

IMPORTANT UPDATE

TECHNICAL INSTRUCTIONS

FOR

SAFETY RECALL H0G

REAR DIFFERENTIAL CARRIER GASKET

CERTAIN 2016-2017 TACOMA

UPDATED JUNE 15, 2017

Updated June 15, 2017

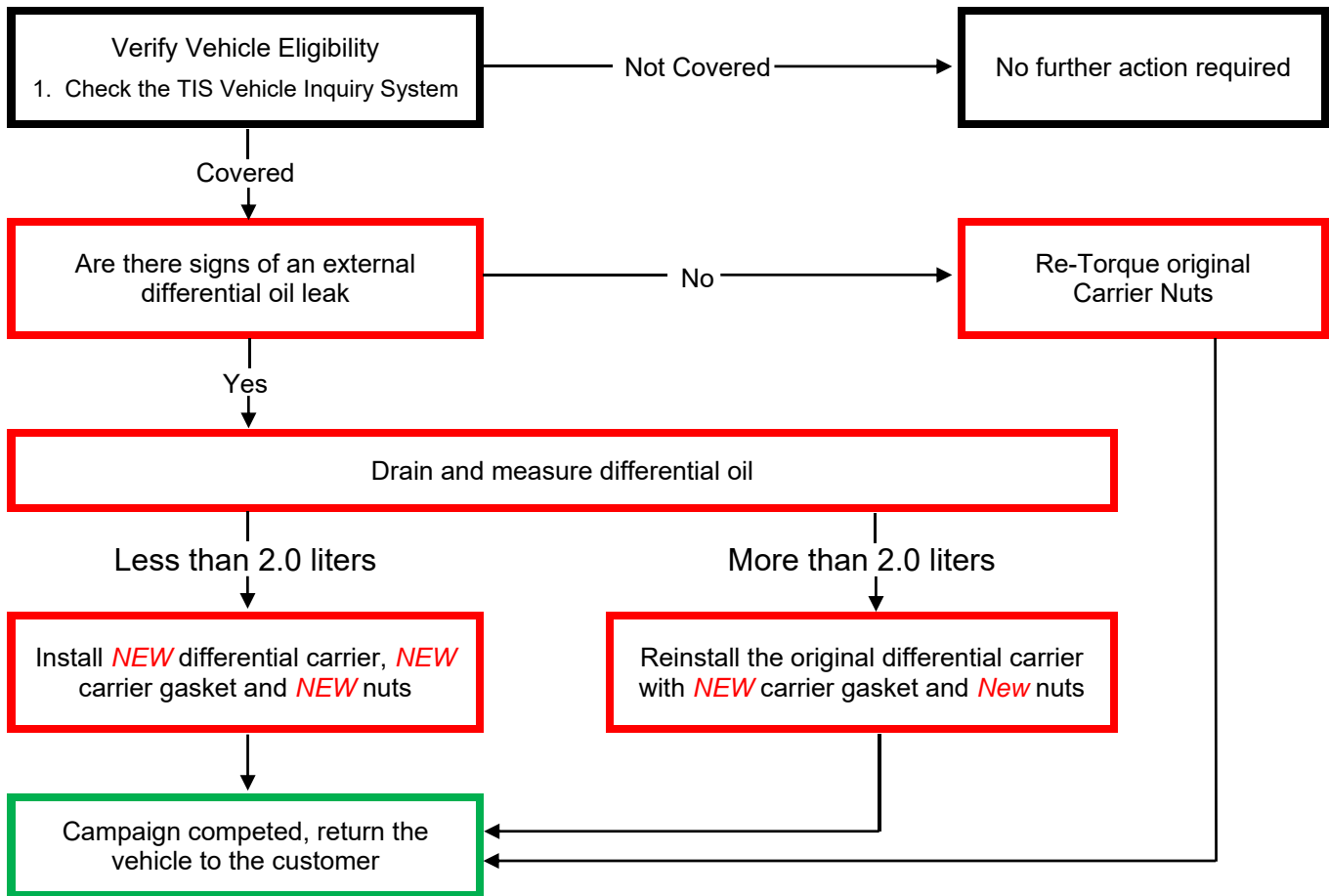
- This TI is updated to include the repair procedure for leaking differentials.

The repair quality of covered vehicles is extremely important to Toyota. All dealership technicians performing this recall are required to successfully complete the most current version of the E-Learning course "Safety Recall and Service Campaign Essentials". To ensure that all vehicles have the repair performed correctly; technicians performing this recall repair are required to currently hold at least one of the following certification levels:

- Certified Technician (Chassis)
- Expert Technician (Chassis)
- Master Technician
- Master Diagnostic Technician

It is the dealership's responsibility to select technicians with the above certification level or greater to perform this recall repair. Carefully review your resources, the technician skill level, and ability before assigning technicians to this repair. It is important to consider technician days off and vacation schedules to ensure there are properly trained technicians available to perform this repair at all times.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF AFFECTED VEHICLES

- Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Safety Recall, and that the Campaign has not already been completed prior to dealer shipment or by another dealer.
- TMS warranty will not reimburse dealers for repairs completed on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

A. PARTS

Part Number	Part Description	Quantity	Condition
90170-08036	Nut	10	Parts needed for all leaking differentials
42181-0K030	Diff carrier gasket	1	
12157-10010	Drain & Filler plug gasket	2	
42444-35050	Brake drum gasket	2	
90301-83002	O-ring (axle bearing case)	2	
90310-58003	Oil seal (axle shaft)	2	
41110-04130 (3.90 ratio)	Differential carrier assy.	1	Only needed if drained oil volume is less than 2.0 liters
41110-04140 (4.30 ratio)			

Note: There are no parts required if the rear differential is NOT leaking.

B. TOOLS & EQUIPMENT

- Techstream
- Standard Hand Tools
- 3/8 "Torque Wrench
- 12mm deep well socket

SST – Special Service Tools required for this repair:

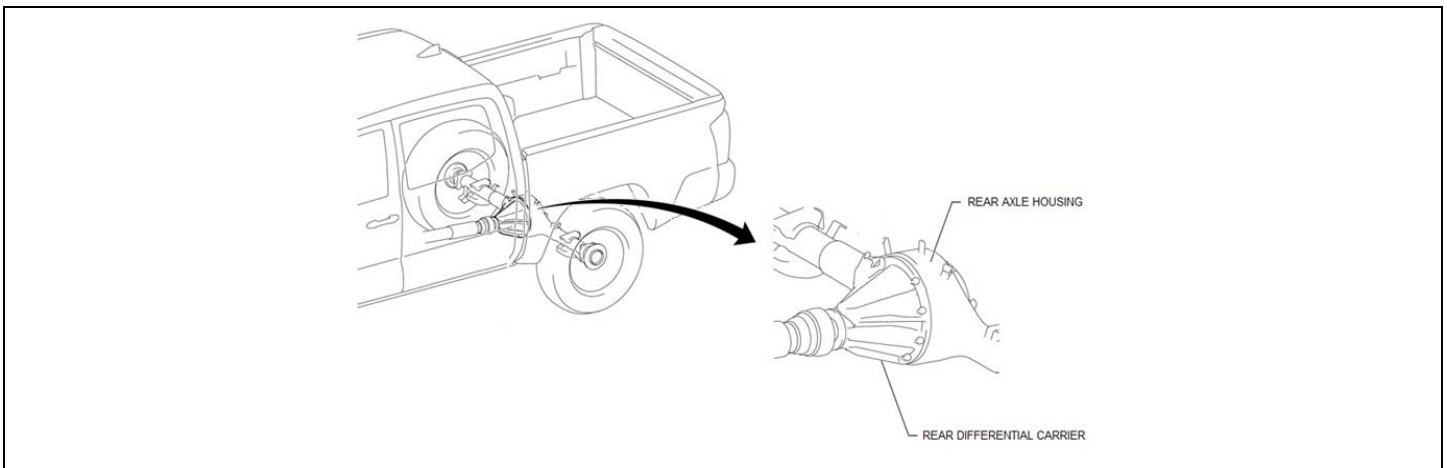
Part Number	Tool Name	Quantity
09951-00730-01	73mm Replacer from Set #2	1
09951-07100-01	Short Handle from Handle Set	1
09308-00010	Oil Seal Puller	1
09325-40010	Transmission Oil Plug	1
09921-00010	Spring Tension Tool	1
09718-00010	Shoe Hold Down Spring Driver	1

C. MATERIALS

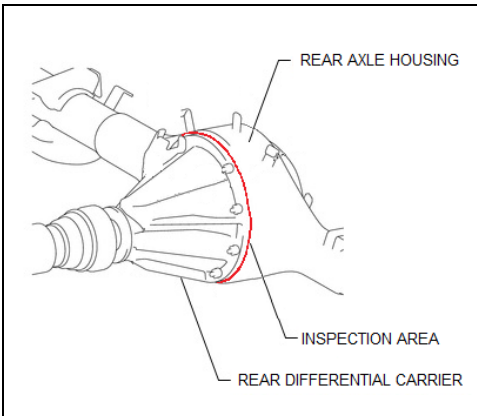
- Toyota Genuine Differential Gear Oil LT SAE 75W-85 GL-5 or equivalent
- Brake Fluid FMVSS No. 116 Dot 3 or SAE J1703

IV. BACKGROUND

The involved vehicles have rear differentials that may leak oil. If the vehicle is continuously operated in this condition, the rear differential could become damaged, which can result in noise and reduced propulsion. In some cases the rear differential could seize, resulting in a loss of control of the vehicle and increasing the risk of a crash.



V. INSPECT FOR DIFFERENTIAL LEAK

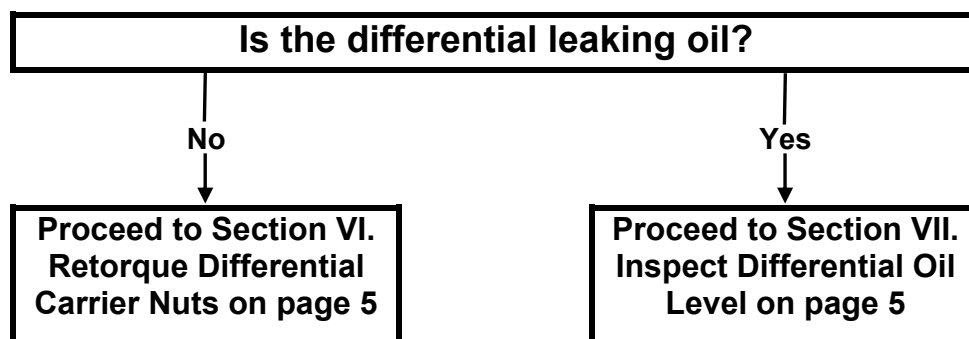


1. INSPECT REAR DIFFERENTIAL FOR OIL LEAK

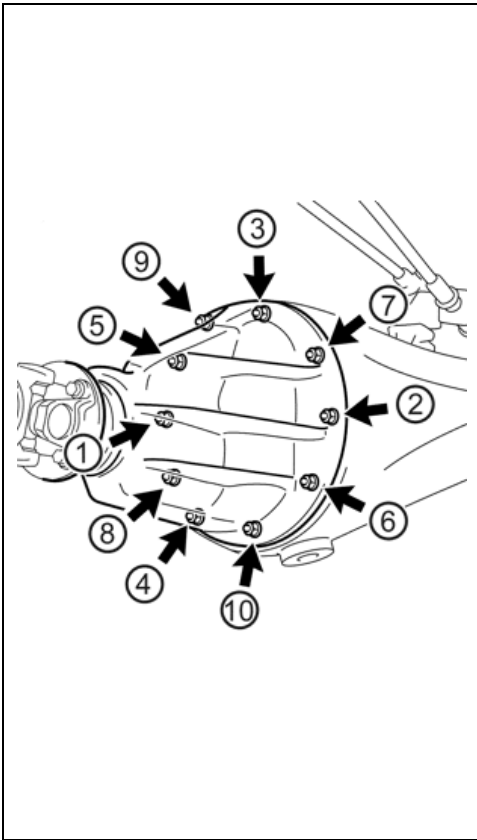
- Inspect the area where the Differential Carrier bolts to the Axle Housing for signs of an oil leak. Check around the entire circumference of the Carrier assembly.

Note: Any sign of leakage, even very minor, is still leakage. Minor seepage is still considered a leak.

Examples of oil leaks



VI. RETORQUE DIFFERENTIAL CARRIER NUTS (w/o OIL LEAK)



1. RETORQUE DIFFERENTIAL CARRIER NUTS

- Retorque the differential carrier nuts using a 12mm deep well socket in the sequence shown.

Torque 18 ft.lbs {25 N·m, 255 kgf·cm}

Note:

- DO NOT remove or loosen the original nuts.
- When retorquing the differential carrier nuts because there is no oil leak present, the original nuts are reused.
- Do not replace the nuts, or any other parts, when there is no oil leak present.
- The correct torque value for the original nuts (18 ft.lbs) is different than the **NEW** nuts (28 ft.lbs) used when an oil leak is present.



It is critical that the Differential Carrier nuts are torqued to exact value specified. DO NOT use any other tool than a properly calibrated torque wrench set to the specified value. Failure to follow this procedure can result in creating a leak or damage to the studs installed in the Rear Axle Housing.

CAMPAIGN COMPLETED

2. CAMPAIGN COMPLETE

- With no oil leak found and the original Differential Carrier nuts retorqued properly, the **campaign is complete and can now be closed.**

VII. INSPECT DIFFERENTIAL OIL LEVEL (with oil leak)



1. OBTAIN OIL DRAIN BUCKET

- The amount of oil in the differential will need to be measured during the draining process. Therefore, you will need to obtain a bucket that has graduations on it to indicate exactly the amount of oil drained from the differential. Home Depot & Lowes sell an appropriate bucket in the Paint section, but other buckets could work if it can **accurately** measure the volume of fluid.

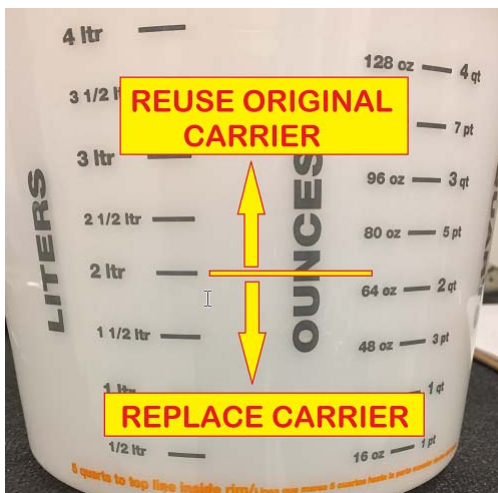
Home Depot: SKU #1002098177

Lowes: Item #206701



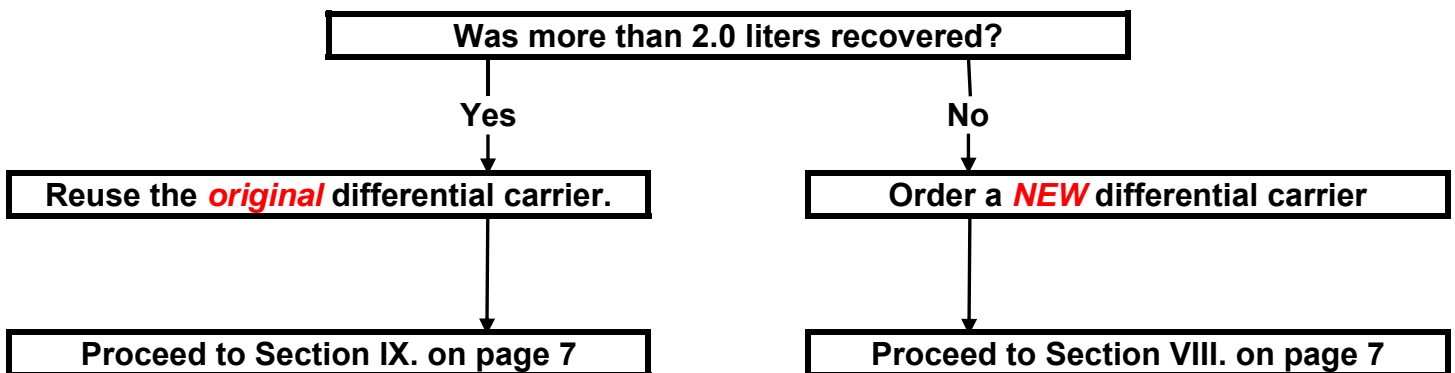
2. DRAIN DIFFERENTIAL OIL (with oil leak)

- Prepare the drain bucket to capture the differential oil. Ensure that all fluid inside the differential will be captured in the bucket so that an accurate oil quantity can be obtained.
- Remove the drain plug and gasket.
- Drain the differential oil into the approved bucket.
- Continue to let the fluid drain until it starts to drip.
- Install a **NEW** gasket onto the drain plug.
- Reinstall the drain plug
Torque 36 ft.lbs {49 N·m, 500 kgf·cm}



3. ANALYZE RESULTS

- Determine the amount of oil drained from the differential by reading the scaling on the bucket.
- Record the amount of fluid drained from the differential on the Repair Order.
- The amount of fluid in the bucket will determine if the original carrier will be reinstalled into the vehicle, or if a **NEW** carrier will be installed. Reference the following flowchart to determine if a **NEW** carrier is required.



VIII. ORDER **NEW** DIFFERENTIAL CARRIER (if less than 2.0L of oil was recovered)



If less than 2.0 liters of oil was removed from the differential, a new differential carrier is required. There are two different carriers available, depending on the axle ratio. To order the correct differential carrier, you first must identify the axle ratio.

1. DETERMINE AXLE RATIO

- There will be a label on the side of the differential carrier that contains the needed information to determine the axle ratio. Do not confuse the label on the rear of the axle housing with the carrier label.

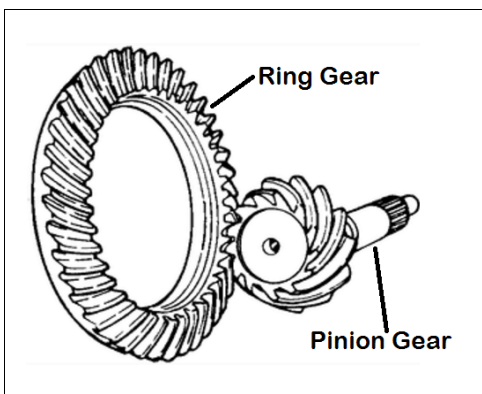
Note: If more than 2.0 liters of oil was removed from the differential, it will not be necessary to replace the carrier. Reuse the original carrier.



- The numbers in the upper left hand corner of the label will identify the axle ratio.

021 = 3.90 ratio: Part # 41110-04130

023 = 4.30 ratio: Part # 41110-04140



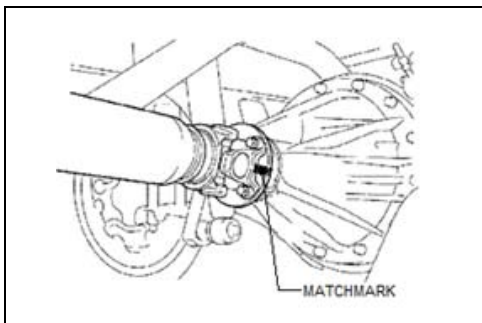
- If the carrier label is unreadable or missing, you will need to calculate the ratio. After removing the differential carrier (Section IX.), count the number of teeth on the ring gear and the number of teeth on the pinion gear.

$$\text{Axle ratio} = \frac{\# \text{ of teeth on ring gear}}{\# \text{ of teeth on pinion gear}}$$

3.90 ratio: Part # 41110-04130

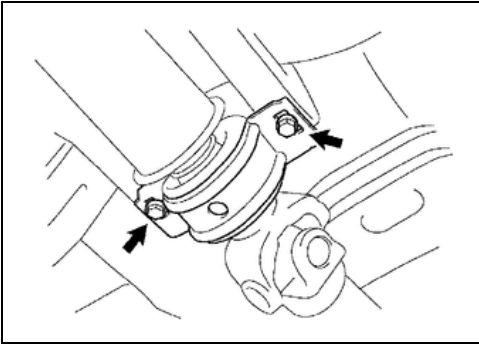
4.30 ratio: Part # 41110-04140

IX. REMOVE REAR DIFFERENTIAL CARRIER (with oil leak)

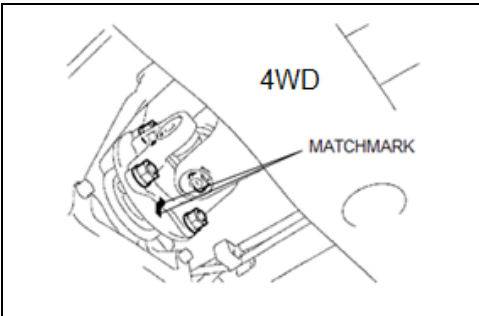


1. REMOVE PROPELLER SHAFT

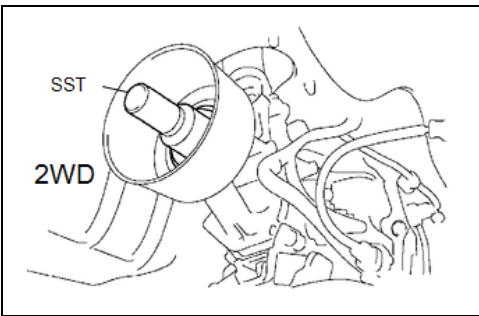
- Place a matchmark on the propeller shaft yolk and differential flange.
- Remove the 4 nuts, bolts and washers to disconnect the propeller shaft from the differential.



- c. Remove the two bolts to separate the center support bearing from the frame crossmember.



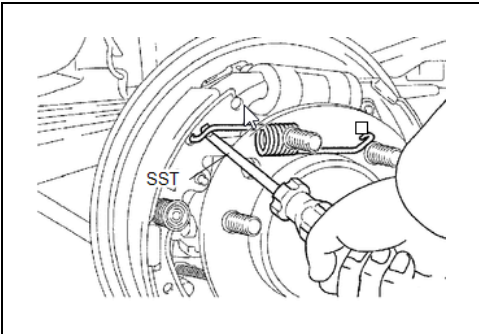
- d. 4WD: Place a matchmark on the propeller shaft flange yolk and transfer case flange.
- e. 4WD: Remove the 4 nuts and washers.
- f. 4WD: Remove propeller shaft



- g. 2WD: Slide the propeller shaft from the rear of the transmission.
- h. 2WD: Insert SST into the transmission extension housing to prevent fluid loss.

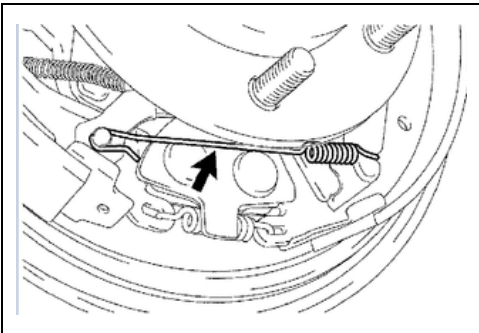
SST: 09325-40010 Transmission Oil Plug

2. REMOVE PARKING BRAKE CABLE

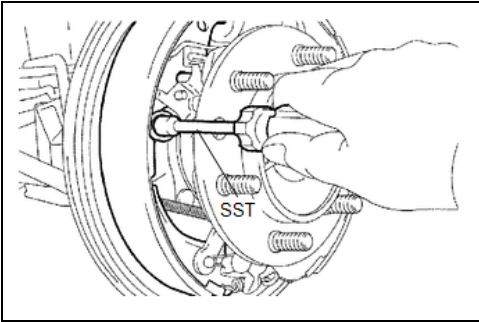


- a. Remove rear wheels
- b. Remove brake drum
- c. Using SST, remove the front shoe return spring from the brake shoe.

SST: 09921-00010 Spring Tension Tool



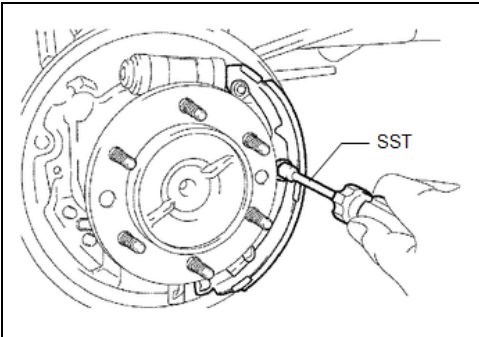
- d. Using needle-nose pliers, remove the return spring.



- e. Using SST, remove the shoe hold down spring cup, spring and pin.

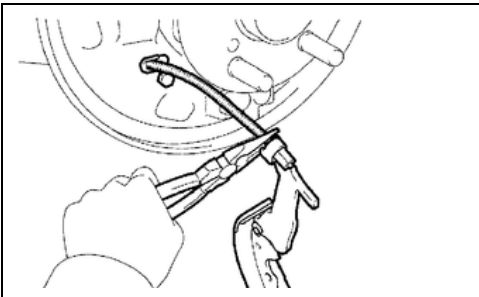
SST: 09718-00010 Shoe Hold Down Spring Driver

- f. Remove the parking brake shoe strut lower.
- g. Remove the tension spring and front brake shoe.
- h. Remove the automatic adjust lever spring and automatic adjust lever from the front brake shoe.

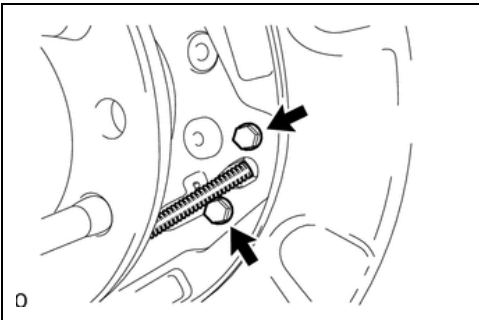


- i. Using SST, remove the rear shoe hold down spring cup, spring and pin.

SST: 09718-00010 Shoe Hold Down Spring Driver

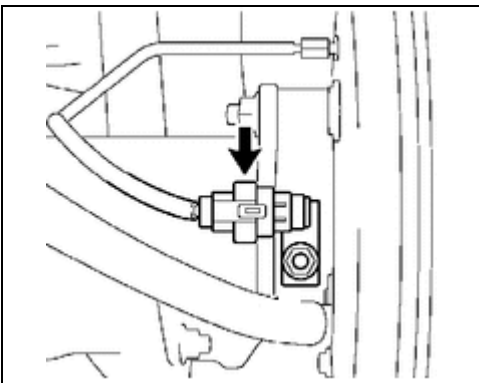


- j. Using needle-nose pliers, disconnect the parking brake cable and remove it from the rear brake shoe.



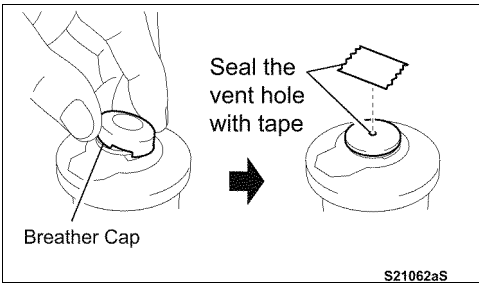
- k. Remove the 2 bolts from the parking cable bracket on the rear of the backing plate.

- l. Pull the parking brake from the backing plate.

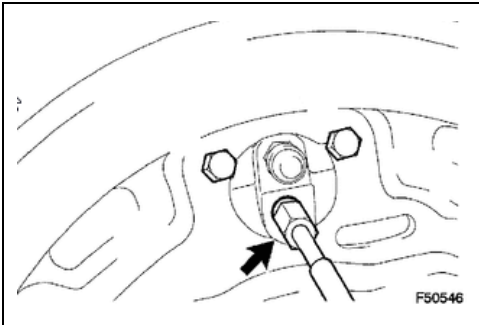


3. REMOVE AXLE LH & RH

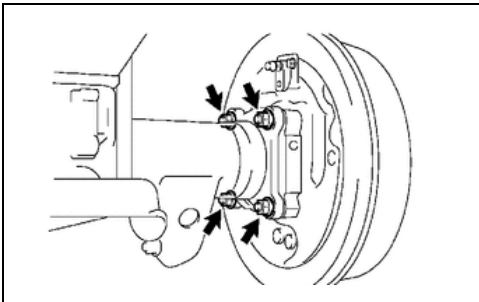
- a. Unplug connector from speed sensor.



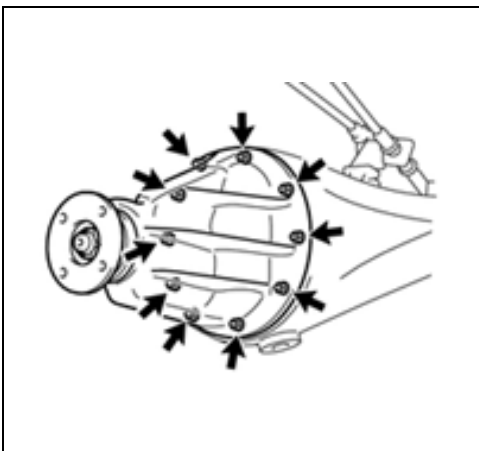
- b. Remove the breather cap from the reservoir tank cap.
- c. Apply a piece of tape to cover the vent hole in the reservoir tank cap so as to prevent the brake fluid from leaking out. (Sealing the hole develops a vacuum, allowing the brake fluid to stay inside)



- d. Remove brake line from wheel cylinder using the correct union nut wrench.



- e. Remove the 4 nuts from the bearing retainer.
- f. Pull the axle shaft & backing plate from the differential housing.

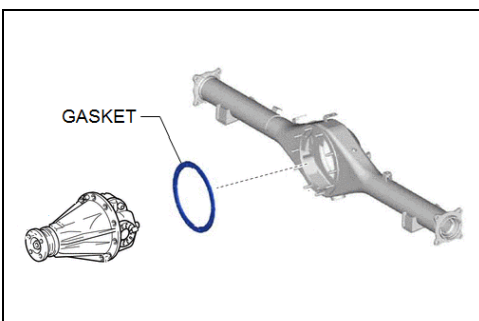


4. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

- a. Remove the 10 nuts and washers.
- b. Separate the differential carrier from the rear axle housing.
- c. Remove the differential carrier gasket.

STOP The rear differential carrier is heavy. Use lifting equipment or multiple people when moving the carrier assembly.

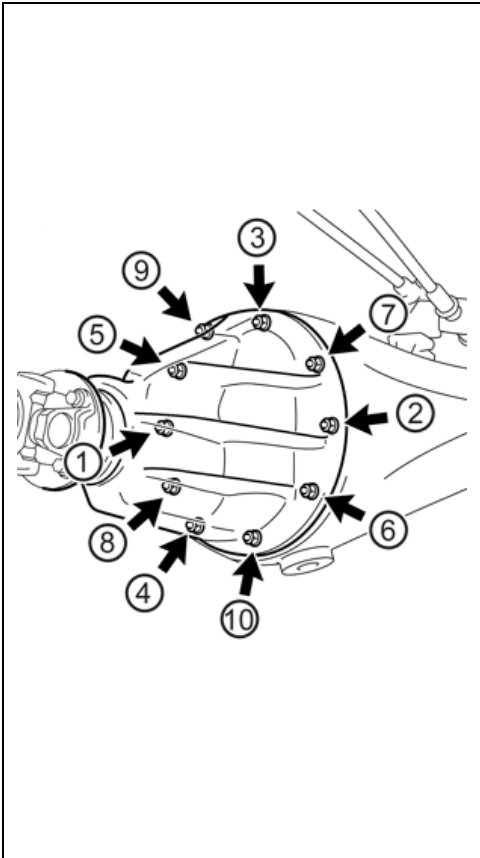
X. ASSEMBLE REAR DIFFERENTIAL (with oil leak)



1. CLEAN CONTACT SURFACES

- a. Clean the gasket contact surfaces of the axle housing.
- b. Clean the gasket contact surfaces of the differential carrier.


Note: Make sure that all traces of the original gasket are removed, and the surfaces are clean and free of oil.



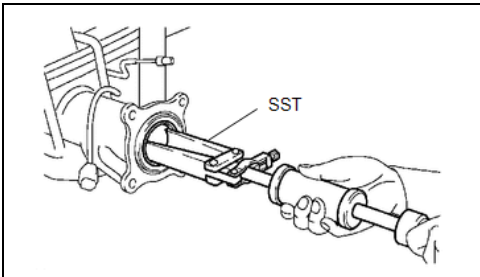
2. INSTALL REAR DIFFERENTIAL CARRIER

- a. Install **NEW** differential carrier gasket.
- b. Install the differential carrier assembly. Use of the original carrier or a **NEW** carrier was determined in Section VII. Step 3 on page 6.
- c. Install the 10 original washers with 10 **NEW** nuts. Torque using a 12mm deepwell socket in the sequence shown.
Torque 28 ft.lbs {37 N·m, 378 kgf·cm}

WARNING: The **NEW** nuts specified in this Recall are different than the original nut's being removed. **DO NOT** reuse the original nuts! The **NEW** nuts have a different torque spec (28 ft.lbs vs. 18 ft.lbs). For assistance in identifying the old vs. new nuts, refer to Section XII. on page 15.

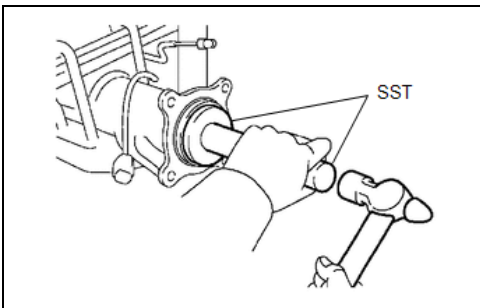


It is critical that the Differential Carrier nuts are torqued to exact value specified. **DO NOT** use any other tool than a properly calibrated torque wrench set to the specified value. Failure to follow this procedure can result in creating a leak or damage to the studs installed in the Rear Axle Housing.

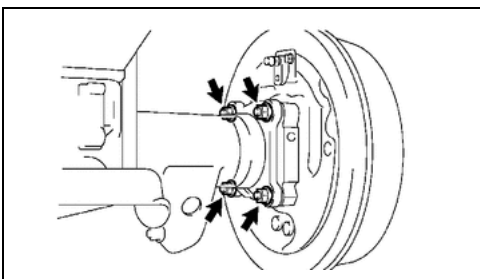


3. REPLACE REAR AXLE SHAFT OIL SEAL LH & RH

- a. Using SST, remove the axle shaft oil seal
SST: 09308-00010 Oil Seal Puller
- b. Remove the O-Ring on the outside of the axle housing flange.

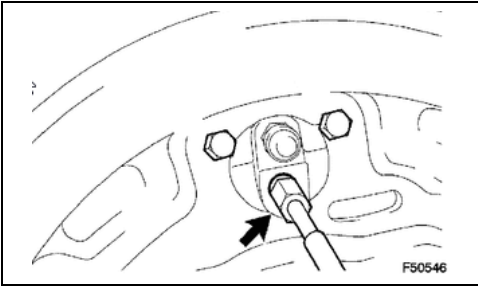


- c. Using SST's, install **NEW** oil seal.
SST: 09951-00730-01 73mm Replacer from Set #2
SST: 09951-07100-01 Handle from Handle Set
- d. Install new O-Ring on the outside of the flange



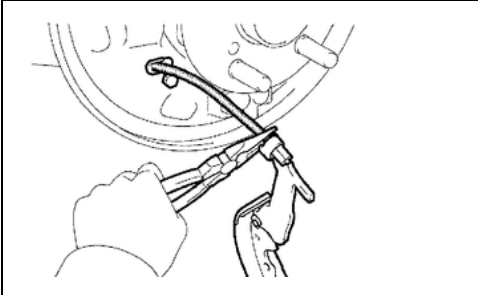
4. INSTALL AXLE SHAFT WITH BACKING PLATE LH & RH

- a. Carefully slide the axle into the differential housing and engage the axle splines into the differential.
- b. Install the 4 nuts onto the bearing retainer.
Torque: 33 ft.lbs {45 N·m, 459 kgf·cm}



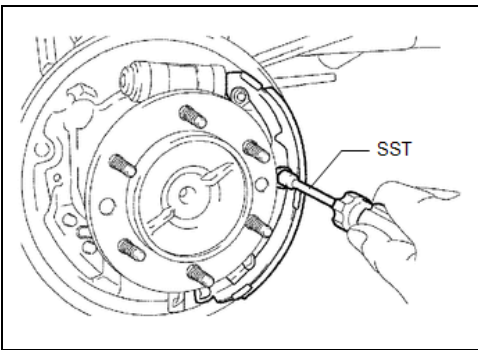
5. CONNECT BRAKE LINE LH & RH

- a. Tighten using the correct union nut wrench
Torque 11 ft.lbs {15 N·m, 155 kgf·cm}



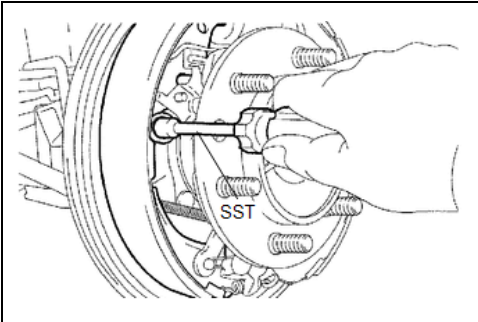
6. INSTALL PARKING BRAKE CABLE LH & RH

- a. Push the parking brake cable through the backing plate.
 b. Install the 2 bolts on the cable bracket.
Torque 71 in.lbs {8.0 N·m, 82 kgf·cm}
 c. Using needle nose pliers, attach the parking brake cable to the rear brake shoe pull rod.

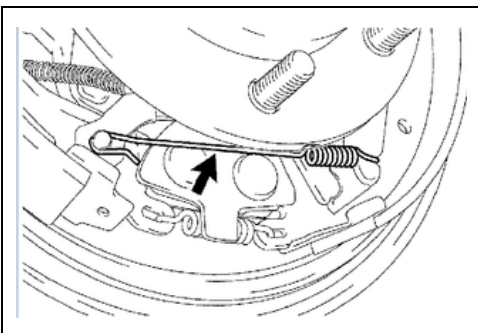


7. INSTALL BRAKE SHOES LH & RH

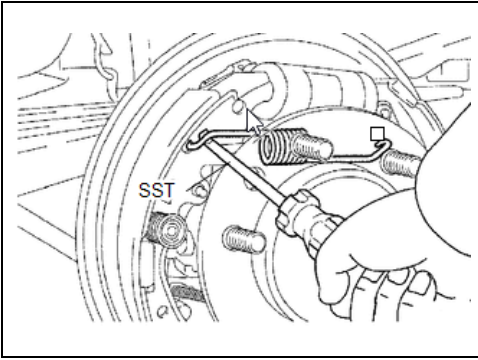
- a. Using SST, install the rear brake shoe, pin, spring and cup.
SST: 09718-00010 Shoe Hold Down Spring Driver



- b. Install the automatic adjuster lever, spring and parking brake shoe strut lower onto the front brake shoe.
 c. Using SST, install the front brake shoe, pin, spring and cup.
SST: 09718-00010 Shoe Hold Down Spring Driver



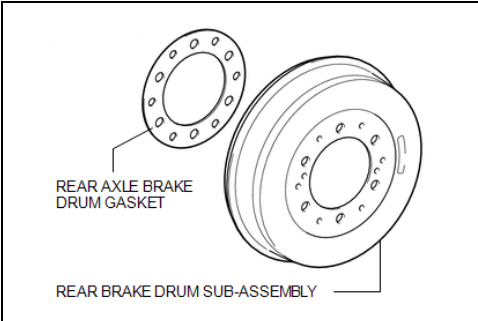
- d. Using needle-nose pliers, install the return spring.



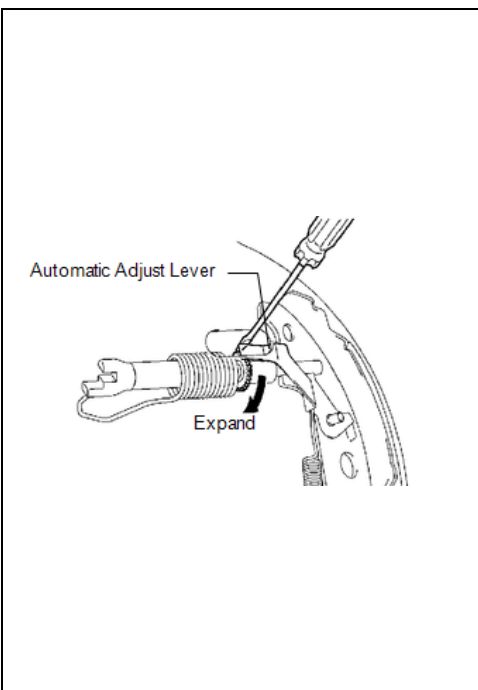
- e. Using SST, install the shoe return spring onto the front brake shoe.

SST: 09921-00010 Spring Tension Tool

- f. Inspect brake shoe installation. If you have concerns about proper brake shoe installation, refer to the Repair Manual.



- g. Clean the original brake drum gasket material from the axle flange and the brake drum.
- h. Install **NEW** brake drum gasket.
- i. Install brake drum.



8. BRAKE SHOE ADJUSTMENT LH & RH

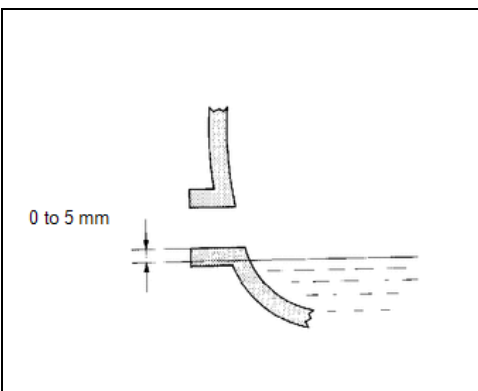
- a. Install the wheel lug nuts to hold the drum in place.
- b. Remove the rubber access plug from the rear of the backing plate.
- c. Turn the adjuster to expand the shoe until the drum locks.
- d. Using a screwdriver, release the adjuster 15 notches.
- e. Reinstall the rubber access plug.
- f. Remove the wheel lug nuts

9. INSPECT PARKING BRAKE OPERATION

- a. Pull the parking brake lever and count the number of clicks.

Standard: When pulled with a force of 45 lbs {200 N, 20 kgf}, there should be 5 to 7 clicks. If the parking brake is out of adjustment, refer to the Repair Manual for the adjustment procedure:

[Parking Brake Adjustment Procedure](#)



10. FILL DIFFERENTIAL OIL

- a. Remove the differential filler plug and gasket
- b. Fill differential with oil

Standard: 0-5mm from bottom of fill plug opening

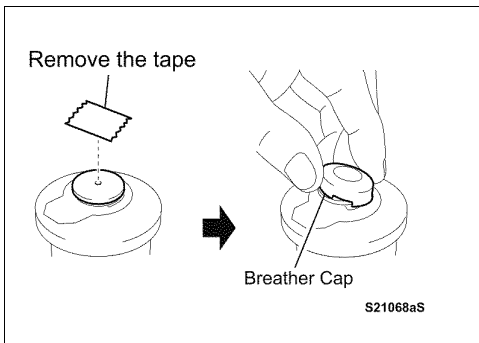
Fluid Type: Toyota Genuine Differential gear oil

LT SAE 75W-85 APL GL-5 or equivalent

- c. Install **NEW** gasket on oil fill plug.
- d. Install oil fill plug.

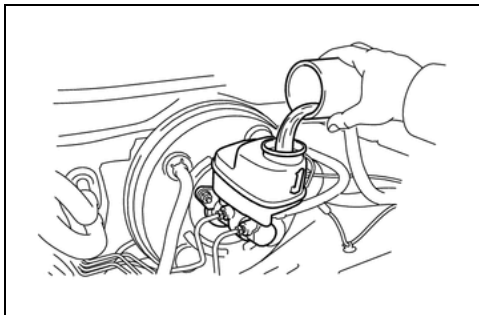
Torque 36 ft.lbs {49 N·m, 500 kgf·cm}

XI. COMPLETE INSTALLATION



1. BRAKE SYSTEM

- a. Remove the tape from the reservoir tank cap, and reinstall the breather cap.

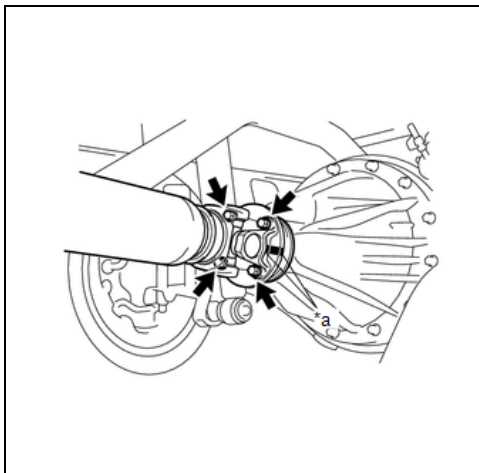


- b. Bleed the hydraulic brake system. Refer to the Repair Manual for instructions:

[Hydraulic Booster bleeding procedure](#)

or

[Vacuum Booster bleeding procedure](#)



2. INSTALL PROPELLER SHAFT

- a. 2WD: Remove the SST from the transmission extension housing and slide the propeller shaft into the extension housing.
- b. 4WD: Align the matchmarks on the propeller shaft flange with the transfer case flange. Install the 4 bolts, nuts and washers.

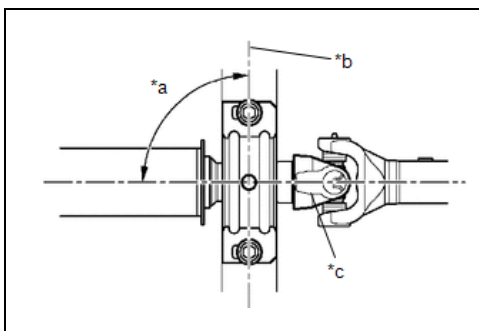
Torque: 65 ft.lbs {88 N·m, 899 kgf·cm}

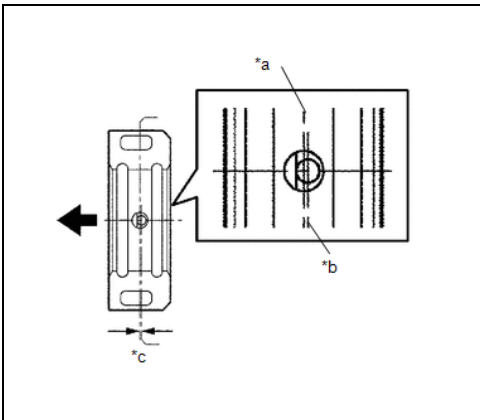
- c. Install the propeller shaft onto the differential flange, aligning the matchmarks.
- d. Install 4 bolts, washers, and nuts.

Torque 65 ft.lbs {88 N·m, 899 kgf·cm}

- e. Temporarily install the center support bearing with the 2 bolts.

Hint: Make sure the bearing is installed with the drain hole facing downward.





f. Adjust the center support bearing assembly to keep the dimensions as shown.

*a	Center Bearing Center Line
*b	Center Bearing Housing Center Line
*c	-1.0 to 1.0 mm (-0.0394 to 0.0394 in.)

g. Tighten the two bolts once properly aligned.
Torque 27 ft.lbs {36 N·m, 369 kgf·cm}

3. INSTALL REAR WHEELS

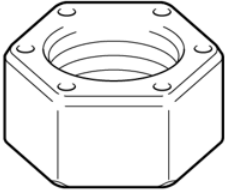
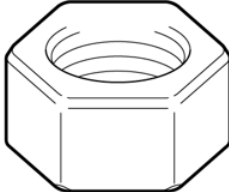
Torque 83 ft.lbs {113 N·m, 1152 kgf·cm}

◀ VERIFY REPAIR QUALITY ▶

- Verify the brakes are properly bled of air
- Verify the brakes are operating correctly
- Verify the parking brake is operating correctly
- Verify that the differential has the correct type and quantity of fluid
- Verify that the differential carrier nuts were torqued to the proper specification

If you have any questions regarding this update, please contact your regional representative.

XII. REFERENCE

<p>ORIGINAL</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Specified torque: 25 N*m (255 kgf*cm, 18 ft.*lbf)</p> </div>	<p>NEW</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Specified torque: 37 N*m (378 kgf*cm, 28 ft.*lbf)</p> </div>	<p>1. IDENTIFICATION OF HARDWARE</p> <ul style="list-style-type: none"> • The original differential carrier nut's have 6 recessed dimples on one side of the nut. • The NEW differential carrier nut's do not have any distinguishing marks on them. • Note the difference in torque values: Original: 18 ft.lbs New: 28 ft.lbs
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XIII. APPENDIX

A. PARTS DISPOSAL

As required by Federal Regulations, please make sure all recalled parts (original parts) removed from the vehicle are disposed of in a manner in which they will not be reused, ***unless requested for parts recovery return.***

B. CAMPAIGN DESIGNATION DECORDER

