Executive Summary: Replaced the tonneau riser clevis ends with a pair of McMaster-Carr #2447K17, $8.51 ea. Minor modification (filing) required to accommodate the [intentionally] bent washer, which activates the latching fork, and to keep it oriented correctly. Used the original bolt and washer, plus an additional shim washer rather than the included clip. Necessitated readjusting the latching pawl per Spyder Service Manual Supplement p.42-172. Ran top auto-configure.

Tonneau Riser Clevis End

Photo 1 is a look at the original part, installed.

Damage

The threads on one of the tonneau riser clevis ends stripped when I ran the top auto-configure. I heard the hydraulic pump whine, then a scary clunk. I believe this problem had already started months ago when that side of the tonneau began failing to latch. Latching on that side has always been a problem, with the Mitsu mechanic making adjustments which worked only for awhile.

The clevis had about 4 or 5 threads stripped out, leading me to wonder if it had been screwed on fully. The piston rod appeared in good shape. I cleaned it up with a 3/8" x 24tpi die (yes, inches--see discussion in the "bracket for tonneau cover" thread).

Replacement Comparison

I replaced both clevis ends, for balance, with McMaster-Carr #2447K17, which are $8.51 ea. They come with a quick-attach clip pin, which I ended up not using (see below).

The measurements aren't exactly the same, as can be seen in the following photos. However, they are sufficiently close, especially given the computer can compensate for the length difference during auto configuration. The McMaster ones are machined zinc-plated steel, which should be stronger than the original cast steel (see Marc Mayer's 9/29/09 10:54 message).

Photos 2-5 show comparison of the McMaster part to the original.


ned Steel Clevis Rod End,
hread Size, 1.574" Length
$8.51
$17.02
Total:


Thread Size, 1.574 Length
ice: $8.51
ice: $17.02
ount: $17.02
Tax: $1.57
arge: $4.50
otal: $23.09

Modification

The McMaster part required a slight modification to accommodate the [intentionally] bent washer which sits below the clevis end and activates the fork attached to the tonneau latching pawl. The base of the original part is both narrower (so the bent edge of the washer fits past it) and flattened on the part toward the back of the car (keeping the bent washer oriented). I filed the McMaster part to achieve these goals, as seen in photo 6. (Read below before filing.)

Of course, there are two choices for the side on which to do the filing. It *does* matter as it turns out: with the washer inserted, there are only 5-7 threads engaged at maximum, so having to back off the clevis even half a turn to get the filed edge to be at the back of the car is significant. What's the chance I happened to file the correct side before realizing this? Yeah, right. :-) Even tried swapping it to the other side of the car. Had to file the other side of that first clevis.

Suggestion: To determine which side of the clevis to file, put the washer on upside down (so the unfiled clevis won't have to clear the washer bent edge) and screw the clevis on to see which side ends up at the back of the car.

I was somewhat concerned about the wall thickness after filing. However, it is at least as thick as the original part (photo 7).

To Screw Or To Clip?

The McMaster clevis comes with a quick-connect pin clip. I'd originally thought I wouldn't use that as there may actually be torc against the attachment of the pin to the clip as the tonneau lift arm rotates against the pin. However, when I saw how hefty the clip was, I figured it would be fine. And then I installed it...

The clip has very sharp edges and they will rub against the trunk carpet on the driver side (see photo 8). (It cannot be reversed as it has to pivot onto the clevis and the washer bent edge is in the way of this on the back side.) Concerned that the clip might cut into the carpet over time, I decided not to use it. An additional consideration in this decision is that the clip doesn't quite fasten completely due to the washer bent edge being in the way. It's probably the safer choice anyway to bolt it.

I used the original bolt and nut. Because of the same consideration for rubbing against the carpet, I oriented the smoother torx end toward the carpet. (Originally, on both drive and passenger sides, they were oriented with the torx ends to the passenger side.) It probably doesn't matter in practice, and would look slightly neater from inside the trunk, as well as be easier to install, with the torx ends facing the center of the car.

Because the forks of the original clevis are slightly wider, I used a washer as a shim, which you can just make out inside the nut in the final photo.

Installed View

Photo 9 is the installed view.

Latch Adjustment

The bent washer depresses the fork (see bottom of final photo) which activates the tonneau latching pawl. The mechanics ensure the pawl begins to rotate forward just as the striker on the tonneau enters it. Because the washer position may have changed (the new clevis did not put the washer at exactly the same height on my installation), the latch mechanism must be adjusted.

The Spyder Service Manual Supplement (included on the 3000spyders site), page 42-172 explains the mechanism and shows the standard acceptable values for where the striker must enter the latch pawl.

Briefly, raise and lower the tonneau manually (set the passenger-side hydraulic valve to point down) and watch where the striker enters the latch. I had to use a flashlight as the tonneau is almost closed at that point. On mine, the striker was actually hitting on the tip-top of the front ridge, then forcing the pawl forward with a clunk, rather than entering basically in the gap between the two pawl ridges.

The rough adjustment is done by adjusting the mounting height of the fork, and the fine adjustment by adjusting the cable end from the bottom of the fork where it is mounted on the chassis. That latter required two 10mm open-end wrenches due to space constraints (another trip to the hardware store).

The result is that the pawl begins to rotate just as the striker reaches it, with the striker slipping into the valley of the pawl, and then the pawl continuing to rotate to pull the tonneau closed tightly and ultimately securing it with a mechanical catch (the click we hear when having to push down a tonneau to get it to latch). It's really quite a feat of beauty, what these ASC folk have engineered.

Auto Configure

Finally, auto configure the top. Follow the instructions in the manual that came with the nifty JNS Top Link you bought from Jim Watkins.

My top now opens and closes more smoothly than I can ever remember its doing since I bought it off a district sales manager at 3k miles. For years, the only way that tonneau corner would latch with the top open was by getting out and pushing on it manually. I suspect the clevis has been the problem for awhile. It's gratifying to put the time and effort in and end up *better* than where I started! Thanks to all who helped with this, especially Jim, Marc, and Bob.

--Dan Craft