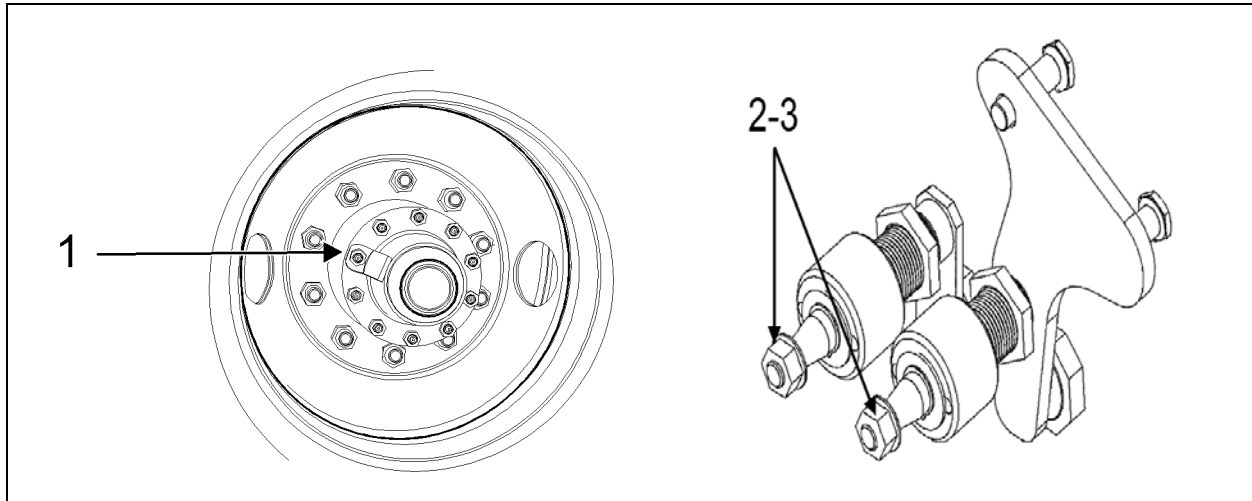


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1. TORQUE TABLES

**MISCELLANEOUS**

No	DESCRIPTION	TORQUE
1	Hubodometer mounting bolts	110-165 lb-ft (149-224 Nm)
2	Wiper arm mounting bolts (first tightening)	9 lb-ft (12 Nm)
3	Wiper arm mounting bolts (second tightening)	22 lb-ft (30 Nm)

2. DESCRIPTION OF AUDIO AND VIDEO SYSTEM INSTALLED ON X3-45 COACHES

The rack mounted components are gathered on the audio-video panel which is located in the first driver's side overhead compartment (Figure 1). In addition to the power amplifier, options for AM/FM radio, satellite radio, karaoke, wireless microphone, DVD, scenic view and back-up camera system and GPS Navigation System module may be featured.

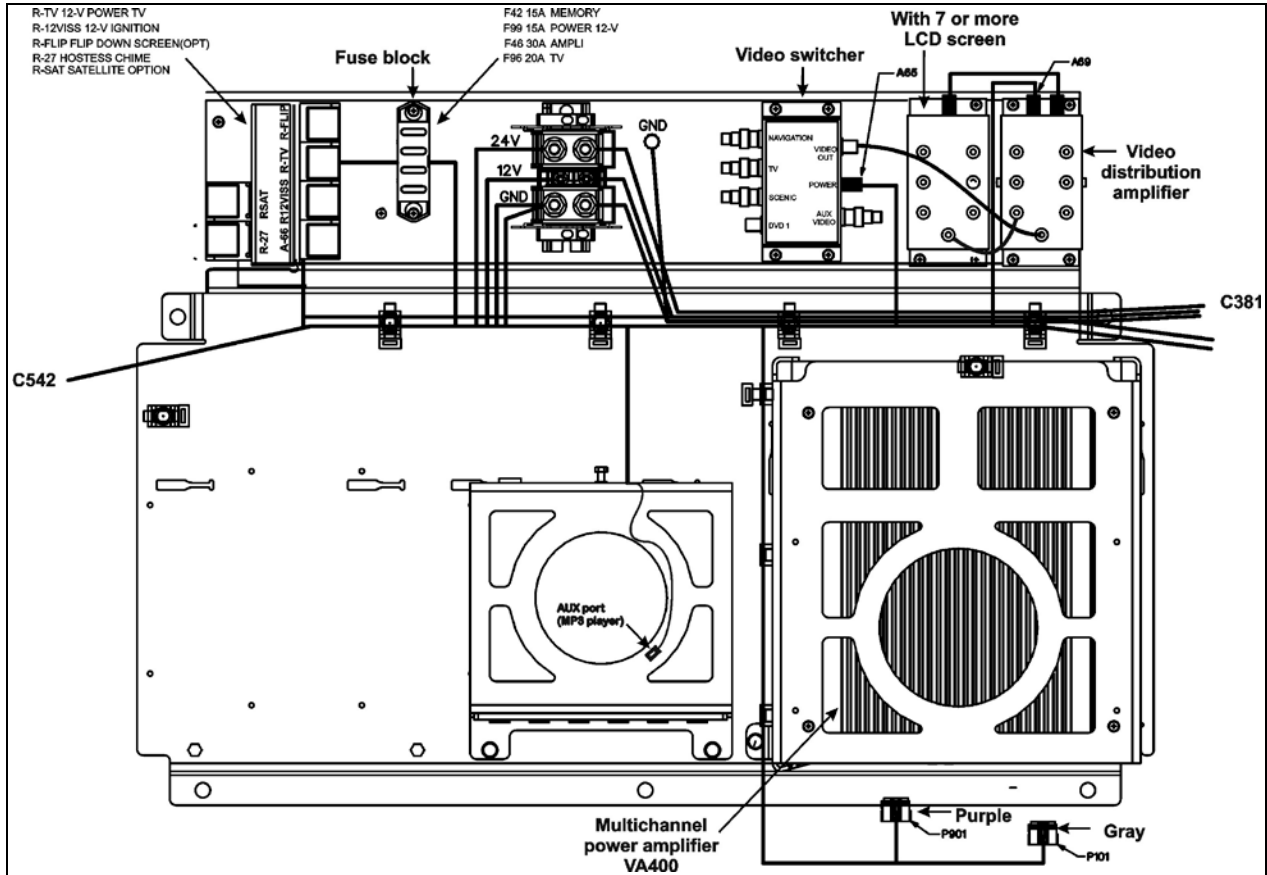


FIGURE 1 : AUDIO-VIDEO PANEL

Each service module mounted to the underside of the parcel racks contains a 40-watt speaker. The speakers in the passenger section are wired in stereo and are powered by the amplifier. A microphone outlet mounted in the driver's area is provided as standard equipment.

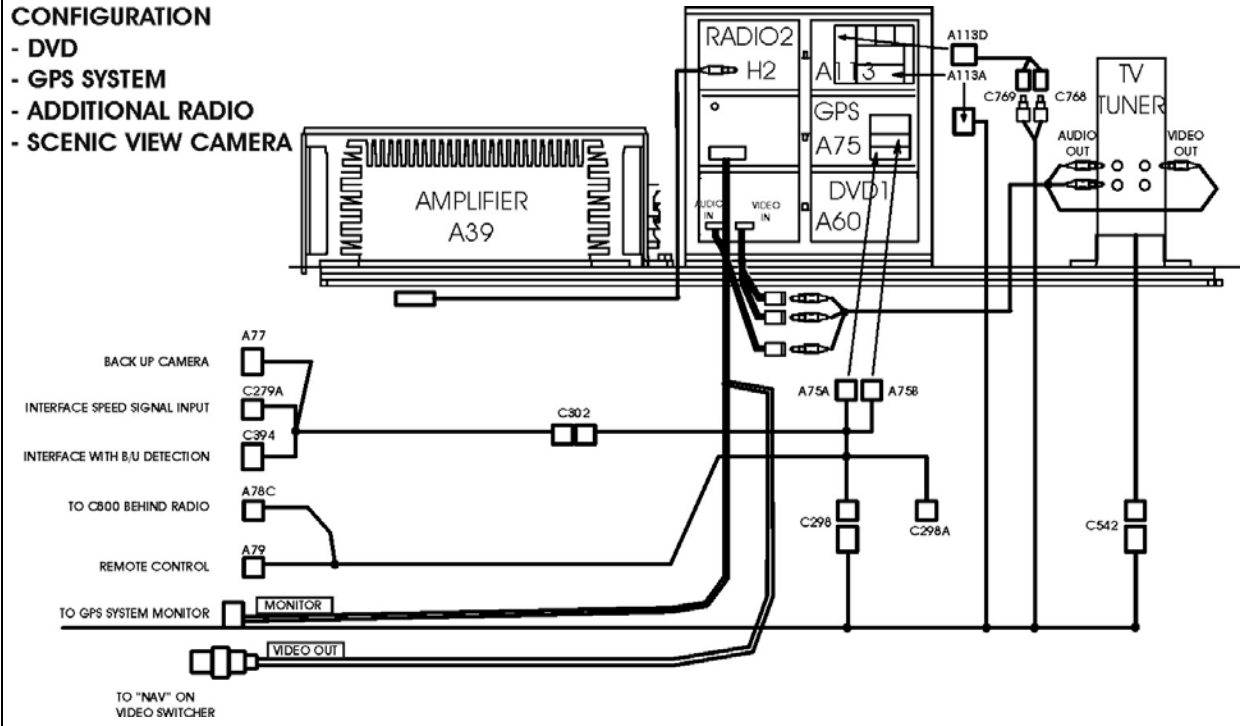
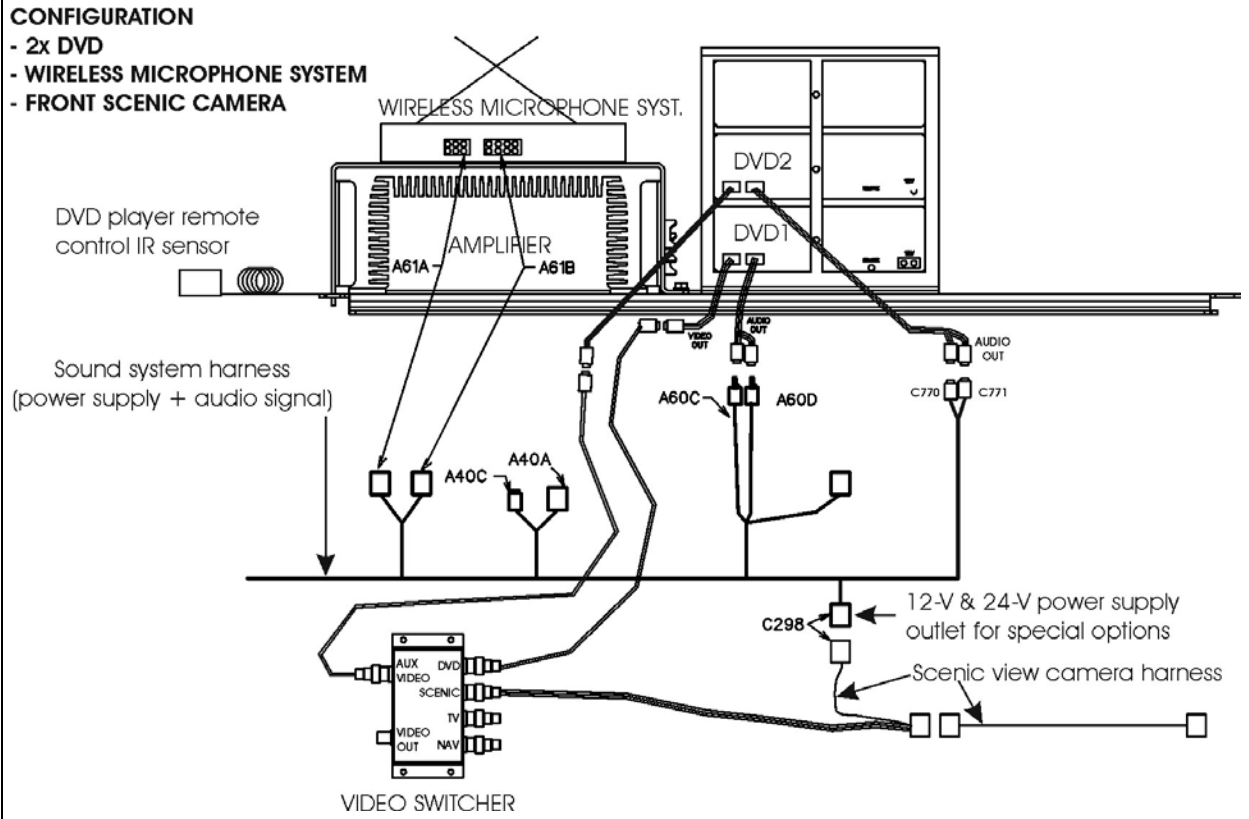


FIGURE 2: AUDIO & VIDEO CONNECTIONS

SECTION 23b: X3 SERIES ACCESSORIES

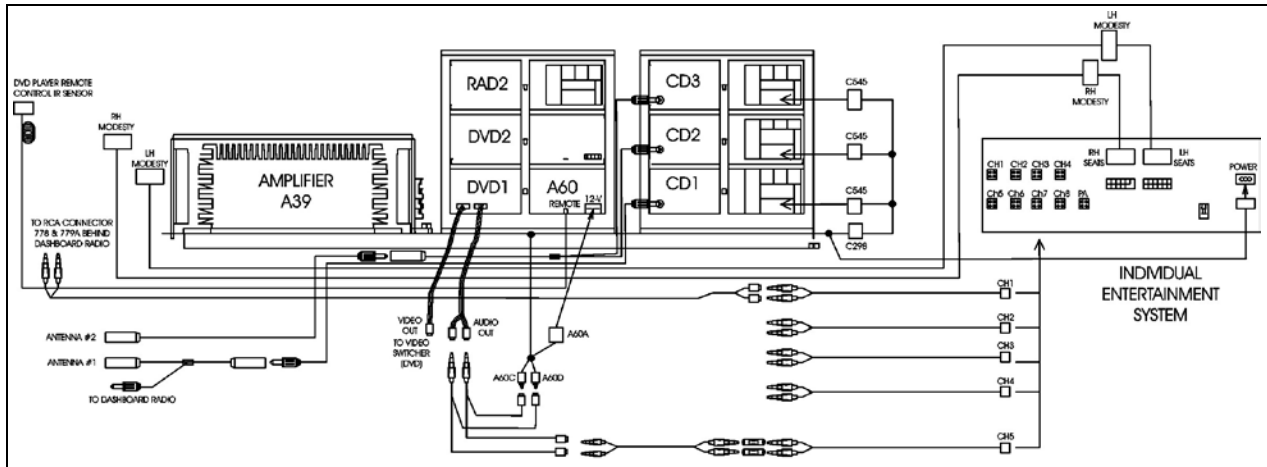


FIGURE 3: AUDIO-VIDEO CONNECTIONS

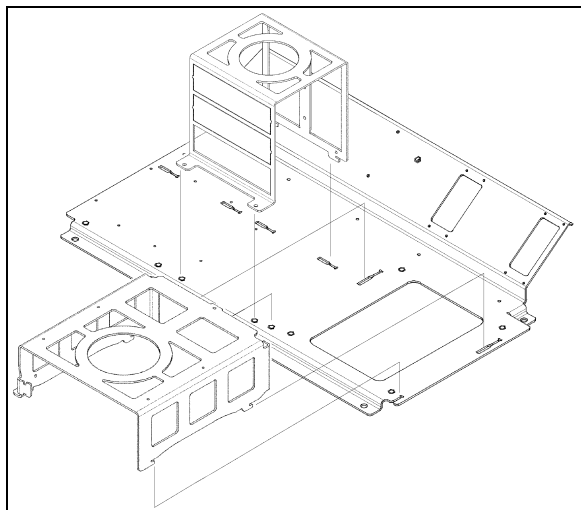


FIGURE 4: RACKS ON AUDIO-VIDEO PANEL 23059

2.1 HOW TO RECEIVE SERVICE FOR YOUR REI AUDIO AND VIDEO PRODUCTS

For assistance in obtaining service for REI products call toll free 877-726-4617 (Continental United States and Canada) between the hours of 7:00 A.M. - 5:00 P.M. CST Monday thru Friday (excluding Holidays).

For assistance in obtaining service for REI products call toll free 877-726-4617 (Continental United States and Canada only) between the hours of 7:00 A.M. - 5:00 P.M. CST Monday thru Friday (excluding Holidays).

Prior to calling REI, please have the part number, serial number, VIN number and detailed description of the problem ready to provide to the REI service representative. After providing information to REI, customers will be issued a return authorization number. When the REI service representative provides the return authorization number, they will also give instructions for returning the item. Any discrepancies in following this procedure may cause delays in the process.

24/7 Tech Support

CALL 1-877-726-4617

E-Mail to technicalsupport@radioeng.com

REI Authorized Repair Facilities

REI
6534 L Street
Omaha, Nebraska 68117

REI
1376 Bennett Drive, Unit 126
Longwood, Florida 32750

REI products that may be installed in your coach:

MONITOR, LCD 10.4"

MONITOR, COLOR BACK-UP CAMERA

MONITOR, LCD 15.4"

MONITOR, CENTRAL LCD 15.4"

MONITOR, FLIP19"

MONITOR, 16:9 LCD 15.4"

MONITOR, 16:9 CENTRAL LCD 19"

INDIVIDUAL ENTERTAINMENT SYSTEM

AMPLIFIER, 8-CHANNEL

DVD PLAYER

DVD REMOTE CONTROL

CAMERA, COLOR BACK-UP

CAMERA, COLOR PANORAMIC

MICROPHONE, 10" CB TYPE

MICROPHONE, WIRELESS

RECEIVER, WIRELESS MIC 16-CHANNEL

2.2 DASHBOARD AM/FM RADIO



FIGURE 5: DASHBOARD AM/FM RADIO

NOTE

Before attempting to solve an electrical problem on the sound system, refer to the wiring diagrams.

The radio operating instructions manual is included at the end of this section.

• Removal/Installation

To remove the radio from its location, proceed as follows:

- Place the ignition switch in the “OFF” position.
- Remove the dashboard cover.
- Disconnect the electrical cable connectors from radio and unfasten back plate securing nuts/screws.
- To separate the radio from its support, insert the removal tool #20584494 in the holes found each side of the radio front panel.
- Push the unit through the front dashboard panel.
- Install a new unit by reversing the procedure.

NOTE

Remember that because power has been interrupted during removal, the radio must be unlocked by entering the four-digit security code after reinstallation.

2.3 VSS-05 SOUND SELECTOR



FIGURE 6: VSS-05 SOUND SELECTOR

• Removal/Installation

To remove the Sound Selector from its location, proceed as follows:

- * Place the ignition switch in the “OFF” position.
- * Remove the dashboard cover.
- * Disconnect the electrical connectors from unit and unfasten back plate securing nut/screw.
- * To separate the Sound Selector from its support, insert the removal tool #20584494 in the holes found each side of the unit front panel.
- * Push the unit through the front dashboard panel.
- * Install a new unit by reversing the procedure.

The operating instructions are included in your Operator’s Manual.

2.4 VD-404 MOBILE DVD PLAYER



FIGURE 7: VD-404 MOBILE DVD PLAYER

The MOBILE DVD PLAYER is located in the first parcel compartment on the driver’s side. Instructions for proper use of this unit are included at the end of this section.

Features:

- POWER
Operating voltage: 12-volt DC
- COMPATIBILITY
This DVD player can play the following disc formats:
DVD, CD, VCD, DVCD, MP3, CD-R, CD-RW
- SYSTEM FUNCTIONS
Video output system: system MULTI, NTSC or PAL switchable.

- 1 L/R audio output
- 1 L/R audio input
- 1 AUX video output
- 1 rear camera video input
- 3 video outputs with one dedicated self-switching rear view monitor

• ADDITIONAL VIDEO FEATURES

Multi-angle, multi-view, multi-audio function, multi-level forward and backward motion, play position memory, resume stop and repeat function.

2.5 MULTICHANNEL POWER AMPLIFIER VA400.8

This 400-watt, 6-channels brings an added dimension to your stereo equipment and increases the total output of the system.

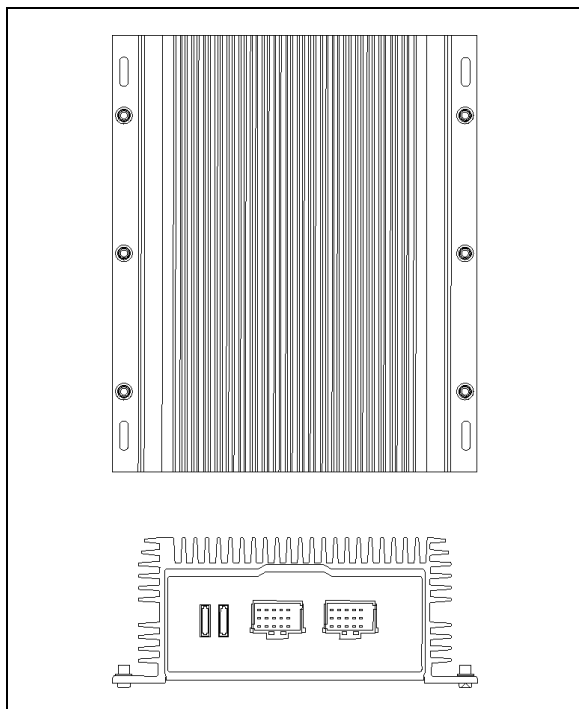


FIGURE 8: MULTICHANNEL POWER AMPLIFIER

For optimum sound quality, adjust the subwoofer crossover filter as shown on figure 9. This adjustment is necessary to balance the subwoofers volume in respect to the other speakers and also to cut high frequencies for a better sound quality.

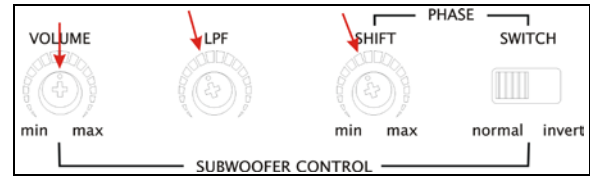


FIGURE 9: CROSSOVER ADJUSTMENT

2.6 SPEAKERS

Each passenger's overhead console mounted to the underside of the parcel racks contains a 20-watt Dual cone or coaxial 10cm speaker. The speakers in the passenger's section, wired in stereo and arranged in a delta configuration are powered by the amplifier.

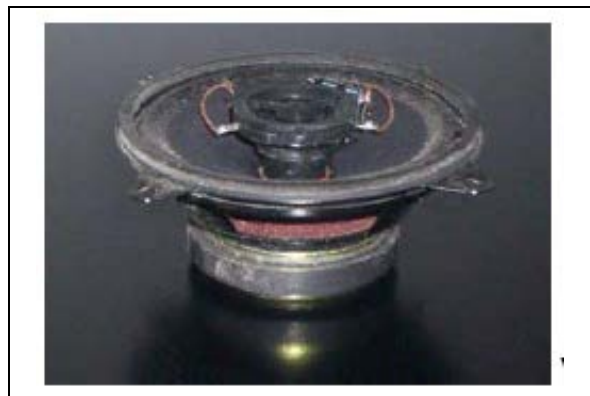


FIGURE 10: 10CM COAXIAL SPEAKER

The vehicle may be equipped with two additional Hi-Fi speakers in the driver's area, mounted one on each side. This arrangement provides the driver with clear stereo sound. Controls for the driver's audio are performed through the dashboard AM/FM radio.

Two specially designed subwoofers may be fixed as an option under a passenger seat with anti-vibration supports.

2.7 BOOM-TYPE MICROPHONE

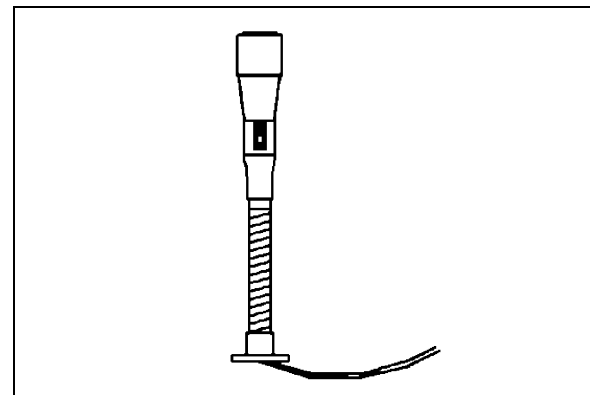


FIGURE 11: BOOM-TYPE MICROPHONE

23083

2.7.1 Removal

1. Place the ignition switch in the "OFF" position.
2. Remove the mounting screws at mounting flange.
3. Disconnect wiring.

2.7.2 Installation

1. Reconnect wiring.
2. Align mounting flange with holes and install screws.
3. Remove spacer block mounting screws.
4. Insert spacer block and install mounting screws.
5. Place the ignition switch in the "ON" position.

2.8 HANDHELD PRIORITY MICROPHONE

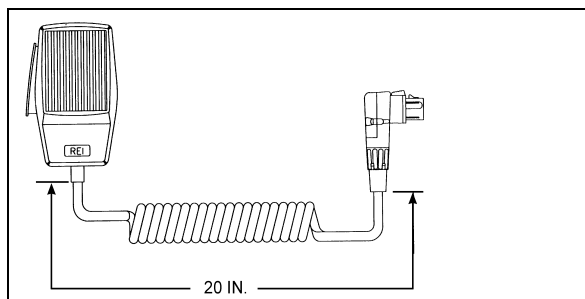


FIGURE 12: HANDHELD PRIORITY MICROPHONE 23216

2.9 WIRELESS MICROPHONE

The system 2000 16 channel wireless microphone, Receiver and Charging Cradle are custom designed units that allow for wireless PA communication from anywhere on the coach. The unit consists of a receiver mounted in the parcel area directly behind the driver, and a rechargeable hand-held microphone and charging unit. Instructions for proper use of the microphone are included in the "REI Operating Manual" which is provided in the technical publications box delivered with the vehicle.

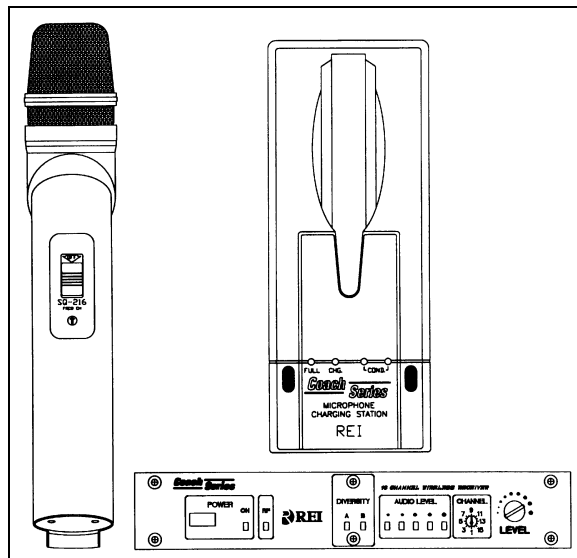


FIGURE 13: WIRELESS MICROPHONE

2.10 TV TUNER

For TV tuner control descriptions, refer to Figure 14.

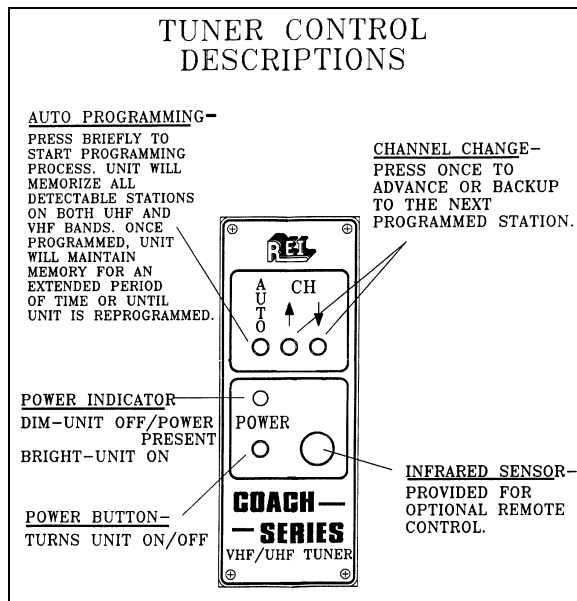


FIGURE 14: TUNER CONTROLS DESCRIPTION

2.11 KARAOKE

The modified Panasonic DVD Player powers up automatically when the video system is activated. The unit can be controlled with the plug-in remote control, or the control head, which has access to the PLAY and STOP commands.

If so equipped, instructions for proper use of the Karaoke system are included in the "Operating

Manual” that is provided in the technical publications box delivered with the vehicle.

2.11.1 Karaoke Panasonic Sound System – MOBILE DVD PLAYER DV1500

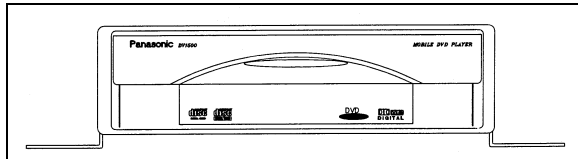


FIGURE 15: PANASONIC DVD PLAYER 1500

2.12 DRIVER'S SPEAKERS

The driver's speakers are mounted one on each side. This arrangement provides the driver with clear stereo sound. Controls for the driver's audio allow selection between the radio and the auxiliary audio (independent of the passenger's speakers) or muting the speakers.

2.13 MONITOR

1. Place the ignition switch in the "OFF" position.
2. Unfasten the retaining screw located on the monitor R.H. side.
3. Slide the monitor to the right to release it from the mounting bracket.

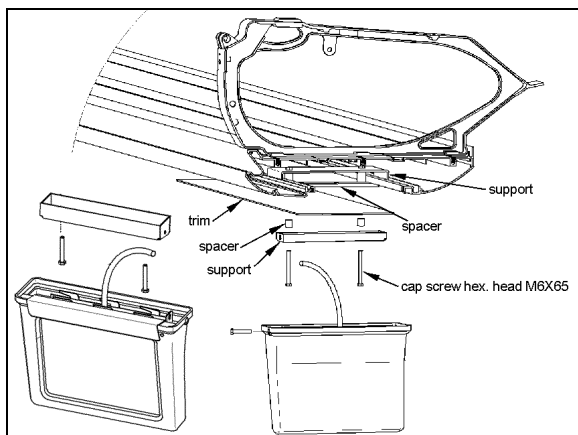


FIGURE 16: MONITOR MOUNTING 23221

2.14 SCENIC VIEWING SYSTEM

The scenic viewing system enables the passengers to view the road ahead of the vehicle. This system is composed of a camera, a dashboard mounted ON/OFF switch and the video switcher located on the audio-video panel (Figs. 1 & 17).

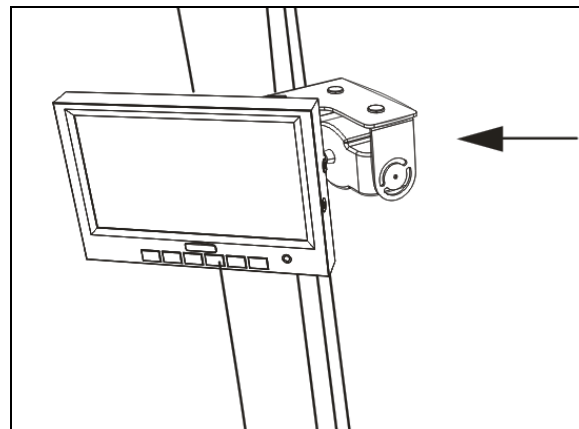


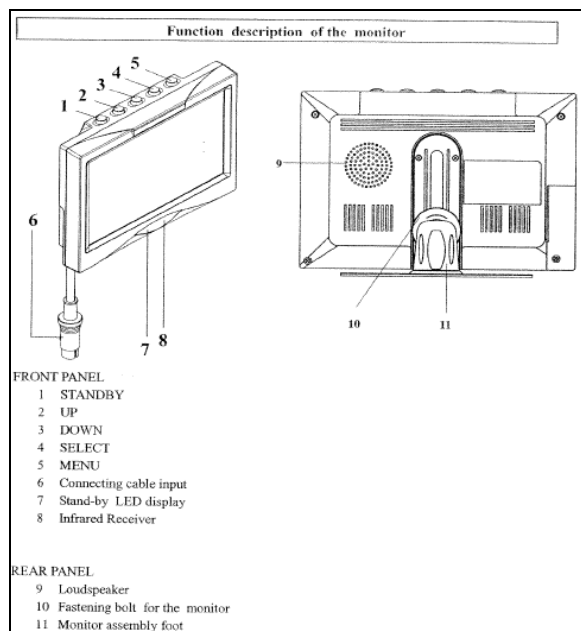
FIGURE 17: SCENIC VIEW CAMERA

2.15 ROOF ANTENNA INSTALLATION

1. Find the desired location and drill a hole according to specification.
2. To remove dirt and grease, wash edge of hole with alcohol.
3. If so equipped, remove foam padding ring from antenna to free the metal surface (foam can produce air bulbs in new rubber seal).
4. With SIKA 205, wash the opening edge and the antenna base surface, wait at least two (2) minutes for chemical evaporation.
5. Apply new seal SIKA 221 on both, vehicle hole edge and antenna base.
6. Fix the antenna in place.
7. Remove excess seal and complete a finishing joint all around the antenna base.

3. BACK-UP CAMERA AND MONITOR

An optional back-up camera is available which provides the driver with visual assistance when backing-up. The camera is automatically activated when the transmission is put in reverse gear and the ignition switch is "ON".



BUTTON DESCRIPTION

1) STANDBY: On/Off switch

2) UP: This key has 3 functions

- Increase of the volume during normal operation;
- Modification of the setting within a function e.g. contrast (after calling up the menu);
- By pressing this key when putting in the reverse gear, the distance markings move upwards;

3) DOWN: This key has 3 functions

- Decrease of the volume during normal operation;
- Modification of the setting within a function e.g. contrast (after calling up the menu);
- By pressing this key when putting in the reverse gear, the distance markings move downwards;

4) SELECT: This key has 3 functions

- Selection of the video sources (CA1 → CA2 → AV → CA1). Press less than 1.5 seconds;
- Selection of the functions e.g. picture setting (after calling up the menu);
- Deleting and calling OSD letters of title & time (press longer than 1.5 seconds) during normal operation;

5) MENU: This key has 2 functions

- Activation of the dimmer function (press less than 1.5 seconds) during normal operation;
- Calling up the menu (press longer than 1.5 seconds, four menus can be called up). Press the key once again to call up the individual menus;
 - a) PICTURE= Functions for the image setting;
 - b) USER= Selection of the system function;
 - c) TIME= Setting time and date;
 - d) INSTALL= Setting the camera function (e.g. mirror function);

6) BUSH FOR THE MONITOR CABLE OF THE CONNECTION BOX

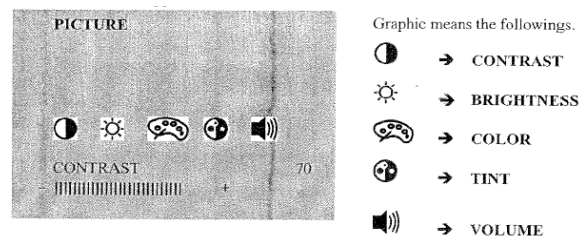
7) STANDBY DISPLAY

8) INFRARED RECEIVER

MONITOR MENU DISPLAY

The monitor (RV59 HD) is equipped with an On-Screen Display (OSD) function which displays date, camera, channel, mirror mode and distance markings. These functions can be selected on MENU. To calling up the menu, press longer than 1.5 seconds. Four menus can be called up. Press the key once again to call up the individual menus.

For calling up the menu PICTURE press the key **MENU** longer than 1.5 seconds. The menu PICTURE appears.



Select the function (e.g. contrast) by pressing the key **SELECT** repeatedly. The setting within the function can be modified with the keys **UP** and **DOWN**.

For calling up the menu USER press the key **MENU** once again. The menu USER appears. Select the function (e.g. SELECTION) by pressing the key **SELECT** repeatedly as necessary. The setting within the function can be modified with the keys **UP** and **DOWN**.

SECTION 23b: X3 SERIES ACCESSORIES

USER	POSSIBLE SETTINGS:
LANGUE ENG	LANGUAGE: ENGLISH/GERMAN (ENG/DEUT)
SCREEN WIDE	SCREEN NOR 4:3, picture format 4:3 WIDE, picture format 16:9 FULL, picture format 16:9 middle enlarge
TITLE ON	TITLE: CAMERA TITLE DISPLAY ON/OFF
TIME ON	TIME: TIME DISPLAY ON/OFF

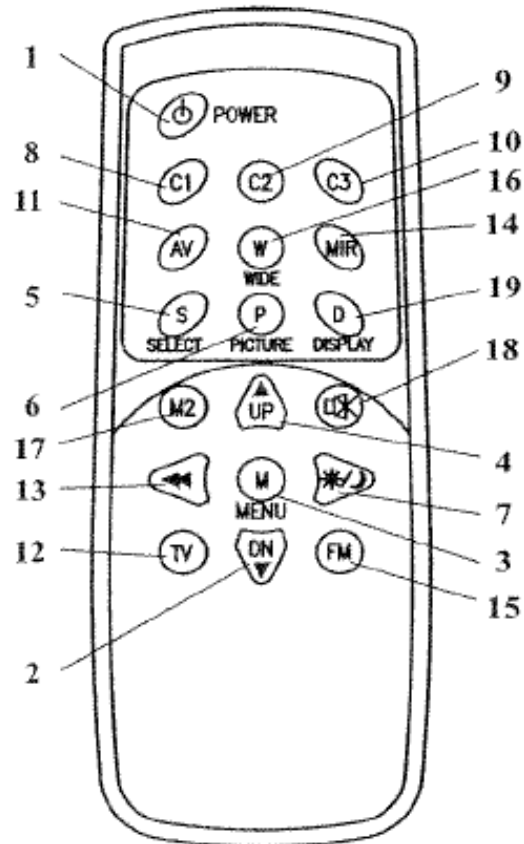
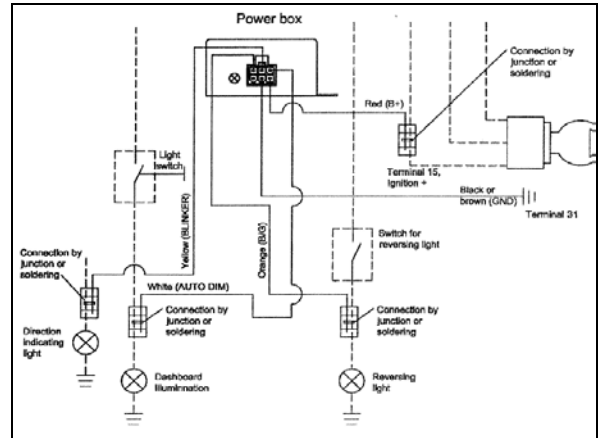
For calling up the menu TIME press the key **MENU** once again. The menu TIME appears. Select the function (e.g. DATE) by pressing the key **SELECT** repeatedly as necessary. The setting within the function can be modified with the keys **UP** and **DOWN**.

TIME	- Hour-Month adjustable by UP BUTTON
TIME 08:25	- Minute/Date adjustable by DOWN BUTTON
DATE MAY01	- Year adjustable by UP/DOWN BUTTON
YEAR 2005	

For calling up the menu INSTALL press the key **MENU** once again. The menu TIME appears. Select the function (e.g. SELECTION) by pressing the key **SELECT** repeatedly as necessary. The setting within the function can be modified with the keys **UP** and **DOWN**.

INSTALL	POSSIBLE SETTINGS:
REAR CAM1	REAR: Selection of priority camera (CAM1 or CAM2) which is triggered by rear gear.
CAM1 MIR	CAM1: Selection of real picture or mirrored picture for camera 1
CAM2 NOR	CAM2: Selection of real picture or mirrored picture for camera 2
NOTE1	The distance mark will appear on the picture of camera which set as MIR (mirrored).
NOTE2	Engaging the reverse gear, only distance mark will appear on the mirrored camera picture without any OSD. At the moment, no keys are available except UP/DOWN key for moving distance bar.

RED	Voltage supply 12-volt to 24-volt (max. 32-volt)
BLACK/BROWN	Earth cable
WHITE	Control wire for switching on the dimmer function (night operation)
YELLOW	Control wire for switching on the side camera. The connection is to be made at the INDICATOR
ORANGE	Control wire for switching on the reversing camera. The connection is to be made at the reversing light



BACK-UP CAMERA MODULE (Power box)

The connection line consists of 6 branch lines as below:

No	Key	Description
1	STANDBY	On/Off switch
2	DOWN ▼	This key has 3 functions. – Decrease of the volume during normal operation. – Modification of the setting within a function e. g. brightness (after calling up the menu). – By pressing this key when putting in the reverse gear the distance markings move downwards.
3	MENU	Calling up the menu on the screen. Three menus can be called up : a: PICTURE = Functions for the image setting b: USER = Selection of the system function c: TIME = Setting time and date d: INSTALL = Setting the camera function (e.g. mirror function)
4	UP ▲	This key has 3 functions. – Increase the volume during normal operation – Modification of the settings within a function e. g. contrast (after calling up the menu) – By pressing this key when putting in the reverse gear the distance markings move upwards.
5	SELECT	This key has 2 functions Selection of the video sources (CA1 → CA2 → AV) Selection of the functions e.g. picture setting (after calling up the menu)
6	PICTURER	Calls up the functions CONTRAST, BRIGHTNESS etc. directly for the picture setting. Carry out the setting with the key UP or DOWN.
7	DIMMER	Regulates the brightness to night operation temporarily
8	C1	Selection of the camera 1
9	C2	Selection of the camera 2
10	C3	Selection of the camera 3 (camera input 3 is not available))
11	AV	Selection of the video input (RCA)
12	TV	Not available
13	SEARCH	Not available
14	MIRROR	Reversing left and right of picture temporarily
15	FM	Not available
16	WIDE	Setting of the screen format NOR/NOR: 4:3, picture format 4:3 WIDE/WEIT, picture format 16:9 FULL/BREIT, picture format 16:9 middle enlarged
17	MONITOR2	Not available
18	MUTE	Switches off the tone temporarily
19	DISPLAY	This key has 2 functions – Deleting or calling OSD letters of Tile & Time temporarily – Leaving the menu

4. HUBODOMETER

4.1 DESCRIPTION

An optional wheel hubodometer (Figure 18) may have been installed on the R.H. side of the drive axle. It indicates the total distance in miles or kilometers covered by the coach since it has left the factory, including road testing.

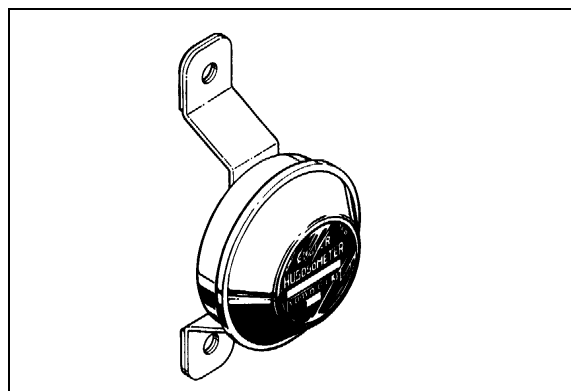


FIGURE 18: HUBODOMETER

23024

4.2 OPERATION

The hubodometer is calibrated for a specific wheel size (diameter). Wheel rotation causes a mechanism inside the hubodometer to record distance after a predetermined number of rotations. The unit should be serviced at a competent speedometer repair facility.

NOTE

Do not use paint, solvent or thinner on hubodometer face or on plastic hubcaps. Do not weld on hubodometer.

4.3 REMOVAL

To remove the unit, remove the two lock nuts and washers securing it to the wheel hub, and pull the unit off the studs.

4.4 INSTALLATION

Place the hubodometer unit over the wheel hub studs. Replace the lock washers and nuts. Torque stud nuts.

TORQUE: 110-165 lb-ft (149-224 Nm)

5. ELECTRONIC DESTINATION SIGN INSTALLED ON X3-45 COACHES (OPTIONAL)

The optional destination sign is located at upper front of the vehicle. To change the destination, depress the selecting switches until the desired destination appears in the LCD display.

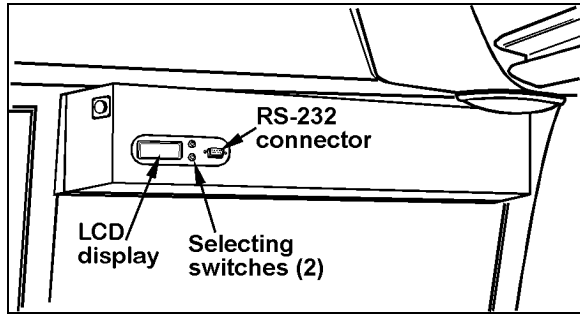


FIGURE 19: DESTINATION SIGN – ELECTRONIC 23123

NOTE

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

NOTE

The destination sign is equipped with lights (bulb light or fluorescent) which illuminates automatically when the headlight or fog light switch is activated.

6. SUNSHADES

6.1 WINDSHIELD SUNSHADES

Two electrically-operated sunshades are installed in the driver's area at the top of the windshields. Two control buttons located on the steering wheel and two on the dashboard operate each sunshade individually. Refer to Operator's Manual: "Controls and Instruments" chapter for more information.

Caution: The electric sunshades should only be operated electrically. Pulling down manually may damage the mechanism.

6.1.1 End of Stroke Adjustment

The sunshades end positions are pre-adjusted at factory. If an adjustment is required, proceed as follows:

1. Place the ignition key to the ON position.
2. Insert a small nail or similar thin object into sunshade adjustment button access hole and press the appropriate sunshade DOWN button **simultaneously** and hold them until a beeping tone sounds. Release both buttons.

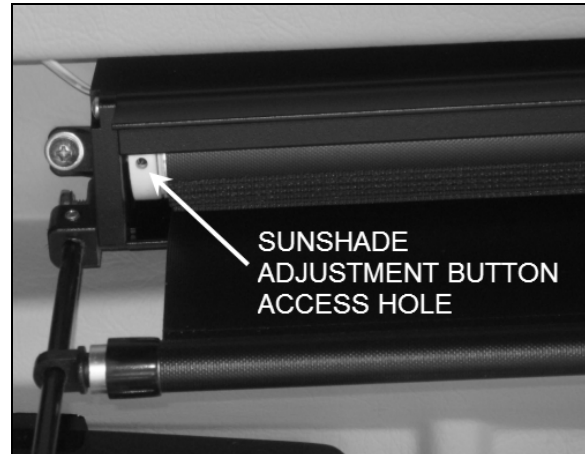


FIGURE 20: DRIVER'S SUNSHADE



FIGURE 21: L.H. SUNSHADE CONTROL BUTTON

3. Move the sunshade to the desired lower end of stroke position using the control button (never move sunshade by hand) and then release button.
4. Proceed to fine adjustment of lower end position by pressing the DOWN button repeatedly.
5. Press the sunshade UP (opposite direction) button to save #1 end position. The confirmation tone will sound.
6. Move the sunshade to the desired upper end of stroke position using control button (never move sunshade by hand) and then release button.
7. Proceed to fine adjustment of upper end position by pressing the UP button repeatedly.
8. Press the sunshade DOWN (opposite direction) button to save #2 end position. The confirmation tone will sound. The adjustment mode is then deactivated.

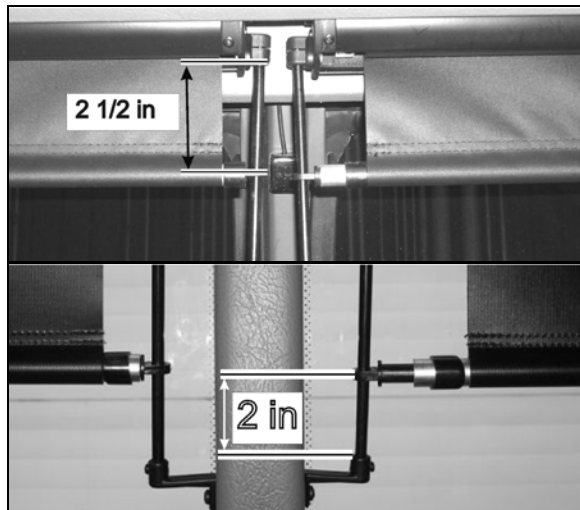


FIGURE 22: FACTORY ADJUSTMENT OF UPPER AND LOWER END POSITION

6.2 PASSENGER SUNSHADES

Manually operated passenger sunshades are factory installed on some vehicles. The sunshades are pulled down and can be locked in the window side moldings at half or full close position.

To release, simply disengage the sunshade from the moldings and release. Spring tension will pull back the sunshade to the full open position.

Correct spring tension is set at the factory and should not need further adjustment.

However, if for any reason a sunshade has to be removed from the vehicle, preloading of the recoil mechanism will be required before re-installation to ensure that the sunshade returns to the full open position when released.

6.2.1 Preload Adjustment

Using the chart below, preload the sunshade mechanism before installing the sunshade in the window support.

Note: When installed, lower the sunshade 6po (15cm) and release. The sunshade should retract freely to the full open position. Re-adjust preload as needed.

Sunshade Type	Req. Preload
Std Sunshade	12 turns
Large WCL Sunshade	12 turns

7. LAVATORY INSTALLED ON X3-45 COACHES

7.1 DESCRIPTION

The lavatory is located in the rear curb side corner of the coach. It is equipped with a chemical flush toilet, bathroom tissue dispenser, mirror and waste container access.

A movement detector will automatically illuminate a fluorescent light inside the lavatory and two outside occupied signs. One sign is located on the outer wall of the lavatory and another sign is located over the windshield. A telltale light on the dashboard will also illuminate to inform the driver when the lavatory is occupied.

If emergency assistance is required, the lavatory occupant can actuate a buzzer that will sound in driver's area. The buzzer push-button is located just below the toilet flush button.

The lavatory has its own ventilation system that operates only when ignition switch is in the "ON" position.

NOTE

This fan runs constantly when the ignition switch located on the dashboard is in the "ON" position.

Also, a drain hole located on lavatory floor drain water splashed on the floor to the engine compartment R.H. side.

7.2 MAINTENANCE

The servicing procedure for the lavatory is described in the "Operator's Manual" included in the technical publications box delivered with the vehicle.

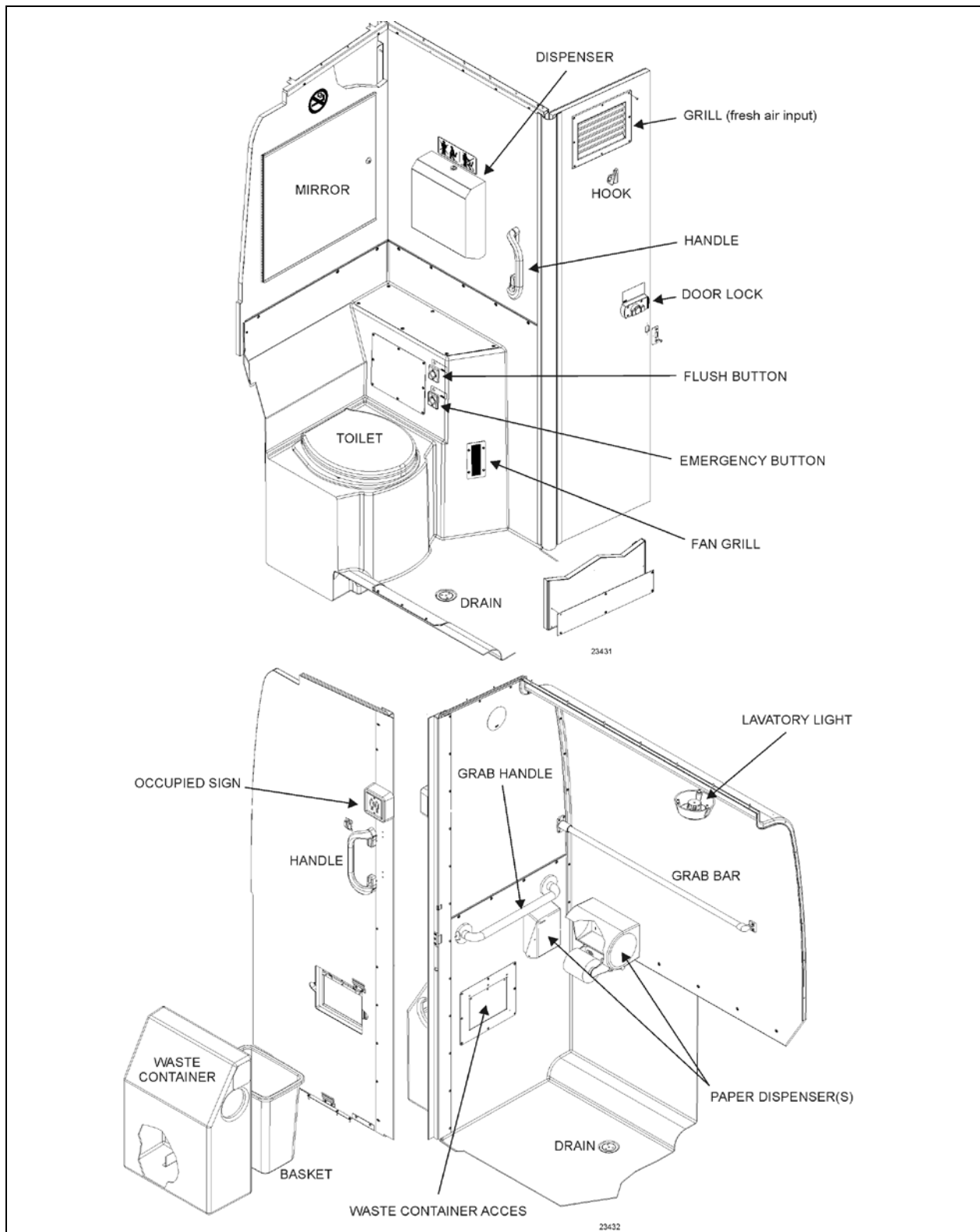


FIGURE 23: LAVATORY

7.3 VENTILATION FAN

7.3.1 Description

The lavatory ventilation fan (Figure 24), mounted in engine compartment, serves two purposes. It exhausts objectionable odors and provides a constant air circulation in the lavatory compartment by heating or cooling the lavatory with the vehicle ambient air. Air flows in the lavatory compartment through a vent grill located on the lavatory door and exhausts through a grill located next to the toilet.

NOTE

This fan runs constantly when the ignition switch located on the dashboard is in the "ON" position.

7.3.2 Maintenance

The frequency of preventive maintenance should be determined according to vehicle mileage and operating conditions. However, it is recommended to check this item every 50,000 miles (80 000 km) or once a year, whichever comes first.

Remove fan and motor assembly. Check for fan housing wheel and motor free operation. When defective motor occurs, new motor must be installed.

7.3.3 Removal and Installation

1. Open SRC access door (*refer to Section 2 of the Operator's Manual under Exhaust Aftertreatment System Access Door*).
2. Locate fan assembly and disconnect the fan wiring connector.
3. Remove the fan shroud mounting screws and remove the ventilation fan assembly from its location.
4. The unit can now be disassembled and the motor and components replaced as necessary.
5. Reverse previous steps to reinstall fan assembly on vehicle.

NOTE

Make sure fan shroud seal is in good condition prior to installation, replace as necessary

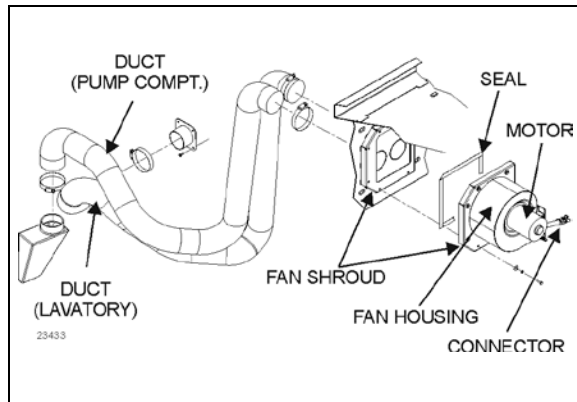


FIGURE 24: VENTILATION FAN INSTALLATION

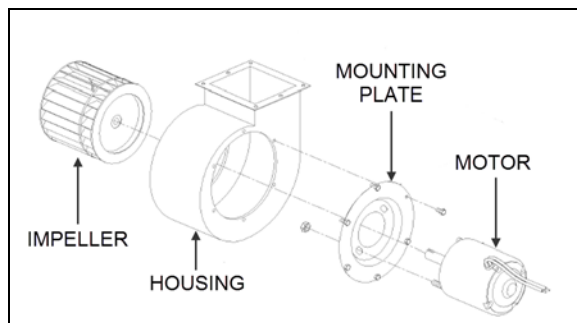


FIGURE 25: FAN ASSEMBLY COMPONENTS

7.4 DOOR LOCK

Lavatory door lock has inside and outside handles, as well as an inside latch to lock door from inside the compartment. If the lock fails to release, the door can be opened from the outside using a special key which is supplied to the driver. Lock assembly can be removed from the door; a thin coat of lubricant on all moving parts will ensure trouble-free operation.

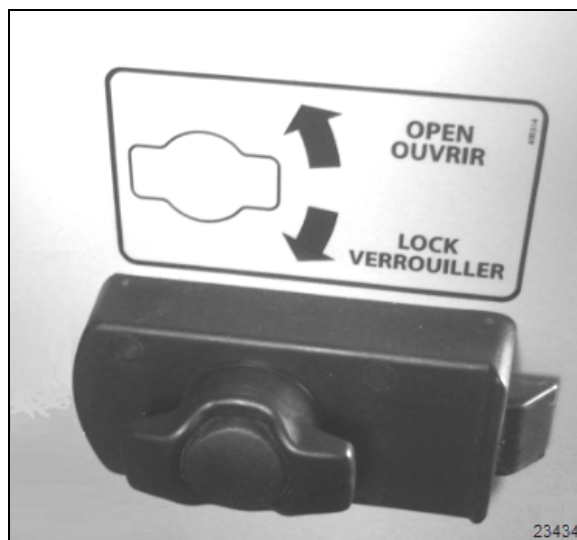


FIGURE 26: DOOR LOCK – FROM INSIDE LAVATORY

7.5 LAVATORY LIGHT & NIGHT-LIGHT

A lavatory LED light with built-in motion detector is installed on lavatory ceiling and will illuminate as soon as door (or occupant) movement is detected. At night, when the ignition switch is set to the ON position, the light will provide dimmed illumination inside the lavatory. The light & movement detector can be serviced as a complete assembly by removing the mounting screws holding the unit to the ceiling.

7.6 EMERGENCY BUTTON

The lavatory emergency buzzer is mounted on the inner curb side wall of lavatory and sounds when the emergency call push-button switch in the lavatory compartment is activated. For specific wiring information, refer to wiring diagrams. To remove the emergency call push-button switch, proceed as follows:

1. Remove both Phillips-head screws retaining pushbutton switch plate to wall.
2. Remove stainless steel plate located on L.H. side of pushbutton switch.
3. Remove switch through this opening, taking care to disconnect electric wires.

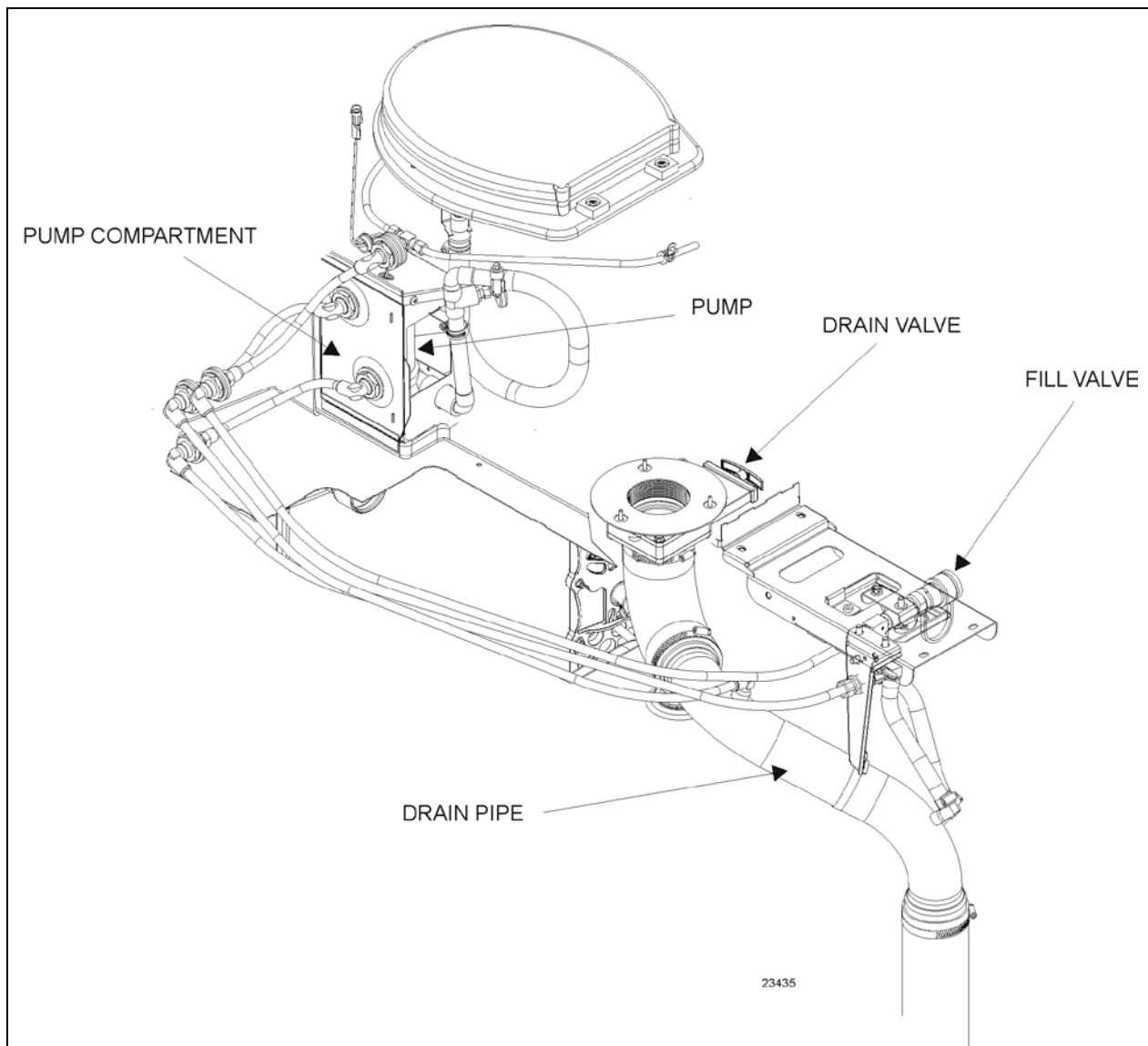


FIGURE 27: LAVATORY PLUMBING COMPONENTS

7.7 FLUSH PUSH-BUTTON

The flush push-button is mounted on the inner curb side wall of lavatory just over the emergency button. Press on push-button to actuate the pump located in the sump tank.

7.7.1 Flush push button removal and installation

1. Remove both Phillips-head screws retaining pushbutton switch plate to wall.
2. Remove stainless steel plate located on L.H. side of pushbutton switch.
3. Remove pneumatic timer through this opening, taking care to disconnect electric wires.
4. Reverse the above procedure to reinstall timer.

7.8 FLUSH PUMP

The submersible-type flush pump is mounted inside an enclosure in the sump tank. The enclosure is provided with a screened side which, serves as a strainer to prevent solid matters from entering the pump.

The pump requires no periodic maintenance other than cleaning of the strainer side using a water jet introduced through the circular cap opening, once the sump tank is completely drained. The pump can run dry periodically without damage. However, for maximum seal life, the run dry periods should be kept to a minimum.



CAUTION

If vehicle is stored for an extended period of time, make sure to clean the strainer as solid matter will tend to pack, and will necessitate replacement of strainer.

7.8.1 Flush Pump Removal

1. Drain tank.
2. Remove the toilet seat and cover.
3. Remove the toilet bowl flange.
4. Lift the toilet bowl, disconnect the water hose and remove the bowl & flap.

5. Remove the pump enclosure retaining screw and remove (lift-up) the complete assembly from the tank.
6. Remove the enclosure cover to access and remove the pump.

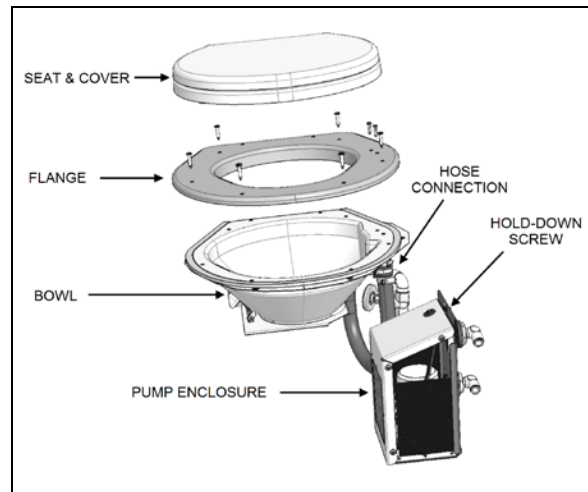


FIGURE 28: SUMP TANK PUMP ACCESS

7.9 SUMP TANK

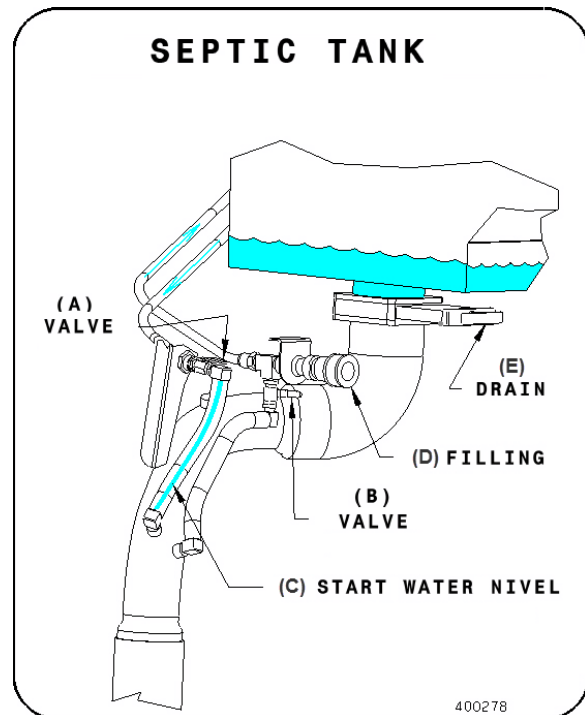



FIGURE 29: SUMP TANK SERVICE VALVES


7.9.1 Sump Tank Draining

When recirculating water in the toilet is soiled, drain sump tank. Pull the drain slide valve lever (E) and allow contents to drain. Remove the access cap and flush tank with clean water. To close, push the slide valve (E) back into closed position.

7.9.2 Sump Tank Filling


Open the sump tank overflow valve (A) and connect a water supply hose to the toilet sump tank fill connection (D). The sump tank is full when water starts flowing through the clear overflow (start water nivel) tube (C). Close sump tank overflow valve (A) when the tank is full and drain water fill tube using drain valve (B) to avoid ice damage during cold weather operation.


	CAUTION
In cold weather, add 2 gallons (9 liters) of antifreeze (e.g.: ethylene glycol) in the toilet before filling sump tank.	


	CAUTION
Lavatory tank should be serviced only at suitably equipped stations.	

<i>NOTE</i>	
<i>It is unlawful to dump sump tank contents in any location other than those designated as such.</i>	

When a full draining is required, clean sump tank by repeating the draining and filling operations while leaving the drain cock opened. Close cocks and pour a pack of commercial toilet deodorant (Prevost part #900329) in toilet before adding the antifreeze and starting final filling of sump tank.

	WARNING
The toilet deodorant contains products that can be very irritating to skin. Use rubber gloves when handling and then clean toilet seat.	

	WARNING
Antifreeze must comply with the effective environmental act.	

	CAUTION
When cold weather is expected and there is no antifreeze in the tank, sump tank must be drained.	

<i>NOTE</i>	
<i>If there is no antifreeze solution in the tank, there is less risk of freezing if engine is operating due to the heat it produces.</i>	

<i>NOTE</i>	
<i>New coaches are delivered with the sump and fresh water tanks empty. Fill with water before putting the coach in service.</i>	

8. HORN INSTALLATION

The electric and air horns are located in a plastic box under the front step well and are accessible from the front body understructure. Refer to Operator's or Owner's Manual for operation.

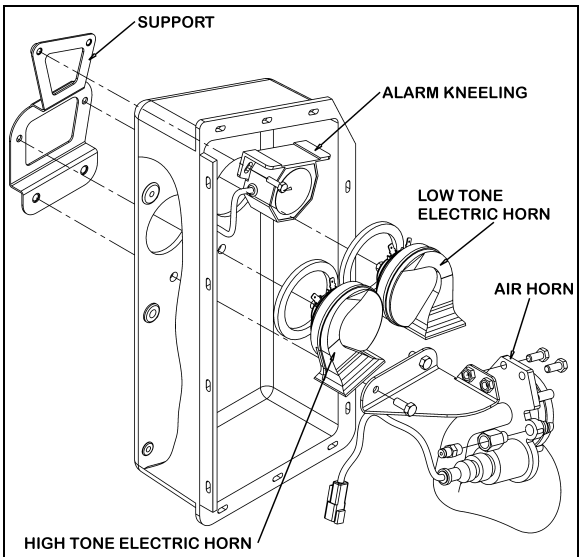


FIGURE 30: ELECTRIC & AIR HORN INSTALLATION 23420

8.1 ELECTRIC OR AIR HORN MAINTENANCE

When needed, the electric or air horn can be serviced or replaced using the following procedure:

1. Raise vehicle by the jacking points;
2. Unplug the cable connector;
3. Disconnect the air tube if applicable;
4. Loosen the retaining bolts;

5. Service or replace the defective horn;
6. Reinstall by reversing procedure.

9. HEADLIGHTS CLEANING SYSTEM

9.1 GENERAL DESCRIPTION

NOTE

When inspecting the headlights cleaning system, check the washer fluid hoses, fittings and connectors to be sure they are properly connected and seal with no restriction to the flow of washer fluid. Check that the washer nozzles are properly aimed.

The headlights cleaning system is independent from the windshield washer system and has its own washer fluid reservoir located in the front electrical and service compartment. However, this system shares the same telltale light than the windshield washer low level sensor (refer to Operator's manual for operation). Each pressing of this switch produces 2 successive 0.7 seconds jets.



CAUTION

Do not operate the headlights washer while the washer fluid reservoir is empty. This may damage the washer fluid pump.

9.2 WASHER FLUID REFILLING

Open the filler neck cap and add regular windshield washer fluid as required. The tank has a capacity of 10 liters (2.6 US gallons). You may use water or windshield washer fluid as well but, during cold weather days, use windshield washer fluid suitable for freezing temperature only.

9.3 WASHER NOZZLES ADJUSTMENT

To avoid waste of washer fluid, assure the fluid jets are properly aimed. Adjust nozzles so they aim as described in figure 32. Align the jet adjustment tool #800377 with the reference line shown on the front view detail. As seen on the side view, position the end of the adjustment tool to a distance of $\frac{1}{2}$ " (high beam) and 1" (low beam) from the top of the headlight for proper aiming.

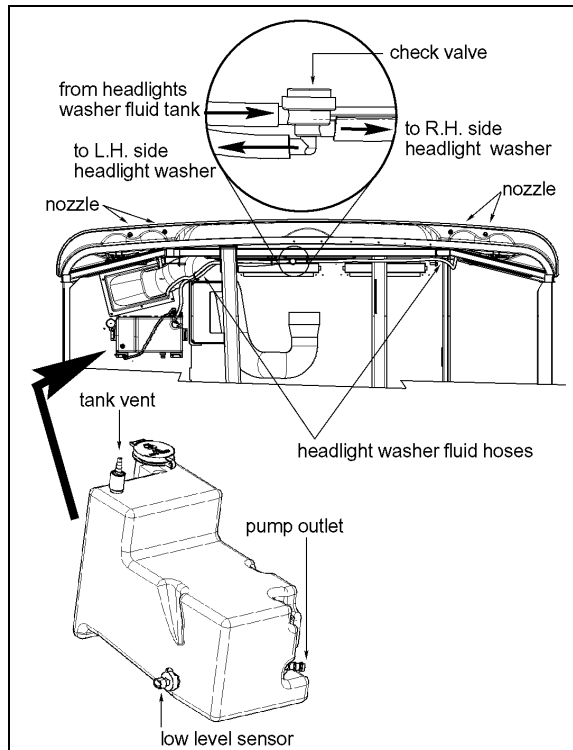


FIGURE 31: HEADLIGHTS CLEANING SYSTEM 23380



CAUTION

Because they are made of plastic, firmly tighten nozzle and bulkhead fittings by hand only.

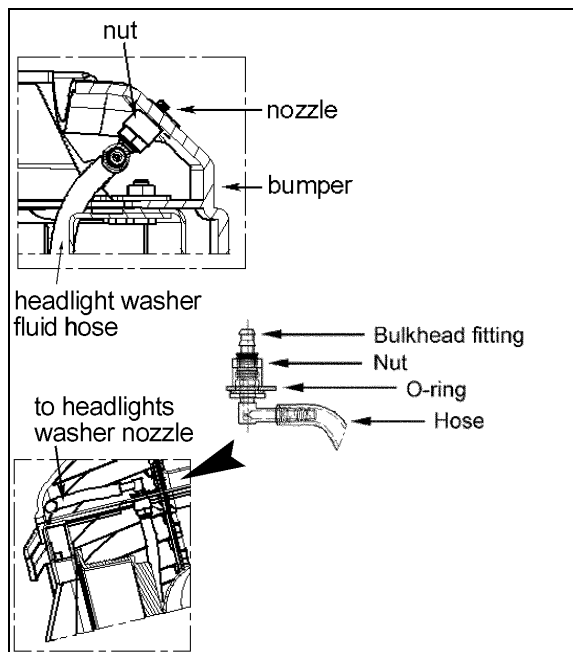


FIGURE 32: TUBING AND FITTINGS 23381

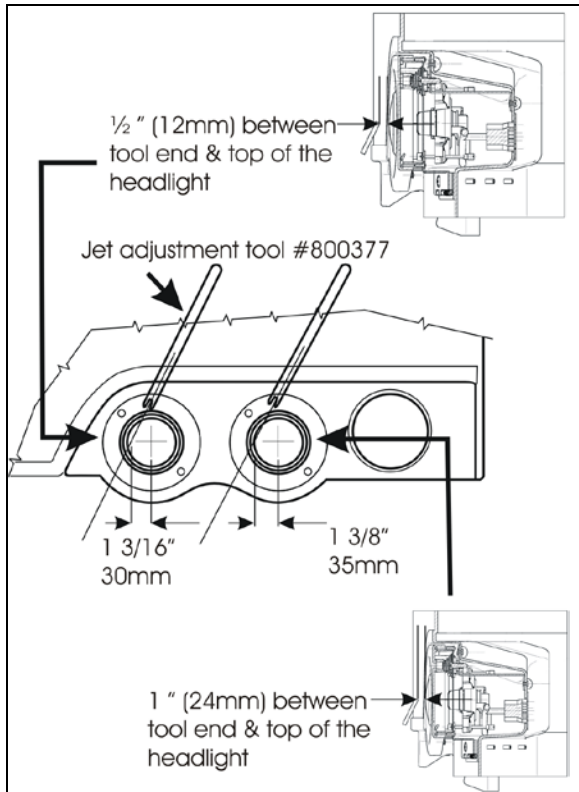


FIGURE 33: WASHER NOZZLES ADJUSTMENT 23382

10. WINDSHIELD WIPERS AND WASHERS

10.1 GENERAL DESCRIPTION

NOTE

When installing a wiper motor, arm or blade, follow recommended procedures to prevent misalignment, binding or malfunction. Check the windshield washer liquid hoses, fittings and connectors to be sure they are properly connected and seal with no restriction to the flow of washer liquid. Check that wiper arms have the proper sweep position and the washer nozzles are aimed so that spray is within the proper wiper pattern.

The windshield wipers are controlled by one electric wiper motor that is accessible for maintenance after removing the appropriate access panel beside the footwell (refer to figure 35).

Turn the multifunction lever forward to activate windshield wipers (item 2, Figure 34). The first position operates the wipers at low speed and the second position operates the wipers at high speed. Turning the lever backwards will operate the wipers in the intermittent mode.

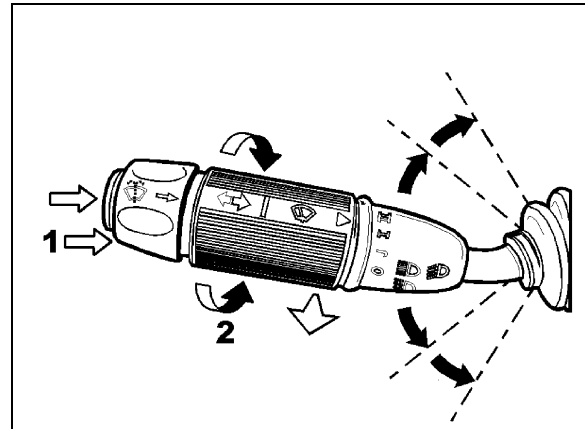


FIGURE 34: MULTIFUNCTION LEVER 23133

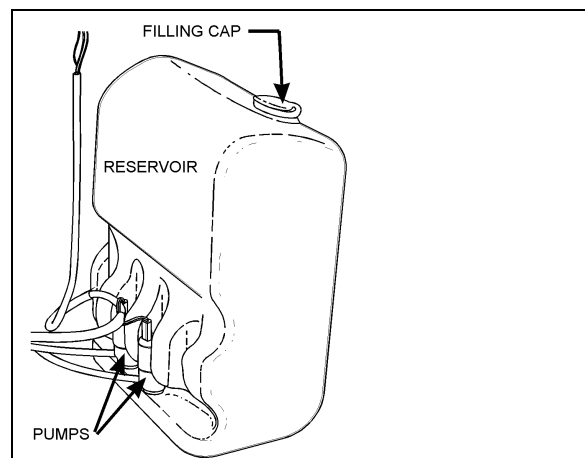


FIGURE 35: WINDSHIELD WASHER RESERVOIR 23220

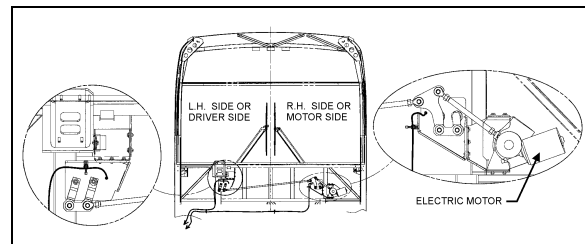


FIGURE 36: WINDSHIELD WIPER INSTALLATION 23287

The windshield washer pumps are electrically operated and are controlled by a washer control ring on the multifunction lever (item 1, Figure 34).

The windshield washer reservoir is located in the front service compartment (Figure 35). This unit pumps the washer liquid to the spray nozzles where it is dispersed across the windshield.

10.2 WIPER ARM

Check operation of the wipers for proper blade sweep and angle.

10.2.1 Wiper Arms Positioning

1. Reinstall the wiper arms and position as shown in figure 40. Before positioning the wipers at their final position, tighten the nuts at first.

TORQUE 9 lb-ft (12 Nm)

2. To find the final position of the wiper arms, lift then release the wiper arm so it falls back on the windshield.

**CAUTION**

Do not attempt to manually move the wiper arms to make wiper blade sweep adjustments as damage to the wiper linkage or motor may occur. If it is necessary to adjust the sweep of blades, remove the arms and make adjustment by positioning the arms using serration on the wiper arm pivot shafts.

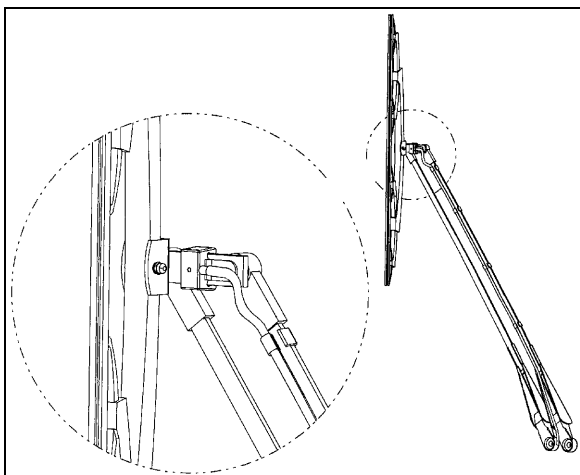


FIGURE 37: WINDSHIELD WIPER (MOTOR SIDE)

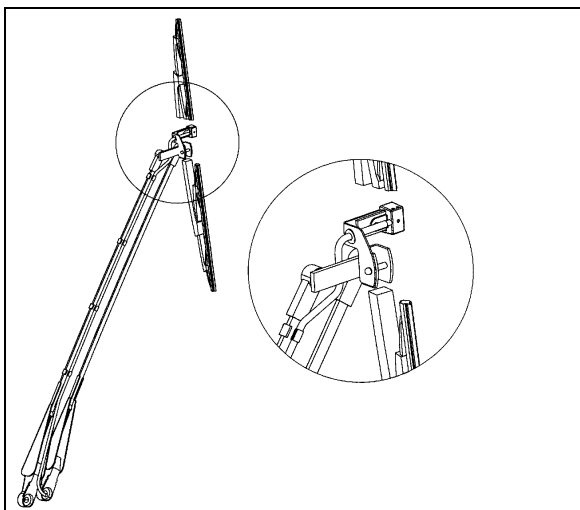


FIGURE 38: WINDSHIELD WIPER (DRIVER SIDE) 23328

3. When the final position is found, tighten wiper arm nuts. Wait 30 minutes and tighten again.

TORQUE 22 lb-ft (30 Nm)

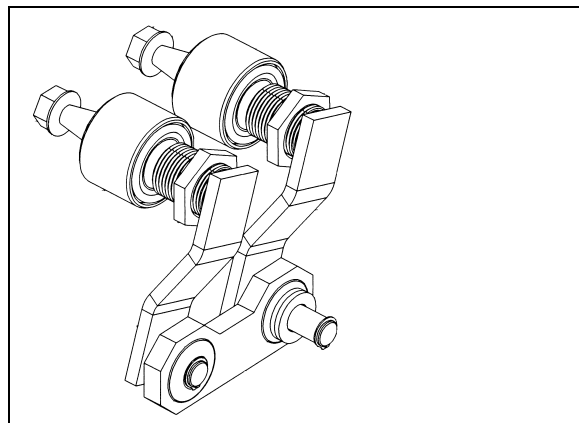


FIGURE 39: DRIVING MECHANISM (DRIVER SIDE) 23284

4. Lower the protective cover.
5. Connect the windshield washer tubing at the base of the wiper arm.
6. Check the adjustment on a wet windshield.

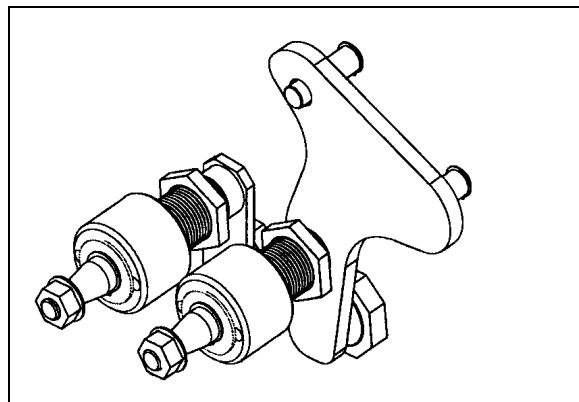


FIGURE 40: DRIVING MECHANISM (MOTOR SIDE) 23285

10.3 WINDSHIELD WIPER MOTOR

10.3.1 Windshield Wiper Motor Replacement

The windshield wiper motor is located at lower front of the vehicle, behind the defroster panel. Refer to figure 35 for motor location.

**WARNING**

Park vehicle safely, apply parking brake, stop engine and set battery master switch to the "OFF" position prior to working on the vehicle.

SECTION 23b: X3 SERIES ACCESSORIES

1. Remove the Phillips-head screws retaining the defroster panels, and remove panels.
2. Disconnect wiring connector from the windshield wiper motor.
3. Loosen clamping screw retaining the lever at the end of the motor driving shaft.
4. Remove the three bolts holding the motor to the steel plate.
5. Remove the windshield wiper motor (Prevost #800328), reverse removal procedure to reinstall.

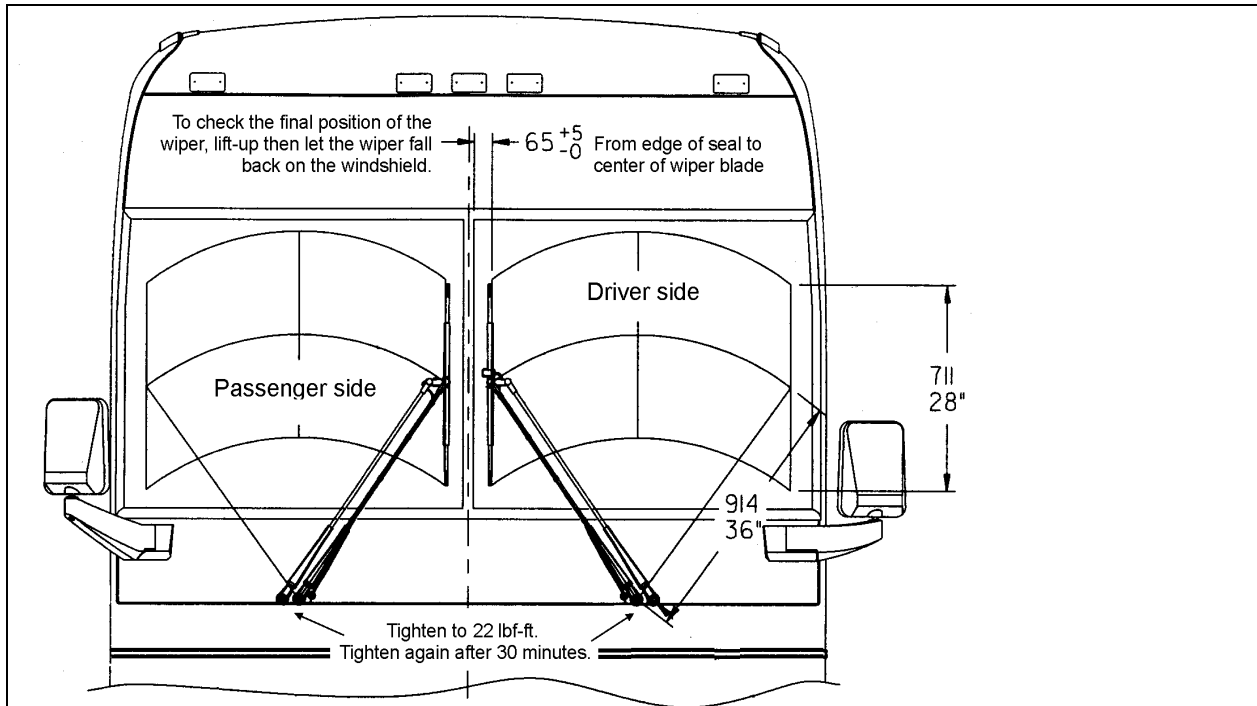


FIGURE 41: WIPER ARMS POSITIONING

23253

10.4 TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
FAIL TO SPRAY WASHER FLUID	A. Reservoir empty. B. If below 32°F (0°C), improper washer fluid frozen. C. Contamination in tubing or nozzles. D. Tubing damage. E. Tubing bent (kinked) or off one or more connections.	A. Add proper fluid. B. Store coach or parts in heated area, then purge system with low-temperature solution. C. Remove with compressed air, if severely clogged, replace items. D. Replace section. E. Realign tubing and/or refit. Trim end to ensure proper fit or replace.
INADEQUATE SPRAYING	A. Tubing failure.	A. Replace tubing.
SLOW OPERATION	A. Improper solution. B. Jet stream improperly directed. C. Check if valve is stuck in the open position.	A. Replace with proper type solution. B. Reposition nozzles. C. Remove, clean or replace.

11. TIRE PRESSURE MONITORING SYSTEM (TPMS)

The optional active tire pressure and temperature monitoring system is a sensing device designed to identify and display tire operating data and activate an alert or warning when pressure or temperature irregularities are detected.

For more information on the operation and troubleshooting of the system, refer to Prevost X3-45 Coaches Operator's Manual, chapters "Controls and Instruments" and "Safety Features and Equipment" sections.

12. AUTOMATIC FIRE SUPPRESSION SYSTEM (AFSS) (OPTIONAL)

This optional system is used to shut down the engine and to extinguish a fire in the engine compartment or in the vicinity of the preheating system if so equipped.

The system operation is fully automatic and does not require assistance from the operator, however if required, the system can be manually activated by the operator at any time.

Refer to Prevost Operator's Manual for system operation and operational sequence (fire).

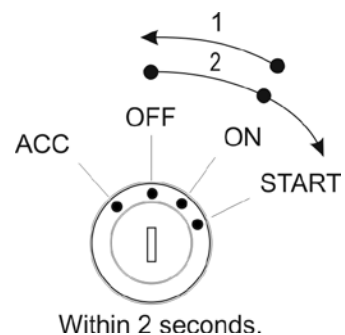
If more information is needed on the system, please refer to Kidde Dual Spectrum "Operation & Maintenance Manual annexed at the end of this section.

12.1 STARTING THE VEHICLE AFTER A FIRE ALARM

The vehicle may be started after a fire alarm without resetting the system. Refer to ignition switch sequence below. This will not reset the system, rather it will instruct the vehicle's multiplex system to ignore vehicle interface outputs from the Protection Panel. This feature is intended to be used only in emergency situations that require the vehicle to be restarted and moved a short distance prior to system reset. It should not be performed if the cause of the fire has not been clearly identified and corrected.

To start the vehicle, perform this ignition switch (key) sequence.

- From the **ON** position,
- Turn to **OFF**, return to **ON** and **START** vehicle within 2 seconds.



12.2 PERIODIC MAINTENANCE

PRE-TRIP

- Verify that the Protection Panel "SYSTEM OK" lamp is on solid green.

EVERY 3000 MILES OR MONTHLY (whichever comes first)

General

- Verify that neither the protected equipment nor the hazard has changed.
- Verify that no obvious physical damage or condition exists that might prevent system operation.

Protection Panel

- Verify that all warning lamps and the audible alarm are operational by pressing the "TEST/RESET" button.

Manual Activation Switch

- Verify that the tamper seal is intact and access to the switch is unobstructed.

Fire Detectors

- Optical
 - Verify that the status lamp on the detector face is on solid green.
 - Verify that nothing is blocking the detector's field of view.
 - Verify that the windows on the face of the detector are free of excess contamination (dirt, oil, grease, etc.) – if necessary, clean using a water soaked non-abrasive towel.
- Linear Thermal
 - Verify that there is no obvious physical damage and that the unit is free of excess contamination (dirt, oil, grease, etc) – if necessary, clean using a water soaked non-abrasive towel.
 - Verify that mounting is secure and taugt.

Electrical Harness

- Verify that electrical connectors and electrical wiring have no visible damage and all connectors are securely seated.

Extinguisher & Distribution System

- Verify that the extinguisher pressure gauge pointer is in the green arc at room temperature.
- Verify that distribution piping and nozzles are intact and unobstructed and that nozzle blow-off caps are in place.

EVERY 18000 MILES OR SEMI-ANNUALLY (whichever comes first)

- Perform a comprehensive fire system test using a Kidde Dual Spectrum System Test Set (Optical Test Kit P/N 420871-2).
- Service the extinguisher in accordance with KDS Document 160296, "KDS Pre-Engineered Fire Suppression System: Installation, Operation and Maintenance Manual".

**MAINTENANCE****EVERY SIX YEARS**

Have the fire extinguisher rebuilt by a qualified fire protection equipment company familiar with Kidde Dual Spectrum equipment and in accordance with KDS Document 160296, "KDS Pre-Engineered Fire Suppression System: Installation, Operation and Maintenance Manual". Rebuilt shall include actuator, O-ring seals and dry chemical replacement.

**MAINTENANCE****EVERY TWELVE YEARS**

Have the Extinguisher cylinder hydrostatically tested by a qualified fire protection equipment company familiar with Kidde Dual Spectrum equipment and in accordance with KDS Document 160296, "KDS Pre-Engineered Fire Suppression System: Installation, Operation and Maintenance Manual".