

PREPARATION KIT



HEAVY VEHICLE MECHANICS ADVANCED

23
24



VERSION 11-2023

qualifying exam

WHY THE QUALIFICATION?

The professional qualification exam is an assessment tool that aims to certify that your knowledge and skills meet standards.

The exam is identical throughout Quebec. The qualification certificate obtained following successful completion is recognized in the other provinces of Canada and in France.



→ For the mechanic

it is the recognition of their skills and the improvement of their working conditions.

→ For the employer

it is the certification of the qualification of its staff.

→ For the public

it is a guarantee of confidence and safety.

SUGGESTED ROUTE TOWARDS QUALIFICATION



Training



Link: www.cpcpa.ca/qualification-et-formation/formations

Description: Training is available depending on the skills to be worked on. With the help of the CPA training advisor in your region, it is possible to put together a training plan adapted to the needs of each candidate.



Qualifying exam

Exam: Heavy vehicle mechanics Advanced

Location: CPA in your region

Card: Class B, Class B/A, Class A (*depending on the region*)

Description: The qualification exam includes only a **theoretical component**.

Prerequisite: Journeyman (Class C)



THE THEORETICAL COMPONENT



CPA in your area



150 minutes

Number of questions: 70 from a bank (random)

Distribution of questions:

10% knowledge

35% understanding

55% diagnosis

Passing grade :

49.9% → **Class B**

62.5% → **Class A/B** (*depending on region*)

75% → **Class A**

Right to retake exam: 3 months

Questions similar to the ones found in the exam can be found here:

[CLICK HERE](#)





Process

- ➔ A computer is assigned to each candidate upon arrival.
- ➔ The supervisor will remind you of the rules for conducting the exam.
- ➔ It is possible to raise your hand to ask questions relating to the use of the software or the computer only.
- ➔ The software allows you to navigate between questions, allowing for revision at the end.
- ➔ Cell phones, lighters, and other computer devices must be given to the supervisor upon arrival.
- ➔ You have the right to use your personal headphones if you wish (the software allows automated reading of questions).

SKILLS



Management and suspension

- Axles and end cap
- Wheels and rims
- Steering system
- Air suspension system

Know and recognize roles and functions

Understand how it works

Diagnose and understand problems



SKILLS



Engine, emission control

- Mechanical part
- Emission control system
- Intake system
- Exhaust system
- Fuel system
- Engine brake system
- Lubrication system
- Cooling system

Know and recognize roles and functions

Understand how it works

Diagnose and understand problems

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SKILLS



Electric and comfort control system

Know and recognize roles and functions

Understand how it works

Diagnose and understand problems

- Air conditioning
- Internal and external elements
- Driving assistance system
- Heating system
- Starting and charging system
- Electronic management system
- Electrical system
- Multiplex system
- Auxiliary unit

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SKILLS



Brake system and hydraulic system

Know and recognize roles and functions

Understand how it works

Diagnose and understand problems

ABS, ATC, and RSC brakes



Hydraulic brakes



Air brakes



Pump, control, and cylinder

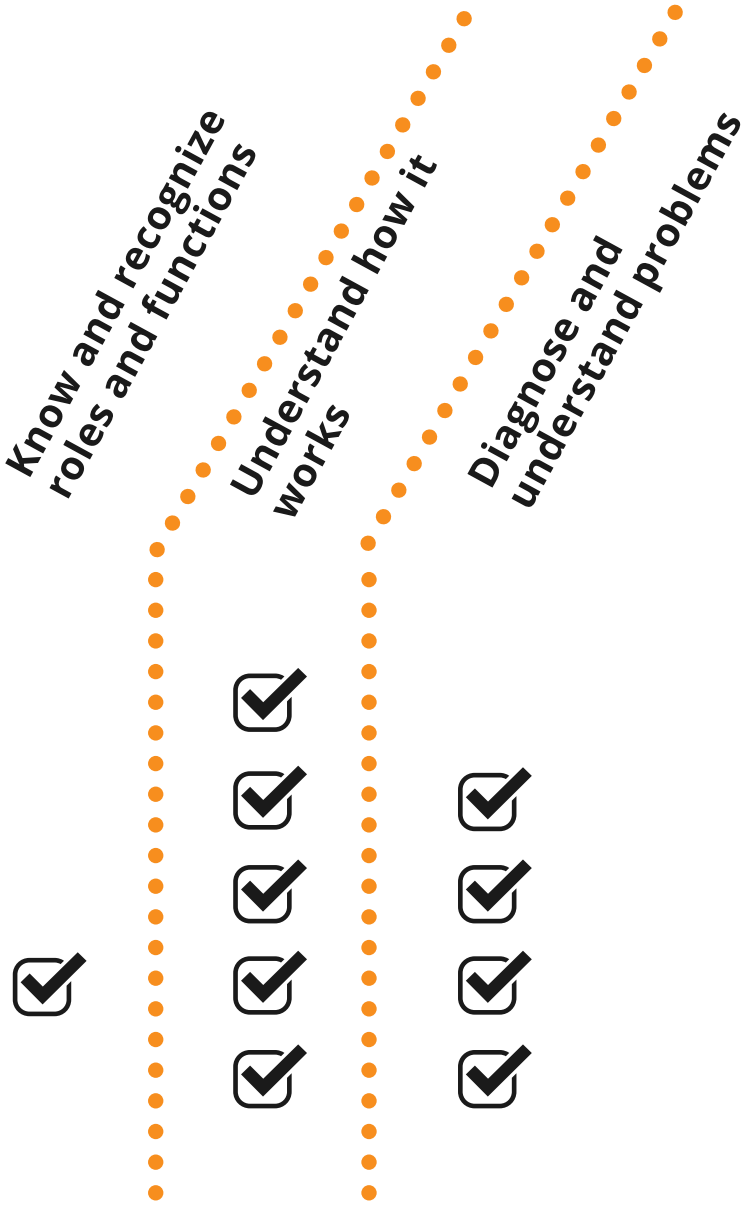




SKILLS



Transmission



Differential

Clutches

Transmission unit

Automatic transmission

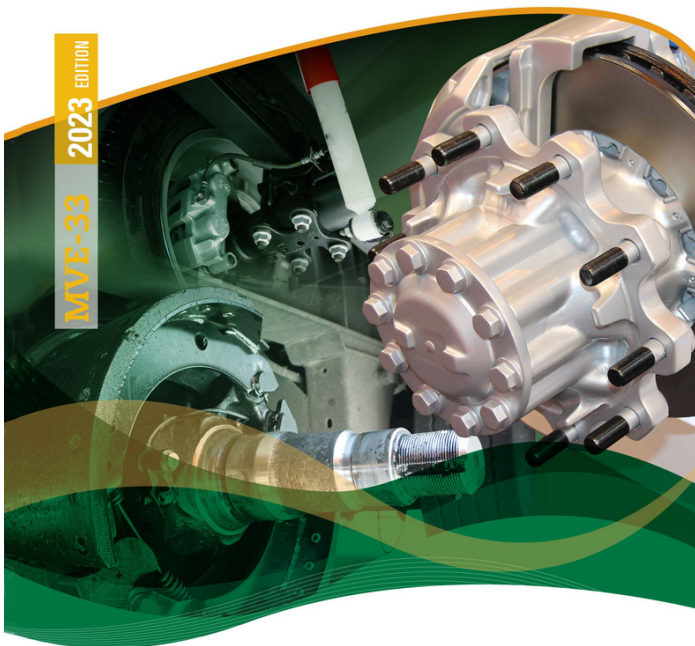
Manual transmission

TRAINING

Developed by the CFCPA,
the CPA and our partners



Advanced Heavy Vehicle Hydraulic and Air Brakes



Training duration

In person **24 hours**

Hydraulic and Air Brakes



Description

This training is aimed at mechanics in the heavy vehicle industry wishing to update their advanced knowledge.

At the end of this training, the participant will be able to diagnose the various components of hydraulic and pneumatic brakes as well as their subsystems, and to perform maintenance and repair.

Course Objectives

- Review the basic principles of the hydraulic and pneumatic braking system.
- Diagnose the ABS brake system of a hydraulic system.
- Diagnose the different parts of hydraulic systems as well as their aids.
- Carry out leak checks on the hydraulic braking system, as well as bleeding.
- Diagnose the air supply to the circuit and the different types of compressors.
- Diagnose the air dryer.
- Review the role of valves in the pneumatic system.
- Define the operation of braking control for a tractor without a semi-trailer.
- Identify the pneumatic circuit of the semi-trailer, its operation and its diagnosis.
- Diagnose mechanical brake parts, drum and disc brakes.
- Diagnose the anti-lock braking system, its parts and its different configurations.

TRAINING

Developed by the CPCPA,
the CPA and our partners



Advanced Heavy Vehicle Engine and Related Systems



Training duration

In person **24 hours**

Engine and Related Systems



Description

This training is aimed at mechanics in the heavy vehicle industry wishing to update their advanced knowledge.

At the end of this training, the participant will be able to diagnose the various systems attached to the engine as well as their subsystems, and to carry out maintenance and repair.

Course Objectives

- Identify the operating principles of the engine and adjust the height parts of the engine.
- Diagnose and analyze the lubrication system.
- Identify new engine oil standards.
- Diagnose and analyze the cooling system.
- Diagnose and analyze the air intake system.
- Diagnose and analyze the gas exhaust system.
- Review the different types of injection systems.
- Diagnose the fuel and injection system.
- Diagnose the different types of speed bumps.
- Identify the different anti-pollution standards for diesel engines.
- Identify the different tests to be carried out on particle filters and urea injection.

TRAINING

Développé par le CPCPA,
les CFA et nos partenaires



Véhicule lourd Avancé
Systèmes électriques, électroniques
et contrôle de l'air ambiant



Training duration

In person **24 hours**

Electrical, electronic and control systems ambient air



Description

This training is aimed at mechanics in the heavy vehicle industry wishing to update their advanced knowledge.

At the end of this training, the participant will be able to diagnose, maintain and repair electrical circuits and their subsystems as well as temperature control systems.

Course Objectives

- Master the basic principles of electricity as well as to use a multimeter.
- Diagnose the different sensors used on vehicles.
- Control voltage drops.
- Diagnose control modules.
- Diagnose the multiplex system.
- Master certain Controller Analyzers.
- Master the different types of batteries as well as their diagnostics.
- Master and diagnose the charging system.
- Identify the different safety systems added.
- Identify the different systems and products needed for the heating and air conditioning system.

TRAINING



Transmission, steering, direction

Description

This training is aimed at mechanics in the heavy vehicle industry wishing to update their advanced knowledge.

At the end of this training, the participant will be able to identify the different components of the transmission, suspension and steering. To be able to effectively diagnose them and their subsystems and carry out maintenance and repairs.

Course Objectives

- Identify symptoms requiring clutch intervention.
- Identify the main components of a manual transmission depending on the model.
- Establish the failure analysis of a manual transmission.
- Define a diagnostic procedure on an Eaton automated transmission.
- Identify the different conditions to enable and disable Eaton fault codes.
- Identify the different diagnostic means on the different automated transmissions (Volvo, Detroit).
- Define, diagnose and maintain the Allison transmission.
- Identify the particularities of the working angles of the transmission shafts.
- Identify parts and types of differentials.
- Review the different types of suspensions, their operation and the corresponding parts.
- Diagnose air spring suspension.
- Diagnose the different types of steering angles.
- Proceed to check the hydraulic steering assistance system.
- Diagnose tire and wheel symptoms.
- Diagnose hub bearing symptoms.

Développé par le CFCPA,
les CPA, et nos partenaires



Véhicule lourd Avancé

Transmission, suspension, direction



Avec la contribution financière de :



Training duration

In person **21 hours**

HEAVY VEHICLE MECHANICS ADVANCED