Manual No. 1500 Game No. 914 October 1, 1971

Bally

SERVICE INSTRUCTIONS AND PARTS CATALOG



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TABLE OF CONTENTS

•	PAGE NO
TROUBLE SHOOTING SECTION	2 - 7
GAME ADJUSTMENTS	8 - 10
ILLUSTRATED PARTS BREAKDOWN & SERVICE G	UIDE
CABINET ASSEMBLY	12 - 13
STEERING UNIT & COIN SYSTEM Steering Potentiometer, Slug Rejector	14 - 15
MOUNTING BOARD ASSEMBLY Normal Game Sound & Play Adjustments	16 - 17
BACK DOOR ASSEMBLY	18 - 19
FRON CABINET DISPLAY UNIT	20 - 21
RACE CAR DRIVE UNIT - FRONT VIEW Players Race Car, Flip Unit, Lighting	22 - 23
RACE CAR DRIVE UNIT - REAR VIEW Track Lighting, Motors, Bonus Time Adjust., Car Potentiometer, Score Panels & Counters.	24 - 25
RACE TRACK CONVEYOR UNIT - PART I Track Motors, Belt Adjust., Crash Detector Unit	26 - 27
RACE TRACK CONVEYOR UNIT - PART II Crash Detector Unit, Race Cars	28 - 29
PROCEDURE FOR BELT REPLACEMENT	30
FOOT PEDAL ASSEMBLY	31

TROUBLE SHOOTING SECTION

GENERAL SERVICE INFORMATION

More service problems are caused in games by hasty service than by natural causes. If it is working ok, leave it alone. If it is not working ok, don't attempt to adjust it until you have determined exactly where the fault lies.

The following Roadrunner Guide describes a test procedure aimed at determining the cause of the trouble and suggesting ways of fixing it. Go through the Check List in sequence, until the fault is found. By following this process, you should avoid servicing the effect rather than the cause.

TESTING PROCEDURES

First check all Plugs are fully inserted, all Fuses are in place and all Relays plugged in.

FUSES BLOWING

A. Servo Amplifier (3 Amp.)

If Fuses are blowing on one of the Servo Amplifiers, check for a short across the corresponding Motor by pulling off one wire. If Fuse still blows, check for short in cable. If Fuse now does not blow, replace Motor.

B. Game Timer (1 Amp.)

One Fuse is in GAME OVER Relay Circuit and the other is the STOP LIGHT Circuit. If the GAME OVER Fuse is blowing, check Game Over Relay and its circuit. If Stop Light Fuse is blowing, check Adjustment #1 and Stop Light on Car Assembly for shorts.

6 Volt Fuse (5 Amp.)

Check all lighting circuits, including Projector Lamp.

50 Volt Fuse (3 Amp)

Check all 50 Volt circuits for shorts. Check Adjustment #1. Check Steering Engage Solenoid, Sound Knocker, Flip Motor, Coin Lockout and Drum Counter Coils for shorts.

10 Volt Fuses (15 Amp.)

Remove one lead of each Aluminum Electrolylic Capacitor. If fuses still blow, replace Bridge Rectifier. If not, replace each lead in turn and replace the Capacitor which blows the Fuse.

12 Volt Fuses (5 Amp.)

First unplug all four Servo Amplifiers, the Control Module, the Sound Generator and the Game Timer. Replace the Fuses and coin the Game. If the Fuse(s) still blow, check for a short in the + or - 12 Volt circuits in the cables. If they don't blow, replace the Modules one at a time until the faulty one is found.

TEST #1 Turn Game On (If already on, turn off and back on.)

NOTE: On-Off Switch is located inside Accelerator Hole in top left corner.

CHECK LIST

- I) 1 115 Volt Lamps should be on behind Roadrun ner Glass.
- [1] 2 Coin Entry Lamp On
- I) 3 Game Over Lamp On
- I) 4 Both Black Lights On
- I) 5 "Out Of Order" Should be LAMP OFF

POSSIBLE FAULT

- II) 1A Check! Line Fuse (Top right hand corner of Front Door entry.) Check if 115 Volt Lamps burnt out.
- I) 2 A Check 6 Volt Fuse
 - Check if Lamp burned out
- Check if Lamp burned out
- I) 4 A **Check Starters**
 - Check Lamps
- I) 5 Rotate Drive Motor Shaft by hand on Top Steering Assembly and move Carriage off Limit Switch - Lamp should go Off.

CHECK LIST

POSSIBLE FAULTS

I) 6 Coin Lockout Coil Energized.

- I) 6 A. Check 50 Volt Fuse
 - B. Check Bounce Switch is closed with good contact pressure.
 - C. Check Replay Button Switch
 - D. Check Coin Switch not jammed
- Check Projector Lamp in Scenery Drum on Back Door is lit dimly.
- I)7 Replace Projector Lamp
- I) 8 Object car should be horizontal (Not flipped or moving)
- I) 8 Check Adjustments #1, 2 and 5.
- Game over Relay should not be operated or buzzing.
- I)9 Change Game Timer Module.

<u>TEST #2</u> Insert Coin (If set for two coins per play Insert two coins.)

II) 1 Object Car moves to Pit Stop Lane (Just to right of right hand lane of traffic. If already in Pit Stop Lane, move it out to 3rd Lane before inserting coin. (Car can be moved by rotating Sprocket Drive on Motor by hand very carefully. If any resistance is felt, rotate Motor Shaft sticking out the back so as to prevent damage to the Gear Box. II) 1A. Doesn't Move At All

Try rotating the Steering Motor Shaft by hand.

- B. If the Steering Motor resists the movement and holds it in the wrong position, CHECK:
 - (a) Adjust #3 & #4B
 - (b) Try a substitute Control Module
- C. If the unit moves freely by hand and stays in the Pit Stop Lane, CHECK:
 - (a) Reset Relay Operated
 - (b) 3 Amp Fuse on Steering Servo Amplifier (light ON indicated bad Fuse)
 - (c) Determine if bad Motor by making sure voltage is getting to terminals (2 small 6 Volt Lamps in series should light).

NOTE: If the Steering Motor has to be replaced, be careful to maintain the timing between car and chain on the Idler Sprocket on the opposite side to the Motor. This Sprocket drives the Steering Feedback Pot which controls the position of the Car. If it is upset, refer to Adjustment III B (d).

2 D. If Motor now runs when moved by hand and operates correctly, check for a mechanical bind in the Steering Assembly or for a Dead Spot in the Steering Motor.

II) 2 E. Car Hits Right or Left Limit Switch

- (a) Check 12 Volt Fuses
- (b) Check Steering Servo Amplifier operation by exchanging with another Servo Amplifier and repeat test.
- (c) Check Control Module operation by substituting a new one.
- (d) Check Adjustment #III, Part B.
- F. Car moves but to wrong position Check through faults II 1 A to II 1 D.

CHECK LIST

POSSIBLE FAULT

II) 2. 3 lanes of cars should move forward (foot off of accelerator)

II) 2 A. No Belts Move

(a) Check Belt Assy. plugged in.

(b) Check right and left hand lane Servo Amplifiers by exchanging for others.

B. Only One Belt Moves

- (a) Check Servo Amplifier of Belt which doesn't move.
- (b) Check for bad connections by making sure voltage is reaching Motor (2 six volt lamps in series across motor should light).

NOTE: Only the left & right lanes are driven by the Electric Drive Motors, the center lane is driven by a differential gear assembly, inside the center pulley.

C. One Belt moves backwards

- (a) Check Servo Amplifier
- (b) Check Motor connection right way round (yellow 30 wire towards front of game).
- (c) Check Game Timer Module by exchanging.
- D. Both Belts run backwards Check Game Timer Module.
- II) 3 A. Check Reset CAM Switch (located inside Back Door under right hand belt drive).
 - B. Check Score Reset Relay (located on rear of Top Steering Drive Assembly).
 - C. Check contacts on Drum Counters

II) 4. When Drum Counters get to zero.
A, "Game Over" Light goes out.

II) 3. Drum Counters Reset to Zero

- II) 4 A. Check Crash Timer Relay operated
 - (a) If operated, check close on zero contacts on three Drum Counters.
 - (b) If not operated, check car horizontal and in Pit Stop Lane also, check wipers on Top Steering Assembly.
 - (c) A few games had a solid Jumper Wire between 2 contacts on the Units Drum Counter which are fed by a #52 (whiteblue) Wire. This Jumper breaks due to vibration and should be replaced with a flexible Jumper wire at least 3" long.
 - B. Check Lamp Burnt out. Check 10 Volt Fuses.
 - C. Check Lamp.

- B. Projector Light goes bright C. Yellow Flag Lights
- II) 5. Projected Scenery moves slowly toward you and speeds up gradually as you push down on the accelerator.

II) 5 A. Doesn't Move At All:

- (a) Check Scenery Drum Motor Servo Amplifier.
- (b) Check for mechanical jam on the Drum Drive.
- (c) Check Voltage is getting to Motor.
- B. Runs fast all the time: Check Accelerator
 Assembly for loose connections or dirty
 wipers. Check Servo Amplifier.
- C. <u>Runs backwards</u> (scenery moves away from you): Check for reversed Motor connection (yellow 30 wire on lower lug). Check Servo Amplifier.
- D. Runs Slowly then jumps to full speed: Replace Accelerator Register.

II) 6 Sound effects should be heard in speaker. One sound is the passing cars and the other sound is the motor of the car being driven.

II) 6 A. No Sound:

(a) Check Main Volume Control. Check Control Module, Sound Generator Module and Game Timer plugged in.

(b) Turn volume to full (counter-clockwise) and listen closely to Speaker. If no noise or hum, try replacing Control Module or checking speaker connections. If some noise is heard, but no sound effects, substitute Sound Generator Module or Game Timer Board.

II) 6 B. Passing car sounds, but no motor sound.

- (a) Check by pressing Accelerator and see if sound comes.
- (b) Check Magnet and Pick-Up Coil are in place on Scenery Drum Motor and if motor runs.
- (c) Substitute Sound Generator Module.
- C. <u>Driven Car sound but no passing cars:</u>
 Check Sound Effects Motor on Sound Generator for damage or jamming. If it is running, substitute Sound Generator Board.

D. Humming Speaker:

(a) Check both 12 Volt, 15 Amp. Fuses.

(b) If hum stays just as loud when the Main Volume Control is turned up and down, replace Control Module, otherwise check for shorts or open circuits on Sound Generator and Game Timer Board cables.

E. Clicking Squealing or noise in Speakers:

- (a) Check for loose connections causing sparking somewhere in the Game.
- (b) Check connections on the Suppressor across the units Drum Counter Coil.
- (c) Check all Pins inserted on Amplifier Module. (Top left-hand corner of Control Module.)

II) 7 Check operation of steering:

NOTE: Once the Car leaves the pit stop lane and joins the race it is LOCKED in the race.

The only way of getting back into the pit stop lane is by having an accident or at the start of a new game.

If the steering Motor has to be replaced, be careful to maintain the timing between the Car and chain drive on the Idler Sprocket on the opposite side to the Motor. This Sprocket drives the Steering Feedback Pot which controls the position of the Car. If it is upset, refer to Adjustment 3 B (d).

II) 7 A. Car won't steer out of pit stop lane:

- (a) Check Steering Potentiometer behind Steering Wheel is engaged by Solenoid.
- (b) Check Rubber Ring Drive is turning the Potentiometer when the Steering Wheel is turned.
- (c) Check for broken wires on Pot.
- (d) Check Adjustments #3 & 4.
- (e) Substitute Steering Servo Amplifier or Control Module.

B. Car Steers but will not reach all lanes:

- a) Check for wire jamming Steering Potentiometer and stopping its full rotation.
- (b) Check for lack of steering pressure by the Rubber Ring allowing the Wheel to slip.
- (c) Check for bind in Steering Wheel Potentiometer Assembly.
- (d) Check for mechanical bind in Top Steering Assembly.
- (e) Check adjustments #3 and 4.

POSSIBLE FAULTS

II) 7 Check operation of steering:

II) 8 Check operation of Accelerator. As Accelerator is pressed down gradually, the Cars should change from going forward, to stopped, to coming backwards, and the speeds should "mix" slowly.

II) 9 Crash:

A crash should occur in any lane when the car collides. On a crash, the car moves to the pit stop lane and SOMETIMES flips over.

C. Car steers but is erratic, drifts or jumps left or right.

- (a) Check Set | Screws are tight on Steering Feed-Back Potentiometer on Top Assembly. (See Adjustment #3).
- (b) Check Adjustment #4.
- (c) If Still erratic, hits the limit switches and will not hold adjustments, replace Steering Feed-Back Pot. See Adjustment #3).
- (d) If still erratic but stays within limits set by adjustment #4, and does not hit limit Switches replace Steering Pot. behind Steering Wheel. (see adj. #3).

II) 8 A. Check sequence II) 5 first.

- B. If cars don't "mix" replace Game Timer Module.
- C. Cars move OK but have a dead spot on the Accelerator where they "Bump". This fault is always combined with a flash of the stop lights. Clean the Accelerator Resistor.

II 9 A. No Crashes at all:

- (a) Check if Crash Detector Cable inside the Belt Assembly is plugged onto Crash Detector.
- (b) Check for at least 100 Volts game supply (on 115 Volt games).
- (c) Check Game Timer Board plugged in.
- (d) Check Crash Relay.
- (e) Check Sliding Wipers in top Steering Assembly.
- (f) Try substitute Game Timer Board.

II) 9 B. Crash works in some lanes but not in all three.

- (a) Check the 3 Crash Detector Lamps under the Belts are working by stopping the 3 Belts with no cars over the Detector. (Belts may be kept stopped by pulling one lead off each of the Motors). Now coin the Game and check that the lamps lite in turn as the car is steered from one lane to another.
- (b) Clean out any accumulated dirt from the cavities in the Crash Detector.
- (c) Clean the white area on the other side of the belt.

C. <u>Crashes</u> where there are no cars: Check black area of belts for white spots which might trigger Detector. Touch up with flat black spray can if necessary.

D. Crashes, but doesn't move to pit stop lane: Check test procedure #2.

CHECK LIST

POSSIBLE FAULTS

II) 9 Crash:

- E. Crashes, but keeps on flipping:
 - (a) If car moves to pit stop lane, check operation of Crash Timer Relay which operates through the Cam Switch on the Flip Motor and through the Wiper Board when the crash is finished.
- F. Crashes but doesn't complete flip:
 - (a) Check Adjustment #1
 - (b) Check for Bad Flip Motor.
- G. Never flips:

Check Flip Motor and Adjustment #1 & 2.

TEST #3 GAME TIMER

III Game Timer

Game Timer is set at the factory for about 1 minute play time. With over-time, game lasts approximately 75 to 95 seconds. Score required for over-time is 300. To adjust over-time score see Race Car Drive Unit-Rear View, in parts list section.

III (A) Game runs a short time and quits:

- (1) Check for loose connections, intermittent shorts or open circuits.
- (2) Check line plug is not loose in wall socket.
- (3) Check all plugs and sockets for loose wires or pins.
- (4) Try adjusting Game Timer Control.
- (5) Replace Game Timer Board.
- (B) Game never stops:
 - (1) Check 1 Amp. Fuses on Game Timer Board.
 - (2) Check Game Timer fully plugged in.
 - (3) Check "Game Over" Relay by substitution.
 - (4) Replace Game Timer Board.
- (C) Game too long or too short.
 - (1) Try Adjusting Game Timer Control.
 - (2) Replace Game Timer
- (D) Over-time doesn't work:
 - (1) Check "Bonus Time" Lite comes on.
 - (2) Replace Game Timer.
- (E) Over-time works OK but too long or too short: NO adjustment provided.

ADJUSTMENTS

Do not attempt any of these adjustments until you have determined the cause of the fault by means of the test procedure.

Adj. #1. This adjustment refers to the alignment of the sliding contacts on the printed circuit on the Top Steering Assembly. Each Wiper should be checked to make sure it has good contact pressure and tracks in line with the contact Strip. If the tracks are too low or too high, some adjustment can be made by moving the Car to the extreme right hand limit which will allow access from the rear to the screw at the bottom of the Contact Carrier. This screw may be loosened and the carrier rocked or shifted to align the contacts. (The top end is held loosely by a slot in the metal). If more adjustment is required, the hole in the fiber carrier may have to be opened

If one of the contacts does not have enough pressure, or actually leaves the Contact Plate, DO NOT ATTEMPT TO BEND MORE TENSION INTO THE CONTACT WITHOUT FIRST REMOVING THE CONTACT PLATE. Remove the Contact Plate by pulling off the plug and undoing the 4 screws, being careful to save the insulating nylon washers. Now put tension in the contact springs and when they are all set evenly, replace the contact Plate.

LEFT - RIGHT Adjustment

Alignment is done as follows:

- Unplug the Game Timer (This disables the Timer and Crash Detector).
- 2. Coin Game.
- 3. Steer Car so the Sliding Contacts are centered in the overlap area of the 1st & 2nd lane contacts on the Contacts on the Contacts on the Contact Plate (see sketch below). The object car should now be centered symmetrically over the line between the center and right hand belts. If it is not, center it over the line and move the Contact Plate left or right in its sloted holes until the contacts are centered in the over-lap area.



Adj. #2. Flip Carry Over Switch

The Flip Carry Over Switch is a snap acttion switch which should operate about half way down the cam slope on the Flip Motor carry-over cam. When rotating the cam with the power off, only rotate it clockwise as the Gear Box may be damaged by going the wrong way. Do Not adjust the spring carrying the roller. If the Switch is not operating at the right point, carefully bend the tab which rests on the Roller Arm up or down to make the switch operate in the middle of the cam movement.

Adj. #3. Steering potentiomenter and feedback potentiometer:

Before changing these Pots, check that they have the 10 Volt supply across them with a D. C. Meter. This measurement should be made with the game coined. If they do not have the 10 Volt supply across them, they may not need replacing, so check the 10 Volt Circuit (which goes to both Pots and to the Accelerator Resistor) for a short or open circuit. The 10 Volts comes from the Control Module which may be faulty.

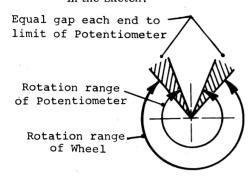
Also check that the Pot behind the Steering Wheel is free to rotate and is returning to its home position. If each Pot is working ok, a Voltmeter between the bottom lug and the center lug should read a voltage proportional to the position the Pot is in.

These Pots are factory set and should not need adjustment through-out the life of the game. If, however, one of them has come loose or had to be replaced, then the following procedure must be used to set them correctly.

A. Steering Potentiometer:

The Steering Pot is located on the swinging arm behind the Steering Wheel. If the unit has been removed for service, the adjustment can be done on the work bench, otherwise the Belt Assembly should be removed by unplugging its cable, removing the 2 shipping screws and sliding out the 2 Cardboard Screws. The whole assembly will then slide out through the Back Door giving access to the Steering Wheel Assembly.

The unit should be assembled with the exception of the set screw on the Pot Shaft Extension. A little lubrication of the Wheel Bearing will prevent binding. The Pot can now be rotated between its limits by turning the knurled knob projecting out of the center of the Wheel. The set screen has to be tightened so that the Pot travel, limited by the stop on the Rubber Tired Wheel, is centered between the limits of the Pot, as shown in the sketch.



Adj. #3 B. The Steering feedback potentiometer (Top Assembly)

This Pot is located on the shaft extension of the Idler Sprocket on the steering drive. It is serviced from the rear of the game.

(1) Removal

- (a) Remove the 2 screws holding the circular Pot carrier.
- (b) Loosen the 2 allen set screws on the shaft just forward of the Pot (about 1 inch). The shaft may have to be rotated by turning the Steering Motor Shaft Extension from the rear until the allen key will go in each set screw.

(2) Replacement

Only use a replacement supplied by Bally. These are specially purchased, long life Servo Pots and an ordinary volume control is not suitable. Change the metal disc over to the new Pot and transfer the wires in their correct order. (Wire numbers reading from top to bottom are 60, 45 and 63).

(3) Installation

The Pot must be installed so that the steering can go from one limit switch to the other without the Pot hitting its internal mechanical stop. This is done by first rotating the steering to either the full left or right limit as far as

it will go. (Select right or left limit such that one of the two set screws for the Pot shaft can be turned with an allen key). Now turn the shaft on the Pot fully in the corresponding direction and re-install from the rear with the wires to the right. Next, tighten one set screw on the shaft. If it has been done correctly, it should be possible to go completely to the other limit without putting any rotational strain on the Pot. If mechanically ok, tighten the 2nd set screw and insert the 2 screws which hold the Pot Mounting Disc.

(4) Adjustment

This adjustment is only valid if the sealed controls on the Control Module have not been altered. If they have been tampered with, it will be necessary to borrow a factory set Control Module until this adjustment has been completed. (The original Control Module could then be reset by following adjustment procedure #4).

Coin the game. At the start of the game the object Car should be centered over the pink strip to the right of the Belts. If it is not, rotate the metal disc supporting the Pot very slightly until the car is centered over the pink area. When in place, tighten the 2 screws onto the disc. This adjustment is done with the game running so that the Steering Motor can move the Car to follow the adjustments.

Adj. #4. CONTROL BOARD STEERING ADJUST-MENT PROCEDURE:

Note: The 4 adjustments (#2, 3, 4 & 5 on the Control Board section of Card inside the door) are preset and sealed at the factory and should not need an adjustment throughout the life of the game. There are only two reasons for having to readjust them.

- A. Where the position of the car is not quite right in the left or right limits, or in the right hand lane when locked out of the pit stop lane.
- B. Where someone has broken the seal and upset the adjustments.

Procedure for 4A

4 A. (1) If all 3 adjustments are off the same amount (all to the left or all to the right) then the adjust ment is probably required due to adjustment of the Steering Feedback Potentiometer, or loss of timing from the Chain Drive. In this case see adjustment #3B(4).

- (2) If they are off different amounts or directions, but only small amounts (less than 1 inch) but otherwise all is working normally, then follow this procedure:
 - (a) Unplug the Game Timer Mod-
 - (b) Coin the game and adjust the right hand steering (#3 Control on Instruction Card) limit, so car is in the middle of the pink area.
 - (c) Steer left as far as the wheel will go and adjust the left hand steering limit (#2 Control), so the left hand side of the Car is in line with the left hand side of the left Belt.
 - (d) Now steer fully right and adjust the pit stop lane lock-out (#4 Control) so the right hand side of the car lines up with the right hand edge of the right hand Belt.
 - (e) Adjust the Idle Speed Control (#5 Control) so the projected images moves towards you at exactly the same speed as the cars are moving towards you.

Procedure for B

- 4 B. If the adjustments are completely screwed up and all other faults have been corrected, then use the following procedure:
 - (1) Set #2 control fully clockwise then back off about 1/4 turn.
 - (2) Set #3 control fully clockwise then back off about 1/8 turn.
 - (3) Set #4 control fully clockwise and back off 1/3 turn. (slot vertical)
 - (4) Set #5 control fully clockwise.
 - (5) Now go through the procedure under A (2), above.

NOTE:

If Car hits Limit Switches, it must be moved off before the game can be restarted. The controls should prevent the switches being hit when they are set correctly.

Adj. #5 Attitude of Object Car:

The Car Should:

- A. Sit level
- Point Straight ahead
- Sit with wheels apparently on the ground.

Procedure for #5

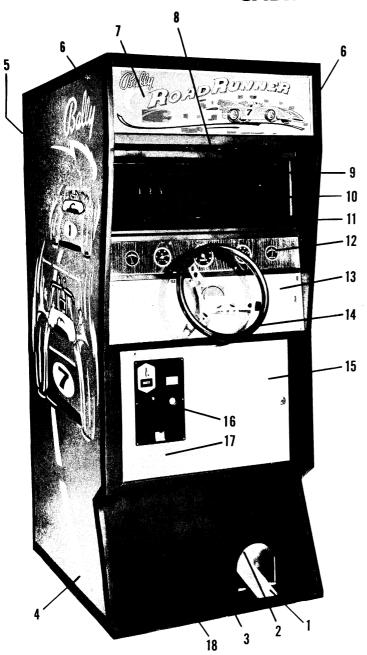
- The adjustment for sitting level is made by loosening the 2 screws which support the Flip Carry-Over Switch Assembly and raising or lowering it. which rotates the cam slightly allowing the Car to sit level. Before making this adjustment, make sure the Switch Roller is sitting in the slot in the cam and that the wire form mounting of the Car has not been bent or damaged.
- The adjustment for pointing straight ahead is made by carefully bending the wire form.
- C. To adjust the height of the Car above the Belt!, loosen the 4 screws which attach the base plate of the top assembly to the two sloping brackets mounted to the roof of the cabinet. The whole unit may now be moved up or down the slope until the car sits with its wheels on the road.

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ILLUSTRATED PARTS BREAKDOWN

CABINET ASSEMBLY



This view introduces your Roadrunner Game as viewed from the front operational area. Most game adjustments, illumination replacement access, sound units, and electronic assemblies are accessible thru the front access panels and the front door.

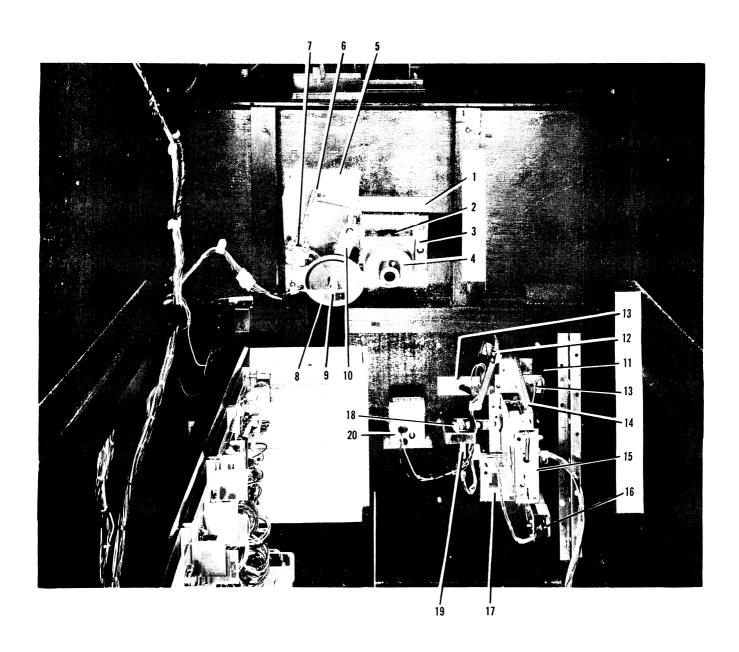
The following paragraphs outline basic service procedures, light and glass replacement with a page index key providing additional detailed information on the separate assemblies.

]	Page
Inde			Index
No	No.	Description req.	Rey
· 1	the Scenery I Door. This the illusion o	Foot Pedal Assembly (Complete) 1 it controls the speed of Drum located on the Back revolving drum provides f speed with moving scenery	31
2	projected on E-108-97A CA-1213C P-6665-286B	the track area. Game off-on Switch 1 Front Panel Front Panel Retainer (Bottom) 1	
	WS 8-20-912	(Bottom) 1 Flat Hd. Wood Screw (Top)	
	to the Accel- move panel, the 3 Flat He retaining the	ing this Panel gives access erator Electronics. To reopen Front Door and removed. Screws on the lower sill top edge of the Panel. The en be lifted up and out.	
4	CA-1363R CA-1366A CA-1370A	Cabinet 1 Mirror Rail 2 Scenery Rail 2	24
5	M-163-4A AS-2691 ND AS-2678 ND	Leg Adjuster 4 Back Door Assem. 1 Drum Unit Assem. (moving road	
	AS-2695A	scenery) 1 Shroud Assem. (end of track unit)) . 1	18
	CA-1361 B	Back Door - Wood unit only 1	
	M-281-24A	Lock Set - Keyed alike 1 set	
	P-758-17A	Lock Cam 2	
	P-2335-9A A-1511-1A	Hinge (Back Door) 2 Hinge & Bracket (Top - cabinet	
	A-1511-2A	mount) 1 Hinge & Bracket ((Bottom - Cabinet mount) 1	
6	M-281-55A	Lock Set (Left & Right Keyed alike) 1 set	
	Display Glas	ocks release the Top s. When released the ss lifts up & out.	
7	G-392A P-6242-45A P-6242-46A P-6242-41B E-125-55A	Top Display Glass . 1 Glass Retainer (Top). 1 Glass Retainer (Bottom) 1 Glass Retainer (Sides) 2 Light Bulb (Std. 25 W.) 2	20

CABINET ASSEMBLY

Index Part No. No.			Page Index Key	Inde No		Part No.	Description		Page Index Key
access to I Sound, Spe entire Play Track Illu	ving the Display Glass giv Display Glass Illumination aker, Crash Sound Unit, yer Car Unit & Back Lite mination - See Page 22.	1,			P-	3974-1A (Cover Ring (Slips over the Handle Bearing on inside of Steering Whe to prevent front acces to Socket Hd. Screws. Screw 1/4-20 x 3/4 Lg. Socket Hd.	el s	
Glass the To removed FIF the top Winds	Loud Speaker Speaker Grill Windshield Glass Glass Retainer (Top) Glass Retainer (Bottom) Glass Retainer (Sides) ove or replace Windshield p Display Glass must be ST to provide access to shield Retainers (See	1 1 1 1 2	20	15	t t 1 S	& Shaft a Reta moved from the chrough back of (4). Once thi Steering Whee	se the Steering Wheel ining Pin must be rene Rear Steering Shaft door access (See Pages Pin is removed the law Shaft can be pulled at for further disassem	-	14
be released	hese two Retainers must & pushed forward. The an then be lifted up & out.	•				A-1360B -281-54A	Unit Assembly Front Door (wood unit only) Lock	1 1 1	14
occasionally front access able through	Mirror - 30/30 Beam Splitter Irror should be wiped off to remove dust (through This Mirror is remove Back Door access along k lite track illumination).	1 e-	24	16	A-	254-104A	Hinge Assembly Coin Unit (See rear view on P.14 for complete details) . Coin Drop Plate Assementation Coin Drop Window	1 1 m.	14
11 AS-2689C	Conveyor Assem. (Movi Road Track Unit w/ competion cars)	ng 1	26-28		Ē-	726-65B 125-22A	(Specify coin denomination · · · · · · Credit Window · · · Lamp (Window lit-up) Slug Rejector(specify	1 1 2	
Note: Track : Door.	accessible through Back						coin denomination) s Coin Guide Spacer (specify coin	1	
12 M-1575C M-330-8A 13 P-7749B	Dash & Instrument Panel Screw Nail Steering Panel Cover	8				P-6694-Serie	denomination)		
M-330-8A 14 AS-2670 ND M-1573B C-167-6A	(Pattern #2-CS) Screw Nail Steering Wheel & Shaft Assembly Steering Wheel	1 8 1 1 1	14		b 8	oard containi	oin assembly & mounting all electronic units und etc.) accessible door.	ng	
S-2078A S-231-781B	Shaft - Steering Wheel Sleeve (front shaft - pr vents roll pin remova	1 e-		17	P- P-	- 2790 - 45B - 3089 - 47A - 3045 - 16A	Cash Box Cover Cash Box Strap	1 1	
P-1637-45E A-3567A	wheel theft) Roll Pin Steering Wheel Mounting Button .	1		18		- 5940 - 32B - 330 - 8A	Steel Edge Screw Nail	_	

STEERING UNIT & COIN SYSTEM



This interior view of the rear Steering Unit and Front Door Coin System was taken through the Back Door with the Conveyor Race Track Unit removed from the Game.

1. The Rear Steering Wheel Unit is actually two assemblies, first the Steering Wheel Retainer base, & Bearing Units; and then the Electronic Steering Controls (AS-2672ND) operated off a driven, rubber edged wheel.

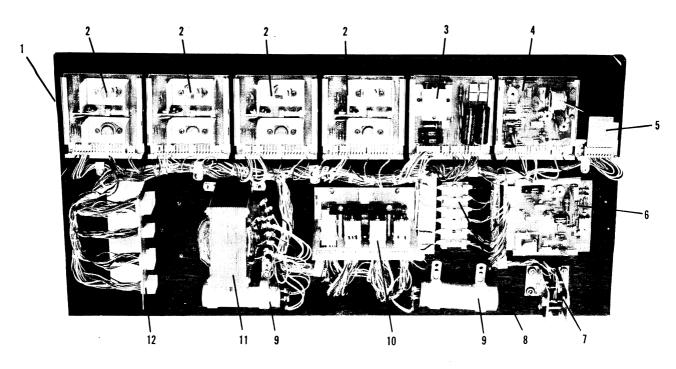
You will also notice the retaining pin on the Rear Steering Wheel Shaft. This is the single pin which holds the Steering Wheel & Shaft in the Game, when released the Steering Wheel Unit can be pulled out of the front.

2. The lower right hand section of the photo shows the Coin System with the Slug Rejector, Switches, Play Meter, and Coin Window Light Units. The Cash Box (not shown) is normally in position under the Slug Rejector.

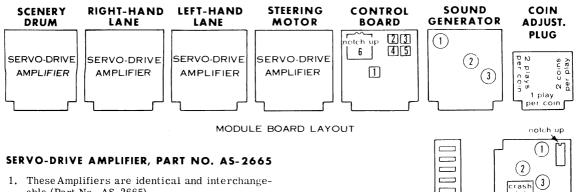
STEERING UNIT & COIN SYSTEM

	x Part		No.	Index			No.
No.	No.	Description	Req.	No.	No.	Description R	leq.
1	P-1973-283A	Retaining Plate	2	. 11	CA-1360B	Front Door (Wood unit only)	1
-	1-1010-20071	#1/4 Lockwasher	4		A-254-104A	Hinge Assembly	ī
	N 1/4 20-1110	Nut	4			Wood Screw, #8 x 5/8" Lg.	
	A-3542 B	Steering Hub & Bracket	_			Truss Hd	24
		Assembly (Installed from		12	AS-982-762A	Tilt Switch & Bracket	
		game front under Front				Assembly	1
		Decorative Panel)	1		ASW-A20A	Switch	1
	A-2904A	Steering Shaft Bearing			P-150-77A	Insulator	1
	/	(Towards Game front)	1		P-137-5A	Spring Plate	1
		Screw (Bearing)	4		P-126-154A	Retaining Plate	1
	P-7752A	Bearing Bracket	1 ~ 1		P-126-185A	Bracket	1 2
	A-2904A LS 1/4 20-8-T11	Rear Steering Shaft Bearing Screw	g 1 8	13	WS 8-8-510 P-7079A	Light Socket Plate	2
	A-3541A	Drive Wheel & Shaft Retain		10	WS 6-6-510	Screw (Mount)	6
7	N-001IN	er Assembly			E-120-138A	Lamp Socket	2
	S-739-193B	Pin (Drive Wheel Retainer)			E-125-22A	Light Bulb (#44)	2
	P-1973-283A	Retainer Ring	2		C-615-1A	Light Shield	2
		3			C-726-65B	Coin Drop Window (Credit)	1
	Note: Index No.	's 5-10 comprise the Driven			C-726-Series	Coin Drop Window (Specify	
	Wheel (Steerin	g Controls) Assembly AS-267	72 ND.			Coin Denomination)	1
5	P-7766B	Base Plate	1	14	A-3051-1A	Left Side Coin Slide Assem.	1
	WS 10-10-518	Wood Screw (Mount)	4		A-3051-2A	Right Side Coin Slide Assem.	1
-	A-3549B	Stop Plate Assembly	1		N 832-1111	Nut & Lockwasher	3
	LS 632-4-111	Screw (Mount)	2	15	AS-277-136 ND	Coin Switch & Rejector Mount	
	SP-154A	Extension Spring (Top) .	1		E 101 50A	Assembly	1
7	A-2885-1A	Solenoid & Spring Assembly	y 1 1		E-101-58A	Lockout Magnet	1
	E-184-275A P-1637-59B	Solenoid	1		P-6694-Serie	\ 1	1
	SP-1037-39B SP-100-297A	Roll Pin Extension Spring	i		P-6431-Serie	Denomination) s Coin Guide Spacer (Specify	1
	LS 632-4-111	Screw (Mount)	$\overline{4}$		F-0431-26116	Coin Denomination)	1
	A-3541-2A	Driven Wheel Assembly.	1		M-1400-Series	Slug Rejector (Specify Coin	-
	SS 832-3-1181	Set Screw (Driven Wheel			W 1100 Belles	Denomination)	1
		Hub into Adjustment Rod-		16	E-108-98A	Coin Switch	ĩ
		Index No. 9)	1		MS 440-12-110	Screw	2
	R-523A	Rubber Tire	1	17	2719-3A	Coin Return Guide Assembly	
	R-115-28A	Rubber Bushing (Acts as				(Below Rejector Housing).	1
	D 001 500D	Bumper)	, 1		LS 540-3-510		2
	P-801-563B	Washer (1st on Inner Whee Shaft)			A-3052A	Coin Return Housing	1
	SP-412A	,	2	10	WS 8-8-510	Wood Screw (Mount)	4
	SP-412A	Torsion Spring (2nd on Inner	1	10	A-1729-17A	Push Button Assembly	
	A-3550-1A	Wheel Shaft) Solenoid Arm Assembly	1		P-126-155A	(Start Play)	1 1
	H-0000-1H	(3rd on Inner Wheel Shaft			P-800-2B	Washer	1
		- See Index No. 10)	1		P-2768-26A	Push Button Guide	1
	P-801-530B	Washer (4th on Shaft)	1		P-2891-7A	Retaining Ring	1
	P-2891-10A	Retaining Ring (5th on Shaft)	1		P-6366-1A	Switch Protector Bracket	1
9	S-2081A	Adjustment Rod (Installed			WS 8-8-510	Wood Screw (Protector) .	2
		from opposite Side)	1		WS 6-6-510	Wood Screw (Mounting Plate)	2
	E-106-23A	Potentiometer (Opposite Side	е	19	ASW-A30-1A	Switch (Start Play)	1
		- secured on Adjustment	_		P-126-155A	Switch Plate	1
	GG 000 0 1101	Rod Shaft)	1		P-137-5A	Spring Plate	1
	SS 832-3-1181	Set Screw (Potentiometer -	2	20	WS 5- 18- 510 E- 130- 10 ND	Wood Screw	2
	P-1973-285A	Adjustment Rod) Retaining Plate (Potentio-	4	. 40	P-4338A	Play Meter (Total Plays) . Meter Mounting Bracket .	1 1
	I - 1010-200M	meter Shaft)	1		I 1000M	Motor Mounting Dracket .	
10	A-3550A	Solenoid Arm Assembly .	1		Note: The follo	wing Coin System Parts are	
	S-231-783B	Bushing (1st on Base Plate	_			re installed on the front.	
	•	Pivot Shaft)	1		P-7228-3B	Coin Drop Plate (Back	
	P-6316-8A	Retaining Ring (Pivot Shaft)	1			front Plate)	1
					A-3058-Series	Coin Drop Unit (Coin Entry	. .
	Note: Index No.	's 11 -19 Comprise the Fron	nt			- Specify Coin Denomination	1) 1
	Door Unit & C	oin System, AS-2677 ND.					

MOUNTING BOARD ASSEMBLY



MOUNTING BOARD INFORMATION



- able (Part No. AS-2665).
- 2. Fuses are 3 Amp. Do Not use a higher rated Fuse, as Transisters will be Damaged.
- 3. Light indicates a Blown Fuse.

CONTROL BOARD, PART NO. AS-2666

IMPORTANT

Index No.'s 2 - 5 are Factory Preset Adjustments DO NOT attempt to adjust unless following detailed adjustment procedure.

- 1. This is Game Volume Control 🕻 🏿 = Increase Volume
- 2. This is Left Hand Steering Limit Adjustment 🌓 = Move Limit To Right
- 3. $T\underline{h}$ is Right Hand Steering Limit Adjustment ♠ = Move Limit To Left
- 4. This is Pit Stop Lane Lock-out Position Adjustment. Move Lockout Position To Right
- 5. This is Drum Idle Speed Adjustment 🛊 🍙 = Increase Idle Speed
- 6. This is Sound Amplifier Part No. E-620-26. (Note: If replaced notched end goes up!)

SOUND GENERATOR, PART NO. AS-2682

FUSES

GAME TIMER

- 1. This is Low-End Speed Adjustment on passing car sound. 🛊 🔻 = Increase Average Engine R.P.M.
- 2. Passing Car Relative Level. = Increase Sound Level
- 3. Driven Car Sound Level. = Increase Sound Level

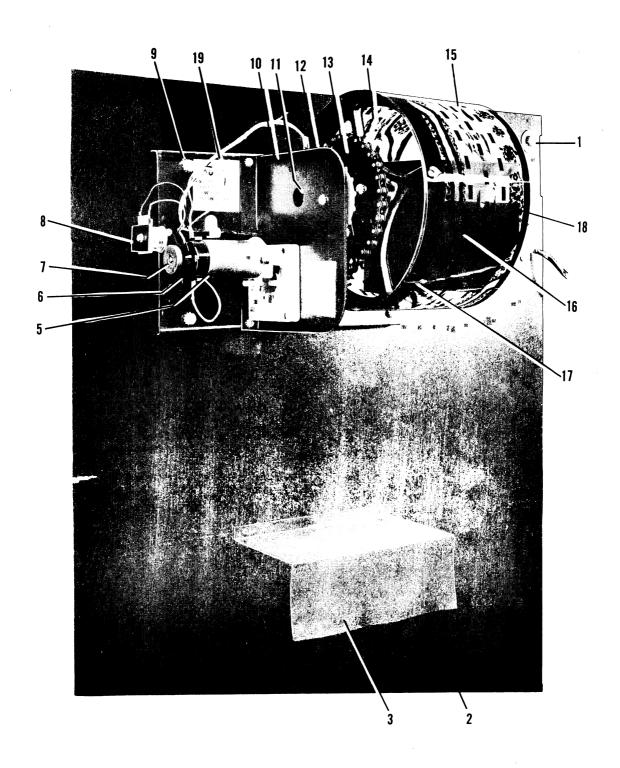
GAME TIMER, PART NO. AS-2681

- This is Game Time Adjustment.
 = Increase Game Time. Overtime length is not adjustable and is 25% game time.
- 2. This is a 1 Amp. Fuse in Game-Over Relay Cir-
- 3. This is a 1 Amp. Fuse in Stop Light Circuit.

MOUNTING BOARD ASSEMBLY

	its many Elec located just i	unting Board Assembly wit etronic Control Units is nside the Front Door. The		Index No.	x Part No.	Description	No. Req.
	connected & s good service Accompanying is a copy of the	rd can also be easily dis- slid out of the Cabinet for access. g the Mounting Board photo he Information Sheet Staple of the Front Door to assist	ed	4	AS-2682 EA-32-1550 E-119-419 A-3537B WS8-8-510	Sound Generator	1 1 1 1 2
		g critical game sound & pla		5	P-7773A P-6665-305A	Coin Adjustment Plug (card edge plate) Plug Mounting Bracket .	1 1
					WS 8-8-510	Wood Screw	2
		You will notice on the Gam t the Electronic Modules	ies	6	AS-2681 P-6665-305A	Game Timer	1
	#AS-2682*)	AS-2681, #AS-2666 & are guaranteed for a period	i	7	WS 8-8-510 AS-2513A	Wood Screw	2 1 4
	#AS-2682 whi	(* Except for Motor on ich is guaranteed for 6 Varranty does not apply to			R-111-8A WS 6-16-510	Rubber Grommet	4 4
	any Module o	r Component thereof which used, altered or damaged.		8	E-148-9A WS 8-8-T11	Fuse Block (6) Wood Screw	1 2
	Modules to be be returned t	e repaired or replaced may o any authorized Bally	y		E-133-3A E-133-5A E-133-15A	3 Amp. Fuse 5 Amp. Fuse	1 3 2
	receipt of pri	r directly to the factory or for authorization by such r factory representatives.	l	9	E-586-38A C-271-40A WS 8-8-T11	Capacitors	2 4 4
				10	E-146-709A	Relay (Check Labels for	7
Inde No		Description	No. Req.			function)	7 1 1 2
	E-556-484 CA-475-50A	Mounting Board Cable Wood Mounting Board	. 1	11	LS 832- 8-511 E-122-114B	Screw	2 1
	AS-2665 E-133-3A	Servo Amplifier 3 Amp. Fuse	4			Carriage Bolt, #10-24 x 1 1/8" Lg	4
	A-3537B WS 8-8-510	Circuit Guide Assembly Wood Screw		10	N 1024-1110	#10 Lockwasher	4 4
	AS-2666 A-3537B WS8-8-510	Control Board Circuit Guide Assembly Wood Screw	1	12	P-7772A	Plug Connector Mounting Bracket	1 2
	1100-0-010	WOOD DETEN , , ,	, 4			11 000 DOLCW , , , ,	4

BACK DOOR ASSEMBLY



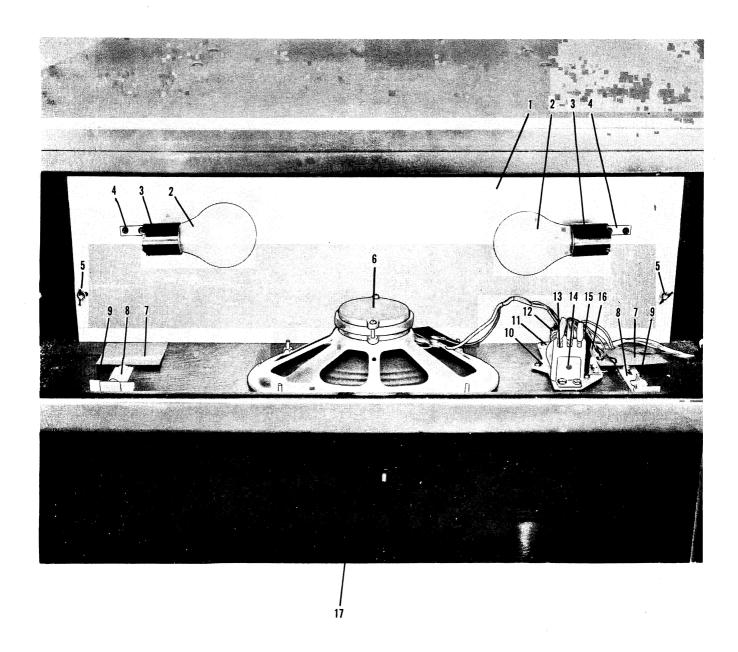
ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

BACK DOOR ASSEMBLY

Note: This is a view of the inside of the back door unit with the hinged side to the right.

Index No.	Part No.	Description	No. Req.	Index No.	Part No.	Description	No. Req.
1	P-2335-9A	Hinge (Door Sec) Carriage Bolt #1/4 -	2	8	AS-2687A	Coil & Bracket Assembly	
		20 X 1 1/4" Long	4			(Motor Sound Unit)	
	P-801-174B	Washer	4	•	EA-32-1		. 1
		Lockwasher #1/4 Exter			P-150-95		. 1
	777.1 /4 00 11	Tooth	4			8-32 X 3/8" Lg. Brass	
	W 1/4-20-11		4		T C 000 4	Hex Screw	
	A-1511-1A	Hinge & Bracket Assembly			LS 832-4	-511 Screw (Mount Unit)	. 2
	A-1511-2A	(Top - Cabinet Side)	1	9		Conniggo Polt #1/4 20	
	A-1311-2A	Hinge & Pin Assembly (Bottom - Cabinet Side).	1	ð		Carriage Bolt, #1/4 - 20 X 13/4" Long	. 4
	WS 10_10_51	8 Wood Screw	4			#1/4 Lockwasher	
	PW 1/4-10	Washer	4		N 1/4 20-11		
	N 1024-1110		3		14 17 1 20 11	10 Ndt	
	111001 1110	#10 Lockwasher	3	10	P-7757B	End Bracket	. 1
		Carriage Bolt #10-24	Ū		LS 1032-6-		_
		X 1 1/4" Long	3				. –
		3		11	S-1275-161	A Shaft `	. 1
2	CA-1361B	Back Door (Wood Unit Onl	y) 1		P-2891-8A		
	M-281-24A	2 Lock Set - Keyed Alike			LS 1032-6-	511Screw	
	P-758-17A	Lock Cam	2				
	P-2892A	Lock Plate (Cabinet Side)	2	12	AS-982-868	BA Switch & Bracket Assembly	y
						(Sends pulses to scoring	
3	M-1392A	Felt Shroud (End-of Track				Unit - Higher Speed =	_
	- 0440 -0-	Mask) - Glued in Place .				Higher Score)	
	P-6442-92B	Bracket	1			X-1A Switch	
	WS 6-8-518	Wood Screw	3		LS 632-4-5	11Screw (Mount Unit)	. 2
4	AS-2678 ND	Drum Unit Assembly		10	A.C. 9(00D)	Sprocket Assembly	. 1
•	710-2010112	(Includes Index No.'s 5-19) 1	13	AS-2688B	717A Cam (Score Unit)	
	Note: This un	it is the projector that pro				38A Bracket	
		oving scenery on the track			P-7745-4		
		ion of speed with an electro	o-		P-7746A	-	
		it on units motor providing			A-631-2		y 1
		accelleration to the Race					
	Car. The I	Drum Speed is directly cont	roled	14	M-1575-3A		
		ohm Resister Unit located			M-1576A	Connector Link	. 1
		Pedal Accelerator Unit; a					
		on this Drum is the basis	for	15	A-3555B	Drum & Scenery Assembly	
	the game so	oring system.			MS 832-4-6	11 Button Hd. Screw (Bearing	
_				4.0	- 10- 101	& Hub Assembly)	. 4
5	AS-2668-3A	Motor & Sprocket		16		A Bayonet Socket	
	TO 110 417A	Assembly			E-125-54A	Lamp	. 1
	E-119-417A			117	A 2556D	Chiold Aggombler	1
	P-1637-62B A-3534A	Roll Pin Sprocket & Hub Assemb	l olv 1	17		Shield Assembly	
		11 Screw (Mount)	лу <u>1</u> 4		LS 832-4-5	11 Screw	. 1
	25002 10 6	in borow (Mount)	•	18	D_6665_20	6A End Bracket	. 1
6	A-3553A	Vane & Hub Assembly .				B Washer (Shaft)	
		(Provide Variating motor	•			511Screw (Mount)	
		sound to race car)			201002 0	orizorow (mround)	
	SS 632-3-1181			19	P-7729-1B	Base Plate	. 1
_							
7	AS-2690A	Magnet & Bushing (Motor	4				
		Sound Unit)	1				

FRONT CABINET DISPLAY UNIT

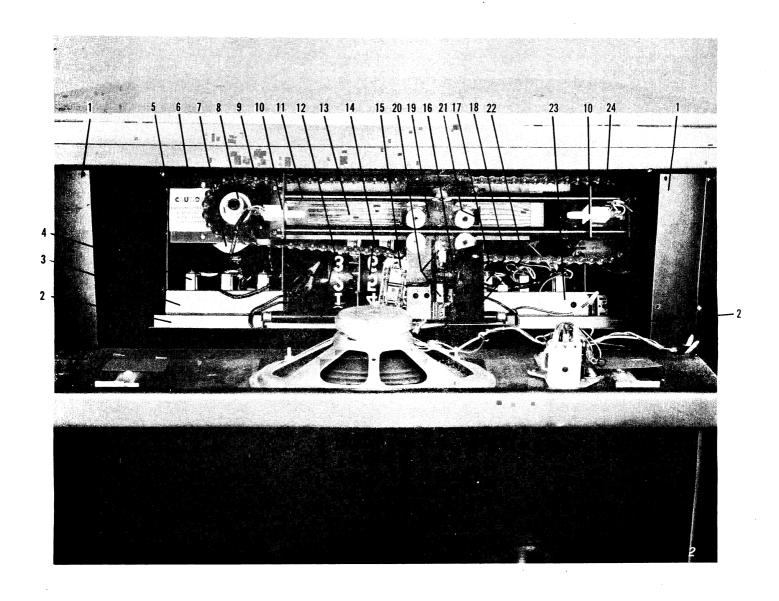


ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

FRONT CABINET DISPLAY UNIT

	the ''Roadrunn	top front view of the Game wi er" Display Glass Removed.		Index No.	Part No.	Description	No. Req.
	Track Illumina Lites & Score	the games mechanism with thation, Race Car Unit, Flag Meter; the rear Light Shield removed by loosening the thun		6 1	E-281-5A	Loud Speaker Carriage Bolt, #8-32 X 11/4" Long #8 Lockwasher	1 4 4
	Note: To remove simply release	ve the Front Display Glass the two Locks on either side			N 832-1111 P-150-111A	Nut	4
٠	be lifted up &	•		8]	P-6243-8A	right side)	
	will notice two side of the ope	Display Glass is removed you Sliding Retainers on either ening held in place by two Turn ndex No. 9 & 10). These			P-1274-1A WS10-10-518	Metal Truss Hd Turn Button	2 2 2
	Retainers hold in position. T release these The Windshiel	the Front Windshield Glass or remove the Windshield Glastwo Retainers & push forward d can then be lifted up & out.		1	Base Plate As AS-1587-80 NI ''thumping'' so	.'s 10-16 comprise the Flipp sembly (crash sound), D. The Unit provides a loud und when the speeding Race o another Racer.	oer
	sure to dust-o	Windshield is removed, be ff the Mirror to retain a good			P-3691-19A	Base Plate	. 1
	clear Race Ca	r image on the race course. ouild-up on the Mirror can des	et rov		WS 8-8-510 P-6256A	Wood Screw Bracket (Stop)	
		mage rendering the Game use			LS 832-5-810	Hex Screw	. 2
	less.				S-496-167A C-342A	Plunger (Coil) Nylon Guide Ring	-
					SP-240A	Compression Spring	
					P-1637-1B	Roll Pin (to Lever Arm)	. 1
					AF-26-750/31- P-108-53A	900 Coil Solenoid Bracket (Front	
					LS 832-5-810	Support)	. 1
Ind	lex Part		No.		A-613-67A	Core Plug Assembly	. 1
	o. No.	Description	Req.		LS 832-5-810	Hex Screw	
					A-1889-17A	Lever Arm Assembly (hidd behind Coil)	. 1
	G-392A P-6242-41B	Top "Roadrunner Glass.	1		M-1590A S-739-194B	Set Screw - Hex. Hd	
	P-6242-45A	Glass Retainer (Sides) . Glass Retainer (Top)	2 1		C-649A	Shaft Bearing - Nylon	. 1
	P-6242-46A	Glass Retainer (Bottom)	1		P-2891-6A	Retaining Ring	. 1
1	P-1973-292A	Light Chield (Democrable)			P-126-665A	Switch Bracket	. 1
2	E-125-55A	Light Shield (Removable). Light Bulb (25 Watt)	$\frac{1}{2}$		ASW-A20-1A P-137-5A	Switch	
3	E-120-156	Lamp Socket	$\overline{2}$		LS 632-3-511	Screw (Mount Bracket)	
4	P-5977-1A	Lamp Socket Mtg. Bracket	2		MS 540-6-110	Screw (Switch)	. 2
	MS 632-5-511	Screw (to Sockets) Screw #8 x 3/8" Lg. Sheet	2		G-393A P-6242-45A	Windshield Glass Glass Retainer (Top)	
		Metal	4		P-6242-46A	Glass Retainer (Top) Glass Retainer (Bottom)	. 1
5	M-961 ND	Thumb Screw	4		P-6242-47B	Glass Retainer (sides)	. 2

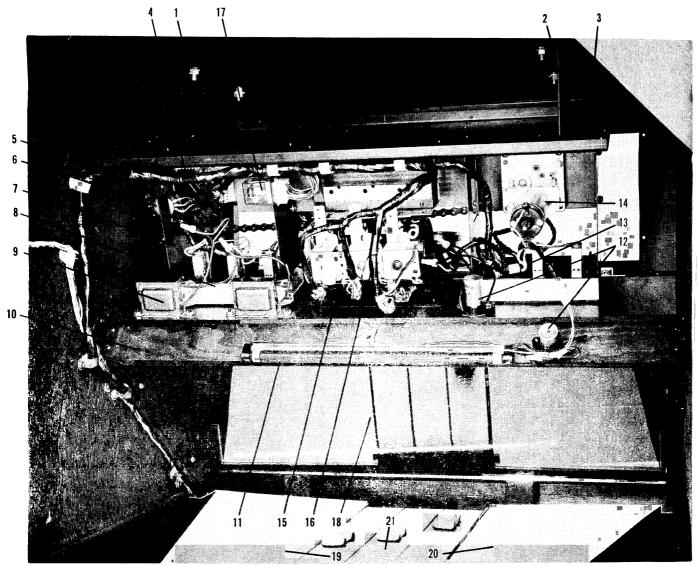
RACE CAR DRIVE UNIT — FRONT VIEW



RACE CAR DRIVE UNIT — FRONT VIEW

	Game taken th	upper front view of the rough the Display Glass ne "Roadrunner" Glass &		Index No.		Description	No. Req.
	Back Lite-Up	Unit removed. From this sthe players Race Car			Note: Counter	details on next Page.	
	Unit, Brake L moving Carria Car Black-Lit On the next page bly is shown w score adjustm	ights, Flip Over Unit, age Unit, Limit Switches & e Illumination can be reached a rear view of this Assempth the bonus over time ent & potentioment adjust-tering & lane limits)		15	AS-2675B M-1584A M-1589 M-1559-1A A-3536A	Chaparral 2- F Assembly . Chaparral Car Fibre Optic (6"- Brake Lit Da-Glo Tape (car stripes) Sleeve, Cotton #11 Black Chassis Suspension & Plate Assembly Screw, #3-48 x 3/16" Lg.	3 1
					A-3561A SS 632-3-1181	Cam & Hub Assembly Set Screw	1 1
Inde No.	x Part No.	Description	No. Req.	17	E-119-418A LS 632-4-518	Motor (Car Flip - Far Side) Screw	1 2
	P-6665-308A	Light Shield	2	18	E-120-120A	Brake Light Socket (far side)	1
2	WS 8-8-510 P-7748B	Wood Screw	$rac{4}{1}$		E-125-22A C-615-1A	Lamp	· 1
3	CA-1368B	Wood Insert	1		0 010 111	Screw, #6 x 1/4" Lg. Parker	
	M-1580-1A	Score Panel (Checker Flag Bonus Time, Out of Orde		19	A-3547A	Swage Form	
	MS 832-24-518	Screw (Shield, Insert, Bracket)	. 4		A-3538B	(Top Unit)	1
4	E-120-158A	Bayonet Socket	3			Assembly	1
5	E-125-22A P-6264-89B	Lamp	ა 1		M-1577A P-2891-4A	Pulley	7 7
Ū	LS 832-4-511	Screw	4 1		LS 632-4-511	Screw	2
6	P-6629-68B LS 832-4-511	Motor Mounting Bracket Screw	4	20	AS-982-878A	Switch & Bracket Assembly	1
7	E-119-417A	Motor & Gear Box Assemb	-		E-108-135A P-126-668A	Snap Switch (Top Unit) Switch Extension Plate .	1 1
	S-1988A	Knob (Motor)	1 4		MS 348-12-1		2
0	LS-832-6-511	Screw			ASW-CO-5A	Switch (Bottom Unit)	1
8	A-3534-4A P-7745A	Hub & Sprocket Assembly Sprocket	1 1		P-137-5A MS 540-10-1	Spring Plate	$\frac{1}{2}$
	S-156-503A	Hub & Sprocket	1		P-7740A	Bracket	1
0	P-1637-17B	Roll Pin	1		LS 632-4-51	1 Screw	2
9	M-1575-2A M-1576A	Chain	1 1	21	P-6629-67A	Limit Bracket	1
10	E-108-134A	End Switch (Out of Order			LS 632-4-51		· 2
	P-6665-292A	Switch & Cuido Brooket	1 1	22	A-3539A LS 632-4-51	Baffle & Plate Assembly . 1 Screw	$\overset{1}{2}$
	LS 1032-4-511	Switch & Guide Bracket Screw	$\overset{1}{2}$	23	CA-1368B	Insert	1
11	S-1275-158A	Guide Rod	2		M-1580A	Score Panel (Red, Yellow &	1
10	LS 1032-4-511	Screw	4		E-120-158A	Green Flags) Bayonet Socket	3
12	E-412-7A	Fluorescent Tube (Black-Lite Blue)	1		E-125-22A	Lamp	3
	E-120-119A	Starter Socket	2		P-6264-89B	Insert Bracket	$\frac{1}{4}$
13	LS 632-4-511 P-2948-156B	Screw	$rac{2}{1}$		MS 832-24-518 LS 832-4-511	Screw (Insert) Screw (Bracket)	4
10	LS 832-4-511		4	24	A-3535A	Bearing Bracket & Stud	
	A-1371-126A	Wiper Plate Assembly (on				Assembly	1
	P-801-566B	back of Index No. 19) Nylon Washer	4 4		E-108-134A	Switch (Limit Safety Switch - Lites ''Out of Order'' Panel	1
	LS 632-4-511		1		LS 1032-24-51	8Screw (Chain Adjust.)	1
14		D3" Counter Assembly (1-9			A-3534-1A	Sprocket & Hub Assembly	
	AC 1000 140 NI	Right				(Further Details on Next	1
	AD- 1900- 140 M	99) Middle	1		P-2891-7A	Page)	1
	AS-1900-141 NI	D'3'' Counter Assembly			•		
		(100-999) Left	1				

RACE CAR DRIVE UNIT — REAR VIEW



Note: This is a view of the upper Race Car
& Score Unit taken through the Rear Door
opening. From this service access you
can:

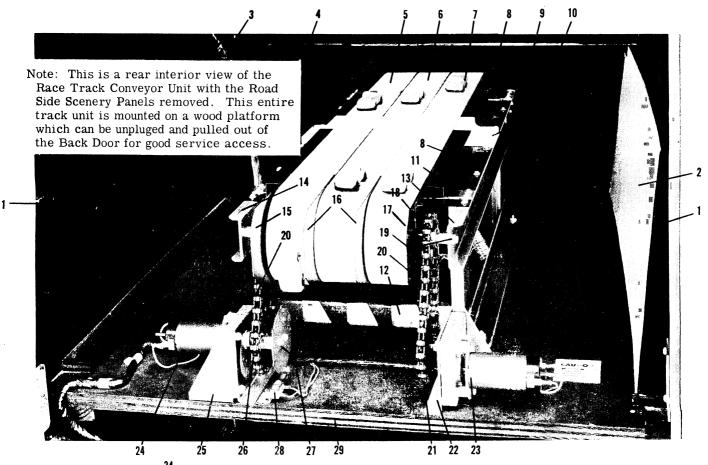
- 1. Adjust the car position Potentiometer (Index No. 6)
- 2. Change Light Bulbs in the score panels (Index No.'s 8 & 13).
- 3. Service the Score Counter Units (Index No. 16).
- 4. Service the Roadway Light-Up Unit (Fluorescent Tube System Index No.'s 9 12).
- 5. Service the Main Race Car Movement Motor (Index No. 14).
- 6. Remove the entire Road Course Conveyor Unit (Index No. 21) for detailed Servicing.
- Adjust Bonus Score Adjustment Plug for extra play time (300 - 900) Index No. 4)
- 8. Change the mirror (Index No. 10 & 18).

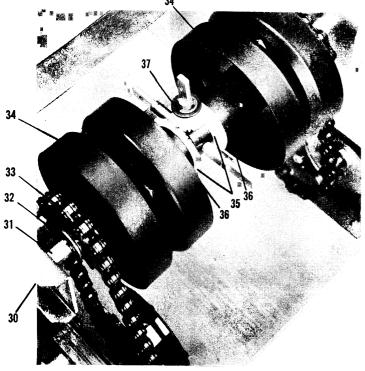
	Day of the bridge of the second secon		
Inde No		Description	No. Req.
1	P-7755B	Base Mounting Bracket . Carriage Bolt, #1/4 - 20	1
		x 1 1/4" Lg #1/4" Lockwasher	2 2
	N 1/4 20-1110	Nut	2
2	P-7755-1B	Base Mounting Bracket.	1
		Carriage Bolt, #1/4-20 x 11/4" Lg	2 2
	N 1/4-20-1110	Nut	2
3	P-7729B	Base Plate	1
	LS 1032-4-511	Screw (Mount Brk.)	4
4	E-610-18-1	Card Edge Connector (Bonus score adjust.).	1
	P-2948-161A	Overtime Adjustment Plug (Card edge plate)	1

Note: To adjust the score necessary to achieve Bonus Play Time move the *Card* Edge Plate to the Left, for higher more difficult score level. When Card Edge

	Plate is in full contact with all 7 contacts the Bonus Score Level is 300. Moving the Plate to the Left uncovering 1 contact makes the score level 400; moving the		Index No.	x Part No.	Description	No. Req.	
	Plate two contacts Left makes it 500 etc. to a high final score 900 level.		12	E-120-120A	Fluorescent Starter Starter Socket	2	
	\	_			Screw (Metal Frame)	2	
5	A-3534-1A Sprocket & Hub Assembly	1			Wood Screw (Top Bar)	2	
	P-2891-7A Retaining Ring (Spro-		13	CA-1368B	Insert	1	
	cket Retainer)	1	10		18 Screw	4	
	A-3533A Coupler Brkt. & Bushing				Score Panel (Checker		
	Assembly (Potentiometer			M-1580-1A			
		1			Flag, Bonus Time, Out	1	
	Connector)	1			of Order)	1	
	LS 1032-4-511 Screw (Mount to Idler)	2		E-120-158A	Bayonet Socket (Squeeze &		
	SS 832-3-1181 Set Screw (Potentio-				Pull Out)	3	
	meter Shaft)	2		E-125-22A	Lamp	3	
6	P-6665-295A Potentiometer Bracket	1 .		P-6264-89B	Insert Bracket	1	
U	LS 832-4-511 Screw	$\tilde{2}$				4	
		4	- 4	LS 832-4-511		1	
	E-106-23A Potentiometer (Position		14	E-119-417A	Motor & Gear Box Assem.		
	limits of car on road - adj.)	1		S-1988A	Knob (See Page 22)	1	
	P-801-568A Adjustment Washer	1		P-6629-68B	Motor Mount Bracket .	1	
	MS 832-4-611 Screw (Adjust.)			LS 832-4-511	Screw (Frame Mount)	4	
	,			LS 832-6-511		4	
	Note: To correctly adjust this Potentiometer			L6 054-0-511	Berew (Mount Motor)	-	
	loosen Set Screws & remove Potentiometer		٠	D 6964 665	Chield (Casma Countains)	1	
			15	P-6264-90B	Shield (Score Counters) .	1	
	from Unit. Now turn Potentiometer Shaft				Screw, #6 x $1/4$ " Lg		
	clockwise to its farthest point (with Shaft				Parker Swage Form .	4	
	facing you). Now move the Car & Carriage		16	AS-1900-139 N	D 3" Counter Assembly (1-9)		
	Unit on its Chain Drive to the farthest				Left	1	
	Left hand point (depressing Limit Switch).			AS 1000 1/0N	D 3" Counter Assembly (10-99		
				AS-1900-140M		1	
	Now re-install the adjusted Potentiometer				Middle	1	
	& tighten the Set Screws down.			AS-1900-141N	D 3" Counter Assembly	_	
					(100-999) Right	1	
7	P-6264-89B Insert Bracket	1					
	LS832-4-511 Screw	4		Note: These C	Counters are easily removed		
8	CA-1368B Insert (Wood)	1			y pushing down on the rear		
U	M-1580A Score Panel (red, yellow,			lovon & nulli	ng out. The following Counter	r	
		1					
	green flags)	1			nsidered possible wear items:	•	
	E-120-158 Bayonet Socket (squeeze &			(single unit):			
	pull out)	3	Α	C-848-8-10A	Numbered Counter Wheel	1	
	E-125-22A Lamp	3		M-254A	Hair Pin	1	
	MS 832-24-518 Screw	4	В	C-704B	Wheel Ratchet	1	
a	E-409-1A Ballast (fluorescent tubes)	2	Ъ	0-1015	Screw, #4x3/8" Lg. Sheet		
ð		$\frac{1}{4}$				3	
	LS 832-6-518 Screw				Metal Binding Hd		
	#8 Lockwasher	4	C	C-708A	Hold Pawl (Ratchet) · ·	1	
	N 832-1111 Nut	4		M-254-1A	Hair Pin	1	
	•			SP-100-80B	Extension Spring	1	
	Note: Index No.'s 10 - 12 comprise the		D	C-703-1A	Rocker Arm	1	
	Mirror Retainer & Fluorescent Assembly,			M-254-1A	Hair Pin	1	
	AS-2886 ND. The Mirror is retained by		E	AS-2293-5A	Drive Pawl Assembly (Coil		
			Ľ	AD-2200-0A		1	
	the Wood Bar across its top. To remove			GD 100 1015	Plunger)		
	or replace a Mirror; first remove the 4		_	SP-100-121B	Extension Spring	1	
	Screws - retaining the 2 Top Bar Side		\mathbf{F}	CD-29-1600	Coil	1	
	Brackets to the Cabinet side, unplug the			E-623-1A	Thyrecter (AS-1900-139 on	Ly) 1	
	Fluorescent Electrical Connector, now		G	ASW-M210-2A	•	1	
	lift off the Top Bar. The Mirror can now		_	P-137-13A	Spring Plate	1	
	be slid up & out of its side rails.			MS 348-16-412		2	
	be slid up & out of its slide fails.			1419 940-10-412	rii, na, beiew	_	
	- 100=1 YY				0 D D 1 1/		
10	CA-1367A Wood Mirror Retainer	_	17	E-146-709A	C-R Relay (SCORE RESET)	1	
	(Top Bar)	1	18		Mirror	1	
	P-6665-299A Mirror Retainer Brackets		19	M-1588A	Roadside Scenery Panel		
	(Top Bar)	2			(Pit Stop Side)	1	
	WS8-8-510 Wood Screw	8	20	M-1588-1A	Road Side Scenery Panel	1	
11		Ü	-0				
11		1		Note: Both De	anels can be slid out from		
	Blue)	1					
	E-120-119A Lamp Holder	2			etainer from the Back Door		
	P-6432-1B Bracket (Holders) · · · ·	1		Access.	·		
	WS 6-6-510 Wood Screw · · · · ·	2					
	Note: This Fluorescent Tube illuminates		21	AS-2689ND	Race Track Conveyor		
	the Race Track Area & the other Com-				Assembly (Accessible		
					through the Back Door)	1	
	petition Cars.				unrough the back boor)	1	25

RACE TRACK CONVEYOR UNIT - PART 1





Note: This is a interior view of the Center Pulleys differential action with the two outside center pulley halves removed. Because the outside pulley halves are riveted to the four spokes the unit can only be sold as a complete assembly.

Inde		Part No.	Decerintion	No. Req.
	-	-1370A	Roadside Scenery Rail	œq.
-	0	10.011	(nailed in place)	2
2	M-	1588A	Right Side Scenery Panel	_
_		100011	Pit Lane Side (shown pulled	i
			out & on edge)	1
	M-	1588-1A	Left Side Scenery Panel	-
		1000 111	(Not Shown)	1
3	CA	- 1366A	Mirror Rail (Wood)	2
Ů		WS 10-22-510	Wood Screw	4
4		391A	Mirror (30/30 Beam Splitter)	1
5		3557A	Belt Assembly Right (as	-
Ū	'		viewed from front - in-	
			cludes 4 Car Cradle Units	
			riveted to Belt)	1
	I	P-7781A	Cradle	4
6		3557-1A	Belt Assembly - Center	_
			(Includes 3 Car Cradle	
			Units riveted to Belt) .	1
	I	P-7781A	Cradle	3
7	A-:	3557-2A	Belt Assembly - Left (In-	
			cludes 3 Car Cradle Units	
			riveted to Belt)	1
	I	P-7781A	Cradle	3

Note: Details on the individual Cars, Wheels etc. covered in detail in Race Track Conveyor Assembly - Part II

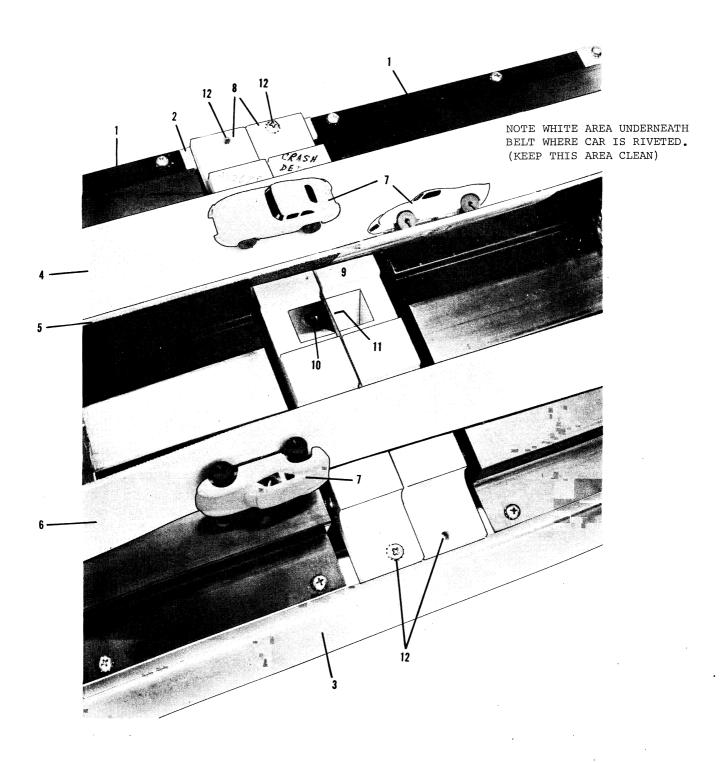
Note: To change a Belt involves removing one whole side of the Framework and all connecting Brackets.

8	P-7735C	Belt Support	Plate		2
	LS 832-4-511	Screw .			8

RACE TRACK CONVEYOR UNIT- PART 1

Inde:		Description	No. Req.	Inde No.		Part No.		No. Req.
9	P-1973-281A	Belt Tension Adjust Plate				C-341-2A	Gear - Bevel	2
Ü		(Both Sides)	2			P-1637-61I		$\overline{2}$
		11 Hex Hd. Screw (Adj. Pla	•				~ ~~	
	PW 10-10	Washer	4	•	A-3	552A (Gear Hub & Pulley Assembly (Center)	1
	Note: The two	Rear Adjust Plates moves	the				(00.001)	
		lley - shaft assembly either					ter hub & differential unit	
		ck to adjust the tension of ARNING: Do not make the				annot be tak 275-159A]	en apart. Pulley Shaft	1
		ght, The Belts should be al	ole				Washer (Outside Sprockets)	$\overline{4}$
		ith a good inch of slack (Bel					Retaining Ring (Outside	
		enter of the Track.	,				Sprockets)	2
	AS-2684A	Idler Pulley - Shaft Assem	(Hex. Hd. Screw	2
	F-1158-GA	Washer Spring washer					Washer	2 2
	P-801-21B						Connecting Link	$\overline{2}$
	P-2891-10A S-1275-160A	"E" Ring	2 1	21	A-3		Sprocket & Hub Assembly	1
	LS 1032-8-81		1			- 1637 - 17B	Roll Pin	1
		Mount)	2	22		734B	Bracket - Motor Mtg	1
	PW 10-10	Washer	2			S-832-8-51 S 832-14-51	` '	4 2
	A-3529A	Pulley Hub & Pulley	9	23		.19-417A	Motor & Gear Box	1
10	AS-2685	Assembly Crash Detector	3 . 1			19-417A	Motor & Gear Box	1
10	110-2000	Clash Beteetol	• 1	25		734B	Bracket	1
		nner P.C. Board containing				S 932-8-511	,	1
		Photo Cell needs service or		26		S 832-14-51 534-3A	1 Screw (Mount) Sprocket & Hub Assembly	4 1
		the unit can be disassemble ronic components (P.C. Bo		40		- 1637-17B	Roll Pin	1
		a trade-in at your Bally	Jaru,			.365-716A	Cam (Score Counter Reset)	1
	Distributor.	•				769A	Bracket (Cam Mount)	1
	P-2948-159					\$ 832-4-511 \$ 832-3-511	,	2 2
	E-125-53	unit)		28		982-869A	Switch Assembly	1
	E-125-55 E-622A	Lamp (7 V .) (soldiered) Photo Cell (soldiered)	. 3			SW-C1-38A		•
11	P-7739B	Tie Bar (top)					Reset)	1
	LS 832-5-51	1 Screw				- 137 - 5A	Spring Plate	1
12	P-7739-1B	Tie Bar (bottom)				IS 540-7-410 -7768A	Screw (Switch) Bracket	1 1
1.0	LS 832-5-51 A-3530-1B	1 Screw				VS 8-8-510	Wood Screw (Brkt.)	1
13	A-3000-1D	Carriage Bolt, #10-24 x	. 1	29		-475-49A	Mounting Board (Wood) .	1
		11/8'' Lg. (Mount)	. 2					
	N 1024-1110	Nut	. 2				.'s 30-37 are an elaboration	
14	A-3530B	Side Frame Assembly .	. 1				18, AS-2683A drive pulley aft assembly; showing its	
		Carriage Bolt, #10-24 x 1 1/8" Lg. (Mount)	. 2			echanical or		
	N 1024-1110	Nut		30		_	Hex Screw (Hidden - Both	
15	A-3532B	Flange Plate Assembly			•	,	Sides)	2
	~ ~ ~ ~ · ~ · ~ ·	(front & rear)				10-10	Washer	2
16	LS 832-4-51 A-3532-1B					275-159A 2891-10A	Pulley Shaft	1 2
10	A-3332-1D	Flange Plate Assembly (Cter - Front & Rear)				801-21B	Washer (Inside Ring - Both	-
	LS 832-4-51						Sides)	2
17	A-3532-2B	Flange Plate Assembly				1575-1A	Chain	2
	T C 0.99 4 E 1.1	(Front & Rear)				1576A	Connecting Link	2
18	LS 832-4-511 AS-2683A	Screw	. 4	34	M-3	3528A	Sprocket Hub & Pulley Assembly	2
10	ID BOOK	Shaft Assembly (entire u	nit) 1					_
	A-3528A	Sprocket Hub & Pulley	,				.'s 35 & 36 are component	
		Assembly (two outside	~	9.5		rts of Index		ก
		lanes)	. 2			841-2A 1637-61B	Bevel Gear	2 2
	Note: The Be	vel Gear can be removed				3552A	Gear Hub & Pulley Assem-	-
		sembly by removing the Rol	l	- •		-	bly (Differential & Center	
	Pin - see ins						Pulley)	1

RACE TRACK CONVEYOR UNIT - PART 2

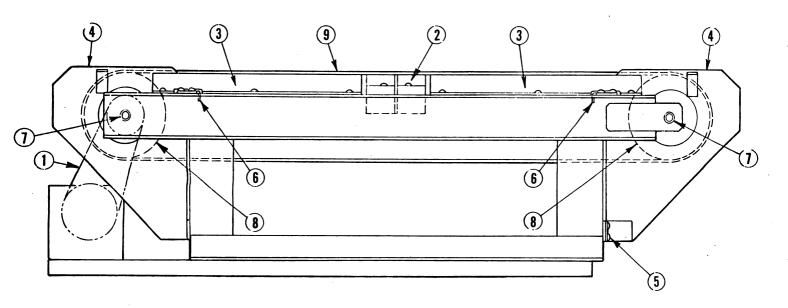


ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

RACE TRACK CONVEYOR UNIT - PART 2

	Track Conve	a top side view of the Race yor Unit with two of the		Index No.	Part No.	Description	No. Req.
	to show Car Unit.	eyor Belts turned up on edge detail & the Crash Detector		7 1	M-1585B	Competition Car (Yellow - Orange, Ferrari)	1
	The Crash D	etector Unit works as follows	•	I	M-1585-1B	Competition Car (Yellow - Orange, Mako-Shark) .	1
	The image of	the Players Race, Car is a point exactly above the	•	I	M-1585-2B	Competition Car (Gold-Yellow, Ford "J")	1
	Lighting Unit	is & Crash Detector Photo one of the three traffic lanes.		I	M-1585-3B	Competition Car (Gold-	1
	It is the Play	ers Race Car which energize		1	M-1585-4B	Yellow, Ford GT) Competition Car (Cerise	
	10) when it e	ree Lighting Units (Index No. nters a particular lane. This	5]	M-1585-5B	Red, Lola GT) Competition Car (Cerise Red, Ferrari "Dino")	1
	area under tl	n, will reflect on the white ne various competion Cars]	M-1585-6B	Competition Car (Lemon	
	be energized	Photo-Cell (Index No. 11) to This Photo Cell detection		1	M-1585-7B	Yellow, Porshe 904) Competition Car (Lemon	
	Race Car & t	accident because the Players the detected Competion Car]	M-1585-8B	Yellow, Cobra GT) Competition Car (Green,	
	-	g in the same lane area.]	M-1585-9B	Margusta)	
	be operating	in the same lane over the				Jaguar)	
	area covered Photo-Cell U	by the lit-up, Light & Init.			M-1583A S-2082 A	Axel Pin	20 40
Inde	No.	Description	No. Req.		parts of the	No.'s 8 - 11 are component Crash Detector Assembly,	
1	P-7735C LS832-4-511	Support Plate Screw	2 8	8	AS-2685.	Wood Incont	•
2	A-3530B	Side Frame Assembly .	1	O	CA-1369B	Wood Insert	2
3	A-3530-1B	Side Frame Assembly .	1		PW 8-11 N 832-2111	-511 Screw	2 2 2
4	A-3557A	Belt Assembly - Right (Viewed from Game		9	P-2948-159	P.C. Board	1
		front) - includes 4 Car Cradle Units riveted to Belt	1	10	E-125-53	Lamp (7V.) (One per lane - soldiered to P.C. Board)	3
	P-7781A	Cradle (Car Frame) .	$\overline{4}$	11	E-622A	Photo - Cell (Hidden, just	
5	A-3557-1A	Belt Assembly - Center (Includes 3 Car Cradle	4			opposite the Light Unit - one per lane, soldiered to P.C. Board)	3
	P-7781A	Units riveted to Belt) . Cradle (Car Frame) .	1 3		Note: If a P.	C. Board is needed with all	3
6	A-3557-2A	Belt Assembly - Left (Includes 3 Car Cradle Units riveted to Belt)	1		Bulbs & Pho	oto Cells soldiered in place est this when ordering this	
	P-7781A	Cradle (Car Frame) .	3	12	LS 832-12-51	1 Screw	4

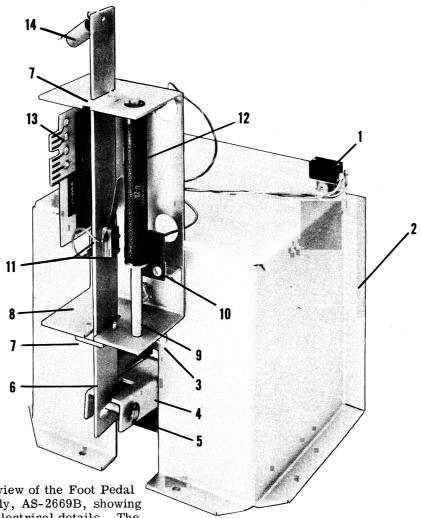
PROCEDURE FOR BELT REPLACEMENT



- 1. Remove both Drive Chains, #M-1575-1a by means of Connecting Links, #M-1576a.
- 2. Unplug and remove, Crash Detector Assembly, #AS-2685 ND.
- 3. Remove both Support Plates, #P-7735a.
- Remove Mounting Screws, both Center Flange Plates, #A-3522-1B and Pull out, on both ends of Conveyor Unit.
- 5. Remove Mounting Screws, both Outside Flange Plates, #A-3532B and #A-3532-2B on both ends of conveyor Unit.

- 6. Remove both Tie Bars, #P-7739B.
- 7. Remove Screw and Plain Washer from center of Shafts, on both sides of the 2 Pulley Shaft Assy's.
- 8. Spread Frame, lift out Pulley Shaft Assy. and remove the 2 remaining Flange Plates, #A-3532B and #A-3532-2B on both ends of the Conveyor Unit.
- 9. Replace the Belt and reverse this procedure to re-assemble the Conveyor Unit.

FOOT PEDAL ASSEMBLY



Index

No.

Part

No.

7 P-1973-277A

8 P-6629-66B

9 S-739-193B

N 1/4 - 20 - 1110

No.

Req.

2

Description

Nylon Bearing Plate . .

Screw, #6-32 x 3/8" Lg.

Resistor Base Plate

1/4" Lockwasher

Nut

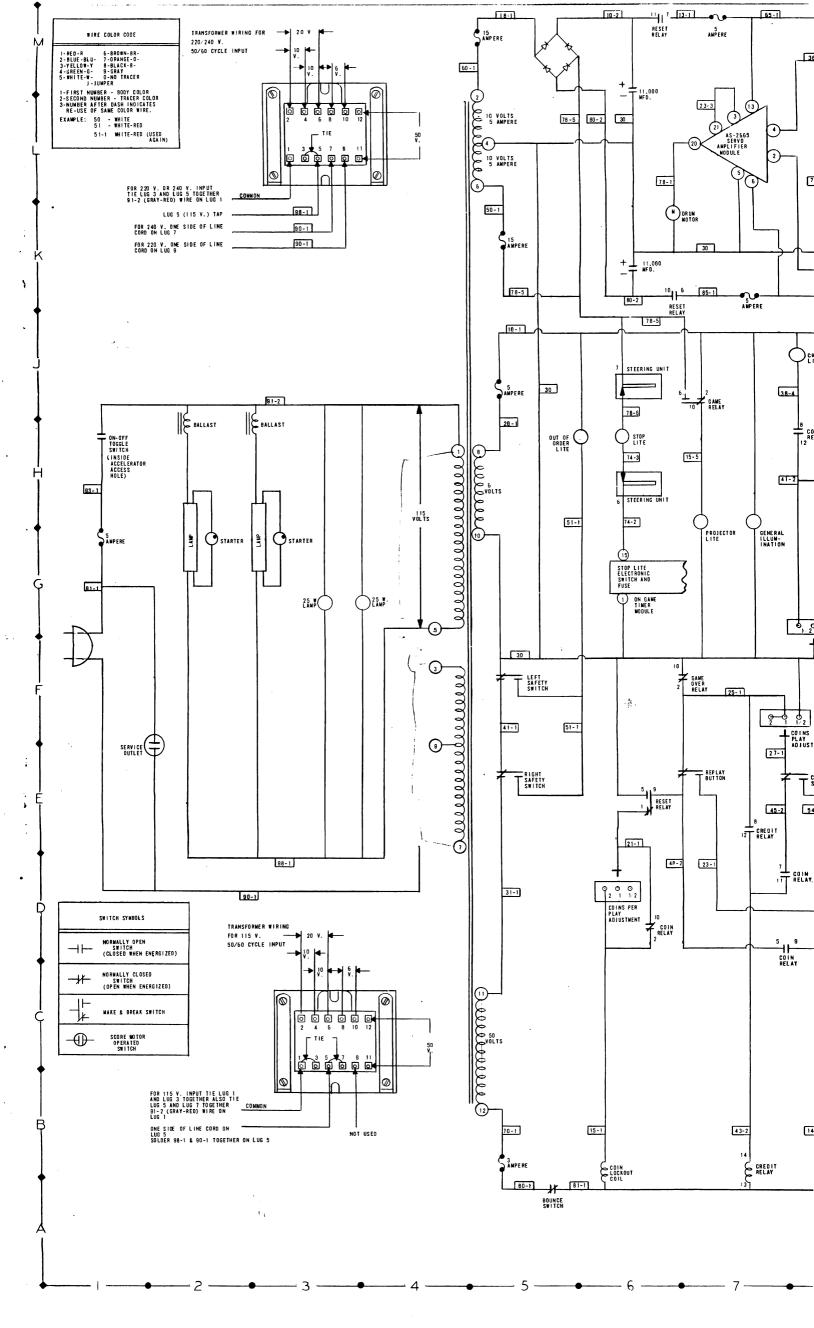
Pin

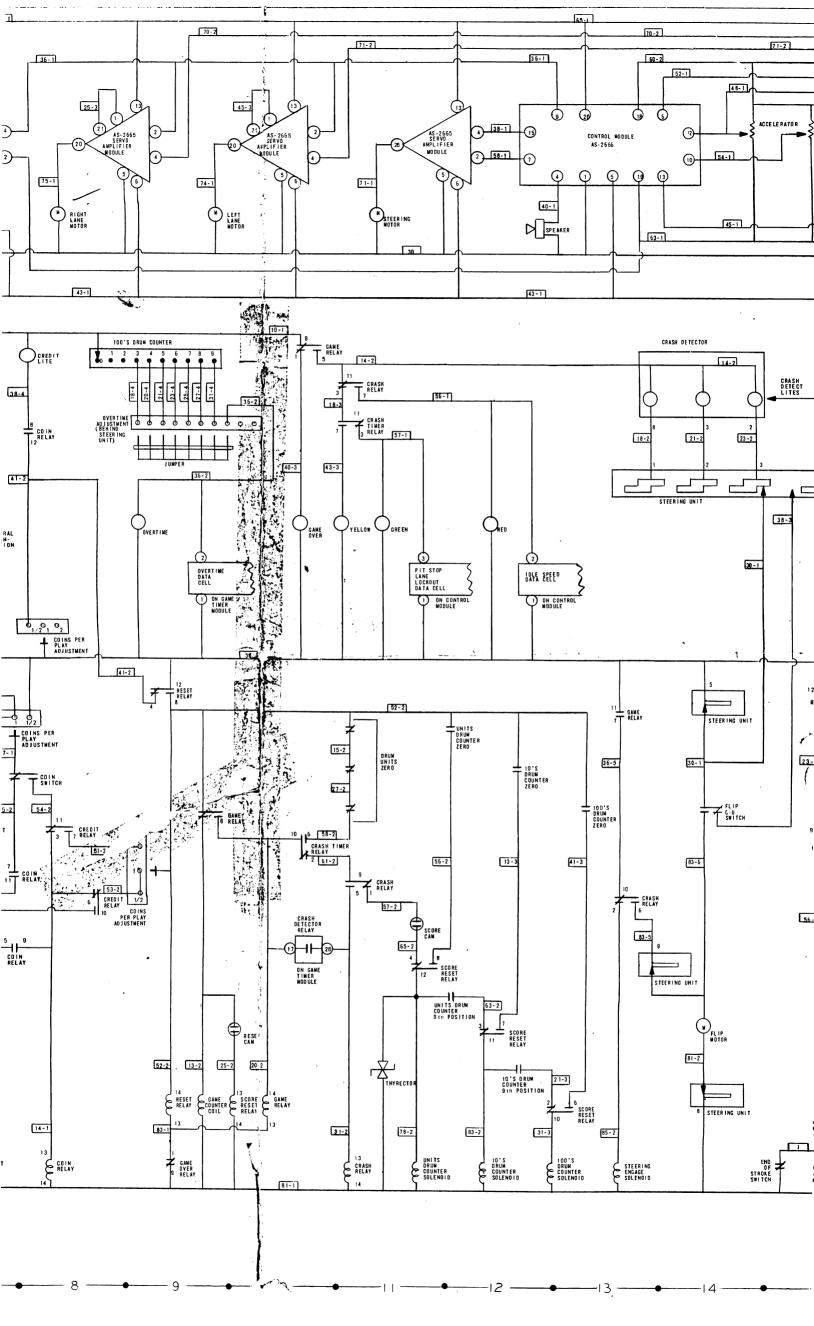
Swage Form

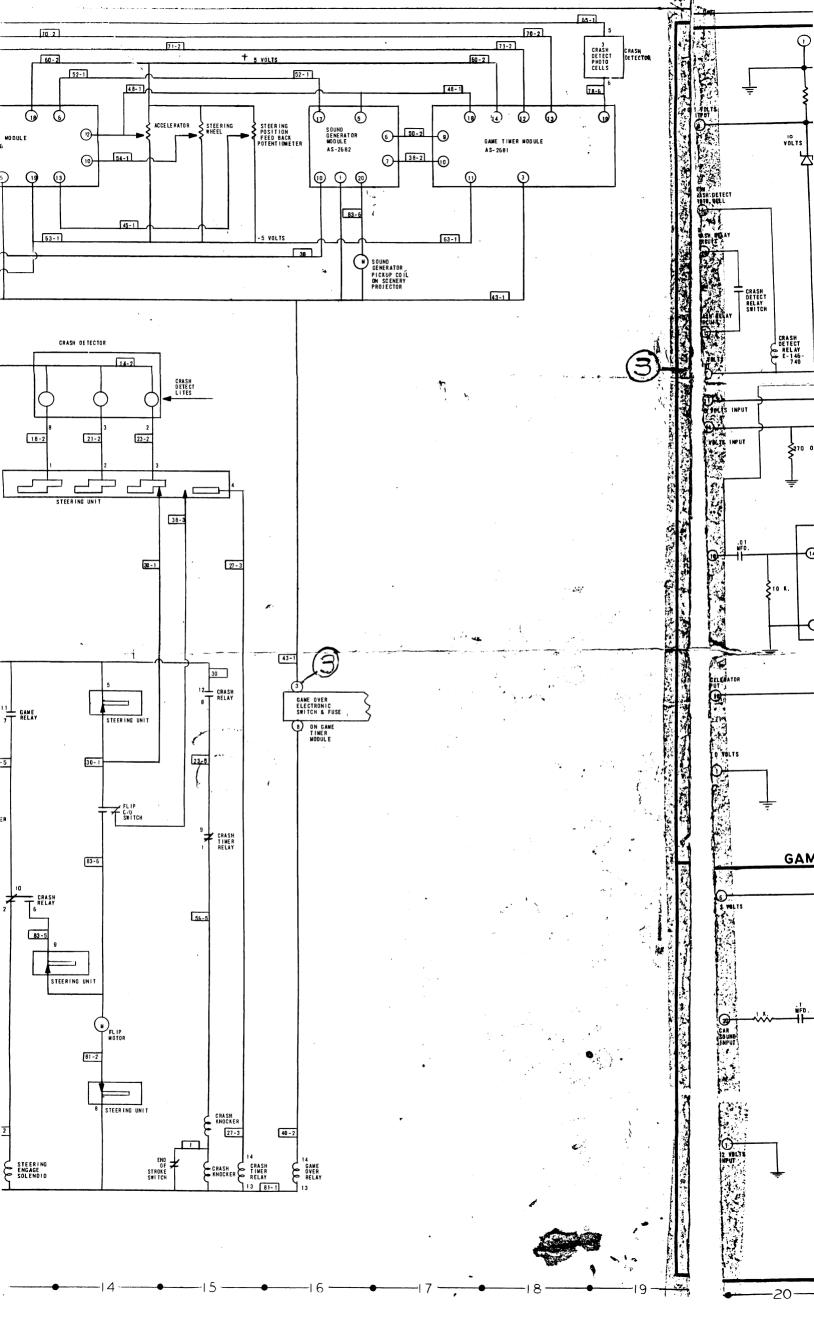
Note: This is a rear view of the Foot Pedal Accelerator Assembly, AS-2669B, showing the mechanical and electrical details. The sliding Wiper Unit on the Dividohm Resister acts as a Rheostat controlling the speed of the Drum Assembly on the Back Door. The Drum Assembly furnishes the projected moving scenery for the illusion of speed. This Foot Pedal Assembly is accessible by removing the lower Front Panel. This

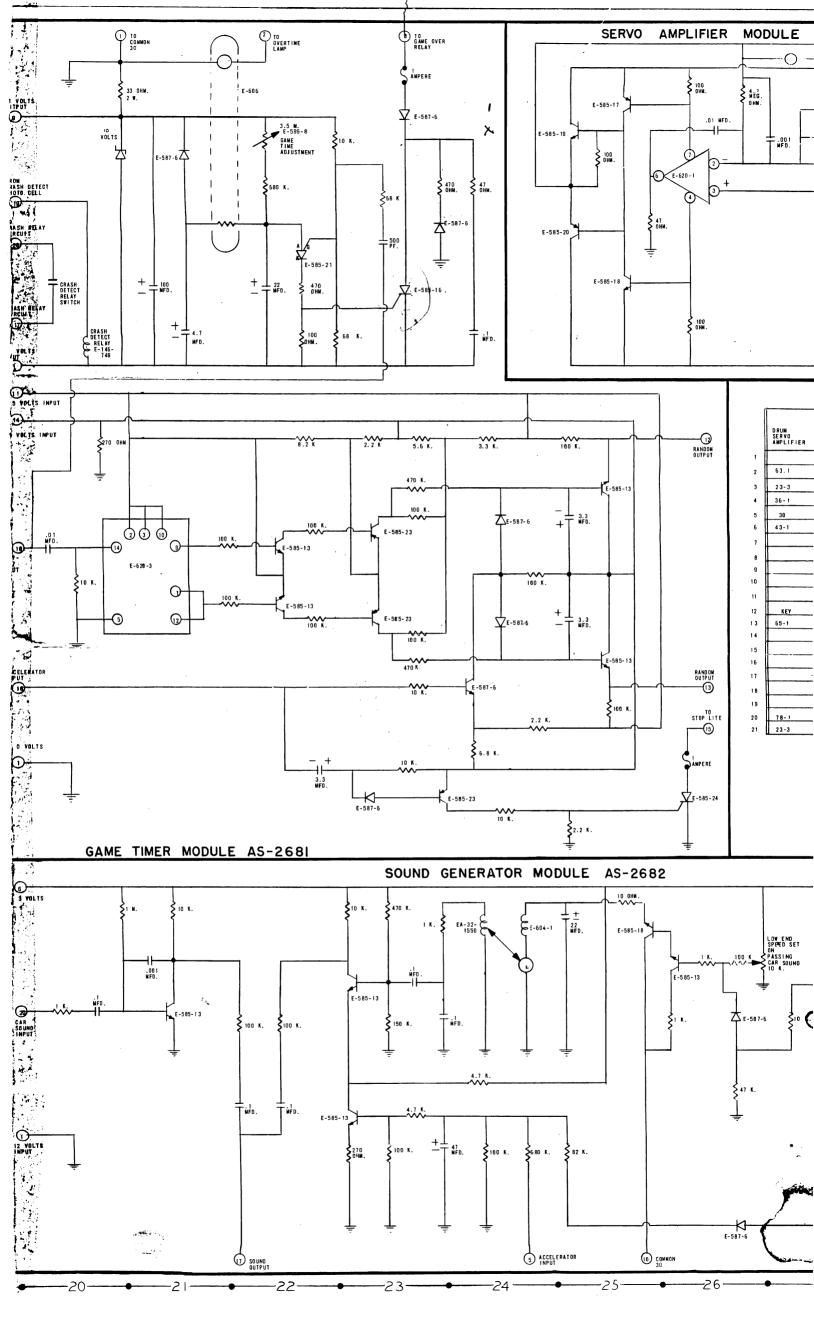
removing the lower Front Panel. This Front Panel is retained by 3 Screws on its top edge, accessible just inside the Front Door on the lower sill. Once the Screws are removed, the Panel can be lifted up & out.

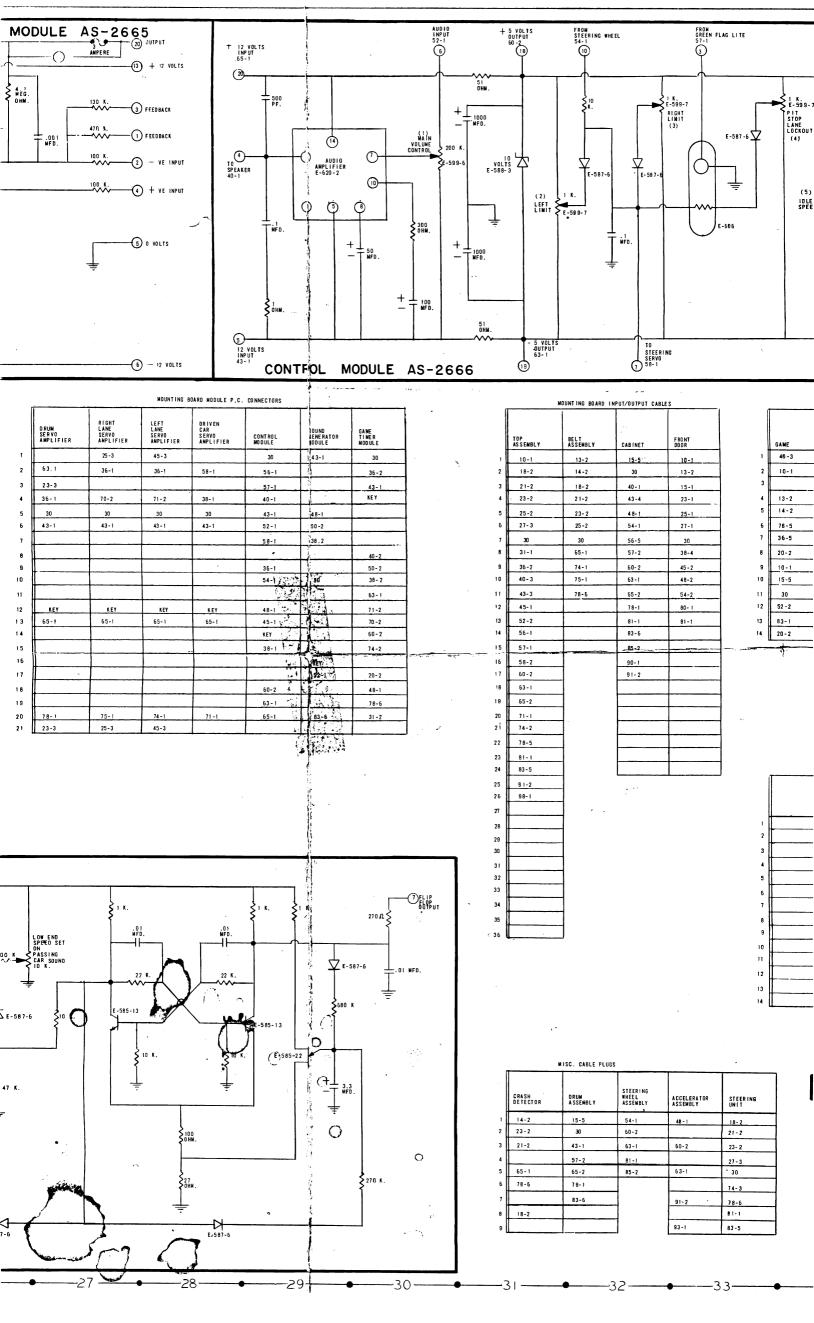
	lifted up & o	ut.		-	P-801-207B	Washer	1
Ind No		Description	No. Req.	10	P-2891-6A P-7719A P-6442-85A	Retaining Ring Insulator Plate (2 together) "Z" Bracket	3 2 1
1	E-108-97A	Game On-Off Switch (Push Button)	1			Screw, #6-32 x 1/4" Lg. Swage Form	4
2	A-3525B	Accelerator Housing Assembly	1	11	ASW-A1-75	Feed Wiper (resister side)	1
3	A-3521-1A	Bumper Housing Assembly	1		ASW-A1-74	Feed Wiper (commutator strip side)	1
	R-116A	Rubber Bumper Screw, #8-32 x 1/4" Swage	1		P-137-5A P-126-154A	Spring Plate Switch Plate	1 1
		Form	3		MS 540-12-110	Screw	2
4	A-3526B	Accelerator Foot Pedal		12	E-603-3A	Dividohm Resister	1
_		Assembly	1	13	A-3540A	Commutator Strip Assembly	1
5	D 100 100D	Pin	1	14	SP-100-295B	Extension Spring	1
	P-2891-6A	Retaining Ring	2		P-1973-280A	Spring Hook Plate (not shown	_
6	P-7720A	Slide Arm	1			installed near Cash Box)	1

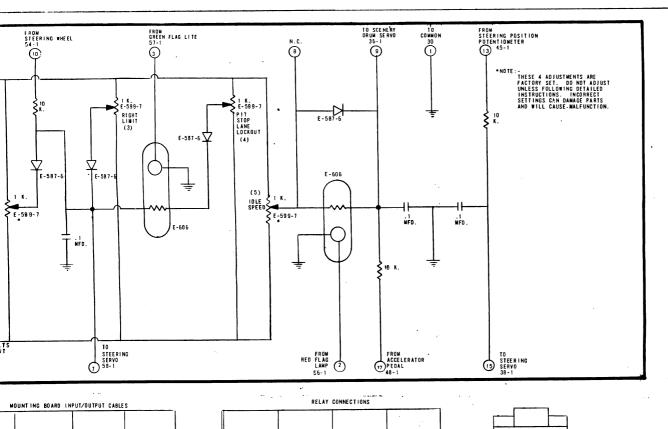






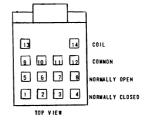






	BELT ASSEMBLY	CABINET	FRONT DOOR
	13-2	15-51	10-1
	14-2	30	13-2
	18-2	40-1	15-1
	21-2	43-4	23-1
	23-2	48-1	25-1
	25-2	54-1	27-1
	30	56-5	30
	65-1	57-2	38-4
	74-1	60-2	45 - 2
	75-1	63 - 1	48-2
	78-6	65 - 2	54-2
		78-1	80-1
		81-1	81-1
	1	83 - 6	
		85=2	
		90-1	
_	1		

GAME	CRASH TIMER	COIN	G AME OVE R
40 - 3	56-5		83-1
10-1	61 -2	15-1	25-1
	57-1		
13-2			
14-2		48-2	
78-5	58-2		
36-5	43-3	45 - 2	
20-2		38-4	
10-1	23-5	14-1	81-1
15-5	20-2	21-1	30
30	18-3	43-2	
52 - 2		41-2	
83-1	81-1	14-1	81-1
20 - 2	27-3	81-1	40-2



RELAY	CONNECTIONS

	-		
	CRASH	RESET	CREDIT
, [57-2	21-1	
2	85-2		14 - 1
3	18-3		14-1
4		41-2	
5	31-2	30	
6	83 - 5	85 - 1	23-1
7	56-1	13 - 1	51-2
8	23 - 5	52 - 2	25-1
9	61-2	48-2	
10	36-5	80 - 2	5 3- 2
11	14-2	10-2	54-2
12	30	30	43 - 2
13	31-2	83-1	81-1
14	31-1	52 - 2	43 - 2

SCORE RESET	LOCATED ON TOP ASSEMBLY
21 - 3	
63-2	
65-2	,
41-3	
13-3	
56-2	
31-3	j
83 - 2	
78-2	·
25-2	
81-1	J
	21-3 63-2 65-2 41-3 13-3 56-2 31-3 83-2 25-2

MISC. CABLE PLUGS

DRUM A SSEMBL Y	STEERING WHEEL ASSEMBLY	ACCELERATOR ASSEMBLY	STEERING Unit	
15-5	54-1	48 - 1	18-2	
30	60-2		21 - 2	
43-1	63-1	60-2	23-2	
57 - 2	81-1		27-3	
65 - 2	85 - 2	63-1	* 30	
78-1			74-3	
83-6		91-2	78-6	
			81-1	
	_	93-1	83-5	

ROAD RUNNER # 914 W-11554

___32 _______33 _______34 ________35 .______36 ______37 -