



The AirShield

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The Problem

Avalanches kill 27.6 people on average per year (“Avalanche deaths in the United States: a 45-year analysis” National Institutes of Health). With the state of Colorado leading the nation in avalanche deaths, the AirShield team decided to tackle the problem of avalanche deaths directly by inventing a device that both lowers the chance a person becomes a victim of an avalanche while also addressing the leading cause of death from avalanches, asphyxiation at 85.7% (“Cause of death in avalanche fatalities” National Institutes of Health).

Table 1: Avalanche Survival vs Time. n = 422

Time in Minutes	Percent Recovered Alive
0	100
15	91
22.5	60
30	30
120	20
130	5
160	4

The data from the Utah Avalanche Center in Table 1 depicts the dependence on rescue time to the success of the rescue. The AirShield is designed to provide 60-90 minutes of extra oxygen to save the victim from asphyxiation.



A novel approach to an old problem.



The AirShield Solution

The AirShield utilizes exiting avalanche airbag technology with a twist. Leaning on the AirShield team's experience both in snow sports and scuba diving, the AirShield incorporates an oxygen filled, industry standard 150 L airbag attached to a respirator to provide critical time for victims.



Left: Respirator attached to the airbag. Right: Toggle to deploy airbag.

Avalanche Safety Begins with the AirShield

The airbag lowers the density of the user, helping them “ride” the snow. In the unlikely chance they are buried afterwards, the respirator allows them to utilize the 150 L of oxygen within their airbag to sustain them for longer until rescuers can reach the victim.

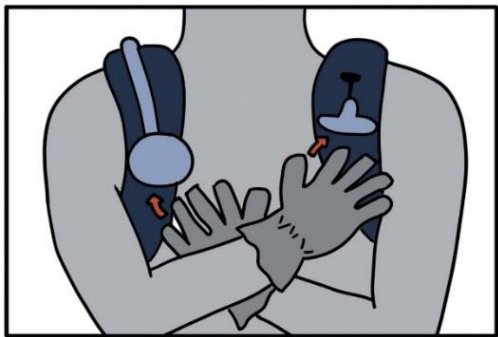
With an MSRP of only \$300, don't risk your life again. Ensure your safety by purchasing an AirShield today.

Usage Instructions

Using the Airshield:

Step 1: Identify you are in an avalanche and stay calm.

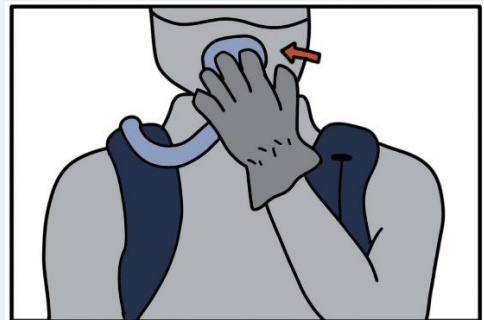
Step 2: Locate both the toggle and regulator and grasp with hands.



Step 3: Pull firmly on release toggle to begin the inflation process.



Step 4: Insert regulator into mouth and grip firmly with teeth.



Step 5: Wait until buried to start breathing out of regulator to maximize additional oxygen.



Frequently Asked Questions

FAQ

How is the AirShield so affordable?

Avalanche safety equipment is easy to sell, and manufacturers/distributors know this. As a consequence, critical safety equipment can be priced in the thousands of dollars when its manufacturing cost is far lower.

AirShield is able to offer a comparably lower MSRP at \$300 due to servicing revenue. Since the AirShield is a complex piece of equipment, it should be repacked and serviced by trained professionals, and such services provide an additional source of revenue. The AirShield will NEVER limit an owner's right to repair, however it is strongly recommended to have your AirShield serviced by professionals to ensure operability.

Is the AirShield's airbag durable?

The airbag is manufactured with a high-grade silicon coated ripstop (nylon). This is conforming with the European standard CSN EN 16716 (used across the world) which regulates avalanche airbag systems.

This material is widely used in tactical clothing, which we have externally validated to be suitable for high stress environments.

How does the AirShield inflate with oxygen?

The AirShield uses a custom-built compressed gas release mechanism. The compressed gas is 220g of oxygen, enough to fill the volume of the airbag and the respirator. All threads are machined to 75% thread depth to ensure a proper seal.

Please refer to the following technical drawings for an in-depth look into the inflation mechanism.

Is the AirShield reusable?

Yes! The AirShield can be reused so long as it is not damaged. Besides the labor to pack, only the compressed oxygen canister needs to be replaced.

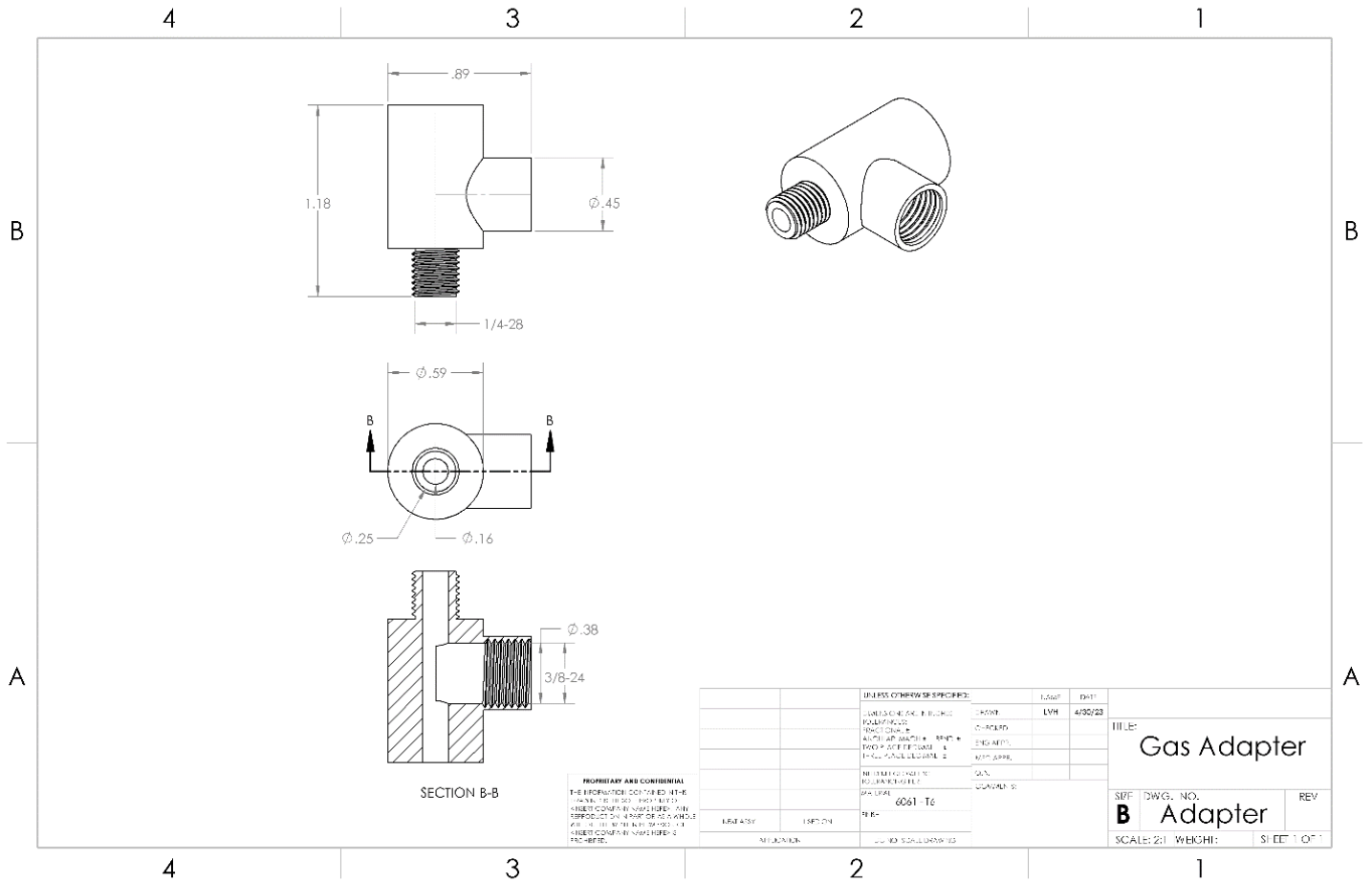
Technical Drawings

The following are the raw technical drawings for the inflation mechanism of the AirShield, as well as other assorted items.

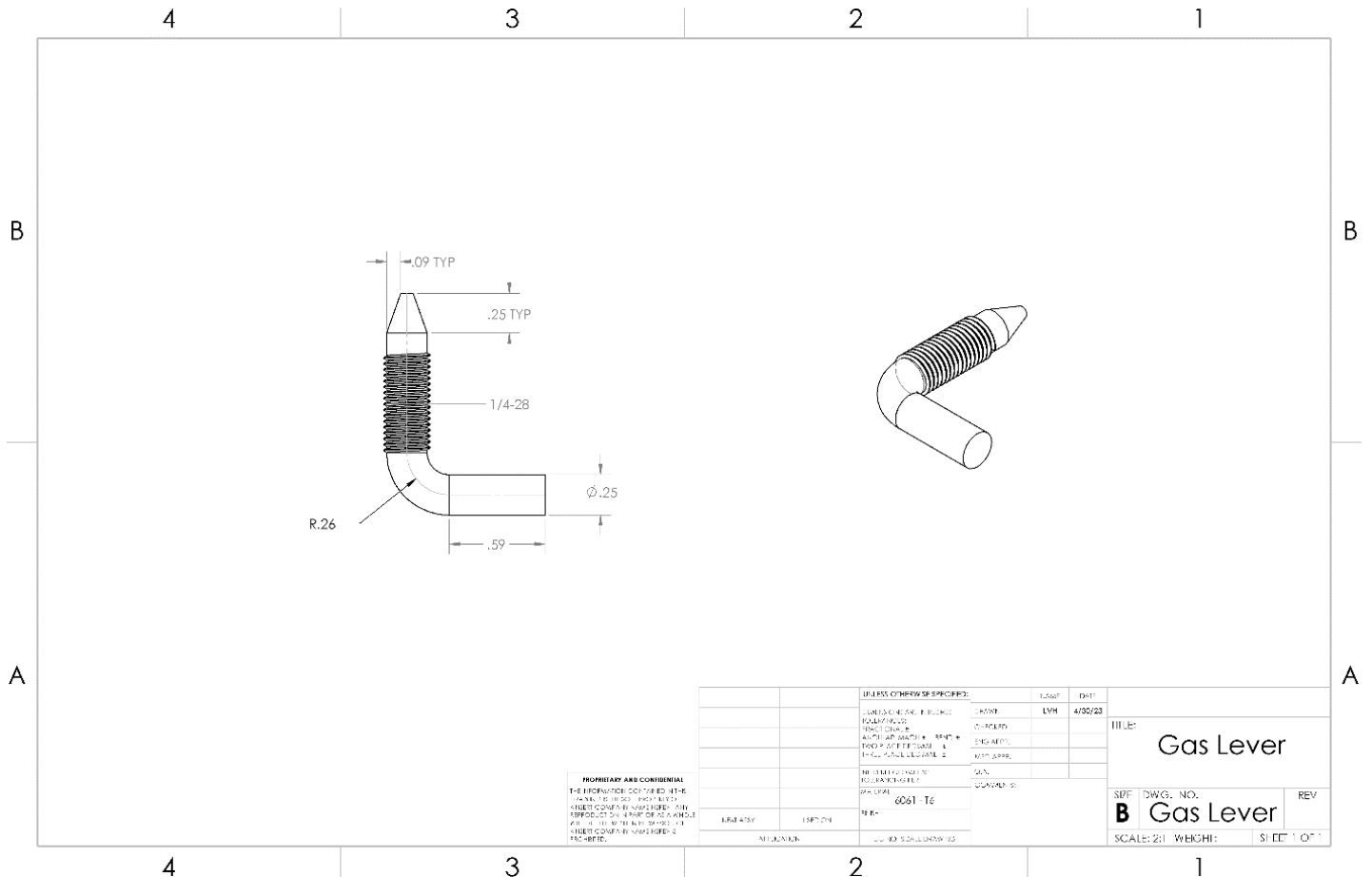
These drawings are provided as is.

Questions/Comments?

AirShield customer support can be reached by call or text at (720)-471-0952



Tech Drawing 3: The gas adapter. This component routes the oxygen from the interface to the airbag and the respirator. The respirator attaches to the 3/8 in – 24 TPI 75% depth thread. The airbag is sealed to the outlet of the adapter. The 1/4 in 28 TPI 75% depth thread connects to the interface.



Tech Drawing 4: The gas Lever. This ¼ in 28 TPI 75% depth threaded tool screws into the interface and provides a means of releasing the oxygen. Normally the AirShield is armed by unscrewing this lever until the outlet from the canister is just before the chamfer. After pulling the toggle and unscrewing a little more, oxygen escapes in a matter of seconds to fill the airbag and respirator.



Left to Right: Sophia Giglio (EE), Gautier Moreau (QBE), Liam Homburger (EE), Calvin Tran (CS), Catalina Cronin (ENV)