

SECTION 26: XLII SLIDE-OUT

CONTENTS

1 SLIDE-OUT	26-5
1.1 INNER STOPPER	26-5
1.1.1 Maintenance	26-5
1.1.2 Adjustment	26-5
1.2 "IN LIMIT" STOPPER	26-6
1.2.1 Maintenance	26-6
1.2.2 Adjustment	26-6
1.3 EXTERIOR EXTRUSION	26-6
1.3.1 Maintenance	26-6
2 SECURITY PIN	26-7
2.1 MAINTENANCE	26-7
2.2 AIR CYLINDER REPLACEMENT	26-7
3 ROOF REINFORCING ROD	26-7
4 RACK	26-8
4.1 MAINTENANCE	26-8
4.2 FRONT SLIDE-OUT RACK REPLACEMENT	26-8
4.3 REAR SLIDE-OUT RACK REPLACEMENT	26-8
5 PINION	26-9
5.1 PINION AND KEYLESS BUSHING POSITIONING	26-9
5.2 FRONT SLIDE-OUT SHAFT PINION REPLACEMENT	26-9
5.3 REAR SLIDE-OUT SHAFT PINION REPLACEMENT	26-10
5.4 KEYLESS BUSHING	26-10
5.4.1 Installation	26-10
6 ELECTRIC MOTOR	26-13
6.1 MAINTENANCE	26-13
6.2 REPLACEMENT	26-13
7 SPEED REDUCTION GEARBOX	26-13
7.1 MAINTENANCE	26-13
7.2 GEARBOX REPLACEMENT	26-13
8 JAW COUPLING	26-13
8.1 MAINTENANCE	26-13
8.2 REPLACEMENT & ADJUST-MENT	26-14
9 FLANGE BEARING	26-14
10 LOCKING COLLAR	26-14
10.1 INSTALLATION	26-14
11 LINEAR BEARING	26-15
11.1 MAINTENANCE	26-15
11.2 REPLACEMENT & ADJUSTMENT	26-15
11.3 LEVEL & TILT ADJUSTMENT	26-15
11.3.1 Procedure	26-15

Section 26: XLII SLIDE-OUT

12 RAIL	26-16
12.1 MAINTENANCE	26-17
12.2 REPLACEMENT	26-17
13 ACETAL PLASTIC BLOCKS	26-17
13.1 REMOVAL / INSTALLATION	26-17
14 SLIDE-OUT PNEUMATIC SYSTEM	26-18
14.1 DESCRIPTION	26-18
14.2 MAINTENANCE	26-19
14.3 SEAL	26-20
14.3.1 Maintenance	26-20
14.3.2 Seal assembly removal	26-20
14.3.3 Seal assembly installation	26-20
14.3.4 Slide-out 2" inside retraction	26-21
15 SLIDE-OUT ELECTRICAL SYSTEM	26-22
15.1 ELECTRICAL INTERCONNECTION WITH PREVOST VEHICLE	26-22
15.2 SLIDE-OUT BREAKERS / FUSES	26-23
15.2.1 Multiplex fuses	26-23
15.3 PROBING VOLTAGE ON THE MULTIPLEX CIRCUITS	26-23
15.4 MODULE REPLACEMENT	26-23
15.4.1 I/O-B replacement	26-23
15.4.2 CECM module replacement	26-24
15.5 SLIDE-OUT LIMIT SENSORS	26-24
15.5.1 Maintenance and adjustment	26-24
16 SLIDE-OUT EXTERIOR FINISHING PANELS & WINDOWS	26-25
16.1 FACE PANEL REMOVAL	26-25
16.2 FACE PANEL INSTALLATION	26-25
16.3 SIDE PANELS REMOVAL	26-26
16.4 SIDE PANELS INSTALLATION	26-26
16.5 TOP AND BOTTOM PANEL REMOVAL	26-27
16.6 TOP AND BOTTOM PANEL INSTALLATION	26-27
16.7 WINDOWS REMOVAL	26-28
16.8 FIXED WINDOWS INSTALLATION	26-29
16.9 AWNING WINDOW INSTALLATION	26-31
16.10 SLIDING WINDOW INSTALLATION	26-33
16.11 FINISHING JOINT	26-34
16.11.1 Slide-out face	26-34
16.11.2 Slide-out side	26-35
16.11.3 Slide-out bottom	26-35
16.11.4 Top of Slide-out	26-36
17 WELDING PRECAUTION	26-36
18 SLIDE-OUT MANUAL OVERRIDE PROCEDURES	26-36
18.1 PRELIMINARY CONDITIONS FOR MANUAL OVERRIDE PROCEDURE	26-36
18.1.1 Manual retracting procedure – Front and rear slide-out	26-37

18.1.2 Manual extending procedure – Front and rear slide-out.....	26-38
19 SLIDE-OUT MAXIMUM LOAD	26-39
20 CONVERSION CHECKLIST	26-40
21 TROUBLESHOOTING	26-41
21.1 ERROR CONDITION OR MISSING OPERATION CONDITION.....	26-41
21.2 TROUBLESHOOTING – OPERATING CONDITIONS & CONTROL.....	26-41
21.3 TROUBLESHOOTING - MECHANICAL COMPONENTS.....	26-44
21.4 SLIDE-OUT FAULT MESSAGE ON MESSAGE CENTER DISPLAY (MCD).....	26-47

LIST OF ILLUSTRATIONS

FIGURE 1 : FRONT SLIDE-OUT.....	26-5
FIGURE 2 : REAR SLIDE-OUT	26-5
FIGURE 3 : SIDE INNER STOPPER ADJUSTMENT.....	26-5
FIGURE 4: UPPER INNER STOPPERS ADJUSTMENT	26-5
FIGURE 5: LOWER "IN LIMIT" STOPPER	26-6
FIGURE 6: UPPER "IN LIMIT" STOPPER.....	26-6
FIGURE 7 : EXTERIOR EXTRUSION	26-6
FIGURE 8: SECURITY PIN AIR CYLINDER REMOVAL	26-7
FIGURE 9 : FRONT SLIDE-OUT ROOF REINFORCING ROD	26-7
FIGURE 10 : RACK	26-8
FIGURE 11: PINION AND KEYLESS BUSHING POSITIONING	26-9
FIGURE 12: PINION AND KEYLESS BUSHING AS SEEN FROM EVAPORATOR COMPARTMENT.....	26-9
FIGURE 13: MECHANICAL COMPONENTS (TYPICAL).....	26-9
FIGURE 14 : KEYLESS BUSHING TIGHTENING	26-10
FIGURE 15 : TORQUE WRENCH FORMULA.....	26-10
FIGURE 16 : KEYLESS BUSHING INSTALLATION INSTRUCTION.....	26-12
FIGURE 17: ELECTRIC MOTOR AND SPEED REDUCTION GEARBOX	26-13
FIGURE 18: DRIVE MOTOR/GEARBOX ASSEMBLY MOUNTING BOLTS.....	26-13
FIGURE 19: CLAMPING HUB POSITION ON GEARBOX SHAFT.....	26-14
FIGURE 20: JAW COUPLING.....	26-14
FIGURE 21: SLIDE-OUT LEVEL ADJUSTMENT	26-15
FIGURE 22 : SLIDE-OUT LEVELING	26-16
FIGURE 23: TILT ADJUSTMENT.....	26-16
FIGURE 24 : RAIL POSITIONING.....	26-17
FIGURE 25: ACETAL PLASTIC BLOCKS	26-17
FIGURE 26: REMOVE THE UPPER ACETAL PLASTIC BLOCKS WITH A PICKING TOOL.....	26-17
FIGURE 27: LOWER ACETAL PLASTIC BLOCK INSERTION	26-18
FIGURE 28 : FRONT SERVICE COMPARTMENT	26-18
FIGURE 29: PNEUMATIC COMPONENT PANEL.....	26-19
FIGURE 30 : SEAL ASSEMBLY	26-20
FIGURE 31: REAR SLIDE-OUT INFLATABLE SEAL AIR INLET	26-20
FIGURE 32: SLIDE-OUT 2" INSIDE – UPPER PART	26-21
FIGURE 33 : DASHBOARD SLIDE-OUT TELLTALE LIGHT	26-22
FIGURE 34: MAIN BREAKER IN ENGINE R.H. SIDE ACCESS COMPARTMENT.....	26-23
FIGURE 35 : SLIDE-OUT CONTROL PANEL	26-23
FIGURE 36 : VEC CIRCUIT BREAKERS & FUSES	26-23
FIGURE 37 : FRONT SLIDE-OUT SENSORS.....	26-24
FIGURE 38: REAR SLIDE-OUT SENSORS	26-25
FIGURE 39 : MAGNETS ON SLIDE-OUT UNDERBODY.....	26-25
FIGURE 40 : SLIDE-OUT PANELS AND WINDOWS.....	26-25
FIGURE 41 : SIDE PANEL INSTALLATION – DOUBLE FACE ADHESIVE TAPE APPLICATION.....	26-26
FIGURE 42 : SIDE PANEL INSTALLATION – SIKA 206 G+P APPLICATION	26-27

Section 26: XLII SLIDE-OUT

FIGURE 43 : SIDE PANEL INSTALLATION – SIKA TACK+BOOSTER APPLICATION.....	26-27
FIGURE 44 : SIDE PANEL INSTALLATION.....	26-27
FIGURE 45 : TOP AND BOTTOM PANEL INSTALLATION - DOUBLE FACE ADHESIVE TAPE APPLICATION	26-28
FIGURE 46 TOP AND BOTTOM PANEL INSTALLATION - SIKA 206 G+P APPLICATION.....	26-28
FIGURE 47 : TOP AND BOTTOM PANEL INSTALLATION - SIKA TACK+BOOSTER APPLICATION	26-28
FIGURE 48 : TOP PANEL INSTALLATION	26-28
FIGURE 49 : BOTTOM PANEL INSTALLATION.....	26-28
FIGURE 50 : FACE FIXED WINDOWS - RUBBER SEAL INSTALLATION.....	26-29
FIGURE 51 : FACE FIXED WINDOWS - RUBBER SEAL INSTALLATION.....	26-29
FIGURE 52 : FACE FIXED WINDOWS – 3/16 X 1/2 DOUBLE FACE ADHESIVE TAPE INSTALLATION.....	26-29
FIGURE 53 : SIDE FIXED WINDOW – ¼ X ½ DOUBLE FACE ADHESIVE TAPE INSTALLATION.....	26-29
FIGURE 54 : FACE FIXED WINDOW AND HALF-WINDOW – SIKA AKTIVATOR.....	26-29
FIGURE 55 : SIDE FIXED WINDOW – SIKA AKTIVATOR	26-29
FIGURE 56 : FACE FIXED WINDOW INSTALLATION – SIKA TACK+BOOSTER.....	26-30
FIGURE 57 : FACE FIXED HALF-WINDOW INSTALLATION – SIKA TACK+BOOSTER	26-30
FIGURE 58 : SIDE FIXED WINDOW – SIKA TACK + BOOSTER.....	26-30
FIGURE 59 : FACE FIXED WINDOW INSTALLATION	26-30
FIGURE 60 : SIDE FIXED WINDOW	26-30
FIGURE 61: AWNING WINDOW - RUBBER BUMPER INSTALLATION.....	26-31
FIGURE 62: SIDE BUMPERS.....	26-31
FIGURE 63: MASKING TAPE APPLICATION	26-31
FIGURE 64: SIKA 255 APPLICATION	26-31
FIGURE 65 : AWNING WINDOW – SIKA AKTIVATOR	26-31
FIGURE 66: AWNING WINDOW – SIKA 255 APPLICATION.....	26-32
FIGURE 67 : CORRECT TIGHTENING SEQUENCE	26-32
FIGURE 68 : SMOOTH DOWN THE JOINT.....	26-32
FIGURE 69 : AWNING WINDOW – SEAL THE UPPER CORNERS.....	26-32
FIGURE 70 : AWNING WINDOW – SEAL THE CHINK	26-33
FIGURE 71 : SLIDING WINDOW - SIKA AKTIVATOR	26-33
FIGURE 72 : SLIDING WINDOW - SIKA AKTIVATOR	26-33
FIGURE 73: AWNING WINDOW – SIKA 252 APPLICATION	26-33
FIGURE 74 : CORRECT TIGHTENING SEQUENCE.....	26-34
FIGURE 75 : SLIDING WINDOW – SEAL THE UPPER CORNERS	26-34
FIGURE 76 : SEAL.....	26-34
FIGURE 77.....	26-34
FIGURE 78.....	26-34
FIGURE 79.....	26-35
FIGURE 80.....	26-35
FIGURE 81.....	26-35
FIGURE 82.....	26-35
FIGURE 83.....	26-35
FIGURE 84.....	26-35
FIGURE 85.....	26-36
FIGURE 86.....	26-36
FIGURE 87: COMPARTMENTS LOCATION.....	26-36
FIGURE 88: VEC CIRCUIT BREAKERS ON SLIDE-OUT CONTROL PANEL.....	26-37
FIGURE 89: MAIN SLIDE-OUT BREAKER IN ENGINE R.H. SIDE ACCESS COMPARTMENT	26-37
FIGURE 90: SLIDE-OUT CONTROL PANEL.....	26-37
FIGURE 91: INFLATABLE SEAL RELIEVING SHUT-OFF VALVE	26-37
FIGURE 92: SLIDE-OUT MOTOR ROTATION.....	26-38
FIGURE 93: INFLATABLE SEAL PRESSURE GAGE	26-38
FIGURE 94: SLIDE-OUT MOTOR ROTATION.....	26-38
FIGURE 95 : FRONT SLIDE-OUT DEFLECTION	26-39

1 SLIDE-OUT

1.1 INNER STOPPER

The front slide-out is equipped with six inner stoppers laid out in the following way: two stoppers on the top horizontal member of the slide-out, and two stoppers on each vertical upright, while the rear slide-out is equipped with only three stoppers (figure 1 and figure 2). The upper inner stoppers are used to provide a support to position perpendicularly the slide-out with the vehicle structure.

The side inner stoppers are used to block the extension of the slide-out. They act as ultimate physical limits but take note that when the "out limit" sensors are properly adjusted, the slide-out extension stops before the side inner stoppers reach the side structure keys (figure 1 & 2).

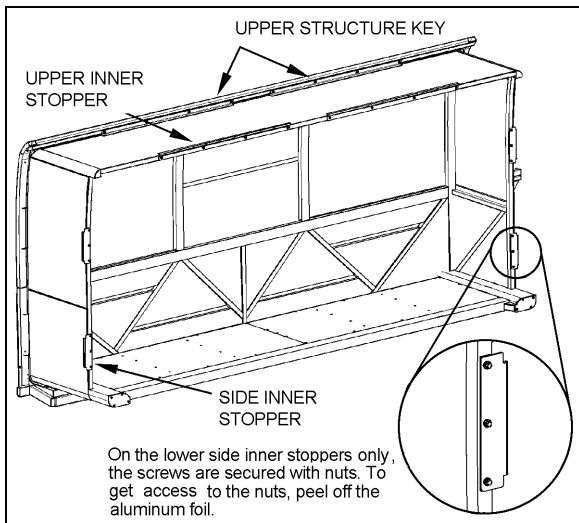


FIGURE 1 : FRONT SLIDE-OUT

1.1.1 Maintenance

Check that the inner stopper screws are tight and that no damage or deformation has taken place for both the side and the upper stoppers.

1.1.2 Adjustment

1. Adjust the side inner stoppers at 1/8" from the vehicle side structure keys, and tighten the screws. Make sure there is a minimum gap of 2mm (0.079") between the side inner stopper and the side window pane (figure 3). Use shim as required.
2. Adjust the upper structure key and the upper inner stoppers according to FIGURE 4 with the seal deflated. When inflating, the seal

presses the roof structure upward and at that moment, the upper inner stopper comes into contact with the upper structure key

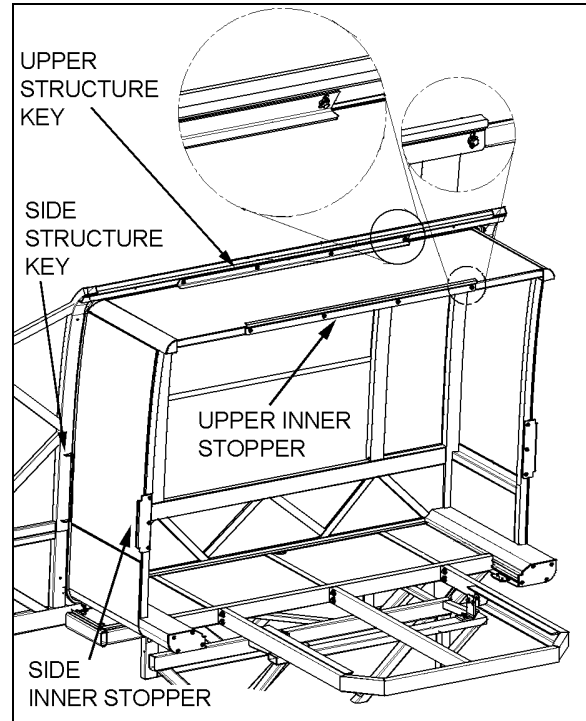


FIGURE 2 : REAR SLIDE-OUT

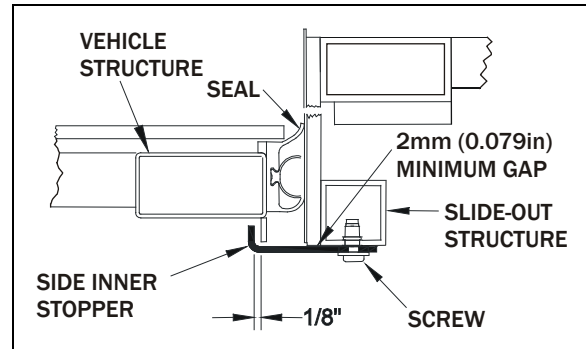


FIGURE 3 : SIDE INNER STOPPER ADJUSTMENT

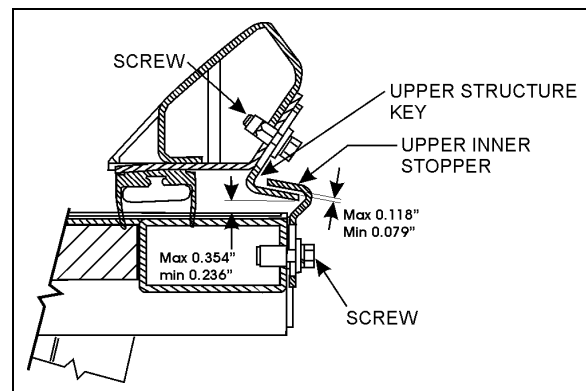


FIGURE 4: UPPER INNER STOPPERS ADJUSTMENT

Section 26: XLII SLIDE-OUT

1.2 "IN LIMIT" STOPPER

Each slide-out has four "in limit" stoppers. Two "in limit" stoppers are mounted on the exterior extrusion at the top of the slide-out (FIGURE 6) and two other "in limit" stoppers are mounted under the slide-out, next to the rail (Figure 5). These stoppers are used to position the outer face of the slide-out flush with the vehicle body when retracted.

1.2.1 Maintenance

Check that the "in limit" stoppers are clean and that there is no foreign matter accumulated between the stopper and their bearing surface. Check that the screws and set screws (where applicable) locking the stoppers in proper position are tight.

1.2.2 Adjustment

NOTE

To properly adjust the "in limit" stoppers, the slide-out system must be turned off to prevent the "in limit" sensors from stopping the slide-out movement before having the "in limit" stoppers contacting their bearing surface.

1. Extend the slide-out partially.
2. Set the ignition switch to the OFF position.
3. To adjust the lower "in limit" stoppers, loosen the set screw and then rotate the stopper CW or CCW to move it back or forward depending on the required adjustment. To adjust the upper plastic "in limit" stoppers, add or remove shims as required between the stopper and the extrusion.
4. Using the manual override procedure (section 18), move the slide-out up to its full "in" position.
5. Using a straight edge, check if the outer face of the slide-out is flush with the vehicle body with the stoppers contacting their bearing surface. Readjust the stoppers if necessary.
6. Readjust the "in limit" sensor.

NOTE

To make sure that the lower "in limit" stoppers are contacting their bearing surface (the acetal plastic blocks) when the slide-out is closed, put white paint on the "in limit" stopper before and check if the acetal plastic blocks are marked with paint.

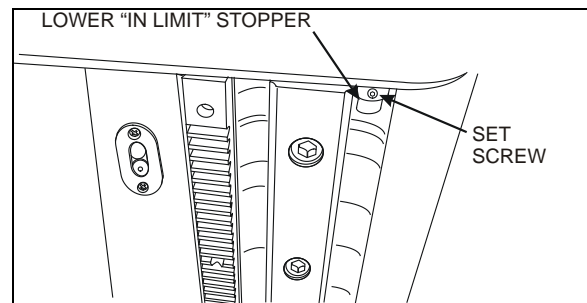


FIGURE 5: LOWER "IN LIMIT" STOPPER

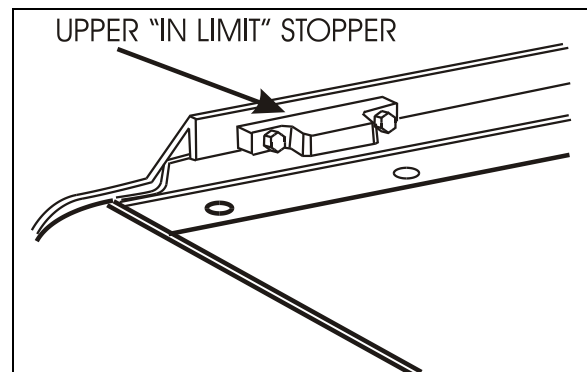


FIGURE 6: UPPER "IN LIMIT" STOPPER

1.3 EXTERIOR EXTRUSION

The exterior extrusion function is to provide a leaning surface for the inflatable seal. When inflating, the seal leans against the extrusion and presses the roof structure upward until it rests on the inner side of the extrusion.

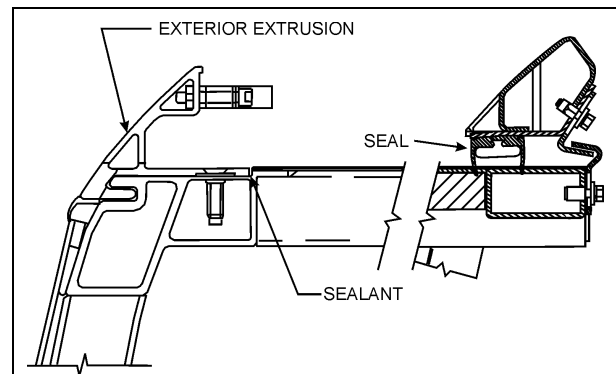


FIGURE 7 : EXTERIOR EXTRUSION

1.3.1 Maintenance

Inspect the exterior extrusion for any deformation or deterioration. Check that the screws are tight. Inspect the sealant condition on screw head and between the extrusion and the vehicle structure, and also at both ends of the extrusion. If needed, clean old sealant and

replace with Sika 221 sealant or equivalent product.

2 SECURITY PIN

During normal ride, the slide-out cannot extend by itself because the 740:1 ratio speed reduction worm gear type gearbox system is not reversible, the output shafts are self-locking. The security pin purpose is to lock the slide-out in retracted position if an accident occurs. It is built to stand a great lateral acceleration of the slide-out.

The system consists of a stainless steel pin connected to a single action/spring return pneumatic cylinder (FIGURE 8). The pin engages in the slide-out receptacle with releasing of the parking brake. A knocking sound may be heard at this moment. An O-ring is located at the base of the pin housing to reduce knocking when the pin retracts. The lower hole on the pin housing permits water to drain. The upper hole permits to insert a small screwdriver to prevent the pin from rotating when the air cylinder has to be removed.

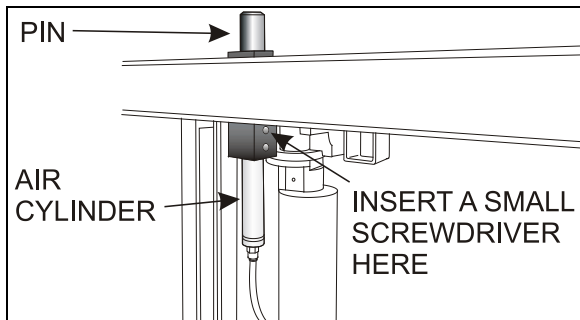


FIGURE 8: SECURITY PIN AIR CYLINDER REMOVAL

2.1 MAINTENANCE

Inspect air cylinder and fitting for air leaks. Periodically, check that the pin retracts and engages in the receptacle as it should when the parking brake is applied or released. To do slide-out, the slide-out must be in its full "IN" position with the engine running. If the pin produces excessive knocking when it engages with releasing of the parking brake, reduce air cylinder speed by adjusting the air flow regulator on the pneumatic control panel (FIGURE 29, item 11).

2.2 AIR CYLINDER REPLACEMENT

1. Assure the parking brake is applied.

2. Disconnect the cylinder air tubing from the 2nd baggage compartment (front slide-out) or under the bed structure (rear slide-out).
3. Using a wrench at its lower end, unscrew the air cylinder from the pin housing.
4. Insert a small screwdriver through the pin and housing to prevent rotation of the pin and then, unscrew the cylinder rod from the pin.
5. Transfer the fitting on the new cylinder. Place Teflon on threads.
6. Cylinder installation is like removal but in reverse order.

3 ROOF REINFORCING ROD



CAUTION

The front slide-out roof reinforcing rod may have to be adjusted after a load variation inside the vehicle or on the top of the vehicle.



CAUTION

Always lock the turnbuckle using the jam nut to prevent loosening.

The roof reinforcing rod is located on the upper horizontal member of the front slide-out opening and is welded on the roof arches (figure 9).

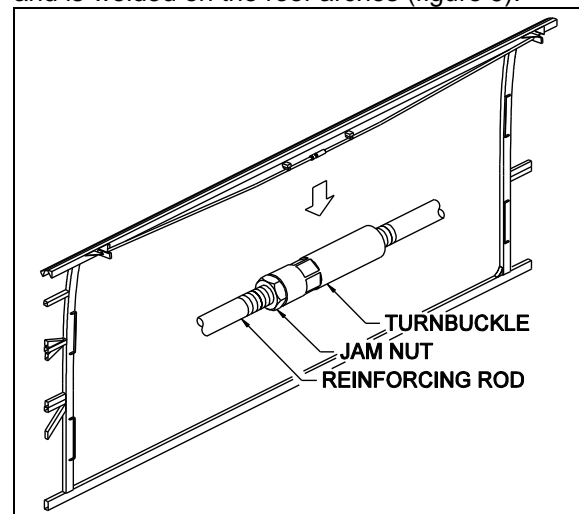


FIGURE 9 : FRONT SLIDE-OUT ROOF REINFORCING ROD

This rod allows an adjustment between the slide-out horizontal member and the roof. When screwing the turnbuckle, the roof is moved upward, and vice versa. Use this rod to adjust

Section 26: XLII SLIDE-OUT

the horizontal member parallel to the slide-out. A member not parallel with the slide-out may cause the inflatable seal to leave the wiper seal or may reduce the inflatable seal and wiper seal efficiency.

4 RACK

Slide-out movement is made by a system of racks and pinions. There are two racks on each slide-out.

4.1 MAINTENANCE

Once a year, check the racks for broken or worn tooth, especially the front slide-out racks. Also, check the rack fastening hole teeth that are weaker and might break (figure 10). Replace the racks if excessive wear is present. Clean racks from sand or other debris. Check that the racks are properly secured. Check the backlash between the gear and the rack. Excessive backlash indicates rack wear.

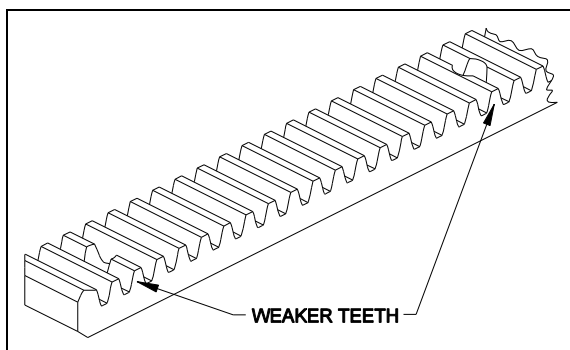


FIGURE 10 : RACK

4.2 FRONT SLIDE-OUT RACK REPLACEMENT

1. Remove the slide-out from the vehicle (removal must be performed according to the Slide-Out Removal Procedure. Ask to your Prevost service representative).
2. From under the slide-out, unscrew all the rack screws and remove the rack.
3. Install a new rack. Tighten the screws to a maximum torque of 2 ft-lbs. Use Loctite™ 242 or equivalent product on threads.



The counterborings required for recessed screw heads reduce plastic thickness. Do not torque higher than specified.

4. Reinstall the front slide-out inside the vehicle.

4.3 REAR SLIDE-OUT RACK REPLACEMENT

1. Using the slide-out handheld control or the manual override procedure (section 18, if using the manual override procedure, do not forget to deflate the inflatable seal completely), extend the slide-out about one foot.
2. From outside, unscrew and remove only the first two screws of the rack to be changed.
3. Using the manual override procedure (section 18) only, retract the slide-out to its fully closed position.
4. Loosen the pinion keyless bushing of the rack to be changed.
5. From under the slide-out, unscrew all the rack screws and remove the rack.
6. Install a new rack between the slide out structural rack seat and the pinion. Tighten the screws to a maximum torque of 2 ft-lbs. Use Loctite™ 242 or equivalent product.



The counterborings required for recessed screw heads reduce plastic thickness. Do not torque higher than specified.

7. Tighten the pinion keyless bushing as described in section 5.4.
8. Using the slide-out manual override procedure only, extend the slide-out about one foot.
9. Tighten the two remaining crews to a maximum torque of 2 ft-lbs. Use Loctite™ 242 or equivalent product.
10. Using the slide-out handheld control switch or the manual override procedure, retract the slide-out to its fully closed position.
11. Re-inflate the air seal at 10 psi.

5 PINION

⚠ CAUTION ⚠

Make sure all keyless bushings are tightened to 125 lb-ft before moving the slide-out. Refer to section 5.4 for torque wrench settings. A lower torque value may cause the bushing to slip on the shaft, and a higher torque value may break the bushing.

5.1 PINION AND KEYLESS BUSHING POSITIONING

For proper functioning, respect the positioning shown on the following figure.

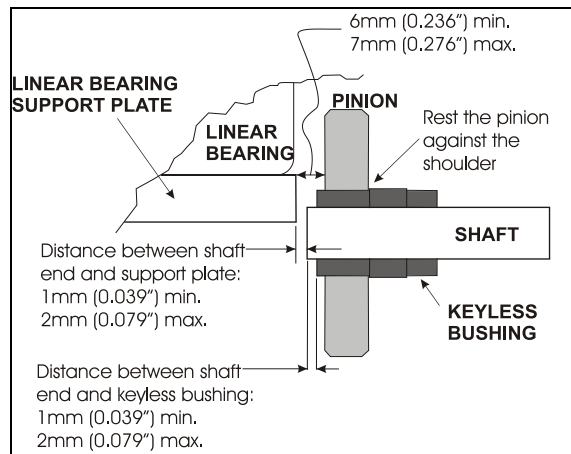


FIGURE 11: PINION AND KEYLESS BUSHING POSITIONING

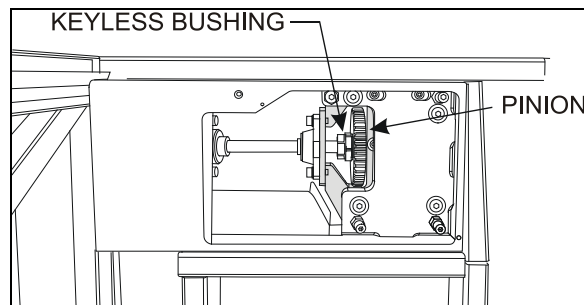


FIGURE 12: PINION AND KEYLESS BUSHING AS SEEN FROM EVAPORATOR COMPARTMENT

5.2 FRONT SLIDE-OUT SHAFT PINION REPLACEMENT

⚠ CAUTION ⚠

Before reinstalling the pinion, clean the following surfaces with alcohol to prevent slippage.

- Pinion bore;
- Keyless bushing I.D. and O.D.;
- Shaft.

Before proceeding with the front slide-out shaft pinion replacement, check the following conditions:

- The locking collars located on the side of the pinion being replaced are disengaged;
- The drive motor/gearbox assembly is removed (see section 7.2);

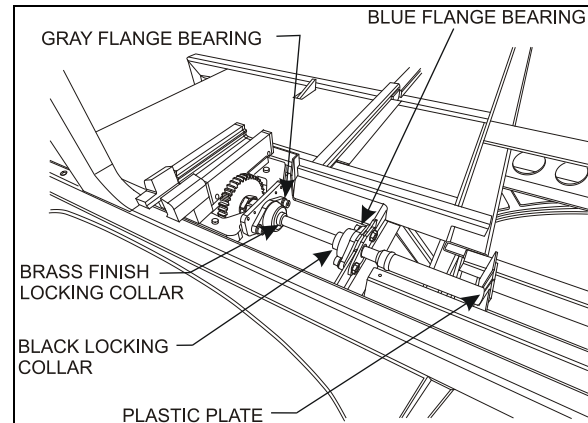


FIGURE 13: MECHANICAL COMPONENTS (TYPICAL)

1. Loosen the keyless bushing (see section 5.4) of the pinion to be replaced. Slide the pinion and its bushing out of the shaft. Check the keyless bushing condition and replace if needed.

NOTE

If necessary, loosen the blue and gray flange bearing to move the pinion away from the rack.

2. Assemble new pinion on the keyless bushing and then slide on the shaft. Do not tighten the bushing at this moment.
3. Properly position the shaft end in relation to the linear bearing support plate (see FIGURE 11) and then tighten the locking collars to maintain the shaft in that position.
4. Position pinion and keyless bushing as shown on FIGURE 11 and tighten the keyless bushing as described in section 5.4.
5. Reinstall the drive motor/gearbox assembly.

⚠ CAUTION ⚠

Make sure the keyless bushing is tightened to 125 lb-ft before moving the slide-out. Refer to section 5.4.1 for torque wrench settings.

Section 26: XLII SLIDE-OUT

5.3 REAR SLIDE-OUT SHAFT PINION REPLACEMENT

The procedure is similar to the front slide-out shaft pinion replacement. Gain access to the mechanism from under the bed structure. Refer to section 5.2.

5.4 KEYLESS BUSHING

The keyless bushings need a specific tightening torque value to ensure proper pinion transmitting torque. They also need specific tools to be tightened.

To tighten or loosen the keyless bushing, use those specific tools:

- crowfoot wrench 1 ½";
- torque wrench;
- combination wrench 1 ¾";
- pipe wrench;
- drive extension 5";
- socket 1 ½".

5.4.1 Installation

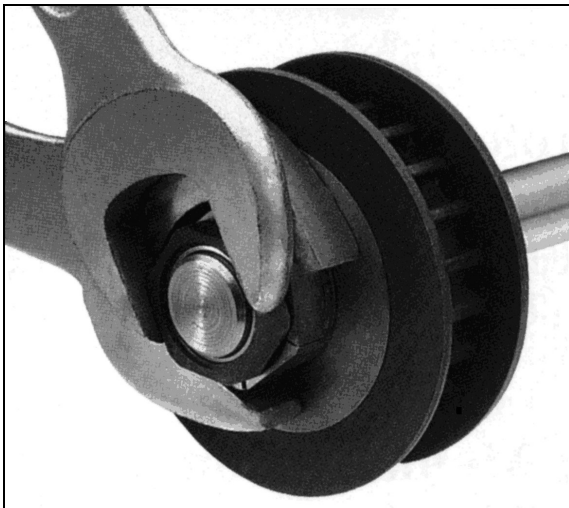


FIGURE 14 : KEYLESS BUSHING TIGHTENING

To tighten the keyless bushing, use a special open-end wrench to retain the yellow part and another wrench to tighten the black part. Figure 20 shows how to tighten the keyless bushing.

When tightening, make sure the pinion does not move or rotate.

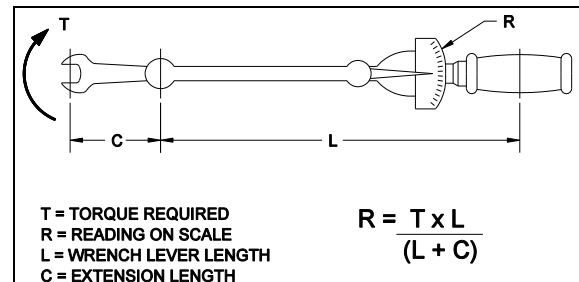


FIGURE 15 : TORQUE WRENCH FORMULA

⚠ CAUTION ⚠

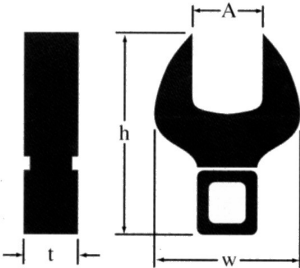
Make sure all keyless bushings are tightened to 125 lb-ft before moving the slide-out. A lower torque value may cause the bushing to slip on the shaft, and a higher torque value may break the bushing. The torque may need to be recalculated depending of the wrench size. Refer to figure 15 for wrench size compensation.

Take note that when the keyless bushing nut is tightened, the pinion moves about 1/16" to 3/32" toward the slide-out center.

NOTE

On the front slide-out, the driver side keyless bushing is not accessible for tightening or removal unless you remove the front left wheel. If the slide-out has been removed, this keyless bushing should be tightened before reinstalling the slide-out.

WRENCHES FOR INSTALLATION



**Style C
Installation Nut**

Fenner Drives offers a complete line of high-quality crowfoot wrenches for installation and to provide counter-torque. These wrenches are much narrower than earlier designs and are specifically for use with Trantorque GT units. It is recommended that both wrenches be used when installing a Trantorque GT unit.

1/2" SQUARE DRIVE

Shaft Size	Part Number	Wrench Style	Dimensions (inches)			
			A	h	w	t
13/16 to 1	6202990024	C	1-1/2	3.44	2.75	0.75

INSTALLATION INSTRUCTIONS

A Trantorque GT Keyless Bushing offers flexible and easy installation while providing exceptional holding power. To ensure a Trantorque GT unit performs as specified, it must be installed properly.

Warning: Use no lubricants in this installation.

1. Shaft and component bore must be within $\pm 0.003"$ ($\pm 0.08\text{mm}$) [$\pm 0.0015"$ ($\pm 0.04\text{mm}$) Mini Series] of stated bore diameter and must have a surface finish of 32-125 Ra (roughness average). If the surface finish is outside these specified values, consult Fenner Drives.

2. Both shaft and component bore must be completely free of paint, grease, oil, and dirt. If necessary, clean the surfaces with a non-petroleum based solvent, such as isopropyl alcohol.

Warning: Do not lubricate the Trantorque GT bushing or shaft. The use of any lubricant on the contact surfaces could result in bushing failure and will void all warranties.

3. Insert the Trantorque GT unit into the component to be mounted, making sure the mating hub is flush against the shoulder at the hex flats.

4. Position the assembly at the desired location on the shaft and hand-tighten the nut (clockwise) until the assembly becomes snug on the shaft.

Warning: Do not hammer or use any type of impact to force the Trantorque GT assembly along the shaft.

Warning: The shaft must fully engage the shaft gripping area (Figure 1) of the Trantorque GT unit. Figure 2 illustrates minimum shaft engagement.

5. Using a torque wrench, tighten the nut to the proper installation torque. See table for torque value. (Note: Fenner Drives has available crowfoot wrenches for square drives in sizes from 1/2" to 3-1/2".) The hex flats on the outer ring are provided for counter-torque, eliminating the need to hold the component or shaft while applying installation torque.

Note: At full installation torque, the assembly will have moved approximately $\pm 0.075"$ ($\pm 1.9\text{mm}$) [$\pm 0.045"$ ($\pm 1.1\text{mm}$) Mini Series] axially along the shaft away from the nut. If axial position is critical it may be necessary to loosen the nut and reposition the assembly.

Warning: Over-tightening the nut could damage the Trantorque GT unit and/or the mounted component.

Do not use an impact wrench in the installation.

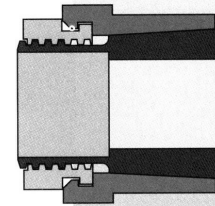


Figure 1

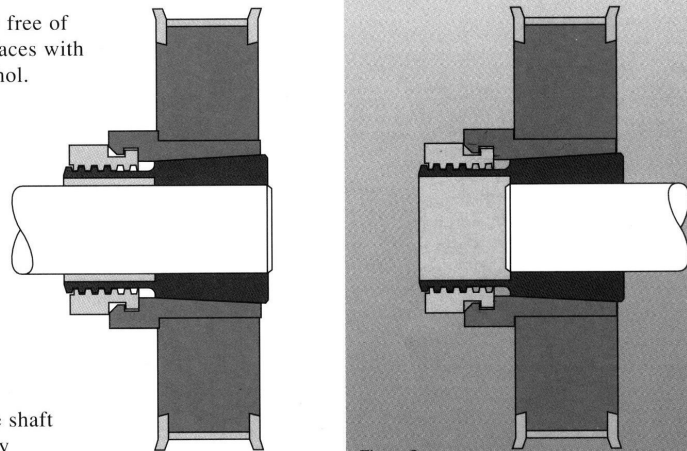


Figure 2

Installation Torque on Nut

	Inch Pound System		Metric System	
	Shaft Size	In. Lbs.	Shaft size	N-m
MINI SERIES	3/16-1/4	125	5-6mm	14.1
	5/16-3/8	150	7-9mm	17.0
	7/16-1/2	175	10-12mm	19.8
	9/16-5/8	200	14-16mm	22.6
	3/4	700	17mm	80.0
STANDARD SERIES	5/8-3/4	1200	15-19mm	136
	13/16-1	1500	20-25mm	170
	1-1/16-1-1/4	2000	28-32mm	225
	1-5/16-1-1/2	2300	34-38mm	260
	1-9/16-1-3/4	2800	40-42mm	316
	1-13/16-2	4900	45-50mm	554
LARGE SERIES	2-1/16-2-1/4	5300	55mm	600
	2-5/16-2-1/2	5600	60mm	635
	2-9/16-2-3/4	6000	65-70mm	680
	2-13/16-3	6600	75mm	750

FIGURE 16 : KEYLESS BUSHING INSTALLATION INSTRUCTION

6 ELECTRIC MOTOR

The power is supplied by a 24V 1/3 HP electric motor coupled with a speed reduction gearbox. Opposite to the gearbox, the motor is equipped with a 3/8 hexagonal socket shaft extension permitting to move the slide-out without using the handheld control. This is very useful when moving the slide-out very slowly is required like during the inner stoppers adjustment, the tilt adjustment or the 2" inside retraction. See section 18 for the manual override procedures.



When moving the slide-out with a cordless power drill as described in the manual override procedure, be careful as the slide-out approaches its opened or closed position, in order not to overload the mechanism.

6.1 MAINTENANCE

Inspect the electrical connections and their watertightness. Check that the mounting bolts are tight (FIGURE 18).

6.2 REPLACEMENT

1. The slide-out must be retracted.
2. Unplug the electric cable connector.

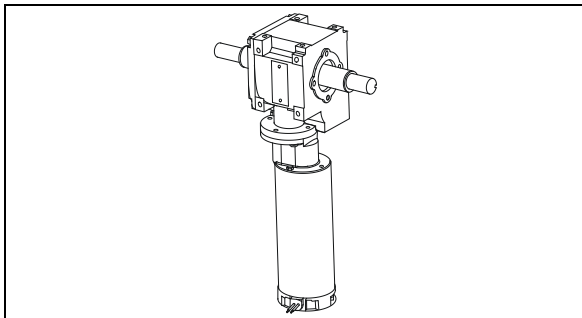


FIGURE 17: ELECTRIC MOTOR AND SPEED REDUCTION GEARBOX

3. Remove the motor from the gearbox.
4. Fasten the new motor to the gearbox using screws.
5. Re-connect the electric cable connector.

7 SPEED REDUCTION GEARBOX

The speed reduction gearbox used is a helical worm gear type. This gearbox has a 2-stage

740:1 ratio and the output shafts are self-locking. Keys on output shafts are glued into keyseats.

7.1 MAINTENANCE

Inspect the gearbox to check if there is any leakage or backlash in the box. Replace the gearbox if excessive wear is present. Check that all bolts are tight.

The gearbox is lubricated for life and the oil should not have to be changed.

7.2 GEARBOX REPLACEMENT

1. The slide-out must be retracted.
2. Disengage the shafts jaw couplings (refer to section 8: JAW COUPLING).
3. Remove the 4 cap screws securing the drive motor/gearbox assembly and dismount the assembly (see FIGURE 18).
4. Remove the gearbox from the motor and install the new one.
5. Reinstall the drive motor/gearbox assembly on the vehicle mounting bracket. Tighten mounting bolts to a torque of 18 lbf-ft in a criss-cross pattern.



To prevent damaging threads, use your fingers to drive the bolts into the aluminum gearbox housing mounting holes.

6. Reinstall the jaw couplings.

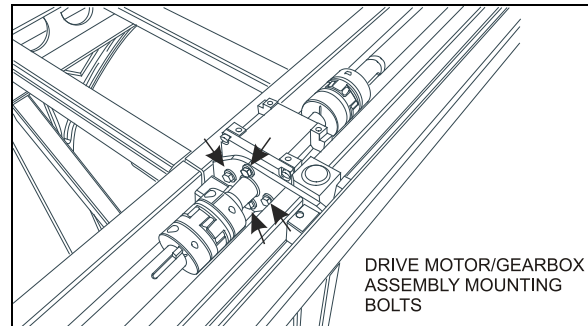


FIGURE 18: DRIVE MOTOR/GEARBOX ASSEMBLY MOUNTING BOLTS

8 JAW COUPLING

8.1 MAINTENANCE

Inspect the jaw couplings to check if there is any backlash between the key and the keyway. Also,

Section 26: XLII SLIDE-OUT

check the spider condition. Check that the clamping screws are tight.

8.2 REPLACEMENT & ADJUSTMENT

1. The slide-out must be retracted.
2. Disengage the jaw coupling: loosen the clamping screw on each clamping hub. If required, rotate the motor shaft extension as described in the manual override procedure (section 18) to get to the clamping screws.
3. Separate both clamping hubs.

NOTE

It may be necessary to loosen the blue flange bearings to move the shaft out of the way.

4. Clean and degrease the hub bore and the shaft.
5. Push the new clamping hubs onto the shaft (pinion side).
6. Install a clamping hub on one of the gearbox shaft (opposite side of gearbox mounting bolts) flush with the shaft extremity (FIGURE 19). Tighten the clamping screw to a torque of 18 lbf-ft.
7. Install the second clamping hub on the gearbox shaft. Position the clamping hubs so that they are flush with the shafts extremity (see FIGURE 19).

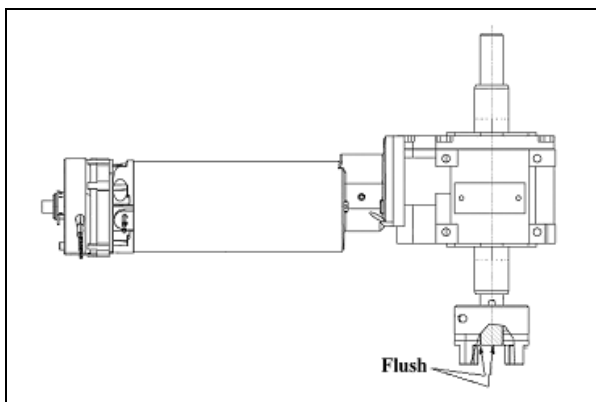


FIGURE 19: CLAMPING HUB POSITION ON GEARBOX SHAFT

8. Reconnect the clamping hubs with the spider. Leave a gap of 20mm (0.787inch) between each clamping hubs as shown on FIGURE 20. Use the motor hexagonal socket output shaft to align the keyways.

9. Tighten clamping screws to a torque of 18 lbf-ft.

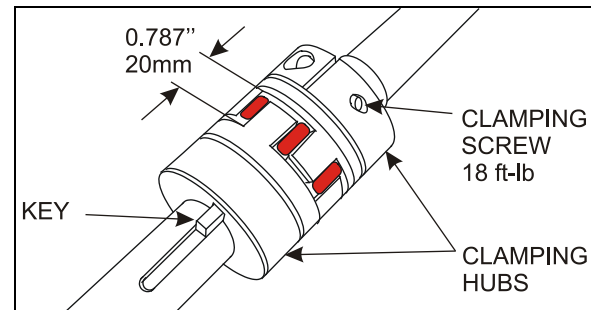


FIGURE 20: JAW COUPLING

9 FLANGE BEARING

There are two different types of flange bearing on the slide-out mechanism (FIGURE 13). Their purpose is to maintain the shaft in position while permitting rotation. The gray flange bearings are fixed to the linear bearing support plate and are not adjustable. The blue flange bearings are fixed to a support with oblong holes permitting to raise or lower the flange bearing as the linear bearing support plate level is being adjusted.

The flange bearings are pre-lubricated and no subsequent lubrication is required due to the very low extending and retracting speed of the slide-out system.

10 LOCKING COLLAR

The locking collar locks the shaft and the flange bearing together using friction. Once locked, it permits no axial translation of the shaft and prevents rotation of the shaft into the flange bearing bore.

10.1 INSTALLATION

Slide the locking collar along the shaft up to the flange bearing (FIGURE 13). Turn the locking collar clockwise while maintaining it pressed against the flange bearing. Knock the collar with a punch to lock it in place, there is a cavity on the collar made for that purpose. Tighten the set screw.

To remove, loosen the set screw and release the locking collar using channellock pliers or a small pipe wrench.

11 LINEAR BEARING

11.1 MAINTENANCE

Make every effort not to allow dust and foreign objects to enter inside the linear bearing.

The linear bearings are pre-lubricated and no subsequent lubrication is required due to the very low demanding use of the slide-out system.

11.2 REPLACEMENT & ADJUSTMENT

1. Remove the slide-out from the vehicle (removal must be performed according to the Slide-Out Removal Procedure. Ask to your Prevest service representative).
2. Disconnect the jaw coupling on the side of the linear bearing being replaced (refer to section 8).
3. Dismount the blue flange bearing.
4. From the mechanism access panel, remove the retaining screws A, B, C & D (see figure 22).
5. Now, you have access to the linear bearing mounting bolts if you turn its support up side down. Dismount the linear bearing and install the new one.
6. Tighten the mounting bolts in a criss-cross pattern to a torque of 60 ft-lb.
7. Reinstall the support plate, retaining screws, blue flange bearing and reengage the jaw coupling. Refer to the specific procedures.

11.3 LEVEL & TILT ADJUSTMENT

Leveling of the slide-out is done by changing the linear bearing support plate height using the leveling screws 1, 2, 3, 4 (figure 22). When proper level is attained, the retaining screws A, B, C & D maintain the support plate seated on the leveling screws. Also, the retaining screws prevent the slide-out from tipping inside the vehicle when it is retracted.

The slide-out is slightly tilted. When retracting, the upper "in limit" stoppers touch first the vehicle structure, followed by the lower "in limit" stoppers. Tilt adjustment is done by changing the linear bearing support plate inclination using the leveling screws 1 & 2 as pivot and 3 to adjust the angle (figure 22).

11.3.1 Procedure

NOTE

For the **front slide-out**, the front linear bearing leveling screws are accessible from the access panel located over the front wheel while the rear linear bearing leveling screws are accessible from the access panel in the evaporator compartment. For the **rear slide-out**, access the linear bearing from under the bed structure or the radiator compartment.

WARNING

The slide-out must be retracted when the level and tilt adjustment is performed.

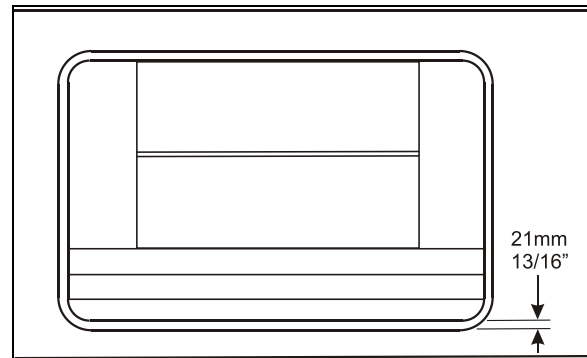


FIGURE 21: SLIDE-OUT LEVEL ADJUSTMENT

Before proceeding with the level and tilt adjustment, check the following conditions:

- The slide-out is retracted;
- The 2 lower "in limit" stoppers are perfectly adjusted, that means that the lower edge of the slide-out outer panel is flush with the vehicle body when retracted;
- The 2 upper "in limit" stoppers are removed from the slide-out (see section 1.2).

1. Loosen the blue flange bearings mounting screws (FIGURE 13).
2. For front slide-out only, loosen the two plastic plates mounting screws along the shafts (FIGURE 13).
3. With the lower edge of the slide-out outer panel flush with the vehicle body, adjust the slide-out level. The distance between the top of the horizontal member under the slide-out and the slide-out under panel must be 21mm (13/16" approximately).

Section 26: XLII SLIDE-OUT



WARNING

Never unscrew completely retaining screw A, B, C, D or the slide-out may tip inside.

To raise the linear bearing support plate, turn levelling screw 1 & 2 clockwise. Slightly and gradually, loosen the retaining screws A & B as the support plate elevates, but keep the retaining screws tighten.

To lower the linear bearing support plate, turn screw 1 & 2 counterclockwise. As the support plate goes down, maintain the retaining screw A & B tighten.

- Loosen retaining screws C & D. Unscrew leveling screw 4. Now, the support plate should be resting on levelling screw 1, 2 & 3.
- Using levelling screw 3, adjust the tilt in order to have the top of the slide-out recessed between 5mm and 10mm (7/32" and 3/8") (see FIGURE 23).
- When proper tilt is attained, tighten leveling screw 4 so that it comes into contact with the support plate.
- Loosen slightly levelling screw 3 and then tighten it so it is perfectly in contact with the support plate. Make sure screws 1, 2, 3 & 4 are in contact with the support plate.
- Loosen retaining screw A & B.
- Using a crisscross pattern, tighten progressively (3 rounds) the retaining screw A, B, C & D to a torque of 50 ft-lb.
- Assure that the levelling screw 1, 2, 3 & 4 are firmly leaning on the support plate and then firmly tighten the jam nuts.
- Verify that the tilt is still properly adjusted (between 7/32" and 3/8").

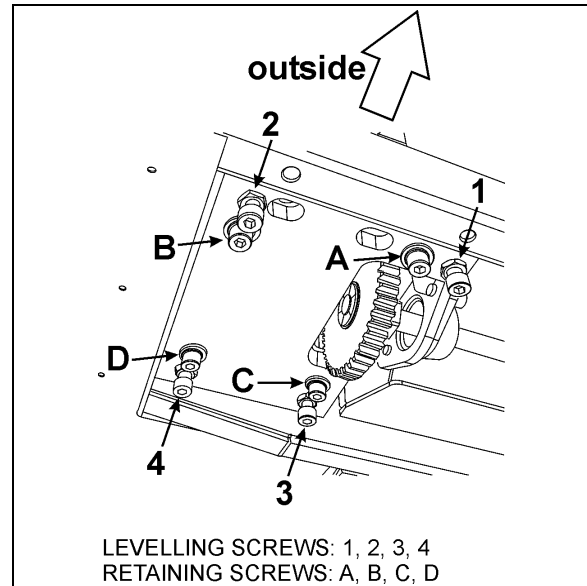


FIGURE 22 : SLIDE-OUT LEVELING

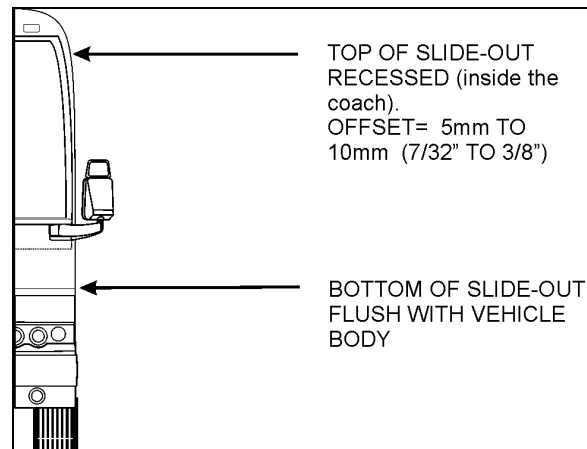


FIGURE 23: TILT ADJUSTMENT

12 RAIL

Rail and linear bearing system provide precise frictionless linear movement together with high load carrying capacity and high stiffness. These standardized equipments are fully interchangeable.

To prevent corrosion, an electrolytic black film treatment is performed to the rail. Do not strike the rail with metal tools, this could damage the treatment.

After the rail is mounted to the slide-out base, a cap is used to cover the bolt hole to prevent foreign matters from clogging up the hole or from entering into the ball slide. The cap for the bolt hole is made of synthetic resin which is superb in its resistance to oil and wear.

12.1 MAINTENANCE

Check that all the caps for the bolt hole are present. Missing caps must be replaced. To insert a cap into the rail bolt hole, use a flat tool. Pound the cap gradually until its height becomes flush with the rail top face.

Clean accumulated dirt from the rails with a soft cloth.

12.2 REPLACEMENT

1. Remove the slide-out from the vehicle (removal must be performed according to the Slide-Out Removal Procedure. Ask to your Prevest service representative).
2. Remove the bolt hole cap covers. To do so, pierce a hole in the center and hook them out. They will not be reusable.
3. Remove the rail mounting bolts.
4. Wipe off the rust preventive oil applied to the new rail. Remove burrs and small bumps on the slide-out mounting face with an oilstone.
5. Carefully place the rail on the bed on its mounting face.

NOTE

The rail is bolted to a flat bar on which weldnuts are mounted. The flat bar is inserted in the slide-out lower body extrusion and can be removed through the end cap (FIGURE 24).

6. Adjust the flat bar position to align the weldnuts with the rail mounting holes.
7. Temporarily tighten the bolts.
8. Adjust the rail position with as per FIGURE 24. For each rail, make sure the gap is the same both side of the rail.
9. For final tightening of the bolts, tighten on either end of the rail and then start to the other end. Tighten to a torque of 95 ft-lbf. Use blue Loctite™ on threads.
10. Cap the bolt holes.

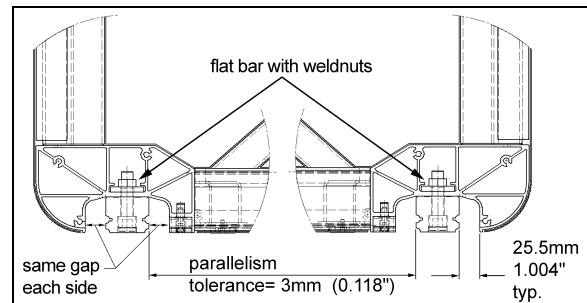


FIGURE 24 : RAIL POSITIONING

13 ACETAL PLASTIC BLOCKS

Three different acetal plastic blocks are installed next to each linear bearing to prevent dirt and foreign matter from entering inside the vehicle. They also serve as bearing surface for:

1. The inflatable seal each side of the rail.
2. The “in limit” stoppers.

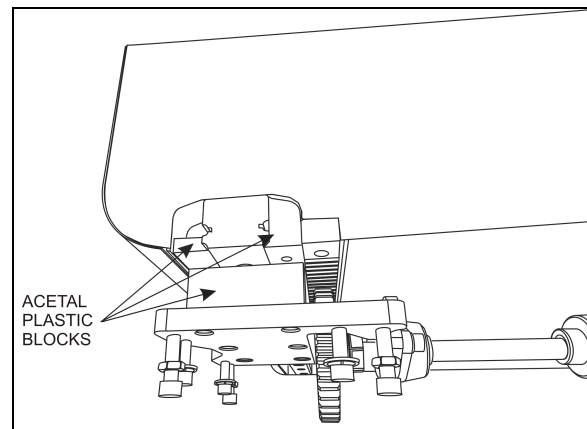


FIGURE 25: ACETAL PLASTIC BLOCKS

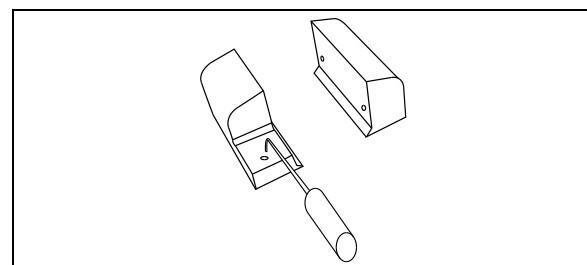


FIGURE 26: REMOVE THE UPPER ACETAL PLASTIC BLOCKS WITH A PICKING TOOL

13.1 REMOVAL / INSTALLATION

1. Gain access to the linear bearing support plate.
2. From under the support plate, remove the acetal plastic block mounting screws (see the oblong holes on figure 22).
3. Remove the 2 upper acetal plastic blocks. They have holes so they can be removed

Section 26: XLII SLIDE-OUT

with a picking tool (FIGURE 26) from outside the vehicle. If the acetal plastic blocks are too hard to reach, slightly extend the slide-out, the movement of the slide-out should bring them out.

4. To remove the lower acetal plastic block, gain access to the compartment under it. Slide the acetal plastic block toward the center of the slide-out. Proceed the same way to reinstall it.
5. Reinstalling the upper acetal plastic blocks. Fold the wiper seal toward the outside with a flat tool to ease installation (FIGURE 27). Tighten the mounting screws to a torque of 7 ft-lb. Leave no gap between the blocks and the rail.

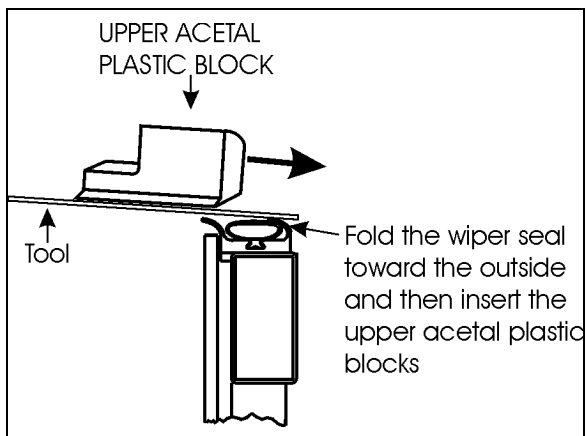


FIGURE 27: LOWER ACETAL PLASTIC BLOCK INSERTION

14 SLIDE-OUT PNEUMATIC SYSTEM

The slide-out is controlled by a pneumatic and electrical system. Mainly, the pneumatic system consists of electrically operated valves that control slide-out components and safety operations.

14.1 DESCRIPTION

AIR PRESSURE INLET VALVE

The slide-out air pressure comes from the air pressure inlet valve on the pneumatic panel in the front service compartment (figure 28).

INFLATABLE SEAL VALVE

The inflation and the deflation of a seal are done using a 5-port 2-position manifold valve with two solenoids. One solenoid is used for inflating of the seal and the other for deflating of the seal.

When one of the solenoids is activated (seal deflating valve for example), the valve will keep its state even if the solenoid is deactivated. The inflating valve solenoid is activated to re-inflate the seal when the slide-out reaches its inner or outer limit. The inflatable seal pressure is set to 10 psi and in full "IN" or full "OUT" position, this pressure is continuously applied to the seal as long as the accessory air tank (which supply the slide-out) is not empty.

VACUUM GENERATOR

A vacuum generator using Venturi principle is controlled by a 5-port 2-position manifold valve and is used to evacuate the air faster from the seal and to ensure that the seal surface does not stay in contact with the slide-out.

The vacuum generator valve is activated simultaneously with seal deflating valve solenoid for 10 seconds. A pressure transducer will detect a seal, vacuum valve or generator failure if -5 psig is not reached after the 10 seconds delay. In that situation, an error code will be stored in the MCD (message center display). In normal operating condition, -5 psig is a necessary condition to consider the seal as deflated.

NOTE

When air pressure is relieved using the shut-off valve, the normal extending and retracting operation cycle is disabled, because the pressure transducer reads 0 psig and that is higher than -5 psig (vacuum). For that reason the slide-out cannot be moved with the handheld control.

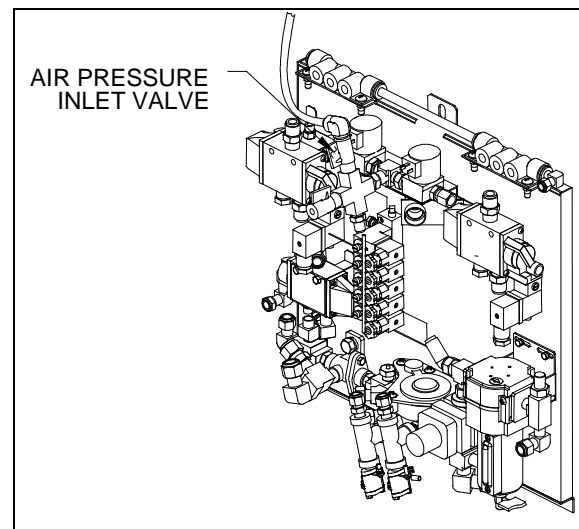


FIGURE 28 : FRONT SERVICE COMPARTMENT

14.2 MAINTENANCE

COMPRESSED AIR LINE

Inspect all compressed air line tubing for cut, swelling, kink or other damage or deterioration. Inspect the pneumatic fittings and components for any leak. The slide-out air supply is connected to the accessory air tank and the maintenance is specified in the "brake and air system" section from the Prevest maintenance manual.

INFLATABLE SEAL CIRCUIT

The efficiency of the seal could be affected by impurities, such as white powder in the pneumatic control valve. It is recommended to inspect the inflatable seal control components once a year to prevent malfunction. In this case, remove the seal valves and clean the interior

valve components using a compressed air nozzle. Do the same thing with the vacuum generators.

The inflatable seal pressure must be set from 7 to 10 psi maximum. It is recommended to check the inflatable seal pressure once a month to ensure sealing efficiency and prevent any infiltration from outside.

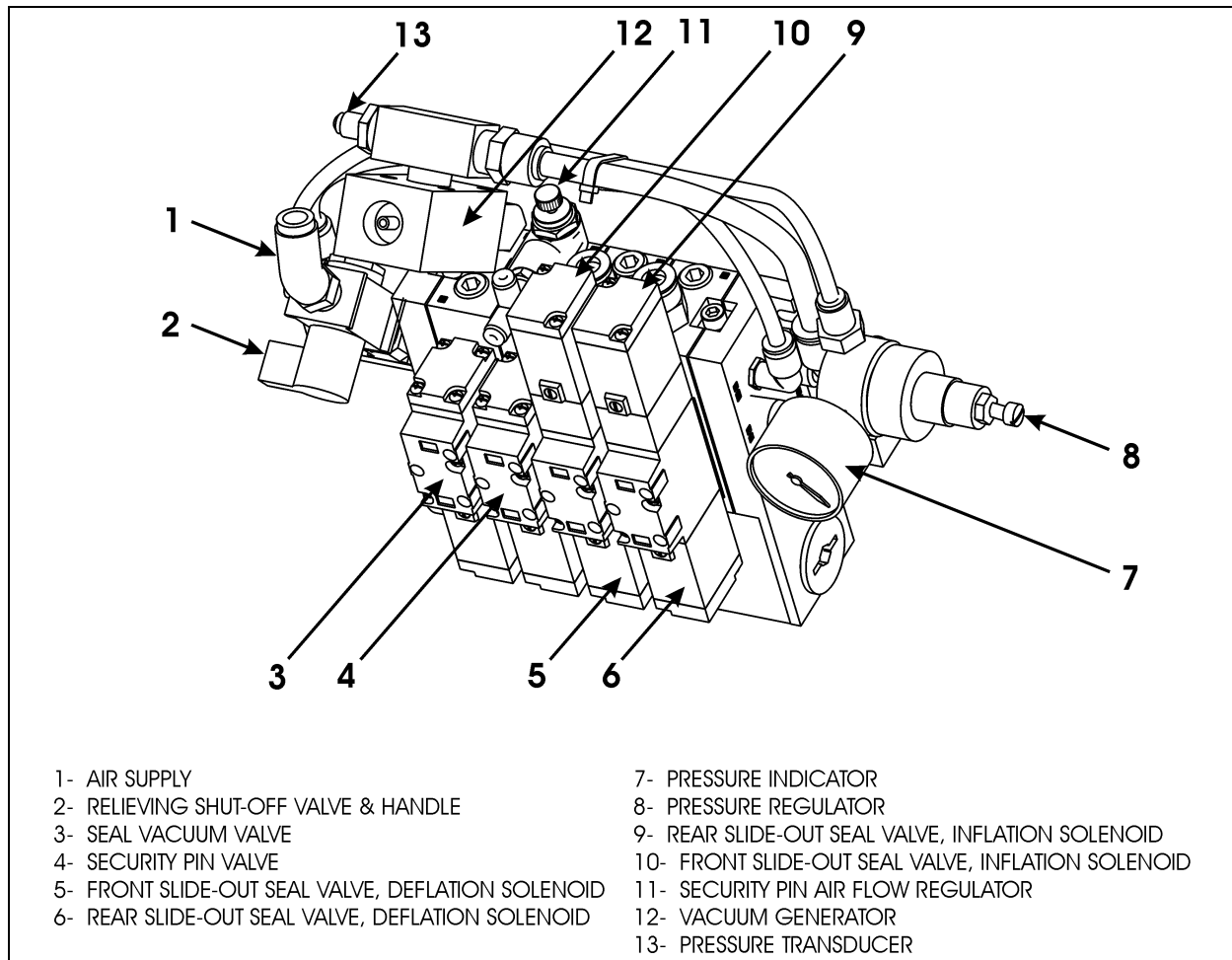


FIGURE 29: PNEUMATIC COMPONENT PANEL

Section 26: XLII SLIDE-OUT

14.3 SEAL

NOTE

Refer to the Prevost parts manual for descriptions of the sealant and adhesives used.

The slide-out sealing device is used to prevent any type of infiltration that may occur between the structure body and the slide-out itself. It is composed of an inflatable seal which is used as a primary sealing device for both retracted and extended slide-out position and a wiper seal as a secondary sealing device which is used to wipe water out and to ensure sealing during slide-out movement.

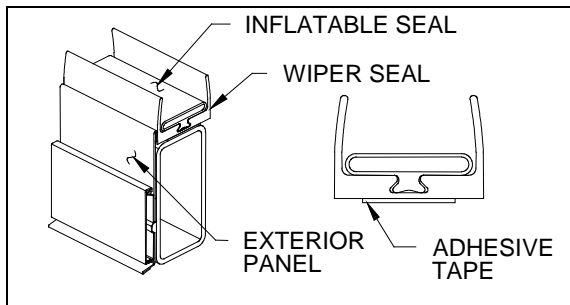


FIGURE 30 : SEAL ASSEMBLY

The seal deflation is done each time the slide-out moves. The deflating valve solenoid is activated before and during the slide-out movement. When the slide-out reaches its retracted or extended position, the deflating solenoid is deactivated before activation of the inflating solenoid to re-inflate the seal.

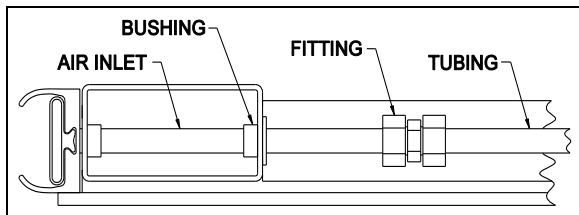


FIGURE 31: REAR SLIDE-OUT INFLATABLE SEAL AIR INLET

CAUTION

Make sure the inflatable seal is deflated when manually moving the slide-out during service maintenance. Deflate both inflatable seals completely by turning the relief shut-off valve handle clockwise (see FIGURE 29).

CAUTION

Check before using any cleaning or adhesive product on seal, panel or glass to prevent alteration or damage.

14.3.1 Maintenance

The inflatable seal pressure must be set to 10 psi maximum with the pressure regulator. It is recommended to check the inflatable seal pressure once a month to ensure sealing efficiency and prevent any infiltration from outside. Check both seals for air leaks or cracks. Check the sealant between the inflatable seal and the exterior panels and glasses. Add sealant if necessary.

14.3.2 Seal assembly removal

WARNING

Always wear the appropriate safety equipment. Maintain adequate ventilation at all time.

1. Retract the slide-out 2" inside the vehicle (section 14.3.4).
2. Unplug the tubing from the inflatable seal air inlet (FIGURE 31). Keep the bushing.
3. Unstick and remove the wiper seal from the structure.
4. Scrape remaining tape from the structure. Remove old sealant that was between the wiper seal and the exterior panels and glasses.

14.3.3 Seal assembly installation

NOTE

This procedure is to install the inflatable seal assembly on the structure.

CAUTION

Always apply product in the same direction to prevent dirt from being brought back.

CAUTION

Check before using any cleaning or adhesive product on seal, panel or glass to prevent alteration or damage.

NOTE
<i>Refer to the slide-out parts manual for descriptions of primer, cleaner, sealant and adhesives used.</i>

NOTE
<i>Refer to the product specification for drying time.</i>

1. Retract the slide-out 2" inside the vehicle (section 14.3.4).
2. Clean the part of the structure that will receive the inflatable seal and also the back of the exterior panel and glasses with a chix cloth and thinner. Use another cloth to dry the surfaces. Wait at least 2 minutes for drying.
3. Rub the structure and also the back of the exterior panel and glasses with a Scotch Brite (or equivalent product).
4. Clean another times the structure and the back of the exterior panel and glasses with a chix cloth and thinner. Use another cloth to dry the surfaces. Wait at least 2 minutes for drying.
5. Clean the structure and the back of the exterior panel and glasses with appropriate cleaner. Wait until the product is dry before proceeding.
6. Seal the gap between the structure and the exterior panels and the gap between the glasses and the fiberglass panels with appropriate sealant. Make sure not to put sealant on the structure surface where the inflatable seal will be placed. Wait until the product is dry before proceeding.
7. Install the inflatable seal on the structure, placing it as close as possible from the exterior side of the structure. Position the air inlet first. Then remove locally the inflatable seal adhesive tape protection, and press the upper corners on the structure and hold them in place for 90 to 120 seconds. Install the lower corners next, then the straight section. Press the straight inflatable seal sections on the structure for at least 15 seconds. Use a small roller to ensure a good adhesive contact on the structure.
8. Seal the gap between the inflatable seal and the exterior panels and the gap between the glasses and the fiberglass panels with

appropriate sealant. Wait until the product is dry before proceeding. Remove excess sealant with appropriate cleaner.

9. Replace the bushing and plug the pneumatic tubing on the inflatable seal air inlet (FIGURE 31).

14.3.4 Slide-out 2" inside retraction

1. For both sides of the slide-out, remove the 2 upper acetal plastic blocks shown on FIGURE 26 (refer to section 13).
2. Manually deflate the seal completely by turning the relieving shut-off valve clockwise (FIGURE 29). Make sure the pressure indicator reading is "0 psi".
3. Turn the ignition to the off position. Using the manual override procedure (section 18), extend the slide-out a few inches so the exterior extrusion screws located on the top of the slide-out are accessible from outside (figure 7).
4. Using a knife cut the sealant between the extrusion and the roof (figure 7). Unscrew and remove the central exterior extrusion screws and the two end extrusion screws.

⚠ CAUTION ⚠
Do not use the slide-out handheld control to move the slide-out 2" inside the vehicle, because the limits are not recognized over the closed position. The slide-out will not stop and damage may occur.

5. Using the manual override procedure, move the slide-out 2" inside the vehicle, so the seal is accessible from outside (FIGURE 32).

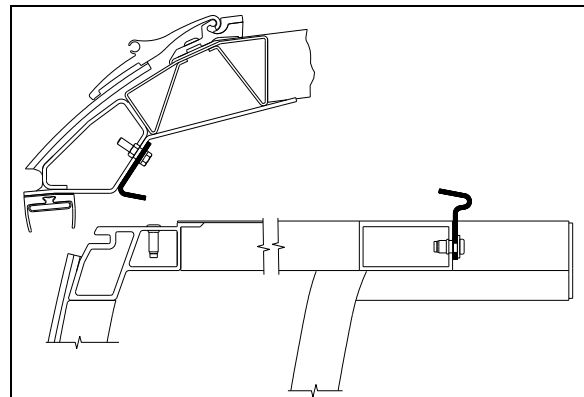


FIGURE 32: SLIDE-OUT 2" INSIDE – UPPER PART

Section 26: XLII SLIDE-OUT

- Once completed, use the manual override procedure to extend the slide-out to reinstall the exterior extrusion. Apply appropriate sealant on the exterior extrusion screws and between the extrusion, the roof and the edges to prevent water infiltration (FIGURE 32).
- Reinstall the acetal plastics blocks.
- Using the manual override procedure, retract the slide-out to its closed position.
- Finally, the seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator to see if the pressure is increasing to 10 psi.

15 SLIDE-OUT ELECTRICAL SYSTEM



WARNING

Never modify the slide-out electrical wiring without the Prevest Car approval. Any modifications may cause an unexpected slide-out action and could result in personal injuries.

The multiplexed slide-out electrical system is mainly composed of the Master ID module, the CECM module, the VEC module and two I/O-B modules.

Each slide-out has its own I/O-B module and two power relays. The I/O-B modules analyze the input signal conditions and activate outputs like the pneumatic valves, the retracting or extending programmed sequence, etc. The power relays are used to supply power coming from the I/O-B module to the electric motor and to change polarity to reverse motor rotation.

The I/O-B modules input signals are:

- Handheld control switch IN;
- Handheld control switch OUT;

Also, the following input signals are required for a safe operation of the slide-out:

- Pressure transducer;
- Parking brake;
- “in limit” sensor;
- “out limit” sensor;

The I/O-B modules output signals are:

- Handheld control green indicator light;
- Power relay current reversing;

- Seal valve inflating solenoid;
- Seal valve deflating solenoid;
- Vacuum generator valve solenoid;
- Security pin valve solenoid;
- Electric motor, first power output 15 amps;
- Electric motor, second power output 15 amps;

The CECM module output signals are:

- Dashboard telltale light;
- Transmission inhibit;



WARNING

Before working on the slide-out electrical system, turn the ignition key to the “OFF” position.

15.1 ELECTRICAL INTERCONNECTION WITH PREVOST VEHICLE

The slide-out power supply comes from the 24-volts circuit breaker (FIGURE 34) in the engine R.H. side access compartment. The other interconnections are located on the pneumatic panel and the electrical panel in the front service compartment. All the interconnections are shown on the electrical diagrams of your vehicle.

A blinking signal is added on the dashboard telltale panel (figure 33) to indicate that an error condition or a missing operation condition is present on a slide-out. The slide-out telltale light also illuminates to indicate that at least one of the slide-outs is extended.

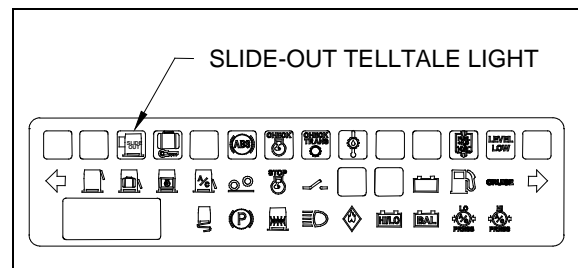


FIGURE 33 : DASHBOARD SLIDE-OUT TELLTALE LIGHT

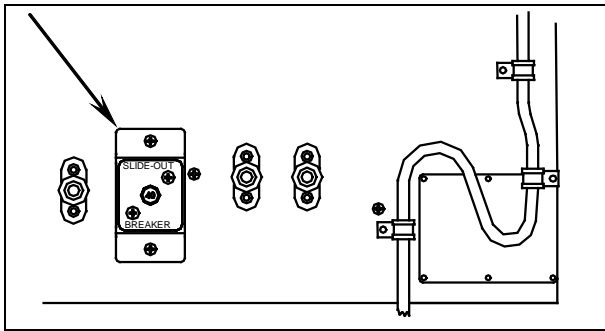


FIGURE 34: MAIN BREAKER IN ENGINE R.H. SIDE ACCESS COMPARTMENT

When an output is shorted, the current gets above the limit and the soft-fuse intervenes to turn the output OFF. The output stays OFF until the "soft-fuse" is reset.

Turn the ignition key to the OFF position and turn to the ON position again. This resets all "soft-fuses".

CAUTION

Never put grease, Cortec VCI-238 or other product on the multiplex modules connector terminals.

15.2 SLIDE-OUT BREAKERS / FUSES

The main breaker (for both slide-outs) is located in the engine R.H. side access compartment. All other slide-out breakers and hardware fuses are located inside the VEC, on the slide-out electrical component panel located in the third baggage compartment on the driver side (figure 35 and figure 36).

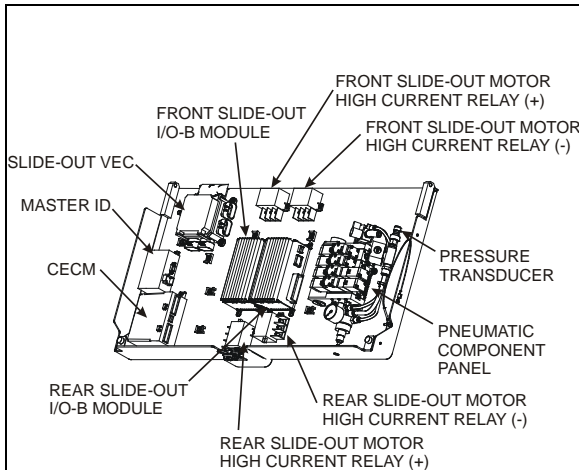


FIGURE 35 : SLIDE-OUT CONTROL PANEL

15.3 PROBING VOLTAGE ON THE MULTIPLEX CIRCUITS

Multiplex modules are supplied by 24 volts.

Inactive Multiplex output = Residual voltage of 18% to 33% of supply voltage.

Inactive Multiplex input = Residual voltage of 50% of supply voltage.

NOTE

For a 24V module: an active voltage would be 24V or 0V but not in between. If you measure the intermediate tensions (ex. 12V, 4V, or 8V) this must be interpreted as if the input or the output is inactive.

15.4 MODULE REPLACEMENT

I/O-B and CECM multiplex modules can be replaced and reprogrammed without having to connect a computer to the vehicle.

15.4.1 I/O-B replacement

- Turn the ignition key to OFF.
- Replace the module (disconnect the green connector first, then the grey one and finish with the black connector. To disconnect the black connector, slide downwards the red latch).
- Turn the ignition key to the ON position. This engages the automatic reprogramming,
- The slide-out telltale light will turn on and stay on until the reprogramming is complete. Once completed, the slide-out telltale light will turn off or stay on (not blinking) if at least, one slide-out is extended.
- Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select

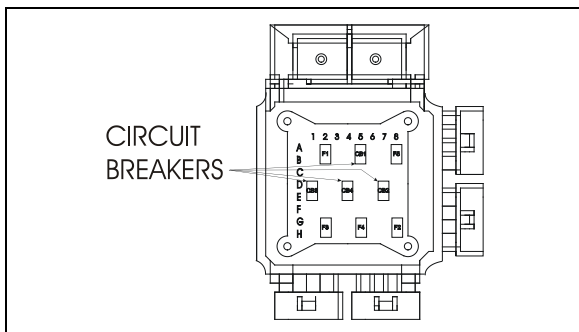


FIGURE 36 : VEC CIRCUIT BREAKERS & FUSES

15.2.1 Multiplex fuses

The multiplex module outputs are protected in current by an internal "soft-fuse". Each output is programmed to specific maximum amperage.

Section 26: XLII SLIDE-OUT

FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. Verify the fault message to be certain the module is reprogrammed. If the module is not reprogrammed, the message « Axx Not Responding » appears where Axx is the module number (A56 or A57).

15.4.2 CECM module replacement

- Turn the ignition key to OFF.
- Replace the module.
- Turn the ignition key to the ON position. This engages the program transfer from the Master ID to the CECM module (the back-up program is inside the Master ID. The Master ID will identify the CECM as being new and will send the correct program to it). The slide-out telltale light will turn on and stay on for a while, and then will turn off. Wait until the slide-out telltale starts blinking each second. At this point, the MasterID module has finished loading the program in the CECM.
- Turn the ignition key to the OFF position and then turn it back to the ON position. This engages I/O's modules automatic reprogramming.
- The slide-out telltale light will turn on. Once completed, the slide-out telltale light will turn off or stay on (not blinking) if at least, one slide-out is extended.
- Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. You should read "no errors". If an active error appears for a module, this one was not reprogrammed. In this case, repeat the procedure.

15.5 SLIDE-OUT LIMIT SENSORS

Two Hall-Effect sensors are used on each slide-out to define end limit positions. The "in limit" and "out limit" sensor detect two pairs of permanent magnets fixed on the slide-out underbody.

15.5.1 Maintenance and adjustment

The rear slide-out sensors are accessible from inside of the vehicle, under the bed structure while the front slide-out sensors can be reached from the 3rd baggage compartment access panel. To remove the sensors, unsnap them from the mounting bracket.

To adjust the "in limit" sensors:

Prior to adjust the "in limit" sensors, assure that the "in limit" stoppers are perfectly adjusted (see section 1.2.2).

1. Retract the slide-out to its full "IN" position with the "in limit" stoppers in contact with their bearing surface.
2. Loosen the "in limit" sensor mounting bracket screws and move back the sensor completely (toward the inside of the vehicle).
3. Bring slowly the sensor toward the outside of the vehicle until the light emitting diode (LED) turns on. When it does, move it 0.079" (2mm) further in the same direction and tighten the mounting bracket screws.
4. Check if the "in limit" sensor is properly adjusted. At the moment when the slide-out stops during normal retraction, the "in limit" stoppers must contact their bearing surface (lower acetal plastic block). Put white paint on the "in limit" stopper before and check if the acetal plastic blocks are marked with paint.

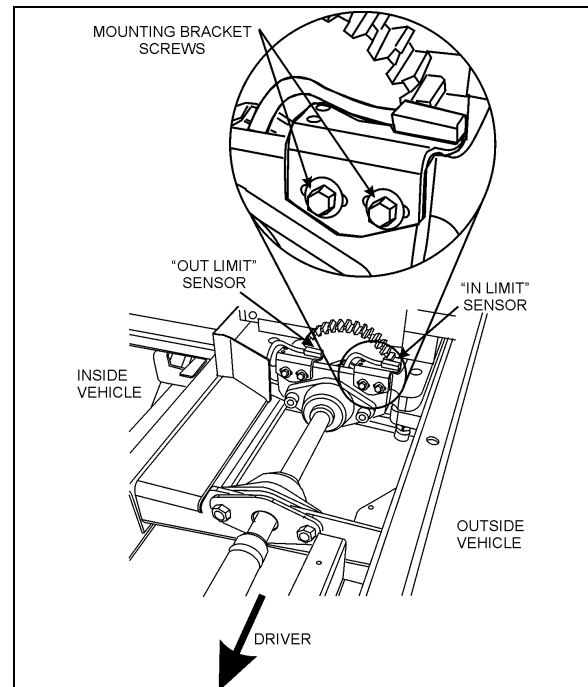


FIGURE 37 : FRONT SLIDE-OUT SENSORS

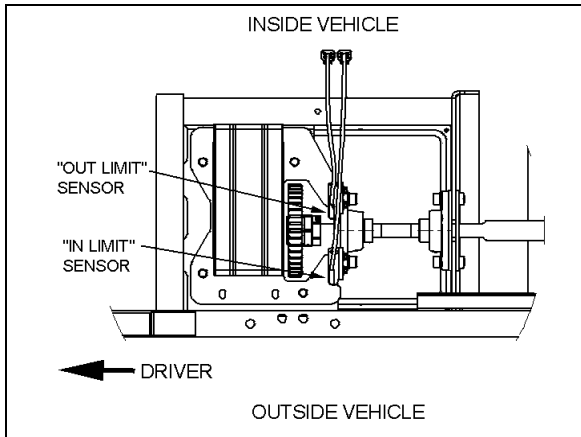


FIGURE 38: REAR SLIDE-OUT SENSORS

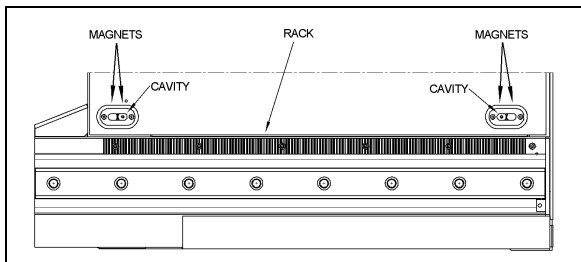


FIGURE 39 : MAGNETS ON SLIDE-OUT UNDERBODY

To adjust the "out limit" sensors:

Prior to adjust the "out limit" sensors, assure that the inner stoppers are perfectly adjusted (see section 1.1).

1. The slide-out is slightly tilted except when it is in its full "IN" or "OUT" position. Extend the slide-out near its full "OUT" position. When the slide-out straightens up and that it is perpendicular with the vehicle body, stop the slide-out.
2. Loosen the "out limit" sensor mounting bracket screws and move back the sensor completely (toward the inside of the vehicle).
3. Bring slowly the sensor toward the outside of the vehicle until the light emitting diode (LED) turns on. When it does, tighten the mounting bracket screws.

NOTE

When the "out limit" sensors are properly adjusted, the slide-out extension stops before the side inner stoppers reach the vehicle structure.

16 SLIDE-OUT EXTERIOR FINISHING PANELS & WINDOWS

NOTE

The removal and installation procedures are all based on standard service methods described in section 18: BOBY. Refer to this manual for procedures, tools, cleaner, adhesives and other product needed.

16.1 FACE PANEL REMOVAL

Use the same procedure as described in section 18: BODY for MTH side panel removal, and:

- Keep the slide-out retracted;
- Make sure not to damage the finishing molding supports to be able to re-use them;
- Remove the old adhesive on the finishing molding supports and clean them before re-using;
- Check where adhesive, sealant and double face adhesive tape are on the structure and the panel back side, in order to be able to stick the new panel in the same way;
- Check the tape width and use same width tape when installing new panels.

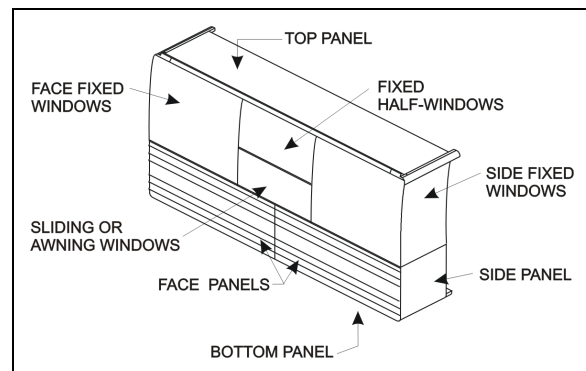


FIGURE 40 : SLIDE-OUT PANELS AND WINDOWS

16.2 FACE PANEL INSTALLATION

For surface cleaning, and preparation, panel installation and products needed, use the same procedure as the MTH side panel installation described in section 18: BODY.

- Keep the slide-out retracted for panel alignment;

Section 26: XLII SLIDE-OUT

- Make sure to apply sealant between the face panels and the side panels, and also between face panels and bottom and top panels. Apply sealant both inside and outside the slide-out panels.

16.3 SIDE PANELS REMOVAL

NOTE

The side panels are made of aluminum, or of stainless steel in option.

Caution: Be careful not to damage the adjacent surfaces.

1. Remove the slide-out (according to the Slide-Out Removal Procedure. Ask to your Prevost service representative).
2. Remove the side fixed windows from the slide-out first, as described in section 16.7.
3. Insert a flat screwdriver between the panel and the slide-out structure, in the top left and right corners of the panel, and unstick the panel from the structure.
4. Use C-clamp to peel the panel from the slide-out structure.
5. Check where adhesive, sealant and double face adhesive tape are on the structure and the panel back side, in order to be able to stick the new panel in the same way.
6. Check the tape width and use same width tape when installing new panels.

Caution: Make sure the heat gun nozzle tip is at least 4" from surface.

7. Use a heat gun and putty knife to remove the dried off adhesive and tape residue from the structure.

Warning: Because of the adhesive toxicity, never use a buffer or other sanding method to remove it.

16.4 SIDE PANELS INSTALLATION

NOTE

The side panels are made of aluminum, or of stainless steel in option. Use rivet of same material as the panels.

For surface cleaning and preparation, panel installation, and products needed, refer to the MTH side panel installation procedure described in section 18: BODY.

1. Protect adjacent surfaces with appropriate material;
2. Refer to figure 41 for 1/16x1/4 double face adhesive tape location on structure;
3. Apply Sika 206 G+P on the side panel as shown in figure 42 ;
4. Apply Sika Tack+Booster (triangular bead: 9mm width X 6mm high) as shown in Figure 43 and glue panel in place as shown in FIGURE 44;
5. Exert pressure and let dry for at least 90 minutes;
6. Smooth down the joint and remove glue in excess;
7. After drying, apply Sika 252 as a finishing joint;
8. Smooth down the joint.
9. Refer to section 16.11 for the finishing joint application procedure.

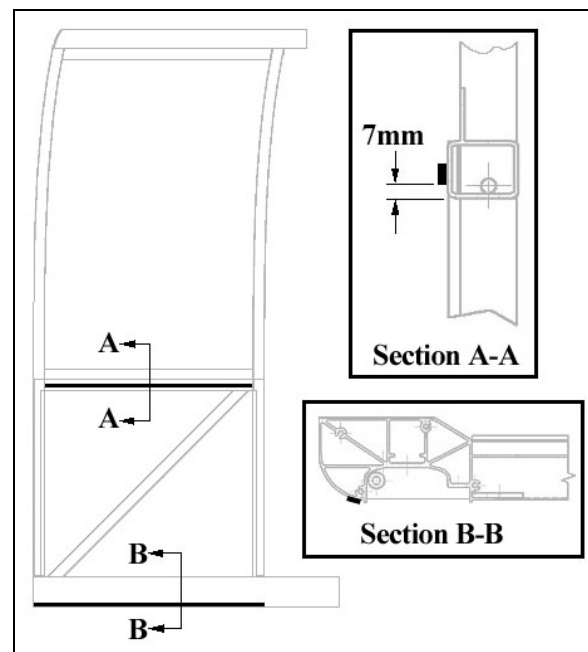


FIGURE 41 : SIDE PANEL INSTALLATION – DOUBLE FACE ADHESIVE TAPE APPLICATION ON THE SLIDE-OUT STRUCTURE

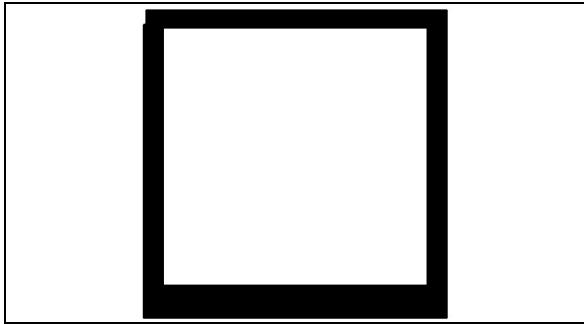


FIGURE 42 : SIDE PANEL INSTALLATION – SIKA 206 G+P APPLICATION

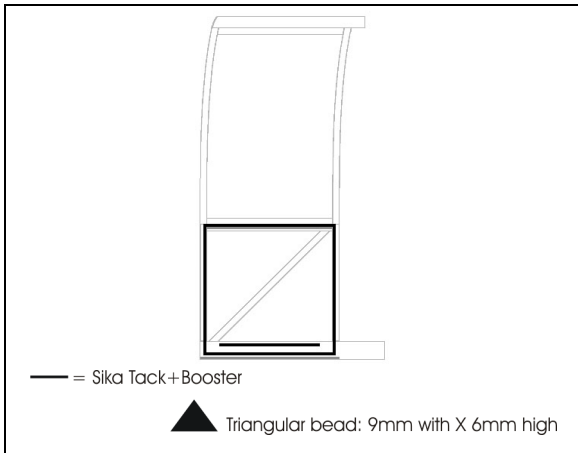


FIGURE 43 : SIDE PANEL INSTALLATION – SIKA TACK+BOOSTER APPLICATION

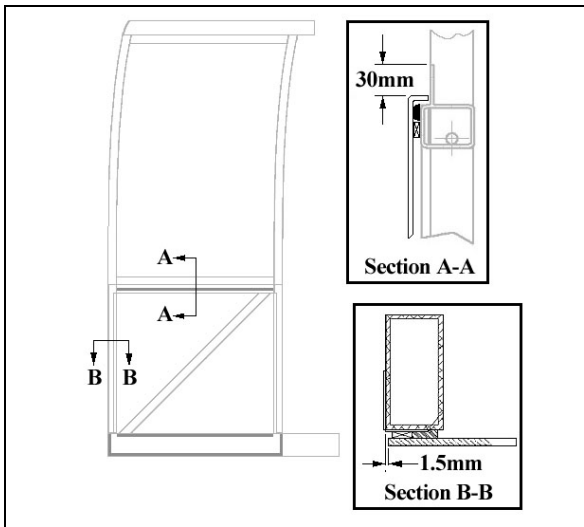


FIGURE 44 : SIDE PANEL INSTALLATION

16.5 TOP AND BOTTOM PANEL REMOVAL

NOTE
The top and bottom panels are made of aluminum sheets.

1. Remove the slide-out (according to the Slide-Out Removal Procedure. Ask to your Prevost service representative).
2. Insert a flat screwdriver between the panel and the slide-out structure, and unstick the panel from the structure.
3. Use C-clamp to peel the panel from the slide-out structure.
4. Check where adhesive, sealant and double face adhesive tape are on the structure and the panel back side, in order to be able to stick the new panel in the same way.
5. Check the tape width and use same width tape when installing new panels.
6. Use a heat gun and putty knife to remove the dried off adhesive and tape residue from the structure.

Warning: Because of the adhesive toxicity, never use a buffer or other sanding method to remove it.

16.6 TOP AND BOTTOM PANEL INSTALLATION

NOTE
The top and bottom panels are made of aluminum sheets and need aluminum rivet.

For surface cleaning, preparation, panel installation and products needed, refer to the MTH side panel installation procedure described in section 18: BODY.

1. Protect adjacent surfaces with appropriate material.
2. Refer to FIGURE 45 for 1/16x1/4 double face adhesive tape location on structure;
3. Apply Sika 206 G+P on panel as shown in FIGURE 46;
4. Apply Sika Tack+Booster (triangular bead: 9mm width X 6mm high) as shown in FIGURE 47 and glue panel in place as shown in figure 48 & figure 49 ;
5. Exert pressure and let dry for at least 90 minutes;
6. Smooth down the joint and remove glue in excess;
7. After drying, apply Sika 252 as a finishing joint;

Section 26: XLII SLIDE-OUT

8. Smooth down the joint.
9. Refer to section 16.11 for the finishing joint application procedure.

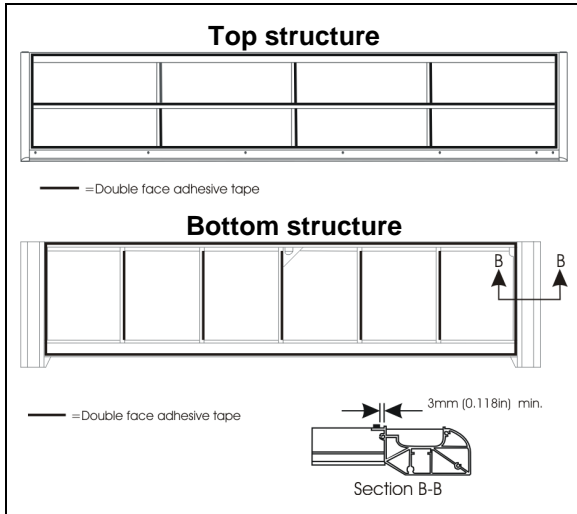


FIGURE 45 : TOP AND BOTTOM PANEL INSTALLATION - DOUBLE FACE ADHESIVE TAPE APPLICATION

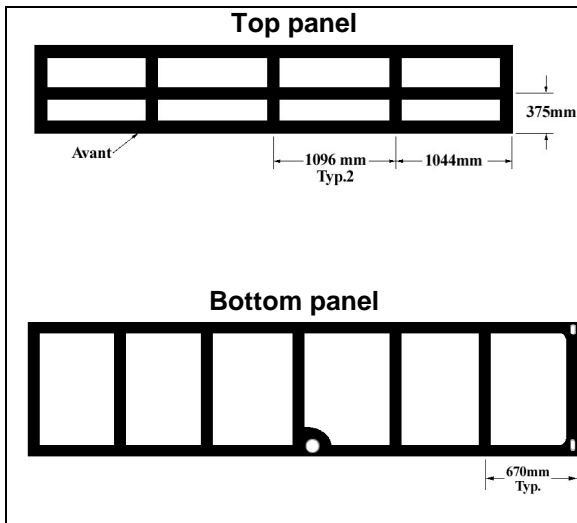


FIGURE 46 TOP AND BOTTOM PANEL INSTALLATION - SIKA 206 G+P APPLICATION

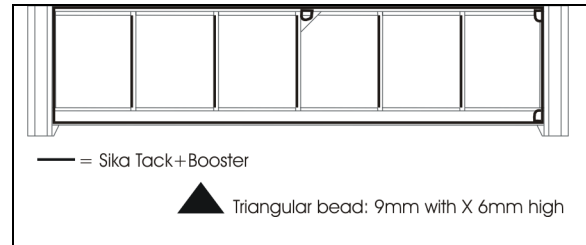
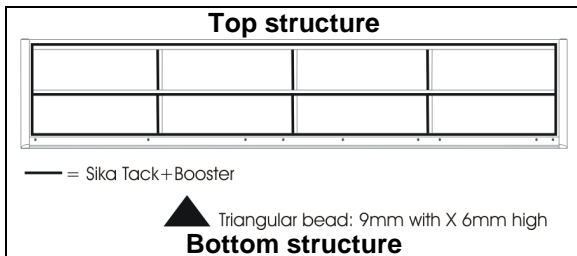


FIGURE 47 : TOP AND BOTTOM PANEL INSTALLATION - SIKA TACK+BOOSTER APPLICATION

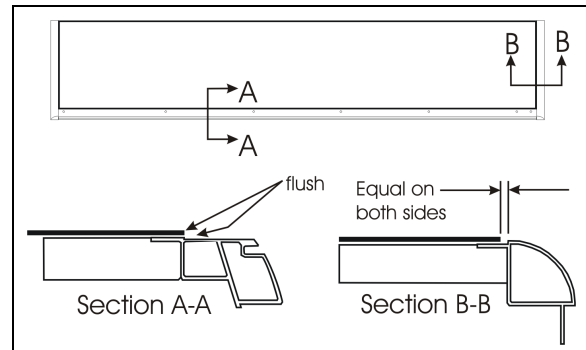


FIGURE 48 : TOP PANEL INSTALLATION

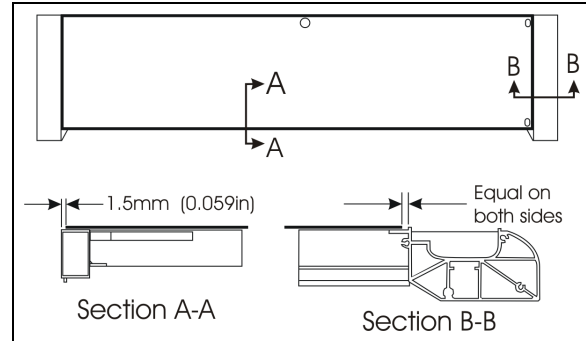


FIGURE 49 : BOTTOM PANEL INSTALLATION

NOTE

The removal and installation procedures are based on standard service methods described in section 18: BODY. Refer to these procedures for tools and adhesives specifications.

Warning: Always wear safety equipment when working with glass and chemical adhesives.

16.7 WINDOWS REMOVAL

1. Remove the slide-out.
2. If needed, remove the exterior extrusion as described in section 1.3.

Caution: Be careful not to damage the adjacent surfaces.

3. With a knife or a wire, cut the sealant and the adhesive between the windows and the structure. Make sure not to damage the rubber seal between the windows.
4. With a helper, remove the window from the slide-out.

16.8 FIXED WINDOWS INSTALLATION

Refer to procedures described in section 18: BODY of the maintenance manual for details.

1. Clean and prepare the windows and the slide-out structure surfaces with appropriate cleaner, abrasives and primers.
2. If necessary, install the rubber seals as per FIGURE 50 & FIGURE 51 . Press the seal against the structure with a roller.

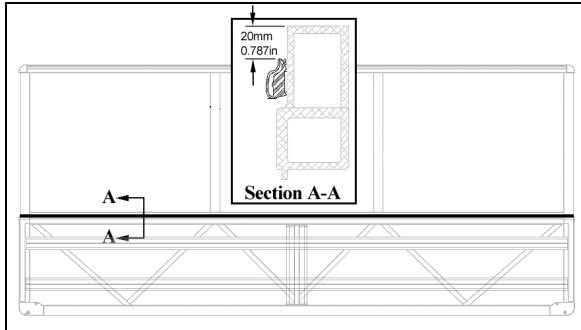


FIGURE 50 : FACE FIXED WINDOWS - RUBBER SEAL INSTALLATION

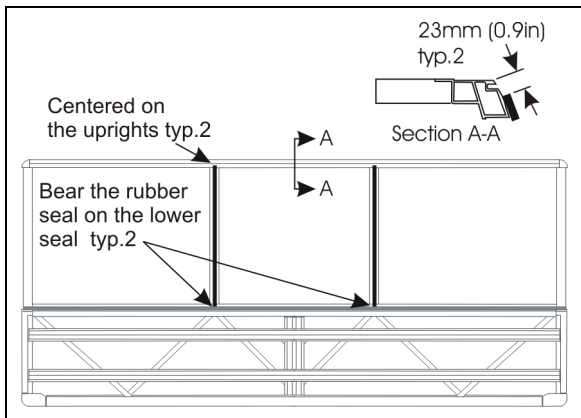


FIGURE 51 : FACE FIXED WINDOWS - RUBBER SEAL INSTALLATION

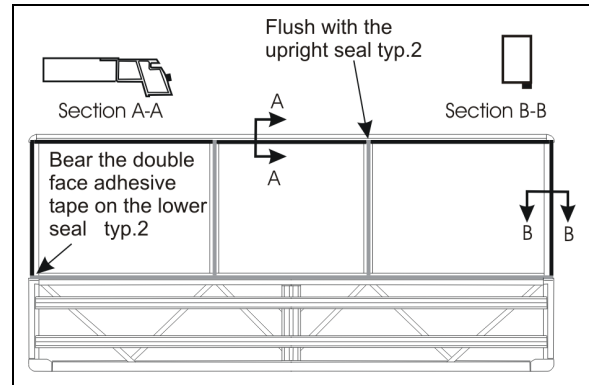


FIGURE 52 : FACE FIXED WINDOWS – 3/16 X 1/2 DOUBLE FACE ADHESIVE TAPE INSTALLATION

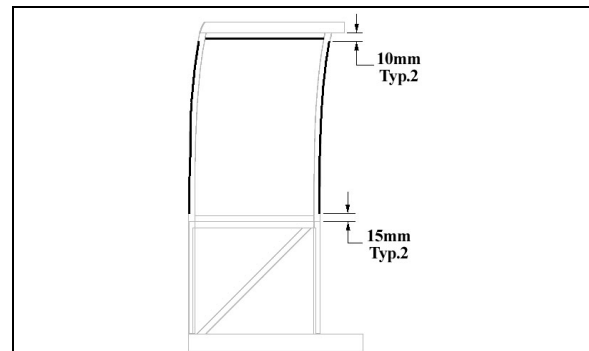


FIGURE 53 : SIDE FIXED WINDOW – ¼ X ½ DOUBLE FACE ADHESIVE TAPE INSTALLATION

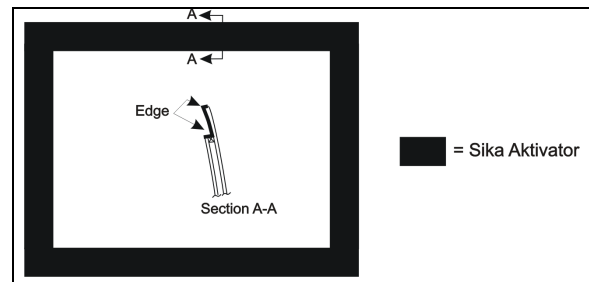


FIGURE 54 : FACE FIXED WINDOW AND HALF-WINDOW – SIKA AKTIVATOR

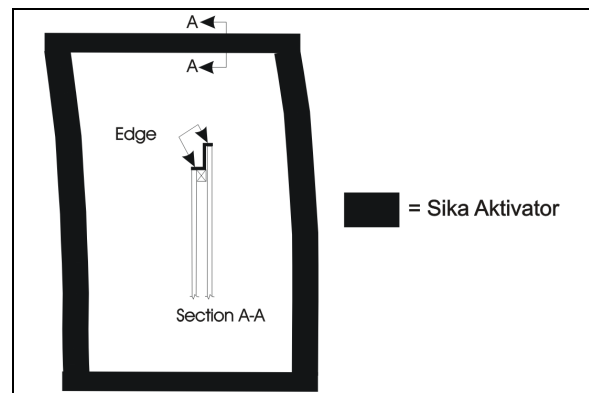


FIGURE 55 : SIDE FIXED WINDOW – SIKA AKTIVATOR

Section 26: XLII SLIDE-OUT

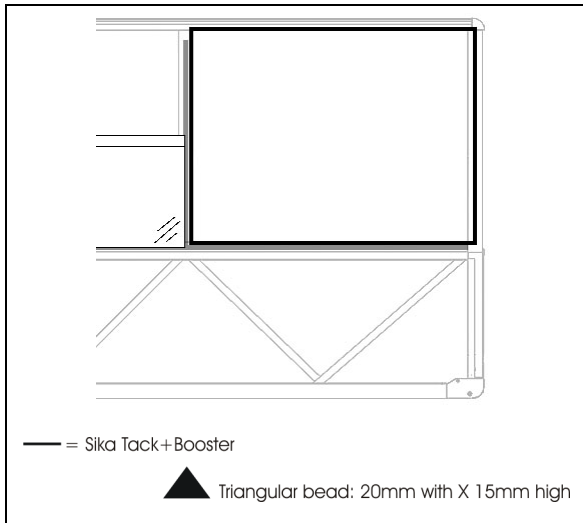


FIGURE 56 : FACE FIXED WINDOW INSTALLATION – SIKA TACK+BOOSTER

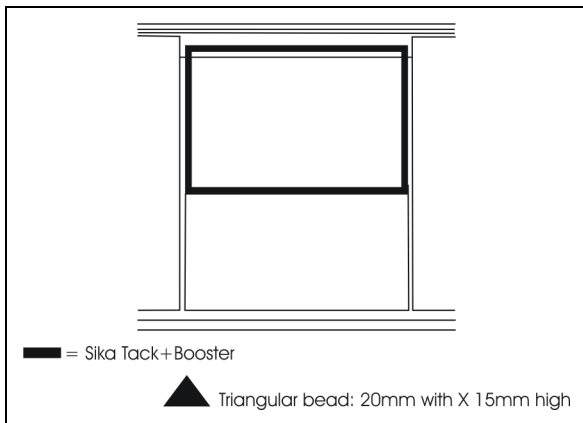


FIGURE 57 : FACE FIXED HALF-WINDOW INSTALLATION – SIKA TACK+BOOSTER

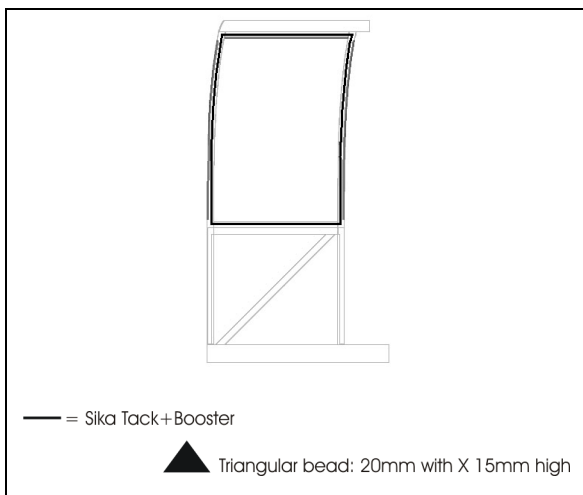


FIGURE 58 : SIDE FIXED WINDOW – SIKA TACK + BOOSTER

3. Apply appropriate double face self adhesive tape on the slide-out structure (see FIGURE 52 for face fixed windows or FIGURE 53 for side fixed window).
4. Clean window with appropriate window cleaner.
5. Apply Sika Aktivator on the window pane as per FIGURE 54 or FIGURE 55.
6. Apply Sika Tack+Booster as per FIGURE 56 FIGURE 57 or FIGURE 58 (triangular bead: 20mm width X 15mm high).
7. Install the windows on the slide-out structure (see FIGURE 59 or FIGURE 60).
8. Press the jigs on the windows and wait for the adhesive to dry (90 minutes minimum).
9. After drying, apply Sika 221 as a finishing joint. Clean excess with Sika 208.
10. Refer to section 16.11 for the finishing joint application procedure.

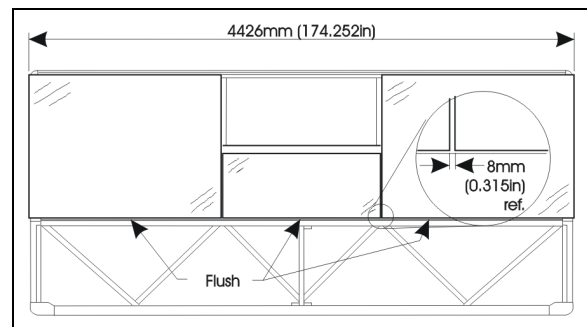


FIGURE 59 : FACE FIXED WINDOW INSTALLATION

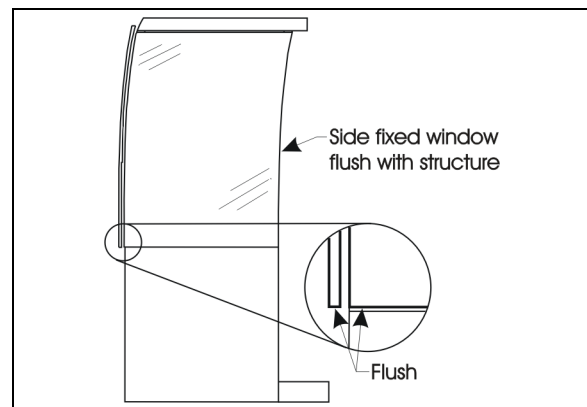


FIGURE 60 : SIDE FIXED WINDOW

16.9 AWNING WINDOW INSTALLATION

1. Clean and prepare the windows and the slide-out structure surfaces with appropriate cleaner, abrasives and primers.
2. Glue on the structure horizontal member, 4 rubber bumpers (#5061020), placing them 2 by 2 to have a total thickness of 1/16" (FIGURE 61).

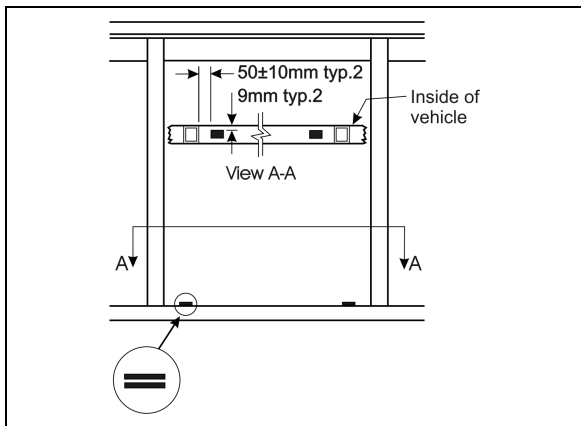


FIGURE 61: AWNING WINDOW - RUBBER BUMPER INSTALLATION

3. Glue 4 rubber bumpers (#790610) on the awning window frame as per FIGURE 62.

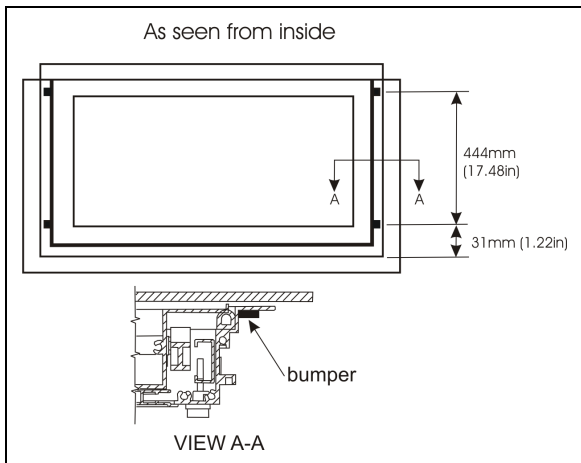


FIGURE 62: SIDE BUMPERS

4. Place masking tape on the inside of the frame as per FIGURE 63.

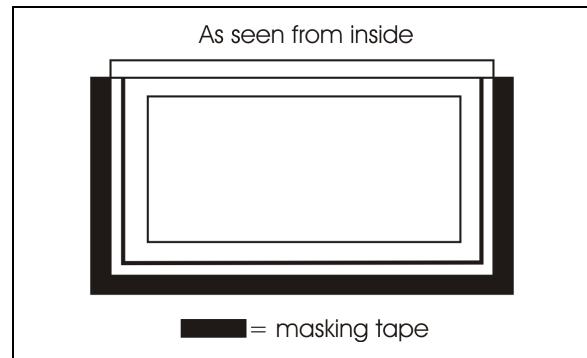


FIGURE 63: MASKING TAPE APPLICATION

5. Apply Sika 255 in the upper and lower frame corner as per FIGURE 64.

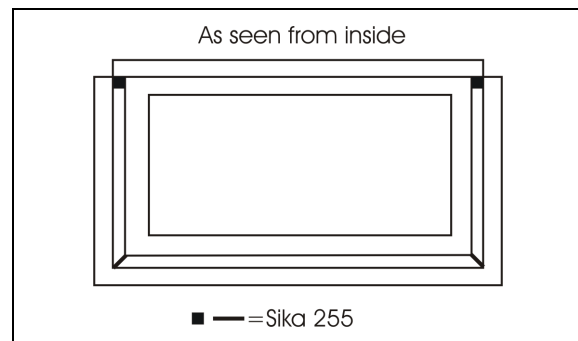


FIGURE 64: SIKA 255 APPLICATION

6. Apply Sika Aktivator as per FIGURE 65.
7. Apply Sika 255 as per FIGURE 66 (triangular bead: 10mm width X 10mm high).

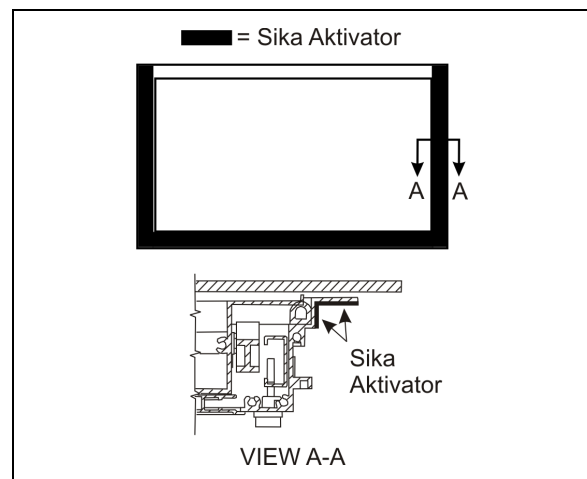


FIGURE 65 : AWNING WINDOW - SIKA AKTIVATOR

Section 26: XLII SLIDE-OUT

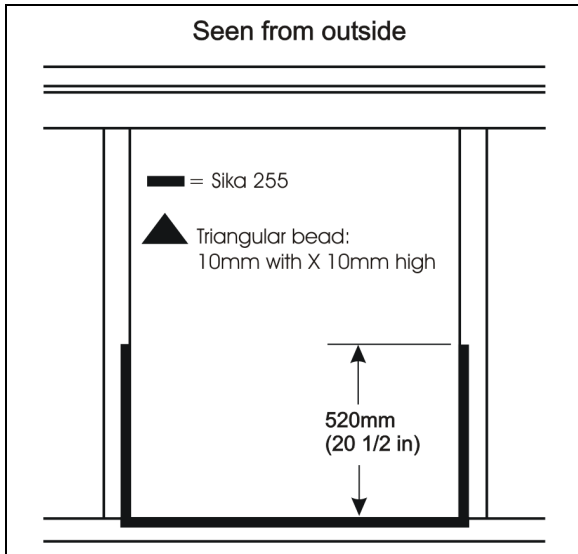


FIGURE 66: AWNING WINDOW – SIKA 255 APPLICATION

8. Install the awning window centered in the opening. Press the window slightly. The awning window must be kept closed.
9. While a helper is pressing on the window from outside, install the awning window clamping frame and tighten screws according to the sequence shown in FIGURE 67.

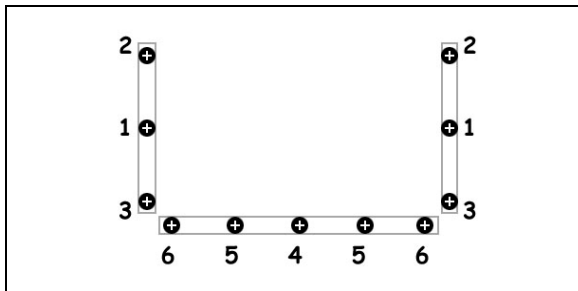


FIGURE 67: CORRECT TIGHTENING SEQUENCE

10. Open the awning window manually and smooth down the joint (FIGURE 68) and remove glue in excess with Sika 208.

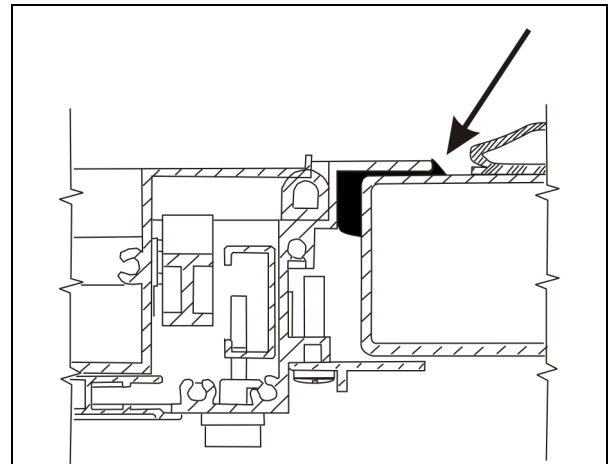


FIGURE 68 : SMOOTH DOWN THE JOINT

11. Using Sika 252 or 255, seal the upper corner of the awning window, both side (FIGURE 69).
12. Using Sika 252 or 255, seal the chink between the structure vertical member and the awning window, both side (FIGURE 70).



FIGURE 69 : AWNING WINDOW – SEAL THE UPPER CORNERS



FIGURE 70 : AWNING WINDOW – SEAL THE CHINK

16.10 SLIDING WINDOW INSTALLATION

1. Clean and prepare the windows and the slide-out structure surfaces with appropriate cleaner, abrasives and primers. Clean surfaces with anti-silicone.
2. Apply Sika Aktivator on sliding window as per FIGURE 71.
3. Apply Sika Aktivator on the structure as per FIGURE 72.
4. Apply Sika 252 as per FIGURE 73 (triangular bead: 20mm width X 10mm high).
5. Install the sliding window centered in the opening. Press the window slightly. The window must be kept closed.
6. While a helper is pressing on the window from outside, install the awning window clamping frame and tighten screws according to the sequence shown in FIGURE 74.
7. Remove glue in excess with Sika 208.
8. Using Sika 252 or 255, seal the inside upper corner of the sliding window, both side (FIGURE 75).
9. Using Sika 252 or 255, seal the chink between the structure vertical rubber seal and the sliding window, both side (FIGURE 76).

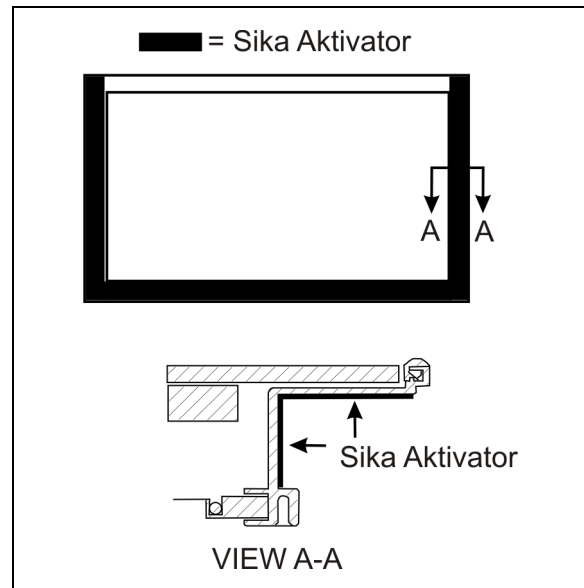


FIGURE 71 : SLIDING WINDOW - SIKa AKTIVATOR



FIGURE 72 : SLIDING WINDOW - SIKa AKTIVATOR

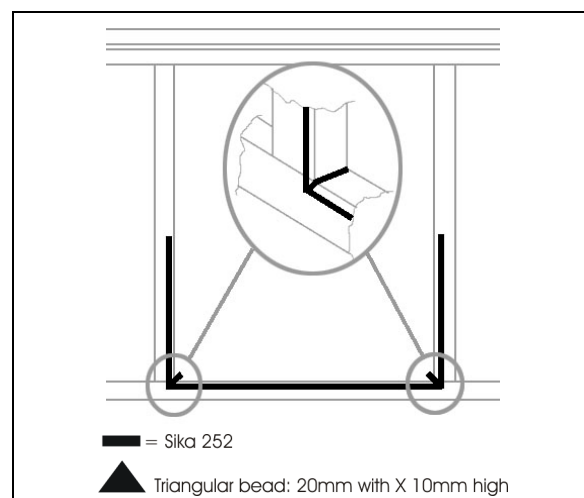


FIGURE 73 : AWNING WINDOW – SIKa 252 APPLICATION

Section 26: XLII SLIDE-OUT

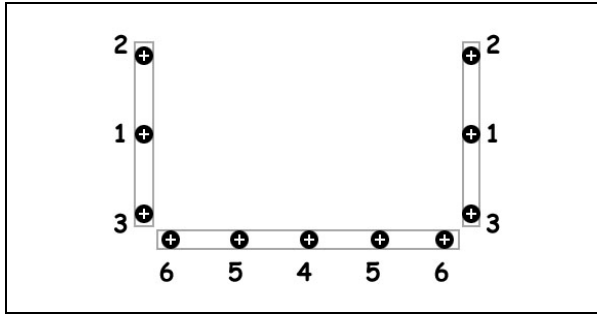


FIGURE 74 : CORRECT TIGHTENING SEQUENCE

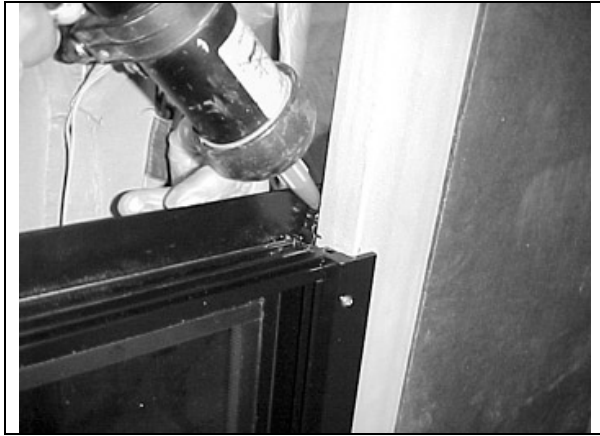


FIGURE 75 : SLIDING WINDOW – SEAL THE UPPER CORNERS



FIGURE 76 : SEAL

16.11 FINISHING JOINT

The following procedure applies to section 16.11.1 up to 16.11.4.

For surface cleaning and preparation, tools, cleaner, adhesives and other product needed, refer to the MTH side panel installation procedure described in section 18: BODY.

1. Place masking tape to protect surfaces from smudge.
2. Apply Sika 221.

3. Using soapy water, smooth down the joint with your finger (wear vinyl gloves).

16.11.1 Slide-out face

Apply Sika 221 between the face panel and the structural member



FIGURE 77

Apply Sika 221 between the top of face window and the structural member



FIGURE 78

16.11.2 Slide-out side

Apply Sika 221 between the top of side window and the structural member

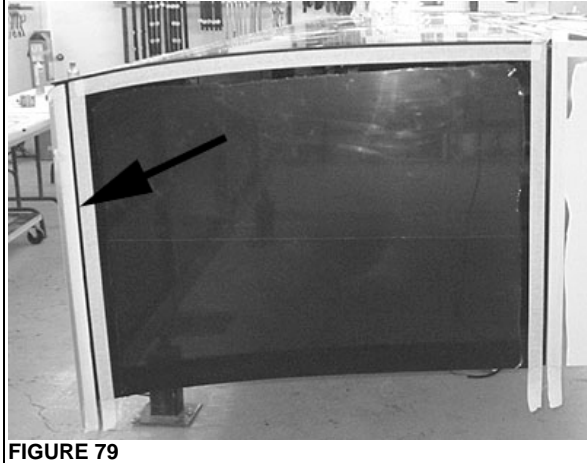


FIGURE 79

16.11.3 Slide-out bottom

Apply Sika 221 between bottom edge of side panel and structural member



FIGURE 82

Apply Sika 221 between the bottom of side window and top of side panel

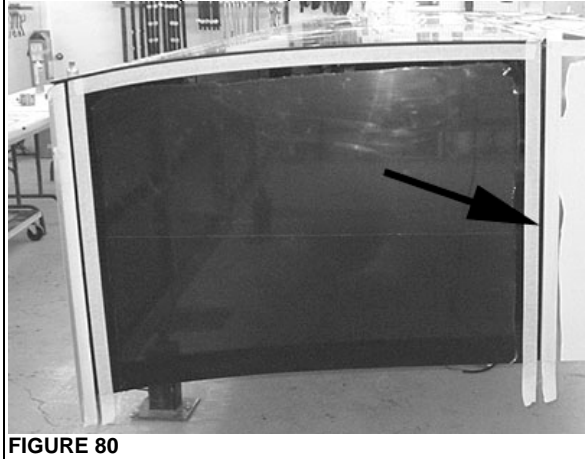


FIGURE 80

Apply Sika 221 between edge of bottom panel and structural member

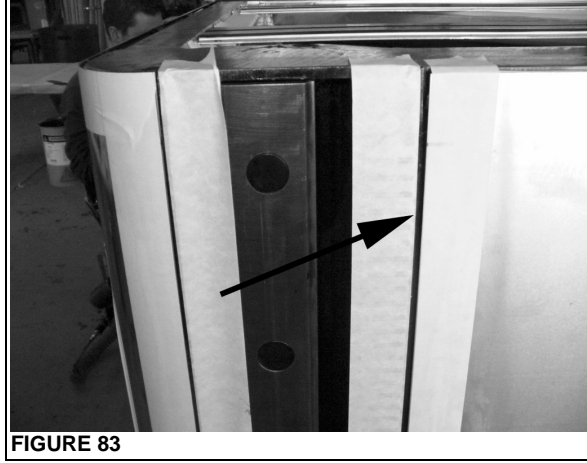


FIGURE 83

Apply Sika 221 between side window and top of face fixed window

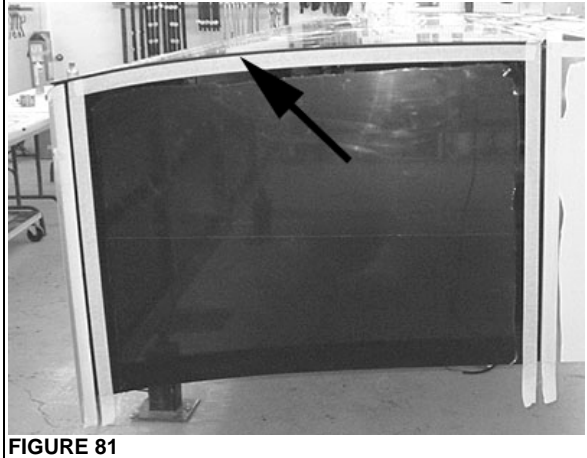


FIGURE 81

Apply Sika 221 between the bottom panel and the magnets

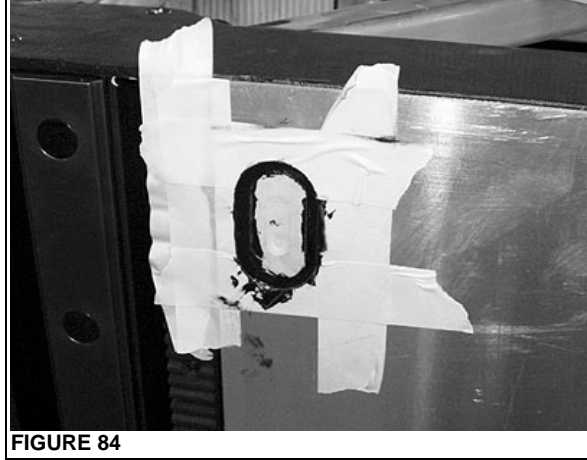


FIGURE 84

Section 26: XLII SLIDE-OUT

Apply Sika 221 around the security pin cavity



FIGURE 85

16.11.4 Top of Slide-out

Apply Sika 221 between edge of top panel and structural member



FIGURE 86

17 WELDING PRECAUTION



Prior to arc welding on the vehicle, refer to the Welding Precautions Procedure Prior To Welding" in section 00 GENERAL of this manual to avoid serious damage to the vehicle components.

18 SLIDE-OUT MANUAL OVERRIDE PROCEDURES

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

The manual override procedures consist in rotating the slide-out motor shaft extension using a cordless power drill with a 3/8" hexagonal bit.

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

18.1 PRELIMINARY CONDITIONS FOR MANUAL OVERRIDE PROCEDURE

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

- Make sure that none of the breakers are tripped (the breakers are located inside the VEC on the slide-out control panel (FIGURE 88) and the main slide-out breaker is located in the engine R.H. side access compartment (FIGURE 89)).
- Make sure the parking brake is applied and that transmission is in the "NEUTRAL" position.
- Make sure the voltage is high enough by running the engine at fast idle or having the battery charger connected.



Before extending or retracting the slide-out, always open a window to avoid movement restriction and to prevent the motor from stopping in overcurrent because of a vacuum or pressure build up inside the vehicle.

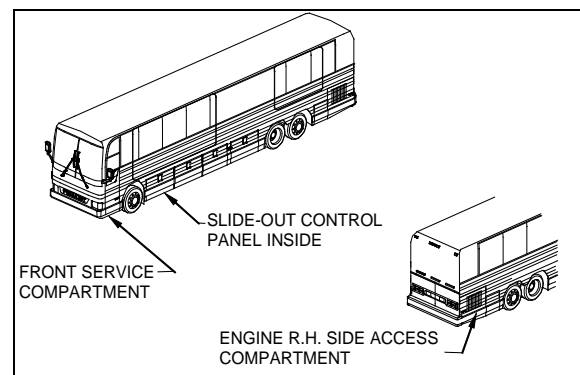


FIGURE 87: COMPARTMENTS LOCATION

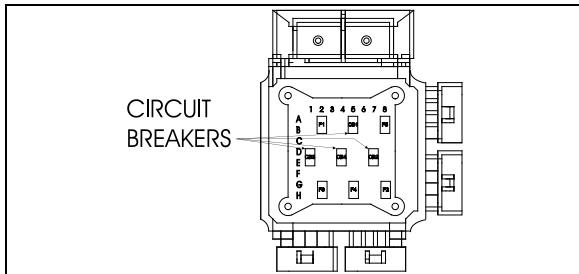


FIGURE 88: VEC CIRCUIT BREAKERS ON SLIDE-OUT CONTROL PANEL

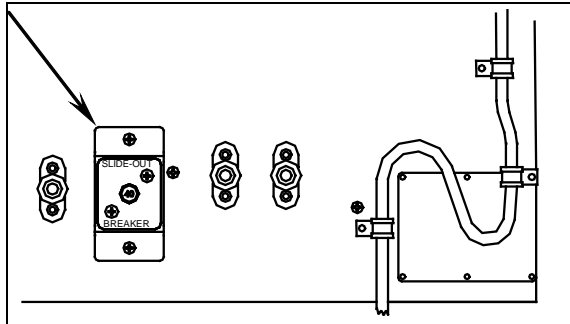


FIGURE 89: MAIN SLIDE-OUT BREAKER IN ENGINE R.H. SIDE ACCESS COMPARTMENT

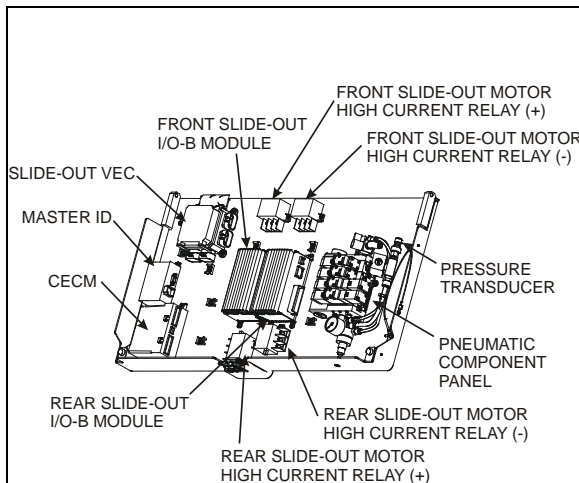


FIGURE 90: SLIDE-OUT CONTROL PANEL

18.1.1 Manual retracting procedure – Front and rear slide-out

1. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
2. Deflate the inflatable seal by using the relieving shut-off valve located on the pneumatic component panel (FIGURE 91).
3. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

⚠ CAUTION ⚠

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

NOTE

When air pressure is relieved using the shut-off valve, the normal extending and retracting operation cycle is disabled, for that reason the slide-out cannot be moved using the handheld control.

4. To move the slide-out, use a cordless power drill with a 3/8" hexagonal bit on the shaft extension of the slide-out motor.
5. Rotate the slide-out motor shaft extension with the power drill until the slide-out comes to its closed position (FIGURE 92).
6. Once the slide-out room is lined up to its closed position, remove the tool from the motor.

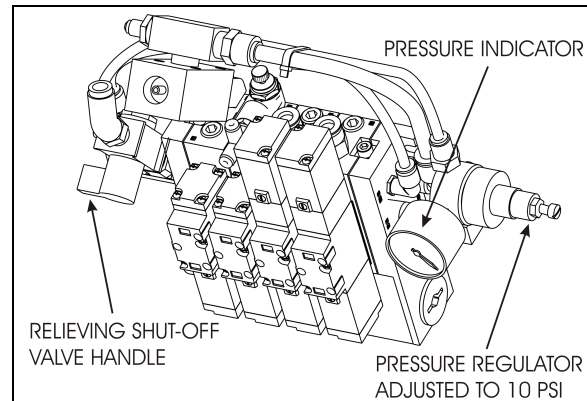


FIGURE 91: INFLATABLE SEAL RELIEVING SHUT-OFF VALVE

NOTE

The **front slide-out motor** is located inside the 2nd baggage compartment while the **rear slide-out motor** is accessible from inside the vehicle, under the bed structure.

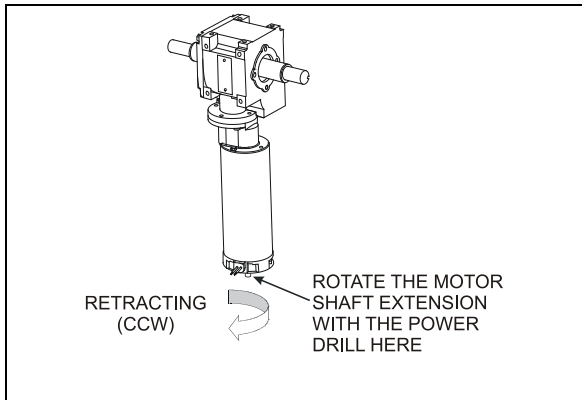


FIGURE 92: SLIDE-OUT MOTOR ROTATION

⚠ CAUTION ⚠
 Slow down on the closing speed as the slide-out approaches its closed position. As soon as the “in limit” stoppers come in contact with their bearing surface, stop immediately the power drill rotating movement. Not doing so could overload the drive mechanism and cause damage to the reduction gearbox.

4. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator to see if the pressure is increasing to 10 psi (FIGURE 93).

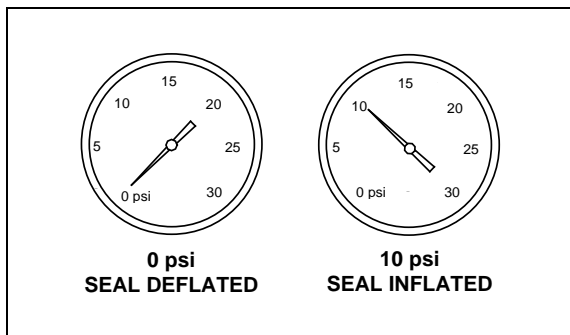


FIGURE 93: INFLATABLE SEAL PRESSURE GAGE

NOTE
 The slide-out control system inhibits transmission range selection to prevent the vehicle from moving if the slide-out is not in its full “IN” position.

18.1.2 Manual extending procedure – Front and rear slide-out

1. Apply parking brake to disengage the security pin from the receptacle.
2. Turn the ignition switch to the “OFF” position, and remove the ignition key for more safety.
3. Deflate the inflatable seal by using the relieving shut-off valve located on the pneumatic component panel (FIGURE 91). Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is “0 psi”.

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

NOTE
 When air pressure is relieved using the shut-off valve, the normal extending and retracting operation cycle is disabled, for that reason the slide-out cannot be moved with the handheld control.

4. To move the slide-out, use a cordless power drill with a 3/8" hexagonal bit on the shaft extension of the slide-out motor.
5. Rotate the slide-out motor shaft extension with the power drill until the slide-out comes to its opened position (FIGURE 94).
6. Once the slide-out is lined up to its opened position, remove the tool from the motor.

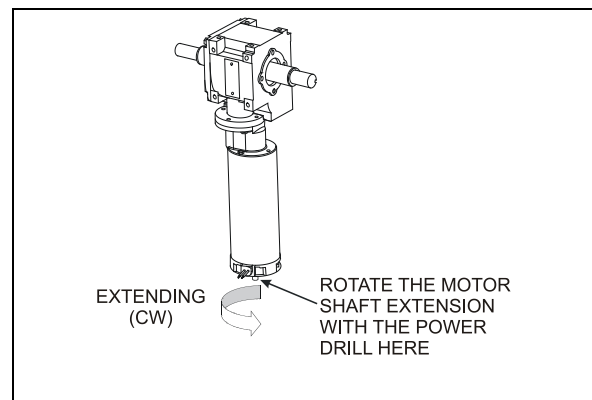


FIGURE 94: SLIDE-OUT MOTOR ROTATION

NOTE

The **front slide-out motor** is located inside the 2nd baggage compartment while the **rear slide-out motor** is accessible from inside the vehicle, under the bed structure.

CAUTION

Slow down on the closing speed as the slide-out approaches its extended position. As soon as the “out limit” stoppers come in contact with their bearing surface, stop immediately the power drill rotating movement. Not doing so could overload the drive mechanism and cause damage to the reduction gearbox.

- Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator to see if the pressure is increasing to 10 psi (FIGURE 94).

NOTE

The *slide-out control system inhibits transmission range selection to prevent the vehicle from moving if the slide-out is not in its full "IN" position.*

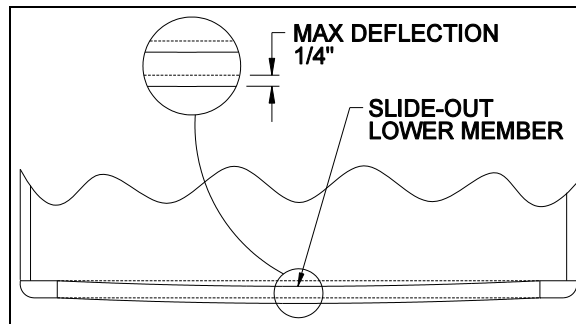


FIGURE 95 : FRONT SLIDE-OUT DEFLECTION

19 SLIDE-OUT MAXIMUM LOAD

Front slide-out:

Maximum load with vehicle at stand still
(retracted or extended)1500 lb
Maximum load with vehicle moving or slide-out
moving1200 lb¹

Rear slide-out:

Maximum load with vehicle at stand still
(retracted or extended)1500 lb
Maximum load with vehicle moving or slide-out
moving1000 lb¹

NOTE

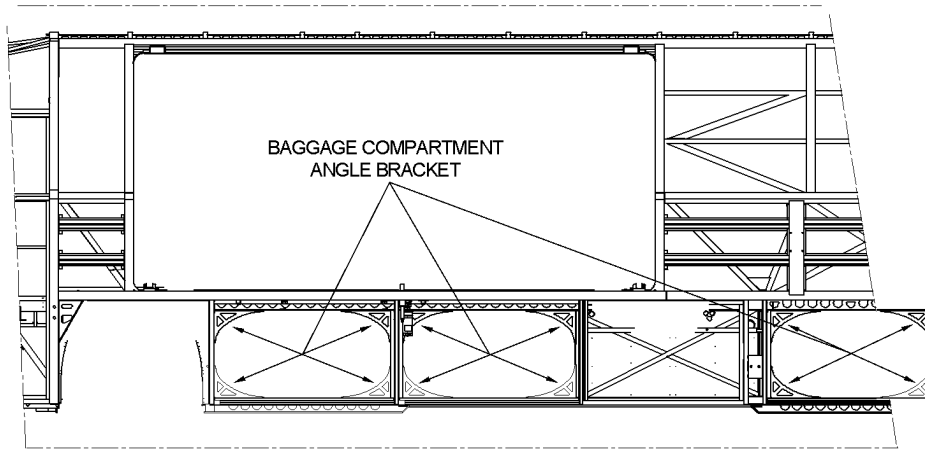
Maximum load includes people weight and equipment added by the converters in the slide-out

¹ When the load is distributed in the slide-out to prevent a deflection of the inside lower member over ¼" that could damage the seal.

Section 26: XLII SLIDE-OUT



Never remove the structural reinforcement angle brackets inside the baggage compartments. Doing so could lead to termination of the warranty coverage concerning the structural integrity.



20 CONVERSION CHECKLIST

The converter should check these points before closing the walls covering the roof reinforcing rod and the pinions:

1. Check that the front slide-out exterior panels are parallel with the vehicle panels when retracted. If not, readjust the tilt.
2. Check that the slide-out is straight when completely extended, and that it leans against all inner stoppers.
3. Make sure the vehicle upper member is parallel with the front slide-out structure. If not, readjust the roof reinforcing rod. This may be affected by the loading on the roof.
4. Make sure the front slide-out lower member deflection is within 1/4". If not, redistribute the slide-out load.
5. Check the whole slide-out mechanism good functioning. The slide-out should retract and extend smoothly without vibration.

Final check:

- Make sure the slide-out air pressure inlet valve is completely opened.
- Check the inflatable seal air pressure on the pressure regulator. The pressure should be 10 psi.

21 TROUBLESHOOTING

21.1 ERROR CONDITION OR MISSING OPERATION CONDITION

When an error condition or a missing operation condition is present on a slide-out, the green indicator light on its respective handheld control starts blinking upon releasing of the IN/OUT rocker switch.

Turning the ignition OFF and ON again, will stop the blinking and reset the fault. If the error condition or a missing operation condition is still present, the blinking will start again the next time that the slide-out is operated. So, to get a fault diagnostic, use the MCD right after operating the slide-out without cycling the ignition switch.

NOTE

It is of the utmost importance to have a MCD (message center display) in working condition because it is the most important tool to achieve troubleshooting on a multiplex vehicle.

Fault diagnostic

To get more specific information about the error condition or the missing operation condition, request a diagnostic from the slide-out CECM using the dashboard message center display (MCD). Check if there are active errors in the slide-out electrical system. With the SYSTEM DIAGNOSTIC menu, highlight FAULT DIAGNOSTIC and then highlight ELECTRICAL SYSTEM to request a diagnostic of the electrical system from the CECM. Press the enter key. If applicable, the MCD shows the device ID, the fault messages or fault codes recorded. When more than one fault is recorded, an arrow pointing down appears on the right of the display. Use the down arrow to see all the fault messages.

Once the problem corrected, the MCD still shows the fault as being active. You have to leave the FAULT DIAGNOSTIC menu, wait approximately 20 to 30 seconds and then return to FAULT DIAGNOSTIC to request a new diagnostic of the ELECTRICAL SYSTEM from the CECM. The MCD should display the fault as being inactive.

21.2 TROUBLESHOOTING – OPERATING CONDITIONS & CONTROL

PROBLEM	CAUSE	CORRECTIVE ACTION
The slide-out functions normally but the handheld control green indicator light blinks	Something is defective and may eventually create an issue if not repaired. The problem may be: <ul style="list-style-type: none"> A. Faulty limit sensor causing the slide-out to stop in overcurrent; B. CAN network problem causing the transmission inhibit safety to be non-operational; C. Vacuum pressure transducer disconnected or damaged (vacuum is applied for a fixed 	Request a diagnostic from the electrical system using the MCD SYSTEM DIAGNOSTIC menu and refer to the Fault Message list in section 21.4.

Section 26: XLII SLIDE-OUT

PROBLEM	CAUSE	CORRECTIVE ACTION
	<p>time of 7 seconds);</p> <p>D. Seal inflating valve solenoid open circuit (the seal is not re-inflated and water can penetrate in the vehicle);</p> <p>E. Security pin valve solenoid open circuit (the security pin is not extended while vehicle is riding).</p>	
<p>The slide-out does not extend</p>	<p>A. The parking brake is not seen by the controller as being applied;</p> <p>B. Not enough air pressure in the accessory air tank to permit proper operation of the vacuum generator;</p> <p>C. Faulty vacuum generator, connection to the vacuum generator open, seal deflating valve solenoid open circuit;</p> <p>D. I/O-B module output defective, regulated 5-volt supply to sensors shorted to ground, "out limit" sensor shorted to ground, connection to the motor negative relay solenoid open circuit;</p>	<p>A. Make sure the parking brake is applied. Confirm parking brake application with the parking brake light on the telltale panel.</p> <p>B. Run the engine at fast idle a few minutes to increase air pressure in the accessory air tank and try again.</p> <p>C. Turn the relieving shut-off valve handle clockwise to deflate the inflatable seal, disconnect the pressure transducer. Do not forget to reconnect the pressure transducer and to close the relieving shut-off valve. Failure to do so could damage the seal and lead to water infiltration;</p> <p>D. Operate the slide-out with the manual override procedures.</p>
<p>The slide-out does not retract</p>	<p>A. Not enough air pressure in the accessory air tank to permit proper operation of the vacuum generator;</p> <p>B. Faulty vacuum generator, connection to the vacuum generator open, seal deflating valve solenoid open circuit;</p> <p>C. I/O-B module output defective, "in limit" sensor shorted to ground, connection to the motor positive relay solenoid open circuit;</p>	<p>A. Run the engine at fast idle a few minutes to increase air pressure in the accessory air tank and try again.</p> <p>B. Turn the relieving shut-off valve handle clockwise to deflate the inflatable seal, disconnect the pressure transducer. CAUTION, do not forget to reconnect the pressure transducer and to close the relieving shut-off valve. Failure to do so could damage the seal and lead to water infiltration;</p> <p>C. Operate the slide-out with the manual override procedures.</p>
<p>When extending, the slide-out stops after having extended by 1 inch</p>	<p>A. The security pin valve solenoid circuit is shorted to (+) 24-volt and the pin remains engaged;</p>	<p>A. Disconnect air supply from the safety pin cylinder;</p>

Section 26: XLII SLIDE-OUT

PROBLEM	CAUSE	CORRECTIVE ACTION
<p>Transmission DRIVE range or REVERSE cannot be selected (the slide-out telltale light is illuminating).</p>	<p>A. Slide-out not in full "in" position; B. Faulty "in limit" sensor. The slide-out is retracted but the controller doesn't see it as retracted.</p>	<p>A. Retract slide-out. B. Confirm that all slide-out are retracted. On the slide-out control panel, disconnect the 5 pins green connector on the I/O-B module to disable the transmission inhibit. CAUTION, this is a temporary measure, the vehicle must be serviced as soon as possible.</p>

Section 26: XLII SLIDE-OUT

21.3 TROUBLESHOOTING - MECHANICAL COMPONENTS

PROBLEM	CAUSE	CORRECTIVE ACTION
Slide-out does not retract or extend when depressing the control switch.	A. Electrical motor failure; B. Speed reduction gearbox failure; C. Security pin still engaged in receptacle;	A. Replace motor. B. Inspect gearbox components, particularly: bronze wheel or first reduction stage output shaft. Replace damaged components. C. Disengage pin and check if air cylinder is damaged.
Slide-out is not straight once retracted or during retracting or extending operation.	A. Broken rack tooth; B. Faulty rack attachment; C. Faulty shaft key at speed reduction gearbox or jaw coupling; D. Pinion keyless bushing slipping; E. Shaft breaking; F. Flange bearing attachment loosen;	A. Replace rack. B. Tighten mounting bolts, apply proper torque and use Loctite threadlocker (replace rack if necessary). C. Replace key or component having a damaged keyway. D. Realign slide-out and apply proper torque to keyless bushing. E. Replace shaft. F. Reposition shaft and tighten flange bearing mounting bolts.
Slide-out moves out slightly when vehicle is traveling.	A. Lower "in limit" stoppers are not leaning against the structure at the moment when the "in limit" sensor detects the magnet;	A. Adjust the sensor position in order to have contact of the stoppers against the structure at the time when the system stops the slide-out retraction.
Slide-out moves when vehicle is moving.	A. Inflatable seal not inflated	A. Check seal condition and seal air supply system.
Slide-out retracts or extends difficultly.	A. Foreign matters accumulated in the linear bearing;	A. Inspect the linear bearing end seals to see if they are in good condition. If not, replace the end seals and clean the inside of linear bearing.
Slide-out oscillates vertically when retracting or extending	A. Linear bearing balls hardened due to a too heavy load; B. Linear bearing mounting bolts loosen;	A. If balls clearance is excessive, replace linear bearing. B. Tighten mounting bolts.
Slide-out vibrating or noisy when extending or retracting	A. Acetal plastic block rubbing against the slide-out structure; B. Worn-out anti-friction coating on wiper seal around slide-out; C. Lower acetal plastic block rubbing against rail;	A. Realign acetal plastic block. B. Replace wiper seal. C. Remove lower acetal plastic block and machine down 1mm (0.039").
Top of slide-out moves	A. Roof reinforcing rod misadjusted;	A. Readjust as per procedure.

Section 26: XLII SLIDE-OUT

PROBLEM	CAUSE	CORRECTIVE ACTION
sideways when vehicle is moving		
Slide-out does not retract up to its full "in" position	A. Interference between the exterior extrusion and the vehicle upper horizontal member above the slide-out;	A. Check for straightness of horizontal member and adjust the roof reinforcing rod. B. Check for outer wiper seal lip straightness on the slide-out roof.
Bottom of slide-out not flush with vehicle body	A. Broken or misadjusted lower "in limit" stopper; B. Lower "in limit" stoppers are not leaning against the structure at the moment when the "in limit" sensor detects the magnet; C. Acetal plastic block serving as leaning surface for lower "in limit" stopper broken or moved;	A. Replace or adjust lower "in limit" stopper. B. Adjust the sensor position in order to have contact of the stoppers against the structure when slide-out is stopped. C. Replace or adjust acetal plastic block proper position.
Top of slide-out not flush with vehicle body	A. Broken or misadjusted leveling or retaining screw; B. Faulty upper "in limit" stopper;	A. Check and replace screw. B. Replace upper "in limit" stopper.
Lower edge of slide-out not parallel with vehicle body opening	A. Faulty leveling and retaining screw (8 screws each side).	A. Inspect screw, replace and adjust slide-out level.
Watertightness problem	A. Inflatable seal and/or wiper seal damaged or unstuck; B. Insufficient air pressure in the seal; C. No air pressure in the slide-out pneumatic system; D. Sealant missing; E. Wiper seal draining hole clogged; F. Faulty water recovery pan; G. Faulty internal gutter;	A. Check both seals condition. B. Check the pressure regulator, the relieving shut-off valve and the seal valve condition. C. Check the slide-out air pressure inlet valve condition and the accessory air tank pressure. D. Check the exterior extrusion screws, the windows and the exterior panels sealant condition. E. Unclog draining hole. F. Check the recovery pan. G. Check internal gutter.
Knocking sound at end of travel when extending slide-out	A. Inner stoppers misadjusted;	A. Readjust the inner stoppers.
Knocking sound when parking brake is released	A. Security pin retracts too rapidly;	A. Adjust security pin air flow regulator.

Section 26: XLII SLIDE-OUT

PROBLEM	CAUSE	CORRECTIVE ACTION
Inflatable seal damaged or removed, or wiper seal unstuck from the structure.	<ul style="list-style-type: none"> A. Slide-out has been retracted or extended with the manual procedure with the inflatable seal not deflated; B. Pressure transducer malfunction; C. Faulty roof reinforcing rod adjustment; D. Seal valve malfunction; E. Excessive load in the slide-out; F. Slide-out not centered in the structure opening; 	<ul style="list-style-type: none"> A. Always deflate the seal when manually retracting or extending the slide-out. B. Check the pressure transducer condition, replace if necessary. C. Readjust the roof reinforcing rod. D. Check the seal valve condition. E. Reduce load or distribute load evenly in order to respect the deflection criterion and slide-out load capacity. F. Readjust the slide-out height and center horizontally in opening.
Friction at end of travel when in full OUT position or at beginning of retraction	<ul style="list-style-type: none"> A. Interference between upper structure key and upper inner stopper; 	<ul style="list-style-type: none"> A. Readjust the upper inner stopper.

21.4 SLIDE-OUT FAULT MESSAGE ON MESSAGE CENTER DISPLAY (MCD)

SID #	FAULT MESSAGE	TEXT	PROBABLE CAUSE	CORRECTIVE ACTION
1	Voltage Module A56	Value Too Low	Module A56 sees a Voltage less than 18 V on its power supply connector. Breaker, fuse or wiring harness open.	Check/ reset circuit breaker CBSo and CBSo1. Check/ replace fuse FSo5 Fix wiring harness
2	No Response Mod A56	Data Error	CECM module does not receive CAN communication from module A56. CAN connector A56 J3 Disconnected or CAN wiring harness open, or module A56 is defective.	Check connection A56 J3 Fix CAN wiring harness Replace module A56
3	Voltage Module A57	Value Too Low	Module A57 sees a voltage less than 18 V on its power supply connector. Breaker, fuse or wiring harness open.	Check/ reset circuit breaker CBSo and CBSo2. Check/ replace fuse FSo2 Fix wiring harness
4	No Response Mod A57	Data Error	CECM module does not receive CAN communication from module A57. CAN connector A57 J3 disconnected or CAN wiring harness open or module A57 is defective.	Check connection A57 J3 Fix CAN wiring harness Replace module
5	SldO Vacuum Sensor	Open Circuit	Pressure transducer disconnected. Faulty pressure transducer. Connection or wiring harness open.	Check/ replace vacuum transducer Check/ reconnect the connector SESo1 Fix wiring harness
		Shorted High	Pressure transducer is faulty Wiring harness shorted to 12v or 24v	Check/ replace vacuum transducer Fix wiring harness
6	SldO Seal Deaf Vac	Mechanical Fault	Does not reach vacuum level (-5 PSIG). Slide-out seal damaged or air leak in the seal deflating pneumatic circuit.	Check the seals and the pneumatic circuit.
7	SldO Motor/Limit se	Mechanical Or Electrical Fault	Slide-Out motor is activated for more than 5 seconds and the limit sensor from the departing end is still seen as active. Either the motor is defective and the slide-out is not moving or the limit sensor from the departing end is broken active.	If the slide-Out is not moving, then check the motor and its wiring. If the slide-out is moving, then check the limit sensor from the departing end. (If problem occurs when extending, check the in-limit sensor. If the problem occurred when retracting, then check the out-limit sensor).
8	SldO Park Br Signal	Mechanical Or Electrical Fault	Parking brake is not applied. Wire between parking brake switch and CECM is open.	Make sure the parking brake is applied and the parking brake telltale illuminates. Check / replace parking brake switch. Fix wiring harness.
		Shorted High	Wire between parking brake	Fix wiring harness.

Section 26: XLII SLIDE-OUT

SID #	FAULT MESSAGE	TEXT	PROBABLE CAUSE	CORRECTIVE ACTION
			switch and CECM is shorted to 12v or 24v.	
9	SldO Mot SpeedA Ctr	Shorted High	Wiring harness shorted to 12v or 24v	Fix wiring harness
		Current Above normal	Security pin or object stop the movement of a slide-out	Check / fix security pin functionality. Check / remove any object around the slide-out.
10	SldO Mot SpeedB Ctr	Shorted High	Wiring harness shorted to 12v or 24v	Fix wiring harness
		Current Above normal	Security pin or object stop the movement of a slide-out	Check / fix security pin functionality. Check / remove any object around the slide-out.
11	SldO Remote Led	Shorted High	LED or wiring harness shorted to 12v or 24v	Fix LED or wiring harness
		Shorted Low	Led or wiring harness shorted to ground	Fix LED or wiring harness
		Open Circuit	LED is broken. Bad connection on handheld control. Wiring harness is cut.	Check / fix remote LED or connection Check /fix wiring harness
		Current Above normal	Led or wiring harness shorted to 12v or 24v	Fix Led or wiring harness
12	SldO Seal Inf Sol	Shorted High	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
		Shorted Low	Solenoid or wiring harness shorted to ground	Fix solenoid or wiring harness
		Open Circuit	Solenoid is broken or open. Bad connection on solenoid or bloc valve. Wiring harness is cut.	Check / fix solenoid or connection Check /fix wiring harness
		Current Above normal	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
13	SldO Seal Def Sol	Shorted High	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
		Shorted Low	Solenoid or wiring harness shorted to ground	Fix solenoid or wiring harness
		Open Circuit	Solenoid is broken or open. Bad connection on solenoid or bloc valve. Wiring harness is cut.	Check / fix solenoid or connection. Check /fix wiring harness
		Current Above normal	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
14	SldO Vacc Gen Sol	Shorted High	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
		Shorted Low	Solenoid or wiring harness Shorted to ground	Fix solenoid or wiring harness
		Open Circuit	Solenoid is broken or open. Bad connection on solenoid or bloc valve. Wiring harness is cut.	Check / fix solenoid or connection Check / fix wiring harness
		Current Above normal	Solenoid or wiring harness shorted to 12v or 24v	Fix Solenoid or wiring harness
15	SldO Mot Neg Rly	Shorted High	Relay coil or wiring harness shorted to 12v or 24v	Fix relay coil or wiring harness
		Shorted Low	Relay coil or wiring harness shorted to ground	Fix relay coil or wiring harness

Section 26: XLII SLIDE-OUT

SID #	FAULT MESSAGE	TEXT	PROBABLE CAUSE	CORRECTIVE ACTION
		Open Circuit	Relay coil is broken or open. Bad connection on relay. Wiring harness is cut.	Check / fix relay coil or connection Check / fix wiring harness
		Current Above normal	Relay coil or wiring harness shorted to 12v or 24v	Fix relay coil or wiring harness
16	SldO Mot Pos Rly	Shorted High	Relay coil or wiring harness shorted to 12v or 24v	Fix relay coil or wiring harness
		Shorted Low	Relay coil or wiring harness shorted to ground	Fix relay coil or wiring harness
		Open Circuit	Relay coil is broken or open. Bad connection on relay. Wiring harness is cut.	Check / fix relay coil or connection Check / fix wiring harness
		Current Above normal	Relay coil or wiring harness shorted to 12v or 24v	Fix relay coil or wiring harness
17	SldO Open Sw	Shorted High	Switch or wiring harness shorted to 12v or 24v	Fix switch or wiring harness
18	SldO Close Sw	Shorted High	Switch or wiring harness shorted to 12v or 24v	Fix switch or wiring harness
19	SldO Limit In Se	Shorted High	Sensor or wiring harness shorted to 12v or 24v	Fix sensor or wiring harness
20	SldO Limit Out Se	Shorted High	Sensor or wiring harness shorted to 12v or 24v	Fix sensor or wiring harness
21	SldO Secu Pin Sol	Shorted High	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
		Shorted Low	Solenoid or wiring Harness shorted to ground	Fix solenoid or wiring harness
		Open Circuit	Solenoid is broken or open. Bad connection on solenoid or bloc valve. Wiring harness is cut.	Check / fix solenoid or connection. Check / fix wiring harness
		Current Above normal	Solenoid or wiring harness shorted to 12v or 24v	Fix solenoid or wiring harness
22	SldO Limit In Out	Mechanical Or Electrical Fault	In Limit and Out Limit are seen at the same time. In Limit or Out Limit problem.	Check / replace in limit or out limit sensors Fix wiring harness.
23	Limit Sensor 5 V supply	Shorted Low	5v IO-B output is less than 2v. Wiring harness is open or shorted to ground.	Check 5v output on IO-B / replace IO-B module. Fix wiring harness.