Making a Track Voltage testing wagon

A simple but useful project for a layout

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Acknowledgement:

Thanks to Keith Shovelin of WoSAG for giving me the germ of the idea and subsequent assistance

Objective and basis of the project

Keith Shovelin has recently shown how the usefulness and simplicity of the MERG PMP1 Track Tester can be enhanced by adding a LED display and diode array to show DC and DCC voltage.

If a similar concept could be built into a wagon it should enable:

- Dynamic track testing of the voltage draw of DC locos under power and load.
- Testing and checking critically for layout track voltage consistency (*voltage drop*), especially if pushed around by hand. This applies to both DC and DCC systems.

Using a Goods Van (rather than an open wagon) enables components to be securely enclosed, allowing easier handling. The display can also be more neatly incorporated.

Electrical components used:

LED 2-wire display; Bridge Rectifier (smaller and simpler to install than diode array); Scraps of Veroboard and copper clad strip; *[nb the PMP1's LED indicator lights were not necessary]*

Wagon model and pick ups used:

Bachmann00 gauge van (any model van could be used); DCC Concepts Wiper Pick Up units ref. DCF-WP12(home made pick-ups could be used).

Adding weight to achieve total weight of about 100gms reduced rolling resistance of pickups.

CHOOSING A WAGON

Pictures show a standard *Bachmann*00 gauge van before adaptation

Almost any 4-wheel van or wagon from any maker or source could be adapted . *The illustrations all show an 00 gauge wagon.*

EM or P4 gauges are achievable by swapping wheelsets and tweaking pick-ups

PROJECT OUTCOME

Showing passing DC voltage

Showing DCC system voltage *(Lenz system)*

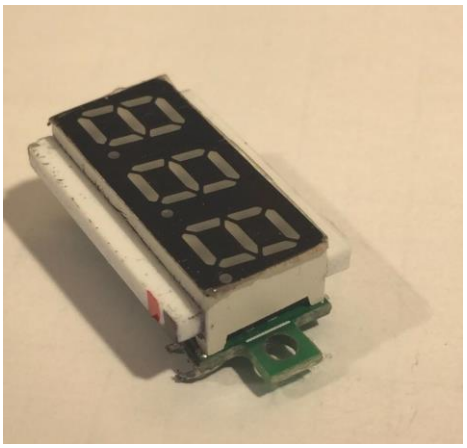
DISPLAY MODULE

2-Wire LED display module.
Easily and cheaply available from eBay and many other suppliers

MODIFYING THE VAN BODY

- Trace around display module.
- Scribe just under traced size
- Drill corner holes
- Deepen scribed lines as a guide to cut out panel with tip of a razor saw.
- File to a snug fit finished size

FITTING THE DISPLAY

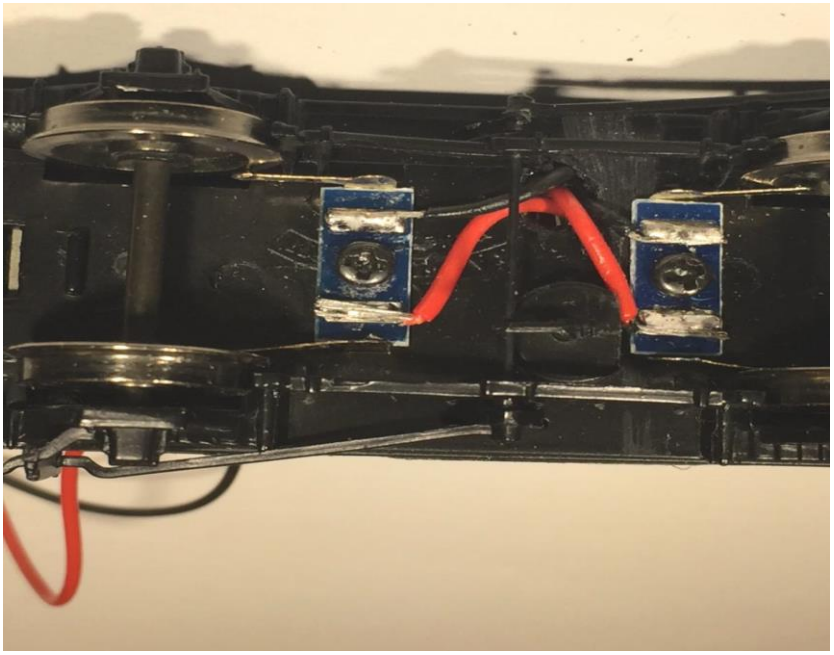


Glue a scrap length of plastic on top and bottom edges as a “stop” to give a flush fit to van body when display is installed from inside.
Depth of “step” same as van side thickness, found by trial and error.

Display held in place by tightly fitting polyurethane foam plastic block inside van, so can be removed if needed

Wires temporarily removed for easier handling during project construction.
Polarity carefully marked .

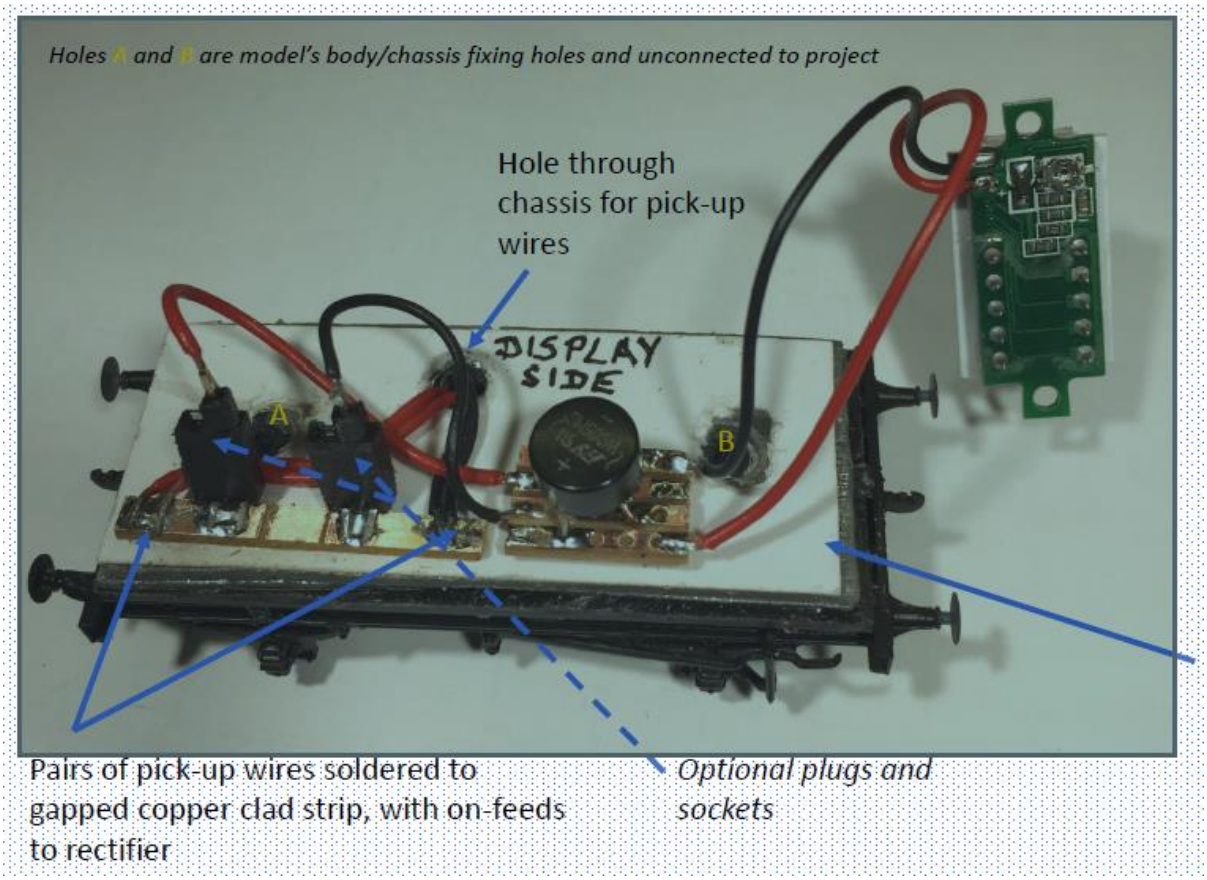
FIXING PICK UPS



Showing 2x *DCC Concepts* Wiper Pick Up units.
Home made pick ups could be used.

- Drill hole to route cables into body
- Screw/glue pick-up units to floor
- Ensure wipers bear on back of wheel tyre. Adjust spring pressure

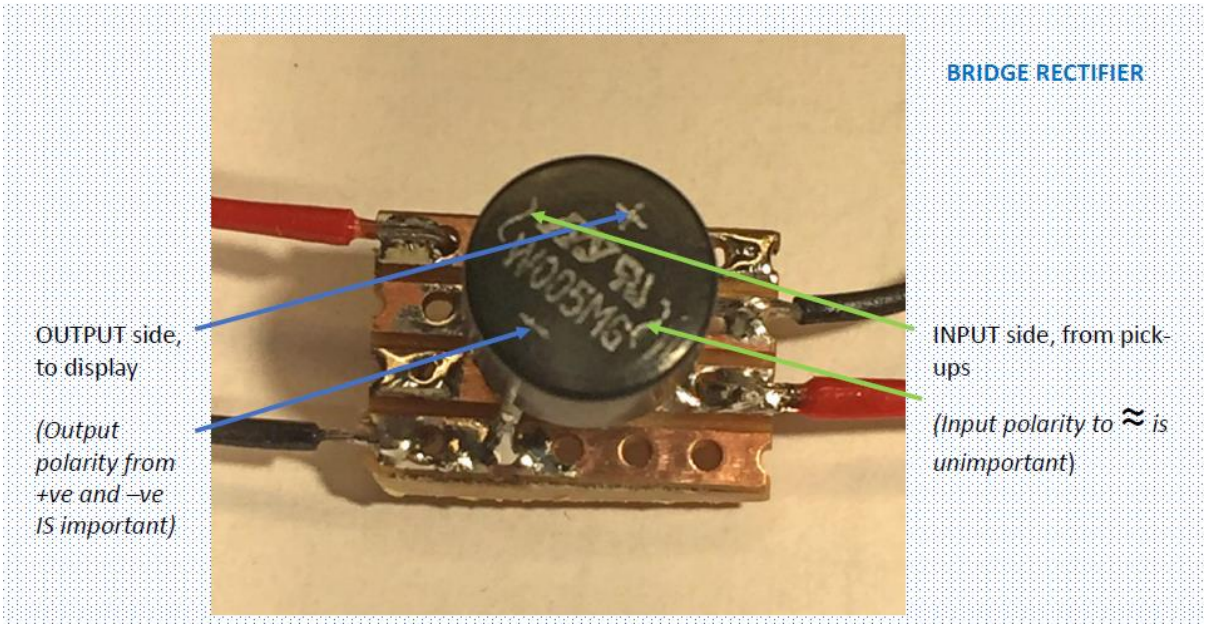
INTERNAL LAYOUT



The pick-up wires (usually) connect direct to the bridge rectifier via single +ve and –ve wires from the copper clad strip.
But here I have incorporated optional plugs and sockets in the pick-up wires to give me scope for later experiments.

Note the lead plate, with an insulating card top layer, glued to chassis for additional weight.

BRIDGE RECTIFIER



[PS I know that the Veroboard tracks are usually on the underside but I wanted easy future access to the wiring once it was fixed down]

THE FINAL WORD..!
And the converted van can still be used in normal traffic.

Click here to watch video