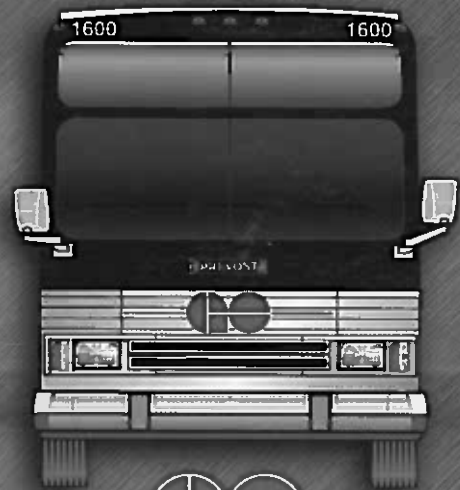


PREVOST OPERATOR'S MANUAL



ISO 9001
9002 & 14001



XL SERIES
MOTORCOACH

PREVOST

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XL Series Motorcoach

FOREWORD

The PRÉVOST "XL Motorcoach" Operator's Manual has been prepared to thoroughly acquaint you, the operator, with vehicle equipment and features in order to fully appreciate and safely enjoy your vehicle. Of course, you are anxious to drive your new coach and test its features, but first please read this publication carefully for enjoyable and trouble free operation, while ensuring optimum safety and passenger comfort. This book should be kept inside the vehicle at all times for convenient reference. It is also suggested that it remain with the vehicle at the time of resale. Please notify PRÉVOST CAR INC. when the vehicle's ownership is transferred so that our records can be kept up to date. Do this by filling out the appropriate form at the end of this manual.

The specifications, descriptions and figures given are based on the latest information available at printing time. And because at PRÉVOST, we are constantly striving to better our product, we reserve the right to make changes at any time without notice and/or obligation on our part.

Please note that this publication applies only to XL Motorcoaches, manufactured by PRÉVOST CAR INC.. It describes and explains all the equipment and options available for installation in our factory.

This manual, or portions thereof, cannot be reproduced in any form whatsoever, in whole or in part, without the written consent of PRÉVOST CAR INC.

The following words are used to emphasize particularly important information:

WARNING: *Identifies instructions which if not followed, could result in serious personal injury or loss of life.*

CAUTION: *Denotes instructions which if not followed, could cause serious damage to vehicle components.*

NOTE: *Indicates supplementary information needed to fully understand and complete an instruction.*

For your own safety and to ensure prolonged service life of your coach, heed our cautions, warnings and notes; Ignoring them could result in extensive damage and/or serious personal injury.



Controls & Instruments

KEYS

Two keys have been supplied with your vehicle. They are used as described below.

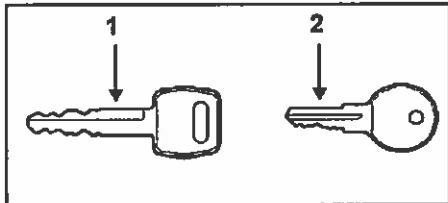


FIGURE 1 23014A

1. Baggage compartments door lock.
2. Entrance door lock.

NOTE: Baggage doors can also be remotely locked/unlocked using the Central Locking System Switch, located on L.H. Side Control Panel.

NOTE: For added security, record the key numbers and keep this information in a safe place. Do not keep these records inside vehicle. It is also advisable to deposit a duplicate of each key in a safe place, so they can be obtained without difficulty in case of an emergency or loss.

MAIN BATTERY DISCONNECT SWITCH

The manual switch which connects or disconnects both the 12 and 24 volt systems is located next to the R.H. Side Rear Baggage Compartment door.

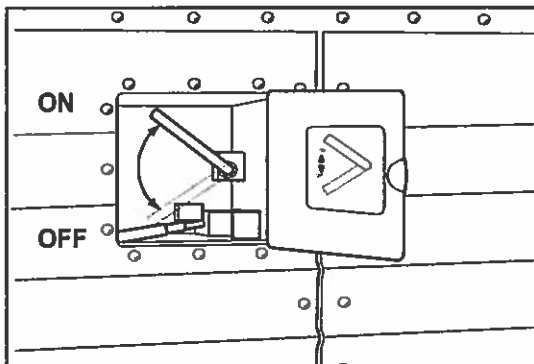


FIGURE 2 06047

CAUTION: When the vehicle is parked overnight or for an extended period of time, the main battery disconnect switch should be set to the "OFF" position in order to avoid battery voltage imbalance.

NOTE: When the battery disconnect switch is set to the "OFF" position, the electrical supply from the batteries is cut off, with the exception of the Fire Detection System, the Engine & Transmission Electronic Controls, the Auxiliary Heating System, the Battery Equalizers and the Digital Clock(s).

FUEL TANK FILLING

The fuel filler neck is accessible by opening a small door located amidships on the R.H. side of the vehicle.

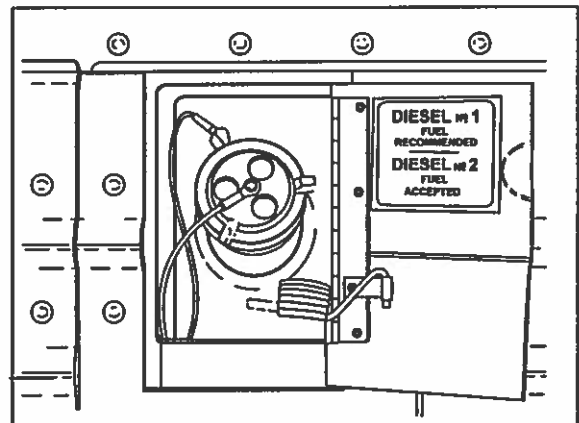


FIGURE 3 18013A

NOTE: Provided vehicle is parked level, an automatic nozzle will shut off when tank is filled to approximately 95% capacity.

CAUTION: Do not fill to more than 95% of fuel tank capacity. Do not "top off" the tank; doing so may result in fuel spillage when the fuel expands.

CONTROLS AND INSTRUMENT PANELS

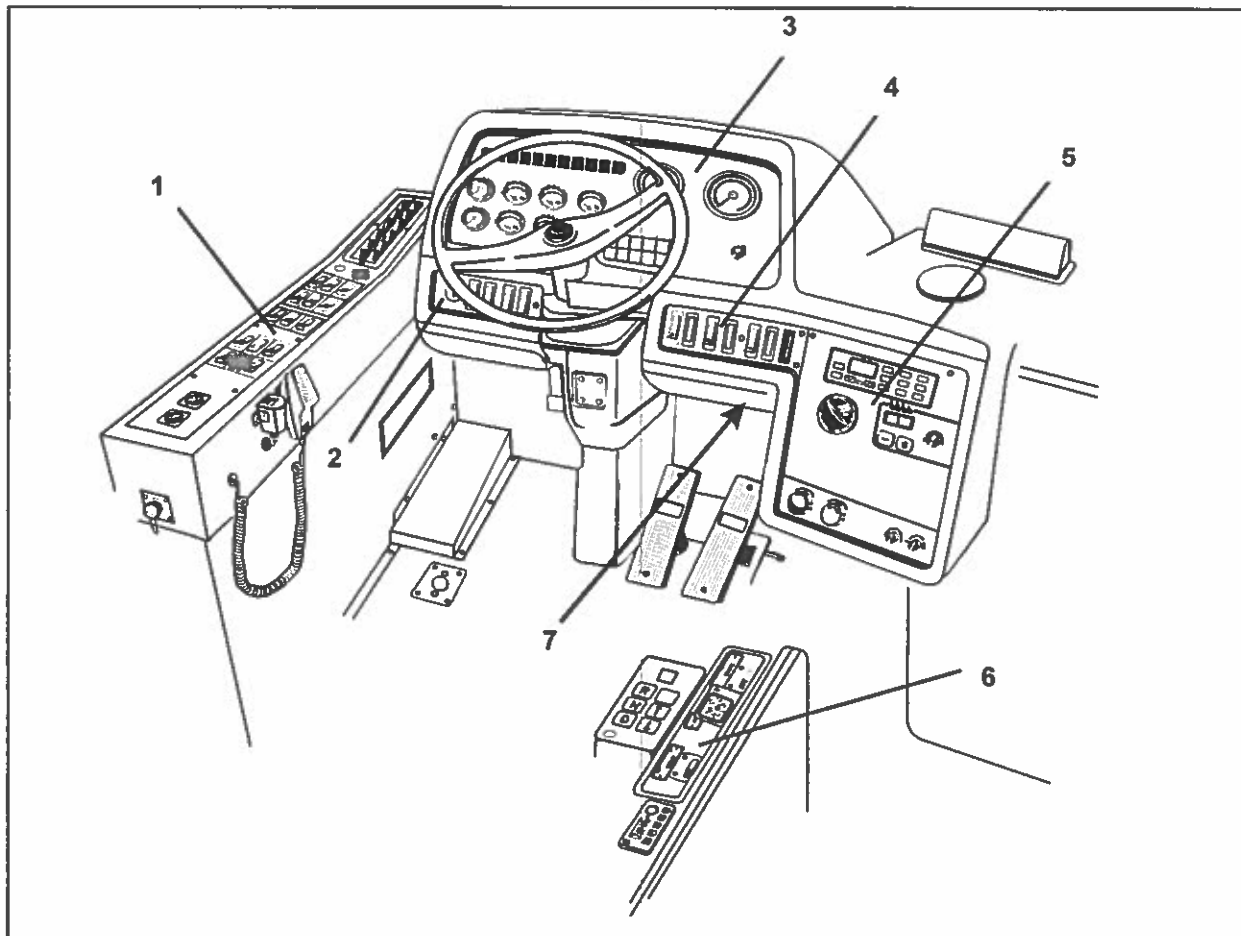


FIGURE 4

18114A

No.	Panel	Pg.	No.	Panel	Pg.
1	L.H. Side Control Panel	2-3	5	R.H. Console	11
2	L.H. Lower Switch Panel	2-10	6	R.H. Lateral Console	2-14
3	Dashboard	2-5	7	Hidden start switch	2-10
4	R.H. Lower Switch Panel	2-11			

L.H. Side Control Panel

1. Adjustable louver

The louver is manually adjustable, so the heated or cooled air flow can be directed towards driver or side window.

2. Close door

Push green button to close the door.

3. Open door

Push red button to open the door.

4. Baggage door lock

Push up rocker switch to unlock the baggage doors and push down to lock. For additional information see page 2-31 under heading "Baggage compartment".

5. Destination sign

Push down rocker switch to energize the destination sign.

6. Exterior mirror heating switch

Push down rocker switch to operate the heating elements that clear frost, fog or thin ice from rear-view mirrors.

7. Stop/Service chime power switch

Push down rocker switch to reset the stop request indicator. See page 2-36 for system description.

8. Driver's light switch (overhead lights)

Push down rocker switch to turn on the two (2) ceiling lights above driver. These lights are frequently used for nighttime operation when passengers board or leave the coach.

9. Fluorescent lighting

Push down rocker switch to turn on the interior fluorescent lights, located under parcel racks. Use of these lights should be avoided when engine is not running.

10. Reading lamps

Reading lamps are controlled by two (2) different switches. Push down this rocker switch to energize the whole reading lamp circuit. Individual lamps can then be activated by each passenger using the switch incorporated in lamp body. Reading lamps are mounted under parcel racks.

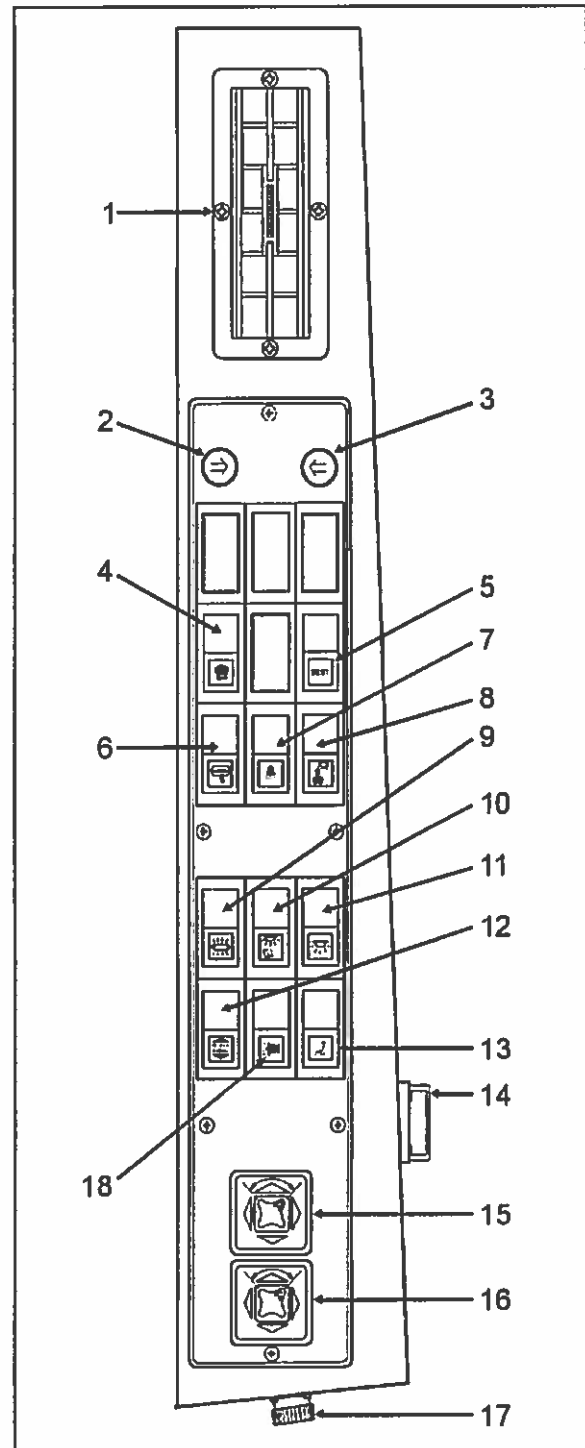


FIGURE 5: L.H. SIDE CONTROL PANEL

18108A

CONTROLS & INSTRUMENTS

11. Dome lights

Push down rocker switch to turn on the aisle dome lights located on front of parcel racks.

12. Kneeling control switch

Momentarily push down rocker switch to lower the front end of coach 4 inches (100 mm), and up to return the coach to normal driving height. See page 3-3 for system description.

13. Wheelchair lift (WCL) master switch

Push down to power up WCL.

14. Microphone jack

Driver's P.A. system microphone.

15. L.H. outside mirror control

Turn pointer knob to the left for mirror head adjustments and to the right for convex mirror adjustments, then push down on either of the button's four (4) sides to adjust the selected mirror's viewing angle.

NOTE: *If the mirror assemblies on your vehicle do not include convex mirrors, only one (1) "Outside Mirror Control" will be installed for both mirrors (replacing items 15 & 16).*

To operate, turn pointer knob to the left for L.H. mirror adjustments and to the right for R.H. mirror adjustments, then push down on either of the four (4) sides to adjust the selected mirror's viewing angle.

16. R.H. outside mirror control (Optional)

Turn pointer knob to the left for mirror head adjustments and to the right for convex mirror adjustments, then push down on either of the button's four (4) sides to adjust the selected mirror's viewing angle.

17. Diagnostic data reader connector

Datalink for DDEC IV, WT World Transmission and ABS brakes.

18. Public address (PA)

Three positions:

- push forward to activate internal PA,
- push a middle to activate both PA,
- push down to activate external PA.

Dashboard

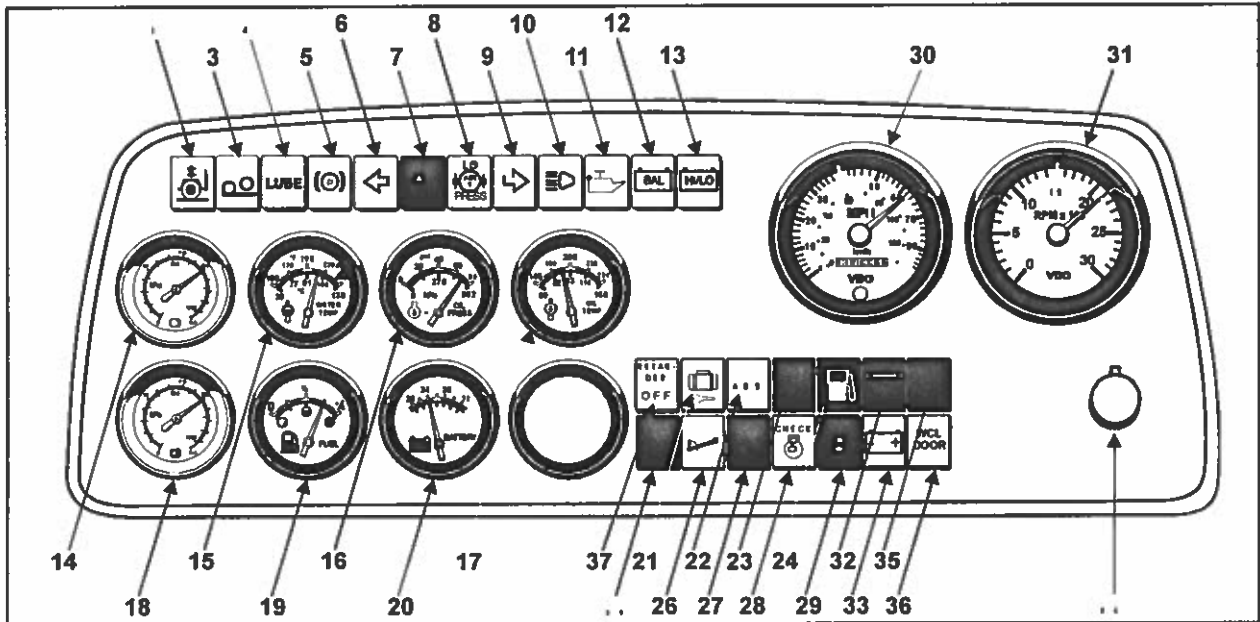


FIGURE 6

18113A

- 01.....Kneeling
- 02..... Blank switch
- 03..... Retractable tag axle
- 04..... Lubrication activated
- 05..... Parking brake
- 06..... L.H. turn signal - Hazard
- 07.....Low secondary air pressure
- 08..... Low primary air pressure
- 09..... R.H. turn signal - Hazard
- 10..... High beams
- 11..... Low oil pressure indicator
- 12..... Battery balance
- 13..... High or low battery voltage
- 14..... Secondary air pressure gauge
- 15..... Engine coolant temperature gauge
- 16..... Engine oil pressure gauge
- 17..... Transmission oil temperature gauge
- 18..... Primary air pressure gauge
- 19..... Fuel gauge

- 20..... Voltmeter
- 21..... Baggage compartment door lock
- 22..... Antilock Braking System
- 23..... Check transmission light
- 24..... Low fuel level
- 25..... Preheating system
- 26.....Output retarder
- 27..... Brake light
- 28..... Check engine
- 29..... Stop engine
- 30.....Speedometer-Odometer
- 31..... Tachometer
- 32..... Alternator 1 light
- 33..... Alternator 2 light
- 34..... Instrument and switch
brightness control
- 35..... WCL master switch ON
- 36.....WCL door opened
- 37..... Retarder OFF

CONTROLS & INSTRUMENTS

Dashboard indicator/warning lights and instruments



Kneeling

Lights when the Suspension Systems is operating. See page 2-4 for Kneeling system description.



Retractable tag axle

The indicator light will illuminate when the tag axle is retracted. Furthermore, an alarm will sound, telling the driver that the axle is retracted. See pages 2-14 & 4-18 for system description.



Lubrication activated

The indicator light will illuminate for about 3 seconds every time the ignition is switched on. Afterwards, it will be energized only if a fault sequence of lubrication operation is detected.



Parking brake

Lights when parking brake is applied (see page 2-18).



L.H. turn signal - Hazard

Flashes when L.H. turn signal is selected with multifunction lever or when hazard switch is turned on. (When hazard switch is turned on both L.H. and R.H. turn signals will flash.)



Low secondary air pressure

Lights when air pressure in secondary system is too low. For System information, see "BRAKES" on page 3-1.



Low primary air pressure

Lights when air pressure in primary system is too low. For System information, see "BRAKES" on page 3-1.



R.H. turn signal - Hazard

Flashes when R.H. turn signal is selected with multifunction lever or when hazard switch is turned on. (When hazard switch is turned on both L.H. and R.H. turn signals will flash.)



High beams

Lights when headlight high beams are selected.



Low oil pressure indicator

Lights when oil pressure on engine is too low.



RETARDER OFF

Lights when retarder control switch is in the OFF position.



Battery balance

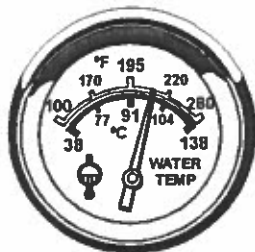
Lights when batteries are out of balance.

NOTE: Before seeking assistance, check that the demand for the 12 volt power is not exceeding rated amperage output of battery equalizer(s), and also check circuit breaker on battery equalizer(s) (for location, see page 4-14). Allow at least 15 minutes to balance batteries after corrective measures have been taken.



High or low battery voltage

Lights when battery voltage exceeds 30 volts or drops below 24 volts.

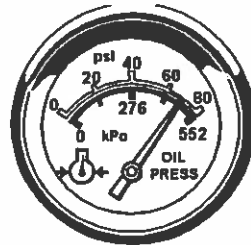


Engine coolant temperature gauge

Indicates engine coolant temperature. Normal reading should vary from 190 to 215°F (88 to 102° C).

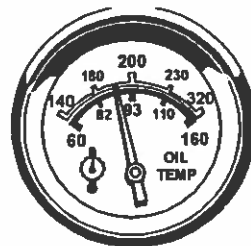
In extremely hot weather and high altitude, the coolant temperature can reach 215°F (102°C) and more when climbing a long grade at full throttle. If this situation occurs, the "check engine" light will come on (at 217°F - 103°C) and the engine over-temperature protection system (EOP) will be activated. If the cooling system is properly maintained, the temperature should stabilize below the shut back temperature of 222 °F (106 °C) so the vehicle can operate normally. See also item # 28 on page 2-5.

NOTE: Engine is not considered "overheating" when below 215 °F (102°C).



Oil pressure gauge

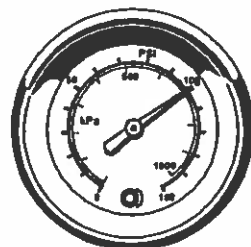
Indicates engine oil pressure. Normal reading at operating temperature should vary from 50 to 70 psi (345 to 483 Kpa) at cruising speed.



Transmission oil temperature gauge (Optional)

Indicates transmission oil temperature. Normal reading can vary from 160 to 250 °F (70 to 120 °C).

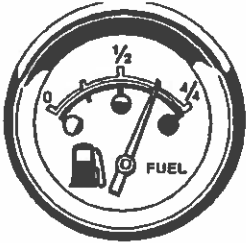
NOTE: On vehicles equipped with a transmission retarder, the temperature may rise to a maximum of 330 °F (165 °C) if operated for extended periods.



Primary and secondary air pressure gauges (Brakes)

Indicate air pressure in the primary and secondary systems. Normal readings vary from 100 to 125 psi (688 to 860 Kpa).

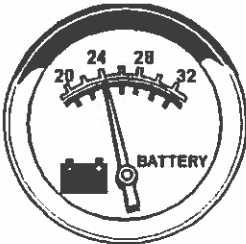
CONTROLS & INSTRUMENTS



Fuel gauge

Indicates the amount of fuel remaining in the fuel tank.

CAUTION: Operating the vehicle when the reading is below 1/8 full is not recommended.



Voltmeter

Indicates electrical system voltage. With engine operating, normal reading should be 27.5 volts.



Baggage compartment door lock indicator

Will light if any one or several of the baggage compartment doors are unlocked.



Antilock braking system

Lights at engine start-up for verification, and when the antilock braking system is malfunctioning.



Check transmission light

See page 4-4 for description.



Low fuel level

Lights when approximately 12 U.S. gallons (45 liters) of fuel remains in the tank.

It is recommended that you do not exceed a distance of 75 miles (120 km) after light has turned on. Light will illuminate "ON" & "OFF" just before running out of fuel. Fill tank as soon as possible.



Preheating system

Lights when preheating system is turned on. For systems description, see page 4-12.



Output retarder

Lights when transmission's output retarder is activated. For system description, see page 4-4.



Brake light

Lights when brakes are activated.



Check engine

Will light if a minor engine malfunction is detected by the DDEC (Detroit Diesel Electronic Control) system. This includes any situation where the engine coolant reaches 217°F (103°C) because of cooling system problems or because of situations described on page 2-10 (Engine coolant temperature gauge). This light will remain illuminated until malfunction is corrected. Furthermore, this indicator flashes to indicate engine malfunction codes when the required procedure outlined on page 5-11 has been performed.

NOTE: As a light bulb and systems check, this indicator will illuminate when the ignition switch is turned "ON". After about five seconds the light will turn off.



Stop engine

Will light when major engine problems occur. The engine power will automatically begin to decrease gradually and will be followed by an automatic shutdown after 30 seconds. This 30 second delay period may be repeated using the "Stop Engine Override Switch" outlined further on page 2-10 (item #4).

NOTE: Once engine is stopped, it cannot be restarted until malfunction is corrected.

As a light bulb and systems check, this indicator will illuminate when the ignition switch is turned "ON". After about five seconds the light will turn off.



Alternator 1 or 2 light

Lights when alternator is not functioning properly.



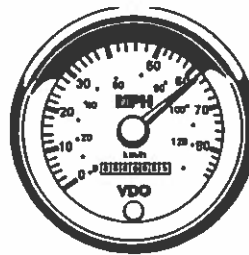
Wheelchair lift

Lights when wheelchair lift is ready for use.



Wheelchair lift door

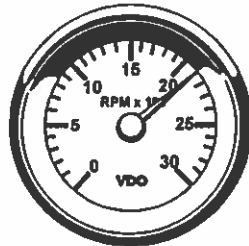
Lights when the wheelchair lift door is opened.



Speedometer-odometer

The speedometer indicates the vehicle speed. The odometer indicates the distance driven in kilometers.

Tachometer



The tachometer indicates the operating speed of the engine in hundreds of revolutions per minute (RPM x 100). The tachometer serves as a guide for gear shifting, and helps prevent engine over speeding when going downhill with the Jacobs engine brake operating. The maximum allowable engine speed is 2,450 rpm.

CONTROLS & INSTRUMENTS

Instrument & switch brightness control

Adjust as required. Brightness is progressively dimmed as control knob is rotated clockwise.

NOTE: Dashboard panel gauges show approximate readings and should not be relied upon for mechanical adjustments.

L.H. lower switch panel

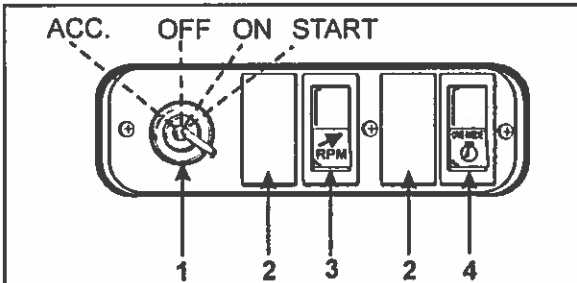


FIGURE 7

1B116A

Switches

1. Ignition

The ignition switch has four (4) positions:

"ACCESSORIES": Turn key counterclockwise; only the vehicle accessories are operational and key cannot be removed.

"OFF": Ignition is "OFF" and key can be removed.

"ON": Ignition is "ON" and key cannot be removed.

"START": Starting position; spring-loaded ignition switch returns to "ON" position after starting. Ignition key must be returned to "OFF" position before trying to restart.

WARNING: Do not engage starter for more than 15 seconds. Allow starter time to cool before engaging again. This will prevent starter from overheating and will allow the time delay relay to cool.

CAUTION: Before trying to start, you have to place and maintain the hidden switch (see Page 2.2) in the "ON" position and then turn the key switch to the "START" position.

2. Blank for additional switch.

3. Fast idle

Push down rocker switch to engage fast idle, thus increasing engine speed to approximately 1100 rpm. Use this switch for extended stops.

CAUTION: Idling produces sulfuric acid which breaks down the oil and eats into bearings, rings, valve stems and engine surfaces. If you must idle the engine, the high idle function should be used.

NOTE: If parking brake is released and/or transmission is shifted with the engine running at fast idle, engine will reduce its speed to idle and maintain this rpm as long as parking brake is not applied and/or transmission is in the neutral position. If engine is stopped with the fast idle switch in the "ON" position, this control will automatically be canceled when restarting the engine; the driver must then shut off, and reset rocker switch to re-actuate fast idle. Fast idle should be reduced to low idle before shutting off engine.

4. "Stop Engine" override

Push down rocker switch to reset the 30 second delay period and the shutdown procedure. This switch can be repeatedly depressed, i.e. one (1) pulse is sufficient for each 30 second period, for engine power in an emergency situation.

NOTE: The stop engine override switch will be operative only if it has been depressed before the end of the 30 second delay period.

CAUTION: The "Stop Engine" override must be used only in emergency situations to bring vehicle to a safe stop. Excessive use of this switch could cause serious damage to the engine.

R.H. lower switch panel

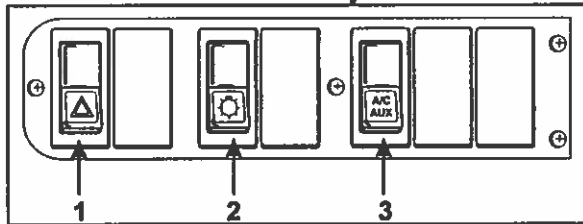


FIGURE 8

18021C

Switches

1. Hazard flashers

Push down rocker switch and all turn signal lights will flash simultaneously. Turn signal indicator lights in dashboard will also flash.

2. Exterior lighting switch

Push down rocker switch to the first position to activate clearance, tail & marker lights and to the second position for headlights.

3. A/C Auxiliary switch

Push down rocker switch to activate the auxiliary A/C system.

R.H. console

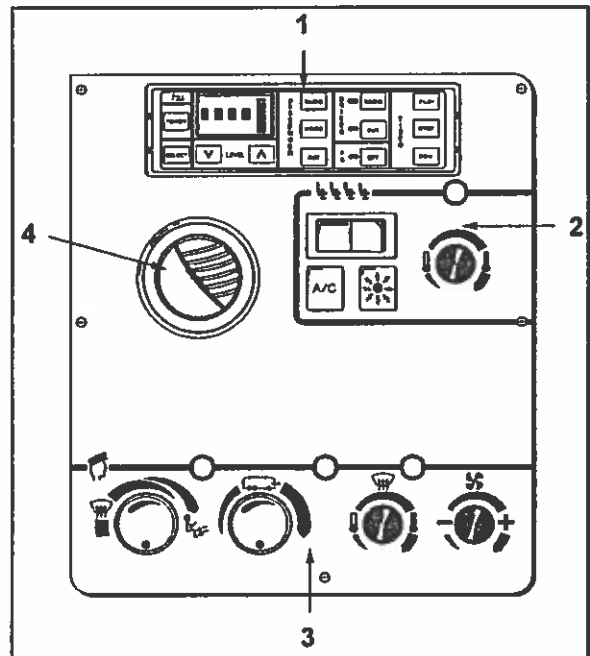
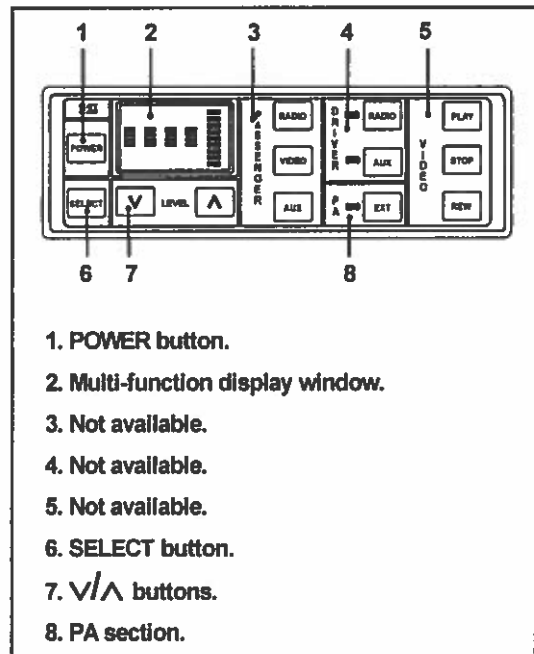


FIGURE 9

18111A

1. Control Head

The control unit is used to control the PA.



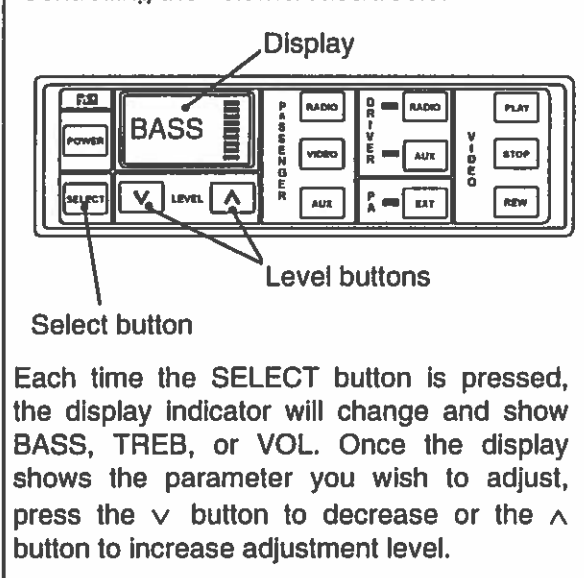
- 1. POWER button.
- 2. Multi-function display window.
- 3. Not available.
- 4. Not available.
- 5. Not available.
- 6. SELECT button.
- 7. V/∧ buttons.
- 8. PA section.

FIGURE 10

23112

To adjust the sound

Controlling the volume/bass/treble.



Each time the SELECT button is pressed, the display indicator will change and show BASS, TREB, or VOL. Once the display shows the parameter you wish to adjust, press the v button to decrease or the ^ button to increase adjustment level.

FIGURE 11

23113

1. Controlling the PA Section

A three-position switch located in the left-hand control panel activates the public address.

Select the forward position to use only the speakers inside the vehicle, the median position for the speakers inside and outside and the down position for the outside one's only.

The exterior speaker is located near the entrance door.

2. Central A/C - heating system controls

These controls are used to obtain desired temperature inside vehicle. For system description see page 4-9.

3. Driver's A/C - heating system controls

These controls are used to obtain desired temperature in driver's area. For system description see page 4-11.

4. Adjustable louver

The louver is manually adjustable, so the heated or cooled air flow can be directed as desired.

NOTE: An additional adjustable louver is located on L.H. side control panel to defrost window. A third adjustable louver is located at extreme right of dashboard and can be used to concentrate warm air on windshield area used to view exterior R.H. side mirror.

PUBLIC ADDRESS (P.A.)

Microphone jack

There is one standard PA system microphone jack installed on vehicle, below the driver's L.H. side control panel.

The PA system may be activated even when the control unit's Power button is not activated. When this is done, there is a short delay while the amplifier is powering up.

R.H. LATERAL CONSOLE

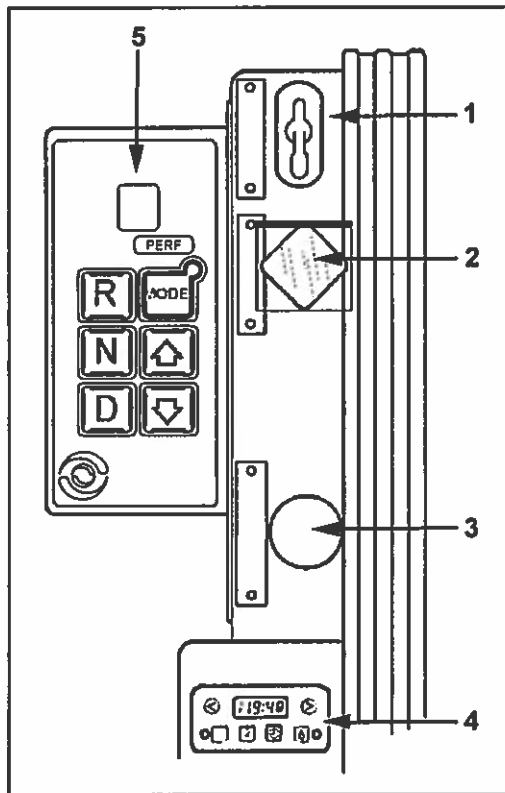


FIGURE 12

18117A

1. Retractable tag axle

When valve is switched to the "Wheels up" position, the tag axle air springs are unloaded (depleted) and the tag axle is raised. For system description, see page 4-18.

2. Parking brake control

See "Combination emergency and parking brakes" on page 2-17.

3. Parking brake override

If during normal operation, primary system air pressure drops below 40 psi (276 kPa), spring-loaded parking brakes will automatically be applied at full capacity on drive axle to stop vehicle. Cause of pressure loss should be determined and corrected before proceeding. The vehicle is equipped with an optional parking brake release system (Parking brake override) which will allow

driving the vehicle for a short period of time to a safe parking area. To operate, push and hold down the control knob with vehicle in motion.

4. Auxiliary Preheating System Timer WEBASTO

See page 2-39 for description of the system.

5. Transmission push-button shifter

Use shifter to select forward, neutral or reverse gears of transmission. "AUTOMATIC TRANSMISSION" system operations are described hereafter.

AUTOMATIC TRANSMISSION

The operation and driving of this vehicle with an automatic transmission is similar to that of an automobile equipped with an automatic transmission. Proper ranges should be selected according to driving speeds to improve vehicle performance and control. The transmission is fully automatic. Speed ratio of power converter changes automatically as vehicle speed increases and direct-drive goes in and out as necessary, modulated by vehicle speed, and accelerator position.

Range Selection - Push-Button Shifter

The push-button shifter is used by the operator to select Neutral (N), Reverse gear (R), or a range of forward gears. When a forward gear range has been selected, the transmission starts in the lowest gear of the range and, as conditions permit, automatically upshifts until the highest gear in the selected range is in use.

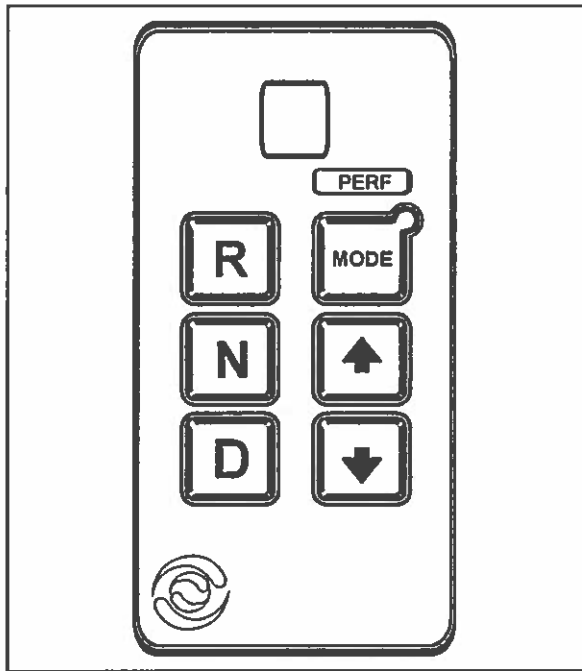
The digital display indicates the current gear of transmission operation.

The function of each button is as follows:

- Select REVERSE gear by pressing "R".
- Select NEUTRAL by pressing "N". Note the raised edge around the "N" button so the driver can orient his hand to the push-buttons by touch, without looking at the display. It is not necessary to press this button prior to starting the vehicle.
- Select DRIVE range by pressing "D". The highest forward gear will appear on the digital display and

CONTROLS/INSTRUMENTS

the transmission will shift to the starting gear (not indicated on the digital display).



CONTROL PAD

The "▲" and "▼" buttons are used to shift to a higher or lower (if not in "1") range selected. One press changes gears by one range. If the button is held down, the selection will scroll up or down until the button is released or until the highest or lowest possible gear is selected. Protection mechanisms should inhibit selecting ranges that are not appropriate or which may damage driveline components.

Function of the Mode Button

This button is used to invoke a special function (mode) that has been programmed into the ECU. Both modes are equivalent from the first to the fourth gear as the transmission upshifts at around 2000 rpm.

- the default "ECONOMY" mode allows for upshifts in fifth and sixth gear at around 1700 rpm. This is a more efficient operation of the transmission and thereby helps contribute to improve fuel economy.

- the "PERF" (performance) mode keeps upshifts at 2000 rpm in fifth and sixth gears. This makes for better performance than the economy mode but with a higher fuel consumption. It is recommended this mode be selected while driving up or down grades. The mode status will be indicated on the digital display by a red LED illuminating in the upper right corner of the MODE button when selected.

Oil level display mode (optional)

Select oil level display mode by pressing simultaneously on the "▲" and "▼" keys. A first press will indicate the transmission oil level after a two minute wait if the following conditions are met:

- the vehicle is parked;
- the engine is in slow idle;
- normal operating temperature is attained;
- transmission is in NEUTRAL;
- the sender unit is present and working.

A code will be displayed one digit at a time:

- O L - O K (oil level is correct)
- L O - 0 1 (one quart low)
- L O - 0 2 (two quarts low)
- H I - 0 1 (one quart high)
- H I - 0 2 (two quart high)

Note : If one or more conditions are not met, an error code will be displayed:

- O L - 5 0 (engine RPM too low)
- O L - 5 9 (engine RPM too high)
- O L - 6 5 (transmission not at NEUTRAL)
- O L - 7 0 (sump oil temperature too low)
- O L - 7 9 (sump oil temperature too high)
- O L - 8 9 (output shaft rotation)
- O L - 9 5 (sender unit defective)

To exit, press either D, R, or N button.

Diagnostic Display Mode

Pressing a second time (or a first time if oil level option not present) on the "▲" and "▼" keys will select diagnostic display mode. Refer to Allison WT troubleshooting guide for further information. To exit diagnostic display mode, press either D, R, N button, or up and down arrow keys at the same time.

Operation

When a button is depressed, the corresponding letter or number is displayed indicating the transmission is ready to operate in the selected range. When the electronic control system detects a serious problem in the transmission, a buzzing tone sounds for 5 seconds, and the "CHECK TRANS" light on the dashboard illuminates to warn the driver that the transmission is held in gear. If another is depressed, the buzzing sound will continue until the original range is selected.

Note : As a light bulb and systems check, the "CHECK TRANS" light will illuminate when the ignition switch is turned to "ON". After about two seconds the light will turn off. If the "CHECK TRANS" light remains on, the self-diagnostic system has detected a problem. If the problem disappears, the light will go out, but a trouble code will remain stored in the ECU.

Reverse (R)

Use this position to back up vehicle. Stop completely before shifting from forward to reverse or from reverse to forward. Touch the reverse (R) button, "R" will be displayed and the reverse warning signal will be activated.

Neutral (N)

Use this position to start engine. Select neutral (N) when checking vehicle accessories, and for extended periods of engine idle operation; parking brake must then be applied. The push-button shifter will automatically select neutral when the master switch is turned on.

Note : The automatic transmission does not have a park (P) position. Select neutral (N) and apply parking brake when coach is left unattended. A warning buzzer will sound if the engine is stopped and the parking brake has not been applied when foot pressure is removed from the brake pedal.

Caution : Detroit Diesel engines should not be idled for extended periods at "slow" idle. For extended idling, engine should run at "fast" idle.

Warning : Always apply parking brake before leaving driver's seat.

Caution : Do not allow your vehicle to "coast" in Neutral. This practice can result in transmission damage. Also, no engine braking is available in Neutral.

Drive (D)

Use this position for all normal driving conditions. After touching this pad, the vehicle will start in first or second range and will automatically upshift to a higher range as output speed increases. As the vehicle slows down, output speed decreases, and the transmission automatically downshifts to the correct range. If a locked brake or a slick surface condition should occur, the ECU (Electronic Control Unit) will command converter operation (disconnect lockup) and inhibit downshifts for a period of time or until normal wheel speed has been restored.

Note : The transmission should normally be allowed to shift itself, but manual shifting can be used as described below.

Fourth (4) and Third (3) ranges

Select these ranges when driving on moderate grades, or when load and traffic conditions require the use of limited speed.

Second (2) range

Select this range when operating in heavy and congested traffic. The transmission will start in first and automatically upshift to second. When slowing, the transmission will automatically downshift to first range. Low ranges provide progressively greater engine(*) and retarder(*) braking power (the lower the range, the greater the engine(*) and retarder(*) braking effect).

CONTROLS/INSTRUMENTS

First (1) range

Select this range when pulling through mud and snow, or when speed control is needed for driving up steep grades. This range also provides maximum engine(*) braking power or retarder(*) braking effect. In the lower ranges (1, 2, 3, and 4), transmission will not upshift above the highest gear selected unless recommended engine governed speed for that gear is exceeded.

Warning : Service brakes should not be used to control the speed of vehicle on long, steep descents. Instead, lower transmission ranges should be used (in conjunction with output retarder (Refer to "JACOBS engine brake" and "Transmission output retarder" options. See pages 4-11 for details regarding both systems)). This procedure keeps service brakes cool and ready for emergency stopping.

Caution : When descending in lower ranges, care must be taken that engine speed does not exceed 2450 rpm.

STEERING COLUMN CONTROLS

Multifunction lever

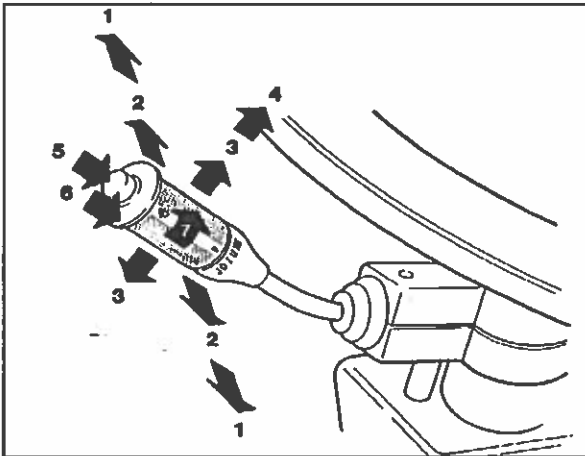


FIGURE 13

18024

Use the "Multifunction lever" to operate the following accessories:

1. Turn signal

Move the lever up to upper position 1 to signal a right-hand turn, and down to lower position 1 to signal a left-hand turn. When the turn is

completed, the signal will be canceled and lever will automatically return to its initial position.

2. Lane change signal

Move the lever up or down, part way to either positions 1, and hold it there. The lever will return to its initial position when released.

3. Headlight beam changer

High beams or low beams can be selected by respectively pushing the lever towards the dashboard or by pulling it towards the driver.

4. Headlight flasher

High beams can be flashed momentarily by pulling the lever completely towards the driver and then releasing it.

5. Courtesy-type blinkers

Clearance lights (blinkers) can be operated by pressing the button located at the tip of lever.

6. Washer controls

Push the external ring at the end of lever towards the steering column to activate windshield washers. When the ring is released, washers stop immediately but wipers will continue to run twice over to dry windshield.

WARNING: In cold weather, windshield should first be warmed up with defroster before using washers, in order to prevent icing and serious visibility impairment.

CAUTION: To avoid damaging pump mechanism, never operate washers when windshield washer fluid level is insufficient.

7. Windshield wipers

Turn lever forward to activate the two (2) elect/synchro arms; the first position corresponds to low speed and the second to high speed. Turn lever backwards to activate intermittent mode.

CAUTION: Do not run wiper blades on dry windshields as this may cause scratches. To avoid damaging wiper mechanism, always loosen frozen blades from windshield before operating wipers.

Electric horns

Can be activated by pressing button in center of steering wheel.

FOOT-OPERATED CONTROLS

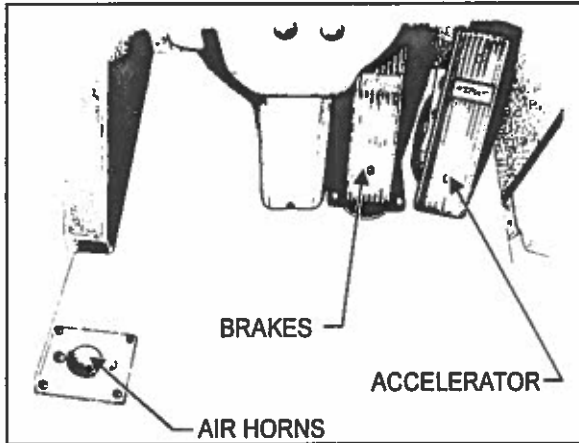


FIGURE 14

18118

AIR HORNS

Use the air horns only on highways. Air is released and the horn is activated when the push-button valve, located on the floor at driver's L.H. side, is depressed.

BRAKES

Service brakes

This vehicle is equipped with a dual braking system, the front brakes being independent of the rear brakes. Normally both systems are activated by the single brake pedal. This brake system becomes a modulated emergency system if a pressure drop occurs in the rear brake system.

Service brakes are applied by depressing the brake pedal, the rate of braking varying according to the gradual increase of pressure until the required rate of braking is obtained. When brake pedal is depressed, vehicle stoplights automatically light up.

For system information, see "BRAKES" on page 3-1.

Combination emergency and parking brakes

The spring-loaded, manually operated parking brake is activated by pulling up on the control valve knob located on R.H. lateral console (see item #2 on page 2-13).

This same brake system will automatically be applied in an emergency situation, whenever the control valve supply pressure drops below 40 psi (275 kPa).

For system information, see "BRAKES" on page 3-1.

ACCELERATOR PEDAL

Controls engine rpm.

NOTE: Pedal will be inoperative when the "DDEC-TEST" switch in steering compartment is in the "ON" position.

TILT STEERING WHEEL AND TELESCOPIC STEERING COLUMN

To unlock, use the handle located on the steering column's left hand side. Pull handle down to permit a maximum variation of 11° in steering wheel angle, and a telescopic wheel movement of 2" (5 cm). Push handle up to lock both mechanisms.

WARNING: Never try to adjust the steering wheel while the vehicle is in motion; wheel could move unexpectedly, making you lose control of the vehicle.

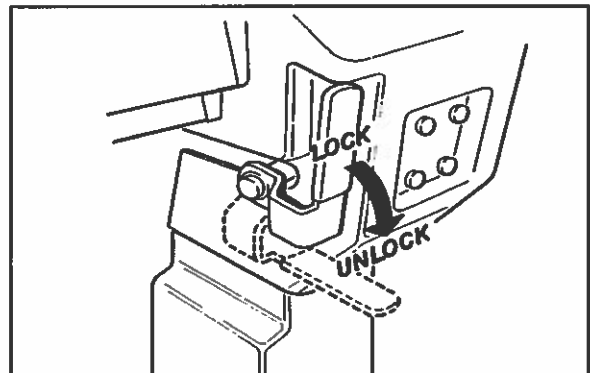


FIGURE 15

18027

ENTRANCE DOOR

Inside operation



Press and hold the red button to open the door and the green button to close the

door. The buttons are located on the left-hand side control panel. Releasing the button at any time will immediately stop door movement.

Warning: The door mechanism has no automatic safety protection to avoid injury to bystanders. The driver is responsible for the safe operation of the door.

Outside Operating Switch

The door must be unlocked before using the outside operating switch. Opening and closing the door is controlled by a 3-position toggle switch located at the left of the entrance door. Push and hold switch forward to open the door and rearward to close it

CAUTION: Before closing door from the outside, make sure keylock is in the unlocked (fully counterclockwise) position so as to avoid damage to the mechanism.

NOTE: When opening door, the stepwell lights will turn on if exterior lighting switch (see page 2-11, item #2), located on R.H. Lower Switch Panel, is "ON".

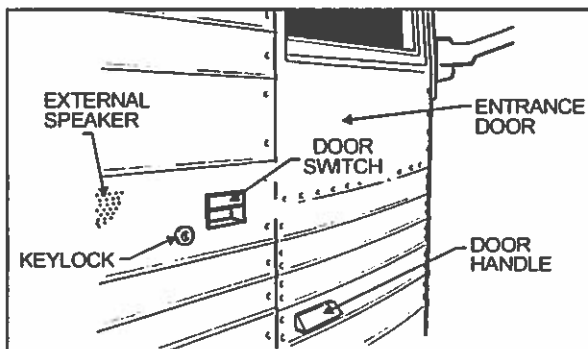


FIGURE 16

18120A

Emergency exit valve

From inside the vehicle, an emergency exit valve located near the door on the dash panel, releases the pressure from the lock cylinders. From the exterior, an emergency exit valve located in the front service compartment, also releases the air from the lock cylinders.

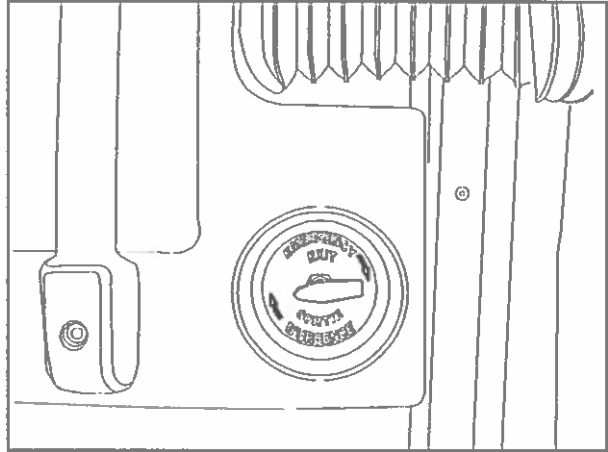


FIGURE 16A

12164

SEATS

Driver's seat

A air suspension model driver's seats is supplied with your vehicle. It is equipped with lumbar supports and adjustable armrests. Seat may be adjusted to the desired driving position by following the instructions listed below:

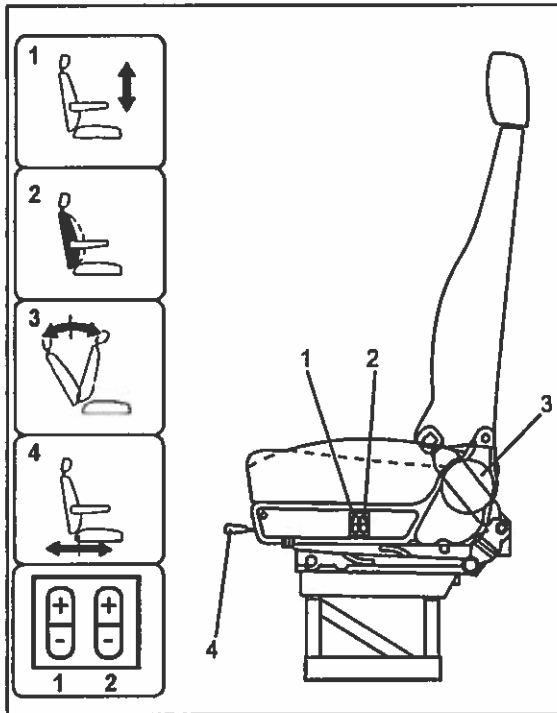


FIGURE 17: MECHANICAL SUSPENSION SEAT OFH3B220

WARNING: Never try to adjust seat while driving vehicle as this could result in loss of vehicle control.

1. Press on "+" or "-" to respectively raise or lower driver's seat.
2. Press on "+" or "-" to respectively inflate lumbar support bellows inside the seat backrest or deflate bellows.
3. Backrest tilt: rotate knob for infinite selection of settings.
4. Seat fore and aft: Move lever and slide seat.

Seat belts - Driver's seat

Each driver's seat is equipped with a retractable seat belt as required by State, Provincial and Federal regulations. To fasten, pull seat belt out of the retractor and insert the latch plate into the buckle until it clicks. No special adjustment is required since the reel device is self-adjusting. If seat belt operation becomes defective, report to Manufacturer's Service Center.

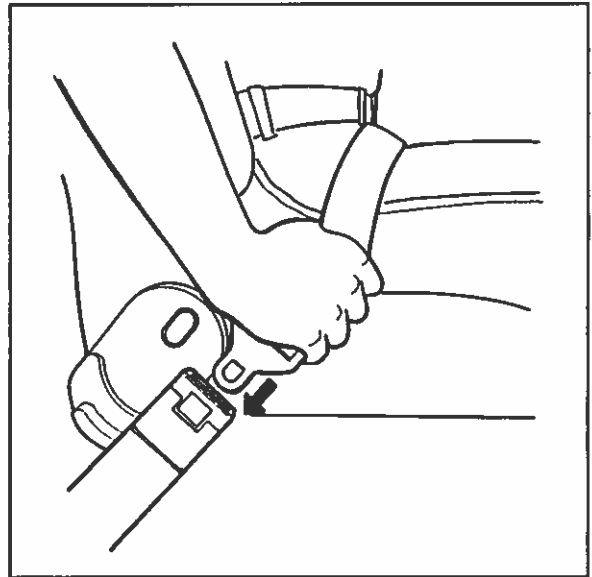


FIGURE 18

18C28

NOTE: The seat belt must be pulled out slowly and continuously, otherwise it will lock the reel before the latch plate reaches the buckle. If this happens, allow the belt to retract completely and repeat the procedure correctly.

WARNING: A snug fit with the lap belt positioned low on the hips is necessary to ensure motorist's safety. Belt should not be worn twisted; avoid pinching belt and/or belt hardware in seat mechanism. Do not wear belt over rigid or breakable objects, such as eyeglasses, pens, or keys as these may cause injuries.

CAUTION: Never bleach or dry clean safety belt.

CONTROLS/INSTRUMENTS

To unfasten belt, press red button in center of buckle and allow belt to retract. If belt does not fully retract, pull it out and check for kinks or twists. Make sure that it remains untwisted as it retracts.

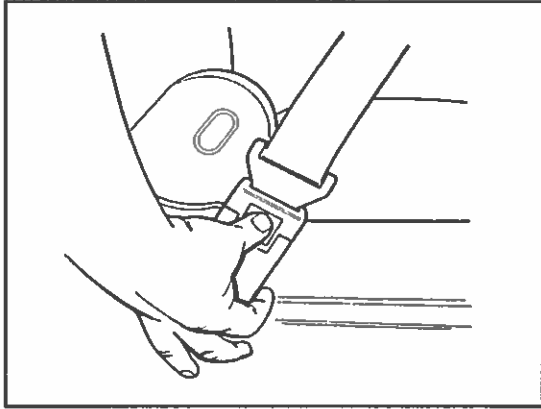


FIGURE 19

18029

WARNING: Seat belts should always be worn by motorists using seats supplied with belts since this is required by most State and Provincial laws.

Passenger seats

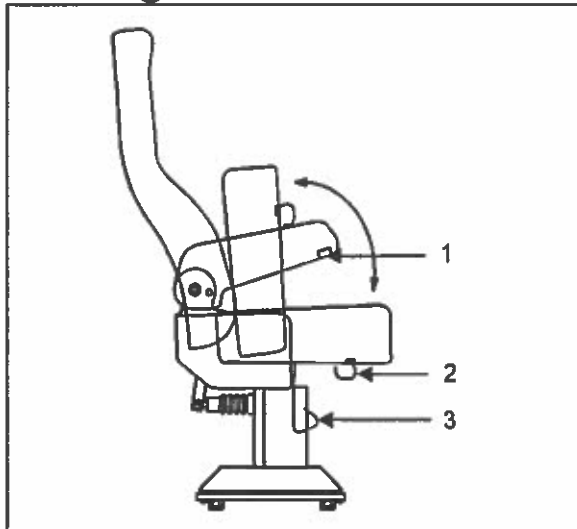


FIGURE 20

18121A

Back rest handling: To adjust the back of the seat, push the button (1) under armrest.

Seat handling to make room for wheelchairs: Raise the seating by pulling the ring (2) while pressing slightly on the seating.

To free stops, operate the lever (3). Remove the plastic covering from the floor tracks. The seat can then be sled out.

Exterior Mirrors (Ramco)

Your vehicle is equipped with two (2) exterior mirrors. These mirrors have an electric heating system which serves to minimize ice and condensation in extreme weather conditions. Integral thermostats are installed in both mirrors to avoid continual heating. Use the appropriate switch on the L.H. side control panel (item #6 on page 2-4) to activate the defroster system on both mirrors simultaneously.

Only the flat mirror can be remotely adjusted. The convex mirror must be adjusted manually.

The exterior mirrors can be manually adjusted as per the following method:

- To obtain desired vehicle width, adjust the mirror arm angle by loosening the adjusting "Allen" screw located at body end of mirror arm. Adjust mirror arm to desired position, then tighten adjusting screw.

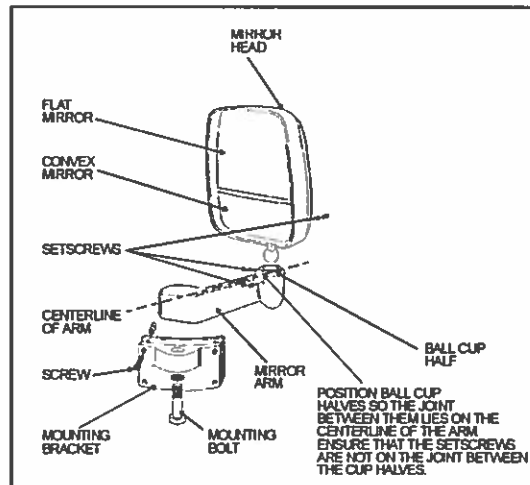


FIGURE 21 RAMCO REAR-VIEW MIRRORS

8201

- Mirror head can be rotated and/or tilted by loosening the adjusting "Allen" screw located at the base of mirror head. Adjust to desired position, then tighten adjusting screw.

CAUTION: Do not over tighten. Do not install a convex mirror on the heated mirror glass. This prevents even distribution of heat in the heated mirror and could cause the glass to break.

WARNING: Objects in convex mirror are closer than they appear.

Mirrors should not extend beyond body of coach any more than necessary.

NOTE: It is important for safe driving that you have good rear vision on each side of the vehicle; therefore, adjust mirrors **before** driving and immediately after adjusting your seat.

Interior Mirror

The interior rearview mirror is located between windshields, above driver's area. It enables the driver to see passenger circulation in the aisle. Adjust to desired viewing angle by hand without loosening screw.

Caution : Do not over tighten the screws. Tighten until snug.

EXTERIOR COMPARTMENTS

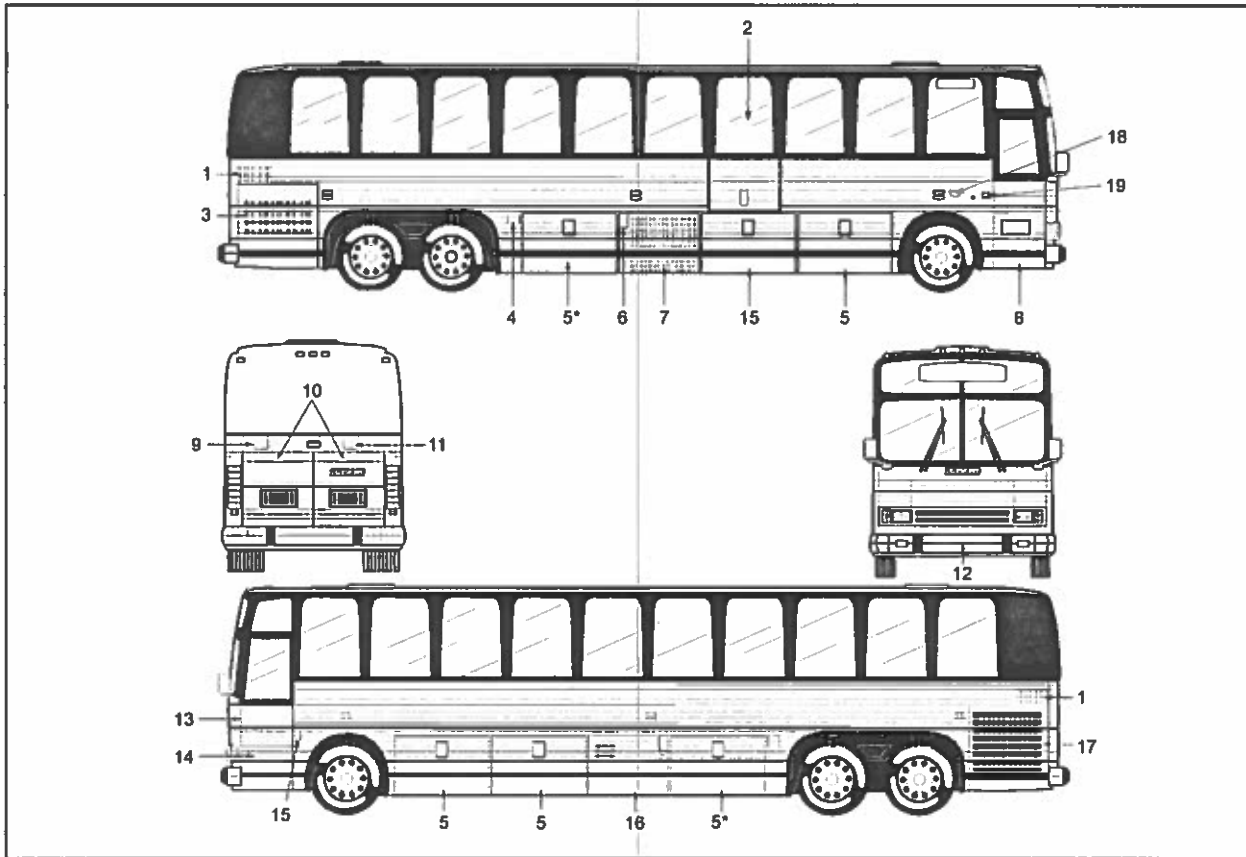


FIGURE 22: EXTERIOR COMPARTMENTS

180308

- 01Engine air intake duct
- 02Passenger WCL door
- 03Engine R.H. side door
- 04 Main battery disconnect switch door
- 05Baggage compartment
(* Access to battery compartment, WCL hydraulic unit and autolube)
- 06 Fuel tank filling door
- 07 Condenser compartment
- 08Entrance door
- 09 Coolant surge tank filling door

- 10 Engine rear doors
- 11 Engine oil reserve tank filling & Block heater plug
- 12 Spare wheel & tire compartment
- 13 Front electrical compartment
- 14 Steering compartment
- 15 Lift storage doors
- 16A/C & Heating compartment
- 17 Engine L.H. side door
- 18 External speaker
- 19 Door operating switch

The above figure identifies all exterior compartments and access doors. See page 2-28 for securing and accessing procedures.

NOTE: If doors are supplied with locks, refer to page 2-1 to select the appropriate key.

Wheelchair Lift

To operate the wheelchair lift system, run engine, put the transmission to the neutral position, apply parking brakes and put WCL master switch to the ON position.

Warning: Do not park within 3 meters.
 When opening door beware of its corners to avoid personal injuries.
 Always operate the lift when the vehicle is parked on level ground.

1. Open the wheelchair lift lower door.
2. Lift the handle of the wheelchair lift upper door.
3. Put the switch located in the rear side of the compartment to the ON position to open the upper door.
4. Use the control pendant to let the wheelchair lift system go out of the compartment.
5. Depress the down position to stop the door if needed.
6. Maintain switch in down position to close the door.
 Release switch only when completely closed.

For description of the lift functions, refer to the following table:

FUNCTION	DESCRIPTION
→ / OUT	Platform extends / deploys OUT of the vehicle from the IN/stowed position.
↓ / DOWN	Platform is lowered from its present position, either vehicle floor level or OUT/deployed position (The rollstop automatically lowers when the platform reaches ground level).
↑ / UP	Platform is raised from its present position, either ground level or OUT/deployed position. (The rollstop automatically raises when the platform leaves ground level).
← / IN	Platform retracts/stows from the OUT/deployed position to the IN/stowed position.

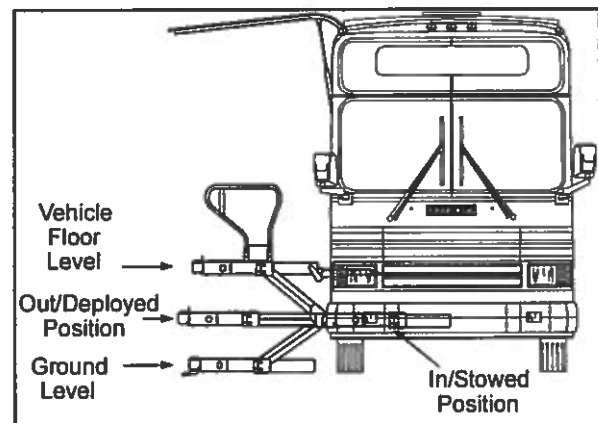


FIGURE 23 *Roll Stop*

To operate the →/OUT, ↑/UP or ↓/DOWN functions, press and hold the appropriate switch until the function is completed. To operate the IN function, the ←/IN and the IN-LOCKOUT switches must be pressed and held at the same time.

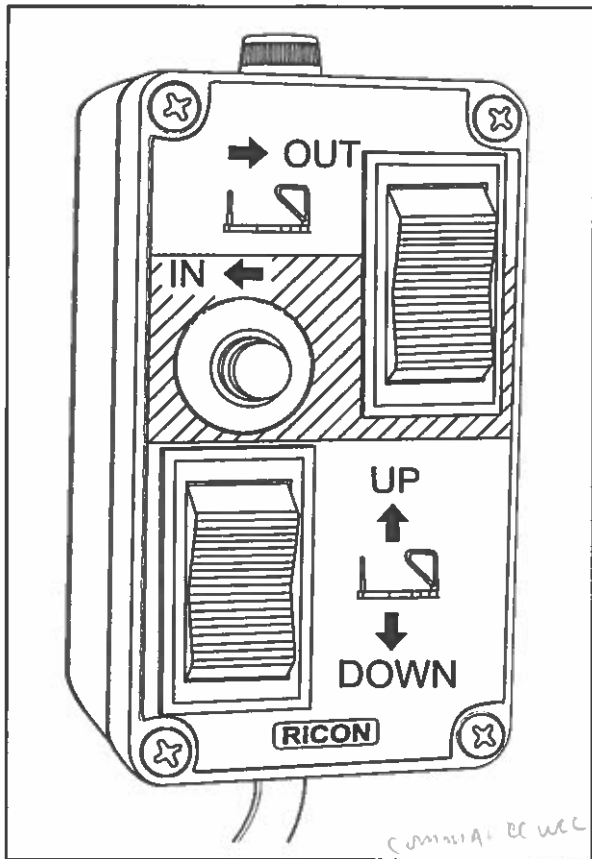


FIGURE 24: Control pendant of the wheelchair lift.

Note: The lift is equipped with a feature that removes electrical power to the lift when it is not in use. The power indicator contained on the control pendant shows when this power is supplied and illuminates only when the lift is in operation.

When the upper wheelchair lift door is open:

- The parking brake is applied automatically (if not already on);
- The WCL door ajar telltale illuminates in the dash;
- A halogen light located inside the vehicle illuminates the entrance of the wheelchair door.

Warning: Be sure not to stand in front of the wheelchair lift upper door when turning the switch to ON.

To enter vehicle

1. Run engine, put the transmission to the neutral position, apply parking brakes and put WCL master switch to the ON position.
2. **Deploy platform:** Press and hold the →/OUT switch until the lift is fully deployed.
3. **Raise Handrails:** Raise RIGHT handrail until slam lock engages then raise LEFT handrail until slam lock engages.
4. Make sure occupant restraint belt is fastened.
5. **Lower Platform:** Press and hold the ↓/DOWN switch until the platform reaches ground level and the rollstop opens completely.
6. Release occupant restraint belt.
7. **Board Platform:** Position wheelchair, facing outward if possible, in centre of platform and lock wheelchair brakes.

Note: Standees should stand in centre of platform and firmly grasp handrails.

8. Fasten occupant restraint belt.
9. **Raise platform:** Press and hold the ↑/UP switch until platform stops at vehicle floor level.
10. **Exit platform:** Carefully exit platform.
11. Release occupant restraint belt.
12. **Lower handrails:** Raise LEFT slam lock handle and lower LEFT handrail to platform. Raise RIGHT slam lock handle and lower RIGHT handrail.
13. **Stow platform:** Press and hold ←/IN switch and the red IN-LOCKOUT switch until the lift is fully stowed. The lift will raise or lower to the proper stowing level and retract into the vehicle.

To exit vehicle

1. Run engine, put the transmission to the neutral position, apply parking brakes and put WCL master switch to the ON position.
 2. **Deploy platform:** Press and hold the →/OUT switch until the lift is fully deployed.
 3. **Raise handrails:** Raise RIGHT handrail until slam lock engages then raise LEFT handrail until slam lock engages.
 4. Make sure occupant restraint belt is fastened.
 5. **Raise platform:** Press and hold the ↑/UP switch until platform stops at vehicle floor level.
 6. **Board platform:** Position wheelchair, facing outward if possible, in centre of platform and LOCK WHEELCHAIR BRAKES.
- Note:** Standees should stand in centre of platform and firmly grasp handrails.
7. **Lower platform:** Press and hold the ↓/DOWN switch until the platform reaches ground level and the rollstop opens completely.
 8. Release occupant restraint belt.
 9. **Exit platform:** Carefully exit platform.
 10. **Lower handrails:** Raise LEFT slam lock handle and lower LEFT handrail to platform. Raise RIGHT slam lock handle and lower RIGHT handrail.
 11. **Stow platform:** Press and hold ←/IN switch and the red IN_LOCKOUT switch until the lift is fully stowed. The lift will raise or lower to the proper stowing level and retract into the vehicle.

MANUAL/EMERGENCY OPERATION

In the event the lift becomes inoperable under its electrical power, it can be operated manually as follows:

To manually deploy the platform

1. Allow enough space for lift operation and passenger boarding. If a break down situation exists and the vehicle cannot be moved so that the lift system can be operated safely, the operator must summon emergency

assistance to move the vehicle before operating the lift.

2. Fully open vehicle doors. Ensure that there are no obstacles in the path of the lift.
3. At the left-side of the lift, raise and hold the stow-loc piston UP.

Warning: Do not attempt to manually deploy or stow the lift using less than two people. Manually deploying and/or stowing of this lift requires forces greater than 100 lbs.

Warning: Ensure that the person or object holding the stow-loc piston is not in the path of the lift platform or frame during this operation.

Warning: To manually deploy the lift platform, a large force is required to overcome the torque clutch initial resistance. After the lift starts moving outward, sustain a constant force until the lift reaches the deployed position.

4. With ONE PERSON ON EACH SIDE of the lift to prevent mechanical binding, grasp the handrails and pull firmly. Best results are attained by starting the deployment with a sharp tug and sustaining a constant pull until the lift is all the way out against the carriage stops.

To manually raise the platform

Insert the pump handle extension onto manual backup pump release valve. Make sure the notches at the end of the handle are fully engaged by the release valve pin. Twist the handle CLOCKWISE until lightly-snug and remove.

Caution: During manual raising of the lift, do not raise the platform more than 1-1/2" above the vehicle floor level. Any excessive travel will make it difficult to enter the platform and/or damage the lift bridgeplate actuator. The outer edge of the bridge plate must rest squarely on the vehicle floor.

Insert handle extension into manual backup pump handle socket. Move pump handle in the appropriate directions to raise the platform to the vehicle floor level.

CONTROLS/INSTRUMENTS

The lift passenger and attendant the instructions to ENTER or EXIT the vehicle, as previously described.

To manually lower the platform

Caution: Do not turn pump release valve more than ¼-turn COUNTER-CLOCKWISE. The valve is totally removable which will disable all automatic and manual UP/DOWN functions.

Insert the pump handle extension onto manual backup pump release valve. Make sure the notches at the end of the handle are fully engaged by the release valve pin. Slowly twist the handle ¼-turn COUNTER-CLOCKWISE until the platform begins to lower.

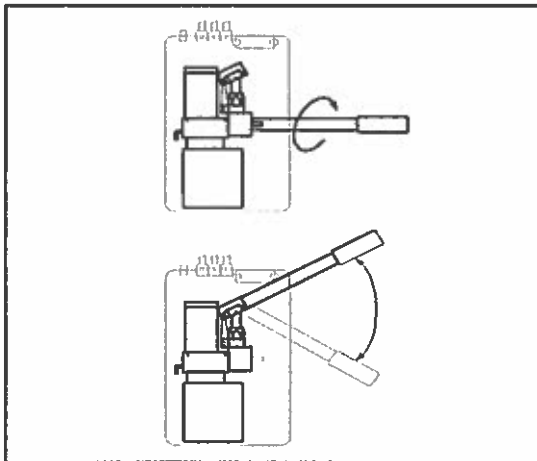


FIGURE 25: Lift operation – Platform manual raising

Allow the platform to reach ground level.

Insert the pump handle extension onto manual backup release valve. Twist the handle CLOCKWISE until lightly-snug and remove.

Using the rollstop manual control knob and one hand on the rollstop, OPEN the rollstop.

The attendant and lift passenger should follow the instructions to ENTER or EXIT the vehicle, as described previously.

To manually stow the platform

Raise or lower the platform to the deploy/stow position, the platform frame must be parallel to the side of the lift enclosure. If the exact position cannot be obtained, slightly low is preferred to slightly high.

Using the rollstop manual control knob and one hand on the rollstop, close the rollstop until it latches.

Warning: Manually deploying and/or stowing of this lift requires forces greater than 100 lbs. Do not attempt to manually deploy or stow the lift using less than two people.

Use one person on each side of the lift to prevent mechanical binding.

With fingers up and palms forward, push the platform forcefully to start the lift moving inward. As the lift begins to move inward, maintain a constant pushing motion until the lift comes to rest completely inside the lift enclosure.

Check that the stow-loc plunger is engaged in the top-front of the platform guide block.

To manually stow the lift from ground level

In the likely event there is a hydraulic system failure and the manual backup pump is inoperative, the lift may be stowed as follows by two or more able-bodied persons:

- Raise or lower the platform to the deploy /stow position, the platform frame must be parallel to the side of the lift enclosure. If the exact position cannot be obtained. Slightly low is preferred to slightly high.
- Using the rollstop manual control knob and one hand on the rollstop, close the rollstop until it latches.

Warning: Manually deploying and/or stowing of this lift requires forces greater than 100 lbs. Do not attempt to manually deploy or stow the lift using less than two people.

Warning: The platform is heavy and should be lifted using caution and proper lifting technique. Always lift with legs and not the back when attempting to lift heavy objects.

- Use one person on each side of the lift to prevent mechanical binding.
- With fingers up and palms forward, push the platform forcefully to start the lift moving inward. As the lift begins to move inward, maintain a constant pushing motion until the lift comes to rest completely inside the lift enclosure.

Check that the stow-loc plunger is engaged in the top-front of the platform guide block.

Engine compartment doors

(doors #3 & 10)

For access to the engine compartment, two rear doors and one R.H. side door are provided. To open rear doors, turn lock release handle counterclockwise and pull open doors. Doors are held in open position by a mechanical locking device located at top of each door.

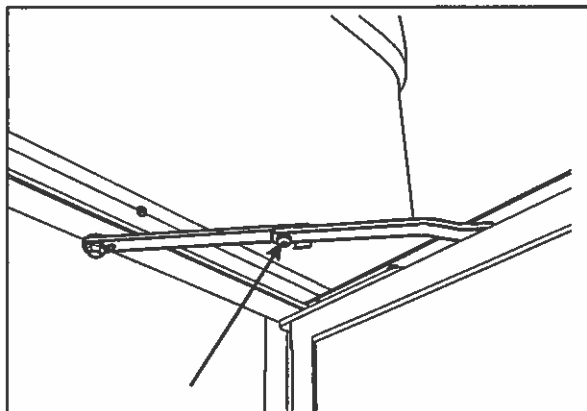


FIGURE 26: Engine door. Pull out to secure, push in to close.
01009A

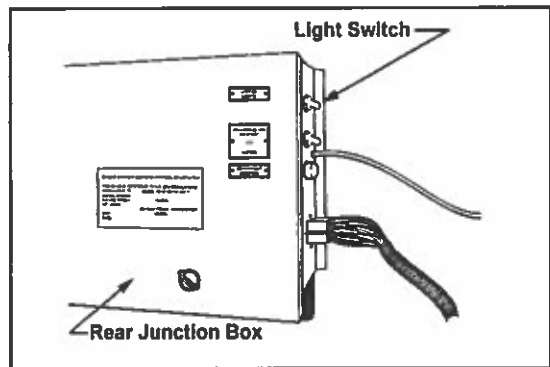


FIGURE 27

01010A

A switch located on R.H. side of rear junction box can be used to actuate the engine compartment lights.

To close doors, first release mechanical locking device by pushing in with fingers, then return doors to closed position; always starting with left (driver's side) door.

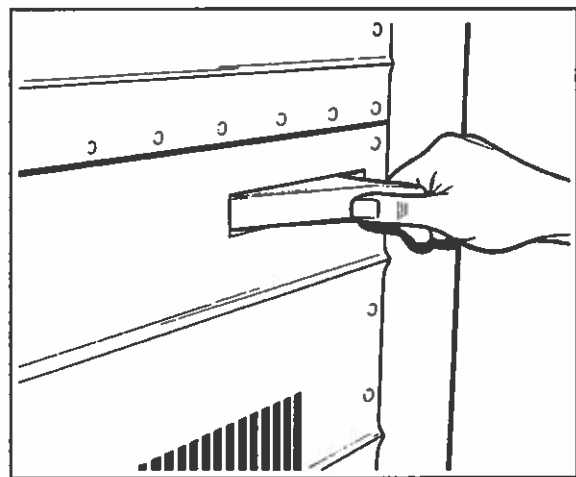


FIGURE 28

18037

The side door can be opened by pulling the release handle and then pulling on the door.

The engine L.H. side compartment door, which opens similarly to the R.H. side compartment door, is designed to provide access to the radiator.

Engine air intake ducts

(items #1)

Engine air intake ducts are not accessible; they are designed only for engine compartment air circulation.

Fuel tank filling door

(door #6)

Fuel filler neck is accessible by simply pulling out door's R.H. side finger notch.

Entrance door

(door #8)

See instructions on page 2-18.

ENGINE COMPARTMENT COMPONENTS

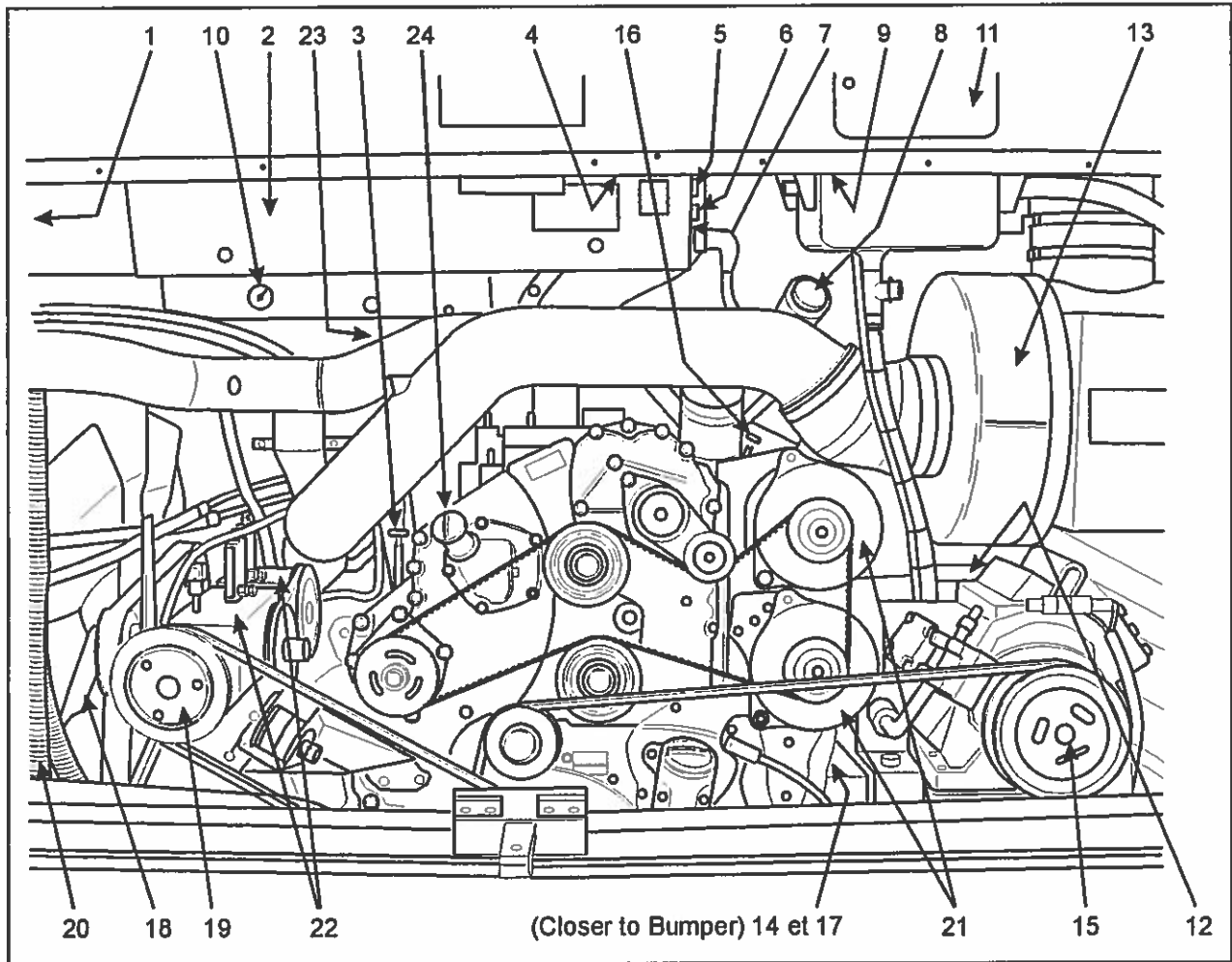


FIGURE 29

01014A

Components identification:

- | | | | |
|----------|---|----------|---|
| 01 | Coolant surge tank | 13 | Engine air cleaner |
| 02 | Rear junction box | 14 | Engine primary fuel filter |
| 03 | Transmission oil dipstick | 15 | A/C compressor (Central system) |
| 04 | Belt tensioner pressure releasing valve | 16 | Engine oil dipstick (Auto. trans. only) |
| 05 | Engine compartment light switch | 17 | Engine secondary fuel filter |
| 06 | Starter selector switch | 18 | Muffler |
| 07 | Rear start push-button switch | 19 | Radiator fan gearbox |
| 08 | Power steering oil tank | 20 | Radiator |
| 09 | Engine oil pressure gauge | 21 | 2 alternators 24V 140A |
| 10 | Engine oil temperature gauge | 22 | A/C compressor (Auxiliary system) |
| 11 | Engine oil reserve tank | 23 | Fire detector |
| 12 | Preheater (Webasto) | 24 | Engine oil filler cap |

Baggage compartment
(doors #5)

An elect. door locking system is installed on all baggage compartment doors. The switch is located on the L.H. side control panel (see item # 3 on page 2-3). Push up rocker switch to unlock the doors and push down to lock. An indicator light will illuminate on dashboard if one (1) or several baggage compartment doors are unlocked.

The baggage compartment doors may also be locked or unlocked from outside using the key provided (see "KEYS" on page 2-1)

To open a baggage compartment door, insert fingers under lower edge of operating handle, pull out and up to unlatch door, grab handle rod and pull up compartment door. The opening action is assisted by gas cylinders which also hold the door in the open position.

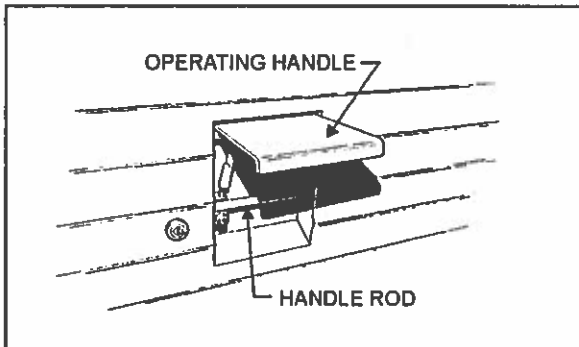


FIGURE 30 18043

Opening of baggage door will actuate a microswitch that will turn on the compartment lights.

NOTE: In case of malfunction or special conditions, use the safety lock to keep the door securely opened.

To close a baggage compartment door, first release safety lock, then pull handle rod out and down as far as door will allow, then push down handle to complete procedure and latch door.

WARNING: Always open and close baggage compartment doors using the handle rod ONLY. Keep hands off all door edges.

CAUTION: Do not slam baggage compartment doors. This can only damage door weather stripping and/or locking mechanism.

NOTE: To prevent theft and/or vandalism, always lock baggage doors before leaving vehicle.

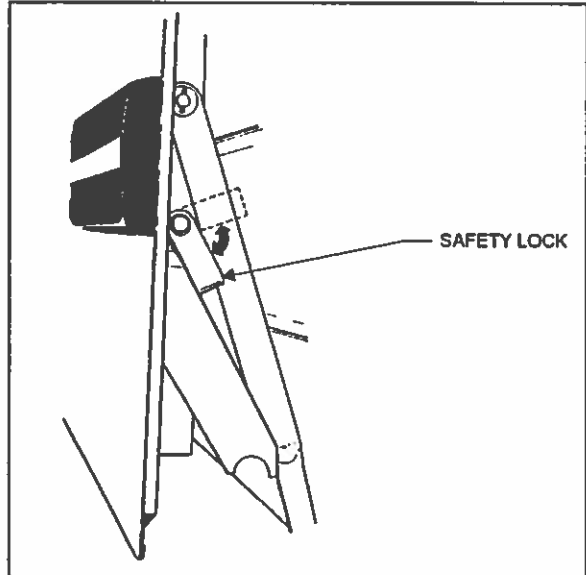


FIGURE 31 18038

Spare wheel & tire compartment
(door #12)

The front bumper is of the "reclining-type". To open, carefully remove the large bolt at each end using the wheel nut wrench, then slowly lower the bumper (see also page 4-15).

WARNING: This compartment has not been designed for storage. Never leave any loose objects in this area since they may interfere with steering linkage mechanism.

Additional care should be taken when opening this compartment since bumper weights 100 lbs (45 kg).

CAUTION: After compartment panel has been secured, the two (2) bumper retaining bolts should be checked to make sure they are tightly fastened.

A/C & heating and Condenser compartment doors
(doors # 7 & 16)

The A/C & heating and Condenser compartment doors can be opened manually or mechanically, depending on options. Open the door manually by first, removing the "Phillips" retaining screws (qty = 2) and then pulling on side of door where screws are located.

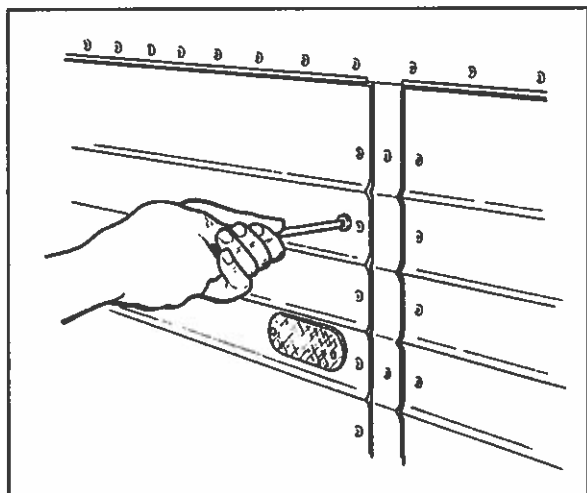


FIGURE 32 18039
 Open the door mechanically by first opening the Baggage Compartment located aft of A/C or Condenser Compartment, then pull on door knob (see fig. below).

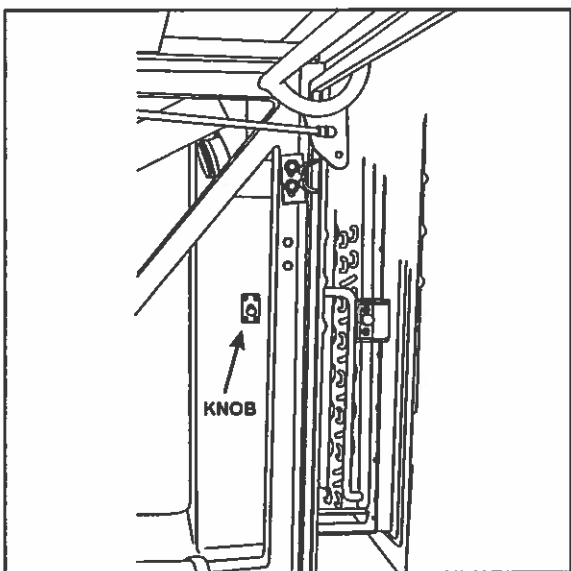


FIGURE 33 18056

Service doors

(doors #2,9,11,13 & 14)

Service doors can be opened by turning the slotted head "Dzus" fasteners 1/4 turn counterclockwise and then pulling on the door.

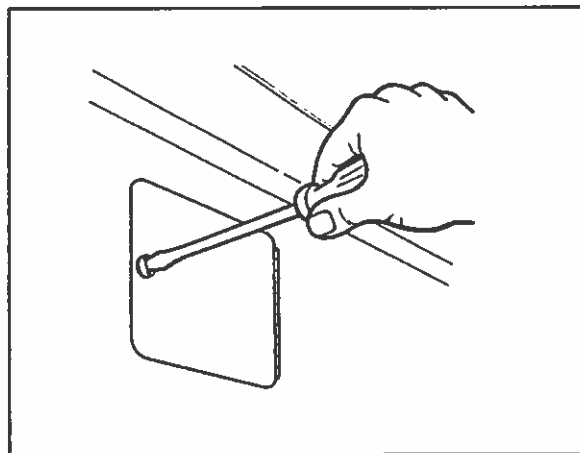


FIGURE 34 18044
 Doors #13 & 14 are each provided with a microswitch which when actuated, will turn on compartment light.

CAUTION: Special care must be taken not to damage the paint around the "Dzus" fasteners when using a screwdriver or a coin.

Battery compartment

(access through door #5 with *)

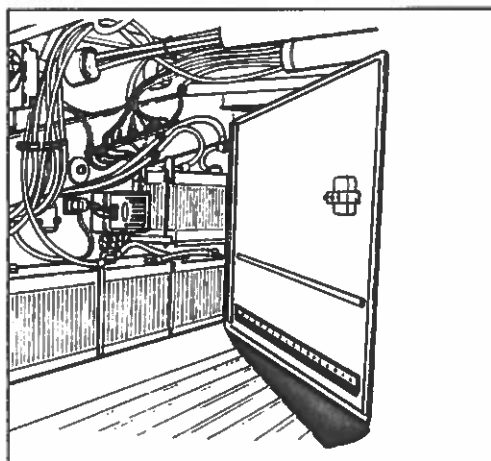


FIGURE 35 06103

Batteries are accessible by means of an access door which is located on the back wall of the rear baggage compartment (#5*). To open battery access door, simply take out handle from it's cavity, turn 1/4 turn counterclockwise and pull on the handle.

INTERIOR COMPARTMENTS

Parcel racks

Passenger carry on luggage is stored in overhead compartments on each side of the coach.

To open the closed-type parcel racks, pull the door handle up to release the latch, then lift the door open. A pressurized cylinder mechanically assists in opening the door and also holds it open.

Fire Hatchet

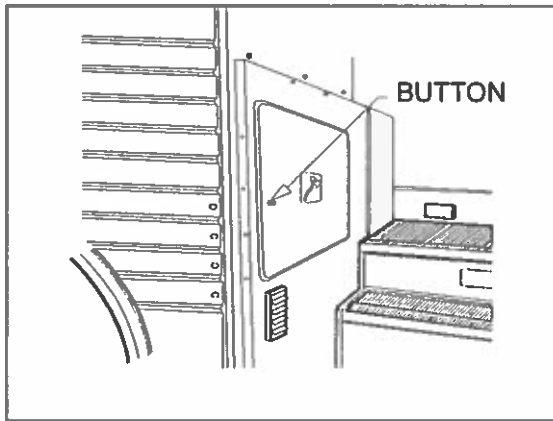


FIGURE 36

23016

To open access door, turn button.

ACCESSORIES

Driver's window

Pull handle towards you to unlock, then slide window open. Reverse operation to close window.

Destination Signs

Two electronic type destination signs are installed on the vehicle. A large character front destination sign is installed above the front windshield and another one is located in the top portion of the front curbside passenger side window.

The destination sign must be programmed with a computer connected to the RS-232 connector prior to first use. Follow the instructions on the computer disk to install and run the software.

To change the destination, depress the selecting switches until the desired destination appears in the Liquid Crystal Display. It is also possible to use the remote control to change the desired location. The remote control is located near the left corner of the windshield.

GO TRANSIT – DESTINATION SIGN SYSTEM

The signs (Front and Side), displays only the messages indicated on the ODK. The ODK (Operator Display Keyboard) allows selection of destination messages for the bus signs.

COMPONENTS DESCRIPTION

ODK (ST-200)

The ODK is equipped with a backlit LCD display screen, with 4 lines of 20 characters, showing the destination sign message. This unit also contains a keyboard to enable selection messages. The ODK is considered a dumb terminal.

This ODK is linked to the signs by a serial RS-232 port with the following characteristics: 9600 bauds, non parity, 8 data bits, 1 stop bit, 1 start bit.

Front Sign

This unit has 15 characters at 6.1" in height (mosaic). The displayed message alternates between the "destination" and the "route". The destination is displayed for 3.0 seconds, followed with the route message scrolling from right to left, if there are more than 15 characters.

The Front Sign (master) directs the destination & the route messages to the Side (slave) Sign. This is done by a J1708 link at 9600 bauds, non parity, 8 data bits, 1 stop bit, 1 start bit.

The Front Sign contains the downloaded destination message database in FEPRAM memory.

The last destination message displayed is stored in EEPROM memory. Therefore, after turning the power OFF and then back on, the system will display the last destination message.

Maximum capacity of the CPU card:

1536 different messages = (98304 memory spaces FEPRAM / 64 spaces per destination message)

Side Sign

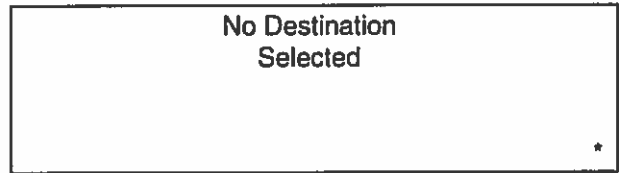
This unit has 12 characters at 3.1" in height (mosaic). The destination and route messages scroll from right to left.

UTILIZATION

Utilizing the ODK

Note : The word "destination" is used to define the destination and route messages for a particular run.

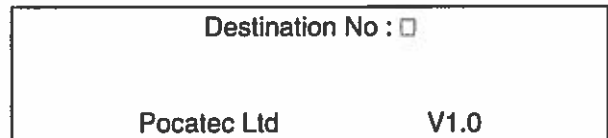
Normally, the ODK displays the selected destination message. If no destination message is selected since the last database download, the signs will display nothing and the ODK will have:



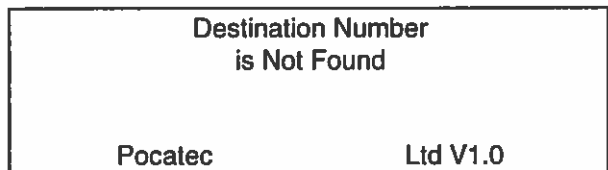
The "*" symbol on the bottom right of the ODK screen, indicates the actual content of the signs.

To start the selection of a new destination message number, enter the first character of the message number. Enter the number of the required destination message, 1 to 3 characters (code ASCII) using the keyboard. To confirm your entry, press "ACCEPT". If, after one minute, the "ACCEPT" button was not pressed, the system cancels the present entry, and returns to the previous selected destination message. If no character is entered, this also returns the ODK screen to the previous selected destination message.

Below, is what the ODK screen displays:



If the number of the destination message entered is NOT in the downloaded database, the system returns to the previously selected destination message and, for a short moment, the ODK displays:



The cursor □ identifies the current position or the next character entry.

the "←" key, deletes the current position character and moves towards the preceding position.

the "↑" and "↓" scroll keys, allow user to scan the database and choose the required destination message number. To confirm selection, press "ACCEPT".

The "CANCEL" key allows, at any time, to undo the current entry. The system returns to the previously selected destination message and, for a short moment, the ODK displays:

OPERATION CANCELLED	
Pocatec	Ltd V1.0

At any time, after a delay of one minute with no keypad entry, the system cancels the current entry and, returns to the previously selected destination message.

The ODK display screen has a limited characters set. Here is a list of character and how they are displayed on the keypad:

Ç = C	û, û, ú, ú = u	ë, ê, è, é = e	ã, â, à, á, á = a
ç = c	Û = u	É = E	Ã, Ã = A
ĩ, î, ï, í = i	õ, ô, ò, ó = o	Õ = O	ÿ = y
ñ = n	Ñ = N		

All other non-recognized characters are displayed as "?".

Downloading New Database of Messages

The destination messages are created using the MTU software V2.0 installed on your computer.

Once the database is created, you are ready to download the information to the Front (master) Sign. To begin database transfer, keep the ODK "CANCEL" button pressed while the system is powering up and until the screen displays:

START THE PC DATABASE Download	
Pocatec	Ltd V1.0

Next, disconnect the ODK from the Front Sign, and connect the computer. With the MTU software V2.0, download the new database. During the download, communication with the Side Sign is stopped. When the download is complete, reconnect the ODK.

If the database was NOT properly transferred, the ODK will display:

THE DATABASE IS NOT COMPLETE.	
Pocatec	Ltd V1.0

In this case, the system waits until the "ACCEPT" button is pressed, which re-starts the download. Disconnect the ODK, and connect the PC as described previously, then resend the database. The system will remain in this mode for as long as the download is not properly received.

When the download is properly received, the ODK screen displays:

THE DATABASE IS CORRECTLY Received	
Pocatec	Ltd V1.0

Press of the "ACCEPT" button to return to normal function.

Note : After a download of a new database, the system no longer retains the last message, therefore required message must be re-entered.

INTERNAL STRUCTURE DATABASE

Each Message contains:

Message ID	3 bytes
Destination	15 bytes
Route	46 bytes
Total:	64 bytes

If you have any questions, please contact Brad Smith at 613-258-1608.

Driver's coat hook

Driver's coat hook is located on post at rear upper left side of driver.

WARNING: Make sure coat is securely hooked and that it will not impair driver vision and movement.

Blinds

The driver's area is supplied with three blinds: one (1) on driver's side window and two (2) on windshield.

To operate driver side window and L.H. windshield blinds, pull down tab to the required position and then release; the blind will remain in position. To raise blind, pull on release cord on it's L.H. side.

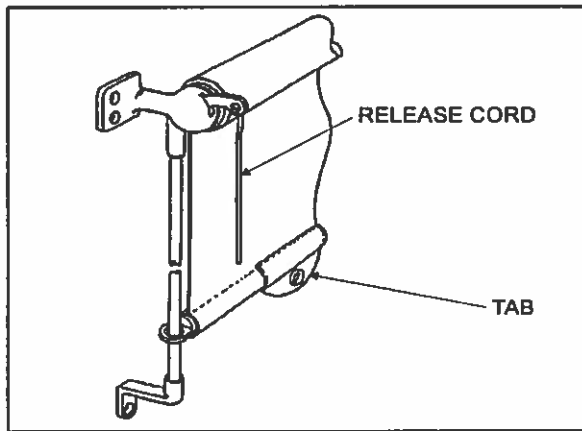


FIGURE 37

23019

To operate R.H. windshield blind, pull down tab and position bar in hooks on central beam. To raise blind, simply unhook bar then slowly lift blind.

Adjustable A/C & heating louvers

The vehicle is supplied with five (5) adjustable A/C & heating louvers. These can be adjusted manually so the heated or cooled air flow can be directed as desired.

Adjustable louvers are located as follows:

- One on L.H. side control panel.
- Two on L.H. side of driver's seat.
- One on center console.
- One over steps, near entrance door.

NOTE: The louver on L.H. side control panel can be used to defrost driver's window or airflow can be directed towards driver.

Mud flaps & splash guards

Mud flaps are installed behind front and tag axle wheels in order to minimize dirt on the lower panels of vehicle and to reduce stone projections on vehicles behind you. Optional splash guards may also have been installed behind each dual wheel of the drive axle in order to reduce stone projections on tag axle wheels.

Stop/Service/Reading lamp

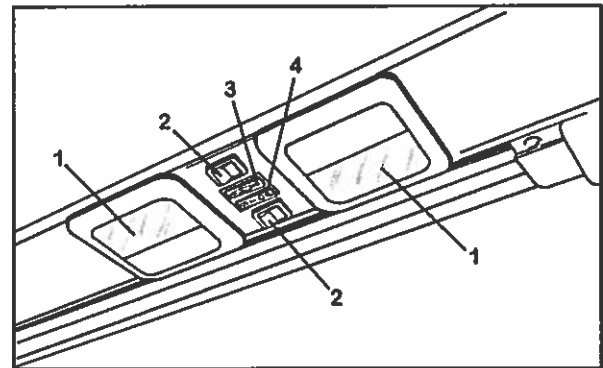


FIGURE 38

23022A

- 1. Reading lamp**
Can be adjusted manually to desired angle.
- 2. Reading lamp switch**
Press to turn reading lamp ON or OFF.
- 3. Blank switch**

4. Driver's signal switch

Depress rocker switch to activate stop request panel and buzzer.

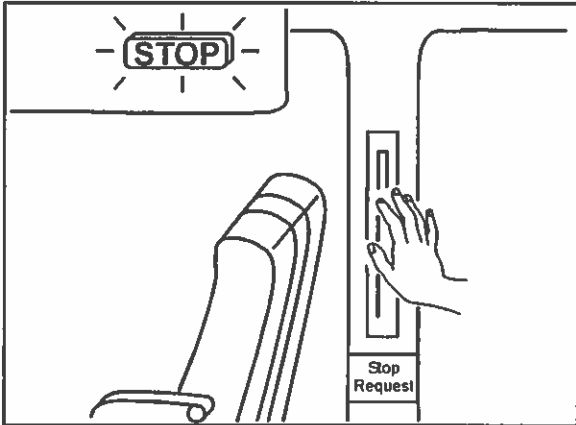


FIGURE 39

A "Stop Requested" yellow tactile band is placed between each windows of the bus. When this band is pressed the stop request panel and a buzzer is activated.

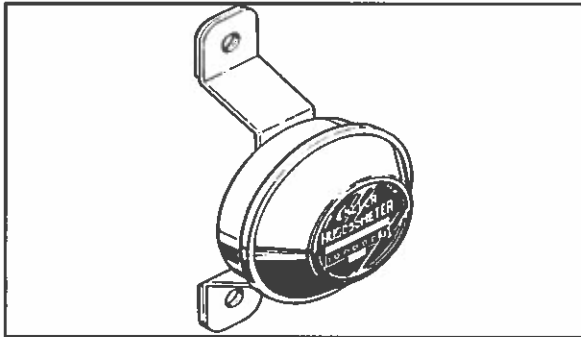


FIGURE 40

Hubodometer

A wheel hubodometer is installed on the R.H. side of the drive axle. It indicates the total distance in miles or kilometers covered by the coach since leaving the factory, including road testing.

Spare Parts Kit

A Spare Parts Kit is supplied with your vehicle; parts are stored in a cardboard box located inside the forward baggage compartment. Kit contents depend on certain vehicle options as shown below:

1 = Series 60 Engine + Full A/C System.

2 = Series 60 Engine + Full A/C System + 110 volt interior lighting.

Part No.	Description	Quantity	
		Option 1	Option 2
561122	Bulb, 24V, 2W	2	2
561166	Bulb #464, 24V, 3W	2	2
562278	Bulb, 24V, 10W	4	4
561707	Relay, 24V	1	1
561797	Circuit Breaker, 3 Amp	1	1
561790	Circuit Breaker, 6 Amp	1	1
561791	Circuit Breaker, 8 Amp	1	1
561792	Circuit Breaker, 10 Amp	1	1
561793	Circuit Breaker, 15 Amp	1	1
561794	Circuit Breaker, 20 Amp	1	1
561795	Circuit Breaker, 25 Amp	1	1
561880	Light Bulb, 12V, 21W	3	3
561881	Light Bulb, 12V, 10W	2	2
561882	Halogen Bulb, 12V, 55W	1	1
506690	V-Belt, AX-74	3	3
506688	Belt, Multi-V	1	1
506669	Belt, Poly V12	1	1
506664	Belt, BX-97	1	1
061204	Cable assy (110 volt interior lighting)		1
506748	Belt, AX-72		
506691	V-Belt, AX-73		

PREHEATING SYSTEM TIMERS (AUXILIARY)

The timer, located on R.H. lateral, is used to program the starting and stopping time of the preheating system. The system indicator light, located on dashboard (see item #25 on page 2-5) illuminates when system is functional. The following offers system descriptions for both timers.

CAUTION: *The preheating system should not operate for more than one hour before starting engine as this could discharge batteries.*

WARNING: *Preheating system must not operate when vehicle is parked inside or during fuel fill stops.*

NOTE: *Preheating system uses the same fuel as the engine.*

In case of failure:

1. Shut off and turn on again.
2. Check main circuit breaker and overheating switch (Espar) or overheat fuse (Webasto).
3. Have system repaired in a specialized shop.

Preheating System

The preheater is located in the rear engine compartment.

This Auxiliary Preheating System is used for preheating and retaining the heat of water-cooled engines. It can be used before starting the engine to ease it's starting and to provide immediate inside heat upon operation of the heating system. It can also be used with engine running to maintain coolant heat and maintain the set temperature inside vehicle.

It's automaticaly "turn on" when the passenger heat switch is press on.

The heater operates independently from the vehicle engine. It is connected to the cooling and heating circuits, the fuel system and the electrical system of the vehicle.

The pilot lamp turns on when the heater is switched on. Combustion air flows in to flush out the combustion chamber and the water circulation pump is put into operation. The fuel metering pump conveys fuel in precise doses to the combustion chamber where fuel and combustion air form a combustible mixture which is ignited by the glow plug.

Once the flame sensor has signaled to the control unit that combustion has taken place correctly, the glow spark plug and ignition coil are switched off.

The hot combustion gases are diverted at the end of the flame pipe, then pass through the indirect heating surfaces of the heat exchanger and transmit their heat to the water passing through the heat exchanger.

The heat is thermostatically controlled and operates intermittently, i.e. the switched-on times of the burner vary depending on the heat requirement. The water temperature depends on the setting of the built-in water thermostat.

The water circulation pump remains in operation as long as the heater is operating, even in the regulation intervals and during the delayed cutout of the switched-off heater. The pump can also be operated independently from the heater by means of an appropriate circuit. The heater can be switched on at any time, even during the delayed cutout period. Ignition takes place once this delay time is over.

When the heater is switched off, the fuel supply is interrupted. The flame goes out, and at the same time a delayed cutout of some 2.5 minutes begins. The combustion air still flowing flushes the remaining combustion gases out of the chamber and cools off the hot parts on the exhaust side of the heat exchanger, while the water circulation pump, still running, transmits the heat present in the heat exchanger, thus preventing local overheats.

Once the delayed cutout time is over, both the combustion air blower and the water circulation pump switch off automatically. A cutout will take place in case of any failure of the preheater.

Webasto

Switch on the heater. The operation indicator lamp comes on and the heater motor and circulating pump begin to run. After about 10-25 seconds the solenoid valve opens and fuel is sprayed into the combustion chamber. At the same time, the electronic ignition unit produces high voltage (8000 V) and the mixture of fuel and air in the combustion chamber is ignited by the spark on the ignition electrodes. The flame is indicated by the flame detector, then the electronic ignition unit stops producing high voltage and combustion continues by itself (spark on electrodes is required only to ignite the flame). At this moment, the heater is working and producing heat.

If the heater is switched off by the on/off switch, the solenoid valve interrupts fuel supply, combustion stops and indicator lamp turns off. Combustion air fan still blows air, cleaning the combustion chamber of any fumes and cooling down the combustion chamber. Coolant circulation pumps coolant, making a purge cycle for approximately 2-3 minutes, thus protecting the heater against overheating.

If the heater is not switched off by the on/off switch, the control thermostat will switch off the heater when coolant temperature reaches $165^{\circ} \pm 6^{\circ}\text{F}$ ($75^{\circ} \pm 3^{\circ}\text{C}$) and turns it on at $154^{\circ} \pm 9^{\circ}\text{F}$ ($68^{\circ} \pm 5^{\circ}\text{C}$). During this time, the heater (combustion) is off and the indication lamp and coolant pump are on. Combustion air fan blows air for 2-3 minutes and then turns off.

Preheating System Timer

The timer, located on R.H. lateral console is used to program the starting and stopping time of the preheating system. The system indicator light, located on the timer, illuminates when the system is functional.

Caution: The preheating system should not operate for more than one hour before starting engine as this could discharge batteries.

Warning: Preheating system must not operate when vehicle is parked inside or during fuel fill stops.

Note: Preheating system uses the same fuel as the engine.

In case of failure:

1. Shut off and turn on again.
2. Check main circuit breaker and overheating switch (Espar) or overheat fuse (Webasto).
3. Have system repaired in a specialized shop.

Timer operating instructions (Webasto)

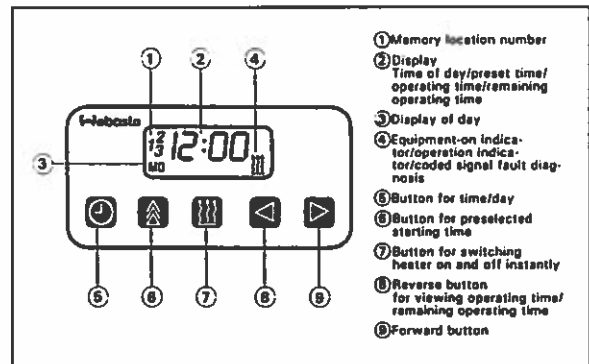


Figure 41: WEBASTO

18327

These instructions refer to the timer illustrated in figure 41. They are the same instructions provided in the Webasto 1529 instruction booklet, provided with your vehicle.

Remaining Operating Time

The remaining operating time refers to the period of time the heater still continues to remain in operation. It may be changed while the heater is in operation.

Setting the Digital Timer

After the power has been connected, all symbols on the digital display are flashing. The time of the day and the day of the week must be set.

All flashing symbols of the timer can be set by means of the Forward (9) or Reverse (8) buttons.

When buttons (8) and (9) are pressed for more than 2 seconds, the quick digit advance mode is activated.

Setting the Time and Day of the Week

1. Press button (5) for more than 2 seconds (time display flashes).
2. Press (8) or (9) button to set the time of day.
3. Wait 5 seconds. The time of day is stored (time of week flashes).
4. Press (8) or (9) button to set the correct day of week.
5. Wait 5 seconds. The day of week is stored.

Viewing the Time (Ignition ON)

Continuous display of current time and day of the week.

Viewing the Time (Ignition OFF)

Briefly press button (5) to display current time and day for 5 seconds.

Switching Heater ON (Instant Heating)**With Ignition ON:**

Press button (7). Heater is switched on (continuous operation) and continues to operate until button (7) is pressed again or ignition is switched off.

Note: *If the ignition is switched off while heater is in operation, the remaining operating time of 5 minutes flashes on the display and the heater will continue to operate for this period of time.*

With Ignition OFF:

Press button (7). Heater is switched on for preset operating time (the factory-set heater operating duration is 60 minutes)

Switching Heater OFF

Press button (7). The heater starts its after-run cycle and switches off thereafter.

Presetting Operating Duration

1. Press button (6). Memory location number flashes.

Note: *By repeatedly pressing button (6), starting time 2 or 3 can be preset.*

2. Press button (8) or (9) until correct startup time is set.
3. Wait 5 seconds. Preset starting time is stored and day of week flashes.
4. Press button (8) or (9) to select the correct startup day of week.
5. Wait 5 seconds. The startup day of week is stored.

The number of memory location remains on the display. The timer is now in the programmed mode and will switch the heater in a the preset time.

Note: *We recommend that memory locations 1 and 2 be used for presetting times within 24 hours of setting the timer. Memory location 3 can be used for a starting time within the next 7 days of setting the timer.*

Recalling Preset Times

Press (6) repeatedly until the desired memory location number and preset time are displayed.

Canceling Preset Time

Press button (6) repeatedly until no more memory location number is visible on the display.

Setting Operating Time

1. With heater off, press button (8). Operating time flashes.
2. Press button (8) or (9) to set the operating time (between 1 and 120 minutes)
3. Wait 5 seconds. Operating time is stored.

The heater remains in operation for the preset time (except for continuous operation).

Setting the Remaining Operating Time

1. With heater in operation, press button (8). Remaining operating time flashes.
2. Set remaining time with button (8) or (9).
3. Wait 5 seconds. Remaining operating time is stored.

Fault Diagnosis by Coded Light Signals

On heaters equipped with a fault diagnosis system using coded light signals, the equipment-on indicator/operation indicator flashes. Please consult your Webasto dealer.

Caution: *When welding on the vehicle, disconnect the preheater module connector in order to protect this system from voltage surges.*

Caution: *To avoid running down the batteries, do not turn on the preheating system for more than one hour before starting the engine.*

Warning: *The preheating system uses the same fuel as the engine. Do not operate in a building or while refueling. Operate only in a well-ventilated area.*



BRAKES

There are two (2) brake systems on your vehicle, the service brakes and the combination emergency & parking brakes, both of which are described below.

Your vehicle is also supplied with ABS brakes (antilock braking system) and an additional retardation system. ABS brakes system information is available in this section on page 3-2. For information regarding the AUTOMATIC TRANSMISSION OUTPUT RETARDER, refer to page 4-4.

Service brakes

The service brakes use air pressure from a foot pedal-operated master cylinder to actuate cylinders which apply the brakes at each wheel. The air system is divided into two (2) independent circuits to isolate front brakes from rear brakes, thus providing safe braking if one (1) circuit fails. Front axle brakes operate from the secondary air system, while brakes on both the drive axle and tag axle operate from the primary air system.

NOTE: *The tag axle service brakes operate only when the axle is in normal ride position (loaded & down).*

Furthermore, the brake application sequence, which starts with rear brakes and then front brakes, provides uniform braking on slippery surfaces.

For safe brake effectiveness, vehicle air system pressure should reach at least 100 psi (688 kPa) in both primary and secondary air circuits. (see items #14 & 18 on page 2-6)

A warning light turns on (see Dashboard items #7 & 8, page 2-6) and a buzzer sounds when air pressure in one of the primary or secondary circuits drops below 60 psi (413 kPa). Vehicle must then be stopped and cause of pressure loss must be corrected before further operation.

WARNING: *"FANNING" or "PUMPING" brake pedal is not recommended. This practice will not increase brake system effectiveness, but will instead waste air and thereby reduce brake effectiveness.*

"RIDING" the brake by resting foot on brake pedal when not braking can cause abnormally high brake temperatures, excessive lining wear, possible damage to the brake drums, and loss of brake efficiency.

Combination emergency and parking brakes

Emergency brakes

In normal operation, if air pressure in both brake circuits drops below approximately 40 psi (276 kPa), spring-loaded emergency parking brakes will immediately be applied at full capacity on drive axle wheels and also on tag axle wheels to stop. In an extreme condition, the emergency brakes might be applied quite rapidly. Vehicle must then be stopped and cause of pressure loss must be corrected before resuming operation.

Parking brakes

Spring-loaded parking brakes are manually applied by pulling up the control valve knob, located on R.H. lateral console (see page 2-11).

They are not designed to be used as service brakes. In normal driving conditions, control valve knob must be pushed all the way down.

NOTE: *Parking brakes can supplement service brakes to stop the vehicle in an emergency condition only. The stopping distance will be considerably longer than with a normal brake application.*

Before releasing parking brakes by pushing down control valve knob, pressure gauges should be checked to ensure that brake system air pressure has built up to a minimum of 95 psi (655 kPa).

SAFETY

WARNING: Always apply parking brake before leaving driver's seat.

NOTE: Each time the parking brake is applied and ignition key is turned or left to the "ON" position, the stoplights automatically light up.

Parking brake override

If during normal operation, primary system air pressure drops below 40 psi (276 kPa), spring-loaded parking brakes will automatically be applied at full capacity on drive axle to stop vehicle. Cause of pressure loss should be determined and corrected before proceeding. The vehicle is equipped with a parking brake release system (Parking brake override) which will allow driving the vehicle for a short period of time to a safe parking area. To operate, push and hold down the control knob with vehicle in motion.

ANTILOCK BRAKING SYSTEM (ABS)

The purpose of the antilock braking system is to preserve the stability and steerability of a vehicle during braking, and to minimize its stopping distance whatever the road conditions.

On slippery roads and in emergency situations, overbraking frequently induces wheel locking. Antilock braking system provides maximum braking performance while maintaining adequate steerability on slippery roads.

Also, on smooth or slippery surfaces, the stopping distance with locked wheels is greatly extended; on rough surfaces however the problem is tire abrasion.

ABS constantly monitors wheel behavior during braking. Sensors on each wheel of front and drive axles continually monitor the wheel speed during braking, transmitting this information to a four-channel electronic processor which senses when a wheel is about to lock. Modulating valves quickly adjust the brake pressure (up to 5 times per second) to prevent wheel from locking. Each wheel is thereby controlled according to the grip available between its tire and the road.

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

CAUTION: On slippery roads, motorists behind you may not be able to brake as fast as you; so whenever possible, give a prior warning by lightly depressing brake pedal several times before braking.

AIR SYSTEM EMERGENCY FILL VALVE

The vehicle is equipped with two air system emergency fill valves to supplement the air system when air pressure is low and engine cannot be operated. The rear valve is located in engine compartment and is accessible from engine R.H. side door: On the vehicle, the valve is positioned next to battery booster block, close to door hinge.

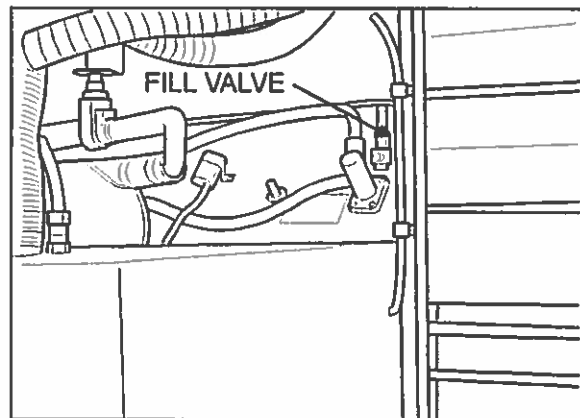


FIGURE 42: XL-40 Rear valve location

12057

The front valve is located in the steering compartment close to R.H. side of door frame.

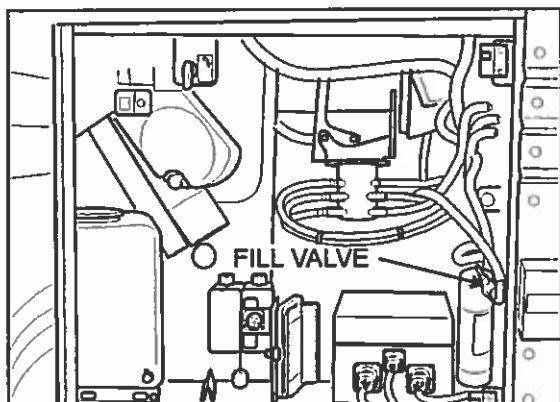


FIGURE 43: Front valve location

12014

These two air system emergency fill valves are fitted with the same valve stems as standard tires, and can be filled by any standard external air supply line.

The rear air system emergency fill valve will supply air for all systems (brakes, suspension and accessories) while the front fill valve will supply air for accessories and suspension only.

CAUTION: Air filled through these two points will pass through the standard air filtering system provided by Prévost. Do not fill air through any other points.

BACK UP ALARM

The back up alarm system serves to warn bystanders of vehicle moving in reverse range. Driver should take extra precautions when backing up. If in doubt, have someone guide you.

KNEELING SYSTEM

This system enables passengers to get on and off the coach without any difficulty by lowering the front end. The system operates rapidly; taking only 5 seconds to lower and 7 seconds to raise.

NOTE: This coach is equipped with an interlock system which will automatically apply the parking brake when the kneeling system is activated.

To operate, stop the coach, set the transmission to neutral(N), then push down the rocker switch located on the L.H. side control panel (Item #12 on page 2-4). The parking brake will be automatically applied and a warning flasher (item #1 on page 2-6) will indicate that the front of the coach is being lowered.

To raise the front of the coach to its normal height, push up the rocker switch. The front end will rapidly rise up. Release the parking brake, and shift transmission to the desired range.

CAUTION: Avoid parking the coach too close to the sidewalk or other obstacles that could damage the coach during kneeling operations.

NOTE: The kneeling system does not operate when the coach is traveling over 5 mph (8 km/h). Consequently, the driver cannot inadvertently operate the kneeling system at higher speeds.

EMERGENCY EXITS

Side windows

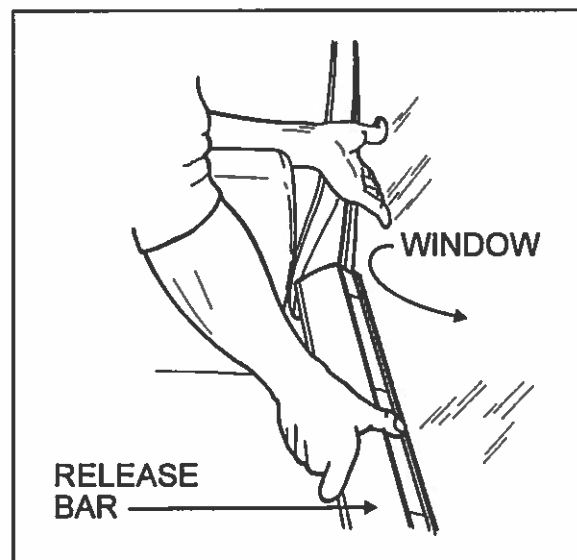


FIGURE 44

18122

Some side passenger windows can be opened from the inside for emergency escape purposes (4 on driver side and 3 on curb side). A decal indicating location of nearest emergency exit

SAFETY

window is affixed at bottom of each side window. The upper section of each emergency side window is equipped with two blue lights that are activated by the exterior lighting switch located on R.H. lower switch panel (item #2 in figure 8, page 2-11).

To open window, slide fingers under release bar, then push out bottom of window. Instruction decals are affixed to the release bar of each emergency exit window.

To close window, lift window release bar and pull window towards you.

CAUTION: All emergency exits should be kept closed during normal operation. Avoid slamming windows shut; this could damage emergency exit system.

Emergency opening of entrance door from the inside

In the event of a malfunction in the front entrance door air lock mechanism, press the door override button located on R.H. lateral console (see item #4 on page 2-11) to release mechanism, and complete the opening procedure by turning the entrance door opening handle counterclockwise.

Emergency roof escape

An emergency escape hatch is located in the roof at the rear of the coach, and is designed to be opened by passengers. Another one is installed at the front of the coach. In case of an emergency, fully push out ventilation hatch, then while depressing black tab towards rear of vehicle, push handle out in the same direction; this will release emergency hatch catch.

NOTE: These instructions are also affixed to escape hatch.

In the event of ventilation systems failure, hatch can be used to provide air circulation, by simply pushing hatch upwards.

CAUTION: If running with roof hatch(es) open, beware of low overhead clearances.

To relatch handle after use, push vent arms upright in "full open vent" position, then insert edge into bracket and pull handle in. Finally,

pull hatch inward, one side at a time.

- 1 Edge
- 2 Handle
- 3 Black tab
- 4 Bracket
- 5 Vent arm

DAY TIME RUNNING LIGHTS

This system turns on automatically the low beams at a lower intensity as soon as engine is started and parking brake is released.

This system will be canceled:

- when engine is stopped
- when parking brake is applied
- when the headlight switch is turned on.

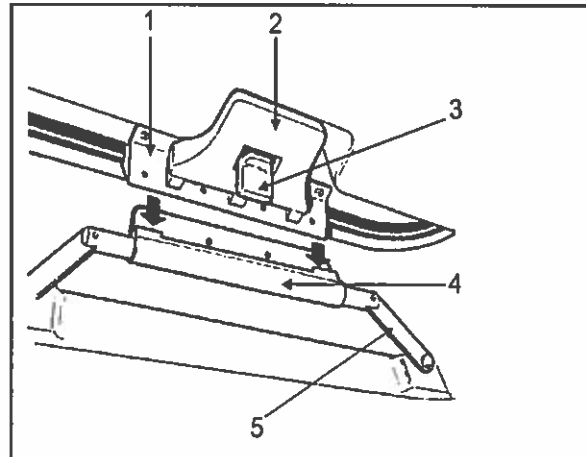


FIGURE 45

18052

WARNING: Never run vehicle at night with these lights only as they have a lesser intensity, and the system does not turn on the marker and clearance lights.

HORNS

Air horns

The air horns can only be used on highways. When the push-button valve located on the floor next to driver's left foot is activated, the valve releases air which sounds the horn.

Electric horns

Use the electric horns in cities and suburban areas. They are activated by simply pushing on button located in the center of steering wheel.

ALARM SYSTEM

As an added protection to indicator lights, Prévost vehicles are equipped with audible alarms to inform the driver of the following operating conditions:

Indicator lights	Audible alarm	Condition
Air primary	Beep	Low air pressure
Air secondary	Beep	Low air pressure
"Do not shift"	Beep	Inhibits shifting of transmission
N/A	Beep	Engine low oil pressure
N/A	Chime	Service button activated by passenger
Front kneeling	Beep	Front kneeling is selected
Tag axle	Beep	Tag axle raised
N/A	Bell ringing	Fire in engine compartment
Lo-oil press	Beep	Engine low oil pressure
N/A	Beep	WCL door open and transmission in speed

NOTE: The alarms for both primary and secondary low air pressure are produced by the same buzzer.

SAFETY EQUIPMENT

The first aid kit is located on the first right baggage compartment.

Two fire extinguishers are located on right baggage compartment, on both sides of the wheelchair lift.

SAFETY

Emergency warning reflectors

A kit of triangular reflectors (Qty=3) is provided to warn approaching motorists of an immobilized vehicle in a Breakdown Situation. This device indicates an Emergency Situation by reflecting the light emanating from a light source. The three reflectors should be placed as illustrated on inside face of box cover. This kit complies with FMVSS 125 (Federal Motor Vehicle Safety Standards).

The Kit is located inside Forward Baggage Compartment and can be removed by simply unscrewing Wing Nut and removing Retaining Rod.

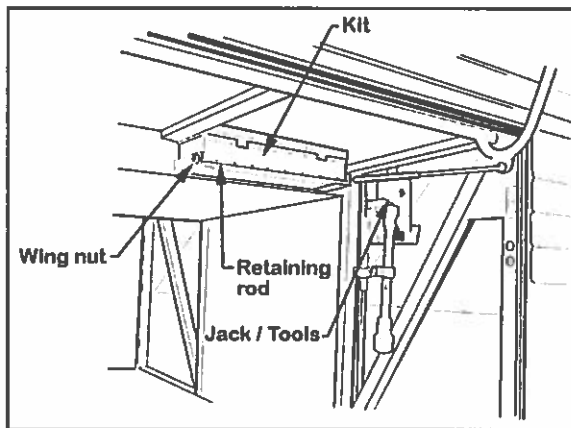


FIGURE 46

23010

Jack/Tools

A kit for jacking vehicle is stored inside Forward Baggage Compartment (See above figure). The kit includes a 12 ton hydraulic jack and a wheel nut wrench.

Fire hatchet

The fire hatchet is stored within the Safety Equipment Compartment (see page 2-32).

SAFETY PRECAUTIONS

To ensure safe and reliable operation, take note of the following safety precautions:

- a) Operation and maintenance of the coach must only be performed by qualified personnel.
- b) Use caution when embarking and disembarking passengers.
- c) Always pay attention to pedestrians passing in front and behind the coach. Always yield to pedestrians at pedestrian walkways.
- d) Inspect the coach before operating (see "DAILY WALK-AROUND INSPECTION" on page 6-14).
- e) Make sure good visibility is maintained at all times. Keep windshields clean and free of obstructions.
- f) Make sure all doors are closed and secured before operating the coach. Before driving, conduct a walk-around inspection to check for security of all baggage compartment doors and equipment access doors.
- g) Adjust the driver's seat so that all controls can be easily reached.
- h) Always wear safety belt when driving.
- i) Check the instrument panel frequently. Do not operate the coach when dials or indicators are not in the normal operating condition.
- j) Switch from high beams to low beams when meeting or following other vehicles within 500 feet (150 meters).
- k) Do not drive over obstacles on the road. Empty cartons, piles of leaves, and snowdrifts could conceal hidden dangers that could damage the coach suspension and/or underbody.
- l) When turning or changing lanes, signal your intention well in advance.
- m) When approaching to make a right turn, reduce spacing between coach and curb to make sure other vehicles cannot pass on the right. Since the coach makes wide turns, allow enough space to make safe turns.
- n) Never leave the coach unattended with the engine running, or with the key in the ignition. Turn off the engine, remove keys and apply the parking brake before leaving the coach.
- o) The service life of the coach depends on the kind of maintenance it receives. Always record any problems and report them immediately to maintenance personnel.
- p) Shut-off engine before fueling, adding oil or performing maintenance or servicing tasks, unless stated otherwise.
- q) Do not run the engine or HVAC system with access doors left open. Close compartment doors before operating any equipment.
- r) Do not remove the surge tank filler cap or the cooling system pressure cap when the engine is hot. Let the engine cool down before removing filler caps.
- s) Fuel is highly flammable and explosive. Do not smoke when refueling. Keep away from open flames or sparks.
- t) Do not attempt to push or pull-start a coach equipped with an automatic transmission. To avoid damaging gears or bearings in manual transmission-equipped coaches, do not push, pull or roll-start in first or reverse gears.
- u) For additional information about safe driving practices, contact the local department of motor vehicles authority.

SAFETY

DEFENSIVE DRIVING

- a) To keep the coach from drifting across lanes during highway driving, always look over the horizon on the road ahead.
- b) Don't stare at the road ahead. Keep your eyes moving. Check all mirrors and dashboard instruments frequently.
- c) Establish eye-to-eye contact with other drivers and with pedestrians. Use headlights, high-beams and low-beams, turn signals and horn(s) as needed.
- d) For city driving, allow a four to six second travel interval between the coach and the vehicle ahead. Increase this travel interval to six to eight seconds for highway driving. Use increased travel interval for night driving and in bad weather.
- e) Adjust your speed according to the road conditions, traffic and visibility. Never exceed the posted speed limits.
- f) If a vehicle is close behind, reduce speed to allow vehicle to pass.
- g) Be prepared to stop when approaching an intersection. The stopping distance of the coach increases with the weight and speed of the coach.
- h) For additional information about defensive driving practices, contact the local department of motor vehicles authority.

Starting and stopping procedures

GENERAL INFORMATION

CAUTION: Read this section of manual before driving vehicle.

Starting engine from driver's compartment

The following procedure is used to start and stop the engine from the driver's compartment.

Starting engine

1. Make sure the starter selector switch in engine compartment is set to the "NORMAL" position and that main battery disconnect switch (see page 2-1) is set to the "ON" position.
2. Make sure the parking brake control valve knob, located on R.H. lateral console, is pulled all the way up, so that the spring-loaded parking brakes are applied.
3. Make sure transmission is in neutral.
4. Turn ignition switch to "START" position, and then release it as soon as engine starts.

NOTE: If engine does not start, ignition switch must be returned to the "OFF" position prior to restarting.

CAUTION: Special precautions are necessary with turbocharged engines to avoid possible turbine damage. After starting, run the engine at low idle for two minutes to allow flowing of lubricant to the turbocharger. Afterwards, run at fast idle and check oil pressure before attempting to drive the vehicle.

Do not engage starter for more than 15 seconds at a time. If engine does not start within 15 seconds, release ignition key and allow starter to cool for one (1) minute before engaging starter again. Continuous use of the starter without allowing a cooling period may damage the starter motor.

With DDEC engines, pressure must not be applied on accelerator pedal before starting. An application

on pedal will induce a fault information to the Electronic Control Unit, thus affecting the fuel system control.

If accelerator pedal is depressed inadvertently, release it and wait approximately 30 seconds before resuming starting procedure.

Stopping engine

1. Apply parking brake then set transmission to the neutral position.
2. Allow engine to run at slow idle for at least two minutes, then shut off engine. This will ensure that the turbine speed has dropped, and the engine exhaust gas temperature is down to approximately 300 °F

CAUTION: Do not shut the engine down directly from high rpm.

If vehicle is parked and left unattended for an extended period of time, main battery disconnect switch (see page 2-1) should be set to "OFF".

Starting engine from engine compartment

The following procedure is used to start and stop the engine from the engine compartment.

Starting engine

Switches for starting and stopping the engine from the engine compartment are mounted on the R.H. side of rear junction box.

WARNING: Before attempting to start engine from engine compartment, make sure parking brake is applied and transmission is in neutral.

1. Make sure the starter selector switch in engine compartment is set to the "REAR START" position and the main battery disconnect switch (see page 2-1) is set to the "ON" position.
2. Press starter push button switch and release as soon as engine starts.

STARTING AND STOPPING PROCEDURES

WARNING: Stay away from moving parts, and do not wear loose clothes (no neckties, open jackets, shirttails, etc.).

CAUTION: Steps previously explained with respect to starter use also apply in this situation.

Stopping engine

Stop only by turning the starter selector switch to the "OFF" position.

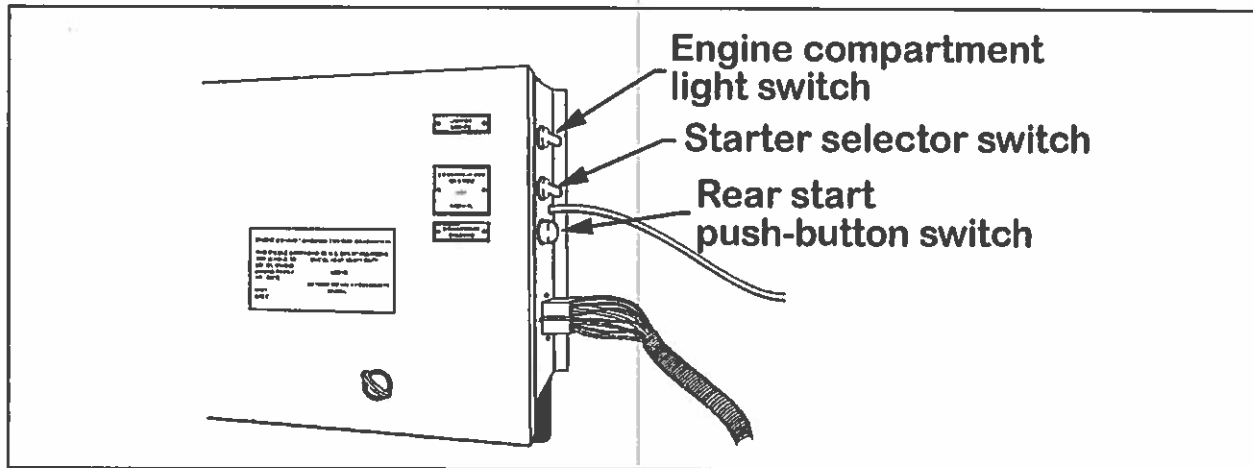


FIGURE 47

01017A

DETROIT DIESEL ELECTRONIC CONTROL (DDEC)

The major components of DDEC are as follows:

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, reduced maintenance and repair cost. These advantages are obtained by optimising control of the critical engine functions that affect fuel economy, engine reliability and the performance of the injectors.

Its major components include an Electronic Control Module (ECM), Electronic Unit Injectors (EUI) and sensors. The ECM is the brain of the DDEC system and is mounted on side of the engine, close to the starter. Within the ECM is the 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, plus an engine protection system.

The ECM continuously monitors and analyses the DDEC system during engine operation with electronic sensors. The Electronic Unit Injectors (EUI) function in a similar manner to the mechanical unit injector system. However, a solenoid-operated control valve performs the injection timing and metering functions that make injector timing much simpler and more precise.

DDEC provides the capability to quickly diagnose system malfunctions by a self-diagnostic system; the self-diagnostic system monitors all engine sensors and electronic components and recognises system faults and other engine-related problems by providing the technician with a diagnostic code. Diagnostic codes are logged into the ECM memory and can be read by performing procedure outlined on page 5-11.

WORLD TRANSMISSION WT ELECTRONIC CONTROL SYSTEM

The WT Electronic Control System consists of five (5) major components connected by wiring harnesses - Electronic Control Unit (ECU), engine throttle position sensor (or direct electronic communication), three (3) speed sensors, pushbutton shifter, and control module (which contains solenoid valves and a pressure switch). The throttle position sensor, speed sensors pressure switch, and pushbutton shifter transmit information to the ECU. The ECU processes this information and sends signals to actuate specific solenoids located on the control module in the transmission. These solenoids control both the oncoming and offgoing clutch pressure during a shift.

Another feature of the World Transmission is its ability to adapt or "learn" as it operates. Each shift is electronically measured, stored and used by the ECU to adapt and "learn" the optimum conditions for future clutch apply and release. It is important to note that if the shift quality of low mileage vehicles or vehicles with new or recalibrated ECU's is unacceptable, simply drive the vehicle through its shift ranges for awhile. After this "learning" period any rough shifting will be corrected and shift quality will be restored.

In addition to controlling the operation of the transmission, the ECU monitors the system for conditions that could result in damage to the transmission or improper vehicle operation. When one of these conditions is detected, the ECU is programmed to respond automatically in a manner that will ensure safe operation of the vehicle and the transmission.

Torque converter

The torque converter consists of three (3) elements - pump, turbine, and stator. The pump is the input element and is driven directly by the engine. The turbine is the output element and is hydraulically driven by the pump. The stator is the reaction (torque multiplying) element. When the pump turns faster than the turbine, the torque converter is multiplying torque. When the turbine approaches the speed of the pump, the stator starts to rotate

with the pump and turbine. When this occurs, torque multiplication stops and the torque converter functions as a fluid coupling.

The lockup clutch is located inside the torque converter and consists of three (3) elements - piston, clutch plate/damper, and backplate. The piston and backplate are driven by the engine. The clutch plate/damper, located between the piston and backplate, is splined to the converter turbine. The lockup clutch is engaged and released in response to electronic signals from the ECU. Engagement of the lockup clutch provides a direct drive from the engine to the transmission gearing. This eliminates converter slippage to provide maximum fuel economy. The torsional damper absorbs engine torsional vibration. The lockup clutch releases at lower speeds and when ECU detects conditions requiring it to be released.

Planetary gears and clutches

A series of three (3) helical planetary gear sets and shafts provide the gear ratios and direction of travel for the vehicle. The planetary gear sets are controlled by five (5) multiplate clutches that work in pairs to produce six (6) speeds. The clutches are applied and released hydraulically in response to electronic signals from the ECU to the appropriate combination of solenoids.

Cooler circuit

The transmission oil is cooled by a remote-mounted oil cooler. Connections to the cooling circuit are located at the rear of the transmission to facilitate installation of remote cooler lines. Oil ports are internal requiring only coolant to be routed to and from the cooler.

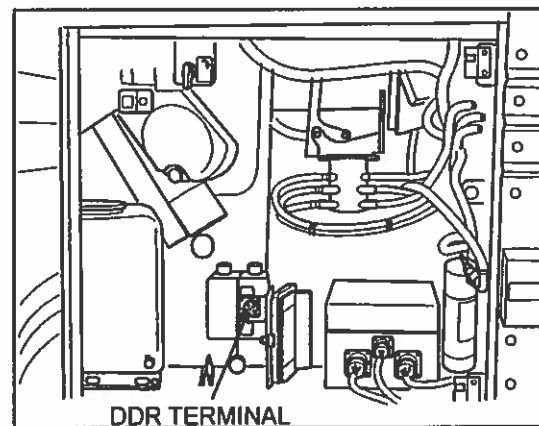


FIGURE 48: Steering Compartment

07005

STARTING AND STOPPING PROCEDURES

To enhance troubleshooting and to allow interrogation of the ECU for valuable service information, a DDR (diagnostic data reader) can be used. To use it, plug the appropriate connector (not furnished by the manufacturer) in the terminal located in the steering compartment or the DDR connector located on L.H. side control panel. You can also use your pushbutton shifter to perform certain maintenance operations (see page 4-5 under "Diagnostic codes").

Output retarder

The purpose of the retarder is to assist in stopping the vehicle during stop and go driving and to control the downhill speed of the vehicle on a grade. For both of these uses, the retarder serves to extend the life of the service brakes and to enhance vehicle control.

A switch located in the upper section of the front electrical compartment enables to turn the Retarder off and on.

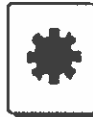
When the retarder switch is OFF, a telltale light is visible in the dashboard.

Once on, the Transmission Retarder follows three steps. The Retarder operates at 30% of its capacity when the fuel pedal is released. It works at 65% when a 4-psi pressure is applied on the brake pedal and at 100% with a 7-psi pressure.

When the vehicle is equipped with the anti-lock braking system (ABS) and the system is activated, the transmission controls "ABS input" is used to disengage the retarder and the transmission lockup clutch, thus enhancing performance of the ABS system.

Diagnostic telltales

Two (2) diagnostic features are available with the transmission control system to assist in troubleshooting of malfunctions and/or the monitoring of specific operating parameters. These features include a "DO NOT SHIFT" light on the dashboard, and the Diagnostic Data Reader (DDR). When a malfunction is detected in the control system, a series of "diagnostic codes" are used to identify and clarify the nature of the malfunction.



Check transmission light

The "Check transmission" light is located on dashboard.

Illumination of this light, accompanied by eight (8) seconds of short beeps from the shifter, indicates that shifts are being restricted. The *SELECT* digit on the display will be blank. Operation may continue in order to reach service assistance. The ECU may not respond to shifter requests, since operating limitations are being placed on the transmission, i.e. upshifts and downshifts may be restricted. Direction changes will not occur.

The ECU will not respond to operator requests while *DO NOT SHIFT* is indicated.

Any time this light has been illuminated, the ECU will register a diagnostic code. It may be identified on the digital display and/or the Diagnostic Data Reader (DDR).

Diagnostic Data Reader (DDR) (Optional)

The purpose of the DDR is to assist in the installation checkout and the troubleshooting of malfunctions as detected by the ECU. The DDR is a portable microcomputerbased receiver/transmitter/display unit. The DDR transmits and receives data to/from the ECU, processes the data and displays appropriate information to the servicer. Operating instructions are supplied with each DDR.

Diagnostic codes

Illumination of the *DO NOT SHIFT* light during vehicle operation (start-up), indicates that the ECU has registered a diagnostic code. A summary of diagnostic codes with each associated transmission response is shown on pages 5-18 through 5-28.

Diagnostic codes can be displayed either by the DDR or on the digital display of the shifter. The following information describes use of the diagnostic capabilities of the system without the DDR.

Up to five (5) diagnostic codes can be registered in the ECU at one time. In addition to the code itself, additional information for each code is available: whether or not any inhibits resulting from the code are active; ignition cycle counts to indicate the frequency of the code occurrence. After a fixed number of ignition cycles, any code will automatically disappear from memory if it has not reoccurred.

The general procedure to display the codes is to first enter the diagnostic mode. This is accomplished by pressing the upshift and downshift arrow buttons simultaneously on the pushbutton shifter. Diagnostic mode will be entered only with the vehicle stopped. (The transmission should be shifted to *NEUTRAL* and the vehicle parking brake applied.) For each code stored in memory, beginning with any code that is presently inhibiting the transmission, the four (4) digits of the code and the pertinent parameters are continuously flashed on the display. Pressing the mode button once will cause the next code with pertinent information to be displayed. Dashes indicate all stored codes have been displayed.

To clear any active inhibits, the mode button must be depressed and held for an extended length of time. To clear the code from memory, the mode button must be pressed and held for a longer period of time. All active inhibits will also be cleared during a normal powerdown (ignition switched off followed by zero output and zero engine speeds).

Importance of proper oil level

1. Maintaining the proper oil level is very important. The transmission oil is used to apply clutches and to lubricate and cool the components.

If the oil level is too low, the result can be poor performance because clutches will not receive adequate oil supply. If the oil level is too high, overheating results from the oil being churned and aerated.

2. Always check the oil level at least twice to ensure that an accurate check is obtained.

3. Transmission input speed and oil temperature significantly affect the oil level. An increase in input speed lowers the oil level; an increase in oil temperature raises the oil level. Thus, the oil level must always be checked with the engine running at idle (approximately 500 RPM), the parking brake applied, and the transmission in neutral. A final check of the oil level must be made when the transmission reaches normal operating temperature (160 – 250 °F; 70 – 120 °C).

Fill pipe protection

When adding oil or checking oil level, dirt or foreign material must not be allowed to enter the filler tube. Before removing the dipstick, clean around the end of the filler tube. Refer to "*Care & maintenance*" section for manual oil level check procedure.

Readout of the oil level sensor

The oil level sensor (OLS) is designed to measure transmission oil level only when a specific combination of operating conditions exist:

- Engine must be at idle;
- **NEUTRAL** must be selected;
- Zero output speed;
- Transmission oil must be within a "normal" temperature band;
- Once the first four (4) conditions are met, a "waiting" period must pass (approx. 2 min., to facilitate consistent oil drainback) before oil level measurement may begin.

To enter OLS readout mode (after meeting the conditions noted above), simultaneously press the *UPSHIFT* and *DOWNSHIFT* arrows on the shifter. If the five (5) conditions noted above are present, the display will immediately enter the reading mode. If the "waiting" period has not elapsed, the left digit of the display will become a "chasing" digit and the right digit will count down from (8) to (1) until the waiting period is complete.

STARTING AND STOPPING PROCEDURES

After attaining the reading mode, the display will flash "OL-OK", "LO-01", "HI-02", etc., where the suffix "01" or "02" indicate the volume of oil (in quarts) low or high.

At any time in this sequence, simultaneously pressing the **UPSHIFT** and **DOWNSHIFT** arrows directs the ECU to enter the transmission diagnostic mode as described under "Diagnostic Codes" on page 4-5. D, N, or R may also be selected on the shifter at any time - the OLS mode will abort and normal transmission will commence. Shifts are not inhibited.

Oil level sensor (OLS) codes

<u>CODE</u>	<u>CAUSE OF CODE</u>
OL-OK	oil level is correct
LO-01	one quart low
LO-02	two quarts low
HI-01	one quart high
HI-02	two quarts high
OL-50	engine speed (rpm) too low
OL-59	engine speed (rpm) too high
OL-65	neutral must be selected
OL-70	sump oil temperature too low
OL-79	sump oil temperature too high
OL-89	output shaft rotation
OL-95	sensor failure

Engine block heater

The vehicle is equipped with an engine immersion-type electric block heater to assist cold weather starting. The heater male electric plug is easily accessible through the engine oil reserve tank access door. To use it, connect the female plug of an electrical extension cord to the heater plug. Some converted vehicles may have the heater connected to the coach AC power system. The extension cord must be plugged into a 110-120 V AC power source only. The engine block heater should be used whenever the vehicle is parked for an extended period of time in cold weather and a suitable power source is available.

CAUTION: Use only a 110-120 V AC power source. Extension cord must be of the grounded type (three prongs) and have a minimum rated

capacity of 15 amps. Be sure to disconnect cord before starting and/or moving the vehicle.

Engine warm-up

After starting the engine, run it at low idle for two (2) minutes to allow flowing of lubricant to the turbocharger, then increase speed to fast idle for warm-up period by using "FAST IDLE" switch located on L.H. lower switch panel (see page 2-3). Run the engine at fast idle and no load for about five (5) minutes to allow it to warm-up before applying a load. Parking brakes should be kept applied throughout warm-up. Gauges and indicator lights should be monitored to check that all conditions are normal. If an abnormal condition should develop, stop engine immediately and have condition corrected.

WARNING: Never let the engine run in an enclosed, non-ventilated area. Exhaust fumes from the engine contain dangerous gases which can be fatal if inhaled.

NOTE: The engine will come up to normal operating temperature shortly after you start driving; if possible, avoid going to full throttle until engine coolant temperature reaches 140°F (60°C).

Transmission warm-up

When temperature is below -20 °F (-29 °C), the "DO NOT SHIFT" and "CHECK TRANS" will stay "ON" after the engine is started. The transmission will stay in neutral, regardless of the gear range selected until it warms past -20 °F (-29 °C). At that point, the "DO NOT SHIFT" light will turn off and the transmission will operate only in first gear or reverse. When the "CHECK TRANS" light goes out at 20 °F (-7 °C), the transmission is warm enough to safely operate in all gear ranges.

DAILY INSPECTION

With engine stopped

General

Check general vehicle condition and verify all exterior lighting. Also check for loose nuts and bolts.

Extinguishers

Ensure that fire extinguishers are in working order and easily accessible.

Emergency exits

Check that emergency exits can be easily opened.

Driver's area

Adjust mirrors and seat.

Doors

Make sure that all exterior doors and windows are closed.

Tools and spares

Check for wheel nut wrench and jack, door keys, spare belts and emergency reflectors.

Washer reservoir

Check that it is full. To prevent the windshield washer fluid from freezing during the winter, use antifreeze windshield washer.

Tires

All tires, including the spare, should be inspected for cuts and correct inflation. On both aluminum alloy and steel wheels, nuts should be checked using a torque wrench. Torque to 450-500 ft•lbs (610-680 N•m).

Wheel bearings

Check oil level in sight glass (see page 6-6).

CAUTION: During a fuel stop, especially if a brake job has been performed recently, apply hand on wheel bearing cover and check for overheating.

Leaks

Check thoroughly under vehicle and in compartments. Report all leaks to maintenance personnel.

Coolant level

The cooling system is completely filled when the coolant (cold) is visible in the sight glass on the right side of the surge tank. If topping-up is necessary, fill the system with the same mixture ratio already used (50-50), as instructed in the "Maintenance Manual".

WARNING: Hot engine coolant is under pressure. Never remove cap until coolant has cooled.

Engine oil

Check oil level; refill directly into engine or from reserve tank (see page 6-4).

Air system

Purge accessory tank by opening remote drain valve located underneath accessory air filter (see page 6-7).

Power steering oil tank

Check oil level (see page 6-6).

Belts

Check for worn belts.

Belt tensioners

Visually check belt tension and the space between tensioning bellows' brackets (see page 6-8).

Seats

Make sure all seats and seat cushions are firmly attached.

With engine running

NOTE: Vehicle must be on level ground.

STARTING AND STOPPING PROCEDURES

Gauges and buzzers

Gauges should be in normal position, warning lights and buzzers off.

Fuel level

Be sure level is sufficient.

Transmission

Check oil level (see page 6-4).

Leaks

Inspect around vehicle and listen for any air leak.

Turbocharger

Look for any leaks or unusual sounds coming from the turbo compressor.

Service brakes

Check for pressure build-up. With engine stopped and no brake applied, loss should not exceed 3 psi/min. (21 kPa/min.). Make a full brake application; loss should not exceed 7 psi (48 kPa).

Parking and emergency brakes

With air pressure above 65 psi (448 kPa), lower pressure with brake pedal applications, check that buzzer works and that control button lifts up. Wait until air pressure exceeds 95 psi (655 kPa) before releasing parking brakes.

RECOMMENDATIONS

- Make sure the basic principles of operation of the vehicle are understood.
- Maintain the vehicle in good running condition.
- Do not drive your vehicle with an extremely low fuel level. This advice is very important, especially if your vehicle is equipped with an auxiliary fuel tank. Unlike a gasoline engine, if a diesel engine runs out of fuel it will not simply restart after fuel is added to the tank. The engine must be "primed" (see procedure in the Maintenance Manual).
- Allow engine to run at slow idle for at least 2 minutes before turning it off.

- Engine should always be at idle speed when shifting from neutral to reverse or forward range.
- Automatic transmission shift pattern does not include a park position. Parking brake must therefore be applied to hold vehicle when it is unattended. Gearshift should then be in neutral position. If engine is stopped without applying the parking brake, a warning buzzer will sound until the parking brake is applied and your foot is removed from the brake pedal.
- Perform procedures as detailed in this manual.
- Unless otherwise specified, engine should be turned off for all lubrication and maintenance procedures.
- Do not attempt to push-start or pull-start the vehicle.
- Do not tow vehicle without first removing the drive axle shafts or disconnecting the drive shaft. Internal lubrication of the transmission is inadequate when the vehicle is towed.
- Fire extinguishers are stored underneath the front L.H. and R.H. passenger seats. In case of fire, get everyone out of the vehicle, then think of your own safety before attempting to fight the fire.
- When driving on ice or snow, accelerations or decelerations should be done gradually.

NOTE: Normal operation as well as some emergencies or abnormal conditions are covered in this booklet. Any malfunction interfering with satisfactory operation should be corrected immediately, particularly when safety may be involved.

HEATING AND AIR CONDITIONING

Ventilation

Driver should always try to introduce as much circulation of outside fresh air as possible without hampering heating and air conditioning systems. Under extreme temperature conditions however, when maximum capacity is required, the adjustable intake dampers (see following pages) should be closed.

It should be remembered that the inside of vehicle should always be slightly pressurized to minimize the entrance of dust and moisture.

Vehicle heating and air conditioning systems have been designed to allow circulation of some outside fresh air, so windows should be kept closed at all times.

In case of air conditioning system failure, substitute ventilation may be provided by opening roof-mounted emergency vent(s).

NOTE: The driver's area A/C & heating and defrost systems are independently controlled from the central system.

A/C & heating system controls

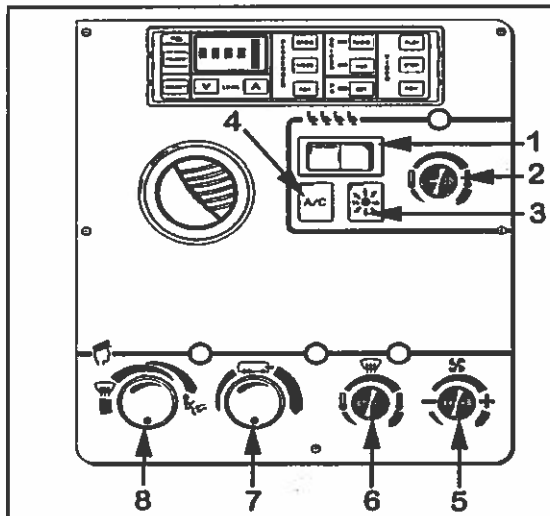


FIGURE 49

1B123A

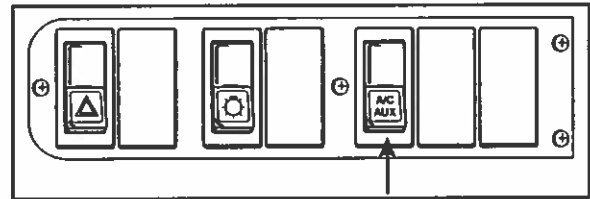


FIGURE 49A

1B021c

Auxiliary A/C system

"A/C-Auxiliary" switch

This switch has two positions: "ON - OFF". Push down this rocker switch to activate the auxiliary A/C system as needed (refer Fig 49A).

Central A/C & heating system

1. "A/C-heat" switch

This switch has three positions: "A/C - OFF - HEAT". Set the switch to:

- "A/C" position (L.H. side) when vehicle's interior needs to be cooled or dehumidified.
- "HEAT" position (R.H. side) when vehicle's interior needs to be warmed or ventilated. Also, this function activates the water heater.
- "OFF" position (center) before stopping the vehicle.

NOTE: Fuel economy is slightly reduced when "A/C" position is used.

To operate air conditioning system when vehicle is stationary, run engine at fast idle. During operation of air conditioning system, windows should be kept closed and door not left open longer than necessary.

In order to prevent battery discharge, A/C & heating system will not operate if battery charging system is not working properly.

CAUTION: "A/C" position should not be used when outside temperature is below 25°F (4°C).

While the A/C system is running, make sure the vehicle is parked at least four (4) feet (1,2m) from other vehicles and/or buildings to allow a sufficient air flow through the condenser core.

STARTING AND STOPPING PROCEDURES

2. "Temperature" control

Once the *A/C-heat* switch is set to the proper position, select the desired temperature by turning the temperature control knob clockwise to raise or counterclockwise to lower temperature. Only a slight movement of knob is generally sufficient to change temperature setting.

Temperature control knob is used to select interior temperature within the range of 65 to 78 °F (18 to 26 °C). Once temperature is selected, system will automatically maintain it within close limits.

At extreme clockwise position, full heat will be maintained.

3. "Heat" indicator light

This indicator will be illuminated when hot water is circulating through the water valve, no matter which mode has been selected (*A/C* or heating).

4. "A/C" warning light

This light is designed to light up when the "*A/C*" system is not working properly. If this happens, first stop "*A/C*" system, then perform the following checks:

- Check the condenser for obstruction. Clean if necessary. (Refer to "*Maintenance Manual*").
- Check that the evaporator and condenser motors are operating.
- Check evaporator filter for cleanliness. Clean or replace as required. (Refer to "*Care and Maintenance*" section, page 6-8).
- Check the air return duct(s) for obstruction. Ducts are located on the left side or on both sides of the vehicle floor, approximately in the center. Clean if necessary.

After these checks, test the system. If the "*A/C*" warning light does not turn off, set the "*A/C - heat*" switch to "*OFF*" position, and seek qualified service assistance.

How to use the controls

- To ventilate without heat or air conditioning:

Turn the "*temperature*" control knobs to the maximum counterclockwise position (cool), then set the "*A/C-heat*" switch to the "*heat*" position.

- To heat:

To ensure maximum efficiency of heating system, set the "*A/C-heat*" switch to the "*heat*" position, then adjust the temperature control knobs to a comfortable setting.

- To dehumidify:

Because an air conditioner dehumidifies as it cools, you can use it in cool weather to help in drying air. Set the "*A/C-heat*" switch to the "*A/C*" position, then adjust the "*temperature*" control to a comfortable setting. With this set-up, the *A/C* and heating will run simultaneously, thus drying air as it flows through the evaporator and then heating it as it flows through the heater radiator.

CAUTION: The air conditioning system should not be used when outside temperature is below 40 °F (5°C).

- To turn everything OFF

Set the "*A/C-heat*" switch to the "*OFF*" position (center).

An adjustable air intake damper is located in the evaporator compartment (third compartment on the L.H. side of vehicle). The damper should normally be left open. However, under extreme temperature conditions, it can be closed to block the addition of ambient air and heat or cool air inside of coach as desired. As soon as extreme heating or cooling is no longer required, the damper should be reopened.

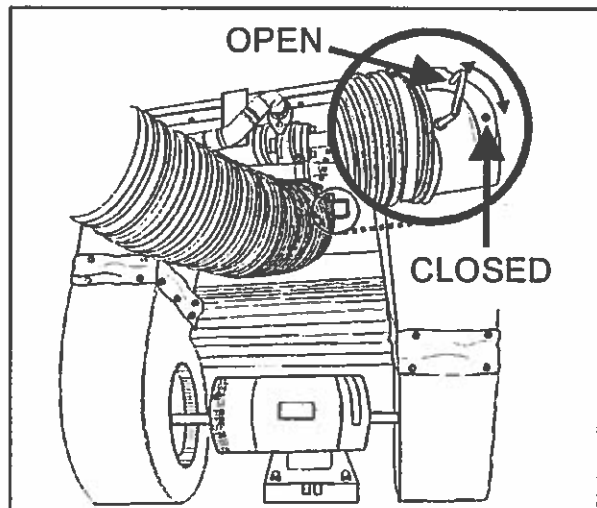


FIGURE 50

22004

Driver's compartment A/C & heating system

5. "Fan" speed control

Turn knob clockwise at the first position to obtain minimum air flow and to start "Driver's system" to circulate warm, cool, or outside air, according to settings of temperature control knob (driver's), "A/C-heat" switch and "Recirc.-fresh air" control. Turn clockwise again to obtain the desired ventilation speed.

6. "Temperature" control

Once the A/C-heat switch is set to the proper position and fans are on, select the desired temperature by turning the temperature control knob clockwise to raise or counterclockwise to lower temperature. Only a slight movement of knob is generally sufficient to change temperature setting.

Temperature control knob is used to select interior temperature within the range of 65 to 78 °F (18 to 26 °C). Once temperature is selected, system will automatically maintain it within close limits.

At extreme clockwise position, full heat will be maintained.

WARNING: Excessive high temperature in driver's area could induce drowsiness, affecting driver's ability to operate the coach safely.

NOTE: Driver's air conditioning system will only operate simultaneously with main air conditioning system, but heating and defrost systems are independent from main system.

Driver's A/C & heating system also affects the two (2) front rows of passenger seats, and should be used in concert with main system, not in opposition.

7. "Recirc.-fresh air" control

This knob should normally be rotated clockwise to allow maximum fresh air admission. When outside temperature is extremely high and maximum cooling is required or when outside temperature is extremely low and maximum heating is required, the knob should be rotated counterclockwise to shut off the fresh air admission, thus recirculating

the air inside vehicle. This position should also be selected when driving vehicle on dusty roads and in air polluted areas to avoid admission of contaminated air inside vehicle.

WARNING: Keep in mind that the "Recirc.-fresh air" control must be reset to the "fresh air" position following these special road conditions in order to prevent contamination of air in driver's area.

NOTE: In order to improve air circulation when A/C system is inoperative, open the roof escape(s) and position the "Recirc.-fresh air" control to the extreme right position (fresh-air).

8. "Feet air outlet" control

This control is used to control the air flow delivered under the dash on the driver's side. Turn control knob clockwise to increase air flow and counterclockwise to decrease.

How to use the controls

- To ventilate without heat or air conditioning

Turn the "temperature" control knob to the maximum counterclockwise position (cool), turn the "recirc.-fresh air" control knob to the maximum clockwise position (fresh air), then set the "A/C-heat" switch to the "heat" position and turn the fan speed control knob to the desired position.

- To defrost

To obtain the maximum defrosting efficiency, switch the "fan" speed control to the highest position, turn the "recirc.-fresh air" control knob to the maximum clockwise position (fresh air), turn the "feet air outlet" control knob to the maximum counterclockwise position (defrost position), then turn the "temperature" control to the maximum clockwise position (warm).

- To dehumidify

Because an air conditioner dehumidifies as it cools, you can use it in cool weather to help defog the windows. Set the "A/C-heat" switch to the "A/C" position, turn the "feet air outlet" control knob to the maximum counterclockwise position (defrost position) then adjust the "temperature" control to a comfortable setting. With this set-up, the A/C and heating will run simultaneously, thus drying air as it

STARTING AND STOPPING PROCEDURES

flows through the evaporator and then heating it as it flows through the heater radiator.

CAUTION: The air conditioning system should not be used when outside temperature is below 40 °F (5 °C).

- To turn everything OFF

Set the "A/C-heat" switch and "fan speed" control knob to the "OFF" position and turn the "temperature" control knobs to the maximum counterclockwise position (cool).

PREHEATING SYSTEM

WEBASTO:

Description of operations

Switch on the heater, the operation indicator lamp comes on and the heater motor & circulating pump begin to run. After about 10-25 seconds the solenoid valve opens and fuel is sprayed into the combustion chamber. At the same time the electronic ignition unit produces high voltage (8000V) and the mixture of fuel and air in the combustion chamber is ignited by the spark on the ignition electrodes. The flame is indicated by the flame detector, then the electronic ignition unit stops producing high voltage and combustion continues by itself (spark on electrodes is required only to ignite the flame). At this moment the heater is working and produces heat.

If the heater is switched off by the on/off switch, the solenoid valve interrupts fuel supply, combustion stops and indicator lamp turns off. Combustion air fan still blows air, cleaning the combustion chamber of any fumes and cooling down the combustion chamber. Coolant circulation pump pumps coolant, making a purge cycle for approximately 2-3 minutes, thus protecting the heater against overheating.

If the heater is not switched off by the on/off switch, the control thermostat will switch off the heater when coolant temperature reaches 165 ° ± 6 °F (75 ° ± 3 °C) and turns it on at 154 ° ± 9 °F (68 ° ± 5 °C). During this time the heater (combustion) is off, the indication lamp and coolant pump are on. Combustion air fan blows air for 2-3 minutes and then turns off.

WINDSHIELD WASHER RESERVOIR

Windshield washer reservoir is located in front left compartment (steering compartment) below driver's floor. This reservoir has a capacity of approximately 5 U.S. gallons (19 liters). Its spin-on type cover is provided with a removable cap to ease windshield washer reservoir filling. Check windshield washer fluid level regularly.

Spray jets are mounted under windshield wiper arms. The reservoir's fluid is forced by two electric pumps through rubber tubes into spray jets and onto windshield.

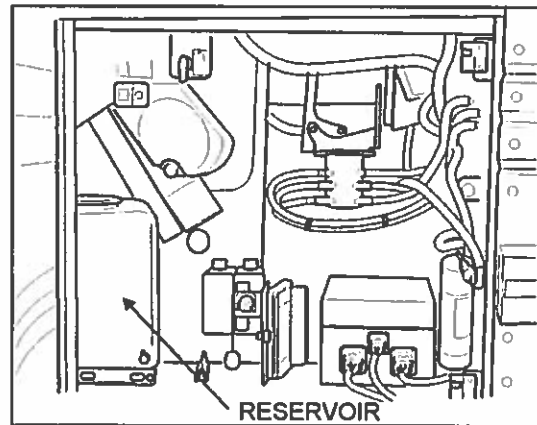


FIGURE 51

23011

JUMP STARTING

Whenever it becomes necessary to start the engine while batteries are discharged, use another power source of the same voltage (24 volt DC), negative grounded and proper jumper cables.

WARNING: Procedure other than the one outlined could cause injury or damage from battery acid spray, explosion, or charging system overload.

- Never connect to the negative post of the discharged battery.
- Never allow the two vehicles or the jumper cable clamps to touch each other.
- Never attempt to jump start a vehicle if the discharged battery fluid is frozen or if the battery

STARTING AND STOPPING PROCEDURES

fluid level is low, as the battery may rupture or explode.

- Do not jump start vehicles equipped with maintenance-free batteries if the test indicator is light yellow.

- Turn off all lights, heaters and other electrical accessories. Make sure the parking brake is applied and the transmission is set to "NEUTRAL" before attempting to jump start the engine.

- Wear eye protection and remove rings, watches with metal bands and other metal jewelry.

1. Connect one end of the red jumper cable to the positive (+) post of the booster power source.
2. Remove the red protective cap from Booster Block's Positive Stud, then connect the other end of the red jumper cable to this stud.
3. Connect one end of the black jumper cable to the negative (-) post of the booster power source.
4. Remove the black protective cap from Booster Block's Negative Stud, then connect the other end of the black jumper cable to this stud.
5. Start the engine in the vehicle that is providing the jump start. Let the engine run for a few minutes, then start the engine in the vehicle that has the discharged batteries.

WARNING: Do not engage starter for more than 15 seconds. Allow starter time to cool before engaging again. This will prevent starter from overheating and will allow time delay relay time to cool.

6. To remove the cables, perform the above procedure in reverse order, then replace the protective caps on booster block posts.

NOTE: Jumper cables must withstand 500 cranking amperes. If cable length is 20 feet (6 m) or less, use 2/0 (AWG) gage wires. If cable length is between 20-30 feet (6-9 m), use 3/0 (AWG) gauge wires.

NOTE: If, after doing this procedure, Starter turns but Engine still doesn't run; (with Jumper Cables in place) wait approximately 15 minutes (to give battery equalizers time to balance 12V and 24V charges), then try again. If engine still doesn't run, repeat procedure once again.

Booster block is located in the engine compartment and is accessible through engine R.H. side door.

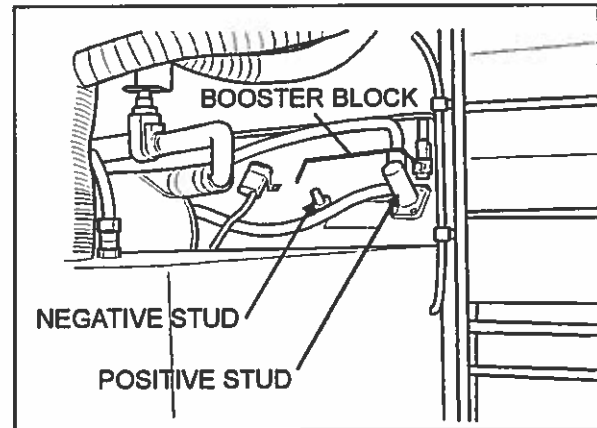


FIGURE 52

06098

ELECTRIC CIRCUIT PROTECTION

Two types of cutoff mechanisms are installed to protect the vehicle's electrical system; fuses and manually-resettable circuit breakers. If an electrical device is inoperative, check the corresponding cutoff mechanism.

CAUTION: Never replace a fuse with a higher rated one because it will cause severe damage to the electrical system.

Main breakers

Most of the manually-resettable circuit breakers are located in the front & rear junction boxes and in the rear baggage compartment. An identification decal is affixed on the inside face of each door.

Vehicles are equipped with eight (8) main breakers; three (3) are installed in A/C junction box located in condenser compartment and the other five (5) are installed just below rear R.H. side baggage compartment's ceiling and can be identified as follows:

STARTING AND STOPPING PROCEDURES

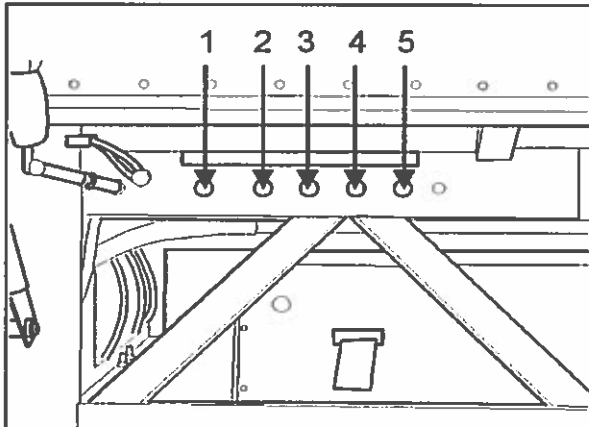


FIGURE 53

06099

- | | |
|-----------------------------|-------------------|
| 1. A/C system (CB1) | 200 amps-24 volts |
| 2. Front junction box (CB7) | 90 amps-24 volts |
| 3. Rear junction box (CB6) | 90 amps-24 volts |
| 4. Front junction box (CB4) | 90 amps-12 volts |
| 5. Rear junction box (CB3) | 70 amps-12 volts |

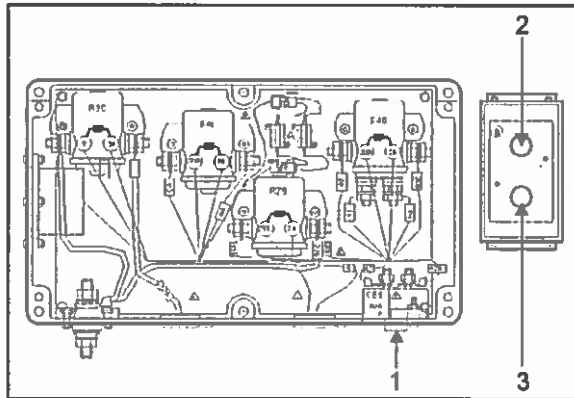


FIGURE 54: A/C junction box

06100A

- | | |
|-----------------------------|-------------------|
| 1 - CB8: L.H. condenser fan | 40 amps-24 volts |
| 2 - CB9: Evaporator fan | 120 amps-24 volts |
| 3 - CB5: R.H. condenser fan | 40 amps-24 volts |

Battery equalizers

On vehicle the two (2) battery equalizers ("VANNER"-60 amps-12 & 24 volts) are installed just below rear L.H. side baggage compartment's ceiling. The reset buttons are located on the end of equalizers facing the center of the coach. Refer to figure 55.

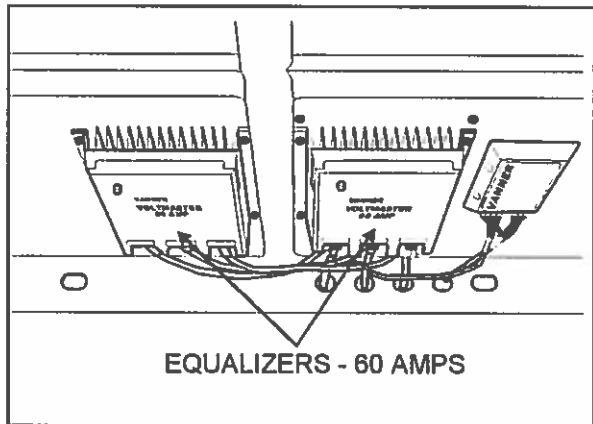


FIGURE 55

06106

TIRES

Tire pressure

The condition and pressure of the tires can greatly affect both useful tire life and road safety.

NOTE: The recommended tire inflation pressures are given in a separate form. Also, cold tire inflation pressures are listed on the Department of Transport's certification plate, affixed below L.H. side control panel in driver's area. Tire pressure must be adjusted according to vehicle loading - see table in "Coach Final Record" (NOT NECESSARILY THE V.I.N. PLATE).

At regular intervals, verify the tire pressures. Use an accurate tire pressure gauge when checking inflation pressures. Never exceed the maximum tire inflation pressure specified on each tire.

Cold tire inflation pressure means: When a vehicle has not been driven for at least 3 hours or less than 1 mile (1.6 km).

WARNING: Incorrect tire pressures cause increased tire wear and adversely affect road holding of the vehicle, leading to loss of vehicle control.

NOTE: Always include the spare tire during a pressure verification.

Changing wheels

Tire failure is a rare event these days, if tires are properly cared for. In case of a flat tire, move vehicle a safe distance away from traffic and apply the parking brake. Remember to switch "ON" the hazard flashers and according to the highway code regulations, set up the triangular reflectors (see "Emergency warning reflectors" on page 3-6) at an adequate distance to warn incoming motorists.

Due to the reinforcement of the front bumper the spare wheel cannot be stored at this place without modifying the bumper.

Jack and wheel nut wrench are stored at right in forward R.H. side baggage compartment.

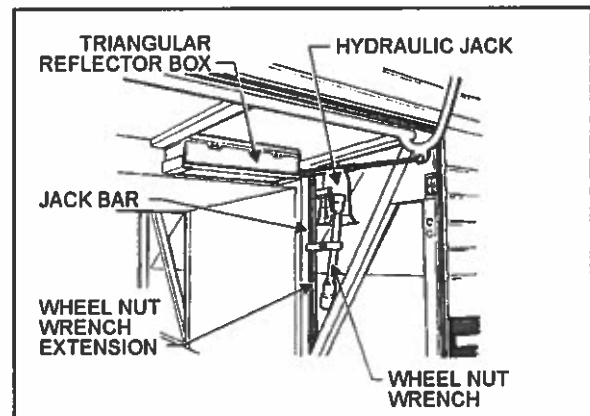


FIGURE 56

23012

Check the spare tire's inflation pressure periodically to keep it ready for use. Inflate spare tire to the pressure of the tire which has the highest pressure on the vehicle.

Also, make sure that retaining bracket is securely fastened in order to prevent it from moving around inside compartment.

Procedure

Step 1

Stop engine, apply parking brake, take out jack and wrench, then remove spare wheel and tire from their compartment.

Step 2

Remove hub cap (with appropriate wrench) or cover from wheel.

Step 3

With supplied wrench, loosen all wheel nuts to about one (1) full turn.

NOTE: For stud-mounted wheels, turn nuts counterclockwise on R.H. side of vehicle and clockwise on L.H. side. For hub-mounted wheels, turn nuts counterclockwise on both sides of vehicle.

Step 4

Use the hydraulic jack to raise the vehicle. Raise vehicle to the height required to remove wheel.

STARTING AND STOPPING PROCEDURES

NOTE: For hydraulic jack placement, refer to "Jacking points", next in this section.

WARNING: Place jack on stable and level ground; if necessary, place a board under the jack.

Do not raise the vehicle until you are sure the jack is securely engaged.

WARNING: To prevent personal injury and/or equipment damage, use only the recommended jacking points.

Passengers must not remain inside vehicle while wheel is being replaced.

Step 5

Fully unscrew the wheel nuts, then remove nuts and wheel. Install spare wheel with existing nuts, then slightly tighten nuts in a crisscross pattern before lowering the vehicle.

Step 6

Lower vehicle (until tire touches ground) by slowly unscrewing the jack's hydraulic valve.

Step 7

Torque all nuts, in a crisscross pattern, to 450-500 ft•lbs (610-680 N•m).

Step 8

Completely lower the coach and remove jack. Adjust tire pressure according to the cold tire inflation pressures.

Step 9

Store damaged wheel in spare tire compartment. Repair and balance the flat tire as soon as possible.

JACKING POINTS

One (1) jacking point on each side of each axle is provided on vehicle. Refer to the following illustrations for details.

CAUTION: Remember that only these jacking points can be used.

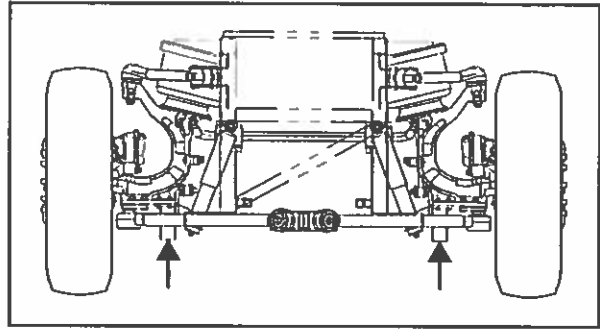


FIGURE 57: Front Axle Jacking Points

10005

CAUTION: The jacking points on tag axle must be used only to lift this axle.

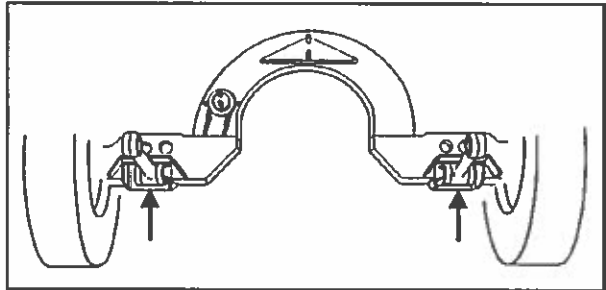


FIGURE 58: Tag Axle Jacking Points

18086

CAUTION: To prevent damage to suspension components, always raise or unload tag axle before jacking coach using drive axle jacking points.

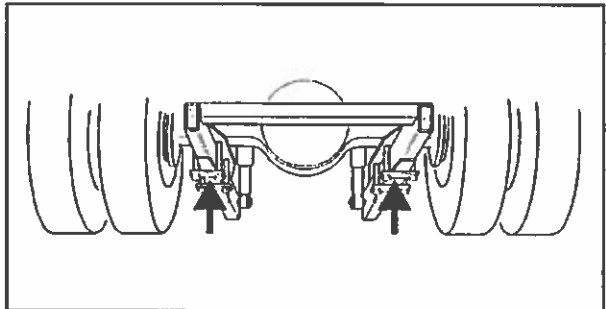


FIGURE 59: Drive Axle Jacking Points

11005

Several kinds of hydraulic jacks can be used but they all must support the following capacities:

Front axle - 14,600 lbs (6 600 kg)
Drive axle - 26,000 lbs (11 820 kg)

TOWING

Two tow eyes are provided at front and rear under vehicle. Towing should be done from these points only by means of a solid link tow bar and a safety chain. This recommended method prevents damaging the vehicle. If required, connect an auxiliary air supply to the vehicle to release the vehicle brakes. The engine cannot be started by pushing or towing.

After either of the above uses, vehicle must be stopped, then tag axle must be lowered before resuming normal driving.

WARNING: *Never allow passengers to ride in a towed vehicle for any reason whatsoever.*

CAUTION: *Internal lubrication of the transmission is inadequate when the vehicle is towed. Remove the axle shafts (refer to the Maintenance Manual for correct procedure) before towing to avoid possibility of damaging transmission.*

NOTE: *When the axle shafts are reinstalled, ensure that the nuts are tightened to the appropriate torques and the axle shafts are properly installed (R.H. & L.H.). Refer to the "Maintenance Manual" for torque values.*

RETRACTABLE TAG AXLE

Operation of the tag axle is controlled by a valve located on the R.H. Lateral Console. The valve can be flipped to either one of two positions, "Wheels up" or "Wheels down". Axle will automatically be raised or lowered by air pressure according to valve position (see page 2-14).

Tag axle service brakes operate only when axle is down. Never lower tag axle while vehicle is moving. When tag axle is up, the corresponding indicator light will illuminate, and a beep will sound to remind you that axle is up. Tag axle can be raised in tight maneuvering areas as in parking lots or to help in turning a short corner, thus shortening the wheelbase and allowing tighter turning. Raising tag axle transfers extra weight and additional traction to the drive wheels on a slippery surface.

CAUTION: *Always raise tag axle before lifting vehicle to prevent damage to suspension components.*



Technical information

DIMENSIONS

SPECIFICATION	XL-40
Overall length	40.0' (12 190 mm)
Overall width	102" (2 590 mm)
Overall height (over closed roof hatch(es))	130.7" (3 320 mm)
Entrance door width	26" (660 mm)
Headroom (Floor to ceiling)	76.5" (1 943 mm)
Aisle width	14" (355 mm)
Step height from ground	15" (381 mm)
Other step height	8.5" (216 mm)
Cabin floor height	48.5" (1 232 mm)
Ground clearance	11" (279 mm)
Wheel base (Front axle's center to drive axle's center)	280" (7 112 mm)
Front overhang	69" (1 753 mm)
Rear overhang	82.7" (2 100 mm)
Front track	85.67" (2 176 mm)
Drive track	76.5" (1 943 mm)
Rear track (Tag axle)	82" (2 083 mm)
Turning circle radius (Exterior front corner)	40' 5" (12 624 mm)

TECHNICAL INFORMATION

WEIGHTS

Dry weight (w/series 60 & World trans.)
.....29 350 lbs (13 341 kg)

Gross vehicle weight rating
.....42 690 lbs (19 400 kg)

Gross axle weight rating
Front axle 14 400 lbs (6 545 kg)
Drive axle20 400 lbs (9 270 kg)
Tag axle..... 12 000 lbs (5 455 kg)

The Gross Vehicle Weight Rating (G.V.W.R.) and the Gross Axle Weight Ratings (G.A.W.R.) for front, drive and rear axles are listed on a certification plate located on the panel at the L.H. side of driver's seat, under the side control panel.

CAPACITIES

Engine oil (series 60)
Crankcase37 U.S. qts (35 liters)
Reserve tank..... 10 U.S. qts (9,5 liters)

Fuel tank
.....180 U.S. gal. (681 liters)

Cooling system27.6 U.S. gal. (104 liters)

Transmissions

Automatic transmission
(excluding external circuits) ... 10 U.S. gal. (38 liters)

Differential oil 13.7 U.S. qts (13 liters)

Power steering reservoir 4.0 U.S. qts (3,8 liters)

Windshield washer reservoir 5 U.S. gal. (19 liters)

Refrigerant
Driver's and central system 24 lbs (11 kg)
Auxiliary system 3.5 lbs (1,6 kg)

FUEL TYPE

ASTM specificationD-975
Recommended grade..... 1-D
Acceptable grade.....2-D

WHEELS AND TIRES

See the Prevostcar wheel and tires form, and the department of transport's certification plate, affixed below L.H. side control panel in driver's area.

BELTS

Radiator fan drive (transfer)
Make: Dayco
Model:AX 74
Qty:3

Radiator fan drive (fan)
Make: Dayco
Model: Multi-V, 5100510
Qty:1

A/C compressor (Driver's and central system)
Make: Gates
Model: BX 97
Qty:2

A/C compressor (Auxiliary system)
Make: Gates
Model: Hi-Power A 35
Qty:1

Alternator 24 V 270 amps
Make: Bosch
Model: 0 120 689 552
Qty:2

ENGINES

Detroit Diesel DDEC IV Series 60, 11.1 liters inline
6 cylinders, 330 BHP.

TRANSMISSIONS

Automatic transmission

Allison six speed automatic World Transmission B500R with Electronic Control.

Gear	Ratio
1 st	3.51
2 nd	1.91
3 rd	1.43
4 th	1.00
5 th	0.74
6 th	0.64
Rev.....	4.80

NOTE: Gear ratios do not include torque converter multiplication.

DRIVE AXLE RATIO

World transmission 4.56:1

BRAKES

- Air operated, disc type on front axle and tag axle, drum operated type on drive axle.
- Brake chamber type 24 on front axle, 30/36 on drive axle and 16/16 on tag axle.
- Automatic slack adjuster.
- Two cylinder air compressor, engine gear driven, water-cooled and lubricated.
- Air dryer (AD-9).
- Nylon color-coded air lines.

ANTILOCK BRAKING SYSTEM (ABS)

- Components: Electronic Control Module (ECM)
- Solenoid control valves
- Sensors
- Clamping bushes
- Wiring harnesses

Electronic control module technical data

Voltage:.....24 ± 6 volts
 Thermal operating range: -40 to 167 °F
 (-40 to 75 °C)

Protection system for sealed multi-pin plug according to DIN 40050

Electrical connection is made through a 35 pin plug

Maintenance: none

Solenoid control valve technical data

Voltage:..... 24 (+4.8, -2.4) volts
 Current: DC
 Rated current: 1.65 amps
 Protection system according to DIN 40050
 Maximum service pressure: 10 bars (145 psi)
 Thermal operating range: -40 to 176 °F
 (-40 to 80 °C)

Electrical connector: 894 601 010 2

Maintenance: none

Sensor technical data

Two cored screened cable: AWG 18 (1 mm²)
 Force needed to tear out lead: 11.2 lbs (50 N)
 Force needed to pull off shrink-fitted tube:
 11.2 lbs (50 N)
 Thermal operating range: -40 to 176 °F
 (-40 to 80 °C)

Protection system according to DIN 40050.

TECHNICAL INFORMATION

STEERING

- Tilt steering wheel and telescopic steering column.
- Integral hydraulic-assisted steering gear.
- System pressure: 2175 psi (14990 kPa).

ELECTRICAL SYSTEM

24 & 12 volt negative grounded

Alternator: -2 x 140 amps (at 24 volts)

Four (4) model 31, 12 volt maintenance-free batteries, each with a 625 cold cranking amp. capacity.

Battery equalizer(s)

Wiring protection: fuses, manual and automatic resettable circuit breakers

12 volt and 24 volt main disconnect switch(es)

SOUND SYSTEM

- 1 Microphone with 6-foot extension cords.
- 1 Microphone jack.
- Public Address.
- 12 Blaupunkt Hi-Fi speakers.
- 90 watts, two channels, 24 volts audio amplifier.
- Digital audio control unit for driver's control.
- 1 Outside speaker.

SUSPENSION

Front axle (independent suspension)

- 2 air springs.
- 2 shock absorbers.
- 1 height control valve.

Drive axle

- 4 air springs.
- 4 shock absorbers.
- 3 longitudinal radius rods.
- 1 transversal radius rod.
- 2 height control valves.

Tag axle

- 2 air springs.
- 2 shock absorbers.
- 3 longitudinal radius rods.
- 1 transversal radius rod.

Kneeling system

ALIGNMENT

Front axle

Toe-in: $+3/32" \pm 1/32"$ (2,4 mm \pm 0,8 mm)
Caster: $+ 2 3/4^\circ \pm 3/4$
Camber: $- 1/8^\circ \pm 3/8^\circ$

Tag axle

Toe: $0" \pm 1/16"$ (0 mm \pm 1,6 mm)

HEATING AND AIR CONDITIONING

Driver's system

Air conditioning capacity: 19,000 Btu/hr.
Refrigerant type: R-134a
Heating capacity: 37,800 Btu/hr.
Air flow: 450 cfm (12,7 m³/min.)

Central system

Air conditioning capacity: 98,000 Btu/hr.
Refrigerant type: R-134a
Heating capacity: 152,000 Btu/hr.
Air flow: 2,400 cfm (68 m³/min.)

A/C COMPRESSOR (Driver's and Central system)

Number of cylinders:..... 6
 Operating speed:400 to 2,200 rpm
 (1,750 rpm, nominal)
 Minimum speed for lubrication:.....400 rpm
 Oil capacity:.....4.5 U.S. qts (4,3 liters)
 Approved oils:Castrol SW-68 (POE)
 Mobil Artic 1 (POE)

A/C COMPRESSOR (Auxiliary system)

Number of cylinders:..... 2
 Maximum rpm: 6,000
 Factory oil charge: 10 U.S. oz (296 ml)
 Approved oils:Castrol SW-68 (POE)
 Mobil Artic 1 (POE)

NOTE: *The above oils are suitable for use with reciprocating compressors using refrigerant R-134a and with evaporator temperatures above -40°F (-40° C).*

OIL SPECIFICATIONS

Engine

Heavy-duty engine oil SAE 15W-40, API classification CF-4, HT/HS Viscosity 3.7 cP minimum. Synthetic oil may be used if it meets the performance and chemical requirements of non-synthetic oils outlined previously. Some engine operating conditions may require exceptions to this recommendation.

NOTE: *To avoid engine damage, do not use single grade (monograde) lubricants, regardless of API classification.*

Automatic Transmission

The transmission must be filled with DEXRON IIE or Dexron III automatic transmission fluid or any equivalent Class C4 fluids.

Differential

Multigrade gear oil meeting MIL-L-2105-D: 85W140 is recommended for use in drive axle. This lubricant performs well over a broad temperature range, providing good gear and bearing protection in a variety of climates.

If temperature drops below 10°F (-12°C), 80W90 should be used, and below -15°F (-26°C), 75W90 should be used. In extreme conditions or for better performance, full synthetic gear oil can be used.

Fan gearbox

Synthetic oil Mobil SHC 630 is recommended for the fan gearbox.

Power steering reservoir

This reservoir must be filled with automatic transmission oil, *Dexron IIE* or *Dexron III*.

Wheel bearings

The front and tag axle wheel hubs use oil lubrication that eliminates periodic grease repacking of the hubs. A sight glass is provided for convenient verification of oil level. Oil level should be checked daily and must be maintained between the "ADD" and "FULL" level mark in the sight glass. If oil is not visible through the sight glass, general purpose gear lubricant SAE 90 (API spec. GL5) must be added by removing the oil fill cap in center of hub to bring oil to the correct level. To check oil level after vehicle has been driven, wait at least 15 minutes to ensure that oil has settled. Drive axle wheel bearings are lubricated by the differential oil. Maintain differential oil level to ensure adequate lubrication of drive axle wheel bearings at all times.

TECHNICAL INFORMATION

PREHEATING SYSTEMS

WEBASTO

Heater:..... Model DBW2010
Heating capacity: 13.1 kW
Heating output:..... 45,000 Btu/hr
Fuel type:..... Same as engine
Fuel consumption:..... 0.4 U.S. gal.
(1.5 liters) / hour
Rated voltage: 24 ± 4 volts
Electric power consumption:..... 85 watts

STORAGE VOLUME

Exterior baggage compartments 315 ft³ / 8,9m³
Parcel racks..... 75ft³ / 2,13m³

SEATS

Seating capacity:

The following layouts are possible:

- No wheelchair with 49 passengers.
- One wheelchair and 47 other passengers.
- Two wheelchairs and 37 other passengers.

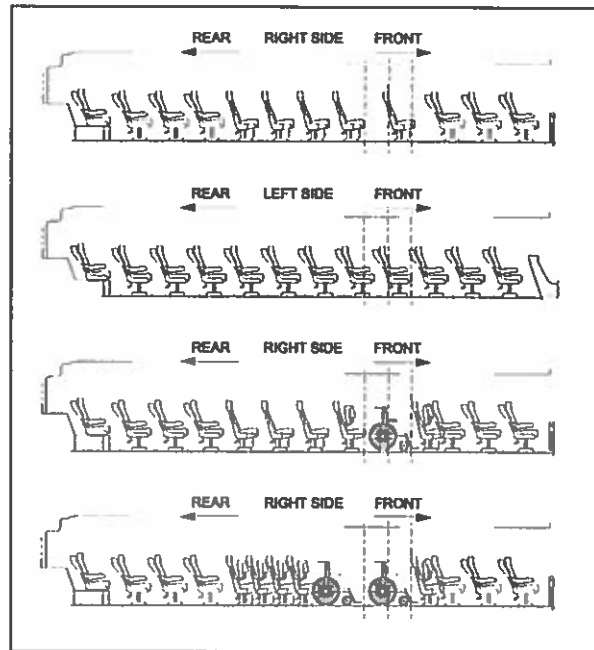


FIGURE 60: POSSIBLE LAYOUTS OF SEATS.

DATA PLATE AND CERTIFICATION

Data plates

The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

Engine

The engine serial number is stamped on the cylinder block under the exhaust manifold (oil filter side) close to the water pump. In addition, four plates are located on the rocker cover (oil filter side). Contents of the plates include the engine serial and model numbers and a list of the optional equipment on the engine. The information is primarily used when ordering replacement parts.

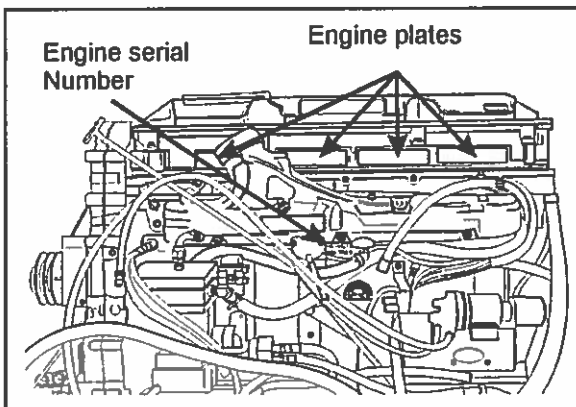


FIGURE 61

01012

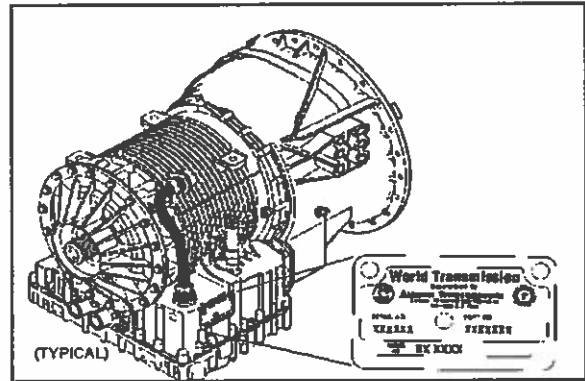


FIGURE 62: Transmission data plate

07019

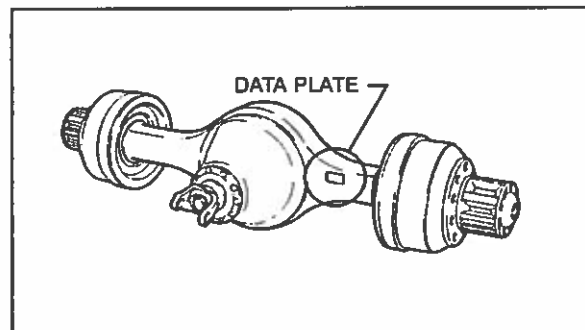


FIGURE 63: Drive axle

11004

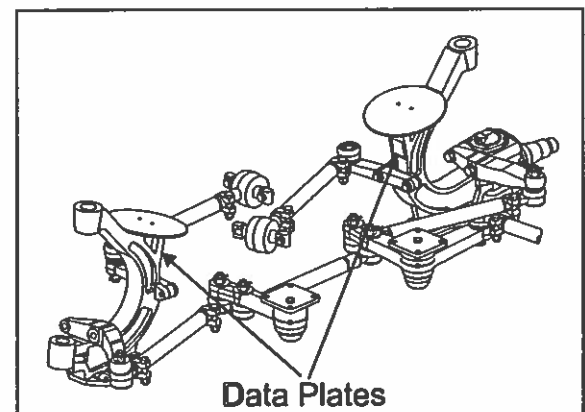


FIGURE 64: Front axle

10003

Vehicle identification number (V.I.N.)

The seventeen digit vehicle identification number (VIN) is located on a plate located on the

TECHNICAL INFORMATION

windshield frame pillar (driver's side). The VIN is visible from the outside of the coach. Make sure the correct vehicle identification number is given when ordering replacement parts. Using the VIN when ordering parts will facilitate processing.

NOTE: Record the VIN in the coach documentation and keep with company records. The VIN will normally be used for vehicle registration and for obtaining vehicle insurance coverage.

Coach final record

This is a complete and detailed record of all data pertaining to the assembly of the vehicle. This information sheet is included in the technical publication box delivered with the new vehicle and should be kept in vehicle where it will be readily available for reference.

Safety certification

All the components on this vehicle meet government requirements:

- Material and parts conform to ASTM and/or SAE standards in effect at time of manufacturing.
- Welding is in accordance with Canadian and US standards.
- All factory-installed interior materials meet F.M.V.S.S. 302 on fire resistance.

Certified according to Provincial, State and Federal Safety standards (Can. & US) B.M.C.S.S., F.M.V.S.S., C.M.V.S.S.

Other certification labels are affixed to the specific components on the vehicle.

DOT certification label

This is your assurance that your new vehicle complies with all applicable Federal Motor Vehicle

Safety Standards which were in effect at the time the vehicle was manufactured. You can find this label affixed below L.H. Side Control Panel in driver's compartment.

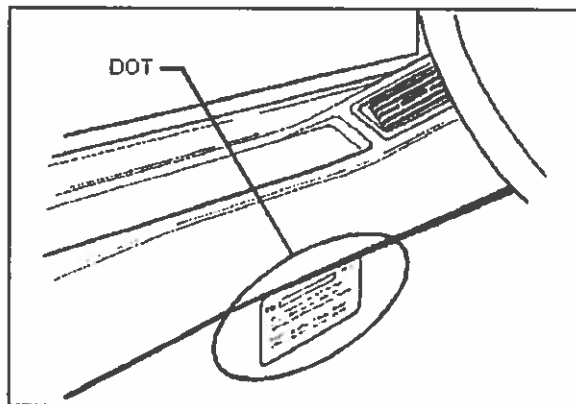


FIGURE 65

18042

EPA engine label

The exhaust emission certification label affixed on the lower R.H. side corner of the rear junction box certifies that the engine conforms to federal and any state exhaust emission regulations. It gives the operating conditions at which certification was made.

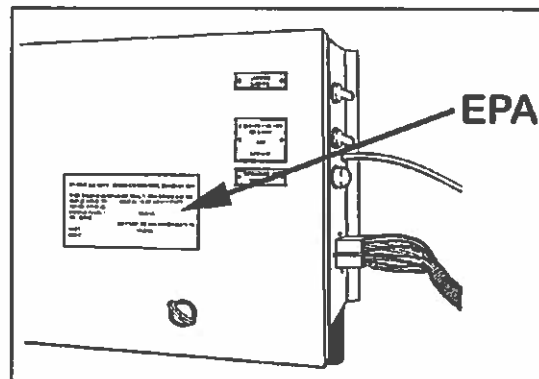


FIGURE 66

01011

LIGHT BULB DATA

When replacing a light bulb, special attention must be paid to the voltage rating (refer to light bulb data hereafter).

Note: All exterior lights are 12 volts and interior lights are 24 volts, except for the Check engine and Stop engine warning lights and flasher indicator lights which are also on 12 volt system.

EXTERIOR LIGHTING					
APPLICATION	PREVOST PART NO.	TRADE OR SAE NUMBER	WATTS OR CANDLE POWER	VOLTS	QTY XL-40
Headlight Hi/Low	930291	9004	65 W/45 W	12	2
License plate (sealed)	930266	---	12 W	12	2
Side directional (red)	930340	47072-3	LED	12	2
Side marker	930341	47073-3	LED	12	10
Identification (front)	930337	25350Y	LED	12	7
Identification (rear)	930334	25350R	LED	12	7
Clearance (front)	930337	25350Y	LED	12	7
Clearance (rear)	930334	25350R	LED	12	7
Front directional (hazard & marker)	562135	3057	32/3 cp	12	2
Rear directional	560589	1156	32 cp	12	8
Stop	560589	1156	32 cp	12	8
Back-up	560589	1156	32 cp	12	4
Center stop	560589	1156	32 cp	12	2
Tail	560123	67	4 cp	12	8
Baggage compartment	562278	6429 (78207)	10 W	24	12
Engine compartment	560601	456	2 cp	24	6
"Stop requested"	562278	6429 (78207)	10 W	24	2
Front door (inside)	563010	1308	16 cp	24	1

TECHNICAL INFORMATION

INTERIOR LIGHTING					
APPLICATION	PREVOST PART NO.	TRADE OR SAE NUMBER	WATTS OR CANDLE POWER	VOLTS	QTY XL-40
Check engine	562048	E-9 (Norma)	2 W	12	1
Stop engine	562048	E-9 (Norma)	2 W	12	1
Flasher indicator	562048	E-9 (Norma)	2 W	12	2
Other indicator - 1/unit	562049	(Osram)	2 W	24	AR
Speedometer	560145	1829	1 cp	24	2
Tachometer	560145	1829	1 cp	24	2
Other instrument - 1/unit	560144	1820	1.6 cp	24	AR
Step	562278	6429 (78207)	10 W	24	3
Driver's area	563010	1308	10 W	24	4
Parcel racks	560144	1820	1.6 cp	24	12
"Emergency exit"	560601	456	2 cp	24	14
Aisle	560141	1251	3 cp	24	6
Switch 1/unit	561123	2741 (Osram)	1 W	24	AR
Reading	561553	-	10 W	24	AR
Fluorescent	830102	F15T8 CW	15 W	---	24
Parcel rack front neon	830108	PL7	7 W	---	14
R.H. lateral console	562278	6429 (78207)	10 W	24	1

DDEC IV DIAGNOSTIC CODES

Reading Diagnostic Codes, Flash Method:

DDEC IV makes use of two types of codes: Active and inactive. The difference between the two types of codes is as follows:

Active Codes: Codes that are currently keeping the Check Engine or Stop Engine telltale light illuminated. Active codes are flashed via the Stop Engine Light when checked with the stop-engine-override switch.

Inactive Codes: These are all the codes logged in the ECM (whether or not they are currently turning on the Stop or Check Engine Light). Inactive codes are flashed via the Check Engine telltale light when checked with the stop-engine-override switch. In most instances, only the DDR can provide the information necessary for a quick diagnosis of the problem. If you just need to read out codes, however, and do not have a DDR available, the following procedure will let you read out codes. Make sure the rear-starting switch (located in the engine compartment) is in the normal position. With the ignition ON, the engine idling or engine shut-off, momentarily depress the Stop Engine Override switch. Active codes will be flashed on the stop engine telltale, followed by the inactive codes being flashed on the check-engine telltale panel. The cycle repeats itself until the operator depresses the stop engine override switch again. A code "43" consists of four flashes, followed by a short pause, then three flashes in quick succession.

Refer to DDEC Troubleshooting Manual 6SE497 for more information and SAE codes.

Note: Active codes are flashed in ascending numerical flash code order. Inactive codes are flashed in most recent to least recent order.

Note: Fault codes can only be cleared using the DDR.

TECHNICAL INFORMATION

DDEC Code Number (Flashed)	DESCRIPTION	DDEC Code Number (Flashed)	DESCRIPTION
11	Variable speed governor sensor input voltage low	12	Variable speed governor sensor input voltage high
13	Coolant level sensor input voltage low	14	Oil, coolant or intercooler temperature sensor input voltage high
15	Oil, coolant or intercooler temperature sensor input voltage low	16	Coolant level sensor input voltage high
17	Bypass or throttle valve position sensor input voltage high	18	Bypass or throttle valve position sensor input voltage low
21	TPS input voltage high	22	TPS input voltage low
23	Fuel temperature sensor input voltage high	24	Fuel temperature sensor input voltage low
25	No active codes	26	Auxiliary shutdown #1 or #2, input active
27	Air inlet or intake air temperature sensor input voltage high	28	Air inlet or intake air temperature sensor input voltage low
31	Auxiliary high side output open circuit or short to ground	32	Check Engine Light or Stop Engine Light short to battery (+) or open circuit
33	Turbo boost pressure sensor input voltage high	34	Turbo boost pressure sensor input voltage low
35	Oil pressure sensor input voltage high	36	Oil pressure sensor input voltage low
37	Fuel pressure sensor input voltage high	38	Fuel pressure sensor input voltage low
41	Too many SRS (missing TRS)	42	Too few SRS (missing SRS)
43	Coolant level low	44	Oil, coolant, intercooler or intake air temperature high
45	Oil pressure low	46	ECM battery voltage low
47	Fuel, air inlet or turbo boost pressure high	48	Fuel or air inlet pressure low

DDEC Code Number (Flashed)	DESCRIPTION	DDEC Code Number (Flashed)	DESCRIPTION
52	ECM A/D conversion fault	53	ECM non volatile memory fault
54	Vehicle speed sensor fault	55	J1939 data link fault
56	J1587 data link fault	57	J1922 data link fault
58	Torque overload	61	Injector response time long
62	Auxiliary output short to battery (+) or open circuit or mechanical fault	63	PWM drive short to battery (+) or open circuit
64	Turbo speed sensor input fault	65	Throttle valve position input fault
66	Engine knock sensor input fault	67	Coolant or air inlet pressure sensor input voltage fault
68	TPS idle validation switch open circuit or short to ground	71	Injector response time short
72	Vehicle overspeed	73	Gas valve position input fault or ESS fault
74	Optimized idle safety loop short to ground	75	ECM battery voltage high
76	Engine overspeed with engine brake	77	Fuel temperature high
81	Oil level, crankcase pressure, dual fuel BOI or exhaust temperature voltage high	82	Oil level, crankcase pressure, dual fuel BOI or exhaust temperature voltage low
83	Oil level, crankcase pressure, exhaust temperature or external pump pressure high	84	Oil level low or crankcase pressure low
85	Engine overspeed	86	External pump or barometer pressure sensor input voltage high
87	External pump or barometer pressure sensor input voltage low	88	Coolant pressure low

TABLE X-X: FLASH CODES AND DESCRIPTION

WORLD TRANSMISSION (WT) DIAGNOSTIC CODES

Diagnostic code memory

Diagnostic codes are logged in a list in memory (sometimes referred to as the queue), positioning the most recently occurring code first and containing up to five codes. The codes continued in the list have the information recorded as shown in the chart below. Access to the code list position, main code, sub code and active indicator is through either the shifter display or the Pro-Link Diagnostic Data reader (DDR). Access to the ignition cycle counter and event counter is through the DDR only.

Code List Position	Main Code	Sub Code	Active Indicator	Ignition Cycle Counter	Event Counter
d1	21	12	YES	00	10
d2	41	12	YES	00	04
d3	23	12	NO	08	02
d4	34	12	NO	13	01
d5	56	11	NO	22	02
Displayed on shifter display and DDR			YES= ACTIVE= "MODE ON"	Ignition cycle counter and event counter are not available on shifter display	

NOTE: All information is available with a DDR.

The following paragraphs define the different parts of the code list.

Code list position:

The position 1 through 5 which a code occupies in the code list in memory. Positions are shown as "d1" (Diagnostic Code #1) through "d5."

Main code

The general condition or area of fault detected by ECU.

Sub Code

The specific area or condition under the main code in which the condition was detected.

Active Indicator

Will be turned "on" when a fault condition is active (shifter will display "MODE ON" or the DDR will display "YES"). Will be set to "off" when conditions exist to indicate fault condition is gone.

Ignition cycle counter

Used to clear diagnostic codes that are inactive from the code list in memory. Counter is incremented each time a normal ECU powerdown occurs following clearing of the Active Indicator. Code will be cleared from the list when the counter exceeds 25.

Event counter

Used to count the number of occurrences of a diagnostic code that occur prior to the incident being cleared from the code list. The most recent code will be in position "d1". If the most recent code is one which is already in the code list, that code will be moved to position "d1", the Active Indicator will be turned "on" (shifter will display "MODE ON" or the DDR will display "YES"), the Ignition Cycle Counter is cleared and "1" is added to the Event counter.

Clearing the Active Indicator and code records from the Code list in memory:

If the conditions causing a diagnostic code to be set are cleared, the Active Indicator can be manually cleared by holding the "MODE" button down continuously for 3 seconds until a tone is heard from the shifter. To clear code records from the list, hold the "MODE" button down continuously for ten seconds until a second tone sounds. All diagnostic records in the list that are not active will then be cleared and the remaining records will then be moved up the list.

Code reading and code clearing procedures

Diagnostic codes can be read and cleared by two methods: by using the Pro-Link 9000 DDR plugged in receptacle located on L.H. lateral console or by using the shifter display. The use of the Pro-Link 9000 DDR is described in the instruction manual furnished with each tool. The method of reading and clearing codes described in

this section refers to only entering the Diagnostic Display Mode by the proper button.

The Diagnostic Display Mode may be entered for viewing of codes at any speed. Codes can only be cleared when the output speed = 0 and no output speed sensor failure is active.

The following descriptions explain how to use the shifter to read and clear codes:

Reading Codes:

1. Enter the diagnostic display mode by pressing the "↑" and "↓" (upshift and downshift arrows) buttons at the same time on the pushbutton shifter.

NOTE: If a "DO NOT SHIFT" condition is present at this time, the lever should be in the same position as it was at time of code detection. If not, this shifter tone will sound continuously.

NOTE: If an oil level sensor is present, then oil level will be displayed first. Diagnostic code display is achieved by depressing the upshift and downshift arrows or display mode button a second time.

2. Read the first code in the first of five code positions on the digital display of the shifter. For example, we will read code 25 11 in the first position. The display will change every two seconds as follows:

- a. Code list position --"d1"
- b. Main code --"25"
- c. Sub code --"11"
- d. Display will repeat cycle of a., b. and c. above

3. Press the "MODE" button momentarily to view the second position (d2) in the same way as 2. above.

TECHNICAL INFORMATION

4. To view the third, fourth and fifth positions (d3,d4 and d5), momentarily press the "MODE" button as explained above.

5. Pressing the "MODE" button momentarily after the fifth position is displayed will cause the sequence of code positions to start over with the first position.

6. Any code which is active will be indicated by the "MODE ON" indicator (active indicator) being turned on while in that code position (while in the normal operating mode, the "MODE ON" indicator is turned on to indicate "ECONOMY" mode operation.

7. Any code position in the list which does not have a diagnostic code logged will display "- -" for both the main and sub code displays. All positions after a code position without any code will also not contain any codes.

Clearing Codes:

1. Clearing of the active indicator is automatically done at ECU powerdown on all codes except 69 34 (see code list, page 5-17).

2. Some codes will clear the active indicator automatically when the condition causing the code is no longer detected by the ECU.

3. Manual clearing is possible while in the diagnostic display mode and after the condition causing to code is corrected (output speed must be zero).

a. To clear all active indicators, hold the "MODE" button down continuously for 3 seconds until the shifter tone sounds for 0.5 seconds.

b. Release the "MODE" button to return to normal operating mode. If the condition causing the code was not active at the time, the active indicator will turn off.

CAUTION: *If clearing a code while locked in a Forward or Reverse position (fail-to-range), the transmission will still be in Drive or Reverse when the clearing procedure is completed. Neutral must be manually selected.*

Exiting the diagnostic display mode:

The diagnostic display mode can be exited by any of the following procedures:

1. Press the "↑" and "↓" (upshift and downshift) buttons at the same time on the pushbutton shifter.

2. Press any range button, "D", "N" or "R", on the pushbutton shifter (the shift will be commanded if it is not inhibited by an active code).

3. Do nothing and wait until the calibrated time (approximately 10 minutes) has passed and the system automatically returns to the normal operating mode.

4. Turn off power to the ECU (turn off the vehicle at the ignition switch).

5. After the clearing the active indicator procedure described above has been performed.

Clearing records from the code list in memory

If the requirements for Manual Clearing the Active Indicator have been satisfied, and the "MODE" button is held down continuously for ten seconds while in the display mode until a tone sounds, all diagnostic records in the code list that are not active will be cleared and the remaining records will be moved up in the code list.

Abbreviation found in the code chart

The following responses are used throughout the following chart to command safe operation when diagnostic codes are set.

• DNS (Do Not Shift) Response

- Turn off lockup clutch and inhibit lockup operation.
- Inhibit all shifts.
- Turn on *DO NOT SHIFT* light.

- Pulse the tone generator for 8 seconds when the condition is first detected.

- Blank the select digit in the display.

- Ignore any range selection inputs and disable the button feedback tone for the pushbutton shifter.

• SOL OFF (Solenoid Off) Response

- All solenoids are commanded off (turning solenoids "A" and "B" off electrically causes them to be on hydraulically).

• RPR (Return to Previous Range) Response

- When the ratio or C3 pressure switch tests associated with a shift are not passed, the ECU commands the same range as commanded at the beginning of the shift.

• NNC (Neutral No Clutches) Response

- When certain ratio or C3 pressure switch tests are not passed, the ECU commands a neutral condition with no clutches applied.

TECHNICAL INFORMATION

World Transmission (WT) Diagnostic code list and description

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
12	12	Oil level, low	No	No upshift above a calibration range
12	23	Oil level, high	No	No upshift above a calibration range
13	12	ECU input voltage, low	Yes	DNS, SOL OFF (Hydraulic default)
13	13	ECU input voltage, medium low	No	None: Shift adaptive feature will not function.
14	12	Oil level sensor, low	No	None
14	23	Oil level sensor, high	No	None
21	12	Throttle position sensor, low	No	Use Throttle default value
21	23	Throttle position sensor, high	No	Use Throttle default value
22	14	Engine speed sensor reasonableness test	No	Use default engine speed
22	15	Turbine speed sensor reasonableness test	Yes	DNS, Lock in current range
22	16	Output speed sensor reasonableness or rapid decel test	Yes	DNS, Lock in current range
23	12	Primary Shifter or RSI Link Fault	No	Hold in last valid direction
23	13	Primary Shifter Mode Function Fault	No	Mode change not permitted
23	14	Secondary Shifter or RSI Link Fault	No	Hold in last valid direction
23	15	Secondary Shifter Mode Function Fault	No	Mode change not permitted
24	12	Sump oil temperature, cold	Yes	DNS
24	23	Sump oil temperature, hot	No	No upshifts above a calibration range
25	00	Output speed reasonableness test, detected at 0 speed, (L)	Yes	DNS, Lock in current range (L)
25	11	Output speed reasonableness test, detected at 0 speed, (1st)	Yes	DNS, Lock in current range (1 st)
25	22	Output speed reasonableness test, detected at 0 speed (2nd)	Yes	DNS, Lock in current range (2nd)

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
25	33	Output speed reasonableness test, detected at 0 speed, (3rd)	Yes	DNS, Lock in current range (3rd)
25	44	Output speed reasonableness test, detected at 0 speed, (4th)	Yes	DNS, Lock in current range (4th)
25	55	Output speed reasonableness test, detected at 0 speed, (5th)	Yes	DNS, Lock in current range (5th)
25	66	Output speed reasonableness test, detected at 0 speed, (6th)	Yes	DNS, Lock in current range (6th)
25	77	Output speed reasonableness test, detected at 0 speed, (R)	Yes	DNS, Lock in current range (R)
32	00	C3 pressure switch open, (L) range	Yes	DNS, Lock in current range (L)
32	33	C3 pressure switch open, (3rd) range	Yes	DNS, Lock in current range (3rd)
32	55	C3 pressure switch open, (5th) range	Yes	DNS, Lock in current range (5th)
32	77	C3 pressure switch open, (R) range	Yes	DNS, Lock in current range (R)
33	12	Sump oil temperature sensor, low	No	Use default value of 200° F (93° C)
33	23	Sump oil temperature sensor, high	No	Use default value of 200° F (93° C)
34	12	EEPROM, factory cal. compatibility number wrong	Yes	DNS, SOL OFF (Hydraulic default)
34	13	EEPROM, factory calibration block checksum	Yes	DNS, SOL OFF (Hydraulic default)
34	14	EEPROM, Power Off Block checksum	Yes	Use previous location, or factory calibration and reset adaptive
34	15	EEPROM, Diagnostic Queue Block Checksum	Yes	Use previous location, or clear diagnostic queue
34	16	EEPROM, Real Time Block Checksum	Yes	DNS, SOL OFF (Hydraulic default)
35	00	Power interruption (Code set after power restored)	No	NONE (Hydraulic default during interruption)
35	16	Real Time EEPROM Write Interruption	Yes	DNS, SOL OFF (Hydraulic default)

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
36	00	Hardware/Software not compatible	Yes	DNS, SOL OFF (Hydraulic default)
41	12	Open or short to ground, A solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	13	Open or short to ground, B solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	14	Open or short to ground, C solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	15	Open or short to ground, D solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	16	Open or short to ground, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	21	Open or short to ground, F solenoid circuit	No	Lock-up inhibited
41	22	Open or short to ground, G solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
41	23	Open or short to ground, H solenoid circuit	No	Retarder allowed, differential lock inhibited
41	24	Open or short to ground, J solenoid circuit	No	Low and 1st inhibited
41	25	Open or short to ground, K solenoid circuit	No	K solenoid operation inhibited
41	26	Open or short to ground, N solenoid circuit	No	Low and 1st inhibited
42	12	Short to battery, A solenoid circuit	Yes	DNS, Lock in a range
42	13	Short to battery, B solenoid circuit	Yes	DNS, Lock in a range
42	14	Short to battery, C solenoid circuit	Yes	DNS, Lock in a range
42	15	Short to battery, D solenoid circuit	Yes	DNS, Lock in a range
42	16	Short to battery, E solenoid circuit	Yes	DNS, Lock in a range

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
42	21	Short to battery, F solenoid circuit	No	Lock-up inhibited
42	22	Short to battery, G solenoid circuit	Yes	DNS, Lock in a range
42	23	Short to battery, H solenoid circuit	No	Retarder allowed, differential lock inhibited
42	24	Short to battery, J solenoid circuit	No	Low and 1st inhibited
42	25	Short to battery, K solenoid circuit	No	K solenoid operation inhibited
42	26	Short to battery, N solenoid circuit	No	Low and 1st inhibited
43	21	Low side driver, F solenoid circuit	No	Lock-up inhibited
43	25	Low side driver, K solenoid circuit	No	K solenoid operation inhibited
43	26	Low side driver, N solenoid circuit	No	Low and 1st inhibited
44	12	Short to ground, A solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	13	Short to ground, B solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	14	Short to ground, C solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	15	Short to ground, D solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	16	Short to ground, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	21	Short to ground, F solenoid circuit	No	Lock-up inhibited
44	22	Short to ground, G solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
44	23	Short to ground, H solenoid circuit	No	Retarder allowed. differential lock inhibited
44	24	Short to ground, J solenoid circuit	No	Low and 1st inhibited

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
44	25	Short to ground, K solenoid circuit	No	K solenoid operation inhibited
44	26	Short to ground, N solenoid circuit	No	Low and 1st inhibited
45	12	Open circuit, A solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	13	Open circuit, B solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	14	Open circuit, C solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	15	Open circuit, D solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	16	Open circuit, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	21	Open circuit, F solenoid circuit	No	Lock-up inhibited
45	22	Open circuit, G solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default)
45	23	Open circuit, H solenoid circuit	No	Retarder allowed differential lock inhibited
45	24	Open circuit, J solenoid circuit	No	Low and 1st inhibited
45	25	Open circuit, K solenoid circuit	No	K solenoid operation inhibited
45	26	Open circuit, N solenoid circuit	No	Low and 1st inhibited
51	10	Offgoing ratio test (during shift), 1 to L	Yes	Low and 1st inhibited
51	12	Offgoing ratio test (during shift), 1 to 2	Yes	DNS, RPR
51	21	Offgoing ratio test (during shift), 2 to 1	Yes	DNS, RPR
51	23	Offgoing ratio test (during shift), 2 to 3	Yes	DNS, RPR
51	43	Offgoing ratio test (during shift), 4 to 3	Yes	DNS, RPR

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
51	45	Offgoing ratio test (during shift), 4 to 5	Yes	DNS, RPR
51	65	Offgoing ratio test (during shift), 6 to 5	Yes	DNS, RPR
52	01	Offgoing C3PS test (during shift), L to 1	Yes	DNS, RPR
52	08	Offgoing C3PS test (during shift), L to N1	Yes	DNS, NNC
52	32	Offgoing C3PS test (during shift), 3 to 2	Yes	DNS, RPR
52	34	Offgoing C3PS test (during shift), 3 to 4	Yes	DNS, RPR
52	54	Offgoing C3PS test (during shift), 5 to 4	Yes	DNS, RPR
52	56	Offgoing C3PS test (during shift), 5 to 6	Yes	DNS, RPR
52	71	Offgoing C3PS test (during shift), R to 1	Yes	DNS, NNC
52	72	Offgoing C3PS test (during shift), R to 2	Yes	DNS, NNC
52	78	Offgoing C3PS test (during shift), R to N1	Yes	DNS, NNC
52	79	Offgoing C3PS test (during shift), R to 2 (R to NNC to 2)	Yes	DNS, NNC
52	99	Offgoing C3PS test (during shift), N3 to N2	Yes	DNS, RPR
53	08	Offgoing speed test (during shift), L to N1	Yes	DNS, NNC
53	18	Offgoing speed test (during shift), 1 to N1	Yes	DNS, NNC
53	28	Offgoing speed test (during shift), 2 to N1	Yes	DNS, NNC
53	29	Offgoing speed test (during shift), 2 to N2	Yes	DNS, RPR
53	38	Offgoing speed test (during shift), 3 to N1	Yes	DNS, NNC

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
53	39	Offgoing speed test (during shift), 3 to N3	Yes	DNS, RPR
53	48	Offgoing speed test (during shift), 4 to N1	Yes	DNS, NNC
53	49	Offgoing speed test (during shift), 4 to N3	Yes	DNS, RPR
53	58	Offgoing speed test (during shift), 5 to N1	Yes	DNS, NNC
53	59	Offgoing speed test (during shift), 5 to N3	Yes	DNS, RPR
53	68	Offgoing speed test (during shift), 6 to N1	Yes	DNS, NNC
53	69	Offgoing speed test (during shift), 6 to N4	Yes	DNS, RPR
53	78	Offgoing speed test (during shift), R to N1	Yes	DNS, NNC
53	99	Offgoing speed test (during shift), N2 to N3 or N3 to N2	Yes	DNS, RPR
54	01	Oncoming ratio test (after shift), L to 1	Yes	DNS, RPR
54	07	Oncoming ratio test (after shift), L to R	Yes	DNS, NNC
54	10	Oncoming ratio test (after shift), 1 to L	Yes	DNS, RPR
54	12	Oncoming ratio test (after shift), 1 to 2	Yes	DNS, RPR
54	17	Oncoming ratio test (after shift), 1 to R	Yes	DNS, NNC
54	21	Oncoming ratio test (after shift), 2 to 1	Yes	DNS, RPR
54	23	Oncoming ratio test (after shift), 2 to 3	Yes	DNS, RPR
54	27	Oncoming ratio test (after shift), 2 to R	Yes	DNS, NNC

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
54	32	Oncoming ratio test (after shift), 3 to 2	Yes	DNS, RPR
54	34	Oncoming ratio test (after shift), 3 to 4	Yes	DNS, RPR
54	43	Oncoming ratio test (after shift), 4 to 3	Yes	DNS, RPR
54	45	Oncoming ratio test (after shift), 4 to 5	Yes	DNS, RPR or SOL OFF (Hydraulic default)
54	54	Oncoming ratio test (after shift), 5 to 4	Yes	DNS,RPR
54	56	Oncoming ratio test (after shift), 5 to 6	Yes	DNS,RPR
54	65	Oncoming ratio test (after shift), 6 to 5	Yes	DNS,RPR
54	70	Oncoming ratio test (after shift), R to L	Yes	DNS,NNC
54	71	Oncoming ratio test (after shift), R to 1	Yes	DNS,NNC
54	72	Oncoming ratio test (after shift), R to 2	Yes	DNS,NNC
54	80	Oncoming ratio test (after shift), N1 to L	Yes	DNS,RPR
54	81	Oncoming ratio test (after shift), N1 to 1	Yes	DNS,RPR
54	82	Oncoming ratio test (after shift), N1 to 2	Yes	DNS,RPR
54	83	Oncoming ratio test (after shift), N1 to 3	Yes	DNS,RPR
54	85	Oncoming ratio test (after shift), N1 to 5	Yes	DNS,RPR
54	86	Oncoming ratio test (after shift), N1 to 6	Yes	DNS, RPR
54	92	Oncoming ratio test (after shift), R to 2 (R to NNC to 2)	Yes	DNS, NNC

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
54	92	Oncoming ratio test (after shift), N1 to 2 (N1 to NNC to 2)	Yes	DNS, RPR
54	92	Oncoming ratio test (after shift), N2 to 2	Yes	DNS, RPR
54	93	Oncoming ratio test (after shift), N3 to 3	Yes	DNS, RPR
54	95	Oncoming ratio test (after shift), N3 to 5	Yes	DNS, RPR
54	96	Oncoming ratio test (after shift), N4 to 6	Yes	DNS, RPR
54	97	Oncoming ratio test (after shift), 2 to R (2 to NNC to R)	Yes	DNS, NNC
55	17	Oncoming C3PS test (after shift), 1 to R	Yes	DNS, NNC
55	27	Oncoming C3PS test (after shift), 2 to R	Yes	DNS, NNC
55	80	Oncoming C3PS test (after shift), N1 to L	Yes	DNS, RPR
55	87	Oncoming C3PS test (after shift), N1 to R	Yes	DNS, RPR
55	97	Oncoming C3PS test (after shift), 2 to R or NVL to R (2 to NNC to R)	Yes	DNS, NNC
56	00	Range verification test, L	Yes	DNS, 1st, Low, or SOL OFF (Low)
56	11	Range verification test, 1st	Yes	DNS, 6th
56	22	Range verification test, 2nd	Yes	DNS, 6th or 5th
56	33	Range verification test, 3rd	Yes	DNS, 5th or SOL
56	44	Range verification test, 4th	Yes	DNS, 3rd or 5th
56	55	Range verification test, 5th	Yes	DNS, SOL OFF (5th) or 3rd
56	66	Range verification test, 6th	Yes	DNS, 5th, 3rd, or SOL OFF (3rd)
56	77	Range verification test, R	Yes	DNS, N2 or N3

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
57	11	Range verification C3PS test, 1 st	Yes	DNS, SOL OFF (3rd)
57	22	Range verification C3PS test, 2nd	Yes	DNS, 3rd
57	44	Range verification C3PS test, 4th	Yes	DNS, 5th or SOL OFF (3rd)
57	66	Range verification C3PS test, 6th	Yes	SOL OFF (5th), DNS
57	88	Range verification C3PS test, N1	Yes	DNS, N3
57	99	Range verification C3PS test, N2 or N4	Yes	DNS, N3
61	00	Retarder oil temperature, hot	No	None
62	12	Retarder oil temperature sensor, low	No	None
62	23	Retarder oil temperature sensor, high	No	None
63	00	Special function input	No	Depends on special function
64	12	Retarder modulation request sensor, low	No	Retarder operation inhibited
64	23	Retarder modulation request sensor, high	No	Retarder operation inhibited
65	00	Engine rating too high	Yes	DNS
66	00	Serial communications interface fault	No	Use default throttle values
69	12	ECU, A solenoid driver open	Yes	DNS, SOL OFF (hydraulic default)
69	13	ECU, B solenoid driver open	Yes	DNS, SOL OFF (hydraulic default)
69	14	ECU, C solenoid driver open	Yes	DNS, SOL OFF (hydraulic default)
69	15	ECU, D solenoid driver open	Yes	DNS, SOL OFF (hydraulic default)
69	16	ECU, E solenoid driver open	Yes	DNS, SOL OFF (hydraulic default)
69	21	ECU, F solenoid driver open	No	Lock-up inhibited
69	22	ECU, G solenoid driver open	Yes	DNS, SOL OFF (Hydraulic default)

TECHNICAL INFORMATION

MAIN CODE	SUB CODE	DESCRIPTION	DO NOT SHIFT LIGHT	INHIBITED OPERATION DESCRIPTION
69	23	ECU, H solenoid driver open	No	Retarder allowed, differential lock inhibited
69	24	ECU, J solenoid driver open	No	Low and 1 st inhibited
69	25	ECU, K solenoid driver open	No	K solenoid operation inhibited
69	26	ECU, N solenoid driver open	No	Low and 1st inhibited
69	32	ECU, SPI communications link fault	No	Hold in last valid direction
69	33	ECU, Central Operating Processor (COP) timeout	Yes	Reset ECU, Shutdown ECU on 2nd occurrence (power loss: hydraulic defaults)
69	34	ECU, EEPROM write timeout	Yes	DNS, SOL OFF (Hydraulic default)
69	35	ECU, EEPROM checksum	Yes	Induce COP timeout (reset ECU)
69	36	ECU, RAM self test	Yes	Induce COP timeout (reset ECU)
69	41	ECU, I/O ASIC addressing test	Yes	Induce COP timeout (reset ECU)
70	12	Software, minor loop overrun	Yes	Induce COP timeout (reset ECU)
70	13	Software, illegal write to address \$0000	Yes	Induce COP timeout (reset ECU)
70	14	Software, major loop overrun	Yes	Induce COP timeout (reset ECU)

Care & maintenance

INTERIOR CLEANING

To provide consistent and quality passenger service, the coach interior must be kept clean at all times. Scheduled servicing of the coach shall include cleaning of all passenger areas.

NOTE: Use only approved cleaning products obtained through a recognised cleaning product supplier. Never use stain protection products on new fabrics. To prevent permanent staining of fabrics, clean stains soon after they occur. Incorrect treatment of stains can worsen them. Get help from a cleaning specialist to remove stubborn stains.

NOTE: The cleaning information provided in this section are recommended cleaning practices. Cleaning results may vary depending on the condition of the stain. Always clean stain promptly for best results.

Seat Upholstery

Normal Cleaning

Firmly beat the seat upholstery with a blunt object, such as a wooden paddle, to release dust and dirt. Vacuum the seat upholstery fabric in the direction of the stitching using an upholstery nozzle.

NOTE: Upholstery life will be reduced due to the abrasive nature of dirt and grit. Vacuum the seat upholstery regularly.

Removal of Stains and Marks

Remove stains and marks from the wool plush as follows:

Method 1:

- Apply a non-flammable solvent (Trichloroethylene) to stained area with a clean, white absorbent rag.
- Clean stain starting at the outer edges of the stain and working in towards the centre.
- Blot affected area frequently with a clean, dry absorbent cloth to prevent stain rings caused by excess solvent.

WARNING: Use solvents in a well-ventilated area. Open all windows and doors.

Method 2:

- Wet the stain with a solution of household detergent and lukewarm water. Do not soak the stain.
- Rub the stain with a damp cloth.
- Rinse cloth after each application.

CAUTION: Do not use soap, soap powder, ammonia, soda, bleach or cleaning products containing any of these compounds.

Beverage Stains

Remove beverage stains by following method 1. If stain persists, repeat method 1 using methylated spirits instead of solvent.

Alcoholic Beverage Stains

Remove alcoholic beverage stains by wetting the stain with water, then clean following method 2.

Burns

Scrape burnt area using a knife or razor blade then clean following method 2. Consult an upholstering specialist when dealing with extensive burns.

CARE & MAINTENANCE

Cosmetic Stains

Remove stains left by cosmetics by following method 1 then method 2.

Ink Stains

Remove ink stains following method 2. If stain persists, apply a warm oxalic acid solution. Rinse with water.

Blood stains

Remove blood stains following method 2.

Urine

Remove urine stains following method 2.

Vomit

Remove vomit stains following method 2.

Copying Ink - Ballpoint Pen Ink

Treat with methylated spirits, blotting frequently to avoid spreading stain, followed by method 2.

Marking Ink (Felt-Tip Pens)

Treat with Methyl-Ethyl-Ketone (MEK) followed by method 2.

Oil, Grease and Paint

Remove excess using a knife. Treat with method 1 followed by method 2. If stain persists, repeat procedure.

Rust

Remove rust stains by following method 2. Apply a warm oxalic acid solution to stained areas. Rinse with water.

Tar

Soften Tar with benzene and then treat using method 1 followed by method 2.

Chewing Gum

Soften gum with cyclohexane. Carefully scrape off stains using a sharp knife or razor blade.

Plastic and vinyl

Use a clean, damp cloth or sponge to keep trim free from dust. For other soilage, use a lukewarm all-purpose cleaning solution or a mild saddle soap for vinyl trim. Remove water spots and soap traces with a clean, damp cloth or sponge. Use a clean, soft cloth to rub dry.

Grease, tar or oil stains can be removed with a clean cloth or sponge soaked with an all-purpose cleaner or with a solvent-type vinyl-cleaning agent.

Occasionally, apply a colourless vinyl or leather preservative to retain the material's lustre and pliability.

Windows

To clean inside surface of the windows, use a commercial glass cleaner or a 10 to 1 mix of water and white vinegar. For maximum visibility, keep your windows clean at all times.

Rubber components

Should be treated only with pure water or glycerine.

Pressure laminates

Normal maintenance consists in wiping surfaces with a damp cloth and detergent. Remove spillage at once to avoid permanent stains.

To remove stains, first try cleaning the affected area with a household detergent, methylated spirits or mineral turpentine. If stain is still present, try a mild abrasive and water solution

Stainless steel

Use a stainless steel cleaner available at any automotive washing and cleaning specialist and follow manufacturer's instructions.

Formica

Remove stains on Formica surfaces with a household detergent, methylated spirits or mineral turps. Clean with a mild abrasive and water solution if stains persist.

Carpet

Vacuum carpets regularly to prolong carpet life.

Floor cleaning

Clean floors with a quality non-ionic detergent cleaner. Follow the manufacturer's recommendations for cleaning.

Remove any excess detergent solution using a wet/dry vacuum or mop. Rinse floor with a solution of one part Clorox to ten parts warm water.

Polish dry floor using a high-speed buffer and a smooth, red 3-M polishing pad.

Mop floor periodically with a solution of 5% Clorox in warm water.

EXTERIOR CLEANING

The paint on your vehicle is very durable, but must be protected from harsh weather conditions that can make it lose its lustre. Therefore, wash and wax your vehicle often. The longer the dirt is left on the paint, the greater the risk of damaging the glossy finish; either by scratching (if the dirt is rubbed into the paint), or simply by the chemical effect dirt particles have on painted surfaces.

Begin by spraying water over the entire vehicle to remove all loose dirt, then wash with a car washing-soap in the concentration recommended by the manufacturer. Rinse afterwards with a generous stream of water.

NOTE: The vehicle paintwork needs polishing or preserving when water no longer forms droplets on the surface.

CAUTION: Do not use hot water. Lukewarm to cool water is less harmful to the paint. Do not use solutions that can damage the body paint.

Do not aim the water jet directly into openings such as the A/C & heating compartment door grille to avoid water penetration in the fresh air intake duct. If the water jet is under high pressure, avoid aiming the jet directly on condenser and radiator doors as the fins of cores may be damaged.

Do not wash or wax your vehicle in direct sunlight. The underside of the vehicle picks up dirt and road salt used to keep streets and highways free of snow and ice. To protect against corrosion, it is important to remove mud, debris and road salt from the underside with a powerful water jet. Be sure to include the wheelhousings, bumpers, muffler, tailpipe and brackets. This should be done twice a year and is best accomplished after the vehicle has been driven through a heavy rain. The exterior of the vehicle, engine, engine compartment, aluminium wheels and mirrors should always be washed as soon as possible after accumulating road salt.

NOTE: Let engine and exhaust cool down before washing.

Tar or oil

Do not allow tar or oil to remain on the paint. Remove as soon as possible with tar remover or turpentine. After applying cleaning fluids, always wash with a lukewarm water and soap solution, then apply a new coat of wax.

Insects

Remove as soon as possible with a lukewarm water and soap solution or insect remover.

Tree sap and bird droppings

Do not allow tree sap or bird droppings to harden on the paint. Remove with a lukewarm water and soap solution.

Windows

Keep silicone sprays off the windshield to avoid wiper smear in rain. Clean all windows regularly to remove road film and bus-wash wax build-up. Use a lukewarm soap and water solution or an alcohol-based cleaning agent. If a chamois is used for polishing the glass, it should be used exclusively for that purpose.

Wiper blades

If wiper blades are frozen, remove ice gently by hand to avoid blade damage. Remove all wiper blades periodically and clean them thoroughly with an alcohol-based solution. Use a sponge or soft cloth and wipe lengthwise. Replace wiper blades if they are damaged or do not clean well.

OIL VERIFICATION

Engine oil level

Ideally, check engine oil level when oil is warm with vehicle on a level surface; for instance, during every fuel filling. First, stop engine and wait at least 10 minutes for the oil to drain back into the oil pan. Then, pull out the dipstick, wipe clean, reinsert the dipstick and note the oil level. Maintain the oil level between the two marks on the dipstick, and never allow it to drop below the "L" mark. If required, add oil from the oil reserve tank using the tank valve, then check oil level again. No advantage is gained by having oil level above the "F" mark. Do not forget to shut off oil reserve tank valve, as too much oil can be harmful to the engine.

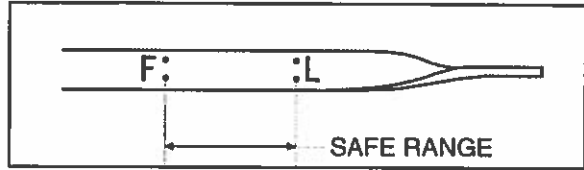


FIGURE 68

01027

NOTE: For location of engine oil dipstick and engine oil reserve tank see figure on page 2-30.

Automatic transmission oil level

Manual oil level check procedure

NOTE: For "Electronic Readout of Oil level sensor" and other transmission related information, see pages 4-3 through 4-6.

WARNING: When checking the oil level, be sure that the transmission is in Neutral, parking brake is properly engaged, and the wheels are chocked. Unexpected and possible sudden vehicle movement may occur if these precautions are not taken.

Special care must be taken not to touch the engine coolant tubing and/or exhaust pipe, as this could cause severe burns.

Do not wear loose clothing and stay away from rotating parts during procedure. Personal injury could occur.

NOTE: Clean around the end of fill tube before removing dipstick. This will aid in preventing dirt and/or foreign matter from entering the fluid system, which can cause valves to stick, undue wear of transmission parts, or clog passages.

Cold Check

The purpose of the Cold Check is to determine if the transmission has enough fluid to be operated safely until a Hot Check can be made.

If the engine has been shut down for an extended period of time, park the vehicle on a level surface and apply the parking brake.

Run the engine for at least 1 minute. Shift to Drive and operate the engine for 30 seconds at 1000-1500 rpm; then shift to Reverse to clear the

hydraulic system of air. Then shift to Neutral and allow the engine to idle (500-800 rpm).

After wiping the dipstick clean (see page 2-37 for dipstick location), check the fluid level. If the fluid on the dipstick is within the COLD RUN band, the level is satisfactory. If the fluid level is not within this band, add or drain fluid as necessary to bring the level to the COLD RUN band.

Perform a HOT CHECK at the first opportunity after normal operating temperature (71 °C-93 °C; 160 °F-200 °F) is reached.

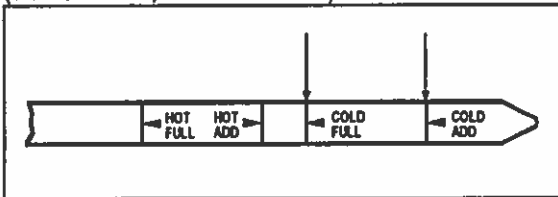


FIGURE 69 07006

CAUTION: An accurate fluid level check cannot be made unless the engine is idling (500-800 rpm) in Neutral, the transmission fluid is at the proper temperature, and the vehicle is on a level surface.

Hot Check

Because the fluid level rises as temperature increases, the fluid must be hot to ensure an accurate check.

Be sure fluid has reached normal operating temperature (71 °C - 93 °C; 160 °F - 200 °F).

Park the vehicle on a level surface and shift to Neutral. Apply parking brake and allow the engine to idle (500-800 rpm).

After wiping the dipstick clean, check the fluid level. The safe operating level is anywhere within the HOT RUN band on the dipstick.

If the level is not within this band, add or drain fluid as necessary to bring the level within the HOT RUN band.

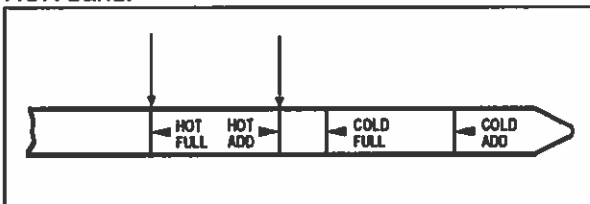


FIGURE 70 07007

Power steering oil level

Your vehicle is equipped with an integrated power steering system. The power steering fluid reservoir is located on the upper R.H. side of engine in the engine compartment (see page 2-30). To check fluid level, proceed as follows:

1. Stop engine, and open both engine rear doors.
2. Unscrew and remove the dipstick located on top of reservoir and wipe with a clean rag.
3. Insert dipstick in reservoir, then remove it again to check fluid level.
4. Adjust level to "FULL" mark using proper dipstick side depending on fluid temperature, use "DEXRON IIE or DEXRON III" automatic transmission fluid.
5. Reinsert and tighten the dipstick.

Fan gearbox oil level

The radiator fan is belt driven from the engine crankshaft pulley through a standard gearbox which is designed with two output shafts (for location of gearbox, see page 2-30). To check fluid level, proceed as follows:

1. Stop engine and make sure that all engine safety precautions have been observed.
2. Remove the dipstick located on top of gearbox and wipe with a clean rag.
3. Insert dipstick in gearbox case, then remove again to check fluid level.
4. Adjust level to "Full" mark using Mobil SHC 630 synthetic oil.
5. Reinsert the dipstick.

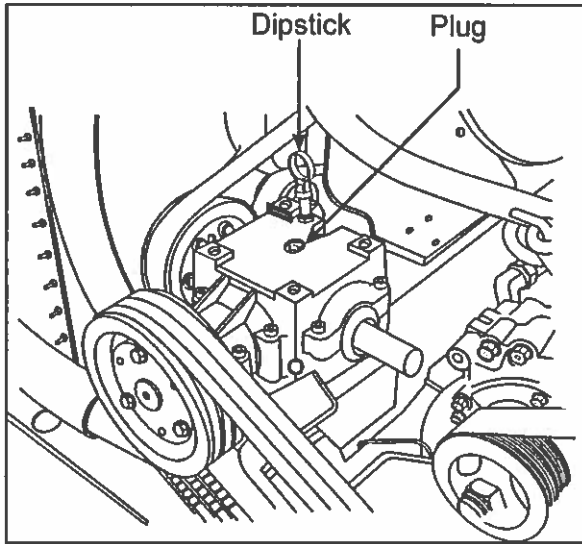


FIGURE 71: ENGINE COMPARTMENT, Fan gearbox

A/C compressor

The level is acceptable when oil is visible in the sight glass on R.H. side of compressor. For an accurate reading, release tension on belts, then level compressor. The oil level should be in centre of sight glass. (See A/C compressor location on page 2-30). To check oil level on compressor used on the optional auxiliary A/C system, refer to the maintenance manual.

Wheel bearing oil level

The front and tag axle wheel hubs use oil lubrication that eliminates periodic grease repacking of the hubs. A sight glass is provided for convenient verification of oil level. Oil level should be checked daily and must be maintained between the "ADD" and "FULL" level mark in the sight glass. If oil is not visible through the sight glass, general purpose gear lubricant SAE 90 (API spec. GL5) must be added by removing the oil fill cap in center of hub to bring oil to the correct level., wait at least 15 minutes to ensure that oil has settled. The differential oil lubricates drive axle wheel bearings. Maintain differential oil level to ensure adequate lubrication of drive axle wheel bearings at all times.

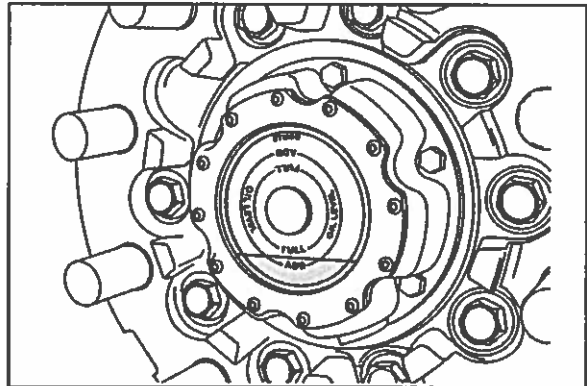


FIGURE 72

13017

CAUTION: Wheel bearing oil fill cap is supplied with a very small vent hole in its centre. Occasionally insert a small tip (toothpick size) to be sure that hole is not plugged; a plugged hole may cause leakage when heat expands the oil and air.

AIR TANKS

The air coming from the air dryer is first forwarded to the wet air tank, then to the primary, supplementary primary, secondary and accessory air tanks. Two additional air tanks have been installed on the vehicle: the kneeling air tank and emergency/parking brake overrule air tank.

The accessory air tank must be purged during pre-starting inspection. A good practice is to purge this reservoir at the end of every working day by using the remote accessory air tank drain valve located in steering compartment underneath accessory air filter.

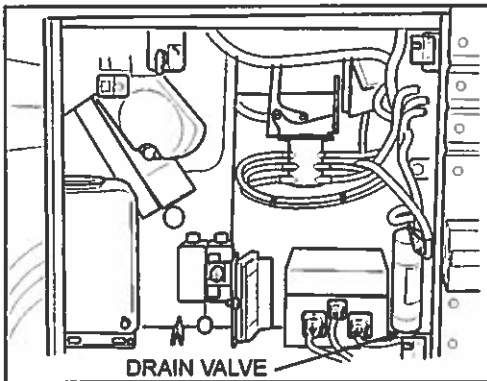


FIGURE 73

12012

Furthermore, purge all tanks using their bottom drain valve each time the oil and filters are changed (maximum 12,500 miles 20,000 km).

For tank locations, refer to figure in "Lubrication and servicing schedule" further in this section.

COOLANT LEVEL VERIFICATION

The cooling system is completely filled when the coolant (cold) is visible in the sight glass of the surge tank (see page 2-30 for location). If topping-up is necessary, fill the system with the same mixture ratio already used in the system.

WARNING: Hot engine coolant is under pressure. Never remove cap when coolant is hot as severe burns can result. Allow engine to cool before checking coolant level.

BELT TENSIONERS

Belt tensioning is applied through air bellows which are adjusted by an air pressure regulating valve mounted in engine compartment above the doors. For proper operation of the air bellows, adjust the upper tensioning bracket to provide a $2\frac{3}{8}$ " - $2\frac{1}{2}$ " (60 - 64 mm) extension with the pneumatic system under normal pressure and the pressure regulating valve set at 50 psi (345 kPa) for Series 60 engines.

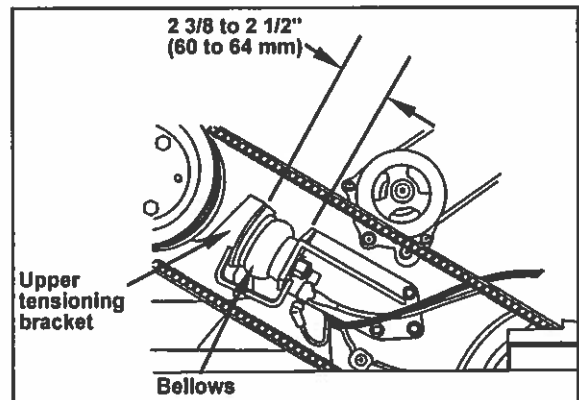


FIGURE 74

12017A

For belt replacement, air pressure must be released from bellows by means of the belt tensioner pressure releasing valve. This valve (see page 2-30 for location) mounted above the engine doors close to the pressure regulating valve, is manually operated. Before handling, be sure that all engine safety precautions have been observed.

A/C AND HEATING AIR FILTERS

For maximum air conditioning and heating system efficiency, air filters should be inspected and cleaned as required in maintenance schedule to ensure proper ventilation of the evaporator and heating radiator cores.

Driver's system

Air filter for driver's system is located under dashboard. To gain access, turn counter-clockwise both $3/4$ turn knurled fasteners of A/C

and heating unit access panel, then lift and remove panel.

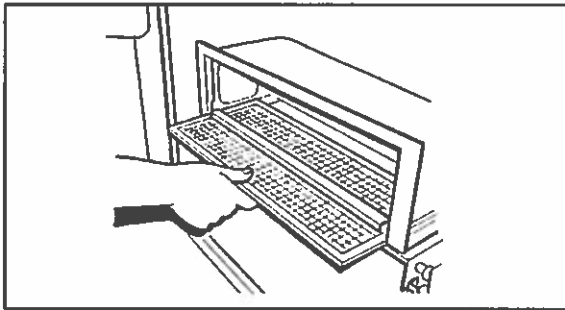


FIGURE 75

22011

Central system

The central system uses two (2) air filters, they are located in the A/C and heating compartment. To gain access, open driver's side baggage compartment, forward of A/C and heating compartment, and open the air filter access panel by unscrewing the three (3) retaining screws. Slide out the upper filter first, then slide out the other.

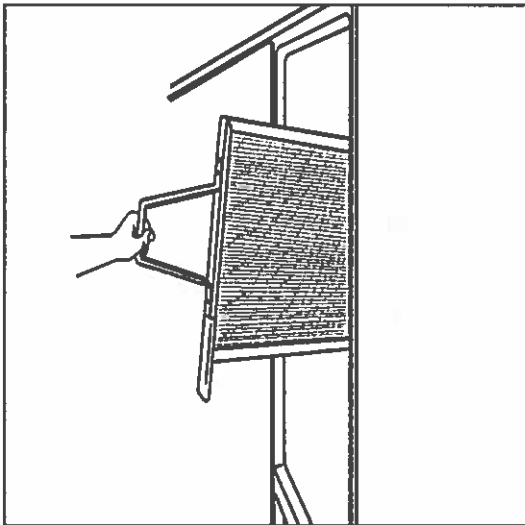


FIGURE 76

22012C

FLEXIBLE HOSE MAINTENANCE

The performance of engine and related equipment is greatly affected by the flexible hoses' ability to carry fluids or gases. Maintenance of hoses is an important element in ensuring efficient, economical, and safe operation of your vehicle.

Pre-starting inspection

Inspect hoses for leaks, and check all fittings, clamps, and ties carefully. Ensure that hoses are not resting on or touching shafts, couplings, heated surfaces including exhaust manifolds, any sharp edges, or other obviously damaging areas. Since all machinery vibrates and moves to a certain extent, clamps and ties can fatigue with time. To ensure proper support, inspect fasteners frequently and tighten or replace them as necessary.

Leaks

Investigate leaks immediately to determine if fittings have loosened or cracked, and also if hoses have ruptured or worn through. Take corrective action immediately. Leaks are not only potentially detrimental to machine operation, but can also result in added expenses caused by the need to replace lost fluids.

WARNING: *Personal injury and/or property damage may result from fire due to the leakage of flammable fluids, such as fuel or lubricating oil.*

Service life

A hose has a limited service life, which is controlled by many factors. With this in mind, it is recommended that all hoses be thoroughly inspected annually. Look for surface damage or indications of twisted, worn, crimped, brittle, cracked, or leaking lines. Hoses having the outer surface worn through or a damaged metal reinforcement should be considered unfit for further service.

It is also recommended that all hoses in this vehicle be replaced during major overhaul and/or after a maximum of five service years. Replacement hoses and hardware should always be at least equal in quality to that of the O.E.M.

FIRE EXTINGUISHERS

In order for fire extinguishers to operate adequately in emergency situations, we strongly recommend that all units be inspected on a monthly basis.

- Check that pressure is adequate and recharge if required.
- Check that seal on handle is intact.
- Check that hose or nozzle is not restricted.
- Keep fire extinguishers clean.
- Note inspection date

110-120 VOLT BLOCK HEATER CONNECTORS

The 110-120 volt power connector can be accessed through the engine oil reserve tank service door (see page 2-28 for location). Connect the female extension cord plug to the vehicle's male connector and the other end of the extension cord to a 110-120 VAC outlet only.

Use the heaters whenever the coach is parked for an extended period of time in cold weather and a suitable power source is available.

Both the engine block heater and the water tank heater will automatically be activated when plugged in to an external power source.

CAUTION: Use only a 110-120 VAC power source and only a grounded type (three pronged) extension cord with a minimum rated current capacity of 15 amps. Disconnect the cord before starting engine.

LUBRICATION AND SERVICING SCHEDULE

This vehicle is equipped with a VOGEL Centralized Lubrication System, which can ensure a substantial extension of its service life. It can also extend the service intervals of the vehicle.

OPERATION

The VOGEL Centralized Lubrication System is a single-line system with piston distributors (Drawing 1) for fluid grease. It is the only lubrication system that employs **Post-Lubrication** technology.

An air (PEF 90) operated pump with reservoir supplies fluid grease at a high pressure through a mainline to piston distributors. This fills each piston chamber in the distributor with grease. To measure the amount of grease going to individual points, each piston chamber has its own cap that allows a designated amount of grease into the piston chamber. At the end of the 154-second (2.5 minute) run cycle, the pump stops and the pressure is released from the mainline and distributors. The check valves in the distributor now move back and the high-tension spring behind each piston pushes the grease to its destination. This is called "Post-Lubrication" because all points get lubricated after the pump stops. The spring pressure ensures that all the grease is delivered to each grease point. A timer controls the frequency and duration of the system cycles. Timer IG433-5-51 can be set to run at 1/2 to 11-hour intervals of ignition on-time. This timer also checks all system functions and faults. If the system does not reach the correct pressure at the end of a cycle (thus not closing the pressure switch built into the system), the timer will activate the light on the dash (fault code) and shuts down the VOGEL Centralized Lubrication System. Once the problem is corrected, push the button on the side of the timer to reset it. When the button is released, the fault code is cleared and the intermediate lubrication cycle is started.

MAINTENANCE

VOGEL Centralized Lubrication Systems require very little maintenance. With your regular "PM" checks, all points should be checked for grease and the main and secondary lubrication lines should be checked for breakage or leaks. Fill grease in reservoir to maximum level. Next, turn on ignition while observing the dash mounted control light.

The light should be lit for 3 seconds. In this 3 seconds, the timer performs a diagnostic check of the last lubrication cycle.

A Manual Override Lubrication Cycle should be run next. There are 3 ways to run an override cycle for the PEF 90 pumps control timer IG433-5-51:

MANUAL OVERRIDE LUBRICATION CYCLE

With the ignition (power) on, push the button on the side of the timer for less than 3 seconds. This will run a full lubrication cycle (2.5 minutes). It will also reset the timer and clear any faults (see Maintenance Instructions).

TIMER TEST CYCLE

To test the timer functions, turn on the ignition (power), push the button on the side of the timer for longer than 3 seconds and release. This will quickly run through the time for which the timer is set (approx. 40 seconds). Then it will run through a short pump running cycle, but without monitoring the pressure build-up. This cycle cannot be used to clear a fault code.

FAST LUBRICATION CYCLE

With the ignition (power) off, push the button on the side of the timer. While still holding the button down, turn on the ignition (power), then release button. This will start the fast lubrication cycle

mode. This mode will keep repeating for 30 minutes or until the power supply is switched off or reservoir is emptied.

With very large systems, this function may trigger a fault code because the pump might not run long enough to pressurize the entire system.

LUBRICANTS

Any brand of NLGI 00 or 000 grease may be used.

Never use NLGI 1 or 2 in these systems.

Use NLGI 0 grease only if minimum ambient temperature remains above -10°C.

TROUBLE SHOOTING CHART

SYMPTOM	REASON	SOLUTION
Dash mounted green warning light stays on (fault code)	Reservoir empty	Fill reservoir *
	Air in system	Bleed system *
	Broken or leaking mainline	Fix mainline with Union(410.410) or replace broken section with new tubing Bleed system to remove any air and contaminants
	Defective pressure switch wiring	Check wiring (see wiring diagram)
	Defective pressure switch	Replace pressure switch
	Pump not building up pressure	Replace outlet valve (for PEF 90 pump)
System will not activate	No power supply	Check for blown fuses Check for loose electrical connections
	Timer not working	Check timer LED for power push side button on timer
		Perform timer test cycle ** If unsuccessful, replace timer
Single point not getting lubricated	Broken secondary line	Fix with Union(404.404 or A-04.00) or Replace broken line
Single point under lubricated	Metering too low	Replace Metering cap with one for a larger amount *
All points being under lubricated	Timer setting	Decrease interval time on timer *
Single point being over lubricated	Metering too high	Replace Metering cap with one for a smaller amount *
	Contaminant in distributor	Clean check valve in distributor outlet *
All points being over lubricated	Timer setting	Increase interval time on timer to a higher setting *

For more information or help please call A.L.S. VOGEL

* see "Maintenance Instructions" page for further instruction

** see "Maintenance" number 2 for further instructions

CARE & MAINTENANCE

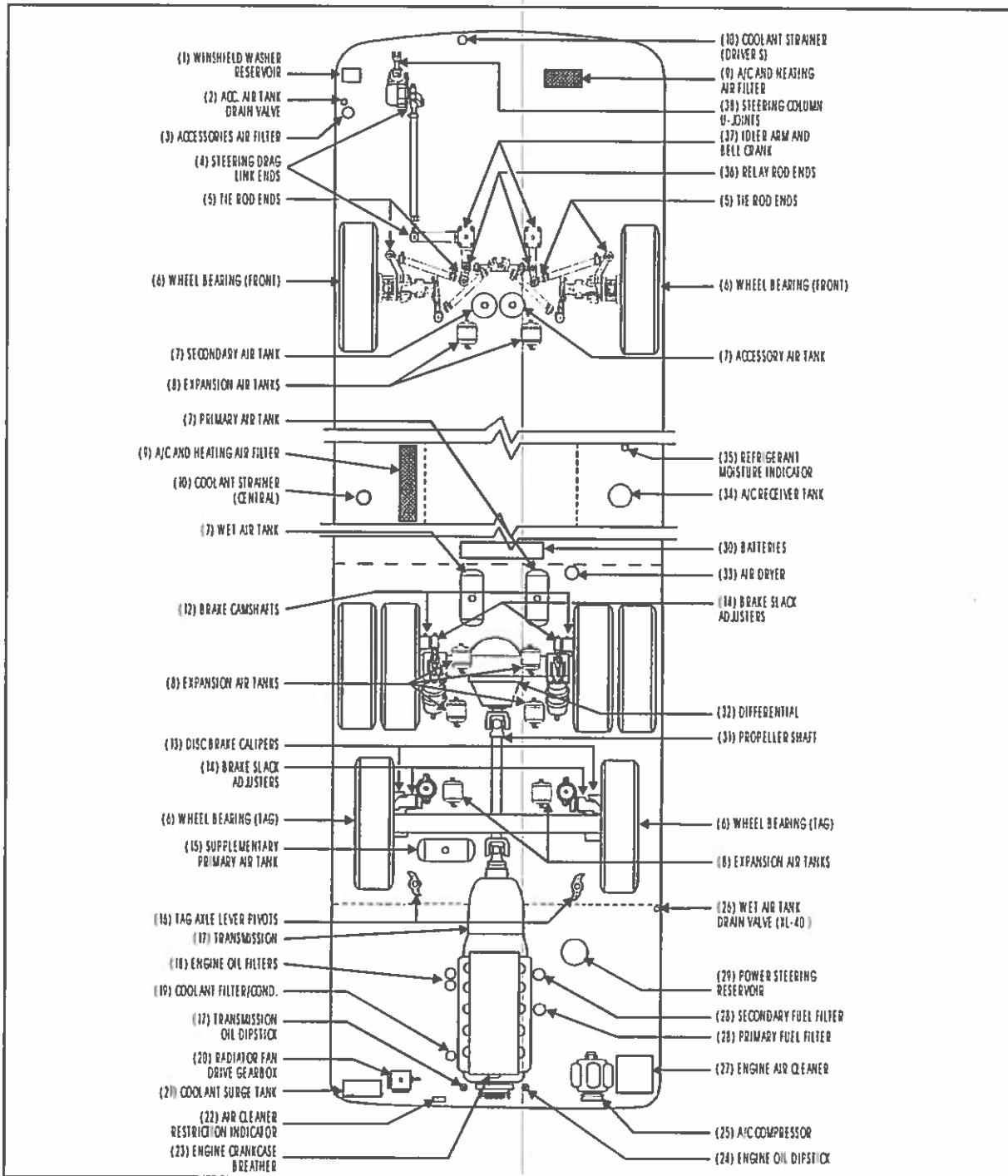


FIGURE 77

24001D

BEFORE OPERATING VEHICLE, PERFORM EACH POINT LISTED IN "STARTING AND STOPPING PROCEDURES" SECTION UNDER HEADING "DAILY INSPECTION..." (PAGE 4-7).

DAILY WALK-AROUND INSPECTION

It is a good practice to make a basic visual inspection of key areas on the vehicle on a daily basis and to report any problem areas to maintenance personnel for immediate correction.

A) Outside the vehicle

ITEM*	DESCRIPTION
---	Check for leaks under vehicle and in engine compartment
---	Check that baggage and service compartment doors close properly
---	Inspect tires and wheels for correct tire pressure, wear or damage, and for missing wheel stud and nuts
1	Check windshield washer fluid level and add if necessary
---	Check condition of windshield wiper blades
---	Verify proper operation of all road lights, signal lights, brake lights, marker lights, and back-up lights; Replace light bulbs as required
2	Purge accessory air filter and accessory air tank
5	Check front and tag axle wheel bearing oil level

B) Engine compartment

ITEM*	DESCRIPTION
21	Check engine crankcase oil level; Add if necessary
17	Check automatic transmission oil level (level can be checked from pushbutton shift selector); Add if necessary
20 & 23	Check air cleaner restriction indicator, replace air cleaner when red flag locks in full view
24	Check power steering reservoir fluid level; Add if necessary
19	Check coolant surge tank fluid level; Add if necessary
25	Drain accumulated water in primary fuel filter

* Item numbers refer to figure on page 6-12

CARE & MAINTENANCE**C) Inside the vehicle**

ITEM	DESCRIPTION
---	Check for proper operation of the entrance door
---	Inspect cleanliness in the steps, aisles, seating area and lavatory
---	Check that emergency exit windows and roof escape hatches can be opened, then close all windows and hatches securely
---	Verify proper operation of windshield wiper/washer
---	Check rear view mirrors for broken glass; Adjust mirrors for adequate rear view vision
---	Start engine and check for proper operation of all gauges and indicator lights
---	Apply brakes and check both primary and secondary pressure gauges
---	Check for proper operation of horns, and back-up alarm

PERIODIC LUBRICATION AND SERVICING SCHEDULE**A) Service every 6,250 miles (10 000 km) or twice a year, whichever comes first.**

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
23	Engine Air Cleaner	Inspect and clean, replace element if required	Filter: #53-0197
22	A/C Compressor	Check oil level, add if necessary	Polyester oil
34	A/C Receiver Tank	Check refrigerant level, add if necessary	HFC 134a
35	Refrigerant Moisture Indicator	Replace filter dryer unit according to moisture indicator	Filter: #95-0231
32	Differential	Check oil level, add if necessary	Varies upon operating areas. See Lubricant Specification Chart
18	Radiator Fan Drive Gearbox	Check oil level, add if necessary	Synthetic oil Mobil SHC 630
31	Propeller Shaft	Grease one fitting on each universal joint and one fitting on slip joint	Multi purpose grease
13	Tag Axle Lever Pivot	Grease one fitting on each pivot	Multi purpose grease
12	Brake Slack Adjuster	Grease one fitting on each slack adjuster (all axles)	Rockwell 0-616-A, Grade 1

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
7	Steering Damper Cylinder	Grease one fitting at cylinder rod end	Multi purpose grease
36	Steering Tie Rod	Grease one fitting at each end	Multi purpose grease
4	Disc Brake Callipers	Grease two fittings on each of front and tag axles.	Rockwell 0-616-A, Grade 1
3	Steering Drag Link	Grease one fitting at each end	Multi purpose grease

• Item numbers refer to figure on page 6-12

** See end of this section for lubricant and part number specifications.

B) Service every 12,500 miles (20 000 km) or once a year, whichever comes first.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
15	Engine	Change oil and filters	Motor oil: SAE 15W40, API CF-4 Filters: #51-0458
25	Fuel Filters	Change primary and secondary fuel filters (Fill with clean fuel before installation)	Primary: #51-0137 Prim. w/sep.: #53-1390 Secondary: #51-0128
16	Coolant Filter/Conditioner	See " F) Miscellaneous Service"	-----
6	Air Tanks	Drain accumulated water in all tanks	-----
9	A/C and Heating Air Filters	Clean or replace elements	Driver's air filter: # 87-1049 Central air filter: # 87-1069

C) Service every 25,000 miles (40 000 km) or once a year, whichever comes first.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
14	Automatic Transmission	Change oil and filters	Dexron-II E or Dexron-III

* Item numbers refer to figure on page 6-12

** See end of this section for lubricant and part number specifications.

CARE & MAINTENANCE**D) Service every 50,000 miles (80 000 km) or once a year, whichever comes first.**

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
24	Power Steering Reservoir	Replace oil filter cartridge element	Cartridge: #66-0987
10	Coolant Strainer	Replace element	Element # 87-1029
19	Coolant Surge Tank	Test coolant solution	-----
8	Steering Knuckle Pins	Grease two fittings on each knuckle	Multi purpose grease
18	Radiator Fan Drive Gearbox	Change oil	Synthetic oil Mobil SHC 630
---	Flexible hoses	Thoroughly inspect all hoses	-----

E) Service every 100,000 miles (160 000 km) or once every two years, whichever comes first.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
2	Accessory Air Filter	Change filter element	Element # 64-1340
33	Air Dryer	Change cartridge	Cartridge # 64-1244
32	Differential	Change oil, clean breathers	Varies upon operating areas. See Lubricant Specification Chart
11	Brake Camshaft	Grease one fitting on each drive axle drum brake	Multi purpose grease

* Item numbers refer to figure on page 6-12

** See end of this section for lubricant and part number specifications.

F) Miscellaneous Service

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART
26	Battery Terminals	Clean and coat terminals yearly	Battery terminal coating
19	Cooling System	Drain, flush and refill every two years or 200,000 miles (320 000 km)	Engine coolant
---	Discharge Tubes (rubber tubes located under vehicle)	Every three months: Check 4 condenser's discharge tubes Check 6 evaporator's discharge tubes Check 2 front discharge tubes	-----
16	Coolant Filter/Conditioner	Replace Precharge Element Filter with a Maintenance Element Filter after 12,500 miles (20 000 km) or after one year, whichever comes first. Then, install a new Maintenance Element Filter and replace every 200,000 miles (320 000 km) or two years, whichever comes first. Note: A Precharge Element Filter must be installed each time the cooling system is drained and flushed prior to installing a Maintenance Element filter.	Maintenance Filter: #550630 Precharge Filter: #550629

* Item numbers refer to figure on page 6-12.

CARE & MAINTENANCE

Lubricant Specifications

ITEM*	DESCRIPTION	SPECIFICATIONS
21	Engine Oil	SAE Viscosity Grade: 15W40 API Classification: CF-4
24	Power Steering Oil	Automatic Transmission Oil (Dexron-IIIE or Dexron-III)
19	Engine Coolant	Low silicate, ethylene glycol coolant 50% antifreeze/water solution is normally used. Antifreeze concentration should be between 30% and 67%.
22	A/C Compressor Oil	Polyester Oil, HFC 134A compatible Castrol SW-68 (POE) or equivalent
32	Differential Oil	Multigrade gear oil meeting MIL-L-2105-D: 85W140 is recommended. If temperature drops below 10°F (-12°C), 80W90 should be used, and below -15°F (-26°C), 75W90 should be used. In extreme conditions or for better performance, full synthetic gear oil can be used.
18	Fan Gearbox Oil	Synthetic oil Mobil SHC 630 or equivalent
17	Automatic Transmission Oil	Dexron-IIIE or Dexron-III
	Low Temperature Grease	Good quality low temperature grease; Prolab AF-100 grade 1, or equivalent
---	Multi Purpose Grease	Good quality lithium-base grease: NLGI No.2 Grade is suitable for most temperatures NLGI No.1 Grade is suitable for extremely low temperatures

* Item numbers refer to figure on page 6-12.

Part Number Specifications

ITEM*	DESCRIPTION	PREVOST NO	SUPPLIER NO
15	Engine Oil Filters	#51-0458	Detroit Diesel: 25014505 AC Rochester Div. GM: PF2100
24	Power Steering Reservoir Oil Filter	#66-0987	Nelson #83804 E
23	Engine Air Cleaner Filter	#53-0197	Nelson: 70337-N Baldwin: PA-2839 Donaldson: P52-2874 Fram: CA-7113
35	Refrigerant Filter Dryer Unit	#95-0231 (XL-40) #95-0262 (XL-45)	Alco controls: EKH 307S (modified) Henry #815031 - XH9
25	Engine Primary Fuel Filter	#51-0137	Detroit Diesel: 23518481 AC Rochester Div. GM: TP-915D
25	Engine Secondary Fuel Filter	#51-0128	Detroit Diesel: 23518482 AC Rochester Div. GM: TP-916D
16	Engine Coolant Filter/Conditioner	#55-0630	Detroit Diesel: 23507545 Nalco Chemical Company: DDF3000
9	A/C and Heating, Driver's Air Filter	#87-1049	Permatron Corp.: Model "R"
9	A/C and Heating, Central Air Filter	#87-1069	Permatron Corp.:IN 1x10x37 EXACT
14	Automatic Transmission Oil Filter Kit	#57-1687	Allison: 29503829
10	Coolant Strainer	#87-1029	Parker # 925566
2	Accessory Air Filter	#64-1340	Pneumac #4338-04
33	Air Dryer Cartridge	#64-1244	Allied Signal #107796

* Item numbers refer to figure on page 6-12.



SERVICE LITERATURE

Additional copies of the following Service Literature are available upon request and at low cost.

- **Maintenance Manual**
- **Operator's Manual**
- **Parts Manual**

To order the desired Manual(s), please contact your local distributor or write to:

PRÉVOST CAR INC.
ATTN.: TECHNICAL PUBLICATIONS DEPARTMENT
35 Boulevard Gagnon
Sainte-Claire, Québec
Canada, G0R 2V0
Fax: (418) 883 - 4157

Thank you for specifying your vehicle's complete serial number. Allow 30 days for delivery.



CHANGE OF ADDRESS OR OWNERSHIP

Any Change in address or ownership should be brought to the attention of the manufacturer by completing and sending out one of the cards supplied below.

CHANGE OF ADDRESS

VEHICLE SERIAL NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

OLD ADDRESS :

_____ NAME

NO. _____ STREET _____ APT _____

CITY _____ STATE/PROVINCE _____ ZIP/POSTAL CODE _____

() - _____ () - _____

PHONE FAX

NEW ADDRESS :

_____ NAME

NO. _____ STREET _____ APT _____

CITY _____ STATE/PROVINCE _____ ZIP/POSTAL CODE _____

() - _____ () - _____

PHONE FAX

CHANGE OF OWNERSHIP

VEHICLE SERIAL NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

The ownership of this vehicle is transferred

FROM :

_____ NAME

NO. _____ STREET _____ APT _____

CITY _____ STATE/PROVINCE _____ ZIP/POSTAL CODE _____

() - _____ () - _____

PHONE FAX

TO :

_____ NAME

NO. _____ STREET _____ APT _____

CITY _____ STATE/PROVINCE _____ ZIP/POSTAL CODE _____

() - _____ () - _____

PHONE FAX



P R E V O S T

**PRÉVOST CAR INC.
AFTER-SALES SERVICE DEPARTMENT
35, boulevard Gagnon
Ste-Claire, (Québec)
Canada G0R 2V0**



P R E V O S T

**PRÉVOST CAR INC.
AFTER-SALES SERVICE DEPARTMENT
35, boulevard Gagnon
Ste-Claire, (Québec)
Canada G0R 2V0**



