

**Driver**

**COLLABORATORS**

	<i>TITLE :</i> Driver		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		August 24, 2022	

**REVISION HISTORY**

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# Chapter 1

## Driver

### 1.1 Driver.guide

Train Driver Simulator V1.3

---

Introduction

Quick Start

Startup Options Screen

Driving

Other features

Keys and lights

Problems

Author

DISCLAIMER

### 1.2 Introduction

Description

Installation

The Class 87 Locos

The West Coast Main Line

---

## 1.3 Description

### Features:

- 9 Difficulty levels
- Moving graphics
- Sound effects
- Unlimited choice of journeys
- Realistic train handling
- 401 miles of route of varying gradients
- Random weather conditions
- Various startup options
- Day or night trains
- Save journeys at any time
- Log made of journey with average speeds
- Random Temporary Speed Restrictions
- Time Speed up (up to x5)
- Details on/off for slower Amigas
- and many more options to experiment with.

### Requirements:

Any Amiga with WB2.0+ and at least 1 mb

Note: This guide uses SYS:Utilities/MULTIVIEW to view pics on the disk.

This is a beta version of a Train Driver Simulator, simulating

The Class 87 Locos  
working on the West Coast Main Line from

Euston to Glasgow.

I originally wrote this program for my own use, but I have been persuaded by friends who have played it, that it was suitable for public release.

I wrote this program with the excellent Blitz Basic 2 because the other train driver simulations advertised for fifteen or twenty quid in the railway mags, are generally text based, with limited options so I wanted to write a program that made you feel that you were actually in the cab, and one in which the train behaved realistically, with proper moving graphics, unlimited options, and was freely available.

This program is aimed at users with a little railway knowledge but anyone can have a go. Although the program has moving graphics I would be the first to admit these are simple and are there mainly to indicate the approach of railway-related objects, and are not particularly scenic, although in V1.3 there are now more bridges and trees added.

I have yet to see a commercial train driver simulator with any graphics other than signals and still objects.

As well as this guide there are two help pics on the disk:

- Help
- Keys
- Map

The pics can be accessed from within the program with the Help key.

Please note this program is not fully completed and although tested there may still be a few bugs.

Also some of the data is incomplete, such as signal numbers but the data on the program is otherwise accurate as far as I know.

## 1.4 Installation

All the files needed must be in the same drawer which must be assigned TrainDriver:

e.g. C:Assign Traindriver: DH0:Traindriver/

Also

```
c:Copy Traindriver:fonts/ ALL FONTS:
```

OR

```
C:Assign FONTS: Traindriver:fonts/ ADD
```

Put these lines in your S:user-startup if you use it regularly.

Click on TrainDriver icon.

Any

Problems  
?

## 1.5 Problems

If the simulation runs very slowly try and free as much memory as possible. Turn details off with key J or on the startup screen.

It will multitask but runs quicker on its own.

Also try raising the task priority (no more than +5)

```
Assign TrainDriver: DH0:TrainDriver ;(<- enter path to TD if on Hard Drive)
```

```
Assign Fonts: TrainDriver:Fonts ADD
```

```
cd Traindriver:
```

```
Traindriver1.3
```

or write a short new alternative startup as above

If the program is on a floppy disk, make sure all the files

and the Save and Fonts drawer are in the root drawer

(ie not in a seperate drawer on the disk)

and Rename the disk TrainDriver

If the program complains "Illegal Sound File" then your assign is wrong

---

or you haven't copied all the files into the same drawer/disk.

I'm sorry if you find all this confusing but Blitz doesn't really allow an easier way. The Fonts have to be in Fonts: and the program would start from SYS: if the assign wasn't there.

If you have system problems check the stack (Menu Icon/Info) is at least 4096.

Any other problems write to  
me  
.

## 1.6 WCML

The West Coast Main Line is 401 miles long and runs from London ↔ Euston to Glasgow Central.

Map

The main stations on the route, where some InterCity West Coast services stop are:

Watford Junction  
Milton Keynes  
Rugby  
Nuneaton  
Tamworth  
Lichfield Trent Valley  
Stafford  
Crewe  
Warrington  
Wigan North Western  
Preston  
Lancaster  
Oxenholme  
Penrith  
Carlisle

and in Scotland:

Lockerbie (no ICWC trains stop)  
Carstairs (no ICWC trains stop)  
Motherwell

The highlights of the route are the climbs over Shap and Beattock summits with

Gradients  
as steep as 1 in 69.

Although generally these cause no problems for electric locos, on wet rails a standing start on these gradients with a heavy train

---



takes skill, care, and patience

Despite the title of "West Coast" the sea is only visible at Hest Bank, north of Lancaster.

The quickest scheduled journey time is under five hours.

## 1.7 Gradients

Miles	Gradients	
0.0	Down 1 in 149	Euston
0.2	Down 1 in 575	
0.4	Up 1 in 70	
0.6	Up 1 in 112	
0.8	Up 1 in 77	
1.0	Down 1 in 409	
1.3	Level	
2.3	Down 1 in 643	
3.2	Up 1 in 587	
4.5	Level	
7.0	Up 1 in 339	
14.4	Level	
15.8	Down 1 in 337	
16.0	Down 1 in 708	
16.8	Up 1 in 586	
17.2	Up 1 in 393	Watford
18.5	Up 1 in 1038	
20.0	Up 1 in 508	
22.2	Up 1 in 338	
23.8	Down 1 in 812	
24.0	Up 1 in 335	
31.0	Level	
31.9	Down 1 in 333	
38.0	Down 1 in 540	
39.0	Up 1 in 1330	
40.0	Down 1 in 927	
41.2	Down 1 in 1683	
44.2	Down 1 in 660	
46.2	Level	
46.8	Up 1 in 892	
48.3	Level	
48.7	Down 1 in 440	Milton Keynes
51.0	Level	
52.0	Down 1 in 225	
52.3	Up 1 in 350	
52.9	Level	
54.1	Up 1 in 475	
54.6	Up 1 in 326	
56.3	Up 1 in 410	
58.1	Up 1 in 330	
60.8	Down 1 in 320	
62.9	Down 1 in 2640	
66.0	Up 1 in 800	
67.2	Down 1 in 1200	

---

68.0	Down	1	in	765	
69.1	Up	1	in	330	
69.4	Up	1	in	310	
69.7	Down	1	in	933	
69.9	Up	1	in	490	
70.8	Up	1	in	350	
73.8	Up	1	in	415	
75.6	Up	1	in	640	
76.2	Level				
76.7	Down	1	in	870	
78.0	Down	1	in	370	
81.7	Down	1	in	200	
82.1	Down	1	in	365	Rugby
83.8	Level				
84.2	Up	1	in	330	
85.6	Level				
86.5	Down	1	in	510	
87.0	Up	1	in	395	
88.0	Down	1	in	600	
88.4	Up	1	in	530	
88.8	Level				
90.4	Up	1	in	330	
92.0	Down	1	in	1254	
93.7	Down	1	in	320	
97.1	Down	1	in	730	Nuneaton
99.0	Up	1	in	645	
101.8	Down	1	in	415	
102.8	Down	1	in	321	
104.7	Up	1	in	888	
105.2	Down	1	in	439	
106.9	Down	1	in	654	
108.3	Level				
110.1	Up	1	in	851	Tamworth
110.3	Down	1	in	359	
111.7	Up	1	in	1305	
112.7	Up	1	in	376	
113.4	Level				
114.0	Up	1	in	463	
115.0	Up	1	in	331	
117.7	Down	1	in	2707	
119.0	Down	1	in	766	
121.3	Down	1	in	317	
122.2	Level				
122.6	Up	1	in	577	
123.9	Down	1	in	381	
124.7	Up	1	in	408	
126.8	Down	1	in	452	
127.2	Down	1	in	815	
127.6	Up	1	in	437	
128.4	Down	1	in	330	
129.2	Up	1	in	351	
130.9	Down	1	in	346	
132.5	Up	1	in	846	
133.0	Down	1	in	1847	
133.3	Up	1	in	3910	Stafford
135.9	Up	1	in	517	
139.0	Up	1	in	509	

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141.0	Up	1	in	650	
143.4	Up	1	in	590	
145.0	Up	1	in	398	
147.9	Level				
148.4	Down	1	in	348	
150.0	Down	1	in	177	
153.3	Down	1	in	269	
156.8	Down	1	in	330	Crewe
157.8	Level				
162.4	Down	1	in	411	
162.9	Down	1	in	616	
163.6	Up	1	in	2485	
164.4	Down	1	in	300	
165.6	Down	1	in	2220	
166.6	Down	1	in	419	
168.6	Level				
168.9	Up	1	in	360	
169.9	Down	1	in	1981	
170.8	Down	1	in	440	
171.8	Level				
172.6	Down	1	in	330	
173.9	Level				
174.2	Up	1	in	330	
175.5	Level				
175.8	Down	1	in	180	
176.9	Down	1	in	112	
177.2	Down	1	in	567	
178.9	Level				
179.4	Up	1	in	135	
180.6	Down	1	in	160	
180.9	Down	1	in	135	
181.9	Down	1	in	460	Warrington
183.3	Up	1	in	400	
183.1	Down	1	in	1010	
184.2	Up	1	in	639	
185.7	Up	1	in	132	
186.4	Up	1	in	470	
186.8	Up	1	in	255	
187.1	Up	1	in	156	
187.8	Up	1	in	473	
189.6	Down	1	in	417	
191.1	Level				
192.2	Up	1	in	705	
193.3	Up	1	in	260	
193.7	Up	1	in	156	Wigan
193.9	Down	1	in	200	
194.1	Up	1	in	360	
194.4	Up	1	in	104	
196.0	Up	1	in	366	
197.6	Up	1	in	242	
198.1	Up	1	in	119	
198.4	Down	1	in	596	
199.0	Down	1	in	197	
199.4	Down	1	in	246	
200.0	Down	1	in	106	
200.6	Down	1	in	235	
201.0	Down	1	in	114	

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202.0	Up	1	in	936	
203.3	Down	1	in	432	
204.2	Down	1	in	110	
204.9	Down	1	in	314	
206.8	Down	1	in	106	
207.2	Down	1	in	440	
208.1	Up	1	in	397	
208.8	Up	1	in	240	
209.0	Up	1	in	240	Preston
209.1	Up	1	in	101	
209.3	Level				
209.5	Up	1	in	173	
209.7	Up	1	in	503	
212.1	Down	1	in	1115	
214.3	Down	1	in	644	
216.8	Level				
217.1	Up	1	in	1042	
220.0	Level				
221.0	Up	1	in	1199	
222.2	Level				
226.1	Up	1	in	736	
228.0	Down	1	in	735	
228.8	Down	1	in	98	
229.8	Down	1	in	347	
230.0	Up	1	in	363	Lancaster
230.2	Level				
230.6	Down	1	in	305	
231.6	Down	1	in	469	
233.1	Level				
234.0	Up	1	in	460	
235.7	Down	1	in	369	
236.8	Level				
237.0	Up	1	in	134	
239.4	Down	1	in	293	
240.8	Level				
242.8	Up	1	in	173	
245.5	Up	1	in	193	
246.6	Up	1	in	392	
247.2	Up	1	in	111	
248.6	Up	1	in	178	Oxenholme
249.6	Up	1	in	104	
250.4	Up	1	in	213	
250.8	Up	1	in	124	
251.5	Up	1	in	131	
253.9	Up	1	in	106	
255.9	Up	1	in	396	
256.1	Down	1	in	204	
257.1	Up	1	in	777	
258.2	Level				
258.8	Down	1	in	425	
260.2	Level				
261.5	Up	1	in	146	
263.1	Up	1	in	75	Shap
267.2	Level				
268.0	Down	1	in	130	
269.2	Level				
270.0	Down	1	in	142	

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271.2	Down	1	in	125	
277.2	Level				
279.0	Down	1	in	193	
280.1	Up	1	in	191	
280.5	Down	1	in	616	
282.1	Level				
283.6	Up	1	in	539	
283.2	Down	1	in	186	
285.1	Level				Penrith
287.0	Down	1	in	164	
289.5	Down	1	in	228	
292.4	Level				
292.8	Down	1	in	184	
294.3	Down	1	in	131	
298.1	Level				
298.7	Down	1	in	110	
298.8	Level				Carlisle
299.1	Down	1	in	100	
299.4	Level				
299.8	Up	1	in	318	
300.0	Up	1	in	318	
300.2	Up	1	in	877	
300.5	Up	1	in	311	
301.1	Down	1	in	330	
302.1	Level				
304.0	Down	1	in	527	
305.1	Down	1	in	616	
305.8	Level				
306.2	Up	1	in	193	
308.5	Up	1	in	200	
313.7	Level				
313.8	Down	1	in	190	
314.7	Level				
314.9	Up	1	in	396	
315.6	Down	1	in	493	
315.9	Level				
316.8	Up	1	in	203	
321.0	Down	1	in	200	Lockerbie
323.8	Down	1	in	528	
327.9	Level				
328.1	Up	1	in	880	
329.9	Up	1	in	366	
332.5	Down	1	in	330	
333.5	Level				
334.6	Up	1	in	202	
339.0	Up	1	in	88	
341.0	Up	1	in	81	
342.0	Up	1	in	79	
343.1	Up	1	in	74	
344.1	Up	1	in	76	
345.0	Up	1	in	69	
345.3	Up	1	in	75	
348.7	Up	1	in	835	Beattock
349.0	Down	1	in	99	
351.1	Level				
352.5	Down	1	in	152	
354.0	Down	1	in	240	

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---

361.6 Level  
362.2 Up 1 in 340  
362.7 Level  
363.2 Up 1 in 231  
363.4 Up 1 in 194  
364.8 Down 1 in 1020  
366.2 Down 1 in 100  
367.7 Level  
368.0 Up 1 in 196  
369.0 Down 1 in 150  
371.1 Level  
372.0 Up 1 in 165  
372.4 Up 1 in 402  
372.6 Up 1 in 207  
373.0 Up 1 in 300 Carstairs  
373.5 Up 1 in 366  
373.9 Up 1 in 453  
375.1 Up 1 in 204  
376.2 Level  
376.7 Up 1 in 190  
377.2 Down 1 in 190  
378.1 Down 1 in 129  
380.0 Down 1 in 98  
381.8 Down 1 in 261  
382.5 Down 1 in 140  
383.0 Down 1 in 199  
386.2 Down 1 in 137  
387.3 Down 1 in 116  
388.1 Down 1 in 143 Motherwell  
388.6 Up 1 in 146  
388.8 Level  
389.1 Down 1 in 132  
389.6 Down 1 in 178  
389.9 Down 1 in 115  
390.8 Down 1 in 135  
392.8 Down 1 in 391  
393.0 Level  
393.2 Up 1 in 280  
393.7 Up 1 in 108  
394.2 Level  
394.6 Down 1 in 724  
395.0 Level  
395.3 Up 1 in 110  
395.6 Down 1 in 236  
396.0 Down 1 in 163  
397.1 Up 1 in 440  
397.3 Down 1 in 516  
397.6 Down 1 in 224  
397.9 Up 1 in 630  
398.2 Level  
398.3 Up 1 in 274  
398.5 Level  
398.7 Up 1 in 268  
399.0 Down 1 in 217  
399.4 Down 1 in 400  
400.0 Down 1 in 177  
400.2 Up 1 in 177

---

400.5 Up 1 in 220  
400.6 Up 1 in 132  
400.7 Down 1 in 245  
401.0 Up 1 in 231  
401.2 Up 1 in 172 Glasgow

## 1.8 Quick Start

If on hard drive Assign TrainDriver: (eg C:Assign TrainDriver: DH0 ↔  
:TrainDriver/)

Assign Fonts: TrainDriver:Fonts ADD

Any problems see

Installation

or

Problems

Double click on "TrainDriver" Icon

Click mouse to remove title screen

Select "1S47" on file requester

Click "OK" on

Startup Options Screen  
for default options

Press: a to cancel

AWS

horn

f to select Forward

"F" should appear below the brake guage

z to release brakes

Hold . for power

You should now start to move !

Press Help for help pics

## 1.9 Startup Options Screen

If in doubt, click OK to choose the default options until you get ↔  
the hang of it.

Difficulty Level

Start time

Loco no.

Train length

Initial Speed

---

Starting mileage  
Headcode  
Select Stops  
Detail On/off  
Vigilance  
Dry/Wet  
Delete  
Load  
Help  
View Log  
View Timings  
OK

## 1.10 Difficulty Level

Select a difficulty level between 0 and 9

- 0 Fewer random events, no crashes
- 1 Realistic level
- 2-9 Increasing number of random events, slippery rail, longer station stops, lower power, poorer brakes etc.

## 1.11 Start Time

Select Hours and Minutes of start time

Default is 06:19 for 1S47

It is best to set the time to one minute before departure to allow station time before "R" appears.

## 1.12 Locos

Select any loco 87001 to 87035, or thyristor controlled 87101.

When selected the loco's name will be displayed. Some of the locos have been renamed, but I prefer the old names.

---



Class 87 locos were built in 1973-75 and are 5,000 hp AC electric locos, supplied by 25 kv overhead wires. They have four traction motors which can be used for rheostatic braking above 10 mph. The power is increased through 38 notches, and then into weak field.

87101 is the most powerful though it is currently ironically demoted to freight duties. It will generally have a higher random power rating.

All locos are 110 mph.

Although powerful these locos have a very high power to weight ratio which means poor adhesion, particularly on a wet rail.

### 1.13 Train length

Select number of coaches to be attached behind your loco. Most of the trains on this line have 9 or 10.

Default is 9.

Average weight is 35 tons.

### 1.14 Starting Mileage

Select starting mileage between 0.18 and 401 from Euston.

The loaded trains are at 0.18 which is the mileage of your loco from the buffers at Euston. Trains starting at Euston MUST start at 0.18 miles.

See also

Start at -->

### 1.15 Headcode

The train Headcode is a four digit code

eg 1S47

1 denotes Class 1 Express Passenger train  
S denotes destination region ie Scotland  
47 denotes individual train number

1S57 is the quickest train on the line, "The Royal Scot"

In the Save Drawer are these trains:

1S47

---

1S55  
1S57 Royal Scot  
1S75  
1S83  
1S84  
1S89  
1S13 fictional  
1S26 Sleeper

These trains have been given preset parameters which you may alter from the Startup Options Screen.

Load with the

LOAD  
gadget.

These trains must be used for the timekeeping function (see Timings )

to work. Other trains may be added with the program at a later date, though disk space is scarce.

You can of course look up any train in the BR Timetable and use the details, and compare your timings with those advertised, as you go along.

## 1.16 Initial Speed

Set your initial speed to 0-110 mph

Default is 0.

If you start at 0 mph you are effectively just inserting the key in the loco, which will cause the AWS horn to sound.

You will then have to select "f" for Forward before you will obtain power.

## 1.17 Stops

If you select the "Calls at -->" gadget it will change to "Start at -->", and you must select the station to start your train. Click on the gadget again to revert to "Calls at" mode.

Click on the stations to choose where your train will stop/not stop.

Loaded trains will set the stops automatically.

## 1.18 Detail On/Off

---

Toggle Detail On/off for faster screen drawing.  
Useful for slower Amigas but very basic graphics.

Also press "j" in game to toggle.

## 1.19 Vigilance

Click on this gadget to isolate (ie disable)  
Vigilance Device

## 1.20 Dry/Wet

Click to change initial rail conditions between wet and dry.

The chosen setting may change during your journey depending  
on the difficulty level chosen.

## 1.21 View log

View Log views log of loaded train.

Close window when viewed.

## 1.22 Timings

View scheduled timings of loaded train.

Format: Miles, Station, Time due, Stop

Click mouse when viewed.

Hold "t" during simulation to see this screen.

## 1.23 Help

Click this gadget to view the two in-game Help pics:

Help

Keys

Map

---

Pressing "Help" during the simulation shows these pictures.

## 1.24 Load

Click to bring up a requester to load saved train file.  
Requester will be set to "TrainDriver:Save/" but if the disk gets full use any drawer/disk you like

If you want to see if you are keeping time, you must use the codes of the trains which can be loaded from the "LOAD" gadget from the "TrainDriver:Save" drawer, as can any trains you save.

1S13 is a fictional train, based on 1C13 Euston-Carlisle  
This is the only train to stop at Lockerbie.

1S26 is a sleeper train departing at 2355 with 16 coaches.  
This train is timed at 80 mph, and stops at Carstairs  
to detach a portion for Edinburgh.

## 1.25 Delete

Click "OK" on the first requester to confirm you want to delete chosen files.

Then choose files to delete from the file requester to delete saved train file.

Requester will be set to "TrainDriver:Save/" but if the disk gets full use any drawer/disk you like

Click "Cancel" when you have finished.

## 1.26 OK

Click "OK" when you are done and you should be taken into the cab.

Let's go!

## 1.27 Driving

When you enter the cab from the  
Startup Options Screen  
you  
will see the drivers view through the cab window on the left,  
and the data display on the right. Below these are the dashboard indicators,  
and between them are the driver's indicator  
Lights

---

and the milepost symbol.

You may also notice a small horizontal white line which indicates when the horizon is level. Watching the horizon gives warning of changing gradients.

For a description of these features see the Help pic

If you start at a stand the

AWS  
horn

will be sounding and will need

to be cancelled with "a". Press "f" to put the motors into Forward and when the "R" appears below the signal number, (after a few seconds and only in a station), you may depart. (If you get bored of waiting, press "5" to speed up time.)

The bottom row of

keys  
control the brakes and power.

So press "z" to release the brakes and then "." or ">" to notch up the power. Watch the gradient and speed to make sure you don't roll back.

Signals and Crossovers

Stations

Braking

Power

## 1.28 Signals

The distance from the next signal is shown on the display in yards ↔

If you see two yellows, then the next signal may be one yellow and the next may be red, in which case you must stop within 35 yards of it to get the message from the signalman.

He may ask you to pass the signal at danger.

Your speed passing a signal with two yellows should generally be <90mph and at one yellow try to reduce your speed to 60mph.

If you can see a red signal and you're over 60mph you will struggle to stop. However, beware of signals closer together than usual, and reduce your speed accordingly.

A hint to assist stopping is to keep your speed well below one tenth of the number of yards from the stopping point.

Flashing yellows countdown to a high speed junction, speed 40 to 70mph.

A junction signal either has a letter above, S for Slow Line or F for Fast Line, or has five white lights diagonally displayed,

indicating the direction of the crossover.

Junctions without flashing yellow signals are protected by red signals which will change as the train passes over the

AWS  
magnet if the  
route is set and the line is clear.

These junction speeds vary between 10 and 40 mph.

A warning board will be shown after passing the junction signal indicating the junction speed, and the speed limit board will also be seen indicating the position of the junction.

## 1.29 Stations

The distance from the next station you are stopping at is shown on the display in miles, and then in yards when you approach.

Again you must stop within 35 yards of the Stop board displaying the number of coaches to enable you to get the "R" indication when your guard is ready to leave. If you pass this board, select "O" to shut the motors down, then "R" to select Reverse and notch up power with "." in the usual way until you are back behind the board. Be careful not to overshoot again backwards !

The time you arrive and depart stations, and certain other points will be recorded on the log, plus the average speed since the previous point.

The "R" indicator will not appear before the booked time to depart, or at a red signal.

## 1.30 Braking

Keys:

z	Release
x	Reduce
c	Increase
v	Increase (continuous)
b	Emergency

To apply brakes hold c until the guage reads 50 psi (pounds per square inch) and release with z when approaching the desired speed level.

Alternatively use v to brake, "catching" the brake with x as the needle comes down to 50 psi.

Normal Full Service application is 50 psi (vertical needle on dial). Normally the driver would not use a greater braking force than this, particularly in the wet.

---

Allow time for the brakes to release down the length of the train particularly after heavy braking, and before taking power.

When braking try not to brake too hard as you come to a stand or you will spill the tea, and you will have to wait for the air brake pipe to charge up again.

Having said that, don't pass a red signal ever, and don't speed excessively or the guard will put the brake on or you may even derail the train.

In the wet don't be too heavy on the brakes or the wheels may lock up and slide greatly increasing braking distance.

Your speed passing a signal with two yellows should generally be <90 mph and at one yellow try to reduce your speed to 60 mph. If you can see a red signal and you're over 60 mph you will struggle to stop. However, beware of signals closer together than usual, and reduce your speed accordingly.

A hint to assist stopping is to keep your speed well below one tenth of the number of yards from the stopping point, until the speed is down to 10 mph.

## 1.31 Power

Keys:

n	Power Off
m	Run down
<	Notch down
>	Notch up
/	Run up

When taking power watch that you don't let the Ammeter go into the red area or you will overload the motors and lose power.

Reset with "p", you may need more than one attempt.

In wet weather you should also stay below the yellow region to avoid wheelslip.

When reducing power you should use "m" and wait for the notch indicator to run down, rather than use "n", as sudden shutting off of power could cause arcing and damage to the motors.

The speed limit is indicated by a roadside type circular sign.

Reductions in speed limit are indicated by a white triangle with a yellow border, with the new limit in black.

Generally about 1.5 miles warning is given, unless two or more reductions follow closely.

In cases of severe speed reduction, an

AWS  
horn will sound.

---

When passing from a lower speed to a higher speed section remember not to accelerate until the whole train has passed the higher speed limit board.

## 1.32 Other features

Neutral Sections

Gradients

AWS

Vigilance Device

Temporary Restrictions

Clock speed

## 1.33 Neutral Sections

If you see the Neutral Section Warning Board you must run down the power to zero before the Neutral Section Board, or there may be a loss of power (reset with "p").

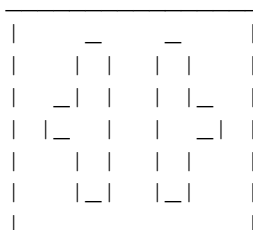
The warning board is one mile before the neutral section.

As a guide it takes 38 seconds to run down power from full power which is just over a mile at 100 mph.

If you shut off power in time, power will be returned at the end of the short dead section.

Do NOT use the brakes in a neutral section as it is a rheostatic brake fed from the motors, so you will lose braking.

Warning is white on black, board at neutral section is black on white.



## 1.34 AWS



Two hundred yards before signals you will pass over an Automatic Warning System magnet. These are visible between the rails.

If the signal is green this will ring a bell and no further action need be taken.

Otherwise a horn will sound and you must press "a" to cancel within five seconds or the brakes will be applied.

There are also AWS magnets at Speed Reduction Warning Boards.

### 1.35 Vigilance Device

If Vigilance is not isolated in the Startup Options Screen a bleeper will sound if no key is pressed for 60 seconds.

If "d" is not pressed within five seconds , the brakes will be applied.

This replaces the traditional Deadman's Pedal.

### 1.36 Temporary Restrictions

Random TSRs will be generated depending on the Difficulty level ← selected.

An

AWS

horn will sound and a board with flashing white lights will tell you what speed you must reduce to by the next board. After your train has passed the "T" board you may resume Line Speed. Remember to allow for the length of the train to pass. The "T" board on the display will remain there until the train is clear.

The TSRs will be recorded on the log along with the speed you entered the restriction.

TSR Boards: Green with Black figures or Blue with White figures

Warning	Commencement	Terminating
3 0	3 0	T

Flashing  
White  
Lights

0 0	←-Yellow Board
-----	-------------------

## 1.37 Clock speed

By holding keys 1 to 5 until the number appears alongside the time ↔ you may adjust the speed with which time elapses.

eg key 5 will make the clock advance 5 seconds every second

However use the faster clock speeds with care as naturally your reaction time will effectively be that much slower.

If the

AWS  
horn sounds, or a Speed Reduction Board  
appears, or certain other events occur, requiring your attention  
your clock speed will revert to 1.

Key 0 pauses the simulation.

## 1.38 Keys and lights

Keys

Lights

## 1.39 Keys

Note: hold keys until desired result is seen

f Forward  
r Reverse  
o Off

The letters O F or R appear below the brake gauge to indicate current mode.

Note: f/r only work when the game has first started or after the train has stopped and o has been pressed to stop the motors.

In reality there is a three position switch:

F O R  
\ | /

so you must stop, go to O (off) then into Reverse.

Putting the switch into off while moving will cause a brake application. Pressing f/r whilst the motors are running and audible will have no effect.

Also power notches must be run down to zero before changing direction.

So when starting, hold F until you hear the motors start up, and F appears then hold O until you hear them shut down, see O, then press R until you hear

the motors restart and R appears. You are now in reverse.

NOTE: Maximum speed when reversing is 10 mph.

Esc Escape without saving etc.  
 q Save, View log and Continue (or q again to Quit)  
 The file name will be set to the code of the train,  
 drivers name, loco no., difficulty level, mileage.  
 eg 1S47.Bill.033.001.133  
 l View Log  
 t View Timings  
 h Horn  
 w Wiper On/Off  
 1-5  
                           Clock speed  
                           0    Pause  
 s Clears Signalman's message or tunnel name from screen  
 p Resets overloads (when B light comes on)  
 a Cancels  
                           AWS  
                           horn  
 d Cancels  
                           Vigilance Device  
                           bleeper  
 j Toggles Detail On / Off  
 t View booked timings (if available for your  
                           Headcode  
                           Help View Keys  
                           Help  
                           Map  
                           Braking  
                           Keys: z   x c v            b  
 Off   << < > >> On   Emergency  
                           Power  
                           Keys: n                    m < > /  
 Off   Down << < > >> Up

## 1.40 Lights

                          L    Line light indicates 25KV power on  
 W    Wheelslip  
 B    Air Blast Breaker cuts off power at  
           Neutral Sections  
           and on overload

## 1.41 DISCLAIMER

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This program and all the disk's contents are MAILWARE, but must all be  
distributed together with this doc.

Don't pay more than the price of a disk + P&P for this program.

If you use the program please send me an email or postcard:)  
-----

Let me know if you want to include this disk on a CD, Coverdisk etc.  
and send

me  
a copy.

## 1.42 Author

Enjoy the program!

Any comments, bug reports, donations etc. to;

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If you use the program please send me an email or postcard:)

Let me know what you think, and what improvements  
you would like to see.  
-----

Photo of 87034 M.Tindall  
Data compiled with assistance from 'Druid'  
Special thanks to main beta-tester Gary Gagnon

-Thanks !

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