A Word From the President

Thank You for Making the "Ultimate" Decision in Luxury Motorcoaching

We are proud to have you join the growing PRÉVOST family. The world's most discriminating motorcoach enthusiasts choose the PRÉVOST H3-45 VIP *time and again because of the confidence they have in our commitment to building the ultimate in factory-prepared, conversion-ready luxury motorcoaches.*

This PRÉVOST commitment to excellence goes back more than 70 years and is matched by a proven performance record that is literally hundreds of millions of miles long. On every road and in every climate imaginable, from frozen arctic through torrential rains and blazing hot desert sands, PRÉVOST coaches have been there and back in peak condition to tell the tale.

Your Owner's Manual *will provide a road map to years and years of carefree motorcoaching enjoyment. Across North America you can depend on our factory owned Service and Parts Centers plus many qualified service locations. They are staffed by professionals dedicated to seeing that all your needs are met with the utmost in efficiency and courtesy.*

Though we are proud of our past, we are not about to forget where the emphasis must lie... it must lie in the future. The PRÉVOST R&D department is the largest and most innovative of it's kind in North America.

All the employees join me in appreciation of the trust you have placed in us. We will make sure that you are totally satisfied with your coach.

Bon voyage and happy motorcoaching!

Georges Bourelle

President

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Foreword

The PRÉVOST *H3-45 VIP* Owner's Manual has been prepared to thoroughly acquaint you, the owner, with vehicle equipment and features in order to fully appreciate and safely enjoy your vehicle. Of course, you are anxious to drive your new private coach and test its features, but first please read this publication carefully to help ensure enjoyable and trouble free operation. 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 back 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 to factory-prepared, conversion-ready luxury motorcoaches, manufactured by PRÉVOST CAR INC. It describes and explains all the equipment and options available for installation in our factory. Therefore, there may be equipment described herein that is not installed on your vehicle. This publication also does not cover equipment installed by your interior designer or systems manufacturer.

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 emphasise 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 private coach, heed our cautions, warnings and notes; ignoring them could result in extensive damage and/or serious personal injury.

Caution

Prior to working on a system inside vehicle, make sure to cut electrical power and air supply. A component could be supplied with electricity even if battery master switch is set to the OFF *position and/or a component could be pressurized even if air tanks are emptied. Always refer to the appropriate wiring and pneumatic diagrams prior to working on electrical and/or pneumatic systems.*

Prior to welding or soldering procedures on the vehicle, disconnect all electronic modules. If these modules (ECM, ECU, ABS) are not disconnected, electronic components (EPROM, CHIPS) could be permanently damaged.

Refer to your maintenance manual for all related procedures.

Brakes

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

Your vehicle is also supplied with ABS brakes (antilock braking system) and can be equipped with an additional retardation system. ABS brakes system information is available in this section on page 3-2; for information regarding both optional retardation systems, see *Jacobs Engine Brake*, page 4-3, or *Transmission Retarder*, page 4-4.

Service Brakes

The service brakes use air pressure from a footpedal-operated brake valve to actuate chambers which apply the brakes at each wheel. The air system is divided into two independent circuits to isolate front brakes from rear brakes, thus providing safe braking if one circuit fails. Front axle brakes operate from the secondary air system, while brakes on both the drive axle and tag axle operate from primary air system.

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

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

For brake effectiveness, vehicle air system pressure should reach at least 95 psi (655 kPa) in both primary and secondary air circuits. Refer to items #31 & #32 on page 2-9.

A warning light turns on (see items #4 & #5, page 2-7) and a buzzer sounds when air pressure in one of the primary or secondary circuits drops below 60 psi (415 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 on a vehicle with an air-operated brake system. 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 (275 kPa), spring-loaded emergency brakes will immediately be applied at full capacity on drive and tag axles wheels to stop vehicle. 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 L.H. side control panel.

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).

Warning: *Always apply parking 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.*

ABS Brakes (antilock braking system)

The purpose of the antilock braking system is to preserve the stability and steerability of a vehicle during braking.

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 the problem is tire abrasion.

The basis of ABS is constant monitoring of the wheel behavior during braking. Sensors on each wheel of front and drive axles continually monitor the wheel speed during braking, transmitting the 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 it's tire and the road.

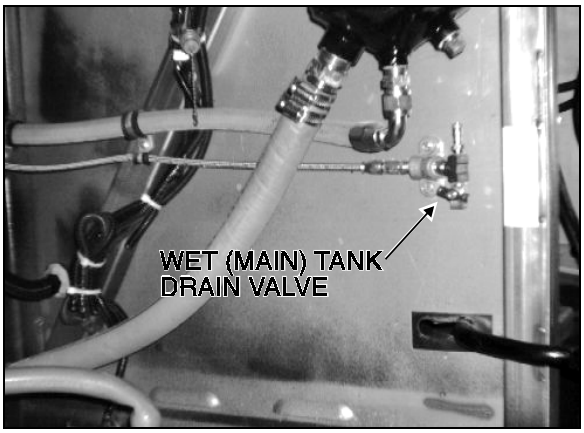
In this way the vehicle is brought to a halt in the shortest possible time, while remaining stable and under driver's control.

Caution: *On slippery roads, motorists behind you may not be able to brake as fast as you; so where 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 R.H. side compartment.



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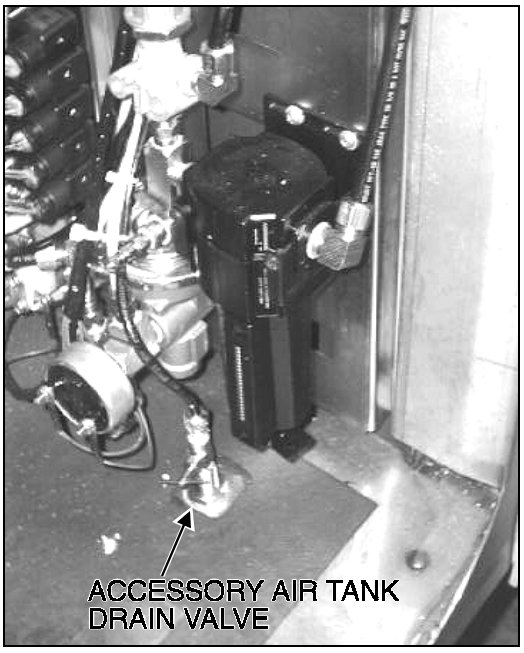
The front valve is located in the front service compartment.



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 only.

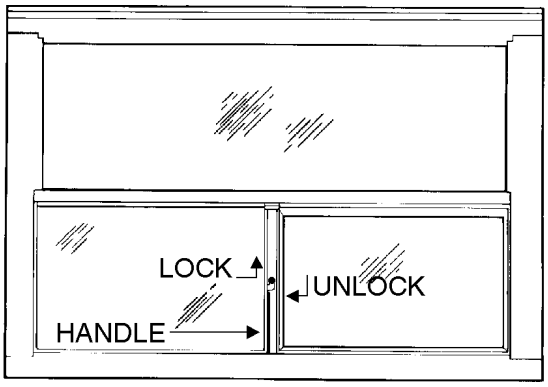
Caution: *Air filled through these points will pass through the standard air filtering system provided by Prévost. Do not fill air through any other points.*

Back Up Alarm

The back up alarm system serves to warn by-standers of vehicle moving in reverse range. Driver should take extra precautions when backing up. If in doubt, have someone guide you. The back up alarm will automatically operate when the reverse range is selected, provided that the *back up alarm cancel* switch is not activated. If your vehicle is equipped with a camera, it will operate automatically.

Emergency Exits

Sliding-Type Window



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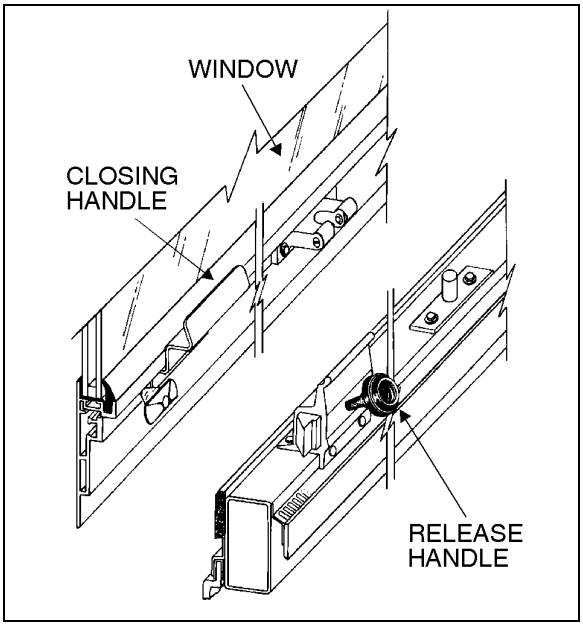
The sliding-type window could be used as an emergency exit. To open the window, unlock it, then slide window and screen. Lock window when closed.

Hinged-Type Window

The hinged-type window could also be used as an emergency exit. To open the window, pull firmly on release handle to unlock window, then push on bottom of window.

Close window by pulling closing handles until window is securely latched.



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Emergency Roof Escape

The optional roof emergency escape hatch(es) of vehicle is (are) designed to be opened from inside. To open in the event of an emergency, push out ventilation hatch fully, then while depressing black tab towards rear of vehicle, push handle out in the same direction; this will release emergency hatch catch.

18051

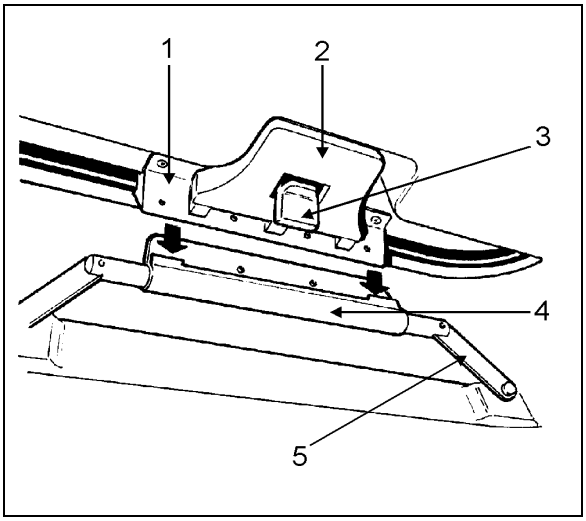
1..... Emergency escape hatch
2.....Instructions decal
3.....Hatch handle
4.....Black tab

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.



18052

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 80% of normal 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 marker light switch is turned on.

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.*

Fog Lights

The halogen fog lights recessed in front bumper allow the driver a better visibility in foggy, rainy or snowy weather, and improve range of vision just ahead of vehicle. They are also a useful active safety factor. For location of ON/OFF switch, see page 2-5.

Note: *Some States or Provinces may restrict the use of these lamps. Verify regulations governing each State and/or Province before using fog lights.*

Docking and Cornering Lights

Two (2) halogen lights are installed on each side of vehicle: one near the front and one near the rear.

When the switch (see page 2-3) is set to the *Docking* position, the four (4) lamps light simultaneously in order to facilitate *docking* procedure.

When the switch is set to the *Cornering* position and left or right turn signal is selected, the corresponding cornering light will illuminate to increase lateral visibility.

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	Buzzer	Low air pressure
Air secondary	Buzzer	Low air pressure
Tag axle	Beep	Tag axle wheels up
N/A	Beep	Ignition *OFF*, parking brake not applied and/or pressure is applied on service brake pedal
Fire Detectors	Bell ringing	Fire in engine compartment

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

Safety Equipment

Extinguishers

Two fire extinguishers are provided with the vehicle and are installed behind the driver's seat along the wall. Use fire extinguishers as required, while carefully following instructions on extinguisher's labels.

Note: *Fire extinguishers may have been relocated following interior design and/or State or Provincial regulations.*

Emergency Warning Reflectors

A kit of three triangular reflectors 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 at right in the first R.H. side baggage compartment (may be relocated by Converter).

FIRST BAGGAGE COMPARTMENT

Jack/Tools

The first R.H. side baggage compartment is also provided with a kit for jacking vehicle. Kit includes a 12.5 ton hydraulic jack and a wheel nut wrench.

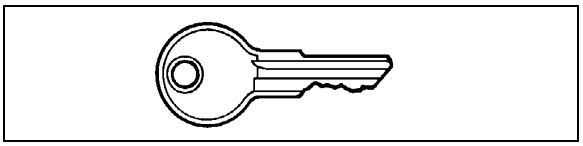
Mud Flaps and Splash Guards

Mud flaps are installed behind each wheel of front and tag axles in order to minimize dirt on the lower panels of vehicle and to reduce stone projections on following vehicles. Splash guards are also installed behind each dual wheel of drive axle in order to reduce stone projections on tag axle wheels.

Keys

Three different key models are provided with the vehicle, They are used as described below.

Ignition Switch



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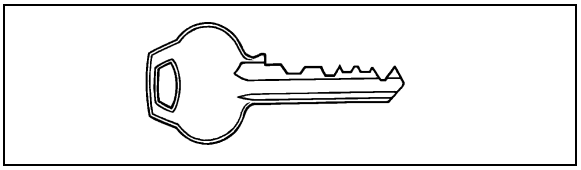
Use this key to activate electrical circuit and/or to start engine.

Front Entrance Door Lock



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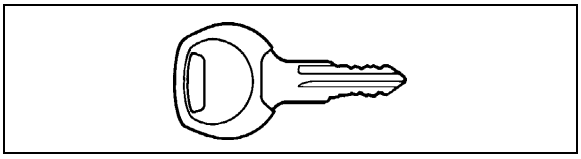
Use this key to lock or unlock the entrance door from outside. It is also possible to lock or unlock the entrance door using the *Exterior compartment door lock* (page 2-3) or *Entrance door unlocking* (page 2-10) switch or using the keyless entrance system (page 2-23).

Exterior Compartments



23058

Use this key to lock or unlock any exterior compartment door, including the fuel tank filling access door and electrical or service compartments doors. It is also possible to lock or unlock the baggage compartment and front service compartment doors from the inside by means of a switch (page 2-3) located in driver's compartment.

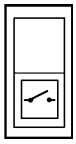
Note: *For your protection against theft:*

A) Record the key numbers and keep this information in a safe place. Do not keep these records inside vehicle.

B) 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.

Battery Master Switch

A manual switch for electrical system is located on L.H. lower control panel.



Caution: *When vehicle is parked overnight or for an extended period of time, the battery master switch should be set to the* OFF *position.*

Note: *When the battery master switch is set to the* OFF *position, all electrical supply from the batteries is cut off, with the exception of battery equalizer check module, ECM ignition and power supply, ECU power (World transmission), preheater electronic timer, preheater and water recirculating pump, prodriver, powerverter and fire alarm.*

Fuel Tank Filling

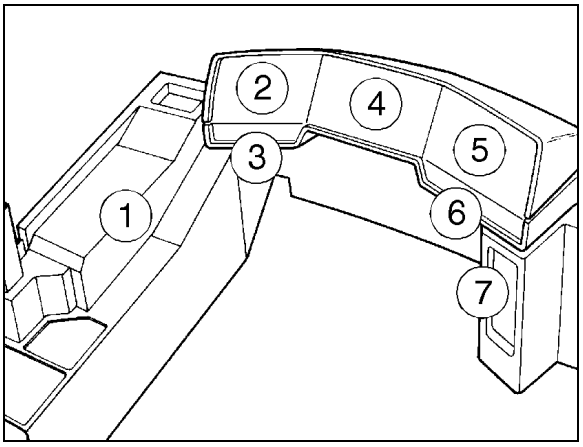
A small door located amidships, on L.H. side of vehicle provides access to the fuel tank filler neck. Another filler neck is accessible on the R.H. side of vehicle from the narrow door at left of condenser compartment (page 2-25).

These two doors can be unlocked with the key provided. The access door on L.H. side of vehicle must be locked again when closing to remove key; as for the door besides the condenser, the key must be returned to its initial position before closing the door.

Note: *Provided the vehicle is parked level, an automatic nozzle will automatically shut off when tank is approximately 95% full.*

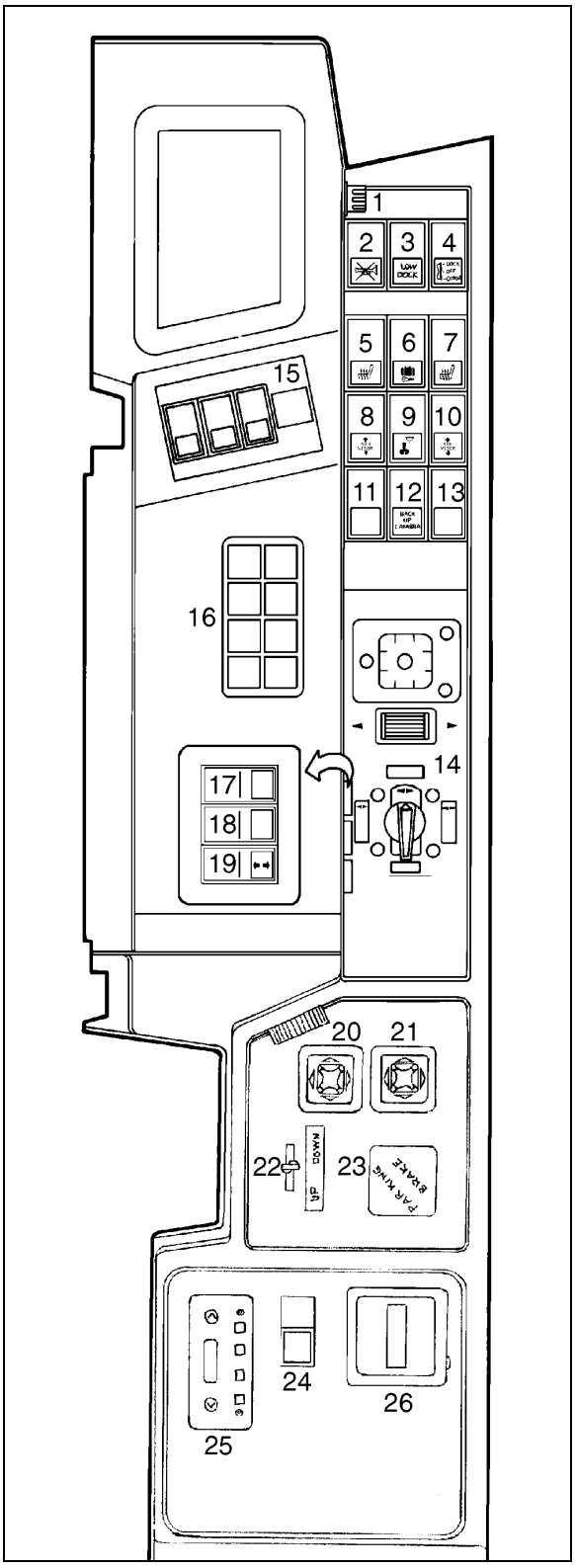
Caution: *Do not fill to more than 95% of the tank capacity. Do not "top off" the tank, doing so may result in fuel spillage when the fuel expands.*

Control and Instrument Panels



18172

L.H. Side Control Panel



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1. Instrument & Control Lighting Dimmer

Turn dimmer in a clockwise direction to increase instrument and control panel brightness.

2. Back Up Alarm Cancel

Push down rocker switch to cancel alarm during back up maneuvers in special situations (e.g.: parking in campground after curfew).

Warning: *Use this switch only in special situations as the alarm is designed primarily to warn bystanders of a vehicle backing up. Be sure to return rocker switch to normal position after use.*

3. Low Docking

Push down rocker switch to lower intensity of docking lights when the docking light switch is activated. Use this switch in special situations (e.g.: parking in campground after curfew).

4. Docking and Cornering Lights

Push up rocker switch to activate simultaneously the four docking lights.

Push down rocker switch to actuate cornering lights. When selecting left or right turn signal, the corresponding cornering light will illuminate to increase lateral visibility (see page 3-4).

Note: *When the rocker switch is set to the center position, the docking and cornering lights will stay* OFF *at all times.*

5. Driver's Seat Heating (optional)

Push down rocker switch to activate heating element inside driver's seat cushions.

6. Exterior Compartment Door Lock

Push up rocker switch to unlock the baggage, entrance and front service compartment door lock. Push down to lock.

7. Copilot Seat Heating (optional)

Push down rocker switch to activate heating element inside copilot seat cushions.

8. Left Sun Visor

Push up rocker switch and hold in position to raise left sun visor.

Push down rocker switch and hold in position to lower left sun visor.

9. Driver's Lights

Driver's light electric circuit is connected to 2 three-way switches; thus, it can be actuated with this switch or by means of the toggle switch located at extreme right of dashboard. Push rocker down or up depending on toggle switch position.

10. Right Sun Visor

Push up rocker switch and hold in position to raise right sun visor.

Push down rocker switch and hold in position to lower right sun visor.

11. Blank for Additional Switch

12. Back-up Camera (optional)

Push down rocker switch to activate camera. Use this switch to see at back of vehicle if everything is normal (e.g.: trailer).

13. Blank for Additional Switch

14. Level Low System Controls.

Refer to Level Low System, page 2-20.

15. Cruise Control Switches.

Refer to Cruise Control, page 2-18.

16. Transmission Shift Selector.

Refer to Automatic Transmission, page 2-15.

17. Blank for Additional Switch

18. Blank for Additional Switch

19. Driver's Window

Push up rocker switch and hold in position to raise the driver's window.

Push down rocker switch and hold in position to lower the driver's window.

Note: *Driver's power window remains functional even after the ignition key has been removed.*

20. L.H. Outside Mirror Control

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

21. R.H. Outside Mirror Control

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

22. Tag Axle

Flip control valve to raise tag axle (see page 4-14).

23. Parking Brake

Pull up on the control valve knob to operate spring-loaded parking brake. Push down to release parking brake.

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.

24. Auxiliary Preheating System Switch (optional)

Push down rocker switch to immediately turn *ON* preheating system (bypassing timer), supplementing central heating system if required. Preheater will turn *ON* and *OFF* automatically depending on coolant temperature.

Note: *Ignition should be* ON *to turn preheating system* ON *with switch.*

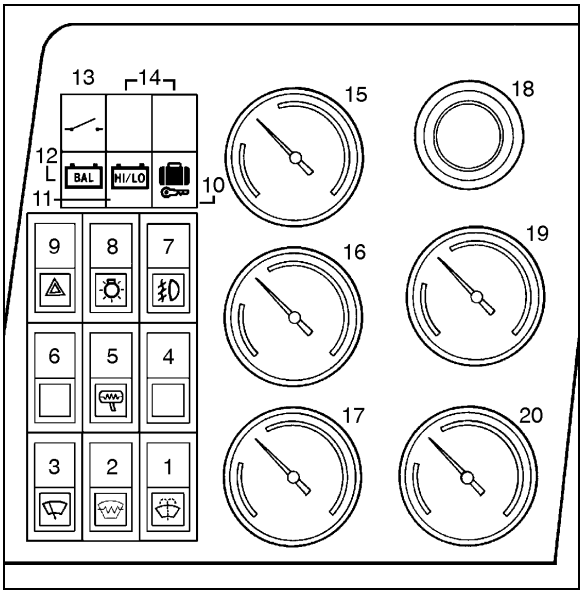
25. Webasto Auxiliary Preheating System Timer (optional)

See page 2-22 for operation of Webasto timer.

26. Espar Auxiliary Preheating System Timer (optional)

See page 2-21 for operation of Espar timer.

L.H. Dashboard



18174

1. Upper Windshield Washer Switch

Push on rocker switch and hold in position to operate windshield washers. Wipers will be automatically activated and will turn off a few seconds after releasing switch.

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

Caution: *Do not operate washers when level is low to prevent damage to the pump mechanism.*

2. Heated Upper Windshield Switch

Actuate this push button to clear frost, fog and thin ice from the inside and outside of upper windshields. After a few minutes, it will turn off automatically.

3. Upper Windshield Wiper Switch

Push on rocker switch to first position to operate the intermittent mode and push to second position to obtain a constant speed.

Note: *Do not run wiper blades on a dry windshield as this may scratch it. Always loosen frozen blades on windshield before operating wipers to avoid damaging their mechanism.*

4. Blank for Additional Switch

5. Exterior Mirror Heating Switch

Push down rocker switch to heat both outside mirrors. Integral Thermostats are installed in both mirrors to avoid continual heating.

6. Blank for Additional Switch

7. Fog Light Switch

Push down rocker switch to activate fog lights as well as clearance, tail and marker lights. Before using fog lights, remove protective covers by pulling on their edges.

Warning: *Before removing protective covers, stop engine and apply parking brake.*

8. Headlight Switch

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

Note: *Daytime running lights will be automatically canceled when this switch is pushed to the second position. For system information, refer to section* **Safety** *under heading* **Daytime Running Lights**.

9. Hazard Flasher Switch

Push down rocker switch and all turn signals will flash simultaneously, as well as their dashboard indicator lights.

10. Baggage Compartment Door Indicator Light

Illuminates when one or several baggage compartment door(s) is (are) unlocked.

11. Batteries With a High or Low Voltage

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

Note: *According to the battery charge, this indicator light will normally turn on upon engine starting and remain on during a few seconds. This is caused by a normal voltage drop during starting.*

12. Battery Balance

Illuminates when batteries are not balanced.

Note: *Before requesting any breakdown service, check that battery equalizer circuit breakers are reset. For their location, refer to heading* **Main Breakers** *(see page 4-11). Allow at least 15 minutes to balance batteries after corrective measures have been taken.*

13. Electrical System Indicator

Illuminates when the ignition switch is *OFF* and the 12-volt and 24-volt electrical systems are activated by depressing the battery master switch located on the L.H. lower control panel.

14. Blank for Additional Indicator Light

15. Turbo Boost Pressure Gauge (optional)

Indicates turbo boost pressure in psi. Reading depends on engine rpm and load conditions.

16. Oil Pressure Gauge

Indicates engine oil pressure. Normal reading should range between 50 and 70 psi (345 - 485 kPa) at cruising speed.

17. 24 Volt Voltmeter

Indicates electrical system voltage. Normal reading should be 27.5 volts with engine operating.

18. Adjustable Ventilation Louver

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

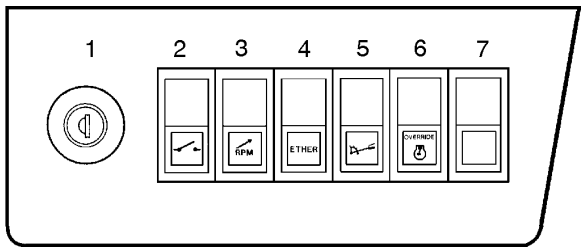
19. Pyrometer Gauge (optional)
Prior V.I.N. 2P9V33499S1001152 only

Indicates exhaust manifold temperature in hundreds of °F. Normal reading should vary between 500 °F (260 °C) and 1100 °F (600 °C) according to operating conditions. Temperature should not exceed 1100 °F (600 °C).

20. 12 Volts Voltmeter

Indicates electrical system voltage. Normal reading should range between 12 and 13.75 volts with engine operating.

L.H. Lower Control Panel



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1. Ignition

This switch has three positions:

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.

Caution: *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 relay delay to cool.*

2. Battery Master Switch

Both the 12-volt and 24-volt systems are activated by the master switch located on the L.H. lower control panel. An indicator light on the L.H. dashboard will illuminate when the ignition key is in the *OFF* position and the 12-volts and 24-volts systems are activated.

Caution: *When parking the coach for an extended period of time, place the battery master switch to the* OFF *position.*

Note: *When the battery master switch is set to the* OFF *position, all electrical supply from the batteries is cut off, with the exception of battery equalizer check module, ECM ignition and power supply, ECU power (World transmission), preheater electronic timer, preheater and water recirculating pump, prodriver and powerverter.*

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.

Note: *If parking brake is released and/or transmission is shifted with 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 reactuate fast idle. Generally, fast idle should be reduced to low idle before shutting off engine.*

4. Cold Starting Aid (optional)

Activates the cold starting device in engine compartment (see page 4-7).

5. Transmission Retarder (optional) **or Engine Retarder** (optional)

Transmission retarder: Push down rocker switch to actuate transmission retarder (see page 4-4).

Engine retarder "Jacobs": Push down rocker switch to the first position to actuate system to half engine brake and press to the second position for a full application of engine brake (see page 4-3).

6. Stop Engine Override

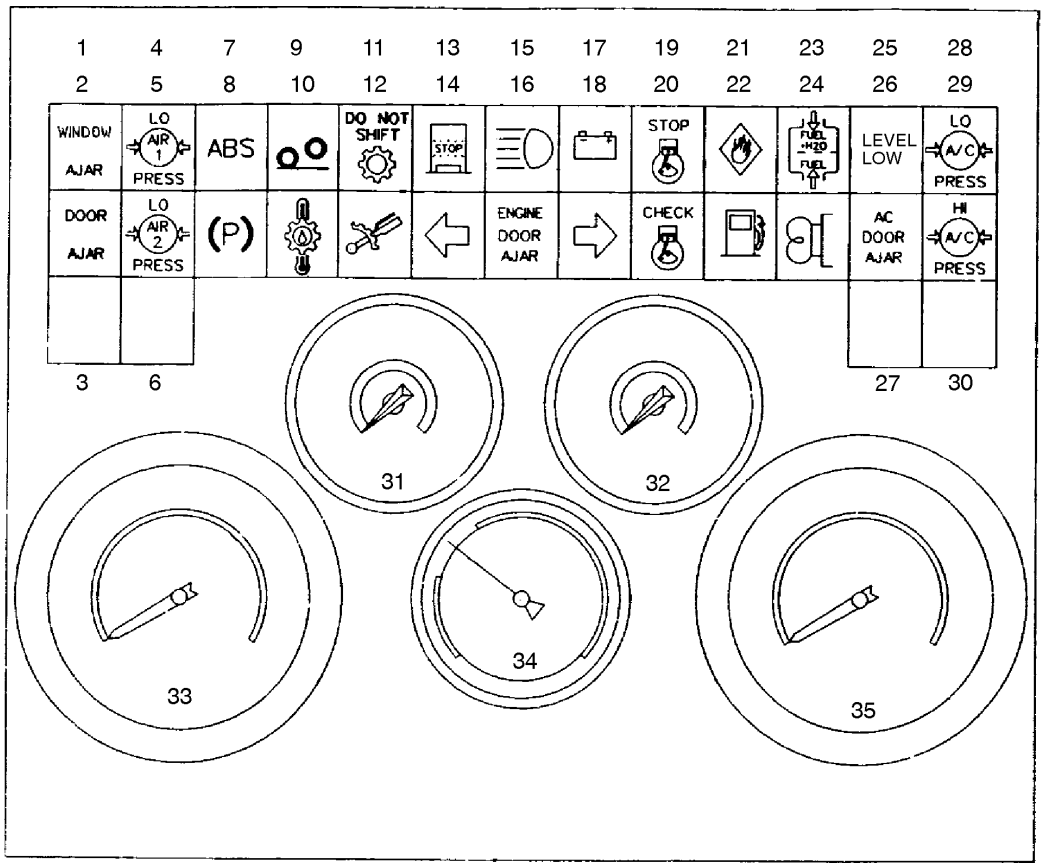
Push down rocker switch to reset the 30 second delay period and the shutdown procedure. This switch can be repeatedly depressed, **i.e. one pulse is sufficient for each 30 second period**, for engine power in an emergency situation.

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.*

7. Blank for Additional Switch

Central Dashboard



18176

1. Window Ajar

Lights when one or several “awning-type” window(s) is (are) ajar.

2. Baggage Compartment Door Ajar

Lights when one or several baggage compartment door(s) is (are) ajar and/or entrance door is ajar.

3. Blank for Additional Indicator/Warning Light

4. Low Primary Air Pressure

Lights when air pressure in primary system is too low.

5. Low Secondary Air Pressure

Lights when air pressure in secondary system is too low.

6. Blank for Additional Indicator/Warning Light

7. Anti-Lock Braking System (ABS) Indicator

Illuminates when the ABS is not available or when the ABS is malfunctioning. Since the ABS system does not operate under 4 mph (7 km/h), the indicator will remain illuminated until the coach reaches that speed. Refer to ***ABS Brakes*** in section 3.

8. Parking Brake

Lights when parking brake is applied (page 2-4).

9. Tag Axle Raised

Lights when tag axle is raised. Moreover, a beep will sound to warn driver that tag axle is raised.

10. High Temperature Retarder Oil Indicator

Illuminates when the transmission oil temperature is too high. Disengage the retarder to allow the oil temperature to cool down.

11. Do Not Shift Transmission Indicator (optional)

Illuminates briefly when the ignition is switched ON as a light test. The indicator light should go out after two seconds.

When the *Do Not Shift* indicator is illuminated, and the shift selector emits 8 seconds of short beeps, this means that the ECU is restricting transmission shifting because of special or abnormal conditions detected by the ECU. The *SELECT* digit on the display will be blank.

If this happens, drive the coach to the next available service station to receive assistance. The ECU will not respond to shift selector requests since operating limitations are being placed on the transmission (i.e., upshifts and downshifts may be restricted). Direction changes and shifts to and from neutral (***N***) will not occur.

Any time the *Do Not Shift* light has been illuminated, the ECU will register a diagnostic code. It may be identified on the display or using a diagnostic tool. Refer to ***Technical Information*** section under ***World Transmission (WT) Diagnostic Codes***.

Note: *The* Do Not Shift *transmission indicator may also illuminate when starting the engine in extreme cold weather. Refer to* ***Starting and Stopping Procedures*** *section under* ***Cold Weather Starting****.*

12. Output Retarder (optional)

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

13. Stoplights

Lights when stoplights are activated.

14. L.H. Turn Signal

Flashes when the left turn signal is selected with the 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.)

15. High Beams

Lights when headlight high beams are selected.

16. Engine Compartment Door Ajar

Lights when engine compartment door is ajar.

17. Battery

Lights when alternator is not operating properly.

18. R.H. Turn Signal

Flashes when the right turn signal is selected with the 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.)

19. 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 (page 2-6).

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

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

20. 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 in *Engine Coolant Temperature Gauge* (page 2-10). 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 5-9 has been performed.

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

21. Fire Detectors

Lights when fire is detected in the engine compartment.

22. Low Fuel Level

Lights when approximately 12 US gallons (45 liters) remain in the tank. It is recommended that you do not exceed a distance of 60 miles (100 km) after light has turned on. Fill tank as soon as possible.

23. Water Separator (optional)

Lights when the accumulated water in the diesel fuel filter/water separator should be drained. See ***Water Separator*** in section ***Care and Maintenance*** (page 6-5).

24. Preheating System (optional)

Lights when preheating system is turned on. For systems description, refer to page 2-21.

25. Level Low

Lights when level low system is operating (page 2-20).

26. A/C and Heating Compartment Door Ajar

Lights when the A/C-heating compartment door is ajar.

27. Blank for Additional Indicator/Warning Light

28. Low A/C Pressure Indicator

Lights when A/C system pressure is too low. Compressor clutch is disengaged and fan shuts off.

29. High A/C Pressure Indicator

Lights when A/C system pressure becomes too high. Compressor clutch will be disengaged, but compressor fan will remain activated.

30. Blank for Additional Indicator/Warning Light

31. Primary Air System Pressure Gauge

Indicates air pressure in the primary system. Normal reading should vary from 95 to 125 psi (655 - 860 kPa).

32. Secondary Air System Pressure Gauge

Indicates air pressure in the secondary system. Normal reading should vary from 95 to 125 psi (655 - 860 kPa).

33. Tachometer

Indicates engine speed in hundreds of revolutions per minute (rpm) and serves as a guide for proper gear shifting. It also helps the driver in preventing excessive engine speeds when going down steep grades, with engine serving as a brake. Maximum allowable engine rpm is 2450.

34. Transmission Oil temperature Gauge

Indicates temperature of transmission oil. Normal reading should vary between 160°F and 250°F (70°C and 120°C).

Note: *For vehicles equipped with a transmission retarder, when retarder is operated for extended periods, it is possible but still acceptable that transmission oil temperature rises above 250°F (120°C) but must not exceed a maximum of 330°F (165°C).*

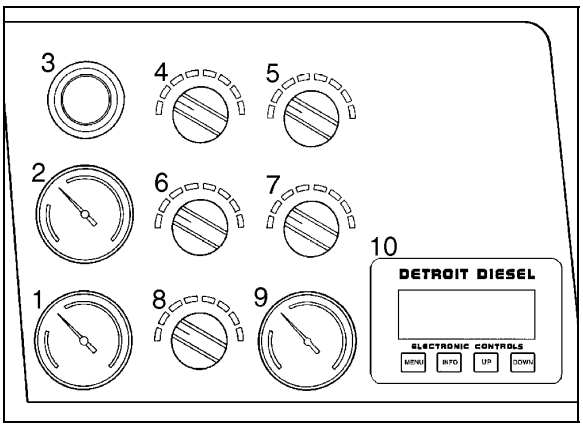
35. Speedometer

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

U.S. vehicles:	Miles/Kilometers (Miles predominant)
Canadian vehicles:	Kilometers/Miles (Kilometers predominant)

Note: *Do not refer to dashboard instruments during adjustment procedures. Use calibrated gauges.*

R.H. Dashboard



18177

1. Fuel Level Gauge

Indicates approximate quantity of fuel remaining in the tank.

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

2. Engine Coolant Temperature Gauge

Indicates engine coolant temperature. Normal reading should vary between 190°F and 215°F (88°C 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 if the engine overtemperature protection 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 ***Check Engine*** on page 2-8.

3. Adjustable Ventilation Louver

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

4. Driver's A/C-Heating Recirculation and Fresh Air Control

This Control provides maximum fresh or recirculated air flow to the driver (see page 4-10).

5. Main Windshield Defroster Control

This control directs air flow in the main windshield defroster and/or dash louvers.

6. Driver's A/C-Heating Temperature Control

This control is used to obtain desired temperature in driver's section.

7. Driver's A/C-Heating Ventilation Speed Control

This control activates the fan to the desired speed.

8. Central A/C-Heating Temperature Control

This control is used to obtain desired temperature inside vehicle.

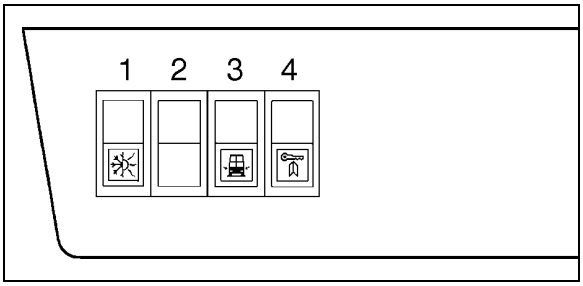
9. Differential Oil Temperature Gauge
(optional) Prior V.I.N. 2P9V33499S1001152 only

Indicates differential oil temperature. Normal reading should not exceed 250 °F (120 °C).

10. Engine Data Display and Computer - ProDriver™ (optional)

Refer to page 2-19.

R.H. Lower Control Panel



18178

1. Central A/C-Heating Switch

Push down rocker switch to activate main A/C-heating system. The ventilation system will operate automatically.

2. Blank for Additional Switch

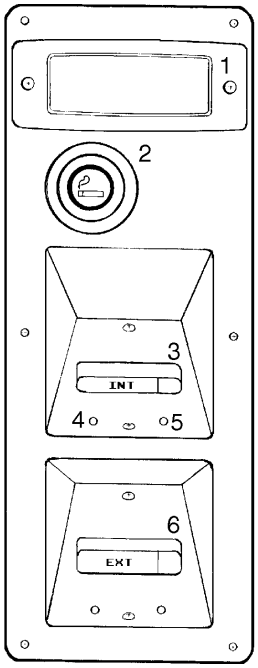
3. Fresh Air Damper Switch

Push down rocker switch to close partially the fresh air damper.

4. Entrance Door Unlocking Switch

Push down rocker switch to unlock the entrance door. This switch can not be used to lock the entrance door.

Center Console



18179

1. Ashtray

To open, push in on left side. Remove ashtray by pressing on inner tab.

Warning: *Never use the ashtray as a waste paper receptacle as it could cause fire.*

2. Cigarette Lighter

Push in to activate, and it will spring back when ready to use. Return lighter to initial (non-activated) position. The lighter socket can also be used for 12 volts appliance with a maximum consumption of 130 watts (10 amps), such as flashlight, or small vacuum cleaner. Do not use appliances equipment with unsuitable plugs as they may damage socket and/or electrical circuit.

Note: *Lighter and socket remain functional even when ignition is* OFF*.*

3. Inside Temperature Thermometer

Indicates vehicle's interior temperature. Temperature is indicated in Fahrenheit for U.S., and in Celsius for Canada.

4. Green LED for *A/C* Mode

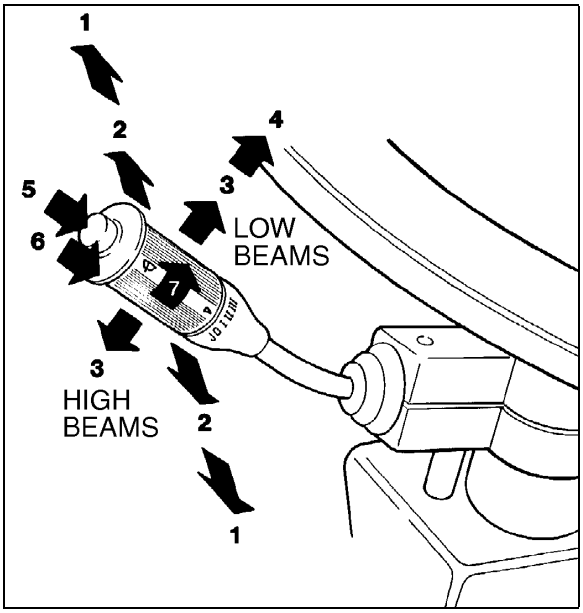
5. Red LED for *Heating* Mode

6. Outside Temperature Thermometer

Indicates exterior temperature. Temperature is indicated in Fahrenheit for U.S., and in Celsius for Canada.

Steering Columns Controls

Multifunction Lever



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

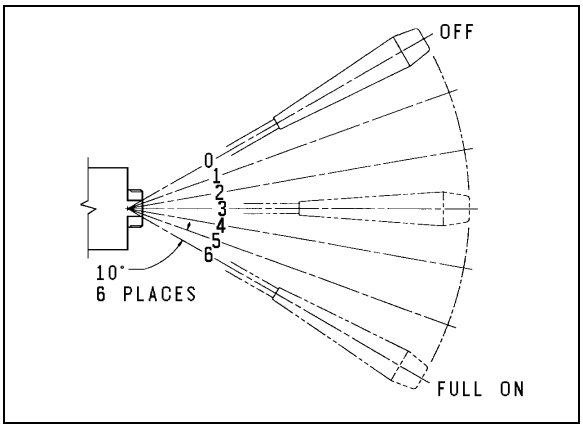
Caution: *Do not run wiper blades on dry windshields as this may cause scratches. To avoid damaging wiper mechanism, always loosen frozen blades from windshield before operating wipers.*

Warning: *Visibility is reduced by the use of worn or dirty wiper blades. Regularly clean the blades, and replace them when they are worn out.*

Electric Horn

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

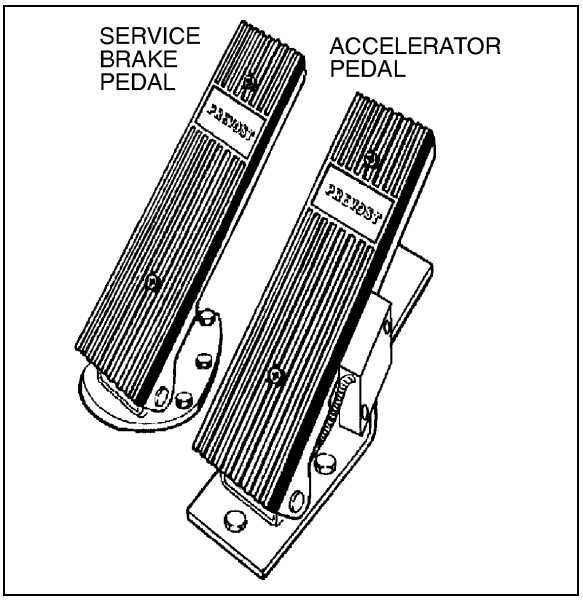
Transmission Retarder Lever (optional)



18018

Located on R.H. side of steering column. Use lever to select transmission's retardation level (*OFF* or 1 to 6) (page 4-4).

Foot Operated Controls



18025

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.

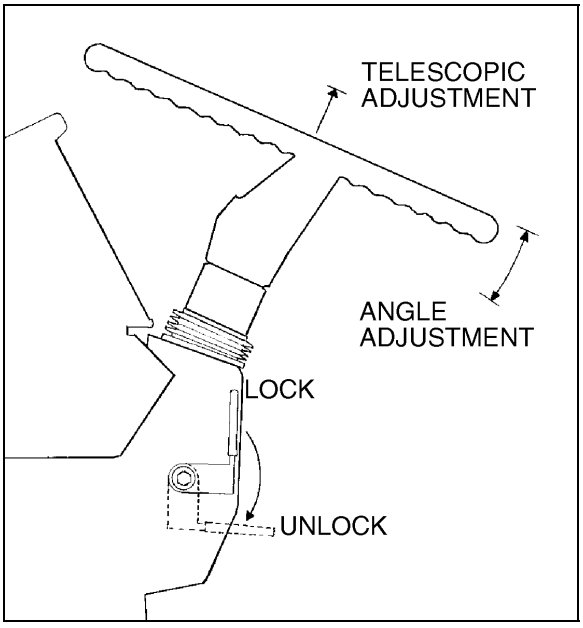
Service brakes are applied by depressing the brake pedal, the rate of braking varying according to the gradual increase of pressure until the required rate of braking is obtained. When brake pedal is depressed, vehicle stoplights automatically light up.

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



18180

To unlock, use the handle located on the steering column's left hand side. Pull handle down to permit a maximum variation of 12° 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.*

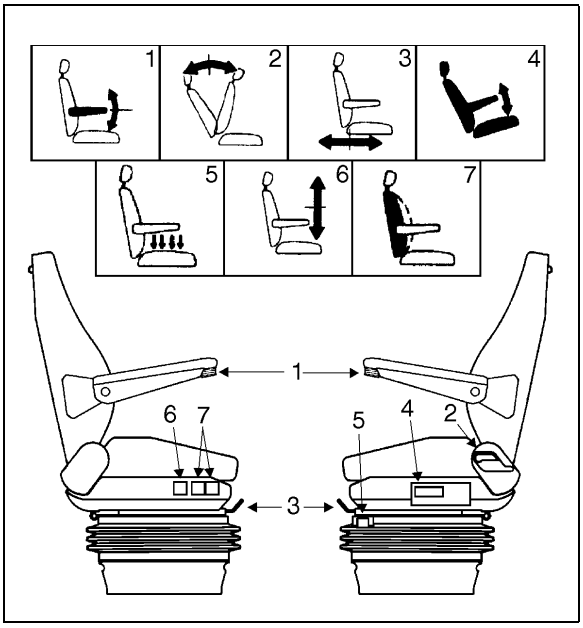
Seats

Driver's Seat - "Delivery"

The driver's "delivery" seat is standard, and legal only for driving the vehicle on its initial delivery. It is a conventional van seat equipped with tracks for fore and aft adjustments.

Driver's and Copilot's Seats - *ISRI* (optional)

Two distinct *ISRI* model driver's and copilot's seats may be supplied with your vehicle: both with a sophisticated air suspension system, one being manually-operated, while the other is electrically-operated. Both seats may be equipped with lumbar supports, heated cushions and adjustable armrests. Seats can be adjusted to the desired driving position by following the instructions listed below:



18026

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

1. Armrest

Rotate control knob to select desired armresting angle. When not in use, raise armrest parallel with backrest.

2. Backrest

Lift lever to select proper adjustment angle of backrest.

3*. Fore-and-Aft

Pull handle up and slide seat forwards or backwards to adjust distance between seat and dashboard.

4*. Incline

Pull handle up, and adjust seat inclination.

Warning: *Before proceeding with seat cushion adjustments, lower seat belt retractor to avoid pinching fingers between retractor and control knobs.*

(*) If your vehicle has electric *ISRI* seats, controls 3 & 4 change. For description of electric controls, see ***Electric* ISRI *Seats*** on this page.

5. Suspension

For maximum suspension performance, push or pull knob until desired damping is reached.

6. Raise/Lower

Press on **+** or **-** to respectively raise or lower driver's seat.

7. Lumbar Support

Push on upper section of rocker switches to inflate lumbar support bellows inside the seat backrest, and push on lower section of rocker switches to deflate bellows.

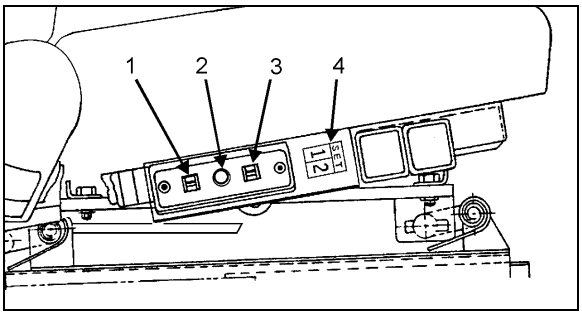
Note: *Rear and front rocker switches are respectively for upper and lower lumbar support bellows.*

Heated Cushions

The *ISRI* seat may also be equipped with back and seat heated cushions, operated by a switch mounted on R.H. lower switch panel (See items #5 and #7 on page 2-3).

Electric *ISRI* Seats

Adjust electric seats as follows:



18040

1. Tilt (rear)

Pull switch up to raise rear section of seat. Push switch down to lower rear section of seat.

2. Fore-and-Aft/Up-Down

Push switch towards dashboard to move seat forwards or back to move seat backwards. Pull switch up to raise seat & push switch down to lower seat.

3. Tilt (front)

Pull switch up to raise front section of seat. Push switch down to lower front section of seat.

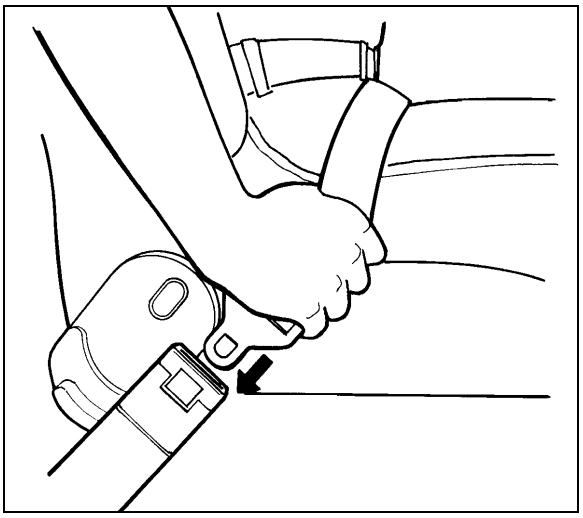
4. Memory

- Use switches (items 1,2 & 3) to adjust the seat to the position desired by driver ***1***.
- Press the *SET* button and then the number ***1*** button. Memory position ***1*** is now set.
- To set the seat position for driver ***2***, repeat steps 1 and 2 except press the number ***2*** button in step 2. Memory position ***2*** is now set.
- To move the seat to either memory position, press and hold the desired button (***1*** or ***2***) for at least 2 seconds. If the seat does not move, the button was not held long enough or the seat is already in the desired position.
- To use the easy entry/exit feature, press and hold the number ***1*** and the number ***2*** buttons at the same time for at least 2 seconds. The seat will move to the full rear and full down position.

- To stop seat movement, push any control button (items 1 to 4).

Note: *The seat can, at any time, be positioned using items 1,2 & 3 without affecting the two memory positions.*

Seat Belts



18028

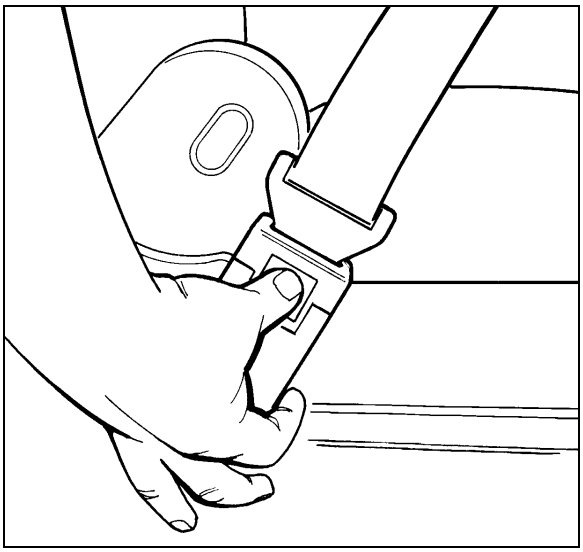
Each seat is equipped with a retractable seat belt as required by State, Provincial and Federal regulations. To fasten, pull seat belt out of the retractor and insert the latch plate into the buckle until it clicks. No special adjustment is required since the reel device is self-adjusting. If seat belt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

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.*

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.



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.*

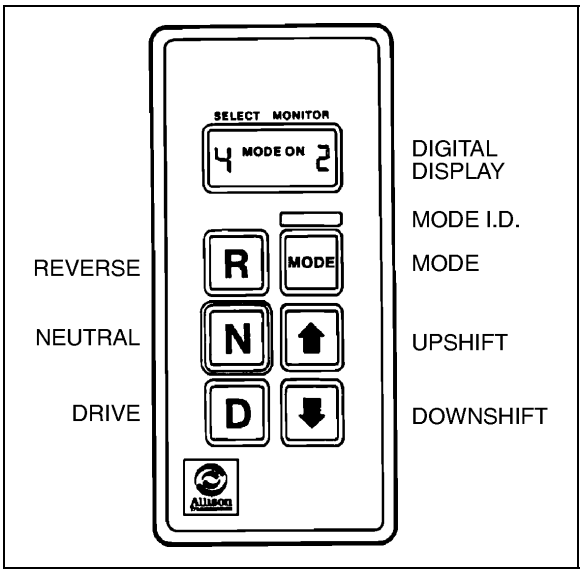
Automatic Transmission

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 readout of two digits:



PUSH-BUTTON SHIFT SELECTOR 18015

SELECT Range of gears selected by the operator.

MONITOR Current gear of transmission operation.

Each time a button is pressed on the shifter a short "beep" will be heard to identify that the ECU has received instructions to change 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 *SELECT* display and the transmission will shift to the starting gear as indicated on the *MONITOR* display.

The *UPSHIFT* and *DOWNSHIFT* (arrow) buttons are used to shift to a higher (if not in ***D***) or lower (if not in ***1***) range selected. One press changes the range selected by one range. If the button is pressed continuously, the range selected continues to change up or down until the button is released or until the highest or lowest possible range of gears is selected.

Function of the Mode Button

This button is used to invoke a special function that has been programmed into the ECU. This button will shift between primary (*Mode* Off) and secondary (*Mode* On) shift schedule. The primary shift schedule is used each time the vehicle is started. To select the secondary shift schedule, push mode button, the mode status will be indicated on the digital display by lighting *Mode On* when the function has been selected.

Shift Schedule

PRIMARY (Economy) Used each time the vehicle is started, this shift schedule is typically used for normal vehicle operation. This schedule allows for more efficient operation of the transmission and thereby helps contribute to improved fuel economy.

SECONDARY (Performance) This shift schedule can be selected via the *MODE* button. This schedule allows for quicker response to transmission demands, shifts at higher ratios and in short uses the maximum engine power possible.

HOLD UPSHIFT This shift schedule is automatically activated to prevent engine overspeed by upshifting the transmission into the next higher range.

In most cases the control system logic protects the transmission from abuse. Such actions as full throttle neutral-to-range shifts and high speed direction changes are inhibited.

Operation

When a push-button pad is depressed, a beep sounds and the pad lights up 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 *Do Not Shift* light on the dashboard (page 2-8) illuminates to warn the driver that the trans-

mission is held-in-gear. If another pad is depressed, the buzzing sound will continue until the original range is selected.

Note: *As a light bulb and systems check, the* Do Not Shift *light will illuminate when the ignition switch is turned* ON*. After about two seconds the light will turn off. If the* Do Not Shift *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.*

A) 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***) pad, the pad will light up and the reverse warning signal will be activated, provided the *Back Up Alarm Cancel* switch is *ON* (page 2-3).

B) 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.

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

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

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

C) 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.*

D) 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.

E) 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).

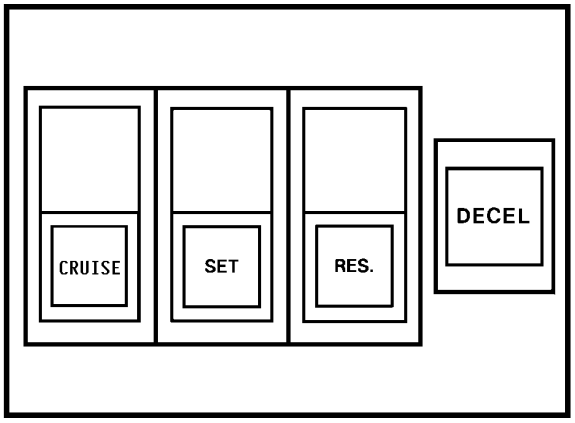
F) First (*1*) Range

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.

Caution: *Service brakes (foot pedal) 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*). When descending in lower ranges, care must be taken that engine speed does not exceed 2450 rpm. This procedure keeps service brakes cool and ready for emergency stopping.*

(*) Refers to ***Jacobs Engine Brake*** and ***Transmission Retarder*** headers, page 4-3 and page 4-4.

Cruise Control



18181

Introduction

The cruise control is an automatic speed control system that allows you to maintain a constant cruising speed above 20 m.p.h. (32 km/h) without depressing the accelerator pedal. The four control switches are located on the L.H. side control panel.

Warning: *Do not use the cruise control system when driving conditions do not permit maintaining a constant speed, such as in heavy traffic or on roads that are winding, icy, snow covered, slippery, or with a loose driving surface.*

Setting Vehicle Speed

To turn on the system, push down *CRUISE* rocker switch, set the vehicle speed by accelerating to the desired speed, momentarily press and release the *SET* switch, and then remove your foot from accelerator pedal. This sets the cruising speed and stores it in memory, thus maintaining speed automatically.

Note: *Cruise control system will not accept speed settings, nor will the* RESUME *switch operate, below approximately 20 m.p.h. (32 km/h).*

Increasing Set Speed

Vehicle speed setting may be increased by one of the following methods:

1. Press and hold the *RESUME* switch until the desired speed is obtained. Releasing the *RESUME* switch will set the new higher speed.
2. Depress accelerator pedal until the desired speed is obtained, then press and release the *SET* switch.

Note: *When driving with cruise control in use, the speed may be increased for passing, etc., by depressing the accelerator in the usual manner. Once the foot is removed from the accelerator pedal, the cruise control will return to the set speed.*

Decreasing Set Speed

Vehicle speed setting may be decreased by one of the following methods:

1. Press and hold the *SET* switch until the desired lower speed is obtained. Releasing the *SET* switch will set the new speed.
2. The cruise control can be disengaged without losing the speed memory by either of two methods:
   a) By lightly applying the brakes, or
   b) by momentarily depressing the *DECEL* switch button.

After either of these disengagements, you may return to the previously set speed by pressing and releasing the *RESUME* switch, provided the speed is higher than 20 m.p.h. (32 km/h).

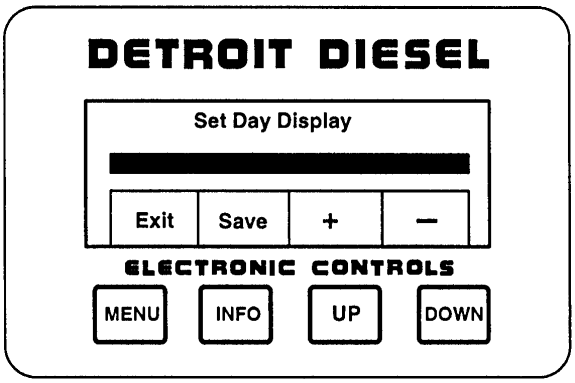
The cruise control is completely shut off and the speed memory is lost when turning off the *CRUISE* rocker switch.

Note: *Cruise control is inoperative when speed drops below 20 m.p.h. (32 km/h), therefore the setting instructions must be repeated if vehicle speed drops below this mark.*

When the cruise control system is canceled, objectionable vehicle motions are minimized by lightly depressing accelerator, before disengaging cruise control.

Warning: *It is important to know that toggling the SET or the RESUME switch will result in a decrease or increase in speed (respectively) of 0.6 m.p.h. (1.0 km/h) for every touch.*

Engine Data Display & Computer - ProDriver™



18034

ProDriver™ is a graphic device that displays and records operational data transmitted by the Detroit Diesel Electronic Controls (DDEC) on the diagnostic data link. It utilizes a vacuum fluorescent (VF) display for wide viewing angles and excellent visibility in all ambient light conditions.

ProDriver[tm] has many driver friendly features designed to provide instantaneous feedback to the driver. This allows him to understand the effect of his actions on engine and vehicle performance. There are two display screens automatically shown, which offer real time feedback based on the vehicle activity. Should an alert message be sent out by the ECM, the driver will be shown what is wrong and how the engine power will change.

Data available from ProDriver™ includes:

- Instantaneous and average fuel economy
- Trip time, miles, fuel used, fuel economy, average speed
- Driving time, percentage, miles, fuel used, fuel economy
- Idle time, fuel and percentage
- Cruise time, percentage, miles, fuel used, fuel economy
- Top gear time, percentage, miles, fuel used, fuel economy
- VSG (previously PTO) time, fuel used, and percentage
- Overspeed time and percentage for two speed thresholds
- Over-rev time and percentage
- Maximum vehicle speed and RPM
- Coasting time and percentage
- Automated oil change interval tracking
- Hard braking incident records
- Driver initiated incident records, and
- Stop and check engine code logs.

Note: *Refer to Detroit Diesel ProDriver™ User Manual (6SE701), for a full description of how to set up and operate your ProDriver™ display.*

Button Functions

MENU	Displays main menu or previous menu level.
INFO	Displays selected menu options; saves new data.
UP / DOWN	Move selection arrow up or down, or move from screen to screen when multiple screens are available.

Button combinations

Press *UP* and *DOWN* at the same time to store an incident record.

Special button functions

Alternate labels are displayed along the bottom of the screen directly over each button when the buttons are used to perform special functions.

Display Screens

Idle Time

Automatically displayed when engine is idling. Shows idle time for current leg of the trip and as a percentage of engine running time. A bar graph shows the idle percentage compared to the fleet goal.

Fuel Economy

Automatically displayed when the vehicle is moving. Shows average fuel economy for current leg of the trip digitally and as a bar graph, with the fleet goal centered on the screen. Instantaneous economy is shown as a series of arrows. *UP* arrows show an improving leg average, while *DOWN* arrows show a decrease. The number of arrows shows the amount of change.

Warning Screens

Speeding, over revving, excessive idling and oil change screens will be displayed until acknowledged by pressing any button or the condition ceases. The display will return to the screen previously shown.

Alert Screens

Shown if a warning condition exists with the engine. Will be displayed until acknowledged by pressing any button.

Note: *Menu displays are available only when the vehicle is stationary. The display may be viewed with the ignition* OFF *by pressing* MENU*.*

To Edit the Main Menu at Idle:

In *Idle Screen*, press *MENU* to go to *Main Menu*, press *MENU* to go back to *Idle Screen*.

To Review Leg Summary Information at Idle:

In *Idle Screen*, press *INFO* to go to *Summary 1*, press *INFO*, to go to *Summary 2*, press *INFO* to go back to *Idle Screen*.

To Review Trip Summary Information at Idle:

In *Idle Screen*, press *MENU* to go to *Main Menu*, press *INFO* to go to *Trip Summary*, then press *DOWN* and *UP* to view all pages of *Trip Summary*. Press *MENU* two times to go back to *Idle Screen.*

To Review Leg Summary Info While in Motion:

In *Economy Screen*, press *INFO* to go to *Summary 1*, press *INFO*, to go to *Summary 2*, press *INFO* to go back to *Economy Screen*.

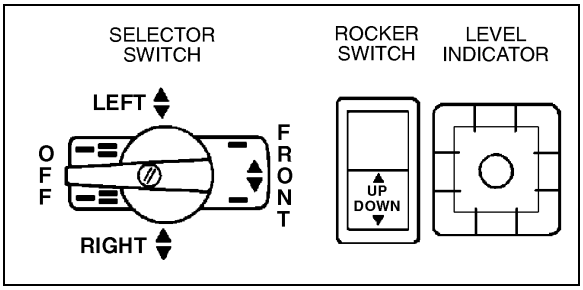
Display Brightness

Temporary adjustments may be made while in the fuel economy, idle or leg summary screens by pressing *UP* or *DOWN*. The normal setting returns the next time the engine is started.

Entering Driver ID

In *Main Menu*, select *Configuration* by pressing *DOWN*, then press *INFO*. Select *Driver ID* by pressing *DOWN*, then press *INFO*. Press *UP* to increment the selected digit. Press *DOWN* to select the next digit to the right. Press *INFO* to save the completed entry or press *MENU* to exit without saving changes.

Level Low System



18182

During driving, the conventional air leveling system of the vehicle controls the height at three points: the front, the left rear and the right rear. Your vehicle is equipped with a suspension system that consists of air springs (pressurized air bellows) located near each wheel. The amount of air in each air spring (and thus the vehicle height) is controlled by automatic leveling valves that operate between the chassis and the axles of the vehicle.

The three leveling valves are located as follows: one at the front which controls the amount of air in both front air springs, one at the left rear which controls the left rear corner of the vehicle and one at the right rear which controls the right rear corner of the vehicle. During normal driving, these valves work automatically to maintain the chassis at the proper level above the axles, indifferent of road conditions or vehicle weight.

When parked, and **ONLY** when parked, the level of the vehicle can be manually adjusted within the range of travel of the air springs. Thus, if the vehicle is parked on uneven ground, the manual override leveling system can be used to level the chassis of the vehicle. With the ignition *ON* (engine running or not), turn the selector switch located on L.H. side control panel (page 2-3) to the area of the vehicle requiring leveling, then press the rocker switch accordingly (up or down) to inflate or deflate the selected set of air springs. The front position raises or lowers the front only and does not tilt the vehicle to its sides. Each rear position raises or lowers its respective side, therefore, the rear positions can be used to tilt the vehicle to one side or the other, or they can be used to raise or lower the rear of the vehicle. When leveling vehicle, it is often necessary to run the engine in order to get an adequate air supply.

Note: *It's always better to first, level the rear of the vehicle (right to left) before raising or lowering the front. After adjusting the rear, watch the level as you adjust the front. If the level shows that the vehicle is starting to tilt to either side, then stop adjusting the front as one of the air springs has come to the end of its travel range.*

After manual leveling, turn off the engine. The vehicle will stay in the leveled position (the air is *"locked"* in air springs) as long as there are no air leaks. The vehicle will hold this position for several days. When engine is restarted and air pressure is adequate, the vehicle will automatically level itself for driving conditions.

Warning: *Do not drive the vehicle with the level low selector switch in any position other than* OFF*, as this may render the vehicle unsafe and uncontrollable. If this is the case, the* Level Low *warning light in dashboard (page 2-9) will flash, reminding you that the selector is not in the* OFF *position.*

Note: *If, for any reason, you wish to start-up the engine without moving vehicle (to warm up engine for instance) while keeping the vehicle in the manually leveled position, place selector switch in any position except* OFF*. When ignition switch is turned to the* OFF *position, reset the selector switch to the* OFF *position.*

Preheating System Timers (Auxiliary) (optional)

The timer, located on L.H. lateral console (see page 2-4), is used to program the starting and stopping time of the preheating system. One of two optional Timers may be installed in your vehicle, Espar (40 000 Btu) or Webasto (80 000 Btu). The system indicator light, located on dashboard (page 2-9) 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.*

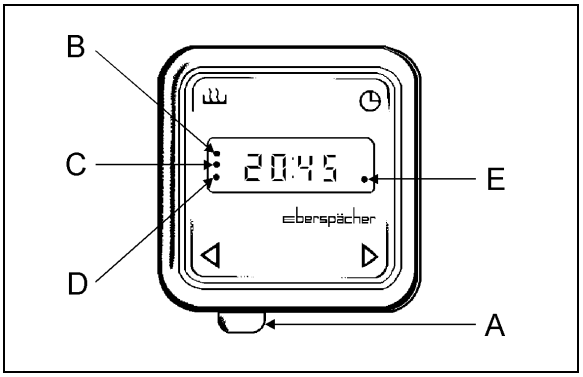
In case of failure:

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.

Espar (40 000 Btu)



18045

Time Display

Pull lever ***A*** forward*.

Time Setting

Pull lever ***A*** forward and press on ◁ or on ▷.

Heating Startup (Possible Regardless of Preselection)

Press on 1.

Display of heating time in minutes, operation indicator light ***E*** is flashing.

Heating Startup, Continuous Operation

Pull lever ***A*** forward and press simultaneously on .

Heating Shutoff

Press on 2. Fan has automatic delay to allow cooling.

Preselection of Heating Startup Time

Memorization of three startup times.

Display of Memorized Times

Note: *Heating will turn on automatically at pre-selected time.*

Press once on 3: Heating is set for the 1st startup time**, indicator light ***B*** is on.

Press twice on 4: Heating is set for the 2nd startup time**, indicator light ***C*** is on.

Press three times on 5: Heating is set for the 3rd startup time**, indicator light ***D*** is on.

Neutral position: Press four times on : No display or display of time*. No preselected startup time.

Setting of Startup Times:**

1st memory: Press momentarily on ***B*** is on.

2nd memory: Press momentarily on 6, ***C*** is on.

3rd memory: Press momentarily on 7, ***D*** is on.

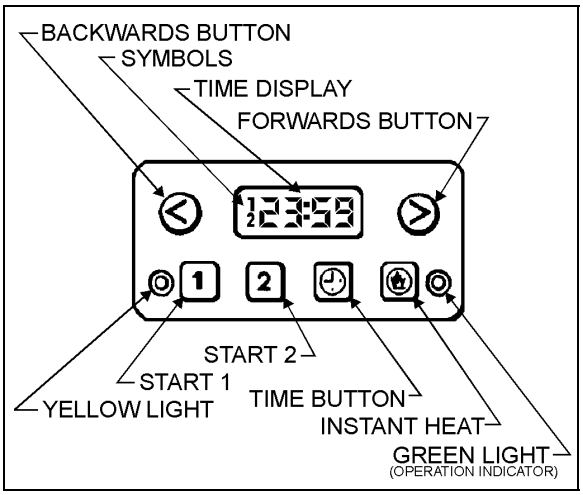
Setting of time by pressing on ◁ or on ▷

Neutral position: Press once again on 8: No display or display of time*, the preset times are still in memory.

* Eventually permanent display of time with the vehicle ignition switch on.

** Display of heating startup time turns out after approximately 20 seconds, or time delay*.

Webasto (80 000 Btu)



18046

1. To set the clock

If the time display e.g. 18:33 is wrong, or if it flashes 8:88, press button 9 and at the same time press either 10 (backwards) or 11 (forwards). The longer you hold the button down, the quicker the display changes. The last few minutes are set accurately by quick pushes. Adjust to get exact time, e.g. 23:59. The display fades after 20 sec.

2. Do you want to know the time?

Just press 12 at any time. The display appears again.

3. You can get instant heat...

with the button 13, which switches your heater on (or off) immediately. The green light is on while the heater is switched on.

4. ... or you can program the heater to come on up to 24 hours ahead.

Press button 1 14 - and the display shows the time at which the heater will start. You can alter starting time by pressing button (backwards) or 15 (forwards). The longer you press the button, the faster the display changes. The last few minutes are set accurately by quick pushes. The display fades after 20 sec. The symbol 1 remains in the display, and the yellow light stays on. Your starting time is now activated.

5. Button 2 allows you to program a second starting time

Press button 2 16, which de-activates starting time 1. Then proceed as in (4).

The activation of the second starting time is indicated by the symbol 2.

6. Do you want to check (or activate) your starting time?

Press button 1 17 or 2 18 1920briefly. The display shows, for 20 sec., the programmed starting time. This activates the timer to start the heater at the time shown.

7. Do you want to cancel a programmed start?

Press button 1 21 or 2 22 23briefly. The appropriate number in the display goes out, together with the yellow light.

Mirrors

Exterior Mirrors

The vehicle is equipped with two exterior mirrors which are provided with an electric heating system to ensure a good visibility in extreme weather conditions. Integral thermostats are installed in both mirrors to avoid continual heating. Use the appropriate switch on the L.H. dashboard panel to activate the defroster system on both mirrors simultaneously.

The mirrors can be electrically adjusted by means of the switch on the L.H. dashboard control panel.

Note: *Adjust exterior and interior mirrors before driving and after adjusting your seat to the proper driving position. It is important for safe driving that you have a good reach vision on each side of the vehicle.*

Caution: *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.*

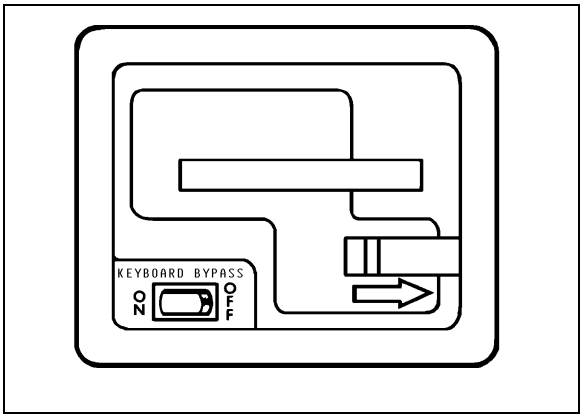
Interior Mirrors

The driver's area is also equipped with two additional interior mirrors. The first mirror is located in the upper L.H. corner and is used to see outside by the front R.H. window, i.e. a dead angle without a mirror. The other mirror is in the upper center of your vehicle and enables the driver to see inside of the vehicle.

Entrance Door

Inside Operation

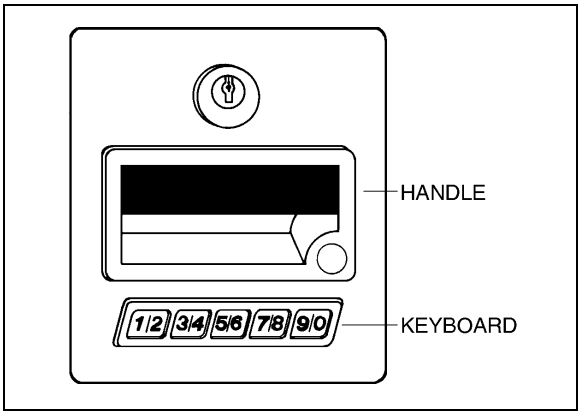
There are three ways of unlocking the entrance door from the inside. The two first consist in actuating the rocker switch on the lower R.H. side control panel or on L.H. side control panel, but this last operation will also unlock the baggage compartments. Finally, you can unlock door by sliding its lock lever to the left. If the orange tab on the door lock lever is visible, the door is unlocked.



18187

Outside Operation

The first way of locking/unlocking the entrance door from the outside is by using the door lock key provided with the vehicle. Turn key to the left to lock or to the right to unlock the entrance door.



18188

Keyless Entry System

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

The manufacturer's code appears:

- On your owner's wallet card
- Taped to the microprocessor/relay module in driver's A/C compartment
- Three stickers are joined to you owner's wallet card

When you use the keyless entry system, the keyboard and stepwell lights illuminate. Do not push the buttons with a key, pencil or any other hard object as it could damage buttons. Although each button is provided with two digits separated by a vertical line, there is only one contact per button. Press in center of button, i.e. between the two digits where there is a vertical line.

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

Keyless Operating Instructions

1. To unlock the entrance door, enter the five numbers of the code. After pressing the fifth number, the door will unlock. At night, press any button to illuminate the keyboard, then enter the code.

Upon pressing any button, the keyboard will light up for five seconds and the stepwell lights for twenty-five seconds.

2. To unlock the baggage and service compartment doors, press button 3/4, within five seconds after entering the entrance door unlocking code.
3. To lock entrance door and compartments simultaneously, press buttons 7/8 and 9/0 at the same time.

Programming Your Personal Code

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

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

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

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

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

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

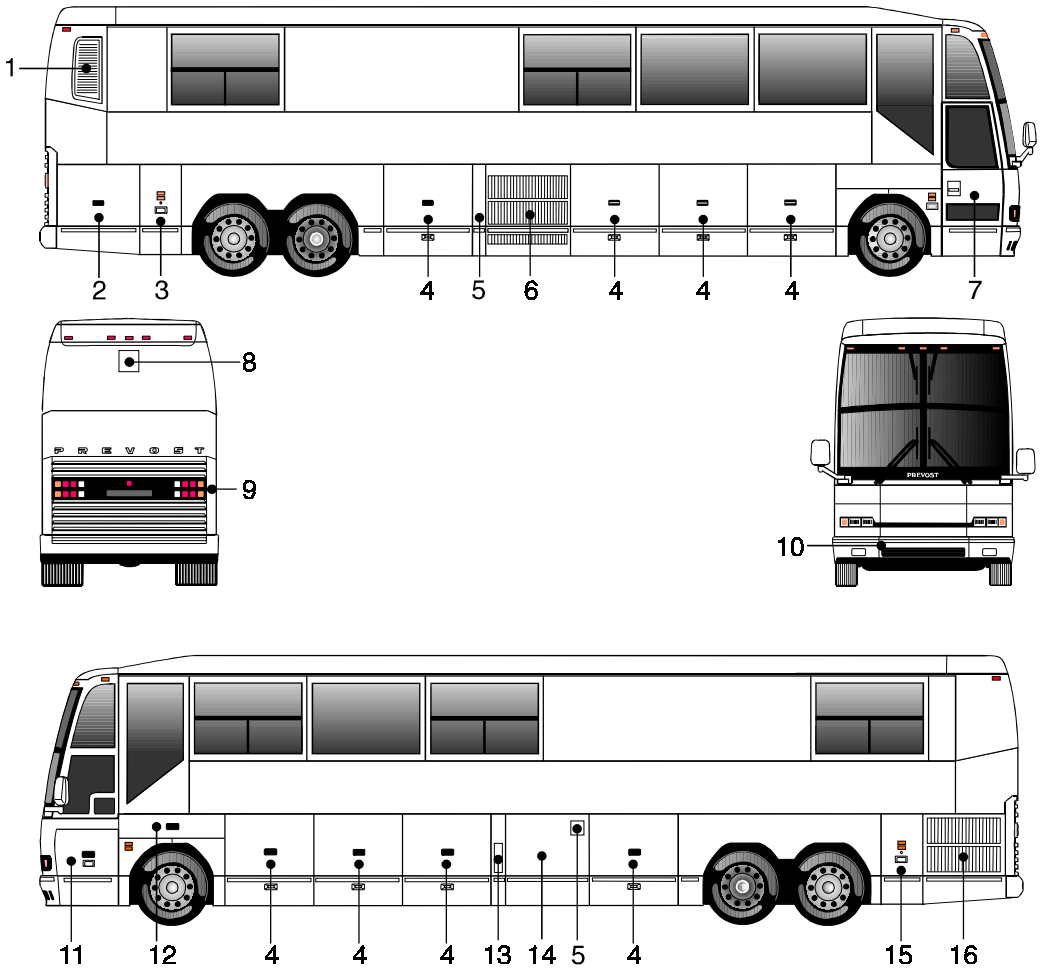
Exterior Compartment Door Lock

Push up rocker switch to unlock the baggage, entrance and front service compartment door locks or push down to lock.

Entrance Door Unlocking Switch

Push down rocker switch to unlock only the entrance door. This switch can not be used to lock it.

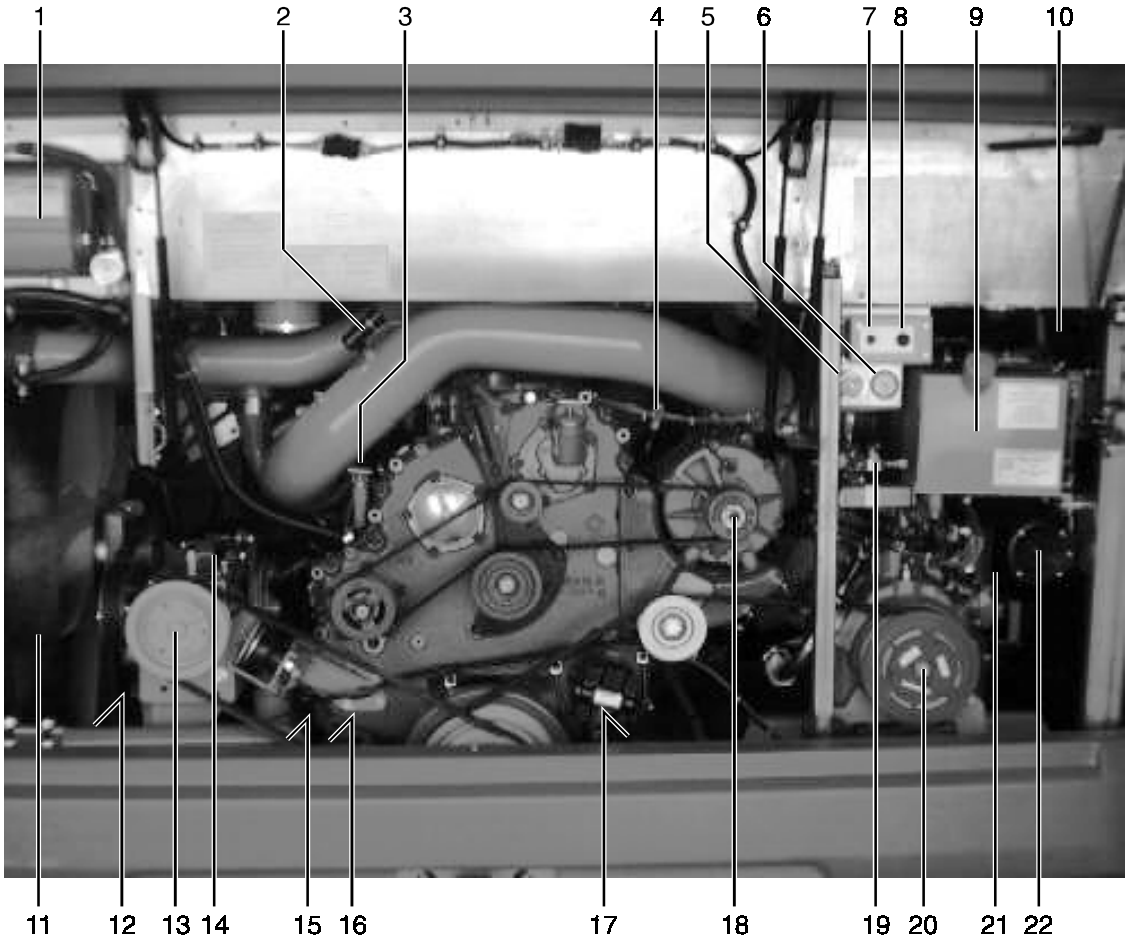
Exterior Compartments



1. Engine Air Intake Duct
2. Engine Compartment R.H. Side Door
3. Main Power Compartment
4. Baggage Compartment
5. Fuel Filler Door
6. A/C Condenser
7. Entrance Door
8. Retractable Back-Up Camera (optional)
9. Engine Compartment Rear Door
10. Reclining Bumper Compartment
11. Front Service Compartment
12. Front Electric Compartment
13. Fresh Air Inlet Duct
14. HVAC Compartment
15. Rear Electrical Compartment
16. Radiator

18183

Engine Compartment Components

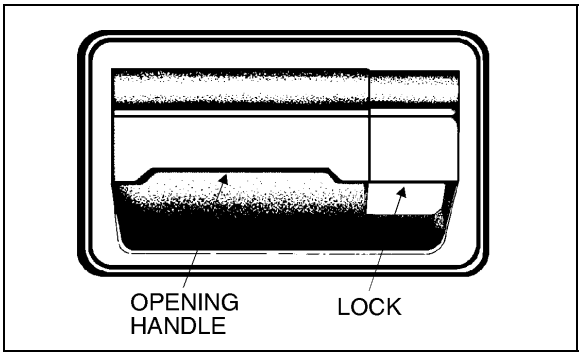


1. Coolant surge tank
2. Air cleaner restriction indicator
3. Transmission oil dipstick
4. Engine oil dipstick
5. Pressure gauge
6. Temperature gauge
7. Starter selector switch
8. Rear start push-button switch
9. Engine oil reserve tank
10. Air cleaner
11. Radiator
12. Muffler
13. Radiator fan gearbox
14. 12 volt, 145 amp, alternator (optional)
15. Engine coolant filter/conditionner
16. Engine oil filters
17. Primary (closer) and secondary fuel filters
18. 24 volts, 270 amp, alternator
19. Belt tensionner pressure control valve
20. A/C compressor
21. Power steering oil reservoir (back)
22. Back-up alarm

01039

Engine Compartment R.H. Side Door

This door can be locked/unlocked using the exterior compartment key. Lift up protector cover to gain access to the lock. Pull up the door handle to release the latch, then pull the door open. To keep the door open, engage the safety catch on top of the door. Release the safety catch before closing the door.

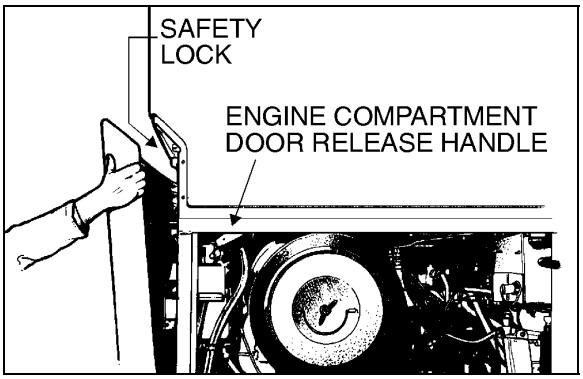


18184

The lighting in the engine compartment turns on automatically when the door is opened. If the compartment door is open, an indicator light will illuminate on the central dashboard.

Warning: *Do not run the engine when the compartment door is open. Close engine compartment door before starting engine.*

Engine Compartment Rear Door



18185

The door latch release lever is located in the upper rear section of the engine compartment R.H. side door. Push up release lever, then place hand on the upper right of the rear door and pull rearward. The door will open automatically.

Warning: *Always engage the safety catch to keep the door securely open in case of any malfunction. Release the catch before closing the door.*

The lighting in the engine compartment turns on automatically when the door is opened. If the door is open, an indicator light will illuminate on the central dashboard.

Warning: *Pressurized cylinders assist the rear engine door opening. To avoid injury when opening it, do not stand at the rear of the coach. Stand clear when opening the rear door.*

Warning: *Do not run engine when the compartment door is open. Close the engine compartment door before starting the engine.*

Main Power Compartment

This door can be locked/unlocked using the exterior compartment key.

The lighting in the compartment turns on automatically when the door is opened. If the door is open, an indicator light will illuminate on the central dashboard.

Baggage Compartments

Open door by lifting handle; the opening action is assisted by gas charge cylinders which also hold the door in the open position.

A central door lock system is installed on the baggage compartments. The switch is located on the L.H. side control panel. Push up rocker switch to unlock the doors and push down to lock. An indicator light will illuminate on L.H. dashboard if one or several baggage compartment door(s) is (are) unlocked. Another indicator light will illuminate on the dashboard if one or several baggage compartment door(s) is (are) ajar.

The baggage compartment doors may also be locked or unlocked from outside using the key provided.

Warning: *To avoid injury, keep hands clear of door edge and door frame when closing.*

Note: *To prevent theft or vandalism, always lock baggage compartment doors before leaving vehicle.*

Fuel Filler Doors

Both fuel filler doors can be locked/unlocked using the exterior compartment key. Turn the key in the lock to remove.

Note: *The L.H. side door lock must be in the unlocked position before closing.*

A/C Condenser

Pull the unlocking rod, located behind the R.H. side fuel filler door, to partly open the condenser door. Push down the release lever, accessible through the opening, to open the door.

Caution: *Do not open or close the adjacent baggage compartment door when the condenser and fuel filler door is open.*

Reclining Bumper Compartment

The "reclining-type" front bumper can be opened for maintenance purpose; move to the right the lever located at upper right of the middle of the front bumper screen, then lower bumper slowly as it is quite heavy.

Warning: *This compartment has not been designed for storage. Never leave any loose object in this area as it may interfere with the steering linkage mechanism.*

Caution: *Check that the bumper is safely hooked in place after bumper compartment has been closed.*

Front Service Compartment

The front service compartment door can be locked/unlocked with the exterior compartment key. Lift protector cover to access the lock. Pull up door handle to release the latch, then pull the door open.

The lighting in the front service compartment turns on automatically when the door is opened.

Front Electric Compartment

The front electric compartment door can be locked/unlocked using the exterior compartment key. Lift protector cover to gain access to the lock. Pull up door handle to release the latch, then pull the door open. Pressurized cylinders assist the opening and closing of the door and also hold the door open.

The compartment lighting turns on automatically when the door is opened. If the compartment door is ajar, a telltale light will illuminate on the central dashboard.

Warning: *To avoid injury, keep hands clear of door edge and door frame when closing.*

HVAC Compartment

The compartment door release latch is located on the left side of the baggage compartment at right of the HVAC compartment. Pull the release latch then pull the HVAC compartment door open.

Rear Electric Compartment

The rear electric compartment door can be locked/unlocked using the exterior compartment key.

The lighting in the compartment turns on automatically when the door is opened. If the door is open, an indicator light on the central dashboard will illuminate.

Accessories

Sun Visor (Blinds)

This vehicle is provided with two electrically-operated sun visors which are installed on both sides of windshield. Push up or down the appropriate switch to raise or lower sun visor to the desired position.

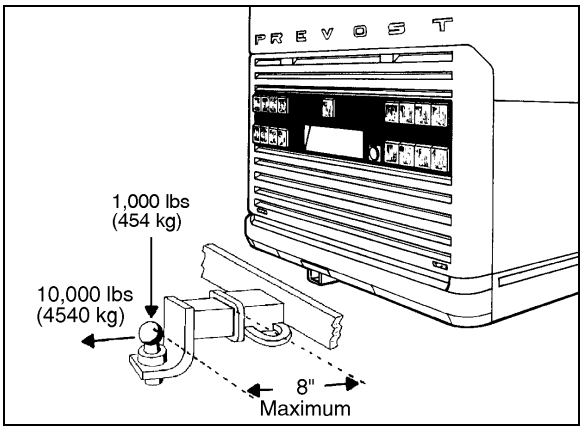
Moreover, an optional spring release type sun visor is provided for the driver's window to protect him from side glare. To operate, pull down sun visor by its hem to the appropriate position and release it; it will remain automatically in position. To lift, depress the unlocking lever.

Spare Parts Kit (optional)

A spare parts kit may be supplied with your vehicle. Parts are stored in a cardboard box located inside the forward baggage compartment.

Trailer Hitch

Your vehicle is equipped with a factory installed trailer hitch which has been designed to meet SAE, class 4 specifications.



18186

- Maximum gross trailer weight: 10,000 lbs (4 540 kg)
- Maximum tongue weight at 8 inches (200 mm) or less from coupling receiver: 1,000 lbs (454 kg)

Warning: *Pulling a trailer weighing more than the recommended maximum gross weight may cause engine and transmission overheating, and also possible hitch failure.*

Note: *Pulling a trailer over long distances is considered as a "severe operating condition" for the vehicle and therefore, power plant requires more frequent servicing.*

Adjustable Louvers

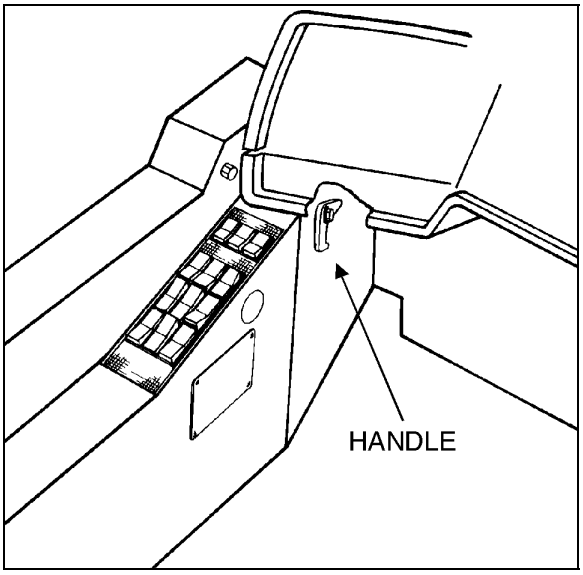
This vehicle is provided with several adjustable louvers connected to the A/C and heating system. These can be adjusted manually so the heated or cooled air flow can be directed as desired.

There are four main louvers located as follows: one on each side of steering column and two in dashboard. To obtain desired air flow, turn louver outer ring clockwise or counterclockwise.

There are also three auxiliary louvers for the A/C and heating system, which are installed at the extremity or on top extremity of A/C and heating duct at front of vehicle. For the louver on L.H.

side at rear of driver's seat, the flow is adjustable by pressing on the upper fin tab and can be directed by turning the outer ring. The two other louvers are located on top front extremity of R.H. side A/C and heating duct, close to the copilot seat. The direction is adjustable by turning the control at rear of louver, while the control at front of louver will regulate air flow.

Finally, an air damper, located under the dashboard and on L.H. side of steering column, allows a supplementary ventilation for feet. The air flow is controlled by pulling the handle under L.H. side panel on L.H. side control panel.



18171M

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 located in engine compartment is set to the *Normal* position, and that battery master switch in main electrical compartment and battery master switch on L.H. lower control panel are set to the *ON* position.
2. Make sure the parking brake valve knob is pulled all the way up, so that the spring-loaded parking brake are applied.
3. Make sure transmission is in neutral.
4. Turn the ignition key to the *ON* position. The *Check Engine* and *Stop Engine* lights will come on. If everything is okay, both lights will go out in approximately five seconds.
4. After lights go out, with foot off pedal, turn ignition key to *Start* position, then release it as soon as engine starts.

Note: *If engine does not start, ignition key 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. Afterward, 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 15 seconds 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 (ECU), 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 between idle and 1000 rpm with no load for four or five minutes, then shut down the engine. This allows the engine to cool and permits the turbocharger to slow down.

Caution: *Do not shut the engine down directly from high rpm. Stopping a turbocharged engine immediately after high speed operation may cause damage to the turbocharger as it will continue to turn without an oil supply to the bearings.*

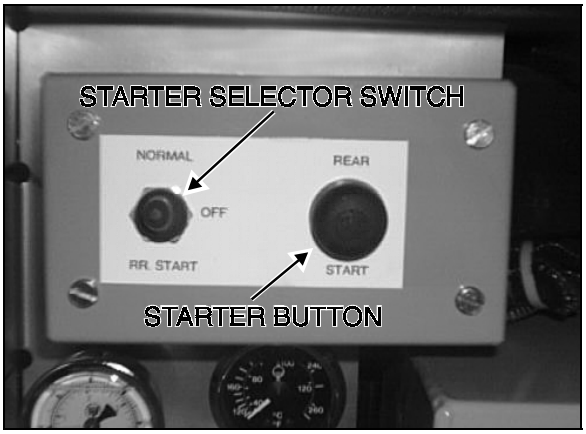
If vehicle is parked and left unattended for an extended period of time, battery master switch on L.H. lower control panel should be set to the OFF *position.*

Starting Engine From Engine Compartment

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

Starting engine

Switches for starting and stopping the engine from engine compartment are mounted on a small box above the engine.



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 is set to the *Rear Start* position, and that battery master switch in main electrical compartment and battery master switch on L.H. lower control panel are set to the *ON* position.
2. Press starter button switch and release as soon as engine starts.

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

Caution: *Refer to cautions in "Starting Engine from Driver's Compartment" in this section.*

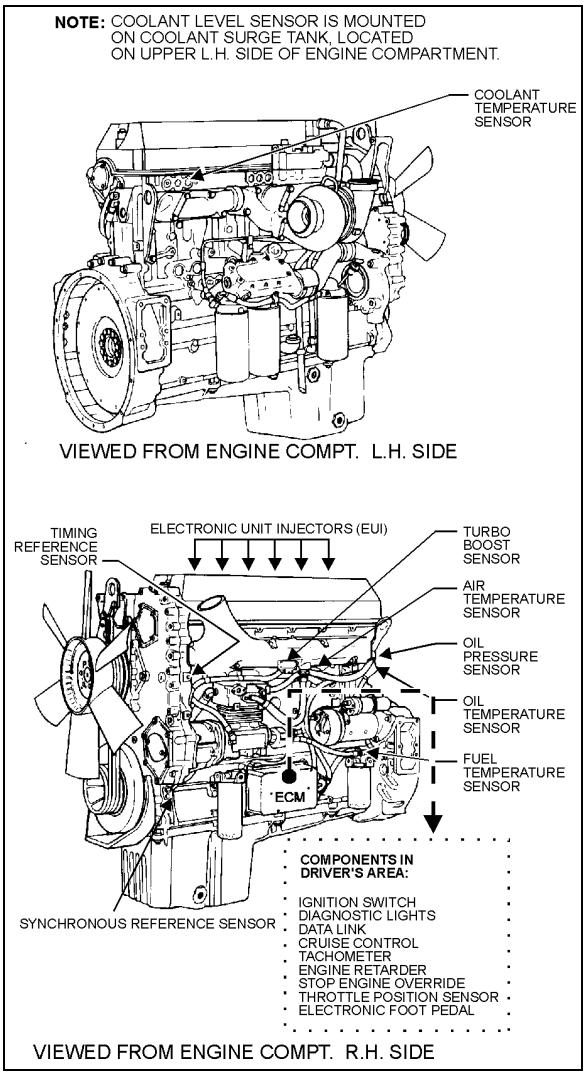
Stopping engine

To stop engine, set the starter selector switch to the *Off* position.

Caution: *Do not stop engine by any other method.*

Detroit Diesel Electronic Control (DDEC)

The major components of DDEC are as follows:



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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 optimizing control of the critical engine functions which affect fuel economy, engine reliability and the performance of the injectors.

Its major components include an Electronic Control Module (ECM), Electronic Unit Injectors (EUI) and sensors. The ECM is the brain of the DDEC system and is located on engine between primary and secondary fuel filters (curb side). 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 analyzes the DDEC system during engine operation with electronic sensors. The Electronic Unit Injectors (EUI) operate a principle which is similar to the mechanical unit injector system. However, a solenoid-operated control valve performs the injection timing much simpler and more precisely.

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 recognizes 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 in page 5-9.

Jacobs Engine Brake (optional)

The *Jacobs* brake is a diesel engine retarder that uses the engine itself to aid in slowing and controlling the vehicle. When activated, the *Jacobs* brake alters the operation of the engine's exhaust valves so that the engine works as a power-absorbing air compressor. This provides a retarding action to the wheels.

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

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

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

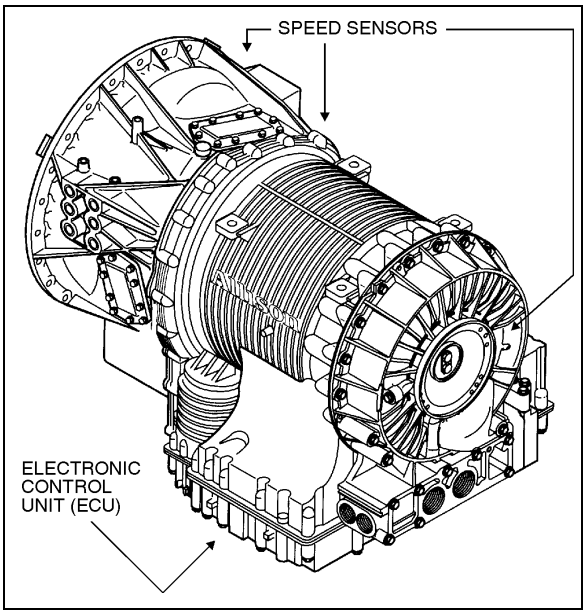
Note: *Engine brake is operative only when accelerator pedal is released, and when engine speed is over 900 rpm.*

Each time the engine brake system is in operation, the stoplights will automatically light up.

World Transmission Electronic Control System

The WT Electronic Control System consists of five major components connected by wiring harnesses:

- Electronic Control Unit (ECU),
- Direct electronic communication from engine Electronic Control Module (ECM),
- Three speed sensors,
- Push-button shifter,
- Control module which contains solenoid valves and a pressure switch.



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Engine Electronic Control Module (via direct electronic communication), speed sensors, and push-button 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 and 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 which ensures 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 elements: piston, clutch plate/damper, and backplate. The lockup clutch is engaged and released in response to electronic signals from the ECU and 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 Gear and Clutches

A series of three 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 multiplate clutches that work in pairs to produce six 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.

Transmission Retarder (optional)

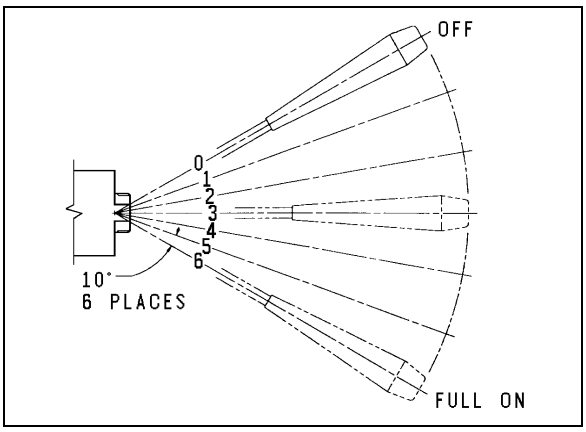
The retarder is not a brake but a device that helps in reducing the speed of a vehicle. It enables an easier control of the vehicle, a safer driving, and a more economical operation. Retarder provides slowing power when it is most needed, such as driving down windy mountain roads, in stop-and-go traffic, on crowded freeways.

The retarder system is activated by turning *ON* the retarder enable switch (4th from ignition on L.H. lower control panel - see page 2-6).

The retarder controls are broken down in two types:

BRAKE APPLY - actuated by brake pressure; applies the retarder at three distinct retardation levels (low (1/3) at 2 psi, medium (2/3) at 4 psi, and "full on" at 7 psi) when increasing pressures are detected in the brake system.

Warning: *Always manually disable the retarder controls (turn Off enable switch) during inclement weather or slippery road conditions.*



TRANSMISSION RETARDER HAND LEVER 18018

AUTOMATIC APPLY - actuated by hand lever located on R.H. side of steering column; retarder capacity is determined by hand lever which permits the operator to select *OFF*, or one of 6 levels of automatically-commanded retardation, the highest of which is maximum retarder capacity ("full on").

The controls may be used in combinations such that the retarder can be activated when either of the two controls are actuated. If both are actuated simultaneously, the level of retardation will correspond to higher input signal.

The optimum retarder control will depend on the vehicle type and retarder use. In general, maximum brake savings occur with increased retarder use. In stop and go driving, retarder use can be maximized by using the *Brake apply*. For downhill speed control, the *Automatic apply* may provide the best operator control.

When the vehicle is equipped with the antilock 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

A *DO NOT SHIFT* light on the dashboard is available with the transmission control system to assist in troubleshooting of malfunctions and/or the monitoring of specific operating parameters. 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.

Do not shift - light

The *DO NOT SHIFT* light is located on dashboard.

Illumination of this light, accompanied by eight 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 the light has been illuminated, the ECU will register a diagnostic code. It may be identified on the digital display.

Diagnostic codes

Illumination of the *DO NOT SHIFT* light during vehicle operation, indicates that the ECU has registered a diagnostic code. A summary of diagnostic codes with each associated transmission response is shown on pages 5-11 through 5-19.

Diagnostic codes can be displayed by the digital display on the shifter. The following information describes use of the diagnostic capabilities of the system.

Up to five 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.

Diagnostic codes can be read and cleared by the following method:

- Bring the vehicle to a stop at a safe location.
- Set transmission to *Neutral* and apply parking brake.

To Display Stored Codes:

- Simultaneously press the Up and Down arrow buttons twice to access the diagnostic display

mode (pressing once will access transmission oil level sensor).

- Observe the digital display for codes.
- Press the *Mode* button to see the next code, repeat for subsequent codes.

To Clear Stored Codes

- Press and hold the *Mode* button for approximately ten seconds, two beeps will sound and all codes will be cleared. Pressing the *Mode* button until one beep is heard will clear all active codes.

To return to the normal display, simultaneously press the Up and Down arrow buttons once while in diagnostic display.

Importance of Proper Oil Level

Because the transmission fluid cools, lubricates, and transmits hydraulic power, it is important that the proper fluid level be maintained at all times. If the fluid level is too low, the converter and clutches do not receive an adequate supply of fluid. If fluid level is too high, the fluid can aerate. Aerated fluid can cause the transmission to shift erratically or overheat.

Fill Pipe Protection

When adding 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 and Maintenance* section for manual oil level check procedure.

Readout of the Oil Level Sensor

The push-button selector can be used to display the oil level as measured by the oil level sensor (OLS). To do so:

- Park the vehicle on a level surface, shift to *Neutral*, and apply the parking brake.
- Simultaneously press the Up and Down arrow buttons once.

Note: *The fluid level check may be delayed until the following conditions are met:*

- *The transmission oil must be within a normal temperature band.*
- *The transmission must be in* Neutral*.*
- *The vehicle must be stationary for approximately two minutes to allow the fluid to settle.*
- *The engine must be at idle.*

The indication of a delayed fluid check is a flashing display under *Select* and a digit countdown from 8 to 1 under *Monitor*.

Correct fluid level

"OL" is displayed, followed by "OK". The "OK" display indicates the fluid is within the "OK" zone.

Low fluid level

"OL" is displayed, followed by "LO" and the number of quarts the transmission fluid is low. Example: "02" indicates 2 additional quarts of fluid will bring the fluid level within the "OK" zone.

High fluid level

"OL" is displayed, followed by "HI" and the number of quarts the transmission is overfilled. Example: "01" indicates 1 quart of fluid above the full transmission level.

Invalid for display

"OL" is displayed, followed by "--" and a numerical display. The numerical display is a fault code. The fault codes that can be encountered are:

50.....Engine speed (rpm) too low
59..... Engine speed (rpm) too high
65.....Neutral must be selected
70.....Sump fluid temperature too low
79..... Sump fluid temperature too high
89..... Output shaft rotation
95..... Sensor failure

Cold Weather Starting

Ether Cold Starting Aid (optional)

23033M

The vehicle may be equipped with an electrically-operated ether cold starting aid designed to ease engine starting when temperature is below 40°F (4°C). The control rocker switch, located near the ignition switch on the L.H. lower control panel (see page 2-6), is provided with a locking mechanism to avoid accidental use when engine is running. To activate the ether starting aid, proceed as follows:

Caution: *Do not use additional ether discharge shots during engine starting. Do not discharge several shots during ether starting aid procedure. The valve is gauged in function of engine cylinders. Too much ether may be detrimental to engine cylinders, moreover it may render void the warranty.*

1. To fill solenoid valve, prior to cranking engine, slide down lock tab while pressing rocker switch for three seconds.
2. Release switch to discharge shot.
3. Allow three seconds for shot to discharge.
4. Start engine. If engine fails to start, repeat procedure.

Caution: *This practice should be performed only when absolutely necessary. Excessive use of fluid could result in serious engine damage.*

Engine Block Heater

The vehicle is equipped with an engine immersion-type electric block heater to assist cold weather starting. The 110-120 VAC power connector is located on the engine compartment rear door. Connect the female plug of an extension cord to the 110-120 VAC male outlet. Plug the extension cord into a 110-120 VAC power source only. Use the engine block heater whenever the coach is parked for an extended period of time in cold weather and a suitable power source is available.

Caution: *Use only a 110-120 VAC power source. Extension cord must be 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 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 next to the ignition switch on L.H. lower control panel (see page 2-6). Run the engine at fast idle and no load for about five 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 conditions should develop, stop engine immediately and have condition corrected.

Warning: *Never let the engine run in an enclosed 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 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 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.

Routine Inspection Before a Trip and on the Road

With Engine Stopped

Extinguishers

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

Escape hatch

Check that escape hatch can easily be opened.

Driver's compartment

Adjust mirrors and seat.

Doors

Make sure that all exterior doors are closed.

Tools and spares

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

Washer reservoir

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

General

Check general vehicle condition and verify all exterior lighting.

Tires

All tires should be inspected for cuts and correct inflation. On both aluminum alloy and steel wheels, nuts should be checked using a torque wrench to specifications given in the *Maintenance Manual*.

Wheel bearings

Check oil level in sight glass (see page 6-4).

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 for any leaks.

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 in the system and 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 6-2).

Air system

Purge accessories and wet tanks by opening drain valves (see page 6-5).

Power steering

Check oil level (see page 6-3).

Belts

Check for worn belts.

Belt tensioners

Visually check belt tension and the space between tensioning bellows' bracket (see page 6-5).

With Engine Running

Note: *Vehicle must be on level ground.*

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 6-2).

Leaks

Inspect around vehicle and listen for any air leak.

Water separator

Purge drain valve (see page 6-5).

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 (450 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.

General Instructions

- Make sure the basic principles of operation of the vehicle are understood.
- Do not drive your vehicle with an extremely low fuel level. Unlike a gasoline engine, if a diesel runs out of fuel it will not simply restart after fuel is added to the tank. The engine must be *primed* (see procedure in *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 patterns 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 automatic transmission is inadequate when the vehicle is towed.
- Fire extinguishers should be located in order to be accessible at all times. In case of fire, get everyone out of the vehicle, think of your own safety before attempting to fight the fire.
- When driving on ice or snow, any acceleration or deceleration 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.*

- The Gross Vehicle Weight Rating (G.V.W.R.), and the Gross Axle Weight Ratings (G.A.W.R.), for front, drive and tag axles of your vehicle are listed on a metal certification label affixed below L.H. side control panel in driver's compartment. The G.V.W.R. is the maximum load that can be applied on each axle of the vehicle and is more than what is legally permitted on some highways.

  Do not exceed the G.V.W.R. and/or the G.A.W.R., as it voids the Prévost warranty.
- Do not conceal the serial numbers and certification plates (for location, refer to *Technical Information* section). Reinstall in same locations after adding any trim.
- Installation of odd type and size of windows may require cutting the vertical post of vehicle structure. However, no more than three of these posts should be cut on one side of a vehicle and two adjacent posts should never be cut.

Caution: *Violation of these instructions is not safe and constitutes sufficient reason for Prévost to void its warranty on any affected area.*

Heating and Air Conditioning

Driver should always try to introduce as much circulation of outside fresh air as possible without hampering heating and air conditioning systems.

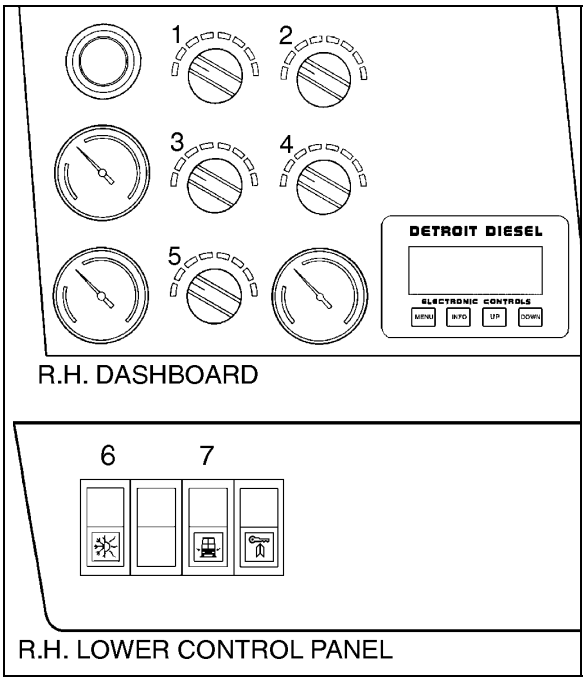
It should be remembered that the inside of vehicle should always be slightly pressurized to minimize the entrance of dust and moisture.

Driver's air conditioning system will operate simultaneously with the central air conditioning system, while heating and defrost systems are independent from the central system.

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

To operate air conditioning system when coach is station, engine should run 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 improve air circulation when A/C system is inoperative, open the roof escape(s) (if vehicle is so equipped) and position the *Recirculation & fresh air* control to the extreme right position (fresh air).



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1. Driver's A/C - heating *Recirculation & 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 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.

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 section.*

2. Main windshield *Defroster* control

This control is used to direct air flow in main windshield defroster or dash louvers or both together. Turn control clockwise to increase air flow in defroster, and counterclockwise to increase air flow in dash louvers. Turn control to center position to simultaneously direct air flow to defroster and dash louvers.

3. Driver's A/C - heating *Temperature* control

When the *Central A/C - heating* switch is activated and fan is on, select the desired temperature by turning the *Temperature* control knob clockwise to increase temperature or counterclockwise to decrease it. Only a slight movement of knob is generally sufficient to change temperature setting. At extreme clockwise position, full heat will be maintained.

Once temperature is selected, system will automatically maintain it within close limits.

Warning: *Excessive high temperature in driver's zone could induce drowsiness, affecting driver's ability to operate coach safely.*

4. Driver's A/C - heating ventilation speed control

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

5. Central A/C - heating *Temperature* control

Push down *Central A/C - heating* switch to activate main A/C-heating system. Regulate temperature for *A/C* or *heating* mode in central section by turning control clockwise to increase temperature or counterclockwise to decrease it. A red LED located in center console under the inside temperature thermometer will light when the *heating* mode is operating, while *A/C* mode and the *dehumidification* function will be indicated by a green LED.

Only a slight movement of knob is generally sufficient to change temperature setting. Once temperature is selected, system will automatically maintain it within close limits.

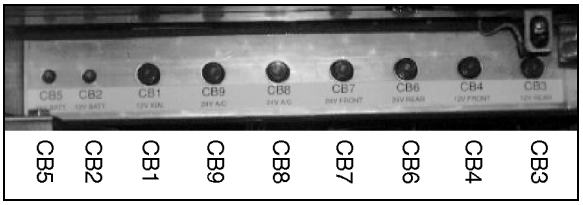
Note: *The two LEDs may be illuminated simultaneously when heating and dehumidifying are required. To maintain ambient temperature, turn control until red LED lights out. However, the green LED may remain on if the dehumidifying mode is operating.*

7. Fresh air damper switch

Push down rocker switch to close partially the fresh air damper. Under extreme temperature conditions only, it can be closed or partially closed according to the inside temperature reached in the vehicle, to block the addition of ambient air and heat or cool only air that is in the vehicle. As soon as extreme heating or cooling is no longer required, the damper should be reopened.

Main Breakers

All electric circuits are protected by circuit breakers of the *"Manual reset"* type. The main circuit breakers, as well as those protecting A/C system, are located in the main power compartment, on R.H. side of the vehicle, behind the tag axle.



BREAKERS 06049

CB1	Ignition	12 volts	40 amps
CB2	Hot Wire	12 volts	30 amps
CB3	Rear Junction Box	12 volts	40 amps
CB4	Front Junction Box	12 volts	40 amps
CB5	Hot Wire	24 volts	30 amps
CB6	Rear Junction Box & Starter Relay	24 volts	90 amps
CB7	Front Junction Box & Inverter Comp.	24 volts	90 amps
CB8	A/C Junction Box & Evaporator Fan	24 volts	150 amps
CB9	A/C Condenser Fan Motor	24 volts	150 amps

Note: *If one of the main breakers has to be reset, it may be necessary to use a large object to push in breaker* (do not use the object to hit the breaker) *since they require considerable force to reset.*

Jump Starting

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

Warning: *Procedures other than those 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.

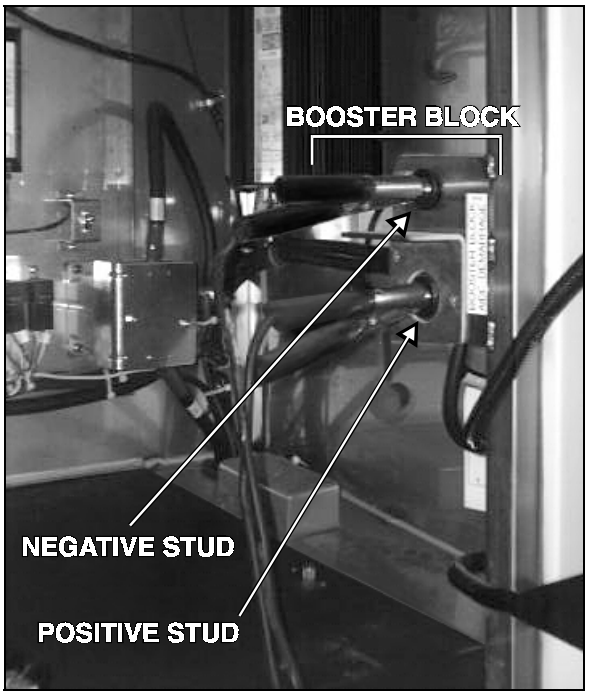
Never allow the two vehicles or the jumper cable clamps to touch each other.

Never attempt to jump start a vehicle if the discharged battery fluid is frozen or if the battery 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. Remove the protective caps from the booster block posts, located in main power compartment.
2. Connect one end of the red jumper cable to the positive (+) post of the booster power source.
3. Connect the other end of the red jumper cable to the positive (+) post of booster block.
4. Connect one end of the black jumper cable to the negative (-) post of the booster power source.
5. Connect the other end of the black jumper cable to the negative (-) post of booster block.
6. Start the engine in the vehicle that is providing the jump start. Let the engine run for a few minutes, then start the engine on 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 to cool.*

7. 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) gauge 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.*

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 the* Technical Information *section, page 5-2. 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 compartment.*

At regular interval, 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.*

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 the traffic and apply the parking brake. Remember to switch *On* the hazard flashers and to set up the triangular reflectors at an adequate distance to warn other vehicles, according to the highway code regulations.

A 12.5 tons hydraulic jack, a wheel nut wrench and a kit of triangular reflectors are installed inside the first R.H. side baggage compartment, near the entrance door (see *Safety Equipment*, page 3-5).

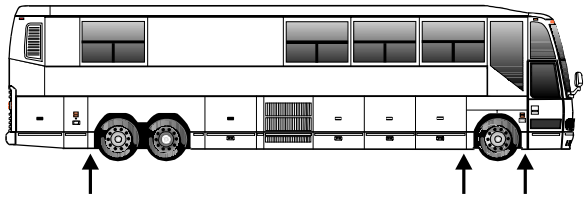
We suggest that you **do not** attempt to change a wheel. First, the wheel and tire are very heavy and usually there is no space available to put the removed flat. Second, the wheel nuts, especially those on inner dual, can become very tight after being on for only a short time. Often a heavy air wrench is required to get these nuts loose. We suggest you get help via CB radio or cellular phone. There are tire service trucks all over the country who can bring a wheel and make the change safely. If you have no choice and must do it yourself, see instructions in the *Maintenance Manual*.

Jacking Points

The vehicle can be jacked by applying pressure under body jacking points or front and drive axle jacking points. When it is necessary to raise the vehicle, care should be taken to ensure that pressure is applied only at the points indicated in figures. Equipment for lifting the front of the vehicle must have a combined lifting capacity of 13,000 lbs (5 900 kg). Equipment for lifting the rear of the vehicle must have a combined lifting capacity of 28,000 lbs (12 600 kg).

Warning: *Extra lift capacity may be required if luggage or any other type of load (e.g. conversion equipment) are onboard the vehicle.*

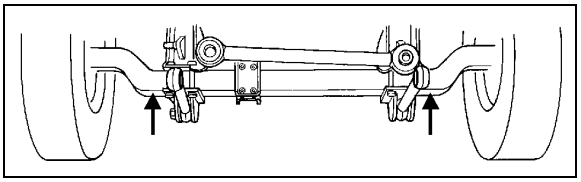
Body Jacking Points



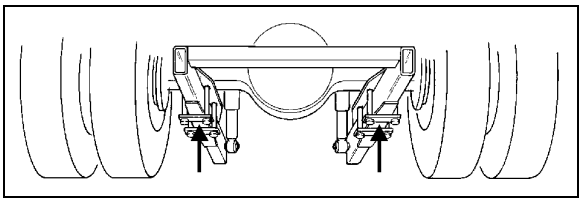
18083M

Warning: *The suspension of the vehicle must be in the normal ride position before jacking. The* Level Low *system must be in the* Off *position prior to turning the ignition key* Off.

Axle Jacking Points



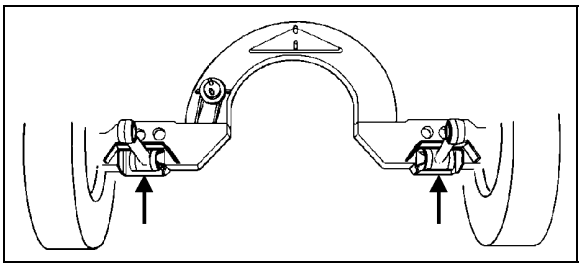
FRONT AXLE 18084



DRIVE AXLE 18085

Warning: *Always unload or retract the tag axle before jacking the vehicle from the front and drive axle jacking points to prevent damage to suspension components.*

Jacking the Tag Axle



TAG AXLE 18086

Warning: *The jacking points on the tag axle must be used for raising the tag axle only.*

Towing

Two tow eyes are provided under front bumper. 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 the vehicle.

Note: *For more complete information on towing, refer to* Maintenance Manual*, section 18:* Body*, under heading* Towing the Vehicle*.*

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

Caution: *Internal lubrication of the transmission is inadequate when 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. Refer to the* Maintenance Manual *for torque values.*

Retractable Tag Axle

Operation of the tag axle is controlled by a valve located on the L.H. side control panel. The valve can be flipped to either one of the two positions, *wheels up* or *wheels down*. Axle will automatically be raised or lowered by air pressure according to valve position (see page 2-4).

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.*

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

Care and Maintenance

Interior Cleaning

Most of the interior of your vehicle was installed by the Interior Designer and Systems Manufacturer who converted your vehicle. Refer to them for correct maintenance and cleaning of the components they have installed.

For the maintenance and cleaning of the materials installed by PRÉVOST inside your vehicle, refer to the following instructions.

Plastic and Vinyl

Use a clean, damp cloth or sponge to keep trim free from dust. For other spillage, 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 colorless vinyl or leather preservative to retain the material's luster 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 glycerin.

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.

Exterior Cleaning

The paint on your vehicle is very durable, but must be protected from harsh weather conditions that can make it lose its luster. 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, aluminum 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

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 buildup. 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.

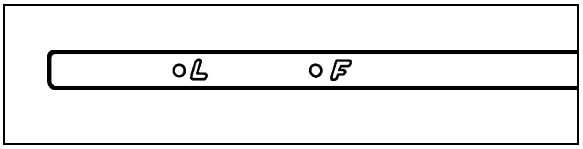
Wiper Blades

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

Check the engine lubricating oil level with the engine stopped and the vehicle on level ground. If the engine has just been stopped and is warm, wait approximately 20 minutes to allow the oil to drain back to the oil pan. To check, 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 between the "L" (low) mark. If required, add oil from the oil reserve tank by opening the tank valve and observing the oil level change in the sight glass, then check oil level again. Do not forget to shut off oil reserve tank valve as too much oil can be harmful to the engine.



ENGINE OIL DIPSTICK 01016

Note: *For location of engine oil dipstick and engine oil reserve tank, see figure on page 2-26.*

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 set in Neutral, parking brake is properly engaged, and the wheels are choked. 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 safety until a *hot check* can be made.

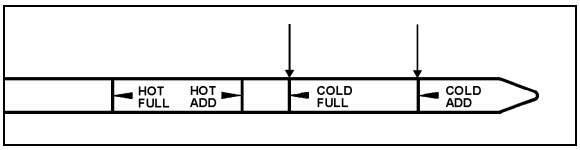
If the engine has been shut down for an extended period of time, park the vehicle on a level surface and apply the parking brake.

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 2-26 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 (160°F-200°F; 70°C-95°C) is reached.

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.*



COLD RUN BAND 07006M

Hot check

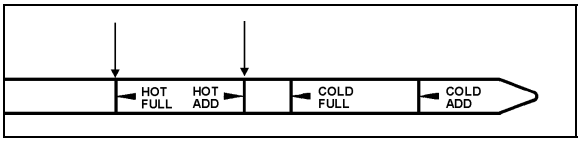
Because the fluid level rises as temperature increases, the fluid must be hot to ensure an accurate check.

Be sure fluid has reached normal operating temperature (160°F-200°F; 70°C-95°C).

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.

If the level is not within this band, add or drain fluid as necessary to bring the level within the *hot run* band.



HOT RUN BAND 07006M

Power Steering Oil Level

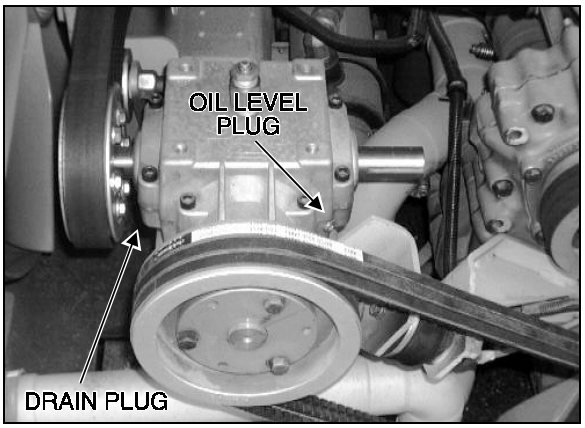
POWER STEERING RESERVOIR 14022

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. To check fluid level, proceed as follows:

1. Stop engine, and open engine compartment R.H. side door.
2. Remove dipstick and wipe with a clean rag.
3. Insert dipstick in reservoir, then remove it again to check mark.
4. Adjust level to *full* mark, using only *Dexron IIE* or *III* automatic transmission fluid.

Fan Gearbox Oil Level

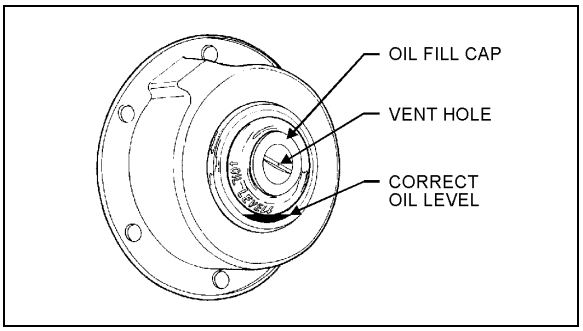
The radiator fan is belt driven from the engine crankshaft pulley through a drive shaft and a gearbox. The gearbox is equipped with an oil level plug and a drain plug. Check oil level with the engine stopped and make sure that all engine stopping safety precautions have been observed. Oil level is correct when oil seeps out of loosened oil level plug; if adding is necessary, use *Mobil SHC 634* synthetic lubricant, or equivalent.



FAN GEARBOX

Wheel Bearing Oil Level

The oil level for the front and tag axle wheel bearings must be maintained to the level mark in the cap. The level is determined by a line, indicated by arrows, which is incorporated to the plastic lens and passes underneath the words *oil level*. To check oil 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.

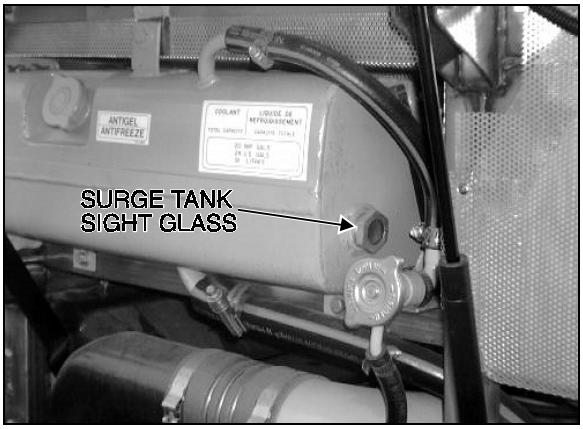


WHEEL BEARING LUBRICATION 13003

Caution: *Wheel bearing oil fill cap is supplied with a very small vent hole in its center. 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.*

Coolant Level Verification

The cooling system, is completely filled when the coolant (cold) is visible in sight glass of the surge tank. If topping-up is necessary, fill the system with the same mixture ratio already used in the system.



COOLANT SURGE TANK

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.*

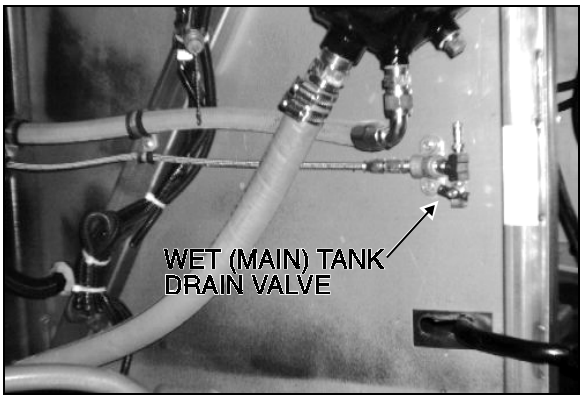
Air Tanks

Your vehicle is equipped with four (4) air tanks; the accessory tank and wet tank must be purged before every trip or once a month, while the primary and secondary air tanks must be purged each time the oil and filters are changed (maximum 12,500 miles (20 000 km)).

The accessory air tank is located in reclining bumper compartment and is provided with a drain valve in front service compartment.

FRONT SERVICE COMPARTMENT

The wet (main) tank is located over the drive axle in rear wheelhousing, and is provided with remote drain valve located in engine R.H. compartment.



ENGINE R.H. COMPARTMENT 12033M

All four (4) tanks are supplied with a drain valve underneath the tank. For locations, refer to figure in *"Lubrication and Servicing Schedule"* later in this section.

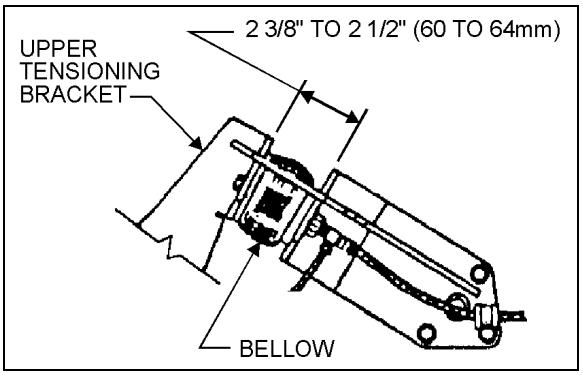
Water Separator (optional)

A fuel filter/water separator may be installed in place of primary fuel filter, to prevent water infiltration in engine fuel system. It should be drained periodically, or when the water separator indicator lamp lights in dashboard. To drain, loosen self venting drain below separator, and tighten after water has been flushed out.

Belt Tensioners

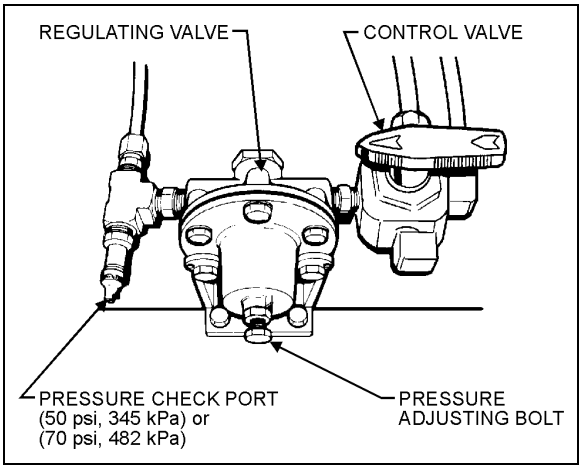
Air-operated Type

Belt tensioning is applied through air bellows which are adjusted by an air pressure regulating valve mounted in engine compartment, on the structure post, at left of A/C compressor. For proper operation of the air bellows, adjust the upper tensioning bracket to provide a 2 3/8" - 2 1/2" (60 - 64 mm) extension with the pneumatic system under normal pressure and the pressure regulating valve set at 50 psi (345 kPa).



AIR BELLOW 12017

For belt replacement, air pressure must be released from bellows by means of the belt tensioning pressure control valve. This valve mounted close to the pressure regulating valve, is manually operated. Before handling, be sure that all engine stopping safety precautions have been observed.



PRESSURE REGULATING VALVE 120018

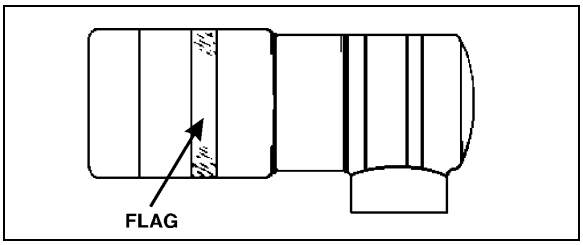
Manually Adjustable Type

There are two different types of manually adjustable belt tensioning systems. Tension belts according to the instructions in *"Maintenance Manual"*.

Filter Restriction Indicator

A filter restriction indicator is used to monitor the vacuum level between the air filter and engine. A red flag is displayed when the air filter is clogged.

The filter restriction indicator is located on the engine air intake near the turbocharger. When the red flag is displayed, the air filter must be replaced. Press down on indicator to reset flag.



RESTRICTION INDICATOR 04002

A/C and Heating Air Filters

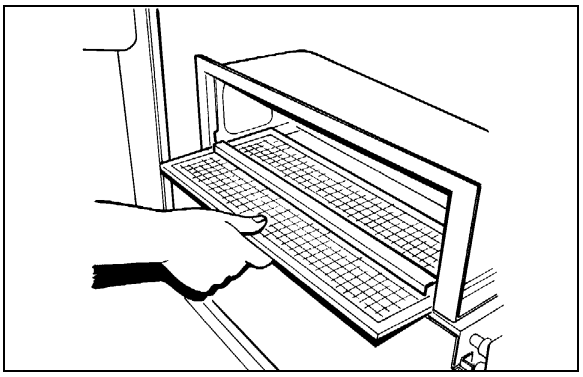
For maximum air conditioning and heating system efficiency, air filters should be inspected and cleaned as required in maintenance schedule to ensure proper ventilation of the evaporator and heating radiator cores. To clean filters, back flush with water, then dry with air.

Caution: *Do not use high pressure water jet to avoid damaging filter.*

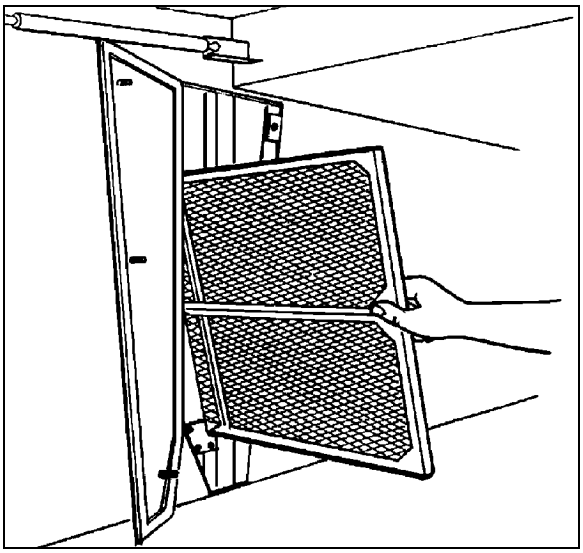
Caution: *Be sure not to reverse filter upon installation.*

Driver System

The driver system's air filter is located under the dashboard. To gain access, unscrew both fasteners of A/C and heating unit access panel located over entrance door steps. Remove panel and filter.



DRIVER'S SYSTEM AIR FILTER 22011



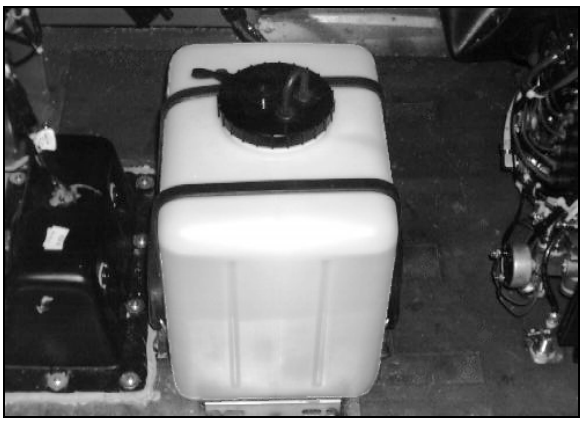
CENTRAL SYSTEM'S AIR FILTER 22100

Central System

The central system's air filter is located in the A/C and heating compartment, on L.H. side of the vehicle. To gain access, locate access panel in one of the baggage compartment adjacent to the A/C and heating compartment. Open panel by unscrewing the three ¼ turn screws of either panel, unsnap both fasteners on top of filter, and slide out filter.

Windshield Washer Reservoir

The windshield washer reservoir is located in the front service compartment. The reservoir has a capacity of 5 U.S. gallons (19 liters) and is equipped with a spin-on type cover. Check the windshield washer fluid level regularly.



WINDSHIELD WASHER RESERVOIR

The spray jets are located under the windshield wiper arms.

Upper and lower windshield wipers have separate controls and separate washer pumps which are connected to the same reservoir.

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.

Flexible Hose Inspection

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 function 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, brittled, 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..

Lubrication

A lubrication chart is provided in this section to give locations of key service points on the vehicle. Cleaning, removal or disassembly procedures (required for lubrication purposes) are covered in applicable sections of this manual.

Lubrication intervals are based on recommendations for normal operating conditions. Where more severe service is encountered, more frequent attention will be required.

First Service on New Vehicle

Differential Oil

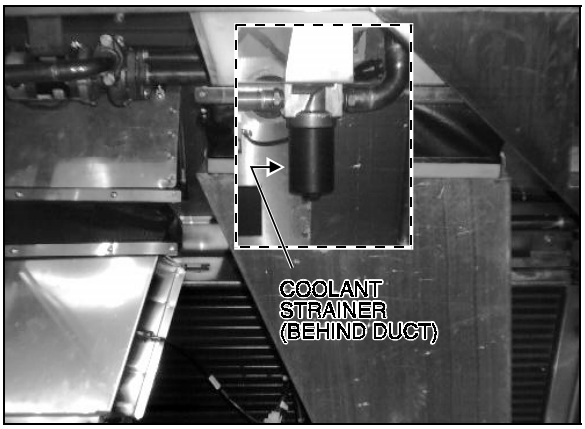
Factory-filled oil in differential on new vehicle should be drained and refilled between 1,000 miles (1 600 km) and 3,000 miles (4 800 km) of initial operation, then according to the lubrication and servicing schedule.

Coolant Strainer

The coolant strainer is designed to recover the soldering residues trapped inside coolant lines during their initial assembly; perform initial cleaning once vehicle has run approximately 3,000 miles (4 800 km), then according to the lubrication and servicing schedule.

Note: *If additional soldering has been performed on any points of coolant piping, clean coolant system strainer as outlined on new vehicle (3,000 miles (4 800 km)).*

Coolant strainer is located behind air duct in A/C and heating compartment.



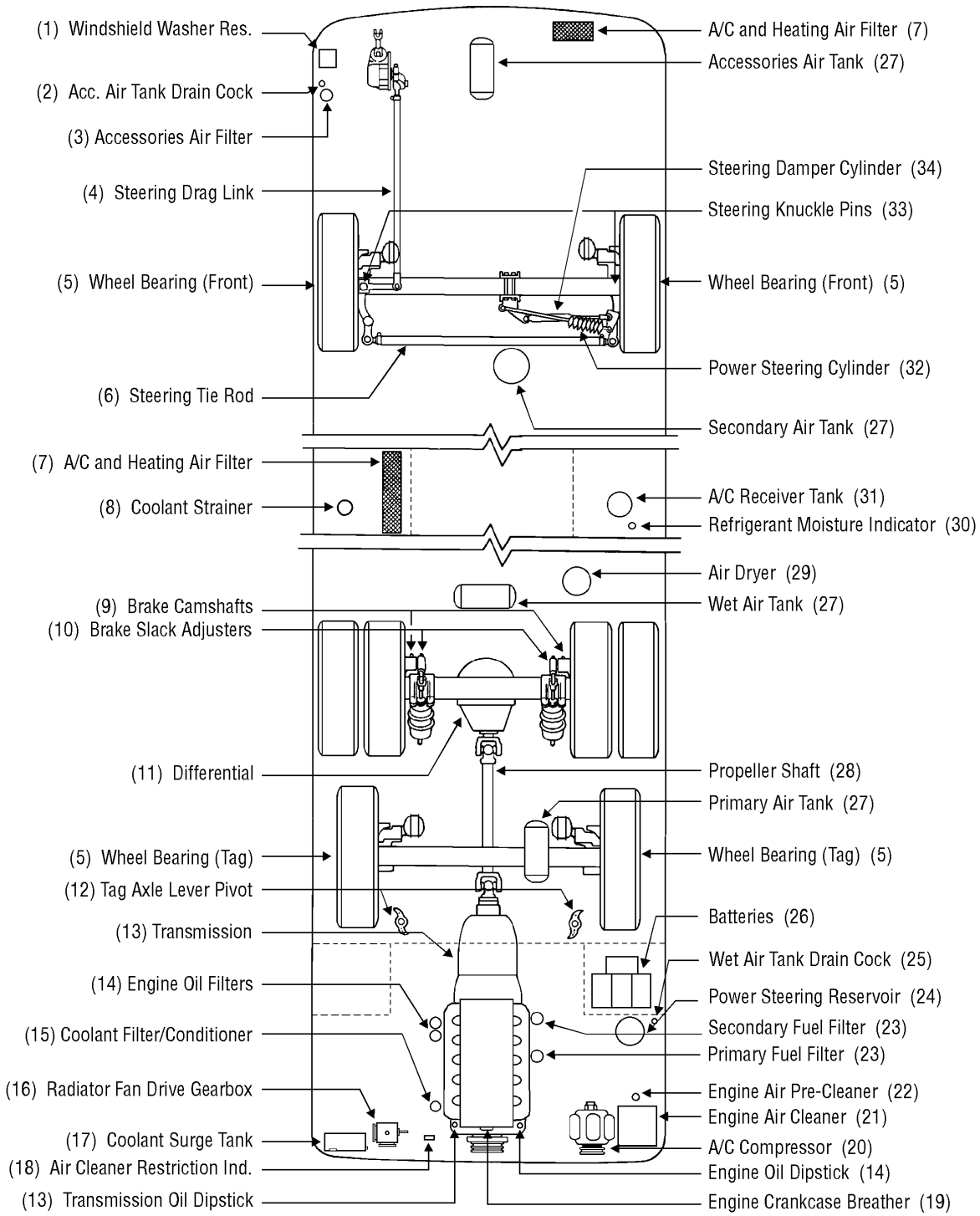
A/C AND HEATING COMPARTMENT

Automatic Transmission Oil Filter

Change cartridge after first 3,000 miles (4 800 km), then after each 25,000 miles (40 000 km) as specified in the lubrication and servicing schedule. Check the oil frequently (with engine stopped); if necessary, add sufficient oil to raise level to proper mark on dipstick.

Engine Oil

There is no special break-in period since engine break-in has been done in factory; therefore oil should be changed according to the lubrication and servicing schedule intervals. Check the oil at every fuel filling. If necessary, add sufficient oil to raise the level to the proper mark on dipstick.



LUBRICATION AND SERVICING POINTS 24002M

Walk-Around Inspection (Before Every Trip)

It is a good practice to make a basic visual inspection of key areas on the vehicle before every trip and to report any problem areas to maintenance personnel for immediate correction.

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
2-25	Drain accumulated water in accessory and wet air tanks

Engine Compartment

ITEM*	DESCRIPTION
14	Check engine crankcase oil level; Add if necessary
13	Check transmission oil level (can be checked from push-button shift selector); Add if necessary
24	Check power steering reservoir fluid level; Add if necessary
17	Check coolant surge tank fluid level; Add if necessary
23	Drain accumulated water in primary fuel filter/water separator (if equipped)
18-21	Check air cleaner restriction indicator, replace air cleaner when red signals locks in full view

Inside the Vehicle

ITEM*	DESCRIPTION
---	Check for proper operation of the entrance door
---	Inspect cleanliness in vehicle
---	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
---	Check for proper operation of electric and air horns, and back-up alarm

* Item numbers refer to figure, on page 9 of this section.

Lubrication and Servicing Schedule

Service Every 6,250 Miles (10 000 km) or Twice a Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
21	Engine Air Cleaner	Inspect and clean, replace element if required	Filter: #530197
22	Engine Air Pre-cleaner	Check discharge tube	----------
20	A/C Compressor	Check oil level, add if necessary	Polyolester Oil
31	A/C Receiver Tank	Check refrigerant level, add if necessary	HFC 134a
30	Refrigerant Moisture Indicator	Replace filter dryer unit according to moisture indicator	Filter: #452497
11	Differential	Check oil level, add if necessary	Multigrade gear oil
16	Radiator Fan Drive Gearbox	Check oil level, add if necessary	Synthetic oil: ISO VG 460 Mobil SHC 630 (Prévost #180217)
28	Propeller Shaft	Grease one fitting on each universal joint and one fitting on slip joint	Multi purpose grease
12	Tag Axle Lever Pivot	Grease one fitting on each pivot	Multi purpose grease
10	Brake Slack Adjuster	Grease one fitting on each slack adjuster (drive axle only)	Multi purpose grease
34	Steering Damper Cylinder	Grease one fitting at cylinder rod end	Multi purpose grease
32	Power Steering Cylinder	Grease one fitting at each cylinder end	Multi purpose grease
33	Steering Knuckle Pins	Grease two fittings on each knuckle	Multi purpose grease
6	Steering Tie Rod Ends	Grease one fitting at each end	Multi purpose grease
4	Steering Drag Link Ends	Grease one fitting at each end	Multi purpose grease

* Item numbers refer to figure, on page 9 of this section.

Service Every 12,500 Miles (20 000 km) or Once a Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
14	Engine	Change oil and filters	Engine oil: SAE 15W40, API CG4 Filters: #510458
23	Fuel Filters	Change primary and secondary fuel filters (Fill with clean fuel before installation)	Primary: #510137 Prim. w/sep.: #531390 Secondary: #510128
15	Coolant Filter/Conditioner	Replace element	Filter: #550630
17	Coolant Surge Tank	Test coolant solution	----------
27	Air Tanks	Drain accumulated water in all tanks	----------
7	A/C and Heating Air Filters	Clean or replace two elements	Driver's: #871049 Passenger's: #871051

Service Every 25,000 Miles (40 000 km) or Once a Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
13	Automatic Transmission	Change oil and filters	Dexron-IIE or Dexron-III

Service Every 50,000 Miles (80 000 km) or Once a Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
16	Radiator Fan Drive Gearbox	Change oil	Synthetic oil: ISO VG 460 Mobil SHC 630 (Prévost #180217)
24	Power Steering Reservoir	Replace oil filter cartridge element	Cartridge: #660987
5	Front and Tag Axle Bearings	Repack with grease, or refill with differential oil	Multi purpose grease or differential oil
8	Coolant Strainer	Check and clean, change cartridge if required	Cartridge: #871029
19	Engine Crankcase Breather	Clean breather steel mesh	----------
---	Flexible Hose	Thoroughly inspect all hoses (see p.6-7)	----------

* Item numbers refer to figure, on page 9 of this section.

Service Every 100,000 Miles (160 000 km) or Once Every Two Years, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
11	Differential	Change oil; Clean breathers	Multigrade gear oil
3	Accessories Air Filter	Change filter element	Filter: #641252
29	Air Dryer	Change cartridge	Cartridge: #641278
9	Brake Camshaft	Grease one fitting on each drive axle drum brake	Multi purpose grease

Miscellaneous Service

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
17	Cooling System	Drain, flush and refill every two years or 200,000 miles (320 000 km) whichever comes first	Engine coolant
25	Battery Terminals	Clean and coat terminals yearly	Battery terminal coating
---	Discharge Tubes***	Every three months: Check 2 condenser's discharge tubes Check 6 evaporator's discharge tubes Check 2 front discharge tubes	----------

* Item numbers refer to figure, on page 9 of this section.

* *** Discharge tubes are rubber tubes located under vehicle.

Lubricant Specifications

ITEM*	DESCRIPTION	SPECIFICATIONS
12	Engine Oil	SAE Viscosity Grade: 15W40 API Classification: CG4
24	Power Steering Oil	Automatic Transmission Oil (Dexron-IIE or Dexron-III)
15	Engine Coolant	Low silicate, ethylene glycol coolant 50% antifreeze/water solution is normally used Antifreeze concentration should be between 30% and 67%
20	A/C Compressor Oil	Polyolester Oil, HFC 134a compatible: Castrol SW-68 (POE) or equivalent
11 and 5	Differential Oil and Wheel Bearing Oil	Multigrade gear oil meeting MIL-L-2105-D: 85W140 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.)
16	Fan Gearbox Oil	Synthetic oil: ISO VG (viscosity grade) 460 Mobil SHC 630 or equivalent
13	Automatic Transmission Oil	Dexron-IIE or Dexron-III
---	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 9 of this section.

Technical Information

Dimensions

Overall length (over bumpers)	45' (13,7 m)
Overall width	102" (2,59 m)
Overall height	148.75" (3,78 m)
Wheelbase (center of front axle to center of drive axle)	317" (8,05 m)
Floor height from ground	63" (1,60 m)
Ground clearance	11" (0,28 m)
Step height from ground	14" (0,36 m)
Headroom	83" (2,11 m)
Entrance door opening width	26" (0,66 m)
Front overhang	71.5" (1,82 m)
Rear overhang	103.5" (2,63 m)
Front track	84.4" (2,14 m)
Drive track	76.7" (1,95 m)
Rear track	83.6" (2,12 m)
Turning circle radius (exterior front corner)	45.7' (13,9 m)

Weight

Curb weight (before conversion)	31,990 lbs (14 540 kg)
Gross vehicle weight rating	52,060 lbs (23 650 kg)
Gross axle weight rating (G.A.W.R.)	
front axle	16,500 lbs (7 500 kg)
drive axle	22,460 lbs (10 200 kg)
tag axle	14,000 lbs (6 350 kg)

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

Capacities

Engine oil		
Crankcase	37 U.S. qts	(35 l)
Reserve tank	10 U.S. qts	(9,5 l)
Fuel reservoir (legal capacity equal to 95% of volume)	230 U.S. gal.	(871 l)
Cooling system	24 U.S. gal.	(91 l)
Transmission (does not include external circuit)	10 U.S. gal.	(38 l)
Differential oil	13.7 U.S. qts	(13 l)
Power steering reservoir	4.0 U.S. qts	(3,8 l)
A/C compressor oil	4.5 U.S. qts	(4,3 l)
Windshield washer reservoir	5 U.S. gal.	(19 l)
Refrigerant	24.1 lbs (11,0 kg)	

Fuel Type

ASTM specification D-975

Recommended grade 1-D

Acceptable grade 2-D

Wheels and Tires

Steel wheels ..... 9 X 22.5

Aluminum forged wheels ..... 9 X 22.5
Except inner drive axle (steel) ..... 9 X 22.5

Tires ..... 315/80 R 22.5

Recommended tire inflation pressure (cold)

Front axle ..... 115 psi (795 kPa)

Drive axle ..... 90 psi (620 kPa)

Tag axle ..... 100 psi (690 psi)

Caution: *These tire pressures are established in accordance with the maximum allowable load on each axle. A lower pressure is recommended if the axle load is less than the above specifications. Weigh vehicle fully loaded and pressurize according to tire manufacturer's recommendations. For non standard tire and wheel specifications, See Prévost tire pressure tabulation in "Coach final record".*

Belts

	Make	Model	Qty
Radiator fan drive (transfer)	Gates	AX 73	3
Radiator fan drive (fan)	Dayco	Poly COG	1
A/C system compressor	Gates	BX 97	2
Alternator 24V, 270 Amp	Detroit Diesel, Gates, Dayco	Poly-V 12K 72"	1
Alternator 12V, 145 Amp (optional)	Gates	BX 31	1

Engine

Detroit Diesel DDEC III Series 60:

- 470 HP @ 2100 rpm
- 1450 lbf•ft @ 1200 rpm
- Operating range: 1200 - 2100 rpm
- Diesel four cycle, six cylinders inline, 12.7 liters
- Turbo, air to air charged cooled
- Overhead camshaft, four valve per cylinder

Transmission

Allison six speed automatic World Transmission B500 or B500R (with optional output retarder) with electronic control:

Gear	Ratio
1st	3.510
2nd	1.906
3rd	1.429
4th	1.000
5th	0.737
6th	0.639
Reverse	4.801
Converter	1.79

Output retarder ..... optional

Drive Axle

Ratio:

4.56 : 1

4.89 : 1

Brakes

- Dual system plus emergency/parking brake
- Air operated:
  disc type on front axle and tag axle
  drum type on drive axle
- Brake chamber effective area:
  24 in^2 on front axle
  30 in^2 (service) and 36 in^2 (emergency/parking) on drive axle
  16 in^2 (service) and 16 in^2 (emergency/parking) on tag axle
- Automatic slack adjuster
- Two cylinder air compressor, engine gear driven, water-cooled and lubricated
- Air dryer
- Nylon color-coded air lines

Antilock Braking System (ABS)

Components:

- Electronic control module
- Solenoid control valve
- Sensors
- Clamping bushes
- Wiring harnesses

Electronic control module technical data

Maintenance free

Voltage..... 24 ± 6 volts

Thermal operating range .....-40 to 167 °F (-40 to 75 °C)

Solenoid control valve technical data

Maintenance free

Voltage:..... 24 (+4.8, -2.4) volts DC

Rated current:.....1.65 amps

Thermal operating range: .....-40 to 176 °F (-40 to 80 °C)

Sensor technical data

Two cored screened cable: .....AWG 18 (1 mm²)

Thermal operating range: .....-40 to 176 °F (-40 to 80 °C)

Steering

- Tilt steering wheel and telescopic steering column
- Integral hydraulic-assisted steering gear
- System pressure: 2000 psi (13 800 kPa)

Electrical System

- 24 volt system
- 12 volt exterior lighting
- 24 volt, 270 amp, self-rectified, gear-driven, oil-cooled *Delco* alternator lubricated by engine circuit
- Four 12 volt, maintenance-free batteries with a 1250 cold cranking amp capacity
- 50 amp or 100 amp battery equalizer (optional)
- 12 volt, 145 amp, air-cooled, belt-driven, additional alternator (optional)

Suspension

Front axle

- 2 air springs
- 2 shock absorbers
- 4 longitudinal radius rod
- 1 transversal radius rod
- 1 height control valve
- 1 sway bar

Drive axle

- 4 air springs
- 4 shock absorbers
- 3 longitudinal radius rod
- 1 transversal radius rod
- 2 height control valve
- 1 sway bar

Tag axle

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

Alignment

Front axle

- Toe in .....3/32 ± 1/32" (2,4 ± 0,8 mm)
- Caster..... 2 3/4 ± 3/4°
- Camber..... 0 ± 1/2°

Tag axle

- Toe in .....0 ± 3/64" (0 ± 1,2 mm)

Heating and Air Conditioning

Driver's System

Air conditioning capacity	19,000 Btu/hr (5 600 W)
Refrigerant type	R-134a
Heating capacity	37,800 Btu/hr (11 100 W)
Air flow	450 cfm (12,7 m^3/min)

Central System

Air conditioning capacity	92,000 Btu/hr (27 000 W)
Refrigerant type	R-134a
Heating capacity	152,000 Btu/hr (44 500 W)
Air flow	2,600 cfm (73,6 m^3/min)

Compressor

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 l)
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 meeting API Classification CG-4.

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 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 (Prévost #180217)* is recommended for the fan gearbox.

Power Steering Reservoir

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

Wheel Bearings

The front and tag axle wheel bearings must be filled to the level mark in the cap using differential oil. 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.

On vehicles equipped with grease-lubricated wheel bearings, pack with wheel bearing grease.

Preheating system (optional)

Espar (Eberspächer)

Model D12W

Heating output	41,000 Btu/hr (12 000 W)
Fuel type	same as engine
Fuel consumption	0.44 U.S. gal./hr (1,65 l/hr)
Rated voltage	24 ± 4 volts
Electric power consumption	55 watts

Webasto

Model DBW2020

Heating output	80,000 Btu/hr (23 300 W)
Fuel type	same as engine
Fuel consumption	0.8 U.S. gal./hr (3 l/hr)
Rated voltage	24 ± 4 volts
Electric power consumption	120 watts

Data Plate and Certification

Data Plates

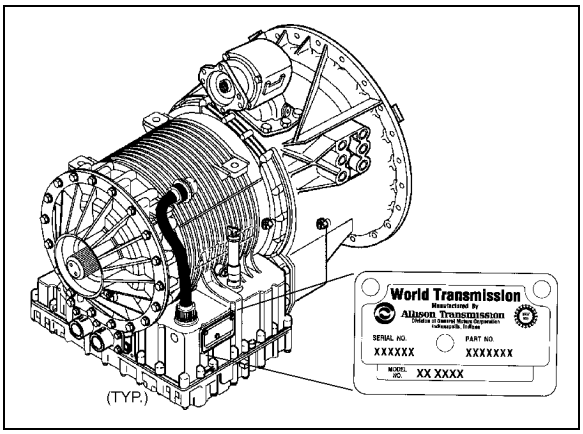
The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

Engine

The engine serial number is stamped on the cylinder block under the intake manifold (oil filter side) close to the water pump.

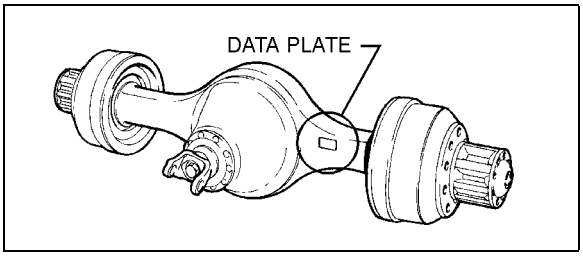
In addition, four plates are located on the rocker cover (oil filter side). Contents of the plates include the engine serial numbers and a list of the optional equipment on the engine. The information is primarily used when ordering replacement parts.

Transmission



TRANSMISSION DATA PLATE 07019

Drive axle



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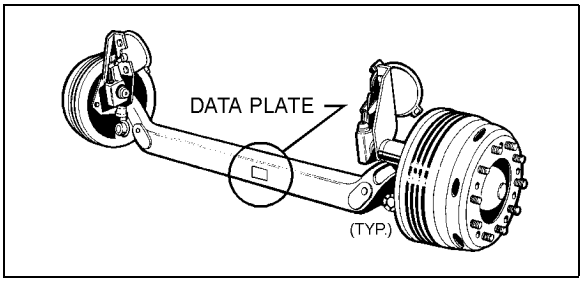
Front axle



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Vehicle identification number (V.I.N.)

The vehicle identification number is stamped on a plate located on a windshield frame pillar (driver's side), so that is visible from the outside. It is extremely important to give the correct vehicle identification number when ordering replacement parts. Use of this number will prevent delays and errors in obtaining the correct material.

18170

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 where it will be readily available for reference.

Safety Attestation

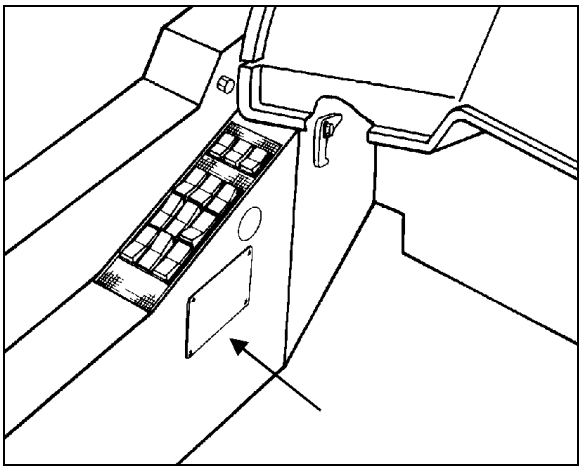
All the components on this vehicle meet the government requirements:

- Material and parts conform to ASTM and/or SAE standards in effect at time of manufacturing.
- Welding is in accordance with Canadian and US standard.
- All factory-installed interior materials meet F.M.V.S.S. 302 on fire resistance.
- Certified according to Provincial, State and Federal Safety standards (Canada and 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

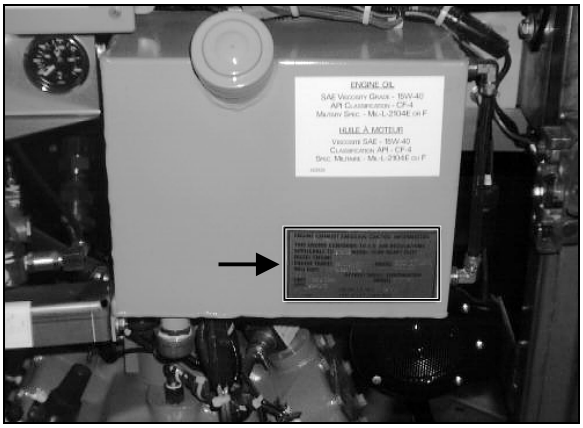
This is your assurance that your new vehicle complies with all applicable Federal Motor Vehicle Safety Standards which were in effect at the time the vehicle was manufactured. You can find this label affixed below L.H. side control panel in driver's compartment.



18171

EPA Engine Label

The exhaust emission certification label affixed on the oil reserve tank (R.H. side of engine compartment) certifies that the engine conforms to the federal and any state exhaust emission regulations. It gives the operating conditions at which certification was made.



INTERIOR LIGHTING					
Application	**Prévost part no.**	**Trade or SAE Number**	**Watts or Candle Power**	**Volts**	**Qty**
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	A\R
Speedometer	560145	1829	1 cp	24	2
Tachometer	560145	1829	1 cp	24	2
Turbo boost	561167	3899 (Osram)	3 W	24	1
Tachograph	561006	1-405-804	1.2 cp	24	3
Other instrument (1/unit)	560144	1820	1.6 cp	24	A\R
Driver's area	561553	78236	10 W	24	4
Switch (1/unit)	561123	2741 (Osram)	1 W	24	A\R

DDEC III Diagnostic Codes

To Read Codes:

Use a diagnostic data reader plugged in receptacle on the bottom of side panel of L.H. control panel or momentarily depress the Stop engine *OVERRIDE* switch (located on the L.H. lower control panel) with the ignition on, engine at idle or not running. Active codes will be flashed on the stop engine telltale (located on central dashboard), followed by the inactive codes being flashed on the check engine telltale (located on central dashboard). The cycle repeats until the operator depresses again the Stop engine *OVERRIDE* switch. A code *43* consists of four flashes, followed by a short pause, then three flashes in quick succession.

DDC Code Number (Flashed)	Description	DDC Code Number (Flashed)	Description
11	Variable speed governor sensor voltage low	12	Variable speed governor sensor voltage high
13	Coolant level circuit failed low	14	Intercooler temperature circuit failed high
14	Coolant temperature circuit failed high	14	Oil temperature circuit failed high
15	Intercooler temperature failed low	15	Coolant temperature circuit failed low
15	Oil temperature circuit failed low	16	Coolant level circuit failed high
17	Bypass position circuit failed high	18	Bypass position circuit failed low
21	EFPA circuit failed low	22	EFPA circuit failed low
23	Fuel temperature circuit failed high	24	Fuel temperature circuit failed low
25	Reserved for "no codes"	26	Aux. shutdown #1 active
26	Aux. shutdown #2 active	27	Air temperature circuit failed high
28	Air temperature circuit failed low	31	Aux. output #3 open circuit (high side)
31	Aux. output #3 short to ground (high side)	31	Aux. output #4 open circuit (high side)
31	Aux. output #4 short to ground (high side)	32	SEL open circuit
32	SEL short to battery	33	Turbo boost pressure circuit failed high
34	Turbo boost pressure circuit failed low	35	Oil pressure circuit failed high
36	Oil pressure circuit failed high	37	Fuel pressure circuit failed high
38	Fuel pressure circuit failed low	41	Too many SRS (missing TRS)
42	Too few SRS (missing SRS)	43	Coolant level low
44	Intercooler temperature high	44	Coolant temperature high
44	Oil temperature high	45	Oil pressure low
46	Battery voltage low	47	Fuel pressure high
48	Fuel pressure low	52	A/D conversion fail
53	Nonvolatile checksum incorrect	53	EEPROM write error
54	Vehicle speed sensor fault	55	J1939 data link fault

DDC Code Number (Flashed)	Description	DDC Code Number (Flashed)	Description
55	Proprietary link fault (master)	55	Proprietary link fault (receiver)
56	J1587 data link fault	57	J1922 data link fault
58	Torque overload	61	Response time long
62	Aux. output #1 short to battery	62	Aux. output #1 open circuit
62	Aux. output #2 short to battery	62	Aux. output #2 open circuit
62	Aux. output #5 short to battery	62	Aux. output #5 open circuit
62	Aux. output #6 short to battery	62	Aux. output #6 open circuit
62	Aux. output #7 short to battery	62	Aux. output #7 open circuit
62	Aux. output #8 short to battery	62	Aux. output #8 open circuit
63	PWM #1 short to battery	63	PWM #1 open circuit
63	PWM #2 short to battery	63	PWM #2 open circuit
63	PWM #3 short to battery	63	PWM #3 open circuit
63	PWM #4 short to battery	63	PWM #4 open circuit
64	Turbo speed circuit failed	65	Reserved for air filter differential pressure circuit failed high
65	Reserved for air filter differential pressure circuit failed low	66	Reserved for oil filter differential pressure circuit failed high
66	Reserved for oil filter differential pressure circuit failed low	67	Coolant pressure circuit failed high
67	Coolant pressure circuit failed low	68	Idle validation circuit fault (grounded circuit)
68	Idle validation circuit fault (open circuit)	71	Injector response time short
72	Vehicle overspeed	72	Reserved for vehicle overspeed (absolute)
73	Reserved for air differential pressure high	74	Oil differential pressure high
75	Battery voltage high	76	Engine overspeed with engine brake
77	All other faults not listed	81	Timing actuator (dual fuel) failed high
81	Oil level circuit failed high	81	Crankcase pressure circuit failed high
82	Timing actuator (dual fuel) failed low	82	Oil level circuit failed low
82	Crankcase pressure circuit failed low	83	Oil level high
83	Crankcase pressure high	84	Oil level low
84	Crankcase pressure low	85	Engine overspeed
86	Pump pressure circuit failed high	86	Barometric pressure circuit failed high
87	Pump pressure circuit failed low	87	Barometric pressure circuit failed high
88	Coolant pressure low	--	CEL short to battery
--	CEL open circuit	--	Clock Module failure
--	Clock module abnormal rate		

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 Datareader (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 push-button 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.
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 *PERFORMANCE* mode operation, (refer to *Function of the mode button*, on page 2-16)).
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 but code 69 34 (see code list, page 5-14).
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 push-button shifter.
2. Press any range button, *D*, *N* or *R*, on the push-button 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 push-button 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.

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.
13	23	ECU input voltage, high	Yes	DNS, SOL OFF (Hydraulic default)
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 (1st)
25	22	Output speed reasonableness test, detected at 0 speed 2nd	Yes	DNS, Lock in current range (2nd)
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)

Main Code	Sub Code	Description	Do Not Shift Light	Inhibited Operation Description
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 200ø F (93ø C)
33	23	Sump oil temperature sensor, high	No	Use default value of 200ø F (93ø 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)
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
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

Main Code	Sub Code	Description	Do Not Shift Light	Inhibited Operation Description
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, 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
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
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

Main Code	Sub Code	Description	Do Not Shift Light	Inhibited Operation Description
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
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
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)

Main Code	Sub Code	Description	Do Not Shift Light	Inhibited Operation Description
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), Nl to 6	Yes	DNS, RPR
54	92	Oncoming ratio test (after shift), R to 2 (R to NNC to 2)	Yes	DNS, NNC
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
57	11	Range verification C3PS test, 1st	Yes	DNS, SOL OFF (3rd)
57	22	Range verification C3PS test, 2nd	Yes	DNS, 3rd

Main Code	Sub Code	Description	Do Not Shift Light	Inhibited Operation Description
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)
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)

Service Literature

Additional copies of the following Service Literature are available upon request and at low cost.

- **Maintenance Manual**
- **Owner'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 Gagnon Boulevard
Sainte Claire, Québec
Canada, G0R 2V0

FAX NO.: (418) - 883 - 4157

Specify your vehicle's complete serial number. Allow 30 days for delivery.

Notice

United States Operators please notice:

The National Highway Traffic Safety Administration has requested that the following statement be provided for your information:

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Prévost Car Inc..

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Prévost Car Inc..

To contact NHTSA you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, DC area) or write to: NHTSA, U.S. Department of Transportation, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the Hotline

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Change of Address or Ownership

Any change of address or ownership should be brought to the attention of the manufacturer by completing and mailing the attached card.

CHANGE OF ADDRESS

VEHICLE SERIAL NUMBER: 2PC _ 334 _ _ _ 101 _ _ _ _

OLD ADDRESS→

NAME: _____
STREET NO./APT.: _____
CITY: _____
STATE/PROVINCE: _____
ZIP/POSTAL CODE: _____
TEL/FAX NO.: _____

NEW ADDRESS→

STREET NO./APT.: _____
CITY: _____
STATE/PROVINCE: _____
ZIP/POSTAL CODE: _____
TEL/FAX NO.: _____

CUT ON DOTTED LINES

CHANGE OF OWNERSHIP

VEHICLE SERIAL NUMBER: 2PC _ 334 _ _ _ 101 _ _ _ _

The ownership of this vehicle is transferred

FROM→

NAME: _____
STREET NO./APT.: _____
CITY: _____
STATE/PROVINCE: _____
ZIP/POSTAL CODE: _____
TEL/FAX NO.: _____

TO→

NAME: _____
STREET NO./APT.: _____
CITY: _____
STATE/PROVINCE: _____
ZIP/POSTAL CODE: _____
TEL/FAX NO.: _____

CUT ON DOTTED LINES

affix
stamp
here

PREVOST

PRÉVOST CAR INC.
35 Boul. Gagnon
Ste Claire (Québec)
CANADA, G0R 2V0

AFTER-SALES SERVICE DEPARTMENT

affix
stamp
here

PREVOST

PRÉVOST CAR INC.
35 Boul. Gagnon
Ste Claire (Québec)
CANADA, G0R 2V0

AFTER-SALES SERVICE DEPARTMENT