



# Recall procedure on "Joint Strength"

Recall: 05-011-JSU

Inside skins & outside roof skin

NHTSA: 05V-365

Author:

G. Lamothe

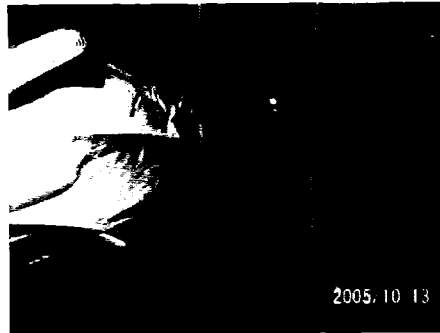
Emission:

19/10/2005

Approval : L. Guillemette

Before you do the modifications, please read the entire procedure. This way you will be familiar with all the steps required to perform the recall. It is assumed that all of the procedures required to embody these modifications will be performed according to professionally accepted standards.

The first step is to cover the seats & floor covering to avoid damage that may be caused during the modifications.



### Safety rule

We suggest you wear safety glasses & gloves to make sure that you will not get burnt while you are heating the skins.

### First section: removal of the inside

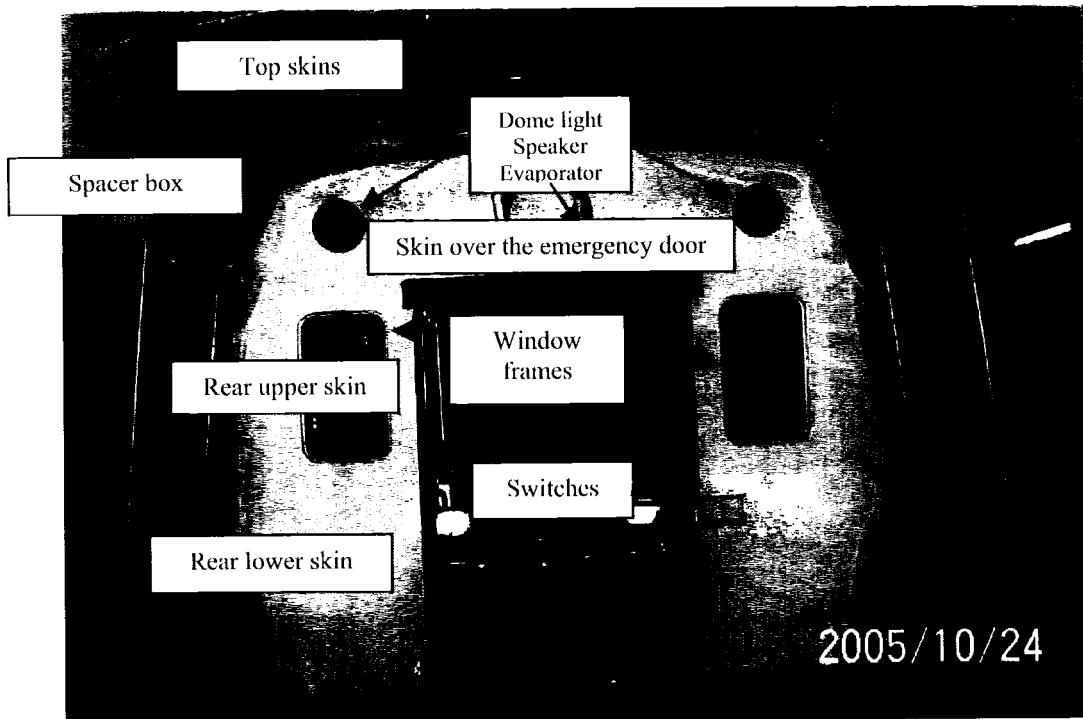


Figure 1: Skins to replace



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### **Step 1.1) Removal of the inside**

If necessary, remove the seats at the back of the minibus using wrenches 7/16, 9/16 & 5/8. Remove the lights, speakers, switches and all other components that may interfere when you will remove the skins. If the vehicle is equipped with an A/C system, you must evacuate it and take off the evaporator. Check carefully where the decals are installed, you will have to put new ones at the same locations after the completion of the work.

### **Step 1.2) Remove the rubber seals from the window frames at the back of the vehicle**

Remove the rubber seals and be careful not to tear them. If necessary, cut the glue joint.

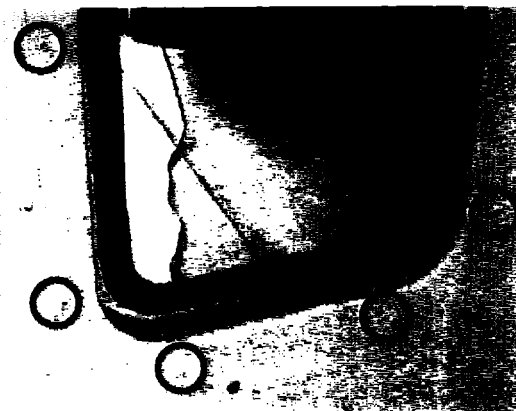


### **Step 1.3) Remove the rear windows**

Cut the joint sealant on the outside of the vehicle with a utility knife. Be careful not to cut the rubber seal. Push on the window from the outside to the inside until the window is out of its frame (2 men should be required). When the window is completely out, take off the joint sealant and be careful not to damage it.

### **Step 1.4) Remove the rear window frames**

Punch the centre pin of the rivets. Drill the rivets with a # 9 drill until the rivets break. Remove the window frames.





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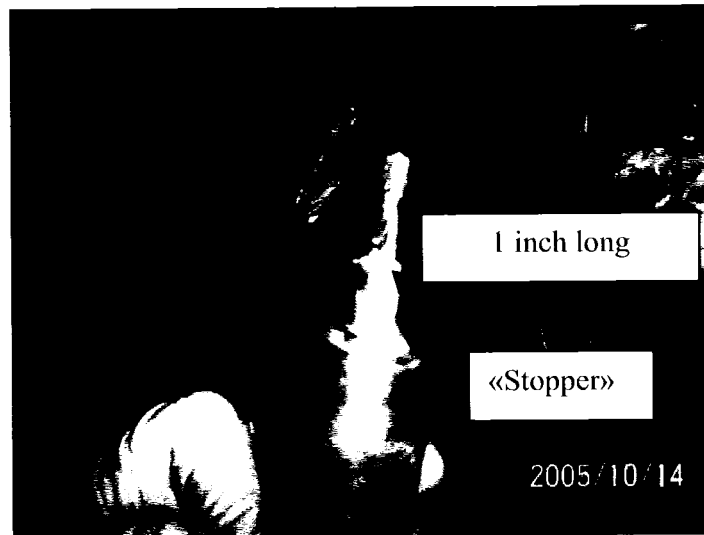
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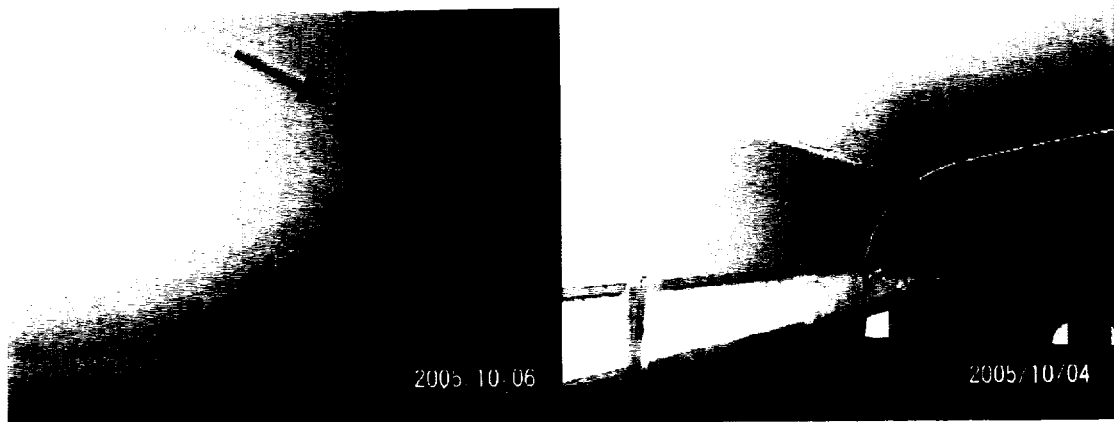
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### Step 1.5) Remove the 2 spacer box covers

To avoid drilling through the outside skins, install a stopper on the drill as shown on the picture below. The size of the drill must not exceed 1 inch.



Punch the centre pin of the rivets. Drill the rivets with a # 9 drill until the rivets break. Remove the rivets & use a 1400W (570°F to 1000°F) « *heat gun* » to remove the covers. Slide a trowel between the 2 skins and pull the skins as the glue softens up. First, pull on the upper side of the cover then the lower side and remove the spacer box cover. Repeat these steps on the other side of the vehicle.





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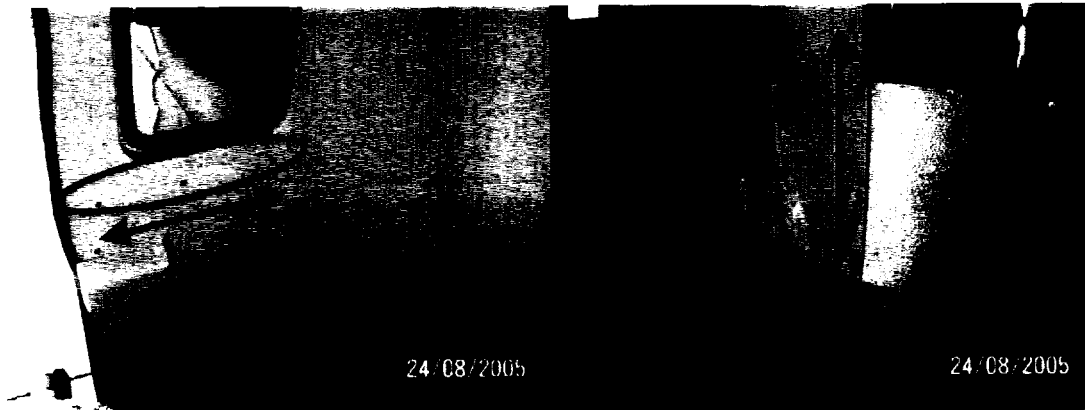
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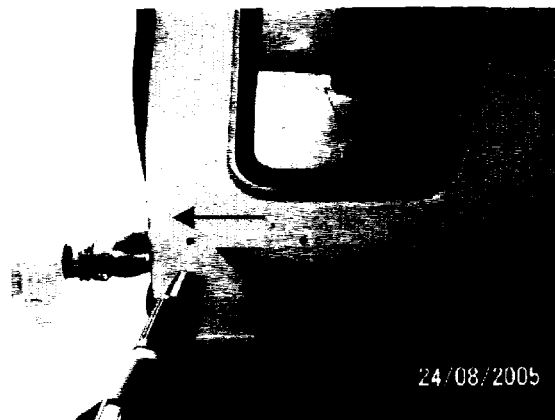
### Step 1.6) Remove the rivets from the rear skins

For those rivets only, drill through the encircled rivets on the picture below with a # 9 drill until the rivets break. Be careful not to drill through the outside skin (use the stopper).



### Step 1.7) Remove the 5 rear skins

Use the « *heat gun* » to remove the 5 rear skins. First, remove the skin over the door then the 2 upper skins and finally the lower ones.





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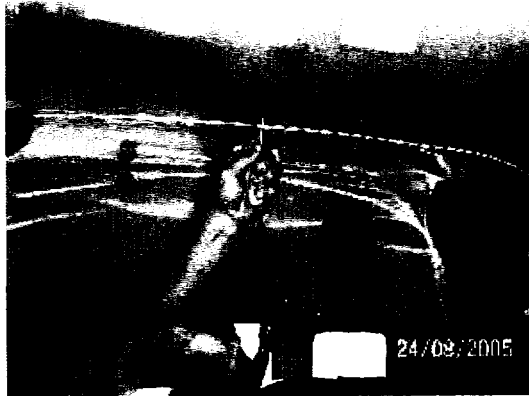
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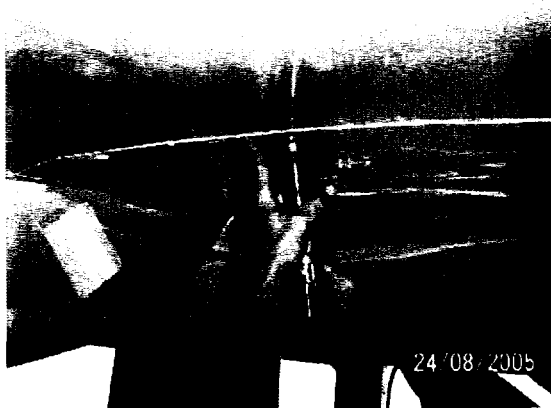
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## Step 1.8) Remove the rivets from the inside roof skins

Punch the centre pin of the rivets.



Drill through the rivets with a # 9 drill until the rivets break. Be careful not to drill through the outside skin (use the stopper).





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### Step 1.9) Remove the roof skins

Heat the roof joint with the « *heat gun* ». Slide a trowel between the 2 skins and pull the skins as the glue softens up. Remove the roof skins from the back to the front. **IMPORTANT: Do not remove the first roof skin at the front of the vehicle.**



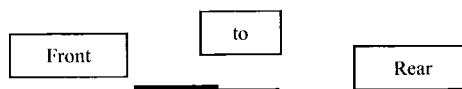
Estimated time for the removal of the inside: 6 hours

## Section 2: Rebuilding of the inside

The following steps will require you apply some glue. It is **important to clean correctly** the surfaces that will be glued. Use a cleaner (with no greasy substance) as isopropyl alcohol 99% before you apply the glue. The parts must be fixed quickly (**it should not take more than 5 minutes**) and the glue joint **must be spread evenly**. When you apply the glue remember that **all the skins joints must be glued** and/or **the extremities of the skin** (example: the skin located between the window & the rear door frame must be glued on the structure because there is no skin joint). Glue must be applied to prevent some passengers to be cut or hurt by the skins in the event of an accident.

You should install the skins as follow:

Starting in the front of the bus: the second skin should cover the extremities of the first one, the third one should cover the extremities of the second and then.



- **Wear safety glasses and rubber gloves to prevent any contact with the glue.**
- **2 persons are required to install the roof panels.**



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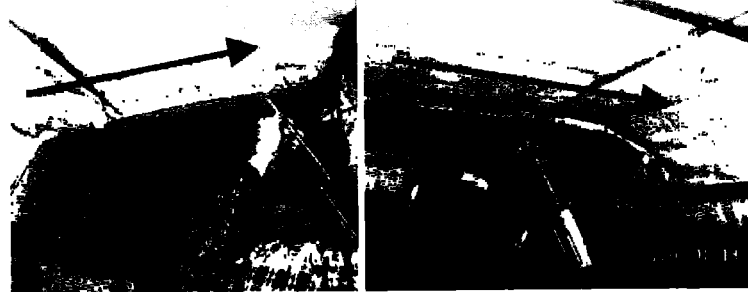
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### Step 2.1) Installation of roof skin # 2

Before you apply the glue, put skin # 2 in place to make sure you have the right part. This will help you figure out how you should install it.

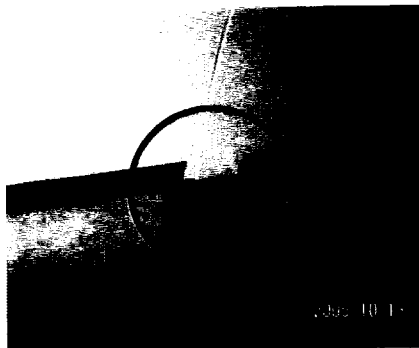


Install roof skin # 2. Two persons should be required to position the skin and maintain it in place. The installation procedure is as follows:

**IMPORTANT:** make sure you are installing the right skin at the right place. You can check the electric wires to know if there are speakers or dome lights you must consider.

1. Clean the 2 parts you have to assemble and apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter onto the skin in place. The cord of glue should be applied at 1/2 inch from the side of the skin. The right technique is to spread the glue in one stroke and constantly.
2. Insert a side of the skin in the spacer box on the right side.
3. Insert the other side of the skin in the spacer box on the left side. To do so, another worker should pull lightly the middle of the skin to the ground. Check picture 4 below.
4. Align the pre-drilled holes in the skin with the bow. Check picture 3 below. Drill a hole in the centre of the minibus with a # 9 drill and put rivet to hold it in place.
5. Once the skin is well positioned, drill in the pre-drilled holes where the skins # 1 & # 2 touch and put rivets. **IMPORTANT:** Before the glue gets dry, remove the excess of glue and clean with "M600 surface cleaner" (Sikkens) or any other similar cleaner.

Picture 3



Picture 4





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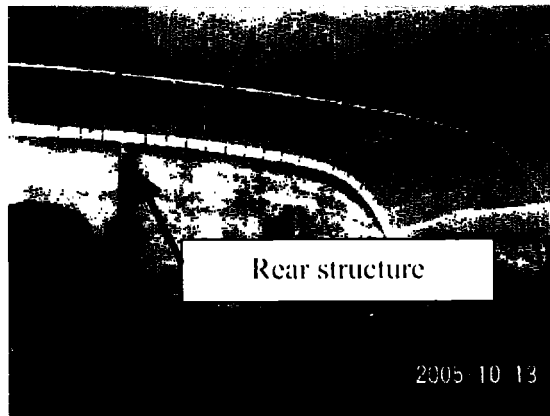
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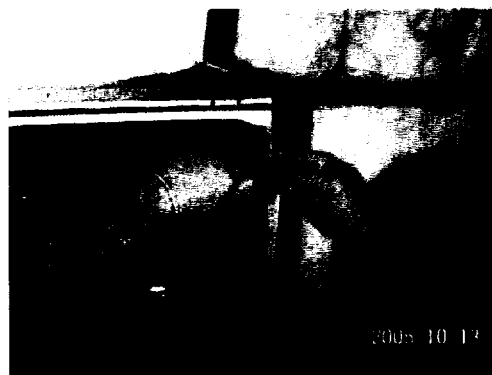
### Step 2.2) Installation of the other roof skins

Repeat step 2.1 for all the other inside roof skins. Make sure the last skin stands against the rear structure.



### Step 2.3) Remove the 3M tape on the rear structure

Use a utility knife to remove the 3M tape previously installed. The better you remove it, the more the new tape will stick to the rear structure.





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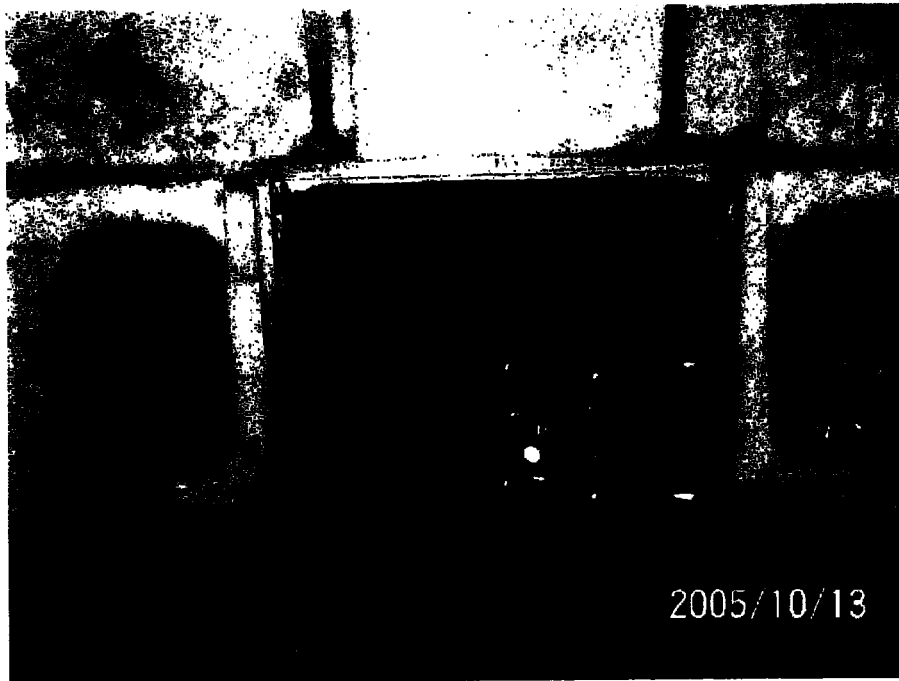
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### Step 2.4) Installation of the rear skins

Apply 3M tape on both sides of the emergency doorframe. This will help to position the rear skins.





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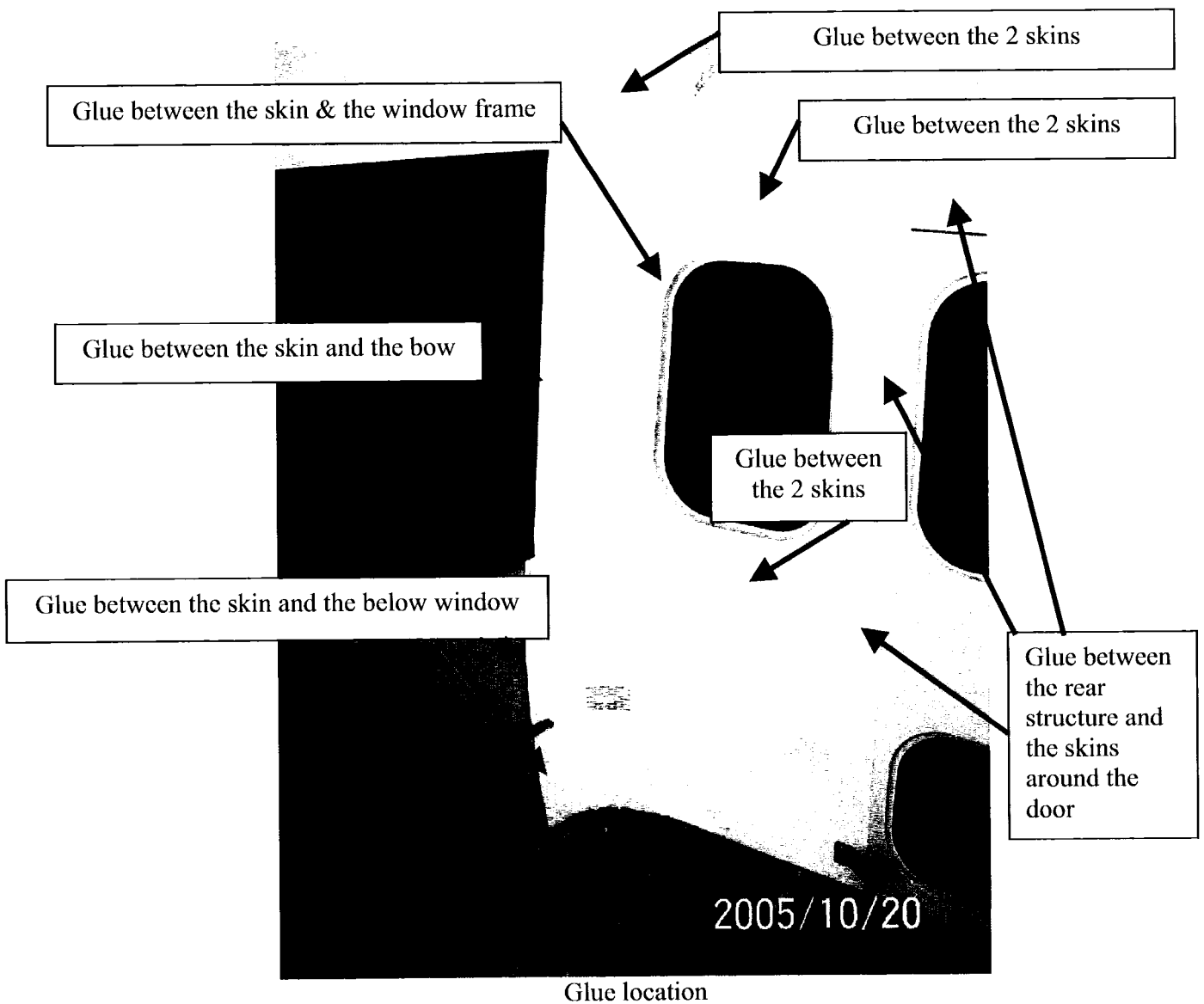
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Begin with the installation of the 2 lower skins then with the 2 skins in the middle (where the windows are) and finally with the skin above the emergency door. Apply pressure on the skins to make sure they are sitting properly against the rear structure. Clean the parts you have to assemble and apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter onto the parts. The perimeter of the skins must be glued as shown on the picture. Drilled through the skins and start to put rivets in the middle. Rivets should be at 6 inches from each other. Clean the excess of glue.





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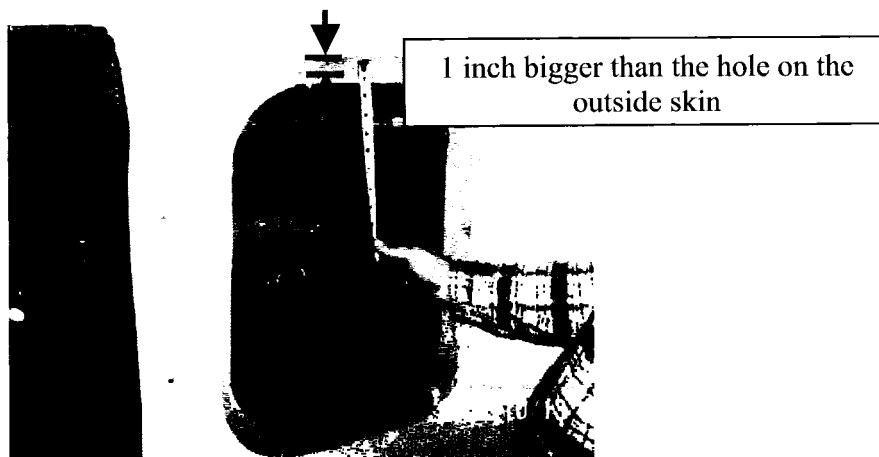
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### Step 2.5) Cut out of the rear windows

On the outside of the bus, make a hole in the area of the rear window. Then go inside the bus and enlarge the hole (it should be 1 inch bigger than the hole on the outside skin).



Hold the window frame in place with flat nose pliers. Align the window frame with the perimeter of the outside hole. Drill the holes in the window frame. Remove the frame, clean & apply glue on it. Put it back in place and put rivets.



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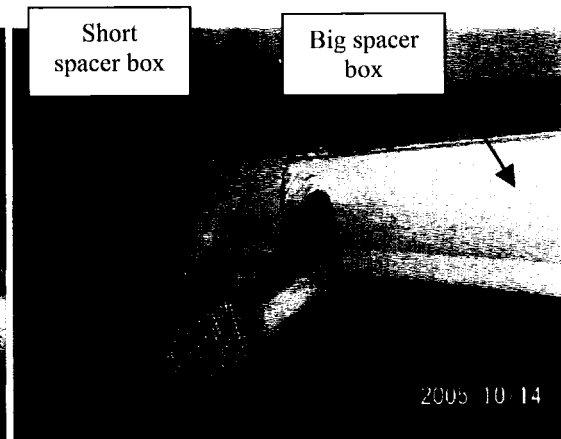
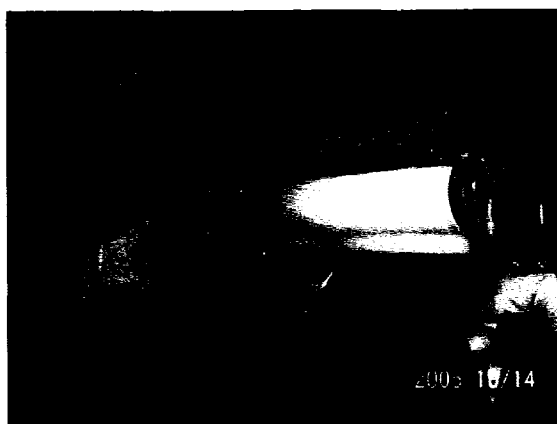
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### Step 2.6) Installation of the 2 short spacer box (if applicable)

Position the long spacer box temporary and cut the short spacer box as needed. Put the short spacer box (the one that should be installed first) and drill through the lower & upper pre-drilled holes. Clean this part and apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter onto it. Reinstall it and put rivets. Install the short spacer box on the other side of the bus. Follow the same procedure. **IMPORTANT:** make sure you do not damage the electrical harness. Move it away if necessary.



As shown on the pictures above, the short spacer box should be installed first because the big spacer box is overlapping the short one.



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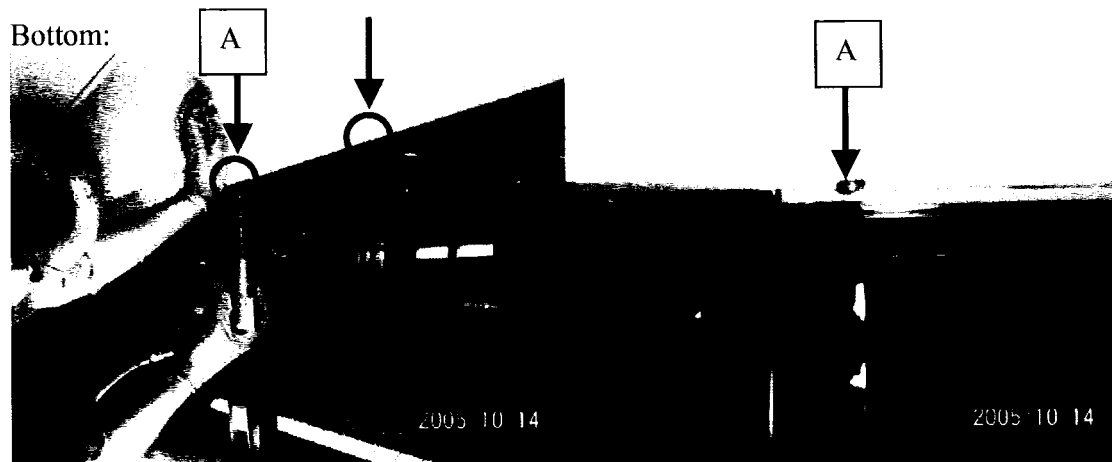
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## Step 2.7) Installation of the 2 long spacer box

Position the spacer box temporary. Cut the end as needed. Make sure the joint with the rear skin matches perfectly.



Put the spacer box in place & drill holes as shown on the following pictures. Drill on top & on the bottom of the spacer box. Make sure you do not damage the windows and the wiring harness.





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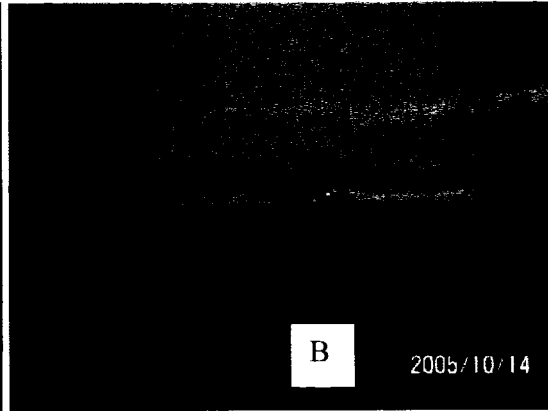
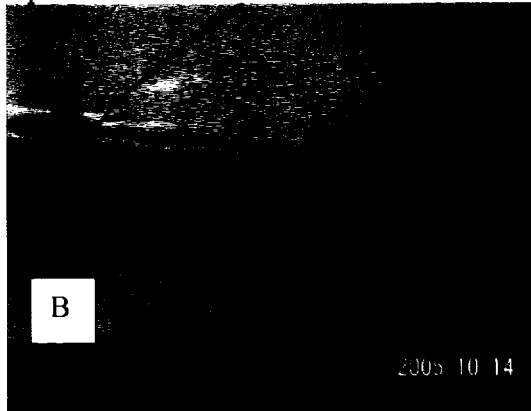
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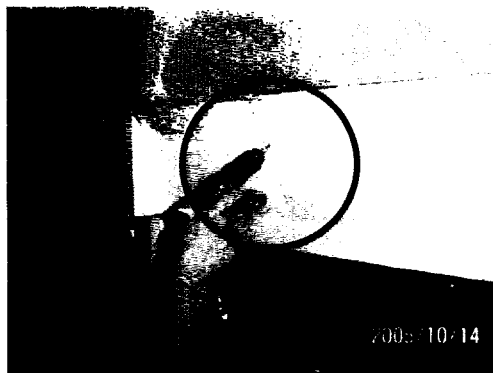
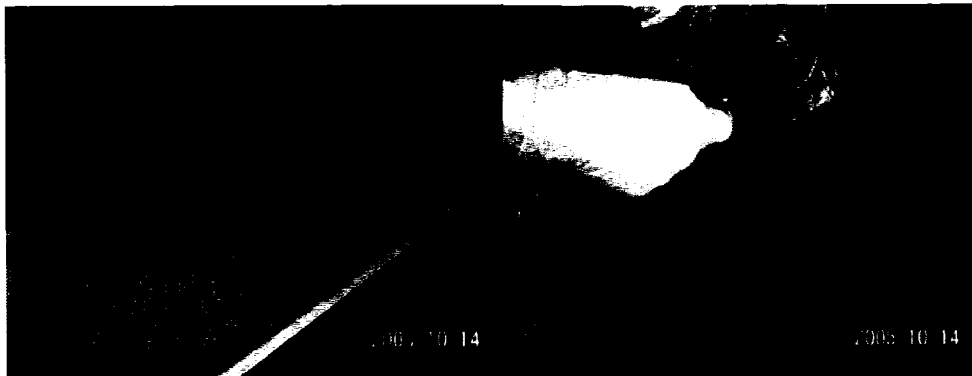
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Top:



Clean with alcohol and apply the glue on the upper edge, on the lower edge and at each end. Apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter. Reinstall the spacer box and put rivets. Drill & put rivets at the junction of the 2 spacer box. Be careful not to drill in the electrical harness.





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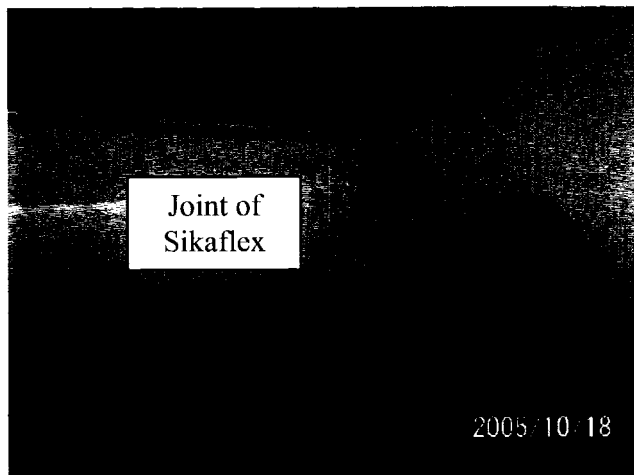
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Put some joint sealant at the junction of the spacer box & the rear skins.



Remove the excess of Sikaflex before it gets dry. You can use Sikkens "M600 surface cleaner" or any similar product.





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## Step 2.8) Installation of the edge on the top of the vehicle

Use isopropyl alcohol 99% to clean the roof seam and the «repair top sheet» to install.



Put the « repair top sheet » on the top of the vehicle and cut it so it fits between the front & rear cap.

Apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter on each side of the «repair top sheet».





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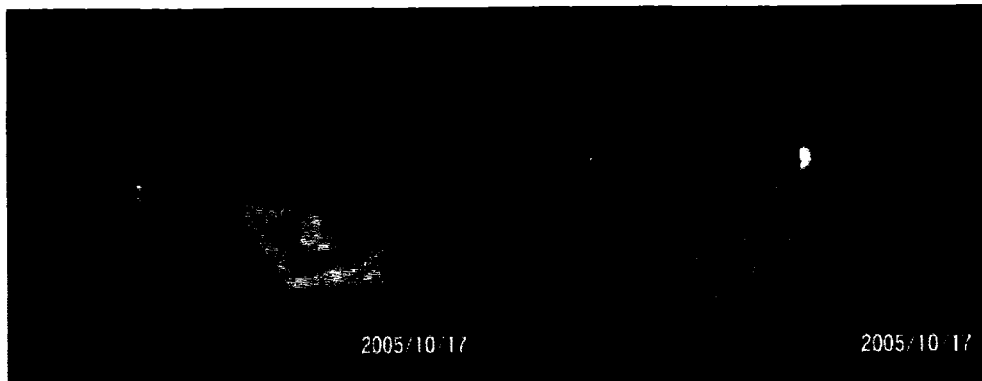
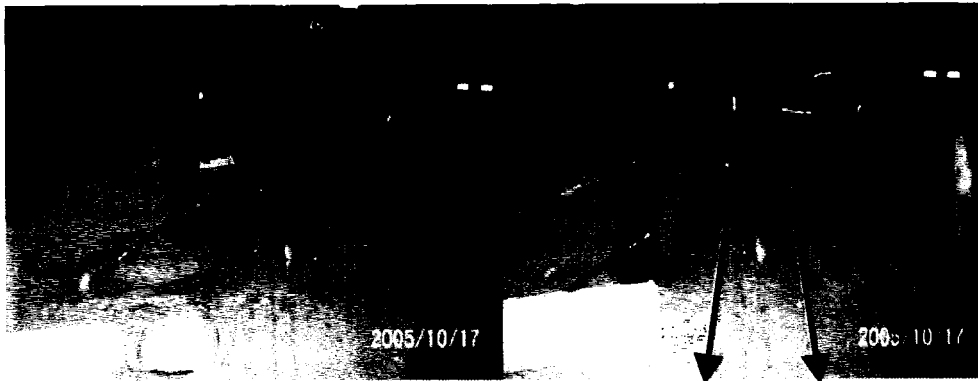
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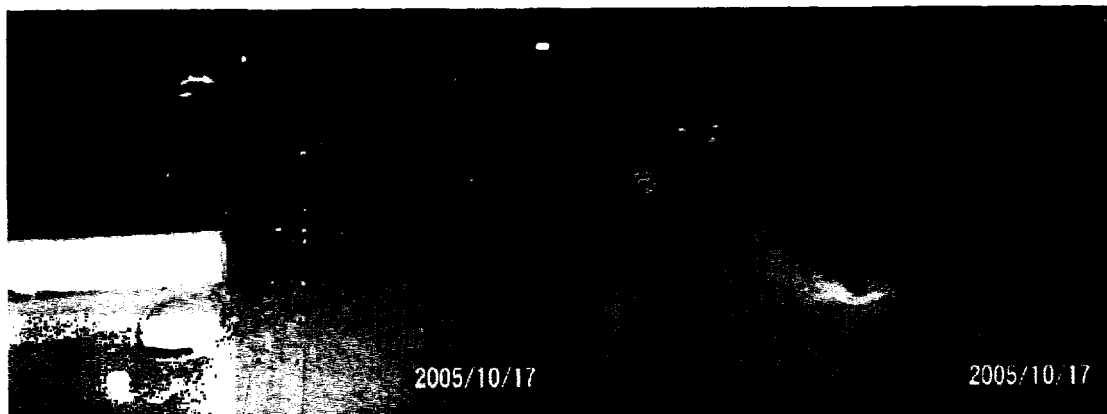
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Put the « repair top sheet » over the roof seam. Drill the roof with a # 9 drill and use the stopper not to drill through the interior top skins. Start drilling from the middle of the bus to the front & the rear of the bus so there will be no buckling. Put some sealer on the rivets before you install them to prevent leaks. Install the rivets.



Remove the excess of glue & Sikaflex with a plastic spatula. Clean with Sikkens "M600 surface cleaner" or any similar product before it gets dry.





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## Step 2.9) Paint touch-up

Do some touch-up on the head of the rivets.

## Step 2.10) Reinstall the seats, the speakers, the A/C evaporator, the decals, etc.

Check the instructions at step 1.1

Recharge the A/C system if required.

**Estimated time for the rebuilding of the inside: 7 hours**

**Total estimated time for recall completion: 13 hours per vehicle**

## **Tools, equipment & material required**

<b>Part number</b>	<b>Description</b>	<b>Quantity</b>	<b>Comment</b>
4950-1833	3M Scotch Tape	10 feet	Supplied by Girardin
	Cleaner (isopropyl alcohol 99%)	As needed	To find locally
	Drill # 9	1	To find locally
	Electrical or pneumatic drill	1	To find locally
QAL433	Glue QAL433	4 to 5 cartridges	Supplied by Girardin
	Heat gun 1400W	1	To find locally
	Metal chisel	1	To find locally
	Nose pliers	1	To find locally
	Paint	As needed	Supplied by Girardin
	Paint brush (touch up)	1	To find locally
	Plastic spatula	1	To find locally
221BL	White Sikaflex	-----	Supplied by Girardin
	Stopper for the drill	1	To be made
	Surface cleaner M600 from Sikkens	As needed	To find locally
	Trowel	1	To find locally
	Utility knife	1	To find locally
	Wrenches 7/16", 9/16", 5/8"		To find locally



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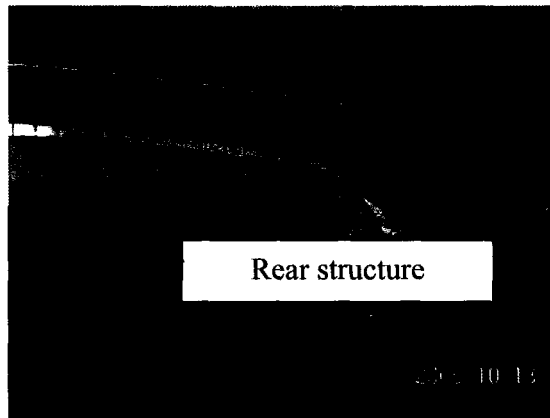
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## Step 2.2) Installation of the other roof skins

Repeat step 2.1 for all the other inside roof skins. Make sure the last skin stands against the rear structure.



## Step 2.3) Remove the 3M tape on the rear structure

Use a utility knife to remove the 3M tape previously installed. The better you remove it, the more the new tape will stick to the rear structure.





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### Step 2.4) Installation of the rear skins

Apply 3M tape on both sides of the emergency doorframe. This will help to position the rear skins.





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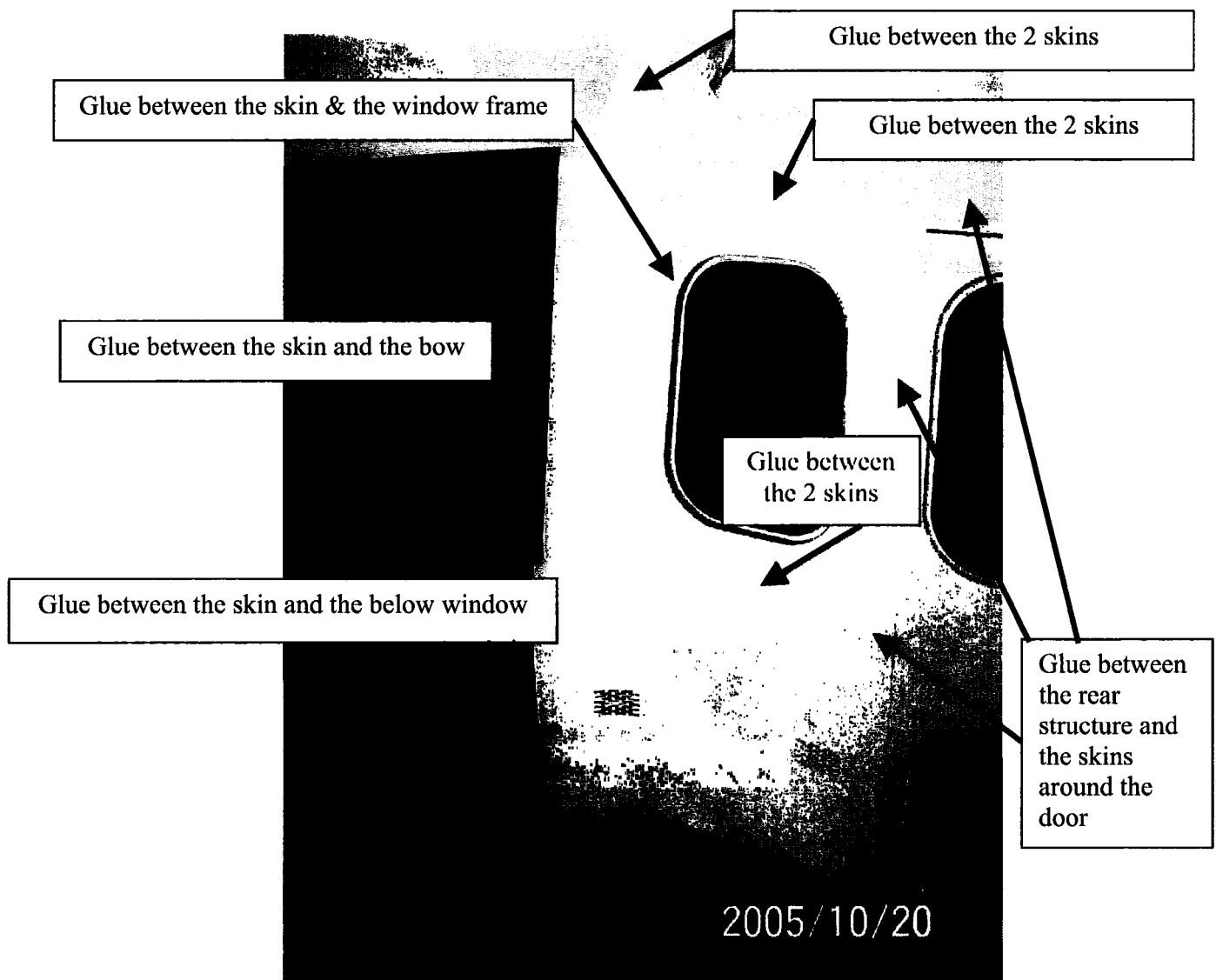
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Begin with the installation of the 2 lower skins then with the 2 skins in the middle (where the windows are) and finally with the skin above the emergency door. Apply pressure on the skins to make sure they are sitting properly against the rear structure. Clean the parts you have to assemble and apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter onto the parts. The perimeter of the skins must be glued as shown on the picture. Drilled through the skins and start to put rivets in the middle. Rivets should be at 6 inches from each other. Clean the excess of glue.



Glue location



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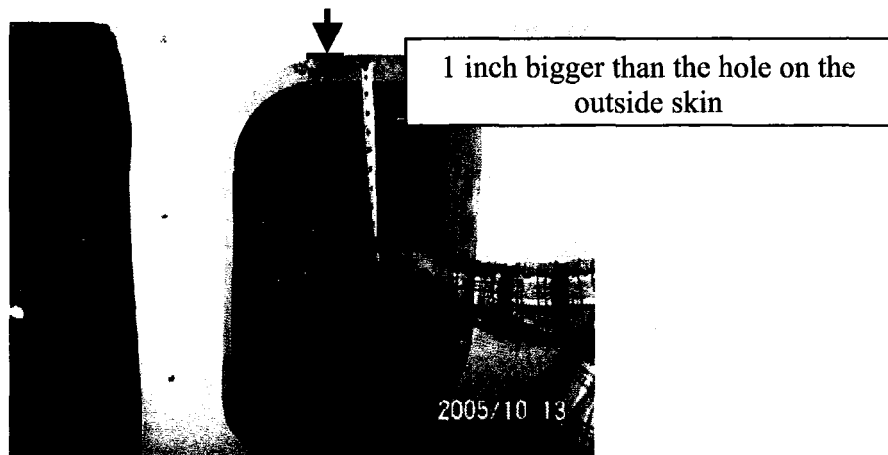
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### Step 2.5) Cut out of the rear windows

On the outside of the bus, make a hole in the area of the rear window. Then go inside the bus and enlarge the hole (it should be 1 inch bigger than the hole on the outside skin).



Hold the window frame in place with flat nose pliers. Align the window frame with the perimeter of the outside hole. Drill the holes in the window frame. Remove the frame, clean & apply glue on it. Put it back in place and put rivets.



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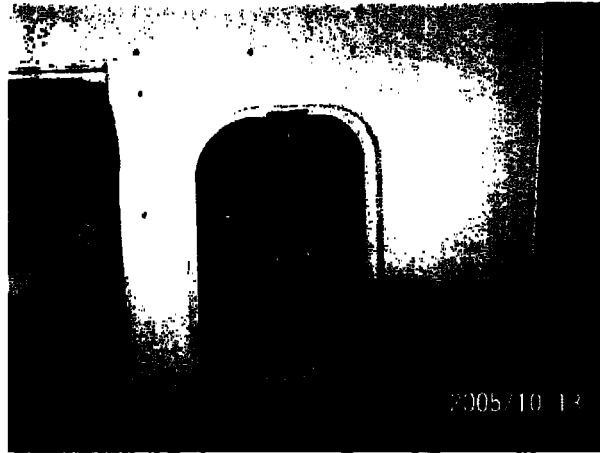
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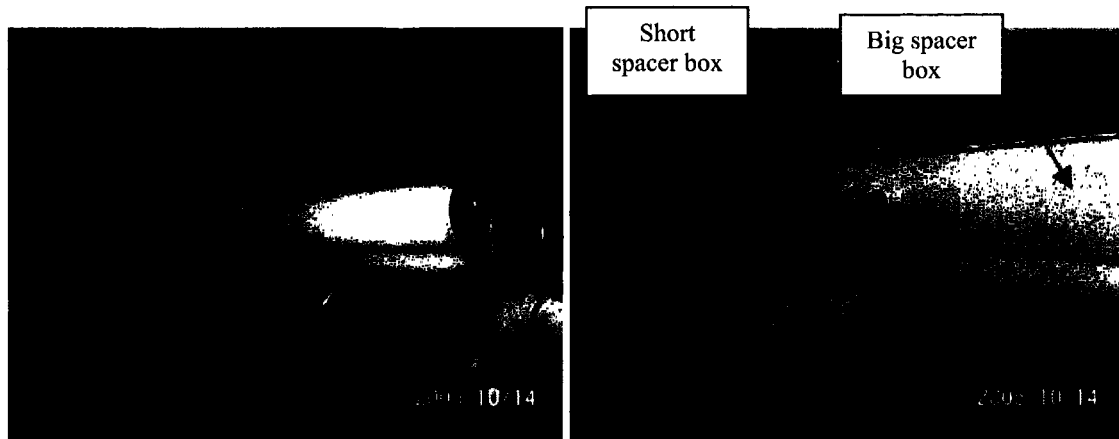
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### Step 2.6) Installation of the 2 short spacer box (if applicable)

Position the long spacer box temporary and cut the short spacer box as needed. Put the short spacer box (the one that should be installed first) and drill through the lower & upper pre-drilled holes. Clean this part and apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter onto it. Reinstall it and put rivets. Install the short spacer box on the other side of the bus. Follow the same procedure. **IMPORTANT:** make sure you do not damage the electrical harness. Move it away if necessary.



As shown on the pictures above, the short spacer box should be installed first because the big spacer box is overlapping the short one.



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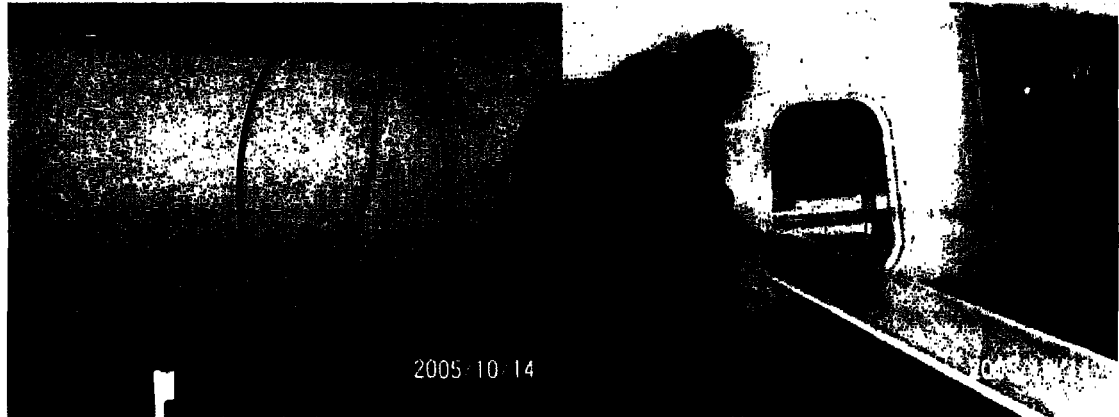
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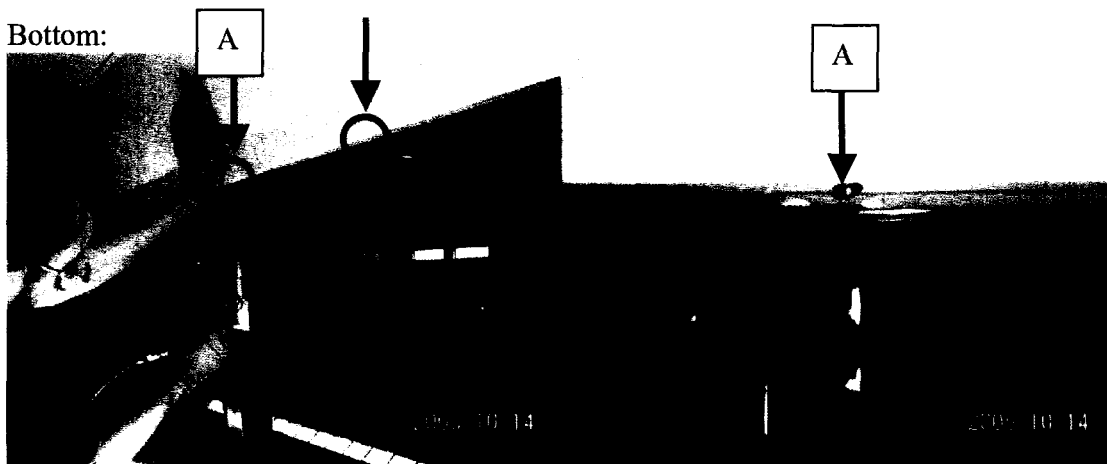
## Step 2.7) Installation of the 2 long spacer box

Position the spacer box temporary. Cut the end as needed. Make sure the joint with the rear skin matches perfectly.



Put the spacer box in place & drill holes as shown on the following pictures. Drill on top & on the bottom of the spacer box. Make sure you do not damage the windows and the wiring harness.

Bottom:





# Recall procedure on "Joint Strength"

Recall: 05-011-JSU

Inside skins & outside roof skin

NHTSA: 05V-365

Author:

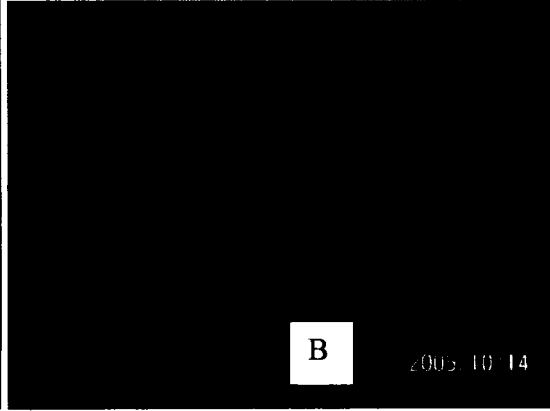
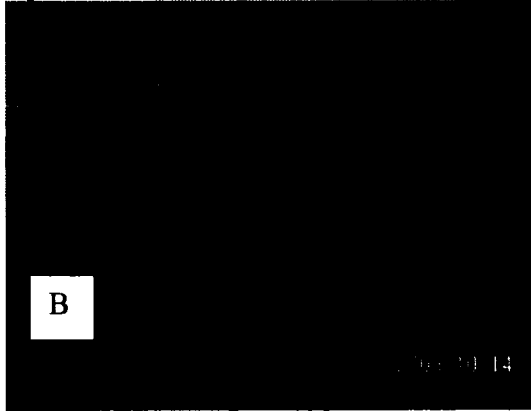
G. Lamothe

Emission:

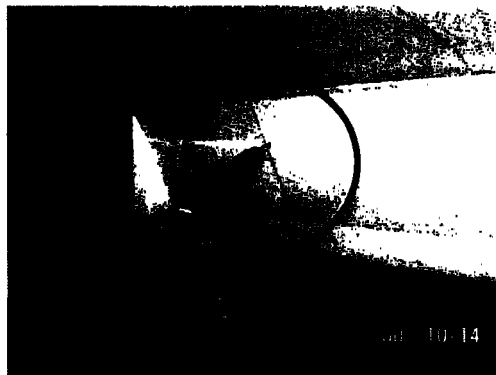
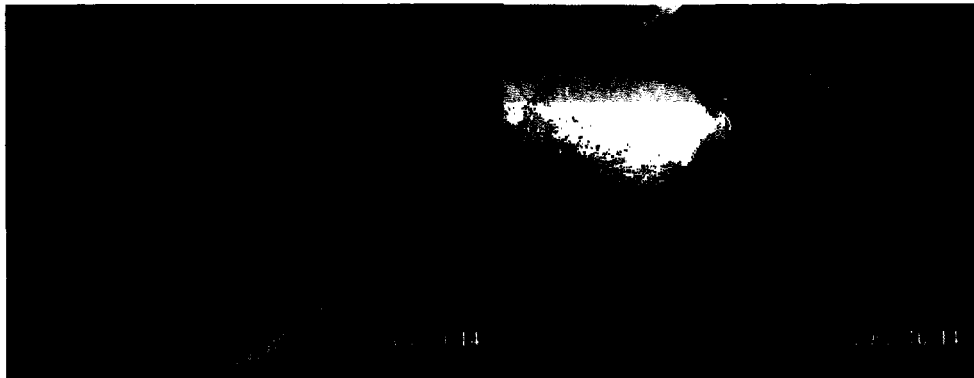
19/10/2005

Approval : L. Guillemette

Top:



Clean with alcohol and apply the glue on the upper edge, on the lower edge and at each end. Apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter. Reinstall the spacer box and put rivets. Drill & put rivets at the junction of the 2 spacer box. Be careful not to drill in the electrical harness.





## Recall procedure on "Joint Strength"

Recall: 05-011-JSU

Inside skins & outside roof skin

NHTSA: 05V-365

Author:

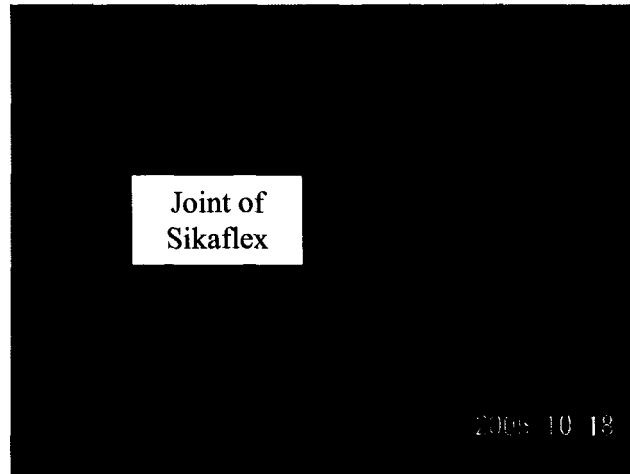
G. Lamothe

Emission:

19/10/2005

Approval : L. Guillemette

Put some joint sealant at the junction of the spacer box & the rear skins.



Remove the excess of Sikaflex before it gets dry. You can use Sikkens "M600 surface cleaner" or any similar product.





## Recall procedure on "Joint Strength"

Recall: 05-011-JSU

Inside skins & outside roof skin

NHTSA: 05V-365

Author:

G. Lamothe

Emission:

19/10/2005

Approval : L. Guillemette

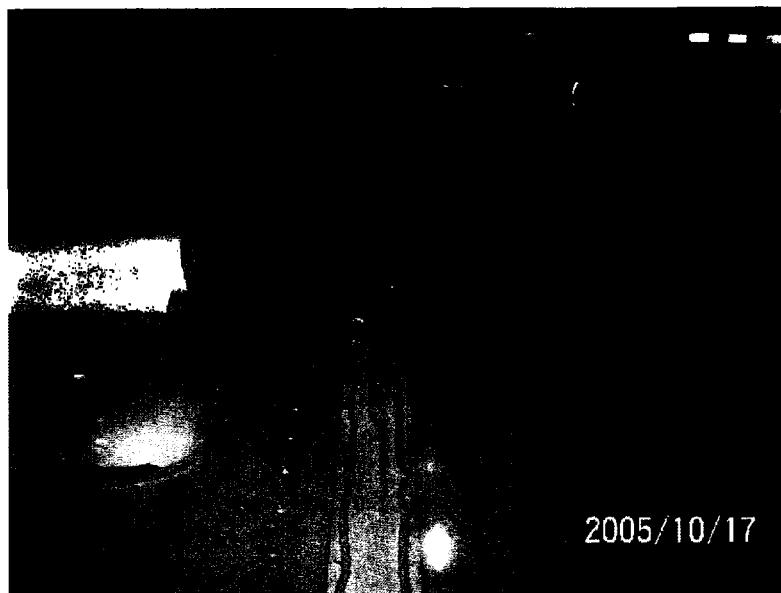
### Step 2.8) Installation of the edge on the top of the vehicle

Use isopropyl alcohol 99% to clean the roof seam and the «repair top sheet» to install.



Put the « repair top sheet » on the top of the vehicle and cut it so it fits between the front & rear cap.

Apply a cord of glue (QAL433 methacrylate) of 1/4 inch diameter on each side of the «repair top sheet».





## Recall procedure on "Joint Strength"

Recall: 05-011-JSU

Inside skins & outside roof skin

NHTSA: 05V-365

Author:

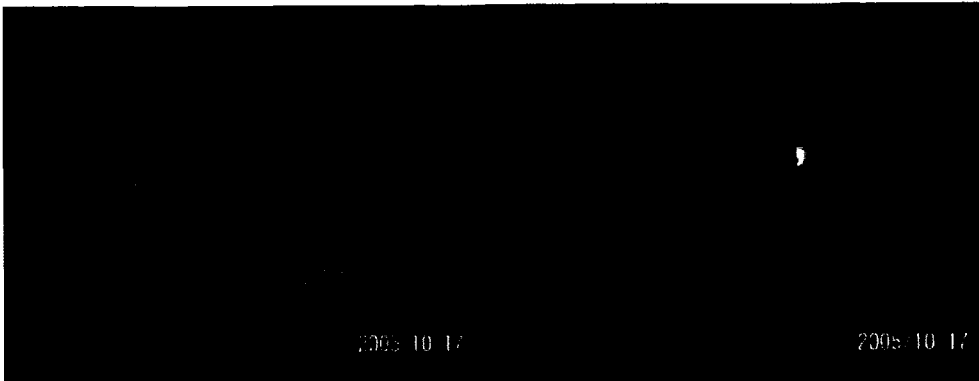
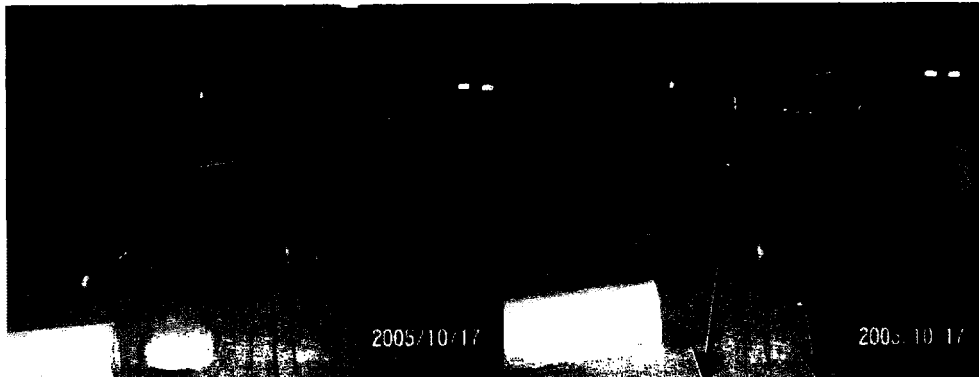
G. Lamothe

Emission:

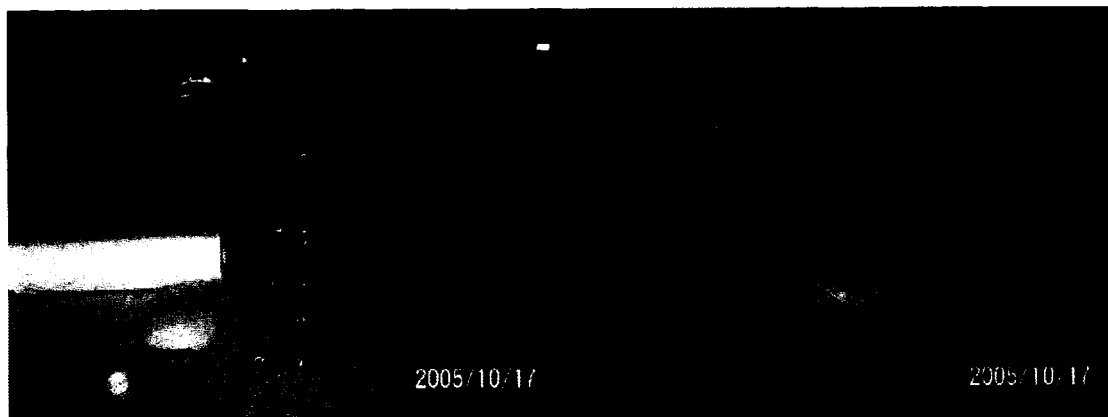
19/10/2005

Approval : L. Guillemette

Put the « repair top sheet » over the roof seam. Drill the roof with a # 9 drill and use the stopper not to drill through the interior top skins. Start drilling from the middle of the bus to the front & the rear of the bus so there will be no buckling. Put some sealer on the rivets before you install them to prevent leaks. Install the rivets.



Remove the excess of glue & Sikaflex with a plastic spatula. Clean with Sikkens "M600 surface cleaner" or any similar product before it gets dry.





## Recall procedure on "Joint Strength"

**Recall: 05-011-JSU**

Inside skins & outside roof skin

**NHTSA: 05V-365**

**Author:**

G. Lamothe

**Emission:**

19/10/2005

**Approval :** L. Guillemette

### Step 2.9) Paint touch-up

Do some touch-up on the head of the rivets.

### Step 2.10) Reinstall the seats, the speakers, the A/C evaporator, the decals, etc.

Check the instructions at step 1.1

Recharge the A/C system if required.

**Estimated time for the rebuilding of the inside: 7 hours**

**Total estimated time for recall completion: 13 hours per vehicle**

### **Tools, equipment & material required**

<b>Part number</b>	<b>Description</b>	<b>Quantity</b>	<b>Comment</b>
4950-1833	3M Scotch Tape	10 feet	Supplied by Girardin
	Cleaner (isopropyl alcohol 99%)	As needed	To find locally
	Drill # 9	1	To find locally
	Electrical or pneumatic drill	1	To find locally
QAL433	Glue QAL433	4 to 5 cartridges	Supplied by Girardin
	Heat gun 1400W	1	To find locally
	Metal chisel	1	To find locally
	Nose pliers	1	To find locally
	Paint	As needed	Supplied by Girardin
	Paint brush (touch up)	1	To find locally
	Plastic spatula	1	To find locally
221BL	White Sikaflex	-----	Supplied by Girardin
	Stopper for the drill	1	To be made
	Surface cleaner M600 from Sikkens	As needed	To find locally
	Trowel	1	To find locally
	Utility knife	1	To find locally
	Wrenches 7/16", 9/16", 5/8"		To find locally