



**Initial Response Training Center, Inc.**

*Emergency Resuscitation Equipment & Training*

## **Oxygen Tank and O2 Bus Buddy™ Retention Test**

### Introduction:

Initial Response Inc is the developer and exclusive manufacturer's agent for the **O2 Bus Buddy™**. The **O2 Bus Buddy™** is a powder painted white steel cabinet 32x6x9 and 1/8 inches thick with a solid hinged door, designed to safely cradle a "D", an "E", and a Liquid Oxygen Concentrator. This cabinet was designed to fit in to the following school busses; "Blue Bird", "Thomas", "International", and "Harvester".

### Statement:

The **O2 Bus Buddy™** Oxygen Cabinet was tested in accordance to AMD Standard 003, and OHIO Department of Education RC 4511.76, and Administrative code(s) 3301-83-19 and 3301-83-06, "*Guidelines Regarding The Safe Transportation Of Oxygen On A School Bus*".

### Purpose:

The purpose of this mechanical test was to demonstrate that the **O2 Bus Buddy™** cabinet met the above standards through a documented 25 X "Pull Test", and a 6X Pull test. The purpose of these tests is to minimize the possibility of failure of the oxygen tank and the retention systems, the **O2 Bus Buddy™** by forces acting upon them as a result of a bus and or sudden driving maneuver.

The tests require that all oxygen tanks have forces applied which are equal to 25, (twenty five) times the weight of a fully loaded oxygen cylinder. A series of 3 tests, a tank bottom pull, a perpendicular to longitudinal axis of the tank pull, and of the **O2 Bus Buddy™** were performed.

### Testing Equipment:

Test equipment included a 300 lb. Hanson Viking strain indicator scale, Model # 8930, a "come-along", a pry bar, chain, a serpentine belt, the **O2 Bus Buddy™ Cabinet**, a "D", a "E" size oxygen cylinder, a liquid oxygen concentrator, and a "Blue Bird" School Bus.

**PO Box 525, Carrollton, VA. 23314 ♦ Phone 757-365-9317  
Or 1-877-377-4782 ♦ Fax 757-357-9718**

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### Testing Procedure:

*(Note: This test was staged on a "Blue Bird" School Bus at the Cuyahoga County Board of Mental Retardation and Developmental Disabilities Transportation Services Facility in Cleveland, Ohio on September 9, 2004 at 12 noon Fleet Manager Mr. Ron Vargo and Mr. Randy Barick, Methods Engineer participated in the test in findings.)*

The **O2 Bus Buddy™ Cabinet** was secured to the internal frame of the bus using 2 5/16 Bolts to the cabinet base at 8 inches, and at the back angle bracket at 6 inch spacing. An empty "E" Oxygen Cylinder and standard flow meter regulator was secured in the cabinet using 2 1 inch nylon web belt straps and a "tourniquet/cam buckle".

A "Serpentine Belt" was placed on the lower bottom of the Oxygen Cylinder and hooked to the Hansen/Viking scale using chains and a 5/16 bolt to the opposite side of the busses internal frame.

Using a "Pry Bar", 300 lbs of pressure was exerted in an effort to pull the 11 lb oxygen cylinder out of the **O2 Bus Buddy™ Cabinet**.

### Findings/Results:

No bending, pulling, crimping, or stretching was observed from the **O2 Bus Buddy™ Cabinet**, the nylon strap, pull chain, scale, or the internal bus frames used.

There was a 27.27 times the weight of the oxygen cylinder pull test. This was the maximum achievable force using the 300 lb scale. The same test. Setup and results were observed securing the "Serpentine Belt" perpendicular and midway on the oxygen cylinder.

The third test was to apply the "Serpentine Belt" to the mid points of the back of the **O2 Bus Buddy™ Cabinet** itself.

This time, a come-along was used versus a pry bar. Only 250 foot pounds of pressure/pull was applied as the come along was not able to be tightened any further.

The findings were the same. No torque, bending, twisting or disfiguration was noted or documented. At the conclusion of the tests, the **O2 Bus Buddy™**

**Cabinet** was unsecured from the school buses internal frame and was again re-inspected. No damage was evident.

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### Conclusion:

The final results were that the 2 oxygen cylinders, the 1 liquid oxygen concentrator, and the **O2 Bus Buddy™ Cabinet**, were able to endure a pulling force of 27.27 times the weight of the larger oxygen cylinder, an "E" size aluminum tank and regulator.

Our **O2 Bus Buddy™** exceeded the standards set forth by the OHIO Department of Education, and the AMD, (Ambulance Manufacturers Division/National Truck Equipment Association) Standard 003,

The **O2 Bus Buddy™** Oxygen Cabinet was tested in accordance to and RC 4511.76, and Administrative code(s) 3301-83-19 and 3301-83-06, "*Guidelines Regarding The Safe Transportation Of Oxygen On A School Bus*".

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