

Gasfitter A Level 4

Gasfitter A

Unit: D1 A Level Requirements Update

Level: Four

Duration: 35 hours

Theory: 7 hours

Practical: 28 hours

Overview:

As adult trade-learners, Gasfitter apprentices at all levels of skill-development are encouraged to use their eyes, ears, prior knowledge, and interpersonal skills to encourage journeypersons to teach as well as to supervise them. This requires understanding the trade's dynamics, including the roles and responsibilities that order jobsite activity taught to you previously. This Unit content reviews the trade's skill-requirements and long-term career possibilities outlined in the previous levels. The unit's purpose is to review essential information about learning to learn as a Manitoba Gasfitter apprentice and prepare for further learning.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe Level 4 Gas A requirements via trade project.	25%
2. Demonstrate Level 4 Gas A requirements via trade project.	75%
a. B Licence requirements	
b. Mathematics (including gas trade formulas)	
c. Sciences	
d. Electrical (controls, phasing, CE, flame safeguard systems)	
e. B149.3 gas codes and MB gas notices	
f. "A" gas fired equipment layout	
g. Boilers	
h. Air make ups	
i. LPGs	
j. Combustion analysis	
k. Other gas fired equipment e.g., mine shaft heaters, grain dryers	
l. Troubleshooting	

Gasfitter A

Unit: D2 Commissioning (Gas Notices)

Level: Four

Duration: 70 hours

Theory: 50 hours

Practical: 20 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of commissioning (gas notices).

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe best practices re B149.3 and Manitoba Gas Notices.	18%
a. Describe procedures recommended and adopted by the Canadian Standards Association and Manitoba Regulatory bodies.	
b. Describe basic procedures to be followed in the field with respect to safety related tests preliminary to firing.	
c. Describe dry run.	
d. Describe procedures to be followed to interface with regulatory bodies in Manitoba.	
2. Describe equipment related commissioning procedures.	18%
3. Describe safety related requirements.	17%
4. Describe factory mutual (FM) industrial flame safeguards.	10%
5. Describe how procedures differ when commissioning appliances.	7%
a. industrial processing	
b. heating	
c. direct fired	
d. hydronic boiler	
e. steam boilers	
f. propane vaporization	
g. liquid propane supply system	
6. Demonstrate commissioning practices for different types of equipment.	30%

Gasfitter A

Unit: D3 Electrical Controls (Building Systems)

Level: Four

Duration: 45 hours

Theory: 35 hours

Practical: 10 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of electrical controls (building systems) and multiple industrial burner controls.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe advanced level 4 controls for multiple gas appliances.	44%
2. Describe building management system and their safety interlock with gas equipment.	9%
3. Describe multiple Industrial Gas Burners electrical interlock.	25%
4. Demonstrate building management system and their safety interlock with gas equipment.	11%
5. Demonstrate multiple Industrial Gas Burners electrical interlock.	11%

Gasfitter A

Unit: D4 Requirements for High Capacity Appliances

Level: Four

Duration: 10 hours

Theory: 10 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of requirements for high capacity appliances.

Objectives and Content:

**Percent of
Unit Mark (%)**

1. **Describe valve train requirements for high capacity appliances.**
 - a. B149.3 requirements
 - b. Understand large capacity burners
 - c. Valve train requirements greater than 10 million BTUs.

100%

Gasfitter A

Unit: D5 Advanced B149.3 Gas Codes and Manitoba Gas Notices Requirements Updates

Level: Four

Duration: 30 hours

Theory: 30 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of advanced Gas Codes and Manitoba Gas Notices requirements updates.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe specific requirements for safety and operating equipment related to high capacity appliances.	34%
2. Describe how to verify proper application of above requirements.	33%
3. Describe recent gas code updates and Manitoba Gas Notices.	33%

Gasfitter A

Unit: D6 Industrial Burner Installations

Level: Four

Duration: 70 hours

Theory: 35 hours

Practical: 35 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of industrial burner installations as per manufacturer specifications.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe different types of industrial burners and their manufacturers and related appliances.	9%
2. Describe various types of gas regulators, mixers, governors, and ratios.	9%
3. Describe safety requirements re: industrial burners and installations.	9%
4. Describe burner set-up as per manufacturer specifications.	9%
5. Describe Factory Mutual (FM) style applications.	9%
6. Describe Infra Red flame detection systems, their use in the industrial setting and rules around flame safeguard systems controlling burners of differing inputs(R application).	5%
7. Demonstrate burner set-up as per manufacturer specifications.	25%
8. Demonstrate Factory Mutual (FM) style applications.	25%

Gasfitter A

Unit: D7 Liquid Petroleum Gas (LPG)

Level: Four

Duration: 20 hours

Theory: 10 hours

Practical: 10 hours

Overview:

This unit of instruction is designed to provide the Gasfitter apprentice with the knowledge and understanding of LPG.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe LPG industrial vaporisers.	25%
2. Describe LPG use for internal combustion engines.	25%
3. Demonstrate liquid burner set-up.	50%
