

Drive Train Upgrades for Smaller Brass Locomotives

October 2017



Intro

In a previous workshop we discussed an approach for upgrading the operating characteristics of older brass locomotives:

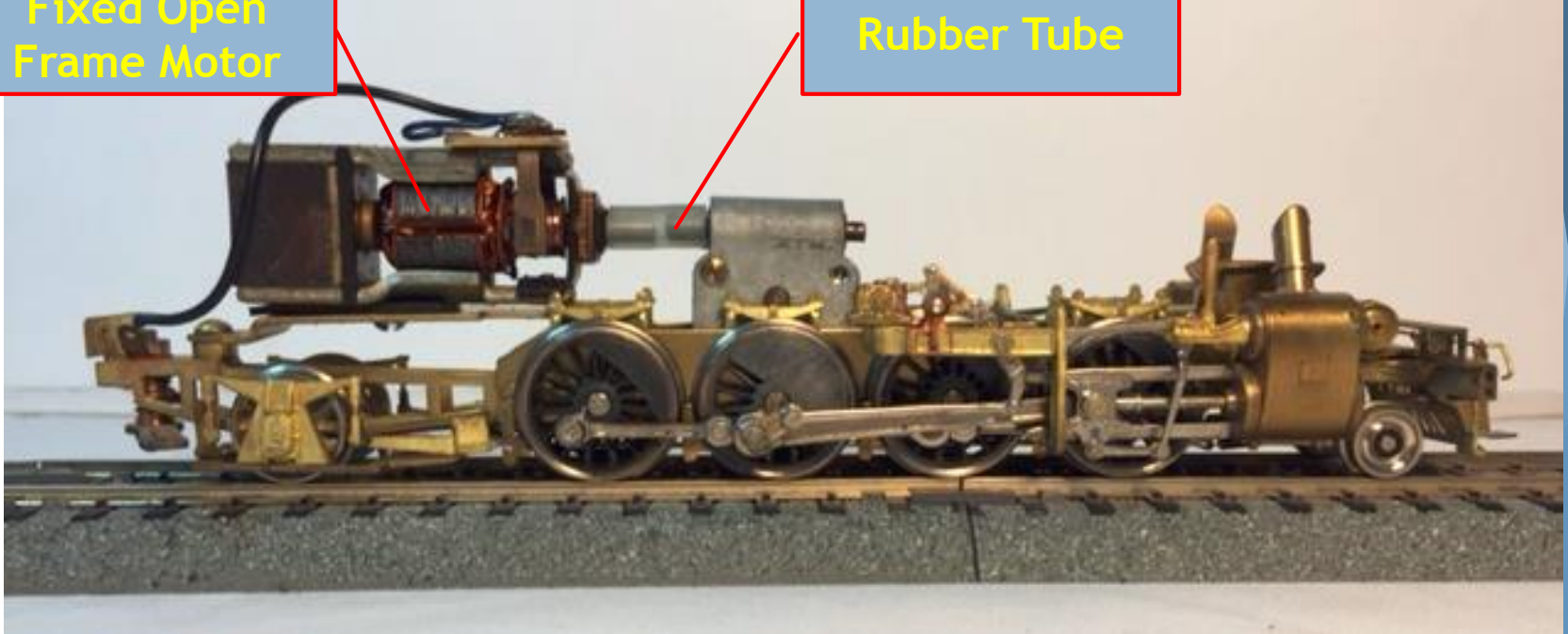
- ▶ The focus is upgrading the existing drive train with a torque arm drive found in the modern brass locomotives

Intro

Replace traditional brass drive train:

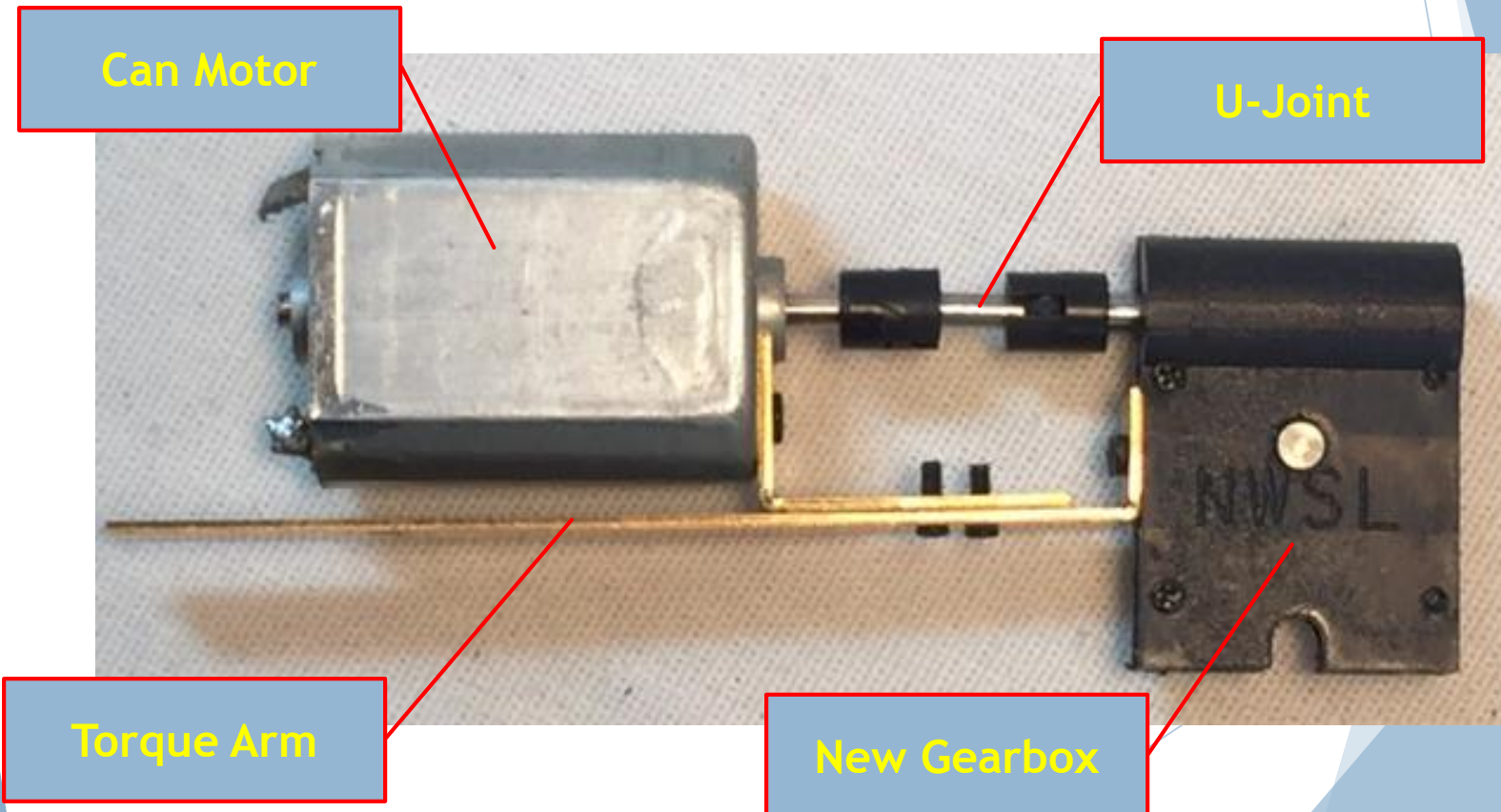
Fixed Open
Frame Motor

Rubber Tube



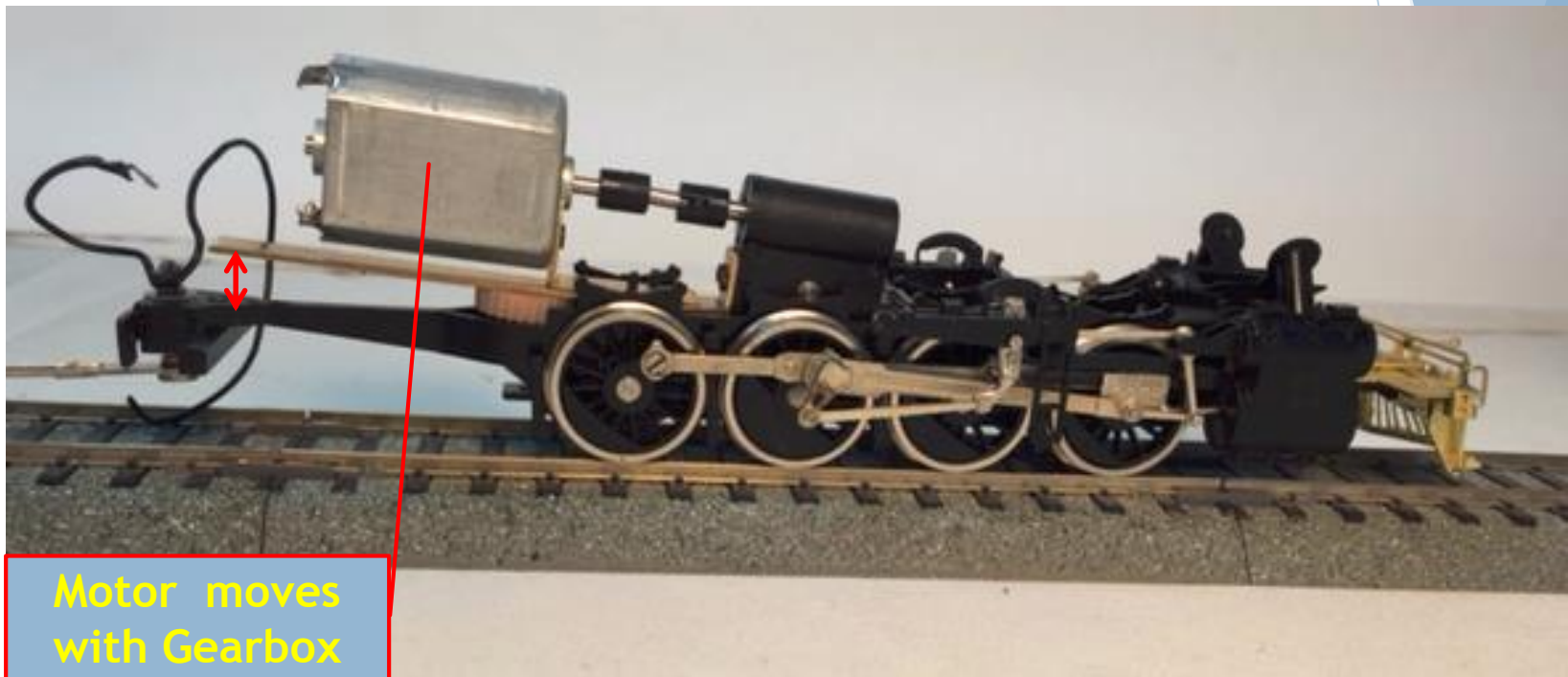
Intro

Components of a modern 'Torque Arm Drive' drive train



Intro

Installed Torque Arm Drive



Motor moves
with Gearbox

Intro

Unfortunately this approach does not generally work well for the smaller brass locomotives as there is not the physical space for the motor, u-joint shaft and gearbox

Today we'll look at an alternate approach for these smaller engines

Intro

The candidate engine will be the Westside V&T No. 26, built in the 1960's.

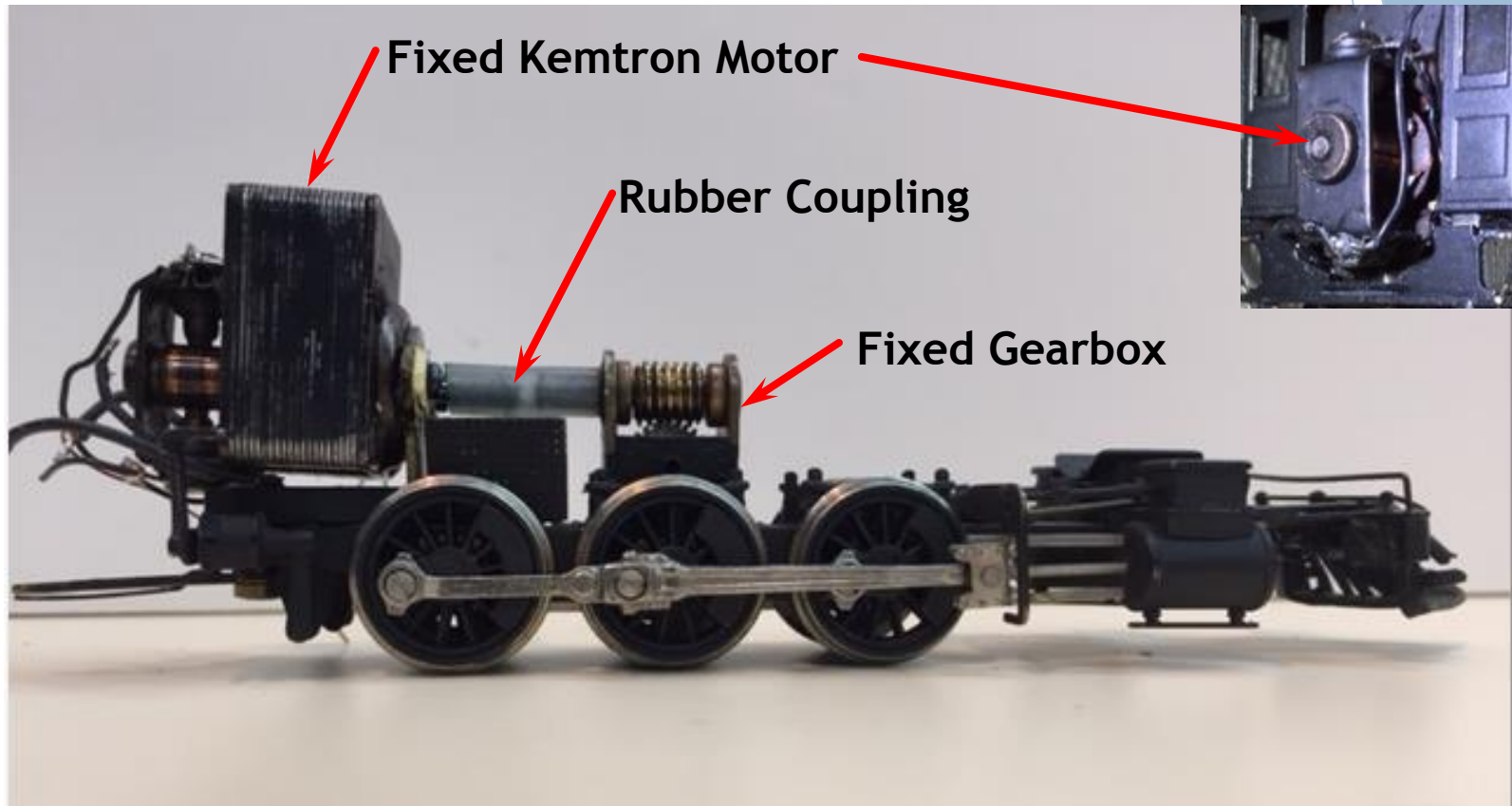


Intro

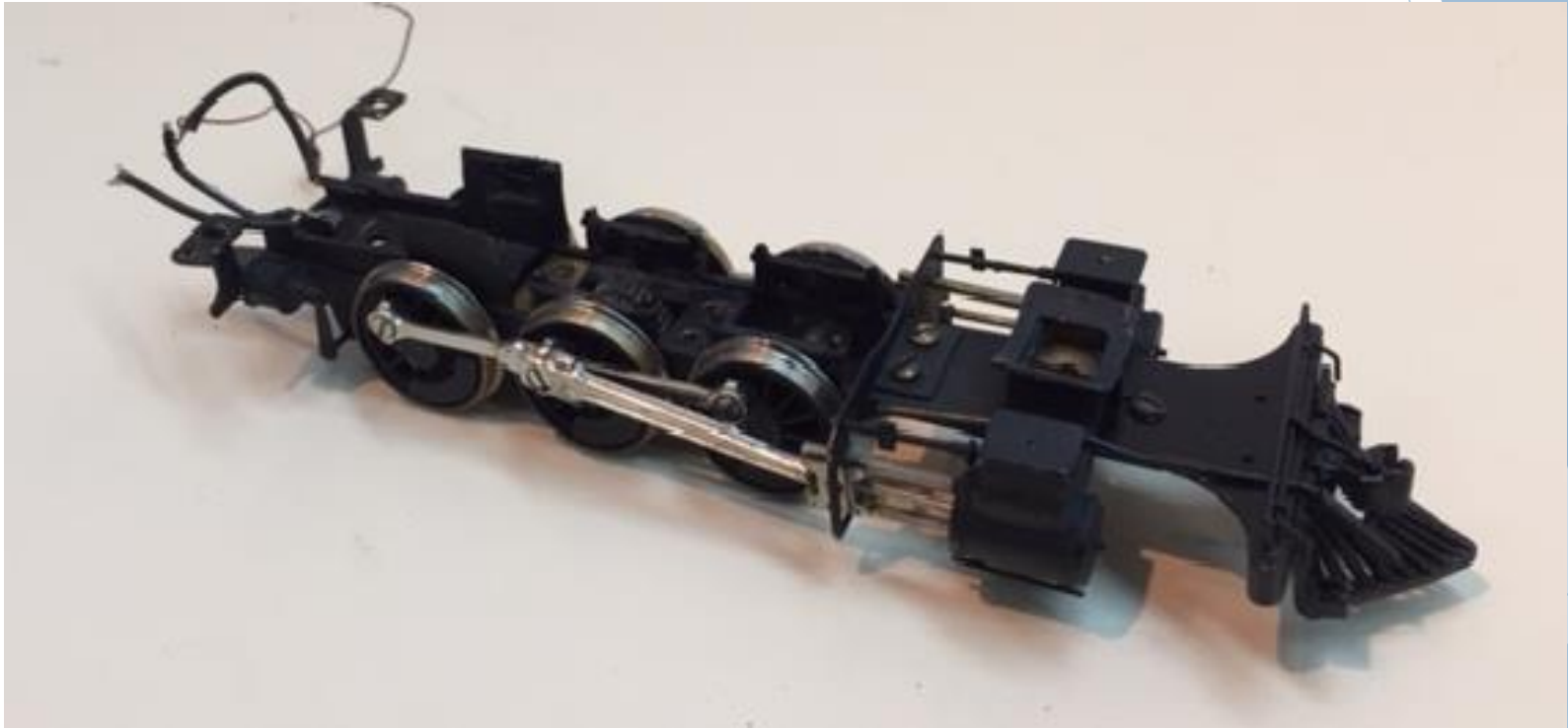
Key Steps in the conversion process:

- ▶ Remove the existing drive train - motor, gearbox and connecting rubber coupler
- ▶ Quarter the drivers (if necessary)
- ▶ Fabricate the new drive train comprised of a new motor, worm shaft and existing gearbox
- ▶ Retro-fit the new drive train to the loco chassis

Remove the Existing Drive Train

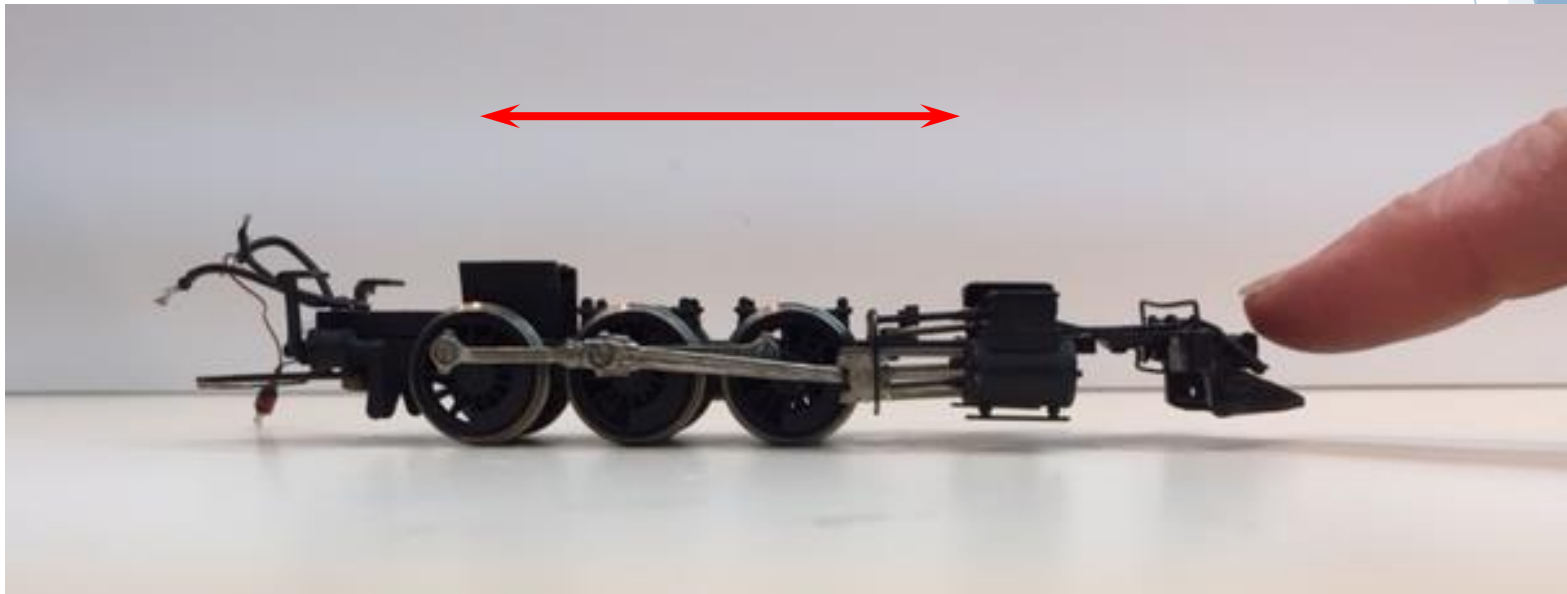


Remove the Existing Drive Train



Quarter the Drivers (if necessary)

- ▶ To evaluate the quartering, place your chassis on a flat piece of track or a piece of glass.
- ▶ Roll the chassis back and forth with your finger.



Roll Test

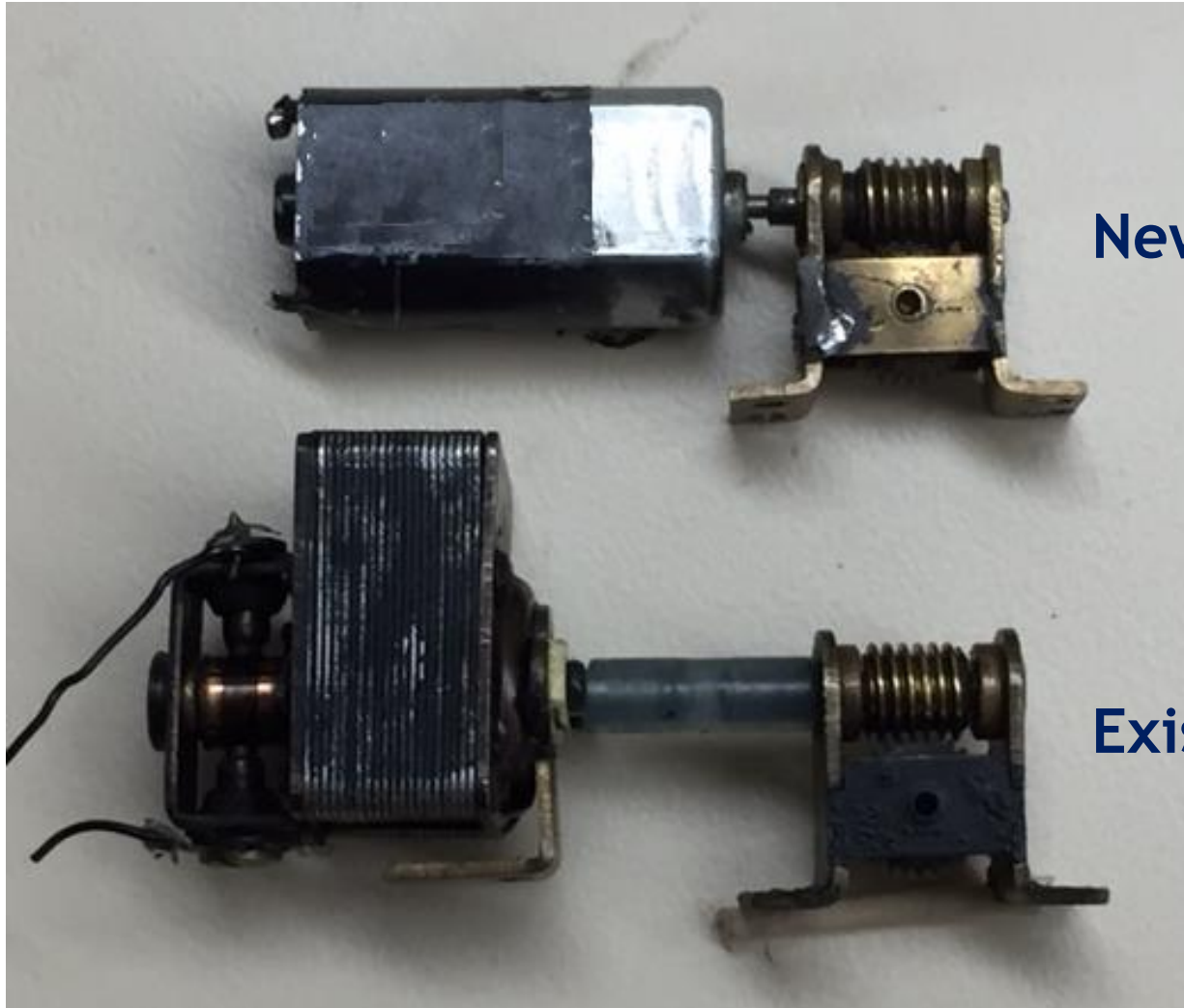
Quarter the Drivers (if necessary)

If the chassis rolls back and forth smoothly without sticking or binding, then the quartering is fine and you can proceed with the fabrication of the new drive train

If the chassis exhibits any sticking or binding then you need to re-quarter all the drivers

Note: Be Fussy - no amount of work later can correct a binding problem found here

Fabricate the New Drive Train



New

Existing

Fabricate the New Drive Train

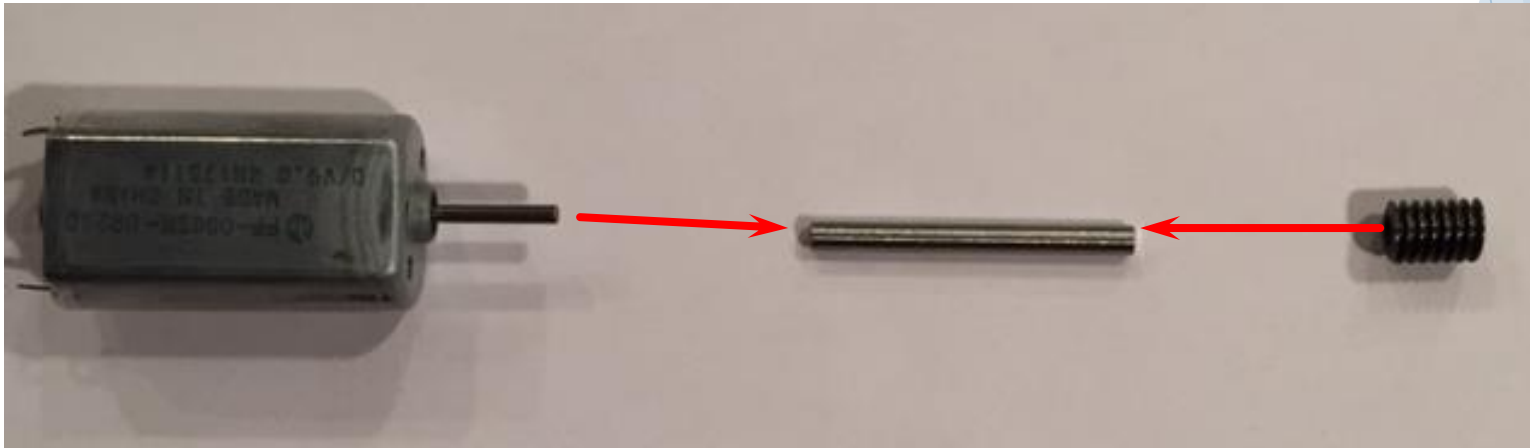
- ▶ Remove the existing worm from the worm shaft
 - ▶ Disassemble the existing gearbox
 - ▶ Unsolder the worm from the worm shaft



Tabbed and soldered
(both sides)

Fabricate the New Drive Train

- ▶ New Drive Train Components
 - ▶ Can motor
 - ▶ Bored 2.4mm worm shaft, counterbored to receive 1.5mm motor shaft (light press fit)
 - ▶ Existing worm



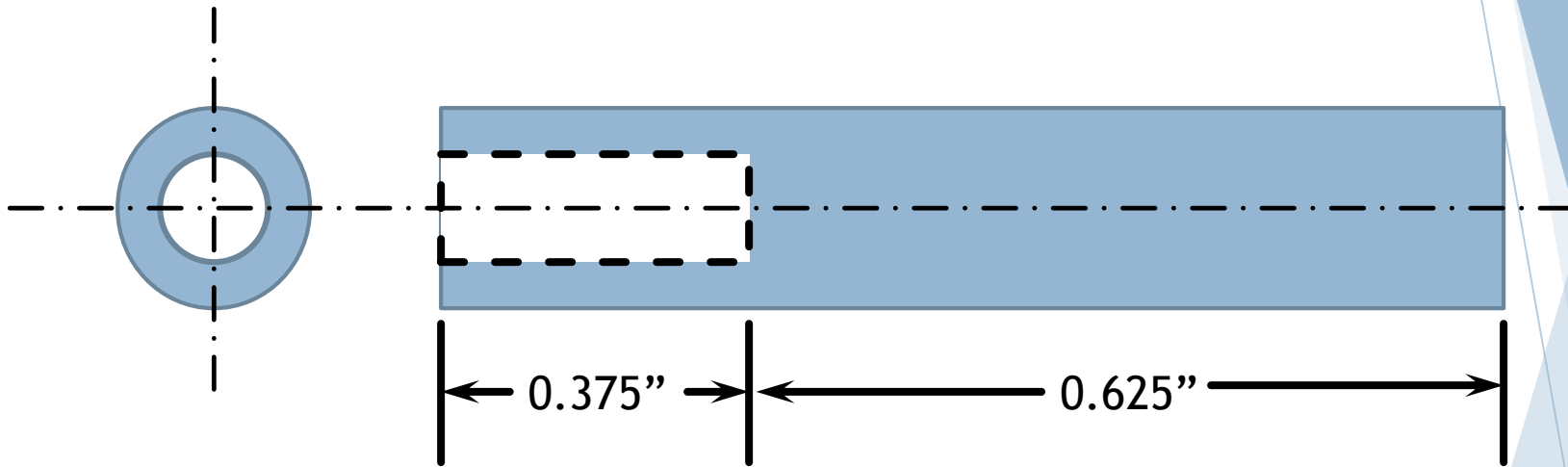
Fabricate the New Drive Train

- ▶ Assemble the drive train components
 - ▶ Trim motor shaft to length
 - ▶ Trim worm shaft to length
 - ▶ Reassemble gear box
 - ▶ Insert motor shaft in worm shaft



Fabricate the New Drive Train

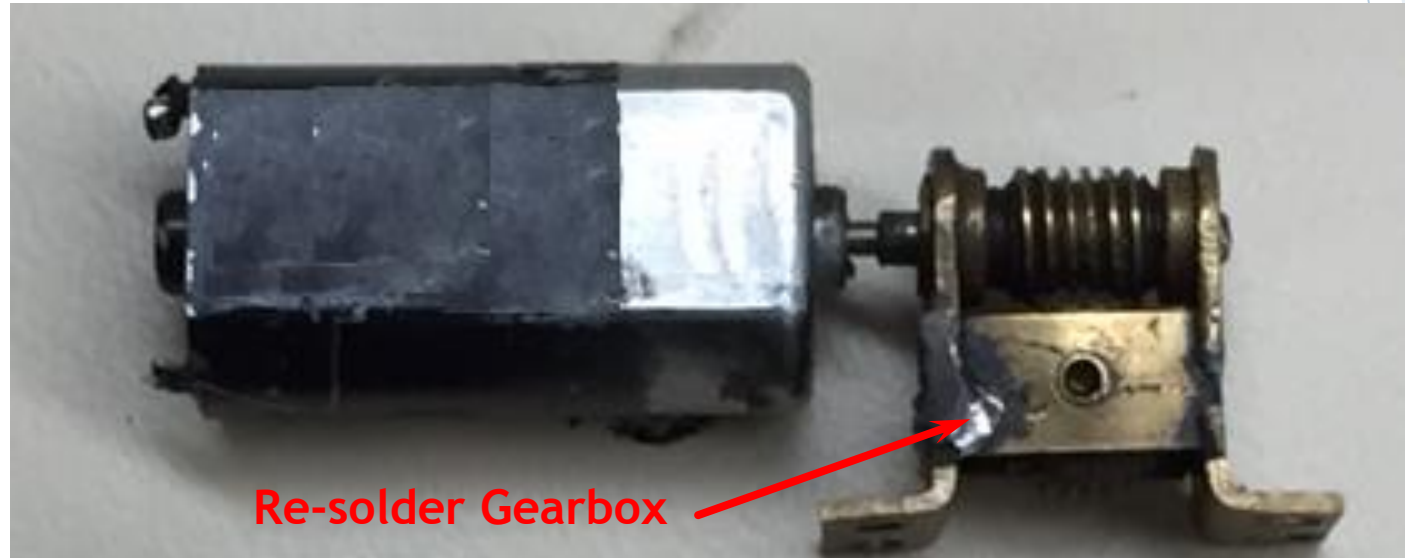
► New Worm Shaft



Note - Fabricating the shaft will require some machinist skills

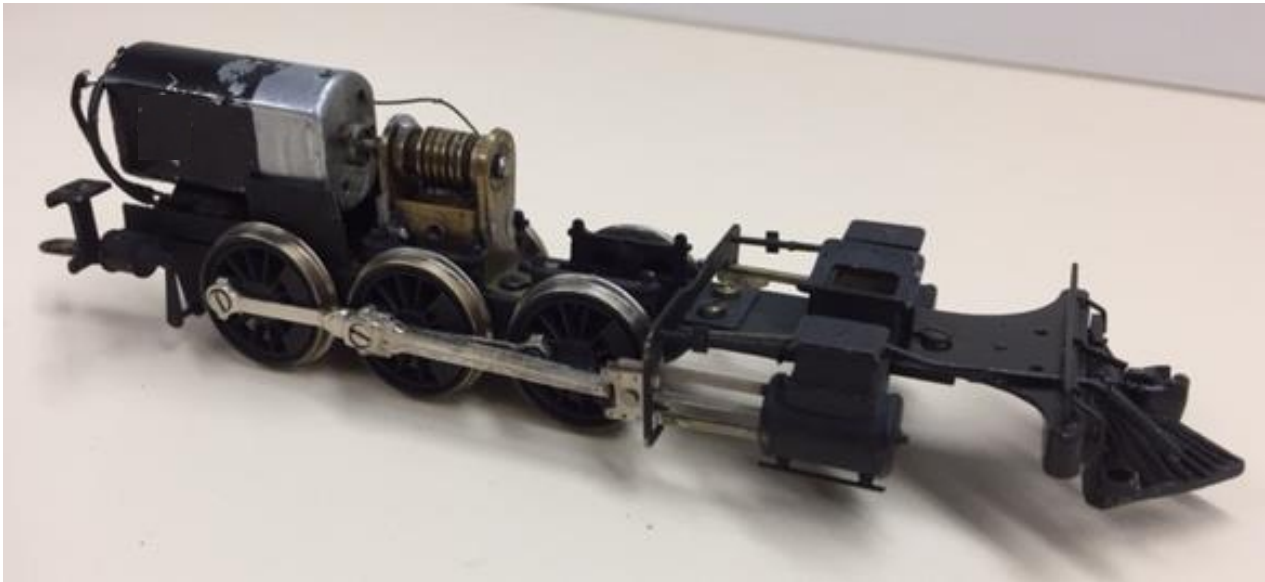
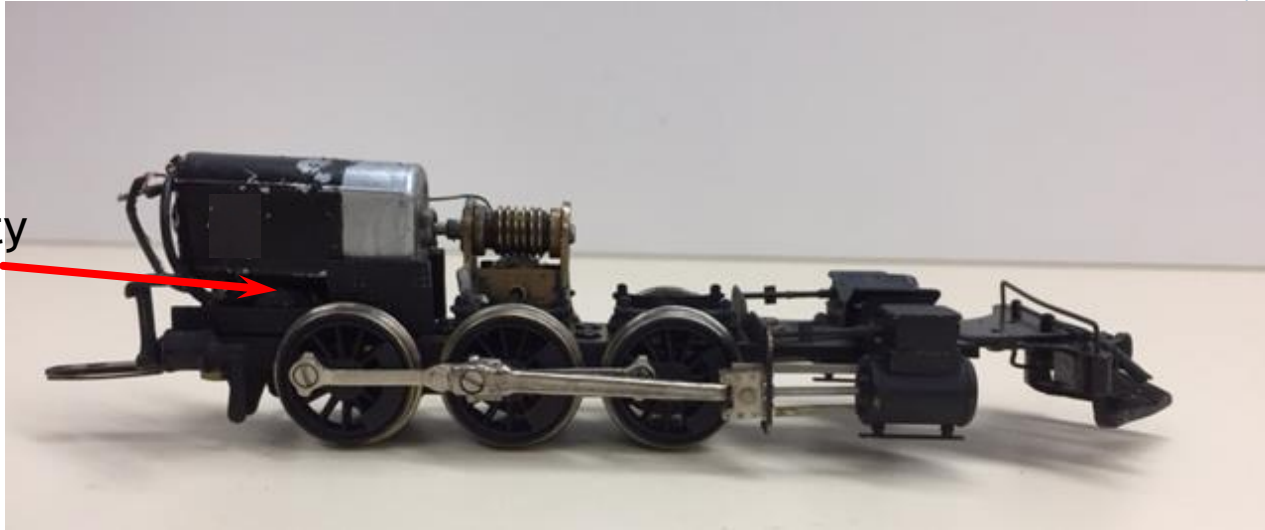
Fabricate the New Drive Train

► Finished Product



Installing the New Drive Train

Black Putty
or Clay



Installing the New Drive Train



Installing the New Drive Train



Comments:

- ▶ This approach will work well with virtually any of the smaller locomotives
- ▶ The key is finding a good motor that will fit in the cab and won't require major surgery to the firebox walls (e.g. No. 20 - Tahoe)

Comments or Questions???

Contact Information

For Further Info:

Ray Davis (details from this presentation, questions, free clinics/workshops for your club or group)

- ▶ E-mail: hillyard.shops@gmail.com
- ▶ Website: www.hillyardshops.com

Current Website Topics

- ▶ **Upgrading the Drive Train in Older Brass Locomotives**
- ▶ **Options if there is not room for a Torque Arm Drive**
- ▶ **Application for a NWSL Stanton Drive Power Truck**

In-The -Works Website Topics

- ▶ **Balancing your engine**
- ▶ **How to fix a driver that no longer has a press fit on the shaft**
- ▶ **Quartering splined driver shafts**
- ▶ **A tool to ensure your drivers are square on the shaft**
- ▶ **Additional topics coming**