



MAST - 1200 Hours
AST - 840 Hours
MLR - 540 Hours
EM-122-HN02
EM-123-2
EM-123-4HN02
EM-123-TY05 (Coming Soon)
EM-200-25
EV-601-TS

A. General

1. Research vehicle service information such as fluid type, system design (hydraulic, electronic, etc.), vehicle service history, service precautions, technical service bulletins, and recalls including xEVs and vehicles equipped with advanced driver assistance systems (ADAS).	P-1	P-1	P-1	X	X	X			
2. Identify brake system components and configurations.	P-1	P-1	P-1	X	X	X	X		
5. Perform calibration/recalibration, initialization, or relearn procedures as required.	P-1	P-1	P-1			X			
6. Describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS).		P-1		X		X			

B. Hydraulic System

1. Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law).	P-1	P-1	P-1	X	X	X	X		
2. Measure brake pedal height, travel, and free play (as applicable); determine needed action.	P-1	P-1	P-1				X		
3. Check master cylinder for internal/external leaks and proper operation; determine needed action.	P-1	P-1	P-1	X	X	X	X		
4. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports; determine needed action.	P-1	P-1	P-1	X	X	X	X		
5. Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification.	P-1	P-1	P-1	X	X	X	X		
6. Bleed and/or replace fluid in the brake system.	P-3	P-2	P-3	X	X	X			
7. Test brake fluid for contamination.	P-2	P-2	P-2	X	X	X	X		
8. Identify, inspect, test, and replace components of brake warning light system.	P-2	P-2	P-2	X	X	X			
9. Remove, bench bleed, and reinstall master cylinder.	P-1	P-1		X	X	X	X		
10. Diagnose poor stopping, pulling, or dragging concerns caused by malfunctions in the hydraulic system; determine needed action.	P-1	P-2		X		X	X		
11. Replace brake lines, hoses, fittings, and supports.	P-2	P-2		X	X	X			
12. Fabricate brake lines using proper material and flaring procedures.	P-2	P-2		X	X	X			

C. Drum Brakes

1. Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability.	P-2	P-2	P-2	X	X	X	X		
2. Refinish brake drum and measure final drum diameter; compare with specification.	P-2	P-2	P-3	X	X	X	X		
3. Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.	P-2	P-2	P-3	X	X	X	X		
4. Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.	P-2	P-2	P-3	X	X	X	X		
5. Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments.	P-2	P-2	P-3	X	X	X			
6. Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pedal pulsation concerns; determine needed action.	P-2	P-2		X		X	X		

D. Disc Brakes

1. Remove and clean caliper assembly; inspect for leaks, damage, and wear; determine needed action.	P-1	P-1	P-1	X	X	X	X		
2. Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine needed action.	P-1	P-1	P-1	X	X	X	X		
3. Remove, inspect, and/or replace brake pads and retaining hardware; determine needed action.	P-1	P-1	P-1	X	X	X	X		
4. Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads against rotor; inspect for leaks.	P-1	P-1	P-1	X	X	X	X		
5. Clean and inspect rotor and mounting surface; measure rotor thickness, thickness variation, and lateral runout; determine needed action.	P-1	P-1	P-1	X	X	X	X		

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6. Remove and reinstall/replace rotor.	P-1	P-1	P-1	X	X	X	X		
7. Refinish rotor on vehicle; measure final rotor thickness and compare with specification.	P-1	P-2	P-3	X		X	X		
8. Refinish rotor off vehicle; measure final rotor thickness and compare with specification.	P-2	P-2	P-3	X	X	X	X		
10. Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendation.	P-1	P-1	P-1	X	X	X			
11. Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pulsation concerns; determine needed action.	P-1	P-1		X		X	X		
E. Power-Assist Units									
1. Check brake pedal travel with and without engine running to verify proper power booster operation.	P-2	P-2	P-2	X*	X*	X*	X		
2. Identify components of the brake power assist system (vacuum/ hydraulic/electric).	P-2	P-2	P-2	X	X	X	X		
3. Inspect vacuum-type power booster unit for leaks; inspect the check-valve for proper operation; check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster determine needed action.	P-2	P-2		X*	X*	X*	X		
F. Related Systems (i.e., Wheel Bearings, Parking Brakes, Electrical)									
2. Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed.	P-2	P-2	P-2	X	X	X			
3. Check parking brake operation (including electric parking brakes); check parking brake indicator light system operation; determine needed action.	P-2	P-2	P-2	X	X	X			
4. Check operation of brake stop light system.	P-1	P-1	P-1						
5. Inspect and replace wheel studs.	P-2	P-2	P-2	X	X	X	X		
G. Electronic Brake Control Systems: Antilock Brake (ABS), Traction Control (TCS), and Electronic Stability Control (ESC) Systems									
1. Identify and inspect electronic brake control system components and describe function (ABS, TCS, ESC); determine needed action.	P-2	P-1	P-2	X					
2. Describe the operation of a regenerative braking system.	P-2	P-2	P-3						X
4. Diagnose poor stopping, wheel lock-up, abnormal pedal feel, unwanted application, and noise concerns associated with the electronic brake control system; determine needed action.	P-2			X					
6. Depressurize high-pressure components of an electronic brake control system.	P-2			X					
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).	P-2			X				X	