MGM Brakes *e*-stroke
e-DT Diagnostic Display
P/N 8290240

Users Guide

Manual INDEX

1. Introduction:

The e-Stroke e-DT is a hand held diagnostic tool which is designed to work with MGM Brakes e-Stroke Systems. The e-Stroke Brake Monitoring System continuously monitors the brake status of the vehicle. As brake faults occur, the e-Stroke System sends SAE J1708 / J1939 fault codes over the vehicles J1708 or Controller Area Network (CAN) where applicable.

The e-DT monitors the vehicles J1708 or J1939 CAN network for the e-Stroke System status and brake faults codes. All e-Stroke brake faults are published SAE J1708 / J1939 codes (See Engineering Bulletin EB 08-025 e-Stroke SAE Fault Codes)

The e-DT can be easily used with the supplied Diagnostic Harness which can connect to either a 6 or 9-pin diagnostic port (OBD) connector. When connected to the vehicles diagnostic port connector the e-DT will automatically turn on and establish communication with the e-Stroke System.

The e-DT displays real time e-Stroke System status, lining wear (if applicable) and active brake faults. In addition the Brake Fault History can be acquired from e-Stroke GEN 3 Systems. Vehicle speed and brake application pressure are also available for diagnostic purposes.

2. e-DT Display & Harness Connections

The e-Stroke e-DT Display Diagnostic Kit (P/N 9090110) consists of the following components:

MGM P/N: 8290240 - e-DT Display
MGM P/N: 8290224 - Display Diagnostic Harness
MGM P/N: 8290239 - e-DT, New Flyer Adapter
MGM P/N: 8090091 - e-Stroke Technical Manual & Software CD

The Diagnostic Harness (P/N 8290224) is capable of connecting the e-DT Display (P/N 8290240) to the vehicles OBD port. Standard 6 and 9 pin connector plug leads are included on the harness to connect the display to the vehicles OBD Circuit.

Vehicles with 6 Pin OBD port connectors typically only include SAE J1708. Vehicles with 9 Pin OBD port connectors typically include both SAE J1708 and J1939.

Typical Display Connections:
Connect the diagnostic harness 12 pin connector labeled “Display” into the receptacle on the back of the Display. Next connect either the 6 or 9-pin diagnostic connector into the available OBD port on the vehicle. The display will receive vehicle power and automatically turn ON and search for the e-Stroke system on either the SAE J1939 or J1708 Circuit. The Display will indicate which Communications Protocol (J1708 or J1939) is being used. The Display is now connected and ready for use.

Additional Display Connection Option:
The e-Stroke GEN 3 fault history and brake application pressure is only available on the J1939 circuit. J1708 is only capable of displaying the e-Stroke faults in real time as they occur. If an e-Stroke GEN 3 system is installed on a vehicle and connected to the J1708 circuit, a direct J1939 connection can be made to the CCM to acquire fault history and brake application pressure.

Connect either the 6 or 9 pin Diagnostic Connector into the available OBD port on the vehicle to access vehicle power. Next connect the 4-Pin connector labeled “P3” into the P3 connector on the e-Stroke GEN 3 CCM. The Display will now have power and a direct connection to the J1939 connection on the GEN 3 CCM.

NOTE: Some 2009 & newer New Flyer Applications will require the (P/N 8290239) Adapter for connection to the 9 pin Diagnostic Connector. If the Display shows “No Communication”, then 8290239 Adapter maybe required.

3. Display Functions & Screens

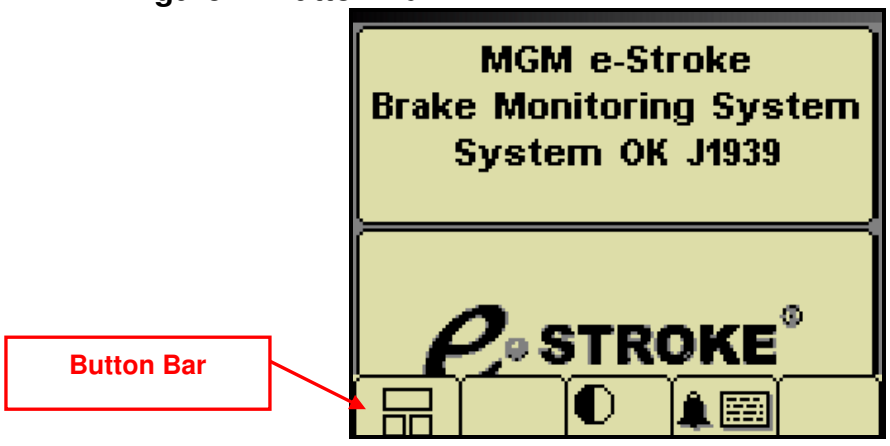
Startup Display Screen:

When the e.DT is plugged in it will show an MGM Brakes Splash screen while the unit conducts a self test. When the self test is complete, the home screen will be displayed. The home screen displays system status, as well as the active diagnostic circuit being used. See Figure 1 below:

Figure 1: e.DT Display, Home Screen, and Buttons

The e-DT can be navigated using the 5 soft keys on the front of the display. A Button Bar graphic will appear after a soft key is pressed indicating the menu options available. With the button bar displayed the appropriate soft key below the icon can then be pressed selecting the option that is desired. The Button actions will vary depending on the options displayed on the Button Bar. See Figure 2 below.

Figure 2: Button Bar



Button Bar Icon Definitions


Vehicle Speed & Brake Application Pressure Diagnostic Page


Contrast & Back Light Adjustment


Active Alarm Acknowledgement


Active & In-active Fault Table


Screen Exit


Scroll Up


Scroll Down


Select to View More Options


Return

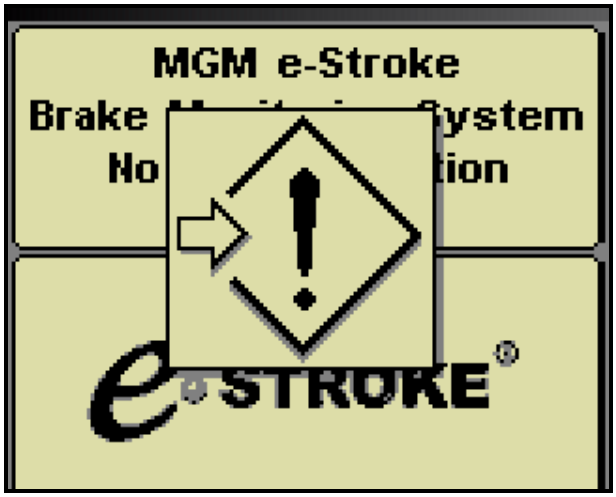
Clears Stored Faults from CCM (Press for 5 Seconds)


Inactive Soft Key (Blank)

4. Display Communication Failure Screen

The e-DT Display requires connection to either the vehicles SAE J1708 or J1939 circuit to retrieve data from the e-Stroke System. If Communication over one of these circuits is not present then the icon shown below in Figure 3 will appear. When Communication is restored the icon will disappear and the active CAN circuit will be displayed on the home screen (Figure 1).

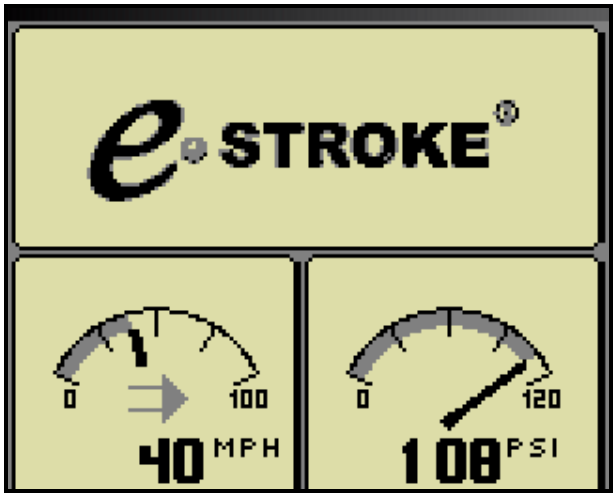
Figure 3: Display Communication Failure Screen



5. Vehicle Speed & Brake Application Pressure Diagnostic Page

This page displays real time Vehicle Speed and Brake Application Pressure. This data can be used to aid in the diagnosis of a reported brake fault. See Figure 4 below.

Figure 4: Vehicle Speed & Brake Application Pressure Page



6. Displaying Active Faults:

An e-Stroke Fault is considered active while the fault is occurring. Active Faults are displayed using a flashing pop up alarm window on the display. This alarm window appears overlaid on the current screen in use, showing details of the fault which is occurring. See Figure 5 below.

Figure 5: Active Fault Alarm Pop Up Window

Pressing any key will acknowledge the fault and display the active alarm (fault) page. This page shows the list of active faults occurring with the e-Stroke System. The button bar icons show the navigation and functions option available on this page. See Figure 6 below.

Key Functions:

- The Arrow keys 1 & 2 can be used to scroll through the active faults.
- An Active Alarm can be acknowledged by pressing key 3.
- The Inactive Stored Fault Table can be accessed by pressing key 4 for 5 seconds.

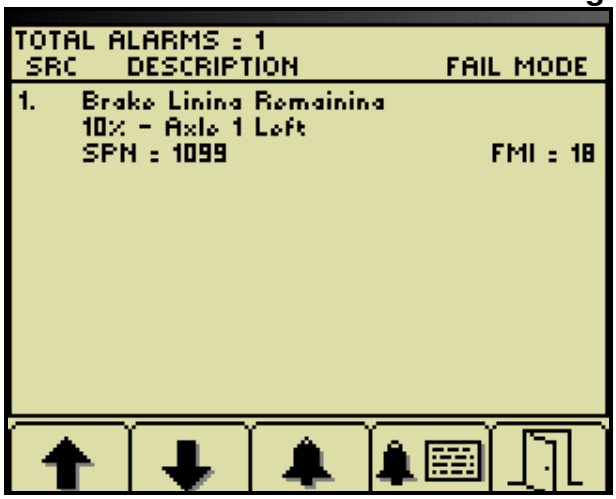
Figure 6: Active Fault Table

The Active Alarms must be acknowledged by pressing key 3 before this page can be exited.

Key Functions:

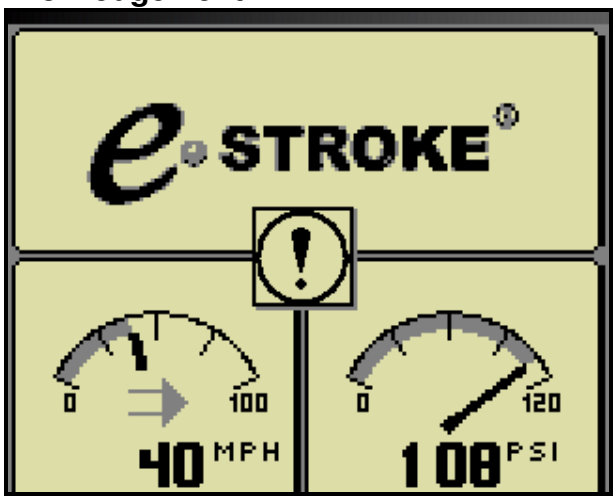
- The Inactive Stored Fault Table can be exited by pressing key 5.

Figure 7: Active Fault Table with Alarm Acknowledged



If the Active Fault Table Page is exited while there is still an active alarm present a caution icon will appear indicating that an Active Alarm is still present. The Active Fault must be repaired before the caution icon will go away. See Figure 8 below.

Figure 8: Caution Icon Indicating Active Fault is Present After Acknowledgement



7. Displaying Inactive Faults:

Faults which occur during operation of the e-Stroke GEN 3 System will be stored in the CCM memory, up to 126 counts, per fault, per wheel. The fault count will increment once per fault occurrence, regardless of the duration of the active fault.

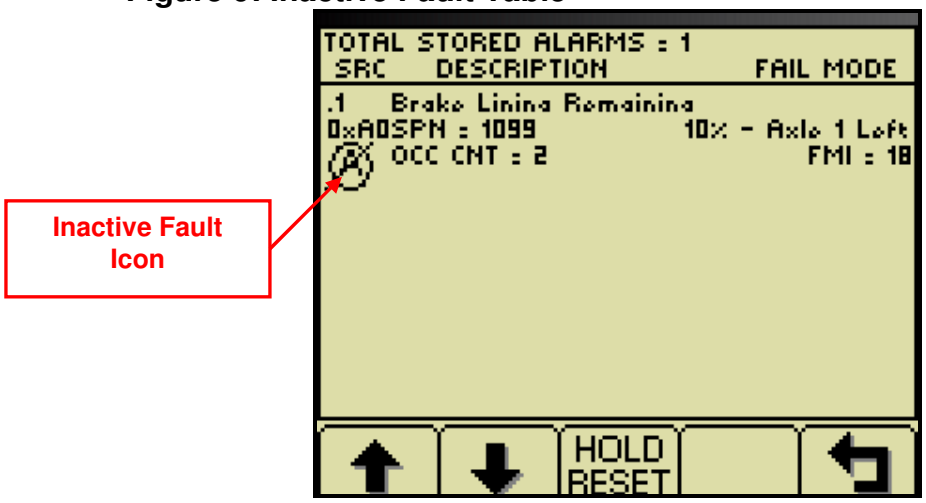
The stored fault alarms can be accessed from the CCM memory by accessing the Active & Inactive Fault Table. The fault table can be accessed from the home page by pressing the Active & Inactive Fault Table key. The Active fault table will then be displayed. The Active & Inactive Fault Table key must then be pressed again for 5 seconds to display the stored faults from the CCM memory.

Inactive faults are marked with an inactive icon. See Figure 9 below.

Key Functions:

- The Arrow keys 1 & 2 can be used to scroll through the inactive faults.
- Press the “HOLD RESET” Key 3 for 5 seconds to clear the CCMs fault history.
- The Inactive Stored Fault Table is exited by pressing the return key 5. This will return to the Inactive fault table where the key 5 can then be pressed to exit to the home screen.

Figure 9: Inactive Fault Table

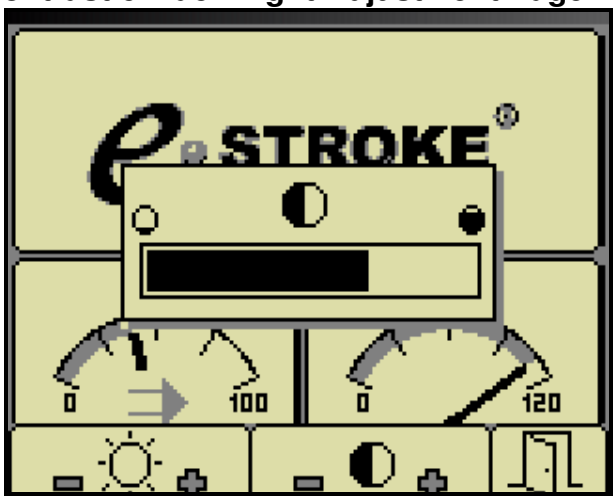


Note: Stored Inactive faults can only be accessed from the GEN 3 CCM through the J1939 circuit. GEN 2 Systems & J1708 does not support the CCM fault history retrieval or brake application pressure. See section 2 for additional connections available if J1939 is not connected to the GEN 3 CCM.

8. Display Contrast & Back Light Adjustment:

The contrast and back light of the display screen can be adjusted. Access the contrast adjustment screen by pressing the Contrast & Back Light Adjustment key from the home page. Follow the button bar icons to adjust as required. See Figure 10 below.

Figure 10: Contrast & Back Light Adjustment Page



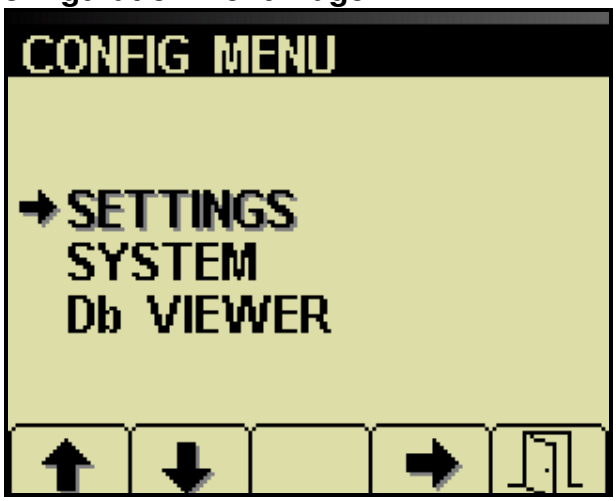
9. Display Configuration Settings:

The Display Configuration menus can be accessed from the home page. With the Button Bar not visible on the screen, Press key 5 for 5 seconds to display the Configuration Menu. See Figure 11 below. Select Settings or System to continue.

Key Functions:

- The Arrow keys 1 & 2 can be used to scroll through the Configuration options.
- Arrow key 4 will select the option indicated by the arrow.
- Key 5 will exit the Configuration Menu Page returning to the home page.

Figure 11: Configuration Menu Page



The following display settings can be adjusted to meet the application requirements:

Display Settings Menu (See Figure 12):

- Units – Units can be adjusted between English and Metric.
- Language – The Language can be changed by selecting one of the displayed options from the Settings / Language Menu.
- Bleep – The Audible key bleep can be turned on or off.
- Backlight – Backlight mode and level can be adjusted.

System Menu (See Figure 13):

- Demo – Three Demo options are available to illustrate the features of the display. Select 0 to shut the Demo option OFF.
- Restore Defaults – This will reset the display back to factory settings.
- COM Viewer – Displays real time data traffic on the J1708 & J1939 circuits.
- Data link Settings – Allows Adjustment of J1939 & J1587 Data Link Settings.
- About – Displays Display unit information.

Key Functions:

- The Arrow keys 1 & 2 can be used to scroll through the display options.
- Arrow key 4 will select the option indicated by the arrow.
- Key 5 will return to the previous page.

Figure 12: Settings Menu Page

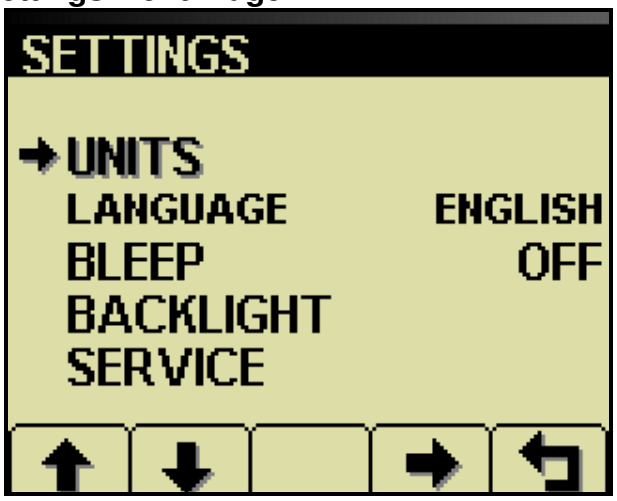
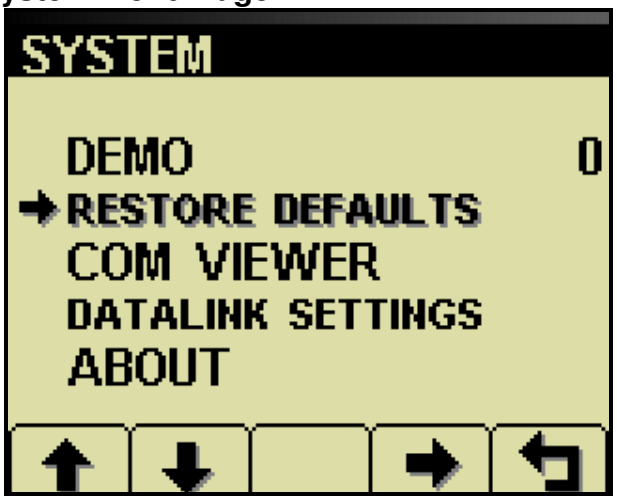


Figure 13: System Menu Page



10. Trouble Shooting Guide

e.DT Trouble Shooting Guide	
Problem	**Recommended Action**
Unit does not power up or fails to display any data	Check for correct connections Check for power (10 to 30 volts) Check for CCM J1939 or J1708 convention.
Display is blank or Black	Check lighting and contrast settings Operating temperature is -25C to + 75 C
Unit beeps at startup and does not show home page	Unit has failed self test, reset power.
Unit fails to display parameters / unable to select parameters	-Ensure e.DT is Communicating with CCM (J1939 or J1708) -A Diamond Caution icon with arrow will appear when both J1708 and J1939 Communication are not present.
Active alarm messages are not displayed	
Stored alarm messages are not displayed	
Display does not respond to Key input and shows “Key” icon when pressed. Display Keys have been locked.	Press and Hold all 5 soft Keys on the Display to Lock and Unlock Keys.

11. Display Connector Information

Display Connector Receptacle: Deutsch DT0412PA
Deutsch Mating Connector Parts:
Connector Body: DT0612PA
Wedgelock: W12S (One per Connector)
Pin Sockets: 0462-201-1631 (One per Connection)
Seal Plugs: 114017 (One per unused cavity)

Display Connector Pin Function

Pin #	Function	Pin #	Function
1	Power -	**7**	CAN LO
2	Power +	**8**	CAN HI
3	RS232 TX+	**9**	RS485A
4	RS232 TX-	**10**	RS485B
5	RS232 RX-	**11**	External alarm
6	RS232 RX+	**12**	No connection

12. Glossary of Terms

e. DT	E-stroke Diagnostic Display
CAN	Controller Area Network (CAN bus):
FMI	Failure Mode Identifier
J1939	SAE data bus protocol (CAN)
J1708/J1587	Electronic Data Interchange between Microcomputer Systems in Heavy Duty Vehicle applications.
LCD	Liquid Crystal Display
PID	Parameter Identifier
RS-232	Standard electrical interface for serial communications
SAE	Society of Automotive Engineers
SID	Subsystem Identifier
Soft Keys	Push Button keys that change function with use
SPN	Suspect Parameter Number: J1939 specific fault code ID number