

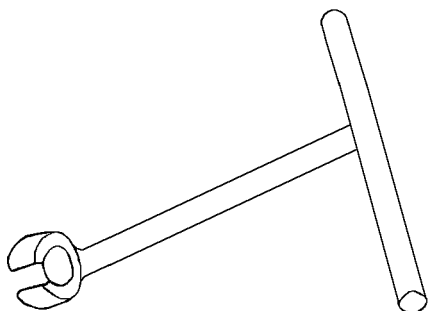
PARKING BRAKE (Continued)

SPECIAL TOOLS

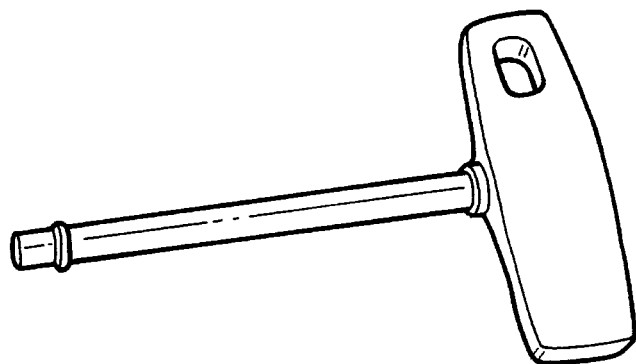
PARK BRAKE

SPECIAL TOOL CROSS REFERENCE CHART

MB TOOL #	MILLER TOOL #	DESCRIPTION
116 589 01 62 00	9280	RETURN SPRING PULLING HOOK
112 589 09 61 00	9281	RETAINING SPRING TOOL
901 589 00 63 00	9289	RETAINING CLIP RELEASE TOOL



RETAINING CLIP RELEASE TOOL - 9289



RETAINING SPRING TOOL - 9281



RETURN SPRING PULLING HOOK - 9280

CABLE TENSIONER

REMOVAL

NOTE: Observe the installation position of the brake control cable lock, for a reference on installation.

- (1) Open the brake control cable lock (Fig. 28).
- (2) Press out the safety bolt and remove the brake control cable lock (Fig. 28).

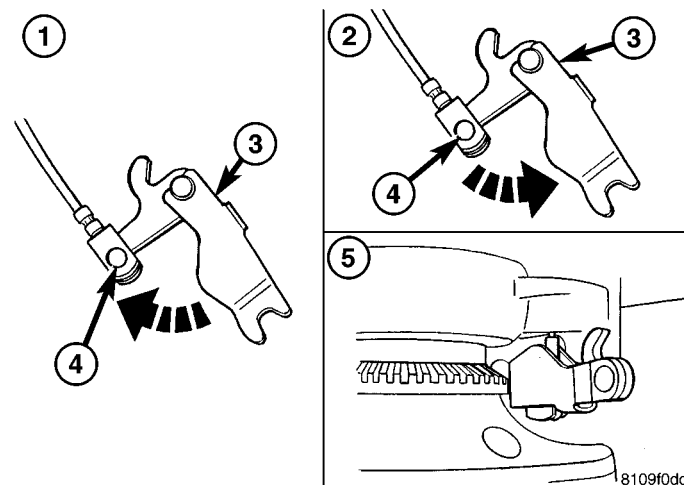


Fig. 28 CONTROL CABLE LOCK

- 1 - BRAKE CABLE CONTROL LOCK OPEN
- 2 - BRAKE CABLE CONTROL LOCK CLOSED
- 3 - BRAKE CONTROL CABLE LOCK
- 4 - SAFETY BOLT
- 5 - INSTALLATION POSITION OF BRAKE CONTROL CABLE LOCK

INSTALLATION

- (1) Push the brake control cable lock onto the brake cable (Fig. 28).
- (2) Insert the safety bolt and snap shut the brake control cable lock. **Observe the installation position of the brake control cable lock (Fig. 28).**

CABLES

REMOVAL

REMOVAL - FRONT

- (1) Raise and support the vehicle.
- (2) Disconnect the front park brake cable from the pulley unit.
- (3) Remove the front park brake cable from the hand brake lever (Fig. 29).

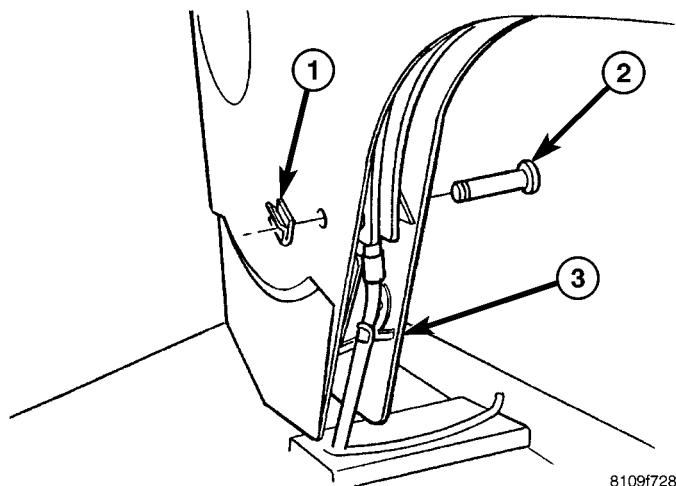


Fig. 29 FRONT PARK BRAKE CABLE AT LEVER

- 1 - LOCKING CLIP
- 2 - LOCKING PIN
- 3 - CABLE STRAP

(4) Unclip the guides at the frame cross members for the front cable at the vehicle (Fig. 30).

(5) Pull off the locking clips at the floor opening and pull the front brake cable down and out (Fig. 30).

(6) Press together the locking ring and pull out the front brake cable to the front (Fig. 30).

(7) Remove the front park brake cable at the vehicle using special tool 9289.

REMOVAL - REAR

- (1) Raise and support the vehicle.
- (2) Remove the rear tires.
- (3) Remove the park brake shoes.
- (4) Remove the park brake cables from the shoe (Fig. 31).

(5) Remove all the connections on the hand brake cable (Fig. 31).

(6) Remove the park brake cable lock (Fig. 31). **Observe the installed position of the brake cable lock for reference on installation.**

(7) Remove the hand brake cable from the anchor plate (Fig. 31).

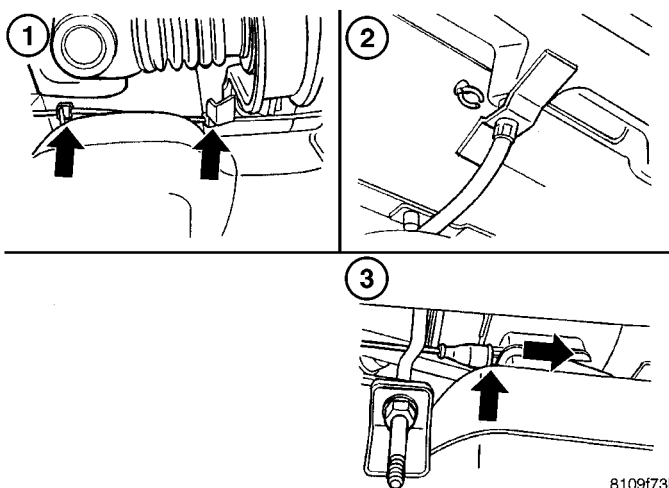


Fig. 30 REMOVING FRONT PARK BRAKE CABLE AT THE VEHICLE

- 1 - UNCLIP CABLE GUIDES
- 2 - LOCKING CLIP
- 3 - LOCKING RING PRESSED TOGETHER

(8) Remove the park brake cable from the vehicle. **Compress the locking ring on the pulley unit.**

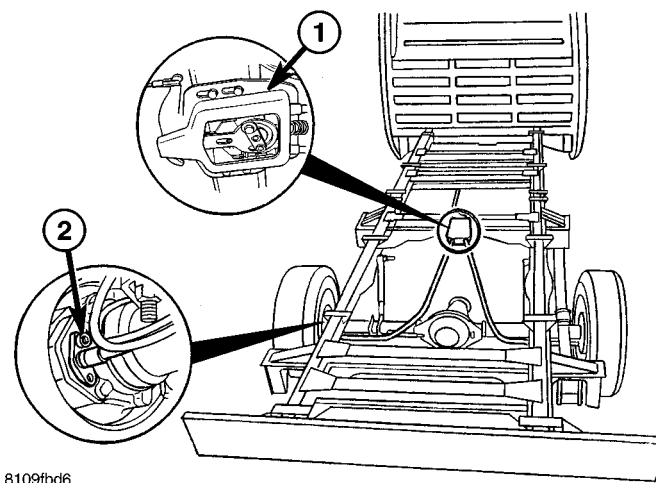


Fig. 31 REAR PARK BRAKE CABLE REMOVE / INSTALL

- 1 - PARK BRAKE ADJUSTER
- 2 - PARK BRAKE CABLE MOUNTING

INSTALLATION

INSTALLATION - FRONT

(1) Install the front park brake cable to the vehicle.

(2) Clip the cable guides at the frame cross members (Fig. 32).

(3) Install the front park brake cable to the hand brake lever (Fig. 29).

(4) Reconnect the front park brake cable to the pulley unit (Fig. 32).

CABLES (Continued)

- (5) Adjust the parking park.
- (6) Lower the vehicle.

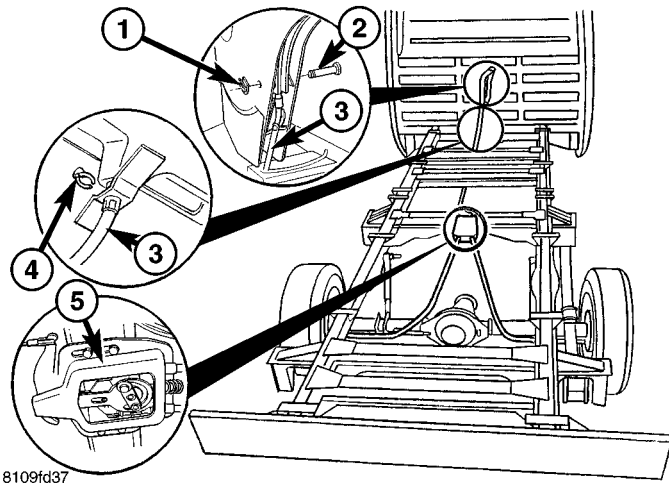


Fig. 32 FRONT PARK BRAKE CABLE

- 1 - RETAINING CLIP
- 2 - LOCKING PIN
- 3 - FRONT PARK BRAKE CABLE
- 4 - RETAINING CLIP
- 5 - PARK BRAKE CABLE ADJUSTER

INSTALLATION - REAR

NOTE: Route the park brake cable free of tension and the risk of chafing.

- (1) Install the hand brake cable to the anchor plate (Fig. 31).
- (2) Install the park brake cable lock (Fig. 31).
- (3) Install all connections on the hardware cable (Fig. 31).
- (4) Install the park brake cables to the shoe (Fig. 31).
- (5) Install the park brake shoes.
- (6) Install the rear wheels.
- (7) Adjust the park brakes.
- (8) Lower the vehicle.

ADJUSTMENTS

ADJUSTMENT - PARKING BRAKE CABLES

- (1) Loosen the bolts of the mounting brackets (Fig. 33).
- (2) Insert a drill bit or an allen wrench with a 6 mm diameter between the mounting bracket and front lever (Fig. 33).
- (3) Push the mounting bracket back until the front brake cable is free of play and without tension (Fig. 33).
- (4) Tighten the bolts to the mounting bracket. Tighten to 25 N·m (221 in. lbs.) (Fig. 33).

(5) Remove the 6 mm diameter drill bit or allen wrench (Fig. 33).

(6) Tighten the hand brake lever one notch (Fig. 33).

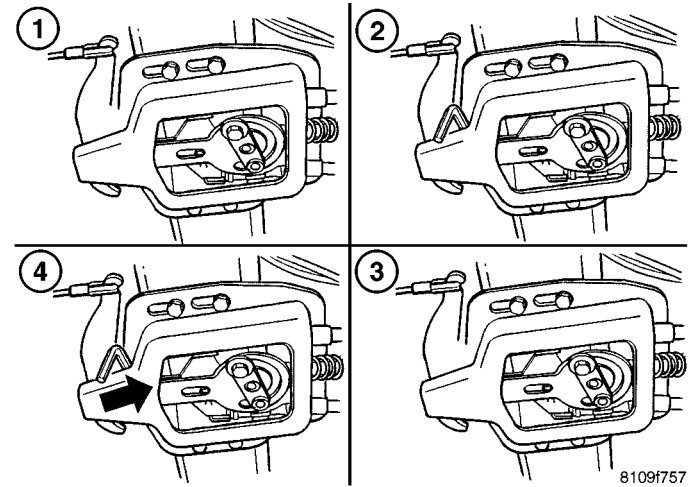


Fig. 33 PARK BRAKE ADJUSTER

- 1 - LOOSEN MOUNTING BOLTS
- 2 - 6 mm ALLEN WRENCH
- 3 - MOUNTING BOLTS TIGHTENED
- 4 - FREEPLAY WITH NO TENSION

(7) Clamp the eccentric clockwise until the wheels/disc brake rotors can still be turned with the force of the hand (Fig. 34).

(8) Tighten the clamp bolt (Fig. 34).

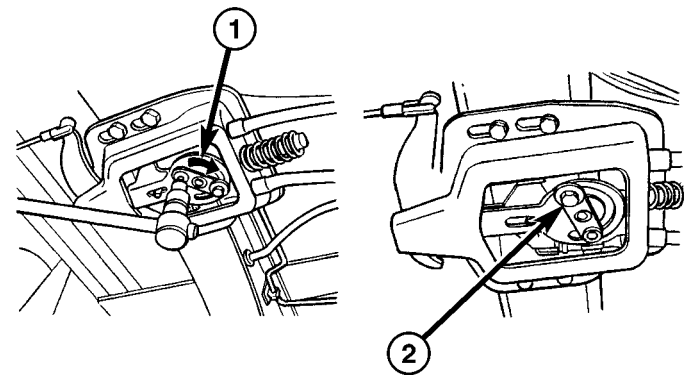


Fig. 34 PARK BRAKE ADJUSTMENT

- 1 - ECCENTRIC CLOCKWISE
- 2 - CLAMP SCREW TIGHTENED

- (9) Release the hand brake lever.
- (10) Check the wheel for free movement.

LEVER

REMOVAL

- (1) Disconnect the front brake cable from the pulley unit.
- (2) Remove the front brake cable from the hand brake lever (Fig. 29).
- (3) Remove the circle cover (Fig. 35).
- (4) Remove the bolts on the hand brake lever (Fig. 35).
- (5) Pull the cover off the hand brake lever (Fig. 35).
- (6) Disconnect the hand brake check switch and wiring harness from the hand brake lever (Fig. 35).
- (7) Remove the hand brake lever (Fig. 35).

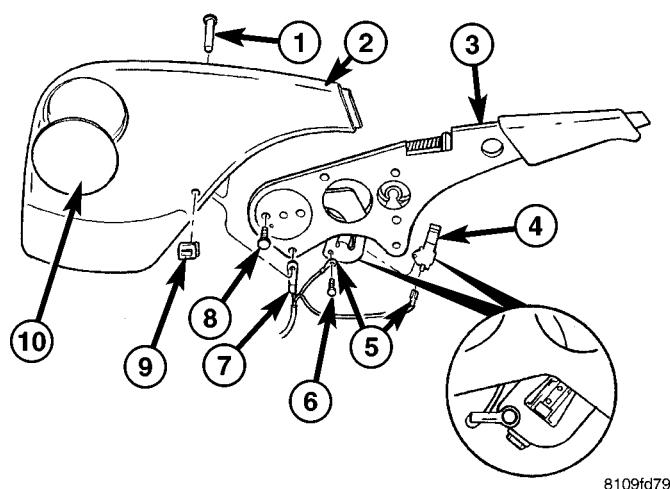


Fig. 35 HAND BRAKE LEVER

- 1 - LOCKING PIN
- 2 - COVER
- 3 - HAND BRAKE LEVER
- 4 - HAND BRAKE CHECK SWITCH
- 5 - WIRING HARNESS
- 6 - BOLT
- 7 - HAND BRAKE CABLE
- 8 - BOLT
- 9 - RETAINING CLIP
- 10 - CIRCLE COVER

INSTALLATION

- (1) Install the hand brake lever (Fig. 35).
- (2) Reconnect the hand brake check switch and the wiring harness to the hand brake lever (Fig. 35).
- (3) Install the cover to the hand brake lever (Fig. 35).
- (4) Install the bolts on the hand brake lever. Tighten to 25 N·m (221 in. lbs.) (Fig. 35).
- (5) Install the circle cover (Fig. 35).
- (6) Install the front brake cable to the hand brake lever.
- (7) Connect the front brake cable to the pulley unit (Fig. 35).

SHOES

REMOVAL

REMOVAL - (SRW)

- (1) Raise and support the vehicle.
- (2) Remove the rear wheels.
- (3) Remove the disc brake rotor.
- (4) Disconnect the front park brake cable from the pulley unit. **Do not remove the rear park brake cables.**
- (5) Remove the retracting springs using special tool 9280 (Fig. 36).
- (6) Remove the adjuster (Fig. 36).
- (7) Remove the pressure springs using special tool 9281 (Fig. 36).
- (8) Remove the rear park brake shoes (Fig. 36). **Pull the park brake shoes apart at the bottom and remove them together with the adjuster.**

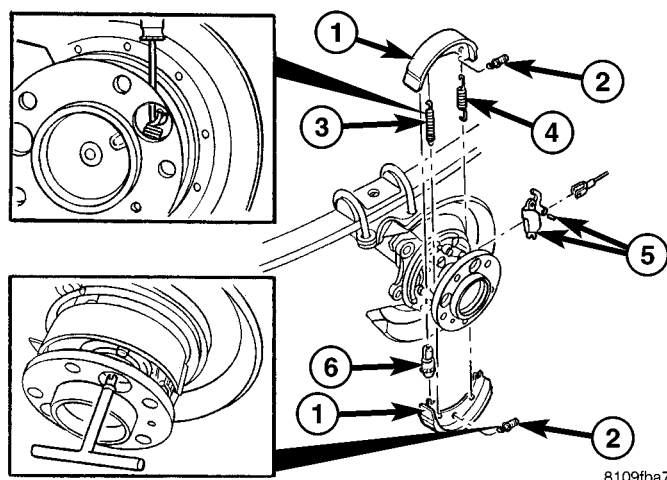


Fig. 36 PARK BRAKE SHOES

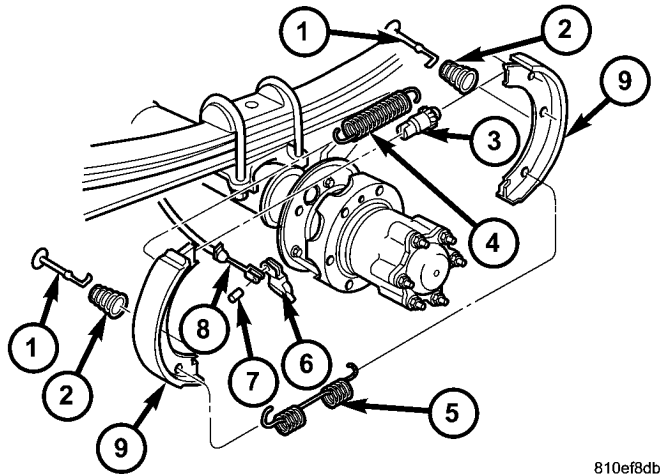
- 1 - PARK BRAKE SHOES
- 2 - PRESSURE SPRING
- 3 - RETRACTING SPRING (SHORT HOOK EYE)
- 4 - RETRACTING SPRING (LONG HOOK EYE)
- 5 - CABLE LOCK
- 6 - ADJUSTER

REMOVAL - (DRW)

- (1) Raise and support the vehicle.
- (2) Remove the rear wheels.
- (3) Remove the wheel flange ring.
- (4) Remove the disc brake rotor.
- (5) Disconnect the front park brake cable from the pulley unit. **Do not remove the rear park brake cables.**
- (6) Remove the retracting springs (Fig. 37).

SHOES (Continued)

- (7) Remove the adjuster (Fig. 37).
- (8) Remove the pressure springs (Fig. 37). by depressing with your fingers and twisting.
- (9) Remove the rear park brake shoes (Fig. 37). **Pull the park brake shoes apart at the bottom and remove them together with the adjuster.**



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Fig. 37 PARK BRAKE SHOES WITH DUAL REAR WHEELS

- 1 - HOLD DOWN PIN
- 2 - PRESSURE SPRING
- 3 - ADJUSTER
- 4 - UPPER RETRACTING SPRING
- 5 - LOWER RETRACTING SPRING
- 6 - CABLE LOCK
- 7 - LOCKING PIN
- 8 - BRAKE CABLE
- 9 - PARK BRAKE SHOE

CLEANING - REAR DRUM IN HAT BRAKE

Clean the individual brake components, including the support plate exterior, with a water dampened cloth or with brake cleaner. Do not use any other cleaning agents. Remove light rust and scale from the brake shoe contact pads on the support plate with fine sandpaper.

INSTALLATION

INSTALLATION - (SRW)

NOTE: Preassemble the retracting spring with the short hook eye from the inside together with the adjuster wheel at the bottom. Fit the preassembled park brake shoes on the brake carrier.

- (1) **Ensure that the cable lock moves easily before installing shoes.** Install the park brake shoes.

- (2) Install the lower retracting spring using special tool 9280.
- (3) Install the hold down springs using special tool 9281.
- (4) Install the upper retracting spring using special tool 9280.
- (5) Install the adjuster.
- (6) Install the front park brake cable to the pulley unit.
- (7) Install the disc brake rotor.
- (8) Install the rear wheels.
- (9) Adjust the parking brakes.
- (10) Lower the vehicle.
- (11) Pump the brake pedal several times to check the operation of the brakes before moving vehicle.

INSTALLATION - (DRW)

NOTE: Preassemble the retracting spring with the short hook eye from the inside together with the adjuster wheel at the bottom. Fit the preassembled park brake shoes on the brake carrier.

- (1) **Ensure that the cable lock moves easily before installing shoes.** Install the park brake shoes.
- (2) Install the lower retracting spring.
- (3) Install the pressure hold down springs by depressing with your fingers and twisting to lock in place.
- (4) Install the upper retracting spring.
- (5) Install the adjuster.
- (6) Install the front park brake cable to the pulley unit.
- (7) Install the disc brake rotor.
- (8) Install the rear wheel flange ring. Tighten to 200 N·m (148 ft. lbs.).
- (9) Install the rear wheels.
- (10) Adjust the parking brakes.
- (11) Lower the vehicle.
- (12) Pump the brake pedal several times to check the operation of the brakes before moving vehicle.

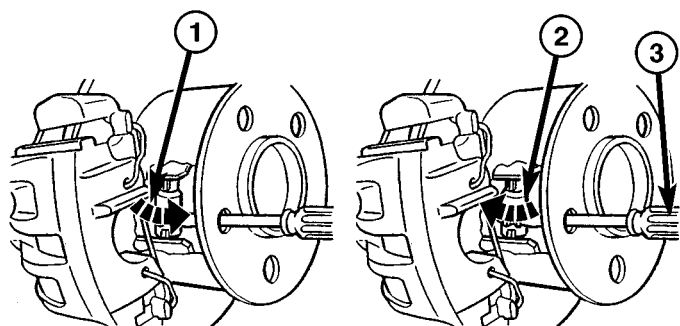
ADJUSTMENTS

ADJUSTMENT

- (1) Raise and support the vehicle.
- (2) Remove the rear wheels.
- (3) Turn the adjusting wheel through the hole of the wheel lug bolt until it is no longer possible to rotate the rear wheel (Fig. 38).

SHOES (Continued)

(4) Loosen the adjusting wheel 3-4 teeth divisions (Fig. 38).

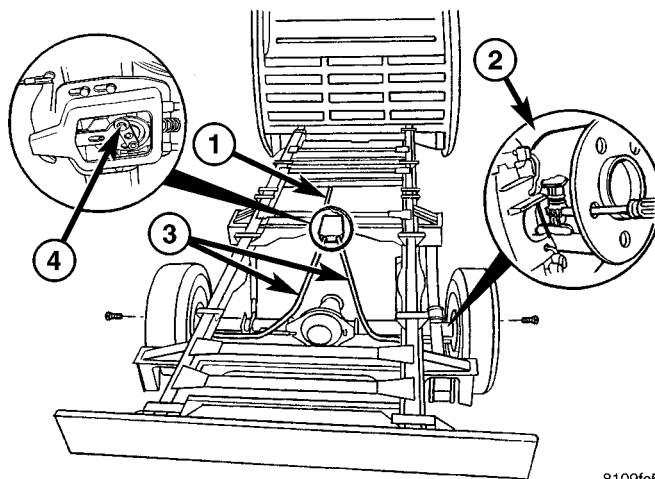


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Fig. 38 STAR WHEEL ADJUSTER

- 1 - LEFT HAND PARK BRAKE SHOES APPLIED
- 2 - RIGHT HAND PARK BRAKE SHOES RELEASED
- 3 - FLAT BLADED TOOL

(5) Inspect the clearance, or a slight drag when rotating the wheel/rear disc brake rotor (Fig. 39).



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Fig. 39 ADJUSTING REAR PARK BRAKE SHOES

- 1 - FRONT BRAKE CABLE
- 2 - SHOE ADJUSTER
- 3 - REAR BRAKE CABLES
- 4 - PARK BRAKE CABLE ADJUSTER

(6) Install rear wheels.
 (7) Lower the vehicle and test the park brake system to hold the vehicle.

BRAKES - ABS

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BRAKES - ABS

SPECIFICATIONS - TORQUE CHART

TORQUE SPECIFICATIONS

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Brake Lines To Hydraulic unit	16	—	12

ELECTRICAL

DESCRIPTION

NOTE: Wheel speed sensor should be installed all the way into the clamping bushings, the wheel speed sensor will self adjust when the vehicle is moved.

The ABS brake system uses 4 wheel speed sensors. A sensor is mounted to each front hub/bearings in the front. A rear sensor is mounted to each rear support plate.

OPERATION

The Wheel Speed Sensor consists of a magnet surrounded by windings from a single strand of wire. The sensor sends a small AC signal to the CAB. This signal is generated by magnetic induction. The magnetic induction is created when a toothed sensor ring (exciter ring or tone wheel) passes the stationary magnetic WSS.

When the ring gear is rotated, the exciter ring passes the tip of the WSS. As the exciter ring tooth approaches the tip of the WSS, the magnetic lines of force expand, causing the magnetic field to cut across the sensor's windings. This, in turn causes current to flow through the WSS circuit (Fig. 1) in one direction. When the exciter ring tooth moves away from the sensor tip, the magnetic lines of force collapse cutting the winding in the opposite direction. This causes the current to flow in the opposite direction. Every time a tooth of the exciter ring passes the tip of the WSS, an AC signal is generated. Each AC signal (positive to negative signal or sinewave) is interpreted by the CAB. It then compares the frequency of the sinewave to a time value to calculate vehicle speed. The CAB continues to monitor the frequency to determine a deceleration rate that would indicate a possible wheel-locking tendency.

The signal strength of any magnetic induction sensor is directly affected by:

- Magnetic field strength; the stronger the magnetic field, the stronger the signal