

GENERAL ELECTRIC U30C

*FOR TRAINSIMULATOR 2017 (TSX)
OPERATOR'S MANUAL*

STEAM EDITION

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The Prototype Locomotive

In 1966, General Electric introduced the railroading world to the U30C road switching locomotive. Although it was designated as a new model, the locomotive was actually just a souped up version of the not-so-popular U28. Turbocharged to 3,000 horsepower, the first units off the production floor were externally identical to the earlier model.

When applied to locomotives, the term "Phase" is more of a rail fan term that is used to denote marked differences in locomotive construction or spotting features. The U30C had three distinctive design phases. The first was built by GE from 1966 to 1968, and is modelled in this package. The spotting features, both inside and out, are as follows:

- Rear radiator section does not extend vertically to the deck.
- Extra cooling tower on top of the standard radiators.
- Drop steps on both ends of the deck.
- GE proprietary controller.
- Toilet in the low hood of the unit.

The second phase of production, which lasted from 1968 to 1973, was the largest build of the locomotive. There were several different “sub-phases” as well, but the most common spotting features were:

- Rear radiator wider than the long hood, extending all of the way to the deck.
- Removal of the top radiator cooling section.
- Machined steps in the equipment boxes leading to the engineer and conductor sides of the cab.
- Some units also had a fairing from the engine-hood to the radiator section.

As of 1972, most railroads adopted the standard AAR control stand to facilitate interoperability between railroads and locomotive manufacturers.

After July of 1973, the U30's moved to the Phase III stage. Again, there were several sub-phases, but the major spotting features included:

- Front anti-climbers on some units (available upon customer request).
- Shorter equipment box on the left side of the unit, with six doors instead of eight.
- After Phase IIIe, the dual rounded door latches were replaced with a single square alcove with a T-handle. This design change carried over into the Dash 7 series.

At the time of its introduction, GE was a distant second in locomotive production behind General Motors. GE locomotives were prone to breakdowns and electrical problems, so railroads generally stayed away from them. The U30C did nothing to alleviate buyer's remorse, as the early units were just as unreliable as their predecessors. However, GE picked up sales for the new model simply because GM could not fill the orders it had for its locomotives fast enough. And with later improvements to the U30C, the set the stage would be set for a battle that would end GM dominance of the American diesel locomotive market...

BUYERS

The primary purchasers of the U30C were:

- Atlantic Coast Line : 4
- Burlington Northern: 182
- Chicago, Burlington, and Quincy: 4
- Chesapeake and Ohio: 13
- Chicago and Northwestern: 7
- Milwaukee Road: 8
- Rock Island: 18
- Delaware & Hudson: 12
- Detroit Edison: 11
- Ferrocarril de Pacifico: 8
- Kaiser Steel: 5
- Louisville & Nashville: 79
- Norfolk and Western: 3
- Pennsylvania: 5
- Reading: 5
- Soo: 10
- Southern: 5
- Southern Pacific: 37
- Union Pacific: 150
- U.S.D.O.T.: 1

Several U30C's were passed down to other Class 1 railroads, either through outright sales or acquisitions. As of the writing of this manual, only a few U30C's survive on branch line railroads. One working unit that runs both revenue service and passenger excursions is preserved at the Illinois Railway Museum in Union.

THE GENERAL ELECTRIC U30C FOR TRAINSIMULATOR

NOTE: This manual also applies to the U28CG and all other U30C add-on packs, sold separately.

This package features CSX Transportation licensed paint liveries, and contains the following downloadable content for use with Dovetail Game's Trainsimulator 20xx PC and video game:

U30C Phase 1: Chessie System – Clean and Weathered Versions



100 ton Hopper, Chessie System - C&O



TRAINSIMULATOR 2017 – U30C LOCOMOTIVE PACK

100 ton Hopper, Chessie System - C&O MOW



100 ton Hopper, Chessie System - B&O



100 ton Hopper, Chessie System – Western Maryland



100 Ton Generic Hopper, Tuscan Red



Quick Drive scenario for each locomotive.**

Scenario: U30C King Coal: Move em' in.

Scenario: U30C King Coal: Load em' up.

Scenario: U30C King Coal: Shoot em'.

Scenario: U30C King Coal: Local Switching.

** Each car comes in a loaded/unloaded version, for use in Free Roam/Standard/Career scenarios. Each car also comes in a Quick Drive version, which is by default fully loaded.

Career Scenarios

NOTE: These scenarios are set on the NS Coal District route, sold separately by Dovetail Games. The settings and outcomes of these scenarios are complete works of fiction.

U30C King Coal: Move em' in. Power plants in the South are hungry for bituminous coal, like the kind that is produced by the Bailey Mine. Take a string of empties on a run-through agreement to pick up the black gold.

U30C King Coal: Load em' up. Got an afternoon to spare? Fire up this grinder and test your skills at loading part of a coal train.

U30C King Coal: Shoot em'. Get the loaded train back to the Alicia loading docks.

U30C King Coal: Local Switching. Moving loads for customers at the busy West Brownville Yard.

Quick Drive Scenarios

Each locomotive is enabled for Quick Drive. Simply click on the Quick Drive tile in TrainSimulator and select one of the locomotives and a route to run it on.

Creating Your Own Scenario

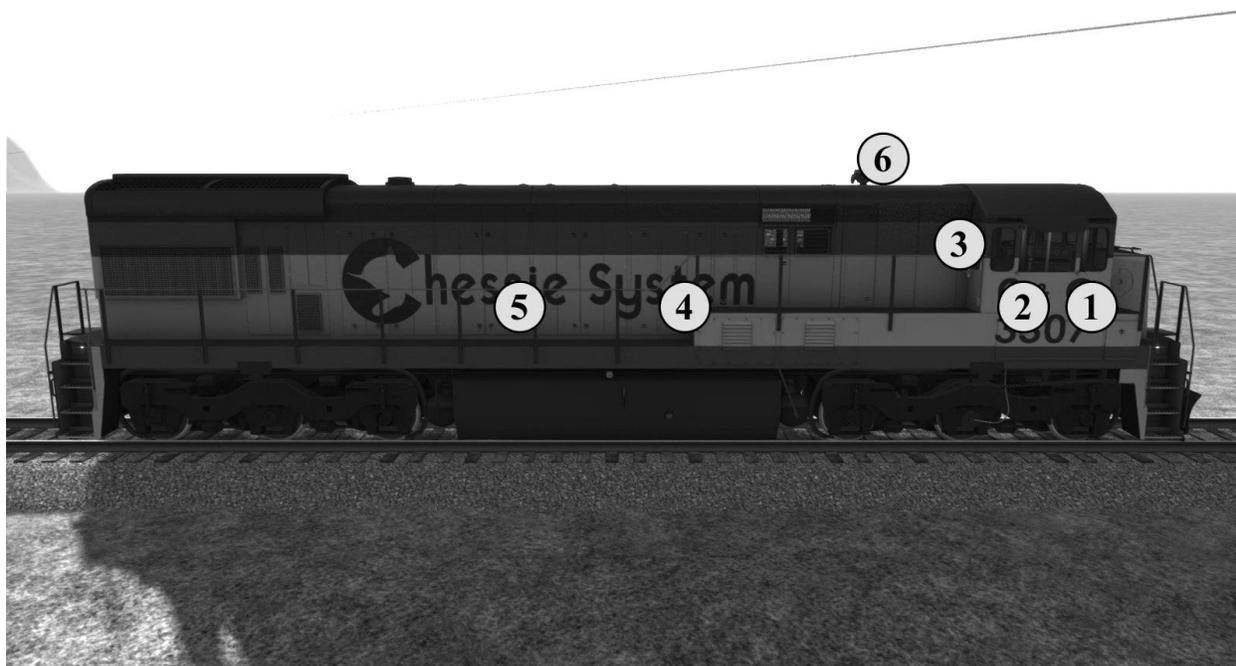
These instructions are for creating a simple free-roam scenario using the U30C and VRC freight cars. If you want to create a more sophisticated scenario or add special instructions you should consult the TS2017 user manual.

- After opening the Scenario Editor for the Scenario and Route of your choosing, click on the Object Filter pane (left middle pull-out).
- Click on the Provider Filter (box with arrow on it) to bring up the filter box (right-side pullout)
- Scroll down through the list of providers and make sure that "VRC" is checked, as well as U30C-Series.
- Return to the object filter and click the Locomotive icon.
- Scroll through the list and choose one of the available U30C locomotives.
- Place the locomotive on the tracks as many times as desired.
- Add VRC freight cars to the consist.
- Place a driver icon on the lead locomotive.
- Press F2 to save the changes, then close out the scenario.
- Once in the actual game, click on the locomotive to select it as your player avatar.

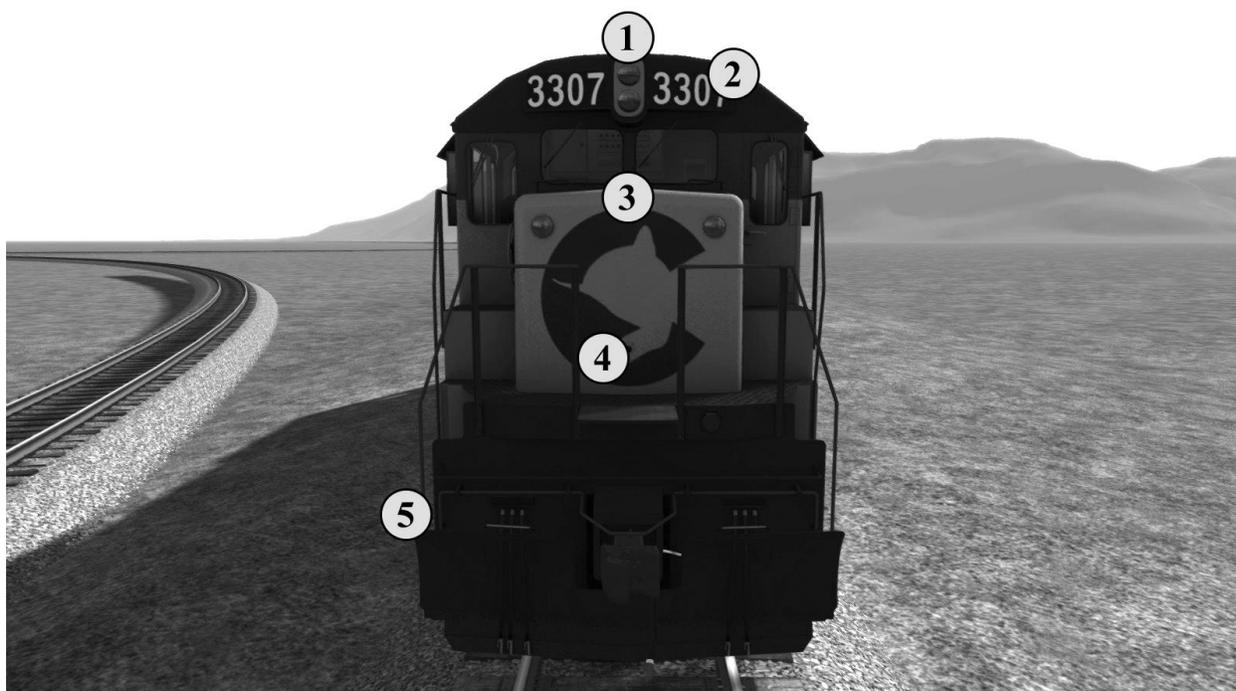
Features and Controls

NOTE: Locomotives were custom built according to the wishes of their owners. Features shown here will vary according to the road name.

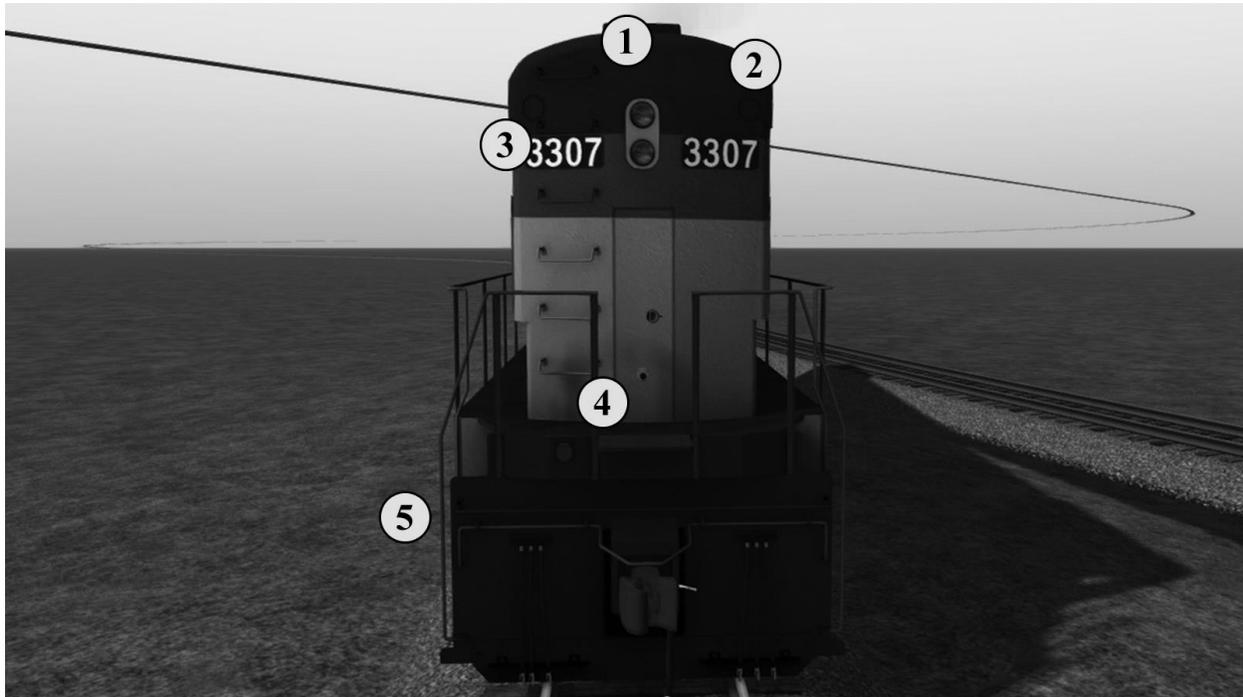
Exterior Features:



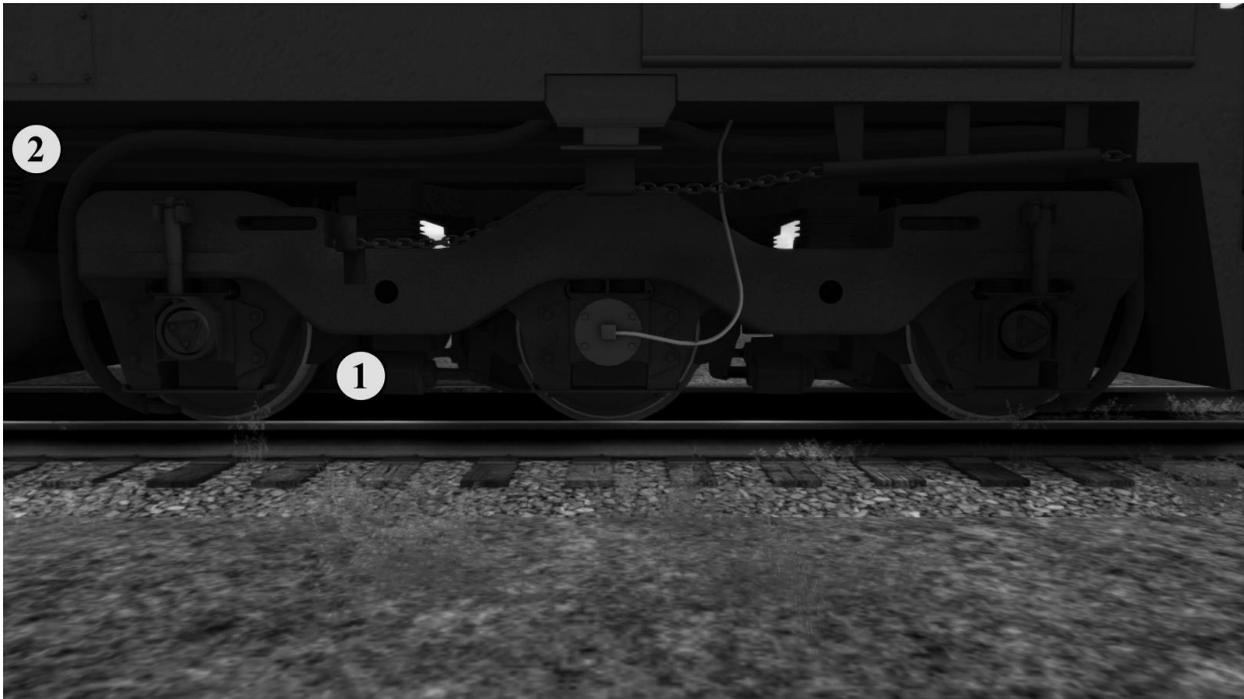
Feature	Cab	Keyboard	HUD	Game Pad
1. Mirrors Right	Yes	Ctrl+N / Ctrl+Shift+N		
Mirrors Left	Yes	Ctrl+M / Ctrl+Shift+M		
2. Windows Engineer	Yes	N		
Windows Conductor	Yes	M		
3. Door Engineer	Yes	Shift+N		
Door Conductor	Yes	Shift+M		
4. Start Compartment	Yes	Shift+V		
5. Engine Compartment	No	Ctrl+V		
6. Horn	Yes	Spacebar	Yes	
NOT SHOWN – Cab Shade	Yes	Shift+S / Ctrl+Shift +S		



Feature	Cab	Keyboard	HUD	Game Pad
1. Front Headlights	Yes	H (Dim/Med/Bright) Shift+H to decrease	Yes	
2. Front Number Boards	Yes	K		
3. Class Lights	Yes	C Ctrl+C Increase Class Shift+Ctrl+C DecreaseClass		
4. Front Kickstep	Yes	Ctrl+K		
5. Front Uncouple Lever	No	Shift+U		
NOT SHOWN – Gyra Warning Light	Yes			
NOT SHOWN – Warning Strobe	Yes			



Feature	Cab	Keyboard	HUD	Game Pad
1. Rear Headlights	Yes	Ctrl+H (Dim/Med/Bright) Ctrl+Shift+H to decrease	Yes	
2. Rear Number Boards	Yes	Shift+K		
3. Rear Class Lights	Yes	Shift+C Ctrl+C Increase Class Shift+Ctrl+C DecreaseClass		
4. Rear Kickstep	Yes	Ctrl+Shift+K		
5. Rear Uncoupler Lever	No	Ctrl+Shift+U		

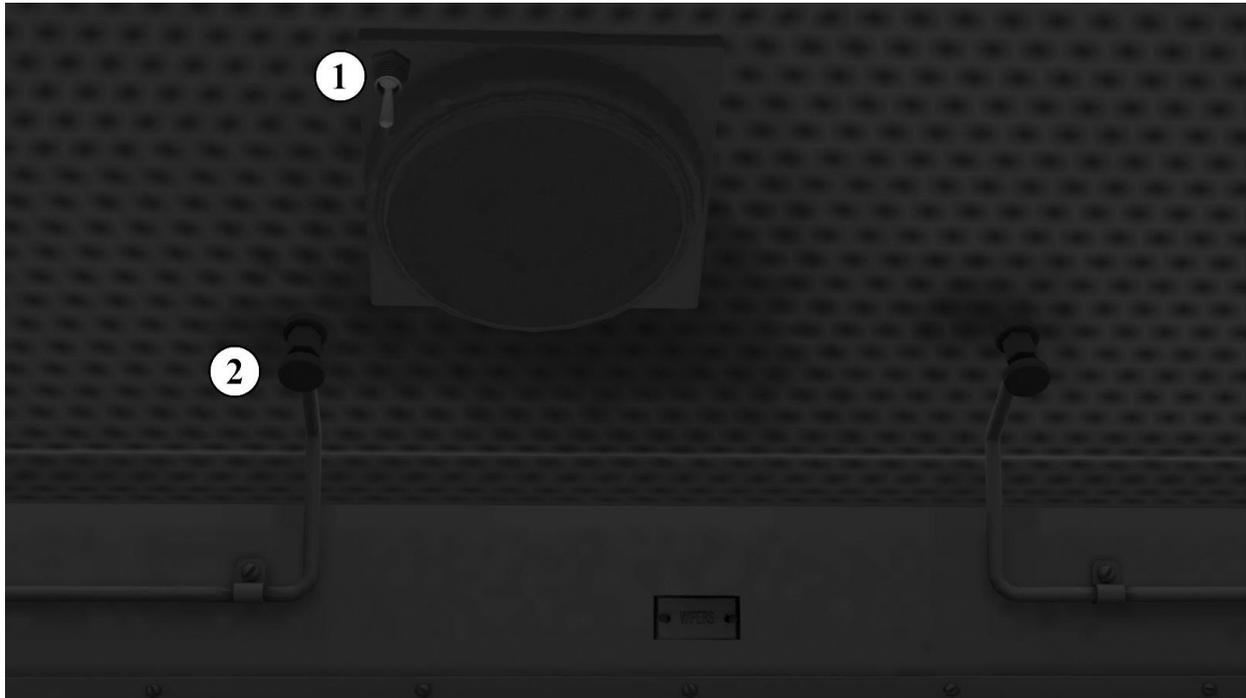


Feature	Cab	Keyboard	HUD	Game Pad
1. Locomotive Brakes	Yes	[Increase] Decrease	Yes	
2. Bell	Yes	B	Yes	

Interior Features:

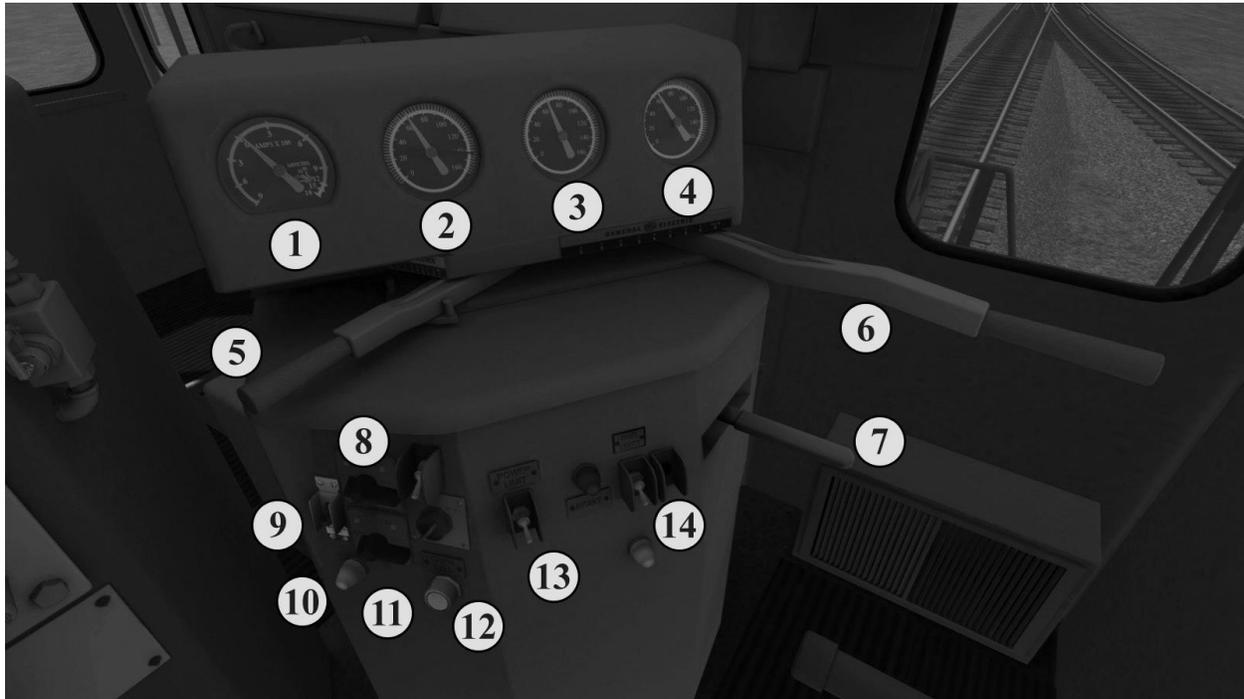


Feature	Cab	Keyboard	HUD	Game Pad
1. Unit Number				
2. Speedometer				
3. Sun Visor	Yes			



Feature	Cab	Keyboard	HUD	Game Pad
1. Light Switch	Yes	L **		
2. Wiper Switch	Yes	V	Yes	

Controls: KC99 Master Controller



Feature	Cab	Keyboard	HUD	Game Pad
1. Ammeter Gauge				
2. Main/EQ Reservoir Gauge				
3. AFM Gauge				
4. Reserve Air Gauge				
5. Selector	Yes	Ctrl X Decrease Shift X Increase		Directional Pad Up / Down
6. Power Lever - Throttle Throttle = Selector "1"	Yes	A Increase D Decrease	Yes	Left Trigger / Left Bumper
6a. Power Lever – Dynamic Brake Dynamic Brake = Selector "B"	Yes	See notes below about using the Selector / Power Lever.	Yes	Right Trigger / Right Bumper
7. Reverser	Yes	W Increase S Decrease	Yes	Left Stick Up / Down
8. Front Headlight Switch	Yes	H Increase Shift+H Decrease	Yes	Hold A, Left/Right Directional Pad
9. Generator Field Switch	Yes			
10. PCS Relay Warning				
11. Rear Headlight Switch	Yes	Ctrl+H Increase Ctrl+Shift+H Decrease		
12. Crew Call Button	Yes			
13. Power Limit Switch	Yes			

14. Console Lights	Yes	I **		
Emergency Brake (Not Shown)	Yes	Backspace	Yes	
Handbrake (Not Shown)	Yes	/		

**** In order to use the panel or cab lights, the “Lights” breaker, located on the rear control panel, must be closed. On the keyboard this is Shift+L.**

Special Note about the Power Lever handle:

The Power Lever handle is capable of supplying power to both the Throttle and the Dynamic Brake, but not both at the same time. For proper operation, you must set the Selector to the proper setting – 1 For Throttle, B for Dynamic Brake, Off for trailing unit.

The Selector should prevent both controls from being active at the same time. Still, if you try to use the Dynamic Brake when the Throttle is active, or the Throttle when the Dynamic Brake is active, unexpected train handling situations may occur, resulting in loss of control or derailment.



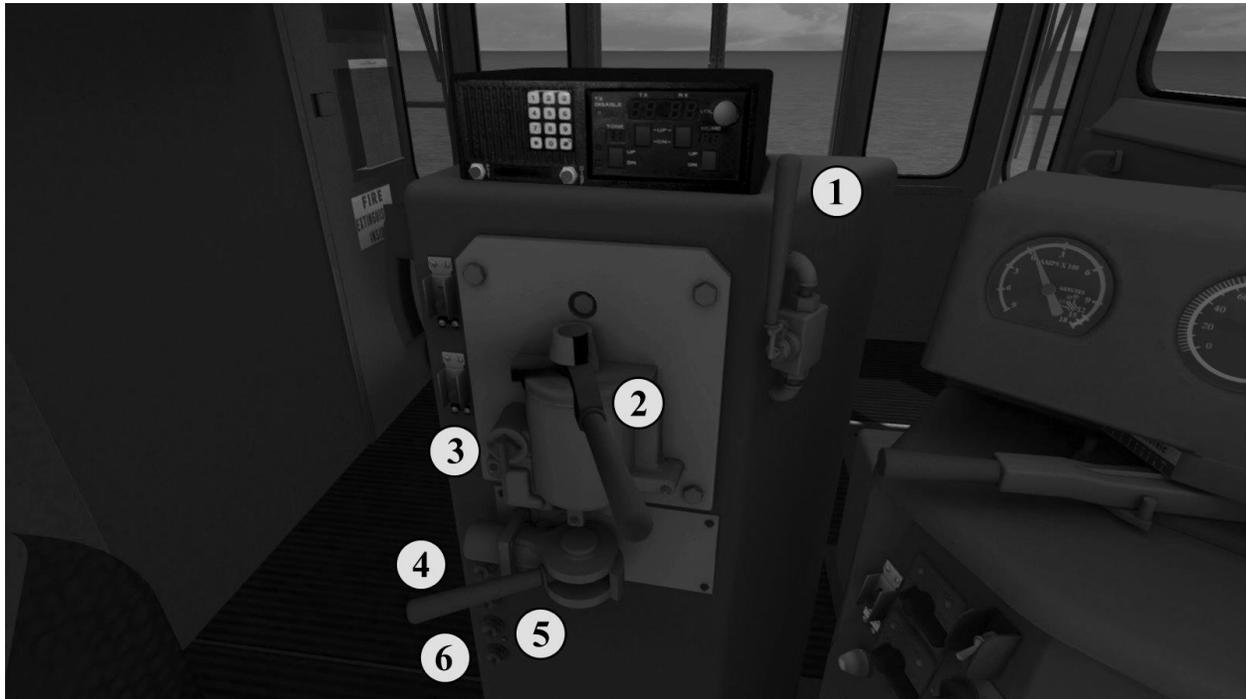
Selector in the “Off” position



Selector in the “Dynamic Brake” position



Selector in the “1” or “Run” position

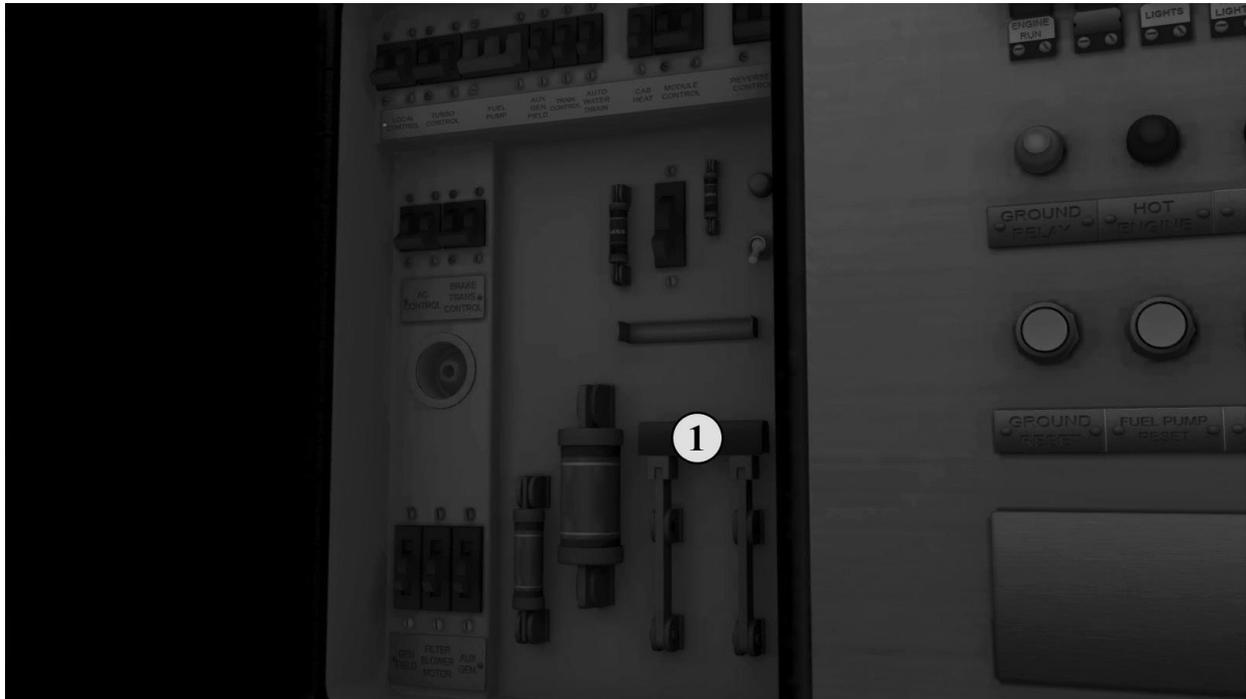


Feature	Cab	Keyboard	HUD	Game Pad
1. Horn	Yes	Spacebar	Yes	Left Stick Push
2. Train brake	Yes	; Increase ' Decrease	Yes	Left Trigger / Left Bumper
3. Brake Cutout	Yes			
4. Independent Brake	Yes	[Increase] Decrease	Yes	
5. Sander	Yes	X	Yes	
6. Bell	Yes	B	Yes	Hold A, then Left/Right Directional Pad

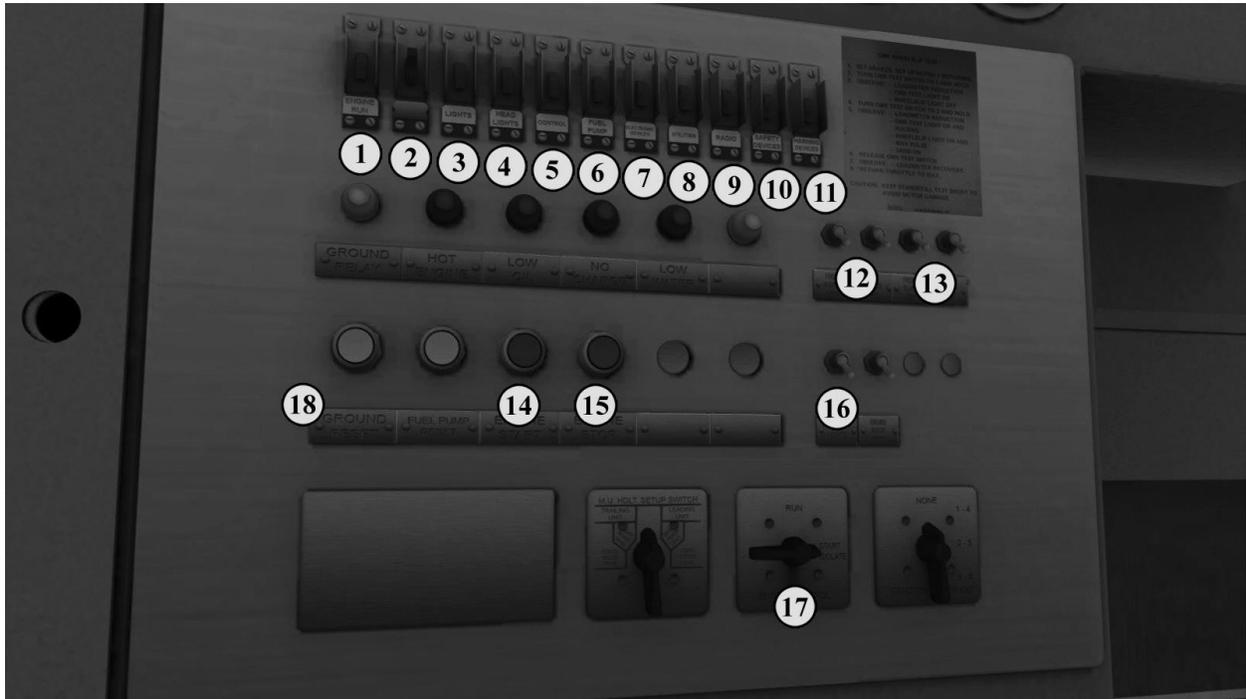


Feature	Cab	Keyboard	HUD	Game Pad
1. Pyle Light Switch	Yes			
2. Motor Switch	Yes			

NOTE: Only select units are equipped with Pyle/Mars light, at railroad company request. The Mars controls are also placed optionally on the rear control panel.



1. Battery Engage Switch	OTHER CONTROLS
- Local Control	- Turbo Control
- Fuel Pump	- Auxiliary Gen Field
- Tran Control	- Auto Water Drain
- Cab Heat	- Module Control
- Reverser Control	- AC Control
- Brake Trans Control	- Gen Field
- Auxiliary Blower Motor	- Auxiliary Generator



Feature	Cab	Keyboard	HUD	Game Pad
1. Engine Run	Yes			
2. Charging Circuit	Yes			
3. Lights	Yes	Shift + L		
4. Headlights	Yes			
5. Control	Yes			
6. Fuel Pump	Yes			
7. Electronic Devices	Yes			
8. Utilities	Yes			
9. Radio	Yes			
10. Safety Devices	Yes			
11. Warning Devices	Yes			
12. Front / Rear Number Boards	Yes	K / Shift K		
13. Class Lights	Yes	C / Shift C		
14. Engine Start	Yes			Right Stick Push
15. Engine Stop	Yes			
16. Platform / Engine Room Lights	Yes			
17. Isolate Switch	Yes			
18. Ground Fault Reset	Yes			

STARTING ENGINE

Simple Mode

1). Press the “Z” key on the computer keyboard. This will throw all necessary switches into their “On” positions and start the locomotive. It may be a minute or more before the locomotive gains full power; wait until the engine has attained 450 RPM before operating the unit.

Intermediate Mode

- 1.) Press the “Engine Start” control on the rear control panel. This will throw all necessary switches into their “On” positions. However, you will need to check your auxiliary switches (Lights, Headlights, etc.) to be sure they are on. Wait until the engine has attained 450 RPM before operating the unit.

Expert Mode

Before attempting to start the locomotive:

- 1). Move the Engine Control switch to the “Start/Isolate” position.
- 2). Close all switches and circuit breakers in the battery switch box.
- 3). Engage the following breakers on the rear control panel:
 - a. Engine Run
 - b. Charging Circuit
 - c. Control
 - d. Fuel Pump
 - e. Headlights
 - f. Lights (Running)
- 4). Once these controls are active, move to the first set of doors at the engine compartment. Open them and locate the “Prime / Start” box.
 - a. Turn the knob to Prime in order to begin pumping fuel to the engine. The prime will automatically stop when enough fuel is present. NOTE: holding the Prime switch for more than 20 seconds could cause flooding. If this happens, the engine cannot be started for two minutes after returning the switch to the OFF position.
 - b. Turn the knob to Start. If the proper starting procedure has been followed, you will hear the engine kicking over within 10 – 15 seconds.
- 5). The engine has a delay at startup of 10-20 seconds before it begins to generate power. Do not attempt to operate the controls of the unit before this delay is over.

Note to Scenario Developers:

By default, the U30C locomotive is unpowered at the start of a scenario. If you wish to have the locomotives start automatically at the beginning of a scenario without user input, then you need to insert the following code into your scenario script and link it to the scenario through the Timetable Editor:

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

In the first line, “boarding” is a name that links the script command to the Timetable Editor. A simple message trigger with this name placed in it is usually enough to start the locomotive. You could also use the timestamp to trigger the startup later, or include a message to the player.

ENGINEERING

Simple / Intermediate Modes

1. Place the Reverser in the forward or reverse position.
2. Move the Train and Independent braking lever to release.
3. Move the Power Lever to the desired position to begin moving the locomotive.

Expert Mode

1. Move the Engine Control switch on the rear control panel to “Run”.
2. Place the “GenField” switch on the Master Controller in the “on” position.
3. Place the Reverser in the forward or reverse position.
4. Place the Selector handle in the “1” position.
5. Move the Train and Independent braking lever to release.
6. Move the Power Lever to the desired position to begin moving the locomotive.

Dynamic Braking (KC99 Master Controller)

The Power Lever doubles both as Throttle and Dynamic Brake. To use the Dynamic Brake, do the following:

For track gradients of 1% or less:

1. Move the Power Lever to the “Idle” position.
2. Move the Reverser lever to either the forward or reverse position.
3. Move the Selector Lever to the “B” (rear) position.
4. Grab the Power Lever and move it to Notch 1. Wait for 10 seconds for the brakes to activate, and then move to the desired position between Notch 1 and Notch 4.

For track gradients of 2% or more:

1. Move the Power Lever to the “Idle” position.
2. Move the Reverser lever to either the forward or reverse position.
3. Move the Selector Lever to the “B” (rear) position.
4. Grab the Power Lever and move it to Notch 1. Wait for 10 seconds for the brakes to activate, and then move to the Power Lever to Notch 4.
5. Place the Train Brake in Minimum Reduction, at about 15%.
6. If this combination is not enough to hold a steady speed, then increase the Dynamic Brake to control train speed.
7. If the wheels begin to slip, reduce the Dynamic Brake until slippage stops, and then use the Train Brake in small reduced increments to control speed.

CONTROL NOTES

NOTCH 7 POWER LIMIT. In order to make the unit more compatible with older lower horsepower locomotives, such as the U28, U26, and U25, a limit has been put on the maximum throttle setting. In order to use this limit, place the Power Limit switch into the “On” position and place the Power Lever in the desired position. Once the Power Lever has reached Notch 7, it will advance no further. If the Power Lever is already in Notch 8, the Power Limit switch is locked and cannot be used. Reduce power to Notch 7 and then engage the switch.

DYNAMIC BRAKING. On units that are equipped with dynamic braking, the following conditions apply:

- If the Brake Trans Control breaker is not closed, then you cannot set up the Dynamic Brake.
- The dynamic brake is interlocked with the Selector, Throttle, and Reverser handles. Before activating the Dynamic Brake, the Throttle must be placed in Idle, and the Reverser in the Forward or Reverse position. Then the Selector must be moved to the “B” (rear) position.
- The Dynamic Brakes should be placed into the 1st notch position and left there for at least ten seconds before moving forward to the next setting. This will give time for the Brake to activate, and will also give you time to observe how the brake will affect the speed of the train.

THROTTLE. In game mode, you will have to put your back into pulling the Power Lever. It is a hard pull, and it is done purposely to simulate the problems that prototype enginemen had with this control. Some are reported to have disassembled parts of the mechanism in order to make it easier to use.

EMERGENCY BRAKE RECOVERY. If the emergency brake is applied, from either the Engineer or Conductor stations, a penalty time is enacted to allow the brake system to recharge. In order to recover from an E-brake application, you must hold the Train Brake handle in Emergency for at least 1 minute. Then, set the Train Brake to Suppression, the Reverser to neutral, the Power Lever to Idle, and wait for the PCS warning light to go off. The unit will not generate power until the Pneumatic Control Relay is reset.

On certain units, the exterior Pyle light is equipped with an emergency beacon that illuminates if the train is placed into emergency with the Auto-Brake, or if the Emergency Brake handle is activated.

OVERSPEED. The maximum powered speed for this locomotive is 65mph. Operation of the unit above the maximum speed can result in damage to engine or traction components. The locomotive is equipped with overspeed control to prevent this. Once the unit has reached 65 mph, the PCS Relay will be tripped in an automatic attempt to reduce unit speed.

PCS RELAY AND RESET. These units are equipped with a PCS (pneumatic control switch) relay that, in the event the train exceeds the maximum locomotive speed, will dump the brake pipe and reset the throttle to zero, no matter its current position. If the PCS relay is tripped, you must place the throttle to Notch 0, place the Reverser handle in neutral, and place the Train Brake in Suppression.

Once the speed of the train has dropped below the maximum tolerable limit, the PCS relay will be reset.

The PCS reset can also be triggered if an electrical fault causes the AC Control breaker to disengage. You will need to make sure that this breaker is engaged before attempting a reset.

WIPERS. The window wipers are equipped with dual controls. You can turn them on or off via the overhead consoles located above the Engineer and Conductor positions.

CONTROLS FOR MULTIPLE UNITS. These units are set up so that control of an entire MU consist can be done from the primary (front) locomotive. If you try to control the train from any of the trailing units in the consist after the primary unit has been started, the locomotives will shut down and restart with the cab of the locomotive that you are currently in becoming the primary unit.

It has been noted that in some cases it may be desirable to have lights or other accessories in the trailing units to be in the on position. If this is the case, then use the following manual procedure to activate them without switching the primary unit off.

Before Startup:

If in the beginning of the Scenario the locomotives have not been started, then use CTRL + or CTRL - to move between the cabs of the engines. You may turn on whatever accessories are necessary. Be sure that the Battery Disconnect for each unit is engaged and that the proper circuit breakers are in the “on” position. For example, if you want to run the Dim Lights on a trailing unit, then the Headlights Breaker must be on.

After Startup:

If you have already started the consist, or it is Auto-started at the beginning of the scenario, moving into the cab of a trailing unit will shut down the consist. Instead, wait until after the train has started moving to move between trailing cabs and turn on any desired accessories. However, if you touch or move any primary controls (brake, throttle, selector, reverser) while the train is running, the game will assume you are taking control of the train from the cab of the selected unit and will shut down the engines.

Supplied Scenarios

All Scenarios are set on the NS Coal District Route (available separately from DTG).

SPOILER ALERT – DO NOT READ THE FOLLOWING INFORMATION IF YOU DO NOT WISH TO KNOW THE OUTCOME OF THE SCENARIOS BEFORE PLAYING THEM.

Scenario Cheatsheet – U30C King Coal: Move em' in, parts 1.1 and 1.2.

1. This is a crew change, so your train will automatically start. After the locomotives power up to full RPM (450), the train will be in ready-to-go state.

Other than that, this Scenario is pretty straight forward. You will pass a few trains on your way to Bailey Mine, and when you get there, you will park the train as you and your crew are outlaw.

This is a long scenario, a good use of an afternoon. However, to keep you awake during the trip, all HUD-shown instructions have been disabled. You will need to pay attention to the occasional dispatcher message, and the signals, in order to get the train safely to its destination.

Scenario Cheatsheet – U30C King Coal: Load em' up.

1. This is the same train from the first scenario, and it has been left on the mine inbound track during the first scenario. Move it down to the mine and load it. **NOTE:** at the beginning of the scenario, it takes a few seconds for all controls to initialize, so you will see the train roll a bit until the brake pipe pressure comes up to normal levels.
2. Position each car in the train under the coal chute. Press "T" to load.

PRO TIP: The most common cause of loading failure is movement of the car before loading is complete. Be sure that the train has come to a complete stop and that the car does not move before the loading is complete.

PRO TIP: In real life, unit coal trains do not stop as they move through the tipple loader. TS2016 requires each car to be completely stopped. This greatly extends the amount of time it takes to load the train. One procedure that can be used to shorten the load time is to stop the car, then run the Engines to Notch 6, while holding the Train Brake in at least 18% (Direct Application). Then, just before the loader is finished, release the train brake. If you are really good, then you can do this with minimal delay between the brake release and the train beginning to move again. But be careful – if your load starts to move too early, you will fail the loading!

3. The scenario will end after the 20th car has been loaded. By that time, you will be ready for the end!

Scenario Cheatsheet – U30C King Coal: Shoot em’.

1. The train is fully loaded and ready for the crew to take it back to the coal docks at Alicia. However, being that you are on a 1% grade, getting things going won't be easy. First, allow the train to start. **NOTE:** at the beginning of the scenario, it takes a few seconds for all controls to initialize, so you will see the train roll a bit until the brake pipe pressure comes up to normal levels.
2. Move the Selector Handle to "1", turn on the Sander, and increase the Throttle to Run 5.5.
3. Allow the amps to build, then reduce the Train Brake to 12%. The trick here is to keep the train from stretching out and rolling backwards. If this happens, the momentum could begin pulling the train downhill.
4. It will take several seconds for the brake pipe to reduce pressure and release the cylinders throughout the train. Once the locomotives have started picking up speed though, reduce the brake to 7-9% and continue with this until you have achieved a speed of 2mph or above. Then, release the brakes completely.
5. Slowly increase the throttle settings, but be careful to avoid wheelslip.
6. Once the train is about half of the way over the first hill, the grade will shift down at about 1.3%. You will need to reduce the Throttle to Idle, and move the Selector to the Dynamic Braking position. Then, use the Dynamic Brakes, along with a few applications of the Train Brake, to keep the train under control all the way to Waynesburg.
7. Although the target destination is Alicia, the scenario will come to an end near MP74. A rock slide has blocked the tracks and you must get the train under control and stopped without hitting it. It is possible to stop in time, if you just happen to be following line speed limits.

Scenario Cheatsheet – U30C King Coal: Local Switching.

1. Although this is not a time-tabled scenario, you should make your best efforts to complete this scenario in a timely manner. Players who take too long to complete a task may end up with their train cut in half when a dispatcher opens a switch under it in preparation of an AI through-move. Specifically, you must have your train through the switches at the south end of Redstone and Brown by 8:15 or you risk a long wait or derailment.
2. After dropping your cars off at Alicia, do not take your locomotives through the Coal Unloader. The switches to bypass the unloader are operated manually and will have to be thrown by the player. Keep your eye on the task list for instructions on this one.
3. Watch your speed. The speed limit is varied and strictly enforced, so if you don't want to be in the negative when payday comes at the end of the scenario, keep your train on the line!

Special thanks go to the following individuals and organizations for their assistance and support of this project:

Dan Vystrcil
Anthony Wood
Rick Grout
Marc Nelson
Ed Kaspriske
Eric Salter

The Illinois Railway Museum and the crew of #5383
Frank Safranek

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U30C: American Rails

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