



TECHNICAL BULLETIN

No: JTB00175
Issue: 3
Date: 20 JAN 2010

CIRCULATE TO:

Service
✓

Parts
✓

Warranty
✓

Body Shop
✓

ISSUE '3' CHANGES ARE EXTENSIVE AND THEREFORE ARE NOT HIGHLIGHTED

SECTION: 205

Rear Differential Replacement

AFFECTED VEHICLE RANGE:

S-TYPE (X200)

VIN: M45255 - N91220
Model Year: 2003 - 2008

XF (X250)

VIN: R00001 - R41865
Model Year: 2009

XJ (X350)

VIN: G00442 - H31470
Model Year: 2004 - 2009

XK (X150)

VIN: B00001 - B32752
Model Year: 2007 - 2009

CONDITION SUMMARY:

Situation: Due to a change in design, the rear differential has a new service part. As a result, should the rear differential require replacement it will be necessary to convert the driveline system to use the new differential. This conversion is only necessary once; for any possible future repairs to the differential, driveshaft, or halfshafts, only the affected components will require repair / replacement.

Action: In the event it becomes necessary to replace the rear differential, refer to the Repair Procedure outlined below.

PARTS:

C2C 1247	Brake caliper bolts - S-TYPE (3.0L, 4.2L N/A; M45255 - N52047), XJ (G00442 - G49700)	Qty: 4
C2C 27237	Brake caliper bolts - S-TYPE (N52048 - N91220), XF, XK	Qty: 2
C2C 33384	Brake disc retaining clip	Qty: 2
C2C 34448	Driveshaft mounting nut	Qty: 3
C2C 40993	Differential - S-TYPE (4.2L), XJ	Qty: 1
C2C 40994	Differential - XF (4.2L S/C)	Qty: 1
C2C 40995	Differential - S-TYPE (3.0L A/T), XF (N/A), XK	Qty: 1
C2C 6710	Halfshaft joint kit - S-TYPE (M45255 - N41580), XJ (G00442 - G41511)	Qty: 2
C2C 6745	Brake caliper mounting bolts - S-TYPE (4.2L S/C; M45255 - N52047) XJ (4.2L S/C; G00442 - G49700)	Qty: 2
C2C 6746	Brake caliper bolts - S-TYPE (4.2L S/C; M45255 - N52047), XJ (4.2L S/C; G00442 - G49700)	Qty: 4
C2D 3648	Differential filler plug	Qty: 1
C2D 3653	Differential oil	Qty: 1
C2P 12731	Hub nut	Qty: 2
C2Z 2224	Differential mounting nut - front	Qty: 1
JLM 21865	Driveshaft kit - XF	Qty: 1
JLM 21866	Driveshaft kit - S-TYPE (4.2L)	Qty: 1
JLM 21870	Driveshaft kit - S-TYPE (3.0L A/T)	Qty: 1
JLM 21871	Driveshaft kit - XJ (SWB)	Qty: 1
JLM 21874	Driveshaft kit - XJ (LWB)	Qty: 1
JLM 21883	Driveshaft kit - XK	Qty: 1
XR8 11133	Halfshaft circlip	Qty: 2

NOTE: The information in Technical Bulletins is intended for use by trained, professional Technicians with the knowledge, tools, and equipment required to do the job properly and safely. It informs these Technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by 'do-it-yourselfers'. If you are not a Dealer, do not assume that a condition described affects your vehicle. Contact an authorized Jaguar service facility to determine whether this bulletin applies to a specific vehicle.

XR8 2681	Lower wishbone-to-knuckle nut - S-TYPE, XJ, XK	Qty: 1
XR8 48057	Tie rod nut	Qty: 1
XR8 53342	Lower wishbone-to-knuckle nut - XF	Qty: 1

TOOLS:

Refer to Workshop Manual (GTR) and Repair Procedure for any required special tools

WARRANTY:

NOTE: Repair procedures are under constant review, and therefore times are subject to change; those quoted here must be taken as guidance only. Always refer to DDW to obtain the latest repair time.

DDW requires the use of causal part numbers. Labor only claims must show the causal part number with a quantity of zero.

<i>Description</i>	<i>SRO</i>	<i>Time (hours)</i>	<i>Condition Code</i>	<i>Causal Part</i>
Rear driveline replacement - S-TYPE (M45255 - N41580)	51.91.20	3.10	42	C2C 40994
Rear driveline replacement - S-TYPE (N41581 - N91220)	51.91.20	3.00	42	C2C 40994
Rear driveline replacement - XF	51.91.20	3.20	42	C2C 40994
Rear driveline replacement - XJ (G00442 - G41511)	51.91.20	3.10	42	C2C 40994
Rear driveline replacement - XJ (G41512 - H32692)	51.91.20	3.00	42	C2C 40994
Rear driveline replacement - XK	51.91.20	3.10	42	C2C 40994

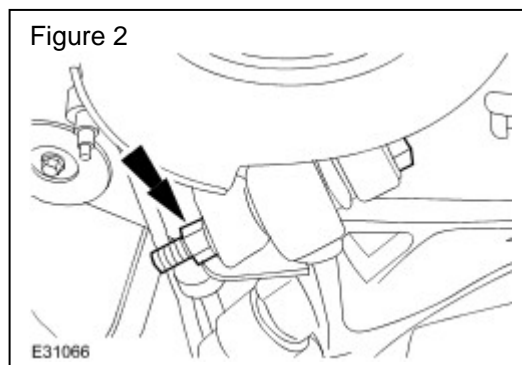
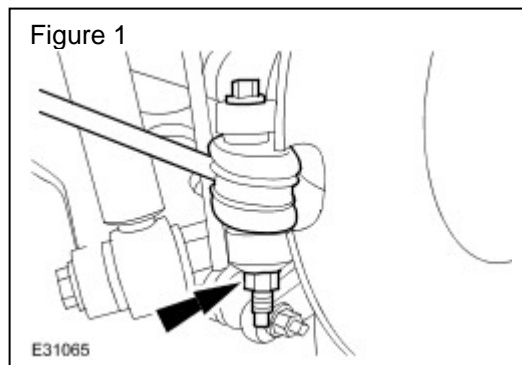
Normal warranty policy and procedures apply.

REPAIR PROCEDURE - S-TYPE

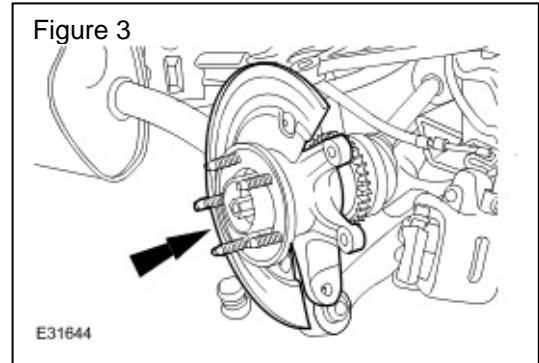
REMOVE REAR DIFFERENTIAL ASSEMBLY

NOTE: Global Technical Reference (GTR) lookup sequence is as follows:
GTR Home > NAS > X200 - S-TYPE > Service Information > Model Year > Workshop Manuals

1. Refer to Workshop Manual (GTR) section 100-02: *Jacking and Lifting* and raise and support the vehicle.
2. Refer to Workshop Manual (GTR) section 204-04: *Wheels and Tires* and remove the rear wheels.
 - Remove and retain wheel center caps.
3. Refer to Workshop Manual (GTR) section 309-00: *Exhaust System* and remove the exhaust system.
4. Refer to Workshop Manual (GTR) section 206-04: *Rear Brake Disc* and remove the right-hand (RH) rear brake disc.
5. Detach the RH outer tie rod. (Figure 1)
6. Detach the lower arm from the RH wheel knuckle. (Figure 2)

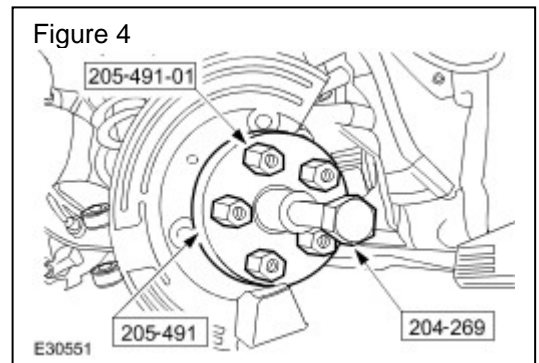


7. Remove RH halfshaft retaining nut. (Figure 3)



8. Detach the RH halfshaft from the wheel knuckle: (Figure 4)

- Use special tools 204-269, 205-491, and 205-491-01.



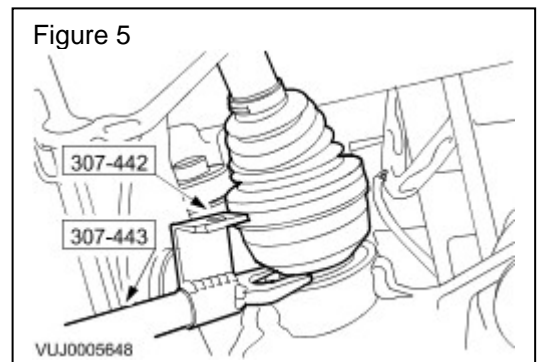
⚠ CAUTION: Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

△ NOTE: The halfshaft is retained in the drive axle assembly by a retaining clip.

9. Remove the RH halfshaft from the differential: (Figure 5)

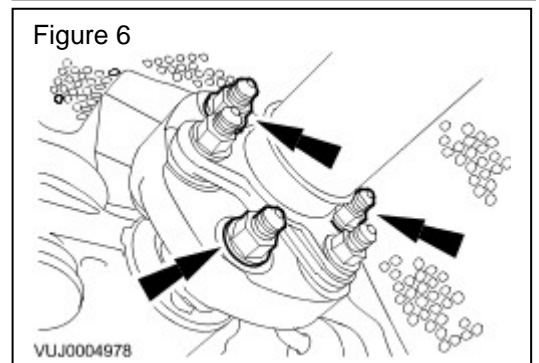
- Use special tools 307-442 and 307-443.

10. Remove the halfshaft from the vehicle.



⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

11. Detach the driveshaft from the differential. (Figure 6)

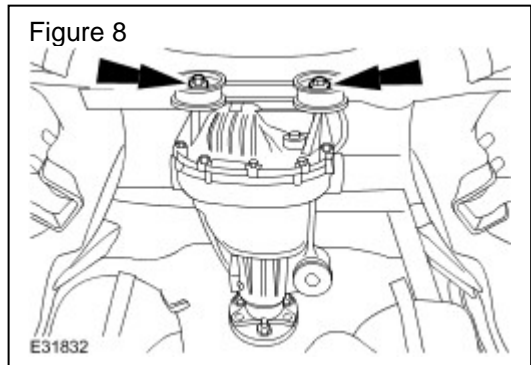
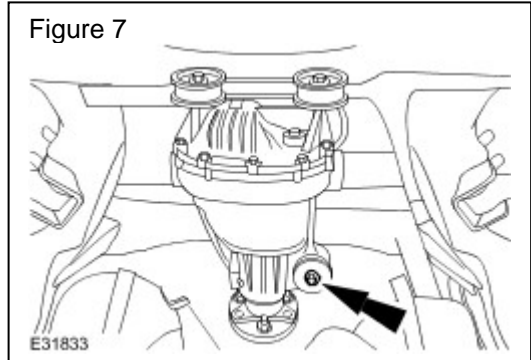


⚠ CAUTION: Use suitable packing material to prevent damage to the differential.

12. Support the differential assembly:
 - Use special tool HTJ1200-2.
13. Remove the front differential assembly retaining bolt: (Figure 7)

△ NOTE: It is not necessary to fully remove the differential assembly rear retaining bolts; loosen each bolt alternately until the differential assembly is released.

14. Loosen the differential assembly rear retaining bolts to release the differential assembly. (Figure 8)
15. Remove the LH halfshaft from the differential: (Figure 5 [RH shown; LH similar])
 - Use special tools 307-442 and 307-442.
16. With assistance, lower and remove the differential assembly.
17. Remove LH halfshaft retaining nut from the wheel knuckle. (Figure 3 [RH shown; LH similar])
18. Detach and remove the LH halfshaft from the wheel knuckle: (Figure 4 [RH shown; LH similar])
 - Use special tools 204-269, 205-491, and 205-491-01.
19. Remove the LH halfshaft from the vehicle.



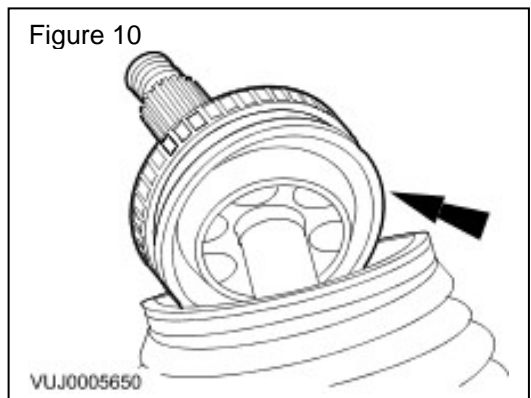
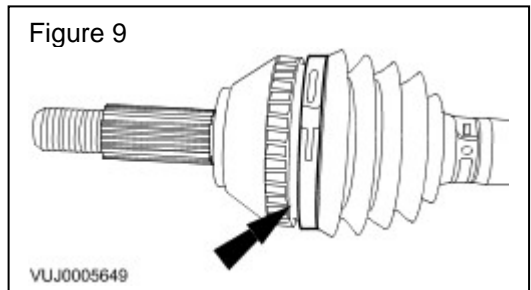
REPLACE HALFSHAFT CONSTANT VELOCITY JOINTS - M45255 - N41580 ONLY

1. Remove the outer constant velocity (CV) joint boot retaining clip from the LH halfshaft. (Figure 9)

⚠ CAUTION: Use care to not damage bearing retainer.

△ NOTE: The outer CV joint is retained to the shaft by a spring clip.

2. Using a suitable brass drift, remove the outer CV joint. (Figure 10)



3. Remove and discard the retaining clip: (Figure 11)
4. Install a new retaining clip. (Figure 11)

⚠ CAUTION: Ensure the CV joint ball bearings do not fall out of the joint.

5. Using the supplied CV joint grease, fill the new joint with 50% of the grease and the CV joint boot with 50% of the grease.
6. Install the new CV joint onto the halfshaft.
7. Install a new CV joint boot retaining clip.
8. Perform steps 1-7 on the RH halfshaft.

REMOVE DRIVESHAFT

1. Remove the four driveshaft heat shield bolts: (Figure 12)
2. Remove the driveshaft heat shield.

⚠ CAUTION: Support the driveshaft front section.

3. Remove and discard the driveshaft center bearing bolts and spacers. (Figure 13)

⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

4. Release the driveshaft from the transmission flange. (Figure 14)
5. Remove the driveshaft from the vehicle.

Figure 11

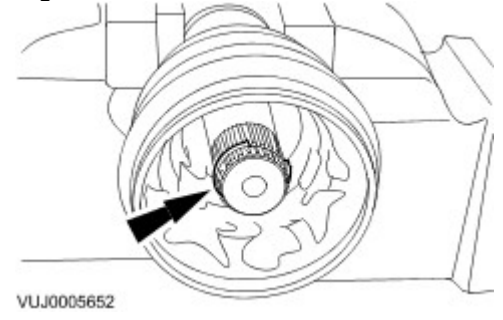


Figure 12

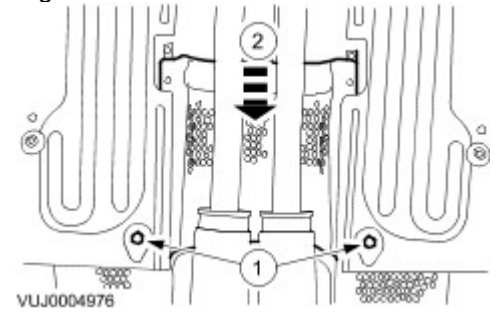


Figure 13

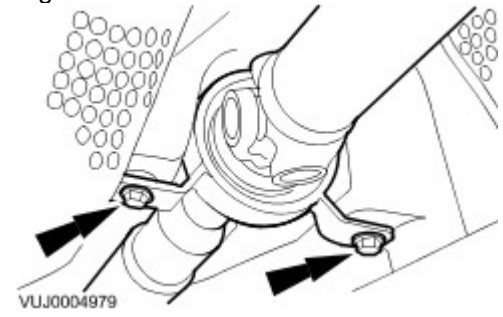
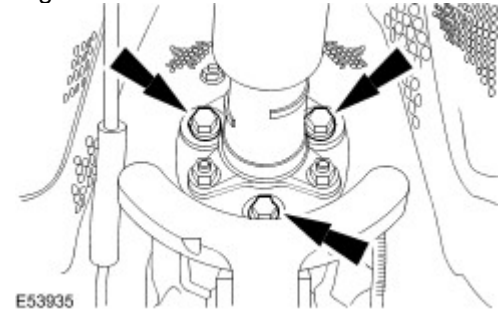


Figure 14



INSTALL NEW REAR DIFFERENTIAL ASSEMBLY

- Using the original hub nut, attach the LH halfshaft to the wheel knuckle:
 - Tighten the nut to **150 Nm (110 lbf ft)**.



CAUTION: Use suitable packing material to prevent damage to the differential.

- Support the differential assembly:
 - Use special tool HTJ1200-2.
- Lift the new differential assembly into the vehicle.



CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.



NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

- Install the LH halfshaft into the differential assembly: (Figure 15)
 - Open the halfshaft oil seal protector;
 - Remove and discard the center disc;
 - Lubricate the seal and bearing running surfaces with clean differential fluid;
 - Install the halfshaft into the differential assembly;
 - Pull the oil seal protector clear of the oil seal;
 - Break the halfshaft oil seal protector into two pieces to remove;
 - Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.
- Loosely install the two differential assembly rear retaining bolts. (Figure 16)
- Loosely install the differential assembly front retaining bolt and new mounting bush. (Figure 17)

Figure 15

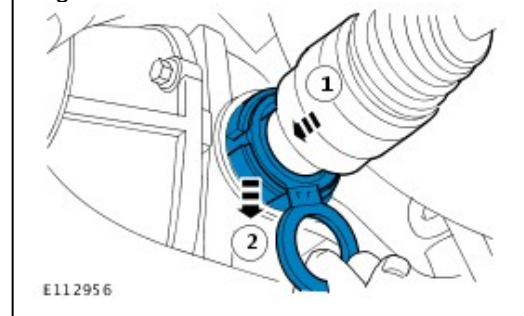


Figure 16

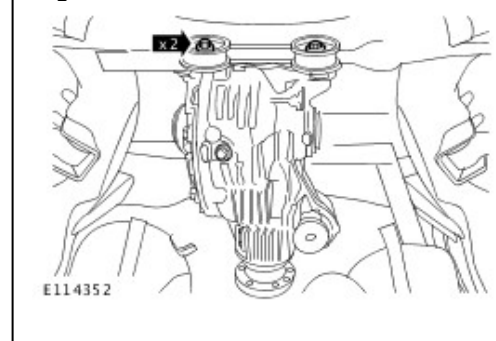
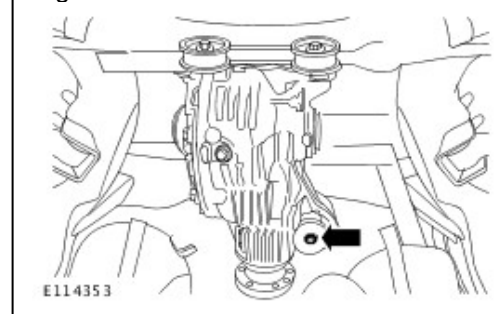


Figure 17



7. Install special tool 204-447 to differential assembly rear retaining bolt. (Figure 18)

CAUTION: The differential assembly rear retaining bolts must be tightened to the correct torque; failure to follow this instruction may result in damage to the vehicle.

- NOTE:** To ensure the correct torque is achieved, the following calculation must be performed: (Figure 19)
1. Multiply 200 Nm (148 lbf ft) by the effective length (①) of the torque wrench.
 2. Add the effective length (②) of the special tool to the effective length (①) of the torque wrench.
 3. Divide the total of step 1 by the total of step 2.
 4. Set the torque wrench to the figure from step 3.

8. Tighten the differential assembly rear retaining bolts to the figure above.
9. Tighten the new differential assembly front retaining bolt to **90 Nm (66 lbf ft)**.
10. With assistance, install new driveshaft:
 - Tighten new driveshaft center bearing bolts to **47 Nm (35 lbf ft)**.
 - Tighten driveshaft-transmission flange bolts to **108 Nm (80 lbf ft)**.

NOTE: Ensure driveshaft-differential bolts are correctly installed. (Figure 20)

11. Install, but do not fully tighten, new bolts and formed washers. (Figure 20)
12. Following the sequence shown, tighten the bolts to **73 Nm (33 lbf ft)**. (Figure 21)
13. Install the center heat shield:
 - Tighten the bolts to **10 Nm (7 lbf ft)**.

Figure 18

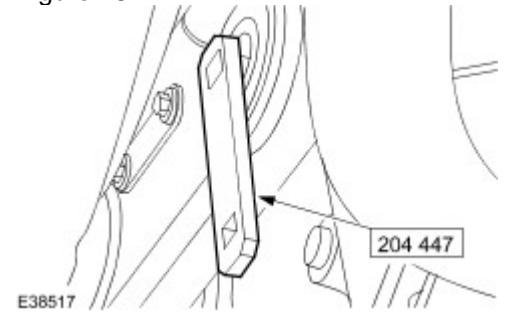


Figure 19

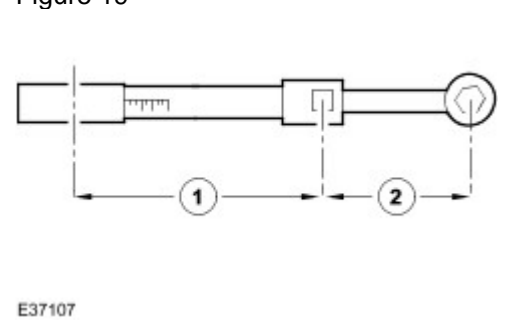


Figure 20

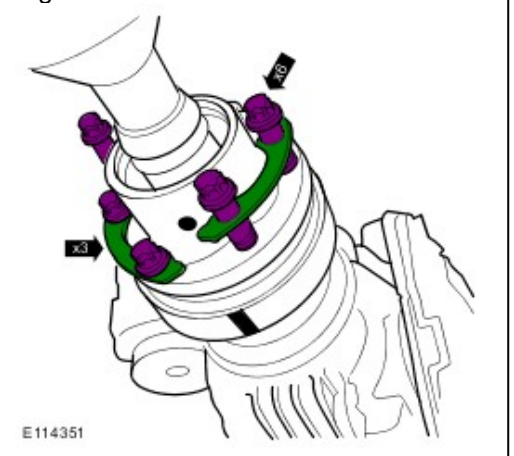
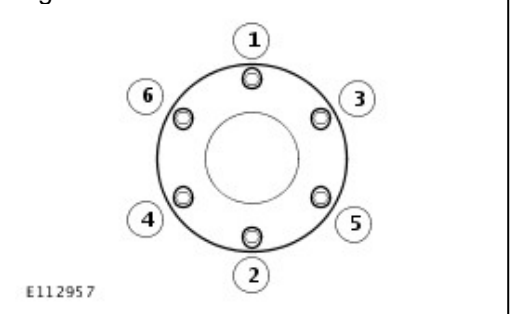


Figure 21

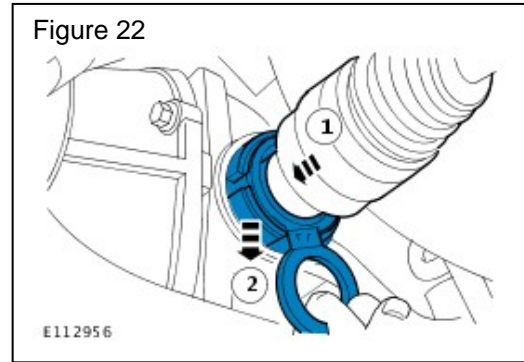


⚠ CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

△ NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

14. Install the RH halfshaft into the differential assembly:
(Figure 22)

- Open the halfshaft oil seal protector;
- Remove and discard the center disc;
- Lubricate the seal and bearing running surfaces with clean differential fluid;
- Install the halfshaft into the differential assembly;
- Pull the oil seal protector clear of the oil seal;
- Break the halfshaft oil seal protector into two pieces to remove;
- Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.



⚠ CAUTION: Differential oil should flow from the filler plug threaded hole when full; failure to follow this instruction may result in damage to the differential assembly.

15. Fill the differential with new oil:

- Remove and discard the differential oil fill plug;
- Fill with differential oil until fluid flows from the threaded hole;
- Install a new differential oil fill plug;
- Tighten differential oil fill plug to **34 Nm (25 lbf ft)**.

16. Using the original hub nut, attach the RH halfshaft to the wheel knuckle:

- Tighten the nut to **150 Nm (110 lbf ft)**.

17. Attach the RH halfshaft to the wheel knuckle.

18. Using a new nut, install the RH lower arm to the wheel knuckle.

19. Using a new nut, install the RH outer tie rod retaining nut.

20. Refer to Workshop Manual (GTR) section 206-04: *Rear Brake Disc* and install the right-hand (RH) rear brake disc using two new brake disc retaining clips and brake caliper bolts.

21. Refer to Workshop Manual (GTR) section 309-00: *Exhaust System* and install the exhaust system.

22. Refer to Workshop Manual (GTR) section 204-04: *Wheels and Tires* and install the rear wheels.

△ NOTE: Final tightening of the rear suspension components and halfshaft nuts *must* be carried out with the vehicle on its wheels.

23. Remove and discard the old LH and RH halfshaft nuts.

24. Install new LH and RH halfshaft hub nuts:

- Tighten LH and RH halfshaft hub nuts to **300 Nm (221 lbf ft)**.

25. Install wheel center caps.

26. Tighten the RH lower arm / wheel knuckle bolt to **150Nm (110 lbf ft)**.

27. Tighten the RH outer tie rod to **55 Nm (40.5 lbf ft)**.

28. Refer to Workshop Manual (GTR) section 204-00: *Suspension System - General Information* to check and adjust the rear wheel alignment.

REPAIR PROCEDURE - XF

REMOVE REAR DIFFERENTIAL ASSEMBLY



NOTE: Global Technical Reference (GTR) lookup sequence is as follows:

GTR Home > NAS > X250 - XF > Service Information > Model Year > Workshop Manuals

1. Refer to Workshop Manual (GTR) section *100-02: Jacking and Lifting* and raise and support the vehicle.
2. Refer to Workshop Manual (GTR) section *204-04: Wheels and Tires* and remove the rear wheels.
 - Remove and retain wheel center caps.
3. Remove left-hand (LH) and right-hand (RH) halfshaft retaining nuts. (Figure 23 [LH shown, RH similar])

4. Refer to Workshop Manual (GTR) section *206-04: Rear Brake Disc* and remove the LH rear brake disc.
5. Detach the lower arm from the LH wheel knuckle. (Figure 24)

6. Detach the LH outer tie rod. (Figure 25)

Figure 23

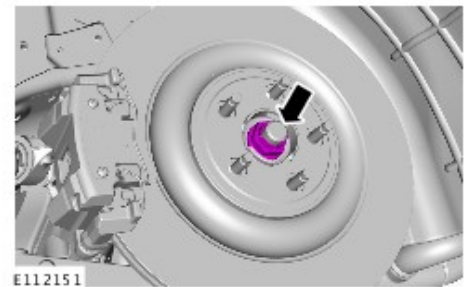


Figure 24

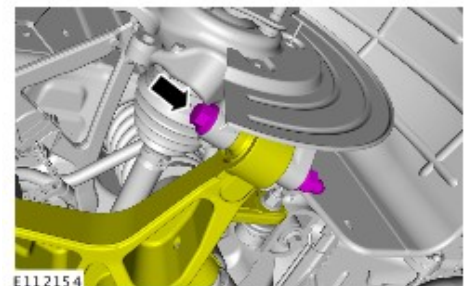
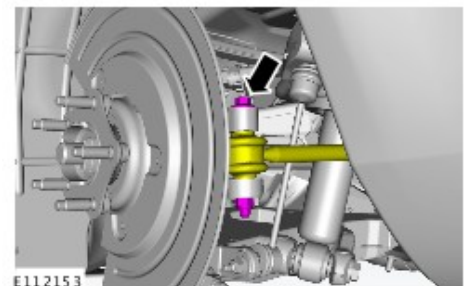


Figure 25



7. Detach the LH halfshaft from the wheel knuckle: (Figure 26)
 - Use special tools 204-269, 205-491, and 205-491/01.

⚠ CAUTION: Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

△ NOTE: The halfshaft is retained in the drive axle assembly by a retaining clip.

8. Remove the LH halfshaft from the differential: (Figure 27)
 - Use special tools 307-442 and 307-443.
9. Remove the LH halfshaft from the vehicle.
10. Refer to Workshop Manual (GTR) section 309-00: *Exhaust System* and remove the exhaust system.

⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

11. Detach the driveshaft from the transmission. (Figure 28)

⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

⚠ CAUTION: Ensure the driveshaft is supported with suitable retaining straps.

12. Detach the driveshaft from the differential. (Figure 29)

⚠ CAUTION: Use suitable packing material to prevent damage to the differential.

13. Support the differential assembly:
 - Use special tool HTJ1200-2.

Figure 26

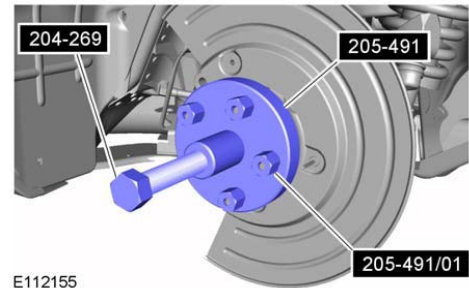


Figure 27

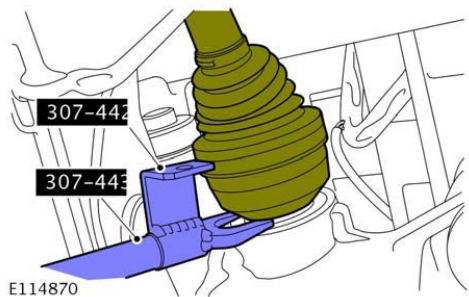


Figure 28

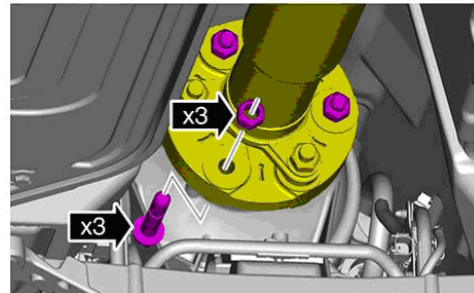
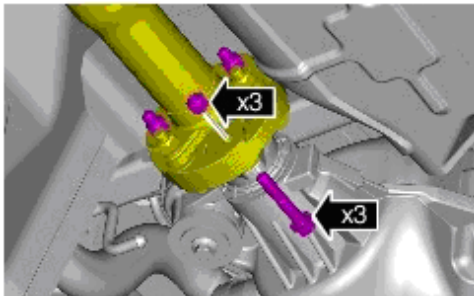
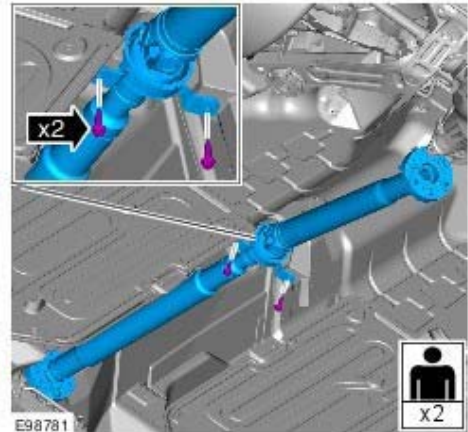


Figure 29



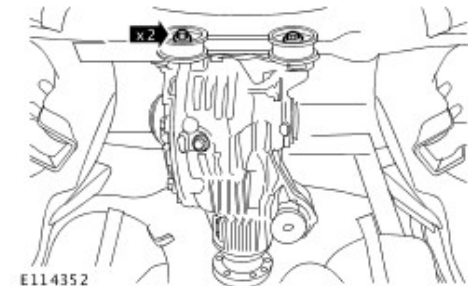
14. Remove and discard the driveshaft center bearing bolts and spacers. (Figure 30)
15. With the aid of an assistant, remove the driveshaft from the vehicle.

Figure 30



16. Release the RH halfshaft from the differential: (Figure 27)
 - Use special tools 307-442 and 307-443.
17. Lower the differential assembly: (Figure 31)
 - Remove the front retaining bolt; discard the front spacer.
 - Remove the two differential assembly rear retaining bolts.

Figure 31



18. Remove the differential assembly from the vehicle.

INSTALL NEW REAR DIFFERENTIAL ASSEMBLY



CAUTION: Use suitable packing material to prevent damage to the differential.

1. Support the differential assembly:
 - Use special tool HTJ1200-2.
2. Lift the new differential assembly into the vehicle.



CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.



NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

3. Using a new retaining clip, install the RH halfshaft into the differential assembly: (Figure 32)
 - Open the halfshaft oil seal protector;
 - Remove and discard the center disc;
 - Lubricate the seal and bearing running surfaces with clean differential fluid;
 - Install the halfshaft into the differential assembly;
 - Pull the oil seal protector clear of the oil seal;
 - Break the halfshaft oil seal protector into two pieces to remove;
 - Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.
4. Loosely install the two differential assembly rear retaining bolts, new front nut, and new front spacer. (Figure 33)
 - Tighten the differential assembly rear retaining bolts to **200 Nm (148 lbf ft)**.
 - Tighten the differential assembly front retaining nut to **90 Nm (66 lbf ft)**.
5. Remove special tool HTJ1200-2.
6. Using the original nut, attach the LH halfshaft to the wheel knuckle assembly:
 - Tighten the nut to **150 Nm (110 lbf ft)**.
7. Using a new retaining clip, install the LH halfshaft into the differential assembly: (Figure 32 [RH shown, LH similar])
 - Open the halfshaft oil seal protector;
 - Remove and discard the center disc;
 - Lubricate the seal and bearing running surfaces with clean differential fluid;
 - Install the halfshaft into the differential assembly;
 - Pull the oil seal protector clear of the oil seal;
 - Break the halfshaft oil seal protector into two pieces to remove;
 - Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.

Figure 32

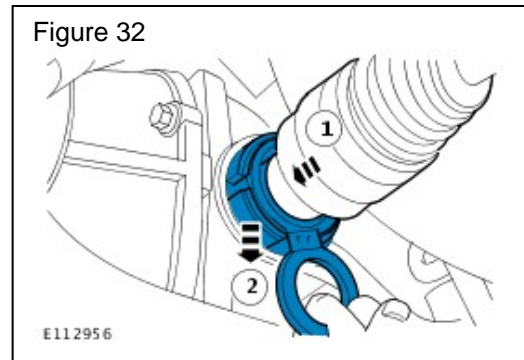
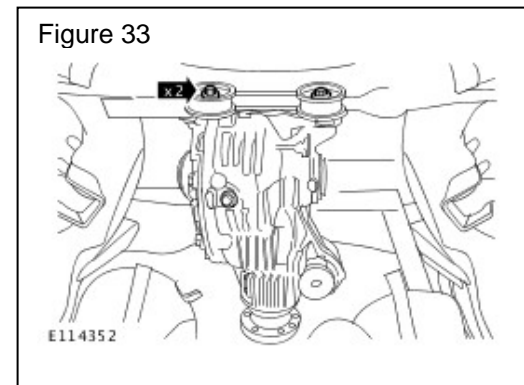


Figure 33



⚠ CAUTION: Differential oil should flow from the filler plug threaded hole when full; failure to follow this instruction may result in damage to the differential assembly.

8. Fill the differential with new oil:
 - Remove and discard the differential oil fill plug;
 - Fill with differential oil until fluid flows from the threaded hole;
 - Install a new differential oil fill plug;
 - Tighten differential oil fill plug to **34 Nm (25 lbf ft)**.
9. With assistance, install new driveshaft:
 - Tighten new driveshaft center bearing bolts to **47 Nm (35 lbf ft)**.
 - Tighten driveshaft-transmission flange bolts and new nuts to **108 Nm (80 lbf ft)**. (Figure 34)

△ NOTE: Ensure driveshaft-differential bolts are correctly installed. (Figure 20)

10. Install, but do not fully tighten, new bolts and formed washers. (Figure 35)
 - Following the sequence shown, tighten the bolts to **73 Nm (33 lbf ft)**. (Figure 35)

Figure 34

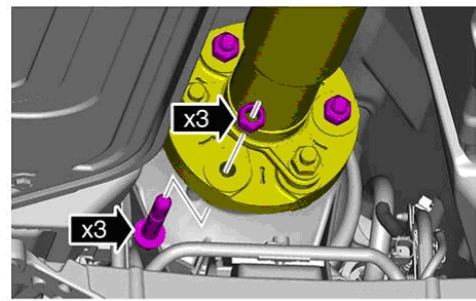
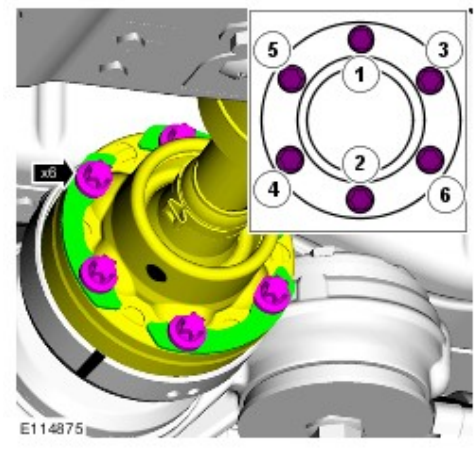


Figure 35

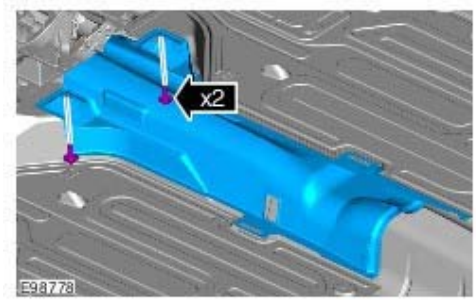


11. Install the center heat shield: (Figure 36)
 - Tighten the bolts to **9 Nm (6 lbf ft)**.
 - Refer to Workshop Manual (GTR) section 309-00: *Exhaust System* and install the exhaust system.
12. Refer to Workshop Manual (GTR) section 206-04: *Rear Brake Disc* and install the right-hand (RH) rear brake disc, using two new brake disc retaining clips brake caliper bolts.
13. Refer to Workshop Manual (GTR) section 204-04: *Wheels and Tires* and install the rear wheels.

△ NOTE: The final tightening of the rear suspension components and halfshaft nuts *must* be carried out with the vehicle on the ground.

14. Remove and discard the old LH halfshaft nut.

Figure 36



15. Install new LH halfshaft hub nut:
 - Tighten LH halfshaft hub nut to **300 Nm (221 lbf ft)**.
16. Using a new nut, install the LH lower arm to the wheel knuckle.
17. Using a new nut, install the LH outer tie rod retaining nut.
18. Install the wheel center caps.
19. Tighten the LH lower arm bolt to **150 Nm (110 lbf ft)**.
20. Tighten the LH outer tie rod to **55 Nm (40.5 lbf ft)**.
21. Refer to Workshop Manual (GTR) section *204-00: Suspension System - General Information*, check and adjust the rear wheel alignment.

REPAIR PROCEDURE - XK

REMOVE REAR DIFFERENTIAL



**NOTE: Global Technical Reference (GTR) lookup sequence is as follows:
GTR Home > NAS > X150 - XK > Service Information > Model Year > Workshop Manuals**

1. Refer to Workshop Manual (GTR) section *100-02: Jacking and Lifting* and raise and support the vehicle.
2. Refer to Workshop Manual (GTR) section *204-04: Wheels and Tires* and remove the rear wheels.
 - Remove and retain rear wheel center trim caps.
3. Remove and retain left-hand (LH) and right-hand (RH) halfshaft retaining nuts. (Figure 37 [RH shown, LH similar])
4. Refer to Workshop Manual (GTR) section *206-04: Rear Brake Disc* and remove the RH rear brake disc.
5. Detach the lower arm from the RH wheel knuckle. (Figure 38)
6. Detach the RH outer tie rod. (Figure 39)

Figure 37

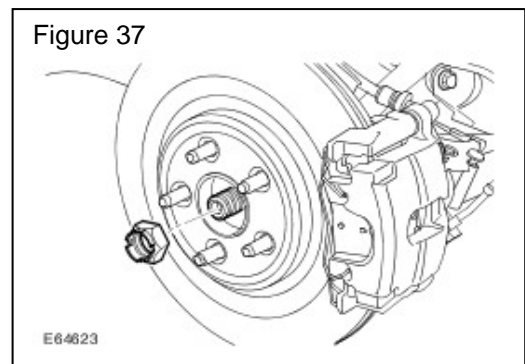


Figure 38

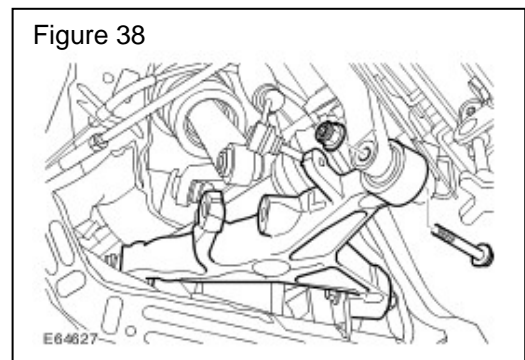
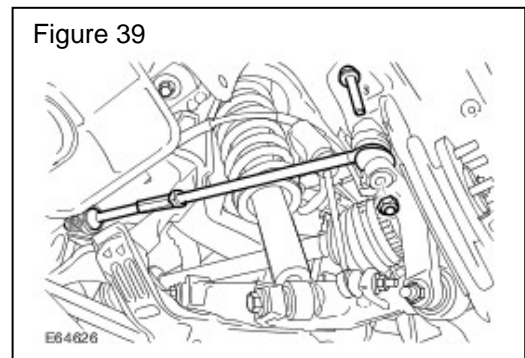


Figure 39



7. Detach the RH halfshaft from the wheel knuckle: (Figure 40)
 - Use special tools 204-269, 205-491, and 205-491/01.

⚠ CAUTION: Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

△ NOTE: The halfshaft is retained in the drive axle assembly by a retaining clip.

8. Remove the RH halfshaft from the differential: (Figure 41)
 - Use special tools 307-442 and 307-443.
9. Remove the RH halfshaft from the vehicle.
10. Refer to Workshop Manual (GTR) section 309-00: *Exhaust System* and remove the exhaust system.

11. With assistance, remove the body K-frame: (Figure 42)
 - Using a jack, support the rear differential.
 - Remove the eight bolts.
 - Remove the four Torx bolts.

12. Install the two subframe mounting bolts. (Figure 43)
13. Remove the jack.

Figure 40

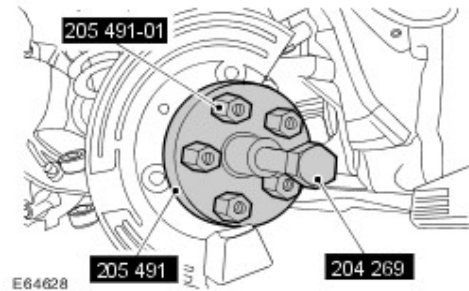


Figure 41

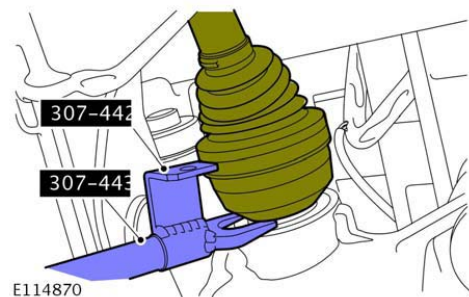


Figure 42

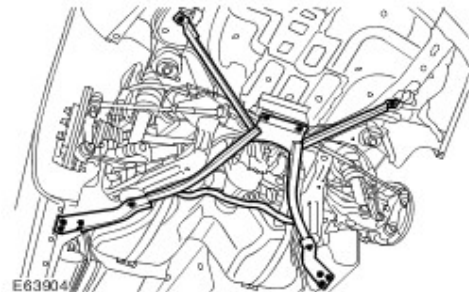
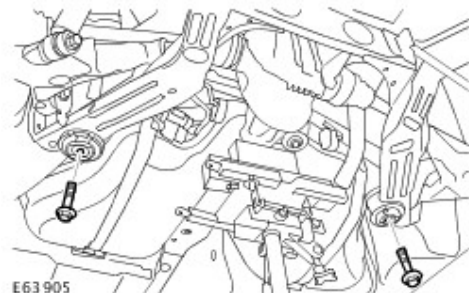


Figure 43



⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

⚠ CAUTION: Ensure the driveshaft is supported with suitable retaining straps.

14. Detach the driveshaft from the differential. (Figure 44)

⚠ CAUTION: Use suitable packing material to prevent damage to the differential.

15. Support the differential assembly:

- Use special tool HTJ1200-2.

16. Remove the front retaining bolt; discard the front spacer. (Figure 45)

△ NOTE: It is not necessary to fully remove the differential assembly rear retaining bolts; loosen each bolt alternately until the differential assembly is released.

17. Loosen the differential assembly rear retaining bolts to release the differential assembly. (Figure 46)

⚠ CAUTION: To avoid damage to halfshaft constant velocity (CV) joints and boots, do not allow the joints to exceed 18° of travel.

△ NOTE: The halfshaft is retained in the drive axle assembly by a retaining clip.

18. Remove the LH halfshaft from the differential: (Figure 47)

- Use special tools 307-442 and 307-443.

19. With assistance, lower and remove the differential assembly.

Figure 44

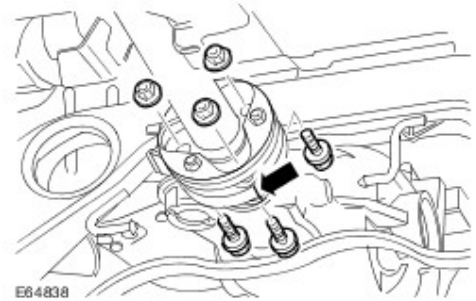


Figure 45

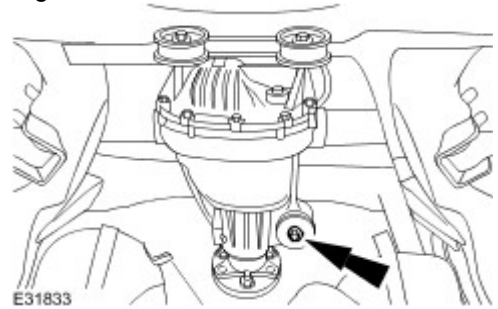


Figure 46

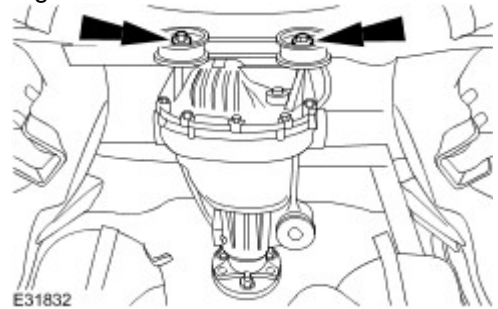
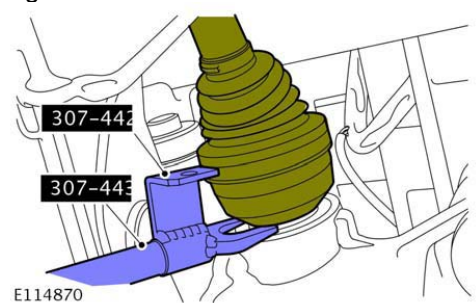


Figure 47



20. Detach the RH halfshaft from the wheel knuckle: (Figure 48 [RH shown, LH similar])

- Use special tools 204-269, 205-491, and 205-491/01.

21. Remove the LH halfshaft from the vehicle.

22. Remove the center heat shield: (Figure 49)

- Remove the four bolts.



CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

23. Release the driveshaft from the transmission flange. (Figure 50)

24. Remove and discard the two driveshaft center bearing mount bolts. (Figure 51)

25. Remove and discard the driveshaft center bearing spacers. (Figure 51)

26. With assistance, remove the driveshaft from the vehicle.



CAUTION: Do not use excessive force on the carbon canister bracket. Failure to follow this instruction may result in vehicle damage.

27. **Push the carbon canister hose bracket 5 - 10mm (0.20 - 0.40in) towards the vehicle underfloor to increase differential clearance.**

INSTALL NEW REAR DIFFERENTIAL

1. With assistance, install the new driveshaft:

- Install two new driveshaft center bearing mount bolts.
- Tighten the bolts to **47 Nm (35 lbf ft)**.

2. Attach the driveshaft to the transmission:

Figure 48

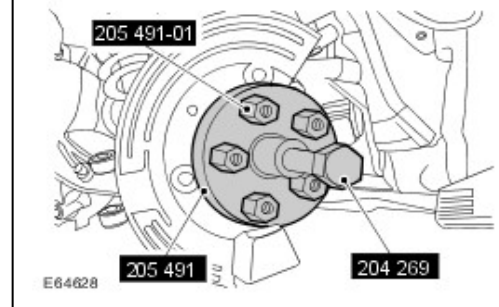


Figure 49

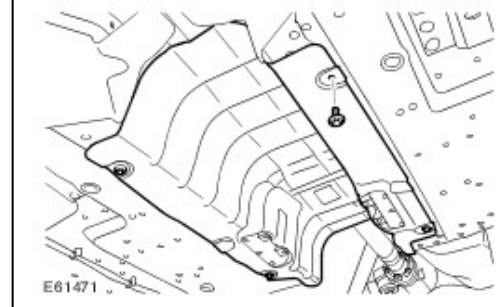


Figure 50

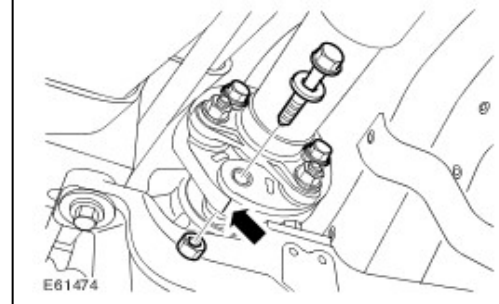
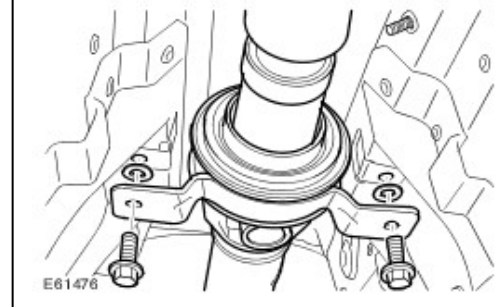


Figure 51



- Tighten the nuts to **110 Nm (81 lbf ft)**.
3. Install the center heat shield:
 - Tighten the bolts to **10 Nm (7 lbf ft)**.
 4. Using the original nut, attach the new LH halfshaft to the wheel knuckle:
 - Lightly tighten the nut.



CAUTION: Use suitable packing material to prevent damage to the differential.

5. Support the differential assembly:
 - Use special tool HTJ1200-2.
6. Lift the new differential assembly into the vehicle.



CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.



NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

7. Using a new retaining clip, install the new LH halfshaft into the differential assembly: (Figure 52)
 - Open the halfshaft oil seal protector;
 - Remove and discard the center disc;
 - Lubricate the seal and bearing running surfaces with clean differential fluid;
 - Install the halfshaft into the differential assembly;
 - Pull the oil seal protector clear of the oil seal;
 - Break the halfshaft oil seal protector into two pieces to remove;
 - Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.
8. Loosely install the two differential assembly rear retaining bolts, new front nut, and new front spacer.(Figure 53)
 - Tighten the two 14mm differential assembly rear retaining bolts to **163 Nm (120 lbf ft)**.
 - Tighten the 12 mm differential assembly front retaining bolt to **90 Nm (66 lbf ft)**.
9. Remove special tool HTJ1200-2.

Figure 52

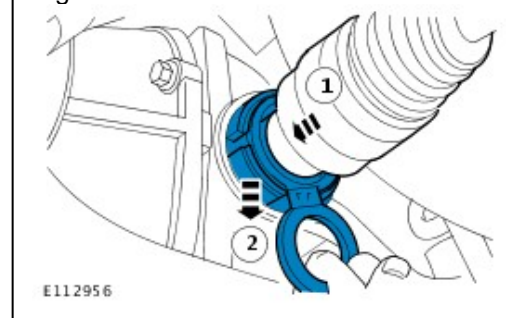
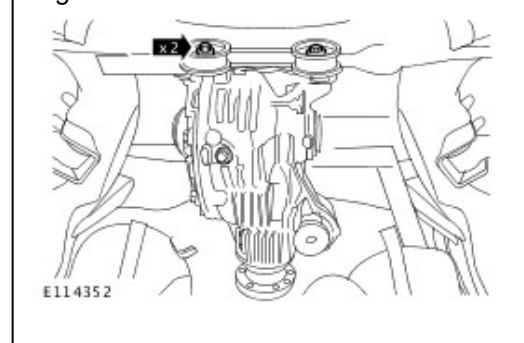


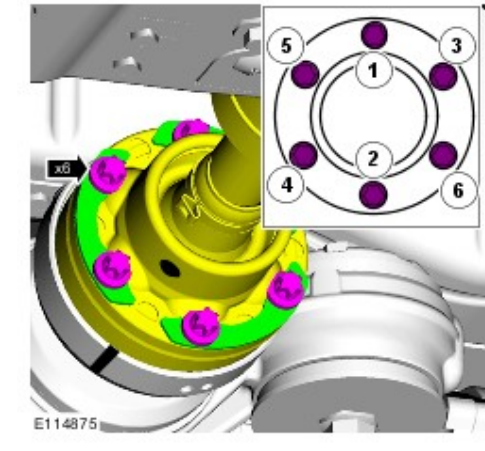
Figure 53



NOTE: Ensure driveshaft-differential bolts are correctly installed.

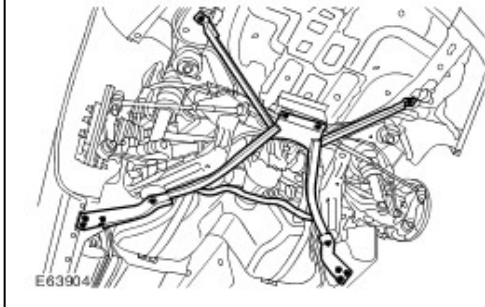
10. Install, but do not fully tighten, new bolts and formed washers. (Figure 54)
 - Following the sequence shown, tighten the bolts to **73 Nm (33 lbf ft)**. (Figure 54)

Figure 54



11. With assistance, remove the body K-frame: (Figure 55)
 - Using a jack, support the rear differential.
 - Remove the two subframe mounting bolts.
 - Tighten the M10 bolts to **40 Nm (30 lbf ft)**.
 - Tighten the M12 bolts to **133 Nm (98 lbf ft)**.
 - Tighten the two subframe bolts to **60 Nm (44 lbf ft)**, then a further 240°.
 - Remove the jack.
12. Refer to Workshop Manual (GTR) section 309-00 and install the exhaust system.

Figure 55



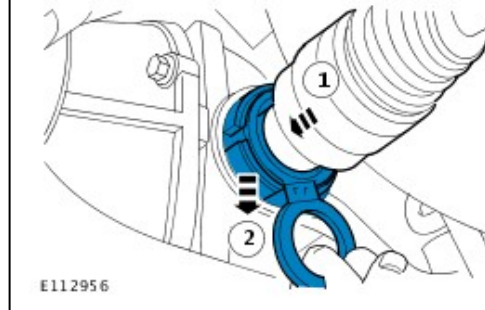
CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

13. Using a new retaining clip, install the new RH halfshaft into the differential assembly: (Figure 56)

- Open the halfshaft oil seal protector;
- Remove and discard the center disc;
- Lubricate the seal and bearing running surfaces with clean differential fluid;
- Install the halfshaft into the differential assembly;
- Pull the oil seal protector clear of the oil seal;
- Break the halfshaft oil seal protector into two pieces to remove;
- Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.

Figure 56



14. Using the original nut, attach the RH halfshaft to the wheel knuckle:
 - Lighten tighten the nut.



CAUTION: Differential oil should flow from the filler plug threaded hole when full; failure to follow this instruction may result in damage to the differential assembly.

15. Fill the differential with new oil:

- Remove and discard the differential oil fill plug;
- Fill with differential oil until fluid flows from the threaded hole;
- Install a new differential oil fill plug;
- Tighten differential oil fill plug to **34 Nm (25 lbf ft)**.

16. Refer to Workshop Manual (GTR) section *206-04: Rear Brake Disc* and install the right-hand (RH) rear brake disc, using two new brake disc retaining clips and brake caliper bolts.

17. Using a new nut, install the LH lower arm to the wheel knuckle.

18. Using a new nut, install the LH outer tie rod retaining nut.

19. Refer to Workshop Manual (GTR) section *204-04: Wheels and Tires* and install the rear wheels.



NOTE: The final tightening of the rear suspension components and halfshaft nuts *must* be carried out with the vehicle on the ground.

20. Remove and discard the old LH and RH halfshaft nut.

21. Install new LH and RH halfshaft hub nuts:

- Tighten LH and RH halfshaft hub nuts to **300 Nm (221 lbf ft)**.

22. Tighten the LH lower arm bolt to **150 Nm (110 lbf ft)**.

23. Tighten the LH outer tie rod to **55 Nm (40.5 lbf ft)**.

24. Install the rear wheel center trim caps.

25. Refer to Workshop Manual (GTR) section *204-00: Suspension System - General Information* check and adjust the rear wheel alignment.

REPAIR PROCEDURE - XJ

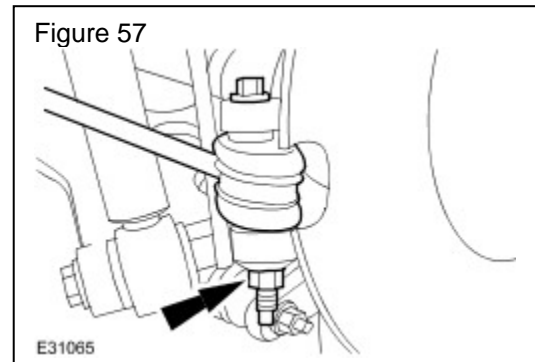
REMOVE REAR DIFFERENTIAL



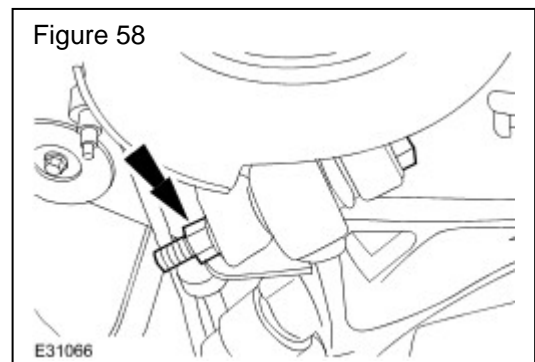
NOTE: Global Technical Reference (GTR) lookup sequence is as follows:

GTR Home > NAS > X350 - XJ > Service Information > Model Year > Workshop Manuals

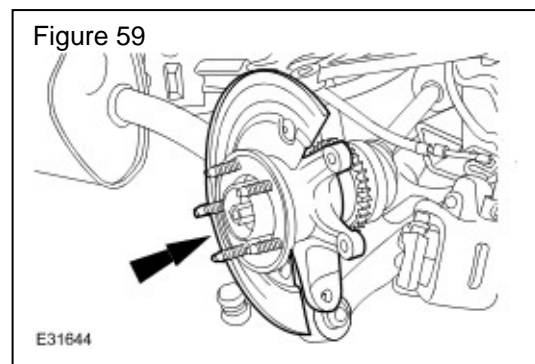
1. Refer to Workshop Manual (GTR) section *100-02: Jacking and Lifting* and raise and support the vehicle.
2. Refer to Workshop Manual (GTR) section *204-04: Wheels and Tires* and remove the rear wheels.
 - Remove and retain the wheel center caps.
3. Refer to Workshop Manual (GTR) section *309-00: Exhaust System* and remove the exhaust system.
4. Refer to Workshop Manual (GTR) section *206-04: Rear Brake Disc* and remove the right-hand (RH) rear brake disc.
5. Detach the RH outer tie rod. (Figure 57)



6. Detach the lower arm from the RH wheel knuckle. (Figure 58)



7. Remove RH halfshaft retaining nut. (Figure 59)



Detach the RH halfshaft from the wheel knuckle: (Figure 60)

- Use special tools 204-269, 205-491, and 205-491-01.

⚠ CAUTION: Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

△ NOTE: The halfshaft is retained in the drive axle assembly by a retaining clip.

8. Remove the RH halfshaft from the differential: (Figure 61)
 - Use special tools 307-442 and 307-443.
9. Remove the halfshaft from the vehicle.

⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

10. Detach the driveshaft from the differential. (Figure 62)

⚠ CAUTION: Use suitable packing material to prevent damage to the differential.

11. Support the differential assembly:
 - Use special tool HTJ1200-2.
12. Remove the front differential assembly retaining bolt: (Figure 63)

Figure 60

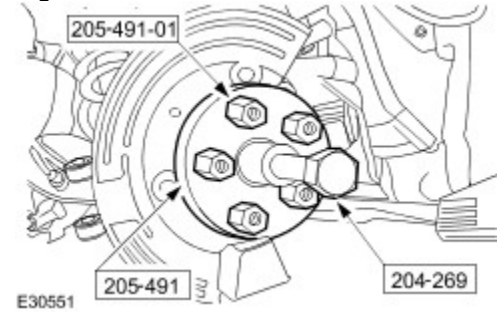


Figure 61

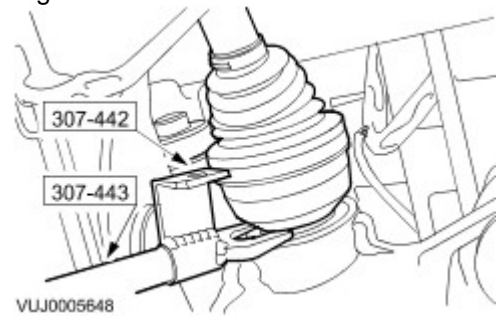


Figure 62

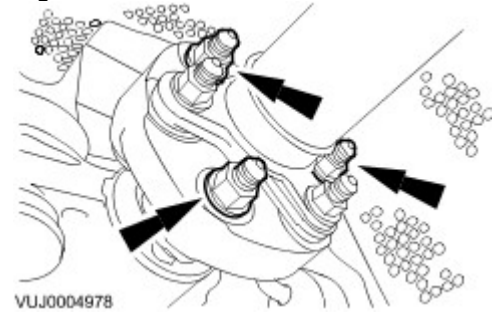
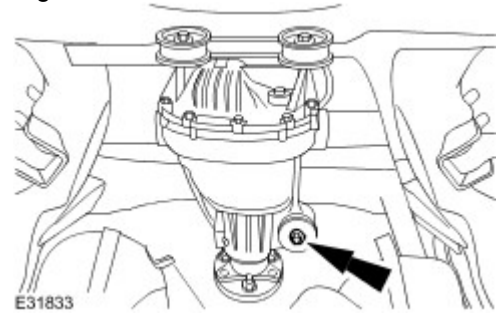
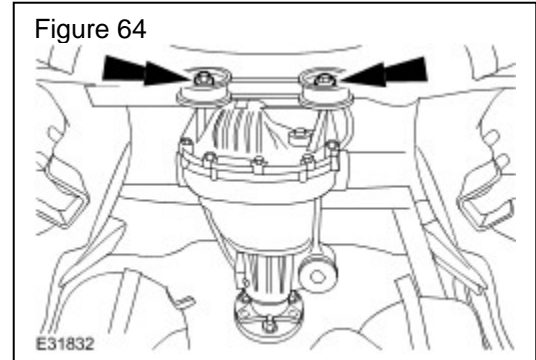


Figure 63



NOTE: It is not necessary to fully remove the differential assembly rear retaining bolts; loosen each bolt alternately until the differential assembly is released.

13. Loosen the differential assembly rear retaining bolts to release the differential assembly. (Figure 64)
14. Remove the LH halfshaft from the differential: (Figure 61 [RH shown; LH similar])
 - Use special tools 307-442 and 307-442.
15. Remove LH halfshaft retaining nut from the wheel knuckle. (Figure 59 [RH shown; LH similar])
16. Detach and remove the LH halfshaft from the wheel knuckle: (Figure 4 [RH shown; LH similar])
 - Use special tools 204-269, 205-491, and 205-491-01.
17. Remove the LH halfshaft from the vehicle.
18. With assistance, lower and remove the differential assembly.



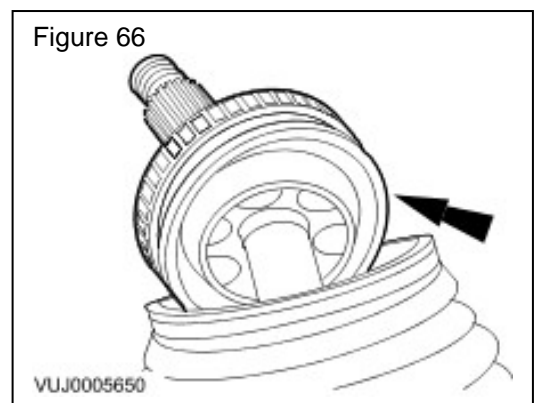
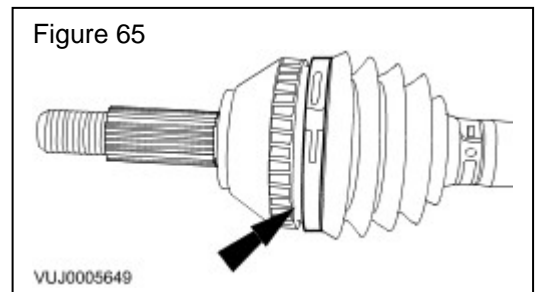
REPLACE HALFSHAFT CONSTANT VELOCITY JOINTS - G00442 - G41511 ONLY

1. Remove the outer constant velocity (CV) joint boot retaining clip from the LH halfshaft. (Figure 65)

CAUTION: Use care to not damage bearing retainer.

NOTE: The outer CV joint is retained to the shaft by a spring clip.

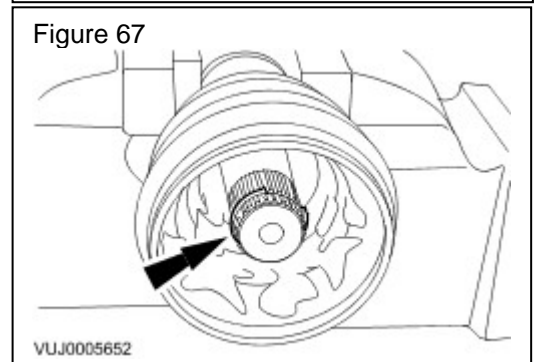
2. Using a suitable brass drift, remove the outer CV joint. (Figure 66)
3. Remove and discard the retaining clip: (Figure 67)



4. Install a new retaining clip. (Figure 67)

CAUTION: Ensure the CV joint ball bearings do not fall out of the joint.

5. Using the supplied CV joint grease, fill the new joint with 50% of the grease and the CV joint boot with 50% of the grease.
6. Install the new CV joint onto the halfshaft.
7. Install a new CV joint boot retaining clip.
8. Perform steps 1-7 on the RH halfshaft.

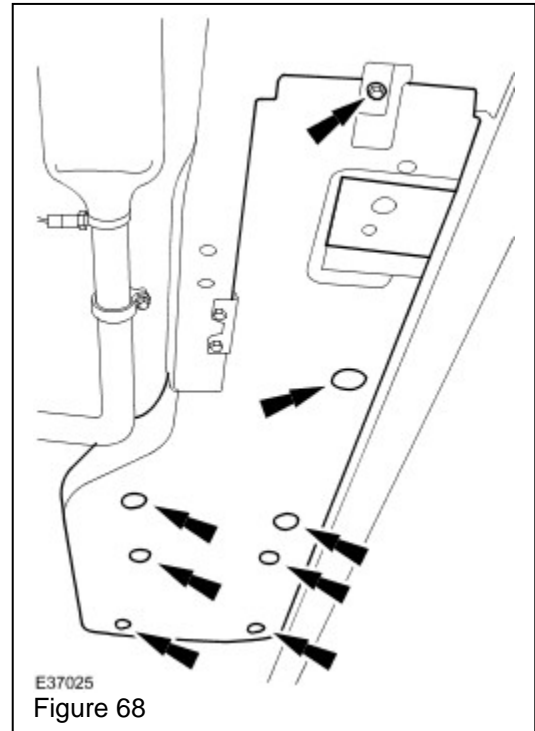


REMOVE DRIVESHAFT

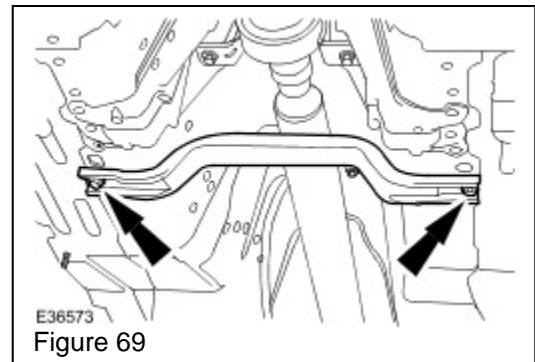


NOTE: LH shown; RH similar.

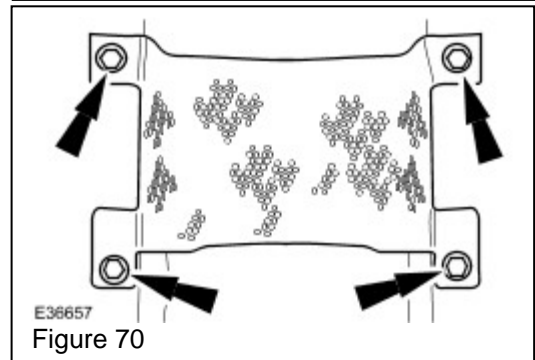
1. Remove LH and RH splash shields. (Figure 68)



2. Remove support bracket. (Figure 69)



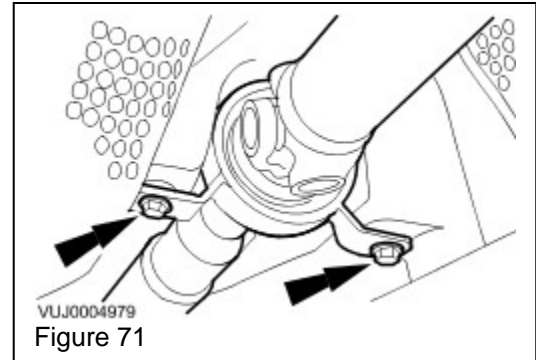
3. Remove the driveshaft heat shield. (Figure 70)



⚠ CAUTION: Support the driveshaft front section.

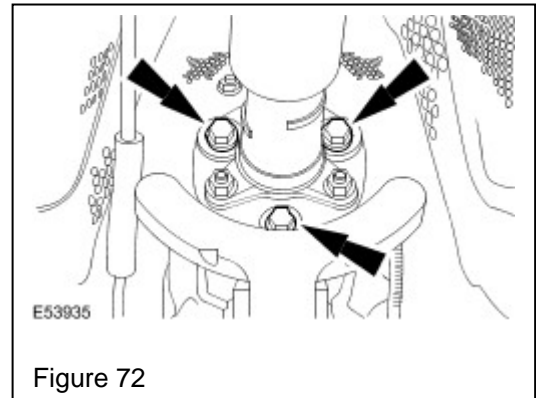
△ NOTE: Note the position of the center bearing spacers.

4. Remove and discard the driveshaft center bearing securing bolts and spacers. (Figure 71)



⚠ CAUTION: Do not loosen or remove the flexible coupling or its bolts from the driveshaft.

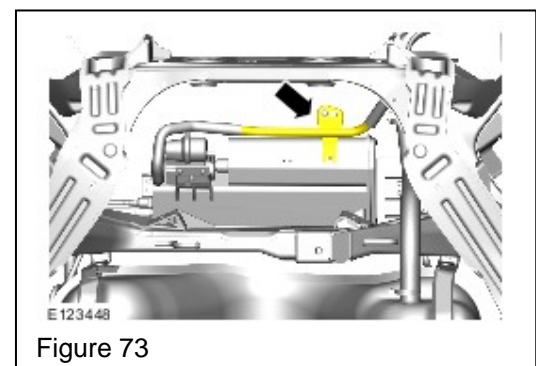
5. Release the driveshaft from the transmission flange. (Figure 72)



REPOSITION CARBON CANISTER HOSE BRACKET

⚠ CAUTION: Do not use excessive force on the carbon canister hose bracket. Failure to follow this instruction may result in damage to the vehicle.

1. Push the carbon canister hose bracket **5 - 10mm (0.20 - 0.40in)** towards the vehicle underfloor to increase differential clearance. (Figure 73)



INSTALL NEW REAR DIFFERENTIAL

1. Using the original hub nut, attach the LH halfshaft to the wheel knuckle:
 - Tighten the nut to **150 Nm (110 lbf ft)**.



CAUTION: Use suitable packing material to prevent damage to the differential.

2. Support the differential assembly:
 - Use special tool HTJ1200-2.
3. Lift the new differential assembly into the vehicle.



CAUTION: Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.



NOTE: Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

4. Install the LH halfshaft into the differential assembly: (Figure 74)
 - Open the halfshaft oil seal protector;
 - Remove and discard the center disc;
 - Lubricate the seal and bearing running surfaces with clean differential fluid;
 - Install the halfshaft into the differential assembly;
 - Pull the oil seal protector clear of the oil seal;
 - Break the halfshaft oil seal protector into two pieces to remove;
 - Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.
5. Loosely install the two differential assembly rear retaining bolts. (Figure 75)

6. Loosely install the differential assembly front retaining bolt and new mounting bush. (Figure 76)

Figure 74

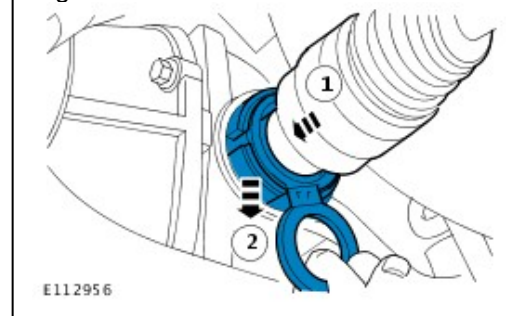


Figure 75

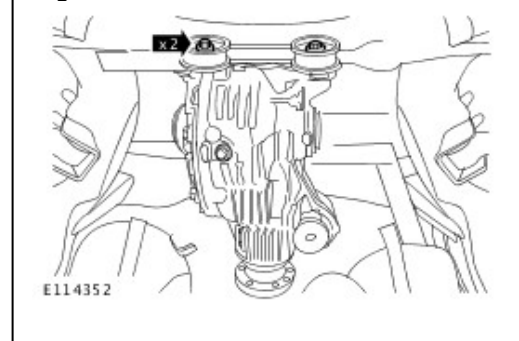
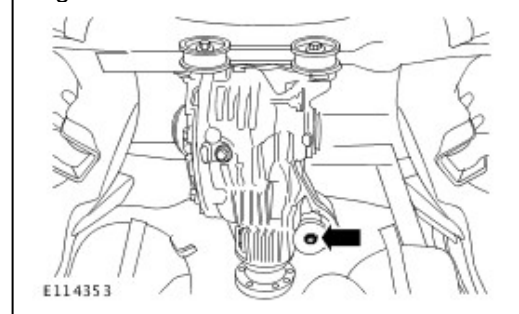


Figure 76



7. Install special tool 204-447 to differential assembly rear retaining bolt. (Figure 77)

⚠ CAUTION: The differential assembly rear retaining bolts must be tightened to the correct torque; failure to follow this instruction may result in damage to the vehicle.

△ NOTE: To ensure the correct torque is achieved, the following calculation must be performed: (Figure 78)

5. Multiply 200 Nm (148 lbf ft) by the effective length (①) of the torque wrench.
 6. Add the effective length (②) of the special tool to the effective length (①) of the torque wrench.
 7. Divide the total of step 1 by the total of step 2.
 8. Set the torque wrench to the figure from step 3.
8. Tighten the differential assembly rear retaining bolts to the figure above.
 9. Tighten the new differential assembly front retaining bolt to **90 Nm (66 lbf ft)**.
 10. With assistance, install new driveshaft:
 - Tighten new driveshaft center bearing bolts to **47 Nm (35 lbf ft)**.
 - Tighten driveshaft-transmission flange bolts to **108 Nm (80 lbf ft)**.

△ NOTE: Ensure driveshaft-differential bolts are correctly installed. (Figure 79)

11. Install, but do not fully tighten, new bolts and formed washers. (Figure 79)

12. Following the sequence shown, tighten the bolts to **73 Nm (33 lbf ft)**. (Figure 80)

13. Install the center heat shield:

- Tighten the bolts to **10 Nm (7 lbf ft)**.

14. Install the support bracket:

- Tighten the bolts to **9 Nm (6 lbf ft)**.

15. Install the splash shields.

Figure 77

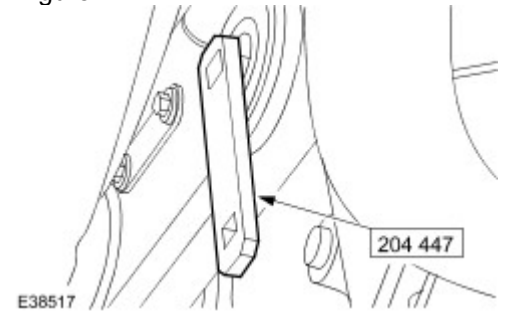


Figure 78

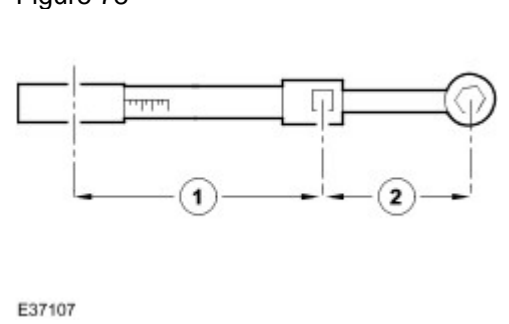


Figure 79

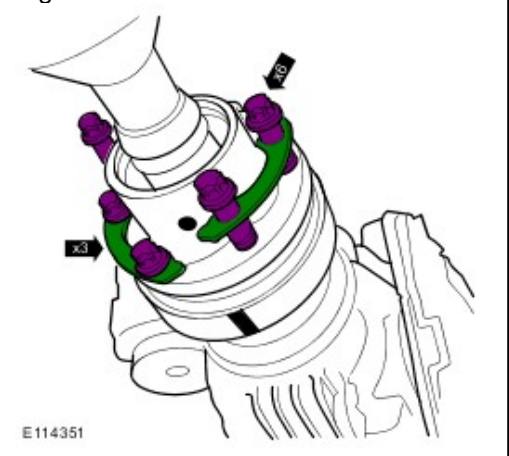
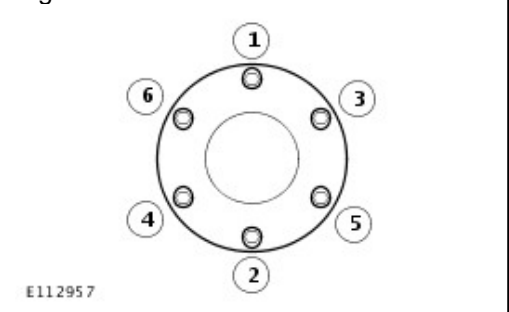



Figure 80



 **CAUTION:** Avoid damage to the halfshaft oil seal. Avoid damage to halfshaft constant velocity (CV) joints and boots; do not allow the joints to exceed 18° of travel.

 **NOTE:** Do not fully engage the halfshaft into the differential assembly until the oil seal protector is removed.

16. Install the RH halfshaft into the differential assembly:
(Figure 74 [LH shown, RH similar])

- Open the halfshaft oil seal protector;
- Remove and discard the center disc;
- Lubricate the seal and bearing running surfaces with clean differential fluid;
- Install the halfshaft into the differential assembly;
- Pull the oil seal protector clear of the oil seal;
- Break the halfshaft oil seal protector into two pieces to remove;
- Ensure halfshaft retaining clip is fully engaged and retains the halfshaft in the differential assembly.

 **CAUTION:** Differential oil should flow from the filler plug threaded hole when full; failure to follow this instruction may result in damage to the differential assembly.

17. Fill the differential with new oil:

- Remove and discard the differential oil fill plug;
- Fill with differential oil until fluid flows from the threaded hole;
- Install a new differential oil fill plug;
- Tighten differential oil fill plug to **34 Nm (25 lbf ft)**.

18. Using the original hub nut, attach the RH halfshaft to the wheel knuckle:

- Tighten the nut to **150 Nm (110 lbf ft)**.

19. Attach the RH halfshaft to the wheel knuckle.

20. Using a new nut, install the RH lower arm to the wheel knuckle.

21. Using a new nut, install the RH outer tie rod retaining nut.

22. Refer to Workshop Manual (GTR) section *206-04: Rear Brake Disc* and install the right-hand (RH) rear brake disc using two new brake disc retaining clips and brake caliper bolts.

23. Refer to Workshop Manual (GTR) section *309-00: Exhaust System* and install the exhaust system.

24. Refer to Workshop Manual (GTR) section *204-04: Wheels and Tires* and install the rear wheels.

 **NOTE:** Final tightening of the rear suspension components and halfshaft nuts *must* be carried out with the vehicle on its wheels.

25. Remove and discard the old LH and RH halfshaft nuts.

26. Install new LH and RH halfshaft hub nuts:

- Tighten LH and RH halfshaft hub nuts to **300 Nm (221 lbf ft)**.

27. Install the wheel center caps.

28. Tighten the RH lower arm / wheel knuckle bolt to **150 Nm (110 lbf ft)**.

29. Tighten the RH outer tie rod to **55 Nm (40.5 lbf ft)**.

30. Refer to Workshop Manual (GTR) section *204-00: Suspension System - General Information* to check and adjust the rear wheel alignment.