Installation Guide

USA Trains ALCO S4 CamPac Components

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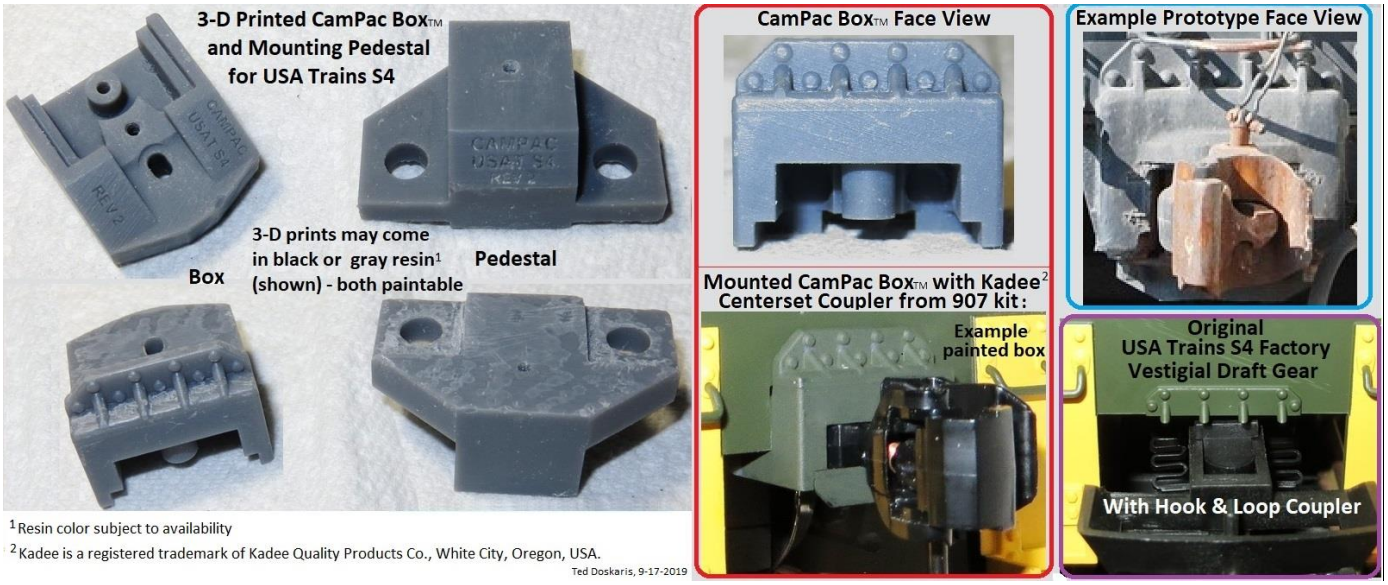
Example Reading Railroad locomotive, courtesy of Robert Van Deusen

Installing 3-D Printed pedestal and coupler box components on ALCO S4 Switch Engine

Overview

- Instructions are provided as a guide for the installer of 3-D printed *CamPac Box*™ and pedestal on the USA Trains brand ALCO S4 "G" (1/29) scale diesel locomotive[1]. With *CamPac* components properly installed, layout operation is intended for 8 foot diameter or greater track curves.
  Note: **Revisions or modifications made to the loco are irrevocable, which will affect the resale value to the possible detriment or benefit of the loco.**
- The installer is to have access to tools and have adequate skills to make cuts and do finish work.
- Tools needed include Phillips type P1 & P2 screwdrivers, razor saw, sharp pencil or pointed scribe or razor knife (if needing to mark cut lines), medium & small size files. (Measuring tools include ½ inch wide by 6 inch long machinist scale, caliper optional.)
- *CamPac* 3-D printed components include coupler boxes (2) and pedestals (2). Other items are #2-56 long screw (2), #2 lock washer (2), #2-56 flat head screw (2), #2-56pan head screw (2).
- Not included: The installer will need to supply a Kadee 907 kit (1) of which all (but the plastic box & lid screw) will be fitted onto each *CamPac Box*

The CamPac Box™ emulates the more common prototype S4 sill like draft gear having rivets or bolts heads. Accordingly, the factory "toy like" vestigial draft gear that is located way low to the rail head is done away with.



Instructions are provided to accomplish:

- ✓ Install Kadee kit parts onto *CamPac Box*™ (coupler box)
- ✓ Cut out notch in front & rear pilot to accommodate box
- ✓ Install mounting pedestal & coupler box assembly on both ends of loco

[1] **Caution**: When operating the locomotive, abrupt excess force (e.g. collision/yanking) to the coupler may result in damage to coupler, coupler box, or other components. Operating the locomotive coupled to a car with truck mount coupler on tight curve track is **incompatible** - the car can be pulled off the track and loco may derail.

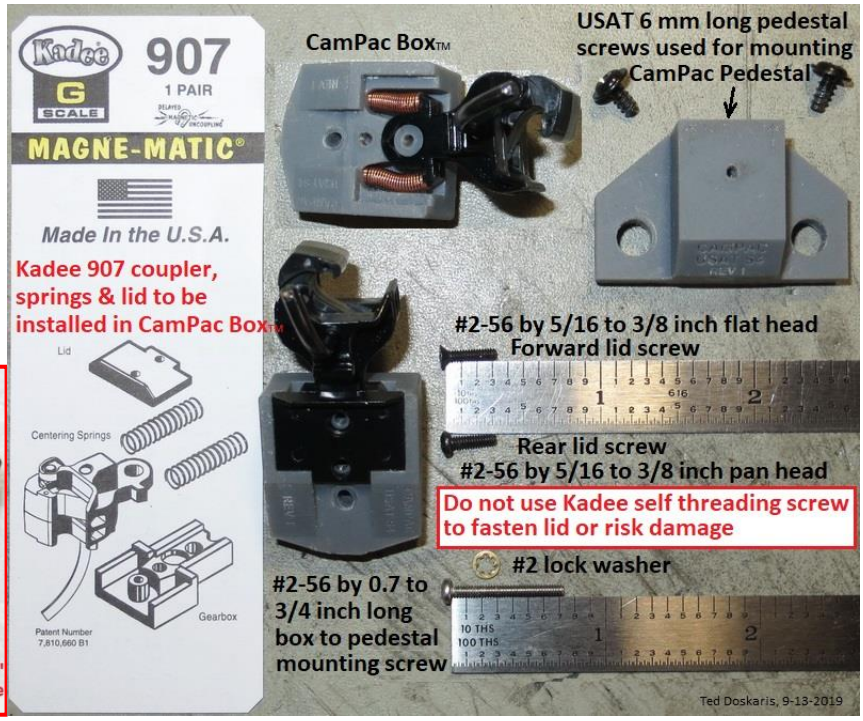
Installation Steps:

Step 1 – Coupler Box Preparation

Install selected parts from a Kadee[2] 907 Kit in the *CamPac Box*. (Box to be fastened to pedestal & mounted later)

Advisory:

The CamPac Box™ is optimized for the "G" scale, preferential late version, AAR E type coupler from the Kadee 907 kit not having a completely round shank hole compared to its introduction version or older predecessor coupler from the 789 kit. Both prior version couplers can bind on the box mounting post. (Shank hole would need to be enlarged to fit)



Verify installed coupler freely swings side to side & self-centers. If not, slightly back out lid screws one at a time. Also, try to tighten the lid's tail screw with front screw loosened. Burnishing the coupler shank pivot surfaces can be beneficial, too.

Note: For now, don't mount the box assembly on the pedestal. This will be done in Step 6.

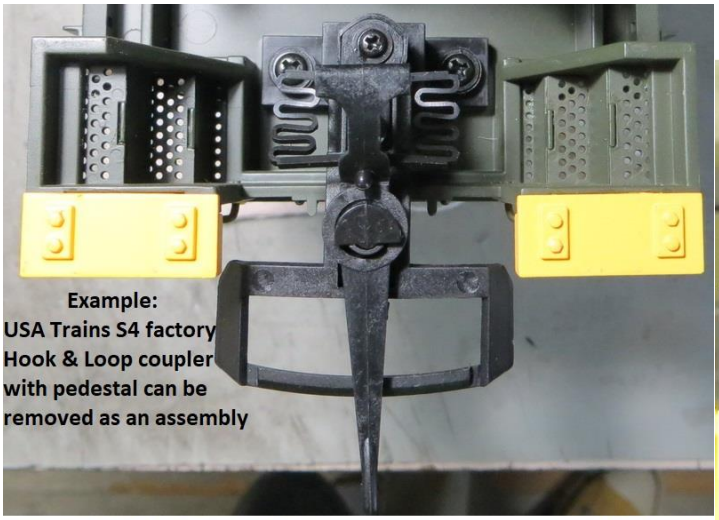
Step 2 – Loco Placement

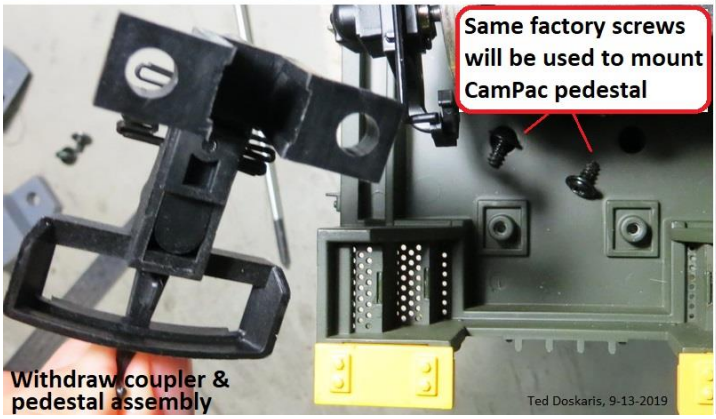
Carefully place the loco on its back (with underbody facing up) on a soft surface with nose propped in such a way so that any delicate top components (i.e. exhaust stack, horn) are not at risk of damage. Ensure braced so not to fall over. **Note**: If working on a new loco, it's preferable to not install the USA Trains factory detail parts until later as done with the example herein. However, pre-installed detail parts can remain on the S4 loco when doing the slight modification (pilot cutout) and installation of CamPac components.

[2] Kadee is a registered trademark of Kadee Quality Products Co., White City, Oregon, USA.

Step 3 – Parts to Remove

Remove factory (or aftermarket) coupler & pedestal from both ends of loco chassis.
Example S4 shown is with factory hook & loop coupler. Other possibilities include USA Trains knuckle coupler or aftermarket coupler.

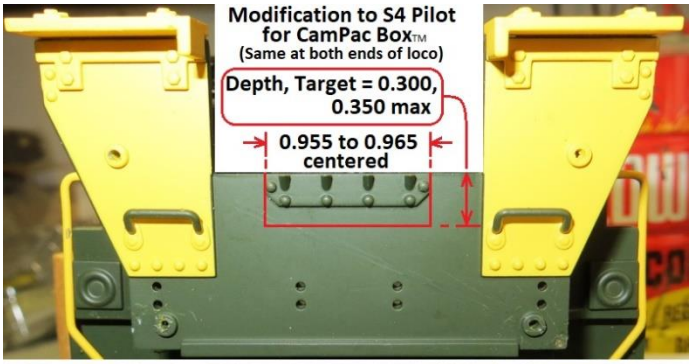


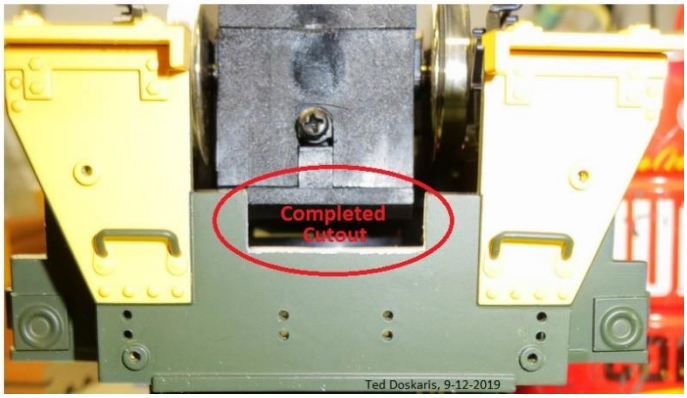


Verify pedestal screw length is 6 mm (~0.235 inch), see below

Step 4 – Pilot Cutout

Step 4A - Preparation





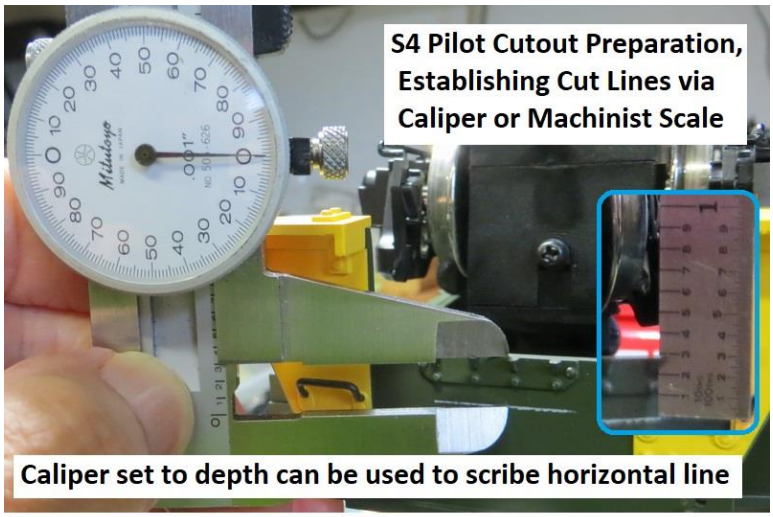
The pilot area as outlined is to be cut to dimensions shown for both ends of the loco.

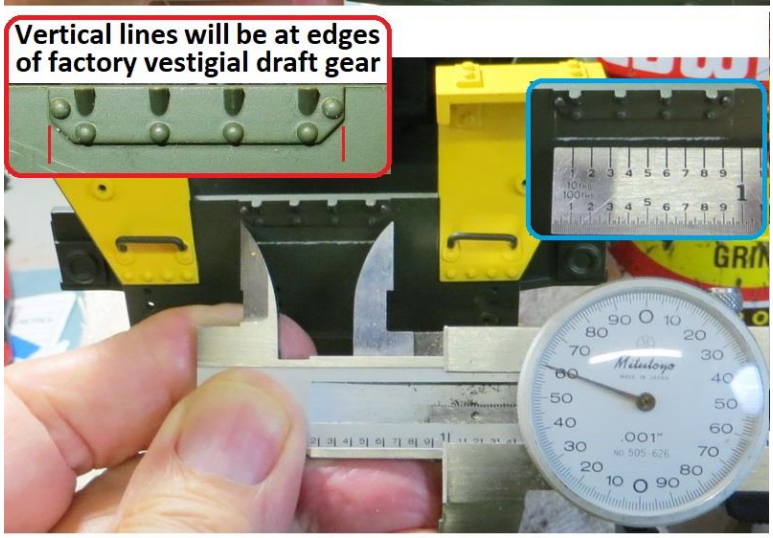
A caliper and / or machinist scale can be used for measurements and to help establish cut lines.

Painters tape may help when placed at cut lines for better visibility; however, there may be some risk that the tape may lift loosely adhered paint! First, test the tape at an inconspicuous location.

Cover the area where the pedestal will mount and nearby truck to catch debris.

See next page for example method for making the cutout.



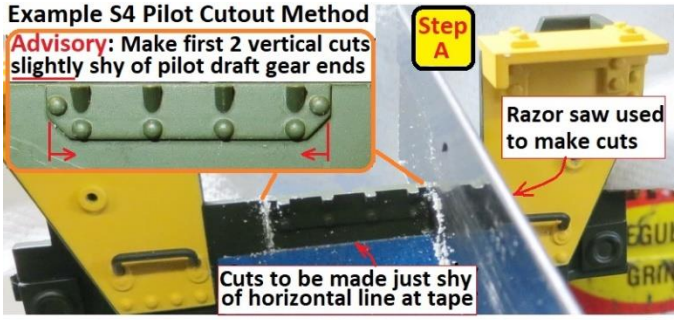


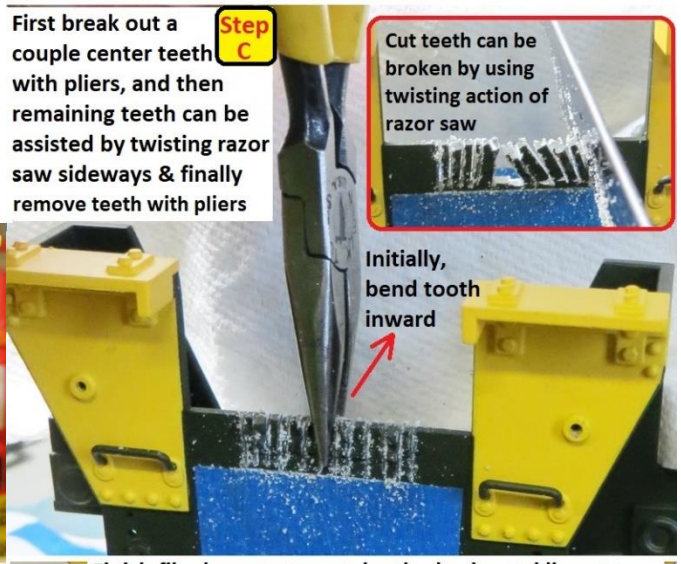
Step 4B – Cutout Method

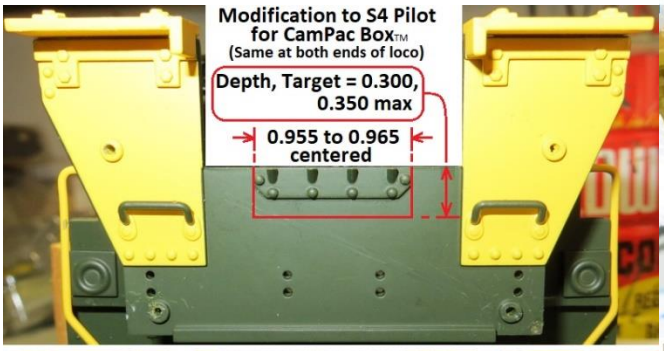
Example Method for making pilot cutout

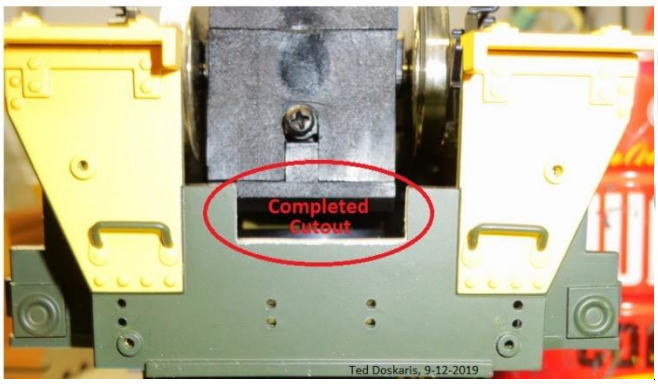
In the example method illustrated:

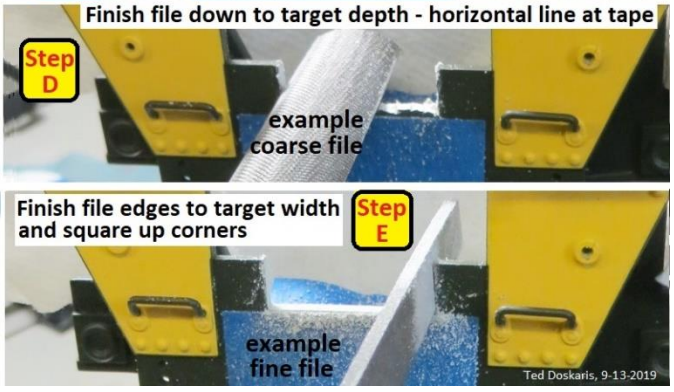
- Initially, a razor saw is used to make a vertical cut near each side extremity of the existing vestigial draft gear - but not beyond
- Then the razor saw is used to make successive closely spaced vertical cuts resembling comb teeth
- Then the teeth are removed
- A file is used to finish the cutout to the dimensions shown











Step 5 – Preparing CamPac Components

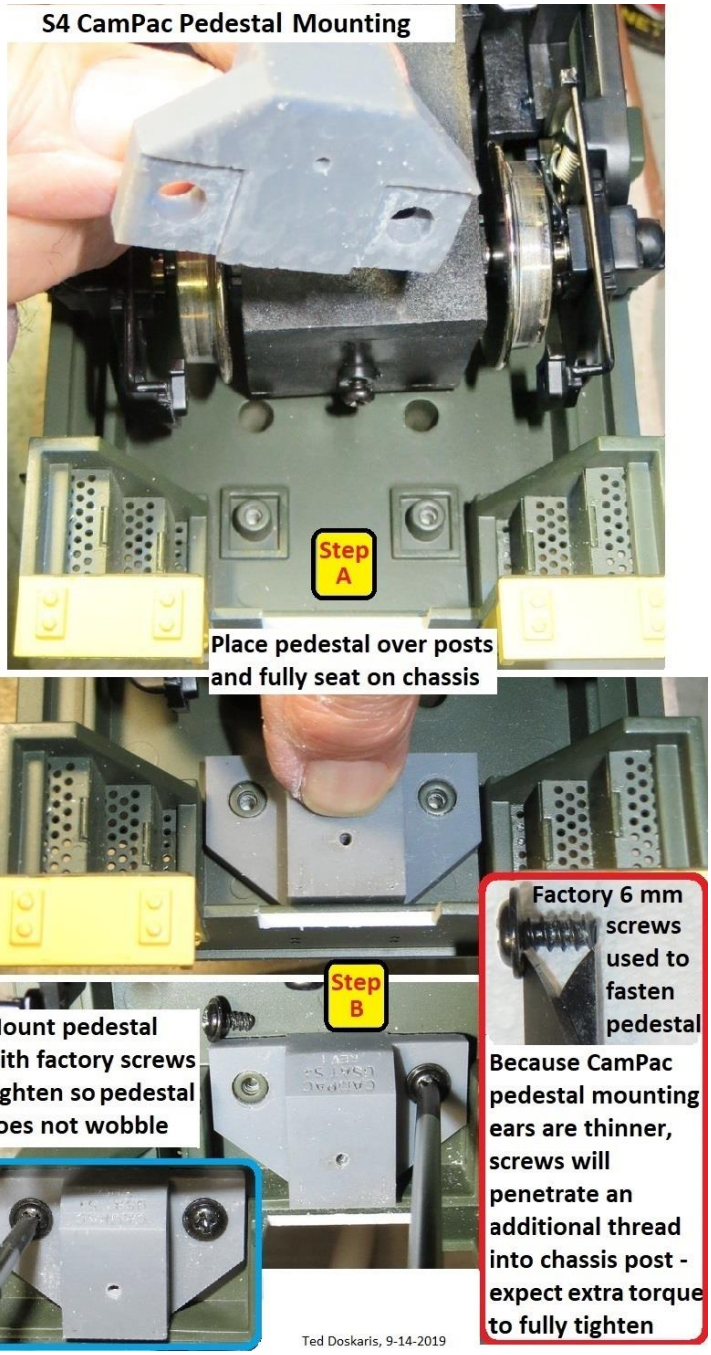
The preassembled coupler boxes are best prepainted to match the livery of the loco before installation

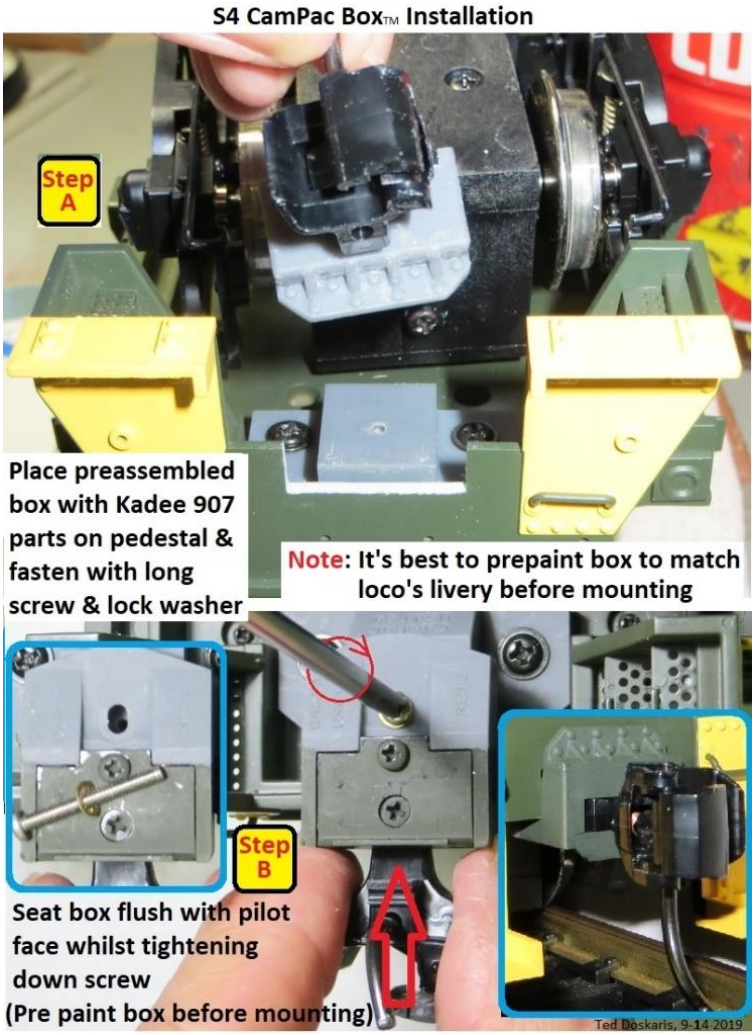
For more realism, only viewable areas of a box assembly need be painted to match a given locomotive. Example Reading Railroad close color match

Step 6 – CamPac Components Installation

The installation of the CamPac pedestal & coupler box is illustrated below.

Ensure all cutting debris is cleaned away before doing the installation.



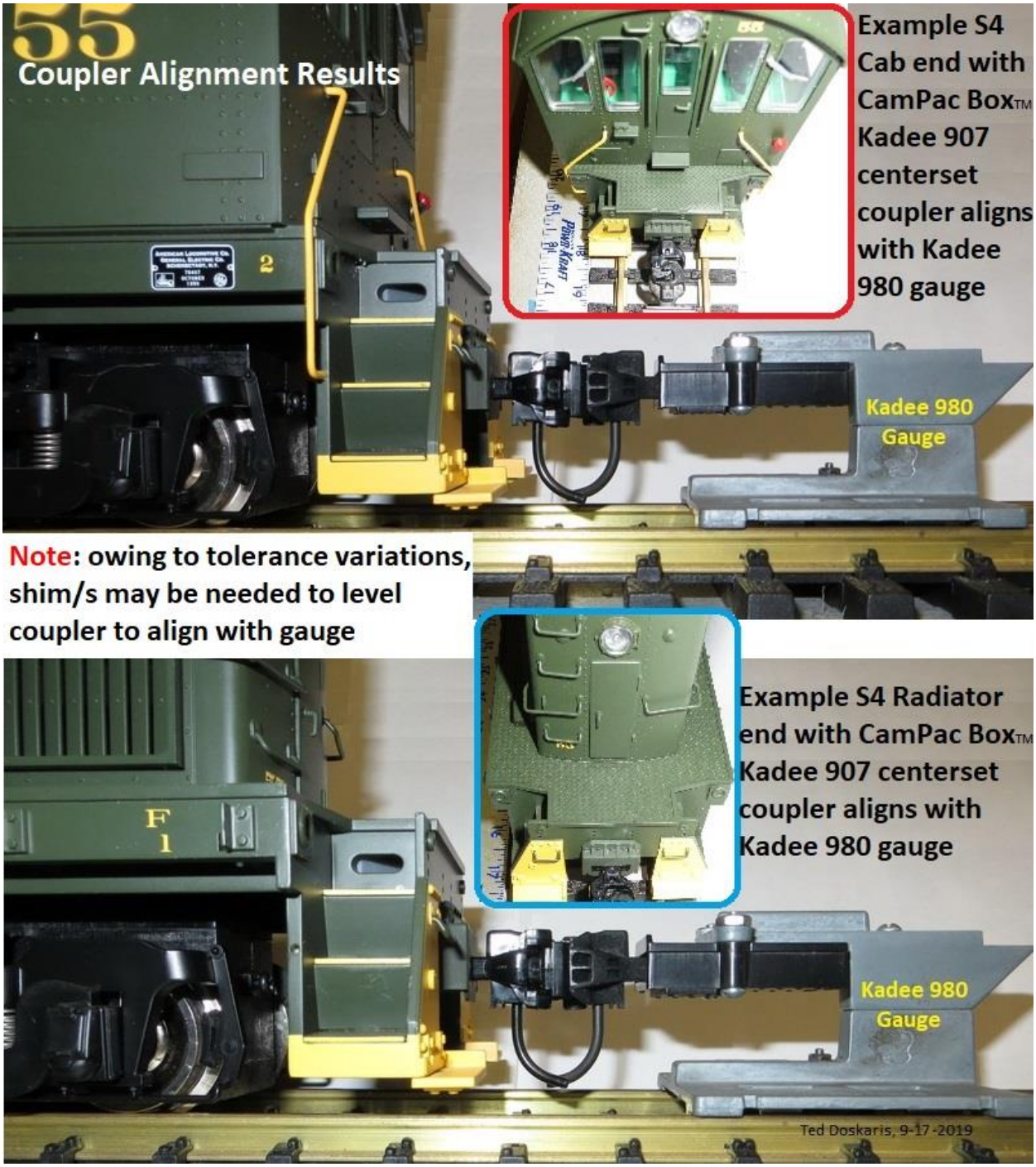


Advisory:

The coupler box mounting screw can be temporarily loosened when needing shim/s for leveling to attain proper coupler alignment - described next page.

Step 7 –Coupler Alignment

At both ends of the loco, check the coupler alignment with the Kadee gauge.



Note: In the event coupler does not align with the Kadee 980 coupler height gauge (illustrated above), shim/s from the Kadee 907 kit's capsule may be needed. (The example above did not require shimming.)

Example S4 with train operating on 8 foot diameter track

Operational Advisory:

Layouts with "S" bends having tight curves (8 foot diameter & possibly greater) are to have a straight track section at least the length of your longest rolling stock between opposite diverging paths or risk derailing the S4's coupled car and possibly the S4 loco, too.

!!!*Done*!!!

Congratulations

The USA Trains S4 now looks more like the prototype with capability to perform on tight curves when coupled to other body mounted locos or rolling stock having *properly equipped* Kadee centerset type couplers.