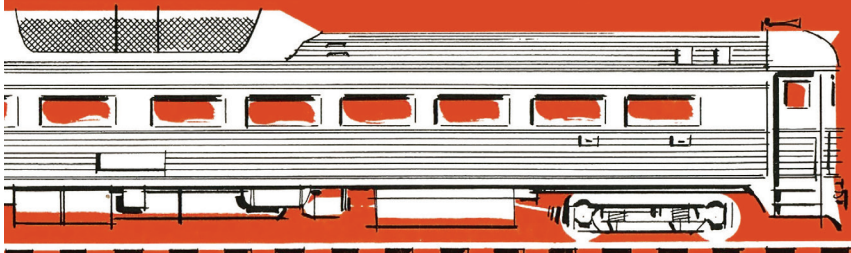

RDC

by Rapido Trains Inc.

Français au verso.

RDC – Rail Diesel Car – Operating Handbook

Thank you for purchasing this "ultimate" model of the Budd RDC. We were completely blown away by the demand for this RDC model. Apparently we weren't the only ones who wanted a model of the RDC that is fit to operate on the finest model railroads of the 21st century. We hope you will operate your RDC with pride and let people know that it is a Rapido RDC and it is not powered by a rubber band drive. We tried the rubber band but gave up when the model wouldn't go slower than 200 MPH.

This is our second run of the famous Rail Diesel Car and we hope that it still leads to many more. Every time we release a model, we get input from out customers on how best to improve our products, and we do take those thoughts into account. So once again, if there is anything about our RDC model that you think can be improved for the next production run, please don't hesitate to get in touch.

As well, please do not hesitate to contact us should there be anything wrong with your model. Whether you have a warranty issue (missing grab iron, moss growing on the floor, etc.), a question ("Why doesn't it go at a scale 186 MPH like it did in 1966?") or a comment ("Your 3D scan is wrong. My RDC is missing 6 rivets over the whole carbody. I triple checked my Polaroids!") please give us a shout. More warranty information is available towards the back of this manual.

Note that we have maxed out the speed in DCC at about 98 MPH as measured using our NCE system at the office. If you are the type of model railroader that likes to shoot his models around 18" radius curves at 400 MPH thereby launching them into the stratosphere, you are out of luck. We suggest strapping a real jet engine to the roof (just like the NYC did). And just in case you didn't expect it to, doing so will void the warranty.

You can reach us by email: trains@rapidotrains.com, by phone (1-855-LRC-6917 or +1-905-474-3314) or by snail mail at the address on the next page.

Please do not send any models back to us without first speaking to us to get a return authorization, and please be patient when you send something back. The Helmic Regulator in the Rapido TARDIS is malfunctioning, so we can't return your model to you before you've sent it to us. And if you complain in an online forum that you sent back your model for repair "months ago" even though we only received it last Tuesday we reserve the right to put your picture up in our office and make fun of it.

If you've just bought this model at an estate sale in 2073 because the original owner bought it, shoved it under his workbench, and then died before opening it, then someone else bought it at an estate sale and similarly stored it and then died before opening it, be wary that this model may be cursed if you don't open it. So you'd better open it. Hang on – if you're reading this you've probably done that. Congratulations! You're spared!

As it's now 2073, there is also a very good chance that Rapido Trains Inc. has not been dealing with model trains in some time, and is now managing and operating

the planetary railway network on the planet Callufrax. As such, if you need some parts for your RDC we are unable to provide them. But we will be more than happy to sell you some discount tickets to the famous Callufrax ice caves if you ever find yourself on vacation here. Callufrax is a very safe place and is in no risk of having another planet suddenly materialize around it, crushing any poor soul who might be visiting at the time. If that doesn't attract you, we have a railway museum on the planet Bandraginus V that houses the last Amtrak Turboliner in existence. Bandraginus V is also in no risk of being crushed by another planet. For goodness' sake, what is giving you these ideas? You can come visit any time, safely and securely.

CONTACT US!

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TOWING AND YOUR WARRANTY

This is so important it even gets put in before the Table of Contents. Please read it carefully.

The real RDC came with a warranty from Budd, its builder in Philadelphia. If you, as a railroad, towed anything behind your RDC, you would void the warranty. The same applies for your Rapido RDC. The Rapido RDC has two very small motors which are strong enough to pull your Rapido RDC and nothing else. Similarly, the worm gears and universals are extremely delicate as they are only designed for the RDC to pull itself. If you tow anything behind your RDC (not including other unmolested Rapido RDCs) you do so at your own risk. Your warranty is well and truly void if you pull unpowered equipment behind your RDC. If you send it back to us under warranty we can quickly determine if the damage was caused by towing (using the secret "tow-ometer" hidden in the RDC floor) and you'll have to pay for any repair work.

RDC #6133 NEEDS YOUR HELP!

If you would like to contribute to our efforts to restore our real RDC #6133, please visit

rapidotrains.com

to read our latest updates, learn more about the project, and to make a contribution.

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WHAT'S NEW?

This run of RDC features a number of improvements, mentioned in more detail throughout these instructions. They include:

- Interior lights and number boards can be turned off using a Rapido Lighter
- Compressor sounds have been lowered so it stops thumping in your ear
- VIA RDCs feature all-new Cummins RDC recordings from the real VIA RDC #6215
- We did NOT replace the engine recording with one from an F7. We don't care what those guys on the internet forums remember, the RDC did not sound like an F7. If they have a video with an RDC sounding like an F7, it was a silent film over which some shmoe dubbed F7 sounds. The RDC sounded like a bus. If you really want your RDC to sound like an F7, go buy an F7 decoder and put it in yourself. We're glad that's off our collective chest. Jon Calon agrees with us, by the way.

LIKE YOUR CUMMINS-EQUIPPED RDC? THANK CHRIS FOX.

Our mechanic, Chris Fox, is the most amazing person on the planet. As many of our customers know, Chris has done the bulk of the restoration work on our RDC #6133. He also resurrected the Toronto Railway Museum's LRC locomotive #6917 and is currently restoring our sleeping car, Edmundston.

In order to get accurate recordings of an RDC equipped with Cummins engines, Chris got permission from VIA Rail Canada to take the mothballs out of their RDC #6215 and fire it up. Together with another unsung hero, John Carey, they actually pulled it off. This wasn't a case of giving her the once-over and pressing the start button. Here is what needed to be done:

- Installed a main reservoir tank to get the brakes to work.
- Put air in the car using 6133 to check for leaks.
- Filled both engines, transmissions and compressor with oil.
- Filled and checked cooling system with coolant and checked for leaks.
- Prelubed engines, checked turbos and tested air starters.
- Made up electrical jumper power cables and jumpered 6133 with 6215.
- Tested electrical system of 6215.
- Primed fuel system and replaced fuel filters due to rust and age.
- Installed Carden shafts.
- Started engines and checked oil pressure and running dynamics.
- Placed in gear with brakes on to check transmissions.

- Ran 6215 through all notches to check operation on its own power.

All this just to get accurate recordings for one roadname (though it is our biggest-selling roadname!). These are the lengths we go to at Rapido! Thanks, Chris and John!

BREAK-IN

Every powered model needs a break-in period, and this is especially true with your RDC as it has not one but TWO motors. Your RDC has been tested at the factory but only for a minute or two. That is not enough time to get the gears to mesh nicely or to even out any jerky operation in the motors. We suggest that, after reading this manual, you put your RDC model on a test loop and just let it run in each direction for a half hour or so. Fast and slow. You don't need to add any grease or oil to the gearboxes.

CAUTION: APPLYING DECALS

Unlettered RDCs will obviously require you to add your own decals. We VEHEMENTLY recommend that you use Microscale Micro-Set and Micro-Sol to apply your decals. Solvaset and other strong decal solutions may cause the "stainless steel" finish to turn brown. If you are absolutely determined to use Solvaset despite us expressly telling you not to, please test it on a hidden spot to make sure it does not ruin the finish. We can't fix a model that has had its finished ruined by decal setting solution. If you used Solvaset and ruined your RDC and you have only now just read this…. Sorry.

CHANGING THE COUPLERS

We've put medium-length couplers on the RDC ends so they will look good while clearing the pilots on wide curves. But if you have tight curves, you may find that you need to replace the coupler at one end with a long one if you want to run two RDCs together. If you need to change the couplers at both ends your curves are too tight. You should be running high-rail buses and not RDCs.

Changing a coupler is very straightforward. Place a white table cloth on your workbench or kitchen table. Dining room tables are not recommended. Coffee tables are punishable by a fine and a possible jail term. Kids play tables are just asking for trouble too, simply because your RDC is NOT A TOY! If you gave your RDC to your four-year-old grandson you clearly have money to burn and we'd like you to contribute $10,000 to our RDC restoration efforts. Please send a cheque payable to "cash" to the attention of Jordan Smith at the Rapido address.

Place a foam cradle (available from Micro-Mark, product #80784) or a thick-piled hand towel (not a tea towel!) folded over a couple of times on top of the table cloth and lay the RDC on its roof.

Use a small Phillips screwdriver to unscrew the coupler box and slide it out without

destroying the surrounding details, especially the really thin trapezoid-thing (we don't know what it's for either) that is liable to spring off into oblivion. Ping! Whooaaa!! There it goes.

Snap the lid off the coupler box, replace the coupler, and snap the lid back on. Slide the coupler box back in and replace the screw. Pick up the RDC and look around the white table cloth for all the grab irons and the horns that have fallen off. Glue them back on with white glue. Hey – don't say we didn't warn you! And on that note….

MISSING OR DAMAGED PARTS

With over 400 individual detail parts, the RDC is a far cry from the rubber-band-equipped model it's replacing. To prevent inevitable frustration, we recommend checking your RDC as soon as possible to ensure that everything is where it should be. Don't wait until you've retired and we're all sitting around reminiscing in a retirement home. We'll be lucky to be able to say RD… RD… RD whatever. You can forget about us sending you parts at that point.

We try to catch all potential issues at the factory, but with literally hundreds of RDCs in each production run it is possible that the odd problem may slip past our quality control inspectors. Everyone gets their hair cut at, like, 2 a.m. in China. We don't know why, but it's true. Even Jason went for a late-night snip in Shenzhen in 2015. (Bill wanted a snip but then realized he had no hair.) The stylist was shocked that Jason wanted him to use clippers. He was ready to spend 45 minutes styling. Eventually Jason took the clippers and did it himself in five, not 45 minutes. Where were we? Right – so maybe the person assembling your RDC was at the barber all night and consequently installed a grab iron crooked. Your model – her hair. Hmmm. Tough choice. Hair wins.

A bigger issue is damage in transit. More than 99.5% of all models are perfect when they leave our warehouse. But our gentle courier and postal carriers tend use our models to practice for their local kickball team every Thursday at 7pm down at the park by the tracks. No packaging is designed to survive such punishment.

If underbody bits come loose in transit, they are easily reattached with CA (super glue). If grab irons or other parts on the shell come loose, we recommend white glue rather than CA. We prefer white glue over CA because it works just as well for most layout scenarios and is very easy to clean up. There is no risk of damaging the paint job – just wipe up the spilled glue with a bit of warm water on a paper towel. If the courier companies have been really cruel and there are a lot of parts loose, please contact us. You can send the RDC back and we'll glue all the parts back on and pack the thing in a mile of toilet paper before sending it back to you. As an added benefit, the toilet paper may come in handy for other purposes as well.

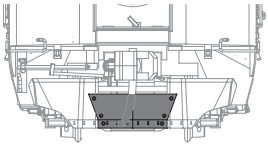
If any parts are missing or broken, please call or email us. We'll happily send you free replacements. We aim for 100% customer satisfaction… with one exception. If you are one of those people who calls us because the horn is slightly crooked and you don't want to move it back into place with your finger, please go away.

WHAT ARE ALL THE EXTRA BITS?

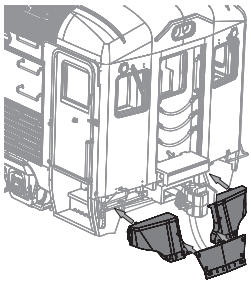
Like any real train, the RDCs went through several changes over their operating lives. We can't represent every possible variation on the model, but we can certainly include a bunch of goodies for you to customize your model to match a specific era or photograph.

Your RDC model will contain some combination of the parts below. Obviously a VIA RDC does not need a Northern Pacific snow plow, so all of these parts are not found in all of the RDC models. See drawings and descriptions below for guidance in installing some of these parts. For parts not described in detail, we'll leave it to you to spend your next sleepless night wondering what the heck they are and where the heck they go.

- Pilot cover. If your railroad installed this, you should too. White glue does not have the needed tensile strength to stand up to the rough handling this part will receive. Use CA or 5-minute epoxy. See illustration at right.

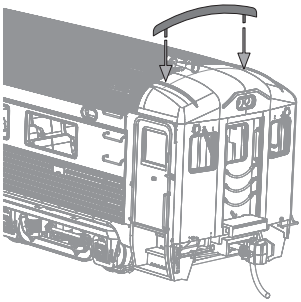


- Pilot. If your railroad usually did not have the pilot installed on their RDCs, we include it anyway just in case you are in possession of the ONE PHOTO that shows the pilot installed.



- Horns. The RDC used many, many horns – sometimes several over the life of one unit. We've installed a horn that is either accurate or close, and depending on the roadname there may be more horns in the polybag.

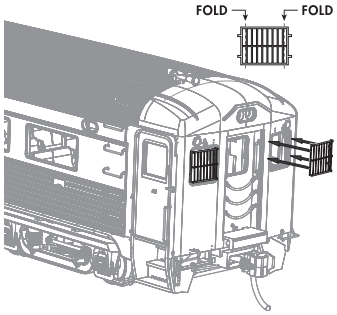
- Wind deflector. This was installed on the roof of the New York Central RDCs. Match photos. You'll want to drill mounting holes to install this. Add a drop of white glue to each mounting post before inserting. If you plan to handle your NYC RDC (such as in taking it to the club), use CA rather than white glue. Be careful! Use a toothpick to apply the glue and not your fingers!



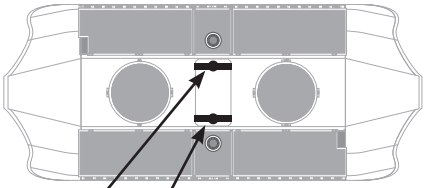
- Sinclair antenna. These were added later in life and were placed in different locations on almost every RDC. Match photos.

- Etched nose logos (B&O only). Definitely use white glue for these. You don't want CA dripping down the nose of your RDC.

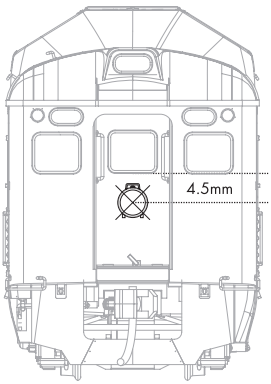
- Front window grilles. These protect your locomotive engineers from debris caused by the clueless pickup driver who ignores the flashing lights and drives in front of your RDC. In the northeast, they also protected the engineer from concrete blocks suspended on ropes from bridges. Yes, that happened. You need to bend the sides and install. We recommend drilling small holes to accept the legs and then dipping them in white glue before installing. If your RDC gets handled much, use CA instead of white glue.



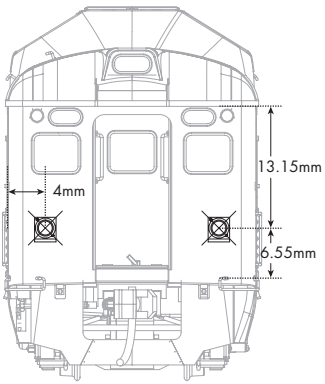
- Roof bell. In later VIA years the bell was finally mounted to the roof inside the blister as it was always filled with snow. Install it in the location shown in the illustration. Note the roof bell installation usually came with stack modification.



- Gyralite. Many RDCs had a Gyralite which was mounted on the door in the direction of travel. We have installed a working Gyralite LED behind both end doors. To install the Gyralite, drill a hole in the location shown in the illustration, 4.5mm (just shy of 3/16") below the end door window. You will need to remove the top safety chain. The hole should be big enough to clear the clear plastic lightway at the rear of the light, but smaller than the size of the Gyralite housing. Glue on the Gyralite using white glue. If you want the Gyralite in use in both directions, install both Gyralites. NOTE: It is HIGHLY RECOMMENDED that you remove the shell before drilling. The Gyralite LED is immediately behind the door and even the slightest punch through will damage it, and then you'll need to contact us about repair options.

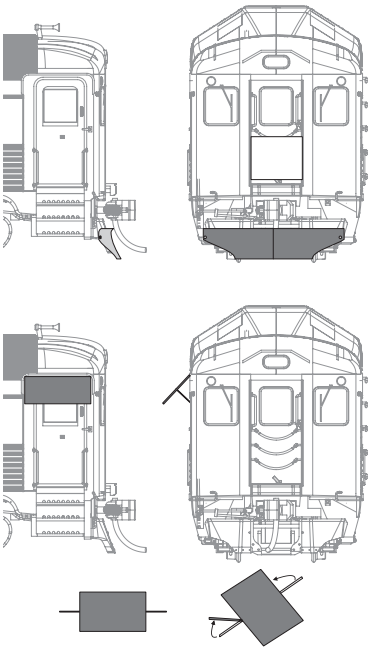


- Note that your RDC has working ditch lights behind the ends. If your unit is already equipped with ditch lights, then ignore what you just read. If you want to retrofit ditch lights, the LEDs are there. Use the illustration provided to drill in the proper location. NOTE: It is HIGHLY RECOMMENDED that you re-



move the shell before drilling. The ditch light LEDs are immediately behind the carbody and even the slightest punch through will damage them, and then you'll need to contact us about repair options. If you already read the note about the Gyralite above, this is your second warning. Don't make us go for the hat trick!

- Northern Pacific Pilot cover. NP had a different style of pilot cover than most other RDCs. We've included it as a separate part as there are photos that show it without the cover. Align it as shown in the illustration at right.



- Rock Island Sun Shade. Some of us will admit that this might be a little over the top, but we're sure that the engineers were happy to have this on a hot summer day. The sun shade wasn't always on the unit, and in fact, we've only seen one or two photos to prove its existence. Drilling two small holes for the support rods isn't necessary, but does make the part more stable in the event it's bumped. Use a small amount of CA to mount this to the side of your RDC. We suggest doing some clearance testing too, as the part does protrude off the side of the carbody considerably.

- Extra extra bits. We include extra windshield wipers and door handles in case one of yours gets beamed to the moon.

INTERIOR LIGHTS AND NUMBER BOARDS

We heard you loud and clear after our first production run. "Why can't I turn the interior lights and number boards off?" Well the simple answer for that was technology just still hasn't gotten far enough, as we ran out of functions on the circuit board. Well, who says you need state-of-the-art technology when we can go back to how Rapido revolutionized interior lighting … with the Rapido Lighter! Just wave the magnetic wand over the long end of the RDC roof (that's the end with six windows instead of five) and you'll toggle the lights on and off … on and off … on and off … Sheer brilliance! The switch is hidden in there. Wave the Lighter close to the roof until you find it.

CHECKING AND ADJUSTING YOUR RDC

We try and make sure that every model is perfectly up to spec before it leaves the fac-

tory, but if the QC inspector spent all night at the barber 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, remove the affected wheelset from the truck by gently prying off the bottom lid of the gearbox with a small flat screwdriver. OK, you need to use a bit more force. 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 on the track.
- Check that all underbody piping and appliances are firmly installed and clear of the track. A small drop of CA-type superglue will sufficiently hold any loose parts securely. Under the body who cares if you spill a bit?
- Make sure that the trucks swivel freely and without binding. If they catch on anything, check to ensure that the sand pipes do not interfere with any of the underframe components and that no underbody conduits are hanging too low.

REMOVING THE SHELL

If you need to open up your RDC to add people it is actually quite easy to do. Just be sure to remember these important points:

- Our factory in China is next to a Mexican Jumping Bean factory. Occasionally products from the two factories get mixed up and some of the little parts on your RDC may actually have been manufactured from Mexican Jumping Beans. That means that, as soon as you turn your RDC over and start fiddling, numerous bits may take the opportunity to jump to their freedom. We would never intentionally imprison a Mexican Jumping Bean, so we won't help you find the offending part(s).
- If you would like to keep your RDC components imprisoned, please make every effort to work in a clean, uncluttered space. That way you can see the bits jumping away and tackle them.
- Turn the RDC upside down and lay it gently in the foam cradle you bought for the "Changing the Couplers" section above and remove the coupler screws. Pull the coupler boxes out of the ends using needle-nose pliers and turn the RDC rightway up. Using something flat and durable like a business card, wedge between the carbody and the frame where they clip together (twice on each side near the trucks). Once you've done that, firmly grab the stairs on one end and pull. Alternate ends until you rock the chassis away from the shell.
- Do not pull on the trucks. If you do, they will break off. You will never be able to get them back on. We will charge you BIG BIG MONEY to put them on for you because clearly you didn't read this.

OPERATION – DC (SILENT)

If your RDC is not equipped with a sound decoder, it should function like most other HO scale locomotives. Put it on the track. Give it some juice. Watch it go.

In DC, the following lights work:

- Headlight (directional)
- Rear red classification lights (directional)
- Interior Lights and Number Boards (turn on/off using the Rapido Lighter)
- Ditch lights (directional, if equipped)

You can't access the door-mounted Gyralite in DC, nor can you dim the lights or turn them off. If you want to have full control over lighting features, you might want to consider upgrading your layout to DCC. In every manual, at around this point, we make a (not remotely) subtle dig at people who choose not to upgrade to DCC. We've decided to skip that with this manual. We respect people who don't trust DCC, and we also respect people who don't trust unleaded gas, air conditioning, or FM radio. (It works under bridges so it can't be natural!)

Now that you DC users are really riled up, we'd like to inform you that effigies of Rapido employees are available to purchase. These can be burned on bonfires, at the stake, or even just propped up on your driveway. They are only $299.95 each, which is about the same price as an entry-level DCC system. If you buy five effigies, we'll throw in Dan Garcia for free. The real one, not an effigy. If you buy six, we'll also throw in the DCC system!

INSTALLING A SILENT DCC DECODER

The RDC contains an ESU-designed motherboard which is connected to the track, motor and lighting outputs. It is located in the roof. A blind plug is attached to the motherboard using a 21-pin connector. To install a decoder, you will need to open your RDC, remove the blind plug and install a 21-pin decoder. You must use a 21-pin decoder rather than an 8-pin or 9-pin decoder. This is clearly written in Rapido's laws and statutes, section 43, subsection 122, paragraph 2175b.

Your chosen decoder should have six function outputs.

We recommend the following 21-pin decoder:

- ESU #54615 - LokPilot V4.0 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 an RDC function mapping which can be downloaded into their non-sound decoder (54615) so that the function buttons and motor control are exactly the same as our factory-released sound versions. This is available for download on the RDC page in the Support section of our web site. You will need an ESU LokProgrammer to

write the function mapping to the 54615 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. After you've bought the silent decoder and spent four 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!

OPERATION – DC WITH SOUND

Operation of a sound-equipped RDC on a DC layout is very similar to running a silent DC model, except that the model will not move until it has reached sufficient voltage for the sounds to fire up (around 7 volts). You cannot control user-activated sound features like the horn and bell if you are using DC. There are third party controllers that supposedly activate these sounds on DC but we've honestly never tested them so we have no idea how well they work. If they cause your RDC to spontaneously combust, contact us for assistance, then contact the third party controller manufacturer and tell them they wrecked your brand new Rapido RDC. Crying is optional but suggested to get best results.

If you want to run your sound-equipped RDC on a DC layout, the Back-EMF circuit can cause issues when you're trying to bring your RDC to a stop. To turn off Back EMF, you will need to bring your RDC to a model railroad equipped with DCC and set CV49 to 18. If you want to turn it back on, change CV49 to 19. If you have a large DC layout and you like to operate sound-equipped locomotives, it might be worthwhile to invest in an entry-level DCC system just so you can adjust the motor settings of your sound-equipped fleet.

WARNING: *If you have purchased a sound-equipped RDC and you operate your trains with a Model Rectifier Corporation RailPower 1300 or 1370 DC controller, stop what you are doing immediately. Do not pass Go. Do not collect $200. The RailPower 1300 and 1370 are notorious for voltage spikes and WILL destroy your model. There is no "if," "might," or "perhaps" about it. We will not repair any RDC destroyed by a 1300 or any other "train set" DC controller. "Train set" DC controllers should not be used with sound-equipped locomotives.*

Here's a hint. If your model train controller has the word TRANSFORMER written in big letters on its metal casing, you should not be using it with your RDC. If it says "Louis Marx & Co. Inc. New York Patent No. 2,019,196" then you REALLY REALLY REALLY should not be using it with your RDC. If there's no lettering on the casing at all, then it was probably home built in the 1970s. To that we applaud your efforts, but we suggest that you don't use that one either. REALLY!

OPERATION – DCC WITH SOUND

We recorded a real RDC in service on the Conway Scenic Railroad back in October 2015. We also recorded a Cummins-powered RDC in 2018, but that wasn't as lovely of a trip as it was just down the street. (You can watch our RDC videos at youtube.com/rapidotrains). On one of our videos you can watch Matt Herman revving the engine up and down on our RDC model while running at a constant speed. He was just fiddling with function F3 on his DCC controller, switching it on and off. You can do great things with our sound-equipped RDC on a DCC layout. Note that our RDC does not have ESU's new* "Full Throttle" control but using F3 you can get a pretty close approximation of that feature.

*new in 2016. If you've just opened your RDC in any year other than 2016, then it's not so new any more. If you opened this up prior to 2016, please contact us as we'd like to go back in time like you've obviously done and save a United Aircraft TurboTrain.

RDC ADDRESS

Your Rapido RDC comes from the factory with a decoder address of 3. We suggest if you are using DCC control that you first test that the RDC responds on address 3. Once you have verified that the RDC is responding you should assign it a unique address (normally the road number of the RDC) 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 the RDC on the main and you have any other locomotives assigned to address 3 (the normal default address for new locomotives) that ALL of them will also be changed to your new address!

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 both RDC engines fire up along with the "fluup! fluup!" air compressor. We've lowered the volume of this air compressor from our first run because ALMOST EVERYONE thought it was too loud. Though we do want to smugly state that the real thing really was that loud.

If you have a VIA RDC with Cummins engines, the compressor actually starts first. They have an air start system. (It sounds really silly, and it wasn't just Dan shouting "Vwooooo" and "Weeeeeee" though it may sound like it.) And the compressor is loud. This is on purpose. It is correct. We recorded it ourselves. PLEASE STOP COMPLAINING ABOUT LOUD COMPRESSORS!

You can adjust CVs to prevent the RDC from moving until the startup sequence has played out. We're really impatient, so we turned this feature off. Refer to a full ESU

LokSound Select decoder manual for more information. You can download it from the RDC page in the Support section of our web site. The feature is called the "Prime Mover Startup Delay" and at the time of writing it is on page 35 of the ESU manual.

If you press F8 when the RDC 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 there is no change in the engine sound between idle and notch 1. That is prototypical. There is nothing wrong with your model.

Here is something to keep in mind. If you are listening to your RDC idling nicely and then you select another engine with your throttle, your RDC still thinks F8 is pressed so it will keep idling along. However, if someone else selects your RDC's number and F8 isn't pressed on his or her controller, the RDC will promptly shut down. That someone will need to press F8 again.

FUNCTIONS

F0 Headlights
F1 Bell
F2 Horn
F3 Straight to 4
F4 Brakes
F5 Doppler Horn – Slow
F6 Ditch Lights (Where Applicable)
F7 Headlight Dimmer
F8 Startup/Mute/Shutdown
F9 Red Classification Lights
F10 Door Gyralites (Where Applicable)
F11 Doppler Horn – Fast
F12 Servicing Mode
F13 There is no F13.
F14 Doppler Horn – Single Blatter
F15 Doppler Horn – Hancock Air Whistle

FUNCTIONS AND PROTOTYPICAL OPERATION

F0 Headlight

In most of our locomotive models, headlights and other lights are not directional. Like the real thing, we make you turn on the headlight and turn it off if you are backing up and you don't want it on any more.

The trouble with the RDC is **IT HAS SO MANY LIGHTS!** So we had to make them directional otherwise we would have run out of function buttons. Please refer to "Which end is front?" above if you are wondering why your RDC thinks its tush is its nose.

F1 Bell

The default bell is a steel bell. For you lucky VIA customers, the default is an E-Bell. And because the four VIA RDCs all had E-Bells by the time they were painted in this paint scheme, we're not telling you how to change it.

F2 Horn
The default horn recording is an M3H. If you have a VIA RDC, the default is a K3L. Choosing a default horn was a tough decision as there are so many horns used.

You can change the default horn using CV 48. The complete list of included horns is below. After you change CV 48, you must take the RDC off the track (or kill the track power) in order for the CV change to kick in.

For all RDCs except VIA:

- CV48 = 0 Large Single Chime
- CV48 = 1 M3H – Default
- CV48 = 2 M5H
- CV48 = 3 K3L
- CV48 = 4 A-125
- CV48 = 5 Hancock Air Whistle
- CV48 = 6 K5LA

For VIA RDCs only:

- CV48 = 64 K3L – Default
- CV48 = 65 K5LA

F3 "Straight to 4"
This unique feature simulates the prototypical operation of the RDC. RDCs were (and are) often used in commuter or branchline service with many stops. To keep to the schedule, locomotive engineers would put the throttle straight into notch 4 and let the RDC accelerate up to track speed. (RDCs only have four notches.) When F3 is selected, you will hear the RDC sound ramp up quickly to notch 4 (full power). It will stay at notch 4 until you press it again. When you press F3 again, it will throttle down to whatever notch you are currently in. Note that this function controls the sound only and not the motor speed, which is still controlled using the throttle settings as normal. That means that, if you forget to turn off F3, your RDC will still be roaring at full throttle even if you bring it to a stop.

F4 Brakes
F4 works just like the brakes on a real engine. Press F4 and your RDC will brake to a stop. Press F4 again to release the brakes.

F5 Doppler Horn – Slow
Rapido's locomotive decoders are known for our awesome Doppler horn recordings. These aren't made by software. They are actual recordings from trackside.

F5 is a recording of an M3H horn on a locomotive travelling at around 35 MPH. If you are barreling along at 85, use F11. If you have a VIA RDC and you change the default horn to a K5LA (as used by Jon Calon on his Vancouver Island RDCs), the Doppler horn on F5 will also change to the K5LA. Note the Doppler horn only works when the engine sound is on.

F6 Ditch Lights (where applicable)
F6 turns on the ditch lights. If your RDC does not have ditch lights, the LEDs are still there, and turning them on will make your RDC glow like it's possessed. The ditch lights are directional. They are located where VIA Rail Canada installed ditch lights – because we own a VIA Rail RDC that has ditch lights – so if your railroad installed ditch lights in a different location the LEDs will not be in the right place.

BC Rail units were unique in that they had their ditch lights (and rock lights) built into the pilot. While we really wanted to make these function, the design of it just proved to be too difficult based on the original design of the model to make them work reliably. Sorry, eh! If you modify your RDC to make these work, we would love to see photos/videos!

F7 Dim the Headlights
When approaching a station stop or an oncoming train, turn off your ditch lights and then press F7 to dim your lights – you don't want to blind your passengers or the oncoming train's engineers.

F9 Red Class Lights
Pressing F9 turns on the red class lights. They are directional. When F9 is pressed, the red class lights will always be lit on the rear as determined by the direction of travel.

F10 Door Gyralites
Many railroads mounted a Gyralite (oscillating headlight) to the front door in service. At the end of the run, the Gyralite was removed and mounted at the other end for the return trip.

We have included a Gyralite LED on the circuit board behind the door. If you choose to install one or both Gyralites, the LED will already be there. Canadian and unlettered RDC models have Gyralite castings in the polybag. ATSF, B&O (ex ATSF), C&O and WP models each have their own unique Gyralite installed.

The Gyralites are directional, just like the headlights. Why? Because like we already told you, technology hasn't caught up to us yet and we ran out of functions!

F11 Doppler Horn – Fast
If your RDC is flying along at 80 or 90 MPH and you are approaching a level crossing, this is the horn for you. On all RDCs except VIA, this is an M3H. On VIA RDCs, this is a K3L. The Vancouver Island RDCs never went this fast, so we do not include a fast K5LA Doppler. Jon Calon will not be able to run his Rapido RDCs at 100 MPH. Sorry.

F12 Servicing Mode
When switching, rules indicate a locomotive should have both front and rear headlights on dim. So if you are tootling around your yard or locomotive maintenance facility, press F12 to put both front and rear headlights on dim.

F13 There is no F13

F14 Doppler Horn – Single Blatter
The RDCs were delivered with a variety of single blatter horns, such as the A2 and its deeper cousin, the S2. We had a heck of a time finding clean Doppler recordings of any of these. An anonymous donor gave us this horn recording, which sounds like an armadillo trying to play the bagpipes. It sounds "sort of" like an A2 (if you cover your ears and go "la la la") so we're using it.

Hopefully someone will hear your RDC in action, get really angry, and shout **"THAT IS NOT AN RDC HORN! I KNOW BECAUSE I HAVE 47 RDC DOPPLER HORN RECORDINGS. WHY DIDN'T THEY JUST ASK ME?"** Once he has cooled down, please have him get in touch with us and we will use his recordings on the next run. And we'll mention him in the manual in a most appreciative way.

F15 Doppler Horn – Hancock Air Whistle
This the same recording of a Doppler Hancock Air Whistle that proved very popular on our HO and N scale FL9 locomotives. Thanks again to David Magill for the recording. If your RDC is equipped with a Hancock Air Whistle you can change the default horn to a Hancock by following the instructions under "F2 Horn" above.

SOUND VOLUME SETTINGS

The sound volume is adjustable. If maxing out all the volume settings does not make it loud enough for you, Jon Calon suggests buying a real RDC. You can also adjust the relative volume levels of the different elements of the sound recordings.

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. For reliable results we recommend using a programming track, a LokProgrammer or JMRI to make sound setting changes.

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 might want to keep.

VERY IMPORTANT: Before you change any of the volume control CVs, please make sure that CV 32 is set to 1. CV 32 is used as an index selection register and if you don't set it first then we are not responsible for your resulting rage and the fact that you will probably throw the RDC against the wall in frustration.

RDC SOUND VOLUME SETTINGS					
FUNCTION	CV	DEFAULT (Detroit)	DEFAULT (Cummins)	RANGE	YOUR VALUE
MASTER VOLUME	63	192	160	0-192	
DIESEL VOLUME	259	80	80	0-128	
HORN VOLUME	275	128	128	0-128	
BELL VOLUME	283	64	64	0-128	
F5 DOPPLER VOLUME	339	128	128	0-128	
F11 DOPPLER VOLUME	395	128	128	0-128	
F14 DOPPLER VOLUME	403	128	—	0-128	
F15 DOPPLER VOLUME	411	128	—	0-128	
AIR LETOFF VOLUME	363	128	128	0-128	
STARTUP COMPRESSOR VOLUME	419	55	40	0-128	
RANDOM COMPRESSOR VOLUME	451	75	40	0-128	
BRAKE VOLUME	459	128	128	0-128	

FACTORY RESET

On your RDC, you 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 keep. You did keep notes, right?

You can NOT lose all of the pre-recorded sounds on your RDC decoder by doing a factory reset. If you manage to lose all of the sounds on your locomotive then you have probably set fire to your decoder with a voltage spike, and chances are you have an MRC 1300 and didn't read the instructions before running your RDC… specifically the bit about not using an MRC 1300 with your RDC. Open up your RDC and pour out the congealed blob that used to be a decoder.

AWESOME SLOW SPEED THINGY

There is an awesome trick that you can use to get even better slow speed running and smoother operation. It's called the Automatic Motor Tuning Feature. This feature will automatically adjust the Back-EMF in most cases and give you phenomenal slow-speed performance. Jon Calon uses it on his layout.

In order to use this automatic adjustment you need to use Ops mode programming, i.e. programming on the main. Make sure your RDC is placed in the middle of a very long stretch of mainline – it should have at least eight feet clear on either side, longer if possible. Set CV 54 to a value of 0. Then get out of programming mode and turn on the

bell (press F1). We'll say this again: Make sure you have plenty of room in front of and behind your RDC and it is not headed for an immovable obstacle or vertiginous drop in either direction.

MOTOR HUM

If you run your sound-equipped RDC with the sounds muted, you will notice a distinctive hum coming from the motors. This is caused by the Back-EMF, the same Back-EMF which was so awesome in the above paragraph. If you are running with the sounds on – it is a sound-equipped model, after all – then the hum is not noticeable. If for some reason it really bugs you, you can try to turn off the Back-EMF. The guy writing these instructions has no idea how to do it because he has never had a reason to run his sound-equipped models with the sound turned off. Check the full ESU Select manual, available from the Support pages of our web site.

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 Select decoder manual. This is available on the RDC page in the Support section of our web site.

LIMITED LIFETIME WARRANTY

We will do our best to solve any problems or issues that you may have with your RDC. We recommend that you operate your RDC within a few months of receiving it as we will not have an everlasting supply of spare parts.

If your RDC has any defects that originate from the factory, we will repair your RDC using new components at our Markham office. Please contact us through our web site or using the telephone before sending any models back to us. As well, please bear in mind that models shipped from the United States must be sent by mail rather than by courier, and must state explicitly on the customs label that the models are being returned under warranty. We always return your model with some free stuff to cover your shipping costs. It can take up to two weeks for mail to get from the United States to Canada. Our record is 91 days from Boston to Toronto. We could have walked there to collect the package and been back sooner. Thank you USPS and Canada Post.

There are a number of things that this warranty can not cover. We've already gone over the bit about reattaching loose parts yourself – don't be afraid! The hassle of packing up a train, going to the post office, waiting a month for it to come back, and then finding that something else broke off when we shipped it back to you can be avoided by two

minutes with a toothpick and some white glue.

Of course, damage caused by attaching real jet engines to the roof of your RDC (That's right NYC modelers, we're calling you out!), using it as a javelin (hey, practice makes perfect!), trying to put real people in the seats, strapping a pair to your shoes to use as HO scale roller skates, or any other new and usual damage caused by Acts of You that we haven't mentioned here is not covered by the warranty. However, if catastrophe does strike and your RDC 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 RDC for you. Don't be shy!

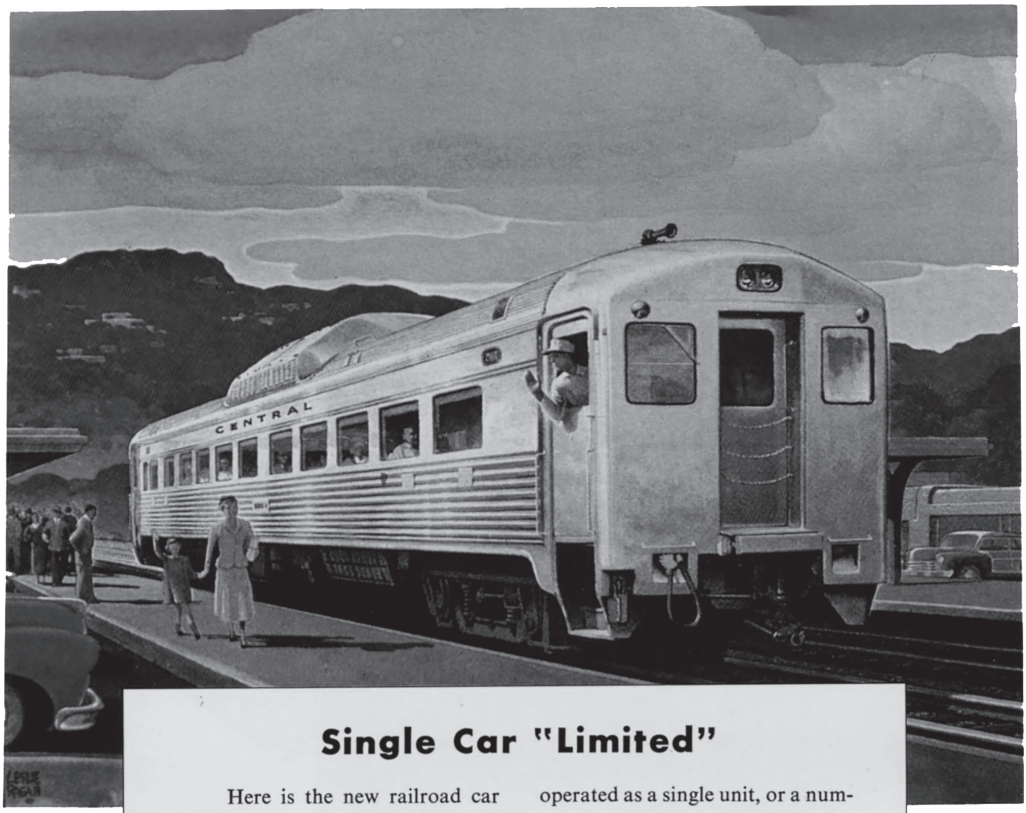
ACKNOWLEDGEMENTS

Many people have helped make this RDC model a reality. Thanks to Bram Bailey, Paul Beck, Rick Bland, Paul Bown, Rob Burnet, Bytown Railway Society, Jeff Cauthen, Joe Cianci, Conway Scenic Railroad, Paul A. Cutler III, Dan Dell'Unto, Rod Desborough, Luc Doiron, John Eull, Bob Fallowfield, James Gagliardi, Court Gregg, Paul Hallett, Gary Hatfield, Patrick Hind, Kevin Holland, Tim Horton, Andrew Jeanes, Mark Kaluza, Jeff Keddy, Gordon Kennedy, Wendell Lemon, Steve Lucas, Pete Magoun, Chris Marrable, Zeke Medeiros, Dave Minshall, Jim Mischke, Jakob Mueller, Don Oltmann, Jean-Louis Ozorak, Jocelyn Pacquet, Gerry Putz, Railroad Museum of Pennsylvania, John Riddell, Jeff Root, Brian Schuff, John Sheridan, Jay Thompson, Tom Thompson, Several Other People Named Thompson, Toronto Railway Historical Association, James Van Bokkelen, Otto Vondrak, Noel Widdlefield, Gord Wilson, the late Asa Worcester and Bob Zenk.

A big thank you goes to Jon Calon, who has been a big help and whom we forgot to thank in the last RDC instructions. To make amends, we've mentioned Jon's name five times throughout this instruction manual. See if you can spot them.

A special thank you again to Chris Fox and John Carey. These guys can resurrect anything mechanical. If you love your Cummins RDC sounds you owe Chris and John a big debt of gratitude. We're just glad they work for veal sandwiches and the occasional beverage.

And of course thanks to Richard Longpre for the amazing French translation. In the first-run RDC manual, we reported that he had almost earned his 7 billion free models. Well he finally achieved that. However, due to an interstitial transmission fault, we only have record of him earning 713,879 of those. So his translation services will be required for the next 109 years.



Single Car "Limited"

Here is the new railroad car which is a train in itself—the self-propelled, diesel-powered, all-stainless steel RDC-1. The Budd Company created it to perform a service both to railroads and their patrons, by carrying more passengers on short or long hauls at lower operating cost.

The RDC-1 seats ninety in air-conditioned comfort. With power transmitted hydraulically, from an effortless start it picks up speed like a whippet and stops in a fantastically short space . . . with the easy softness of pushing your hand against a pillow.

Railroad men foresee a wide usefulness for this car. It may be operated as a single unit, or a number of cars can be coupled into a train, operated by one engineman.

Improvement in any field of endeavor begins with imagination. The RDC-1 is another example of Budd practice which is first to envision clearly the need and then bring to bear all the resources of inventive engineering. It follows the modern stainless steel streamliner, the all-steel automobile body, the tapered steel disc wheel and so many other products in which Budd has translated imagination into practical accomplishment. The Budd Company, Philadelphia, Detroit.

Budd