

SERVICE REPAIR

MANUAL

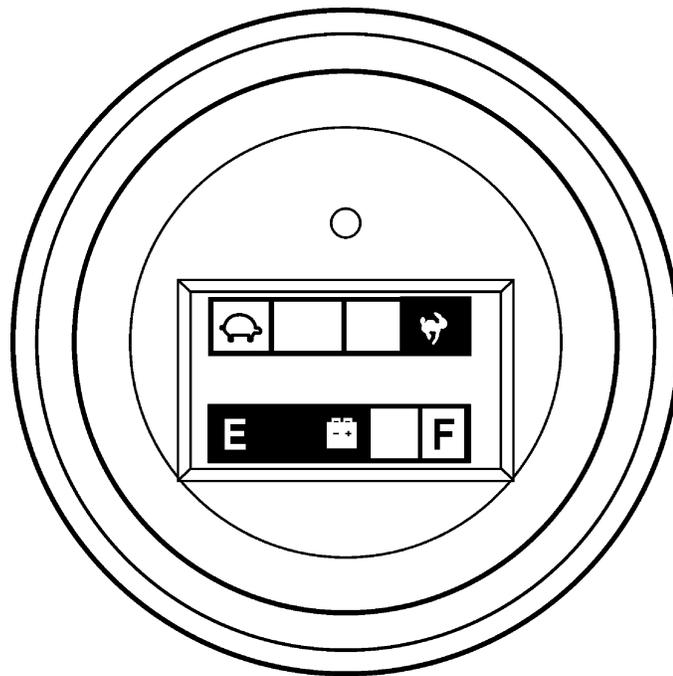
Hyster A257 (B80ZHD) Forklift

HYSTER

USER INTERFACE

SERVICE TECHNICIAN FUNCTIONS ON-BOARD DASH DISPLAY

B60Z^{AC} [B230]; B80Z^{AC} [B233];
B60Z^{HD} [A262]; B80Z^{HD} [A257]



HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **HYSTER APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the WARNING symbol and word are on orange background. The CAUTION symbol and word are on yellow background.

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manual**

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This section is for the following models:

B60Z^{AC} [B230];
B80Z^{AC} [B233];
B60Z^{HD} [A262];
B80Z^{HD} [A257]

General

DESCRIPTION

NOTE: Some menu functions are only accessed through the dash display by using a technician-level password. These functions include truck speed settings, acceleration rates, and audible/visual alarm settings.

NOTE: The initial setup of the supervisor password must be performed by a service technician accessing the menu system with a technician-level password. The supervisor password must be entered before a supervisor can gain access to the menu functions.

The dash display is a multifunction device. It contains a truck status LED and an LCD which displays the performance mode indicator and a battery charge indicator. The dash display menu system can be accessed by starting the truck in service mode and entering the proper password. See Figure 1.

DASH DISPLAY MENU ACCESS (STANDARD HANDLE)

Start up the lift truck in service mode to access the dash display menu system:

1. Simultaneously depress and **HOLD** the RH LIFT switch and the HORN switch (located on the control handle). See Figure 5.
2. Turn the key switch to the **ON** position.
3. Release the lift and horn switches.

The Enter Password screen will now appear on the LCD. See Figure 2. At the Enter Password screen, enter your five-digit Service Technician password. The default Service Technician password is 55555.

To enter your password at the Enter Password screen, enter the appropriate digit in the highlighted area of the display. See Figure 2. Use the LH LIFT switch to increase the number to any digit between 1 and 5. Use the LH LOWER switch to decrease the number. Use the RH LOWER switch to move to and highlight the next digit to be entered. Use the RH LIFT switch to return to and highlight a previous entry. Repeat until all five digits of your password

have been entered. While on the final digit, press the RH LOWER switch to enter the password. Upon successful entry of your technician-level password, you will be directed to the Technician Menu.

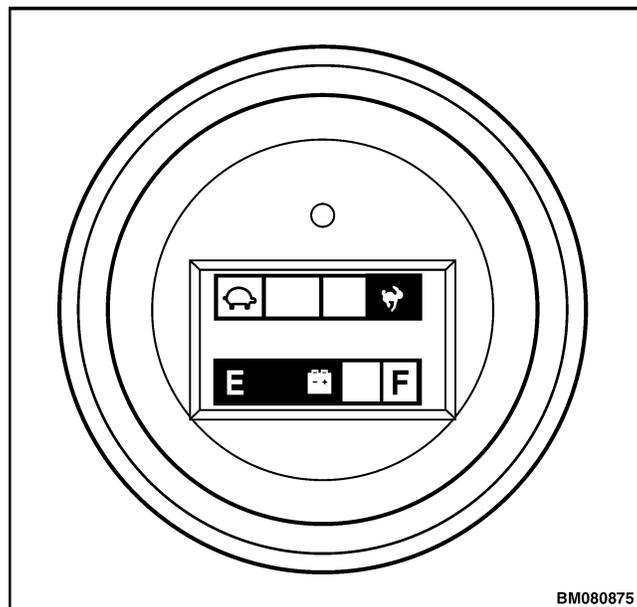


Figure 1. Dash Display

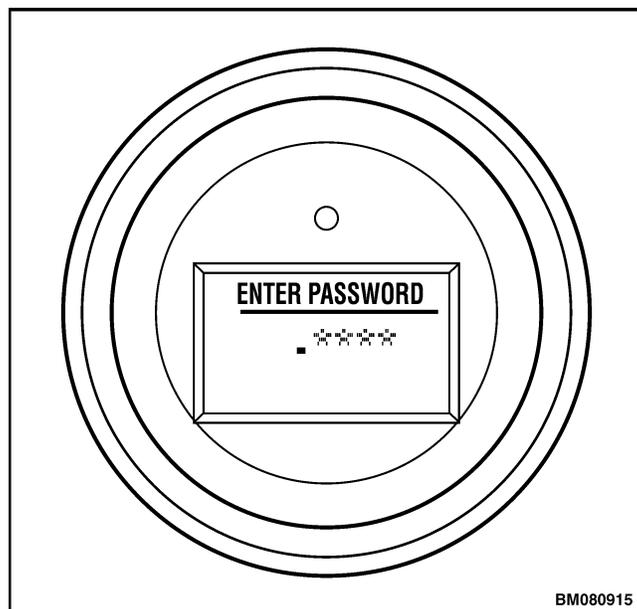
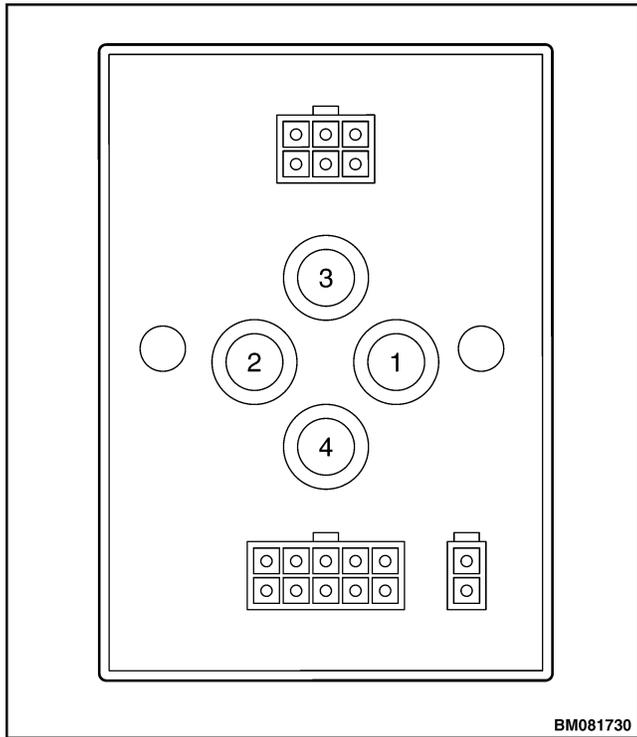


Figure 2. Enter Password Screen

DASH DISPLAY MENU ACCESS (METAL HANDLE OPTION)

Startup the lift truck in service mode to access the dash display menu system:

1. Remove the drive unit compartment covers to access the control module.
2. Depress and **HOLD** the #3 switch (located on the control module inside the electrical compartment). See Figure 3.
3. Turn the key switch to the **ON** position.
4. Continue holding the #3 switch and press the HORN switch (located on top of the control handle) within 1 second of turning the key switch.
5. Release the #3 and horn switches.



- | | |
|--------------|--------------|
| 1. #1 BUTTON | 3. #3 BUTTON |
| 2. #2 BUTTON | 4. #4 BUTTON |

Figure 3. Control Module

The Enter Password screen will now appear on the LCD. At the Enter Password screen, enter your five-digit Technician password. See Figure 4.

To enter your password at the Enter Password screen, enter the appropriate digit in the highlighted area of the display. Use the #1 switch to increase the number to any digit between 1 and 5. Use the #2 switch to decrease the number.

NOTE: As an alternative to using the control module buttons, the lift and lower buttons on the steer handle itself can be used to increase and decrease the values of the digits, respectively.

Use the #4 switch to move to and highlight the next digit to be entered. Use the #3 switch to return to and highlight a previous entry. Repeat until all five digits of your password have been entered. While on the final digit, press the #4 switch to enter the password. Upon successful entry of your technician-level password, you will be directed to the Technician Menu.

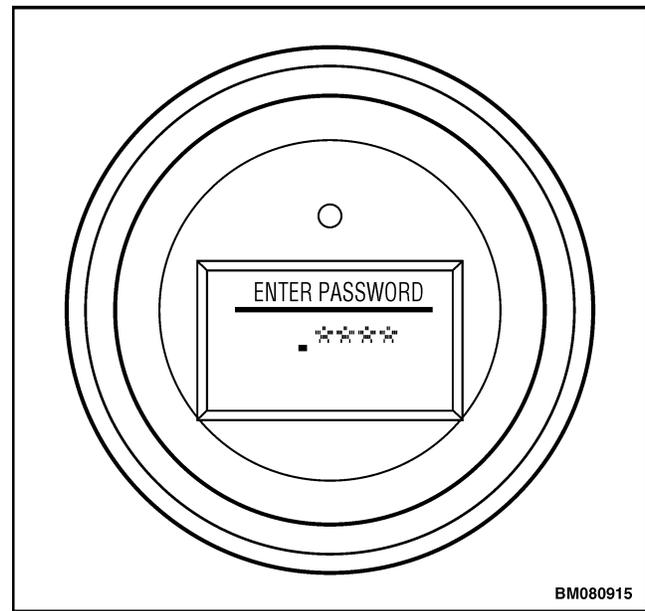


Figure 4. Enter Password Screen

Menu Navigation

STANDARD HANDLE

Upon successful entry of your technician-level password, the Technician Menu screen will appear on the dash display LCD screen. Menu navigation is accomplished by using the lift truck control function switches on the control handle. Depressing the switches will result in the following actions:

- LH LOWER Switch – Scroll up within a menu, or increase the value of a setting when making a parameter adjustment.
- LH LIFT Switch – Scroll down within a menu, or decrease the value of a setting when making a parameter adjustment.
- RH LIFT Switch – Scroll left within a menu. This switch will move you to the previous menu when depressed.
- RH LOWER Switch – Scroll right within a menu. This switch will move you to the next menu when

depressed or return you to the technician menu when finished making a parameter adjustment. This switch will also activate the ability to adjust the parameter that is focused upon.

Use the LH LIFT and LH LOWER switches to scroll up and down between the menu choices. When the proper menu item has been highlighted, press the RH LOWER switch to move to the selected submenu. Use the RH LIFT switch to return to the previous menu. To exit the menu system, select "Exit To Run Mode" and press the RH LOWER switch to return to normal truck operation. When changing a value or setting, pressing the LH LOWER switch will cause the selected value to DECREASE. Pressing the LH LIFT switch will cause the selected value to INCREASE. See Figure 5.

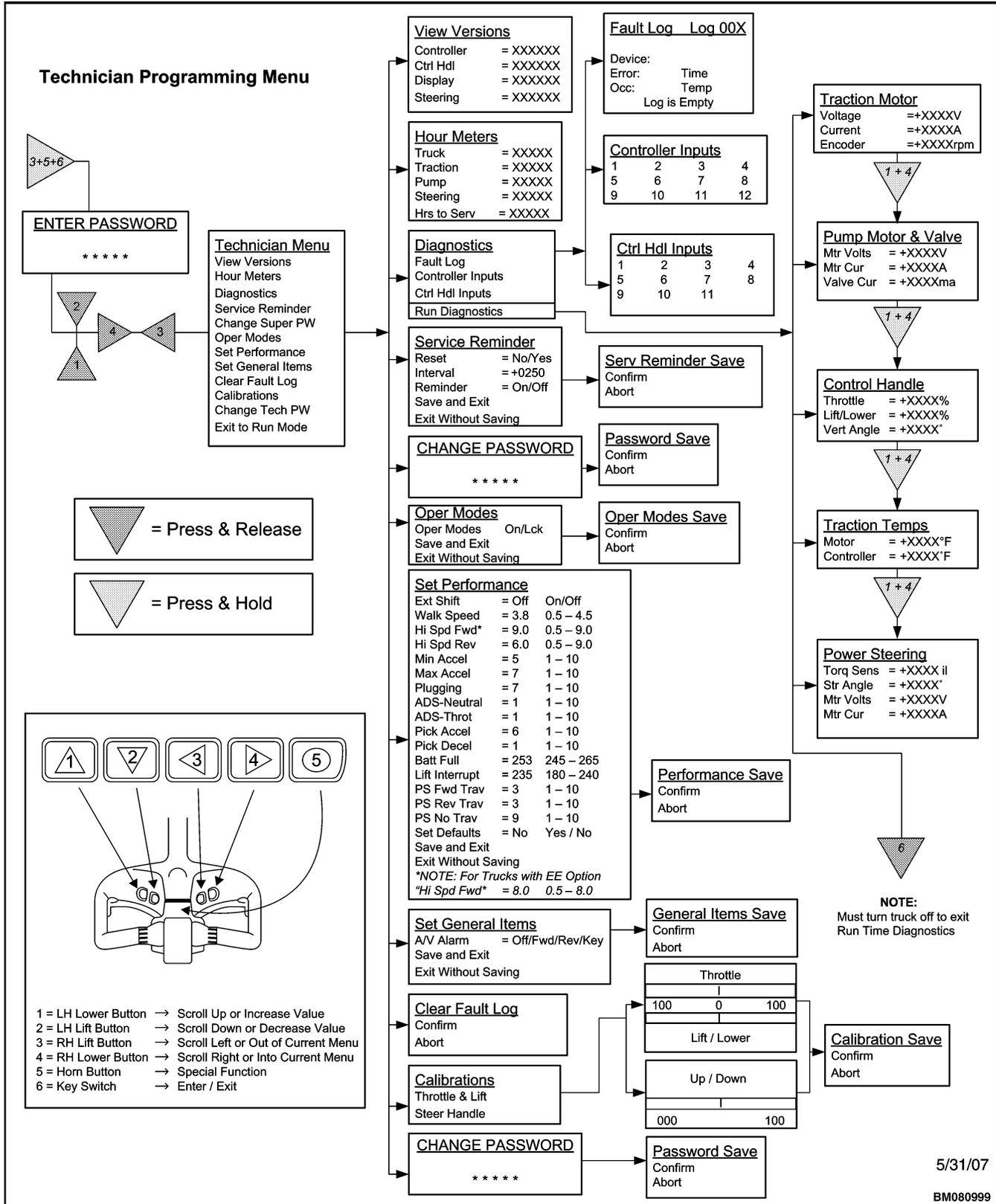


Figure 5. Menu Navigation Flowchart

METAL HANDLE OPTION

Upon successful entry of your technician password, the Technician Menu screen will appear on the dash display LCD screen. Technician Menu navigation is accomplished by using the lift truck control function switches on the control module. Depressing the switches will result in the following actions:

1. #1 Button (Control Module) – Scroll up within a menu, or increase the value of a setting when making a parameter adjustment.
2. #2 Button (Control Module) – Scroll down within a menu, or decrease the value of a setting when making a parameter adjustment.
3. #3 Button (Control Module) – Scroll left within a menu. This switch will move you to the previous menu when depressed.
4. #4 Button (Control Module) – Scroll right within a menu. This switch will move you to the next menu when depressed or return you to the technician menu when finished making a parameter adjustment. This switch will also activate the ability to adjust the parameter that is focused upon.
5. Horn Button (Control Handle) – Used for special functions.
6. Key Switch (Dash Console) – Used to enter/exit the menu.

NOTE: As an alternative to using the control module #1 and #2 buttons, the lift and lower buttons on the steer handle itself can be used to move up and down within the menus, respectively.

Use the #1 and #2 switches to scroll up and down between the menu choices. When the proper menu item has been highlighted, press the #4 switch to move to the selected submenu. Use the #3 switch to return to the previous menu. To exit the menu system, select "Exit To Run Mode" and press the #4 switch to return to normal truck operation.

When changing a value or setting, pressing the #1 switch will cause the selected value to INCREASE. Pressing the #2 switch will cause the selected value to DECREASE. See Figure 5.

When using the instructions in this section to navigate the display on trucks equipped with the metal control handle option, refer to the button number in brackets following the standard control handle button description (i.e. press the LH LOWER [#1] button). See Table 1.

Table 1. Corresponding Buttons

Standard Control Handle Button	Control Module Button	Display Function
LH LOWER Switch	#1	Scroll Up / Increase
LH LIFT Switch	#2	Scroll Down / Decrease
RH LIFT Switch	#3	Scroll Left / Exit Menu
RH LOWER Switch	#4	Scroll Right / Enter Menu

Dash Display Versions

Early production dash displays use an arrow symbol to the left of the menu item to indicate the active menu selection. See Figure 6.

NOTE: Instructional illustrations throughout this manual show only early versions of the dash display.

Later production dash displays use a highlight bar (white letters on a black background) to indicate the active menu item. See Figure 7. If an item parameter is selected for editing, the arrow symbol will appear to the left of the selected item.

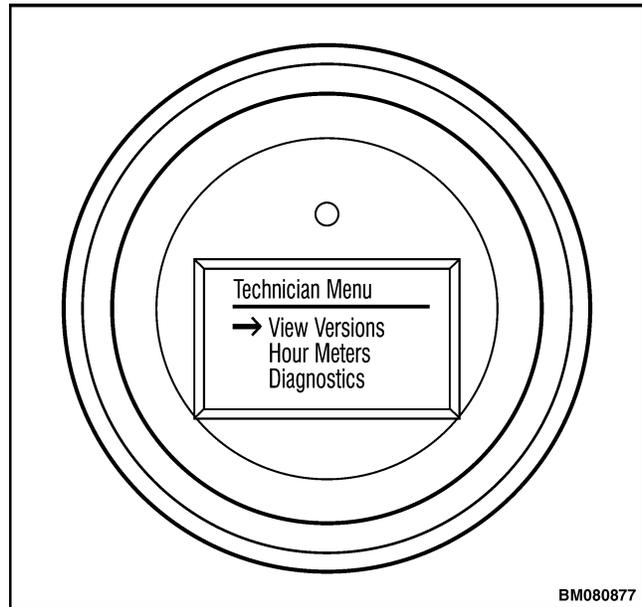


Figure 6. Dash Display (Early Models)

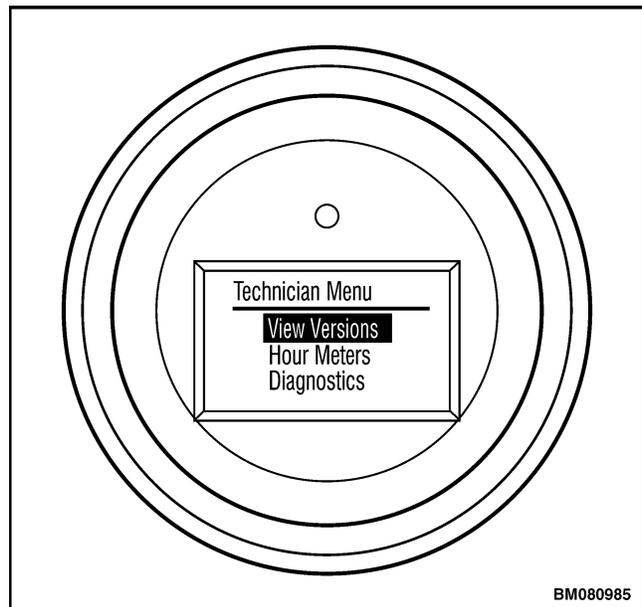


Figure 7. Dash Display (Later Models)

Technician Menu

At the Technician Menu, the following submenu choices are available:

- View Versions
- Hourmeters
- Diagnostics
- Service Reminder
- Change Super Pw
- Oper Modes
- Set Performance
- Set General Items
- Clear Fault Log
- Calibrations
- Change Tech Pw
- Exit To Run Mode

Use the LH LOWER [#1] and LH LIFT [#2] switches to scroll up or down within the menu. Select an option by pressing the RH LOWER [#4] switch. See Figure 8.

Table 2. Technician Menu

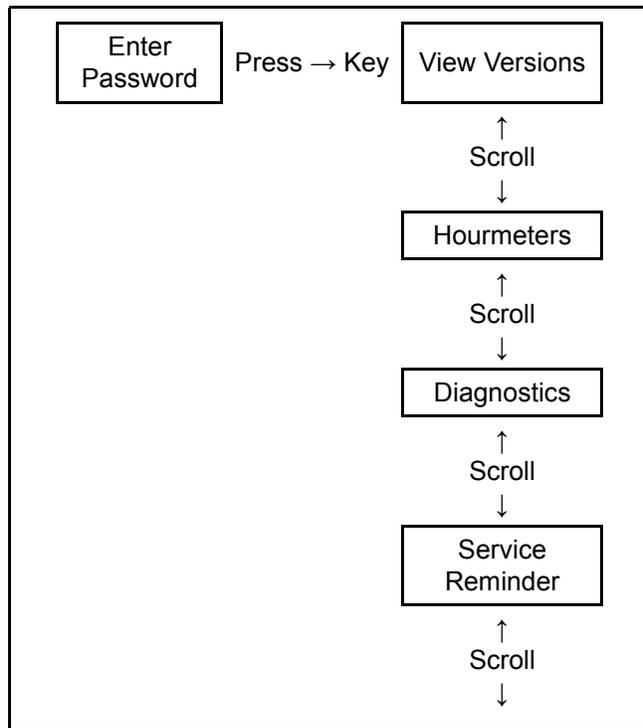
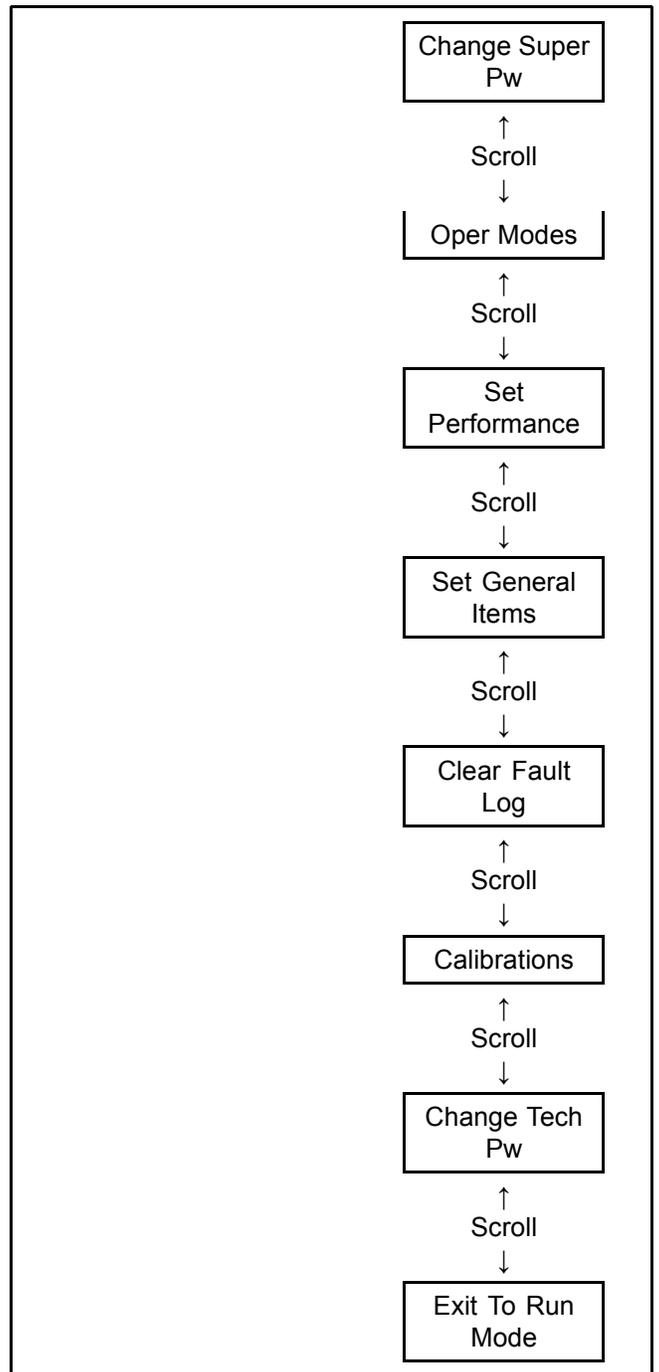


Table 2. Technician Menu (Continued)



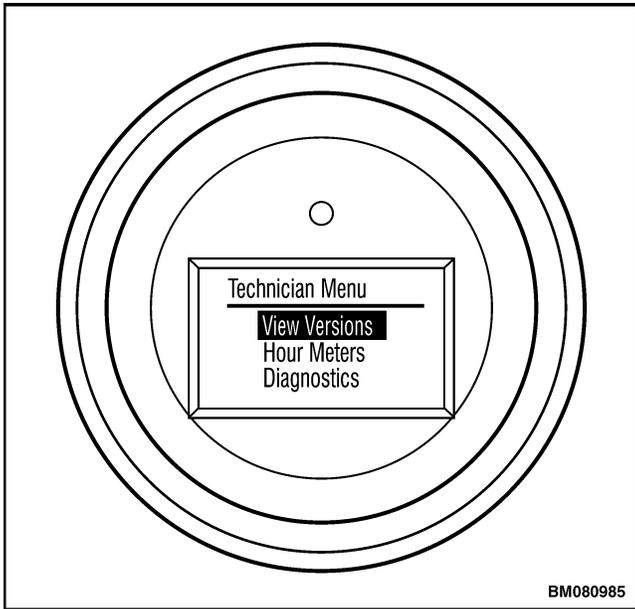


Figure 8. Technician Menu Screen

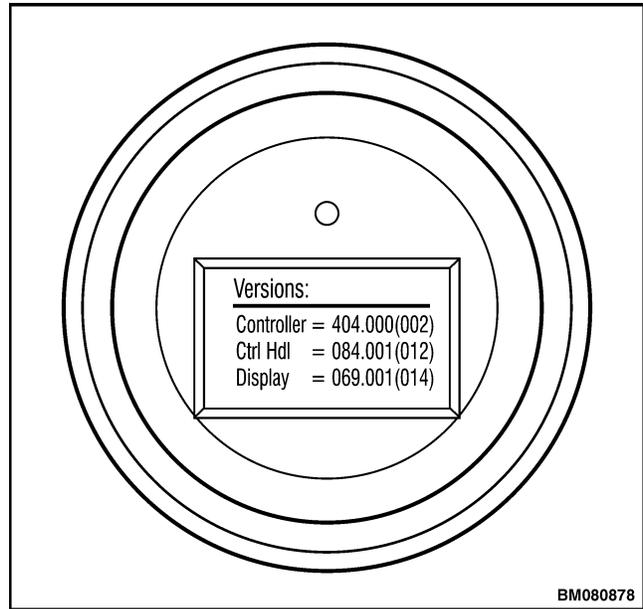


Figure 9. View Versions Screen

VIEW VERSIONS

NOTE: The software version is denoted by the center three digits of the nine digit number displayed in the views menu. **Example:** If the number listed on the View Versions menu for the display unit is 069.001(014), the software version for the display is 001.

Within the View Versions menu, you can view the software version number for the Controller, Control Handle, the optional Power Steering, and Dash Display. Press the RH LIFT [#3] switch to return to the previous menu. See Figure 9.

HOURMETERS

Within the Hourmeters menu, you can view the hourmeter readings for the Truck, Traction Motor, Pump Motor, Power Steering Motor, and the number of hours remaining until the next scheduled service is required. Use the RH LIFT [#3] switch to return to the previous menu. See Figure 10.

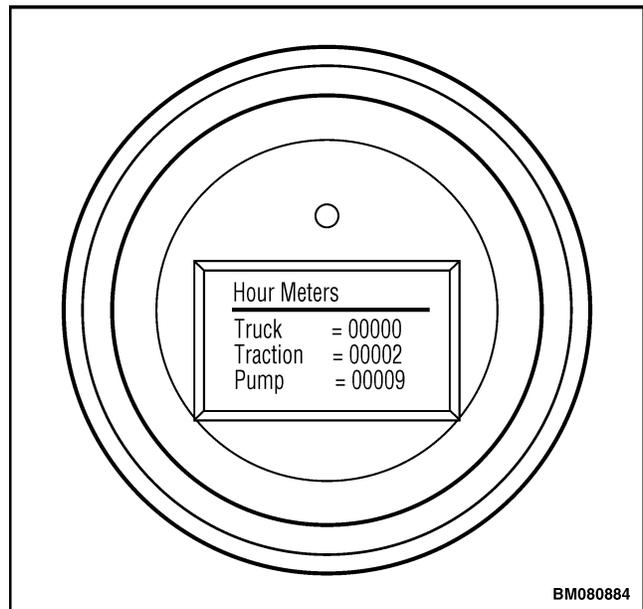


Figure 10. Hourmeters Screen

DIAGNOSTICS

NOTE: Once the Run Diagnostics menu has been selected, you cannot return to the Diagnostics menu. The only way to exit Run Diagnostics is to cycle the key switch.

A series of submenus are available from the Diagnostics menu. Within the Diagnostics menu, you can access the Fault Log, Controller Inputs, Control Handle Inputs, and Run Diagnostics. See Table 3. Use the LH LOWER [#1] and LH LIFT [#2] switches to scroll between the menu choices. See Figure 11. When the proper menu item has been highlighted, press the RH LOWER [#4] switch to move to the selected submenu. Use the RH LIFT [#3] switch to return to the previous menu.

Table 3. Diagnostics Menu

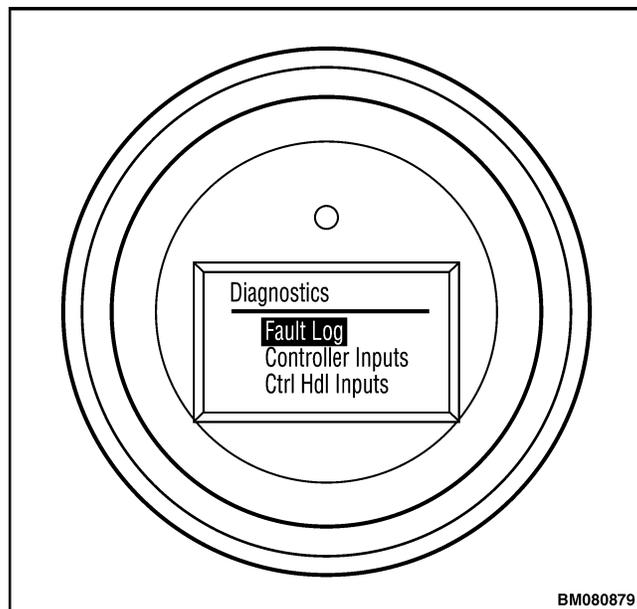
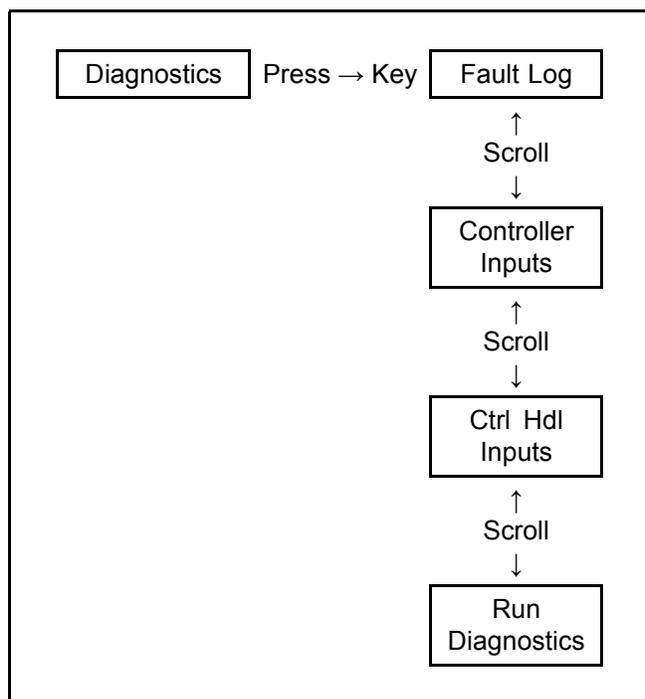


Figure 11. Diagnostics Screen

Fault Log

The Fault Log menu will list the truck system initiating the fault, the error code associated with the fault, the hourmeter reading when the fault occurred, the number of times the fault has been logged, and the system temperature when the fault occurred. See Figure 12. To scroll through the Fault Log menu, depress and **HOLD** the #1 and the #2 switches. The system will retain the last 10 faults recorded.

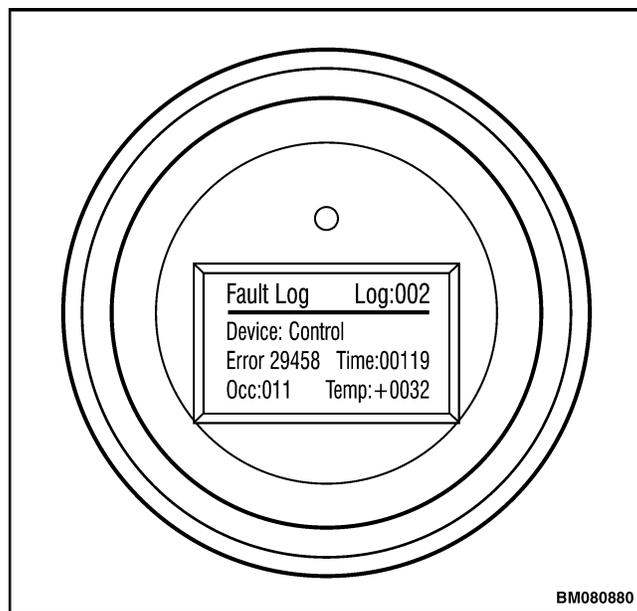


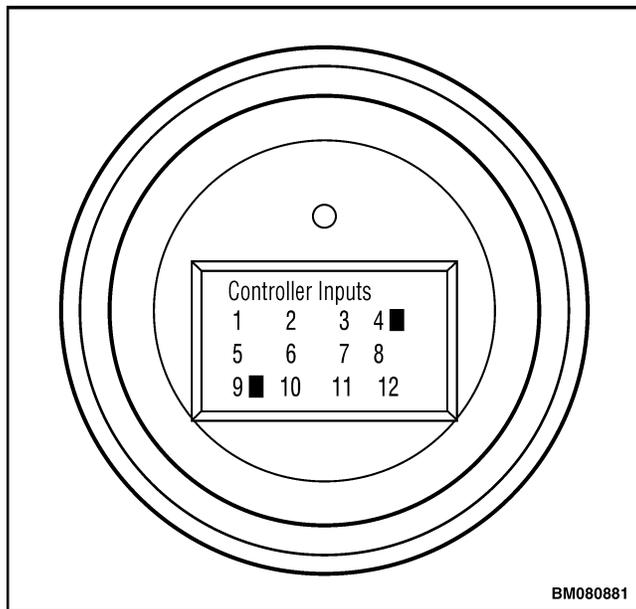
Figure 12. Fault Log Screen

Controller Inputs

If an input is enabled, the square next to the input number will be illuminated. See Figure 13. The controller inputs for the lift truck are itemized in Table 4.

Table 4. Controller Inputs

Display Number	Input Function
1	High Speed Switch
2	Grab Rail Lift Switch
3	Grab Rail Lower Switch
4	Belly Switch
5	Brake Switch
6	Regen Braking Switch
7	Coast Control Switch (Optional)
8	Not Used
9	Not Used
10	Not Used
11	Not Used
12	Not Used



BM080881

Figure 13. Controller Inputs Screen

Control Handle Inputs

If an input is active, the square next to the input number will be illuminated. Press the RH Lift [#3] switch to return to the Technician Menu. See Figure 14. For a list of the steer handle inputs, see Table 5.

Table 5. Control Handle Inputs

Display Number	Input Function
1	LH Lift Switch [#2]
2	LH Lower Switch [#1]
3	Belly Switch (Open)
4	Horn Switch
5	Belly Switch (Closed)
6	Not Used
7	RH Lift Switch [#3]*
8	RH Lower Switch [#4]
9	Regen Braking Switch
10	Pick Switch(es)
11	Not Used
12	Not Used

*When RH LIFT [#3] switch is released the dash display returns to the diagnostic menu.

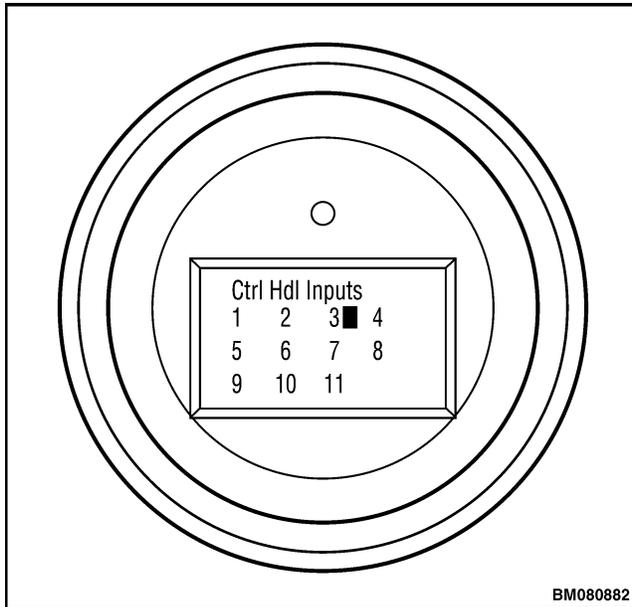


Figure 14. Ctrl Handle Inputs Screen

Run Diagnostics



WARNING

The lift and lower functions are enabled when the Run Diagnostics Menu is selected.

NOTE: Once the Run Diagnostics menu has been selected, you cannot return to the Diagnostics menu. The only way to exit Run Diagnostics is to cycle the key switch.

From the Technician Menu, enter Diagnostics and scroll down to and select Run Diagnostics. The horn will sound twice when entering the Run Diagnostics menu. A series of submenus are available inside the Run Diagnostics menu. See Table 6.

To scroll through the Run Diagnostics menu, press both the RH LIFT [#4] and the LH LIFT [#1] switches and hold until the menu changes (approximately 7 seconds). Exit the Run Diagnostics by cycling the key switch. See Figure 15.

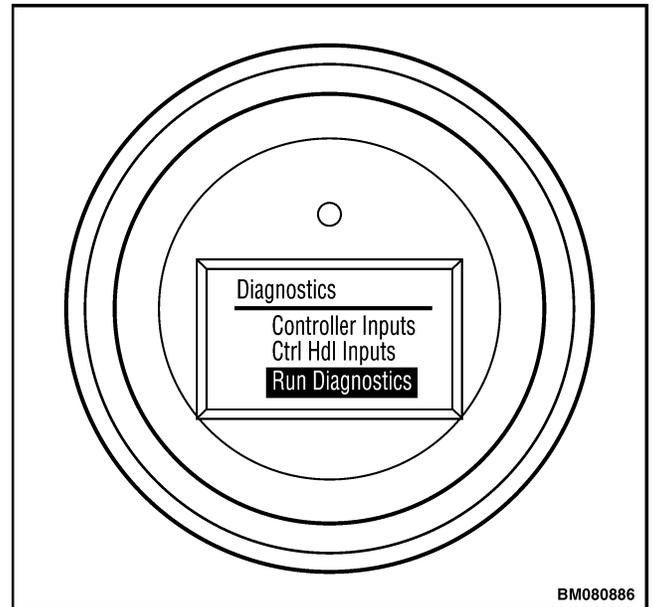
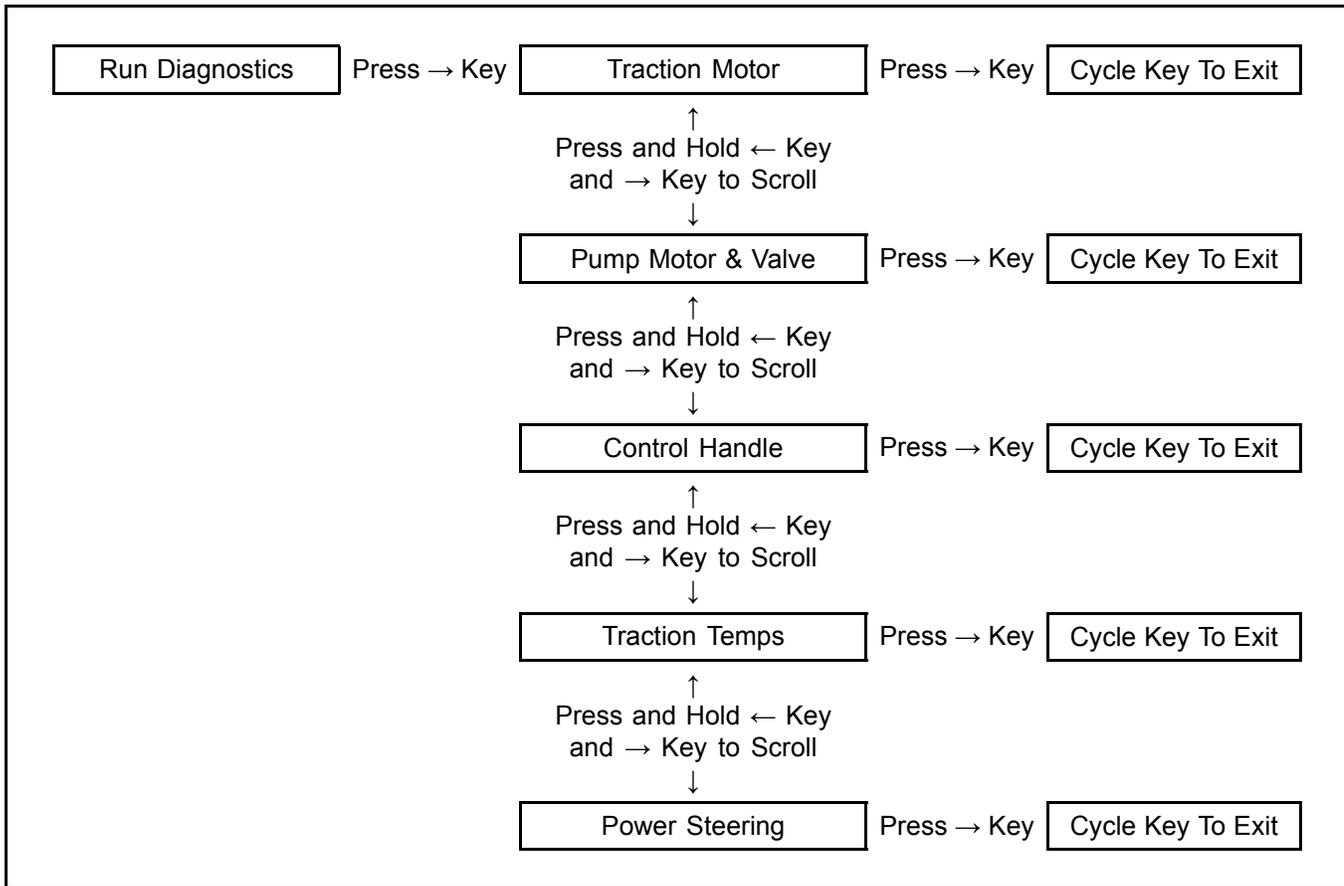


Figure 15. Run Diagnostics Screen

Table 6. Run Diagnostics Menu



Traction Motor

The Traction Motor menu provides the following information:

- Traction Motor Voltage
- Traction Motor Current (amps)
- Traction Motor Speed (Encoder RPMs)

To exit the Traction Motor menu, press both the RH LOWER [#4] and LH LOWER [#1] switches and hold until the next diagnostic menu is present, or cycle the key switch to return the lift truck to **RUN** mode. See Figure 16.

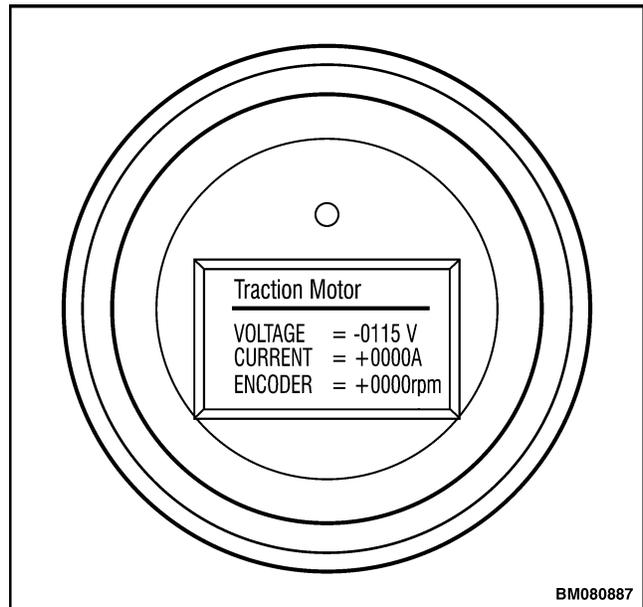


Figure 16. Traction Motor Screen

Pump Motor and Valve

The Pump Motor and Valve menu provides the following information about the lift system:

- Pump Motor Voltage
- Pump Motor Current (in amps)
- Valve Current (in milliamps)

To exit the Pump Motor and Valve menu, press both the RH LOWER [#4] and LH LOWER [#1] switches and hold until the next diagnostic menu is present, or cycle the key switch to return the lift truck to **RUN** mode. See Figure 17.

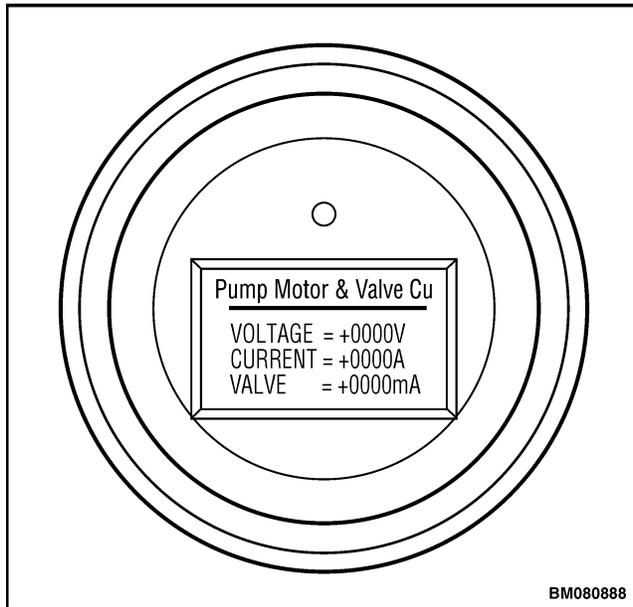


Figure 17. Hydraulic Motor/Valve Screen

Control Handle

The Control Handle menu provides information about the control handle outputs: Truck Throttle, Lift Pump Speed, and Vertical Angle. These speed outputs will be shown as a percentage of the full speed of the device. See Figure 18. To exit the Control Handle menu, press both the RH LOWER [#4] and LH LOWER [#1] switches and hold until the next diagnostic menu is present or cycle the key switch to return the lift truck to **RUN** mode.

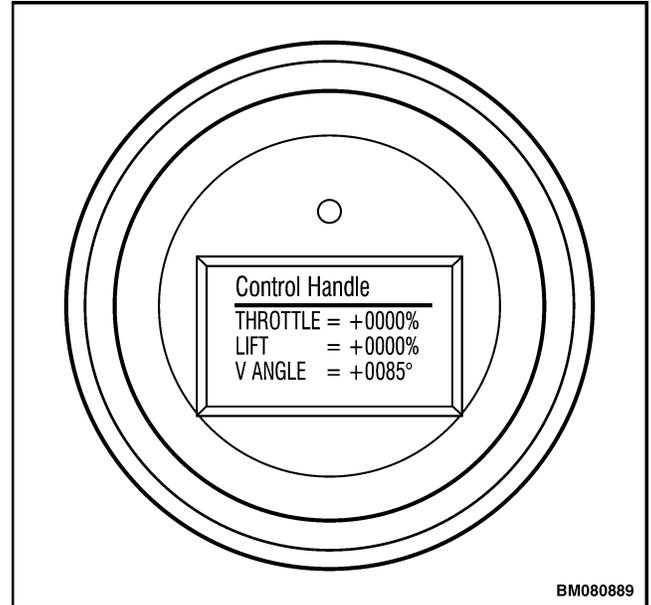


Figure 18. Control Handle Screen

Traction Temps

The screen shows the traction motor internal temperature and the controller internal temperature in degrees Fahrenheit. See Figure 19. To exit the Temperatures menu, press both the RH LOWER [#4] and LH LOWER [#1] switches and hold until the next diagnostic menu is present or cycle the key switch to return the lift truck to **RUN** mode.

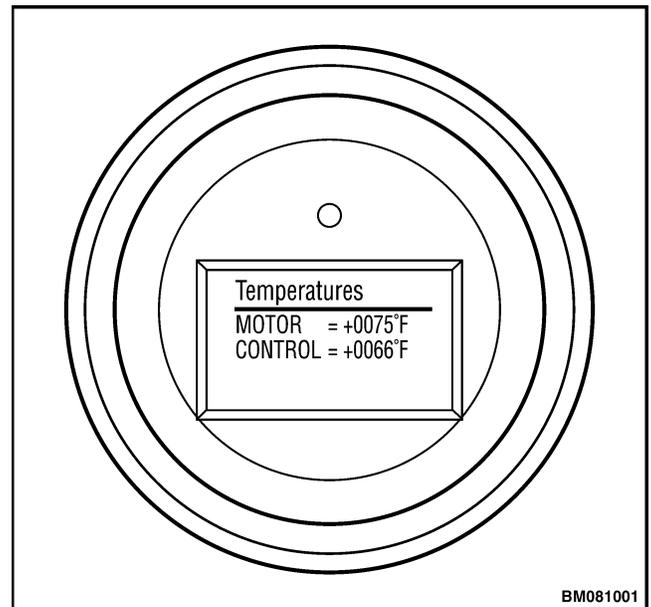


Figure 19. Temperatures

Power Steering

The Power Steering menu provides the following information when the truck is equipped with power-assisted steering:

- Torque Input (in inch-pounds)
- Steering Handle Angle (in degrees)
- Battery Input (in volts)
- Steering Motor Current (in amps)

To exit the Power Steering menu, press both the RH LOWER [#4] and LH LOWER [#1] switches and hold until the next diagnostic menu is present, or cycle the key switch to return the lift truck to **RUN** mode. See Figure 20.

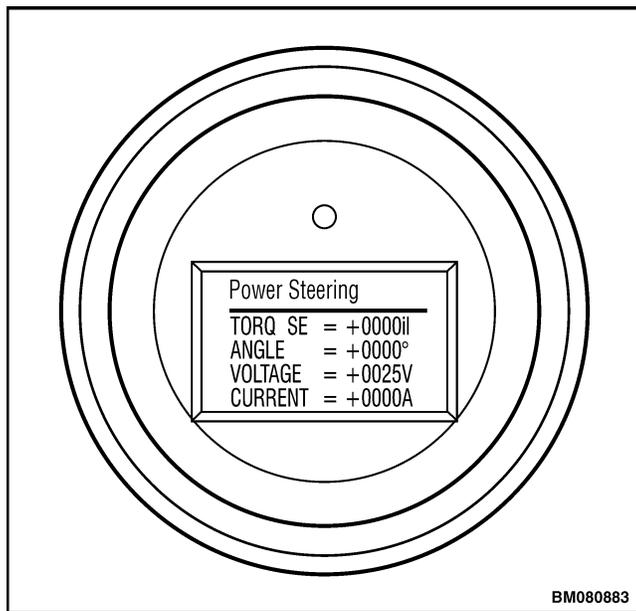


Figure 20. Power Steering Screen

SERVICE REMINDER

NOTE: The Service Reminder interval can be changed from its current setting in 50-hour increments when using the dash display. The intervals can be further adjusted in one-hour increments if using ETACC.

Within the Service Reminder menu, you can reset the Service Reminder, change the service interval hours, and turn the reminder ON or OFF.

NOTE: To reset in ETACC in Version 1.29 and below, take the interval amount and current truck hours, and add them together. Enter this value under Truck Hours at Next Service and download.

When the service reminder is ON, the dash display will display a one-time message to the operator when the service interval has been reached. The lift truck will continue to operate normally until the hourmeter reaches 20 hours past the designated service interval. At this time the lift truck function speeds will be reduced until the Service Reminder has been reset. See Figure 21. Use the LH LOWER [#1] and LH LIFT [#2] switches to scroll between the menu choices. When the proper menu item has been highlighted, press the RH LOWER [#4] switch to move to the selected submenu. Make any changes required to the menu item. Use the RH LIFT [#3] switch to return to the Service Reminder menu. Scroll to the exit options and select. Press the RH LOWER [#4] switch to return to the Technician Menu. The normal factory default setting for the Service Reminder is OFF and must be changed to ON for the Service Reminder to be active. The interval value shown on the display is a fixed value denoting the total time interval between services and **DOES NOT** change to show time remaining as the service reminder counts down.

NOTE: To turn off service reminder in ETACC Version 1.29 and below, enter 0 in Truck Hours at Next Service and download.

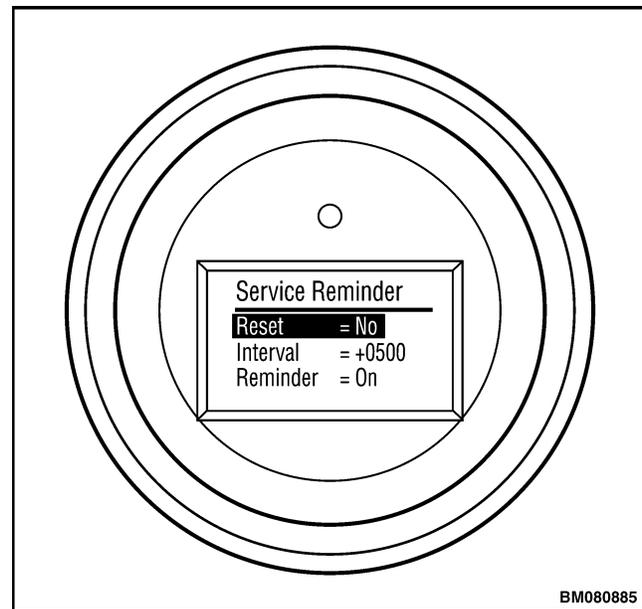


Figure 21. Service Reminder Screen

CHANGE SUPERVISOR PASSWORD

NOTE: To disable a service password enter "10000" in the ETACC box value and download.

Use this menu to enter or change any passwords. See Figure 22. To enter a new password at the Passwords screen, enter the appropriate digit in the highlighted area of the display. Use the LH LOWER [#1] and LH LIFT [#2] switches to raise or lower the number to any digit between 1 and 5. Use the RH LOWER [#4] switch to move and highlight the next digit to be entered. Use the RH LIFT [#3] switch to return and highlight a previous entry. Repeat until all five digits of your password have been entered. Press the RH LOWER [#4] switch to move to the Password Confirm menu. Use the RH LIFT [#3] switch to return to the Enter New Password menu. Use the LH LOWER [#1] and LH LIFT [#2] switches to scroll between the Save And Exit or Exit Without Saving choices. Press the RH LOWER [#4] switch to return to the Technician Menu.

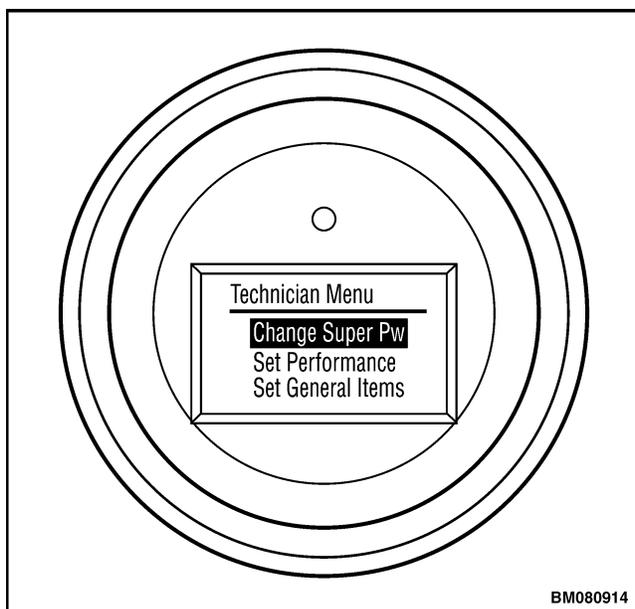


Figure 22. Change Supervisor Password Screen

OPERATOR MODES

The Operator Modes function gives a service technician (or a supervisor) the means to either allow or deny the lift truck operator's access to change the operating mode on the lift truck.

The lift truck is set in one of four operating modes. A service technician (or a supervisor) can lock the lift truck into its current operating mode by entering the Operator Modes menu and selecting LCK. If the function is set to ON, the lift truck operator will have access to change the operating mode selection for the lift truck.

To edit the Operator Modes function, enter the Operator Modes menu and select the Operator Mode settings by pressing the RH LOWER [#4] switch. Scroll to either ON or LCK using the LH LOWER [#1] or LH LIFT [#2] switch. When complete, back out one level using the RH LIFT [#3] switch and scroll down using the LH LOWER [#1] or LH LIFT [#2] switch to either the Save And Exit or Exit Without Saving selections. Press the RH LOWER [#4] switch to select. If Save And Exit is selected, Confirm will appear on the dash display. Scroll down beside Confirm and press the RH LOWER [#4] switch to save your selection and to return to the Technician Menu. See Figure 23.

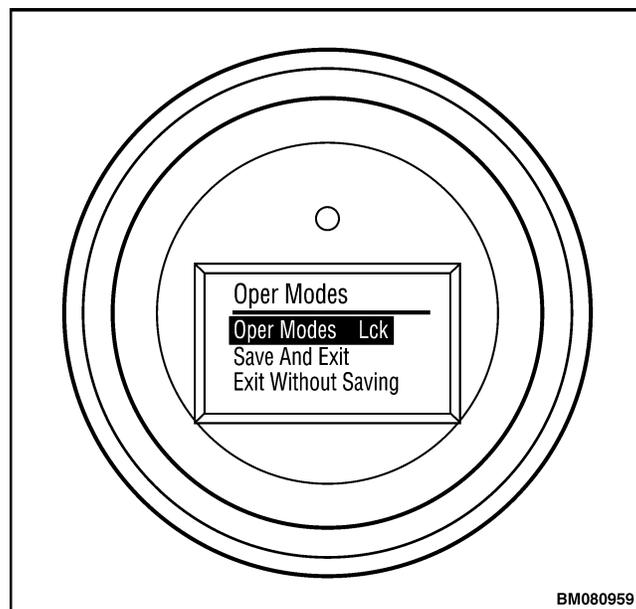


Figure 23. Operator Modes Screen

SET PERFORMANCE

A series of submenus are available from the Performance menu. These selections allow the technician to change the truck's parameter settings. See Table 7.

Table 7. Performance Parameters

Parameter	Range	Default Value
Ext Shift	Off/On	Off
Walk Speed	+0005 to +0040	+0038
Hi Spd Fwd	+0005 to +0090	+0090
Hi Sped Rev	+0005 to +0075	+0050
Min Accel	+0001 to +0010	+0005
Max Accel	+0001 to +0010	+0006
Plugging	+0001 to +0010	+0007
ADS-Neutral	+0001 to +0010	+0001
ADS-Throt	+0001 to +0010	+0001
Pick Accel	+0001 to +0010	+0006
Pick Decel	+0001 to +0010	+0001
Batt Full	+0245 to +0265	+0253
Lift Interrupt	+0180 to +0240	+0235
PS Min Fwd	+0001 to +0010	+0003
PS Min Rev	+0001 to +0010	+0003
PS Max Assist	+0001 to +0010	+0005
Set Defaults	Yes/No	No

Enter the Performance menu and use the LH LOWER [#1] and LH LIFT [#2] switches to scroll between the menu choices. When the proper menu item has been highlighted, press the RH LOWER [#4] switch to move to the selected submenu. Make the adjustment needed and press the RH LIFT [#3] switch to return to the Performance menu. Scroll to the next item requiring adjustment, or scroll to the end of the menu for the Exit options. Select one of the two Exit options (Save And Exit or Exit Without Saving), press the RH LOWER [#4] switch to move back to the Technician menu. See Table 8.

Table 8. Set Performance Menu

