

MeshTools

J50



Contents

Background.....	2
Technical Data.....	3
Controls.....	4
Liveries.....	14
Scenarios.....	17
Reskinning/Sound Policy.....	18
Head codes.....	19
Credits.....	21

Background

Sir Nigel Gresley designed the Great Northern Railway Class J23 (LNER J51) 0-6-0T in 1913. The first thirty J23s were built between 1913 and 1919 in three batches of ten. The first batch had a short bunker and was classified J51/1 by the LNER. A longer bunker was used on the second and third batches and were classified as J51/2.

Around grouping in 1923, two more batches of ten each were built. Both batches were fitted with smaller boilers and shorter fireboxes. In 1923 the newly-formed LNER adopted the J50 as a group standard design, the J50 differed only slightly from the J51 in having a wider boiler. Between 1926 and 1939 a total of 52 more J50s were built by the LNER.

The LNER built J50s can be divided into four distinct categories, the /1 and /2 retained the vacuum brakes and Right hand drive of the Great Northern examples, while the /3 lost their vacuum brakes in favour of steam brakes and also swapped to right hand drive. Following this came a batch of 14 J50/4s which differed again from its predecessors regaining a vacuum brake and for the first time steam heat apparatus was fitted. It also had a much larger coal bunker than previous examples.

Withdrawals started in September 1958 with the arrival of diesel shunters. Withdrawals of regular locomotives were completed in September 1963, leaving only seven Departmental engines. The last departmental J50 was withdrawn in September 1965.

Technical data – LNER J50/4

- Introduced: 1938-39
- Power Classification: 4F
- Configuration: 0-6-0T
- Total Built: 14
- Length: 33'. 4. "
- Width: 9'.0"
- Height: 12'. 8"
- Weight: 58T. 3C
- Coal Capacity: 5.25 Tons
- Water Capacity: 1520 Gallons
- Tractive Effort: 22963 Lbf
- Estimated Power Output: 600HP
- Fire tube heating surface: 1016 Sq Ft
- Firebox heating surface: 103 Sq Ft
- Total Heating Surface: 1119 Sq Ft
- Cylinder Size: 18.5' x 26'
- Driver Diameter: 4'. 8"
- Boiler Pressure: 170 Psi

Controls

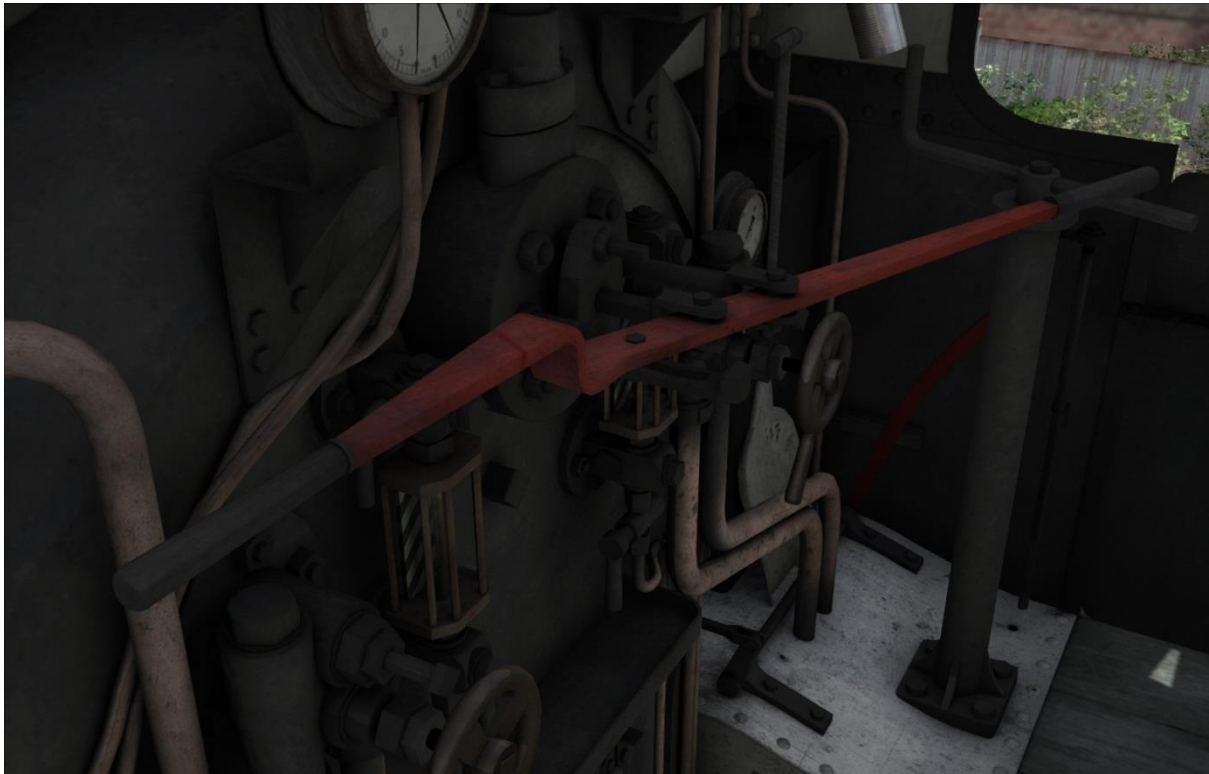
Each engine has two versions, a standard [Std] and an advanced [Adv] version. The need for both arose when creating the script as we found that the AI simply could not drive the engine, in addition the loco brake did not function via the HUD. Since the HUD must be fully functioning we had to do 2 versions the simple and the advanced engines.

The advanced version contains the advanced scripting which allows for better simulation of the vacuum brakes, two dampers, notched reverser, exterior animations and various other things like controlled emitters. This version is auto fireman compatible, but is not HUD compatible and is not AI compatible.

The Simple version has basically had the entire script removed, it is mostly designed for people who want to just hop in and drive without the fuss of notched reversers, vacuum brake leakage and so on. This version is also AI compatible unlike the advanced version.

All scenarios have a standard and advanced version using the respective standard and advanced engines, allowing drivers of any skill to drive them without having any fuss and having to edit the scenarios themselves.

The Regulator



The regulator controls how much steam from the boiler enters the cylinders, the further it is opened the faster you will accelerate. Essentially if you want to meaningfully get somewhere you will probably want to open this, but be careful how much you open it since the engine may slip. The Regulator can be controlled by using either your hands or the **A** and **D** key to respectively increase and decrease the regulator setting.

The Reverser



The next important control you will want to learn is the reverser, this works essentially like gears on a car, moving the reverser closer to the centre is like moving up through the gears of a car meaning you can go faster. It works by limiting the amount of steam which enters the cylinder and allows the steam to expand more efficiently hence you will be able to go faster without emptying your boiler and making the fireman rather grumpy. To move the reverser you must first release the reverser lock by pressing **E**, then the **W** and **S** to move it forward and back.

The Reverser on the J50 is of a pole type, it has 6 notches in either direction and a mid-gear notch. It is fitted with a locking mechanism which locks the reverser into a notch and prevents it moving while the regulator is opened. To release the lock the **E** key must be used, but caution must be used to not release the lock while the regulator is open more than a third otherwise the reverser could fly into full forward or reverse taking your arm with it!

Cylinder cocks



The cylinder cocks allow any steam which has condensed in the cylinders to be exhausted out of the cylinder preventing damage since water really doesn't like to be compressed. A secondary effect of the drain cocks is that it aids warming of the cylinders when the regulator is opened. They can be found under the reverser pole. The previous driver will have left the cylinder cocks open to prevent the engine moving while it stands idle (and so you don't forget to open them before moving off). The drain cocks should be opened when starting after being stationary for a prolonged period of time and left open for around 5-6 revolutions of the wheels. They are controlled by the **C** key.

The Handbrake



Despite what some people may say the handbrake is the only truly fail safe brake and will probably work 99% of the time. But let's not worry about brake failures (they won't happen honest). The handbrake is less effective compared with other forms of braking being slower to apply, less effective and requiring the fireman to screw it down. It however doesn't require steam pressure to operate and hence will be your brake of choice when moving about the shed near the end of a long shift.

Blower



The blower is the left valve in the picture above, it is used to create a draught through the boiler when the regulator is shut, it's useful for creating pressure quickly when stationary ready for an assault on a hill! Although it does absolutely nothing when the regulators open since that creates a draught as well, so it mainly just wastes steam. Make sure however it is open a bit when shutting the regulator and is wide open when going through tunnels to prevent a blowback of the fire into the cab, which would really ruin your day! To open and close the blower the **N** and **shift N** keys are used respectively

Sanders

The sanders on the J50 are of a gravity type, the sand falling from the box in front of the wheels by gravity alone. Sand is used to aid adhesion in poor conditions (basically it makes you slip less!). There are two sanders on the J50, a forward sander and a rear sander, it is important to note they only work when you are going in that direction (well it's a bit pointless to apply sand behind the wheels isn't it!). To open the front sand valve the **X** key is used and to open the rear sanders the **Z** key is used.

Front Sanders



Rear Sanders



Injectors

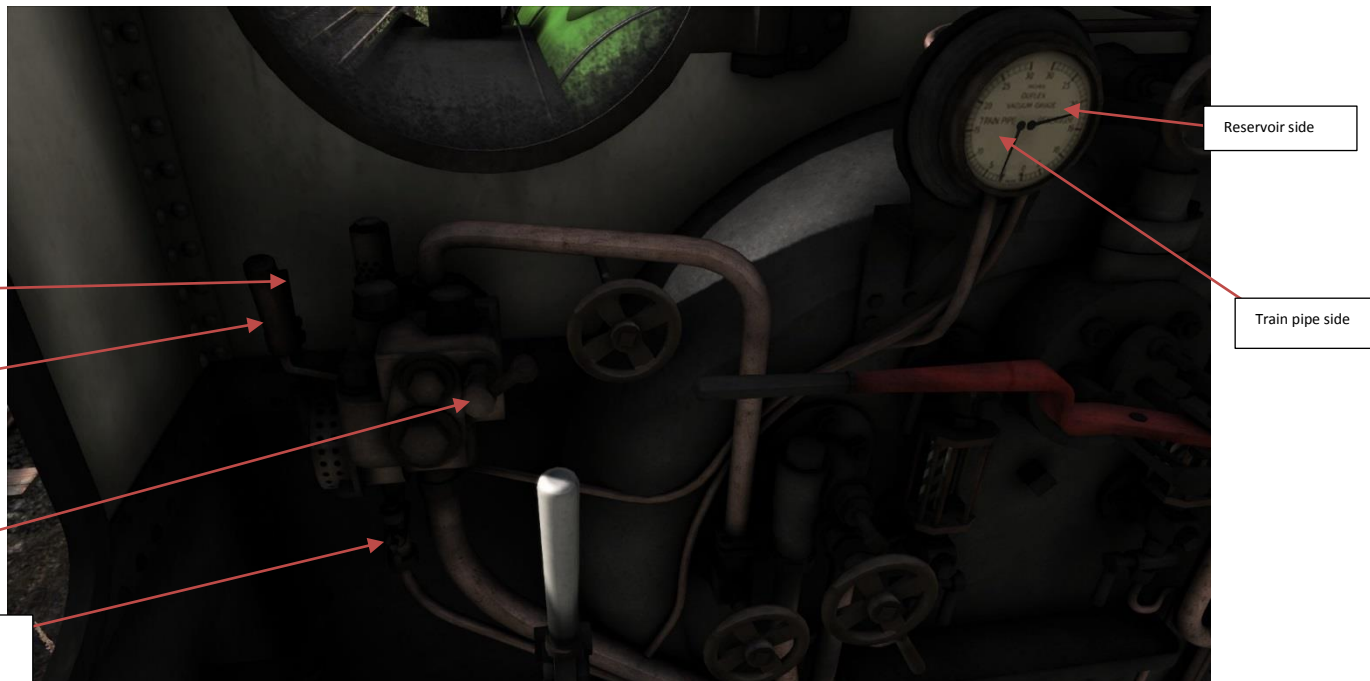
Injectors are used to put water into the boiler, their operation is as follows: The water regulator is opened for the respective injector, this is located on the far left and right of the cab, being used for the left and right injectors respectively. This can also be open and closed by the **k** and **Shift K** keys for the left injector and **L** and **Shift L** for the right. Next the steam valve is opened gradually to allow the injector to pick up, this can be done with the **I** key for the right injector and **O** key for the left, the same key is also used to turn them off. Remember also open the water valve before starting the injector, and after you have shut the steam valve otherwise steam will erupt from the injector and make a very loud noise!

Dampers



On the J50 there are two dampers, they are used to allow air into the firebox thereby heating up the firebox through improved combustion. They are located to the left of the firebox doors on the floor. To open and close the left damper the **M** and **Shift M** key are used, and for the right the **Ctrl M** and **Ctrl Shift M** keys are used.

Extra Controls



Vacuum Brakes

The J50 is fitted with a Dreadnought type ejector which operates vacuum brakes on the train and on the engine. The important thing to note on vacuum brakes is the brake force is proportional to the difference between the reservoir side and the train pipe side, for example if the vacuum in the train pipe was 0" Hg and the chamber side was 20" the brake would be fully applied on the engine, but if the chamber side was only 10" the brake would only be half applied. If the chamber side was 20" and the train pipe side was 10" because the difference is 10" the brake would again be half applied. If the in the train pipe side is greater than that of the reservoir side however the two sides will equalise to give the same vacuum on both sides of the cylinder.

It is very important to keep an eye on this as it is quite possible for the vacuum reservoir to bleed away without you noticing leaving you without brakes on the engine.

The Dreadnought ejector has 2 ejectors, a small and a large ejector. The large ejector is operated by a cam connected to the brake handle, while the small ejector is operated by a valve on the side of the ejector body and will operate continuously if it is opened regardless of where the brake handle is.

The brake handle itself has three main positions Release, Running and Full On. When the handle is fully forward the brake valve is in the Release position and the large ejector is opened allowing the brake to be quickly released, moving the handle back off the stopper the brake is in the running position where the large ejector is shut, in this position if the small ejector remains open and vacuum will still be created however it will create a vacuum slower than if the large ejector is used.

Further movement of the brake handle down will open an air disc to allow air into the train pipe, the closer the handle is to the full on position the faster the vacuum will be destroyed hence the quicker the brakes will be applied. In the full on position the brake will be rapidly applied but also if the small ejector is open, the reservoir side of the system will also be created to maintain maximum brake power for stopping (instead of it bleeding away).

There also two additional controls on the dreadnought, a small release valve which will quickly bleed off the reservoir side (if you want to move for whatever reason without creating a vacuum) and a small brake valve on the handle operated by a trigger valve which will destroy vacuum more gently and can be used for a more gradual controlled application than using the brake handle itself. This small brake valve is however only really effective when the brake is in the running position.

The keys for the brake valve are as follows

To move the handle towards Release the ; key is used

To move the handle towards the full on position the ` key is used

To open the reservoir release valve the [key is used

To open the small application valve the] is used.

Additional

I'm sure you'll know where the firebox doors are, to open them the **F** and **Shift F** key are used. Also you will probably know how to make the fireman shovel coal into the fire, this can be done by the use of the **R** and **Shift R** key, alternatively the coal door on the floor at the back of the cab can also be used to control the rate of firing by opening and closing it.

The Cab also has a lamp in it which can be used to illuminate the cab when its dark, this can be turned on by the **Ctrl H** key and off again with the same key.

The windows and roof ventilator on the J94 can also be opened and closed to suit your needs by using the mouse.

Liveries

BR Green Passenger



BR Early Passenger



BR Late Passenger



BR Mid Passenger



LNER Black Passenger



LNER Green Passenger



Scenarios

All scenarios support the standard version and the advanced version, they are defined using [Std] for standard and [Adv] for Advanced.

Getting to know the locals –

You'll be taking the early local service to Newton Stewart.

On Tour –

Today you'll be taking a special tour with a newly painted livery is BR green. It's a long trip but stopping at very few stations, watch out for slower train services; however they shouldn't affect your whole journey. You'll need to fill up with coal and water beforehand. Good luck driver!

Replacement Service –

You'll be recovering a loco which has failed on its way to Stranraer, you will also need to move around additional rolling stock to prepare for the return service which you will also be taking over.

Reskinning/Sound Policy

Our (Meshtools) reskin policy for the J50 addon is as follows:

We generally allow reskins of our work to be done. Permission needs to be sought before doing said reskin, to do this contact us at Meshtools by filling in a support form on our website at <http://www.meshtools.co.uk/contact> ,

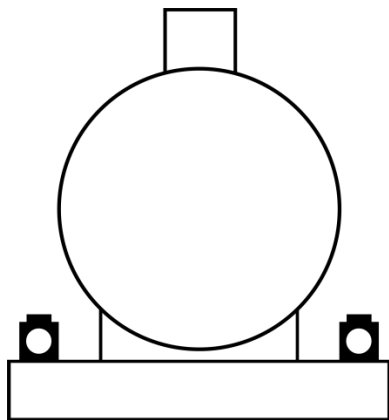
We would also like for you to inform us how your reskin is going and if any improvements can be made to make reskinning easier. Approval should also be sought before uploading it to any site as a quality control check.

The reskins must not include the shape files, child object files, simulation files, script files, sound files or animation files, but it can include the loco bins if needed.

No modifications at all must be done to the sounds, any sound modifications must be done from scratch and not based on the included sound files (sound files includes: .xml and .bin files). Sound modifications if done must not use or include any audio files such as .wav or .dav files included with the addon. Permission must be sought before doing any sound modifications.

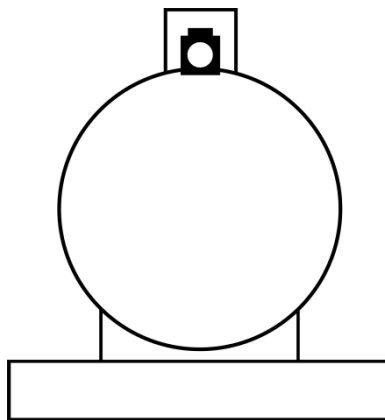
Head codes

The engines also have toggleable head code lamps which can be turned off and on while in play. To do this simply hold down **Ctrl** Key followed by either **1, 2, 3** or **4**.



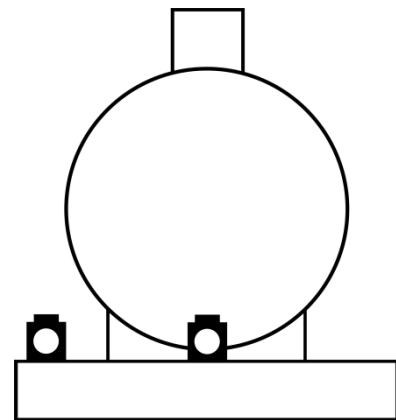
CLASS A

Express passenger or a breakdown train.



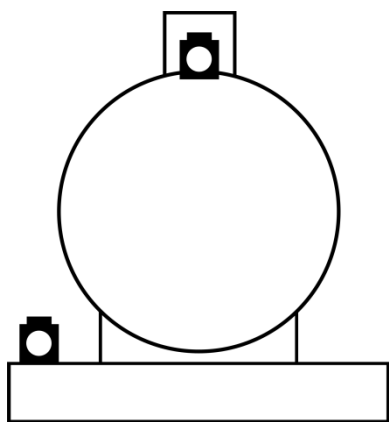
CLASS B

Stopping passenger, rail motor or a breakdown train returning from job.



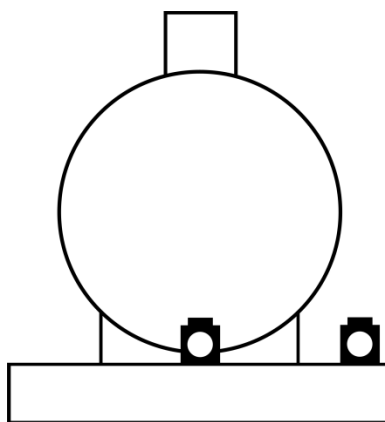
CLASS C

Parcels, fish, livestock, milk, fruit or perishables all XP stock.



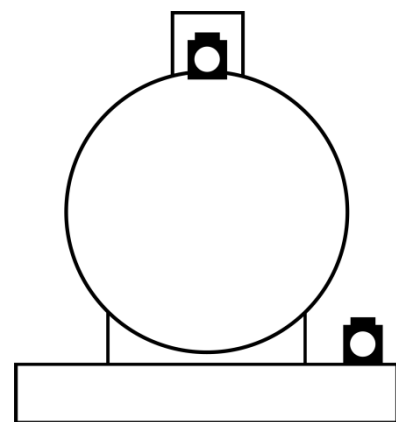
CLASS D

Express freight or livestock with at least 30% XP connected to loco.



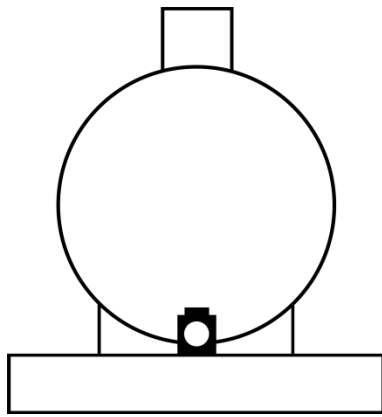
CLASS E

Express freight with at least 4 fitted vehicles connected to the loco or a short unfitted express freight.



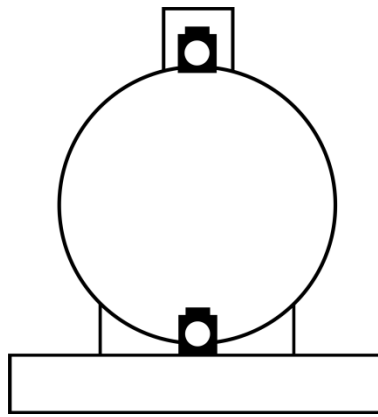
CLASS F

Express freight all unfitted stock.



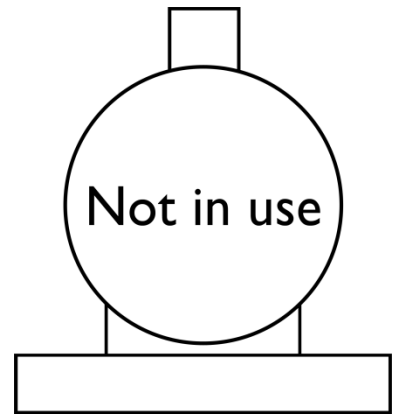
CLASS G

Light engine or engine with one or two brake vans attached.



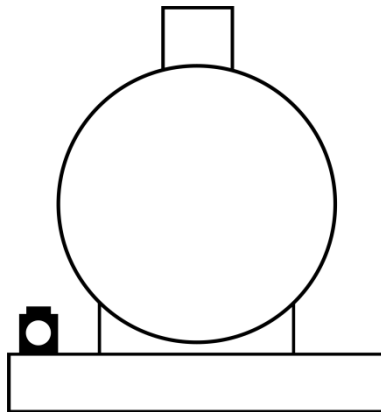
CLASS H

Through freight or ballast train.



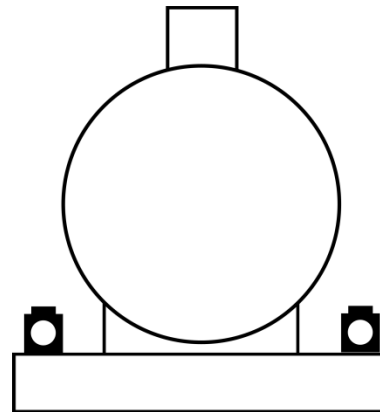
CLASS I

Was not used.



CLASS J

Through mineral or empty wagon train.



CLASS K

Pick-up or branch freight or mineral/ballast train on a short haul run.

Credits

Thank you to all those who those who helped out, contributed and gave their own time in helping out with this project! Without them it wouldn't be where we are today!

Also, thank you for taking some time to go through and read this manual, we hoped it helped answer some of your questions or any problems you've been having! I'd also personally like to thank you for purchasing this addon and supporting us. We hope to bring you a lot more exciting addons in the future!

A MeshTools development.

www.meshtools.co.uk

<https://www.facebook.com/Meshtools>

Major contributors:

Michael Whiteley: 3D modelling, texturing, animation, route building, scenarios, research and live streams.

Edward Fisk: Sounds, simulation/physics, scripting, quality control, support, research and Live streams.

Additional contributors:

Simon Hall: Programming/scripting and testing.

Pete Gillam: Additional Programming/scripting and testing.

Testers:

Our group of enthusiastic beta testers!

RailSimulator Beta/QA testers

Chris Barnes

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The East Lancashire Railway

<http://www.eastlancsrailway.org.uk/>

RailSimulator.com for publishing and additional support and assets.