



ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

Apprenticeship
Training Standard

Small Engine Technician

Trade Code: 435A

Development Date: September 2004

Please Note: Apprenticeship Training and Curriculum Standards were developed by the Ministry of Training, Colleges and Universities (MTCU). As of April 8th, 2013, the Ontario College of Trades (College) has become responsible for the development and maintenance of these standards. The College is carrying over existing standards without any changes.

However, because the Apprenticeship Training and Curriculum Standards documents were developed under either the *Trades Qualification and Apprenticeship Act* (TQAA) or the *Apprenticeship and Certification Act, 1998* (ACA), the definitions contained in these documents may no longer be accurate and may not be reflective of the *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA) as the new trades legislation in the province. The College will update these definitions in the future.

Meanwhile, please refer to the College's website (<http://www.collegeoftrades.ca>) for the most accurate and up-to-date information about the College. For information on OCTAA and its regulations, please visit: <http://www.collegeoftrades.ca/about/legislation-and-regulations>

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APPRENTICESHIP PROGRAM SUMMARY/GUIDELINES

1. **Program Definition:** **Small Engine Technician** is defined as a person who,
- Diagnoses, repairs and maintains small engine and engine systems for off-road vehicles and powered equipment.

SMALL ENGINE TECHNICIAN is an approved apprenticeship program for the purposes of the *Apprenticeship and Certification Act, 1998* (ACA).

2. **Program Guidelines**

- **On-The-Job Train Duration (*for apprentices*)**
The Industry Committee has identified **4520** hours as the duration generally necessary for any apprentice to become competent in the skills required. There may be individual circumstances where the duration varies from this guideline.
- **In-School Training Duration**
The Industry Committee has identified **480** hours of in-school training as the duration generally necessary for an apprentice to complete the in-school curriculum for this program, except where an apprentice has been exempted from any level of that curriculum.
- **Ratio**
The Industry Committee has identified a journeyman-to-apprentice ratio of one journeyman or individuals who are deemed equivalent to a journeyman status to one apprentice as the ratio generally necessary for an apprentice to be properly trained on the job in this program. There may be individual circumstances where the ratio varies from this guideline.

2. **Program Requirements**

- **Restricted Skill Sets**

This program does not contain any restricted skill sets as per Ontario Regulation 565/99, Restricted Skill Sets. Therefore, an individual is not required to be registered apprentice or possess certification in order to perform skills contained in the program.

- **Academic Standard**

The Industry Committee has identified the minimum academic standard for entry to this program as completion of Grade 12 or ministry-approved equivalent.

(See ACA Policy 102, Confirming Academic Requirements)

- **Eligibility for Exam Challenge (*for Non-apprentice C of Q Applicants*)**

The challenger must:

- provide proof of competency in all mandatory (unshaded) skills as identified in the Training Standard or Schedule of Training; and
- demonstrate that he/she has acquired 7.222 hours of on-the-job training.

(See ACA Policy 150, Assessing Applicants for the Certificate of Qualification)

- **Eligibility for Program Completion (*for Apprentices*)**

The apprentice must:

- achieve competency in all mandatory (unshaded) skills as identified in the Training Standard or Schedule of Training.
- complete the in-school training as outlined in the industry and ministry-approved Curriculum Standard.

(ACA Policy 309, Completion of an Apprenticeship Program)

- **Other Information**

- **Other Resources**

Complete program requirements, policies, and standards can be obtained by referring to the following resources:

- *Apprenticeship and Certification Act, 1998 (ACA)*;
- ACA General Regulation 573/99;
- ACA Exemption Regulation 566/99;
- Program-specific Apprenticeship Training Standards or Schedules of Training; and
- ACA Program and Policy Manual

- **Other Required Certification**

N/A

- **Academic Background**

Industry has identified relevant secondary school course(s) likely to increase an individual's chances of success if completed prior to program entry. For details, see the document Apprenticeship Subject Pathways.

SMALL ENGINE TECHNICIAN

COMPETENCY ANALYSIS PROFILE

Small Engine Technician – 435A

(All unshaded skill sets must be demonstrated/completed)

SKILL SETS

SKILLS

PROTECT SELF AND OTHERS 6400.0	Identify and take corrective action against potential workplace health and safety hazards 6400.01	Handle, store and dispose of hazardous workplace materials 6400.02	Wear and maintain personal protective equipment 6400.03	Comply with workplace-related legislation 6400.04	Practice good housekeeping in the workplace 6400.05
	Comply with Workplace Hazardous Materials Information System (WHMIS) guidelines 6400.06	Communicate with supervisors and co-workers 6400.07			
PERFORM GENERAL TRADE PRACTICES 6401.0	Interpret and apply service-related information 6401.01	Demonstrate effective customer relations 6401.02	Perform customer relations activities 6401.03	Perform seasonal storage of engines 6401.04	Perform visual inspection of Oxy/fuel heating and cutting equipment 6401.05
	Prepare repair area, set up and operate oxy/fuel heating and cutting equipment 6401.06	Verify condition of heating and cutting area 6401.07	Perform visual inspection of Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding equipment 6401.08	Prepare repair area, set up and operate Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) 6401.09	Verify integrity of weld 6401.10
	Perform visual inspection of arc welder 6401.11	Prepare repair area, set up and operate arc welding equipment 6401.12	Verify integrity of the arc weld 6401.13		

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PERFORM PRE-DELIVERY INSPECTION (PDI)	Check powered equipment and unit systems and components	Perform visual inspection of powered equipment, unit systems and components	Diagnose and troubleshoot powered equipment, unit systems and components	Complete a Pre-Delivery Inspection report	Perform powered equipment and unit-pre-delivery and setup
6402.0	6402.01	6402.02	6402.03	6402.04	6402.05
	Verify the pre-delivery Inspection report accuracy				
	6402.06				

REPAIR ELECTRICAL SYSTEMS	Perform visual inspection of starting and charging systems	Diagnose and troubleshoot batteries	Service and boost/charge batteries	Diagnose and troubleshoot electrical starting system and components	Repair starting systems and components
6403.0	6403.01	6403.02	6403.03	6403.04	6403.05
	Verify repair of starting systems and components	Diagnose and troubleshoot charging systems and components	Repair charging systems and components	Verify repair charging systems and components	Diagnose and troubleshoot electrical and electronically-controlled systems and components
	6403.06	6403.07	6403.08	6403.09	6403.10
	Repair electrical and electronically-controlled systems and components	Verify repair of electrical, electronically-controlled systems and components	Diagnose and troubleshoot electrical/ electronic ignition systems and components	Repair electrical/ electronic ignition systems and components	Verify repair of electrical/ electronic ignition systems and components
	6403.11	6403.12	6403.13	6403.14	6403.15

SMALL ENGINE TECHNICIAN

REPAIR ENGINE FUEL MANAGEMENT SYSTEMS	Perform visual inspection of mechanically and electronically-controlled gasoline engine fuel systems and components	Diagnose and troubleshoot mechanically and electronically-controlled gasoline engine fuel control systems and components	Repair mechanically and electronically-controlled gasoline engine fuel control systems and components	Verify repair of gasoline fuel control systems and components	Diagnose and troubleshoot diesel engine fuel control systems and components
	6404.01	6404.02	6404.03	6404.04	6404.05
6404.0	Repair diesel engine fuel control systems and components	Verify repair of diesel fuel control systems and components			
	6404.06	6404.07			

PERFORM ENGINE TUNE- UPS	Perform gasoline engine tune-ups	Perform diesel engine tune-ups	Verify engine tune-ups		
	6405.01	6405.02	6405.03		
6405.0					

REPAIR ENGINE SYSTEMS	Perform visual inspection of engine cooling systems	Diagnose and troubleshoot cooling systems and components	Repair cooling systems and components	Verify repair of cooling systems and components	Perform visual inspection of engine lubrication systems
	6406.01	6406.02	6406.03	6406.04	6406.05
6406.0	Diagnose and troubleshoot engine lubricating systems and components	Repair engine lubricating systems and components	Verify repair of engine lubricating systems and components	Perform visual inspection of engine cylinder heads, block and components	Diagnose and troubleshoot cylinder and components
	6406.06	6406.07	6406.08	6406.09	6406.10
	Repair cylinder head and components	Verify repair of cylinder head and components	Diagnose and troubleshoot engine block and components	Repair engine block and components	Verify repair of engine block and components
	6406.11	6406.12	6406.13	6406.14	6406.15

SMALL ENGINE TECHNICIAN

REPAIR FRAMES, STEERING AND SUSPENSION SYSTEMS 6407.0	Perform visual inspection of steering, frames and suspension systems and components	Diagnose and troubleshoot frames, suspension systems and components	Repair frames, suspension systems and components	Verify repair of frames, suspension systems and components	Diagnose and troubleshoot steering systems and components
	6407.01	6407.02	6407.03	6407.04	6407.05
	Repair steering systems and components	Verify repair of steering systems and components			
	6407.06	6407.07			

REPAIR TRANSMISSION AND AUXILIARY POWER SYSTEMS 6408.0	Perform visual inspection of transmissions, auxiliary power systems and components	Diagnose and troubleshoot clutch systems and components	Repair clutch systems and components	Verify repair of clutch systems and components	Diagnose and troubleshoot manual transmission/transaxles and components
	6408.01	6408.02	6408.03	6408.04	6408.05
	Repair manual transmission/transaxles and components	Verify repair of transmission/transaxles and components	Diagnose and troubleshoot hydrostatic transmission and components	Repair hydrostatic transmission and components	Verify repair of hydrostatic transmissions and components
	6408.06	6408.07	6408.08	6408.09	6408.10

REPAIR BRAKING SYSTEMS 6409.0	Performs visual inspection of braking systems and components	Diagnose and troubleshoot mechanical braking systems and components	Repair mechanical braking systems and components	Verify repair of mechanical braking systems and components	Diagnose and troubleshoot hydraulic braking systems and components
	6409.01	6409.02	6409.03	6409.04	6409.05
	Repair hydraulic braking systems and components	Verify repair of hydraulic braking systems and components			
	6409.06	6409.07			

REPAIR COMPRESSED AIR SUPPLY SYSTEMS 6410.0	Performs visual inspection of compressed air supply systems and components	Diagnose and troubleshoot compressed air supply systems and components	Repair compressed air supply systems and components	Verify repair of compressed air supply and auxiliary air systems and components	
	6410.01	6410.02	6410.03	6410.04	

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REPAIR HYDRAULIC SYSTEMS	Perform visual inspection of hydraulic systems and components	Diagnose and troubleshoot hydraulic systems and components	Repair hydraulic systems and components	Verify repair of mechanically and electrically controlled hydraulic systems and components	
6411.0	6411.01	6411.02	6411.03	6411.04	

REPAIR TIRES, WHEELS AND TRACKS	Performs visual inspection of tires, wheels and track components	Diagnose and troubleshoot tires, wheels and track components	Repair tire, wheel and track components	Verify repair of tire, wheel and track components	
6412.0	6412.01	6412.02	6412.03	6412.04	

PREFACE

This training standard was developed by the Workplace Training Branch of the Ministry of Training, Colleges, and Universities (MTCU), in partnership with the Provincial or Industry Advisory Committees (*only the applicable will be indicated*) and in consultation with representatives from the industry. This document is intended to be used by apprentice, supervisor/trainer and sponsor/employer as a "blueprint" for training and as a prerequisite for completion and certification.

This training document becomes the apprentice's only record of workplace training performance.

Supervisor/trainer and apprentice are required to sign off and date the skills following each successful acquisition, unless a skill is marked shaded (optional).

The care and maintenance of this training document are the joint responsibility of the apprentice and the sponsor/employer. By signing off the skill, the supervisor/trainer and the apprentice are indicating that the apprentice has demonstrated competence of the skill. This training standard has been developed specifically for documenting the apprentices acquisition of skills of the trade.

DEFINITIONS

ACA

Apprenticeship and Certification Act, 1998

Certificate of Apprenticeship (CofA)

Certification issued to individuals who have demonstrated that they have completed an apprenticeship in Ontario.

Certificate of Qualification (CofQ)

Certification issued to C of Q applicants who have achieved a passing grade on the certification exam for their trade.

Competency Analysis Profile

A document that identifies the training needs of an individual trade and details the skills/skill sets that must be demonstrated.

Competence

The ability of an individual to perform a skill repeatedly and without assistance in the workplace to the standard set out in the Training Standard or Schedule of Training.

General Performance Objective (On-the-job Skill Set)

Describes set of skills which include all performance objectives under that skill set.

Industry Committee (IC) - under the ACA and Provincial Advisory Committee (PAC) under the TQAA

Under the ACA and TQAA, the Minister may appoint a provincial committee in any trade or group of trades to advise the Minister in matters relating to the establishment and operation of apprenticeship training programs and trades qualifications.

Journeyman or Equivalent

A person who has acquired the knowledge and skills in a trade, occupation or craft as attested to by a provincial or territorial authority.

Mandatory

Status assigned to unshaded individual skills, skill sets or general performance objective which must be signed off for the apprentice to complete their program.

Optional

Status assigned to shaded individual skills, skills sets or general performance objective for which sign-off is not required for the apprentice to complete the program.

Sign-off

Signature of the sponsor/employer of record or an individual, to whom that sponsor or employer has delegated signing authority, indicating an apprentice's achievement of competence.

Skill

Individual skill described in the Training Standard (note: does not mean the larger skill groups referred to in the Training Standard as Skill Sets, Training Units, or General Performance Objective, but the individual skills that make up those groups).

Skill Sets

Group of individual skills found in the Training Standard (may also be called Training Unit or General Performance Objective)

Skill Set Completion Form

Lists all skill sets and includes space for sign-off by sponsor/employer of record.

Sponsor/Employer

Means a person that has entered into a registered training agreement under which the person is required to ensure that an individual is provided with workplace-based training in a trade, other occupation or skill set as part of an apprenticeship program approved by the Director.

Sponsor/Employer of Record

Refers to the sponsor or employer documented as the signatory to the current training agreement or contract. In order for an sponsor/employer to be considered for the training of apprentices, they must identify that the workplace has qualified journeypersons or equivalent on site and can identify that the workplace has the tools, equipment, materials, and processes which have been identified by Provincial Advisory Committees (PACs) or Industry Committees (ICs) to be required for the trade.

Supervisor

An individual who oversees the execution of a task, oversees the actions or work of others.

Trainer

A qualified trainer in a compulsory trade is a journeyperson with a Certificate of Qualification or in a voluntary trade is an individual who is considered equivalent to a journeyperson with a Certificate of Qualification.

TQAA

Trades Qualification and Apprenticeship Act.

Training Standard

A document that has been written in concise statements, which describe how well an apprentice must perform each skill in order to become competent. In using the document, trainers will be able to ensure that the apprentice is developing skills detailed for the occupation.

IMPORTANT DIRECTIONS

Apprentice

1. All complete skills or skill sets must be signed and dated by both the apprentice and sponsor/employer when either all terms of the contract have been completed or the apprentice leaves the employ of the employer.
2. It is the responsibility of the apprentice to inform the apprenticeship staff at the local Ministry of Training, Colleges and Universities office regarding the following changes:
 - change of sponsor/employer address;
 - change of apprentice name or address;
 - transfer to a new sponsor/employer.
3. The Skill Set Completion Form must be completed and signed by the current sponsor/employer and presented to the local Apprenticeship Client Services Office at the fulfillment of all terms of a Contract of Apprenticeship/Training Agreement.
3. The apprentice completion form with the Completed and Authorized Training Standard must be presented to the local Apprenticeship Client Services Unit.

Sponsors/Employers and Supervisors/Trainers

The Training Standard identifies skills required for this trade/occupation and its related training program.

This Training Standard has been written in concise statements which describe how an apprentice must perform each skill in order to become competent. Competence means being able to perform the task to the required standard.

In using this Training Standard, supervisors/trainers will be able to ensure that the apprentice is developing the skills detailed for the trade/occupation.

Supervisors/Trainers and apprentices are required to sign off and date the skills following each successful acquisition.

Sponsors/Employers participating in this training program will be designated as the Signing Authority and are required to attest to successful achievement by signing the appropriate box included at the end of each skill set.

NOTICE OF COLLECTION OF PERSONAL INFORMATION

1. At any time during your apprenticeship training, you may be required to show this training standard to the Ministry of Training, Colleges and Universities (the Ministry). You will be required to disclose the signed Apprenticeship Completion form to the Ministry in order to complete your program. The Ministry will use your personal information to administer and finance Ontario's apprenticeship training system, including confirming your completion and issuing your certificate of apprenticeship.
2. The Ministry will disclose information about your program completion and your certificate of apprenticeship to the Ontario College of Trades, as it is necessary for the College to carry out its responsibilities.
3. Your personal information is collected, used and disclosed by the Ministry under the authority of the Ontario College of Trades and Apprenticeship Act, 2009.
4. Questions about the collection, use and disclosure of your personal information by the Ministry may be addressed to the:

Manager, Employment Ontario Contact Centre
Ministry of Training, Colleges and Universities
33 Bloor St. E, 2nd floor, Toronto, Ontario M7A 2S3
Toll-free: 1-800-387-5656; Toronto: 416-326-5656
TTY: 1-866-533-6339 or 416-325-4084.

**ROLES & RESPONSIBILITIES OF APPRENTICE, SPONSOR/EMPLOYER
AND SUPERVISOR/TRAINER**

Apprentice “Apprenticeship is Learning On-the-job”

- Practice safe work habits.
- Use your apprenticeship training standard as a journal to keep track of which skills you have achieved.
- Talk over your training plan with your Training Consultant, Employer, Union, or Sponsor.
- Know what tools are required for your trade and how to use them.
- Ask questions and keep asking.
- Talk to your employer about your training needs.
- Demonstrate enthusiasm and good work habits.
- Ensure that you and your supervisor/trainer sign off skill/skill sets upon demonstration of competency.

Sponsor/Employer “Training is an Investment”

- Demonstrate safe work habits.
- Attest to successful achievement by signing the skill/skills sets.
- Provide opportunities and time for the apprentice to learn the trade.
- Offer practical trade training experiences that cover all of the skill sets.
- Foster work ethics that support training while minimizing productivity losses.
- Set out clear expectations, then recognize or reward performance excellence.
- Involve both the apprentice and supervisor/trainer in developing the training plan.
- Use the Training Standard as a monitoring tool and part of regular performance evaluations.
- Select supervisors/trainers with good communication skills and who work well with others.
- Encourage supervisors/trainers to take upgrading courses - (e.g. Train the Trainer, Mentor Coach, etc).
- Complete the Skill Set Completion Form once the apprentice has demonstrated competency in the training.
- Ensure that the apprentice always works under the direction of or has access to a qualified supervisor/trainer.
- Vary the apprentice’s exposure to all the skills set out in the training standard.

Supervisor/Trainer

- Demonstrate safe work habits.
- Treat apprentices fairly and with respect.
- Use the Training Standard as a guide to evaluating competence in each skill area. In using the Training Standard, supervisors/trainers will be able to ensure that the apprentice is developing skills detailed for the trade/occupation.
- Review the Training Standard with the apprentice and develop a training plan.
- Respond fully to all questions.
- Be patient. Explain what is to be done then, show how it is done, and then let the apprentice demonstrate the task.
- Provide continuous feedback.
- Sign off individual skills/skill sets once the apprentice demonstrates competence in the skill.

Suggestions for Assessing the Progress of the Apprentice in the Workplace

- Use informal daily observation.
- Provide constructive feedback to build confidence.
- Allow the supervisor/trainer time to teach and demonstrate the skills.
- Take prompt action wherever problems occur.
- Conduct regular performance reviews involving the apprentice, supervisor/trainer and sponsor/employer.
- Use the Training Standard as the reference for establishing the competency of the apprentice.

SKILL SET COMPLETION FORM

SKILLS SETS	TITLE	SIGNING AUTHORITY
6400.0	PROTECT SELF AND OTHERS	
6401.0	PERFORM GENERAL TRADE PRACTICES	
6402.0	PERFORM PRE-DELIVERY INSPECTION	
6403.0	REPAIR ELECTRICAL SYSTEMS	
6404.0	REPAIR ENGINE FUEL MANAGEMENT SYSTEMS	
6405.0	PERFORM ENGINE TUNE-UPS	
6406.0	REPAIR ENGINE SYSTEMS	
6407.0	REPAIR FRAMES, STEERING AND SUSPENSION SYSTEMS	
6408.0	REPAIR TRANSMISSION AND AUXILIARY POWER SYSTEMS	
6409.0	REPAIR BRAKING SYSTEMS	
6410.0	REPAIR COMPRESSED AIR SUPPLY SYSTEMS	
6411.0	REPAIR HYDRAULIC SYSTEMS	
6412.0	REPAIR TIRES, WHEELS AND TRACKS	

NOTE ON SHADED PERFORMANCE OBJECTIVES AND SKILLS:

- Shaded performance objectives and skill sets are optional. The shaded skills do not have to be demonstrated or signed-off for completion of the on-the-job component of the apprenticeship
- The in-school curriculum learning outcomes will cover all of the skill sets, both shaded and unshaded.
- The Certificate of Qualification examination will test the whole of the trade and may test both shaded and unshaded performance skill sets.

6400.00 PROTECT SELF AND OTHERS

GENERAL PERFORMANCE OBJECTIVE

Comply with occupational health and safety procedures by: identifying potential workplace health and safety hazards; handling, storing and disposing of hazardous materials; wearing and maintaining personal protective equipment; complying with workplace-related legislation; interpreting and applying service-related information; practicing good housekeeping in the workplace; complying with Workplace Hazardous Materials Information System (WHMIS) guidelines, according to the Occupational Health and Safety Act, government regulations, company policy and manufacturer's recommendations.

PERFORMANCE OBJECTIVES

SKILLS

6400.01 Identify and take corrective action against potential workplace health and safety hazards, including: excessive exhaust and/or explosive fumes, dust, sound levels, electrical and mechanical hazards (i.e., damaged or faulty air lines and/or inadequate ventilation); so that the potential for personal injury, damage to equipment, vehicles, and the environment are minimized; according to government regulations and company policy.

Date Completed

Apprentice

Supervisor/Trainer

6400.02 Handle, store and dispose of hazardous workplace materials, including: cleaning solvents, anti-freeze, transmission and brake fluids, engine oil, brake dust, battery acid, refrigerants, and gases; using personal protective equipment and specified handling and storage equipment; so that individuals are protected from injury, the environment from contamination and safety procedures are followed; according to the government regulations and company policy.

Date Completed

Apprentice

Supervisor/Trainer

6400.00 PROTECT SELF AND OTHERS- Cont'd

6400.03 Wear and maintain personal protective equipment, including: eye, ear, hand, respiratory, body, and foot protection; ensuring that correct fit and optimum protection is provided to the wearer for the specific task performed; according to the government regulations, manufacturer's specifications and company policy.

Date Completed

Apprentice

Supervisor/Trainer

6400.04 Comply with workplace-related legislation, relating to highway traffic safety, parts, warranties, occupational health/safety, environmental protection, business and trade practices, including: *Occupational Health and Safety Act, Motive Vehicle Repair Act, Highway Traffic Act* and the *Environmental Protection Act*; by identifying the personal and legal liabilities of technicians, and vehicle owners, when performing and/or conducting vehicle safety inspections, emissions tests, work estimates and repairing and/or replacing defective parts; according to government regulations.

Date Completed

Apprentice

Supervisor/Trainer

6400.05 Practice good housekeeping in the workplace, by: applying fire hazard prevention methods, including: maintaining a clean and orderly work area; identifying, removing and disposing of potential fire hazards; cleaning up grease, oil spills and/or fluids; ensuring work area is free of obstructions; and safely storing tools and shop equipment, to minimize accident or injury to self and others, according to according to government regulations and company policy.

Date Completed

Apprentice

Supervisor/Trainer

6400.06 Comply with Workplace Hazardous Materials Information System (WHMIS) guidelines, including; reading and interpreting labels and Material Safety Data Sheets (MSDS), ensuring receipt of training in WHMIS regulations and practices, according to the *Occupational Health and Safety Act*.

Date Completed

Apprentice

Supervisor/Trainer

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6400.00 PROTECT SELF AND OTHERS- Cont'd

6400.07 Communicate with supervisors and co-workers, identifying any unsafe or non-compliant conditions; tools and equipment requirements; scheduling and operational issues; and all other information required to create a safe and successful work environment.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6401.0 PERFORM GENERAL TRADE PRACTICES

GENERAL PERFORMANCE OBJECTIVE

Perform general trade practice procedures by: Interpreting and applying service-related information, Demonstrating effective customer relations and activities, performing seasonal storage of engines, performing oxy- acetylene heating, cutting, welding and soldering, Metal inert gas (MIG) welding and Shielded Metal Arc Welding; according to manufacturer’s recommendations and specifications, government safety regulations, and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6401.01 Interpret and apply service-related information, including: service bulletins, manuals and parts catalogues, by: locating and identifying Vehicle Identification Number (VIN) number, accessing microfiche and computerized service information systems, so that service/repair is performed according to accepted industry standards and/or manufacturer’s recommendations.

Date Completed

Apprentice

Supervisor/Trainer

U6401.02 Demonstrate effective customer relations by using attentive listening skills, communicating clearly and effectively, accurately recording customer service requirements and related information and describing to the customer the recommended maintenance and operation of the powered equipment and unit and the warranty provisions and limitations.

Date Completed

Apprentice

Supervisor/Trainer

U6401.0 **PERFORM GENERAL TRADES PRACTICES- Cont'd**

U6401.03 **Perform customer relations activities**, including providing an honest interpretation of the vehicle's condition, explaining repairs and costs, providing a written statement of work performed, as well as resolving customer's complaints, so that customer's expectations are met and information is communicated in a courteous and friendly manner.

Date Completed

Apprentice

Supervisor/Trainer

U6401.04 **Perform seasonal storage of engines** by draining and winterizing cooling system, lubricating and draining carburettor, stabilizing fuel systems, and protecting intake and exhaust system from elements; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.05 **Perform visual inspection of Oxy/fuel heating and cutting equipment**, including: tanks, gauges, oxygen/acetylene valves, hoses, fittings, regulators, lines, tips, by checking for: tank pressure, cracks, leaks, foreign matter, wear, and specific regulator settings; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.0 PERFORM GENERAL TRADES PRACTICES- Cont'd

U6401.06 Prepare repair area, set up and operate oxy/fuel heating and cutting equipment, including: opening gas valve, checking regulator for specified pressure, setting the regulators for cutting or heating, selecting tip, set mixture, igniting gas, fine tuning and adjust flame, by performing: heating and or cutting of seized bolts, nuts and other metal assemblies as specified by manufacturer's repair procedures using: hand, power, specialized, precision and electronic service tools, lifting devices and safety stands, and personal protective equipment, fire retardant shielding, covering or removing exposed parts to prevent injuries and vehicle damage; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.07 Verify condition of heating and cutting area by visually inspecting; checking for: damage or distortion to surrounding area and components, according to manufacturer's and industry approved repair procedures and safety requirements.

Date Completed

Apprentice

Supervisor/Trainer

U6401.08 Perform visual inspection of Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding equipment, including: tanks, gases, hoses, fittings, regulators, lines, electrical connectors, cables, ground clamps, tips and nozzles, drive assembly, and ventilation fans. By checking for: pressure, cracks, leaks, corrosion, fraying, foreign matter, wear, proper settings, connections, obstructions and ventilation, according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.0 PERFORM GENERAL TRADES PRACTICES- Cont'd

U6401.09 Prepare repair area, set up and operate Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding equipment, including: attaching ground clamp to repair area to protect vehicle electronic components, turning on power switch, opening gas valve, checking regulator for specified pressure, adjusting wire speed, selecting required amperage, and fine tuning the welder to the repair area, applying weld-through primer to repair area by performing: welding on mild steel and aluminium components; and silicon bronze welding for cosmetic repairs only, using personal protective equipment, fire retardant shielding, covering or removing exposed parts to prevent injuries and vehicle damage according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.10 Verify integrity of weld including: correct penetration, absence of visible cracks, undercuts, melt-through, porosity, craters, excessive spatter, edge defects according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.11 Perform visual inspection of arc welder, including: ground clamp and holder, power cables, electrical connectors, electrodes, ventilation fans by checking for: wear, fraying, burns, corrosion, loose connections and electrode condition; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.0 PERFORM GENERAL TRADES PRACTICES- Cont'd

U6401.12 Prepare repair area, set up and operate arc welding equipment, including: cleaning and preparing work area, selecting specified electrodes, adjusting amperage, attaching ground clamp, turning on power switch, fine tuning the welder to the repair area, as specified by manufacturer's repair procedures, by performing: welding limited to heavy gauge steel when recommended by manufacturer's repair procedures, using personal protective equipment, fire retardant shielding, covering or removing exposed parts to prevent injuries and vehicle damage; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6401.13 Verify integrity of the arc weld including: correct penetration, without any slag in the weld, visible cracks, undercuts, melt-through, porosity, craters, excessive spatter, and edge defects by visually inspecting; checking for: damage to surrounding area and components; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6402.0 PERFORM PRE-DELIVERY INSPECTION (PDI)

GENERAL PERFORMANCE OBJECTIVE

Perform powered equipment and unit pre-delivery and setup procedures by: performing a visual inspection; diagnosing and troubleshooting, completing a pre-delivery inspection report and verifying the pre-delivery inspection report accuracy; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

PERFORMANCE OBJECTIVES

U6402.01 Check powered equipment and unit systems and components by visually inspecting, diagnosing, troubleshooting, testing and verifying performance and function, according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6402.02 Perform visual inspection of powered equipment, unit systems and components, including the condition of exterior and interior components, accessories, engine systems, fuel system, intake and exhaust systems, emission systems, electrical and electronic systems, suspension system, steering systems, braking systems, cutting systems, hydraulic systems, fastening and mounting devices; by checking for cleanliness, structural integrity, cracks, distortion, corrosion, leaks, worn, loose, damaged, missing and defective components, according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6402.0 PERFORM PRE-DELIVERY INSPECTION (PDI)- Cont'd

U6402.03 Diagnose and troubleshoot powered equipment, unit systems and components, including, the condition of exterior and interior components, accessories, engine systems, fuel system, intake and exhaust systems, emission systems, electrical and electronic systems, suspension system, steering systems, braking systems, cutting systems, hydraulic systems, fastening and mounting devices; by visually inspecting, testing and analysing performance and function; checking for structural integrity, leaks, pressure, venting, flow, temperature, corrosion, vibration, noise, wear, misalignment, fractures, odour, and colour; using hand, power, and specialized electronic service tools, according to manufacturers' recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6402.04 Complete a Pre-Delivery Inspection Report recording the results of the visual inspection, diagnosis and troubleshooting activities, including the condition of exterior and interior components, accessories, engine systems, fuel system, intake and exhaust systems, emission systems, electrical and electronic systems, suspension system, steering systems, braking systems, cutting systems, hydraulic systems, fastening and mounting devices; according to manufacturers' recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6402.05 Perform powered equipment and unit pre-delivery and setup procedures, including re-torquing specified fasteners, installing required accessories and attachments, cleaning and applying corrosion protection, adjusting belt tensions and track drive alignment, topping up fluid levels; according to manufacturers' recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6402.0 PERFORM PRE-DELIVERY INSPECTION (PDI)- Cont'd

U6402.06 Verify the Pre-Delivery Inspection report accuracy, including the condition of exterior and interior components, accessories, engine systems, fuel system, intake and exhaust systems, emission systems, electrical and electronic systems, suspension system, steering systems, braking systems, **cutting systems**, hydraulic systems, fastening and mounting devices by visually inspecting, testing and analysing performance and function, and structural integrity, using hand, power, and specialized electronic service tools, according to manufacturers' recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6403.0 REPAIR ELECTRICAL SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair electrical systems, by: performing a visual inspection; diagnosing and troubleshooting batteries; servicing and boosting, or charging batteries; diagnosing, troubleshooting, repairing and verifying the repair of starting, charging, ignition, electrical and electronic lighting and accessory systems and components; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6403.01 Perform visual inspection of starting and charging systems, identifying system types and applications, by: checking for worn, damaged, corroded, loose, or defective components, including: batteries, electrolyte levels, starters, cables, connectors, solenoids, relays, sensors, modules, regulators, circuit protection devices, wiring harnesses, gauges, magneto systems, generators, alternators, drive mechanisms, fastening and mounting devices, according to manufacturer's recommendations, specifications, and safety requirements.

Date Completed

Apprentice

Supervisor/Trainer

U6403.02 Diagnose and troubleshoot batteries, by: visually inspecting, testing, and analysing performance and function; checking for damaged, worn, loose, and or missing components, electrolyte specific gravity, voltage, fluid level, leaks, cracks, corroded connections, distortion, and cleanliness, using hand, power specialized, precision and electronic service tools, load testers, chargers, and hydrometers; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.0 REPAIR ELECTRICAL SYSTEMS- Cont'd

U6403.03 Service and boost/charge batteries, including: single- and multi battery group; by removing, charging, and/or replacing; using hand and power tools, booster cables, booster packs, chargers, electrolyte, distilled water, pullers, cleaning tools and hydrometers; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.04 Diagnose and troubleshoot electrical starting system and components, including: starting motors and drive mechanisms, batteries, cables, connectors, circuit protection devices, neutral safety devices, switches, solenoids, relays, wiring harnesses, fasteners and mounting devices; by visually inspecting, testing, and analysing performance and function; checking for wear, opens/shorts/grounds, high resistance connections, routing of wires, noise/vibration, odour, distortion, corrosion, fractures, and temperature; using hand, power, specialized, precision and electronic service tools, digital volt ohmmeter, ammeter, load testers; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.05 Repair starting systems and components, including: starting motors and drive mechanisms, batteries, neutral safety devices, cables, connectors, circuit protection devices, switches, solenoids, relays, wiring harnesses, fasteners and mounting devices; by exchanging, reconditioning or servicing, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.06 Verify repair of starting systems and components; by visually inspecting, testing, and analysing performance and function; using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.0 REPAIR ELECTRICAL SYSTEMS- Cont'd

U6403.07 Diagnose and troubleshoot charging systems and components, including: magneto systems, generators, alternators, drive mechanisms, batteries, cables, connectors, circuit protection devices, voltage regulators, switches, relays, sensors, modules, wiring harnesses, fasteners and mounting devices; by visually inspecting, testing, and analysing performance and function; checking for wear, opens/shorts/grounds, high resistance connections, parasitic draw, routing of wires, system voltage and amperage, vibration/noise, odour, corrosion, distortion, contamination, and temperature; using hand, power, specialized, precision and electronic service tools, digital volt ohmmeter (DVOM), amperage voltage resistance (AVR) testers and stethoscopes; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.08 Repair charging systems and components, including: magneto systems, generators, alternators, drive mechanisms, batteries, cables, connectors, circuit protection devices, voltage regulators, switches, relays, sensors, modules, wiring harnesses, fasteners and mounting devices; by exchanging, reconditioning, or servicing; using hand, power, specialized, precision and electronic service tools digital volt ohmmeter (DVOM); according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.09 Verify repair of charging systems and components, including: by visually inspecting, testing, and analysing performance and function using hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.0 REPAIR ELECTRICAL SYSTEMS- Cont'd

U6403.10 Diagnose and troubleshoot electrical and electronically -controlled systems and components, including: batteries, connectors, cables, display panels, gauges, switches, solenoids, relays, sensors, modules, data links, warning devices, lighting/illumination systems, circuit protection devices, theft-deterrent and electrical accessory devices, wiring harnesses, and fasteners and mounting devices; by visually inspecting, testing, analysing performance and function; checking for wear, opens/shorts/grounds, parasitic draw, diagnostic codes, routing of wires, temperature, corrosion, distortion, vibration/noise, colour, and odour; using hand, power, specialized, precision and electronic service tools and digital volt ohmmeter (DVOM); according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.11 Repair electrical and electronically -controlled systems and components, including: batteries, connectors, cables, display panels, gauges, switches, solenoids, relays, sensors, modules, data links, warning devices, lighting/illumination, circuit protection, theft-deterrent and electrical accessory devices, wiring harnesses, and fasteners and mounting devices; by, exchanging, reconditioning, or servicing; using hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, and government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.12 Verify repair of electrical, electronically-controlled systems and components, by visually inspecting, testing, analysing performance and function; using hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.0 REPAIR ELECTRICAL SYSTEMS- Cont'd

U6403.13 Diagnose and troubleshoot electrical/electronic ignition systems and components, including: distributor components, coils, resistors, ignition modules, ignition timing components, spark advance mechanisms, high tension wires, spark plugs, data links, switches, sensors, pick-up assembly, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices; by visually inspecting, testing, analysing performance and function; checking for wear, opens/shorts/grounds, diagnostic codes, routing of wires, temperature, colour, system voltage and amperage, electrical leakage, coil oil leakage, corrosion and vibration/ noise; using hand, power, specialized, precision and electronic service tools digital volt ohmmeter (DVOM); according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.14 Repair electrical/electronic ignition systems and components, including: distributor components, coils, resistors, ignition modules, ignition timing components, spark advance mechanisms, high tension wires, spark plugs, data links, switches, sensors, pick-up assembly, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices; by exchanging, reconditioning, or servicing; using hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6403.15 Verify repair of electrical/electronic ignition systems and components, by visually inspecting, testing, analysing performance and function; using hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6404.0 REPAIR ENGINE FUEL MANAGEMENT SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair gasoline engine fuel management systems, by: performing a visual inspection; diagnosing and troubleshooting, repairing and verifying repair of fuel control system and components; ignition systems and components, computer- controlled systems and components; according to manufacturer’s recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6404.01 Perform visual inspection of mechanically and electronically-controlled gasoline engine fuel systems and components, identifying system types and applications, including: fuel, tanks, valves, filters, pumps, lines, hoses and fittings, carburetors, injectors, fuel rails, pressure regulators, intake manifolds, emission control devices, diagnostic codes, warning devices, solenoids, relays, sensors, modules, actuators, data links, circuit protection devices, wiring harnesses, and fastening and mounting devices, by: checking: for worn, loose, damaged, leaking, missing, or defective components, according to manufacturer’s recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.02 Diagnose and troubleshooting mechanically and electronically-controlled gasoline engine fuel control systems and components, including, fuel, tanks, valves, filters, pumps, lines, hoses and fittings, carburetors, injectors, fuel rails, pressure regulators, intake manifolds, emission control devices, diagnostic codes, warning devices, solenoids, relays, sensors, modules, actuators, data links, circuit protection devices, wiring harnesses, and fastening and mounting devices by: visually inspecting, testing, and analysing performance and function, checking for: odour, temperature, emissions, corrosion, colour, vibration/ noise, leaks, pressure, vacuum and flow; using hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.0 REPAIR ENGINE FUEL MANAGEMENT SYSTEMS- Cont'd

U6404.03 Repair mechanically and electronically-controlled gasoline engine fuel control systems and components, including: fuel, tanks, valves, filters, pumps, lines, hoses and fittings, carburetors, injectors, fuel rails, pressure regulators, intake manifolds, emission control devices, diagnostic codes, warning devices, solenoids, relays, sensors, modules, actuators, data links, circuit protection devices, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning, or servicing, using hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.04 Verify repair of gasoline engine fuel control systems and components, by: visually inspecting, testing, and analyzing performance and function, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.05 Diagnose and troubleshooting diesel engine fuel control systems and components, including, fuel, tanks, valves, filters, pumps, lines, hoses and fittings, injectors, fuel rails, intake manifolds, emission control devices, diagnostic codes, warning devices, solenoids, relays, sensors, modules, actuators, data links, circuit protection devices, wiring harnesses, and fastening and mounting devices by: visually inspecting, testing, and analysing performance and function, checking for: odour, temperature, corrosion, colour, vibration/ noise, leaks, pressure, vacuum and flow; using hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.0 REPAIR ENGINE FUEL MANAGEMENT SYSTEMS- Cont'd

U6404.06 Repair diesel engine fuel control systems and components, including: fuel, tanks, valves, filters, pumps, lines, hoses and fittings, injectors, fuel rails, intake manifolds, emission control devices, diagnostic codes, warning devices, solenoids, relays, sensors, modules, actuators, data links, circuit protection devices, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning, or servicing, using hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6404.07 Verify repair of diesel fuel control systems and components, by: visually inspecting, testing, and analyzing performance and function, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6405.0 PERFORM ENGINE TUNE-UPS

GENERAL PERFORMANCE OBJECTIVE

Perform gasoline and diesel engine tune-ups, by: performing a visual inspection; diagnosing and troubleshooting engine operating systems, checking compression, replacing filters and crankcase oil, sparkplugs, fuel injectors, ignition components, checking and adjusting ignition and fuel pump timing, fuel pump pressure, and verifying the tune-up; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6405.01 Perform gasoline engine tune-ups, by: checking or replacing spark plugs, performing compression, vacuum and leak-down tests, checking or replacing air filters, intake system and flame arresters, check fuel pressure, lines and hoses, adjusting cleaning and/or replacing carburetors or injectors, checking or replacing batteries, cables and connectors, ignition system components, fuel filter, and positive crankcase ventilation (PCV) valve; checking and/or adjusting ignition timing, timing control mechanisms, governors, idle speed, and emission control devices, check, adjust level and or replace engine oil, check and or repair exhaust system restrictions, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6405.02 Perform diesel engine tune-ups, by: performing compression and leak-down tests, checking and/or replacing air filters and intake system components, fuel filters, check fuel pressure, lines and hoses, check and/or repair exhaust restriction, check manifold boost pressure, electrical system and valve adjustment, including: injectors and pumps, checking and/or adjusting injection timing, governors, idle speed, and emission control devices, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

SMALL ENGINE TECHNICIAN

U6405.0 PERFORM ENGINE TUNE-UPS- Cont'd

U6405.03 Verify engine tune-up, by: visually inspecting, testing, and analyzing performance and function, using hand, power, specialized, and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6406.0 REPAIR ENGINE SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair engines, by: performing a visual inspection; diagnosing and troubleshooting, repairing and verifying repairs of cooling system and components, engine lubricating system and components; cylinder head and components and engine block and components; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6406.01 Perform visual inspection of engine cooling systems identifying system types and applications, including: coolant, radiators and reservoirs, cooling fins, surge tanks, coolant fans and hubs, coolant pumps, belts, hoses, lines, fittings, heat exchangers, gaskets, o-rings, seals, pipes, valves, sensors, temperature control devices, drive mechanisms, wiring harnesses, fastening and mounting devices; by: checking for: coolant level, worn, loose, damaged, missing, leaking or defective components, according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.02 Diagnose and troubleshoot cooling systems and components, including: coolant, radiators, cooling fins, reservoirs, surge tanks, coolant fans, hubs, coolant pumps, belts, hoses, lines, fittings, heat exchangers, seals, gaskets, o- rings, pipes, valves, sensors, relays, temperature control devices, drive mechanisms, wiring harnesses, fastening and mounting devices; by: visually inspecting; testing, and analyzing performance and function; checking for: leaks, odour, temperature, corrosion, colour, vibration/noise, coolant type, quantity and condition; using hand, power, electronic service and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.0 REPAIR ENGINE SYSTEMS- Cont'd

U6406.03 Repair cooling systems and components, including: coolant, radiators and reservoirs, surge tanks, coolant, fans and hubs, coolant pumps, belts, hoses, lines, fittings, heat exchangers, seals, gaskets, o-rings, pipes, valves, sensors, relays, temperature control devices, drive mechanisms, wiring harnesses, fasteners and mounting devices; by: exchanging, reconditioning, or servicing, using, hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.04 Verify repair of cooling systems and components; by: testing, and analysing performance and function, using, hand, power, electronic service and specialized tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.05 Perform visual inspection of engine lubrication systems identifying system types and applications, including: pumps, housings, filters, lines, fittings, seals, oil, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, modules, gauges, warning devices, wiring harnesses, fastening and mounting devices by: checking for: oil levels, worn, loose, damaged, missing, leaking or defective components; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.0 REPAIR ENGINE SYSTEMS- Cont'd

U6406.06 Diagnose and troubleshoot engine lubricating systems and components, including: pumps, housings, filters, lines, fittings, seals, oil, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, modules, gauges, warning devices, wiring harnesses, fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: leaks, odour, temperature, distortion, corrosion, colour, vibration/noise, pressure, contamination and oil analysis, using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.07 Repair engine lubricating systems and components, including: pumps, housings, filters, lines, fittings, seals, oil, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, modules, gauges, warning devices, wiring harnesses, fastening and mounting devices; by: exchanging, reconditioning, or servicing; using hand, power, electronic service and specialized tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.08 Verify repair of engine lubricating systems and components, by: testing, and analyzing performance and function, using hand, power, electronic and specialized tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.0 REPAIR ENGINE SYSTEMS- Cont'd

U6406.09 Perform visual inspection of engine cylinder heads, block and components identifying system types and applications, including: cylinder heads, exhaust manifolds, cover plates, seats, guides, seals, gaskets, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves, actuating mechanisms, camshafts, follower assemblies, drive mechanisms, engine blocks, piston assemblies, connecting rods, bearings, liners, counter-balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, harmonic balancers, pulleys, auxiliary drives, oil pans, sensors, modules, gauges, warning devices, wiring harnesses, fastening and mounting devices by: checking for: worn, loose, damaged, , missing, leaking or defective components, ventilation and pressure; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.10 Diagnose and troubleshoot cylinder head and components, including: cylinder heads, exhaust manifolds, cover plates, seats, guides, seals, gaskets, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves, actuating mechanisms, camshafts, follower assemblies, drive mechanisms, sensors, modules, gauges, warning devices, wiring harnesses fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: corrosion, erosion, vibration/noise, carbon build-up, fractures, leaks, distortion, temperature, pressure and ventilation, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.0 REPAIR ENGINE SYSTEMS- Cont'd

U6406.11 Repair cylinder head and components, including: cylinder heads, exhaust manifolds, cover plates, seats, guides, seals, gaskets, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves, positive crankcase ventilation systems, actuating mechanisms, camshafts, follower assemblies, drive mechanisms, sensors, modules, gauges, warning devices, wiring harnesses fastening and mounting devices; by: exchanging, reconditioning, or servicing, using hand, power, electronic service and specialized tools and equipment, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.12 Verify repair of cylinder head and components, by: testing, and analyzing performance and function, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.13 Diagnose and troubleshoot engine block and components, including: engine blocks, expansion plugs, cover plates, positive crankcase ventilation systems, piston assemblies, connecting rods, bearings, seals, gaskets, liners, counter-balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, camshafts, follower assemblies, harmonic balancers, pulleys, auxiliary drives, oil pans, fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function, checking for: temperature, corrosion, erosion, vibration/noise, carbon build-up, fractures, distortion, alignment, leaks, ventilation and pressure, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.0 REPAIR ENGINE SYSTEMS- Cont'd

U6406.14 Repair engine block and components, including: engine blocks, expansion plugs, cover plates, positive crankcase ventilation systems, piston and connecting rod assemblies, bearings, seals, gaskets, sealants, liners, counter-balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, camshafts and follower assemblies, harmonic balancers, pulleys, auxiliary drives, oil pans, fastening and mounting devices; by: exchanging, reconditioning, or servicing, using hand, power, electronic service, and specialized tools; heating, cutting and welding equipment; lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6406.15 Verify repair of engine block and components, by: testing, and analyzing performance and function, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6407.0 REPAIR FRAMES, STEERING AND SUSPENSION SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Repair suspension systems and frames, by: performing a visual inspection; diagnosing and troubleshooting suspension system and components; repairing suspension system, frames/sub-frames, and components, and verifying repair of suspension system, frames/sub-frames and components, according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6407.01 Perform visual inspection of steering, frames, and suspension systems and components identifying system types and applications; including: frames/sub-frames, control arms, I-beams, shock absorbers, springs, shackles, hangers, equalizers, bushings, air suspension, strut assemblies, sway bars, lines, hoses, fittings, gauges, valves, controls, and actuators, pumps and drive mechanisms, cylinders, reservoirs, seals, bearings, gaskets, steering boxes/racks/motors, linkages, tie rod ends, bushings, guides, column assemblies, grips, ball joints, kingpins, and fastening and mounting devices by checking for worn, loose, missing, leaking, damaged, or defective components,; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.02 Diagnose and troubleshoot frames, suspension systems and components, including: frames/sub-frame assemblies, control arms, I-beams, shock absorbers, springs, shackles, hangers, equalizers, bushings, bearings, blocks, air suspension, strut assemblies, sway bars, lines, hoses, fittings, gauges, valves, controls, and actuators, fastening and mounting devices by: visually inspecting, testing, and analyzing performance and function, checking for: vibration/noise, corrosion, fractures, leaks, pressure, colour, alignment, stability, ride height, load distribution and controls, using hand, power and specialized tools; lifting, rigging, and blocking devices, according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.0 REPAIR FRAMES, STEERING AND SUSPENSION SYSTEMS- Cont'd

U6407.03 Repair frames, suspension systems and components, including: frames/sub-frame assemblies, control arms, I-beams, shock absorbers, springs, shackles, hangers, equalizers, bushings, bearings, blocks, air suspension, strut assemblies, sway bars, lines, hoses, fittings, gauges, valves, controls, and actuators, fastening and mounting devices by: exchanging, reconditioning, aligning, or servicing, using hand, power and specialized tools, heating, cutting and welding equipment and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations an accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.04 Verify repair of frames, suspension systems and components by: visually inspecting, testing, and analysing performance and function, using hand, power and specialized tools; lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.05 Diagnose and troubleshoot steering systems and components, including: pumps and drive mechanisms, cylinders, reservoirs, seals, bearings, gaskets, steering boxes/racks/motors, linkages, tie rod ends, bushings, guides, column assemblies, grips, ball joints, kingpins, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: odour, temperature, colour, alignment, vibration/noise, corrosion, fluid type, contamination, pressure, leaks, and flow, using hand, power and specialized tools; lifting, rigging, and blocking devices; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.0 REPAIR FRAMES, STEERING AND SUSPENSION SYSTEMS- Cont'd

U6407.06 Repair steering systems and components, including: pumps and drive mechanisms, cylinders, reservoirs, seals, bearings, gaskets, steering boxes/racks/motors, linkages, tie rod ends, bushings, guides, column assemblies, grips, ball joints, kingpins, and fastening and mounting devices, by: exchanging, reconditioning, aligning, or servicing; using hand, power and specialized tools, lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6407.07 Verify repair of steering systems and components by: visually inspecting, testing, and analysing performance and function, using hand, power and specialized, tools; lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6408.0 REPAIR TRANSMISSION AND AUXILLARY POWER SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair transmission and auxiliary power systems including, clutches, torque converters and transmission systems; by: performing a visual inspection; diagnosing and troubleshooting, repairing and verifying repair of clutch systems and components; manual transmissions/transaxles, and compo78nents; automatic transmissions/transaxles, and components; variable ratio belt drive systems, hydrostatic transmissions, and components; transfer cases and components, according to manufacturer’s recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6408.01 Perform visual inspection of transmissions, auxiliary power systems and components identifying system types and applications, including: housings, shafts, gears, chains, sprockets, pulleys, tension devices, cams, sheaves, idlers, springs and weights, belts, bearings, seals, bushings, linkages, cables, controls, actuators, clutches, pressure plates, flywheels, switches, relays, solenoids, sensors, wiring harnesses, safety components, fluids/lubricants, coolers, power take-off unit (PTO), pumps, filters, level indicators, tubes, yokes, flanges and data displays, fastening and mounting devices, by: checking for: worn, loose, damaged, leaking, missing, or defective components, according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.0 REPAIR TRANSMISSION AND AUXILLARY POWER SYSTEMS- Cont'd

U6408.02 Diagnose and troubleshoot clutch systems and components, including: primary clutch assemblies, secondary clutch assemblies, centrifugal clutch assemblies, pressure plate assemblies, friction materials, cables, linkages, release mechanisms, bearings, springs, flywheel assemblies, input (pilot) shafts, intermediate plates, drive mechanisms, switches, relays, solenoids, sensors, fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function, checking for: odour, temperature, corrosion, contamination, vibration/noise, alignment, colour, fluid level, pressure, free play, internal adjustments, slippage, disengagement and dragging, using hand, power, electronic service, and specialized tools and lifting, rigging and blocking devices; according to manufacturer's recommendations, and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.03 Repair clutch systems and components, including: primary clutch assemblies, secondary clutch assemblies, centrifugal clutch assemblies, pressure plate assemblies, friction materials, cables, linkages, release mechanisms, bearings, springs, flywheel assemblies, input (pilot) shafts, intermediate plates, drive mechanisms, switches, relays, solenoids, sensors, fastening and mounting devices, by: exchanging, reconditioning, or servicing, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.04 Verify repair of clutch systems and components by: testing, and analysing performance and function, using hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.0 REPAIR TRANSMISSION AND AUXILLARY POWER SYSTEMS- Cont'd

U6408.05 Diagnose and troubleshoot manual transmissions/transaxles and components, including: housings, gear trains, chain-case assembly, drive-axle assembly, synchronizers, differentials, shift mechanisms, power take-off (PTO) units, speedometer drives, bearings, seals, lubrication systems, oil, switches, relays, sensors, modules, circuit protection devices, wiring harnesses, fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: odour, temperature, corrosion, contamination, colour, leaks, vibration/noise, wear, alignment, gear clash, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.06 Repair manual transmissions/transaxles and components, including housings, gear trains, chain-case assembly, drive-axle assembly, synchronizers, differentials, shift mechanisms, power take-off (PTO) units, speedometer drives, bearings, seals, lubrication systems, oil, switches, relays, sensors, modules, circuit protection devices, wiring harnesses, fastening and mounting devices, by: exchanging, reconditioning, or servicing, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.07 Verify repair of transmissions/transaxles and components by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards and safety requirements.

Date Completed

Apprentice

Supervisor/Trainer

U6408.0 REPAIR TRANSMISSION AND AUXILLARY POWER SYSTEMS- Cont'd

U6408.08 Diagnose and troubleshoot hydrostatic transmissions and components, including: housings, cooling fins, pulleys, belts, shafts, valves, accumulators, shift mechanisms, bearings, seals, filters, pumps, fluids, lines, hoses, fittings, lubrication systems, reservoirs, atmospheric vents, actuators, controls, fasteners and mounting devices; by: visually inspecting, testing and analyzing performance and function; checking for: wear, odour, oil levels, leaks, pressures, contamination, fractures, temperature, corrosion, distortion, colour, vibration/noise, alignment and clearances, routing of lines and hoses; using: hand, power, specialized and precision service tools, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.09 Repair hydrostatic transmissions and components, including, housings, cooling fins, pulleys, belts, shafts, valves, accumulators, shift mechanisms, bearings, seals, filters, pumps, fluids, lines, hoses, fittings, lubrication systems, reservoirs, atmospheric vents, actuators, controls, fasteners and mounting devices; by exchanging, reconditioning or servicing; using: hand, power, specialized and precision service tools, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6408.10 Verify repair of hydrostatic transmissions and components by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized and precision service tools and lifting, rigging, and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6409.0 REPAIR BRAKING SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair braking systems, by: performing a visual inspection; diagnosing and troubleshooting, repairing, and verifying the repair of: mechanical braking systems, and components; hydraulic braking systems and components; according to manufacturer’s recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6409.01 Performs visual inspection of braking systems and components; identifying type and application; including: drums, friction materials, cables, calipers, discs, rotors, bands, backing plates, springs, adjusting mechanisms, linkages, dust shields, lines, hoses, fittings, fluids, pumps, valves, reservoirs, lubricants, cylinders, actuators, warning devices, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, light bulbs, fasteners and mounting devices checking for worn, loose, damaged, defective, or missing components; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6409.02 Diagnose and troubleshoot mechanical braking systems and components, including: drums, friction materials, cables, callipers, discs, rotors, bands, backing plates, springs, adjusting mechanisms, linkages, clevis joints, pins, cams, dust shields, lubricants, warning devices, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, light bulbs, pedals, handles, control arms, fasteners and mounting devices; by: visually inspecting, testing, analysing performance, and function; checking for: wear, temperature, lubrication, contamination, clearances, vibration/noise, alignment, corrosion, distortion and fractures; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, and personal protective and environmental control equipment; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6409.0 REPAIR BRAKING SYSTEMS- Cont'd

U6409.03 Repair mechanical braking systems and components, including : drums, friction materials, cables, callipers, discs, rotors, bands, backing plates, springs, adjusting mechanisms, linkages, clevis joints, pins, cams, dust shields, lubricants, warning devices, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, light bulbs, pedals, handles, control arms, fasteners and mounting devices by: exchanging, reconditioning, adjusting, or servicing; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, heating, cutting and welding equipment, personal protective and environmental control equipment; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6409.04 Verify repair of mechanical braking systems and components by: visually inspecting, testing, and analysing performance and function; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, and personal protective and environmental control equipment; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6409.05 Diagnose and troubleshoot hydraulic braking systems and components, including: drums, friction materials, calipers, discs, rotors, bands, backing plates, springs, lubricants, adjusting mechanisms, linkages, pedals, levers, dust shields, lines, hoses, fittings, valves, fluids, seals, reservoirs, hydraulic pumps, cylinders, actuators, warning devices, switches, relays, sensors, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices; by: visually inspecting, testing, analysing performance and function; checking for: wear, opens/shorts/grounds, temperature, lubrication, leaks, contamination, pressure, flow, colour, clearances, vibration/noise, alignment, corrosion, distortion and fractures; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, personal protective and environmental.

Date Completed

Apprentice

Supervisor/Trainer

U6409.0 REPAIR BRAKING SYSTEMS- Cont'd

U6409.06 Repair hydraulic braking systems and components, including: drums, friction materials, cables, calipers, discs, rotors, bands, backing plates, springs, adjusting mechanisms, linkages, clevis joints, pins, cams, dust shields, lubricants, warning devices, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, light bulbs, pedals, handles, control arms, fasteners and mounting devices by: exchanging, reconditioning, adjusting, or servicing; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, heating, cutting and welding equipment, personal protective and environmental control equipment; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards,

Date Completed

Apprentice

Supervisor/Trainer

U6409.07 Verify repair of hydraulic braking systems and components by: visually inspecting, testing, and analysing performance and function; using: hand, power, specialized, precision and electronic service tools, lifting, rigging and blocking devices, personal protective and environmental control equipment; according to manufacturer's recommendations, and specifications, government safety regulations, and accepted industry standards

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6410.0 REPAIR COMPRESSED AIR SUPPLY SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair compressed air supply systems and components, by: performing a visual inspection; diagnosing and troubleshooting, repairing, and verifying the repair of: air supply systems and components; according to: manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6410.01 Performs visual inspection of compressed air supply systems and components identifying system type and application, including: compressors, drive mechanisms, regulator, cooling and lubrication systems, air filters, air manifolds, reservoirs, lines, hoses, fittings, seals, valves, gauges, moisture drains, fasteners and mounting devices; checking for worn, loose, damaged, missing, leaking, restricted, or defective components, according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6410.02 Diagnose and troubleshoot compressed air supply systems and components, including: compressors, drive mechanisms, regulator, cooling and lubrication systems, air filters, air manifolds, reservoirs, lines, hoses, fittings, seals, valves, gauges, moisture drains, fasteners and mounting devices by: visually inspecting, testing, analysing performance and function, checking for: wear, temperature, lubrication, leaks, contamination, pressure, flow/velocity, routing of lines and hoses, belt tension and condition, vibration/noise, corrosion, erosion, distortion and fractures using: hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6410.0 REPAIR COMPRESSED AIR SUPPLY SYSTEMS- Cont'd

U6410.03 Repair compressed air supply systems and components, including, compressors, drive mechanisms, regulator, cooling and lubrication systems, air filters, air manifolds, reservoirs, lines, hoses, fittings, seals, valves, gauges, moisture drains, fasteners and mounting devices by: exchanging, reconditioning, servicing, or calibrating; using: hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6410.04 Verify repair of compressed air supply and auxiliary air systems and components by: visually inspecting, testing and analysing performance and function; using: hand, power, specialized, precision and electronic service tools; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6411.0 REPAIR HYDRAULIC SYSTEMS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair hydraulic systems by: performing a visual inspection; diagnosing and trouble shooting, repairing, and verifying the repair of: mechanically controlled hydraulic systems and components; electrically controlled hydraulic systems, and components; according to: manufacturer's recommendations and specification, government safety regulations and accepted industry standards

PERFORMANCE OBJECTIVES

SKILLS

U6411.01 Perform visual inspection of hydraulic systems and components, identifying systems types and applications including: pumps, valves, actuators, motors, cylinders, accumulators, reservoirs, atmospheric ventilating devices, controls, display panels, screens, filters, heat exchangers, drive mechanisms, fittings, lines, hoses, oil, seals, bearings, bushings, gaskets, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices; checking for: worn, loose, damaged, leaking, missing or defective components, oil level and condition; according to: manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6411.0 REPAIR HYDRAULIC SYSTEMS- Cont'd

U6411.02 Diagnose and troubleshoot hydraulic systems and components, including: pumps, valves, actuators, motors, cylinders, accumulators, reservoirs, atmospheric ventilating devices, controls, display panels, screens, filters, heat exchangers, drive mechanisms, fittings, lines, hoses, oil, seals, bearings, bushings, gaskets, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices by: visually inspecting, testing and analysing performance and function; checking for: wear, opens/shorts/grounds, fluid level, leaks, odour, colour, distortion, corrosion, cavitations, contamination, fractures, pressure, flow, routing of lines and hoses, temperature, and noise/vibration; using: hand, power, specialized precision and electronic service tools, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6411.03 Repair hydraulic systems and components, including: pumps, valves, actuators, motors, cylinders, accumulators, reservoirs, atmospheric ventilating devices, controls, display panels, screens, filters, heat exchangers, drive mechanisms, fittings, lines, hoses, oil, seals, bearings, bushings, gaskets, switches, solenoids, relays, sensors, modules, circuit protection devices, wiring harnesses, fasteners and mounting devices by exchanging, reconditioning or servicing, using: hand, power, specialized precision and electronic service tools, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6411.0 REPAIR HYDRAULIC SYSTEMS- Cont'd

U6411.04 Verify repair of mechanically and electrically controlled hydraulic systems and components, by: visually inspecting, testing and analysing performance and function; using: hand, power, specialized precision and electronic service tools, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations, and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

U6412.0 REPAIR TIRES, WHEELS AND TRACKS

GENERAL PERFORMANCE OBJECTIVE

Diagnose and repair tires, wheels and tracks by: performing a visual inspection; diagnosing and troubleshooting, repairing, and verifying the repair of: tire, wheel and track components; according to: manufacturer’s recommendations and specifications, government safety regulations, and accepted industry standards.

PERFORMANCE OBJECTIVES

SKILLS

U6412.01 Performs visual inspection of tire, wheel and track components, identifying type and application, including: tires, tracks, tubes, flaps, rims, hubs, bearings, bushings, seals, lugs, guides, valves, caps, spacers, tire ballast, fasteners and mounting devices; checking for worn, misaligned, loose, damaged, missing, overheated, or defective components, chunking and leaks, according to manufacturer's recommendations and specifications, and government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6412.02 Diagnose and troubleshoot, tire, wheel and track components, including: tires, tracks, tubes, flaps, rims, hubs, bearings, bushings, seals, lugs, guides, valves, caps, spacers, tire ballast, fasteners and mounting devices; by: visually inspecting, testing and analysing performance and function; checking for: wear, alignment, tire matching, condition, chunking, corrosion, fraying, belt separation, contamination, pressure, leaks, temperature, noise/vibration, and distortion ; using: hand, power, specialized precision and service tools, torquing devices, lifting, rigging and blocking devices; according to: manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6412.0 REPAIR TIRES, WHEELS AND TRACKS- Cont'd

U6412.03 Repair tire, wheel and track components including: tires, tracks, tubes, flaps, rims, hubs, bearings, bushings, seals, lugs, guides, valves, caps, spacers, tire ballast, fasteners and mounting devices; by: exchanging, reconditioning, servicing, aligning or calibrating; using: hand, power, specialized and precision service tools, torquing devices, patches, plugs, adhesives, lubricants, lifting, rigging and blocking devices; according to: manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

U6412.04 Verify repair of tire, wheel and track components, by: visually inspecting, testing and analysing performance and function; using: hand, power, specialized and precision service tools, torquing devices, lifting, rigging and blocking devices; according to manufacturer's recommendations and specifications, government safety regulations and accepted industry standards.

Date Completed

Apprentice

Supervisor/Trainer

Sponsor/Employer Name

Sponsor/Employer Signature

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION	
Training Agreement #	
Name	
Address	
Telephone	
E-mail Address	

SUMMARY OF TRAINING	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION	
Training Agreement #	
Name	
Address	
Telephone	
E-mail Address	

SUMMARY OF TRAINING	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION	
Training Agreement #	
Name	
Address	
Telephone	
E-mail Address	

SUMMARY OF TRAINING	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

APPRENTICE COMPLETION FORM

APPRENTICE NAME	
Print	
Signature	
Social Insurance Number	

Skill Sets when completed should be signed by the Supervisor/Trainer and presented with this completion form to your local Apprenticeship Client Services Office. Any supporting documentation should also be attached.

In-school Completed Yes () No () Not applicable ()
 (Proof to be Provided)

Hours completed as Yes () No () Not applicable ()
 Per Contract:

SPONSOR/EMPLOYER INFORMATION	
Name	
Address	
Telephone	
E-mail Address	
Signature of Signing Authority	

You will be required to disclose this signed form to the Ministry of Training, Colleges and Universities in order to complete your program. The Ministry will use your personal information to administer and finance Ontario's apprenticeship training system. For further information please see the notice/declaration for collection of personal information that is referenced in the table of contents of this training standard.