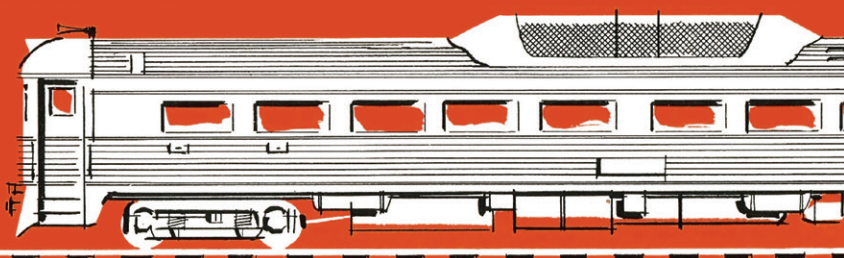

RDC

by Rapido Trains Inc.

Français au verso.

RDC – Rail Diesel Car – Operating Handbook

Thank you for purchasing this ultimate model of the Budd RDC. This is our third run of the famous Rail Diesel Car and while we have covered most of the RDC versions built, we've still got a few more things up our sleeve. 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 upon, please let us know.

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. The RDC should really resemble my pet salamander named Captain Fluffy.") 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. (Note that this 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. Our warranty team does not rush through jobs just to get them done quickly – time and care is taken to make sure the repair is done right. And if you complain online that you sent back your model for repair "months ago" even though the model has only been out for three weeks, we reserve the right to put your picture up in our office and make fun of it.

If its 2053 and you just purchased this model from a middle-of-nowhere roadside antique shop, then there is a very good chance that not only is Rapido Trains Inc. probably moved up in the world and operating a shortline railway, but the warranty likely won't apply any more. We specialize in providing 24/7 service to local businesses, and are even providing RDC shuttles with timed connections to nearby VIA services. As such, if you need some parts for your RDC you are on your own. But we will be more than happy to offer you freight delivery service at competitive prices!

This sound-equipped Rapido model features an ESU Loksound V5 decoder. For more information, please visit www.esu.eu.

OUR ADDRESS

Rapido Trains Inc.
Canada: 500 Alden Road, Unit 21, Markham, Ontario L3R 5H5
USA: PO Box 796, Higganum, Connecticut 06441

Email: trains@rapidotrains.com
Tel. 905-474-3314 **Fax.** 905-474-3325

THIS IS SO IMPORTANT IT EVEN GETS PUT IN BEFORE THE TABLE OF CONTENTS. PLEASE READ IT CAREFULLY.

TOWING AND YOUR WARRANTY

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 you do so at your own risk. Your warranty is well and truly void if you pull unpowered equipment behind your RDC. The emphasis is unpowered. Coupling up to another Rapido RDC is perfectly fine. Gold star if you can make a really long train of nothing but RDCs, just like CP did once upon a time. If you send it back to us under warranty we can quickly determine if the damage was caused by towing (using the secret "tow-o-matic" strain meter hidden in the RDC floor) and you'll have to pay for any repair work.

RDC #6133 HAS A NEW FRIEND!

Yes, we've done it again. We've saved RDC-2 #6215 from the scrapper's torch. We welcome contributions to our restoration efforts. Please visit our web site to contribute!

rapidotrains.com

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RDC: DCC FUNCTION QUICK REFERENCE

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

WHAT'S NEW?

This run of RDCs features a number of improvements over our first run of Canadian RDCs, 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
- 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 F unit. 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.

HISTORY

In the early 1950s many railroads were looking for alternate means of providing fast, more economical passenger service with the goal of gaining back some of the clientele that had transferred to automobiles. The Budd Company of Philadelphia designed the RDC (Rail Diesel Car) as an economical alternative to the traditional locomotive-hauled passenger trains in suburban, commuter, branch line, interurban and supplementary main line service at a time when the railroads were struggling to make such services profitable. RDCs proved much less costly to operate than regular consists and were well received by railroads throughout North America as well as some overseas lines. Priced at $127,000 to $130,000, an RDC cost approximately 50 per cent less to operate than a conventional locomotive-hauled train. An RDC demonstrator unit toured a number of railroads in late 1949 and early 1950. A total of 398 units of various configurations were built from 1949 and 1962. The Budd Company built RDCs in its Red Lion plant in Philadelphia. In 1957, Canadian Car & Foundry Company of Montreal was licensed to build RDCs in Canada for Canadian buyers. Subsequently, 16 unfinished body shells were supplied by the Budd Company and completed in the Lachine plant of Canadian Car & Foundry.

Canadian railways purchased a total of 107 RDCs - both new and second-hand from US roads. Sixteen units were completed by Canadian Car & Foundry plant in Lachine, Quebec in 1957. CNR purchased 46 new while CPR purchased 54 new of which two were assigned to the Dominion Atlantic. PGE purchased seven new. Some of the units moved from one railroad to another over time, such as the CN and CP cars going to VIA Rail. The numbers include units purchased both new and second-hand.

Canadian National

CN advertised its RDCs as Railiners and numbered them based on model type. RDC-1s were D-100 up. RDC-2s were D-200 up. RDC-3s were D-300 up. RDC-4s were D-400 up and RDC-9s were D500 up. Due to popular public response to the initial units that CN purchased in 1954-1959, CN purchased additional second-hand units from B&M, C&O, C&EI, B&M in 1964 and 1965 to meet traffic demands. CN purchased an additional seven RDC-9 units from the MBTA in 1965. The CN units were delivered with green and yellow ends with black lettering on the stainless steel letter boards. Later they received bright red ends with white CN noodle logos and wide black bands with white CN noodle logos along the side window panels Some units also featured a white band on their letter boards.

In 1964-65 CN modernized and improved the interiors accommodations in many units. CN and VIA Rail operated one of the largest RDC fleets. CN modernized most of its Phase I units by adding new ends with smaller cab windows, larger pilots of the Phase II design and roof-top headlights in a unique housing. Many Phase II units were fitted with a diaphragm at each end to enable passengers to move between cars when operated as multiple unit trains. Late in life many units also received ditch lights in rectangular recesses below the end cab windows. In 1978 all existing CN units were transferred to VIA.

Canadian Pacific

CP advertised its RDCs as Dayliners and numbered them based on model type. RDC-1s were 9050-9099. RDC-2s were 9100-9199. RDC-3s were 9020-9049. RDC-4s were 9200-9299. In operation, a headlight was usually mounted on the center of the end door on the leading unit. Two RDC-1 units were assigned to, and lettered for, the CP subsidiary Dominion Atlantic Railway. CP purchased one RDC-1 from the DSS&A in 1958 and one RDC-2 from the Lehigh Valley in 1958.

The Initial CP paint scheme was maroon and yellow chevron striped ends and maroon letter boards. With the advent of CP Rail they received Action Red and white ends, white cab roofs and Action Red letter boards. This CP Rail scheme has been called the "hockey mask" scheme as it resembles a face mask worn by hockey goal keepers. A final paint scheme was ends with Action Red and white stripes, white cab roofs and Action Red side doors and letter boards. In 1978 all existing CP units were transferred to VIA.

PGE/British Columbia Railway/BC Rail

PGE and BC Rail advertised its RDCs as Cariboo Dayliners and numbered them based on model type. RDC-1' were BC-10 up while RDC-3s were BC-30 up. In addition to the units that PGE purchased new in 1956, PGE purchased additional second-hand units; four from Amtrak in 1975 and three from SEPTA in 1983. The PGE units had dark green and orange ends with a dark green letter boards and orange lettering. Most of the units had the side fluting carried across the side doors and wrapped around the car ends.

PGE cars had Swanson air horns mounted on the roof at each end and "Pathfinder" headlights mounted on the extreme top corners of the car. In operation, a headlight was usually mounted on the center of the end door on the leading unit. In 1972 all existing PGE units became units of the British Columbia Railway which later became BC Rail.

VIA Rail

In 1978, VIA inherited a combined 84 units from both CN and CP. Many additional RDCs were purchased from MBTA (ex-B&M) as they were made surplus in the US. VIAs RDCs were numbered in the 6xxx series, which necessitated renumbering of all the ex-CP units to match the existing CN numbering scheme. In operation, a headlight was usually mounted on the center of the end door on the leading unit. The VIA units carried wide blue bands with yellow stripes on their sides with VIA logos and had their pilots painted black. VIA started as a division of CN, called VIA CN. In 1976 and 1977, many units could be seen with a small CN logo under the VIA logo.

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 work-

bench 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.

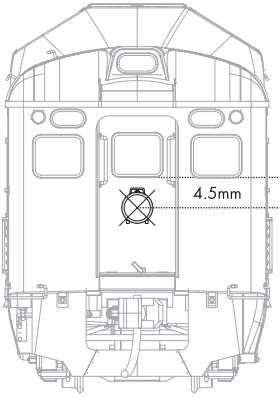
If any parts are missing or broken, please call or email us. We'll happily send you free replacements. We aim for 100% customer satisfaction… with one exception. If you are one of those people who calls us because the horn is slightly crooked and you don't want to move it back into place with your finger,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

Canadian RDC models contain:

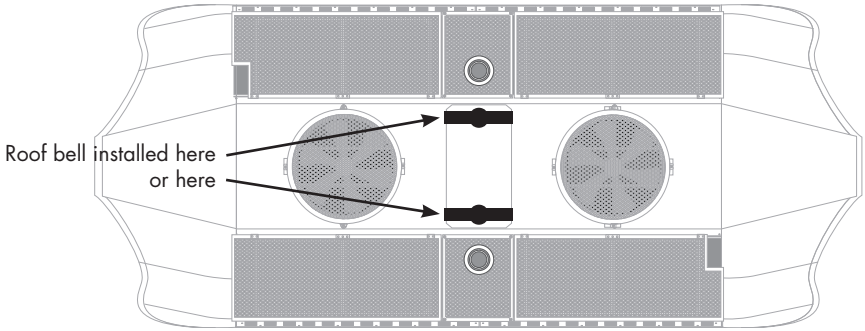
- **Diaphragms.** Install to match photos. Some RDCs had diaphragms at both ends. Some had a diaphragm at one end. Some had notched diaphragms. Some had straight diaphragms. Many had all of the above. We include two pairs of diaphragms. Have fun.



- **Gyralite.** CP and VIA 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.

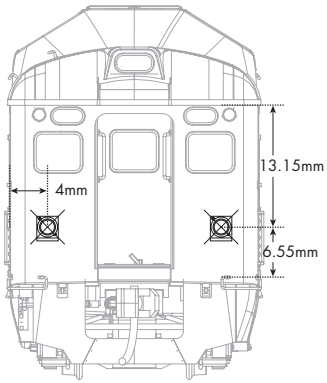
- **Sinclair antenna.** These were added later in life and were placed in different locations on almost every RDC. Match photos.

- **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 on the next page. Note the roof bell installation usually came with stack modification.



- **Frigidaire AC single condenser unit.** Most Canadian RDCs were built with a Frigidaire dual condenser unit, and others received them later on. So we've installed the dual condenser unit on the models but for the two of you who care we've included the original Frigidaire AC single condenser unit. You need to hack off the dual condenser unit and install the single condenser unit. No, we're not going to illustrate it for you. If you have no idea what the dual condenser unit looks like, then you are fine with whatever is installed on the model.

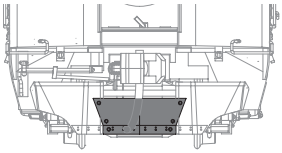
- Note that your RDC has **working ditch lights** behind the ends. If your unit is already equipped with ditch lights, then ignore what you just read. If you want to retrofit ditch lights, the LEDs are there. Use the illustration provided to drill in the proper location. NOTE: It is HIGHLY RECOMMENDED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



- **Horns.** We've installed appropriate horns for your model. Some models will also include an additional horn in the polybag in the event the real RDC wore different types over the years. If you end up with a spare or two, can also use them to replace some of the totally wrong horns on your non-Rapido models. Yes, M3H horns really are that small. We've also included the raised horn bases used on CP RDCs and randomly on VIA RDCs.

- Stacks and stuff. VIA and CN did all sorts of stack modifications. We've included tall stacks (they are the ones with the bend in them) because some RDCs got one or two tall stacks. We've also included extra straight stacks for installation on the outside angled sections of the roof blisters. VIA moved most of their stacks to the outside. We've also included extra radiator cover grilles with holes in them to clear the outside stacks. An example is shown in the roof bell illustration above. Look at photos and install the needed bits to match the photos as there are far too many variations to illustrate here.

- Pilot cover. This is included for CP Action Red RDCs as they are the only phase 1 Canadian RDCs in the first run with an as-delivered pilot. 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 to install this part.



- 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. They were used mainly between Calgary and Edmonton but have been seen all over the country. A couple styles are provided. 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.

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

- Note that your RDC has working ditch lights behind the ends. If you want to retrofit ditch lights, the LEDs are there. Contact us for a drawing showing where the LEDs are located.

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 factory, 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 right-way 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 #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 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 (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.

– NOTICE –

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 off the layout.

OPERATION – DCC (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 2020. If you've just opened your RDC in any year other than 2020, then it's not so new any more. If you opened this up prior to 2020, 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.

— 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.

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.

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 Start-up Delay" and at the time of writing it is on page 89 of the ESU LokSound 5 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

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. Some modellers will no doubt find solace in the fact that we also included an e-bell in the sound file too (ok, only Jason will find solace). Visit the following section "Horns and Bells" on how to change that.

F2 Horn

The default horn recording is an M3H. Choosing a default horn was a tough decision as there are so many horns used. Actually, it was quite easy since there were only a handfull to choose from. For the answer to that, and how to change the default horn sound, visit the "Horns and Bells" section which follows.

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 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, 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 two VIA Rail RDCs that have 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.

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. This is a real recording of an M3H at speed. If you change the default horn recording (next section), then this will change as well to the appropriate tone.

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.

HORNS AND BELLS

The default horn on your RDC model is a Nathan M3H. Yes, we know, not all RDCs had one, but we had to pick one. We wanted each RDC to have their unique horn by default, but doing so would be really complicated and would've taken Mohan an estimated 3,792,564 minutes of programming to accomplish that. So, we spun the wheel of sound effects (it's an old Wheel of Fortune wheel) and came up with the M3H. If you wish to change the default horn, you can do so by changing CV 163. For changing the default bell, change the value of CV 164.

Horns
- CV 163-1 Nathan M3H (Default)
- CV 163-2 Nathan K5H
- CV 163-3 Nathan K3L
- CV 163-4 Nathan K5LA

Bells
- CV 164-0 - Steel Bell (Default)
- CV 164-1 - E-Bell

Changing the default horn automatically changes the Doppler recordings on F5 and F11 as well for the M3H, K3L and K5LA.

SOUND VOLUME SETTINGS

The sound volume is adjustable. If maxing out all the volume settings does not make it loud enough for you, then the entire Rapido team and fan club 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.

RDC SOUND VOLUME SETTINGS

FUNCTION	CV	DEFAULT	RANGE	YOUR VALUE
MASTER VOLUME	63	192	0-192	
DIESEL VOLUME	259	80	0-128	
HORN VOLUME	275	128	0-128	
BELL VOLUME	283	64	0-128	
SLOW DOPPLER VOLUME (F5)	339	128	0-128	
FAST DOPPLER VOLUME (F11)	395	128	0-128	
AIR LETOFF VOLUME	363	128	0-128	
STARTUP COMPRESSOR VOLUME	419	55	0-128	
RANDOM COMPRESSOR VOLUME	451	75	0-128	
BRAKE VOLUME	459	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~~ *ELIMINATED!*

This is no longer a thing. That's right, **there is no more awesome slow speed thingy!** Period! End quote! ESU made refinements to the programming and with the advanced motor control of the V5 decoders, this is no longer necessary because your RDC should already have fabulous motor control. If you choose to try to implement it by reading an old manual and applying it to your locomotive, then your warranty is void. Yes, we said it. VOID! There should be no reason to apply changes to the Back-EMF of your decoder. If you feel inclined, then there may be an underlying issue that needs to be corrected. Please contact us if you're having any motor control issues or concerns regarding your locomotive and we'll be glad to assist. Actually, contact ESU. We can even give you their home address if they don't get back to you. And we'll provide the noisemaker for you to let them know you are there at 3 a.m.

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 strapping a real Detroit Diesel 6-110 to it (or would that be the other way around?), using it as a switching engine (should've bought the SW1200RS), trying to put real people in the seats, strapping a pair to your shoes to use as 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

There are so many people we have to thank for this project. Like, it's eclipsing on an entire page almost. We've now released three productions of the RDC model – including both American and Canadian roads (and even an Aussie version too). We'd be banished to the stub-ended siding forever if we neglected to mention these people and organizations for all their help with this project over the years: Bram Bailey, Paul Beck, Rick Bland, Paul Bown, Rob Burnet, Bytown Railway Society, Jon Calon, Jeff Cauthen, 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 (not the Canadian coffee guru), Andrew Jeanes, Mark Kaluza, Jeff Keddy, Gordon Kennedy, Wendell Lemon, Steve Lucas, Pete Magoun, Chris Marrable, 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, Jay Thompson, Tom Thompson, Several Other People Named Thompson, Toronto Railway Historical Association, James Van Bokkelen, Otto Vondrak, Noel Widdlefield, Gord Wilson and Bob Zenk.

A very special thank you goes out to Chris Fox too. Chris should be known as Superman. Better yet, we'll just call him RDC Man! Na na na na na na na na RDC MAAAAAAN! He can resurrect anything rail or road-related, as long as it runs on oil, hopes and dreams. His own official fleet of equipment consists of three restored Canadian-built snowmobiles older than most Rapido employees! We would never have been able to save 6133 if we didn't have Chris on our team. Everyone who loves the restoration work that Rapido does owes Chris a big debt of gratitude. This is also where we mention he has more RDCs to play with now too. Don't worry Chris, you'll be fine. Have fun with those MU hoses.

And of course thanks to Richard Longpre for the amazing French translation. With all of the translation work he has done for us, he is expected to release the first edition of his English-French Railway Terminology Translation Guide for Model Railroaders who have no idea how to read the French language.

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