Locoman sound and large EM1 speaker, firebox flicker, stay alive and working front and rear lamps.
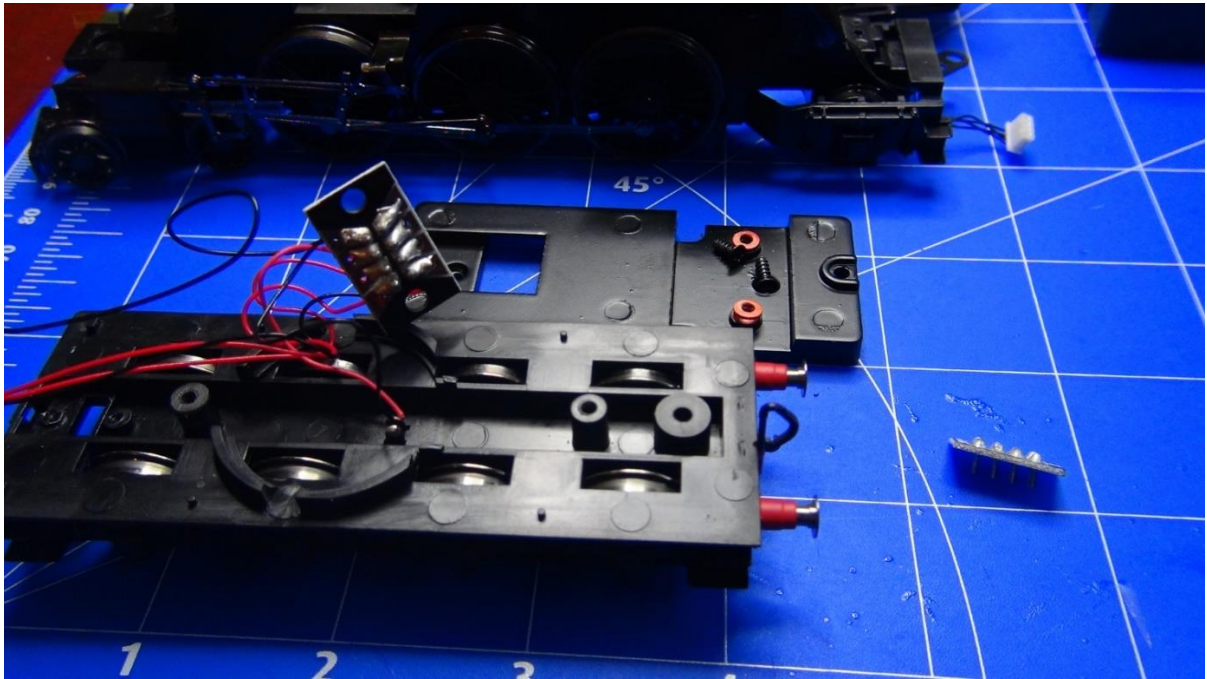
irst the tender. The 8 pin plug was disconnected and the weight removed. The tender pickups had to be disconnected and then resoldered.


As the decoder would be moved to the loco, the existing 4 pin plug between loco and tender was modified. The outer two pins remained as L & R track pick ups, and the two centre pins would be the new speaker connections.
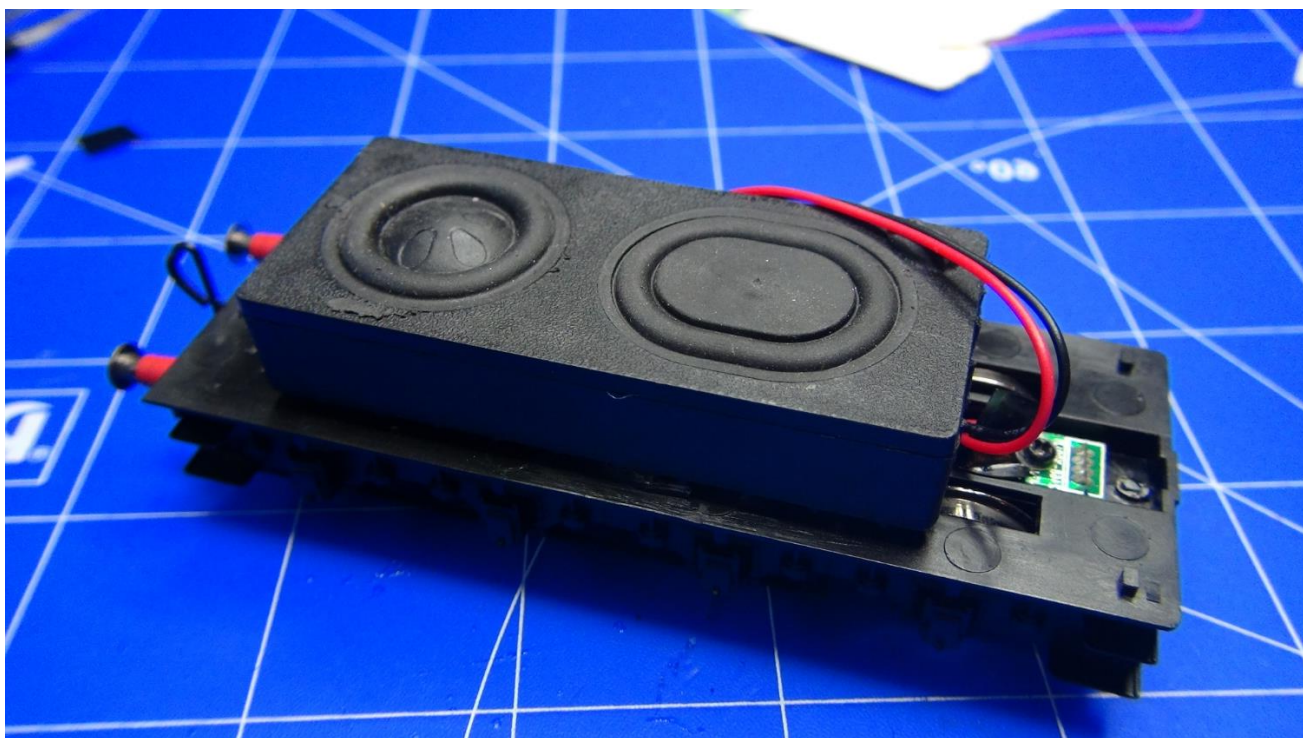An EM1 speaker was to be installed.

The lugs for fitting the weight, and the existing speaker surround was clipped off. The lugs were also cut off the EM1 speaker, and the EM1 speaker cable was connected to the 4 pin plug.
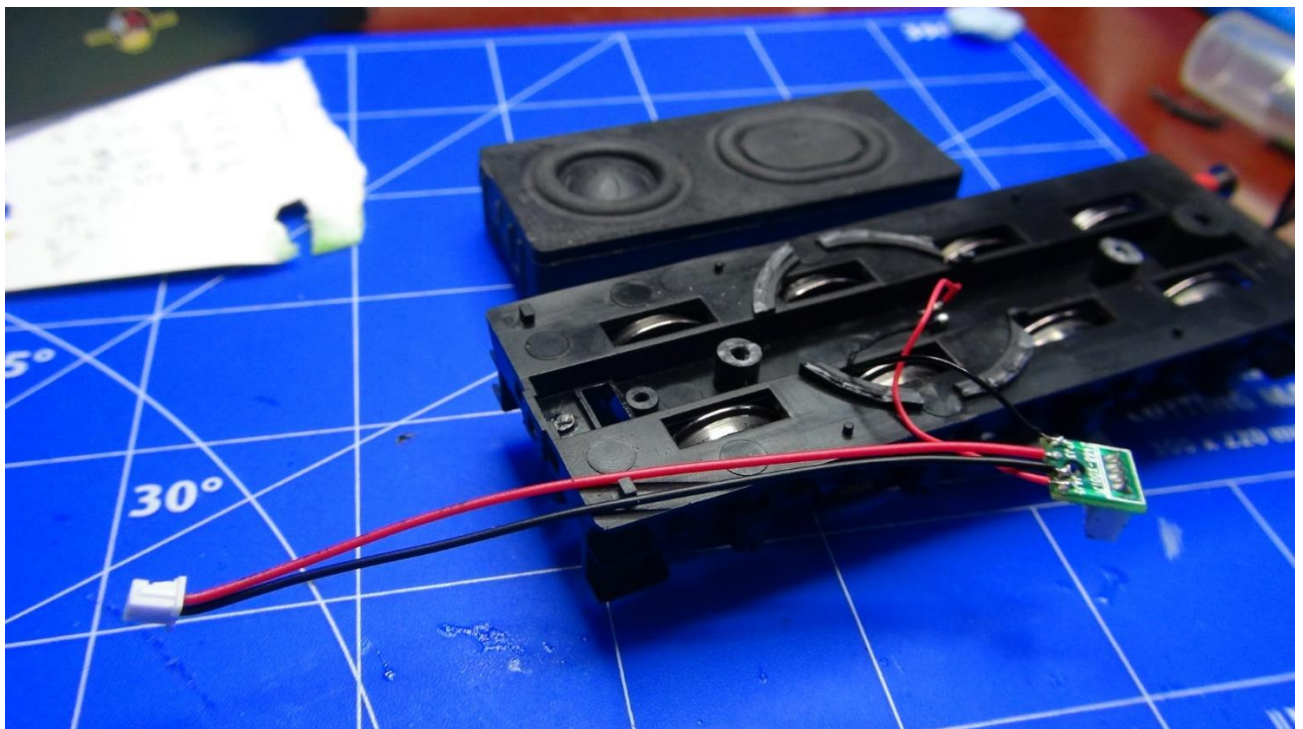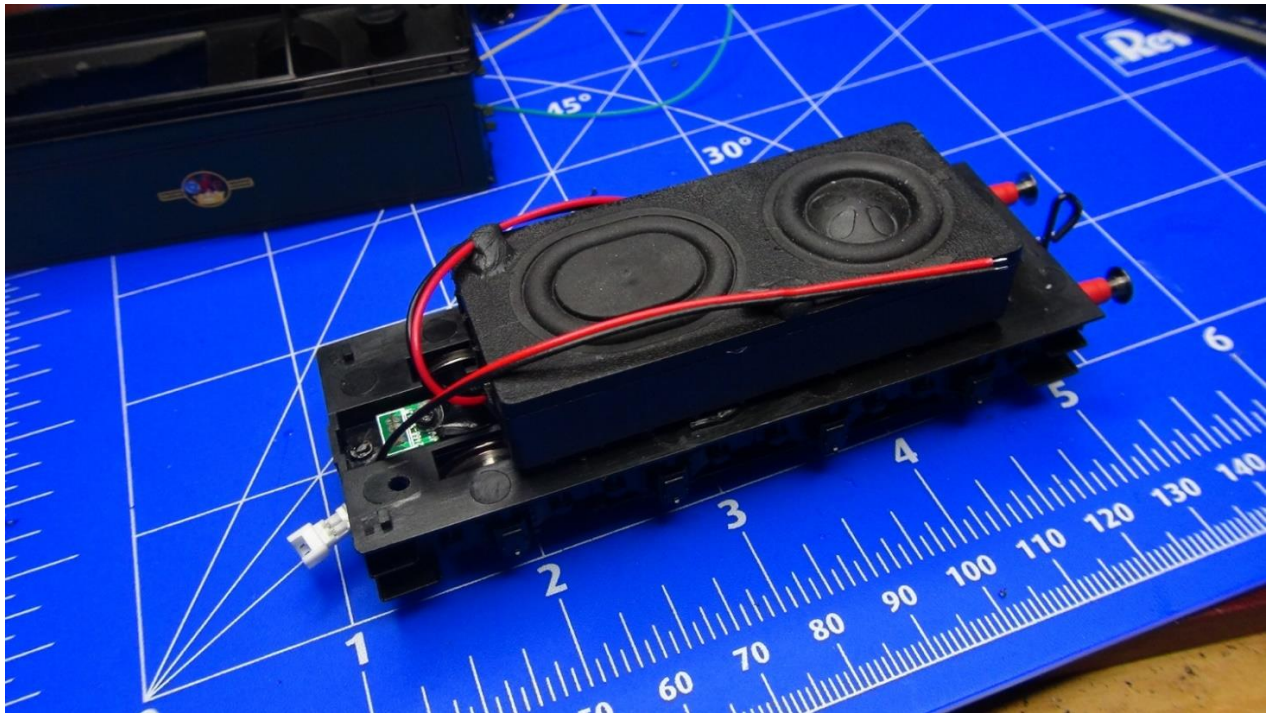

Speaker installed using black tack.

The coal chute was cut out of the tender body.

The rear tender lamp (red), would be connected to the loco via a 2 pin JST connector.

Preparation of the DCC Concepts lamps. Painting was done using the same method as on the Q6. Black primer, and then an off white. Sadly, DCC concepts no longer have these lamps available, but they are looking to introduce them again - hopefully. I could not get LNER lamps, so LMS / BR had to used.
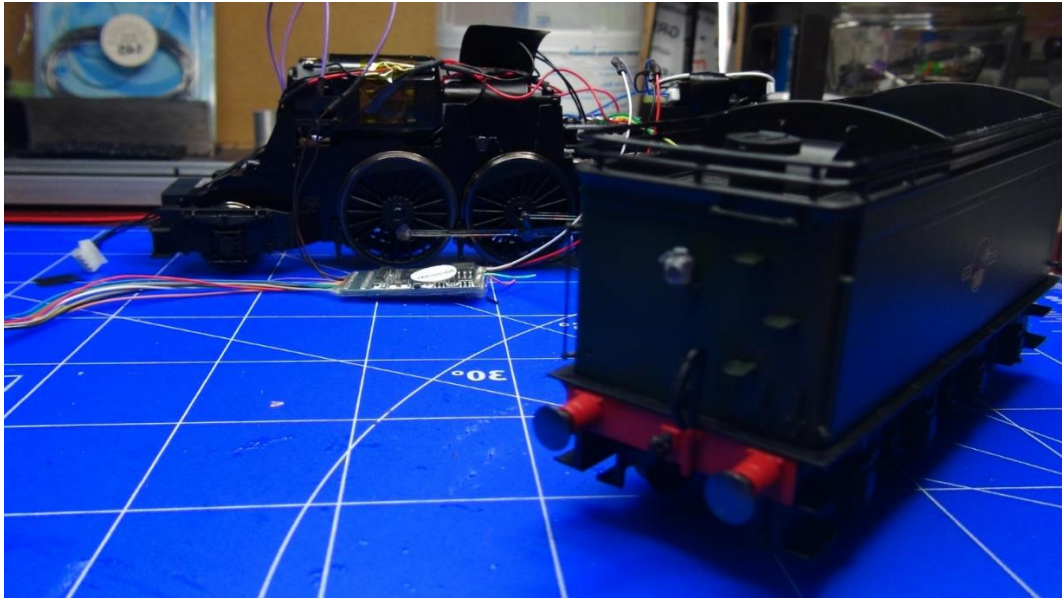

The lamp was installed together with a 50K ohm resistor in the positive leg. The positive would connect to Blue +ve common, and the negative return to the yellow wire (rear lights).
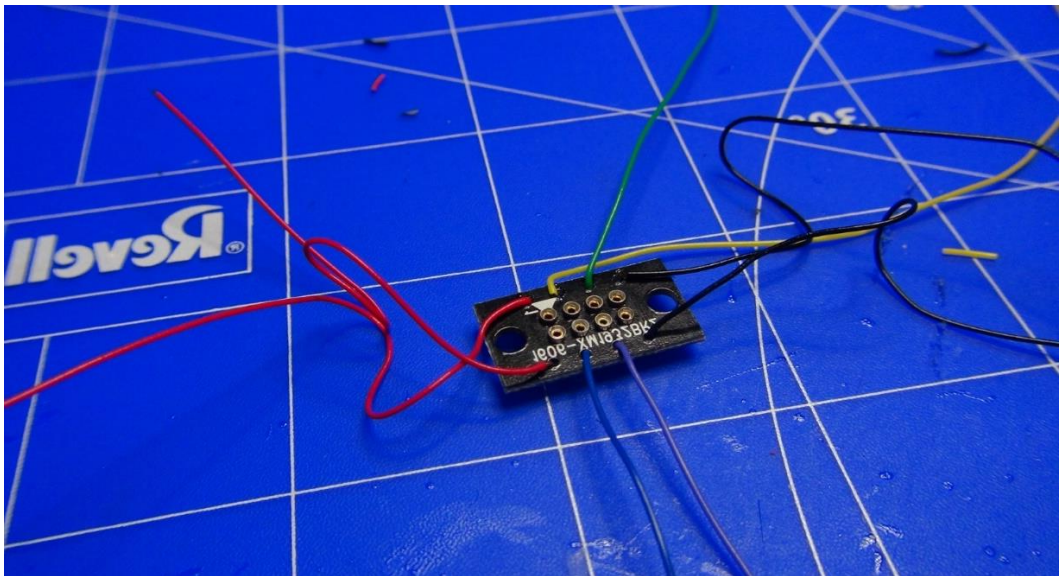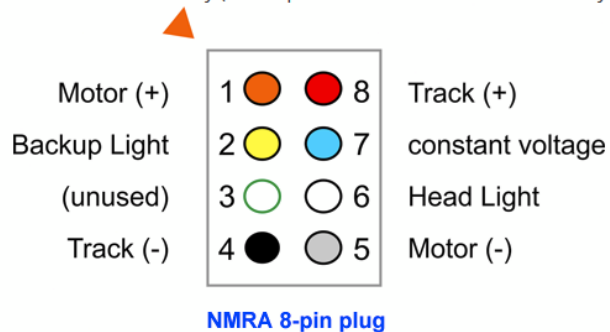
Tender body fitted.
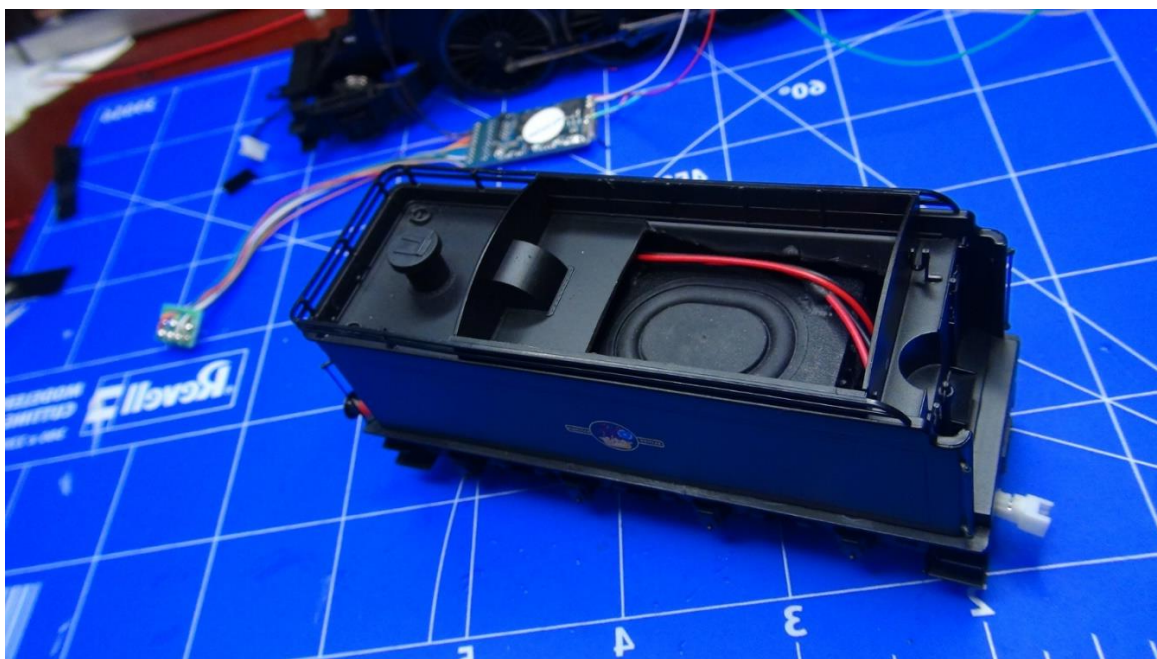
The next part will cover the installation in the locomotive.

8 PIN CONNECTOR

If you are plugging your BlueRail board into a "DCC-Ready" locomotive equipped with a 8-pin connector, it is important to orient the connector correctly (as the pin can be inserted one of two ways). Please refer to the diagram below for reference.

|			
Motor (+)	1 🟠	🔴 8	Track (+)
Backup Light	2 🟡	🔵 7	constant voltage
(unused)	3 ⚪	⚪ 6	Head Light
Track (-)	4 ⚫	⚪ 5	Motor (-)

NMRA 8-pin plug

The circuit board in your locomotive should have a small triangle or dot indicating where the number 1 pin (orange) should go, which will help you orient the 8-pin connector correctly. (It is possible the number 1 pin location is not marked.) If you connect the pin in the wrong orientation, your locomotive will run backwards and the lights will not work. If after installation you find this to be the case, simply rotate the connector 180 degrees. It is probably a good idea to launch the app and test your motor and lights before putting the shell back on your loco.
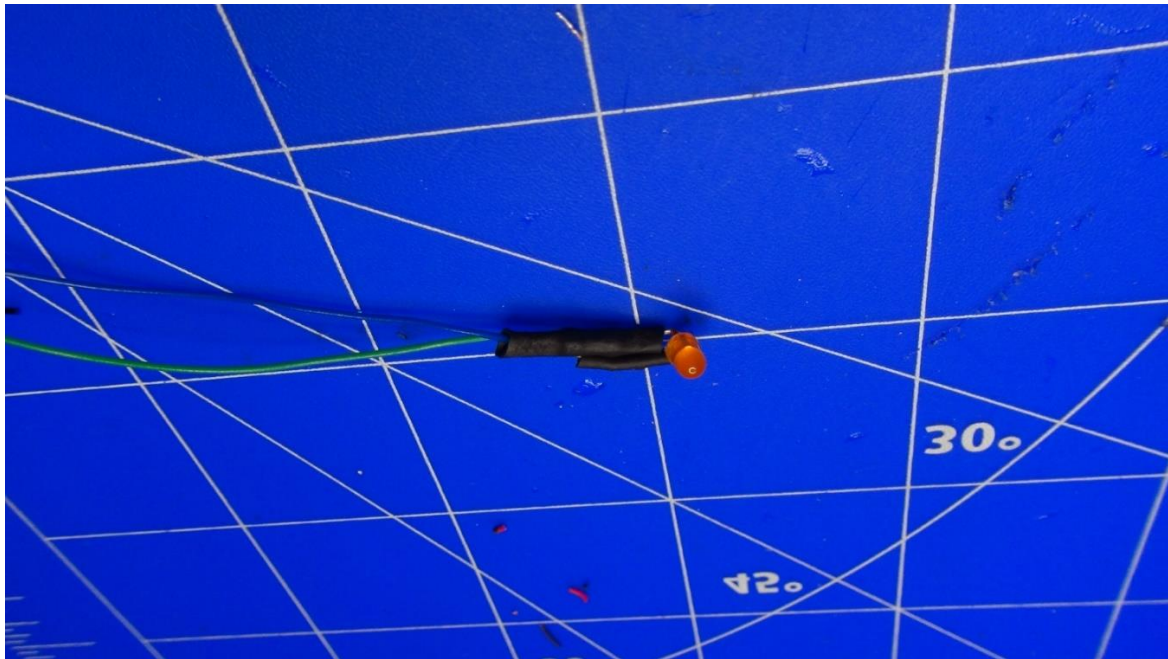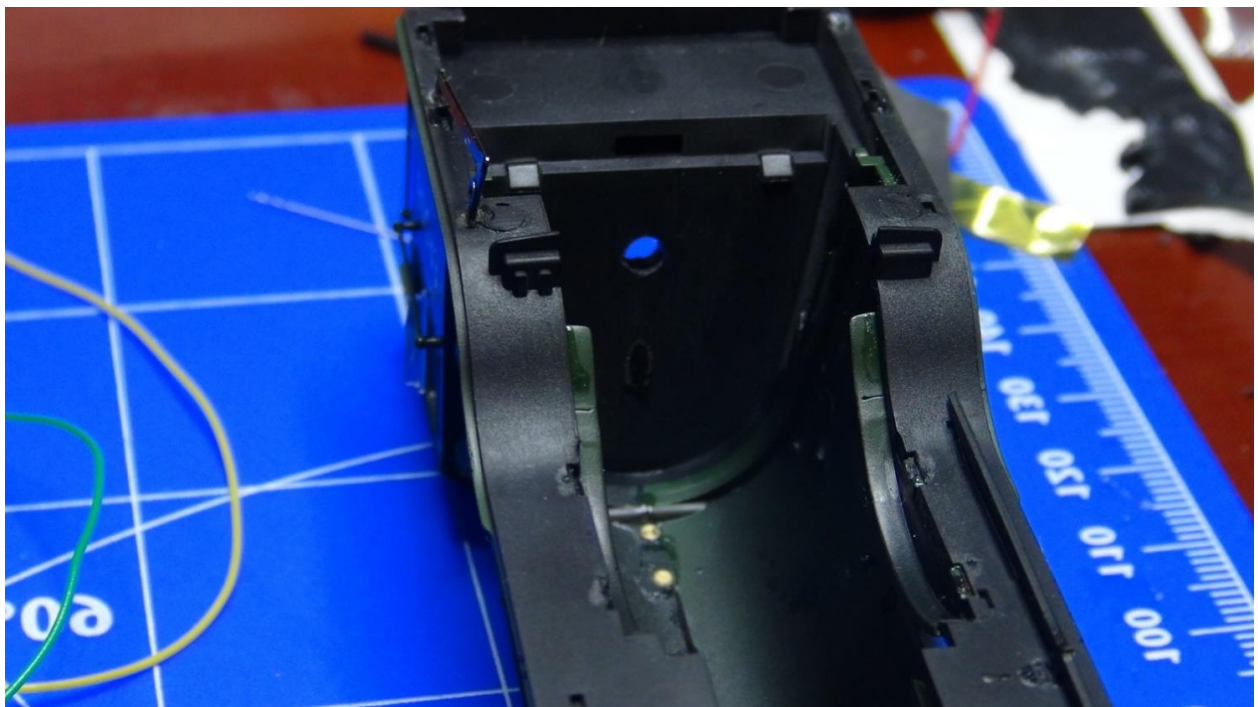
Motor wires connected to the socket.
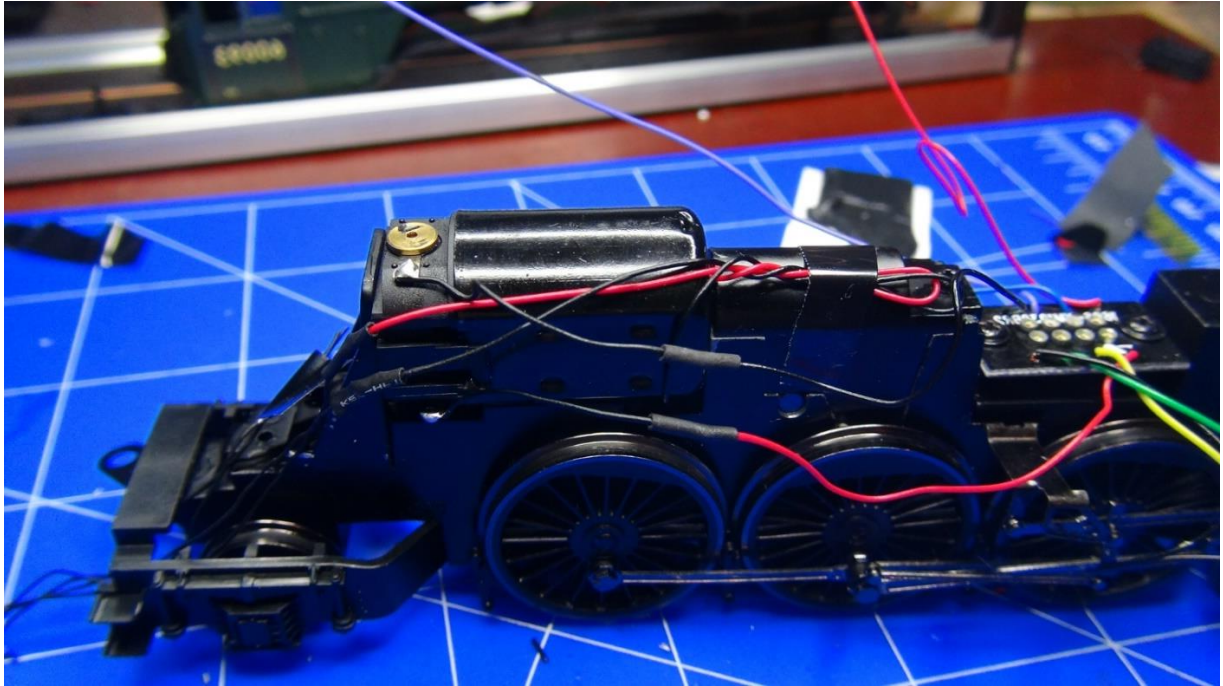
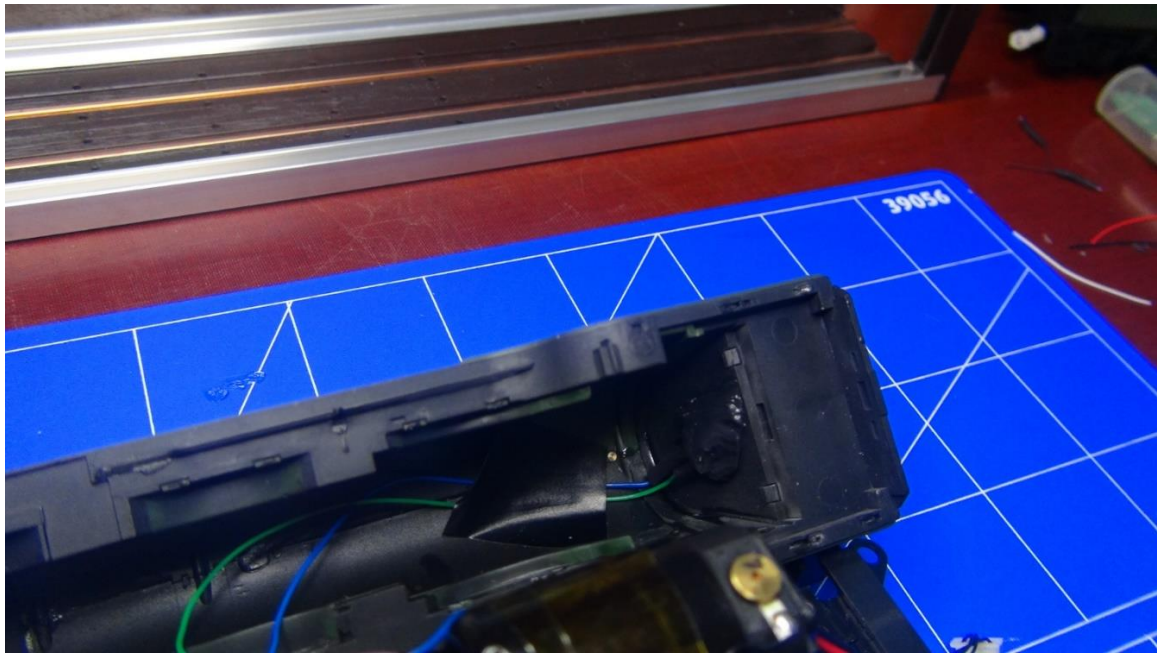Track wires from loco and tender connected, and then routed to the 8 pin socket.
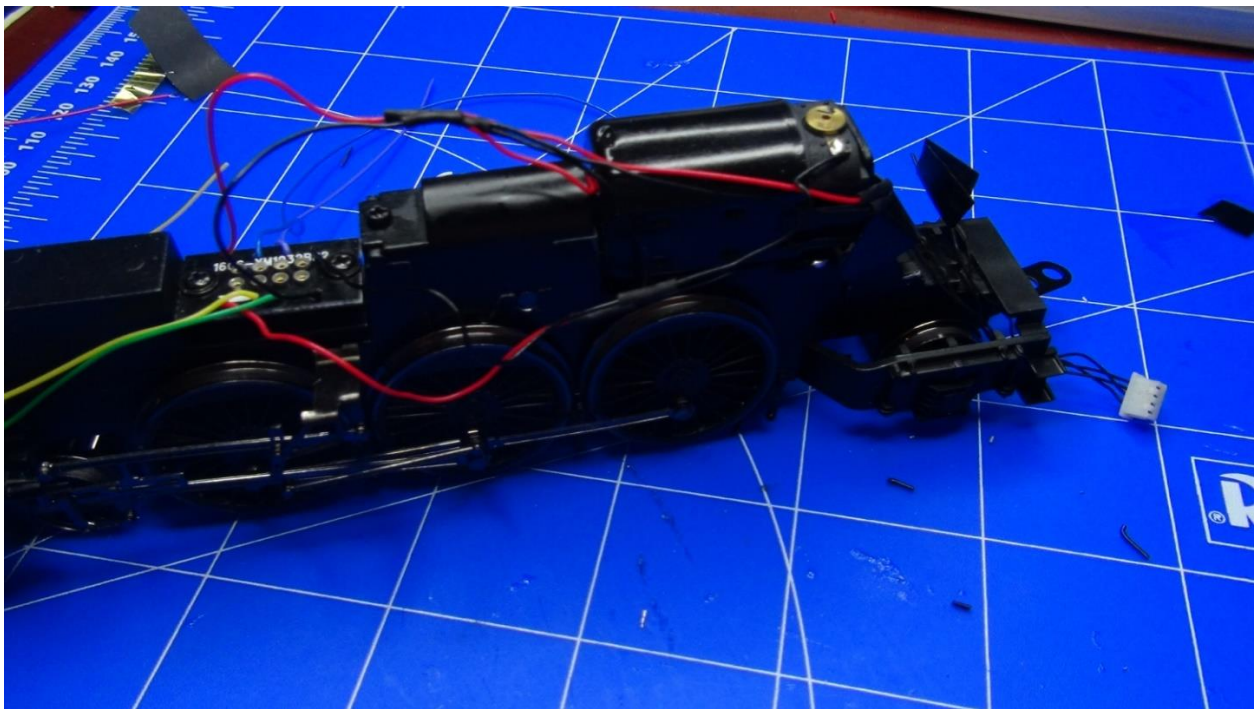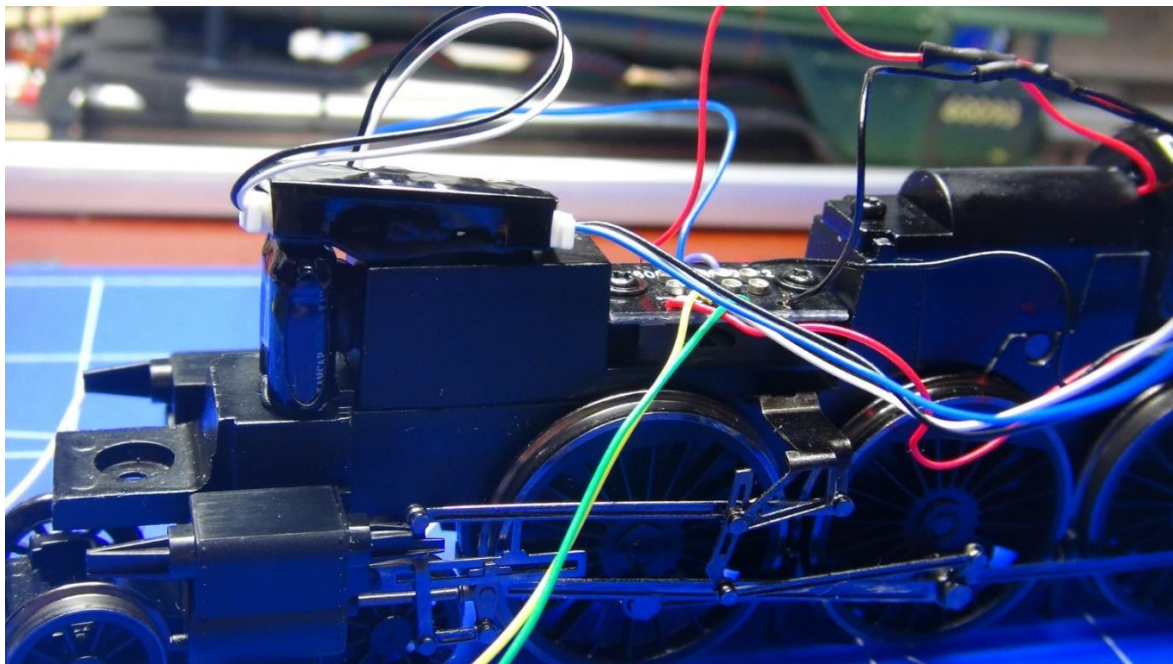

Firebox flicker LED / 1K ohm resistor prepared.

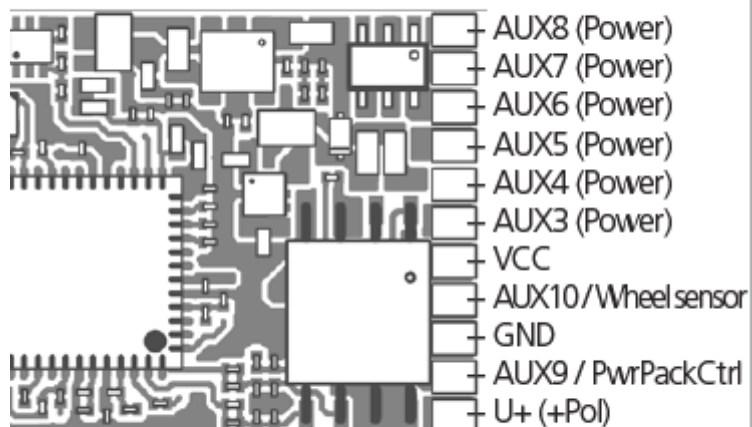A 3mm diameter hole was drilled in the back plate.

LED installed using black tack, with wires Blue (+ve common) and Green (AUX 1) for firebox flicker - coal shovelling.

Zen 3 wire stay alive installed, and connected to the decoder. Black (GND), White (CTRL) and Blue (+ve).

+ AUX8 (Power)
+ AUX7 (Power)
+ AUX6 (Power)
+ AUX5 (Power)
+ AUX4 (Power)
+ AUX3 (Power)
+ VCC
+ AUX10 / Wheel sensor
+ GND
+ AUX9 / PwrPackCtrl
+ U+ (+Pol)

AUX9, AUX10 are Logic level outputs / inputs

2   AUX9 Default: PwrPackCtrl

ESU V5 Decoder Series

LokSound Version 5

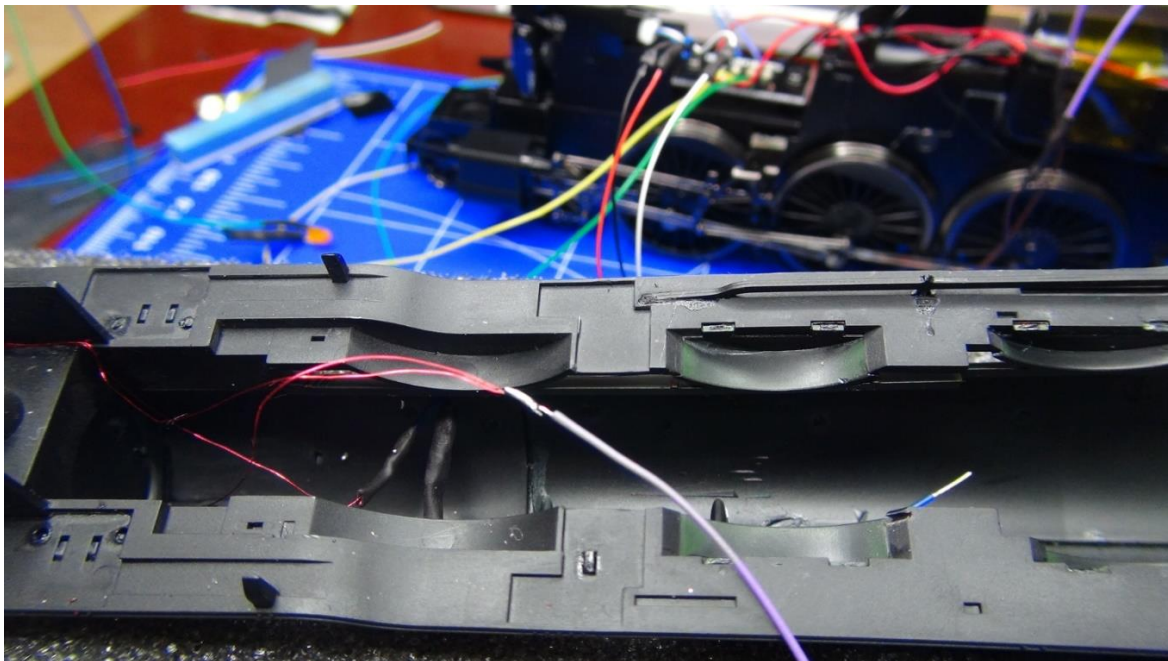U+ - RED in ESU

Ground - BK in ESU

LokSound Version 5 MICRO
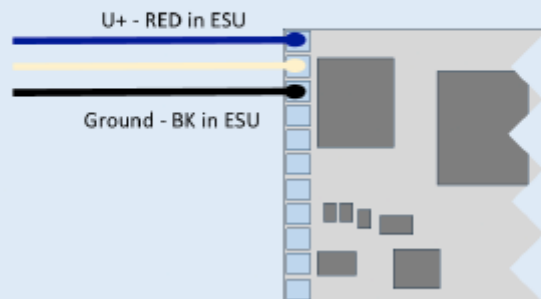
Front loco lamps were installed. 0.4mm diameter holes were drilled for the wires, and routed as shown. Blue wire to a 50K ohm resistor, and then connected to both positives of the LED lamps.
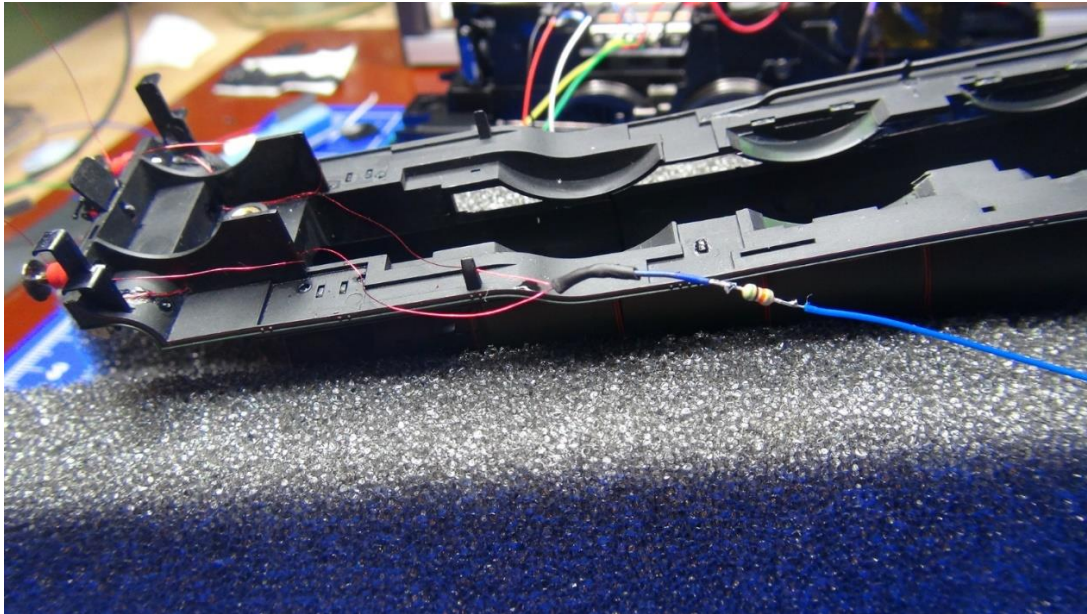
White (purple in this case), wire for front lamps connected to negative legs of LED lamps.

The speaker wireswere connected to brown wires on the decoder, then lots of tidying up. It was difficult to get the loco body back on until the wires were well secured with insulation tape as shown below. The decoder was sited in the roof of the locomotive body, and aligned properly in front of the motor.
The wires were checked on each side in turn to prevent trapping.
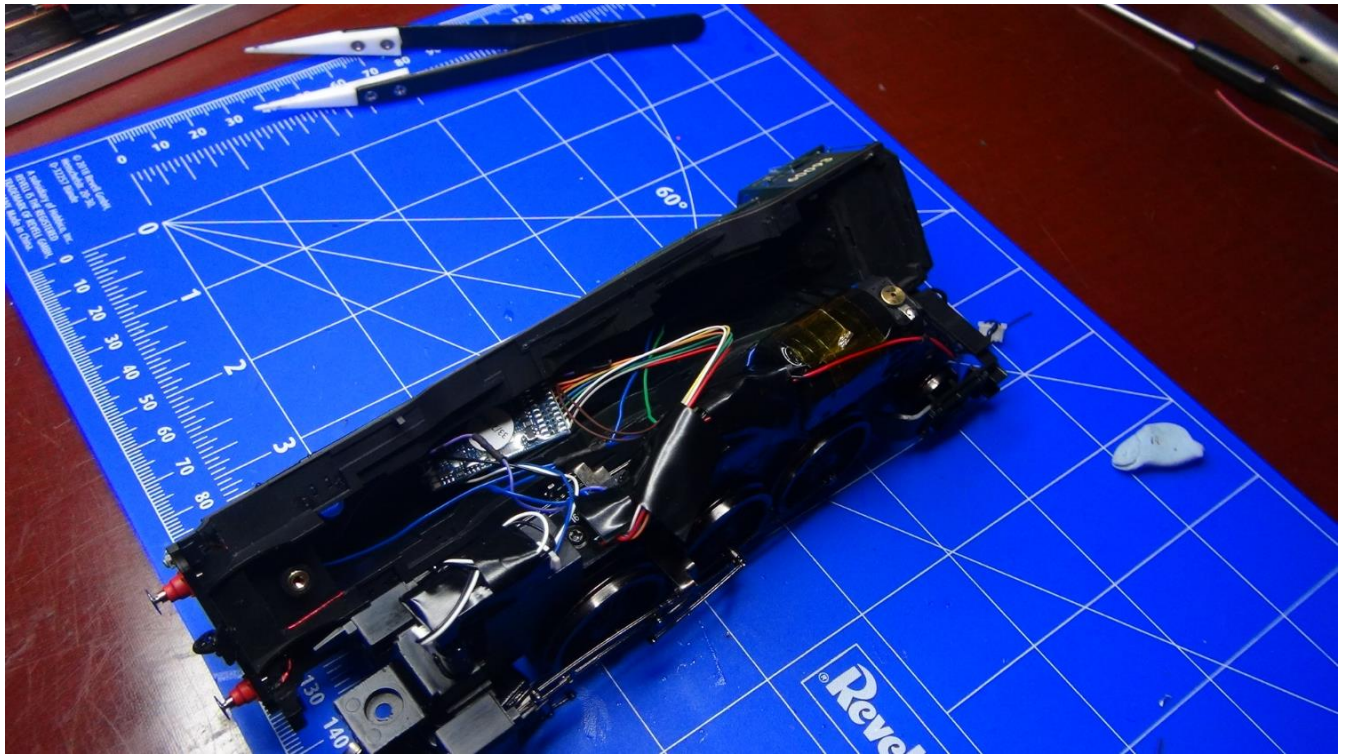
Tested, with lighting and stay alive working fine.

The sound from the EM1 is tremendous!
if you are ok with keeping F20 (for the rear light) and dropping the smoke generator, you don'have to change the mapping.
You just have to change the output settings for Aux2 from "smoker output" to "lighting output" and this can be done by
CV31 = 16
CV32 = 0
CV283 = 1
CV286 = 20

where CV286 is the brightness (range from 1 to 31).
When changing brightness for this output you always have to program CVs 31/32 in advance as shown above.

For the front light you indeed can connect white and yellow, this is authorized by ESU. This is easier than remapping.

Changed CVs

Changed CVs (Programming instructions)

```
CV31 = 16, CV32 = 0
----------------------
CV283 =    2
CV286 =   31
CV287 =   16
```

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