REAR SUSPENSION

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E34AA--

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SPECIFICATIONS

GENERAL SPECIFICATIONS

E34CA--

Items	SPACE RUNNER	SPACE WAGON
Suspension system	Semi-trailing arm type	Semi-trailing arm type
Coil spring		
<2WD>		
Wire dia. × I.D. × free length mm (in.)	14.2 × 114.2 × 242.5 (0.559 × 4.496 × 9.547)	15.2 × 115.2 × 263.5 (0.603 × 4.535 × 10,374)
Coil spring identification colour	Red × 2	Light blue × 2
Spring constant N/mm (kg/mm, lbs./in.)	67 (6.7, 375)	67–80 (6.7–8.0, 375–448)
<4WD>		
Wire dia × I.D. × free length mm (in.)	14.5 × 114.5 × 257.0 (0.570 × 4.508 × 10.118)	15.5 × 115.5 × 278.5 (0.610 × 4.547 × 10.965)
Coil spring identification colour	Pink × 3	Light blue × 1
Spring constant N/mm (kg/mm, lbs./in.)	67 (6.7, 375)	67–80 (6.7–8.0, 375–448)
Shock absorber		
Type	Hydraulic, cylindrical, double-acting type	Hydraulic, cylindrical, double-acting type
Max. length mm (in.)	612 (24.1)	612 (24.1)
Min. length mm (in.)	394 (15.5)	384 (15.1)
Stroke mm (in.)	218 (8.6)	228 (9.0)
Damping force [at 0.3 m/sec. (0.984 ft./sec.)]		
Expansion N (kg, lbs.)	800 (80, 176)	800 (80, 176)
Contraction N (kg, lbs.)	300 (30, 66)	300 (30, 66)

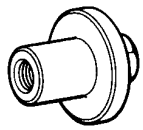
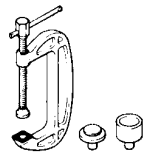
SERVICE SPECIFICATIONS

E34CB--

Items	Specifications
Standard value	
Toe-in	
At the centre of tyre tread mm (in.)	2^{+3}_{-2} ($0.08^{+0.12}_{-0.08}$)
Toe angle (per wheel)	$0°6'^{+9'}_{-6'}$
Camber	$-30' \pm 30'$
Distance between the stabilizer bar mounting nut and the end of the bolt mm (in.)	25–27 (0.98–1.06)

SPECIAL TOOLS

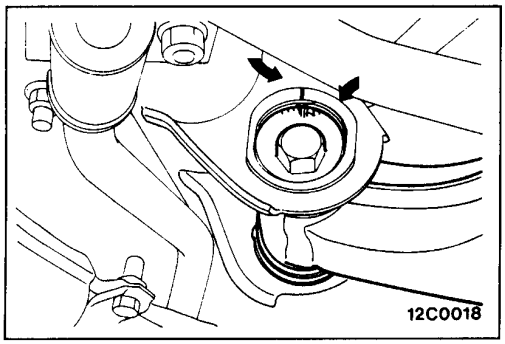
E34DA--

Tool	Number	Name	Use
	MB991004	Wheel alignment gauge attachment	Measurement of the wheel alignment (Vehicles with aluminium type wheels)
	MB991318	Lower arm bushing arbor	Removal and press-fitting of suspension crossmember bushing
	MB990840	Universal joint remover & installer	

SERVICE ADJUSTMENT PROCEDURES
E34FAAP

REAR WHEEL ALIGNMENT INSPECTION AND ADJUSTMENT

Measure the wheel alignment with the vehicle parked on level ground.
The rear suspension and wheels should be serviced to the normal condition prior to measurement of wheel alignment.

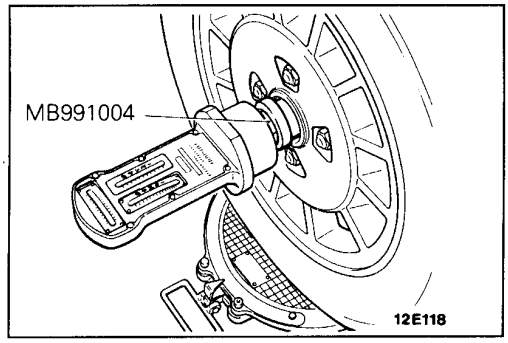


TOE-IN

Carry out adjustment by turning the mounting bolts inside the lower arm to the left and right by the same amounts.
LH: Turning clockwise →toe-out direction
RH: Turning clockwise →toe-in direction
Toe adjustment can be altered by approximately 2 mm (0.08 in.) for every scale gradation.

Standard value:

At the centre of tyre tread	**2^{+3}_{-2} mm ($0.08^{+0.12}_{-0.08}$ in.)**
Toe angle (per wheel)	**$0°6'^{+9'}_{-6'}$**



CAMBER

Standard value: –30′±30′

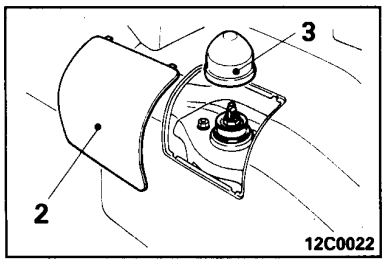
NOTE
1. Camber and caster are pre-set at the factory and cannot be adjusted.
2. If camber is not within the standard value, check and replace bent or damaged parts.
3. For vehicles with aluminium type wheels, attach the camber/caster/kingpin gauge to the drive shaft by using the special tool. Tighten the special tool to the same torque [200–260 Nm (20–26 kgm, 145–188 ft.lbs.)] as the drive shaft nut.

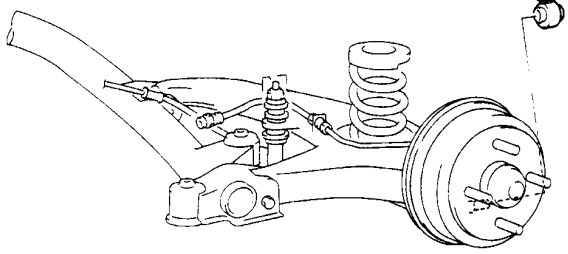
Caution
Never subject the wheel bearings to the full vehicle load when the drive shaft nuts are loosened.

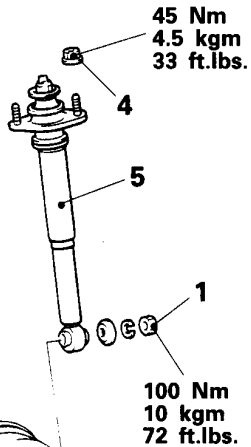
SHOCK ABSORBER ASSEMBLY

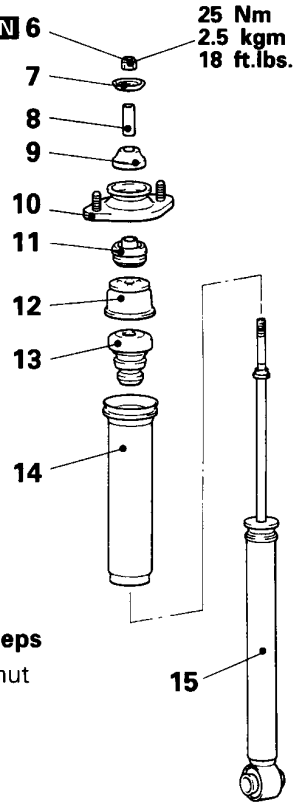
E34MA–

REMOVAL AND INSTALLATION, DISASSEMBLY AND REASSEMBLY







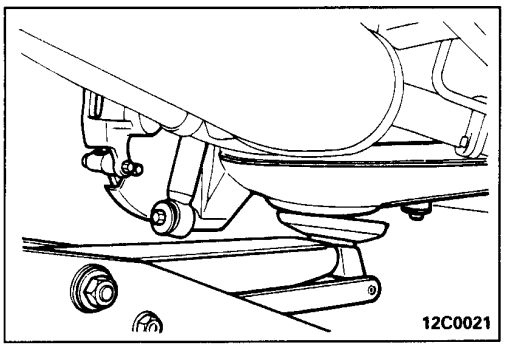


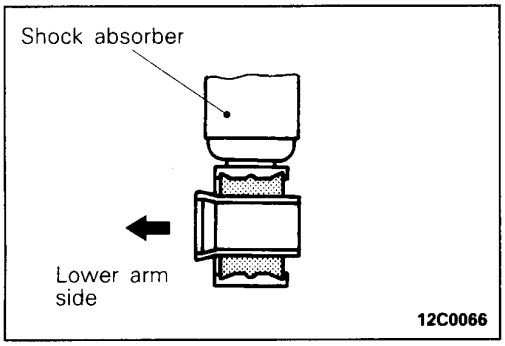
Removal steps

◆◆ 1. Nut
2. Lid (A)
3. Cap
4. Nut
◆◆ 5. Shock absorber assembly

Disassembly steps

6. Self-locking nut
7. Washer
8. Collar
9. Bushing
10. Bracket
11. Bushing
12. Cup assembly
13. Bump stopper
14. Dust cover
15. Shock absorber





SERVICE POINTS OF REMOVAL

E34MBAE

1. REMOVAL OF NUT

Support the lower arm with a garage jack, and after compressing the coil spring, remove the nut.

INSPECTION

E34MGAF

- Check the rubber parts for cracks and wear.
- Check the shock absorber for malfunctions, oil leakage or abnormal noise.

SERVICE POINTS OF INSTALLATION

E34MDAB

5. INSTALLATION OF SHOCK ABSORBER ASSEMBLY

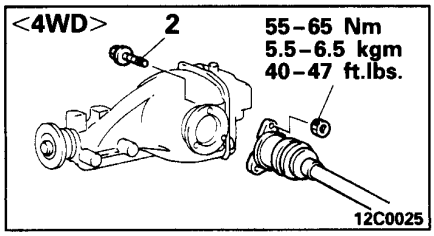
Install the shock absorber to the lower arm so that the lower end of the shock absorber faces in the direction shown in the illustration.

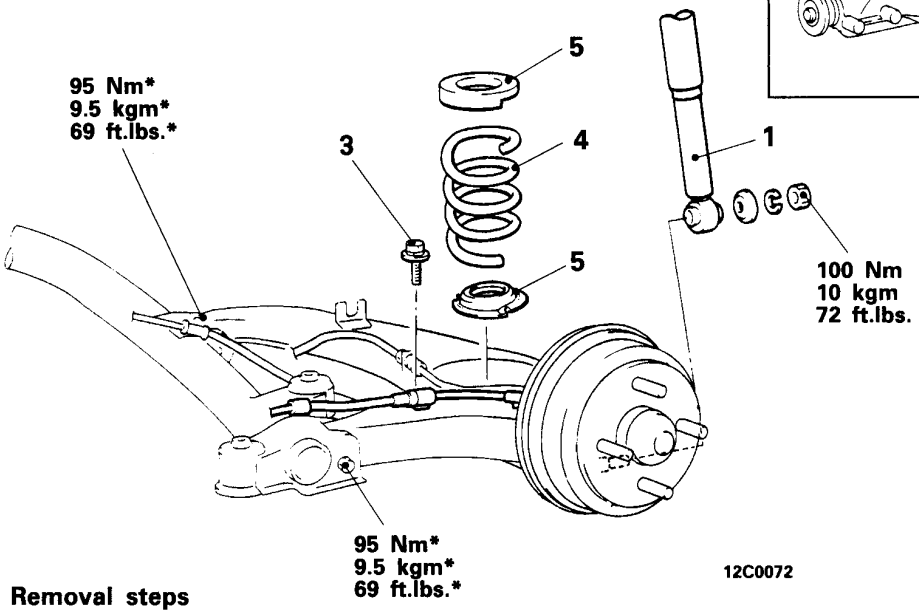
REAR SPRING

E34PA--

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Removal and installation of Stabilizer Bar (Refer to P.34-15.)

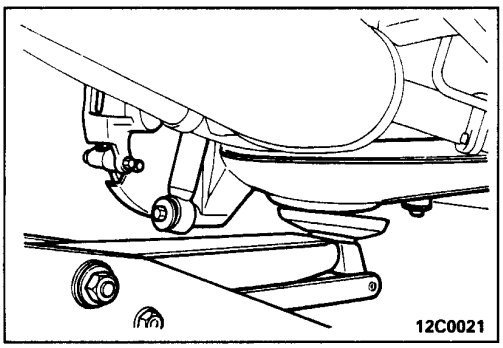




Removal steps

◆◆ 1. Shock absorber
◆◆ 2. Bolt <4WD>
3. Speed sensor clamp bolt <Vehicles with ABS>
◆◆ ◆◆ 4. Coil spring
5. Spring seat

NOTE
*Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle in the unladen condition.

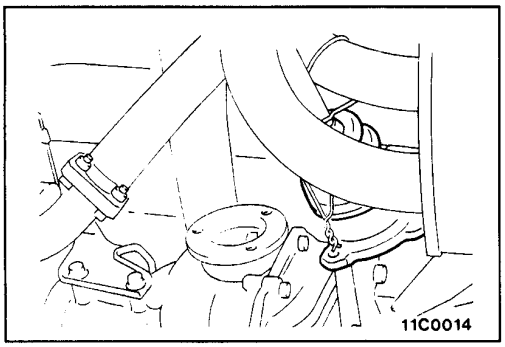


SERVICE POINTS OF REMOVAL

E34PBAC

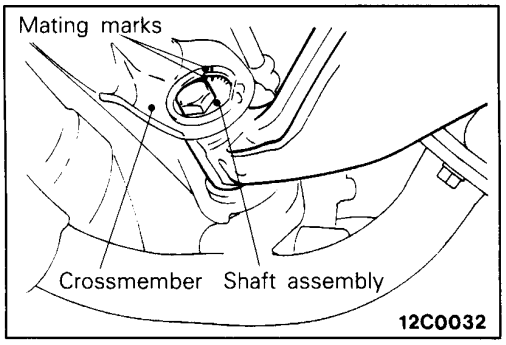
1. REMOVAL OF SHOCK ABSORBER

Support the lower arm with a jack, and then remove the shock absorber from the lower arm.



2. REMOVAL OF BOLT <4WD>

Remove the bolt, and hang the drive shaft from the vehicle body with wire, etc.



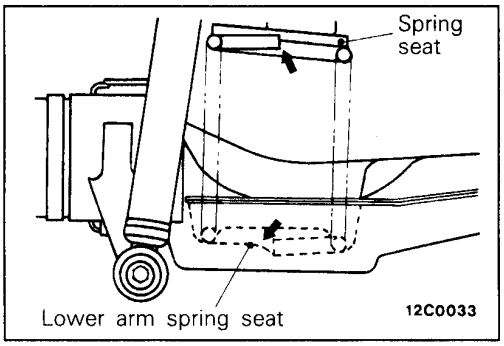
4. REMOVAL OF COIL SPRING

After making mating marks on the lower arm shaft assembly and the crossmember, loosen the shaft assembly nut and lower the rear end of the lower arm to remove the coil spring.

NOTE
It is not necessary to remove the nut, only to loosen it.

INSPECTION E34PCAA

- Check the coil springs for crack, damage or deterioration.
- Check the spring seats for cracks and wear.



SERVICE POINTS OF INSTALLATION

4. INSTALLATION OF COIL SPRING

Install the coil spring so that both ends are correctly aligned with the spring seat groove.

LOWER ARM

E34LA-1

REMOVAL AND INSTALLATION

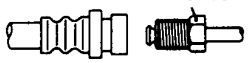
<2WD>

Pre-removal Operation
- Removal of Stabilizer Bar (Refer to P.34-15.)

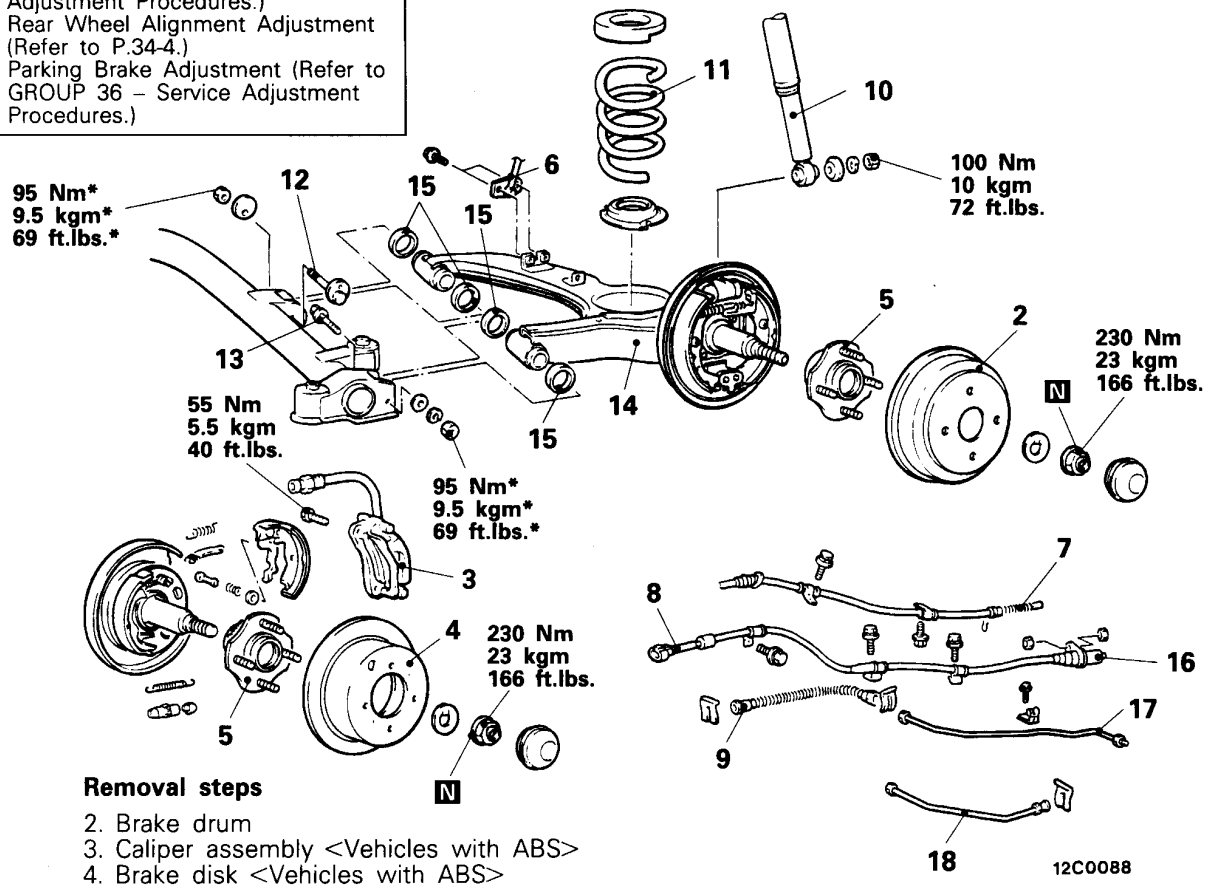
Post-installation Operation
- Installation of Stabilizer Bar (Refer to P.34-15.)
- Air Bleeding of Brake Lines (Refer to GROUP 35 – Service Adjustment Procedures.)
- Rear Wheel Alignment Adjustment (Refer to P.34-4.)
- Parking Brake Adjustment (Refer to GROUP 36 – Service Adjustment Procedures.)

Brake Pipe Flare Nut

15 Nm
1.5 kgm
11 ft.lbs.



14F038



Removal steps

2. Brake drum
3. Caliper assembly <Vehicles with ABS>
4. Brake disk <Vehicles with ABS>
5. Hub assembly
6. Link bracket <SPACE WAGON>
7. Connection for parking brake cable and brake shoe
   (Refer to GROUP 36 – Parking Brake.)
8. Rear sensor connector <Vehicles with ABS>
9. Brake hose
10. Shock absorber
11. Coil spring
12. Shaft assembly
13. Flange bolt
14. Lower arm assembly
15. Stopper
16. Rear speed sensor <Vehicles with ABS>
17. Brake pipe
18. Brake pipe <Vehicles with ABS>

NOTE
*Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle in the unladen condition.

Caution
(1) For vehicles with ABS, be careful not to damage the rotor teeth when removing the hub assembly.
(2) For vehicles with ABS, when removing the speed sensor, be careful that the end of the pole piece does not touch any other component.

<4WD>

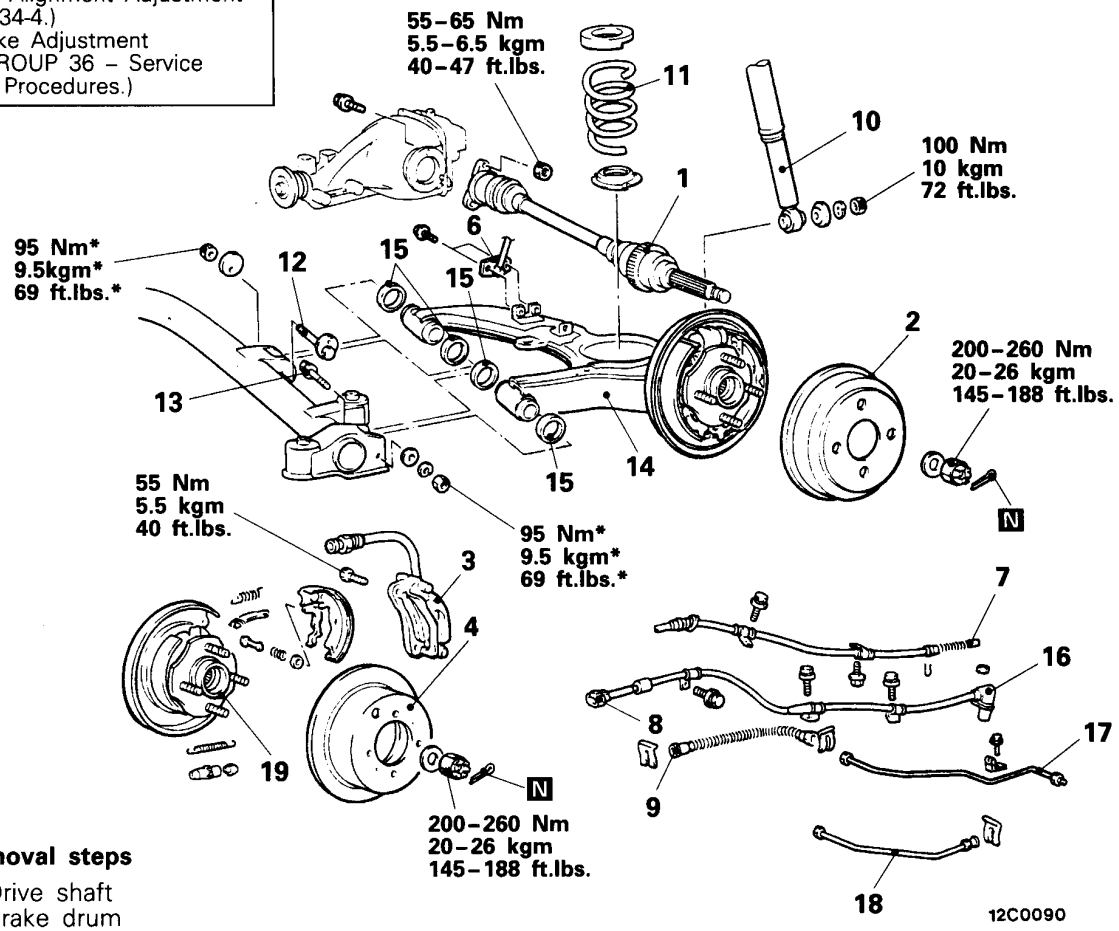
Pre-removal Operation
- Removal of Stabilizer Bar (Refer to P.34-15.)

Post-installation Operation
- Installation of Stabilizer Bar (Refer to P.34-15.)
- Air Bleeding of Brake Lines (Refer to GROUP 35 – Service Adjustment Procedures.)
- Rear Wheel Alignment Adjustment (Refer to P.34-4.)
- Parking Brake Adjustment (Refer to GROUP 36 – Service Adjustment Procedures.)

Brake Pipe Flare Nut E34LA-2

15 Nm
1.5 kgm
11 ft.lbs.

14F038

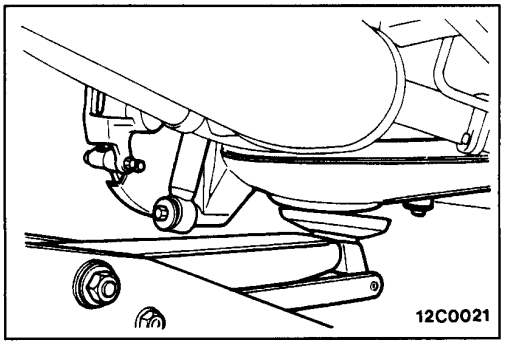


Removal steps

1. Drive shaft
2. Brake drum
3. Caliper assembly <Vehicles with ABS>
4. Brake disk <Vehicles with ABS>
6. Link bracket <SPACE WAGON>
7. Connection for parking brake cable and brake shoe (Refer to GROUP 36 – Parking Brake.)
8. Rear sensor connector <Vehicles with ABS>
9. Brake hose
10. Shock absorber
11. Coil spring
12. Shaft assembly
13. Flange bolt
14. Lower arm assembly
15. Stopper
16. Rear speed sensor <Vehicles with ABS>
17. Brake pipe
18. Brake pipe <Vehicles with ABS>
19. Hub assembly

NOTE
*Indicates parts which should be temporarily tightened, and then fully tightened with the vehicles in the unladen condition.

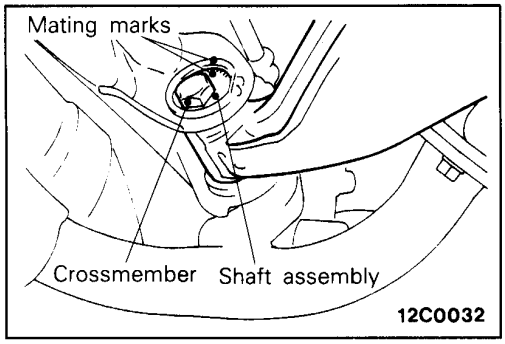
Caution
(1) For vehicles with ABS, be careful not to damage the rotor teeth when removing the drive shaft.
(2) For vehicles with ABS, when removing the speed sensor, be careful that the end of the pole piece does not touch any other component.



SERVICE POINTS OF REMOVAL E34LBAB

10. REMOVAL OF SHOCK ABSORBER AND LOWER ARM

Support the lower arm with a jack, and then remove the shock absorber from the lower arm.



11. REMOVAL OF COIL SPRING

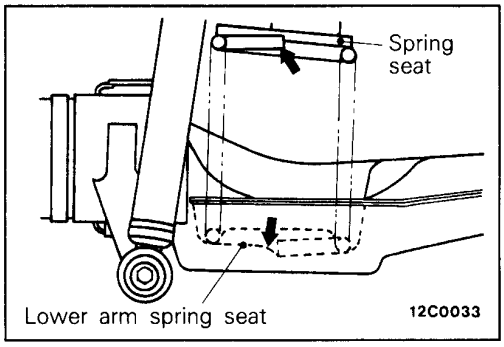
(1) Before removing the coil spring, make mating marks on the lower arm shaft assembly and the crossmember.
(2) Loosen the lower arm mounting nut and remove the coil spring.

19. REMOVAL OF HUB ASSEMBLY <4WD>

Do not carry out removal of the hub assembly except when replacing the bearing. (Refer to GROUP 27 – Rear Axle Hub.)

INSPECTION E34LCAB

- Check the lower arm for deformation and deterioration.
- Check all bolts for condition and straightness.
- Check the spring seats for cracks and wear.



SERVICE POINTS OF INSTALLATION E34LDAB

11. INSTALLATION OF COIL SPRING

Install the coil spring so that both ends are correctly aligned with the spring seat groove, and then provisionally tighten the lower arm mounting nut.

SUSPENSION CROSSMEMBER

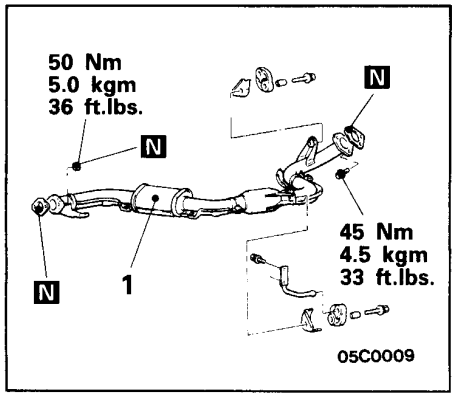
E34RA--1

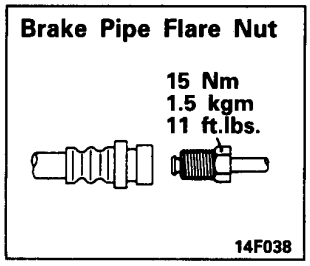
REMOVAL AND INSTALLATION

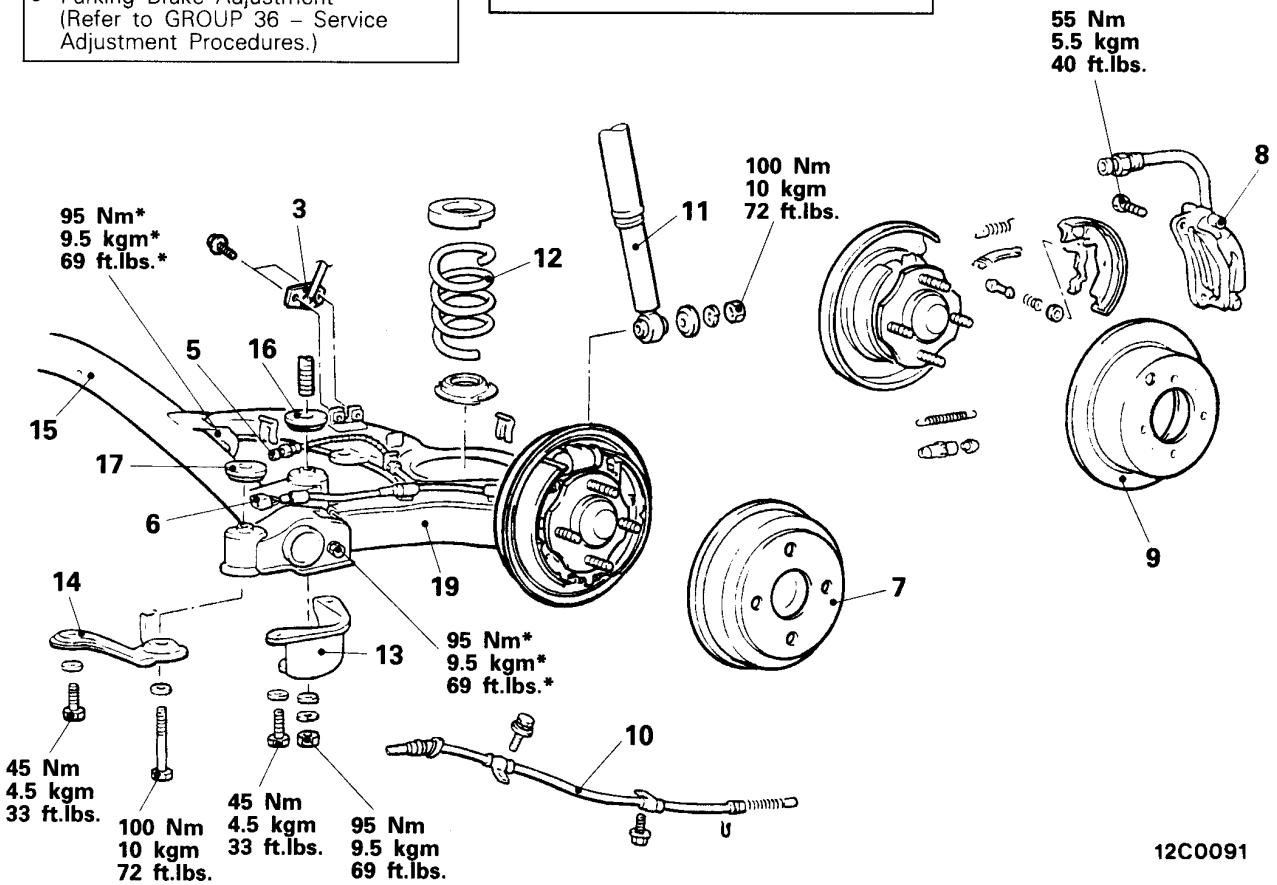
<2WD>

Pre-removal Operation
- Removal of Stabilizer Bar (Refer to P.34-15.)

Post-installation Operation
- Installation of Stabilizer Bar (Refer to P.34-15.)
- Air Bleeding of Brake Lines (Refer to GROUP 35 – Service Adjustment Procedures.)
- Rear Wheel Alignment Adjustment (Refer to P.34-4.)
- Parking Brake Adjustment (Refer to GROUP 36 – Service Adjustment Procedures.)







Removal steps

◆◆ ● Lift supporting point
1. Center exhaust pipe
3. Link bracket <SPACE WAGON>
4. Brake hose
6. Rear sensor connector <Vehicles with ABS>
7. Brake drum
8. Caliper assembly <Vehicles with ABS>
9. Brake disk <Vehicles with ABS>
10. Parking brake cable (Refer to GROUP 36 – Parking Brake.)

◆◆ 11. Shock absorber
◆◆ ▶◀ 12. Coil spring
13. Crossmember bracket
14. Lower stopper
15. Suspension crossmember assembly
16. Upper stopper
17. Upper stopper
19. Lower arm assembly

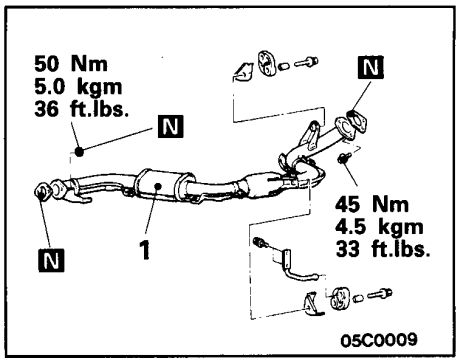
NOTE
*Indicates parts which should be temporarily tightened, and then fully tightened with the vehicles in the unladen condition.

<4WD>

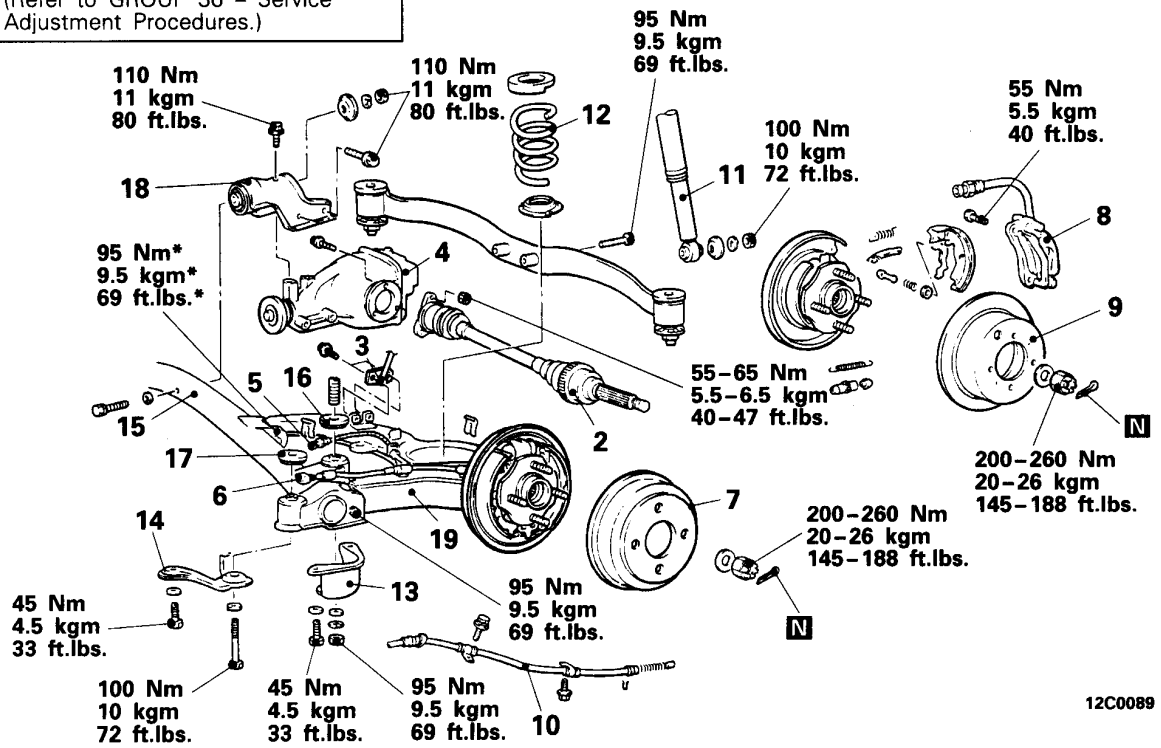
E34RA-2

Pre-removal Operation
- Removal of Propeller Shaft (Refer to GROUP 25 – Propeller Shaft.)
- Removal of Stabilizer Bar (Refer to P. 34-15.)

Post-installation Operation
- Installation of Stabilizer Bar (Refer to P. 34-15.)
- Installation of Propeller Shaft (Refer to GROUP 25 – Propeller Shaft.)
- Air Bleeding of Brake Lines (Refer to GROUP 35 – Service Adjustment Procedures.)
- Rear Wheel Alignment Adjustment (Refer to P. 34-4.)
- Parking Brake Adjustment (Refer to GROUP 36 – Service Adjustment Procedures.)



Brake Pipe Flare Nut
15 Nm
1.5 kgm
11 ft.lbs.



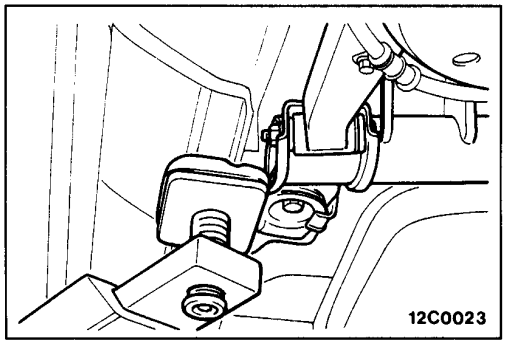
Removal steps

◀■▶ ● Lift supporting point
1. Center exhaust pipe
2. Drive shaft
3. Link bracket <SPACE WAGON>
4. Differential carrier
5. Brake hose
6. Rear sensor connector <Vehicles with ABS>
7. Brake drum
8. Caliper assembly <Vehicles with ABS>
9. Brake disk <Vehicles with ABS>
10. Parking brake cable (Refer to GROUP 36 – Parking Brake.)

◀■▶ 11. Shock absorber
◀■▶ ■▶◀ 12. Coil spring
13. Crossmember bracket
14. Lower stopper
15. Suspension crossmember assembly
16. Upper stopper
17. Upper stopper
18. Bracket assembly
19. Lower arm assembly

Caution
For vehicles with ABS, be careful not to damage the rotor teeth when removing the drive shaft.

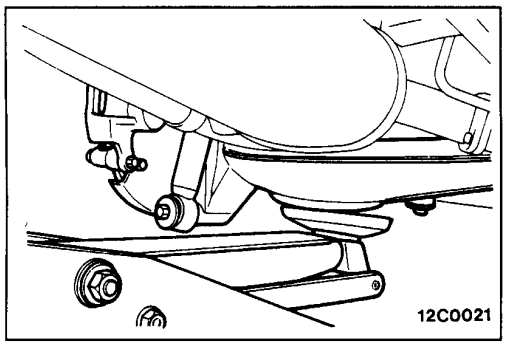
NOTE
*Indicates parts which should be temporarily tightened, and then fully tightened with the vehicles in the unladen condition.



SERVICE POINTS OF REMOVAL E34RBAA

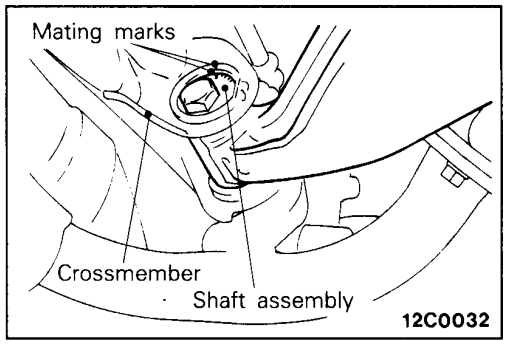
- **LIFT SUPPORTING POINT**

When lowering the suspension crossmember, place the lift arm slightly away from the outside of the vehicle so that it will not be in the way.



11. REMOVAL OF SHOCK ABSORBER

Support the lower arm with a jack, and then remove the shock absorber from the lower arm.

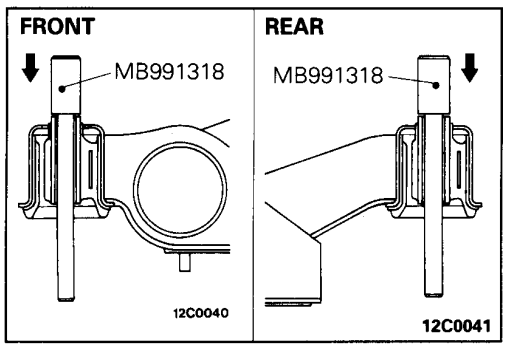


12. REMOVAL OF COIL SPRING

(1) Before removing the coil spring, make mating marks on the lower arm shaft assembly and the crossmember.
(2) Loosen the lower arm mounting nut and remove the coil spring.

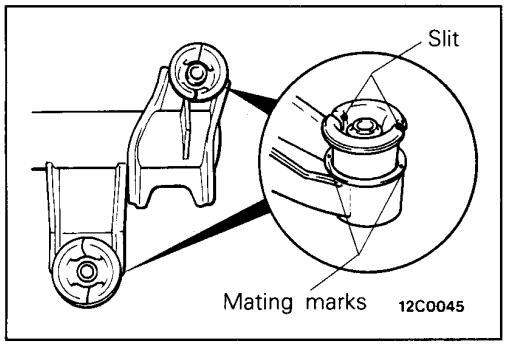
INSPECTION E34RCAA

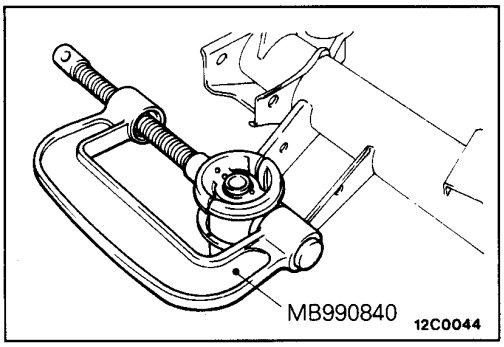
- Check the crossmember for cracks or deformation.



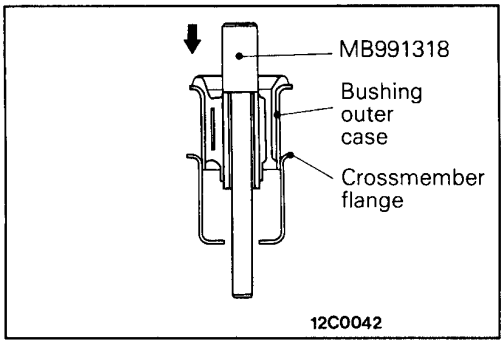
SUSPENSION CROSSMEMBER BUSHING REPLACEMENT E34RDAA

(1) Make a mark on the crossmember bracket to match the slits on the old bushing, and use these marks to position the new bushing.
(2) Insert a flat-tipped screwdriver between the old bushing and the crossmember bracket, and lever around the bushing to break the seal.
(3) Use the special tool to tap out the bushing from the crossmember bracket.
(4) Align the slits on the new bushing with the mating marks on the crossmember bracket.

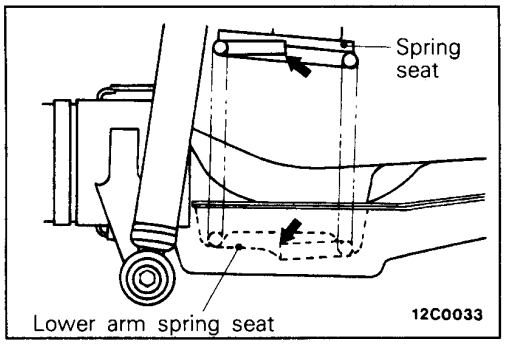




(5) Use the special tool to reduce the size of the rear end of the bushing.



(6) Use the special tool to press-fit the bushing until the outside case of the bushing is fitting securely in the crossmember flange.



SERVICE POINTS OF INSTALLATION E34REAA

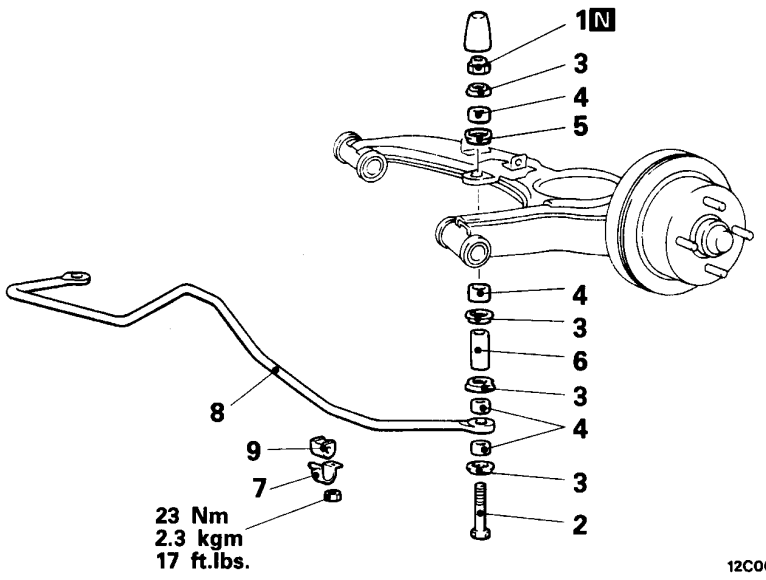
12. INSTALLATION OF COIL SPRING

Install the coil spring so that both ends are correctly aligned with the spring seat groove, and then provisionally tighten the lower arm mounting nut.

STABILIZER BAR

E34KA–

REMOVAL AND INSTALLATION



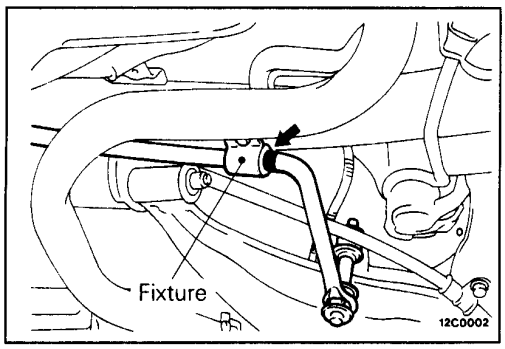
Removal steps

- ◆◆ 1. Self-locking nut
- 2. Bolt
- 3. Joint cup (A)
- 4. Stabilizer rubber
- 5. Joint cup (B)
- 6. Collar
- ◆◆ 7. Fixture
- 8. Stabilizer rubber
- 9. Bushing

INSPECTION

E34KCAD

- Check the bushing for wear and deterioration.
- Check the stabilizer bar for deterioration or damage.
- Check all bolts for condition and straightness.

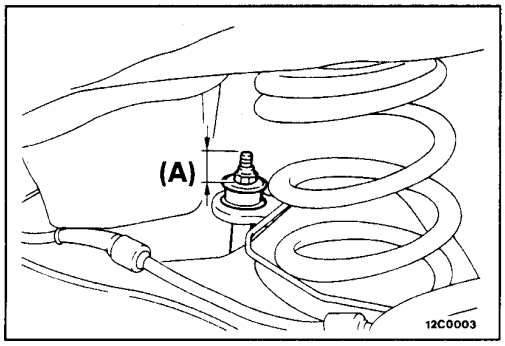


SERVICE POINTS OF INSTALLATION

E34KDAJ

7. INSTALLATION OF FIXTURE

To position the stabilizer bar, align the painted section with the fixture as shown in the illustration.



1. INSTALLATION OF SELF LOCKING NUT

Standard value (A): 25–27 mm (0.98–1.06 in.)