

DAIHATSU

Rocky

REAR AXLE & SUSPENSION

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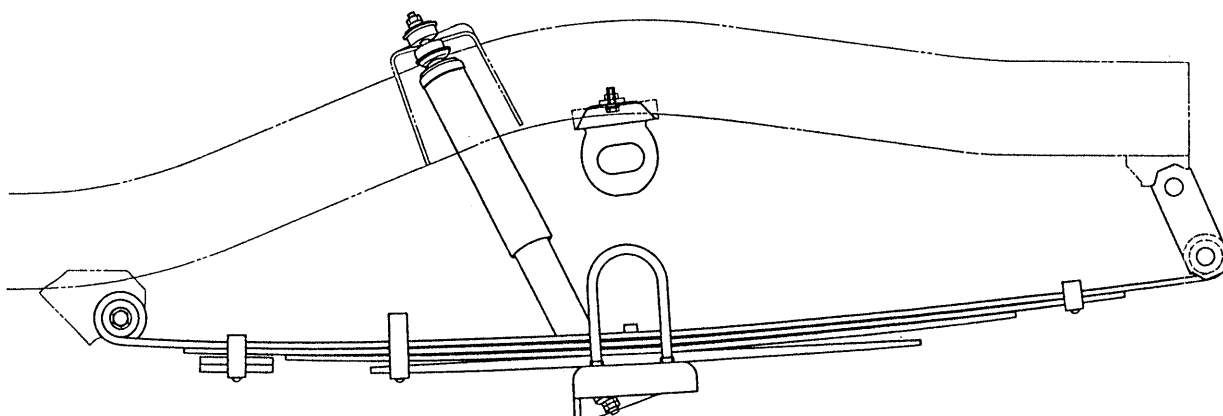
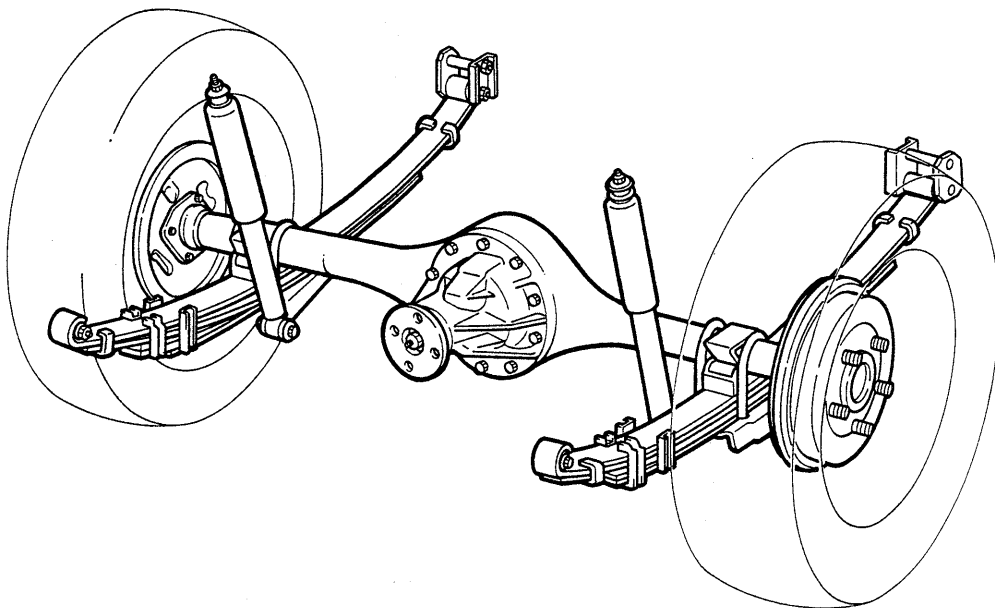
WRU90-RS001

RS

OUTLINE OF REAR AXLE & SUSPENSION

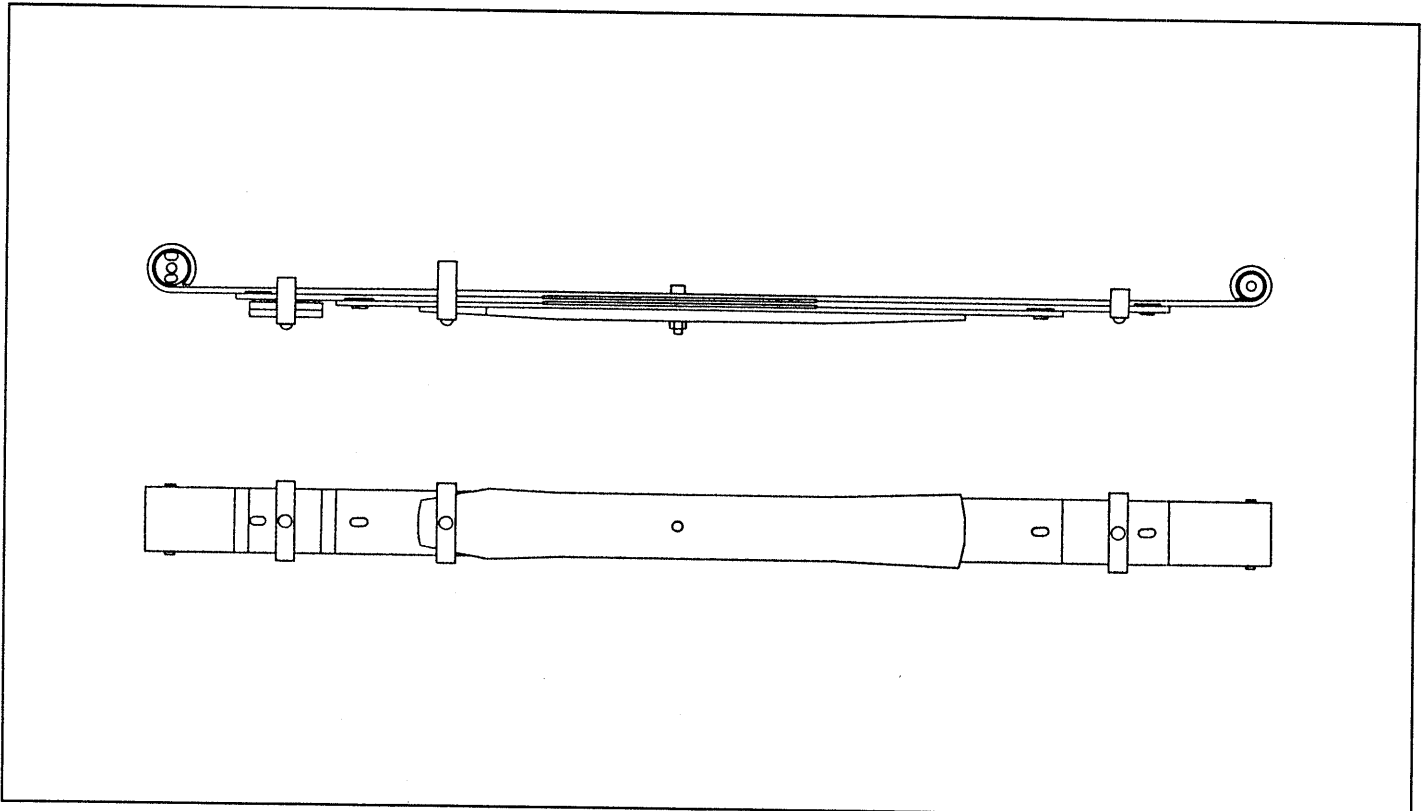
REAR SUSPENSION

The rear suspension is a rigid type and is composed of leaf springs. For improved negotiability over rough terrains and steering response, shackles are installed at the back side.



REAR SPRING

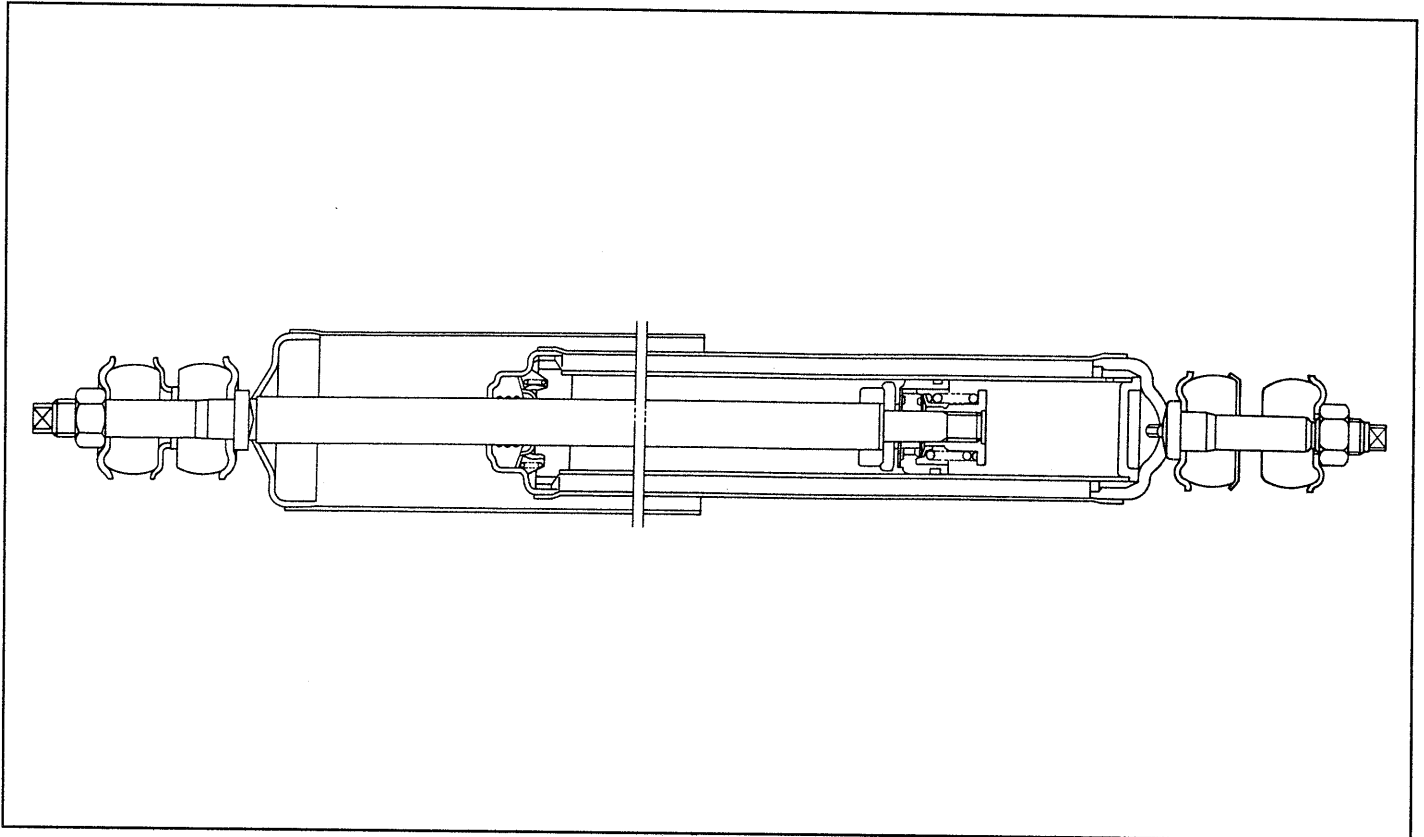
The rear spring adopts leaf springs which consist of 4 leaves, thus assuring excellent negotiability over rough terrains.



WRU90-RS003

REAR SHOCK ABSORBER

The rear shock absorber is a nitrogen gas-sealed type shock absorber.



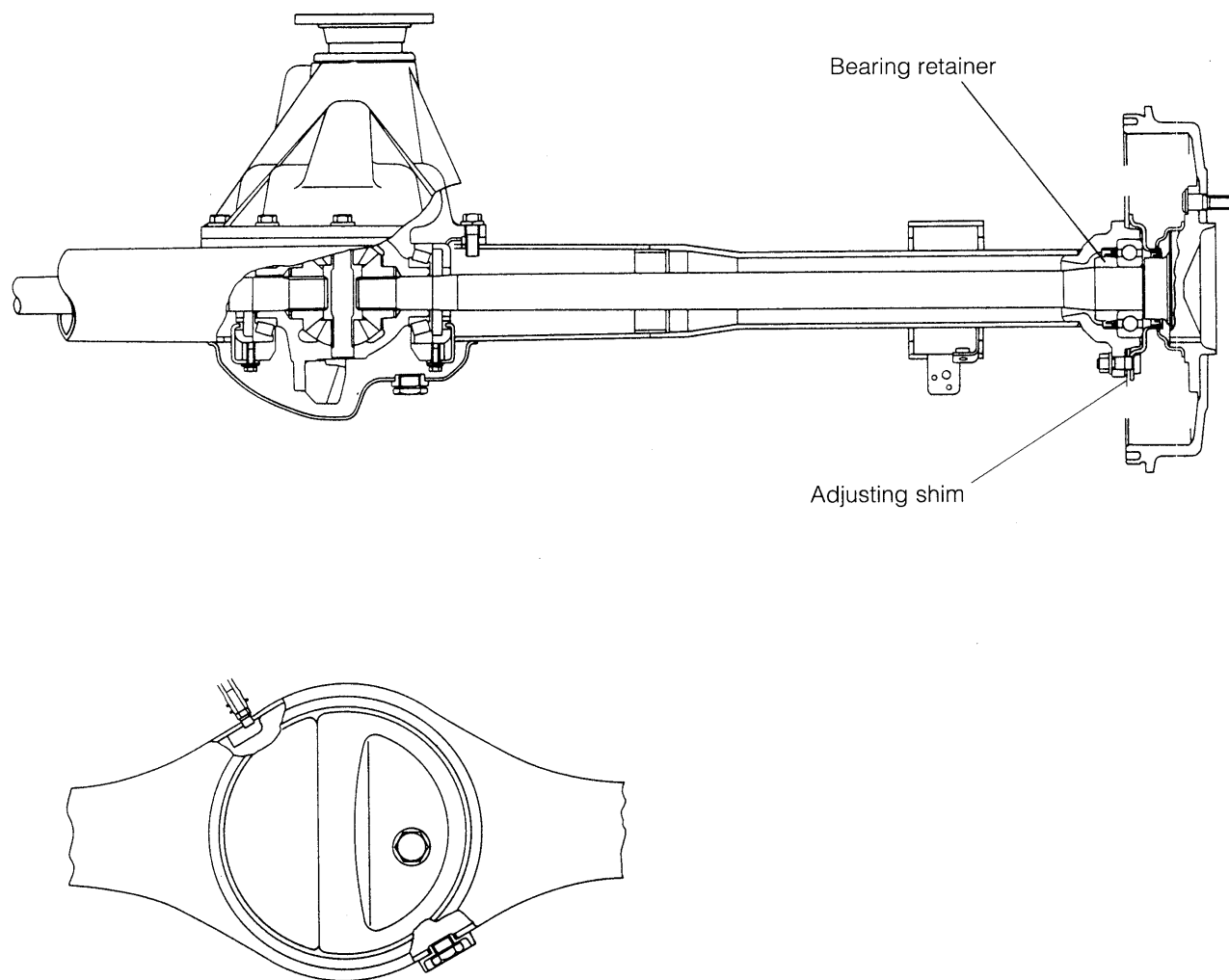
WRU90-RS004

REAR AXLE & SUSPENSION

REAR AXLE

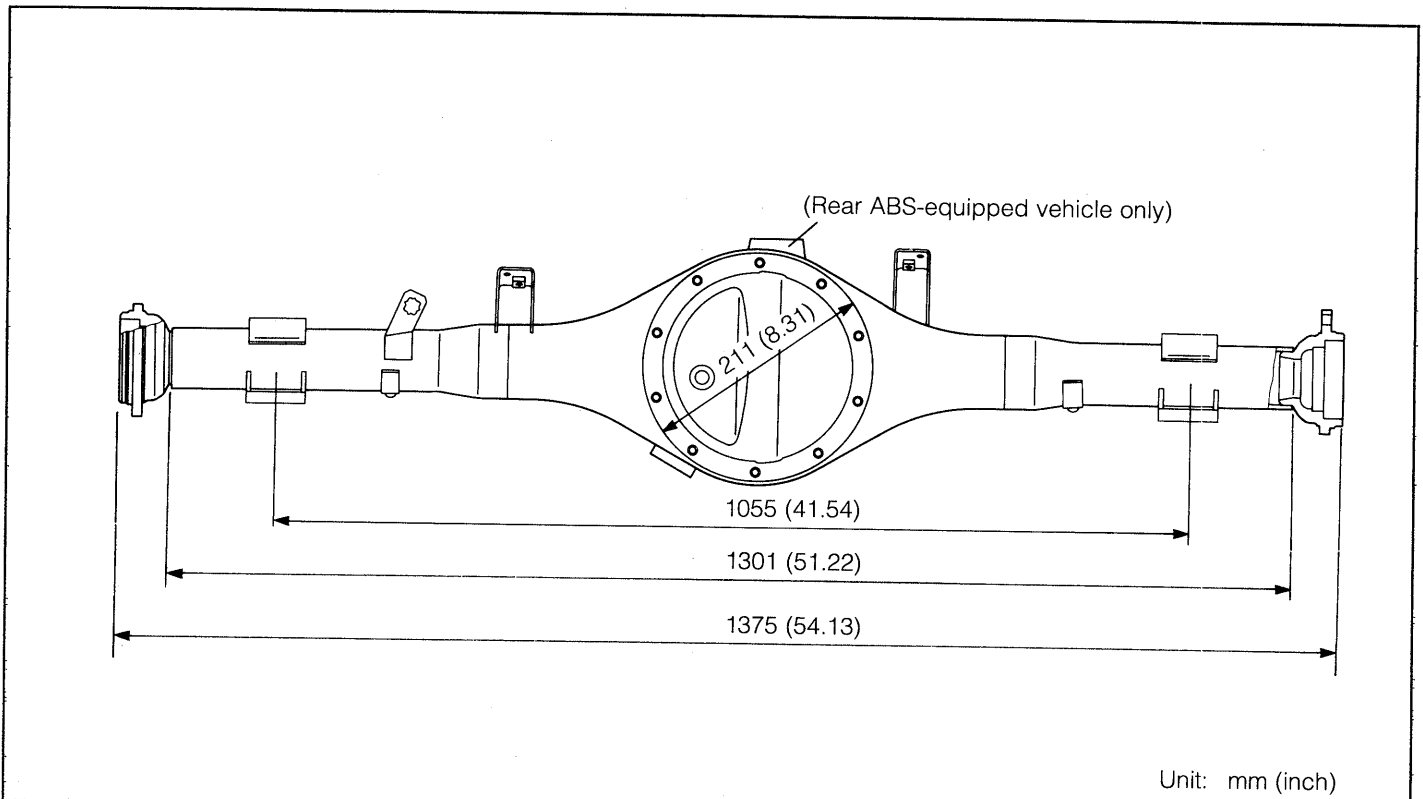
The rear axle housing employs a banjo type. The axle is a semi-floating type.

The bearing adopts a radial ball bearing, where the axle shaft is secured to the bearing retainer by means of shrinkage fitting. The clearance between the bearing and the backing plate is adjusted by shims.



REAR AXLE HOUSING

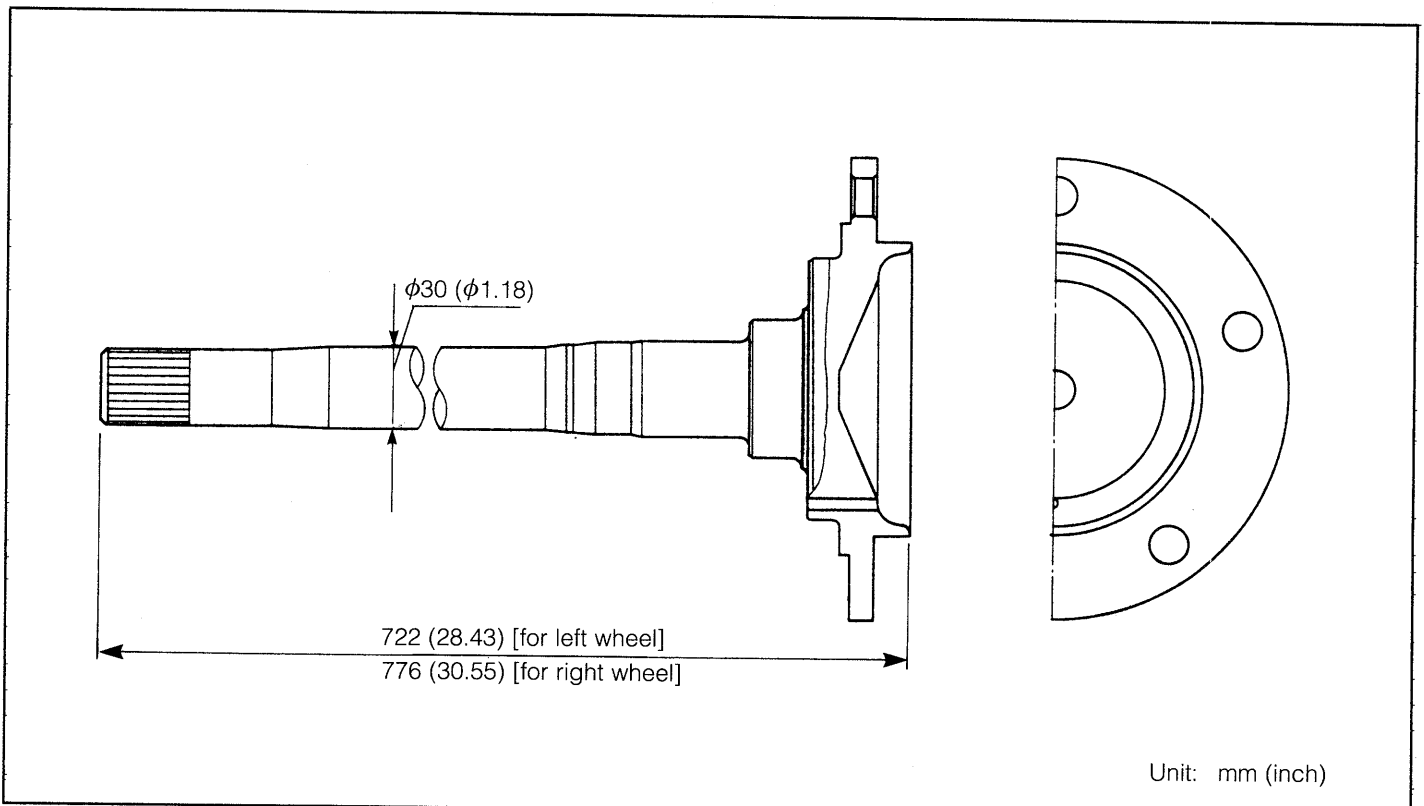
The rear axle housing employs a banjo type rear axle housing which features high rigidity of the axle tube and easy removal/installation of the rear differential carrier.



WRU90-RS006

REAR AXLE SHAFT

The rear axle shaft adopts a semi-floating type, where the wheel is attached directly to the drive shaft and the vehicle weight is sustained by the drive shaft and axle tube half-and-half.



WRU90-RS007

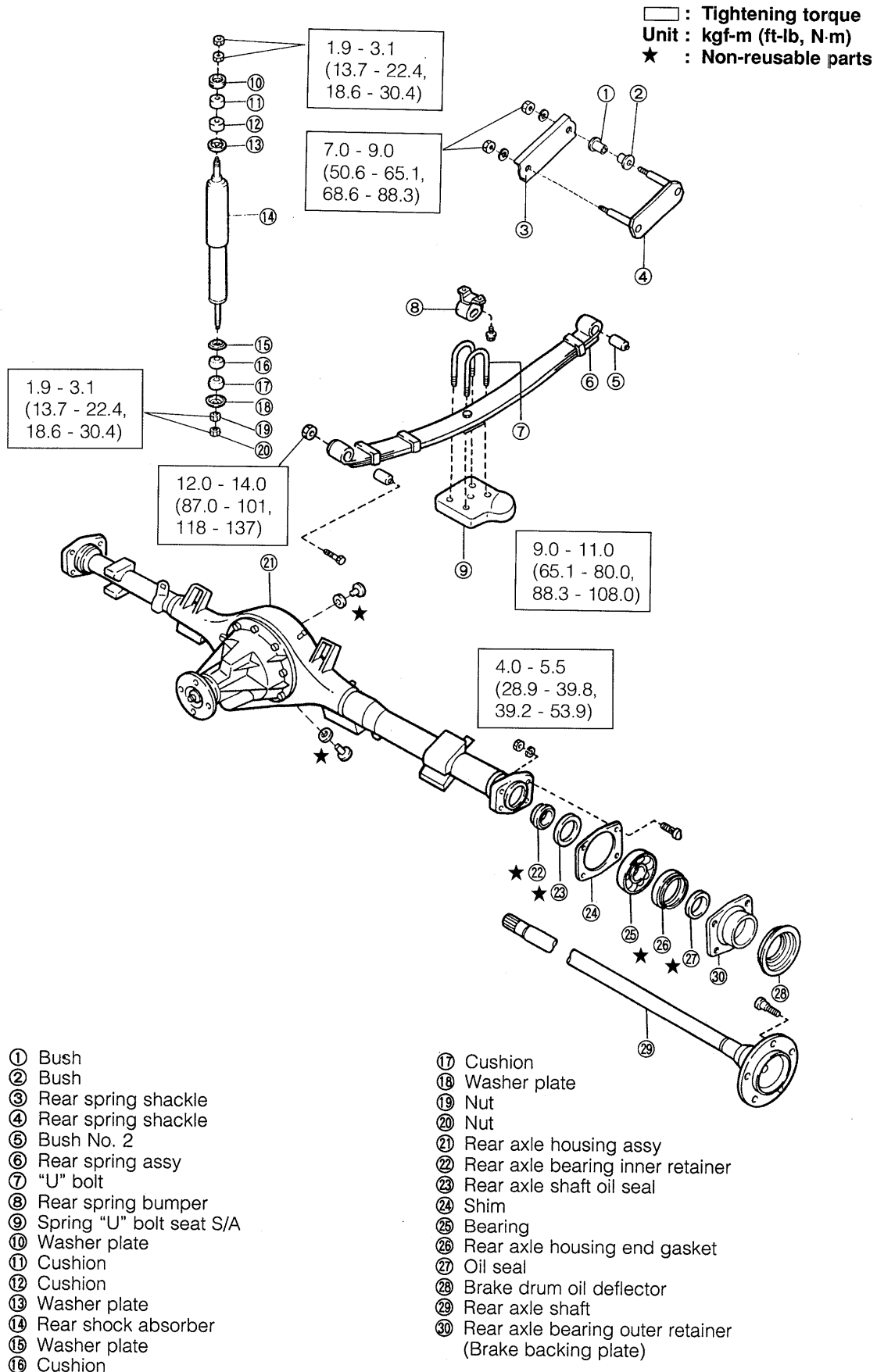
REAR AXLE & SUSPENSION

Rear suspension specifications

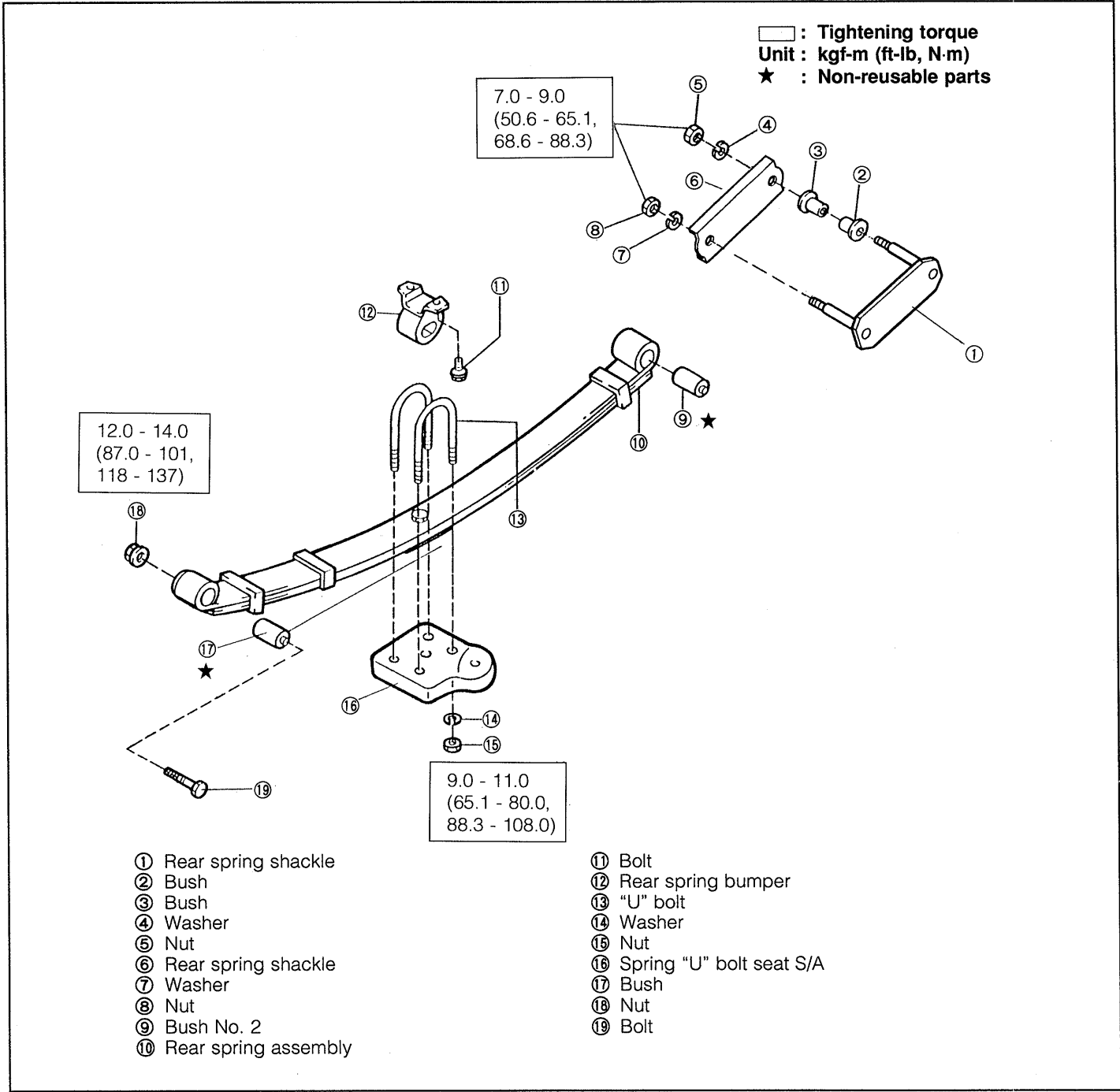
Item			Vehicle model	All models
Leaf spring	Camber (under unloaded state)		mm (inch)	165 (6.5)
	Main spring	Span x width x sheet thickness - Number of leaves (pcs.)		1,170 × 70 × 6 - 1 (46.06 × 27.6 × 0.24)
				1,010 × 70 × 6 - 1 (39.76 × 2.76 × 0.24)
				785 × 70 × 6 - 1 (30.91 × 2.76 × 0.24)
				590 × 70 × 12 - 1 (23.23 × 2.76 × 0.47)
Shock absorber	Spring constant	Main spring	kgf/mm (lb/inch)	2.12 (0.18)
		Combined	kgf/mm (lb/inch)	4.61 (0.4)
	Damping force (at time of piston speed of 0.3 m/s)	During rebound stroke	kgf (lb)	198 (436.6)
		During compression stroke	kgf (lb)	28 (61.74)
	Maximum length		mm (inch)	448 (17.6)
	Minimum length		mm (inch)	267 (10.5)
	Stroke		mm (inch)	181 (7.13)

WRU90-RS008

COMPONENTS



REAR SPRING
COMPONENTS



WRU90-RS010

TROUBLE SHOOTING

Symptom	Possible causes	Checking points
Abnormal noise Vehicle body tilted	Spring bushes worn Spring damaged	Check spring and bush.

WRU90-RS011

NOTE:

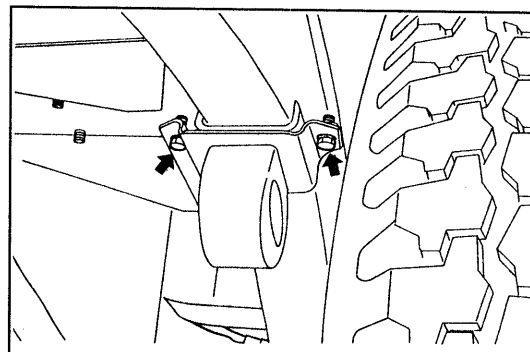
1. Care must be exercised so that the right and left leaf springs may not be exchanged with each other during the removal and installation of the leaf springs.
2. When replacing the leaf springs, assemble them according to the following combination of the marking codes (+, 0, -) which were put on the leaf springs. The right table indicates the priority order with the top priority attached to the (1).

	Right	Left
(1)	+	0
(2)	0	-
(3)	+	-
(4)	0	0
(5)	+	+
(6)	-	-

WRU90-RS103

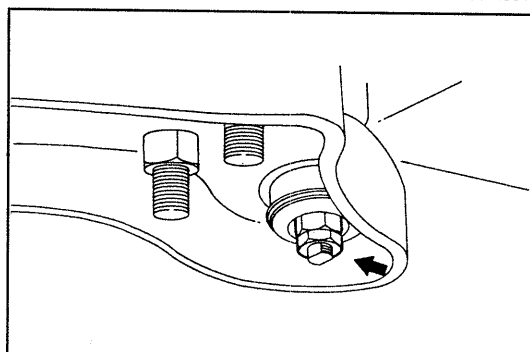
REMOVAL

1. Remove the rear spring bumper by removing the attaching bolts.



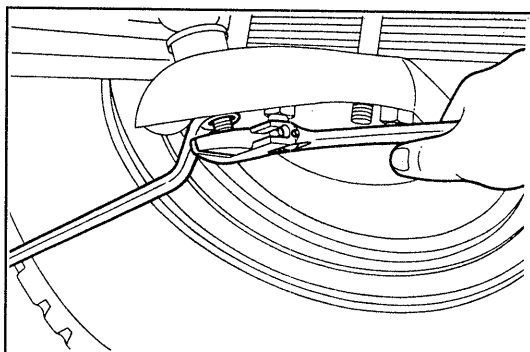
WRU90-RS012

2. Loosen the lock nut of the attaching nut at the lower side of the rear shock absorber.



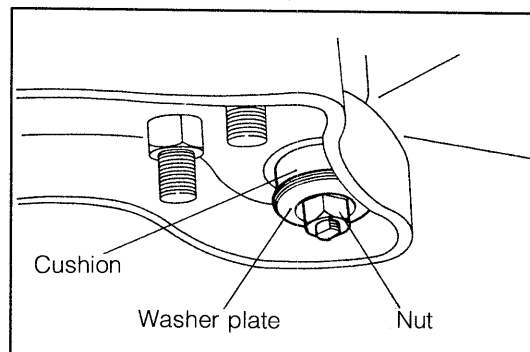
WRU90-RS013

3. Loosen the attaching nut at the lower side of the rear shock absorber, while preventing the rear shock absorber from turning by lower side of the shock absorber.



WRU90-RS014

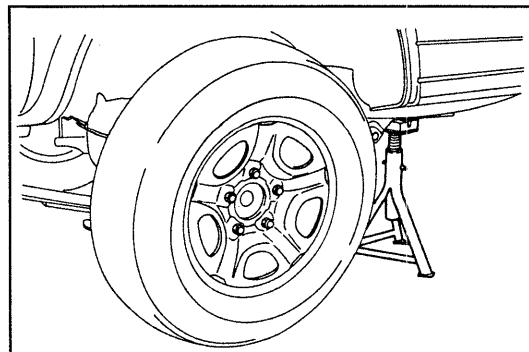
4. Remove the attaching nut at the lower side of the rear shock absorber. Remove the washer plate and cushion.



WRU90-RS015

REAR AXLE & SUSPENSION

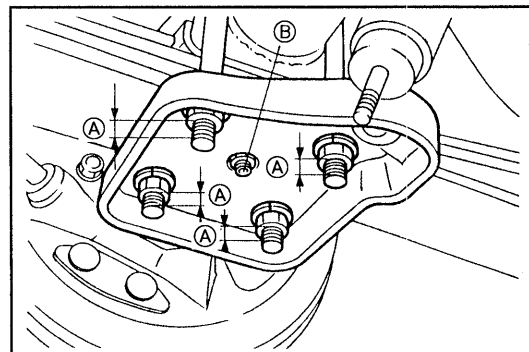
5. Jack up the vehicle until the rear tires are just contacting the ground (with no load applied to the rear axle). Apply safety stands to the frame so as to support the vehicle.



WRU90-RS016

6. Removal of U bolt

- 1) Measure the protruding dimension of the U bolt tightening nut. Record the measured value.

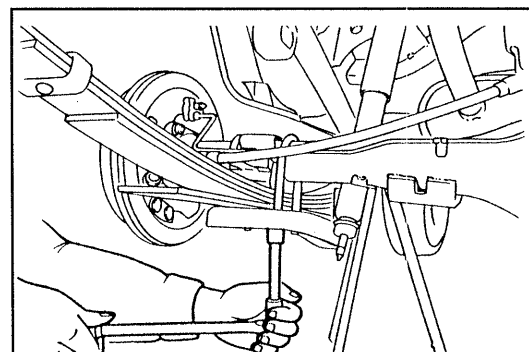


WRU90-RS017

- 2) Loosen the U bolt attaching nuts evenly over two or three stages.

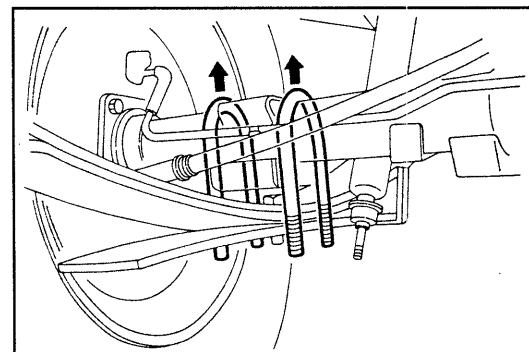
CAUTION:

- When loosening the nuts, make sure that the spring load is not sustained by the nuts.



WRU90-RS018

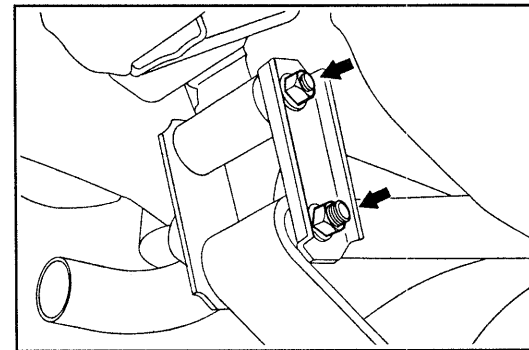
- 3) Remove the U bolt attaching nuts. Remove the spring U bolt seat and U bolt.



WRU90-RS019

7. Removal of rear spring shackle pin

- 1) Remove the rear spring shackle attaching nuts. Remove the shackle bracket.

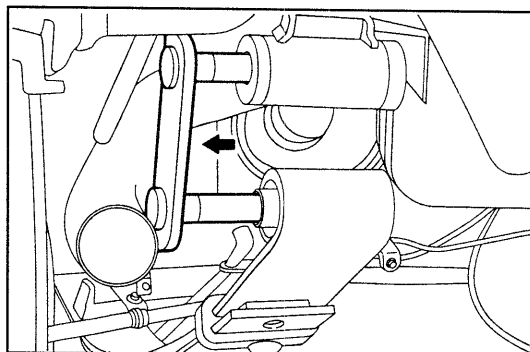


WRU90-RS020

- 2) Pull out the shackle pin about halfway by lightly tapping the shackle pin at its plate section by means of a plastic hammer or the like.

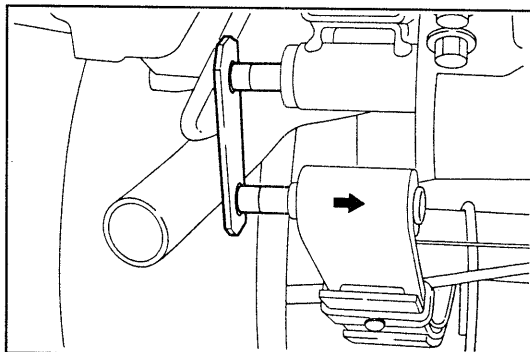
NOTE:

- When pulling out the shackle pin about halfway, keep the exhaust pipe to the left so that the left shackle may not interfere with the exhaust pipe.



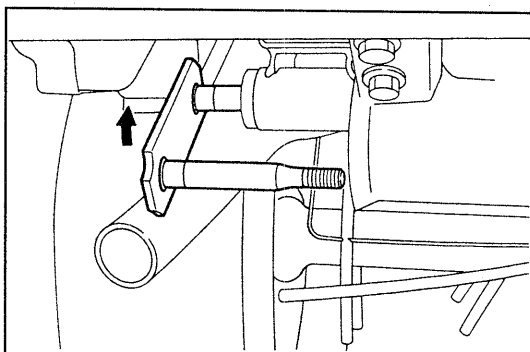
WRU90-RS021

- 3) Remove the leaf spring from the shackle pin.



WRU90-RS022

- 4) Raise the leaf spring connecting side of the shackle pin until it may not interfere with the exhaust pipe. (Left side only)

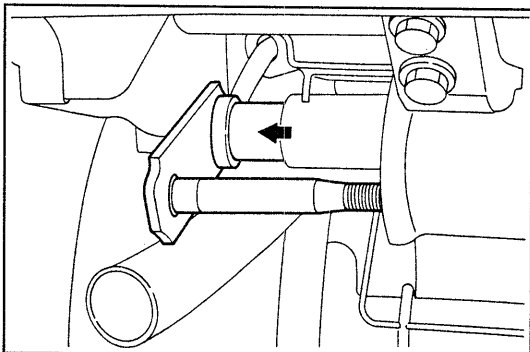


WRU90-RS023

- 5) Pull out the shackle pin with the shackle pin bush at the vehicle outside installed.

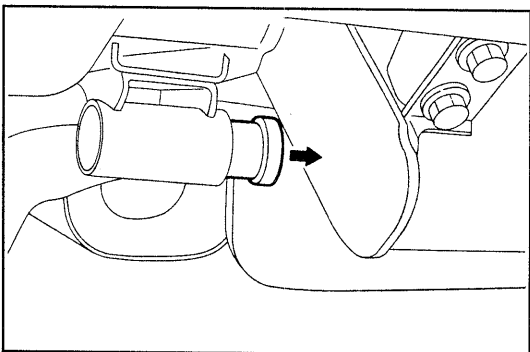
NOTE:

- If the shackle pin only should be pulled out, interference with the body would occur.
- The bush is a two-split type.



WRU90-RS024

8. Remove the shackle pin bush at the vehicle inside from the frame.



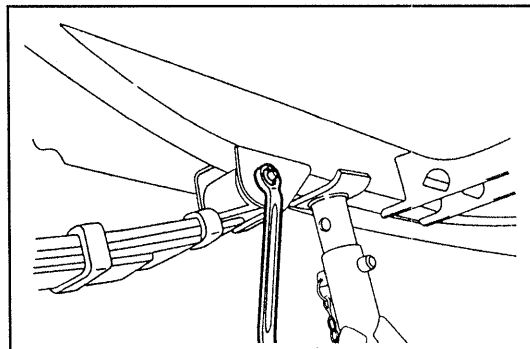
WRU90-RS025

REAR AXLE & SUSPENSION

9. Remove the leaf spring attaching bolt and nut at the front side. Remove the rear spring from the vehicle.

NOTE:

- When removing the bolt, be very careful not to drop the leaf spring.



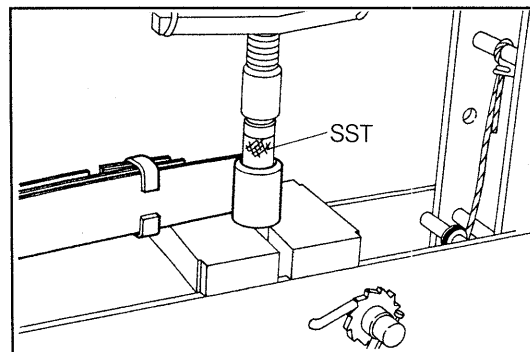
WRU90-RS026

10. Removal of rear spring bushes No.1 and No.2

- 1) Pull out the rear spring bush No.1, using the following SST in combination with a hydraulic press.
SST: 09608-87607-000

NOTE:

- Consideration should be taken at the receiver side so that the bush may be pulled downward.

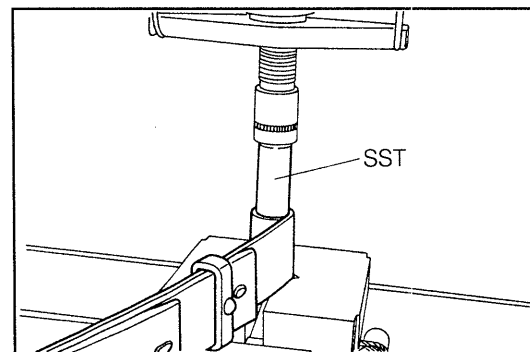


WRU90-RS027

- 2) Pull out the rear spring bush No.2, using the following SST in combination with a hydraulic press.
SST: 09608-87608-000

NOTE:

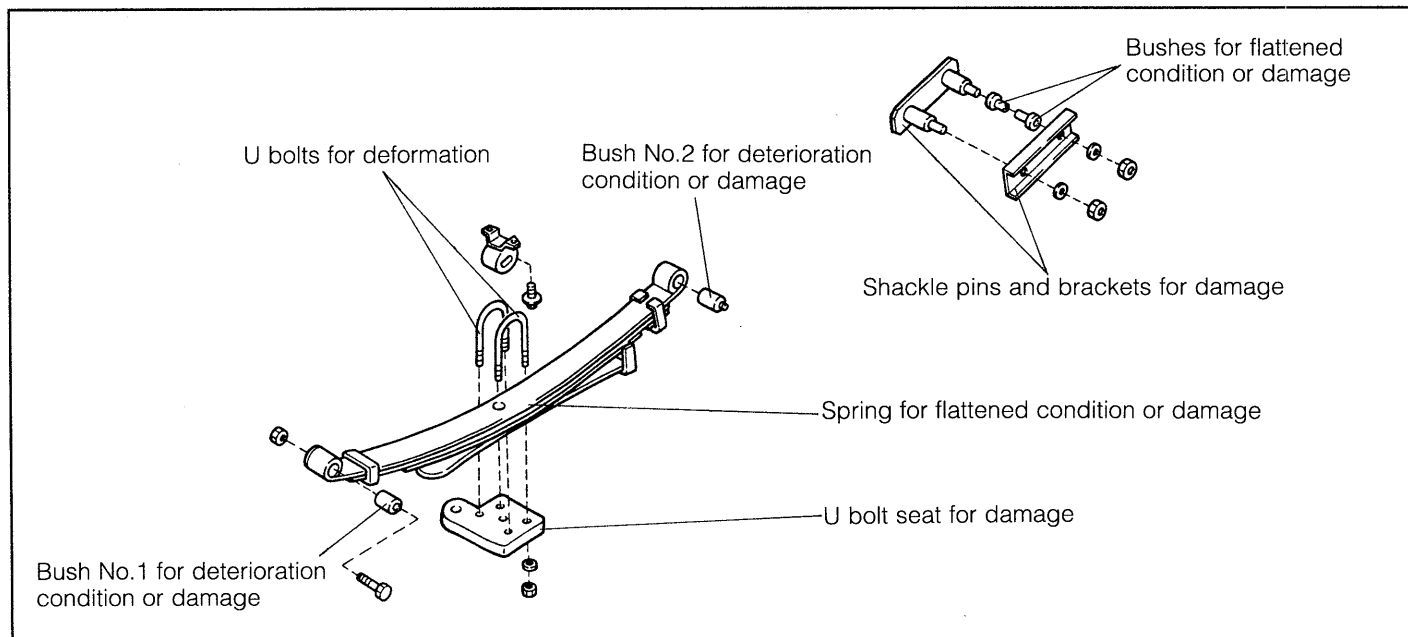
- Consideration should be taken at the receiver side so that the bush may be pulled downward.



WRU90-RS104

INSPECTION

1. Inspect each section in the figure below. Replace any defective parts.



WRU90-RS028

2. Ensure that the bush installing section of the chassis exhibits no damage.

INSTALLATION

1. Installation of rear spring bushes No.1 and No.2
 - 1) Press the rear spring bush No.1 into the rear spring with the following SST in combination with a press.
SST: 09608-87607-000

NOTE:

- Be sure to press the bush up to the edge surface of the leaf spring.
- For this operation, use a press stand having a hole so that no interference with the inner bush may occur.

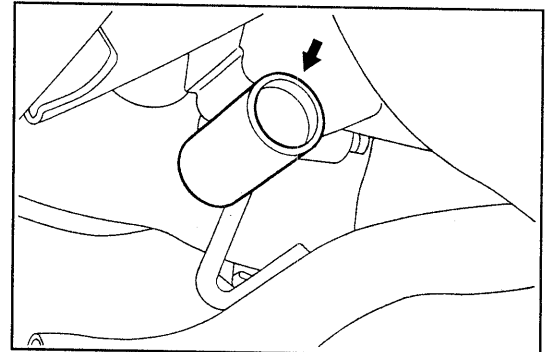
- 2) Press the rear spring bush No.2 into the rear spring with the following SST in combination with a press.
SST: 09608-87608-000

NOTE:

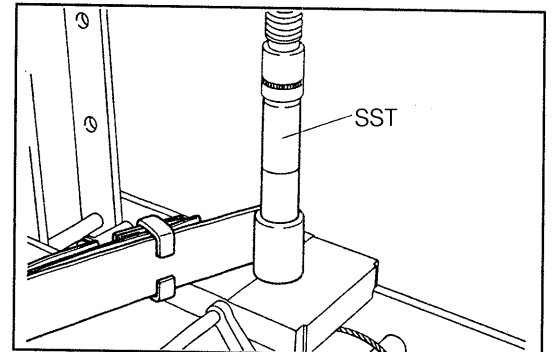
- Be sure to press the bush up to the edge surface of the leaf spring.
- For this operation, use a press stand having a hole so that no interference with the inner bush may occur.

2. Connect the front installing section of the rear spring. Temporarily install the attaching bolt and nut.

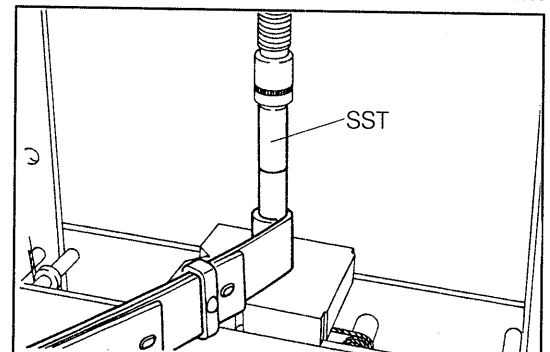
3. Apply a thin film of SUNPAR 150[®] to the bush at the vehicle outside. Install the bush to the shackle pin.



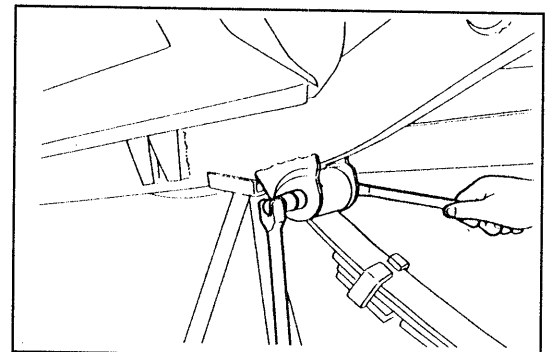
WRU90-RS029



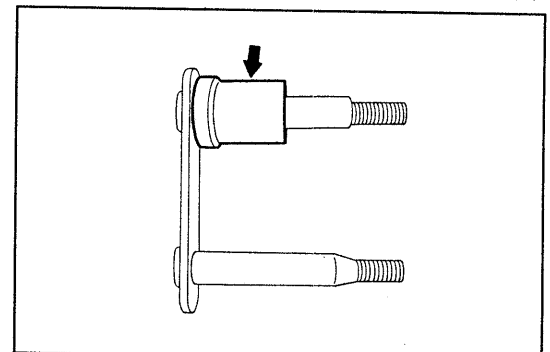
WRU90-RS030



WRU90-RS105



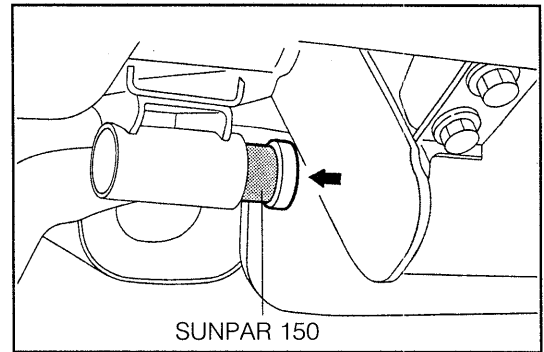
WRU90-RS031



WRU90-RS032

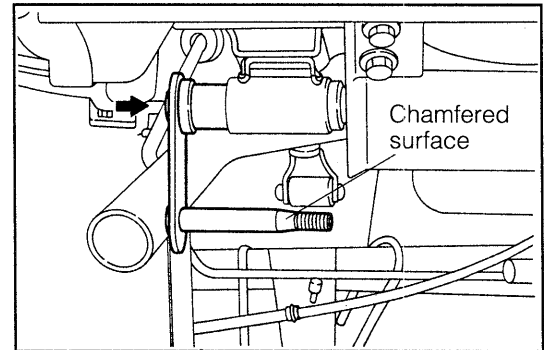
REAR AXLE & SUSPENSION

4. Apply a thin film of SUNPAR 150[®] to the bush at the vehicle inside. Install the bush to the frame.



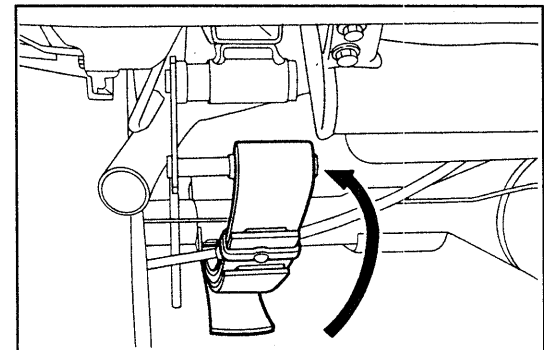
WRU90-RS033

5. Insert the shackle pin into the frame about halfway.



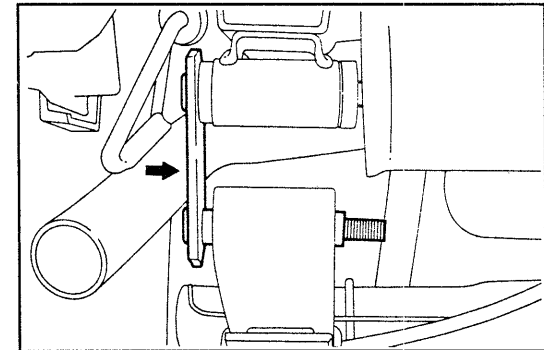
WRU90-RS034

6. Connect the leaf spring to the shackle pin.



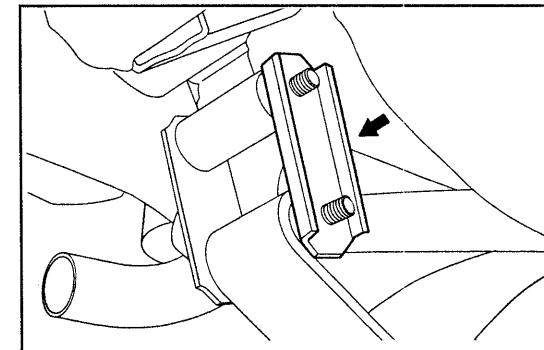
WRU90-RS035

7. Insert the shackle pin correctly.



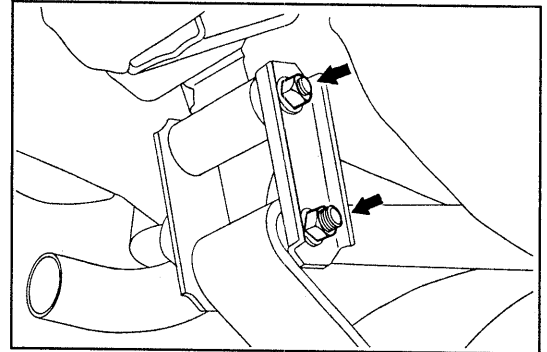
WRU90-RS036

8. Install the shackle pin bracket to the shackle pin.



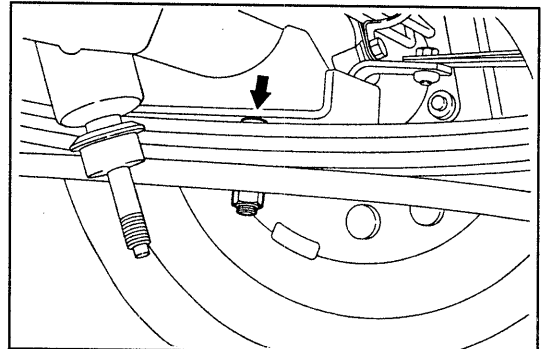
WRU90-RS037

9. Temporarily tighten the shackle pin bracket attaching nut with the new washer interposed.



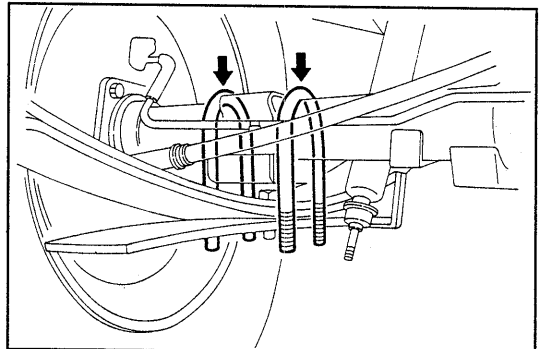
WRU90-RS038

10. Attach the bolt head of the leaf spring into the hole at the rear axle housing side.



WRU90-RS039

11. Install the U bolt to the rear axle housing.



WRU90-RS040

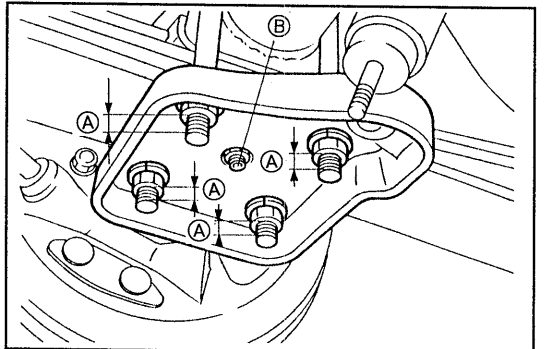
12. Install the spring U bolt seat. Connect the U bolt.
13. Tighten the spring U bolt seat attaching nuts with the new washers interposed. This tightening must be performed evenly over two or three stages to the specified torque in such a way that all the protruding amounts (dimension A) of the four bolts may become the same.

Tightening Torque:

9.0 - 11.0 kgf-m (65.1 - 80.0 ft-lb, 88.3 - 108 N-m)

NOTE:

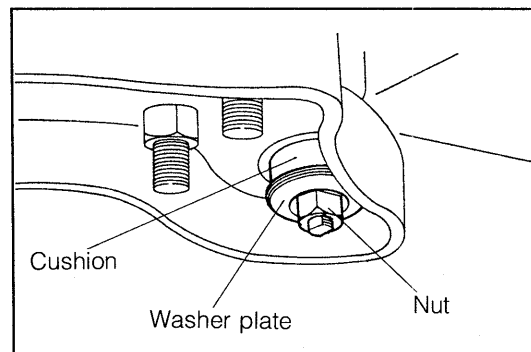
- When the U bolt is reused, make sure that the protruding dimension is virtually the same as the value which was measured during the disassembly.



WRU90-RS041

REAR AXLE & SUSPENSION

14. Connect the shock absorber to the spring/U bolt seat. Temporarily install the cushion, washer plate and nut.



WRU90-RS042

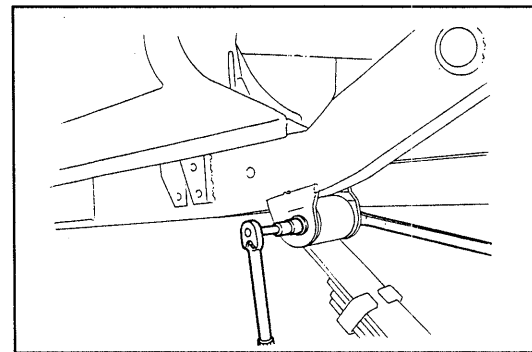
15. Jack down the vehicle.
16. Tighten the rear spring attaching bolt and nut at the front side to the specified torque.

Tightening Torque:

12.0 - 14.0 kgf-m (87.0 - 101 ft-lb, 118 - 137 N-m)

NOTE:

- Perform tightening under the no-loaded condition.



WRU90-RS043

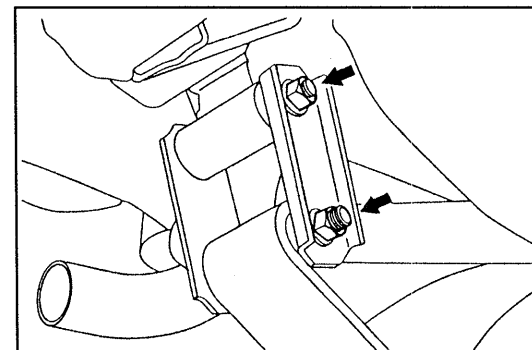
17. Tighten the rear spring shackle attaching nuts to the specified torque.

Tightening Torque:

7.0 - 9.0 kgf-m (50.6 - 65.1 ft-lb, 68.6 - 88.3 N-m)

NOTE:

- Perform tightening under the no-loaded condition.

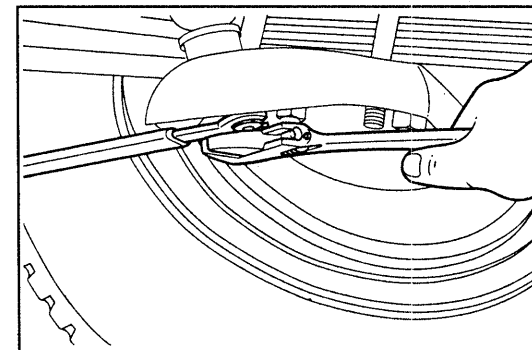


WRU90-RS044

18. Tighten the rear shock absorber attaching nut to the specified torque, while preventing the rear shock absorber from turning. For this operation, use the two-flat section provided at the rear shock absorber lower end.

Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N-m)

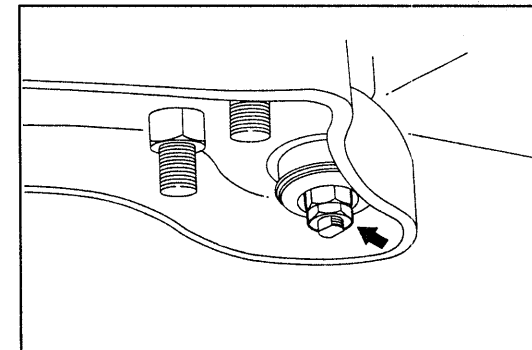


WRU90-RS045

19. Install the lock nut of the rear shock absorber attaching nut. Tighten the nut to the specified torque so as to lock it.

Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N-m)

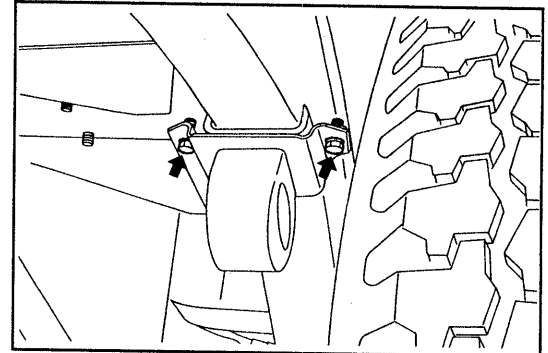


WRU90-RS046

20. Install the rear spring bumper. Tighten the attaching bolts to the specified torque.

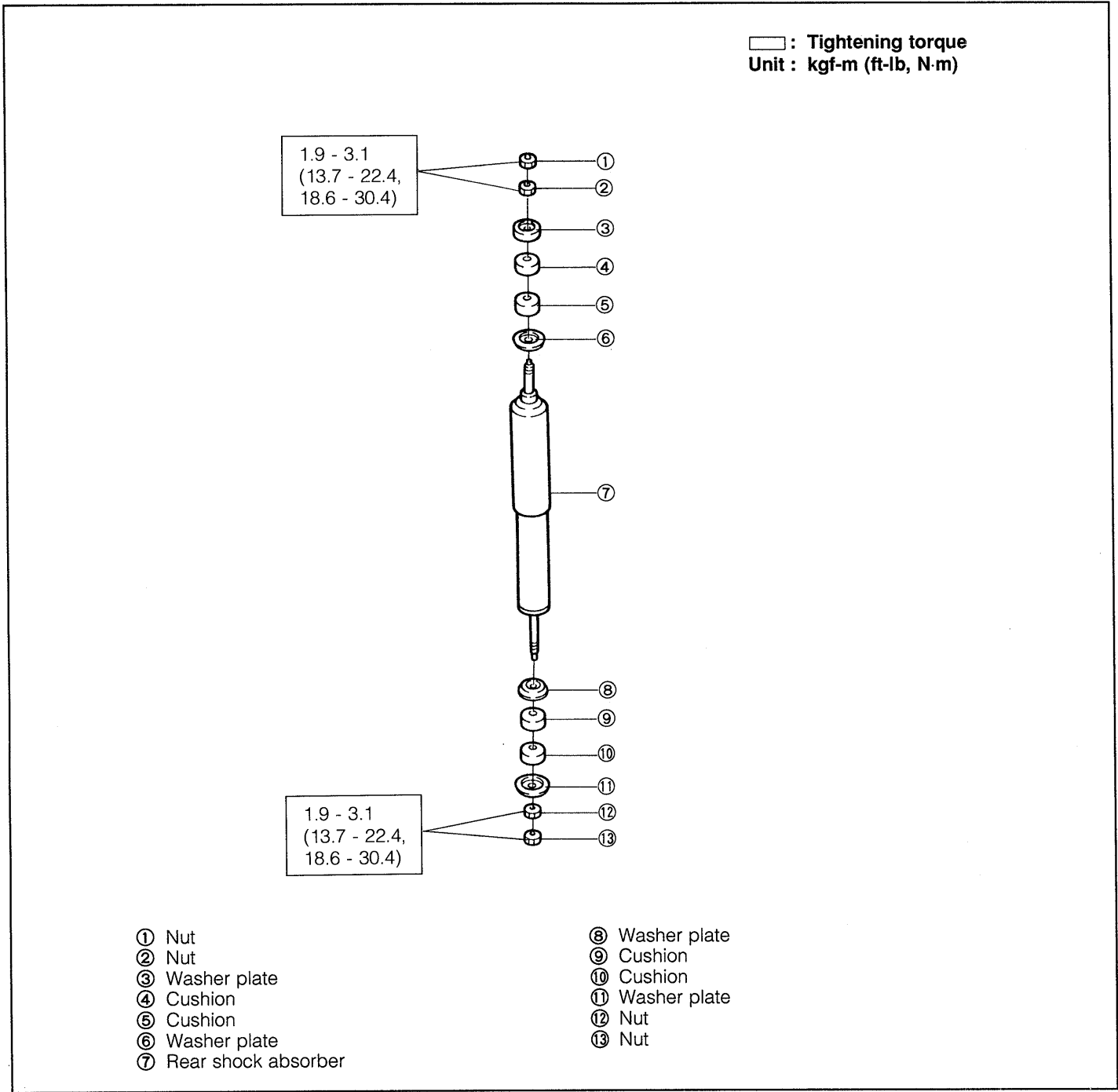
Tightening Torque:

1.5 - 2.2 kgf-m (10.8 - 15.9 ft-lb, 14.7 - 21.6 N·m)



WRU90-RS106

REAR SHOCK ABSORBER
COMPONENTS



WRU90-RS047

TROUBLE SHOOTING

Symptom	Possible causes	Checking points
Abnormal noise Oil leakage	Oil leakage at shock absorber Poor oil seal of shock absorber	Check shock absorber. Check shock absorber.

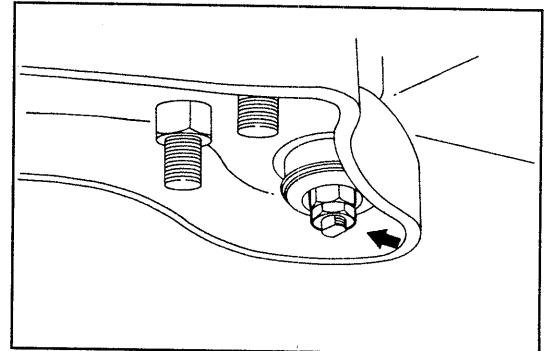
WRU90-RS048

- CAUTION:
- When discarding the rear shock absorber, prior to disposal be sure to release the filled gas.

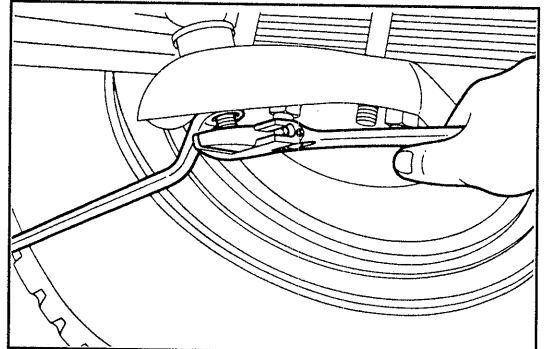
WRU90-RS107

REMOVAL

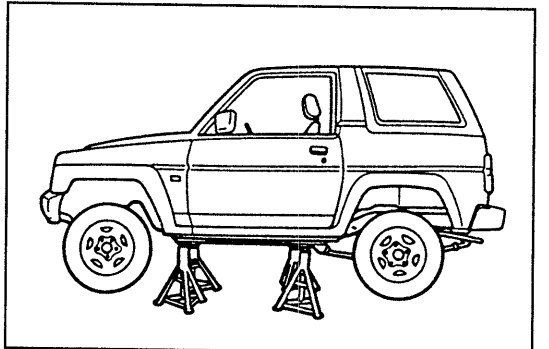
1. Loosen the lock nut provided at the lower side of the lower connecting section of the rear shock absorber.
2. Remove the attaching nut while preventing the rear shock absorber from turning at the two flat section at the lower section of the rear shock absorber. Remove the washer plate and cushion.
3. Jack up the vehicle and support it with safety stands. (See GI section.)
4. Loosen the lock nut provided at the upper side of the upper connecting section of the rear shock absorber.
5. Remove the attaching nut while preventing the rear shock absorber from turning. For this operation, use the two-flat section provided at the top of the rear shock absorber. Remove the washer plate and cushion.
6. Remove the rear shock absorber.



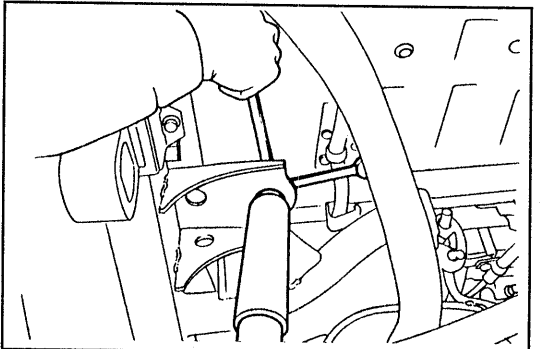
WRU90-RS049



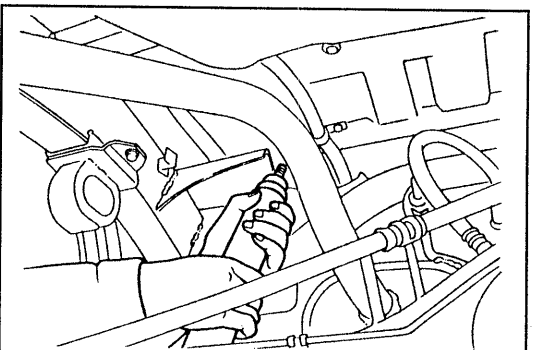
WRU90-RS050



WRU90-RS051



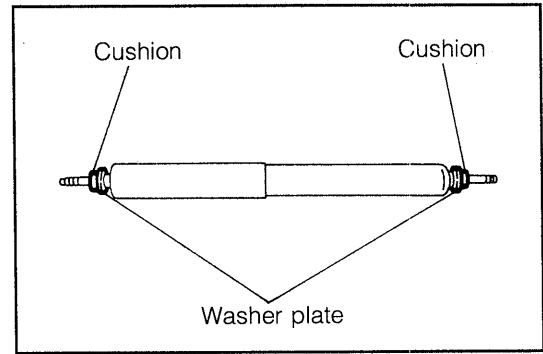
WRU90-RS052



WRU90-RS053

REAR AXLE & SUSPENSION

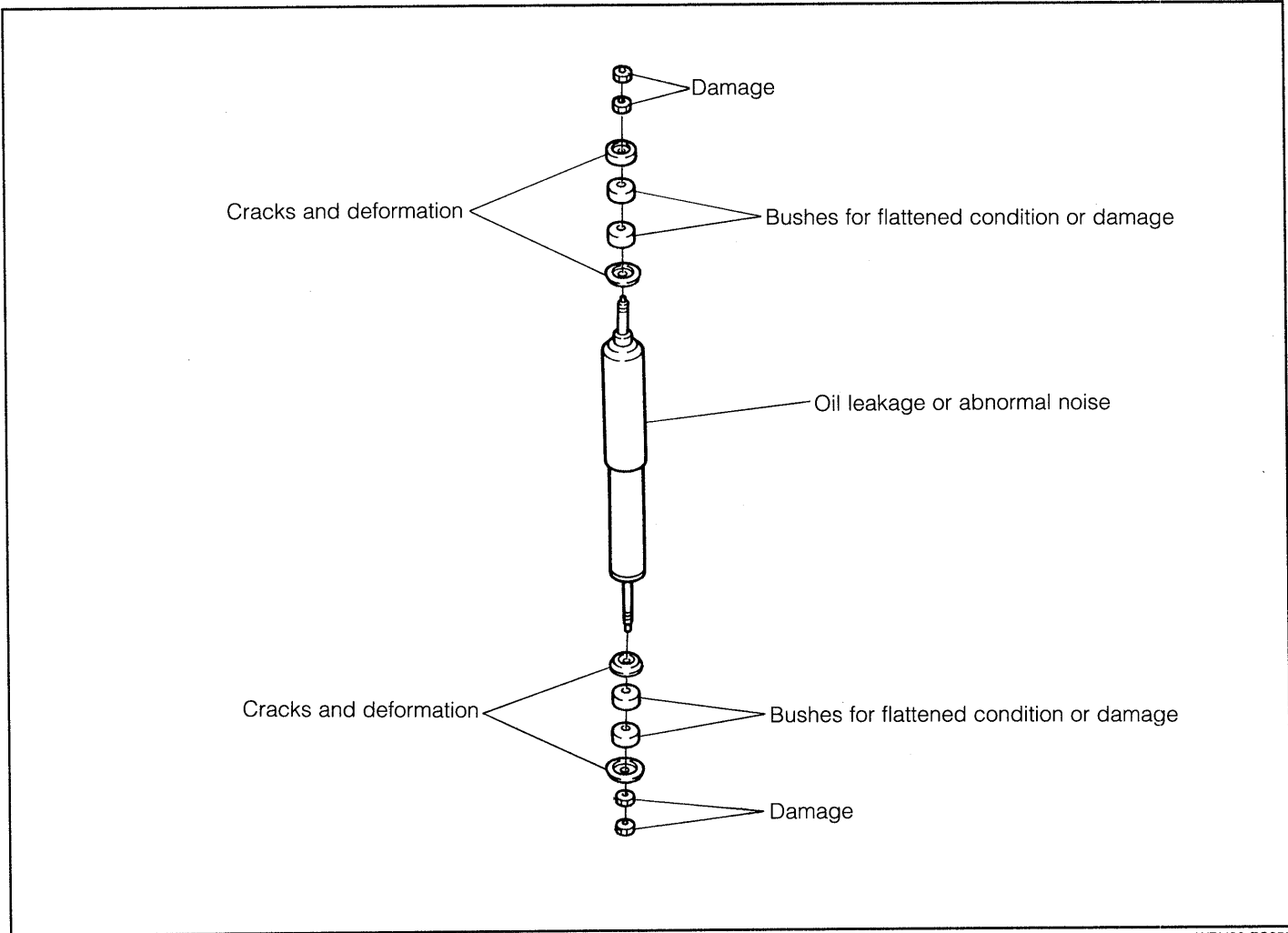
7. Remove the cushions and washer plates from the rear shock absorber.



WRU90-RS054

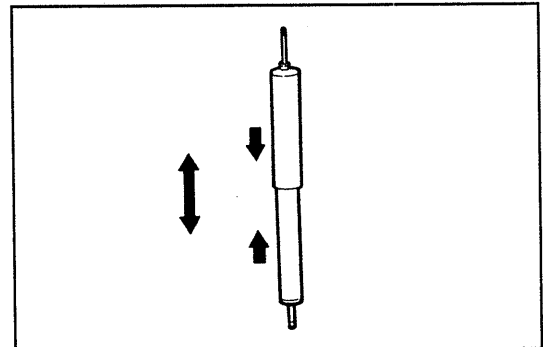
INSPECTION

1. Inspect each section in the figure below. Replace any defective parts.



WRU90-RS055

2. Check of shock absorber
Ensure that the shock absorber can be contracted slowly when it is compressed. Also, ensure that the shock absorber can extend slowly and smoothly when it is extended.



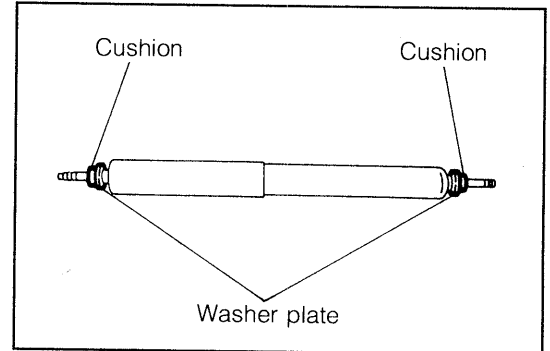
WRU90-RS056

INSTALLATION

1. Install the washer plates and cushions to the shock absorber.

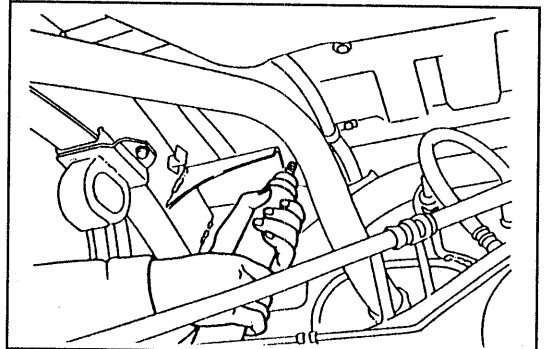
NOTE:

- Install the washer plate so that the recessed surface may come at the cushion side.



WRU90-RS057

2. Install the rear shock absorber, while contracting it.



WRU90-RS058

3. Install the cushions and washer plates to the upper and lower sections of the rear shock absorber. Install the attaching nut.
4. Tighten the attaching nuts, while preventing the rear shock absorber from turning. For this operation, use the two flat sections provided at the top and lower sections of the rear shock absorbers.

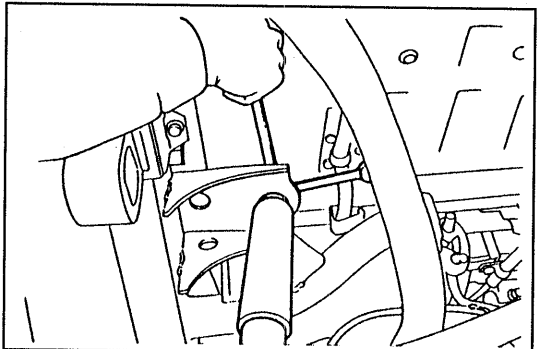
Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N·m)

5. Install and tighten the lock nut of the attaching nut at the rear shock absorber upper end.

Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N·m)



WRU90-RS059

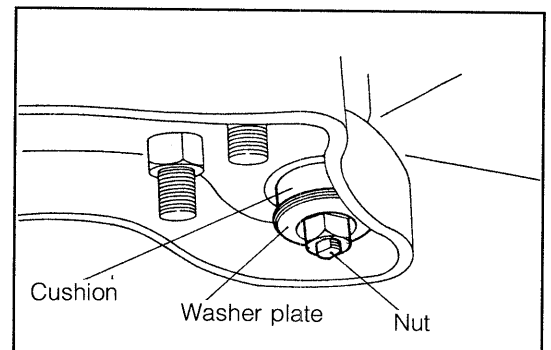
6. Jack down the vehicle.

NOTE:

- Be very carefull not to damage the shock absorber.

WRU90-RS060

7. Install the cushion, washer plate and nut to the attaching bolt section at the rear shock absorber lower end.



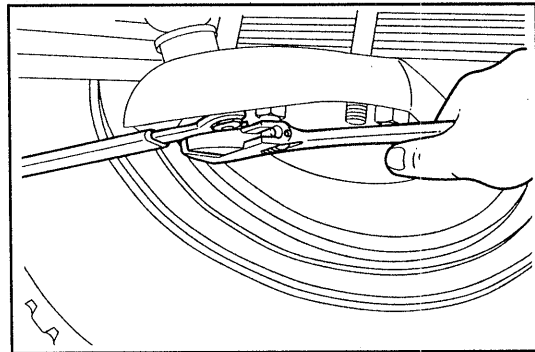
WRU90-RS061

REAR AXLE & SUSPENSION

8. Tighten the attaching nut to the specified torque, while preventing the rear shock absorber from turning. For this operation, use the two-flat section provided at the rear shock absorber lower end.

Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N·m)

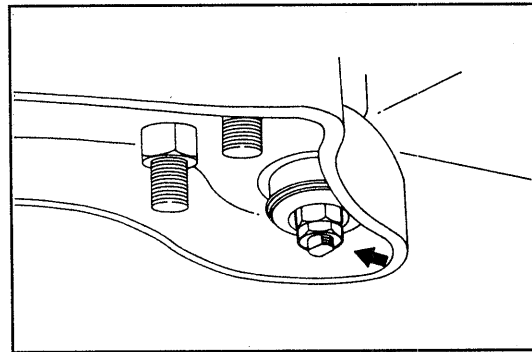


WRU90-RS062

9. Install and tighten the lock nut of the attaching nut at the rear shock absorber lower end.

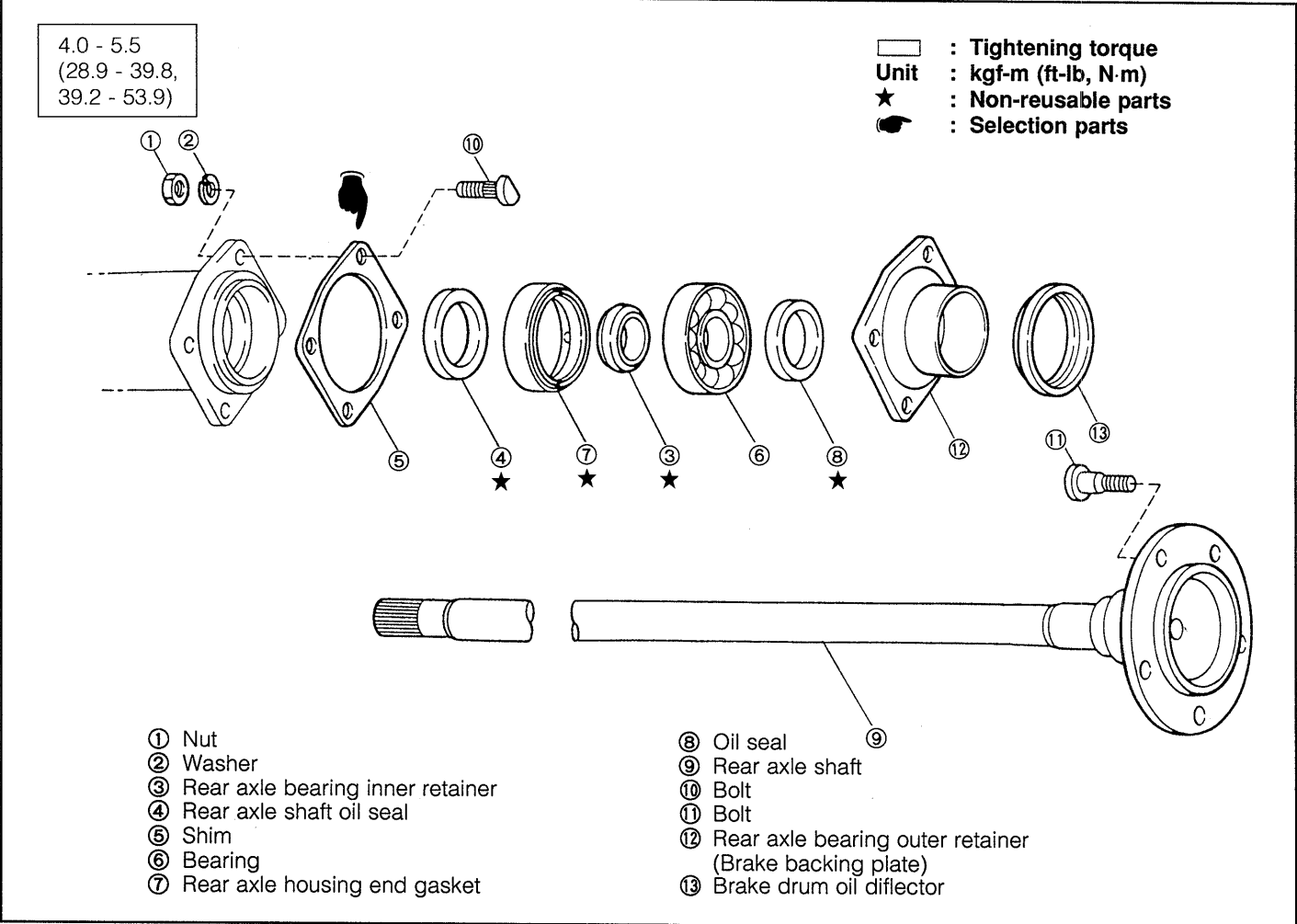
Tightening Torque:

1.9 - 3.1 kgf-m (13.7 - 22.4 ft-lb, 18.6 - 30.4 N·m)



WRU90-RS063

REAR AXLE SHAFT
COMPONENTS



TROUBLE SHOOTING

WRU90-RS064

Symptom	Possible causes	Checking points
Abnormal noise	Bearing damaged Bearing improperly lubricated	Check bearings.
Oil leakage	Oil seals damaged Oil seals improperly installed	Check oil seals.

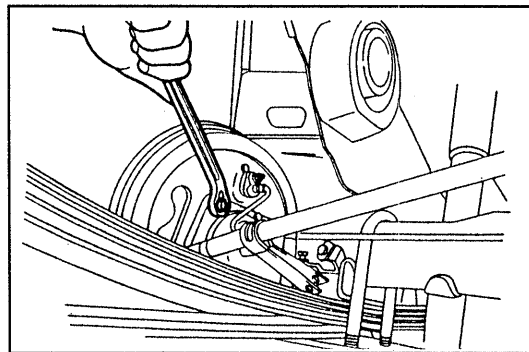
WRU90-RS065

REMOVAL

1. Disassemble the rear brake.
(For details, see the Brake section.)

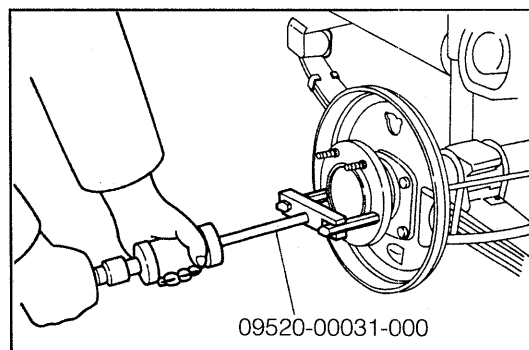
WRU90-RS066

2. Remove the attaching nuts of the backing plate from the rear axle housing.



WRU90-RS067

3. Remove the rear axle shaft, using the following SST.
SST: 09308-00031-000

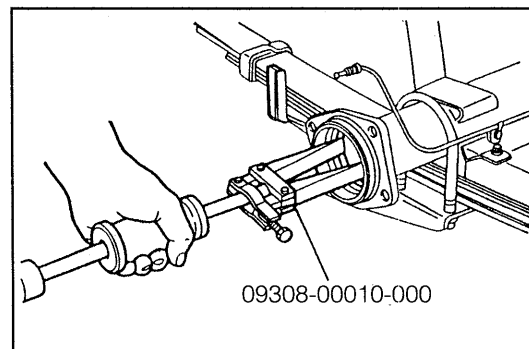


WRU90-RS068

4. Remove the oil seal, using the following SST.
SST: 09520-00010-000

NOTE:

- Never reuse the oil seal.

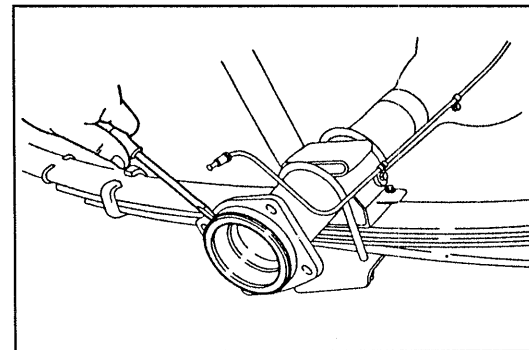


WRU90-RS069

5. Remove the oil seal, using a screwdriver or the like.

NOTE:

- Never reuse the gasket.



WRU90-RS070

DISASSEMBLY

1. Grind off the retainer, using a hand grinder.

WARNING:
Observe the operating instructions of the hand grinder.
Also, be sure to wear goggles during the grinding.

NOTE:

- Do not grind the rear axle shaft.

2. Split the retainer with a chisel.

WARNING:
Be sure to wear a pair of gloves and goggles during the operation.

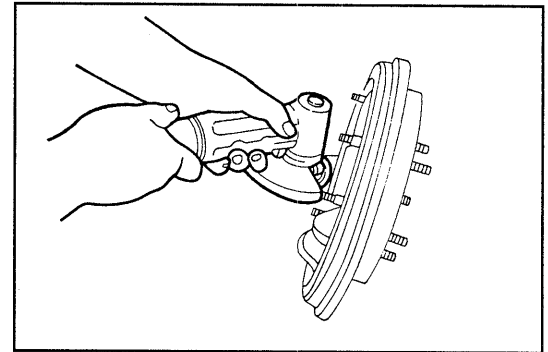
3. Remove the retainer and bearing, using the following SSTs in combination with a socket wrench.

SST: 09520-87603-000

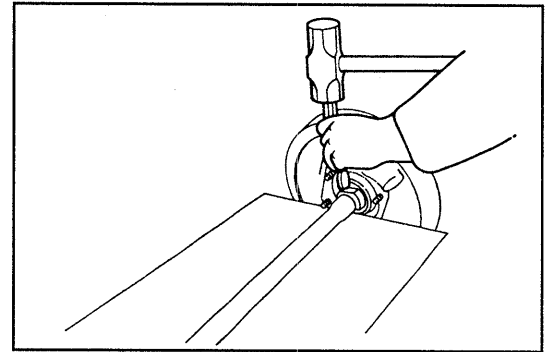
SST: 09956-00010-000

4. Remove the backing plate from the rear axle shaft.

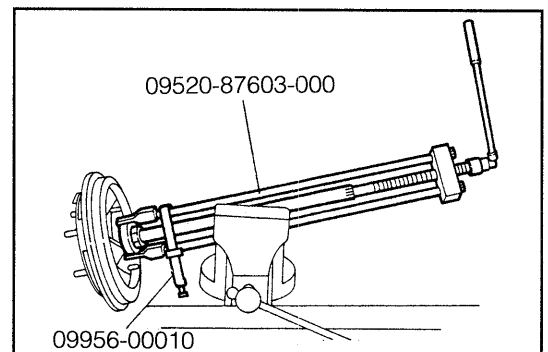
5. Remove the shim from the backing plate.



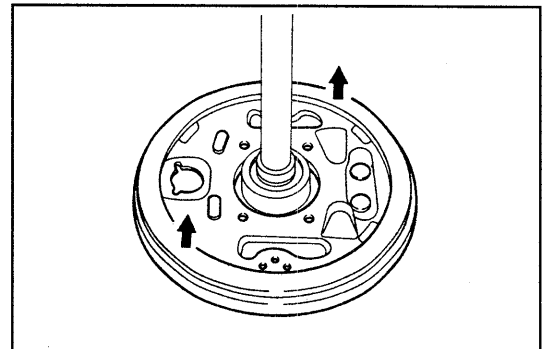
WRU90-RS071



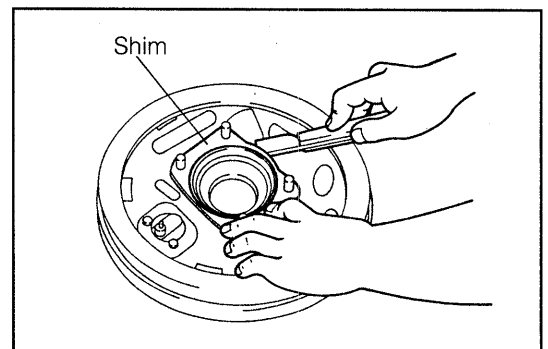
WRU90-RS072



WRU90-RS073



WRU90-RS074



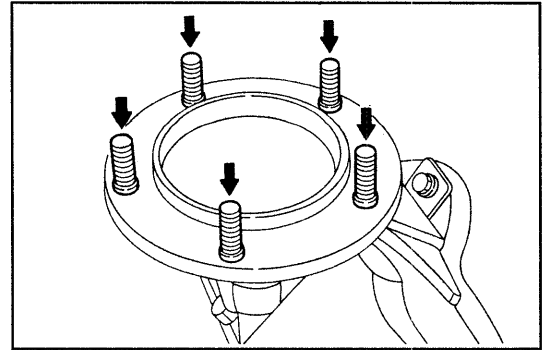
WRU90-RS075

REAR AXLE & SUSPENSION

6. Drive off the hub bolt from the rear axle shaft with a plastic hammer or the like.

NOTE:

- Be very careful not to damage the screw section.

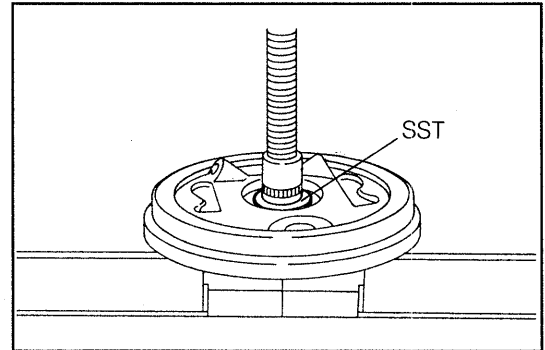


7. Remove the oil seal from the backing plate using the following SST in combination with a hydraulic press.

SST: 09608-87604-000

NOTE:

- Be sure to use the flat surface of the SST.



INSPECTION

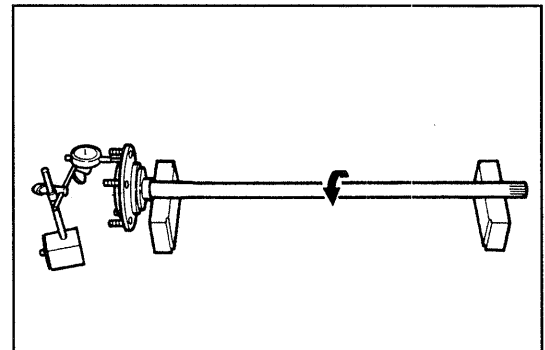
1. Rear axle shaft

- 1) Place the rear axle shaft on a "V" block. Ensure that the runout at the flange end surface is within the allowable limit.

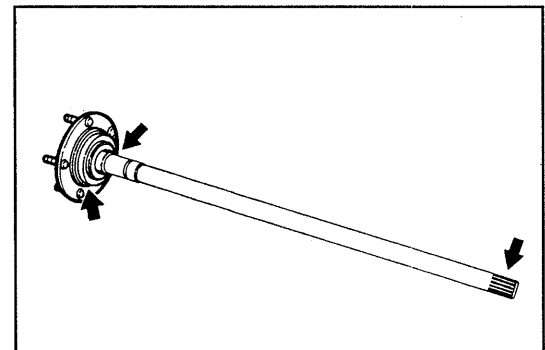
Maximum Allowable Runout: 0.15 mm (0.0059 inch)

NOTE:

- This maximum allowable runout does not include the runout caused by roughness on the flange surface.
- If the flange surface exhibits roughness, finish the surface with abrasive paper or the like.



- 2) Ensure that the rear axle shaft spline section exhibits no damage, such as cracks and wear. If any damage exists, replace the rear axle shaft.
- 3) Ensure that the oil seal contact surface of the rear axle shaft exhibits no damage, such as cracks, scores and/or rust. If any damage exists, replace the rear axle shaft.
- 4) Ensure that the oil deflector exhibits no damage, such as deformation. If any damage exists, replace the rear axle shaft.



2. Backing plate
Ensure that the backing plate exhibits no damage such as cracks, scores, rust and deformation.
If any damage exists, replace the backing plate.

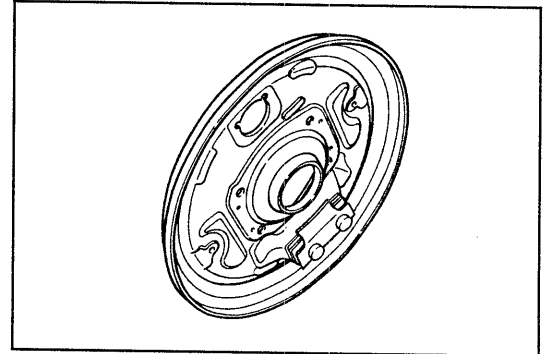
ASSEMBLY

1. Pack the back side of the lip section of the oil seal with specified amount of lithium-based MP grease.
Specified Amount: 5 grams (0.18 oz)
Specified Grease: Lithium-based MP grease
2. Apply a thin film of lithium-based MP grease to the lip surface of the oil seal.
3. Drive the oil seal from the brake shoe attaching surface of the backing plate up to the wheel end surface of the backing plate, using the following SST.
SST: 09608-87606-000
09611-87506-000

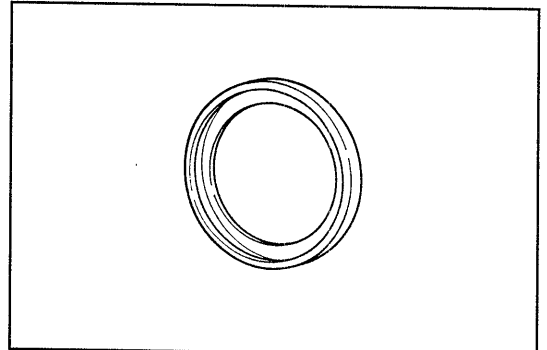
NOTE:

- At this time, the oil seal should be installed in such a direction that the rear axle bearing attaching surface comes at the inner side.
- Be very careful not to allow the oil seal to tilt.
- Install the oil seal so that its surface may come at the brake shoe side.

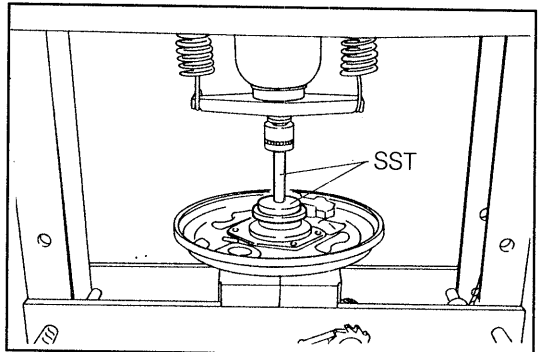
4. Drive the serration bolt into the backing plate with the cut-out section of the serration bolt aligned with the backing plate.



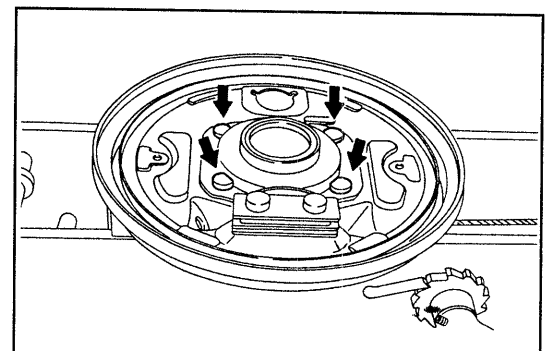
WRU90-RS080



WRU90-RS081



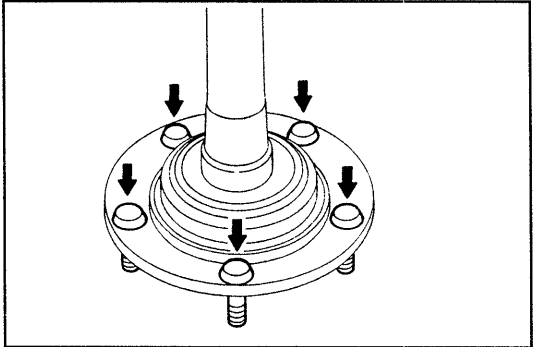
WRU90-RS082



WRU90-RS083

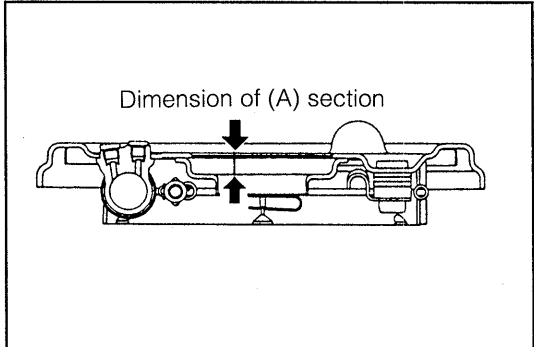
REAR AXLE & SUSPENSION

5. Drive the hub bolt into the rear axle shaft with the cut-out section of the hub bolt aligned to the rear axle shaft.



WRU90-RS084

6. Selection of shim
1) Measure the dimension A of the backing plate at four points which are diagonally opposite with each other.

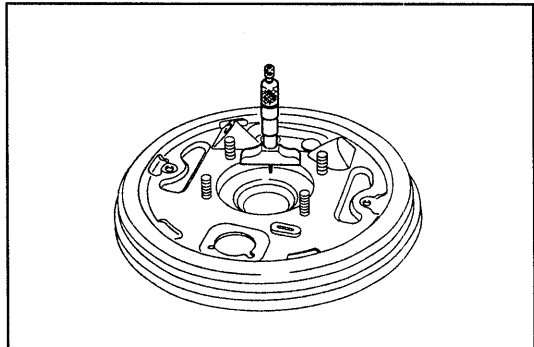


WRU90-RS085

2) Calculate the mean value of the measured four dimensions. Select a shim which corresponds to the calculated value, referring to the table below.

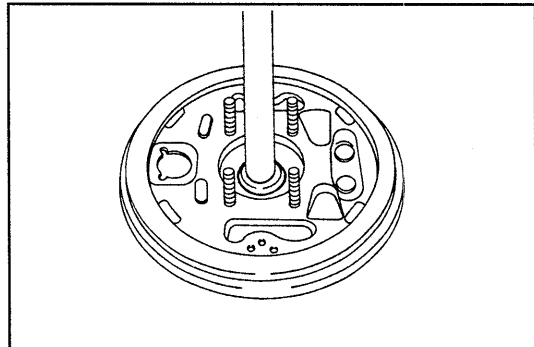
Dimension A of backing plate	Suitable thickness of adjusting shim
14.4 - 14.65 (0.567 - 0.576)	0.50 (0.020)
14.66 - 14.90 (0.577 - 0.587)	0.25 (0.0098)

mm (inch)



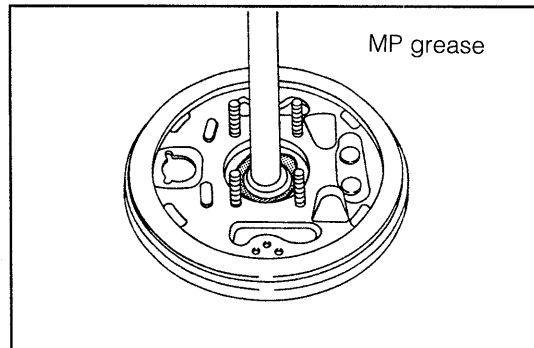
WRU90-RS086

7. Install the backing plate to the rear axle shaft.
NOTE:
• Be very careful not to damage the oil seal during the installation.



WRU90-RS087

8. Pack the back surface of the oil seal with 5 grams (0.18 oz) of lithium-based MP grease.

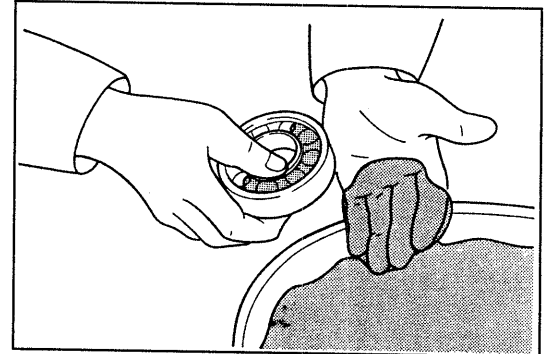


WRU90-RS088

9. Pack the rear axle bearing with lithium-based MP grease.

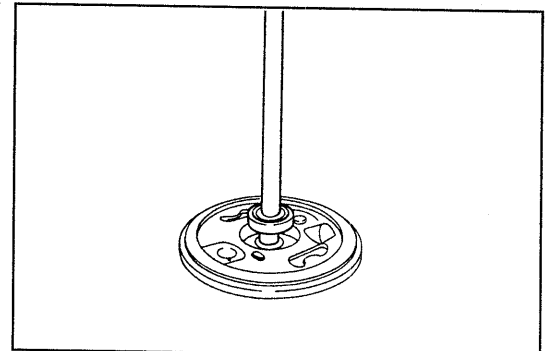
NOTE:

- Grease should not be applied only to the surface. After packing the bearing with grease, apply grease also to the surface.



WRU90-RS089

10. Install the rear axle bearing to the rear axle shaft.



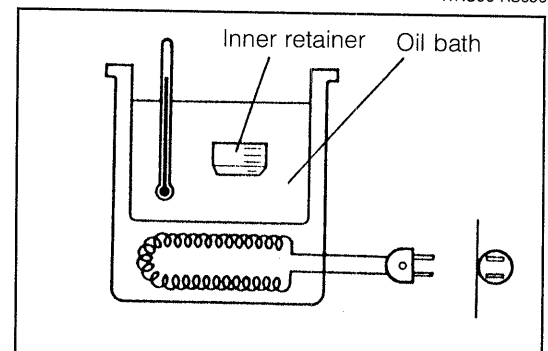
WRU90-RS090

11. Installation of rear axle bearing retainer

NOTE:

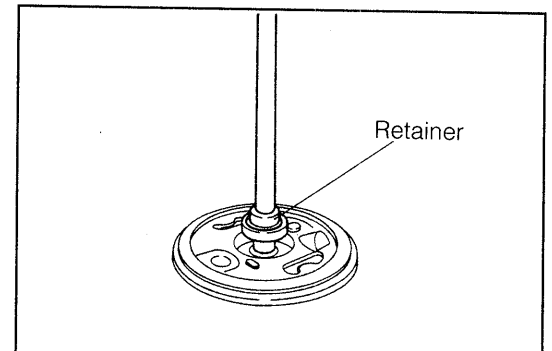
- Perform this operation promptly before the retainer temperature drops.

- 1) Heat the retainer to about $150 \pm 15^{\circ}\text{C}$ ($302 \pm 27^{\circ}\text{F}$).



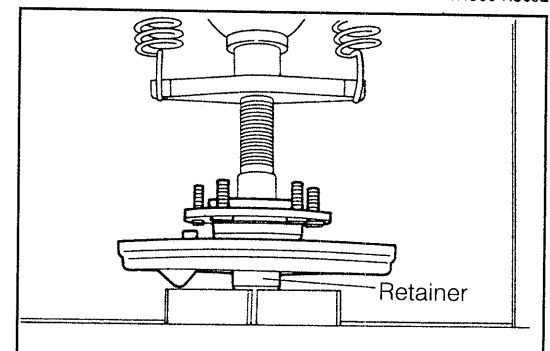
WRU90-RS091

- 2) Install the retainer to the rear axle shaft.



WRU90-RS092

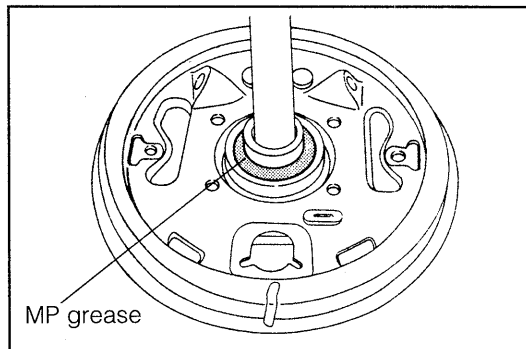
- 3) Press the retainer into the rear axle shaft, using a hydraulic press.



WRU90-RS093

REAR AXLE & SUSPENSION

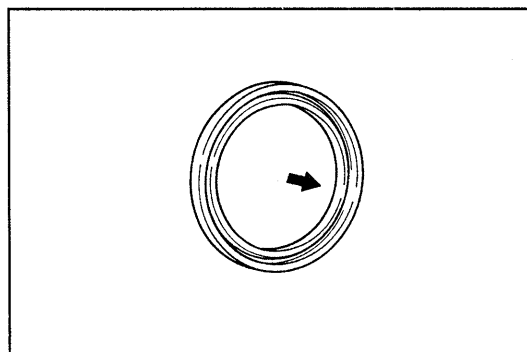
12. Apply 5 grams (0.18 oz) of lithium-based MP grease between the retainer and the bearing.



WRU90-RS094

INSTALLATION

1. Apply lithium-based MP grease to the lip section of the oil seal.



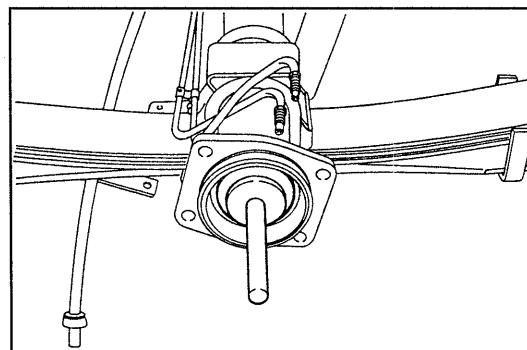
WRU90-RS095

2. Press the oil seal into the rear axle housing, using the following SSTs.

SST: 09608-87606-000
09611-87506-000

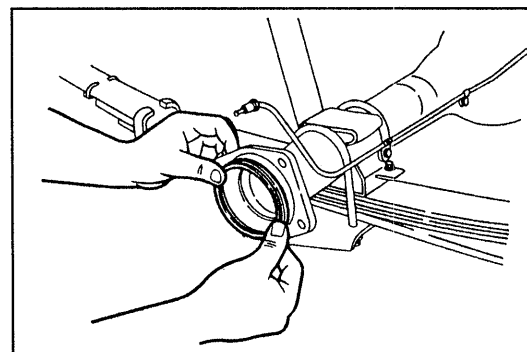
NOTE:

- Care must be exercised not to allow the oil seal to be tilted.
- The oil seal should be installed in such a way that the surface comes at the wheel side.



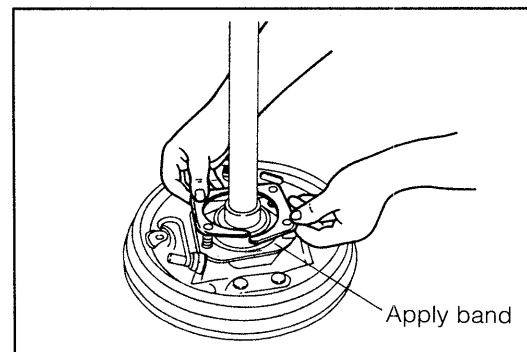
WRU90-RS096

3. Install the gasket to the rear axle housing.



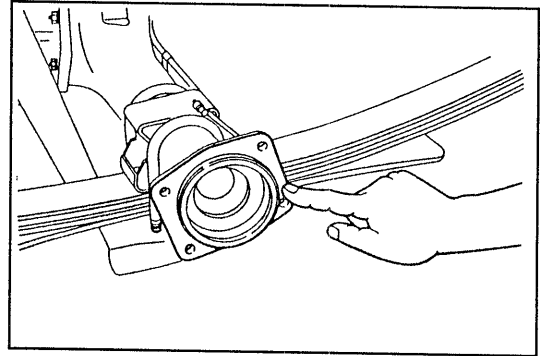
WRU90-RS097

4. Apply a thin film of Three Bond 1104® to the shim contact surface of the backing plate. Install the selected shim (at page RS-28) to the backing plate.



WRU90-RS098

5. Apply a thin film of Three Bond 1104® to the backing plate installing surface of the axle housing.

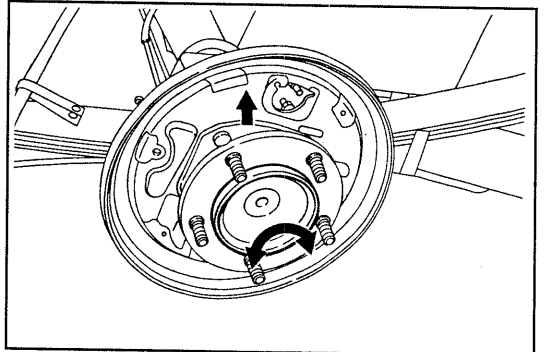


WRU90-RS099

6. Insert the rear axle shaft into the rear axle housing. Install the backing plate to the rear axle in such a way that the attaching bolt of the backing plate is aligned with the attaching hole of the rear axle housing and that the wheel cylinder installing hole of the backing plate comes at the upper side.

NOTE:

- 1) Turn the axle shaft so that the spline at the differential side may engage with the spline at the axle shaft side.
- 2) Be very careful not to damage the oil seals.

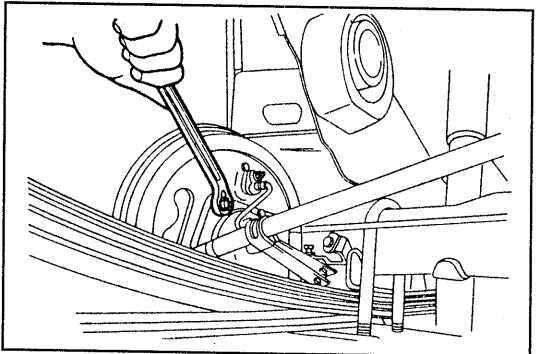


WRU90-RS100

7. Attach the backing plate attaching nuts and tighten them to the specified torque evenly over two or three stages.

Tightening Torque:

4.0 - 5.5 kgf-m (28.9 - 39.8 ft-lb, 39.2 - 53.9 N·m)



WRU90-RS101

8. Install the rear brake.
(For details, see the Brake section.)

WRU90-RS102