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PARACHUTE INSTALLATION MANUAL  
BRS 1350 HS  
Flight Design GmbH, CTSW Aircraft

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**Abstract**

These installation instructions were created in cooperation with Flight Design GmbH. 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-1350 HS parachute system installed in the CTSW Aircraft manufactured by Flight Design GmbH.


**Proprietary Notice**

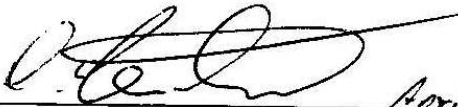
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The signatures below verify that together BRS, Inc. and Flight Design GmbH certify and accept this manual, Document Number 020008-PM revision A, dated 04-14-2008 as the "Parachute Installation Manual" (PIM) for the CTSW AIRCRAFT, as required under ASTM Standard F2316.

Both parties agree that any deviations or changes to components affecting the functionality of the items listed in this Parachute Installation Manual will not be performed until the changes are reflected in a revised and accepted version of this document.

Signed,

  
\_\_\_\_\_  
Frank Hoffmann  
VP Engineering  
BRS Inc.  
Date Apr. 11, 2008

  
\_\_\_\_\_  
Oliver Reinhardt  
Technical Director  
Flight Design GmbH  
Date April 14, 2008

# Revision Page

Doc. Nos.	Rev	ECO#	Date	Approve	Description
020002-GU	A		08-23-05	Brent Torgerson	Initial Release. 1350LS Softpack. OBS.
020008-01	A	1241	02-23-06	Brent Torgerson	Release of 1350 HS Canister
020008-02	B	1342	01-22-07	Frank Hoffmann	Bulkhead Handle Brkt.
020008-PM	A	0804-0005	04-14-08	Frank Hoffmann	Update for Pickup Collar replacement. Update to "PM" config. suffix



Flight Design GmbH, CTSW Aircraft

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BRS PARACHUTE INSTALLATION CHECKLIST

**Flight Design GmbH, CTSW Aircraft**

**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 installation photos for registration and quality control purposes.**

Note: If parachute assembly and rocket are installed in separate locations, the first installers should sign and make copy for themselves. Send the uncompleted Installation Checklist along to the final installers, who will make the final signatures, make a copy and send to BRS.

BRS Unit Serial Number: \_\_\_\_\_

Aircraft N # : \_\_\_\_\_ Acft. Serial Number \_\_\_\_\_

Parachute /Harness installed by: \_\_\_\_\_ Date: \_\_\_\_\_

Rocket install completed by: \_\_\_\_\_ Date: \_\_\_\_\_


TWO FRONT AND ONE REAR HARNESES installed as per INSTALLATION MANUAL.

ROCKET assembled as per Dwg. 020012-01 (Instructions shipped with rocket fuel box.)

ROCKET installed into LAUNCH TUBE (item 1) secured with NYLON SCREWS (item 5)

ROCKET connected to ROCKET MOUNT. LOCTITE on SCREWS (Item 15)

Parachute unit installed and checked for security.

ALL THREE KEVLAR HARNESES attached to LINK (Item 17) on CANISTER. Gate closed.

ACTIVATION HANDLE ASSEMBLY installed as per INSTALLATION MANUAL.

ACTIVATION HANDLE HOUSING ASSEMBLY connected to ROCKET as per BRS Dwg. 610 -A.

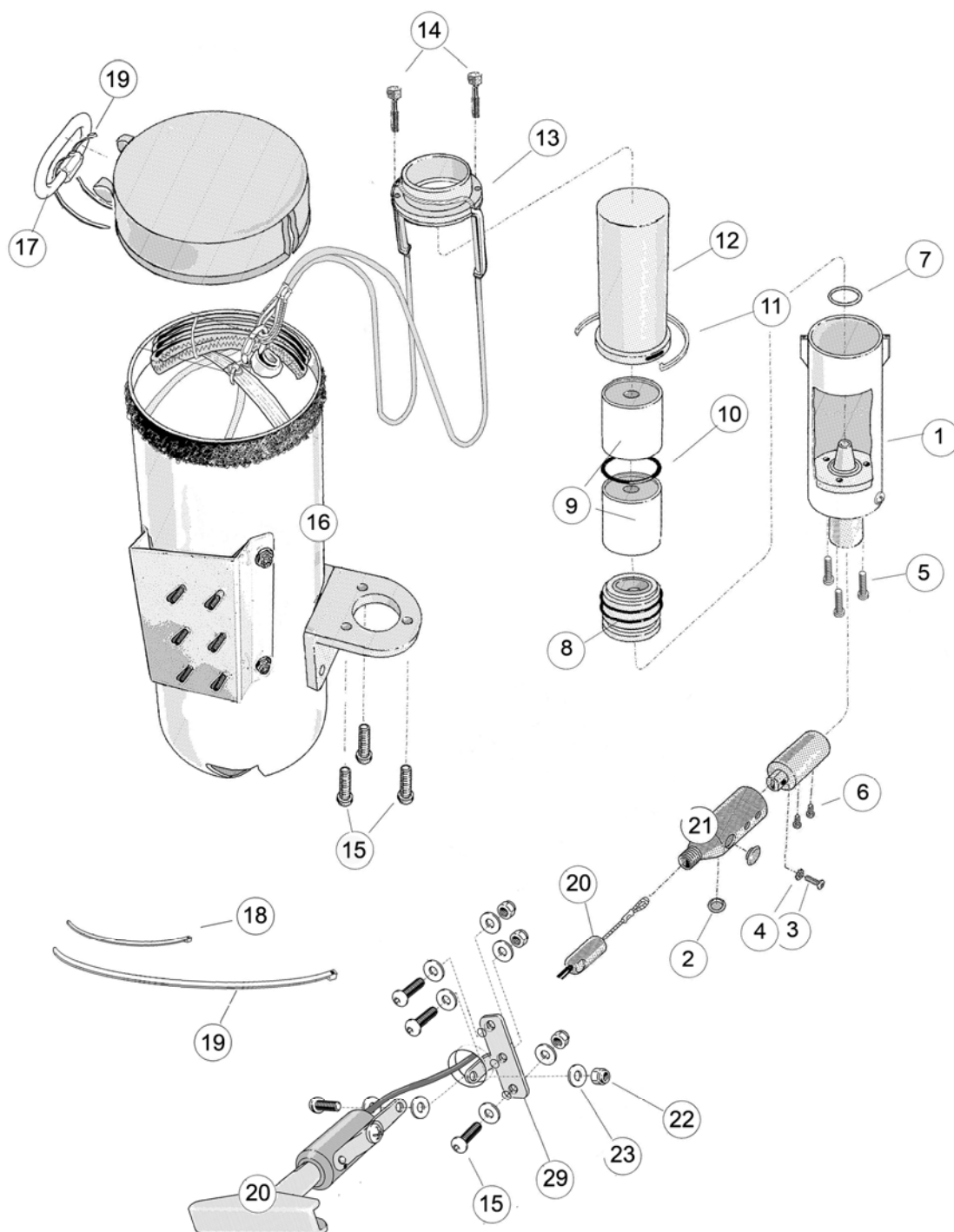
Ensure SAFETY PIN WITH FLAG installed into ACTIVATION ASSEMBLY.

ACTIVATION HANDLE HOUSING ASSEMBLY mounted securely and routed with no tight bend radiuses along routing path.

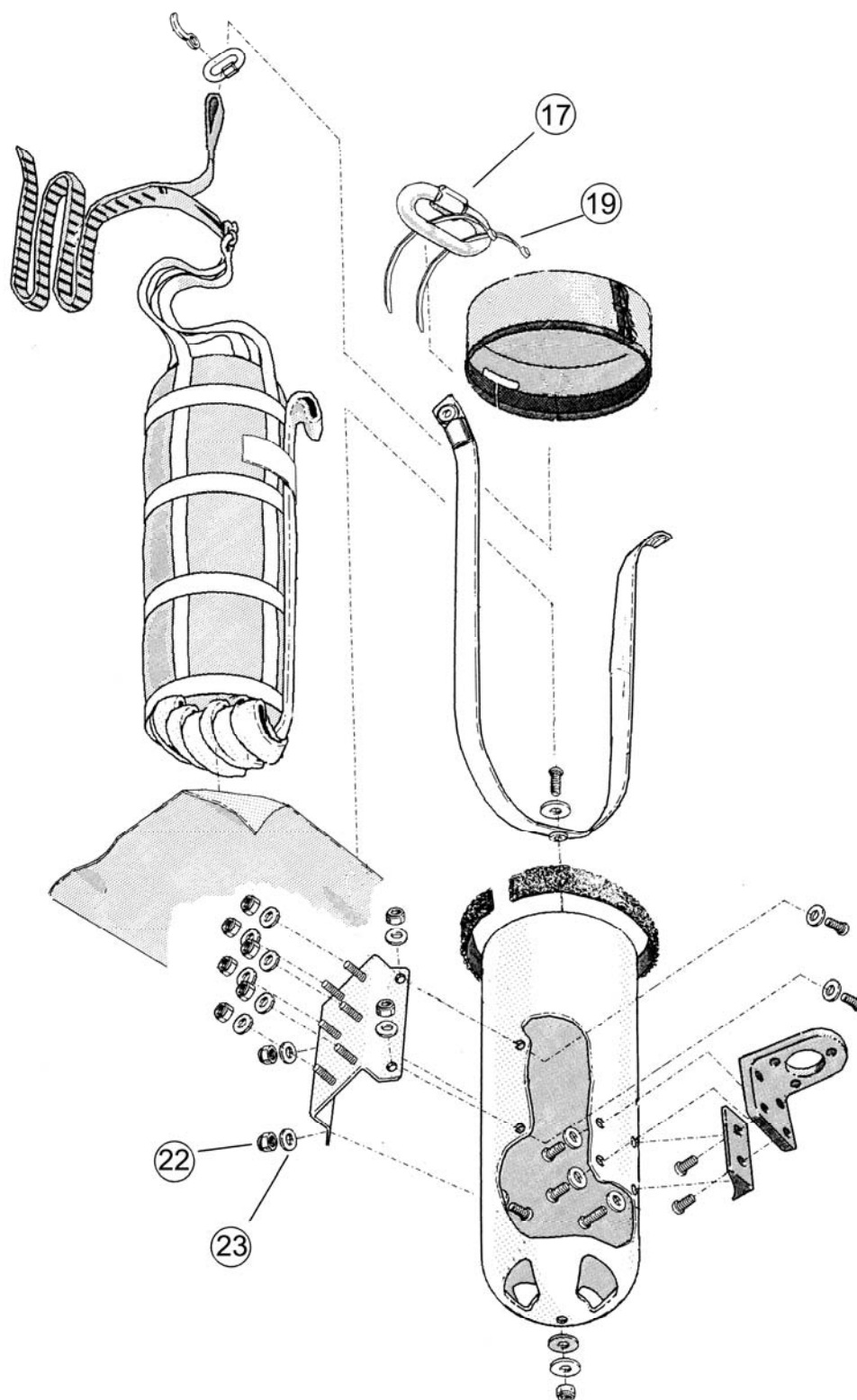
PLACARDS applied to aircraft as per INSTALLATION MANUAL.

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

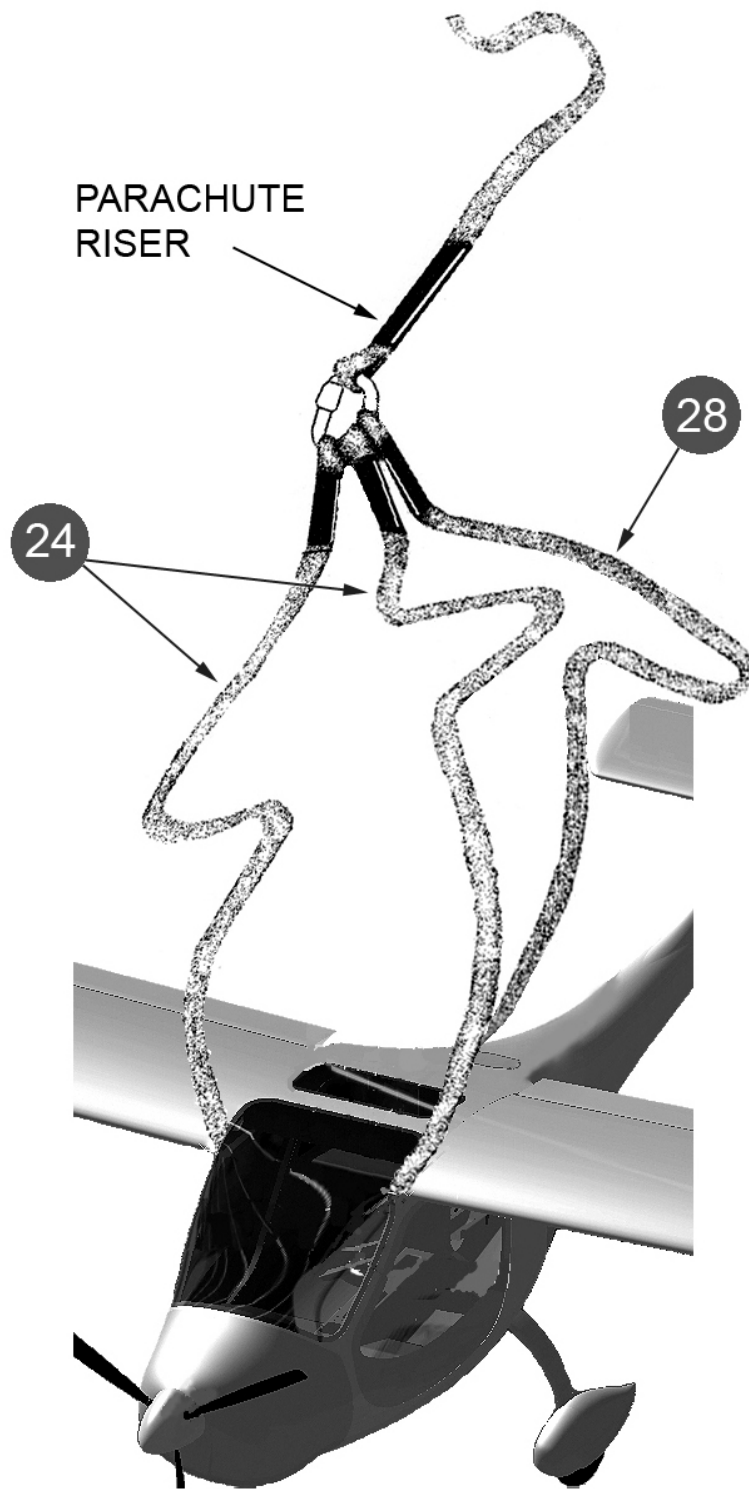
## PARTS - ROCKET AND ACTIVATION ASSEMBLY



BRS Doc.: Parachute Installation Manual - BRS-1350 HS Flight Design GmbH, CTSW Aircraft      Page 7 of 24  
BRS Document Number 020008-PM    Rev. A

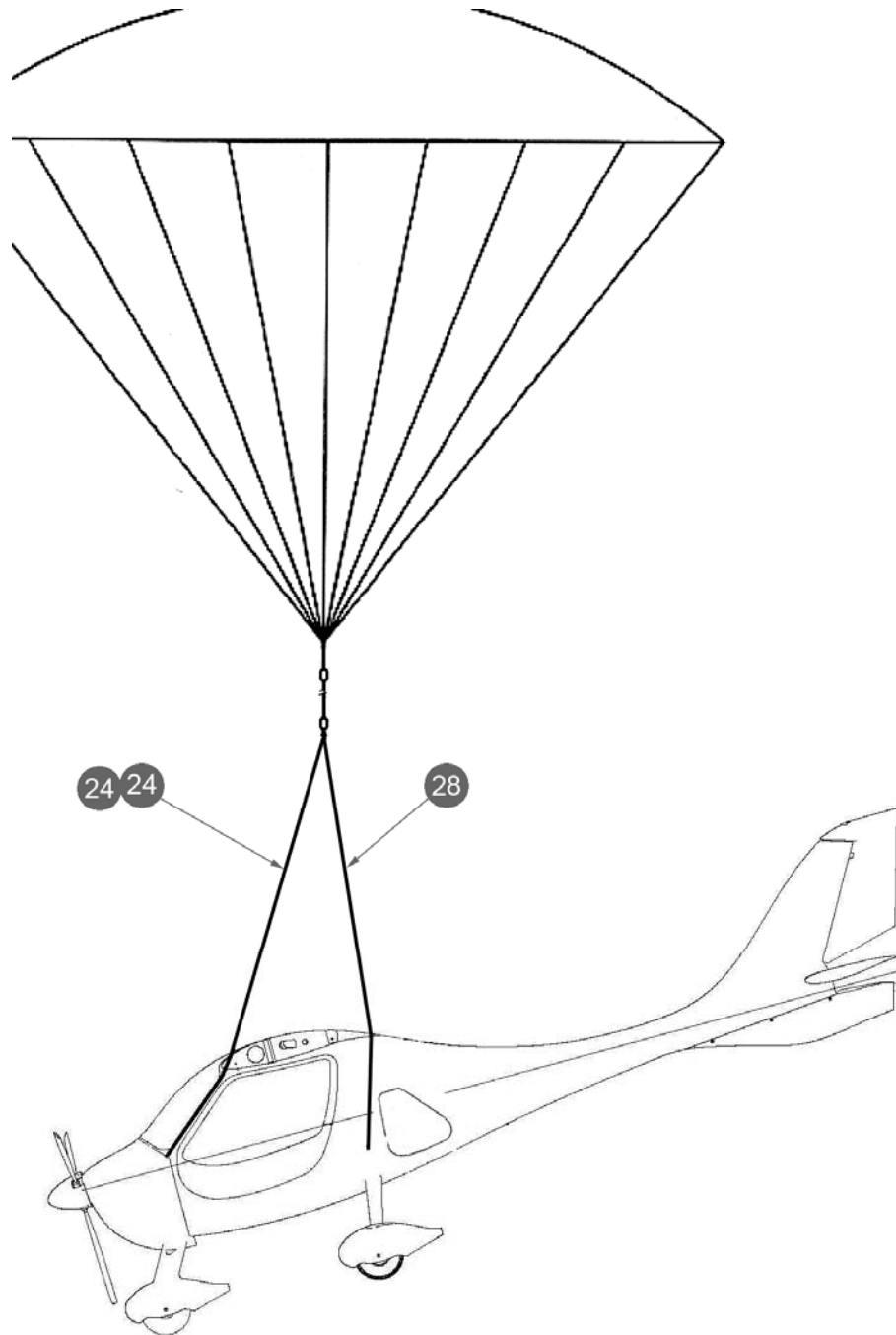


## HARNESS DIAGRAM OVER VIEW







## HARNESS GEOMETRY IN DESCENT CONDITION

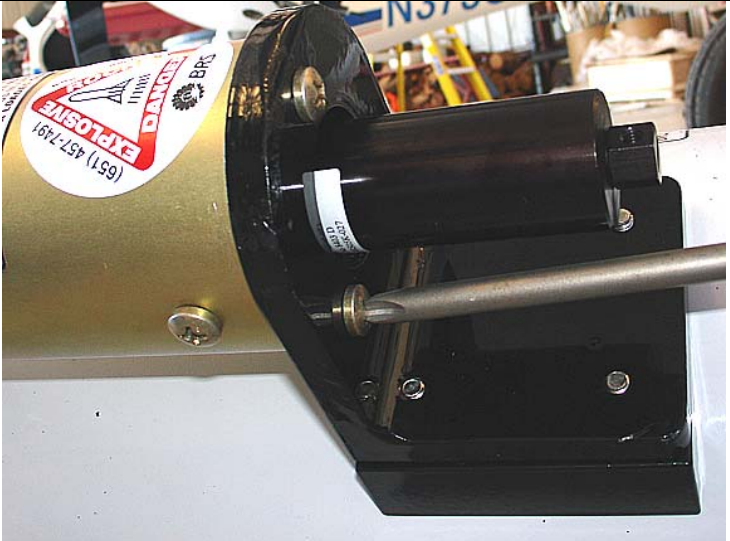
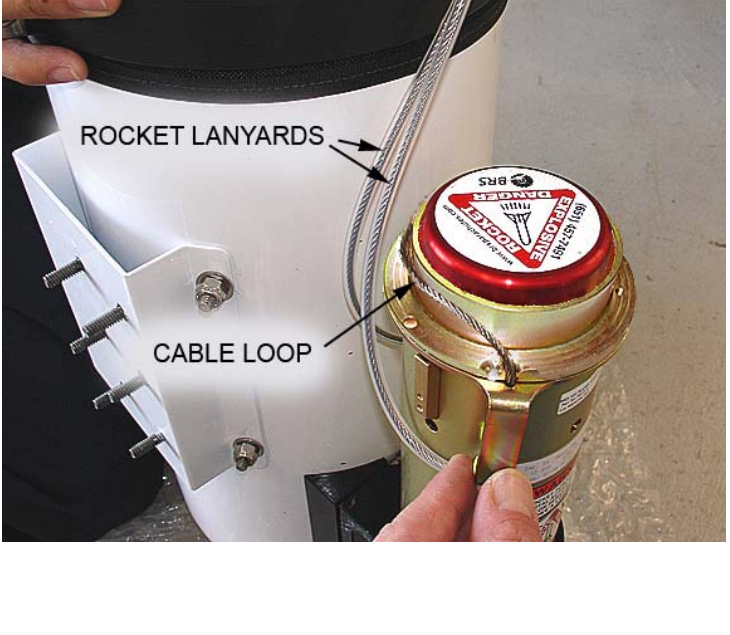



## PARTS LIST - CTSW AIRCRAFT 1350 HS PARACHUTE

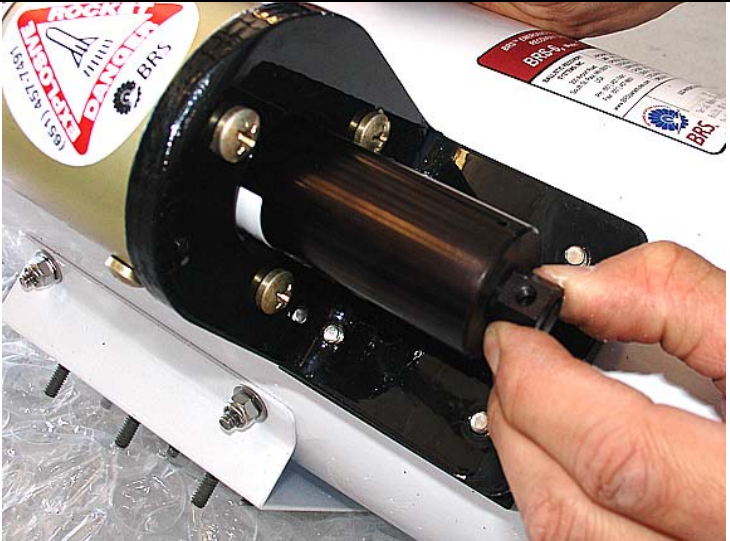


ITEM	QTY.	PART NO.	DESCRIPTION
1	1	008408-01	RKT.BASE/TUBE/ IGN. ASSY BRS 600
2	3	005033-01	PLUG, CAP, SMALL
3	1	004035-01	SCREW, 10-24 X 5/8
4	1	004055-01	WASHER, EXT. TOOTH, #10 S.S.
5	3	17100	SCREW, NYLON 10-32 X 3/4"
6	2	17004	SCREW, 10-24 X 3/8"
7	1	002586-01	O-RING, BASE
8	1	009205-01	RKT. AFT BULKHD ASSY.
9	2	008399-01	FUEL ASSY, BRS 600
10	1	14112	O-RING, SPACER
11	1	14113	ORTMAN LOCK KEY
12	1	002102-01	CASE, MOTOR BRS-600
13	1	14104	COLLAR ASSY, PICK-UP
14	2	017104-01	SCREW, 8-32 x 3/4 SPECIAL
15	4+3	004042-01	SCREW 1/4-20 X 3/4"
16	1	008939-01	1350 HS CAN SHORT MOUNT
17	1	005061-01	LINK, QUICK 1/2" SS
18	4	004025-01	CABLE TIE, PLASTIC 4"
19	22	004000-01	CABLE TIE, PLASTIC, 10 3/4"
20	1	008040-05	30" ACTIVATION ASSY
21	1	5204	CONE, ROCKET
22	11+3	004001-01	NUT, NYLOCK 1/4-20
23	20+6	004010-01	WASHER, 1/4"
24	2	007395-17	KEVLAR FRONT HARNESS (B157/132C)
25	1	006230-01	LABEL "STAY CLEAR, DANGER"
26	3	006231-01	LABEL "BALLISTIC WARNING"
27	1	006206-11	LABEL, BRS 6 LOGO
28	1	007395-15	KEVLAR REAR HARNESS (B145/120C)
29	1	003193-01	BRACKET, HANDLE MOUNT, BULKHEAD

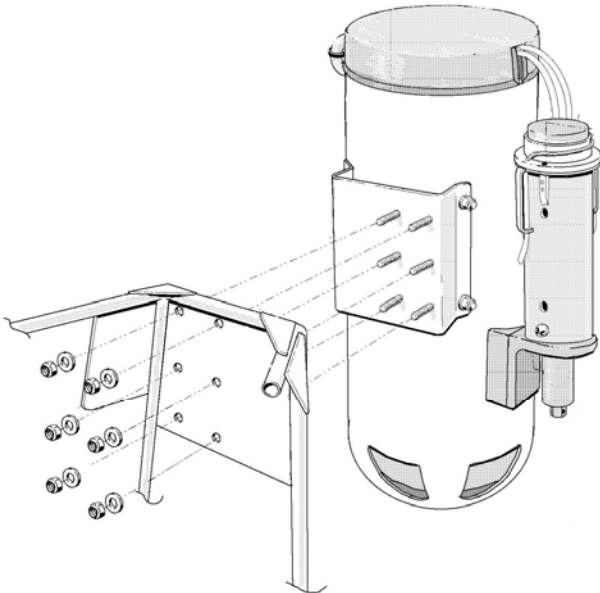

## 1. ROCKET ASSEMBLY AND PARACHUTE INSTALLATION.

1.1	<p>Assemble Rocket as per Rocket Assembly Instruction set.</p> <p>Attach Rocket to Canister prior to installing unit into airplane.</p> <p>Note the hole pattern on bottom of Rocket Launch Base. It's unsymmetrical – it only fits on the Rocket Mount one way.</p>	
1.2	<p>Position Rocket on Mount.</p> <p>Apply small amount of blue <b>242 LOCTITE</b> on three Screws (item 15) thread.</p>	

1.3	Attach Rocket to the Rocket Mount.	
1.4	<p>Remove Aluminum Screws (item 14) installed at the top of the Launch Tube.</p> <p>Slide Pick-up Collar over Rocket and onto Launch Tube.</p> <p><b>IMPORTANT: ENSURE THAT CABLE LOOP IS PLACED TO SIDE OF THE ROCKET – NOT OVER THE TOP.</b></p> <p><b>DANGER! CABLE ROUTED OVER TOP WILL CAUSE DEPLOYMENT FAILURE, POSSIBLY RESULTING IN DEATH OR SERIOUS INJURY!</b></p>	
1.5	<p>With Pick-up Collar positioned properly, secure Collar by replacing Aluminum Screws (item 14).</p> <p>USE 242 LOCTITE ON THESE SCREWS.</p> <p><b>DO NOT OVER TIGHTEN. Not more than 5 in/lbs of torque.</b></p> <p><b>ENSURE ROCKET LANYARDS ARE <u>NOT</u> ROUTED OVER TOP OF THE ROCKET!</b></p>	

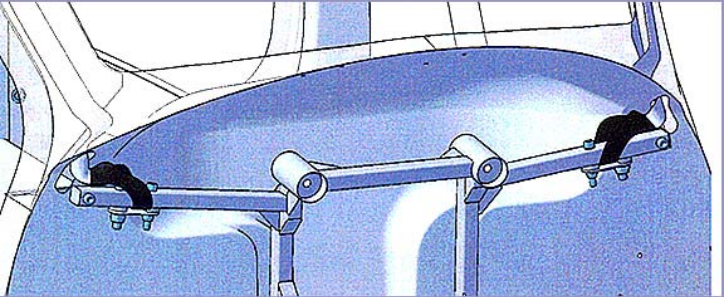




1.6	<p>Rotate (do not pull) Actuator on bottom end of Rocket until larger, unthreaded hole is facing away from Canister.</p>	
1.7	<p>Install Rocket Cone with larger access hole also facing away from Canister, to facilitate installation of Handle Assembly later.</p> <p>Apply Loc-tite 242 (blue) to thread of two Screws (item 6) and secure.</p>	
1.8	<p>Install BRS Canister unit to aircraft parachute frame.</p>	

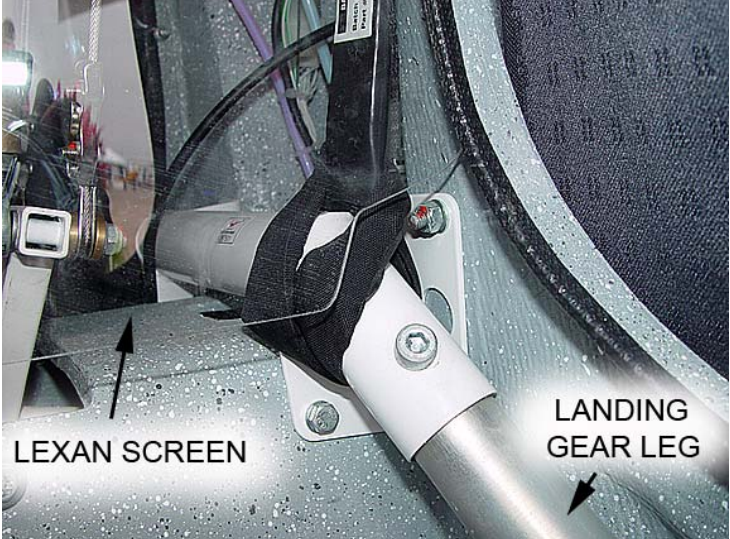
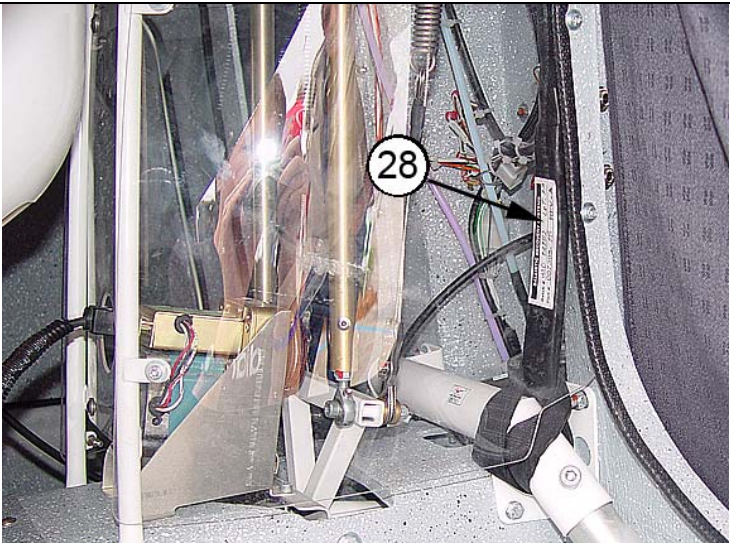
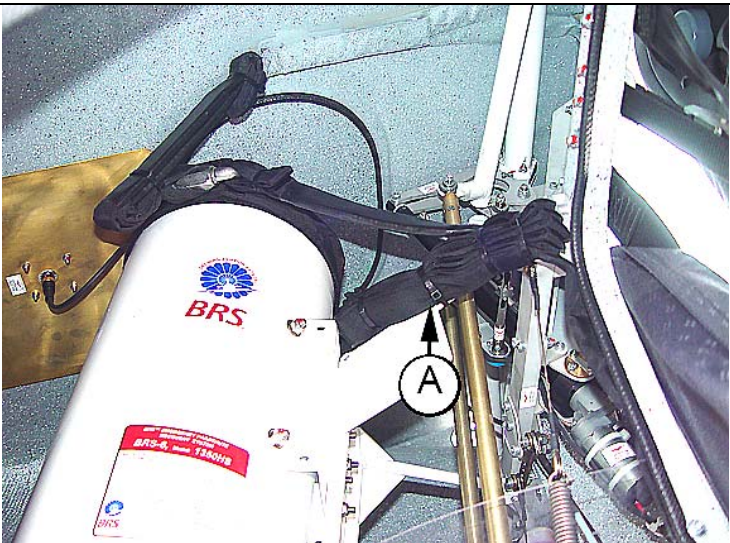
1.9	<p>Use 6 Nylon Lock Nuts (unit 22) and 6 Washers (unit 23) to secure.</p>	
1.10	<p>Check alignment of Canister and Rocket with egress hole when installing.</p> <p>Use washers between mounting bracket to shim parachute for better alignment, if necessary.</p>	




## 2. FRONT HARNESES INSTALLATION.

2.1	<p>Verify correct installation of Kevlar® Front Harnesses (Item 24). There should be one harness looped around each side of the upper engine mount tube, using a “Lark’s Head” knot. They are routed up the door posts and across the cabin (just under the top skin) to the luggage/parachute compartment. These harnesses are supplied by BRS to the Flight Design factory for installation during production.</p>	 A technical line drawing showing the installation of a Kevlar harness. The harness is shown as a black line with loops, routed along a metal structure that represents the upper engine mount tube and door posts. The drawing is set against a light blue background.
2.2	<p>Inspect Front Harness attach points to ensure for proper installation. Harnesses should be connected via “Larks-head” Knot to forward firewall cross member, situated between bolts with lower plate installed.</p> <p>Left side shown.</p>	 A photograph showing the left side of the firewall cross member. A black Kevlar harness is attached to a metal bolt on the cross member. The harness is looped around the bolt and secured with a knot. The background shows the interior of the aircraft, including the firewall and various cables.
	<p>Right side of firewall.</p>	 A photograph showing the right side of the firewall cross member. A black Kevlar harness is attached to a metal bolt on the cross member. The harness is looped around the bolt and secured with a knot. The background shows the interior of the aircraft, including the firewall and various cables.

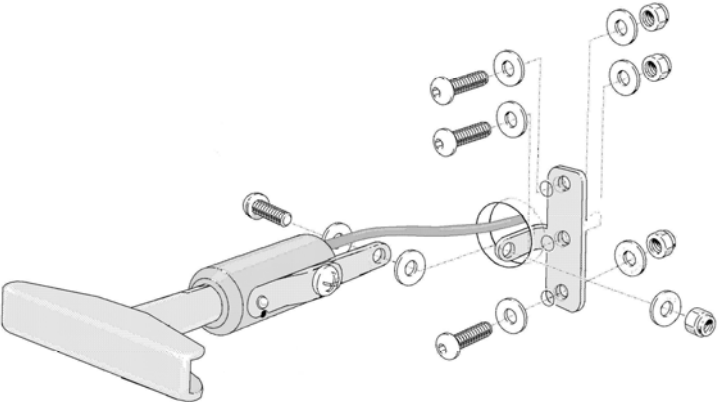


### 3. REAR HARNESS INSTALLATION.

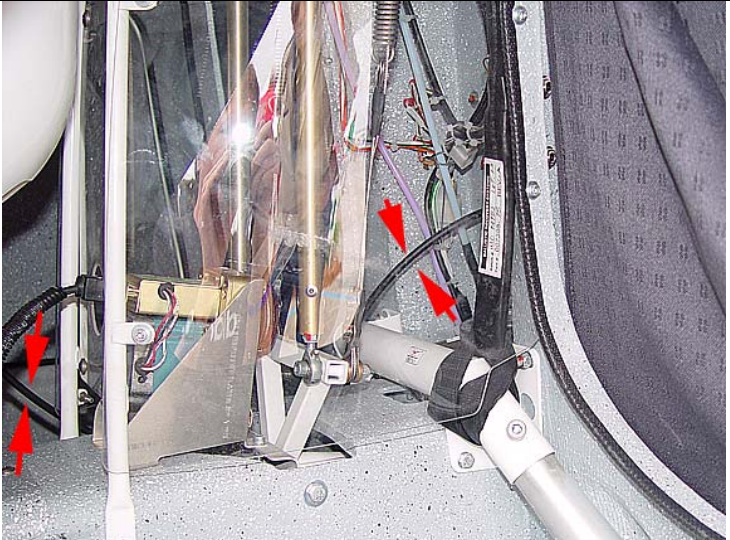
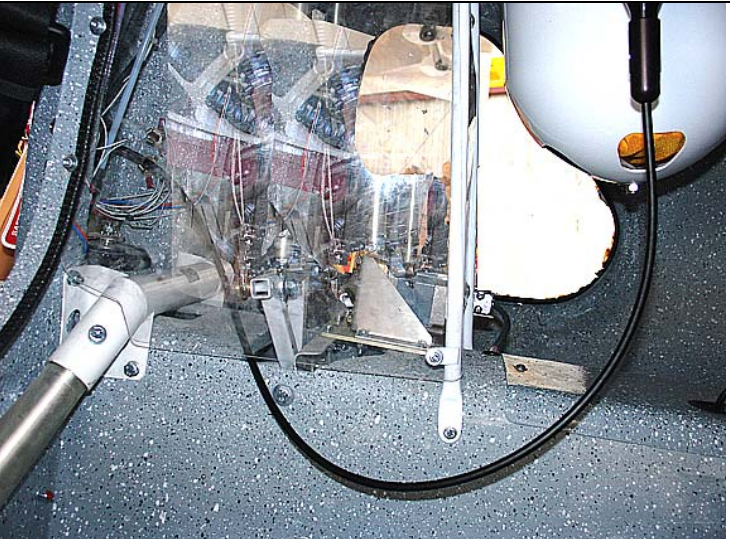
3.1	<p>Connect Rear Harness (item 28) to right side landing gear leg using a “Lark’s Head” knot.</p> <p>Pass free end through large loop – pull up tight.</p>	 <p>A close-up photograph showing the rear harness (item 28) being connected to the right side landing gear leg. A black strap with a white buckle is being secured. An arrow points to a curved metal plate labeled 'LEXAN SCREEN'. Another arrow points to the 'LANDING GEAR LEG'.</p>
3.2	<p>Route Harness straight up towards aircraft ceiling and locate along the edge of back wall right hand side opening.</p>	 <p>A photograph showing the harness being routed upwards along the right-hand side of the aircraft's back wall. A circular callout with the number '28' points to the harness. The harness is being guided over a metal frame and towards the ceiling.</p>
3.3	<p>S-fold majority of Rear Harness, apply three Cable Tie (item 19) and secure.</p> <p>To keep stowed Harness from moving around apply one more Cable Tie (item 19) and attach S-folded Rear Harness to parachute frame in position A.</p>	 <p>A photograph showing the S-folded rear harness being secured to the parachute frame. Three black cable ties are visible, securing the harness. A circular callout with the letter 'A' points to the attachment point on the parachute frame. The BRS logo is visible on the white parachute pack.</p>



3.4	<p>Attach both Front Harnesses (item 24) and one Rear Harness (item 28) to the Link (item 17) mounted on the top of the canister.</p> <p>Use blue <b>242 LOCTITE</b> on Link threads and close the gate.</p> <p>S-fold majority of both Front Harnesses apply two Cable Tie (item 19) and secure.</p>	
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#### 4. ACTIVATION HANDLE AND HOUSING INSTALLATION.

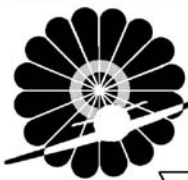
4.1	<p>Slide Activation Housing through the hole in aircraft back wall.</p> <p>Install Bracket Handle Mount Bulkhead (item 29) onto aircraft back wall using BRS supplied parts: 3 Screws (item 15), 6 Washers (item 23) and 3 Lock Nuts (item 22).</p>	
4.2	<p>Attach Activation Handle to the Bracket Handle Mount Bulkhead (item 29) using one Screw (item 15), two Washers (item 23) and one Lock Nut (item 22).</p>	
4.3	<p>Install boot around Handle Assembly.</p>	

<p>4.4</p>	<p>Route Activation Housing aft and over the landing gear tube.</p> <p>Follow the red arrows on picture to see position of the Activation Housing.</p>	
<p>4.5</p>	<p>Bring Activation Housing up to the Rocket for connection.</p> <p>Activation Housing is located behind Lexan Screen on the left hand side of the aircraft.</p> <p>Read detail instruction on the next page how to connect Activation Cable to the Rocket.</p>	



## 5. CONNECTING ACTIVATION CABLE TO THE ROCKET.

**WARNING:** Make sure to insert Safety Pin with Flag into Activation handle before Connecting Activation Cable to the Rocket.

**BRS**  
DRAWING BY  
JEFF PELTIER

**ACTIVATION ASSEMBLY  
INSTALLATION**  
Rev A 01-08

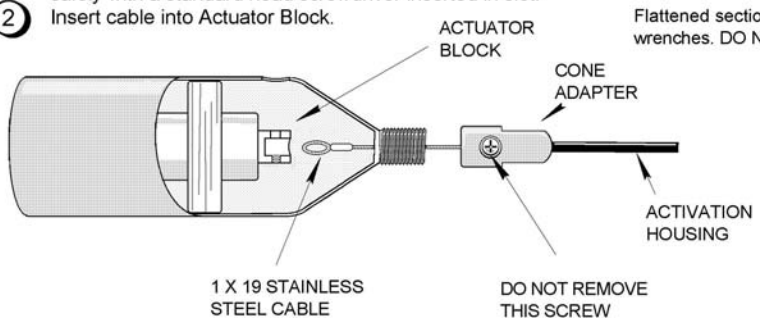
DRWG. # 020610-01  
pg 1 of 1  
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**⚠ WARNING**  
Never point rocket at anyone.  
Accidental activation may  
cause death or serious injury!  
TREAT LIKE LOADED GUN!

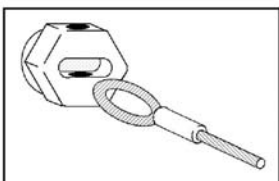
**⚠ WARNING**  
Assembly must be done in this sequence. If  
done incorrectly, accidental discharge of  
rocket may occur and may cause death or  
serious injury!

**NOTE:** Instructions for removing Activation Assy. on other side of this page.

- 1** IMPORTANT: Make sure threaded side of Actuator is towards bottom when assembling. Actuator may be twisted safely with a standard head screwdriver inserted in slot.
- 2** Insert cable into Actuator Block.

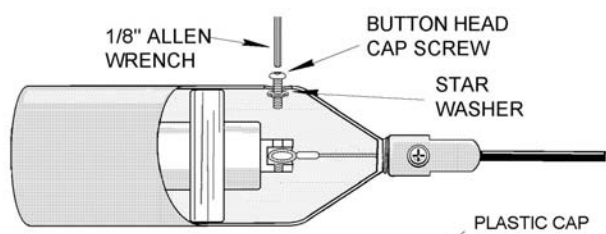


Flattened sections of Cone Adapter is to accommodate wrenches. DO NOT OVERTIGHTEN!

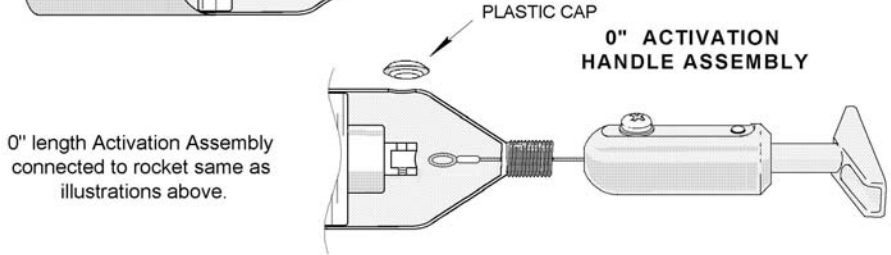


END VIEW OF ACTUATOR BLOCK. NOTE SLOT THAT CABLE FITS INTO.

- 3** Using Loctite 242 (blue), install the Button Head Cap Screw with Star Washer, using 1/8" Allen wrench. MAKE SURE SCREW PASSES THROUGH LOOP IN CABLE! Before installing Cone Adapter, tug on Cable lightly to ensure that is secured by screw.
- 4** Install Cone Adapter with Loctite 242





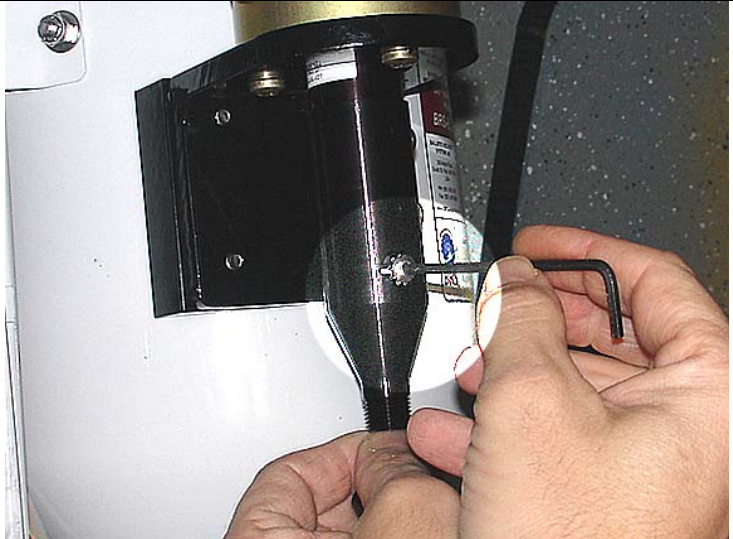
CAUTION! KEEP ALLEN WRENCH VERTICAL. BE CAREFUL NOT TO "LEVER" WRENCH AGAINST SIDE, SO AS TO NOT ACCIDENTLY ACTIVATE ROCKET!






0\" length Activation Assembly connected to rocket same as illustrations above.

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www.BRSparachutes.com




DRWG. # 020610-01

5.1	Grasp the Activation Cable close to the Cone Adapter and insert loop into slot at aft end of Rocket Actuator.	
5.2	<p>Insert loop into slot at aft end of Rocket Actuator.</p> <p>Make sure that cable loop is visible through hole in Actuator. (May need to use the flash light to see this).</p>	
5.3	When cable loop is visible through the hole in Actuator, secure Activation Cable with Screw (item 3) and Lock Washer (item 4).	

5.4	<p>Apply <b>242 LOCTITE</b> to threads on Rocket Cone.</p>	
5.5	<p>Screw Cone Adapter to Rocket Cone.</p>	
5.6	<p>Install Plastic Cap (item 2) to access holes.</p> <p>Review this installation.</p>	



## 6. PLACARD PLACEMENT.

6.1	Place "DANGER" sticker (item 25) centered on egress panel on top of aircraft. Points towards front of aircraft.	
6.2	Place "WARNING" sticker (item 26) on left hand side of aircraft at upper aft corner of the door.	
6.3	Place "WARNING" sticker (item 26) on right hand side of aircraft at upper aft corner of the door.	

6.4	Place "WARNING" sticker (item 26) on pedestal under Activation Handle.	
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**DANGER: REMOVE SAFETY PIN WITH FLAG FROM ACTIVATION HANDLE BEFORE FLIGHT !**