

After the locomotive was approved for production our tool maker, trying to produce a better part with less flash, made a mistake and enlarged the slot that holds the truck sideframe. The poor fit of the sideframes was discovered during model assembly and the builders tried to remedy the situation by applying shims, believing they were fixing a sideframe peg that had been produced too small. There are two different sideframes and the belief was that only one was produced too small, so shims were only applied to that side of the sideframe pairs. The mistake and attempted fix was not communicated to the Athearn product team, and the flaw wasn't apparent during the review of production samples. Complaints about the locomotive's propensity for derailment and missing bearing cap issues prompted Athearn to look for the root cause and we were able to trace the problem back to the tooling mistake. The extra space in the gear box housing slot allows the sideframe to move vertically. There is enough movement that the sideframe can escape the hold of the bottom gear cover peg and become disconnected from the gear box housing. This movement applies pressure to the bearing caps causing them to become unattached. It also allows the axle to shift out of position and bind when underway. This binding will make it appear as if the truck is warped; because the 6 wheels of the truck will not sit level and will rock on the center axle. It also prevents the outermost axle on both trucks from freely moving side to side. When it is out of alignment from the other two axles, the locomotive is very prone to derailments. Future productions of this locomotive will not have this issue; the tooling has already been corrected and returned to the original specification. No other locomotive model has been affected as these parts were designed specifically for the Triclops. We chose this solution to address the already built Triclops because it was the fastest fix, only needed a couple parts that could be accessed without disassembling the entire locomotive, and was simple enough that many modelers could do the repair themselves. **The time required depends previous modeling experience. The average repair takes about 10 minutes total.**

## Included in this Kit:

- 2 improved bottom gear covers
- 3 plastic shims (2 required)
- 6 bearing caps (2 each of black, silver, grey)
- CA Adhesive

## Recommended Tools:

### Tweezers

#### Choice of Pointed Instrument

- Toothpicks (several)
- Bamboo skewers (several)
- Dental Pick
- Pointed tweezers
- Sewing needle
- Flat-bladed micro screwdriver

#### Choice of Locomotive Support

- Foam Cradle
- Original clam-shell packaging
- Rolled kitchen towel



Gear Box Housing Slot too large



Clamshell Support



Rolled Towel Support

## The Repair Process:

1. Begin by placing the locomotive upside down in your chosen support.

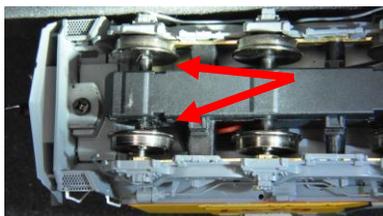
Before going any farther, know that sideways pressure on the truck sideframes **WILL** cause the bearing caps to come off the axles.



Masking tape over bearing caps

Prepare yourself and your work area for these to come off. The caps can fly away quickly to never be found again. We've included a couple extra bearing caps just in case. Placing a small piece of masking tape over the bearing caps can help capture and contain them.

2. Using your pointed instrument, pry the four bottom gear cover clips away from the gear box housing assembly and remove bottom gear cover.



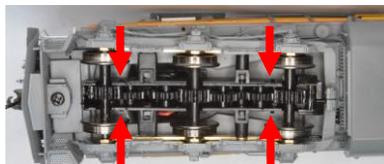
Outer clips

This process can be frustrating because the clips like to re-attach themselves as you attempt to remove each clip. For this repair, the original bottom gear covers will be discarded, so the easiest method to remove the bottom cover is to bend or break the clips off. Using your pointed instrument, pry the side of the clip away from the locomotive without concern for keeping the piece intact. This is easier with tools like micro-screwdrivers and dental picks. Toothpicks and skewers work but expect to break the tips frequently.



Inner clips

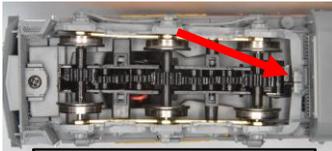
When all four clips have been loosened/bent/broken, you can gently pull up on the bottom gear cover. Using your pointed instrument, you can also gently pry it away from the gear box housing. This part can be thrown away.



Locations of 4 clips

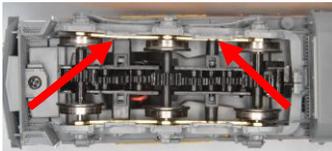
**Do not install the improved bottom gear cover yet.**

3. Two of the four sideframes need to be removed from the gear box housings, the Left Front and Right Rear



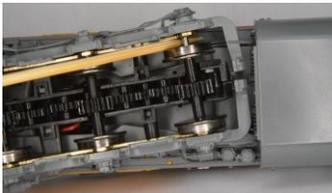
1<sup>st</sup> Attachment Point

The sideframes are held on at three locations. The first location to unsecure is at the middle back of the truck. The sideframe wraps around this end of the truck coming to meet the other side's sideframe. There is a small peg the sideframes fit over. Using your pointed instrument, gently pull the sideframe away from this peg towards the fuel tank.



3<sup>rd</sup> & 2<sup>nd</sup> Points

The second and third locations are on the side of the gear box housing. One location will appear round, the other square. It's recommended to start by loosening the round location first as this is the tightest fit.



"Prybar" Placement

Using your pointed instrument as a 'crowbar', insert it between a wheel face and the brass pickup plates on the truck sideframe. The brass pickup plates are attached to the sideframe, so do not place your pointed instrument between them and the plastic sideframe. A gentle amount of pressure will loosen the sideframe. If the bearing caps have not come off yet, this is when they will.



Brake Chain

**The right-rear sideframe is attached to the shell by the parking brake chain.** Because of this chain, it's advised to start on the left-front sideframe which will be easier. The factory used a small amount of glue to secure the chain to both the shell and truck sideframe so it is more difficult to remove. There is enough slack in the chain to work on the sideframe without having to remove the chain.

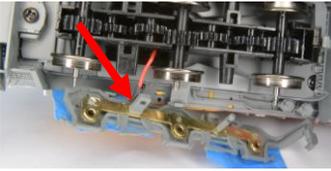


Sideframe removed

Once a gap is created at the round mounting location, use the same technique of gently prying on the other end of the truck to remove the sideframe from the square attachment point. With gaps at either attachment points, the sideframe should be free of the gear box housing.

Because the brass pickup plate is attached to the sideframes, there is also a wire tethering the sideframe to the locomotive. Here too, there is enough slack in the wire to remove the sideframe without having to disconnect the wire as it is soldered to the brass pickup plate.

## 4. Adhere the shims to the sideframes.



Shim goes here



Carefully apply glue



Place shim on peg



Shim properly positioned

Apply a tiny amount of adhesive to the top (Top meaning towards the sky when the locomotive is on tracks. While the locomotive is being worked on upside down, the “top” is down towards your work surface) of the peg that fits into the square attachment point.

**Applying the adhesive using a toothpick helps regulate how much adhesive is being applied.** The shim is not under any physical stress, meaning that the adhesive is only to hold it in position until the sideframe is installed. There is no benefit in applying too much adhesive.

Using tweezers, position the shim on the top of the peg. It's easiest to position the shim flush with the brass pickup plate, but do not worry if it's not flush as long as it doesn't extend beyond the end or sides of the peg.

**Allow adequate time for the adhesive to cure before reassembling.**

## 5. That was the hard part, now it's time to reassemble the truck.

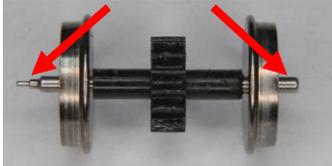


Sanding line position

Insert the sideframes back into the slots on the gear box housing.

When reinstalling the sideframes, be mindful of the inboard sanding lines. They are flexible, but you don't want to trap them between the sideframe and gear box housing. Also pay attention to the metal brake line attached to the top of the sideframe. It likes to catch on the jack pads and hand brake hanger. Make sure to seat the sideframe on the clip near the fuel tank

# SD60M TRICLOPS Repair Kit



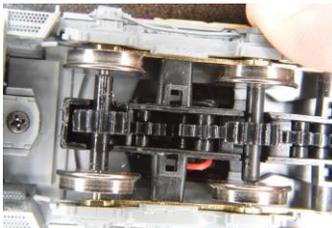
Needle and Blunt  
axle ends

If the wheelsets happen to fall out while working on this repair, note that they are not universal. The axles can have two different ends variations, one is blunt, the other is tapered to a needle-point. The needle-point axles are where the rotating bearing caps are attached. Examine both truck sideframes and identify which locations need the blunt versus needle point axles.



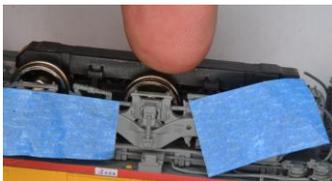
Square and  
rounded ends

The cover is directional and will only fit one way. The rounded end will face the outside of the locomotive while the squared off end will face the inside towards the fuel tank.



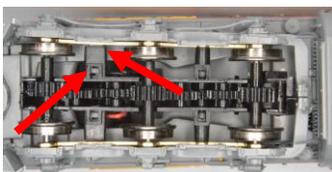
Squeeze

Gently squeeze the left and right sideframes together while installing the improved bottom gear cover.



Push listening  
for clicks

Press the bottom gear cover onto the gear box housing. You should hear 'clicks' as the tabs engage. Check to make sure all clips engaged. Sometimes it requires using your pointed instrument to seat the clip over the peg on the gear box housing.

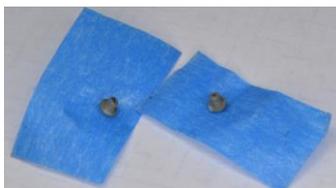


Slot out of position

If you didn't squeeze the sideframes together while pushing the bottom gear cover on, the sideframe retaining slot can be outside the "window" that the bottom gear cover peg is designed to engage.

Test to make sure the bottom gear cover fully engaged and secured the side frames by using your pointed instrument. Try to move the sideframes away from the gear box housing by the square attachment point. There should be no movement. If the side frame moves, then there was a problem with the install of the bottom gear cover and you'll have to remove it and try again.

## 6. Re-install the bearing caps.



If you used masking tape to catch the bearing caps a slight squeeze on the tape will usually seat the bearing caps on the axles again. Removed the tape. If they didn't re-attach themselves to the axle, they'll likely be stuck to the tape.



Positioning the bearing cap

Carefully position the bearing cap over the axle point. A gentle push of a fingertip will seat the cap onto the axle. Glue should not be required to hold the bearing cap on the axle, but if it's desired, make sure it's only applied inside the axle hole on the cap and none is dripped on the outside. **Gluing the caps on is not recommended.**

## 7. All done.



The improved bottom gear cover is designed with longer pegs to better capture the truck sideframes solving the bearing cap problem.

By adding shims to the two sideframes that did not receive them at the factory, the binding, derailment, and "warped" truck issues are resolved.

With the shims in place and the extra security of the improved bottom gear cover, these locomotives will perform as intended and provide years of trouble-free enjoyment.

If further assistance is needed in completing this repair, please contact Athearn at [athearnhelp@horizonhobby.com](mailto:athearnhelp@horizonhobby.com) or 310-763-7140. Be sure to mention that you are looking for help with the SD60M Triclops Repair Kit.