

USA Trains 50 foot Box & Reefer car CamPac Box™ Install Guide

Ted Doskaris, 2/26/2021

Single Door Boxcar



Reefer Car



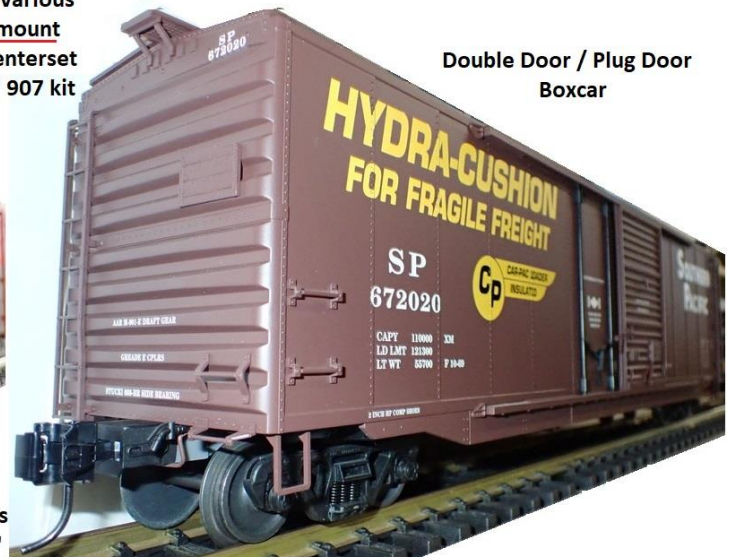
Example USA Trains 50 foot Cars having various truck options equipped with body mount CamPac Boxes™ fitted with centerset couplers from Kadee* 907 kit



Cushion Underframe Cars with extended "+, - 10 inch"

'Hydra-Shock' variant CamPac Boxes™

Ted Doskaris, 2-24-2021



Double Door / Plug Door Boxcar

*Kadee is a registered trademark of Kadee Quality Products Co., White City, Oregon, USA

Preface

USA Trains "Ultimate Series" 50 foot Reefer & Boxcars are factory equipped with Bettendorf "hot box" trucks fitted with hook & loop couplers, whereas, prototypes often have roller bearing trucks, and of course, body mounted knuckle couplers. Though these 50 foot cars are made to accommodate aftermarket body mount Kadee* 830 / 906 coupler boxes, wheel drag against them inevitably results, owing to their large foot print, when operated on tight track curves, such as 8 foot diameter.

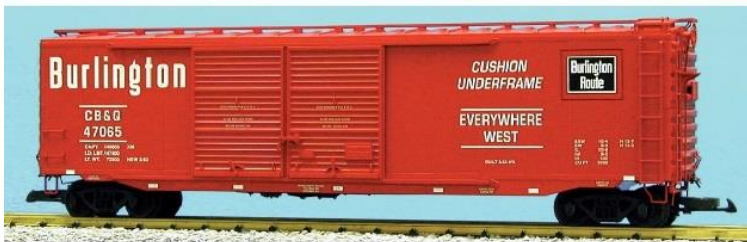
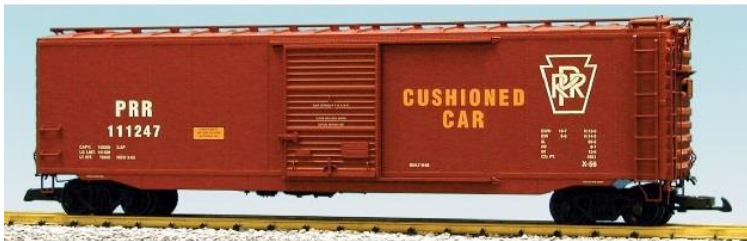
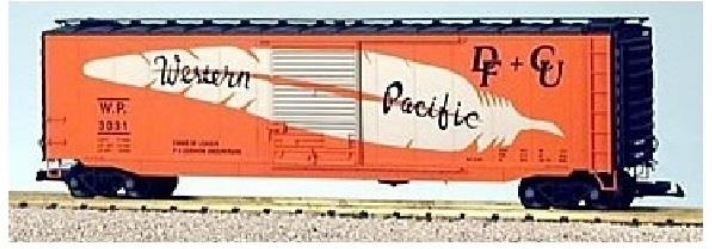
Moreover, factory fitted Bettendorf trucks can be supplanted with additional roller bearing truck choices. Also, factory truck mount hook & loop couplers are done away with - being replaced by direct fit body mount 3-D printed CamPac coupler boxes which accept the realistic Kadee* centerset (no offset) "G" scale AAR E type knuckle couplers.

Furthermore, a "Hydra-Shock" variant of the CamPac box is available if desiring to emulate a prototype car having a "cushion underframe".

(CamPac Boxes with Kadee couplers are intended for car operation on 8 foot diameter or greater track curves.)

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Illustrated below are example USA Trains 50 foot boxcars identified as having some form of a cushion underframe. With few exceptions, prototype cars for which these emulate, also, typically employ roller bearing type trucks.



Replacement Trucks

The installer can select and obtain one of the following replacement brands of "roller bearing" trucks:

- USA Trains Intermodal car plastic roller bearing truck #R2034 – pair needed - wheels #R2093 not included & sold separately - but wheels from factory standard Bettendorf truck can be transplanted (**Note:** The USA Trains metal 100 ton truck & wheels are too big) **or**
- Kadee 70 ton #973 all metal roller bearing truck pair; **or**
- Aristo-Craft 100 ton plastic roller bearing truck pair #ART-29100 - may not be available

Selected trucks and CamPac coupler boxes fit both USA Trians 50 foot boxcars and reefers having any variety of door configurations – all of which have virtually the same chassis underframes - illustrated below:

USAT 50 foot Boxcar & Reefer car chassis same, but
Reefer has 2 added boxes



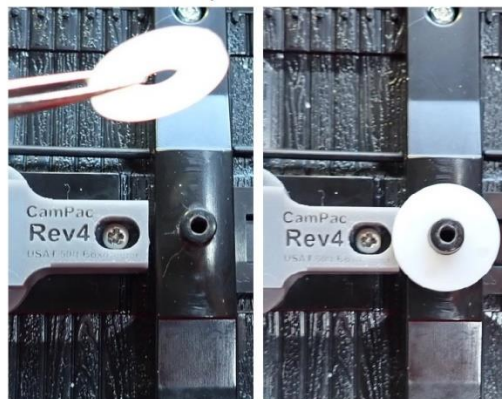
- **CamPac Kit Parts**

When selecting USA Trains Intermodal trucks for a car, request when ordering a set of CamPac boxes that the CamPac kit add two (2) 0.064 inch thick truck spacers along with two (2) #4 hole size, 0.039 inch thick washers to extend the height of the chassis truck mounting posts.

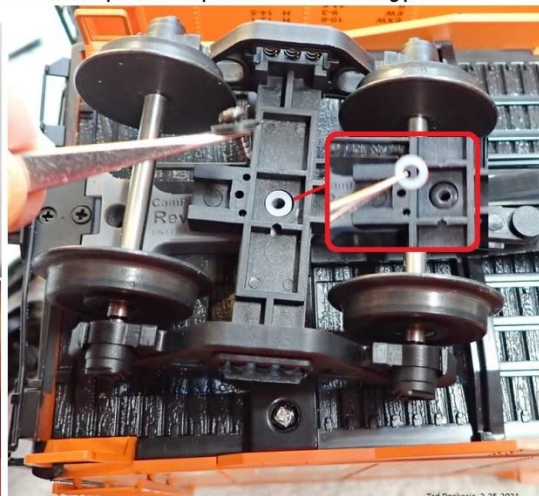


Metal wheels from
the factory installed
Bettendorf truck can
be transplanted into
the Intermodal truck

USA Trains Intermodal Car "Roller Bearing" trucks can be installed on the USA Trains 50 foot reefers & boxcars; however, they will need a spacer (~0.064") to maintain car height from the railhead similar to that of the factory installed Bettendorf "Hot Box" trucks.



So screw that fastens truck can be tight without binding, a thin (~0.039 inch) washer should be placed on top of the chassis mounting post.



The CamPac kit includes two (2) 3-D resin printed direct fit (no spacers needed) CamPac coupler boxes regardless of truck selection. (Though developed for the 50 foot reefers & boxcars to mitigate wheel rubbing for operation on tight curves, these Boxes should also fit the Ultimate Series 40 foot reefers & boxcars, too.)

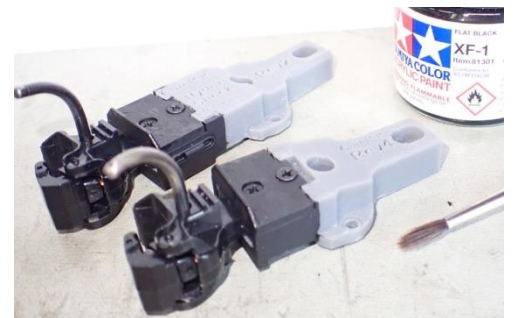
To be requested at time order, is convention box set/s OR “Hydra-Shock” box set/s having an extended draft gear applicable to cushion underframe cars.

The installer is to obtain a Kadee 907 kit, and install selected parts into the CamPac Box™ as illustrated below.

Install springs, coupler and lid from Kadee 907 kit into CamPac Boxes™



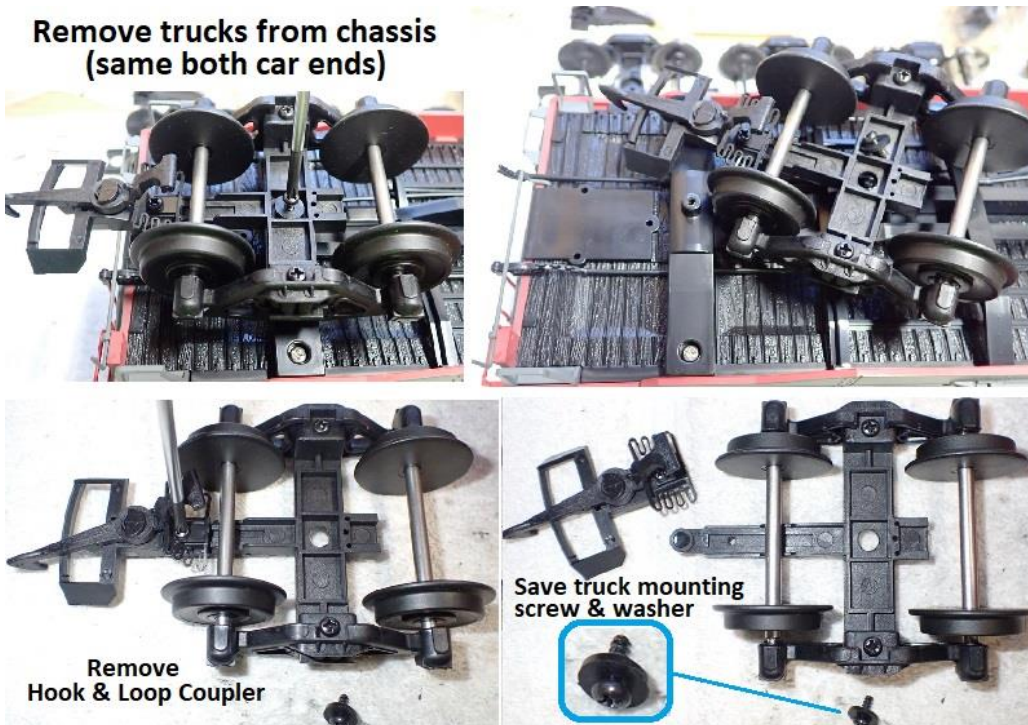
Viewable areas of assembled boxes can be prepainted to a desired color before they are installed on the car.



Car Preparation

Remove the trucks (but save screws & washers) from the car chassis.

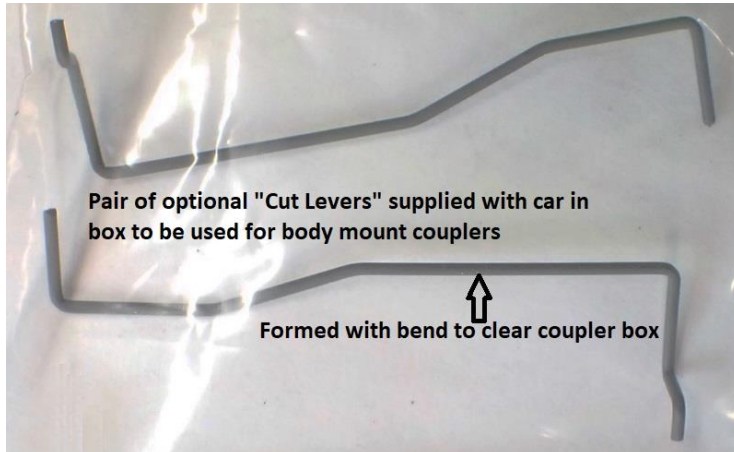
Remove trucks from chassis (same both car ends)



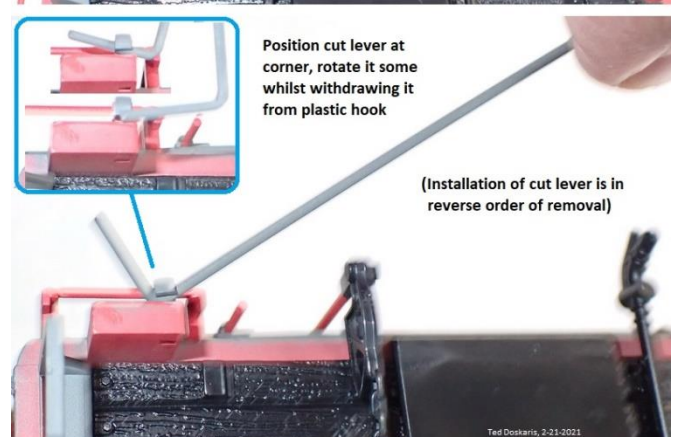
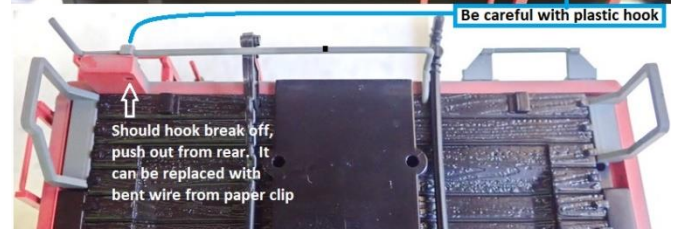
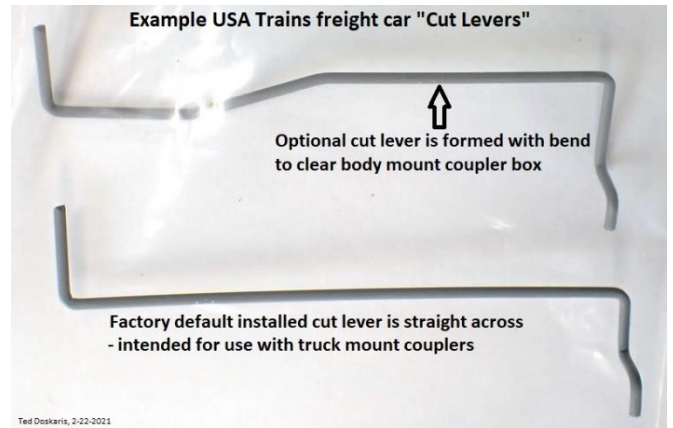
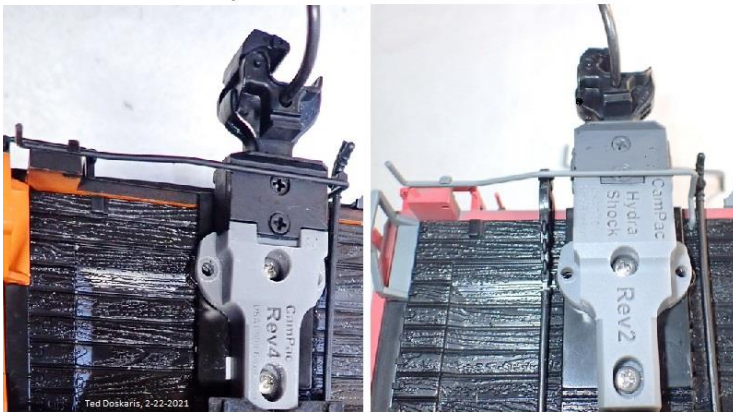
Cut Levers

Remove the factory shallow cut lever from both ends of the chassis. It's to be replaced with the optional cut levers provided in the box with the car. It's designed to fit with body mount couplers. It does not have to be installed now and can wait until after mounting CamPac boxes.

Note: The shallow cut lever could be rebent with care to fit; however, the wire is hardened and subject to breakage.



Shown below is optional cut lever to be used with CamPac Boxes™



Chassis Pad Preparation

The CamPac box is intended to mount on the chassis pad using its inline holes so truck wheel flanges won't rub when the car is operated on tight curves.

Accordingly, the "wing" holes are provided for locating the box on the pad's side holes so a new forward hole can be located and drilled as illustrated.

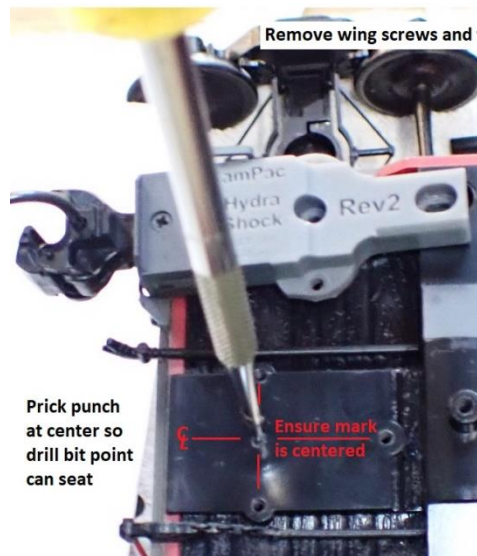
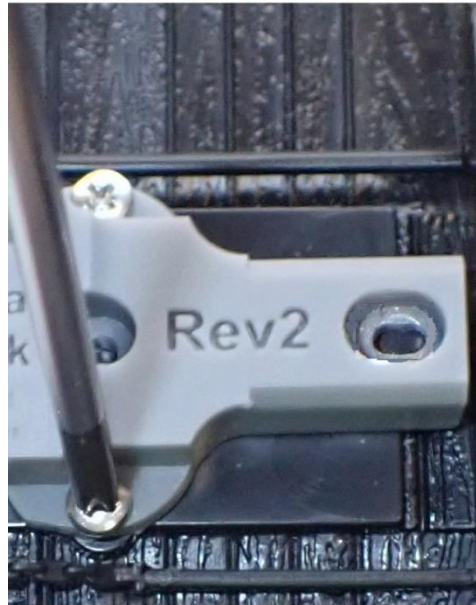
Essentially, the box serves as template.

The same method is used for both conventional and Hydra-Shock variant boxes.

Once the new hole is established, the box wings can be trimmed in the event wheel contact on them were to occur.

Shimming when mounting the box will likely be needed - described on next sheet

Example CamPac Box™ being used as template to locate and drill inline hole in which to mount it. First, temporarily fasten "wings" of the box with M2.5 screws to the pad, and then use scratch awl to scribe / mark new center hole.



Prick punch at center so drill bit point can seat

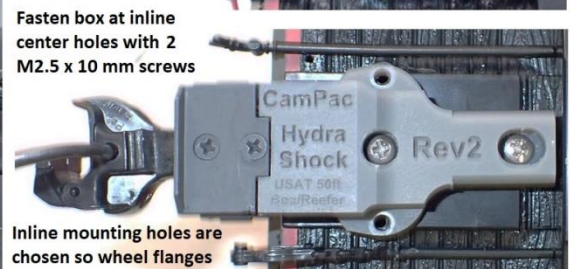
Remove wing screws and take off box



Drill new hole in chassis pad with #46 bit. (It's easier to first use smaller pilot drill bit)



Fine screw thread pitch can take many turns until screws are seated and box secured



Fasten box at inline center holes with 2 M2.5 x 10 mm screws

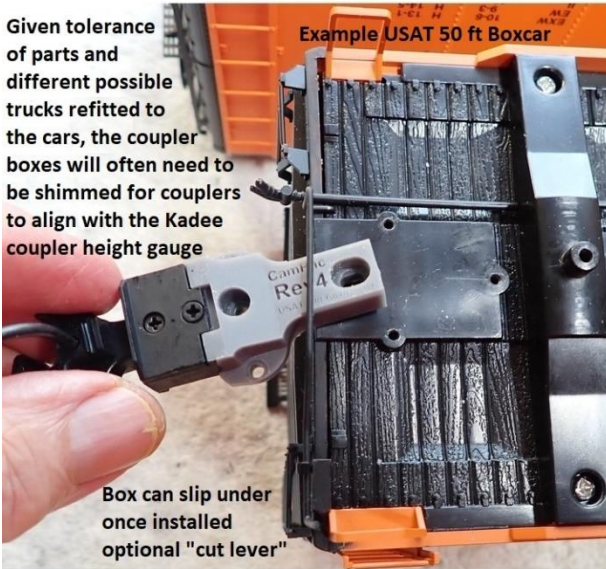
Inline mounting holes are chosen so wheel flanges won't rub with car operation on 8 foot diameter curves

Ted Doskaris, 2-23-2021

CamPac Boxes Mounting & Shimming Methods

Shimming is dependant on a number of things, including truck & wheel selections that can be seen on the next sheet.

Given tolerance of parts and different possible trucks refitted to the cars, the coupler boxes will often need to be shimmed for couplers to align with the Kadee coupler height gauge

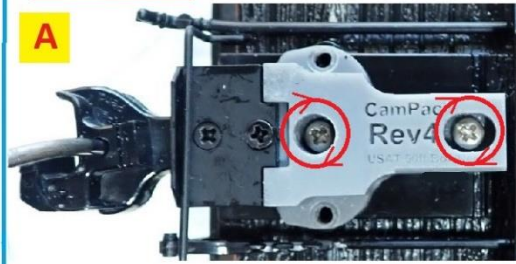


CamPac Boxes™ pre-assembled with center set couplers from Kadee 907 kit shown with two M2.5 x 10 mm long inline mounting screws



Place box on chassis pad and screw down inline screws almost all the way - but loose enough so box can be lifted a bit to push shims under it

A



Note: Screws are fine pitch, takes many turns

Each shim from Kadee capsule is 0.010 inch thick



Sometimes shims may need to be spaced apart so whole coupler box is lower to the railhead



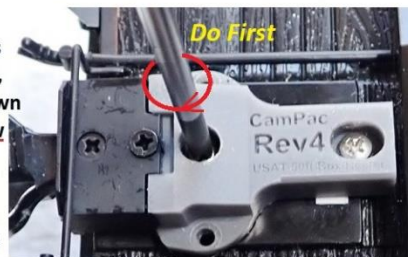
B

Most of the time a shim (or stack of shims, 3 max) needs to be placed under the tail up against the screw



C

With shims positioned, tighten down front screw first until shims are clamped & can't move



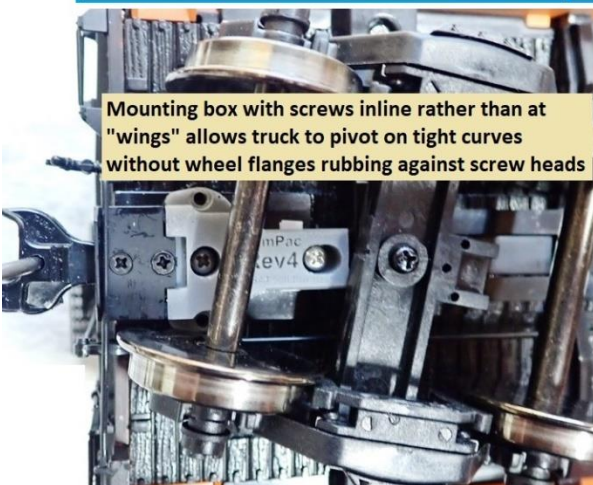
D

Only snug down tail screw last - do not over tighten



Never tighten tail screw first when shims placed as shown as this will prevent box from tilting, resulting in damaged box

Mounting box with screws inline rather than at "wings" allows truck to pivot on tight curves without wheel flanges rubbing against screw heads



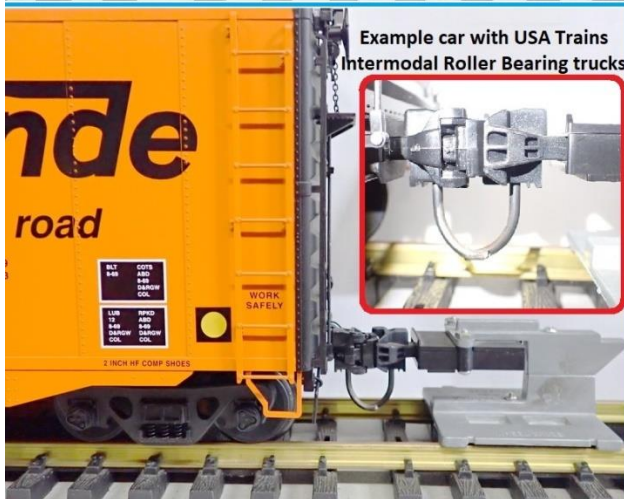
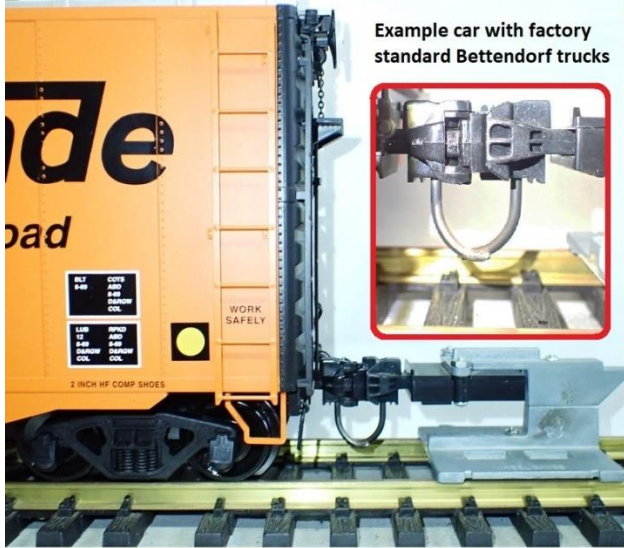
Ted Doskaris, 2-25-2021

Truck Mounting Considerations

Trucks are mounted after fastening coupler boxes. If using Aristo-Craft trucks, the coupler tang must be removed so it won't interfere with fitment when mounted on the chassis. However, USA Trains Bettendorf (and Intermodal trucks with spacer) need not have their coupler tangs removed and can be mounted on the chassis without interference by turning them around 180 degrees. If using Kadee all metal trucks, they do not have coupler tangs and are mounted using the adaptor kit's USA Trains parts.

Truck Selection Examples

Choices of replacement trucks, wheels and mounting methods affects coupler box shimming to align couplers. Shim thickness / positioning (methods as illustrated on the prior sheet) will serve to align the coupler with the Kadee 980 gauge.



This car has Aristo trucks fitted with American Main Line (AML) metal wheels