

## Denfeld Auto Block 1 Auto Basics: Brakes and Engines

### Syllabus with Task Sequence

40% Classroom Lecture and 60% Supervised Lab Time

### ASE 0: Foundation Studies (Block I, Weeks 1-9, Grade Period 1)

- A. General Safety
- B. Personal Safety
- C. Tool Safety
- D. Vehicle Protection and Jack and Lift Safety
- E. Vehicle, Customer, and Service Information
- F. SRS and ABS Safety

During Weeks 1-3, SP2 Online Safety Course to be completed

CDX Tasksheet Number	NATEF Tasksheet Title	MLR NATEF Reference number; Priority Level	Grade Period 1 Block 1 Week #	
<u>Task Sheet Group Title Page</u>	<b>A. General Safety</b>			NATEF Supplemental Task?
<u>C451</u>	Identify general shop safety rules and procedures.	0A1; P-1	4	Y
<u>C456</u>	Identify marked safety areas.	0A6; P-1	4	Y
<u>C458</u>	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.	0A7; P-1	4	Y

<a href="#"><u>C459</u></a>	Identify the location and use of eye wash stations.	0A8; P-1	5	Y
<a href="#"><u>C460</u></a>	Identify the location of posted evacuation routes.	0A9; P-1	5	Y
<a href="#"><u>C465</u></a>	Locate and demonstrate knowledge of material safety data sheets (MSDS).	0A15; P-1	5	Y
<a href="#"><u>NN00</u></a>	Shop Diagram	N/A	6	NO
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>B. General Safety: Personal Safety</b>			
<a href="#"><u>C461</u></a>	Comply with the required safe use of safety glasses, ear protection, gloves, and shoes, during lab/shop activities.	0A10; P-1	6	Y
<a href="#"><u>C462</u></a>	Identify and wear appropriate clothing for lab/shop activities.	0A11; P-1	6	Y
<a href="#"><u>C463</u></a>	Secure hair and jewelry for lab/shop activities.	0A12; P-1	6	Y
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>C. General Safety: Tool Safety</b>			
<a href="#"><u>C466</u></a>	Identify tools and their usage in automotive applications.	0B1; P-1	6	Y
<a href="#"><u>C467</u></a>	Identify standard and metric designation.	0B2; P-1	6	Y
<a href="#"><u>C452</u></a>	Utilize safe procedures for handling of tools and equipment.	0A2; P-1	7	Y
<a href="#"><u>C468</u></a>	Demonstrate safe handling and use of appropriate tools.	0B3; P-1	7	Y
<a href="#"><u>C469</u></a>	Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	0B4; P-1	7	Y

<u>C896</u>	Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper).	0B5; P-1	7	Y
<u>Task Sheet Group Title Page</u>	<b>D. General Safety: Vehicle Protection and Jack and Lift Safety</b>			
<u>C473</u>	Identify purpose and demonstrate proper use of fender covers, mats.	0C2; P-1	7	Y
<u>C455</u>	Utilize proper ventilation procedures for working within the lab/shop area.	0A5; P-1	7	Y
<u>C453</u>	Identify and use proper placement of floor jacks and jack stands.	0A3; P-1	7	Y
<u>C454</u>	Identify and use proper procedures for safe lift operation.	0A4; P-1	7	Y
<u>C476</u>	Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover etc).	0D1; P-1	8	Y
<u>Task Sheet Group Title Page</u>	<b>E. General Safety: Vehicle, Customer, and Service Information</b>			
<u>C471</u>	Proper vehicle identification information, Define the use and purpose of the VIN, engine numbers and data code, Locate VIN, Apply knowledge of VIN information.	N/A	8	NO
<u>C472</u>	Identify information needed and the service requested on a repair order.	0C1; P-1	8	Y
<u>C474</u>	Demonstrate use of 3 C's (concern, cause and correction).	0C3; P-1	8	Y
<u>C475</u>	Review vehicle service history.	0C4; P-1	8	Y

<u>Task Sheet Group Title Page</u>	<b>F. General Safety: SRS and ABS Safety</b>			
<u>C464</u>	Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	0A13; P-1	9	Y
<u>C895</u>	Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignitions systems, injection systems, etc.).	0A14; P-1	9	Y
<u>C590</u>	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	0C5; P-1	9	Y

## ASE 5: Brakes – (Block 1, Weeks 10 to 27, Grade Period 2 & 3)

- [A. Vehicle, Customer, and Service Information](#)
- [B. Fluid Testing and Maintenance](#)
- [C. Master Cylinder Testing and Service](#)
- [D. Brake Lines and Hoses Inspection and Repair](#)
- [E. Disc Brake Inspection, Maintenance, and Service](#)
- [F. Rotor Inspection and Service](#)
- [G. Brakes Drum Brake Inspection, Maintenance, and Service](#)
- [H. Parking Inspection and Service](#)
- [I. Power Booster Inspection](#)
- [J. Hydraulic System Diagnosis and Service](#)
- [K. Wheel Bearing Inspection, Maintenance, and Service](#)
- [L. Brake Warning Light and Stop Light inspection and Service](#)
- [M. Electronic Brake Control Maintenance and Service](#)
- [N. Electronic Brake Control Hydraulic Service](#)
- [O. Electronic Brake Control Diagnosis](#)

CDX Tasksheet Number	NATEF Tasksheet Title	MLR NATEF Reference number; Priority Level	Block 1 Grade Per. 2&3 Week #	
<a href="#">Task Sheet Group Title Page</a>	<b>A. Brakes: Vehicle, Customer, and Service Information</b>			
<a href="#">C230/A5001</a>	Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.	5A1; P-1	10	
<a href="#">C944/A5002</a>	Describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS).	5A2; P-1	10	
<a href="#">Task Sheet Group Title Page</a>	<b>B. Brakes: Fluid Testing and Maintenance</b>			

<a href="#"><u>C239/A5008</u></a>	Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification	5B4; P-1	10	
<a href="#"><u>C625/A5011</u></a>	Test brake fluid for contamination.	5B7; P-1	11	
<a href="#"><u>C705/A5010</u></a>	Bleed and/or flush brake system.	5B6; P-1	11	
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>C. Brakes: Master Cylinder Testing and Service</b>			
<a href="#"><u>C622/A5005</u></a>	Measure brake pedal height, travel, and free play (as applicable); determine necessary action.	5B1; P-1	11	
<a href="#"><u>C946/A5006</u></a>	Check master cylinder for external leaks and proper operation.	5B2; P-1	12	
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>D. Brakes: Brake Lines and Hoses Inspection and Repair</b>			
<a href="#"><u>C237/A5007</u></a>	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear; tighten loose fittings and supports.	5B3; P-1	12	
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>E. Brakes: Disc Brake Inspection, Maintenance, and Service</b>			
<a href="#"><u>C802/A5017</u></a>	Remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action.	5D1; P-1	13	
<a href="#"><u>C803/A5018</u></a>	Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action.	5D2; P-1	13	
<a href="#"><u>C632/A5026</u></a>	Check brake pad wear indicator; determine necessary action.	5D10; P-2	13	

<a href="#"><u>C627/A5019</u></a>	Remove, inspect and/or replace brake pads and retaining hardware; determine necessary action.	5D3; P-1	14	
<a href="#"><u>C805/A5020</u></a>	Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks.	5D4; P-1	14	
<a href="#"><u>C251/A5003</u></a>	Install wheel and torque lug nuts.	5A3; P-1	14	
<a href="#"><u>C631/A5025</u></a>	Retract and re-adjust caliper piston on an integral parking brake system.	5D9; P-3	15	
<a href="#"><u>C948/A5027</u></a>	Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations.	5D11; P-1	15	
<a href="#"><u>Task Sheet Group</u></a> <a href="#"><u>Title Page</u></a>	<b>F. Brakes: Rotor Inspection and Service</b>			
<a href="#"><u>C628/A5021</u></a>	Clean and inspect rotor and mounting surface; measure rotor thickness, thickness variation, and lateral runout; determine necessary action	5D5; P-1	15	
<a href="#"><u>C806/A5022</u></a>	Remove and reinstall/replace rotor.	5D6; P-1	16-17	
<a href="#"><u>C630/A5024</u></a>	Refinish rotor off vehicle; measure final rotor thickness and compare with specifications.	5D8; P-1	16-17	
<a href="#"><u>C629/A5023</u></a>	Refinish rotor on vehicle; measure final rotor thickness and compare with specifications.	5D7; P-1	18	
<a href="#"><u>C274/A5035</u></a>	Inspect and replace wheel studs.	5F6; P-1	18	
<a href="#"><u>Task Sheet Group</u></a> <a href="#"><u>Title Page</u></a>	<b>G. Brakes Drum Brake Inspection, Maintenance, and Service</b>			
<a href="#"><u>C800/A5012</u></a>	Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability.	5C1; P-1	19	

<a href="#"><u>C248/A5014</u></a>	Remove, clean, and inspect and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.	5C3; P-1	20-21	
<a href="#"><u>C707/A5015</u></a>	Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.	5C4; P-2	20-21	
<a href="#"><u>C801/A5016</u></a>	Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments.	5C5; P-2	20-21	
<a href="#"><u>C251/A5003</u></a>	Install wheel and torque lug nuts.	5A3; P-1	22	
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>H. Brakes: Parking Brake Inspection and Service</b>			
<a href="#"><u>C811/A5031</u></a>	Check parking brake system and components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed.	5F2; P-2	22	
<a href="#"><u>C633/A5032</u></a>	Check parking brake operation and parking brake indicator light system operation; determine necessary action.	5F3; P-1	22	
<a href="#"><u>Task Sheet Group Title Page</u></a>	<b>I. Brakes: Power Booster Inspection</b>			
<a href="#"><u>C807/A5028</u></a>	Check brake pedal travel with, and without, engine running to verify proper power booster operation.	5E1; P-2	23	
<a href="#"><u>C808/A5029</u></a>	Identify components of the brake power assist system (vacuum and hydraulic); Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.	5E2; P-1	23	



<a href="#">Task Sheet Group Title Page</a>	<b>J. Brakes: Hydraulic System Diagnosis and Service</b>			
<a href="#">Task Sheet Group Title Page</a>	<b>J. Brakes: Hydraulic System Diagnosis and Service cont.</b>			
<a href="#">Task Sheet Group Title Page</a>	<b>K. Brakes: Wheel Bearing Inspection, Maintenance, and Service</b>			
<a href="#">C810/A5030</a>	Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings.	5F1; P-1	24-25	
<a href="#">C273/A5034</a>	Replace wheel bearing and race.	5F5; P-2	24-25	
<a href="#">Task Sheet Group Title Page</a>	<b>L. Brakes: Brake Warning Light and Stop Light inspection and Service</b>			
<a href="#">C272/A5033</a>	Check operation of brake stop light system	5F4; P-1	26	
<a href="#">C947/A5009</a>	Identify components of the hydraulic brake warning light system	5B5; P-3	26	
<a href="#">Task Sheet Group Title Page</a>	<b>M. Brakes: Electronic Brake Control Maintenance and Service</b>			
<a href="#">C857/A5036</a>	Identify traction control/vehicle stability control system components.	5G1; P-3	27	
<a href="#">C950/A5037</a>	Describe the operation of a regenerative braking system.	5G2; P-3	27	
<a href="#">Task Sheet Group Title Page</a>	<b>N. Brakes: Electronic Brake Control Hydraulic Service</b>			
<a href="#">Task Sheet Group Title Page</a>	<b>O. Brakes: Electronic Brake Control Diagnosis</b>			



## ASE 1: Engine Repair - (Block I, Weeks 28-36, Grade Period 4)

- A. Vehicle, Customer, and Service Information
- B. Fastener Repair
- C. Engine Mechanical Testing
- D. Engine Removal
- E. Cylinder Head Removal, Inspection, and Installation
- F. Cylinder Head Disassembly, Inspection, and Repair
- G. Block Disassembly, Inspection, and Repair
- H. Crankshaft and Oil Pump Service
- I. Assemble Engine Block
- J. Miscellaneous In-Vehicle Engine Tasks
- K. Lubrication System Service
- L. Cooling System Service

CDX Tasksheet Number	NATEF Tasksheet Title	MLR NATEF Reference number; Priority Level	Grade Period 4 Block 1 Week #	
<u>Task Sheet Group Title Page</u>	<b>A. Engine Repair: Vehicle, Customer, and Service Information</b>			
<u>C885</u>	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.		28	
<u>C002/A1001</u>	Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	1A1; P-1	28	
<u>C900/A1007</u>	Identify service precautions related to service of the internal combustion engine of a hybrid vehicle.	1A7; P-3	28	

<u>NN01</u>	Demonstrate the use of the 3 Cs (concern, cause, and correction).	N/A	28	
<u>Task Sheet Group Title Page</u>	<b>B. Engine Repair: Fastener Repair</b>			
<u>C886/A1006</u>	Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert.	1A6; P-1	29	
<u>Task Sheet Group Title Page</u>	<b>C. Engine Repair: Engine Mechanical Testing</b>			
<u>C004/A1003</u>	Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.	1A3; P-1	29	
<u>C898/A1002</u>	Verify operation of the instrument panel engine warning indicators.	1A2; P-1	30	
<u>NN09</u>	Perform cranking sound diagnosis.	N/A		
<u>C392/A8002</u>	Perform engine absolute (vacuum/boost) manifold pressure; document results.	8A2; P-1	30	
<u>C393/A8003</u>	Perform cylinder power balance test; document results.	8A3, P-2	30	
<u>C709/A8004</u>	Perform cylinder cranking and running compression tests; document results.	8A4; P-1	31	
<u>C395/A8005</u>	Perform cylinder leakage test; document results.	8A5; P-1	31	
<u>Task Sheet Group Title Page</u>	<b>D. Engine Repair: Engine Removal</b>			

<a href="#">Task Sheet Group Title Page</a>	<b>E. Engine repair: Cylinder Head Removal, Inspection, and Installation</b>			
<a href="#">C899/A1005</a>	Verify engine mechanical timing.	1A5; P-1	32	
<a href="#">Task Sheet Group Title Page</a>	<b>F. Engine Repair: Cylinder Head Disassembly, Inspection, and Repair</b>			
<a href="#">C723/A1008</a>	Adjust valves (mechanical or hydraulic lifters).	1B1; P-1	32-33	
ID 1/A1009	Identify components of the cylinder head and valve train.	1B2; P-1	32-33	
<a href="#">Task Sheet Group Title Page</a>	<b>J. Engine Repair: Miscellaneous In-Vehicle Engine Tasks</b>			
<a href="#">C541/A1004</a>	Install engine covers using gaskets, seals, and sealers as required.	1A4; P-1	33	
<a href="#">Task Sheet Group Title Page</a>	<b>K. Engine Repair: Lubrication System Service</b>			
<a href="#">C737/A1014</a>	Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required.	1C5; P-1	34	
<a href="#">Task Sheet Group Title Page</a>	<b>L. Engine Repair: Cooling System Service</b>			
ID 5/A1015	Identify components of the lubrication and cooling systems.	1C6; P-1		
<a href="#">C578/A1010</a>	Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, and heater core and galley plugs; determine necessary action.	1C1; P-1	34	

<u>C734</u> /A1011	Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.	1C2; P-1	34	
T6	Inspect and replace engine cooling and heater system hoses.	N/A	34	
<u>C735</u> /A1012	Remove, inspect, and replace thermostat and gasket/seal.	1C3; P-1	35	
<u>C050</u> /A1013	Inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required.	1C4; P-1	36	

Final Exam Follows Week 36