



Spartan Motors Chassis, Inc.

SERVICE BULLETIN

RSB13-260-001

NHTSA Id: 13V-182

7/25/2013

SUBJECT: Spartan Motors Chassis, Inc. has determined a defect relating to steering gear mounting bracket with gussets welded at the lower and top ends may exist in certain vehicles.

CONDITION: Welds that attach supporting gussets to the main bracket material may crack resulting in fatigue to the main bracket.

APPLIES TO: This bulletin applies to incomplete vehicles assembled by Spartan Motors Chassis, Inc. completed as motorhomes during vehicle dates of manufacturing of July 20, 2005 and Dec. 17, 2010.

CORRECTION: A replacement of steering gear mounting bracket.

LABOR ALLOCATION: 3.5 hrs.

PARTS NEEDED:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	S-2399-001	Kit-SVC, MH STRG BRKT

Kit # S-2399-001 Contains:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	1850-KK-001	BRKT-STRG Gear
5	0229-BB1-018	Bolt NDP M20-1.50X35MM Yellow
5	12FWSAE8Y	Washer-3/4 flat GR8 Yellow
12	10110175FH8Y	Bolt 5/8-11X1.75 FLG GR8 Yellow
12	1011FLN8Y	Nut 5/8-11 Toplock FLNG GR8 Yellow
1	07140200H8Z	Bolt 7/16-14X2.00 HEX GR8 ZN
1	0714LNZ	Nut Lock 7/16-14 Zinc
1	S-2403	INSTL, Brkt Steering Gear Supt.
1	0203-BB1-001	Pin, Cotter 0.16 DIA 2" Plain
2	1850-KK1-002	Reinf, Strg Gear Brkt
1	RSB13-260-001	Document Information

GENERAL INSTRUCTIONS:

Please thoroughly review entire work procedure before starting work. If there are questions and/or concerns with steps defined in this procedure, contact Spartan Motors Chassis, Inc. Customer & Product Support Group.

All applicable industry safety standards must be followed when performing work identified in this procedure.

Technical Service Bulletins are intended for use by Professional Technicians only. They are written to guide Professional Technicians in performing service to vehicles of product specific nature in conjunction with industry standards. Professional Technicians are appropriately trained on industry standards and have the tools and equipment to perform procedures safely and properly.



STEP-BY-STEP INSTRUCTIONS:



The steering gear bracket/gear assembly weighs more than 185 lbs. Appropriate lifting equipment, assistance and techniques must be used when handling the assembly to avoid personal injury or property damage.

NOTE: This repair is easiest to do with the vehicle parked on a flat floor; working over a pit or with the coach elevated on a lift may complicate the repair process. It may be necessary to elevate the front of the vehicle in certain circumstances to remove the steering gear/bracket assembly.

1. Set park brake.
2. Turn steering wheel so steer axle tires are pointed forward.
3. Secure the steering wheel so it cannot rotate.



Damage to the clock spring may result if the steering wheel is allowed to rotate beyond the clock spring's rotational limit.

4. Remove the cotter pin and castle nut that secures the drag link end to the pitman arm. Properly discard the cotter pin and retain the nut for reuse.
5. Remove drag link end from pitman arm using an appropriate puller.
6. Disconnect the hydraulic lines from the steering gear – cap the lines and fittings on the gear.
7. Mark the steering slip shaft / steering gear input shaft alignment so the steering wheel will be properly aligned at re-assembly.
8. Remove and properly discard the pinch bolt and nut from the steering input shaft.
9. Disconnect the steering slip shaft from the steering gear input shaft.
10. Support the steering gear bracket / gear assembly with a floor jack.
11. Remove and properly discard the bolts and nuts that secure the steering gear bracket to the frame.
12. With a helper, carefully lower the steering gear bracket / gear assembly.
13. Remove the nut securing pitman arm to the steering gear output shaft. Retain hardware for reuse.

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NOTE: If the pitman arm retaining nut has been staked in two places or the previously staked location aligns with the peening location on the steering gear output shaft, a new nut must be used. Contact Spartan Motors Chassis, Inc., Customer & Product Support.

14. There are two timing marks on the pitman arm. Mark the one that aligns with center mark on the steering gear output shaft.
15. Remove pitman arm from the output shaft using an appropriate puller.

CAUTION

Do not attempt to remove the pitman by heating it or pounding on it; damage to the gear will result.

16. Remove and properly discard bolts securing the steering gear to the bracket.
17. Properly discard steering gear bracket.
18. Clean blind holes on steering gear to ensure no debris in threads. Attach the steering gear to the new bracket using new bolts then torque to 385 lbs. ft.
19. Install pitman arm on output shaft carefully aligning the alignment mark on the pitman arm with the center mark on the output shaft.
20. Install pitman arm nut, torque to 420 lbs. ft. and stake nut in place. The pitman arm **must** be blocked in place to prevent the steering gear output shaft from rotating while the nut is being torqued.

NOTE: If the pitman arm retaining nut has been staked in two places or the previously staked location aligns with the peening location on the steering gear output shaft, a new nut must be used. Contact Spartan Motors Chassis, Inc., Customer & Product Support.

21. Attach steering gear bracket to frame using new hardware then torque to 165 lbs. ft.

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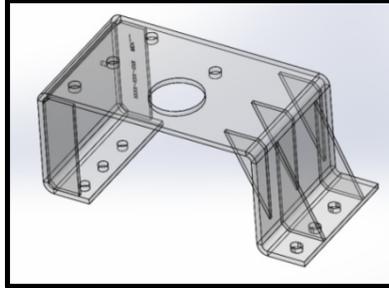
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NOTE: The below graphic shows the original steering gear bracket. Occasionally final stage manufacturers attach components to this. If the bracket has additional parts such as angle iron welded to it, please contact Spartan Motors Chassis, Inc., Customer & Product Support.



22. Attach the drag link end to the pitman arm, install castle nut, torque nut to 150 lbs. ft. then install new cotter pin.
23. Install the steering slip shaft to steering gear input shaft carefully aligning the marks made in step #7.
24. Verify steering wheel alignment.
25. Install new pinch bolt in steering shaft yoke at steering gear input and torque to 49 lbs. ft.
26. Install steering gear bracket reinforcements (item #2 on installation drawing) and torque nuts to 235 lbs. ft.
27. Reconnect hydraulic lines.
28. Verify hydraulic reservoir is full. Refer to owner's manual for fluid type.
29. Start the engine and rotate the steering wheel fully in each direction multiple times to ensure air is bled from system.
30. Turn off engine and verify hydraulic reservoir is full. Refer to owner's manual for fluid type.

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1860-KK1-001	BRKT-ZF 8098 STRG GEAR	1
2	1860-KK1-002	REINF-ZF 8098 STRG GEAR BRKT	2
3	1010175FF8Y	BOLT - 5/8-11 X 1.75LG FLG GR8 YEL	12
4	1011FLN8Y	NUT - 5/8-11 FLG LK GR8 YEL	12
5	0229-8B1-018	BOLT - M20-1.50 X 35mm HEX HD WIND PATCH	5
6	12FWSAE8Y	WASHER - 3/4 FLAT SAE YEL	5
7	1861-KK1-001	NUT-ZF 8098 PITMAN ARM RETAINING	1
8	07140200H8Z	BOLT - 7/16-14 X 2.00LG HEX GR8 ZINC	1
9	0714L1NZ	NUT - 7/16-14 LOCK ZINC	1
10	0203-8B1-001	PIN - COTTER	1

SIZE	INCHES	MILLIMETERS	TYPE	FINISH
1	3/8	9.5	BOLT	Y
2	1/2	12.7	NUT	Y
3	5/8	15.9	NUT	N
4	2 1/2	63.5	NUT	N
5	1 1/2	38.1	NUT	N
6	1 1/2	38.1	NUT	N

NOTE:
THE PITMAN ARM RETAINING NUT MAY BE REUSED ONE TIME IN SERVICE. IT SHOULD BE RE-STAKED IN A NEW AREA.

REV	DESCRIPTION	AUTH	DATE	DR	CHK	ENG	APPD
1	INITIAL RELEASE						

Spartan Chassis, Inc. CHARLOTTE, MI 48813		TITLE: INSTALL BRKT ZF STEERING GEAR SUPP
INVENTOR: DANLEY CHECKED: M. GARD DATE: 8/29/03	DATE: 7/25/13 CHECKED: S-2403	APPROVED: A

RELEASE AUTHORITY: E10812Z
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