

EQUIPMENT/FURNISHINGS

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EQUIPMENT/FURNISHINGS

25-1. MAP AND DATA CASE.

Map and data cases are provided for the pilot and copilot (student). The pilots map and data case is located in the lower forward section of pilots compartment door. The copilots map and data case is located in the center section between the pilot and copilot seat backs.

25-2. CREW RESTRAINT INSTALLATION.

A crew restraint installation for pilot and copilot seats consists of an inertia reel, shoulder harness, lap belt and inertia reel release handle. Components for each seat are identical. (Refer to Fig. 25-1.)

25-3. HEADRESTS

The TH57 B and C models are equipped with hook and loop attached headrests. The hook and loop arrangement prevents the head rest from sliding vertically which could result in shoulder harness interference.

25-4. INERTIA REEL ASSEMBLY.

The inertia reel assembly is located on lower back side of pilots/copilots seat assembly and connects to the shoulder harness. The inertia reel release handle is located on left side of pilots/copilots seat assembly.

25-5. REMOVAL - INERTIA REEL ASSEMBLY.

1. Remove belt from belt guide at the top of the seat.
2. Remove reel from seat.
3. Disconnect inertia reel control cable from inertia reel.

NOTE

Be sure to retain cable locking collar.

4. Using 7/32" Allen wrench, in end of inertia reel, adjust reel shaft to expose belt slot.
5. Remove "Z" bracket holding belt in reel shaft slot. (Refer to Fig. 25-2.)

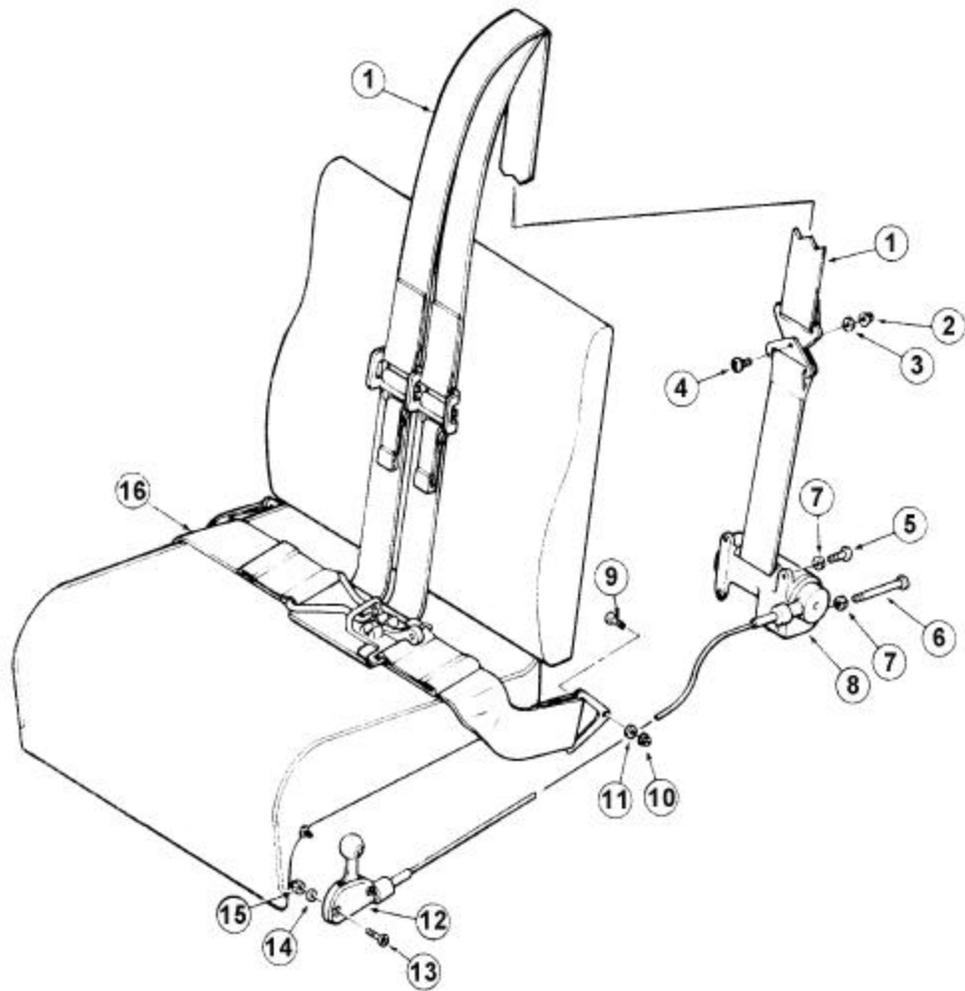
6. Remove belt.
7. Slowly release tension on 7/32" Allen wrench in end of inertia reel to release spring tension on reel.

25-6. INSTALLATION - INERTIA REEL ASSEMBLY.

NOTE

Only the "Z" bracket supplied with the new reel may be used. "Z" brackets from other Koch inertia reels will not work.

1. Set reel control to unlock.
2. Locate the end of the reel opposite from the cable attachment.
3. Insert a 7/32" Allen wrench in the inertia reel to engage the webbing shaft.
4. Brace wrench against spring torque and cut nylon tie wrap to release shaft.
5. Adjust wrench slightly in either direction as necessary until the narrow slot in the webbing shaft faces out through the opening in the housing. Hold shaft in this position.
6. Feed molded plastic end of the webbing into the window so that it passes through the shaft from the narrow side of the slot to the wide side of the slot.
7. With the wrench, allow the reel shaft to retract 180 degrees while feeding the molded plastic end of the webbing through the narrow slot in the reel shaft until it is clear of the housing and extended parallel to the bottom of the reel.
8. Hold the "Z" bracket against the side of the molded plastic end fitting of the webbing, away from the main length of the restraint lead-in strap (with long leg of the "Z" bracket against the molded end of the fitting and the short leg of the "Z" bracket against the strap) and feed both together into the reel shaft.
9. Pull 'down' tight on the webbing to chock the molded end of the webbing completely into the shaft, so that it does not protrude beyond the diameter of the reel shaft.



1. **Shoulder Harness**
2. **Nut**
3. **Washer**
4. **Bolt**
5. **Screw**
6. **Screw**
7. **Washer**
8. **Inertia Reel Assembly**
9. **Bolt**
10. **Nut**
11. **Washer**
12. **Release Handle**
13. **Screw**
14. **Washer**
15. **Nut**
16. **Safety Belt Assembly**

Figure 25-1. Crew Restraint Installation

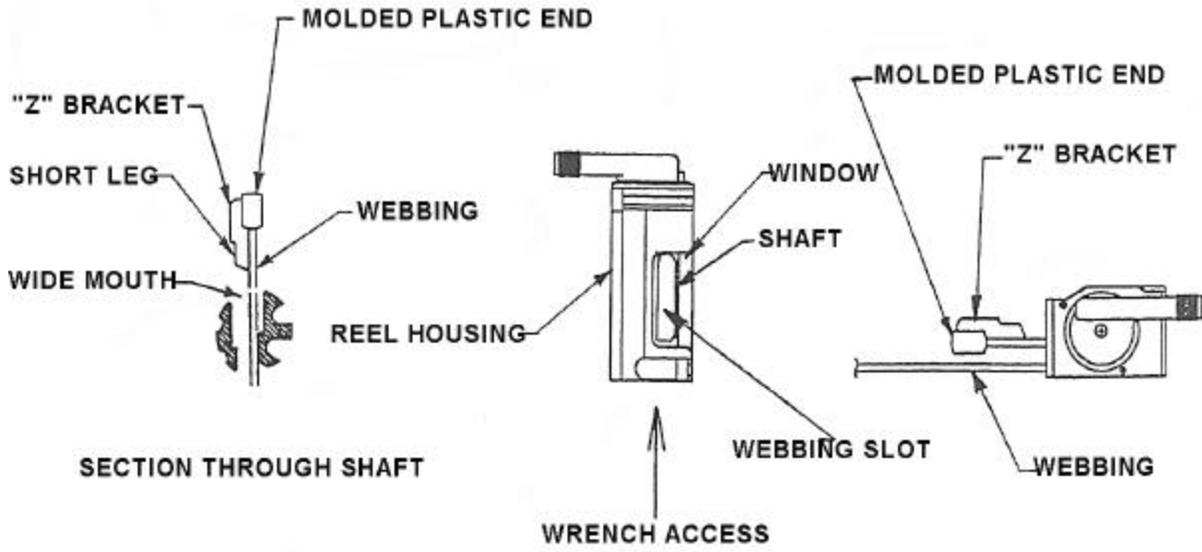


Figure 25-2. Inertia Reel

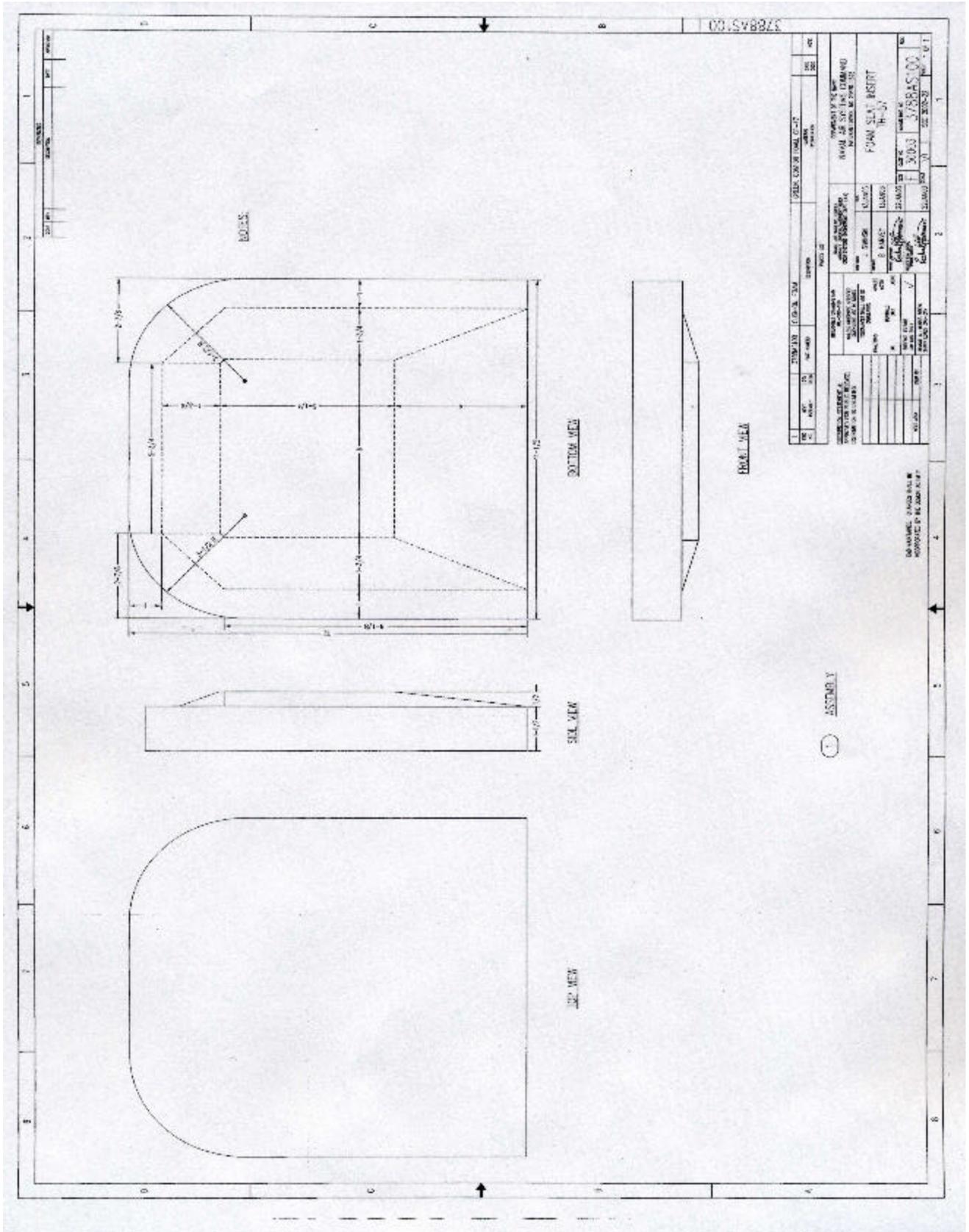
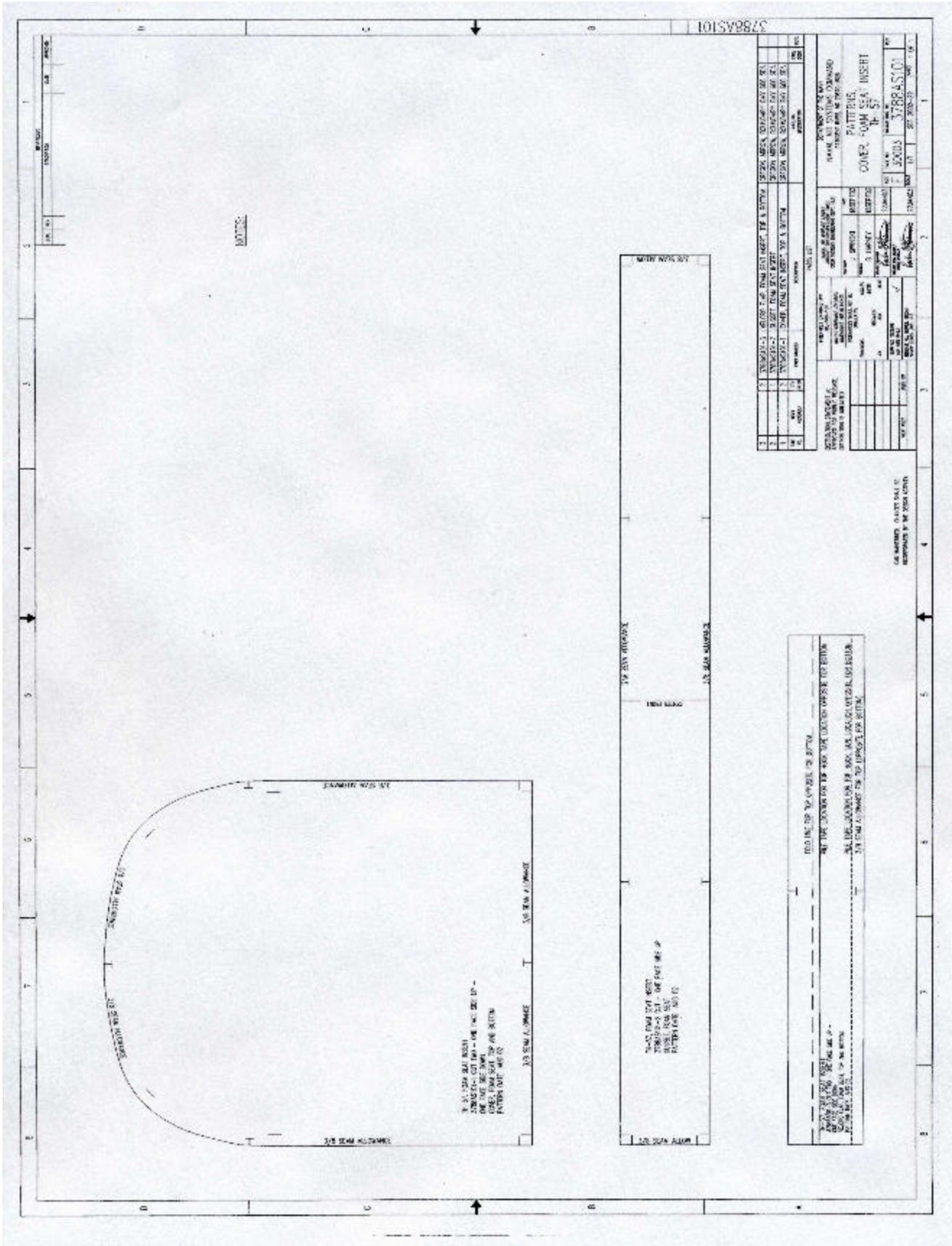


Figure 25-3. Seat Inserts (Sheet 1 of 2)



10. Hold webbing firmly and remove wrench.
11. Slowly allow webbing to retract into reel. If webbing fails to retract fully, pull webbing out and check that molded end of webbing is fully seated in reel shaft.
12. Install MA-16 inertia reel and check control cable housing for adequate clearance through the seat bulkhead.
13. Attach shoulder harness to MA-16 inertia reel.

25-7. SEAT INSERT, PILOT AND CO-PILOT

The seat insert is constructed of an energy absorbent foam, Confor (CF47) as per Technical Directive ACC-673. This insert reduces the amount of energy transfer to the seat occupant in the event of an excessive “G” load impact. This absorption of energy significantly reduce lumbar and pelvic accelerations in the event of rapid fuselage deceleration.

The seat insert is installed between the seat pan and the seat cushion and is attached with hook and loop tape to the seat pan..

25-8. SEAT INSERTS, MANUFACTURING INTRUCTIONS

Materials Required	
Description	Reference Number
Material, Boundary Bay	606SEA (Cage OWY76)
CONFOR Foam (Green)	CF-4720 (Cage 63994)
Fastener Tape (Pile 1”)	NIIN 00-978-0113
Fastener Tape (Hook 1”)	NIIN 00-454-9063
Thread, Nylon, Green (VT -295)	NIIN 00-204-3884

NOTE

All stitching shall be with size E nylon thread, in accordance with ASTM-D-6193, Type 301 Lockstitch, 8 to 10 stitches per inch, with 1 inch overstitch.

1. Mark and cut the energy absorbing foam, refer to Figure 25-3.

2. Mark and cut the two smaller closure gusset pieces from Boundary Bay material , refer to Figure 25-X.
3. Mark and cut the large gusset piece from Boundary Bay material, refer to Figure 25-X.
4. Mark and cut the top and bottom cushion covers from Boundary Bay material refer to Figure 25-X. Place alignment marks on all gusset pieces and the two cushion pieces.
5. Fold one edge of one of the small gusset pieces under 3/8” and sew 1 inch pile fastener tape over top of the folded edge and along the entire length of the gusset. With the fastener tape laying flat on the gusset, sew the remaining sides of the fastener to the gusset. Sew the second small gusset piece in the same manner, using 1 inch hook fastener tape. Ensuring total width of closure gusset is 2 3/4 inches.
6. Place 2 3/4 inch edge of closure gusset on top of the 2 3/4 inch edge of the larger gusset piece. Sew gusset pieces together using two rows of stitches, 3/8 inch from the edge. Repeat this procedure on the other end of the gusset pieces.
7. Position the completed gusset onto the top cushion cover. Align all centering marks to ensure the large gusset portion is centered with the front, straight edge of the top cushion cover. The closure gusset portion will be centered to the rear, on the curved side of the cushion cover. Sew the gusset in place, using two rows of stitching, 3/8 inches from the edge. Repeat this step with the bottom cushion cover.
8. Upon completion of step seven, turn the completed assembly right side out and top stitch the top and bottom cushion covers to the gusset assemblies.

25-9. MAINTENANCE - SEAT INSERT

1. Maintenance is limited to inspecting for condition, cleaning, removing and replacing the hook and loop tape on the seat pan, and removing and replacing the seat insert itself.

25-10. INSTALLATION - SEAT INSERT

1. Remove pilot and co-pilot seats allowing access to the seat pans.
2. Permanently install a four (4) inch long strip of hook and loop tape four (4) inches from and centered and parallel to the aft side of the seat pan.
3. Permanently install three (3) pieces of four (4) inch long hook and loop tape to form a square with the first piece of hook and loop tape. After allowing glue cure time install the seat insert onto the hook and loop tape affixed to the seat pan. Insure that the back portion of the insert is against the "U" shaped portion of the seat pan and that the hook and loop tape from both the seat pan and the insert match up and secure.

25-11. CARGO HOOK - THEORY OF OPERATION

The primary elements of the Cargo Hook are the load beam, the internal mechanism, and a DC solenoid. The load beam supports the load and is latched through the internal mechanism. The DC solenoid and an external manual release cable provide the means for unlatching the load beam.

The load beam is normally returned to its closed position after release of the load by a spring in the internal mechanism. In the closed position, a latch engages the load beam and latches it in this position. The load is attached to the load beam by passing the cargo sling ring into the throat of the load beam past a spring-loaded keeper, which secures the load.

To release the load, the latch is disengaged from the load beam. With the latch disengaged, the weight of the load causes the load beam to swing to its open position, and the cargo sling slides off the load beam. A spring in the internal mechanism then drives the load beam back to its closed and latched position.

A load release can be initiated by three different methods. Normal release is achieved by pilot actuation of the push-button switch in the cockpit.

When the push-button switch is pressed, it energizes the DC solenoid in the Cargo Hook, and the solenoid opens the latch in the internal mechanism. In an emergency, release can be achieved by operating a mechanical release lever. A manual release cable attached to the lever operates the internal mechanism of the Cargo Hook to unlatch the load beam. The load can also be released by the actuation of a lever located on the side of the Cargo Hook.

25-12. CARGO HOOK - REMOVAL

1. Disconnect the manual and electrical release cables from the Cargo Hook.
2. Remove the Cargo Hook from the universal assembly leaving the universal assembly attached to the cargo suspension assembly.

25-13. CARGO HOOK - INSTALLATION

1. Inspect the cargo frame assembly to insure that all components are in serviceable condition.
2. Attach the link adapter assembly to the Cargo Hook using the hardware supplied. (Refer to Fig. 25-3.)

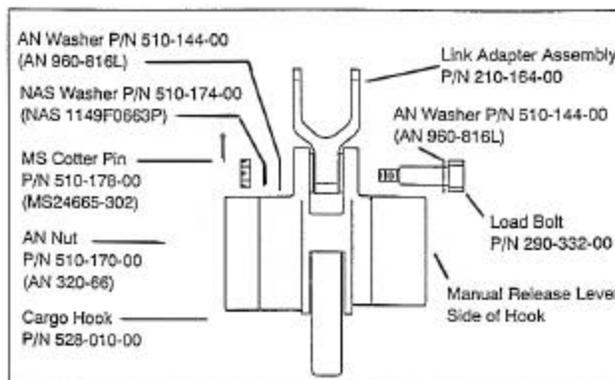


Figure 25-4. Link Adapter Assembly Installation

3. Attach the Cargo Hook assembly to the cargo frame assembly using the hardware that was previously used to attach the universal assembly to the Cargo Hook. The cargo hook load beam should point to the right. (Refer to Fig. 25-4.)

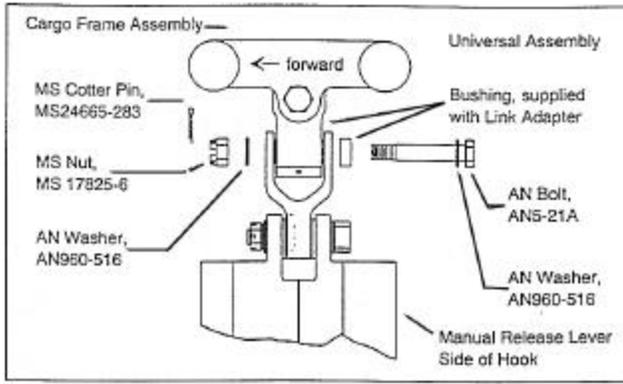


Figure 25-5. Cargo Hook Assembly to Cargo Frame Assemble Installation.

- Remove the cargo hook manual release cover and connect the manual release cable. Place the cable ball end fitting into the hook manual release fork fitting as illustrated in Figure 25-5. Adjust the cable to give .125 inch free play with the manual release handle in the cockpit in the full down position.

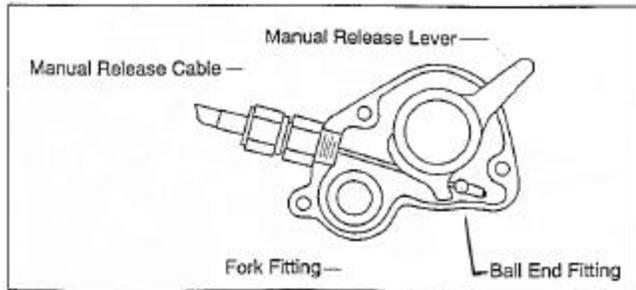


Figure 25-6. Manual Release Cable Rig

- Attach the supplied adel clamp through the end loops of the cargo hook restraining shock cord. Route the shock cord through the eyelet and over the threaded rod as illustrated in Figures 25-6 and 25-7. Secure the adel clamps to the lower screws on the cargo hook - manual release cover as illustrated. Replace the cargo hook manual release cover and safety wire.

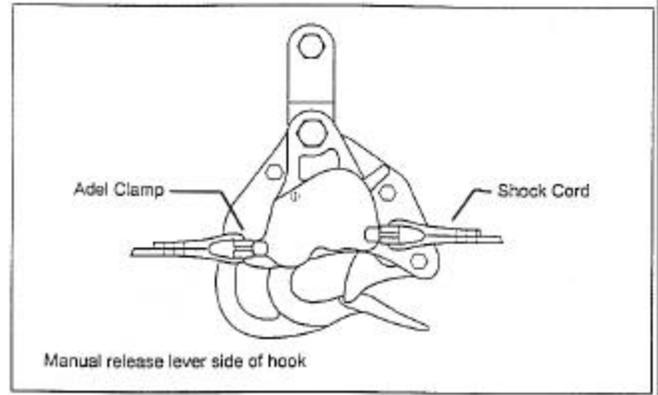


Figure 25-7. Adel Clamp and Shock Cord Installation

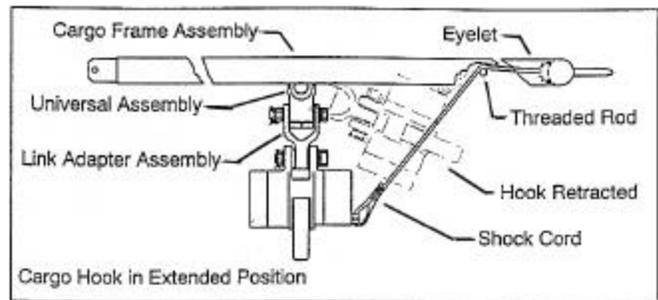


Figure 25-8. Cargo Frame Assembly Overview

- Connect the cargo hook electrical release cable connector to the Cargo Hook. Table 25-1 is the pin out for the cargo hook connector.

Table 25-1. Cargo Hook Connector

<i>Pin</i>	<i>Function</i>
A	Ground
B	Power

WARNING

Un-commanded cargo hook release will happen if the manual and electrical release cables are improperly restrained. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions. If the Cargo Hook loads cause the hook to strain against the manual release cable the swaged end of the cable may separate allowing the inner cable to activate the cargo hook manual release mechanism. The result is an un-commanded release. Ensure that no combination of cyclic stick or Cargo Hook position is restrained by the manual or electrical release cables. (Refer to Fig. 25-8.)

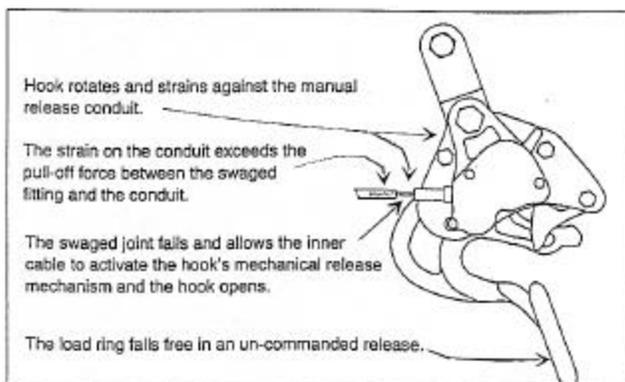


Figure 25-9. Un-commanded Release From Incorrectly Secured Cable.

25-14. CARGO HOOK - INSTALLATION CHECK OUT

After installation of the Cargo Hook, perform the following functional checks.

1. Swing the installed Cargo Hook to ensure that the manual release cable assembly and the electrical release cable have enough slack to allow full swing of the suspension assembly without straining or damaging the cables. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions.
2. Apply 10-20 pounds to the cargo hook load beam and pull the handle operated cargo hook mechanical release, the Cargo Hook should release.
3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. Apply 10-20 pounds to the cargo hook load beam and depress the cargo hook electrical release button, the Cargo Hook should release.

25-15. CARGO HOOK - COMPONENTS WEIGHTS

The weight of the cargo hook components are listed in Table 25-2.

Table 25-2. Cargo Hook Component Weights

Item	Weight in Pounds
Cargo Hook	3.0
Link Adapter assembly	1.0

25-16. CARGO HOOK - TROUBLESHOOTING

1. Refer to Table 25-3 below.

Table 25-3. Cargo Hook Trouble Shooting

INDICATION OF TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
<p>Cargo hook does not operate electrically, manual cable release operates normally.</p> <p>Cargo hook does not operate electrically or manually.</p>	<p>Open electrical circuit, faulty wiring, circuit breaker, switch or solenoid</p> <p>Defective internal mechanism</p>	<p>Disconnect cable from electrical connector on Cargo Hook.</p> <p>Using multimeter, check for 2.75 to 3.25 ohms between pins A and B of electrical connector.</p> <p>If open indication is obtained. check solenoid for 2.75 to 3.25 ohms resistance, replace solenoid if required.</p>
<p>Cargo hook operates electrically, but not manually.</p> <p>Load beam fails to relatch after load release.</p>	<p>Defective manual release cable</p> <p>Defective manual release system</p>	<p>Check manual release cable and cable connection to Cargo Hook. Correct any defects.</p> <p>If load beam does not swing back up, check return spring, pin, and arm</p>
<p>Cargo hook manual release pull-off exceeds 10 Lbs. (at the hook).</p>		<p>Check pivot points for excessive friction and lubricate. Check contact surfaces between latch and load beam. Check operation of unit using manual release knob.</p>
<p>Circuit breaker opens when Cargo Hook is energized.</p>	<p>Short in the system, faulty wiring, circuit breaker or solenoid</p>	<p>Check for shorts to ground.</p> <p>Check solenoid, repair or replace</p>