

NATEF AUTOMOTIVE TASK LIST
AUT 112 – BRAKING SYSTEMS

TERM: _____

SID: _____

INSTRUCTOR: _____

NAME: _____

**For every task in Braking Systems, the following safety requirement must be strictly enforced:
Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.**

<u>Task Code</u>	<u>Task</u>	<u>Priority</u>
<u>A. General Brake Systems Diagnosis</u>		
5.A.1	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	P1
5A.2	Identify and interpret brake system concern; determine necessary action.	P1
5.A.3	Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.	P1
5.A.4	Locate and interpret vehicle and major component identification numbers	P1
<u>B. Hydraulic System Diagnosis and Repair</u>		
5.B.1	Diagnose pressure concerns in the brake system using hydraulic principles (Paschal's Law).	P1
5.B.2	Measure brake pedal height, travel and freeplay (as applicable); determine necessary action.	P1
5.B.3	Check master cylinder for internal/external leaks and proper operation; determine necessary action.	P2
5.B.4	Remove, bench bleed, and replace master cylinder	P1
5.B.5	Diagnose poor stopping, pulling, or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action..	P2
5.B.6	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, or wear; tighten loose fittings and supports; determine necessary action.	P1
5.B.7	Replace brake lines, hoses, fittings and supports.	P2
5.B.8	Fabricate brake lines using proper material and flaring procedures(double flare and ISO types); replace hoses,	P2
5.B.9	Select, handle, store and install brake fluids to proper level	P1
5.B.10	Inspect, test, and/or replace metering (hold-off), proportioning (balance), pressure differential, and combination valves.	P3

5.B.11	Inspect, test, and replace components of brake warning light system.	P3
5.B.12	Bleed and/or flush brake system.	P1
5.B.13	Test brake fluid for contamination.	P1

C. Drum Brake Diagnosis and Repair

5.C.1	Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns: determine necessary action.	P1
5.C.2	Remove, clean, inspect, and measure brake drums; determine necessary action.	P1
5.C.3	Refinish brake drum ; measure final drum diameter.	P1
5.C.4	Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/ self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble..	P1
5.C.5	Inspect, and install wheel cylinders.	P2
5.C.6	Pre-adjust brake shoes and parking brake install brake drums or drum/hub assemblies and wheel bearings	P2
5.C.7	Install wheel, torque lug nuts, and make final checks and adjustments..	P1

D. Disc Brake Diagnosis and Repair

5.D.1	Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pulsation concerns: determine necessary action..	P1
5.D.2	Remove caliper assembly inspect for leaks and damage to caliper housing; determine necessary action.	P1
5.D.3	Clean and inspect caliper mounting and slides/pins for operation wear and damage; determine necessary action.	P1
5.D.4	Remove, inspect and replace pads and retaining hardware; determine necessary action.	P1
5.D.5	Disassemble and clean caliper assembly; inspect parts for wear, rust, scoring, and damage; replace seal, boot, and damaged or worn parts.	P3
5.D.6	Reassemble, lubricate and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks.	P1
5.D.7	Clean, inspect and measure rotor thickness, lateral runout and thickness variation; determine necessary action.	P1
5.D.8	Remove and reinstall rotor	P1
5.D.9	Refinish rotor on vehicle, measure final rotor thickness	P1
5.D.10	Refinish rotor off vehicle, measure final rotor thickness.	P1
5.D.11	Retract caliper piston on an integrated parking brake system.	P3

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| 5.D.12 | Install wheel, torque lug nuts and make final checks and adjustments. | P1 |
| 5.D.13 | Check brake pad wear indicator system operation; determine necessary action. | P2 |

E. Power Assist Units Diagnosis and Repair

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| 5.E.1 | Test pedal free travel; check power assist operation. | P2 |
| 5.E.2 | Check vacuum supply to vacuum-type power booster. | P1 |
| 5.E.3 | Inspect the vacuum-type power booster unit for leaks; inspect the check valve for proper operation; determine necessary action. | P1 |
| 5.E.4 | Inspect and test hydraulically assisted power brake system for leaks and proper operation; determine necessary action. | P3 |
| 5.E.5 | Measure and adjust master cylinder pushrod length. | P3 |

F .Miscellaneous (Wheel Bearings, Parking Brakes, Electrical, etc.) Diagnosis and Repair

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| 5.F.1 | Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine necessary action. | P1 |
| 5.F.2 | Remove, clean, inspect, repack and install wheel bearings and replace seals; install hub and adjust l bearings. | P1 |
| 5.F.3 | Check parking brake cables and components for wear, binding and corrosion; clean, lubricate, adjust or replace as needed. | P2 |
| 5.F.4 | Check parking brake operation and indicator light system; determine necessary action. | P1 |
| 5.F.5 | Check operation of brake stop light system; determine necessary action. | P1 |
| 5.F.6 | Replace wheel bearing and race. | P2 |
| 5.F.7 | Inspect and replace wheel studs. | P1 |
| 5.F.8 | Remove and reinstall sealed wheel bearing assembly. | P1 |

G. Electronic Brake, Traction and Stability Control Systems Diagnosis and Repair

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| 5.G.1 | Identify and inspect electronic brake control system components; determine necessary action. | P1 |
| 5.G.2 | Diagnosis poor stopping, wheel lock-up, abnormal pedal feel, unwanted application and noise concerns associated with electronic brake control system ; determine necessary action. | P2 |
| 5.G.3 | Diagnose electronic brake control system electronic control(s) and components by retrieving diagnostic trouble codes and/or using recommended test equipment; determine necessary action. | P1 |
| 5.G.4 | Depressurize high-pressure components of the electronic brake control system | P3 |
| 5.G.5 | Bleed the electronic brake control system hydraulic circuits. | P1 |

5.G.6	Remove and install electronic brake control system electrical/electronic and hydraulic components.	P3
5.G.7	Test, diagnose and service electronic brake control system speed sensors (digital and analog) toothed ring (tone wheel), and circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO) (includes output signal, resistance, shorts to voltage/ground, and frequency data).	P1
5.G.8	Diagnose electronic brake control system braking concerns caused by vehicle modifications (tire size, curb height, final ratio, etc.).	P3
5.G.9	Identify traction control/vehicle stability control system components.	P3
5.G.10	Describe the operation of a regenerative braking system	P3