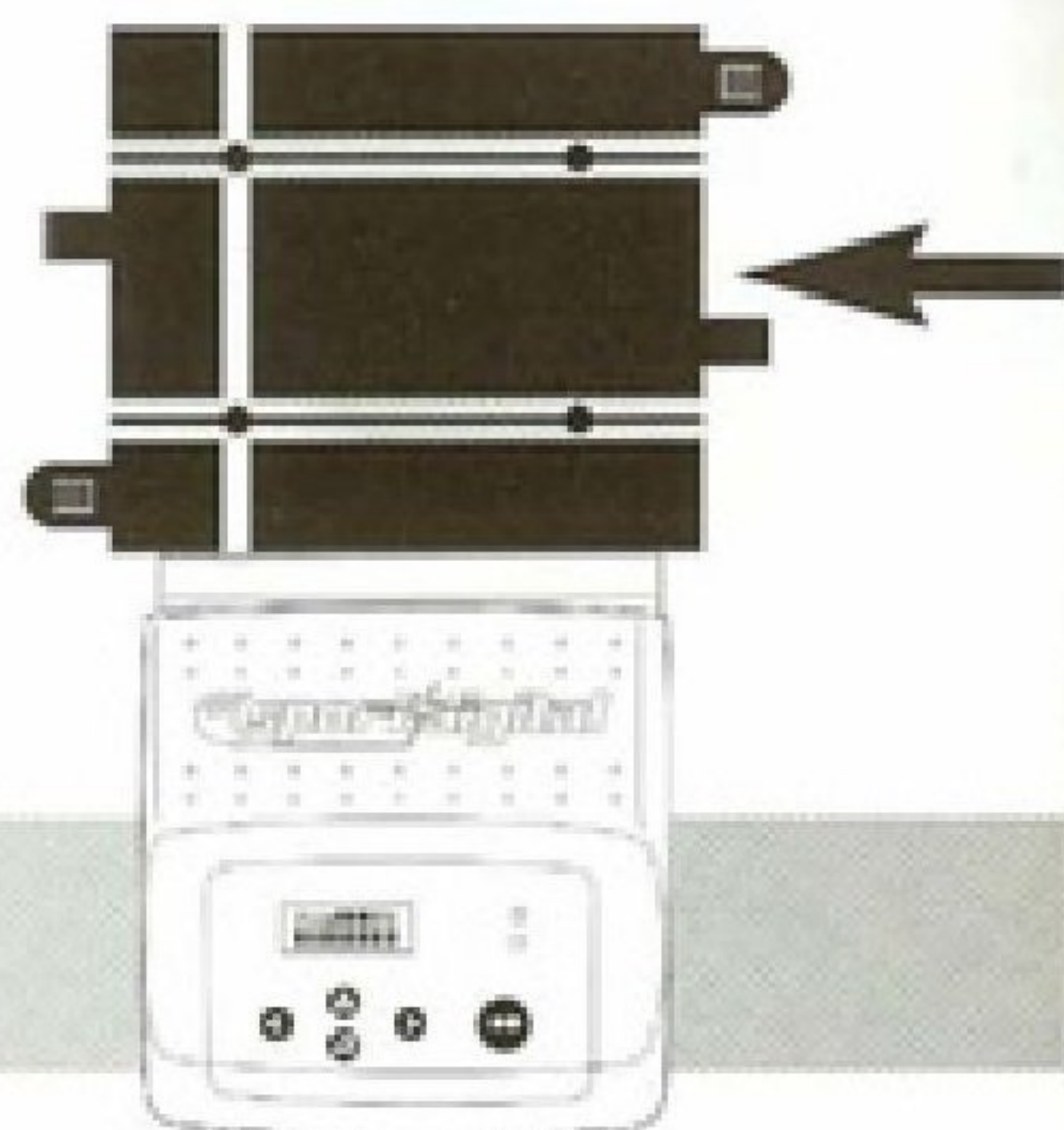# sport*digital

1 SPORT DIGITAL COMPONENTS

DO NOT USE STANDARD POWER BASES OR POWER SUPPLIES IN A SPORT DIGITAL LAYOUT AS THIS WILL SERIOUSLY DAMAGE THE SPORT DIGITAL EQUIPMENT.

1.1 The Sport Digital system components:

- **The SPORT DIGITAL power base.**
  This unit is permanently connected to the Finish Line straight. The Finish line contains an optical sensor which accurately records when a car crosses the line. It contains all the electronics which provide power and control to the cars and lane change track pieces. Direction of travel must be right to left in relation to the power base.

- **The Digital Controllers.**
  The digital controllers provide smooth, accurate control of cars. They are low voltage controllers specifically designed for use with Sport Digital products. The controller has two buttons and a trigger. The trigger increases power to the car whilst the large oval button is a brake and the small round button is the lane change activator. These controllers should only be used with the Sport Digital and Sport World products.
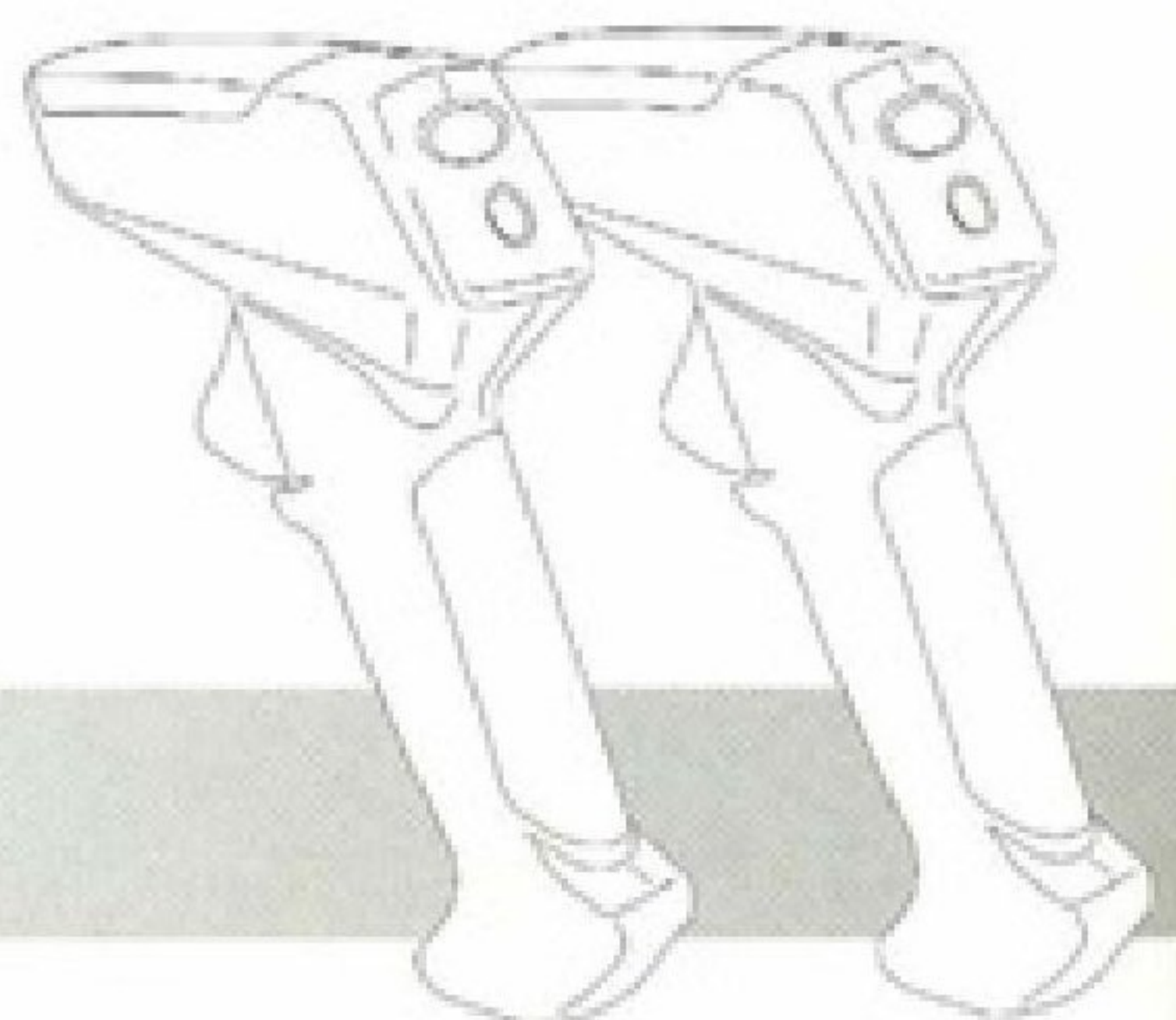
- **Power Supply Transformers.**
  One transformer is supplied with the SPORT DIGITAL power base. It must be connected to socket P1. This will supply sufficient power to drive three cars. In addition, a second Hornby recommended power supply can be connected to socket P2 to supply enough power to drive four to six cars.

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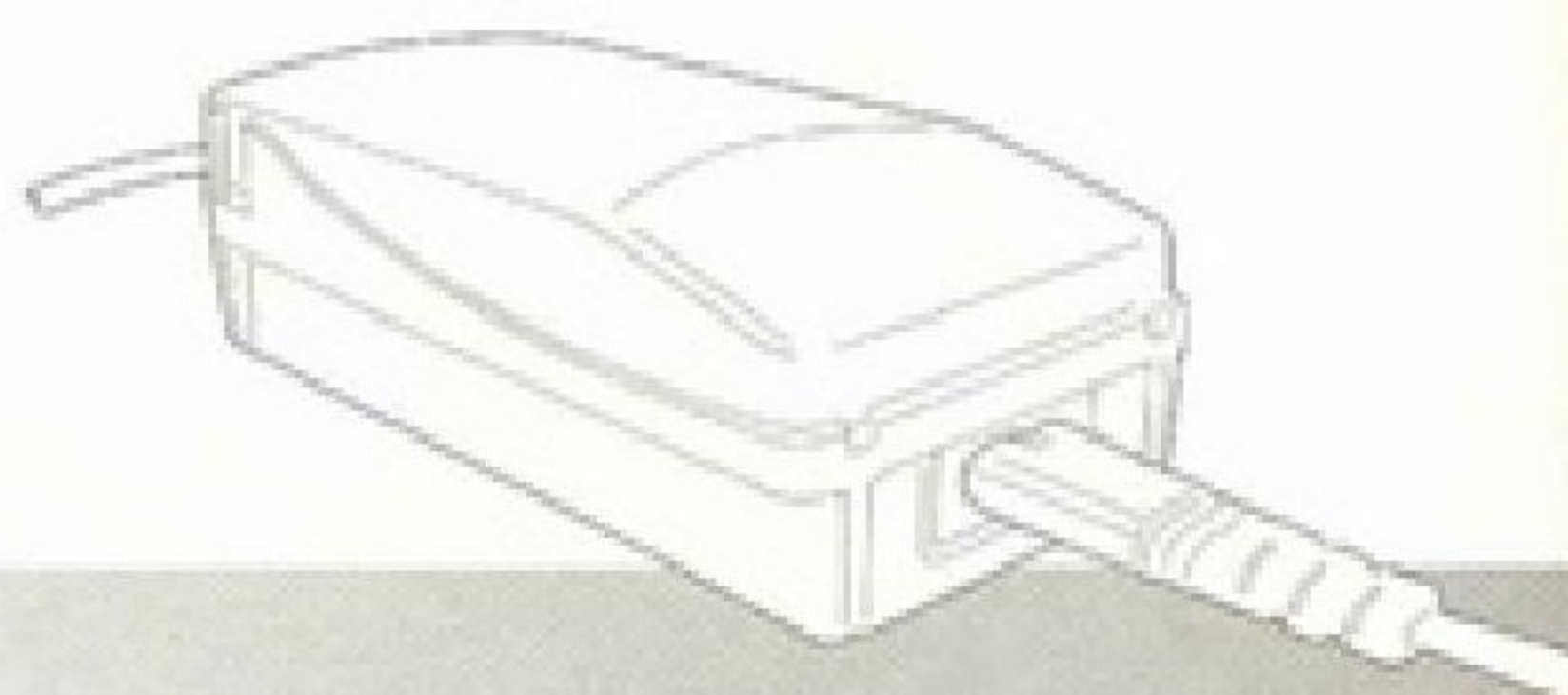
2 QUICK START

Get racing! Follow this check List:

1 - Connect track and equipment   See Section 2.1
2 - Practice and Learn how to change lane   See Section 2.2 - 2.3
3 - Start 10 lap Grand Prix race & view results.   See Section 2.4

2.1 Setting up your circuit

To get racing with Sport Digital, set up your circuit following the instructions contained in your set. Refer to the instructions in the set (Standard or Digital) or Digital Conversion pack.

IMPORTANT

1 - You must not place any standard power bases, Pacer or Challenger systems in a circuit that contains the Sport Digital power base.
2 - Do not add standard power bases as extra track.
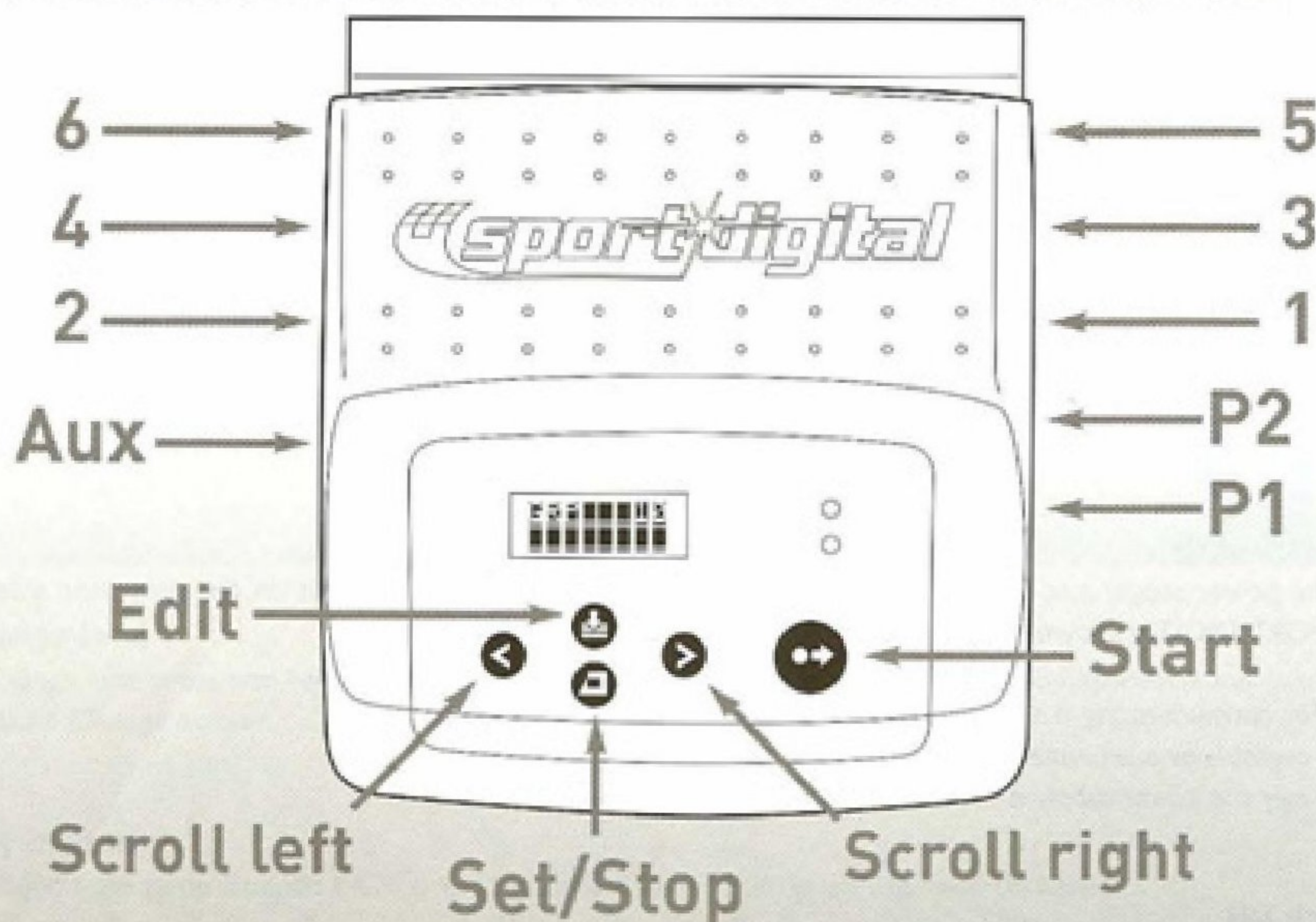3 - Non-Sport Digital power bases with no power may still lead to damage to the Sport Digital system.

Figure 1. The SPORT DIGITAL power base showing connection and edit buttons.

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P1	Socket P1 is the input socket for power supply.
P2	Socket P2 is the input socket for an additional power supply when racing 4 to 6 cars.
1-2	Sockets 1 and 2 are the default hand controller sockets.
3-4-5-6	Sockets 3-6 are for additional hand controllers when racing 3 or more cars.
Aux	The Aux socket is an output socket for the connection of accessories to the Sport Digital range.
⊙	Start
⊙	Edit
⊙	Set/Stop
◄	Scroll left
►	Scroll right

• **Controllers**

Plug the two controllers into the controller sockets either side of the SPORT DIGITAL power base.

1 = Hand controller 1
2 = Hand controller 2
3 = Hand controller 3, etc.
See figure 1. The SPORT DIGITAL power base.

• **Power Supply**

Plug the power supply into a wall socket and the power connector into the socket on the right hand side of the SPORT DIGITAL power base marked "P1". See Figure 1.

Note: For optimum racing, a second power supply (C7004) can be connected to "P2" and is available as a separate item.
When only one power supply is used, only connect the supply to the 'P1' socket.

• **Switch ON**

Switch on the power at the wall socket.
The Sport Digital power base LCD window will display the default setting (or last used) race setting.

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2.2 Practice Laps

Connect a hand controller to socket 1 and place a car with a Car ID of 1 on track and connect a hand controller to socket 2 and place a car with a Car ID of 2 on track. The SPORT DIGITAL power base will display the Car ID and lap time when the car passes through the Finish Line.
This is the default mode when the SPORT DIGITAL power base is powered up.

2.3 Changing Lanes

To change lane press and hold the small round button on the hand controller (*Fig.1*) as you approach and pass over the Lane Change Sensor Track which is laid immediately before the Lane Change Track piece (*Fig.2*). This will cause the Lane Change flipper to activate (*Fig.3*) and the car will change lanes (*Fig.4*). The hand controller lane change button can be released at anytime after passing the sensor.

Press

Fig.1

Lane change sensor

Fig.2

Lane change flipper

Fig.3

Car changing lane

Fig.4
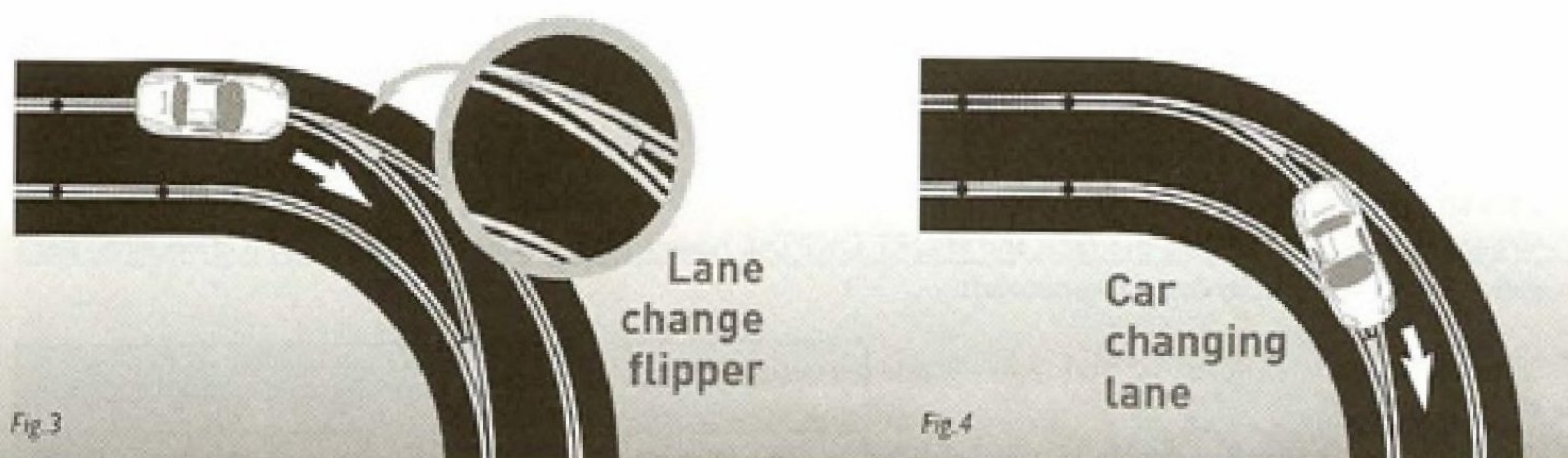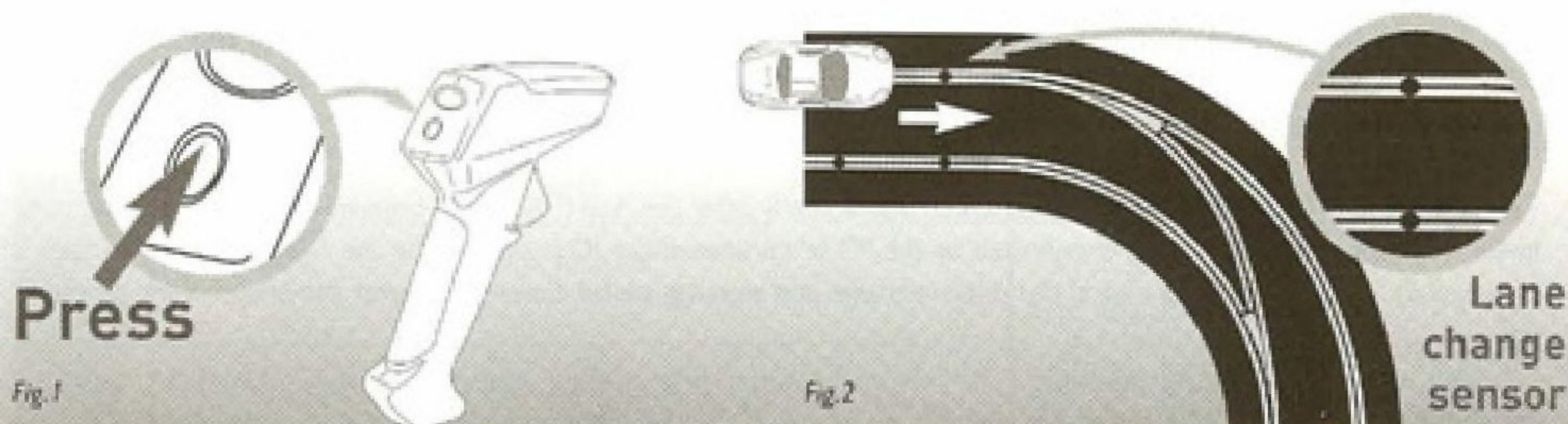
- **Change lane**

    To change lane press and hold the small round button on the hand controller as you approach and pass over the Lane Change Sensor.

- **Stay in lane**

    To stay on the same lane, do NOT press the Lane Change button on the hand controller.

    Note: If the Lane Change button is NOT pressed the Lane Change Track flipper will default to 'stay on same lane' as the car passes the sensor regardless of the present position of the flipper.

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2.4 Racing

By pressing the Start button you are entering race mode. The factory default is a 10 lap Grand Prix (GRP 10). The SPORT DIGITAL power base will remember and display the race mode and parameters last used.

• Race screen

The last race setting will be displayed in the LCD screen. Example: "GRP 10". The race screen will display the race mode, the primary race parameter (i.e. 10 laps) and, during the race, relevant race-time data such as car position, lap times, etc.
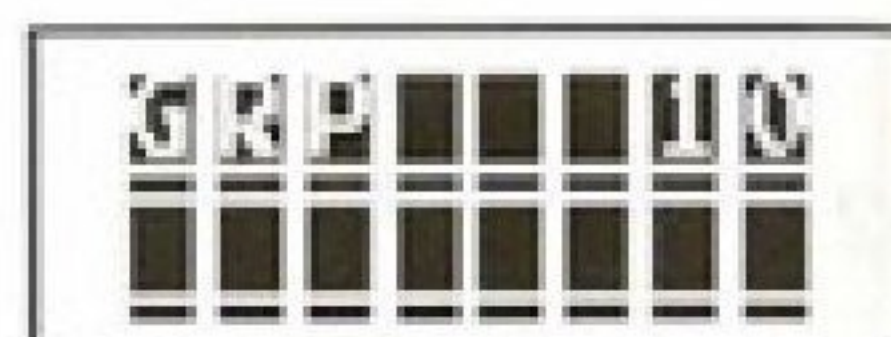
• Start racing

The race start sequence will begin when you press the "Start" button on the unit. A red LED will flash 5 times, with 4 short beeps for each flash. The last red flash will hold along with a long beep. When the red LED goes out, there is a final short beep as the race starts and the green LED comes on. The green LED remain lit for 5 seconds indicating the start of the race.

*Tip: If 'HC ERR *' is displayed on the LCD screen immediately after the 'Start' button is pressed then either a hand controller is unplugged (socket number indicated by the "*") or an unused car ID is set as 'Y' in the CAR parameters (See section 3.5). Press 'Set/Stop' to cancel the error message and warning sound. Correct the error condition before proceeding.*

Tip: Crashed cars can be replaced in any slot.
Suggestion: Agree a racing rule of always replacing a car on the outside slot.

Tip: Immediately remove any stopped car from the track to avoid a race accident.

• Finish racing

When each car has finished the race, the SPORT DIGITAL power base will beep 5 times and a chequered flag will show on the display for a few seconds.

• Results

The race results are then shown in race finish order. First, Position 1 and the car ID that finished first, followed by Position 2 and the car ID that finished second, etc.

• Clearing the results

To clear the results and set the SPORT DIGITAL power base ready to run another race, press the "Set/Stop" button.

• Abandon the race

The race can be stopped at any time by pressing the "Set/Stop" button .

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3 ADVANCED USE OF THE SPORT DIGITAL POWER BASE

3.1 Race Modes

Sport Digital has seven race modes. The table below shows each race mode and what will be displayed on each of the two rows of race information on the LCD display.

	Race mode	Line 1 of LCD display.	Line 2 of LCD display.
GRP	Grand Prix	Laps left in the race	Flashes position & laps left when the racer passes the start line
END	Endurance	Time left in the race (displayed in HH:MM:SS format)	Flashes position when the racer passes the start line
RLY	Rally	Laps left	Timer: M:SS:mSmSmS
PST	Pursuit	Race leader	Time gap between you and leader
NAS	NASCAR	Laps left in the race	Flashes position & laps left when the racer passes the start line
ARD	Arcade	Time left to complete check point	Number of laps before the check point & position
QLY	Qualify	Best lap	Last lap

Table 1: Race Modes and line display information.

Race Mode	Primary Race Parameter
Grand Prix	Number of laps
Endurance	Time
NASCAR	Number of laps
Rally	Number of laps
Pursuit	Number of laps
Arcade	Laps & check point time
Qualify	Number of laps
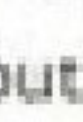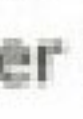
Table 2: Race Mode parameters

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3.2 Edit Mode

The race and car parameters can be changed to suit the required race rules. As an example, an Endurance race can be edited to have a one hour race duration with a false start penalty of 10 seconds and the power to be turned off at the finish of the race. Many more parameters are also included and are explained in Section 3.

* Pressing the edit button once on the screen enters edit mode.

  Note: There is no power to the track whilst in Edit mode.

* The cursor buttons are then used to select the global race parameter or car that needs to be set up.

* Pressing edit for a second time, allows the particular global parameter to be changed.
  Use the cursor buttons to select the available values.

* Alternatively if a car is selected, the user must then select which car specific variable needs to be changed using the cursor buttons. To change these car variables use the edit key .

* The value can then be saved by pressing the set/stop key . Pressing the set/stop key for a second time, takes the system out of edit mode and into pre-race state (or back to global race parameter if a car was chosen). A further set/stop press will take the user back to pre-race screen.

To change the Race Mode from 'GRP' to 'END' (Grand Prix to Endurance) follow this example:

* **Default screen (race parameters may differ)**

* **Press the 'Edit' button twice. 'Race Mode' will be displayed.**

* **Scroll to right to 'END'.**

* **Press 'Set' to accept.**

* **Press 'Set' to exit the Race edit level.**
  The display will now show 'END 10' (Endurance - 10 minutes)

3.3 More about Race Modes

Seven different race modes can be selected. See Table 1, Section 3.1.
Pressing the Start button will invoke the race start sequence for the currently selected race mode and its selected parameters.

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• Grand Prix

A fixed number of laps, cars racing simultaneously with a grid start.

Suggested novice settings: End at = Same Lap, Power Cut = YES, Laps = 10. This allows a race where there is no power before the green 'GO' light. Furthermore, when the lead car completes the race all other cars will stop as they cross the finish line.

Suggested pro settings: End at = Same Lap, Power Cut = End Only, False Start = Yes, Laps = 50. This race set up allows for a live power start with the opportunity to fall foul of a false start and suffer a time penalty. Furthermore, when the lead car completes the race all other cars will stop as they cross the finish line.

• Endurance

A fixed time race, cars racing simultaneously with a grid start.
The winner is the driver who completes more laps or the same number of laps in a faster time.

Suggested novice settings: End at Same Lap, Power Cut YES, Minutes 5. See Section 3.5 for more information.

*Suggested pro settings: End at Same Lap, Power Cut End Only, False Start Yes, Laps 100.
See Section 3.5 for more information.*

• Rally

A fixed number of laps, with drivers taking turns to race.
The winner is the driver who completes the course in the fastest time.

Note: circuits here could be single slot (i.e. an odd number of changeovers on the circuit).

• Pursuit

Racers start together and race until one car laps the other.

• Arcade [Time Attack]

Racers complete a fixed number of laps within a given "checkpoint" time period. The racers carry on to complete the same number of laps in a reduced time. The race goes on with continually decreasing time periods and ends when the last car fails to make the stage or checkpoint. Power is cut to the car not completing a lap within its current time checkpoint. Arcade mode is a continuous race not a series of races. Hence if a driver completes a stage with two seconds spare they have two seconds extra time available for the next stage. Arcade mode race ends when the last car fails to complete the stage.

Tip: Try a simple set up of Laps = 1 and Time = 8s before advancing to higher combinations.

• NASCAR

A NASCAR race mode is very similar to Grand Prix with fixed number of laps.

Suggested novice settings: End at Same Lap, Power Cut YES, Laps 10

Suggested pro settings: End at Same Lap, Power Cut End Only, False Start Yes, Laps 50

- **Qualify**

  Register your best time. Select the number of laps then race round to register the fastest lap. The best time will be displayed above the last lap time. This mode is intended to be used one car at a time. Using more than one car on the track may confuse the results.

  Tip: Record lap times on a score sheet and use these to seed the Starting Grid.

3.4 Race Parameters - What they do and how they affect a race.
See table 3.

- **End at**

  There are two ways in which the race can be ended.

  - **End at Same Lap** - When the leading cars passes the SPORT DIGITAL power base Finish Line sensor at the end of the final lap, the race finishes for this car and all other cars as they complete their current lap. This can be compared with F1.

  - **End at Last Lap** - The race finishes for each car as it completes its final lap. The race finishes when all cars have completed their full number of laps.

  Tip: Remove cars that have finished the race from the track to avoid racing accidents!.

- **Laps**

  Any amount of laps from 1 to 65535 can be entered.

- **Duration**

  Selecting to run a race over time, rather than laps, is selectable when using the Endurance or Arcade race modes. Any value from 1 to 65535 can be selected. Seconds, minutes or hours can then be selected as the time measure. For example, a race time of one and a half minutes should be selected as 90 seconds, and similarly a two and a half hour race would be selected as 150 minutes. A traditional Le Mans endurance race can be run selecting 24 hours.

  Tip: The maximum endurance race value is 65535 hours - beware this is equal to approximately 7.5 years!

- **Power cut**

  Power to the cars can be controlled by selecting one of these parameters:

  - **ON** = Power is only available during the race. When the red start light is on there is no power. When the race has finished there is no power.

  - **OFF** = Power is available before, during and after the race.

  - **End Only** = Power is cut as each car completes its race.

- **False Start detection**

  Pressing the hand controller before the green light is lit (jumping the startlights) can be detected and a time penalty applied.

  - **Y** (Yes)
  - **N** (No)
  - False Start penalty
  - A value of 0 to 60 seconds can be selected as a time penalty.

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Parameters	Values	Race modes						
		GrandPrix	Endurance	Rally	Pursuit	NASCAR	Arcade	Qualify
End at	Last Lap/Same Lap	Y		Y		Y		
Laps	1-65535	Y		Y		Y	Y	Y
Duration	1-65535 (seconds/minutes/hours)		Y				Y	
Power Cut	EndOnly/Off/On	Y	Y	Y				Y
False start detection	Y/N	Y	Y	Y	Y	Y	Y	
False start penalty	1-60 (seconds)	Y	Y	Y	Y	Y	Y	

Table 3: Function and race mode concurrence

3.5 Car Parameters - What they do and how they effect race performance.

• Car Used

It is necessary to instruct the SPORT DIGITAL power base which hand controller sockets are to be used in the Sport Digital power base. If three cars using IDs of 1, 3 and 4 are to be raced then Car IDs 2, 5 and 6 should be deactivated on the SPORT DIGITAL power base.

Note: Factory default is cars 1 & 2 are active and cars 3, 4, 5 & 6 are inactive.

Car	1,2,3,4,5,6
Car used	Y/N
Braking	Off/Button/ Dynamic/Both
Set Car ID	Set

Table 4: Car parameters

• Activate Car ID 4. Car 4 will be used.

Example:

- Press the 'Edit' button
- Scroll to left to 'CAR 4'.
- Press 'Edit'
- 'Car Used' is displayed.
- Press 'Edit'
- Scroll to select 'Y'
- Press 'Set' to accept.
- Press 'Set' twice to exit the edit levels.

• Deactivate Car ID 6: Car 6 will not be used.

Example:

- Press the 'Edit' button
- Scroll to left to 'CAR 6'.
- Press 'Edit'
- 'Car Used' is displayed.
- Press 'Edit'
- Scroll to select 'N'
- Press 'Set' to accept.
- Press 'Set' twice to exit the edit levels.

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• Set Car ID

It is necessary to synchronize the hand controller with the car.
Note: Hand controller socket 2 should be used with a hand controller and a car with an ID of 2.

• CAR ID

A car must have a digital ID assigned to it in order for it to race. You should ensure that all cars have a unique ID setting. A hand controller plugged in to controller socket 1 will operate any car with a digital ID of 1. A hand controller in socket 5 of the SPORT DIGITAL power base will control any car with an ID of 5, etc.

• Setting the car ID.

There are six possible values; 1, 2, 3, 4, 5 and 6. To set the ID, place the car on the track. Remove all other cars from the track. Select the Car ID on the SPORT DIGITAL power base and *SET* the ID of the car.

Note: Any cars left on track will also be set with the new ID!

If Car ID 5 was selected then the new ID of the car on the track is now '5'. Ensure only one car is on track when setting the ID. When the ID is set, remove it from the track before preparing another car for an ID setting.

To set a car ID of 2 follow this example:

• **Default screen (race parameters may differ)**

• **Press the 'Edit' button. 'Race Mode' will be displayed.**

• **Scroll to left to 'CAR 2'.**

• **Press 'Edit'**

• **Scroll to 'Set CAR ID'**

• **Press 'Edit'. 'Set' will flash on the display**

• **Press 'Set' to accept.**

• **Press 'Set' twice to exit the Race edit level.**

The car on track now has an ID of '2' and can be operated by the hand controller plugged in to controller socket 2.

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Tip: If the car (set with Car ID 2) doesn't move remember that you must use a controller plugged into the same socket number of the SPORT DIGITAL power base. Plug a controller into controller socket 2.

Note: There is no power to the track when the SPORT DIGITAL power base is in Edit Mode. Before you can drive the car ensure the SPORT DIGITAL power base is NOT in edit mode.

• Braking modes

Each car and hand controller pairing can be configured to use different braking techniques. For example, Car 1 could have Dynamic braking and Car 3 could be configured to have no braking whilst Car 5 could employ Button braking.

• Dynamic

Braking is invoked by releasing the hand controller trigger to the Off position. An electrical braking effect is automatically applied to the electric motor in the car.

• Button

Braking is effected by pressing the large button on the hand controller. This applies an immediate 'stop' to the car's motor.

Tip: This feature can also be used at the start of a race for a quick full power start. Hold the Brake button down, pull the trigger to full power. The car will not move until the Brake button is released. The car will accelerate at instant full power.

• Both

Button and Dynamic braking are activated.

• Activating both button and Dynamic braking

Example:

• Press the 'Edit' button

• Scroll to 'CAR 2'.

• Press 'Edit'

• Scroll to 'BRAKING'

• Press 'Edit'

• Scroll to 'BOTH'

• Press 'Set' to accept.

• Press 'Set' twice to exit the edit levels.

The car (CAR 2) will now respond to Dynamic (trigger) and Button (immediate) braking from the hand controller in socket 2.

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4 MAINTENANCE

4.1 Errors

The type of error will be indicated on the LCD and the red LED will continually flash, until the error has been corrected and reset. Errors are reset by pressing the SET button.

Error ID	Error	Message
1	Overload on the slot.	OVERLOAD
2	Hand Controller error - controller not connected or not functioning. * gives the controller number.	HCERR:*

4.2 Factory Reset

It is possible to return all the race and car parameters back to the original factory settings. Reset is achieved by pressing the two cursor buttons and start button together. The green LED will flash 5 times to indicate the process is complete. The unit will then use factory settings.

4.3 Hints & Tips

• Hand Controllers

Only use Sport Digital hand controllers with Sport Digital or Sport World products. Other hand controllers may damage the Sport Digital power base.

• Power Supply

Only use the recommended Sport Digital power supplies. Other transformers/power supplies may cause damage to the Sport Digital or Sport World power bases.

• No Power in Edit Mode

There is no power to the track when the SPORT DIGITAL power base is in Edit Mode. Before you can drive the car ensure the SPORT DIGITAL power base is NOT in edit mode.

• Digital Cars

Digital cars can be used on ordinary layouts.

• Standard (non-Digital) Cars

Standard non-digital cars will not work on SPORT DIGITAL. A warning sound will be emitted from the SPORT DIGITAL power base if a non-digital car is placed on the Sport Digital track.
For a few seconds this will not harm the car but the car should be removed immediately.

Factory Settings are as follows:

Race Mode = GRP
End At = Same Lap
Laps = 10
Power Cut = Off
False Start = No

Hand controller connections:

Car 1 - Used = Yes
Car 2 - Used = Yes
Car 3 - Used = No
Car 4 - Used = No
Car 5 - Used = No
Car 6 - Used = No

Braking = Off

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5 SAFETY NOTICES

• This product is not suitable for children under 3 years of age because of small parts which can present a choking hazard. Some components have functional sharp edges – handle with care.

• This product is intended for indoor use only.

• Do not use standard power bases or power supplies in a Sport Digital layout as this will seriously damage the Sport Digital equipment.

• The power supply transformer is not a toy. It is a "Transformer for Toys". Before use, check that the transformer is the correct voltage for your mains electricity supply. This set is only to be used with the recommended transformer. The transformer should be examined regularly for damage to the casing, plug pins and cables. In the event of such damage, the set should not be used until the transformer is replaced with a new Hornby recommended unit. Never attempt to open the transformer yourself.

• This set must not be connected to more than the recommended number of power supplies. The output terminals of the transformer must not be connected directly, or indirectly, to the output of any other circuit derived from a transformer or mains power supply.

• If the electric motor in the car becomes jammed, remove the car from the track and let it cool down. Do not touch the motor casing.

• Before cleaning any part, disconnect the transformer from the mains electricity supply. Do not use liquid for cleaning.

• Please retain these details and address for future reference.

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