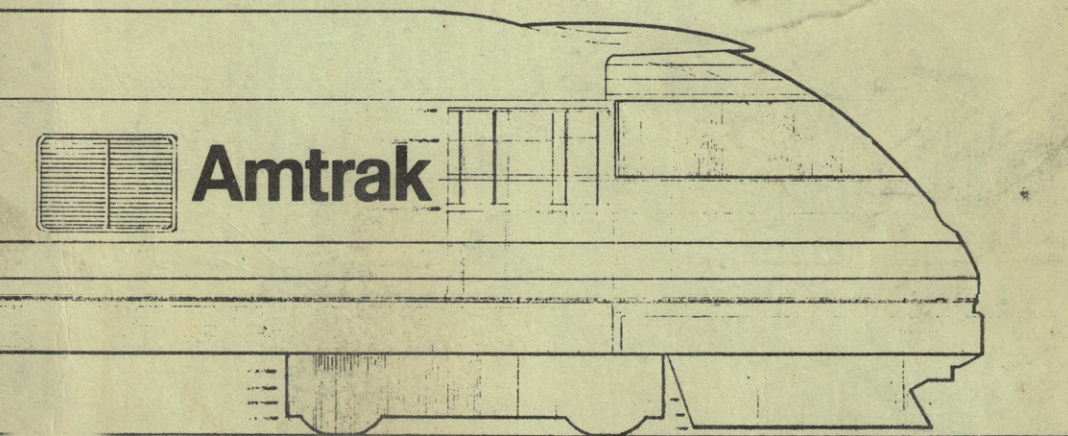


**Amtrak**



# ***RTL TURBOLINER***



## **OPERATING & SERVICING INSTRUCTIONS**

RAPIDO TRAINS INC.

500 ALDEN ROAD, UNIT 21  
MARKHAM, ONTARIO, CANADA L3R 5H5

## **RTL TURBOLINER PRODUCT GUIDELINES**

Thank you for purchasing this model of the last turbine-powered passenger train in North American revenue service, the Rohr-built RTL Turboliner! Based on the earlier French RTG (*Rame à Turbine à Gaz*) Turboliner but with American couplers and 480v HEP, the RTL Turboliners ran for over 25 years out of New York City.

If this is your first Rapido product, we must ask – why is this your first Rapido product? C'mon, we've been around now for a long time now and we're not just a Canadian company anymore, eh? We've produced several imperial tons of US products, like the SW1200s, FL9s, F40PHs, E8s, PA-1s, FA-2s, RS-11s, etc. So just for that, we're going to make sure you LOVE your RTL Turboliner. And then you'll say to yourself, "What have I missed out on all these years? I need to find and buy every Rapido model that has ever been released, in every scale! Even the UK ones!"

If you are a returning customer, welcome back! All we ask is you don't intentionally set your new train on fire, don't use it on a daredevil stunt off the end of the layout, don't use it as mini hockey sticks (that's *too* Canadian...even for us!), and don't run it at high speed into anything made of depleted uranium. Oh, and REALLY keep it away from cheap DC controllers. Crappy power packs can quickly and easily give any Rapido unit an unwanted makeover ... and not the good kind (more like the smoked brisket kind).


If this is your first Rapido Manual, we should warn you up front – there's usually a good amount of humor through these manuals. Well, at least we think so. We have gotten some e-mails from people that don't agree, but we suspect that they have no sense of humor. After all, last we heard is that model railroading is supposed to be fun!

As always, if there is anything amiss with your RTL Turboliner, please do not hesitate to contact us. We stand by our products 100%. The best way to contact us is through email ([service@rapidotrains.com](mailto:service@rapidotrains.com)) but you can also reach us by phone or the postal service. Our contact info is near the back of this manual.

However, PLEASE do not send a faulty model back to us without first getting authorization. You wouldn't believe how many times we get a delivery of a broken locomotive with only a name inside (sometimes only the FIRST name), meaning we have no idea what's wrong with it! If the issue with your model is something simple – like a loose grab iron – then we'll likely tell you how to fix it yourself. Information about the warranty of your model can be found near the end of this manual. Again, please make sure you contact us first so we can tell you whether there's enough parts (or humanity) left to do your repair.

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	<p><b>LOK SOUND</b> EST. 1999</p>	<p>Sound-equipped Rapido models feature ESU Loksound V5 decoders. For more information, please visit <a href="http://www.esu.eu">www.esu.eu</a>.</p>
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**RTL TURBOLINER DCC FUNCTIONS**

- |                                |                                   |
|--------------------------------|-----------------------------------|
| F0 Front Headlight/Red Markers | F11 Door Open/Close               |
| F1 Bell                        | F12 Red Emergency Light           |
| F2 Horn                        | F13 Manual Change Ends            |
| F3 Flange Squeal               | F14 Grand Central Terminal Mode   |
| F4 HEP Turbine                 | F15 Prototype Mode                |
| F5 Doppler Horn                | F16 Air Dryer On Shutdown         |
| F6 Strobe Lights               | F17 Brake Set/Release (Automatic) |
| F7 Dim the Headlights          | F18 Sanding Valve                 |
| F8 Startup/Mute/Shutdown       | F19 Short Air Let Off             |
| F9 Class Lights                | F20 Air Compressor                |
| F10 Independent Brake          | F21 Air Dryer                     |

## **PROTOTYPE HISTORY**

In the 1970s – with Amtrak still reeling from inheriting a proverbial mixed bag of equipment from the former passenger carriers – efforts were made to improve passenger services along key corridors. Following the success of the French-built RTG Turboliners in the mid-1970s in the Midwest, Amtrak turned to Rohr Industries in California to build modernized Turboliners for use along the Empire Corridor.

Entering service starting in September 1976, these new RTL Turboliners quickly proved their value, bringing passengers back to the rails. Equipped with third-rail shoes, they operated on electric power through New York's Grand Central Terminal (and later Penn Station), switching to gas-turbine power once out of New York City. Painted in Amtrak's stunning red, white and blue paint scheme, they operated on most Empire Corridor services, as well as regular appearances on the *Adirondack* to and from Montreal in the early years. Occasional equipment needs even put the Turbos on other rare adventures outside their normal call of duty, including the *Niagara Rainbow* to Detroit via Southwestern Ontario, and the *Maple Leaf* to Toronto via Niagara Falls.

After nearly 20 years of service under their belts, Amtrak selected one RTL set in 1994 to be rebuilt into what would be called the RTL-II, incorporating several improvements including new turbines, a remodelled interior, a striking new demonstrator paint scheme, in addition to extending the lifespan of the set for several more years. While this set continued in service until 2003, no other RTL-II sets were ever commissioned.

Further redevelopments and improvements of the fleet into the RTL-III's was never fully realized, and all were retired from active service in 2004. Conventional dual-mode (diesel & electric) equipment has since been utilized on the Empire Corridor services in place of the once mighty Turboliners.

## **BREAK-IN**

Just so we're clear, that doesn't mean break into anyone's layout room to steal their RTL Turboliner. And don't break into a hobby shop either because that is really frowned upon. Just buy more for yourself. But this isn't about that kind of break-in.

Every self-propelled piece of equipment needs a break-in period. Your RTL Turboliner has been tested at our factory for about two minutes ... maybe ... just to make sure everything functions as it should. That is certainly not enough time to get the gears to mesh nicely or to even out any jerky operation in a new motor. We suggest that, after reading this manual, you put your RTL Turboliner power cars on a test loop and just let them run independently in each direction for an hour or two. Fast and slow. Don't run them as a full trainset until you've let them wear themselves in for a bit.

There already should be enough grease in the gearbox so you don't need to add any. Just let the things run.

## HOW TO HOLD YOUR TURBOLINER

Hold your RTL Turboliner gently, and with much love, care, and attention. Your model has numerous delicate parts, particularly on the underframe. If you want to backdate it to be the quality of a model produced in the 1970s, then rip all the parts off and handle it like a young child with their first tub of plasticine. We're assuming you don't want to do that, so the RTL Turboliner should be picked up carefully and separately. That means don't pick up the complete trainset and play it like an accordion either. It is also best to handle each vehicle with your fingers along the bottom edge of the carbody. That way you won't leave greasy fingerprints on all the windows and you also won't stress any of the delicate parts. Always make sure your hands are free of shmutz before touching your train, otherwise you'll shmutz up the body sides. Hey – Amtrak kept these pretty clean for the most part, so that would not be too realistic.

If you are taking your RTL Turboliner to the club all the time and regularly handling it, stuff will likely break off. Sorry. We've included a few extra parts where applicable, but the little bits are made of plastic and metal and attached with glue, which is all a bit fragile. We wanted to make the small parts out of unobtainium and use Steady-State Micro Welding to install them. Unfortunately, with the current global supply crisis, unobtainium has become unobtainable.

We suggest wrapping your RTL Turboliner in a plastic bag before placing it in the packaging or in your holder so you can catch bits that fall off. White glue is the recommended adhesive for reattaching the bits, although you are welcome to use CA but only if you are very careful or very brave. Remember to apply the CA to just the part and not the model (don't ask us how we know this).

## CHECKING AND ADJUSTING YOUR TURBOLINER

We try and make sure that every model is perfectly up to spec before it leaves the factory, but if it was a Monday night and our factory workers were placing bets on last night's dance off at the club rather than assembling models, there may be a couple of bugs. Doing a quick pre-service check will solve most operational glitches.

- Check to see that all wheelsets are correctly in gauge using an NMRA RP-2 Standards Gauge. Should any of the wheelsets be out of gauge, then remove the affected wheelset from the truck by prying off the bottom lid of the gearbox with a small flat screwdriver and then spreading apart the sideframes. The wheelset can be regauged by grabbing each wheel and twisting. Reverse the

steps to replace the wheelset and ensure the gearbox cover is snapped into place before placing it on the track.

- Check that all underbody piping and appliances are firmly installed and clear of the track. If your track transitions from flat to a 12% grade in three inches, you may want to remove the pilot and the fuel tank as they will foul the rails. Have you ever considered roller coaster modeling? That might be more your style.
- Make sure that the trucks swivel freely and without binding. If they catch on anything, check to ensure that the sides of the trucks don't bind against the steps. If they do, see that everything is firmly installed.

## MISSING OR DAMAGED PARTS

If you open your RTL Turboliner box and discover that something has obviously been bumped in transit and is damaged, please contact us. We know that some of you don't like the idea of human beings touching your models, but if it is a matter of gluing a roof vent back on you can do it yourself in less than a minute with a drop of white glue. If you really want to send your model back to us for us to install that, we would be happy to. But if you do send it back to us for us to put that one part back on and other stuff falls off when we send it back to you, then tough tooties. We're not fixing it again.

We try to make our models courier- and mail-proof, but there really is no way to protect a model from damage when it is handled and treated like it's the 7-pin down at the local bowling alley. Model trains generally don't survive well after being hit wildly in a desperate attempt to nail that 7-10 split. That pin never saw it coming.

If you see some grab irons are missing and they are not floating around the packaging, let us know and we will send you replacements. More information about our warranty can be found towards the end of this manual.

## HOW TO ASSEMBLE YOUR TURBOLINER

The first thing you're probably going to say when you take your Turboliner out of the packaging is "Where are the couplers?" Well, they're in the polybags, but they're not regular couplers. The Turboliner uses NEM-style drawbars and coupler pockets. What this means is that when the train is on straight track, the cars are as close together as possible. When on curves even down to 18 inch radius, the cars are just as close together as they were on the straight track. This allows for the best appearance at all times, especially since you now don't need (or want) massive daylight gaps between cars to accommodate sharp curves.

To assemble your train, install a drawbar into one car at a time, then placing them on the track. After you have all the cars lined up, simply press all the trainsets together into a connected train. There, you're done! To separate the cars, get a hold of each of the two cars you want to separate and firmly begin pulling them apart with your fingers on either side of the diaphragms. Don't be afraid to use steady, firm pressure when separating. Don't just reef them apart either. The drawbars curved hooks will eventually give way and the train separate. We discourage turning the entire train on its side (unless you have a foam mat) simply because its length may twice (and subsequently break) a coupling and the fact you may break any detail parts on the sides.

If you want to convert your train to Kadee couplers so you can marshal and mix cars around on a whim, then Kadee does offer an NEM coupler conversion. Please visit their website for more information.

## **ADDITIONAL FEATURES AND DETAIL PARTS**

Over the years, the RTL Turboliner had a few changes over the years. We've tried to include all options covering their storied careers, which is why you'll find an array of parts both in the polybag and included on your model. Let's have a look at them.

### **INTERIOR LIGHTS**

All models come with track powered interior lights, similar to our standard passenger car lighting. If you want to run your train with the lights out, or are parking it in the yard, simply wave the included Rapido Lighter magnetic wand over the middle of the roof of each car and the lights can be turned off. Wave it again and you can turn them back on. Magic, eh?

### **CAB DOOR STEPS**

The cab door steps underneath the body shell are quite fragile, so take care when handling your power cars. You'll also notice the front section of the power car is narrower than the rest of the body, which presents a more restricted space for the lead trucks to rotate around tight curves because of the steps position. If you experience derailment issues on tighter curves (less than 22" radius), just remove the steps. They're keyed on the inside of the shell with just a little glue, so there'll be no visible damage if you remove them. They're also black, so they're almost invisible even when installed.

### **DUMMY KNUCKLE COUPLER**

After the first few years, the Turboliners always ran around with an exposed coupler on the front. Because these usually ran by themselves and the coupler is such a pronounced detail on the nose, we've included a painted scale dummy knuckle coupler that looks far more realistic than the functional type

you use with freight cars. Simply install as you would a regular coupler into the coupler box.

## **FRONT COUPLER DOORS**

On the prototype in the early years, the front coupler could be retracted and then a pair of doors could be closed to create a streamlined nose. Because a reliable hinge in HO scale would be horribly oversized, we've designed the nose doors as a single piece that plugs into the coupler box. Simply remove the dummy knuckle or working coupler from the coupler box, and then insert the nose doors.

## **AIR HOSES**

The air hoses between the cars are left in the polybag because they're quite fragile and we didn't want them to end up broken or damaged in shipping. Simply install these into the keyed holes on the ends of the car if you wish to add them. Take note that they're positioned to avoid interference from the coupling between the cars.

## **DOOR STEP PROTECTORS**

In the early years, there were some issues with the retractable steps deploying when the passenger doors were closed. Normally this isn't an issue, except it was while the train was moving. To avoid this issue, a protector plate was secured to the bottom of the doors to prevent the steps from deploying and possibly contacting trackside objects. These can be installed with simple white glue, centered on the bottom of the passenger doors, with about half of the plate extending below the door.

## **STROBE LIGHTS**

Every Turboliner comes with three strobe lights on the roof - two white strobes and a single red emergency strobe light in the middle. Depending on the model, you may also find the later "large" strobes in the polybag should you wish to change them. These will be glued on the model, so care should be given when changing them. Match prototype photos to determine which style is more appropriate for your era.

## **MIRRORS**

Several mirrors are provided in the polybag for you to install on the model. These are very small and susceptible to damage, so we didn't pre-install them. If you want to install the mirrors, simply drill a small hole 1 mm (3/64 inch) below the cab side windows, aligned with the divider in the window. Reference photos online to confirm. A 1/64-inch, 0.4 mm or #79 drill bit should be the correct size.



## **SIDE AIR INTAKE GRILLES**

After the first few years, the air intakes on the sides of the power cars were changed for improved performance. If you have the early style Turboliner, we've included the later style of air intakes in the polybag. These snap into the body side using clips. If you want to update your model with the later style of intake, remove the shell, pop off the early intakes and snap in the new ones. It's that easy.

## **LATE-STYLE FRA WINDSHIELD**

Not long after the Turboliners were delivered, the FRA mandated better windshields on trains to improve safety. Sadly, the Turboliner was no exception, so the as-delivered curved windshields needed to be replaced. We've included the later version in the polybag if you have the early-style Turboliner. While glue is used to secure the windshield to the model, it should be possible to remove the old one and install the new one. You may need to sacrifice the integrity of the old windshield to fully remove it without damaging the rest of the shell so you can install the FRA windshield. Later models already have this style installed.

## **REMOVING THE SHELL**

If you need to open your RTL Turboliner to install a crew or a decoder, things should be pretty straightforward and easy. To get inside your RTL Turboliner, you will need to follow these steps:

- We recommend that you only attempt opening up your locomotive in a zero-gravity environment. That way, if a part does break off, it will just be suspended there, right where you broke it, ready for you to reinstall it. If you don't have a zero-gravity chamber, then we suggest a well lit room that does not have shag carpet on the floor. Yes, it looks great and yes it feels great on bare feet, until said bare feet find a stray detail part you completely forgot about.
- We recommend taking the shells off while the train is NOT assembled into a fixed trainset. You can try, but we can't be held responsible for what happens should you attempt this.
- For the Coaches and Cafe-Coaches, there are 4 clips holding the body shell to the chassis. If you look at the chassis from the underside and spread the shell from the chassis, you'll see these clips. Set the car right-side up (wheels down), use your fingers to lightly pull the car sides away, and you should be able to wiggle the shell off. Avoid twisting or tilting towards one end, as you can catch onto the end weights or interior walls.

- For the Power Cars, it's largely the same, but there's one step that must be taken before removing the shell. Turn the power car over and rest it on the roof in a foam cradle or other safe surface and you'll notice the U-shape of the pilot. The pilot is not secured to the chassis, but to the shell itself so the fit is always tight. Pry the sides of the U-shape away from the shell and the two clips should disengage. It will remain around the coupler box, but this is fine to leave it loose. Turn the Power Car back over (wheels down) and remove the shell much like the coaches. When you do, the pilot will be loose as well and can be lifted off of the coupler box.
- To reinstall the shells, set them directly on top of the chassis and press straight down until the clips engage. For the Power Car, make sure the pilot is in position over the coupler box first before putting the shell on. Once you secure the shell, turn the car over and clip the loose pilot into the body shell.

Any requests for replacement bodies because you broke the little clips will be met with laughter, followed by sadness, then laughter again, and then a very polite suggestion that you should model a railcar rebuilder and use your recently broken body as scenery. We did warn you after all. If we can assist, then all joking aside we'll make every effort to do so. But note that we don't have a warehouse full of shells to replace the broken ones.

## **OPERATION – DC (SILENT)**

If your RTL Turboliner locomotive is not equipped with a sound decoder, it should function like most other HO scale locomotives. Put it on the track, assemble the trainset, give it some juice and watch it go. In DC, the headlights are directional. All other lights – including class lights and strobe lights – are wired, but they will not work in DC.

If you are new to the hobby (or just like to occasionally “play trains”) and you have a DC-powered train set, please contact us before operating your RTL Turboliner as it may not be safe (for your model and/or your wallet) for you to use your controller.

Some train set throttles put out a very high maximum voltage that is not suitable for scale model trains. The maximum recommended voltage is 15 volts DC. Similarly, controllers designed for large scale trains put out a much higher voltage than your RTL Turboliner can handle. Please see the highlighted warning not too much further in this manual.

If you use a train set throttle or a throttle designed for large scale trains, your locomotive's circuitry may end up looking like a TV dinner forgotten in the microwave after you accidentally punched in an extra digit into the timer. In such situations, we'll

try our best to fix it for you, but it may be beyond salvaging. Please note we may have to charge you for the replacement parts and/or the labor involved in restoring it to its former self. That's because you didn't read this bit of the manual. For those of you who are reading this, hi! How's it going? You in the mood for gyros?

## INSTALLING A DCC DECODER

The RTL Turboliner contains a motherboard specially designed for our decoders. This is connected to the track, motor and main lighting outputs (interior lights are not controlled by the decoder). A blind plug is attached to the motherboard using a 21-pin connector. To install a decoder, remove the blind plug and install a 21-pin decoder. Your chosen decoder should have eight function outputs.

We recommend the following 21-pin decoder:

- ESU #59619 - LokPilot V5 DCC with 21MTC

The necessary resistors are included on our motherboard, so you don't have to futz around with resistors. Just plug in the recommended decoder and you have DCC.

ESU has made the Turboliner function mapping which can be downloaded into their non-sound decoder so that the function buttons and motor control are the same as our factory-released sound versions. This is available for download from the Support section of our website. Well, it should be there. If it isn't there, I blame the Boston Bruins (yeah, we went there – Sorry Paul). You will need an ESU LokProgrammer to write the function mapping to the silent decoder. If you don't have a LokProgrammer, you can adjust CVs in the usual way.

You know, if you want silent DCC it's a heck of a lot easier to just order the sound model and turn off the sounds. If you're known for mashing buttons on your controller errantly and want to avoid sound altogether, open your Turboliner and either remove the speaker or simply snip the wires to it. There, done! At any rate, after you've bought the silent decoder and spent many hours fiddling to install it, fix the bits you broke off, and get all the functions to work correctly, you'll realize it would have been cheaper and less frustrating to buy the sound-equipped model and just turn off the sounds. Your time and sanity are worth something, after all!

If you want to install a decoder other than the one we suggest, it's more than just plugging in the decoder and then playing trains. You will have to custom map all the functions. It's just how it is. We won't apologize for that. Sorry.

## **OPERATION – DC (SOUND)**

To operate your sound-equipped RTL Turboliner locomotive on a DC layout, just give the throttle some juice. The two power cars will start up once sufficient voltage has been reached (around seven volts). See the note above (in Operation – DC (Silent)) about using train-set or large-scale throttles. With DC layouts, you have very little control over the sounds of your model.

### **– WARNING –**

Rapido products are designed to operate safely between 0V and 16V. Voltages in excess of 16V - as well as irregular waveforms, voltage spikes or short circuits - may cause severe and sometimes irreversible damage to the product. "Train set" power packs are known to suffer from any one of these unexpected irregularities, whereas higher-end systems have safeguards in place to prevent this. Rapido always recommends using a power supply system that matches the quality of the models you are running. If you're reading this, you've obviously invested in top-of-the-line, museum-quality motive power and equipment, so we hope you've made the same investment with your model railroad power supply too.

While many power supply systems exist, some are known to have caused problems with model train circuitry in the past. If you have any one of the following systems, PLEASE DO NOT USE IT until you contact us for more information: MRC RailPower 1300/1370-series, Bachman Spectrum Magnum, Atlas 313 Universal Power Pack.

The DC lighting is limited. Some throttle manufacturers produce special gadget-like thingies which are meant to trigger the sounds in locomotives on DC layouts. As we have no involvement in the development of those gadget-like thingies, we have absolutely no idea how they will affect your RTL Turboliner, for good or for ill, for richer or poorer, in sickness and in ... sorry, wrong transcript. As always, we'll try to help you fix your RTL Turboliner if one of these gadget-like thingies turns your locomotive's circuitry into something akin to glowing magma, but we can't guarantee we'll be able to.

## **OPERATION – DCC (SOUND)**

We go to extreme lengths for accuracy, in sounds as well as in looks. Our sound decoders are LokSound 5 decoders by ESU, programmed with sounds digitized and remastered from hours of footage of the RTL Turboliners operating in upstate New York. So these sounds are 100% correct!

More detailed decoder instructions, including all sorts of weird CV settings we still don't understand after all these years, can be found in the ESU Loksound decoder manual. This is available for download in the Support section of our web site. We highly recommend using the LokProgrammer especially if you have lots of Rapido ESU-equipped locomotives. You do have lots, right?

## POWER CAR ADDRESS

Both of your RTL Turboliner power cars come from the factory with a decoder address of 3. We suggest if you are using DCC control that you first test that the locomotive responds on address 3 to all functions – motor, lights, sounds, everything. Each power car has different circuitry so that they will work nicely together and not always fight against or away from each other like a pair of nuisance siblings.

Once you have verified that the power cars are responding you should assign them either unique addresses (normally the road number of the unit) or together on the same address (since they'll be in the same trainset) before going any further. This can be done either on your programming track (recommended) or on the main if your system supports programming on the main. Be aware however that if you do program either power car on the main and you have any other locomotives (or power cars) assigned to address 3 (the normal default address for new locomotives) that ALL of them will also be changed to your new address! This is great if you want to simulate a bunch of kids getting into the engine shop, notching the controllers, and then heading for the hills.

Note that some DCC systems get a little wonky when programming sound-equipped locomotives on the programming track because of the high current draw. If weird stuff happens, try programming on the main.

## TURN ON THE SOUND

Press F8 and you will hear the RTL Turboliner startup sequence followed by the sound of it idling. You can adjust CVs to prevent the power cars from moving until the startup sequence has played out. Because we're an impatient lot we keep this feature off by default. Refer to a full ESU LokSound V5 decoder manual for more information. You can now download it from the Support section of our web site. The feature is called the "Prime Mover Startup Delay" and is Section 13.2 on Page 89 of the ESU LokSound V5 manual.

If you press F8 when your trainset is already moving, it will skip the startup and the sound will just turn on. Press F8 again to turn the sound off.

Note that if you are listening to your RTL Turboliner purring nicely and then you select

another engine, your trainset still thinks F8 is pressed so it will keep idling along. However, if someone else selects your train number and F8 isn't pressed on their controller, the Turboliner will promptly shut down. They will need to press F8 again.

## OPERATING MODES

We've gone to great lengths to make the model of the RTL Turboliner operate just like the real thing in DCC, and that was one heck of a challenge to do too! Technology has come a long way since the Turboliner itself was designed and built, so there are two ways that you can operate your trainset:

### MODEL RAILROAD MODE

Without pressing any buttons and just running your Turboliner, it will operate just like a model train – the headlights will be facing the forward direction and the red marker lights will face the rear. When Head End Power (F4) is active, whatever end of the train is at the rear is where you'll hear the HEP turbine running. Changing directions will switch the lights around, as well as the source of the HEP sound.

### PROTOTYPE MODEL

Pressing F15 will enable realistic operation of your Turboliner. Whenever a crew operates the Turboliner, they will typically operate it from one end only, even while hostling the train between the yard and the station. When you change direction, the lights and HEP turbine sounds will not change, as per the real thing. If you want to have your "crew" move to the other end of the train, press F13. Now the lights will face the other direction and if enabled, the HEP turbine will shut down from one end and restart at the other end. Pretty neat, eh?

## FUNCTIONS

F0	Front Headlight/Red Markers	F11	Door Open/Close
F1	Bell	F12	Red Emergency Light
F2	Horn	F13	Manual Change Ends
F3	Flange Squeal	F14	Grand Central Terminal Mode
F4	HEP Turbine	F15	Prototype Mode
F5	Doppler Horn	F16	Air Dryer On Shutdown
F6	Strobe Lights	F17	Brake Set/Release (Automatic)
F7	Dim the Headlights	F18	Sanding Valve
F8	Startup/Mute/Shutdown	F19	Short Air Let Off
F9	Class Lights	F20	Air Compressor
F10	Independent Brake	F21	Air Dryer

## FUNCTIONS: MORE INFORMATION

### F0 Headlight/Red Markers

The Turboliner, being a trainset, has headlights at each end as well as red markers indicating the rear of the train. When you turn the lights on with F0, the headlights will go on in the direction of movement and red markers at the opposite end will turn on. When you change directions, the lights will switch (unless you have F15 enabled).

### F1 Bell

Probably one of the most difficult sounds to master is the bell because it's such a noticeable feature, and no matter what, chances are they all had their own unique tone to them. We have provided two slightly different bell sounds so that you can add a little variety to your fleet of RTL Turboliners. You DO have a fleet of Turboliners, don't you? You can choose between the bells by changing CV164 to either 0 or 1. Note that only the bell in the direction of travel will ring when F1 is on.

### F2 Horn

We love our horns. Like really! Seriously, who doesn't love a good sounding horn? To get a short "toot" just tap F2 or your "HORN" button. If you hear a long tail-off, you are tapping for too long. If, no matter what you do, you just can't get the darn thing to make a short "toot," switch to NCE. The default horn is a Nathan P5A, but we've included a pair of others. Refer to the "Custom Sound Settings" section below. Note that only the horn in the direction of travel will blow with F2 pressed.

### F3 Flange Squeal

Just as you're easing into a sharp curve on your layout, press F3 to hear the metal-on-metal squealing sound all trains are known for.

### F4 Head End Power (HEP) Turbine

To keep the lights, heating, and air conditioning running, each Turboliner power car was equipped with separate smaller turbine engine that provided Head End Power (HEP). To hear this little jet engine spool up, press F4 and keep your passengers comfortable. Note that only the HEP turbine opposite the direction of travel will come on. This was done to keep the noise in the operating cab to a minimum.

### F5 Doppler Horn

You can play this when approaching level crossings or any other whistle post. The doppler is nicely timed for a moderately paced train blowing for a level crossing.

## **F6 Strobe Lights**

Amtrak has been adding white strobe lights on all their road power for decades. These add extra grade crossing protection that will hopefully catch the eye of motorists and pedestrians to warn them that the train is a comin' through.

## **F7 Dim the Headlights**

When approaching a station stop or an oncoming train, press F7 to dim your lights – you don't want to blind your passengers or the oncoming train's engineers. Not dimming your lights is a direct violation of what's commonly referred to as "Rule 17". The internet can answer all your questions about said rule.

## **F8 Startup/Mute/Shutdown**

While your trainset is stationary, pressing F8 will begin the startup sequence of the turbine sounds. If your trainset is silent but already in motion, pressing F8 will skip the startup sequence and simply turn on the sound. If the sound is already on, press F8 to mute the sounds. If your trainset is stationary, then you will hear the turbine shut down sequence before the sound turns off.

*If you have a DCC system that only allows eight functions, you can remap the functions below following the guidelines in the ESU LokSound V5 manual, which can be downloaded from the support section of our web site. Or you can upgrade to a newer DCC system, which may be less stressful.*

## **F9 Class Lights**

When you press F9, the white class lights will turn on. Hitting F9 a second time will cycle the lights off. White class lights were used to signify a train was running as an extra (unscheduled train) in train order territory.

## **F10 Independent Brake**

F10 works just like the brakes on a real train. Press F10 and you put on the brakes. Turn off F10 and the brakes come off so you can start moving again.

## **F11 Door Open/Close**

When you press F11, the decoder will play the sound of all the passenger doors opening. Press it again, and you'll hear the sound of the doors closing. Note that the doors will not *actually* open or close, but the sound is cool.

## **F12 Emergency Light**

On most Amtrak road units, there's a red emergency strobe light centrally located on the front of the equipment. On the real thing, the light comes on when the emergency



brake is applied to warn oncoming trains that there might be a derailment ahead that fouls the mainline. Press F12 to simulate an emergency by turning on the red strobe.

### **F13 Manual Change Ends**

When F15 is on, press F13 to manually change the ends of the trainset (see F15 below). Otherwise, when F15 is off, every time you change the model's direction, the headlight, horn, bell, and HEP turbine will also change ends which could be annoying.

### **F14 Grand Central Terminal Mode**

New York City had banned smoke-producing trains in 1908 and all trains into Grand Central Terminal since then have had 3rd rail shoes – including the Turboliner – to run on clean electricity. To hear your trainset change from screaming turbines to humming electric traction, press F14. To wind the turbines back up, press F14 again.

### **F15 Prototype Mode**

When F15 is on, the Turboliner's crew will stay in one end regardless of direction change as if they were hostling back and forth from the yard to the station. The horn, bell, and lights will not change ends unless the "crew" does. ONLY pressing F13 will then change the Crew end, thus changing the headlight, horn, bell, and HEP turbine ends.

### **F19 Short Air Let Off**

No, this is not about the Wednesday after Taco Tuesday. You get a simple release of air when you hit F19, that's it. "Psssst!" Kind of like shushing someone at the local library.

### **F20 Air Compressor**

Pump that air up! By pressing F20, this will activate the air compressor but by default, the sound file will randomly play this feature.

### **F21 Spitter Valve**

To save you from the saliva clean-up should you try to mimic the sound of the spitter valve, we've provided its sporadic sounds on F21. By default, it's always on, as the real thing would always be going when the power cars are running (and for a few minutes after they've shut down). But if you prefer to not hear it at all, just press F21 to silence the spit.

## **CUSTOM SOUND SETTINGS**

The RTL Turboliners were only used by Amtrak and, as such, were equipped with only a limited number of horns and bell tones.

The default horn on your model is the Nathan P5A. You can change the default horn by changing the value of CV 163. We've also chosen a default in the bell category because someone had to make the important decisions. They can be changed by adjusting the value of their respective CVs below.

### **Horns**

- CV163=0 Nathan P5A (*Default*)
- CV163=1 Nathan P5A (*Alternate*)
- CV163=2 Nathan K5LA

### **Bells**

- CV 164=0 Bronze Bell #1 (*Default*)
- CV 164=1 Steel Bell #1

Note that after you change the horn, bell or any other sound effect, you may need to cycle the power (turn it off and on). And changing the default horn automatically changes the doppler recording on F5 too.

## **SOUND VOLUME SETTINGS**

The sound volumes on your decoder have been pre-set at the factory to levels that we found comfortable on our test tracks.

Sound levels are very much a matter of personal taste (especially if you are showing signs of advanced deafness like we are), and what sounds great in one layout environment may sound too loud or too soft in another. Fortunately, the sound levels can be easily adjusted to best suit your own requirements and we recommend that you experiment with different settings if you don't care for the default levels.

To set the volume levels go into the program mode on your DCC system (refer to your system's manual for instructions on how to do this as each system is slightly different); enter the desired CV number; then enter the desired levels. Note that this can be done either on a programming track or on the main (Ops mode) if your DCC system supports programming on the main.

We strongly recommend that you keep notes on which settings you have changed, and which values were used. If you ever need to do a reset on the decoder (see "Factory Reset" below) then having good notes will allow you to easily re-enter any changes that you wish to keep.

**— VERY IMPORTANT —**

Before you manually change any of the volume control CVs, you must set CV 31 to 16 and then CV 32 to 1. CV 31 and CV 32 are used as index selection registers and if you don't set them first, unspeakable things may happen to your unit. You must set the CVs every time before changing any volume CV settings.

Or just get a LokProgrammer. No, we will not teach you how to use it!

**RTL TURBOLINER SOUND VOLUME SETTINGS**

KEY	FUNCTION	CV	DEFAULT	RANGE	YOUR VALUE
	Master Volume	63	128	0-192	
F1	Bell Volume	283	60	0-255	
F2	Horn Volume	275	220	0-255	
F3	Flange Squeal Volume	435	30	0-255	
F4	HEP Turbine Volume	267	75	0-255	
F5	Doppler Horn Volume	299	220	0-255	
F8	Turbine Volume	259	100	0-255	
F10	Independent Brake Volume	339	40	0-255	
F11	Door Open/Close Volume	395	80	0-255	
F13	Manual Change Ends Volume	267	75	0-255	
F14	Grand Central Mode Volume	215	80	0-255	
F15	Prototype Mode Volume	267	75	0-255	
F19	Short Air Let Off Volume	443	80	0-255	
F20	Air Compressor Volume	307	80	0-255	
F21	Air Dryer Volume	387	80	0-255	
F29	Air Dryer	387	80	0-255	

**FACTORY RESET**

On your Turboliner, you can perform a factory reset by entering a value of "8" into CV 8. Note that this will cause all of your new volume and motor settings to be lost, so you will need to reprogram any settings that you want to restore. You did keep notes, right? We hope so, because you have twins here. If you have to reset your decoder, and you didn't write down your settings, we recommend resetting BOTH power cars so that they can be reprogrammed (again) from the beginning.

You can NOT lose all of the pre-recorded sounds on your Turboliner decoder by doing a factory reset. If you manage to lose all of the sounds on your locomotive

then you have probably flame broiled your decoder with a voltage spike. Open up your locomotive and serve it with some ketchup and lettuce on the side.

### **AWESOME SLOW SPEED THINGY (NOT RECOMMENDED)**

On previous Rapido locomotives we have recommended using the “Awesome Slow Speed Thingy” (our term) to adjust the motor settings. With the current ESU V5 decoders (such as the ones fitted to these models) we have found that this is not necessary. We have calibrated the low speed settings on the decoder at the factory to work best with our motor and drivetrain.

### **MORE INFORMATION**

While addressing the features that most modelers will need for normal operation, these instructions have covered just a small number of the many customizable features of your ESU LokSound decoder. For advanced users who want to more fully explore the capabilities of the decoder we suggest downloading the ESU LokSound V5 decoder manual. This is available in the Support section of our web site.

### **LIMITED “FIVE-YEAR-ISH” WARRANTY**

We will do our best to solve any problems or issues that you may have with your Turboliner. If your trainset has any defects that originate from the factory, we will repair them using new components or replace it outright should a repair not be possible. However, we can only replace your models while we have additional ones in stock. We normally keep spares for up to six months after a model is released. And while we would love to have an unlimited supply of spare parts, note that eventually these will run out too. If you are like most of us and – after purchasing this trainset – you dismissed it to the shelf full of model boxes under the darkest corner of your layout and are now just discovering it 30 years later after your friend ran theirs at the club, then you are on your own if there are any issues. We’ve all probably retired at this point and after realizing we retired too early, we all started our own model train companies in our own basements in the hopes that one day we will achieve greatness.

There are a number of things that this warranty cannot cover. If your Turboliner arrives with a couple of loose grab irons or underbody bits, there is a very good chance that you can do a repair in less time and effort than it would take to contact us. Don’t be afraid to do some model railroading! White glue works wonders for securing all sorts of parts and will not mar or damage your paint. Gorilla Glue...not so much. However, if parts are missing that is another story – call us or send us an email and we’ll send you some replacements.

Of course, damage caused by running your Turboliner at full speed around a 15" radius curve along the edge of your layout, running your Turboliner model on an actual live 600 volt third rail, modifying your locomotive to work off jet fuel, or any other damage caused by you that we haven't been able to cover here is not covered by the warranty. However, if catastrophe does strike and your Turboliner gets damaged, please give us a shout and we'll do our best to help you out. Yes, even if it was your fault we will try our best to fix your locomotive for you. Don't be shy.

## **ACKNOWLEDGEMENTS**

The RTL Turboliner project was very much a labor of love as many of us on the Rapido team (especially Jordan). However, this project would not have been possible without the extensive help, expertise and assistance provided by Alex Stroshane, Mike Danneman, and Matt Donnelly.

We also have to express our sincere thanks to Amtrak and the staff at Adams Yard for allowing us access to the remaining Turboliner sets for this project. And an additional shout out to the audio team at ESU for converting hours of vintage Turboliner footage – as well as an actual horn from a retired Turboliner power car – into the exquisite sound file featured in this model.

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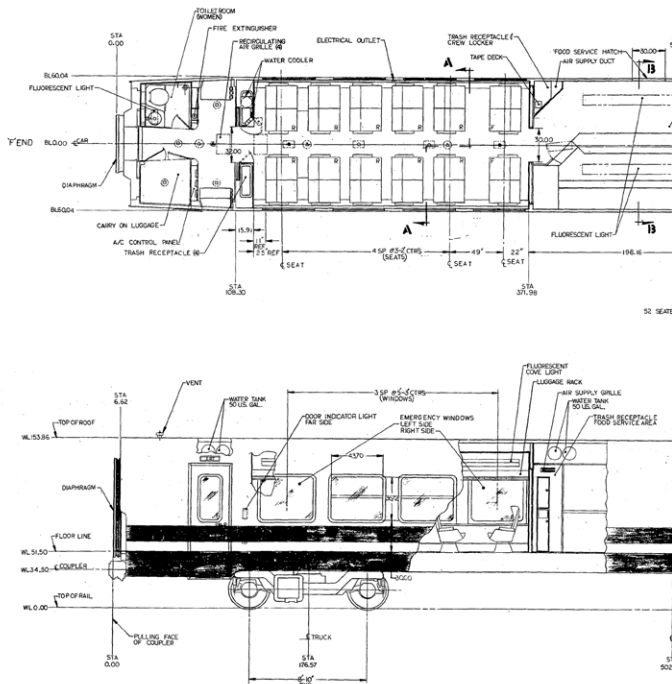
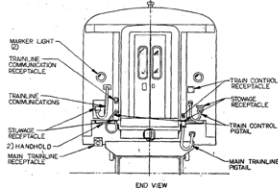
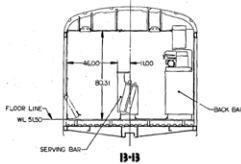
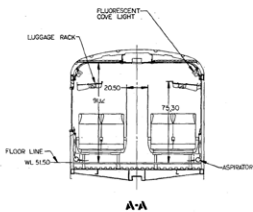
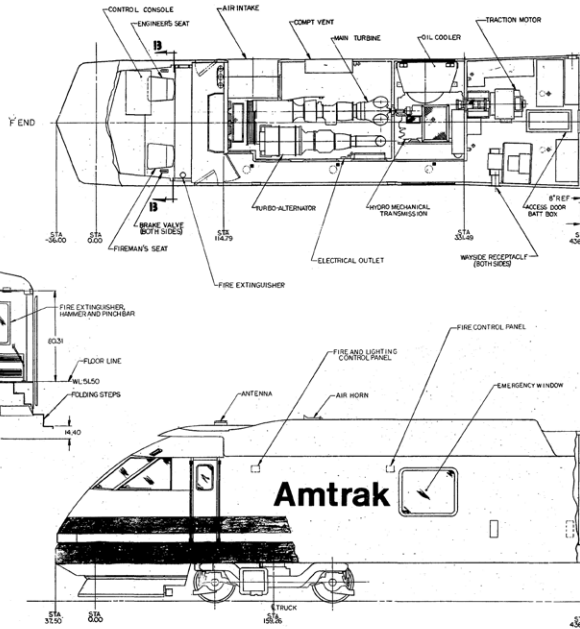
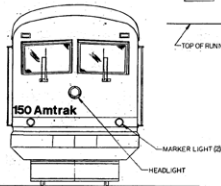
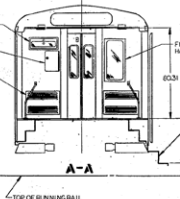
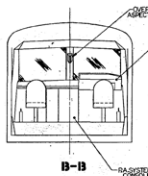
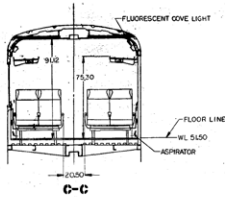
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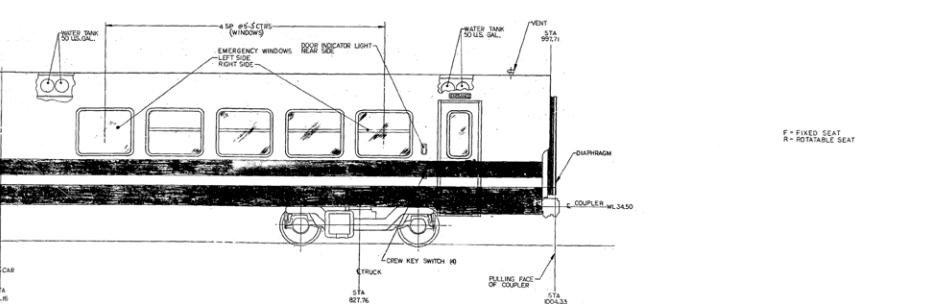
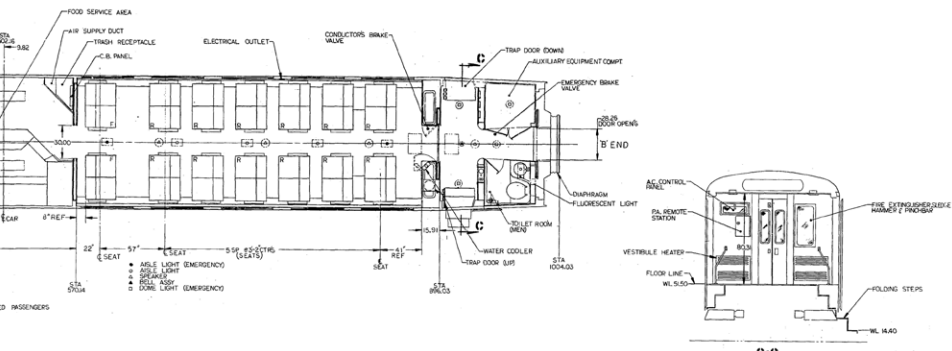
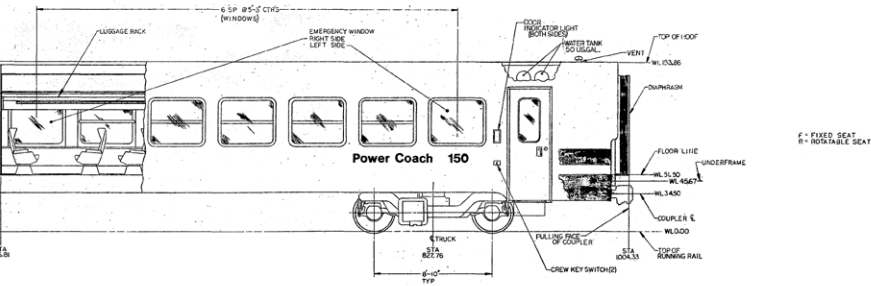
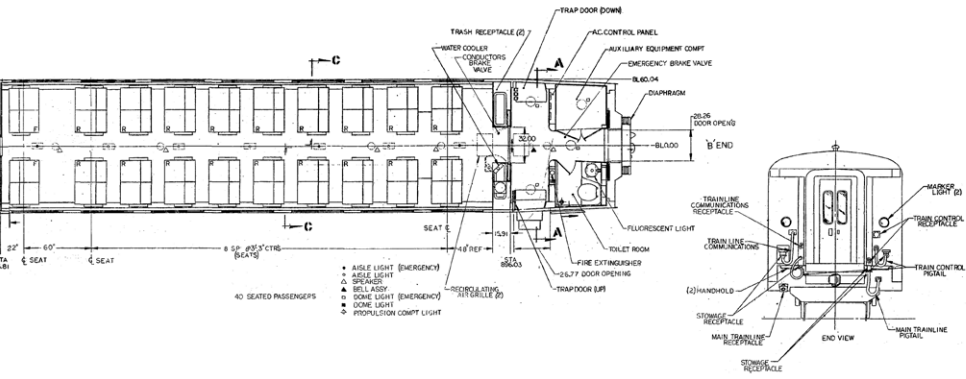
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