

Technical Service Bulletin 195

Mandatory Steering Shaft Connection Inspection and Potential Replacement

Prepared By: B King
Date: December 14, 2021

Estimated time of completion:

Inspection	-	20 minutes
Repair	-	1 Hour

Models Affected:

L3, L4, L5, L5W, and L7 Models equipped with standard steering produced between March 1, 2021 and October 31, 2021. Vehicles equipped with Electronic Power Steering are excluded from this TSB.

Description of Problem:

Steering shaft may have incorrect installation or defective machining.

DO NOT OPERATE THE UTV UNTIL THE BELOW INSTRUCTIONS HAVE BEEN COMPLETED.

Solution:

Inspect and repair or replace as necessary.

Background:

Due to a component manufacturing error and/or assembly error, some steering shafts may pull free from the splined steering shaft at the universal joint connection closest to the steering wheel resulting in the potential inability to steer the vehicle.

A. Determine if the UTV is equipped with Electronic Power Steering

- 1- From the driver side of the vehicle, look for a power steering module and electronic control box as shown in Figs 1-2.
- 2- If Power Steering Module is present, the vehicle IS equipped with Electronic Power Steering and **no further action is required.** If the power steering module and electronic control box are NOT present on your vehicle, please continue to Section B - Determine if Your Manual Steering Vehicle is affected.



Figure 1 - General Location



Figure 2 – Power Steering Module


B. Determine if the Manual Steering Vehicle is affected

The vehicle Identification Plate is located just behind the pedals and contains the Vehicle Model, PIN Number and Manufacture Date.

Affected vehicles:

- Models: L3, L4, L5, L5W, L7
- Mfg. Date Range: March-2021 through Oct-2021

If the vehicle model is not listed, or if the vehicle manufacturing date falls outside the date range listed above, no further action is required. If the vehicle IS one of the models listed AND falls into the date range in the above table, continue to Section C – Basic Vehicle Inspection.

 AMERICAN LANDMASTER	
2499 S. 600 E., SUITE 102 COLUMBIA CITY, IN 46725 800-643-7332 AMERICANLANDMASTER.COM	
MODEL NAME	VEHICLE MODEL
YEAR	PIN NUMBER
PIN/VIN	
DATE OF MFG.	MANUFACTURE DATE
GVWR	LBS.

C. Basic Vehicle Inspection

Tools Required	
4mm Allen Wrench	Flashlight
13mm socket and ratchet	Torque Wrench (if available)

Inspection Procedure:

Perform a 3-step vehicle inspection to determine if the vehicle will require repair:

- 1- Visual Inspection
- 2- Bolt Tightness Test
- 3- Tug Test

Look for:

- ✓ Is cross bolt correctly installed?
- ✓ Is U-Joint fully engaged?
- ✓ Is cross bolt tightened?

Remove the hood and front fenders as one assembly (Ref. Fig. 3) in order to perform a visual inspection of the upper steering U-Joint connection. Using a 4mm Allen wrench, remove the two front hood bolts and (6) fender bolts (3 on each side). Lift hood and fender assembly carefully from vehicle and set aside to expose the Upper Steering U-Joint.

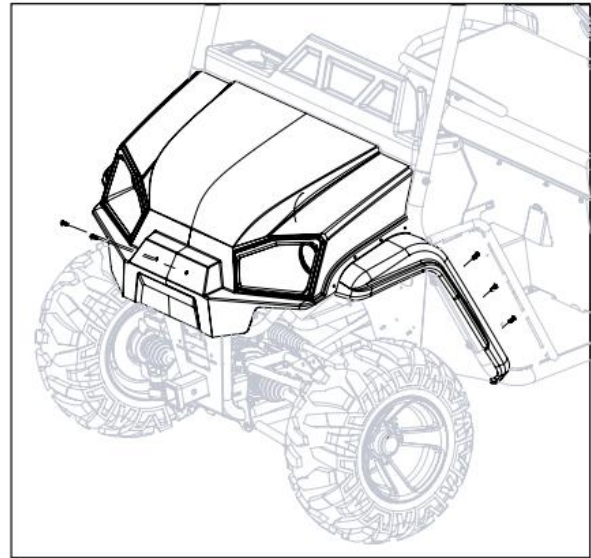
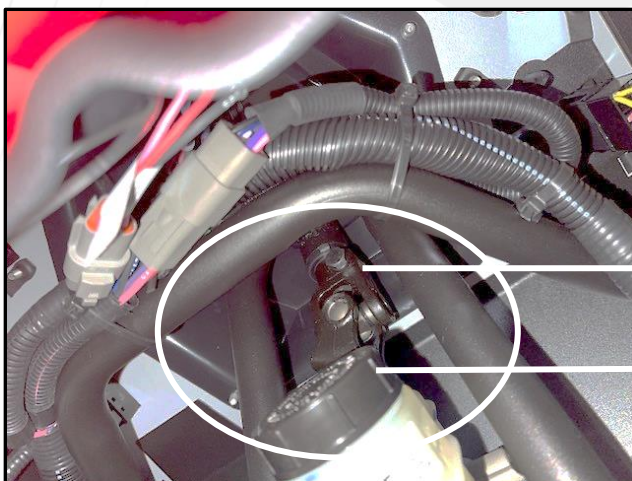


Figure 3 – Hood / Fender Removal

Upper U-Joint connection is located just above the master cylinder as shown below in Fig. 4.



U-Joint

Master Cylinder

Figure 4 – Upper U Joint location

1- VISUAL INSPECTION - Is the cross bolt installed correctly?

- Is cross bolt installed correctly (Ref. Figs. 5-6)?

Rotate steering such that U-Joint is oriented as shown in Fig. 6 with Cross Bolt Head Facing UP.

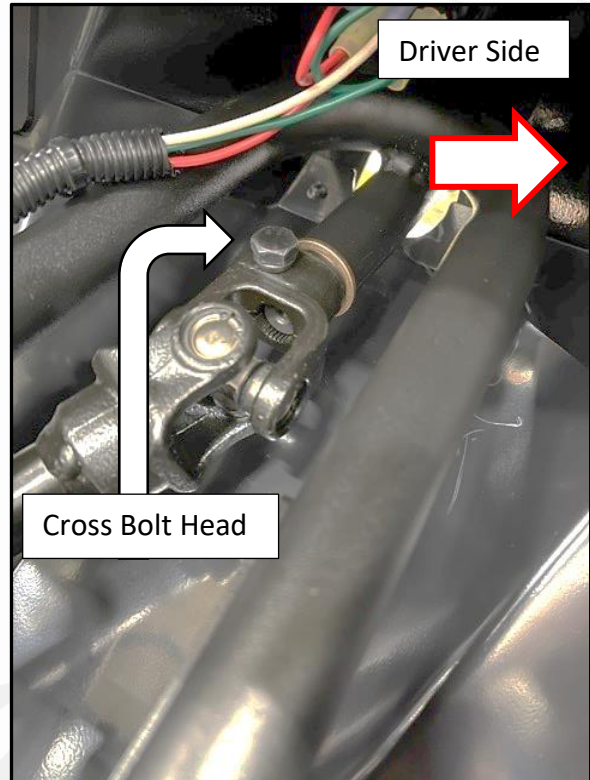
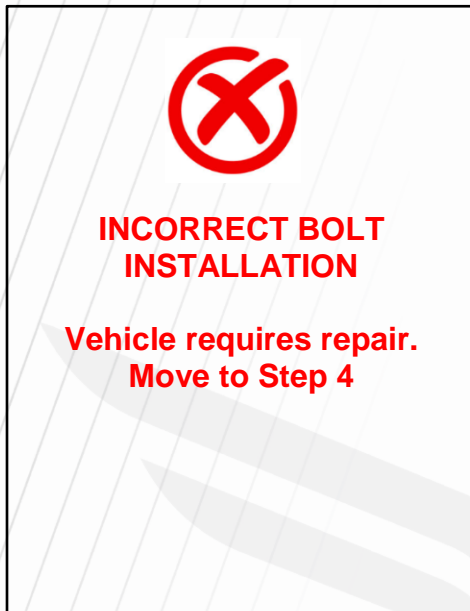


Figure 5 – Incorrect Bolt Installation

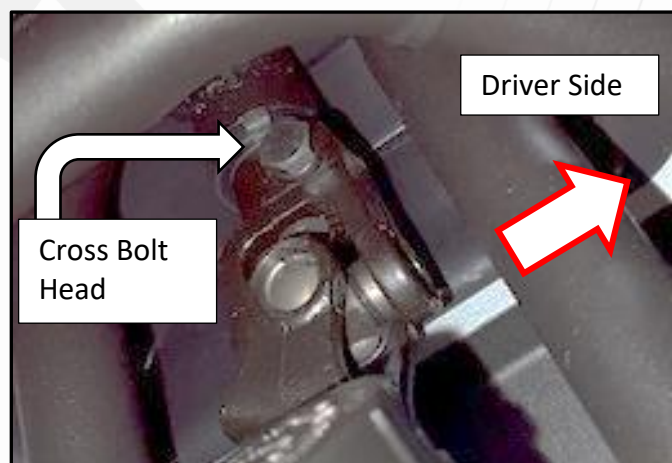
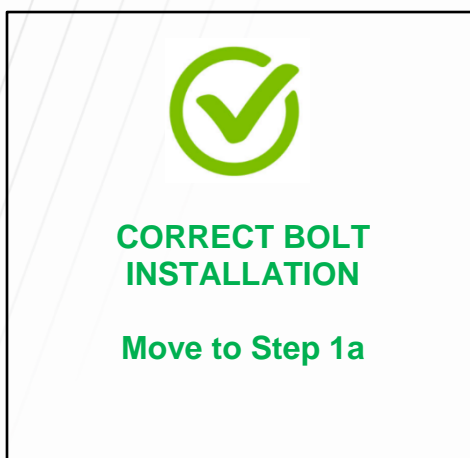


Figure 6 – Correct Cross Bolt Installation

1a - VISUAL INSPECTION CONT'D - Is the U-Joint fully engaged?

Ensure the U-Joint is fully engaged on the splined steering shaft. Incorrect engagement will result in a gap between U-Joint and steering support tube. Ref. Figs. 7-8.

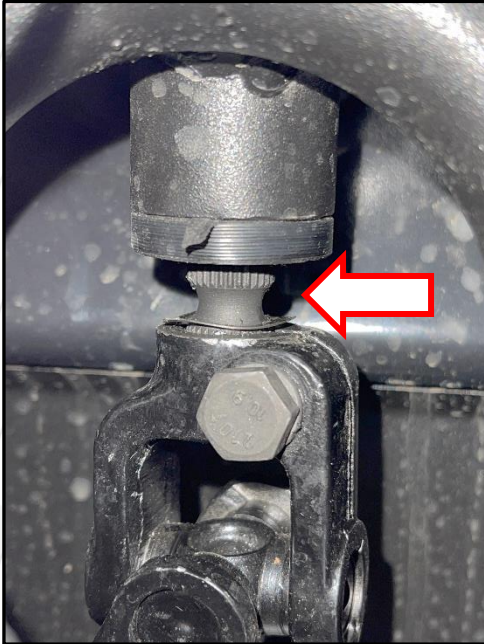


Figure 7 – Incorrect Engagement

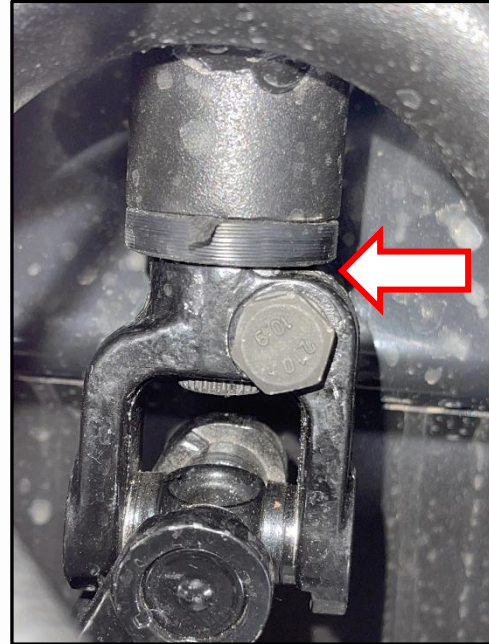


Figure 8 – Correct Engagement

**INCORRECT INSTALLATION****Vehicle requires repair.
Move to Step 4****CORRECT INSTALLATION****Move to Step 2 – Bolt
Tightness Test****2- BOLT TIGHTNESS TEST - Is the Cross Bolt Tightened?**

A loose cross bolt will result in excess play between the U-Joint and Spline Shaft. If the unit has passed all the above inspections, ensure the cross bolt (Ref. Figs 6 and 8) is tightened securely with the 13mm socket and ratchet (If you have a torque wrench, tighten to 20lb/ft). After tightening the cross bolt, move on to Step 3 – Tug Test.

3- TUG TEST – Is the steering shaft firmly attached?

Grasp the steering wheel with hands at the 3 and 9 o'clock positions and apply a firm upward tug in an attempt to pull the shaft out of the upper U-Joint Connection.
 Ref Fig 9.

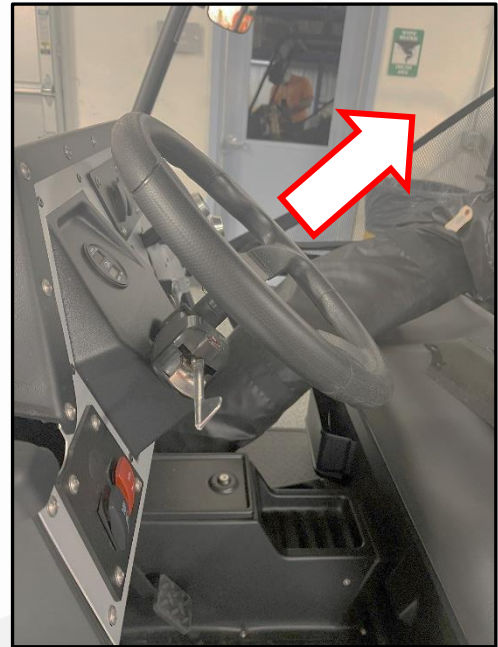


Figure 9 – Tug Test

4- STEERING SHAFT REPLACEMENT

If the vehicle failed the Tug Test in step 3 you will need to replace the Steering Shaft and Splined Steering Shaft.

Call American Landmaster at 1-800-643-7332 to order your free field service kit PN19785

Part No	Description	Qty
2-10526	SHAFT, STEERING - UNIVERSAL	1
2-18169	STEERING HUB DISK	1
2-18170	STEERING HUB SHAFT	1
2-50098	BOLT, TAPERED 5/16-18 X 1IN	1
2-50708	WASHER, WAVE	1
	RMA RETURN INSTRUCTIONS	1

Tools Required	
4mm Allen wrench	Dash removal (optional)
13mm Socket	Cross bolt Upper
16mm Socket	Cross bolt Lower
16mm Wrench	Cross bolt Lower
3/16" Allen Wrench	Steering Wheel Cap / Steering Hub
7/16" Wrench	Steering Wheel Cap
Torque Wrench	Cross bolt validation
Ratchet	
Flashlight	

Steering Shaft Removal

- 1- (Optional) for easier access to the upper U Joint, you may wish to remove the upper dash using a 4mm Allen wrench
- 2- Using a 16mm wrench and socket, loosen and remove the cross bolt and nut at the lower U-Joint. Ref Fig 10
- 3- Using a 13mm socket, loosen and remove cross bolt at the upper U-Joint. Ref Fig 11.



Figure 10 – Lower cross bolt



Fig 11 – Upper cross bolt

- 1- Gently pry up on the lower U-Joint to free it from the rack and pinion.
- 2- Slide the upper U-Joint free from the steering shaft and collapse the telescoping steering shaft and remove the steering shaft from the vehicle.
- 3- Slide the loose steering wheel assembly out of the vehicle.

- 4- To dis-assemble steering wheel, remove the (6) Allen head bolts and nuts using a 3/16" Allen wrench and 7/16" socket. Set fasteners aside for re-use.
- 5- Remove the tapered head screw using a 3/16" Allen wrench. Discard fastener.

Steering Shaft Installation

- 1- Remove the bolt and nut from the lower end of the new steering shaft and install the shaft over the spline on the top of the rack and pinion. Re-install the bolt such that it passes through the groove on the rack and pinion spline. Ref. Fig. 12.
- 2- With the bolt installed, the lower U-Joint should NOT be able to pull free from the Rack and Pinion spline. Using a 16mm socket and wrench, install the nut and tighten to 40lbft.
- 3- Using a 13mm socket, remove the 8mm bolt from the upper U-Joint on the steering shaft.
- 4- Slide the supplied splined shaft into the steering column of the vehicle
- 5- Install the supplied wave washer onto splined shaft, then slide the upper U-Joint of the steering shaft onto the splined steering shaft. Ref. Fig. 13.



Figure 12 – Cross-Hole detail

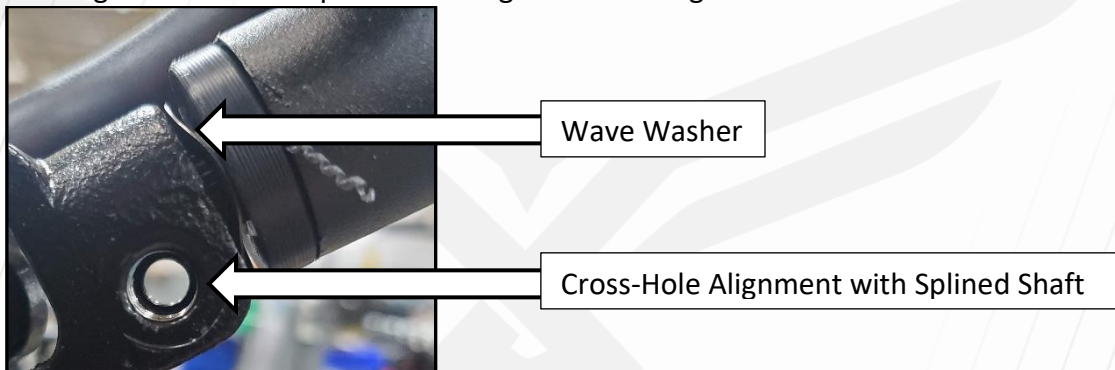


Figure 13 – Upper Cross Hole Detail

- 6- Ensure upper U-Joint is pushed all the way up on the splined steering shaft such that the 8mm cross bolt can be installed and engages the groove in the splined steering shaft. Ref. Fig. 13.
- 7- Install the cross bolt into the unthreaded side of the U-Joint so that it engages the splined shaft groove and the threads on the opposite side of the U-Joint. Tighten to 20lbft to secure using a torque wrench. Final installation must look like Figs 6 and 8 above.
- 8- Rotate the steering assembly to center the front wheels.
- 9- Install the steering hub disk to the steering wheel end of the splined shaft and ensure that there is a hole in the 12 o'clock position.
- 10- Install the tapered bolt and tighten securely with a 3/16" Allen wrench.

- 11- Install the steering wheel using the (6) Allen head bolts and nuts from item 6 in the prior section.
- 12- Repeat the Inspection Process outlined in STEPS 1-3.
- 13- Re-install the Hood/Fender assembly and upper dash (if needed)

5- DOCUMENTATION AND PART RETURN

It is essential that American Landmaster receive proper documentation on the outcome of your inspection/repair. This information must be submitted along with returned parts in order to receive payment.

- 1- Complete the included Inspection/Repair Log Sheet and return to ALM. Forms may be submitted by:
 - a. Dealer Portal – Login to the dealer portal and follow the prompts to enter the required information.
 - b. Email: Send to safety@americanlandmaster.com with SUBJECT “TSB195”
 - c. Fax: Send to 260-432-7870 – ATTN: “TSB195”
 - d. Mail to:

American Landmaster
2499 S. 600 E., Suite 102
Columbia City, IN 46725
ATTN: TSB195

- 2- Part return please follow instructions included in the field service kit PN19785.
Inspection/Repair Log Sheet

Feedback Log							
Vehicle PIN	Mfg Date	Model	Inspection Pass? (circle)		Unit Repaired? (circle)		Repaired By
			P	F	Y	N	
			P	F	Y	N	
			P	F	Y	N	
			P	F	Y	N	
			P	F	Y	N	
			P	F	Y	N	
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