TRW Automotive
Commercial Steering Systems

Service Procedure # COL-201

IGEN 3 Intermediate Shaft Weld Location Inspection Procedure

June 2010

NOTE Park the vehicle on a level surface. Shut down the engine, set the parking brake, and chock the tires before beginning procedure. Take any additional personal safety measures that may be required while performing this procedure.

NOTE This service procedure applies to TRW IGEN 3 Intermediate Columns

Tools Required

- Weld Position Gauge (IF-35029 DET.3 REV.D) for all intermediate column part numbers listed in the "Identifying Columns to Be Inspected" section, below.
- Weld Position Gauge (IF-35029 DET.5) for intermediate column part number 418035 ONLY.

Definition of Procedure

This procedure is designed for inspecting the joining weld of the IGEN 3 Intermediate Column to ensure that the weld position is to the correct specification.

Inspection Process Overview

1. Confirm the part number of the intermediate shaft to ensure that the shaft on your vehicle is in fact an IGEN 3 intermediate shaft.
   - If the shaft is NOT an IGEN 3 intermediate shaft -STOP- No further inspection is required.

2. Confirm that the date code of the IGEN 3 intermediate shaft is within the range specified in this campaign.
   - If the date code is NOT within the range specified in this campaign -STOP- No further inspection is required.

3. Inspect the tube weld location using the TRW gauge specified for use with your intermediate shaft.
   - If the the weld on the intermediate shaft passes the gauge test - STOP - No further inspection is required.

4. If weld position fails the weld location gauge test - Replace the IGEN 3 intermediate shaft.

- Please use the inspection instructions on page 2 of this procedure to ensure that a thorough and proper inspection is conducted Per these instructions.

This TRW Commercial Steering Systems' service procedure has been written to help you repair commercial vehicles more efficiently. This procedure should not replace your manuals; you should use them together. These materials are intended for use by properly trained, professional mechanics, NOT "Do-it-yourselfers". You should not try to diagnose or repair steering problems unless you have been trained, and have the right equipment, tools and know-how to perform the work correctly and safely.

Identifying Columns to Be Inspected

The intermediate columns to be inspected are numbered in one of the following ways.
- Indicates Numeral
X - Indicates Alpha Character
4180##
4180##-#
4180##-# X
4180##-##
4180##-## X

All are followed by a space and then a date code. The intermediate columns to be inspected fall between and include the following date codes.

7130 - 9110

First digit indicates the year and the last three digits indicate the day of that year. **Figure 1**

NOTE If the Intermediate column is stamped with a second date code that starts with P (P####) it is not included as part of this procedure.

If the intermediate column on the vehicle looks like the intermediate column displayed in **Figure 2** it is **NOT** an IGEN 3 intermediate column and **DOES NOT** require inspection. Record the part number and vehicle vin number to verify that the part was not covered in this service procedure.

I GEN 3

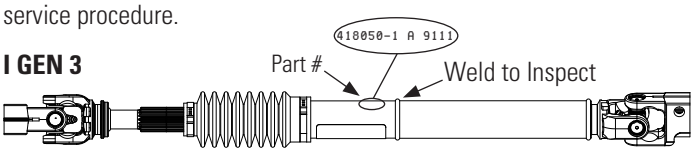


Figure 1

SF

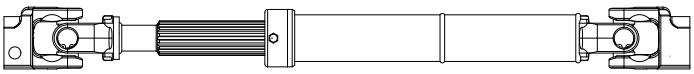


Figure 2

Weld position Inspection Procedure

1. Check the weld position using the TRW gauge (SEE Tools Required Page 1). Place the template end of the gauge against the base of the boot seal as shown in **Figure 3** with the gauge placed over the top of the part number stamp location.

NOTE Clean the base of the boot clearing any debris to ensure that the gauge makes good radial contact with the boot.

NOTE Clean the weld so that it is free of any dirt, oil or debris so it may be clearly inspected through the gauge window.

2. Visually inspect the position of the weld bead in reference to the small gauge window (3/16" width). The full circumference of weld seam must be inspected in the gauge window. **Figure 4**
   Look for the following criteria:
   - The weld bead must completely fill the gauge window.
   - No joint line between the 2 tubes should be visible, the edges where the tubes join should be covered by the weld.
   - The parent tube should not be visible in the narrow section of the gauge window.

NOTE The larger window in the gauge is for visual reference only and is not intended for gauging purposes.

2a. **Part Passes** if the weld bead completely fills the narrow gauge window **Figure 4.** Mark the parts that pass inspection with yellow or white paint mark adjacent to the part number stamp. **Figure 1**

- This completes the inspection
Submit a warranty claim for inspection only including:
- Vehicle Identification Number (VIN)
- Intermediate column part number and date code

If the part did not pass proceed to step 2b.

2b. **Part Fails** if any of the following are seen in the inspection. **Figure 5**
- The weld bead does not completely fill the narrow gauge window.
- The parent tube is partially visible in narrow gauge window.
- The joint line between the 2 tubes is visible at any point around the circumference of the shaft. **Figure 5**

If part did not pass
Remove intermediate shaft and replace.
- Submit warranty claim for inspection and part replacement including:
  - Vehicle Identification Number (VIN)
  - Intermediate column part number and date code

3. **All failed parts must be returned** through normal warranty procedures. TRW will inspect all returned parts to verify that they fail the inspection. TRW will only pay warranty claims for IGEN 3 intermediate shafts that are verified to fail the inspection.

Figure 3

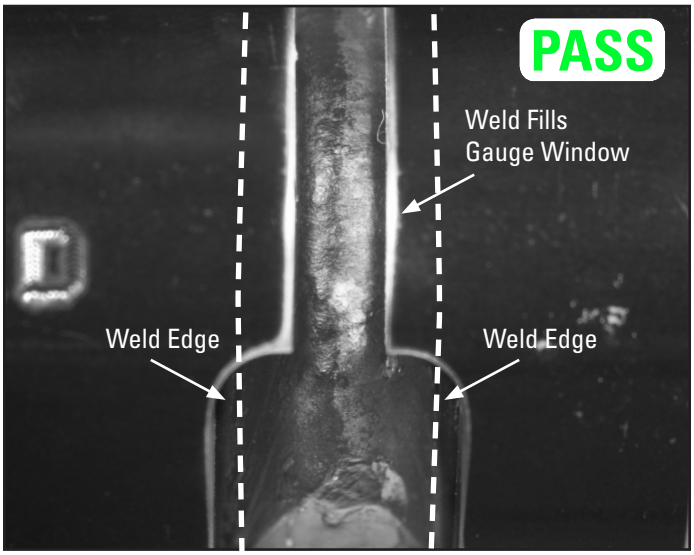


Figure 4

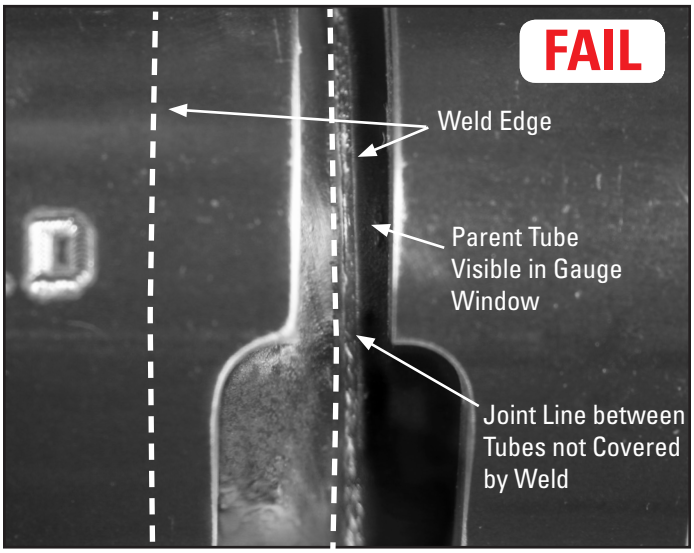


Figure 5

TRW Commercial Steering Systems
P.O. Box 60
Lafayette, IN 47902
Phone: 765.423.5377
Fax: 765.429.1868

TRW IGEN3 Intermediate Steering Shaft Assembly

RECALL

Models Affected: 2010 and 2011 All American Front Engine (D3FE) and Rear Engine (D3RE)

R10SB RECALL CAMPAIGN

ISSUE

The weld around the TRW IGEN3 steering shaft tube that secures the spline tube to the intermediate tube may be mis-located. Mis-located welds may result in torsional and axial strength falling below acceptable levels. Failure of a steering shaft tube while vehicle is in operation could result in loss of steering.

CORRECTIVE ACTION

Inspect the upper and lower steering shaft tubes following TRW Recall Service Procedure #COL-201 instructions. The intermediate steering shafts that do not pass the inspection must be replaced.

PROCEDURE

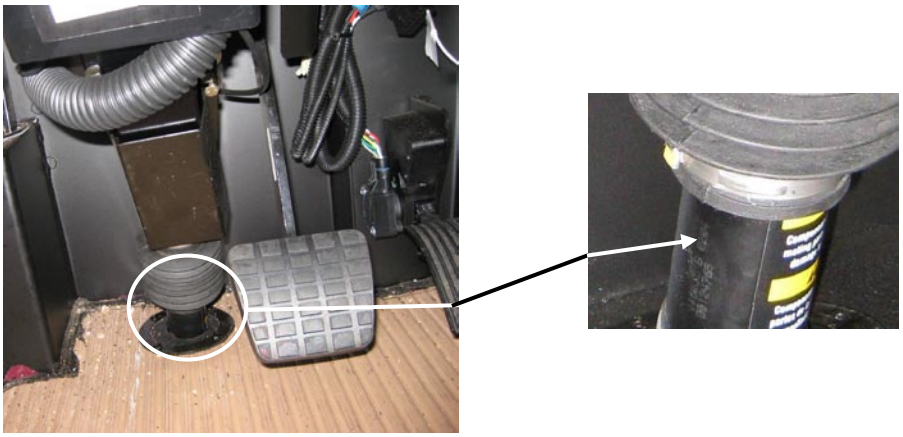
WARNING: Always follow all Federal, State, Local and Shop safety standards and use proper safety equipment when performing these procedures.

INSPECTION: UPPER SHAFT

1. Read the entire TRW Service Procedure #COL-201 IGEN Intermediate Shaft Weld Location Inspection Procedure before proceeding to step 2.
2. Park vehicle on a level surface, apply parking brake, remove ignition key, and chock rear wheels.
3. Disconnect batteries by removing the negative cable first.
4. Raise the front of the bus enough for the front tires to clear the floor.

   CAUTION: Jack stands must be properly placed under the chassis frame before proceeding.

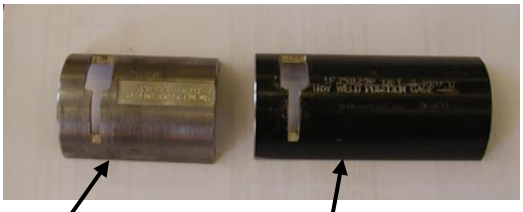
5. The upper shaft TRW date code identification stamped on the shaft is located above the floor in the driver's area. Turn the steering wheel to rotate shaft for stamped number to be visible.

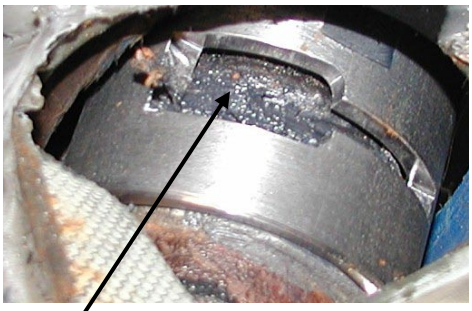


6. Record body number and four digit date code on sheet from Blue Bird provided with recall.
7. If the date code does not fall within the range on TRW Service Procedure # COL-201, then no further action is required.
8. If the date code falls within the range on TRW Service Procedure # COL-201, then remove the 4 Phillip head screws, slide trim ring up and remove shaft seal.
9. Slide inspection tool around shaft and through the hole in floor.

10. The window for the inspection will be visible from underneath driver's floor. Rotate the shaft by turning the steering wheel to inspect weld per TRW Service Procedure # COL-201. If the part passes, follow TRW Service Procedure # COL-201 and then mark the Blue Bird Sheet. If the part fails, mark the sheet and return to the Blue Bird Recall Administrator. **NOTE:** If the weld cannot be seen in the installed position, remove the shaft for inspection. New fasteners MUST be use to reinstall the shaft.

TRW Inspection Tools





11. Re-install the shaft seal and trim ring with screws removed in earlier step.

INSPECTION: LOWER SHAFT

1. Read the entire TRW Service Procedure #COL-201 IGEN Intermediate Shaft Weld Location Inspection Procedure before proceeding to step 2.
2. Park vehicle on a level surface, apply parking brake, remove ignition key, and chock rear wheels.
3. Disconnect batteries by removing the negative cable first.
4. Raise the front of the bus enough for the front tires to clear the floor.

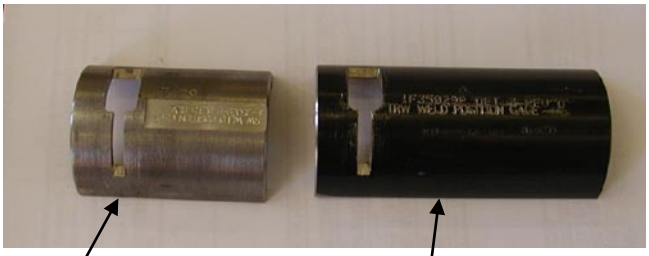
CAUTION: Jack stands must be properly placed under the chassis frame before proceeding.

5. The lower shaft TRW date code identification stamped on the shaft is located on steering gear end of the shaft. Turn the steering wheel to rotate shaft for stamped number to be visible.

6. Record body number and four digit date code on sheet from Blue Bird provided with recall.
7. If the date code does not fall within the range on TRW Service Procedure # COL-201, then no further action is required.

8. If the date code falls within the range on TRW Service Procedure # COL-201, then place the inspection tool around shaft.

TRW Inspection Tools



For Upper Shaft For Lower Shaft

Weld shown through TRW Inspection tool

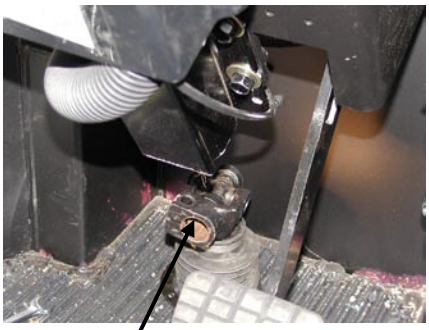
9. Rotate the shaft by turning the steering wheel to inspect weld per TRW Service Procedure # COL-201. If the part passes, follow TRW Service Procedure # COL-201 and then mark the Blue Bird Sheet. If the part fails, mark the sheet and contact Blue Bird Recall Administrator.
10. After the inspection process has been completed for both upper and lower shaft, remove jack stands, and reconnect batteries by connecting the negative last.
11. Place bus back in service.

SHAFT REPLACEMENT

1. Park vehicle on a level surface, center steering wheel, apply parking brake, remove ignition key, and chock rear wheels.

   Mark location of steering wheel before removing upper or lower shaft.

2. Disconnect batteries by removing the negative cable first.
3. Remove the shaft cover by removing two cap screws.
4. Remove four (4) Phillip head screws from trim ring and shaft seal.
5. Remove and discard the pinch bolt and nut from the bottom of steering column.

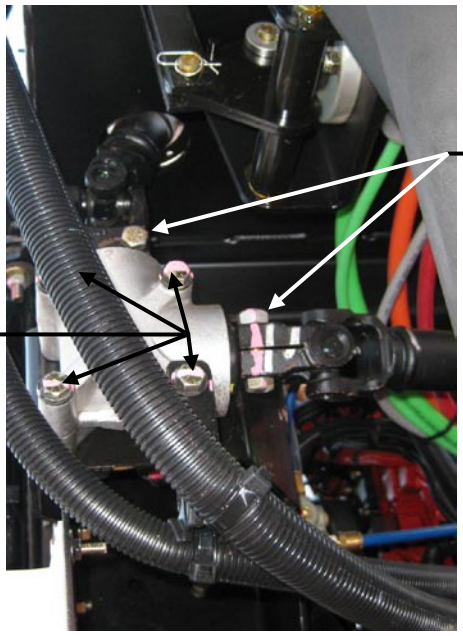


TRW IGEN3 Intermediate Steering Shaft Assembly

RECALL

R 1 0 S B

RECALL CAMPAIGN



6 From underneath the bus, remove and discard both the upper and lower shafts pinch bolts and nuts at the steering transfer gear box.
7 Remove and discard the lower shaft pinch bolt and nut at the gear box.
8 Remove four (4) 3/8-16 locknuts, washers and 3/8-16 x 4 inch long capscrews to remove steering transfer gear box , then remove steering transfer gear box.
9 From inside the bus, pull the upper shaft through hole in driver's floor.
10 Remove the lower shaft.
11 Install new upper shaft back in the same direction as the one removed.
12 Slide new lower shaft in place in the same direction as the one removed.
13 Install the steering transfer gear box back to the bracket with four 3/8 -16 x 4 inch long cap screws and washers removed in earlier step. Install four (4) **new** 3/8-16 lock nuts and torque to 29-33 LB-FT.
14 Connect the upper steering shaft to the top of steering transfer gear box with a new 7/16 grade 8 pinch bolt (Blue Bird capscrew 01916980) and 7/16 grade 8 lock nut (Blue Bird 00997080) and torque to 36-43 LB-FT.
15 Connect the lower steering shaft to the rear of steering transfer gear box with a new 7/16 grade 8 pinch bolt (Blue Bird capscrew 01916980) and 7/16 grade 8 lock nut (Blue Bird 00997080) and torque to 36-43 LB-FT.
16 Connect the rear of the lower steering shaft to the steering gear box a new 7/16 grade 8 pinch bolt (Blue Bird capscrew 01916980) and 7/16 grade 8 lock nut (Blue Bird 00997080) and torque to 36-43 LB-FT.

17 Make sure steering wheel and front wheels are located in same position before reconnecting new shaft.
18 On the inside of the bus, slide trim ring over shaft, then attach shaft to steering column with a new 7/16 grade 8 pinch bolt (Blue Bird capscrew 01916980) and 7/16 grade 8 lock nut (Blue Bird 00997080) and torque to 36-43 LB-FT.
19 Install shaft seal and trim ring with four screws for the steering column to shaft joint.
20 Check all four connections.
21 Reconnect the batteries by connecting the negative last.
22 Place unit back in service.

PARTS LIST

PART NUMBER	DESCRIPTION	QTY.
01916980	Capscrew, Hex Head, 7/16 – 14 X 1 ¾ Grade 8	4
00997080	Nut, Hex Head, 7/16 – 14, Lock, Grade 8, Cad wax	4
00826297	Nut, Hex Head, 3/8 – 16, Lock	4
No Part Number	TRW Inspection Tool – Upper Shaft	1
No Part Number	TRW Inspection Tool – Lower Shaft	1