being careful not to damage it on sharp corners. Reassemble in reverse order. Adjust belt lever linkage if necessary.

PULLEYS

The engine pulley is held on the flywheel by three cap screws which should be kept tight. Be sure lock washers are used under the heads, and that screw ends do not project through the pulley lugs. The two speed gear pulley is mounted on a tapered shaft and driven by a key. Keep pulleys in line so belt runs true and does not rub or climb the flanges.

AXLES AND BEARINGS

The axles run on a double row taper roller bearing at each end. When axle bearings require adjustment, it is best to remove them from the car. Unbolt and remove wheel, axle, and bearing assemblies. Take off wheels, then jar the bearing assemblies off the axles. If but one bearing requires adjustment, block up end of car and take off brake shoe and wheel adjacent to the bearing, then unbolt and remove bearing.

Take bearings apart and clean with gasoline if the lubricant is dirty or old, then repack with grease. To remove bearings from axle casing, take off the cover, and with a heavy punch drive against the inner race from the opposite end of the casing. If necessary, remove remaining outer race by jarring the casing against a heavy wood block. Reassemble in reverse order. Sufficient shims should be used under the cover to obtain .003" to .005" bearing end play with cover bolted tight.

A slightly sprung axle can usually be straightened cold, but one badly bent should be replaced. Never heat axles when straightening.

Two thrust collars on each axle take up end play. To adjust a thrust collar, loosen set screw and clamp bolt, then tap collar snugly against axle bearing. When correctly set, tighten clamp bolt first, then set screw, and finally apply lock wire.

DIFFERENTIAL AXLE

ST2 series H cars are equipped with the FAIRMONT differential axle. It accommodates two tight insulated wheels which turn independently of each other with their respective axle halves.

WHEELS

Standard ST2 series H cars use 16" x 5/16" x 4-1/2" demountable steel wheels, and are equipped with a differential axle and four insulated wheels. Insulated wheels are mounted on the tapered axle ends with fibre sleeves in the hubs and fibre washers next to the outer face to provide electrical insulation. Each group is drawn tight by the axle end nut and a steel washer.

Each wheel tire is tightly held on the hub by eight heat treated bolts. Removing these bolts and swinging the brake shoe clear permits of quickly exchanging a tire without taking the

complete wheel off the axle. Insulated 16" demountable wheels are easily removed from axles by using M19509 demountable wheel puller, or a shock wheel puller.

Before applying insulation smooth all burrs in the wheel hub and wipe clean. Then carefully drive the insulating bushing in until flush with outer hub face; and tighten wheel on the axle with end nut and steel washer, being sure the fiber washer is next to outer hub face. If wheels come too close together (under gauge), tough paper can be wrapped around the axle taper; if too far apart (over gauge), slightly ream the bushing with a taper reamer. Be sure insulated wheels are tight on the taper and all wheels run true.

WHEEL ALIGNMENT

NOTE -- Sometimes a small difference in drive wheel circumferences causes a car to run to one side even though perfectly aligned. Again, another car will operate satisfactorily with drive wheels showing more variation. Track conditions, direction of wind, car loading, and windshield have some effect on a car, and it may tend to run to one side even when in alignment.

Careful observance of these instructions insures a safe running car. This diagram represents the running gear of any motor car, but the instructions apply to ST2 series H cars with FAIRMONT 16" demountable wheels.

(1) Replace beat or sprung frame members and check frame for squareness. Measurements "D" across corners should be the same if frame is square. Tighten all frame bolts.

(2) Carefully block up under the car frame so all wheels turn freely and frame is level.

(3) Examine wheels and replace tires with badly worn flanges.

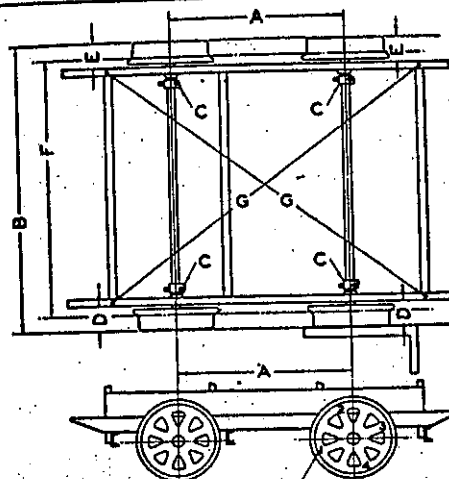
(4) Drive wheel tires must be approximately the same size. Measure them with a steel tape around the tread, being careful to keep it equidistant from the flanges at all points.

(5) (a) Rotate wheel and axle assembly, and hold a piece of chalk steady so it just touches outer face of each wheel. If wheel and axle run true chalk will mark evenly around wheel -- if wheel is sprung or axle is bent chalk will mark the high spot on wheel. Wheels or axles badly out of true usually must be replaced, though axles can sometimes be straightened. A maximum tolerance of $1/32$ " out of true is recommended on wheel tread, and up to $1/16$ " out of true on wheel face or flange.

(b) Another method of check is with a straight edge or two-foot carpenter's square across outer wheel faces (see diagram). Mark each wheel face in quarters and measure from the square to the side sill at each quarter turn of the wheel. The measurements should be the same for each wheel, if the wheel and axle run true.

(6) Axle center distance "A" should be the same on both sides of car. Axle bearing bolts can be loosened to permit shifting the wheel and axle assemblies a trifle if necessary.

(7) Cars have the wheels assembled on the axles with a tolerance of $1/8$ " to $1/4$ " under standard 56 1/2" gauge. This enables them to operate on under gauge track or canted rail without



WHEEL MARKED AT EACH QUARTER FOR TALK RUNNING TEST (5) b

change. The measurement over outside faces of wheels at "B" is $63-7/16$ " when ST2 series H wheels are $3/16$ " under standard 56 1/2" gauge. It is preferable to have both axle assemblies drawn to the same gauge when aligning wheels.

(8) New insulating sleeves are sometimes necessary to bring wheels to gauge. Fit them carefully so wheels run true.

(9) With frame approximately centered between the four wheels, the outside faces of left wheels should be in line and parallel with axle bearing sill. Check with a straight edge, tight cord, or carpenter's square, being sure distances "E" are both the same. If necessary loosen and shift thrust collars "C".

(10) Next check right side of car where distances "D" should also be equal and approximately the same as "E".

(11) Carefully set all thrust collars "C" against bearings. First tighten clamp bolts, then set screws and lock wires.

(12) After thrust collars are set, make another check of wheels to be sure alignment has not been disturbed.

To bring the car to a quick stop, apply the brake with firm steady pressure, yet allowing the wheels to revolve. Go over the brake when weekly car inspection is made, and tighten bolts and adjust shoes if necessary. Be sure cotter pins are spread.

To adjust brake, disconnect adjustable toggles on both sides of car, unscrew the eyebolt or yoke on each toggle 2 or 3 turns, then reconnect parts. Try the brake and if necessary make further adjustment until all four shoes take hold equally. Be sure the lever can be latched in the first notch in the guide. Install replacement liners when old ones wear thin. Be sure liners and bolts holding them do not touch other metal brake parts as electric signals might be operated.

BRAKE

COOLING SYSTEM

Use clean soft water in the cooling system if available. Check water regularly and keep it up to the water level cock. Capacity is approximately thirteen quarts. In service, steam from boiling water rises to the condenser where it is condensed to water which drains back.

A motor car operated in severe cold weather may cool too much, or the condenser may fill with frost, causing water to be forced out thru the overflow. To insure normal operation, partially or entirely cover the front of the condenser with cardboard or canvas. Cars can stand in freezing weather without harm to the jacket, providing water is not carried above the proper level. If cooling system contents freeze solid, be sure engine is thoroughly warmed up before driving car.

Many operators use anti-freeze mixtures during the winter months. Automobile anti-freeze mixtures which contain mineral salts should not be used. Mixtures of alcohol and water give fair satisfaction in severe weather, providing the condenser is not covered. Equal parts of water and "Zerex", or "Prestone" make a satisfactory anti-freeze, providing the condenser is protected to prevent frost forming inside. Always use water to replenish any loss by evaporation.

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 F3613 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. Don't use heavy wrenches on fuel pipe couplings, float bowl, or strainer bowl.

CAR FRAME AND HOUSING

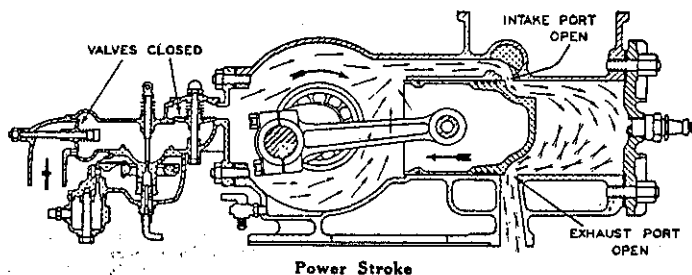
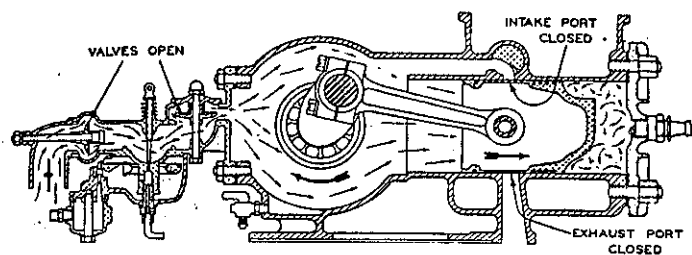
Keep all frame bolts tight. In case frame members become damaged, straighten them; or if badly out of shape, replace. Raising the hinged seat top permits inspections and adjustments to be quickly and easily made.

ENGINE MOUNTING

Engines used in ST2 series H cars are designated as type RQ-D. They are secured to the engine sills by alloy steel S.A.E. bolts with nuts and lock washers.

HOW ENGINE OPERATES

The upper illustration shows the piston passing over the exhaust and intake ports, as it moves toward the cylinder head and compresses fresh gases in the cylinder. At the same time it creates a partial vacuum in the crankcase, opening the carburetor check valve and air valve, through which fresh gases are drawn into the crankcase. When the piston reaches the end of this "compression stroke", the spark at the spark plug ignites the compressed gases, and expansion of the burning mixture forces the piston away from the cylinder head. As the piston moves away the carburetor valves close, and gases in the crankcase are compressed.



The lower illustration shows the piston nearing the end of this "power stroke" where it first uncovers the exhaust ports, and burnt gases start to escape. Immediately afterward the piston also uncovers the intake ports, and fresh compressed gases from the crankcase rush through them into the cylinder. The deflector on the piston sweeps these fresh gases toward the cylinder head and spark plug, forcing the remaining burnt gases out through the exhaust ports.

As the flywheels and crankshaft turn, the piston starts back toward the cylinder head on another "compression stroke" and again covers the ports. The fresh gases are again compressed, ignited, expanded, and exhausted. This same cycle of events is repeated over and over rapidly when the engine runs.

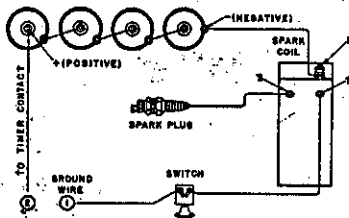
BATTERY IGNITION

The battery ignition system includes four dry cells and a coil, both carried in the battery box and wired to the timer on the engine which closes and opens the electrical circuit. A switch cuts off or turns on the ignition. This switch should always be open (down) when working on the engine or not using the car.

An engine which misses when cold and first started will usually fire regularly after being warmed up. Before changing ignition, warm up engine and try different carburetor adjustments. Then if ignition is suspected, check all wiring, switch, and connections. Tighten coil connections lightly.

New dry cells test 30 to 35 amps each and are good for several months, or until exhausted to 8 or 10 amps. Then replace entire set. Freezing reduces their efficiency, necessitating more frequent replacement in cold weather. Keep inside of battery box dry; cardboard cases on dry cells; dry cells firmly wedged in place so connections do not touch each other; and wiring free from oil, gasoline, and water.

Wiring of the ST2 series H is shown in the diagram. The "ground" wire from lower timer terminal connects to the switch.



NOTE.—Cars with generator and storage battery have one side of the electrical system permanently grounded. Coil, switch, and timer all connect in "live" side of circuit. This brings wire marked 1 from switch to insulated timer contact; the other side of timer is grounded by the mounting and an additional wire. Battery terminal marked 2 is then also grounded.

**SPARK
COIL**

Always keep spark coil dry and use only four dry cells. If system is in good condition, a 4" to 5/16" spark should jump from end of high tension cable to engine. If not, vibrator points may require attention or a new coil may be necessary. When rough or pitted, dress the alloy vibrator points clean and smooth with a fine file, pocket stone or emery cloth. After they wear thin, fit a complete new vibrator F4168 to the coil. See that points match and seat together evenly at all times, and that the point opening is 1/32".

To check current draw of coil, use an accurate low reading ammeter (Fairmont F7888). Remove spark plug and lay it on some metal frame member, or disconnect high tension cable and hold it about 1/8" from engine. Close ignition switch and turn flywheels until timer points close and cause coil to buzz. Open switch, then hold ammeter leads firmly against switch binding posts. With good batteries the current draw should be .86 to .90 amps. Adjust coil draw by carefully bending the farthest end of vibrating point bridge down toward coil box to increase the current, or up to reduce the current, as required.

**SPARK
PLUG**

To test, remove from engine and lay on some metallic part of car or engine. High tension cable attached. Close (pull up) switch and turn engine until the coil buzzes. If spark at plug gap is not steady, check high tension cable and clean the plug,

then test again. If condition of plug is doubtful, replace plug. Set points at 1/32" gap for battery ignition and 1/64" for magneto ignition. Check and reset gap whenever plug is removed. Always carry a spare plug for emergency use. Replacement plugs should duplicate the factory plug closely and be 18 mm size.

**TIMER
ADJUSTABLE
WEATHERSEALD**

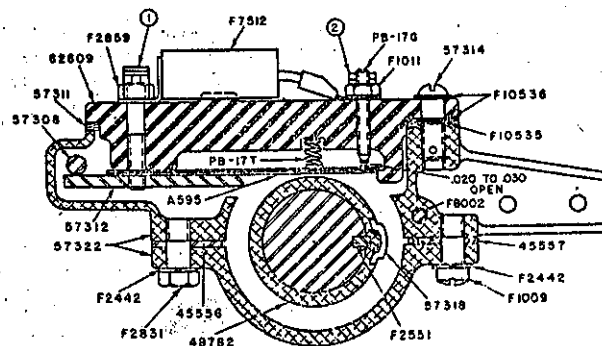
The Fairmont Adjustable Weatherseald Timer uses the standard A595 double leaf spring blade and has contact points enclosed in the mounting casting to prevent entrance of moisture, oil, and foreign matter. This timer is used on RQ-D battery ignition engines numbered 88480 and higher and is also applicable to earlier RQ-D units.

The interval during which the timer points close to produce the spark should be 30° to 35°, or about one tenth of a flywheel revolution. This measures 5-1/2" to 6" for RQ-D engines with 20" flywheels. To check this measurement, close switch and slowly turn flywheel until the contact points just close, causing coil to buzz. Mark flywheel rim in line with timer handle or some fixed object. Again turn flywheel in same direction until coil just stops buzzing and mark flywheel as before. If adjustment is necessary turn arc adjusting screw 57314 to right to increase the interval and to the left to decrease it. **CAUTION**—Do not attempt to adjust timer with engine running.

Best ignition is obtained with the contact points adjusted with .020" to .030" opening. Following is an easy way to set them. Remove timer body from mounting casting by releasing arc adjusting screw 57314. Loosen lock nut on point adjusting screw PB-176. Turn this screw down until the two points just touch, then back screw out a scant 1/2 turn and tighten the lock nut. Check with a feeler gauge if one is available.

DO NOT ADJUST THE TIMER POINTS TO CHANGE THE LENGTH OF CONTACT—keep them set at .020" to .030" opening.

If the points burn or wear unevenly, dress them with a fine file, pocket stone, or fine emery cloth. Be sure they match and seat together evenly when adjusted. Keep timer connections clean and tight. The mounting casting should be adjusted

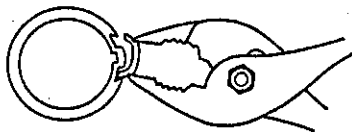


closely on the support casting, yet be free to move when spark is "advanced" or "retarded".

To renew timer blade, remove body assembly from mounting casting, and loosen clamp screw F2859. Be careful not to lose PB-17T spring. Reassemble with new parts, making sure clamp block is clean to insure a good connection; also lined with blade and rounded end towards the points, and that the two contact points match and seat together evenly. Adjust points to .020" to .030" and reassemble on mounting casting, then adjust for proper contact interval as explained previously.

The nylon timer wiping block 57318 can be quickly and easily replaced as follows: Remove complete timer from support casting. Turn flywheel so timer wiping block is exposed through opening in support casting. With a pair of pliers opened wide grasp the wiping block as shown. Apply pressure on pliers, at the same time tilt pliers either up or down. This will release wiping block from one lip of cam sleeve and permit removal.

Use pliers to install new wiping block, placing one edge under sleeve lip, then apply just enough pressure to clear other lip of cam sleeve. The wiping block tends to straighten out, causing it to lock snugly in the cam sleeve. Center wiping block under timer blade and apply a thin coat of grease. Adjust points, reassemble timer on support casting, and reset contact interval.



The sponge rubber gasket 57811 seals the timer from water, snow and foreign matter. When applying a new gasket first clean timer body - then moisten adhesive side of gasket with gasoline and press into place.

Always check and readjust point opening, and length of contact interval, after making any repairs or removing timer parts from engine.

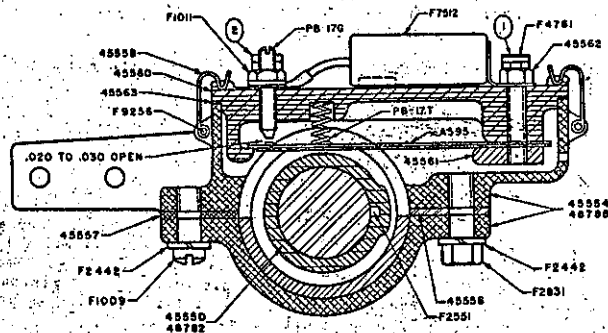
WEATHERSEALD TIMER (NON- ADJUSTABLE)

Keep timer connections clean and tight and the contact points free from pits and scale. The timer casting should be adjusted closely on the timer support casting, yet free enough to move when the spark is "advanced" or "retarded". If the points burn or wear unevenly, dress them with a fine file, pocket stone, or fine emery cloth. Timer is equipped with an ignition condenser that is bridged across the timer points to reduce burning and scaling of points, thereby giving more efficient ignition operation. When the cast one piece timer cam wears so it will not properly close the points replace with the late style cam with nylon wiping block, see page 14B. Remove flywheel and timer support casting. Loosen set screw, remove old cam and replace with new one. Center wiping block under timer blade and apply a thin coat of grease. Adjust points and reassemble timer casting and flywheel.

Occasionally apply a thin coat of cup grease or similar lubricant to cam and blade wearing surfaces. The frequency of this lubrication will depend on the hours of service.

Best ignition is obtained with the contact points adjusted from .020" to .030" opening. Following is an easy way to set them: Remove the body assembly from the mounting casting by releasing the snap springs at each end of the body assembly. Loosen the lock nut on adjusting screw PB-17G. Turn this screw down until the two points just touch, then back it out a full 1/2 turn and tighten the lock nut. Reassemble body assembly on the mounting casting.

To renew a timer blade, remove the body assembly from the mounting casting by releasing the snap springs at each end of the body assembly. Loosen timer blade screw 45562 and remove clamp block 45561. Old blade can then be removed and a new one put in its place. Be careful not to lose the PB-17T spring. Replace the clamp block and tighten the screw making sure the clamp block is lined with the blade and with the rounded end towards the points. Also be sure the two contact points match and seat together evenly. Adjust the points and reassemble body assembly on the mounting casting.



CARBURETOR

The carburetor control knob turns to open or close the needle valve and pulls up to choke the carburetor. If needle valve is opened too far the mixture will be "rich". Black smoke from the exhaust indicates a "rich" mixture. With needle valve closed too much the mixture is "lean". A "lean" mixture gives a weak explosion and causes engine to run unevenly, missing a few explosions or back firing.

The needle valve should always be set so the engine runs best with the least gasoline. The best adjustment for a warm engine is between 1 and 1 1/2 turns open. When starting in cold weather, open needle valve at least a turn more than the regular adjustment. After engine is warmed up, needle valve can be closed to the regular adjustment. Don't close needle valve when stopping engine, nor shut it hard. Springs on check and air valves are set with correct tension at factory and should not be changed.

Sometimes a hot engine will start hard after standing a short time. This is caused by "flooding", or a very rich mixture forming in the crankcase. A "flooded" engine can be cleaned out by opening crankcase drain cock and rocking flywheels.

The small vent hole in body of carburetor should be kept open. If gasoline runs out, or constantly drips, float valve is not seating properly. To remedy, take off and clean strainer bowl and drain carburetor, then replace parts. If float valve continues to leak, shut off gasoline, remove float bowl, and inspect float valve, float lever bearing and hinge pin. New parts should be applied if these are badly worn, and float level checked.

With float lifted to its high position and float valve tight on the seat, the top surface of float should be 3/8 to 7/16 inch below top rim of bowl. If the distance is less than this, the float valve and seat should be renewed. The strainer bowl should be taken off and cleaned regularly.

**AIR
CLEANER**

Cars are equipped with open screen type of air cleaners as standard. Clean the screen every two to four weeks, depending on conditions. Extremes may necessitate other intervals. To clean, remove screen assembly and wash in gasoline or engine fuel mixture. Allow screens to dry thoroughly, then dip in medium engine oil, drain and replace.

**CONNECTING
ROD - STEEL**

The piston pin bushing is pressed into the connecting rod, and reamed for .0015" to .002" clearance on the piston pin. The bronze backed babbit bushing at the crankpin end wears slightly in service and needs occasional adjustment. A dull rattling sound in crankcase as engine slows down usually indicates a worn or loose connecting rod bearing.

To adjust a loose connecting rod, remove carburetor. Remove lock wire, both screws, cap and shims. Peel off layers from each shim, according to looseness; then replace cap and shims, drawing screws tight, and test adjustment. If still loose, continue until correct. Do not file the bronze cap. There should be but very little play in this bearing. If piston rebounds from compression the bearing is not too tight. Be sure screws are tight, then lock with a new wire.

**PISTON
AND RINGS**

The piston has a floating piston pin held in place by lock rings. Four piston rings prevent loss of compression. The three rings on the head end are doweled in place to prevent their turning, while the one on skirt end is free. When fitting new rings in cylinders, the ends should have an opening of .015" to .025". Rings may be slipped on or off the piston by inserting thin strips of metal under them. When replacing piston in cylinder, have rings properly located on dowel pins.

To pull piston from cylinder, first remove carburetor, then disconnect connecting rod. Remove water jacket and take off cylinder head, after which piston and rod can be pulled. When replacing piston, be sure the deflector is in proper position (see cut on page 13). The piston pin and holes in the piston and connecting rod are finished to insure assembly without fitting. Always use a new pin with a new piston.

FLYWHEELS

Flywheels are located on crankshaft tapered by keys, and drawn to place by nuts. Don't try to drive flywheels off as spokes are liable to be cracked, crankshaft sprung, or bearings damaged. To remove a flywheel, pull cotter and unscrew nut. With a brass or lead hammer weighing about 3 lbs. sharply strike end of crankshaft, at same time pulling outward on flywheel rim. Flywheels which have been in place a long time may stick, and a jaw wheel puller should be used. When replacing flywheel, wipe parts clean and oil, draw nut fairly tight and insert cotter.

**ROLLER
BEARINGS**

Roller bearing installations on FAIRMONT equipment are approved by the bearing manufacturer's engineers, and bearings have proper load capacities and clearances to insure satisfactory service. Don't strike bearings with steel hammers. Always drive them off evenly with a brass punch held against inner races only, being careful not to damage the roller retainers. A piece of clean tubing which just slips over the shaft is best to drive them back in place. Never lay bearings on work benches or heat with a torch. Wash in gasoline or hot soda bath as soon as removed, lubricate with oil, and wrap in clean paper or cloth.

**CRANKSHAFT
AND ROLLER
BEARINGS**

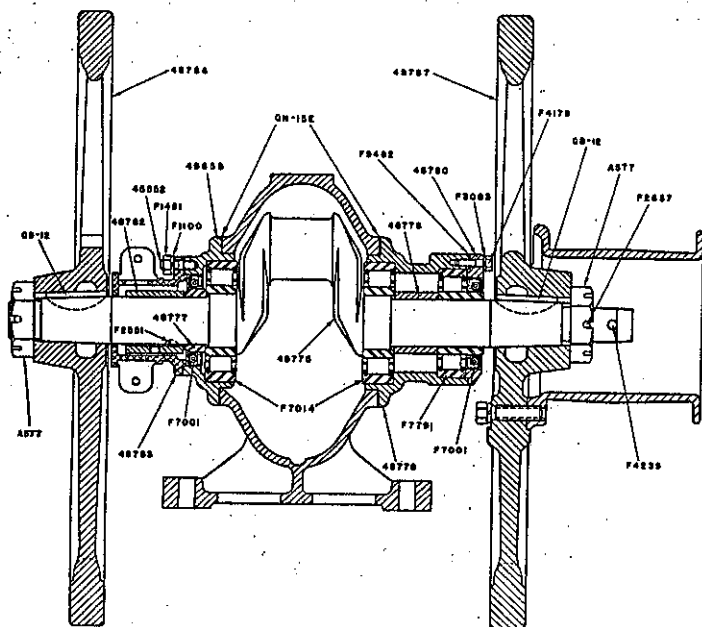
The crank pin, inboard roller bearings and outboard roller bearings are lubricated by oil which enters the crankcase mixed in the fuel.

To remove crankshaft disconnect connecting rod, then push piston and rod assembly toward cylinder head. Take off flywheels and remove starting crank pin from crankshaft. Remove nuts holding side bearing casings and carefully drive them off with a block of wood. Remove timer cam and key, turn crank pin straight down in crankcase, then lift out crankshaft with bearings.

The three roller bearing races are pressed on the crankshaft, the inner two having rollers and cages assembled on them. If necessary to remove them, they should be driven off evenly, with a brass punch against inner races only. The oil seal race on timer side is forced off as the bearing race is removed. On the belt side the outboard bearing inner race is removed first, then the spacing sleeve, and finally the inboard bearing race and rollers. Outer races of the two inboard bearings are pressed in the side bearing casings, also the outer race and rollers of the outboard bearing. Outer races may be driven from the casings with a heat punch.

Smooth all burrs and rough places on the crankshaft shoulders and fillets before reassembly, then carefully press or drive on the inner races with rollers. Also press or drive the oil seal race on the timer side against the inner bearing race with the beveled edge out. Tap belt side spacing sleeve against inner bearing race, then press or drive on the outboard bearing race. Apply timer cam and tighten set screw. Outer races for the inboard bearings must be squarely pressed and seated in the bearing casings, thrust shoulders first.

Clean gasket joints, remove timer support casting from side bearing casing, and oil bearings before reassembling. Replace crankshaft and bearings in crankcase, apply a new gasket, then start timer side casing with outer race on the rollers squarely and carefully tap to place. Be sure oil seal fits properly on the oil seal race. When applying the side bearing nuts first draw one up just snug, then tighten the opposite one equally. Set the remaining two the same way and finally tighten all four nuts evenly. Next "seat" the roller bearing in the casing by lightly tapping the opposite end of the crankshaft. Apply belt side casing with a new gasket, and tighten as instructed for timer side. Be sure this casing is drawn evenly to place and concentric with the crankshaft.



The crankshaft and bearing assembly must have 1/64" to 1/16" clearance when side bearing casings are bolted in place. Check this by tapping crankshaft on one end, then the other, and measure the amount it shifts. An extra gasket may have to be added at one or both bearing casings to secure clearance. Replace belt side casing cover, using a new gasket, and be sure oil seal is in good condition. On the timer side, replace the timer support casting on the side bearing casing, with opening for timer blade towards carburetor end of engine. Flywheels and remaining parts can then be reassembled.

THROTTLE

Leakage at the throttle stem is prevented by a packing. The stop in opposite cover limits the valve travel. The throttle arm is held in place by a clamp screw that should be kept tight. If this arm slips, the throttle may not open properly. The throttle valve can be pulled out from belt side of engine after removing valve cover and belt side flywheel.

CARBON DEPOSITS

After long service the piston head, inside of cylinder head, and walls of combustion chamber become coated with carbon. Knocking or "pinging" then occur when the engine is warmed up, especially when pulling loads. Carbon can be scraped out after removing water jacket and cylinder head. Clean the intake and exhaust ports; removing the muffler and throttle valve makes it easier. Carbon inside the piston head and deflector should also be removed. Wipe or blow out loose carbon before reassembling.

When replacing cylinder head and water jacket be sure the gasket and joints are clean. First tighten every other cylinder head nut just snug, then set the remainder the same way. Next go over all of them, tightening to place evenly.

INSTRUCTIONS FOR ORDERING PARTS

When this bulletin is received complete the following motor car record from the FAIRMONT name plates on the car, and on the engine water jacket. The engine number is also stamped on top of the crankcase. Always mention these factory serial numbers when writing about the car or ordering parts.

Factory Car No. _____ Class _____ Series _____

Group _____ Special _____

Factory Engine No. _____ H. P. _____ Type _____

Group _____ Special _____

TO INSURE PROMPT AND CORRECT SHIPMENT of parts always give:

- (1) Quantity of each part wanted.
- (2) Symbol number of part as shown in this book.
- (3) Description of part as shown in this book.
- (4) Factory serial numbers recorded above.
- (5) Car gauge if other than 56 1/2" standard.
- (6) State whether shipment is to be by mail, express, or freight.

All parts are shipped f.o.b. factory, transportation charges to be paid by customer. Terms are strictly cash with order.

Parts are listed by description, symbol, and quantity, and all important items illustrated. Quantities in right hand columns show the number of parts in each assembly or group. Items printed in capitals are assemblies which include all parts listed immediately following and indented to the right. When assemblies can be used, always order them to save work of fitting separate parts. If in doubt as to any part wanted, send full description or sketch, or send old part with order.

For descriptive purposes the engine end of car is named front, and right and left are determined by looking from rear to front.

Common bolts, nuts, and washers are not listed in this bulletin, as they can be obtained from any railroad store department.

The weight and numerical part list on pages 21 through 23 contains all items shown in the parts section covering standard belt drive battery ignition cars. Spare parts for accessories, and parts used on special cars only, are not listed in this index.

Spare parts of accessory groups are given on pages 46 through 48. Items used only on cars having figures in the space on the name plate marked "Special" are listed according to car designation, starting on page 49.

CAR IDENTIFICATION
(Found on Car Name Plate)

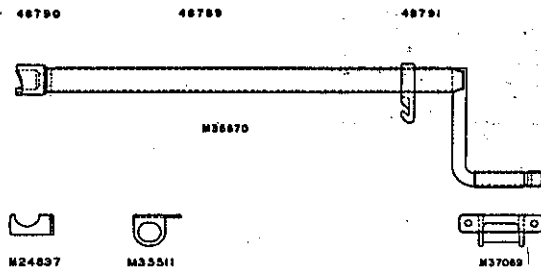
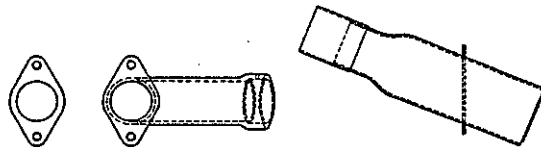
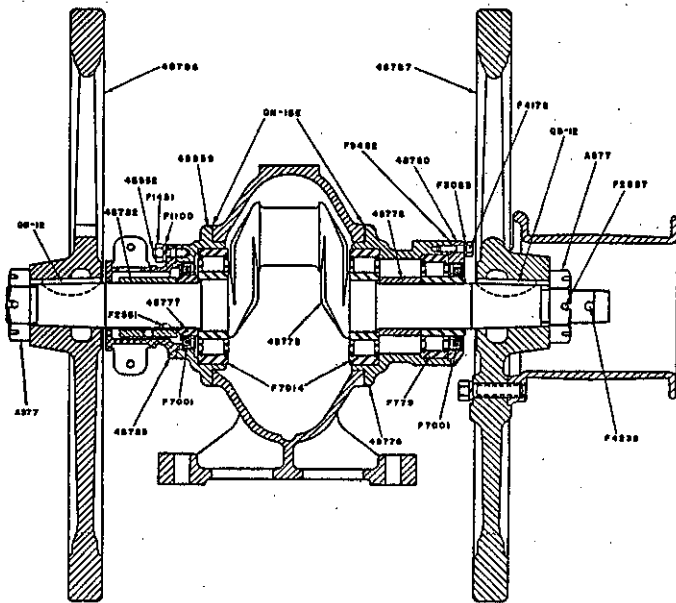
To accurately identify cars, all units carry the designation "Class ST2---Series H---Group---Special---". The group number is always shown, and cars having changes to customers' specifications also have figures in the space marked "Special." When the letter "Z" appears in the designation, it indicates either broad or narrow gauge.

WEIGHT AND NUMERICAL PART INDEX

SYMBOL	(APPROX) WEIGHT	PAGE	SYMBOL	WEIGHT	PAGE	SYMBOL	WEIGHT	PAGE
RO-D	242 lb.	43	A1065	5 oz.	25	F2551	1 oz.	27, 32, 33
U-3E	1 oz.	41	A1073	34 1/2 lb.	25	F2581	1 oz.	25
Q-6	3 oz.	24	F1081	2 lb.	35	F2657	1 oz.	27
G-8C	1 oz.	25	A1088	1/2 oz.	25, 41	F2702	1 oz.	39
PH-8A	1/2 oz.	25	F1100	1/2 oz.	25	F2703	9 oz.	37
QN-8D	2 oz.	25	F1103	2 oz.	37	F2729	12 oz.	37
QB-12	2 oz.	27	F1176	1 oz.	41	F2733	1 oz.	37
G-13C	6 oz.	24	A1182	59 1/2 lb.	25	F2737	1/2 oz.	41
G-13D	1/2 oz.	24	A1185	61 lb.	25	F2753	1 1/2 oz.	37
Q-13E	2 oz.	24	F1194	1/2 oz.	25, 41	F2831	1/2 oz.	32, 33
QB-13A	11 oz.	24	A1198	25 1/2 lb.	25	F2845	1/2 oz.	39
QB-13B	4 oz.	24	F1222	1/2 oz.	39	F2859	1 oz.	32
QN-15E	1/2 oz.	27	F1291	1/2 oz.	43	F2866	1/2 oz.	39
PB-15G	1/2 oz.	32, 33	A1316	3 1/2 lb.	29	F2879	1 oz.	39
PB-17T	1/2 oz.	32, 33	A1319	1 1/2 lb.	29	F2945	1 1/2 oz.	35
QH-20	6 oz.	25	A1321	1/2 oz.	29	F2945	7 oz.	35
P-21D	1/2 oz.	25	A1322	1 1/2 oz.	29	F2948	2 oz.	35
QH-21A	3 oz.	25	A1324	1/2 oz.	29	F2958	2 oz.	35
P-43C	1 oz.	25	A1325A	2 oz.	29	F2989	1/2 oz.	41
Q-47B	1 oz.	25, 29	A1326	1/2 oz.	29	F3006	1/2 oz.	25
QN-47B	1 oz.	25, 29	A1327	1/2 oz.	29	F3011	1 oz.	45
C-48	1/2 oz.	35	A1328	1/2 oz.	29	F3018	1 oz.	41
D-48A	3 oz.	35	A1331	1 oz.	29	F3029	1/2 oz.	31
TF-68F	1/2 oz.	31, 45	A1332	1/2 oz.	29	F3030	1/2 oz.	31
PH-90F	1 oz.	31	A1332	1/2 oz.	29	F3032	1 oz.	27, 35
Q-91	3 oz.	31	A1334	1/2 oz.	29	F3054	1/2 oz.	ft.
QB-113	2 1/2 lb.	24	A1341	1/2 oz.	29			
QB-213	3 1/2 lb.	24	A1342	1 1/2 oz.	29	F3079	1/2 oz.	43
A260	7 1/2 lb.	39	A1344	1/2 oz.	29	F3083	1/2 oz.	27
A406	1 oz.	25	A1345	12 oz.	29	F3095	3 oz.	37
A410	3 oz.	25	A1347	1/2 oz.	29	F3096	7 oz.	35
E2453	1/2 oz.	29	A1349	1/2 oz.	29	F3132	1 oz.	45
E2454	1/2 oz.	29	A1350	1/2 oz.	29	F3148	1 oz.	43
E2456	1/2 oz.	29	A1364	1/2 oz.	41	M3226	5 oz.	39
E2472	2 1/2 oz.	29	A1366	1/2 oz.	29	F3288	1/2 oz.	41
E2530	1 oz.	29	A1367	1/2 oz.	29	F3288	1/2 oz.	31
E2540	1/2 oz.	29	A1368	1 1/2 oz.	29	F3366	1/2 oz.	43
E2541	1/2 oz.	29	A1369A	1 oz.	29	F3495	1 oz.	45
A577	9 oz.	27	A1371	9 oz.	29	F3515	1 oz.	39
A595	1/2 oz.	32, 33	A1372	8 oz.	29	M3550	1/2 oz.	39
A646	1/2 oz.	29	A1384	1/2 oz.	29	F3598	1/2 oz.	39
A695	2 oz.	25	A1386	1 oz.	29	F3613	1/2 oz.	31
A868	7 1/2 lb.	24	A1387	6 oz.	29	F3614	2 oz.	31
A871	1/2 oz.	24	A1390	1 1/2 lb.	29	F3651	1 oz.	31
A873	8 lb.	24	A1391	2 oz.	29	F3718	1/2 oz.	37
A874	11 1/2 lb.	24	F1402	1/2 oz.	35	F3853	1/2 oz.	31
F1000	1/2 oz.	25	F1416	1/2 oz.	25	F3854	1 oz.	31
F1007	1/2 oz.	37	F1451	1/2 oz.	25, 27	F3855	1/2 oz.	31
F1009	1/2 oz.	32, 33	F1683	1/2 oz.	31	F4026	1 1/2 oz.	31
A1011	5 oz.	25	F1691	1/2 oz.	41	F4125	1 1/2 oz.	35
F1011	1/2 oz.	25, 32, 33	F1692	1/2 oz.	29	F4166	1 oz.	35
			F1741	2 oz.	25	F4178	1/2 oz.	27
A1012	11 oz.	25	F1903	1/2 oz.	25	F4235	1/2 oz.	27
F1023	1/2 oz.	25	F1969	1/2 oz.	29	F4252	1/2 oz.	37
F102E	1/2 oz.	25	F1971	1/2 oz.	29	F4334	2 oz.	43
F1029	1/2 oz.	25, 27	F2035	1/2 oz.	31	M4442	2 oz.	37
F1040	1/2 oz.	25, 31	F2229	1 oz.	37	M4447	1/2 oz.	37
A1057	5 1/2 lb.	25	M2314	1/2 oz.	35	M4458	2 oz.	37
A1060	1/2 oz.	25	F2442	1/2 oz.	32, 33	M4460	1 oz.	37
			F2447	1/2 oz.	27, 33	F4635	1/2 oz.	37
			F2485	2 oz.	41	F4761	1/2 oz.	32, 33
			F2493	1/2 oz.	39, 41			

F5115.....	4 oz.....	25	M8674.....	5 oz.....	37	M29663.....	2 oz.....	31
F5153.....	1 oz.....	37	M8675.....	2 oz.....	37	M29829.....	1 1/2 oz.....	31
F5153.....	1 oz.....	31	F8C92.....	1 oz.....	31	M30342.....	1 oz.....	37
F5493.....	1 1/2 lb.....	37	F8951.....	1 oz.....	41	M30343.....	1 oz.....	37
F5505.....	1 oz.....	41	F8987.....	2 1/2 oz.....	41	M30844.....	1 oz.....	37
F5566.....	1 oz.....	41	F8993.....	5 oz.....	41	M31263.....	1 oz.....	43
F5567.....	1 oz.....	41	F9168.....	1 oz.....	39	M31360.....	1 oz.....	39
F5523.....	1 1/2 lb.....	37	F9169.....	1 oz.....	39	M32621.....	2 lb.....	37
F5691.....	2 oz.....	35	F9182.....	1 oz.....	35	M34385.....	1 1/2 lb.....	37
F5855.....	2 1/2 oz.....	43	M9199.....	1 oz.....	25	M34386.....	1 1/2 lb.....	37
F6470.....	1 oz.....	29	F9217.....	1 oz.....	39	M34410.....	6 oz.....	31
F6537.....	1 oz.....	31	F9231.....	1 oz.....	45	M34916.....	5 lb.....	43
F6574.....	3 lb.....	39	F9256.....	1 oz.....	33	M34917.....	5 lb.....	43
F6584.....	1 oz.....	31	F9263.....	4 oz.....	39	M35062.....	14 oz.....	31
F6699.....	9 oz.....	27	F9336.....	2 oz.....	41	M35511.....	3 oz.....	27, 45
M6733.....	1 oz.....	35	M9429D.....	49 lb.....	37	M35798M.....	36 lb.....	37
F6823.....	8 lb.....	25	F9482.....	1 oz.....	27	M36277.....	15 1/2 oz.....	39
F6923.....	1 oz.....	37, 41	F9513.....	1 oz.....	41	M36324A.....	1 1/2 lb.....	31
F6930.....	1 oz.....	37, 41	F9557.....	1 1/2 lb.....	41	M36398.....	4 lb.....	35
F6931.....	1 oz.....	37, 41	F9558.....	11 oz.....	41	M36400.....	10 oz.....	35
F7001.....	3 oz.....	27	F9559.....	1 1/2 lb.....	41	M36406.....	1 oz.....	35
F7014.....	2 1/2 lb.....	27	M9643.....	1 oz.....	37	M36601.....	1 oz.....	39
F7106.....	4 oz.....	39	M9688D.....	46 lb.....	37	M36639.....	7 oz.....	27, 43
F7112.....	1 oz.....	25	F9949.....	1 oz.....	41	M36670.....	4 lb.....	27
F7119.....	1 oz.....	29, 31, 45	10069.....	1 oz.....	35	M36700.....	3 lb.....	39
F7120.....	1 oz.....	39, 43	F10535.....	1 oz.....	32	M36865.....	2 oz.....	35
F7121.....	1 oz.....	31, 43	F10536.....	1 oz.....	32	M36866.....	3 oz.....	35
M7220.....	2 lb.....	39	F10601.....	1 oz.....	39	M36867.....	1 lb.....	35
F7242.....	1 oz.....	45	M1140A.....	33 lb.....	37	M36871.....	3 oz.....	35
F7244.....	1 oz.....	45	M11410.....	10 1/2 lb.....	37	M37085.....	7 oz.....	31
F7273.....	2 oz.....	43	M11412.....	10 1/2 lb.....	37	37502.....	1 oz.....	29
F7370.....	1 oz.....	29	M11479.....	3 1/2 oz.....	37	37723.....	4 oz.....	25
F7455.....	5 oz.....	35	F11874.....	8 oz.....	34	37724.....	1 oz.....	25
F7506.....	1 oz.....	31	M12024.....	7 oz.....	25	38334.....	6 oz.....	25
F7512.....	1 oz.....	32, 33	M12177.....	2 1/2 lb.....	37	39330.....	1 oz.....	25, 27
F7608.....	1 oz.....	25, 41	M12335.....	7 oz.....	35	41039.....	9 oz.....	25
F7791.....	1 1/2 lb.....	27	M12336.....	14 oz.....	35	41907.....	1 oz.....	41
F7863.....	1 oz.....	25	M12376.....	14 oz.....	35	44543.....	2 1/2 oz.....	43
F7875.....	1 1/2 oz.....	31	M16102.....	13 1/2 lb.....	37	45235.....	8 1/2 oz.....	27, 43
F7877.....	1 oz.....	31	M16103.....	13 oz.....	27	45236.....	1 1/2 oz.....	27, 43
F7901.....	1 oz.....	29	M16104.....	6 1/2 lb.....	37	45522.....	1 oz.....	27
F7913.....	1 oz.....	41	M16397.....	1 lb.....	39	45556.....	1 oz.....	32, 33
F7916.....	1 oz.....	31	M16492.....	2 oz.....	35	45657.....	1 oz.....	32, 33
F7925.....	1 oz.....	35	M16725.....	1 1/2 oz.....	39	45558.....	1 oz.....	33
F7949.....	1 1/2 lb.....	31	M17061.....	1 oz.....	45	45559.....	4 oz.....	33
F7953.....	14 oz.....	35	M17277.....	10 1/2 oz.....	39	45560.....	3 oz.....	33
F7954.....	9 oz.....	35	M18528.....	1 oz.....	26, 41	45561.....	1 oz.....	32
F7955.....	6 1/2 oz.....	35	M18863.....	1 oz.....	37	45562.....	1 oz.....	33
F7956.....	3 1/2 oz.....	35	M18931.....	1 oz.....	39	45563.....	1 oz.....	33
F7957.....	1 1/2 oz.....	35	M19290.....	1 1/2 oz.....	41	46023.....	1 oz.....	43
F7979.....	1 oz.....	45	M19529.....	4 oz.....	39	46252.....	3 lb.....	43
F7996.....	2 1/2 lb.....	35	M19901.....	2 1/2 lb.....	37	46559.....	4 oz.....	45
F8002.....	1 oz.....	32, 33	M22500.....	1 oz.....	39	46565.....	5 lb.....	31
F8031.....	5 oz.....	31	M22664.....	1 oz.....	35	46570.....	5 oz.....	31
F8031.....	1 oz.....	31	M24765A.....	3 1/2 lb.....	37	48640.....	6 1/2 lb.....	35
F8033.....	2 1/2 oz.....	31	M24766A.....	5 oz.....	37	48718.....	6 lb.....	37
F8039.....	1 oz.....	31	M24796.....	4 oz.....	43	48721.....	21 lb.....	43
M8126.....	1 1/2 oz.....	41	M24837.....	2 1/2 oz.....	27, 45	48722.....	21 lb.....	43
M8127.....	4 oz.....	41	M27175.....	9 1/2 lb.....	39	48723.....	17 1/2 lb.....	43
M8128.....	1 oz.....	41	M28323.....	1 1/2 oz.....	39	48724.....	17 lb.....	43
M8128.....	1 oz.....	41	M28351.....	5 oz.....	39	48725.....	17 lb.....	43
M8501.....	3 oz.....	37	M28761.....	7 oz.....	39	48726.....	13 1/2 lb.....	43
M8511.....	1 1/2 oz.....	37	M28764.....	9 oz.....	39	48727.....	13 1/2 lb.....	43

48729.....	2 lb.....	43	48887.....	10 oz.....	45	49506.....	10 1/2 oz.....	39
48732.....	2 lb.....	43	48889.....	3 1/2 lb.....	45	49507.....	4 1/2 oz.....	39
48735.....	1 1/2 lb.....	43	48840.....	3 1/2 lb.....	45	49508.....	1 1/2 lb.....	39
48736.....	1 1/2 lb.....	43	48852.....	3 oz.....	45	49509.....	5 1/2 oz.....	39
48737.....	10 oz.....	43	48855.....	3 oz.....	45	49510.....	1 oz.....	39
48739.....	18 lb.....	43	48856.....	1 1/2 oz.....	45	49511.....	4 oz.....	39
48742.....	8 lb.....	43	48857.....	2 oz.....	45	49512.....	7 1/2 oz.....	39
48743.....	6 lb.....	43	48858.....	6 oz.....	45	49513.....	6 oz.....	39
48745.....	3 lb.....	43	48859.....	10 oz.....	45	49514.....	2 1/2 lb.....	39
48751.....	2 1/2 lb.....	43	48862.....	4 oz.....	45	49517.....	8 oz.....	39
48752.....	3 1/2 lb.....	43	48863.....	11 lb.....	45	49518.....	2 1/2 lb.....	39
48755.....	8 1/2 lb.....	43	48865.....	2 1/2 lb.....	45	49519.....	3 1/2 oz.....	39
48757.....	4 oz.....	39	48869.....	3 oz.....	31	49520.....	15 oz.....	39
48759.....	1 1/2 lb.....	39	48870.....	4 oz.....	31	49521.....	4 oz.....	39
48760.....	13 oz.....	39	48871.....	8 oz.....	31	49524.....	2 1/2 lb.....	39
48761.....	7 oz.....	39	48872.....	6 oz.....	31	49527.....	13 1/2 lb.....	45
48762.....	1 1/2 lb.....	39	48873.....	4 oz.....	31	49528.....	5 lb.....	45
48764.....	1 1/2 oz.....	39	48874.....	3 1/2 oz.....	35	49529.....	1 lb.....	35
48776.....	1 1/2 lb.....	27	48876.....	2 1/2 lb.....	31	49698.....	1 oz.....	45
48776.....	9 oz.....	27	48878.....	24 lb.....	31	49857.....	8 1/2 oz.....	25, 27
48777.....	10 oz.....	27	48977.....	9 1/2 lb.....	45	49858.....	2 1/2 lb.....	27
48778.....	5 1/2 lb.....	27	49463.....	97 1/2 lb.....	41	49859.....	4 lb.....	27
48780.....	10 oz.....	27	49465M.....	45 lb.....	37, 41	49860.....	19 1/2 lb.....	43
48782.....	8 oz.....	27, 32, 33	49467.....	2 1/2 lb.....	41	49940.....	1 oz.....	33
48783.....	8 oz.....	27	49468.....	7 oz.....	41	49976.....	12 oz.....	45
48784.....	14 oz.....	32	49469.....	1 oz.....	41	50080.....	2 lb.....	43
48785.....	45 lb.....	27	49471.....	1 oz.....	41	50084.....	2 1/2 lb.....	43
48787.....	42 lb.....	27	49472.....	3 1/2 lb.....	41	50087.....	1 oz.....	45
48789.....	1 lb.....	27	49474.....	2 1/2 oz.....	41	50517.....	2 1/2 lb.....	45
48790.....	1 oz.....	27	49475.....	1 1/2 lb.....	41	50518.....	2 1/2 lb.....	45
48791.....	1 1/2 lb.....	27	49476.....	1 oz.....	41	50519.....	12 oz.....	31
48802.....	86 lb.....	45	49477.....	1 oz.....	41	50523.....	1 1/2 lb.....	46
48804.....	25 lb.....	45	49478.....	3 1/2 lb.....	41	50945.....	11 1/2 lb.....	41
48806.....	25 lb.....	45	49478.....	4 1/2 lb.....	41	50946.....	13 1/2 lb.....	41
48807.....	3 1/2 lb.....	45	49480.....	4 1/2 lb.....	41	50947.....	14 1/2 oz.....	41
48809.....	8 oz.....	45	49481.....	12 oz.....	41	51127.....	6 1/2 lb.....	35
48812.....	4 oz.....	45	49482.....	1 oz.....	41	51140.....	1 oz.....	32, 33
48814.....	6 oz.....	45	49483.....	2 1/2 oz.....	41	51142.....	10 1/2 oz.....	29
48815.....	3 oz.....	45	49485.....	1 1/2 lb.....	41	51460.....	1 lb.....	39
48816.....	2 lb.....	45	49486.....	1 oz.....	41	51666.....	1 lb.....	45
48817.....	1 1/2 lb.....	45	49487.....	7 oz.....	41	53342.....	1 oz.....	25, 27
48818.....	6 oz.....	45	49491.....	10 oz.....	41	54816.....	5 oz.....	45
48822.....	5 lb.....	45	49492.....	8 oz.....	41	54319.....	2 oz.....	45
48825.....	1 1/2 lb.....	45	49493.....	1 oz.....	41	54320.....	5 oz.....	45
48826.....	11 lb.....	45	49494.....	1 1/2 oz.....	41	55627.....	4 oz.....	25
48832.....	12 1/2 lb.....	45	49495.....	1 oz.....	41	57308.....	1 oz.....	32
48833.....	3 lb.....	45	49496.....	4 1/2 lb.....	41	57309.....	4 oz.....	32
48834.....	3 lb.....	45	49497.....	15 lb.....	37	57311.....	1 oz.....	32
48835.....	5 lb.....	45	49499.....	21 1/2 lb.....	43	57312.....	1 oz.....	32
48836.....	12 oz.....	45	49500.....	9 1/2 lb.....	43	57314.....	1 oz.....	32
48837.....	12 oz.....	45	49501.....	5 oz.....	43	57318.....	1 oz.....	32, 33
48838.....	12 oz.....	45	49502.....	4 lb.....	39	57322.....	10 oz.....	32
48839.....	12 oz.....	45	49503.....	1 1/2 lb.....	39	58468.....	1 oz.....	25
48840.....	12 oz.....	45				62609.....	4 oz.....	32
48841.....	12 oz.....	45				68092.....	1 oz.....	25
48842.....	12 oz.....	45				68093.....	12 oz.....	25
48843.....	12 oz.....	45				69639.....	1 oz.....	29
48844.....	12 oz.....	45				70231.....	4 lb.....	45
48845.....	12 oz.....	45				70233.....	6 1/2 oz.....	44



FLYWHEELS - CRANKSHAFT - SIDE BEARINGS

Flywheel (timer or magneto side)	48786	1
Flywheel (belt side)	48787	1
Flywheel (QB-12)	QB-12	2
Key (flywheel)	A577	2
Nut (flywheel)	F2657	2
Cotter 3/16 x 1 3/4"	F4235	1
Pin (starting crank)		
CRANKSHAFT WITH BEARINGS, SLEEVE AND OIL SEAL RACE	49858	1
Crankshaft (only)	48776	1
Bearing with Races (inboard)	F7014	2
Bearing with Races (outboard)	F7791	1
Sleeve (belt side)	48776	1
Oil Seal Race (timer side)	48777	1
Gasket (side bearing)	QN-15E	2
Stud (side bearing) 7/16 x 1-7/16"	39630	4
Nut (side bearing)	F1029	8
Stud (side bearing) 7/16 x 1-7/8"	53342	4
BEARING CASING WITH STUDS (timer side)	49859	1
Stud 5/16" x 1-1/16"	45552	4
Hex Nut 5/16" (use F1100 L.W.)	F1451	4
Oil Seal (timer side)	F7001	1
Support Casting (timer)	48788	1
Bearing Casing (belt side)	48778	1
COVER WITH OIL SEAL (bearing casing - belt side)	48780	1
Oil Seal	F7001	1
Gasket (cover)	F9482	1
Hex Head Cap Screw 4" x 7/8" (cover)	F4178	4
Lock Washer (cover screw)	F3083	4
Timer Cam	48782	1
Key (timer cam)	F2551	1
Set Screw (hollow head)	F2447	1
Wrench (set screw)	F3032	1

SIDE EXHAUST

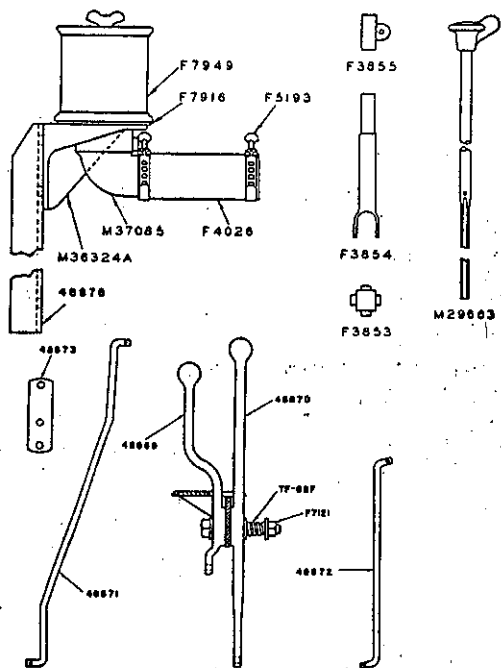
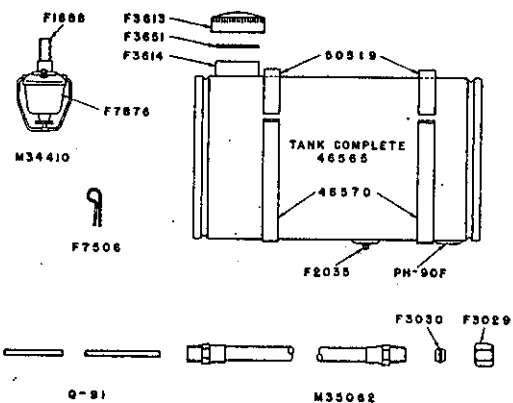
Exhaust Elbow	48789	1
Gasket	48790	1
Tail Pipe	48791	1
Exhaust Tubing	F6699	36

STARTING CRANK

Starting Crank (with bearing)	M36670	1
Bearing Catch (on step plate)	M36639	1
Spacer (bearing catch - thick)	45235	1
Spacer (bearing catch - thin)	45236	6
Holder (starting crank - with loop)	M35511	1
Holder (starting crank - plain)	M24897	1

GASKET SET 49857

For a general engine overhaul, all gaskets, the throttle valve packing, and cylinder head barrel packing can be obtained under one symbol by specifying 49857 gasket set. This set includes items in this bulletin marked with an asterisk (*) and in the quantities shown.



FUEL SYSTEM

FUEL TANK (with cap)	46565	1
Threaded Bushing (solders in tank)	PH-90F	2
Bayonet Catch (neck for F3613)	F3614	1
FILLER CAP (bayonet type)	F3613	1
Gasket (filler cap)	F3651	1
Pipe Plug	F2055	1
Strap (fuel tank lower)	46570	2
Saddle (fuel tank)	50519	2
Hex Nut 1/2" self locking	F7119	4
Clip (supports fuel line)	F7506	2
FUEL STRAINER WITH NIPPLE	M34410	1
Nipple 1/8 x 1/4" brass	F1688	1
Strainer Bowl (glass)	F7876	1
Gasket (strainer bowl)	F7877	1
Screen (strainer)	F3692	1
Street Elbow 1/8" (flexible fuel line to strainer)	F6584	1
FLEXIBLE FUEL LINE - 7" (with sleeve and nut)	M35462	2
Compression Nut	F3029	3
Compression Sleeve	F3030	3
Fuel Pipe (two flexible lines)	Q-91	1

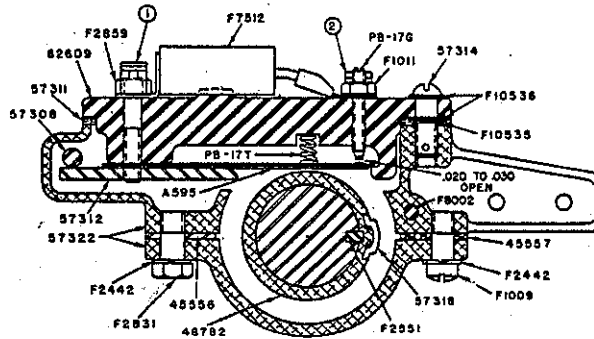
AIR CLEANER

SCREEN ASSEMBLY WITH COVER (includes wing nut and stem)	F7949	1
Top only (cover)	F7916	1
Wing Nut only	F5193	1
Stem only (threaded)	F3855	1
Name Plate only (washer)	M37085	1
Mounting Bracket (screen assembly)	F4026	1
Gasket (screen to bracket)	M36324A	1
Support Angle (bracket)	F7916	1
ELBOW (below cleaner)	48876	1
Set Screw 3/8 x 1/4" dog point	F3854	1
Hex Half Nut 3/8"	F1040	1
Hose - 2" diameter (specify length required)	F4026	25'
Hose Clamp	F5193	2

CONTROLS

Throttle Lever	48869	1
Timer Control Lever	48870	1
Spring (throttle lever friction)	TF-68F	1
Hex Nut 3/8" self locking	FT121	1
Throttle Rod	48871	1
Timer Rod	48872	1
Timer Extension Strip	48873	1
CONTROL SERVICE GROUP (carburetor)	M29829	1
Universal Spider (carburetor control)	F3853	1
Adjusting Rod Sleeve	F3851	1
Choke Sleeve	F3855	1
Adjusting Rod (with knob)	M29603	1
Choke Wire (specify length)	F3054	1
Wrot Washer (choke sleeve)	F6537	1

ADJUSTABLE WEATHERSEALD TIMER

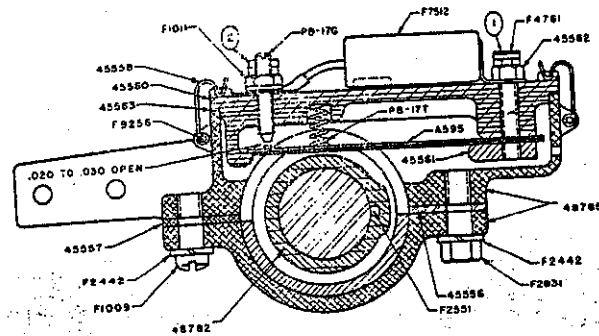


WEATHERSEALD TIMER COMPLETE (adjustable)	48784	1
MOUNTING CASTING (complete - halves not sold separately).	57322	1
Spacer (steel - lower - casting halves)	45556	1
Spacer (cork - upper - casting halves)	45557	1
Cap Screw 5/16 x 7/8" hex hd.	F2331	1
Clamp Screw 5/16 x 3/4" fillister hd.	F1009	1
Lock Washer 5/16" (light)	F2442	2
Stop Pin 7/32 x 1/2"	F8002	1
Pivot Pin 1/4 x 1-1/8" (grounds timer to body)	57308	1
TIMER BODY COMPLETE (with blade, points and condenser)	57309	1
Body (with gasket)	62609	1
BLADE AND SCREW (service set)	51140	1
Timer Blade (with point)	A595	1
Adjusting Screw (with point)	PB-176	1
Spring (timer blade - spiral)	PB-177	1
Cap Screw 1/4 x 1-3/8" hex hd.	F2859	1
Clamp Block (timer blade)	57312	1
Connector	F4761	1
Hex Nut #12-24	F1011	1
Ignition Condenser	F7512	1
Arc Adjusting Screw	57314	1
Retaining Ring (adjusting screw)	F10536	1
Washer 1/4" (thin)	F10536	2
Gasket (timer body to mounting casting)	57311	1
NOTE--When applying a new gasket to timer body moisten adhesive side of gasket with gasoline, then press into place.		
TIMER CAM (with wiping block)	48782	1
Wiping Block	57318	1
Key (timer cam)	F2551	1

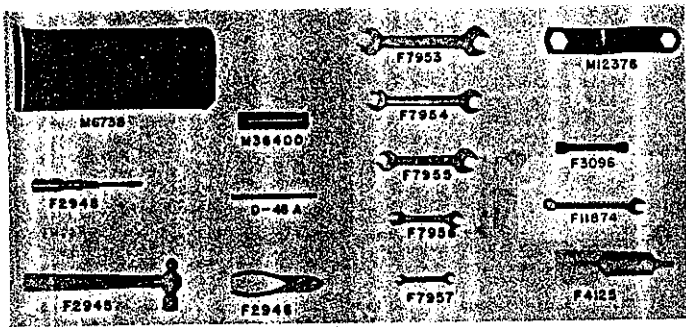
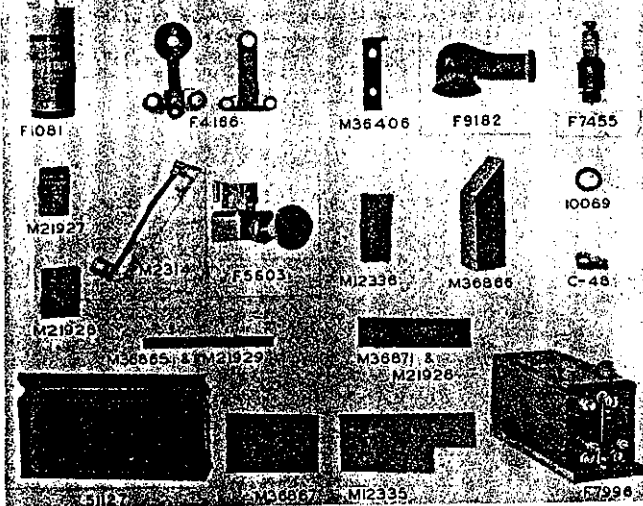
8-53

WEATHERSEALD TIMER (NON-ADJUSTABLE)

NOTE--Non-adjustable weathersealed timer complete as furnished on engines below 88480 are no longer supplied. If a complete timer is required order adjustable timer as shown on page 32. One piece cam is also replaced by cam with renewable wiping block. Repair parts for timer on engines below 88480 are available as listed below.



MOUNTING CASTING (complete - halves not sold separately)	48785	1
Spacer Steel (lower - casting halves)	45556	1
Spacer Cork (upper - casting halves)	45557	1
Cap Screw 5/16" x 7/8" hex head	F2331	1
Clamp Screw 5/16 x 3/4"	F1009	1
Lockwasher 5/16" special	F2442	2
Spring Clip	45558	2
Pins	F9256	2
Stop Pin	F8002	1
TIMER BODY COMPLETE (with blade, points and condenser)	45559	1
Body (with gasket)	45560	1
BLADE AND SCREW (service set)	51140	1
Timer Blade (with point)	A595	1
Adjusting Screw (with point)	PB-176	1
Spring (timer blade - spiral)	PB-177	1
Screw (timer blade clamp)	45562	1
Clamp Nut (timer blade)	45561	1
Ground Clip	49940	1
Connector	F4761	2
Nut (timer adjusting screw)	F1011	1
Ignition Condenser Complete	F7512	1
Gasket (timer body to mounting casting)	45563	1
TIMER CAM (with wiping block)	48782	1
Wiping Block	57318	1
Key (timer cam)	F2551	1
Set Screw (used with one piece cam only)	F2447	1

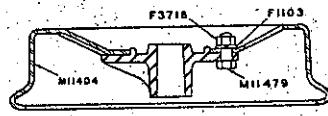
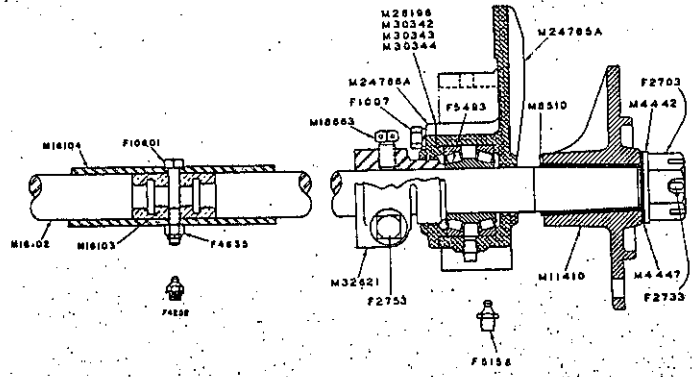
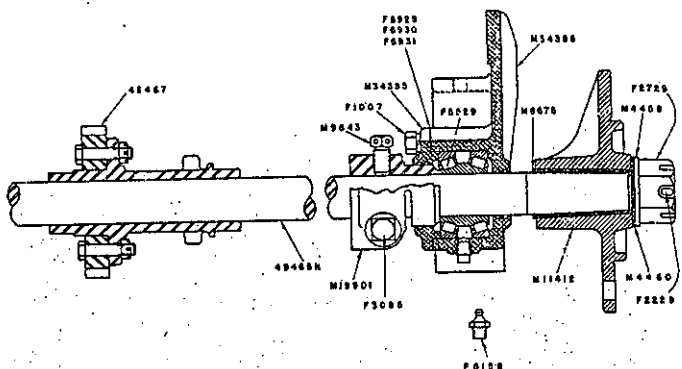


BATTERY IGNITION EQUIPMENT

Battery Box (with mounting bracket)	51127	1
Insulating Liner (side - battery box)	M12335	1
Insulating Liner (end - battery box)	M12336	1
Insulating Liner (bottom - short - 10-1/4")	M36871	1
Insulating Liner (side - short - 10-1/4")	M36867	1
Rubber Bushing (protects wires)	10069	1
Spark Coil	F7996	1
Spacer Block (coil)	M36866	1
Spacer (above batteries)	M36865	1
Dry Cell	F1081	4
Vibrator (both points included)	F4166	1
Connector (battery)	M2314	3
Spark Plug - 18 mm	F7455	1
Rubber Cap (high tension terminal - coil)	F9182	1
WIRE (spark plug with terminals)	M16492	1
Terminal	F7926	2
Switch	F5603	1
Wiring Assembly (in braided covering)	48876	1
Wire (coil to battery - 11")	M22664	1
Support Clip (timer wires)	M36406	1
Cable Clip (fibre)	C-48	8
Hi Tension Wire (plain, no terminals - specify length req.)	F1402	1
Primary Wire (plain, no terminals - specify length req.)	F2958	1
Support (wire)	48877	1

TOOL BOX AND TOOLS

Tool Box (not illustrated)	48640	1
Support Angle (tool box)	49529	1
Grease Gun	F4125	1
Box and Open End Wrench 9/16"	F13443	1
Wrench (spark plug)	M36400	1
Handle (spark plug wrench)	D-48A	1
Demountable Wheel Wrench	M12376	1
Wrench (hollow head set screw - timer cam)	F3082	1
TOOL KIT (in bag)	M36398	1
Draw String Bag	M6738	1
Ball Pein Hammer	F2945	1
Pliers - 6"	F2946	1
Screw Driver - 3"	F2948	1
Connecting Rod Socket Wrench	F3096	1
End Wrench 7/16 & 3/8" openings	F7956	1
End Wrench 9/16 & 1/2" openings	F7955	1
End Wrench 3/4 & 5/8" openings	F7954	1
End Wrench 7/8 & 13/16" openings	F7953	1
End Wrench 15/16 & 1" openings	F7953	1

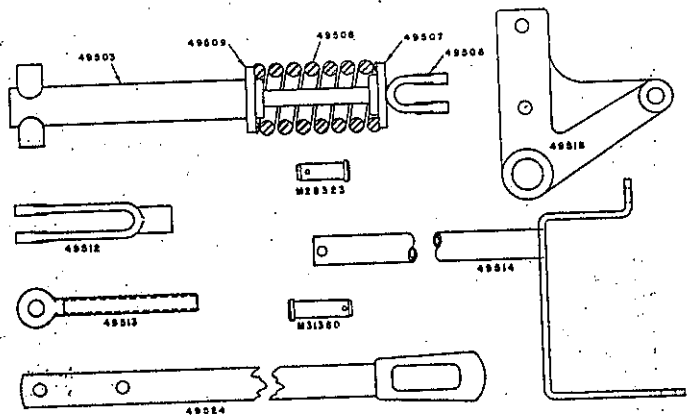
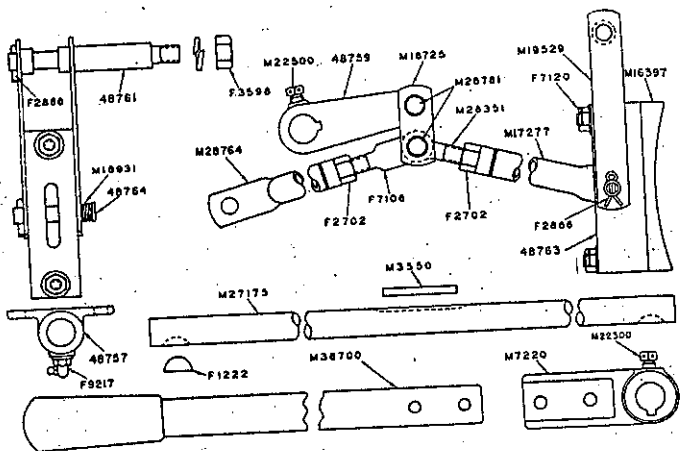


DRIVE AXLE-BEARINGS-WHEELS-THRUST COLLARS 1-11/16"

DRIVE AXLE WITH GEAR FLANGE 1-11/16" (with nuts and cotters)	49465N	1
Axle End Nut	F2729	2
Cotter (axle end nut)	49497	2
AXLE BEARING 1-11/16" assembled	M34386	2
Bearing Casing only	F6529	2
Bearing with Races	M34385	2
Cover (bearing casing)	F6929	6
Cover Shim (.005 steel)	F6930	6
Cover Shim (.007 steel)	F6931	2
Cover Shim (.020 steel)	F1007	8
Cap Screw 3/8 x 1" hex head	F5158	4
Grease Fitting	M19901	2
THRUST COLLAR 1-11/16" (complete)	F3095	2
Clamp Bolt (thrust collar - use F2737 nut)	M9643	2
Set Screw (thrust collar)	F3054	14"
Lock Wire (specify length required)	M8674	2
INSULATION SET 1-11/16" (3 piece)	M8675	2
Insulating Sleeve	M4460	2
Insulating Washer	M4458	2
Steel Washer	M9429D	2
16 x 5/16 x 4-1/2" DEM. WHEEL (taper bored for 1-11/16" ins.)	M11412	2
Hub only (taper bored)	M11404	2
16 x 5/16 x 4-1/2" Dem. Tire (bolt set at bottom of page)		

DIFFERENTIAL AXLE-BEARINGS-WHEELS-THRUST COLLARS 1-7/16"

DIFFERENTIAL AXLE (with nuts and cotters)	M35798N	1
Axle Half	M16102	2
Split Bushing (both halves)	M16109	1
Axle Sleeve	M16104	1
Center Cap Screw 5/16 x 2-1/2"	F10601	1
Hex Elastic Stop Nut 5/16"	F4635	1
Grease Fitting	F4252	1
Axle End Nut	F2703	2
Cotter (axle end nut)	F2733	2
AXLE BEARING 1-7/16" (assembled)	48718	2
Bearing Casing only	M24765A	2
Bearing with Races	F5493	2
Cover (bearing casing)	M24766A	2
Cover Shim (.010 steel)	M30342	2
Cover Shim (.007 steel)	M30343	6
Cover Shim (.005 steel)	M30344	8
Cap Screw 3/8 x 1" hex head	F1007	8
Grease Fitting	F5158	4
THRUST COLLAR 1-7/16" (complete)	M32621	2
Clamp Bolt (thrust collar - use F2737 nut)	F2753	2
Set Screw (thrust collar)	M18663	2
Lock Wire (specify length required)	F3054	14"
INSULATION SET 1-7/16" (3 piece)	M8509	2
Insulating Sleeve	M8510	2
Insulating Washer	M4460	2
Steel Washer	M4442	2
16 x 5/16 x 4-1/2" DEM. WHEEL (taper bored for 1-7/16" ins.)	M9688D	2
Hub only (taper bored)	M11410	2
16 x 5/16 x 4-1/2" Demountable Tire	M11404	2
TIRE BOLT SET (8 each hub bolt, nut and lockwasher)	M12177	4
Tire Bolt	M11479	32
Hex Nut 5/8" S.A.E.	F3718	32
Lockwasher 5/8"	F1103	32

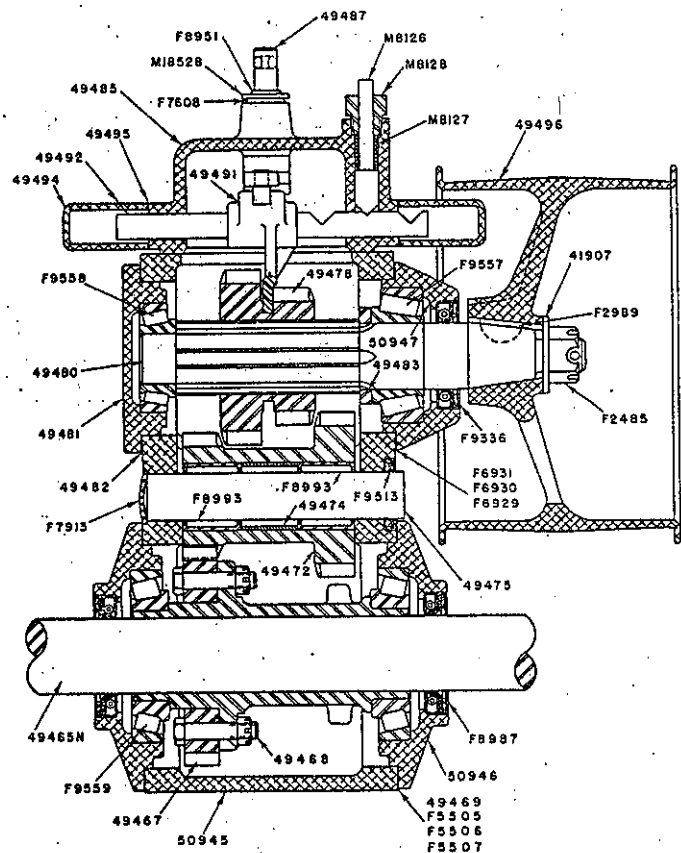


BRAKE

Brake Lever - 34-1/2"	M36700	1
Socket (brake lever)	M7220	1
Socket (brake lever to socket)	M36601	2
Bolt 3/8 x 1-1/4" (brake lever to socket)	F2493	2
Hex Slotted Nut 3/8"	M3550	1
Key (brake lever socket)	M22500	2
Set Screw 3/8 x 5/8"	F3054	9
Lock Wire (specify length required)	M27175	1
Brake Shaft	48757	4
BEARING (brake shaft - with grease fitting)	F9217	4
Grease Fitting	48769	2
End Arm (brake shaft)	F1222	2
Key (end arm)	M22500	2
Set Screw 3/8 x 5/8"	F3054	16
Lock Wire (set screw - per ft.)	M18725	4
Toggle Link	M28761	4
Pin (toggle link - 1/2 x 1-1/2")	48760	2
TOGGLE ARM (with yoke)	M28764	2
Body only (toggle arm)	F7106	2
Yoke (toggle arm)	F2702	2
Jam Nut 1/2" - 12 thread	M36277	2
TOGGLE ARM (with eye bolt)	M17277	2
Body only (toggle arm)	M28351	2
Eye Bolt (toggle arm)	F2702	2
Jam Nut 1/2" - 12 thread	48762	4
BRAKE SHOE WITH LINER (assembled)	M18397	4
Liner (use 5/16" self locking nut F7120)	48761	4
Pivot Stud (use 1/2" hex nut F3598)	M19529	8
Shoe Hanger	48704	4
Hanger Pin (brake shoe)	M18931	4
Spring (hanger pin)	F2866	12
Cotter 3/16 x 1"		

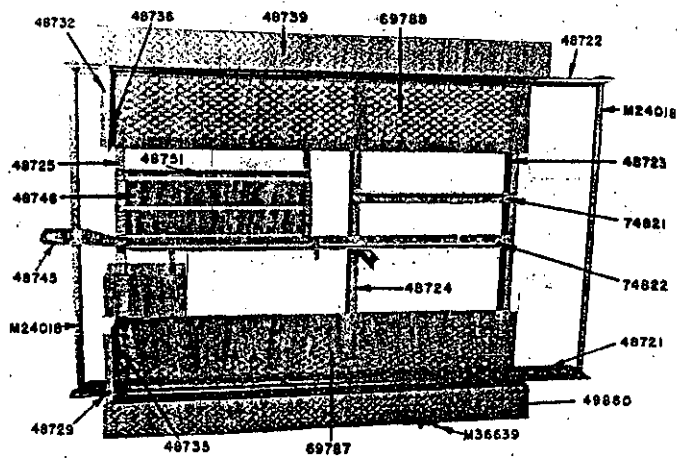
BELT - PULLEY - TWO SPEED GEAR CONTROLS

Endless Cord Belt 4 x 89-1/2"	F6574	1
Engine Pulley 6"	A25C	1
Cap Screw 7/16 x 1-3/4" hex-head	F2879	3
Belt Lever	49524	1
SPRING TOGGLE ARM (assembled)	49502	1
Body (toggle arm)	49503	1
Yoke	49506	1
Spring	49508	1
Spring Seat	49507	1
Nut (spring seat)	49509	1
Guide	49510	1
Groove Pin	F9168	1
Retaining Ring	F9169	1
Bolt 1/2 x 3-1/2" flat head (use slotted nut F2545)	49511	1
ADJUSTABLE YOKE ASSEMBLED	51460	1
Yoke	F2875	1
Eye Bolt (use 1/2" hex nut F1864)	49513	1
Pin	M28323	1
Shaft with Bracket (belt lever)	49514	1
Gusset (belt lever shaft)	49517	1
Arm (belt lever)	49519	1
Collar (use set screw F2754)	F3226	1
Toggle Link (4-1/4" between holes - order in pairs)	49519	2
Pin	M28761	2
Shift Lever	49520	1
Ball (shift lever)	F9263	1
Universal Joint	49521	1
Cap Screw 1/4 x 1-1/4" hex head	F2849	2



TWO SPEED GEAR

TWO SPEED GEAR WITH DRIVE AXLE (less pulley)	83565	1
Drive Axle with Gear Flange	49465N	1
Axle Gear	49467	1
Bolt 3/8 x 1-5/8 S.A.E.	49468	6
Nut 3/8 S.A.E. Castle	F2493	6
Lock Wire (Specify length required - 16")	F3054	1
GEAR CASE WITH STUDS	50945	1
Stud 1/2 x 1-15/16" (lower cover)	A581	10
Stud 1/2 x 1-7/16" (lower cover)	49471	2
Stud 3/8 x 1-1/2" (cover - top left)	A1088	4
Stud 3/8 x 1-5/8" (cover - top right)	U-3E	4
Stud 3/8 x 1-3/8" (top cover)	A1364	4
Stud 5/16 x 1" (lock plate)	49477	2
Bearing With Races (axle)	F9559	2
COVER WITH OIL SEAL (large)	50946	2
Oil Seal	F8987	2
Gasket (large cover)	49469	2
Cover Shim (large - .020 steel)	F5505	2
Cover Shim (large - .007 steel)	F5506	4
Cover Shim (large - .005 steel)	F5507	6
Hex Nut 1/2" (cover stud - use F1683 L.W.)	F8598	10
Hex Half Nut 1/2" (cover stud - use F2521 L.W.)	F2737	2
Counter Shaft	49475	1
Gear (counter shaft)	49472	1
Bearing (counter shaft gear)	F8993	2
Spacer (counter shaft gear bearings)	49474	1
Expansion Plug 1-3/16"	F7913	1
Oil Seal	F9513	1
Lock Plate (counter shaft)	49476	1
Castle Nut 5/16"	F8283	2
Shaft (pulley)	49480	1
Gear (pulley shaft)	49478	1
Bearing With Races (small - pulley shaft)	F9558	1
Cover (plain - pulley shaft)	49481	1
Gasket (plain cover)	49482	1
Bearing With Races (large - pulley shaft)	F9557	1
Spacer (bearing)	49483	1
COVER WITH OIL SEAL (pulley shaft)	50947	1
Oil Seal	F9336	1
Cover Shim (small - .020 steel)	F6931	2
Cover Shim (small - .007 steel)	F6930	4
Cover Shim (small - .005 steel)	F6929	4
Cover (gear case)	49485	1
Gasket (gear case cover)	49486	1
Shifter Arm	49487	1
Packing (shifter arm)	F7608	1
Washer (packing)	M1852B	1
Snap Ring	F8951	1
Gear Shift Fork	49491	1
Set Screw 5/16 x 1/2" (shift fork)	49493	1
Shifter Shaft	49492	1
Dog (shifter shaft)	M8126	1
Spring (dog)	M8127	1
Guide (dog)	M8128	1
Shaft End Cover	49494	2
Gasket (end cover)	49495	2
Cap Screw 5/16 x 3/4" (end cover)	F1194	4
Level Plug 3/8"	F1691	1
Breather Plug (filler)	F11476	1
Drain Plug 3/8" (counter sunk head)	F9949	1
Key (pulley)	F2989	1
Washer	41907	1
Slotted Nut 3/4"	F2485	1
Pulley 5 x 8"	49496	1



NOTE - Cars No. 216786 and higher have full length engine sill and aligning bracket to line up engine pulley and drive pulley.

Engine Sill (ill. 74821)	74823	1
Engine Sill (full length - ill. 74822)	77304	1
Aligning Bracket	74891	1
Stud 3/8 x 2-3/4" (aligning bracket)	74892	1
Hex Half Nut 3/8"	F1040	1
Cap Screw 1/2 x 1-1/4" Hex Head	F7273	1
Cap Screw 3/8 x 1-1/4" Hex Head	F1125	1

COMPLETE CAR - LESS ENGINE

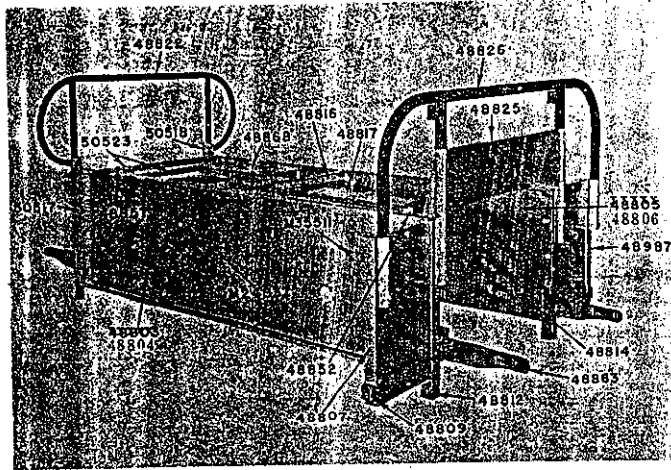
For cars that are in need of extensive repairs on account of damage or wear, we offer the ST2 series H car complete less engine, coil and batteries. Specify SPT2 series H motor car frame complete to obtain this group.

FRAME AND DECK

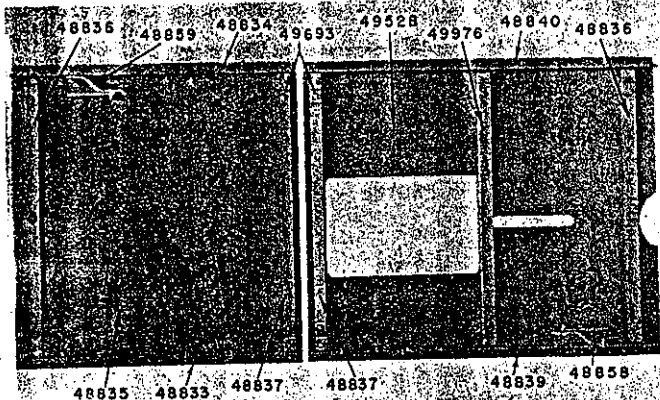
FRAME AND DECK (assembled)	49499	1
Axle Bearing Sill (right)	48721	1
Axle Bearing Sill (left)	48722	1
Cross Channel (front)	48723	1
Cross Channel (middle)	48724	1
Cross Channel (rear)	48725	1
Deck (right) (ill. 69787)	48726	1
Deck (left) (ill. 69788)	48727	1
Cap Screw 1/2 x 1 1/4 Hex Head	F4334	1
Engine Sill (right - long)	74823	1
Engine Sill (left - short)	77304	1
Cap Screw 1/2 x 1 1/4" (heat treated)	F7273	1
End Plate (tool tray - right rear)	48735	1
End Plate (tool tray - left rear)	48736	1
Spacer (rear end plate)	46023	4
STEP PLATE RIGHT (with crank catch and spacers)	49860	1
Bearing Catch	M36639	1
Spacer (bearing catch - thick)	45235	1
Spacer (bearing catch - thin)	45236	6
Step Plate (left)	48739	1
Support Angle (step plate - left rear)	48732	1
Support Angle (step plate - right rear)	48729	1
Bracket (step plate support)	48737	6
Lift Pipe (with clip)	N24018	2
Draw Bar	48745	1
U-Bolt (draw bar)	M24796	1
Spacer (draw bar)	M31253	1
Bracket (spring toggle arm anchor)	49501	1
Cap Screw 1/2 x 2 1/4 hex head	F6855	1
LUNCH BUCKET TRAY (complete) (Cars below 216786)	50080	1
Side Angle (left) (Cars with short engine sills only)	48751	1
Side Angle (right) (Cars with short engine sills only)	50084	1
Bevel Washer 1"	F3148	11
Bevel Washer 3/8"	F3495	8
Hex Nut 3/8" (self locking)	F7121	3
Hex Nut 5/16" (self locking)	F7120	1
Rail Skid (with brace - right)	48752	1
Rail Skid (with brace - left)	48755	1
Set Off Skid (right)	M34917	1
Set Off Skid (left)	M34916	1

ENGINE - MOUNTING

ENGINE Complete	RQ-D	1
Mounting Strip (engine)	46252	2
Cap Screw 7/16 x 2 1/2" hex head SAE	44543	4
Hex Nut 7/16" SAE	F3079	4
Lock Washer 7/16"	F1291	4



CONTROL PANEL WITH WEAR PLATE	70231	1
Wear Plate	70233	2
Cap Screw 5/16" x 3/4" flat head	F3543	6



HOUSING - LIFT HANDLES

NOTE--Cars numbered 193528 and higher are equipped with late type seat fasteners which can be applied to earlier cars by ordering group 54566. Application drawing and instructions SD #131, included with each group.

Safety Rail (front)	48826	1
HOUSING (assembled)	48802	1
Safety Rail (rear)	48822	1
Side Panel (right)	48804	1
Side Panel (left)	48906	1
Housing Support with Panel (right front)	48807	1
Housing Support with Panel (left front)	48987	1
Housing Support (center)	48817	2
Housing Support (left rear)	50518	1
Housing Support (right rear)	50517	1
Support Angle (control panel - front and rear)	48816	2
Support Cleat (fuel tank)	50523	2
Guide (lift handle - front and rear)	48814	4
Strap (front and rear lift handle guides)	48815	4
Guide (lift handle - center)	48818	2
Seat Fastener (left)	54316	2
Seat Fastener (right)	54220	2
Spring (seat fastener)	TF-68F	4
Hood (cooling condenser)	48825	1
Control Panel (ill. 48568)	70231	1
Spacer (front support frame - axle bearing sill)	48809	2
Spacer (front support frame - front cross channel)	48812	2
Guide (shift lever)	50087	1
Spacer (front housing support to deck)	M17061	4
HOUSING SEAT FRONT (assembled)	48832	1
Side Angle (right)	48838	1
Side Angle (left)	48834	1
Seat Board	48835	1
HOUSING SEAT REAR (assembled)	49527	1
Side Angle (right)	48839	1
Side Angle (left)	48840	1
Seat Board	49528	1
Cleat (center)	49976	1
Guide Clip	49693	4
Cleat (hinge end)	48836	2
Cleat (fastener end)	48937	2
Hex Nut 1/4" self locking	F7119	26
Fastener Plate	54319	4
Hinge (housing seat - right)	48852	2
Hinge (housing seat - left)	48855	2
Pin (housing seat hinge)	48856	4
SEAT SUPPORT COMPLETE	61856	2
Support Arm (short - seat top)	48858	2
Support Arm with Stop (seat top)	48859	2
Bearing (support arm bolts)	48862	6
Bracket (seat support arm)	48867	2
Holder (starting crank - with loop)	M35511	1
Holder (starting crank - plain)	M24837	1
EXTENSION LIFT HANDLE (complete)	48868	2
Reinforcing Strip (bottom - steel)	48865	2
Wood Screw No. 14 x 1-1/4" recessed head	F7242	40
Cap Screw (flat head)	F3516	2
Stop Nut	46559	2
Instruction Plate	F8011	1
Name Plate	F7244	1
Safety First Plate	F3132	1
Timer Lever Indicating Plate	F7979	1
Blank Number Plate	F9231	

ACCESSORIES

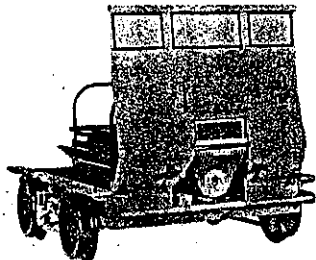
The following standard accessories may be applied to S2 series H cars. When ordering for field installations, be sure to give factory car and engine serial numbers. Also shown are some tools that will simplify maintenance work.

ALUMINUM WINDSHIELD 51352

Includes mounting parts complete for installation. All bolts, nuts and lock washers are CADMIUM plated to resist rusting.

Lower Half	50918
Upper Half (with windows)	49709
Window (14-1/2 x 28")	49717
Rubber Moulding (long)	49718
Rubber Moulding (short)	49719

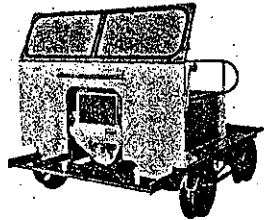
Canvas Weather Strip	49720
Hinge	49721
Machine Screw #10-24 x 7/16"	F9540
Lock Washer 3/16"	F9541
Hex Nut #10-24	F9542
Cap Nut #10-24 brass	F9543
Adjusting Bar	55995
Cap Screw 5/16 x 1-1/4"	F9715
Washer 5/16"	F9549
Hex Nut 5/16"	F9550
Spacer Washer (top)	55997
Spacer Washer (bottom)	55998
Support Bracket (right)	55822
Support Bracket (left)	55821
Adapter Strip	50939
Stove Bolt 1/4 x 5/8" rd. hd.	F9714



WINDSHIELD PLAIN 49187

Full width of car, protects riders at minimum cost. Easily applied in field. Strong materials, withstands wintry gales.

Curtain	49188
Top Cross Bar	49191
Top Socket	M16416
Vertical Post	42022
Bottom Cross Bar	M19964

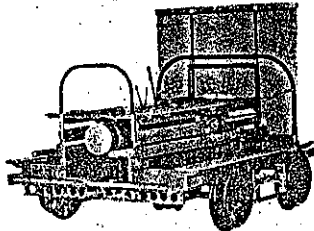


Guard Rail	50924
Lock Washer 1/4"	F9535
Spacer Tube	50940
Mounting Bracket (upper left)	50941
Mounting Bracket (upper right)	51779
Mounting Bracket (lower left)	51781
Mounting Bracket (lower right)	50942
Machine Bolt 5/16 x 1"	F9556
Machine Bolt 5/16 x 1-1/4"	F9715
Machine Bolt 5/16 x 3/4"	F9546
Lock Washer 5/16"	F9545
Hex Nut 5/16"	F9547
Machine Bolt 1/4 x 2"	F9559
Hex Nut 1/4"	F9534
Name Plate	52409

WINDSHIELD WITH WINDOWS 49189

Adequate bad weather protection. Deflects wind away from operator. Windows allow full vision; easily applied in field.

Curtain (with windows)	49190
Window (8-3/4 x 25-3/4")	F4899
Window (8-3/4 x 9-1/2")	F4899
Top Cross Bar	49191
Top Socket	M16416
Vertical Post	42022
Bottom Cross Bar	M19964



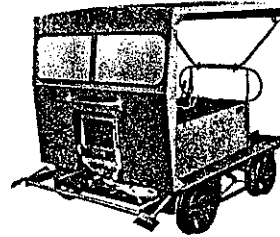
8-53

MOTOR CAR TOP 63960

Combination of 63960 top and 51352 aluminum windshield gives durable all weather protection to motor car operator and passengers.

Aluminum top is bolted to top of windshield and a rear support which clamps on rear safety rail. Long gussets replace adjusting bars on windshield side frame.

Roof Unit	64424
Support Pipe (rear)	64421
Saddle	64709
U-Bolt	64708
Lockwasher 5/16"	F9546
Hex Nut 5/16"	F9547
Mtg. Brkt. (rear suppt. to roof)	64423
Rubber Insulator (windshield to roof)	F11486
Gusset (windshield side frame)	64616
Cap Screw 5/16 x 3/4" hex hd.	F9827



8-53

CAB TOP 50520 (STEEL)

CAB FRONT COMPLETE	51392
Cab Front (less windows).	51393
Window Glass 20 x 26"	51405
Rubber Moulding (window).	51406
Condenser Hood	51407
Rubber Seal - cond. hood top	51408
Rubber Seal - cond. hood side	51409
Ventilator Cover	54922
Cover Guide (ventilator).	53576
Lift Pipe	53370
Support (lift pipe)	59372
Spacer (rubber)	51410
Rubber Seal	51411
Roof Unit Complete	51412
Gusset (right)	51426
Gusset (left)	51427
Support Pipe (rear)	51428
Clamp Bar	51431
Clamp Strap	51434
REAR SUPPORT	51435
Support Casting	51436
Rubber Mounting	F9695
Spacer	51437
Retaining Ring	F9696

SIDE PANELS (PR.) 51524

SIDE PANEL COMPLETE - R.	51525
Side Panel only - R.	51526
SIDE PANEL COMPLETE - L.	51532
Side Panel only - L.	51533
Window Glass 8 x 12"	51530
Rubber Moulding (window).	51531
Rubber Mounting Stud (lower)	F10059
Rubber Seal (side panel top)	51537

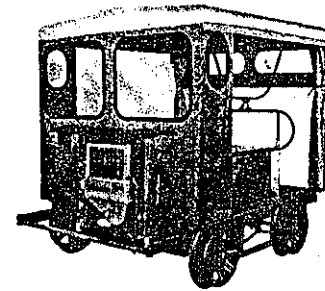
NARROW SIDE CURTAINS (PR.) 51520

Used only on cars with side panels.

Slide Rod (side curtains).	51500
Support Angle Brkt. (upper).	51521
Support Post (right rear).	51550
Support Post (left rear).	51551
Support Angle (lower right).	51511
Support Angle (lower left).	51512
Spring	M1245
Curtain Ring	43901
SIDE CURTAIN COMPLETE	51522
Lock Bolt	51515
Handle (curtain bar).	F9701
Curtain Bar	51516

NARROW SIDE CURTAINS AND REAR WINDOW WITH CURTAIN 51519

Made up of groups 51520 and 50522 but has only one set of corner support posts.



REAR CURTAIN AND WINDOW 50522

REAR WINDOW	51501
Window Glass 8 x 26"	51507
Rubber Moulding (window).	51508
Support Post (right rear).	51550
Support Post (left rear).	51551
Support Angle (lower right rear)	51511
Support Angle (lower left rear)	51512
Spring	M1245
Rear Curtain	51517
Curtain Strip	51518
Stud (lift dot fastener)	F7748
Eyelet (lift dot fastener)	F7746
Clinch Plate (lift dot fast.)	F7747
Curtain Bar	M30088

WIDE SIDE CURTAINS (PR.) 50521

Used only on cabs without side panels.

Slide Rod (side curtains).	51500
Support Angle Brkt. (upper).	51521
Support Post (right rear).	51550
Support Post (left rear).	51551
Support Angle (lower right).	51511
Support Angle (lower left).	51512
Spring	M1245
SIDE CURTAIN COMPLETE (wide)	51513
Lock Bolt	51515
Curtain Bar	51516
Handle (curtain bar).	F9701
Curtain Ring	43901
Clip (lock bolt - right).	51468
Clip (lock bolt - left).	51463

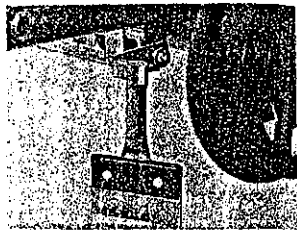
WIDE SIDE CURTAINS AND REAR WINDOW WITH CURTAIN 51499

Made up of groups 50521 and 50522 but has only one set of corner support posts.

RAIL SWEEPS 51002 BLADE TYPE

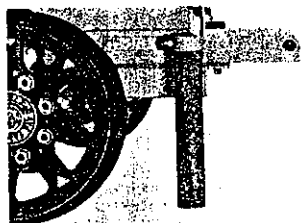
Heavy duty type, hinged. All parts are steel except blade proper. Adjustable for rail clearance. Gives full protection due to blade width. Long lived. Blade easily renewed.

Rail Sweep - right	51047
Rail Sweep - left	51050
Blade (belting)	M23956
Clamp Strip	M23957
Rail Sweep Stop - left	51052
Rail Sweep Stop - right	51053
Hinge Bolt	M21445
Spring	QB-61C
Spring Seat	M30435A
Spacer	41726



RAIL SWEEPS 51136 HOSE TYPE

Late air hose type. Hinged to clear rail when car is set on or off the track.

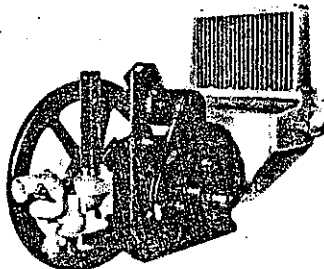


Hose Clamp Strap - R.	51324
Hose Clamp Strap - L.	51327
Filler Block	51325
Stop Clip - right	51053
Stop Clip - left	51052
Hinge Bolt	M21445
Spacer	41726
Spring	QB-61C
Spring Seat	M30435A

GENERATOR OUTFIT 49192

This electrical system consists of headlight (swivel mounted on front safety rail), taillights, storage battery and generator. The generator is hinged above the engine crankcase, and is "V" belted to the pulley on the inner side of a standard "belt side" flywheel. This generator furnishes enough current for the ignition and all the lights. For instructions and complete parts list see bulletin 495.

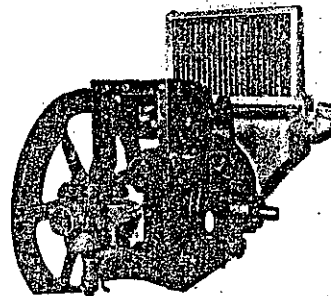
GENERATOR (less pulley).	F6995
Regulator & Cutout	F7260
Fuse	F7331
Brush Set	F8040
Pulley - 3-5/8" (generator).	M36653
Pulley - 7-9/16" (on flywheel)	M31040
V-Belt - 32" outside	F7448
Storage Battery	F7332
Ammeter	F3951
Headlight (sealed beam).	F8343
Light Replacement Unit	F8372
Bracket (casting)	39808
Swivel Clip	39180
Washer (friction)	F8363
Taillight Bulb - 3 C.P.	F8820
Taillight Lens (red)	F7363
Snap Ring (F7363 lens)	F7981
Switch (taillights)	F5603



BATTERYLESS GENERATOR OUTFIT 50692

This electrical system consists of sealed beam headlight (swivel mounted on front safety rail), taillights and generator. Generator is hinged above the engine crankcase, and is "V" belted to the pulley on the inner side of a standard "belt side" flywheel. This generator furnishes current for all lights and the ignition after starting engine on dry cell batteries. For instructions and complete parts list see batteryless generator bulletin 614.

GENERATOR (less pulley).	F9380
Regulator & Cutout	F10018
Brush Set	GEM 1012
Pulley - 2-7/8" (generator).	48555
Pulley - 3-13/32" (on flywheel)	50904
V-Belt - 37-1/8" outside	F6581
Headlight (sealed beam)	F8343
Light Replacement Unit	F8372
Knife Connector	F9732
Bracket (casting)	39808
Swivel Clip	39180
Washer (friction)	F8363
Taillight Bulb - 3 C.P.	F8820
Taillight Lens (red)	F7363
Snap Ring (F7363 lens)	F7981
Switch (reversing)	F9398
Switch (ignition)	F9399



HAND GONG - 10 INCH 49912

Loud, durable warning signal. Mounted away from tools. Operated by pull wire.

Gong only - 10"	1337
Pull Wire	37725
Guide (pull wire)	M22600

FOOT GONG - 10 INCH 429432

Loud warning signal operated by foot, leaves both hands free. Mounted out of way of tools, etc.

Gong only - 10"	F8025
Mounting Board	M25202

AIR CLEANER M36321

Oil bath type, includes filter unit complete with shell, ready to be fitted on mounting bracket in place of open screen type of cleaner standard on these cars.

AIR CLEANER ASSEMBLY	M36321
Gasket	F7916



HAND GONG - 6 INCH 49911

Meets minimum requirements. Safe mounting.

Gong only - 6"	F8444
Pull Wire	37725
Guide (pull wire)	M22600



TURNTABLE M14905

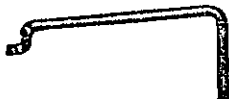
Turntable Truss	M14959
Turntable Rail	M14963
Turntable Base	M14964

CANVAS COVER M7951

Cars that are kept out of doors need this protection. Brown No. 10 duck, 7 x 9 ft. Eyelets for tying on car.

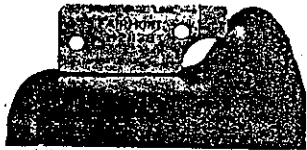
SAFETY COUPLER M11668

Provides maximum safety and efficiency in linking trailer to motor car. Hook 7/8" rod with self closing malleable iron catch.



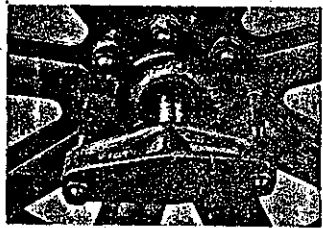
SPRING COUPLER M27169

Bolts to drawbar on motor car. Springs cushion bumps and jerks when towing trailers.



TAPER HAND REAMER

Wheel reamers save time and provide an accurate means of bringing wheel and axle assemblies to gauge, and in removing burrs, paint, or rust from the bores. Listed at the right under the illustrations are four reamers with the axle size each is to be used with. Check axle size before ordering.

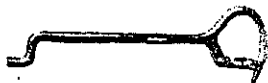


AMMETER F7838

Low reading ammeter is desirable when checking ignition systems to determine coil draw. Scale reads from 0 to 3 amps.

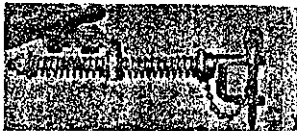
AMMETER 1230

Used to check condition of dry cell batteries. Good ignition means easy starting.



LINK COUPLER M6656

One piece, holds securely, easily detached by lifting one end a few inches.



POCKET WHEEL GAUGE M21138

This gauge provides a dependable method of checking motor car and trailer wheel gauges. Locate line of one wheel, hold tape or other accurate measure in position, then shift gauge to other wheel.



Reamer (1-3/16 axle) M7666
Reamer (1-5/16 axle) M34728
Reamer (1-7/16 axle) M7667
Reamer (1-11/16 axle) M7668

WHEEL PULLER M19509

Very effective, yet light weight and easy to use, this puller makes it a simple matter to remove demountable wheels or hubs with complete safety. Consists of a cross bar and two long bolts with nuts and washers. Draw nuts evenly, and when tight, a hammer blow on center of cross bar frees the wheel.



F7838



1230

PARTS USED ON SPECIAL CARS ONLY

Listed on this and following pages, in numerical order according to car designation, are spare parts used only on cars with figures in the space on the name plate marked "Special".

The symbols at left side of page are for standard car parts as listed on pages 24 through 45, and symbols for corresponding parts as used on the special cars are shown at the right-hand side of page. When selecting material for special cars, first locate items in standard parts section pages 24 through 45 and note symbol number. Then under the part of this section covering the car for which parts are being ordered, determine whether or not the symbol is changed for such cars. Items for which there are no corresponding parts in the standard parts section are shown as additional items under the car designation to which they apply.

ST2-H-1-1			
48721	Axle Bearing Sill (right)	Should read . . .	51684
48722	Axle Bearing Sill (left)	" " . . .	51636
48723	Cross Channel (front)	" " . . .	50738
48724	Cross Channel (middle)	" " . . .	50739
48752	Rail Skid (with brace - right)	" " . . .	50740
48755	Rail Skid (with brace - left)	" " . . .	50743
M34917	Set Off Skid (right) - Omit		
M34916	Set Off Skid (left) - Omit		
48807	Housing Support with Panel - R.P.	Should read . . .	51648
48987	Housing Support with Panel - L.P.	" " . . .	51651
M17061	Spacer - Omit		51658
48822	Safety Rail (rear)	Should read . . .	51654
48826	Safety Rail (front)	" " . . .	51657
	1 Support (center railing)	" " . . .	M23587
	2 Spacer	" " . . .	51659
	1 Center Railing	" " . . .	M37153
	2 Bolt 3/8 x 2-1/4"	" " . . .	F2877
	2 Hex Slotted Nut 3/8"	" " . . .	M24985
	8 Socket (rail skid)	" " . . .	51642
	2 Tool Tray Extension (outside)	" " . . .	51643
	2 Tool Tray Extension (inside)	" " . . .	51644
	1 Tool Tray Extension (right)	" " . . .	51647
	1 Tool Tray Extension (left)	" " . . .	51647
ST2-H-1-2			
48721	Axle Bearing Sill (right)	Should read . . .	50736
48722	Axle Bearing Sill (left)	" " . . .	50737
48723	Cross Channel (front)	" " . . .	50738
48724	Cross Channel (center)	" " . . .	50739
48752	Rail Skid (with brace - right)	" " . . .	50740
48755	Rail Skid (with brace - left)	" " . . .	50743
M34917	Set Off Skid (right) - Omit		
M34916	Set Off Skid (left) - Omit		
50518	Housing Support (left rear)	Should read . . .	50682
50517	Housing Support (right rear)	" " . . .	50683
48822	Safety Rail (rear)	" " . . .	50744
48826	Safety Rail (front)	" " . . .	50746
	1 Center Railing	" " . . .	50748
ST2-H-1-3			
M36670	Starting Crank	Should read . . .	M36856
50518	Housing Support (left rear)	" " . . .	50682
50517	Housing Support (right rear)	" " . . .	50683
48822	Safety Rail (rear)	" " . . .	50684
F7979	Timer Lever Indicating Plate	" " . . .	M35802
	1 Instruction Plate - Run	" " . . .	M35803

ST2-H-1-4			
43721	Axle Bearing Sill (right)	Should read	50736
43722	Axle Bearing Sill (left)	"	50737
43723	Cross Channel (front)	"	50738
43724	Cross Channel (center)	"	50739
43752	Rail Skid (with brace - right)	"	50740
43755	Rail Skid (with brace - left)	"	50743
M34917	Set Off Skid (right) - Omit		
M34016	Set Off Skid (left) - Omit		
43822	Safety Rail (rear)	Should read	53983
43826	Safety Rail (front)	"	50745
Add:	8 Socket (rail skid)		M24988
	1 Center Railing		53985
ST2-H-1-5			
46252	Mounting Strip (engine)	Should read - Mounting Plate	55410
43789	Exhaust Elbow	Should read	55411
ST2-H-1-6			
See bulletin 559 for magneto parts, magneto drive parts and magneto instructions. Omit all sections of this bulletin 583 referring to battery ignition, timer parts and timer controls, and in addition:			
RO-D		ENGINE	
49858	CRANKSHAFT WITH BRGS., SLEEVE AND OIL SEAL RACE - Omit	Should read	RO-D-2
48775	Crankshaft (only)	Should read	51262
49859	BEARING CASING WITH STUDS (timer side) - Omit		
P7001	Oil Seal - Omit		
48777	Oil Seal Race - Omit		
48788	Support Casting (timer) - Omit		
48868	Control Panel	Should read	78877
ST2-H-1-7			
50517	Housing Support (right rear)	Should read	50683
50518	Housing Support (left rear)	"	50682
48822	Safety Rail (rear)	"	51458
51666	SEAT SUPPORT (and parts) - Omit		
Add:	1 Center Railing		51459
ST2-H-1-8			
49463	TWO SPEED GEAR COMP.	Should read	56572
49465	AXLE WITH GEAR FLANGE	"	56573N
M8674	INSULATION SET 1-11/16"	"	46325
M8675	Insulating Sleeve	"	45326
M9429D	DEM. WHEEL 16 x 5/16 x 4-1/2"	"	46005D
M11412	Hub only	"	46257
M35798	DIFFERENTIAL AXLE	"	57076N
M16102	Axle Half	"	42980
M8509	INSULATION SET 1-7/16"	"	42974
M8510	Insulating Sleeve	"	42975
M9688D	DEM. WHEEL 16 x 5/16 x 4-1/2"	"	M8149D
M11410	Hub only	"	M13459
ST2-H-1-9			
Changes same as ST2-H-1-3, and in addition:			
48832	HOUSING SEAT FRONT	Should read	62059
48833	Side Angle (right)	"	62060
48834	Side Angle (left)	"	62061
48835	Seat Board	"	62062
49527	HOUSING SEAT REAR	"	62051
48839	Side Angle (right)	"	62052
48840	Side Angle (left)	"	62053
49528	Seat Board	"	62054

(Continued on next page)

ST2-H-1-10			
43723	Cross Channel (front)	Should read	50753
43735	End Plate (tool tray - R.R.)	Should read	50757
43736	End Plate (tool tray - L.R.)	Should read	50758
43736	End Plate (tool tray - L.R.)	Should read	F4334
43745	Draw Bar	Should read	38095
43745	Cap Screw 1/2" x 2-1/4"	Should read - 1/2 x 1-1/2"	38095
P5855	U-Bolt (draw bar)	Should read	M36855
M24796	Starting Crank	Should read	50759
M36070	Housing Support L.R.	Should read	50760
60518	Housing Support R.R.	Should read	50761
60517	Housing Support (rear)	Should read	M35802
48822	Safety Rail (rear)	Should read	M35803
77979	Timer Lever Indicating Plate	Should read	50754
Add:	1 Instruction Plate - Run		44681
	1 Draw Bar (front)		M30756
	2 Coupler (draw bar)		
	2 Pin (draw bar)		
ST2-H-1-11			
49497	AXLE BEARING 1-11/16"	Should read	68605
P5158	Grease Fitting	Should read - Pin Type	F5264
M35798N	DIFFERENTIAL AXLE	Should read	68606
P4252	Grease Fitting	Should read - Pin Type	F3744
48718	AXLE BEARING 1-7/16"	Should read	52082
P5158	Grease Fitting	Should read - Pin Type	F5264
P9217	Grease Fitting (brake shaft brg.)	Should read - Pin Type	F9510
P4125	Grease Gun	Should read	F3834
Add:	1 Hose (grease gun)		F3835
ST2-H-1-12			
M38670	Starting Crank	Should read - Starting Wheel	40026
M35511	Holder (starting crank)	Should read	50728
M24837	Holder (starting crank)	Omit	
48868	Control Panel	Should read	37318
48868	EXTENSION LIFT HANDLE	Should read	69679
48865	Reinforcing Strip (bottom - steel)	Should read	M35577
Add:	2 Lock Chain (lift handle)		69881
ST2-H-1-13			
48640	Tool Box	Should read	74805
49529	Support (tool box)	Omit	
48721	Side Sill (right)	Should read	51634
48721	Side Sill (left)	Should read	51636
48722	Cross Channel (front)	Should read	50738
48723	Cross Channel (center)	Should read	50739
48724	Rail Skid (right)	Should read	50740
48752	Rail Skid (left)	Should read	50743
48755	Set Off Skid (right)	Omit	
M34917	Set Off Skid (left)	Omit	
M34916	Set Off Skid (left)	Should read	51643
48807	Housing Support (right front)	Should read	51651
48987	Housing Support (left front)	Should read	
M17061	Spacer	Omit	

(continued on next page)

48822	Safety Rail (rear)	Should read..	5164
48826	Safety Rail (front)	Should read..	8724
Add:	8 Rail Skid Socket		M2498
	2 Tool Tray Extension (outer)		5164
	2 Tool Tray Extension (inner)		5164
	1 Tool Tray Extension (right)		5164
	1 Tool Tray Extension (left)		5164
	1 Center Railing		5164
	2 Bolt 3/8 x 2-1/4"		M8719
	2 Hex Slotted Nut 3/8"		F287

HOUSING SEAT FASTENER GROUP 54565 Inspection Cars

This group can be applied to any of the following Fairmont inspection cars: M19 series F, MR19 series A, M9 series G, M9 series E, and M9 series B. See application illustration on page 2 of this bulletin.

With seat top removed, pull or drive out small pins from lower ends of old fastener studs and then take out studs and grommets. With a sharp chisel cut small rivets holding spring fasteners to housing top side angles and remove four fasteners.

Drill two 13/32" holes in each housing top side angle as shown in Figure 1. These holes are 1-15/16" in from original spring fastener holes.

IMPORTANT - The distance from outside edge of angle to center of hole is 7/8" for cars with aluminum side panels, and 5/8" for cars with plywood side panels. BE SURE TO LOCATE THESE HOLES ACCURATELY.

In these holes apply the four seat fasteners (two each 54316 and 54320) as shown in Figure 2 using machine bolt, spring, washer, and hex nut. Tighten nuts enough to provide some tension but do not fully compress the springs.

Remove nut, large aluminum washer M30839, and step bolt from each corner of seat top. Notch ends of cleats (Figure 4) so fastener plates fit flush with bottom of cleats. Apply the four fastener plates (Figure 3) with wide portion extending inward from seat ends. The group includes new step bolts and nuts for this assembly. Be sure to include aluminum washers M30839. Draw nuts tight with fastener plates in position, then with hole in plate as a guide, drill 1/8" lead holes 3/4" deep in cleats for wood screws. Apply and tighten screws.

Holes left in seat top after removal of old fastener studs can be plugged if desired. Apply a few drops of oil to top side angle where it contacts the lip on seat fastener. Place seat on car and check tension of springs, adjusting if necessary.

Listed below are all parts included in seat fastener group 54565:

SEAT FASTENERS (complete)	54565	1
Fastener (right front & left rear)	54316	2
Fastener (left front & right rear)	54320	2
Machine Bolt 5/16 x 1-3/4"	F1570	4
Spring	TP-68F	4
Washer 1/4"	F1106	4
Hex Nut 5/16"	F7120	4
Plate (fastener)	54319	4
Step Bolt 1/4 x 1-3/4"	F2309	4
Hex Nut 1/4"	F7119	4
Wood Screw #10 x 3/4" flat head	F4000	4

FAIRMONT RAILWAY MOTORS, Inc.

FAIRMONT, MINNESOTA, U. S. A.

DISTRICT SALES OFFICES

Chicago New York Washington, D. C. St. Louis Fairmont

IN CANADA: Fairmont Railway Motors, Ltd., Toronto, Ont.

Printed in U. S. A.

INSPECTION CARS

LEFT FRONT - RIGHT REAR

RIGHT FRONT - LEFT REAR

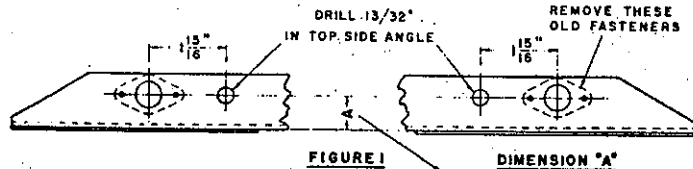


FIGURE 1

DIMENSION "A"

WITH ALUM. SIDE PANELS "A" IS 7/8"
WITH WOOD SIDE PANELS "A" IS 5/8"

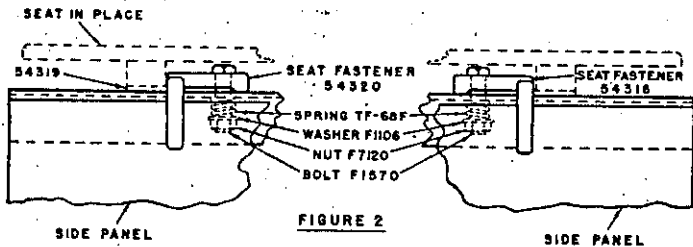


FIGURE 2

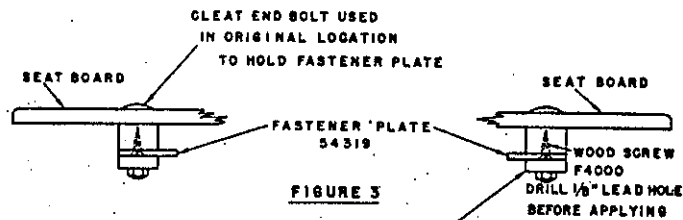


FIGURE 3

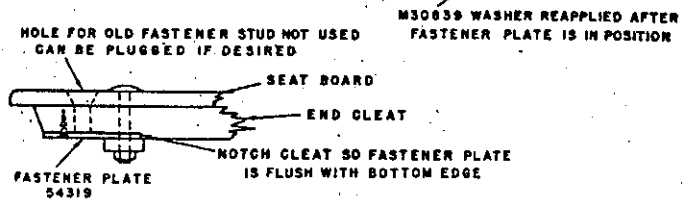


FIGURE 4

HOUSING SEAT FASTENER GROUP 54565

Section Cars

This group can be applied to S2 series H and ST2 series H section cars. See application illustration on page 4 of this bulletin.

Raise seat tops and remove threaded wing bolt seat fasteners. With a sharp chisel cut small rivets holding fastener nuts to housing side panels and remove four fastener nuts.

Enlarge rear rivet hole of front fastener on each side panel to 13/32", then drill a 13/32" hole 27" from front end of side panel and 7/8" from outer edge. (Figure 1)

In these holes apply the four seat fasteners (two each 54316 and 54320) as shown in Figure 2 using machine bolt, spring, washer, and hex nut. Tighten nuts enough to provide some tension but do not fully compress the springs.

At fastener end, remove cleat from front seat board and corner bolts from rear seat board. Seat side angles should be cut out as shown in Figure 3; 4-1/2" back and 3/4" deep for front seat angles and 7/8" back and 3/4" deep for rear seat angles. Replace cleat on front seat moving it towards front of car so bolt center hole is 2" from end of seat. Notch ends of cleats (Figure 4) so fastener plates fit flush with bottom of cleats. Apply the four fastener plates (Figure 3) with wide portion extending towards front of car. The group includes new step bolts and nuts for applying the fastener plates. Draw nuts tight with fastener plates in position, then with hole in plate as a guide, drill 1/8" lead holes 3/4" deep in cleats for wood screws. Apply and tighten screws.

Holes left in seat tops after removal of old fasteners can be plugged if desired. Apply a few drops of oil to top of side panel where it contacts lip on seat fastener.

Lower seat tops and check tension of springs, adjusting if necessary.

Listed below are all parts included in seat fastener group 54565:

SEAT FASTENERS (complete)	54565	1
Fastener (right front & left rear)	54316	2
Fastener (left front & right rear)	54320	2
Machine Bolt 5/16 x 1-3/4"	F1670	4
Spring	TF-68F	4
Washer 1/4"	F1106	4
Hex Nut 5/16"	F7120	4
Plate (fastener)	54319	4
Step Bolt 1/4 x 1-3/4"	F2309	4
Hex Nut 1/4"	F7119	4
Wood Screw #10 x 3/4" flat head	F4000	4

NOTE--File this sheet with motor car parts list for future reference.

SECTION CARS

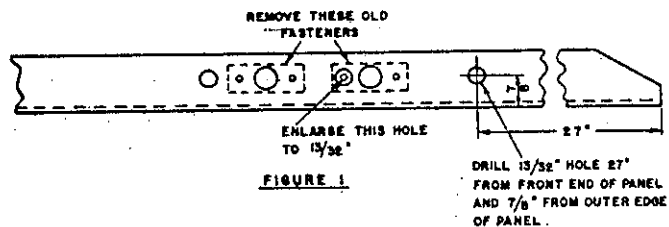


FIGURE 1

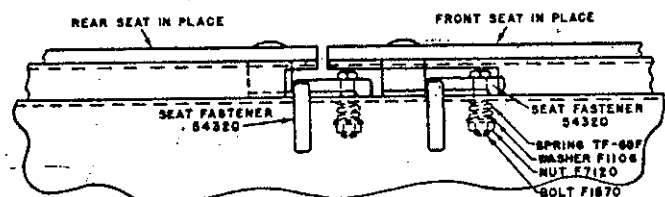


FIGURE 2

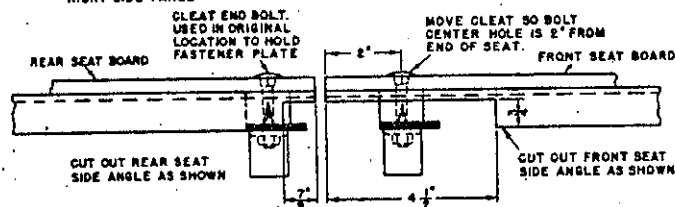


FIGURE 3

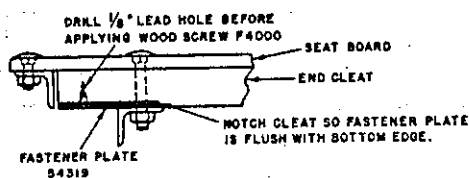


FIGURE 4

OIL—WATER—FUEL

Satisfactory performance of a motor car depends to a great extent on these three essentials. A FAIRMONT engine of the two-cycle type must never be run without water in the water jacket and lubricating oil thoroughly mixed with the gasoline.

OIL is of vital importance in protecting a motor car and engine against rapid wear. The proper amount and grade of oil must be mixed in the fuel for two-cycle engines, and bearings and other moving parts should be lubricated regularly.

Some oils are unsatisfactory for use in FAIRMONT two-cycle engines. Complete information on oil recommendations and oil-fuel mixtures is given in each motor car or engine instruction bulletin. Don't use poor oil or reduce the proportions recommended.

WATER in the cooling system should be kept at the correct level to insure proper engine cooling. The simple FAIRMONT cooling system keeps the engine at the most efficient temperature which insures economical operation.

FUEL for two-cycle engines should have a minimum lead content to obtain best results. It must be mixed with the correct amount of oil to properly lubricate such engines.