

*RAILKING*<sup>®</sup>  
**READY-TO-RUN** *SETS*  
THE COMPLETE SOLUTION

**GP-20 DIESEL  
READY-TO-RUN™ SET**  
*OPERATION MANUAL*



**PLEASE READ BEFORE USE AND SAVE**  
[www.mthtrains.com](http://www.mthtrains.com)

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## CAUTION: ELECTRICALLY OPERATED PRODUCT:

Recommended for Ages 14 and up. Not recommended for children under 14 years of age without adult supervision.

As with all electric products, precautions should be observed during handling and use to prevent electric shock.

**WARNING:** When using electrical products, basic safety precautions should be observed, including the following:

- Read this manual thoroughly before using this device.
- M.T.H. recommends that all users and persons supervising use examine the hobby transformer and other electronic equipment periodically for conditions that may result in the risk of fire, electric shock, or injury to persons, such as damage to the primary cord, plug blades, housing, output jacks or other parts. In the event such conditions exist, the train set should not be used until properly repaired.
- Do not operate your layout unattended. Obstructed accessories or stalled trains may overheat, resulting in damage to your layout.
- This train set is intended for indoor use. Do not use if water is present. Serious injury or fatality may result.
- Do not operate the hobby transformer with damaged cord, plug, switches, buttons or case.
- The transformer was designed to operate on regular US household current (120 volt, 50-60 Hertz). Do not connect to any other source of power.
- To avoid the risk of electrical shock, do not disassemble the transformer unit. There are no user-serviceable parts inside. If the unit is damaged contact M.T.H. Service for instructions.
- The transformer is equipped with an internal circuit protector. If the circuit protector trips, unplug the power cord from the electrical wall outlet, check your layout for any short circuits. The circuit breaker will reset automatically when the short is removed from the circuit.
- Unplug the transformer from the electrical wall outlet when not in use.
- Do not use this transformer for other than its intended purpose.

**Transformer Ratings:** Input: 120 VAC, 60 Hz Only, Output: 15 VDC, 56.3 VA

This product may be protected by one or more of the following patents:

6,019,289; 6,280,278; 6,281,606; 6,291,263; 6,457,681; 6,491,263; 6,604,641; 6,619,594; 6,624,537; 6,655,640.

©2019, M.T.H. Electric Trains, Columbia, MD 21046

# 4 WAYS TO OPERATE YOUR PROTO-SOUND 3.0-EQUIPPED TRAIN SET

## DCS EXPLORER:

Your RailKing Ready-to-Run Train Set features an industry-leading range of operating features that can be operated in ways no other modern train set can emulate. The included DCS Explorer and power supply in your set pairs with **YOUR** smart phone or tablet to give you fast, wifi-enabled control over the locomotive in a simple intuitive interface.

## OTHER DCS CONTROL OPTIONS:

Don't have a smart device? Swap out the DCS Explorer for simple infra-red control using the DCS Remote Commander, or choose the 32 digital function DCS Commander or even the full featured DCS System for the ultimate in command control technology. You can learn more about command control and DCS options by visiting our DCS Options page at [www.mthtrains.com/2017RTRsets/DCS](http://www.mthtrains.com/2017RTRsets/DCS).

## DCC COMMAND CONTROL:

Similar to the M.T.H. DCS systems, DCC is an older industry standard command control protocol that sends digital signals to the train. While not as robust or intuitive as DCS, DCC control is an appealing option for customers who already have DCC equipped trains. DCC controllers are available from many different manufacturers. Your train set locomotive requires a slight, do-it-yourself modification to work under DCC control. Instructions for modifying the locomotive and operating it under DCC control can be found by visiting our DCC Control page at [www.mthtrains.com/2017RTRsets/DCC](http://www.mthtrains.com/2017RTRsets/DCC).

## CONVENTIONAL AC OR DC ANALOG CONTROL:

Virtually any AC or DC traditional transformer can run your Proto-Sound 3.0 train set providing speed, direction and basic locomotive sounds. AC transformers with whistle and bell controls can access additional features whistle and horn effects, bell sounds, coupler operation and much more. Learn more and see a list of compatible transformers by visiting our Conventional Control Options page at [www.mthtrains.com/2017RTRsets/conventional](http://www.mthtrains.com/2017RTRsets/conventional).

## Manual Volume Control

To adjust the volume of all of the sounds made by the engine (while operating the engine in CONVENTIONAL AC OR DC ANALOG CONTROL), turn the manual volume control (see figure) clockwise to increase the volume and counterclockwise to reduce the volume. Turning the manual volume control completely counterclockwise will turn off all of the engine sounds and announcements.



Manual Volume Control

# SET UP CHECKLIST

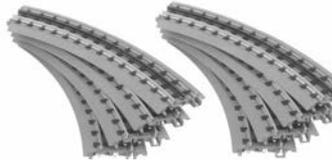
- Assemble RealTrax®
- Lubricate the Engine
- Prime the Smoke Unit
- Place the engine and cars on the track and couple them together
- Connect the transformer and install the DCS Explorer
- Apply power to run as described in the Basic Operation section of these instructions

## Set Includes:

- Diesel Engine
- 3 Cars



DCS Explorer  
(50-1035)



8-Pieces O-31 Curve RealTrax  
(40-1002)



4-Pieces Straight  
RealTrax  
(40-1001)



RealTrax wire harness  
(40-1015)



Lighted Lock-On  
(40-1003)



DCS Explorer Power  
Supply



DVD

## Tools Needed



Philips Screwdriver



Pliers



Scissors



Cotton Swab or Rag



M.T.H. Maintenance Kit  
(30-50051)

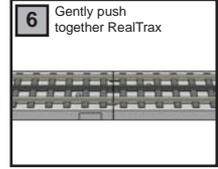
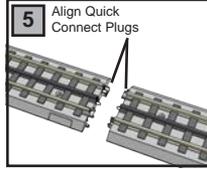
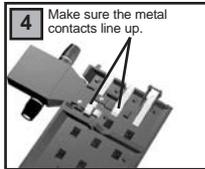
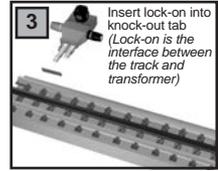
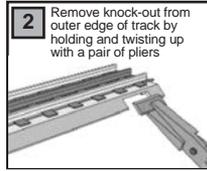
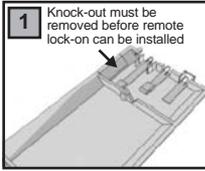
**You can obtain replacement parts and replacement instructions from the M.T.H. Parts Department**

Order Online: [www.mthtrains.com](http://www.mthtrains.com), E-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2580, Mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532

# GETTING STARTED

## Assembling RealTrax®

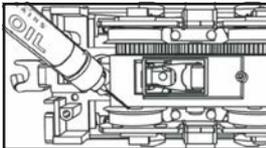
The quick connectors and built-in roadbed allow you to set up RealTrax anywhere, including carpeted surfaces.



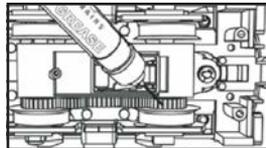
For more information on assembling and using RealTrax, visit [www.mthtrains.com/RTRsets](http://www.mthtrains.com/RTRsets) and click on the RealTrax video link.

## Lubricating the Engine

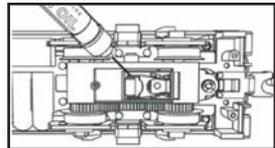
Lubricate all exposed moving parts before operating using a multi-purpose, plastic-compatible oil (available with M.T.H.'s Maintenance Kit (#30-50010), sold separately) or a light household oil. Follow the lubrication points.



Lubricate Axles



Grease Gears



Lubricate Pick-Up Rollers  
(Do Not Lube the Flat Part of Pick-Up Rollers)

Lubricate Pick Up Roller Axles (L)



Figure: Lubrication Points on the Locomotive

## Priming the Smoke Unit

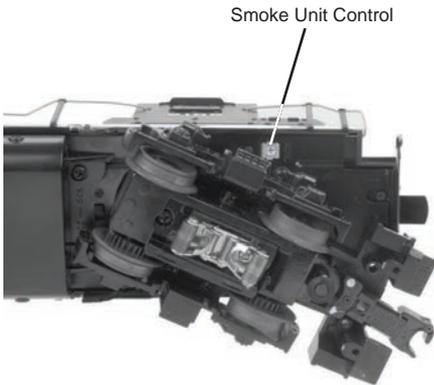
You should prime the smoke unit with smoke fluid before operating. Add 15-20 drops of smoke fluid from the included pipette through the smokestack, then gently blow into the stack to eliminate any air bubbles in the fluid. Do not overfill the unit or the fluid may leak out and coat the interior engine components.

If you choose not to prime the unit with fluid, turn the smoke unit control (see figure below) to the OFF position (Full Counter Clockwise Position). Failure either to add fluid to the smoke unit or to turn it off may damage the smoke unit heating element and/or wicking material. See the "ProtoSmoke™ Unit Operation" section of this book for more information on smoke unit maintenance.

**RUNNING THE ENGINE WITHOUT A  
PRIMED SMOKE UNIT MAY CAUSE DAMAGE**



*Figure: Smoke Unit Control*



*Figure: Smoke Unit Control*

## Coupling the Engine and Cars

Our couplers are designed for realistic operation. Place the engine and cars on the track and couple them together. If the coupler is already closed, press down on the small finger that extends from under the right side of the coupler to open the coupler knuckle and allow the couplers to interlock as shown in Step 3 below.

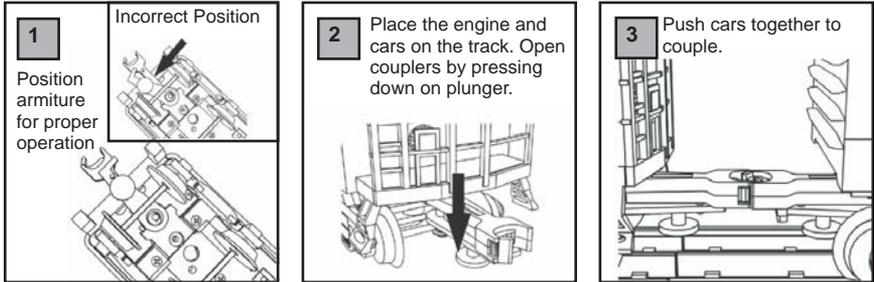
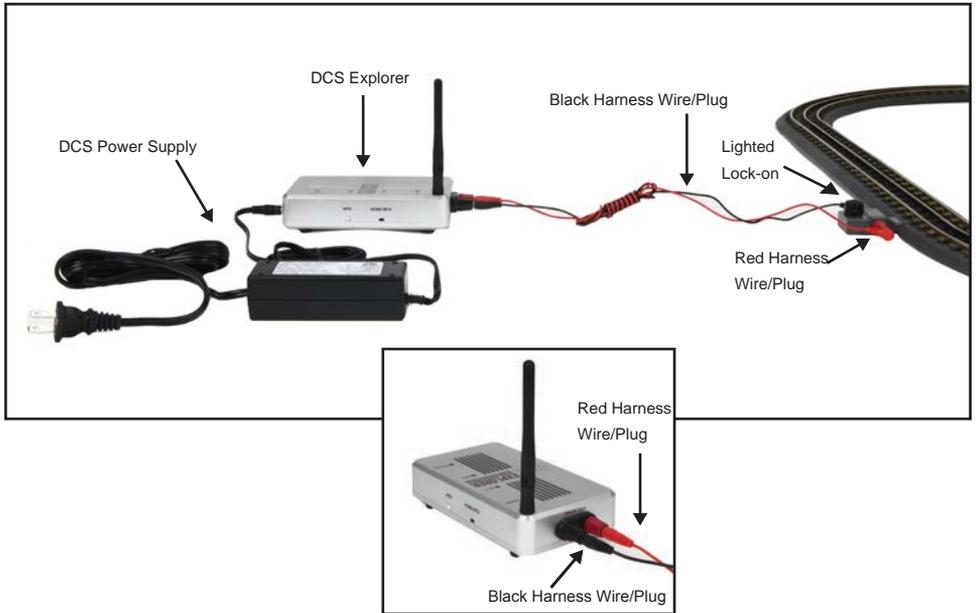


Figure: Coupling the Engine and Cars

# CONNECTING THE TRANSFORMER & INSTALLING DCS EXPLORER

Your set comes with M.T.H.'s latest DCS component, the DCS Explorer. The Explorer communicates with any Android or iOS smart phone or tablet running the free M.T.H. DCS App via a WiFi signal. The app is available from the Apple App Store (for iOS devices) or Google Play (for Android devices). It is possible to operate the train set with other controllers, including conventional transformers (like the M.T.H. Z-1000), the DCS Remote Commander, the DCS Commander or the full DCS Digital Command System. All of these devices are sold separately.

To install the DCS Explorer and power supply, please use the following instructions:



# DCS EXPLORER EXPLAINED

## Reset button

Press and release for Reboot  
Press and hold 10 seconds for factory reset

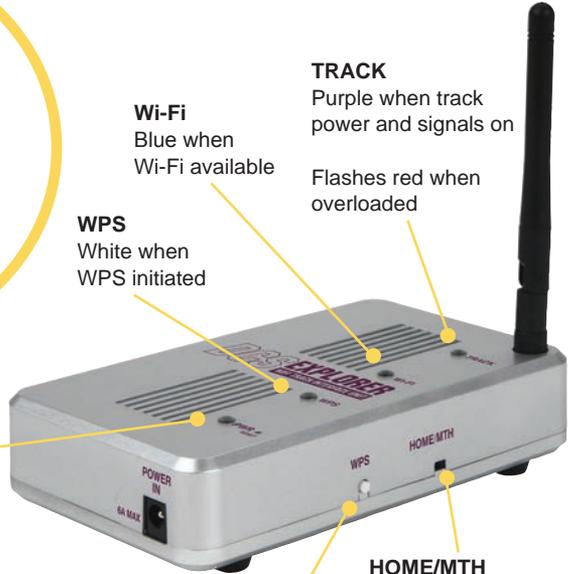


**TRACK OUT**  
Connect directly to your track

**Wi-Fi**  
Blue when Wi-Fi available

**TRACK**  
Purple when track power and signals on  
Flashes red when overloaded

**WPS**  
White when WPS initiated



**POWER**  
Green when plugged in

**HOME/MTH**  
Selects between HOME and MTH networks

**WPS**  
"Wi-Fi Protected Set Up"  
Press to connect to your WPS capable router

**FUSE**  
Replaceable if necessary



**USB**  
Connect to Ethernet (requires adapter)



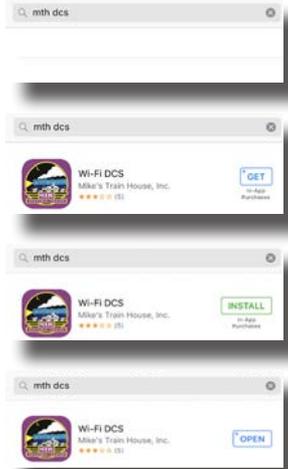
**POWER IN**  
Connect wall adapter here

# DOWNLOAD AND INSTALL DCS APP

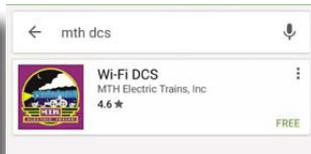
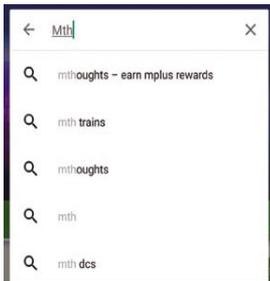
for iOS and Android



1. Tap the App Store icon on your Apple device
2. In the lower right of the screen, tap the magnifying glass to search the app store
3. Tap the gray search bar at the top of the screen and type "MTH DCS" without the quotation marks.
4. Tap the blue search button in the lower right corner of the screen.
5. When the MTH Wi-Fi DCS app appears tap "GET" in the upper right area of the screen.
6. Once the app downloads, the "GET" box will change to "Install."
7. Tap "Install" and the box will change to "Open."
8. Tap Open to open the app.
9. There will now be an icon on your screen when you want to open the app in the future.



1. Tap the Play Store icon on your Android device
2. Tap the white bar at the top of the page to bring up the search function.
3. Type "MTH DCS" into the search bar without the quotation marks.
4. Tap on the purple MTH logo for Wi-Fi DCS.
5. Tap on the Install button in the middle of the screen.
6. Once the app is installed, tap open to run your app.
7. There will now be an icon on your screen when you want to open the app in the future.



# USING THE MTH NETWORK

In MTH network mode, your DCS Explorer creates its own unique Wi-Fi network. In this mode, you simply connect your smart device to the MTH network, open your app, and run your trains! Please note, your smart device will not be connected to the internet while operating in MTH network mode.

1. Attach the antenna to the DCS Explorer.
2. Set the **HOME/MTH** selector switch to **MTH**.
3. Connect the DCS Explorer to the track using the red and black track connection included in your set.
4. Connect the included power supply into the DCS Explorer.
5. Plug the DCS Explorer into an AC wall outlet.
6. Wait 1 minute for the WIU to initialize. When ready, the **PWR** and **WI-FI LEDS** will be lit.
7. If you haven't already, go to the iOS App Store or Google Play Store and install the app on your smart device. Search for **MTH DCS** to quickly find the app in either app store.
8. In your smart device, navigate to Wi-Fi settings and connect to the **MTH DCS** network. The network name (SSID) and network key are printed on the label affixed to the bottom of the DCS Explorer.
9. Open the app and select your DCS system type. The choices are DCS Explorer or DCS WIU. You can change this later in app settings.
10. Tap **RUN MY TRAINS**.
11. Tap **CHOOSE OR ADD AN ENGINE** near the top of the screen and follow the prompts.
12. After adding an engine(s), tap **START UP** and enjoy running your trains in Wi-Fi DCS.

# USING YOUR HOME WI-FI NETWORK

In HOME network mode, your DCS Explorer connects with your existing home Wi-Fi network. Just make sure your smart device is connected as usual, open your app, and run your trains! In this mode, you can choose the links within the app to check out our online catalogs, newsletters, or search for products.

## For Routers with WPS (Wi-Fi Protected Setup)

1. Attach the antenna to the DCS Explorer.
2. Set the **HOME/MTH** selector switch to **HOME**.
3. Connect the DCS Explorer to the track using the red and black track connection included in your set.
4. Connect the included power supply into the DCS Explorer.
5. Plug the DCS Explorer into an AC wall outlet.
6. Wait 1 minute for the DCS Explorer to initialize. When ready, the **PWR** and **WI-FI LEDS** will be lit.
7. Press the **WPS BUTTON** on your home Wi-Fi router and then press and release the **WPS BUTTON** on your DCS Explorer. Note, some routers may require you to press and hold the **WPS BUTTON** for several seconds. Check the manual for your specific router.
8. Wait until the white **WPS LED** on the DCS Explorer is on steadily. It will go off after a few minutes.
9. If you haven't already, go to the iOS App Store or Google Play Store and install the app on your smart device. Search for **MTH DCS** to quickly find the app in either app store.
10. Make sure your smart device has Wi-Fi turned on and is connected to the Wi-Fi network of the router.
11. Open the app and select your DCS system type. The choices are DCS Explorer or DCS WIU. You can change this later in app settings.
12. Tap **RUN MY TRAINS**.
13. Tap **CHOOSE OR ADD AN ENGINE** the tap **ADD MTH ENGINE** and follow the prompts.
14. Tap **START UP** and enjoy running your trains in Wi-Fi DCS!

## For Routers that Require Manual Setup (no WPS feature)

1. Attach the antenna to the WIU.
2. Set the **HOME/MTH** selector switch to **MTH**.
3. Plug the DCS Explorer into an AC wall outlet.
4. Wait 1 minute for the DCS Explorer to initialize. When ready, the **PWR** and **WI-FI LEDS** will be lit.
5. Using A PC with Wi-Fi, navigate to see the available wireless networks and connect to the **MTH\_DCS-XXXX**. The network name is printed on the bottom of your module.
6. When prompted, enter the network key **mthdcswifi** all lower case. The network key is also printed on the bottom of your module.
7. Open your web browser and enter the IP address **192.168.143.1** in the url address line. This is usually the top text box in your browser. This will open LuCI, the MTH DCS web interface.
8. Enter the password **MTHDCS** and hit enter. Do not change the username from **ROOT**.
9. Select the **STATION MODE** tab along the top of the screen. Then, select **WIRELESS** from within that tab. Wireless is the only option under Station Mode.
10. In the **ESSID** field, enter the network name (SSID) you want to connect the module to. This is probably the same network you connect your phone or other devices to.
11. If your network is secured (requires a password) then select the encryption type from the drop down menu. If you don't know your encryption type, try the last choice which is mixed mode. If that doesn't work, you will need to obtain your specific encryption type from your router.
12. Enter your home network password in the **KEY** field. This is also known as your **NETWORK KEY**.
13. Click the **SAVE AND APPLY** button in the lower right part of the screen.
14. Remove power from the DCS Explorer and close your browser.
15. Set the **HOME/MTH** selector switch to **HOME**.
16. Follow the instructions for connection to your home network using WPS in the previous section, however, ignore steps 7 and 8. The WIU will now automatically connect to your home network each time it is powered up.

# USING A WIRED ETHERNET NETWORK

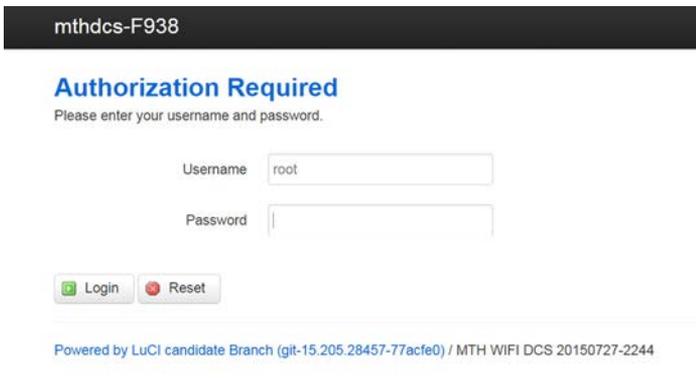
If you prefer, the DCS Explorer can be hard wired to your network router using standard Ethernet cables and a USB to Ethernet adapter. In this configuration, a network router is required. The smart device typically connects to the router via Wi-Fi, so there is limited benefit to using this configuration. It may improve overall performance in an environment with unreliable Wi-Fi network signaling.

1. Attach the antenna to the DCS Explorer (It isn't necessary of course but, it's a great place to store it!).
2. Set the **HOME/MTH** selector switch to **MTH** (I know, it seems odd but, trust us).
3. Connect the DCS Explorer to the track using the red and black track connection included in your set.
4. Connect the DCS Explorer to your network router using a standard Ethernet cable and USB to Ethernet adapter.
5. Plug the DCS Explorer into an AC wall outlet.
6. Wait 1 minute for the DCS Explorer to initialize. When ready, the **PWR** and **WI-FI LEDS** will be lit.
7. If you haven't already, go to the iOS App Store or Google Play Store and install the app on your smart device. Search for **MTH DCS** to quickly find the app in either app store.
8. Make sure your smart device has Wi-Fi turned on and is connected to the Wi-Fi Network of the router.
9. Open the app and tap **RUN MY TRAINS**.
10. Tap **CHOOSE OR ADD AN ENGINE** then tap **ADD MTH ENGINE** and follow the prompts.
11. Tap **START UP** and enjoy running your trains in Wi-Fi DCS!

LuCI is a web interface for your DCS Explorer. Think of it as a custom web page used exclusively for accessing advanced set up and features in your DCS Explorer unit. To operate Wi-Fi DCS, most people will not need to access LuCI. However, if MTH releases an update to your DCS Explorer firmware, you will want to meet her.

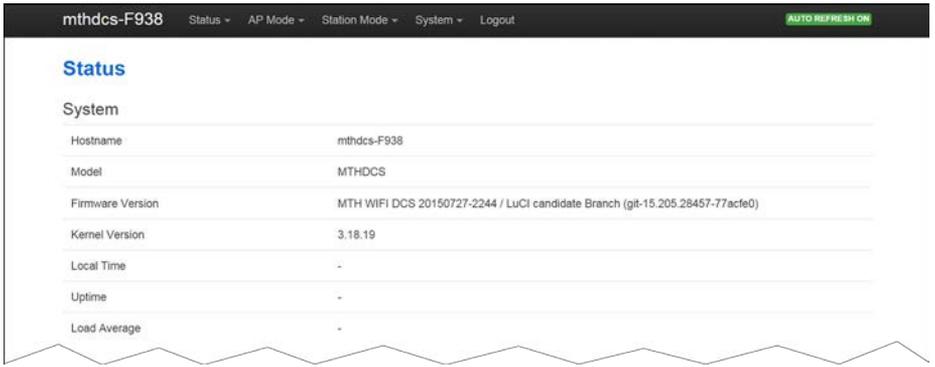
## Accessing LuCI

1. Disconnect all cables from your WIU DCS Explorer.
2. Set the **HOME/MTH** selector switch to **MTH**.
3. Plug the DCS Explorer into an AC wall outlet.
4. Using a smart device or Wi-Fi capable laptop/PC, navigate to see the available wireless networks and connect to the **MTH\_DCS-XXXX**. The network name is printed on the bottom of your module.
5. When prompted, enter the network key **mthdcswifi** all lower case. The network key is also printed on the bottom of your module.
6. Open your web browser and enter the IP address **192.168.143.1** in the url address line. This is usually the top text box in your browser. This will open LuCI, the MTH DCS web interface.
7. Enter the password **MTHDCS** and hit enter. Do not change the username from **ROOT**.



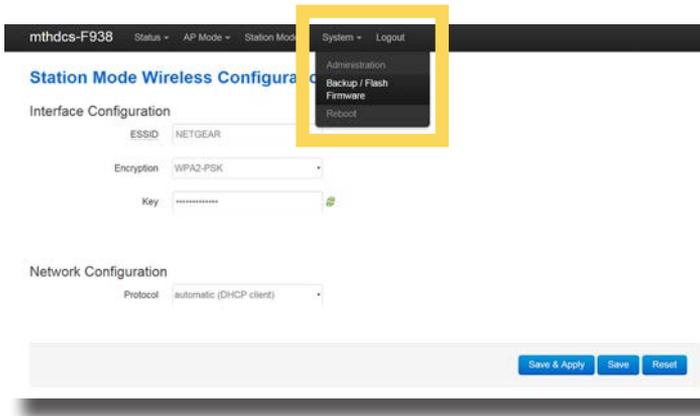
The screenshot shows a web browser window with a black header bar containing the text "mthdcs-F938". Below the header, the main content area has a white background. At the top, it says "Authorization Required" in blue, followed by "Please enter your username and password." in grey. There are two input fields: "Username" with the value "root" and "Password" which is empty. Below the fields are two buttons: "Login" (green) and "Reset" (red). At the bottom, there is a footer line: "Powered by LuCI candidate Branch (git-15.205.28457-77acf0) / MTH WIFI DCS 20150727-2244".

8. The home page of LuCI will be displayed.



## Updating DCS Explorer Firmware

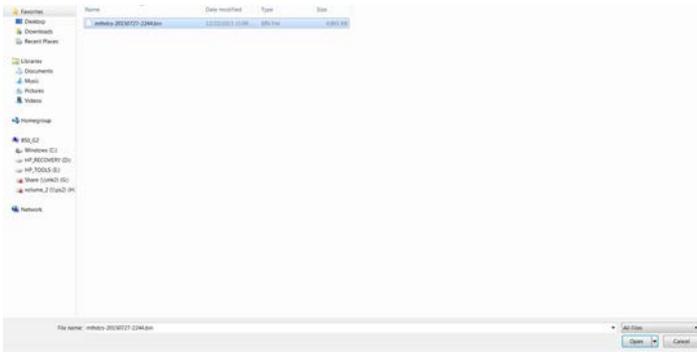
1. Access LuCI (see instructions above in this section).
2. Select the **SYSTEM** tab near the top of the page.



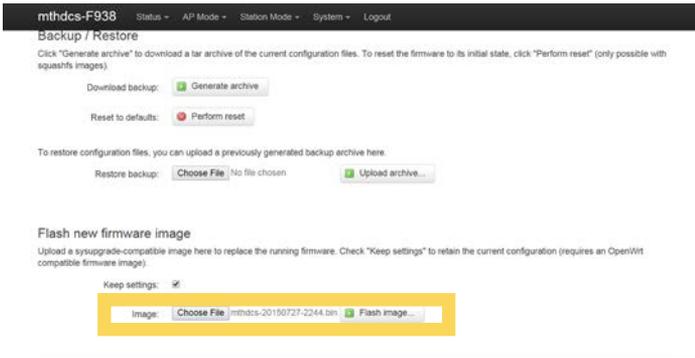
3. Select **BACK-UP/FLASH FIRMWARE** from the drop down list.
4. Scroll down the page until you see **FLASH NEW FIRMWARE IMAGE** near the bottom of the page.



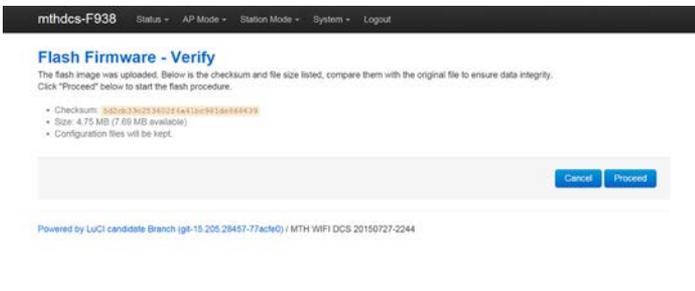
5. The **KEEP SETTINGS** box must be **UNCHECKED**. If you leave it checked you will have to hard reset the Explorer to get it running again. Your SSID and Password info will be overwritten and have to be reentered after the Firmware has been updated.
6. Select **CHOOSE FILE** and navigate to the new firmware filename, select the file, and click **OPEN**.



7. Wait until the file window closes (up to 15 seconds). Verify the filename selected is displayed next to the **CHOOSE FILE** button.

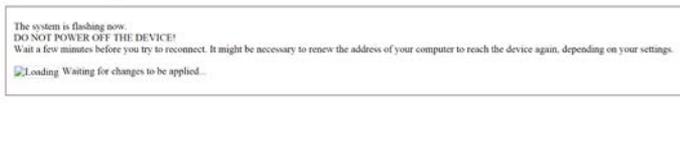


8. Select **FLASH IMAGE...**
9. When the **FLASH FIRMWARE - VERIFY** page is displayed, select the blue **PROCEED** button.



10. You should now see the **SYSTEM FLASHING SCREEN**.

#### System - Flashing...



**NOTE: While the firmware image is being flashed, DO NOT TOUCH THE DEVICE (tablet, phone, PC, laptop) OR THE DCS EXPLORER! WAIT A FULL 3 MINUTES. IF YOU DO NOT, THE DCS EXPLORER COULD BE DAMAGED AND REQUIRE SERVICE!**

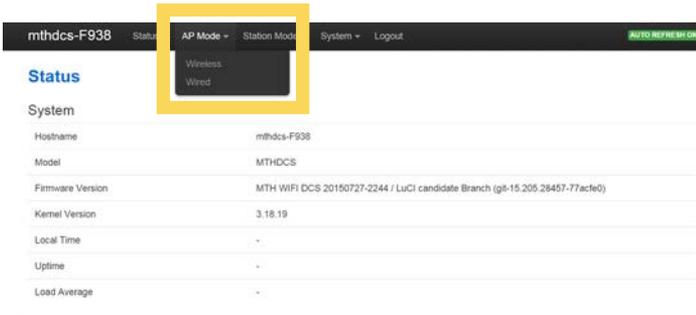
11. After waiting a full 3 minutes, it is now safe to remove power from the DCS Explorer and reconnect it to your layout.

**NOTE: LuCI will never tell you that the step is complete. It will remain on the system flashing screen indefinitely. This is why you must wait 3 minutes.**

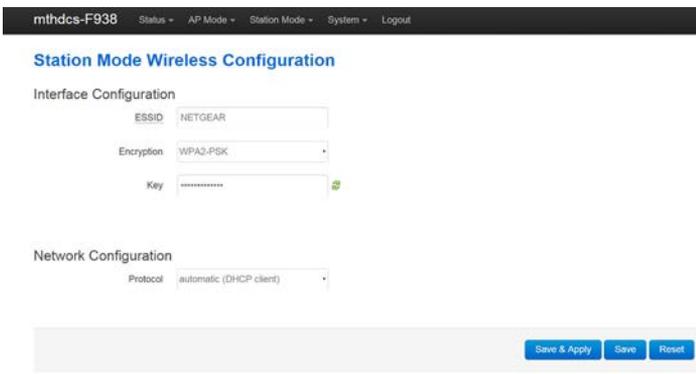
## Changing the SSID and Network Key for MTH Wi-Fi Network Mode

For security purposes, like operating in a public setting, you may want to change the SSID and Network Key. These are also known as the Network Name and Password for those of us who are less technical. Either way, it's easy.

1. Access LuCI (see instructions above in this section).
2. Select the **AP MODE** tab at the top of the page.



3. Select **WIRELESS** from the drop down menu.
4. Scroll to the top of the page.
5. In the **ESSID** box, delete the contents and enter the new **SSID** or network name.



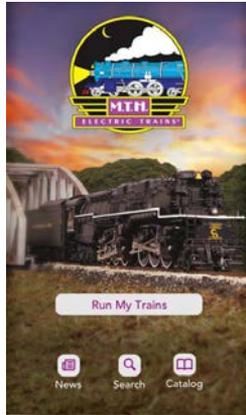
6. In the **KEY** box, delete the contents and enter the new **NETWORK KEY** or password.
7. Scroll down to the bottom of the page and select **SAVE & APPLY**.
8. Close LuCI.
9. Remove power from the DCS Explorer.
10. When power is reapplied, the **SSID** and **NETWORK KEY** (Network name and password) will be changed.

*NOTE: The Encryption box should be left on WPA2-PSK.*

# APP TOUR

## TITLE SCREEN

When you first open the MTH DCS app, this is the screen you will see. You have several options described below.



### Run My Trains

**Run My Trains:** Tap here to take you to the **MAIN ENGINE CONTROL SCREEN**



**News:** While connected to the internet, tap here to sign up for our newsletter or find out the latest happenings at MTH.



**Search:** While connected to the internet, tap here to search for products.



**Catalog:** While connected to the internet, tap here to browse through all of our catalogs.

## SECOND SCREEN

After selecting “Run My Trains,” the next screen you will see is shown here. Select the system you’ll be running which is “DCS Explorer.”

The system selection screen will pop up when the app is first opened. Thereafter, the system selection screen will not reopen.

### Welcome to WiFi DCS!

First off, tell us which MTH DCS system you're running, then we'll locate the system on your WiFi network.

You can change your selection in app settings later on.

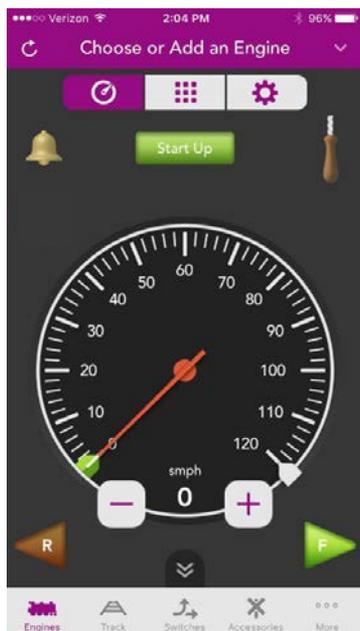
DCS Explorer



DCS WIU



# MAIN CONTROL SCREEN



**Refresh:** Tap here to read the track and refresh your app to the current state of your layout

Choose or Add an Engine

**'Choose or Add an Engine':** Tap here to add your engines to the app and run them!



**Down Arrow:** Tap here to pull down your engine list



**Bell:** Tapping here turns the bell on and off

Start Up

**Start Up:** Tapping here starts up the engine currently displayed



**Whistle:** Touch, hold, and drag downward to play the whistle. For engines with playable whistles, see **Whistle Settings** in the **Setting Screen** section.

*NOTE: For diesel and electric engines, the whistle pull is replaced by a horn icon. Tap and hold the horn icon to blow the horn.*



**Speedometer:** There are several ways to control the speed of your locomotives.

Tap once anywhere around the circular bezel once to set the speed. The engine will accelerate or decelerate at the default rate. (See the DCS Manual)

Tap twice anywhere around the circular bezel to set the speed at faster rate.

Touch, hold, and drag from the tip of the speed indicator needle around the circular bezel in either direction to select the desired speed.

Regardless of how you set the speed, the digital speed is displayed between the “-” and “+” icons. Incidentally, speeds are in actual scale miles per hour (smph) in DCS!



**- icon:** Tapping here decreases speed in increments of 1 smph.



**+ icon:** Tapping here increases speed in increments of 1 smph.



**Reverse:** Tapping here sets the direction of the engine to reverse.

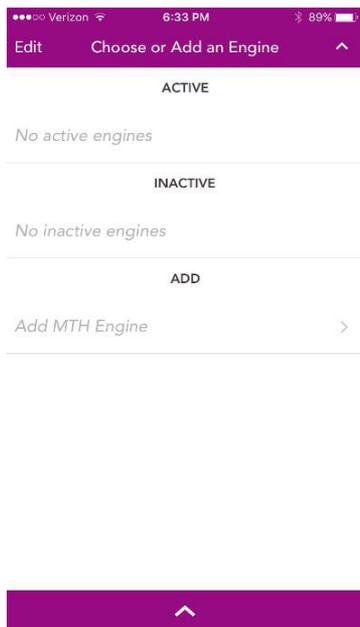


**Forward:** Tapping here sets the direction of the engine to forward.

*NOTE: If you are moving in forward, tapping reverse is a good way to bring the engine to a stop. The same is true if you tap forward while moving in reverse. Go ahead. Try it.*

# ENGINE LIST SCREEN

On the **MAIN CONTROL SCREEN**, tapping **CHOOSE OR ADD AN ENGINE** or the down arrow, takes you to the **ENGINE LIST SCREEN**. This screen is used to manage your engine roster. From here, engines can be added or deleted. You can also see the list of currently active and inactive engines.



**Up arrow:** Tapping here closes the **ENGINE LIST**

## ACTIVE

**Active:** This section displays the currently active engines. These engines are available to run!

## INACTIVE

**Inactive:** This section displays the currently inactive engines. These engines exist in your roster but currently, are not active and ready to run.

## ADD

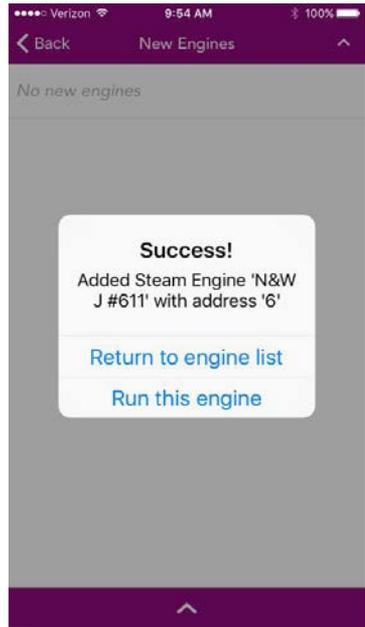
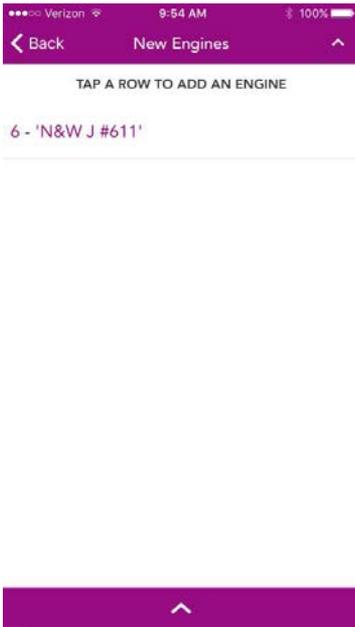
**Add:** Tap **ADD MTH ENGINE** and follow the prompts to add a new engine to your system. The SS app only allows 3 engines to be added to the system.

*NOTE: Engines should be added to your system one at a time. Never try to add multiple engines that have the same address!*

# ADDING NEW ENGINES

After tapping **ADD MTH ENGINE** from the **ENGINE LIST SCREEN**, a list of new engines found will be displayed.

From this screen, simply tap the engine name you would like to add. This will bring up the Confirmation screen.



From here, you can tap **RETURN TO ENGINE LIST** which will take you back to your **ENGINE LIST** or **RUN THIS ENGINE** which will take you to the **MAIN CONTROL SCREEN** for the newly added engine.

*NOTE: If you are adding multiple engines, the additional option of **ADD ANOTHER ENGINE** appears. Tap to go back to the list of new engines to add.*

# SECONDARY CONTROL SCREEN

The Secondary Control Screen provides quick access to features commonly used while running trains. This screen is common to all engines so, some features may not be present on all engines.



**Rear Coupler:** Tap to open the rear coupler (if so equipped)



**Front Coupler:** Tap to open the front coupler (if so equipped)



**Headlight:** Tap to turn the headlight on or off



**Smoke:** Tap to turn the smoke on or off



**Engine Sound:** Tap to turn the engine sounds on or off (mute)

A light gray rounded rectangular button with the word "Protocast" in purple text.

**Protocast:** Tap to activate the Protocast feature.

---

A light gray rounded rectangular button with the text "PFA" in purple.

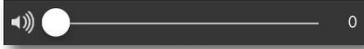
**PFA:** Tap to activate the Passenger or Freight Announcements.

---

A light gray rounded rectangular button with the word "Doppler" in purple.

**Doppler:** Tap to activate the "one shot" Doppler feature.

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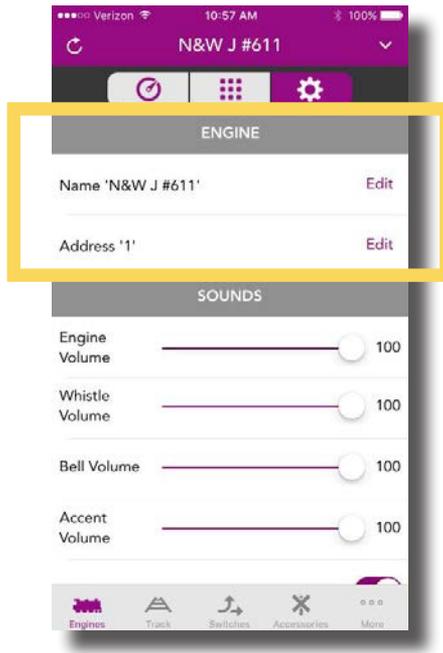
**Master Volume Slider:** In iOS, **tap, hold,** and **drag the circle** on the slider to set the master sound volume. In Android, **tap the bar** to set the master sound volume. The percentage is displayed on the right side of the slider.

# SETTINGS SCREEN

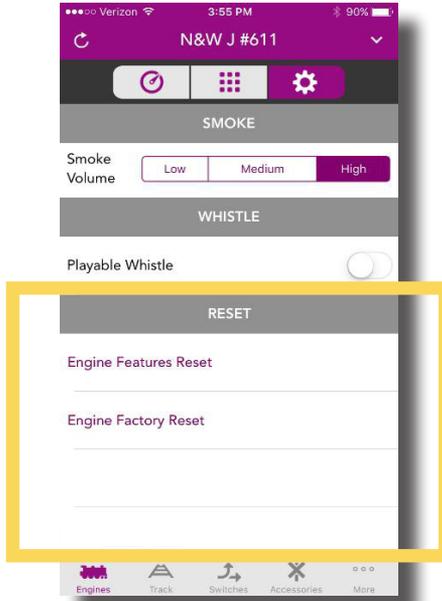
The Settings Screen is where you can tailor your engine's behavior to fit your operating preferences. Like many things in DCS, the settings available are unique to your engine so, there will be differences between steam and diesel engines, for example. Most of these settings are saved in the engine and remain until you change them again. Don't worry, included in the Settings Screen is the ability to reset your engines to their original state.

## Engine Settings

You can edit the engine name or address by simply tapping **EDIT** shown to the right of both. You can name your engine whatever you like up to 16 characters. You can change your engine address to any available address that is not already assigned to another engine.



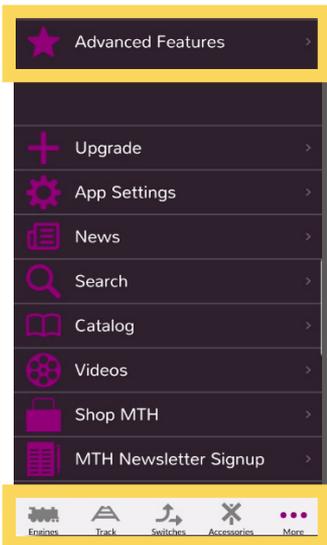
# Reset Settings



**Engine Features Reset:** Tap to reset all features of your engine except the address and custom name.

**Engine Factory Reset:** Tap to reset the engine to factory defaults.

**To Unhide or Hide the E-Stop Feature:** Unhiding E-stop, or Emergency Stop, displays an icon on the main control screen that when pressed for 1 second or more, removes power from the track.



# NAVIGATIONAL TIPS

Like any app, once you know the general layout and how to move around, things get much easier. So, here are a few tips to help you find your way around.

## Engine Selection

There are several ways to select engines. We've made this simple and intuitive for you.

1. Tapping the **ENGINE NAME** at the top of the screen will toggle between the current engine and the last engine ran.  
*NOTE: If there is only one active engine, tapping the engine name will open the **ENGINE LIST**.*
2. Tapping the **DOWN ARROW ICON** in the upper right of the screen will pull down the **ENGINE LIST**.
3. From the **ENGINE LIST**, tapping any active engine will take you to the **MAIN CONTROL SCREEN** for that engine.
4. From the **ENGINE LIST**, tapping the **UP ARROW ICON** in the upper right of the screen or at the bottom center of the screen will return you to the previous screen.

## Main Control and Secondary Control Screens



**Cntl Icon:** Tapping here takes you to the **MAIN CONTROL SCREEN**

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These two screens are probably the most common screen you will use while operating your trains. You can easily switch back and forth between these screens in a couple of different ways.

1. From the **MAIN CONTROL SCREEN**, swipe upward or tap **DBL DOWN ARROW ICON** to move down to the **SECONDARY CONTROL SCREEN**.
2. From the **SECONDARY CONTROL SCREEN**, swipe upward or tap **DBL UP ARROW ICON** to move up to the **MAIN CONTROL SCREEN**.

## Refresh (Read)

You can Refresh the app to reflect your current operating state in a couple of ways.

1. Tap the **REFRESH ICON** in the upper left of the screen to update the app with the current status of your layout.
2. From the **ENGINE LIST**, swipe down and release to update the app with the current status of your layout.

## Tab Bar

Across the bottom of the screen is the tab bar. The icons on this bar normally allow you to navigate between major functionalities of the app. However, other than the More button, **none of these functions (Track, Switches, Accessories) are available when using the app with the DCS Explorer.** Clicking on the More button will give you access to select features that do function when the app is connected to the DCS Explorer.



**Engines:** Tap here for primary engine controls where you can add, edit, operate, and customize your



**More:** Tap here to upgrade your app, access app information, and find links to news, videos, product searches, catalogs, and more!

# TROUBLESHOOTING

CONDITION	POSSIBLE CAUSE(S)
No DCS Explorer Found	Make sure your smart device is connected to the same Wi-Fi Network as the DCS Explorer. In MTH mode, this is the MTH Wi-Fi Network. In HOME mode, this is your home network.
	Make sure the TIU has power applied. Confirm the green power LED is lit.
Engine Inactive - will not move to active list	Make sure the engine is on the track and track power is applied.
Resetting your DCS Explorer	Use a paperclip or toothpick to press and hold the reset button for 10 seconds then release it. The unit must be powered.

# MAINTENANCE

## Lubricating and Greasing Instructions



The engine should be well oiled and greased in order to run properly. Regularly lubricate all axles and pickup rollers to prevent squeaking. Use light household oil, such as that found in M.T.H.'s maintenance kit. Do not over oil. Use only a drop on each pivot point.

Lubricate Pick Up Roller Axles (L)



Lubricate All Wheels Axles (L)

Figure: Lubrication Points on the Locomotive

Body Mount Screws

Body Mount Screws



Motor Mount Screw

Motor Mount Screw

Figure: Body Removal Screw Locations and Motor Mount Screws

The locomotive's internal gearing was greased at the factory and should not need additional grease until after 50 hours of operation or one year, whichever comes first. Follow the greasing instructions below. Note that in some tightly packed engines you may need to move internal components temporarily in order to access the gears.

1. To access the gear box, remove the cab from the chassis by unscrewing the body mount screws as seen above and lifting the cab from the chassis.
2. Once the cab is removed, remove the trucks by unscrewing the black Phillips motor mount screw located on the underside of the drive trucks.
3. Once the motor mount screw has been removed, pull the motor away from the truck block and lightly coat the motor worm gear and bronze drive gear (in the truck block) with grease.
4. Reassemble the truck and motor, being careful not to pinch any wires between the truck block and motor mount.
5. After repeating the procedure for the other motor, reassemble the chassis and body, being careful that the wire harnesses are not caught between the chassis and body, and reinstall the body mount screws.

Lubricate the outside truck block idler and drive gears with grease. Use the diagram shown below as a guide and add grease to the points marked.



Figure: Grease the Idler Gears

## Cleaning The Wheels, Tires, and Track

Periodically check the locomotive wheels and pickups for dirt and buildup, which can cause poor electrical contact and traction and prematurely wear out the neoprene traction tires. Wheels and tires can be cleaned using denatured (not rubbing) alcohol applied with a cotton swab.

To clean the track, use RailKing® Track Cleaning Fluid or denatured (not rubbing) alcohol and a clean rag. Unplug the transformer and wipe the rails of the track, turning the rag frequently to ensure that you are using clean cloth on the rails. Thereafter, keep an eye on the track and clean it when it gets dirty to ensure good electrical contact and to lengthen the life of the tires.



Maintenance Kit (30-50051)



Track Cleaning Block (40-1099)

## ProtoSmoke™ Unit Operation

This diesel locomotive contains a smoke unit that outputs smoke through the exhaust stack of the engine. The smoke unit is essentially a small heating element and wick that soaks up and then heats a mineral oil-based fluid that emits a harmless smoke. The smoke is then forced out of the stack by a small electric fan. With a few easy maintenance steps, you should enjoy trouble-free smoke unit operation for years.

When preparing to run this engine, add 15-20 drops of smoke fluid through the smokestack. We recommend M.T.H. ProtoSmoke fluid (a small pipette of ProtoSmoke fluid is included). Do not overfill the unit or the fluid may leak out and coat the interior engine components.

If you choose not to add the fluid (or have already added the fluid but choose to run smoke-free), turn off the smoke unit control (Full Counter Clockwise Position) located under the tender body.

**Failure either to add fluid to the unit or to turn it off may damage the smoke unit heating element and/or wicking material.**

When the smoke output while running the engine begins to diminish, add another 10-15 drops of smoke fluid or turn the smoke unit off.

When storing the unit for long periods of time, you may want to add about 15 drops of fluid to prevent the wick from drying out.

If you experience poor or no smoke output when the smoke unit is on and has fluid, check the wick to see if it has become hard, blackened, and unabsorbent around the heating element. Remove the body as shown on page 32. Remove the smoke unit inspection cover from the locomotive's body. After removing the chassis and inspection cover screws, lift the inspection plate away and inspect the wick. If it is darkly discolored and hard, it should be replaced. When priming new wick add 40 drops.

**RUNNING THE ENGINE WITHOUT A  
PRIMED SMOKE UNIT MAY CAUSE DAMAGE**

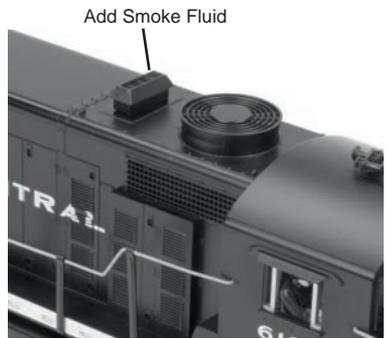


Figure: Adding Fluid

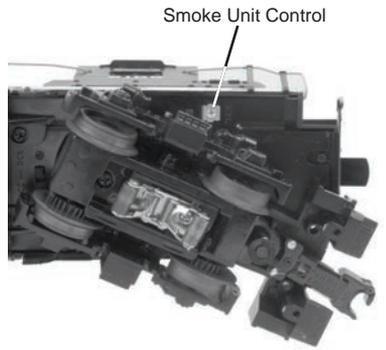
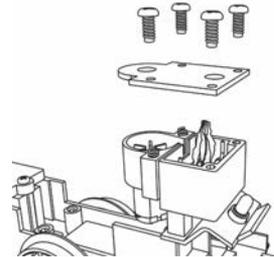


Figure: Smoke Unit Control



Smoke Unit Cover



Wick  
in Poor  
Condition



Wick in  
Good  
Condition

## ProtoSmoke™ Fluid

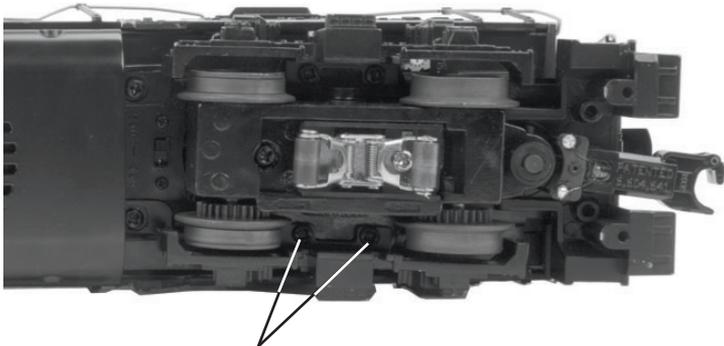
ProtoSmoke is the recommended fluid for M.T.H. products and can be used in other manufacturers products as well. Choose from 12 different scents: Christmas, Coal, Diesel, Wood Burning, Coffee, Eggs & Bacon, Vanilla, Candy Cane, Barbeque, Pipe Smoke, Cinnamon Roll, and Apple Pie



## Traction Tire Replacement Instructions

Your locomotive is equipped with two neoprene rubber traction tires on each powered truck block. While these tires are extremely durable, you may need to replace them at some point. Please use the following instructions to replace the traction tires.

1. Turn your engine upside down.
2. Remove the two Phillips screws that attach each truck side to the truck block.



Truckside Screws

3. Make sure the old tire has been completely removed from the groove in the drive wheel, using a razor blade or small flathead screwdriver to pry away any remains.
4. Slip the new tire onto the wheel. You may find it useful to use two small flathead screwdrivers to stretch the tire over the wheel.
5. If you twist the tire while stretching it over the wheel, you will need to remove and reinstall the tire. Otherwise your engine will wobble while operating.
6. Make sure the tire is fully seated inside the groove. Use a razor blade to trim away any excess tire that doesn't seat itself inside the groove properly.
7. Reassemble in reverse order.

**One set of replacement tires is packaged with the model. Additional tires are available directly from the M.T.H. Parts Department.** Order online: [www.mth-trains.com](http://www.mth-trains.com), e-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2580, Mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532

## Headlight Replacement

The PS 3.0 headlights and other associated lights are small LEDs that require a lot less power and generate a lot less heat than incandescent bulbs, resulting in extremely long life compared to the incandescent bulbs. The LEDs are not user serviceable.

# QUICK-START AND RAILWARE INTERACTIVE DVD

Included in this set is a Quick-Start DVD that demonstrates the start-up and basic operation of this set as well as other information about model railroading. You may find it helpful to view the DVD before operating this set. It is full of helpful information on M.T.H. product history, track planning software, a dealer finder, and information and video clips on Loco-Sound and Proto-Sound 3.0. Follow the directions below to use the DVD.

Minimum System Requirements: Pentium 100, 16MB RAM, Windows 95 or later, DVD drive, Sound Card, display properties set to greater than 256 colors. The DVD will not work on a Mac OS unless you run VirtualPC®.

## Running RR-Track Software

You may run the RR-Track software directly off of the DVD or you may install the software to your hard drive.

1. On the Desktop, click on the icon that says My Computer.
2. Find your CD ROM/DVD drive.
3. With the M.T.H. DVD in the drive, double click on the icon for the CD ROM/DVD drive.
4. Find the folder on the DVD entitled INSTALLATION.
5. Choose the folder inside entitled RRTRAXSETUP.
6. Run the file in that folder called SETUP.EXE and follow the directions it provides.

The program may ask you for a registration code. If it does type in "M.T.H." and it will run.

Additional track libraries can be obtained directly from RR-Track. See their website for more information [www.rrtrack.com](http://www.rrtrack.com).

## Installing Adobe Acrobat Software

To read some of the electronic documents included on the DVD, you will need to install Adobe Acrobat Reader® if it is not already on your computer. To install the software:

1. On the Desktop, click on the icon that says My Computer.
2. Find your CD ROM/DVD drive.
3. With the MTH DVD in the drive, double click on the icon for the CD ROM/DVD drive.
4. Find the folder on the DVD entitled INSTALLATION.
5. Choose the folder inside entitled ACROBAT READER.

\*If you are running Windows 95, 98 or NT choose the folder 32 BIT. Run the file AR32E301.EXE and follow the directions it provides.

If you have problems you cannot resolve by using these directions, contact [custserv@mth-railking.com](mailto:custserv@mth-railking.com) or call 410-381-2580 for further help.

## Service & Warranty Information

### How to Get Service Under the Terms of the Limited One-Year Warranty

When you suspect an item is defective, please check the operator's manual for standard operation and troubleshooting techniques that may correct the problem. Additional information may be found on the M.T.H. Website. Should you still require service, follow the instructions below to obtain warranty service. First, e-mail, write, call or fax a M.T.H. Authorized Service Center (ASC) in your area to obtain Repair Authorization. You can find the list of ASCs on the M.T.H. Website, [www.mthtrains.com](http://www.mthtrains.com). Authorized Service Centers are required to make warranty repairs on items sold only from that store; all other repairs may-- or may not be done at the store's own discretion. If you did not purchase the item directly from the ASC, you will need to select a National Authorized Service Center (NASC). These centers are compensated by M.T.H. to perform warranty service for any customer whose repair qualifies for warranty service. A list of NASC retailers can be located on the M.T.H. Website or by calling 410-381-2580. Should the warranty no longer apply, you may choose either an ASC or NASC retailer to service your M.T.H. Product. A reasonable service fee will be charged.

**CAUTION:** Make sure the product is packed in its original factory packaging including its foam and plastic wrapping material to prevent damage to the merchandise. There is no need to return the entire set if only one of the components is in need of repair unless otherwise instructed by the Service Center. The shipment must be prepaid and we recommend that it be insured. A cover letter including your name, address, daytime phone number, e-mail address (if available), Return Authorization number (if required by the service center, a copy of your sales receipt and a full description of the problem must be included to facilitate the repairs. Please include the description regardless of whether you discussed the problem with a service technician when contacting the Service Center for your Return Authorization.

Please make sure you have followed the instructions carefully before returning any merchandise for service. Authorized M.T.H. Service Centers are independently owned and operated and are not agents or representatives of M.T.H. Electric Trains. M.T.H. assumes no responsibility, financial or otherwise, for material left in their possession, or work done, by privately owned M.T.H. Authorized Service Centers.

If you need assistance at any time email MTH Service at [service@mth-railking.com](mailto:service@mth-railking.com), or call 410 381-2580.

### Limited One-Year Warranty

All M.T.H. products purchased from an M.T.H. Authorized Retailer are covered by this warranty provided the product was manufactured within five years of the date of purchase. This warranty is for the original purchaser and is non-transferable.

See our website [www.mthtrains.com](http://www.mthtrains.com) to identify an M.T.H. Authorized Retailer near you.

M.T.H. products may be registered online in advance of warranty work at [www.mthtrains.com/warranty](http://www.mthtrains.com/warranty). The original sales receipt and the conditions below must be met regardless of whether the product is registered on the M.T.H. website in order to obtain warranty service.

M.T.H. products manufactured within five years from the date of purchase are warranted for one year against defects in material or workmanship, excluding wear items such as light bulbs, pick-up rollers, batteries, smoke unit wicks, and traction tires. We will repair, replace, or credit (at our option) the defective part without charge for the parts or labor if the following conditions are met: (1) the item is returned to an M.T.H. Authorized Service Center\* (ASC) or M.T.H. National Authorized Service Center (NASC) or M.T.H. Electric Trains Service Department, (2) was manufactured within the previous five years and (3) was purchased within one year of the original date of purchase from an M.T.H. Authorized Retailer. Products manufactured after the five year cutoff from the date of purchase are not covered under any warranty by M.T.H. Electric Trains. The manufacture date of an item can be verified on the item's detail page "shipping date field" on the M.T.H. website ([www.mthtrains.com](http://www.mthtrains.com)). This warranty does not cover damages caused by improper care, handling, or use. Transportation costs incurred by the customer are not covered under this warranty.

Items sent for repair must be accompanied by a return authorization number, a description of the problem, and a copy of the original sales receipt from an M.T.H. Authorized Retailer, which gives the date of purchase. If you are sending this product to an Authorized Service Center, contact that Center for their return authorization.

This warranty gives you specific legal rights, and you may have other rights that vary from state to state. Specific questions regarding the warranty may be forwarded to M.T.H. Directly.

\* Authorized Service Centers (ASC) are only obligated to provide warranty service for any consumer who has purchased the specific M.T.H. item from them that requires service work.

Service Department:  
M.T.H. Electric Trains  
7020 Columbia Gateway Drive  
Columbia MD 21046-1532