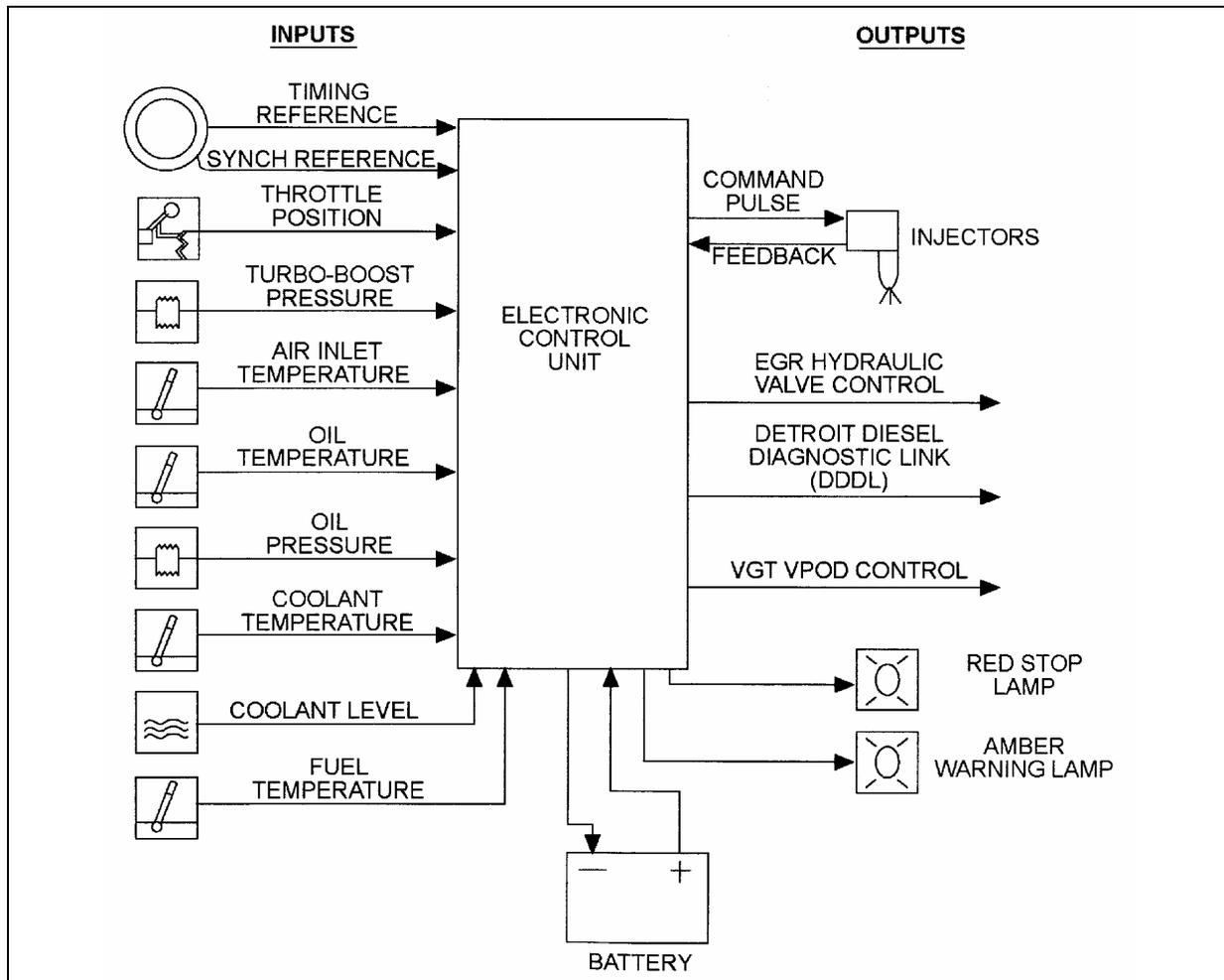


OTHER FEATURES



SCHEMATIC DIAGRAM OF DDEC V SYSTEM

01143

DETROIT DIESEL ELECTRONIC CONTROL (DDEC) SYSTEM

DDEC is an advanced-technology electronic fuel injection and control system for Detroit Diesel engines. As an integral part of the engine, the DDEC system provides a number of performance features and driver benefits including improved fuel economy and performance, reduced cold smoke and reduced maintenance and repair costs. These advantages are obtained by optimizing control of the critical engine functions which affect fuel economy, engine reliability and the performance of the injectors.

Its major components include an Electronic Control Module (ECM), Electronic Unit Injectors (EUI), electronic throttle pedal and sensors. The ECM, which provides central processing and control of the DDEC system, contains the following:

- A microprocessor that continuously monitors and analyzes the engine's performance using sensors during engine operation;
- Flash Random Access Memory (FRAM) that stores ECM runtime software, which contains engine control instructions;
- Electrically Erasable, Programmable, Read-Only Memory (EEPROM) that provides instructions for basic engine control functions such as rated speed and power, engine governing, cold start logic and diagnostics and an engine protection system.

The Electronic Unit Injectors (EUI) operates on a principle similar to the mechanical unit injector system. However, a solenoid operated control valve performs the injection timing and metering functions which make injector timing much simpler and more precise.

DDEC provides the capability of quickly diagnosing system malfunctions with a self-

OTHER FEATURES

diagnostic system. The self-diagnostic system monitors all engine sensors and electronic components and recognizes system faults and other engine-related problems by providing the technician with a diagnostic code. The DDEC system will illuminate the dashboard CHECK ENGINE and STOP ENGINE indicators which are integral parts of the electronic diagnostic system. These lights are designed to indicate a problem and transmit a coded signal to the technician to locate the defective component. To facilitate troubleshooting and obtain pertinent data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) can be used (not supplied by manufacturer). Plug the DDR into the receptacle on the upper left wall in the driver's footwell. You can also momentarily depress the STOP ENGINE OVERRIDE switch on the L.H. lower control panel (refer to "Controls & Instruments" chapter). Active and inactive codes will flash respectively the STOP ENGINE and the CHECK ENGINE indicators. Refer to "Technical Information" chapter under "DDEC V Diagnostic Codes".

DDEC V ELECTRONIC CONTROL MODULE (ECM)

The simplest implementation of Data Hub does not require the addition of any hardware to the vehicle. Instead, basic Data Hub features built into the DDEC V ECM are used. The ECM stores data such as miles, fuel used, idle time, PTO time, idle fuel, cruise time and cruise fuel on life-to-date, trip and daily basis. Daily recording is limited to a maximum of two days.

Selected parameters, such as oil pressure, are measured periodically under specified conditions. The measurements are analyzed over long time periods, which allow the system to detect degradation in performance and warn the user prior to component failure.

The average life span of up to ten components may be specified in terms of miles, fuel used, time, engine RPM and engine hours. The ECM tracks the specified factors and automatically alerts the user when the average life span of the component has been attained. An event log is also stored which indicates the vehicle status (e.g., off, idle, in motion) at 15 minute intervals.

Data stored in the DDEC V ECM is extracted by connecting a cable from a PC to the vehicle's diagnostic connector via an RP1202 adapter

module. Data extraction takes about 20 seconds.

MESSAGE CENTER DISPLAY (MCD)

MCD is a standard dashboard mounted graphic device that displays and records operational data transmitted by the Detroit Diesel Electronic Controls (DDEC) and other electronically controlled components on the SAE J1708/1587 diagnostic data link.

The many functions of the MCD include vehicle operating status for the driver and diagnostics for the technician.

The MCD uses a dashboard integrated liquid crystal display. It provides automated intensity control of the display, based on the dashboard instrument panel lights for improved driver convenience.

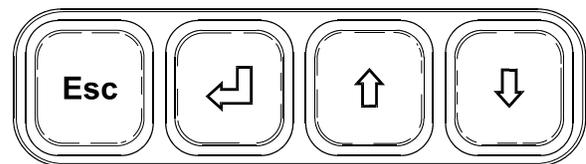
Should an alert message be sent out by the ECM, the driver will be shown what is wrong via an error code. Symbols may be displayed on the screen when a condition occurs or as a reminder that a feature is enabled. These symbols include a bell when the reminder alarm is on, "PTO" when fast idle is activated or "CC" when cruise control is activated.

NOTE

When a condition requiring attention occurs, the screen relating to that condition will automatically replace the current display.

The MCD works with interactive menus in a series of cascading layers. The MCD allows access only to GAUGE MODE, FUEL ECONOMY and TIME/DIST menus when the vehicle is moving. Access to the remaining menus is granted when the vehicle is stopped.

The driver inputs commands and settings by using the keys on the MCD keypad.



06399

Use the up (↑) and down (↓) arrows to highlight a function or a setting. At any given level, small arrows may appear in the upper and lower right corner of the display. This means that more information is available by scrolling up or down with the arrow keys.

To change the setting of a feature, press enter key (↵). The first value to set is highlighted. Set the correct value with the arrow keys. Press the enter key when the correct value is displayed. The next value to set is highlighted. In some cases, the enter key will reset compiled data. In that situation, the MCD will prompt you to press the enter key for 1 second to prevent accidental resetting.

To return to the previous level, press Esc key any time. In most cases, the MCD will return to the previous level once a setting has been chosen.

To return to the main menu from any submenu, press Esc key a few times.

DRIVING MODE MENU

This menu includes the following modes; Gauge Mode; Fuel Economy, Time/Dist; Faults?.

GAUGE MODE MENU

Transmission fluid temperature, engine oil temperature and battery voltage can be displayed in this mode.

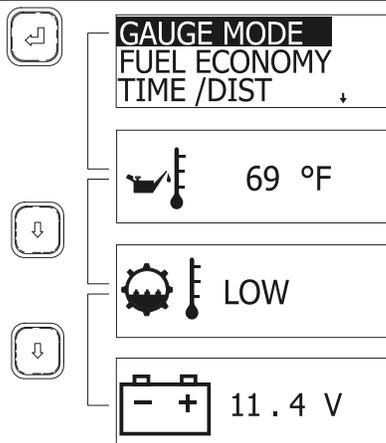
To display:

1. Highlight GAUGE MODE.
2. Press enter key (↵).
3. Choose a gauge using the up (↑) or down (↓) arrow keys.

To exit gauge mode, press Esc key.

NOTE

When a condition requiring attention occurs, the screen relating to that condition will automatically replace the current display.



06398

FUEL ECONOMY MENU

Check average and instantaneous fuel consumption, as well as distance until empty.

To display:

1. Highlight FUEL ECONOMY.
2. Press enter key (↵).
3. Toggle between average/instantaneous fuel consumption and leg fuel consumption using the up and down arrows.

To exit FUEL ECONOMY menu, press Esc key any time.

4. To reset average and instantaneous fuel consumption, press enter key. The MCD will prompt you to press enter key for one second to reset.

If you do not wish to reset the fuel data, press Esc to return to previous menu.

TIME / DIST MENU

This menu gives access to the digital clock, the reminder alarm, two trip odometers and the average speed counter.

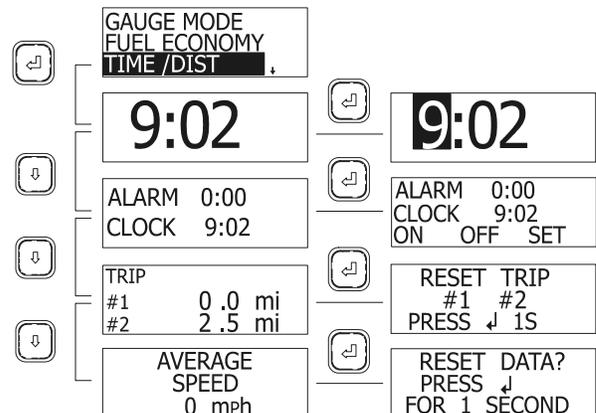
To display the digital clock.

1. Highlight TIME/DIST.
2. Press enter key (↵).

The digital clock appears.

3. Use up down arrows to display the alarm and clock display, the trip odometer display or the average speed counter display.

To exit TIME/DIST menu, press Esc key.



06388

OTHER FEATURES

Setting the Digital Clock

1. Display the clock.

2. Press the enter key (↵).

The first digit of the time is highlighted.

3. Set the correct value using the arrow keys.

4. Press enter key (↵).

The next digit of the time is highlighted.

5. Set the correct time using the arrow keys and the enter key.

After pressing the enter key when the last digit is highlighted, the display reverts to clock mode.

Reminder Alarm

The alarm can be useful to remind the driver of a task to do at a given time.

To set the alarm:

1. Display the alarm and clock menu.

2. Press the enter key (↵).

3. Using the arrow keys, highlight ON, to arm the alarm, OFF to disarm the alarm or SET to set the alarm time.

4. Press the enter key (↵).

If you have chosen SET, set the time using the arrow keys and enter key.

To exit any menu and return to the previous menu, press Esc key.

A bell appears in the upper right corner on all MCD screens if the alarm is armed.

When armed, the alarm will sound at the set time even when the battery master switch is off.

To stop the alarm from sounding, press any key on the MCD keypad.

Trip Odometers

Two trip odometers are available for driver convenience.

To reset a trip odometer:

1. Display the trip odometers.

2. Press the enter key (↵).

3. Using the arrow keys, highlight the trip odometer you wish to reset.

4. Press the enter key (↵) for 1 second.

To exit anytime, press Esc key.

Average Speed

The average speed display shows the average speed has been driven since the last reset.

To reset:

1. Display the average speed.

2. Press the enter key (↵).

3. When prompted, press the enter key for 1 second to reset data.

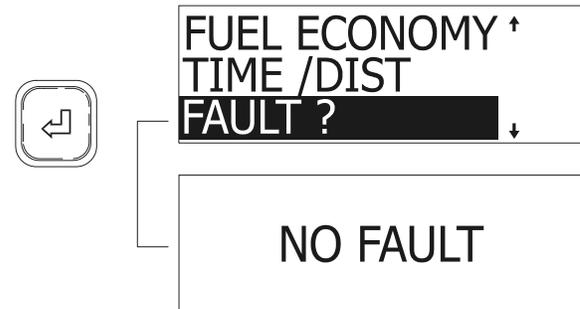
FAULT ? MENU (Fault messages)

To display logged fault messages:

1. Highlight FAULT ?.

2. Press the enter key (↵).

3. Fault messages are displayed (if any).



06393

NON-DRIVING MODE MENU

SET UP MODE MENU

Set up mode allows the driver to customize the MCD. Set up mode allows setting the language, units used (Metric or Standard), clock format, display contrast, backlight and night display.

If the correct password is entered, default language, fleet fuel target and passwords can also be set.

To configure the MCD, highlight SET UP MODE using the arrow keys, then press the enter key.

Language Selection

If available, language may be selected. To select a language:

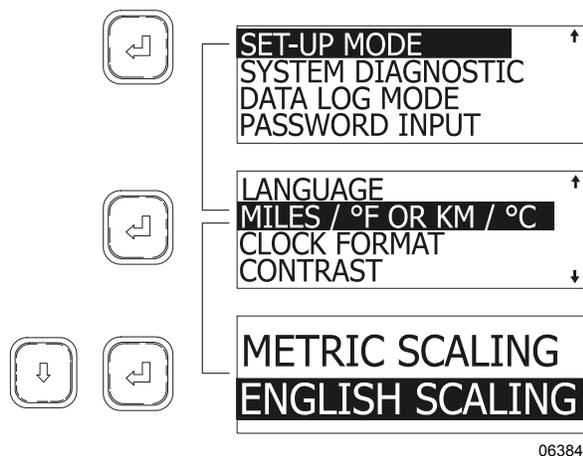
1. In SET UP MODE, highlight LANGUAGE using the arrow keys.
2. Press the enter key (↵).
3. Highlight the desired language using the arrow keys.
4. Press enter key (↵) to confirm the language choice.

The MCD returns to SET UP MODE menu.

Metric or Standard Units

1. In SET UP MODE menu, highlight MILES/°F OR KM/°C using the arrow keys.
2. Press the enter key (↵).
3. Highlight the desired units using the arrow keys.
4. Press enter key (↵) to confirm.

The MCD returns to SET UP MODE menu.

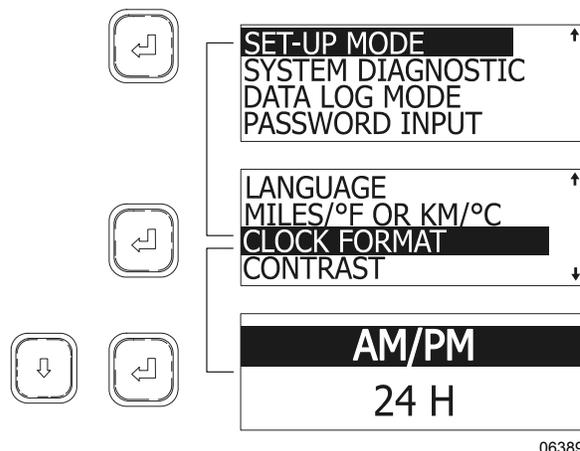


06384

Clock Format

1. In SET UP MODE, highlight CLOCK FORMAT using the arrow keys.
2. Press the enter key (↵).
3. Highlight the desired format (AM/PM or 24 H) using the arrow keys.
4. Press enter key (↵) to confirm.

The MCD returns to SET UP MODE.

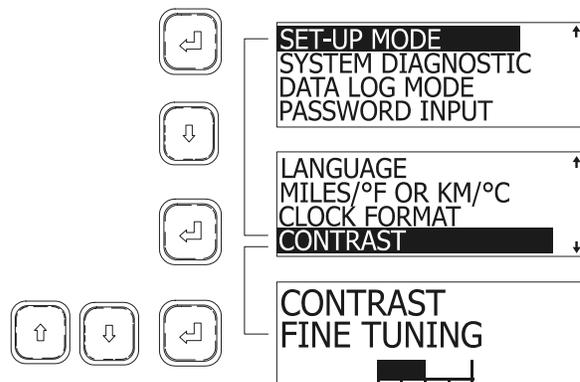


06389

Setting Contrast

1. In SET UP MODE, highlight CONTRAST using the arrow keys.
2. Press the enter key (↵).
3. Using the arrow keys, set the desired contrast. A horizontal graphic shows state of contrast.
4. Press enter key (↵) to confirm.

The MCD returns to SET UP MODE.



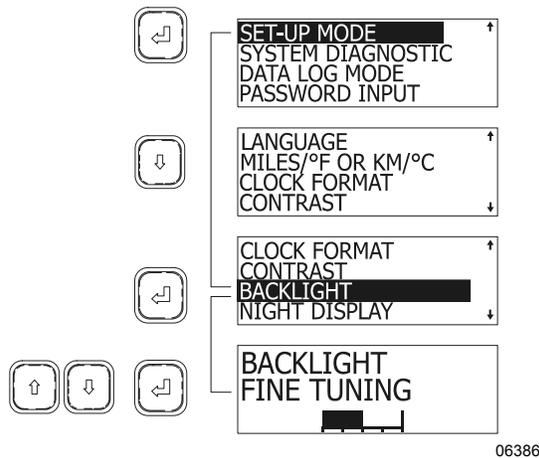
06395

Setting Backlight

1. In SET UP MODE, highlight BACKLIGHT using the arrow keys.
2. Press the enter key (↵).
3. Using the arrow keys, set the desired back lighting. A horizontal graphic shows state of lighting.
4. Press enter key (↵) to confirm.

The MCD returns to SET UP MODE.

OTHER FEATURES

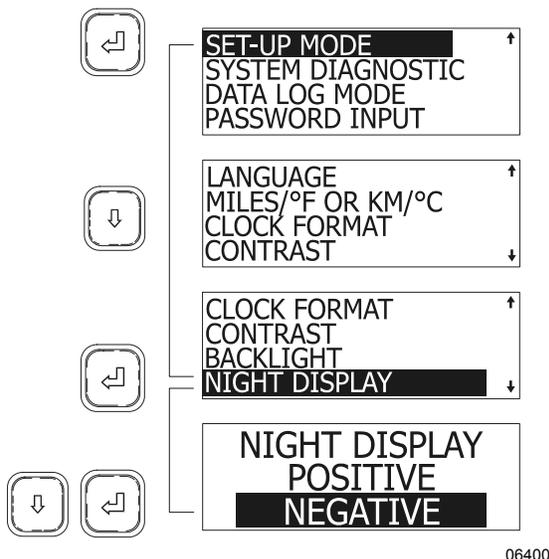


Setting Night Display

Night display, when activated, shows all displays in negative when the headlights are ON.

1. In SET UP MODE, highlight NIGHT DISPLAY using the arrow keys.
2. Press the enter key (↵).
3. Highlight the desired display using the arrow keys.
4. Press enter key (↵) to confirm.

The MCD returns to SET UP MODE.



Setting Default Language

This feature is enabled when the correct password is entered (see PASSWORD INPUT).

1. In SET UP MODE, highlight DEFAULT LANGUAGE using the arrow keys.

2. Press the enter key (↵).
3. Highlight the desired language using the arrow keys.

4. Press enter key (↵) to confirm.

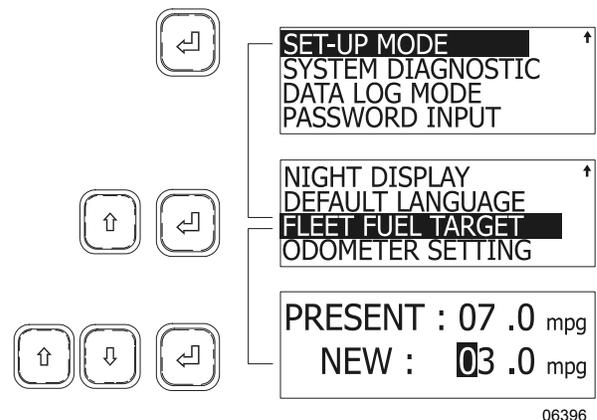
The MCD returns to SET UP MODE.

Setting Fleet Fuel Target

This feature is enabled when the correct password is entered (see PASSWORD INPUT).

1. In SET UP MODE, highlight FLEET FUEL TARGET using the arrow keys.
2. Press the enter key (↵).
3. Using the arrow keys set the highlighted digit.
4. Press enter key to confirm, the following digit is highlighted. Set as in step three.
5. When last digit is set, press the enter key to confirm new target.

The MCD returns to SET UP MODE.



Setting the Odometer

This feature is disabled.

SYSTEM DIAGNOSTIC MENU

System Diagnostic menu allows the driver to request diagnostics from the ECU's of components such as the engine, ABS brakes and other instruments. The driver can also perform a cluster self test and read data about the ECU's

Enter diagnostic mode by using the arrow keys to highlight SYSTEM DIAGNOSTIC, then pressing the enter key to confirm.

FAULT DIAGNOSTIC MENU

To request a diagnostic:

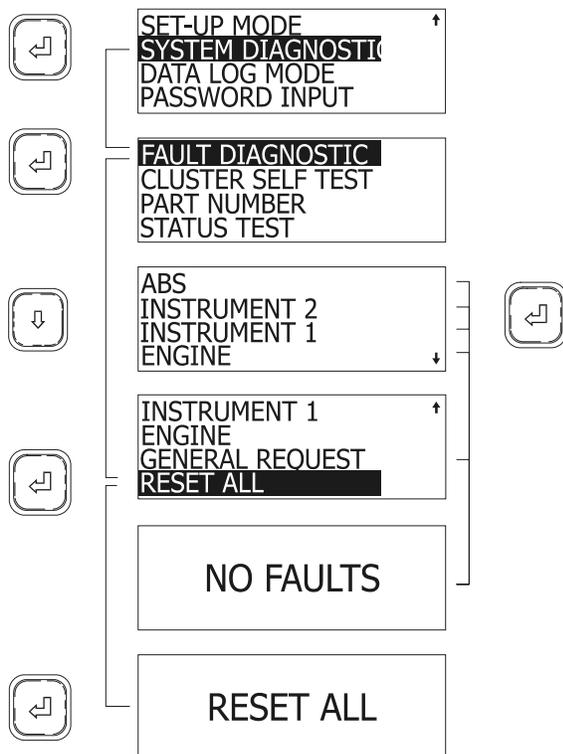
1. Highlight **FAULT DIAGNOSTIC** with the arrow keys.
2. Press the enter key (↵) to confirm.
3. Highlight the component to request a diagnostic using the arrow keys.
4. Press the enter key (↵).

After showing a fault message (if any) the MCD returns to **FAULT DIAGNOSTIC** screen.

To request a general diagnostic:

1. Highlight **GENERAL REQUEST** using the arrow keys.
2. Press the enter key (↵).

After showing a fault message (if any) the MCD returns to **FAULT DIAGNOSTIC** screen.



06392

To reset fault codes:

1. Highlight **RESET ALL** using the arrow keys.
2. Press the enter key (↵).

The MCD displays **RESET ALL**.

3. Press enter key (↵) to confirm.

After resetting the fault codes, the MCD returns to **FAULT DIAGNOSTIC** screen.

Exit **FAULT DIAGNOSTIC** and return to **SYSTEM DIAGNOSTIC** using Esc key.

Cluster Self Test

Tests cluster light bulbs, gauges, MCD display and buzzers.

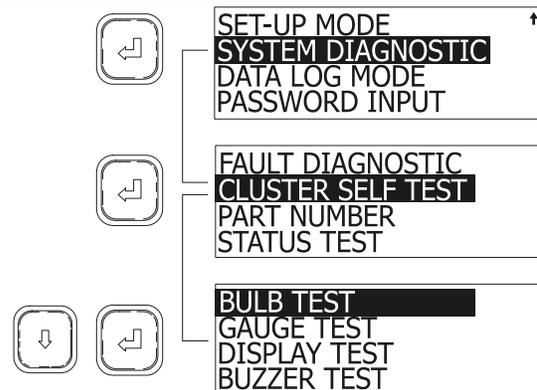
To perform a self test:

1. In diagnostic mode, highlight **CLUSTER SELF TEST** using the arrow keys.
2. Press enter key (↵) to confirm.
3. Highlight the test to perform using the arrow keys.
4. Press enter key (↵) to confirm.

The test may normally take several seconds to perform. The MCD may explain the progression of the test as it runs. The display returns to cluster self test mode once finished.

NOTE

While in the cluster self test mode, the engine ECU data link is disconnected. Therefore, the gauges will not function until the cluster is out of the self test mode. To interrupt any test, cycle the ignition key off and on.



06378

BULB TEST

Turns **ON** all telltale lights and red warning LED's in the gauges which have them, for ten seconds.

GAUGE TEST

This test causes the pointers in the tachometer, speedometer, oil pressure, coolant temperature; fuel and turbo boost gauges to move from minimum scale to full scale and back, briefly stopping at mid-scale each way. This occurs

OTHER FEATURES

three times. The air pressure and voltmeter gauges are excluded from the test.

DISPLAY TEST

To help identify defects in the graphic display, the display goes from dark to bright in about ten seconds.

BUZZER TEST

Sounds each of the buzzer signals for ten seconds each. The name of the buzzer is written on the display as the test runs.

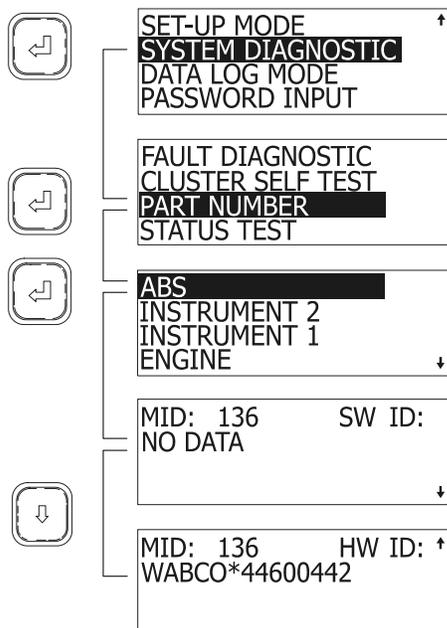
PART NUMBER

This feature requests information from the available components. This information includes the component's SAE message identifier (MID), its software ID (SW ID) and hardware ID (HW ID) if available.

To access PART NUMBER:

1. When in SYSTEM DIAGNOSTIC menu, highlight PART NUMBER using the arrow keys.
2. Press enter key (↵).
3. Highlight the desired component.
4. Press enter key (↵).

The MCD displays the information on two screens. Toggle between screens using the arrow keys.



06391

STATUS TEST

This feature allows testing the response of vehicle systems. This can be useful when troubleshooting or checking the proper working order of senders and other components. This feature is enabled when correct password is entered (see password input)

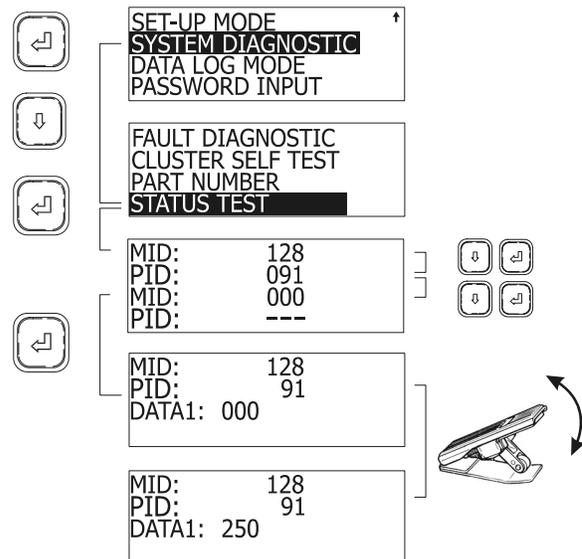
In Status Test mode, the MCD will monitor the system and display the data on the screen. Up to two components can be monitored at once.

To perform a status test:

1. When in SYSTEM DIAGNOSTIC, highlight STATUS TEST using the arrow keys.
2. Press enter key (↵).
3. Using the arrow and enter keys, enter a MID and PID (or PPID).
4. Press enter key (↵).

The MCD now displays in real time the value of the component. The example below shows how changing the throttle position will be displayed on the MCD. That way one can verify if any identifiable sender unit is working properly or whether the link is OK.

5. Press Esc key to exit.



06420

In this example, a throttle pedal in good working order will send a linear and continuous (no jumps) signal to the ECU, appearing as DATA value on the MCD screen. Full pedal movement will display values from 000 (no throttle) to 250 (maximum throttle).

NOTE

The MCD can perform a status test on as many as two components simultaneously. To do so, when setting MID and PID codes, set a second (non zero) MID and PID code.

DATA LOG MODE MENU

This feature shows total accumulated distance, fuel used engine hours and idle time.

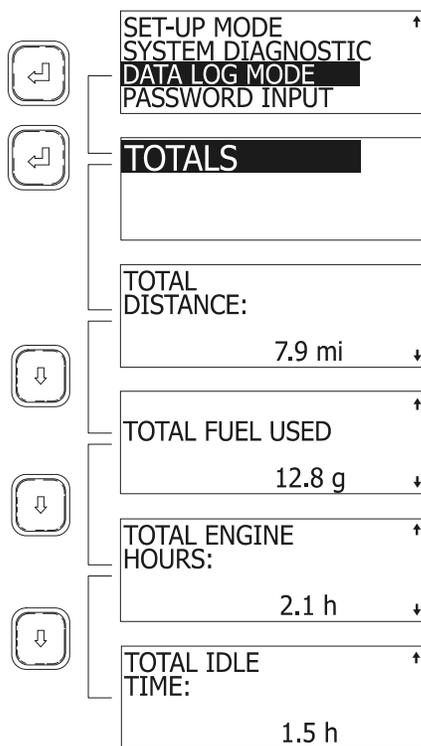
To access data log:

1. Highlight DATA LOG MODE using the arrow keys.
2. Press enter key (↵) to confirm.

The screen shows TOTALS highlighted.

3. Press enter key (↵).
4. View totals using the arrow keys.

Exit by pressing the Esc key.



06383

PASSWORDS

The MCD recognizes two passwords: a mechanic's password and an owner's password. The mechanic's password allows setting DEFAULT LANGUAGE, FLEET FUEL TARGET, performing a STATUS TEST and using the

RESET ALL function. The owners password gives access to all the above and allows changing both passwords.

The mechanic's password is initially set to "0000".

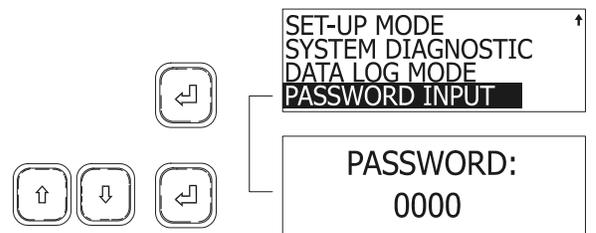
The owner's password is initially set to "1234".

Password Input

To enter either password and have access to restricted functions of the MCD:

1. Use the arrow keys to highlight PASSWORD INPUT.
2. Press enter key (↵) to confirm.
3. Use the arrow keys to set the first digit of the password.
4. Press enter (↵) to highlight the next digit.
5. Pressing enter key on last digit will confirm the password.

If the entered password is correct, the MCD will revert to the previous screen. Access to restricted screens is allowed.



06402

Changing passwords

To change any password, owner's password must be entered first.

To change passwords:

1. Using the arrow keys, highlight SET UP MODE.
2. Press enter key (↵) to confirm.
3. Using the arrow keys, highlight PASSWORD CONFIG.
4. Press enter key (↵) to confirm.
5. Using the arrow keys, select MECHANIC or OWNER.
6. Press enter key (↵) to confirm.
7. Set new password.

OTHER FEATURES

PRODRIVER™

PRODRIVER™ is an optional graphic device similar to MCD but with added features. A summary of data displays available from PRODRIVER™ include:

- Instantaneous and average fuel consumption rate;
- Trip time, miles driven, fuel used, , average speed;
- Driving time, percentage, miles, fuel used, fuel consumption rate;
- Idle time, percentage and fuel used;
- Cruise time, percentage, miles cruised, fuel used, fuel consumption rate;
- Top gear time, percentage, miles driven, fuel used, fuel consumption rate;
- Overspeed time and percentage for two speed thresholds;
- Over-rev time and percentage;
- Maximum vehicle speed and RPM;
- Coasting time and percentage;
- Automated oil change interval tracking;
- Hard braking incident record;
- Driver initiated incident record;
- Stop Engine and Check Engine code log.

PRODRIVER™ has many additional features and benefits and can be combined with other members of Data Hub line of products from Detroit Diesel. This combination presents a powerful vehicle information management system.

ALLISON WORLD TRANSMISSION ELECTRONIC CONTROL UNIT (ECU)

The ECU works with the automatic transmission equipped with a push-button shift selector.

The World Transmission electronic control has four major elements: The Electronic Control Unit (ECU), the Throttle Position Sensor (TPS), speed sensors and the transmission shift selector control pad. Refer to "Controls & Instruments" chapter. These components work together to electronically control the functions of the transmission. The throttle sensor, speed sensors and shift selector transmit information to

the ECU. The ECU processes this information and then sends signals to actuate specific solenoids located on the control valve body in the transmission. The action of the solenoids affects hydraulic circuits, which in turn control the upshifts, downshifts, and lock-up functions. In addition to controlling the operation of the transmission, the WT electronic controls monitor the system for abnormal conditions.

When one of these conditions is detected, the WT electronic control system is programmed to automatically respond in a manner which is safe for the driver, the vehicle and the transmission. The WT electronic control system turns ON the CHECK TRANS light on the dashboard, which serves as a fault indicator.

To enhance troubleshooting and to allow interrogation of the ECU for valuable service information, the shift selector display on the transmission control pad or an optional diagnostic tool can be used. For information about reading and interpreting diagnostic codes, refer to chapter, "Technical Information" under "World Transmission Diagnostic Codes".

TRANSMISSION RETARDER

The transmission retarder is an optional device that helps to reduce the speed of a vehicle. It improves vehicle control, increases driving safety and permits more economical operation. The retarder provides slowing power when it is most needed, such as when descending mountain roads, in stop-and-go traffic and on crowded freeways.

The retarder is provided with a switch on the dashboard and a lever on the steering column (refer to "Controls & Instruments" chapter).

<i>NOTE</i>
<i>Extended use will raise the temperature of the transmission oil.</i>

The retarder helps to reduce speed on grades without using the vehicle's conventional service braking system. A retarder greatly increases the service life of brake pads and discs, resulting in reduced brake maintenance costs.

<i>NOTE</i>
<i>Each time the transmission retarder system is in operation, the stoplights automatically illuminate.</i>

NOTE

For vehicles equipped with the Antilock Braking System (ABS), as the wheels start to lock-up on slippery roads, the output retarder automatically deactivates until the wheels roll freely.

JACOBS ENGINE BRAKE

The JACOBS engine brake is an optional diesel engine retarder which uses engine compression to aid in slowing and controlling the vehicle. When activated, (refer to "Controls & Instruments" chapter) the JACOBS brake alters the operation of the engine's exhaust valves so that the engine works as a power-absorbing air compressor. This provides a retarding action to the wheels.

The engine brake is a vehicle-slowng device, not a vehicle-stopping device. It is not a substitute for the service braking system. The service brakes must be used to bring the vehicle to a complete stop.

Effectiveness of the engine brake system will vary according to the transmission range in use. The engine brake system is more effective in lower ranges and at higher engine RPM.

⚠ WARNING ⚠

When descending significant grades, use the service brakes as little as possible. If the engine does not slow the vehicle to a safe speed, apply service brakes and shift to a lower range. Let the engine (and engine brake) slow the vehicle. Keep brakes cool and ready for emergency stopping.

NOTE

For vehicles equipped with the Antilock Braking System (ABS), as the wheels start to lock-up on slippery roads, the engine brake automatically deactivates until the wheels roll freely.

NOTE

Each time the engine brake system is in operation, the stoplights automatically illuminate.

ANTILOCK BRAKING SYSTEM (ABS)

The purpose of the Antilock Braking System (ABS) is to maintain vehicle stability and control during braking and to minimize the stopping distance in any road condition.

On slippery roads and more generally in emergency situations, over-braking frequently induces wheel locking. Wheel locking greatly increases breaking distance on any road surface. Locked wheels also impede directional control and cause severe tire abrasion. An anti-lock braking system provides maximum braking performance while maintaining adequate control on slippery roads.

The basis of ABS is constant monitoring of wheel parameters during braking. Sensors on each wheel of the front and drive axles constantly measure wheel speed during braking. This information is transmitted to a four-channel electronic processor which senses when any wheel is about to lock. Modulating valves quickly adjust brake pressure (up to 5 times every second) to prevent wheel lock. Each wheel is therefore controlled according to the available grip.

In this way, the vehicle is brought to a stop in the shortest possible time while remaining stable and under the driver's control.

⚠ CAUTION ⚠

Vehicles following ABS-equipped vehicles may not be able to brake as fast on slippery roads. Whenever possible, warn other drivers by depressing the brake pedal lightly several times before braking.

DRIVER CONTROLLED DIFFERENTIAL LOCK (DCDL)

By actuating the electric switch, the driver can lock or unlock differential action.

The purpose of the DCDL is to provide maximum vehicle traction and control on unfavorable road or highway surfaces. When the DCDL is actuated, a clutch collar completely locks the differential case, gearing, and axle shafts together. This feature maximizes traction to both wheels. The lock position will also protect against spinout damage to the differential. The DCDL should not be actuated when favorable road conditions exist.

OTHER FEATURES

OPERATION TIPS

1. The DCDL can be locked or unlocked if the vehicle is standing still or moving at a constant low speed when the wheels are not spinning, slipping, or losing traction.
2. When the DCDL is locked, operate the vehicle at low speeds. DCDL will not engage and will disengage in speed higher than 5 MPH (8 km/h).
3. When the DCDL is locked, the vehicle's turning radius will increase. This condition is called "understeer." The driver must use caution, good judgment and drive at low speeds when operating the vehicle with the DCDL locked.
4. Always unlock the DCDL as soon as the need for maximum traction has passed and the vehicle is traveling on a good road or highway.
5. Do not lock the DCDL when the wheels are slipping or losing traction, or damage to the axle can result.
6. Do not lock the DCDL when the vehicle is traveling down steep grades, or potential loss of vehicle stability could occur.

LOCKING THE DCDL

When encountering poor road or highway conditions where maximum traction is needed, follow the recommended procedures:

1. Without the wheels spinning, slipping or losing traction, flip the DCDL control switch to the "LOCK" position while maintaining a constant vehicle speed.
2. Let up momentarily on the accelerator to relieve torque on the gearing, allowing the DCDL to lock.
3. When the DCDL is fully locked, the vehicle will have an "understeer" condition when making turns. Proceed cautiously over poor road or highway conditions.

UNLOCKING THE DCDL

When the vehicle can safely operate and driving conditions have improved, disengage the DCDL following the recommended procedures:

1. Flip the control switch to the "UNLOCK" position, when the vehicle is stopped or when traveling at low speed while the wheels are not spinning, slipping or losing traction.
2. Let up momentarily on the accelerator to relieve torque on the gearing, allowing the DCDL to unlock.
3. Resume driving at normal speed using good driving judgment.

RETRACTABLE TAG AXLE

The optional lifting of the tag axle is controlled by a valve located on the left lateral console. The valve can be switched to either the WHEELS UP or WHEELS DOWN position. The axle will be automatically raised or lowered by air pressure according to the position of the valve switch. Refer to "Controls & Instruments" chapter.

The tag axle service brakes operate only when the tag axle is in the WHEELS DOWN position. Never lower the tag axle while the coach is moving. When the tag axle is in the WHEELS UP position, the corresponding indicator light will illuminate and a beep will sound to alert the driver of the tag axle's position. Lifting the tag axle shortens the wheelbase and allows tighter turning. This is very useful in tight maneuvering areas like in a parking lot or when negotiating a tight corner. Raising the tag axle transfers extra weight and additional traction to the drive wheels providing improved control on slippery roads.

 **CAUTION** 

In order to prevent damage to the suspension, always raise the tag axle before lifting the vehicle.

 **CAUTION** 

Never lower the tag axle while vehicle is moving.

VARIABLE ASSISTANCE STEERING GEAR (OPTIONAL)

The steering effort is controlled automatically in relation to vehicle speed. For more information, refer to Maintenance Manual Section 14: Steering.

KEYLESS ENTRY SYSTEM

By using this system, you can lock or unlock the entrance door and the baggage and service compartment doors. The keyboard is located below the entrance door handle. The master code in the microprocessor/relay module is pre-programmed by the manufacturer and cannot be deleted. Moreover, you can program your own entry code (e.g. a birthday or part of a social security number).

The master code is:

- Printed on the owner's wallet card;
- Printed on three decals, joined to the owner's wallet card;
- Printed on decal affixed to the keyless system microprocessor/relay module in the front console.

When you use the keyless entry system, the keyboard and step lights illuminate.

Do not push the buttons with a key, pencil or any other hard or sharp object as the buttons could be damaged. Although each button is provided with two digits separated by a vertical line, there is only one contact per button. Press in the center of the button (between the two digits, on the vertical line).

You must unlock the entrance door before you unlock any other baggage or service compartment door. If you let more than five seconds pass between the numbers you press, the system shuts down, and you have to enter your code again. If the keyless entry system does not work properly, use the key to lock or unlock entrance or compartment doors.

KEYLESS OPERATING INSTRUCTIONS

1. To unlock the entrance door and disarm the anti-theft alarm, enter the permanent factory code or the personal code. After pressing the fifth digit, the door will unlock. During the night, press any button to illuminate the keyboard, and then enter the code.
2. When pressing any button, the keyboard lights up for five seconds and the step lights illuminate for twenty-five seconds.
3. To unlock the baggage and service compartment doors, press button 3|4 within five seconds of entering the code.

4. To lock entrance door, compartments and arm the anti-theft alarm system all at the same time, press buttons 7|8 and 9|0 simultaneously.

PROGRAMMING A PERSONAL CODE

NOTE

To avoid erasing your personal code from the system memory, you should connect the keyless entry system to house batteries, otherwise the code will be erased each time battery main disconnect switches are set to the OFF position.

You can program one personal code to unlock the entrance door and compartments. This code does not replace the permanent code that is factory programmed into the system. Use your personal code in the same manner that you would use the original code.

Do not choose a code that presents the numbers in sequential order, such as 1|2, 3|4, 5|6, 7|8, 9|0. Studies show that people who idly press the buttons usually press a sequential pattern. Also, do not select a code that uses the same button five times. Thieves can easily figure out these types of codes.

1. Choose and memorize your personal code.
2. Enter the original code, and within five seconds, press button 1|2.
3. Within five seconds of pressing button 1|2, enter your personal code, pressing each button within five seconds of the previous digit. The keyboard light will immediately turn *OFF* if the code is correctly entered.

The keyless entry system registers your personal code. To unlock the entrance door, you can use either code.

To erase your personal code, enter the original code, press button 1|2, then wait six seconds.

REMOTE ENTRY TRANSMITTER

Up to four hand held (key fob) transmitters can control electronic door lock system.

To unlock the entry door:

- Press the UNLOCK button on the transmitter. This will unlock the door and disarm the anti-theft system.

OTHER FEATURES

To unlock all compartments:

- Press UNLOCK a second time within five seconds of the first unlock. If more than five seconds pass pressing UNLOCK will only unlock the entry door.

To lock all doors and arm the anti-theft system:

- Press LOCK on the transmitter once.

To confirm that the door and compartments have been locked and that the anti-theft system is armed:

- Press LOCK again within five seconds of the first lock. The horn will chirp once if the door and compartments have locked. If the door or one of the compartments is open, a door ajar signal prevents arming of the system.

To set off the personal security alarm:

- Press the red PANIC button on any transmitter. The horn will sound and the headlamps will flash for a maximum of three minutes.

To deactivate the personal security alarm:

- Press the red PANIC button again on any transmitter or turn the ignition key ON.

NOTE

<i>The remote entry features will not function when the ignition is in the ON or ACC position.</i>
--

PROGRAMMING TRANSMITTERS

To program additional transmitters or replacing a lost or broken transmitter, all transmitters for a vehicle must be programmed at the same time. The receiver assembly module erases all previous transmitters from memory. When the transmitters are programmed or reprogrammed, the receiver assembly module can store up to four transmitters in memory.

To program or reprogram transmitters into the remote/keyless entry system, perform the following steps:

1. Make sure that the anti-theft system is not armed or triggered.
2. Turn the ignition key from OFF to ON eight times within ten seconds, ending in ON. Refer to, "Controls and Instruments" chapter for information on positions of the ignition switch.

If the system has successfully entered program mode, it will lock then unlock all doors.

3. Press any button on a transmitter. The doors will lock and unlock to confirm that the transmitter has been programmed. Repeat for each other transmitter.

If the door locks do not respond for any transmitter, wait a few seconds and press the button again. If the doors still fail to respond, call your service representative.

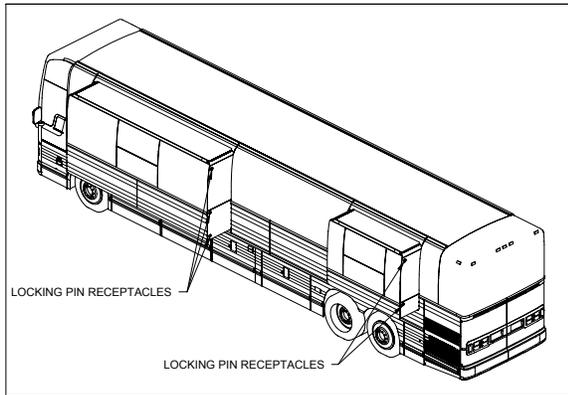
4. Turn ignition OFF (or wait up to five minutes after step two). To exit program mode. If a new set of transmitters have been programmed or reprogrammed, the remote control system will lock and unlock all doors one last time to confirm.

SLIDE-OUT OPERATION

SAFETY PRECAUTIONS

Before operating both slide-out units, proceed to the following verifications:

- Make sure that the area outside of the slide-out is clear and that there are no persons or objects within 3 feet of the slide-out outside wall. **Serious personal injury or damage to the vehicle components may occur.**
- Make sure that the area inside the motor home where the room retracts (30" for the front and 24" for the rear slide-out) is free of people or obstacles. **Serious personal injury or damage to the vehicle components may occur.**
- In temperatures below freezing point, make sure that the entire sliding surface outside the slide-out is free of snow, ice or sleet. **Failure to clear all ice or snow may seriously damage the inflatable seal.**
- The parking brake must be applied.
- The transmission shifter must be in the "Neutral" position.
- Make sure that the locking pin receptacles are free of foreign objects.
- Open a window to avoid slide-out movement restriction.
- Level the vehicle.



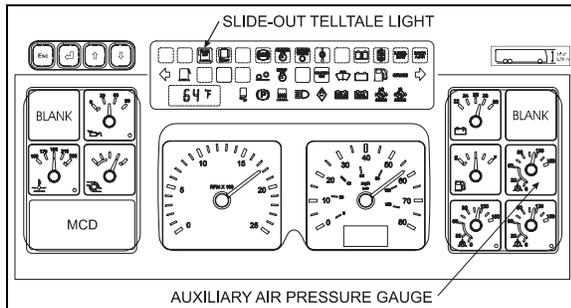
SLIDE-OUT LOCKING PIN RECEPTACLES

FRONT SLIDE-OUT OPERATION

Preliminary condition for the front slide-out operation

Before extending or retracting the front slide-out, please make sure all the following conditions are met:

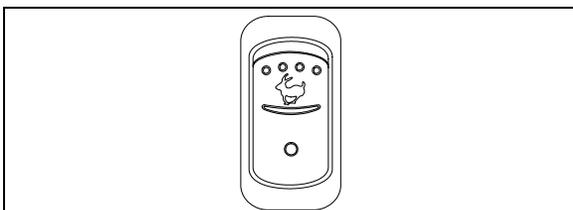
1. Make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.



VEHICLE INSTRUMENT CLUSTER

23343

2. Make sure the parking brake is applied
3. Turn the ignition key to the "ON" position, start the engine and set the RPM to fast idle.



FAST IDLE BUTTON

06264

⚠ WARNING ⚠

The inflatable seals can be re-inflated only when the slide-out is in its full "OUT" or full "IN" position. Do not leave the slide-out in any position other than the full extended or closed position as water infiltration may occur.

Front slide-out extending operation

With the ignition switch to the "ON" position and the engine running, press and hold down the handheld control rocker switch to the "OUT" position. The green indicator light "ROOM IN OPERATION" will come on to indicate that the slide-out operation cycle is activated. The following actions will be done in sequence:

- Deflation of the inflatable seal
- Unloading of the tag axle
- Retraction of the locking pins
- Movement of the slide-out to its full "OUT" position

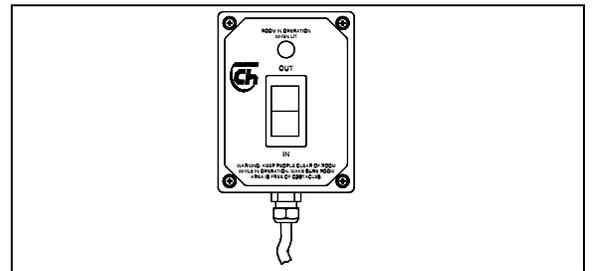
Then releasing the rocker switch will permit the following actions:

- Re-inflation of the seal
- Reloading of the tag axle

When the rocker switch is released, the green indicator light goes out. Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

NOTE

Handheld control green indicator light flashing. A green light flashing indicates an error condition or missing operation condition. Refer to the troubleshooting list at the end of this section if that situation occurs.



SLIDE-OUT HANDHELD CONTROL

Front slide-out retracting operation

With the ignition switch to the "ON" position and the engine running, press and hold down the rocker switch to the "IN" position and hold to retract the slide-out. Note that the green indicator light "ROOM IN OPERATION" will come on. When the movement of the slide-out to its full "IN"

OTHER FEATURES

position is completed, the rocker switch can be released to allow the re-inflation of the seal and reloading of the tag axle. The green indicator light goes out as the rocker switch is released. At any time during the slide-out movement, releasing the rocker switch will stop the operation instantly.

Please note that while the room retracts, there is a hissing sound. This is normal, as air is being blown in the gear racks on top of the slide-out to clear out leaves, water or other foreign matter.

REAR SLIDE-OUT OPERATION

Preliminary condition for the rear slide-out operation

Before extending or retracting the rear slide-out, please respect all the following conditions:

1. Make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.
2. Make sure the parking brake is applied
3. Turn the ignition key to the "ON" position, start the engine and set the RPM to fast idle.

Rear slide-out extending operation

With the ignition switch to the "ON" position and the engine running, press and hold down the handheld control rocker switch to the "OUT" position. The green indicator light "ROOM IN OPERATION" will come on to indicate that the slide-out operation cycle is activated. The following actions will be done in sequence:

- Deflation of the inflatable seal
- Retraction of the locking pins
- Movement of the slide-out to its full "OUT" position

Then releasing the rocker switch will permit the following actions:

- Re-inflation of the seal

When the rocker switch is released, the switch green indicator light goes out. Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

NOTE

Handheld control green indicator light flashing. A green light flashing indicates an error condition or missing operation condition. Refer to the troubleshooting list at the end of this section if that situation occurs.

Rear slide-out retracting operation

With the ignition switch to the "ON" position and the engine running, press and hold down the rocker switch to the "IN" position to retract the slide-out. Note that the green indicator light "ROOM IN OPERATION" will come on. When the movement of the slide-out to its full "IN" position is completed, the rocker switch can be released to allow the re-inflation of the seal. The green indicator light goes out as the rocker switch is released. At any time during the slide-out movement, releasing the rocker switch will stop the operation instantly.

Please note that while the slide-out retracts, there is a hissing sound. This is normal, as air is being blown in the gear racks on top of the room to clear out leaves, water or other foreign matter.

SLIDE-OUT LOGIC CONTROLLER

Pin State Indicator

Determine the state of each pins of the slide-out.

A/B/C/D Buttons

A+D (at the same time) set the current position as the outer limit.

B+C (at the same time) reset to the manufacturer settings.

Inputs

Each LEDs determine the state of each of the inputs connected to the controller.

Status LED

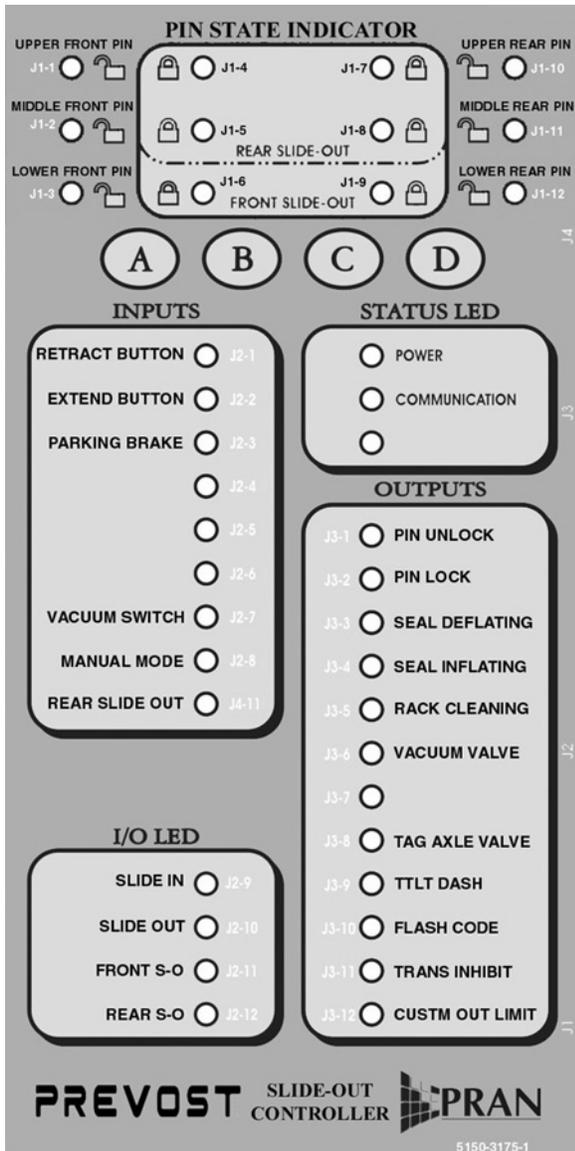
Power:

ON: the controller is powered

OFF: the controller is not powered

Communication:

Indicates the activity on the serial communication port. Blinking in normal operation at 1Hz



SLIDE-OUT LOGIC CONTROLLER INTERFACE DISPLAY

Outputs

Each LED determine the state of the outputs controlled by the controller. The flash code description can be found in the troubleshooting list at the end of this section.

I/O LED

Slide in: ON if the slide-out is retracting.

Slide out: ON if the slide-out is extending.

Front S-O Set: ON if the controller is configured as the front slide-out.

Rear S-O Set: ON if the controller is configured as the rear slide-out.

SLIDE-OUT MANUAL OVERRIDE PROCEDURES

In case of power retracting system failure to function, it is possible to use two different manual override procedures to retract or extend the slide-out.

The first one, which is the power assist override will permit you to control the slide-out motor directly connected to the battery power, without the use of the logic controllers or motor controllers.

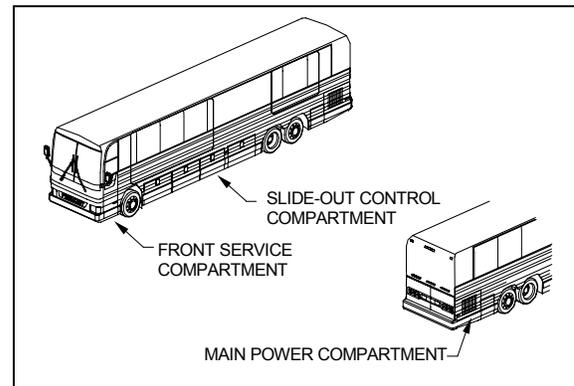
The second manual override procedure consist in rotating the slide-out motor shaft using a manual ratchet.

However, it is very important to follow all the instructions very carefully to insure that the inflatable seal or the retraction mechanisms are not damaged.

Preliminary conditions for manual override procedure

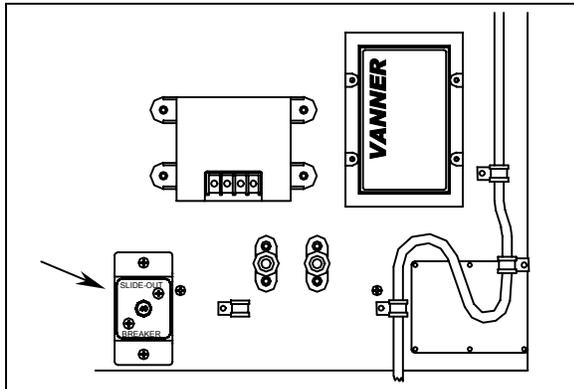
Before using one of the slide-out manual override procedures, make sure that the problem cannot be solved by one of the following simple checks:

- Make sure that none of the breakers are tripped (the breakers are located in the slide-out control compartment and in the main power compartment).
- Make sure the parking brake is applied.
- Make sure the voltage is high enough by running the engine at fast idle or having the battery charger connected.

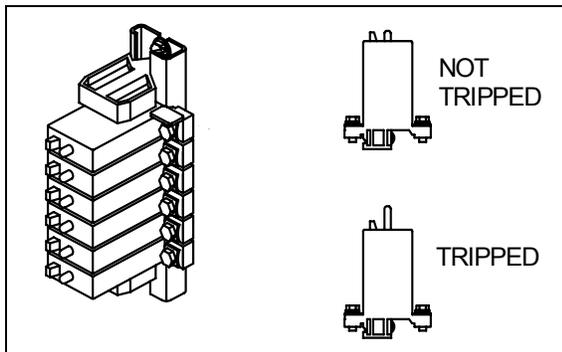


COMPARTMENTS LOCATION

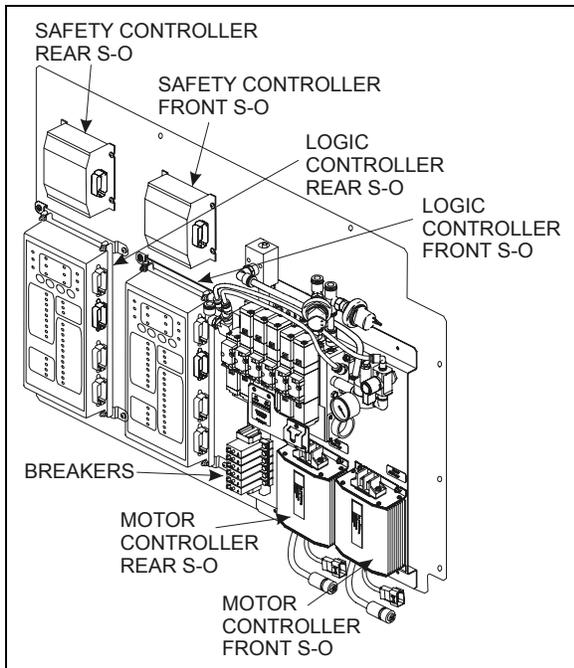
OTHER FEATURES



MAIN SLIDE-OUT BREAKER IN MAIN POWER COMPARTMENT



BREAKERS IN SLIDE-OUT CONTROL COMPARTMENT

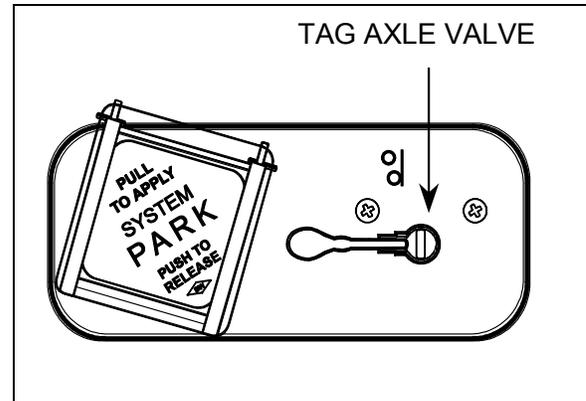


SLIDE-OUT ELECTRICAL PANEL

POWER ASSIST OVERRIDE – Retracting procedure – Front and rear slide-out

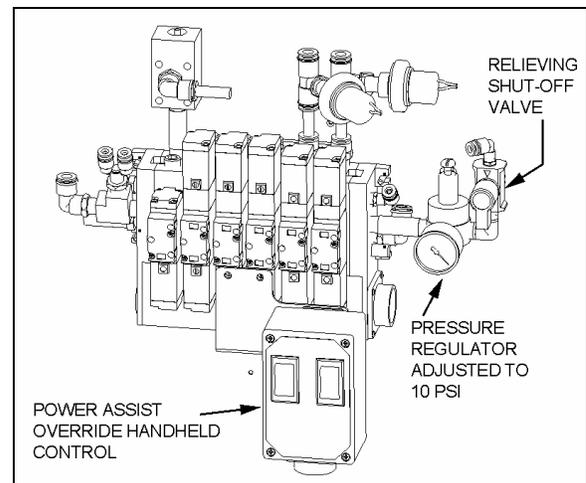
NOTE

For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.



TAG AXLE VALVE ON LEFT LATERAL CONTROL PANEL
06390

1. Turn the ignition switch to the "OFF" position.
2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".



INFLATABLE SEAL PRESSURE REGULATOR

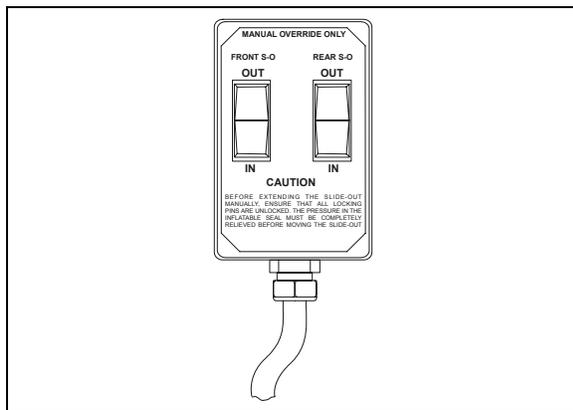
⚠ WARNING ⚠

The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.

⚠ CAUTION ⚠

Before moving the slide-out manually, ensure that all locking pins are unlocked. Refer to the slide-out manual extending procedure.

3. Turn the ignition switch to the "ON" position, start the engine and set the RPM to fast idle.
4. With the power assist override handheld control, press and hold down the Front S-O or Rear S-O rocker switch to the "IN" position, depending on which slide-out you want to retract.



POWER ASSIST OVERRIDE HANDHELD CONTROL

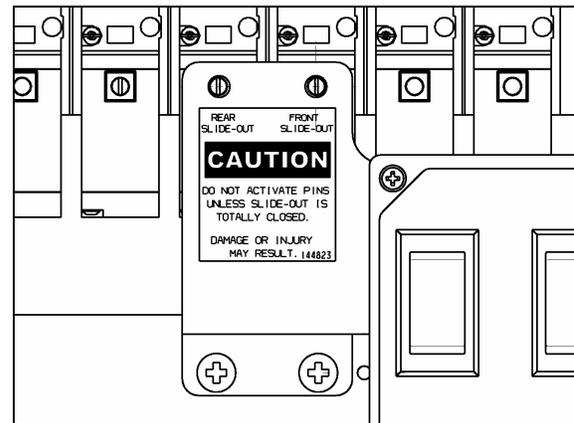
⚠ CAUTION ⚠

Remember that in override mode, the logic controller doesn't keep track of the slide-out position neither command the motor controller. Be careful as the slide-out approaches its closed position, in order not to overshoot it, which may damage the mechanism.

5. Once the slide-out room is lined up to its closed position (flush with the vehicle body), release the rocker switch.
6. To close the locking pins, use the following method:
 - a) Insert a small screwdriver in the protection plate hole to access the "pin valve manual override screw" corresponding to the slide-out to be locked. Turn the override screw clockwise to actuate the locking pins. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.

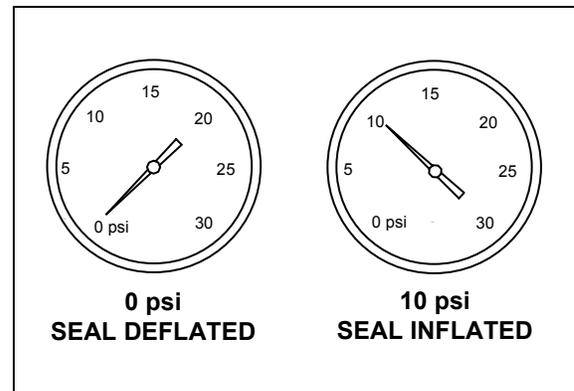
⚠ WARNING ⚠

Actuating the locking pins on the slide-out not completely closed or with locking pins misaligned with their receptacle may result in glass breakage and cause serious injury.



LOCKING PIN VALVE PROTECTION PLATE

- b) When the locking pins have been locked, re-insert a screwdriver in the protection plate hole. Turn the override screw counterclockwise and keep it in this position to cancel the manual override actuation.
7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.



INFLATABLE SEAL PRESSURE GAGE

8. When the retraction procedure is completed, if the transmission DRIVE range or REVERSE cannot be selected to move the vehicle, verify that at least one pin is locked on each slide-out. To do so, check the lights (12) on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all padlocks is used to identify

OTHER FEATURES

the state locked or unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. With the ignition key to the "ON" position, verify if at least one pin locked light is "ON". Otherwise, go back to step 7 of this section to manually lock all the pins until all pin locked lights go "ON".

NOTE

The slide-out safety controllers use a relay to inhibit transmission range selection to prevent the vehicle from moving if each slide-out has not at least one pin locked.

POWER ASSIST OVERRIDE – Extending procedure – Front and rear slide-out

NOTE

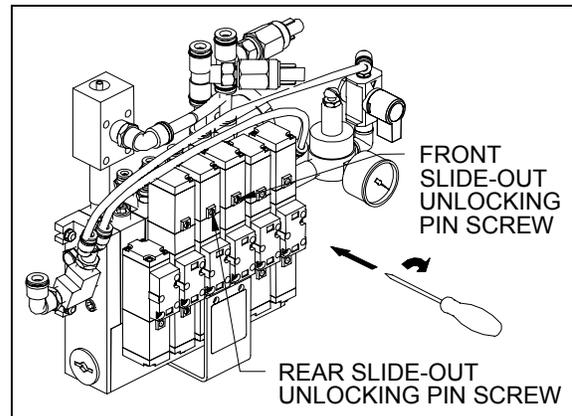
For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.

1. Turn the ignition switch to the "OFF" position.
2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

⚠ WARNING ⚠

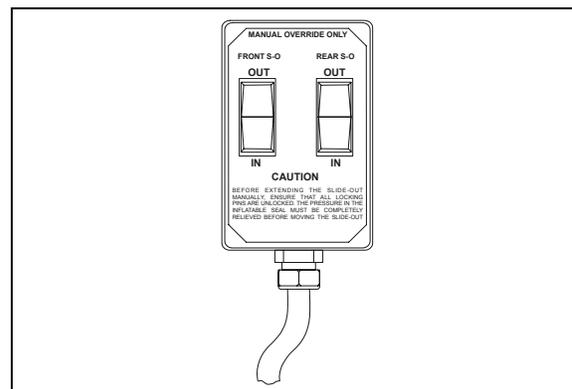
The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.

3. To unlock the pins, use the following method:
 - a) Identify the proper pneumatic valve controlling the unlocking of the pins of the slide-out to be extend.
 - b) Ensure the ignition key is in the "OFF" position. When the proper valve has been identified (right side for front slide-out and left side for rear slide-out), turn clockwise the "pin valve manual override screw" to actuate the locking pins. Keep the override screw in this position. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.



UNLOCKING PIN VALVE LOCATION

- c) Verify if all the pins are unlocked with the ignition to the "ON" position. To do so, check the lights on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all unlocked padlocks is used to identify the state unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. If at least one light is off, that means all the pins are not unlocked and it will not be possible to manually move the slide-out. In this case, restart the engine and make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.
 - d) Switch the ignition to the "OFF" position, and remove the ignition key for more security.
 - e) When the locking pins have been unlocked, turn the pin valve manual override screw counterclockwise and keep it in this position to cancel the manual override actuation.
4. Turn the ignition switch to the "ON" position, start the engine and set the RPM to fast idle.



POWER ASSIST OVERRIDE HANDHELD CONTROL

- With the power assist override handheld control, press and hold down the Front S-O or Rear S-O rocker switch to the "OUT" position depending on which slide-out you want to retract.

⚠ CAUTION ⚠

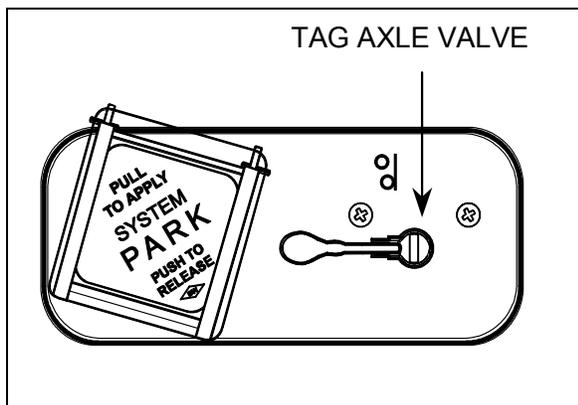
Remember that in override mode, the logic controller doesn't keep track of the slide-out position neither command the motor controller. Be careful as the slide-out approaches its opened position, in order not to overshoot it, which may damage the mechanism.

- Once the slide-out room is lined up to its opened position (resting against the stoppers), release the rocker switch.
- Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.

Manual ratchet retracting procedure – Front and rear slide-out

NOTE

For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.



TAG AXLE VALVE LOCATION 06390

- Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.

- Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

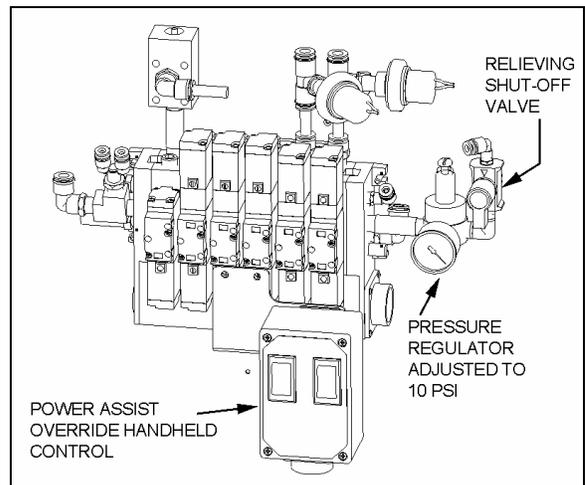
⚠ WARNING ⚠

The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.

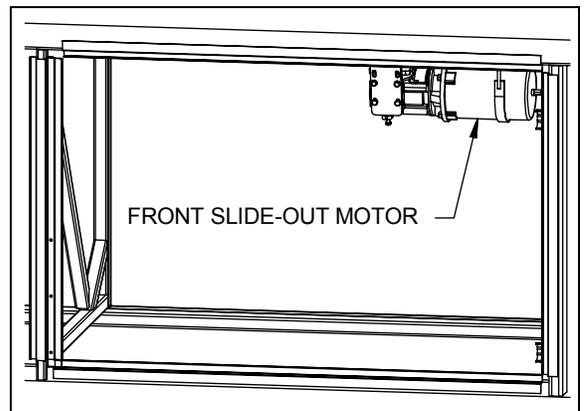
⚠ CAUTION ⚠

Before moving the slide-out manually, ensure that all locking pins are unlocked. Refer to the slide-out manual extending procedure.

- To move the slide-out use a 1/2" hexagonal socket on the back of the slide-out motor.

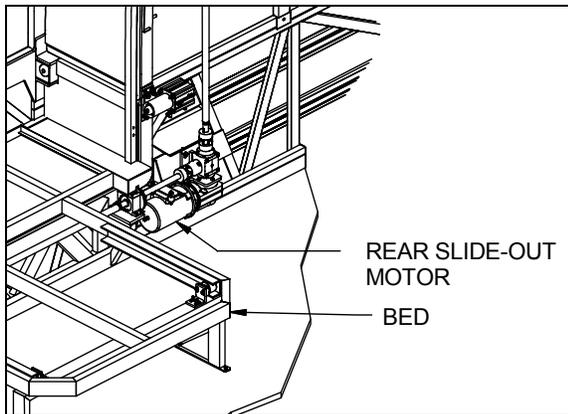


INFLATABLE SEAL PRESSURE REGULATOR



FRONT SLIDE-OUT MOTOR

OTHER FEATURES

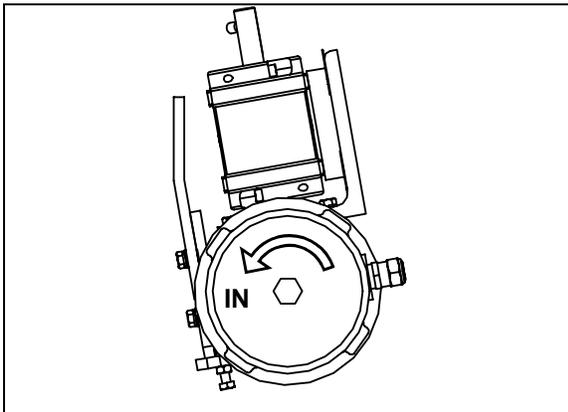


REAR SLIDE-OUT MOTOR INSIDE COACH

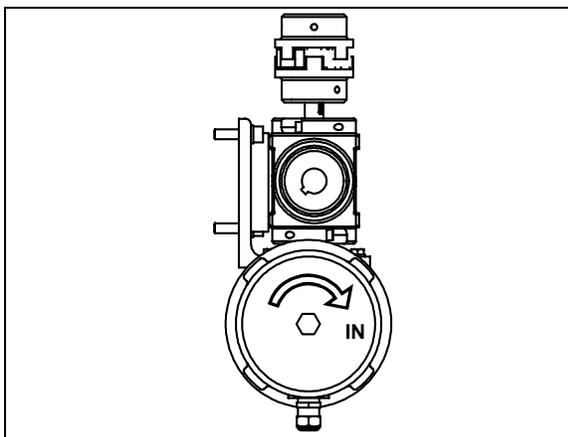
4. Rotate the slide-out motor with a manual ratchet or any power drill until the slide-out comes to its closed position.



Slow down on the closing speed as the slide-out approaches its closed position, in order not to overshoot it, which may damage the mechanism.

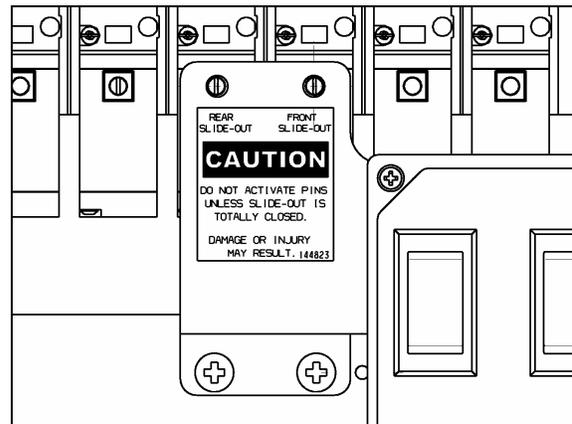


DIRECTION OF ROTATION FOR RETRACTING (FRONT)

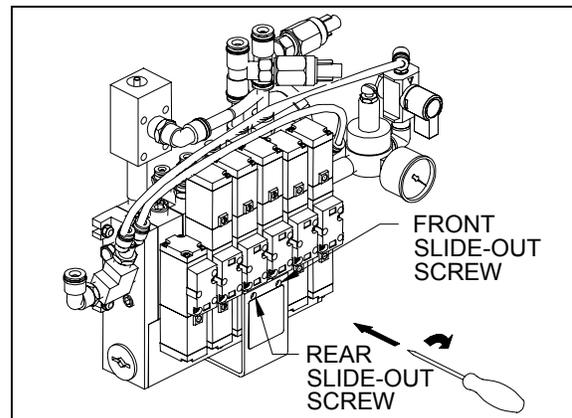


DIRECTION OF ROTATION FOR RETRACTING (REAR)

5. Once the slide-out room is lined up to its closed position, remove the tool from the motor.
6. To close the locking pins, use the following method:
 - a) Insert a small screwdriver in the protection plate hole to access the "pin valve manual override screw" corresponding to the slide-out to be locked. Turn the override screw clockwise to actuate the locking pins. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.



LOCKING PIN VALVE PROTECTION PLATE



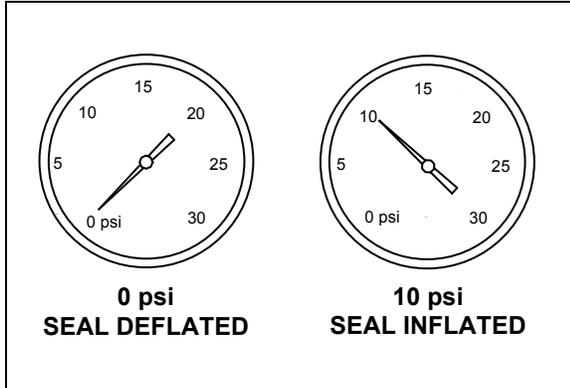
LOCKING PIN VALVE LOCATION



Actuating the locking pins on the slide-out not completely closed or with locking pins misaligned with their receptacle may result in glass breakage and cause serious injury.

- b) When the locking pins have been locked, re-insert a screwdriver in the protection plate hole. Turn the override screw counterclockwise and keep it in this position to cancel the manual override actuation.

- Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.



INFLATABLE SEAL PRESSURE GAGE

- When the retraction procedure is completed, if the transmission DRIVE range or REVERSE cannot be selected to move the vehicle, verify that at least one pin is locked on each slide-out. To do so, check the lights (12) on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all padlocks is used to identify the state locked or unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. With the ignition key to the "ON" position, verify if at least one pin locked light is "ON". Otherwise, go back to step 7 of this section to manually lock all the pins until all pin locked lights go "ON".

NOTE

The slide-out safety controllers use a relay to inhibit transmission range selection to prevent the vehicle from moving if each slide-out has not at least one pin locked.

Manual ratchet extending procedure – Front and rear slide-out

NOTE

For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.

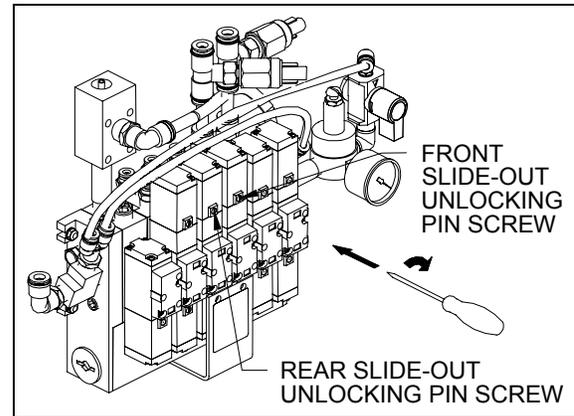
- Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.

- Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

WARNING

The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.

- To unlock the pins, use the following method:
 - Identify the proper pneumatic valve controlling the unlocking of the pins of the slide-out to be extent.



UNLOCKING PIN VALVE LOCATION

- Ensure the ignition key is in the "OFF" position. When the proper valve has been identified (right side for front slide-out and left side for rear slide-out), turn clockwise the "pin valve manual override screw" to actuate the locking pins. Keep the override screw in this position. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.
- Verify if all the pins are unlocked with the ignition to the "ON" position. To do so, check the lights on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all unlocked padlocks is used to identify the state unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. If at least one light is off, that means all the pins are not unlocked and it will not be possible to manually move the slide-out. In this case, restart the engine and make sure the air

OTHER FEATURES

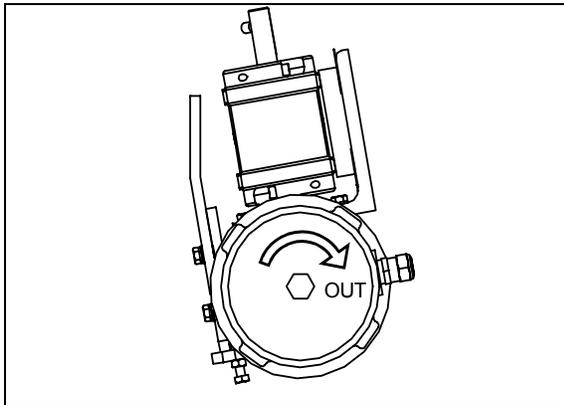
pressure is 110 psi minimum on the auxiliary air pressure gauge.

- d) Switch the ignition to the "OFF" position, and remove the ignition key for more security.
 - e) When the locking pins have been unlocked, turn the pin valve manual override screw counterclockwise and keep it in this position to cancel the manual override actuation.
4. To move the slide-out, use a ½" hexagonal socket on the back of the slide-out motor.
 5. Rotate the motor with a manual ratchet or any power drill until the slide-out comes to its full opened position.
 6. Once the slide-out is lined up to its opened position, remove the tool from the motor.
 7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.

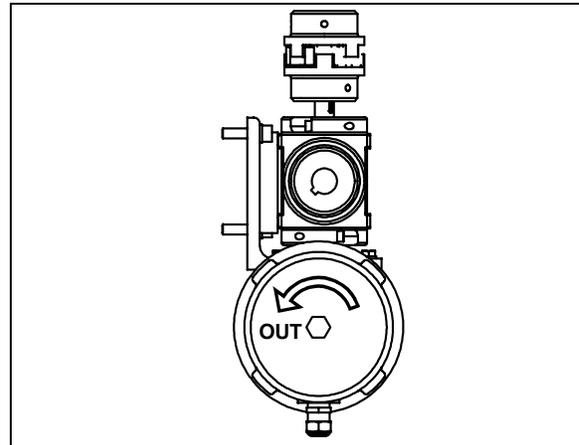


CAUTION

Slow down on the opening speed as the slide-out approaches its opened position, in order not to overshoot it, which may damage the mechanism.



DIRECTION OF ROTATION FOR EXTENDING (FRONT)



DIRECTION OF ROTATION FOR EXTENDING (REAR)

SLIDE-OUT TROUBLESHOOTING – THIRD GENERATION

How to recognize 3rd generation controller

When there is no error conditions, press and hold the handheld control rocker switch in the IN or OUT position for 3 seconds and release it. If the controller is a generation 3, the LED on the control will blink three times. Generation 3 controller can also be recognized by their different colors: gray instead of blue/yellow.

Flash code operation

The flash codes are either displayed on the dashboard (telltale panel), on the handheld control or on the logic controller.

In a case where both the front and rear slide-out are in error and flashing error codes on their respective remotes, the dash telltale will flash the front slide-out error code.

A flash code consist of two consecutive series of blinks separated by a one-and-one-half second pause. The first series of blinks identifies the first digit of the error number and the second series of blinks identifies the second digit of the error number. The flash code repeats itself after a pause of 4 seconds. All flash codes except 12, 31, 32 and 33 are repeating themselves for ever until cleared with the Ignition turned OFF and ON. The codes 12, 31, 32 and 33 will repeat three times and then stopped.

Examples of codes:

Code #12

Flashes 1 time, pause of 1,5 seconds, then Flashes 2 times, pause of 4 seconds

Code #23

Flashes 2 times, pause of 1,5 seconds, then
Flashes 3 times, pause of 4 seconds

 WARNING 
<p>If the dash slide-out telltale light starts blinking while on the road for 30 minutes, it means that one of the structural pins (4 bottom pins for the front slide or 2 bottom pins for the rear slide) is not properly inserted. Driving for a long period in this condition can damage the vehicle structure.</p>

 CAUTION 
<p>If the dash slide-out telltale light comes ON and stays ON (no blink) after 30 minutes on the road, it means that one of the 2 upper pins (not structural) are not properly inserted. Driving with the upper pins not inserted will not cause damage to the vehicle structure.</p>

Clearing the flash code blink

Turning the ignition OFF and ON again, will stop the flash code blinking.

Bringing back the last flash code

Press and hold the handheld control rocker switch in the IN or OUT position for 2 seconds to see again an active flash code error that was cleared by turning the Ignition OFF and ON.

CODE DESCRIPTION

SIGNAL	PROBLEM	CAUSE	CORRECTIVE ACTION
Code #12	The slide-out does not extend or retract	The parking brake is not seen as being active by the controller	<p>Make sure the parking brake is applied</p> <p>Confirm parking brake application with the parking brake light on the telltale panel</p> <p>Check wiring</p>
Code #13	The seal deflates but the slide-out does not extend or retract	Problem with the vacuum switch sensor or the seal deflating valve	<p>Visually inspect the seal to confirm that it is deflated</p> <p>If seal deflates, check/replace the vacuum switch</p> <p>If seal does not deflate, check the seal deflating valve</p>
Code #14	The seal deflates but the slide-out does not extend	The controller does not see all pins unlocked	<p>Safety module not present or disconnected</p> <p>One of the unlock sensor wrongly positioned or broken</p> <p>Pin unlock valve defective</p>
Code #21	When extending, the slide-out stops after having extended by 1 inch	The limit IN sensor is seen as active by the controller	Check the limit IN sensor

OTHER FEATURES

SIGNAL	PROBLEM	CAUSE	CORRECTIVE ACTION
Code #22	When retracting, the slide-out went too far	The limit IN sensor is always seen as inactive by the controller	Check the limit IN sensor
Code #23	When extending, the slide-out stops after having extended by 8 inches	The controller does not see the teeth sensor	Check the teeth sensor
Code #24	The slide-out does not move out	Problem with the slide-out motor or motor drive controller module	Ensure the motor breaker is not tripped Check/replace the motor drive
Code #25	When retracting, the slide-out does not move at all or moves by 8 inches and stops	Teeth sensor not seen by the controller or a problem with the motor drive module or the motor itself	Check that the motor breaker is not tripped Check/replace the teeth sensor Check/replace the motor drive module
Code #26	The slide-out retracts but refuses to pin	The slide-out position has been moved manually, mixing-up the teeth counter	Use the manual procedure to re-pin, it will reset the counter. If this problem comes back, check the teeth sensor adjustment
Code #31	One of the unlock sensor is defective and needs repair. No immediate impact on the slide-out operation	One of the unlock sensor is always seen active even when the pins are locked	Check the unlock sensors
Code #32	One of the lock sensor is defective and needs repair. No immediate impact on the slide-out operation	One of the lock sensor is always seen as active	Check the lock sensors
Code #33	The slide-out stopped in overcurrent	There is abnormal friction in the slide-out movement or the slide-out mechanical stopper before reaching full extension	Check the mechanical slides
Code #41	The slide-out is not working properly	The front and the rear logic controllers have the same ECU number	Check the wiring of the rear module, to make sure the input J4-11 is ON.
Code #42	The slide-out does not extend or retract	The battery voltage is too low	Start the engine and set the RPM to fast idle Connect to a battery charger capable to supply 40 Amps