MANITOBA
PUBLIC INSURANCE

Lesson 3

Air Brakes

Exercise Book

Table of Contents

Introduction

Purpose

This Exercise Book contains exercises related to MANDATORY ENTRY-LEVEL TRAINING MANITOBA CLASS 1 (MELT) PROGRAM Lesson 3.

Approach

This lesson covered information related to Air Brakes through:

- MPI's Air Brake Manual
- In-class instruction
- The course textbook

Tips for End Users

Use all the reference materials provided to complete the exercises.

Exercise 1: Operating Principles

Instructions

- Answer the questions below
- Use the resources listed to assist you (if required)

Resources

- MPI Air Brake Manual
- In-class instruction
- Manufacturer's manual (options)

Questions

1. Describe how power is obtained in air brake systems (include reference to leverage and air pressure).

Fill in the Table

For each scenario provide the increase in required brake power.

Scenario	Required Brake Power Increased by How Much?
Doubled Weight	
Doubled Speed	
Doubled Weight and Speed	

Exercise 2: Components of Air Brakes

Instructions

- Provide answers to the questions below
- Use the resources listed to assist you (if required)

Resources

- MPI Air Brake Manual
- In-class instruction
- Air Brake Diagram Activity & Study Guide

Fill in the Table

Provide a description or function of each type of valve.

Valve	Description or Function
Quick Release Valve	
Relay Valve	
Bobtail Proportioning Relay Valve	
Spring Parking Brake Control Valve	
Hand Valve	
Trailer Air Supply Valve	
Trailer Control Valve	

Questions

1. List possible reasons for a supply circuit failure and how to recognize if there is an issue.

2. Draw a line to match each component to its purpose.

Component	Purpose
Reservoir	To create friction needed to stop the vehicle
Brake Chambers	To hold compressed air
Air Compressor	Convert compressed air pressure energy into a mechanical force and movement, which apply the vehicle's brakes
Foot Valve	To build up and maintain air pressure
Brake Shoes, Linings and Drums	Applies air to operate the brakes and is regulated by the driver

3. Indicate if the statement below is true or false.

   All reservoirs must be completely drained once a week.

   True False

Exercise 3: Variables Affecting Braking

Instructions

- Fill in the table below
- Use the resources listed below to assist you (if required)

Resources:

- MPI Air Brake Manual (optional)

In-class instruction

Fill in the Table

For each variable, provide a potential braking affect.

Variable	Potential Affect
Tractor Bobtailing	
Travelling on Downgrades	
Water on Roadways	

Exercise 4: Air Brake Operation and Adjustments

Instructions

- Answer the questions below
- Use the resources listed to assist you (if required)

Resources

- MPI Air Brake Manual
- In-class instruction

Questions

1. Describe how to properly store glad hand couplers when not in use.

2. Explain the difference between major and minor air brake system defects.

Exercise 5: MPI Air Brake Manual Review

Instructions

- Answer the questions below
- Use the resources listed to assist you (if required)

Resources

- MPI Air Brake Manual
- In-class instruction

Questions

1. What are the key points to remember when inspecting air brake system operations?

2. What are the key things to remember when inspecting air brake adjustment?

3. What is the difference between hydraulic brakes and air brakes?

4. How do anti-lock braking systems assist a vehicle with braking?

In-Yard Assessment Preparation

Instructions

- Read and understand the following checklist (pre-check inspection points) to prepare for the in-yard assessment of air brake operation and inspection
- Use the resources listed to assist you (if required)

Resources

- MPI Air Brake Manual

Introduction

An air brake inspection must be carried out on every air brake equipped vehicle before you start driving for the day and logged as outlined in The Highway Traffic Act and its regulations.

At the end of the final trip of the day, you should inspect your vehicle for any damage or problems that may have developed on the road, including the air brake system. Complete an inspection report and note any defects.

The In-Yard Assessment for Lesson 3 Air Brakes includes a pre-trip inspection and brake adjustments. Use the pre-trip list to review and prepare for the In-Yard Assessment. The Air Brake Manual also provides inspection checklists for air brakes.

Additional Notes / Exercise Area