

# Authorized Field Change



AFC 14903

**Date:** September 2014

**Subject File:** Exhaust

**Subject:** Exhaust Ground Clearance Correction.

Model: DuraStar®

Start Date: 12 December 2013 End Date: 12 June 2014

Engine Family: ISB

## DESCRIPTION

It has been determined that the exhaust feature code, in conjunction with a 19.5-in wheel and tire combination, presents the opportunity for extremely low ground clearance, which is a concern for many customers. This procedure will help improve ground clearance.

There are two parts to this procedure. The first part involves removing the Selective Catalyst Reduction (SCR) assembly and installing new mounting brackets, new turbo down pipe, and diffuser hanger. The second part of the operation involves installing a spacer underneath the front axle to gain additional clearance. It does not matter which procedure is completed first.

## PARTS INFORMATION

**Table 1. Parts Information.**

Part Number	Description	Quantity
8000964C92	Kit, Ground Clearance ISB Truck	1

**Table 2. 8000964C92 Ground Clearance ISB Truck Kit Contents.**


Description	Quantity
Bracket, Frame Side	2
Hanger, Tailpipe	1
Pipe, Turbo	1
Bolt, M16 x 60MM PHC FLG Class	4
Gasket, Exhaust Pipe Flange	1
Gasket, Exhaust Pipe Flange	1
Block, Riser Front Spring	2
Bolt, U-Bolt 3/4-16 UNRF x 8.0	4


## PARTS INFORMATION (CONT.)


Table 2. 8000964C92 Ground Clearance ISB Truck Kit Contents. (cont.)


Description	Quantity
Spacer	2
Nut, Hex LK* U-Bolt 3/4-16 UNF	8


## SERVICE PROCEDURE


 **WARNING:** To prevent property damage, personal injury, and / or death, park vehicle on hard flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in both directions.

 **WARNING:** To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

 **WARNING:** To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

 **WARNING:** To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

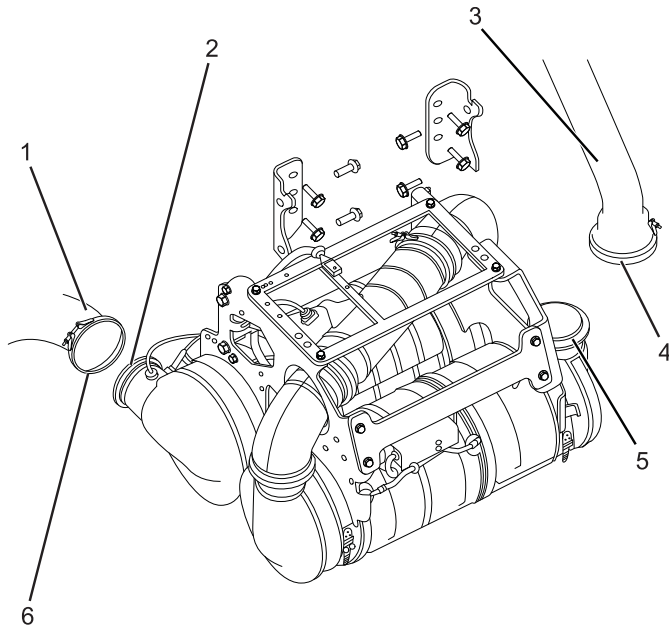
 **WARNING:** To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

 **WARNING:** To prevent property damage, personal injury, and / or death, use a suitable device for support and removal of the Diesel Particulate Filter (DPF). The DPF is heavy and contains a ceramic "brick" that is sensitive to shocks and impacts.

1. Bring vehicle into shop and park on flat surface.
2. Shift transmission to Park or Neutral, set parking brake, and install wheel chocks.

## SERVICE PROCEDURE (CONT.)

3. Unlatch and open hood.
4. Remove right-side splash shield, if required.
5. Remove eight bolts, nuts, and step assembly from vehicle.

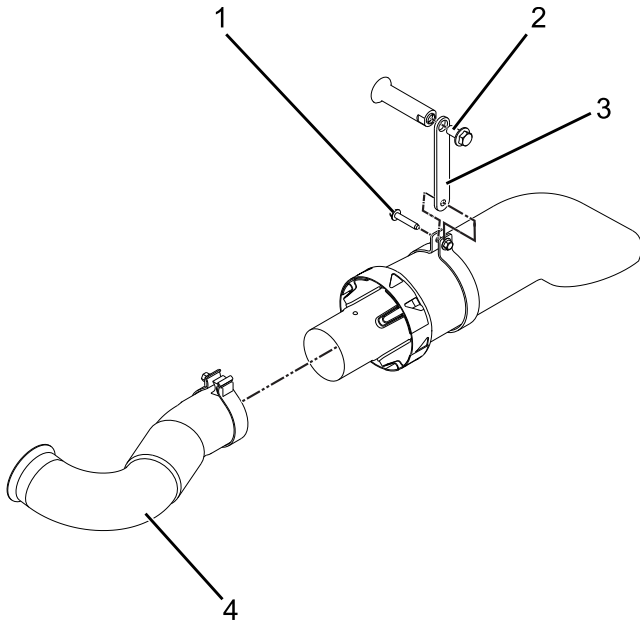


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**Figure 1. V-Clamps.**

1. Tailpipe
  2. SCR canister outlet
  3. Turbo pipe
  4. V-clamp
  5. DOC inlet
  6. V-clamp
6. Loosen V-clamp (Figure 1, Item 4) on turbo pipe (Figure 1, Item 3) and Diesel Oxidation Catalyst (DOC) inlet (Figure 1, Item 5).
  7. Loosen V-clamp (Figure 1, Item 6) on tailpipe (Figure 1, Item 1) and SCR canister outlet (Figure 1, Item 2).

## SERVICE PROCEDURE (CONT.)



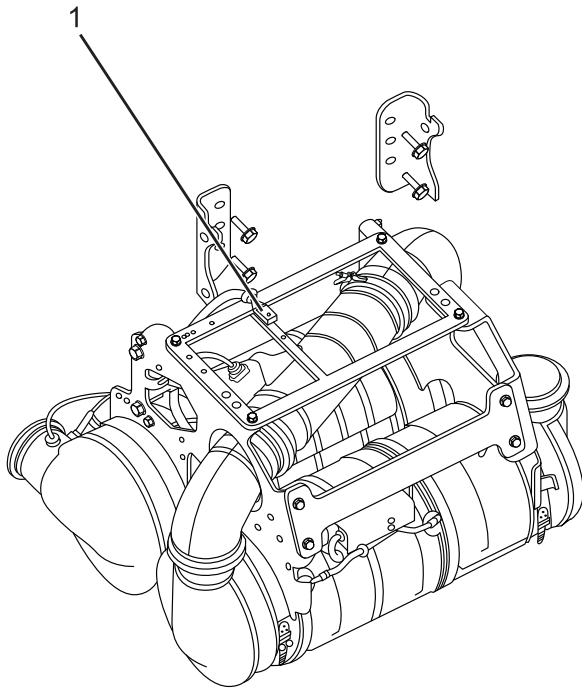
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**Figure 2. Diffuser Hanger Bracket.**

1. Bolt
2. Bolt
3. Diffuser hanger bracket
4. Tailpipe

8. Remove two bolts (Figure 2, Items 1 and 2), tailpipe (as a unit) (Figure 2, Item 4), and diffuser hanger bracket (Figure 2, Item 3) from vehicle. Discard diffuser hanger bracket.

## SERVICE PROCEDURE (CONT.)

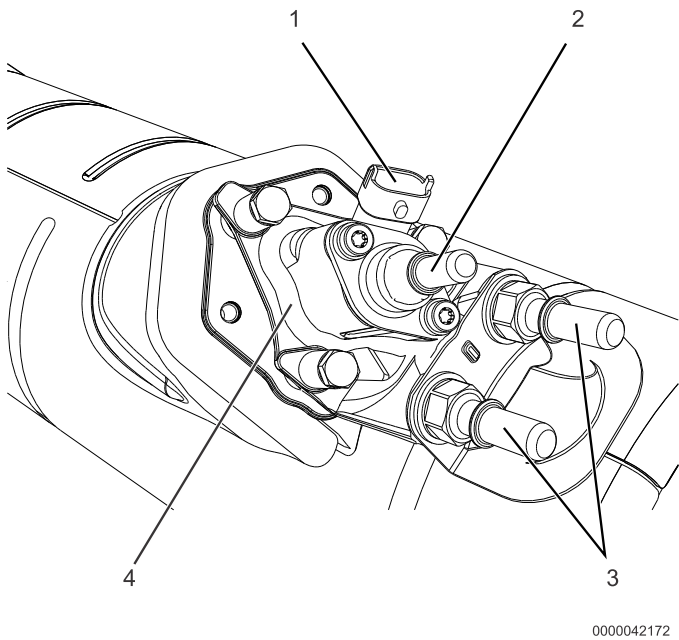


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**Figure 3. Diesel Exhaust Fluid (DEF) Tank Assembly Electrical Connector.**

1. DEF tank assembly electrical connector
  
9. Disconnect Diesel Exhaust Fluid (DEF) tank assembly electrical connector (Figure 3, Item 1) from switchback interconnect harness electrical connector, not shown.

## SERVICE PROCEDURE (CONT.)



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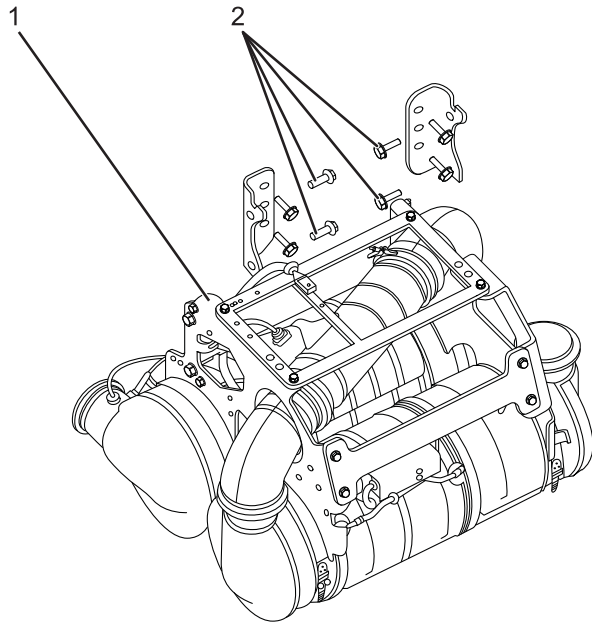
**Figure 4. DEF Dosing Valve.**

1. DEF dosing valve electrical connector
2. DEF dosing valve pressure line
3. DEF dosing valve coolant line (2)
4. DEF dosing valve

**NOTE: To disconnect DEF lines from fittings, push inward on white quick-release clip.**

10. Disconnect DEF dosing valve pressure line (Figure 4, Item 2) from DEF dosing valve (Figure 4, Item 4).
11. Disconnect two DEF dosing valve coolant lines (Figure 4, Item 3) from DEF dosing valve (Figure 4, Item 4).
12. Disconnect DEF dosing valve electrical connector (Figure 4, Item 1) from DEF dosing valve (Figure 4, Item 4).
13. Support DPF / DOC, SCR canister, and aftertreatment assembly mounting bracket with a suitable lifting device.

## SERVICE PROCEDURE (CONT.)



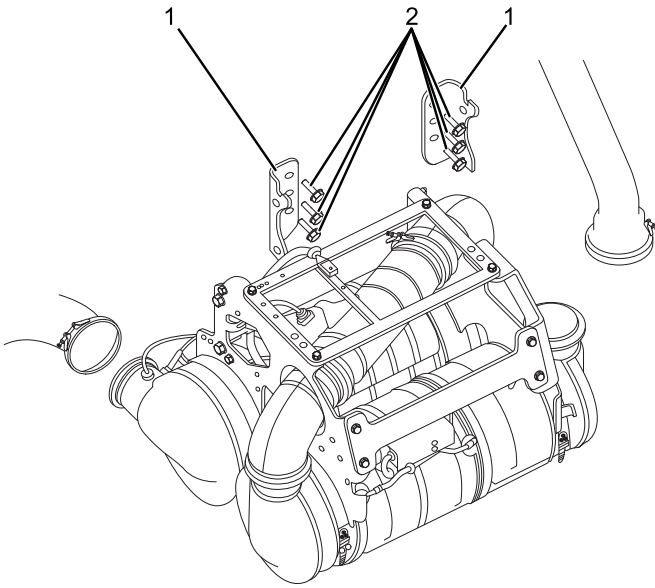
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**Figure 5. Aftertreatment Assembly Mounting Bracket.**

1. Aftertreatment assembly mounting bracket
2. Bolt (4)

14. Remove four bolts (Figure 5, Item 2) from aftertreatment assembly mounting bracket (Figure 5, Item 1).
15. Lower DPF / DOC and SCR canister (with aftertreatment assembly mounting bracket attached) from frame rail.

## SERVICE PROCEDURE (CONT.)



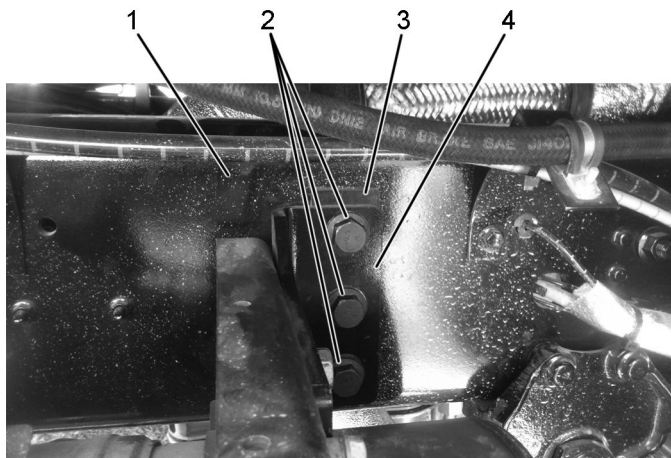
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**Figure 6. Frame Rail Brackets.**

1. Bracket (2)
2. Bolt and nut (nut not shown) (6) (three not shown)

16. Remove six bolts, nuts (Figure 6, Item 2), and two brackets (Figure 6, Item 1) from frame rail. Discard two brackets.
17. Install two new aftertreatment assembly mounting brackets (Figure 5, Item 1) onto SCR canister with four bolts (Figure 5, Item 2) hand tight.

## SERVICE PROCEDURE (CONT.)



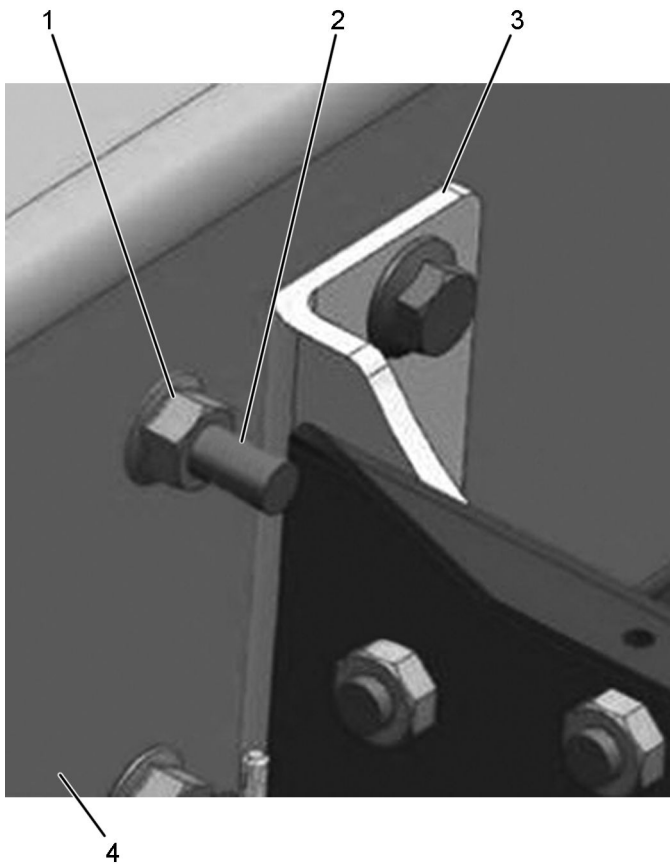
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**Figure 7. Spacer Installation.**

1. Frame rail
2. Bolt and nut (nut not shown) (6)
3. Spacer (2) (one not shown)
4. Bracket (2) (one not shown)

18. Raise DPF / DOC and SCR canister into position and install two new spacers (Figure 7, Item 3) between two brackets (Figure 7, Item 4) and frame rail (Figure 7, Item 1) with six bolts and six nuts (Figure 7, Item 2) into frame rail, hand tight.

## SERVICE PROCEDURE (CONT.)



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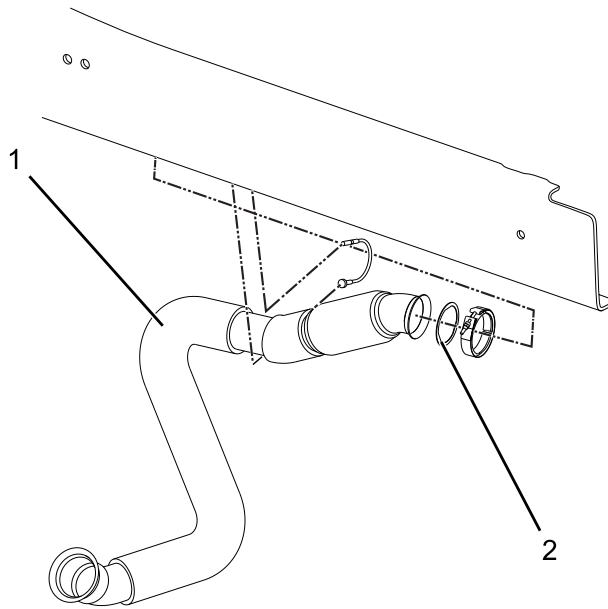
**Figure 8. Rear-Most Bolt.**

1. Nut
2. Bolt
3. Rear-most mounting bracket
4. Frame rail

**NOTE: To provide adequate clearance, install bolt with head on outside of frame rail.**

19. Remove nut (Figure 8, Item 1) and bolt (Figure 8, Item 2) from frame rail (Figure 8, Item 4), next to rear-most mounting bracket (Figure 8, Item 3).
20. Install bolt (Figure 8, Item 2) and nut (Figure 8, Item 1) into frame rail (Figure 8, Item 4) with bolt head on outside of frame rail.

## SERVICE PROCEDURE (CONT.)



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**Figure 9. Turbocharger Down Pipe.**

1. Turbocharger down pipe
2. Gasket

21. Remove turbocharger down pipe (Figure 9, Item 1) and gasket (Figure 9, Item 2) from vehicle. Discard turbocharger down pipe and gasket.
22. Install new gasket (Figure 9, Item 2) and new turbocharger down pipe (Figure 9, Item 1) onto turbocharger and SCR canister with V-clamp hand tight.
23. Using torque wrench, tighten six bolts (Figure 7, Item 2) to 192 lb-ft (260 N•m).
24. Using torque wrench, tighten four aftertreatment assembly mounting bracket bolts (Figure 5, Item 2) to 192 lb-ft (260 N•m).
25. Verify that turbocharger down pipe bellows section is parallel to frame and no visual bends are present. While securing cable, use a pair of vice grips or pliers to hold crimped end before threads to prevent cable twist.
26. Using torque wrench, tighten V-clamp (Figure 1, Item 4) to 106 lb-in (12 N•m).
27. Install tailpipe (Figure 2, Item 4) as a unit and new diffuser hanger bracket (Figure 2, Item 3) on frame rail with bolts (Figure 2, Items 1 and 2) hand tight.
28. Attach tailpipe (Figure 1, Item 1) to SCR canister outlet (Figure 1, Item 2) with V-clamp (Figure 1, Item 6).
29. Using torque wrench, tighten V-clamp (Figure 1, Item 6) to 106 lb-in (12 N•m).
30. Connect DEF dosing valve electrical connector (Figure 4, Item 1) to DEF dosing valve (Figure 4, Item 4).

## SERVICE PROCEDURE (CONT.)

31. Connect two DEF dosing valve coolant lines (Figure 4, Item 3) to DEF dosing valve (Figure 4, Item 4).
32. Connect DEF dosing valve pressure line (Figure 4, Item 2) to DEF dosing valve (Figure 4, Item 4).
33. Connect DEF tank assembly electrical connector (Figure 3, Item 1) to switchback interconnect harness electrical connector (not shown).
34. Using torque wrench, tighten bolts (Figure 2, Items 1 and 2) to 110 lb-ft (149 N•m).
35. Install right-side splash shield, if removed.
36. Install step assembly on vehicle with eight bolts and nuts.

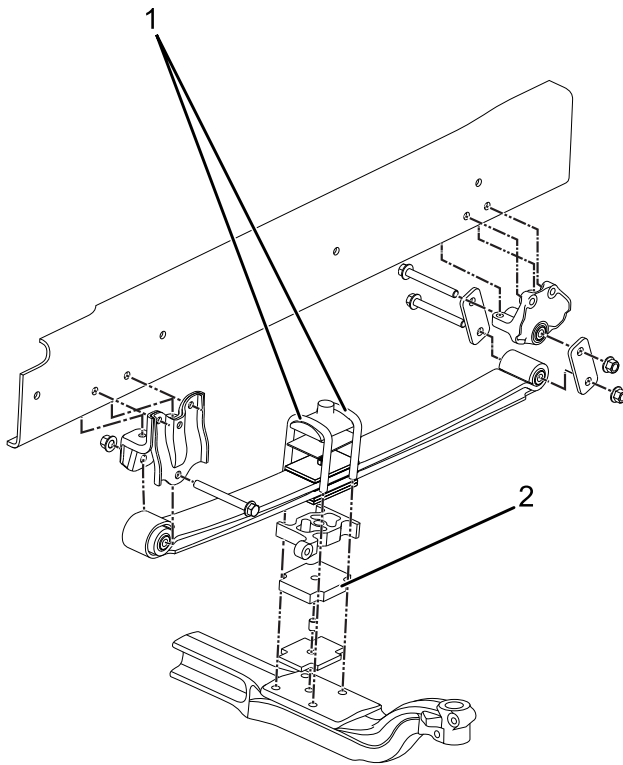
**NOTE: Depending on oil pan setup and front axle configuration, vehicle may be equipped with either a 1-inch spacer, 1/2-inch spacer, or no spacer on driver-side of vehicle.**

**NOTE: To verify axle and oil pan configuration, consult Line Set Ticket.**

**NOTE: The following steps are for a vehicle with 8k front suspension and a 15-quart oil pan.**

37. With wheels chocked, raise and support front of vehicle and place jack stands under frame rails on both sides.
38. Remove front tire on left side. Refer to [Service Manual Section, Wheels, Rims, and Tires, S17001Y](#).
39. Place a floor jack under front axle and raise floor jack until it just contacts axle. **DO NOT put a load on the springs.**

## SERVICE PROCEDURE (CONT.)



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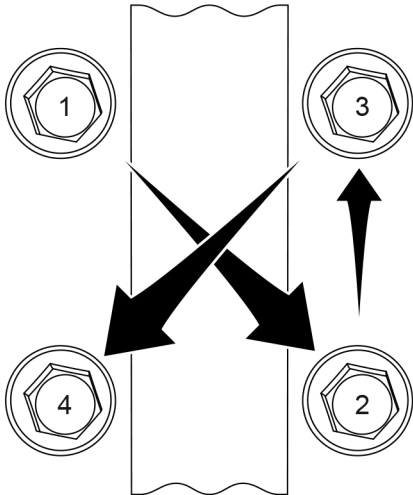
**Figure 10. U-Bolts.**

1. U-Bolt (2) and nut (4) (Nut not shown)
2. Spacer

40. Remove four nuts and two U-bolts (Figure 10, Item 1) from axle and allow axle to rest on floor jack. Discard nuts and U-bolts.
41. Remove 1/2-inch spacer (Figure 10, Item 2) from underneath shock mount. Retain spacer as this part will be used on right side of vehicle.
42. Install new 1-inch spacer (Figure 10, Item 2) underneath shock mount.
43. Install two new U-bolts on axle with four new bolts (Figure 10, Item 1) hand tight.
44. Remove front tire on right side. Refer to [Service Manual Section, Wheels, Rims, and Tires, S17001Y](#).
45. Place a floor jack under front axle and raise floor jack until it just contacts axle. **DO NOT put a load on the springs.**
46. Remove four nuts and two U-bolts (Figure 10, Item 1) from axle and allow axle to rest on floor jack. Discard nuts and U-bolts.
47. Install 1/2-inch spacer (Figure 10, Item 2), removed from left side, underneath shock mount.

## SERVICE PROCEDURE (CONT.)

48. Install two new U-bolts on axle with four new bolts (Figure 10, Item 1) hand tight.
49. Verify 1-inch spacer (Figure 10, Item 2) is on left side and 1/2-inch spacer is on right side.

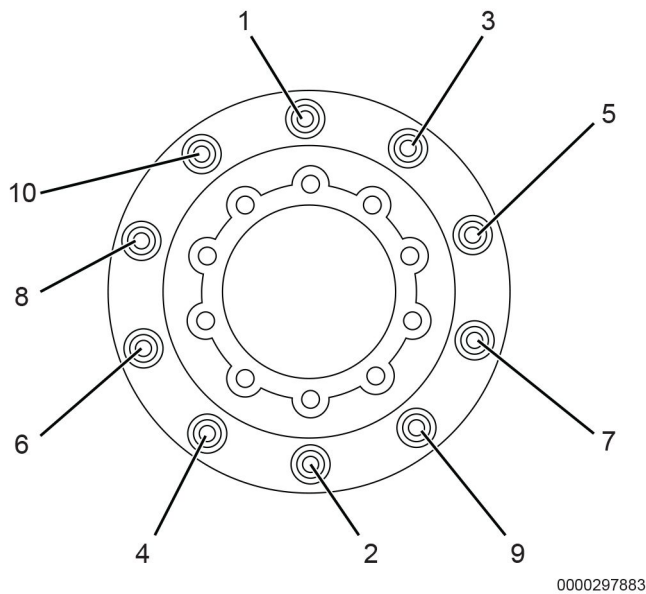


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**Figure 11. Torque Pattern.**

50. Using torque wrench, tighten four bolts on left-side front axle in diagonal pattern to 300 lb-ft (405 N•m) (Figure 11).
51. Using torque wrench, tighten four bolts in diagonal pattern to final torque of 375 lb-ft (508 N•m) (Figure 11).
52. Repeat Steps 48 and 49 on right-side front axle.

## SERVICE PROCEDURE (CONT.)



**Figure 12. Wheel Torque Sequence.**

53. Install front tires. Refer to [Service Manual Section, Wheels, Rims, and Tires, S17001Y](#). Draw up nuts alternately, following crisscross pattern sequence (Figure 12). Do not fully tighten nuts at this time.
54. Remove jack stands and lower vehicle.
55. Tighten wheel nuts to 450 - 500 lb-ft (610 - 678 N·m) using torque sequence (Figure 12).
56. Remove wheel chocks.
57. Road test vehicle for 10 minutes.
58. Final tighten wheel nuts to 450 - 500 lb-ft (610 - 678 N·m) using torque sequence (Figure 12).

## LABOR INFORMATION

Operation number must appear on all claims.

**Table 3. Labor Information**

Operation No.	Description	Time
A40-14903-1	Install Exhaust Kit and Axle Spacers	3.2 hrs

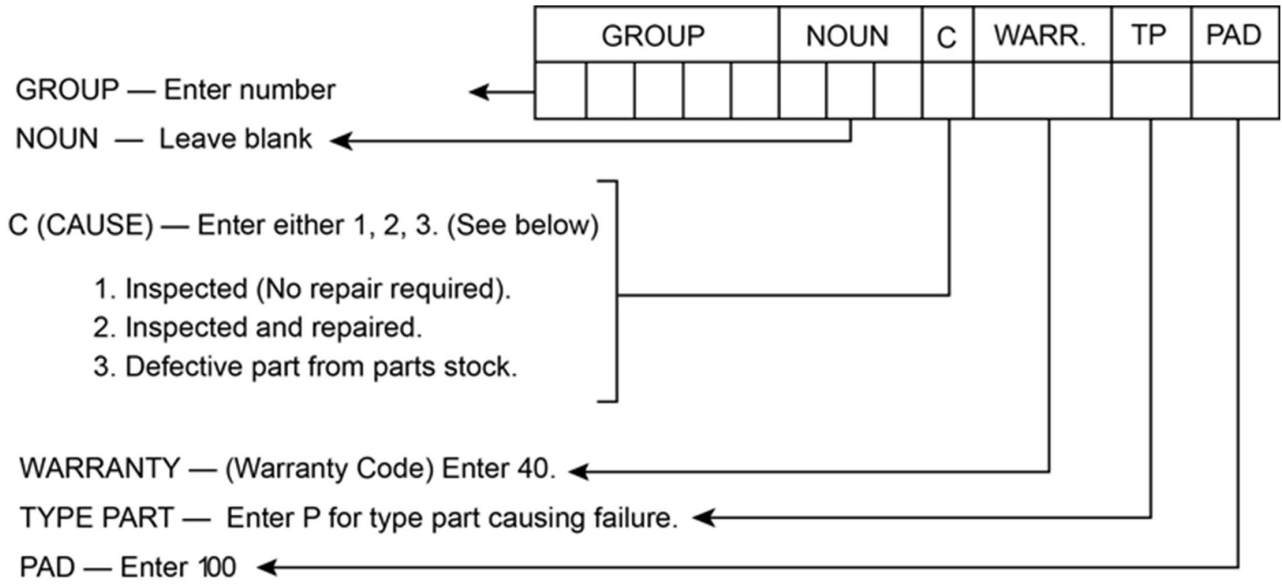
## ADMINISTRATIVE PROCEDURE

Expense is to be charged to Warranty. Claims are to be submitted in the normal manner, making reference to Authorized Field Change Number 14903.

It is important that the coding be completed properly to assist in processing the warranty claim. Complete instructions will be found in the Warranty Policy Manual, Section 7.1.8.

As with all claim submissions, items acquired locally must be submitted in the “Other Charges” tab. The cost of any bulk items (such as a bag of cable tie straps, roll of wire, barrel of oil, or tube of silicone) should be prorated for the cost of the individual pieces / amount used during each repair.

To ensure this important improvement is made in a timely manner, all claims for 14903 activity must be submitted by 17 September 2015 or within the normal warranty period for the vehicle, if after 17 September 2015.



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