

BRAKES

SECTION 5C
PARKING BRAKES

Contents

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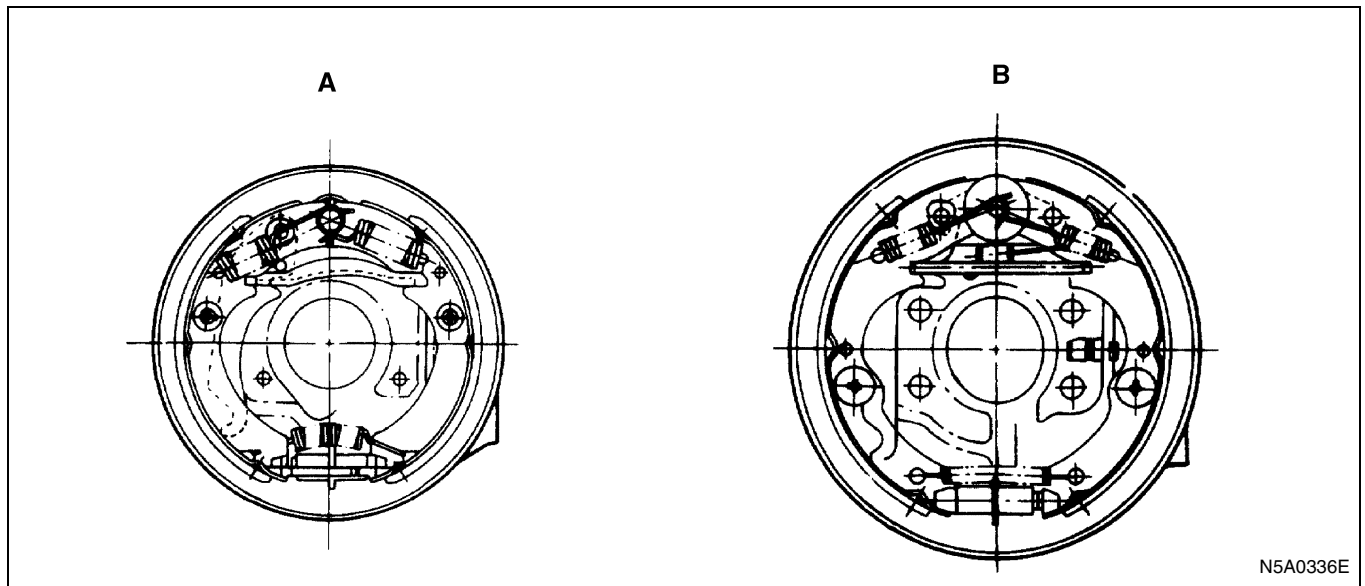
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GENERAL DESCRIPTION

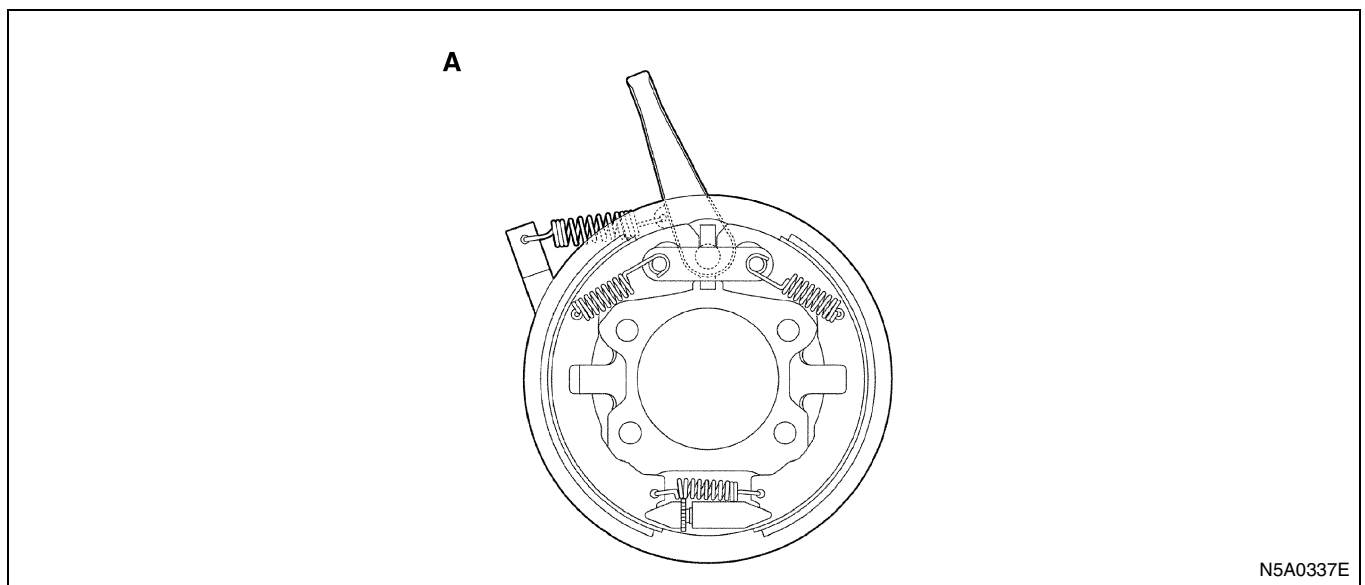
Parking Brake Assembly



Legend

A. 178 mm type

B. 190 mm type



Legend

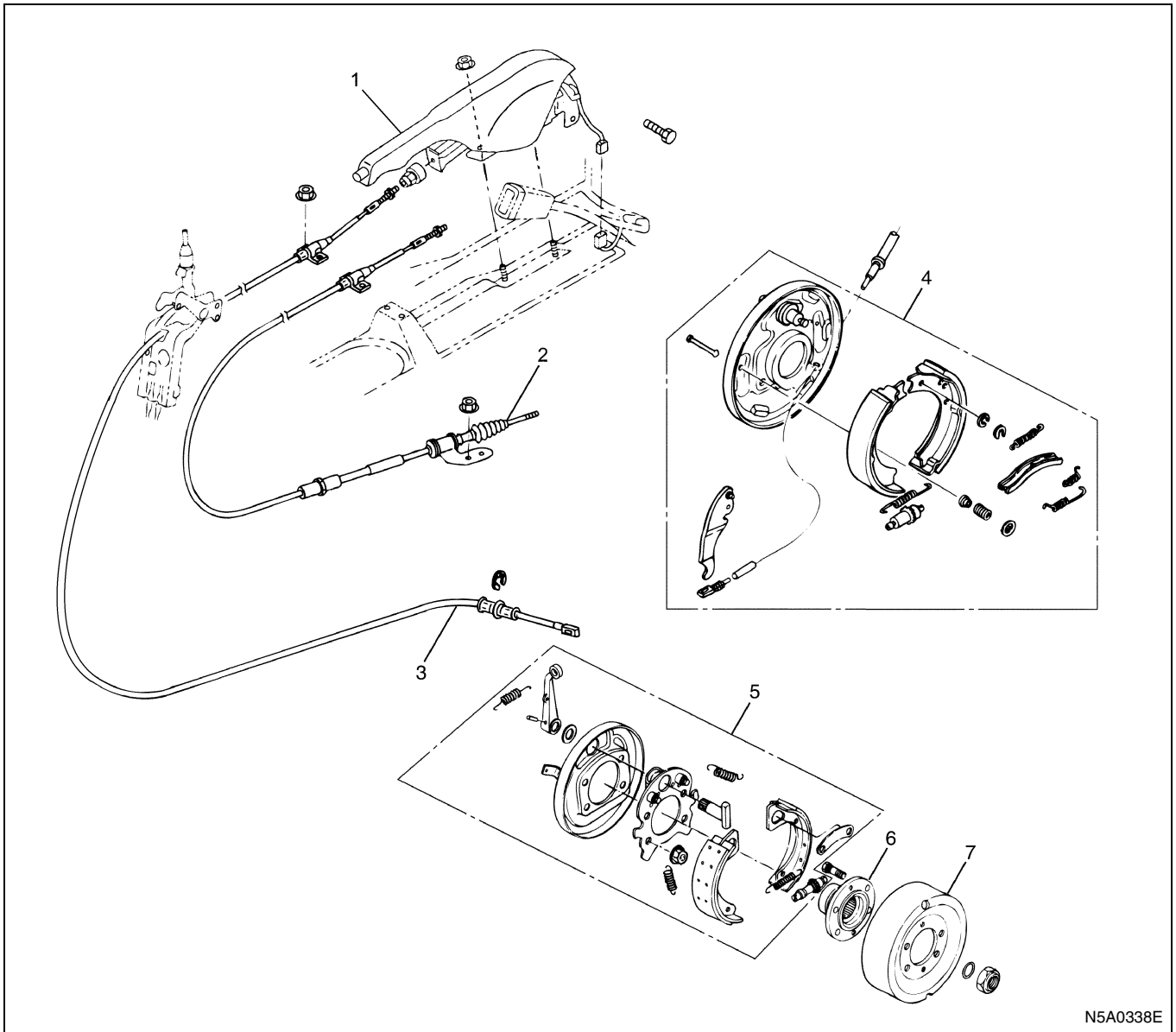
A. 203 mm type

The parking brake is a mechanically operated internal-expanding type drum brake. It is mounted on the rear of the transmission case.

The control cable is routed into the vehicle cab where it is connected to the parking brake lever.

PARKING BRAKE ASSEMBLY, PARKING BRAKE LEVER

Components



N5A0338E

Legend

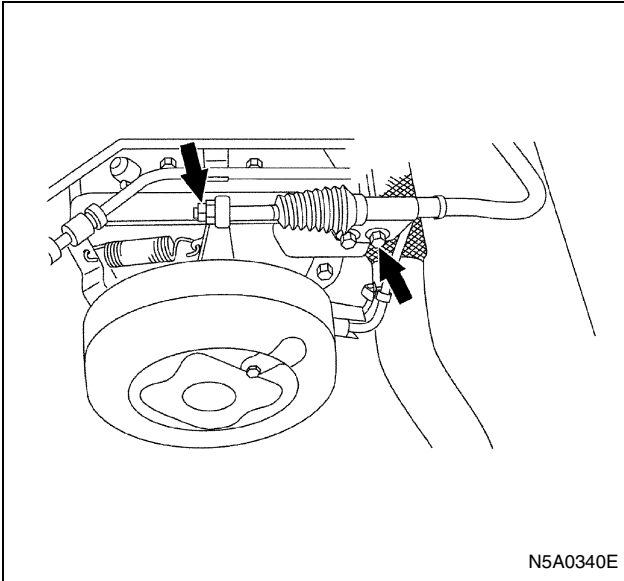
- | | |
|--|---|
| 1. Parking brake lever assembly | 5. Parking brake assembly (203 mm TYPE) |
| 2. Parking brake cable (203 mm TYPE) | 6. Coupling driver |
| 3. Parking brake cable (178, 190 mm TYPE) | 7. Parking brake drum |
| 4. Parking brake assembly (178, 190 mm TYPE) | |

Removal

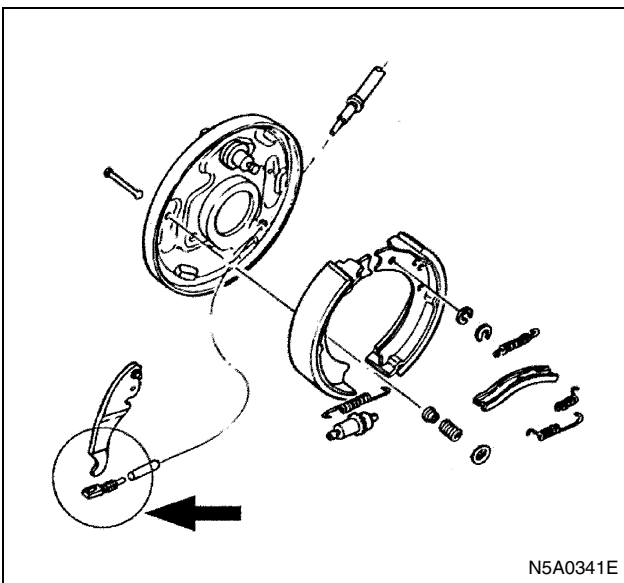
- Jack up the body, and support the frame with the stand.
Refer to "LIFTING INSTRUCTION" in Section 0A GENERAL INFORMATION.
- Remove the rear propeller shaft.
 - Disconnect the propeller shaft from the transmission.
 - Remove the center bearing bracket as well in the case of the long type.
- Loosen the coupling driver lock nut.
 - Apply the parking brake, completely raise the latch of the lock nut for the coupling driver, and loosen the lock nut. Then, release the parking brake.
- Disconnect the parking brake cable.
 - 203 mm TYPE
 - Remove the lock nut from the lever of the parking brake assembly.

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- Remove the mounting bolt from the cable bracket, and disconnect the parking brake cable from the transmission.

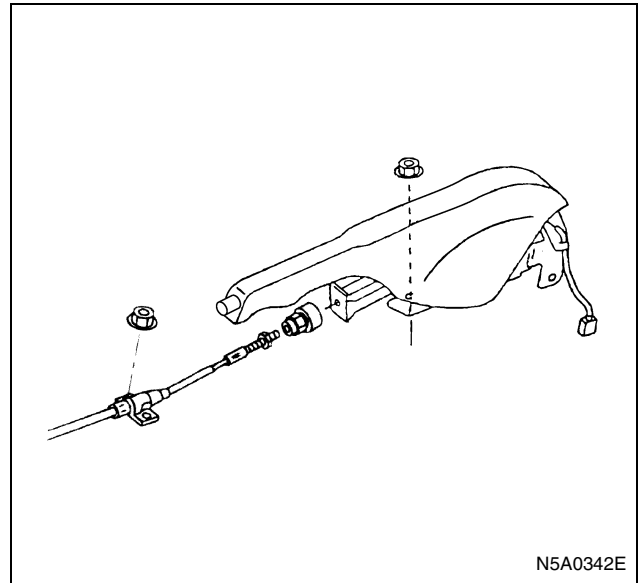


- 178, 190 mm TYPE
 - Remove the parking brake drum.
 - Disconnect the cable from the lever of the parking brake assembly.

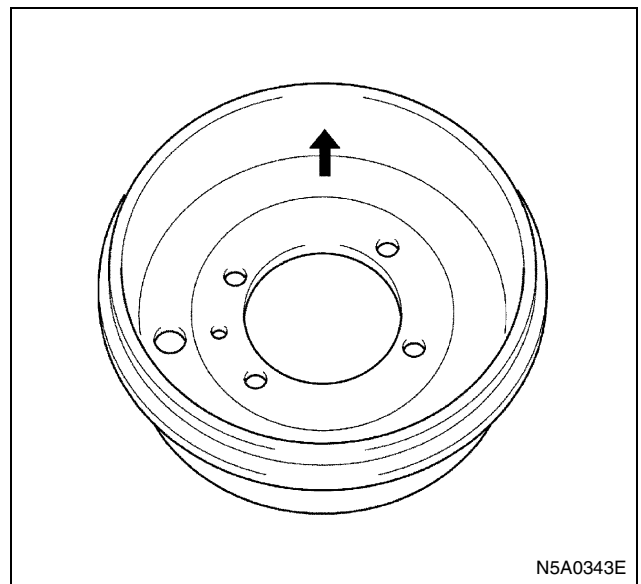


5. Remove the parking brake drum.
 - Remove the adjusting hole cover and the parking brake drum.
6. Remove the coupling driver.
 - Remove the lock nut that was loosened in step 3, and remove the coupling driver using a universal puller.
7. Remove the parking brake assembly.
8. Remove the parking brake lever assembly.
 - Loosen the adjusting nut, and disconnect the parking brake cable from the lever.
 - Disconnect the connector.

- Loosen the retaining nut, and remove the parking brake lever assembly.



9. Inspect the parking brake drum.
 - Inspect the parking brake drum for damage, wear, step wear, or cracking. If any defect is found, correct or replace the parking brake drum with a new one.
 - Measure the inside diameter of the parking brake drum.



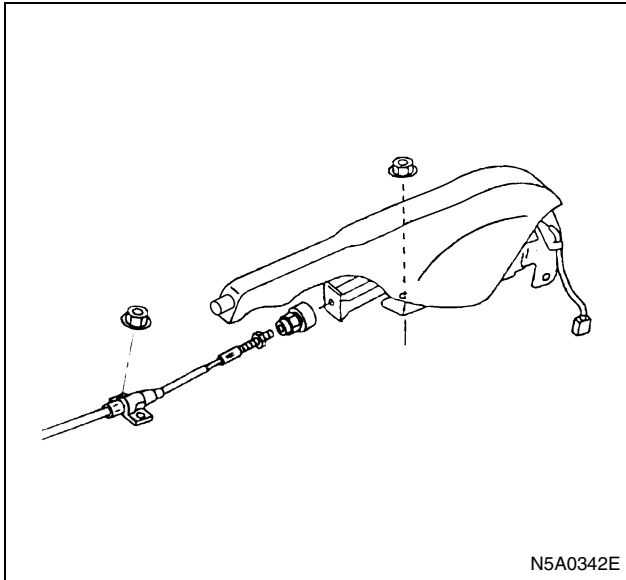
Drum inside diameter
 178 mm (7.00 in) type parking brake
 Standard value = 178 mm (7.00 in), limit = 179 mm (7.05 in)
 190 mm (7.48 in) type parking brake
 Standard value = 190 mm (7.48 in), limit = 191 mm (7.52 in)
 203 mm (7.99 in) type parking brake
 Standard value = 203 mm (7.99 in), limit = 204 mm (8.03 in)

Notice:

Correct the drum inside diameter by grinding to the appropriate limit.

Installation

1. Mount the parking brake lever assembly.
 - Mount the parking brake lever assembly, connect the parking brake cable, and properly tighten the adjusting nut.



2. Mount the parking brake assembly.
 - 178 mm type parking brake

Tighten:

M12 nut to 113 N·m (11.5 kg·m/83.3 lb·ft)

M8 bolt to 25 N·m (2.6 kg·m/18.4 lb·ft)

- 190 mm type parking brake
 - Wash the stud bolt and the bolt hole with volatile oil (thinner, alcohol, etc.).
 - Apply Loctite #638 to the embedded side (guide side) of the stud bolt and the bolt hole.
 - Attach the stud bolt (M12).

Tighten:

Stud bolt to 49 N·m (5.0 kg·m/36.1 lb·ft)

- Mount the parking brake assembly, and fasten it with the caulking nut (M12).

Tighten:

Caulking nut to 126.5 N·m (12.9 kg·m/93.3 lb·ft)

- 203 mm type parking brake

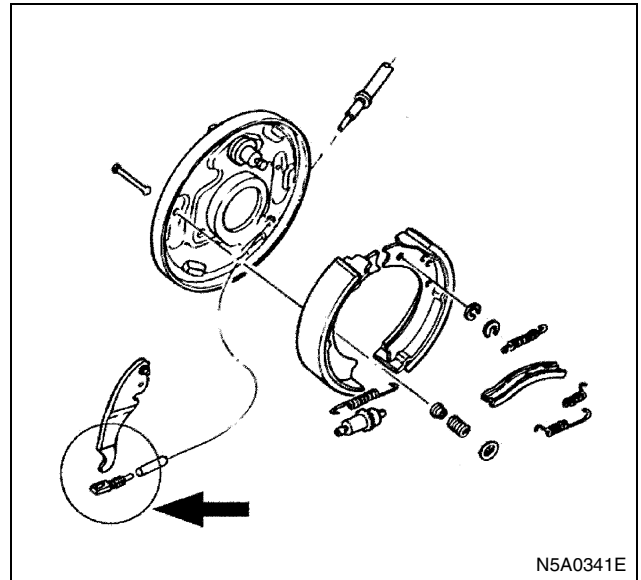
Tighten:

127 N·m (13.0 kg·m/93.7 lb·ft)

3. Connect the parking brake cable.
 - Connect the parking brake cable to the lever of the parking brake assembly (178, 190 mm TYPE).

Notice:

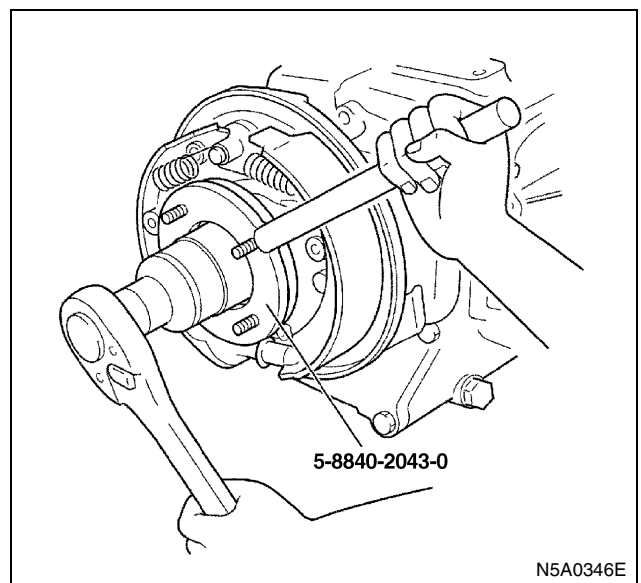
Confirm that the portion indicated by the arrow is properly connected.



4. Mount the coupling driver.
 - Attach the coupling driver to the main shaft, and fasten it with an O-ring, a conical washer (MSB only), and a lock nut.

Tighten the lock nut while holding the coupling driver with a handle 5-8840-2043-0.

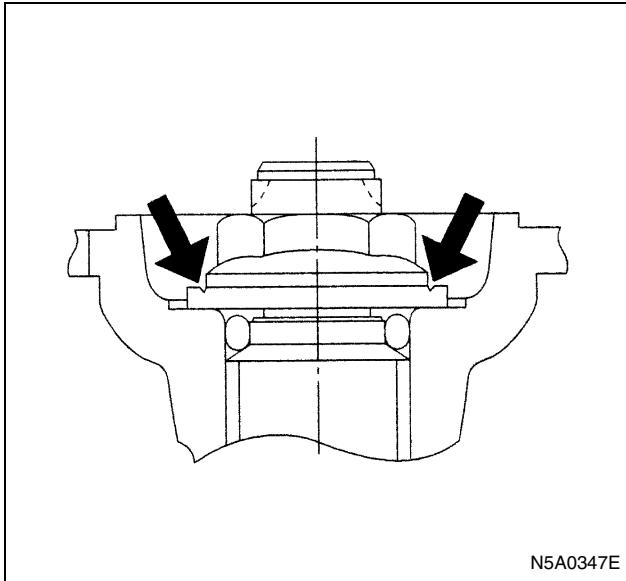
Tightening torque	N·m (kg·m/lb·ft)
MSB type transmission	226 (23.0/166.7)
MYY type transmission	289 (29.5/213.2)
MZZ type transmission	382 (39.0/281.8)

**Notice:**

- Use a new lock nut because it is a caulking type. Apply oil to the seating face before attaching the lock nut.

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- Use a new O-ring. Apply a thin coat of lubricating oil to the O-ring before attaching it.
- Attach the conical washer (MSB only) with the identification groove facing the lock nut (rear side).

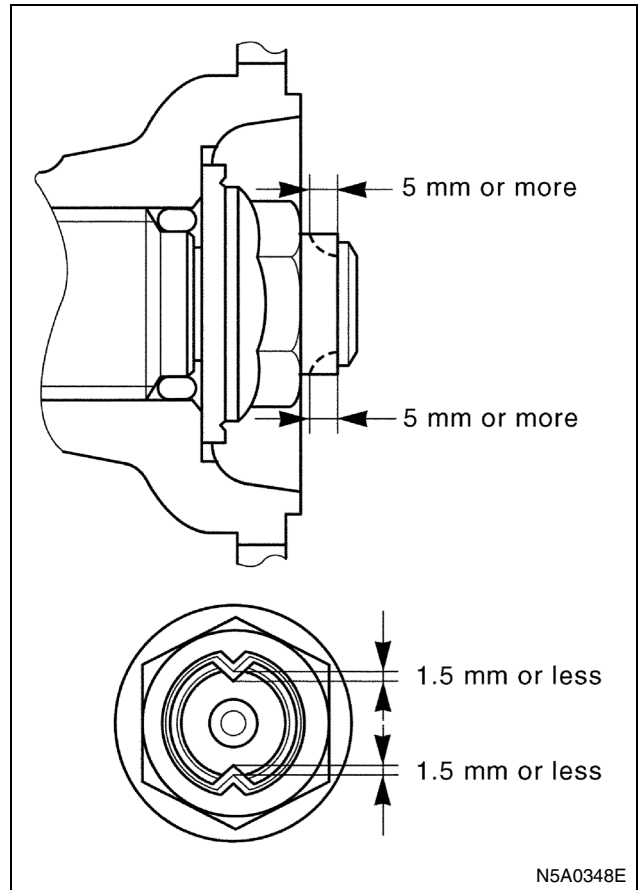


5. Caulk the lock nut.

- Align the lip of the lock nut with the V-grooves cut in the tip of the main shaft, and securely caulk the lock nut at two points so that the caulking length will be 5 mm (0.2 in) or more and the clearance between the lower V-groove in the main shaft and the lock nut lip will be 1.5 mm (0.06 in) or less.

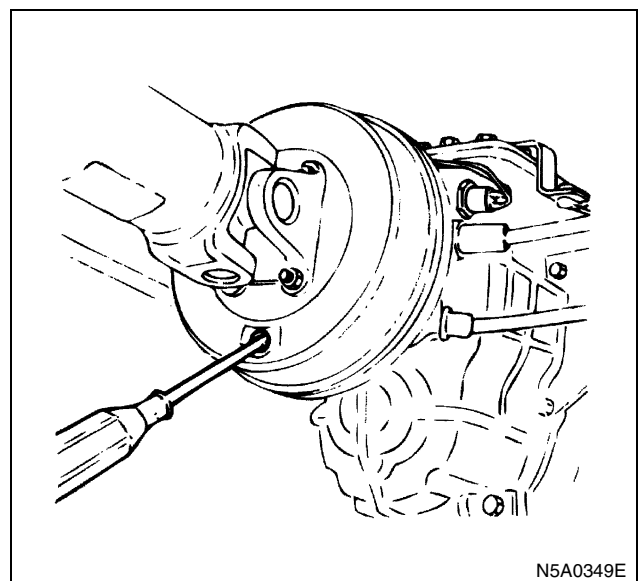
Notice:

After the caulking of the lock nut, check the caulked points for cracking. If there is any crack, replace the lock nut with a new one, and caulk it.



6. Mount the parking brake drum.

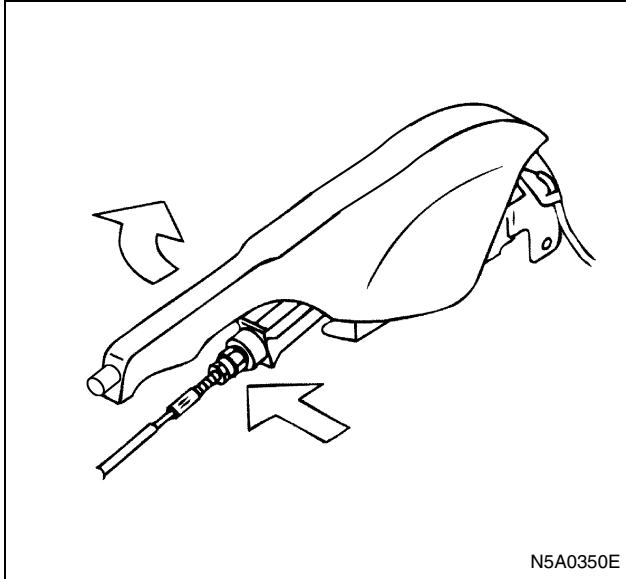
7. Adjust the pulling allowance of the parking brake.
 - Turn the adjuster until the parking brake drum stops turning. (Turn the parking brake drum downward in the case of vehicles with a 203 mm type or upward in the case of vehicles other than 203 mm type.)
 - Turn back the adjuster by the specified number of notches.



Number of notches by which the adjuster must be turned back

All vehicles equipped with other than 203 mm type
= 30 notches

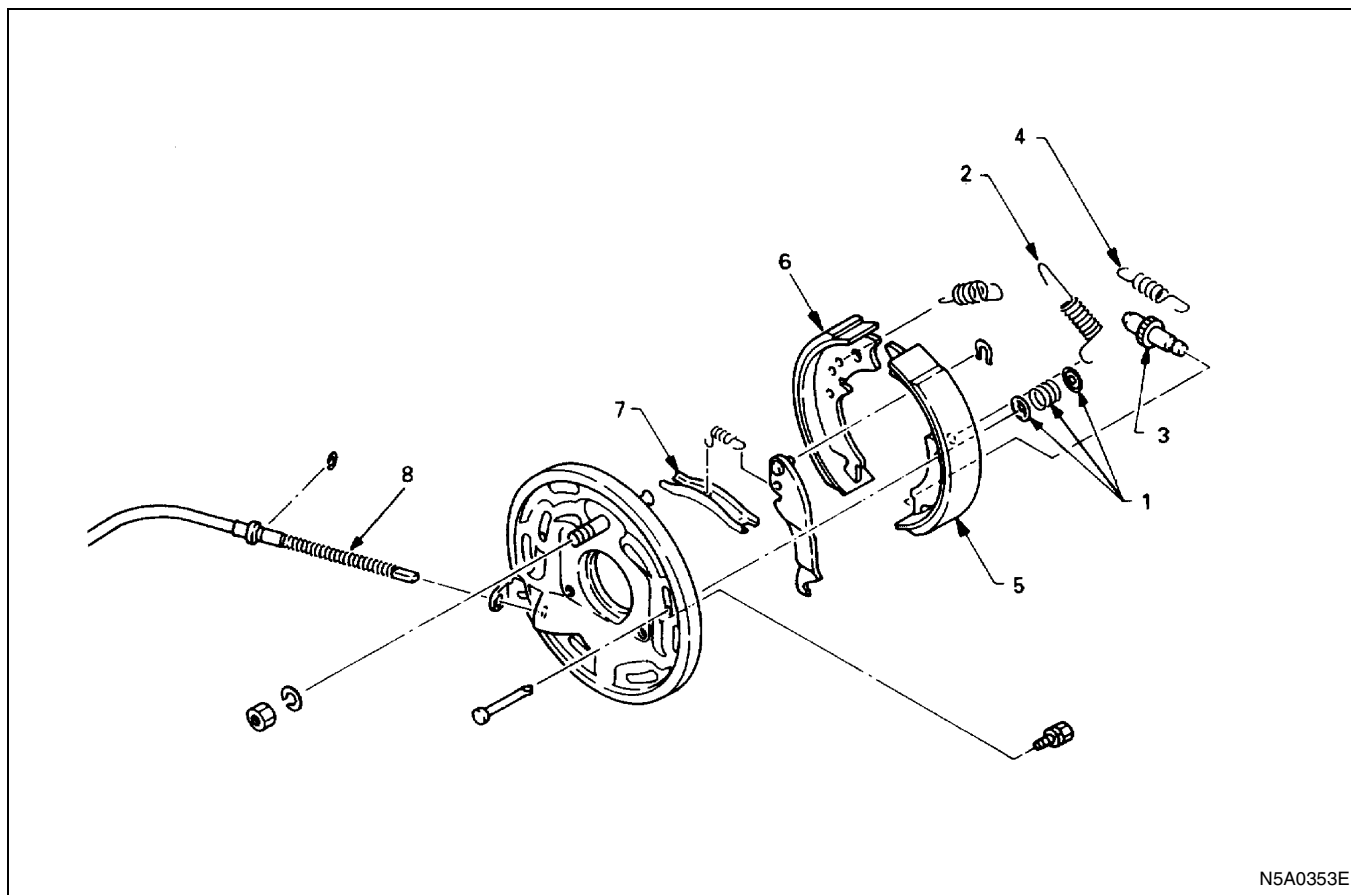
Vehicles equipped with a 203 mm type = 8 notches



- Adjust the pulling allowance of the parking brake lever by tightening the adjusting nut so that the allowance at a handle operating force of 147 N (15.0 kg / 33 lb) will be six to eight notches.
- Confirm that the brake does not drag.
- Mount the adjusting cover over the parking brake drum.

UNIT REPAIR [178 mm, 190 mm TYPE]

Parking Brake Assembly



N5A0353E

Legend

- | | |
|----------------------|---|
| 1. Holding spring | 5. Secondary brake shoe assembly with lever |
| 2. Return spring | 6. Primary brake shoe assembly |
| 3. Adjuster assembly | 7. Strut |
| 4. Spring; adjuster | 8. Parking cable |

Disassembly

1. Holding Spring
2. Return Spring
3. Adjuster Assembly
4. Spring; Adjuster
5. Secondary Brake Shoe Assembly
6. Primary Brake Shoe Assembly
7. Strut
8. Parking Cable

- Brake lining
- Return spring
- Parking brake lever assembly
- Parking brake inner cable

Brake Drum

Use a vernier caliper to measure the brake drum inside diameter.

If the measured value exceeds the specified limit, the brake drum must be replaced.

Brake Drum Inside Diameter		mm (in)
	Standard	Limit
Inside diameter	178 (7.01)	179 (7.05)
	190 (7.48)	191 (7.52)
Out of round:		
• Limit: 0.05 mm (0.0020 in) or less		

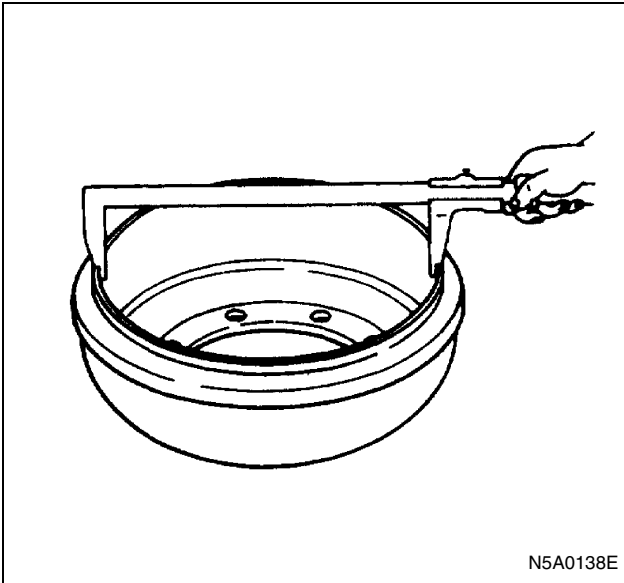
Inspection and Repair

Make the necessary adjustments, repairs, and part replacements if excessive wear or damage is discovered during inspection.

Visual Check

Inspect the following parts for wear, corrosion, scuffs, scratches, deterioration or other abnormal conditions.

- Brake drum

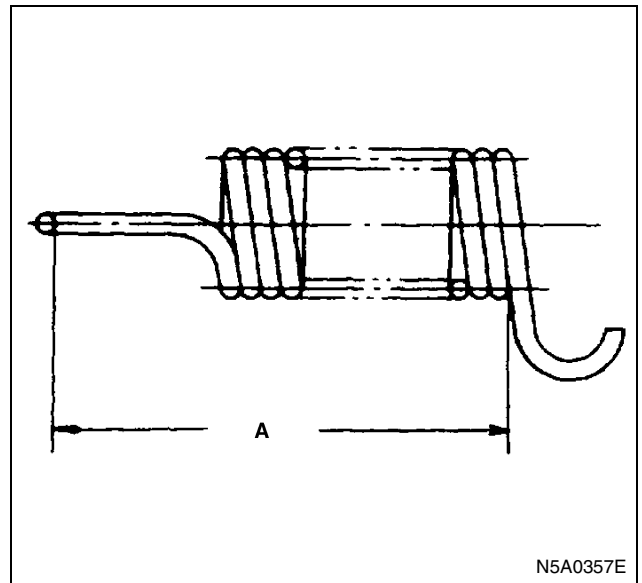
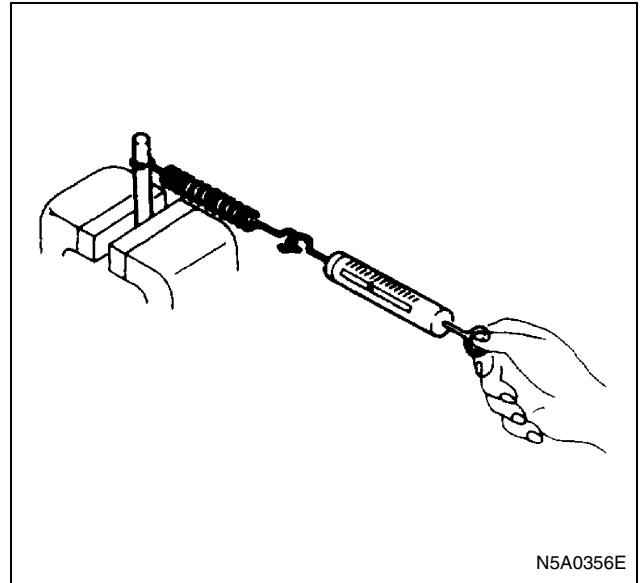


Return Spring

Use a spring balancer to measure the return spring set load.

If the variation exceeds 10% of the specified value, the return spring must be replaced.

		Drum inside dia. mm (in)	
		178 (7.01)	190 (7.48)
Free length: mm (in)	Primary	62 (2.44)	62.1 (2.44)
	Secondary	49 (1.93)	
Set length: mm (in)	Primary	70 (2.76)	67.1 (2.64)
	Secondary	57 (2.24)	
Set load; N (kg/lb)	Primary	105.9 — 129.5 (10.8 — 13.2/23.8 — 29.1)	53 — 65.7 (5.4 — 6.6/ 11.9 — 14.6)
	Secondary	88.3 — 107.8 (9.0 — 11.0/19.8 — 24.3)	



Legend

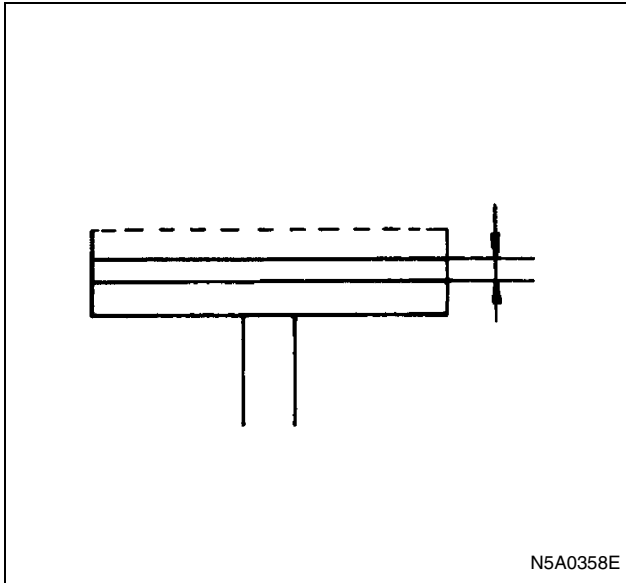
A. Length

Brake Lining Thickness

Use a vernier caliper to measure the brake lining thickness.

If the measured value is less than the specified limit, the brake shoe assembly must be replaced.

Brake Lining Thickness		mm (in)
Limit		1.0 (0.039)

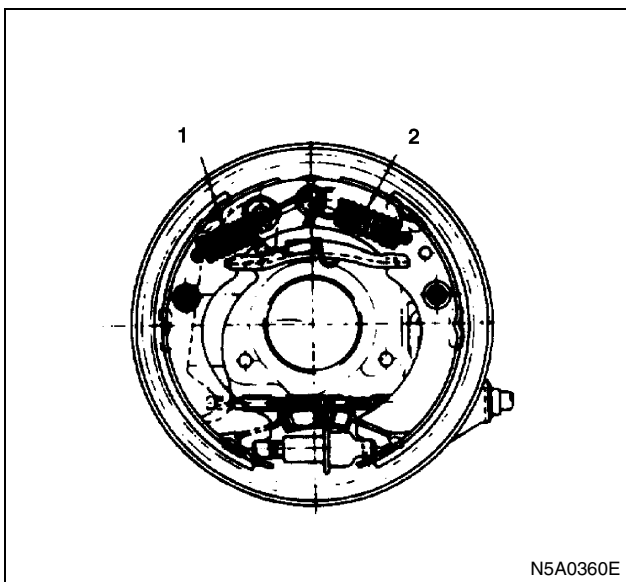


Reassembly

1. Parking Cable Rear
2. Strut
3. Primary Brake Shoe Assembly
4. Secondary Brake Shoe Assembly
Install the brake shoes by fitting them properly into slot in the adjuster and strut.
5. Spring; Adjuster
6. Adjuster Assembly
7. Return Spring

Drum inside diameter 178 mm only

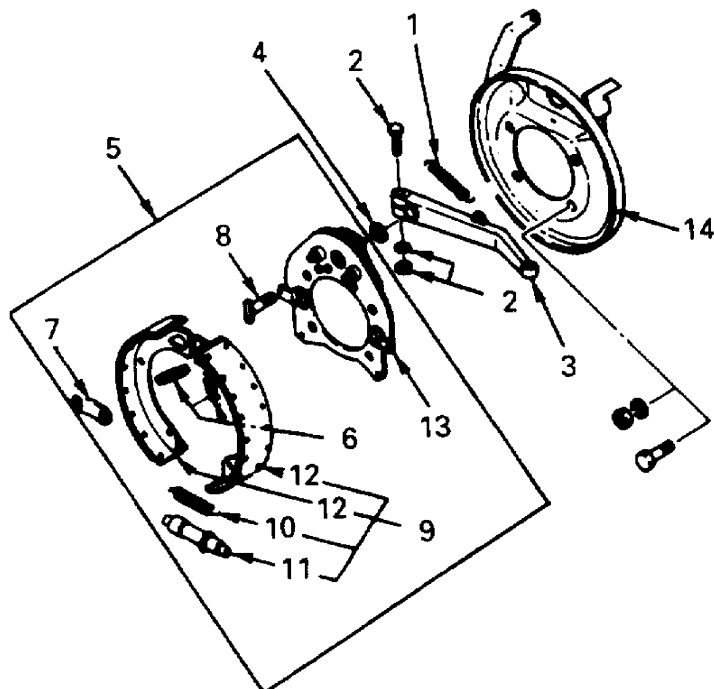
Attach the return spring bawing fewer windings at the primary side as illustrated.



Legend

1. Fewer windings
2. Much windings

-
8. Holding Spring

UNIT REPAIR [203 mm TYPE]**Parking Brake Assembly**

N5A0361E

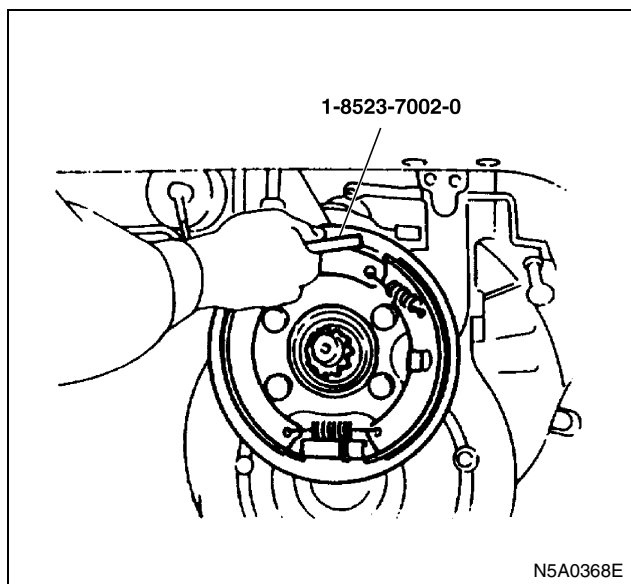
Legend

- | | |
|---------------------------------|------------------------|
| 1. Spring | 8. Camshaft |
| 2. Nut, spring washer and bolt | 9. Brake shoe assembly |
| 3. Lever | 10. Spring: adjuster |
| 4. Washer | 11. Adjusting screw |
| 5. Brake shoe and support plate | 12. Brake shoe |
| 6. Return spring | 13. Support plate |
| 7. Anchor pin brace | 14. Dust cover |

5C-12 PARKING BRAKES

Disassembly

1. Spring
 2. Nut, Spring Washer and Bolt
 3. Lever
 4. Washer
 5. Brake Shoe and Support Plate
 6. Return Spring
- Remover: 1-8523-7002-0



7. Anchor Pin Brace
8. Camshaft
9. Brake Shoe Assembly
10. Spring: adjuster
11. Adjusting Screw
12. Brake Shoe
13. Support Plate
14. Dust Cover

Inspection and Repair

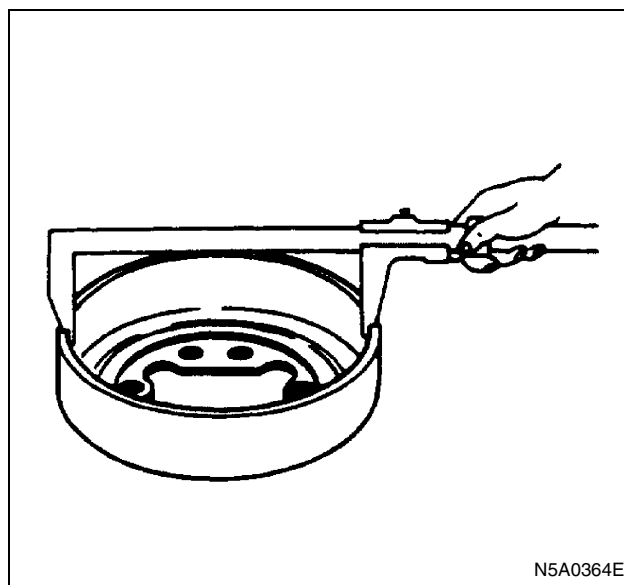
Make the necessary adjustments, repairs, and part replacements if excessive wear or damage is discovered during inspection.

Visual Check

Inspect the following parts for wear, corrosion, scuffs, scratches, deterioration or other abnormal conditions.

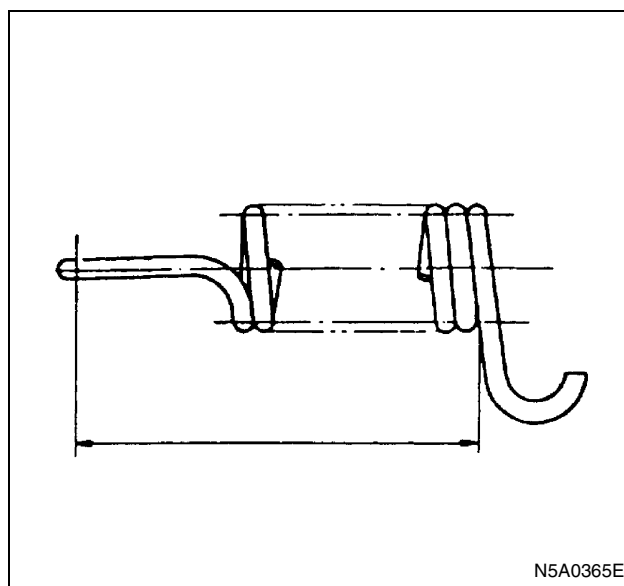
- Brake drum
- Brake lining
- Return spring
- Parking brake lever assembly
- Parking brake inner cable

Brake Drum



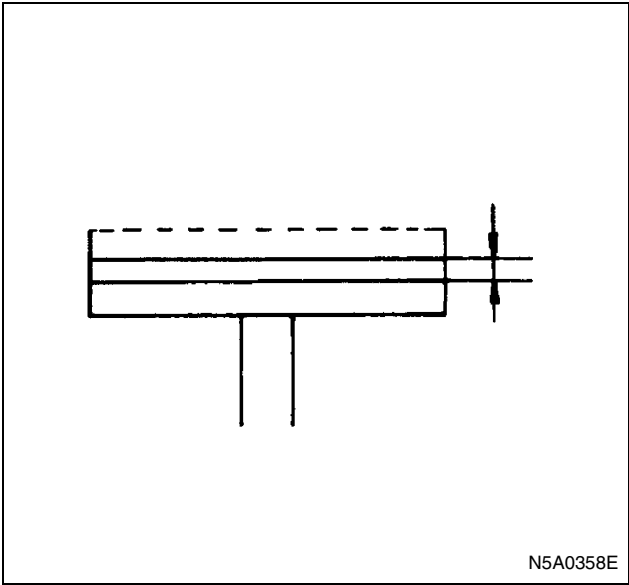
	mm (in)	
	Standard	Limit
Brake drum size inside diameter	203 (8.00)	205 (8.07)
Uneven wear and/or score	Run out 0.05 (0.002) or less	

Return Spring



	mm (in)	
Free length		49.9 (1.965)
Set load	N (kg/lb)	147 (15/33.07)
Set length		57.5 (2.264)

Brake Lining



- 10. Brake Shoe and Support Plate
- 11. Washer
- 12. Lever
- 13. Bolt, Spring Washer and Nut
- 14. Spring

Brake Lining Thickness		mm (in)
Limit		1.0 (0.039)

Reassembly

- 1. Duct Cover
- 2. Support Plate

Tighten:

Bolt to 123 N·m (12.5kg·m / 90 lb·ft)

- 3. Brake Shoe
 - 4. Adjusting Screw
 - 5. Spring: adjuster
 - 6. Brake Shoe Assembly
 - 7. Camshaft
 - 8. Anchor Pin Brace
 - 9. Spring
- Spring installer: 9-8522-1231-0

