OUR MODEL GARDEN RAILWAY

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Authors: Rainer Kleinsteuber / Bart van der Schrieck

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G.L.M. van der Schrieck
Burg. Den Tex Avenue 43,
NL 2111 CC, Aerdenhout, The Netherlands
E-mail: glm@vanderschrieck.nl

CONTENT

2.4 Pre-Treatment of Track

by Rainer

Before laying the track material outside in nature in the garden, here are a few important tips.

Application of Copper Grease

Loosen all screws in the turnouts and other track material and treat them with turpentine thinned copper grease , otherwise the screws will get stuck after a while, see also Chapter 2.5.
Brass and even stainless steel tends to get stuck, even so tight that the heads break off because it takes too much force to unscrew them.
It is very important is to treat the standard rail joints with diluted copper grease, the diluted grease creeps in and the turpentine evaporates. The grease can withstand very high temperatures (>300 degrees°C !) and forms a protective layer against oxidation that is not washed away by rainwater.
The diluted copper grease creeps into all crevices so that no more moisture can get there, which would otherwise suck itself between everywhere due to capillary action.
Even high temperatures that evaporate or melt away other types of grease in sunny weather do not affect copper grease.

Fig . 2.4-1
Molycote copper grease

Rail connectors/joints

There are a number of rail connectors on the market, all of which have their advantages and disadvantages. In all cases, copper grease prevents contact problems and provides protection for years to come. Below is a table listing the main advantages and disadvantages.

Blade Brand name & Type Rail Connection	Advantages	Disadvantages
Standard LGB slide connection	- Almost invisible - Inexpensive	- Difficult to remove - Cannot be cleaned - Poor current connection
Massoth screw connection	- Low transition resistance - Can be removed from the top	- Very visible - Damages the rail
Dietz screw connection	- Low transition resistance - Can be removed from the side	- Noticeable - Sometimes difficult to install

Fig. 2.4-2
Comparison between various brands of rail joints

2.5 Preparing Points for The Garden Track

by Rainer

In addition to proper pre-treatment of the rails, there are a few more points we would like to highlight.

Contact between switch blades and the rails

In LGB turnout series 16000, the contact between the point blades and the rails is so bad after a while that the two-axle locomotives may stall on the point blade at low speed. To remedy this, a wire bridge can be made between the rail and the brass spring at the spot through which the point blade mounting screw passes, see [1] in Fig. 2.5-3. Use solid copper wire 0.75 mm² for this and grease the solder points with copper grease to prevent oxidation. It is recommended to install the wiring now in case the point is made digital later. Make the wires that would serve for electrifying the point motor long enough that the motor can be mounted on either the right or left, see Fig. 2.5-3.

Switches for a passing track

For a passing track , two hand-operated points can be used that are both set to right-hand deflection. In this way, oncoming trains will always pass each other on the right.
However, the manual control for the LGB turnouts only works outside for one season and then it needs a thorough cleaning. A better solution is a long stainless steel spring that is screwed onto a pivot on one side of the turnout and by putting a block on another sleeper it pushes the turnout tongue to one side, see Fig. 2.5-6. By putting the spring on the other side of the block it works in the opposite direction. This system is convenient for two passing tracks where the turnouts must always face one way but must be able to be opened.
If stainless steel springs are not available and still the LGB hand control is used, there is another solution that makes it work in the garden for quite a while, see Fig. 2.5-9. The spring is mounted directly between the slide and the adjustment lever. In doing so, part 6 is taken out and the existing spring is bent slightly according to sketch 3 and 4 in Fig. 2.5-9.

Maintenance of electric switches

LGB's electric turnout drive is still the most widely used and the most solid available, but it does require regular maintenance. A lot of problems are prevented by treating the iron parts of the magnet with diluted copper grease .
This prevents rust and the consequent jamming of the magnet.

Ingress of rainwater into the switch motor housing

Rainwater can run in unhindered through the holes in the black housing directly above the terminal block for the two power supply wires. In addition, small insects can also crawl in through them, seeking protection there and then growing so large that they can no longer get out! By attaching two miniature counter plugs (Conrad 52 61 64-P5, see Fig. 2.5-1) in the terminals, not forgetting copper grease, these holes are no longer needed and can be sealed with a good adhesive, e.g. ZAP a G OO.

Fig. 2.5-1
Counter plugs Conrad 52 61 64-P5

These counter plugs are suitable for solid copper wire 0.75 mm^2. Finally, it is also recommended to lubricate the cover on the inside near the edges with copper grease, then almost nothing will get in.

Fig. 2.5-2
All purpose adhesive ZAP GOO which, if necessary, can be removed later without damage

A major advantage of the ZAP GOO adhesive is that it not only adheres well but is also easily removable if necessary, without affecting the underlying plastic.

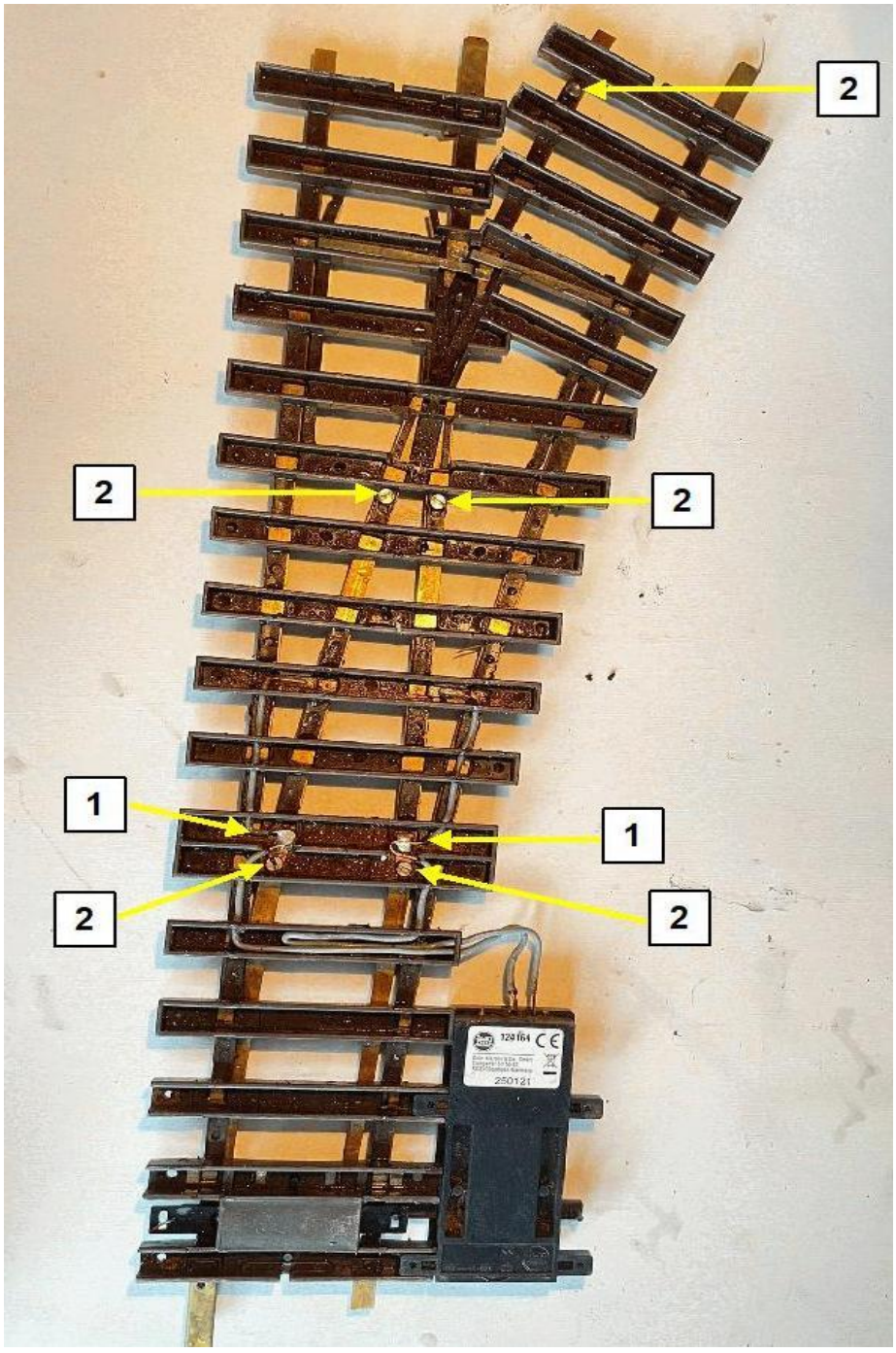

Fig. 2.5-3
Wiring to be installed under the turnouts for power to the switch motor and power to both switch blades

[1] Spring contacts of the switch blades to be connected to the current-carrying rails. NOTE: Make both wires to the turnout drive long enough to be long enough for both right and left assembly of the turnout drive.
[2] Remove screws and treat with copper grease.

Fig. 2.5-4
Point LGB 16050 with drive and decoder Zimo MX820D and switch contact RBK310610 with built in wiring seen from above.

Fig. 2.5-5
The same point seen from below. The two red wires provide better supply of current for the point blades.

Figs. 2.5-4 and 2.5-5 show how the wiring under a turnout can be eliminated for a reverse loop circuit. This can also be done for a circuit where a siding needs to be double-poled off in case the turnout is not set to the siding .

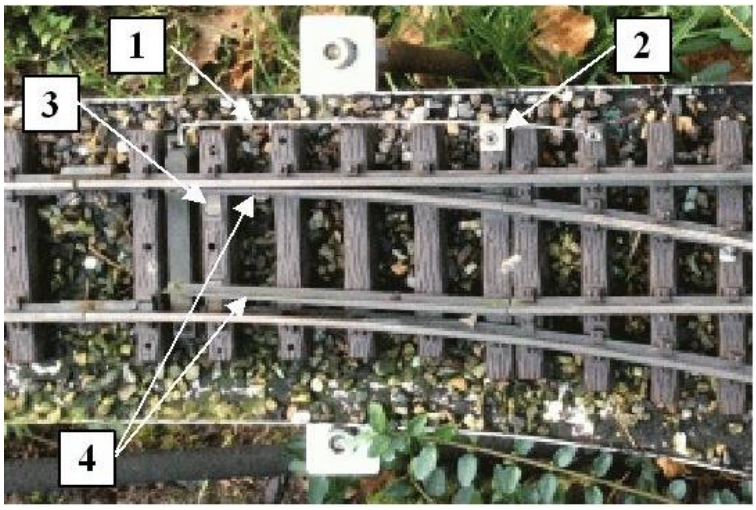

Fig. 2.5-6
Turnout LGB 16050 with stainless steel spring RBK310630

[1] stainless steel spring
[2] Nylon block
[3] Stainless steel sliding surfaces for point blades, grease with Teflon grease
[4] Point blades

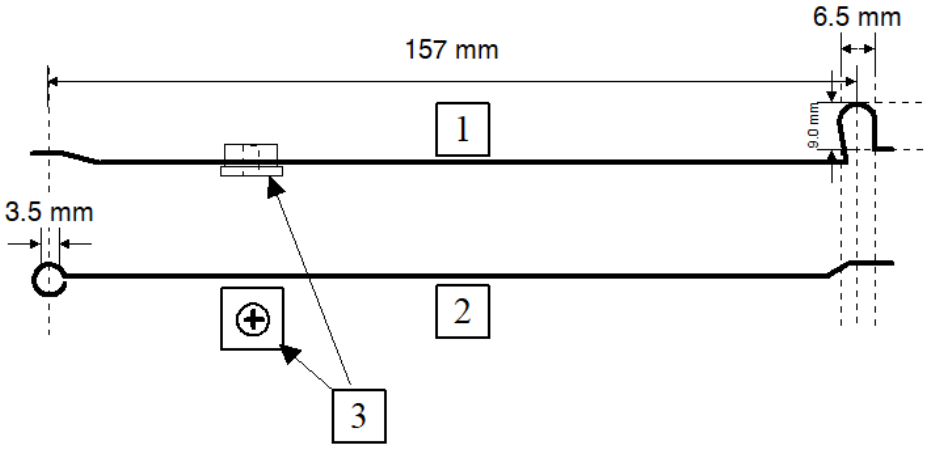

Fig. 2.5-7
Turnout spring stainless steel for LGB turnouts 16050-16150

[1] Side view spring 1.2 mm stainless steel spring steel
[2] Bottom view
[3] Nylon block which holds the spring in the proper position.

Putting the spring on the other side makes the turnout work in the other direction.

Fig. 2.5-8
Photo of the spring RBK31060

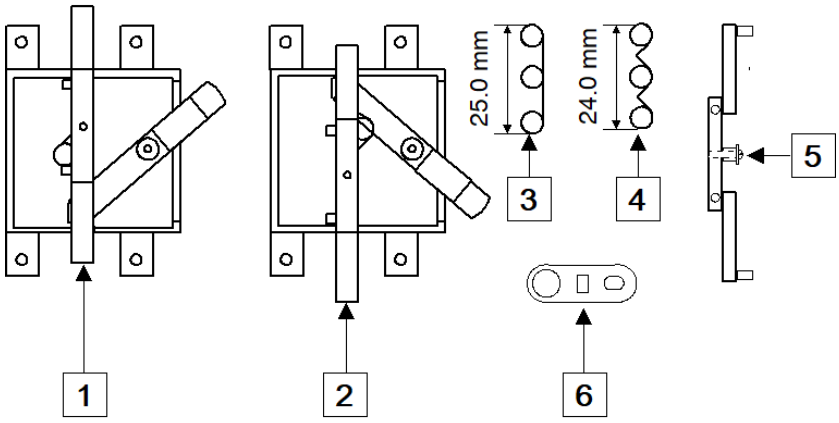

Fig. 2.5-9
Adjustment spring of LGB 12060 turnout manual control

[1] Manual control position 1 [2] Manual control position 2 [3] Spring standard
[4] Spring in modified form [5] Slide with screw and washer [6] Remove this part

Turnouts that can be driven open/close
In some cases there is also the need for the turnout to be driven open/close but to remain in that position and is pressed on by a spring. On my layout, this is the case with 4 adjustment tracks where two trains are back to back and can be driven off to either side. (See Fig.2.5-10) In this way I can let a train leave and, without having to switch the turnout, let it return later in reverse on the same adjustment track.

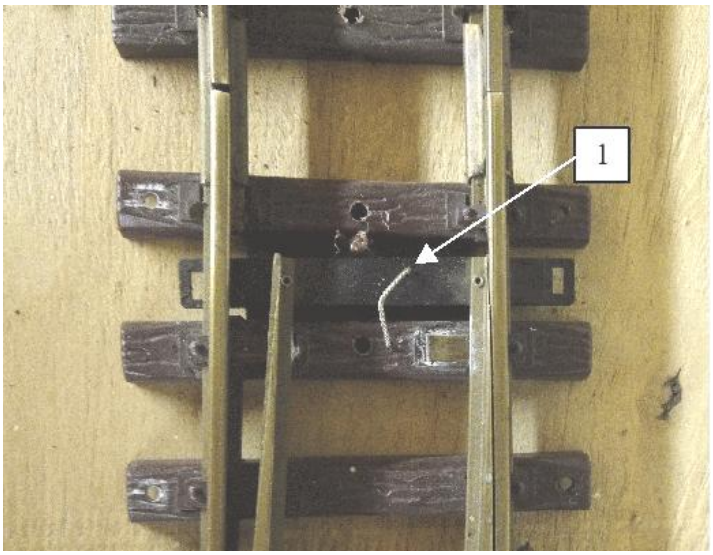

Fig. 2.5-10
Manual turnout with spring [1] RBK310631 pressing switch tongue against rail

[1] Spring pushes the left or right switch tongue depending on the desired turnout position against the rail.

Installing decoder
When digitizing the turnouts by installing a turnout decoder it is recommended to remove the terminal block for the connection of the power supply and place the decoder in the vacant place. Use the Zimo MX820D decoder, it is waterproof and has proven to be very reliable. Against the back of the black housing is then a piece of circuit board to which the counter plugs (Conrad 52 61 64-P5) are soldered. A nice touch is that the decoder also has two inputs so that the turnout can be operated by two contacts in the rail (RBK 310603) by a driving locomotive. Since there is enough space to install these plugs for these two functions as well, it is recommended to do so immediately. In combination with a turnout contact (LGB 12070 or RBK 310610), you can also easily create a reverse loop circuit.

See also Chapters 3.3 Electrical schematics, reverse loops, safeguards, etc. and Chapter 2.9 Depot - sidings.

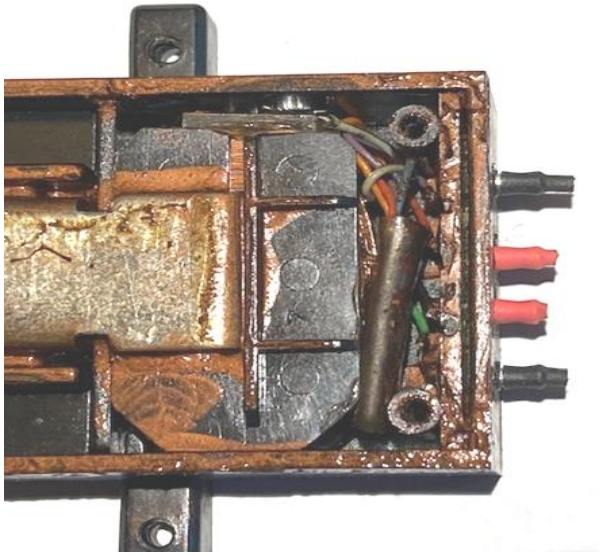

Fig. 2.5-11
Interior turnout motor with the decoder on the right and the circuit board to the right of it for the four counter plugs and put everything well in copper grease.

Fig. 2.5-12
Alternating motor with four counter plugs on circuit board and two sealed screw holes. The middle two are for the power supply and the outer two for two rail contacts.

Massoth rail terminals
To easily disassemble the turnouts for maintenance in the layout, it is recommended to remove all LGB rail connectors and replace them with the Massoth screw rail clamp 8100150 which is clamped to the rails with two bolts. The same, of course, should be done with the three rails that each turnout is connected to. You can remove the LGB rail connectors in the following way: clamp one rail of the turnout in a vise and use a 4 mm drill bit at the bottom to drill out the dimple punched into the rail connector to hold it in place. This allows the rail connector and the sleepers to slide in relation to the rails. If the temperature is low, it is recommended to heat the plastic sleeper mat so that it is not damaged when the rail connector is pulled off.

Fig. 2.5-13
Massoth rail clips for connecting rails

Removing a rail connector
There is another somewhat quicker way to remove a rail connector , but generally the rail connector is not usable afterwards. However, this is not a problem because we prefer screwed Massoth joints anyway. First, carefully bend the upright clamping lips of the rail connector away from the rail with a screwdriver or pointed pliers, see Fig. 2.5-14 and Fig. 2.5-15.
Then carefully turn down the bottom surface of the rail connector with the pointed pliers. While doing so, the vertical end of the rail connector that protrudes into the sleepers, and which fixes the rail connector to the sleepers, is carefully twisted out of the plastic sleepers. Simultaneously with the downward rotation, press the rails very firmly onto the sleepers with index finger and thumb of the other hand. This is to prevent the two fragile plastic clamping edges of the connector from breaking off. Do not do this at too low a temperature and, if necessary, heat the bedding with a hair dryer.

Contamination image of the rail connector
Fig.2.5-15 shows a rail connector just removed in this manner. It can be clearly seen that dirt has deposited between the rails and the rail connector between the parts that are not touching each other properly.
Copper grease will prevent this and also prevent moisture from reaching it. It is best to replace the rail connector with a screw connector. To do this, remove the dirt from the rails with a metal brush and apply a liquid solution of copper grease to the screw rail connector, (50% copper grease + 50% white spirit).

Fig 2.5-14
Bending open an LGB rail connector

Fig.2.5-15
The contamination accumulated in the rail connector is clearly visible here