Wakayama-Sakurai Line

JNR Series 103 EMU

User Manual

友聯工作室
UNION WORKSHOP

Contents

1. Route information

1.1 Background information

The Route

The Wakayama Line is a railway line that links Nara Prefecture to Wakayama Prefecture in Japan, once operated by Japan National railway (currently by JR West). It connects Ōji Station on the YamatŌji Line to Wakayama Station on the Hanwa Line and Kisei Main Line, with through train service to JR-Namba via the YamatŌji Line and to Nara via the Sakurai Line.

First section from Ōji to Takada of the line was opened in 1891 by Osaka Railway. Then soon in 1896, Minarmi Kazu Railway Company open Takada to Yoshinoguchi section and extended to Gojō in 1898. 2 years later in 1900 the line finally extended to Wakayama.

In 1907 the private railway company was nationalized, and then operated by Japan National Railway Company. In 1987 the newly formed JR West Company took over the route.

The Service

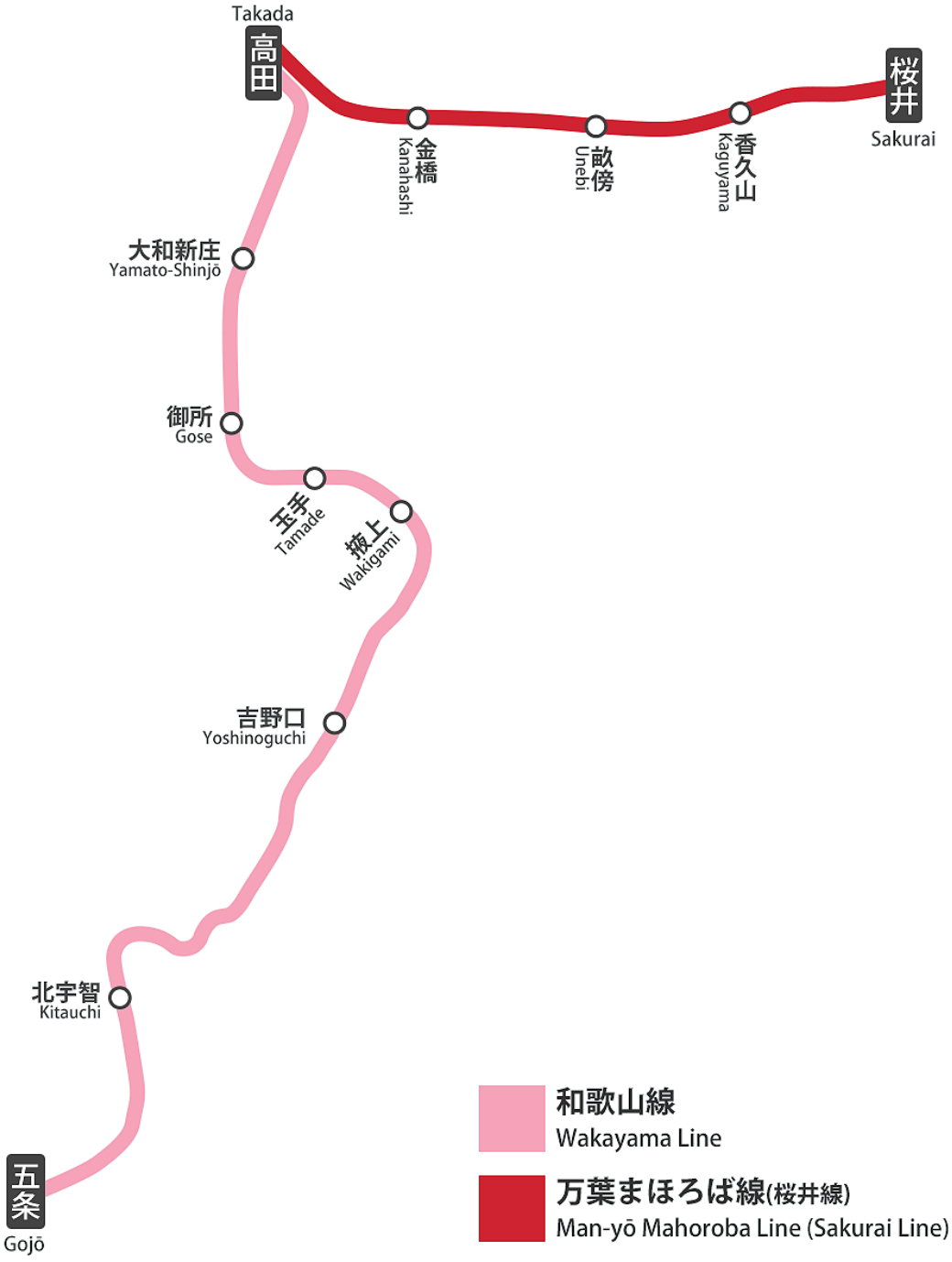
Most local services on the Wakayama line only run on part of the route: Wakayama to Gojo, Gojo to Oji.

There're also many though services from other routes like the YamatOji rapid service on the YamatOji line and the local serivce from Sakurai to Gojo via Takada. In the rush hour there also services from Nara to Oji via Sakurai and Takada.

All trains apart from some reserved train or limited express will stop at all stations from Ōji to Kokawa station. The though service from Sakurai to Gojō will also stop at all stations.

In this DLC we provide Takada to Gojō section of Wakayama line, and Takada to Sakurai section of Sakurai line in early 2000s.

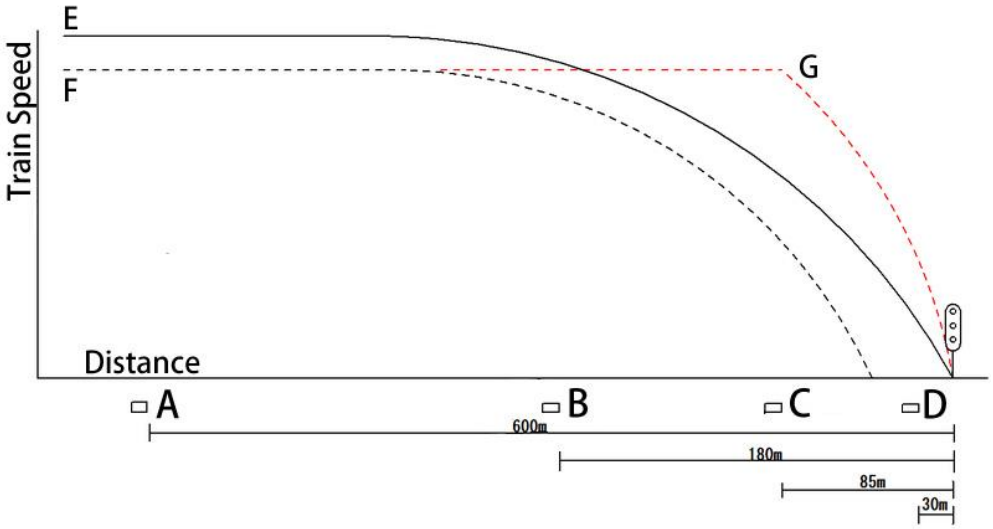
1.2 The Route map



1.3 ATS Safety system

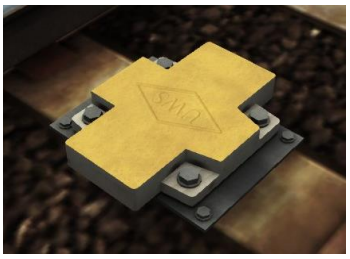
ATS or automatic train stop is a system on a train that automatically stops a train if certain situations occur to prevent accidents. ATS installed on most Japanese train and route (apart from Shinkansen), mostly are transponder-based. Here in this DLC, we provide you ATS-P system.

ATS-P is a system using pattern renewal transponder. Unlike AWS, ATS-P will generate a speed curve you need follow once passing the first transponder. If your speed 5 km/h over speed limit then system will kick-in to slow down the train. Detail patterns can be seen below:
There are usually 4 transponders installed in front of a home signal. When train pass



transponder **A**, it will get first ATS-P message while **B**, **C** and **D** will renew the message. **E** means the system monitor curve; **F** is the speed curve you should follow; **G** is the system kick-in curve once you fail to react.

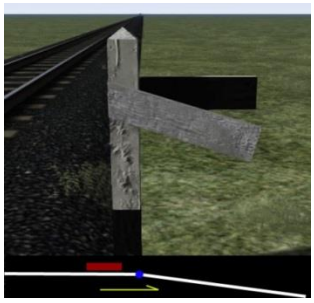
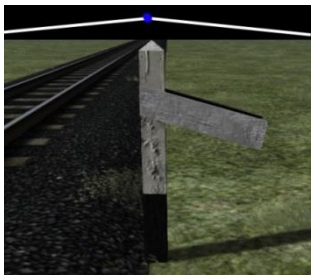
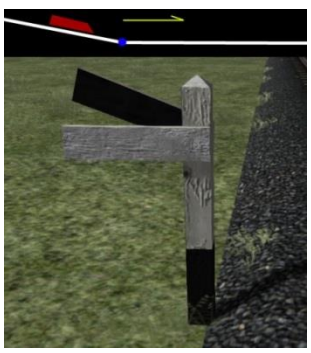
If home signal is red, once you passing **transponder A,** a warning chain sound will reminds you there is a red signal just 600m ahead, you need push ATS confirm button quickly, or train will apply emergency brake after 5 seconds. Then another caution sound will on; it will turn off automatically if signal changes to green or yellow once you passing another transponder. You need apply brake to slow down train before the red signal, or system will kick-in to stop the train.

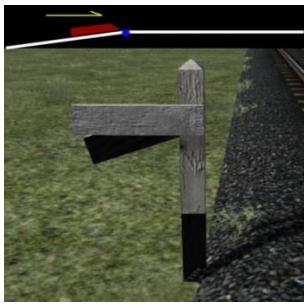
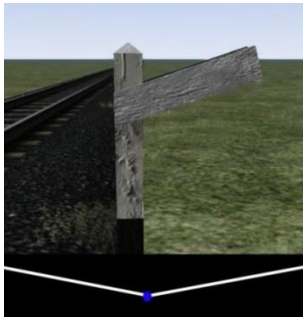
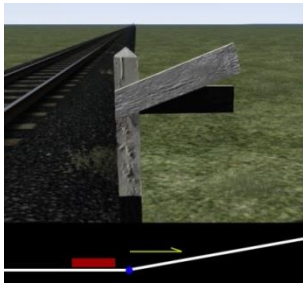
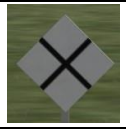


the transponder on the track

1.4 Route signs and train stop position

Route signs

Speed limit signs	
	Normal speed limit sign. Usually using on the Mainline, indicate the speed limit ahead.
	Speed limit of left track. Placed near junction, indicate speed limit of the track goes left
	Speed limit of right track. Placed near junction, indicate speed limit of the track goes right.
Track gradient indicator Red box means the train and yellow arrow means the direction train is going.	
	Track ahead going down slop. Track from level to down slop.
	Track ahead going down slop. Both sides are slop.
	Track ahead going level. Train from downhill to level.

	Track ahead going level. Train from uphill to level.
	Track ahead going up. Both sides are uphill.
	Track ahead going up. Train from level to uphill.
Train stop position signs	
	Stop position for train with 6 cars (EMU/DMU).
	Stop position for train with 4 cars (EMU/DMU).
	Stop position for train with 2 cars (EMU/DMU).
	Absolutely stop position. A train should stop no more than this sign if it required to stop at this station.
Other signs	
	Mile post. Read from top to bottom. In left picture means 36Km milepost

Platform stop position

In some platforms there were marked by a series of white circles and triangles with number with it. These signs indicate the door position for passengers so they will know where to queue for coming train.

A triangle means the door position for trains with 3 doors while a circle means the door position for trains with 4 doors. Number in between the markers means the certain car number of the consist.

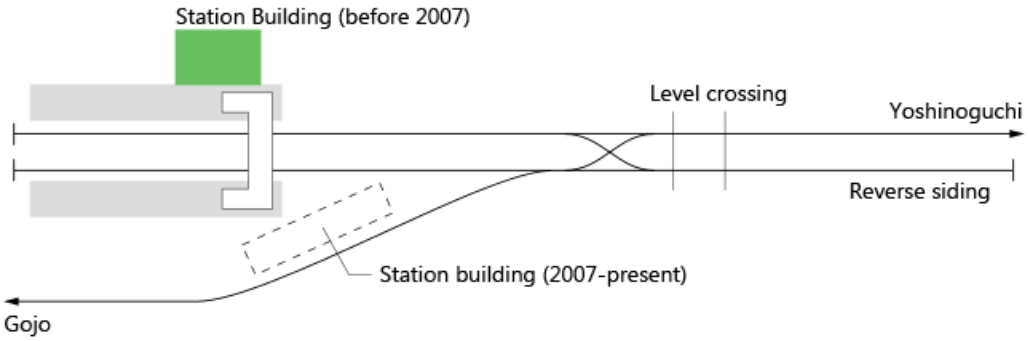
A four cars train should stop at marker begin with number 2 (occupy marker 2 to 5):

A six cars train should stop at marker begin with number 1 (occupy marker 1 to 6):

In gameplay please try your best to match these markers.

1.5 Kitauchi station operation

In steam age it's quite difficult for steam engine to climb up the steeply hills near Kitauchi station. To solve the problem, engineers design a reverse siding in the middle of slope which made the entire track gradient more friendly to steam engine (similar design can be seen on Beijing-Zhangjiakou railway near Qinglongqiao station).
Originally trains from Gojō will enter the siding first, then reverse and pulling into the station; then continue go uphill. Trains from Yoshinoguchi will first go into station and then reverse to the siding, and then heading for Gojō.



After electrification of the line, EMUs replace the locomotive and the gradient was no longer the problem. Kitauchi station was rebuilt in year 2007; older platform and reverse sidling were abandoned since then.

2. 103 series EMU

2.1 Basic information

The 103 series, is a commuter electric multiple unit (EMU) type introduced in 1964. known as "Japan National railway new performance train", 103 series was developed from 101 series

First 103 series was constructed in 1963. There were 3447 cars of 103 series been built from 1963 to 1984. Today, there are still more than 300 cars still in services, mainly in west Japan region.
During its long time of construction and operation, 103 series EMU has many different type of modification and sub-type.

In this DLC we provide you 103 series basic consist (air conditioned) with Nara depot color.

Constructed:	1963-1984
Number built:	3,447 cars
Number in service:	328 cars
Car length:	20,000 mm
Width:	2,800mm
Maximum service speed	100 km/h
Traction system:	Resistor control
Power output:	440kW per car (motor car)
Safety systems:	ATS-P (in this DLC)
Track gauge:	1,067mm

2.2 External models

In this DLC we provide you 4 type of cars so you can create a basic 103 series consist up to 6 cars per train.

Tc103-01

Control car. This car is using as Mildly air-conditioned car.

M102

Motor car without pantograph.

M103

Motor car with pantograph.

Tc103-02

Control car.

You can change numbers on the train in Scenario Editor. 103 series using 3 digital numbers so you need entering 3 numbers to get them work. Double click an engine in scenario editor, and enter the number in the right window:

2.3 The consist

By this DLC, you can creating consist up to 6 cars. Formation as follow:

4 cars consist

←Nara/Wakayama Ōji→

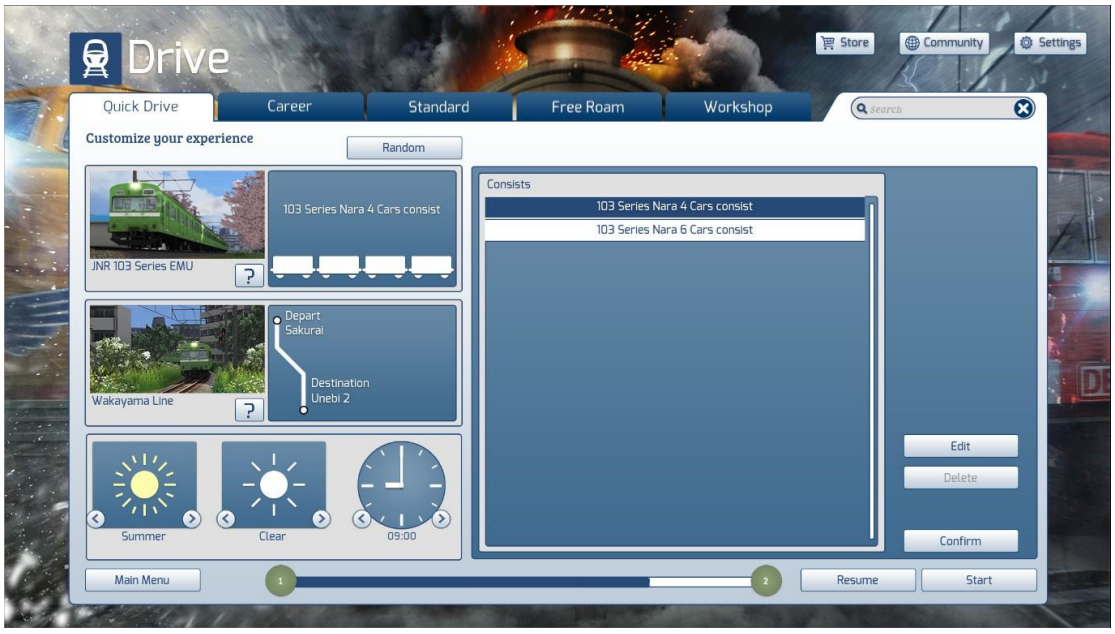
1	2	3	4
Tc103-01	M103	M102	Tc103-02

6 cars consist

←Nara/Wakayama Ōji→

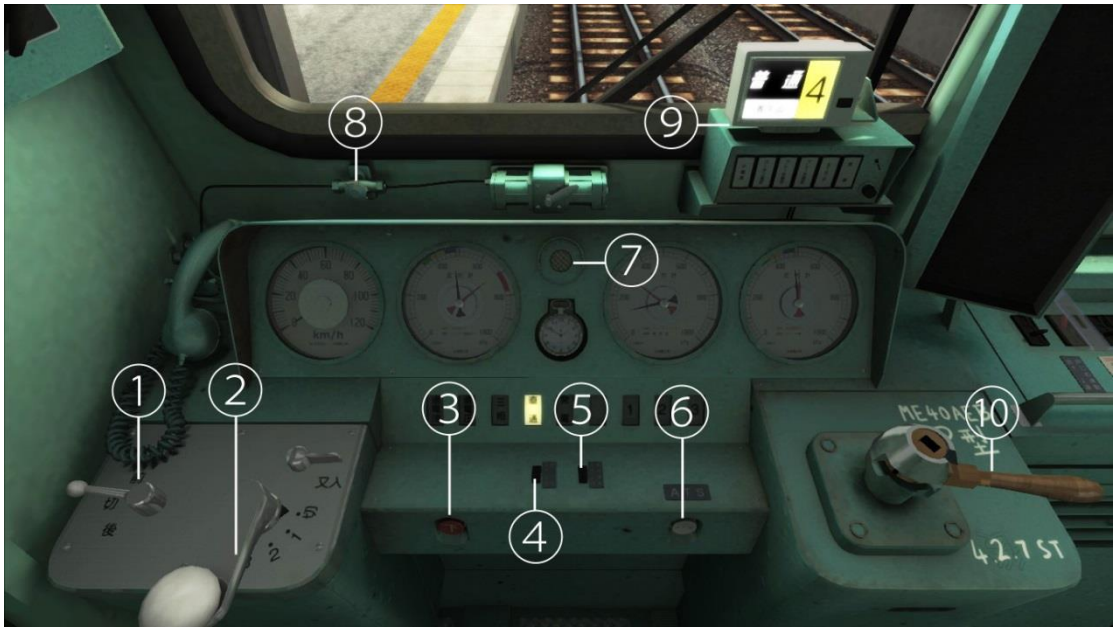
1	2	3	4	5	6
Tc103-01	M103	M102	M103	M102	Tc103-02

You can also use preload consist in Quick Drive scenarios:



2.4 The cab

Main area

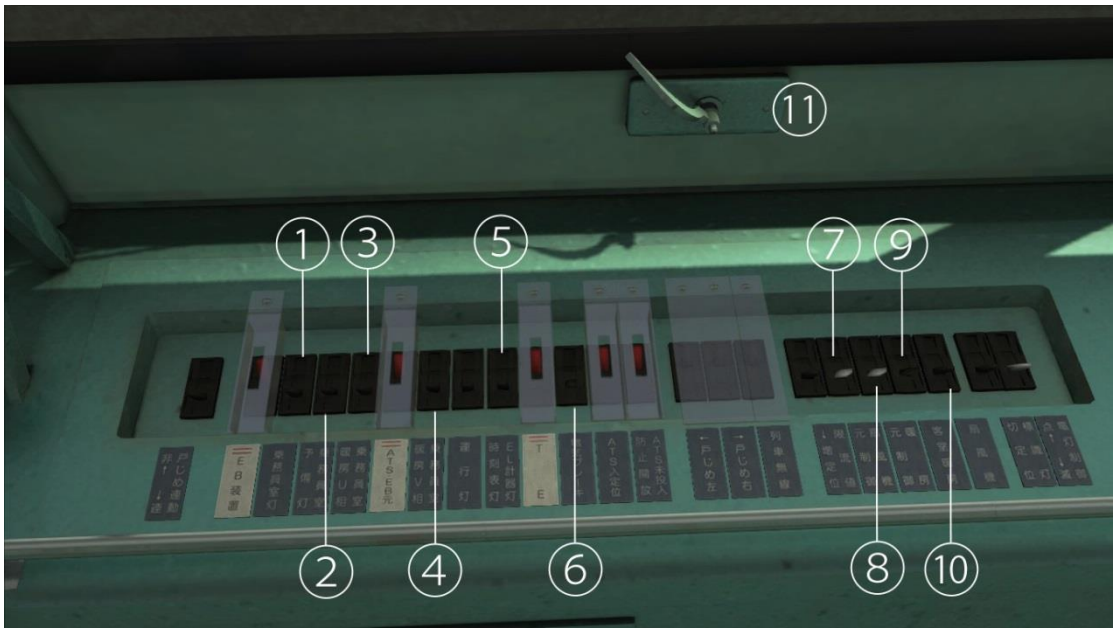


1	Reverser handle	2	Regulator handle
3	Pantograph down button	4	Headlight master control
5	Headlight switch	6	ATS Confirm button
7	Doors state indicator	8	Auto wiper switch
9	Driver information indicator and ATS-P indicator	10	Train brake handle

Main left side area

1	Pantograph up button
2	Emergency brake button
3	Emergency indicator
4	Control voltage
5	Traction voltage

Central electrical cabinet area



1	Cab main light switch	2	Driver light switch
3	Cab heater switch U	4	Cab heater switch V
5	Instrument light switch	6	Dynamic brake control switch*
7	Cooler fan master switch	8	Heater master switch
9	Cabin heater	10	Cabin Fans (not work as air conditioned)
11	Manual wiper handle		

** Dynamic brake will apply automatically when you use train brake if this switch turned on.*

Train service number/rollsign control

(Just behind the central electrical cabinet area)

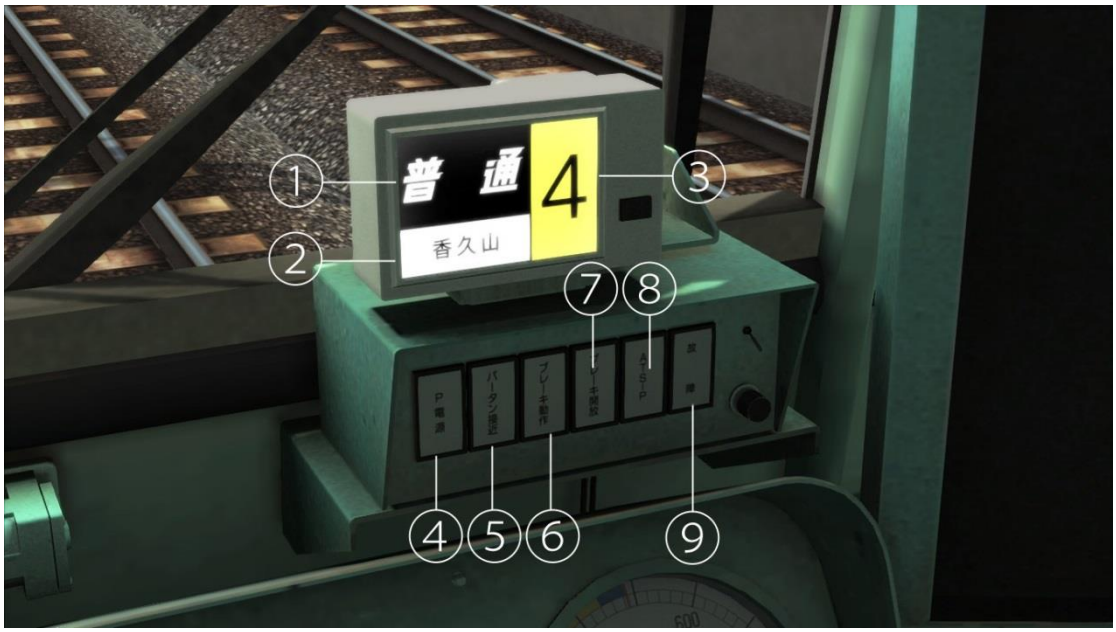
1	Train service number setting *
2	Rollsigns setting
3	Confirm button **
4	Movement indicator

** There're three numbers you can set. All three rollers here is digital number but the third one will display English characters on external model. Reference table on the left to let you know which number will match which characters.*

*** you need press confirm button to let your input work. When you press on it, the movement indicator light will on, you need press and hold the confirm button until the light off.*

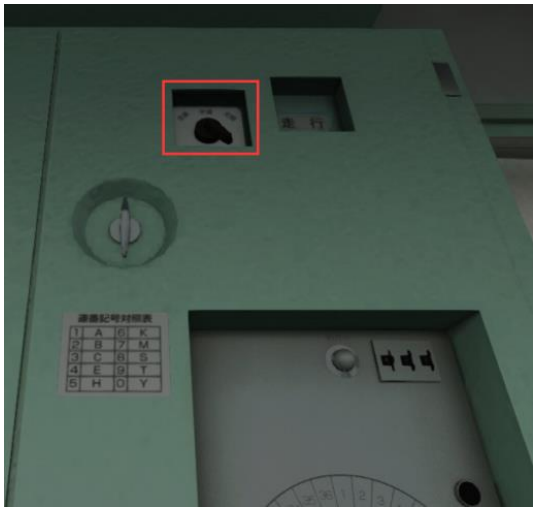
Detail meanings of rollsign number on this board can be found on ***Appendix 1.***

Drive information displayer and ATS indicator



1	Train class. Indicate the train is local or rapid service.
2	Next station. The name of next station you need stop.
3	Consist length. Indicate how many cars in your consist.
4	ATS-P power indicator. When this light on means onboard ATS-P system is working.
5	ATS-P warning. When it on means you're speeding or over ATS-P speed curve.
6	ATS-P movement. When ATS-P is kick-in to slow down the train this light will on.
7	ATS-P brake release.
8	ATS-P signal indicator. When this is on means the train is working under ATS-P mode (compare with ATS-S mode)
9	ATS-P fault light. When it on means the ATS-P system is breakdown, not working.

To set the driver information indicator you need use scenario script, please see more detail in ***Appendix 3.***



Air conditioner

Air conditioner switch is just above the train rollsign control board.

2.5 Cabin view

In this DLC we are offering you a detailed cabin view, you can use your mouse and keyboard arrow key (←and→) to explore the cabin.

2.6 Hotkeys

Headlight master control	M	Headlight shift up	H
Headlight shift down	Shift+H	Reverser handle	W/S
Regulator handle increase	A	Regulator handle decrease	D
Train brake control increase	Apostrophe	Train brake control decrease	Semi Colon
Emergency brake	Backspace	Pantograph up/down	P
Horn	Space	Auto wiper switch	W
Cab main light	L	Driver light	Ctrl+L
ATS Confirm button	Q	Instrument light	I

3. AI train

In this DLC we also provide 105 series AI train set for vivid scenarios. 105 series usually running in 2 cars consist, sometimes it also can running in 4 cars (2 train sets coupled)

Setting up train service number and rollsigns.

Unlike player controlled 103 series, the AI 105 series has a different way to setting up train service number and rollsings. You can set up these in scenario editor by double click on the engine, and entering digitals and characters on the dialogue box on the right side of screen:

You will need 7 characters and numbers to change the train number, service number and rollsign. The first required capital letter, and second to fourth require lower-case letter, and then others need to be pure numbers.

For example: Gbcd521

*In this example **G** stands for rollsign "Rapid service for Wakayama", **bcd** stands for train service number 234, and **521** are the car number on the train body.*
*Detail information about the meanings or characters can be found in **Appendix 2.***

4. Scenarios

1. [103] Early in the morning

   Start location: Gojō

   Terminal station: Takada

   Duration: 48 minutes

   From Gojō to Takada, stop at all stations and pick up passengers.

2. [103] Sakura and I

   Start location: Takada

   Terminal station: Sakurai

   Duration: 20 minutes

   *From Takada to Nara (you only need finish Takada to Sakurai section) local service. Season is spring and hope you will enjoy the blooming **Sakura** along your way to Sakura**i** station.*

3. [103] Long long way to go

   Start location: Gojō

   Terminal station: Sakurai

   Duration: 60 minutes

   From Gojō to Takada, stop at all stations and pick up passengers. It's long way to go and please try your best to catch up the timetable.

4. [103] One summer's afternoon

   Start location: Sakurai

   Terminal station: Gojō

   Duration: 60 minutes

   From Sakurai to Gojō though service. Be careful as weather reports said a storm is just around the corner.

5. [103] 1 more time, one more try

   Start location: Gojō

   Terminal station: Takada

   Duration: 48 minutes

   From Gojō to Takada, stop at all stations and pick up passengers. Almost the same as scenario 1 but much tight timetable, can you handle it this time?

6. [103] A return journey

Start location: Takada

Terminal station: Gojō

Duration: 45 minutes

From Takada to Gojō, a return journey of scenario 5. The only concern is the changing weather…

7. [103] Last train to Gojō

Start location: Gose

Terminal station: Gojō

Duration: 30 minutes

Late in the evening, last service on the line to Gojō. Can you operate the train without any error in darkness?

Quick Drive

This DLC also featured Quick Drive scenario, you can customize your own journey by click Quick Drive tag.

5. Known issues

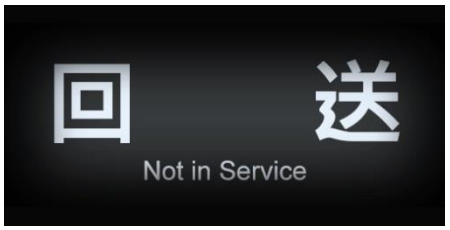
Issue 1: Incorrect rollsign display in Quick Drive

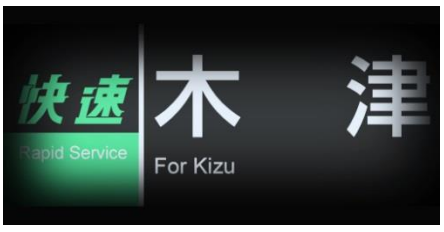
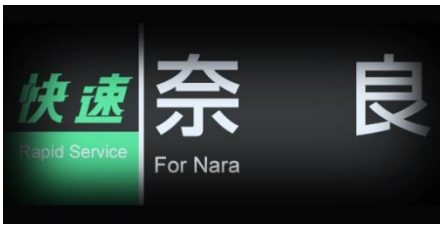
Some script will not load in rear control car in Quick Drive scenario, result is, the rollsigns on the rear control car display incorrectly. The reason is unknown.

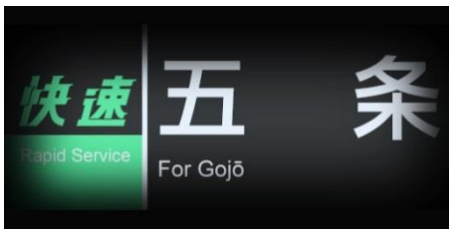
Issue 1: in above screenshot, the rollsign on left carriage is the one not display correctly.

Appendix 1. 103 series rollsign cab setting reference

Number	Meaning	Display outside
1	Test Run	
2	Reserved train	
3	Yamatoji rapid service	
4	Miyakoji rapid service	
5	Rapid service	
6	Regional rapid service	

7	Local	
8	For Kyoto	
9	For Uji	
10	For Jōyō	
11	For Kizu	
12	For Nara	
13	Not In Service	

14	For Ōji	
15	For Takada	
16	For Gojō	
17	For Sakurai	
18	Rapid service for Kyoto	
19	Rapid service for Uji	
20	Rapid service for Nara	

21	Rapid service for Ōji	
22	Rapid service for JR-Namba	
23	Rapid service for Gojō	
24	Rapid service for Takada	
25	For Nara via Takada and Sakurai	
26	For Ōji via Takada and Sakurai	
27	For JR-Namba via Takada and Sakurai	

28	For Gojō via Takada and Sakurai	
29	For Takada via Sakurai	
30	Rapid service for JR-Namba via Sakurai and Takada	
31	reserved, not use currently	/

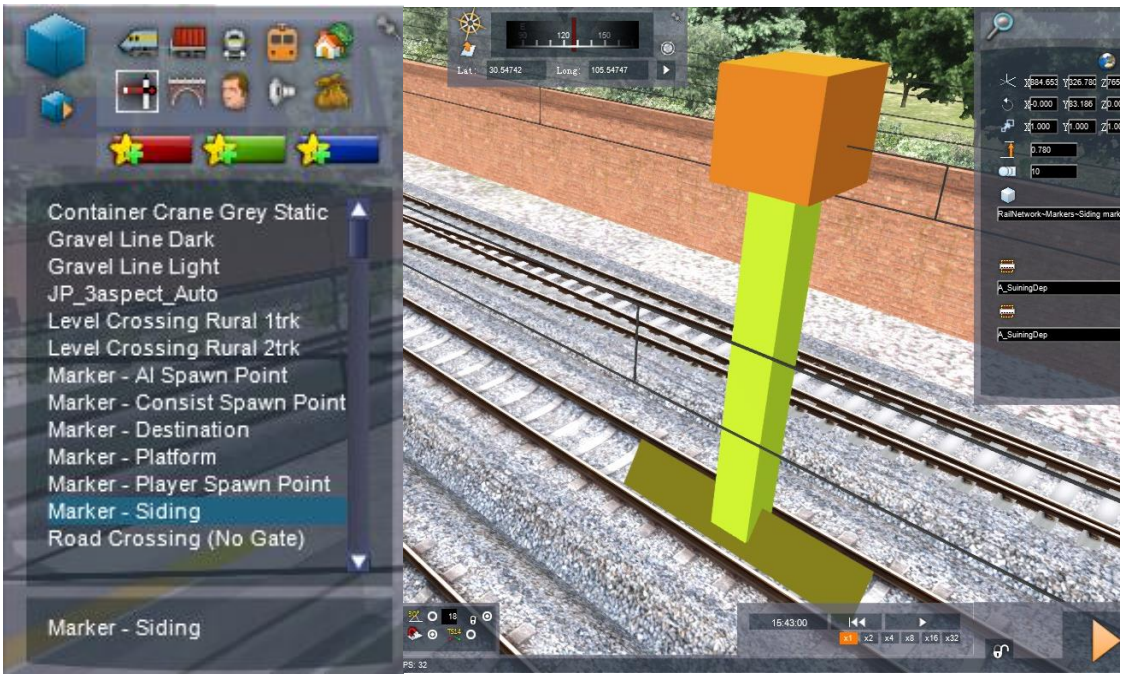
Appendix 2. 105 series car number reference table

Characters	Meanings	Characters	Meanings
Rollsign			
A	Test run	B	Not in service
C	Reserved train	D	Local
E	Rapid service	F	For Wakayama
G	Rapid service for Wakayama	H	For Wakayama via Takada and Sakurai
I	For Gojō	J	Rapid service for Gojō
K	For Gojō Via Takada and Sakurai	L	For Wakayamashi
M	For Kokawa	N	For Hashimoto
O	For Takada	P	For Takada via Sakurai
Q	For Ōji	R	For Ōji via Takada and Sakurai
S	For Nara	T	For Nara via Sakurai
U	For Nara via Takada and Sakurai	V	For Sakurai
W	Wakayama to Wakayamashi		
Train service number			
a	0	These number are white base, black font, no alpha channel	
b	1	c	2
d	3	e	4
f	5	g	6
h	7	i	8
j	9	k	A
l	B	m	C
n	E	o	H
p	K	q	M
r	S	s	T
t	Y		
Z	No number, white base	z	No number, empty
Digitals are train numbers, displayed on the side of the train.			

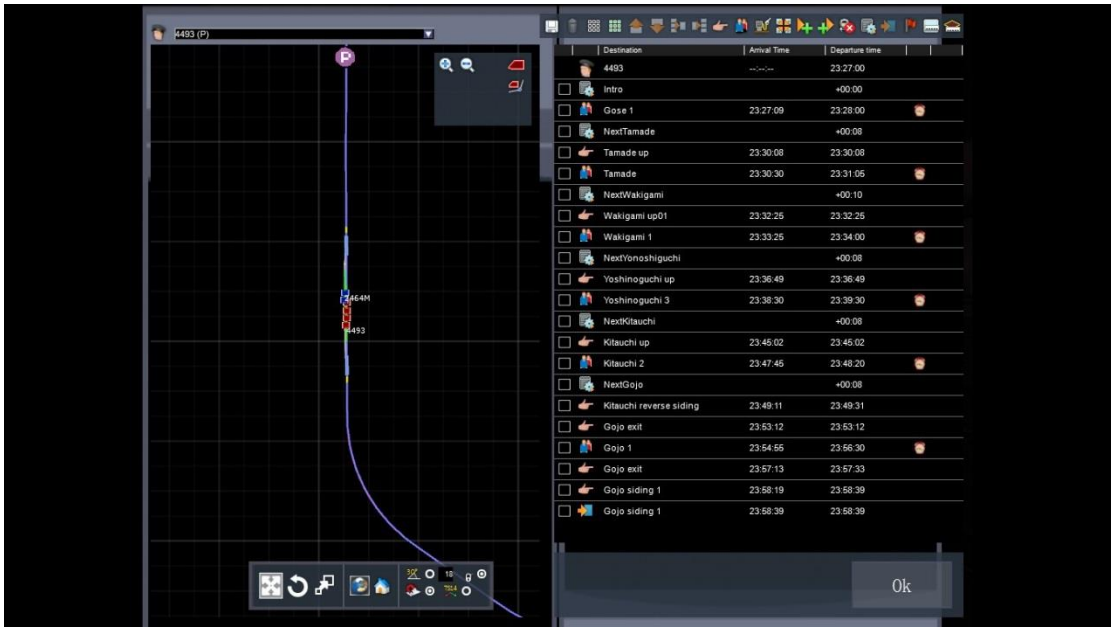
Appendix 3. Conductor announcement

This add-on offering you an conductor announcement system during game play, if you wish to use it in your own scenario, please take the following steps:

1. Click Track Infrastructures in scenario editor, then selecting siding marker and put it on the track player train will go though, then give it a meaningful name. This step is optional, you can use the siding already exist, or if you have other way to trigger an event then you can pass this step.



2. In timetable view, creating an events like Go Via and give it a name, like *DepTakada*.



3. Write following script in your scenario script.

```
if event == "DepTakada" then
        SysCall ( "PlayerEngine:SetControlValue", "BroadCasting", 0, 217);
        return TRUE;
 end
```

Here the *DepTakada* is the name of event. We will need this to trigger the announcement.
You will also require to reset the broadcasting value to 0 when at platform:

```
if event == "Yamatoshinjo" then
        SysCall ( "PlayerEngine:SetControlValue", "BroadCasting", 0, 0);
        return TRUE;
 end
```

YamatoShinjo is the station event. You can setup a pick-up passenger event here and enter this event name in Trigger Success section.
The **driver information indicator** also set in this way by using scenario script.

Announcement code and meanings

Departure (bound for)		**Next station**		**Arrival of next station**	
Code	Meaning	Code	Meaning	Code	Meaning
214	For Ōji	301	**No use currently**	401	Kitauchi
215	For Takada	302	Kitauchi	402	Yoshinoguchi 3
216	For Gojō	303	Yoshinoguchi	403	Yoshinoguchi 4
217	For Sakurai	304	Wakigami	404	Yoshinoguchi 5
225	For Nara (via Sakurai)	305	Tamade	405	Wakigami
226	For Ōji (via Sakurai)	306	Gose	406	Tamade **up**
227	For JR-Namba (via Sakurai)	307	Yamato-Shinjō	407	Tamade **down**
228	For Gojō (via Sakurai)	308	Takda	408	Gose
229	For Takada (via Sakurai)	309	Kanahashi	409	Yamato-Shinjō up
230	For JR-Namba (via Sakurai, rapid service)	310	Unebi	410	Yamato-Shinjō down
		311	Kaguyama	411	Kanahashi up
		312	Sakurai	412	Kananashi down
				413	Unebi
				414	Kaguyama up
				416	Kaguyama down
				417	Sakurai 2
Up: Heading for Ōji/Nara Down: Heading for Gojō/Wakayma				418	Sakurai 3
				423	Takada(left doors open)
				424	Takada(right doors open)
				431	Gojō(terminal station)
				434	Takada(terminal station)
				438	Sakurai(terminal station)
				441	Gojō(terminal and then not in service)
				444	Takada(terminal and then not in service)
				448	Sakurai(terminal and then not in service)

Driver information indicator code and meanings

Consist length		Consist type		Next station	
Code	Meaning	Code	Meaning	Code	Meaning
1	4 cars consist	1	Local	1	Takada
2	6 cars consist	2	Rapid service	2	Yamato-Shinjō
				3	Gose
				4	Tamade
				5	Wakigami
				6	Yoshinoguchi
				7	Kitauchi
				8	Gojō
				9	Kanahashi
				10	Unebi
				11	Kaguyama
				12	Sakurai

To set driver information indicator, you also need using scenario script. Consist length and type should set at the very first event, like *Intro*, then **next station** change should set at **pick-up passenger events**.

Example:

Scenario startup setting:

```
if event == "Intro" then
    SysCall ( "PlayerEngine:SetControlValue", "DR_Class", 0, 1 );
    SysCall ( "PlayerEngine:SetControlValue", "DR_nextstation", 0, 9 );
    SysCall ( "PlayerEngine:SetControlValue", "DR_Carnumber", 0, 1 );
    return TRUE;
end
```

Next station name change:

```
if event == "Yamatoshinjo" then
    SysCall ( "PlayerEngine:SetControlValue", " DR_nextstation ", 0, 1 );
    return TRUE;
end
```

Appendix 4. Scenario timetables

	Scenario 01, Easy		Scenario 02, Easy		Scenario 03, Middle	
Stations	**Arr.**	**Dep.**	**Arr.**	**Dep.**	**Arr.**	**Dep.**
Sakurai			0941'25	/	0717'15	/
Kaguyama			0937'30	0938'05	0713'50	0714'25
Unebi			0933'15	0933'50	0709'45	0710'20
Kanahashi			0929'15	0929'45	0705'55	0706'30
Takada	0724'55	/	/	0925'05	0700'55	0702'05
Yamato-Shinjō	0721'35	0722'10			0654'40	0655'25
Gose	0716	0716'35			0648'50	0649'50
Tamade	0711'15	0711'50			0644'20	0644'55
Wakigami	0707'30	0708'05			0641	0641'20
Yoshinoguchi	0701	0702			0635'20	0636'20
Kitauchi	0651'30	0652'05			0625'50	0626'30
Gojō	/	0644			/	0619
	Scenario 04, Hard		**Scenario 05, Hard**		**Scenario 06, Hard**	
Sakurai	/	1407				
Kaguyama	1409'40	1410'15				
Unebi	1413'15	1413'50				
Kanahashi	1416'35	1417'10				
Takada	1420'35	1422'35	1750'55	/	/	1752
Yamato-Shinjō	1427'40	1428'15	1745'10	1745'45	1757'10	1757'45
Gose	1432'25	1433	1740'05	1741'05	1801'15	1801'50
Tamade	1436'30	1437'05	1736'10	1736'45	1805'15	1805'50
Wakigami	1439'35	1440'10	1734'15	1734'50	1808'20	1808'55
Yoshinoguchi	1444'30	1446	1729'20	1730'20	1813'15	1814'15
Kitauchi	1454	1454'35	1720'30	1721'05	1822'45	1823'20
Gojō	1501'35	/	/	1714	1829'50	/
	Scenario 07, Hard					
Yamato-Shinjō	/					
Gose	2330'30	2327				
Tamade	2333'35	2331'05				
Wakigami	2338'30	2334'10				
Yoshinoguchi	2347'50	2339'30				
Kitauchi	2344'55	2348'25				
Gojō		/				

Credits

103 Series EMU train

Staff

Model & Textures	*CNAurora* *T9Express*
Advanced Scripts	*CNAurora*
Sound Effects	*CNAurora* *T9Express*

Cast

Conductor	*KyoNingyo*

Wakayama & Sakurai Line route

Staff

Route	*T9Express*
Scenario	*T9Express* *CNAurora*
Scenery Model	*T9Express* *CNAurora* *doubleRainbow*
Signal System	*T9Express*
Sound Effect	*T9Express* *CNAurora*

Developer	*Union Workshop*
Publisher	*Dovetail Games*
	Train-Simulator.com
Special thanks:	*Beta testing team*
	3rd party team of Dovetail Games

For more DLCs and game news, please visit: www.train-simulator.com

For our website you can click: www.uws-trainsim.com