REAR SUSPENSION

OPERATION

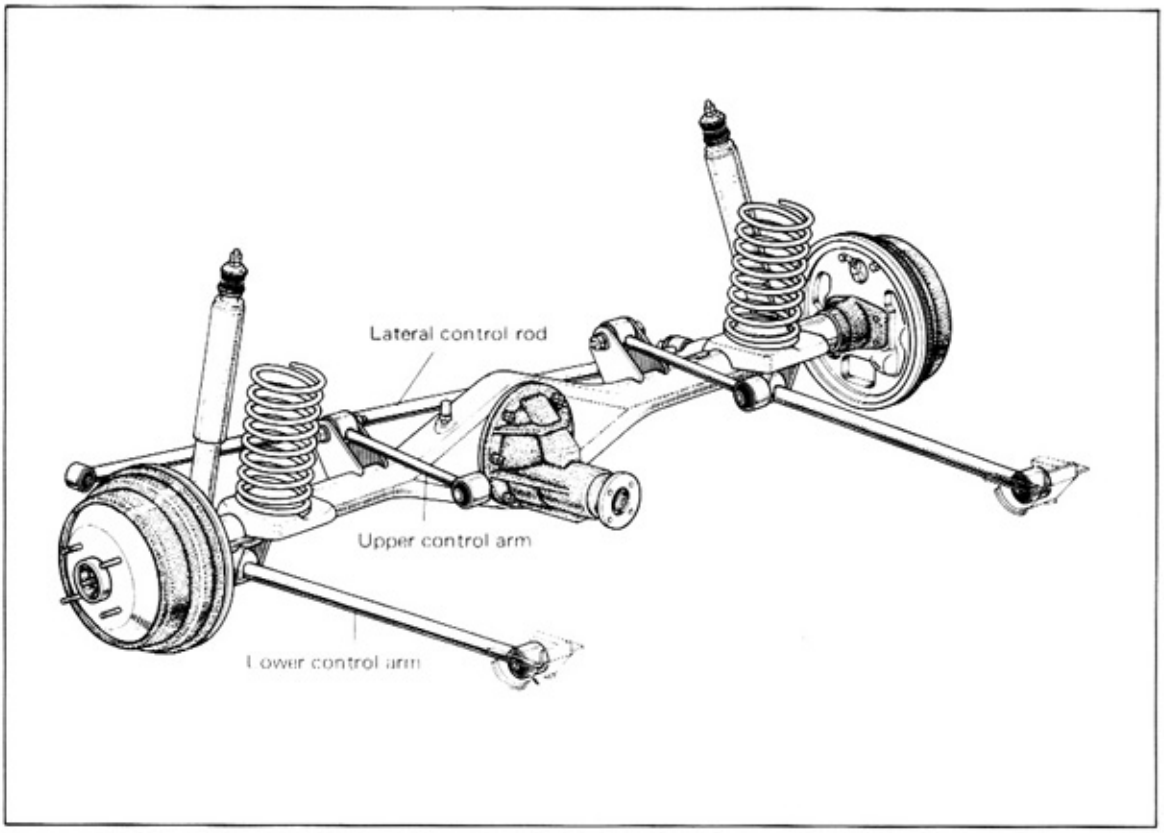


Fig. 5-1 Rear Suspension Construction

NORMALLY LOADED STATE

The lower control arms are installed horizontally while the shorter upper control arms are installed tilted slightly downward. This causes the rear axle housing to move up and down in a circular movement. As a result, the front end of differential carrier will have less upward movement at bound than the rear axle, and consequently the upward movement of the propeller shaft will also be less. The upper control arms serve to prevent the rear axle housing from turning. The lateral rod serves to control the rear axle lateral movement.

AT SUDDEN STARTING AND ACCELERATION

Due to the upper control arms being installed in slightly downward tilted state, there is less tendency for the differential carrier front end to be lifted upward.

AT CORNERING

In the centrifugal force subjected to the vehicle body, the force on the rear wheels are balanced with the road reaction through the medium of the lateral control rod. The higher location of the lateral control rod raises the roll center and thereby decreases the roll angle. The turning moment produced between the left and right coil springs is also minimized.

SPECIFICATIONS

Table 5-1 Rear Coil Spring Specifications

Vehicle Models	TA10, 12 Series	TA22 Series & RA20L-KA
Free height	378 mm (14. 9")	361 mm (14.2")
Installed height	237 mm (9.3")	237 mm (9.3")
Installed load	240 kg (529 lbs)	210 kg (463 lbs)
Load Classification	Blue (230–244 kg) (507–538 lbs)	Red (201–210 kg) (443–463 lbs)
	Green (236–250 kg) (520–551 lbs)	Yellow (210–219 kg) (463–483 lbs)

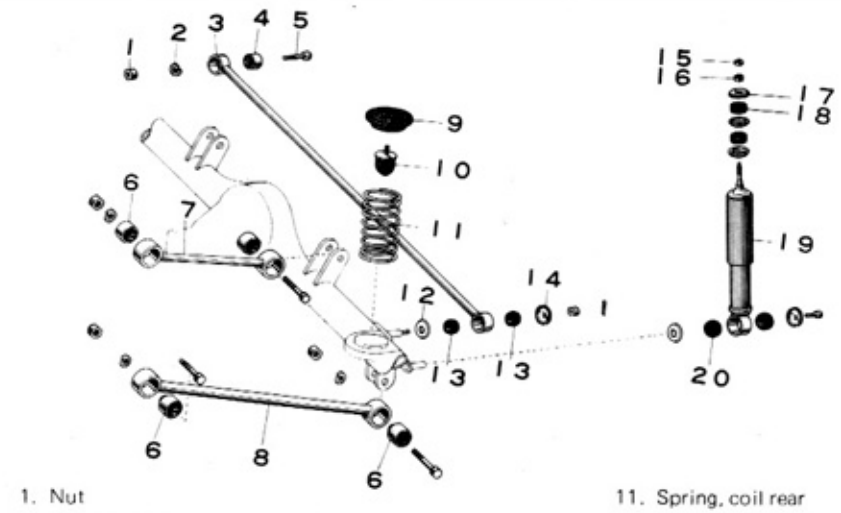
Table 5-2 Rear Shock Absorber Specifications

Models		TA10, 12 Series		TA22 Series & RA20L-KA	
Maker		Kayaba	Tokico	Kayaba	Tokico
Stroke		230 mm	(9.1")	204 mm (8.0")	209 mm (8.2")
Maximum Length		568 mm–571 mm	(22.36")–(22.48")	561 mm (22.06")	564 mm (22.20")
Minimum Length		338 mm–341 mm	(13.31")–(13.43")	357 mm–361 mm	(14.06") (14.21")
Damping Power	Rebound (kg/0.3 m/sec) (lb/ft/sec)	80 (176)		64 (141)	
	Compress (kg/0.3 m/sec) (lb/ft/sec)	34 (75)	32 (71)	30 (66)	35 (77)

TROUBLE SHOOTING

Symptom and Probable Causes	Remedies
Noise 1. Upper control arm, lower control arm, lateral rod, or shock absorber bushings squeaking. 2. Abnormal noise in shock absorber. 3. Coil spring noisy 4. Abnormal noise at start	Apply rubber grease or replace Replace Replace insulator Correct improperly installed upper and lower control arms or replace bushings.
Rear Wheel Heights Not Equal 1. Upper control arm rod and lower control arm not installed at correct locations. 2. Upper or lower control arm broken. 3. Coil spring weakened.	Adjust Replace Replace
Vehicle unstable when cornering 1. Lateral control rod not installed at correct location. 2. Lateral control rod broken or bushing defective.	Adjust Replace

REAR SHOCK ABSORBER



1. Nut
2. Washer, spring
3. Rod, lateral control
4. Bushing, lateral control rod
5. Bolt, hexagon
6. Bushing, control arm
7. Arm, upper control
8. Arm, lower control
9. Insulator, rear coil spring
10. Bumper, rear spring
11. Spring, coil rear
12. Washer, shock absorber cushion
13. Bushing
14. Washer, shock absorber cushion
15. Nut
16. Nut
17. Washer, shock absorber cushion
18. Bushing
19. Absorber, shock rear
20. Bushing

Fig. 5-2 Rear Suspension Component Parts

REMOVAL

1. Jack up the rear end of the vehicle and support the rear axle housing on stands.
2. Disconnect the bottom end of rear shock absorber.
3. Disconnect the shock absorber top end from the frame, and remove the shock absorber.

INSPECTION

Inspect to see if it functions properly, is noisy or leaking, or has worn bushings. Replace it if found defective.

INSTALLATION

Follow the removal procedures in reverse order.

Tightening torques : Upper end 190–310 kg-cm (14–22 ft-lb)

Tightening torques : Lower end 360–450 kg-cm (26–33 ft-lb)

REAR COIL SPRING

REMOVAL

1. Jack up the rear axle housing and support the frame on stands.
   Note : Leave the jack in this position.
2. Disconnect the lower ends of the shock absorbers.
3. Lower the jack until the rear axle housing is lowered fully.
4. Remove the coil spring together with its insulator.

INSPECTION

Inspect the coil spring to see if weakened, bent, or cracked, and the insulator if cracked or damaged. Replace if found defective.

INSTALLATION

Follow the removal procedures in reverse order.

LOWER CONTROL ARM

REMOVAL

1. Remove the rear coil springs. (Refer to P5-3)
2. Remove the bolt mounting the lower control arm to the rear axle housing.
3. Jack up the rear axle housing.
4. Remove the bolt mounting the lower control arm to the frame, and take off the lower control arm.

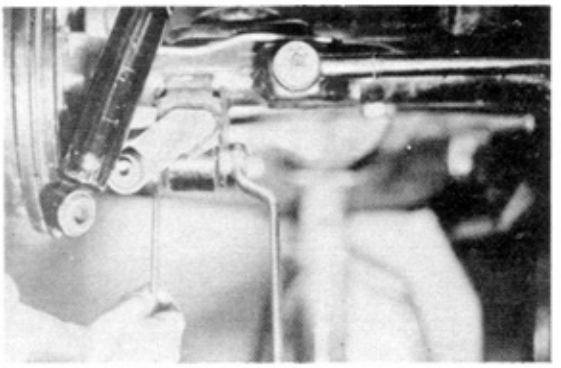


Fig. 5-3 Removing Lower Control Arm

INSPECTION

1. Inspect the lower control arm to see if damaged or deformed.
2. Inspect the control arm bushings to see if deteriorated or damaged.

Replace all parts found defective.

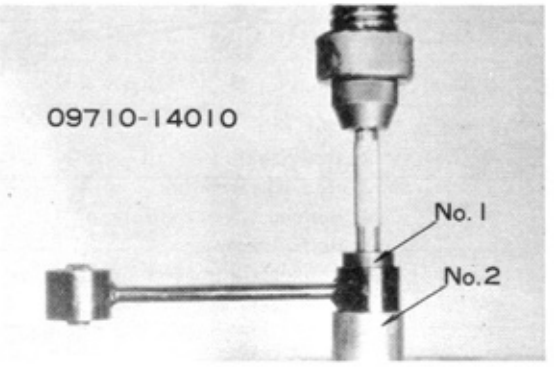


Fig. 5-4 Removing Bushing

LOWER CONTROL ARM BUSHING REPLACEMENT

1. Bushing Removal
   Using Rear Suspension Bushing Tool Set [09710–14010], press out the lower control arm bushing.
2. Bushing Installation
   Using Rear Suspension Bushing Tool Set [09710–14010], press in the new control arm bushing.

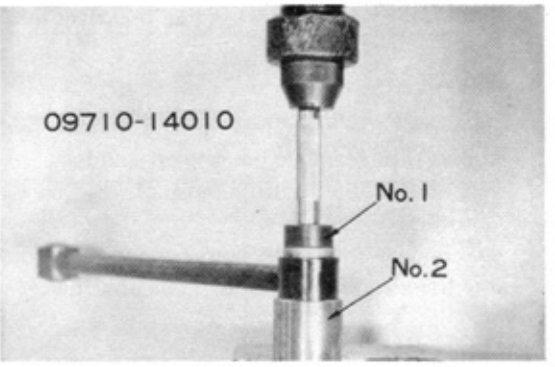


Fig. 5-5 Pressing In Bushing

INSTALLATION

1. Follow the removal procedures in reverse order.
   Bolt torque : **1000**–1500 kg-cm (72–108 ft-lb)
2. Adjust rear **suspension** vehicle height. (Refer to P5-6)

UPPER CONTROL ARM

REMOVAL

1. Remove the rear coil springs. (Refer to P5-3)
2. Remove the bolt mounting the upper control arm to the rear axle housing.
3. Jack up the rear axle housing.
4. Remove the bolt mounting the upper control arm to the frame, and take off the upper control arm.

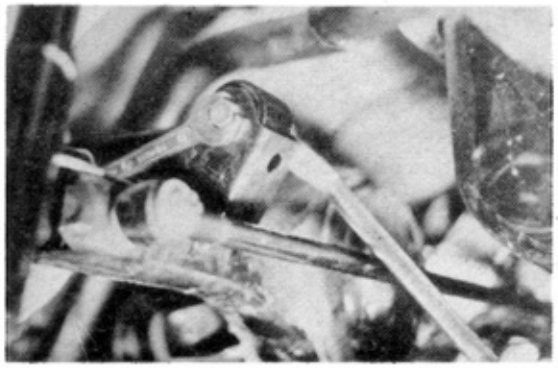


Fig. 5-6 Removing Upper Control Arm

INSPECTION

1. Inspect the upper control arm to see if bent or damaged.
2. Inspect the control arm bushing to see if deteriorated or damaged.

Replace all parts found defective.

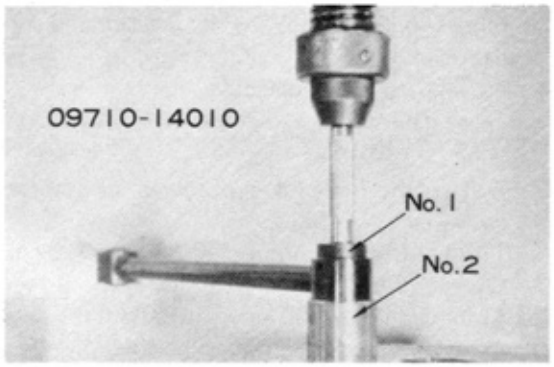


Fig. 5-7 Removing Bushing

UPPER CONTROL ARM BUSHING REPLACEMENT

1. Bushing Removal.
   Using Rear Suspension Bushing Tool Set [09710–14010], press out the upper control arm bushing.
2. Bushing Installation
   Using Rear Suspension Bushing Tool Set [09710–14010], press in the new control arm bushing.

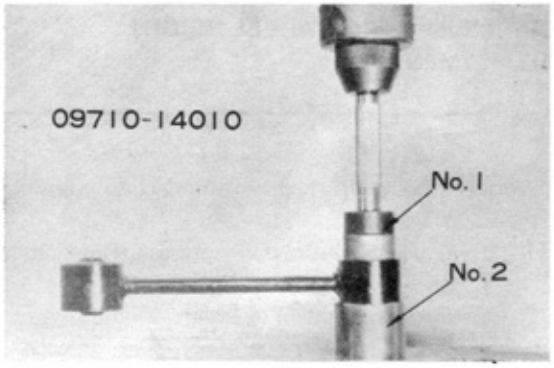


Fig. 5-8 Pressing In Bushing

INSTALLATION

1. Follow the removal procedures in reverse order.
   Bolt torque 1000–1500 kg-cm (72–108 ft-lb)
2. Adjust rear suspension wheel heights. (Refer to P5-6)

LATERAL CONTROL ROD

REMOVAL

1. Remove the rear coil springs. (Refer to P5-3)
2. Remove the cotter pin, nut, washer, and outer side bushing from the lateral control rod mounting (at rear axle housing).
3. Jack up the rear axle housing.
4. Remove the nut and washer from the lateral control rod mounting (at frame), pull out the bolt, and take out the lateral control rod.

INSPECTION

1. Inspect the lateral control rod to see if bent or damaged.
2. Inspect the lateral control rod bushing and the rubber bushings to see if deteriorated or damaged.

Replace all parts found defective.

INSTALLATION

1. Follow the removal procedures in reverse order.
   Tightening torque : 350–550 kg-cm (25–40 ft-lb)
   At frame : 700–900 kg-cm (51–65 ft-lb)
2. Adjust rear suspension wheel heights.

LATERAL CONTROL ROD BUSHING REPLACEMENT

1. Bushing removal
   Using Rear Suspension Bushing Tool Set [09710–14010], press out the lateral control rod bushing.
2. Bushing installation
   Using Rear Suspension Bushing Tool Set [09710–14010], press in new bushing.

REAR SUSPENSION WHEEL HEIGHT ADJUSTMENT

Note

Work to be performed before starting adjustment.

1. Remove the rear coil springs. (Refer to P5-3)
2. Care must be taken when lowering the rear axle housing as it can easily cause damage to the brake flexible hose and side brake cable.

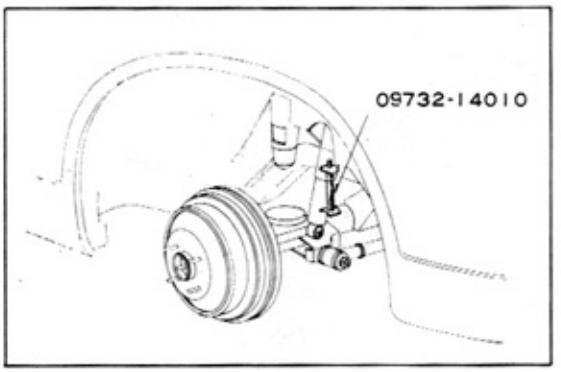


Fig. 5-9 Wheel Height Adjustment

1. Install the Rear Axle Height Gauge [09732–14010] between the rear axle housing and rear side member.
   (Refer to Fig. 5-9 for installation procedure)
   Note : Install the height gauges to left and right sides at same time.
2. Jack up the rear axle housing until the height gauges contact against the axle housing.
3. With the height gauges in contacted state, bolt together all of the disconnected parts (lower control arms, upper control arms, lateral control rod, etc.).
   Note : If the disconnected points are reconnected without using the rear axle height gauges, it can lead to causing unequal rear wheel heights, bushing deformation or early wear, etc.