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| Title | **Maintain brake system** |
| Level | **2** | **Credits** | **13** |

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| Purpose | This Competency Standard identifies the competencies required to maintain brake system of vehicle, at workplace by Automobile Mechanic, in accordance with the organization’s approved guidelines and procedures. You will be expected to perform inspection and diagnoses of brakes, rebuild/replace brake Master cylinder, rebuild/replace wheel cylinders of vehicle, rebuild/replace calipers of vehicle, service parking brake system of vehicle, bleed brake system of vehicle, diagnose fault codes of ABS/TCS/VSA, service ABS/TCS/VSA systems of vehicle and road test vehicle to verify repair, at workplace. Your underpinning knowledge regarding maintenance of brake systems of a vehicle will be sufficient to provide you the basis for your work. |

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| Classification ISCED | 0716 Motor vehicles, ships and aircraft |

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| Available grade | Competent / Not yet competent |

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| Modification history | N/A |

|  **Unit of Competency** | **Performance Criteria** | **Knowledge & Understanding**  | **Tools & Equipment** |
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| 1. Perform

inspection & diagnosis of brakes | You will be able to:P1. Carry out a road test to diagnose faults in brake system P2. Inspect the followings on road test: * Vibration on brake paddle
* Abnormal Noise
* Brake grip
* Anti-lock brake system (ABS)
* Left right pulling
* Brake performance

P3. Arrange tools and equipment required for brake inspection P3. Inspect the followings at workplace according to repair manual: * Brake oil
* Disc pad and brake shoe thickness
* Disc plate/brake drum surfaces
* Brake calipers
* ABS/VSS (vehicle speed sensor) sensors
* Brake master cylinder
* Wheel cylinders
* Hand brake cables
* Brake booster

P4. Follow safety precautions while driving and at workplace  | You will be able to: K1. Explain organizational rules, regulations and policies regarding road test K2. Describe organizational standard operating procedures (SOPs)K3. Explain braking system of vehicle K4. Explain ABS system K5. Read and interpret repair manualK6. Explain the application and importance of measuring tools K7. Describe the procedure to check the run out of disc plate K8. Explain how to check the ABS sensors and modulator through scanner K9. Explain local driving lawsK10. Explain the safety precautions regarding personal health and workplace | Scanner, SSTs, repair manual, vernier caliper, dial indicator gauge, wheel spanner, spanner set, socket set, PPEs |
| C2 Rebuild/ replace brake master Cylinder of vehicle |  You will be able to:P1: Arrange tools and equipment required to rebuild/replace brake master cylinder P2. Follow the instructions of repair manual to rebuild/replace brake master cylinder P3. Follow safety precautions at workplace  |  You will be able to:K1. Explain the usage of tools and equipment for rebuild/replace brake master cylinder K2. Read and interpret repair manual K3. List the adverse effects of brake fluid on human health, vehicle body and workplace  | SSTs, spanners, repair manual, bleeding kit, bench vice, personal protective equipment (PPE) |
| C3 Rebuild/ replace wheel cylinders of vehicle | You will be able to:P1: Arrange tools and equipment required to rebuild/replace wheel cylinder P2. Follow the instructions of repair manual to rebuild/replace wheel cylinder P3. Follow safety precautions at workplace  | You will be able to:K1. Explain the usage of tools and equipment for rebuild/replace wheel cylinder K2. Read and interpret repair manual K3. Explain the safety precautions regarding personal health and workplace | Jacks, safety stand, technician stretcher, spanners, socket set, SSTs, bleeding kit, repair manual, personal protective equipment (PPE)  |
| C4. Rebuild/replace Calipers of vehicle  | You will be able to:P1: Arrange tools and equipment required to rebuild/replace calipersP2. Follow the instructions of repair manual to rebuild/replace calipers P3. Follow safety precautions at workplace  | You will be able to: K1. Explain the usage of tools and equipment for rebuild/replace calipersK2. Read and interpret repair manual K3. Explain the safety precautions regarding personal health and workplace | Jacks, safety stand, spanners, socket set, SSTs, bleeding kit, back winding tool, bench vice,repair manual, personal protective equipment (PPE) |
| C5 Service parking brake system of vehicle | You will be able to: P1: Arrange tools and equipment required to service parking brake systemP2. Follow the instructions of repair manual to service parking brake systemP3. Follow safety precautions at workplace  | You will be able to: K1. Explain the usage of tools and equipment for servicing parking brake systemK2. Read and interpret repair manual K3. Identify the types of parking brake system K4. Explain the safety precautions regarding personal health and workplace | Jack, safety stand, Screw driver, spanners, amery paper, Personal protective equipment (PPE) |
| C6 Bleed brake system of vehicle | You will be able to:P1: Arrange tools and equipment required to bleed brake systemP2. Follow the instructions of repair manual to bleed brake systemP3. Follow safety precautions at workplace  | You will be able to: K1. Explain the usage of tools and equipment for servicing parking brake systemK2. Read and interpret repair manualK3. Describe the methods of bleeding brake system K4. Explain the grading of brake fluid K5. Explain the safety precautions regarding personal health and workplace | Bleeding kit, scanners, SSTs, spanners, personal protective equipment (PPE), repair manual |
| C7. Diagnose fault codes of ABS/TCS/VSA | You will be able to:P1: Arrange tools and equipment required to diagnose ABS fault codesP2. Follow the instructions of repair manual to diagnose ABS/TCS (traction control system)/VSA (vehicle stability assist) fault codes P3. Follow the Electric wiring diagram (EWD) for electrical diagnoses of ABS systemP4. Follow safety precautions at workplace | You will be able to:K1. Explain the usage of tools and equipment for diagnosing faults in ABSK2. Read and interpret EWD K3. Read and interpret repair manualK4. Explain the safety precautions regarding personal health and workplace | Scanners, spanners, electric wiring diagram (EWD), repair manual, multi-meter, test lamp, cutter plier, screw driver, PPE |
| C8 Service ABS/TCS/VSA systems of vehicle | You will be able to:P1: Arrange tools and equipment required to service ABS/TCS/VSAP2. Follow the instructions of repair manual to service ABS/TCS/VSAP3. Follow safety precautions at workplace  | You will be able to:K1. Explain the usage of tools and equipment to service ABS/TCS/VSAK2. Read and interpret EWD K3. Read and interpret repair manualK4. Explain the safety precautions regarding personal health and workplace | Scanners, spanners, EWD, repair manual, multi-meter, insulation tape, test lamp, cutter plier, screw driver, PPE |
| C9. Conduct Road test of vehicle to verify repair | You will be able to: P1. Follow the organizational policy regarding road test P2. Verify the followings on road test according to organizational guidelines:* Function of ABS
* Drivability performance
* Tracking performance
* Braking performance
* Parking brake performance
* Noises
* Vibrations

P3. Follow safety precautions while driving | You will be able to: K1. Explain organizational rules, regulations and policies regarding road test K2. Describe organizational standard operating procedures (SOPs)K3. Explain the function of brake system K4. Explain how to check the brake performance of vehicle K6. Explain local driving laws | Scanner, seat covers protector, steering wheel cover, hand brake cover, gear lever cover, floor matts, driving license |