

WATER INFILTRATION

Tech Tip #17-0527



IN TORRENTIAL RAIN A 2" HOLE CAN CAUSE ISSUES

On May 7, 2012 Blue Bird made a change to their “static” roof vent to standardize to the one used by Microbird. This was found to be a much better design for channeling water away from the “hole” in the roof sheet. It’s designed to allow air exchange between the interior of the bus and the outside.

With our recent rain, we have heard of many reports of water leaks in BOTH products. We have tried, often times with less success than we would like, at sealing what we thought was leaking.

Seeing as most units built for New York State have roof hatches and some roof hatches that Blue Bird and Microbird offer have static vents built into them, we started to question how we could address that 2” hole (Figure #4).

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Our first contact was NYSDOT where we learned that the requirement for static roof vents were taken out of NYSDOT regulations. This went into effect in July of 1999. Working with Blue Bird engineering we learned that the “National Minimum Standards” for school bus states “Static-type, non-closeable exhaust ventilation shall be installed in a low-pressure area of the roof.” Also that, “roof hatches designed to provide ventilation in all types of exterior weather conditions may be provided.”

We then researched which options offered by Blue Bird had a static roof vent built in and found two: Feature #30030-27 (Figure #1) which is the “Triple Value” and Feature #30030-28 (Figure #2) which is the “SafeFleet” hatch with the power vent. We found that Microbird offers only Option #RSS1-V (Figure #3) which is the Spheros “Smart Hatch” with integrated vent.

27	VENT, SAFE FLEET, TRIPLE VALUE
	Products: BBCV, T3FE, T3RE
	Body Lengths: BBCV
	Usage: Activity, Canada School Bus, Export, School Bus
	<p>ROOF HATCH, SAFE FLEET, TRIPLE VALUE PROVIDES A ROOF HATCH WITH A 23" BY 23" EMERGENCY EXIT OPENING WITH INNER AND OUTER RELEASE HANDLES. HATCH POPS UP TO PROVIDE AN AIR VENT. AN ALARM WILL SOUND IN THE DRIVERS AREA INDICATING THE EMERGENCY EXIT IS OPEN WHEN THE IGNITION SWITCH IS ON UNLESS A "DELETE ROOF HATCH BUZZER" OPTION IS ORDERED.</p> <p>SAFE FLEET TRIPLE VALUE ROOF HATCH WITH STATIC ROOF VENT.</p> <p>HATCH HAS YELLOW REFLECTIVE TAPE APPLIED TO OUTSIDE FLANGE. NOT AVAILABLE WITH 30430-01 BECAUSE ITS ALREADY INCLUDED WITH THIS ROOF HATCH ASSEMBLY. FEATURE 30430-14 IS AVAILABLE AND IF ORDERED, THE WHITE VINYL REFLECTIVE TAPE WILL BE PLACED OVER THE YELLOW REFLECTIVE TAPE.</p> <p>NOTES:</p> <p>REQUIRES: 30029-01 WIRING FOR BUZZER or 38115-37 DELETE BUZZER.</p> <p>NOT AVAILABLE IN THE SAME BODY SECTION AS THE FOLLOWING OPTIONS: 0055100 EXHAUST FAN 2 SPEED</p> <p>NOT AVAILABLE WITH ANY OTHER VENT/ROOF HATCH EXCEPT 30030-25/26/28.</p>

FIGURE #1

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28	VENT, SAFE FLEET, W/POWER FAN
	Products: BBCV, T3FE, T3RE
	Body Lengths: BBCV
	Usage: Activity, Canada School Bus, Export, School Bus
	VENT, SAFE FLEET, W/POWER FAN PROVIDES A ROOF HATCH WITH A 23" BY 23" EMERGENCY EXIT OPENING WITH INNER AND OUTER RELEASE HANDLES. HATCH POPS UP TO PROVIDE A MECHANICAL MEANS TO VENT AIR AND IT ALSO HAS AN ELECTRIC POWERED FAN LOCATED IN THE POP-UP PORTION (TOP) OF THE HATCH. AN ALARM WILL SOUND IN THE DRIVERS AREA INDICATING THE EMERGENCY EXIT IS OPEN WHEN THE IGNITION SWITCH IS ON UNLESS A "DELETE ROOF HATCH BUZZER" OPTION IS ORDERED.
	SAFE FLEET POWERED VENT/HATCH. NEW LOW PROFILE DESIGN. A MAXIMUM OF TWO POWERED ROOF VENT HATCHES ARE ALLOWED PER UNIT.
	HATCH HAS YELLOW REFLECTIVE TAPE APPLIED TO OUTSIDE FLANGE. NOT AVAILABLE WITH 30430-01 BECAUSE ITS ALREADY INCLUDED WITH THIS ROOF HATCH ASSEMBLY. FEATURE 30430-14 IS AVAILABLE AND IF ORDERED, THE WHITE VINYL REFLECTIVE TAPE WILL BE PLACED OVER THE YELLOW REFLECTIVE TAPE.
	Requires feature 3002901 or 3811537.
	REQUIREMENTS:3002903
	NOT AVAILABLE WITH ANY OTHER VENT/ROOF HATCH EXCEPT 30030-25/26/27.
	NOT AVAILABLE IN THE SAME BODY SECTION AS THE FOLLOWING OPTIONS: 0055100 EXHAUST FAN 2 SPEED

FIGURE #2

RSS1-V

Description : ROOF HATCH SPHEROS SMART W/VENT

Detail : ROOF HATCH SPHEROS WITH INTEGRATED VENT
 Smart low profile roof hatch from Spheros with integrated static vent. Provides an alarm switch. It has two release handles (one interior, one exterior) that allows the hatch to hinge open for emergency exit. Both inner and outer covers are white. If a strobe light is also ordered, the roof hatch must be located in front of it. Adds about 3½ inches to the roof height.

FIGURE #3

PLEASE NOTE:

Clearly if units have the correct roof hatches with the integrated vent then the added separate static roof vent is not required. This is a standard feature with both Blue Bird and Microbird to ensure all the units they produce meet the National Minimum Standards. If units have the above listed features OR if you choose to replace existing roof hatches with those listed later in this article, then what we are about to discuss can be done.

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FIGURE #4



FIGURE #5



FIGURE #6

As you can observe in Figure #4 the 2" hole is indicated by the red arrow. There is also an indent in the plastic shown with the yellow arrow which is where there is a rubber "diverter" to the front of the vent. This is designed to channel water away from the hole while the bus is in a forward motion. This is VERY helpful from the initial design, but when there are "driving" rains with wind "pushing" water in every direction we know water will infiltrate even the smallest openings and that is not a small opening.

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The other issue we contend with is the travel of water once it is inside the bus. With insulation, steel channel structure and perforated roof panels water that is “seeping” in can actually travel from the front, where this vent is mounted, to the rear. This makes finding the source even harder. Our first thought was to remove the vent and install a rubber “gasket” which would seal the hole off. With a proper roof hatch it was determined to not be required but we found that with Blue Bird using the “Manus-bond” sealer that it was difficult to remove the vent without causing damage. We then looked at the openings at the front and rear of the vent (Figures #5 & #6) which are only about ½” wide. It was determined that a quicker resolution to sealing off the vent was to simply lay a wide bead, or 2 smaller beads, of sealer across each opening to seal the vent off. Please also note that as an added deterrent to water infiltration, Microbird has changed their install procedure to only using 2 rivets to mount the static roof vent as shown in Figure #7. They feel less holes lead to less water leaking through the sealant and issues and have reordered where the vents become physically “cracked.”



FIGURE #7

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If units were NOT built with the “vented” roof hatches it is possible to change the existing hatches to the vented design. If you have a “standard hatch” with no vent you have the choice between the Spheros “SMART” hatch (Figure #8) and the Safe Fleet “Triple Value” (Figure #9).

BOTH are available through our Parts Department!



FIGURE #8



FIGURE #9

PLEASE NOTE – If you choose to replace a roof hatch where there was not a power roof vent and decide to install a power roof vent, please note that added work will be required to connect a power supply to meet the vehicle manufacturer specifications.

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