

Piko BR64 en

Retrofit of a “PIKO Steam Loco BR64” with a eMotion XLS Sound decoder. (Pict. 1)
This loco have 3 lights front and rear and 4 engine lights.



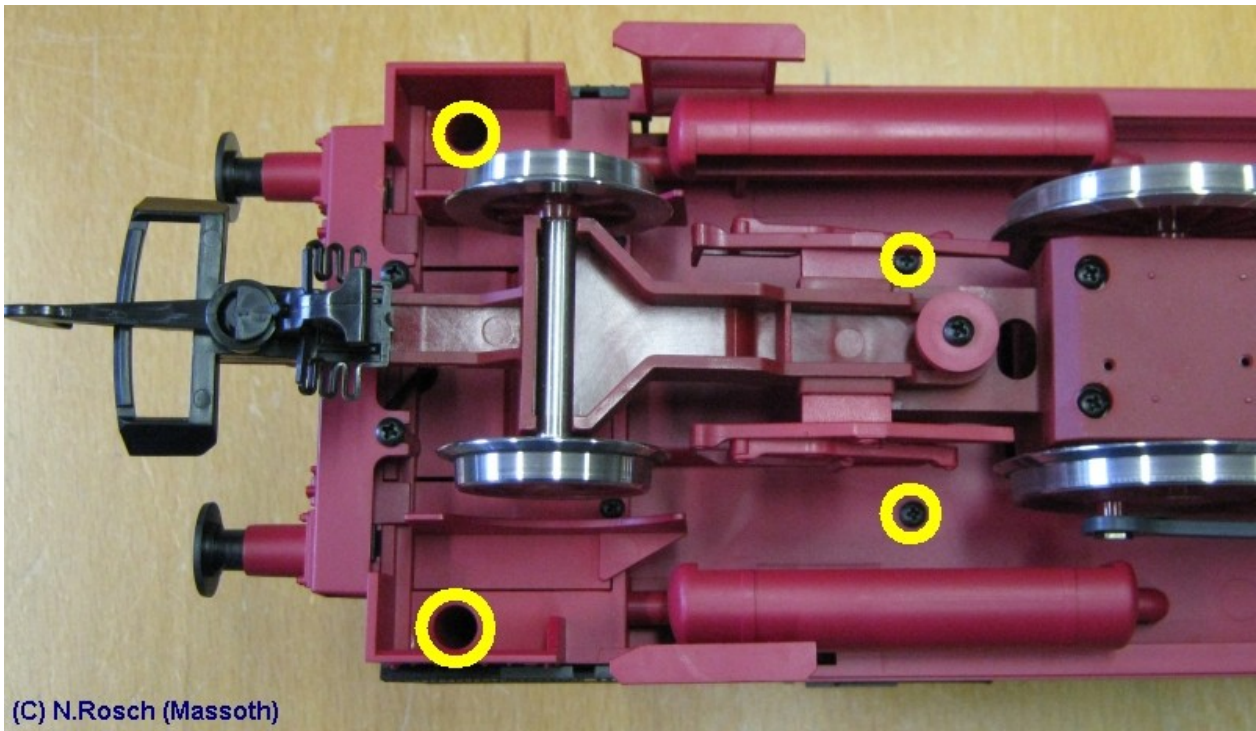
Pict. 1: Piko 37210 “Steam Loco BR64”

Needed parts:

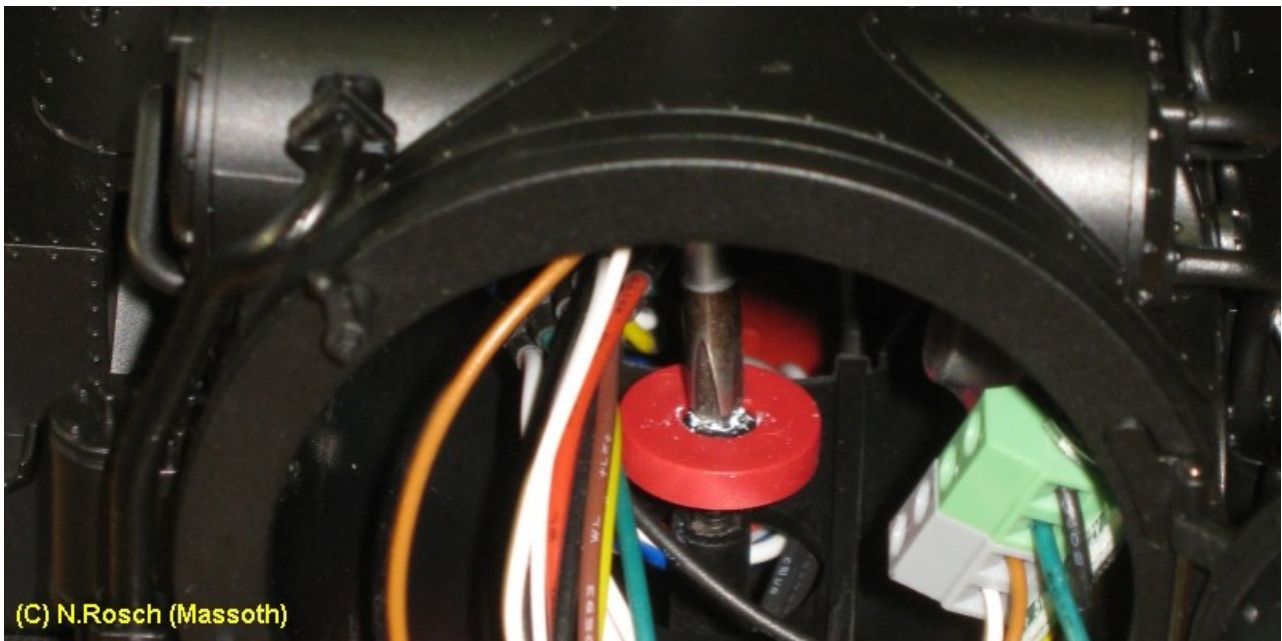
1x 8210530 XLS-Sound decoder : PIKO BR64

Retrofit:

- Open loco with removing the 4 screws under the cab (Pict. 2)
- Remove pipe with turn smoothly and pull up.
- Loose central boiler screw through pipe hole, but don't unscrew it! (Pict. 3)
- Lift the locomotive body upwards.



Pict. 2: Remove the 4 screws in the vehicle floor



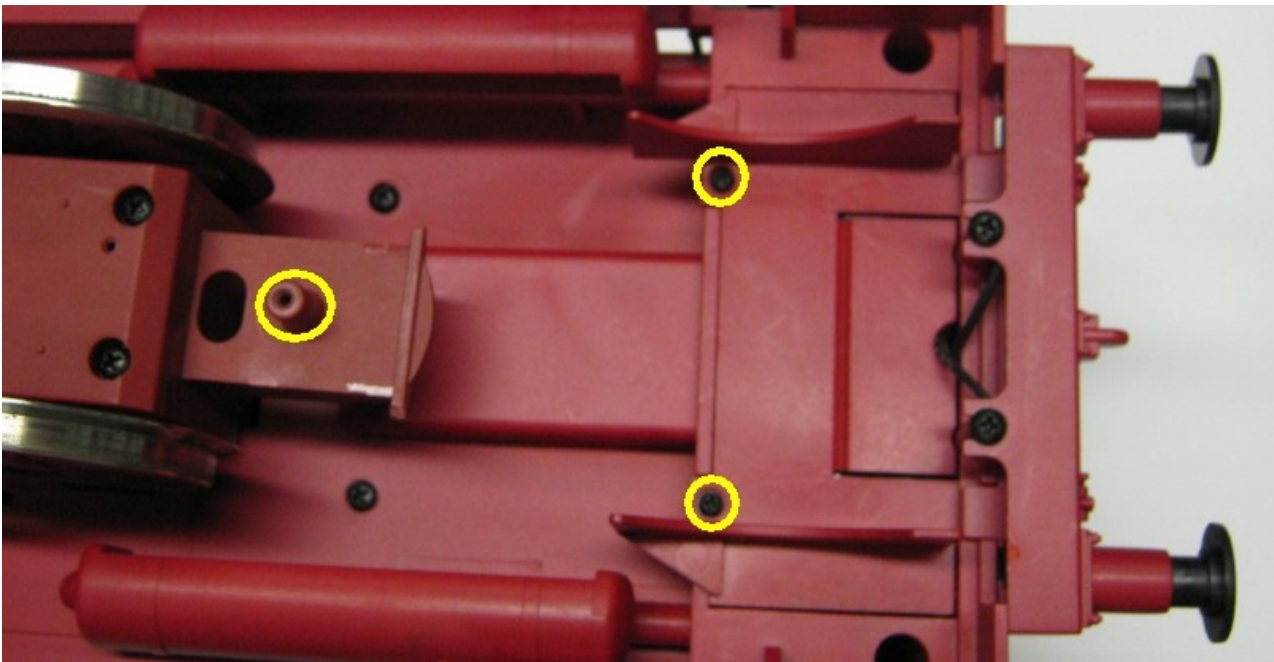
Pict. 3: View of the central boiler screw with open boiler chamber

- Mount the enclosed speaker with 2 screws on the body.
(possibly the cables must be laid to the side).
- Put the cable of the loudspeaker through the body to the rear analogue PCB.



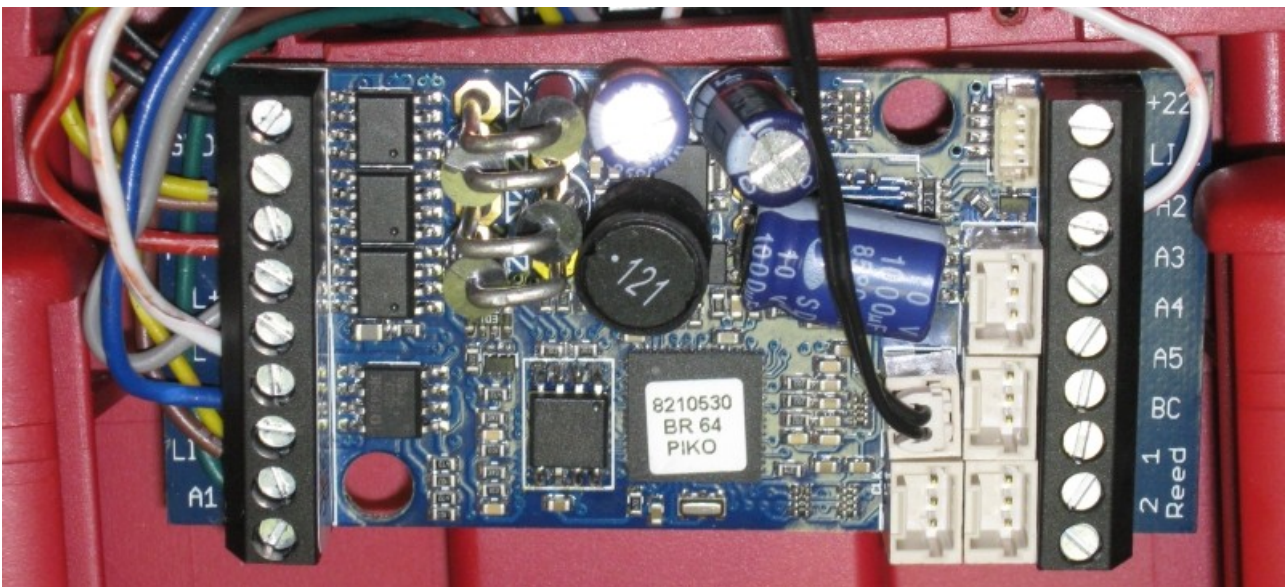
Pict. 4: Mounting of the speaker

- Place the loco housing back and fix it with all 5 screws.
- Remove rear trailing axle and 2 screws for electronic cover.



Pict. 5: Opening of Electronic cover

- Remove analogue PCB
- Remove plastic pins from XLS
- Rewire the cables to the decoder



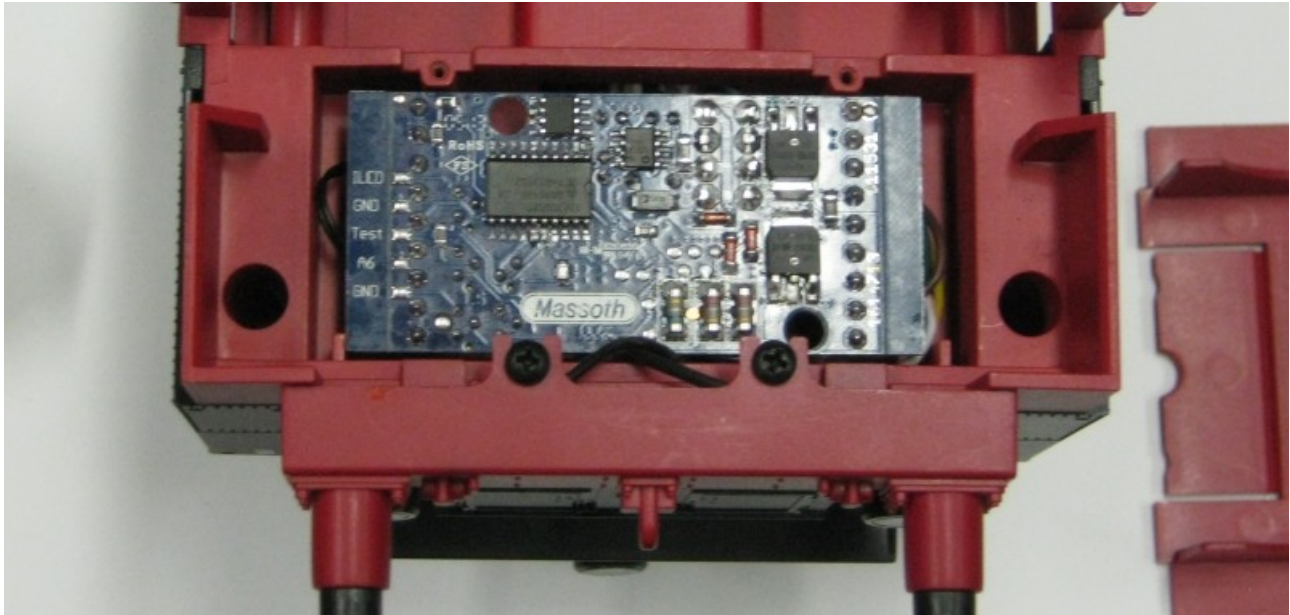
Pict. 6: Rewiring of the decoder

Connection of decoder (Pict. 6):

- “GL+” = grey cable (from clamp 8 of analogue adapter)
- “GL-” = white cable (from clamp 1 of analogue adapter)
- “Mot+” = red cable (from clamp 2 of analogue adapter)
- “Mot-” = blue cable (from clamp 7 of analogue adapter)

- “+24V” = black cable of illumination (from clamp 4 of analogue adapter)
- “LI-V” = yellow cable from front (from clamp 6 of analogue adapter)
- “LI-H” = brown cable from rear (from clamp 3 of analogue adapter)
- “A2” = red/white cable for engine lights (from clamp 5 of analogue adapter)

Lay decoder with the screw up into the opening (Pict. 7)



Pict. 7: Mounted XLS-decoder

Programming:

- All CV's for this loco are preset.
- You can dimming the light with CV 50 at your choice (e.g.: Value=15)

Enhanced connection:

You can switch the evaporator in this retrofit only with a switch in the smoke chamber.

If you want to switch it digital, you have to add an additional wire from the Main PCB to A1 of XLS.

This retrofit will be described in a later report.

Also mounting of light interior, pulsed smoker, decoupler and powercaps.

Take care that no wires are pinched or damaged during assembly by screws.

CAUTION: Incorrect wiring or programming can lead to the destruction of electronic components!

PIKO BR64 - complete reconstruction

Here we describe a complete conversion of a PIKO BR64.

To be installed:

XLS Decoder

2 uncouplers

boiler fire

pulsed evaporator

powercap maxi
Installation light driver's cab

The conversion is aimed at experienced users! Some of the locomotive has to be milled off and the cable extended.

Good soldering knowledge and experience with the handling of a small hand drill with milling cutter are a prerequisite.

Needed parts:

1 x XLS decoder 8210530
1 x Uncoupler 8414002
1 x Boiler fire 8242060
1 x Pulsed Evaporator 8413501
1 x Powercap Maxi 8151701
1 x LED warm white + resistor 2.2 KOhm
1 x Massoth hose set 8412901
Heat shrinkable tubing in various sizes
Various cables
2 pole plug/pin tray
Double-sided adhesive tape

Conversion:

In general, all cable extensions are equipped with heat shrinkable tubing

The pulsed smoke unit

The locomotive is opened as in the 1st conversion plan, the loudspeaker is mounted.

Turn the steam dome with the original evaporator to the left and pull it out.

Remove evaporator.

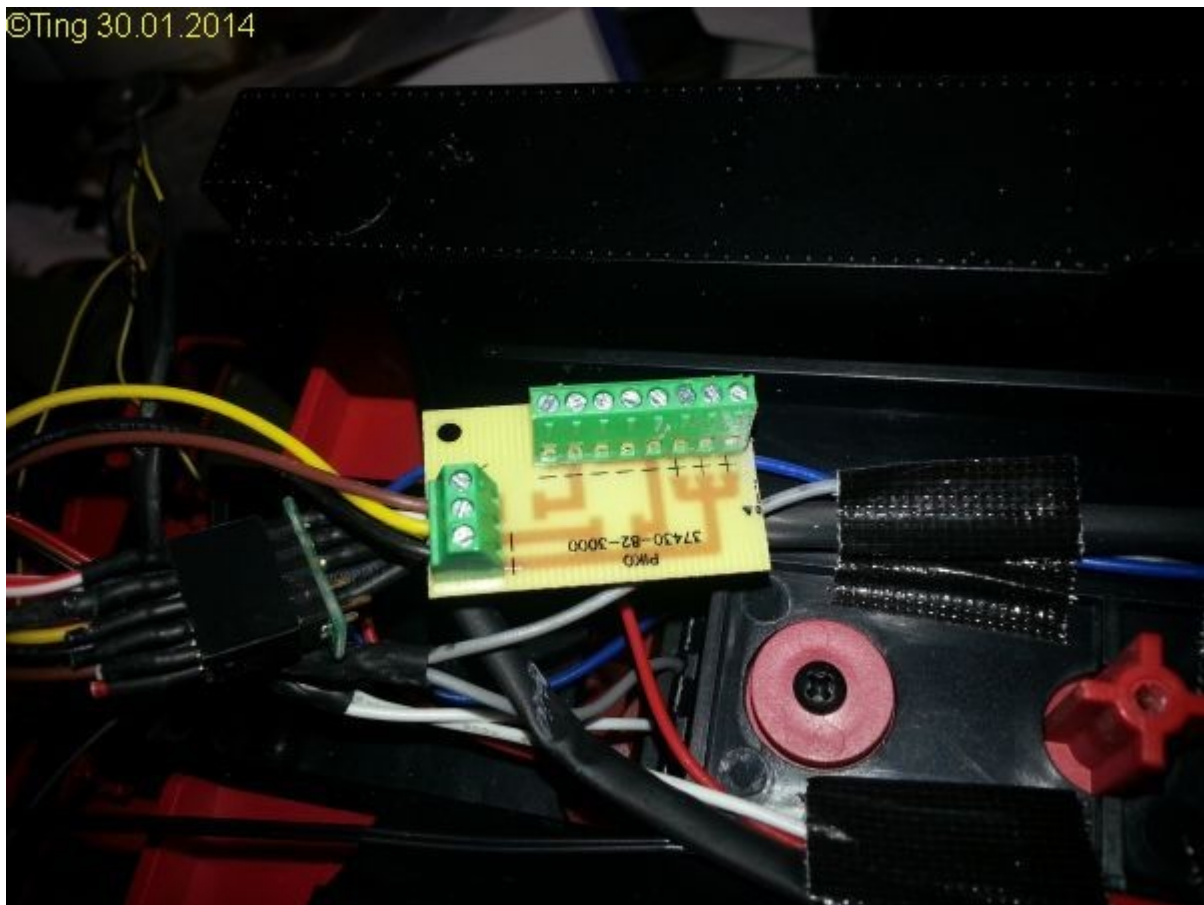
To disassemble the boiler it is advisable to disconnect the cable of the upper lights (ge and sw).

The XLS electronics are hidden under the carbon box.

The circuit boards on the plug-in unit in the boiler are unscrewed.

The switch/potentiometer board is not required, unscrew the cables there.

The white circuit board for the front light is shortened as shown in Fig. 1.



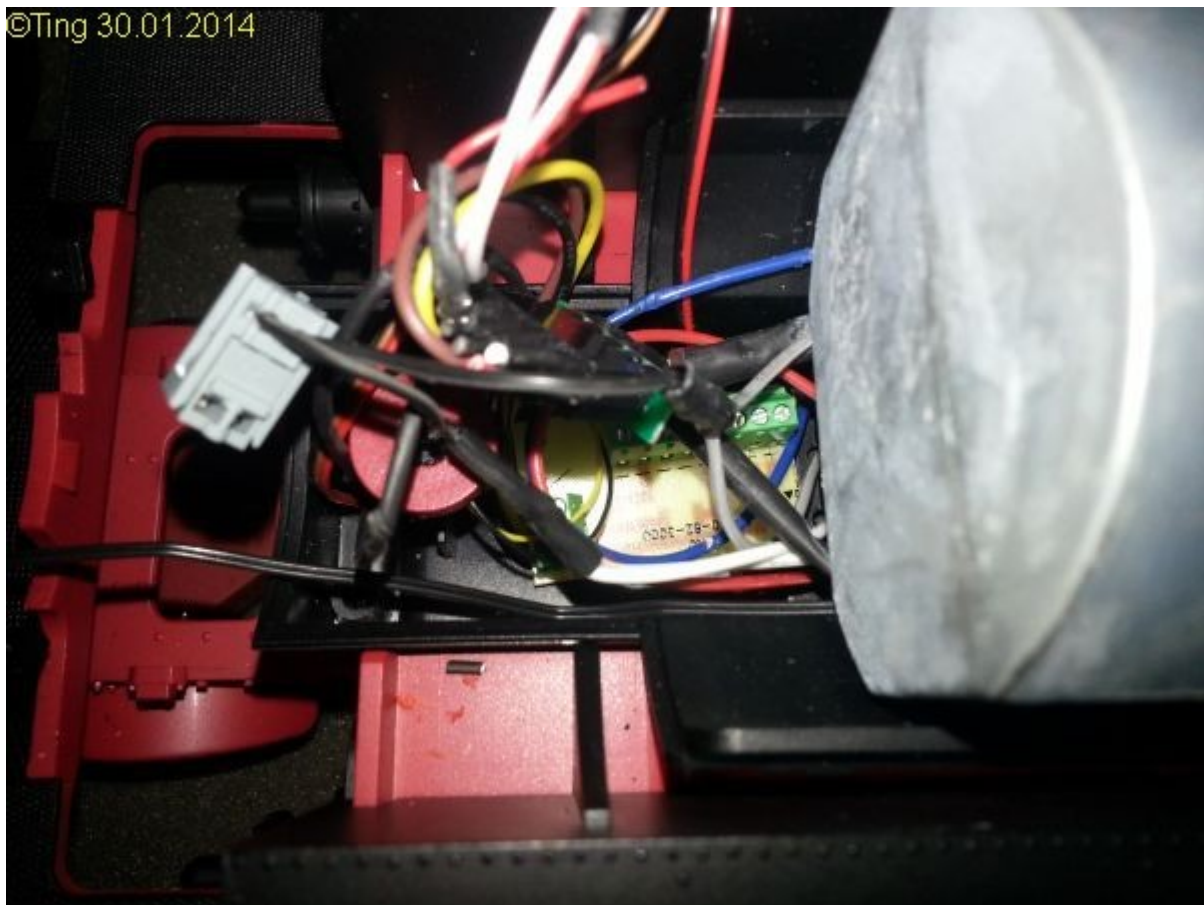
Picture-1: Shortened board

For the pulsed evaporator you need the track voltage, therefore disconnect the grey and white cable from the motor plug and extend it with a 2-wire cable (about 10cm).

Attach a 2-pole plug to it.

Solder the counterpart to the evaporator.

The plug shown here is only one example, it can also be used with any other plug, but it should be able to withstand 1 ampere.



Picture- 2: Connector for supply of pulsed smoke unit

The cable for the cycle simulation must be extended to the coal box.

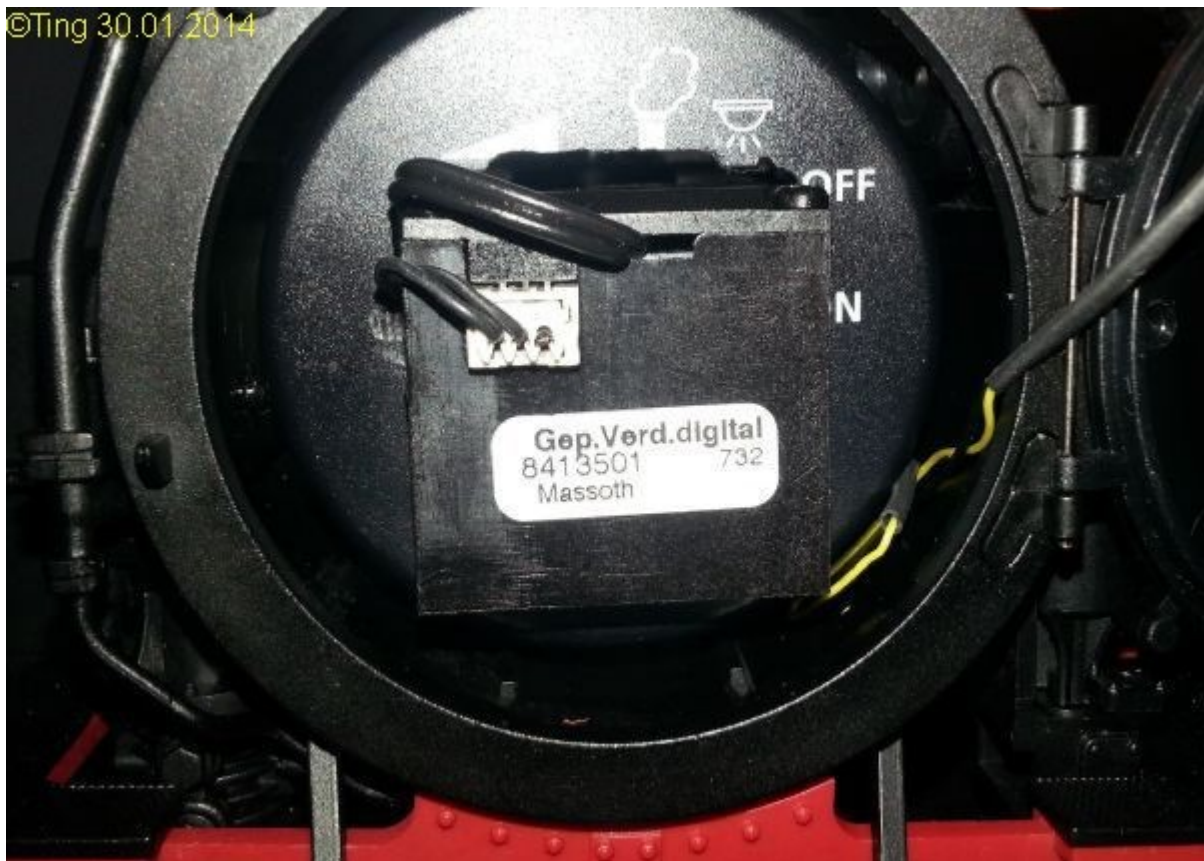
The 2 cores as described in the evaporator instructions are sufficient.

To lay the cable, it is best to unscrew the lead weight.

Remove the floor of the driver's cab for better laying of the cables.

Leave the cables to the evaporator long enough, as the evaporator is then inserted from the front.

Now you have to work on the insert from the front of the boiler.



Picture-3: Opening for pulsed evaporator

The opening should fit very well.

First, edit the pages appropriately.

Then extend downwards until the cutting edge touches the inner curve.

Thus, the evaporator rests well on the inner edge of the curve during insertion.

At the upper edge you still have to adjust a little so that the evaporator opening fits.

A cutout must still be milled for the cables at the top left.

Final assembly will take place later.

The boiler fire

For the boiler fire, an opening as shown in picture 4 must be milled.

It is advisable to separate the boiler from the driver's cab.

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Picture-4: Opening for boiler fire

Then glue the boiler fire plate to the inside as shown in Picture 5.

Here I cut a matching strip from a cardboard strip of the uncoupler packaging, stuck it on with aluminium foil and glued it on at the bottom as a reflector.



Picture-5: Installation of the boiler fire.

The cable must reach the coal box again!

Light cabin

The wires of the LED are bent with sharp edges and 2 wires are soldered on.

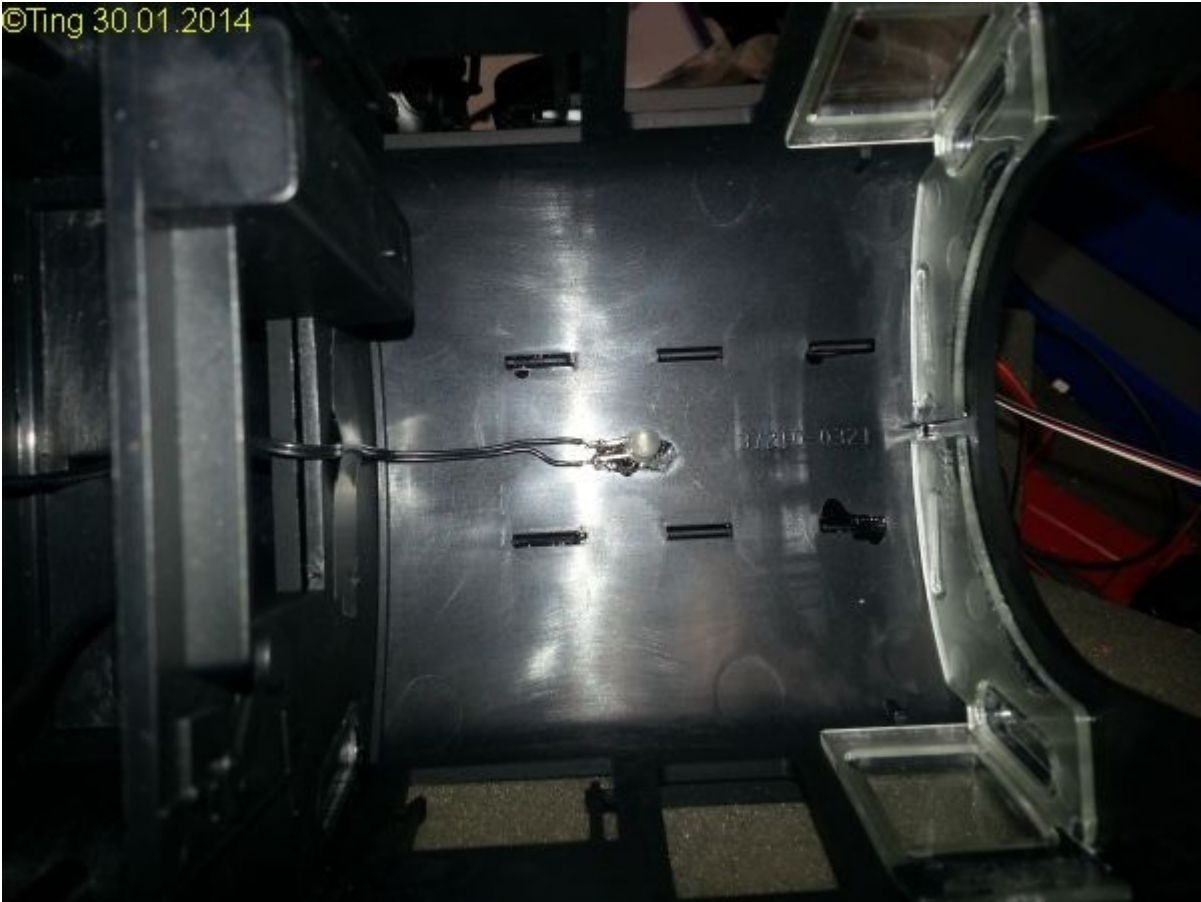
It is essential to remember the polarity.

With LEDs, the short wire or the flattened side of the diode is usually.

Solder the 2.2KOhm resistor to the other end of the cable on the - side and provide it with heat shrinkable tubing.

About 1cm wire of the resistor should remain free and then screw it to the XLS.

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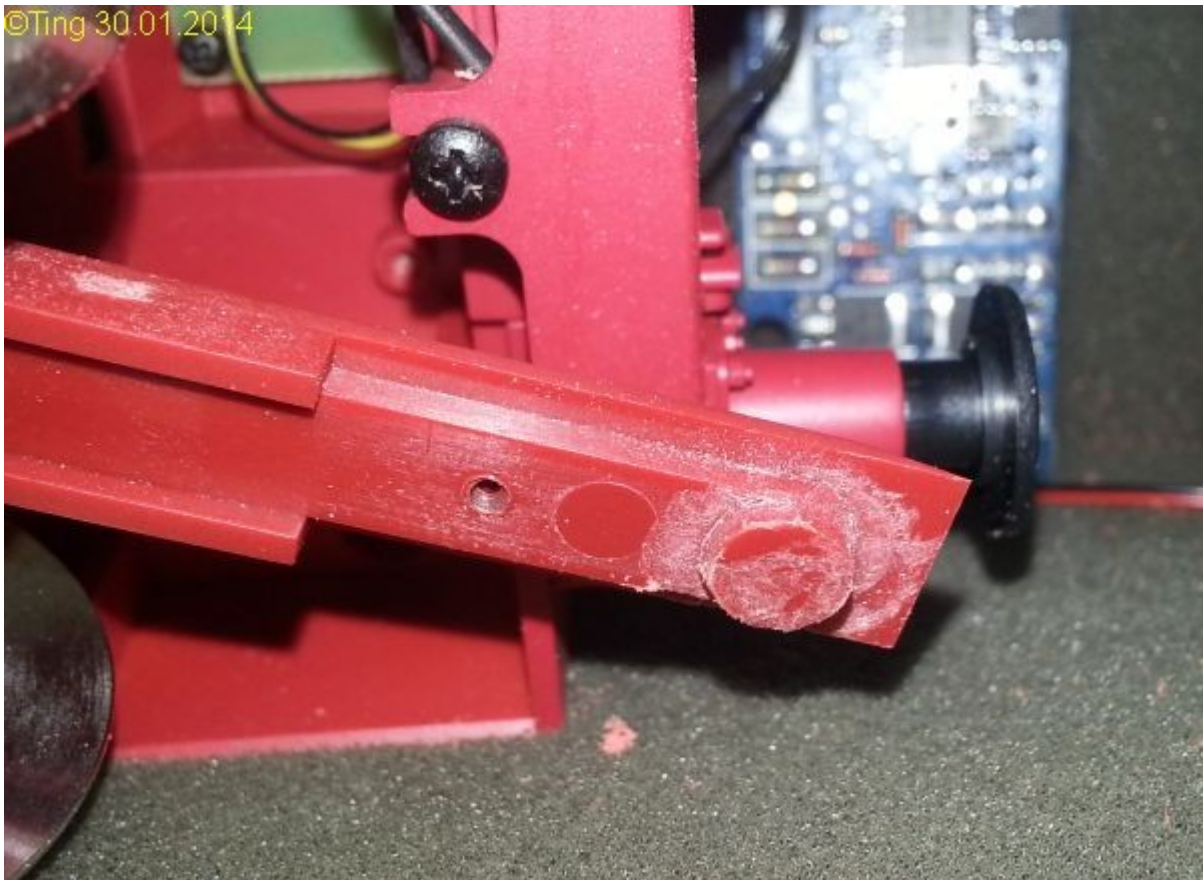


Picture-6: Mounting light inside driver's cab

Now plug the boiler and driver's cab together again.

Decoupler

In order to mount the uncouplers, some milling has to be done on the mount, as can be seen in Picture 7.



Picture-7: Modification uncoupler image

Do NOT attach the uncoupler with the enclosed Massoth screws, but with the original PIKO screw!
Drill a small hole for the cable as shown in Fig. 8.



Picture-8: Hole for cable

With the front uncoupler, fix the cable again with a cable tie.
Then pull into the cable gland inside the locomotive as shown (Picture 9)



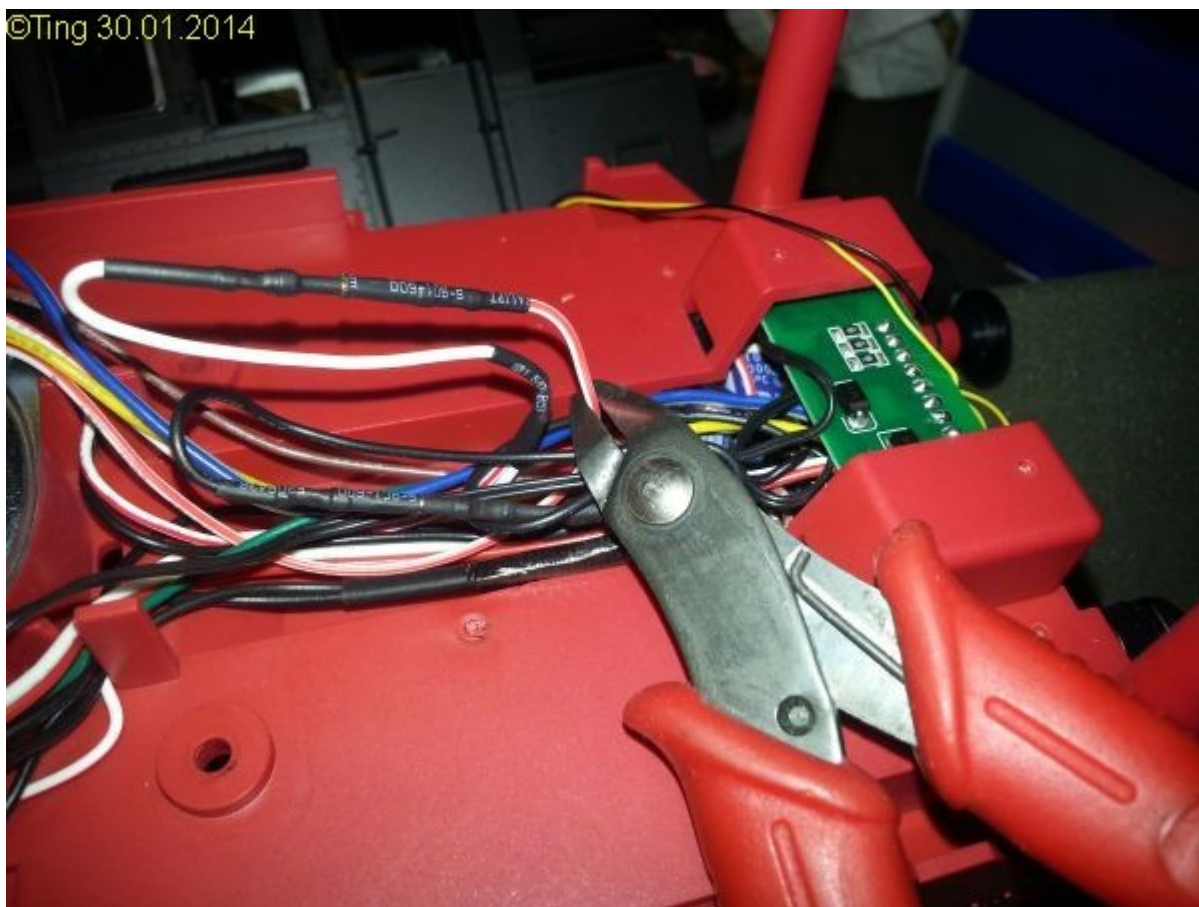
Picture-9: Cable routing front uncoupler

With the rear uncoupler the cable is sufficient, with the front one we use unused cables in the wiring harness.

To do this, proceed as follows:

Disconnect the 2 white/orange cables as shown in Picture 10/11.

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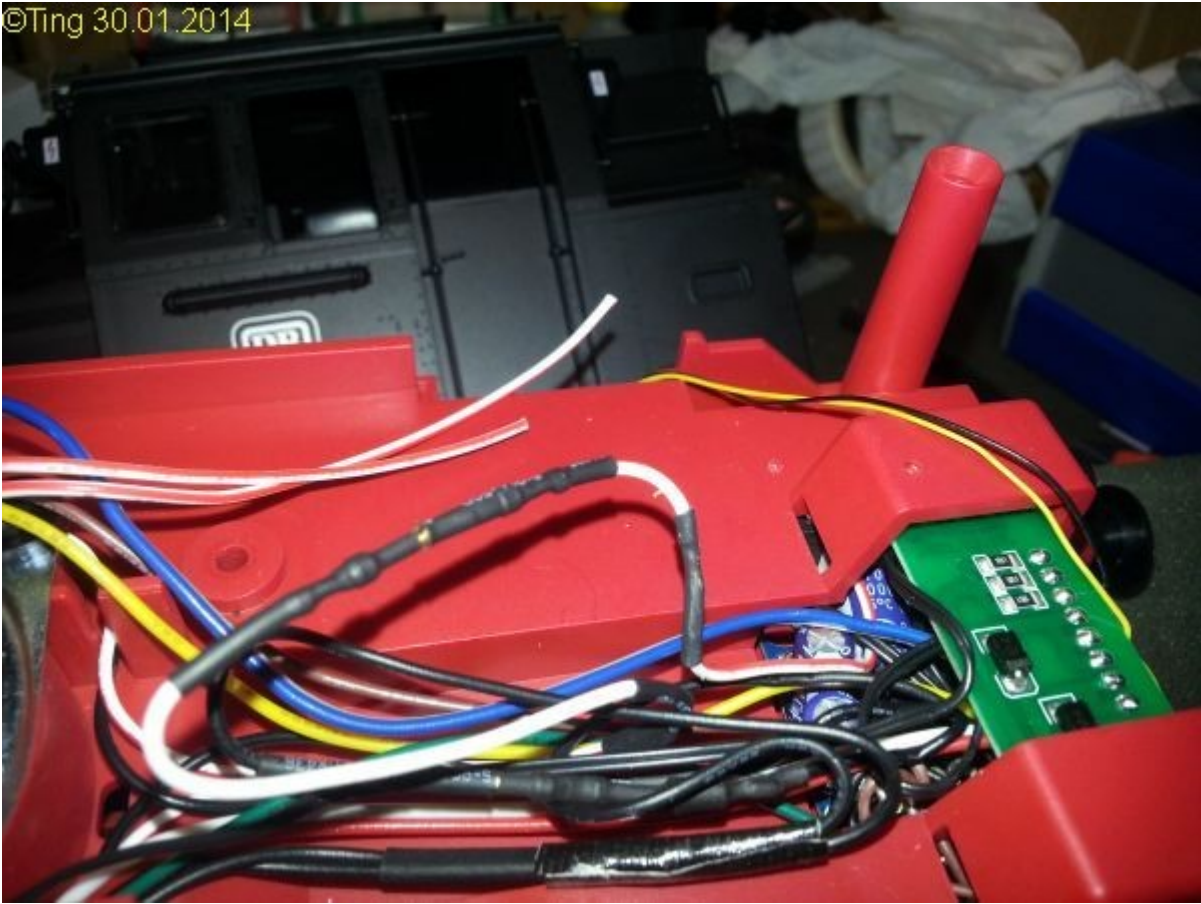
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Picture-10/11: Preparing the cable

Then connect the 2 cut cables (From LED engine lighting to XLS)

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Picture-12: Re-soldered cable for engine lighting

Now there are 3 free cables in the wiring harness. Now connect the uncoupler at the front as follows (Picture 13)



Picture-13: Front uncoupler connection

Connect red cable uncoupler to green cable

Connect the black and brown cables to the white/orange cable.

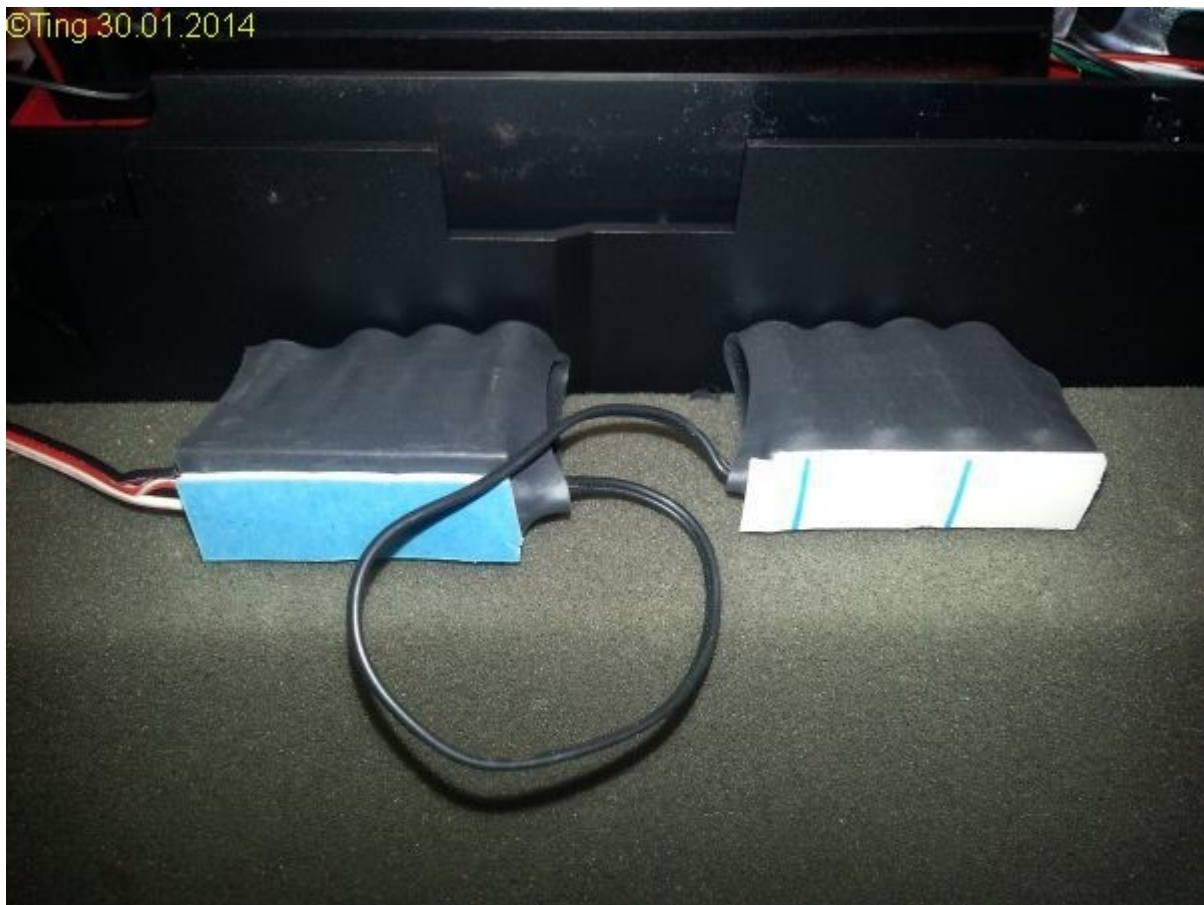
Measure where the brown one is connected (other side of the cable) and mark!

On the other side extend the 2 white/orange cables and the green cable sufficiently to the carbon box.

Powercap Maxi

The Powercap maxi goes into the water box.

In order for the 2 blocks to cool, double-sided adhesive tape must be applied as shown in Fig. 14.



Picture-14: Attaching the adhesive pads

The cut-out on the water box must be enlarged for the cable (Picture 15)



Picture-15: Enlargement of the cable opening

At the bottom of the water box, the bridge must be milled off by 5mm at the marked point (Picture 16).



Picture-16: Powercaps assembly and milling

The Powercaps must be mounted exactly as shown in the picture. The cable is also extended to the coal box.

Final cabling of the XLS

Reconnect the cables of the lights at the top to the light distribution board as before (note polarity)

First connect the gearbox:

“GL+” = grey cable

“GL-” = white cable

“Mot+” = red cable

“Mot-” = blue cable

Divide the Dec+ (+22V) connections into 2 parts, otherwise it won't all fit into 1 terminal.

In Dec+, it's coming:

Black light distribution boards front and rear

the LED light driver's cab

1 wire from boiler fire

Red from Powercap Maxi

Red from rear uncoupler

Green cable from front uncoupler

Comes in Dec- (GND):

Black from Powercap maxi

GND Cable from the clock input of the pulsed evaporator (Please note the polarity here!!)

Black from the rear uncoupler and the corresponding white/orange to which the black cable is connected at the front.

LI-V = Yellow/Brown on the front light distribution board

LI-H = Yellow/Brown on rear light distribution board

A1 = 2nd wire of the boiler fire

A2 = white/orange cable of engine lighting and - with resistance of LED cab

A3 = Connection of pulsed evaporator clock simulation

A4 = Brown of both uncouplers (from behind the corresponding white/orange cable)

Then first place the upper part loosely on the lower part for programming.

Also put the evaporator safely aside.

Set DIP switch 2 to ON first.

Programming

The uncouplers are set to F5 and the engine lighting + cab light to F16.

The delay time that can be switched off is dispensed with.

The complete programming of the locomotive as address 64 with the DCC Programmer is enclosed.

CV1=64 (XLS and pulsed evaporator are programmed to address 64)

CV15=148 (Evaporator only programming inhibit)

CV29=2 (Disable analog mode)

CV50=15 (Dim light)

CV53=143 (Dim A2 only, engine lighting + cab)

CV54=10 Boiler fire on button 10

CV56=16 Engine lighting on key 16

CV64=0 Disabling the shutdown function delay time

CV114=30 Cycle simulation A3

CV115=5 Uncoupler on button 5

CV129=20 Digital overrun time (can be adjusted)

CV156=16 Coal shovels continuous loop

CV15=0 Programming inhibit XLS + evaporator

The programming lock of the XLS is available on all newer XLS!

Prepare hose set

Now cut off the following lengths from the hose set:

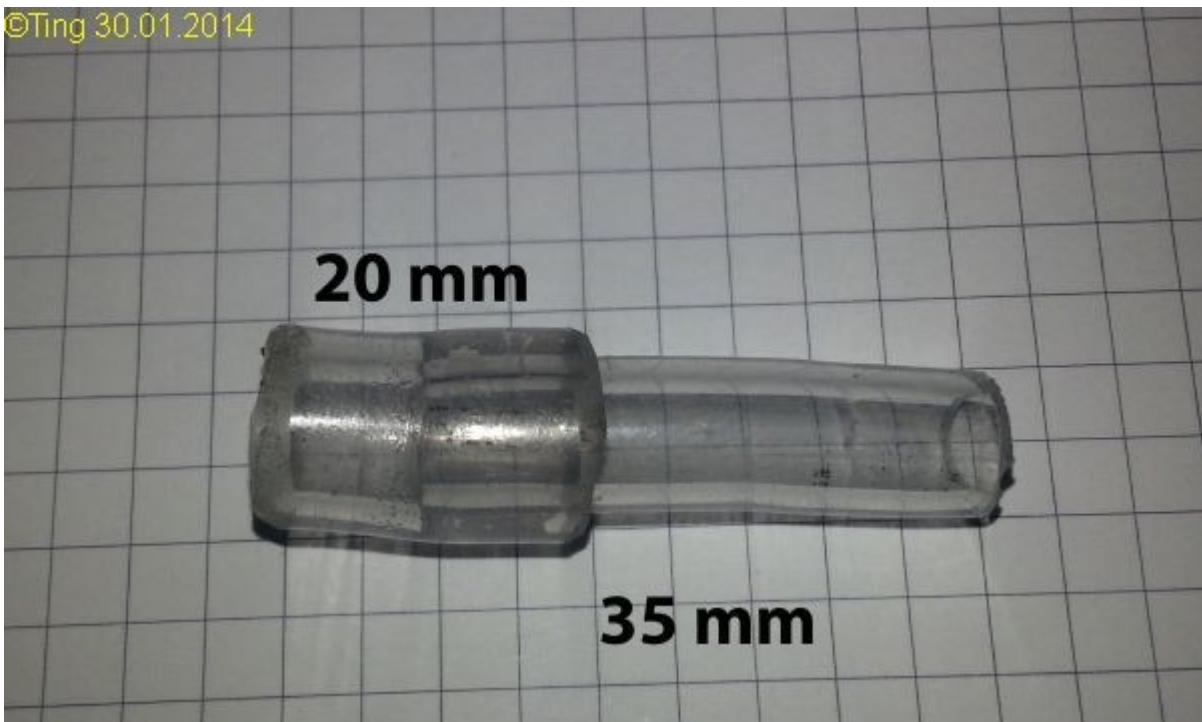
Thick hose 20 mm

Medium hose 35 mm

Round off the edges of thick hoses to make installation easier.

Then insert the middle hose about 10mm into the thick hose (Picture 17).

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Picture-17: Preparation hose set.

The XLS is placed with the long edge on the back of the coal box.

Now carefully mount the locomotive again and make sure not to crush any cables!

The shortened light distribution board at the front fits between the mounting spigot at the front and the motor connection plug.

Finally, insert and secure the front boiler part.

It is essential to pass the cycle cable and track connection through the opening of the evaporator beforehand!

Then insert the evaporator with the connections to the front when the steam outlet opening is aligned with the steam dome, first insert the prepared hose with the thick end and carefully insert into the opening.

Then push the evaporator a little bit inwards so that the front cover just closes.

Drill out the steam dome with 9.8mm to make the hose easier to insert.

Reinstall the steam dome.