

NEWMAR CORPORATION WARRANTY DEPARTMENT

TECHNICAL SERVICE BULLETIN							
DATE ISSUED	MODEL YEAR(S) AFFECTED		MODEL(S) AFFECTED			TSB #	
10/2/2007	2007 - 2008		VTDP / ATME			324	
BRAND						TYPE	
All	<input type="checkbox"/>	American Star	<input type="checkbox"/>	Mountain Aire	<input type="checkbox"/>	All	<input type="checkbox"/> TT <input type="checkbox"/>
Ventana	<input checked="" type="checkbox"/>	Dutch Star	<input type="checkbox"/>	Kountry Aire	<input type="checkbox"/>	FW	<input type="checkbox"/> CA <input type="checkbox"/>
All Star	<input checked="" type="checkbox"/>	Kountry Star	<input type="checkbox"/>	Essex	<input type="checkbox"/>	DP	<input checked="" type="checkbox"/> DB <input type="checkbox"/>
Scottsdale	<input type="checkbox"/>	Northern Star	<input type="checkbox"/>	London Aire	<input type="checkbox"/>		
<input type="checkbox"/> Air Conditioning & Heating <input type="checkbox"/> Appliances & Accessories <input type="checkbox"/> Cabinets & Furniture <input checked="" type="checkbox"/> Chassis Components <input type="checkbox"/> Construction Components				<input type="checkbox"/> Electrical Components <input type="checkbox"/> Exterior Components <input type="checkbox"/> Interior Components <input type="checkbox"/> Plumbing & Bath Components <input type="checkbox"/> Windows, Awnings, Vents, & Doors			
DESCRIPTION OF PROBLEM							
Potential leak in steering gear seals.							
RECOMMENDED SOLUTION							
<p>Perform repairs per attached Spartan procedures. Note that the "002" Spartan Campaign & Procedure is for "All Star" units, and the "003" Spartan Campaign & Procedure is for the "Ventana" units.</p> <p>Please read the attached Spartan repair information thoroughly, and contact Spartan prior to attempting repairs. Any questions regarding these TSB's should be directed to Spartan Motors.</p> <p>These TSB's are designed for professional technicians and should not be distributed to retail customers.</p>							

If you have any questions regarding this T.S.B., please contact a Warranty Service Representative at Newmar Corporation.

TSB 324 Attachments
Spartan TSB07-260-002
For “All Star” Motorhomes



SPARTAN CHASSIS, INC.

TSB07-260-002

October, 2007

Page 1 of 4

TECHNICAL SERVICE BULLETIN

SUBJECT: Steering – Steering Gear

APPLIES TO: Certain Spartan Chassis produced as Newmar Allstar and equipped with a 1507-KK1-001 steering gear and having a VDM (Vehicle Date of Manufacture) date of December 8, 2006 through August 21, 2007.

CONDITION: Steering gear seals leak

PART / SERVICE INFORMATION:

Labor Time: 2.0 hrs.

<u>QTY.</u>	<u>Part Number</u>	<u>Description</u>
1	S-1898-001A	Kit – Steering Gear Replacement
As Required	N/A	Hydraulic Fluid AW46 or Equivalent

Kit # S-1898-001A Contains:

<u>QTY.</u>	<u>Part Number</u>	<u>Description</u>
1	1507-KK1-002	Steering Gear
1	3506	Hose Clamp
1	14140400H8Y	Bolt-7/8-14 X 4.00 Lg. Hex Gr.8 Yellow
1	14140450H8Y	Bolt-7/8-14 X 4.50 Lg. Hex Gr.8 Yellow
1	14140500H8Y	Bolt-7/8-14 X 5.00 Lg. Hex Gr.8 Yellow
2	12FWSAE8Y	Washer- 3/4 Flat SAE Yellow
6	14FWSAE8Y	Washer- 7/8 Flat SAE Yellow
3	1414LNZ	Nut-7/8-14 Lock Zinc
1	12160450H8Y	Bolt-3/4-16 X 4.50 Lg. Hex Gr.8 Yellow
1	1216LNZ	Nut-3/4-16 Lock Zinc
1	07140200H8Z	Bolt-7/16-14 X 2.00 Lg. Hex Gr.8 Zinc
1	0714LNZ	Nut-7/16-14 Lock Zinc
1	0203-BB1-001	Pin-Cotter
1	TSB07-260-002	Document Instructions

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.



SPARTAN CHASSIS, INC.

TSB07-260-002

October, 2007

Page 2 of 4

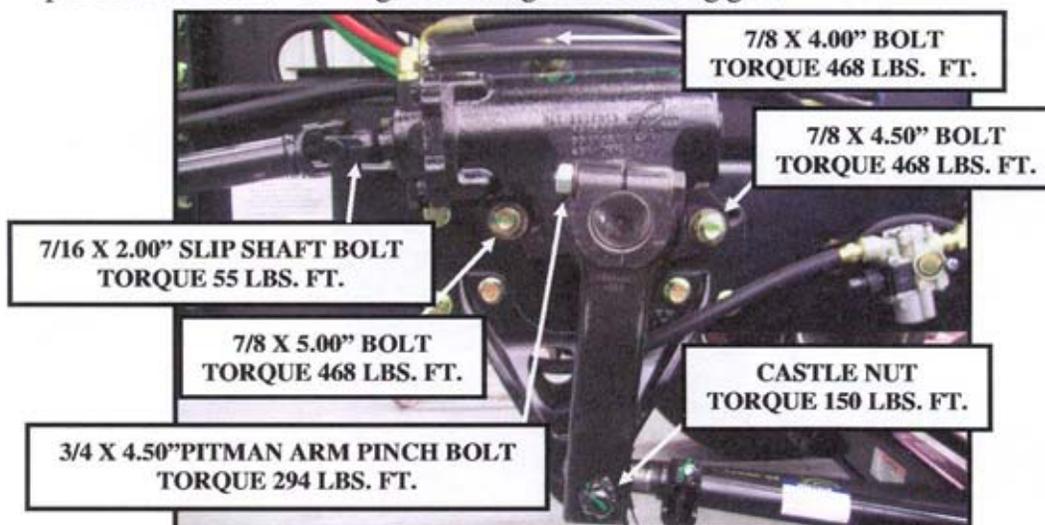
TECHNICAL SERVICE BULLETIN

STEP-BY-STEP INSTRUCTIONS:

1. Observe all industry safety standards, disconnect any necessary power source and secure vehicle for replacing of the steering gear.
2. Disconnect hoses from the steering gear and drain fluid into an approved container. Discard clamp and fluid properly. Remove cap/dipstick from power steering reservoir to aid in draining of the fluid.

NOTE: Mark position of steering wheel to ensure proper alignment during reassembly.

3. Disconnect steering slip shaft from steering gear input shaft. Discard all hardware.
4. Remove cotter pin and disconnect drag link from steering gear pitman arm. Discard cotter pin, retain castle nut for reinstallation.
5. Remove steering gear and steering gear support from frame rail, retain support. Discard all hardware.
6. Remove pitman arm from steering gear output shaft. Discard all hardware.
7. Remove hose fittings from steering gear and properly dispose of the steering gear. Retain pressure and return "O" ring hose fittings from steering gear.



STEERING GEAR TORQUE SPECIFICATIONS

FIG. 2-1

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.



SPARTAN CHASSIS, INC.

TSB07-260-002

October, 2007

Page 3 of 4

TECHNICAL SERVICE BULLETIN

8. Reinstall "O" ring hose fittings into new steering gear.
 - A. Torque pressure fitting to 63 lbs. ft.
 - B. Torque return fitting to 20 lbs. ft.
9. Reinstall pitman arm onto new steering gear, ensuring timing mark on pitman arm aligns with timing mark on the end of the steering gear output shaft. Use new 3/4" X 4.50" bolt, washers and nut supplied in the kit. Do not torque at this time.
10. Refer to FIG. 2-1. Install new steering gear and steering gear support onto frame rail using new 7/8" X 4.00", 7/8" X 4.50 and 7/8" X 5.00" bolts, washers and nuts supplied in the kit.
 - A. 4.00" bolt to the top mounting hole. Torque to 468 lbs. ft.
 - B. 4.50" bolt to the rear mounting hole. Torque to 468 lbs. ft.
 - C. 5.00" bolt to the front mounting hole. Torque to 468 lbs. ft.
11. Refer to FIG. 2-1. Torque pitman arm pinch bolt to 294 lbs. ft.
12. Refer to FIG. 2-1. Reconnect drag link to pitman arm using original castle nut retained from previous steps. Torque castle nut to 150 lbs. ft. Install and bend new cotter pin.

NOTE: Refer to previous note to ensure the proper indexing of steering wheel.
13. Refer to FIG. 2-1. Reconnect steering slip shaft to steering gear input shaft. Use new 7/16" X 2.00" bolt and nut supplied in kit. Torque to 55 lbs. ft.
14. Reconnect hoses to the steering gear using a new clamp on the return hose supplied in kit. Secure both hoses as needed.
15. Reconnect any power source that was disconnected in step # 1.

Steering Gear Poppet Setting

16. With engine at full idle and the vehicle unloaded, turn steering wheel to full travel in one direction until axle stop contact is made. Pull firmly on steering wheel and hold for 5 seconds and release.
17. Follow the same procedure while turning the steering wheel in the other direction. The poppets are now positioned to trip and reduce pressure as the steering wheels approach the axle stops in either direction.

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.



SPARTAN CHASSIS, INC.

TSB07-260-002

October, 2007

Page 4 of 4

TECHNICAL SERVICE BULLETIN

Filling And Bleeding The System

CAUTION

DO NOT ALLOW THE FLUID LEVEL TO DROP SIGNIFICANTLY OR RUN OUT OF THE RESERVOIR. THIS MAY INDUCE AIR INTO THE SYSTEM.

18. Fill reservoir nearly full with the appropriate fluid as stated on the reservoir information label. **Do not steer.** Start and run the engine for 10 seconds, then shut it off. Check and refill reservoir as needed. Repeat, check and refill at least three times, checking and topping it off with appropriate quantities.
19. Restart engine and let idle for 2 minutes. **Do not steer.** Shut off engine and check the fluid level in the reservoir. Refill as required.
20. Restart engine again. Steer the vehicle from full left to full right several times. Add fluid, as necessary, to the full line on the dipstick. Steering system should now be free from trapped air.
21. Steer vehicle to left and right fully, holding against steering stops for several seconds while listening for audible indication that oil is passing over poppets. This is to ensure the poppets are set accordingly.

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.

TSB 324 Attachments
Spartan TSB07-260-003
For “Ventana” Motorhomes



SPARTAN CHASSIS, INC.

TSB07-260-003

October, 2007

Page 1 of 4

TECHNICAL SERVICE BULLETIN

SUBJECT: Steering – Steering Gear

APPLIES TO: Certain Spartan Chassis produced as Newmar Ventana's and equipped with a 1506-KK1-001 steering gear and having a VDM (Vehicle Date of Manufacture) date of November 22, 2006 through June 18, 2007.

CONDITION: Steering gear seals leak.

PLEASE READ THE ENTIRE BULLETIN BEFORE PROCEEDING WITH ANY WORK. CONTACT SPARTAN CHASSIS IF THERE ARE ANY CONCERNS WITH THE PROCEDURES CONTAINED IN THIS DOCUMENT

PART / SERVICE INFORMATION:

Labor Time: 2.0 hrs.

<u>QTY.</u>	<u>Part Number</u>	<u>Description</u>
1	S-1897-001A	Kit – Steering Gear Replacement
As Required	N/A	Hydraulic Fluid AW46 or Equivalent

Kit # S-1897-001A Contains:

<u>QTY.</u>	<u>Part Number</u>	<u>Description</u>
1	1506-KK1-002	Steering Gear
1	0182-BB1-001	Hose Clamp
3	14140400H8Y	Bolt-7/8-14 X 4.00 Lg. Hex Gr.8 Yellow
3	1414LNZ	Nut-7/8-14 Lock Zinc
6	14FWSAE8Y	Washer- 7/8 Flat SAE Yellow
1	07140200H8Z	Bolt-7/16-14 X 2.00 Lg. Hex Gr.8 Zinc
1	0714LNZ	Nut-7/16-14 Lock Zinc
1	12160450H8Y	Bolt-3/4-16 X 4.50 Lg. Hex Gr.8 Yellow
1	1216LNZ	Nut-3/4-16 Lock Zinc
2	12FWSAE8Y	Washer- 3/4 Flat SAE Yellow
1	0203-BB1-001	Pin-Cotter
1	TSB07-260-003	Document Instructions

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.



SPARTAN CHASSIS, INC.

TSB07-260-003

October, 2007

Page 2 of 4

TECHNICAL SERVICE BULLETIN

STEP-BY-STEP INSTRUCTIONS:

1. Observe all industry safety standards, disconnect any necessary power source and secure vehicle for replacing of the steering gear.
2. Disconnect hoses from the steering gear and drain fluid into an approved container. Discard clamp and fluid properly. Remove cap/dipstick from power steering reservoir to aid in draining of the fluid.

NOTE: Mark position of steering wheel to ensure proper alignment during reassembly.

3. Disconnect the steering slip shaft from steering gear input shaft. Discard all hardware.
4. Remove cotter pin and disconnect drag link from steering gear pitman arm. Discard cotter pin, retain castle nut for reinstallation.
5. Remove steering gear and steering gear support from frame rail, retain support. Discard all hardware.
6. Remove pitman arm from steering gear output shaft. Discard all hardware.
7. Remove hose fittings from steering gear and properly dispose of the steering gear. Retain pressure and return "O" ring hose fittings from steering gear.
8. Reinstall "O" ring hose fittings into new steering gear.
 - A. Torque pressure fitting to 63 lbs. ft.
 - B. Torque return fitting to 20 lbs. ft.
9. Reinstall pitman arm onto new steering gear, ensuring timing mark on pitman arm aligns with timing mark on the end of the steering gear output shaft. Use new 3/4" X 4.50" bolt, washers and nut supplied in the kit. Do not torque at this time.
10. Refer to FIG. 3-1. Install new steering gear and steering gear support onto frame rail using three new 7/8" X 4.00" bolts, washers and nuts supplied in the kit. Torque to 468 lbs. ft.
11. Refer to FIG. 3-1. Torque pitman arm pinch bolt to 294 lbs. ft.
12. Refer to FIG. 3-1. Reconnect drag link to pitman arm using original castle nut retained from previous steps. Torque castle nut to 150 lbs. ft. Install and bend new cotter pin.
13. Refer to FIG. 3-1. Reconnect steering slip shaft to steering gear input shaft. Use new 7/16" X 2.00" bolt and nut supplied in kit. Torque to 55 lbs. ft.

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.



SPARTAN CHASSIS, INC.

TSB07-260-003

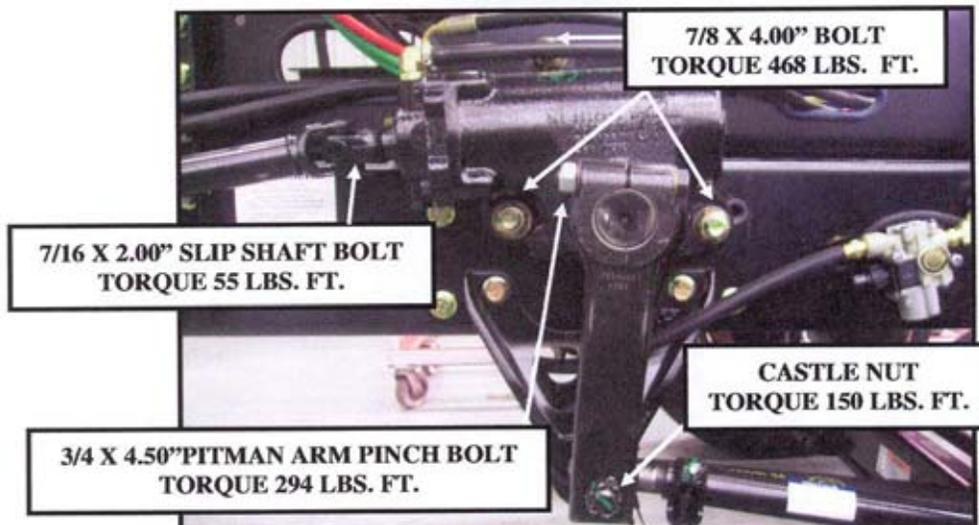
October, 2007

Page 3 of 4

TECHNICAL SERVICE BULLETIN

NOTE: Refer to previous note to ensure the proper indexing of steering wheel.

14. Reconnect hoses to the steering gear using a new clamp on the return hose supplied in kit. Secure both hoses as needed.
15. Reconnect any power source that was disconnected in step # 1.



STEERING GEAR TORQUE SPECIFICATIONS

FIG. 3-1

Steering Gear Poppet Setting

16. With engine at full idle and the vehicle unloaded, turn steering wheel to full travel in one direction until axle stop contact is made. Pull firmly on steering wheel and hold for 5 seconds and release.
17. Follow the same procedure while turning the steering wheel in the other direction. The poppets are now positioned to trip and reduce pressure as the steering wheels approach the axle stops in either direction.

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.



SPARTAN CHASSIS, INC.

TSB07-260-003

October, 2007

Page 4 of 4

TECHNICAL SERVICE BULLETIN

Filling And Bleeding The System

CAUTION

DO NOT ALLOW THE FLUID LEVEL TO DROP SIGNIFICANTLY OR RUN OUT OF THE RESERVOIR. THIS MAY INDUCE AIR INTO THE SYSTEM.

18. Fill reservoir nearly full with the appropriate fluid as stated on the reservoir information label. **Do not steer.** Start and run the engine for 10 seconds, then shut it off. Check and refill reservoir as needed. Repeat, check and refill at least three times, checking and topping it off with appropriate quantities.
19. Restart engine and let idle for 2 minutes. **Do not steer.** Shut off engine and check the fluid level in the reservoir. Refill as required.
20. Restart engine again. Steer the vehicle from full left to full right several times. Add fluid, as necessary, to the full line on the dipstick. Steering system should now be free from trapped air.
21. Steer vehicle to left and right fully, holding against steering stops for several seconds while listening for audible indication that oil is passing over poppets. This is to ensure the poppets are set accordingly.

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.