

IN **HO** SCALE

AURORA

MODEL[®]
MOTORING

**SERVICE
MANUAL**

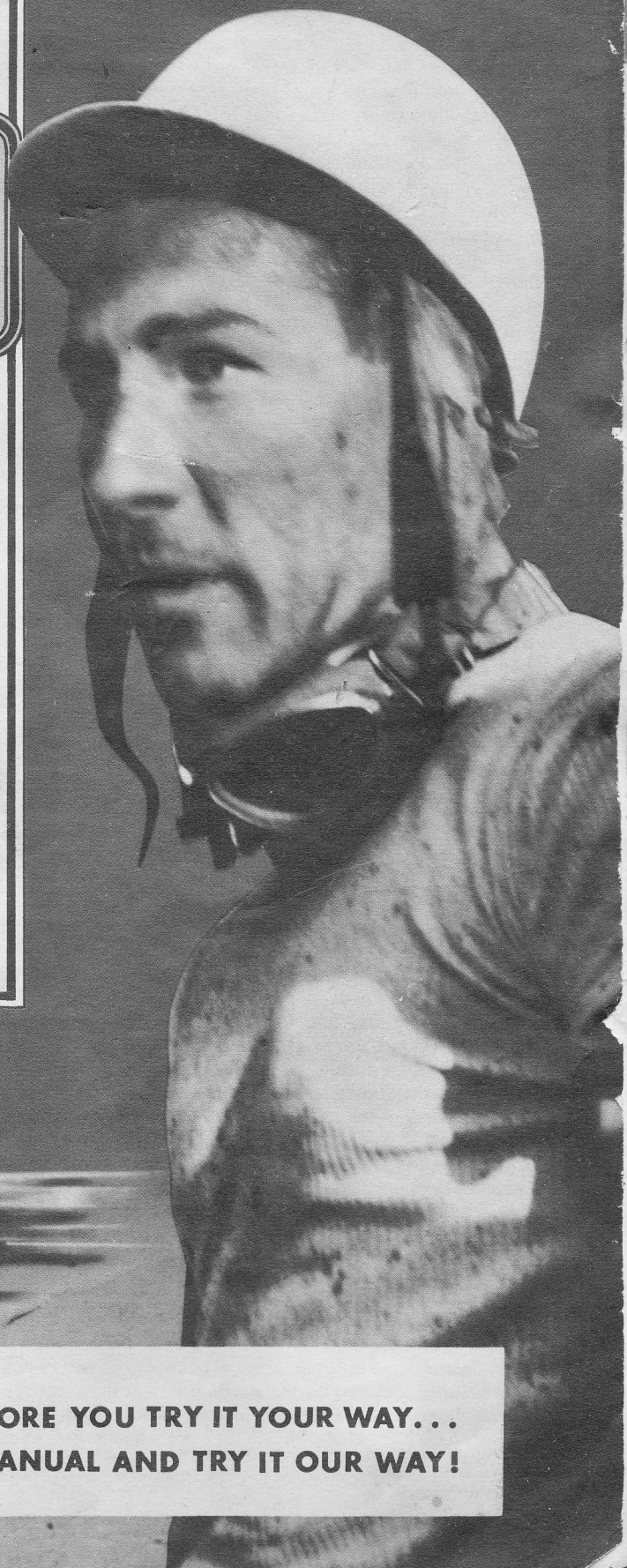
for

THUNDERJET 500

with the **FABULOUS**
"PANCAKE" MOTOR*

© 1963 AURORA PLASTICS CORP., WEST HEMPSTEAD, L.I., N.Y.

*U.S. & FOREIGN PATENTS APPLIED FOR



**PLEASE... BEFORE YOU TRY IT YOUR WAY...
READ MANUAL AND TRY IT OUR WAY!**

THE STORY OF THE AUTOMOBILE

The story of the automobile, if told in detail with proper weight given to every factor responsible for its existence, would have its beginning shrouded in the unknown pages of the past and would have no true ending because of the constant changes and improvements. We could begin with primitive man, thousands of years ago, and his invention and development of the first log-hewn version of the wheel and continue through the centuries telling of the scythe-bearing war chariots and the ornate carriages of the late Middle Ages; then to the horseless carriages of our grandparents time; and conclude with the experimental solar-charged electrical cars of the present day. We would find it necessary to cover all important items contributed to the advancement of the automobile, viz: the discovery of iron and steel for the roller bearings; the story of oil, so vital to lubrication; the outline of rubber, first the hard rubber tires and then the pneumatic tires; and we would have to include a resume of the energy, genius, expense and heartbreak of the untold numbers of men devoting virtually their entire lives to the development of the automobile. Man continued in his drive to create a machine that could move itself without the help of the wind, without human or animal muscle; the automobile must have a propelling mechanism of its own.

In 1670, a Dutch scientist, Christian Huygens and a French inventor, Dionysius experimented with an 'explosive engine' run by steam, with a piston and cylinder principle but could not make the cylinder go in both directions to result in the reciprocating engine. Even Sir Isaac Newton, in 1680, invented a toy horseless carriage; and a century later, in 1770, a French army officer, Nicolas Joseph Cugnot built a three-legged steam-powered locomotive. Although crude, for the first time in history, man had invented a machine that would move itself. In the 1880's the railroad matured and with it the steam engine. In 1801, Richard Trevithick successfully operated the first steam powered automobile in his native town of Camborne, in Devonshire, England. The use of these steam powered vehicles was considered too dangerous and resulted in the famous Red Flag Locomotive Acts of 1861, 1865 and 1878, requiring every such vehicle to be preceded by a man on foot carrying a red flag. This curtailed the development of the steam automobile in England and further experiment moved to France and the United States. The early development of the automobile was seriously hindered because of the discomfort afforded the passengers of the vehicle. Rough roads did not encourage the public to go motoring about the country, hence, the beginning of scientific highway construction by John McAdam, an English road builder. His name has found a place in the history of the automobile and the 'macadam' road is known to everyone.

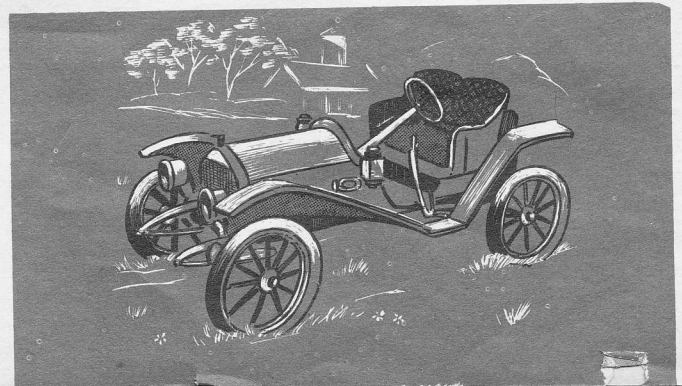
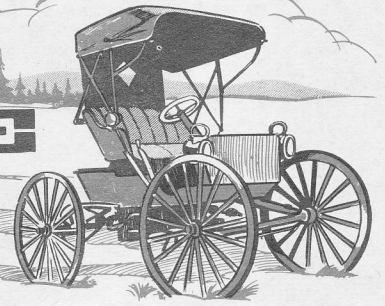
White and Stanley steam automobiles were widely manufactured in the United States and the 'Stanley Steamer' was quite popular. These steam powered automobiles ran quietly because there was no gears or transmission; power was instantly available and maintenance was negligible. The chief objection was the possibility of a fire from the open firebox and pioneers began to seek power from other sources

were to include the combustible engine and the electric storage battery. In 1860, Etienne Lenoir of

France developed the first practical internal-combustion engine, using illuminating gas as a fuel. The gas was drawn into the cylinder during part of the power stroke and fired for the rest of the stroke. Burned gas was eliminated by the return stroke. Three years later, in 1863, Lenoir banged and rattled through Paris streets in a crude 'gas' carriage which burned benzine. The pistons moved up and down too slowly and too noisily and Lenoir abandoned the project.

In 1876, the first of Otto & Langen built the first four-cycle engine employing the same principle as internal-combustion engines of today. Dr. Nicholas A Otto worked out the principle and had it patented in several countries. A high-speed four-cycle internal-combustion engine was developed in 1885 by a German, Gottlieb Daimler, a former managing director of the Otto firm. This engine employed liquid fuel in place of the gas and was a much lighter engine. The first V-engine, also the first two-cylinder internal-combustion engine was completed in 1889 by Daimler. This engine was also the first to equal the steam engine in power for its size and created a competition that lasted a quarter of a century before the gasoline engine finally triumphed over the steam engine as the best for automotive use. Americans forged steadily ahead in the progress of the automobile; George B. Seldon of Rochester, New York, was the only American to tinker with the gasoline cart before 1890. Sometimes called the 'father of the automobile', Seldon, in 1872, applied for a United States Patent covering the application of an internal-combustion engine for a self-propelled vehicle. The patent was not granted until 1895 and by then many inventors were using the same idea.

Among American inventors was Charles B. Duryea, also called by some the 'father of the automobile'. Charles Duryea built his buggy of 1892 the simple way by merely fastening his engine under the seat of a one-horse buggy, removing the poles to which the horse was attached, installing a handle to the front wheel for steering and turning the rear wheels with the engine. Elwood Haynes of Kokomo, Indiana became bored with driving his slow-poke horse and on July 4th, 1894, removed the horse and installed an engine to the buggy and rattled through the streets for the jeering and cheering crowds. Other famous Americans began work on gas cars in the 1890's including three bicycle makers — the two Dodge brothers and John P. Willys. Walter P. Chrysler, a railroad man joined the automobile makers as did the Studebaker brothers who were carriage makers. The wheezing horseless carriage of Ransom E. Olds and Henry Ford's rickety contraption made their contributions. Americans became car conscious and Detroit, Michigan became

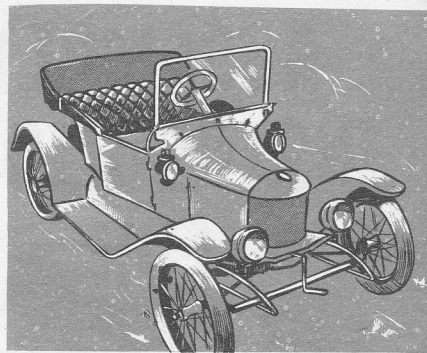


the Motor City. Songs were published and people sang "Get Out and Get Under" and "In My Merrie Oldsmobile", the automobile was on its way.

Then entered the Age of Gasoline when on January 10, 1901, Beaumont, Texas, a 160 ft. geyser of gas and oil blew off a salt dome known as Big Hill and became known as the famous Spindletop, the famed Texas gusher. The dawn of the twentieth century was signaling the start of the Gasoline Age. After nine days and nights, plus the loss of some half a million barrels of oil, the well was brought under control. Electricity and steam was still the favorite power for automobiles, oil was for cooking and illumination. Gasoline was only a by-product of the refining process and was dumped as so much waste. Oil had dropped in price below five cents a barrel, but the development of the gasoline-burning internal-combustion engine changed all this and millionaires were soon to be made. America progressed in the manufacture of the automobile and when half of the twentieth century had passed, the United States assumed leadership in production of motor vehicles. In 1951, the United States and Canada produced more than 7 million motor vehicles out of the world total of over 9 million.

The social and economic life of the United States changed rapidly due to the automobile which was once considered merely a luxury item but today is a necessity. Yesterdays American road measured a little over 2,000 miles in 1900 but todays highways cover more than 3 million miles. Expressways, superhighways and turnpikes are carrying increasing numbers of trucks, busses and cars. More than three out of every four American families own automobiles; tourist travel is creating big business in motels and restaurants; education has advanced with the school bus transporting over six and half million children to school each day. Millions of Ameri-

cans earn their living directly or indirectly due to the manufacture and maintenance of the automobile. The automobile found many diversified uses in military activities as far back as 1899-1902 when the British used motor vehicles in the South African war. Motor transportation was used as offensive and defensive weapons, greatly changing the character of war.



Automobile racing has ever been a popular event, the first known took place in 1894 from Paris to Rouen, about 80 miles. Two cars started over the ninety mile course but only one finished, taking eight hours and forty-eight minutes. The winner used five and one-half gallons of gasoline, stopped ten times for repairs and averaged some ten miles per hour. Although this speed seems humorous when we consider some of the speed records such as John R. Cobb's 369.7 miles per hour on the Bonneville Salt Flats, Utah, August 23, 1939, this aroused a public interest which laid the foundation for todays great automobile races. Special types of racing autos were built for speed racing in former years for annual races for the Vanderbilt cup in New York (300 miles), and for the Grand Prize of the Automobile Clubs (400 miles), as well as the famous 500 mile Indianapolis Speedway races held each Memorial Day. Today, racing holds much interest for the public for the many manufacturers who enter their stock cars to prove the construction of their product in the gruelling, grinding stocks car races held everywhere. It seems the automobile is here to stay and science is endeavoring to harness the energy of the sun in solar batteries to provide power for the electric automobile of the future.



MODEL MOTORING in HO

AURORA PLASTICS CORPORATION climaxes four years of engineering research and presents "MODEL MOTORING" . . . The GREATEST NEW HOBBY CONCEPT since Electric Trains.

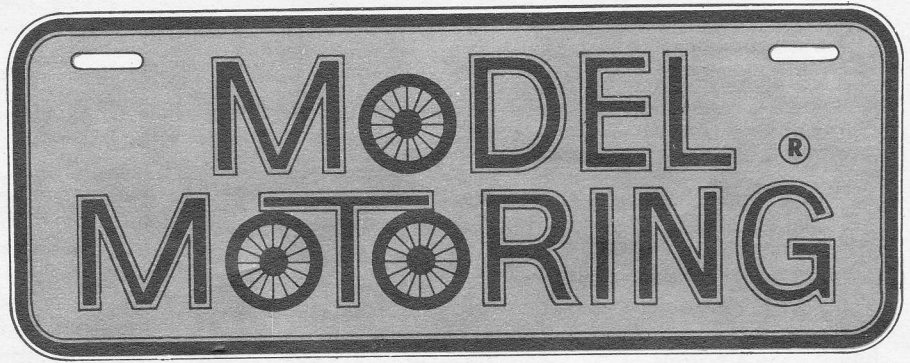
Aurora Plastics Corporation climaxes four years of engineering research and presents the greatest conception of the Model Motoring hobby ever to be made available. Model Motoring is far superior to any other roadway system with its rugged endurance and versatility. The many styles of vehicles and the driving lanes are purposely scaled to actual HO size so that the hobbyist can use HO accessories for perfection in planning roadway systems. Very easily, the hobbyist can reproduce scale replicas of famous race tracks all over the world; or design and lay out exclusive race tracks with over and under flyover bridges, straightway stretches, banked curves, tunnels, right of way cross-overs, etc. The modern plastic-bodied autos and trucks are authentically detailed, right down to the hub caps, and can attain scale speeds of 150 miles per hour or more. The rugged asphalt-like plastic roadway has a series of thin conductor strips imbedded to energize the tiny miracle motor, smaller than a dime, which in turn activates the rear wheels for unbelievable power and drive.

Aurora Model Motoring offers greater potential for appealing layout systems than any other due to the HO scale feature. This compact setup will allow unusual speedways on 4' x 12' and 4' x 8' platforms or even a 4' x 4' table and any HO size accessories will match perfectly. The sky is the limit on this wonderful new product — drag races can be held on a com-

petitive basis; record breaking speed can be reached on straight stretches; blocking on the hairpin turns may lead to crashes and pile-ups; team racing can be organized for the fastest car in the area. Quarter-mile, half-mile or mile distances can be accurately measured and timed for recorded runs. Only the Aurora Model Motoring offers such year-in, year-out fun and excitement with a hobby to delight and entertain every age group. Only Aurora offers a wide variety of cars and trucks such as the Jaguar XK 140, Mercedes Benz 300 SL, Corvette, Thunderbird, convertibles, hard-tops, station wagons, trucks with a flat-body, van-body or stake-body, tractor trailers, etc. Model Motoring operates most efficiently on the Aurora D.C. Power Pack, Model DC-1 but will also operate on any 12-22 volts DC standard train power pack.

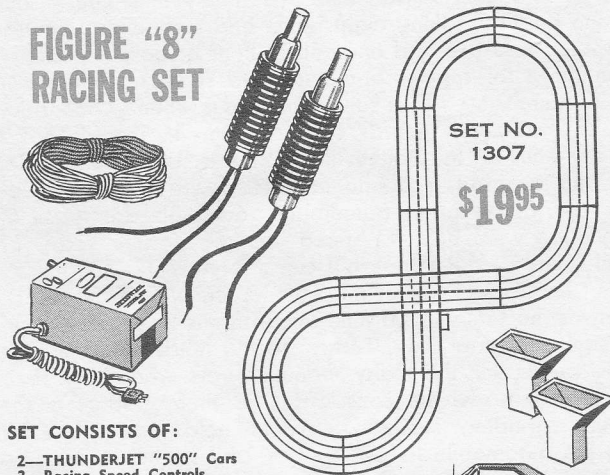
The Aurora Model Motoring in HO road system can be added to your present HO train layouts. Think of it! No more dummy cars and fake roads, now your cars and trucks will move over the highways, cross the bridges, will race your train at the crossings! Beautiful scenes and panoramas can be created with HO accessories such as houses, animals, buildings, people, etc. all in perfect scale with your Model Motoring. Yes, Aurora has scored again with a hobby engineered especially for participation and enjoyment. Add to this pleasure the knowledge that your HO scaled Model Motoring will NEVER be obsolete.

ASSEMBLY INSTRUCTIONS FOR



YOUR SET WILL BE ONE OF THESE BASIC TYPES

FIGURE "8" RACING SET



SET NO.
1307
\$19⁹⁵

SET CONSISTS OF:

- 2—THUNDERJET "500" Cars
- 2—Racing Speed Controls
- 6—9" Radius Curved Road Sections (1/4 Sect.)
- 3—9" Straight Road Sections
- 2—6" Straight Road Sections
- 1—9" Terminal Straight Road Section
- 2—Trestle Posts
- 1—18 Volt D.C. Power Pack

"CRISSCROSS"



SET NO. 1305
\$21⁹⁵

SET CONSISTS OF:

- 2—THUNDERJET "500" Cars
- 2—Speed Controls with Reverse Switch and Brake. Connecting Wire
- 4—9" Radius Curved Road Sections (1/4 Sect.)
- 2—9" Crisscross Roadways
- 3—9" Straight Road Sections
- 1—9" Terminal Straight Road Section
- 1—18 Volt D.C. Power Pack

THUNDERJET SPEEDWAY

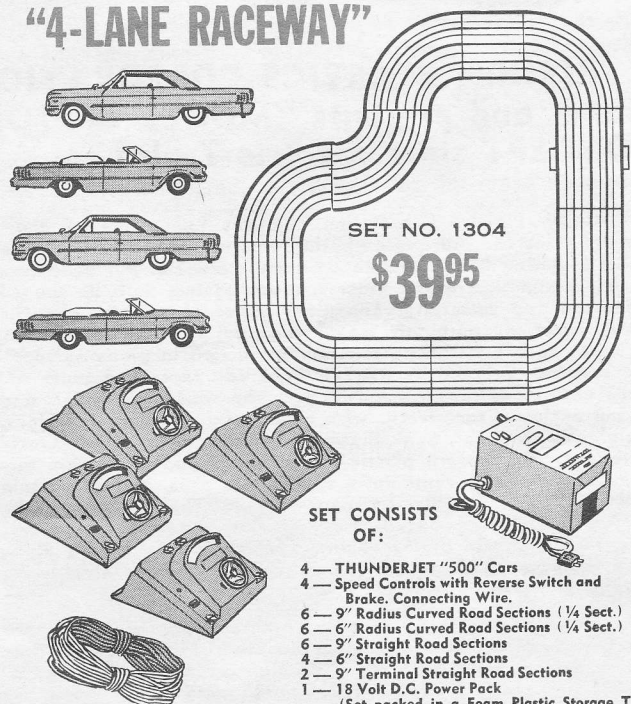


SET NO.
1302
\$24⁹⁵

SET CONSISTS OF:

- 2—THUNDERJET "500" Cars
- 2—Speed Controls with Reverse Switch and Brake. Connecting wire.
- 8—9" Radius Curved Road Section (1/4 Sect.)
- 7—9" Straight Road Sections
- 1—9" Terminal Straight Road Section
- 4—Trestle Posts
- 1—Set Guard Rails and Rail Posts
- 1—18 Volt D.C. Power Pack

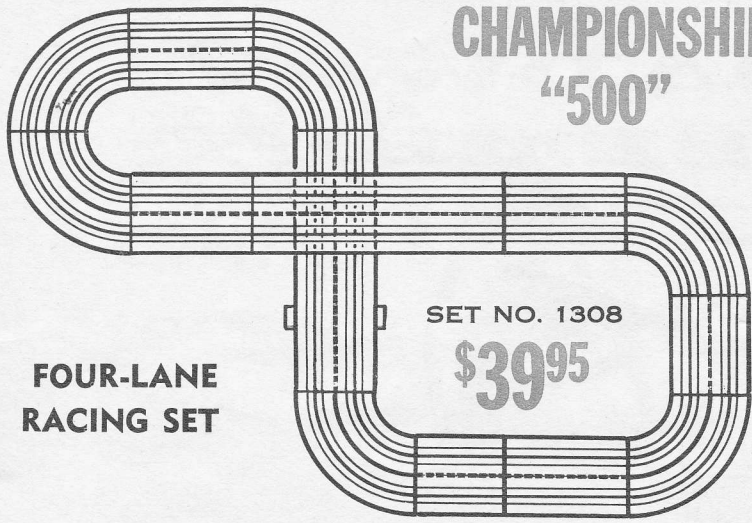
"4-LANE RACEWAY"



SET NO. 1304
\$39⁹⁵

SET CONSISTS OF:

- 4—THUNDERJET "500" Cars
- 4—Speed Controls with Reverse Switch and Brake. Connecting Wire.
- 6—9" Radius Curved Road Sections (1/4 Sect.)
- 6—6" Radius Curved Road Sections (1/4 Sect.)
- 6—9" Straight Road Sections
- 4—6" Straight Road Sections
- 2—9" Terminal Straight Road Sections
- 1—18 Volt D.C. Power Pack (Set packed in a Foam Plastic Storage Tray inside a full color box.)



CHAMPIONSHIP "500"

SET NO. 1308

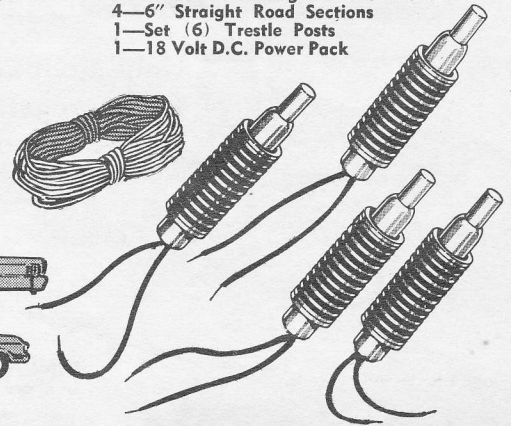
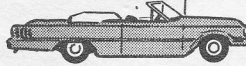
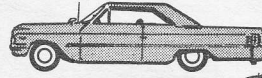
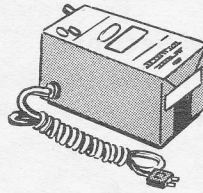
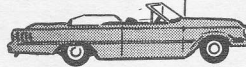
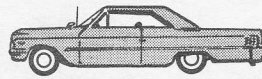
\$39⁹⁵

**FOUR-LANE
RACING SET**

(Set packed in a Foam Plastic Storage Tray
inside a full color box.)

SET CONSISTS OF:

- 4—THUNDERJET "500" Cars
- 4—Racing Speed Controls
- 6—9' Radius Curved Road Sections (1/4 Sect.)
- 6—6" Radius Curved Road Sections (1/4 Sect.)
- 14—9' Straight Road Sections
- 2—9' Terminal Straight Road Sections
- 4—6" Straight Road Sections
- 1—Set (6) Trestle Posts
- 1—18 Volt D.C. Power Pack



BASIC PARTS



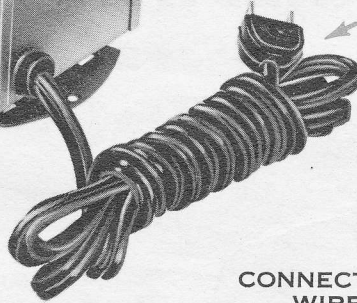
POWER PACK
INPUT 115 V 60 CYCLE AC
OUTPUT 18 V DC 1 AMP

UNDERWRITERS LABORATORY APPROVED
CANADIAN STDS. ASSOC. APPROVED

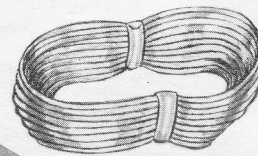
ON-OFF SWITCH
CIRCUIT BREAKER
PROTECTION



**ROADWAY
LOCK**



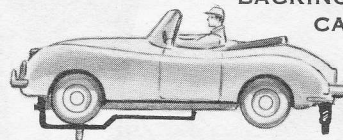
PLUGS INTO ANY
110 VOLT AC
OUTLET



REAR GUIDE PIN
(OPTIONAL FOR
BACKING UP
CARS)

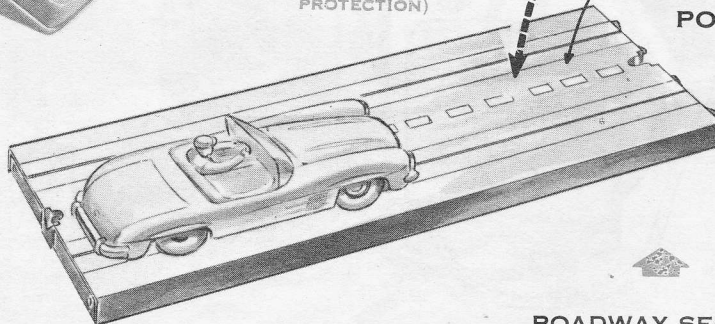


**SPEED CONTROL -
WITH
REVERSE SWITCH
AND BRAKE**
(CIRCUIT BREAKER
PROTECTION)



GUIDE PIN
RUNS IN
SLOT

**D. C.
ROTARY MOTOR
POWERED CARS**



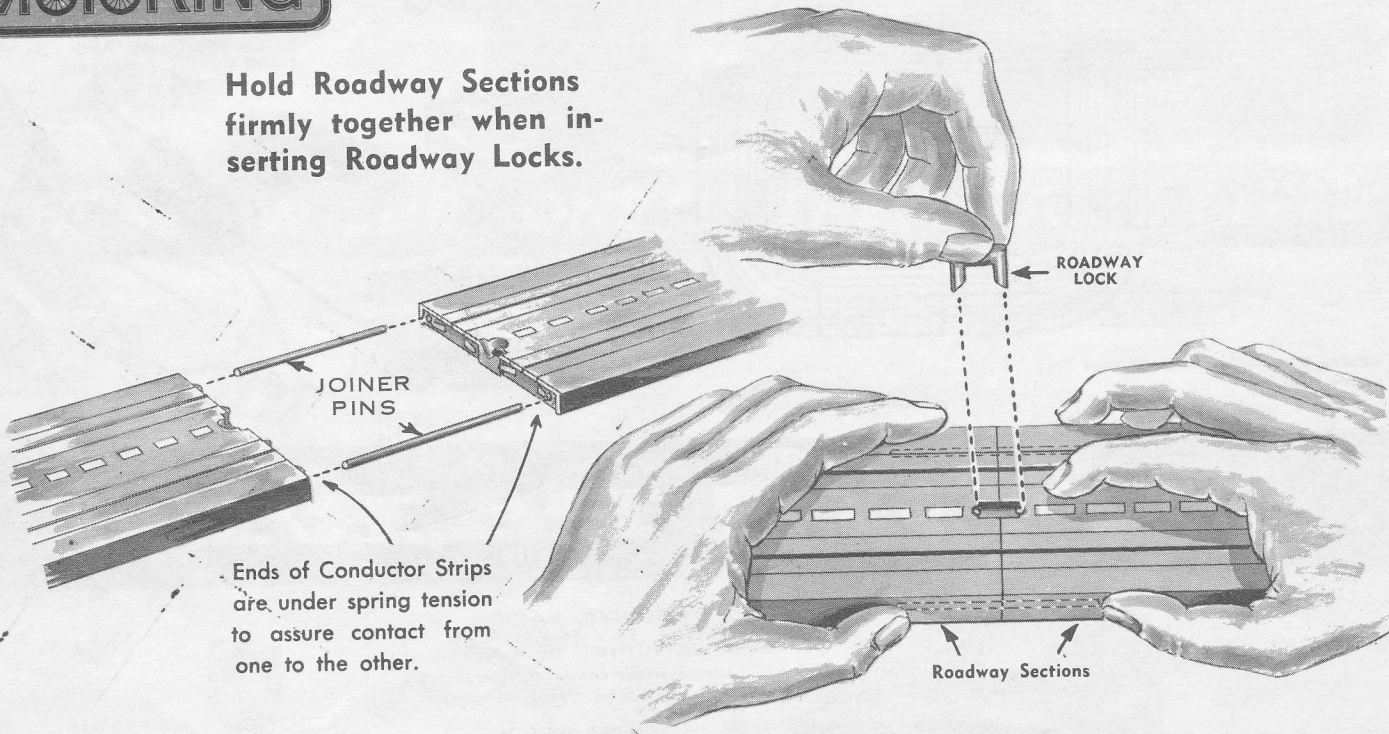
ROADWAY SECTION

SET MAY BE PURCHASED SEPARATELY



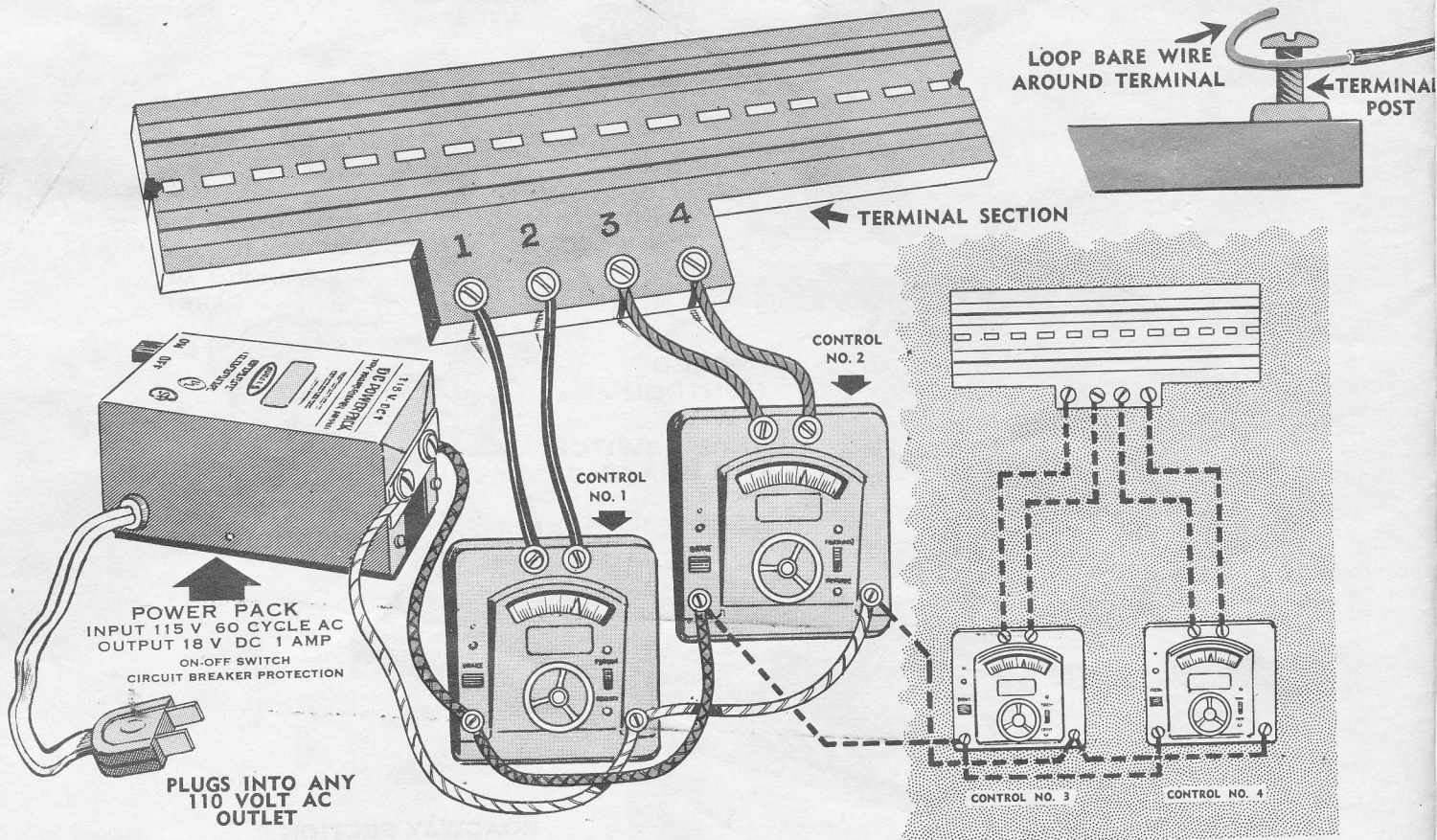
ROADWAY ASSEMBLY

Hold Roadway Sections firmly together when inserting Roadway Locks.

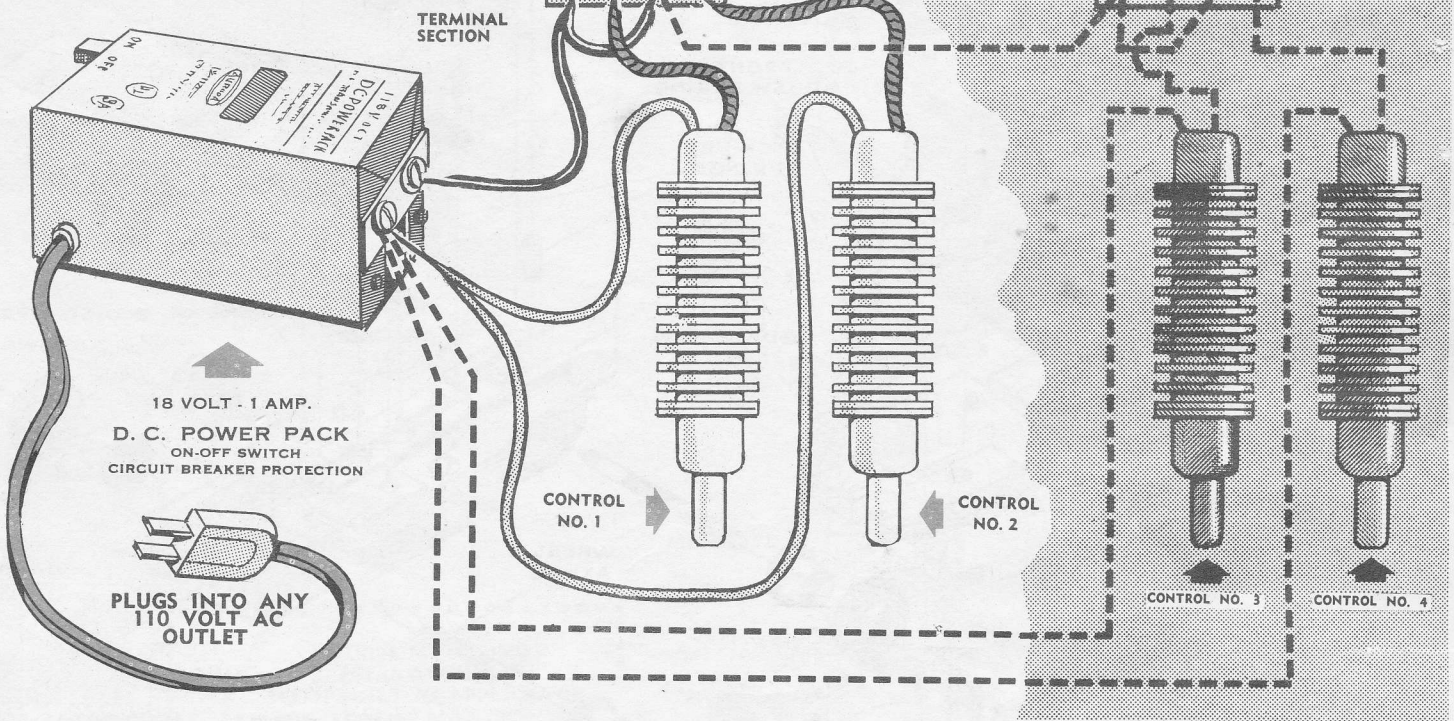


WIRING YOUR ROADWAY

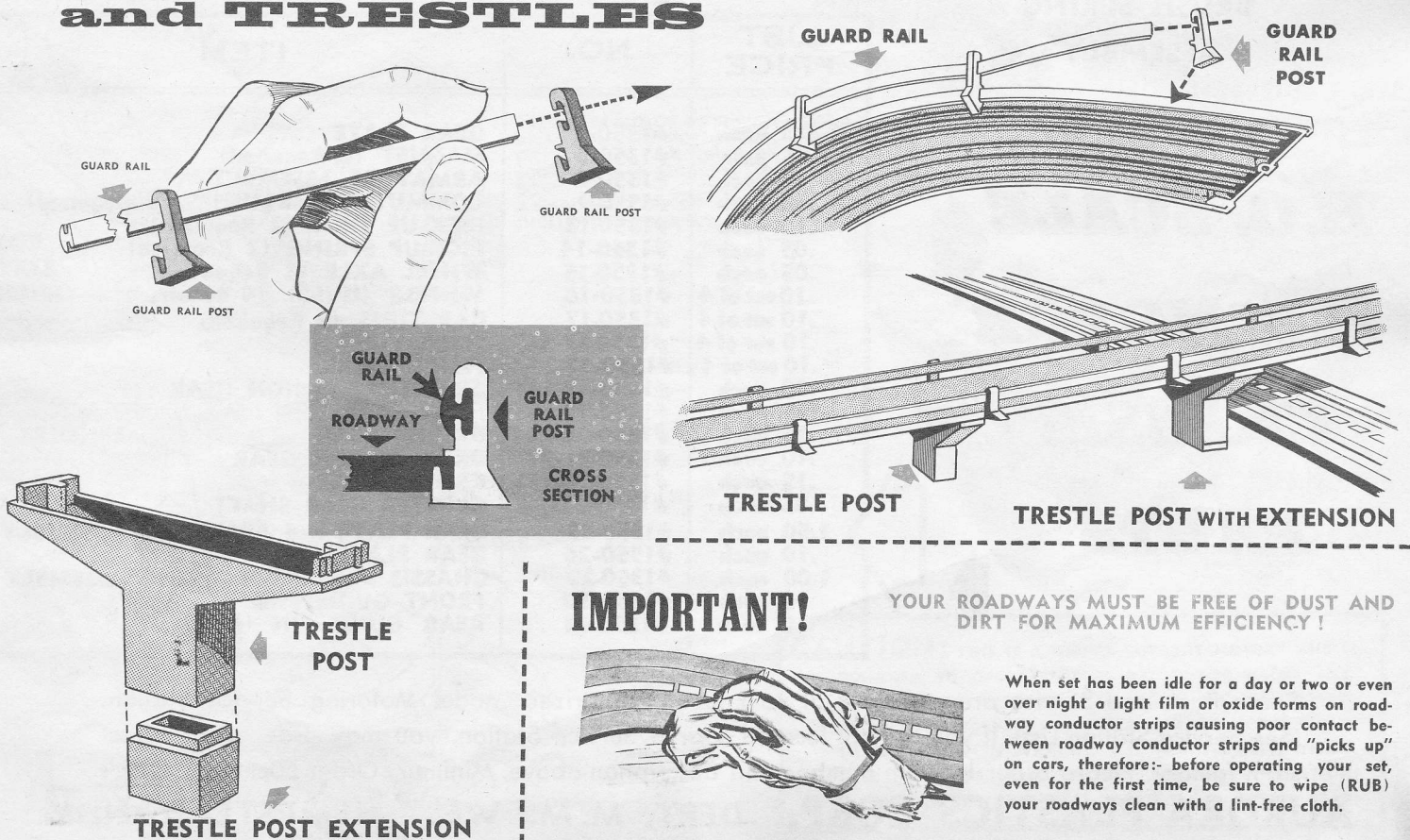
CUT WIRE TO LENGTH REQUIRED TO SUIT YOUR LAYOUT. STRIP INSULATION FROM END OF WIRE AND CONNECT TO TERMINALS AS SHOWN IN DIAGRAMS



WIRING DIAGRAM for RACING SPEED CONTROLS

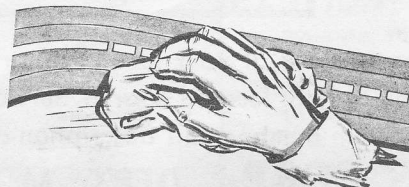


GUARD RAILS and TRESTLES



IMPORTANT!

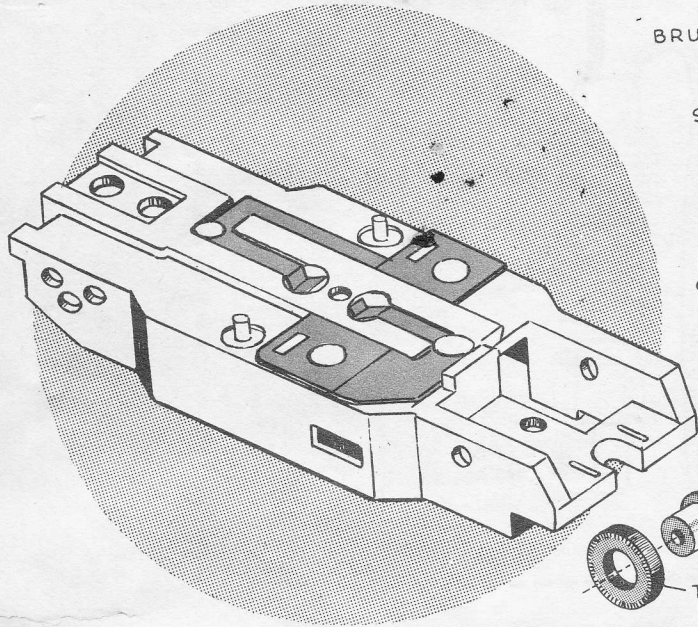
YOUR ROADWAYS MUST BE FREE OF DUST AND DIRT FOR MAXIMUM EFFICIENCY!



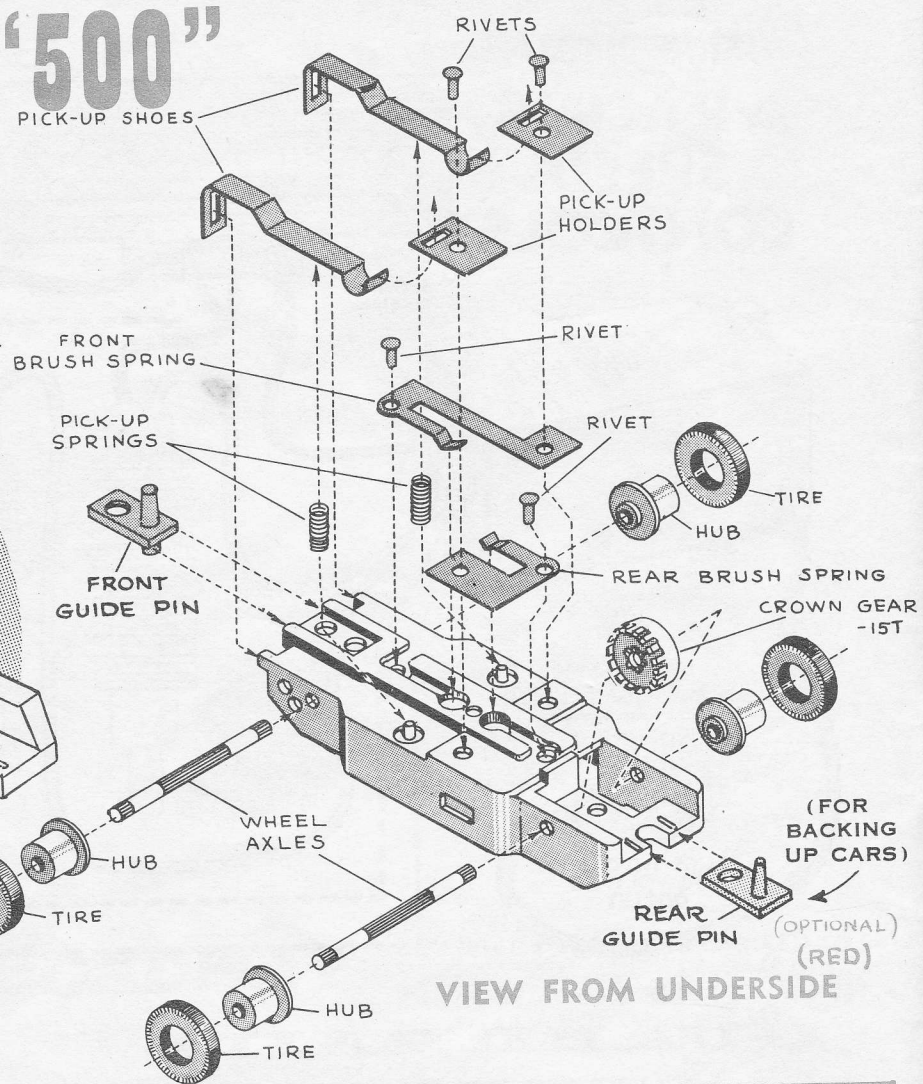
When set has been idle for a day or two or even over night a light film or oxide forms on roadway conductor strips causing poor contact between roadway conductor strips and "picks up" on cars, therefore: before operating your set, even for the first time, be sure to wipe (RUB) your roadways clean with a lint-free cloth.

THUNDERJET "500"

*MOTOR and CHASSIS ASSEMBLY



CHASSIS and BRUSH SPRING ASSEMBLY



VIEW FROM UNDERSIDE

H.O. SCALE D.C. MOTOR CHASSIS PARTS

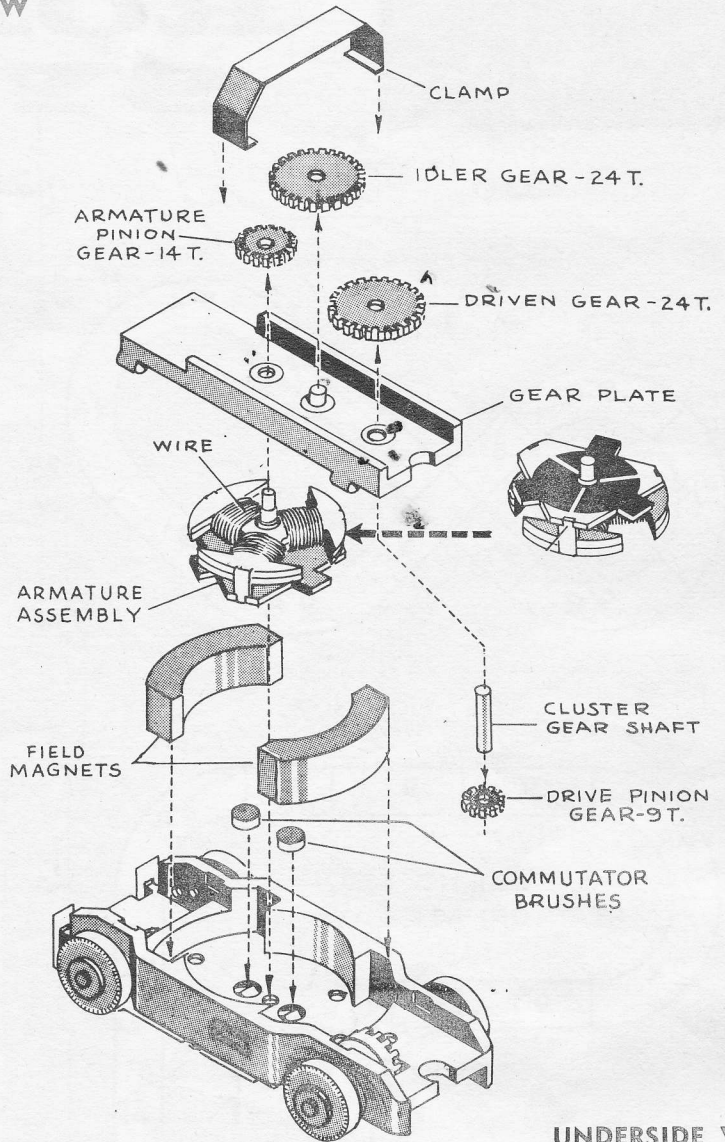
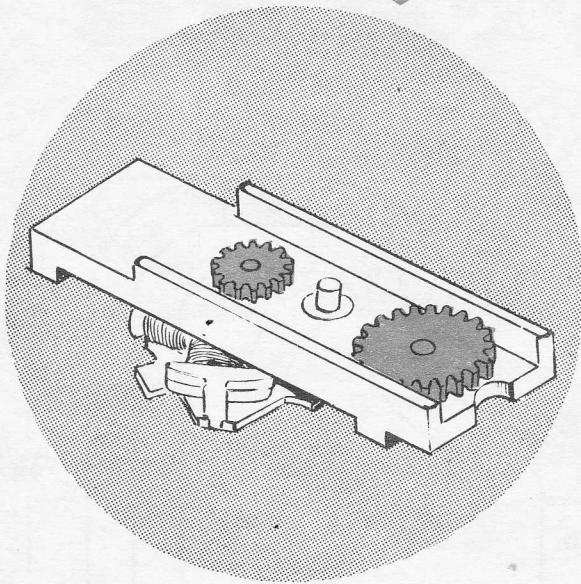
LIST PRICE	NO.	ITEM
\$.25 each	#1350-2	GEAR PLATE
.25 pair	#1350-3	MAGNET (2 Required)
1.00 each	#1350-8	ARMATURE ASSEMBLY
.10 each	#1350-9	COMMUTATOR BRUSHES (2 Required)
.10 each	#1350-13	PICK-UP SHOE (2 Required)
.05 each	#1350-14	PICK-UP SPRING (2 Required)
.05 each	#1350-15	WHEEL AXLE (2 Required)
.10 set of 4	#1350-16	WHEELS (HUBS) (4 Required)
.10 set of 4	#1350-17	CAR TIRES (4 Required)
.10 set of 4	#1350-17-1	SLICK TIRES
.10 set of 4	#1350-17-2	TRUCK TIRES
.10 each	#1350-18-14T	ARMATURE PINION GEAR
.15 each	#1350-19-24T	IDLER GEAR
.15 each	#1350-20-24T	DRIVEN GEAR
.10 each	#1350-21-9T	DRIVE PINION GEAR
.15 each	#1350-22-15T	CROWN GEAR
.05 each	#1350-23	CLUSTER GEAR SHAFT
1.50 each	#1350-25	GEAR PLATE and ARMATURE ASSEMBLY
.10 each	#1350-26	GEAR PLATE CLAMP
1.00 each	#1350-29	CHASSIS and BRUSH SPRING ASSEMBLY
.10 each	#1350-30	FRONT GUIDE PIN
.10 each	#1350-31	REAR GUIDE PIN (Optional)

Spare Parts and Service are available at your local Authorized Model Motoring Service Station. (See Service Station List). If you are not located near a Service Station, you may order parts direct from factory. Please order by item number and description above. Minimum Order 50c. No C.O.D.'s

AURORA PLASTICS CORP. DEPT. M.M. WEST HEMPSTEAD, N. Y.

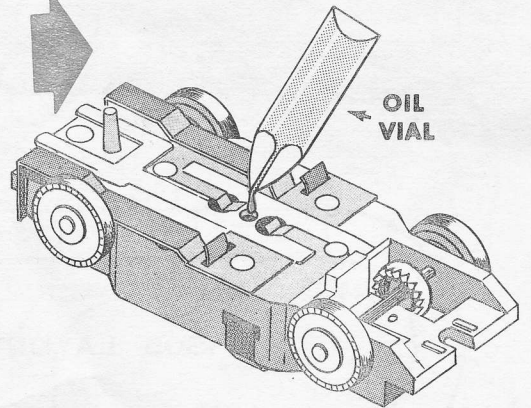
GEAR PLATE and ARMATURE ASSEMBLY

TOP VIEW

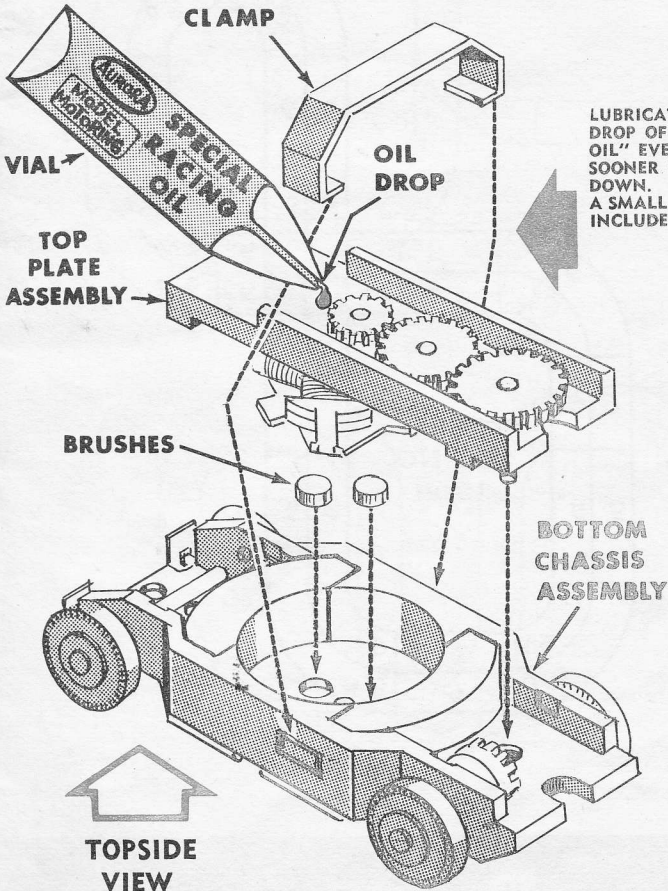


MODEL MOTORING
"SPECIAL RACING OIL"
WITH BUILT-IN APPLICATOR
IN CAP MAY BE
PURCHASED AT YOUR
DEALER FOR 25c.

UNDERSIDE VIEW



LUBRICATE MOTOR AS SHOWN WITH A SMALL DROP OF MODEL MOTORING "SPECIAL RACING OIL" EVERY 3 OR 4 HOURS OF OPERATION, OR SOONER IF CAR BEGINS TO "SQUEAK" OR SLOW DOWN. A SMALL VIAL OF "SPECIAL RACING OIL" IS INCLUDED IN YOUR SET.



TOPSIDE VIEW

CAUTION: THIS IS A DIRECT CURRENT MOTOR* AND IS DESIGNED TO OPERATE FROM D.C. POWER PACKS (A.C. TRANSFORMER WITH BUILT-IN A.C. to D.C. CONVERTER) OF 12 TO 18 VOLTS D.C. — WARNING: DO NOT ATTEMPT TO OPERATE WITH STRAIGHT A.C. TRANSFORMER, OTHERWISE BURN-OUT WILL RESULT. FOR BEST OPERATION; USE AURORA'S MODEL DC-1 18 VOLT D.C. POWER PACK.