# Drum Brake Inspection, Maintenance, and Service

Student/intern	information:			
Name		Date	Class	
Vehicle used for	r this activity:			
Year	Make		Model	
Odometer		VIN		

CDX Tasksheet **2008 NATEF** 2008 NATEF Learning Objective/Task Reference Number Number Priority Level Diagnose poor stopping, noise, vibration, pulling, grabbing, C706 5C1 P-1 dragging, or pedal pulsation concerns; determine necessary action. C800 5C2 P-1 · Remove, clean, inspect, and measure brake drums; determine necessary action. • Refinish brake drum; measure final drum diameter. C626 5C3 P-1 · Remove, clean, and inspect brake shoes, springs, pins, clips, C248 5C4 P-1 levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. Inspect and install wheel cylinders. C707 5C5 P-2 • Pre-adjust brake shoes and parking brake; install brake C801 5C6 P-2 drums or drum/hub assemblies and wheel bearings. Install wheel, torque lug nuts, and make final checks and C251 5C7 P-1 adjustments.

**Recommended Resource Materials** 

#### • CDX Automotive program

- CDX eTextbook
- Technical service bulletins, shop manuals, and any other information applicable to the specific vehicle or components you are working on
- Class notes

## **Materials Required**

- Vehicle with drum brake concern
- Manufacturer-specific tools depending on the concern
- Vehicle lifting equipment
- Asbestos removal equipment
- Drum brake micrometer
- Brake spring tools
- Micrometer or dial caliper
- · Flare nut wrench to fit brake line fitting
- Brake spoon

## Some Safety Issues to Consider

• Diagnosis of this fault may require test driving the vehicle on the school grounds or on a hoist, both of which carry severe risks. Attempt this task only with full permission from your supervisor/instructor and follow all the guidelines exactly.

Caution: Brake dust may contain asbestos, which has been determined to cause cancer when inhaled or

ingested. Treat all brake dust as if it contains asbestos and use OSHA-approved asbestos removal equipment. Do not allow brake dust to become airborne by using anything that would disturb the dust. Also, wear

Lifting equipment such as vehicle jacks and stands, vehicle hoists, and engine hoists are important tools that increase productivity and make the job easier. However, they can also cause severe injury or death if used improperly. Make sure you follow the manufacturer's operation procedures. Also make sure you have

protective gloves during this procedure and dispose of or clean them in an approved manner.

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your supervisor/instructor's permission to use any particular type of lifting equipment.

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Time off\_\_\_\_\_

Time on\_\_\_\_\_

Total time\_\_\_

- Always wear the correct protective eyewear and clothing and use the appropriate safety equipment, as well as fender covers, seat protectors, and floor mat protectors.
- Make sure you understand and observe all legislative and personal safety procedures when carrying out practical assignments. If you are unsure of what these are, ask your supervisor/instructor.

### **Performance Standard**

- **O-No exposure:** No information or practice provided during the program; complete training required
- **1-Exposure only:** General information provided with no practice time; close supervision needed; additional training required
- **2-Limited practice:** Has practiced job during training program; additional training required to develop skill
- 3-Moderately skilled: Has performed job independently during training program; limited additional training may be required
- 4-Skilled: Can perform job independently with no additional training

<b>TASK</b> Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging,	
or pedal pulsation concerns; determine necessary action.	C706 5C1

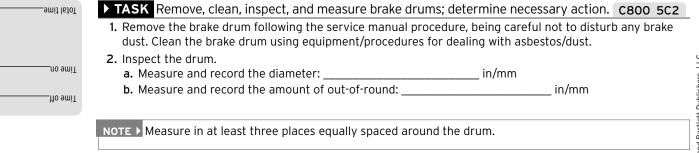
1. List the drum brake-related customer complaint/concern:

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- Research the description and operation of the brake system for this vehicle in the appropriate service manual. Also research the drum brake diagnostic procedure and removal/installation procedures.
   a. List the possible cause/s of the complaint/concern:
  - b. Maximum drum diameter: \_\_\_\_\_\_ in/mm
  - c. Maximum drum out-of-round: \_\_\_\_\_\_ in/mm
  - d. Minimum lining thickness: (Primary) \_\_\_\_\_ in/mm (Secondary) \_\_\_\_\_ in/mm
  - e. Parking brake adjustment specification:
  - f. Lug nut torque: \_\_\_\_\_\_ ft-lbs/Nm
  - g. Draw lug nut torque pattern:
- **3.** With instructor permission, test drive the vehicle to verify the concern. Be sure to follow all shop policies regarding test drives. List your observations:

The rest of this task is performed at the end of the drum brake service. Please refer to page 38 for the completion of this task.



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- c. Hot spots? Yes/No (Circle one)
- d. Cracks? Yes/No (Circle one)
- e. Other defects? List if found:
- 3. Based on your observations/measurements, determine any necessary action/s:
- **4.** Have your supervisor/instructor verify satisfactory completion of this procedure, any observations found, and any necessary action/s recommended.

Performance Rating		CDX Tasksheet Number: C80	00 2008 NATEF Ref	ference Number: 5C2
0	1	2	3	4
Supervisor/instructor signat	ure			Date
TASK Refinish bra	ke drum; measure final	drum diameter	C626 5	:02
		efinish the brake drum to within a		Time off
•				_
	1	ur findings here:		Time on
<ol><li>Calculate the amour</li></ol>	nt of material removed fro	m the surface of the drum:	in/mm	
4. Does the drum meet a. Why or why not?	•	y put back into service? <b>Yes/No</b> ((	Circle one)	
				Total time

**5.** Have your supervisor/instructor verify satisfactory completion of this procedure, any observations found, and any necessary action/s recommended.

Performance Rating		CDX Tasksheet Number: C6	26 2008 NATI	EF Reference Number: 5C3	
0	1	2	3	4	
Supervisor/instructor signal	:ure			Date	

0

- iii. Levers and adjusters: Damaged/Missing/OK (Circle one)
- iv. Backing plate: Damaged/Worn/OK (Circle one)
- v. Other hardware: Damaged/Missing/OK (Circle one)

3. Determine any necessary action/s:

4. Have your instructor initial to verify condition of hardware:

The rest of this task is performed at the end of the drum brake service. Please refer to page 37 for the completion of this task.

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TASK Inspect and install wheel cylinders.
 C707 5C5
 Remove the wheel cylinder following the service manual procedure to prepare for inspection.

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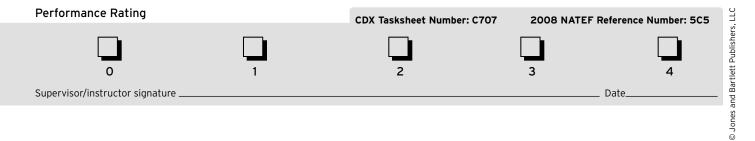
**NOTE** To prevent twisting the brake line, it is common practice to loosen the brake line fitting before unbolting the wheel cylinder.

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- 2. Disassemble, clean, and inspect the wheel cylinder for damage, wear, or missing pieces.
   a. Bore: Damaged/OK (Circle one)
  - b. Pistons: Damaged/Missing/OK (Circle one)
  - c. Seals: Damaged/Missing/OK (Circle one)
  - d. Dust boots: Damaged/Missing/OK (Circle one)
  - e. Spring/s: Damaged/Missing/OK (Circle one)
- 3. List any necessary action/s:
- **4.** Have your supervisor/instructor inspect the disassembled wheel cylinder and determine whether it can be rebuilt or whether it needs to be replaced:
  - a. Rebuild/Replace (Circle one, then initial) \_\_\_\_\_
- 5. If the wheel cylinder can be reused, rebuild it, preferably with new seals and dust boots.
- 6. Reinstall the wheel cylinder on the backing plate.

**NOTE** It is usually best to start the brake line fitting into the wheel cylinder before bolting the cylinder down. This will allow the threads of the brake line fitting to align with the threads in the wheel cylinder, preventing cross-threading of the parts.

7. Have your supervisor/instructor verify satisfactory completion of this procedure, any observations found, and any necessary action/s recommended.



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TASK	C248/5C4 Continued Remove, clean, and inspect brake shoes, springs, pins, clips,
	levers, adjusters/self-adjusters, other related brake hardware, and backing support plates;
	lubricate and reassemble (from page 35-36).

Time off\_

Time on\_

Total time.

NOTE Many vehicles use a primary shoe toward the front of the vehicle and a secondary shoe toward the rear of the vehicle. Refer to the manufacturer's specifications to install the shoes, springs, and hardware correctly.

- 5. Following the manufacturer's procedure, reassemble the brake assembly (shoes, springs, and hardware).
- 6. Are the springs seated correctly? Yes/No (Circle one)
- 7. Does the self-adjuster operate properly? Yes/No (Circle one)
- 8. List any necessary action/s:
- 9. Have your supervisor/instructor verify satisfactory completion of this procedure, any observations found, and any necessary action/s recommended.

Performance Rating	CDX Tasksheet Number: C248	2008 NATEF Reference I	Number: 5C4
	2	3	4
Supervisor/instructor signature		Date	
▶ TASK Pre-adjust brake shoes and parking brake, assemblies and wheel bearings.	install brake drums or drum	n/hub C801 5C6	Time off
<ol> <li>If this vehicle uses serviceable wheel bearings, see th and clean, inspect, service, reinstall, and adjust them</li> <li>Install the brake drum.</li> </ol>	- ,	-	1111C 011
<ul> <li>a. Does the brake drum turn without excessive drag?</li> <li>b. If equipped with adjustable wheel bearings, are the</li> </ul>		(Circle one)	Total time
NOTE The brakes may need air bled out of the wheel cy they were, consider bleeding all wheel cylinders once all have all drums and calipers installed could cause damage pads. Ask your instructor if you are unclear about this.	drums and calipers are back in	place. Failure to	

3. Have your supervisor/instructor verify satisfactory completion of this procedure, any observations found, and any necessary action/s recommended.

	Performance Rating		CDX Tasi	ksheet Number: C801 2	008 NATEF Reference Number: 5C6
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Publish					Date
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	1. Draw the lug nut torque pattern for thi	s vehicle:		
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1to əmiT	2. Install the wheel/s, place lug nuts on st proper torque.	uds with the proper side faci	ing the wheel, and torque	them to
	NOTE ▶ If in doubt about which way the nu	ts should face, ask your insti	ructor.	
	<b>3.</b> What torque did you tighten the lug nu	ts to?	ft-lbs/Nm	
	4. Reinstall any wheel covers that have be	een removed.		
	<ul> <li>5. Check to see that the brake master cyl</li> <li>a. Is it at the proper level? Yes/No (Cin</li> <li>b. If no, refill with the proper fluid.</li> </ul>		t of brake fluid in it.	
	6. Check the backing plates for any leaks	or loose fasteners.		
	7. Have your supervisor/instructor feel bus sary to final adjust brakes and verify sa			Irive is nece
Performance Ratir	ng c	DX Tasksheet Number: C251	2008 NATEF Reference	Number: 5C7
0	1	2	3	4
C · /· / /			-	•
Supervisor/instructor	signature		Date	•
_	► TASK C706/5C1 Continued Diagno		Date Date	-
		oncerns; determine neces	Date Date Date Date Date Date Date Date	e 34).
Total time	► TASK C706/5C1 Continued Diagno dragging or pedal pulsation of	oncerns; determine neces	Date Date Date Date Date Date Date Date	e 34).
	► TASK C706/5C1 Continued Diagno dragging or pedal pulsation of	oncerns; determine neces	Date Date Date Date Date Date Date Date	e 34).
Total time	<ul> <li>TASK C706/5C1 Continued Diagnod</li> <li>dragging or pedal pulsation of</li> <li>4. Reflecting back on this job, list the cause</li> </ul>	concerns; determine neces s of the customer concern as I	Date Date Date Date Date Date Date Date	e 34).
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no əmiT 	<ul> <li>TASK C706/5C1 Continued Diagnod</li> <li>dragging or pedal pulsation of</li> <li>4. Reflecting back on this job, list the cause</li> </ul>	oncerns; determine neces s of the customer concern as I	Date Date Date Date Date Date Date Date	e 34).
no əmiT 	<ul> <li>TASK C706/5C1 Continued Diagnod dragging or pedal pulsation of 4. Reflecting back on this job, list the cause</li> <li>5. Document the correction/s required to</li> <li>6. Did you repair the vehicle? Yes/No (Cir</li> </ul>	s of the customer concern as I	Date Date Date Date Date Date Date Date	e 34).
Time on- 	<ul> <li>TASK C706/5C1 Continued Diagnod dragging or pedal pulsation of 4. Reflecting back on this job, list the cause</li> <li>5. Document the correction/s required to</li> </ul>	s of the customer concern as I	Date Date Date Date Date Date Date Date	e 34).
Time on- 	<ul> <li>TASK C706/5C1 Continued Diagnod dragging or pedal pulsation of 4. Reflecting back on this job, list the cause</li> <li>5. Document the correction/s required to</li> <li>6. Did you repair the vehicle? Yes/No (Cir</li> </ul>	soncerns; determine neces s of the customer concern as I fix the customer concern: cle one) satisfactory completion of ti	bate bration, pulling, grabb ssary action (from page isted at the beginning of th	e 34). nis tasksheet

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Date\_

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Supervisor/instructor signature \_

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