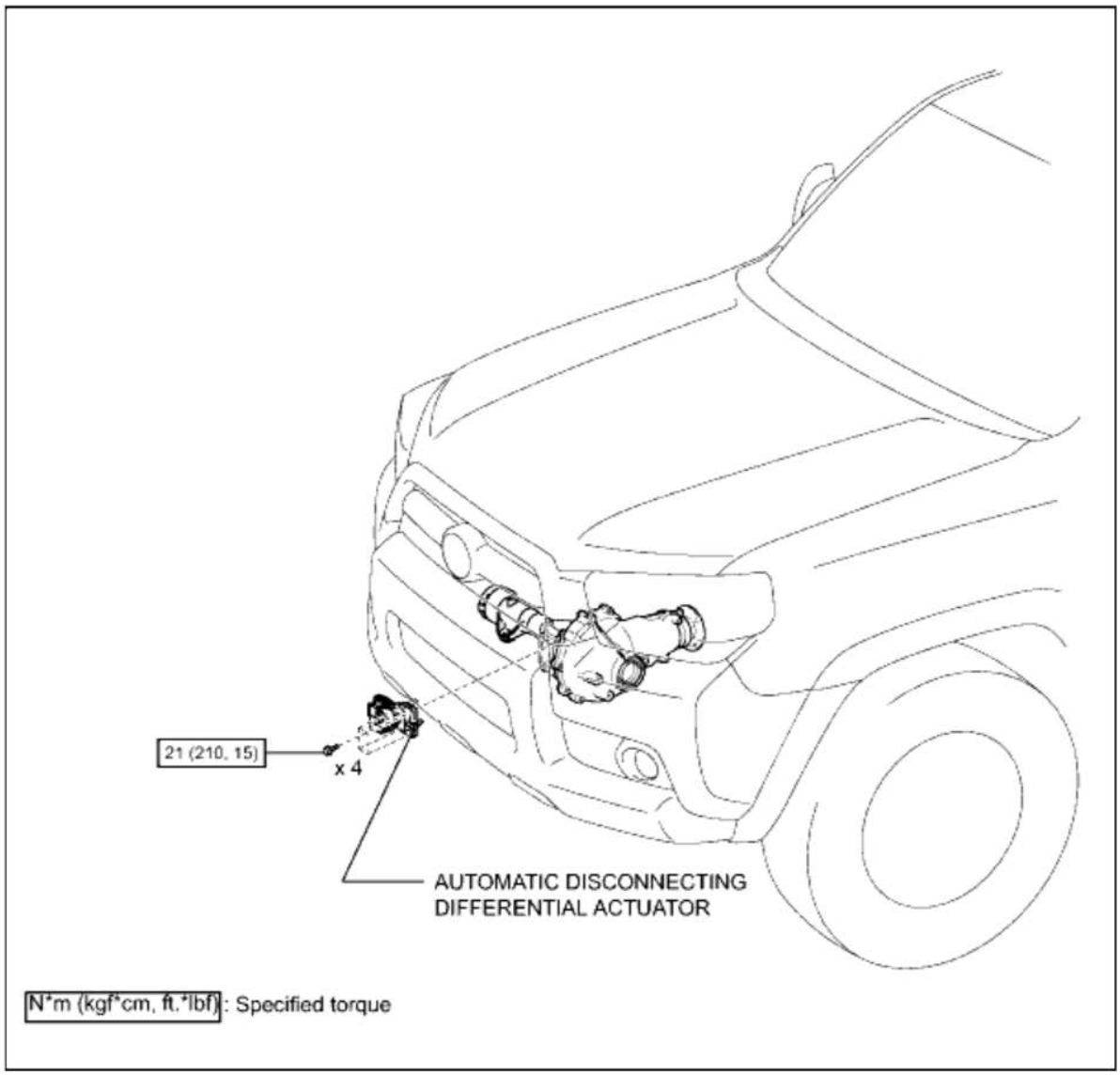
Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000480K000X
Title: AXLE AND DIFFERENTIAL: AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000480L000X
Title: AXLE AND DIFFERENTIAL: AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR: REMOVAL (2010 4Runner)		

REMOVAL

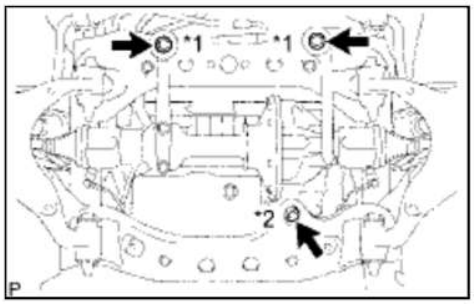
1. REMOVE FRONT SIDE MEMBER TO FRONT SUSPENSION CROSSMEMBER BRACE

2. REMOVE NO. 1 ENGINE UNDER COVER INFO

3. REMOVE REAR ENGINE UNDER COVER ASSEMBLY INFO

4. DRAIN DIFFERENTIAL OIL

5. REMOVE AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR



(a) Remove the bolt and disconnect the differential breather tube bracket.

(b) Support the differential with a jack.

(c) Remove No. 1 differential mounting nut.

(d) Remove the 2 mounting bolts and nut.

Text in Illustration

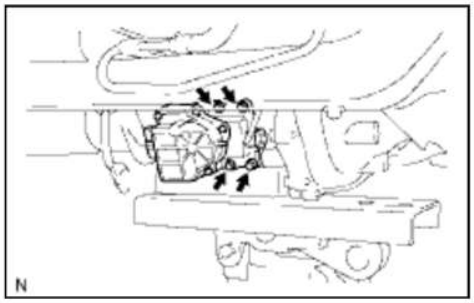
*1	Mounting Bolt
*2	Mounting Nut

(e) Disconnect the actuator hose and connector.

(f) Lower the jack.

(g) Remove the 4 bolts and actuator.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000000480J000X
Title: AXLE AND DIFFERENTIAL: AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR

(a) Remove any old FIPG material.

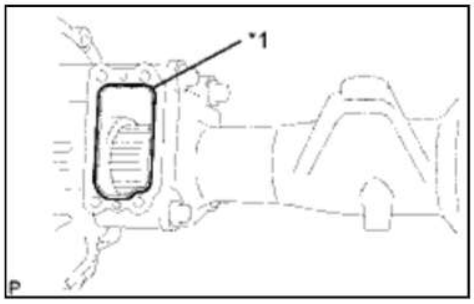
NOTICE:

Be careful not to drop oil on the contact surfaces of the actuator and clutch case.

(b) Using gasoline or alcohol, wipe off any residual FIPG material on the contact surfaces.

(c) Apply seal packing to the differential tube as shown in the illustration.

Seal packing:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



Text in Illustration

*1	Seal Packing

HINT:

Install the actuator within 10 minutes of applying seal packing.

(d) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

(e) Apply adhesive to 2 or 3 threads at the tip of the bolts.

Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or equivalent

(f) Install the actuator to the differential tube with the 4 bolts.

Torque: 21 N·m (210 kgf·cm, 15ft·lbf)

(g) Connect the actuator hose and connector.

(h) Support the differential with a jack.

(i) Install the 2 front mounting bolts and 2 nuts.

Torque: 137 N·m (1400 kgf·cm, 101ft·lbf)

(j) Install the No. 1 differential mounting nut.

Torque: 87 N·m (887 kgf·cm, 64ft·lbf)

(k) Install the differential breather tube bracket with the bolt.

Torque: 13 N·m (133 kgf·cm, 10ft·lbf)

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2. ADD DIFFERENTIAL OIL

(a) Add differential oil INFO .

3. CHECK FOR DIFFERENTIAL OIL LEAKAGE

4. INSTALL REAR ENGINE UNDER COVER ASSEMBLY INFO

5. INSTALL NO. 1 ENGINE UNDER COVER INFO

6. INSTALL FRONT SIDE MEMBER TO FRONT SUSPENSION CROSSMEMBER BRACE



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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001IWV01GX
Title: AXLE AND DIFFERENTIAL: AXLE SYSTEM: PROBLEM SYMPTOMS TABLE (2010 4Runner)		

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Axle System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Vehicle unstable	Tire (Worn or improperly inflated)	INFO
	Wheel alignment (Incorrect)	INFO
	Steering linkage (Loosen or worn)	-
	Hub bearing (Worn) for 2WD	INFO
	Hub bearing (Worn) for 4WD	INFO
	Steering gear (Out of adjustment or broken)	-
	Suspension parts (Worn)	-
Front wheel shimmy	Tire (Worn or improperly inflated)	INFO
	Wheel (Out of balance)	INFO
	Front shock absorber (Worn)	INFO
	Wheel alignment (Incorrect)	INFO
	Upper ball joint (Worn)	INFO
	Lower ball joint (Worn)	INFO
	Hub bearing (Worn) for 2WD	INFO
	Hub bearing (Worn) for 4WD	INFO
	Steering linkage (Loose or worn)	-
Rear wheel shimmy	Tire (Worn or improperly inflated)	INFO
	Wheel (Out of balance)	INFO
	Rear shock absorber (Worn) w/ REAS	INFO
	Rear shock absorber (Worn) w/o REAS	INFO

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SYMPTOM	SUSPECTED AREA	SEE PAGE
	Rear axle shaft (Worn)	INFO



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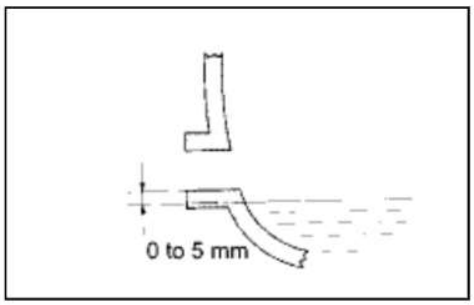
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PSG001X
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL OIL: REPLACEMENT (2010 4Runner)		

REPLACEMENT

1. INSPECT DIFFERENTIAL OIL LEVEL

(a) Stop the vehicle on a level surface.

(b) Remove the differential filler plug and gasket.



(c) Check that the oil level is within 0 to 5 mm (0 to 0.197 in.) of the bottom of the filler plug opening.

NOTICE:

Excessively large or small quantities of oil may cause problems.

If the oil level is low, add differential oil to adjust the oil level.

If the oil level is still low, check for oil leakage. If leakage is found, repair or replace the part necessary to stop the leakage.

(d) Install a new gasket and differential filler plug.

Front differential carrier - Torque: 39 N·m (398 kgf·cm, 29ft·lbf)
Rear differential carrier - Torque: 49 N·m (500 kgf·cm, 36ft·lbf)

2. DRAIN DIFFERENTIAL OIL

(a) Stop the vehicle on a level surface.

(b) Remove the differential drain plug and gasket.

(c) Drain the oil.

(d) Install a new gasket and the differential drain plug.

Front differential carrier - Torque: 65 N·m (660 kgf·cm, 48ft·lbf)
Rear differential carrier - Torque: 49 N·m (500 kgf·cm, 36ft·lbf)

3. ADD DIFFERENTIAL OIL

(a) Remove the differential filler plug and gasket.

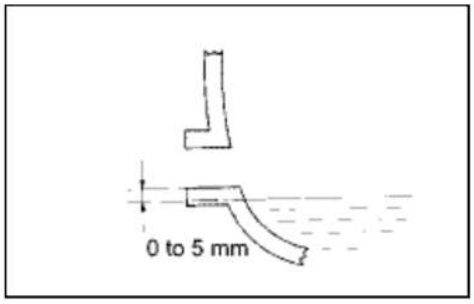
(b) Pour oil into the rear differential carrier assembly so that the oil level is within 0 to 5 mm (0 to 0.197 in.) of the bottom of the filler plug opening.

NOTICE:

Excessively large or small quantities of oil may cause problems.

Front Differential Capacity:

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DIFFERENTIAL TYPE	OIL TYPE AND VISCOSITY	SPECIFIED CONDITION
Standard	Toyota Genuine Differential gear oil LT 75W-85 GL-5 or equivalent	1.35 to 1.45 liters (1.43 to 1.53 US qts, 1.18 to 1.27 Imp. qts.)
w/ A.D.D. (Automatic Disconnecting Differential)		1.50 to 1.60 liters (1.59 to 1.69 US qts, 1.32 to 1.40 Imp. qts.)

Rear Differential Capacity:

DIFFERENTIAL TYPE	OIL TYPE AND VISCOSITY	SPECIFIED CONDITION
Standard	Toyota Genuine Differential gear oil LT 75W-85 GL-5 or equivalent	2.65 to 2.75 liters (2.80 to 2.91 US qts, 2.33 to 2.42 Imp. qts.)
w/ Differential Lock	Toyota Genuine Differential gear oil LT 75W-85 GL-5 or equivalent	2.60 to 2.70 liters (2.75 to 2.85 US qts, 2.29 to 2.38 Imp. qts.)

(c) Install a new gasket and the differential filler plug.

Front differential carrier - Torque: 39 N·m (398 kgf·cm, 29ft·lbf)
Rear differential carrier - Torque: 49 N·m (500 kgf·cm, 36ft·lbf)

(d) Drive the vehicle and check the oil level again.

If necessary, add differential oil.

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Last Modified: 5-10-2010	6.4 L	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000031U700AX
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: PRECAUTION (2010 4Runner)		

PRECAUTION

1. IGNITION SWITCH EXPRESSION

HINT:

The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

EXPRESSION	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition Switch off	Off	Off
Ignition Switch ON	ON	On (IG)
Ignition Switch ACC	ACC	On (ACC)
Engine Start	START	Start

2. PRECAUTION

(a) Before disassembly, clean the outside of the differential assembly and remove any sand or mud to prevent it from entering the assembly during disassembly and installation.

(b) When removing connected parts made of a light alloy, such as differential carrier covers, tap them off with a plastic-faced hammer. Do not attempt to pry them off with a screwdriver.

(c) Always arrange disassembled parts in order and protect them from dust.

(d) Before installation, thoroughly clean and dry each part, and then apply hypoid gear oil to it. Do not use alkaline cleaner for aluminum or rubber parts, or ring gear set bolts. Also, do not clean rubber parts such as O-rings or oil seals with non-residue solvent.

(e) Coat all sliding surfaces and rotating parts with hypoid gear oil.

(f) When holding a part with a vise, be sure to place an aluminum sheet between the part and vise. Do not put the part directly in the vise.

(g) Be careful not to damage the contact surfaces of the case. Such damage could cause oil leakage.

(h) Before applying new sealant, remove any old sealant and clean the part to be sealed using non-residue solvent.

(i) Do not add differential oil immediately after installing sealed parts. Leave them for at least an hour.

(j) Damage to the surfaces in direct contact with oil seals, O-rings or gaskets could cause oil leakage.

(k) When press-fitting an oil seal, be careful not to damage the lip of the oil seal and outside periphery.

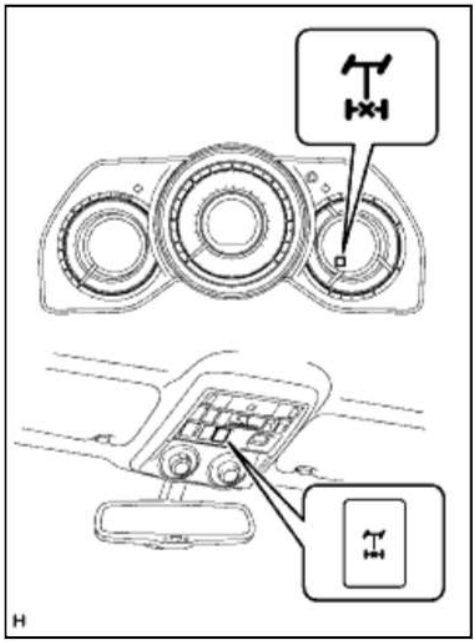
(l) When replacing a bearing, replace the inner and outer races as a set.

(m) Be careful not to damage or deform aluminum parts when clamping them in a vise.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001LZW00DX
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: INSPECTION (2010 4Runner)		

INSPECTION



1. INSPECT DIFFERENTIAL LOCK SYSTEM

(a) Inspect the indicator light.

(1) Check that the indicator light lights up approximately 1 second after the ignition switch is turned ON.

(b) Inspect the differential lock operation.

(1) Jack up the vehicle and start the engine.

(2) Set the transfer to L4.

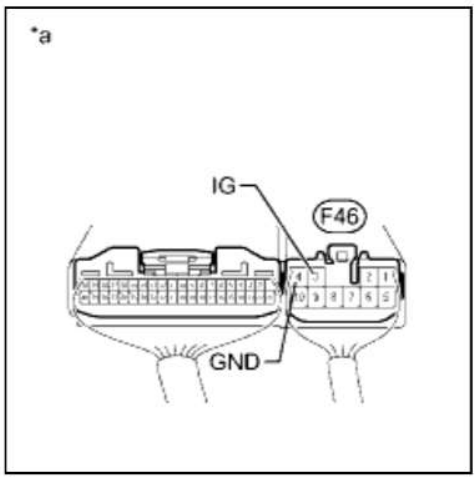
(3) When the differential lock control switch is set to the ON position, check that the indicator light turns on. Differential lock is applied to the rear wheels at this time.

HINT:

If the gears of the differential lock system are not engaged, the indicator light continues blinking, so rotate the tires to engage the gears.

(4) When the differential lock control switch is in the OFF position, check that the indicator light goes off. The rear differential lock is released at this time.

(5) Stop the engine and lower the vehicle.



2. INSPECT FOUR WHEEL DRIVE CONTROL ECU (POWER SUPPLY)

(a) Check the harness and connector (ECU - battery and body ground).

(1) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
F46-3 (IG) - Body ground	Ignition switch ON	11 to 14 V

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Text in Illustration

*a	Component with harness connected (Four Wheel Drive Control ECU)

If the result is not as specified, inspect the harness or connector. If the harness is malfunctioning, repair or replace the harness connector or 4WD fuse. If the harness and connector are normal, replace the four wheel drive control ECU INFO .

(2) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F46-10 (GND) - Body ground	Always	Below 1 Ω

If the result is not as specified, repair or replace the harness or connector.

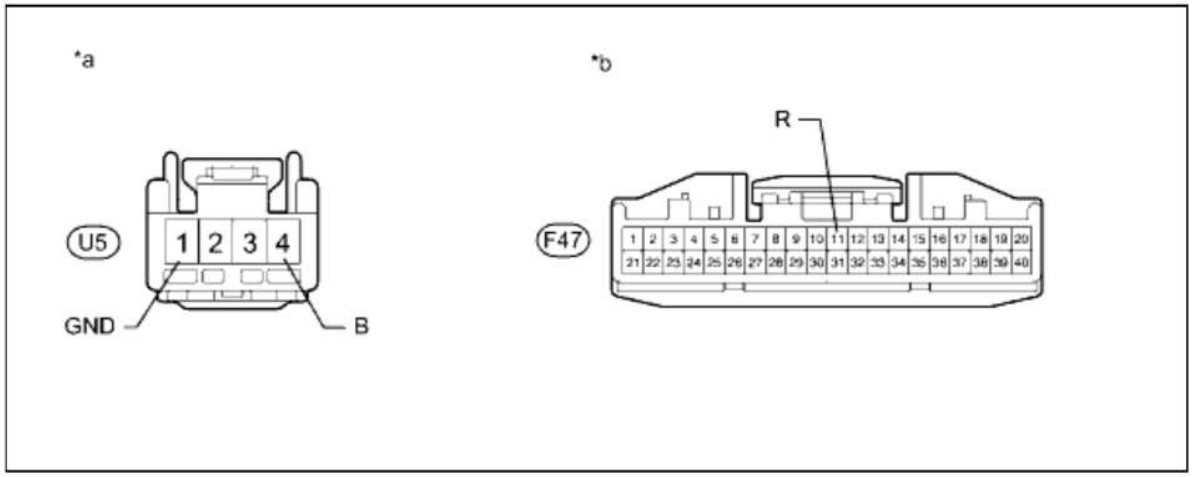
3. INSPECT DIFFERENTIAL LOCK SWITCH

(a) Check the harness and connector (differential lock switch - ECU).

(1) Disconnect the F47 ECU connector.

(2) Disconnect the U5 switch connector.

(3) Measure the resistance according to the value(s) in the table below.



Text in Illustration

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*a	Front view of wire harness connector (to Differential Lock Switch)	*b	Front view of wire harness connector (to Four Wheel Drive Control ECU)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
U5-4 (B) - F47-11 (R)	Always	Below 1 Ω
U5-1 (GND) - Body ground	Always	Below 1 Ω
U5-1 (GND) - F47-11 (R)	Always	100 kΩ or higher

If the result is not specified, repair or replace the harness or connector.

(b) Check the differential lock switch.

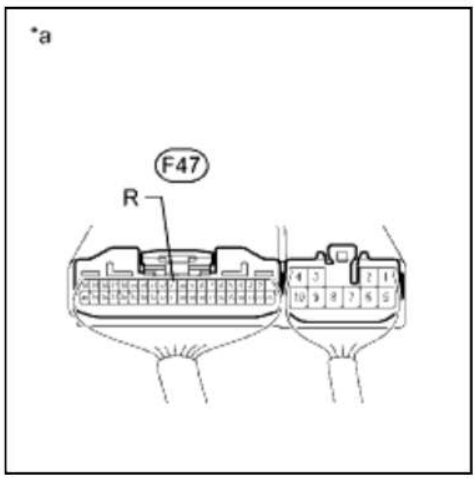
(1) Turn the ignition switch off.

(2) Connect the U5 switch connector.

(3) Connect the F47 ECU connector.

(4) Measure the resistance according to the value(s) in the table below.

Standard Voltage:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
F47-11 (R) - Body ground	Differential lock switch on	Below 1.5 V
	Differential lock switch off	11 to 14 V

Text in Illustration

*a	Component with harness connected (Four Wheel Drive Control ECU)

4. INSPECT REAR DIFFERENTIAL LOCK ACTUATOR

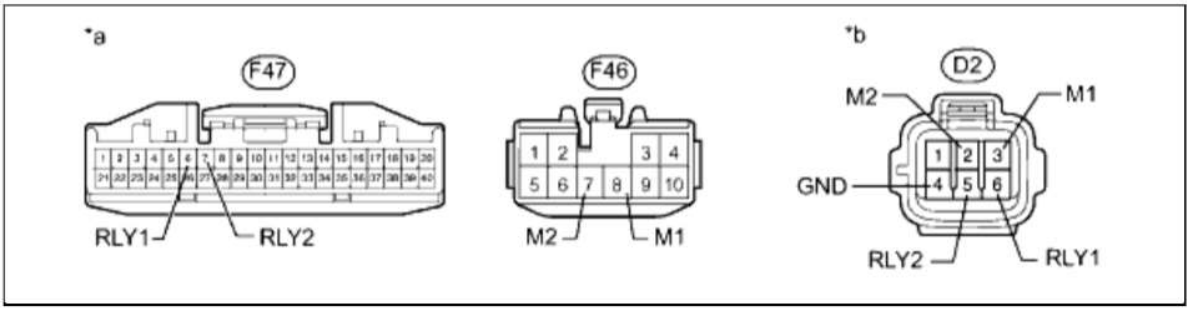
(a) Check the harness and connector (rear differential lock actuator - ECU).

(1) Disconnect the D2 differential lock actuator connector.

(2) Disconnect the F47 and F46 ECU connectors.

(3) Measure the resistance according to the value(s) in the table below.

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Text in Illustration

*a	Front view of wire harness connector (to Four Wheel Drive Control ECU)	*b	Front view of wire harness connector (to Differential Lock Actuator)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F47-7 (RLY2) - D2-5 (RLY2)	Always	Below 1 Ω
F47-7 (RLY2) - Body ground	Always	100 kΩ or higher
F47-6 (RLY1) - D2-6 (RLY1)	Always	Below 1 Ω
F47-6 (RLY1) - Body ground	Always	100 kΩ or higher
F46-7 (M2) - D2-2 (M2)	Always	Below 1 Ω
F46-7 (M2) - Body ground	Always	100 kΩ or higher
F46-8 (M1) - D2-3 (M1)	Always	Below 1 Ω
F46-8 (M1) - Body Ground	Always	100 kΩ or higher
D2-4 (GND) - Body Ground	Always	Below 1 Ω

(b) Check the free to lock switch.

(1) Connect lines via a relay as shown in the illustration and check that the actuator fork moves from the free to the lock position.

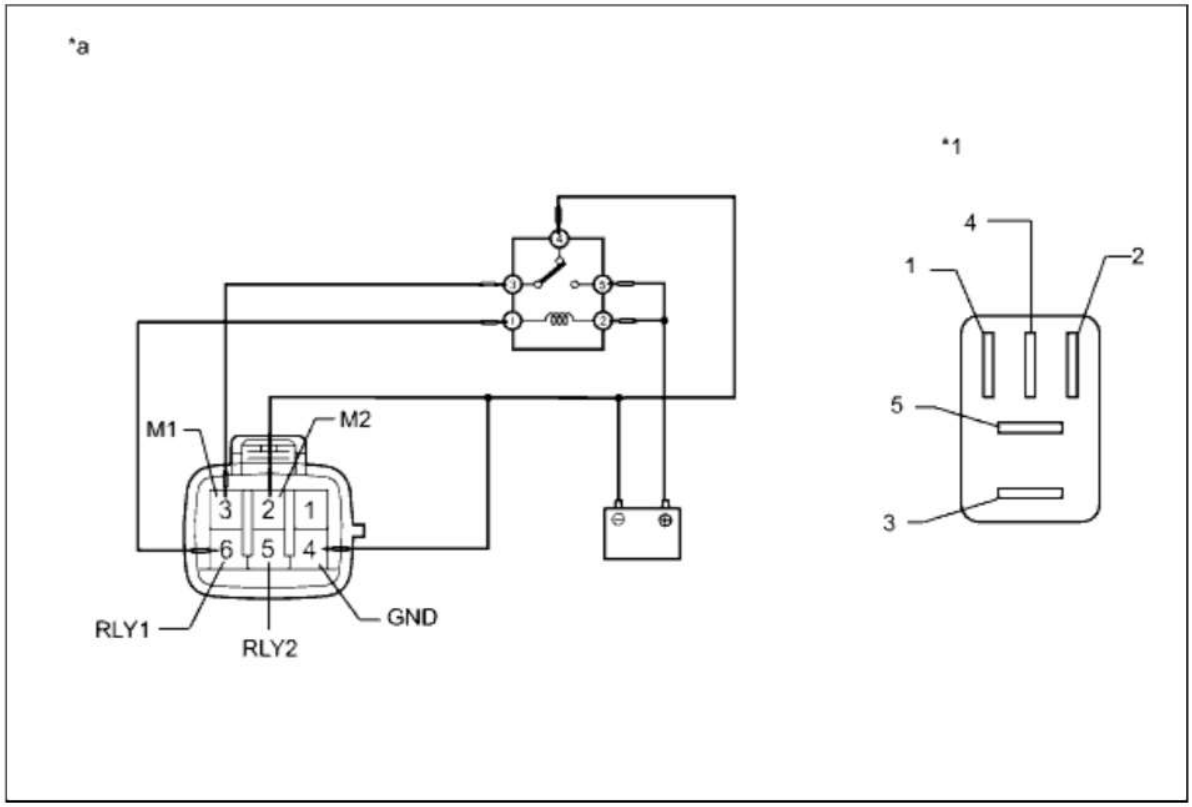
NOTICE:

- Make sure to perform this inspection with the actuator removed from the vehicle. If this inspection is performed with the actuator installed to the vehicle, the actuator will be damaged.
- When inspecting the actuator, make sure to operate it with the lines connected via a relay. If the lines are not connected via a relay and battery voltage is directly applied to the actuator, the actuator will be damaged.

HINT:

When performing the operation described above, use the stop LP relay.

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Text in Illustration

*1	Stop LP Relay	-	-
*a	Front view of wire harness connector (to Differential Lock Actuator)	-	-

(2) After the free to lock switch is complete, check the limit switch.

Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
5 (RLY2) - 4 (GND)	After free to lock switch is complete	Below 12.5 Ω
6 (RLY1) - 4 (GND)	After free to lock switch is complete	500 kΩ or higher

If the result is not as specified, replace the differential lock shift actuator assembly.

(c) Check the lock to free switch.

(1) Connect lines via a relay as shown in the illustration and check that the actuator fork moves from the lock to the free position.

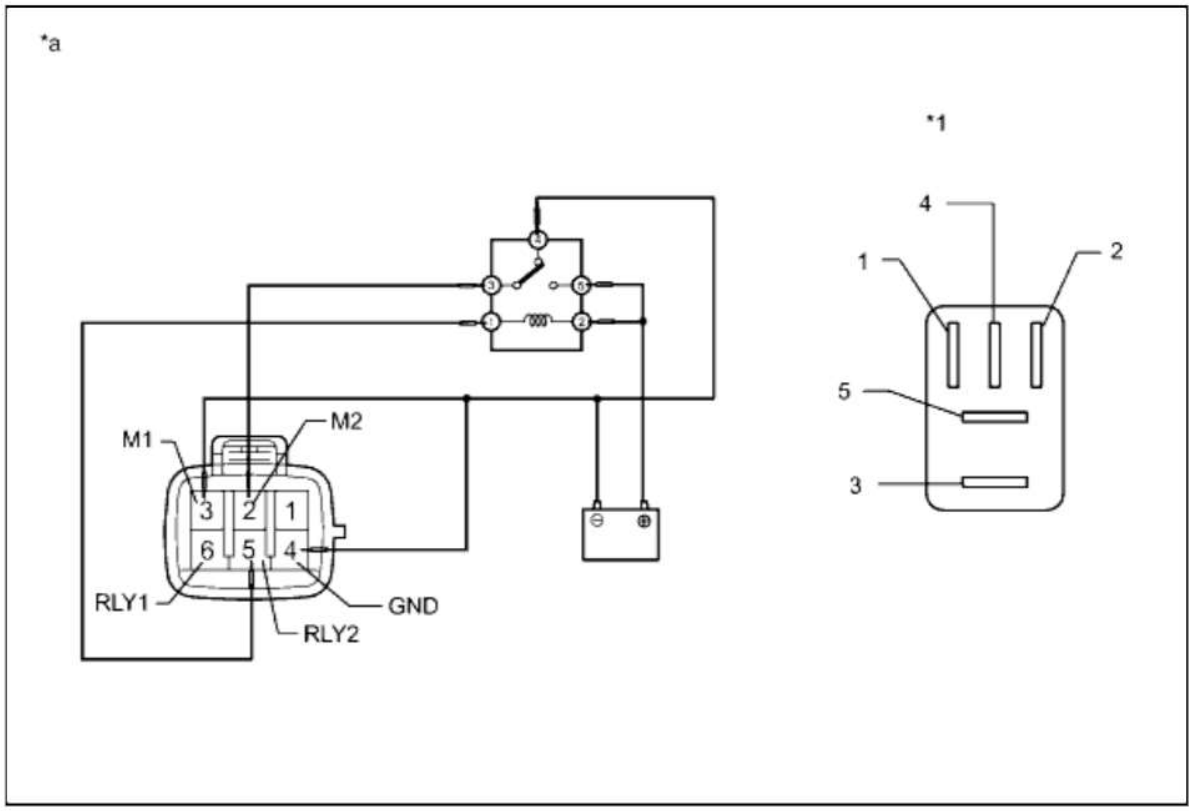
NOTICE:

- Make sure to perform this inspection with the actuator removed from the vehicle. If this inspection is performed with the actuator installed to the vehicle, the actuator will be damaged.
- When inspecting the actuator, make sure to operate it with the lines connected via a relay. If the lines are not connected via a relay and battery voltage is directly applied to the actuator, the actuator will be damaged.

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HINT:

When performing the operation described above, use the stop LP relay.



Text in Illustration

*1	Stop LP Relay	-	-
*a	Front view of wire harness connector (to Differential Lock Actuator)	-	-

(2) After the lock to free switch is complete, check the limit switch.

Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
5 (RLY2) - 4 (GND)	After lock to free switch is complete	500 kΩ or higher
6 (RLY1) - 4 (GND)	After lock to free switch is complete	Below 12.5 Ω

If the result is not as specified, replace the differential lock shift actuator assembly.

5. INSPECT DIFFERENTIAL LOCK POSITION SWITCH

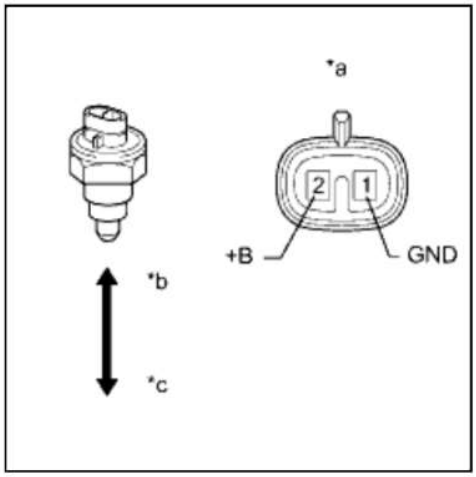
(a) Inspect the rear differential lock position switch.

(1) Remove the rear differential lock position switch INFO .

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(2) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
2 (+B) - 1 (GND)	Pushed	Below 1 Ω
	Released	100 kΩ or higher

Text in Illustration

*a	Component without harness connected (Rear Differential Lock Position Switch)
*b	Pushed
*c	Released

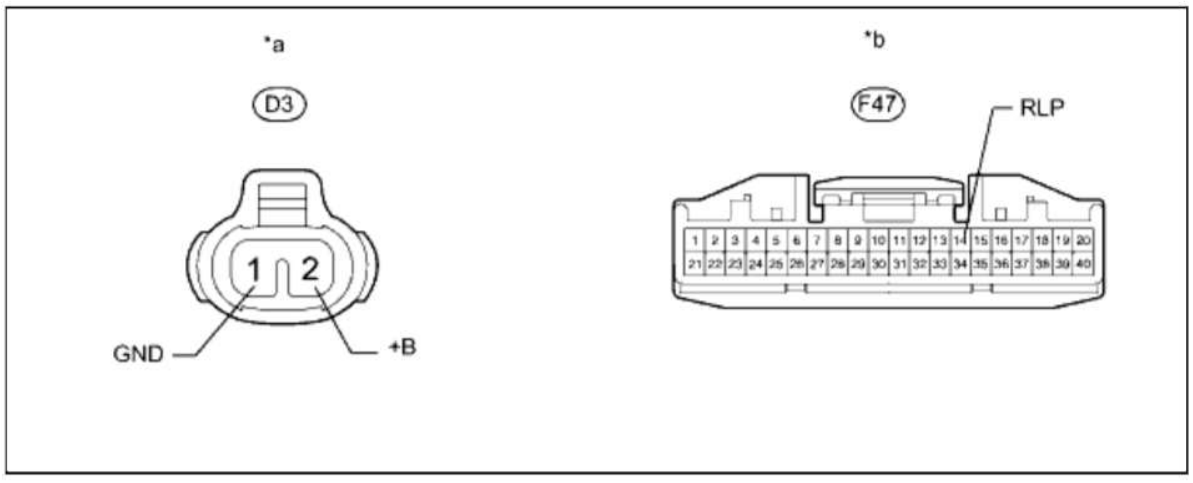
If the result is not as specified, replace the rear differential lock position switch.

(b) Check the harness and connector (ECU - differential lock position switch).

(1) Disconnect the D3 differential lock position switch connector.

(2) Disconnect the F47 ECU connector.

(3) Measure the resistance according to the value(s) in the table below.



Text in Illustration

*a	Component without harness connected (Rear Differential Lock Position Switch)	*b	Component without harness connected (Four Wheel Drive Control ECU)

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Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
F47-14 (RLP) - D3-2 (+B)	Always	Below 1 Ω
F47-14 (RLP) - Body ground	Always	100 kΩ or higher
D3-1 (GND) - Body ground	Always	Below 1 Ω

If the result is not as specified, repair or replace the harness or connector.

6. INSPECT AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR

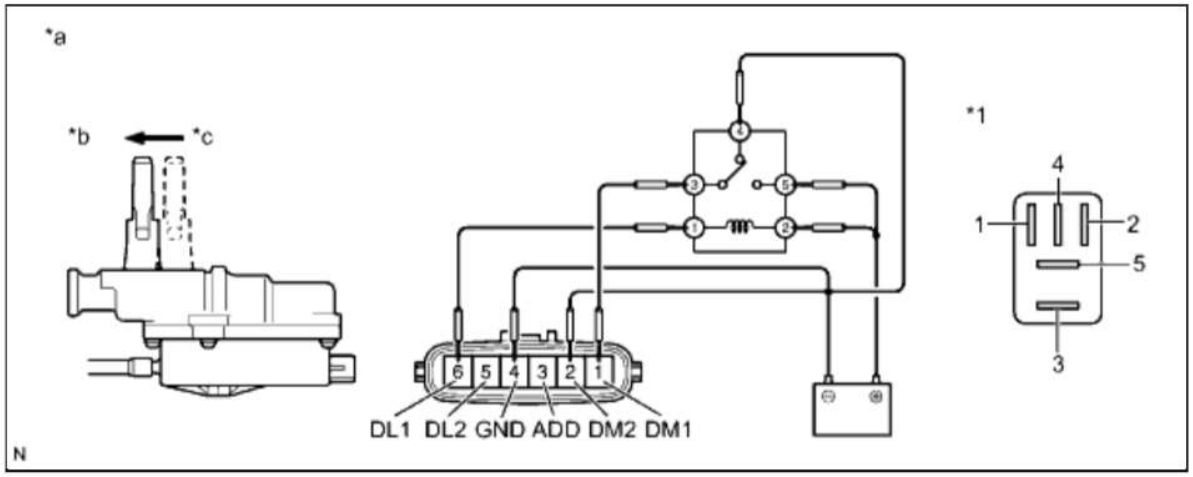
NOTICE:

When inspecting the actuator, make sure to operate it with the lines connected via a relay. If the lines are not connected via a relay and battery voltage is directly applied to the actuator, the actuator will be damaged.

HINT:

When inspecting the operation described above, use the stop LP relay.

(a) Check the free to lock switch.



Text in Illustration

*1	Stop LP Relay	-	-
*a	Component without harness connected (A.D.D. Actuator Connector)	*b	Lock
*c	Free	-	-

(1) Connect lines via a relay as shown in the illustration and check that the actuator fork moves from the free to the lock position.

(2) After the free to lock switch is complete, inspect the A.D.D. detection switch and limit switch.

Standard Resistance:

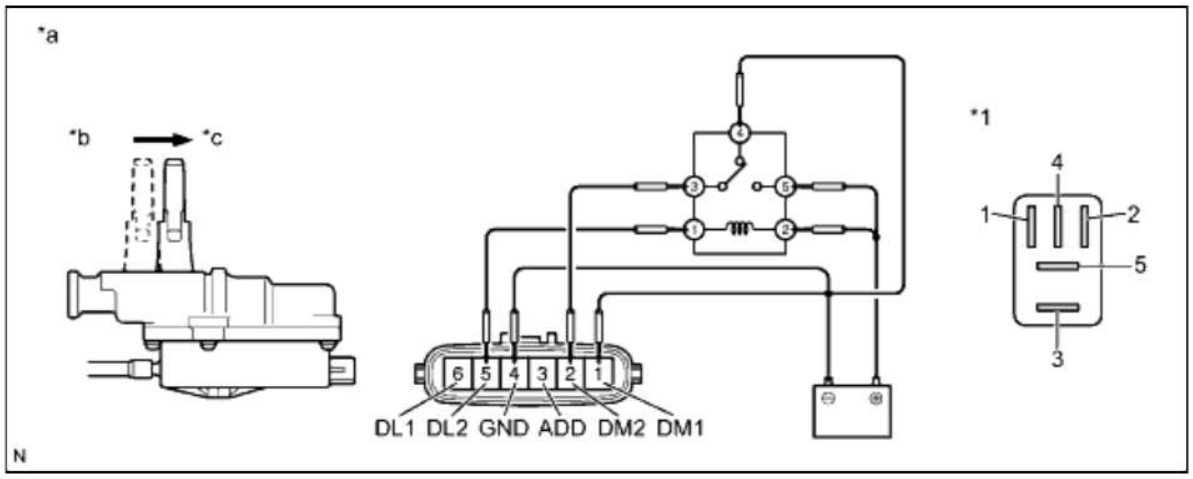
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 (ADD) - 4 (GND)	After free to lock switch is complete	Below 12.5 Ω
5 (DL2) - 4 (GND)		Below 12.5 Ω
6 (DL1) - 4 (GND)		0.5 MΩ or higher

If the result is not as specified, replace the A.D.D. actuator. If the A.D.D. actuator is normal, replace the four wheel drive control ECU.

(b) Check the lock to free switch.



Text in Illustration

*1	Stop LP Relay	-	-
*a	Component without harness connected (A.D.D Actuator Connector)	*b	Lock
*c	Free	-	-

(1) Connect lines via a relay as shown in the illustration and check that the actuator fork moves from the lock to the free position.

(2) After the lock to free switch is complete, inspect the A.D.D. detection switch and limit switch.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 (ADD) - 4 (GND)	After lock to free switch is complete	0.5 MΩ or higher
5 (DL2) - 4 (GND)		0.5 MΩ or higher
6 (DL1) - 4 (GND)		Below 12.5 Ω

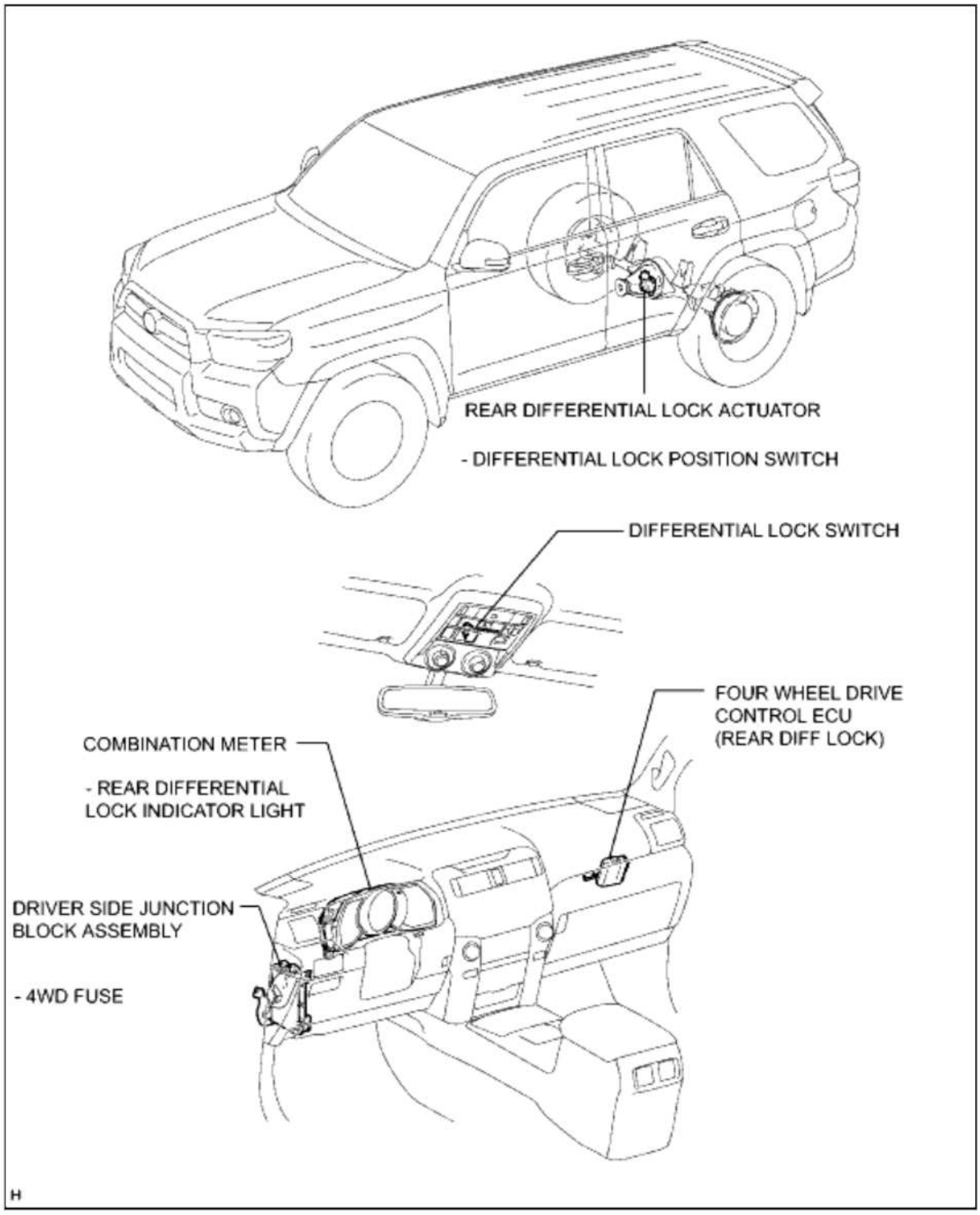
If the result is not as specified, replace the A.D.D. actuator. If the A.D.D. actuator is normal, replace the four wheel drive control ECU.

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Last Modified: 5-10-2010	6.4 R	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001LZV00DX
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: PARTS LOCATION (2010 4Runner)		

PARTS LOCATION

ILLUSTRATION



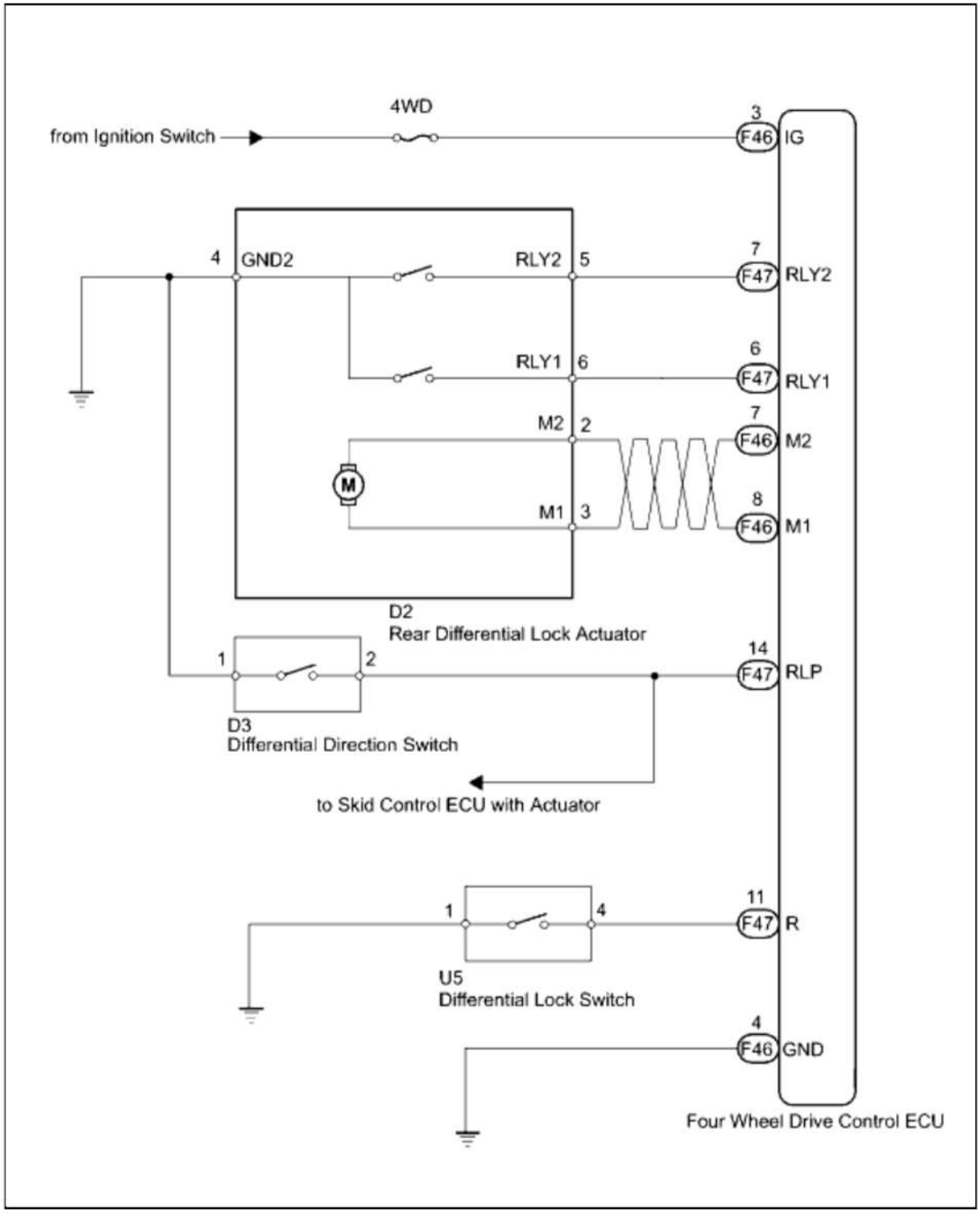
cardiagn.com



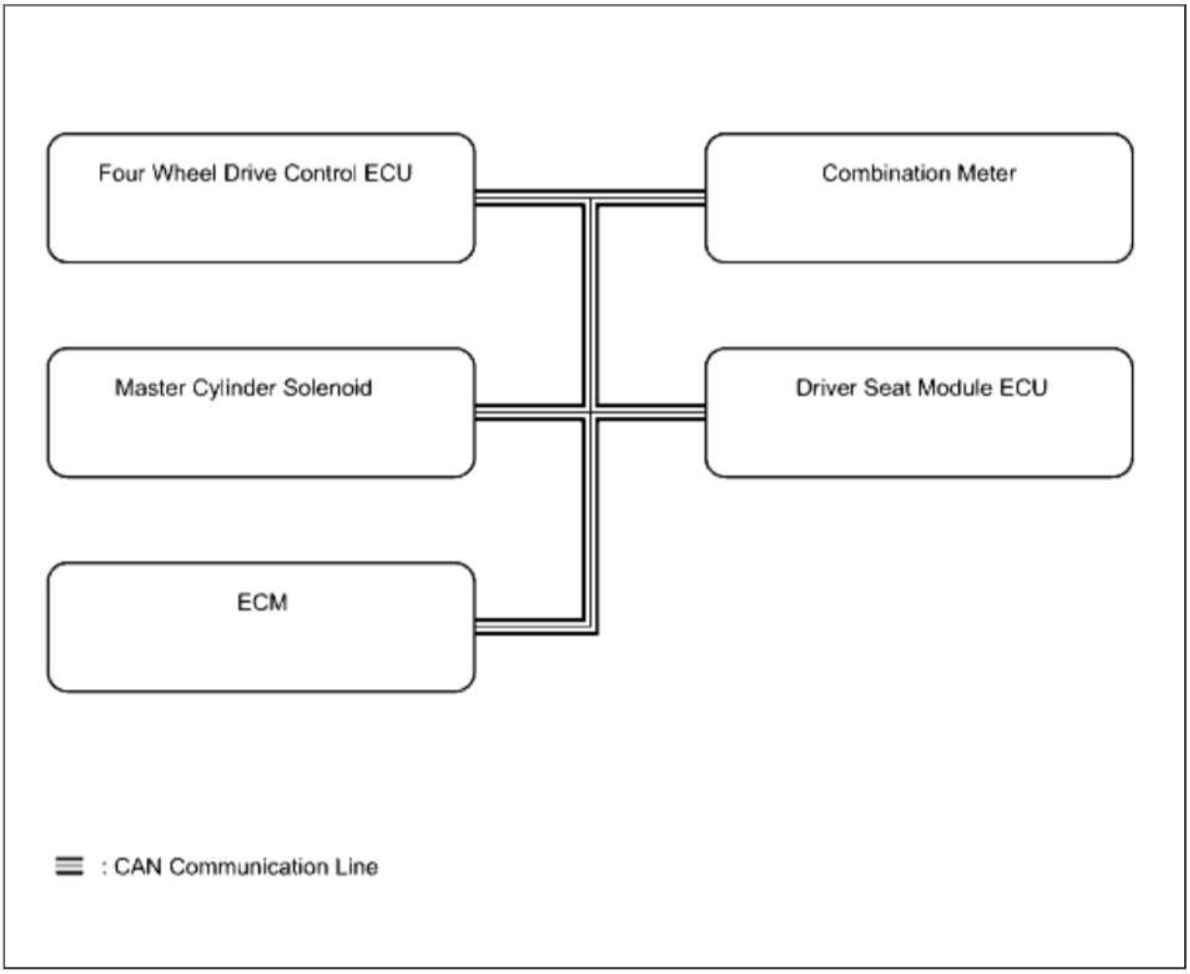
cardiagn.com

Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000004819000X
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: SYSTEM DIAGRAM (2010 4Runner)		

SYSTEM DIAGRAM



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Last Modified: 5-10-2010	6.4 T	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016G600OX
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: PROBLEM SYMPTOMS TABLE (2010 4Runner)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Differential System

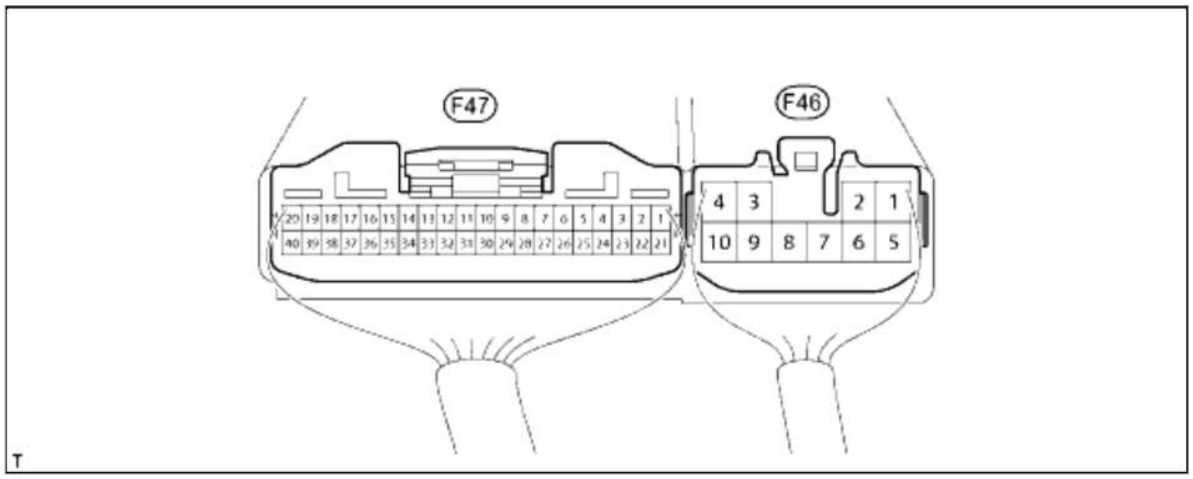
SYMPTOM	SUSPECTED AREA	SEE PAGE
Oil leakage from front differential	Oil (Level too high or wrong grade)	INFO
	Front differential rear oil seal (Worn or damaged)	INFO
	Companion flange (Loose or damaged)	INFO
Oil leakage from rear differential	Oil (Level too high or wrong grade)	INFO
	Rear differential front oil seal (Worn or damaged)	INFO
	Companion flange (Loose or damaged)	INFO
Oil leak from front drive pinion shaft	Oil (Level too high or wrong grade)	INFO
	Front differential oil seal (Worn or damaged)	INFO
	Companion flange (Loose or damaged)	INFO
Oil leak from rear drive pinion shaft	Oil (Level too high or wrong grade)	INFO
	Rear differential oil seal (Worn or damaged)	INFO
	Companion flange (Loose or damaged)	INFO
Differential lock does not operate	Rear differential lock switch	INFO
	Four wheel drive control ECU	INFO
	Differential carrier (Faulty)	-
	Wiring or ground (Faulty)	-

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Last Modified: 5-10-2010	6.4 U	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000047FF000X
Title: AXLE AND DIFFERENTIAL: DIFFERENTIAL SYSTEM: TERMINALS OF ECU (2010 4Runner)		

TERMINALS OF ECU

1. CHECK 4WD CONTROL ECU



(a) Measure the voltage and resistance according to the value(s) in the table below.

TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
F47-6 (RLY1) - F46-4 (GND)	G - W-B	Rear differential lock actuator limit switch	Ignition switch ON Rear differential lock actuator limit switch on	Below 1.5 V
			Ignition switch ON Rear differential lock actuator limit switch off	11 to 14 V
F47-7 (RLY2) - F46-4 (GND)	P - W-B	Rear differential lock actuator limit switch	Ignition switch ON Rear differential lock actuator limit switch on	Below 1.5 V
			Ignition switch ON Rear differential lock actuator limit switch off	11 to 14 V
F47-11 (R) - F46-4 (GND)	SB - W-B	Rear differential lock switch	Ignition switch ON Rear differential lock switch on	Below 1.5 V
			Ignition switch ON Rear differential lock switch off	11 to 14 V

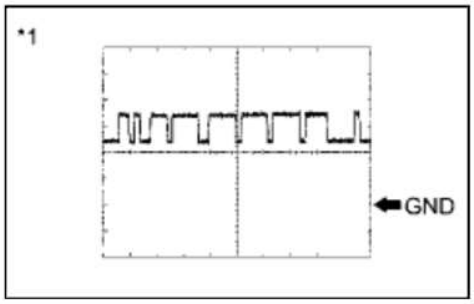
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TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
F47-14 (RLP) - F46-4 (GND)	V - W-B	Rear differential lock detection switch	Ignition switch ON Rear differential lock detection switch on	Below 1.5 V
			Ignition switch ON Rear differential lock detection switch off	9.5 to 14 V
F46-8 (M1) - F46-4 (GND)	LG - W-B	Differential lock actuator motor	Ignition switch ON Differential lock switch off → on (Differential lock switch OFF → ON (For 5 seconds after power supplied or until switching of limit switch is complete during FREE to LOCK switching))	11 to 14 V
			Ignition switch ON Differential lock switch off → on (Differential lock actuator motor stopped)	Below 1.5 V
F46-3 (IG) - F46-4 (GND)	R - W-B	IG power	Ignition switch ON	11 to 14 V
F46-4 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
F46-7 (M2) - F46-4 (GND)	L - W-B	Differential lock actuator motor	Ignition switch ON Differential lock switch on → off (Differential lock switch ON → OFF (For 5 seconds after power supplied or until switching of limit switch is complete during LOCK to FREE switching))	11 to 14 V
			Ignition switch ON Differential lock switch on → off (Differential lock actuator motor stopped)	Below 1.5 V
F47-19 (CANH) - F46-4 (GND)	G - W-B	CAN communication line	Ignition switch ON	Pulse generation (see waveform 1)
F47-20 (CANL) - F46-4 (GND)	W - W-B	CAN communication line	Ignition switch ON	Pulse generation (see waveform 2)

(b) Using an oscilloscope, check waveform 1.

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Waveform 1 (Reference)



ITEM	CONTENT
Terminal No. (Symbols)	F47-19 (CANH) - F46-4 (GND)
Tool setting	1 V/DIV., 10 µsec./DIV.
Condition	Engine stopped and ignition switch ON

Text in Illustration

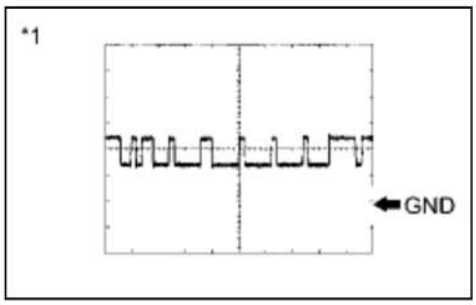
*1	Waveform 1

HINT:

The waveform varies depending on the CAN communication signal.

(c) Using an oscilloscope, check waveform 1.

Waveform 2 (Reference)



ITEM	CONTENT
Terminal No. (Symbols)	F47-20 (CANL) - F46-4 (GND)
Tool setting	1 V/DIV., 10 µsec./DIV.
Condition	Engine stopped and ignition switch ON

Text in Illustration

*1	Waveform 2

HINT:

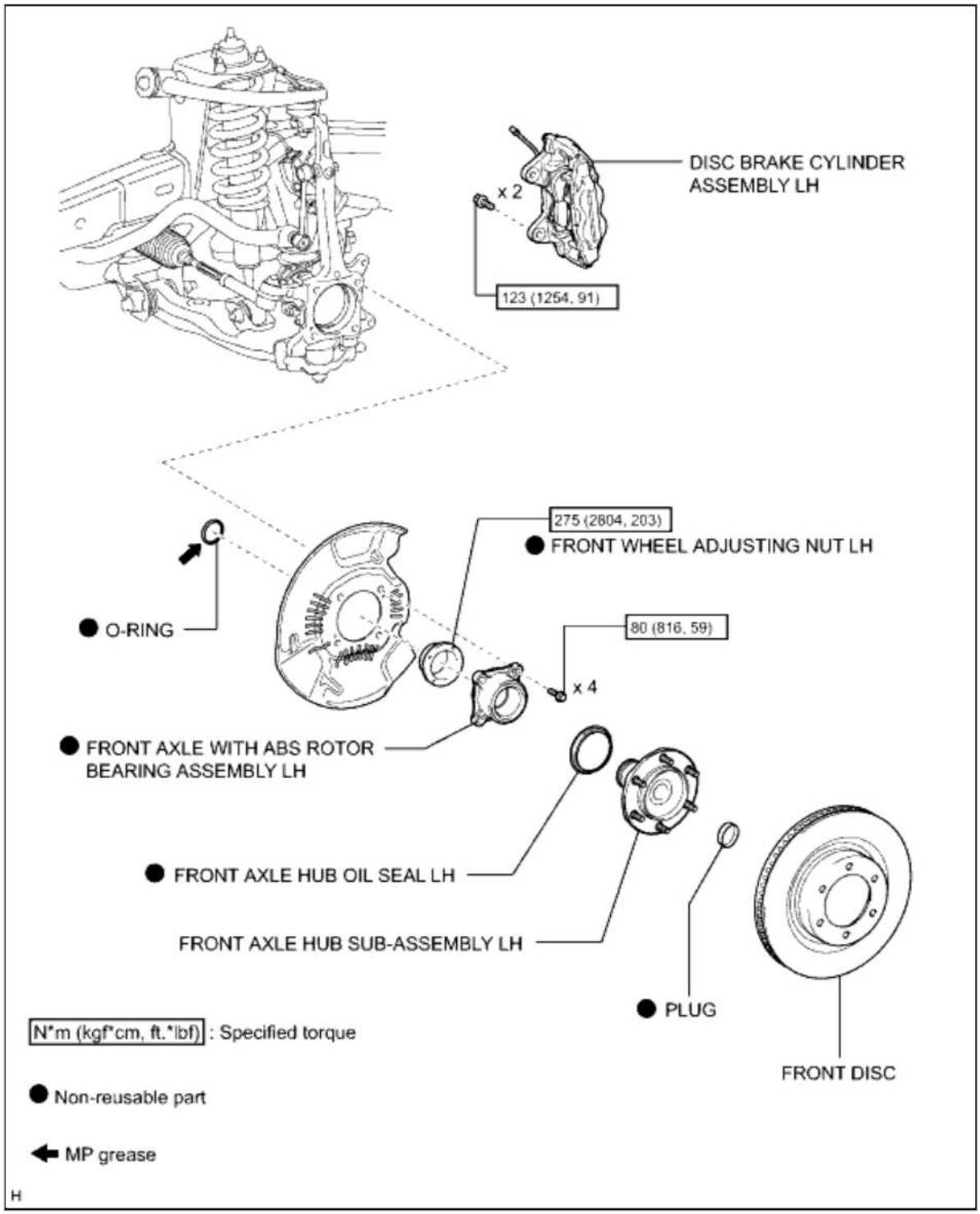
The waveform varies depending on the CAN communication signal.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X000SX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001IWW02AX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): ON-VEHICLE INSPECTION (2010 4Runner)		

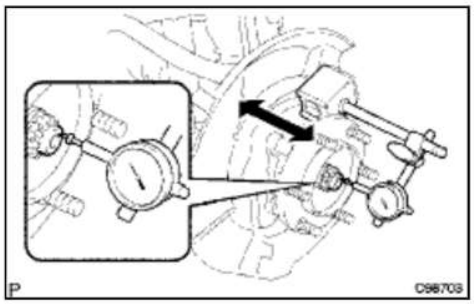
ON-VEHICLE INSPECTION

1. REMOVE FRONT WHEEL

2. REMOVE DISC BRAKE CYLINDER ASSEMBLY LH INFO

3. REMOVE FRONT DISC INFO

4. INSPECT FRONT AXLE HUB BEARING LOOSENESS



(a) Using a dial indicator, measure the looseness near the center of the axle hub.

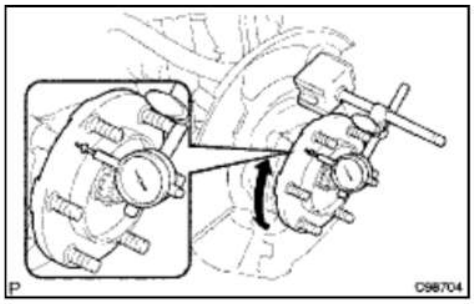
Maximum looseness:
0.05 mm (0.00197 in.)

NOTICE:

Make sure that the dial indicator is set at a right angle to the measurement surface.

If the looseness is more than the maximum, replace the axle hub.

5. INSPECT FRONT AXLE HUB RUNOUT



(a) Using a dial indicator, measure the runout on the surface of the axle hub outside the hub bolts.

Maximum runout:
0.08 mm (0.00315 in.)

NOTICE:

Make sure that the dial indicator is set at a right angle to the measurement surface.

If the runout is more than the maximum, replace the axle hub.

6. INSTALL FRONT DISC INFO

7. INSTALL DISC BRAKE CYLINDER ASSEMBLY LH INFO

8. INSTALL FRONT WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X100JX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): REMOVAL (2010 4Runner)		

REMOVAL

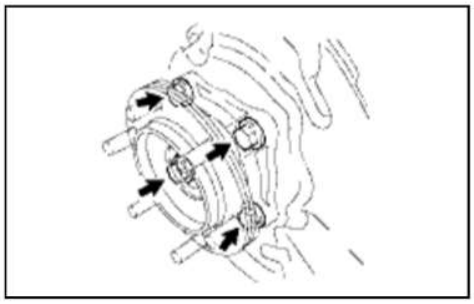
HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. REMOVE DISC BRAKE CYLINDER ASSEMBLY LH INFO

3. REMOVE FRONT DISC INFO



4. REMOVE FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Remove the 4 bolts, axle hub and disc brake dust cover from the steering knuckle.

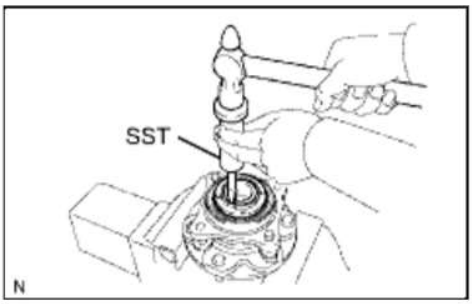
(b) Remove the O-ring from the axle hub.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X200CX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): DISASSEMBLY (2010 4Runner)		

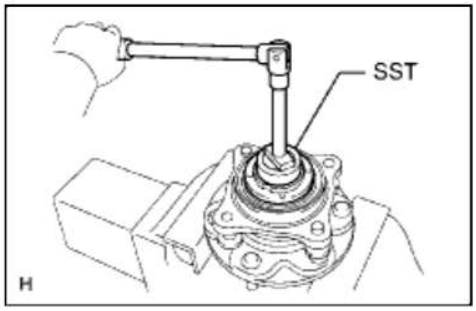
DISASSEMBLY

1. REMOVE FRONT WHEEL ADJUSTING NUT LH



(a) Using SST and a hammer, unstake the adjusting nut.

SST: 09930-00010



(b) Using SST, remove the adjusting nut.

SST: 09318-12010

2. REMOVE FRONT AXLE WITH ABS ROTOR BEARING ASSEMBLY LH

(a) Gently fix the front axle hub in a vise between aluminum plates.

NOTICE:

Do not damage the threads of the hub bolts.

(b) Using SST, remove the bearing.

SST: 09710-30021

09710-03051

SST: 09950-40011

09951-04020

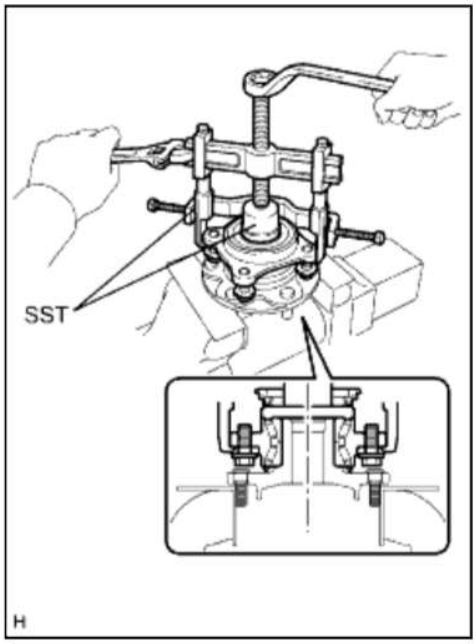
09952-04010

09953-04020

09954-04010

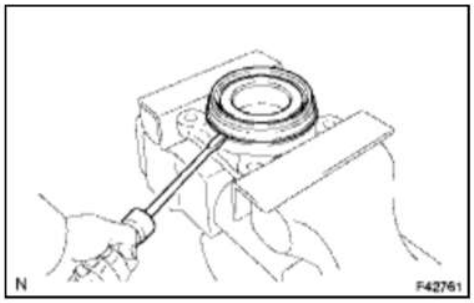
09955-04061

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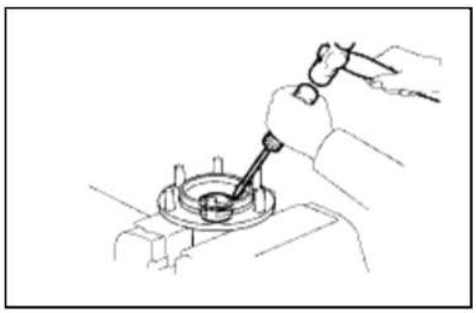
09957-04010
09958-04011

3. REMOVE FRONT AXLE HUB OIL SEAL LH



(a) Using a screwdriver, remove the front axle hub oil seal.

4. REMOVE PLUG



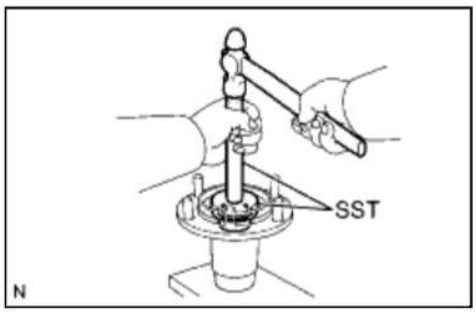
(a) Using a screwdriver and hammer, remove the plug.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X300CX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): REASSEMBLY (2010 4Runner)		

REASSEMBLY

1. INSTALL PLUG



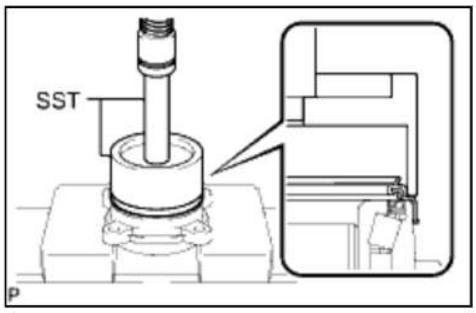
(a) Using the SST and a hammer, install a new plug.

SST: 09950-60010

09951-00450

SST: 09950-70010

09951-07100



2. INSTALL FRONT AXLE HUB OIL SEAL LH

(a) Using SST and a press, press in a new oil seal.

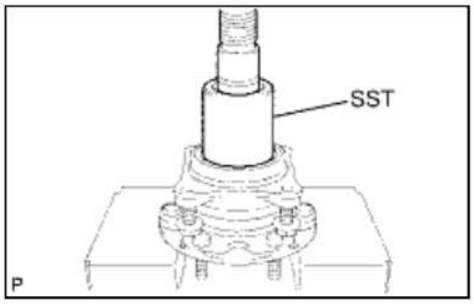
SST: 09608-36010

SST: 09950-70010

09951-07100

NOTICE:

Do not damage the oil seal.



3. INSTALL FRONT AXLE WITH ABS ROTOR BEARING ASSEMBLY LH

(a) Using SST and a press, install a new bearing to the front axle hub.

SST: 09649-17010

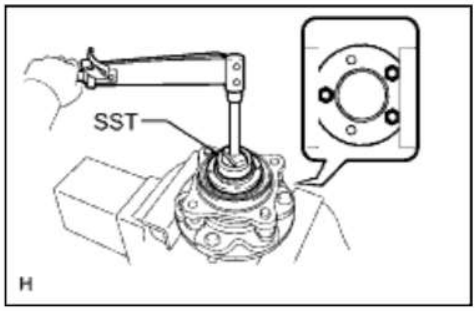
4. INSTALL FRONT WHEEL ADJUSTING NUT LH

(a) Using SST, install a new adjusting nut.

SST: 09318-12010

Torque: 275 N·m (2804 kgf·cm, 203ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016WZ00CX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 2WD): INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. INSTALL FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Apply MP grease to a new O-ring.

(b) Install the O-ring to the axle hub.

NOTICE:

Do not damage the O-ring.

(c) Install the disc brake dust cover and axle hub to the steering knuckle with the 4 bolts.

Torque: 80 N·m (816 kgf·cm, 59ft·lbf)

2. INSTALL FRONT DISC INFO

3. INSTALL DISC BRAKE CYLINDER ASSEMBLY LH INFO

4. INSTALL FRONT WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

5. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO.

6. CHECK SPEED SENSOR SIGNAL

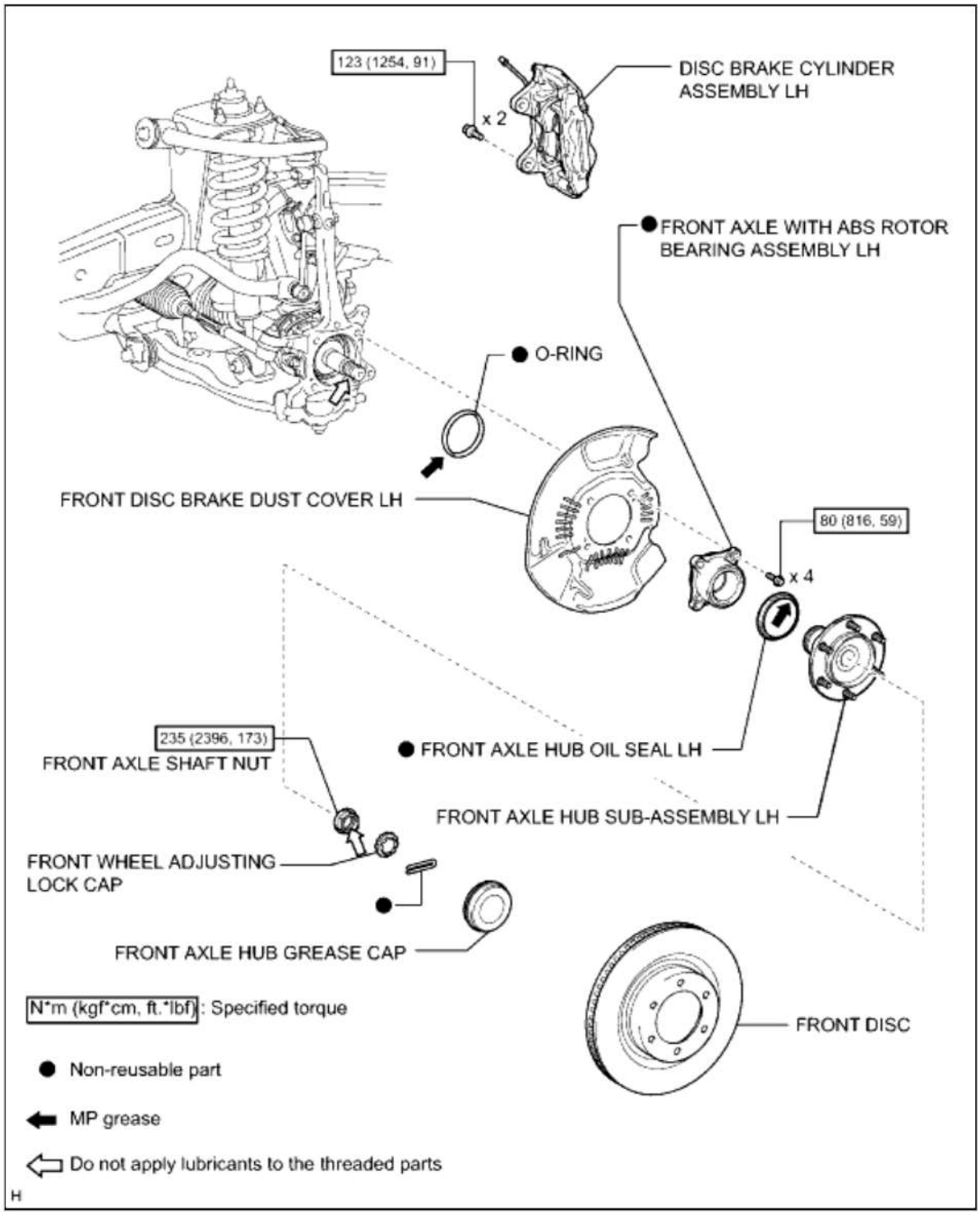
(a) Inspect the speed sensor signal INFO.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X5010X
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001IWW02BX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): ON-VEHICLE INSPECTION (2010 4Runner)		

ON-VEHICLE INSPECTION

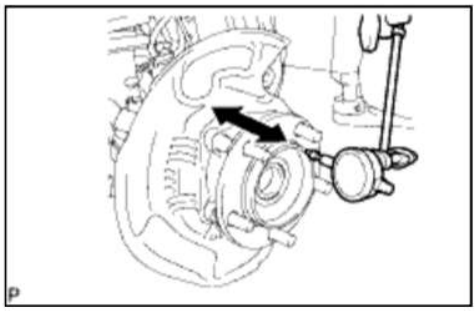
1. REMOVE FRONT WHEEL

2. DISCONNECT FRONT DISC BRAKE CYLINDER ASSEMBLY LH INFO

3. REMOVE FRONT DISC INFO

4. REMOVE FRONT AXLE HUB GREASE CAP INFO

5. INSPECT FRONT AXLE HUB BEARING LOOSENESS



(a) Using a dial indicator, measure the looseness near the center of the axle hub.

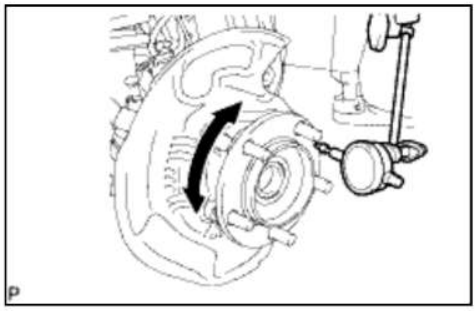
Maximum looseness:
0.05 mm (0.00197 in.)

NOTICE:

Make sure that the dial indicator is set at a right angle to the measurement surface.

If the looseness is more than the maximum, replace the axle hub.

6. INSPECT FRONT AXLE HUB RUNOUT



(a) Using a dial indicator, measure the runout on the surface of the axle hub outside the hub bolts.

Maximum runout:
0.08 mm (0.00315 in.)

NOTICE:

Make sure that the dial indicator is set at a right angle to the measurement surface.

If the runout is more than the maximum, replace the axle hub.

7. INSTALL FRONT AXLE HUB GREASE CAP INFO

8. INSTALL FRONT DISC INFO

9. INSTALL DISC BRAKE CYLINDER ASSEMBLY LH INFO

10. INSTALL FRONT WHEEL

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Torque: 131 N·m (1336 kgf·cm, 97ft·lbf)



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X6018X
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): REMOVAL (2010 4Runner)		

REMOVAL

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

2. REMOVE DISC BRAKE CYLINDER ASSEMBLY LH

3. REMOVE FRONT DISC

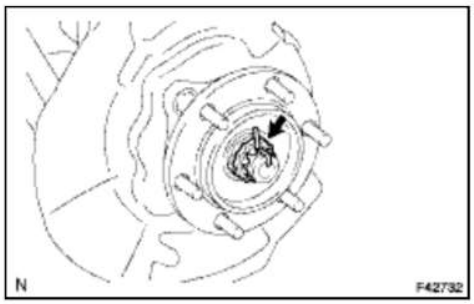
4. REMOVE FRONT AXLE HUB GREASE CAP

(a) Using a screwdriver and hammer, remove the front axle hub grease cap.

NOTICE:

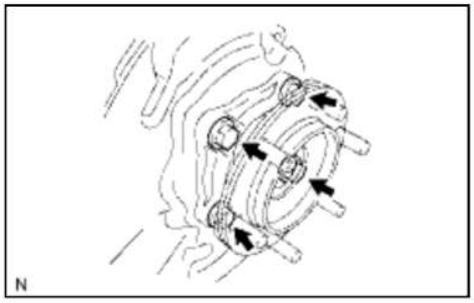
Do not damage the axle hub.

5. REMOVE FRONT AXLE SHAFT NUT



(a) Remove the cotter pin and lock cap.

(b) Remove the front axle shaft nut.



6. REMOVE FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Remove the 4 bolts.

(b) Using a plastic-faced hammer, tap out the front drive shaft from the front axle hub.

NOTICE:

Be careful not to damage the drive shaft boot.

(c) Remove the front axle hub and front disc dust cover.

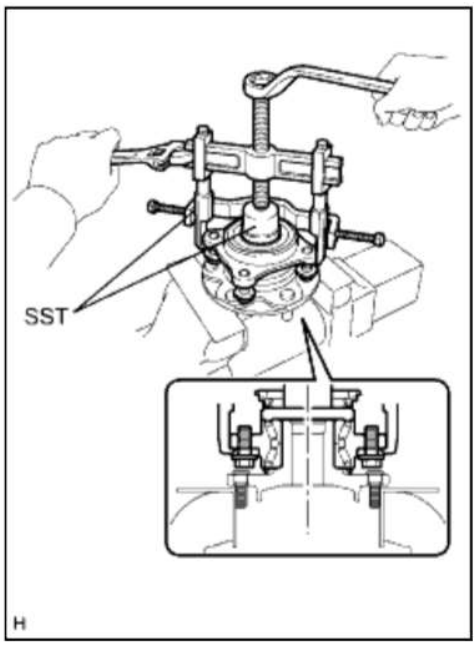
(d) Remove the O-ring.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X7015X
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

1. REMOVE FRONT AXLE WITH ABS ROTOR BEARING ASSEMBLY LH



(a) Gently fix the front axle hub in a vise between aluminum plates.

(b) Using SST, remove the bearing.

SST: 09710-30021

09710-03051

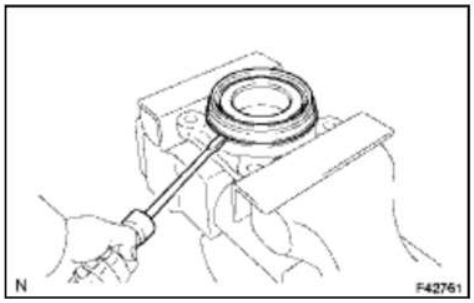
SST: 09950-40011

09951-04020
09952-04010
09953-04020
09954-04010
09955-04061
09957-04010
09958-04011

2. REMOVE FRONT AXLE HUB OIL SEAL LH

(a) Using a screwdriver, remove the front axle hub oil seal.

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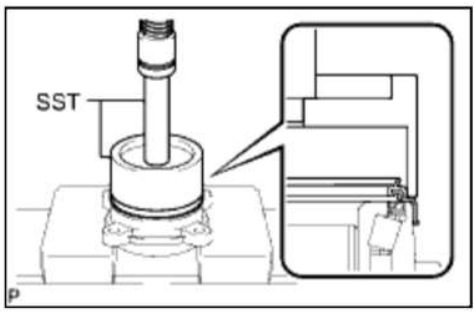


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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X8015X
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): REASSEMBLY (2010 4Runner)		

REASSEMBLY

1. INSTALL FRONT AXLE HUB OIL SEAL LH



(a) Using SST and a press, press in a new oil seal.

SST: 09608-36010

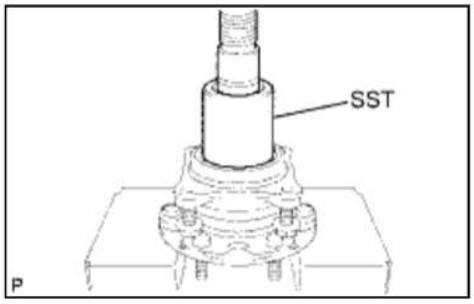
SST: 09950-70010

09951-07100

NOTICE:

Do not damage the oil seal.

2. INSTALL FRONT AXLE WITH ABS ROTOR BEARING ASSEMBLY LH



(a) Using SST and a press, install a new bearing to the front axle hub.

SST: 09649-17010

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016X401GX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB (for 4WD): INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. INSTALL FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Apply MP grease to a new O-ring.

(b) Install the O-ring to the axle hub.

(c) Install the dust cover and axle hub to the steering knuckle with the 4 bolts.

Torque: 80 N·m (816 kgf·cm, 59ft·lbf)

2. INSTALL FRONT AXLE SHAFT NUT

(a) Clean the threaded parts on the drive shaft and axle shaft nut using a non-residue solvent.

(b) Install the front axle shaft nut.

Torque: 235 N·m (2396 kgf·cm, 173ft·lbf)

(c) Install the adjusting cap and cotter pin.

3. INSTALL FRONT AXLE HUB GREASE CAP

(a) Install the axle hub grease cap.

NOTICE:

Make sure the grease cap is securely installed to the axle hub.

4. INSTALL FRONT DISC INFO

5. INSTALL DISC BRAKE CYLINDER ASSEMBLY LH INFO

6. BLEED BRAKE LINE

(a) Bleed the brake line INFO .

7. CHECK FLUID LEVEL IN RESERVOIR INFO

8. CHECK FOR BRAKE FLUID LEAKAGE

9. INSTALL FRONT WHEEL

Torque: 112 N·m (1142 kgf·cm, 83ft·lbf)

10. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .

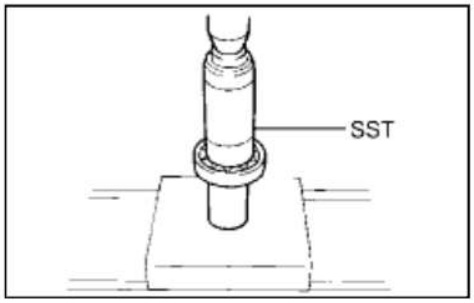
11. CHECK SPEED SENSOR SIGNAL

(a) Inspect the speed sensor signal INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MO00EX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD): REASSEMBLY (2010 4Runner)		

REASSEMBLY



1. INSTALL FRONT DIFFERENTIAL SIDE GEAR SHAFT BEARING RH

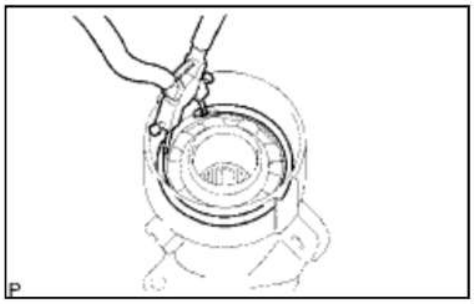
(a) Using SST and a press, press in the shaft bearing.

SST: 09223-00010

(b) Using a snap ring expander, install the snap ring.

HINT:

Install the snap ring securely.



2. INSTALL DIFFERENTIAL SIDE GEAR SHAFT SUB-ASSEMBLY RH

(a) Install the shaft to the differential tube.

(b) Using snap ring expander, install the snap ring.

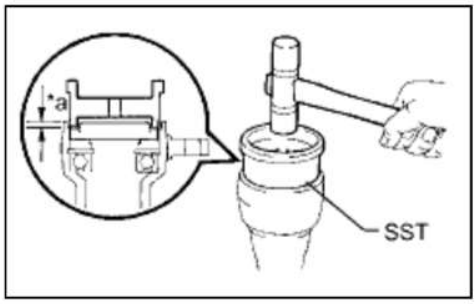
HINT:

Install the snap ring securely.

3. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Coat the lip of a new oil seal with MP grease.

(b) Using SST and a plastic-faced hammer, tap in the oil seal.



SST: 09223-15020

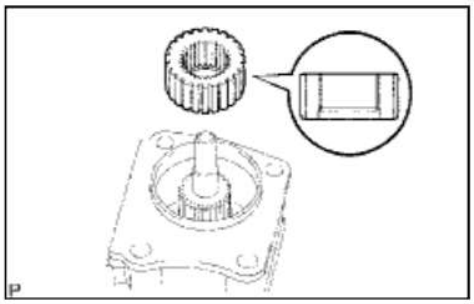
Standard oil seal depth:

4.8 to 5.8 mm (0.189 to 0.229 in.)

Text in Illustration

*a	Oil Seal Depth

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4. INSTALL DIFFERENTIAL CLUTCH HUB (w/ A.D.D.)

(a) Install the clutch hub to the side gear inter shaft.

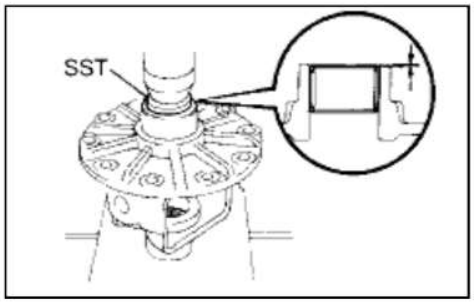
(b) Using snap ring pliers, install the snap ring.

HINT:

Install the snap ring securely.

NOTICE:

Install the differential clutch hub so that it is facing in the correct direction.



5. INSTALL FRONT DIFFERENTIAL SIDE GEAR NEEDLE ROLLER BEARING (w/ A.D.D.)

(a) Using SST and a press, press in 2 new bearings.

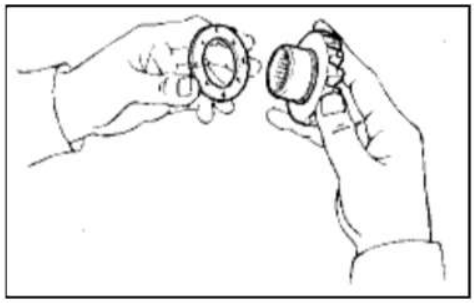
SST: 09950-60010

09951-00380

Standard needle roller bearing depth:

1.4 to 2.0 mm (0.0551 to 0.0787 in.)

6. INSTALL DIFFERENTIAL CASE ASSEMBLY

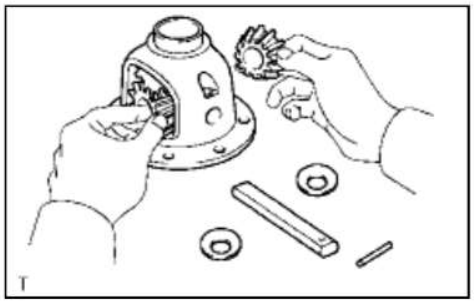


(a) Install the 2 thrust washers to the 2 side gears.

Standard Thrust Washer:

SPECIFIED CONDITION	SPECIFIED CONDITION
1.48 to 1.52 mm (0.0583 to 0.0598 in.)	1.73 to 1.77 mm (0.0681 to 0.0697 in.)
1.53 to 1.57 mm (0.0602 to 0.0618 in.)	1.78 to 1.82 mm (0.0701 to 0.0717 in.)
1.58 to 1.62 mm (0.0622 to 0.0638 in.)	1.83 to 1.87 mm (0.0720 to 0.0736 in.)
1.63 to 1.67 mm (0.0642 to 0.0657 in.)	1.88 to 1.92 mm (0.0740 to 0.0756 in.)
1.68 to 1.72 mm (0.0661 to 0.0677 in.)	-

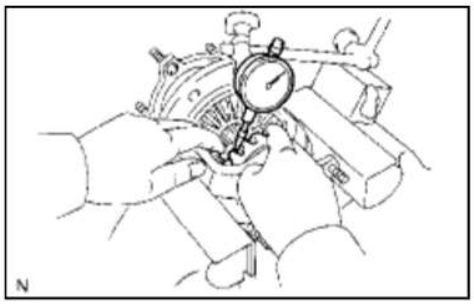
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(b) Install the 2 side gears, 2 pinion gears, 2 side gear thrust washers, 2 pinion thrust washers and pinion shaft to the differential case.

HINT:

Align the holes of the differential case and pinion shaft.

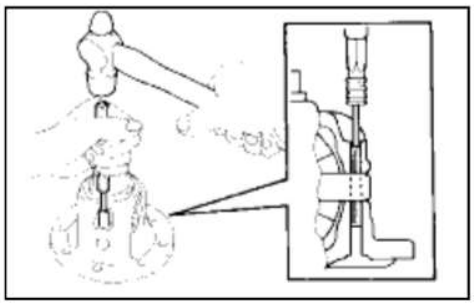


(c) Measure the side gear backlash.

(1) Using a dial indicator, measure the side gear backlash while holding one pinion gear toward the differential case.

Standard backlash:
0.15 mm (0.00591 in.) or less

If the backlash is not as specified, install 2 side gear thrust washers with different thicknesses.



(d) Using a 5 mm pin punch and hammer, tap in the straight pin through the differential case and hole of the pinion shaft.

(e) Stake the differential case.

7. INSTALL DIFFERENTIAL RING GEAR

(a) Clean the contact surfaces of the differential case and ring gear.

(b) Heat the ring gear in water that is approximately 100°C (212°F).

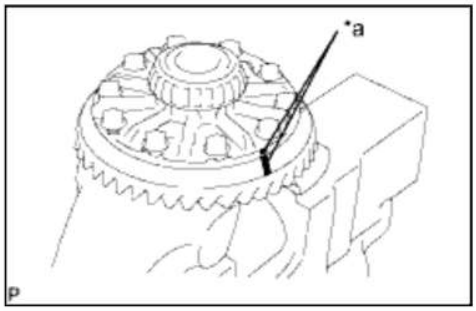
(c) Carefully remove the ring gear from the boiling water.

(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

(e) Align the matchmarks on the ring gear with those of the differential case.

Text in Illustration

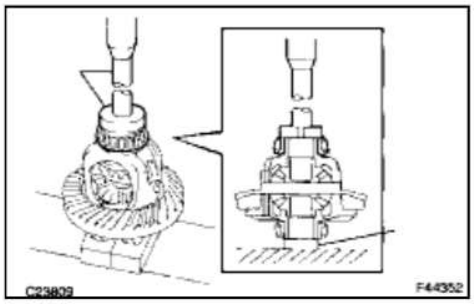
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*a	Matchmark

(f) After the ring gear cools down, apply thread lock adhesive to the 10 set bolts and install them.

Adhesive:
Toyota Genuine Adhesive 1360K, Three Bond 1360K or equivalent
Torque: 115 N·m (1173 kgf·cm, 85ft·lbf)



8. INSTALL FRONT DIFFERENTIAL CASE BEARING

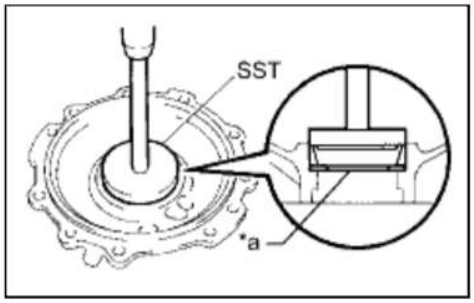
(a) Using SST and a press, press the 2 bearings (inner) into the differential case.

SST: 09950-60010
09951-00520
09951-00610
SST: 09950-70010
09951-07150

9. INSTALL FRONT DIFFERENTIAL CASE BEARING

HINT:

Use the same differential case bearings that were previously installed to the vehicle.



(a) Using SST and a press, press the case bearing (outer race) into the differential case bearing retainer.

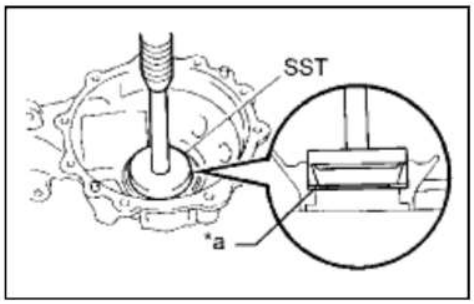
SST: 09950-60020
09951-00810
SST: 09950-70010
09951-07150

Text in Illustration

*a	Case Washer

(b) Using SST and a press, press the case bearing (outer) into the differential carrier.

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SST: 09950-60020

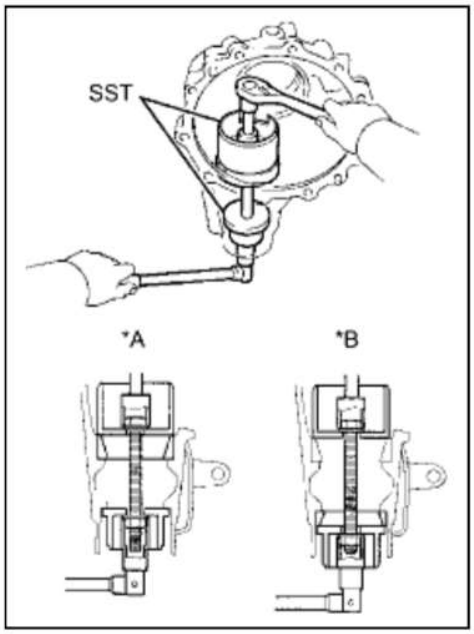
09951-00810

SST: 09950-70010

09951-07150

Text in Illustration

*a	Case Washer



10. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)

(a) Using SST, install the front drive pinion rear tapered roller bearing (outer race).

SST: 09950-00020

09951-00890

09951-00680

Text in Illustration

*A	for Rear
*B	for Front

11. INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using a brass bar and hammer, tap in the oil storage ring.

(b) Using SST, install the front drive pinion front tapered roller bearing (outer race).

SST: 09950-00020

09951-00890

09951-00680

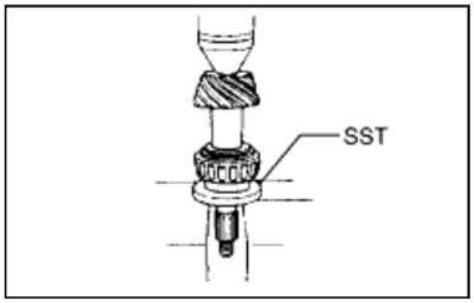
12. INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Install the washer to the drive pinion.

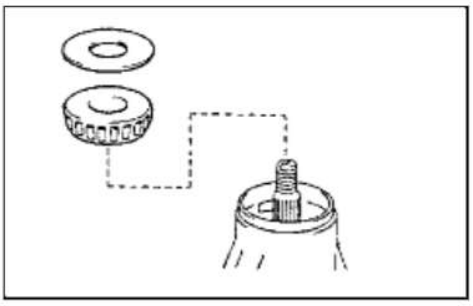
(b) Using SST and a press, press the front bearing onto the drive pinion.

SST: 09506-30012

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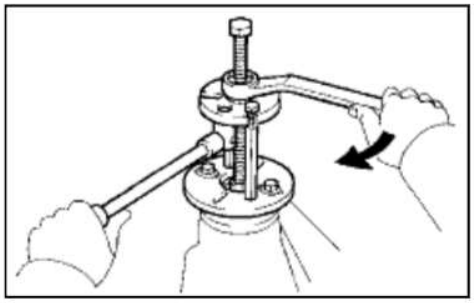
13. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD



(a) Install the drive pinion, roller bearing and oil slinger to the differential case.

HINT:

Install the spacer, oil storage ring and oil seal after adjusting the gear contact pattern.



(b) Using SST, install the companion flange.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03020

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

(c) Adjust the drive pinion preload by tightening the companion flange nut.

(d) Using SST to hold the flange in place, tighten the nut.

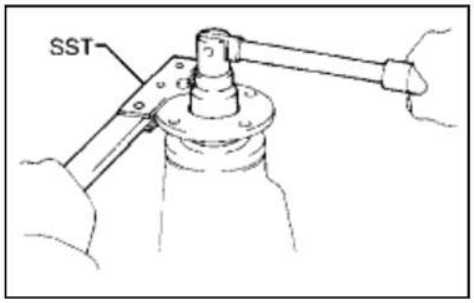
SST: 09330-00021

Torque: 370 N·m (3770 kgf·cm, 273ft·lbf)or less

NOTICE:

- As there is no spacer, tighten the nut a little at a time. Be

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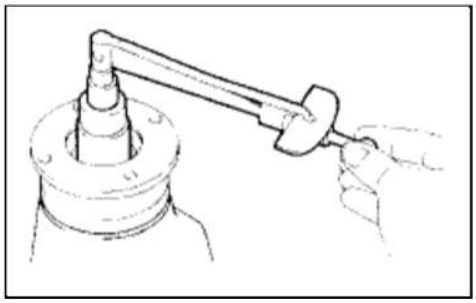


careful not to overtighten it.

- Apply hypoid gear oil to the nut.

(e) Using a torque wrench, measure the preload.

Standard Preload (at Starting):



ITEM	SPECIFIED CONDITION
New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 14 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

NOTICE:

For a more accurate measurement, rotate the bearing forward and backward several times before measuring.

14. INSTALL DIFFERENTIAL CASE ASSEMBLY

15. ADJUST DIFFERENTIAL RING GEAR BACKLASH

(a) Install the side bearing retainer with the 10 bolts.

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

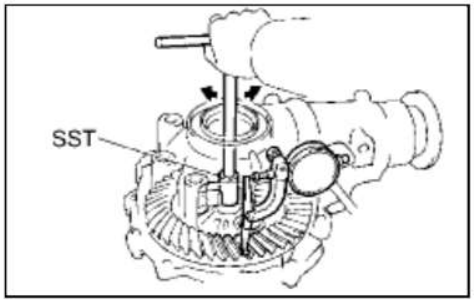
(b) Using SST and a dial indicator, measure the ring gear backlash.

SST: 09564-32011

Standard backlash:

0.11 to 0.21 mm (0.00433 to 0.00827 in.)

If the backlash is not as specified, adjust it by either increasing or decreasing the number of washers on both sides equally.



HINT:

There should be no clearance between the plate washer and case.
Make sure that the ring gear has backlash.

Standard Washer:

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SPECIFIED CONDITION	SPECIFIED CONDITION	SPECIFIED CONDITION
1.57 to 1.59 mm (0.0618 to 0.0626 in.)	1.79 to 1.81 mm (0.0705 to 0.0713 in.)	1.99 to 2.01 mm (0.0783 to 0.0791 in.)
1.59 to 1.61 mm (0.0626 to 0.0634 in.)	1.81 to 1.83 mm (0.0713 to 0.0720 in.)	2.01 to 2.03 mm (0.0791 to 0.0799 in.)
1.61 to 1.63 mm (0.0634 to 0.0642 in.)	1.83 to 1.85 mm (0.0720 to 0.0728 in.)	2.03 to 2.05 mm (0.0799 to 0.0807 in.)
1.63 to 1.65 mm (0.0642 to 0.0650 in.)	1.85 to 1.87 (0.0728 to 0.0736)	2.05 to 2.07 mm (0.0807 to 0.0815 in.)
1.65 to 1.67 mm (0.0650 to 0.0657 in.)	1.87 to 1.89 mm (0.0736 to 0.0744 in.)	2.07 to 2.09 mm (0.0815 to 0.0822 in.)
1.67 to 1.69 mm (0.0657 to 0.0665 in.)	1.89 to 2.01 (0.0744 to 0.0791)	2.09 to 2.11 mm (0.0822 to 0.0830 in.)
1.69 to 1.71 mm (0.0665 to 0.0673 in.)	1.89 to 1.91 mm (0.0744 to 0.0752 in.)	2.11 to 2.13 mm (0.0830 to 0.0839 in.)
1.71 to 1.73 mm (0.0673 to 0.0681 in.)	1.91 to 1.93 mm (0.0752 to 0.0760 in.)	2.13 to 2.15 mm (0.0839 to 0.0846 in.)
1.73 to 1.75 mm (0.0681 to 0.0689 in.)	1.93 to 1.95 mm (0.0760 to 0.0768 in.)	2.15 to 2.17 mm (0.0846 to 0.0854 in.)
1.75 to 1.77 mm (0.0689 to 0.0697 in.)	1.95 to 1.97 mm (0.0768 to 0.0776 in.)	-
1.77 to 1.79 mm (0.0697 to 0.0705 in.)	1.97 to 1.99 mm (0.0776 to 0.0783 in.)	-

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16. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

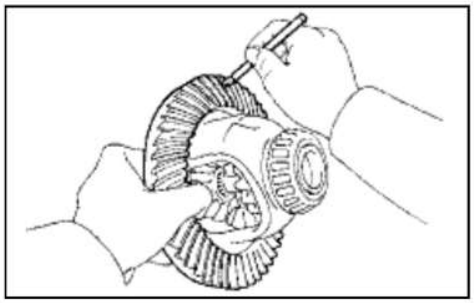
Standard Total Preload (at Starting):

ITEM	SPECIFIED CONDITION
New bearing	1.2 to 2.45N*m (12 to 25 kgf*cm, 10.6 to 21.7 in.*lbf)
Used bearing	0.71 to 1.66 N*m (7.2 to 17 kgf*cm, 6.3 to 14.7 in.*lbf)

- If necessary, disassemble and inspect the differential.

17. ADJUST TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(a) Remove the differential case bearing retainer and differential case.



(b) Coat 3 or 4 teeth at 3 different positions on the ring gear with Prussian blue.

(c) Install the differential case and differential case bearing retainer.

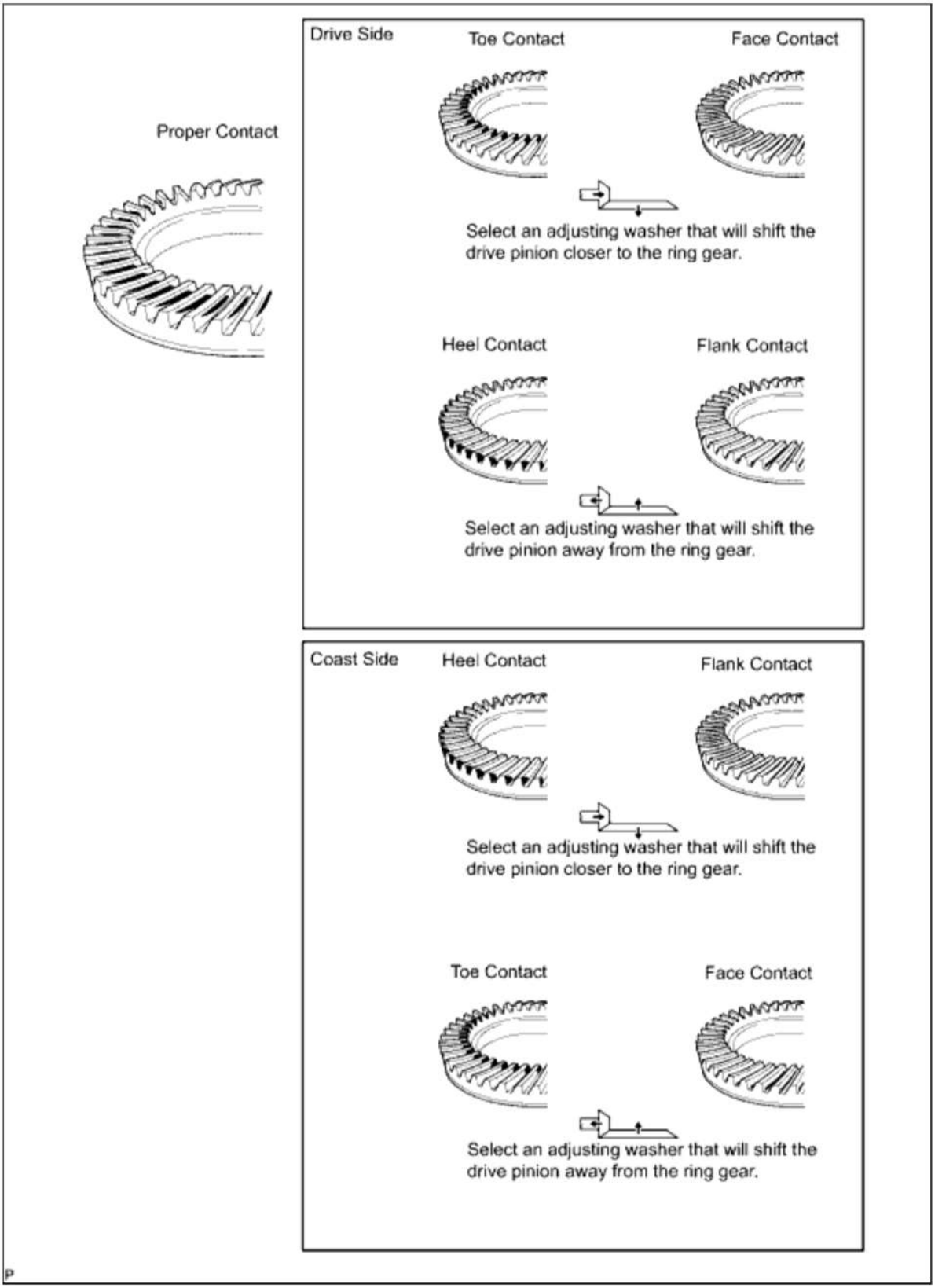
Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

(d) Hold the companion flange firmly in place and rotate the ring gear in both directions.

(e) Remove the differential case bearing retainer and differential case.

(f) Inspect the tooth contact pattern.

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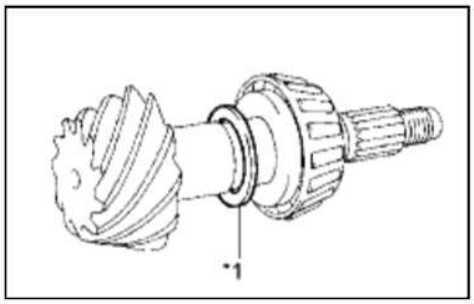


(g) If the teeth are not contacting properly, use the following chart to select an appropriate washer.

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Text in Illustration

*1	Drive Pinion Washer



Standard Washer:

SPECIFIED CONDITION	SPECIFIED CONDITION	SPECIFIED CONDITION
1.69 to 1.71 mm (0.0665 to 0.0673 in.)	1.93 to 1.95 mm (0.0760 to 0.0768 in.)	2.17 to 2.19 mm (0.0854 to 0.0862 in.)
1.72 to 1.74 mm (0.0677 to 0.0685 in.)	1.96 to 1.98 mm (0.0772 to 0.0780 in.)	2.20 to 2.22 mm (0.0866 to 0.0874 in.)
1.75 to 1.77 mm (0.0689 to 0.0697 in.)	1.99 to 2.01 mm (0.0783 to 0.0791in.)	2.23 to 2.25 mm (0.0878 to 0.0886 in.)
1.78 to 1.80 mm (0.0700 to 0.0709 in.)	2.02 to 2.04 mm (0.0795 to 0.0803 in.)	2.26 to 2.28 mm (0.0890 to 0.0898 in.)
1.81 to 1.83 mm (0.0713 to 0.0720 in.)	2.05 to 2.07 mm (0.0807 to 0.0815 in.)	2.29 to 2.31 mm (0.0902 to 0.0909 in.)
1.84 to 1.86 (0.0724 to 0.0732)	2.08 to 2.10 mm (0.0819 to 0.0827 in.)	2.32 to 2.34 mm (0.0913 to 0.0921 in.)
1.87 to 1.89 mm (0.0736 to 0.0744 in.)	2.11 to 2.13 mm (0.0831 to 0.0839 in.)	-
1.90 to 1.92 mm (0.0748 to 0.0756 in.)	2.14 to 2.16 mm (0.0843 to 0.0850 in.)	-

18. REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT INFO

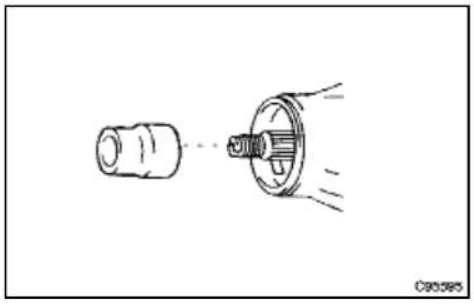
19. REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY INFO

20. REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

21. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (INNER) INFO

22. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER) INFO

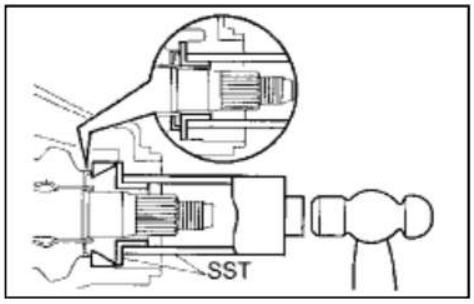
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23. REMOVE FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Remove the front differential drive pinion bearing spacer.

24. INSTALL FRONT DIFFERENTIAL OIL STORAGE RING INFO



25. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)

(a) Using SST and a hammer, install the roller bearing (outer).

SST: 09316-60011

09316-00011

09316-00021

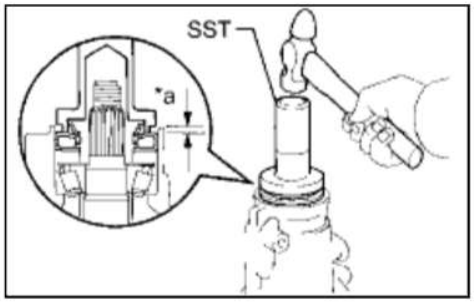
26. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (INNER)

(a) Install the roller bearing (inner).

27. INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

28. INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL

(a) Apply MP grease to the lip of a new oil seal.



(b) Using SST and a hammer, tap in the oil seal.

SST: 09554-22010

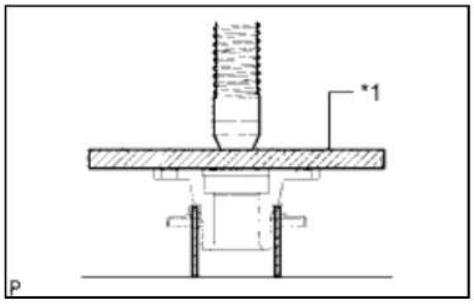
Standard oil seal depth:

3.9 to 4.8 mm (0.154 to 0.189 in.)

29. INSTALL FRONT DIFFERENTIAL DUST DEFLECTOR

(a) Using a steel plate and press, press in a new dust deflector.

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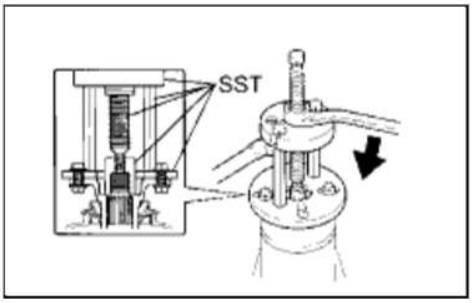


Text in Illustration

*1	Plate

NOTICE:
Do not damage the dust deflector.

30. INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY



(a) Place the companion flange on the drive pinion.

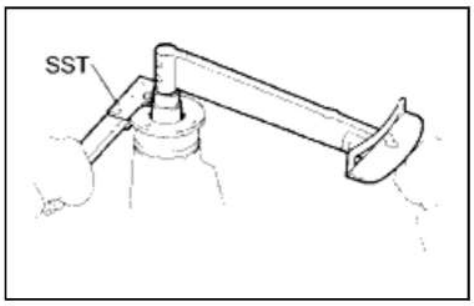
(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST, install the companion flange.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03020

NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(d) Using SST to hold the companion flange in place, tighten the nut to the correct torque.

SST: 09330-00021

09330-00030

Torque: 370 N·m (3770 kgf·cm, 273ft·lbf) or less

31. INSTALL DIFFERENTIAL SIDE BEARING RETAINER

(a) Remove any old FIPG material from the side bearing retainer.

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NOTICE:

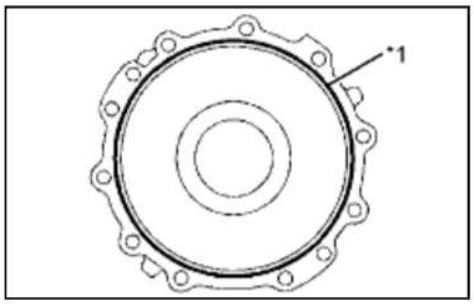
Do not drop oil on the contact surfaces of the differential carrier and side bearing retainer.

(b) Wipe off any residual FIPG material on the contact surface using gasoline or alcohol.

(c) Apply seal packing to the side bearing retainer as shown in the illustration.

Seal packing:

Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



Text in Illustration

*1	Seal Packing

HINT:

Install the side bearing retainer within 10 minutes of applying seal packing.

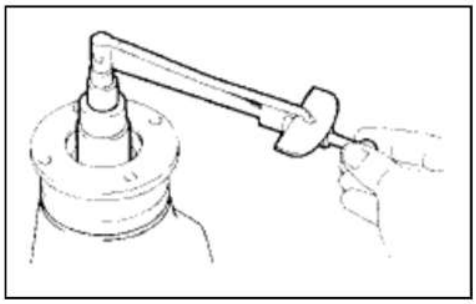
(d) Install the side bearing retainer with the 10 bolts.

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

32. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Standard Preload (at Starting):



ITEM	SPECIFIED CONDITION
New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 14 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

If the preload is more than the maximum, replace the bearing spacer.

If the preload is less than the minimum, retighten the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.

Torque: 370 N·m (3770 kgf·cm, 273ft·lbf) or less

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.

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HINT:

Do not loosen the pinion nut to reduce the preload.

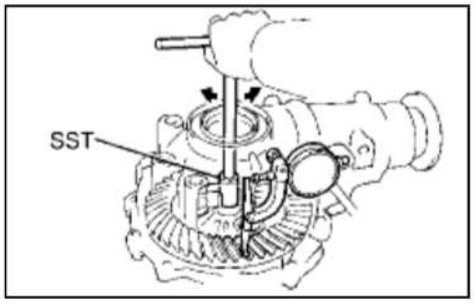
33. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Standard Total Preload (at Starting):

ITEM	SPECIFIED CONDITION
New bearing	1.2 to 2.45 N*m (12 to 25 kgf*cm, 10.6 to 21.7 in.*lbf)
Used bearing	0.71 to 1.66 N*m (7.2 to 17 kgf*cm, 6.3 to 14.7 in.*lbf)

- If necessary, disassemble and inspect the differential.



34. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using SST and a dial indicator, measure the ring gear backlash.

SST: 09564-32011

Standard backlash:

0.11 to 0.21 mm (0.0043 to 0.00827 in.)

If the backlash is not within the specification, adjust the side bearing preload.

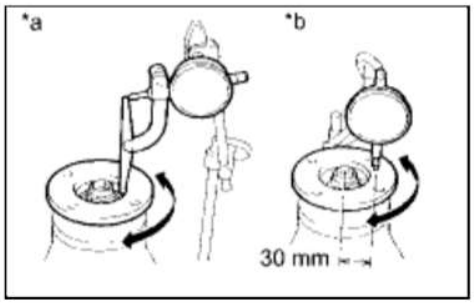
35. INSPECT FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Distance from center to runout measurement point:

30 mm (1.18 in.)

Maximum Runout:



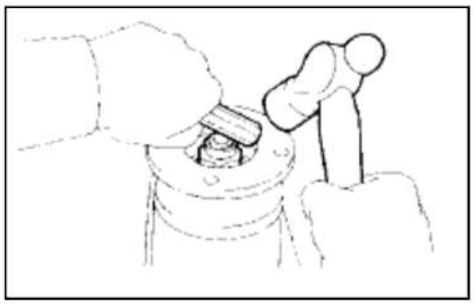
ITEM	SPECIFIED CONDITION
Vertical runout	0.15 mm (0.00591 in.)
Lateral runout	0.15 mm (0.00591 in.)

Text in Illustration

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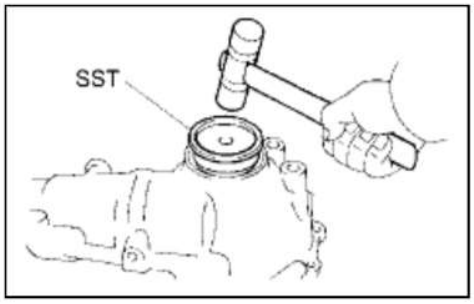
*a	Vertical runout
*b	Lateral runout

If the runout is more than the maximum, replace the companion flange.



36. STAKE FRONT DRIVE PINION COMPANION FLANGE NUT

(a) Using a chisel and hammer, stake the drive pinion nut.



37. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

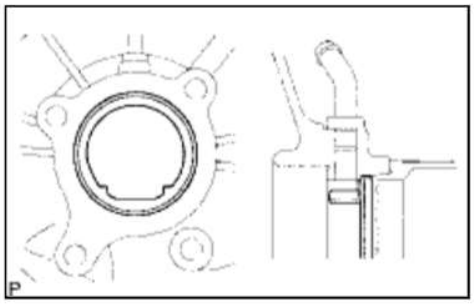
(a) Coat the lip of a new oil seal with MP grease.

(b) Using SST and a plastic-faced hammer, tap in the oil seal until its surface is flush with the differential carrier end.

SST: 09608-32010

Oil seal depth:

-0.45 to 0.45 mm (-0.018 to 0.018 in.)



38. INSTALL FRONT DIFFERENTIAL SIDE BEARING RETAINER DEFLECTOR

(a) Using a brass bar and hammer, tap in the side bearing retainer deflector.

NOTICE:

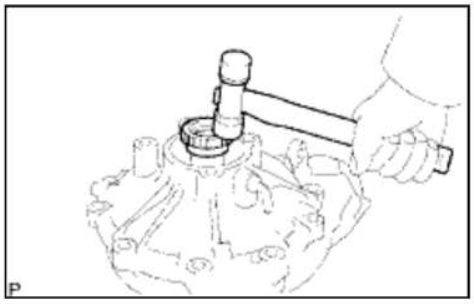
Install the side bearing retainer deflector so that it is facing in the correct direction.

39. INSTALL DIFFERENTIAL SIDE GEAR INTER SHAFT SUB-ASSEMBLY (w/ A.D.D.)

(a) Install a new snap ring to the side gear inter shaft.

(b) Using a plastic-faced hammer, tap the side gear inter shaft

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into the differential case.

(c) Check that there is 2 to 3 mm (0.0787 to 0.118 in.) of axial play.

(d) Check that the side gear inter shaft cannot be completely pulled out by hand.

40. INSTALL FRONT DIFFERENTIAL TUBE ASSEMBLY

(a) Remove any old FIPG material from the contact surfaces of the differential and clutch case.

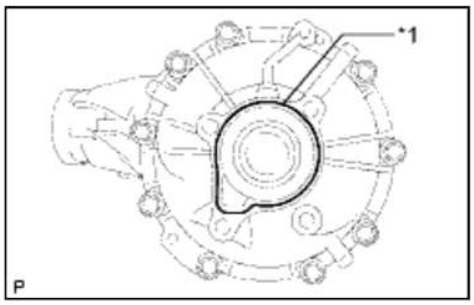
NOTICE:

Do not drop oil on the contact surfaces of the differential and clutch case.

(b) Wipe off any residual FIPG material on the contact surface using gasoline or alcohol.

(c) Apply seal packing to the differential as shown in the illustration.

Seal packing:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



Text in Illustration

*1	Seal Packing

HINT:

Install the differential tube within 10 minutes of applying seal packing.

(d) Install the differential tube to the differential.

(e) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

(f) Apply adhesive to 2 or 3 threads at the tip of each bolt.

Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or equivalent

(g) Using a E14 "TORX" socket wrench, install the 4 bolts.

Torque: 110 N·m (1120 kgf·cm, 81ft·lbf)

41. INSTALL AUTOMATIC DISCONNECTING DIFFERENTIAL ACTUATOR (w/ A.D.D.)

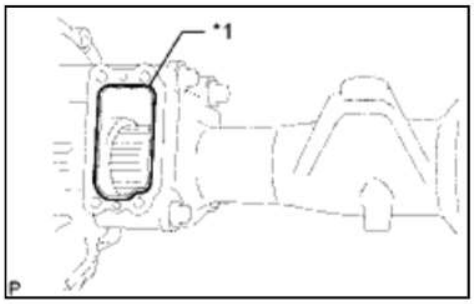
(a) Remove any FIPG material from the contact surfaces of the differential and clutch case. Also, do not drop oil on the contact surfaces.

(b) Wipe off residual FIPG material on the contact surfaces using gasoline or alcohol.

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(c) Apply seal packing to the differential tube as shown in the illustration.

Seal packing:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



Text in Illustration

*1	Seal Packing

HINT:

Install the actuator within 10 minutes of applying seal packing.

(d) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

(e) Install the actuator to the differential tube.

(f) Apply adhesive to 2 or 3 threads at the tip of each bolt.

Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or equivalent

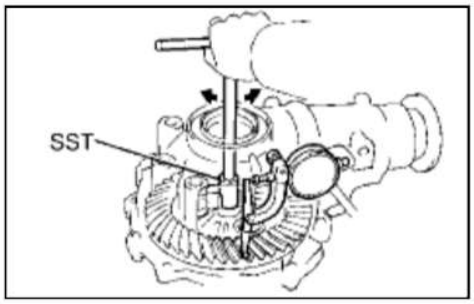
(g) Install the 4 bolts.

Torque: 21 N·m (210 kgf·cm, 15ft·lbf)

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016GC01AX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY



1. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using SST and a dial indicator, measure the ring gear backlash.

SST: 09564-32011

Standard backlash:

0.11 to 0.21 mm (0.00433 to 0.00827 in.)

If the backlash is not as specified, adjust the side bearing preload or perform repairs as necessary.

HINT:

Perform the measurement at 3 or more positions around the circumference of the ring gear.

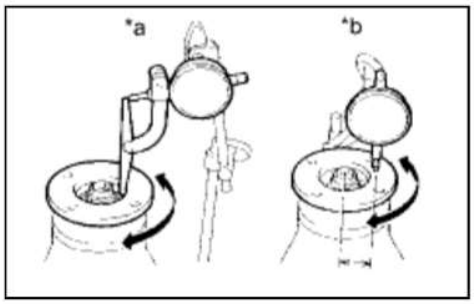
2. INSPECT FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Distance from center to runout measurement point:

30 mm (1.18 in.)

Maximum Runout:



ITEM	SPECIFIED CONDITION
Vertical runout	0.15 mm (0.00591 in.)
Lateral runout	0.15 mm (0.00591 in.)

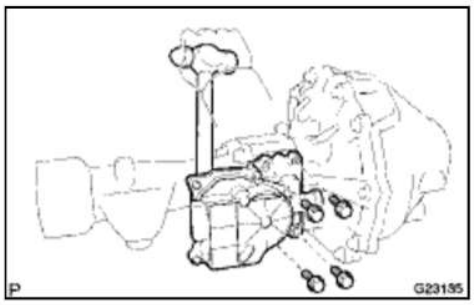
Text in Illustration

*a	Vertical Runout
*b	Lateral Runout

If the runout is more than the maximum, replace the companion flange.

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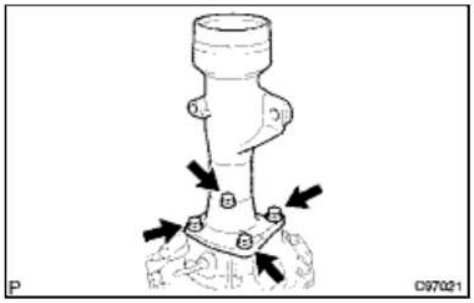
3. REMOVE DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY (w/ A.D.D.)



(a) Remove the 4 bolts.

(b) Using a hammer handle, pry out the actuator from the differential tube.

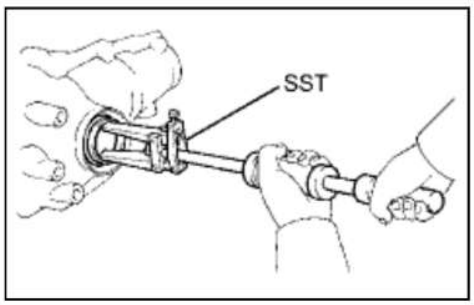
4. REMOVE FRONT DIFFERENTIAL TUBE ASSEMBLY



(a) Using a E14 "TORX" socket wrench, remove the 4 bolts.

(b) Using a plastic-faced hammer, tap out the differential tube.

5. REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL



(a) Using SST, remove the 2 oil seals.

SST: 09308-00010

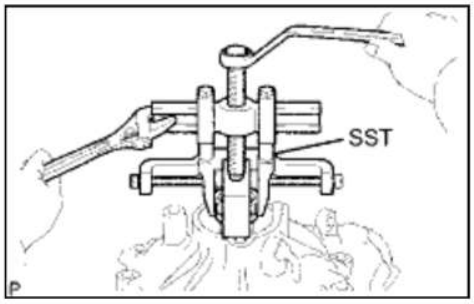
6. REMOVE DIFFERENTIAL SIDE GEAR INTER SHAFT SUB-ASSEMBLY (w/ A.D.D.)

(a) Using SST, remove the side gear inter shaft.

SST: 09350-20015

09369-20040

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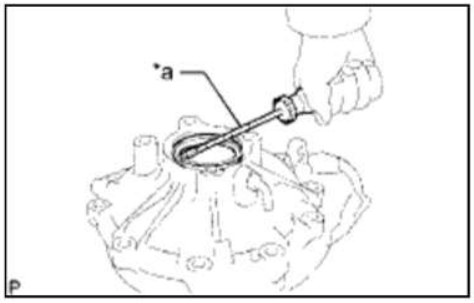


SST: 09950-40011

09951-04010
09952-04010
09953-04020
09954-04010
09955-04011
09957-04010
09958-04011

(b) Remove the snap ring from the side gear inter shaft.

7. REMOVE FRONT DIFFERENTIAL SIDE BEARING RETAINER DEFLECTOR (w/ A.D.D.)



(a) Using a screwdriver pry out the bearing retainer deflector.

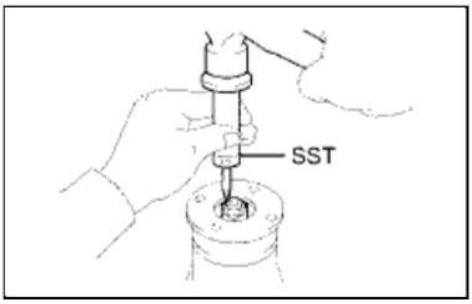
HINT:

Tape the screwdriver tip before use.

Text in Illustration

*a	Protective Tape

8. REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT



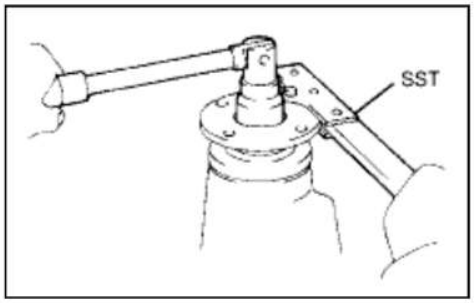
(a) Using SST and a hammer, unstake the nut.

SST: 09930-00010

(b) Using SST to hold the companion flange, remove the nut.

SST: 09330-00021

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9. REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, remove the companion flange.

SST: 09950-30012

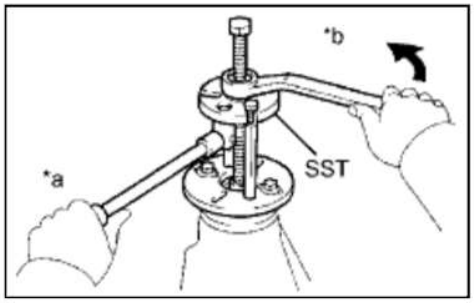
09951-03010

09953-03010

09954-03010

09955-03030

09956-03020



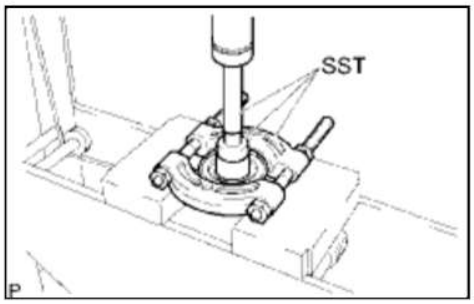
Text in Illustration

*a	Hold
*b	Turn

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

10. REMOVE FRONT DIFFERENTIAL DUST DEFLECTOR



(a) Using SST and a press, press out the dust deflector.

SST: 09950-00020

SST: 09950-60010

09951-00510

SST: 09950-70010

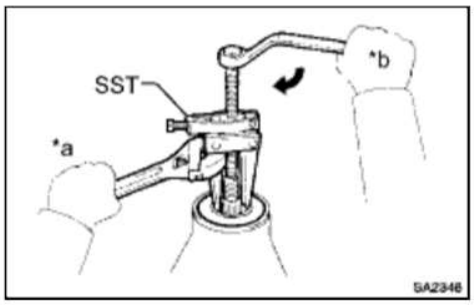
09951-07150

NOTICE:

Do not drop the companion flange.

11. REMOVE FRONT DIFFERENTIAL CARRIER OIL SEAL

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(a) Using SST, remove the oil seal from the differential carrier assembly.

SST: 09308-10010

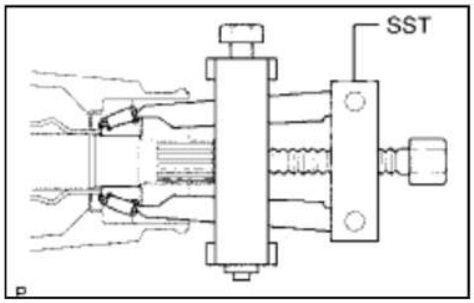
Text in Illustration

*a	Hold
*b	Turn

12. REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

(a) Remove the oil slinger from the drive pinion.

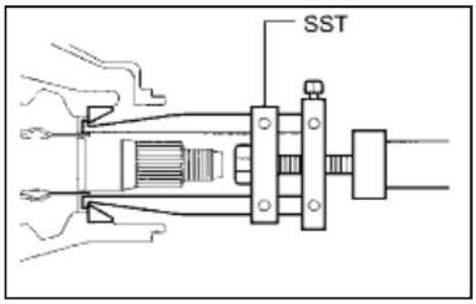
13. REMOVE FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)



(a) Using SST, remove the front tapered roller bearing (inner) from the drive pinion.

SST: 09556-22010

14. REMOVE FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)



(a) Using SST, remove the front tapered roller bearing (outer).

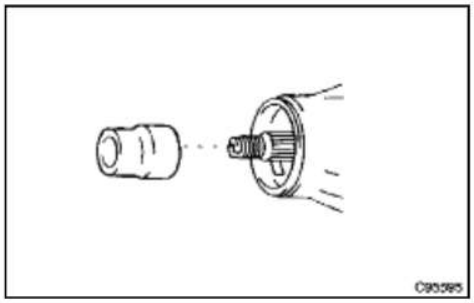
SST: 09308-00010

15. REMOVE FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a screwdriver and hammer, tap out the oil storage ring.

16. REMOVE FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER

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(a) Remove the bearing spacer.

17. REMOVE DIFFERENTIAL SIDE BEARING RETAINER

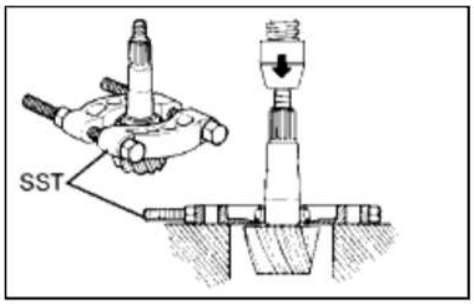
(a) Using a screwdriver, remove the union.

(b) Remove the 10 bolts and tap out the side bearing retainer with a plastic-faced hammer.

18. REMOVE DIFFERENTIAL CASE ASSEMBLY

19. REMOVE DIFFERENTIAL DRIVE PINION

20. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (INNER)



(a) Using SST and a press, remove the rear tapered roller bearing (inner) and washer from the drive pinion.

SST: 09950-00020

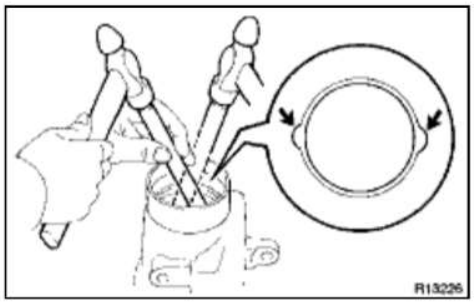
NOTICE:

Do not drop the drive pinion.

HINT:

If the drive gear or ring gear is damaged, replace them as a set.

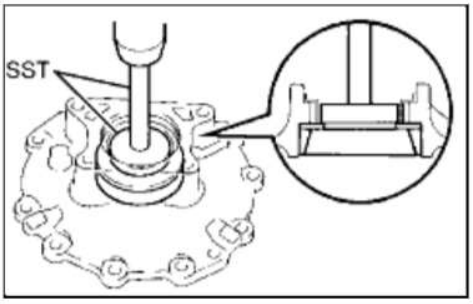
21. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)



(a) Using a brass bar and hammer, remove the rear tapered roller bearing (outer).

22. REMOVE FRONT DIFFERENTIAL CASE BEARING

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HINT:

- Measure the thickness of the case washer.
- Tag the bearing outer races so that they can be reinstalled in the correct locations.

(a) Using SST and a press, press out the case bearing (outer race) and case washer from the bearing retainer.

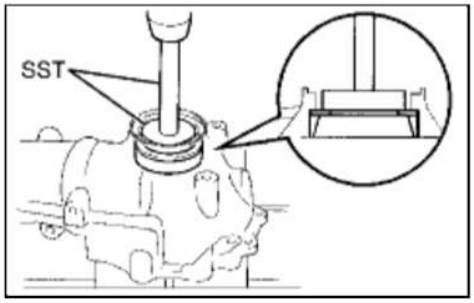
SST: 09950-60020

09951-00680

SST: 09950-70010

09951-07150

If the bearing is damaged during removal, replace it.



(b) Using SST and a press, press out the case bearing (outer race) and plate washer from the differential carrier.

SST: 09950-60020

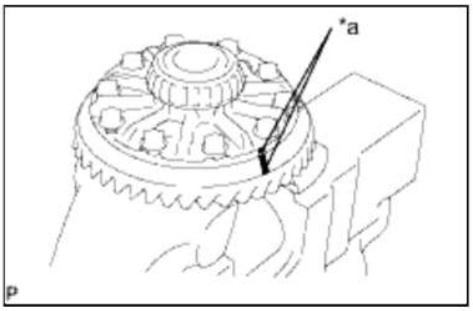
09951-00680

SST: 09950-70010

09951-07150

If the bearing is damaged during removal, replace it.

23. REMOVE DIFFERENTIAL RING GEAR



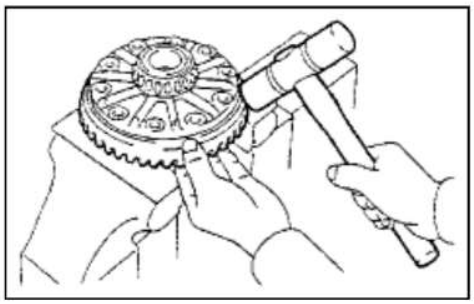
(a) Place matchmarks on the ring gear and differential case.

Text in Illustration

*a	Matchmark

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(b) Remove the 10 ring gear set bolts.



(c) Using a plastic-faced hammer, tap on the ring gear to separate it from the differential case.

24. REMOVE FRONT DIFFERENTIAL CASE BEARING

HINT:

The differential case and case bearings should only be removed when replacement is necessary.

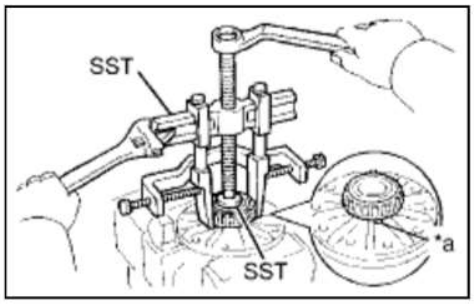
(a) Using SST, remove the 2 differential case bearings (inner) from the differential case.

SST: 09950-60010

09951-00390

SST: 09950-40011

09951-04020
09952-04010
09953-04030
09954-04010
09955-04061
09957-04010
09958-04011



Text in Illustration

*a	Notch

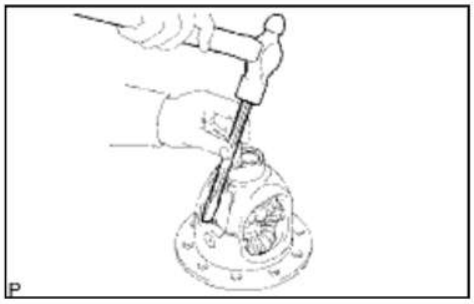
HINT:

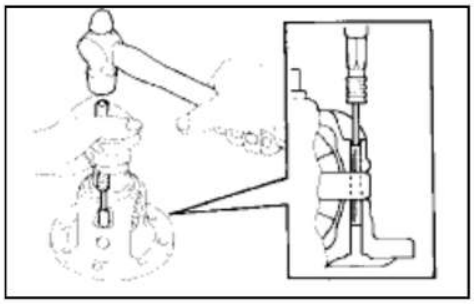
Set the claws of SST into the notches in the differential case.

25. REMOVE DIFFERENTIAL CASE ASSEMBLY

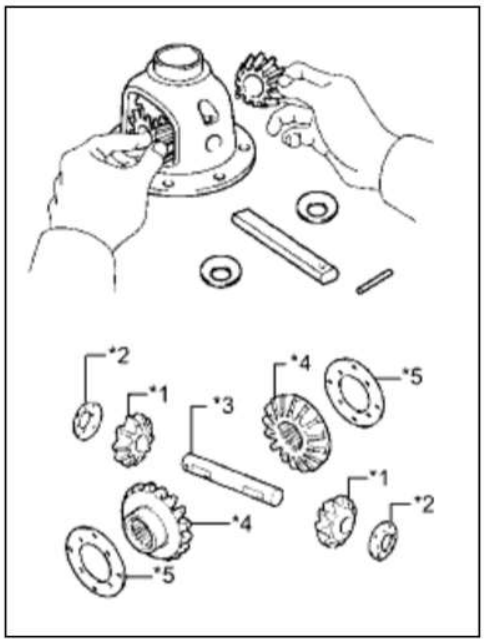
(a) Using a chisel and hammer, unstake the differential case.

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(b) Using a 5 mm pin punch and hammer, tap out the straight pin.



(c) Remove the parts shown in the illustration from the differential case.

Text in Illustration

*1	Differential Pinion Gear
*2	Differential Pinion Gear Thrust Washer
*3	Differential Pinion Shaft
*4	Differential Side Gear
*5	Differential Side Gear Thrust Washer

26. INSPECT DIFFERENTIAL GEAR KIT

(a) Check that the differential pinion and differential side gear are not damaged.

If the differential pinion or differential side gear is damaged, replace the differential gear kit.

27. INSPECT FRONT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.

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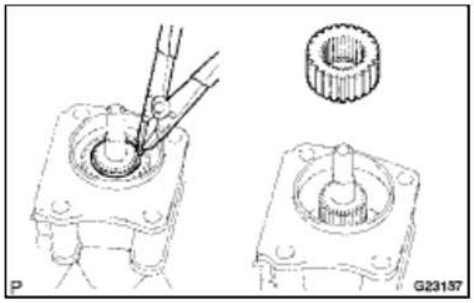
If the differential case is damaged, replace it.

28. REMOVE FRONT DIFFERENTIAL SIDE GEAR NEEDLE ROLLER BEARING (w/ A.D.D.)



(a) Using a brass bar and hammer, tap out the 2 bearings.

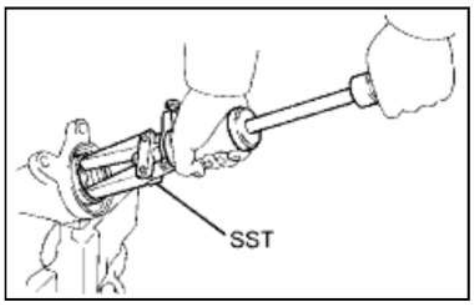
29. REMOVE DIFFERENTIAL CLUTCH HUB (w/ A.D.D.)



(a) Using a snap ring expander, remove the snap ring.

(b) Remove the differential clutch hub.

30. REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL



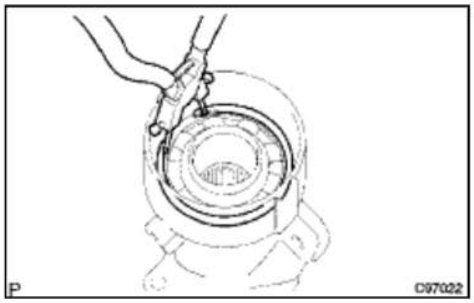
(a) Using SST, tap out the oil seal from the differential tube.

SST: 09308-00010

31. REMOVE DIFFERENTIAL SIDE GEAR SHAFT SUB-ASSEMBLY RH

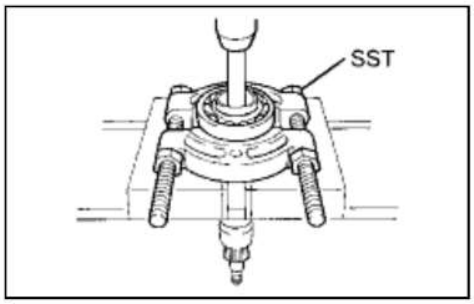
(a) Using a snap ring expander, remove the snap ring.

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(b) Remove the side gear shaft from the differential tube.

32. REMOVE FRONT DIFFERENTIAL SIDE GEAR SHAFT BEARING RH



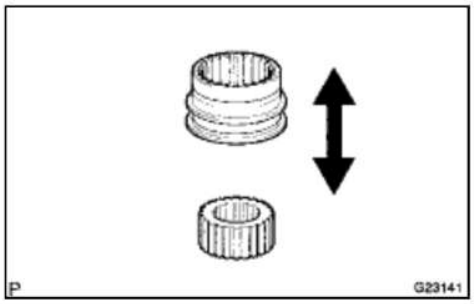
(a) Using a snap ring expander, remove the snap ring.

(b) Using SST, a brass bar and press, press out the bearing.

SST: 09950-00020

NOTICE:

- Do not damage the bearing.
- Do not drop the shaft.



33. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND DIFFERENTIAL CLUTCH HUB (w/ A.D.D.)

(a) Check that there is no wear or damage to the clutch hub and clutch sleeve.

Replace parts as necessary.

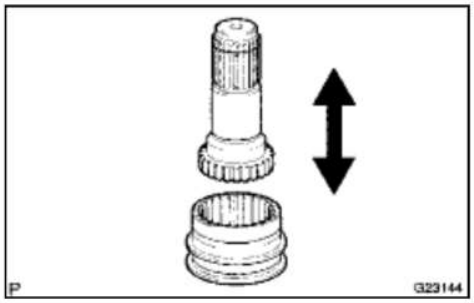
(b) Check that the clutch sleeve slides smoothly on the clutch hub.

Replace parts as necessary.

34. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND DIFFERENTIAL SIDE GEAR INTER SHAFT (w/ A.D.D.)

(a) Check for wear and damage to the clutch hub and side gear

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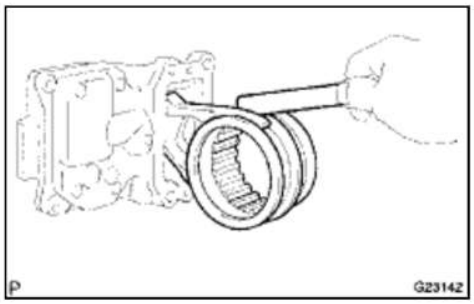
inter shaft.

Replace parts as necessary.

(b) Check that the clutch sleeve slides smoothly on the side gear inter shaft.

Replace parts as necessary.

35. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND CLUTCH SLEEVE FORK CLEARANCE (w/ A.D.D.)



(a) Using a feeler gauge, measure the clearance between the sleeve fork and clutch sleeve.

Maximum clearance:
0.15 to 0.35 mm (0.00591 to 0.0138 in.)

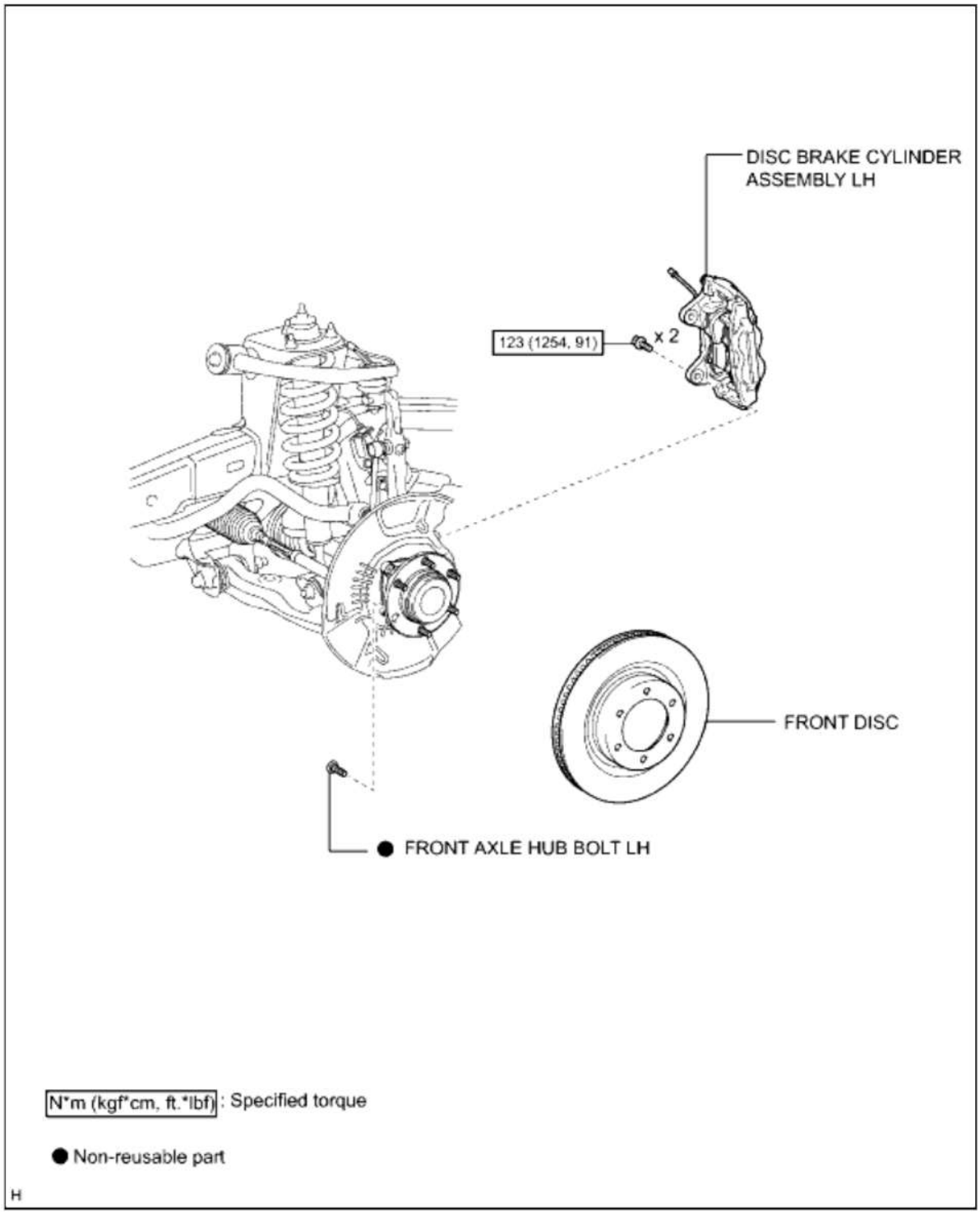
If the clearance is more than the maximum, replace the fork or clutch sleeve.

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002A7C00QX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB BOLT: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XA00KX
Title: AXLE AND DIFFERENTIAL: FRONT AXLE HUB BOLT: REPLACEMENT (2010 4Runner)		

REPLACEMENT

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE FRONT WHEEL

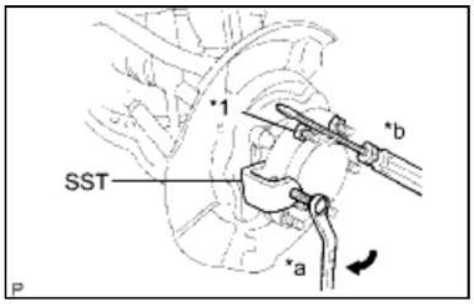
2. REMOVE DISC BRAKE CYLINDER ASSEMBLY LH INFO

3. REMOVE FRONT DISC INFO

4. REMOVE FRONT AXLE HUB BOLT LH

(a) Using SST and a screwdriver or equivalent to hold the axle hub, remove the front axle hub bolt.

SST: 09611-12010



Text in Illustration

*1	Nut
*a	Turn
*b	Hold

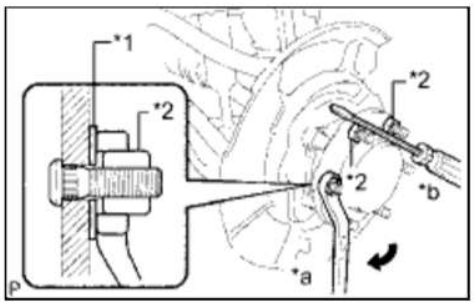
NOTICE:

Do not damage the threads of the hub bolt.

5. INSTALL FRONT AXLE HUB BOLT LH

(a) Insert a new hub bolt.

(b) Temporarily install a washer and hub nut to the hub bolt as shown in the illustration.



Text in Illustration

*1	Washer
*2	Nut

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*a	Turn
*b	Hold

NOTICE:

Install a hub nut to prevent damage to the hub bolt.

(c) Using a screwdriver or equivalent to hold the hub, turn the hub nut until the bottom surface of the hub bolt head touches the axle hub.

(d) Remove the hub nut and washer.

NOTICE:

Do not damage the threads of the hub bolt.

6. INSTALL FRONT DISC INFO

7. INSTALL DISC BRAKE CYLINDER ASSEMBLY LH INFO

8. INSTALL FRONT WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

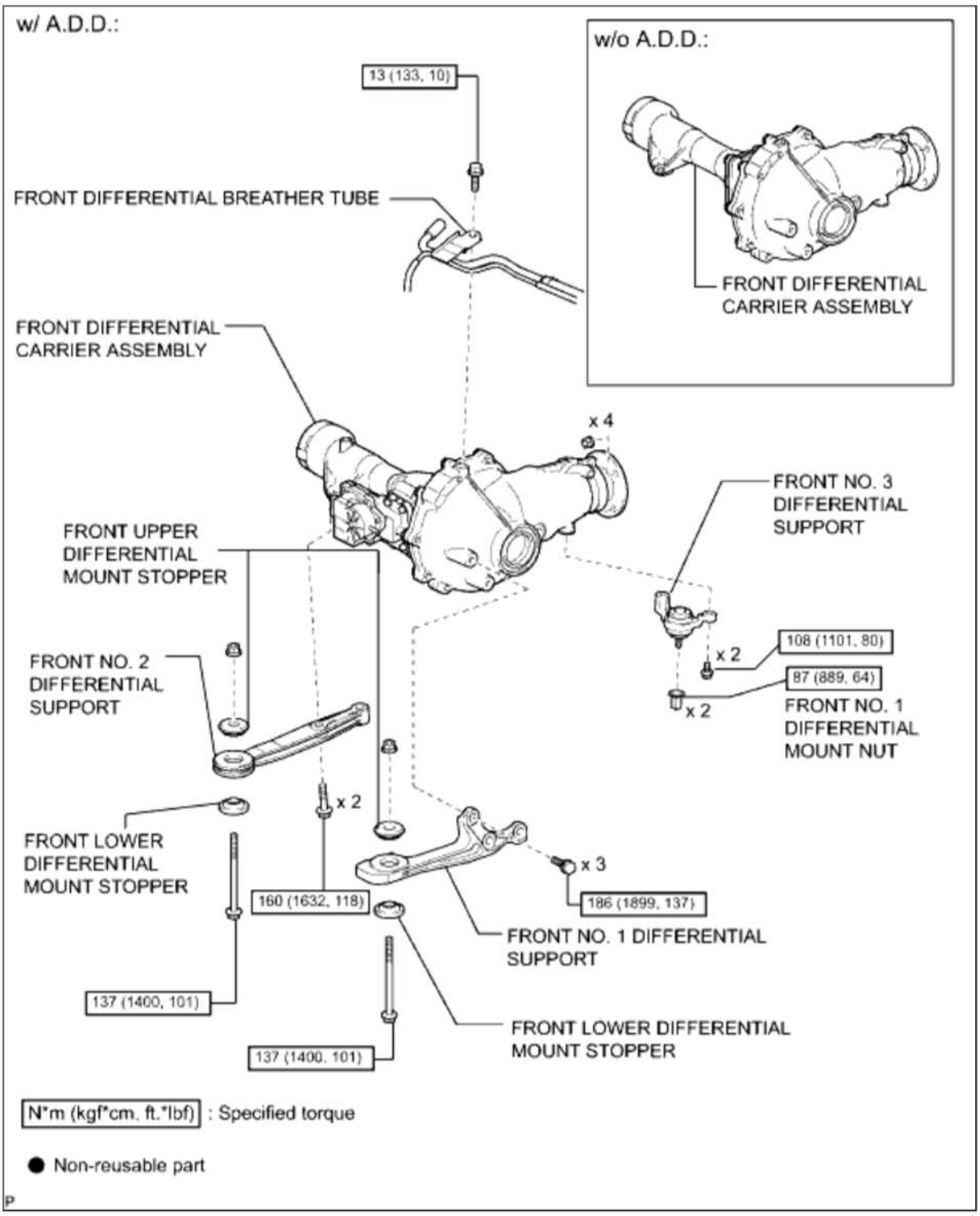
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016GB00ZX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD): COMPONENTS (2010 4Runner)		

COMPONENTS

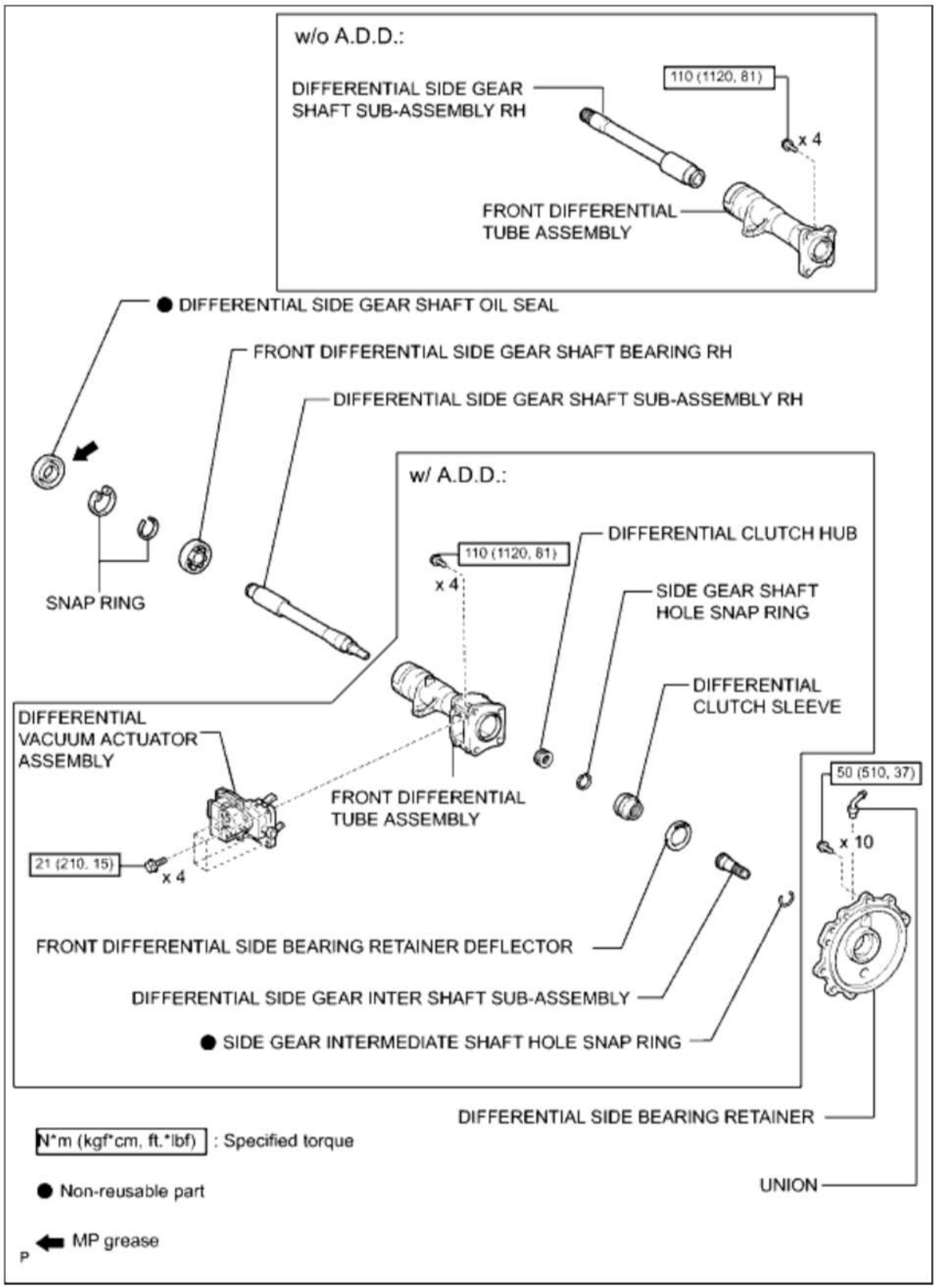
ILLUSTRATION

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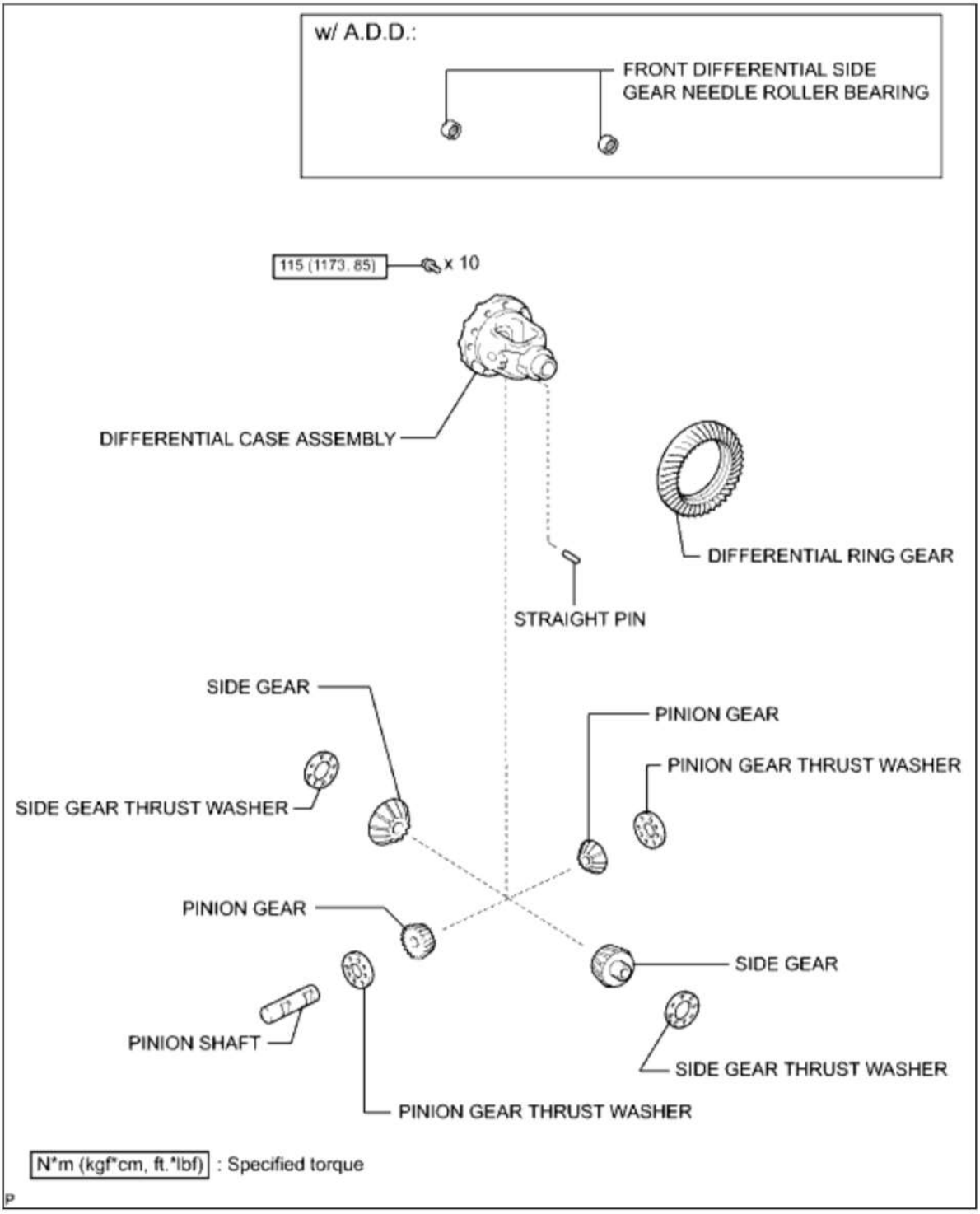
ILLUSTRATION

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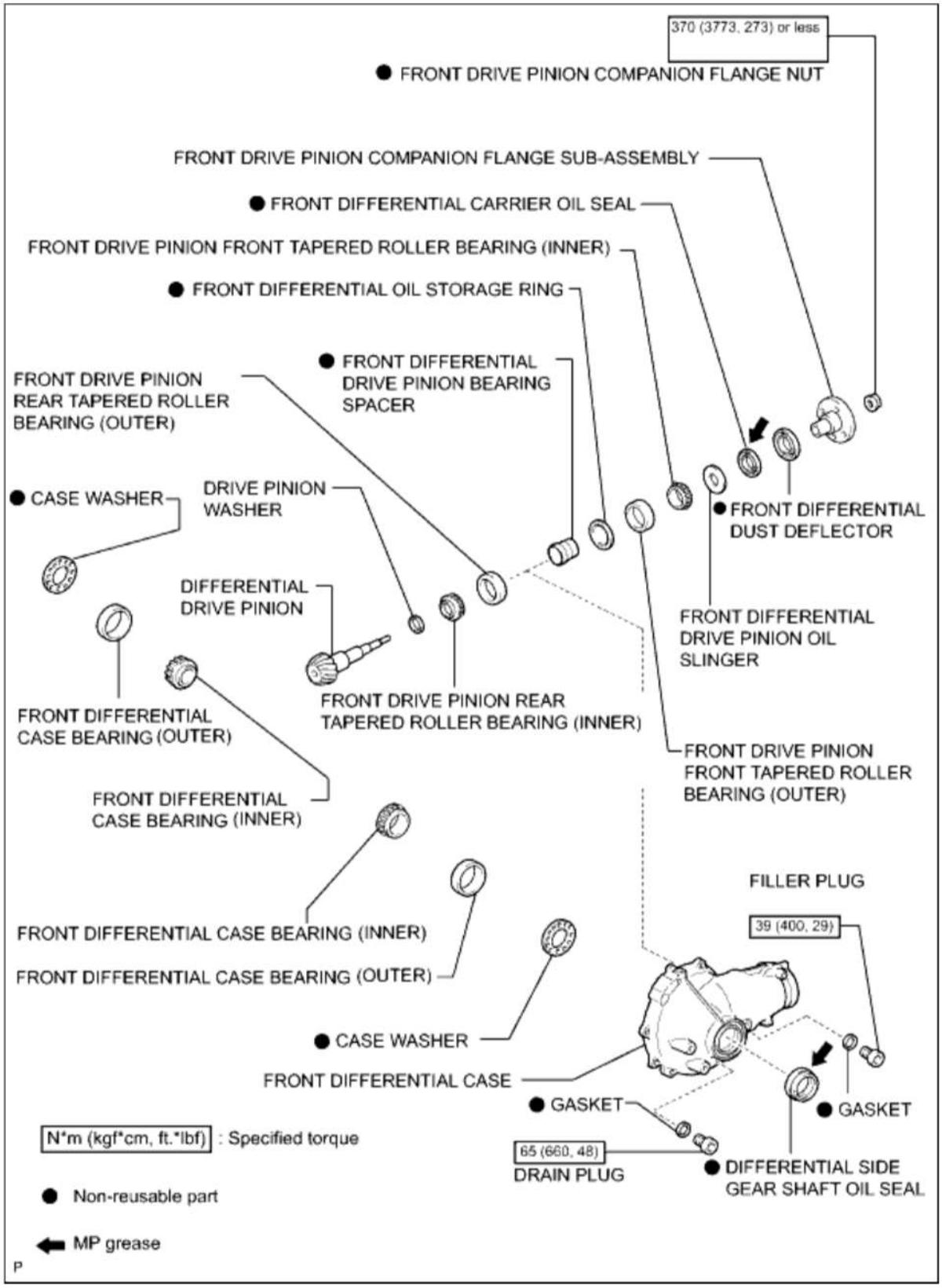
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000017BM018X
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD): REMOVAL (2010 4Runner)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

2. REMOVE NO. 1 ENGINE UNDER COVER SUB-ASSEMBLY

(a) Remove the No. 1 engine under cover INFO .

3. REMOVE REAR ENGINE UNDER COVER ASSEMBLY

(a) Remove the rear engine under cover INFO .

4. REMOVE FRONT DRIVE SHAFT ASSEMBLY

(a) Remove the front drive shaft INFO .

5. REMOVE FRONT WHEELS

6. REMOVE FRONT PROPELLER SHAFT ASSEMBLY

(a) Remove the front propeller shaft INFO .

7. REMOVE FRONT STABILIZER LINK ASSEMBLY

(a) Remove the stabilizer link INFO .

8. REMOVE FRONT SPEED SENSOR

(a) Remove the front speed sensor INFO .

9. DISCONNECT TIE ROD END SUB-ASSEMBLY LH

(a) Disconnect the tie rod end sub-assembly INFO .

10. DISCONNECT TIE ROD END SUB-ASSEMBLY RH

(a) Disconnect the tie rod end sub-assembly INFO .

11. REMOVE FRONT LOWER NO. 1 SUSPENSION ARM SUB-ASSEMBLY LH

(a) Remove the front lower No. 1 suspension arm sub-assembly INFO .

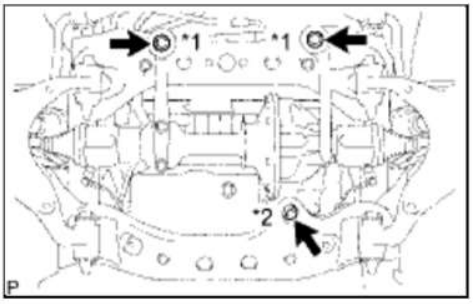
12. REMOVE FRONT LOWER NO. 1 SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

13. REMOVE FRONT DIFFERENTIAL CARRIER ASSEMBLY

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(a) Remove the bolt and disconnect the front differential breather tube bracket.

(b) Support the front differential with a jack.

(c) Remove the front No. 1 differential mount nut.

(d) Remove the 2 front mounting bolts and nut.

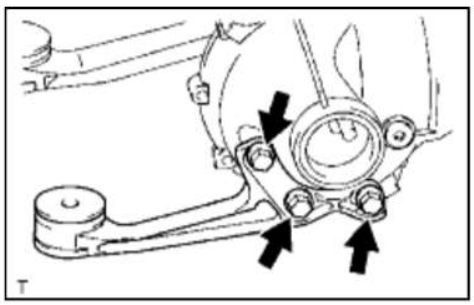
Text in Illustration

*1	Mounting Bolt
*2	Mounting Nut

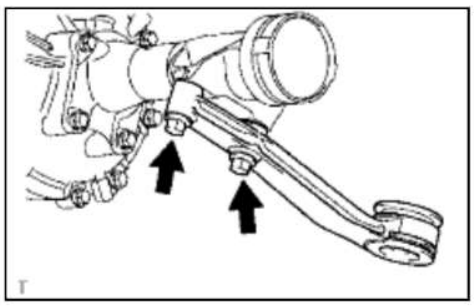
(e) for w/A.D.D. :

Disconnect the actuator hose and connector.

(f) Lower the jack and remove the front differential.



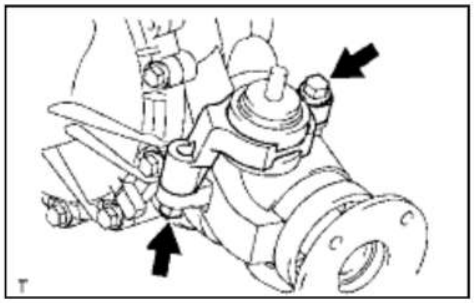
(g) Remove the 3 bolts and front No. 1 differential support.



(h) Remove the 2 bolts and front No. 2 differential support.

(i) Remove the 2 bolts and front No. 3 differential support.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MK00EX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL FRONT DIFFERENTIAL CARRIER ASSEMBLY

(a) Install the front No. 3 differential support with the 2 bolts.

Torque: 108 N·m (1101 kgf·cm, 80ft·lbf)

(b) Install the front No. 2 differential support with the 2 bolts.

Torque: 160 N·m (1632 kgf·cm, 118ft·lbf)

(c) Install the front No. 1 differential support with the 3 bolts.

Torque: 186 N·m (1899 kgf·cm, 137ft·lbf)

(d) Support the front differential with a jack.

(e) Install the 2 front mounting bolts and 2 nuts.

Torque: 137 N·m (1400 kgf·cm, 101ft·lbf)

(f) for w/A.D.D. :

Connect the actuator hose and connector.

(g) Install the No. 1 front differential mounting nut.

Torque: 87 N·m (889 kgf·cm, 64ft·lbf)

(h) Install the front differential breather tube bracket with the bolt.

Torque: 13 N·m (133 kgf·cm, 10ft·lbf)

(i) Lower the jack.

2. INSTALL FRONT DRIVE SHAFT ASSEMBLY

(a) Install the front drive shaft assembly INFO .

3. INSTALL FRONT LOWER NO. 1 SUSPENSION ARM SUB-ASSEMBLY LH

(a) Install the front lower No. 1 suspension arm sub-assembly INFO .

4. INSTALL FRONT LOWER NO. 1 SUSPENSION ARM SUB-ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

5. CONNECT TIE ROD END SUB-ASSEMBLY LH

(a) Connect the tie rod end sub-assembly LH INFO .

6. CONNECT TIE ROD END SUB-ASSEMBLY RH

(a) Connect the tie rod end sub-assembly RH INFO .

7. INSTALL FRONT SPEED SENSOR

(a) Install the front speed sensor INFO .

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8. INSTALL FRONT WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

9. INSPECT DIFFERENTIAL OIL LEVEL INFO

10. CHECK FOR DIFFERENTIAL OIL LEAKAGE

11. INSTALL REAR ENGINE UNDER COVER ASSEMBLY INFO

12. INSTALL NO. 1 ENGINE UNDER COVER INFO

13. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

14. CHECK SPEED SENSOR SIGNAL

(a) Check the VSC sensor signal INFO .

15. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .



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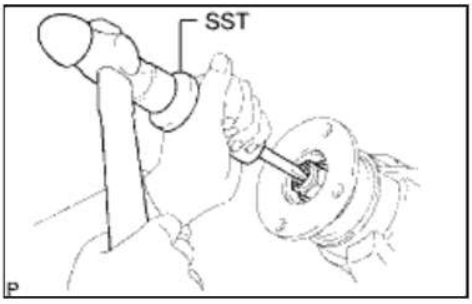
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000026G6005X
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER OIL SEAL (for 4WD): REPLACEMENT (2010 4Runner)		

REPLACEMENT

1. REMOVE FRONT DIFFERENTIAL CARRIER ASSEMBLY

(a) Remove the front differential carrier assembly INFO .

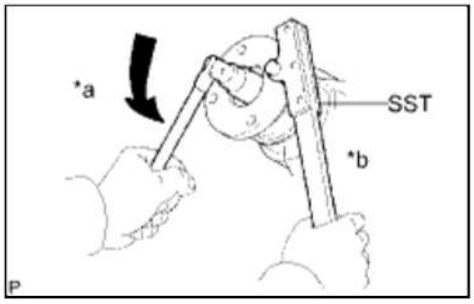
2. REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT



(a) Using SST and a hammer, loosen the staked part of the nut.

SST: 09930-00010

(b) Using SST to hold the companion flange, remove the nut.



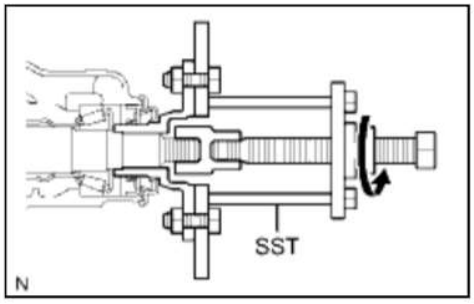
SST: 09330-00021

09330-00030

Text in Illustration

*a	Turn
*b	Hold

3. REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY



(a) Using SST, remove the companion flange.

SST: 09950-30012

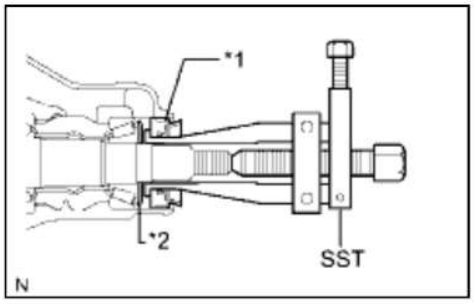
09951-03010
09953-03010
09954-03010
09955-03030
09956-03020

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NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

4. REMOVE FRONT DIFFERENTIAL CARRIER OIL SEAL



(a) Using SST, remove the oil seal.

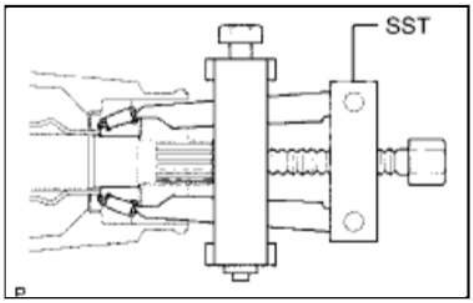
SST: 09308-10010

Text in Illustration

*1	Oil Seal
*2	Oil Slinger

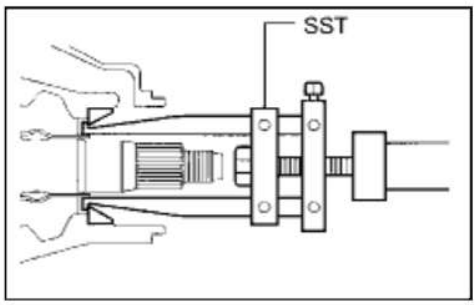
5. REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

6. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING



(a) Using SST, remove the roller bearing (inner).

SST: 09556-22010



(b) Using SST, tap out the roller bearing (outer).

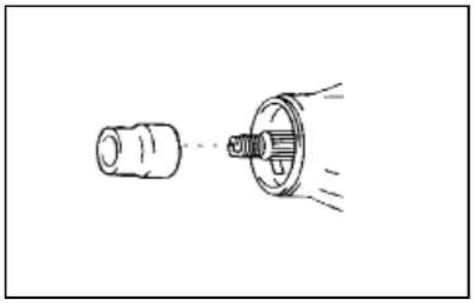
SST: 09308-00010

7. REMOVE FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a screwdriver and hammer, tap out the oil storage ring.

8. REMOVE FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER

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(a) Remove the bearing spacer.

9. INSTALL FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer.

HINT:

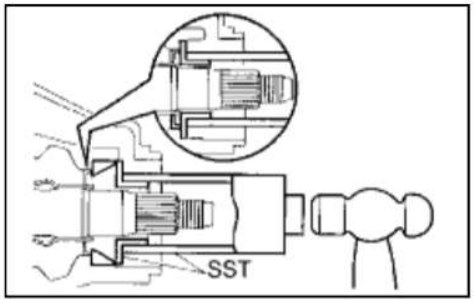
Install the spacer so that it is facing in the correct direction.

10. INSTALL FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a brass bar and hammer, tap in a new oil storage ring.

NOTICE:

Be careful not to damage the oil storage ring.



11. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a hammer, install the roller bearing (outer).

SST: 09316-60011

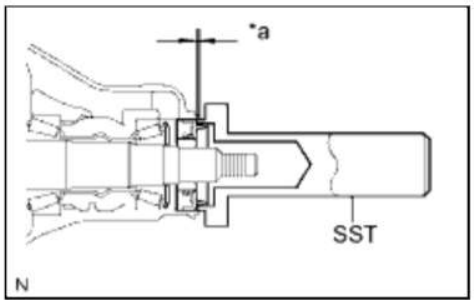
09316-00011

09316-00021

(b) Install the roller bearing (inner).

12. INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

13. INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL



(a) Apply MP grease to the lip of a new oil seal.

(b) Using SST and a hammer, tap in the oil seal.

SST: 09554-22010

Oil seal depth:

3.9 to 4.8 mm (0.154 to 0.188 in.)

Text in Illustration

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*a	Oil Seal Depth

14. INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, install the companion flange.

SST: 09950-30012

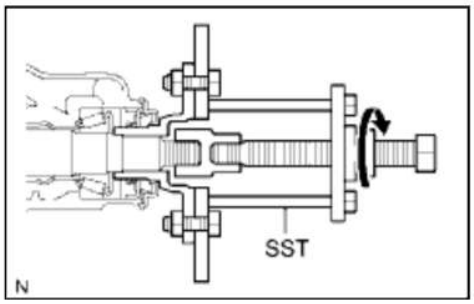
09951-03010

09953-03010

09954-03010

09955-03030

09956-03020



NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

(b) Using SST to hold the companion flange, install the nut.

SST: 09330-00021

09330-00030

Torque: 370 N·m (3770 kgf·cm, 273ft·lbf)or less

15. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload.

Standard Preload (at Starting):

ITEM	SPECIFIED CONDITION
New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 13.9 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

If the result is not as specified, adjust the preload.

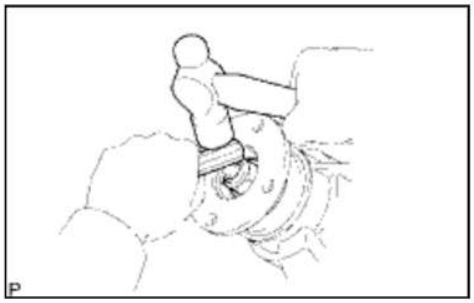
Standard Total Preload (at Starting):

ITEM	SPECIFIED CONDITION
New bearing	1.2 to 2.45 N*m (12 to 25 kgf*cm, 10.6 to 21.7 in.*lbf)
Used bearing	0.71 to 1.66 N*m (7.2 to 17 kgf*cm, 6.3 to 14.7 in.*lbf)

16. STAKE FRONT DRIVE PINION COMPANION FLANGE FRONT NUT

(a) Using a chisel and hammer, stake the nut.

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17. INSTALL FRONT DIFFERENTIAL CARRIER ASSEMBLY

(a) Install the front differential carrier assembly INFO .

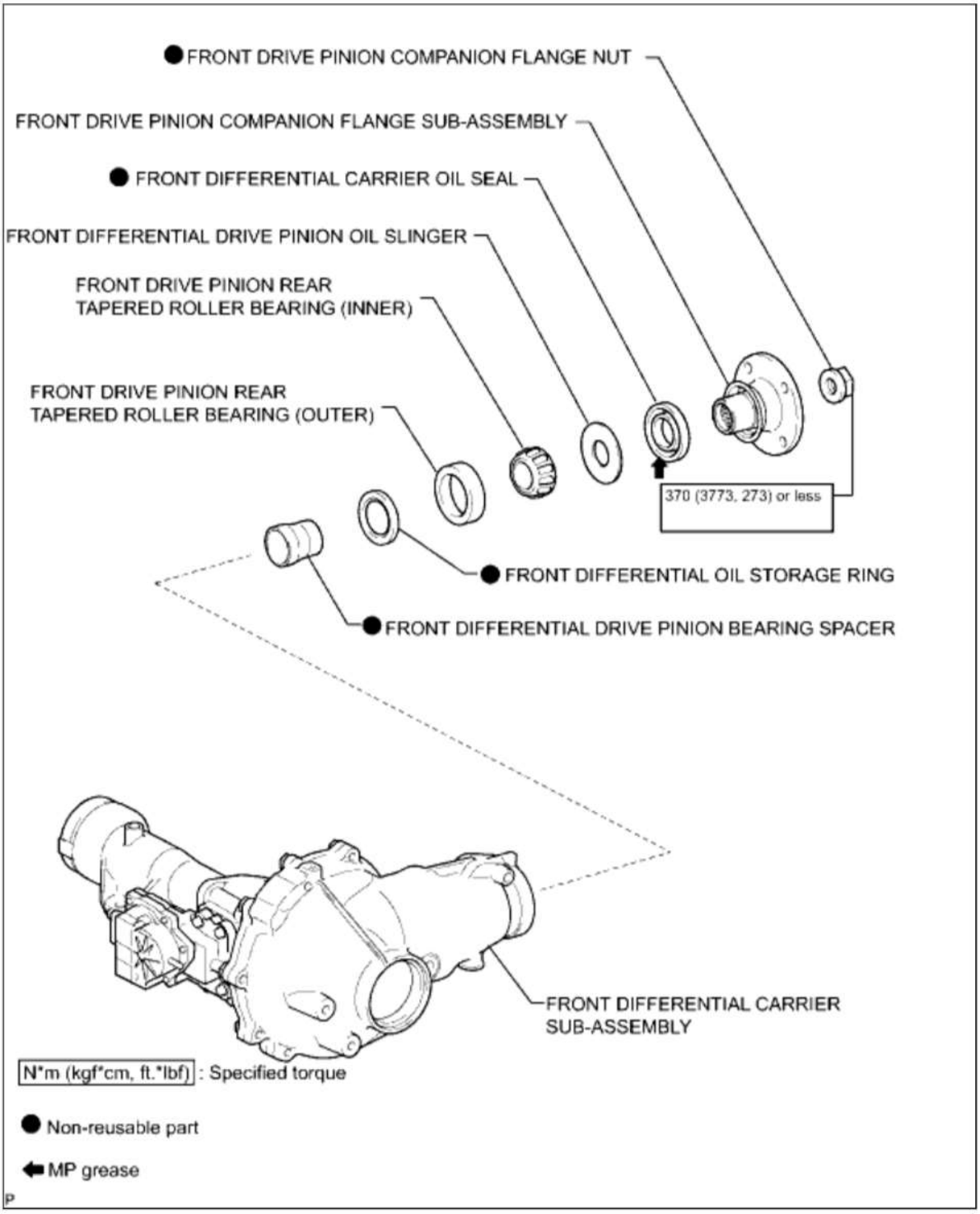
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010ME00FX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL CARRIER OIL SEAL (for 4WD): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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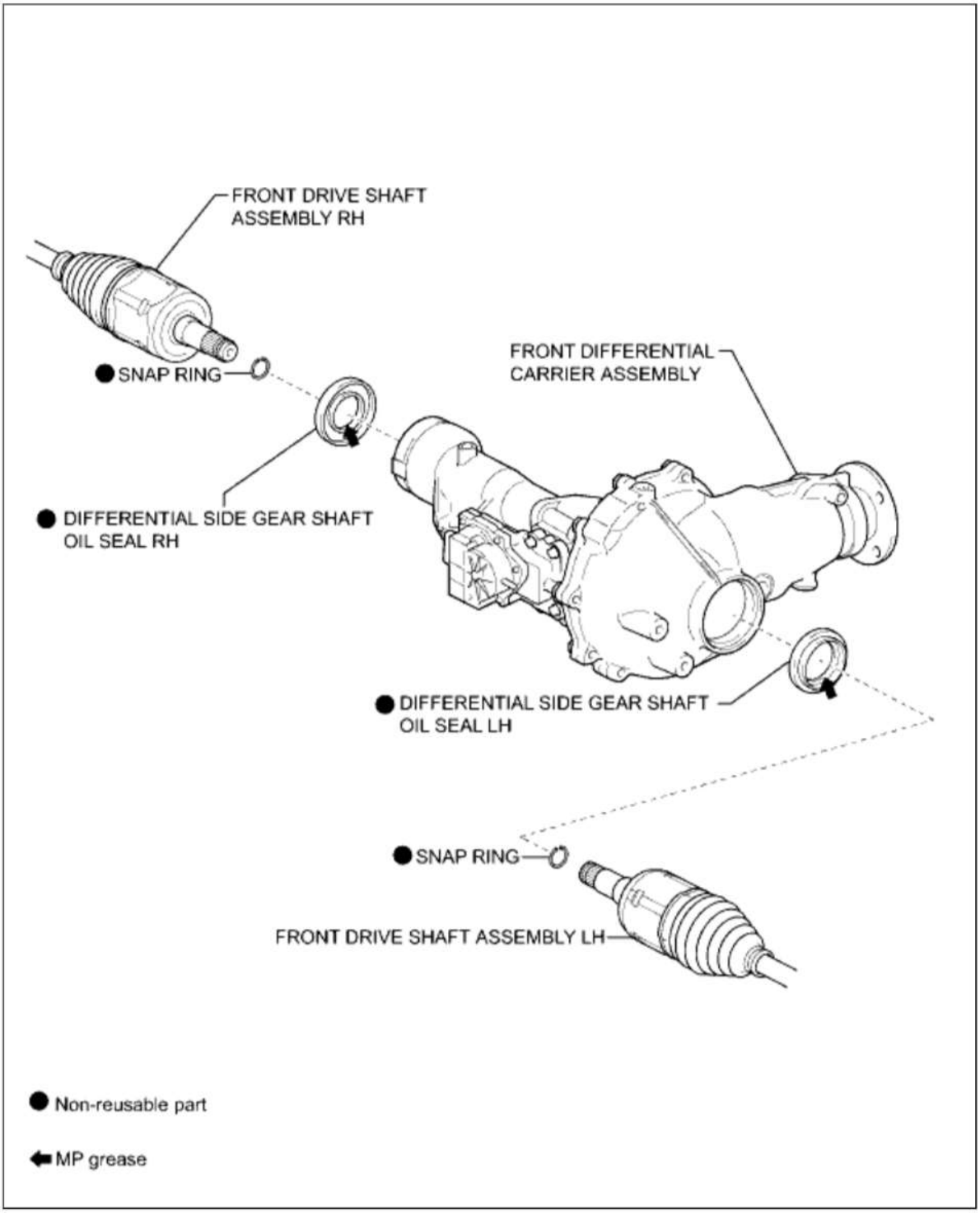
cardiagn.com

Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MJ012X
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL (for 4WD): COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000026GA00TX
Title: AXLE AND DIFFERENTIAL: FRONT DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL (for 4WD): REPLACEMENT (2010 4Runner)		

REPLACEMENT

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

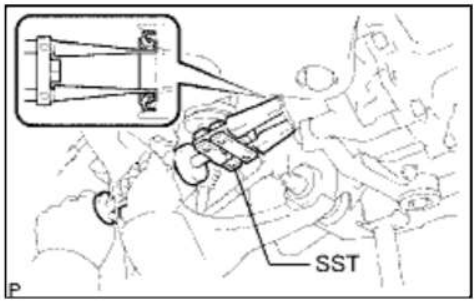
1. REMOVE FRONT DRIVE SHAFT ASSEMBLY LH

(a) Remove the front drive shaft assembly LH INFO .

2. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.



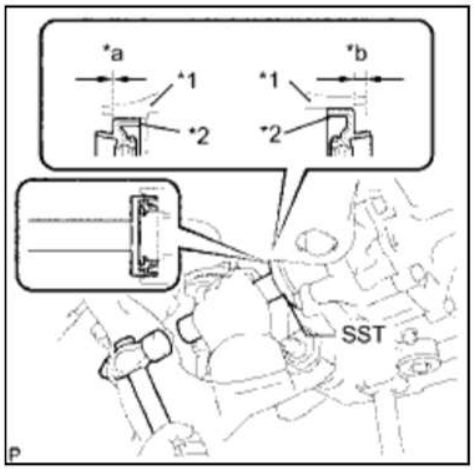
3. REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Using SST, tap out the 2 oil seals.

SST: 09308-10010

4. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Apply MP grease to 2 new oil seals.



(b) Using SST and a hammer, tap in the 2 oil seals.

SST: 09550-00032

SST: 09950-70010

09951-07100

Standard Oil Seal Depth:

ITEM	SPECIFIED CONDITION
LH side	-0.45 to 0.45 mm (-0.018 to 0.018 in.)
RH side	4.8 to 5.8 mm (0.189 to 0.229 in.)

Text in Illustration

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*1	Differential
*2	Seal
*a	LH side
*b	RH side

NOTICE:

Make sure the LH and RH oil seals are installed in the proper locations.

5. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

(a) Install the front drive shaft assembly LH INFO .

6. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH

HINT:

Use the same procedure described for the LH side.

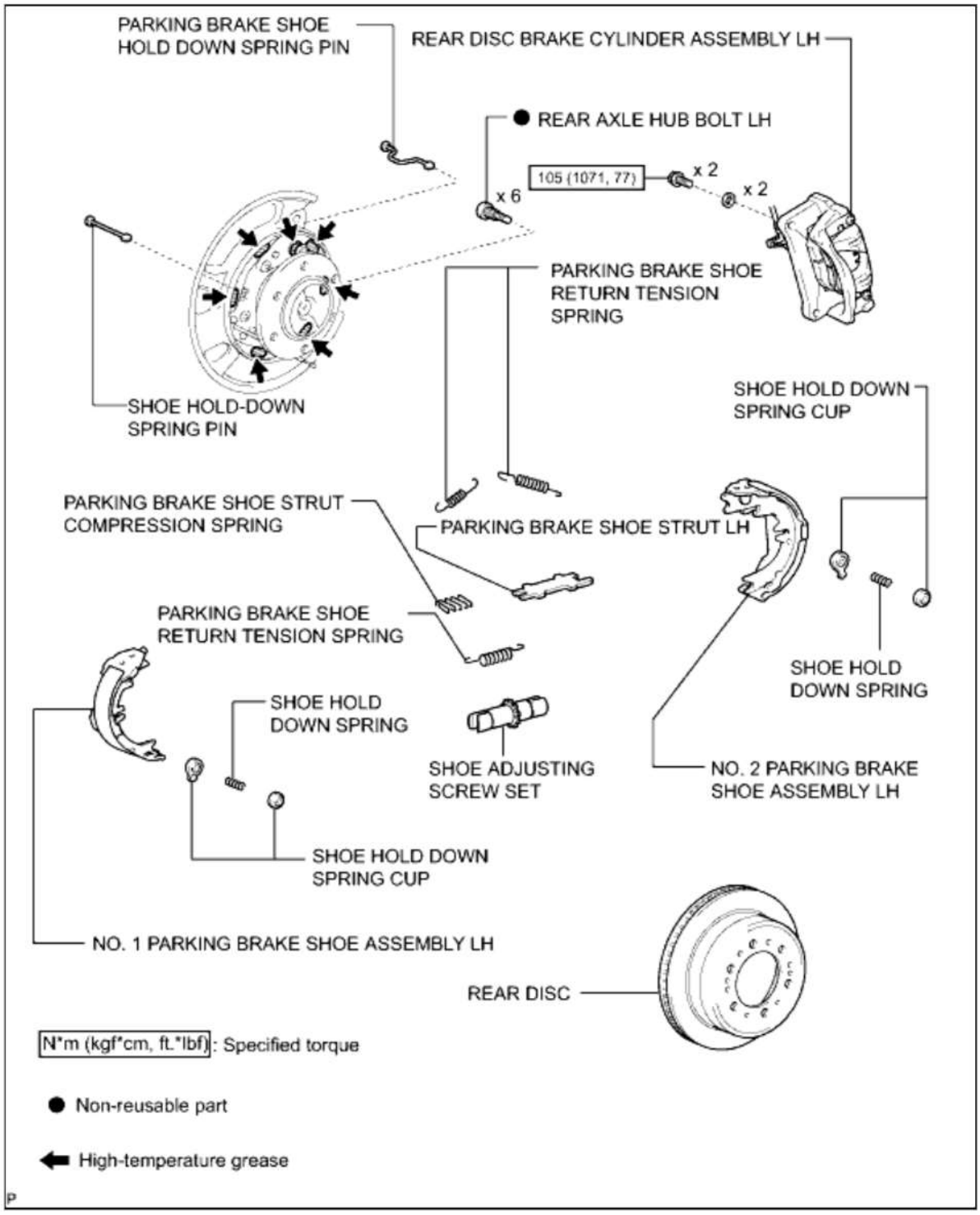


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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002A7D00QX
Title: AXLE AND DIFFERENTIAL: REAR AXLE HUB BOLT: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XI00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE HUB BOLT: REPLACEMENT (2010 4Runner)		

REPLACEMENT

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. REMOVE REAR WHEEL

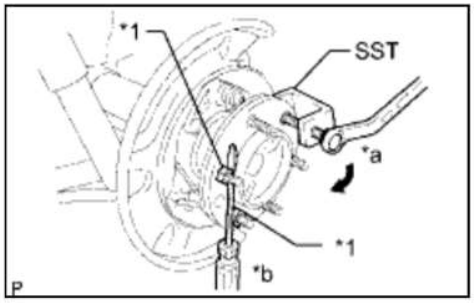
2. REMOVE PARKING BRAKE ASSEMBLY

(a) Remove the parking brake assembly INFO .

3. REMOVE REAR AXLE HUB BOLT LH

(a) Using SST and a screwdriver or equivalent to hold the axle hub, remove the hub bolt.

SST: 09650-17011



Text in Illustration

*1	Nut
*a	Turn
*b	Hold

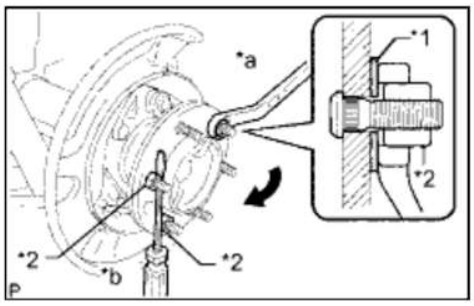
NOTICE:

- Do not deform the oil deflector.
- Make sure to align the notch of SST with the flange of the oil deflector.

4. INSTALL REAR AXLE HUB BOLT LH

(a) Insert a new hub bolt.

(b) Temporarily install a washer and hub nut to the hub bolt as shown in the illustration.



Text in Illustration

*1	Washer

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*2	Nut
*a	Turn
*b	Hold

NOTICE:

Install a hub nut to prevent damage to the hub bolt.

(c) Using a screwdriver or equivalent to hold the hub, turn the hub nut until the bottom surface of the hub bolt head touches the axle hub.

(d) Remove the hub nut and washer.

NOTICE:

Do not damage the threads of the hub bolt.

5. INSTALL PARKING BRAKE ASSEMBLY

(a) Install the parking brake assembly INFO .

6. INSTALL REAR WHEEL

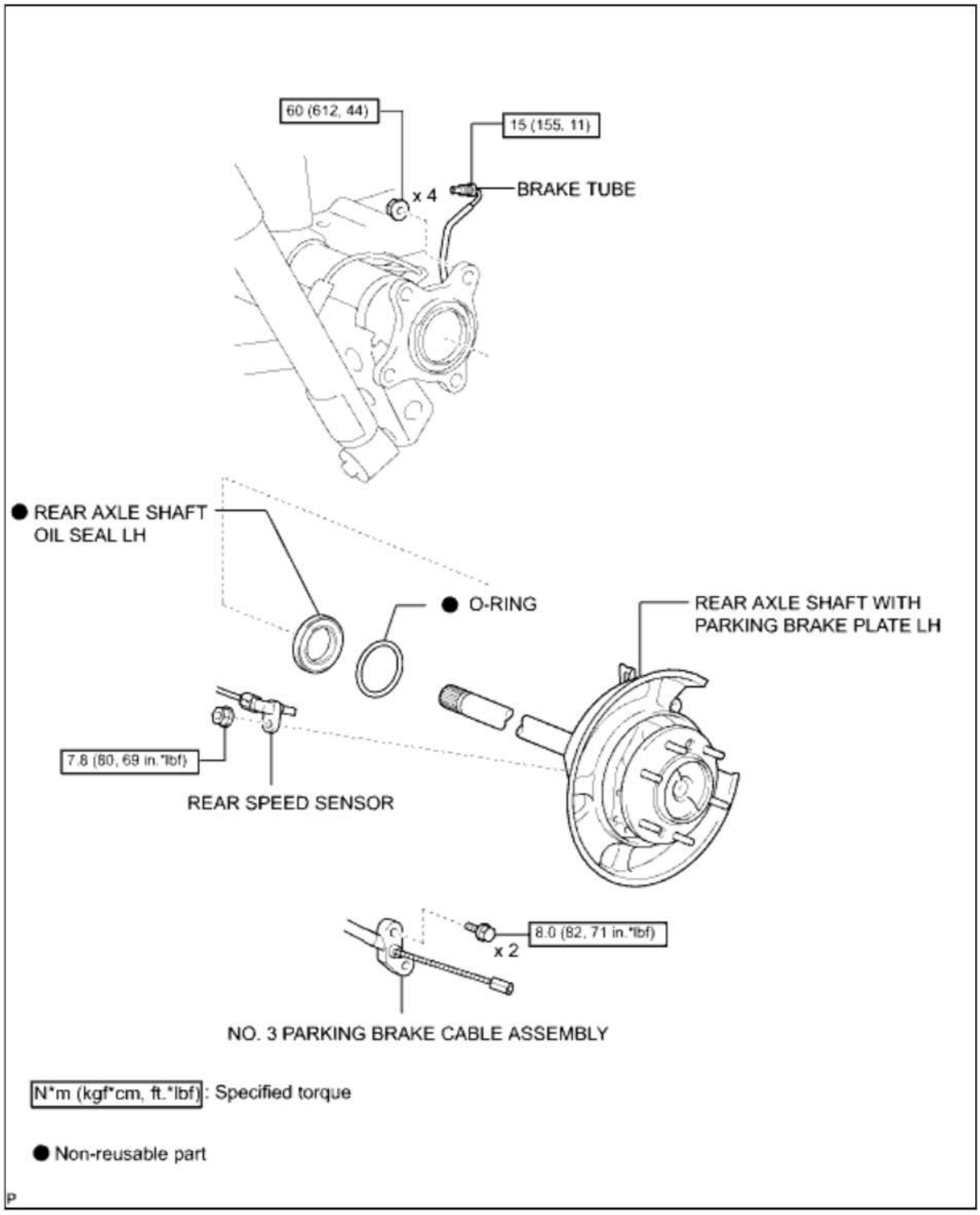
Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XD00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: COMPONENTS (2010 4Runner)		

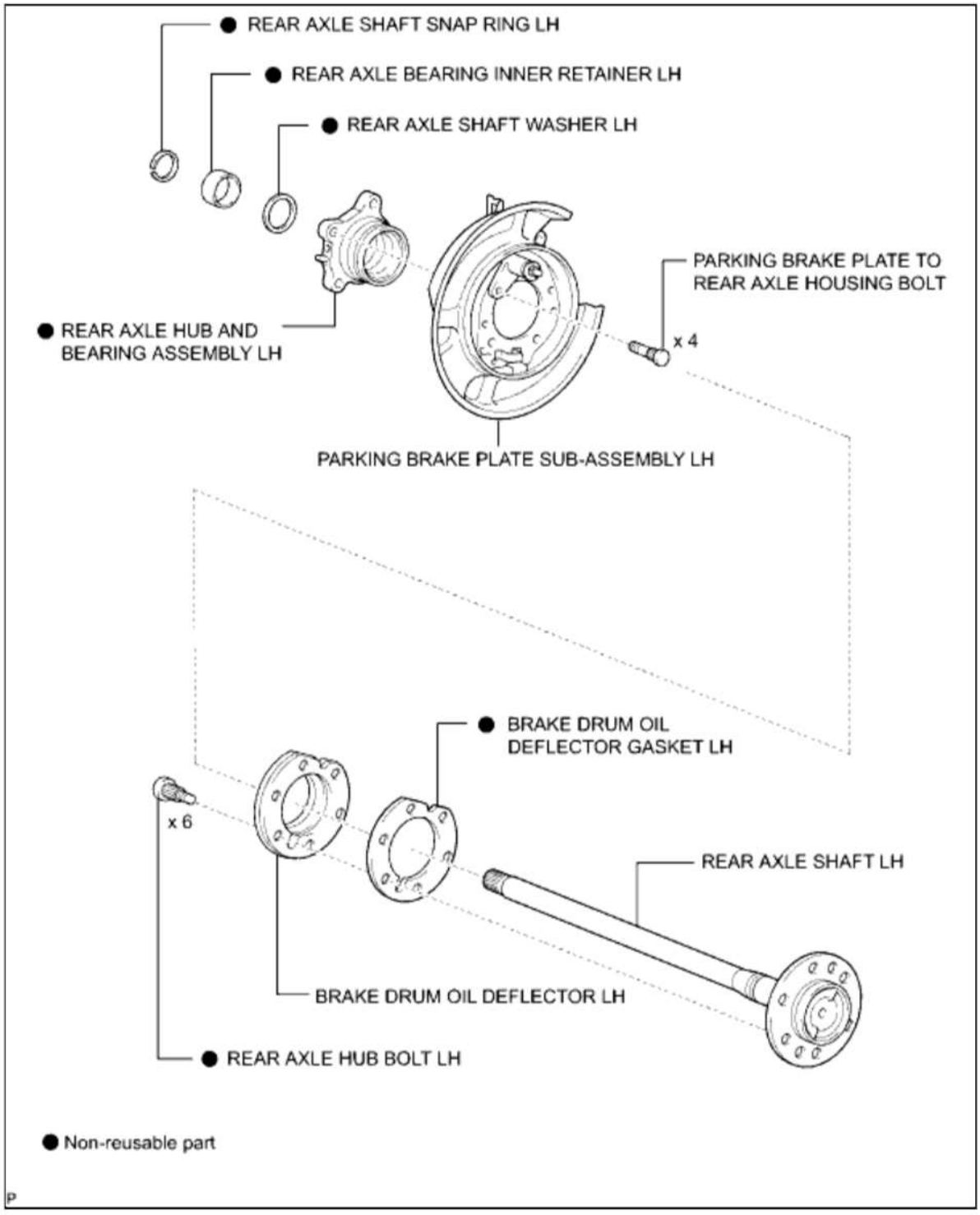
COMPONENTS

ILLUSTRATION



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ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XE00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: REMOVAL (2010 4Runner)		

REMOVAL

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

2. REMOVE REAR WHEEL

3. DRAIN BRAKE FLUID

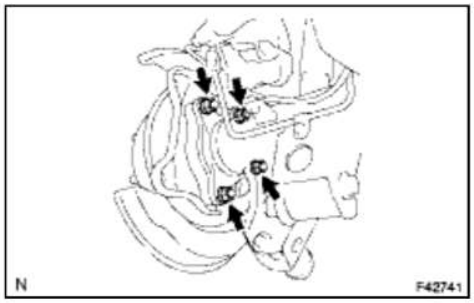
4. DISCONNECT REAR FLEXIBLE HOSE LH INFO

5. REMOVE REAR SPEED SENSOR LH INFO

6. REMOVE PARKING BRAKE ASSEMBLY

(a) Remove the parking brake assembly INFO .

7. REMOVE REAR AXLE SHAFT WITH PARKING BRAKE PLATE LH



(a) Remove the 4 nuts and rear axle shaft with parking brake plate.

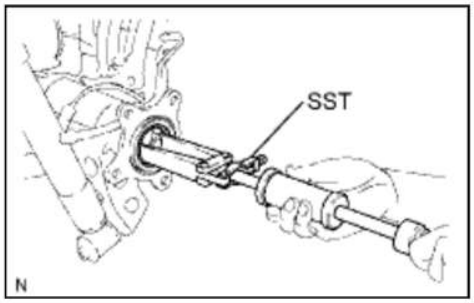
(b) Remove the O-ring.

8. REMOVE REAR AXLE SHAFT OIL SEAL LH

(a) Using SST, remove the rear axle shaft oil seal.

SST: 09308-00010

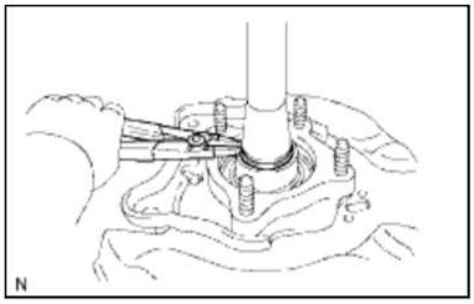
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XF00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: DISASSEMBLY (2010 4Runner)		

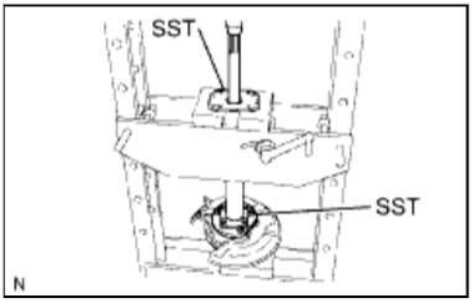
DISASSEMBLY



1. REMOVE REAR AXLE SHAFT SNAP RING LH

(a) Using a snap ring expander, remove the snap ring.

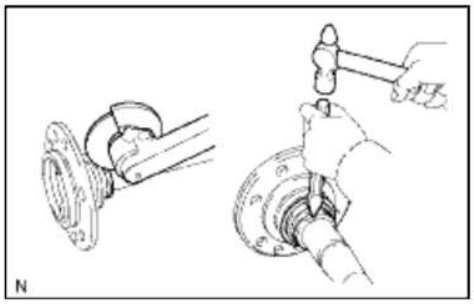
2. REMOVE REAR AXLE SHAFT LH



(a) Using SST and a press, press out the rear axle shaft.

SST: 09521-25023

SST: 09521-25011



(b) Grind the rear axle bearing retainer using a grinder, and then remove it with a chisel.

(c) Remove the shaft washer from the axle shaft.

3. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY

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LH

(a) Temporarily install 4 nuts to the housing bolts.

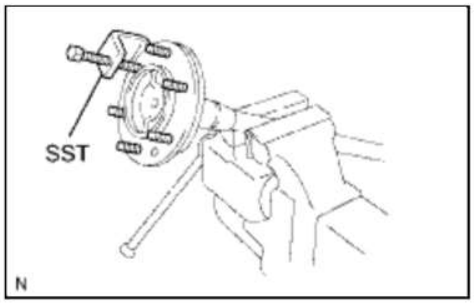
NOTICE:

Do not use any nuts removed from the vehicle, as they may be damaged.

(b) Using a hammer, remove the 4 housing bolts and rear axle hub and bearing.

(c) Remove the 4 nuts.

4. REMOVE BRAKE DRUM OIL DEFLECTOR LH



(a) Using SST, remove the 6 hub bolts.

SST: 09650-17011

NOTICE:

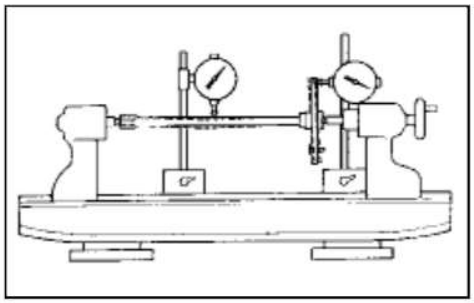
- Do not deform the oil deflector.
- Make sure to align the notch of SST with the flange of the oil deflector.

(b) Remove the deflector and deflector gasket from the rear axle shaft.

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XC00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: INSPECTION (2010 4Runner)		

INSPECTION



1. INSPECT REAR AXLE SHAFT

(a) Using a dial indicator, measure the rear axle shaft runout and flange runout.

Maximum runout:
Shaft runout: 1.50 mm (0.0591 in.)
Flange runout: 0.05 mm (0.00197 in.)

If the rear axle shaft or flange is damaged or worn, or the runout is more than the maximum, replace the rear axle shaft.

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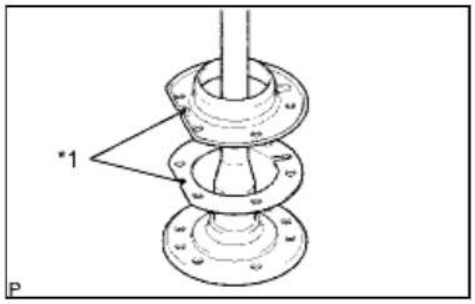
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XG00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: REASSEMBLY (2010 4Runner)		

REASSEMBLY

NOTICE:

Do not allow foreign matter, etc. to contact the rear axle hub and bearing assembly.

1. INSTALL BRAKE DRUM OIL DEFLECTOR LH



(a) Install a new deflector gasket and deflector to the rear axle shaft.

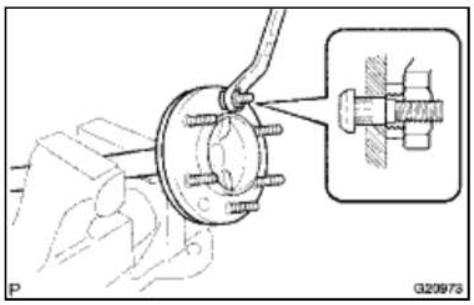
HINT:

Align the 2 oil drain holes.

Text in Illustration

*1	Oil Drain Holes

(b) Insert 6 new hub bolts.



(c) Temporarily install a washer and nut to each hub bolt as shown in the illustration.

(d) Install the hub bolts by tightening each nut.

(e) Remove the washer and nut from each hub bolt.

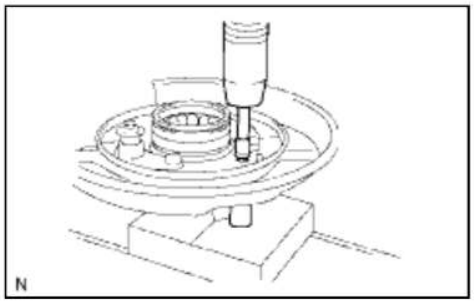
2. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY LH

(a) Install a new rear axle hub and bearing to the parking brake plate.

NOTICE:

Make sure the bearing is securely installed to the parking brake plate.

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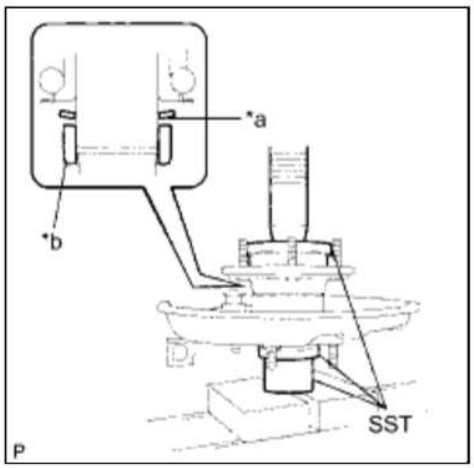


(b) Using 2 socket wrenches and a press, press in the 4 housing bolts.

3. INSTALL REAR AXLE SHAFT LH

(a) Install a new washer and a new retainer to the axle hub as shown in the illustration.

Text in Illustration



*a	Tapered Surface
*b	Chamfered Surface

NOTICE:

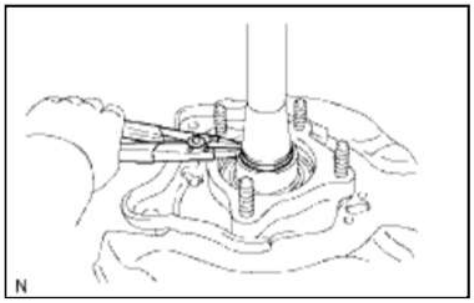
- Install the washer with its tapered surface facing downward.
- Install the retainer with its chamfered surface facing downward.

(b) Using SST and a press, press in the rear axle shaft.

SST: 09631-12090
SST: 09726-40010
SST: 09951-01100

NOTICE:

Make sure the bearing is securely installed to the rear axle shaft.



4. INSTALL REAR AXLE SHAFT SNAP RING LH

(a) Using snap ring expander, install a new rear axle shaft snap ring.

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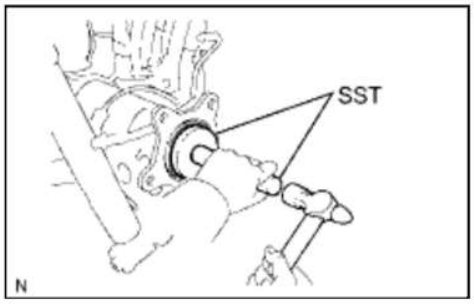
Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016XB00FX
Title: AXLE AND DIFFERENTIAL: REAR AXLE SHAFT: INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. INSTALL REAR AXLE SHAFT OIL SEAL LH



(a) Using SST and a hammer, install a new axle shaft oil seal.

SST: 09950-60020

09951-00770

SST: 09950-70010

09951-07150

NOTICE:

Do not allow foreign matter, etc. to contact the axle shaft housing hole.

2. INSTALL REAR AXLE SHAFT WITH PARKING BRAKE PLATE LH

(a) Install a new O-ring to the axle housing.

(b) Install the rear axle shaft with parking brake plate with the 4 nuts.

Torque: 60 N·m (612 kgf·cm, 44ft·lbf)

3. INSTALL PARKING BRAKE ASSEMBLY

(a) Install the parking brake assembly INFO .

4. INSTALL REAR SPEED SENSOR LH INFO

5. CONNECT REAR FLEXIBLE HOSE LH INFO

6. FILL RESERVOIR WITH BRAKE FLUID

7. BLEED BRAKE LINE INFO

8. CHECK BRAKE FLUID LEVEL IN RESERVOIR INFO

9. INSPECT FOR BRAKE FLUID LEAK

10. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

11. INSTALL REAR WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

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12. INSPECT PARKING BRAKE PEDAL TRAVEL INFO

13. CHECK SPEED SENSOR SIGNAL

(a) Check the speed sensor signal INFO .



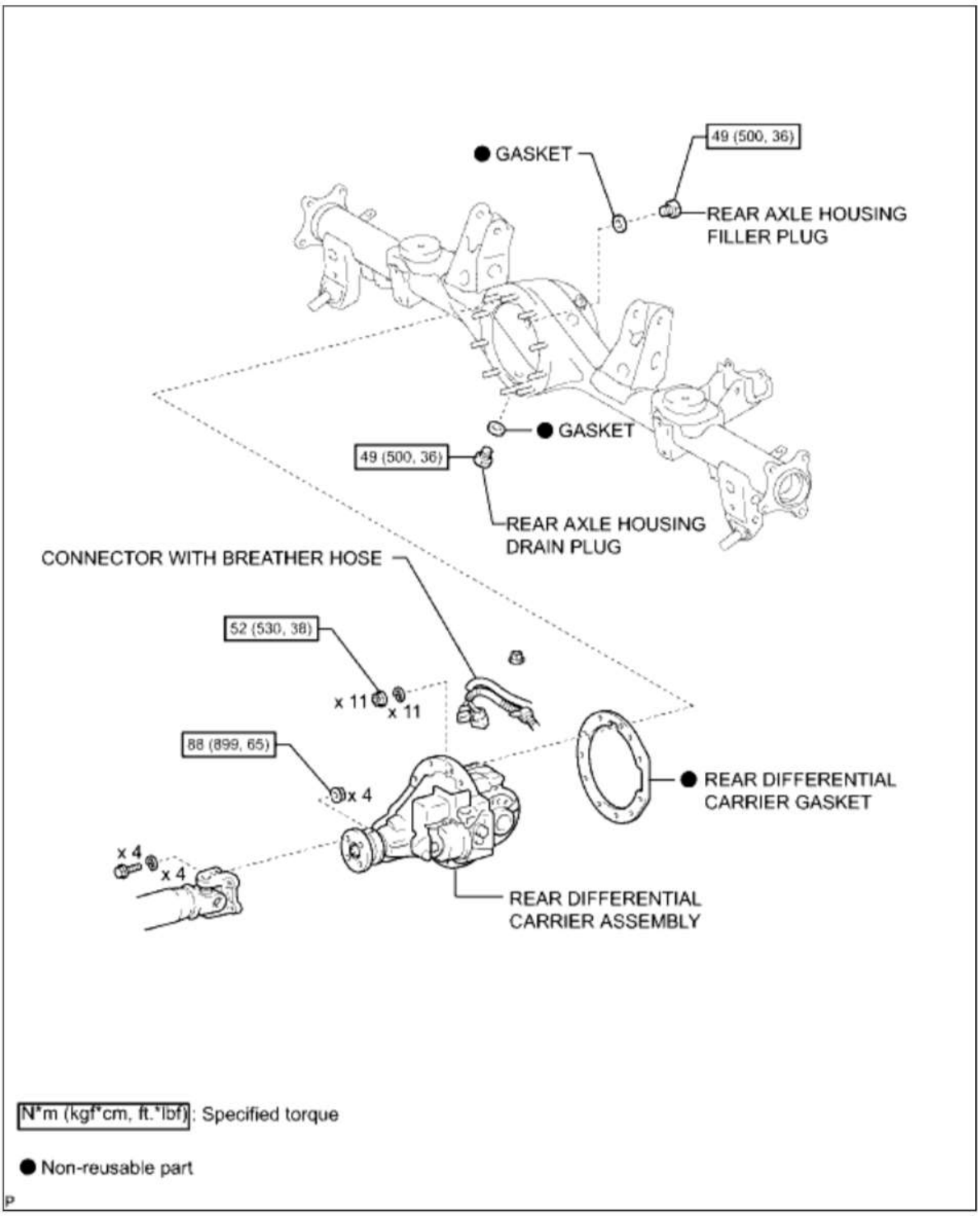
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000047MY000X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): COMPONENTS (2010 4Runner)		

COMPONENTS

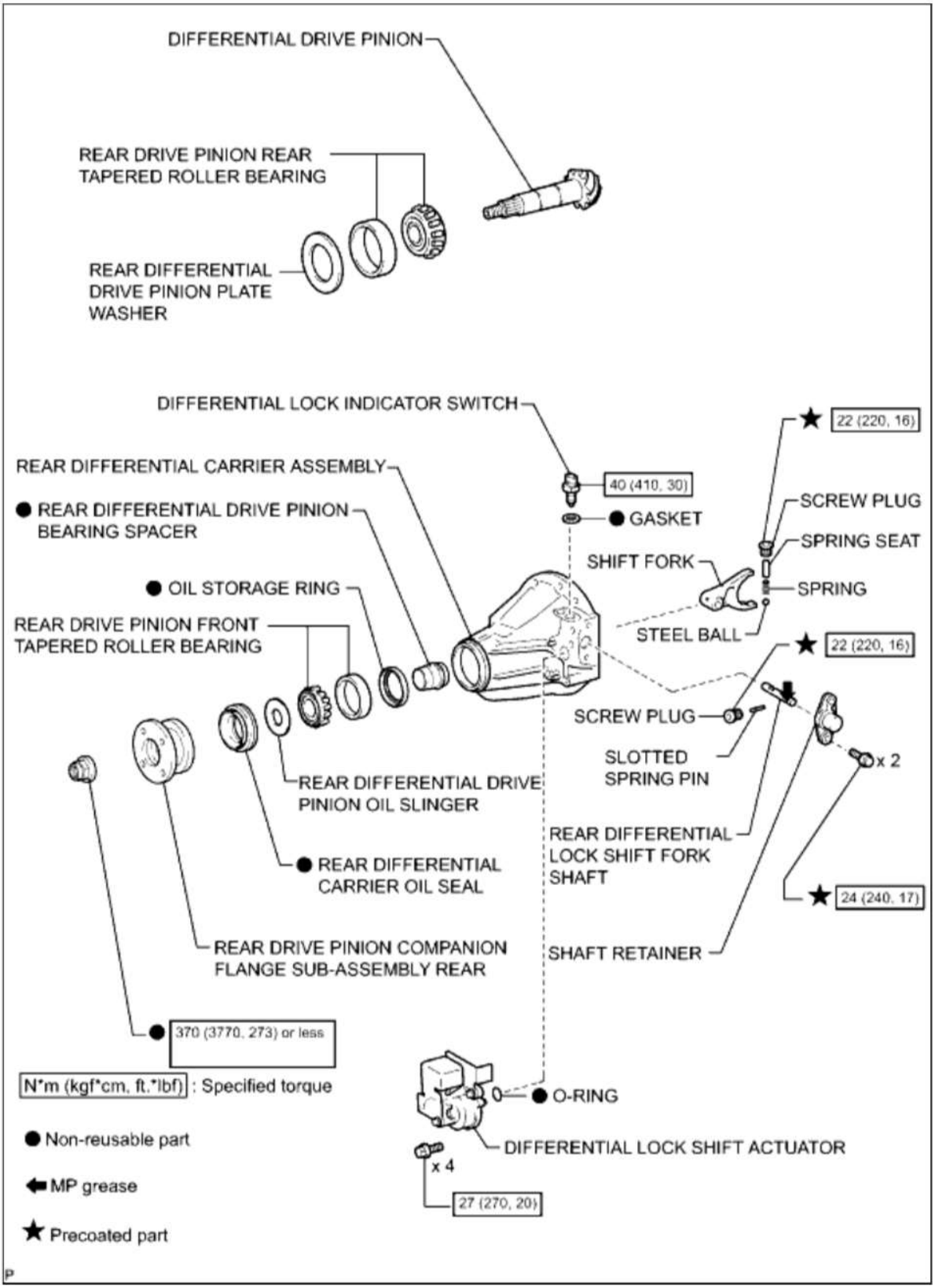
ILLUSTRATION

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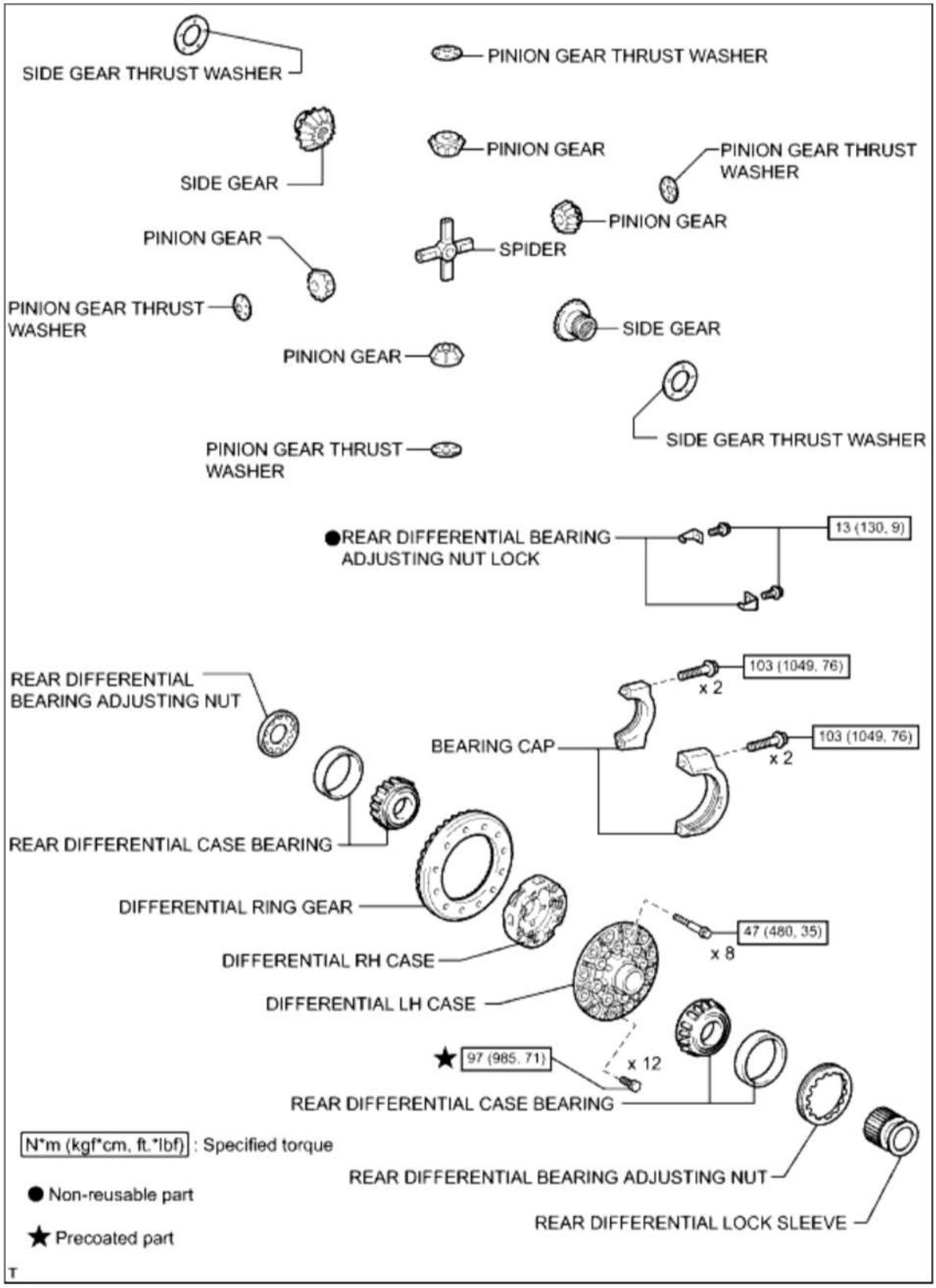
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MQ01BX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE REAR AXLE SHAFT LH

(a) Remove the rear axle shaft LH INFO .

2. REMOVE REAR AXLE SHAFT RH

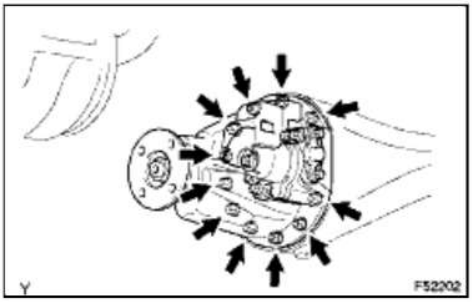
HINT:

Use the same procedure described for the LH side.

3. REMOVE PROPELLER SHAFT ASSEMBLY

(a) Remove the propeller shaft assembly INFO .

4. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

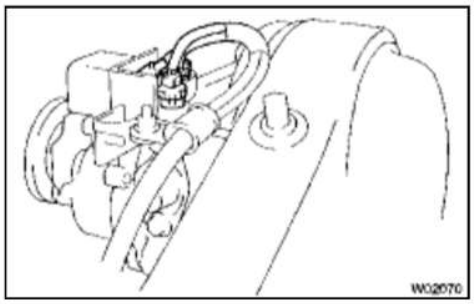


(a) Remove the 11 nuts and 11 washers, differential carrier.

NOTICE:

Be careful not to damage the contact surface.

(b) Disconnect the rear differential lock actuator breather hose from the differential actuator assembly.



(c) Disconnect the differential lock actuator connector.

5. REMOVE REAR DIFFERENTIAL CARRIER GASKET

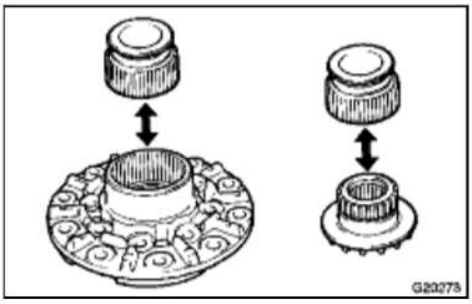
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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000017DE00XX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): INSPECTION (2010 4Runner)		

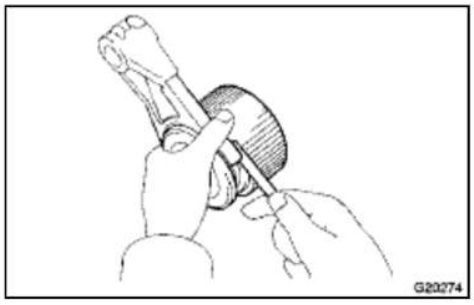
INSPECTION

1. INSPECT REAR DIFFERENTIAL LOCK SLEEVE



(a) Install the sleeve to the differential case (LH) and check that it moves smoothly.

(b) Install the side gear to the sleeve and check that it moves smoothly.



(c) Using a feeler gauge, measure the clearance between the shift fork and sleeve.

Maximum clearance:
0.15 to 0.35 mm (0.0059 to 0.0138 in.)

2. INSPECT DIFFERENTIAL PINION AND SIDE GEAR

(a) Check that there is no damage to the differential pinion or differential side gear.

If the differential pinion and/or differential side gear is damaged, replace the differential.

3. INSPECT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.

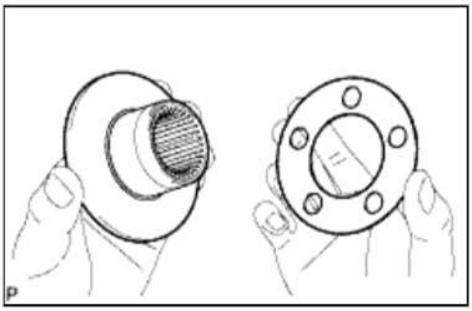
If the differential case is damaged, replace it.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016GI012X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): REASSEMBLY (2010 4Runner)		

REASSEMBLY

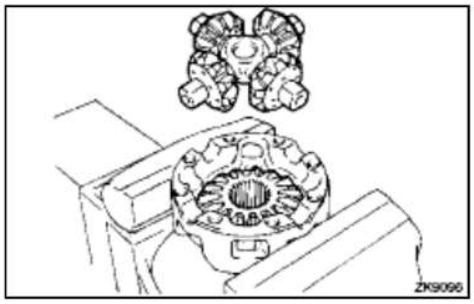
1. INSTALL DIFFERENTIAL CASE ASSEMBLY



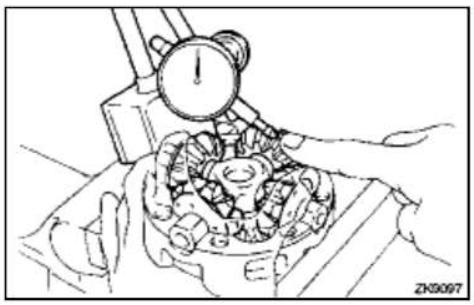
(a) Install the rear differential side gear thrust washer to the rear differential side gear.

(b) Install the rear differential pinion thrust washer and rear differential pinion to the rear differential spider.

(c) Fix the differential case RH in place.



(d) Install the rear differential side gear and rear differential spider to the differential case RH.

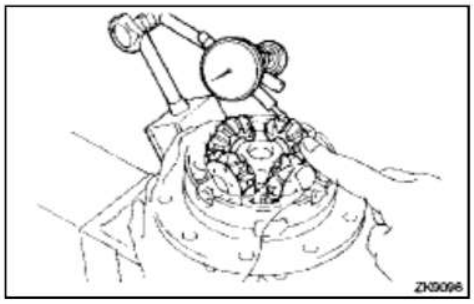


(e) Using a dial indicator, measure the differential case RH side backlash while pushing the pinion toward the case.

Standard backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

(f) Remove the rear differential spider from the differential case RH.

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(g) Install the rear differential side gear and rear differential spider to the differential case LH.

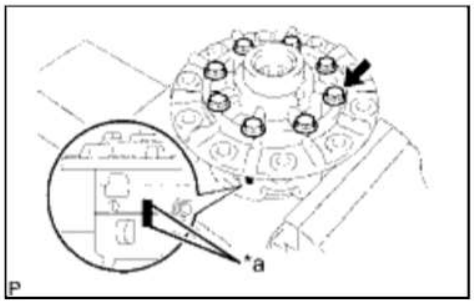
(h) Using a dial indicator, measure the differential case LH side backlash while pushing the pinion toward the case.

Backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

If the backlash is not within the specification, install 2 side gear thrust washers of a different thickness.

Standard Thrust Washer:

SPECIFIED CONDITION	SPECIFIED CONDITION
0.88 to 0.92 mm (0.0346 to 0.0362 in.)	1.18 to 1.22 mm (0.465 to 0.0480 in.)
0.98 to 1.02 mm (0.0386 to 0.0402 in.)	1.28 to 1.32 mm (0.0504 to 0.00520 in.)
1.08 to 1.12 mm (0.0425 to 0.0441 in.)	-



(i) Align the matchmarks and assemble the differential case from the RH and LH cases.

Text in Illustration

*a	Matchmark

(j) Using a plastic-faced hammer, install the differential case.

(k) Install the 8 bolts.

Torque: 47 N·m (480 kgf·cm, 35ft·lbf)

2. INSTALL DIFFERENTIAL RING GEAR

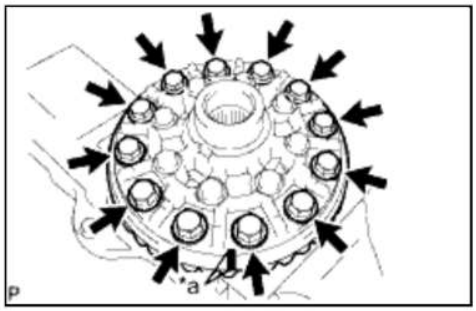
(a) Clean the contact surfaces of the differential case and ring gear.

(b) Heat the ring gear to approximately 100°C (212°F) in boiling water.

(c) Carefully take the ring gear out of the boiling water.

(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

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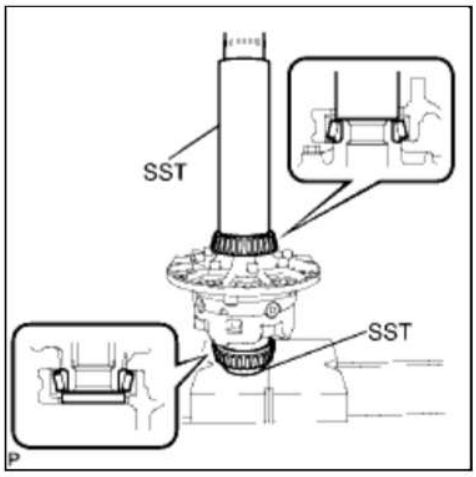
(e) Align the matchmarks on the ring gear and differential case.

Text in Illustration

*a	Matchmark
*1	Lock Plate

(f) After the ring gear cools down sufficiently, apply adhesive to the 12 bolts and install them.

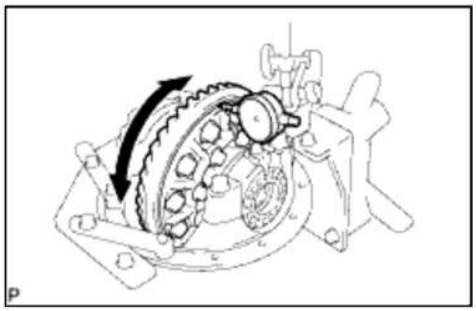
Adhesive:
Toyota Genuine Adhesive 1360K, Three Bond 1360K or equivalent.
Torque: 97 N·m (985 kgf·cm, 71ft·lbf)



3. INSTALL REAR DIFFERENTIAL CASE BEARING

(a) Using SST and a press, install the bearing to the differential case.

SST: 09308-14010
SST: 09950-60010
09951-00490



4. INSPECT DIFFERENTIAL RING GEAR RUNOUT

(a) Install the differential case to the carrier, and then install the 2 adjusting nuts so that there is no play in the bearing.

(b) Install the 2 bearing caps with the 4 bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

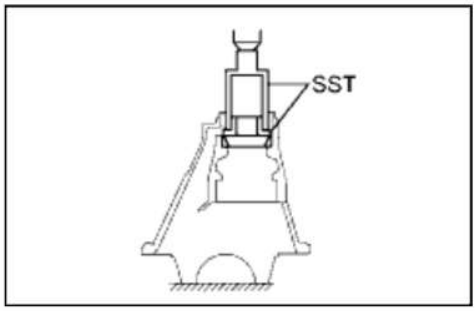
(c) Using a dial indicator, measure the runout of the ring gear.

Maximum runout:
0.07 mm (0.00276 in.)

(d) Remove the 2 bearing caps, 2 adjusting nuts and differential case.

5. INSTALL REAR DRIVE PINION FRONT TAPERED

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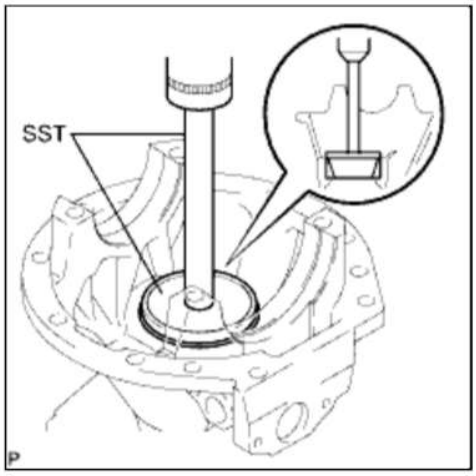


ROLLER BEARING

(a) Using SST and a press, install the tapered roller bearing to the carrier.

SST: 09308-14010

SST: 09309-14040



6. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)

(a) Install the plate washer to the carrier.

HINT:

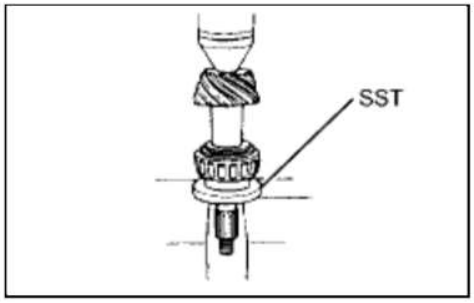
First, install a washer with the same thickness as the removed washer, and then check the tooth contact pattern. Replace the washer with one of a different thickness if necessary.

(b) Using SST and a press, install the tapered roller bearing to the carrier.

SST: 09950-70010

09951-07200

SST: 09255-10012

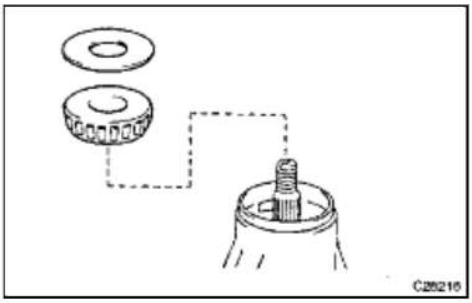


7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING (INNER)

(a) Using SST and a press, install the tapered roller bearing to the drive pinion.

SST: 09506-30012

8. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

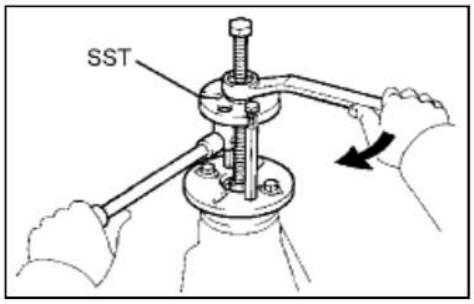


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(a) Install the drive pinion, rear drive pinion tapered roller bearing and rear differential drive oil slinger.

HINT:

Install the spacer and oil seal after adjusting the gear contact pattern.



(b) Using SST, install the drive pinion companion flange.

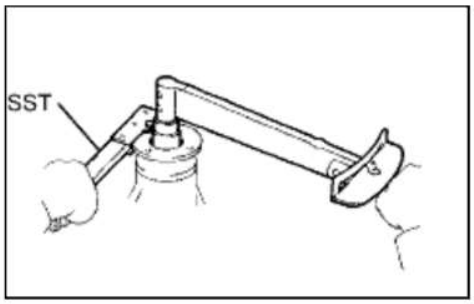
SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

(c) Coat the threads of the nut with hypoid gear oil LSD.



(d) Using SST to hold the drive pinion companion flange, tighten the nut.

SST: 09330-00021

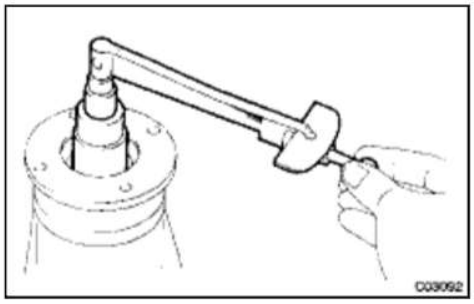
Torque: 457 N·m (4660 kgf·cm, 337ft·lbf) or less

NOTICE:

- As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.
- Apply hypoid gear oil to the nut.

(e) Using a torque wrench, measure the preload.

Standard Preload (at Starting):

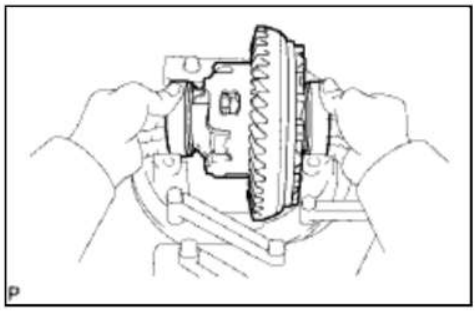


ITEM	SPECIFIED CONDITION
New Bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
Used Bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)

NOTICE:

For a more accurate measurement, rotate the bearing forward and backward several times before measuring.

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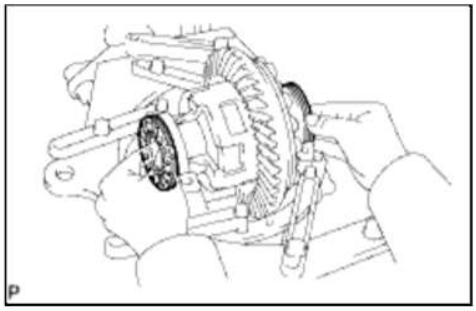


9. INSTALL DIFFERENTIAL CASE ASSEMBLY

(a) Place the 2 bearing outer races on their respective bearings.

HINT:

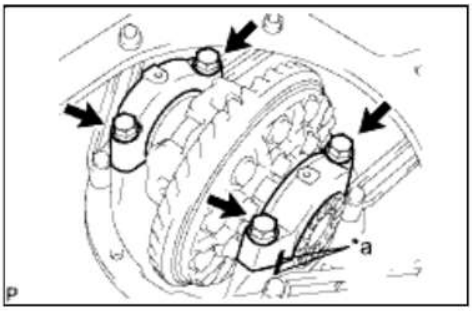
Do not interchange the right and left races.



10. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT

(a) Install the 2 adjusting nuts to the carrier, making sure the nuts are threaded properly.

11. INSPECT AND ADJUST DIFFERENTIAL RING GEAR AND DIFFERENTIAL DRIVE PINION BACKLASH



(a) Align the matchmarks on the cap and carrier.

Text in Illustration

*a	Matchmark

(b) Install the right and left bearing caps with the 4 bolts.

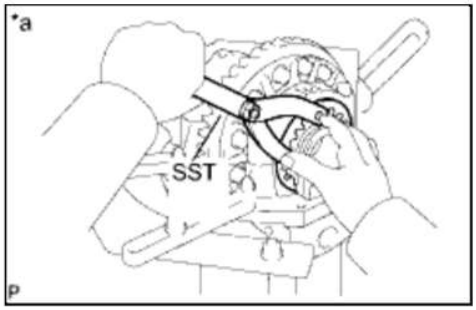
Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

HINT:

If the bearing cap does not fit tightly onto the carrier, the adjusting nuts are not threaded properly.

Reinstall the adjusting nuts if necessary.

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(c) Tighten the 4 bearing cap bolts to the specified torque, and then loosen them to the point where the adjusting nuts can be turned by SST.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

Text in Illustration

*a	for LH Side

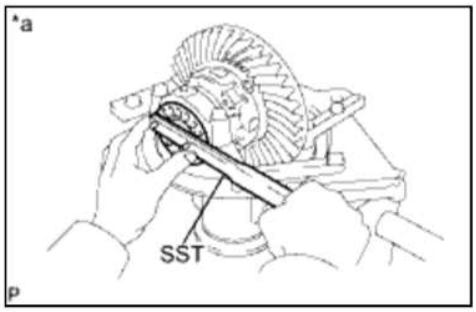
(d) Using SST, tighten the adjusting nut on the ring gear side until the ring gear has a backlash of about 0.2 mm (0.008 in.).

SST: 09960-10010

09962-01000

09963-00700

(e) While turning the ring gear, use SST to tighten the adjusting nut on the drive pinion side.



Text in Illustration

*a	for RH Side

HINT:

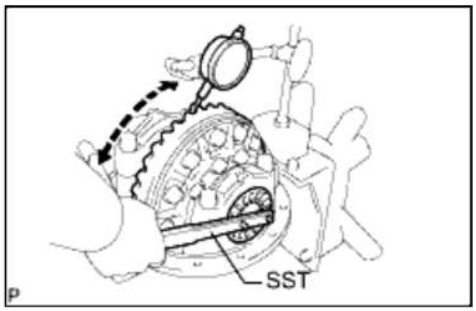
After the bearings have settled, loosen the adjusting nut on the drive pinion side.

(f) Using SST, tighten the adjusting nut 1 to 1.5 notches from the 0 preload position.

SST: 09504-00011

(g) Using a dial indicator, adjust the ring gear backlash until it is within the specification.

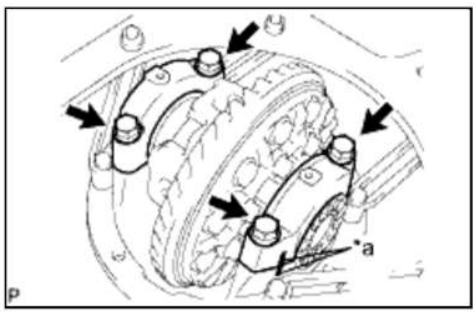
Standard backlash (reference):
0.10 to 0.20 mm (0.00394 to 0.00787 in.)



HINT:

- The backlash is adjusted by turning the left and right adjusting nuts an equal amount. For example, loosen the nut on the right side one notch and loosen the nut on the left side one notch.
- Perform the measurement at 3 or more positions around the circumference of the ring gear.

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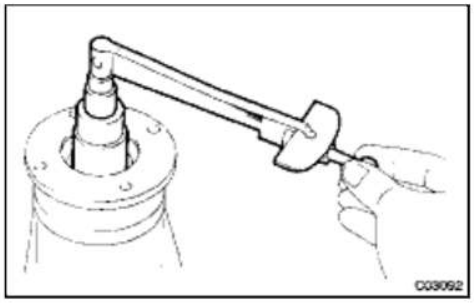


(h) Tighten the bearing cap bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

Text in Illustration

*a	Matchmark



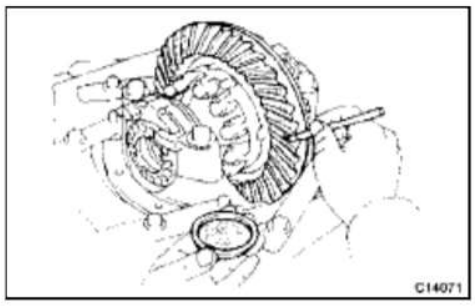
12. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Standard total preload (at starting):
Drive pinion preload plus 0.20 to 0.40 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)

If necessary, disassemble and inspect the differential.

13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

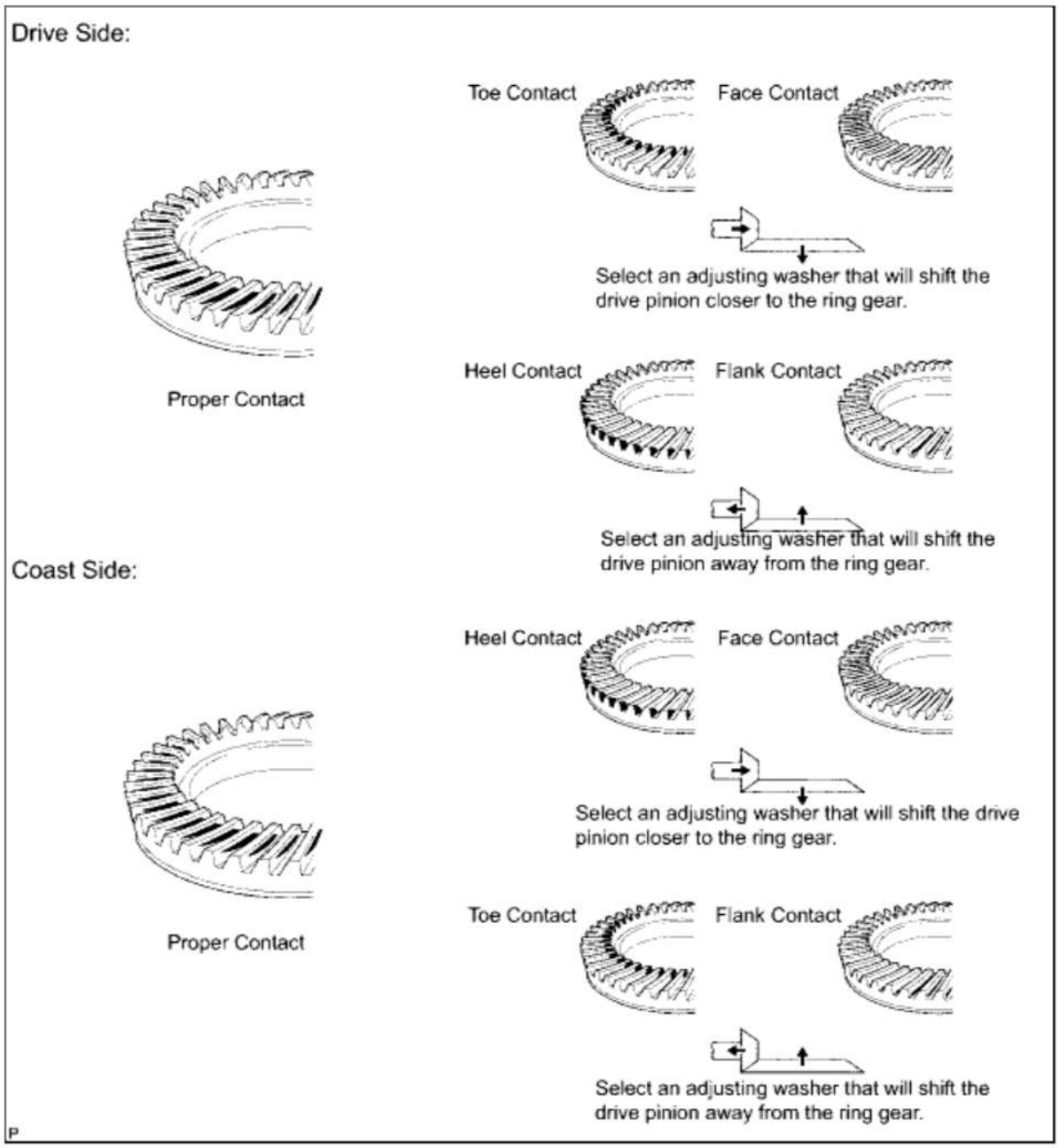


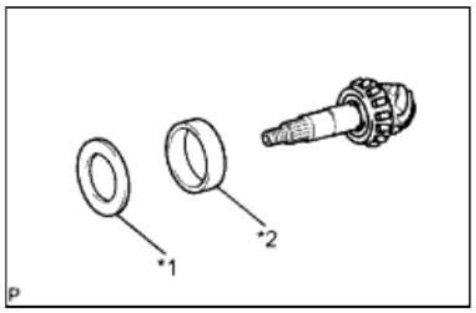
(a) Coat 3 or 4 teeth at 3 different positions on the ring gear with Prussian blue.

(b) Hold the companion flange firmly and rotate the ring gear in both directions.

(c) Inspect the tooth contact pattern.

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Text in Illustration

*1	Plate Washer

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*2	Rear Drive Pinion Rear Tapered Roller Bearing (Outer)

If the teeth are not engaged properly, use the following chart to select an appropriate washer for correction.

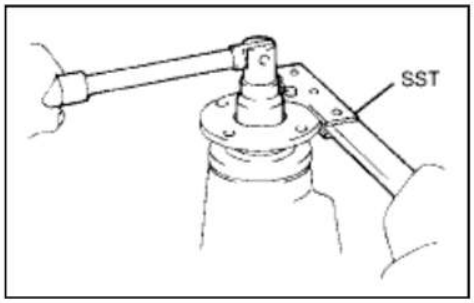
Standard Plate Washer

SPECIFIED CONDITION	SPECIFIED CONDITION
1.845 to 1.855 mm (0.0726 to 0.0730 in.)	2.085 to 2.095 mm (0.0821 to 0.0825 in.)
1.855 to 1.865 mm (0.0730 to 0.0734 in.)	2.095 to 2.105 mm (0.0825 to 0.0829 in.)
1.865 to 1.875 mm (0.0734 to 0.0738 in.)	2.105 to 2.115 mm (0.0829 to 0.0833 in.)
1.875 to 1.885 mm (0.0738 to 0.0742 in.)	2.115 to 2.125 mm (0.0833 to 0.0837 in.)
1.885 to 1.895 mm (0.0742 to 0.0746 in.)	2.125 to 2.135 mm (0.0837 to 0.0841 in.)
1.895 to 1.905 mm (0.0746 to 0.0750 in.)	2.135 to 2.145 mm (0.0841 to 0.0844 in.)
1.905 to 1.915 mm (0.0750 to 0.0754 in.)	2.145 to 2.155 mm (0.0844 to 0.0848 in.)
1.915 to 1.925 mm (0.0754 to 0.0758 in.)	2.155 to 2.165 mm (0.0848 to 0.0852 in.)
1.925 to 1.935 mm (0.0758 to 0.0762 in.)	2.165 to 2.175 mm (0.0852 to 0.0856 in.)
1.935 to 1.945 mm (0.0762 to 0.0766 in.)	2.175 to 2.185 mm (0.0856 to 0.0860 in.)
1.945 to 1.955 mm (0.0766 to 0.0770 in.)	2.185 to 2.195 mm (0.0860 to 0.0864 in.)
1.955 to 1.965 mm (0.0770 to 0.0774 in.)	2.195 to 2.205 mm (0.0864 to 0.0868 in.)
1.965 to 1.975 mm (0.0774 to 0.0778 in.)	2.205 to 2.215 mm (0.0868 to 0.0872 in.)
1.975 to 1.985 mm (0.0778 to 0.0781 in.)	2.215 to 2.225 mm (0.0872 to 0.0876 in.)
1.985 to 1.995 mm (0.0781 to 0.0785 in.)	2.225 to 2.235 mm (0.0876 to 0.0880 in.)
1.995 to 2.005 mm (0.0785 to 0.0789 in.)	2.235 to 2.245 mm (0.0880 to 0.0884 in.)
2.005 to 2.015 mm (0.0789 to 0.0793 in.)	2.245 to 2.255 mm (0.0884 to 0.0888 in.)
2.015 to 2.025 mm (0.0793 to 0.0797 in.)	2.255 to 2.265 mm (0.0888 to 0.0892 in.)
2.025 to 2.035 mm (0.0797 to 0.0801 in.)	2.265 to 2.275 mm (0.0892 to 0.0896 in.)
2.035 to 2.045 mm (0.0801 to 0.0805 in.)	2.275 to 2.285 mm (0.0896 to 0.0900 in.)
2.045 to 2.055 mm (0.0805 to 0.0809 in.)	2.285 to 2.295 mm (0.0900 to 0.0904 in.)
2.055 to 5.065 mm (0.0809 to 0.0813 in.)	2.295 to 2.305 mm (0.0904 to 0.0907 in.)
2.065 to 2.075 mm (0.0813 to 0.0817 in.)	2.305 to 2.315 mm (0.0907 to 0.0911 in.)
2.075 to 2.085 mm (0.0817 to 0.0821 in.)	-

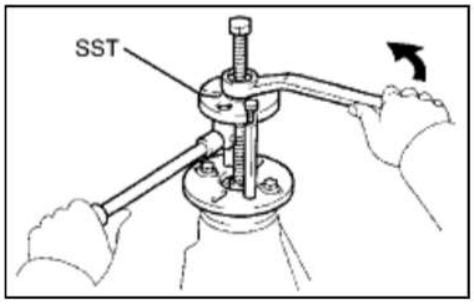
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14. REMOVE REAR DRIVE PINION NUT

(a) Using SST to hold the drive pinion companion flange, remove the nut.



SST: 09330-00021



15. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, remove the drive pinion companion flange.

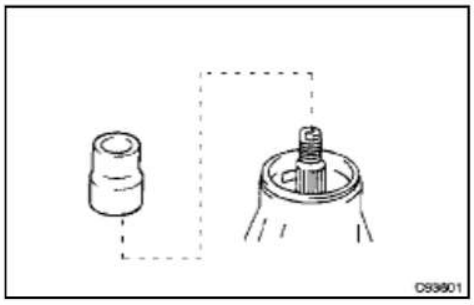
SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

16. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

17. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)

18. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)



19. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

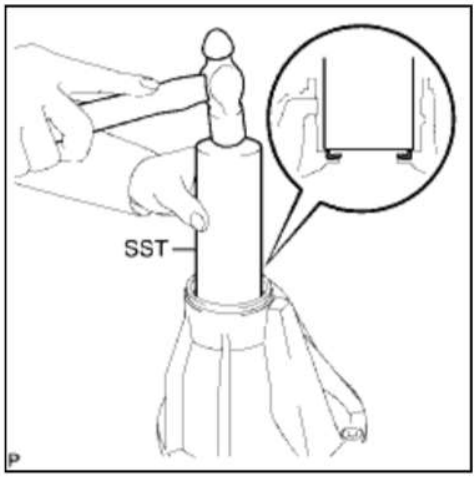
(a) Install a new bearing spacer to the drive pinion.

20. INSTALL DIFFERENTIAL OIL STORAGE RING

(a) Using SST, tap in a new oil storage ring.

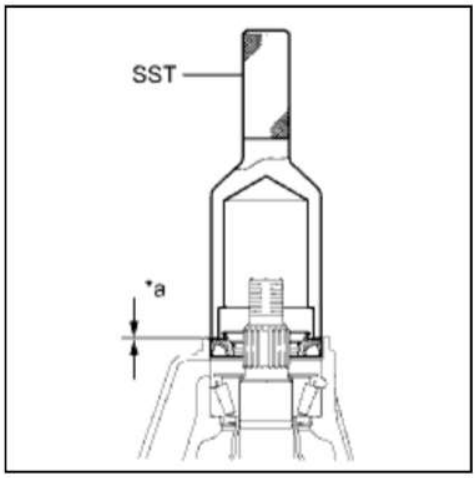
SST: 09308-14010

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21. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

22. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



23. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Apply MP grease to the oil seal lip.

(b) Using SST and a hammer, install a new carrier oil seal.

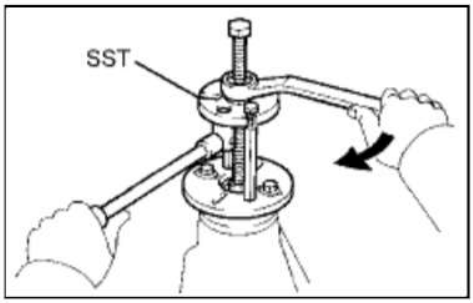
SST: 09214-76011

Standard oil seal drive in depth:
-0.3 to 0.3 mm (-0.0118 to 0.0118 in.)

Text in Illustration

*a	Oil Seal Depth

24. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR



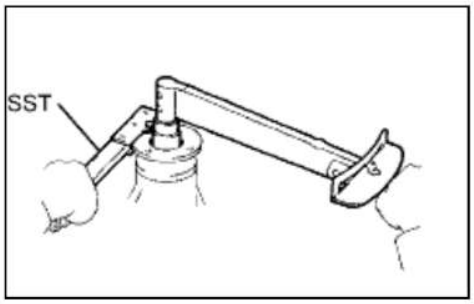
(a) Using SST, install the drive pinion companion flange to the drive pinion.

SST: 09950-30012

09951-03010

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09953-03010
09954-03010
09955-03030
09956-03040



(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST to hold the flange, tighten the nut.

SST: 09330-00021

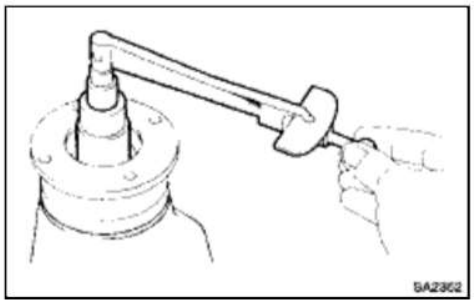
Torque: 457 N·m (4660 kgf·cm, 337ft·lbf)or less

25. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Standard Preload (at Starting):

ITEM	SPECIFIED CONDITION
New Bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
Reused Bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)



If the preload is more than the maximum, replace the bearing spacer.

If the preload is less than the minimum, retighten the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.

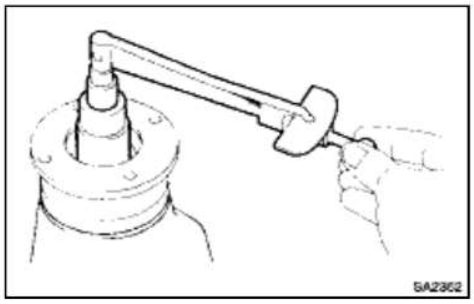
Torque: 457 N·m (4660 kgf·cm, 337ft·lbf) or less

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.

HINT:

Do not loosen the pinion nut to reduce the preload.

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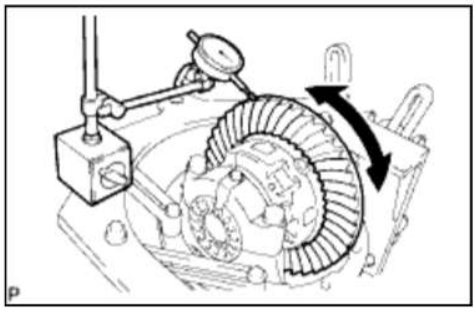
26. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload.

Standard total preload (at starting):

Drive pinion preload plus 0.20 to 0.40 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)

If necessary, disassemble and inspect the differential.



27. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.

Standard Backlash:

0.10 to 0.20 mm (0.00394 to 0.00787 in.)

If the backlash is not within the specification, adjust the side bearing preload or perform repairs as necessary.

HINT:

Perform the measurement at 3 or more positions around the circumference of the ring gear.

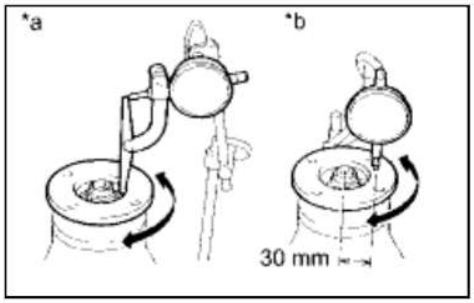
28. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using a dial indicator, measure the runout of the drive pinion companion flange vertically and laterally.

Distance from center to runout measurement point:

30 mm (1.18 in.)

Maximum Runout:



ITEM	SPECIFIED CONDITION
Vertical runout	0.14 mm (0.00551 in.)
Lateral runout	0.14 mm (0.00551 in.)

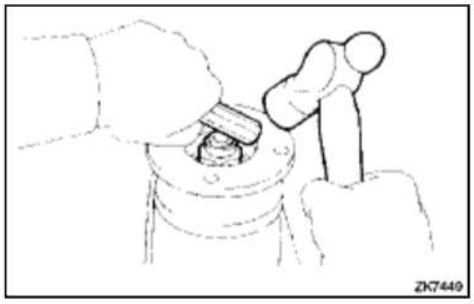
Text in Illustration

*a	Vertical Runout
*b	Lateral Runout

If the runout is more than the maximum, replace the

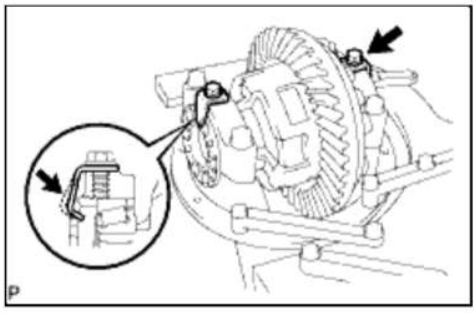
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companion flange.



29. INSTALL REAR DRIVE PINION NUT

(a) Using a chisel and hammer, stake the drive pinion nut.



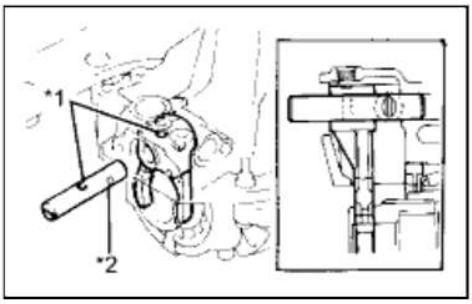
30. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

(a) Install 2 new adjusting nut locks to the bearing caps with the 2 bolts.

Torque: 13 N·m (129 kgf·cm, 9ft·lbf)

(b) After tightening the bolts, bend the nut locks.

31. INSTALL REAR DIFFERENTIAL LOCK SHIFT FORK



(a) Apply MP grease to shaft.

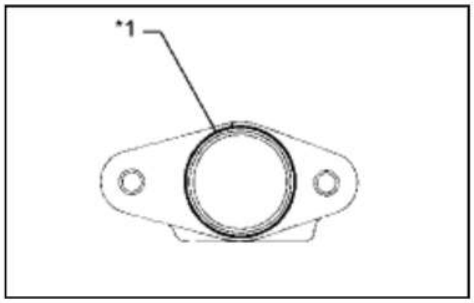
(b) Install the fork shaft so that the hole of the shift fork shaft aligns with that of the shift fork.

Text in Illustration

*1	Holes
*2	Groove

(c) Remove any FIPG material and be careful not to drop the oil shaft retainer.

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(d) Apply seal packing to the carrier as shown in the illustration.

Seal packing:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent

FIPG Width

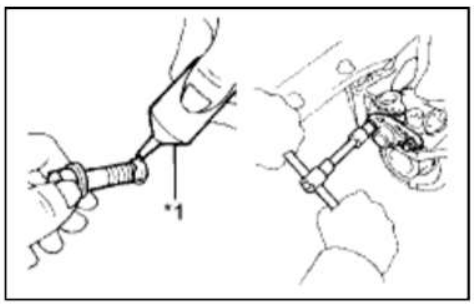
Approx. 1 to 2 mm (0.0394 to 0.0787 in.)

Text in Illustration

*1	Seal Packing

HINT:

Install the shaft retainer within 10 minutes of applying seal packing.



(e) Clean the threads of the bolts and retainer bolt holes with toluene or trichloroethylene.

(f) Apply adhesive to 2 or 3 threads at the tip of each mount bolt.

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

Text in Illustration

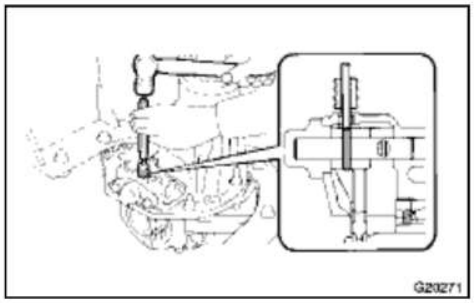
*1	Adhesive

(g) Install the shaft retainer with the 2 bolts.

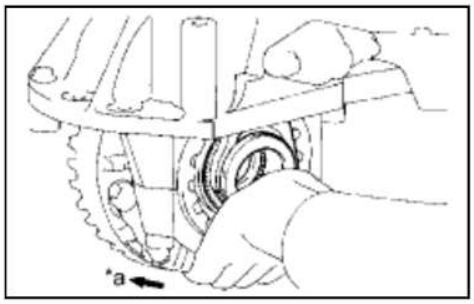
Torque: 24 N·m (240 kgf·cm, 17ft·lbf)

(h) Using a 5 mm pin punch and hammer, install the slotted spring pin to the shift fork.

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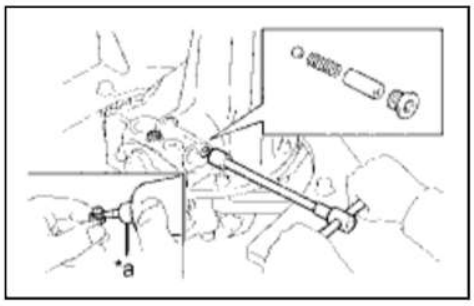
Torque: 22 N·m (220 kgf·cm, 16ft·lbf)



(i) Push the differential lock sleeve in deeply and hold it in position.

Text in Illustration

*a	Lock



(j) Install the ball, spring and spring seat.

(k) Clean the threads of the 2 plugs and plug holes with toluene or trichloroethylene.

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

Text in Illustration

*1	Adhesive

(l) Using a 6 mm hexagon wrench, install the screw plugs.

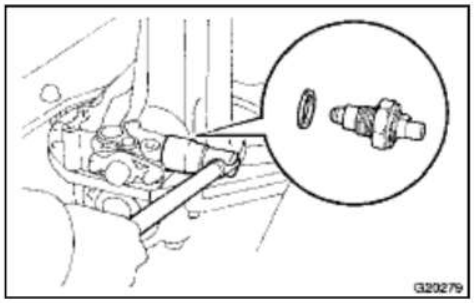
Torque: 22 N·m (220 kgf·cm, 16ft·lbf)

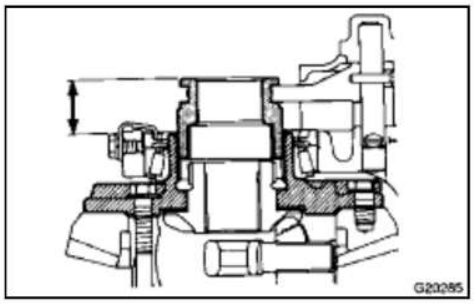
32. INSTALL DIFFERENTIAL LOCK INDICATOR SWITCH

(a) Install the indicator switch together with a new gasket.

Torque: 40 N·m (410 kgf·cm, 30ft·lbf)

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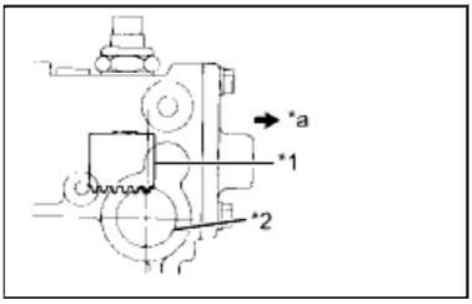


33. INSPECT REAR DIFFERENTIAL LOCK SLEEVE

(a) Measure the distance between the sleeve and tip of the differential case when the differential is free, and when it is locked.

Standard distance:
Locked: 17.44 to 18.86 mm (0.687 to 0.743 in.)
Free: 32.40 to 33.90 mm (1.276 to 1.335 in.)

34. INSTALL DIFFERENTIAL LOCK SHIFT ACTUATOR



(a) Check that the outermost rack tooth of the shift fork is approximately above the center line of the actuator installation hole.

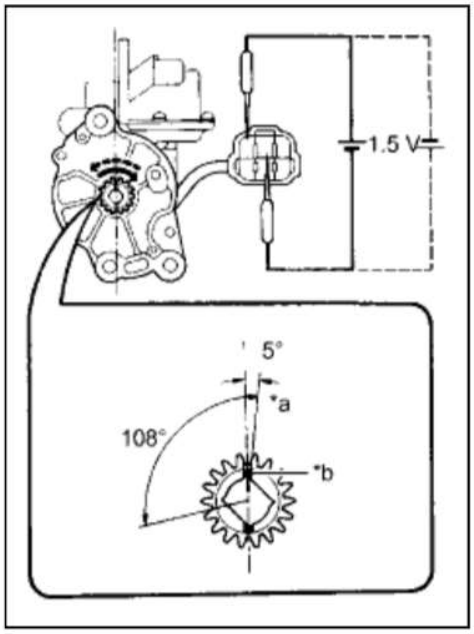
Text in Illustration

*a	Outside
*1	Shift Fork
*2	Actuator Installation Hole

(b) Make sure that the matchmarks on the pinion of the actuator are in the range of 0 to 5 degrees clockwise from the center line of the actuator.

Text in Illustration

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*a	Matchmark
*b	Groove

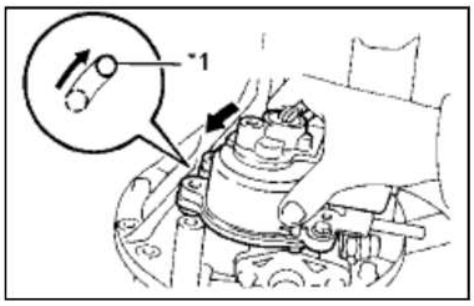
NOTICE:

- If the matchmarks are not within this range, rotate the pinion.
- Do not apply positive battery voltage directly to the terminals.
- If the matchmarks move to the limit of rotation, stop applying electric current.

(c) Install a new O-ring to the actuator.

(d) Apply a light coat of gear oil to the O-ring.

(e) Apply MP grease to the gear.



(f) Mack sure that the outermost rack tooth of the shift fork aligns with the matchmarks on the pinion of the actuator.

(g) Install the actuator so that the knock pin on the carrier side fits into the long hole on the actuator side.

Text in Illustration

*1	Knock Pin

HINT:

Do not damage the O-ring of the actuator.

(h) Rotate the actuator counterclockwise so that the knock pin slides to the end of the hole as shown in the illustration.

(i) Install the bolts.

Torque: 27 N·m (270 kgf·cm, 20ft·lbf)

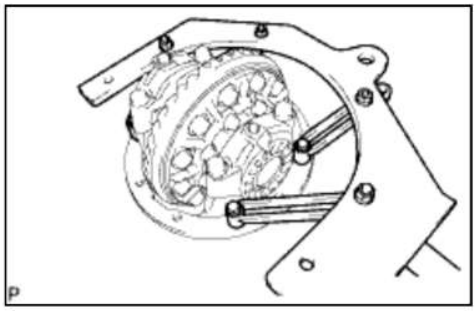
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000016GH012X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY



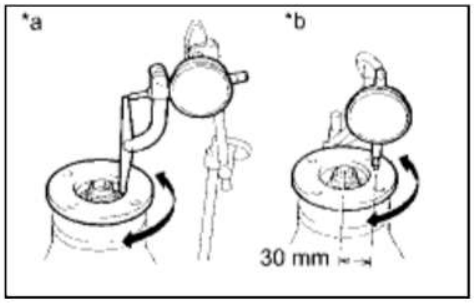
1. FIX REAR DIFFERENTIAL CARRIER ASSEMBLY IN PLACE

(a) Fix the rear differential carrier assembly to the overhaul attachment.

2. INSPECT REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Distance from center to runout measurement point:
30 mm (1.18 in.)
Maximum Runout:



ITEM	SPECIFIED CONDITION
Vertical runout	0.14 mm (1.0055 in.)
Lateral runout	0.14 mm (1.0055 in.)

Text in Illustration

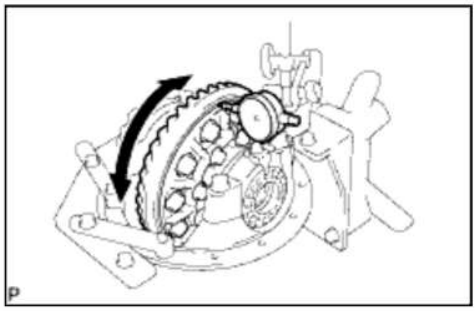
*a	Vertical Runout
*b	Lateral Runout

If the runout is more than the maximum, replace the companion flange.

3. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

(a) Using a dial indicator, check the runout of the ring gear.

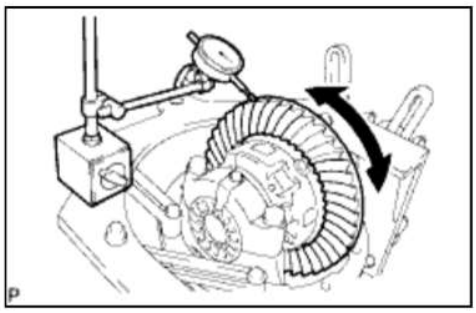
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Maximum runout:

0.07 mm (0.00276 in.)

If the runout is more than the maximum, replace the ring gear with a new one.



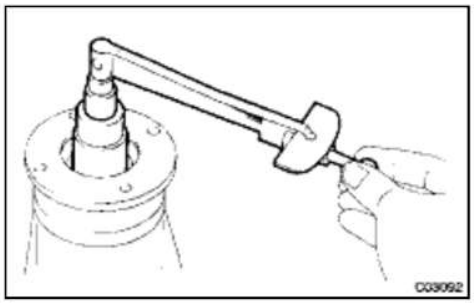
4. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.

Standard backlash:

0.10 to 0.20 mm (0.00394 to 0.00787 in.)

If the backlash is not within the specification, adjust the side bearing preload or performs repairs as necessary.



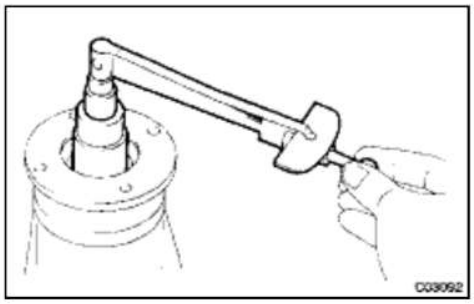
5. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Standard preload (at starting):

0.88 to 1.98 N*m (9.0 to 20.2 kgf*cm, 7.8 to 17.5 in.*lbf)

If necessary, disassemble and inspect the differential assembly.



6. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

(b) Using a torque wrench, measure the total preload.

Standard total preload (at starting):

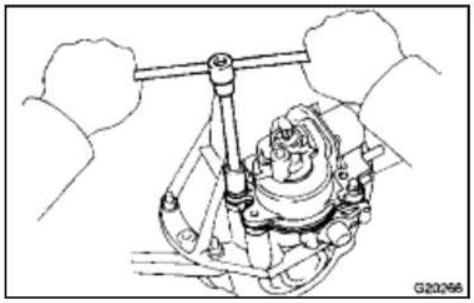
Drive pinion preload plus 0.20 to 0.40 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)

If necessary, disassemble and inspect the differential.

7. REMOVE DIFFERENTIAL LOCK SHIFT ACTUATOR

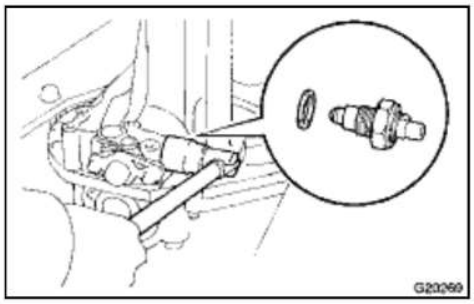
(a) Remove the 4 bolts and actuator from the differential

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carrier.

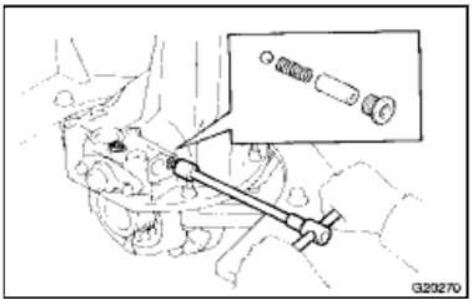
(b) Remove the O-ring.



8. REMOVE DIFFERENTIAL LOCK INDICATOR SWITCH

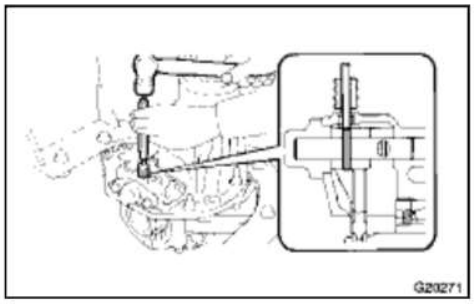
(a) Remove the indicator switch and gasket.

9. REMOVE REAR DIFFERENTIAL LOCK SHIFT FORK SHAFT



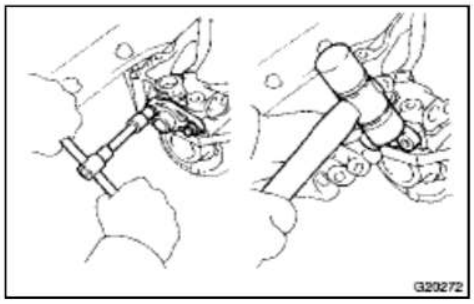
(a) Using a 6 mm hexagon wrench, remove the 2 screw plugs.

(b) Remove the spring seat, spring and ball.



(c) Using a 5 mm pin punch and hammer, remove the slotted pin.

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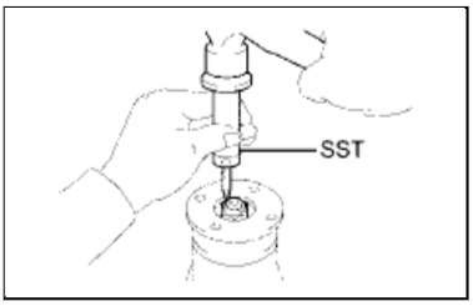
(d) Remove the 2 bolts from the shaft retainer.

(e) Using a plastic-faced hammer, remove the shaft retainer.

(f) Remove the shift fork shaft.

(g) Remove the rear differential lock sleeve.

10. REMOVE REAR DRIVE PINION NUT

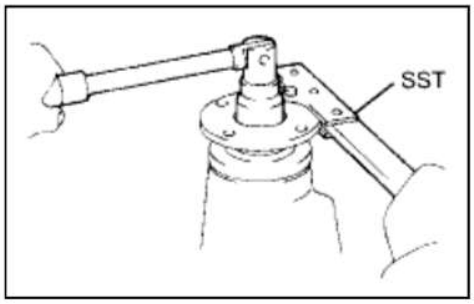


(a) Using SST and a hammer, loosen the staked part of the nut.

SST: 09930-00010

NOTICE:

- Be sure to use SST with the tapered surface facing the shaft.
- Do not grind the tip of the SST with a grinder, etc.
- Completely loosen the staked part of the nut when removing.
- Do not damage the threads of the drive pinion.



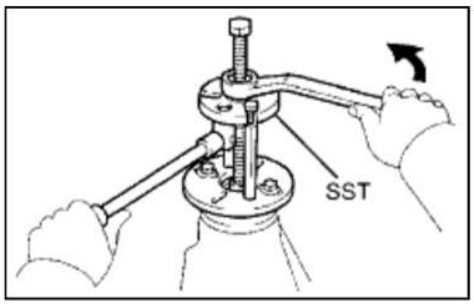
(b) Use SST to hold the drive pinion companion flange.

SST: 09330-00021

(c) Using a 30 mm socket wrench, remove the rear drive pinion nut.

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11. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR



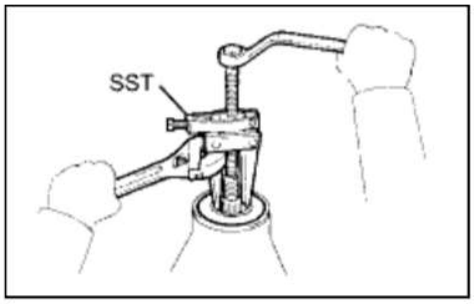
(a) Using SST, remove the drive pinion companion flange.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

Apply grease to the threads and tip of the SST center bolt before use.



12. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

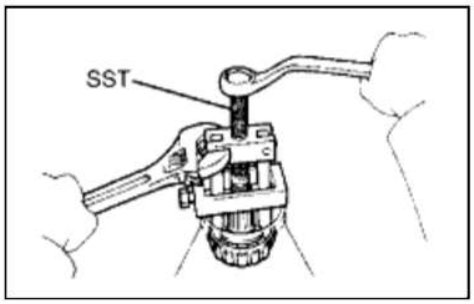
(a) Using SST, remove the oil seal from the differential carrier.

SST: 09308-10010

13. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

NOTICE:

Apply grease to the threads and tip of the SST center bolt before use.



14. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)

(a) Using SST, remove the drive pinion tapered roller bearing from the drive pinion.

SST: 09556-22010

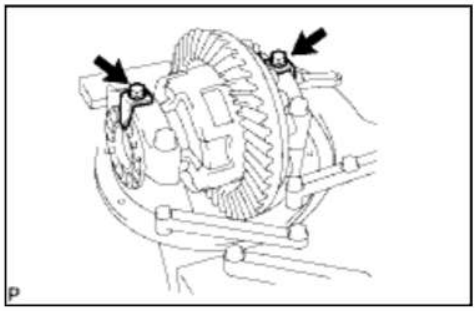
NOTICE:

Apply grease to the threads and tip of the SST center bolt before use.

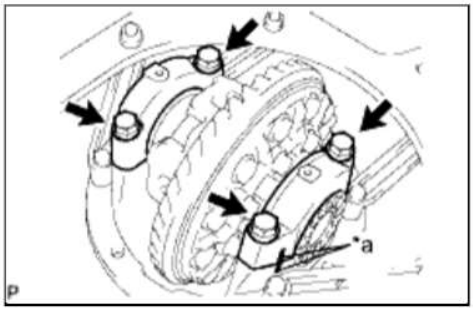
15. REMOVE REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

(a) Remove the 2 bolts and 2 rear differential bearing adjusting nut locks.

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16. REMOVE DIFFERENTIAL CASE ASSEMBLY



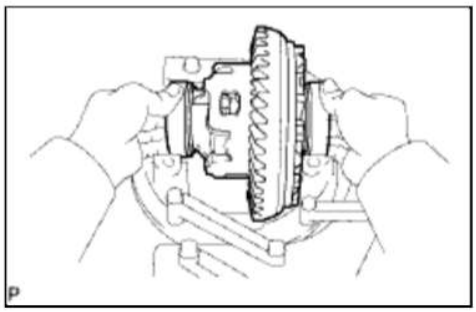
(a) Place matchmarks on the bearing cap and differential carrier.

Text in Illustration

*a	Matchmark

(b) Remove the 4 bolts and 2 differential bearing caps.

(c) Remove the 2 adjusting nuts.



(d) Remove the rear differential case sub-assembly and 2 case bearings from the differential carrier.

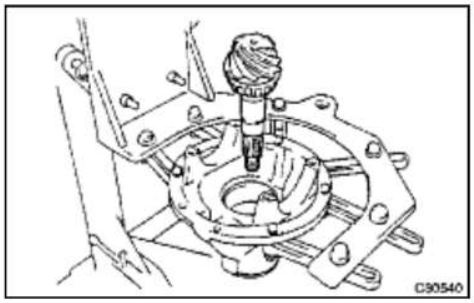
HINT:

Tag the 2 case bearing outer races so that they can be reinstalled in the correct locations.

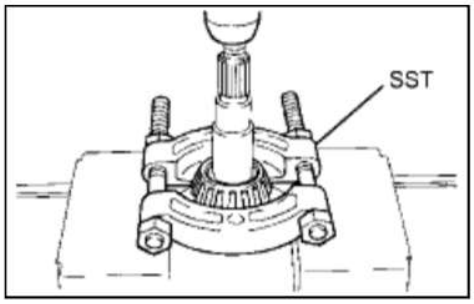
17. REMOVE DIFFERENTIAL DRIVE PINION

(a) Remove the differential drive pinion and bearing spacer from the differential carrier.

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18. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING (INNER)



(a) Using SST and a press, remove the drive pinion tapered roller bearing from the drive pinion.

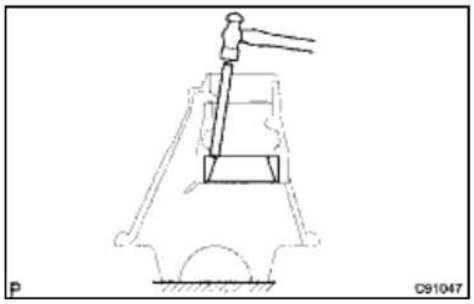
SST: 09950-00020

NOTICE:

Do not drop the drive pinion.

HINT:

If either the drive pinion or ring gear is damaged, replace them as a set.



19. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)

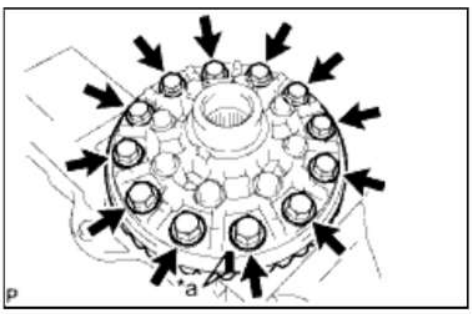
(a) Using a brass bar and hammer, remove the rear tapered roller bearing from the carrier.

HINT:

If the bearing is damaged during the removal, replace it.

20. REMOVE REAR DIFFERENTIAL DRIVE PINION PLATE WASHER

21. REMOVE DIFFERENTIAL RING GEAR



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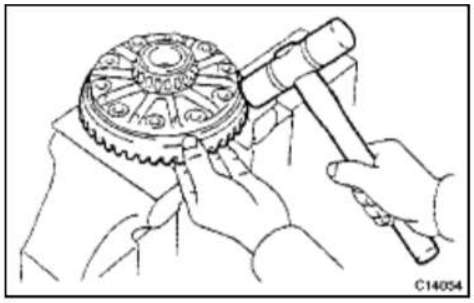
(a) Place matchmarks on the ring gear and differential case.

Text in Illustration

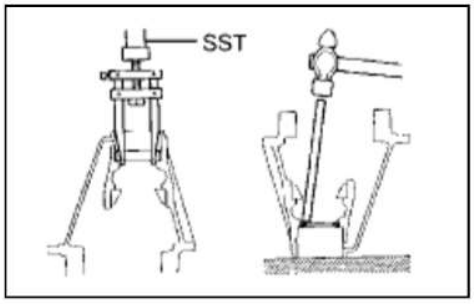
*a	Matchmark

(b) Using a screwdriver and hammer, unstake the lock plates.

(c) Remove the 12 ring gear set bolts.



(d) Using a plastic-faced hammer, tap on the ring gear to separate it from the differential case.



22. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)

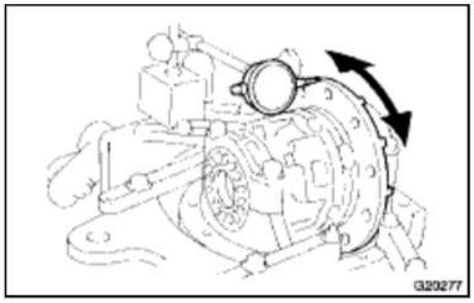
(a) Using SST, remove the front tapered roller bearing from the carrier.

SST: 09308-00010

(b) Using a brass bar and hammer, remove the oil storage ring from the carrier.

HINT:

If the bearing is damaged during the removal, replace it.



23. INSPECT DIFFERENTIAL CASE ASSEMBLY RUNOUT

(a) Install the rear differential case bearing to the differential case.

(b) Install the differential case to the differential carrier.

(c) Install the 2 bearing caps to the differential carrier with the 4 bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

(d) Inspect the differential case runout.

Maximum runout:
0.07 mm (0.00276 in.)

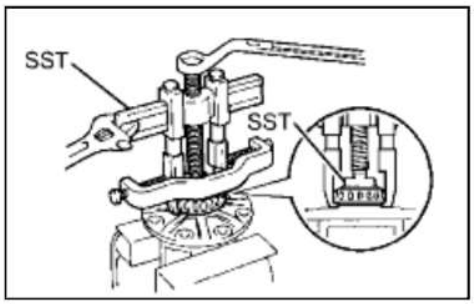
(e) Remove the differential case.

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(f) Remove the rear differential case bearing.

24. REMOVE REAR DIFFERENTIAL CASE BEARING

(a) Using SST, remove the 2 rear differential case bearings from the differential case.



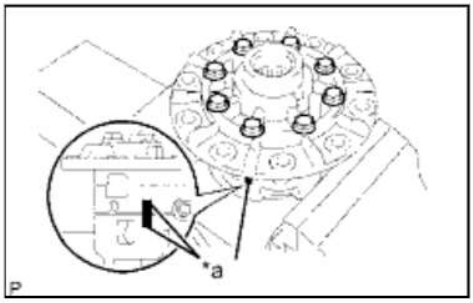
SST: 09950-40011

09953-04020
09951-04010
09952-04010
09954-04010
09955-04061
09957-04010
09958-04011

SST: 09950-60010

09951-00500
09951-00650
09952-06010

25. DISASSEMBLE DIFFERENTIAL CASE



(a) Place matchmarks on the LH and RH cases.

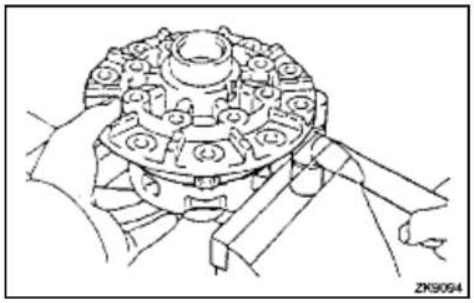
Text in Illustration

*a	Matchmark

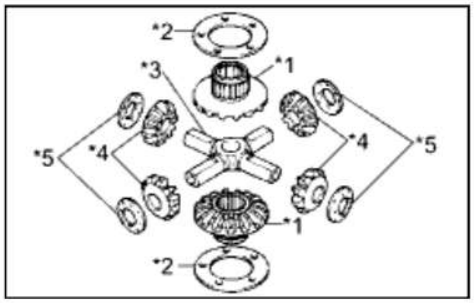
(b) Remove the 8 bolts.

(c) Using a plastic-faced hammer, separate the LH and RH cases.

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(d) Remove the parts shown in the illustration from the differential case.



Text in Illustration

*1	Side Gear
*2	Side Gear Thrust Washer
*3	Spider
*4	Pinion Gear
*5	Pinion Gear Thrust Washer

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010SI01BX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY

(a) Remove any dust and oil from the differential carrier assembly and the contact surfaces of the axle housing.

(b) Install a new gasket and the differential carrier assembly with the 11 nuts and 11 washers.

Torque: 52 N·m (530 kgf·cm, 38ft·lbf)

(c) Connect the differential lock actuator connector.

(d) Connect the rear differential lock actuator breather hose to the differential actuator assembly.

2. INSTALL REAR AXLE SHAFT LH

(a) Install the rear axle shaft LH INFO .

3. INSTALL REAR AXLE SHAFT RH

HINT:

Use the same procedure described for the LH side.

4. INSTALL PROPELLER SHAFT ASSEMBLY

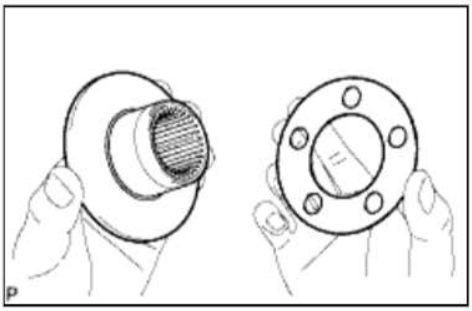
(a) Install the propeller shaft assembly INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MS01GX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): REASSEMBLY (2010 4Runner)		

REASSEMBLY

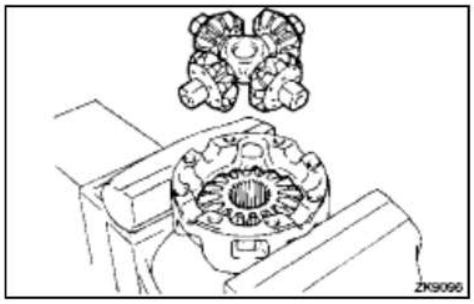
1. ASSEMBLE DIFFERENTIAL CASE



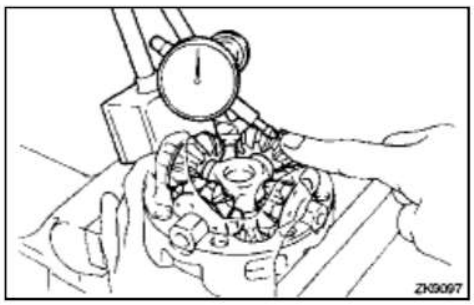
(a) Install the rear differential side gear thrust washer to the rear differential side gear.

(b) Install the rear differential pinion thrust washer and rear differential pinion to the rear differential spider.

(c) Fix the differential case RH in place.



(d) Install the rear differential side gear and rear differential spider to the differential case RH.

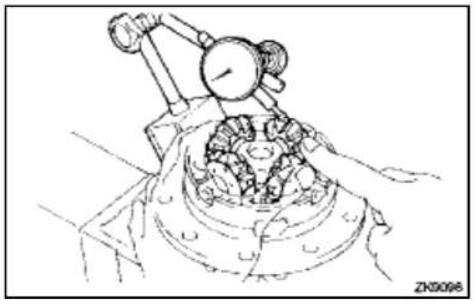


(e) Using a dial indicator, measure the differential case RH side backlash while pushing the pinion toward the case.

Standard backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

(f) Remove the rear differential spider from the differential case RH.

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(g) Install the rear differential side gear and rear differential spider to the differential case LH.

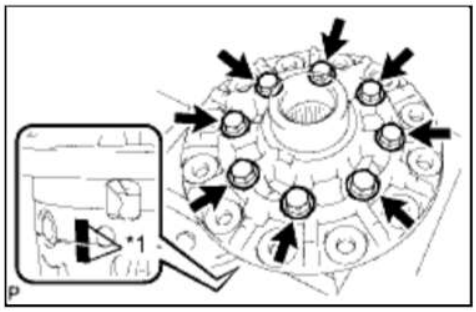
(h) Using a dial indicator, measure the differential case LH side backlash while pushing the pinion toward the case.

Standard backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

If the backlash is not within the specification, install 2 side gear thrust washers of a different thickness.

Standard Thrust Washer:

SPECIFIED CONDITION	SPECIFIED CONDITION
0.87 to 0.93 mm (0.0343 to 0.0366 in.)	1.17 to 1.23 mm (0.0461 to 0.0484 in.)
0.97 to 1.03 mm (0.0382 to 0.0406 in.)	1.27 to 1.33 mm (0.0500 to 0.0524 in.)
1.07 to 1.13 mm (0.0421 to 0.0445 in.)	-



(i) Align the matchmarks and assemble the differential case from the RH and LH cases.

Text in Illustration

*a	Matchmark

(j) Using a plastic-faced hammer, install the differential case.

(k) Install the 8 bolts.

Torque: 47 N·m (480 kgf·cm, 35ft·lbf)

2. INSTALL DIFFERENTIAL RING GEAR

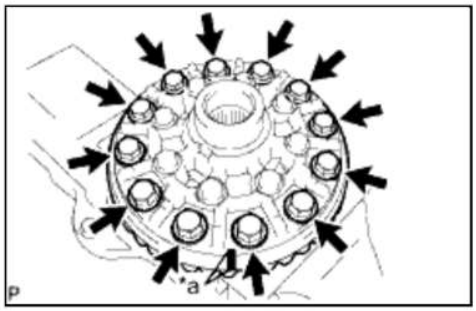
(a) Clean the contact surfaces of the differential case and ring gear.

(b) Heat the ring gear in water that is approximately 100°C (212°F).

(c) Carefully remove the ring gear from the boiling water.

(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

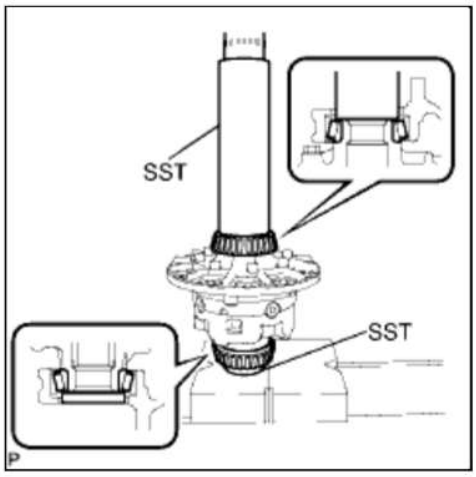
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(e) Align the matchmark on the ring gear with that of the differential case.

(f) After the ring gear cools down sufficiently, apply adhesive to the 12 bolts and install them.

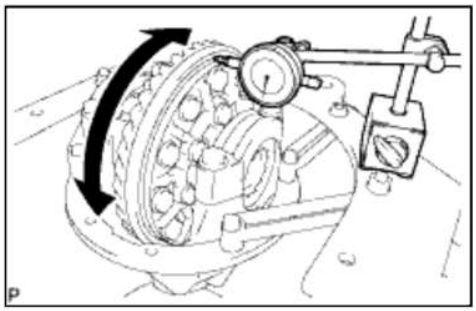
Adhesive:
Toyota Genuine Adhesive 1360K, Three Bond 1360K or equivalent
Torque: 97 N·m (985 kgf·cm, 71ft·lbf)



3. INSTALL REAR DIFFERENTIAL CASE BEARING

(a) Using SST and a press, press the bearing onto the differential case.

SST: 09308-14010
SST: 09950-60010
09951-00490



4. INSPECT DIFFERENTIAL RING GEAR RUNOUT

(a) Install the differential case to the carrier and install the 2 adjusting nuts so that there is no play in the bearing.

(b) Install the 2 bearing caps with the 4 bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

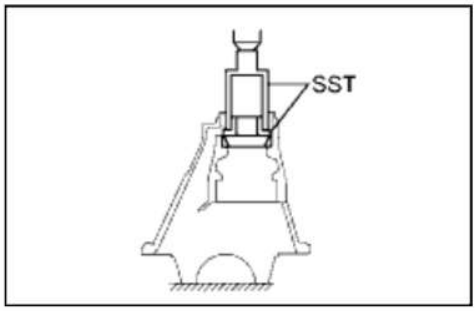
(c) Using a dial indicator, measure the runout of the ring gear.

Maximum runout:
0.07 mm (0.00276 in.)

(d) Remove the 2 bearing caps, 2 adjusting nuts and differential case.

5. INSTALL REAR DRIVE PINION FRONT TAPERED

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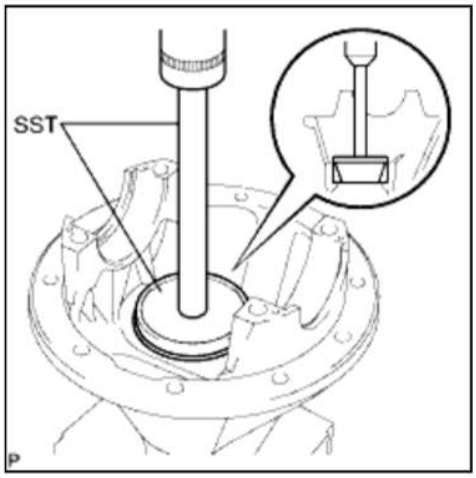
ROLLER BEARING

(a) Using SST and a press, press in the roller bearing (outer) to the carrier.

SST: 09308-14010

SST: 09309-14040

6. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING



(a) Install the plate washer to the carrier.

HINT:

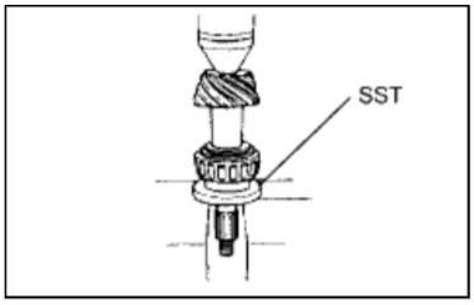
First, install a washer with the same thickness as the removed washer, and then check the tooth contact pattern. Replace the washer with one of a different thickness if necessary.

(b) Using SST and a press, press the roller bearing (outer) into the carrier.

SST: 09950-70010

09951-07200

SST: 09255-10012



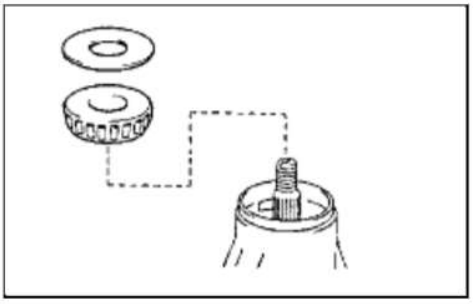
7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a press, press the roller bearing (inner) onto the drive pinion.

SST: 09309-14040

8. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

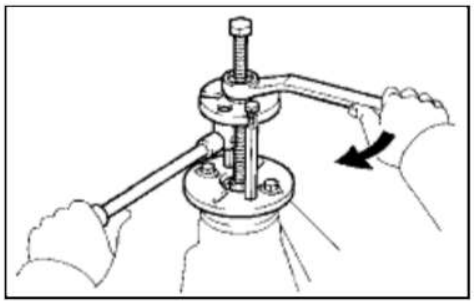
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(a) Install the drive pinion, rear drive pinion tapered roller bearing and rear differential drive pinion oil slinger.

HINT:

Install the spacer and oil seal after adjusting the gear contact pattern.



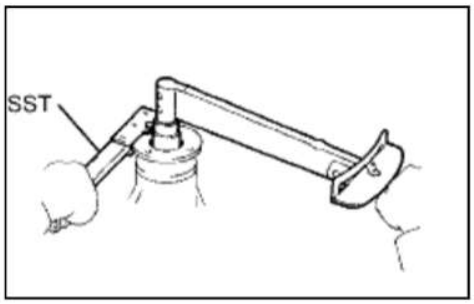
(b) Using SST, install the companion flange.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

Before using SST (center bolt), apply hypoid gear oil LSD to its threads and tip.



(c) Using a 30 mm socket wrench, adjust the drive pinion preload by tightening the companion flange nut.

(d) Using SST to hold the companion flange in place, tighten the nut.

SST: 09330-00021

Torque: 457 N·m (4660 kgf·cm, 337ft·lbf)or less

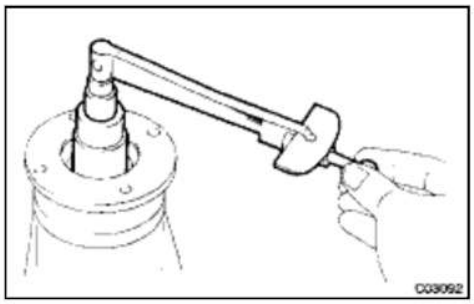
NOTICE:

- As there is no spacer, tighten the nut a little at a time. Be careful not to overtighten the nut.
- Apply hypoid gear oil to the nut.

(e) Using a torque wrench, measure the preload.

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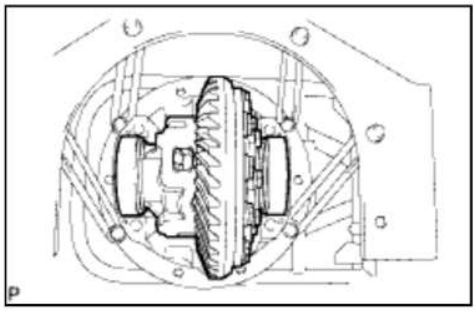
Standard Preload (at Starting):



ITEM	SPECIFIED CONDITION
New bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
Used bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)

NOTICE:

For a more accurate measurement, rotate the bearing forward and backward several times before measuring.



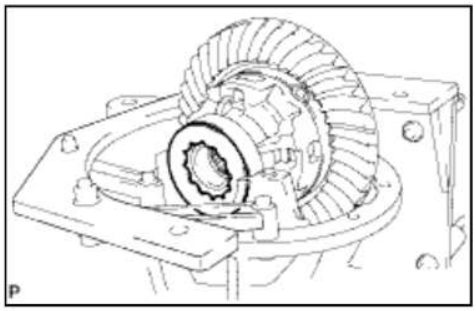
9. INSTALL DIFFERENTIAL CASE ASSEMBLY

(a) Place the 2 bearing outer races on their respective bearings.

HINT:

Do not interchange the right and left races.

10. ADJUST RING GEAR BACKLASH



(a) Install the plate washer on the side without the ring gear teeth.

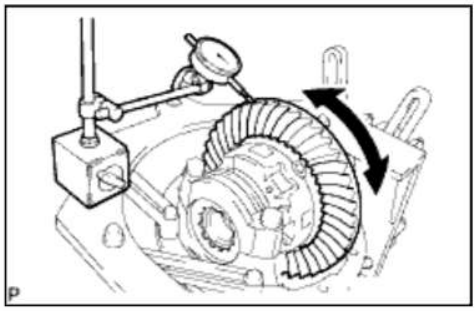
NOTICE:

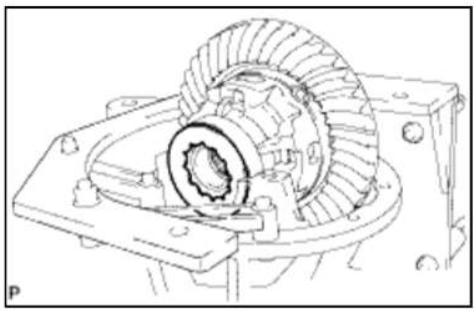
Make sure that the ring gear has backlash.

(b) Using a dial indicator, while holding the companion flange, measure the ring gear backlash.

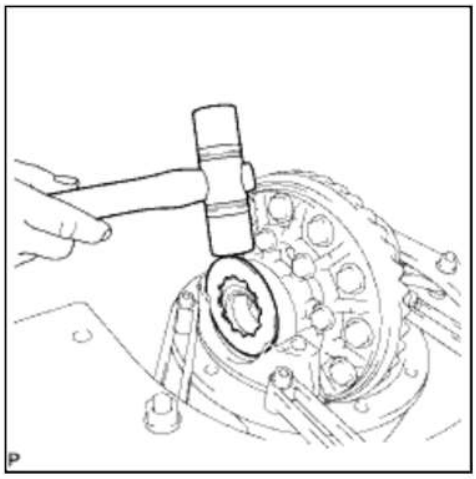
Standard backlash (reference):
0.10 to 0.20 mm (0.00394 to 0.00787 in.)

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(c) Select a plate washer for the side without the ring gear teeth using the backlash as a reference.



(d) Select a plate washer for the side with the ring gear teeth so that there is no clearance between the outer race and case.

(e) Using a plastic-faced hammer, install the plate washer for the side with the ring gear teeth.

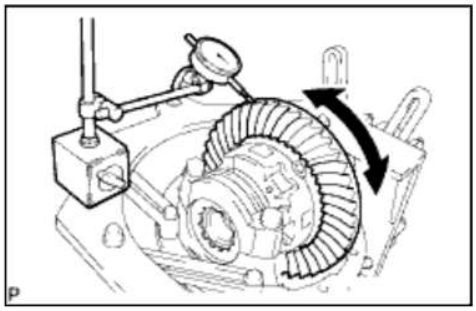
(f) Using a dial indicator, while holding the companion flange, measure the ring gear backlash.

Standard backlash:

0.10 to 0.20 mm (0.00394 to 0.00787 in.)

If the backlash is not within the specification, adjust it by either increasing or decreasing the thickness of the washers on both sides by an equal amount.

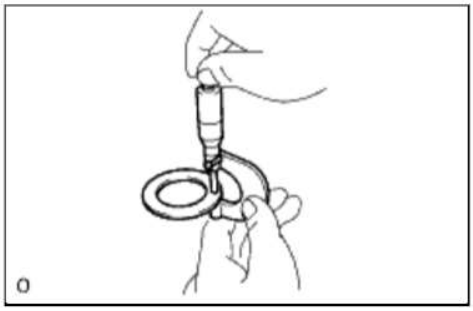
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HINT:

- There should be no clearance between the plate washer and case.
- Make sure that there is ring gear backlash.

11. ADJUST SIDE BEARING PRELOAD



(a) Remove the ring gear teeth side plate washer and, using a micrometer, measure the thickness.

(b) Using the backlash as a reference, select a new washer that is 0.05 to 0.20 mm (0.00197 to 0.00787 in.) thicker than the removed washer and, using a plastic-faced hammer, tap it in so that it fits against the bearing.

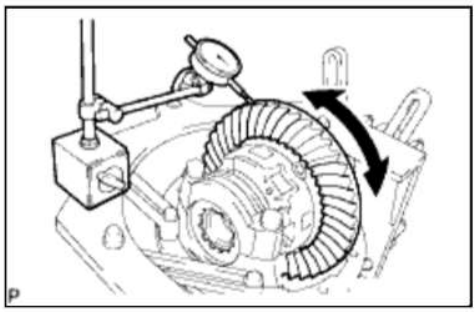
HINT:

Select a washer which can be pressed in 2/3 of the full amount with your finger.

(c) Recheck the ring gear backlash.

Standard backlash:
0.10 to 0.20 mm (0.00394 to 0.00788 in.)

If the backlash is not within the specification, adjust it by either increasing or decreasing the thickness of the washers on both sides by an equal amount.



HINT:

An approximately 0.02 mm (0.000787 in.) change in each plate washer results in a 0.03 mm (0.00118 in.) change in the backlash.

Standard Washer:

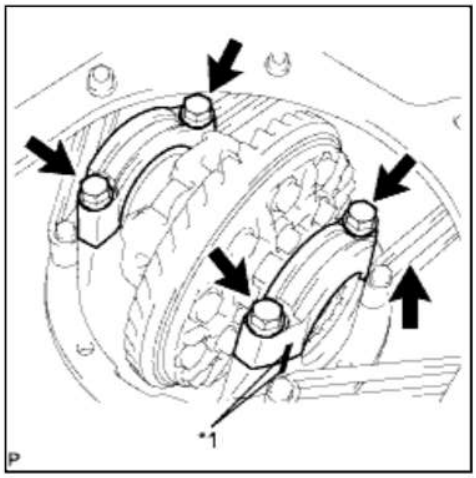
MARK	SPECIFIED CONDITION	MARK	SPECIFIED CONDITION
70	2.05 to 2.07 mm	62	2.41 to 2.43 mm

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	(0.0808 to 0.0816 in.)		(0.0950 to 0.0957 in.)
71	2.07 to 2.09 mm (0.0816 to 0.0823 in.)	63	2.43 to 2.45 mm (0.0957 to 0.0965 in.)
72	2.09 to 2.11 mm (0.0823 to 0.0831 in.)	64	2.45 to 2.47 mm (0.0965 to 0.0972 in.)
73	2.11 to 2.13 mm (0.0831 to 0.0839 in.)	65	2.47 to 2.49 mm (0.0972 to 0.0980 in.)
74	2.13 to 2.15 mm (0.0839 to 0.0847 in.)	66	2.49 to 2.51 mm (0.0980 to 0.0988 in.)
75	2.15 to 2.17 mm (0.0847 to 0.0855 in.)	67	2.51 to 2.53 mm (0.0988 to 0.0996 in.)
76	2.17 to 2.19 mm (0.0855 to 0.0863 in.)	68	2.53 to 2.55 mm (0.0996 to 0.1000 in.)
77	2.19 to 2.21 mm (0.0863 to 0.0871 in.)	69	2.55 to 2.57 mm (0.1000 to 0.1012 in.)
78	2.21 to 2.23 mm (0.0871 to 0.0879 in.)	01	2.57 to 2.59 mm (0.1012 to 0.1020 in.)
79	2.23 to 2.25 mm (0.0879 to 0.0887 in.)	32	2.59 to 2.61 mm (0.1020 to 0.1028 in.)
80	2.25 to 2.27 mm (0.0887 to 0.0894 in.)	33	2.61 to 2.63 mm (0.1028 to 0.1035 in.)
81	2.27 to 2.29 mm (0.0894 to 0.0902 in.)	03	2.63 to 2.65 mm (0.1035 to 0.1043 in.)
82	2.27 to 2.31 mm (0.0902 to 0.0891 in.)	34	2.65 to 2.67 mm (0.1043 to 0.1051 in.)
83	2.31 to 2.33 mm (0.0891 to 0.0918 in.)	35	2.67 to 2.69 mm (0.1051 to 0.1059 in.)
84	2.33 to 2.35 mm (0.0918 to 0.0926 in.)	05	2.69 to 2.71 mm (0.1059 to 0.1067 in.)
85	2.35 to 2.37 mm (0.0926 to 0.0934 in.)	36	2.71 to 2.73 mm (0.1067 to 0.1075 in.)
86	2.37 to 2.39 mm (0.0934 to 0.0942 in.)	37	2.73 to 2.75 mm (0.1075 to 0.1082 in.)
87	2.39 to 2.41 mm (0.0942 to 0.0950 in.)	07	2.75 to 2.77 mm (0.1082 to 0.1091 in.)

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12. INSTALL BEARING CAP



(a) Align the matchmarks on the cap and carrier.

Text in Illustration

*a	Matchmark

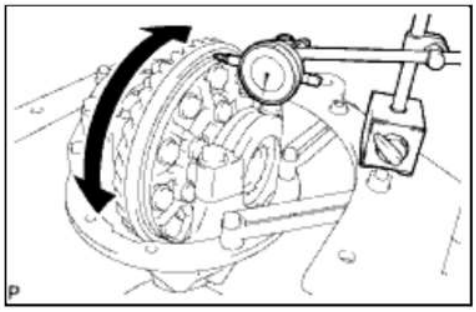
(b) Install the 2 bearing caps with the 4 bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

HINT:

After rotating the ring gear 5 times or more, recheck the backlash.

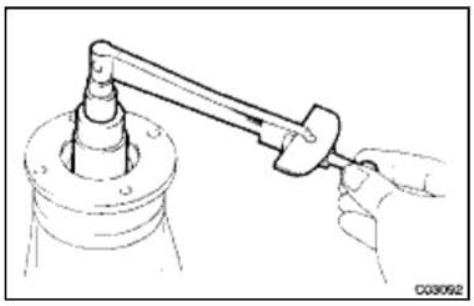
13. INSPECT DIFFERENTIAL RING GEAR RUNOUT



(a) Using a dial indicator, measure the runout of the ring gear.

Maximum runout:
0.07 mm (0.00276 in.)

If the runout is more than the maximum, replace the ring gear.



14. INSPECT TOTAL PRELOAD

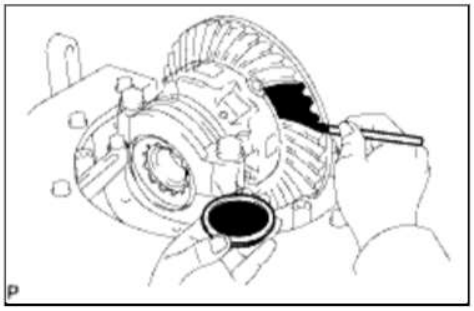
(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Standard total preload (at starting):
Drive pinion preload plus 0.20 to 0.40 N*m (2 to 4 kgf*cm, 2 to 3 in.*lbf)

If necessary, disassemble and inspect the differential.

15. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

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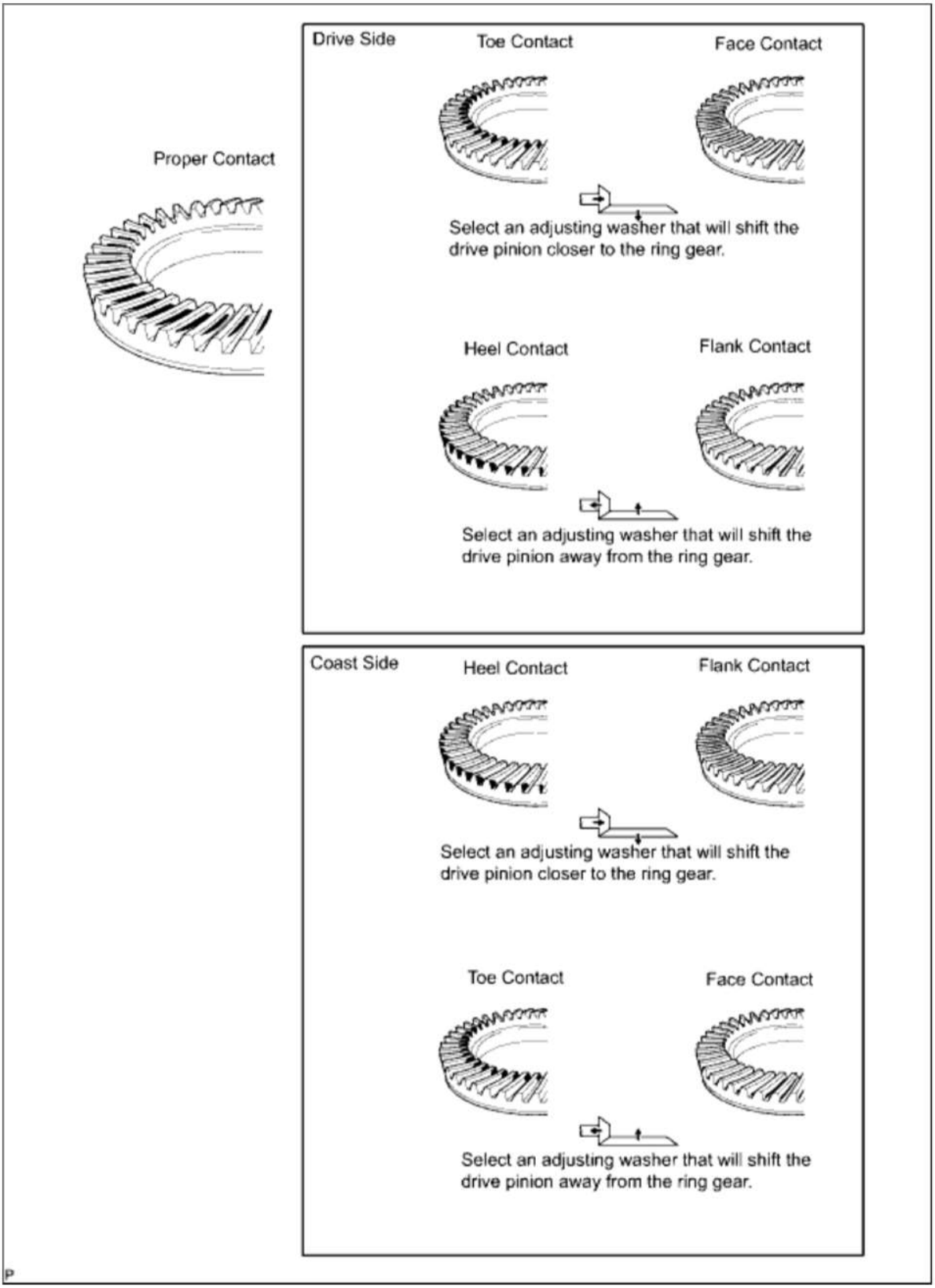


(a) Coat 3 or 4 teeth at 3 different positions on the ring gear with Prussian blue.

(b) Hold the companion flange firmly in place and rotate the ring gear in both directions.

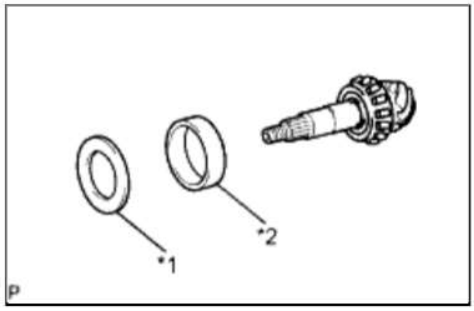
(c) Inspect the tooth contact pattern.

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- If the teeth are not engaged properly, use the following chart to select a proper washer.

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Text in Illustration

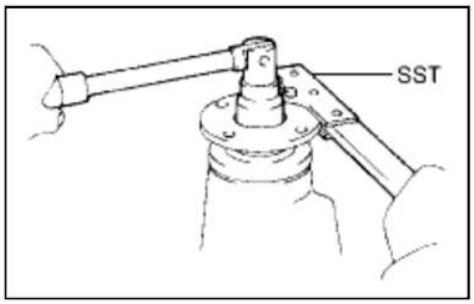
*1	Plate Washer
*2	Rear Drive Pinion Rear Tapered Roller Bearing (Outer)

Standard Plate Washer:

SPECIFIED CONDITION	SPECIFIED CONDITION
1.845 to 1.855 mm (0.0726 to 0.0730 in.)	2.085 to 2.095 mm (0.0821 to 0.0825 in.)
1.855 to 1.865 mm (0.0730 to 0.0734 in.)	2.095 to 2.105 mm (0.0825 to 0.0829 in.)
1.865 to 1.875 mm (0.0734 to 0.0738 in.)	2.105 to 2.115 mm (0.0829 to 0.0833 in.)
1.875 to 1.885 mm (0.0738 to 0.0742 in.)	2.115 to 2.125 mm (0.0833 to 0.0837 in.)
1.885 to 1.895 mm (0.0742 to 0.0746 in.)	2.125 to 2.135 mm (0.0837 to 0.0841 in.)
1.895 to 1.905 mm (0.0746 to 0.0750 in.)	2.135 to 2.145 mm (0.0841 to 0.0844 in.)
1.905 to 1.915 mm (0.0750 to 0.0754 in.)	2.145 to 2.155 mm (0.0844 to 0.0848 in.)
1.915 to 1.925 mm (0.0754 to 0.0758 in.)	2.155 to 2.165 mm (0.0848 to 0.0852 in.)
1.925 to 1.935 mm (0.0758 to 0.0762 in.)	2.165 to 2.175 mm (0.0852 to 0.0856 in.)
1.935 to 1.945 mm (0.0762 to 0.0766 in.)	2.175 to 2.185 mm (0.0856 to 0.0860 in.)
1.945 to 1.955 mm (0.0766 to 0.0770 in.)	2.185 to 2.195 mm (0.0860 to 0.0864 in.)
1.955 to 1.965 mm (0.0770 to 0.0774 in.)	2.195 to 2.205 mm (0.0864 to 0.0868 in.)
1.965 to 1.975 mm (0.0774 to 0.0778 in.)	2.205 to 2.215 mm (0.0868 to 0.0872 in.)
1.975 to 1.985 mm (0.0778 to 0.0781 in.)	2.215 to 2.225 mm (0.0872 to 0.0876 in.)
1.985 to 1.995 mm (0.0781 to 0.0785 in.)	2.225 to 2.235 mm (0.0876 to 0.0880 in.)
1.995 to 2.005 mm (0.0785 to 0.0789 in.)	2.235 to 2.245 mm (0.0880 to 0.0884 in.)
2.005 to 2.015 mm (0.0789 to 0.0793 in.)	2.245 to 2.255 mm (0.0884 to 0.0888 in.)
2.015 to 2.025 mm (0.0793 to 0.0797 in.)	2.255 to 2.265 mm (0.0888 to 0.0892 in.)
2.025 to 2.035 mm (0.0797 to 0.0801 in.)	2.265 to 2.275 mm (0.0892 to 0.0896 in.)
2.035 to 2.045 mm (0.0801 to 0.0805 in.)	2.275 to 2.285 mm (0.0896 to 0.0900 in.)
2.045 to 2.055 mm (0.0805 to 0.0809 in.)	2.285 to 2.295 mm (0.0900 to 0.0904 in.)

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SPECIFIED CONDITION	SPECIFIED CONDITION
2.055 to 5.065 mm (0.0809 to 0.0813 in.)	2.295 to 2.305 mm (0.0904 to 0.0907 in.)
2.065 to 2.075 mm (0.0813 to 0.0817 in.)	2.305 to 2.315 mm (0.0907 to 0.0911 in.)
2.075 to 2.085 mm (0.0817 to 0.0821 in.)	-



16. REMOVE REAR DRIVE PINION NUT

(a) Using SST to hold the companion flange in place, remove the nut.

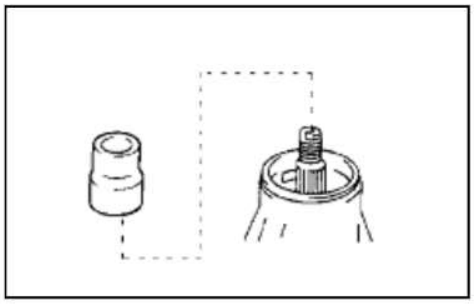
SST: 09330-00021

17. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY INFO

18. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

19. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)

20. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER) INFO



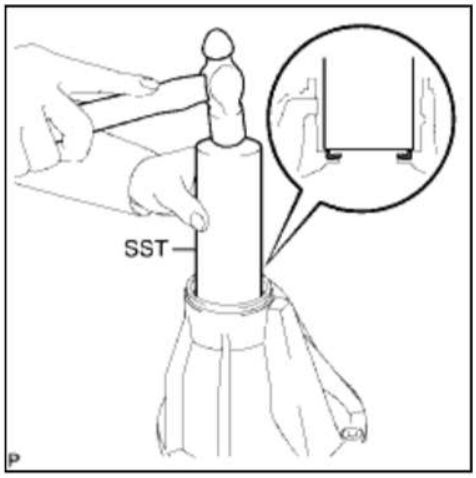
21. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer to the drive pinion.

22. INSTALL DIFFERENTIAL OIL STORAGE RING

(a) Using SST, tap in a new oil storage ring.

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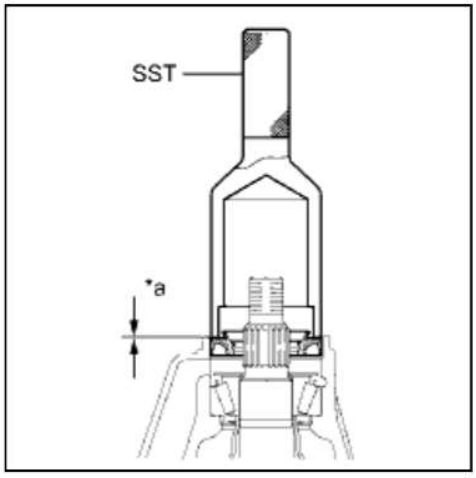
23. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)

24. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)

25. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

26. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Apply MP grease to a new oil seal.



(b) Using SST and a hammer, tap in the oil seal.

SST: 09554-30011

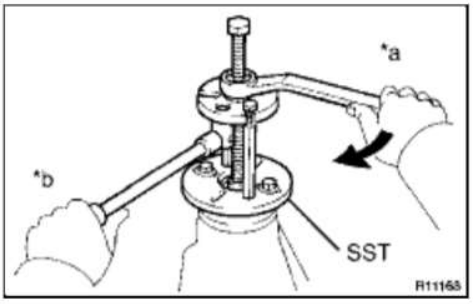
Standard oil seal depth:
-0.3 to 0.3 mm (-0.0118 to 0.0118 in.)

Text in Illustration

*a	Oil Seal Depth

27. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

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(a) Using SST, install the companion flange to the drive pinion.

SST: 09950-30012

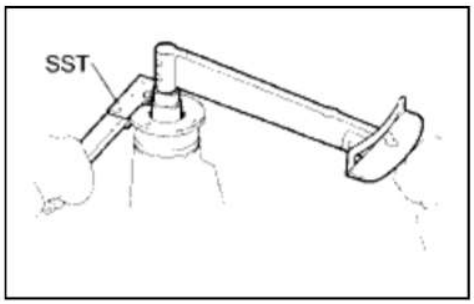
09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

Text in Illustration

*a	Turn
*b	Hold

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST to hold the flange, tighten the nut.

SST: 09330-00021

Torque: 457 N·m (4660 kgf·cm, 337ft·lbf)or less

28. INSPECT DRIVE PINION PRELOAD

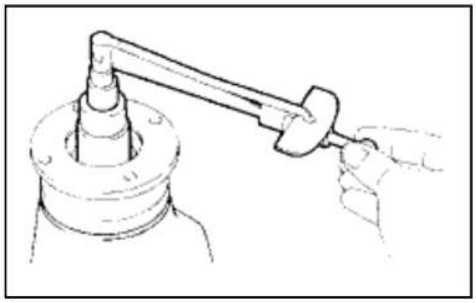
(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Standard Preload (at Starting):

ITEM	SPECIFIED CONDITION

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New bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
Used bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)



If the preload is more than the maximum, replace the bearing spacer.

If the preload is less than the minimum, retighten the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.

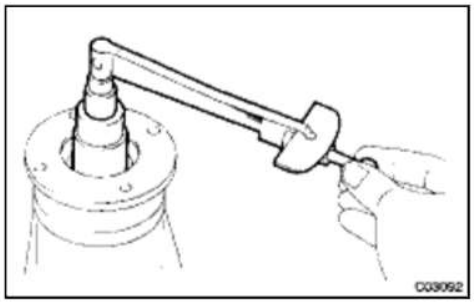
Torque: 457 N·m (4660 kgf·cm, 337ft·lbf)or less

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.

HINT:

Do not loosen the pinion nut to reduce the preload.

29. INSPECT TOTAL PRELOAD

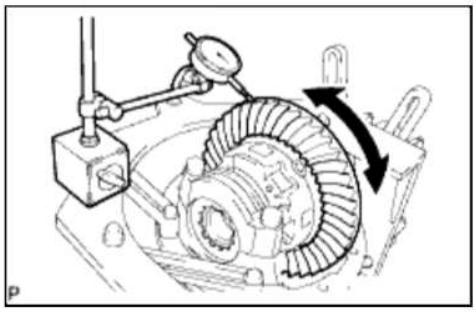


(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):
Drive pinion preload plus 0.20 to 0.40 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)

If necessary, disassemble and inspect the differential.

30. INSPECT DIFFERENTIAL RING GEAR BACKLASH



(a) Using a dial indicator, check the backlash of the ring gear.

Standard backlash:
0.10 to 0.20 mm (0.00394 to 0.00787 in.)

If the backlash is not as specified, adjust the side bearing preload or perform repairs as necessary.

HINT:

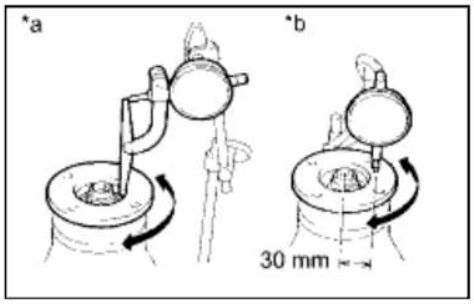
Perform the measurement at 3 or more positions around the circumference of the ring gear.

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31. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the drive pinion companion flange vertically and laterally.

Distance from center to runout measurement point:
30 mm (1.18 in.)
Maximum Runout:

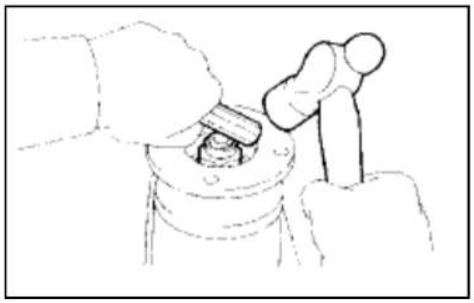


ITEM	SPECIFIED CONDITION
Vertical runout	0.14 mm (0.00551 in.)
Lateral runout	0.14 mm (0.00551 in.)

Text in Illustration

*a	Vertical Runout
*b	Lateral Runout

If the runout is more than the maximum, replace the companion flange.



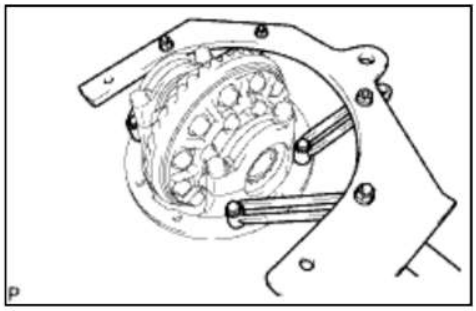
32. STAKE DRIVE PINION NUT

(a) Using a chisel and hammer, stake the nut.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MR01FX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

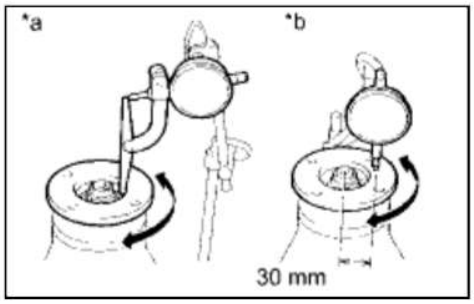


1. FIX REAR DIFFERENTIAL CARRIER ASSEMBLY IN PLACE

2. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Distance from center to runout measurement point:
30 mm (1.18 in.)
Maximum Runout:



ITEM	SPECIFIED CONDITION
Vertical runout	0.14 mm (0.00551 in.)
Lateral runout	0.14 mm (0.00551 in.)

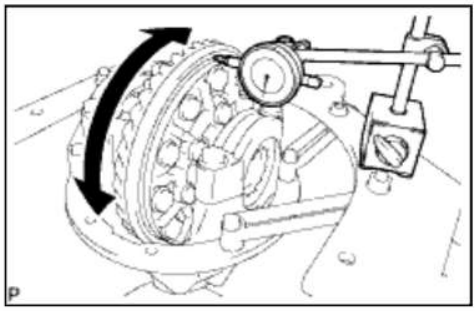
Text in Illustration

*a	Vertical Runout
*b	Lateral Runout

If the runout is more than the maximum, replace the companion flange.

3. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

cardiagn.com

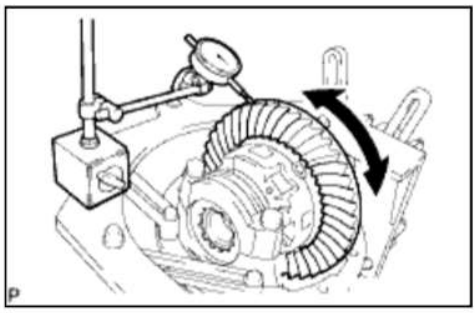


(a) Using a dial indicator, check the runout of the ring gear.

Maximum runout:
0.07 mm (0.00276 in.)

If the runout is more than the maximum, replace the ring gear with a new one.

4. INSPECT DIFFERENTIAL RING GEAR BACKLASH



(a) Using a dial indicator, check the backlash of the ring gear.

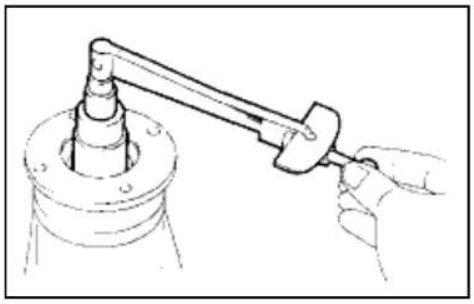
Standard backlash:
0.10 to 0.18 mm (0.00394 to 0.00709 in.)

If the backlash is not within the specification, adjust the side bearing preload or perform repairs as necessary.

HINT:

Perform the measurement at 3 or more positions around the circumference of the ring gear.

5. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

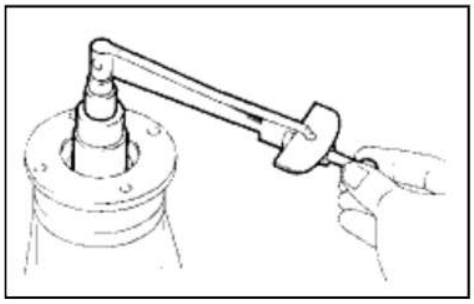


(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Standard preload (at starting):
0.88 to 1.98 N*m (9.0 to 20.2 kgf*cm, 7.8 to 17.5 in.*lbf)

If necessary, disassemble and inspect the differential.

6. INSPECT TOTAL PRELOAD



(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

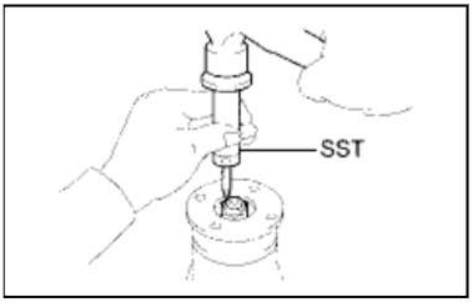
(b) Using a torque wrench, measure the total preload.

Standard total preload (at starting):
Drive pinion preload plus 1.08 to 2.38 N*m (11.0 to 24.3 kgf*cm, 9.6 to 21.0 in.*lbf)

If necessary, disassemble and inspect the differential.

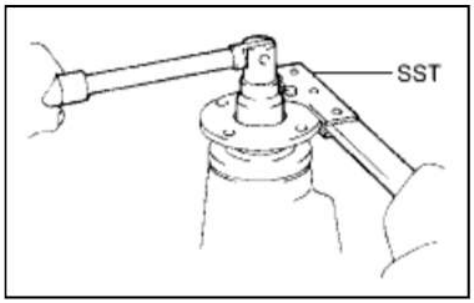
7. REMOVE REAR DRIVE PINION NUT

cardiagn.com



(a) Using SST and a hammer, loosen the staked part of the rear drive pinion nut.

SST: 09930-00010

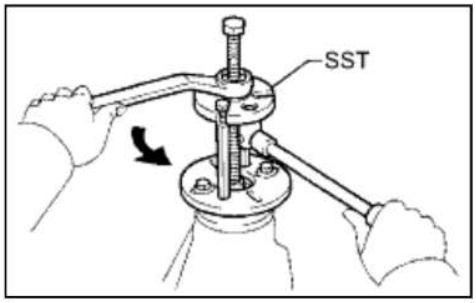


(b) Use SST to hold the companion flange.

SST: 09330-00021

(c) Using a 30 mm socket wrench, remove the rear drive pinion nut.

8. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY



(a) Using SST, remove the rear drive pinion companion flange sub-assembly.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

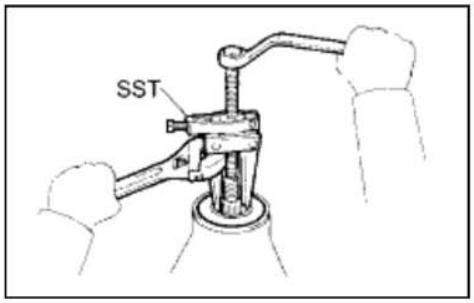
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

9. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

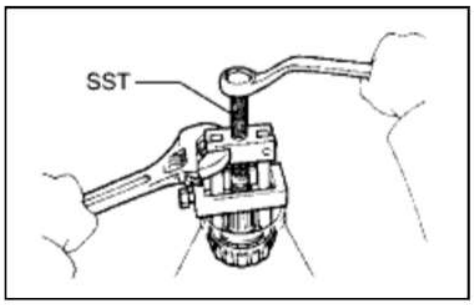
(a) Using SST, remove the rear differential carrier oil seal from the differential carrier.

SST: 09308-10010

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10. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

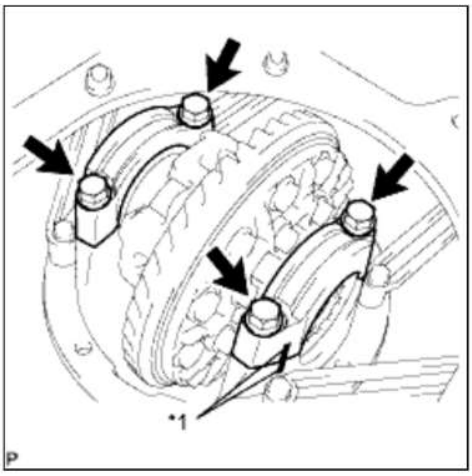


11. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)

(a) Using SST, remove the rear drive pinion front tapered roller bearing (inner) from the drive pinion.

SST: 09556-22010

12. REMOVE DIFFERENTIAL CASE ASSEMBLY



(a) Place matchmarks on the bearing cap and differential carrier.

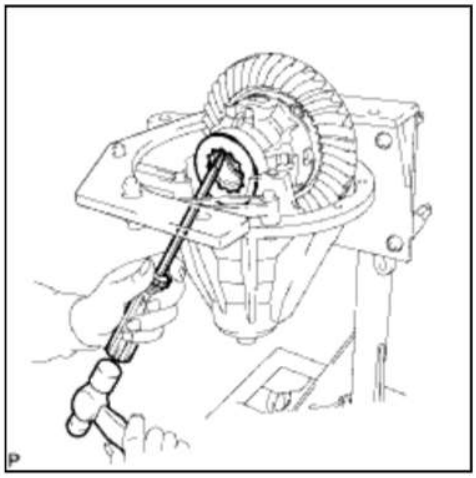
Text in Illustration

*a	Matchmark

(b) Remove the 4 bolts and 2 differential bearing caps.

(c) Using a screwdriver and hammer, remove the 2 plate

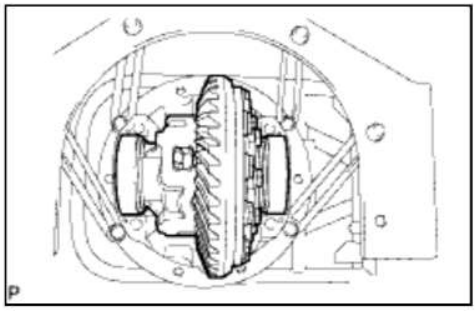
cardiagn.com



washers.

HINT:

Measure the plate washer thickness and note it down.

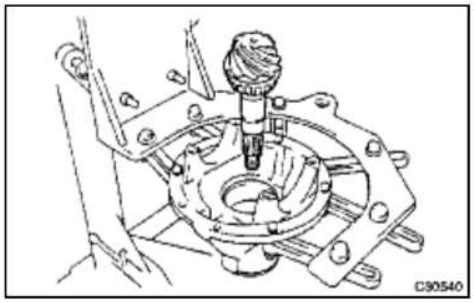


(d) Remove the rear differential case assembly from the differential carrier.

HINT:

Tag the 2 case bearing outer races so that they can be reinstalled in the correct locations.

13. REMOVE DIFFERENTIAL DRIVE PINION



(a) Remove the drive pinion and bearing spacer from the differential carrier.

14. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

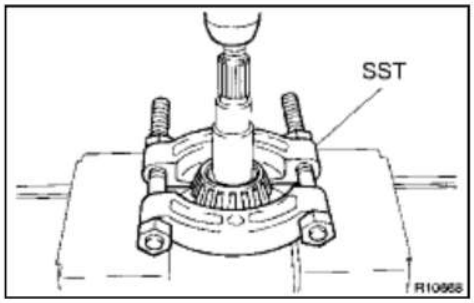
(a) Using SST and a press, press out the roller bearing (inner) from the drive pinion.

SST: 09950-00020

NOTICE:

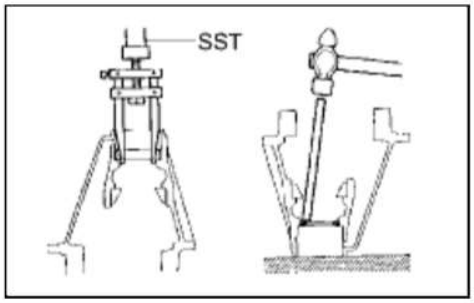
Do not drop the drive pinion.

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HINT:

If the drive pinion or ring gear is damaged, replace them as a set.



15. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)

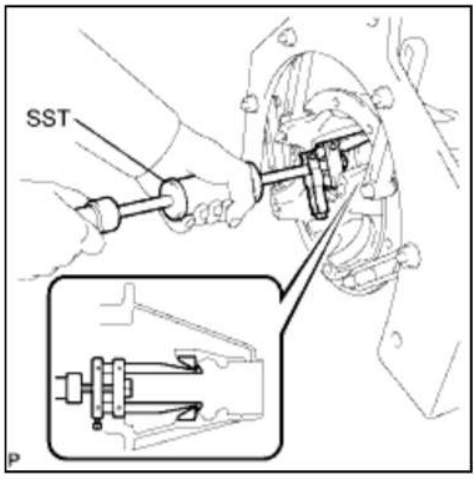
(a) Using SST, remove the roller bearing (outer) from the carrier.

SST: 09308-00010

(b) Using a brass bar and hammer, tap out the oil storage ring from the carrier.

HINT:

If the bearing is damaged during removal, replace it.



16. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, tap out the rear tapered roller bearing (outer) from the carrier.

SST: 09308-00010

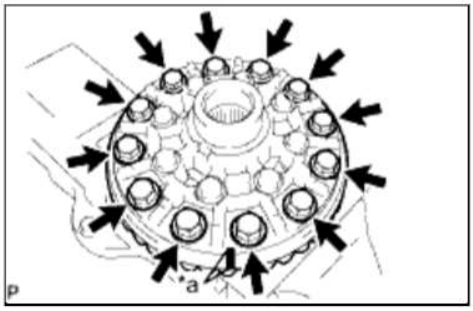
HINT:

If the bearing is damaged during removal, replace it.

17. REMOVE REAR DIFFERENTIAL DRIVE PINION PLATE WASHER

18. REMOVE DIFFERENTIAL RING GEAR

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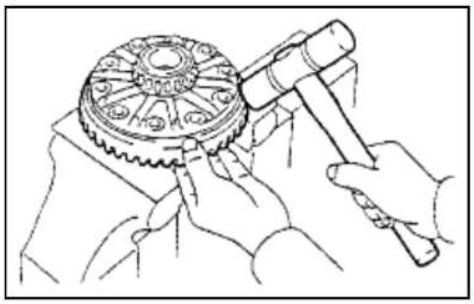


(a) Place matchmarks on the ring gear and differential case.

Text in Illustration

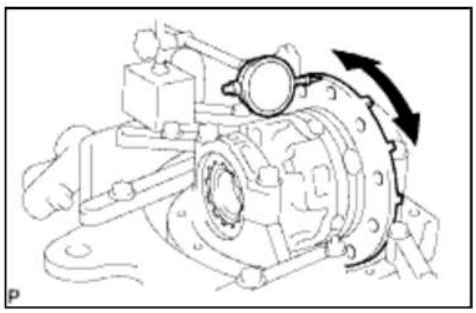
*a	Matchmark

(b) Remove the 12 ring gear set bolts.



(c) Using a plastic-faced hammer, tap on the ring gear to separate it from the differential case.

19. INSPECT DIFFERENTIAL CASE ASSEMBLY RUNOUT



(a) Install the rear differential case bearing to the differential case.

(b) Install the differential case to the differential carrier.

(c) Install the 2 bearing caps to the differential carrier with the 4 bolts.

Torque: 103 N·m (1049 kgf·cm, 76ft·lbf)

(d) Using a dial indicator, measure the differential case runout.

Maximum runout:
0.07 mm (0.00276 in.)

(e) Remove the differential case.

(f) Remove the rear differential case bearing.

20. REMOVE REAR DIFFERENTIAL CASE BEARING

(a) Using SST, remove the 2 bearings from the differential

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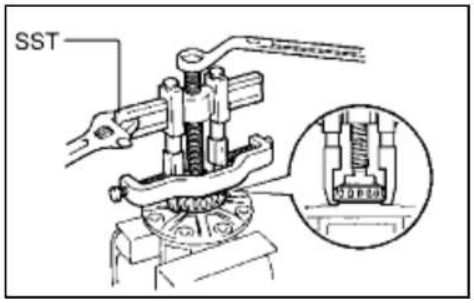
case.

SST: 09950-40011

09953-04020
09951-04010
09952-04010
09954-04010
09955-04061
09957-04010
09958-04011

SST: 09950-60010

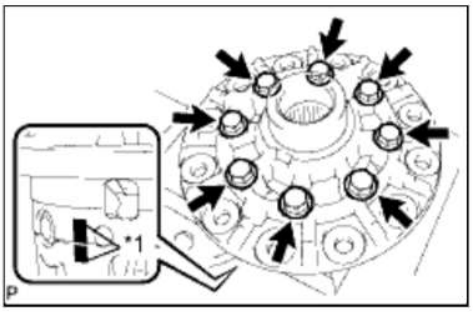
09951-00500
09951-00650
09952-06010



NOTICE:

Do not remove a case bearing unless replacing the differential case.

21. DISASSEMBLE DIFFERENTIAL CASE



(a) Place matchmarks on the LH and RH cases.

Text in Illustration

*a	Matchmark

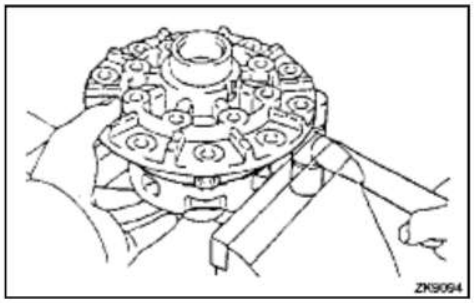
(b) Remove the 8 bolts.

NOTICE:

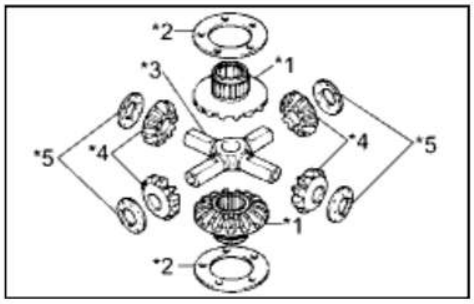
Loosen the bolts, diagonally opposite of each other, in pairs.

(c) Using a plastic-faced hammer, separate the LH and RH cases.

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(d) Remove the parts shown in the illustration from the differential case.



Text in Illustration

*1	Side Gear
*2	Side Gear Thrust Washer
*3	Spider
*4	Pinion Gear
*5	Pinion Gear Thrust Washer

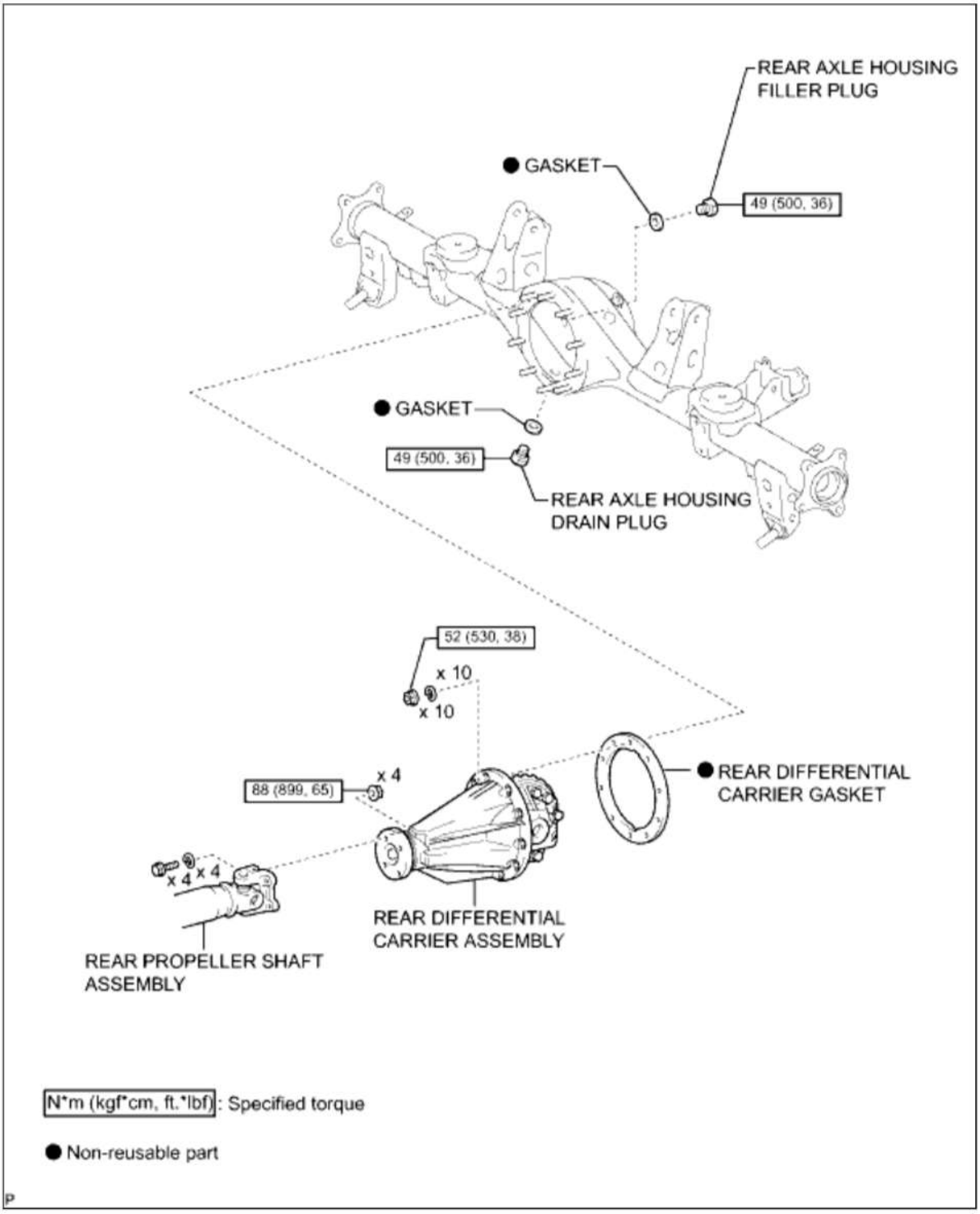
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000047MZ000X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): COMPONENTS (2010 4Runner)		

COMPONENTS

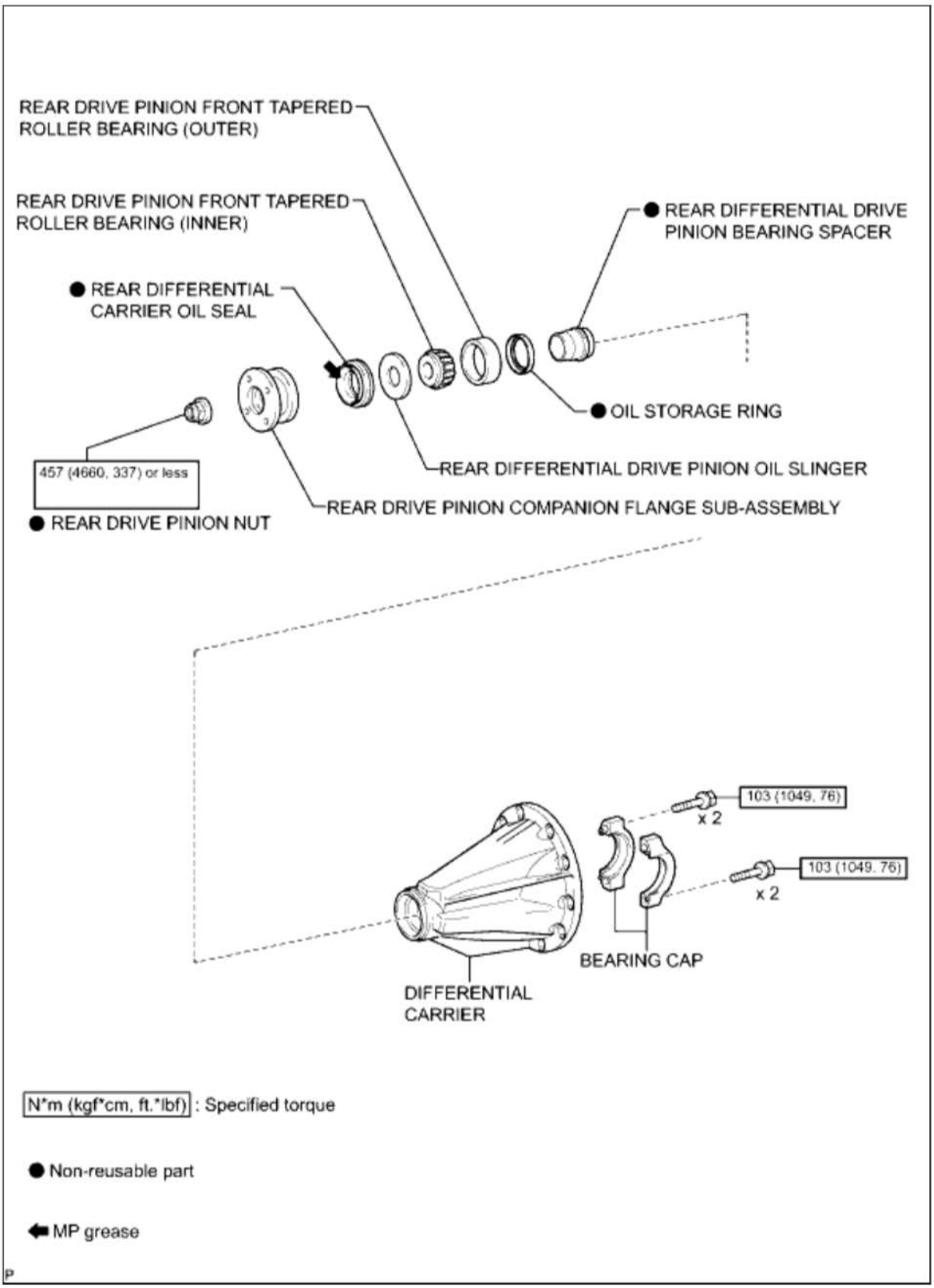
ILLUSTRATION

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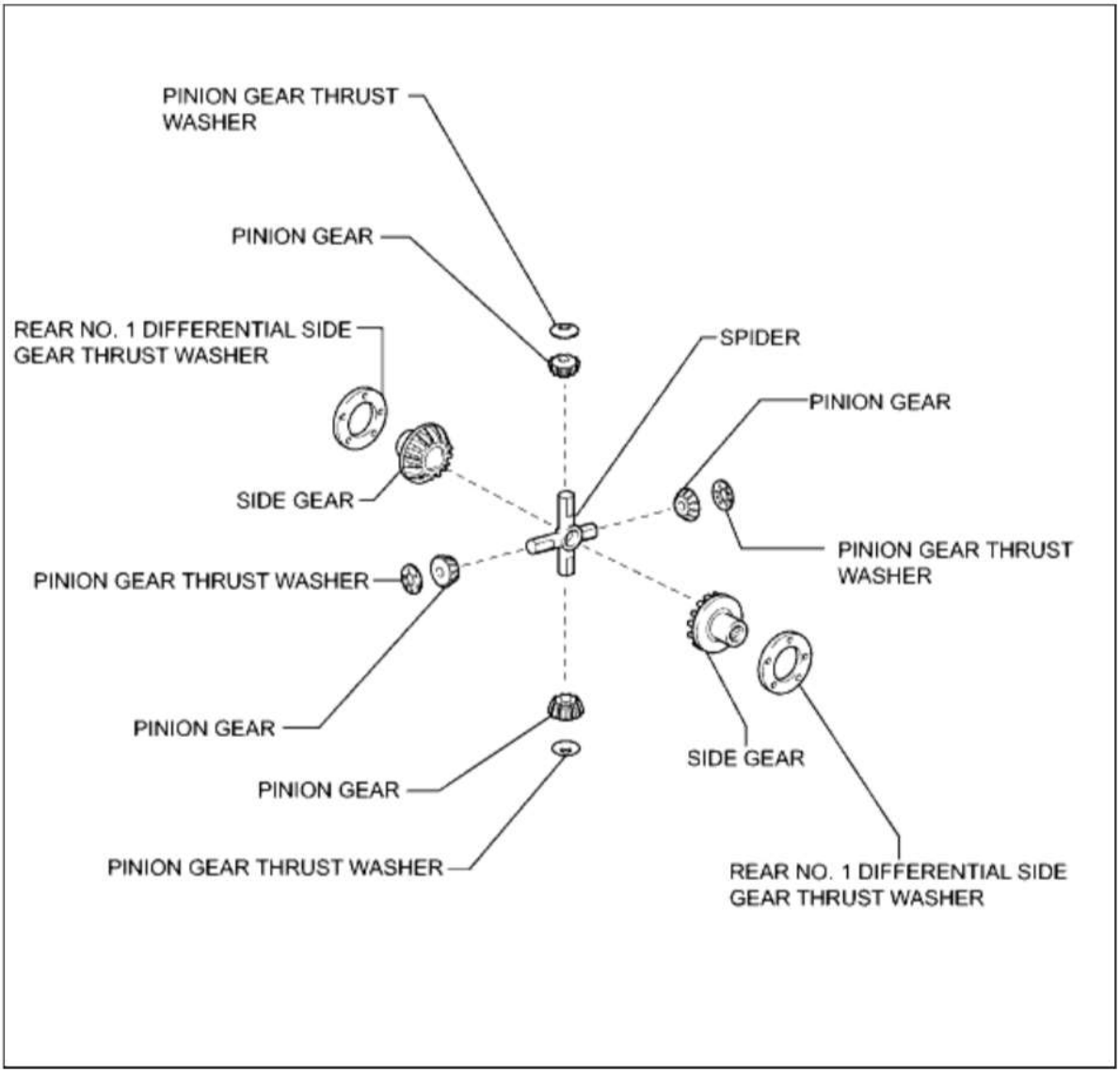
ILLUSTRATION

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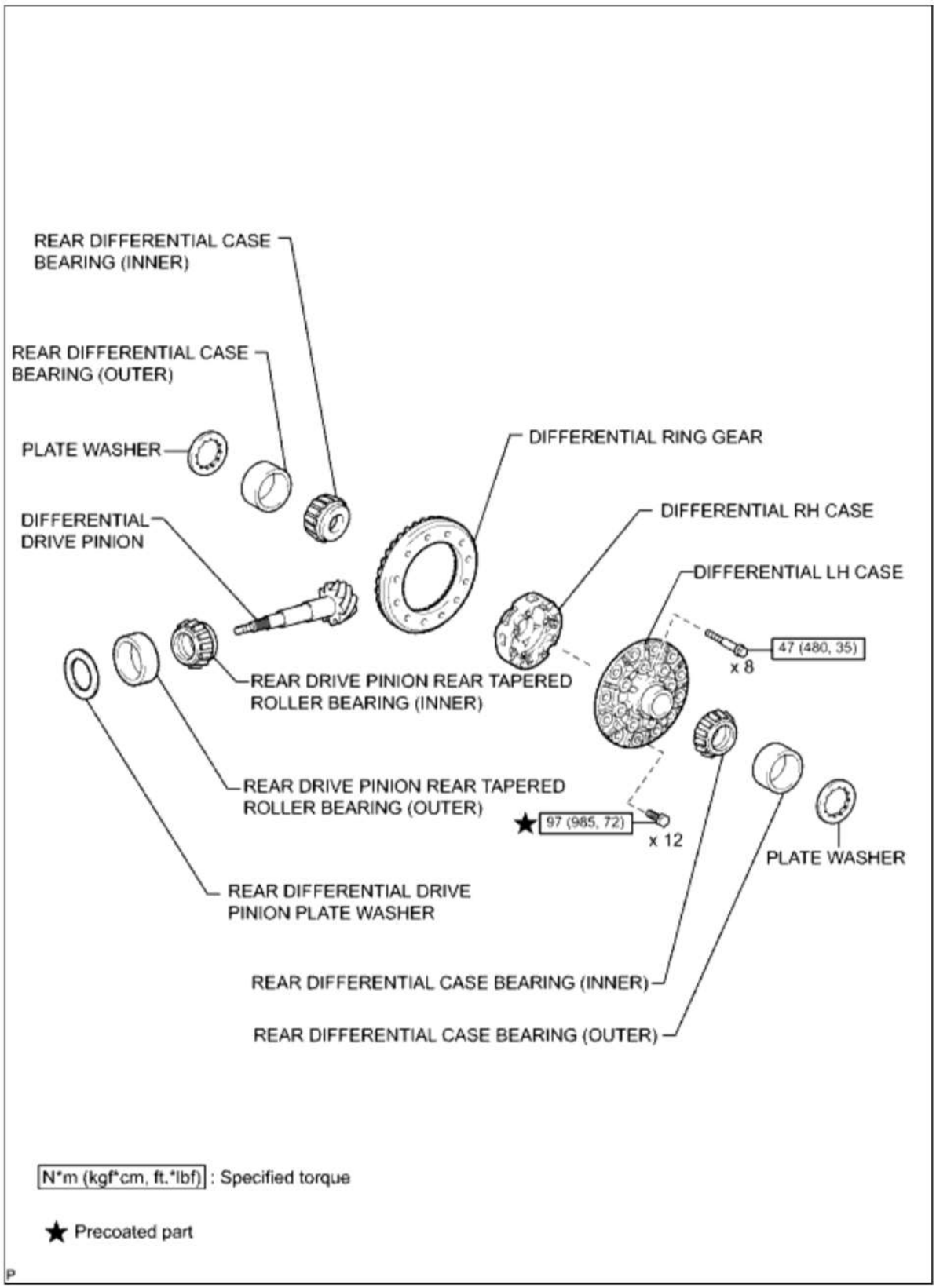
ILLUSTRATION

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ILLUSTRATION

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010MQ01CX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE REAR AXLE SHAFT RH

(a) Remove the rear axle shaft RH INFO .

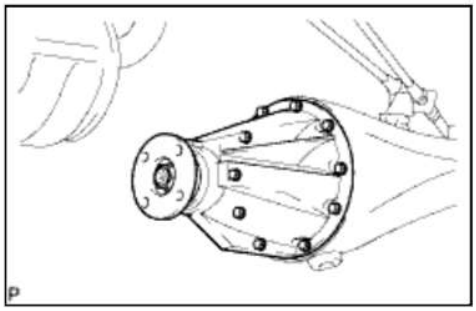
2. REMOVE REAR AXLE SHAFT LH

HINT:

Use the same procedure described for the RH side.

3. REMOVE PROPELLER SHAFT ASSEMBLY

(a) Remove the propeller shaft assembly INFO .



4. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

(a) Remove the 10 nuts and 10 washers, differential carrier.

NOTICE:

Be careful not to damage the contact surfaces.

5. REMOVE REAR DIFFERENTIAL CARRIER GASKET

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Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000017DE00WX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT DIFFERENTIAL PINION AND SIDE GEAR

(a) Check that there is no damage to the differential pinion or differential side gear.

If the differential pinion and/or differential side gear is damaged, replace the differential.

2. INSPECT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.

If the differential case is damaged, replace it.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000010SI01CX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY (w/o Differential Lock): INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY

(a) Install a new gasket and the differential carrier assembly with the 10 nuts and 10 washers.

Torque: 52 N·m (530 kgf·cm, 38ft·lbf)

2. INSTALL REAR AXLE SHAFT LH

(a) Install the rear axle shaft LH INFO .

3. INSTALL REAR AXLE SHAFT RH

HINT:

Use the same procedure described for the LH side.

4. INSTALL PROPELLER SHAFT ASSEMBLY

(a) Install the propeller shaft assembly INFO .

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000026G8005X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER OIL SEAL: REPLACEMENT (2010 4Runner)		

REPLACEMENT

1. REMOVE REAR PROPELLER SHAFT ASSEMBLY

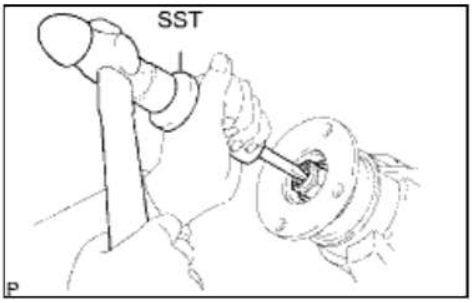
(a) for 2WD:

Remove the rear propeller shaft assembly INFO .

(b) for 4WD:

Remove the rear propeller shaft assembly INFO .

2. REMOVE REAR DRIVE PINION NUT

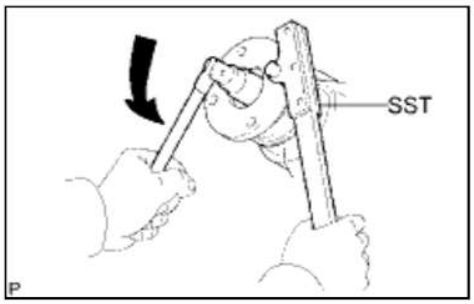


(a) Using SST and a hammer, loosen the staked part of the rear drive pinion nut.

SST: 09930-00010

NOTICE:

- Be sure to use SST with the tapered surface facing the shaft.
- Do not grind the tip of the SST with a grinder, etc.
- Completely loosen the staked part of the nut when removing it.
- Do not damage the threads of the drive pinion nut.



(b) Use SST to hold the companion flange.

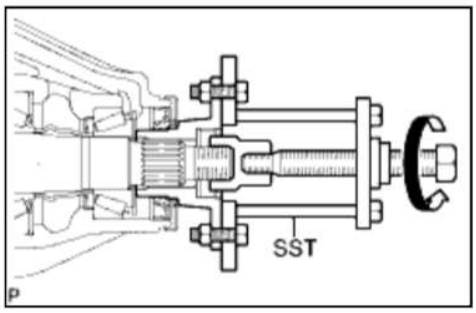
SST: 09330-00021

09330-00030

(c) Using a 30 mm socket wrench, remove the rear drive pinion nut.

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3. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY



(a) Using SST, remove the rear drive pinion companion flange sub-assembly.

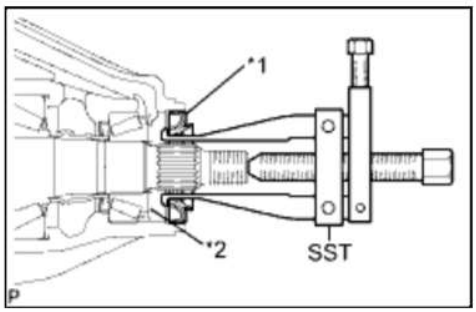
SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

4. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

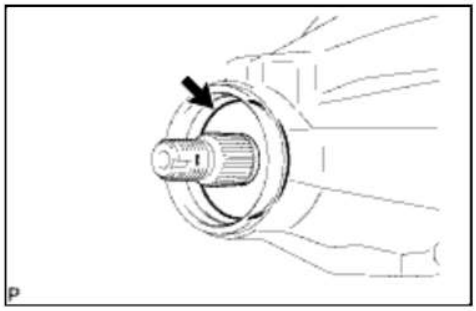


(a) Using SST, remove the rear differential carrier oil seal.

SST: 09308-10010

Text in Illustration

*1	Oil Seal
*2	Oil Slinger



5. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

(a) Remove the rear differential drive pinion oil slinger.

NOTICE:

Apply grease to the threads and tip of the SST center bolt before use.

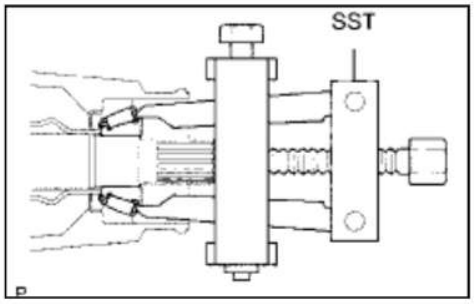
6. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST, remove the rear drive pinion tapered roller bearing (inner).

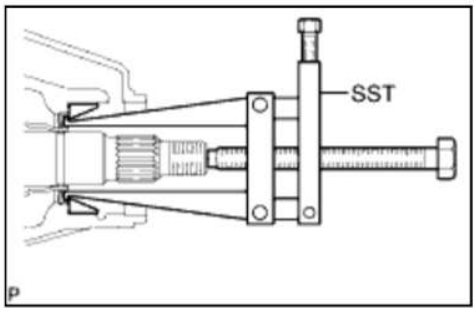
SST: 09556-22010

NOTICE:

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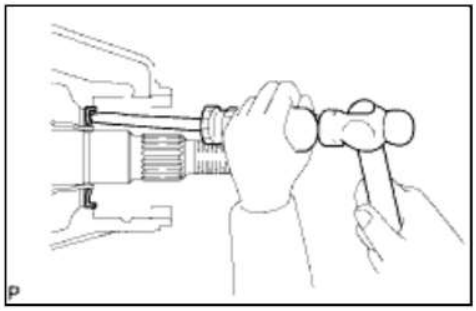


Apply grease to the threads and tip of the SST center bolt before use.



(b) Using SST, tap out the rear drive pinion tapered roller bearing (outer).

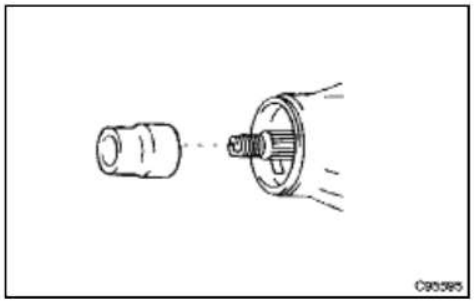
SST: 09308-55010



7. REMOVE DIFFERENTIAL OIL STORAGE RING

(a) Using a screwdriver and hammer, tap out the differential oil storage ring.

8. REMOVE REAR DIFFERENTIAL DRIVE PINION BEARING SPACER



9. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

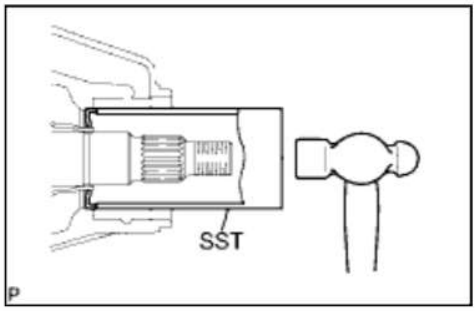
(a) Install a new rear differential drive pinion bearing spacer.

NOTICE:

Install the spacer so that it is facing in the correct direction.

10. INSTALL DIFFERENTIAL OIL STORAGE RING

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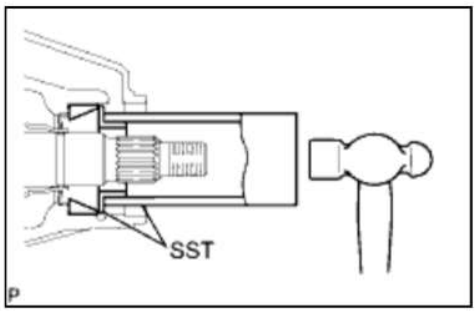


(a) Using SST and a hammer, tap in a new differential oil storage ring.

SST: 09308-14010

NOTICE:

Be careful not to damage the oil storage ring.

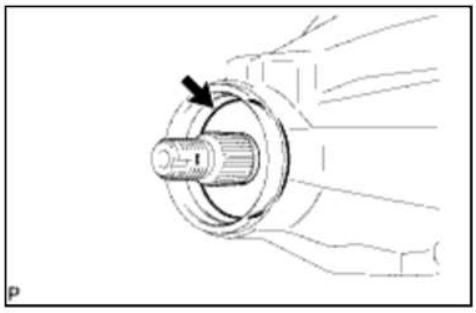


11. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST and a hammer, tap in the rear drive pinion front roller bearing (outer).

SST: 09308-14010

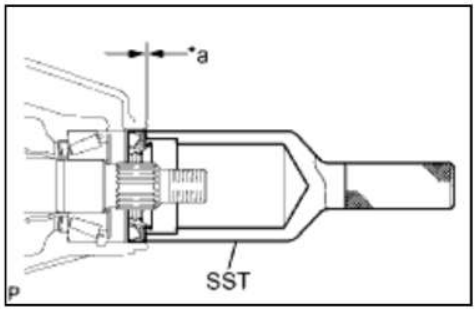
(b) Install the rear drive pinion front roller bearing (inner).



12. INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

(a) Install the rear differential drive pinion oil slinger.

13. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL



(a) Apply MP grease to the lip of a new oil seal.

(b) Using SST and a hammer, tap in the rear differential carrier oil seal.

SST: 09214-76011

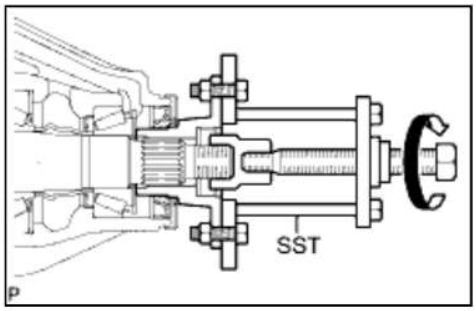
Standard oil seal depth:
-0.30 to 0.30 mm (-0.0118 to 0.0118 in.)

Text in Illustration

*1	Oil Seal Depth

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14. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY



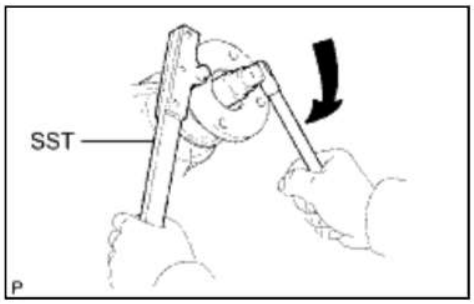
(a) Using SST, install the rear drive pinion companion flange sub-assembly.

SST: 09950-30012

09951-03010
09953-03010
09954-03010
09955-03030
09956-03040

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(b) Using SST to hold the companion flange in place, install the rear drive pinion nut.

SST: 09330-00021

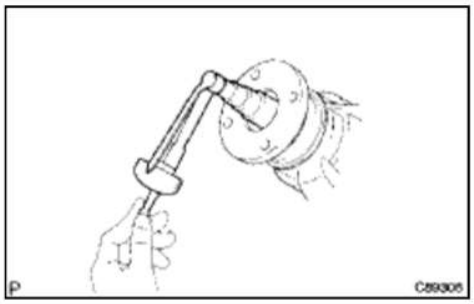
09330-00030

Torque: 457 N·m (4660 kgf·cm, 337ft·lbf)

15. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload.

Standard Preload (at Starting):



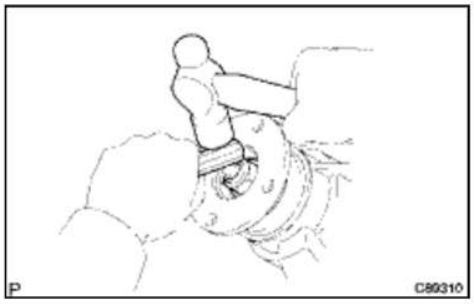
ITEM	SPECIFIED CONDITION
New bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
Used bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)

If the result is not as specified, adjust the preload.

Total preload (at starting):
1.08 to 2.38 N*m (11.0 to 24.3 kgf*cm, 9.6 to 21.0 in.*lbf)

16. STAKE REAR DRIVE PINION NUT

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(a) Using a chisel and hammer, stake the rear drive pinion nut.

17. INSTALL REAR PROPELLER SHAFT ASSEMBLY

(a) for 2WD:

Install the rear propeller shaft assembly INFO .

(b) for 4WD:

Install the rear propeller shaft assembly INFO .

18. INSTALL DIFFERENTIAL OIL INFO

19. CHECK FOR DIFFERENTIAL OIL LEAKAGE

TOYOTA

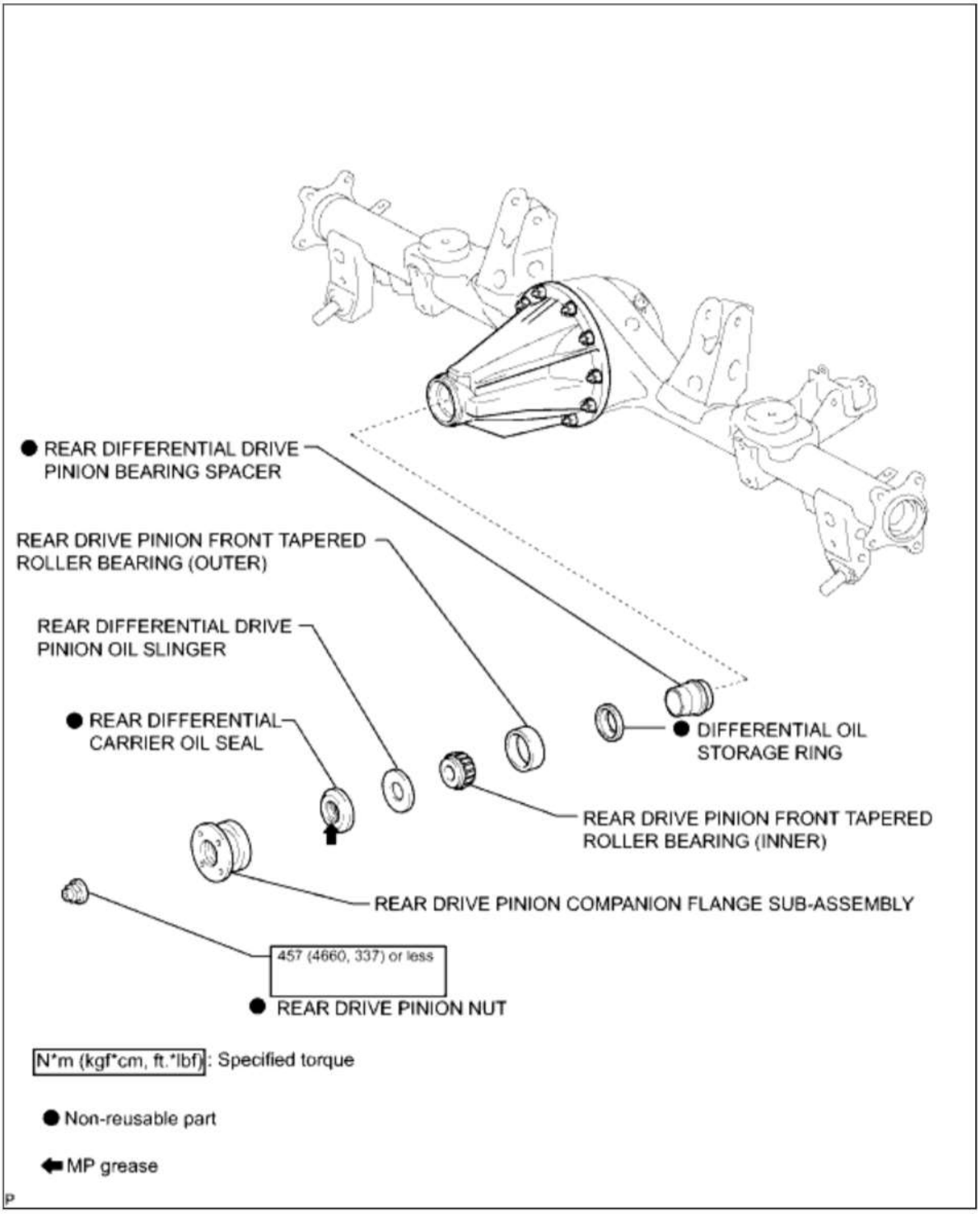
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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002B0R00HX
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER OIL SEAL: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION

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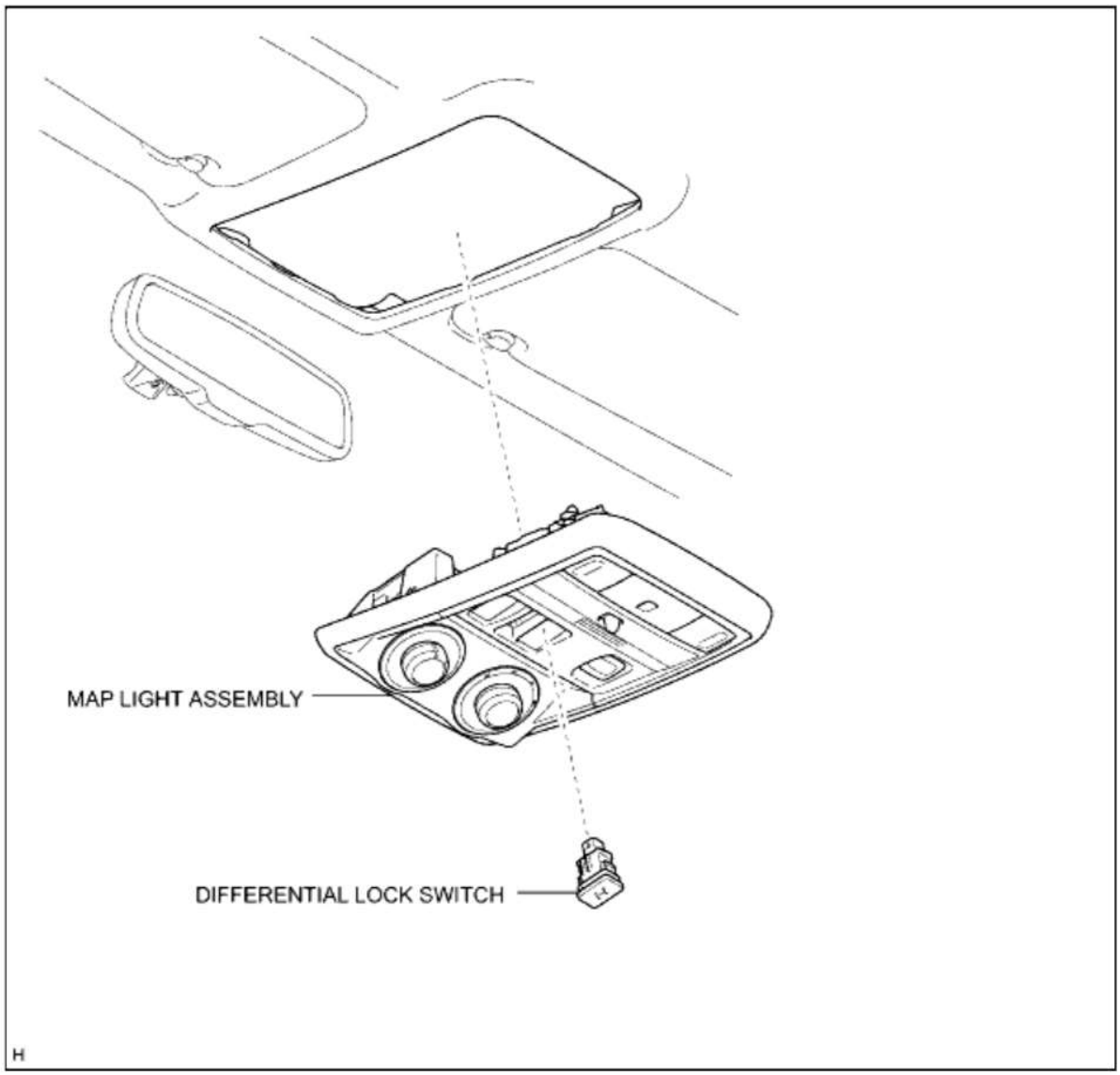


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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PXC001X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK CONTROL SWITCH: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



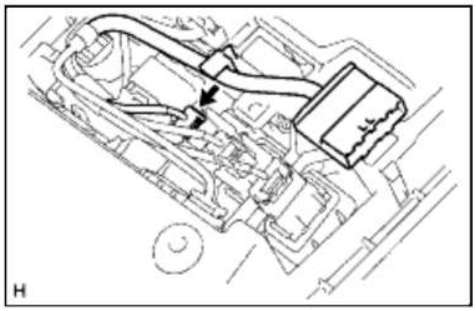
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PXD001X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK CONTROL SWITCH: REMOVAL (2010 4Runner)		

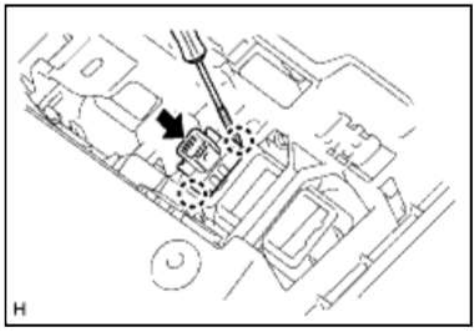
REMOVAL

1. REMOVE MAP LIGHT ASSEMBLY INFO

2. REMOVE DIFFERENTIAL LOCK SWITCH



(a) Disconnect the differential lock switch connector.



(b) Using a screwdriver, detach the 2 claws and remove the differential lock switch from the map light assembly.

HINT:

Tape the screwdriver tip before use.

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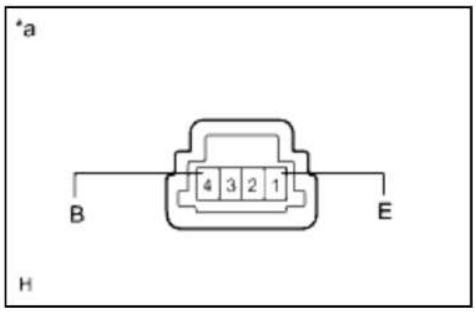
Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PYF001X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK CONTROL SWITCH: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT DIFFERENTIAL LOCK SWITCH

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (E) - 4 (B)	Pressed	Below 1 Ω
	Not pressed	100 kΩ or higher

Text in Illustration

*a	Component without harness connected (Differential Lock Switch)

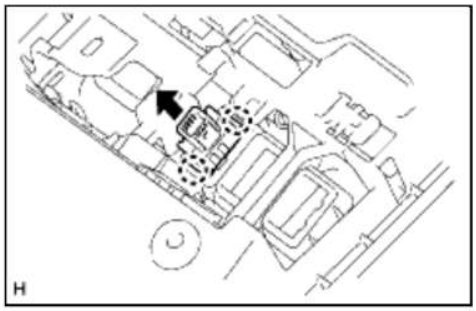
If the result is not as specified, replace the differential lock switch.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PXB001X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK CONTROL SWITCH: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL DIFFERENTIAL LOCK SWITCH



(a) Attach the 2 claws to install the differential lock switch to the map light assembly.

(b) Connect the connector.

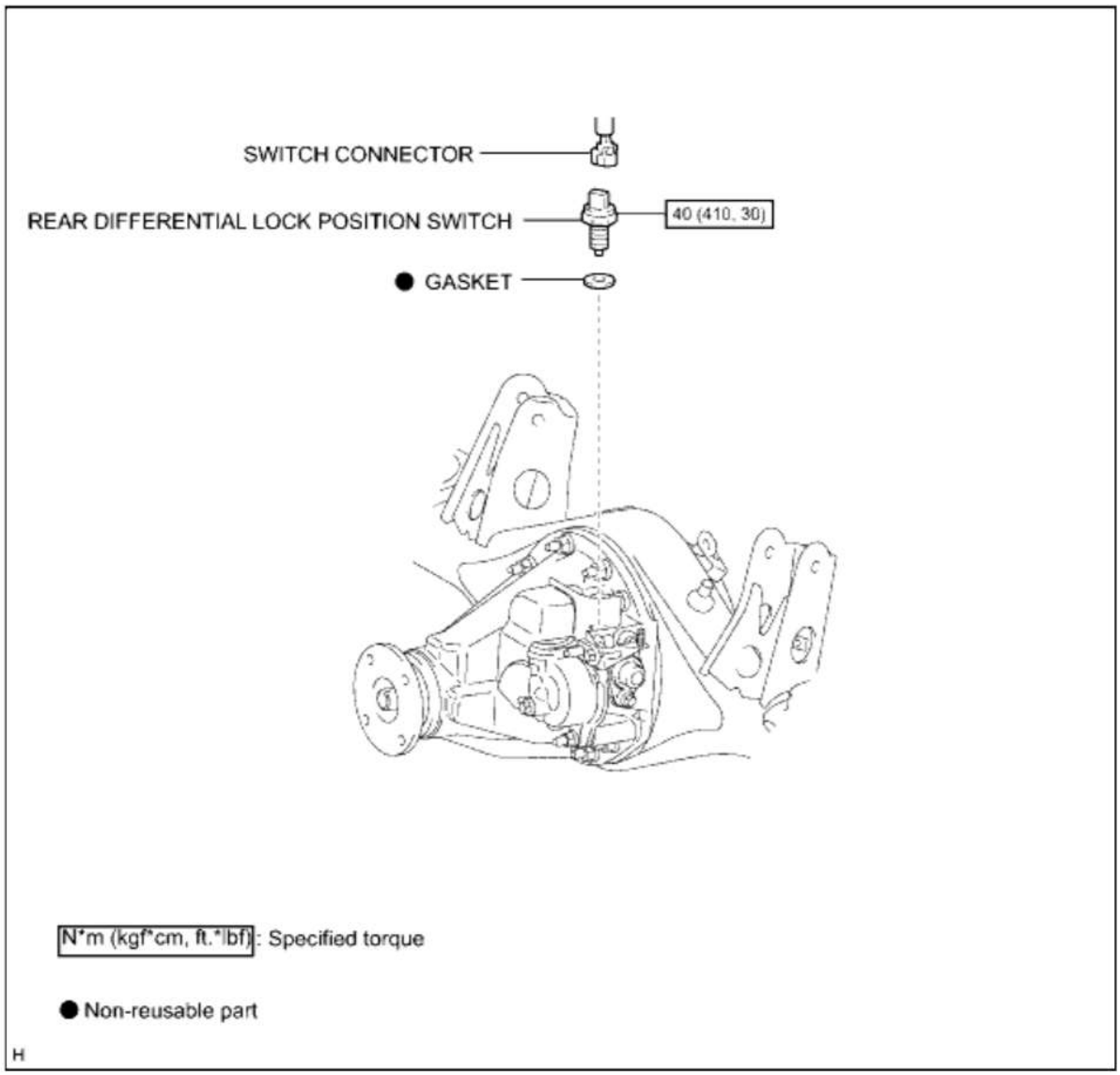
2. INSTALL MAP LIGHT ASSEMBLY INFO

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003Q04003X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK POSITION SWITCH: COMPONENTS (2010 4Runner)		

COMPONENTS

ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PYI003X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK POSITION SWITCH: REMOVAL (2010 4Runner)		

REMOVAL

1. REMOVE REAR DIFFERENTIAL LOCK POSITION SWITCH

(a) Remove the rear differential lock position switch INFO .

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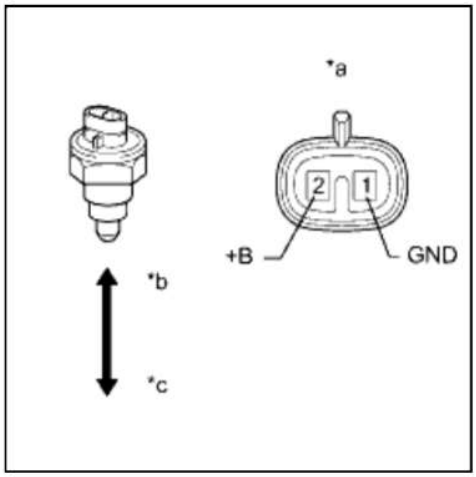
Last Modified: 5-10-2010	6.4 G	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PYH003X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK POSITION SWITCH: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT REAR DIFFERENTIAL LOCK POSITION SWITCH

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (GND) - 2 (+B)	Pushed	Below 1 Ω
	Released	100 kΩ or higher

Text in Illustration

*a	Component without harness connected (Rear Differential Lock Position Switch)
*b	Pushed
*c	Released

If the result is not as specified, replace the rear differential lock position switch.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003PYG003X
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL LOCK POSITION SWITCH: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL REAR DIFFERENTIAL LOCK POSITION SWITCH

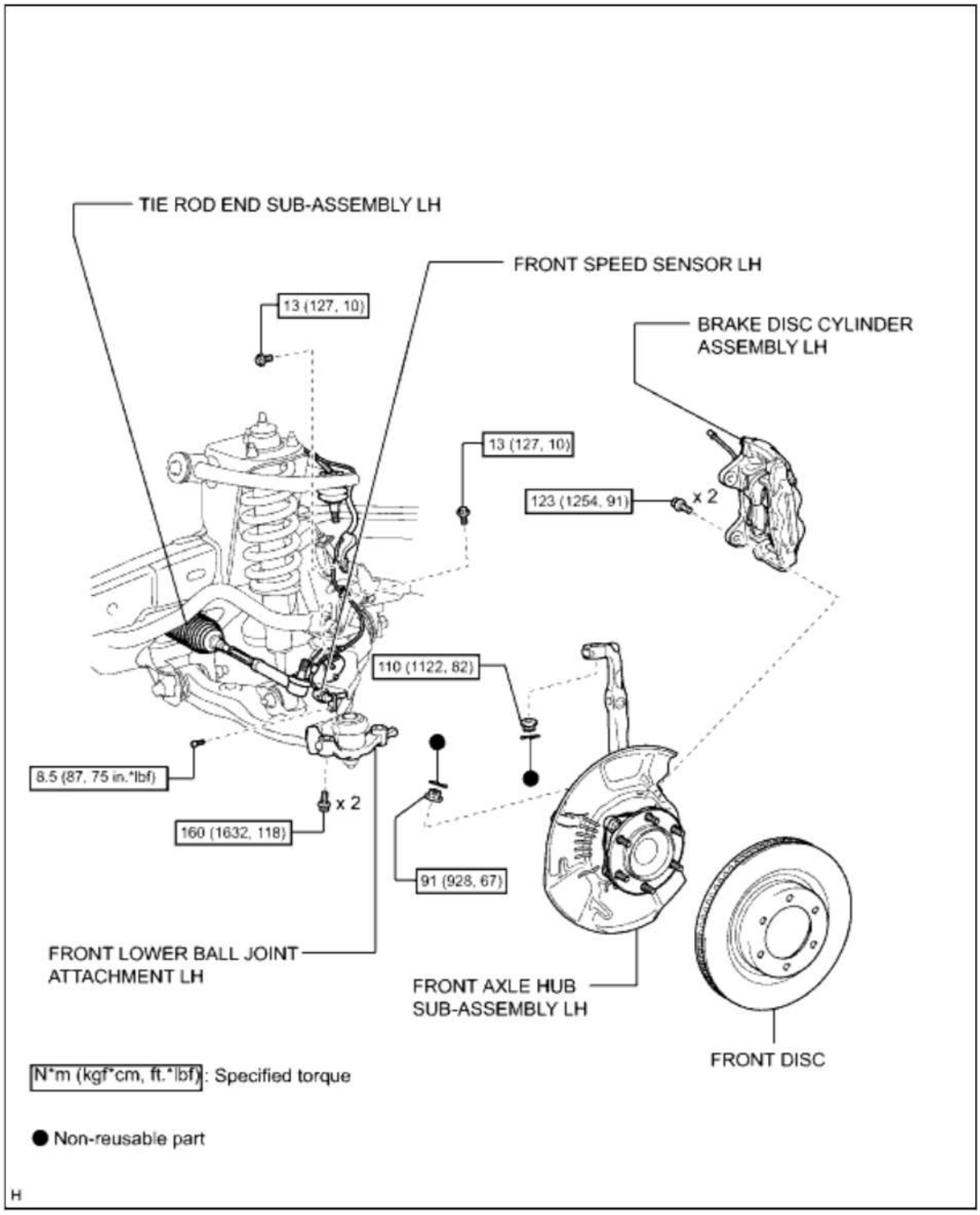
(a) Install the rear differential lock position switch INFO .

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046UB000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 2WD): COMPONENTS (2010 4Runner)		

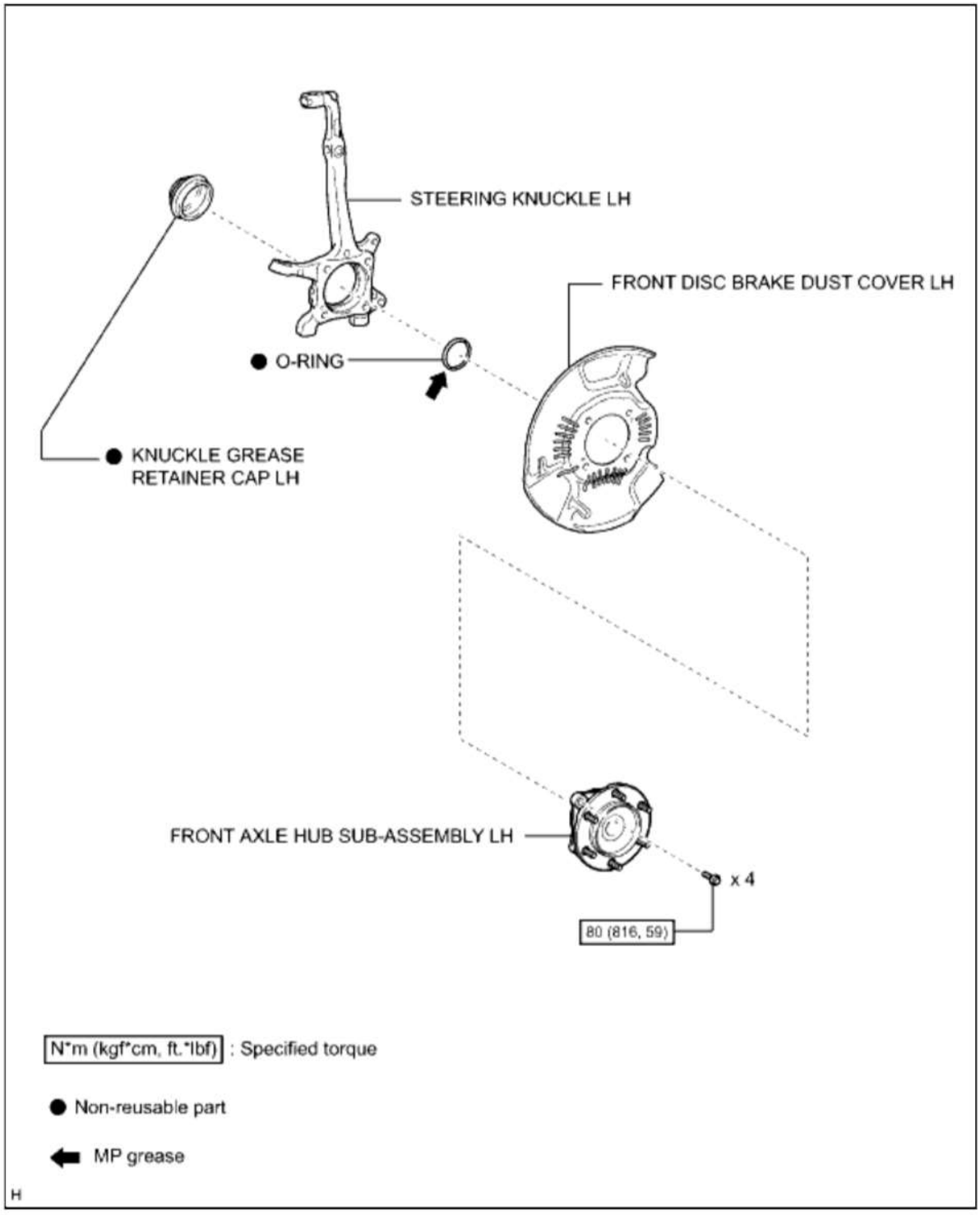
COMPONENTS

ILLUSTRATION



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ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046KZ001X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 2WD): REMOVAL (2010 4Runner)		

REMOVAL

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

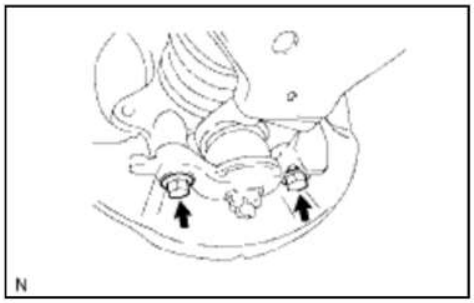
When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

2. REMOVE FRONT SPEED SENSOR LH INFO

3. REMOVE FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Remove the front axle hub INFO .

4. DISCONNECT TIE ROD END SUB-ASSEMBLY LH INFO



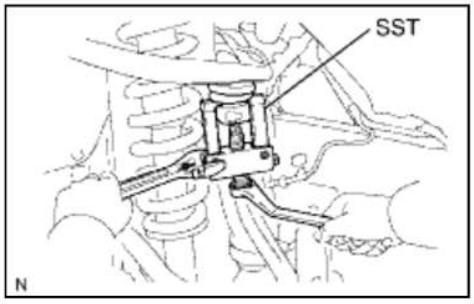
5. DISCONNECT FRONT LOWER BALL JOINT ATTACHMENT LH

(a) Remove the 2 bolts and disconnect the front lower ball joint attachment from the axle.

6. REMOVE STEERING KNUCKLE LH

(a) Support the front suspension lower arm LH with a jack.

(b) Remove the clip and nut.



(c) Using SST, disconnect the upper ball joint from the steering knuckle.

SST: 09628-62011

NOTICE:

Do not the damage the ball joint dust cover.

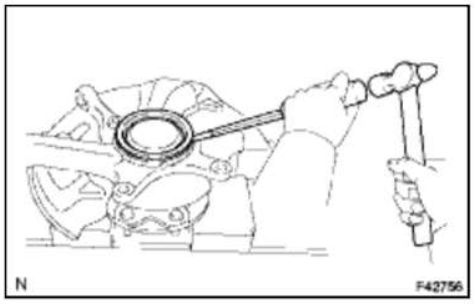
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(d) Remove the steering knuckle.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046UD000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 2WD): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY



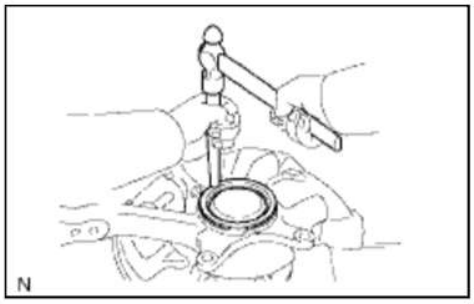
1. REMOVE KNUCKLE GREASE RETAINER CAP LH

(a) Using a screwdriver and hammer, remove the knuckle grease retainer cap.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046UE000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 2WD): REASSEMBLY (2010 4Runner)		

REASSEMBLY



1. INSTALL KNUCKLE GREASE RETAINER CAP LH

(a) Using a brass bar and a hammer, install a new retainer cap.

NOTICE:

Do not damage the knuckle grease retainer cap.

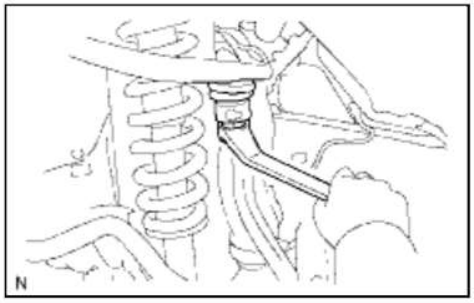
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046KY001X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 2WD): INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.



1. INSTALL STEERING KNUCKLE LH

(a) Install the steering knuckle to the front suspension upper arm with the nut.

Torque: 110 N·m (1122 kgf·cm, 82ft·lbf)

(b) Install a new cotter pin.

2. CONNECT FRONT LOWER BALL JOINT ATTACHMENT LH

(a) Connect the front lower ball joint attachment and install the 2 bolts.

Torque: 160 N·m (1632 kgf·cm, 118ft·lbf)

3. INSTALL TIE ROD END SUB-ASSEMBLY LH INFO

4. INSTALL FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Install the front axle hub INFO .

5. INSTALL FRONT SPEED SENSOR LH INFO

6. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

7. INSTALL FRONT WHEEL

Torque: 122 N·m (1142 kgf·cm, 83ft·lbf)

8. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .

9. INSPECT SPEED SENSOR SIGNAL

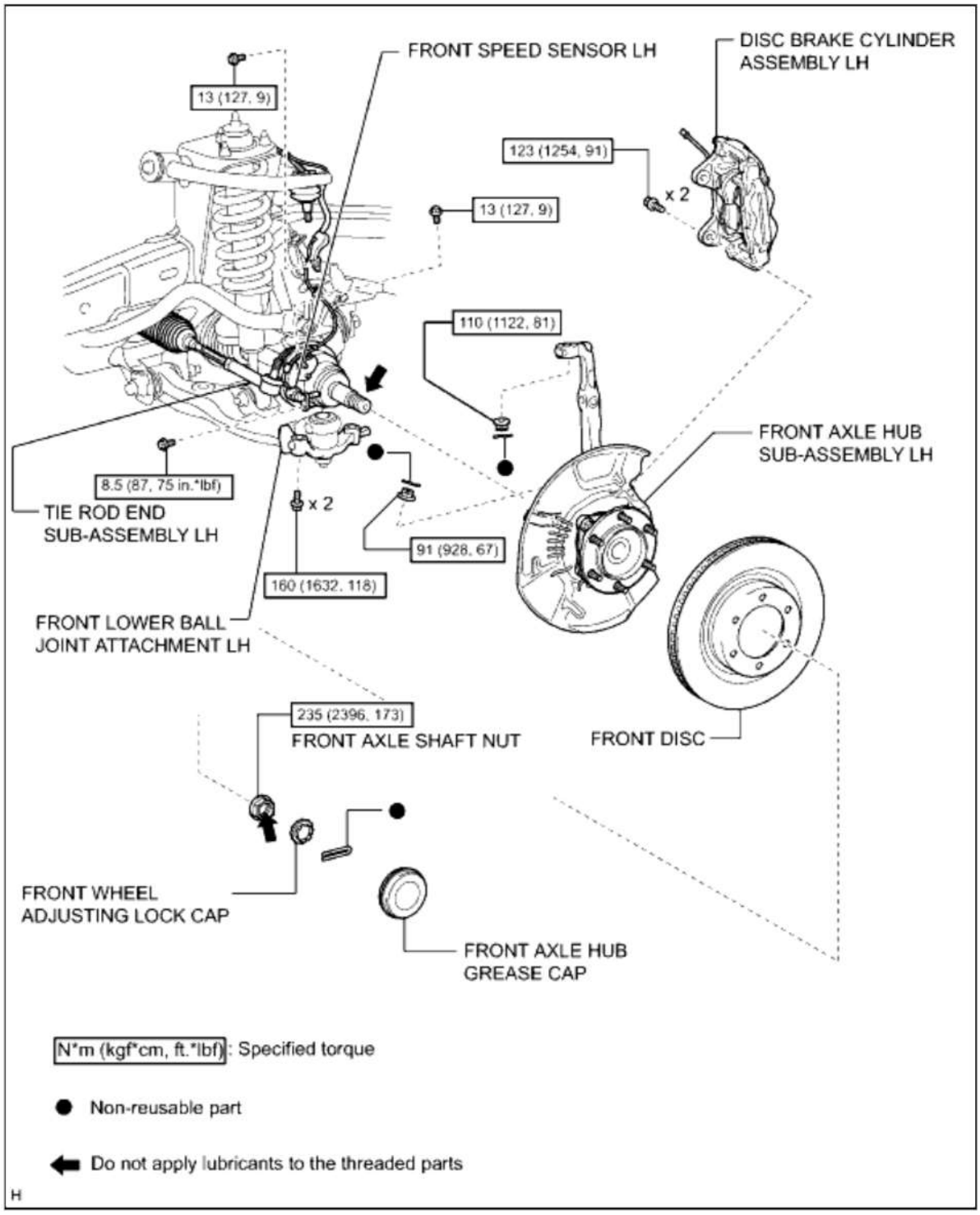
(a) Inspect the speed sensor signal INFO .

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Last Modified: 5-10-2010	6.4 K	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046KW000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 4WD): COMPONENTS (2010 4Runner)		

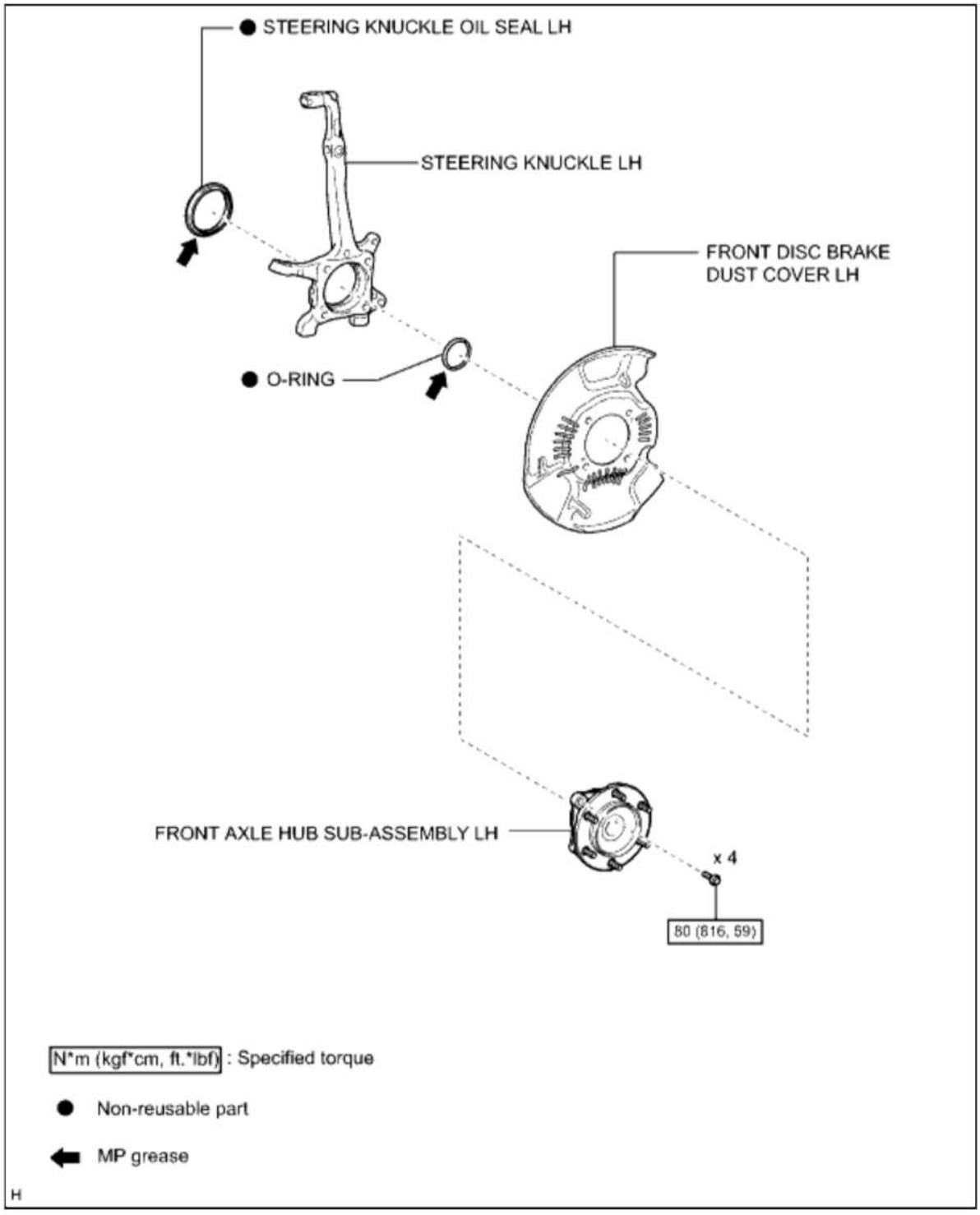
COMPONENTS

ILLUSTRATION



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ILLUSTRATION



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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046KZ000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 4WD): REMOVAL (2010 4Runner)		

REMOVAL

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTICE:

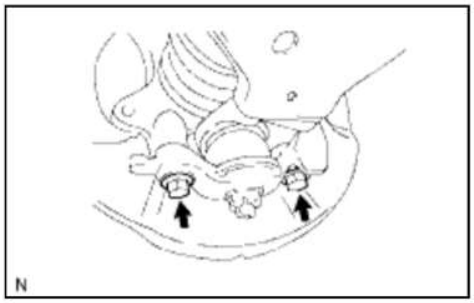
When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

2. REMOVE FRONT SPEED SENSOR LH INFO

3. REMOVE FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Remove the front axle hub INFO .

4. DISCONNECT TIE ROD END SUB-ASSEMBLY LH INFO



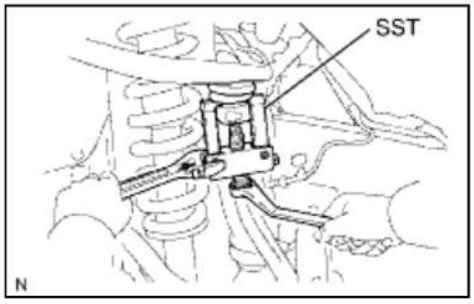
5. DISCONNECT FRONT LOWER BALL JOINT ATTACHMENT LH

(a) Remove the 2 bolts and disconnect the front lower ball joint attachment from the axle.

6. REMOVE STEERING KNUCKLE LH

(a) Support the front suspension lower arm LH with a jack.

(b) Remove the clip and nut.



(c) Using SST, disconnect the upper ball joint from the steering knuckle.

SST: 09628-62011

NOTICE:

Do not the damage the ball joint dust cover.

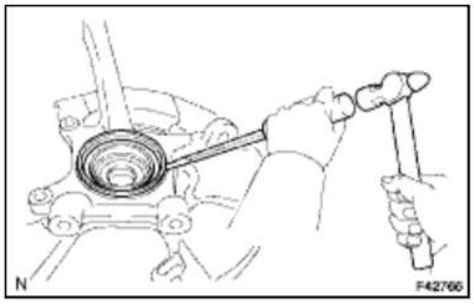
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(d) Remove the steering knuckle.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046UF000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 4WD): DISASSEMBLY (2010 4Runner)		

DISASSEMBLY



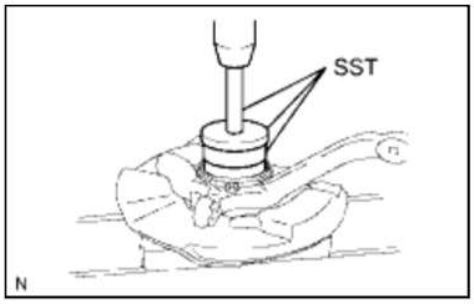
1. REMOVE STEERING KNUCKLE OIL SEAL LH

(a) Using a screwdriver and hammer, remove the steering knuckle oil seal.

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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046UG000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 4WD): REASSEMBLY (2010 4Runner)		

REASSEMBLY



1. INSTALL STEERING KNUCKLE OIL SEAL LH

(a) Using SST and a press, install a new steering knuckle oil seal.

SST: 09527-17011

SST: 09950-70010

09951-07100

SST: 09951-01000

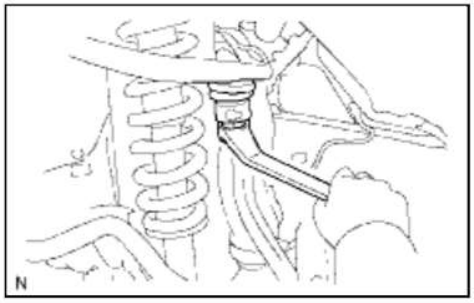
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Last Modified: 5-10-2010	6.4 A	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000046KY000X
Title: AXLE AND DIFFERENTIAL: STEERING KNUCKLE (for 4WD): INSTALLATION (2010 4Runner)		

INSTALLATION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedure listed below is for the LH side.



1. INSTALL STEERING KNUCKLE LH

(a) Install the steering knuckle to the front suspension upper arm with the nut.

Torque: 110 N·m (1122 kgf·cm, 82ft·lbf)

(b) Install a new cotter pin.

2. INSTALL FRONT LOWER BALL JOINT ATTACHMENT LH

(a) Install the front lower ball joint attachment with the 2 bolts.

Torque: 160 N·m (1632 kgf·cm, 118ft·lbf)

3. INSTALL TIE ROD END SUB-ASSEMBLY LH INFO

4. INSTALL FRONT AXLE HUB SUB-ASSEMBLY LH

(a) Install the front axle hub INFO .

5. INSTALL FRONT SPEED SENSOR LH INFO

6. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected INFO .

7. INSTALL FRONT WHEEL

Torque: 112 N·m (1137 kgf·cm, 82ft·lbf)

8. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

(a) Inspect and adjust the front wheel alignment INFO .

9. CHECK FRONT SPEED SENSOR

(a) Check the front speed sensor INFO .

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