

East Penn HO Power Clinic.

Powering/Repowering cars.

Adapting RTR trolleys to East Penn Modules

19th EPTC Meet
Villanova Pavilion
May 2009
Bob Dietrich

East Penn HO Power Clinic.

Powering/Repowering cars.

Bowser – Original new drive.

Updated Bowser mechanism.

Hollywood Foundry Low-Boy.

Hollywood Foundry Bull-Ant.

Other Sources.

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Bowser – Original new drive.

Released in 1998 they are still available.

3 wheel sizes

Available with and without floors

Preview:

- Use replacement floor if it fits the job.
- Or make brass floor based on template.
- Add A-Line flywheel made for these units.
- Adjust Turning radius.
- Collect power from overhead.
- Ground all wheels.

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Bowser Drive

Select Drive Unit



Floor included:

PCC
Brill Semi Convertible
IRR High Speed
LVT 800 Series

Without Floor:

3 WHEEL SIZES:
26"
30"
34"

Replacement Nickel Silver wheels are available.

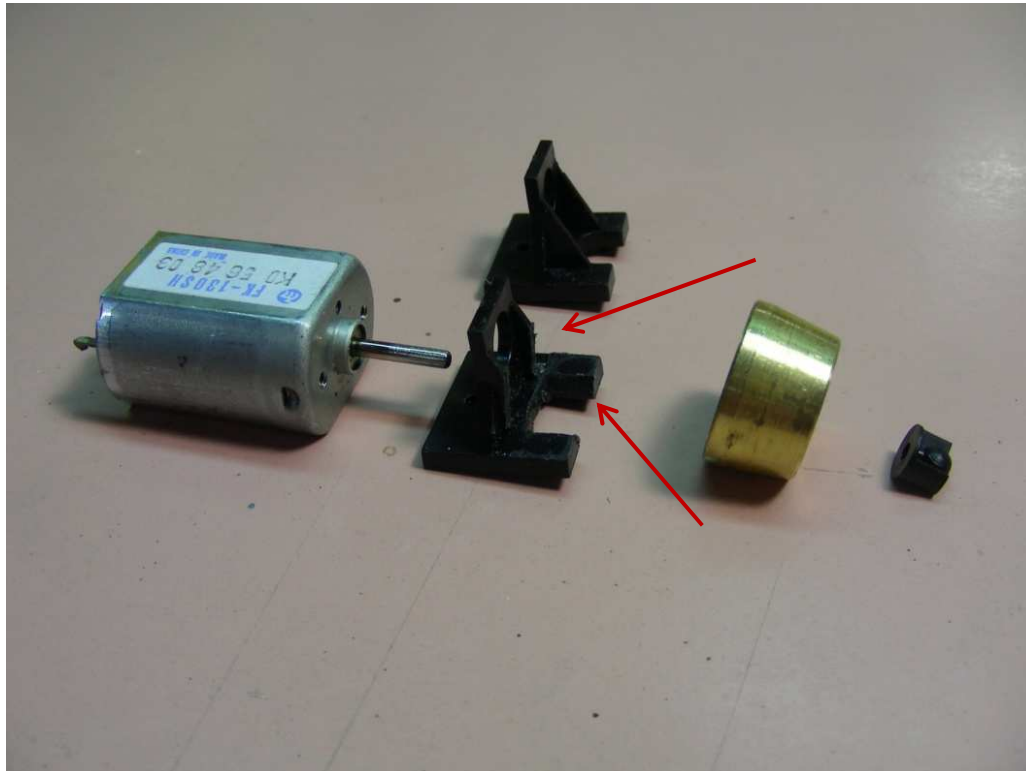
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Bowser Drive

Flywheel – A-Line part # 20021.

Follow A-Line instructions and remove some of the knurl from the shaft.

Modify one motor-mount if using the Bowser floor.



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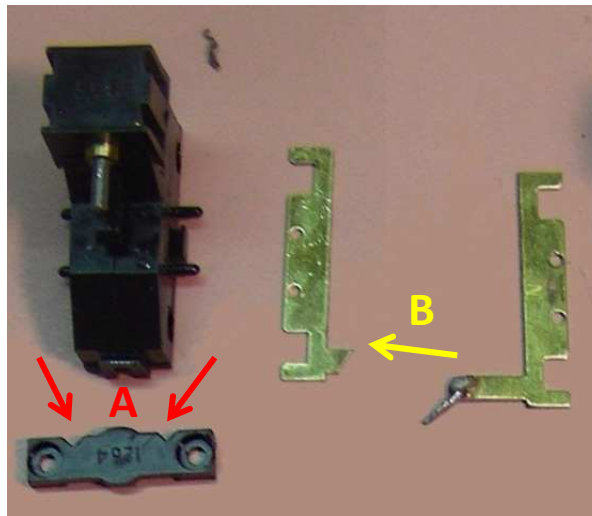
Bowser Drive

Modifications for Sharper Turns.

Without these modifications

the Bowser drive will negotiate approximately 9" radius curves.

With the changes a 6" radius is possible.



A - Notch the bolster where it hits the power truck.

Newer models are already notched.

B - Cut down the solder tab on the power truck side plates.

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Bowser Drive

Modifications for Sharper Turns.

Enlarge the power truck hole in the Bowser floor.
File it out to the side rib as shown.

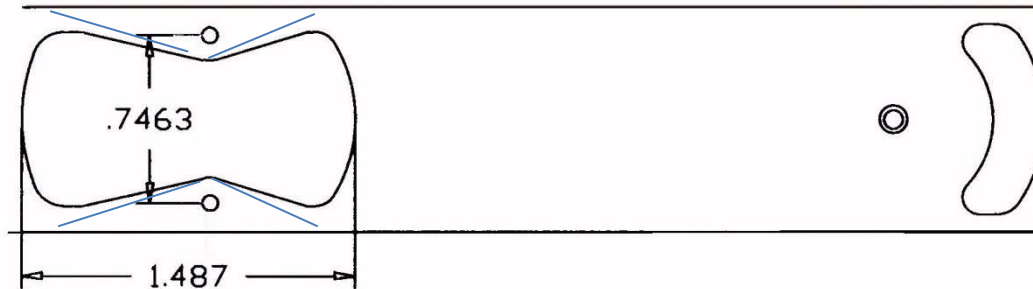


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Bowser Drive

Modifications for Sharper Turns.

Use this Bowser template to make a brass floor.



The width of the bow-tie hole must be .90" to .95" at the ends.

The distance between the trucks depends on your car.

The trailing truck slot may not be necessary.

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Bowser Drive

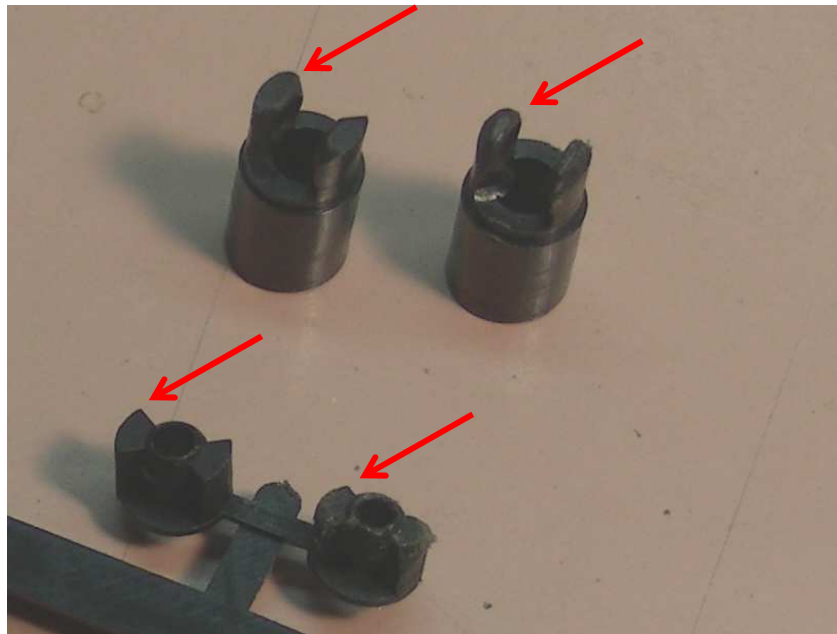
Modifications for Sharper Turns.

Universal joint.

Remove the universal mechanism from the gear tower and replace it with one from the A-Line flywheel kit.

Round off the edges of this Universal Joint.

Not necessary on the U-Joint nearest the motor.



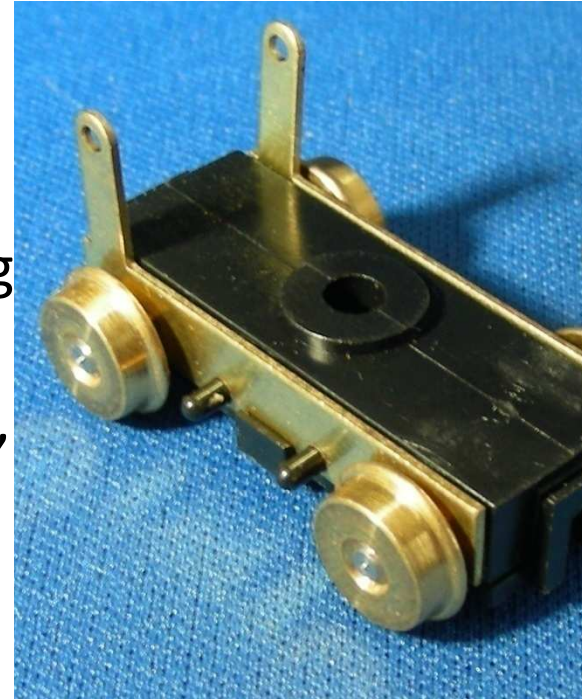
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Bowser Drive

Trailing Truck

The trailing truck has solder lugs projecting through a slot in the floor.

You can keep the lugs and enlarge the slot, or cut them off and solder wire leads to the side plates under the floor.



If making your own floor or adding interior detail use the latter method.

Solder wire leads to the side plates using very flexible wire. If wiring for overhead pickup, ground both sides together.

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Bowser Drive

Assemble the mechanism.

Mount the motor with the modified motor mounts or double sided 3M picture mounting tape.

Work the power truck into the hole and attach the bolster.

Mount the trail truck

Solder leads to the motor.

Attach the body.

On resin bodies I like making channels in the body side and snapping it over the frame.

For metal bodies I make a slot in the front and a tab in the rear that can be tightened

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Updated Bowser Drive

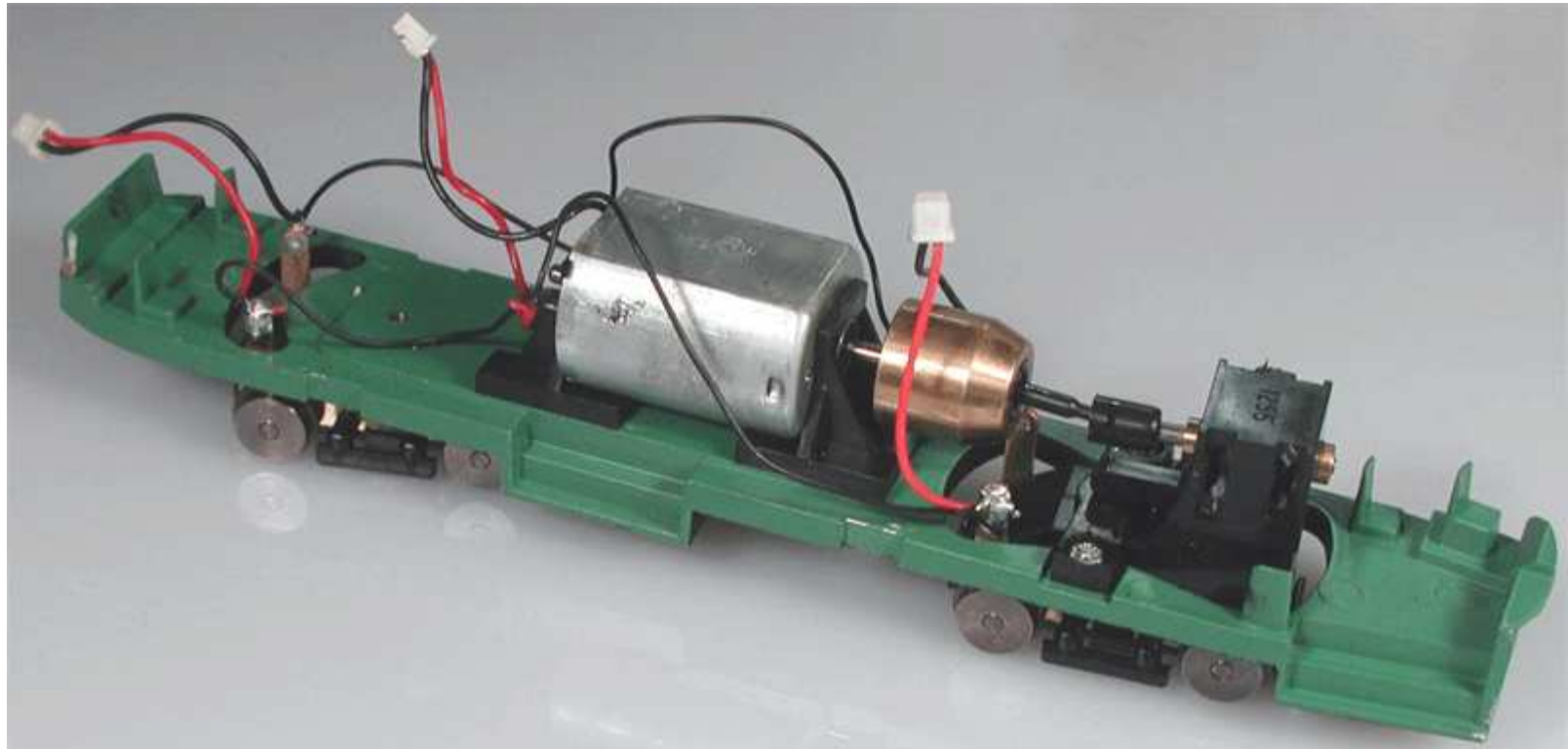
Bowser did not fix what wasn't broke.

They did make a couple improvements though:

- Nickel Silver wheels

- Flywheel

- Notched bolster for tighter radius.



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Hollywood Foundry.

<http://www.hollywoodfoundry.com/>

Bull-Ant products are well engineered drives made in a one-man shop Australia. They are best used in special situations or where interior detail is to be added.

The Bull Ant

A self-contained power truck with a variety of options designed to fill the smaller scale void left by the Black Beetle.

Low-Boy drive

An under-floor drive that mounts below floor. It is available in a variety of wheel bases, wheel sizes, gear ratios, motor mounts, and motors.

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Hollywood Foundry.

Decisions, Decisions!

Under floor or projecting into model?

Low-Boy

Wheel Base: 5'6" or 6' HO

Wheel Size: 24" to 33" HO

Track Gauge: HO or HO_{n3.5}

But the motor is a separate item:

14 motors in various sizes and speeds.

Flywheel or not.

Gear reduction or not.

Motor mount or not.

Bull Ant

Wheel Base: 3'6" in HO to 9' in O

Wheel size: 20.5" to 63" HO

Track gauge: 9 gauges including HO, S, and O

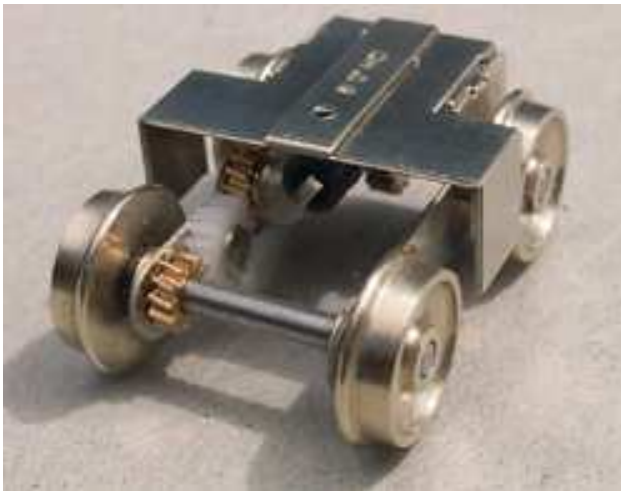
Also decide on: Flywheel, Mounting

Bolster, Bolster Attachment, and wiring scheme.

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Hollywood Foundry.

Low-Boy drive with motor options



Match components for speed and power requirements.

Wheel size, motor speed, gear reduction.

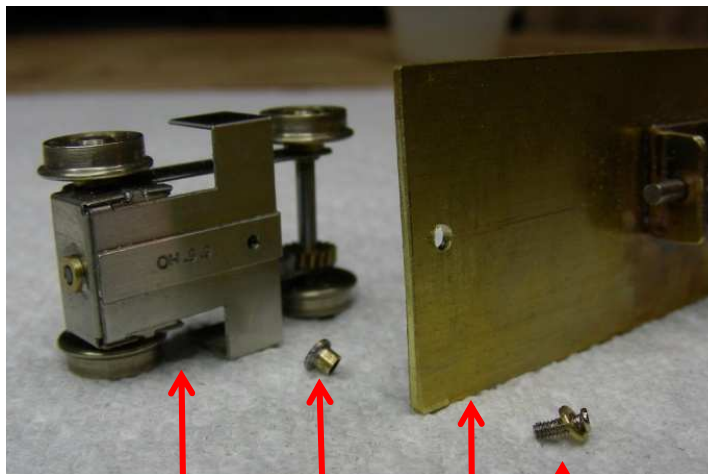
Select motor mount to align universal joints.

Hollywood Foundry has downloadable speed calculator
to aid in matching components

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Hollywood Foundry.

Low-Boy drive



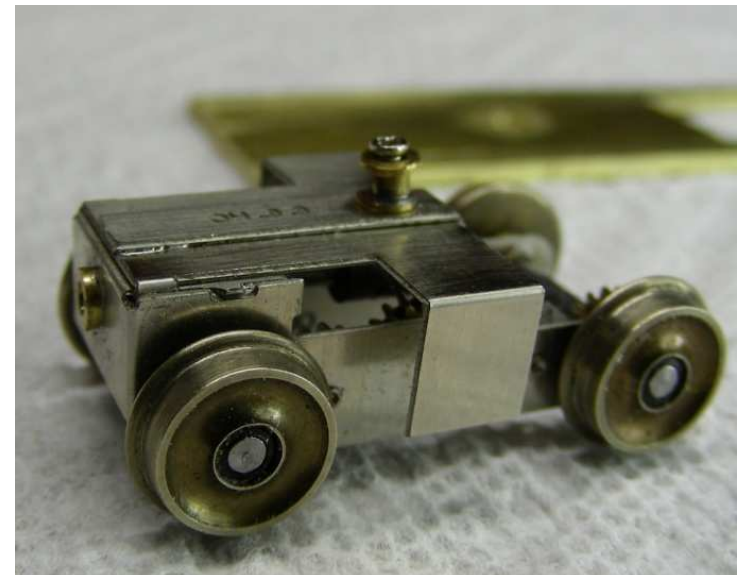
Low-Boy

NSWL shouldered
bearing

Floor

Screw & washer

To mount the low-boy I use a NSWL shouldered bearing (366-6) filing it to a length of .080". This fits through a #45 hole in the floor and the original mounting screw is used with a 0-80 washer. Give the low-boy plenty of freedom to move in all directions.



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Low-Boy drive

4 wheel pickup.

Wheels on one side of the Low-Boy are insulated and there is no pickup for them. Normal EPTC operation is to have all wheels grounded together in order to operate the block control relays. Two methods:

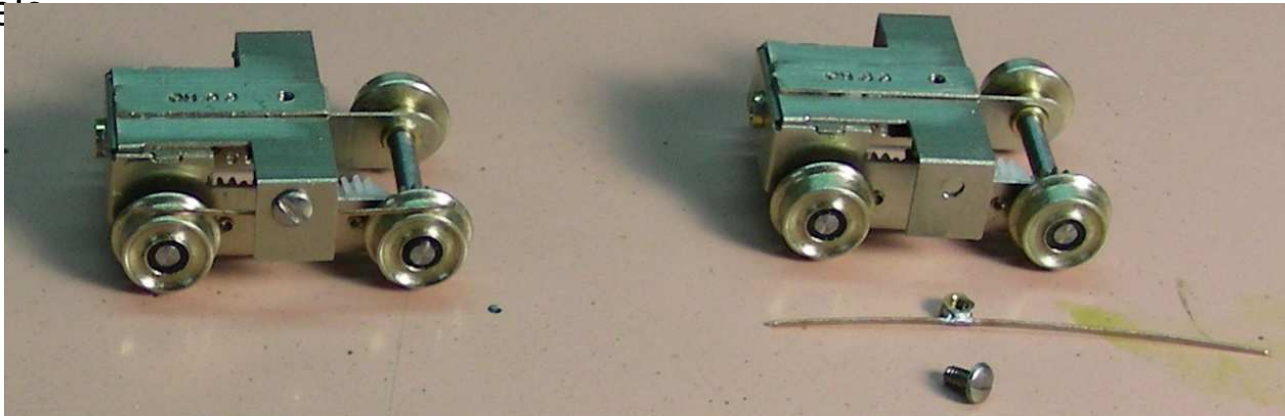
1. Drill a hole in the insulation and insert a wire to touch the wheel and axel.

See <http://www.eastpenn.org/uninsulatedwheels.pdf>.

2. Add a wiper to the Low-Boy.

Solder a phosphor-bronze wire to a 2-56 nut

Drill the side-frame lug and attach the wire so it lightly rubs the wheels





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Hollywood Foundry.

Applications of Low-Boy drives

I attempt to get all cars running close to the same speed. This starts with matching the wheel-size, gear reduction, and motor rpm.

BCER 1222

Mashima 1024 motor 33" wheels 1.8:1 gear reduction.

PRCo 3752

Mashima 1224 motor 24" wheels no gear reduction.

PRCo 4398

NWSL ??? motor 24" wheels no gear reduction

DC Transit 1050

Mashima 1024 motor 24" wheels no gear reduction

was too slow with Mashima 1020 motor 24" wheels 1.8:1 gear reduction.

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Hollywood Foundry.

The Bull Ant

The hard part is option selection:

Wheel Size – 20.5 to 65" HO

Track Gauge – less than HOn3 to O

Motor – Mashima 10 series

Gearbox Reduction Ratio – 15:1 to 60:1

Flywheel Option

Mounting Bolster – 10 options

Mounting Bolster Attachment – Swivel or fixed

Optional Wiring scheme – Several options

Wheelbase – Whatever you want

Now with rubber band drive option

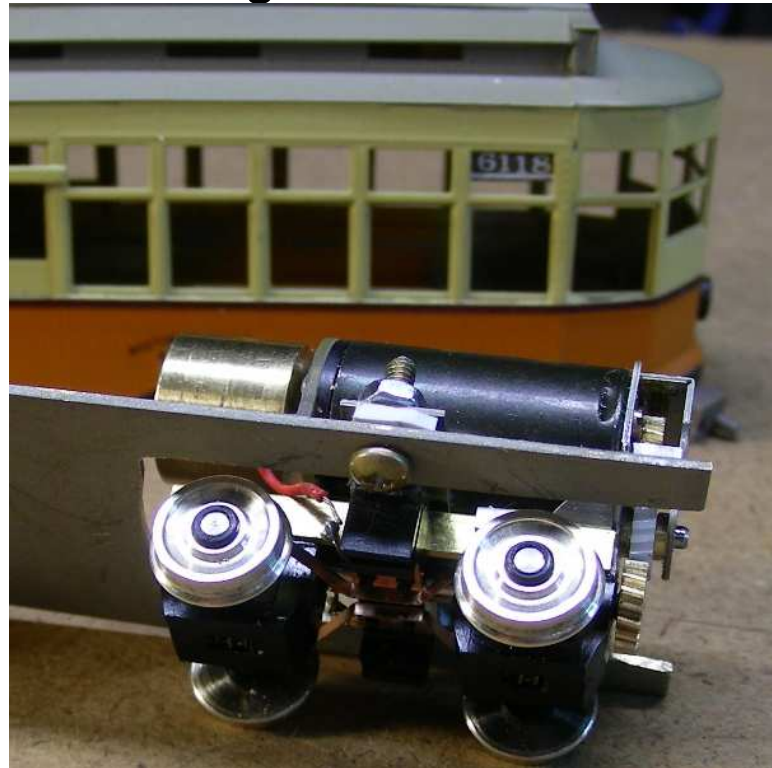


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The Bull Ant

The easy part – installing the Bull Ant.



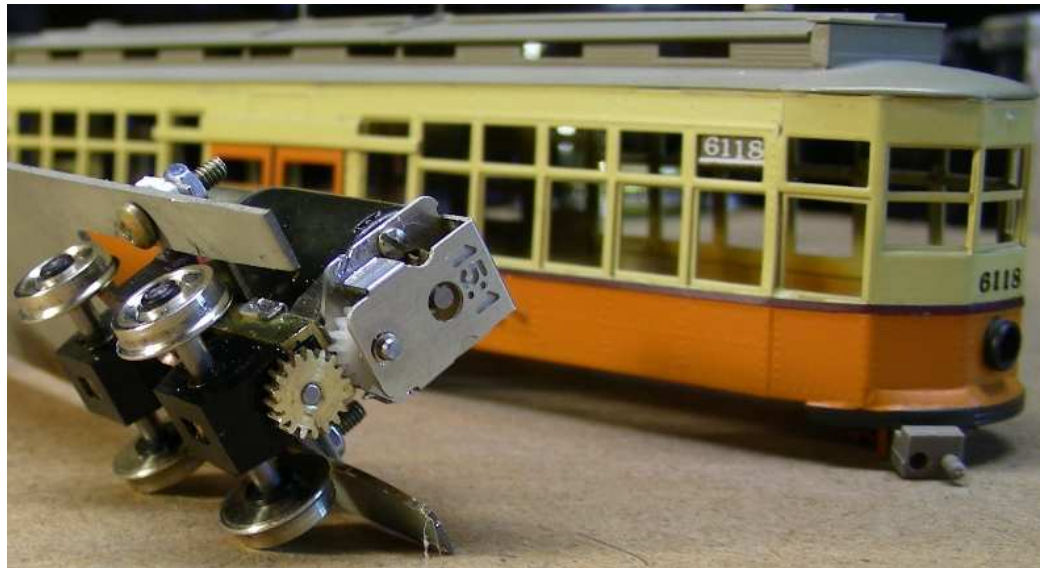
Cut a hole or slot in the floor and drill two holes for the mounting screws.
Screw the Bull Ant to the floor.

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Hollywood Foundry.

The Bull Ant

We installed the Bull Ant into a Brass Boston car.
Here are a couple more shots of that model.



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Hollywood Foundry.

The Bull Ant In-Line 2 Axle Power Bogie

Straight substitute for Bowser drive?

Like the Bull-Ant the hard part is option selection:

Wheel Size – 20.5 to 65" HO

Track Gauge – less than HOn3 to O

Gearbox Reduction Ratio – 15:1 to 60:1

Mounting Bolster – 10 options

Mounting Bolster Attachment – Swivel or fixed

Optional Wiring scheme – Several options

Wheelbase – Whatever you want

Now with belt drive option



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Other Repower Options.

Bachmann Spectrum Gas Electric.

Can motor and very nice power truck.

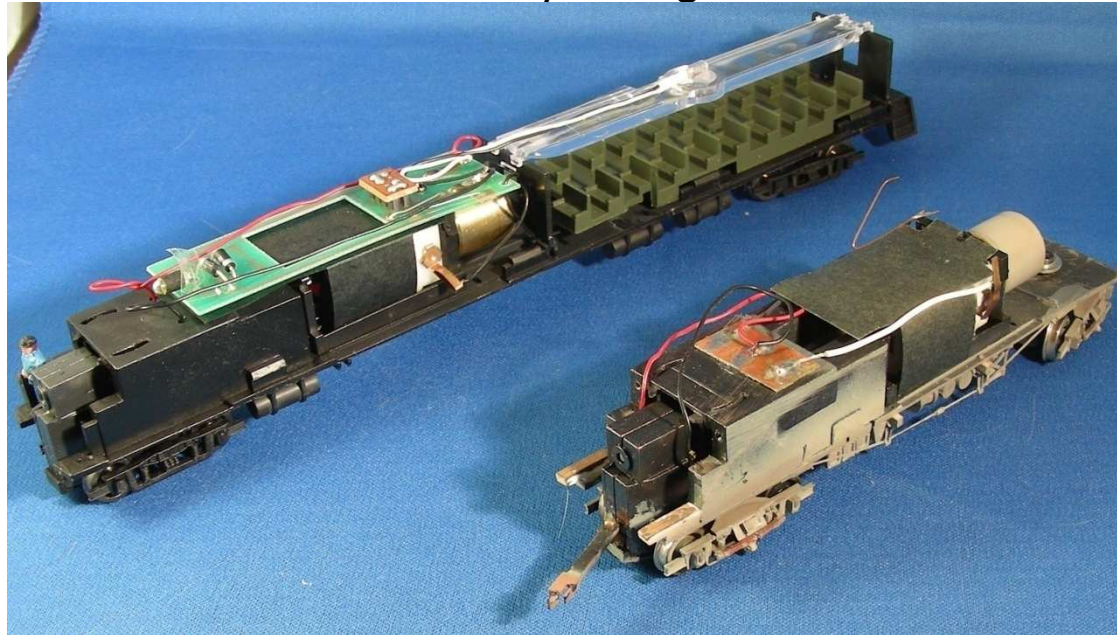
Fixed wheelbase trucks at 6'9" and 36" wheel size. Best for interurban cars

Heavy frame is integral part of drive.

Keep this frame, cutting it to length and move the trailing truck.

Or build new mounting mechanism for use with brass floor.

I bought some for \$25 each a few years ago



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Other Repower Options.

Early model Bachmann Spectrum 44 Tonner

Early models had individual truck-mounted motors.

Good for Box Motors and single truck applications.

Fixed wheelbase trucks at 6'8" and 36" wheel size.

Motor mount is above motor.

Either mount to top of car body
or use 44 Tonner frame.

Lately finding motors burning out.

Once 44 ton Body is removed there
is no restriction on turning radius.

The 70 tonner is same mechanism
with larger wheels.

Box Motor

Liner

M1



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Bachmann Peter Witt.



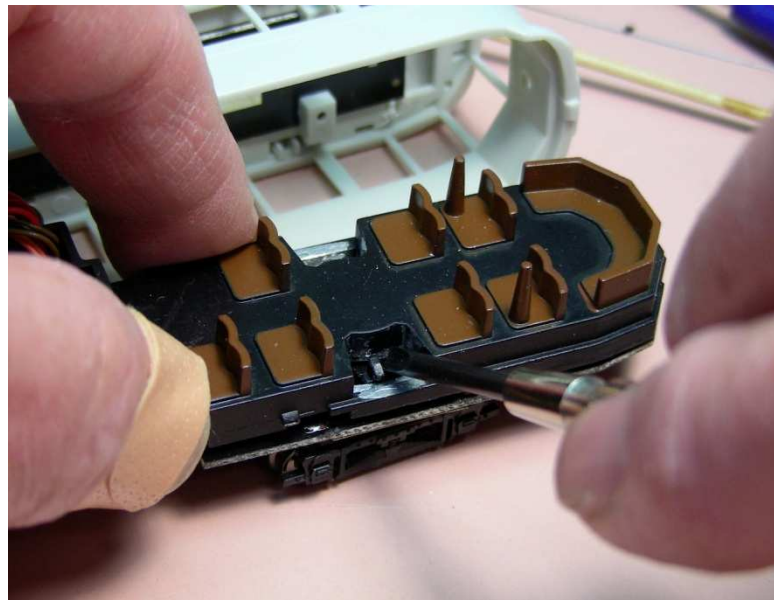
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Bachmann Peter Witt.

See my article at http://www.eastpenn.org/bachmann_peterwitt.pdf.

Increase turning radius. First test the car on your layout, the turning radius of the car is somewhat less than the advertised 9". If it is necessary the process is fairly simple:



Remove the body and the trucks

NOTE – I'm sure this operation will void the warranty... Proceed at your own risk.

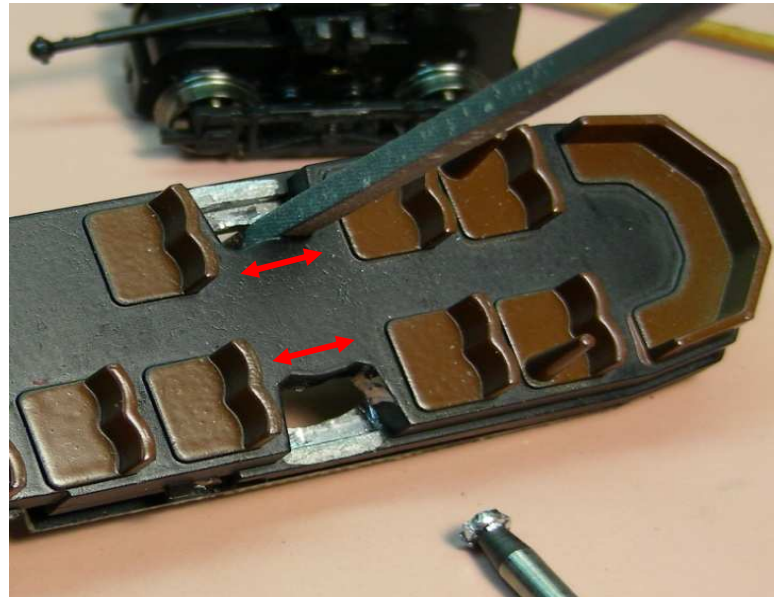
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Bachmann Peter Witt.

Adjustments for tight radius – if necessary.

I removed some of the floor by first filing away a little of the edge that stops the truck tabs. Just file up through the holes at the end of the curve of the hole. Caution – be sure the motor is protected from filings or the car will grind to a halt on the first test run.

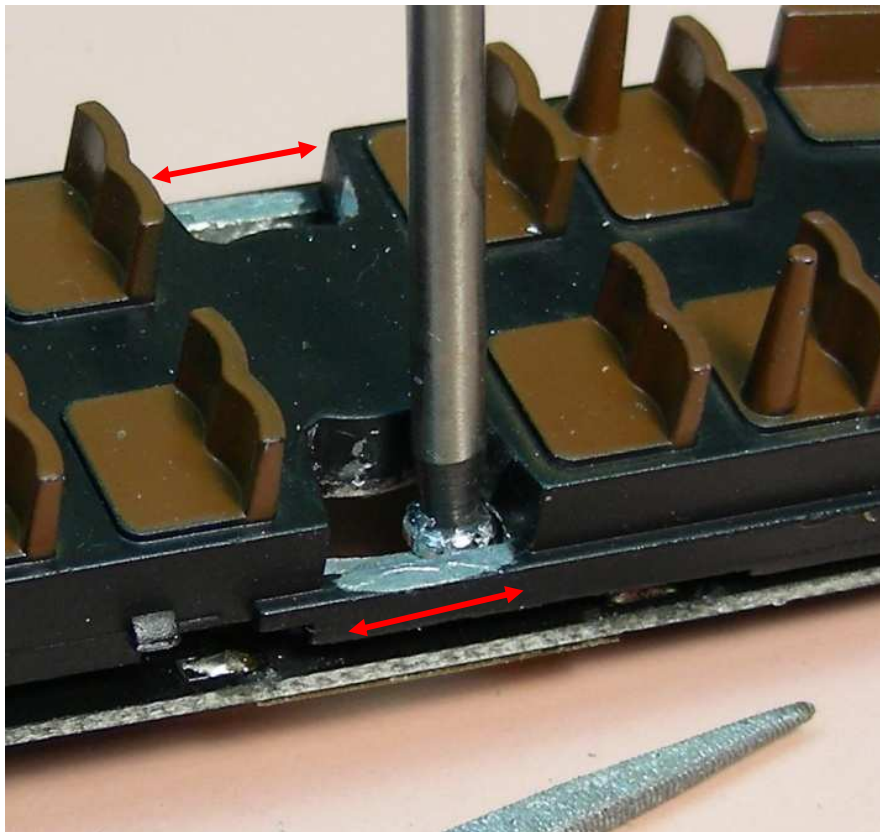


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Adjustments for tight radius.



Use a Dremel motor tool with a #197 or 198 cutting bit. Get this bit down on the lower flat curved surface and cut into the front and back edge. Be sure to not mar the curved surfaces of the floor. You can see that this bit can only remove a small amount to metal – no more is necessary. When you are done with the Dremel there will probably be some flash from the work you did. Do a thorough job of removing all flash and be sure to get all filings off the model.

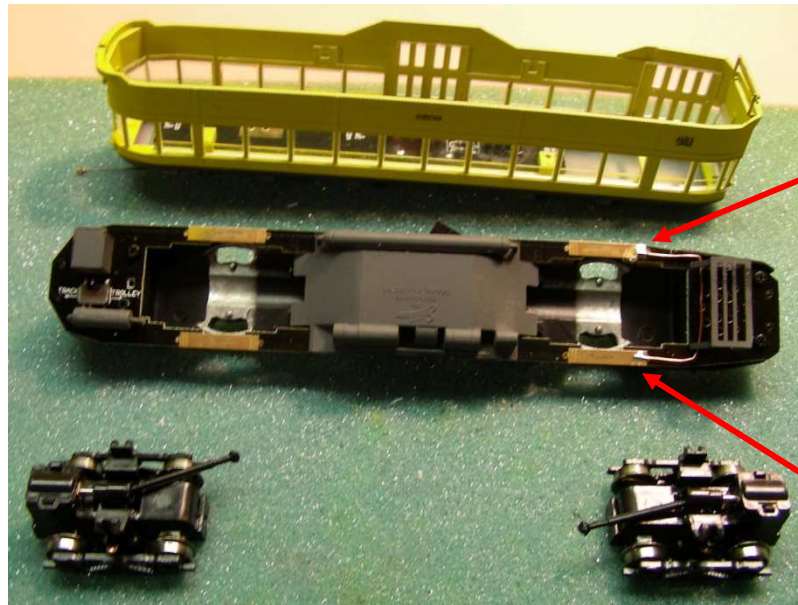
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Eight Wheel Pickup.

When switched to overhead the wheels on the right side are dead. Get eight wheel pickup by soldering a wire between the pickup pads on the bottom PC board:



Replace the trolley wheel with your preferred shoe or wheel.

I use the Precision Scale shoes.

Put the car back together and you're finished.

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Bachmann Peter Witt.

Additional information

Charlie Long's article on Improved Lighting and Operation.

http://www.trolleyville.com/tv/school/lesson5_4/index.htm

Trolleyville articles on various subjects, including replacing the pole

<http://www.trolleyville.com/tv/times/current/index.shtml>

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Bachmann PCC

New box, new mechanism, same old body.



Bachmann recently, & quietly, released a new drive for their PCC
It has a truck-mounted can motor and enclosed gear box.
Similar quality as the Peter Witt.
But for only \$30 you still get the same old body.

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Bachmann PCC

The minimum adjustments required to get this car running on East Penn modules.:

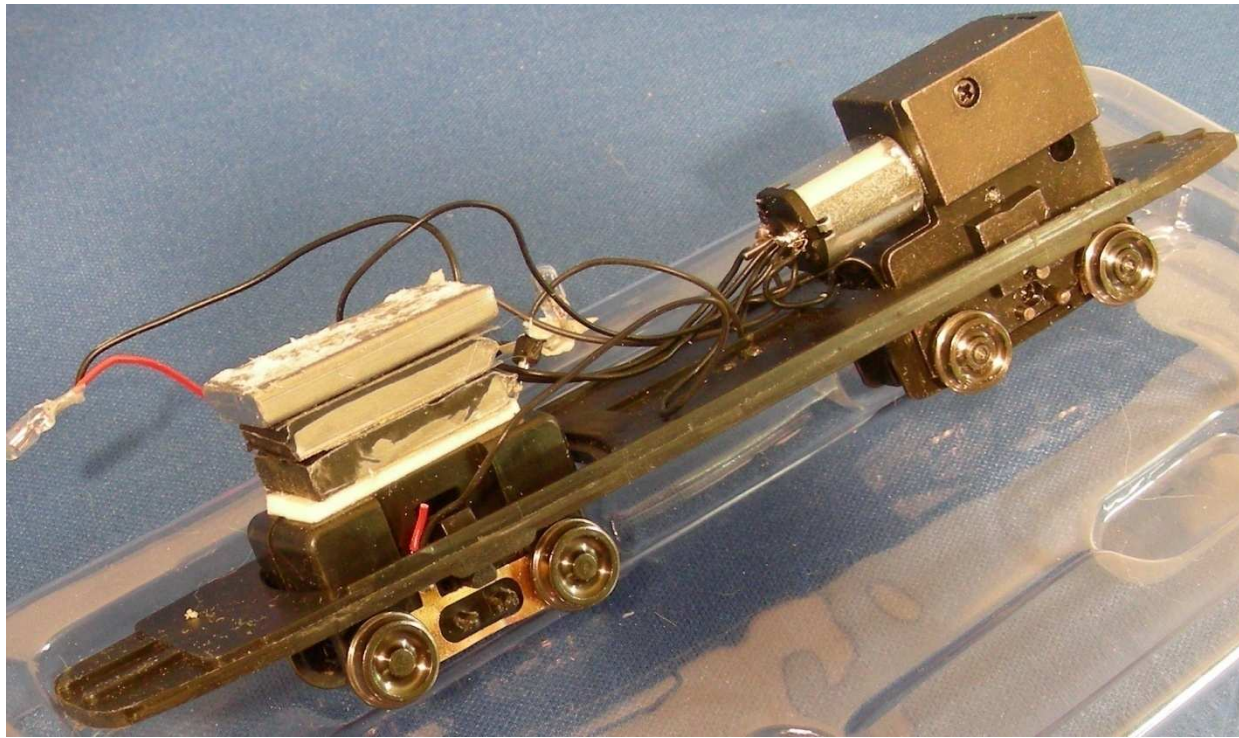
1. Install a pole and Pole Hook.
2. Rewire for Overhead
bond all wheels electrically.
3. Add weight to Front.
4. Adjust for sharper radius.

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Bachmann PCC

Weigh front truck with 1 ½ oz.



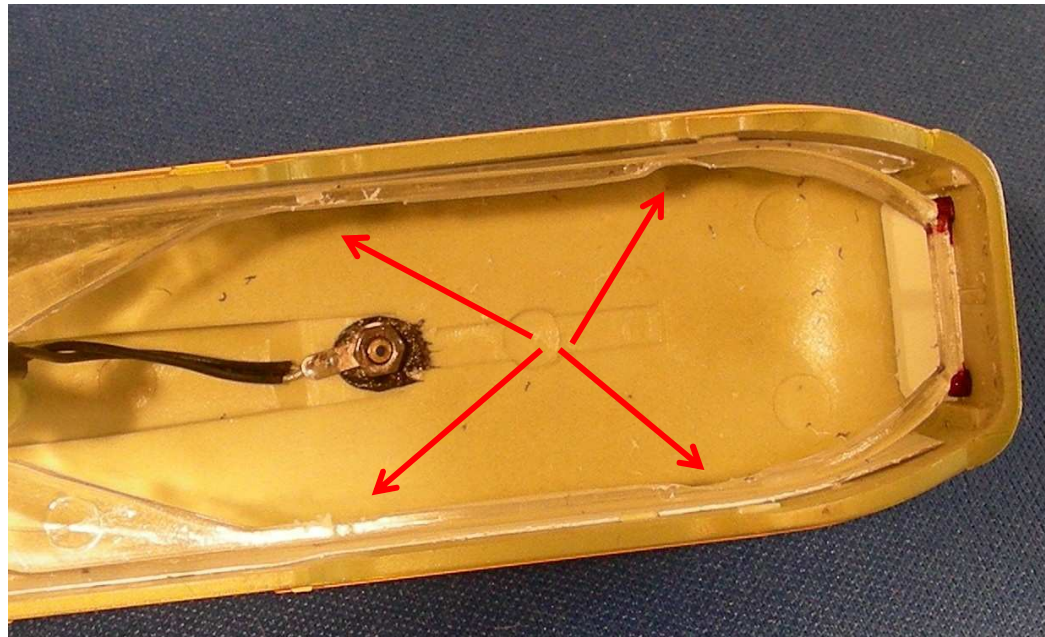
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Bachmann PCC

Adjust for sharper turns.

Notch the light bar.



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Bachmann PCC

What else?

Add a flywheel.

Lower the body – doors should be 1' above railhead.

Remove the silhouette, frosted, window glass.

Remove the window bars.

Maybe grind the body thinner around the windows.

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Con-Cor PCC

Pre-War PCC with new drive
and many paint schemes,
with and without lettering



Car is not available yet.
Still need some refinement.
Currently expect to be released
by end of this summer.

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Bowser San Francisco PCC

This car will come with the updated Bowser drive.

All that should be needed is to:

- Electrically tie all wheels together.

- Take power from the overhead.

