

SPARTAN  MOTORS
CHASSIS, INC.

CSB00-0902B

SPEC (99007B)

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March, 2001

CAMPAIGN SERVICE BULLETIN

SUBJECT:

Fire Truck Steering Enhancement

APPLIES TO:

Gladiator and Metro Star Fire Trucks with Power Steering Assist, and with a Vehicle Date of Manufacture (VDM) of 1/1/95 through 12/31/99

Work completed under the direction of bulletin CSB00-0902 and CSB00-0902A will not require additional rework; the inspection/repair is valid. CSB00-0902B corrects a misprinted part number.

CONDITION:

Upon Inspection, Steering Assist Cylinder Ball Stud is Found to be Loose, Creating Potential For Loss of Steering Assist

CAUSE:

Premature Wear at Steering Assist Cylinder Ball Stud/Mounting Plate Interface

SERVICE PROCEDURE: Labor Time: 8.0 Hours

Remove and replace steering assist cylinder mounting plate and rework mounting holes in frame. If necessary, replace ball stud.

PLEASE READ THE ENTIRE BULLETIN BEFORE PROCEEDING WITH ANY WORK.

PARTS LIST:

<u>QTY</u>	<u>Part Number</u>	<u>Description</u>
1	99007B	Kit- Gladiator/Metro Star Steering Enhancement

Kit # 99007B Contains:

1	S-1387	Plate- Frt Extension (Right Side)
1	14SFWB	Washer- Hardened Flat 7/8"
1	N514-1	Nut- 7/8" R J. Assist
1	125X350CP	Cotter Pin- 1/8" X 3.50"
1	08130175FH8B	Bolt- 1/2"- 13 X 1.75" Hex Flg
1	0813FLN8B	Nut- 1/2"- 13 Flg Lock
1	CSB00-0902B	CSB Instructions

Technical bulletins are intended for use by professional technicians only. They are written to inform these technicians of a condition that may occur on a vehicle, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and training to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition.

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STEP BY STEP INSTRUCTIONS:

PREP

1. Park vehicle (power switches 'off'), engage parking brake, and chock wheels.
2. Disconnect both battery cables.

EXTENSION PLATE REPLACEMENT / FRAME RAIL REWORK

3. Locate power steering assist cylinder, and disconnect ball stud end at the extension plate/frame rail. Properly dispose of nut.

NOTE: Inspect ball stud for damage. If evidence of damage exists, contact Spartan Motors Customer Assistance Center at 1-800-543-5008, to advise of assist cylinder type (separate or one-piece.) The one-piece type will require a complete replacement assist cylinder; the separate type will require replacement of the ball stud only. This ball stud is Meritor part number 2110-V-100.

4. Remove and properly dispose of the existing extension plate; retain bolts/nuts for reinstallation.
5. Refer to FIG. 3-1. Locate the assist cylinder attachment hole (item 'A') for the ball stud at the rail. Enlarge the hole to 1.25". An alternative to drilling is to position the new extension plate to the rail and use a pencil type grinder to enlarge the frame rail hole as required.

NOTE: DO NOT allow the hole to become oversize when drilling.

DO NOT attempt to *drill/modify* the frame rail hole with the extension plate in place, as this could distort the tapered hole in the plate.

NOTE: Verify the alignment of the assist cylinder attachment hole in the rail with the new extension plate hole before fully installing plate.

6. Install the new extension plate with the existing attachment hardware; torque the 1/2" nuts to 105 LBS. FT. The 5/8" bolt attachment is no longer utilized; item 'B', FIG. 3-1.
7. Refer to FIG. 3-1. From the inside of the rail, identify the crossmember attachment hole, which is covered by the new extension plate.

Locate the hole (item 'C') on the crossmember just forward of the covered hole. Drill this hole to 0.53" and install (from outside the rail) the 1/2" bolt/nut; torque to 105 LBS. FT.

NOTE: A 1/2" bolt/nut is included in the kit if needed.

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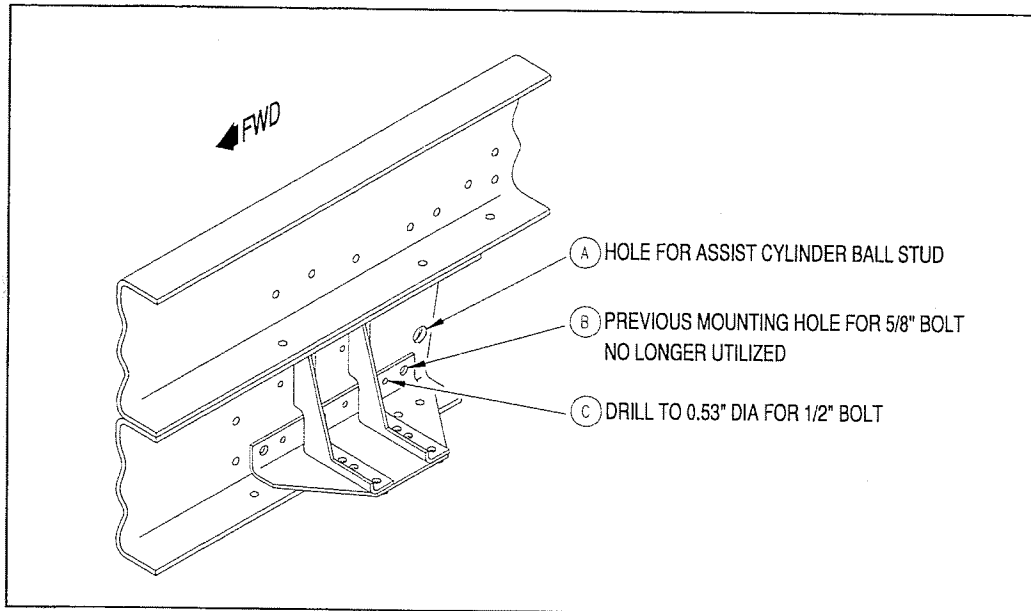
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HOLE IDENTIFICATION- INSIDE RIGHT RAIL SHOWN

FIG. 3-1

8. Refer to FIG. 4-1. Reinstall the assist cylinder.
 - 8a. Install ball stud of assist cylinder into the attachment hole using the new 7/8" hardened washer and nut as shown.

NOTE: To ensure the taper on the stud fits properly into the taper in the plate, with appropriate thread engagement for the nut, the taper on the ball stud end must protrude inside the frame rail section approximately 0.125" in addition to the lead-in on the thread.

If this cannot be achieved, contact Spartan Motors Chassis, Inc. Customer Assistance Center for further instruction.

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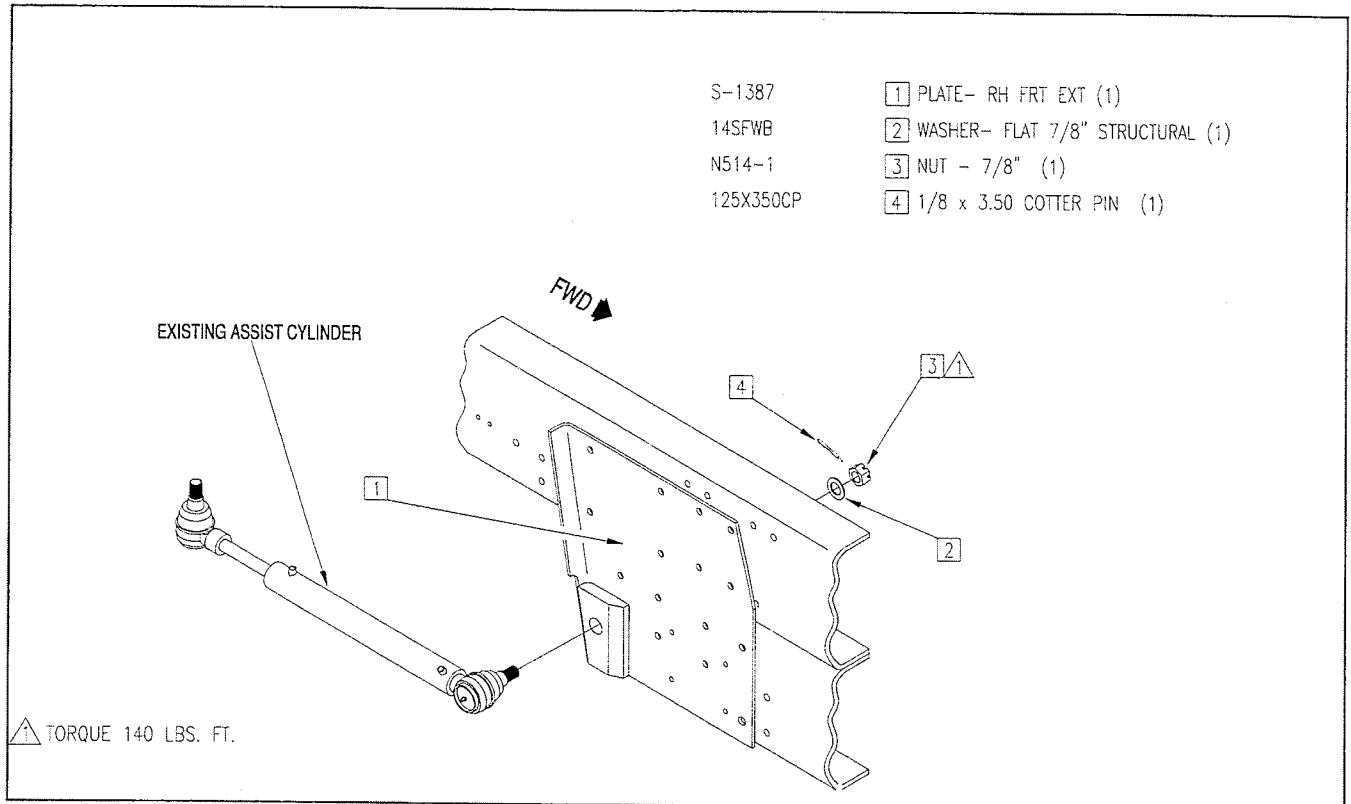
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*'Complete Assembly' Type of Assist Cylinder Shown
'Separate Ball Stud' Type of Assist Cylinder Not Shown*

FIG. 4-1

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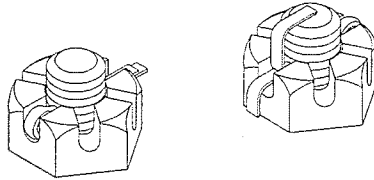
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8c. Torque nut to 140 LBS. FT. and properly install cotter pin.



COTTER PIN INSTALLATION PROCEDURE

AFTER REACHING DESIRED TORQUE, INSTALL COTTER PIN INTO HOLE IN THE BOLT SHAFT.

IF CASTLE NUT MUST BE MOVED TO ALIGN WITH THE SHAFT HOLE, TURN THE NUT TO TIGHTEN UP TO 1/8 OF A TURN. DO NOT LOOSEN THE NUT TO ALIGN THE HOLE WITH A SLOT.

TO ACHIEVE A FULLY SECURE COTTER PIN, ALIGN THE COTTER PIN HEAD WITH THE SLOT IN THE CASTLE NUT AND INSERT THE PRONGS THROUGH THE SHAFT HOLE. FULLY SEAT THE COTTER PIN HEAD WHEN INSTALLING THE COTTER PIN INTO THE SHAFT HOLE.

BEND EACH PRONG UNTIL CONTACT IS MADE WITH THE NUT AND BOLT SHAFT AS SHOWN.

9. Test drive vehicle.

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SPARTAN  MOTORS
CHASSIS, INC.

TO: SPARTAN MOTORS CHASSIS, INC. FIRE TRUCK TECHNICAL SUPPORT

FROM: _____ (Fire Dept.)

DATE: _____

RE: STEERING ASSIST CYLINDER MOUNTING PLATE INSPECTION
(CSB-00-0902)



We have checked the torque setting on the appropriate ball stud nut and it is within torque spec (140 ft. lbs.). The SO Number(s) (last five digits of the VIN) inspected:



We have checked our vehicle(s) and have found the following unit(s) **do not** meet the torque spec and will therefore require modification under your Campaign. The SO Number(s) (last five digits of the VIN) inspected:



We have checked our vehicle(s) and have found the following unit(s) **do not** meet the torque spec and will therefore require modification under your Campaign **AND** the ball stud is damaged and in need of replacement. The SO Number(s) (last five digits of the VIN) requiring ball stud replacement:



We have previously encountered this problem and completed the required corrective action as directed by Spartan Motors Chassis, Inc. Customer Service. The SO Number(s) (last five digits of the VIN) of the corrected vehicle(s):

SIGNATURE: _____

RETURN COMPLETED FORM BY FAX TO: (517) 543-9264