

ELECTRICAL POWER SUPPLY: MAKING THE RIGHT CHOICE

Voie Libre

Voie Libre

101

THE MAGAZINE OF RAILWAY CREATORS

HISTORY

THE SCHNEIDER TYPE 69
0-4-0 T IS 150 YEARS OLD

CONSTRUCTION

PLASTIC SHEET
LOCOMOTIVES
IN THE GARDEN,
A TRACK-SWEEPING
DIESEL ENGINE

ESCAPADE TO NORTH FRISIA
LUTGEOOG IN 1/32
KNIEPHAVEN IN 1/220

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PUBLISHER: Christian Fournereau - christianf@lrpresse.com / **EDITOR:** François Fontana - francoisf@lrpresse.com / **CONSULTANTS TO THE EDITORIAL TEAM:** Éric Fresné (ericf@lrpresse.com), Jean-Paul Quatresous / **WITH ASSISTANCE FROM:** Yann Baude (yannb@lrpresse.com), Annette and Jean-Louis Rochaix (†) **AND FROM:** Alexis Avril, Sébastien Deleforterie, Bernard Déluard, Raymond Duton, Herbert Fackeldey, Nobuo Koizumi, Dirk Kuhlmann, Vincent Lepais, Jacques Royan, Jean-Pierre Schenfele et Thomas Schmid

ARTISTIC MANAGEMENT AND GRAPHIC DESIGN: Antoine Simon - antoiness@lrpresse.com / **GRAPHIC DESIGNER:** Stéphanie Grevet - stephanieg@lrpresse.com / **TRANSLATOR:** Geoffrey Nickson / **DOCUMENTATION AND SHIPPING:** Patrick Morvan - patrickm@lrpresse.com / **ADVERTISING:** Benjamin Fournereau - 02 97 24 01 65 - benjaminf@lrpresse.com / **TRADE AND PROFESSIONALS:** Magalie Rous - magalier@lrpresse.com - 02 97 59 37 66 / **ACCOUNTING:** Anne Le Crom - annel@lrpresse.com / **PHOTO-ENGRAVING:** Photext / **FLASHAGE AND PRINTING:** RECTILIGNE

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LR PRESSE Sarl
BP 30104 - F-56401 AURAY CEDEX
Tél. (33) 02 97 24 01 65
Fax (33) 02 97 24 28 30
<http://www.voielibre.com>
contact@voielibre.com
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April, May, June 2020

Editorial #101

FORGING AHEAD

Working is hard, entertaining oneself is hard, escaping is hard... Nevertheless, even in this very peculiar period, we need to forge ahead.

Building, imagining, creating... are all activities that help us look to the future, help us escape the present. To assist you, LR Presse has put in place various communications tools: a newsletter, blogs, forums, while continuing to publish our magazines,

to keep us all in touch, to ensure that modelling helps us cope with the sanitary crisis. For this issue #101, we had to alter the editorial line, amend our copy to take into account the cancellation of a great many scheduled gatherings. But over and above everything else, our objective is to preserve our links with our readership, and continue to help you dream.

Take care, and enjoy your modelling.

The Editorial Team

→ Follow us on Keep in touch all the year round with **Voie Libre** on blog.voielibre.com

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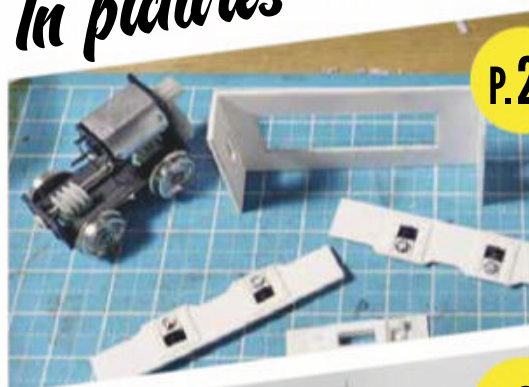
Central folder

SCHNEIDER TYPE 69 LOCOMOTIVE

COAL SKIP,
DECIZE COAL MINES

In pictures

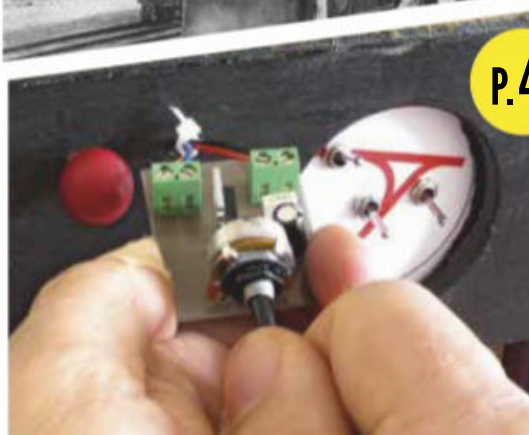
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H0-12 **TILLIG** : BOGIE CARRIAGES



Tillig has released two new references for two new versions and variations in H0-12 of its DR bogie carriages. Under reference 13980: a metal-bodied carriage in green livery, featuring 7 windows, numbered DR KB4ip 900-230, period III/IV, based in Straupitz (built Werdau 1929) from the Spreewaldbahn network, transferred in June 1970 to the Harz. It was modernized in 1984 and became KB 900-230. Under reference 13981, we have a set of two Harz carriages, numbered DR KB 900-494 (Werdau 1929) and 900-513 (Bautzen 1932) modernized in 1985/86, period IV/V, featuring 8 windows, in red and cream livery.

Jacques Royan



TILLIG

PRICE OBSERVED FOR ONE CARRIAGE: BETWEEN 40 AND 45€

SET: CA. 85€

H0-9 **BEMO** : A NEW LIVERY FOR THE HF 130



Bemo has released a new version of the HF 130 diesel locomotive. Numbered ÖGLB 2092.01 on the Ybbstalbahn Bergstrecke museum line connecting Lunz am See and Kienberg Gaming in Austria, it was built in 1941 by Gmeinder under number 3130. Its red and cream livery is typical of the 1960s, despite this engine having been originally on an industrial railway (Joh. Pengg on the defunct Thörlerbahn of the StLB).

Jacques Royan

BEMO / REF. 1011 971 / PRICE OBSERVED: 160 €



ROCO : A NEW VERSION OF THE MARIAZELL BOBO



Roco has produced a new version of its excellent 2095 006-9 diesel, in red-orange and cream livery, from the Mariazell network, period IV/V. The technical features of this engine are as good as those of the earlier versions.

Jacques Royan

ROCO

REF. 33298 DCC SOUND

**PRICE: 180€ IN ANALOGUE VERSION,
265€ IN DCC VERSION WITH SOUND**



ROCO : A STEAM SET



Roco has released an H0-9 set consisting of an Austrian 0-8-2 T steam locomotive with a bogie carriage, a bogie box van, and two standard gauge/narrow gauge carrier wagons, loaded with two 4-wheeler Austrian wagons. The main attraction of this set is that the locomotive, a familiar reference, is now supplied fitted ex-works with DCC and sound. The latter is very convincing, but the total absence of working lights is unfortunate. The set runs perfectly. This consist is typical of those that used to run on the Waldviertelbahn, a network located next to the Czech border in Northern Austria, and originating in the town of Gmünd. Locomotive 399.06 is actually based there.

Jacques Royan

ROCO / SET REF. 31032 / PRICE: CA. 450€

What's New



ABE : HOW TO MODIFY THE MINITRAINS DECAUVILLE 0-6-0 T



ABE has released an interesting little conversion set designed to close the body of the Minitrains Decauville 0-6-0 T in H0-9. It consists of a rear spectacle plate for the cab, of four circular spectacles, a lamp, a few fire tools, a length of chain and a bag of coal. Assembly is simple, the laser-cut rear spectacle plate fits with perfect accuracy into the opening at the back of the Minitrains engine. Once firmly in place, a few droplets of polystyrene cement, applied along the seams from the inside of the cab, are enough to hold the part in place. The back of the lamp is sanded and the part glued in the middle of the panel with a drop of instant adhesive.



The paint is the tricky part here, you will need to countertype the shade of your own locomotive; proceed in several steps, blending the colours. Apply the paint lightly with a brush, the overall weathering will conceal any differences and make them almost invisible. A small coal shovel and a poker can be placed against the inside of the rear panel, both tools must be accessible to the fireman. The clinker shovel is jammed between the water tank and the boiler barrel; when a steam engine is running, anything that isn't firmly held in place will fall off! Drape the chain over the buffer beam, and weather the engine. You now have a very personal model.

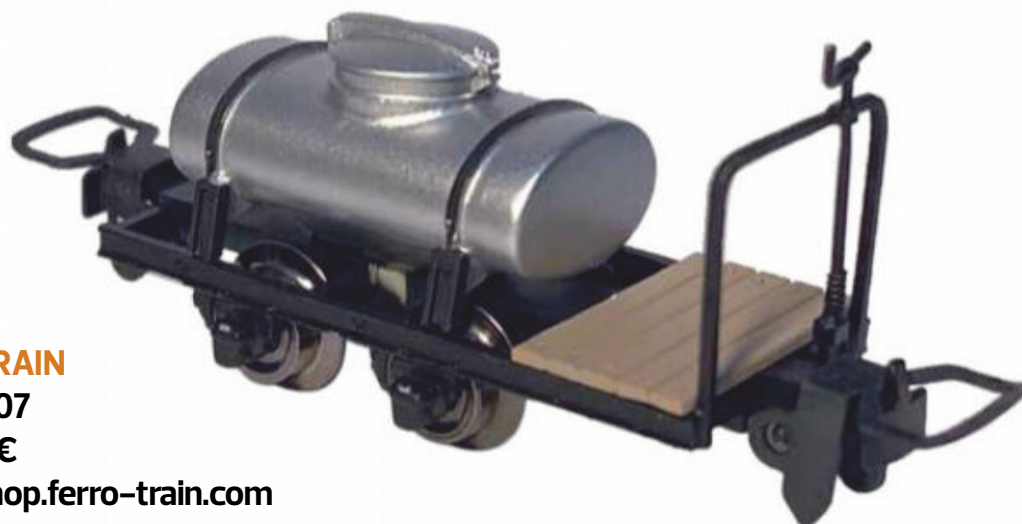
François Fontana



ATELIER BELLE ÉPOQUE
REF. 530
PRICE: 15 €
www.abe44.fr



FERRO-TRAIN : TRUCKS



Delightful! What else can be said? The small Ferro-Train trucks are simply delightful. Plastic chassis, insulated wheels and metal superstructure, their weight is not negligible and this improves their running qualities. Many different models are available, check out the firm's website.

François Fontana

FERRO-TRAIN
REF. T-1007
PRICE: 24€
<https://shop.ferro-train.com>

SCENERY AND SUPPLIES

PRINCE AUGUST : WATER SUPPLY

I discovered this product shortly after having made a marsh on my layout (see VL 100). Prince August produces a polyurethane varnish, supplied in a jar, which polymerizes in 24 hours when exposed to the air. By pouring this product in successive stages, you can obtain surfaces that represent calm waters. A substance that is very reminiscent of GPP "water".

Eric Fresné

PRINCE AUGUST
EAUX TRANQUILLES [CALM WATERS]
REF. FX001
PRICE: 14.00€ PLUS POSTAGE



MBR MODEL : READY-MADE UNDERGROWTH

Produced by the Polish firm MBR Model and available from the LR Modélisme shop, this undergrowth is supplied in the shape of a block of grey-brown fibres of various shades. Separated and put into shape, they can be used to quickly make bushes and hedges. I shall return to this product in a forthcoming article about the scenery on Quittancourt, my 00-9 layout.

Eric Fresné



MBR MODEL
HEDGES
REF. MBR50-5001 TO 5007
PRICE: 6.90€ PLUS POSTAGE
<http://trains.lrpresse.com>

DELUXE MATERIALS : "LIQUID" WEIGHT



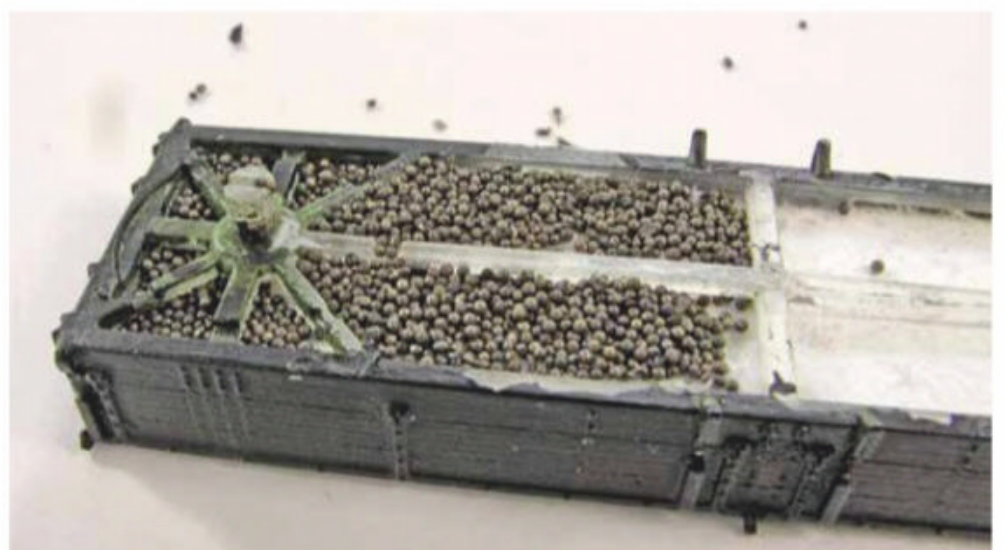
DELUXE MATERIALS
LIQUID GRAVITY
REF. BD38
PRICE: 12.50€ PLUS POSTAGE

This isn't truly a new product, as it has been used by our Anglo-Saxon colleagues for quite some time. Liquid gravity actually consists of metal micro-pellets that behave like a liquid by filling any cavities they are poured into. With a density of 5g per milliliter, they swiftly bring a substantial increase in mass to a model.

Tested on a P'tits Kits Voie Libre 1915 Decauville flat wagon, this model very easily gained several dozen grams. It is also quite simple to fill small hollow objects that are then used as loads on a flat wagon. The haulage power of a

locomotive can also be improved by adding the weight exactly where it is needed. To fix this weight in place, the hollow area can then be sealed off, or the pellets can be mixed with a two-part epoxy resin (standard Araldite standard, for example) or with wood glue. A very handy product.

Eric Fresné



What's New

P'TITS KITS 4 : THE PÉCHOT CONSIST

The fourth set in the P'tits Kits Voie Libre range returns to the military world with the mythical Péchot flat wagons. We haven't fundamentally modified the concept which the previous three set were based on; the parts you will receive are direct prints made of photo-polymerizable resin. But as we have learnt from our earlier experiences, this set has a few new features.

STURDIER MODELS

When the parts were designed, we took care to remain well within the printing constraints. Without neglecting realism, a few extra tenths of millimetres here and there meant we obtained parts that could, in principle, withstand careful handling. For example, the stanchions are printed separately while remaining sturdy. A new feature of this set is that a set of etched brass parts is supplied with each wagon. They will allow for a realistic representation of the plating while adding rigidity and mass to the wagon. A few brass detailing parts are also included, but fitting them doesn't require any soldering; gluing them in place is enough!

The bogies feature a coupler shank with a metal loop fitted. They run on metal axles. Associated to brass bearings, they ensure very good running to the trucks. They can run through the 228mm radius of Peco Setrack.



THE USUAL PLUSES

As is customary with our sets, you will find a few items designed to load and personalize your consist. Firstly, two laser-cut sheets for building an "omnibus body", reproducing



H0-9
/00-9

The omnibus body has a lot of character (prototype).

THE SET AT A GLANCE

COMPATIBILITY: with MinitrainS and Bachmann motive power

REPRODUCTION : 2 trucks and 1 Péchot 1888 type flat wagon

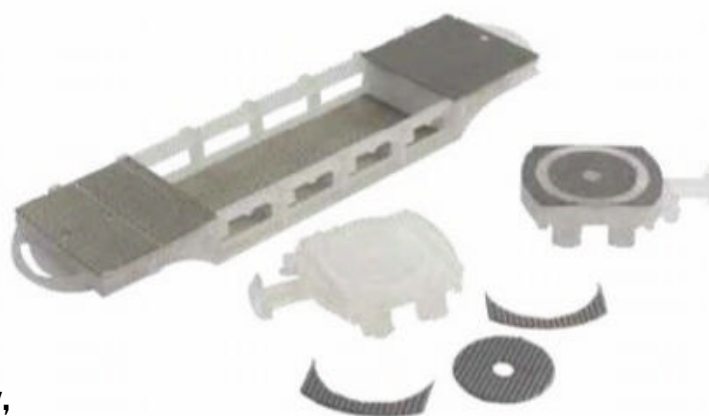
Period: 1888 to nowadays

CONTENTS: 6 trucks, 3 flat wagon bodies, 63 stanchions, 1 omnibus body, 24 loads

PRICE: 139€, ready-to-run 189,90€

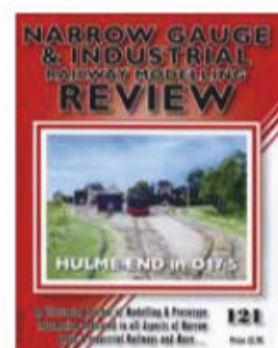
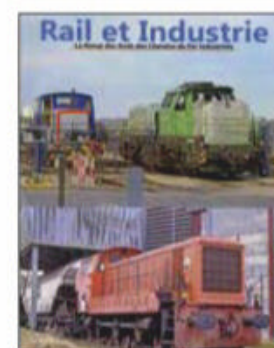
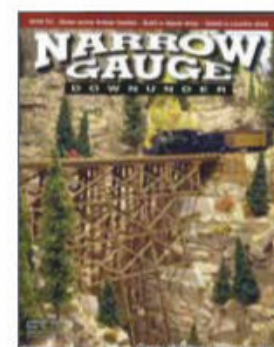
AVAILABLE FROM THE LR

MODÉLISME SHOP: trains.lrpresse.com



The kit consists mainly of 3D printed and etched brass parts.

PRESS REVIEW



The new P'tits Kits consist, perfect behind a 0-6-0 T or a MinitrainS Schneider diesel.



those used on the railways of the strongholds in Eastern France, of which a replica has been built by the P'tit Train de la Haute Somme heritage railway. You will also find a choice of 3D printed items sufficiently detailed to load the two platforms in a realistic manner.

In this weird period we are experiencing, and at the time of writing these lines, railway modelling and reading related magazines bring us a touch of relief... This quarter, we welcome a newcomer to our press review. **Narrow gauge Downunder**, an Australian quarterly, deals largely with American narrow gauge, but not only! The January issue contains a very good article about a 12 inch gauge outdoor railway. An opportunity for its owner to gather friends around the railway. In the **Narrow Gauge and Shortline Gazette**, Gary Bothe presents an attractive project in On30: a steam railcar based on a Porter 0-4-2 and a Bachmann Spectrum panoramic carriage, fitted with DCC and sound. **Rail & Industrie** features two fine historical studies on two factories that used to be connected to metre gauge lines: Chedde, in Haute-Savoie, served by the Saint-Gervais-Vallorcine line, and the Corneilles distillery, in the Eure, on the Corneilles-Glos-Montfort line. It appears that the existence of a metre gauge line often depended on the presence of a single industry! Enjoy your reading and meanwhile, take care and practice railway modelling!

The Editorial Team

BALDWIN BACHMANN : AVAILABLE FROM LR MODÉLISME



The small Bachmann Baldwin 4-6-0 T locomotives are now available from the LR Modélisme online shop. We have selected four references: two black engines, one with the original cab, and the other with a stretched cab. As well as one engine in grey weathered military livery, and the very attractive Southern livery, green and black with white lining.
François Fontana



BACHMANN

AT LR MODÉLISME

REF. BA391025A MILITARY, BLACK

REF. BA391028A BLACK, STRETCHED CAB

REF. BA391030 MILITARY, WEATHERED GREY

REF. BA391032 GREEN AND BLACK, WHILE LINING

PRICE: 189.50€

<https://trains.lrpresse.com>

ANNOUNCEMENT

EXPONG

THE END OF A GREAT STORY?

Since 1983, the Greenwich & District Narrow Gauge Society has been organizing the famous Expo Narrow Gauge show, in Swanley near London. Because the building is being modified and the area being re-developed, the hall that used to accommodate the show every autumn will no longer be available. Therefore, the organizers have decided to cancel the October 2020 edition. We very much hope they can find a new venue for 2021.

The Editorial Team

Nuremberg 2020

SMALL BUT GREAT

A minor edition for narrow gauge enthusiasts? Not really!

Text and illustrations: François Fontana



Peco



Bemo



LGB

At first sight, new releases are few and far between, but all are worthy of interest. Let's take a closer look.

RACK RAILWAYS

For LGB, Hobbytrain and N-tram, this is the year of the rack! In Hm scale, **LGB** has released a magnificent DCC locomotive from the Furka line, featuring sound and a smoke system. An unpainted prototype, displaying cast metal and injected plastic parts, shuttled up and down a short gradient. At an advertised price of 3599 euros, this will be an engine for deep-pocketed modellers.

Hobbytrain has released the small electric steeple-cab engine from the Zugspitzbahn, in two liveries and three gauges: 9, 12 and 16.5mm. For **N-tram**, this year's engine is an Aus-

trian rack-and-pinion 0-4-0T from the Achenseebahn. Quite splendid! Tiny, sharply detailed and running beautifully. Ideal for evoking this scenic line connecting the plains to a mountain lake. Especially as this artisan firm also produces the specific carriages.

ZÉRO METRE GAUGE: BEMO

This German firm **Bemo**, specialized in Swiss metre gauge railways, has released this year a model of the splendid Ge 4/4 II BoBo locomotives, in original and modernized versions. Exceptional slow running, fine detailing and sharp markings, this engine has it all! A few new wagons are expected to complete the range.

ANNOUNCEMENTS

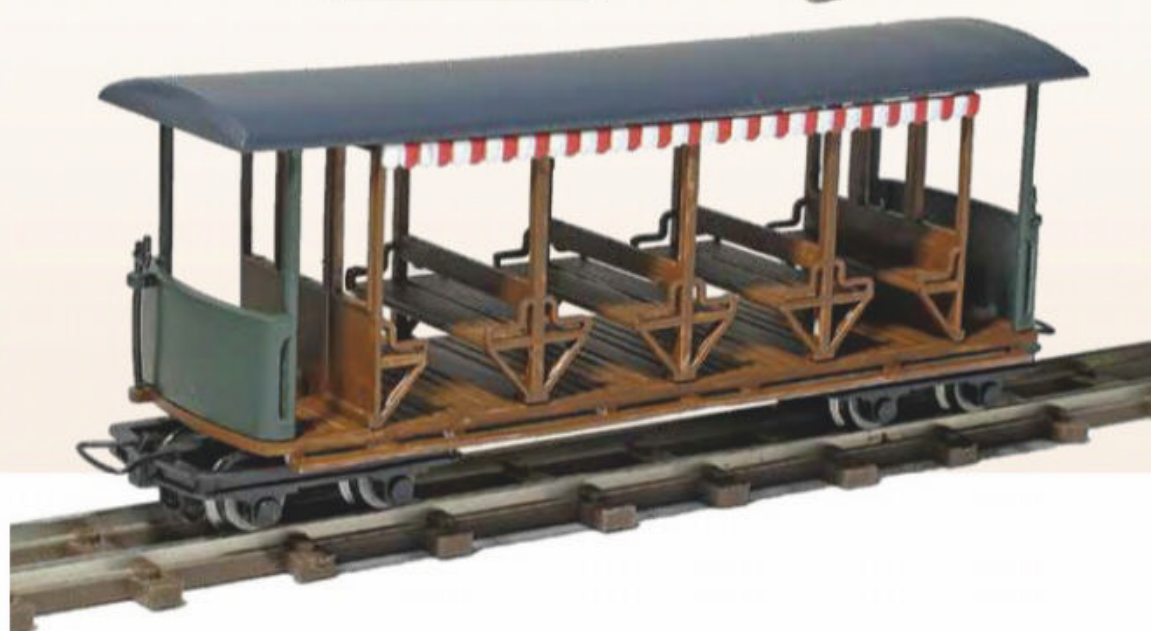
In addition to the Billard A80 D railcar, **REE** has announced the forthcoming



N-tram



MinitrainS



MinitrainS

release of French metre gauge wagons. They should be with us in the early summer... provided all goes well in this highly troubled period.

Tillig announces an ex-DR 040 + 040 T Mallet. But all we could see was a photo of the real engine. The flyer states April 2020 as a release date, let's remain cautious and not expect to see this splendid engine in retail shops that quickly!

NARROW GAUGE

On the **Peco** stand, a real avalanche of new releases in 00-9, at varying stages of completion: the small hopper wagon from the Snailbeach tramway is almost ready. The bugbox sets were shown in two different liveries. As for

the small tender 0-4-0, a prototype shuttled on a length of track. This was nothing more than a 3D print of the body, fitted to the first production chassis. The model is attractive, seems reliable, runs smoothly at slow speed... All this looks good, as I said!

MinitrainS had a surprise in store with "Greif", a delightful bogie tender 0-4-0, reproducing an amusement park locomotive. And while at it, MinitrainS has also released the Henschel 0-4-0 T which served as a base. Two toast-rack carriages, made out of soldered metal, complete the set. The Karlsruhe firm also produces a Henschel tram locomotive, as well as two attractive Decauville-style toast-rack carriages.

Hobbytrain





A tramway driving unit and its trailer.
A Leopold Halling kit in H0-12.

TRAMWAY IN-A-BAG

Alexis Avril describes how to assemble the Leopold Halling tram kit in H0-12 that runs on his layout. Easy, affordable and highly evocative!

Text and illustrations: **Alexis Avril**

The Leopold Halling company produces delightful H0 scale ready-to-run tramways. One model is available in non-motorized kit form for less than 40 euros, with a choice of three gauges. A perfect opportunity for me, as I was short of stock for my metre gauge tram line.

On the Ferro Train Leopold Halling stand, I fell for a fine tramway and its trailer in H0 scale. For ca. one hundred euros, I found myself with a tram kit, a type B vintage mode fitted with a bow collector, in 12mm gauge. This was my first rolling kit: a real treat!

THE MODEL AT A GLANCE

Manufacturer: Leopold Halling Modelle

Scale: H0 (1/87)

Gauge: 16.5 – 12 – 9mm

Driving chassis: 23mm Halling
Vario-drive

Pantograph: IDPAN-SMU lozenge

Price: Kit ca. 40€, driving chassis 54€,
pantograph 13€.

Website : <https://shop.ferro-train.com>



- 1: Roof parts
- 2: Body and glazing
- 3: Chassis
- 4: Front panels
- 5: Control console (large) and seats
- 6: Couplers (short and long) and

- plastic axles for standard gauge
- 7: Accessories (lamps, lights, handles, brake levers...)
- 8: Control console (small)
- 9: Guard-irons
- 10: Supporting rods for roof cable

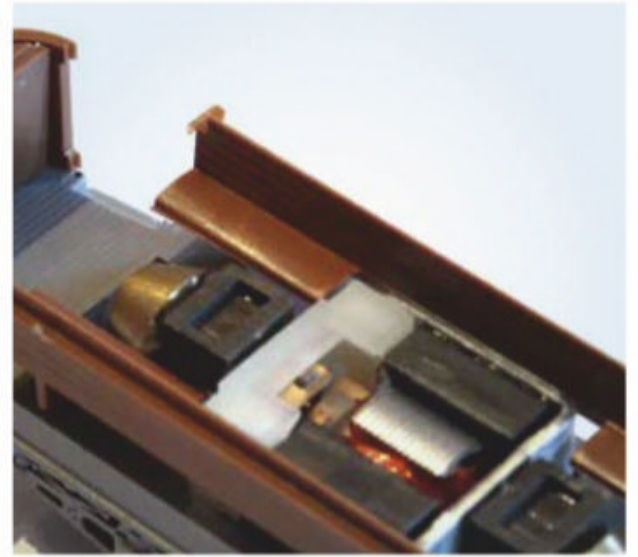
The first step consists in trying to figure out the purpose of the various parts, there are quite a lot of them, and no assembly instructions! While some parts are duplicated, others, like the control consoles, are alternatives, to be chosen depending on the type of machine wanted. The kit gives us some freedom! The photo of an assembled model was of assistance, you can also use the illustrations that appear on the Leopold Halling Ferro-Train website. Except for a few detailing parts, assembly is actually quite intuitive.



I started by a blank assembly, to be sure of my choices. Most parts fit neatly together. The driving mechanism, the 23mm wheelbase Vario model, which can be adapted to 9, 12 or 16.5mm gauge, slots into the chassis aperture.



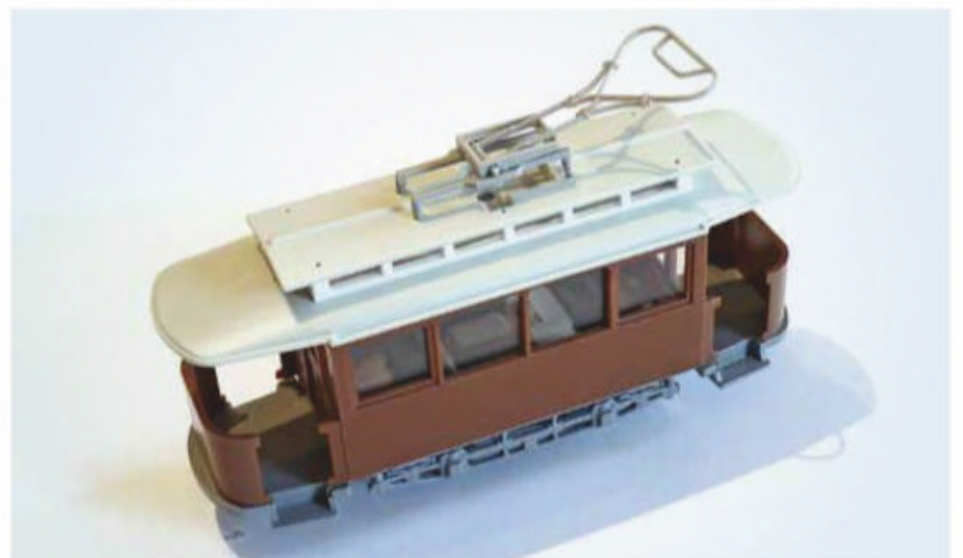
The locating lugs of the front panels fit into the front holes in the running board. The format of the control console, which is glued against the front panel, must be chosen, together with the controller handles.



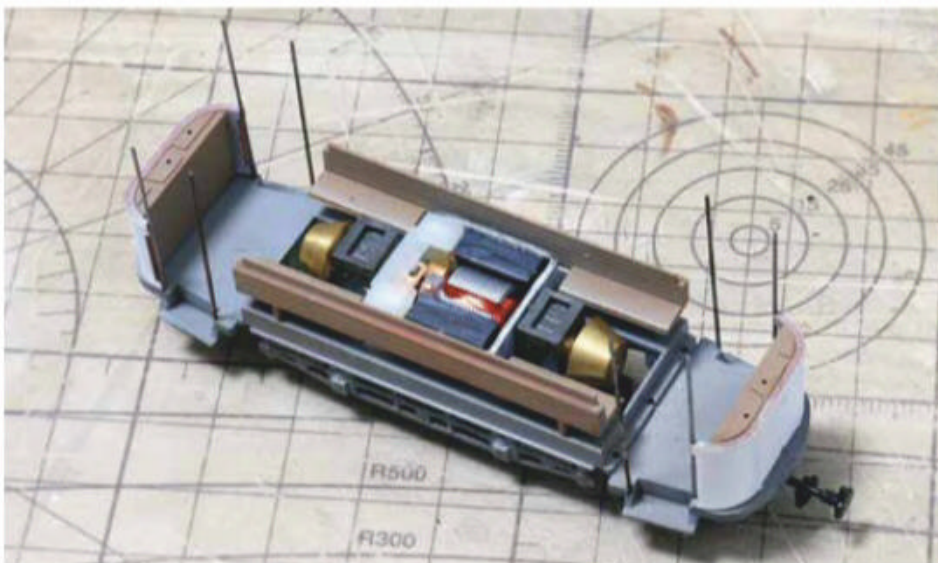
Remember to fit the seats inside the tram under the windows and lengthways.



Insert the glazing in the body sides before sliding the latter onto the chassis.



Finally, complete the job by fitting the roof and the electrical pick-up system. The kit is supplied with a bow collector. For operational reasons, I opted to replace it by a lozenge-shaped pantograph from the same manufacturer, bought separately. It is fixed to the roof with a screw.



The handrails are not supplied with the kit. I made them out of 0.7mm diam. piano wire. The puzzle having been solved, each part is removed and painted. I used matt Tamiya paint applied with an airbrush. Some parts can be glued together definitively, for instance the body and roof. I used cyano adhesive. On the other hand, I opted to leave the body free from the chassis, to facilitate fitting figures inside or for carrying out maintenance on the motor. The various details, lamps, lights, brake handles, handrails, were added at the last moment.



I fitted the driving unit with a short coupler, and the trailer with a long one, finding this combination more elegant. The set remains capable of running through 300mm radius curves. The kit doesn't contain any loop couplings, this is a pity but as the pockets are present, use couplers from other brands such as Liliput, Bemo, Roco... And remember to procure carrying axles of the same gauge as those on the driving chassis!

Lutgeoog

Friesian Fantasy

Unknown, even to the very latest navigation systems, the tiny island of Lutgeoog lies opposite the northernmost point of Rear-Friesland.

Text: Herbert Fackeldey
Photos: François Fontana

In the local Friesian vernacular, Lutgeoog means “small island”. This diminutive place was born of Helmut Heinert's imagination; modelled in 1/35 scale, it offers us an idyllic vision of what this German architect dreams of. To supply the lighthouse and the small community of tourists who spend their holidays there, the island features a small railway built in 528mm gauge, a highly uncommon one outside Rear-Friesland!

Herbert Fackeldey: Helmut, let's board the Lutgeoog-bound ferry!

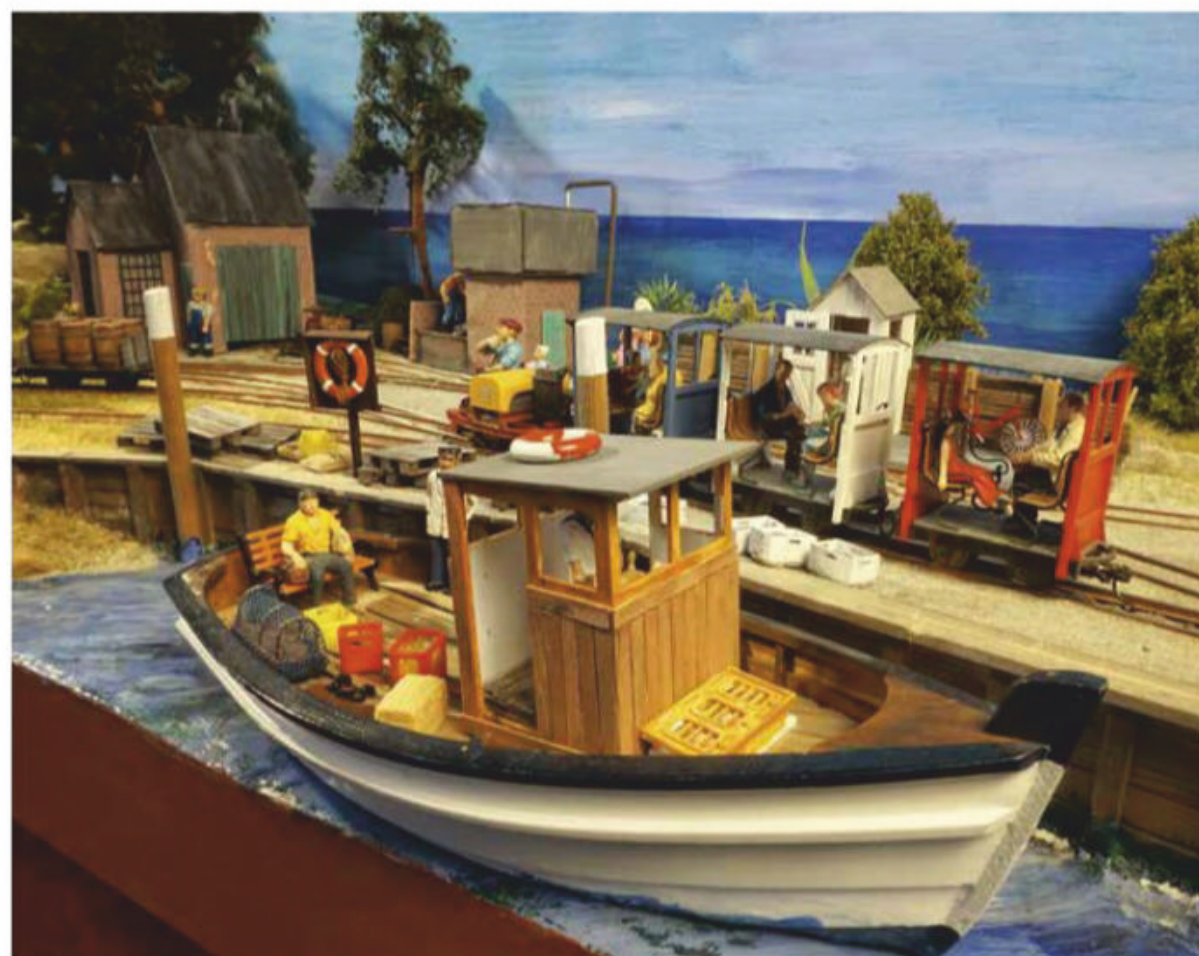
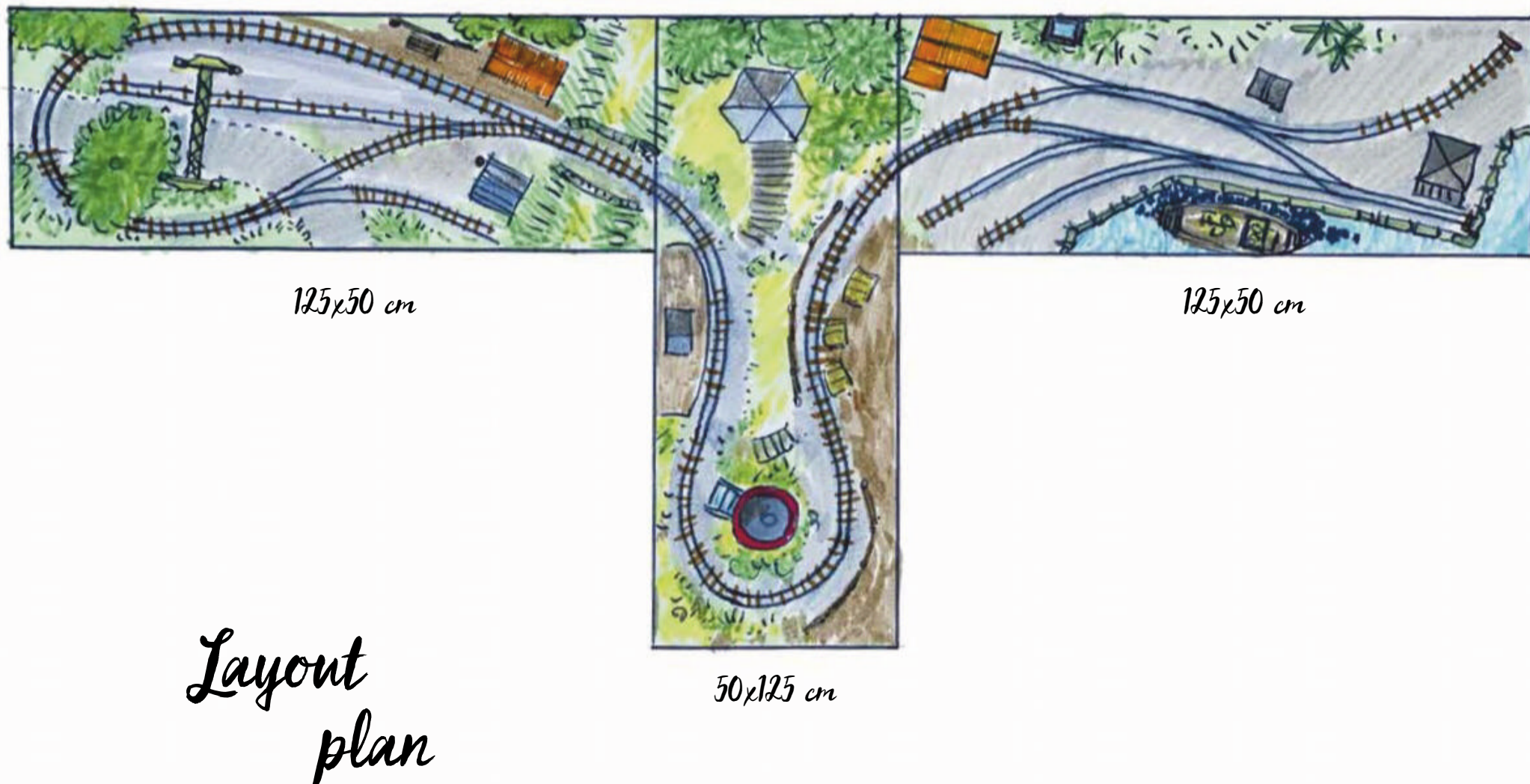
Helmut Heinert: From the harbour of Katharinensiel, on the continent, the ferry Lüt 1, a former fishing cutter, zigzags to the island between the mud banks – at high tide only. This means that there are no more than two crossings per day, depending on the tidal schedule. Passengers must not be impatient!

The railway terminus is located next to the wharf: a passing loop, three storage ...





The small 0-4-0 T, built on a Magic Train basis, is hauling the closed passenger carriages from the harbour to the village, and is seen running along the back of the beach. Note the traditional beach seats made out of weaved wicker.



The harbour couldn't be more basic: a wooden wharf where the fishing boats or the ferry berth. The passenger train is hauled by the Simplex locomotive.

■■■ sidings, and engine shed and a turntable are amply sufficient to meet operational requirements.

HF: Can you describe the line?

HH: The line tackles a gradient right after the station throat, turns left, runs along the back of the beach, around the lighthouse at Lütge Hörn Point and reaches the sand dune halt. A block telephone is located here, to ensure safe operations! Then, following a long curve to the left, the line reaches its terminus after having run through a gap in the dyke.

The terminus is a balloon loop, this avoids many tedious shunting movements. There is a siding under a gantry crane for transshipping goods onto road vehicles, and another one for parking the stock used for breakwater maintenance.

HF: Does the company own its rolling stock?

HH: The island railway owns a steam locomotive and a motley bunch of diesel locomotives. To take the ferry captain to the harbour for the morning departure, the company workshops have built a motor

The layout at a glance

Dimensions: T-shaped 330 x 130cm

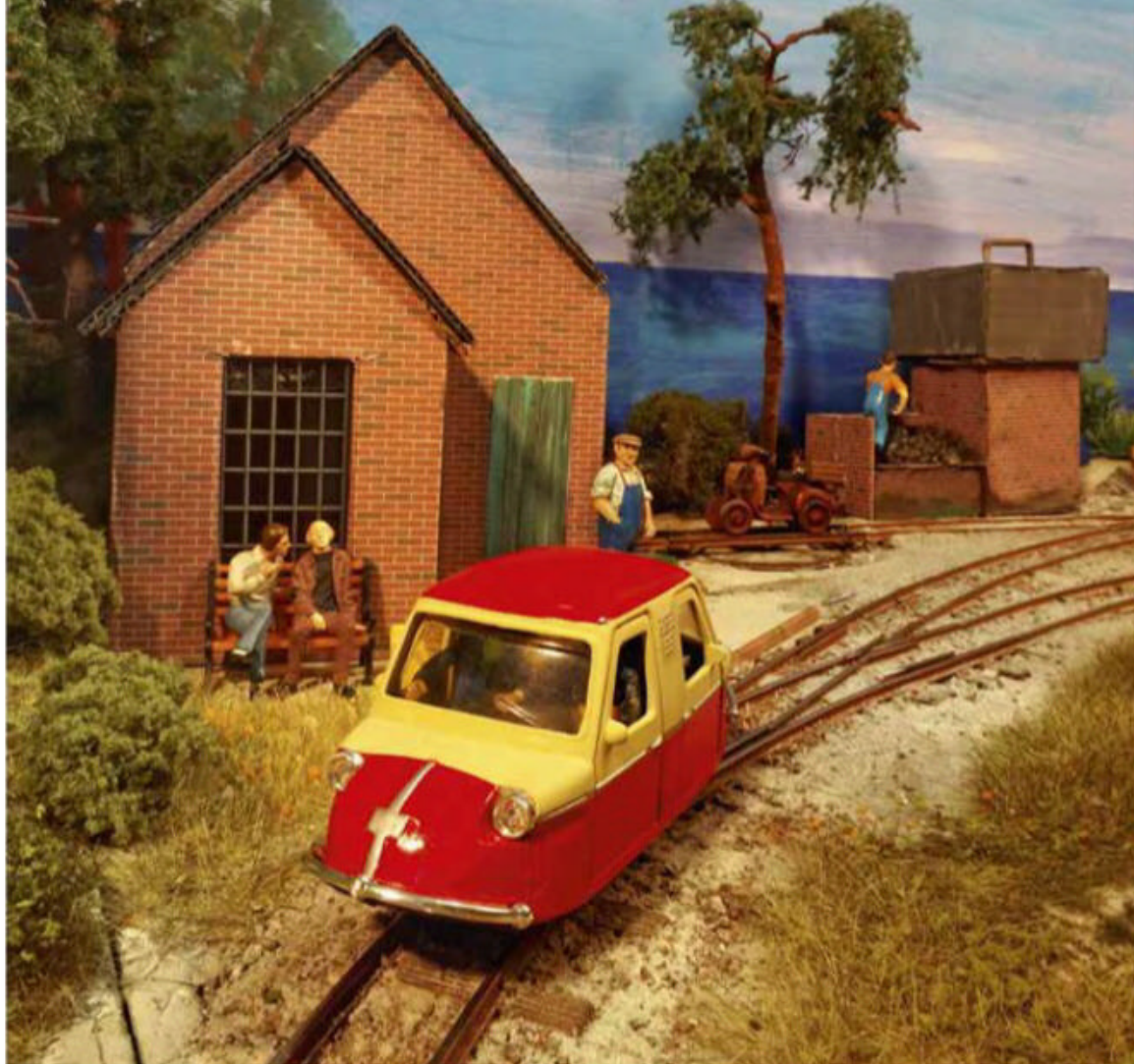
Scale: 1/32

Gauge: 16.5mm

Control: DCC sound

Inspiration: North Friesland

trolley by assembling two 3-wheeler vans back-to-back. For track maintenance, a simple rail-mounted scooter serves the purpose. Building items of motive power on the basis of simple machinery is customary practice on secondary railways. The breakwater maintenance team has its own Simplex engine, sometimes seen helping out with passenger services! ■■■



The captain's motor-trolley! Built by the railway works, just like the rail-mounted scooter that is visible outside the engine shed.



*A block telephone is located at the half-way halt.
A luxury on this type of railway.*

1/32 Layout

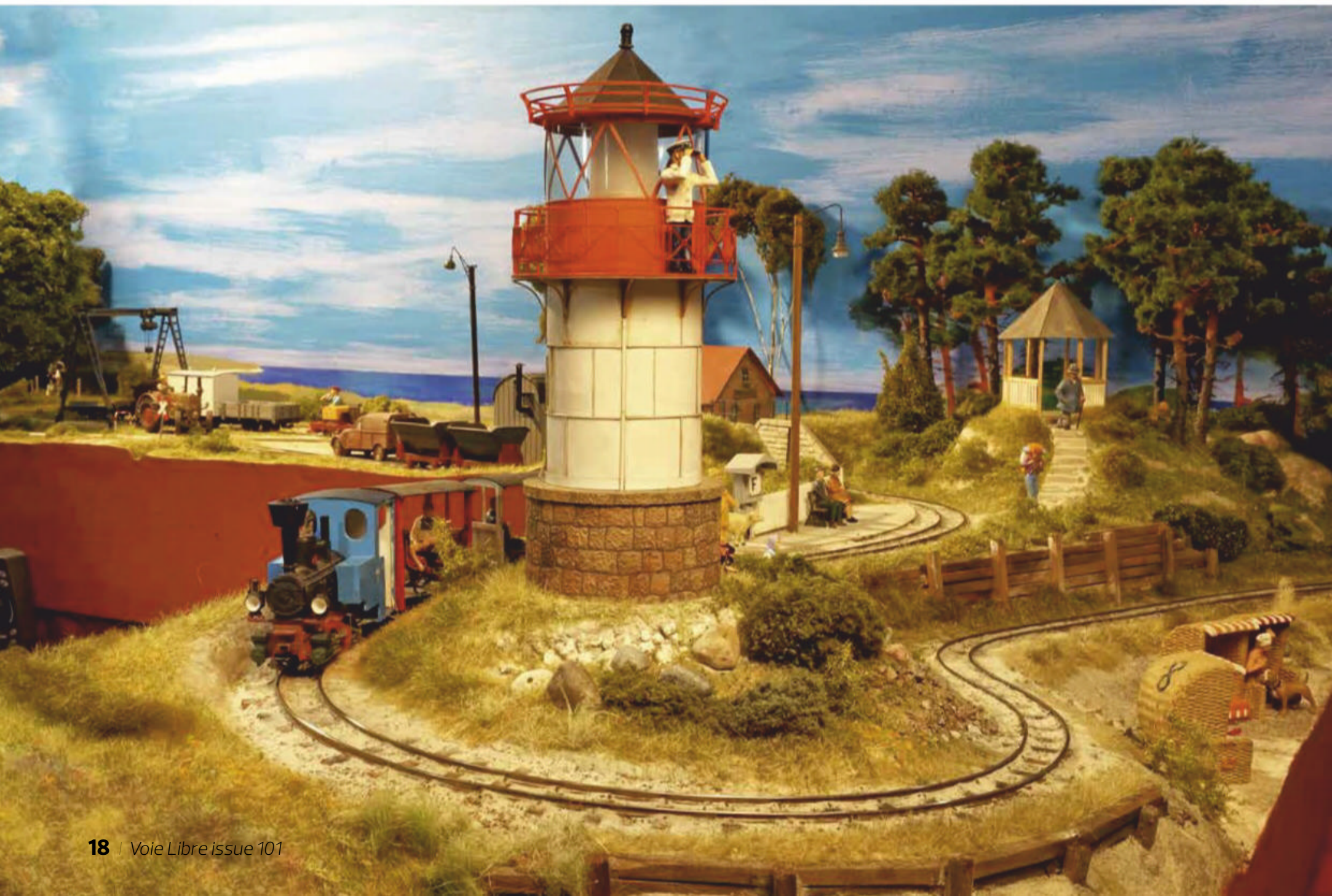


The railway is also used for maintenance of the breakwaters. On the short siding, here are two skips used for such work after each storm. The Citroën 2CV van is a nod to Helmut's own car – he takes the layout to shows in a 1981 Acadiane.

The line gains altitude and runs around the lighthouse along Lütge Hörn Point. The general arrangement and the composition of the layout are extraordinary! Very little surface is needed to evoke the scenery, even in a large scale.

... HF: What about carriages and wagons?

HH: There are two types of passenger carriage: completely open or completely closed! They are put into service depending on the weather. As far as goods are concerned, there are a few standard box vans, open wagons and flat ones. The barrel wagon and the insulated wagon are used to carry milk. The permanent way team has a few trucks, used to repair any damage caused by the weather.





The village station. Here, shunting is made easy thanks to the balloon loop. In the background, note the milk wagons.

HF: Technically, how does the layout work?

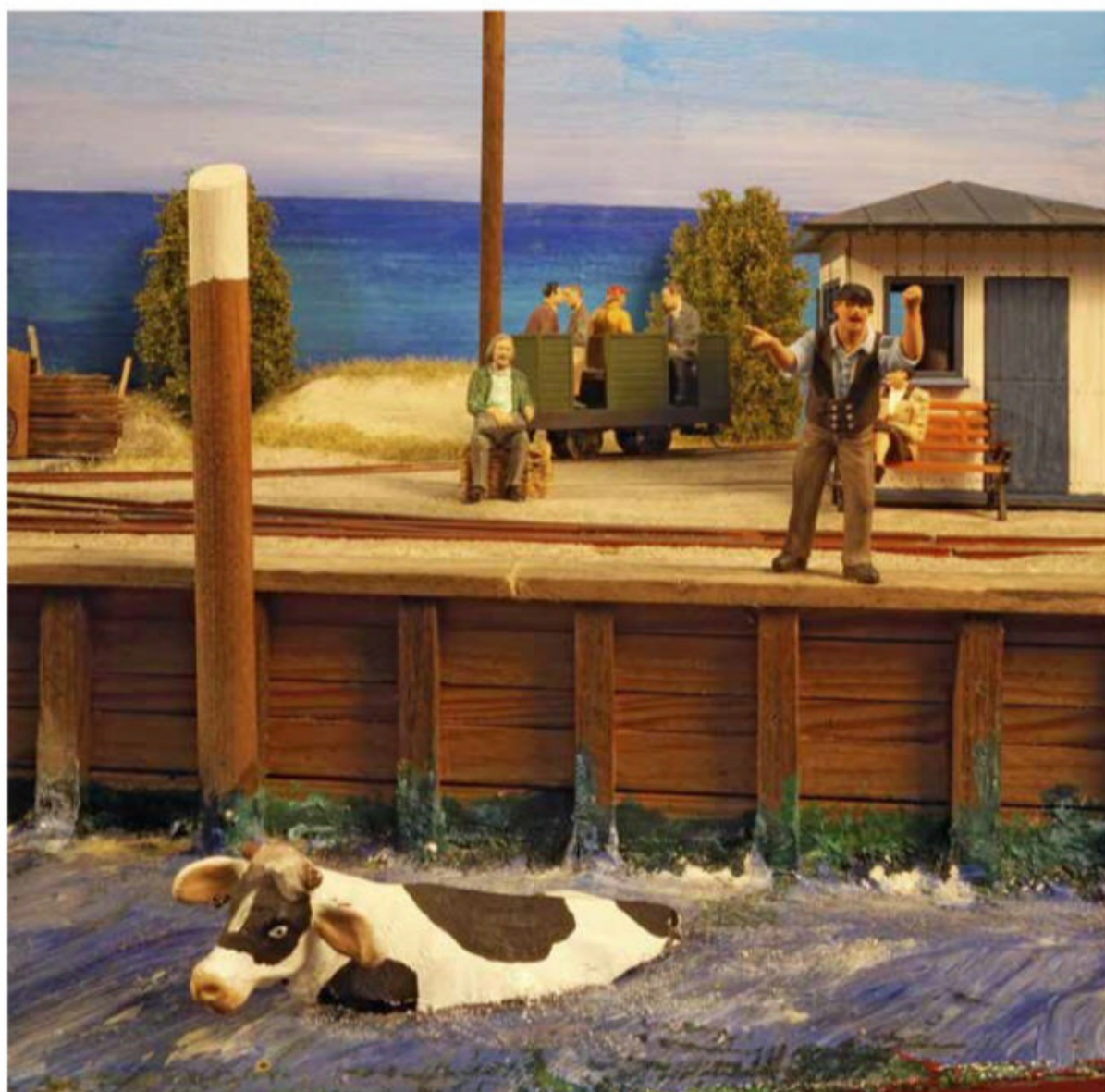
HH: The locomotives are fitted with sound decoders and loud speakers. I have two hand-held controllers, one on each side of Lütge Hörn Point; the turnouts are operated remotely by wires. This means I can stand in front of the layout, without having my back to the public, and talk with visitors.

HF: How are the wagons built?

HH: They are based on shortened Fleischmann Magic Train wagons; the small passenger carriages are entirely scratchbuilt. The steam locomotive is built around a Magic Train basis, while the captain's motor-trolley is a pairing of two road vehicles.

HF: Does the layout feature sound?

HH: Yes, behind the curtain, there is a sound system with a CD player. When watching the layout, it's almost as if you could feel the sand between your toes! ■



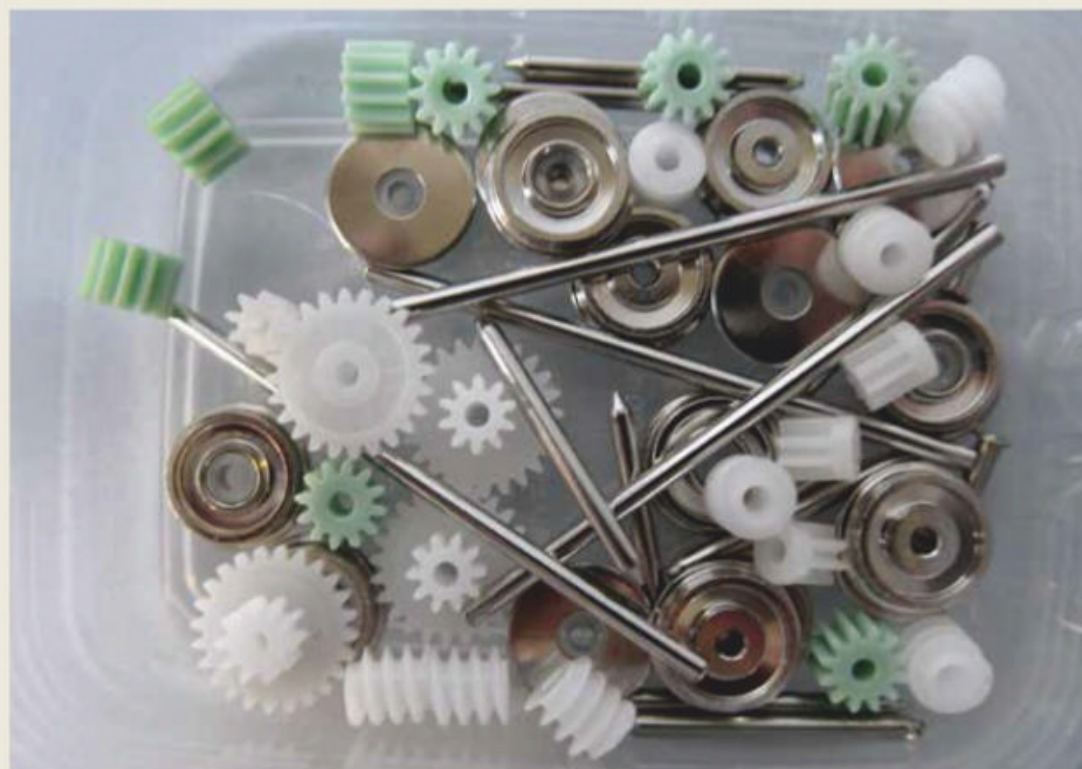
This local inhabitant has missed the boat in the true sense of the word!

Nobuo Koizumi

BUILDING DIESEL LOCOMOTIVES OUT OF PLASTIC SHEET

Nobuo Koizumi shows us how to build small internal combustion locomotives, out of polystyrene sheets. It looks almost... too simple!

Text and illustrations: **Nobuo Koizumi**



1 10.5mm diam. wheels, 2mm axles, worm gear, 24-tooth cog, 10 and 12-tooth gears for building two-stage driving mechanisms with a 1/36 gearing ratio.

MAIN SUPPLIES

0.5 – 1mm thick
plastic sheet
2mm **square rod**
Axles with 10.5mm
diam. wheels
Gears, worm gear
module 0.5.
12V **motors**

Polystyrene is my favourite material for building model locomotives. My models are designed with drawing software; this enables me to generate cutting templates for the various parts. Once printed, these templates are glued to the polystyrene sheets, and are used as a cutting guide. The driving chassis is designed in the same way. This article will show you, step-by-step, the various construction stages of a plastic sheet model.

Transferring the drawings onto the plastic sheet

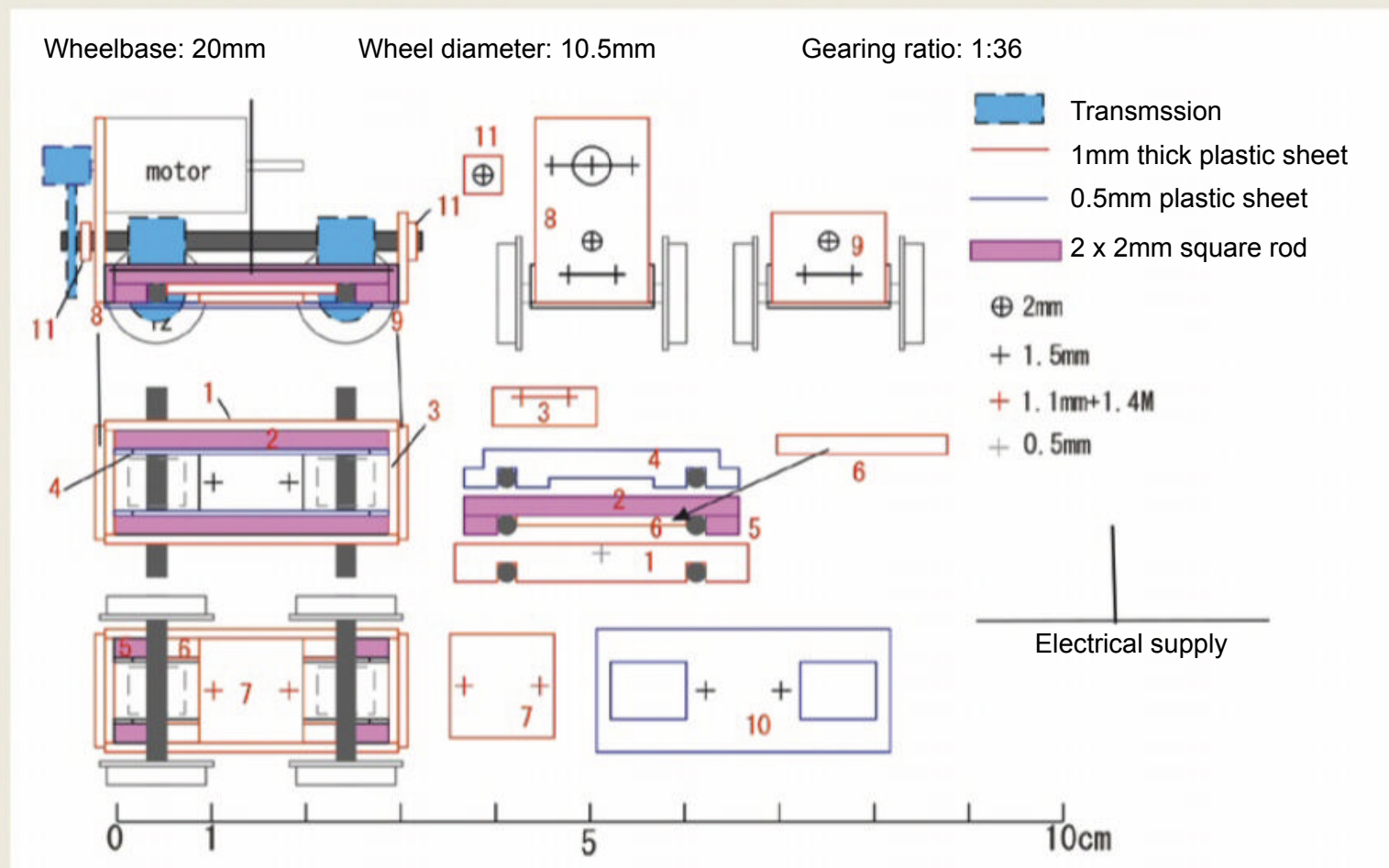
I use the Canvas X drawing software. The various parts are printed on paper. The outside body panels are cut out of 0.3mm thick plastic sheet. The 0.5mm thick sheet is mainly used to reinforce the outside panels from the inside of the models. The 1mm sheet is used for the chassis and infrastructure parts. The print-outs are glued onto the plastic sheet with masking tape. In a first phase, the rivet locations are marked with a punch. With a hobby knife or a scalpel, I cut out the various paper templates. The cutting line leaves a slight groove on the surface of the plastic sheet. Once the masking tape and the paper are removed, this groove is highlighted by applying chalk or dry pastel. All that is needed then is to run over these grooves a couple of times with a very sharp blade and to snap off the plastic sheet following the lines.

The driving chassis

It is designed with sheets and strips from the Tamiya and Evergreen ranges: 0.5; 1 and 2mm thick sheets, and 2mm square rods. The 2mm diam. axles and the 0.5 module gears are bought in specialized modelling and hobby shops. I buy my small motors from Arumodel, they can be found in many specialized stores (Editor's note: Micro-Modèle Le Train Magique for example). I built driving chassis with a wheelbase of 20 and 24.5mm. This ...



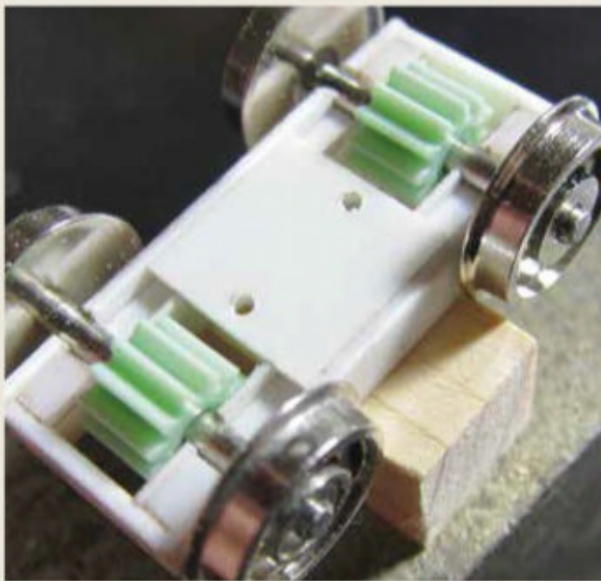
Number 72 is one of the small plastic sheet diesel locomotives whose construction is described by Nobuo Koizumi.



**100%
PLASTIC
SHEET**

2 Design plan for the driving chassis. The colours of the parts refer to the thicknesses of the plastic sheet. The drilling points are identified by crosses.

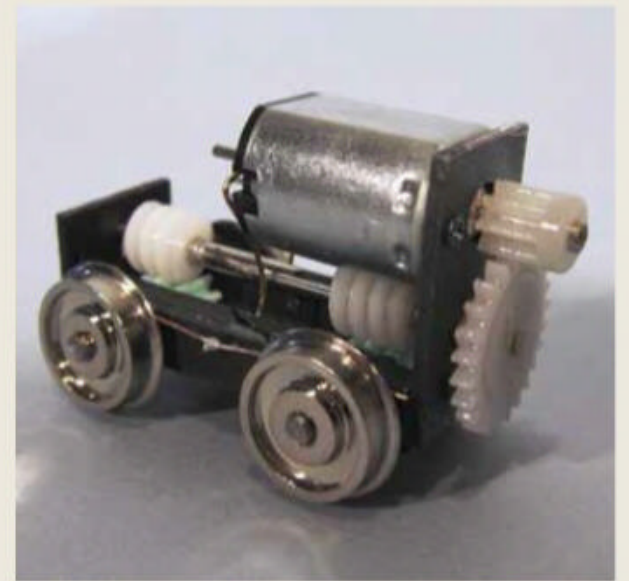
Motive power



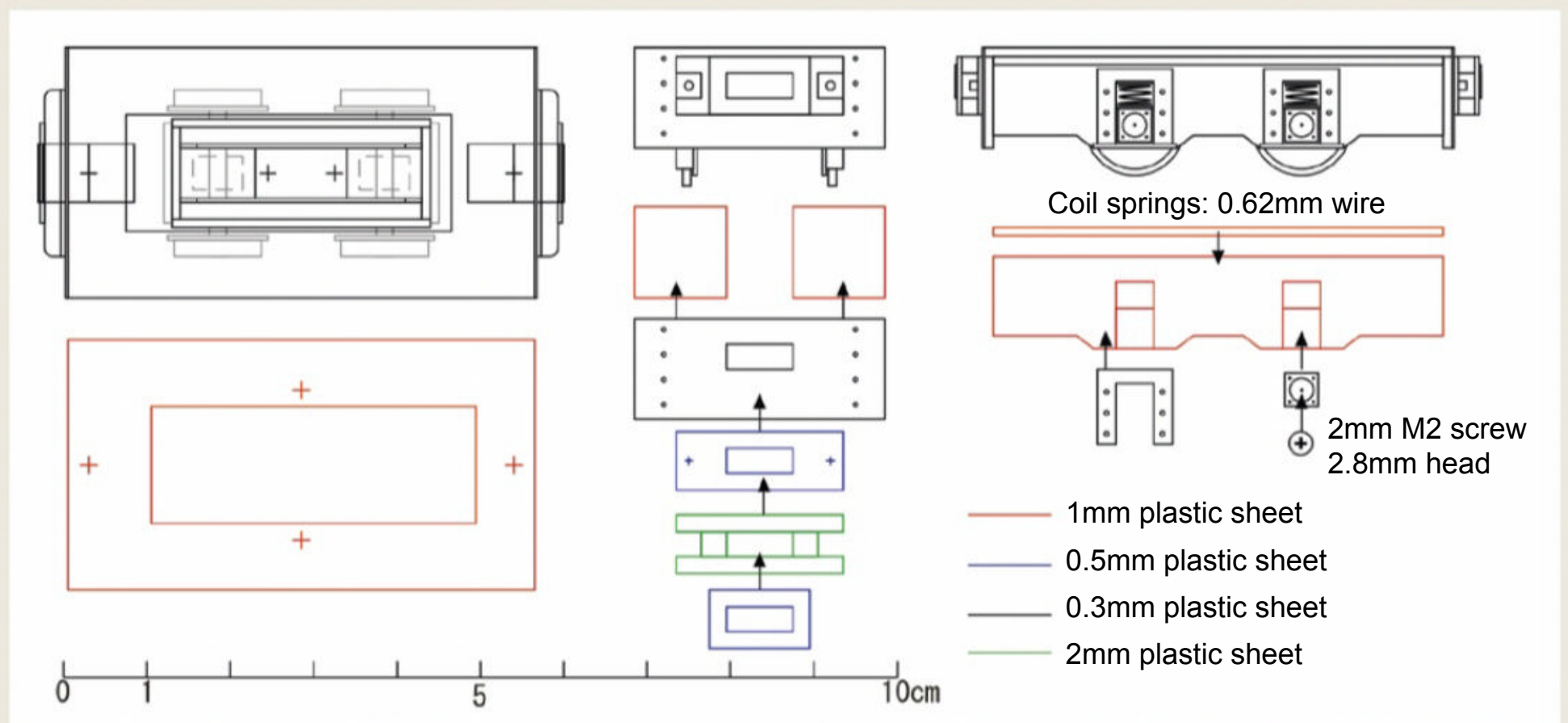
3 The 12-tooth gears on the axles. A keeper plate will hold the axles in place.



4 The two end brackets are screwed into the chassis. Everything is then painted black.



5 The electrical pick-ups are inserted into the chassis and simply threaded through the holes of the motor supply tabs.



6 Plan of the various parts needed to build the outside frames, the buffer beams, the couplings and the decking.

... article is illustrated with a 20mm wheelbase driving chassis.

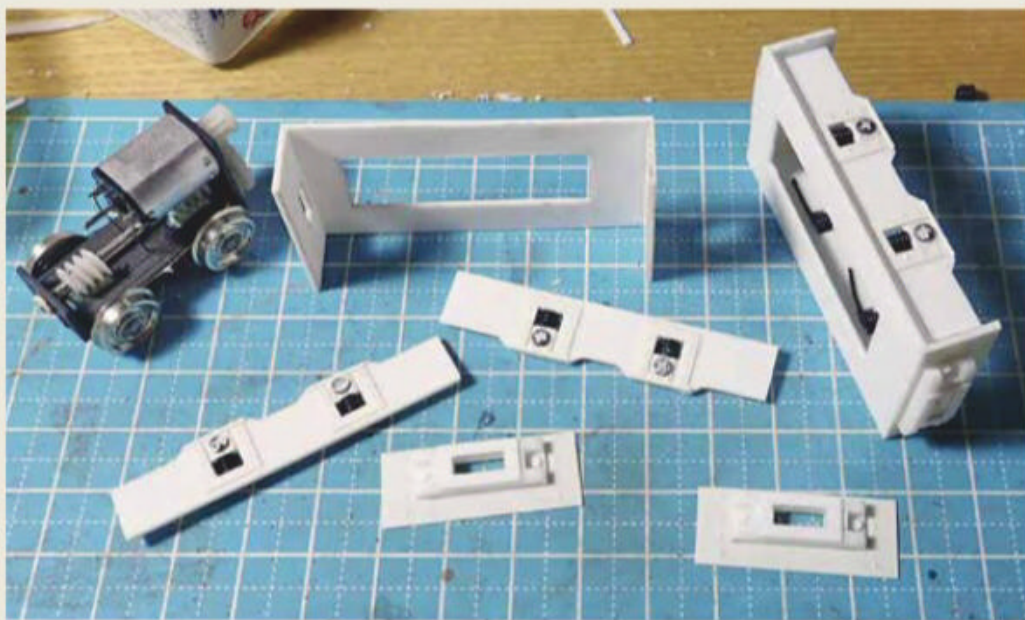
Getting down to work!

I begin by removing the wheels from the original tip-pointed axles, and slide them onto the 2mm axles, already fitted with their gears; the back-to-back spacing is adjusted by hand. An NWSL Puller can be useful for removing the wheels (Editor's note: to remove the wheels, you can also use a vice with smooth jaws). I cut out my plastic sheet parts, as well as the strips, and glue them together. The

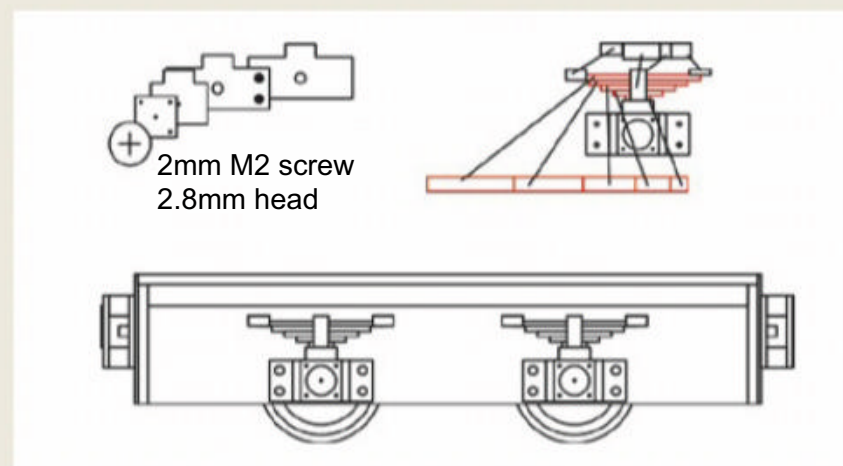
two brackets that support the worm gear shaft and the motor, located at each end of the chassis, are held in place with 1.4mm screws. This means they can be removed for adjusting and maintenance. The whole plastic sheet cradle is painted black before assembly of the axles, the gears and the motor.

Electrical pickup

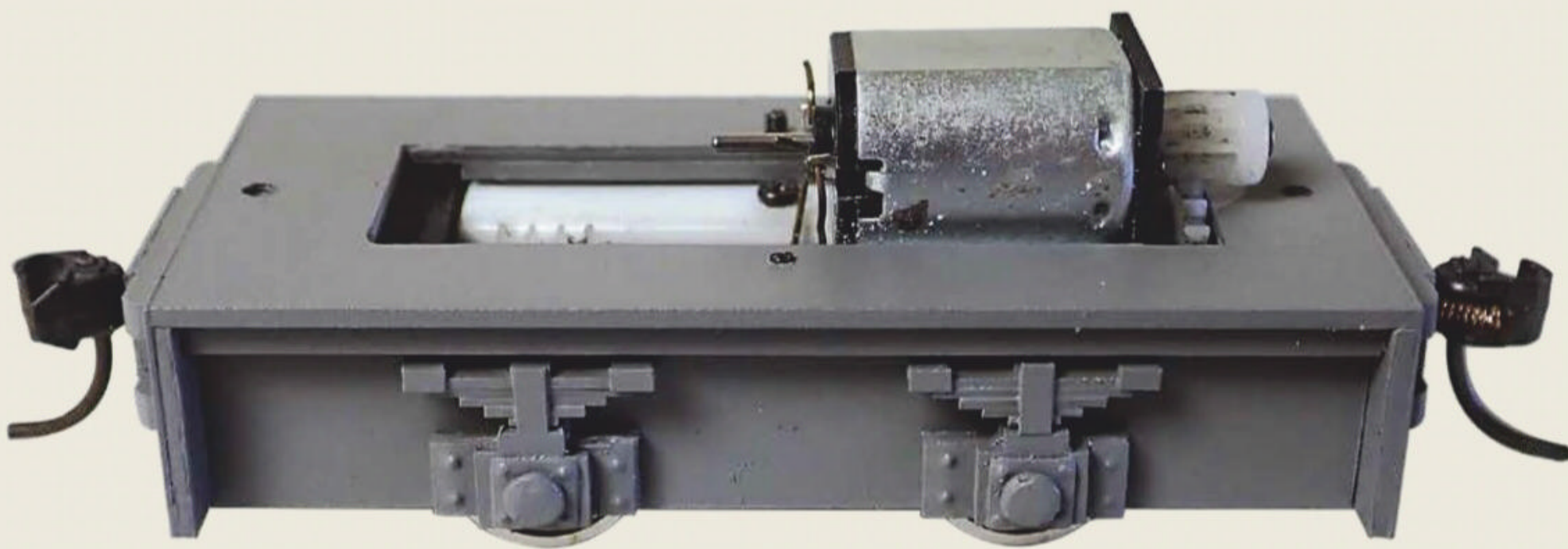
I use 0.3mm phosphorous bronze wire wipers, rubbing against the back of the wheels. A 0.4mm diam. brass wire connects the wipers to the motor. The



7 Assembling two chassis with coil spring suspensions.



8 Plan of parts for a chassis with leaf spring suspension.



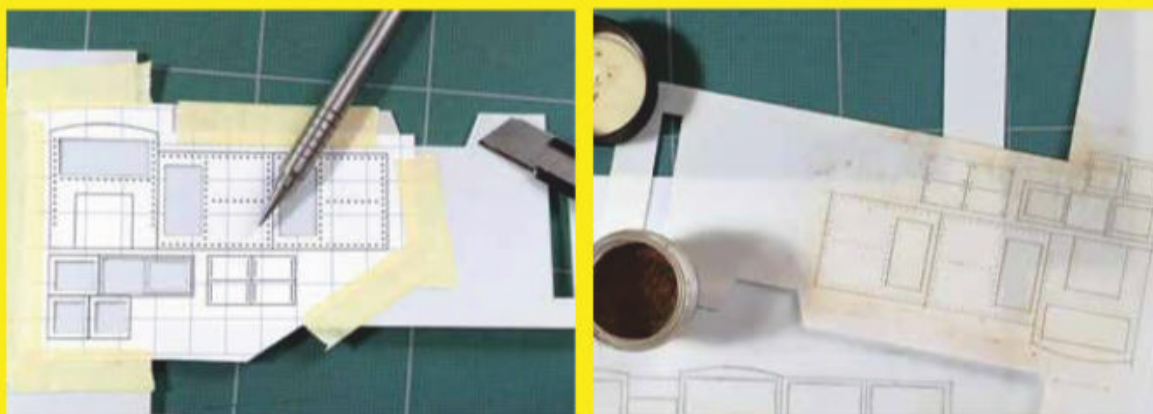
9 The two chassis painted grey.

wires are soldered in a "T" shape, and are simply inserted into the chassis sides, exactly half-way between the axles. The driving chassis is finished; with this two-stage gearing, I have a gear ratio of 1/36 which is perfect with small diameter wheels.

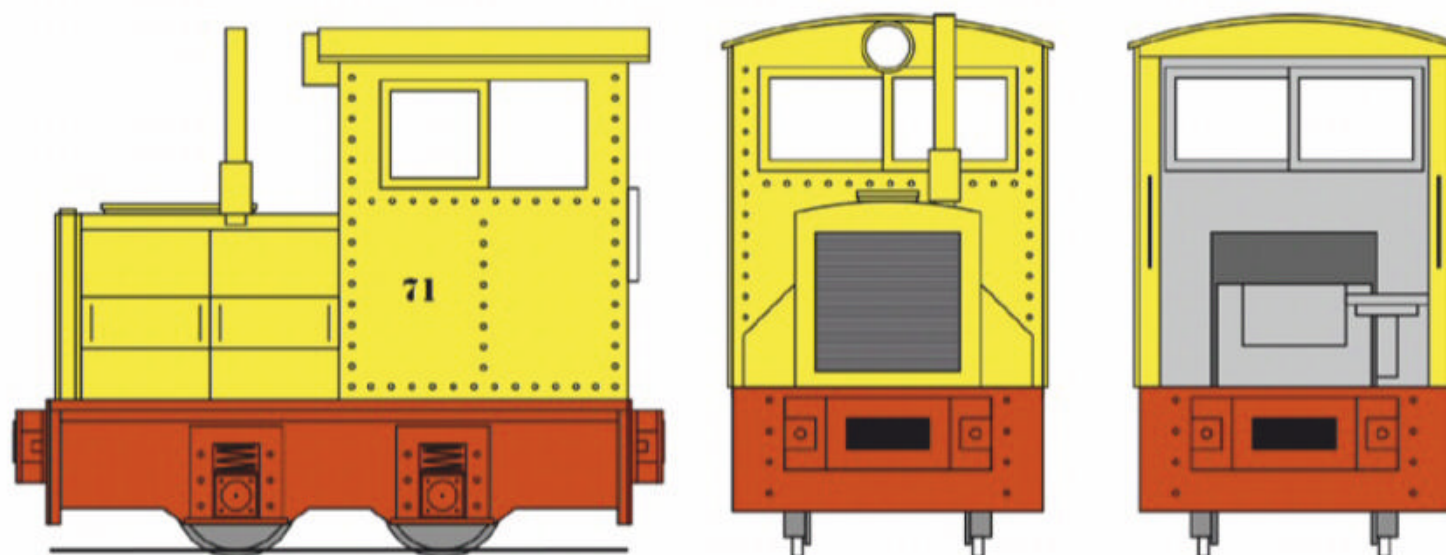
The chassis sides

I designed two chassis sides with different features: one has a 20mm wheelbase with coil spring suspension, the other has a 24.5mm wheelbase with leaf spring suspension. ■■■

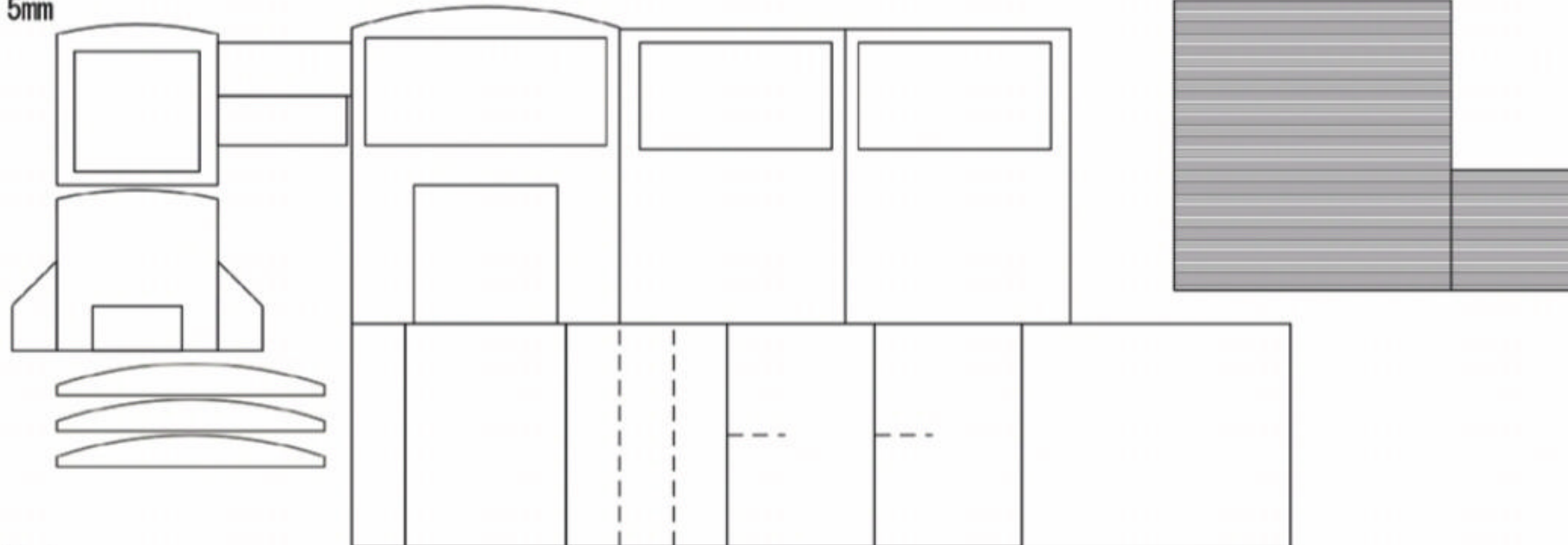
HOW TO TRANSFER THE PART TEMPLATE



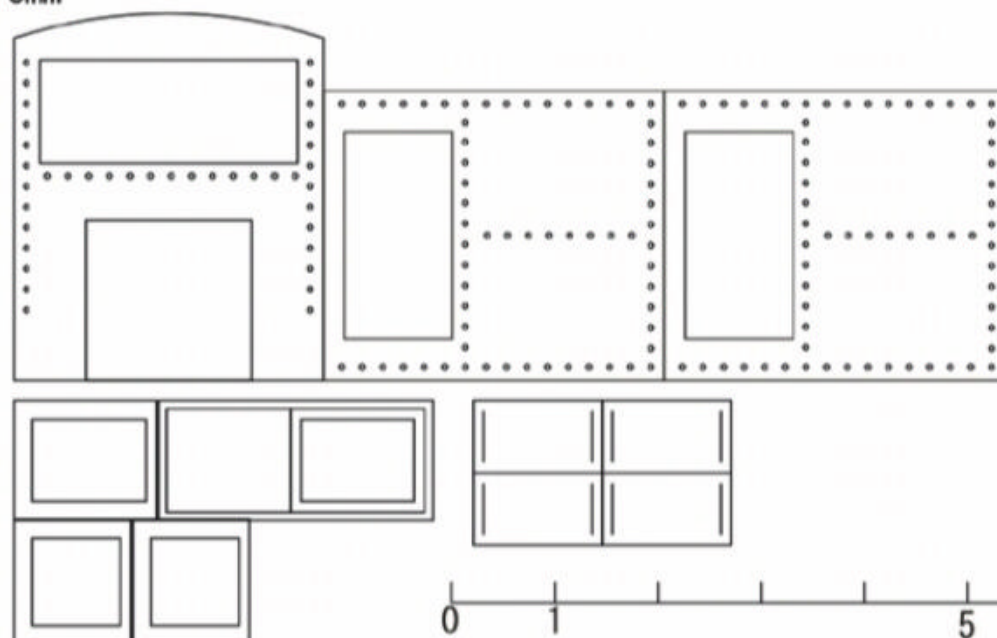
The rivets are marked with a dry point. The various parts once cut out, from the smallest to the biggest. In this way, the plastic sheet is grooved. Coating the plastic sheet with pastels shows up the cutting lines.



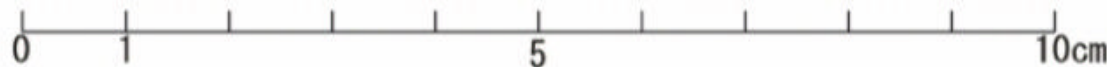
0.5mm



0.3mm



1mm

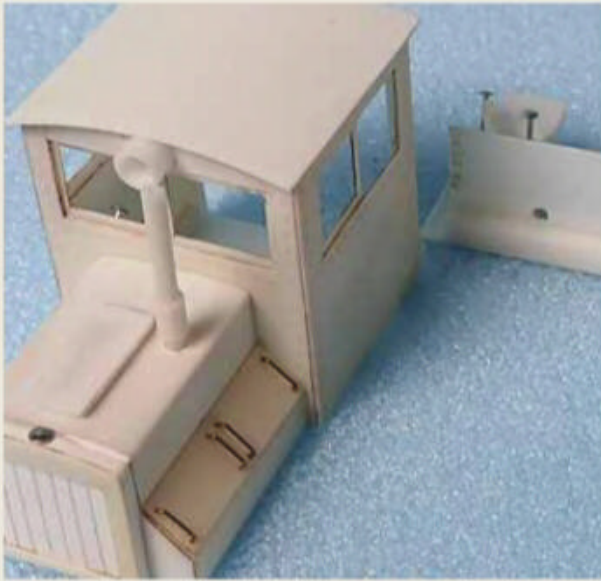


10 Part template for the body of locomotive #71. The various parts making up the body are glued together.

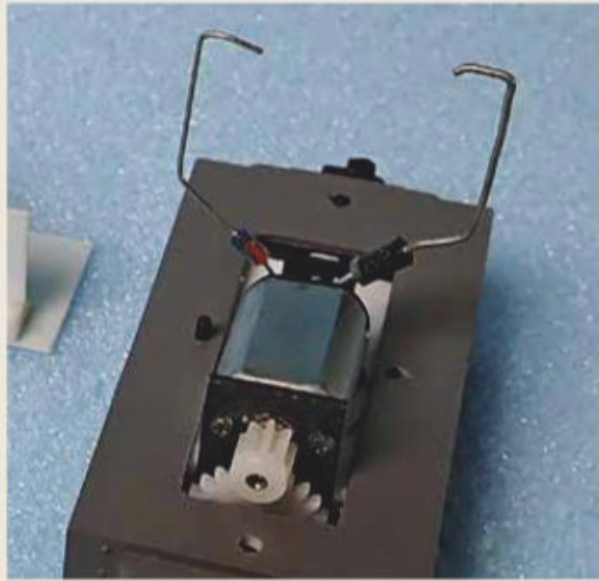
■ I cut out the plastic parts, the axleboxes are made using screw heads whose groove is filled with putty. The coil springs are made out of thin metal wire, complete with insulation sleeve. The chassis are sprayed with grey primer, using an airbrush. They are now ready to be tested.

The body

The body consists of two parts, one made out of 0.5mm thick sheet, the core, and the other out of 0.3mm sheet, into which the rivets are embossed. Both parts are glued together. For the curved parts such as the roofs, I use grooved Evergreen polystyrene



11 The radiator filling cap and levers are made out of sewing pins, the brass wire handles are add-on parts.



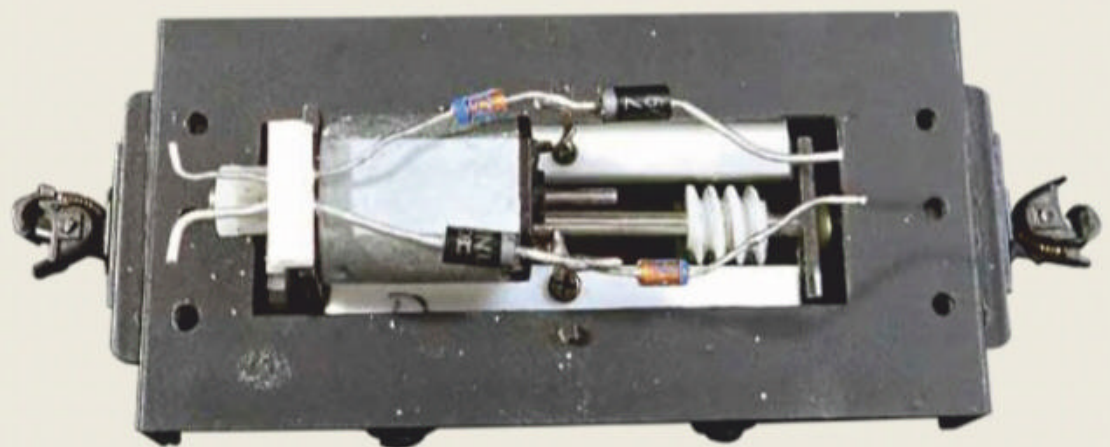
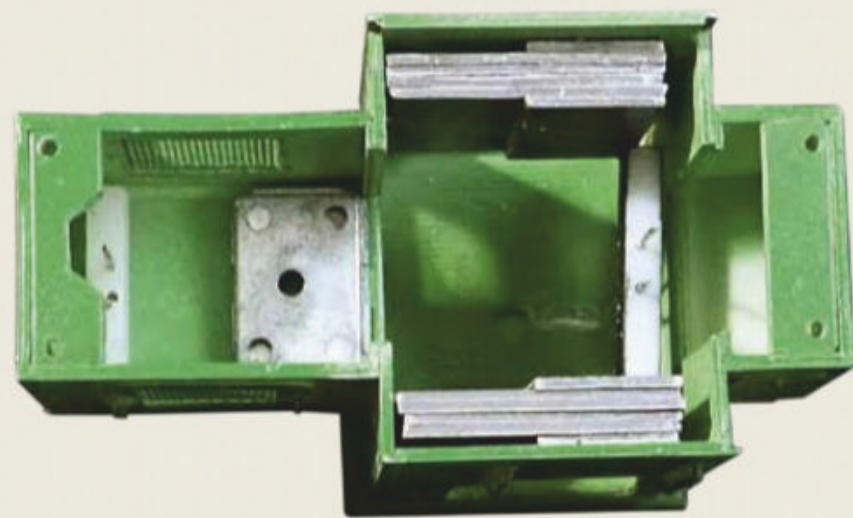
12 The headlamp is fitted with its LED, whose contacts are soldered onto the motor supply tabs.



13 The inside of the cab is furnished.



14 And the assembly is then give a coat of primer before being painted.



15

All available spaces are filled with lead sheet to make the engine as heavy as possible. Note the contact wires of the front and rear LEDs on locomotive #72.

sheets. Once curved into shape, the grooves are filled with specific glue. My models are lit with 3mm diam. LEDs. Two wires, one fitted with a resistor, the other with a diode, are soldered to the motor terminals and are in direct contact with the LED inserted into the front headlamp. The bodies are then given a coat of primer and coats of colour with an airbrush.

Putting on weight

As these locomotives are entirely built out of polystyrene, ballast must be fitted inside to increase the weight and ensure smooth running and decent hauling power. Although these hand-made driving chassis are not highly accurate, I am pleased with their regular slow running. The only drawback is that they are somewhat noisy! ■

THE MACHINE AT LA MACHINE

The Schneider type 69 0-4-0 T

When it comes to railway archeology, one fact often seems to hold true: the best known rolling stock or buildings are often the least well documented! Let's take a look at a venerable great-grandmother.

Text:
Vincent Lepais

How many modellers have to be content with the drawings of the Decauville catalogue to build their 0-4-0 T or Progrès type 0-6-0 T? The same applies to the famous 1870 Schneider locomotive preserved by the Pithiviers Transport Museum, which celebrates this year the 150th anniversary of the engine, a record! Although this loco is familiar to many, no drawings were available, and its history remained clouded in mystery. We decided to meet the challenge head-on.

A BIT OF HISTORY... STARTING AT LE CREUSOT

It is often forgotten that Le Creusot started by being a coal mining basin, geologically associated to that of Montchanin and to the main mining basin in the area, namely Blanzky-Montceau-les-Mines. Schneider worked the deposit at Le Creusot until 1943, in parallel with its highly varied industrial activities. Therefore, when a need appeared for small locomotives suited to 50cm gauge mining railways, a series of three engines was built, known as type 69, numbered 1347 to 1349.

They weighed just 2.250 metric tons empty and 3 tons in working order. Their water tanks, offering a total capacity of 400 litres, were divided into two sections. 80kg of coal were also carried on-board. From the start, the engines featured a roof, and the top of the funnel was 1.76m above rail level. This meant the engines were designed to be used in mineshafts, but only in firedamp-free areas. This, however, was just the beginning of their careers.

MAZENAY

One of the engines then found its way to the iron mines at Mazenay, in Saône-et-Loire, also owned by the Schneider dynasty. This was the only site ...

Shunting skips at La Machine.



Builder's plate
of the type 69.

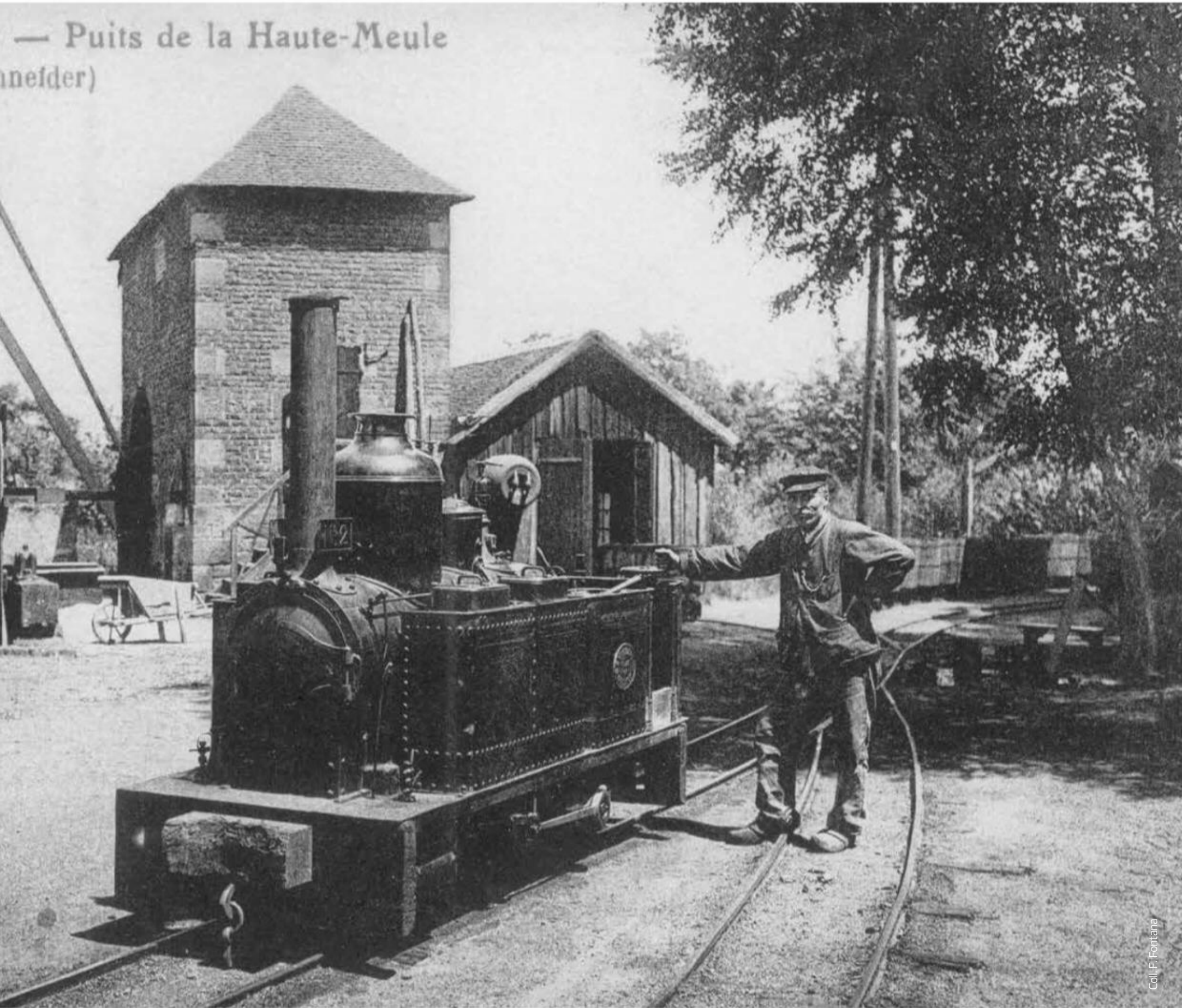
ACKNOWLEDGEMENTS

Many thanks to Francis Dreyer, Conservation Attaché, Curator of La Machine museum, to Pascal Balourdet, in charge of archives, and to Sébastien Deleforterie, Chairman of the Pithiviers Transport Museum Association, for their assistance and warm welcome when measuring the coal skip and the locomotive.

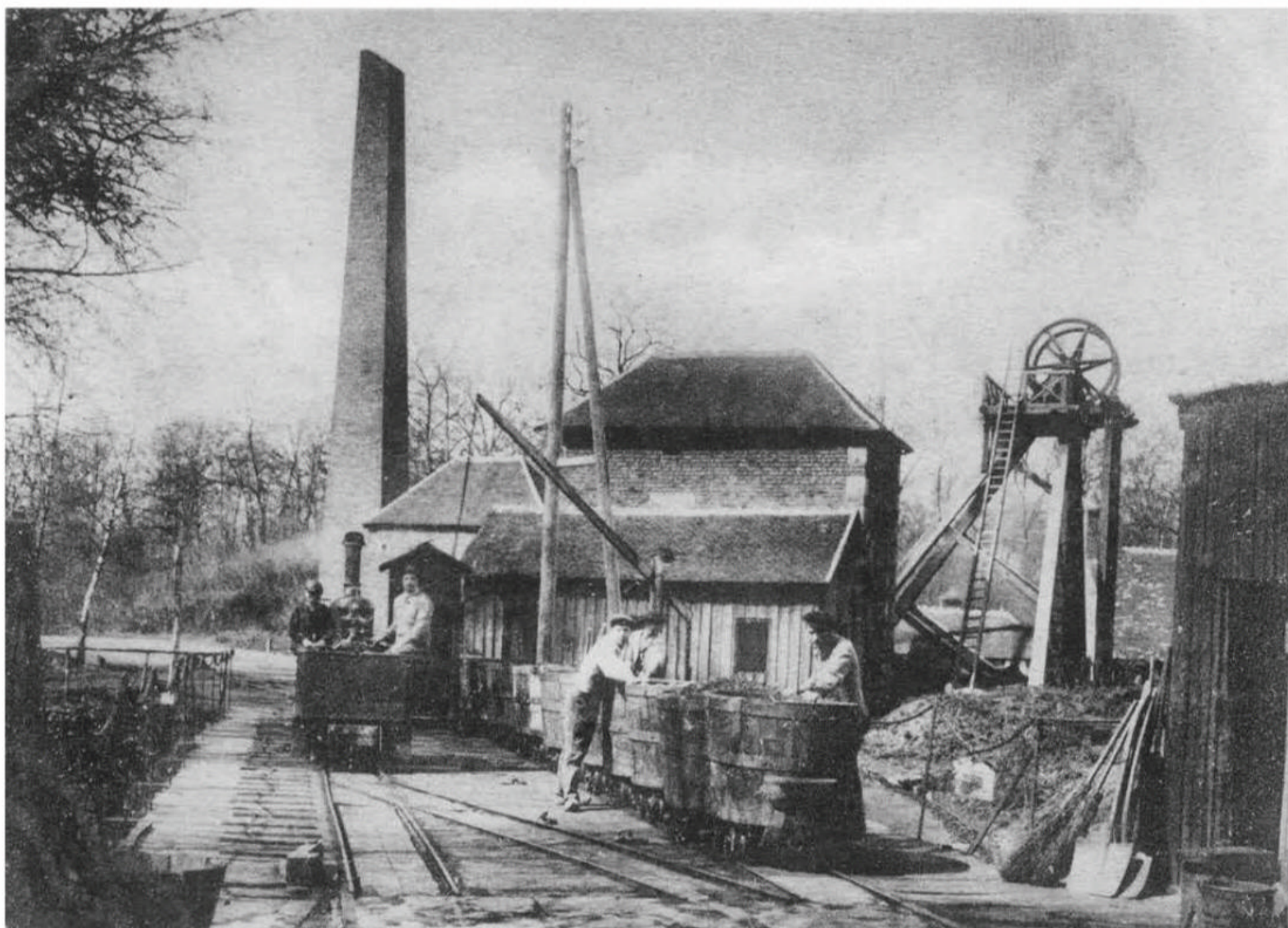
A proud crew poses on the tiny locomotive.



Coll. V. Lepais



Coll. F. Fontana



Coll. F. Fontana

The Schneider type 69 0-4-0 T at La Machine.



MTP

The locomotive being restored during the 2019-2020 winter.

... where one of the locomotives was photographed complete with its roof, hauling a string of skips.

LA MACHINE

Later, two locomotives – what happened to the third one? – were transferred to the Decize coal mines, at La Machine in the Nièvre department, also part of the Schneider workings. This is where engine 1347, displaying n° 2, is visible on a vintage postcard; this is the best known picture of this locomotive. It has lost its roof, and the funnel has been stretched. The locomotives hauled quaint wooden-bodied, oval-shaped coal skips; one of these is preserved at the Mining Museum at La Machine.

DECIZE

Around 1925, N° 1347 was sold to the Joseph Boigues & Cie ceramics factory at Decize (Nièvre), while the other locomotive was scrapped in 1930 (according to the Industrial Railway Society). This factory used a 60cm gauge line connecting it to the PLM main-line station and to the Saint-Thibault wharf on the Nivernais canal. Thanks to the IRS documents, it is



MTP

GOING A STEP FURTHER

The central folder contains drawings of the locomotive and of the La Machine skips. Oval-shaped skips are uncommon, it can be expected that "machinois" skips will soon appear on your layouts, hauled by a type 69 Schneider.

150 YEARS

The Schneider type 69 0-4-0 T seen at Pithiviers station.

known that the Boigues factory also owned two DFB 0-8-0 T engines (Schwartzkopf n° 6741 and Henschel n° 16082), as well as two Decauville 0-4-0 T locos, the first, a 3.25 tonner, n° 635 and the second a 5 tonner, n° 821.

This means that the Schneider engine had to be adapted to 60cm gauge track by widening the frames and modifying the axles. It isn't known whether the coal mine, thus equipped, carried out this work before selling the engine, or whether the Boigues factory did the job. It was also at this time that the funnel on our little engine was fitted with its flared cap, and that one of the pick-up doors on the water tanks was removed. As the engine's running board had been widened in line with the re-gauging, the size of the water tanks was increased.

PITHIVIERS

This was the condition of the locomotive when it was loaned to the Pithiviers Transport Museum in 1969, which later became its owner. It is now listed as an Technical Heritage Item.



MTP

The engine will be ready for its 150th anniversary.



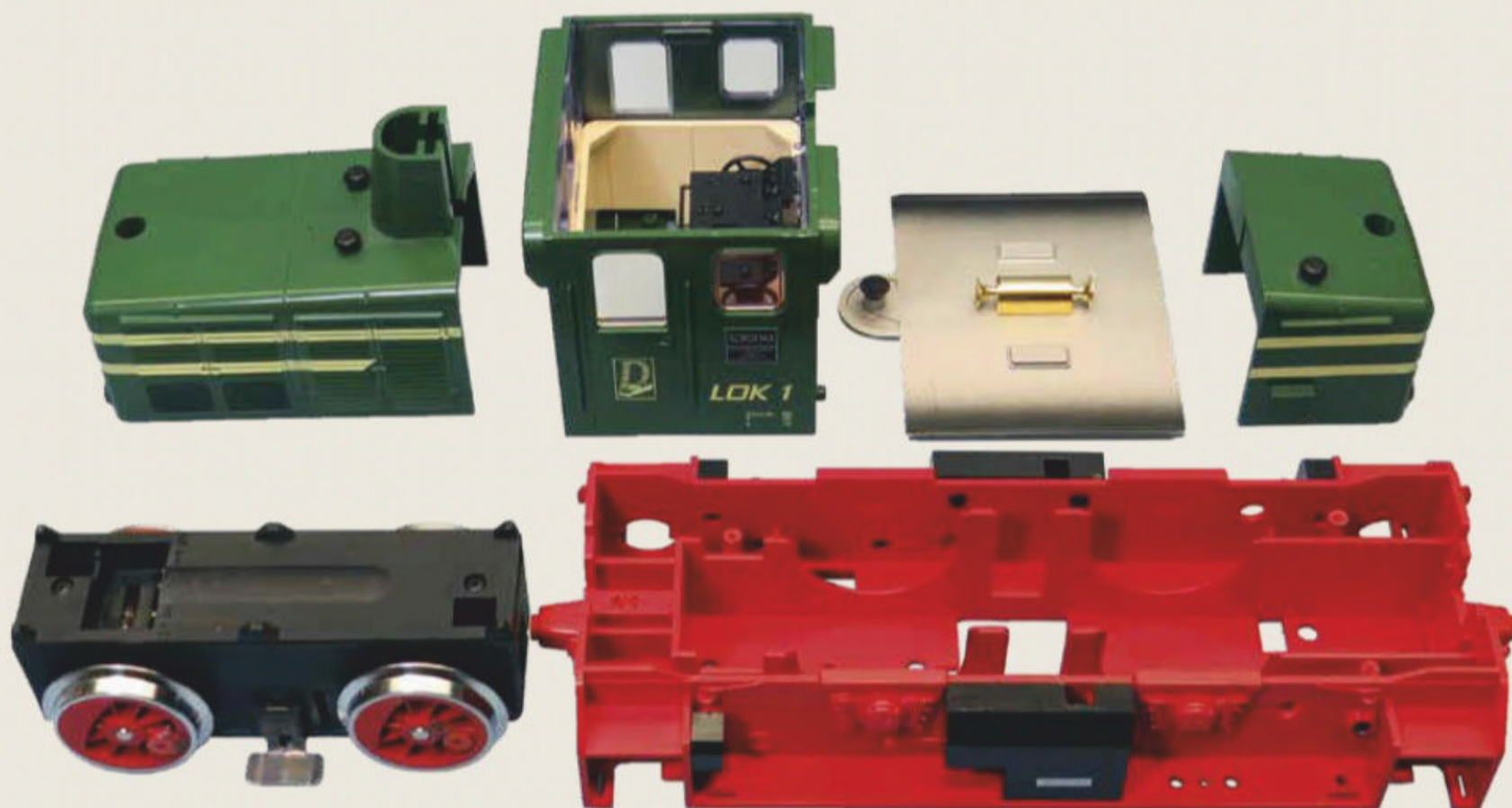
**SWEEPING
THE GARDEN**

A rail-sweeping **DIESEL LOCOMOTIVE**

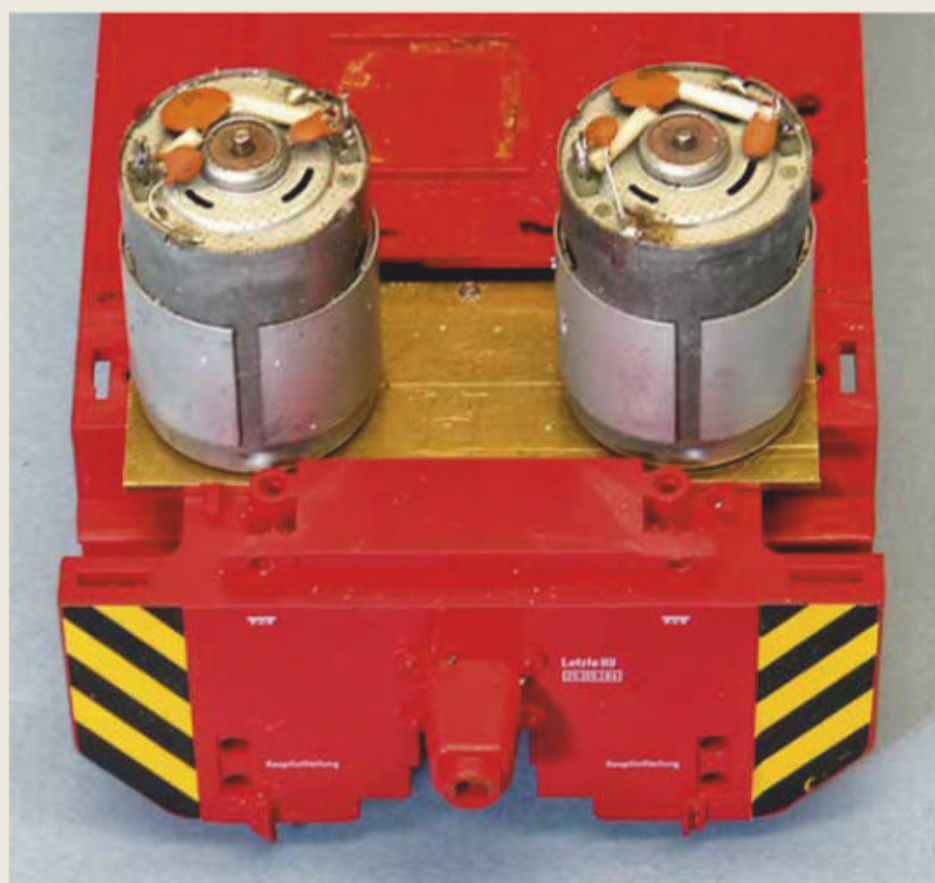
When dust hits the garden and dirties the track, a thorough clean-up is required! Bernard Déluard has created the ultimate weapon: a rail sweeper...

Text and illustrations: **Bernard Déluard**

Some time ago, I realized that one cause of malfunctioning on my garden railway wasn't the (relative) oxidization of the rail head, which causes unexpected stalling or irregular running, but rather the build-up of an amount of grime and debris, following rain, a gale or a longish period with no trains running. The LGB track-cleaning diesel locomotive does the job, but almost too well. What



1 I had kept the body and chassis of an LGB diesel locomotive that was part of the digital starter set referenced 55100. No longer having the driving mechanism, I bought a new one for 88 € from Champex-Linden (ref. ET621151.521.1).



2 The location of the brushes was soon settled: under the small bonnet. For driving the brushes, I had a couple of motors remaining from Gécomodel kits, which I had replaced with LGB-Bühler motors. Any type of motor can be used, of course, provided it's powerful enough! I fitted both motors vertically and spaced 48.5mm, above the axis of each rail. The fixing plate is a simple sheet of 1.5mm thick brass.

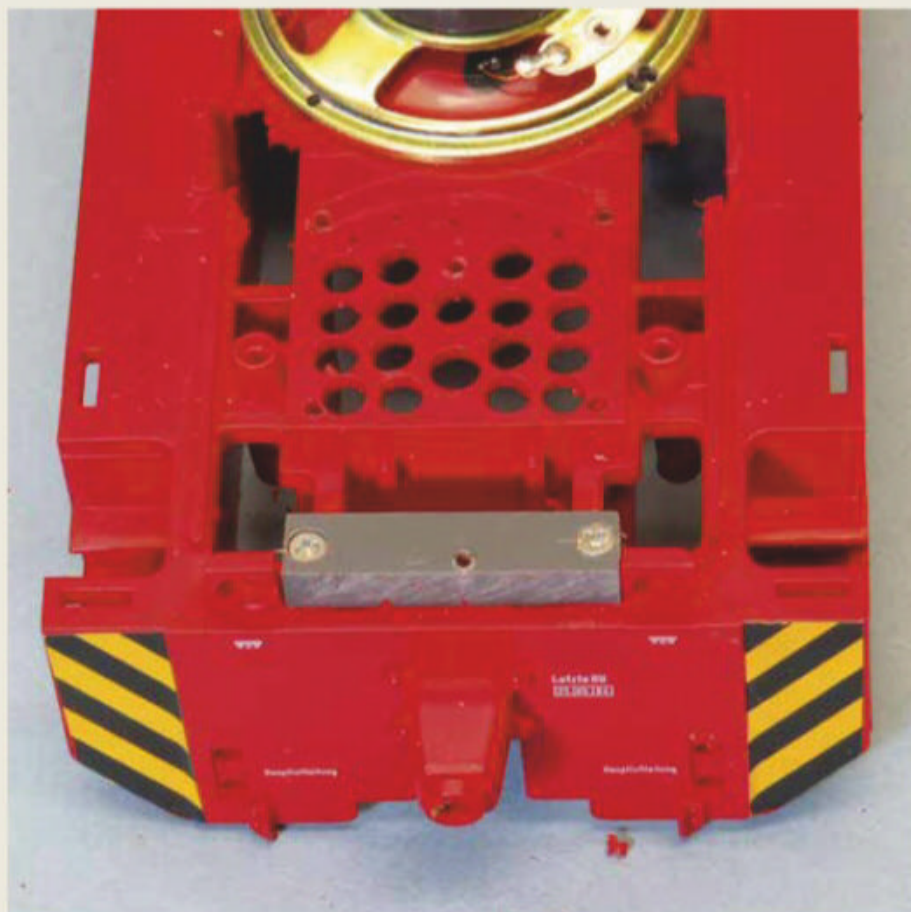
MAIN SUPPLIES

This model was designed using recycled components: **body, driving chassis, ancillary motors, brushes...** and a few specially ordered parts: **pick-up shoes, decoders, nuts and bolts...** The suppliers are listed in the body of the article.

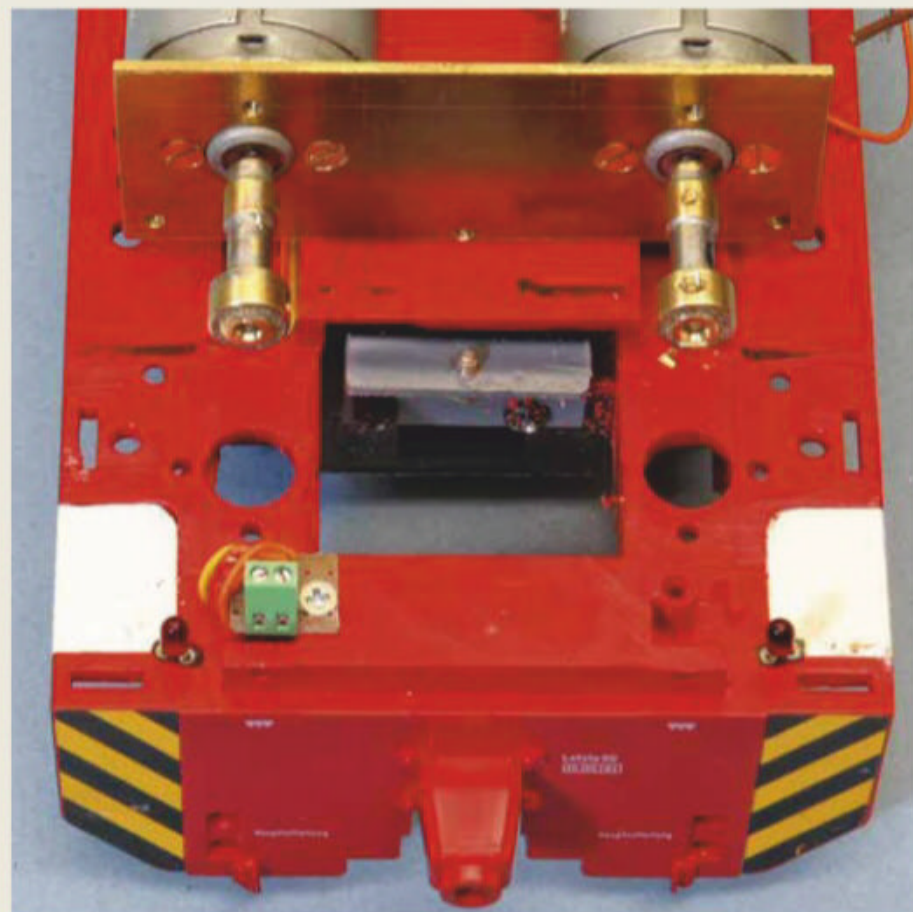
I needed to design was a system that cleaned the rail head without really attacking it. A friend of mine built a wagon fitted with a horizontal disk driven by a motor. A piece of Scotch-Brite is glued under the disk and rubs on both rails; this system is fairly efficient. Picking up on the idea, I thought of replacing the Scotch-Brite by a brush; this led to a system featuring two (hard) toothbrushes, one for each rail.

Many tests carried out from springtime until early summer have confirmed the soundness of my solution. The brass rail, even slightly oxidized and having lost its shine, remains perfectly conductive; the stainless steel rail, on the other hand, doesn't lose its shine. After a rain shower that brings a lot of micro-grime onto the track, a single passage with the diesel locomotive at once ensures smooth running of the locomotives. ■

Motive power



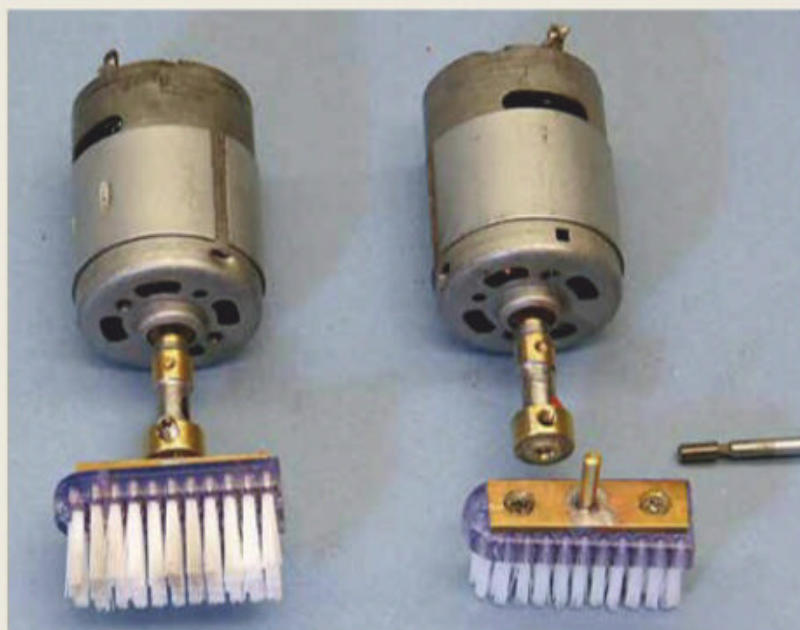
3 The chassis had to be trimmed here and there, but this is straightforward. The opposite end of the chassis was drilled out, to accommodate the loud speaker.



4 Holes were drilled to allow placing the brush motors and the coupling shafts, the latter were made to measure using brass tube offcuts of various diameters.

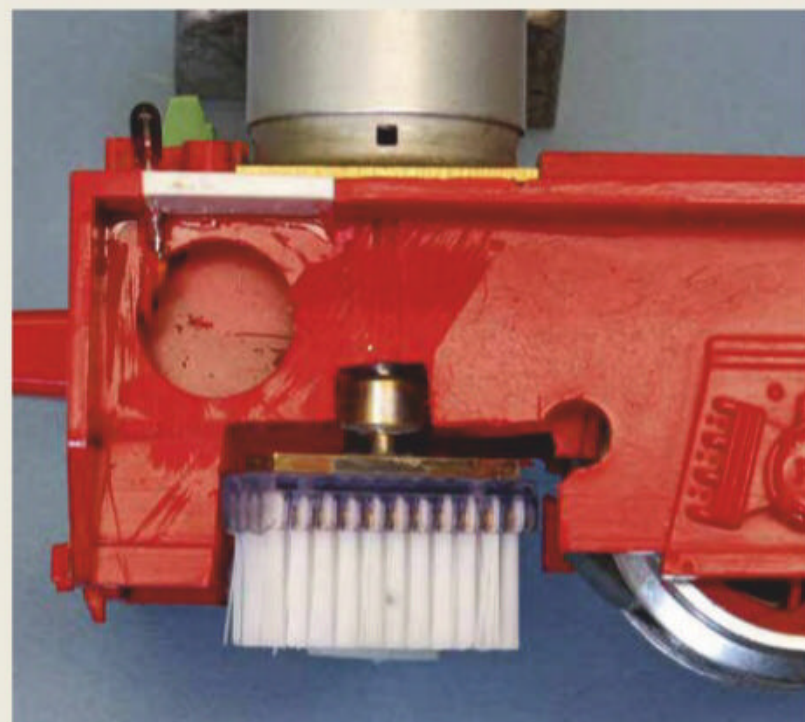
5

To fit both brush motors under the small bonnet, it had to be widened with plastic sheet (Evergreen, 1.5mm thick). This depends of course on the diameter of the motors selected.

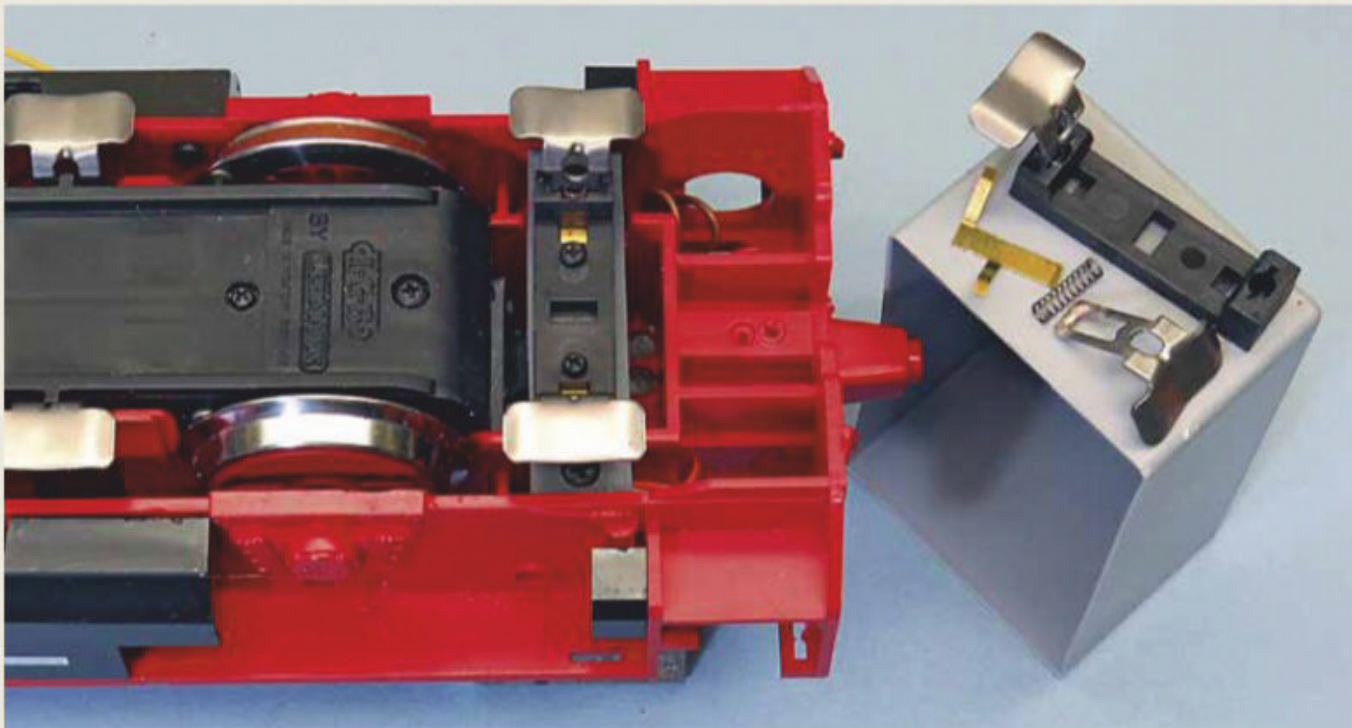


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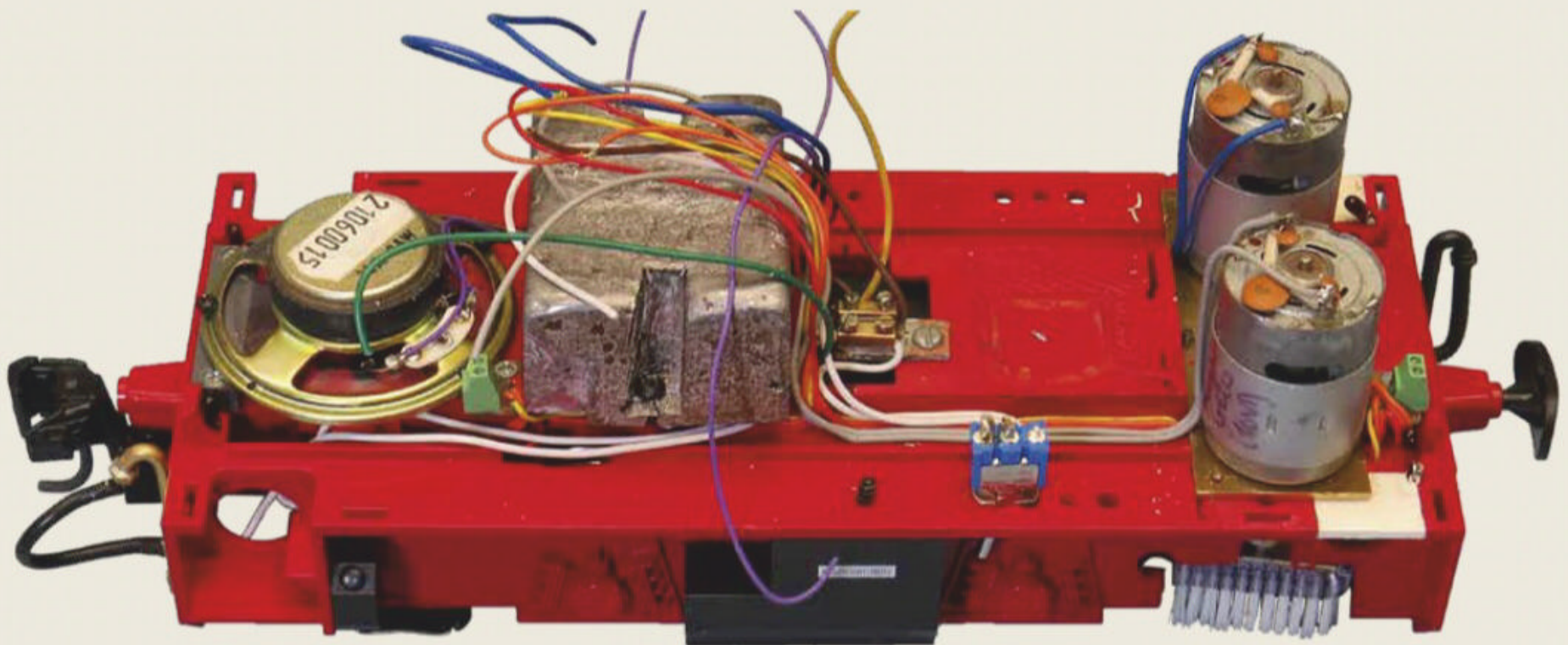
The brushes were made using the hairy part of two hard toothbrushes, fixed to a brass plate with a shaft soldered in the middle; they were fixed to the coupling shafts.



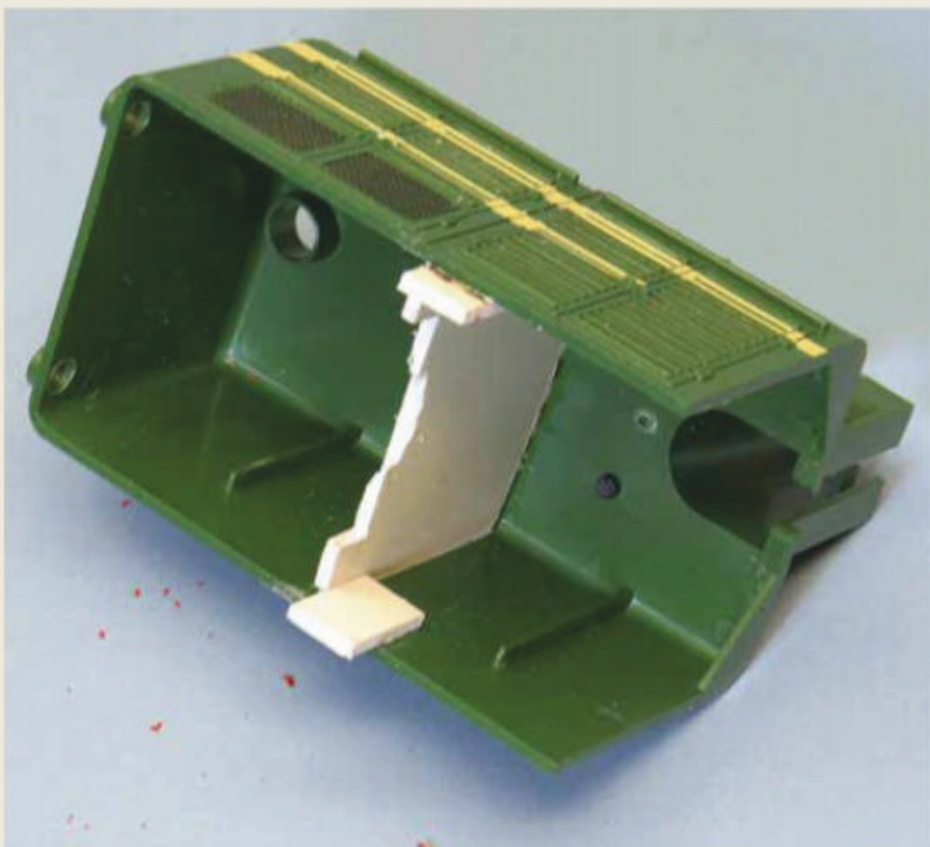
7 Apertures were cut out of the chassis to allow the brushes to rotate and to be fixed to the coupling shafts using a headless M3 hexagon socket screw to ensure good tightening (L'Octant ref. V 894). For appearance's sake, the step was plugged with 2mm thick plastic sheet, and the lower step removed. A red (LGB) micro-lamp is visible, located opposite what was originally a dummy lamp, but which has been drilled out. This will give the machine more life! I added working lights on all four lamps on the bonnets, the white central lamps above the bonnets having been retained. They are all fed by the decoder.



8 To improve the electrical pick-up, two pick-up shoes were added on the large bonnet side, using a shoe bracket similar to that found on the LGB Mogul (Champex-Linden ref. ET2018/34 + /127). Furthermore, to avoid having the springs buckle when the power drawn is too high, flexible wires were soldered directly onto the pick-up shoes.



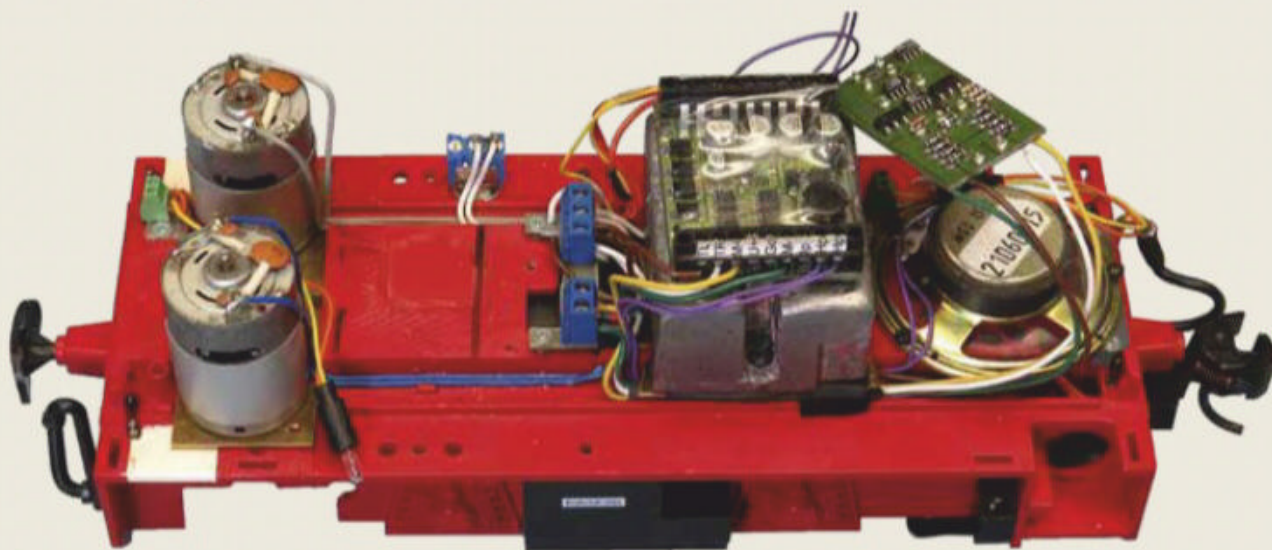
9 The chassis is fitted with a Kadee coupler on the large bonnet end. The top of the chassis is wired to connect all the components to the decoder. A master switch, visible between the weight and the motors, allows for the decoder to be isolated from the track.



10 A lead weight was cast (see *Voie Libre* #17) in a mold made to the proper measurements. A partition was fitted alongside the weight, leaving a sound box for the loud speaker. Two tabs allow the bonnet to be inserted onto the chassis.

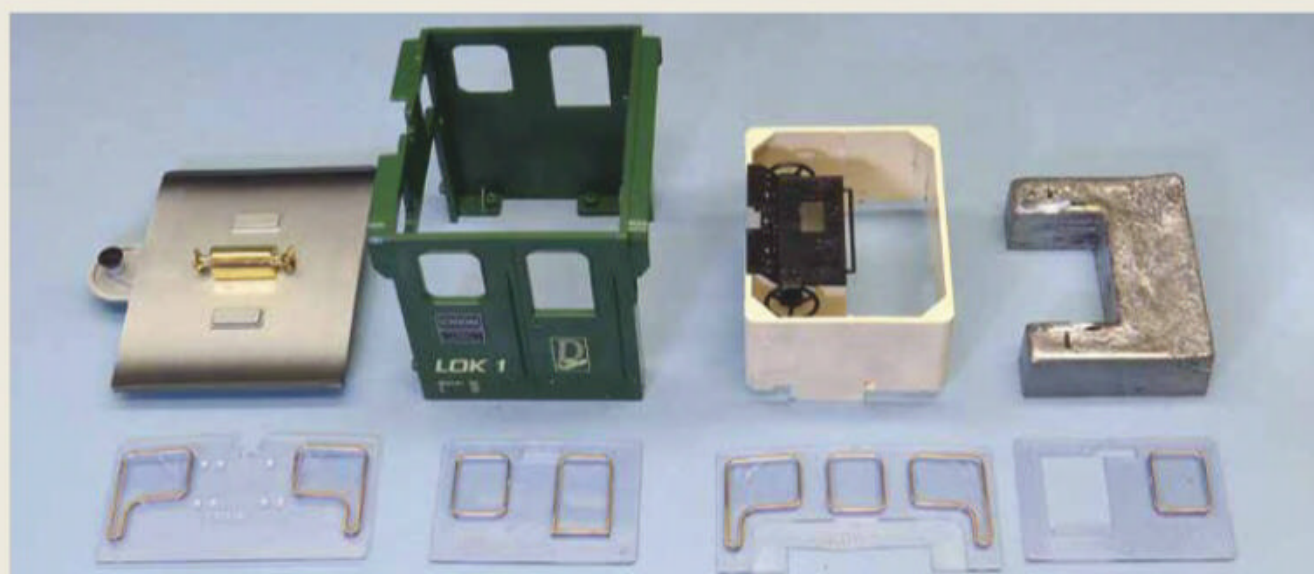


Motive power



This decoder is fed via another switch to allow independent programming of both decoders.

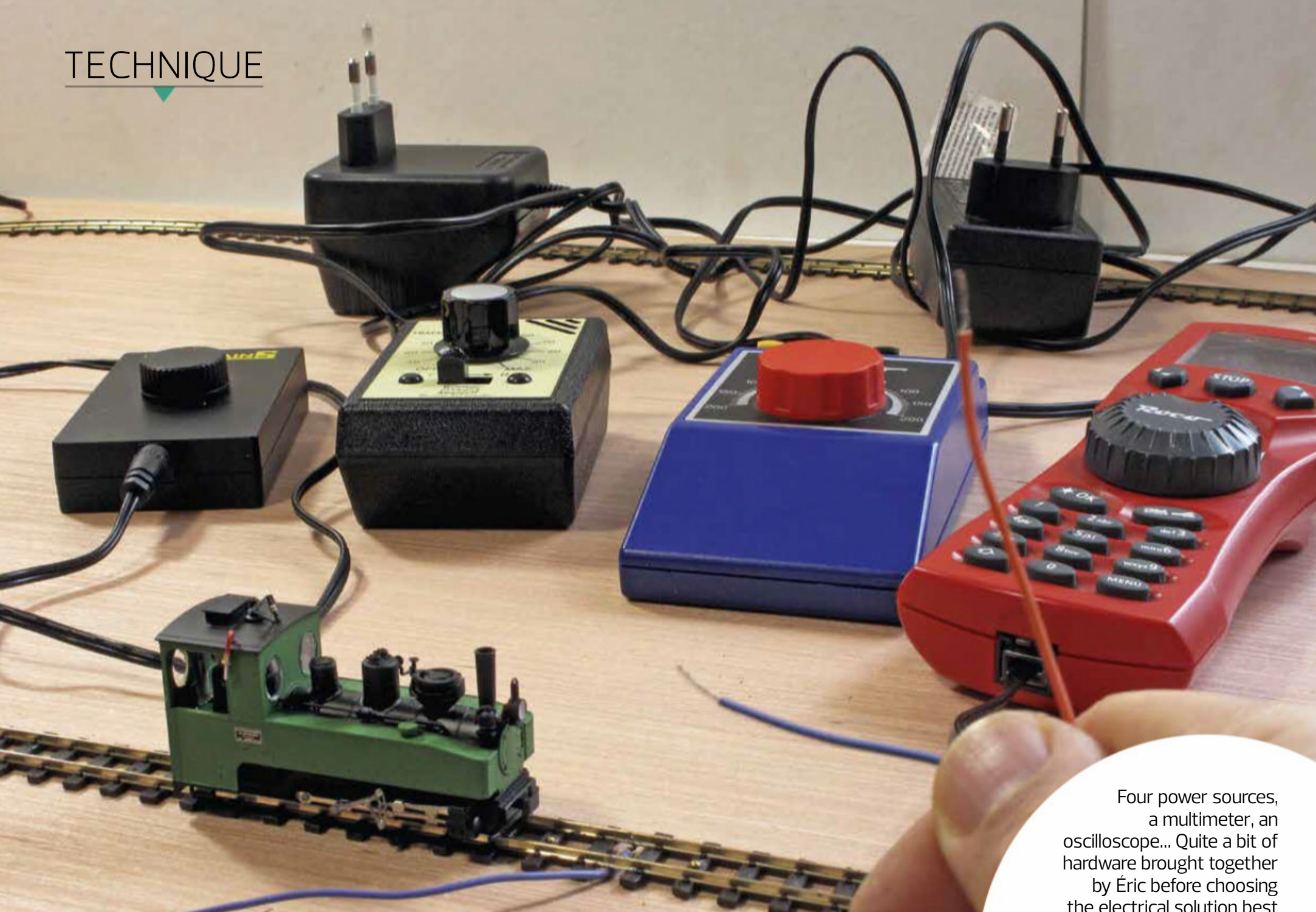
11 I used an ESU LokSound version 3 decoder. Tests feeding the brush motors with a variable LM 317T regulator piloted by the decoder having failed, I found another solution consisting in feeding the brush motors via an old LGB 55021 decoder configured on a different address; this solution is made possible thanks to a functionality of the Massoth navigator consisting in the independent driving of another loco by using the M1 key. I can fine-tune the rotation speed of the brushes while keeping perfect control of the locomotive.



12 To improve the adhesion of the locomotive – always necessary with this type of machine – I made a second weight and fitted it into the cab: it is visible to the right on the picture of the various components. The total mass of both weights is 1500g.



13 Everything then had to be painted. To remain faithful to the livery of the LGB cleaning unit, I painted the chassis in Humbrol 85 black and the body in a yellow shade blending equal parts of Humbrol 8 and 99.



Four power sources, a multimeter, an oscilloscope... Quite a bit of hardware brought together by Éric before choosing the electrical solution best suited to his expectations!

Power to the layout

Which is the best power source for your layout and motive power, to take into account any on-board electronics and recent technological developments? *Voie Libre* describes some of the solutions available on the market.

Text and illustrations (unless otherwise mentioned): Éric Fresné

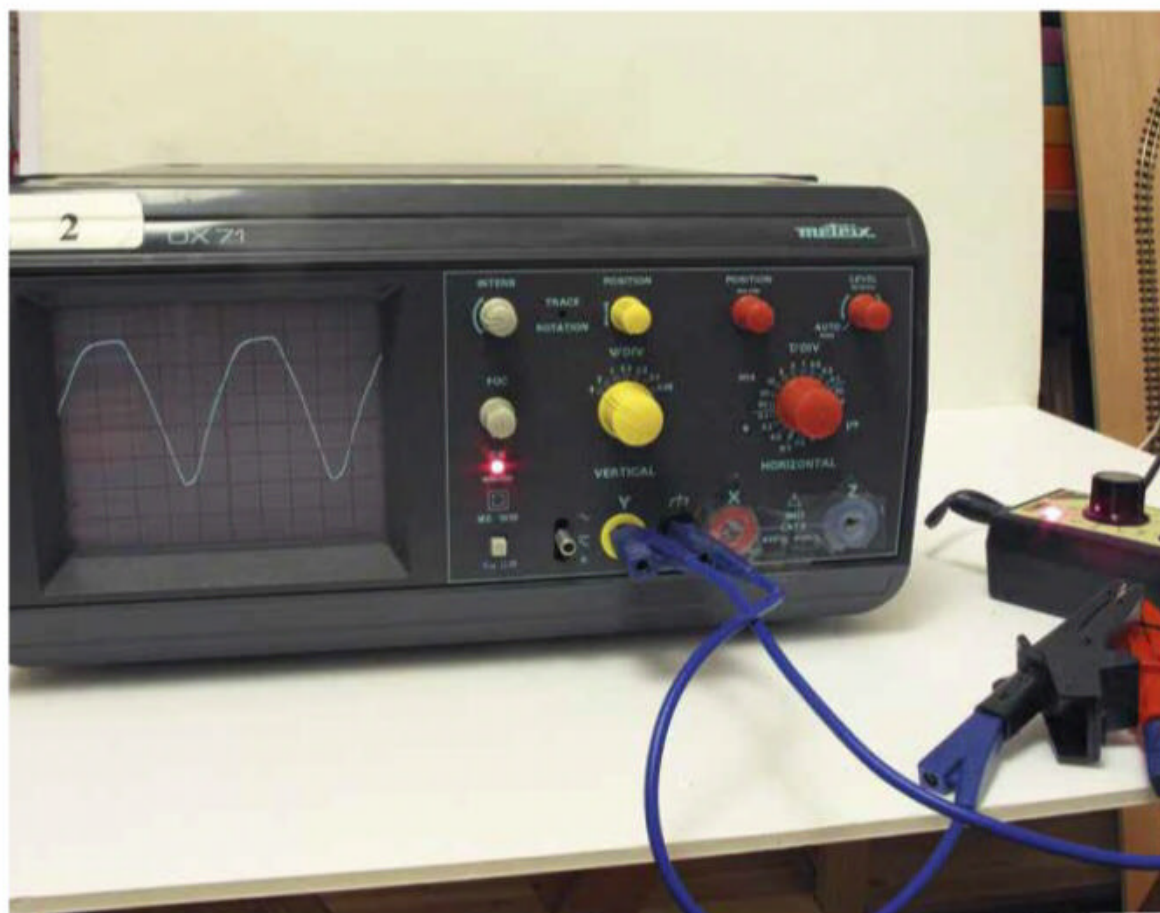
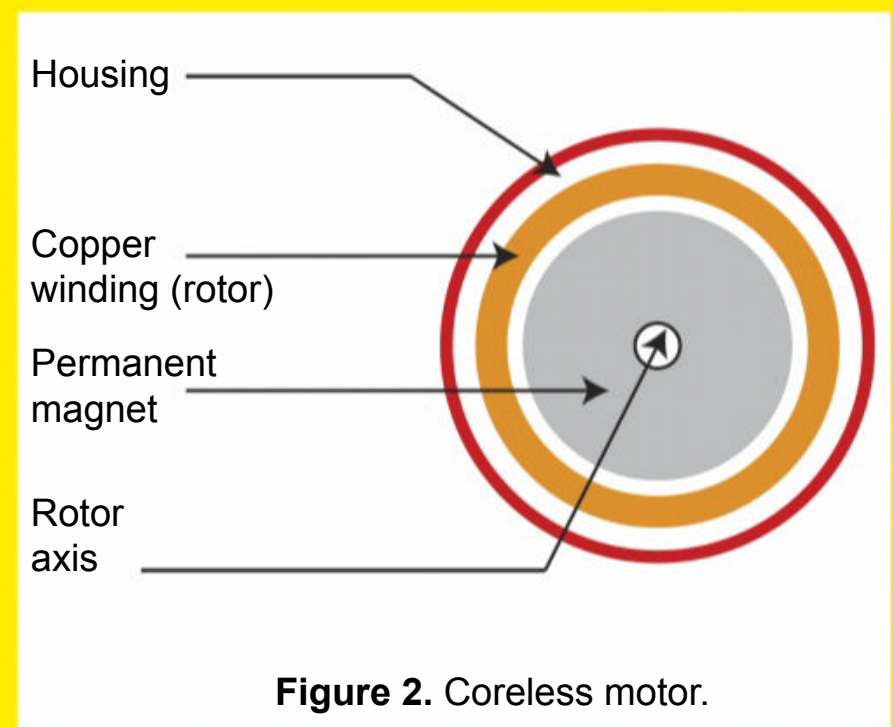
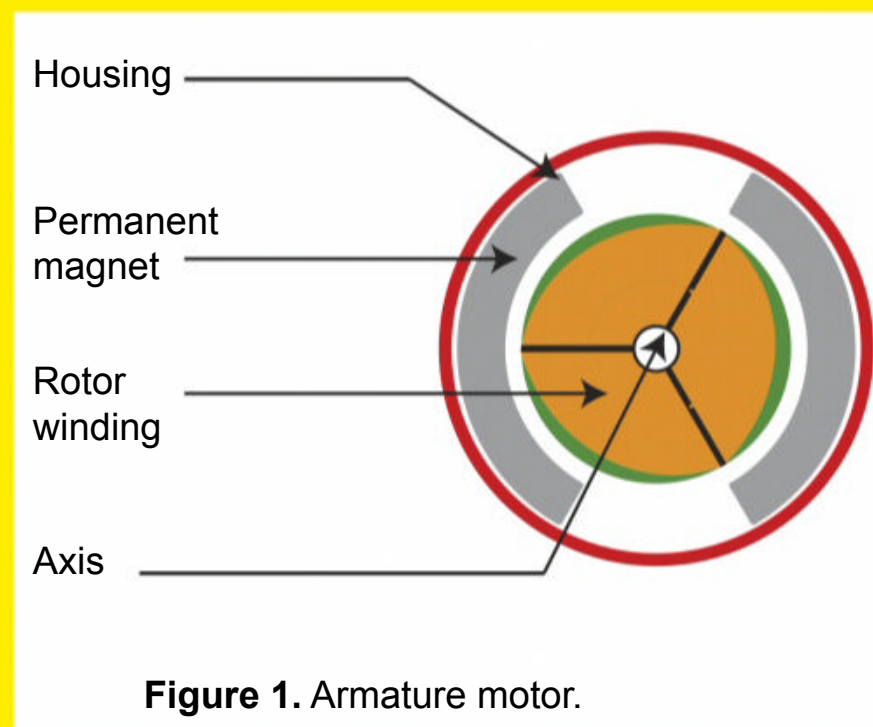
It was the release of the Bachmann 4-6-0 in 00-9 that triggered an alarm. On the Voie Libre forum, a few crestfallen enthusiasts reported that the electronics on their engines had burnt-out after just a short run on their respective layouts. During the summer of 2018, Bachmann Europe issued a press release warning against the use of feedback power sources with its models.

The cause of all this trouble? On the one hand, using coreless motors paired with an electronic board designed for DCC. On the other hand, ■■■

THERE IS MANY A MOTOR!

The electric motors fitted to our models don't all operate on the same principle. The standard armature motor is well known: it features a copper-wound iron mass, electrically fed, which is pushed away successively by the poles of a magnet, setting it rotating (**figure 1**). For many years, coreless motors have become widespread. In this

latter case, the copper winding isn't carried by an iron core, but is a self-supporting cage that rotates around the magnet (**figure 2**). While more efficient than armature motors, in particular at low voltages, coreless motors are fragile and cannot withstand high frequency pulsating currents.

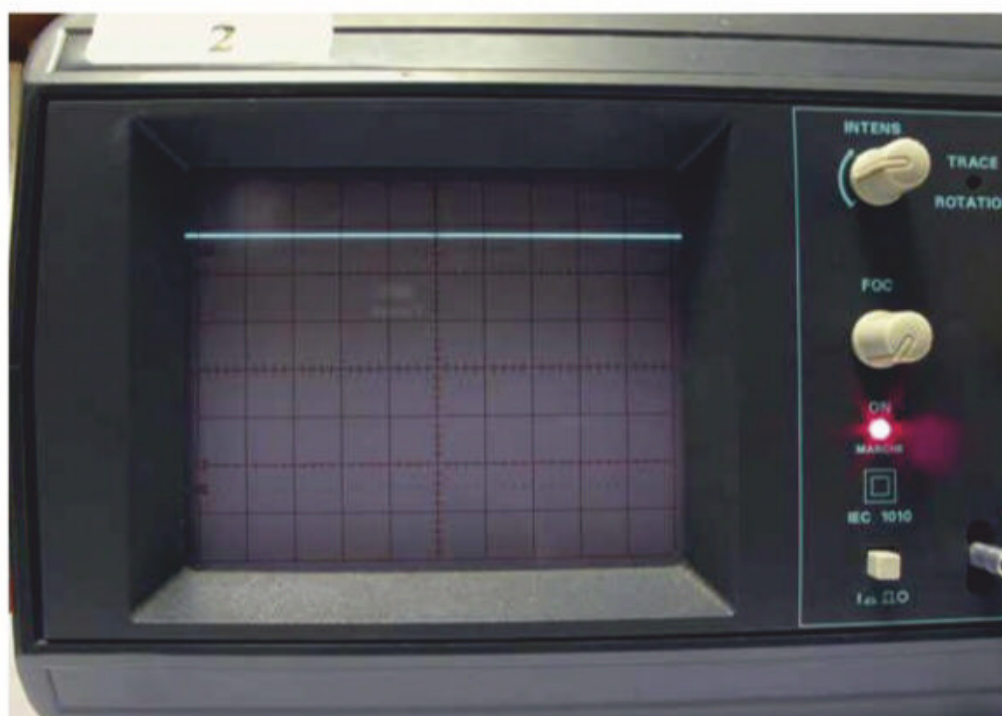


The outline of the current supplied by each source has been measured using an oscilloscope.

■■■ power sources providing DC current, no doubt, but in the form of an elaborate electronic signal. Taking these observations into account, I gathered a few power sources to proceed with a range of tests. The idea was to determine, for each of them, the nature and voltage of the power supplied. The sources selected are small units designed to supply one single engine at a time, or a maximum of two, in N and H0 scales, or in 0 scale narrow gauge. All of them are supplied with a wall-mounted transformer and can be used either as a walkabout controller, or fixed to the front of the layout. The traction tests were carried out on an oval of Peco 9mm gauge Setrack. I ran a MinitrainS Brigadelok engine straight out of the box. An oscilloscope was used to visualize the outline of the current generated by each source. Where possible, I also determined the voltage curves using a direct reading multimeter. Finally, for good measure, I opened all the power units to ascertain the nature of their main components and hence understand their general “philosophy”.



The electronics of the Roco source are quite simple. They are built around a LM317T rectifier fixed to a copper plate that doubles as a radiator.

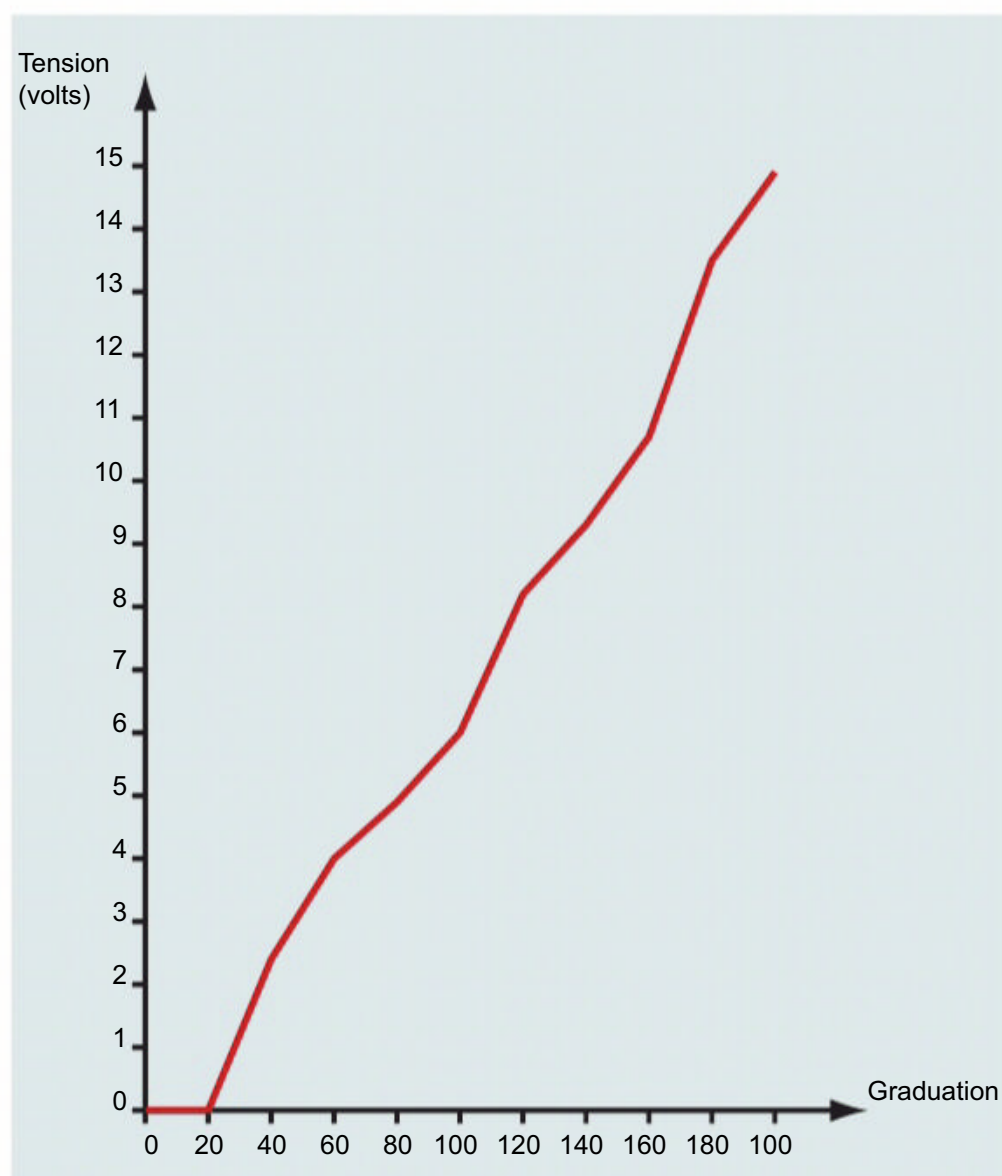


The oscilloscope shows that the Roco source delivers DC.

THE ROCO REGULATOR

Also sold under the Fleischmann brand (green box), this small regulator appears in all the analogue starter sets of both brands. It can also be bought separately, priced at ca. 75€ under the references 10788 (Roco) or 6720 (Fleischmann). It is supplied with a wall-mounted transformer supplying 18V DC. Opening the housing shows a fairly simple electronic system, built around an LM317T* rectifier. The control knob, with the zero in central position, works rotating paths connected to a network of resistors that provide a variable voltage to the tracks (yellow terminals). The regulator also features AC sockets for track accessories (black and white terminals). The oscilloscope displays a fine horizontal line. The current supplied is therefore pure DC. A second series of measurements, carried out with the multimeter, gives a good idea of the voltage variation curve. It's a perfectly regular straight line, ensuring a smooth acceleration of our models. The minimum speed registered with a light engine and on a straight stretch is 1.04 m/min under 2.4V. ■■■

* Find out more about the LM317T device in the article "Build your own variable power source" in this same issue.

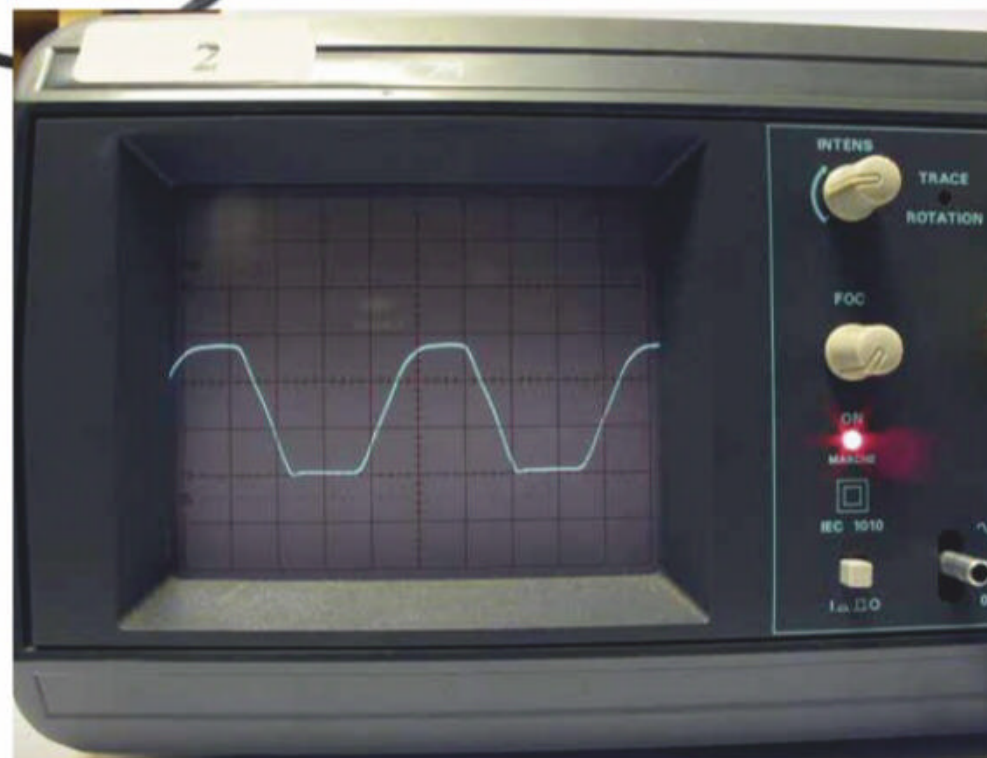


The voltage of the Roco regulator evolves in a perfectly linear way.

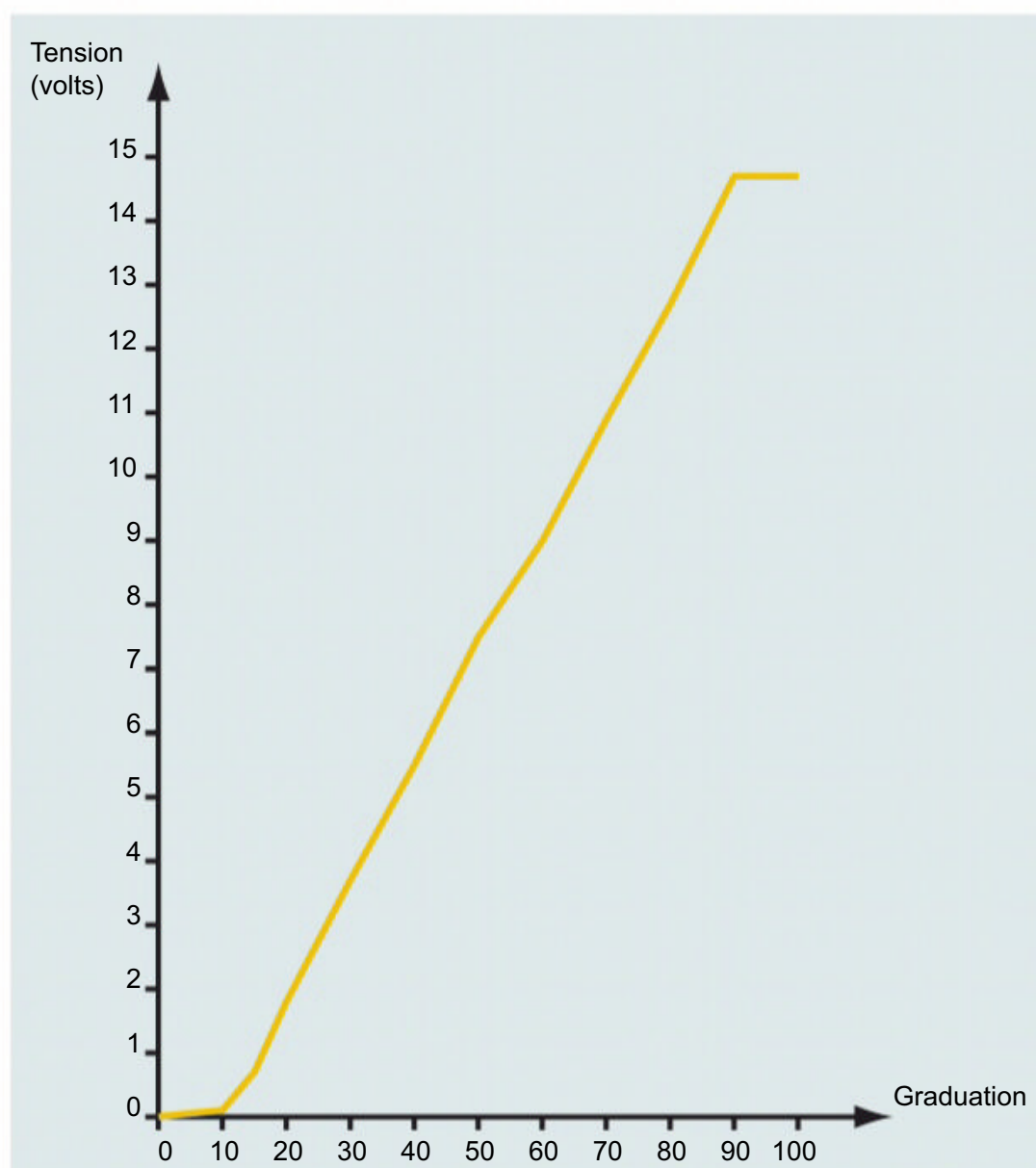
TECHNIQUE



The outside of the Gaugemaster Combi shows more than the inside: a potentiometer and a 3-way switch. Upon opening the casing, all that can be seen is an LM317T device concealed under its radiator.



The Combi supplies rectified current, akin to DC.



The voltage curve of the Combi is also a rising straight line.

THE GAUGEMASTER COMBI

Designed almost 40 years ago, the Gaugemaster range is well known and well-liked by both British and continental enthusiasts. The Combi model is the latest-born. Actually, it calls on the architecture of the brand's W hand-held controller, but is supplied with a wall-mounted transformer (18V AC). It also features a power outlet for accessories. For £49.95 (ca. 60€), the GMC-COMBI-EU reference is supplied with a transformer adapted to continental sockets.

Like the Roco controller, the Combi current is rectified by a LM317T unit. However, because of manufacturing secrets, opening up the housing doesn't reveal very much more... Voltage variation is obtained via a rotating potentiometer, and the direction of the current by a 3-position switch (forward/stop/reverse). The oscilloscope shows rectified current with variable voltage, whose signal has a frequency of roughly 100Hz. It is perceived by an electric motor as DC voltage and has been recognized as such by my multimeter. The voltage curve shows linear progression with a small final plateau at 14.5V. In the same testing conditions, the lowest speed of my Brigadelok was 0.85 m/min under 1.8V.

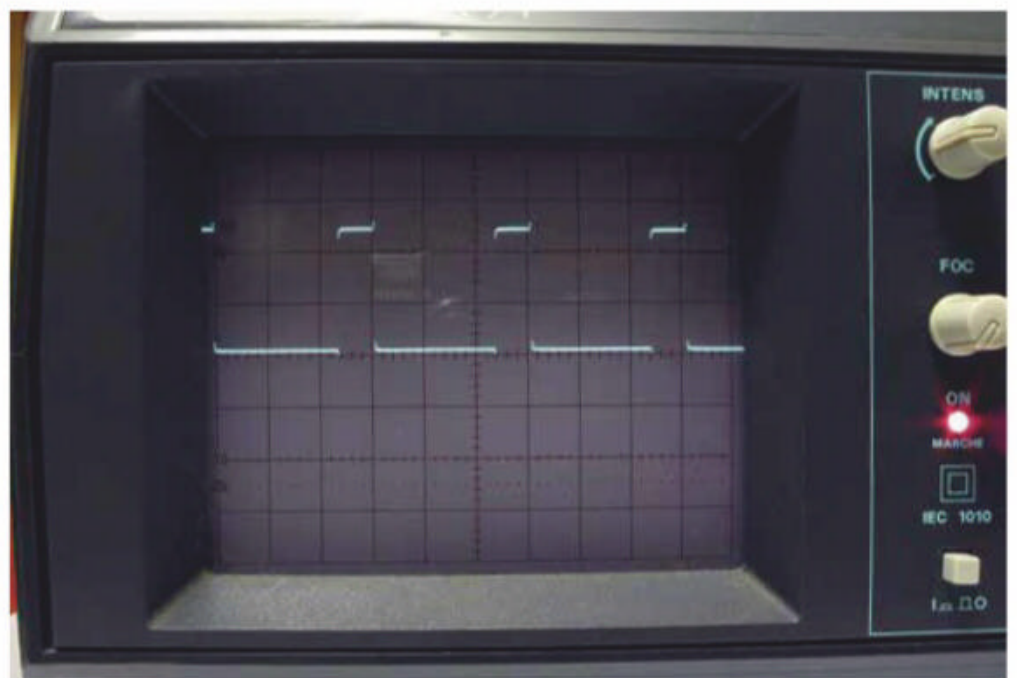


The MinitrainS source is minimalist in appearance, with no scale nor marked zero point. The electronic board is a bit more complex than competitors' productions.

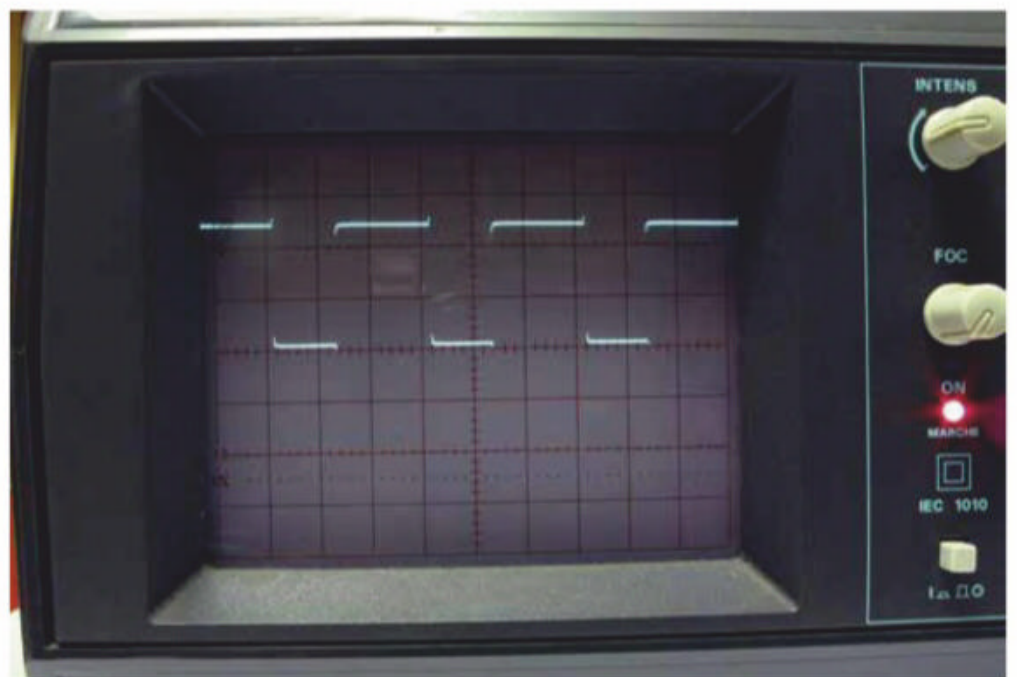
THE MINITRAINS CONTROLLER

Released at the same time as the first track set branded MinitrainS, this manufacturer's controller differs significantly from those produced by competitors. First by its appearance: a very minimalistic black box, supplied with a 12V DC transformer. There is no outlet for accessories, and two pressure connectors are provided to which the supply wires are fixed. It is priced at 65€ under reference 9200. If you take a peek inside the box, you will discover micro-processors. Their presence explains the nature of the current supplied. Measurements with the multimeter shows a continuous 12V voltage, irrespective of the position of the control knob. The oscilloscope actually shows a very high frequency signal (roughly 15 KHz) consisting of a plateau at 12V followed by a return to zero. It is the relative duration of the two phases which varies the rotation speed of the locomotive's motor. The shorter the plateau, the more slowly the locomotive will run. This type of power source enables armature motors to be easily "unstuck" and normally produces good slow running.

In practice, I timed my MinitrainS 0-8-0 at 1m/min. On the other hand, such a pulsated current power supply has a major drawback: it is totally incompatible with most on-board electronics as well as with coreless motors, in which it induces more vibration than rotation. At best, you will observe that your engine runs erratically; in the worst case, the motor will be irretrievably burnt-out. ■■■



If the signal of the MinitrainS controller is recorded at low speed, the voltage spike lasting less than two milli-seconds can easily be observed.



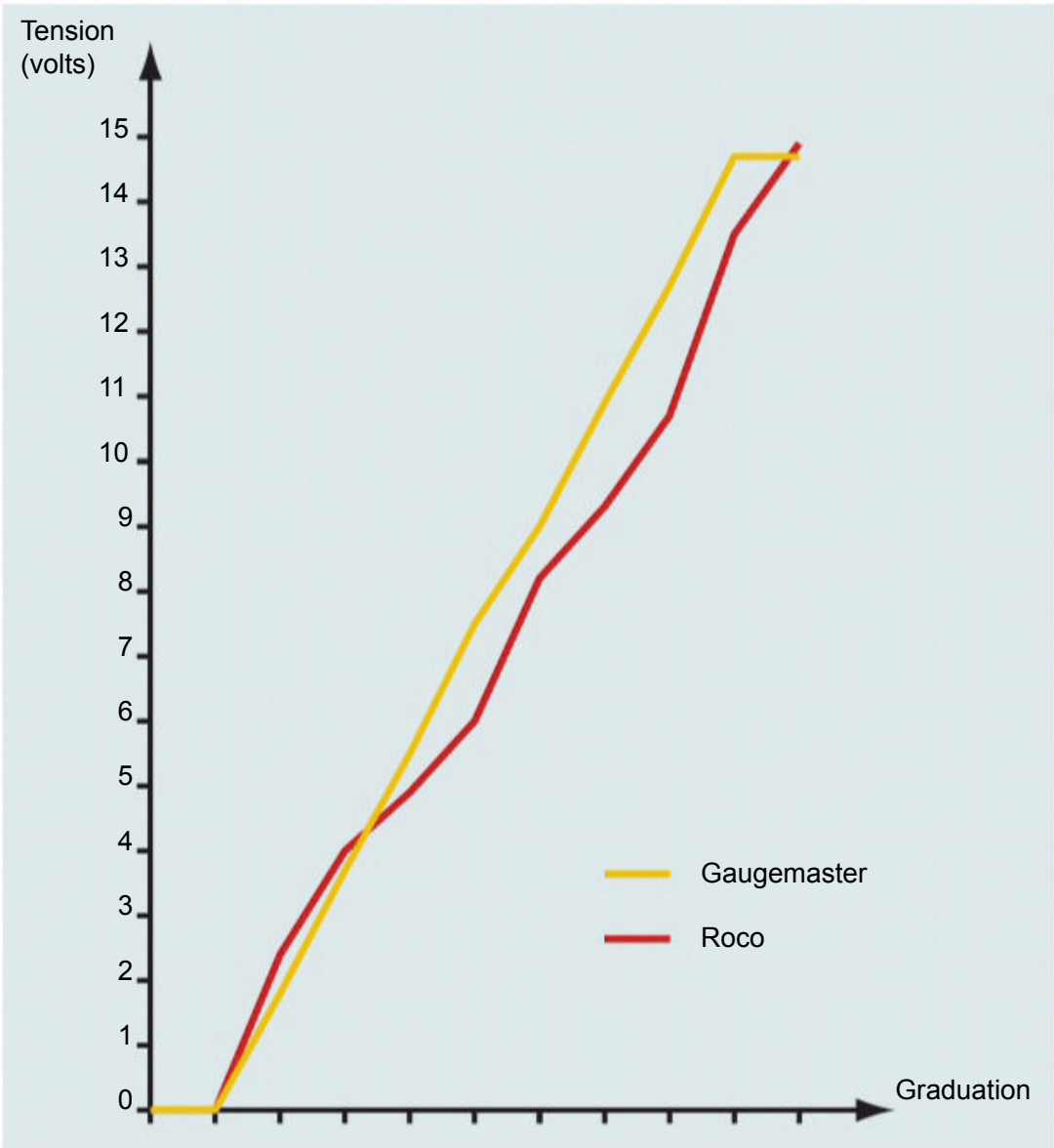
At a higher speed, the voltage remains the same, but the plateau lasts longer.

Compatibility between power source and locomotives

Locomotive \ Power source	Locomotive Egger-Bahn Jouef	Locomotive Minitrains	030 T HF110C ROCO	Locotracteur ROCO	230 T Bachmann
	Armature motor	Armature motor	Armature motor	Armature motor	Coreless motor
ROCO	Bad slow running	Acceptable slow running	Excellent slow running	Acceptable slow running	Excellent slow running
Gaugemaster	Bad slow running	Excellent slow running	Excellent slow running	Excellent slow running	Excellent slow running
MinitrainS	Acceptable slow running	Acceptable slow running	Excellent slow running	Acceptable slow running	*
Decoder fitted at the power source outlet	Excellent slow running	Excellent slow running	Excellent slow running	Excellent slow running	**

* Total incompatibility between a pulsated current source and a coreless motor!
** Compatible subject to removal of the locomotive's electronic board.

Comparison between the voltage curves of the Roco and the Combi.



PILOTING A SMALL LAYOUT IN DCC

Digital isn't necessarily the first thing one thinks of for operating a small layout, especially when the small size of narrow gauge engines restricts the fitting of a decoder. However, there

is a simple and convenient solution for using DCC on a small layout with any type of motive power. The trick consists in interposing the decoder between the central unit output and the track. In this way, the DCC signal is transmitted to the locomotive via the rails, just like a good old analogue DC current.

In this configuration, the accessories outputs of the decoder can even be used to bring life to the layout. Lighting or a small automaton can thus be controlled. Franck Combe, on his Sidi Fontana layout, even managed to install sound on his layout. To do so, he used two DCC Sound decoders fed via a bipolar switch and connected to a loud speaker.

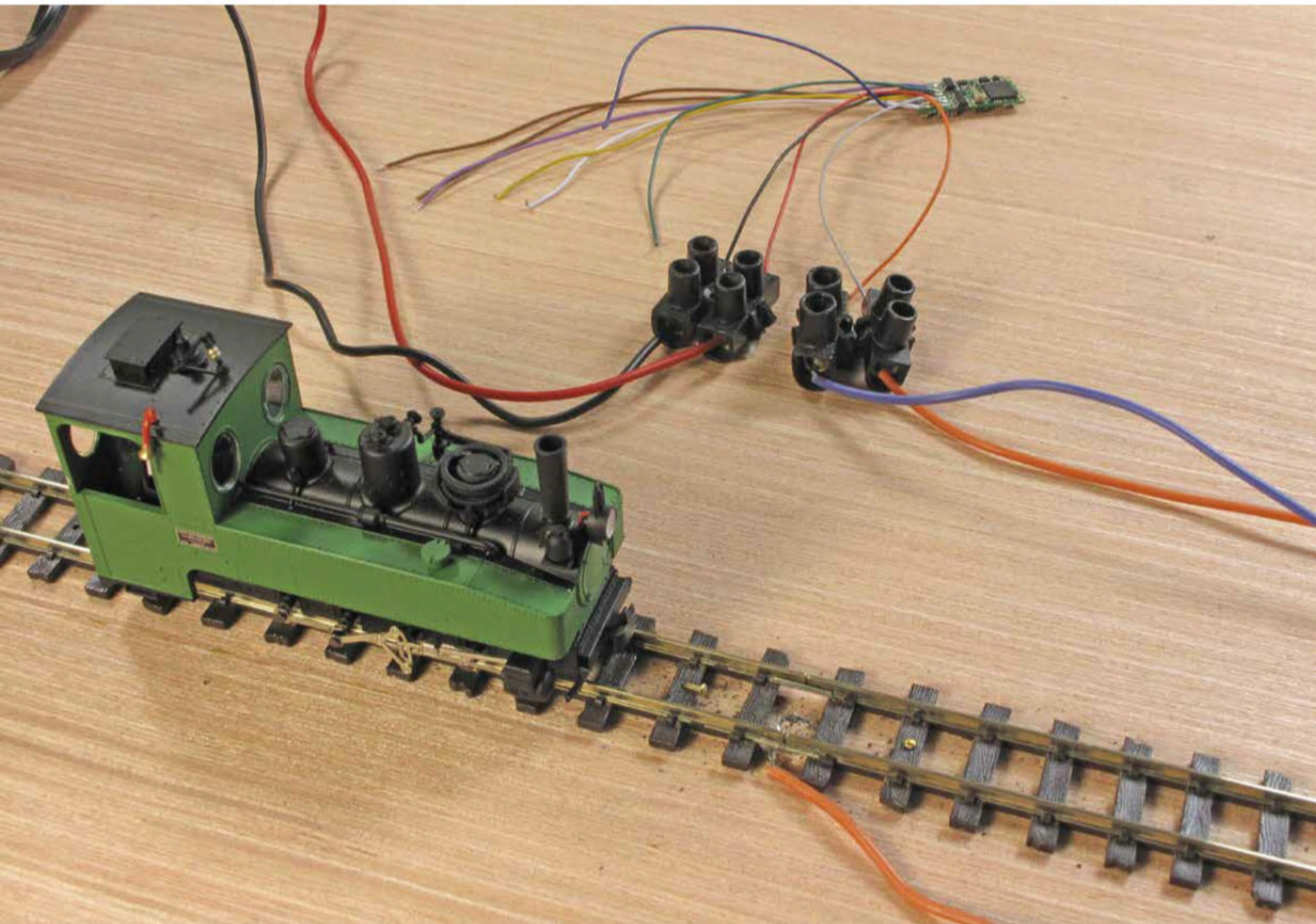
In this way, he broadcasts "steam" or "internal combustion" sounds depending on the type of engine that is running. Nonetheless, this solution also has its drawbacks. A digital starter set will cost from 170 to 400€, depending on the brands. What's more, an engine designed to be fitted with a decoder, such as the Bachmann 4-6-0 T in 00-9, will have to have its electronics removed before being put into service. With a basic decoder connected to a Roco Multimaus Roco, my 0-8-0 T ran at 0.88m/min.

TIME TO CHOOSE

To conclude my test campaign, I extracted a large number of locomotives from their boxes and ran them round the circuit. The tables in this article summarize the main data I observed. Their purpose is to provide you with objective elements when you have to choose. Unless you prefer to build your own regulator...

Table comparing the features of the various power sources

Type of power source	Price	Type of current	Minimum speed
ROCO	75€	DC	1,04 m/min
Gaugemaster	60€	Rectified	0,85 m/min
MinitrainS	62€	Intermittent	1 m/min
Décodeur en tête de réseau	From 170€	Complex signal	0,88 m/min



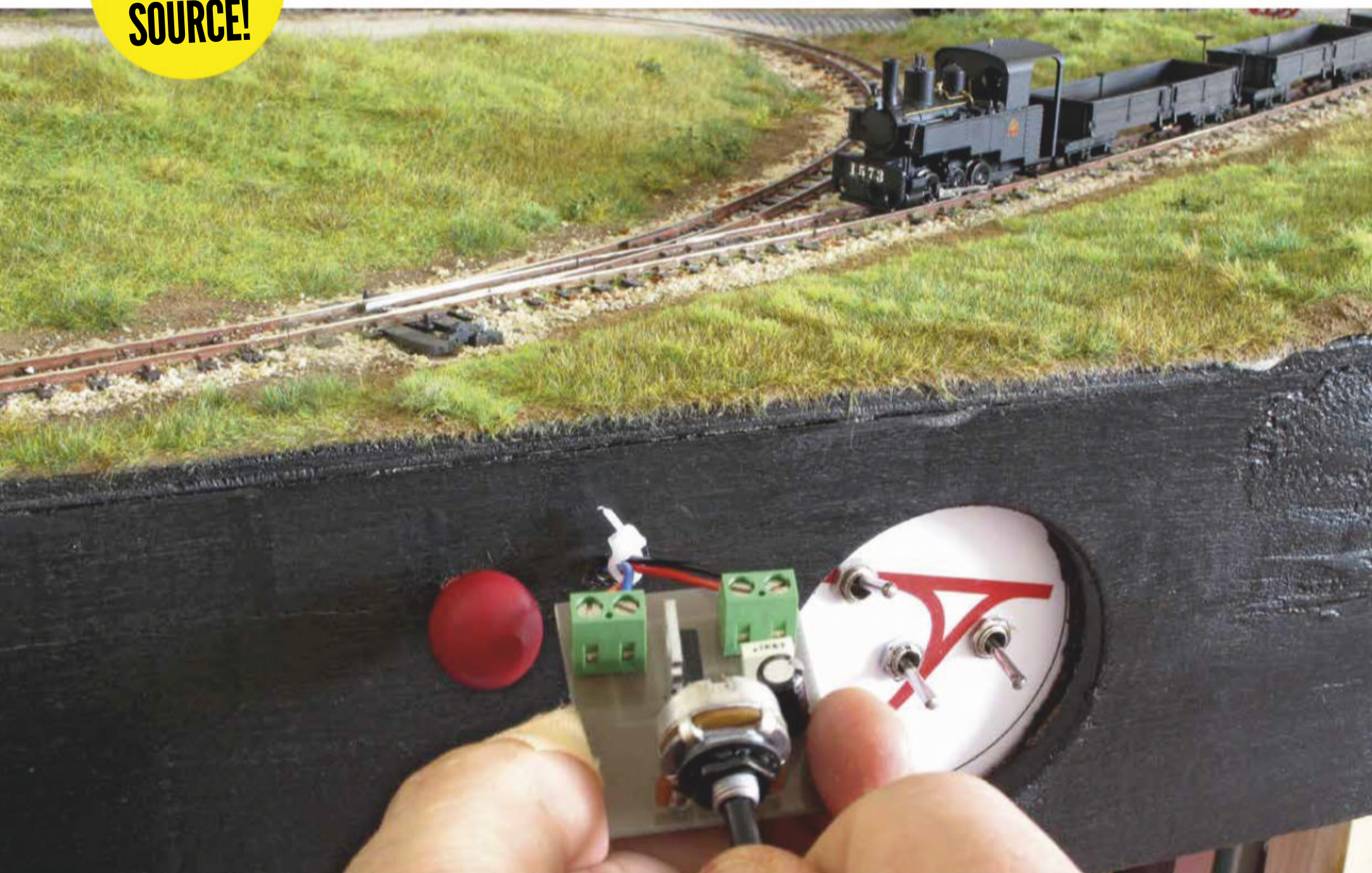
To supply the whole layout, the decoder is fitted between the power output of the central unit and the track feed. The black and red wires go to the central unit, the orange and grey ones to the track. In short, some conductive material is simply added between the decoder and the motor of the locomotive...

Build YOUR OWN VARIABLE POWER SOURCE

How about building your own power source, rather than buying one off-the-shelf? We asked Jean-Pierre Schenfele, the technology specialist of the *Rail Miniature Castrais* railway modelling club, to describe the unit he designed for the club's requirements. Cost: less than 15 euros!

Text and illustrations: Jean-Pierre Schenfele

**BUILD YOUR
POWER
SOURCE!**



A simple and affordable design to power your layout.

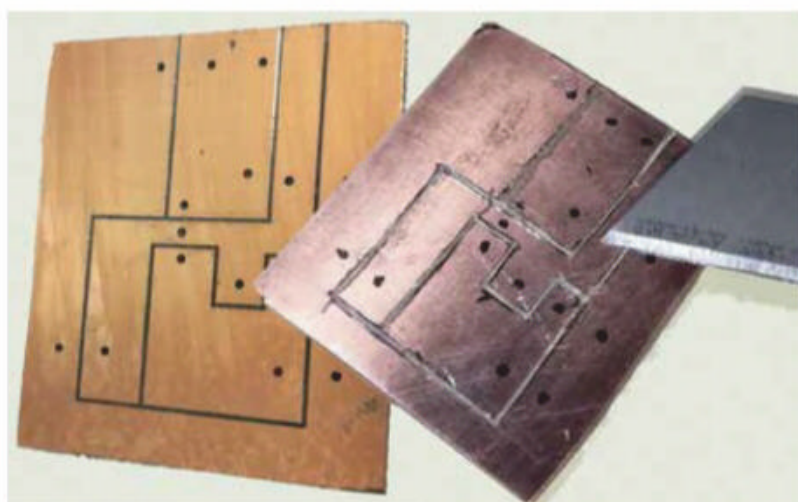
Obtaining a simple and affordable variable regulator for a small layout is fairly straightforward if you start from an integrated circuit, the LM317. This is a very widespread electronic component. It's an adjustable linear voltage regulator, able therefore to deliver an accurate voltage depending on the resistors with which it is combined. This component is perfectly suited to our requirements. It can accommodate an intensity of up to 1.5 Amps. It features internal protection against short circuits as well as an automatic cut-off in the event of over-heating, but a small radiator can easily be added to it. Many combinations based on an LM317 are available. The one I describe here calls on just a handful of components: a resistor, a potentiometer and two capacitors.

AN ELECTRONIC CIRCUIT BOARD, TWO TRACES FOR TWO METHODS

The circuit board is a 40 x 35mm single-sided board. For this project, I opted to fabricate it "British-style" using equipotential fields (**figure 1**). I no longer use chemicals, even for complex circuitry, and I'm lucky to have access to a digitally-controlled milling machine. This ensures accuracy and reproducibility! After having cut out the epoxy sheet, using for example a hacksaw, you can transfer the drawing and the drill-outs by tracing or copying them using a permanent felt-tip. Take care, the spacing of the drill-outs must be accurate for components such as the LM317 and the potentiometer. For those who are keen on traditional etching, **figure 2** shows a traditional trace.

The necessary supplies

35 x 40 mm
single-sided copper-clad **epoxy board**
1 LM317T **rectifier**
14.7 k Ω linear **potentiometer**
1220 Ω **resistor**
11 μ F **capacitor**
1100 nF **capacitor**
2 screw **terminals**
1 bipolar
ON/OFF/ON **switch**
150 x 50mm **metal sheet**
(copper or aluminium)
Multi-strand electric wire for wiring
1 **knob** for the potentiometer



1 To engrave the separations between tracks, you can use a very fine cutting disk or scribe the surface several times with the blade of a hobby knife. Drill out all holes to 0.8mm diam., the standard width of the pins on most usual electronic components.



2 To check the absence of electrical continuity between the various tracks, a multimeter is a very useful tool. Place the dial on the ohmmeter position. Position the two tips on two adjacent tracks. The device must show no value on the right-hand side of the screen.

It is essential to carefully check the absence of electrical continuity between the various tracks.

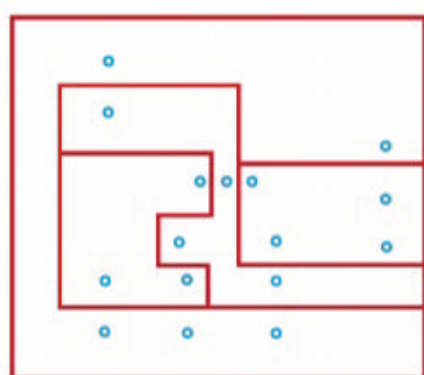


Figure 1. The "British" trace.

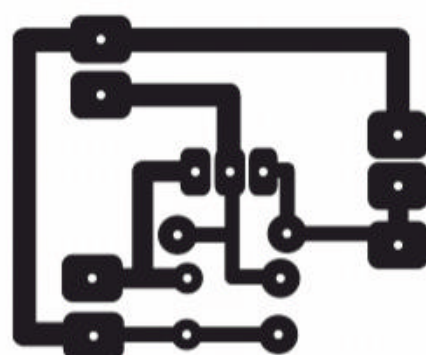


Figure 2. The standard trace.

Caption

1: LM317T rectifier
2: Potentiometer
3: 1 μ F capacitor (polarized)

4: 1 nF capacitor
5: Resistor
6: Input terminal
7: Output terminal

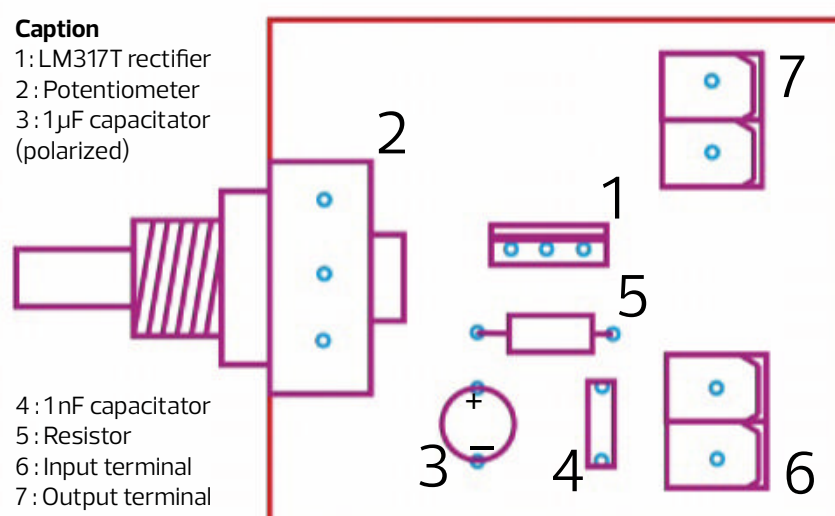
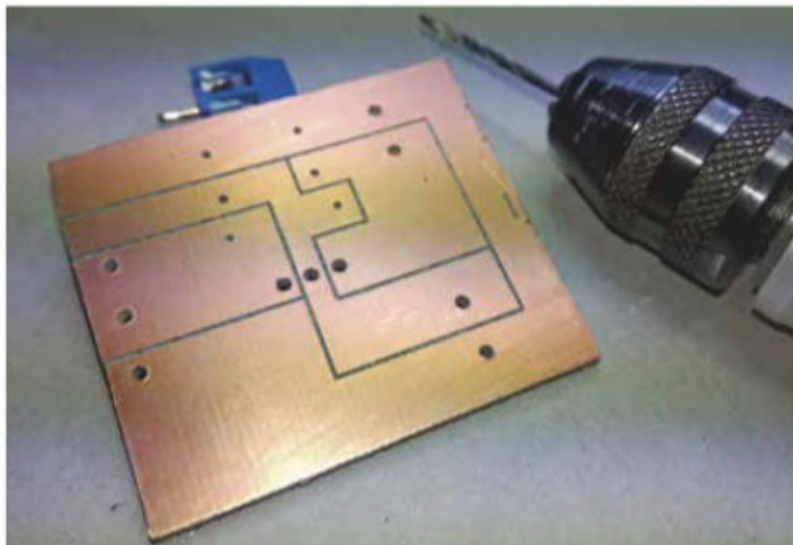


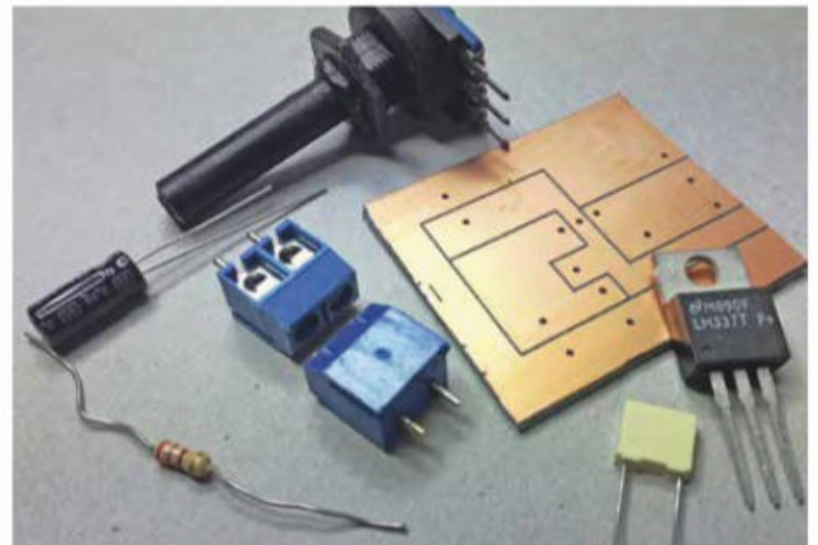
Figure 3. Component layout drawing, seen on the resin side of the board.

The necessary tools

- A soldering iron
- Tin/lead soldering wire
- A multimeter
- Wire cutters

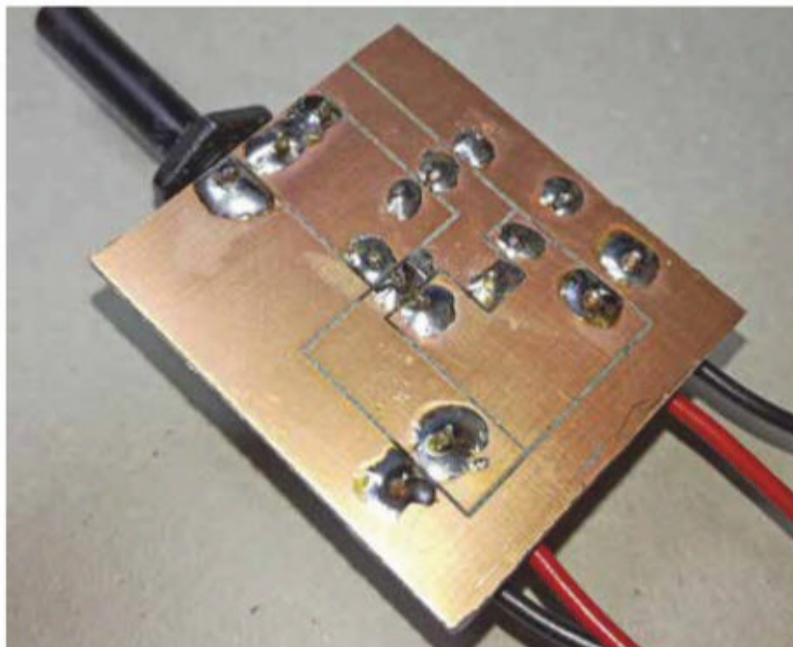


3 For some specific components (potentiometer, feed wires, terminals (optional), the holes will have to be drilled out to a bigger diameter 1, or even 1.2mm.



4 The overall range of components needed for the project is really restricted. They are put in place, on the non-copper clad side of the board, following scrupulously the drawing in **figure 3**. Be careful how the LM317 and the C2 capacitor are fitted (the minus side displays a light-shaded strip)!

Before soldering the components, clean the copper-clad surface thoroughly with a rubber. It must be nice and shiny.



5 For soldering, opt preferably for a blend of tin (60 %) and lead (30 %) rather than for soldering wire which is 99.3% tin and 0.7% copper. The temperature being lower, the components will suffer less and the stripping core of this type of wire is more efficient (Edit. note: while being acid-free). Heat both elements (pin and track) by pressing down slightly, then approach the tin wire where the tip of the iron, pin and track meet. Two seconds are enough. The soldering joint must be truly shiny.

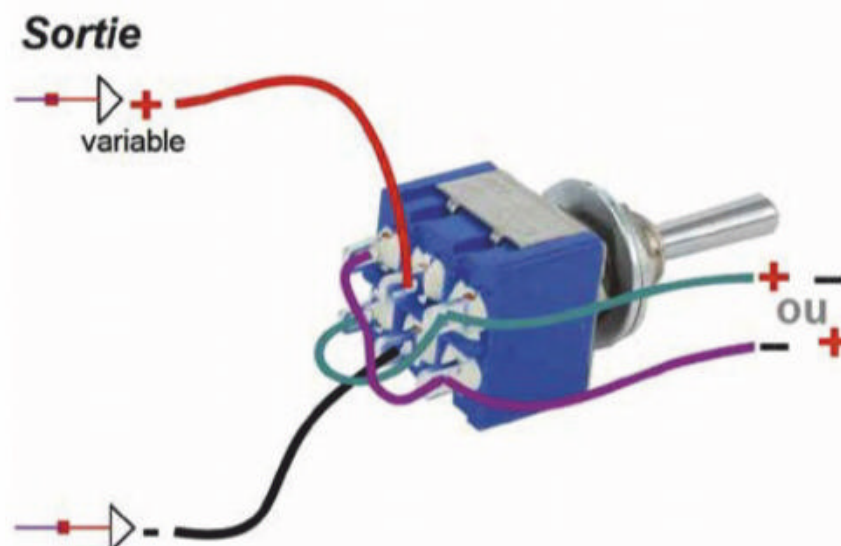


6 This type of assembly can be easily mounted on a control panel or on the front fascia of a small layout. Simply drill out a hole the same diameter as the thread of the potentiometer. You can also fit into a small recycled housing.

*Caution:
this assembly must
be powered by
a DC source!*

7

Adding a bipolar switch will enable you to change the polarity of the track. Choose an « ON/OFF/ON » switch, the OFF in central position allowing for trains to be stopped on the track supplied by your source.





Grisette or life in the 19th century

Rising up to the Editorial Team's challenge, Nicolas Novel-Catin has imagined everything that the mystery photo published in VL 100 didn't show. Here is his layout project... an unusual one.



The photograph published for the challenge of *Voie Libre* 100.

Text: **Nicolas Novel-Catin**

Illustrations:

François Fontana based on input from Nicolas

In Issue 100, we suggested you imagine how a photo of Carnac station, found in the Brittany Museum archives, could inspire you. A fine story has come our way. We received a text and a proposed illustration which, once edited, produced the layout project described here. Many thanks to Nicolas for answering the call!

AN ATTRACTION...

A leisure park in Brittany had a weird idea for a new attraction, based on the idea of allowing its visitors to live an extraordinary experience: returning to the time of their great-grandparents. In those days, of course, everything was in black and white! Therefore, in one part of the park, a period village was re-created, including its church, its shopping street and naturally, its steam train... And to become fully immersed in the theme, visitors must dress in grey (suits, dresses, hats), while a makeup workshop gives them the appearance of their ancestors, with mustaches, side-burns, wigs, as well as... grey blush!

They are then allowed to discover the village and board the little train.

The company spared no expense for this cinema set, but did have some trouble finding the rolling stock for the railway. So the train is a bit of a hotch-potch, as can be seen on the photo: German locomotive, French carriage... But don't be mistaken: it all runs on electricity! Can you glimpse the slightest wisp of black smoke coming out of the funnel?

This new attraction was named *Grisette*, an old-fashioned French word describing young urban working-class women, sometimes considered as being of loose morals. Naturally, the name also alludes to the special world in which visitors are immersed.

FOR AN H0-9 LAYOUT

This new tourist railway is off the beaten track, as it were, and can easily be built in H0-9 with very motley stock (MinitrainS, BCF, Jellymodels, etc.) and a reproduction of all the attractions with their garish colours and bright lights, while the small village consists entirely of 50 shades of grey...

When building this layout, emphasize the contrasts: a village with rickety and lop-sided houses, rubbish-strewn streets (Eugène Poubelle, Prefect of Paris (1837-1907) had not yet made dustbins compulsory in cities), stray dogs, essential shops, etc. Everywhere else, the visitors can enjoy the attractions found in the Faller catalogue (Ferris wheel, merry-go-rounds, gondolas, showmen, etc.) lit up by a thousand LEDs. Two trains pass on the loop visible on the photo, and travel round the park. The rolling stock is maintained in a small engine shed, to the left of the makeup workshop and costume store. A completely grey backdrop closes the horizon around the village.

Let your creative hair down and grab your tools! I hope this project will inspire you and that your layout will be reviewed soon in a forthcoming issue of *Voie Libre*...

Layout Project

Engine shed

Makeup & costumes

Merry-go-rounds

Ticket booth

Parking

Restaurant

Ferris wheel

Attractions



When the curve radius becomes really too tight, axles have to be replaced by bogies!

The MinitrainS Zillertalbahn **CARRIAGES ON BOGIES**

For his new H0-9 layout, which features 100mm radius curves, Raymond Duton needed very short four-wheeler stock. Whatever is too long will have to be fitted with bogies.

Text and illustrations: **Raymond Duton**



Mayrhofen, 22 August 2014, a station on the Zillertalbahn railway, the small four-wheeler carriage is the prototype for the MinitrainS model.

The constraints are strict, what is needed is a bogie fitted with a loop coupling whose shank is long enough to extend beyond the front buffer beam, with the pivot under the carriage

body. Furthermore, the bogie must also feature a certain number of details. No bogie in H0-9 meets such requirements. So I looked at older N scale stock and recalled that the Lima Micromodel passenger stock, when first released, was fitted with loop couplings. The bogies on British passenger carriages were best suited to what I wanted; what's more, their

chassis fits in neatly, once cut-outs have been made in the floor of the MinitrainS carriage. These models, which no longer meet current modelling standards, can be found for next to nothing in swap-meets and online.

Start by dismantling

The MinitrainS carriage is dismantled. To separate the body from the floor, remove the railings and pull gently on the two parts. The chassis is fixed under the floor by four small lugs located on the sides at each end, level with the steps. The chassis isn't used again, save it for a different project.



1 The ancient N scale Lima carriage.



2 The MinitrainS four-wheeler carriage.

MAIN SUPPLIES

MinitrainS

Green carriage ref. 5193; or brown ref. 5194; or red and cream ref. 5291; or blue and cream ref. 5292; or ZillertalBahn Hobby-Zug set ref. 1401.

Lima Micromodel N

British 1st/2nd class carriage ref. 306; or end of consist ref. 307 with loop coupling (Caution: some versions are fitted with the Arnold N scale coupling).

Peco N

Spoked wheels ref. NR-101.

Preiser H0

Seated figures.

Slater's

Strips 0.25mm (.010") ref. 0110; 0.75mm (.030") ref. 01030; 1.5mm (.060") ref. 0160; 2mm (.080") ref. 0180.

Evergreen

Square rods 0.75 x 0.75mm (.030" x .030")



3 Dismantling is straightforward, but take care all the same.



4 The N scale carriage suffers the same fate. Not the loop couplings, compatible with those used for H0e.

Let's move on now to the Lima Micromodel carriage. The body is solidly fixed to the chassis by a lug inside each end door, you will have to force on them using a screwdriver blade. The body, of course, isn't used either in this conversion project. The bogies are dismantled in the same way, taking care not to damage the retaining lugs.

Modifying the bogies

The bogies can be fitted with Peco spoked wheels, whose profile is finer. If you opt to keep the original wheels, make sure they can travel smoothly over all the layout

turnouts. If not, alter their back-to-back distance

Under the chassis of the Lima carriage, cut off the four buffers as well as the two lugs that fix it to the body, remove the ballast and cut out – as per the drawing – the hatched parts.

A sausage job for the chassis

Under the carriage floor, cut out two apertures using a milling bur, to accommodate the supports of the chassis pivots. ...

**FURNISHINGS
INSIDE
VL87**

Motive power



5 The Peco axles are on the left, the Lima axles on the right. The difference is pretty obvious.



6 The Lima chassis before modifications.



7 Remove the hatched parts.



9 The reinforcements in the Lima chassis.

■ Cut two 12 x 12mm parts out of plastic sheet, one 2mm thick, the other 0.5mm thick. Glue the two parts on top of each other and glue this assembly in the middle of the floor, as shown on the photo. The chassis uprights must fit between this part and those on the floor.

Cut out part A in 2mm thick plastic sheet, dimensions: 13.5 x 40mm and both parts B in 0.75mm thick plastic sheet, dimensions: 15 x 12mm.

After having checked with the carriage floor that everything fits together neatly, glue the two half-chassis, obtained at the previous stage, on **part A** and glue both **parts B** at each end.



8

Under the MinitrainS floor, clear space for the pivots.

The carriage can also be lowered

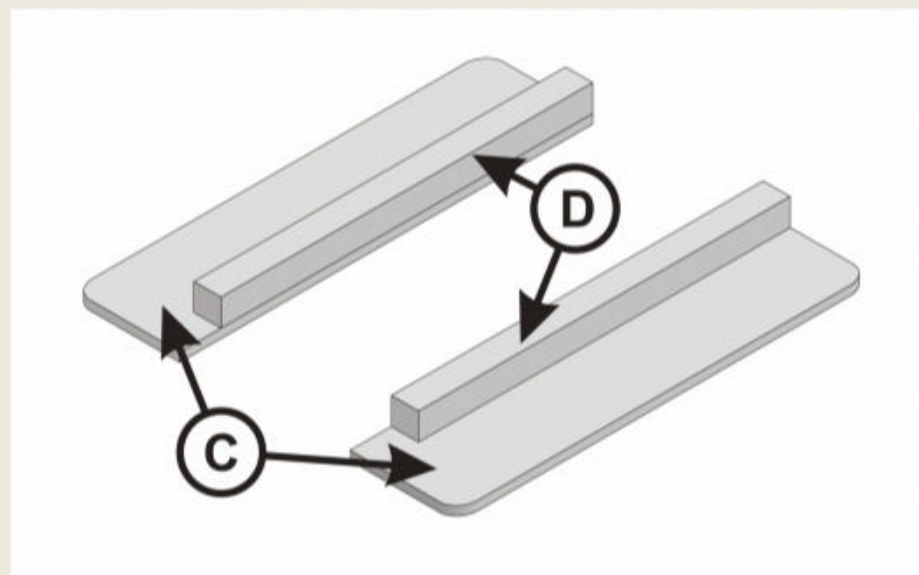
The following job isn't absolutely necessary, but it means the height of the carriage can be reduced by 0.5 mm. Cut out a 15 x 15mm square out of 1.5mm thick plastic sheet, and open up a 9mm diameter hole. Place this template under the chassis and file off whatever protrudes with a file.

Putting it all together

Assembling the MinitrainS body and the Lima chassis calls on a self-tapping screw, of the type used to hold a model (train, car...) on its plinth. A hole is drilled into the middle of these two parts, smaller in diameter by ca. 0.3mm than the screw's diameter. These parts being held together, the hole in the chassis is drilled out to the



10 How to trim the bogie side bearers.



11 Four steps are needed.



12 The steps must not impair the rotation of the bogies.



13 Poor little amputated figures, seated on rough wooden seats!

diameter of the screw, leaving ca. 0.1mm of play.

All aboard!

The steps are made as per the drawing: part C (10 x 3mm) is made out of 0.25mm thick plastic sheet, part D is a 0.75mm square rod. The steps are glued under the chassis, taking care to not impair the rotation of the bogies.

Settling in

Figures can be fitted inside the carriage. The seats are cut out of 1mm thick plastic sheet, 5mm wide and the same length as the outside floor uprights. The figures' feet will naturally have to be amputated. Before gluing them in place, check that they don't rub on the body sides. ■



14 The carriage fitted to its bogies and full of passengers is ready to leave.



A perfect rendering of the prototype outline.

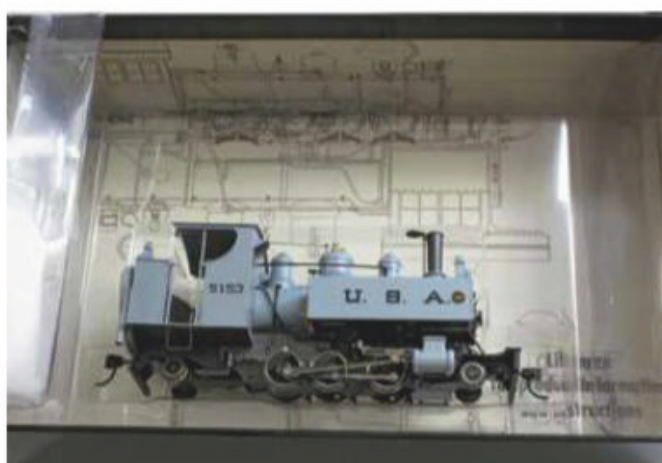
A PERSHING BALDWIN 2-6-2 T BACHMANN SPECTRUM

This must be the most French of all American narrow gauge locomotives, and Bachmann has released it in 0n30.

Text and illustrations: **Éric Fresné**

THE PRODUCT AT A GLANCE

Manufacturer: Bachmann Spectrum (ref. 29503)
Scale: 0n30 (1/48)
Control: DCC WOWSound
Locomotive: 60cm gauge Baldwin Pershing 10-12D1/4
Public price: 459 \$



The Bachmann Baldwin 2-6-2 T, a fine model in an attractive box.

Lee Riley had had this 0n30 project up his sleeve for quite a long time. His successors brought it to fruition in record time, as it took just six months from the announcement to the release of the model.

A LARGE BOX

Comfortably enclosed in its transparent box, this 0 scale engine looks almost small at first sight. Remember: it is a 60cm gauge locomotive with a European loading gauge. Once out of the box, the model displays a superstructure that is fully prototypical. The model combines injected plastic and metal. The rods and pipes are cast in black flexible plastic. The only liberty taken with the locomotive's realism is the use of a driving chassis from the Bachmann H0 range.

Cohabitation with the engine's 4-6-0 T cousin in 1/43.5 scale or with other stock in the same scale is perfectly possible.



The markings are sharp and prototypical.

The inside of the cab is fully detailed. I can only find fault with the missing dial on the pressure gauge.

The wheel diameter and overall wheelbase are correct. On the other hand, the axles are not properly spaced and the motion is simplified. A careful modeller can improve things in this last area.

ALL-DIGITAL

Once on the track, the engine displays its full potential. Fitted with a sound decoder and a power pack, it displays excellent slow running even on hastily laid track. On the level, I was able to haul five heavy, resin and metal Pershing wagons, with no slippage.

The WOWSound technology used offers more than 20 functions from the whistle to assisted braking, and even includes battlefield sounds! This locomotive is clearly designed to bring a layout to life.

A GOD-SEND FOR FRENCH RAILWAY MODELLERS

Apart from a couple of engines that remained in the States, the entire class was shipped to France and remained there in the post-WWI years! This locomotive is therefore ideal for anyone wanting to build

a narrow gauge 0 scale layout! Whether you opt for a large sand quarry line in Seine-et-Marne, a sugar beet railway in Aisne or a forestry network in the Landes area, unless you'd rather go for "sweet sugar", like in the Indian Ocean island of Réunion: everything is possible. Besides the RPI or Trains d'Antan Pershing wagons, if you have some, you can couple your Baldwin to skips or log disconnects. One way or the other, scope for a fine project. Many thanks to Bachmann Industries for making this model available to us.

Kniephaven **North Sea impressions**



The line runs through the impressive dyke that protects the inhabited areas. Not the thatched roofs. The train carries a coffin and the whole funeral procession.

It's tiny, tiny. It's in Z, 1/220 scale; but what an impression of depth and large open spaces! It proves that a harmonious design doesn't necessarily imply a lot of ground surface!

Text: Thomas Schmid
Photos: Dirk Kuhlmann

Thomas Schmid: Hello Dirk, your layout doesn't follow a specific prototype, but it's highly typical. Where exactly are we?

Dirk Kuhlmann: We are in Germany between 1968 and 1974, on the North Sea coast. The layout depicts various scenes found in the islands of North Frisia, Amrum and Sylt. I imagined a railway line, drew its route and created the scenery around it.

TS: The layout is Z, meaning 1/220 scale; how is it designed?

DK: The layout is built on a framework of 10mm thick beech wood. It is covered with Styrofoam sheets, which are sculpted and coated with wood filler. The layout is enclosed in a caisson that is used for displaying it during shows, and which doubles as a carrying case.

TS: Which range is the track from?

DK: I used Märklin rails. The track is laid on a 3mm thick cork strip, blasted with a Koemo product adapted for N. The track is

The layout at a glance

Scale: 1/220

Gauge: 6.5 and 4mm

Dimensions: 360 x 70cm

Control: analogue

Inspiration: North Frisia

weathered to model the typical alteration of the rails when exposed to a seaside atmosphere. I use analogue control, and do not plan to convert to digital for the time being.

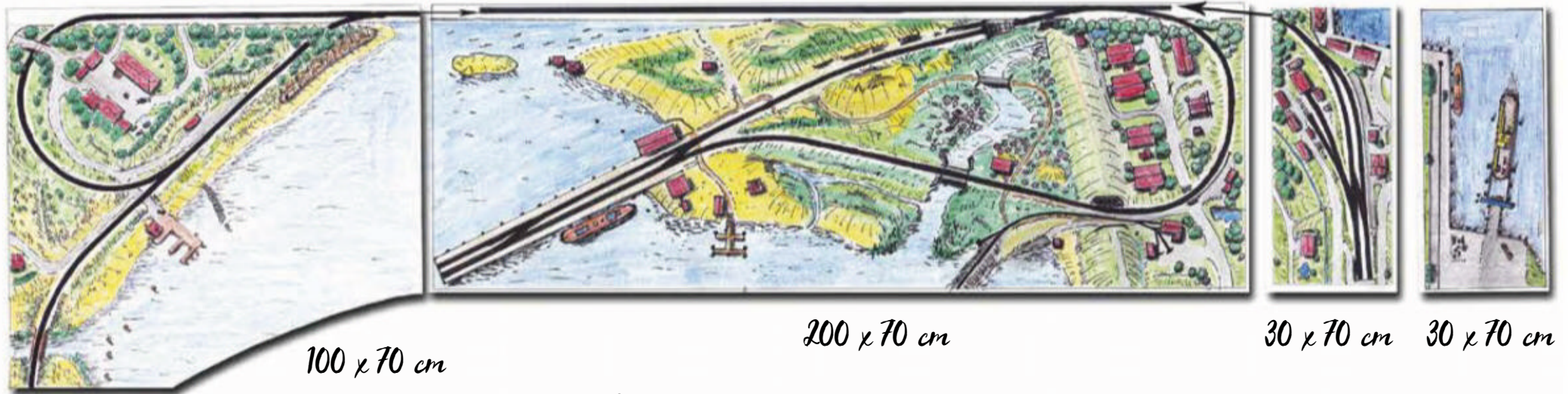
TS: What type of rolling stock is found on the layout?

DK: For the standard gauge part, I use stock from various manufacturers: as far as motive power is concerned, a VT 133 "Schweineschnäuzchen" ("Pig's snout") railcar, an ML 2/2 steam locomotive, four-wheeler Sik diesel locomotives from the ■■■

On the double-track wharf, the Borgward LT4 railcar is waiting to depart. The fishing boat has just landed its catch of crabs. The seagull in the foreground isn't in the same scale! But this trick contributes to giving such the impressive depth to the scene.

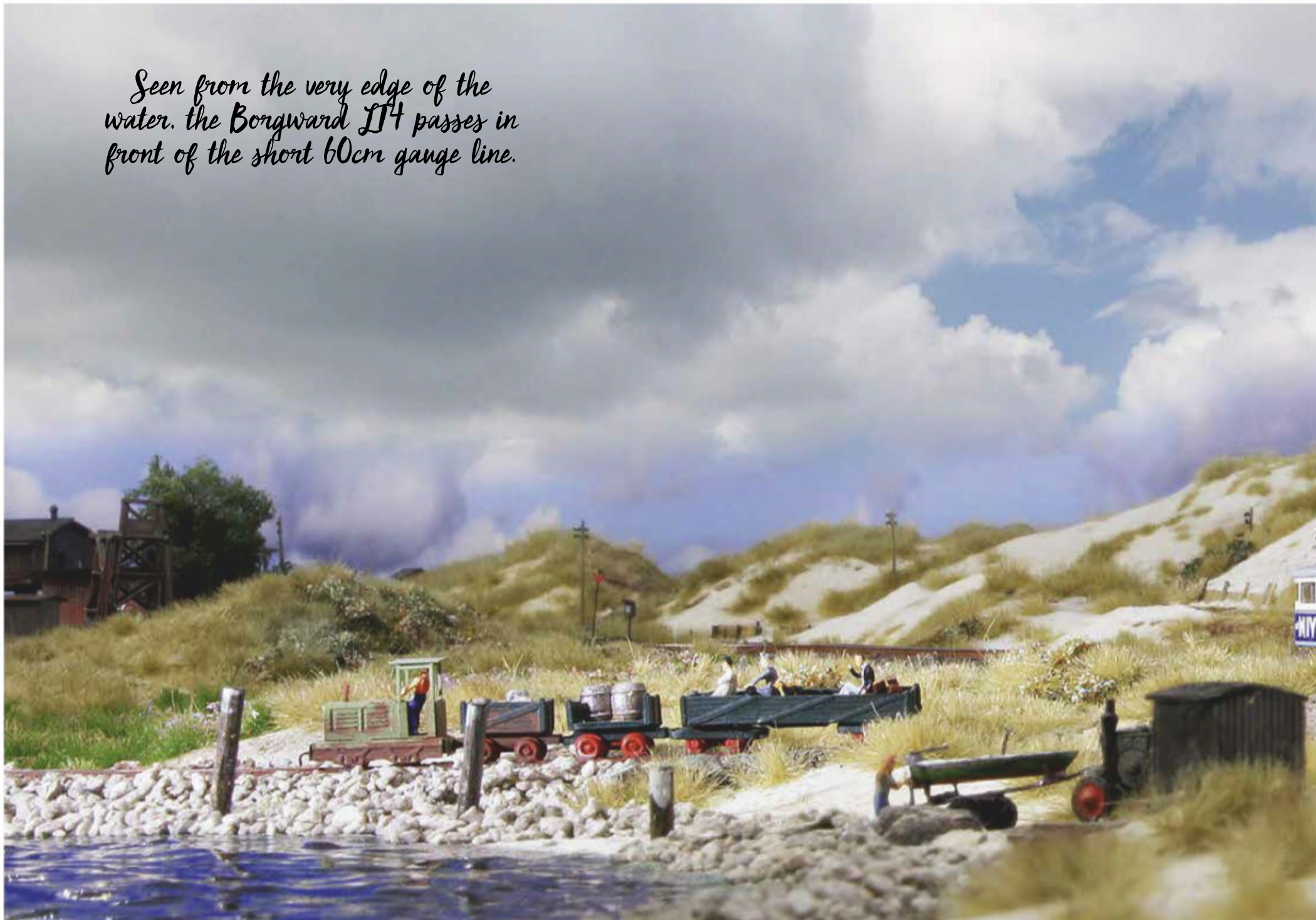


Z-6.5 Layout



Layout plan

Seen from the very edge of the water, the Borgward LT4 passes in front of the short 60cm gauge line.





Unchallenged star in the eyes of railway enthusiasts, the Sylter Railbus, a Borgward rail-mounted lorry, with a trailer for passengers.



■■■ Dutch railways and a V 36. They are in charge of a motley bunch of carriages and wagons. The most striking vehicle is the "Sylter Railbus". A Borgward LT 4 machine. Like the "Schweineschnäuzchen", it is produced by the artisan Z-modellbau. The 60cm narrow gauge track is purely cosmetic, it calls on products from the German manufacturer Saller & Railex.

TS: How is the scenery made?

DK: Various types of earths and sands are used for the scenery. The grass is created using an electrostatic applicator. The flock materials and flocked mats are from the Mininatur, Polak, Anita Décor and Woodland Scenics ranges. I combine the various products to recreate the typical vegetation found in this unique natural landscape. ■■■



The steam railcar, an all-brass model. You are not dreaming, this is indeed 1/220 scale!

Z-6.5 Layout

*The small 040 T
is in charge of
a goods train.
Note the loads:
floating buoys,
3-wheeler micro-cars,
barrels, wood, coal.*



■■■ One major element is, of course, the sea. To evoke the North Sea in this scale, I used coarse grained painting paper, paint and glossy varnish for boats. The key to realism is to paint carefully so as to create the depth effect, then to apply several coats of glossy varnish to create the illusion of a moving surface.

TS: Let's now talk about the building and other scenic elements.

DK: In Z scale, there are virtually no buildings that are typical of Northern Germany. Therefore, the buildings are

either conversions or modifications of existing kits, or entirely scratchbuilt. I took great care when modelling the thatched roofs; their base are Kibri workmen's cottages, the plastic roofs are coated with filler and then painted with brown paint. Then, I apply a 2mm thick coat of grass fibre with an electrostatic applicator, before weathering the structure. The boats are from the N scale Scale Ships artisan range.

TS: I am most impressed with the wide space effect, despite the layout being only 70cm deep.

DK: The layout is designed inside a box: a 3D painted image, as it were. The backscene is a panoramic photo of North Frisia. Lighting calls on a combination of daylight fluorescents tubes and of strips of LEDs on the side. The warm, 4000 K, colour temperature is important to create a realistic atmosphere with the many green and yellow shades in the scenery. ■



A view of the station and its tracks. In the foreground, the small shed accommodates the railway's motive power, including the small 040 locomotive and the steam railcar.



After having crossed the dyke, the VT 133 "Schweineschnäuzchen" railcar runs along the back of the narrow gauge depot, towards the station and the ferry landing stage.



A Dutch diesel locomotive is in service on the railway. It is seen here heading a works train.



An all-plastic **WOODEN BRIDGE**

Carrying on with the scenery of his layout, Éric Fresné has decided to run his trains over the marsh (see VL100). To achieve this, he has tackled the construction of a bridge built out of plastic strips. A good opportunity to take another look at how such current modelling supplies can be used.

Text and illustrations: **Éric Fresné**

**ÉRIC
BRIDGES
THROUGH!**



Maurice's train passes over the Aussecourt marsh. Quittancourt and the end of the day are drawing closer...

As “temporary” was the keyword when building the railway networks in the liberated regions, my whole layout revolves around this idea, in particular when it comes to making wooden structures inspired by the removable ones that were extensively used during that period. To remain consistent, I extended this approach to all the scenic items I built. This is particularly true for the bridge, or rather the trestle, which spans the marsh. To make it, I was inspired by a British Army model illustrated in Roy Link’s excellent “WDLR Album”. This type of construction calls on standardized trestles that carry an ultra-simple deck consisting of two parallel girders (**figure 1**).

Mass-producing these small trestles is highly compatible with the use of polystyrene strips. The Evergreen range is sufficiently large to easily find the three references required to build these parts. This type of material is easy to work with using a hobby knife or a saw. A wood-like texture can be easily obtained by simply scratching the surface of the strips.

The parts are assembled with liquid cement for plastic kits. It’s actually more a case of welding than of gluing. In general, I place the parts next to each other, and then apply the glue. It spreads into the assembly by capillary effect, melts the surface of the parts and welds them literally together.

Main supplies

3.2 x 3.2mm
Evergreen **strip**,
ref. 186
0.75 x 2.5mm
Evergreen **strip**,
ref. 135
1.5mm Evergreen **U**,
ref. 261
Grandt Line **hex**
nuts, réf. 127
Liquid polystyrene
cement (Tamiya
green)



1 The Evergreen strips are far too smooth. I give them a bit of grain by scratching all the sides with a flat back saw. This gives them a more wood-like appearance.



2 I must build at least three identical trestles. This means cutting a certain number of identical parts. I use a very ancient North Western Shortline cutting tool.

This type of repetitive cutting work is made very much easier if you use such a tool.



3 To obtain the geometry of the trestle, the cross-beam must be notched using a metal ruler as a guide. The small Tamiya fine saw is particularly well suited to this type of work.



4 Simply remove the excess material with a chisel to obtain a cross-beam that has the right profile.

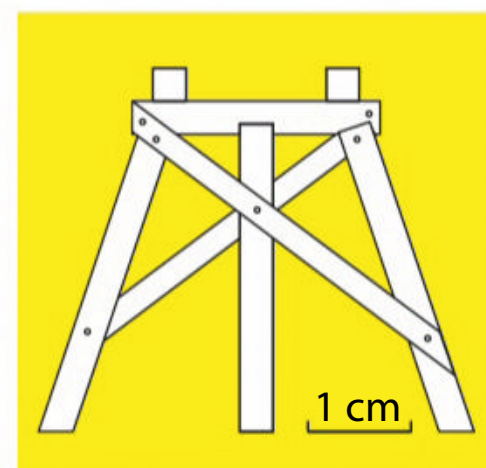


Figure 1. Drawing of a trestle.

SCENERY



5 I then glue three pillars under each cross-beam. I prefer to glue on a small metal sheet.



6 I then glue the struts. There is one on each side of the trestle. They extend from the top left-hand angle of the cross-beam to one-third of the way down the right-hand side pillar. The struts are cut a lot longer than needed and adjusted once the glue has set.



7 The Grandt Line hex nuts provide a bit more detail and realism to the assembly.

A metal shee doesn't react to the plastic cement, unlike most ordinary cutting mats



8 The rough structure of the relief has been put in place on either side of my hollow and the track laid over the gap. Each trestle is evenly spaced. The connection with the embankments calls on two separate beams.



9 The bridge deck consists of lengths of square strip cut to rest on two cross-beams while following the curve of the track. All these parts are held together temporarily with masking tape before being glued together. The bridge will remain like this until the glue has set completely.

Tooling
Hobby knife
Fine tweezers
Backsaw
Massicot for strip
Tamiya fine saw
ref. 1437055
Small wood chisel
0.5mm diam. bit
Pin-vice



10 The track has been weathered and the sleepers spaced. The bridge has been painted, weathered using Prince August acrylics and put into place. Applying the ground cover fixes it finally.



11 As per the prototype, the sleepers on the bridge are strengthened by "U" shaped girders, located outside the rails. To follow the curve of the track, these strips are cut and glued in lengths on three or four sleepers.

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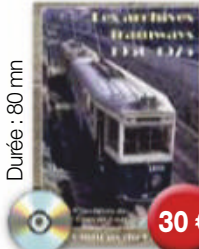


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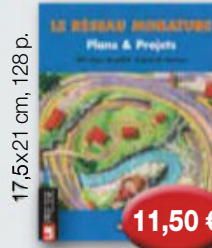


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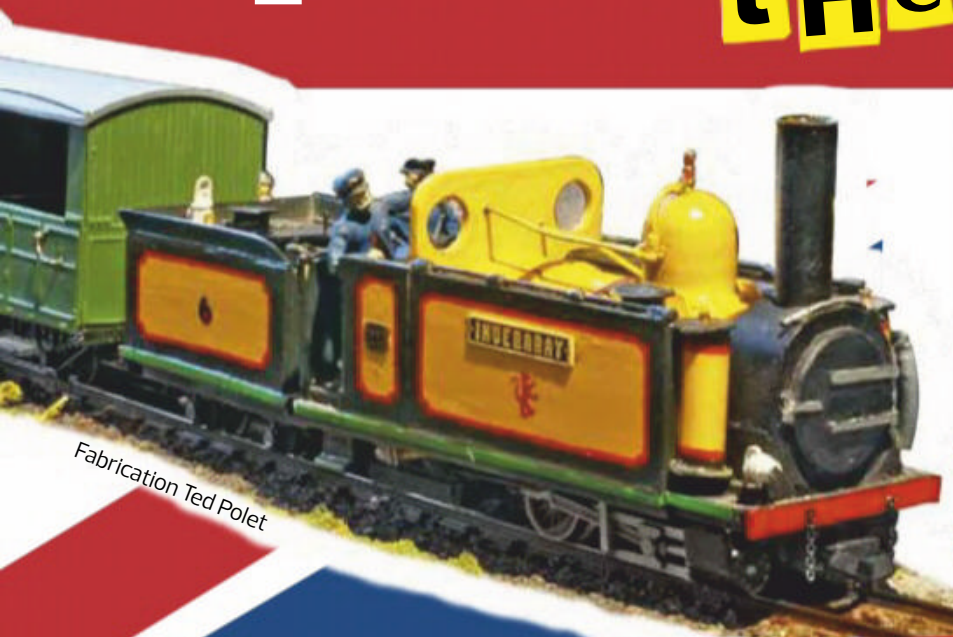
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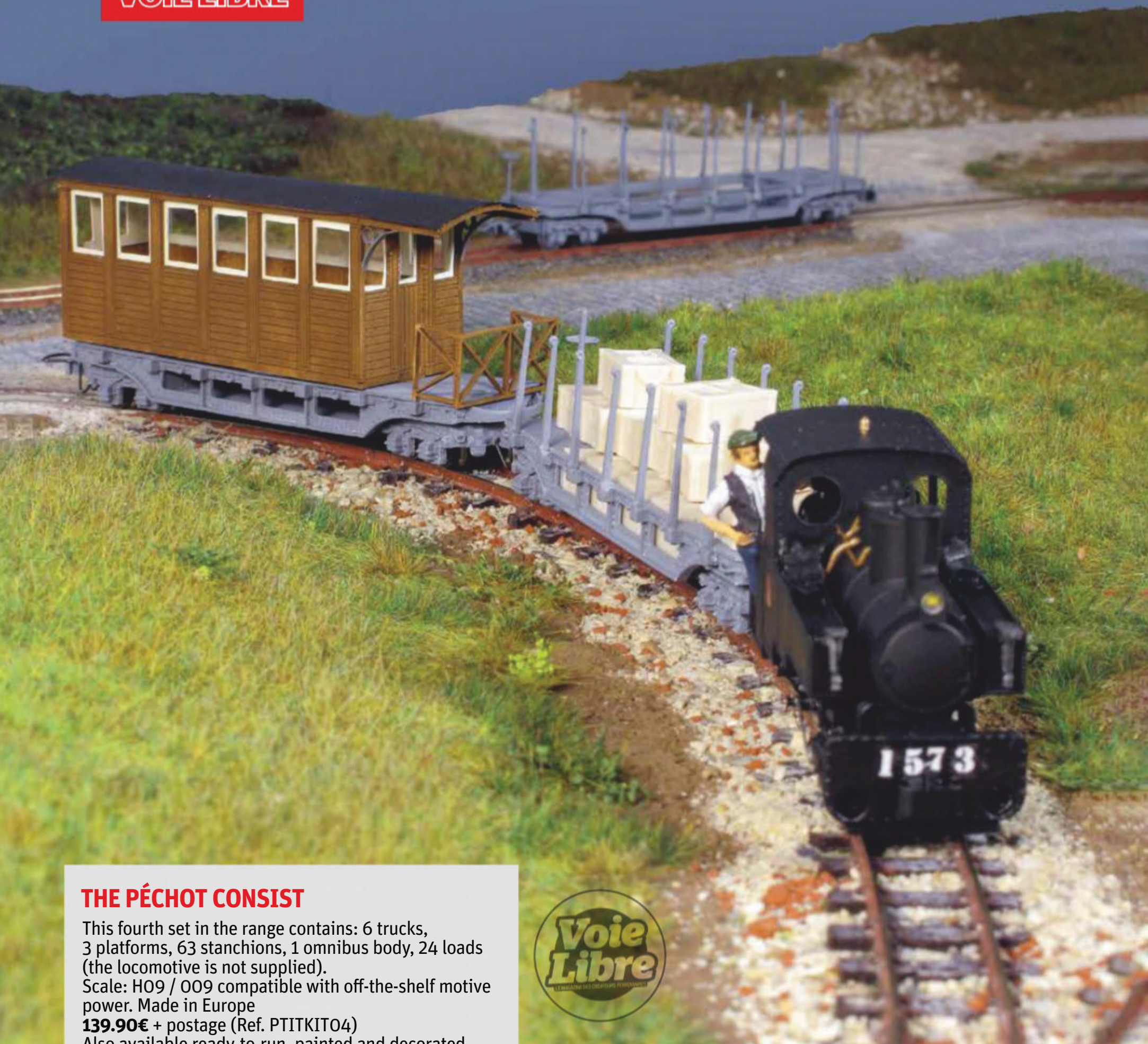
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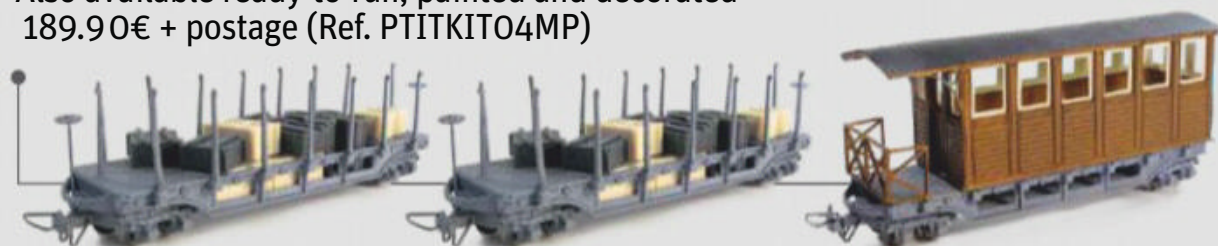
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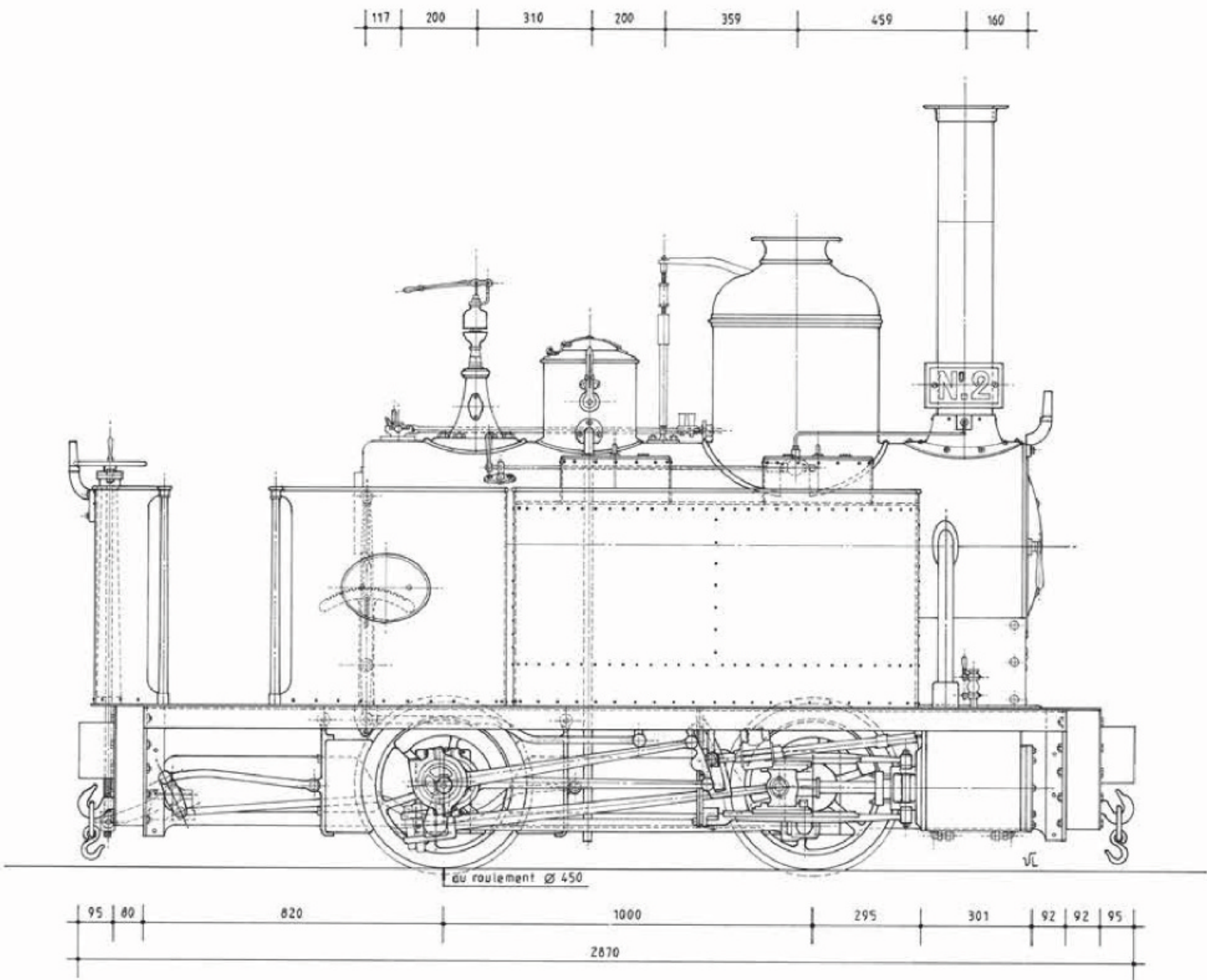
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Schneider type 69 locomotive

Measurement readings and drawing Vincent Lepais. Scale 1/20.

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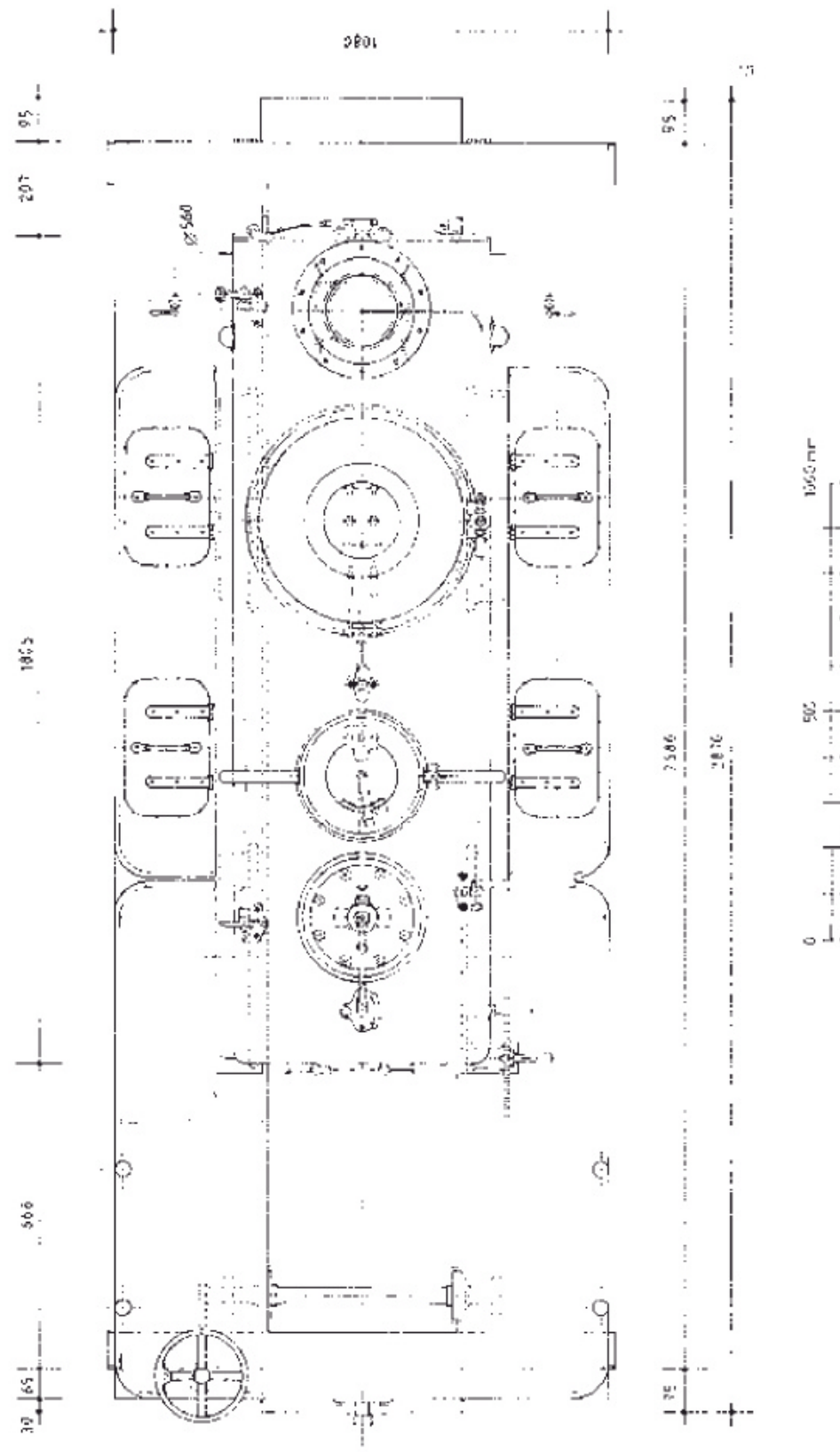
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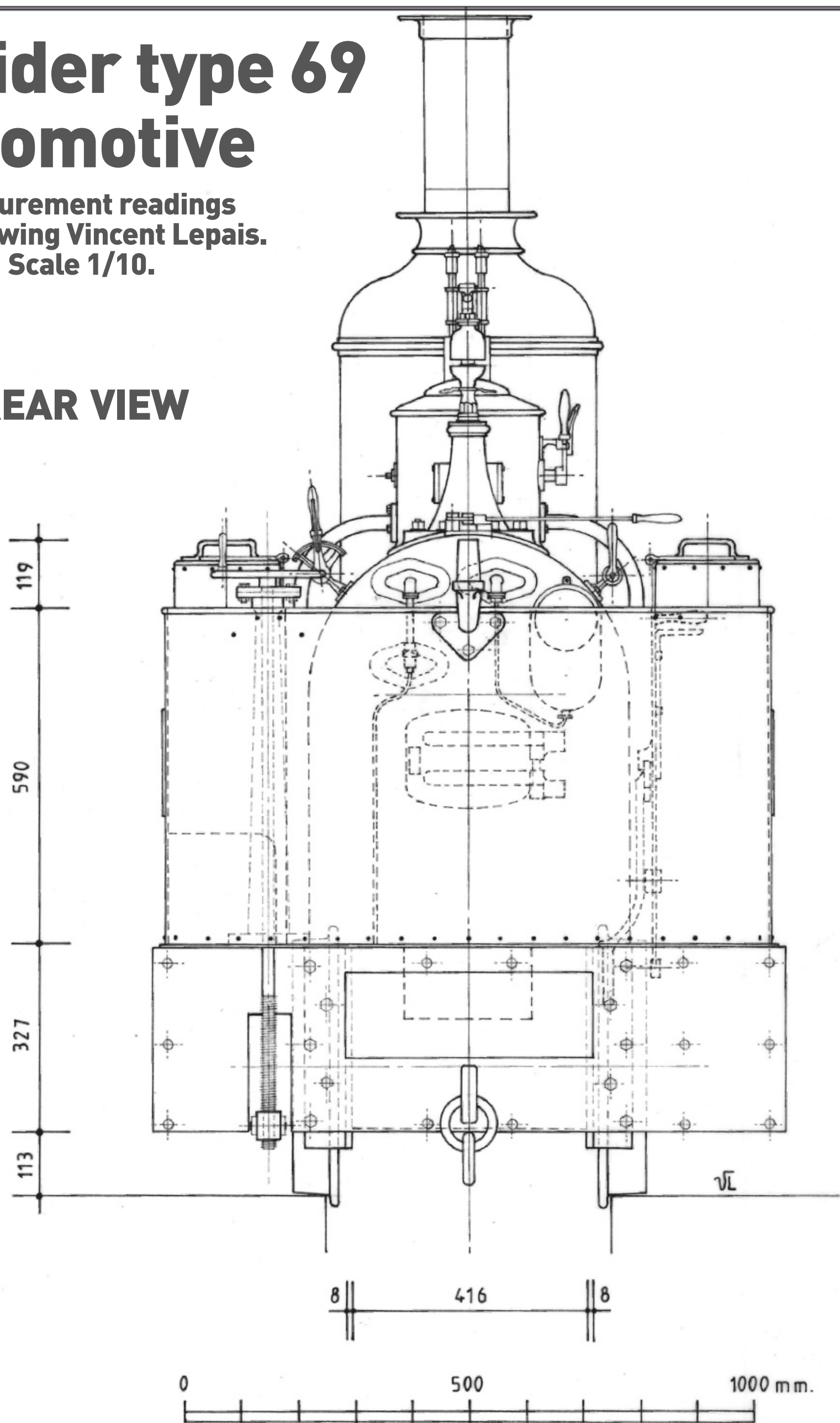
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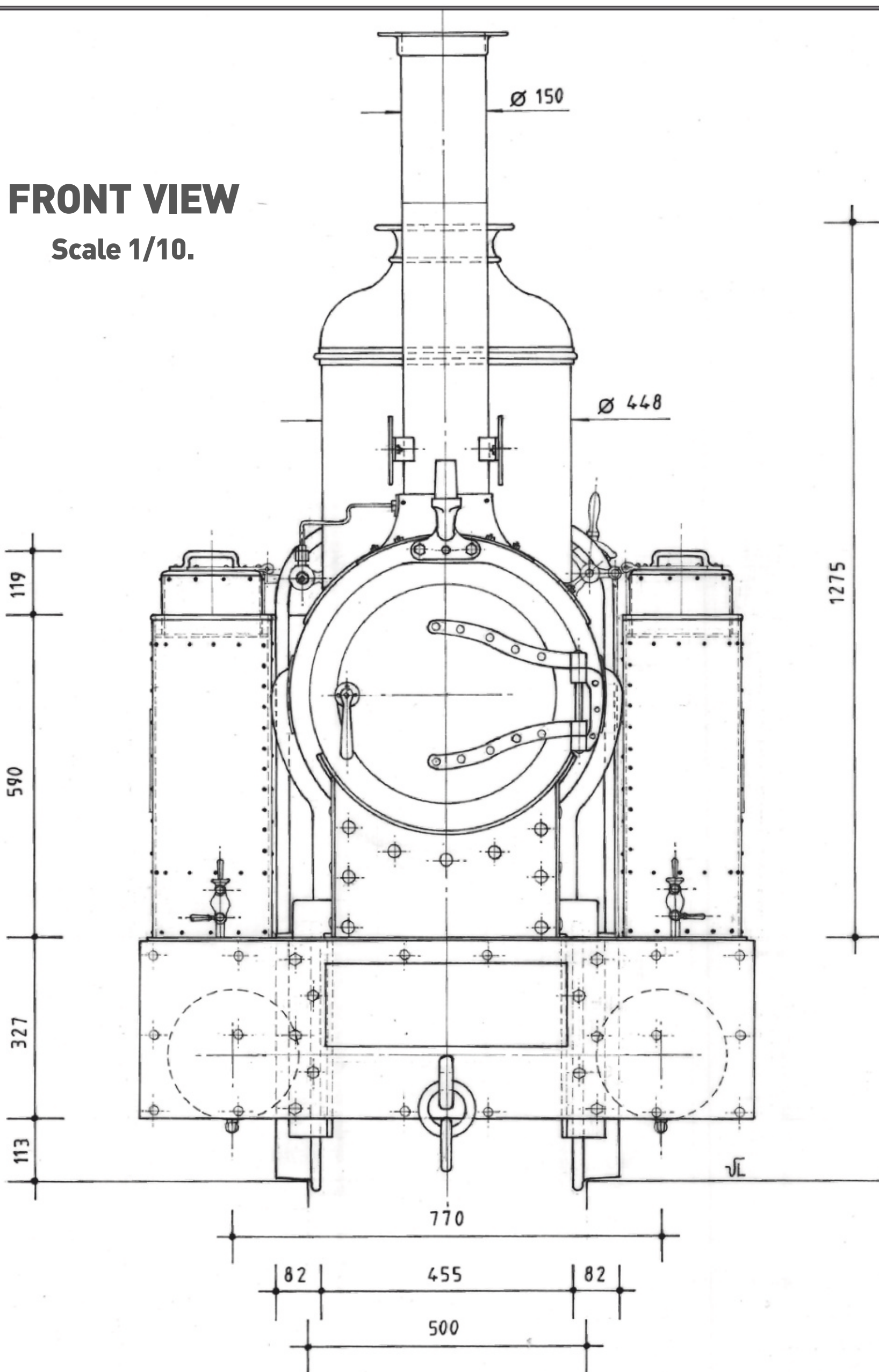
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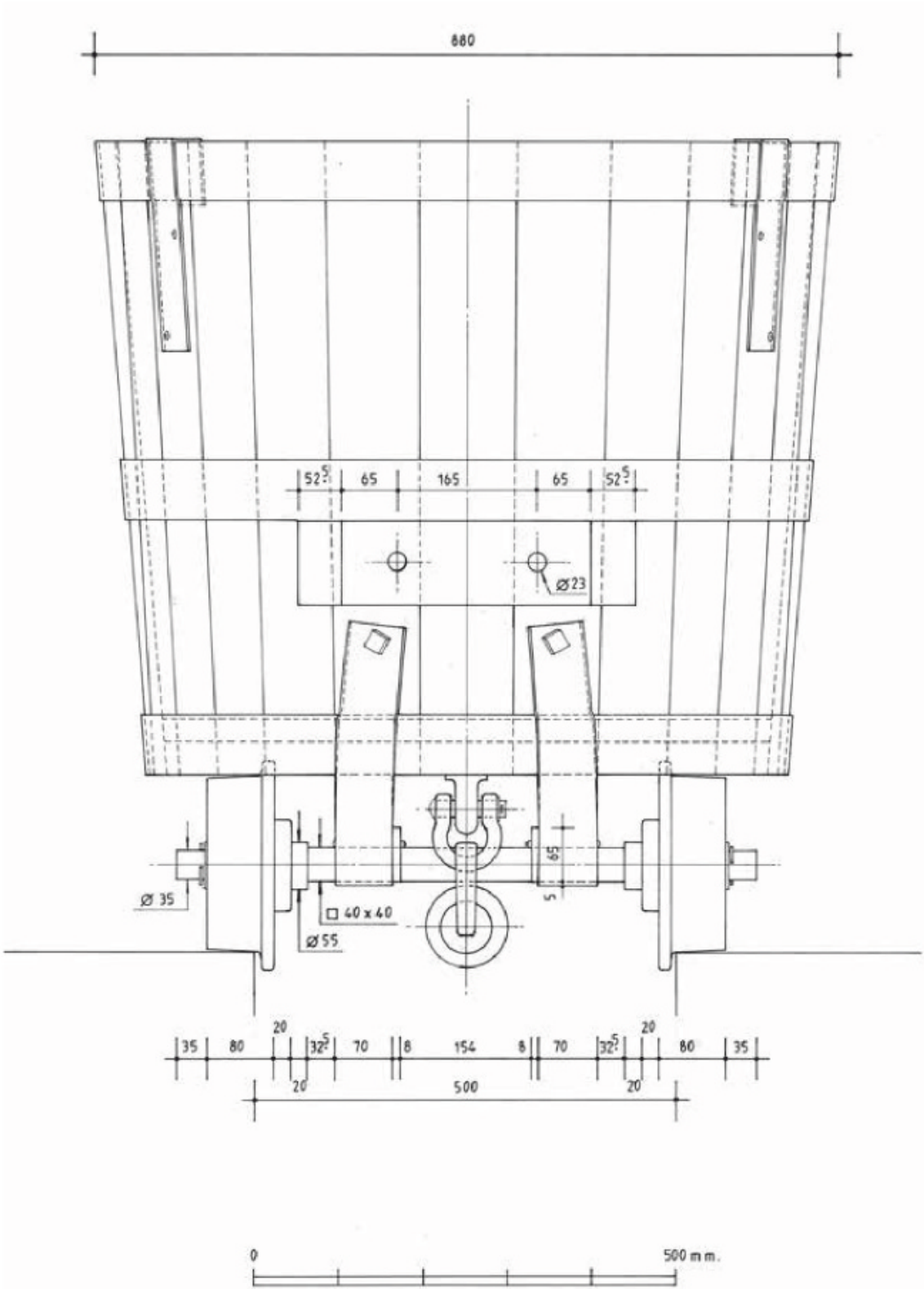
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