TOYOTA
SERVICE BULLETIN
Group: 06 No.: 01 Date: Aug, 16

FJ Cruiser

Corrections to Repair Manual RM07D9E

Please ensure these pages are distributed to all relevant staff for their information; and a copy made available for future reference, with the above repair manual.

Section	Title	Paragraph
SERVICE SPECIFICATIONS	DIFFERENTIAL	TORQUE SPECIFICATIONS (2007/07 - 2009/08)
		TORQUE SPECIFICATIONS (2009/08 -)
DIFFERENTIAL	FRONT DIFFERENTIAL CARRIER ASSEMBLY	COMPONENTS
		REASSEMBLY

The revised pages listed above are attached.

(The corrected parts are indicated by arrows.)

This bulletin does not cause the Flat Rate Manual to be changed

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Differential tube x Differential vacuum actuator	21	210	15
Drive pinion companion flange x Drive pinion	370 [Corrected]	3,770	273
Differential side bearing retainer x Differential carrier	75	765	55
Differential case x Differential rig gear	97	985	71
Differential carrier x Drain lug	65	660	48
Differential carrier x Filler plug	39	400	29

REAR DIFFERENTIAL CARRIER (w/ Differential lock type)

Part tightened	N*m	kgf*cm	ft.*lbf
Axle housing x Drain plug Axle housing x Filler plug	49	500	36
Differential carrier x Propeller shaft	88	899	65
Rear drive pinion nut x Differential drive pinion	370	3,770	273
Bearing cap x Differential bearing adjusting nut lock	13	130	9
Differential case x Differential ring gear	97	985	71
RH differential case x LH differential case	47	480	35
No.1 Transfer indicator switch x Rear differential carrier assembly	40	410	30
Screw plug (for rear differential lock shift fork shaft) x Rear differential carrier assembly	22	220	16
Screw plug (for shift fork) x Rear differential carrier assembly	23	237	17
Shift retainer x Rear differential carrier assembly	23	237	17
Differential lock shift actuator x Rear differential carrier assembly	27	270	20

REAR DIFFERENTIAL CARRIER

Part tightened	N*m	kgf*cm	ft.*lbf
Axle housing x Drain plug Axle housing x Filler plug	49	500	36
Differential carrier x Propeller shaft	88	899	65
Drive pinion companion flange nut x Differential drive pinion	370	3,770	273
Bearing cap x Differential bearing adjusting nut lock	13	130	9
Differential case x Differential ring gear	97	985	71
RH differential case x LH differential case (Differential lock type)	47	480	35

TORQUE SPECIFICATIONS

(2009/08-)

FRONT DIFFERENTIAL CARRIER

Part tightened	N*m	kgf*cm	ft.*lbf

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Differential breather hose x Differential carrier	13	133	10
No. 3 differential support x No. 1 differential mount nut	87	887	64
No. 3 differential support x Differential carrier	108	1,100	80
No. 2 differential support x Differential carrier	160	1,630	118
No. 1 differential support x Differential carrier	186	1,900	137
Differential tube x Differential carrier	110	1,120	81
Differential tube x Differential vacuum actuator	21	210	15
Drive pinion companion flange x Drive pinion	370 [Corrected]	3,770	273
Differential side bearing retainer x Differential carrier	75	765	55
Differential case x Differential rig gear	97	985	71
Differential carrier x Drain lug	65	660	48
Differential carrier x Filler plug	39	400	29

REAR DIFFERENTIAL CARRIER (w/ Differential lock type)

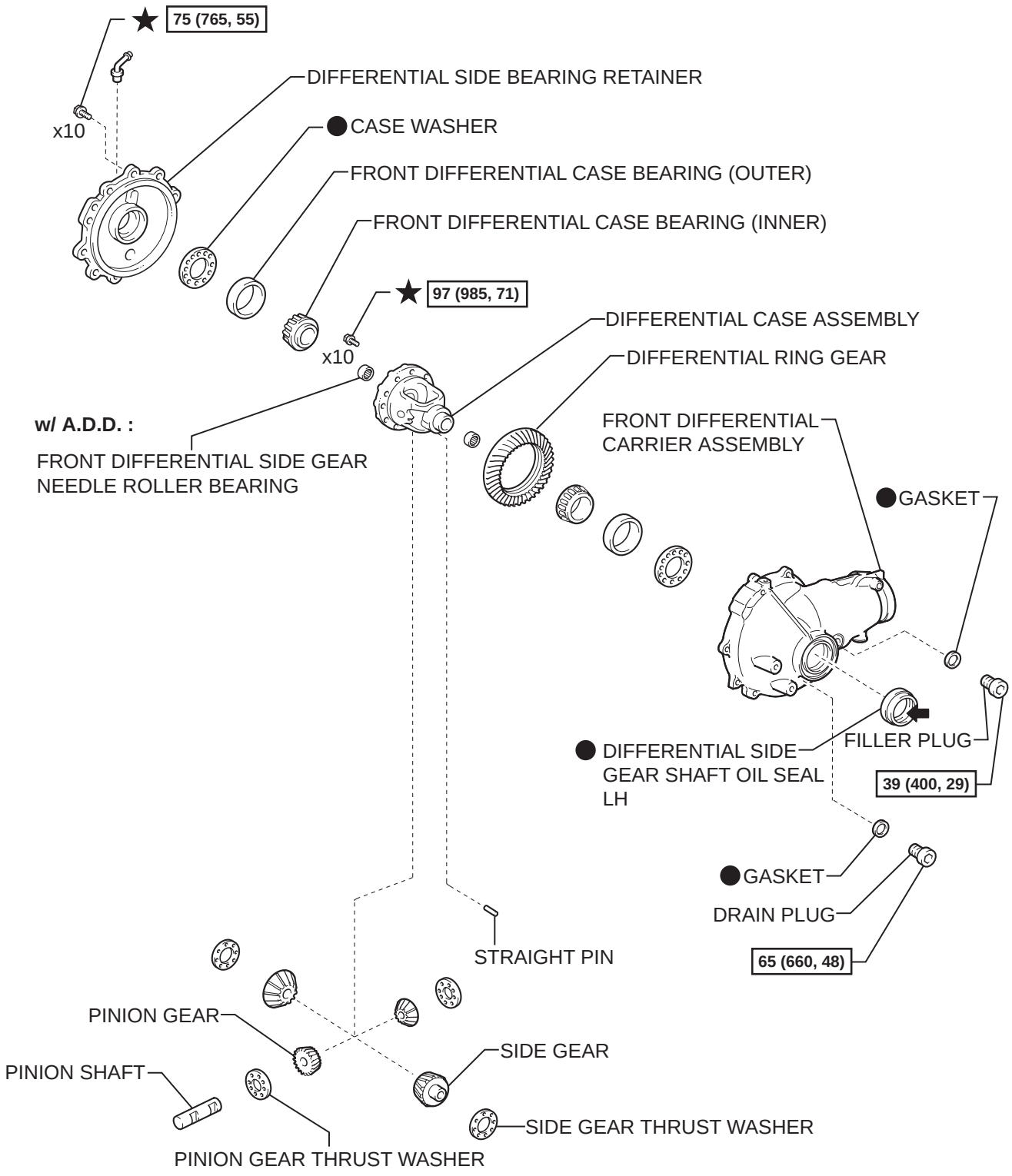
Part tightened	N*m	kgf*cm	ft.*lbf
Axle housing x Drain plug Axle housing x Filler plug	49	500	36
Differential carrier x Propeller shaft	88	899	65
Rear drive pinion nut x Differential drive pinion	457	4660	337
Bearing cap x Differential bearing adjusting nut lock	103	1049	76
Differential case x Differential ring gear	97	985	71
RH differential case x LH differential case	47	480	35
No.1 Transfer indicator switch x Rear differential carrier assembly	40	410	30
Screw plug (rear differential lock shift fork shaft) x Rear differential carrier assembly	22	220	16
Screw plug (for shift fork) x Rear differential carrier assembly	23	237	17
Shift retainer x Rear differential carrier assembly	23	237	17
Differential lock shift actuator x Rear differential carrier assembly	27	270	20

REAR DIFFERENTIAL CARRIER

Part tightened	N*m	kgf*cm	ft.*lbf
Axle housing x Drain plug Axle housing x Filler plug	49	500	36
Differential carrier x Propeller shaft	88	899	65
Drive pinion companion flange nut x Differential drive pinion	457	4660	337
Bearing cap x Differential bearing adjusting nut lock	103	1049	76

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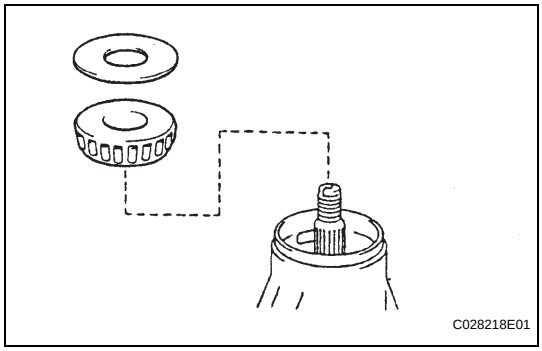
DIFFERENTIAL – FRONT DIFFERENTIAL CARRIER ASSEMBLY



[Corrected]

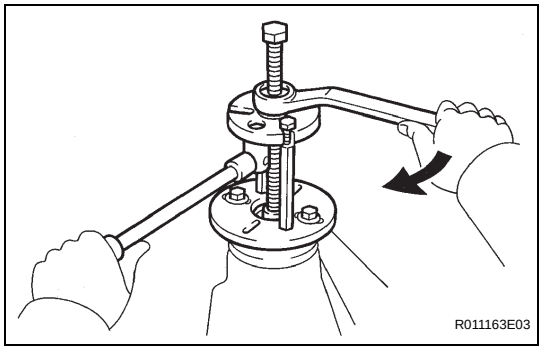
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(b) Using SST and a press, press the front bearing onto the drive pinion.
SST 09506-30012

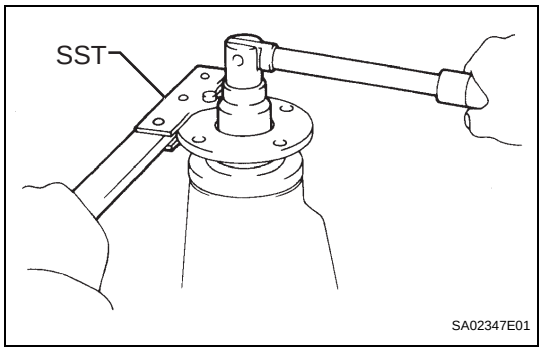

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12. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

(a) Install the drive pinion and oil slinger.
HINT:
Assemble the spacer and oil seal after adjusting the gear contact pattern.


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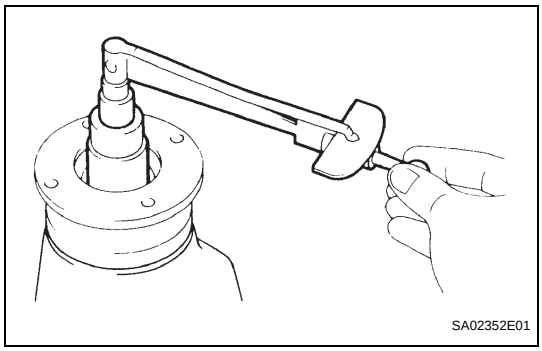
(b) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



SA02347E01

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

(d) Using SST to hold the flange in place, tighten the nut.
Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less
NOTICE:
- **As there is no spacer, tighten the nut a little at a time. Be careful not to overtighten it.**
- **Apply hypoid gear oil to the nut.**


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

Item	Specified Condition
New bearing	0.98 to 1.57 N*m (5 to 8 kgf*cm, 4.3 to 6.9 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.

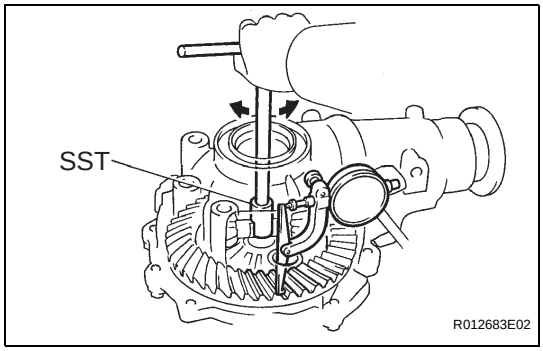
13. INSTALL DIFFERENTIAL CASE ASSEMBLY

14. ADJUST DIFFERENTIAL RING GEAR BACKLASH

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

[Corrected] **Torque: 75 N*m (765 kgf*cm, 55 ft.*lbf)**

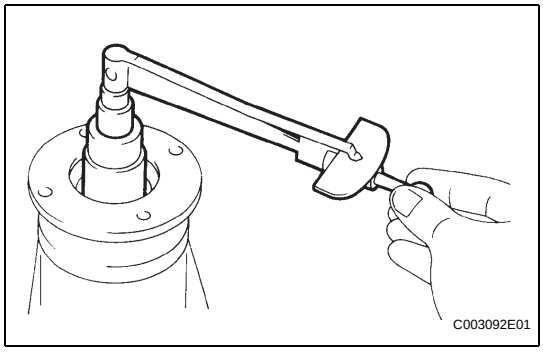
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(b) Using SST and a dial indicator, measure the ring gear backlash.
SST 09564-32011
Backlash:
0.11 to 0.21 mm (0.0043 to 0.0083 in.)
If the backlash is not as specified, adjust it by either increasing or decreasing the number of washers on both sides equally.
HINT:
There should be no clearance between the plate washer and case. Make sure that the ring gear has backlash.

Washer thickness

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

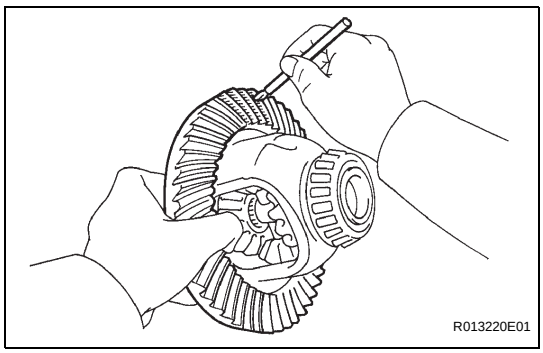


15. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
HINT:
Bolts without torque specifications are shown in the service data (see page ○○-○○).
If necessary, disassemble and inspect the differential.

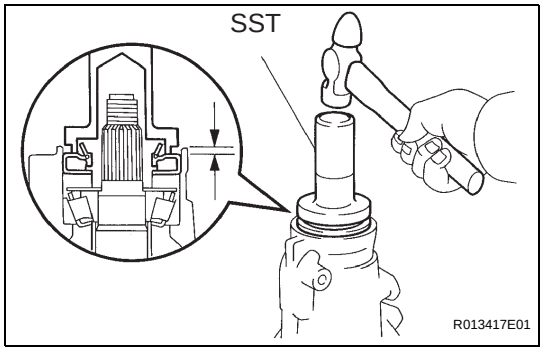
16. ADJUST TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(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: 75 N*m (765 kgf*cm, 55 ft.*lbf) [Corrected]
(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.

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24. INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL

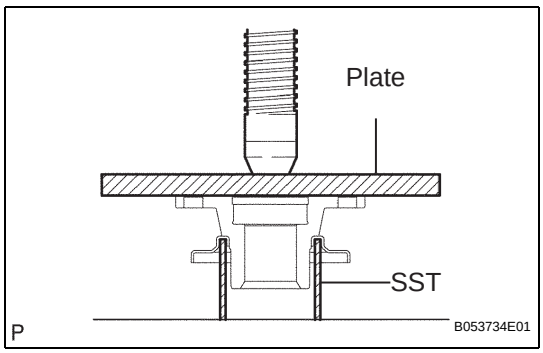
(a) Apply MP grease to the lip of a new oil seal.

(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 0.189 in.)

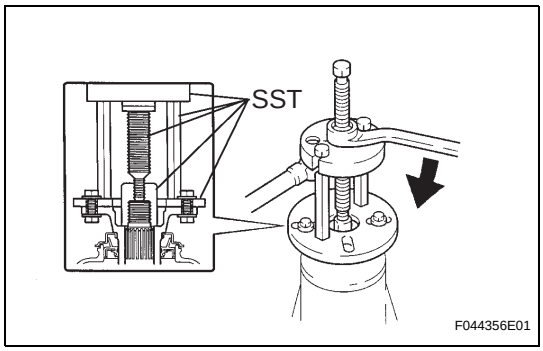


25. INSTALL FRONT DIFFERENTIAL DUST DEFLECTOR

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

NOTICE:

Do not damage the dust deflector.



26. INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

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

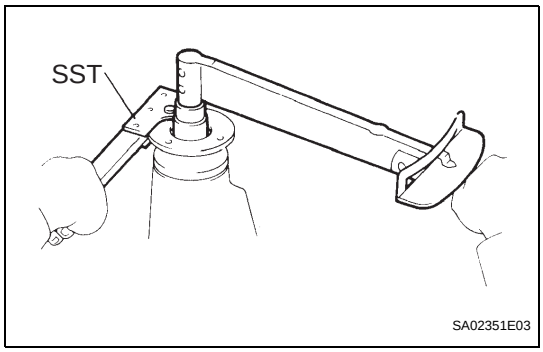
(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST, install the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

NOTICE:

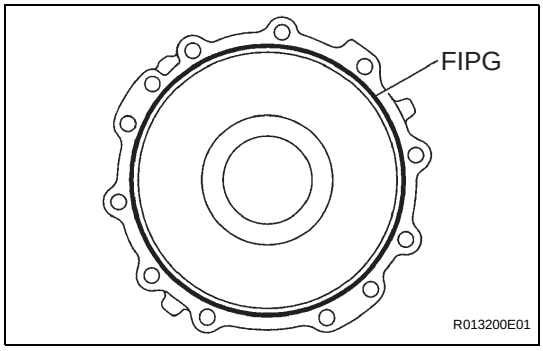
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(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 (3,770 kgf*cm, 273 ft.*lbf) or less



27. INSTALL DIFFERENTIAL SIDE BEARING RETAINER

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

NOTICE:

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

(b) Clean and degrease the 10 side bearing retainer installation bolts and the 10 bolt holes of the front differential carrier assembly.

[Added]

(c) Clean residual FIPG material from the contact surface using gasoline or alcohol.

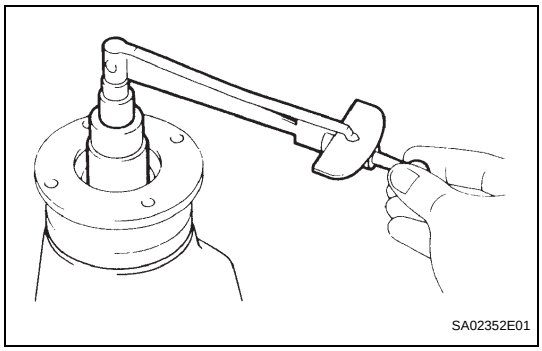
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(d) Apply FIPG to the side bearing retainer, as shown.
FIPG:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or Equivalent
HINT:
Install the side bearing retainer within 10 minutes of applying FIPG.

[Added] (e) Apply adhesive to 2 or 3 threads at the end of each of the 10 bolts.
Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent
NOTICE:
To prevent contamination by foreign matter, install immediately after applying adhesive.

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

[Corrected] **Torque: 75 N*m (765 kgf*cm, 55 ft.*lbf)**

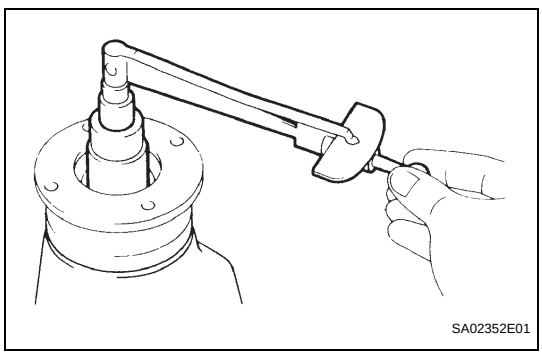

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28. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.
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 greater 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 (3,770 kgf*cm, 273 ft.*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.


SA02352E01

29. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
Torque: Total preload (at starting)
0.22 to 0.88 N*m (6 to 9 kgf*cm, 1.9 to 8.8 in.*lbf) drive pinion preload plus
HINT:
Bolts without torque specifications are shown in the service data (see page ○○-○○).
If necessary, disassemble and inspect the differential.

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