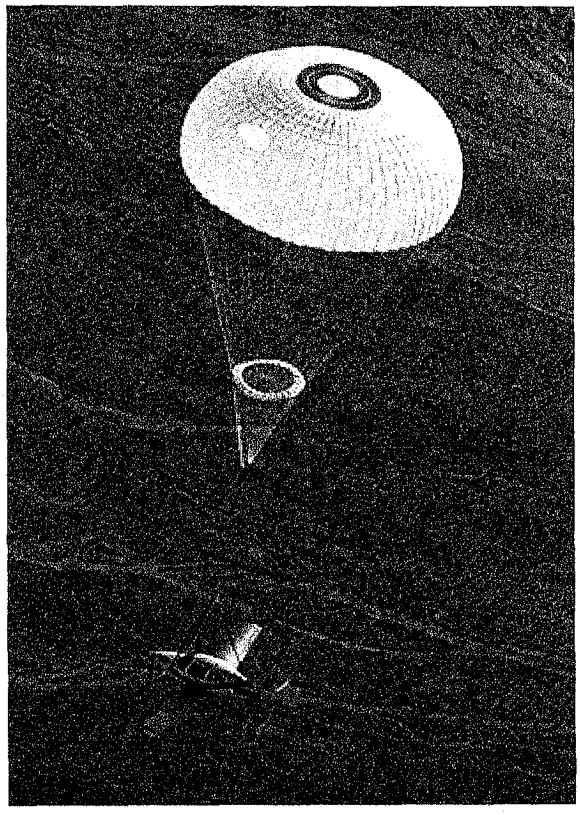
BRS Parachute

Zodiac N601DN is equipped with a Full-Airplane Parachute as an added safety feature.

To deploy the parachute:

1) **Pull the handle out of the holder. This will result in about 6 inches of slack cable connected to the end of the handle.**
2) **Continue to pull the handle so as to take up the slack and render it taut. Once taut, the firing pin is made ready to strike and ignite the rocket.**
3) **Pull past the 30# resistance. At this time, the firing pin will strike the rocket igniter, and the parachute will deploy.**



Understanding the BRS System

Q. <u>What are some of the deployment scenarios for using the BRS?</u>
A. • Mid-air collision
• Single-engine night operations
• Pilot incapacitation
• Stall/spin on approach
• Structural failure
• Loss of control/icing (component failure, icing induced or pilot error)
• Engine out over hostile terrain

Q. What happens after I pull the handle?
A. In the first 0.1 second, the rocket accelerates to 150 feet per second (over 100 mph). In less than one second, the rocket will extract the parachute and will stretch tight its lines and the airframe harness attachments. Very shortly afterward -- depending on the forward speed of the aircraft -- the canopy will become fully inflated and will decelerate the aircraft. The aircraft stabilizes under the canopy quite quickly.

Q. Can I cut away the canopy once its deployed?
A. No—once you're under the canopy, you're along for the ride.

Q. Can the parachute be detonated on a hard landing?
A. No—short of pulling the handle, the rocket cannot ignite. You can't fire it by hitting it, dropping it, heating it (within reason) or any other action. Only pulling the handle will fire it. The unit cannot "just go off." It is dormant until the pilot exerts a deliberate two-step action.

Q. How low can the parachute work?
A. The altitude required is a function of speed more than height. FAA certified tests have shown that full parachute inflation could occur as low as 260-290 feet above the ground.

Q. How much damage will occur to the aircraft?
A. As in any off-airport landing, the damage can vary with the actual terrain but using the BRS should be limited to emergencies where the cost of the aircraft is not the main concern. The damage in most cases is to the airframe gear, seats and frame. The deployments to date have resulted in aircraft that can and have been repaired.

Q. Will I be injured on touchdown?
A. Through spring 2005, 177 lives were spared by real-time use of an installed BRS unit and zero life-threatening injuries were recorded.

The Cessna 150,172,182, Symphony 160 and Cirrus SR20, SR22 SRV and SRG-2 systems successfully met all FAA criteria for occupant protection (according to FAA's "Injury Criteria for Human Exposure to Impact").

Q. How does the aircraft descend after the parachute is activated? What attitude?

A. When the rocket is first activated, the system is designed to sharply pitch up the aircraft. Doing so uses the aircraft's wings and fuselage to aid in slowing the forward motion. It also reduces loads applied to both airframe and parachute canopy.

In a very short time, the aircraft will cease any swinging and stabilize under the now fully opened canopy at zero-forward airspeed.

Once stabilized, the aircraft will descend in a flight level attitude with the nose slightly lower than the tail. On reaching the ground, the nosewheel generally will touch down first.

Q. What is the descent rate?
A. Once under canopy and descending in a stable condition, the rate of descent will be about 15 - 28 feet per second (fps) at 5,000 feet density altitude under rated weight capacity of canopy.

Q. How does the airplane descend? What altitude?
A. In a very short time, the aircraft will cease any swinging and stabilize under the now fully opened canopy at zero-forward airspeed.

Once stabilized, the aircraft will descend in a flight level attitude with the nose slightly lower than the tail. On reaching the ground, the nosewheel generally will touch down first.

At 5,000 foot MSL, the descent rate is 25 fps. To give you a better idea, descending at 21 fps (7.5 meters/sec) is approximately like jumping from a seven-foot height. In the Symphony and Cessna the gear and seats will absorb most of the force.

Q. What is the descent rate using the BRS-172?
A. Once under canopy and descending in a stable condition, the rate of descent will be about 21 feet per second (fps) at sea level in standard atmospheric conditions.

If you were to jump from seven feet off the ground, the impact would feel essentially the same.

Q. How is the system activated?
A. Simple: Pull the handle strongly and slowly! The Aircraft Flight Manual Supplement provided will give specifics for the plane but in general:
1. Fuel Mixture Control: idle cut
2. Activation Handle Cover (covering the pull handle): remove
3. Activation Handle: pull down with both hands
4. Fuel Selector Switch: off
5. Master Switch: off
6. Restraint System: secure
7. Assume Emergency Landing Body Position

When pulling with both hands, make a motion like performing a pull up. While only a small motion is required to arm and fire the rocket (in one action), you should still pull as hard and as far as physically possible. It only takes 35-40 pounds of pull on the handle to fire the rocket. BRS has proven that a wide range of occupants can activate the rocket; however, very small children will not be able to accomplish the pull.

Q. How does the parachute depart the fuselage?
A. The parachute, its lines and bridles are extracted from a special container in each airplane. An exterior cover permits unobstructed extraction but environmental protection for a deployment bag in the container. The rocket pulls out the densely packed parachute in its protective deployment bag out and away.

Once the rocket blasts through the frangible cover, window or panel, the parachute and bridles follow in a carefully staged sequence.