

# MANUAL DRIVE TRAIN AND AXLES



## Tasksheet Manual for NATEF Proficiency

**CDX Automotive**



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LEARNING



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The procedures and protocols in this book are based on the most current recommendations of responsible sources. The publisher, however, makes no guarantee as to, and assume no responsibility for, the correctness, sufficiency, or completeness of such information or recommendations. Other or additional safety measures may be required under particular circumstances.

For every task in ASE 3: Manual Drive Train and Axles, the following safety requirement must be strictly followed: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

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# Resource Preview

2008 NATEF and CDX tasksheet numbers appear at the beginning and end of every task, as well as in the general information for the section.

Required and recommended materials and equipment are listed for each task.

Safety issues relevant to the tasks are listed at the beginning of every section.

### Vehicle, Customer, and Service Information

Student/Intern Information: \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

Vehicle Used: \_\_\_\_\_  
 Year \_\_\_\_\_ Make \_\_\_\_\_ Model \_\_\_\_\_  
 Odometer \_\_\_\_\_

Learning Objective/Task	CDX Tasksheet Number	2008 NATEF Reference Number	2008 NATEF Priority Level
• Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	C761	3A1	P-1
• Locate and interpret vehicle and major component identification numbers.	C762	3A4	P-1
• Research applicable vehicle and service information, such as drive train system operation, fluid type, vehicle service history, service precautions, and technical service bulletins.	C102	3A3	P-1
• Identify and interpret drive train concern; determine necessary action.	C101	3A2	P-1
• Describe the operational characteristics of an electronically controlled manual transmission/transaxle.	C611	3C17	P-3

**Recommended Resource Materials**

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

**Materials Required**

- Blank work order
- Vehicle with available service history records
- Depending on the type of concern, special diagnostic tools may be required. See your supervisor/instructor for instructions to identify what tools may be required.

**Some Safety Issues to Consider**

- Diagnosis of this fault may require test driving the vehicle on the school grounds. Attempt this task only with full permission from your instructor and follow all the guidelines exactly.
- When running any vehicles in the shop, make sure you use the shop's exhaust ventilation system to discharge all exhaust gas safely outside.
- 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 your supervisor/instructor's permission to use any particular type of lifting equipment.
- 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.

Time off \_\_\_\_\_  
 Time on \_\_\_\_\_  
 Total time \_\_\_\_\_

Vehicle, Customer, and Service Information 1

Performance Rating

CDX Tasksheet Number: C764      2008 NATEF Reference Number: 3C1

0      1      2      3      4

Supervisor/instructor signature \_\_\_\_\_ Date \_\_\_\_\_

**TASK** Measure flywheel runout and crankshaft end play; determine necessary action. C848 3B8

1. Research the specifications and procedure for measuring flywheel runout and crankshaft end play in the appropriate service information.

a. Flywheel runout: \_\_\_\_\_ in/mm

b. Crankshaft end play: \_\_\_\_\_ in/mm

2. Following the specified procedure, remove the transmission/transaxle. List any observations:

3. Following the specified procedure, remove the pressure plate and clutch disc.

**NOTE** It is good practice to remove the pressure plate bolts evenly. This requires backing each bolt out a turn or two at a time to avoid warping the pressure plate. Also, have an assistant hold the pressure plate and clutch disc when they get close to becoming loose to avoid dropping them on the floor and damaging them or injuring your feet.

4. Clean up any debris using an approved method for disposing of hazardous dust.

5. Following the specified procedure, measure the following.

a. Flywheel runout: \_\_\_\_\_ in/mm

b. Crankshaft end play: \_\_\_\_\_ in/mm

6. Determine any necessary action/s:

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

Performance Rating

CDX Tasksheet Number: C848      2008 NATEF Reference Number: 3B8

0      1      2      3      4

Supervisor/instructor signature \_\_\_\_\_ Date \_\_\_\_\_

Time off \_\_\_\_\_  
 Time on \_\_\_\_\_  
 Total time \_\_\_\_\_

Clutch Diagnosis and Repair 23

Time card feature appears at the beginning of every task and allows students to track the time they spend on each task.

Note boxes offer students vital information to consider while performing the task.

Performance standard and rating areas simplify the sign-off process for instructors.

## Acknowledgments

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# CDX Automotive

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