CAUTION-ELECTRICALLY OPERATED PRODUCT:

NOT RECOMMENDED FOR CHILDREN UNDER 8 YEARS OF AGE. AS WITH ALL ELECTRIC PRODUCTS CERTAIN PRECAUTIONS SHOULD BE OBSERVED DURING HANDLING AND USE TO PREVENT ELECTRICAL SHOCK.

PARENTS PLEASE NOTE!

AS YOU WOULD USUALLY DO WITH ANY ELECTRICAL HOUSEHOLD PRODUCT DURING ITS USE; PERIODICALLY EXAMINE TRANSFORMER AND WIRING. TO DETERMINE IF ANY DAMAGE HAS OCCURRED OR ANY HAZARD EXISTS. ALL SUCH CONDITIONS SHOULD BE CORRECTED IMMEDIATELY.

#1442-100	INPUT:	120VAC 60 HZ ONLY	#1442-200	INPUT: 120VAC 60 HZ ONLY
(AFX–Wall Pak)	OUTPUT:	5.6VA DC	(AFX–Wall Pak)	OUTPUT: 5.2VA DC
		14.0 V.D.C. MAX.		14.0 V.D.C. MAX.

READ SEPARATE INSTRUCTION SHEET FIRST BEFORE READING THIS MANUAL

Congratulations on purchasing your new Aurora AFX Model Motoring Racing Set! Your set has been specially engineered for ease of assembly and years of trouble-free enjoyment with reasonable care. With the component parts of your set such as the Russkit Speed Controllers, Quikee assembly Terminal Track, Guard Rails, etc., you will enjoy a new experience in H.O. Scale Model Motoring.

Aurora is very concerned with your safety. Our sets operate efficiently on a very safe, low voltage which will not cause electrical shock.

First read through all the assembly steps on your separate instruction sheet to assemble your AFX set. Then, should you require more "Technical" assembly information, read through the assembly steps on page 2 through 4 in this manual. The following pages will give you additional information on Maintenance and Trouble Shooting, necessary for the proper operation of your Aurora AFX set.

Periodically wipe down your tracks with a clean cloth and have fun racing!

NOTE: DO NOT ASSEMBLE OR OPERATE YOUR SET ON A CARPET SURFACE.

AURORA AFX™
MODEL MOTORING®

576

TECHNICAL MANUAL

THE ONLY TOOLS REQUIRED FOR ASSEMBLY ARE YOUR QUIKEE-LOK KEY (ENCLOSED) AND IN SOME SETS, A PAIR OF SCISSORS.

QUIKEE-LOK KEY

1 SEPARATE AND STACK ALL TRACKS IN YOUR SET, ACCORDING TO SIZE
NOTE: SIZE SHOWN ON UNDERSIDE OF TRACK

## 2 CLEAN RAILS ON ALL TRACK

Rails

Eraser

Using your E-race-away™ eraser (supplied) clean all Track Rails. Wipe off eraser particles with a clean, dry cloth.

3 ASSEMBLE GUARD RAILS and BILLBOARDS*

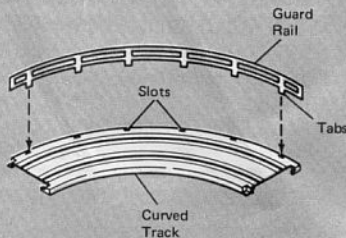A. Your AFX Guard Rail and Billboards are designed to be inserted on all curved tracks as shown.

B. Cut off ends of Guard Rail and Billboards to match various sized curved Track.
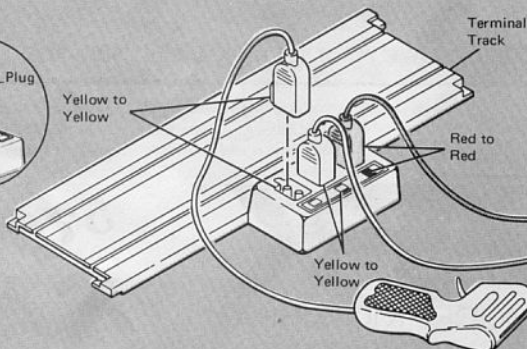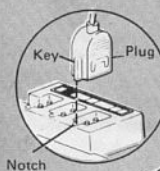
Guard Rail

Billboard*

Guard Rail

Slots

Tabs

Curved Track
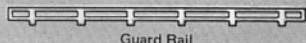
OPTIONAL in some sets. Check parts list.

Refer to track layout illustration on separate instruction sheet for correct placement of Billboards and/or Guard Rail.

## 4A PLUG CONTROLLERS AND WALL-PAK™ INTO TERMINAL TRACK (2 LANE SETS)

A. First plug in "yellow-colored" PLUGS on Controllers into "yellow-colored" Receptacles on TERMINAL TRACK as shown.
NOTE: Yellow PLUGS can be inserted into either yellow receptacle.

B. Next plug in "RED-colored" PLUG from WALL-PAK™ into "RED-colored" receptacle.

C. Finally, plug WALL-PAK itself into Wall Outlet and proceed to step 4B.

Key — Plug

Notch

Yellow to Yellow

Terminal Track

Red to Red

Yellow to Yellow
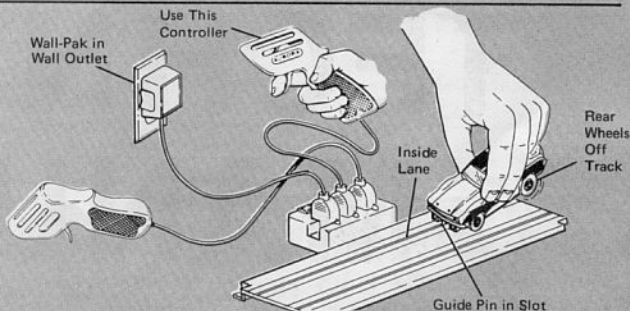
Controllers

Wall-Pak ™
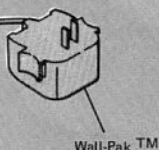
4B NOW TEST FOR POWER

A. Place Guide-Pin of a car in SLOT on inside lane of Terminal Track.

B. Raise rear wheels off track slightly, and press trigger on same Controller shown in picture.

C. Rear wheels will start "spinning" indicating power in track.

D. Repeat same procedure on other lane using other Controller.

NOTE: EVERY CONTROLLER HAS A PROTECTIVE COATING ON THE INTERNAL RESISTORS TO PREVENT RUST. THIS MAY BURN OFF AND SMOKE SLIGHTLY WHEN CONTROLLERS ARE NEW.

Wall-Pak in Wall Outlet

Use This Controller

Inside Lane

Rear Wheels Off Track

Guide Pin in Slot

## 4C FOR ATTACHING SPEED CONTROLLERS ON 4-LANE SETS TURN TO PAGE 4.

2

5 NOW COMPLETELY ASSEMBLE YOUR TRACK LAYOUT AS SHOWN ON SEPARATE INSTRUCTION SHEET STARTING WITH TERMINAL TRACK.
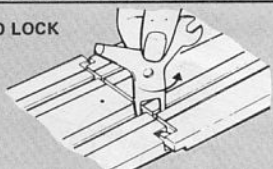
NOTE: As you assemble your layout continue to test for power continuity from one track to another.

RAIL TABS MUST TOUCH

If the wheels of the car do not spin on a particular track section, separate tracks with Quickee-Lok Key and rebend RAIL TABS to angle shown before reassembling. After reassembling check power again.
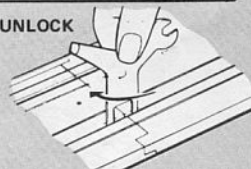
Rail Tabs

Top View
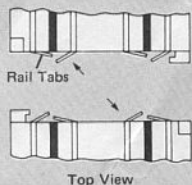
TO LOCK

A. To assemble tracks, join two sections so they just touch. Then using QUIKEE-LOK KEY (supplied) insert the pronged end in the TRACK SLOTS and twist in the direction of arrow, until tracks snap together.

TO UNLOCK

B. To disassemble tracks, twist KEY in opposite direction.

TRACK REPAIR CLIPS

USED IN CASE LOCKING TABS ON TRACKS BREAK OFF

Several Track Clips have been included in a separate poly-bag with your set. They are not required to assemble your layout. However, should the Locking Tabs on a track section break off for any reason, the track sections can be held together using the clips as shown in the drawings.
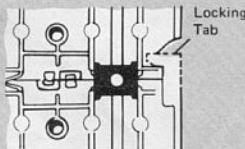
Track Clip

Locking Tab
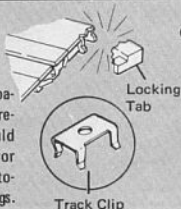
ATTACH THIS WAY ON ALL BANKED CURVES

Locking Tab
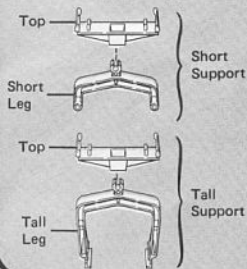
ATTACH THIS WAY ON ALL REGULAR TRACK
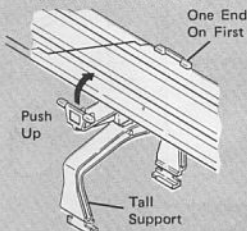
Locking Tab
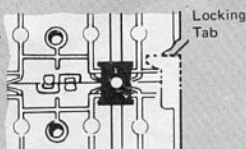
View of Underside of Tracks

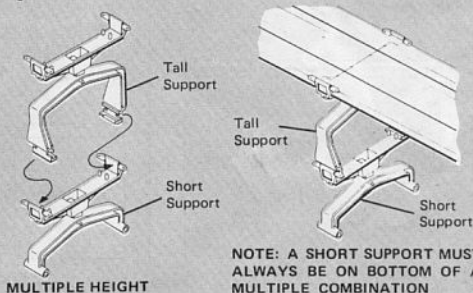**6A** ASSEMBLE AND ATTACH TRACK SUPPORTS (2 LANE SETS ONLY)

A. There are two types of supports in AURORA AFX Sets, a Short Support and a Tall Support. You must assemble a TOP piece to either a Short LEG or a Tall LEG to complete a Support assembly as shown below.

B. By combining the various Support Assemblies, you can elevate your track sections to the required height. See your separate track layout diagram for correct amount of support combinations needed.

Top
Short Leg
Short Support

Top
Tall Leg
Tall Support

ASSEMBLE TO TRACK

One End On First

Push Up

Tall Support

Tall Support

Tall Support

Short Support

Short Support

Short Support

MULTIPLE HEIGHT

NOTE: A SHORT SUPPORT MUST ALWAYS BE ON BOTTOM OF A MULTIPLE COMBINATION

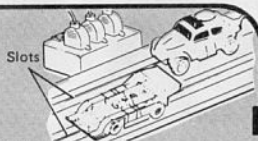**6B** FOR ATTACHING TRACK SUPPORTS ON 4-LANE SETS,

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7 RACING INSTRUCTIONS

Slots

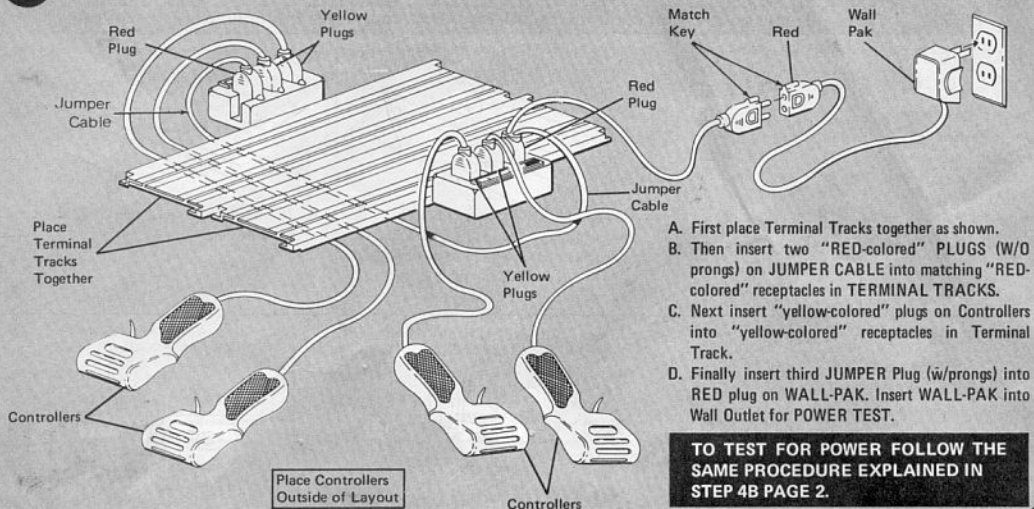A. Make sure Wall-Pak is in wall outlet.
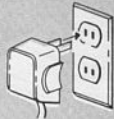
B. Place cars in lanes on Terminal Track with Guide Pins in Slots. Slowly drive them around your Layout by squeezing triggers on Speed Controllers.

IMPORTANT NOTE: Your cars may hesitate at first. This is due to a protective coating on the rails which will normally wear off after your cars travel around the layout a few laps.
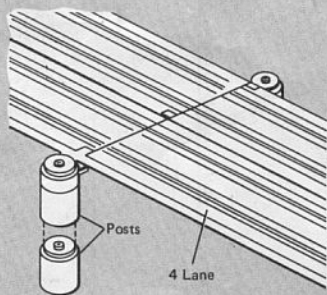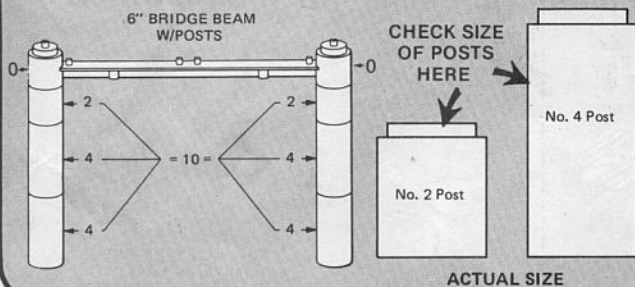
IF YOUR SET DOESN'T OPERATE PROPERLY, REFER TO YOUR TROUBLE SHOOTING

4C PLUG IN JUMPER CABLE, 4 CONTROLLERS AND WALL-PAK™ INTO TERMINAL TRACKS (4 LANE SETS)

Red Plug

Yellow Plugs

Jumper Cable

Match Key

Red

Wall Pak

Red Plug

Jumper Cable

Place Terminal Tracks Together

Yellow Plugs

Controllers

Place Controllers Outside of Layout

Controllers

A. First place Terminal Tracks together as shown.

B. Then insert two "RED-colored" PLUGS (W/O prongs) on JUMPER CABLE into matching "RED-colored" receptacles in TERMINAL TRACKS.

C. Next insert "yellow-colored" plugs on Controllers into "yellow-colored" receptacles in Terminal Track.

D. Finally insert third JUMPER Plug (w/prongs) into RED plug on WALL-PAK. Insert WALL-PAK into Wall Outlet for POWER TEST.

TO TEST FOR POWER FOLLOW THE SAME PROCEDURE EXPLAINED IN STEP 4B PAGE 2.

6B BRIDGE BEAMS AND POSTS (4 LANE SETS)

Aurora AFX Modular Bridge Beams and Posts can be snapped together in various heights to create overpasses (i.e.: A numeral 10 indicated for a post on your track layout sheet can be made by snapping together post sizes 2+4+4 for a total of 10.)

6" BRIDGE BEAM W/POSTS

0— —0

2   2

—4 = 10 = 4—

4   4

CHECK SIZE OF POSTS HERE

No. 4 Post

No. 2 Post

ACTUAL SIZE

Posts

4 Lane

HOW TO CHECK TRACK ALIGNMENT ON 4-LANE SETS ONLY

A. After your tracks are assembled and Bridge Beams are in position under tracks, you may find some track surfaces out of alignment, especially in elevated areas.

B. This situation can be remedied by properly seating the tracks on the Bridge Beams until track surfaces are level.

C. Slight re-positioning of Bridge Beams may also help to correct this problem.

Tracks Out of Alignment
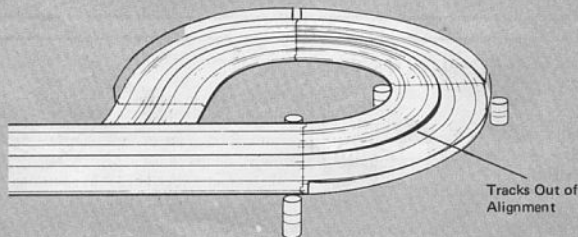
MAINTENANCE INSTRUCTIONS FOR AFX CARS WITH MAGNA-TRACTION ONLY.

NOTE: See separate maintenance instruction sheet if your set includes G-PLUS cars.

During the normal course of operating your set, various parts will eventually wear out and need replacing. Instructions below will help guide you in the disassembly of your AFX with "Magna-Traction" cars, to make the necessary replacements.

A
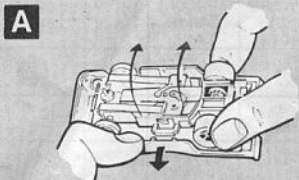
Easy disassembly is a feature of your AFX car. The bodies snap off easily by holding the car as shown and pulling the edge of the body away from chassis. To replace the chassis simply pull the body side and snap the chassis into place.

B
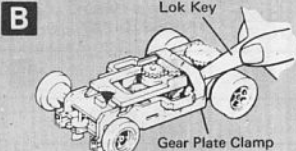
Disassembling the chassis is easy with the AFX. First of all, refer to the exploded view of the chassis to see where all the parts go.

The gear plate is removed by placing a screwdriver or QUIKEE-LOK KEY under the edge of the clamp and carefully prying it off.

C
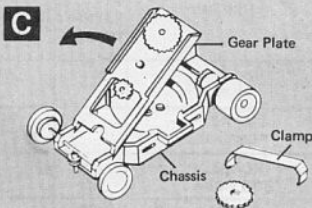
With the GEAR PLATE CLAMP removed simply lift the GEAR PLATE and armature from the chassis. Note how the gear plate snaps into place at the front of the chassis.

D
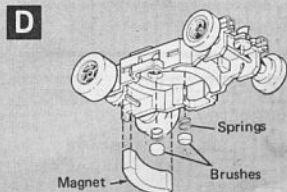
To remove the magnets, commutator brushes and springs simply turn the chassis upside down and they will fall out. Be sure to replace the magnets in their original position, with Red Magnet in rear position or cars will run backwards.

E
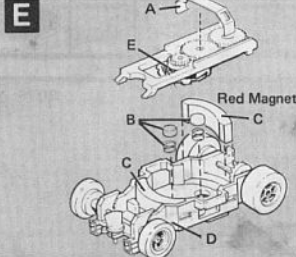
Here is the chassis with: A-Clamp, B-Commutator Brushes and Springs, C-Magnets, D-Chassis, E-Gear Plate and Armature.

F
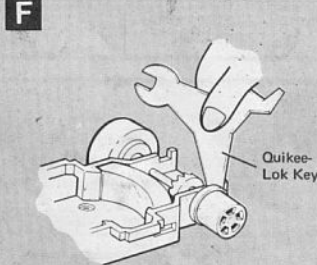
Should Wheels need replacing, remove them by prying off with QUIKEE-LOK KEY, as shown.

CHASSIS PARTS BREAKDOWN FOR CARS WITH magna⟩⟨traction ONLY

REPLACEMENT PARTS

8777—Armature
8703—Guide Pin
8705—Pick Up Shoe Springs (Pr.)
8711—Gear Plate and Cluster Gear
8712—14 Tooth Pinion Gear
8713—24 Tooth Idler Gear
8714—15 Tooth Crown Gear
8715—Front Axle
8716—Front Wheels (Pr.)
8717—Front Tires (Pr.)
8718—Rear Axle
8719—Rear Wheels (Pr.)
8720—Rear Tires (Pr.)
8770—Chassis
8771—Magnets
8772—Gear Plate Clamp
8773—Motor Brush Springs (Pr.)
8774—Motor Brushes (Pr.)
8775—Pick Up Shoes (Pr.)
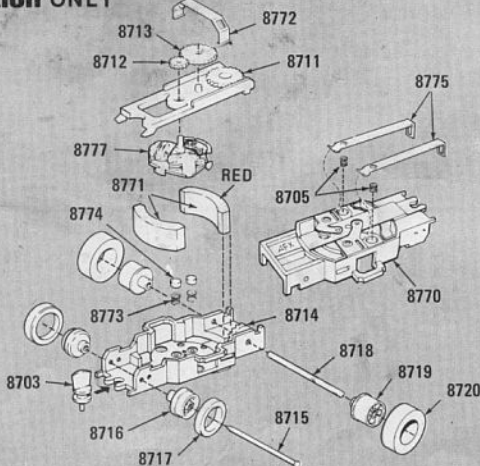
AFX REVERSIBLE GUIDE PIN
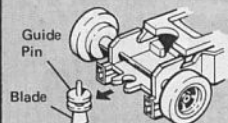
AFX cars come with Reversible Guide Pins for every racing condition. The Blade side provides an extra handling edge on AFX Speed-Lok Tracks. (For old style Aurora HO track simply reverse it and use the pin side.)
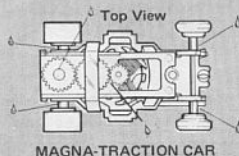
•5

TROUBLE SHOOTING CHART

Refer to the Trouble Shooting Chart below for your particular problem.
Then look for the diagram or diagrams shown below for the best solution.

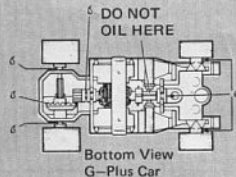| PROBLEM	A LUBRI-CATION	B INCORRECT WIRING	C RAIL TABS DO NOT TOUCH	D DIRTY TRACKS	E CARS DIRTY	F WHEEL BODY INTERFER.	G DIRTY OR WORN PICK-UP SHOES	H MORE THAN ONE CAR IN LANE	I DIRTY TIRES	J EXCESSIVE OILING
CARS WON'T RUN		●	●	●		●				●
CARS HESITATE				●	●		●			
CARS RUN NOISY	●				●	●				
CARS RUN SLOWLY OR OVERHEAT	●				●	●				●
CARS SPIN OUT				●					●	
CONTROLLERS HOT or SMOKE								●		
SOUND UNITS (OPTIONAL IN SOME SETS)		● (SEE ACCESS INSTRUCTIONS)								

A — LUBRICATION

Proper lubrication is important for maintaining a high performance car. Aurora's Model Motoring Special Racing Oil is formulated to help your AFX car run better, faster and smoother. Apply oil sparingly to specific oiling points (see illustrations).
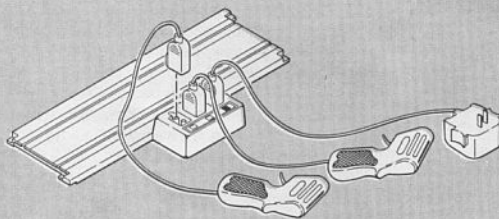
NOTE: SEE MAINTENANCE SECTION FOR DISAS-SEMBLY INSTRUCTIONS OF AFX CAR.

G-PLUS OILING TIPS ONLY

Top View
DO NOT OVER OIL HERE
Bottom View
MAGNA-TRACTION CAR

DO NOT OIL HERE
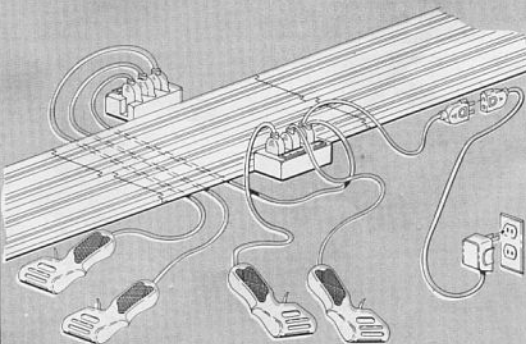Bottom View G—Plus Car

B — RECHECK 2 LANE SET WIRING

Make sure Yellow Plugs are inserted in Yellow Receptacles and Red Plug is in Red Receptacle in Terminal Track.

RECHECK 4 LANE SET WIRING

Make sure Yellow Plugs are inserted in Yellow Receptacles and Red Plugs are in Red Receptacles in Terminal Tracks.

C CHECK TRACK POWER FROM TRACK TO TRACK

Check for track power by squeezing trigger on your controllers and placing the PICK-UP-SHOES, of a car, on the rails of both lanes on all track sections. Rear wheels should spin, indicating track power.
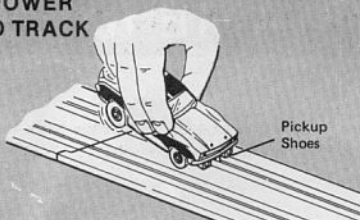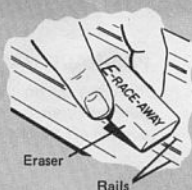
Pickup Shoes

RAIL TABS MUST TOUCH

If the wheels of the car do not spin on a particular track section, separate tracks with Quikee-Lok Key and rebend RAIL TABS to angle shown before reassembling and after reassembling check power again.
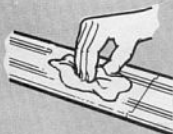
Rail Tabs
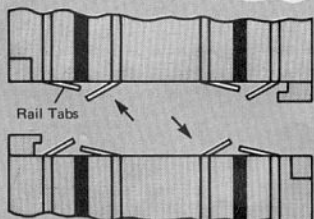
D CLEAN TRACK

A. Take your E-RACE-AWAY eraser (included) and clean rails on all tracks.
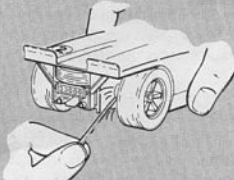
Eraser

Rails

B. Wipe down your tracks with clean cloth to remove lint, dust and eraser particles.

E REMOVE LINT FROM AXLES

When racing your cars over long periods, lint and dust may accumulate around the axles. Remove with a toothpick or small tweezers, as shown.
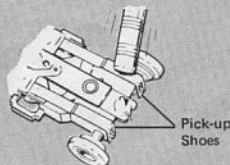
F REALIGN CHASSIS
(Magna-Traction, or G-Plus)

After a crash, the snap-on body of AFX cars (Magna-Traction, or G-plus) may shift and cause tire-body interference. This can be corrected by holding the car upside-down and centering the chassis until it snaps back into position.

Snaps Here

Car Shown is AFX Magna-Traction Car.
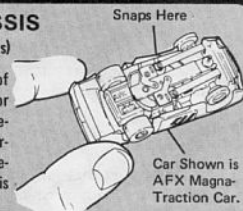
G CLEAN PICK-UP SHOE

Pick-up Shoes

The PICK-UP SHOES on your cars should be cleaned regularly by rubbing them with a pencil eraser as shown. When PICK-UP SHOES become worn replace them with new ones available at your dealer.

H
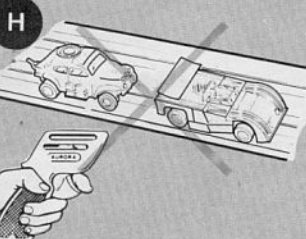
Do Not race more than one car at a time in one lane. It will cause your Controller to get hot and possibly burn out.

I CLEAN REAR TIRES

Rear Tires

Sticky Side Up
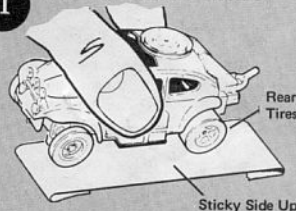
One very effective way to clean tires is to place a piece of tape on a table as shown and roll rear tires on it a few times.

J CLEAN OFF EXCESSIVE OIL
(PERTAINS TO AFX CARS WITH MAGNA-TRACTION ONLY)

Great care should be taken not to over oil your cars, especially at the bottom armature bearing hole.

If this happens use a cotton-tipped swab, saturated with rubbing alcohol to clean the chassis completely. See Figure 1.

Using a pencil eraser carefully clean the Commutator. New Motor Brushes should now be installed, car reassembled and carefully oiled. See Figure 2.
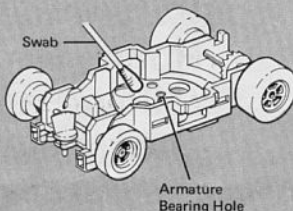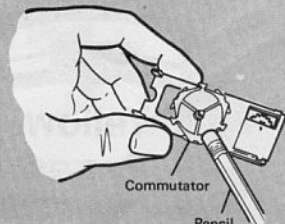
Fig. 1

Swab

Armature Bearing Hole

Fig. 2

Commutator

Pencil

RACING GAME RULES

PRE-RACE WARM-UP

Place the car on the assembled track layout and slowly drive it around the track. Now begin to increase your speed to the point of your car leaving the track. A truly skillful driver will be the one who can maintain a high level of speed without coming off the track. You are now ready to race.

OBJECTIVE

The objective of this race game is to determine a winner based upon speed and driving ability. This is accomplished by completing a predetermined number of laps before your opponent does, or, as in the case of one player, by completing laps in a period of time less than previously established. A lap is determined by one complete pass around the layout, ending at the original starting point.

FOR ONE PLAYER

Rule 1:   Player is to set car on track at his chosen starting point for qualifying trials.
Rule 2:   Player will run three qualifying trial runs of five laps each.
Rule 3:   Player is to time his qualifying trial speeds with a watch which has a second hand.
Rule 4:   After each five-lap trial, player should record his elapsed time.
Rule 5:   After the three qualifying trials have been run, player should determine his average running speed by totaling the three recorded times and dividing by three. This average running speed is called the handicap.
Rule 6:   Player now has the time he must beat to win in a five-lap race against the clock.
Rule 7:   Place car in starting position and begin race.
Rule 8:   If player takes less time than handicap he is declared a winner; if he takes more time, he is a loser.

It is suggested that players record their handicap and compare it with those of their friends. If desired, several players may even form a club in which qualifying heats must be run in order to eliminate other players from the final competition, which is limited to two players. In addition, teams may be formed by combining two players on each side whose handicaps total a time equal to or close to those of other two-player teams.

FOR TWO PLAYERS

Rule 1:   Players are to determine lane for racing by the flip of a coin. Winner has choice of lane.
Rule 2:   Players set cars on track at chosen starting point, side by side.
Rule 3:   Players determine number of laps required for race. (Race can be any number of laps.)
Rule 4:   Race begins with the player having won the coin flip giving a starting countdown, 1 — 2 — 3 — Go.
Rule 5:   Players are to count aloud their laps.
Rule 6:   PENALTIES: If you are responsible for your opponent's car leaving the track during the race, you will be penalized one lap for each occurrence.

 If your own car comes off the track there is no additional penalty other than the time lost by being off the track. Your car should be placed back on the track at its point of exit.
Rule 7:   The first player to complete the required number of laps is declared the winner.