H1

OPERATION INSPECTION AND MAINTENANCE OF STEAM LOCOMOTIVES

RAPIDO TRAINS INCORPORATED
MARKHAM • ONTARIO • CANADA

CP H1 4-6-4 LOCOMOTIVE PRODUCT GUIDELINES

Thank you for purchasing the next release in Rapido's Icons of Canadian Steam series – the Canadian Pacific's most famous steam engine, the H1 Hudson.

If this is your first Rapido locomotive, we must ask – why is this your first Rapido locomotive? No, seriously, we've been around now for 20 years now and have been pumping out a lot of beauty Canadian trains, eh? We've produced a metric tonne of Canadian products, like the *Canadian*, D10 4-6-0, Dash 8-40CM, RS-18u, Angus van, M-420, GP9RM+slug, F59PH, etc. So just for that, we're going to make sure you LOVE your H1. And then you'll say to yourself, "What have I missed out on all these years? I need to find and buy every Rapido model that has ever been made, in every scale! Even the UK ones!"

If you are a returning customer, welcome back! Just put your engine on the track. All we ask is you don't intentionally set it on fire, don't use it on a daredevil stunt off the end of the layout, and don't MU it to anything made by Tyco. Oh, and REALLY keep it away from cheap DC controllers. Crappy power packs can quickly and easily give any Rapido locomotive the gooey-like center of a grilled cheese sandwich.

If this is your first Rapido Manual, we should warn you up front – there's usually a good amount of humour through these manuals. Well, at least we think so. We have gotten some comments from people that don't agree, but we suspect that they have had their sense of humor surgically removed (we think it's near the spleen). After all, model railroading is supposed to be fun!

As always, if there is anything amiss with your H1, please do not hesitate to contact us. We stand by our products 100%. The best way to contact us is through email (service@rapidotrains.com) but you can also try to reach us by phone, the postal service, or heliotrope (but only on sunny days). Our contact info is near the back of this manual.

However, PLEASE do not send a faulty model back to us without first getting authorization. You wouldn't believe how many times we get a delivery of a broken locomotive with only a name inside (sometimes only the FIRST name), meaning we have no idea what's wrong with it! (Hey Dave – your package of RTL Turboliner decoders are still sitting on the shelf in our bathroom.) If the issue with your model is something simple – like a loose grab iron – then we'll likely tell you how to fix it yourself. While we generally will support repairs to your H1 for a considerable length of time, please realize that eventually the parts supply will run out. That, or you'll have to invent a time machine and put it into a DeLorean to visit us in the past, which would be back to our future; whichever comes first. Unfortunately, that will dictate when we can no longer help you. Again, please make sure you contact us first so we can tell you whether there's enough parts (or plutonium) left to do your repair.

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PROTOTYPE HISTORY

Designed by Chief of Motive Power & Rolling Stock Henry Blane Bowen, Canadian Pacific's H-1a and H-1b class 4-6-4 Hudson locos were state-of-the-art steam power when delivered. A total of twenty locos were delivered in two batches of ten each. The first batch, numbers #2800-2809, were delivered in 1929 and classified H1a. The second ten, numbers #2810-2819, were delivered in 1930 and were classified H1b. These locomotives were used on mainline passenger trains across the CP's system. They were so successful that CP used their design as the basis for its later H1 c/d/e "Royal Hudsons" seven years later. The H1a/b classes survived intact until the end of steam, with the first retirements not coming until 1957.

The lone H1a/b class survivor today is #2816. After many years of storage at Steamtown in the United States, she was restored to operating condition by Canadian Pacific in 2001 for excursion service. Nicknamed *Empress*, #2816 was converted to burn oil and equipped with ditchlights plus other modern appliances to run on today's modern railroads. As of 2024, *Empress* is touring North America!

ASSEMBLING YOUR LOCOMOTIVE AND TENDER

Put your locomotive and tender on the track. Note the plug on the locomotive needs to go into the socket on the tender. If the locomotive or tender is not properly on the track, the plug and socket will not connect. Connecting them is super easy and smooth. They just click together. If they do not click together, DO NOT FORCE THEM. Check that the plug and socket are perfectly aligned. If you force them together and the plug and socket are misaligned, you will destroy your decoder.

BREAK-IN

Just so we're clear, that doesn't mean break into anyone's layout room to steal their H1. And don't break into a hobby shop either because that is really frowned upon. Just buy more for yourself. But this isn't about that kind of break-in.

Every locomotive needs a break-in period. Your H1 has been tested at our factory for about two minutes…maybe…just to make sure everything functions as it should. That is certainly not enough time to get the gears to mesh nicely or to even out any jerky operation in a new motor. We suggest that, after reading this manual, you put your H1 on a test loop and just let it run in each direction for an hour or two. Fast and slow. Don't have it pulling anything either while you're breaking it in.

There already should be enough grease in the gearbox so you don't need to add any. Just let the thing run. If you are running this thing on track on the carpet, please vacuum first. You have no idea how many models come back to us with gearboxes full of carpet fluff and pet fur. Our models are not cat-proof.

HOW TO HOLD YOUR LOCOMOTIVE

Hold your H1 gently, and with much love, care, and attention as your model has numerous delicate parts. If you want to back date it to be the quality of a model produced in the 1930s, then rip all the parts off and handle it like a bowl of poutine after skipping breakfast. We're assuming you don't want to do that, so the H1 should be picked up carefully. It is best to pick up the engine with the fingers of one hand along the bottom edges of the running boards (avoiding the air pumps and air tanks) while grabbing the bottom edge of the tender frame with the fingers of your other hand and lift both together. That way you won't leave greasy fingerprints on the boiler or tender and you also won't stress any of the delicate parts. NEVER PICK UP A STEAM ENGINE BY THE VALVE GEAR OR SIDERODS! They are very delicate. We also don't recommend using only one hand to pick up both engine and tender at the same time; there are no awards for juggling. Always make sure your hands are free of shmutz before touching your engine, otherwise you'll shmutz it up. However, if your hands have enough grease, soot, and oil on them, that could be quite realistic as clean steam engines only exist in museums.

If you are taking your H1 to the club all the time and regularly handling it, stuff will likely break off. Sorry, eh? The little bits are made of plastic and metal and attached with glue, which is all a bit fragile. We attempted to make the small parts out of unobtainium and use Steady-State Micro Welding to install them. Unfortunately, with the current global supply crisis, unobtainium has become unobtainable.

We suggest wrapping your H1 in a plastic bag before placing it in the packaging or in your holder so you can catch bits that fall off. White glue is the recommended adhesive for reattaching the bits, although you are welcome to use CA but only if you are very careful or very brave. Remember to apply the CA to the part and not to the model (don't ask us how we know this).

CHECKING AND ADJUSTING YOUR LOCOMOTIVE

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

- Check to see that all wheelsets are correctly in gauge using an NMRA RP-2 Standards Gauge. Should any of the leading or tender truck wheelsets be out of gauge, just remove the affected wheelset from the truck. The wheelset can be regauged by grabbing each wheel and twisting. DO NOT TWIST A DRIVER WHEELSET!!! The spokes are delicate. If your drivers are out of gauge, please contact us for a replacement.

- Check that all piping and appliances are firmly installed and clear of the track. Bend up any low coupler trip pins so they don't interfere with your switches and crossings. We recommend using Kadee part #237 (Trip Pin Pliers) or Micro-Mark part #80600 (Trip Pin Bending Plier).

- Make sure that the tender, lead and trailing trucks swivel freely and without binding. If they catch on anything, check to ensure that the ends of the trucks don't bind against any underbody components. If they do, see that everything is firmly installed. If the engine is leaning over at a 45-degree angle, the leading truck is probably sideways so turn the truck straight. Don't try to do wheelies with your $700 steam engine model.

MISSING OR DAMAGED PARTS

If you open your H1 box and discover that something has obviously been bumped in transit and is damaged, please contact us. We know that some of you don't like the idea of human beings touching your models, but if it is a matter of gluing an air pump back on you can do it yourself in less than a minute with a drop of white glue. You can't ruin the paint finish with white glue. If you really want to send your model back to us for us to install that, we would be happy to. But if you do send it back to us for us to put that one part back on and other stuff falls off when we send it back to you, then tough tooties. We're not fixing it again. Just ask your granddaughter to install the part for you; it will take her at least three minutes.

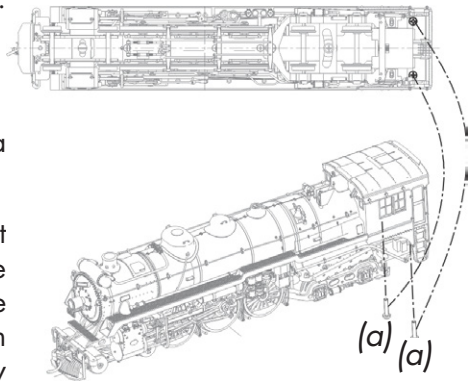
We try to make our models courier- and mail-proof, but there really is no way to protect a model from damage when it is used in a game of football at the UPS or FedEx distribution center. Model trains generally don't survive well after being "spiked" because Mikey strip sacked the QB near the warehouse loading dock.

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

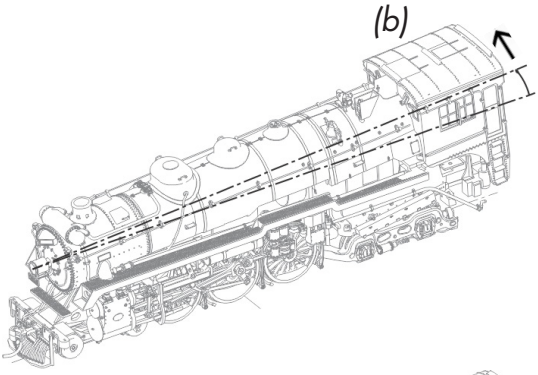
REMOVING THE SHELL

If you need to open your H1 to install a decoder, you will need to follow these steps:

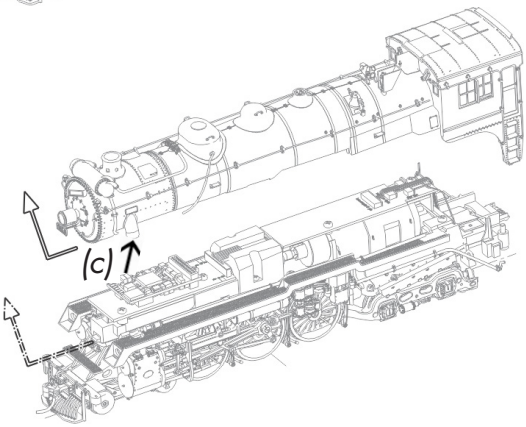
- To remove the boiler & cab shell, first remove the pair of screws *(a)* under the bottom of the cab that are behind the side ladders. Those of you familiar with other model steam locomotives may



rush ahead, assuming that the pilot truck screw will need to be removed. You'd be wrong. HAH! We bet you wished you read this first, eh? Read on...



- Lift up slightly on the rear of the cab *(b)* to raise the cab/boiler assembly clear of the backhead and internal motherboard, but mind the wires to the cab light! (These wires can be unplugged from the motherboard if you want to, but it's not necessary.)



- To unlatch the front end, care must be taken to loosen the supearheater pipes *(c)* from the walkways as they are a bit of a tight fit. Gently twist the boiler top along its axis back and forth to the free the large pipes from the walkway tops. If you yank it, you might separate the walkways from the boiler, and we don't want to do that. Once the pipes are free, move the boiler slightly forward to clear the latch on the underside of the smokebox. Now the entire boiler top can be slowly lifted straight up and clear of the chassis. Why slowly? Because of even more wires! The *Empress* ditchlights are especially delicate.

- If you wish to install or change out the decoder, now's the time to do it. The 21-pin socket should be obvious. Simply pull the dummy plug or the decoder straight up at the plug end and insert the new decoder. Just please don't bend the pins.

- If you wish to install a crew inside your H1 Hudson, removing the boiler isn't necessary as the back of the cab is open. Just use some angled tweezers and put an engineer (on the right) and fireman (on the left) into their seats. We recommend using a removable adhesive like Hob-E-Tac® because the crew has to be replaced every 12 hours; it's not us saying that, it's the law!

- The open the tender up, simply remove the screws under each corner of the tender chassis and the tender tank shell will lift clear.

At this point you should have the entire boiler off the frame and the tender in two pieces, as long as you followed our simple instructions. We don’t know how to put them back together, so from here you’re on your own. Just read the instructions backwards and you should be ok. If you find a cryptic message while reading the instructions backwards, it's not our fault!

Any requests for replacement models because you broke a part off will be met with laughter, followed by sadness, then laughter again, and then a very polite suggestion that you should model a locomotive scrap yard and use your recently broken loco as scenery. We did warn you after all. If we can assist, then all joking aside we’ll make every effort to do so. But note that we don’t have an infinite supply of boilers, cabs, and detail parts to replace broken or missing parts. Pro tip: if you're going to break something, do it sooner rather than later while we still have the parts.

OPERATION – DC (SILENT)

If your H1 locomotive 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 track inspection lights, firebox glow, and numberboard(s) are always on, and the headlights are directional along with the white class lights; they are lit while running forwards and turn off in reverse. All other lights are wired, but they will not work in DC.

If you are new to the hobby (or just like to occasionally “play trains”) and you have a DC-powered train set, please contact us before operating your H1 as it may not be safe (for your engine and/or your wallet) for you to use your controller.

Some train set throttles put out a very high maximum voltage that is not suitable for scale model trains. The maximum recommended voltage is 16 volts DC. Similarly, controllers designed for large scale trains put out a much higher voltage than your H1 can handle. Please see the highlighted warning not too much further in this manual.

If you use a train set throttle or a throttle designed for large scale trains, your locomotive’s circuitry may end up looking like a TV dinner forgotten in the microwave after you accidentally punched in an extra digit into the timer. In such situations, we’ll try our best to fix it for you, but it may be beyond salvaging. Please note we may have to charge you for the replacement parts and/or the labor involved in restoring it to its former self. That’s because you didn’t read this bit of the manual.

INSTALLING A DCC DECODER

The H1 contains a motherboard specially designed for our decoders. This is connected to the track, motor and lighting outputs. A blind plug is attached to

the motherboard using a 21-pin connector. To install a decoder, remove the blind plug and install a 21-pin decoder. Your chosen decoder should have eight function outputs.

At the time of writing, we recommend only the following non-sound 21-pin decoders:

- ESU #59029 - LokPilot 5 Basic with 21MTC
- ESU #59629 - LokPilot 5 DCC with 21MTC

We feel the 21-pin connectors are superior because there are enough pins to ensure that all your lighting functions are connected. The necessary resistors are included on our motherboard so you don't have to futz around with resistors. Just plug in one of the recommended decoders and you have DCC. We know some of you prefer a different brand of decoder, but we honestly can't help you install it or map the functions.

We have made a H1 function map which can be downloaded from our website so that you can match the function buttons and motor controls to our factory-released sound versions. This should be available from the Support section of our web site. If it isn't, bug us. You will need an ESU LokProgrammer to write the function mapping to the 59029 or 59629 decoders. If you don't have a LokProgrammer, you can adjust CVs in the usual way.

We will be selling H1 sound decoders separately; if they aren't on our web site by the time you read this, call our office, pick a random number between 1 and 50,000, divide by ∫¼%, multiply by $\sqrt{\pi^5}$, and then take the last ten digits. Call that extension and you'll be redirected to someone whom you can yell at. But seriously, let us know and we'll send you one…but only, you know, after you buy it.

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

OPERATION – DC (SOUND)

To operate your sound-equipped H1 locomotive on a DC layout, just give the throttle some juice. The engine will start up once sufficient voltage has been reached (around seven volts). See the note above (in Operation – DC (Silent)) about using train-set or large-scale throttles. With DC layouts, you have very little control over the sounds of your model.

— WARNING —

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

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

The DC lighting is limited. Some throttle manufacturers produce special gadget-like thingies which are meant to trigger the sounds in locomotives on DC layouts. As we have no involvement in the development of those gadget-like thingies, we have absolutely no idea how they will affect your H1, for good or for ill, for richer or poorer, in sickness and in…sorry, wrong transcript. As always, we'll try to help you fix your H1 if one of these gadget-like thingies turns your locomotive's circuitry into something akin to glowing magma, but we can't guarantee we'll be able to.

OPERATION – DCC (SOUND)

We go to extreme lengths for accuracy, in sounds as well as in looks. Our sound decoders are LokSound V5 decoders by ESU. The sounds are about as bang-on accurate as we can make them. H1 Hudsons weighed in at some 291,000kg (643,000 lbs.) in working order, therefore a certain amount of starting momentum has been pre-programmed into the decoder to replicate that massive weight. If you want to eliminate the delay to speed up, program starting momentum CV3=00, but when your passengers complain about their spilled drinks in the diner, or they complain about being thrown from their sleeper berths, don't blame us!

More detailed decoder instructions, including all sorts of weird CV settings we don't understand, can be found in the ESU LokSound V5 decoder manual. It is available for download directly from the ESU website. But to use that information, it's better to have the ESU LokProgrammer...

— ESU PROGRAMMER USERS —

To program your ESU-equipped locomotive using an ESU LokProgrammer or an ESU ECoS DCC system, the onboard Mo-Power capacitors must be fully discharged. Please allow your loco to discharge a full five minutes before programming, or allow it to discharge one minute before using Ops Mode (on-the-main programming). If it doesn't work, wait a little longer and try again.

While waiting around like an impatient Spaniard while a man in black freeclimbs the Cliffs of Insanity is kinda boring, we say take advantage of this newly found free time! Wrestle a giant, pour some wine, or tour a fire swamp (avoid the ROUSes). To speed-a-things up, try using your loco like a flashlight to read freight car numbers or search for that lost coupler spring from last week.

NOTE: This does not apply to any other DCC system or controller, just ESU.

LOCOMOTIVE ADDRESS

Your Rapido H1 comes from the factory with a decoder address of 3. We suggest if you are using DCC control that you first test that the locomotive responds on address 3 to all functions – motor, lights, sounds, everything. Once you have verified that the locomotive is responding, you should assign it a unique address (normally the road number of the unit) 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 locomotive 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! This is great if you want to simulate a bunch of kids getting into the engine shop, notching the controllers, and then heading for the hills.

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

— RECOMMENDATION —

We recommend that the tender be unplugged from the boiler and off the rails if using a DCC programming track. The MoPower (see page 17) device in the tender can soak up enough of the digital programming signal that there won't be enough energy to write to or read from the decoder; even programming track boosters don't always work.

TURN ON THE SOUND

Press F8 and you will hear the H1 start hissing as it builds steam. Fortunately, you don't have to wait hours for the locomotive to build up to a full working pressure. You can just drive off and listen to the wondrous noise! You can adjust CVs to prevent the locomotive from moving until the startup sequence has played out. Most of us at Rapido are really impatient so we turned this feature off. Refer to a full ESU LokSound V5 decoder manual for more information. You can download it from the Support section of our web site. The feature is called the "Prime Mover Startup Delay" and is Section 13.2 on Page 89 of the ESU LokSound V5 manual.

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

Note that if you are listening to your H1 hissing nicely and then you select another engine with your throttle, your locomotive still thinks F8 is pressed so it will keep simmering. However, if someone else selects your locomotive's number and F8 isn't pressed on their controller, the H1 will promptly go silent. They will need to press F8 again.

FUNCTIONS

F0 Directional Headlights & Dynamo
F1 Bell
F2 Whistle
F3 Coupler Clank
F4 Coast Mode
F5 Coal Shoveling with Fire Flicker
F6 Ditch Lights *(if equipped)*
F7 Dim the Headlights
F8 Chuff Sounds
F9 Heavy Load Mode
F10 Independent Brake
F12 Manual Cylinder Cocks
F13 Cab Light
F14 Numberboards
F15 Doppler Whistle
F16 Injector
F18 Ground Lights
F19 Blowdown
F20 Safety Valve
F21 Air Pump Slow
F22 Headlight *(without dynamo)*
F24 Blower
F25 Oil Burner Blower
F26 Short Whistle
F27 Air Pump Fast
F28 Auto Brake Set/Release

FUNCTIONS: MORE INFORMATION

F0 Directional Headlights & Dynamo

Starts up the dynamo, then turns the headlight on in the direction of travel when the dynamo generates enough power. Reversing the direction will change the light to the one on the tender deck. Pressing F0 again will power down the light and dynamo. If you want to turn on the headlight without the dynamo sound, see F22.

F1 Bell

Probably one of the most difficult sounds to master is the bell because it's such a noticeable feature, and no matter what, chances are they all had their own unique tone to them. We have provided two slightly different bell sounds so that you can add a little variety to your H1s. You can choose between the bells by changing CV164 to a value of 0 or 1.

F2 Whistle

We love our whistles. Like really! Seriously, who doesn't love a good sounding steam whistle? So, we're now providing a wide range of whistles for you to apply to your locomotive as appropriate or as you fit (even if it's not appropriate). To get a short "toot" just tap F2 or your "HORN" button. If you hear a long tail-off, you are tapping too long. We've included four whistle options; change CV163 to a value of 0 through 3 to select them. Refer to the "Custom Sound Settings" section below to see which whistles are which (say that five times fast).

F3 Coupler Clank

The real H1, including its tender, weighs over 320 tons, and when it couples up to a 50 ton freight car or an 80 ton passenger car, there's going to be some noise. Hit F3 to get that noise. It helps, of course, to hit F3 the moment you strike the coupler of a car, otherwise it makes it sound possessed by spirits of scrapped H1s.

F4 Coast Mode (Rod Clank)

Coast mode simulates the engineer closing the throttle, either to slow down or when going downgrade. Pressing F4 will disable the throttle and drop the sound volume down to a drift. You'll hear the rod clank. You can then use the throttle to adjust the chuff level to where you want it. Pressing F4 again will return to regular operation.

F5 Coal Shoveling with Fire Flicker

This activates the shoveling sound to replicate the fireman hand firing the loco. It also intensifies the firebox lighting effect. If you have #2816, don't press F5; it would stuff up the firebox something fierce; use F25 to hear the oil being injected.

F6 Ditchlights *(if equipped)*

Ditchlights were invented in Canada in the 1960s to illuminate right-of-way ditches for rockslides and other obstructions. They became mandatory in Canada in 1975 and do not alternately flash. They are either both on or both off because their job is just to light up ditches. The flashing kind of ditchlights are for American locos. They were added to #2816 *Empress* in the 1998-2001 rebuild by Canadian Pacific.

F7 Dim the Headlights

When approaching a station stop or an oncoming train, press F7 to dim your lights – you don't want to blind passengers on the platform or the oncoming train's

engineer. Not dimming your lights is a direct violation of what's commonly referred to as "Rule 17". The internet can answer all your questions about said rule.

F8 Chuff Sounds

Normally, this is where the start-up and shut-down function is located, but we didn't think anyone wanted to listen to that multi-hour process. *First the sound of wood kindling being put into the firebox...*um, no. Besides, the sound decoder doesn't have enough memory. Instead, pressing F8 turns on the exhaust chuffs, the firebox glow (which varies with speed), and the other automatic sounds, but you can still blow the whistle, ring the bell, etc.

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

F9 Heavy Load Mode

"Heavy Load" allows you to adjust the "Steam Cut Off Valve" at any speed allowing for a fierce full chuff or drifting with snifters and rod clanks. Heavy load can also act as an offset allowing speed adjustments when engaged if desired. Pressing F9 again returns to normal operation.

F10 Independent Brake

F10 simulates the brakes on a real engine. Press F10 and the brakes are applied and the locomotive gradually stops. Turn off F10 and the brakes come off; now the locomotive will be able to move again.

F12 Manual Cylinder Cocks

Before starting off, you should open the cylinder cocks to clear any condensation from the cylinders to prevent bending a piston rod. You can shut them again once the train is moving. Note that this is an automatic sound as well that is activated if the engine has been sitting for a period of time.

F13 Cab Light

When the sun sets or you are in a tunnel, how do you read your train orders (or see our awesome backhead detail)? Lighting an oil lantern wasn't easy in a cab being jostled about at speed (and back then a "cell phone" was the phone inside the local jail), so just turn on the cab light instead. Just remember to turn if off as soon as possible so as not to ruin your night vision.

F14 Numberboard(s)

The numberboard(s) are lit by default. We hate having to turn numberboard(s) back on after a power failure. If you want to turn it/them off, press F14.

F15 Doppler Whistle

You can play this when approaching level crossings or any other whistle post. The doppler is nicely timed for a moderately paced train blowing for a level crossing. When you change the default whistle for F2, the doppler whistle will also change to the appropriate tone as well. It's wizardry! (Harry Potter ain't got nothin' on us!)

F16 Injector

Your boiler needs water over the crown sheet of the firebox or it will explode. Press F16 to put water into the boiler from the tender. Use of real water will void your warranty.

F18 Ground Lights

These lights shine down onto the roadbed under the cab. Why did we include them? Because otherwise your brakeman will probably slip and fall in the dark, then sue you for worker's compensation. By default the lights are on. Pressing F18 will turn them off.

F19 Blowdown

Clean out any crud that may have accumulated in the lower parts of the water jacket and mud ring by pressing F19. Just make sure that nobody is standing next to the loco when you do!

F20 Safety Valve

Let off some steam! Used to prevent boiler explosions due to over-pressurization, safety valves are mounted on the dome in front of the cab. Note that this sound is automatically generated at random as well, provided the fireman hasn't fallen asleep.

F21 Air Pump Slow

Activates a slow air brake pump sound, useful for just topping up the train line pressure after normal use.

F22 Headlight *(without dynamo)*

Electric lights on a steam engine are driven by a dynamo that, with a steady whine of escaping steam, spins a turbine generator. This can become annoying in a small layout room, so we've added the ability to turn on the headlight without hearing that sweet, high-pitched sound...all...the...time.

F24 Blower

Adds draft to the fire, for use when the engine is stationary or coasting.

F25 Oil Burner Blower

This feeds bubbling crude/black gold/Texas tea into the fire, but if you do this on a coal-fired H1, you'll be a fired fireman.

F26 Short Whistles

When you stop at a station, you give a short toot. When you're ready to depart, you play two quick toots. If backing up, you toot the whistle three times. F26 is quite useful for giving these kinds of quick whistle signals, especially if your F2 button likes to stick.

F27 Air Pump Fast

Activates a fast air brake pump sound, useful for when you've just coupled up to a string of cars that have little to no air pressure after sitting idle for a while. Cross compound air pumps are so steamy!

F28 Auto Brake Set/Release

This function turns off the brake release and brake set sounds when you start or stop moving, respectively. It has no effect on the function of the engine — it just affects the sounds.

CUSTOM SOUND SETTINGS

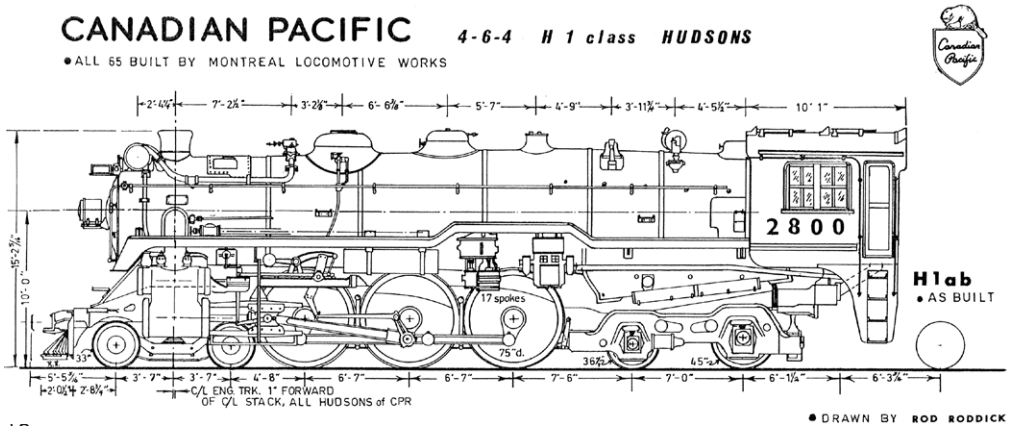
The H1 engines were in use for decades and, as such, each one tended to sound a little different from her sisters. The default whistle on your model is from CPR 4-6-4 #2816. You can change the default whistle by changing the value of CV163 *(see below)*. The bell can be changed by adjusting the value of CV164.

Whistles

- CV163=0 CPR #1201
- CV163=1 BCR #2860
- CV163=2 CPR #2816 *(default)*
- CV163=3 SOU PS-4

Bells

- CV 164=0 Bell #1 *(default)*
- CV 164=1 Bell #2



Note that after you change the horn, bell or any other sound effect, you may need to cycle the power (turn it off and on). And changing the default horn automatically changes the doppler recording on F15, too.

MOPOWER

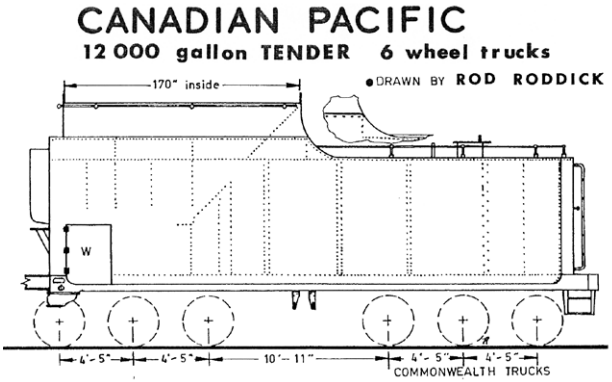
This model is equipped with MoPower, our capacitor-based temporary energy storage system that lets a locomotive travel over dirty (or dead) rail spots without stopping. The length each loco can move without track power varies by condition of both track and model; your mileage my vary, long-distance rates may apply. NOTE: You will *not* have control of the loco when running on MoPower energy, and if you're used to a loco stopping when it shorts at a mis-aligned switch, forget it. Like the prototype, it's not going to stop just because the points are thrown against you (at least until the capacitors are drained). The lengths we go to for more realism!

SOUND VOLUME SETTINGS

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

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

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



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

— VERY IMPORTANT —

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

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

H1 SOUND VOLUME SETTINGS

KEY	FUNCTION	SOUND SLOT	CV	RANGE	YOUR VALUE
	Master Volume		63	0-192	
F0	Headlight/Dynamo	6	299	0-255	
F1	Bell	3	283	0-255	
F2	Whistle	4	275	0-255	
F3	Coupler Clank	5	291	0-255	
F5	Coal Shoveling	30	491	0-255	
F8	Chuff	1	259	0-255	
F10	Independent Brake	11	339	0-255	
F15	Doppler Whistle	27	467	0-255	
F16	Injector	9	323	0-255	
F19	Blowdown	28	403	0-255	
F20	Safety Valve	19	331	0-255	
F21	Air Pump Slow	10	411	0-255	
F24	Blower	18	395	0-255	
F25	Oil Burner Blower	8	315	0-255	
F26	Short Whistle	14	363	0-255	
F27	Air Pump Fast	7	307	0-255	

FACTORY RESET

On your H1 you can perform a factory reset by entering a value of "8" into CV8. 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. What do you mean, you didn't take any notes? WE JUST TOLD YOU TAKE NOTES! If we had a band, you'd be kicked out of it. Again!

You can NOT lose all the pre-recorded sounds on your H1 decoder by doing a factory reset. However, after performing a factory reset, your H1 may begin to

binge watch *Doctor Who* episodes and recite lines from the song *Love Potion Number Nine* by The Searchers. If that happens, you have probably lost your mind. But don't worry. Just sit back, grab some popcorn, and enjoy the show.

By the way, pay no attention to the person breaking into your layout room attempting to steal your Rapido H1 because they misread the instructions on Page 4.

MORE INFORMATION

While addressing the features that most modelers will need for normal operation, these instructions have covered just a small number of the many customizable features of your ESU LokSound decoder. For advanced users who want to more fully explore the capabilities of the decoder we suggest downloading the ESU LokSound V5 decoder manual. This is available for download from ESU's web site. For all the different exploded view drawings showing the stupendous number of detail parts for each version of the H1 Hudson (along with their part numbers), see the Product Support section of our website. By the time you read this, they should be there.

LIMITED WARRANTY

We will do our best to solve any problems or issues that you may have with your H1 locomotive. If your locomotive has any defects that originate from the factory, we will repair your locomotive using new components or replace it outright should a repair not be possible. However, we can only replace your locomotive while we have additional ones in stock. While we would love to have an infinite supply of spare parts and do our best to keep as many on hand as possible, eventually these will run out too. In some cases, future productions of the same locomotive may result in a parts supply being restocked, but that is not always guaranteed. If you are like most of us and – after purchasing this locomotive – you put it on the collection shelf under the darkest corner of your layout and are now just discovering it 30 years later after your friend at the club ran theirs, then you are on your own if there are any issues. Jason is long retired and probably touring the country on our restored sleeping car, *Edmundston*. The rest of us have also retired but probably don't have the luxury of our own private rail car. And we're not bitter at all. Really. Not….at…all….

There are several things that this warranty cannot cover. If your H1 arrives with a couple of loose grab irons or underbody bits, there is a very good chance that you can affect a repair in less time and effort than it would take to contact us. Don't be afraid to do some model railroading! White glue works wonders for securing all sorts of parts and will not mar or damage your paint. However, if parts are missing that is another story – contact us directly through our website or give us a call and we'll send you some replacements.

Of course, damage caused by running your locomotive at full speed around a 15" radius curve along the edge of your 60" high layout, weathering it with Vaseline, or any other unique damage caused by you and that we haven't been able to cover here is not covered by the warranty. If catastrophe does strike – even as the result of your own actions (or possible inactions) – and your locomotive gets damaged, please give us a shout and we'll do our best to help you out if possible. Don't be shy.

ACKNOWLEDGEMENTS

The H1 project was very much a labor of love as many of us on the Rapido team obsessively love these locomotives. However, this project would not have been possible without the extensive help and expertise provided by the following folks:

The fine folks at Canadian Pacific Kansas City Limited, the Canadian Pacific Historical Association, Jeff Pinchbeck, Adam Meeks, Dave Love, Justin Tracy, and John Riddell.

Although Richard Longpré can translate 5000 words in 10 minutes, one fact remains: the translation of this manual would never have been so complete without the involvement of Claude Langlois, a veritable encyclopedia of Canadian steam locomotives.

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