MGM Brakes
A Division of Indian Head Industries, Inc.

e-Stroke Gen1 & 2 Post System Installations
Functionality Test Procedure

Introduction: The following procedure is intended to test the e-Stroke system functionality after installation. Following these steps will verify that the system is installed correctly and the vehicles foundation brakes are operating within the recommended limits. The e-Stroke Chassis Communication Module (CCM) will display brake status conditions on the multi-color LEDs.

This test procedure applies to e-Stroke GEN 2 systems installed 2 and 3 Axle Tractor / Truck / Bus applications after September, 2007. CCM P/Ns: 8290110, 8290112, 8290113

Required Vehicle Status: In order to complete this test, the following systems must be completely installed and operational on the vehicle:

- Air brake system
- Foundation Brake System
- Engine Controller
- Electrical Ignition System which powers the e-Stroke System
- SAE J1708 / 1939 circuits (where applicable)

Functionality Test Procedure:

Step 1: Chock vehicle wheels

Step 2: Turn ignition power ON, allowing the e-Stroke CCM to turn ON and complete the start up blinking sequence on the system status LED. Upon completion of the e-Stroke start up mode the following should be observed on the CCM:

- E-Stroke warning light should briefly bulb check ON (1-3 sec) after ignition power is turned on. This is only applicable if the e-Stroke warning light is powered directly by the e-Stroke CCM. If the vehicle I/O system controls the warning light, consult the department which designed the vehicle I/O system.
- All LEDS should display *GREEN* if the parking brakes and air system interlocks are RELEASED
- If the parking brakes ONLY are APPLIED the front brake actuator LEDs will remain *GREEN* and the rear brake actuator LEDs will slow blink *RED*
- If air system interlocks are APPLIED the appropriate wheel LED will display a slow blink *RED*

Step 3: Build air system pressure to 100-110psi using either the engine compressor or external compressed air supply.

Step 4: Release parking brake, and any brake interlock functions (i.e.: Door, Driver's Seat Interlocks)

- All CCM LEDs should be *GREEN*
- Warning Light should remain *OFF*

Step 5: Apply service brake foot pedal one time ONLY to 90-100psi (for at least 2 seconds), then release the foot pedal (wait at least 6 seconds for fault display).

Step 6: View System Status and brake chamber LEDs on CCM.

- All LEDs should remain *GREEN*
- Warning Light should remain *OFF*

Notes: 1. Upon FIRST brake application after power up, the CCM will hold LED fault codes for 5 minutes; immediately upon a SECOND brake application , the LED fault codes are displayed in "real time."
2. If any of the LEDs do not remain *GREEN* reference the e-Stroke Blink Code Definitions at the end of this document to determine the system condition.

Step 7: Apply service brake foot pedal a second time to 90-100psi (for at least 4 seconds), then release the foot pedal (wait at least 12 seconds for fault display). View CCM both during and after the brake application.

- All LEDs should remain *GREEN*
- Warning Light should remain *OFF*

Step 8: Apply parking brakes.

- System Status LED should remain *GREEN*
- Front brake chamber LEDs should remain *GREEN*
- Rear brake chamber LEDs should slow blink *RED*.
  Note: Slow blinking *RED* indicates that the rear brake chambers are dragging and the parking brakes are applied.
- Warning Light should remain *OFF*

The Functionality Test is now complete: If the above conditions are met during this test the e-Stroke system is properly installed and functioning.

Trouble Shooting: If the e-Stroke system deviates from the above functionality / LED codes proceed as follows:

1. For blink codes other than *GREEN* displayed on brake actuator LEDs verify proper foundation brake and function. CCM blink codes such as Over-Stroking or Dragging Brake may be indicating actual brake conditions and needs to be verified and corrected before proceeding.
2. System status LED codes other than Green indicates either low system voltage or an issue with the pressure transducer wiring.
3. Repeat Steps 1-8 upon completion of foundation brake or e-Stroke system repair to verify proper functionality.

e-Stroke Blink Code Definitions:
CCM System Status LED
Solid Green – System Operating Properly
Blinking Red, **Alternate Blinking Red** / **Green**, **Unlit** – System Low Voltage
Blinking Orange – Pressure Transducer Fault

CCM Wheel Specific LEDs
Solid Green – Actuator Operating within Normal Stroke
Slow Red Blink – Dragging Brake
Rapid Red Blink – Over-stroke Fault
Alternate Blinking Red / **Green** – Non-Functioning Actuator
Blinking Orange (Long Short Long) – Sensor or Sensor Harness Fault