



Ballistic Recovery Systems, Inc.

**PARACHUTE INSTALLATION MANUAL
BRS-1350 LS,
AMD 601XL Zodiac**

BRS Document Number: 020019-PM Rev A

Date: 09/05/07

BRS Unit Serial Number: 20119

Aircraft Registration Number: N1601DN

Abstract

These installation instructions were created in cooperation with Aircraft Manufacturing and Development Co (AMD). This Parachute Installation Manual (PIM) complies with ASTM F 2316, "Standard Specification for Airframe Emergency Parachutes for Light Sport Aircraft".

These instructions supplement the "BRS Owner's Manual" and the "BRS General Installation Guide". It provides additional direction relating specifically to the BRS-1350LS parachute system installed in the AMD 601XL Zodiac.

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REVISION PAGE

Rev	Date	Approved by	Description
A	09-05-07		Initial Release



BRS PARACHUTE INSTALLATION CHECKLIST

AMD, 601XL ZODIAC

This checklist must be completed and signed by installing mechanic or certified aircraft assembly technician. Detach and return signed copy to BRS Inc., along with required photos for registration and quality control purposes.

Note: If parachute assembly and rocket are installed in separate geographic location, the first installers must sign and make a copy for themselves. Send the uncompleted Install Checklist in manual on to final installers, who will make the final signatures, make copy and send to BRS.

BRS Unit Serial Number: 20119

Aircraft Serial Number: 601-0465 Acft. Registration/N number N601DN

Parachute Installed by: [Signature] Date: 12-5-07

Rocket Installed by: [Signature] Date: 12-5-07

☒ Harnesses installed as per Installation Manual.

☒ Rocket assembled as per BRS Doc # 6539 (Instructions shipped with rocket fuel box.)

☒ Rocket installed into Launch Tube (item 1) as per BRS Doc # 6539.

☒ Rocket connected to Pedestal (item 31), Set-screws secured with Loc-tite.

☒ Rocket Lanyards attached to small Link (item 15), gate closed secured with blue Loc-tite.

☒ Rocket Lanyards coiled in fashion which promotes, "first in, last out", to avoid fouling of Lanyards.

☒ Rocket Lanyards secured with small 4" tie-wraps (item 27)

☒ Parachute unit installed and checked for security.

☒ Main Kevlar Bridle (item 41) secured to Link (item 29) on side of unit. Loc-tite, gate closed.

☒ Other end of Main Kevlar Bridle connected to all 4 Harness sections with extra Link (item 29).

☒ Activation Handle assembly routed as per Installation Manual.

☒ Activation Handle checked for freedom of movement.

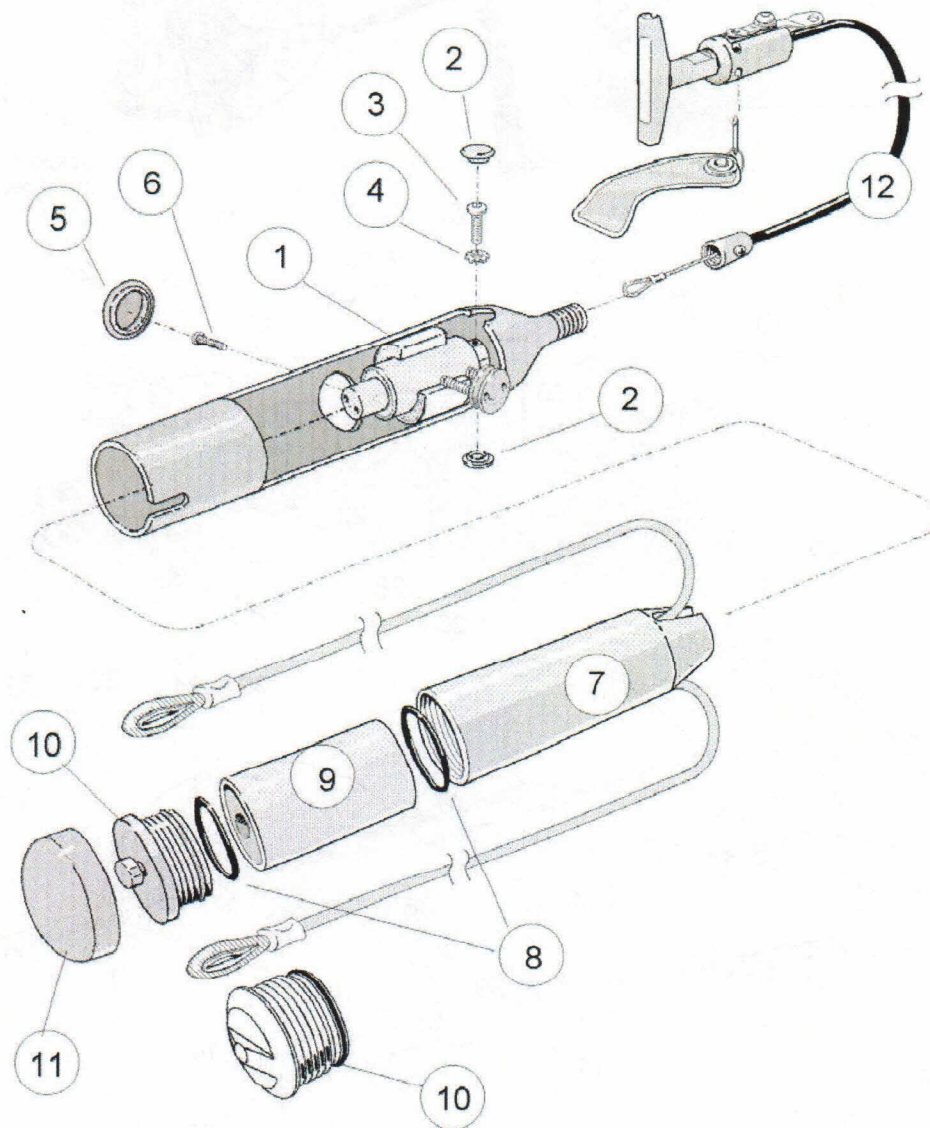
☒ Ensure Safety Pin and Flags installed. Handle assembly connected to Rocket.

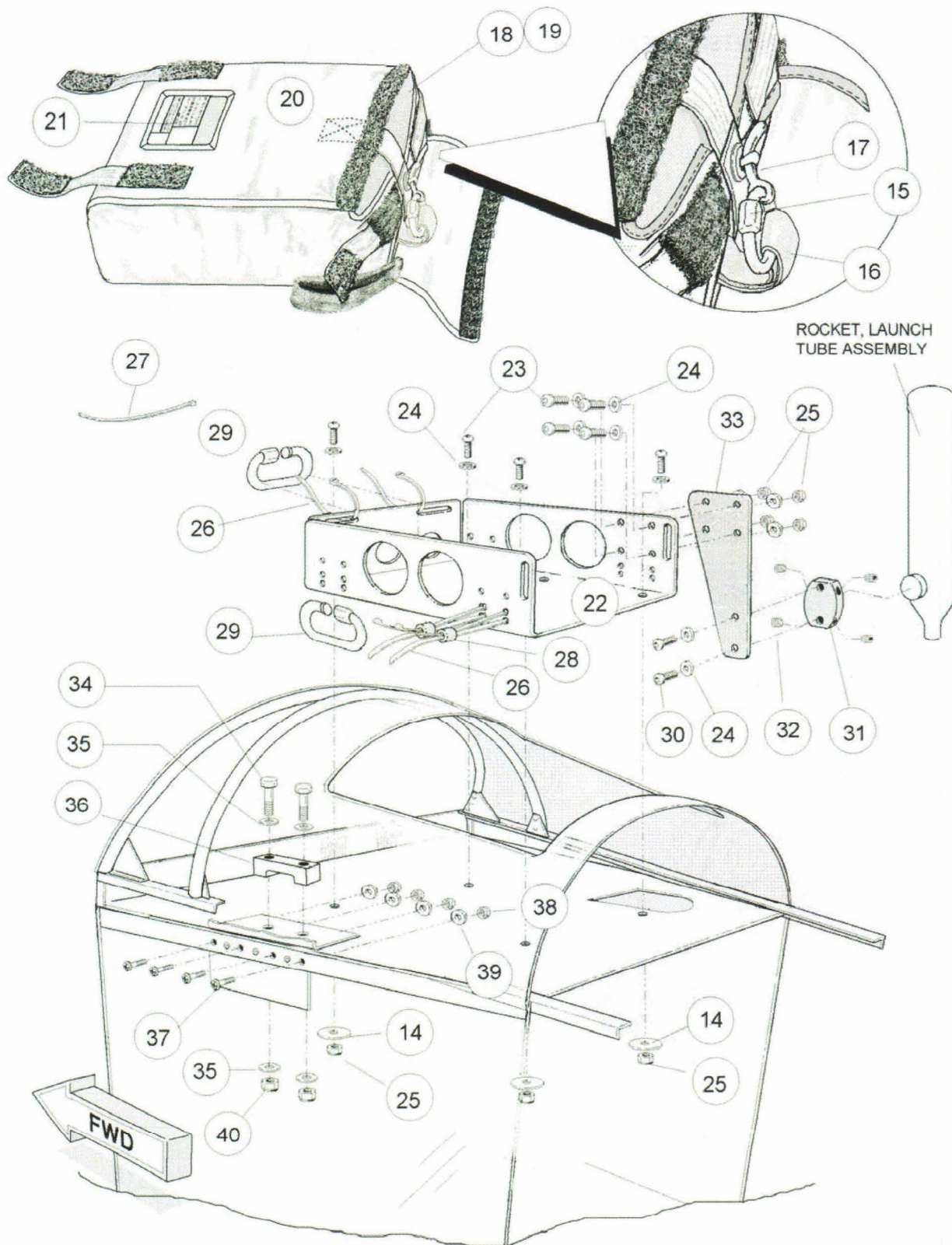
☒ Handle assembly mounted securely and routed with no tight bend radiuses along routing path.

☒ Placards applied to aircraft as per Installation Manual.

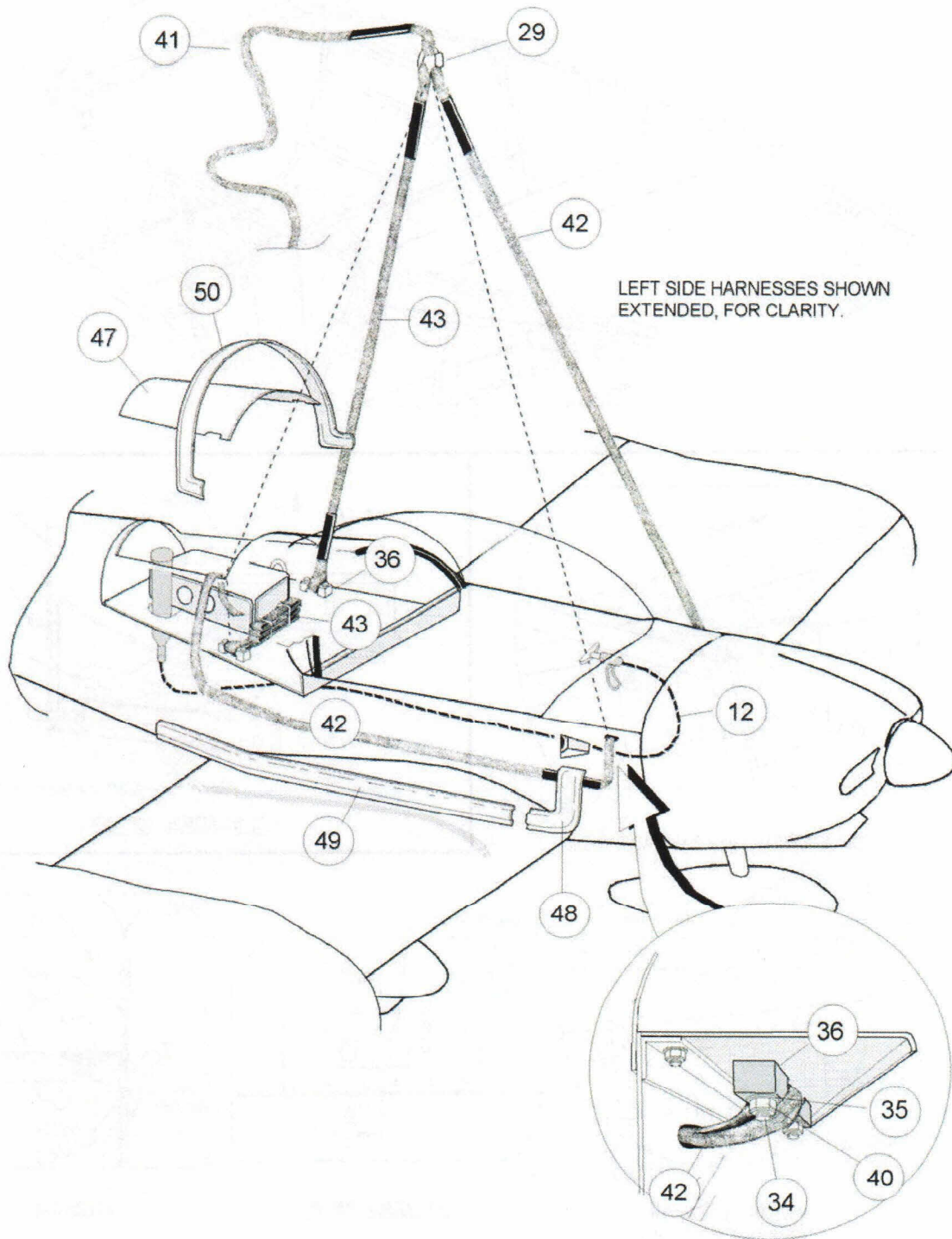
☒ This Manual , BRS Owners Manual (BRS # 020000) and Installation Guide (#020001) delivered with aircraft.

PARTS - ROCKET AND ACTIVATION ASSEMBLY





INSTALLATION OVERVIEW



PARTS LIST - 601XL Zodiac, BRS 1350 LSA

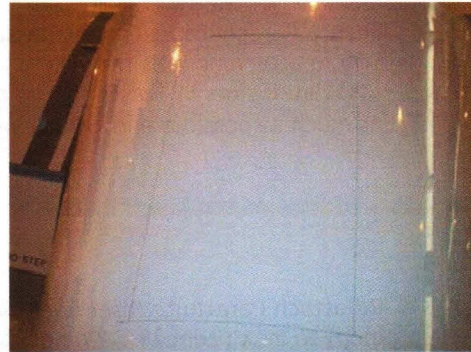
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	008411-01	IGNITER / TUBE ASSEMBLY
2	3	005033-01	PLUG, CAP, SMALL
3	1	004035-01	SCREW, 10-24 X 5/8
4	1	004055-01	WASHER, EXT. TOOTH, #10 S.S.
5	1	005040-01	PLUG, CAP, 1"
6	1	004081-01	SCREW, NYLON 8-32 X 1/2"
7	1	002151-01	CASE, MOTOR, T2-400
8	2	002569-01	O-RING, SPACERS
9	1	008450-01	CARTRIDGE, T2-400
10	1	002550-01	* BULKHEAD, FORWARD
11	1	003216-01	CAP, ROCKET
12	1	008040-18	108" ACTIVATION ASSEMBLY
13	1	008062-01	HANDLE MOUNT, FLAT
14	4	004200-01	WASHER, .281 X .063 (FENDER)
15	1	005062-01	LINK, QUICK 1/8" S.S.
16	1	001644-01	INCREMENTAL BRIDLE, BRS 460
17	1	005037-01	PIN, CURVED, RELEASE
18	1	001015-01	PARACHUTE ASSEMBLY, 1350 LSA
19	1	001347-01	SLEEVE, DEPLOYMENT 8.5 X 250"
20	1	001344-01	BAG, SOFTPACK 15X10X6"
21	1	006243-01	LABEL, NAMEPLATE, BRS 1350 LSA
22	1	003068-01	TRAY, SOFTPACK 15X10.5"
23	8	004042-01	SCREW, 1/4-20 X 3/4"
24	20	004010-01	WASHER, FLAT 1/4"
25	8	004001-01	NUT, NYLOCK 1/4"
26	A/R	004000-01	CABLE TIE, 10 3/4"
27	4	004025-01	CABLE TIE, PLASTIC 4"
28	2	005063-01	LINK, STAND-OFF
29	2	005061-01	LINK, QUICK, 1/2" S.S.
30	2	004041-01	SCREW, 1/4-20 X 5/8"
31	1	003201-01	PEDESTAL, ROCKET
32	4	004058-01	SCREW, SET 1/4-20 X 1/4"

33	1	003227	ROCKET EXTENSION
34	8	AMD SUPPLIED PART	BOLT, AN5-12A
35	16	004133	WASHER, 5/16
36	4	003205	CLAMP, BRIDLE
37	8	AMD SUPPLIED PART	AN525 10R7
38	8	004148	NUT, 10-32 LOCKING
39	8	004166	WASHER, #10
40	8	004134	NUT, 5/16-24
41	1	007195-07	60" KEVLAR, MAIN BRIDLE C82/60C
42	2	007895-19	132" KEVLAR, FRONT HARNESSSES C160/132C12
43	2	007195-19	132" KEVLAR, REAR HARNESSSES, C154/132C
44	1	006230-01	LABEL "STAY CLEAR,DANGER"
45	2	006231-01	LABEL "BALLISTIC WARNING"
46	2	006206-11	LABEL, BRS 6 LOGO
47	1	005008	EGRESS PANEL (Plastic, Thermal Molder)
48	2	P/N 6N30-2	FRONT STRAP COVERS, RIGHT / LEFT
49	2	P/N 6N31-3	STRAP SIDE COVERS
50	1	P/N 6N30-1	REAR STRAP COVER
Following items must be installed in aircraft prior to parachute system installation!			
51	1 ea.	6N31-1	REAR ATTACH ANGLE, UPPER LEFT / RIGHT
52	2	6N31-2	REAR ATTACH ANGLE, LOWER
53	1	6B6-4R	FRONT ATTACH GUSSET, RIGHT
54	1	6B6-4L	FRONT ATTACH GUSSET , LEFT
55	2	AMD SUPPLIED PART	BOLT, AN3-4A
56	2	AMD SUPPLIED PART	WASHER 3/16"
57	2	AMD SUPPLIED PART	NUT, NYLOCK AN3
58	1	AMD SUPPLIED PART	¾" X ¾" X .093" ALUM. ANGLE EXTRUSION
59	3	AMD SUPPLIED PART	¾" X ¾" X .025 ALUM. ANGLE EXTRUSION
60	A/R	AMD SUPPLIED PART	1/8" ALUM. BLIND (POP) RIVETS

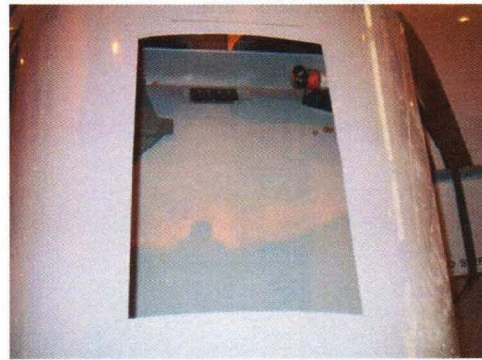
Forward Bulkheads (item 10) may come in one of two different types, as shown.
Items in Red depict non-BRS supplied parts.

1. PARACHUTE ASSEMBLY INSTALLATION

- 1.1 Mark out top of turtle-deck for cutting out of egress hole. Lay pattern out so hole will be parallel with longitudinal axis of airplane. Centerline of hole should be on centerline of airplane. Mark hole 14.5" x 19" (approx). Allow at least 1/2" lip to allow for riveting cover in place.

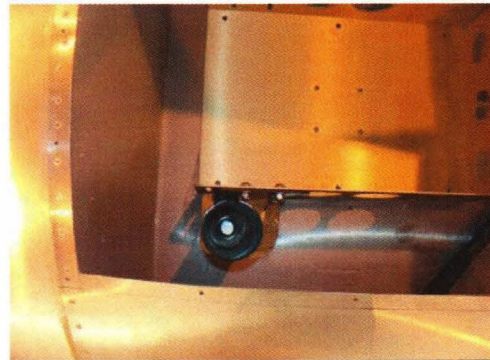


- 1.2 File and sand perimeter of hole to ensure no sharp edges or burrs.

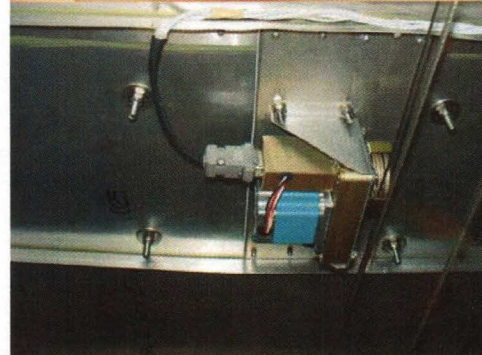


- 1.3 Remove Parachute from Tray (item 22). Place Tray in baggage area and align with egress hole. Rocket should have at least 1" clearance from the right and rear edges of egress hole.

Cut hole for rocket to penetrate floor of baggage area.

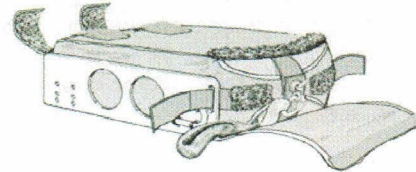
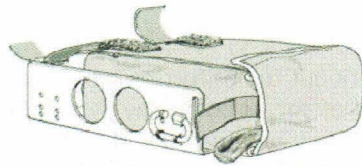


- 1.4 Secure 1350 Tray to baggage floor with Screws 1/4-20x3/4" (item 23), Nut Nylock 1/4" (item 25) Washer 1/4" (item 24) and Washer .281 (item 14). Use larger Fender Washer on bottom.

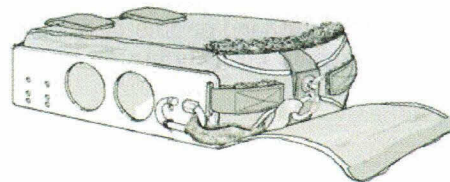


- 1.5 Install Parachute back into Tray, with the closing flap towards rear of aircraft.

Secure Parachute to Tray by passing Velcro attaching tabs through associated slots in Tray. Pull up on tabs as much as possible and secure Velcro.



- 1.6 Re-attach Parachute Riser (webbing loop) to Link (item 29). Do not close gate at this time.

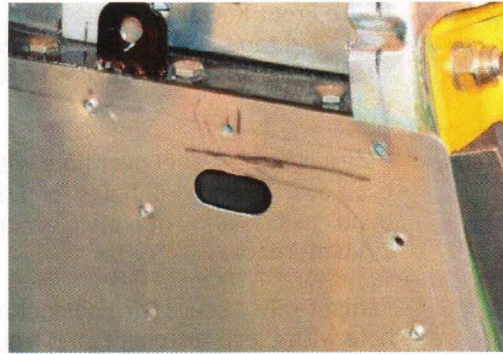


2. HARNESS ASSEMBLY INSTALLATION

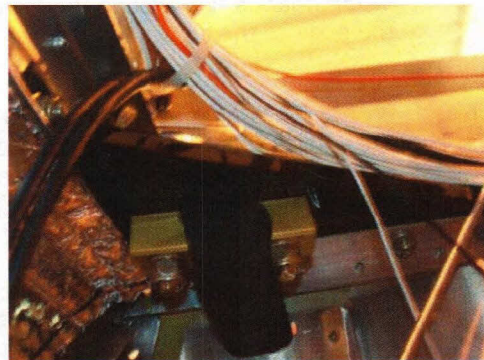
- 2.1 Cut an access hole for each Kevlar Front Harness to enter the fuselage on both sides, aft of the firewall.
Hole Dimension: 1.25 x .50" Oval.

Hole should be centered to line up with Bridle Clamp (item 36) holes on corner gusset, and positioned just under upper longeron.

Note: File and sand edges to remove all burrs.

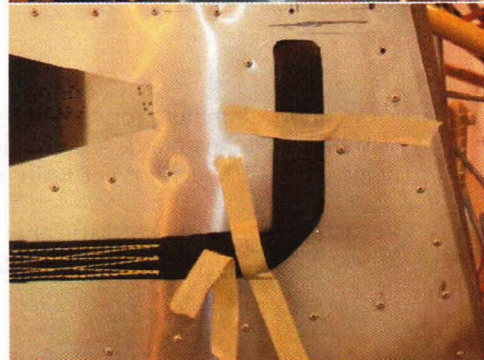


- 2.2 Install Front Harnesses by routing the long loop end through pre-cut hole, and attaching to Bridle Clamp (item 36) using hardware as shown in inset on page 7.



- 2.3 Approximately 6" below hole, turn Harness over on itself in order to make the 90 deg. turn. Hold in position with tape until ready to cover.

Use Front Strap Cover (item 48) for correct positioning.



- 2.4 Use Rear Strap Cover (item 50) to determine proper final positioning of Kevlar Harness as it runs parallel with fuselage. Tape Harness in place.

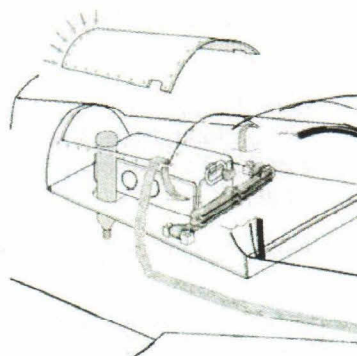
Note: Harnesses may be held in place with double-sided carpet tape, if necessary.



- 2.5 Route Front Kevlar Harnesses into Egress hole, and tape in place. Make notches in supplied ABS plastic sheet for Front Harnesses.

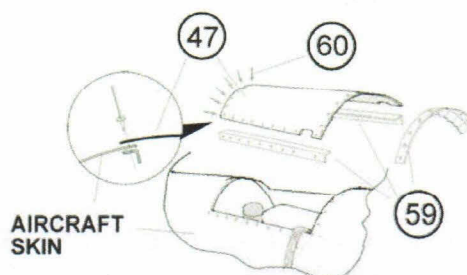
Position Egress Panel over hole with an even overlap and drill holes for 1/8" blind rivets. 40-60 mm pitch around circumference.

Temporarily, secure Egress Panel over hole with Cleco fasteners, and from the inside, mark a line around the Panel at the edge of the aircraft skin.



- 2.6 Position .025 Alum Angles (item 59) with the vertical flange oriented towards the Egress Panel (item 47), as shown in inset. Match drill holes for riveting. File edges to remove all burrs.

Aluminum Angle is installed to give support to edge of hole and to protect parachute from getting caught on rivet heads.



- 2.7 View shows aluminum forward hole edge stiffener angle installed. (Aluminum angle side stiffeners not yet installed)

Vertical flange of forward stiffener is "fluted" to allow for curvature of turtle-deck.

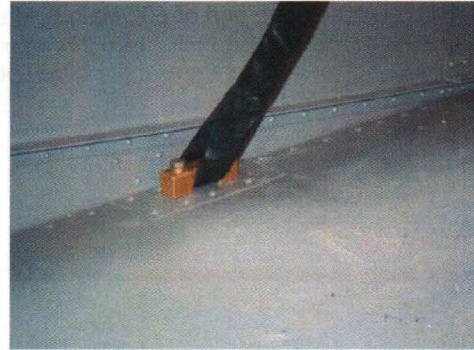


- 2.8 Remove the Egress Panel. Using an "Exacto" knife, score the Panel over the line previously marked. You want about half material thickness worth of blade penetration.

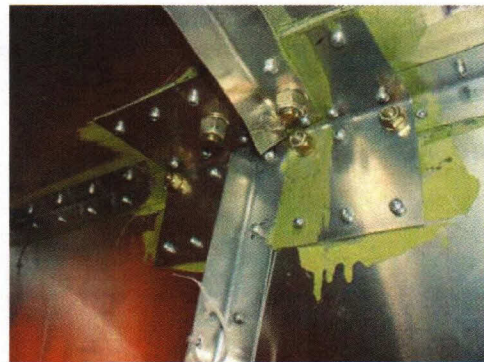
Install Egress Panel. Seal around edges with appropriate sealant or paint-able silicone.



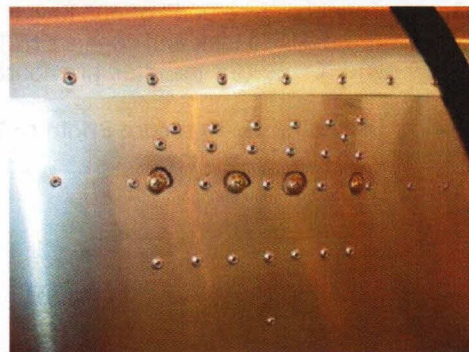
- 2.9 Attach 132" Rear Harnesses (item 43) to pre-installed rear attach hard-points using the Bridle Clamps (item 36). Secure each Bridle Clamp with hardware specified on page 6.



- 2.10 If not already done so, replace 4 of the rivets securing the skin to the longeron with 4: AN525-10R7 (item 37) plus nuts and washers, as depicted. Do this on both sides of aircraft.



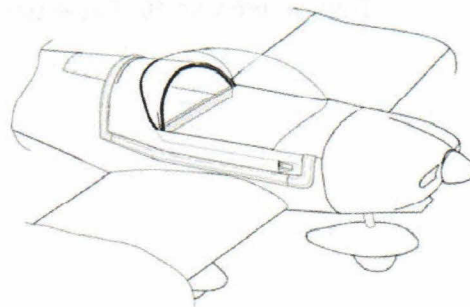
- 2.11 View showing installed AN 525-10R7 on right side of aircraft.



Install Harness Covers using 1/8" dia. aluminum blind rivets with a 150mm to 250mm pitch.

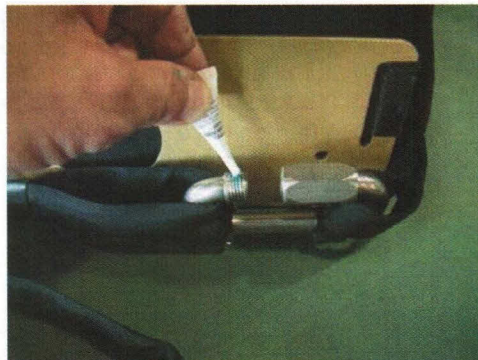
Use silicone or otherwise appropriate sealant around perimeter of Covers to prevent moisture contamination.

Do not apply sealant to bottom edge of Side Strap Covers. This will allow trapped moisture to escape.



3. HARNESS CONNECTION AND STOWAGE

- 3.1 Attach one end of 60" Main Bridle (item 41) to the ½" Link (item 29) near the Softpack opening. Apply blue Loc-tite and close gate.



- 3.2 Insert a 10" Cable-tie into each bag strap retaining slot as shown. These will be used to hold extra Link in place.

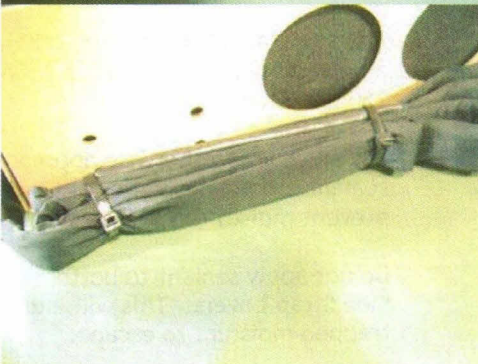


- 3.3 Connect "free end" of 60" Kevlar Bridle (item 41) to Link and connect to Tray with Cable-ties installed previously.

Use Cable-tie to secure Bridle to Tray below Link, as shown.



- 3.4 S-fold excess Kevlar Bridle along side of Tray, secure with 10" Cable-ties.



- 3.5 Connect free ends of both Front and Rear Kevlar Harnesses to extra ½" Link on end of Tray.

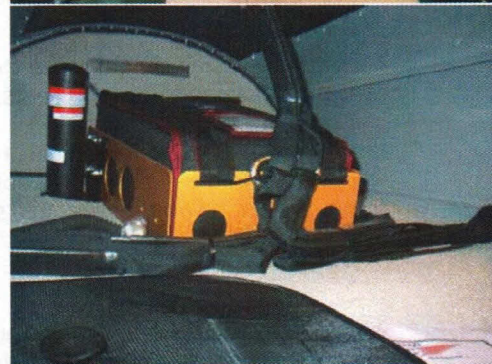
Apply Loc-tite 242 (blue)...



- 3.6 ...and close gate on Link. Do Not over-tighten.

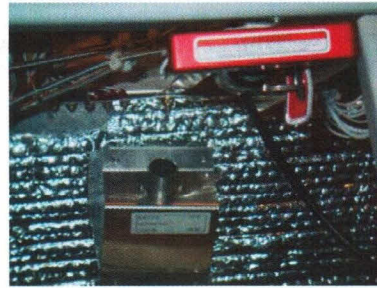


- 3.7 S-fold excess Harness sections and secure with 10" Cable-ties, as shown.



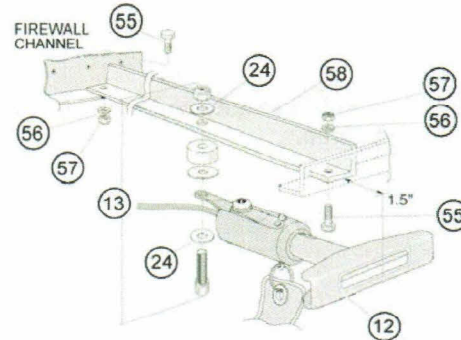
4. ACTIVATION HANDLE INSTALLATION

- 4.1 Install Activation Handle underneath instrument panel, on the left side of the center console. This places it in pilots control, but reachable by passenger.



- 4.2 Install Activation Assembly support angle between lower instrument panel flange and bottom firewall channel.

Drill $17/64$ " hole through center console support angle for Handle installation.
Note: Ensure that face of Handle extends at least 1.5" from instrument panel.



Note use of large Nylon washer to extend Handle Assembly below support angle.

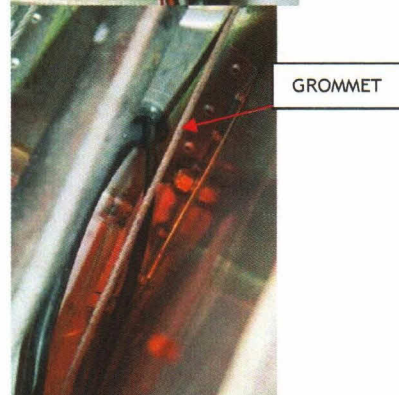
- 4.3 From Handle, route Activation Housing towards firewall in wide radius. Use 10" Cable-ties to secure Housing away from rudder pedals.

Activation Housing should route through center console and between seats.

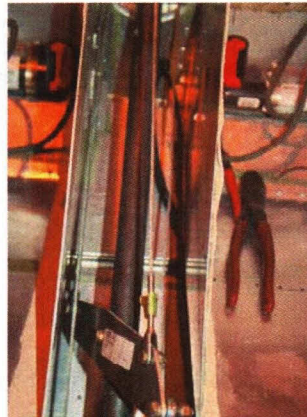
Note: Ensure Housing is well secured with plastic Cable-ties and will not be subject to chafing on moving parts.



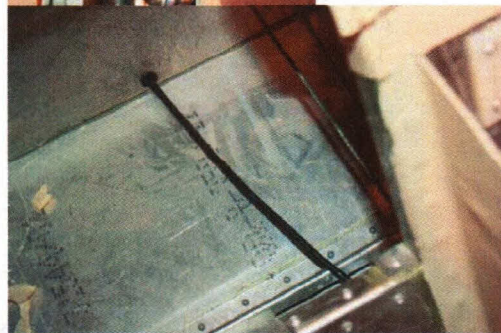
- 4.4 Where Activation Housing must route through bulkheads, make $7/8$ " hole for Cone Adapter to pass. Hole should utilize a grommet to reduce chance of chafing on Housing.



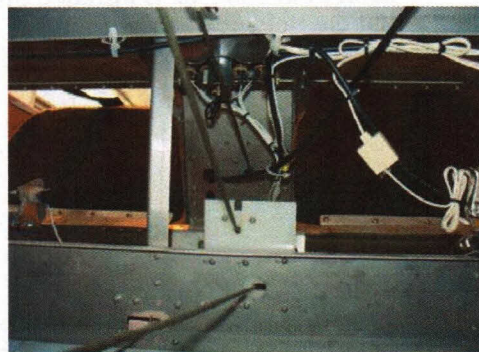
- 4.5 Route Activation Housing through center console. Secure it so that it's clear of elevator tube, rudder cables and any other moveable item. Use plenty of Cable-ties to ensure the Housing stays where installed.



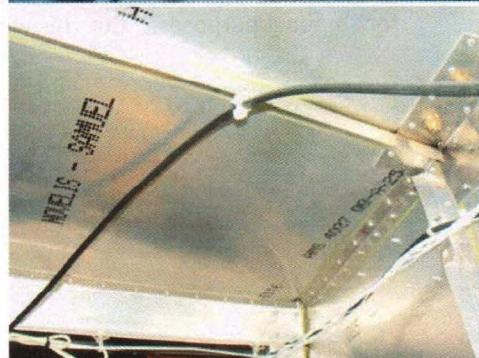
- 4.6 Housing routing along floor, aft of seats.



- 4.7 Activation Housing routing aft from center panel, aft of seats. Notice rubber grommet installed.

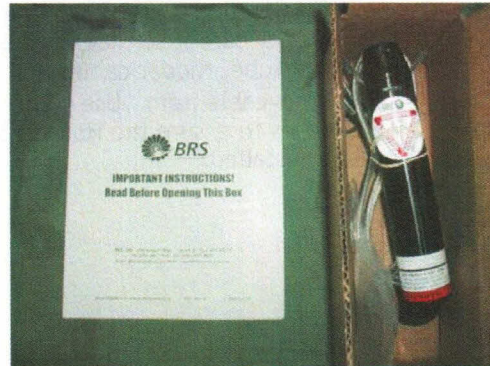


- 4.8 Activation Housing secured with 10" Cable-ties in multiple places to restrict movement during normal operations.



5. ACTIVATION ASSEMBLY CONNECTION TO ROCKET

- 5.1 Assemble Rocket in accordance with BRS Instruction Manual 6539, which is taped to the top of the small box the fuel is contained in.



- 5.2 Check to ensure you have the proper parts and tools for installing the Activation Assembly (item 12).

- Loc-tite 242 (blue)
- 2: Cap Plug, small (item 2)
- Hex wrench, 1/8"
- Screw 10-24x5/8" (item 3)
- Washer External Tooth (item 4)



- 5.3 Before beginning installation, ensure Safety Pin and Flag is installed into the Handle Holder, as shown.



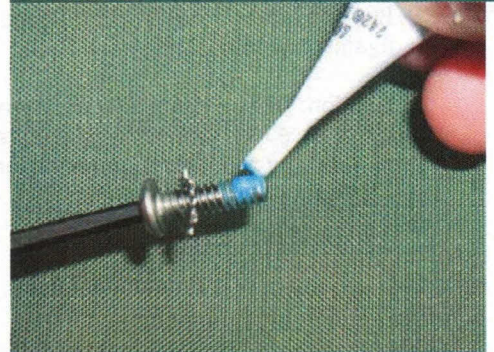
- 5.4 A safety wire is installed through the Launch Tube into the Igniter Assembly for shipping purposes. Cut this wire...



- 5.5 ...and remove carefully. Discard Safety Wire, it is no longer needed.



- 5.6 Apply a drop of Loc-tite 242 onto threads of Screw (item 3).



- 5.7 Grasping cable with thumb and forefinger, insert Activation Cable Loop into end of Launch Cone.

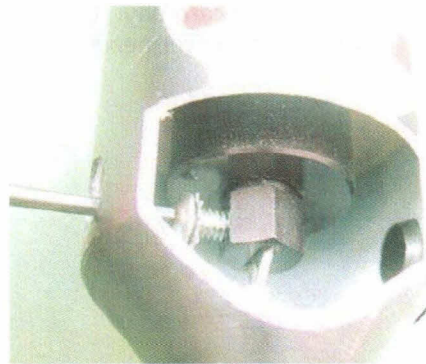
Note: Bottom portion of Launch Tube is cut-away for clarity.



- 5.8 The "Actuator" on the bottom end of the Rocket Igniter Assembly has a slot in the end. The Loop on the end of the Activation Assembly must fit into this slot.

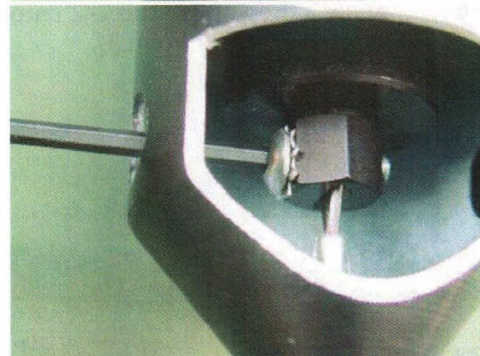


- 5.9 Once the Loop is definitely in the slot, secure it with the 10-24 Screw and Lock Washer.



- 5.10 Run the Screw in until it's snugged up against the Actuator.

Caution: When tightening the Screw, make sure that you remain "square" to it. Pushing too hard towards aft end of Launch Tube could cause ignition.



- 5.11 Properly installed Cable with seated Screw and Lock Washer.



- 5.12 Before connecting Cone Adapter, tug on Cable lightly towards rear with thumb and forefinger to ensure cable is actually captured by Screw.

Note: It's advisable to use a small flashlight and look in the end or sides to determine if Cable is properly inserted into slot, before closing everything up.

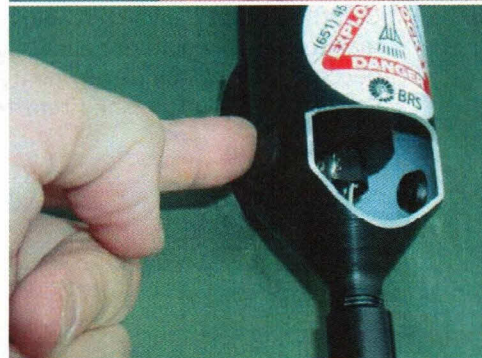
DO NOT PROCEED UNTIL THIS IS VERIFIED!



- 5.13 Apply Loc-tite 242 to threads on end of Launch Tube, and screw on Cone Adapter. (Black cylindrical part on end of Activation Assy.)
Screw on by hand. May be snugged up with wrench, but do not over-tighten!



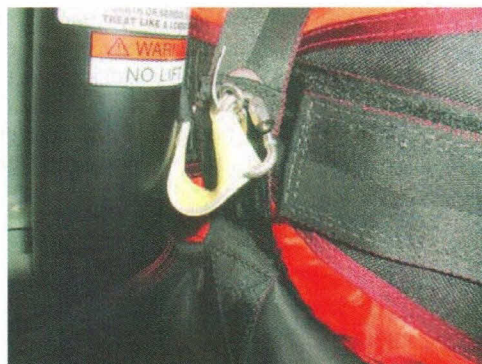
- 5.14 Install small Plastic Cap Plug (item 2) into 1/2" access hole.



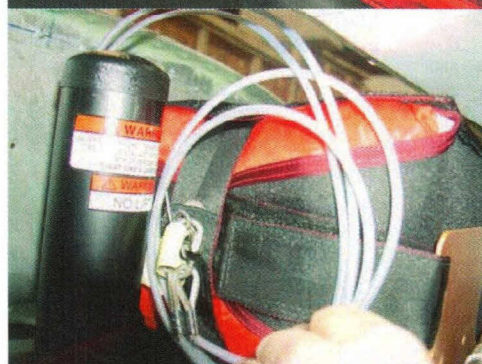
6. ROCKET CONNECTION TO PARACHUTE

- 6.1 Pull open front flap of Softpack, and expose Release Pin and small 1/8" Link (item 16). Open gate on Link.

Note: *Ensure Incremental Bridle (yellow strap assembly) is attached to Link.*



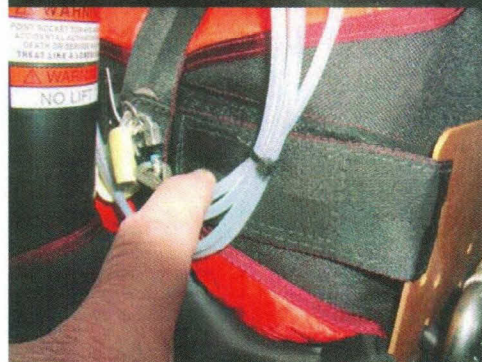
- 6.2 Coil the Rocket Lanyards (cables) in a manner which would not allow them to become a "knot" on deployment, and connect them to the Link (item 16).



- 6.3 Apply a drop of Loc-tite 242 (blue) or equivalent, to threads on Link. Close gate, but do not over-tighten.



- 6.4 Place 2-3 small plastic Cable-ties (item 27) around Rocket Lanyards so they remain stowed.



Close flap on Softpack.

7. PLACARD PLACEMENT

- 7.1 Install “Ballistic Warning” label (item 45) aft of canopy on each side of airplane. **Note: Labels have very aggressive adhesive - you will only get one attempt at placement before they’re on for good!**
- 7.2 Install “Stay Clear, Danger” label (item 44) on parachute egress cover, in position shown.

