# CHAPTER 3
# ASSEMBLY OF THE MISSILE FOR ELECTRICAL CHECKOUT

## Section I. GENERAL

### 3-1. Shipment of the Missile Components

*a.* The missile is normally shipped disassembled to the using organization in the major components listed below:

(1) Rear body and forward body sections.

(2) Main fins and elevons.

(3) Missile rocket motor subassembly and initiators.

(4) Warhead body section.

(5) Rocket motor cluster fin assemblies.

(6) Rocket motor.

*b.* Packaged components of the missile are normally shipped from the manufacturer to a depot for storage or distribution. The depot may assemble all components of the rocket motor cluster, except the rocket motor cluster fin assemblies, before distribution to the using organization. The depot installs the warhead in the warhead body section before distribution.

*c.* The rear body and forward body sections, and the warhead body section are packaged in end-opening, reusable, steel containers with access coverplates and with an inspection window for observation of humidity indicators within the containers. The containers also provide shock, vibration, and environmental protection to their contents throughout a temperature range of -65° to + 165°F. The rear body section and forward body section container may be pressurized to 5 psi with dry air for protection of components susceptible to damage from moisture. The remaining major components of the missile are shipped and stored in wooden boxes designed for their specific content. The contents of the shipping containers for the missile are listed in table 3-1.

*Table 3-1. Contents of Guided Missile MIM-14A and MIM-14B Shipping and Storage Containers.*

| *Container* | *Contents* |
|---|---|
| Rear body and forward body section container. | Rear body section and forward body section. |
| Warhead body section container. | Warhead body section with warhead installed. |
| Main fin and elevon shipping and storage box. | Four main fins, four elevons and four forward fins. |
| Missile rocket motor subassembly shipping and storage box. | Solid-propellant missile rocket motor subassembly and metal container carrying missile rocket motor initiators and gaskets. |
| Rocket motor fins shipping and storage box M39 or M32. | Four rocket motor cluster fin assemblies and attaching hardware, when rocket motor cluster is shipped assembled. Also contains some items of assembling hardware, when rocket motor cluster is shipped disassembled |
| Rocket motor components shipping and storage box M36. | Rocket motor thrust ring assembly and attaching hardware. |
| Rocket motor shipping and storage box. | Rocket motor and a metal container containing a rocket motor igniter. |
| Rocket motor cluster shipping and storage box. | Assembled rocket motor cluster, less fin assemblies, and four metal containers each containing a rocket motor igniter. |

*d.* The using organization inspects all containers for external damage. The rear body and forward body section container and the warhead body section container are also examined to determine whether they are reusable. In the event of damage to the containers, the office in charge determines the acceptability of the contents.

*e.* Missile components are uncrated as required for assembly of the missile.

3-2. Assembly and Service

*a. General.* Some differences exist in facilities and the sequence of assembly and service operations of a permanent-type assembly area installation and those of a mobile-type assembly area installation. These differences are reflected below:

(1) The permanent-type assembly area installation contains the assembly area building, the receiving area (adjacent to the assembly area building), and the test area within the assembly area building. Upon completion of assembly test and service procedures, the missile rocket motor subassembly and the warhead body section are installed in a revetted area. The assembled missile body is then transported to the launching area. The packaged items received by the using organization are routed as listed in *(a)* through *(g)* below:

| | *Items* | *Location* |
|---|---|---|
| *(a)* | Rear body and forward body sections | Receiving area |
| *(b)* | Main fins and elevons | Receiving area |
| *(c)* | Missile rocket motor subassembly and initiators | Revetted area |
| *(d)* | Warhead body section | Revetted area |
| *(e)* | Rocket motor cluster fin assemblies | Revetted area |
| *(f)* | Rocket motor cluster | Revetted area |
| *(g)* | Rocket motor | Revetted area |

(2) The mobile-type assembly area installation is composed of three distinct sections: the checkout area with an air-inflated shelter, the warheading area with an air-inflated shelter, and the explosive-storage area. (For a detailed description of these sections and the specific functions, refer to TM 9-1400-250-10 or TM 9-1400-250-10/2.) Upon completion of assembly, test, and service operations in the checkout shelter, the missile body is moved to the warheading shelter. In the warheading shelter, the missile rocket motor subassembly and the warhead body section are installed. The assembled missile body is then moved to the joining area adjacent to the warheading shelter for final assembly with the rocket motor cluster. In the explosive-storage area, the rocket motor cluster is removed from its container, installed on the trailer-mounted launching-handling rail, and fins added. The loaded trailer is then moved to the joining area for joining of the missile body with the rocket motor cluster. After joining, the complete trailer-mounted missile is moved to the mobile-type launching area. The packaged items received by the using organization area routed as listed in *(a)* through *(f)* below:

| | *Items* | *Location* |
|---|---|---|
| *(a)* | Rear body and forward body sections | Receiving area adjacent checkout shelter |
| *(b)* | Main fins and elevons | Receiving area adjacent checkout shelter |
| *(c)* | Missile rocket motor subassembly and initiators | Warheading area shelter |
| *(d)* | Warhead body section | Warheading area shelter |
| *(e)* | Rocket motor cluster fin assemblies | Explosive-storage area |
| *(f)* | Rocket motor cluster | Explosive-storage area |

b. Sequence of Assembly and Service Operations.

(1) The sequence of the assembly and service operations is illustrated in figure 3–1 for a permanent-type assembly area installation and figure 3–2 for a mobile-type assembly area installation and described in the associated legends.

(2) After all operations shown in figures 3–1 or 3–2 are complete, final preparation of the missile is performed as described in *(a)* through *(e)* below:

*(a)* The missile, assembled on the launching-handling rail, is positioned on the monorail launcher, and the ground power cables are connected.

*(b)* The missile rocket motor initiators are installed.

*(c)* The propulsion arming lanyard is installed, and the missile-away switch adjusted.

*(d)* Four rocket motor igniters are installed.

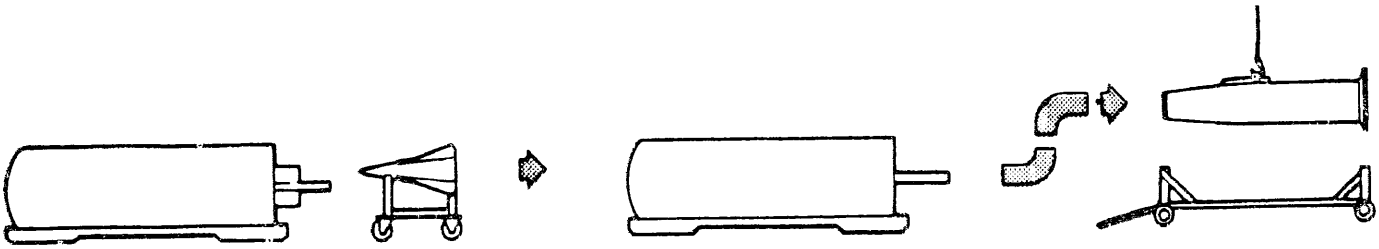
*(e)* The two safety-and-arming devices are checked for safe indication and installed.

## 3–3. Handling Explosives

Personnel handling explosive components of the missile must be familiar with all applicable safety regulations. Published rules for the use and care of tools must be observed. Firefighting equipment must be kept in good working order and readily available. Sparkproof safety tools and equipment are not required for normal missile assembly and disassembly operations. The installation of the rocket motor igniter using the authorized spanner wrench is considered normal missile operation.

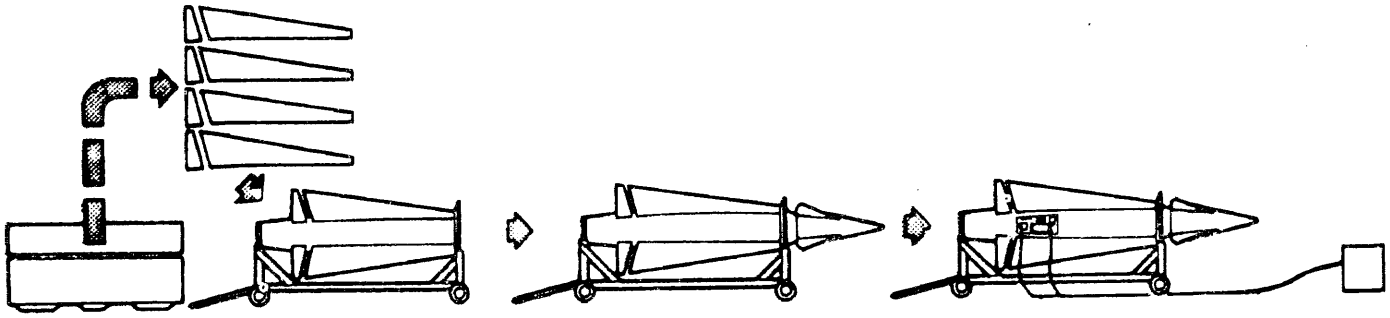
### 3-3.1 Installation of Common Hardware

The direction of installation of common mounting hardware is not important as long as fit and function are not impaired.



(1) FORWARD BODY SECTION IS REMOVED FROM SHIPPING AND STORAGE CONTAINER AND PLACED ON HERCULES FORWARD BODY SECTION TRUCK.

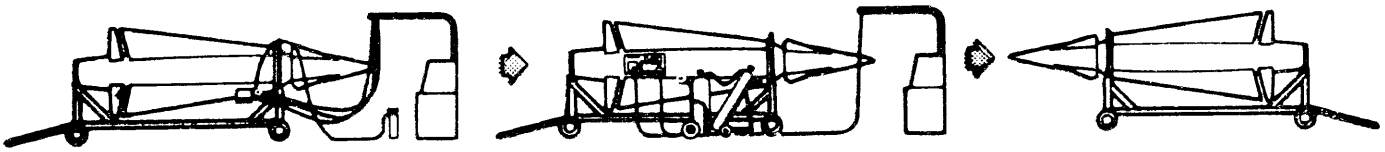
(2) REAR BODY SECTION IS REMOVED FROM SHIPPING AND STORAGE CONTAINER AND PLACED ON HERCULES MISSILE BODY TRUCK WITH HERCULES HANDLING RING SEGMENTS ATTACHED.



(3) REAR MAIN FINS AND ELEVONS ARE REMOVED FROM SHIPPING AND STORAGE BOX AND INSTALLED ON REAR BODY SECTION.

(4) FORWARD BODY SECTION IS ATTACHED TO REAR BODY SECTION BY USE OF TESTING FIXTURE ASSY PREPARATORY TO MISSILE ELECTRICAL CHECKOUT.

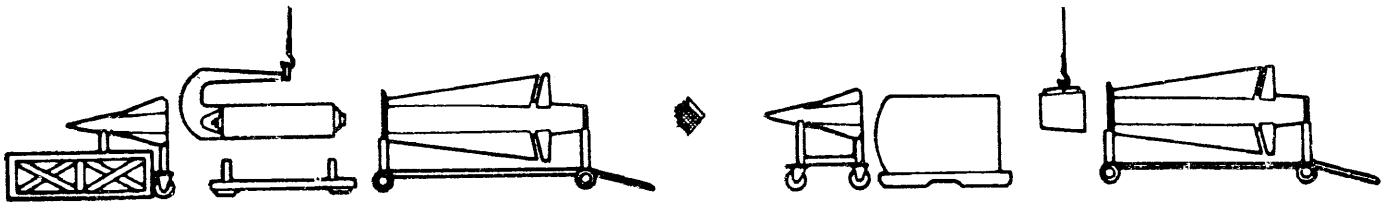
(5) ACCESSORY POWER SUPPLY (APS) OR HYDRAULIC PUMPING UNIT (HPU) IS AIR AND OIL SERVICED.



(6) MISSILE ELECTRICAL CHECKOUT IS PERFORMED.

(7) APS IS FUELED AND OPERATIONAL TEST (HOT RUN) PERFORMED. AFTER PERFORMANCE OF HOT RUN, APS IS REFUELED.

(8) MISSILE BODY IS TRANSPORTED TO SERVICE AREA AND PREPARED FOR INSTALLATION OF MISSILE ROCKET MOTOR SUBASSEMBLY AND ROCKET MOTOR INITIATORS.

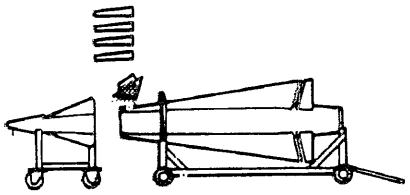


(9) MISSILE ROCKET MOTOR SUBASSEMBLY IS REMOVED FROM SHIPPING AND STORAGE BOX AND INSTALLED IN REAR BODY SECTION. ROCKET MOTOR INIATORS ARE REMOVED IN THEIR CONTAINERS AND PLACED IN A SUITABLE STORAGE AREA.

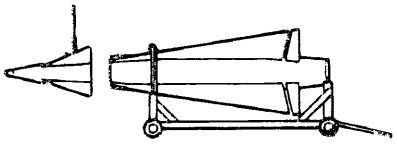
(10) WARHEAD BODY SECTION IS REMOVED FROM CONTAINER AND INSTALLED ON REAR BODY SECTION

ORD G5377

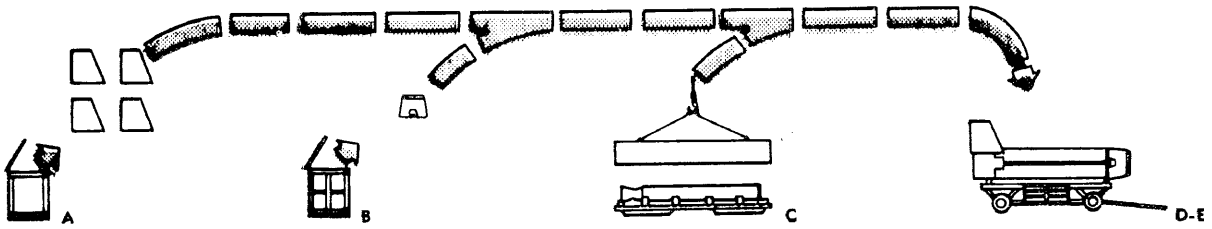
*Figure 3-1. Assembly and service operations — permanent-type assembly area installation — flow chart (Sheet 1 of 2).*



(11) MISSILE ELECTRICAL WIRING HARNESSES ARE CONNECTED TO WARHEAD BODY SECTION AND FORWARD MAIN FINS (REMOVED FROM SHIPPING AND STORAGE BOX) ARE INSTALLED ON WARHEAD BODY SECTION.



(12) FORWARD BODY SECTION IS INSTALLED ON WARHEAD BODY SECTION. GUIDANCE SET BATTERY INSTALLED.




(13) IF ROCKET MOTOR CLUSTER IS RECEIVED DISASSEMBLED, IT IS ASSEMBLED AS DESCRIBED IN A THROUGH E BELOW:

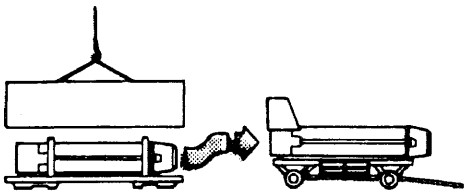
A — ROCKET MOTOR CLUSTER FIN ASSEMBLIES ARE REMOVED FROM SHIPPING AND STORAGE BOX.

B — ROCKET MOTOR THRUST RING ASSEMBLY AND MISCELLANEOUS HARDWARE CONTAINER COMPONENTS ARE REMOVED.

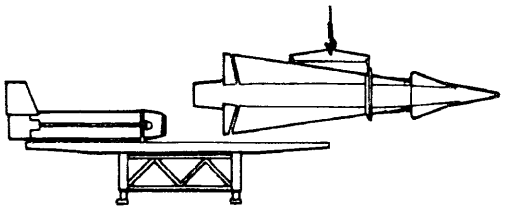
C — ROCKET MOTOR IGNITER IS REMOVED FROM COMPARTMENT AND ROCKET MOTOR IS REMOVED FROM SHIPPING AND STORAGE BOX.

D — ROCKET MOTOR CLUSTER IS ASSEMBLED ON ROCKET MOTOR CLUSTER TRUCK AND THE TWO UPPER FIN ASSEMBLIES ARE INSTALLED.

E — CONTINUITY CHECK OF ROCKET MOTOR IGNITER CABLE IS PERFORMED AND CABLE IS INSTALLED ON ROCKET MOTOR CLUSTER.



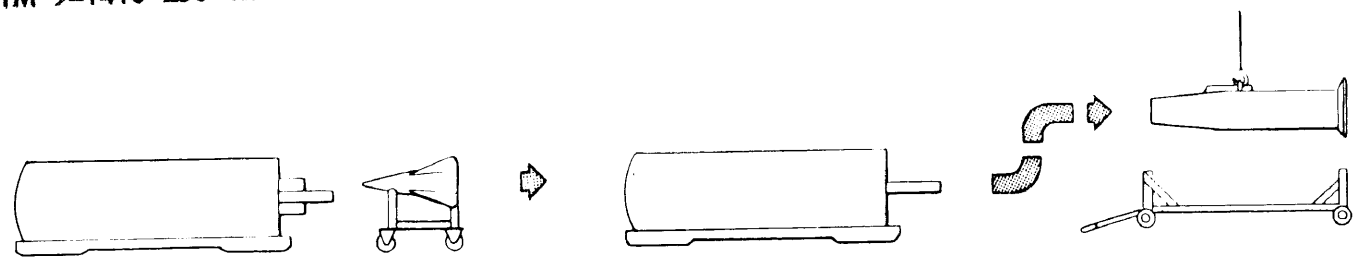
(14) IF ROCKET MOTOR CLUSTER IS RECEIVED ASSEMBLED, IT IS REMOVED FROM SHIPPING AND STORAGE BOX, PLACED ON ROCKET MOTOR CLUSTER TRUCK, AND THE TWO UPPER FIN ASSEMBLIES INSTALLED.



(15) ASSEMBLED MISSILE BODY AND ROCKET MOTOR CLUSTER ARE TRANSPORTED TO LAUNCHING AREA, JOINED ON A LAUNCHING-HANDLING RAIL, AND THE TWO LOWER FIN ASSEMBLIES INSTALLED ON ROCKET MOTOR CLUSTER.

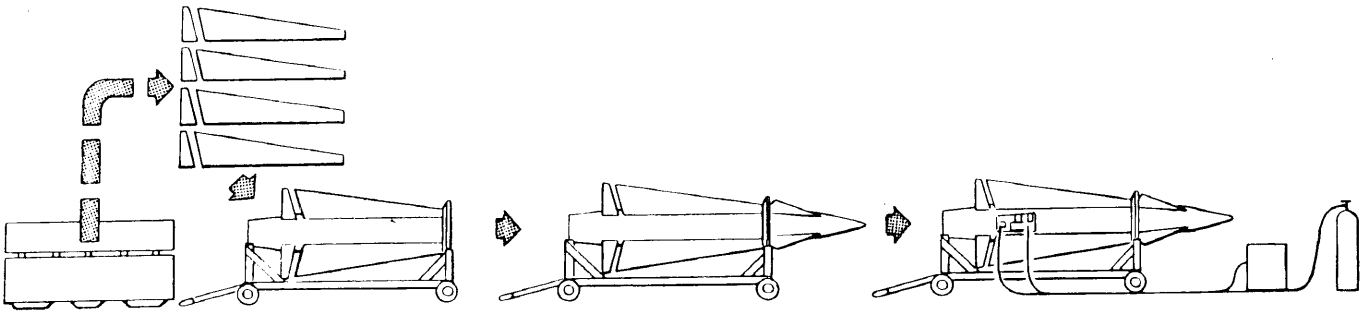
ORD G 5539

*Figure 3-1. Assembly and service operations—permanent-type assembly area installation—flow chart (Sheet 2 of 2).*



(1) FORWARD BODY SECTION IS REMOVED FROM SHIPPING AND STORAGE CONTAINER AND PLACED ON HERCULES FORWARD BODY SECTION TRUCK

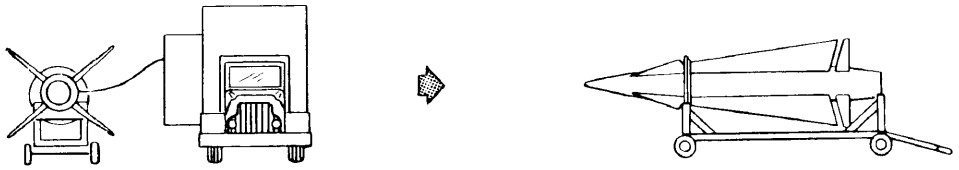
(2) REAR BODY SECTION IS REMOVED FROM SHIPPING AND STORAGE CONTAINER AND PLACED ON HERCULES MISSILE BODY TRUCK WITH HERCULES HANDLING RING SEGMENTS ATTACHED



(3) REAR MAIN FINS AND ELEVONS ARE REMOVED FROM SHIPPING AND STORAGE BOX AND INSTALLED ON REAR BODY SECTION.

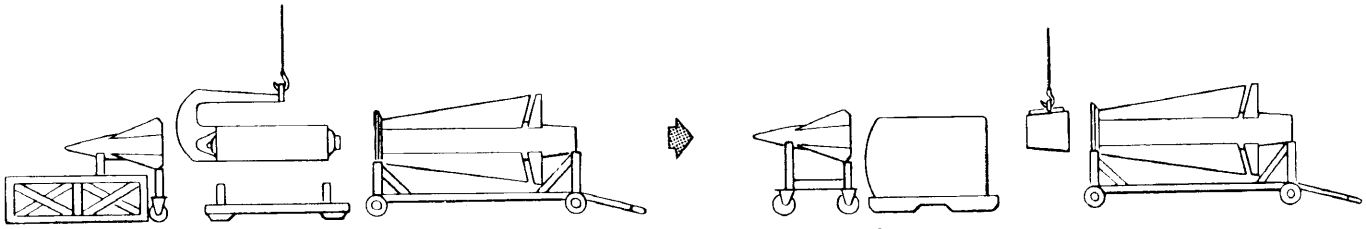
(4) FORWARD BODY SECTION IS ATTACHED TO REAR BODY SECTION PREPARATORY TO MISSILE ELECTRICAL CHECKOUT.

(5) HYDRAULIC PUMPING UNIT (HPU) IS AIR AND OIL SERVICED.



(6) MISSILE ELECTRICAL CHECKOUT UTILIZING THE MOBILE TEST UNIT (MTU) IS PERFORMED.

(7) MISSILE BODY IS TRANSPORTED TO WARHEAD AREA AND PREPARED FOR INSTALLATION OF MISSILE ROCKET MOTOR SUBASSEMBLY.

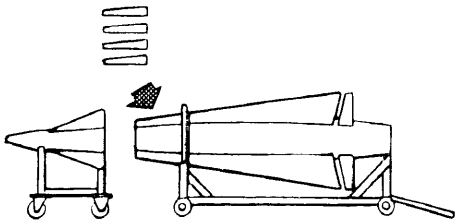


(8) MISSILE ROCKET MOTOR SUBASSEMBLY AND ROCKET MOTOR INITIATORS ARE REMOVED FROM SHIPPING AND STORAGE BOX. THE ROCKET MOTOR SUBASSEMBLY IS INSTALLED IN REAR BODY SECTION AND THE INITIATORS RETAINED FOR STORAGE IN SHIPPING AND STORAGE BOX ON THE M529 LOW BED TRAILER.

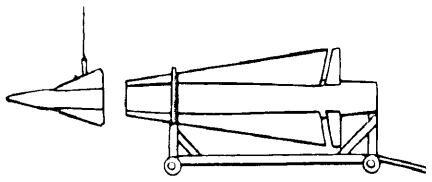
(9) WARHEAD BODY SECTION IS REMOVED FROM CONTAINER AND INSTALLED ON REAR BODY SECTION.

ORD G5488

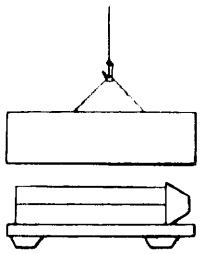
*Figure 3-2. Assembly and service operations—mobile-type assembly area installation—flow chart (Sheet 1 of 2).*



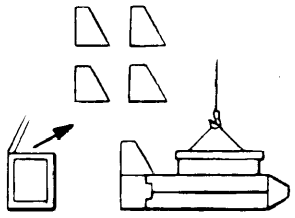
⑩ MISSILE ELECTRICAL WIRING HARNESSES ARE CONNECTED TO WARHEAD BODY SECTION AND FORWARD MAIN FINS (REMOVED FROM SHIPPING AND STORAGE BOX) ARE INSTALLED ON WARHEAD BODY SECTION.



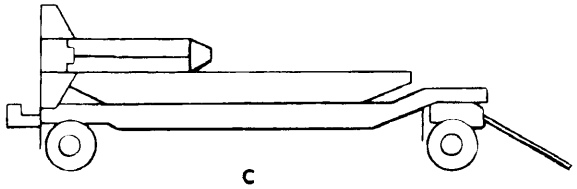
⑪ FORWARD BODY SECTION IS INSTALLED ON WARHEAD BODY SECTION AND GUIDANCE SET SQUIB BATTERY IS INSTALLED.



A



B



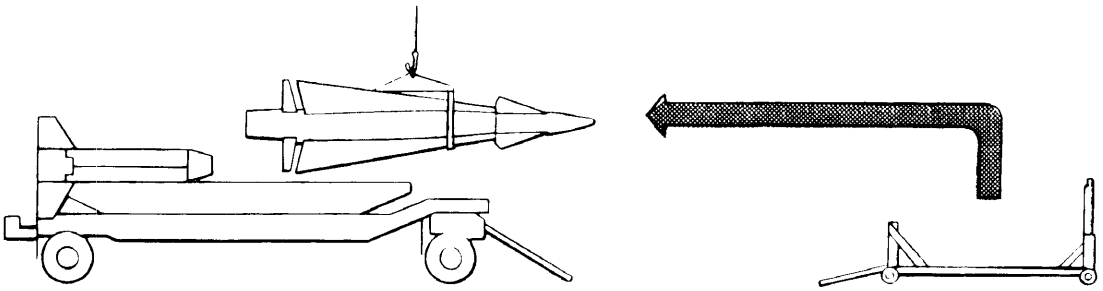
C

⑫ ROCKET MOTOR CLUSTER IS UNCRATED AND ASSEMBLED IN THE EXPLOSIVE STORAGE AREA AS DESCRIBED IN A THROUGH C BELOW.

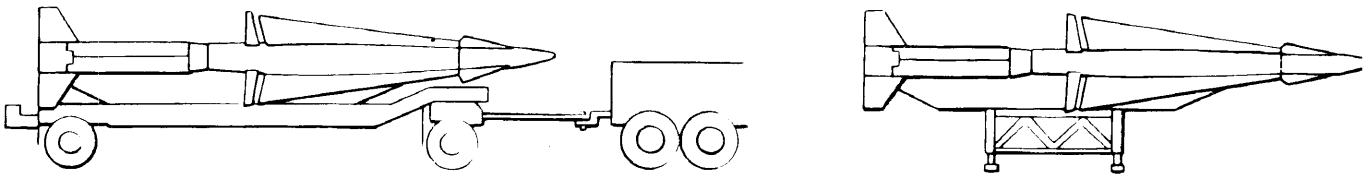
A. ROCKET MOTOR CLUSTER IS REMOVED FROM SHIPPING AND STORAGE BOX.

B. ROCKET MOTOR CLUSTER FIN ASSEMBLIES ARE REMOVED FROM SHIPPING AND STORAGE BOX AND TWO UPPER FIN ASSEMBLIES INSTALLED ON ROCKET MOTOR CLUSTER.

C. ROCKET MOTOR CLUSTER WITH UPPER FIN ASSEMBLIES ATTACHED IS INSTALLED ON TRAILER-MOUNTED LAUNCHING-HANDLING RAIL AND LOWER FIN ASSEMBLIES INSTALLED. TRAILER-MOUNTED ASSEMBLY OF LAUNCHING-HANDLING RAIL AND ROCKET MOTOR CLUSTER IS MOVED TO JOINING AREA.



⑬ IN THE JOINING AREA, MISSILE BODY IS JOINED TO THE ROCKET MOTOR CLUSTER ON TRAILER-MOUNTED LAUNCHING-HANDLING RAIL.



⑭ THE ASSEMBLED MISSILE READY-ROUND CONSISTING OF MISSILE BODY, ROCKET MOTOR CLUSTER (WITH FINS ATTACHED) AND LAUNCHING-HANDLING RAIL IS TRANSPORTED TO THE LAUNCHING AREA BY LOW-BED TRAILER M529 AND INSTALLED ON THE LAUNCHER LOADING RACK.

ORD G5478

*Figure 3-2. Assembly and service operations — mobile-type assembly area installation— flow chart (Sheet 2 of 2).*

## Section II. INSPECTION OF CONTAINERS

### 3-4. General

Inspect all shipping and storage containers (table 3-1) for exterior damage or evidence of tampering. Include in the inspection a check for broken straps and hinges and for broken or missing seals on the fasteners. Report any damage or evidence of tampering to the proper authorities.

### 3-5. Inspection of the Rear and Forward Body Sections and Warhead Body Section Containers

*Note.* Some containers have only one access cover plate.

*a.* In addition to the inspection in paragraph 3-4, perform the inspection in *b* through *h* below for the rear and forward body section and warhead body section containers.

*b.* Loosen the wing nuts (3, fig. 3-3) on each of the two access cover plates (5) on the ends of the container.

*c.* Swing each of the access cover plates downward to expose the humidity indicator window (4) and the air valves (2).

*d.* Check the humidity indicator card (6) on each end of the container. If the indicator card is not blue, carefully inspect the rear and forward body sections or warhead body section when removed from the container for deterioration due to moisture.

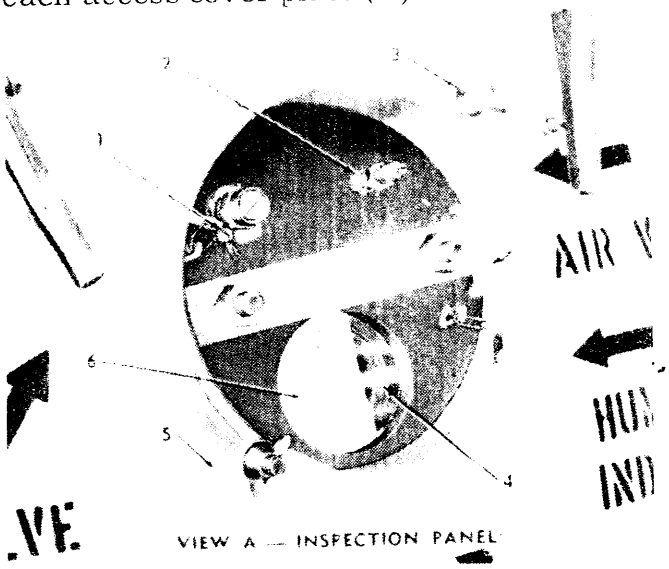
*e.* Inspect the seals (1), two on the container cover, two on each end of the container, and one on the log tube cover plate.

*f.* Report any damage, defects, broken seals, or absence of seals to the proper authorities.

*Note.* Omit *g* and *h* below if uncrating is to follow immediately.

*g.* Swing the two access cover plates (5) up to close.

*h.* Tighten the wing nuts (3) to secure each access cover plate (5) to the container.




1 — Lead seal (7)
2 — Air valve (2)
3 — Wing nut (4)
4 — Humidity indicator window (2)
5 — Access cover plate (2)
6 — Humidity indicator card (2)

*Figure 3-3. Rear and forward body section container and warhead body section container (typical).*

## Section III. UNCRATING AND ASSEMBLING THE MISSILE

### 3-6. Uncrating the Rear Body Section and the Forward Body Section

*Note.* Some containers have only one access cover plate.

*a. Inspection.* Perform the inspection of the container (par. 3-5).

*b. Container Depressurization (fig. 3-4).*

(1) Loosen the wing nuts that secure the access cover plate over the inspection panel.

(2) Open the access cover plate.

(3) Remove the valve cap from the upper valve assembly.

(4) Remove the upper valve assembly from the lower valve stem.

**WARNING: Remove the lower valve core cautiously. Wait until the air pressure equalizes before attempting to remove the cover.**

(5) Use the slotted tip of the valve cap as a wrench, and remove the lower valve core from the lower valve stem.

(6) Repeat steps (1) through (5) above on the opposite end of the container, and allow the container to depressurize completely.

(7) Install the lower valve core in the lower valve stem.

(8) Install the upper valve assembly in the lower valve stem.

(9) Install the valve cap on the upper valve assembly.

(10) Swing the access cover plate closed, and secure with the wing nuts.

(11) If required, repeat steps (7) through (10) above on the opposite end of the container.

*c. Removal of the Container Cover (fig. 3–5).*

**WARNING: Be sure the container pressure is completely equalized before removing the container cover.**

(1) Cut and remove the lead seals on the outer edge of the container cover and the log tube cover plate.

(2) Loosen the wing nuts that secure the log tube cover plate to the log tube.

(3) Swing the log tube cover plate upward, and remove the extension handle from the log tube.

*Note.* Release the top clamps last in step (4) below.

(4) Use the extension handle and disconnect the quick-release clamps that secure the container cover to the container.

**WARNING: Due to the weight of the container cover, it must be removed by two men.**

(5) Use the container cover handles, and remove the container cover.

*d. Preparation for Removal of the Rear Body Section and the Forward Body Section.*

(1) Remove the hexagon-head bolts (6, fig. 3–6), flat washers (7), and self-locking hexagon nuts (9), that secure the missile motor head heater (5) to the heater brackets (8); remove the heater.

(2) Remove the hexagon-head bolts (3) flat washers (2), and self-locking hexagon nuts (10) that secure each heater bracket to the rear of the forward body section (1); remove the brackets.

(3) Break and remove the lockwire, if present, through the heads of the hexagon-head screws (20, fig. 3–7) that secure each movable track (22).

(4) Remove the hexagon-head screw (20) and lockwasher (21) that secure each movable track to the stationary tracks (1).

(5) Slide the movable tracks out as far as possible.

*Note.* For external missile markings, refer to table 3–2 and figures 3–32 and 3–33.

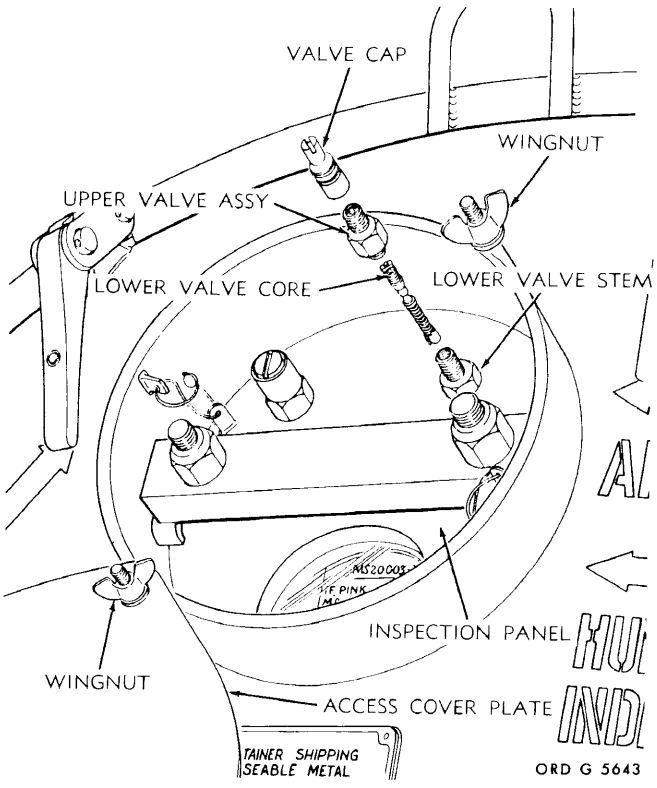



*Figure 3–4. Container depressurization.*

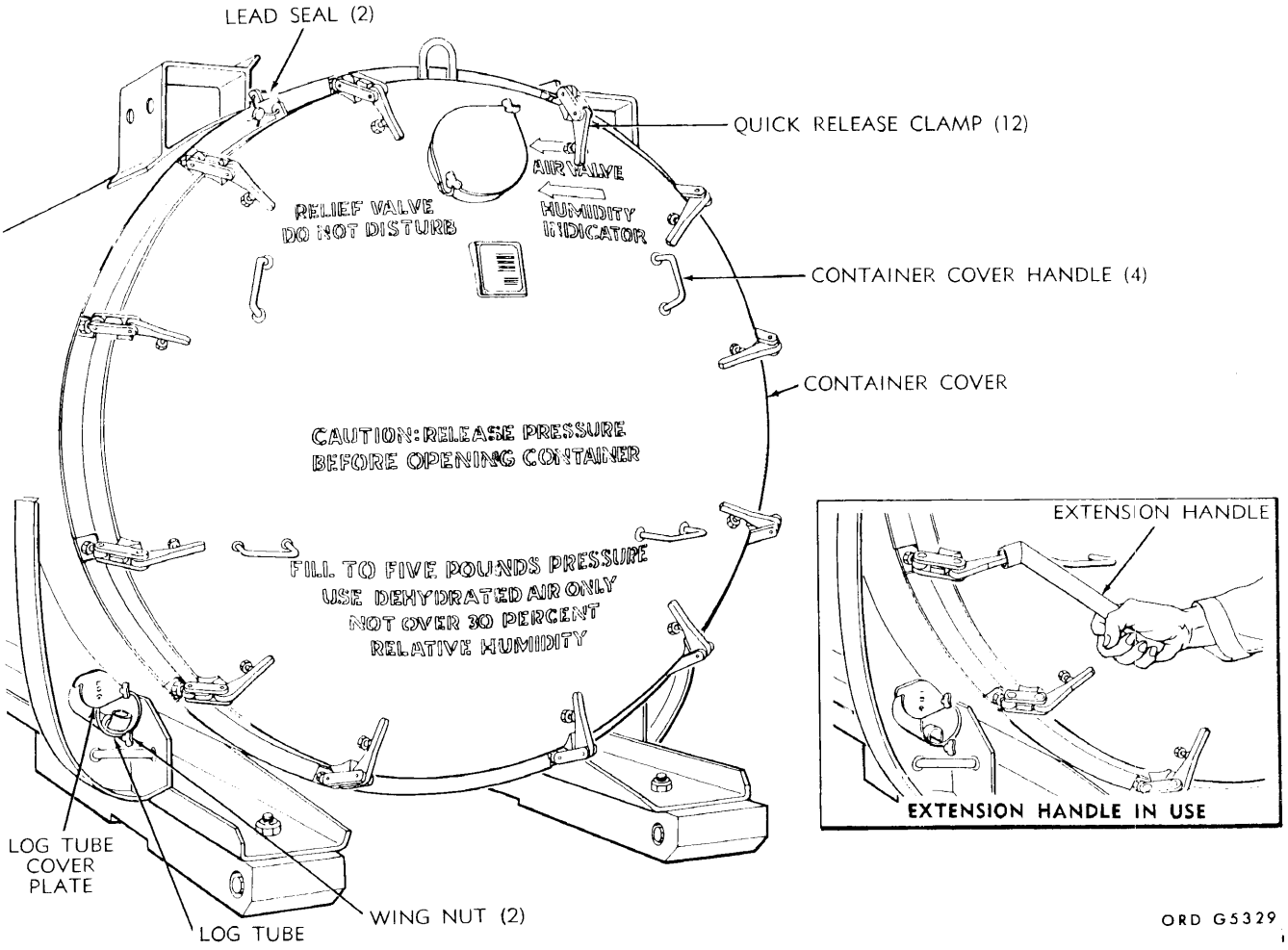



*Figure 3–5. Removal and installation of the container cover.*

(6) Inspect the rear body section and the forward body section for visible damage, proper external markings, and loose or missing components. Refer to paragraph 12–2 for standards of acceptability of skin defects.

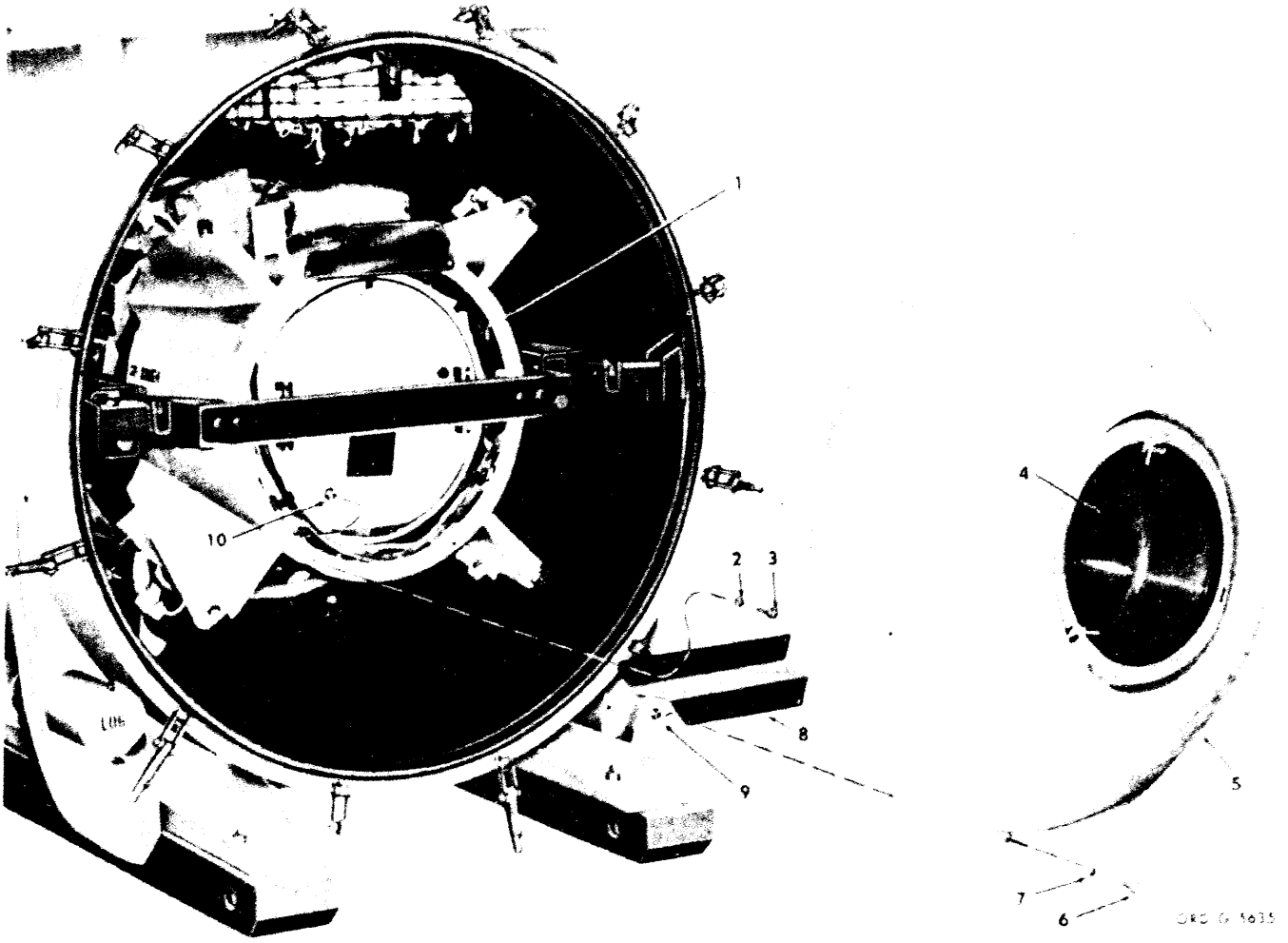
*Note.* Perform (7) through (10) below for missiles 13001 and subsequent.

(7) Disconnect the storage loop clamps (4, fig. 3–27), and remove the fail-safe wiring harness (8) from the shipping position in the forward body section.

(8) Remove the hose and cable assembly (7); remove the protective cover from the hose and cable assembly.

(9) Inspect the end of the hose for cracks and damage to the threads of the fitting.

(10) Install the hose and cable assembly in the forward body section, and secure with the storage loop clamps.




1—Forward body section
2—No. 10 fl washer (4)
3—No. 10–32 X 25/32 hex-hd bolt (4)
4—Special shape insulation (missiles 10206 through 11935 and 13001 through 17055)
5—Missile motor head heater
6—No. 10–32 X 17/32 hex-hd bolt (4)
7—No. 10 fl washer (4)
8—Heater bracket (2)
9—No. 10–32 self-lkg hex nut (4)
10—No. 10–32 self-lkg hex nut (4)

*Figure 3–6. Removal and installation of the missile motor head heater.*

*e. Removal of the Forward Body Section.*

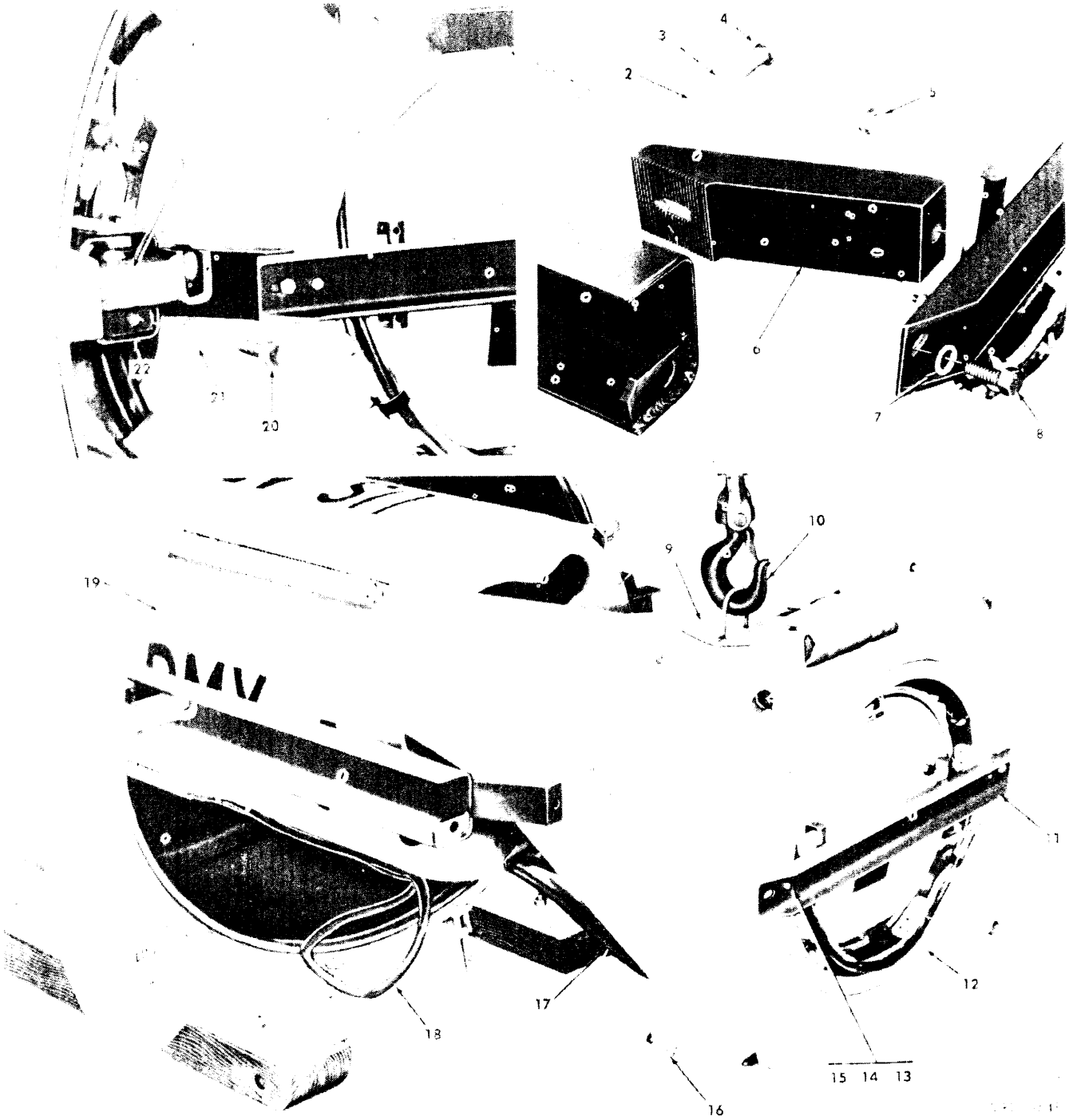
***Caution*: Use care to prevent damage to the exterior electrical cabling.**

(1) Remove the shipping cords that secure the transponder control group wiring harness (18, fig. 3–7) and the warhead wiring harness (17) around the forward body section; allow the end of the wiring harnesses to rest temporarily on the floor.

(2) Position the hoisting device so that the falling hook (10) may be attached to the hoist (9).

***Caution:* Insure that the hoist is secure.**

(3) Attach the falling hook to the hoist, and take up the slack in the cable to support the weight of the forward body section.




1—Stationary track (2)
2—1/2 fl washer (2)
3—1/2 lockwasher (2)
4—1/2-13 X 1/4 hex-hd screw (2)
5—1/2-13 self-lkg hex nut (2)
6—Support arm (2)
7—1/2 fl washer (2)
8—1/2-13 x 1 3/4 hex-hd screw (2)
9—Hoist
10—Falling hook
11—Shipping support channel
12—Forward body section
13—5/16-18 self-lkg hex nut (2)
14—5/16 fl washer (2)
15—5/16-18 X 1 1/4 hex-hd screw (2)
16—Ram probe pressure tube cover (4)
17—Warhead wiring harness
18—Transponder control group wiring harness
19—Rear body section
20—3/4-10 X 1/4 hex-hd screw (2)
21—3/4 lockwasher (2)
22—Moveable track (2)

*Figure 3-7. Removal and installation of the forward body section.*

(4) Remove the hexagon-head screws (8), flat washers (7), and self-locking hexagon nuts (5) that secure the shipping support channel (11) to each of the two support arms (6) at the forward end of the movable tracks.

(5) Remove the hexagon-head screws (4), lockwashers (3), and flat washers (2) that secure each of the two support arms to the moveable tracks. Remove the support arms.

(6) Remove the hexagon-head screws (15), flat washers (14), and self-locking hexagon nuts (13) that secure the channel to the forward body section; remove the channel.

(7) Hold the forward body section steady, and slide the movable tracks, with the rear body section attached, into the container until the forward body section completely separates from the rear body section.

(8) Place the forward body section (2, fig. 3-8) on the forward body section truck (10).

(9) Secure the front of the forward body section to the forward cradle (11) of the truck with the holddown strap (1).

***Caution:*** **Be sure that the hose and cable assembly (7, fig. 3-27) is clear of the hand clamp (6) before securing the hand clamp.**

(10) Secure the rear of the forward body section to the rear cradle (9, fig. 3-8) of the truck with the hand clamp (8).

(11) Remove the falling hook from the hoist (3).

*Note.* On some series missiles, the sequential timer is packed for shipping in the accessory carton.

(12) Inspect the forward body section for visible damage to the skin, fins, antenna horns, ram-pressure probes, fail-safe and timer bracket (4), fail-safe control (6), and sequential timer (5), and for loose or missing components.

(13) Remove the equipment log from the log tube (fig. 3-5), and check that the missile serial number agrees with the serial number in the equipment log.

(14) Remove the flathead screws (6, fig. 3-26) or (9, fig. 3-27) that secure the J1 +XMTR ACCESS DOOR (missiles 10206 through 11935) or the GUIDANCE TEST AND ADJUST ACCESS DOOR (missiles 13001 and subsequent); remove the access door.

(15) Check that the transponder control group serial number agrees with the serial number in the equipment log.

*f. Removal of the Rear Body Section.*

(1) Place the forward portions of the transponder control group wiring harness (fig. 3-9) and warhead wiring harness inside the rear body section.

(2) Slide the moveable tracks, with the attached rear body section, out of the container as far as possible.

(3) Loosen the captive bolts that secure each of the two rear body support mounts to the moveable tracks.

(4) Loosen the rear body section captive bolts that secure each of the two rear body support mounts to the rear body section.

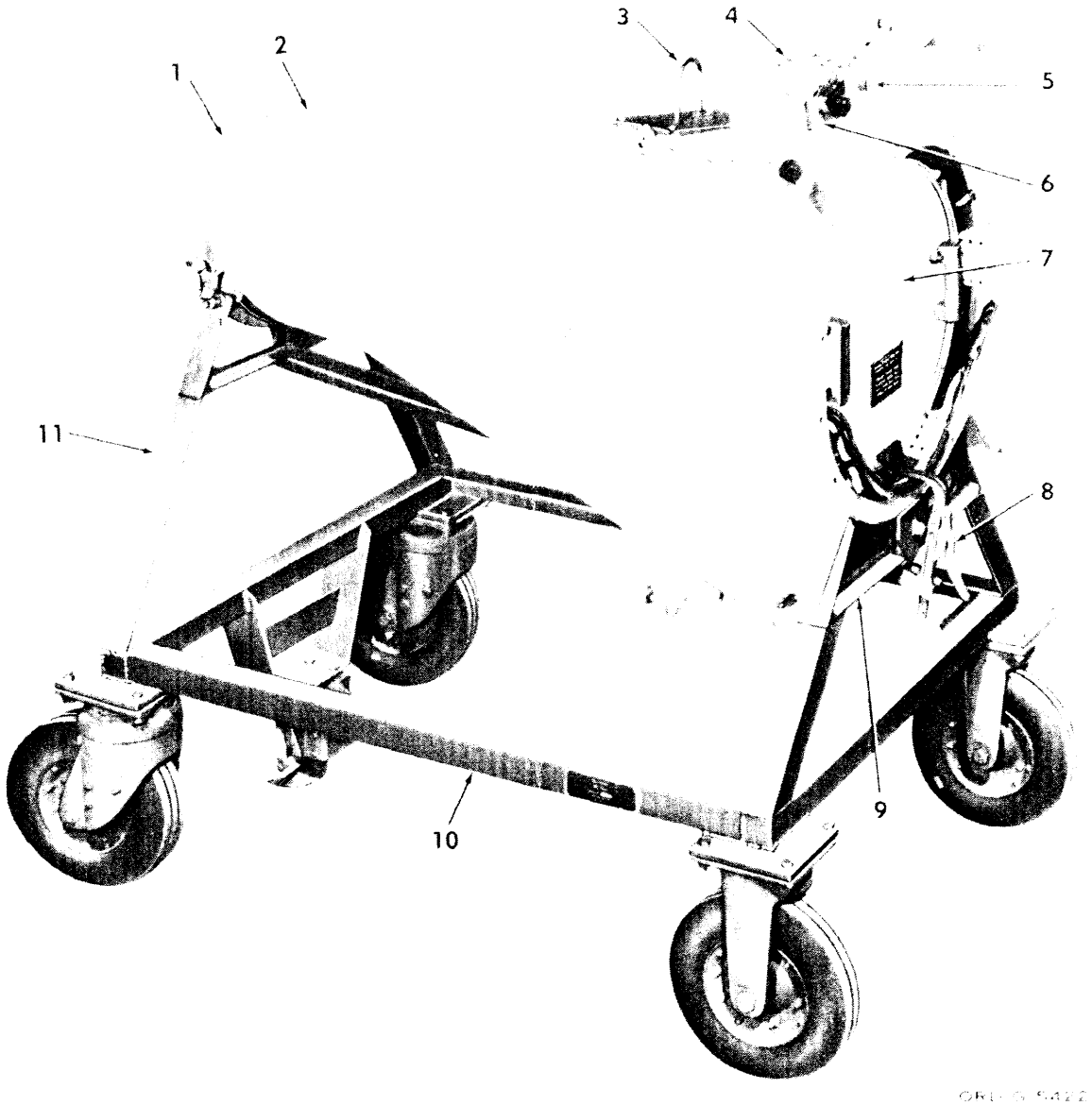
(5) Slide the rear body support mounts forward along the movable tracks until they are clear of the rear body section; remove the mounts.

(6) Loosen the forward shipping clamp captive bolts that secure the forward shipping clamp to the forward cradle; remove the shipping clamp.

(7) Reach into container and loosen the captive bolts (fig. 3-10) that secure the rear shipping clamp to the rear cradle.

(8) Remove the rear shipping clamp from the rear cradle.

(9) Remove the plugs (8, fig. 3-11) from the handling ring segment mounting bolt holes on the forward end of the rear body section.




1—Holddown strap
2—Forward body section
3—Hoist
4—Fail-safe and timer bracket
5—Sequential timer
6—Fail-safe control
7—Transponder control group
8—Hand clamp
9—Rear cradle
10—Forward body section truck
11—Forward cradle

*Figure 3–8. Installation of the forward body section on the track.*

***Warning:*** **Check that the threads of the captive bolts (6) in the handling ring segments (7) and the bolt holes in the rear body section are in good condition.**

(10) Position the handling ring segments on the top and bottom of the rear body section with the AFT markings on the segments facing the rear;

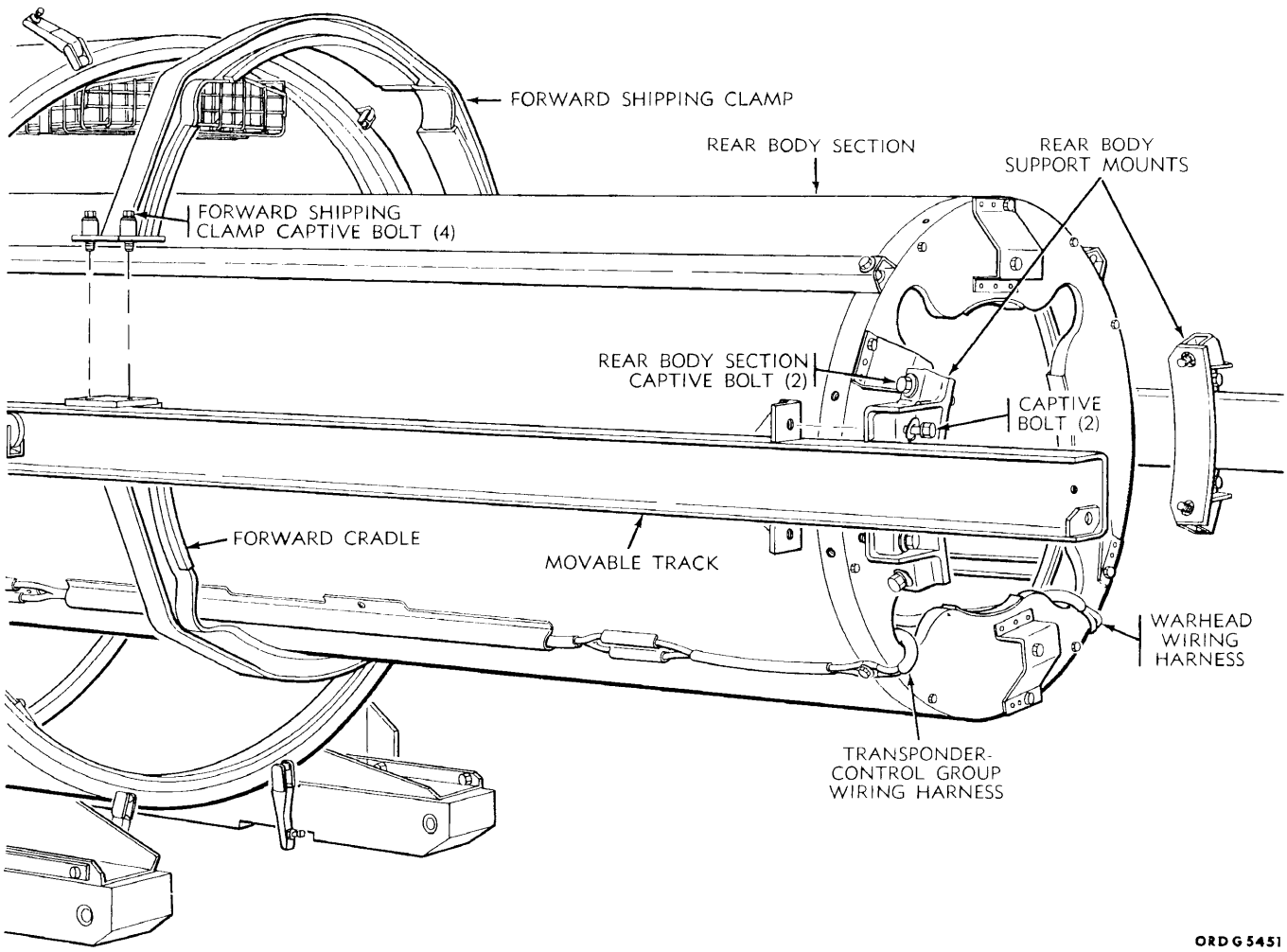



*Figure 3-9. Removal and installation of the rear body support mounts and the forward shipping clamp.*

secure in position with the two captive bolts on each segment, and tighten the captive bolts to the torque value prescribed in table 15-9.

(11) Remove the plugs (1 and 5) from the rear body section hoist beam attach points on top of the rear body section.

**WARNING: Check that the safety strap assemblies (2) and the threads of the captive bolts (3) of the rear body section hoist beam (4) and the bolt holes in the rear body section are in good condition.**

**CAUTION: Position the safety strap buckles near the hoist beam so that the buckles will not touch the rear body section.**

(12) Position the hoist beam on top of the rear body section; secure with the two captive bolts and the safety strap assemblies.

(13) Attach the hoisting device to the hoist beam; take up the cable slack.

**CAUTION: Exercise care to prevent damage to the missile umbilical cable as the rear body section is lifted from the cradles.**

(14) Slowly raise the rear body section until the hoist beam will just clear the dessicant basket if present.

(15) Slide the moveable tracks (9) into the container (10).

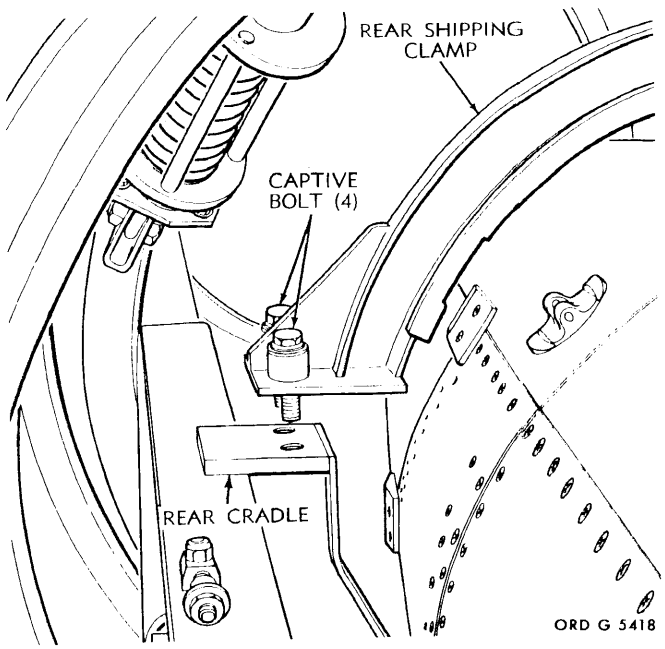



*Figure 3–10. Installation and removal of the rear shipping clamp.*

(16) Move the rear body section away from the container.

*Note.* The rear roll ring is clamped and stowed on the forward cradle of the missile body truck.

(17) Position the rear roll ring on the rear body section as shown in figure 3–12 and secure with the four captive bolts.

(18) Position the handling ring segments (6, fig. 3–13) on the sides of the forward end of the rear body section (3) with the AFT marking on the segments facing the rear of the rear body section; secure in position with the captive bolts (6, fig. 3–11) on each segment, and tighten to the torque value prescribed in table 15–9.

(19) Position the rear body section on the missile body truck (8, fig. 3–13) by placing the handling ring segments in the rear cradle (7) and the rear roll ring (2) in the forward cradle (10).

**CAUTION: Make certain that the rear roll ring is fully seated in the groove of the wheels (11) as shown in figure 3–13.**

(20) Lock the rear body section in position on the truck with the self-locking pins (fig. 9–1).

(21) Remove the falling hook.

(22) Loosen the captive bolts (3, fig. 3–11), and release the safety strap assemblies (2) on the rear body section hoist beam (4); remove the hoist beam.

(23) Install the two plugs (1 and 5) in the rear body section.

*g. Final Uncrating Procedures.*

(1) Remove the steel strapping that secures the accessory carton to the inside of the container; remove the accessory carton.

(2) Inspect and inventory the accessories and hardware shipment against the enclosed packing list.

(3) Report any damaged or missing parts to the supervisor.

(4) Remove the hexagon-head bolt (5, fig. 3–14), flat washer (4), round-head screws (2), and flat washers (1) that secure each shipping tunnel section (3 and 7) to the rear body section; remove the tunnel sections, and place in the container.

*Note.* Perform step (5) below for missiles 11839 through 11935, and 13001 and subsequent.

(5) Remove the hexagon-head bolt (5), flat washer (4), and shipping tape (6) that secure each lower cable assembly to the forward end of the rear body section.

(6) Remove the roundhead screws (10) and flat washer (9) that secure each tunnel section bracket (8) to the rear body section; remove the brackets.

**CAUTION: Use care to prevent damage to exterior electrical cabling.**

(7) Remove the unattached ends of the transponder control group wiring harness (fig. 3–9) and the warhead wiring harness from the rear body section; allow the wiring harnesses to rest temporarily on the floor.

(8) Remove the hexagon-head bolts (fig. 3–15), lockwashers, and flat washers that secure the shipping adapter to the forward end of the rear body section; remove the shipping adapter.

(9) Place the unattached ends of the transponder control group wiring harness and warhead wiring harness inside the rear body section.

(10) Insure that the motor head heater wiring harness connectors P172 and P173 are connected to rear body section connectors J172 and J173 respectively. Make certain that the orange bands on connectors P172 and P173 are visible and a positive mechanical connection has been made.

*Note.* (Deleted)

(11) Perform the check of safety-and-arming switch S31 as follows:

*(a)* Disconnect connector P177A (3, fig. 3-16) from connector J177.

*(b)* Remove the eight flathead screws that secure safety-and-arming switch S31 to the missile motor section, and remove the switch. If any foreign material is visible through the window, reject the switch.

*(c)* Position safety-and-arming switch S31 (4, fig. 3-17) on the safety-and-arming switch sling (7), with connector J177 (2) pointed away from the handle (8) of the sling, and secure in position with the 3 flat-head screws (6).

*(d)* Depress the PUSH TO RESET switch on S31, and check that the green field is visible through the inspection window (1).

*(e)* Revolve the sling at 3 revolutions per second for a minimum of 3 revolutions. A click is heard when the switch is armed.

*(f)* Check that the red field is visible through the inspection window. If the red field is not visible, repeat *(e)* above. If the red field still is not visible, reject safety-and-arming switch S31.

*(g)* With switch S31 in the armed position (red field visible), measure the resistance with a multimeter between pins J177-2 and J177-3, and between pins J177-5 and J177-6. If the resistance exceeds 1 ohm, reject the switch.

*(h)* Remove the flathead screws that secure the switch to the sling and remove the switch.

*(i)* Depress the PUSH TO RESET switch on S31, and check that the green field is visible through the inspection window.

*(j)* With switch S31 in the safe position (green field is visible through the inspection window) measure the resistance with a multimeter between pins J177-1 and J177-2, and between pins J177-4 and J177-5. If the resistance exceeds 1 ohm, reject the switch.

*(k)* Position safety-and-arming switch S31 (1, fig. 3-16) in the missile motor section, and secure it in position with the eight flathead screws. Torque the screws to 15 pound-inches.

*(l)* Connect connector P177A to connector J177, and check that the entire width of the orange band on the connector is visible after the connection is made.

(12) Inspect the rear body section for visible damage to the skin and for loose or missing components. For skin defects, refer to paragraph 12-2 for standards of acceptability.

### 3-7. Uncrating the Main Fins and Elevons

*a.* Perform inspection of the shipping and storage box (par. 3-4).

*b.* Break the lead seals located on the cover fasteners.

*c.* Turn the swivel on each of the cover fasteners.

*d.* Remove the nails that secure the steel straps to the box cover, and bend the straps outward.

*e.* Release the hasp from each of the cover fasteners, and raise the box cover.

*f.* Remove the elevon support block (fig. 3-18) that secures the four forward main fins and four elevons in the box.

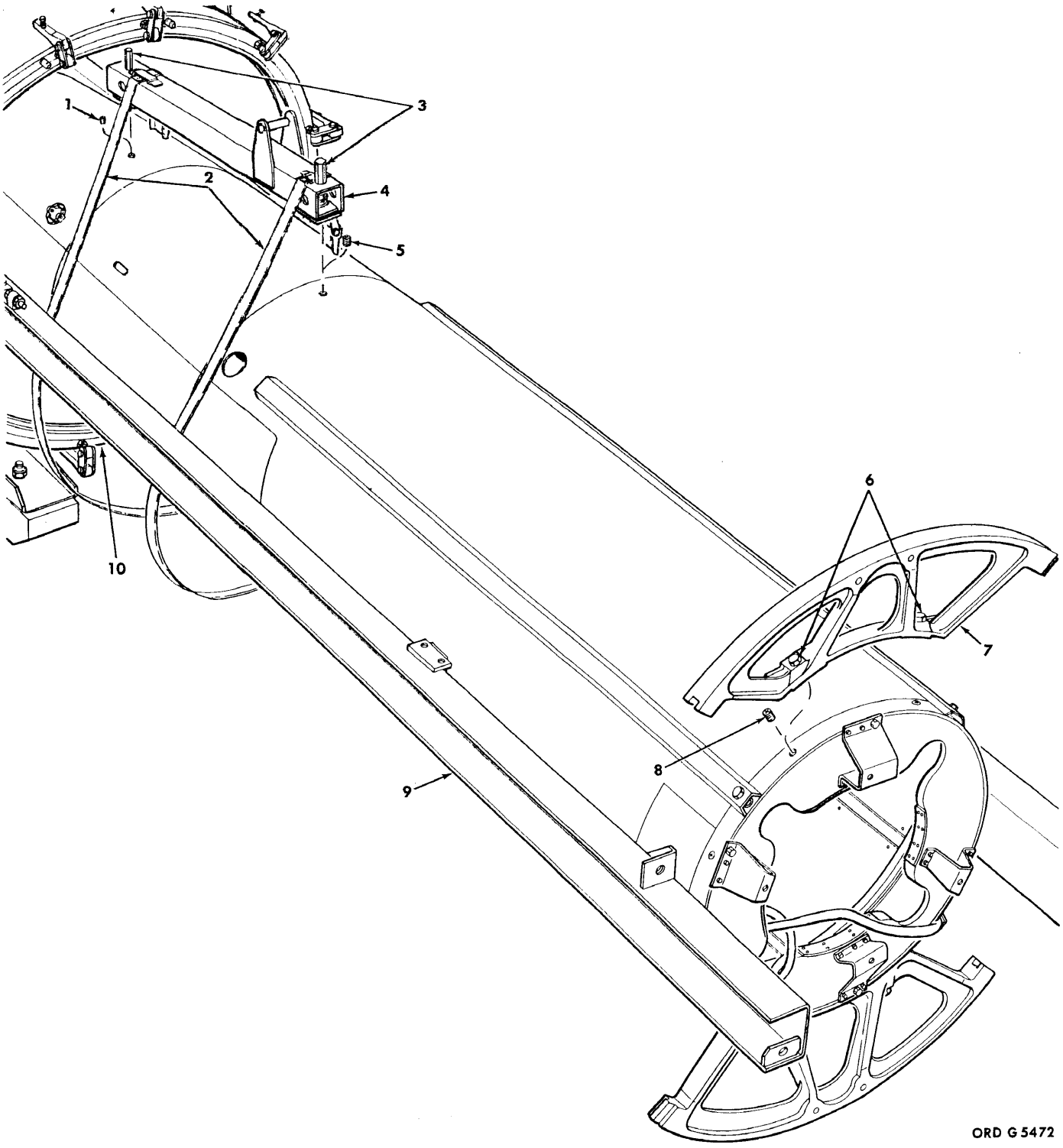
*g.* Remove the square nuts, lockwashers, and flat washers that secure the forward main fin support block inside the box. Remove the forward main fin support block.

*h.* Remove the accessory carton from the forward main fin support block, and place it in a suitable area.

*i.* Remove the four elevons and four forward main fins.

*j.* Remove the square nuts (fig. 3-19), lockwashers, flat washers, and square-neck bolts that secure the rear main fin support block to the box. Remove the support block.

*Note.* The rear main fins should be removed one at a time, inspected for damage, reinstalled in the box, and left there until they are required for installation.




1—Plug
2—Safety strap assy
3—Captive bolt
4—Rear body section hoist beam
5—Plug
6—Captive bolt (4)
7—Handling ring segment (2)
8—Plug (8)
9—Moveable track (2)
10—Container

*Figure 3-11. Removal and installation of the handling ring segments and the rear body section hoist beam.*

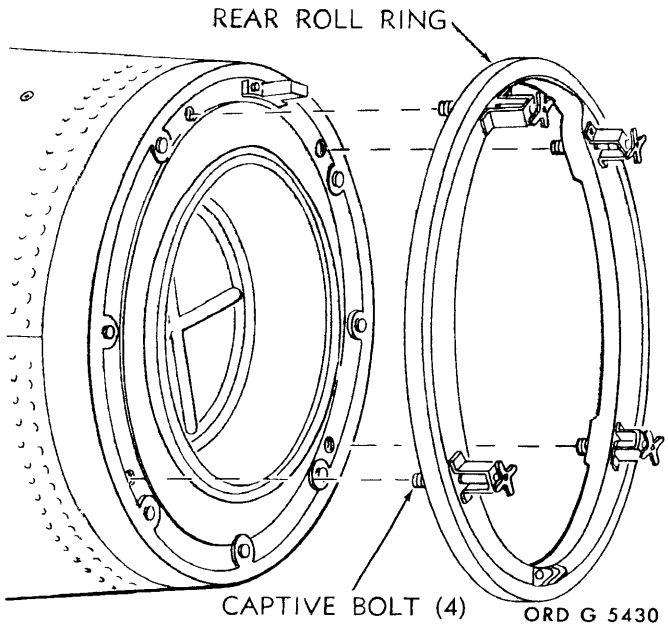



*Figure 3–12. Removal and installation of the rear roll ring.*

*k.* Inspect the forward main fins and elevons for damage.

*l.* Inventory all parts against the inclosed packing list.

*m.* Report any damaged or missing parts to the supervisor.

### 3–8. Removal of Access Doors, Cover Plates and Door Assemblies

*a.* Remove the flat-head screws (2 and 4, fig. 3–20) from the two missile motor section access doors, and remove the doors.

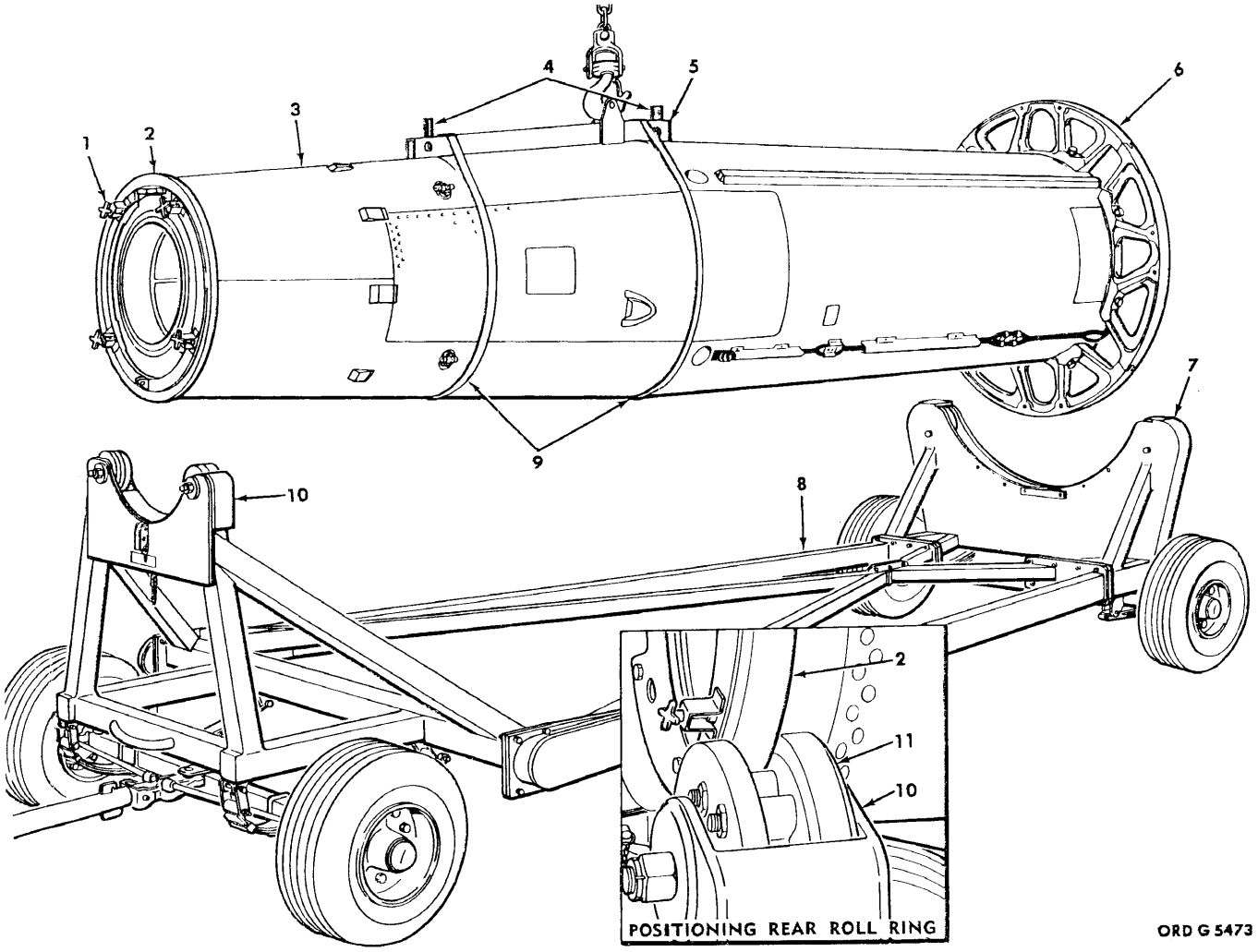
*b.* Remove the flathead screws (3 and 10 or 7 and 9 fig. 3–21) from the two equipment section access cover plates, and remove the cover plates.

*c.* Perform the operations listed in steps (1) through (3) below to remove the two actuator section door assemblies (fig. 3–22), one on each side of the actuator section.

(1) Remove a flathead screw from each joining pad that overlaps the edge of the door assembly.

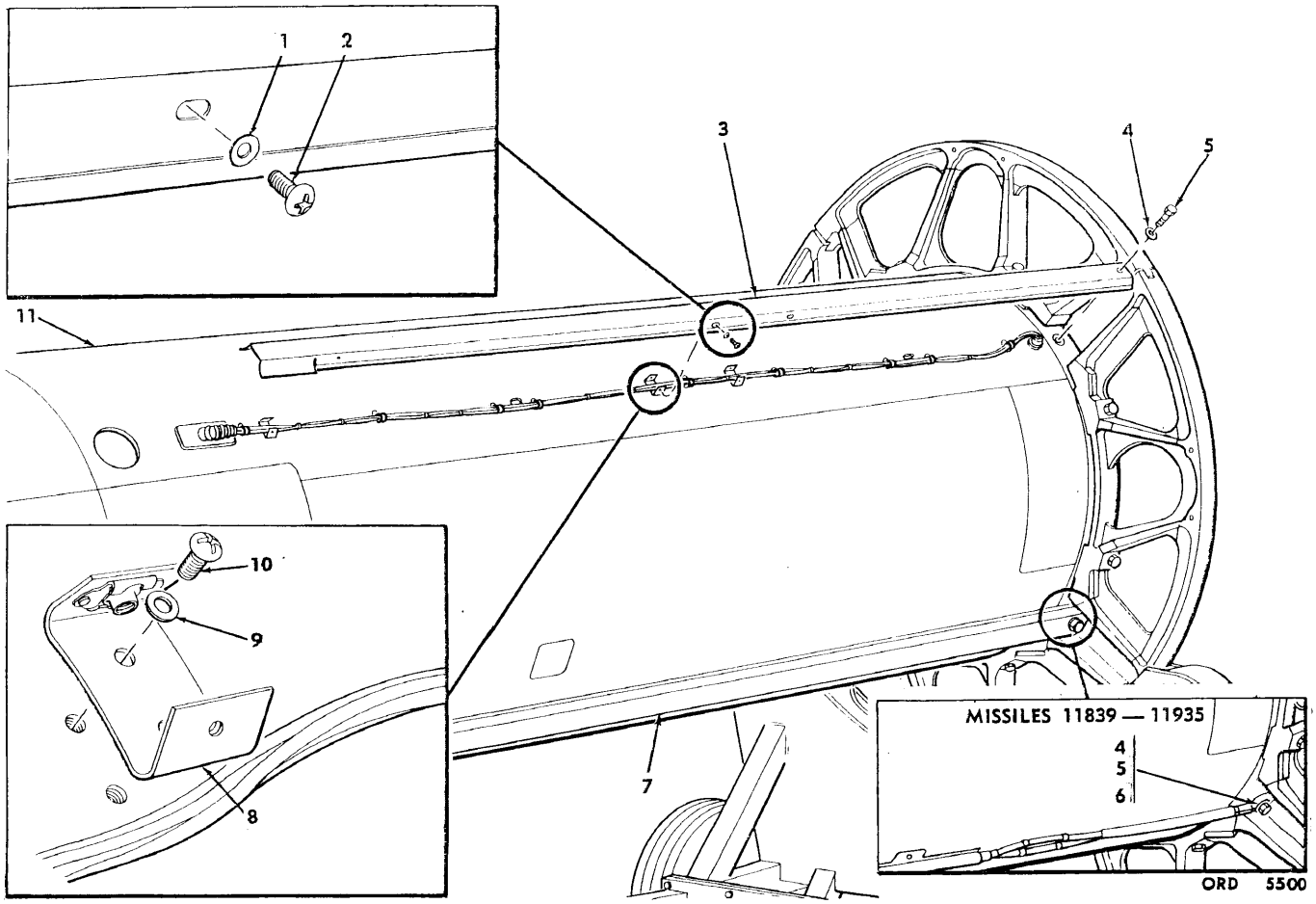
(2) Loosen the remaining flathead screw, and turn the joining pad so that it does not overlap the door assembly.

(3) Remove the flathead screws that secure each door assembly to the actuator section, and remove the door assemblies.




1—Captive bolt (4)
2—Rear roll ring
3—Rear body section
4—Captive bolt
5—Rear body section hoist beam
6—Handling ring segment (4)
7—Rear cradle
8—Missile body truck
9—Safety strap assy (2)
10—Forward cradle
11—Wheel (2)

*Figure 3-13. Installation of the rear body section on the missile body truck.*




1—13 / 64-in-id fl washer (16) (missiles 10206 through 11745), (24) (missiles 11746 through 11838); (12) (missiles 11839 through 11935 and 13001 and subsequent)
2—No. 10-32 x ⅜ rd-hd screw (16) (missiles 10206 through 11745); (24) (missiles 11746 through 11838); (12) (missiles 11839 through 11935 and 13001 and subsequent)
3—Shipping tunnel section 9033218 (2) (fins no. 1 and 2)
4—0.765 id x 1.312 od fl washer 8170127 (4) (missiles 10206 through 11935 and 13001 through 13683) or ¾ id x 1½ od fl washer MS15795-322 (4) (missiles 13684 and subsequent)
5—¾-16 x 1-17 / 32 hex-hd bolt AN182-13A (4) (missiles 10206 through 11935 and 13001 through 13683) or ¾-16 x 1⅝ hex-hd bolt NAS464P12A17 (4) (missiles 13684 and subsequent)
6—Shipping tape (missiles 11839 through 11935 and 13001 and subsequent)
7—Shipping tunnel section 9033218 (2) (missiles 10206 through 10569) or 9019530 (2) (missiles 10570 through 11838) (fins no. 3 and 4)
8—Tunnel section bracket 9033221 (8) (missiles 10206 through 11745); (12) (missiles 11746 through 11838); (6) (missiles 11839 through 11935 and 13001 and subsequent)
9—13 / 64-in-id fl washer (16) (missiles 10206 through 11745); (24) (missiles 11746 through 11838; (12) (missiles 11839 through 11935 and 13001 and subsequent)
10—No. 10-32 x ½ rd-hd screw (16) (missiles 10206 through 11745); (24) (missiles 11839 through 11935 and 13001 and subsequent)
11—Rear body section

*Figure 3-14. Removal of the shipping tunnel sections.*

## 3-9. Inspection of the Actuator Section

*a.* Visually inspect the actuator assemblies and mechanical linkage to determine any obvious defects or damage. Refer any obvious defects or damage to the direct support (DS) unit for disposition.

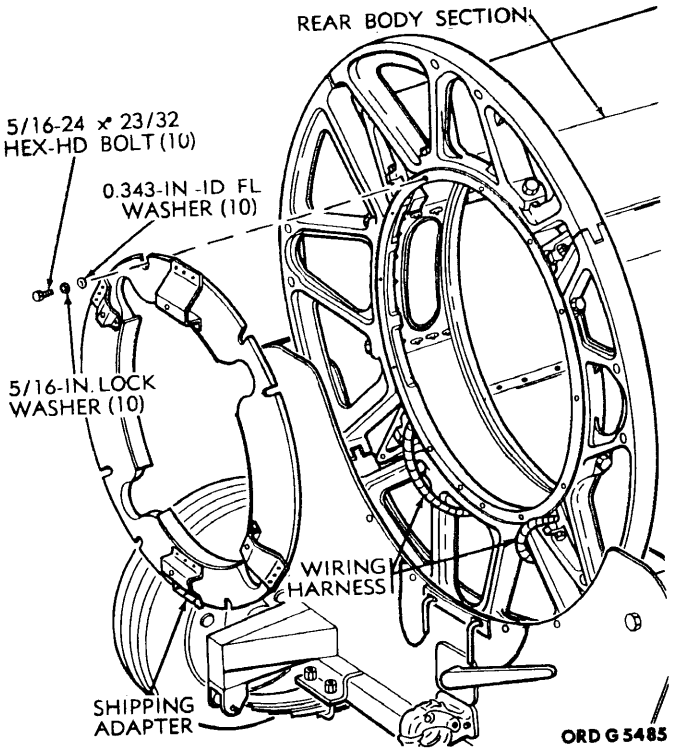



*Figure 3-15. Removal and installation of the shipping adapter.*

*b.* Remove and test the thermal battery pack (par. 12-87). Inspect the initiator pins, striker arms, percussion caps, springs, and related linkage on the thermal batteries. Insure that the shipping safety pin has been removed from each terminal.

*Note.* The date of manufacture can be determined by a four-digit code located approximately one inch from the connector end of the thermal battery. The first two digits indicate the month and the second two digits indicate the year of manufacture. Replace any undated batteries.

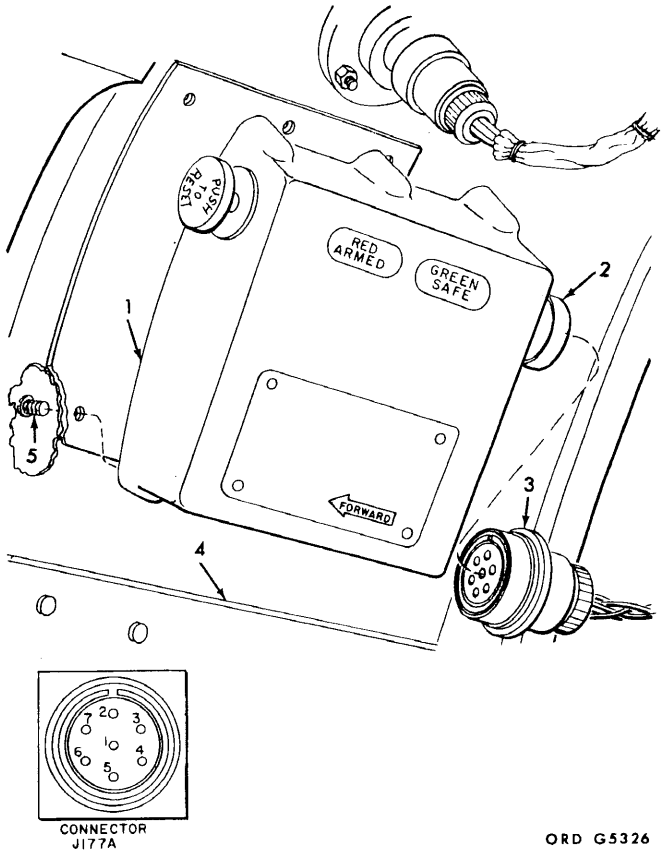
*c.* Check each thermal battery (2 and 5, fig. 12-52) to insure that the shelf life has not exceeded the limits indicated in table 15-8. If the shelf life will expire within three months, replace the battery. Document expiration dates for batteries if the expiration date is within two years.

*d.* Replace the thermal battery pack (par. 12-87).

*Note.* If the motor start delay timer has been replaced with a dummy connector, check that the dummy connector is properly connected between P178 and P179, and omit paragraph 3-10.

## 3-10. Removal, Test, and Installation of the Motor Start Delay Timer Relay

*Note.* The check of the motor start delay timer relay must be performed during missile assembly and at 90-day intervals thereafter.




1—Safety and arming switch S31
2—Connector J177
3—Connector P177A
4—Missile motor section
5—No. 10-32 x 13 / 32 fl-hd screw (8)

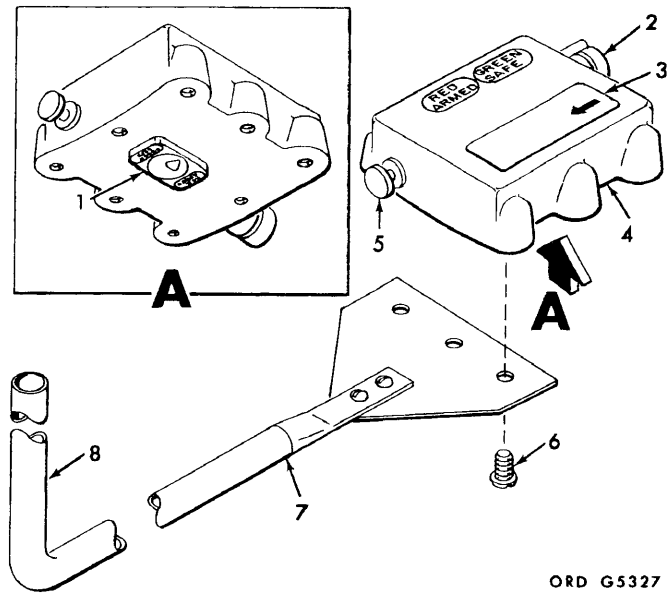
*Figure 3-16. Removal and installation of safety-and-arming switch S31.*

*Note.* The battery box may be removed if necessary.

*a. General.* The motor start delay timer relay (7, fig. 3-23) is secured to the bracket (8) mounted on the longeron (4), directly above the missile batteries.

*b. Removal.* Remove the hexagon nuts (1), lockwashers (2), and flat washers (3), that secure the relay to the bracket.

*c. Test.* Disconnect connectors P178 (6) and P179 (5) from connectors J178 and J179 of the relay. Using multimeter set to the RX1 scale, check for continuity and resistance between relay connector J179, pins A and G, B and C, and E and F. Replace the relay with connector 9978535 if the resistance exceeds 2 ohms.




1—Inspection window
2—Connector J177
3—Arrow
4—Safety-and-arming switch S31
5—PUSH TO RESET switch
6—No. 10-32 X 1-3/32 fl-hd screw (3)
7—Safety-and-arming switch sling
8—Handle

*Figure 3-17. Removal and installation of safety-and-arming switch S31 from the safety-and-arming switch sling.*

*d. Installation.* Secure the relay to the bracket with the flatwashers, lockwashers, and hexagon nuts. Connect connectors P178 and P179 to connectors J178 and J179.

### 3-11. Installation of the Rear Main Fins

*a.* Install the rear main fin attach studs (6, fig. 3-24) with the retaining ring installed, at the rear main fin attach points and tighten to the torque value given in table 15-9.

*b.* Locate the stud retainers (5) on the rear main fin attach studs. Install the retainer screws (4) and tighten the screws to the torque value given in table 15-9.

**CAUTION: Make a thorough inspection of all missile cable connectors to determine that all connectors are in place and securely fastened.**

*Note.* Insure that the cover (2, fig. 7-2) is installed on the bracket (13), with the wide side up.

*c.* The wiring harness under fins 3 and 4 should measure 50 ± 1/4 inches from the forward end of the rear body section to the rear edges of the covers (15, fig. 7-1 and 2, fig. 7-2). These measurements will be taken with the brackets (10, fig. 7-1 and 13, fig. 7-2) fully to the rear and the covers fully forward.

*Note.* If the above measurement cannot be made because the cable is too short or too long, adjustment may be made by loosening the cable clamps along the inside and outside the rear body section. Shorten or lengthen the cable as necessary to attain the measurement of 50 ± 1/4 inches. Secure all cable clamps.

*d.* Using a cleaning solvent, remove all corrosion-preventive compound from the fin spar sockets (11, fig. 3-24), and apply a light coat of general-purpose lubrication-grade oil.

*e.* Remove the two self-locking pins (view A, fig. 9-1) on the rear cradle of the missile body truck. Rotate the rear body section so that a rear main fin can be installed at approximately 90 degrees clockwise and 90 degrees counterclockwise from the top center position. Relock the rear body section in position.

*Note.* The fins and elevons should be removed from the shipping and storage box to perform *f* and *g* below and replaced when the steps are complete.

*f.* Remove all tape from the main fins and elevons.

*g.* Using a cleaning solvent, remove the corrosion-preventive compound from the unpainted surfaces on all the main fins, elevons, and attaching hardware, and apply a light coat of general-purpose lubrication-grade oil. Do not lubricate threaded surfaces.

*Note.* Verify that each hanger-point setscrew contains a teflon insert.

*Note.* If setscrews with teflon inserts have been used previously, check the screws by turning them into their mounting holes by finger pressure. If they can be turned as many as 7 turns, they must not be reused.

*h.* Remove a rear main fin from the shipping and storage box.

**CAUTION: Insure that all wiring harnesses are clear of the fin indexing holes before seating the fin.**

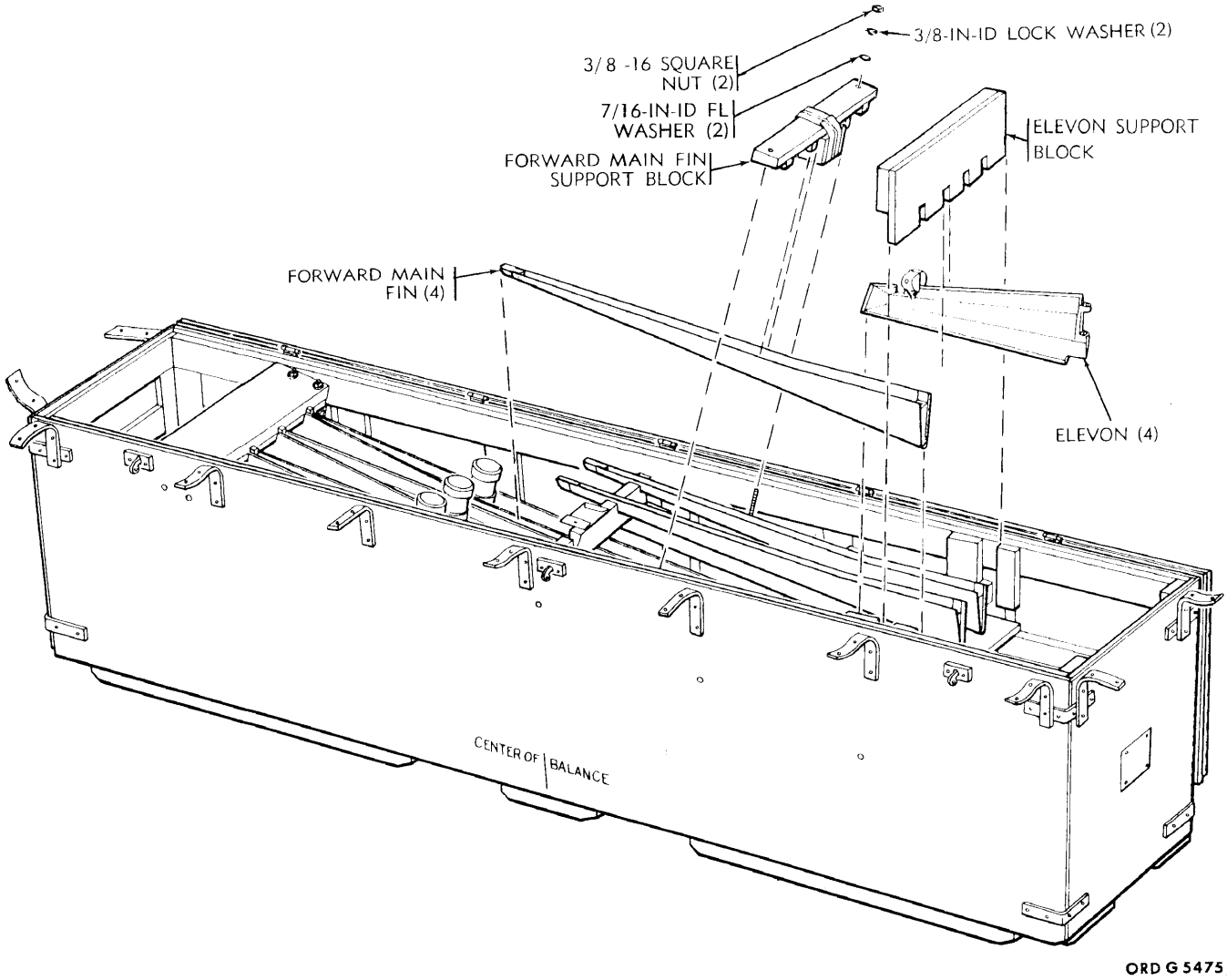



*Figure 3–18. Removal and installation of the forward main fins and elevons.*

*i.* Aline the rear main fin spar (10, fig. 3–24) with the fin spar socket; aline the indexing pins (14) with the indexing holes; aline the fin (12) with the fin attach stud at the forward end of the rear body section; push the fin into position on the rear body section.

*Note.* Connectors P506 and P505 may be disconnected to eliminate interference when applying torque to the hanger-point setscrew (1) for fin 4 in *j* below. Perform steps *j* and *k* in sequence.

*Note.* Check that the setscrew hole in the spar socket is alined with the setscrew hole in the rear main fin spar. If the holes are not properly alined, position the rear main fin until correct alinement is obtained.

*j.* Install the hanger-point setscrew to secure the rear main fin to the rear body section. Reach through the rear main fin spar opening and make certain that the tapered end of the setscrew protrudes through the rear main fin spar wall. Tighten the setscrew to the torque value given in table 15–9.

*k.* Install the flat washer (8) and double hexagon nut (9) on the rear main fin attach stud, and tighten to the torque value given in table 15–9.

*l.* Repeat steps *e* and *h* through *k* above to install the remaining rear main fins.

*Note.* If connectors P506 and P505 were disconnected in *j* above, reconnect them when the step is completed.

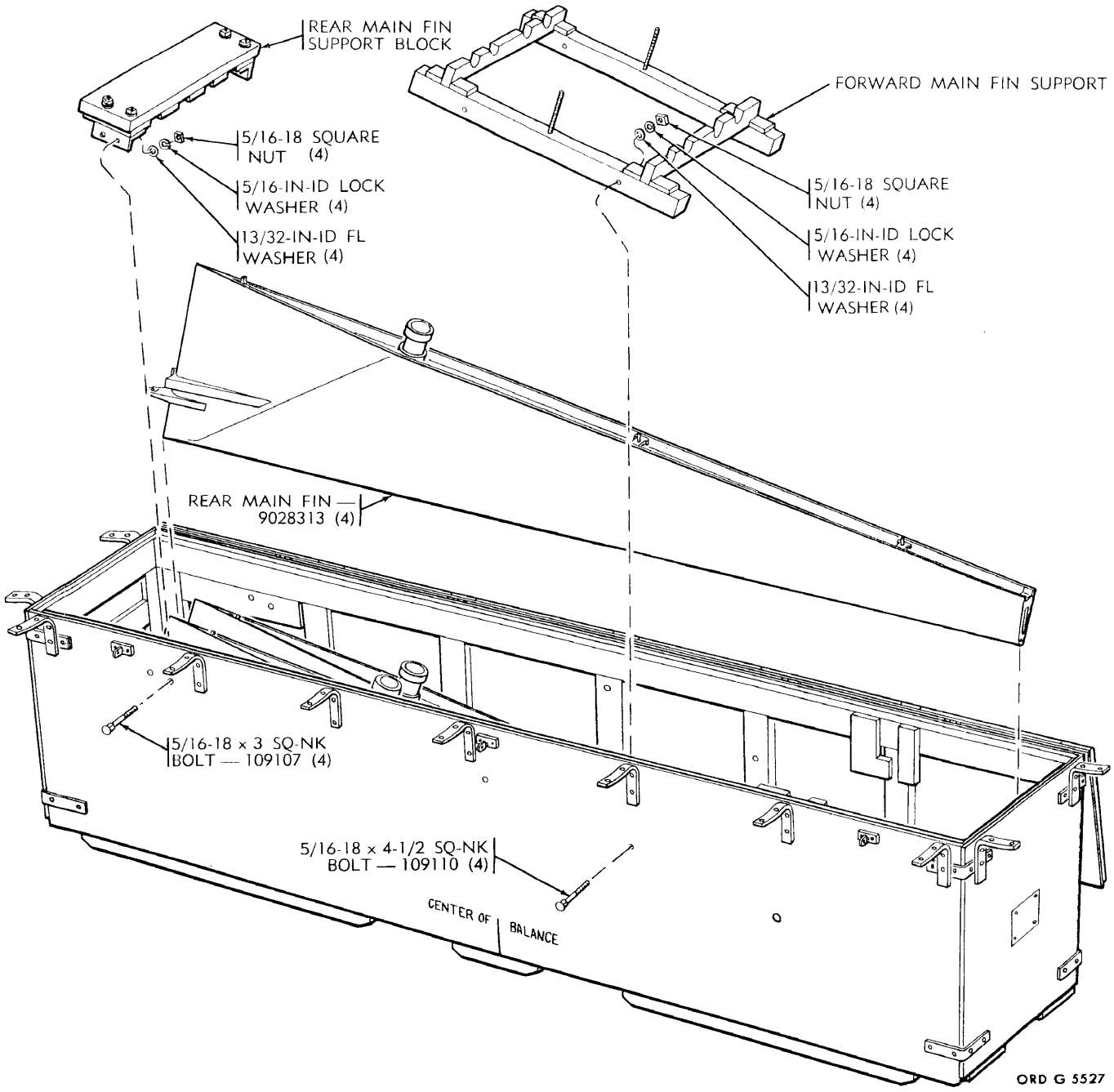
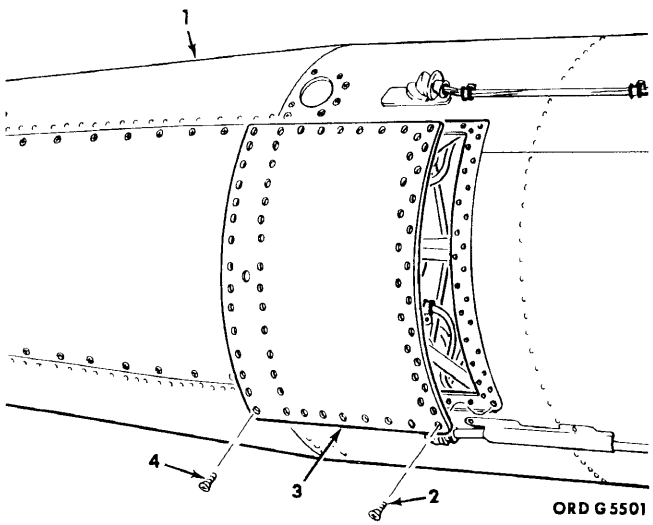



*Figure 3–19. Removal and installation of the rear main fins.*

## 3–12. Installation of the Elevons

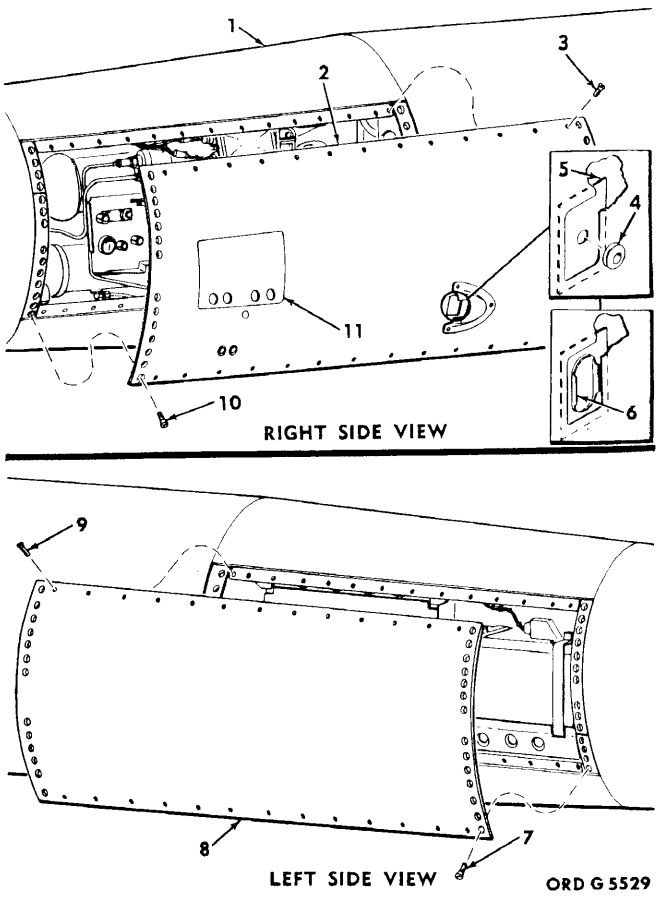
*a.* Position the elevon hinge clevis (4, fig. 3–25) to the hinge fitting (2) on the rear main fin (1); install the elevon hinge pin (3) through the hinge clevis and the hinge fitting on the fin.

*b.* Aline the clevis hole on the elevon (9) with the clevis attached to the hinge fitting. Install the elevon on the elevon hinge clevis; install the flat washer (7) and double hexagon nut (8) to the end of the elevon hinge clevis; do not tighten.




1—Missile section
2—1/4–28 x 21/32 fl-hd screw (62) missile 10206 through 10388) (35) (missiles 10339 through 11935 and 13001 and subsequent)
3—Missile motor section access door (2)
4—1/4–28 x 17/32 fl-hd screw (27) (missiles 10339 through 11935 and 13001 and subsequent)

*Figure 3–20. Removal and installation of the missile motor section access doors.*




1—Equipment section
2—Right equipment section access cover plate
3—1/4–28 x 21/32 fl-hd screw (26)
4—Grommet (missiles 14965 and subsequent)
5—Plate (missiles 14965 and subsequent)
6—Seal (missiles 10206 through 14964)
7—5/16–24 x 23/32 fil-hd screw (27)
8—Left equipment section access cover plate
9—1/4–28 x 21/32 fil-hd screw (26)
10—5/16–24 x 23/32 fl-hd screw (27)
11—APS SERVICE DOOR or HPU SERVICE DOOR

*Figure 3–21. Removal and installation of the equipment section access cover plates.*

*c.* Aline the elevon holes and universal joint holes; insert the elevon attach pin (13) through the elevon and universal joint (12); aline the groove on the attach pin with the spring pin hole and secure the elevon attach pin in position by inserting the spring pin (11) until it does not protrude beyond the surfaces of the elevon.

*d.* Tighten the double hexagon nut on the end of the elevon hinge clevis to the torque value given in table 15–9.

*e.* Repeat steps *a* through *d* above to install the three remaining elevons.

*f.* Return all rear main fin box components and attaching hardware to the main fin and elevon shipping and storage box.

*g.* Close the box cover; position the hasps on the swivels; turn the swivels to secure.

*h.* Bend the shipping straps inward over the cover and flatten the straps.

## 3–13. Installation of the Forward Body Section for the Missile Electrical Checkout (Missiles 10206 through 11935)

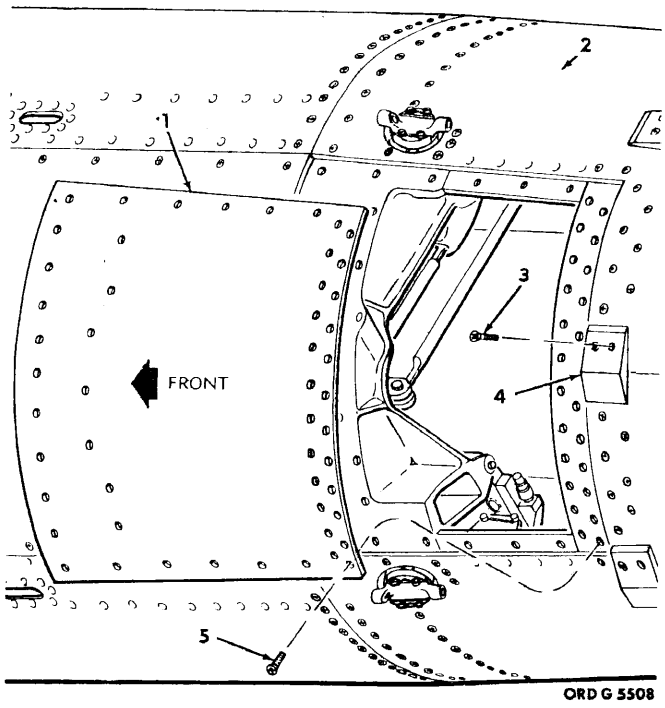
*Note.* Ascertain that preformed packing (13, fig. 12–2) is properly seated and firmly cemented on the antenna horn (25).

*a.* Install the receiving antenna horns in the forward fin assemblies in accordance with paragraph 12–24*b*.

*b.* Remove the flathead screws (13, fig. 3-26) that secure the GUIDANCE TEST AND ADJUST ACCESS DOOR assembly (1) to the left side of the forward body section; remove the access door assembly and the fail-safe wiring harness (11).

***CAUTION:*** **Avoid damage to the wiring harness.**

*c.* Remove the flathead screws (2) that secure the INERTIA SWITCH AND ADJUST ACCESS DOOR assembly (3) to the left side of the forward body section; remove the access door assembly.




1—Actuator section door assembly
2—Actuator section
3—No. 10–32 X 23/32 fl-hd screw (2)
4—Joining pad
5—1/4–28 X 21/32 fl-hd screw (51)

*Figure 3–22. Removal and installation of the actuator section door assemblies.*

*d.* Remove the unattached ends of the wiring harnesses (4 and 9, fig. 3–28) from the rear body section (1). Place each wiring harness through the opening in the handling ring segment (3) on top of the missile.

*e.* Tape the missile motor head heater (fig. 4–31) inside the rear body section.

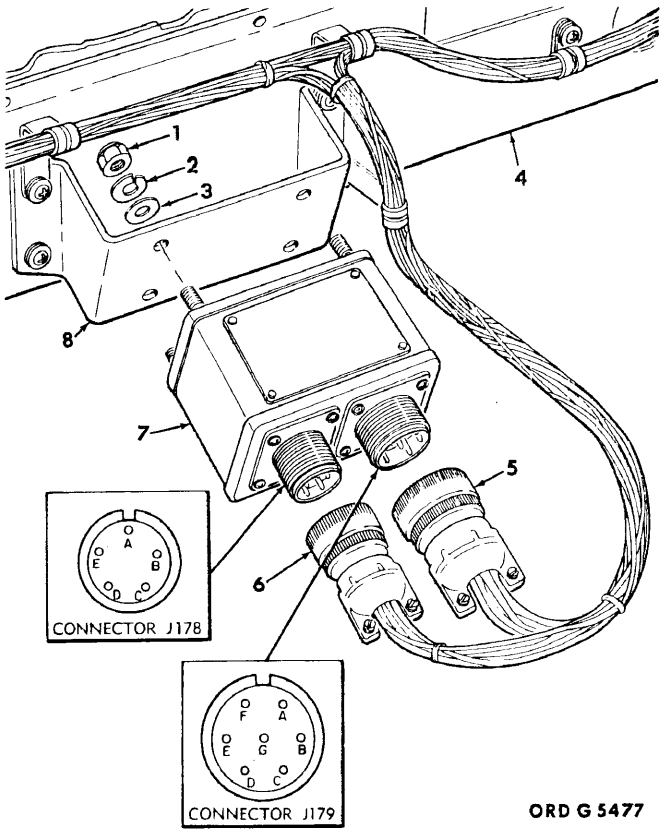
*f.* Attach the falling hook (5, fig. 3–28) of the hoisting device to the hoist-bolt (6) of the testing fixture (7), and slowly raise the testing fixture.

*g.* Position the testing fixture at the forward end of the rear body section.

*h.* Remove the two self-locking pins (view A, fig. 9–1) on the rear cradle of the missile body truck.

*Note.* Step *i* below is a convenient method of positioning the rear body section 24 degrees clockwise from the flight position.

*i.* Rotate the rear body section 24 degrees clockwise so that the nine holes in the rear




1—No. 8–32 hex. nut (4)
2—No. 8 lockwasher (4)
3—No. 8 fl washer (4)
4—Longeron
5—Connector P179
6—Connector P178
7—Motor start delay timer relay
8—Bracket

*Figure 3–23. Removal and installation of the motor start delay timer relay.*

body section aline with the captive bolts (8, fig. 3–28) on the testing fixture.

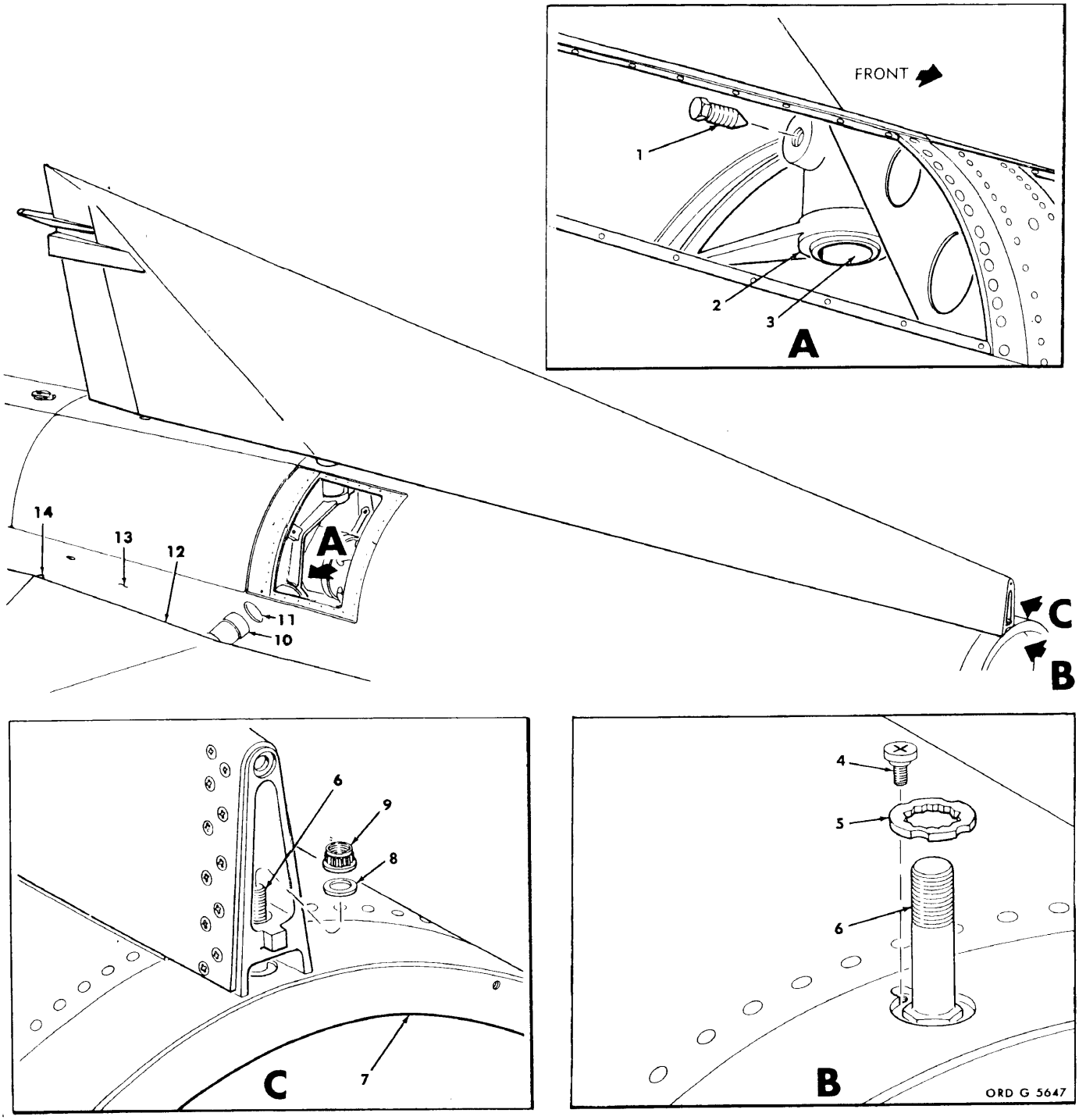
*j.* Lock the rear body section in position on the missile body truck.

*k.* Secure the testing fixture with the captive bolts, and torque the bolts to the value given in table 15–9.

*l.* Remove the falling hook from the hoisting bolt.

*m.* Remove the four flathead screws (9, fig. 3–29). Install the screws in the storage holes in the hinge of the testing fixture (5).

***Caution:*** **Insure that the hoisting device is secure.**




1—3/4–10 X 21/2 hanger-pt setscrew
2—Fin spar socket
3—Rear main fin spar
4—Retainer screw (4)
5—Stud retainer (4)
6—Rear main fin attach stud (4)
7—Rear body section
8—0.640-in-id fl washer (4)
9—5/8–18 dble hex nut (4)
10—Rear main fin spar
11—Fin spar socket
12—Rear main fin (4)
13—Rear body section
14—Indexing pin (3)

*Figure 3-24. Removal and installation of the rear main fin.*

*n.* Attach the falling hook (6) of the hoisting device to the forward body section hoist (7).

*o.* Release the hand clamp (9, fig. 3–26) and the holddown strap (5) that secure the forward body section (4) to the truck.

*p.* Lift the forward body section from the truck, and position it on the testing fixture; secure the right side of the testing fixture to the forward body section with the captive bolts (2, fig. 3–29). Torque the bolts to the value given in table 15–9.

*q.* Remove the falling hook from the forward body section hoist.

**WARNING: Insure that the self-locking pins (view A, fig. 9–1) are inserted through the handling ring segment prior to performing *r* below.**

**CAUTION: Check the placement of the wiring harness before opening or closing the forward body section hinged to the testing fixture, to make certain they will not be damaged.**

*r.* Swing the forward body section to the right until the hinge lock pin (12, fig. 3–29) snaps into the locked position.

**CAUTION: When performing *s* through *u* below, care must be taken to prevent damage to the connector.**

*s.* Remove the protective wrapping from the transponder control group wiring harness (13), if not removed during inspection.

*t.* Insert the transponder control group wiring harness (24, fig. 3–30) through the hole in the testing fixture near fin 2, and insert connector P1 (13) between the right side of the transponder control group (22) and the forward body section; move connector P1 forward to the access opening.

*u.* Disconnect connector P177B (8, fig. 4–20) from connector J177 (7).

*v.* Remove the screw (1), lockwasher (2), and flat washer (3) that secure the clamp (4) to the bracket (9) and safety-and-arming switch S30 (6). Move the barometer probe hose and cable (5), with the attached clamp clear of the bracket.

*w.* Remove the flathead screws (10) that secure the bracket to the forward body section (15).

*x.* Remove the two roundhead screws (14), lockwashers (13), and flat washers (12) from the forward end of the bracket.

*y.* Position safety-and-arming switch S30 (2, fig. 4–21) and the bracket (3) on the safety and arming switch sling (5) with connector J177 (7, fig. 4–20) pointing away from the handle of the sling and secure it in position with the three screws (4, fig. 4–21).

*z.* Depress the PUSH TO RESET switch (1) on switch S30, and check that the green field is visible through the inspection window (6).

*aa.* Revolve the sling at three revolutions per second for a minimum of three revolutions. An audible click is heard when switch S30 arms.

*ab.* Check that the red field is visible through the inspection window. If the red field is not visible, repeat *aa* above and *ab*. If the red field still is not visible after the second test, reject switch S30.

*ac.* With switch S30 in the armed position, using a multimeter on the R X 1 scale, measure the resistance between pins J177–2 and J177–3 and between J177–5 and J177–6. The resistance should not exceed 2 ohms. If this value is exceeded, reject switch S30.

*ad.* Remove the screws that secure switch S30 and the bracket to the sling.

*ae.* Depress the PUSH TO RESET switch on switch S30, and check that the green field is visible through the inspection window.

*af.* with switch S30 in the safe position, measure the resistance between J177–1 and J177–2 and between J177–4 and J177–5. The resistance should not exceed 2 ohms. If this value is exceeded, reject switch S30.

*ag.* Install the two roundhead screws, lockwashers, and flat washers removed in *x* above.

*ah.* Position switch S30 and the bracket (9, fig. 4–20) in the forward body section and secure with flathead screws (10).

*ai.* Position the barometer probe hose and cable (5), with the attached clamp (4) on the bracket (9), and secure with the truss-head screw (1), lockwasher (2), and flat washer (3).

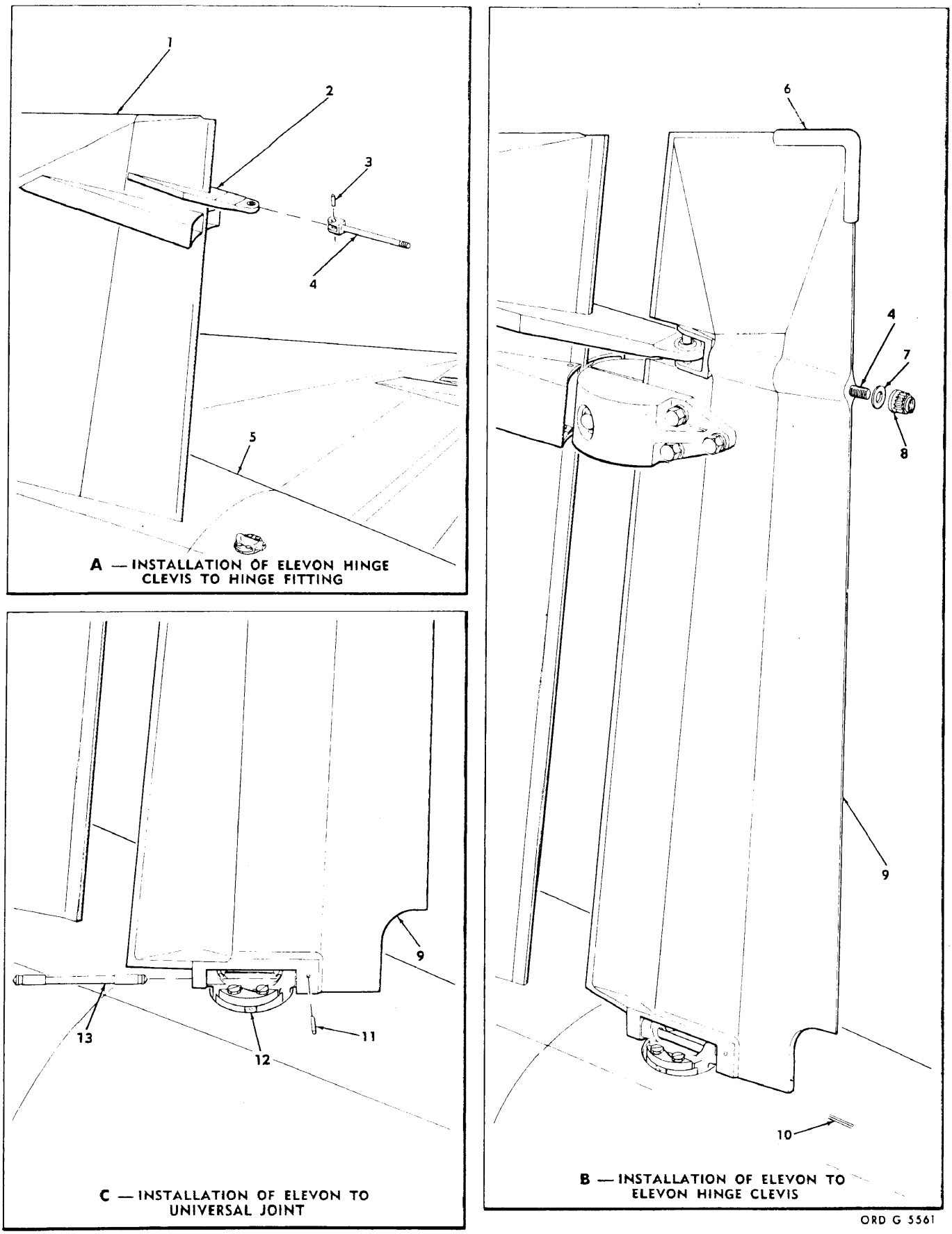
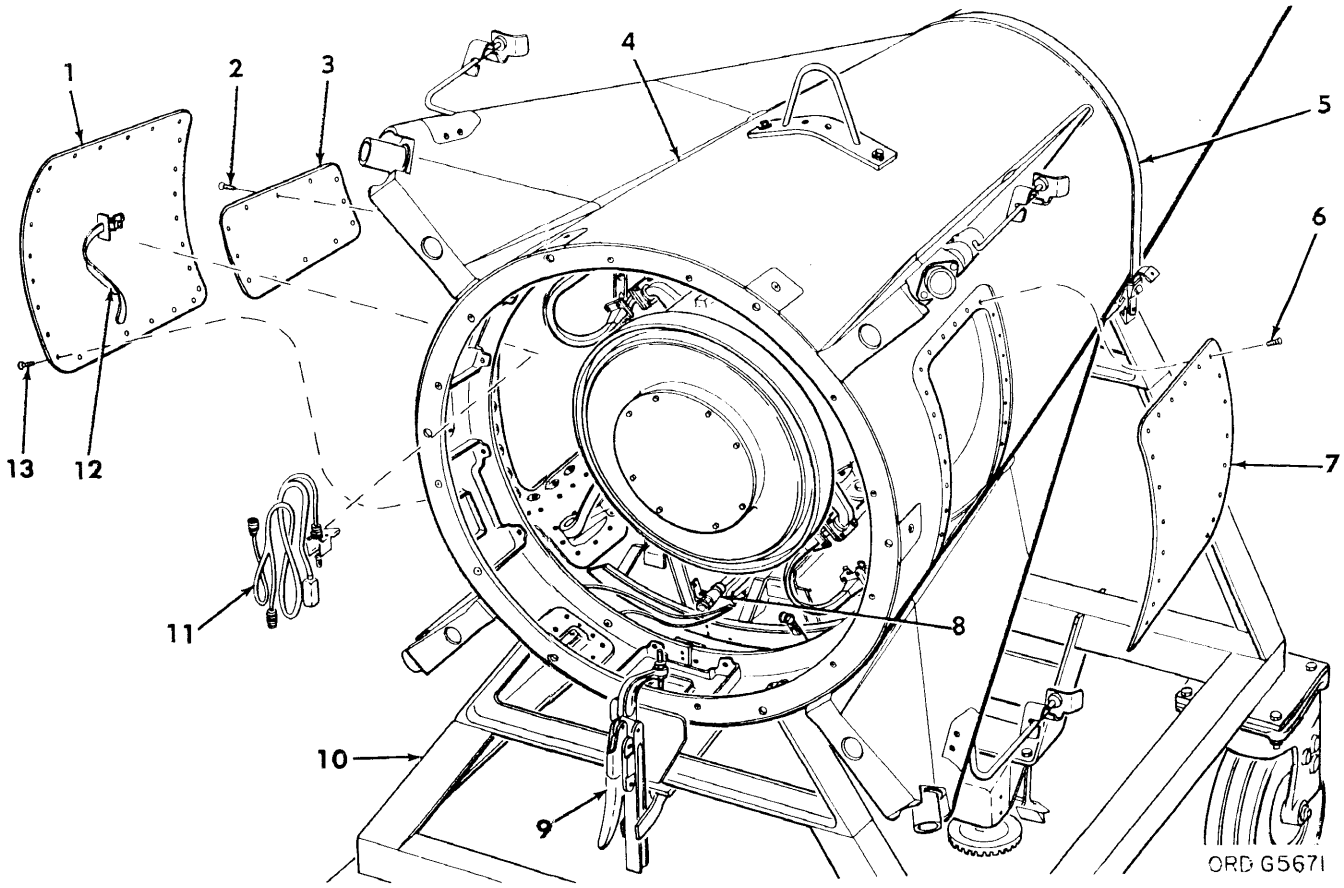



*Figure 3-25. Removal and installation of the elevons.*

1—Rear main fin
2—Hinge fitting
3—0.311 X 1.219 elevon hinge pin (4)
4—3/8 X 5.437 elevon hinge clevis (4)
5—Rear body section
6—Protective guard (4)
7—0.390-in-id fl washer (4)
8—3/8-24 dble-hex nut (4)
9—Elevon (4)
10—Elevon centering scribe lines
11—3/32 X 1/2 spg pin (4)
12—Universal joint
13—0.260 X 4 3/4 elevon attach pin (4)

*Figure 3-25. Removal and installation of the elevons—legend.*



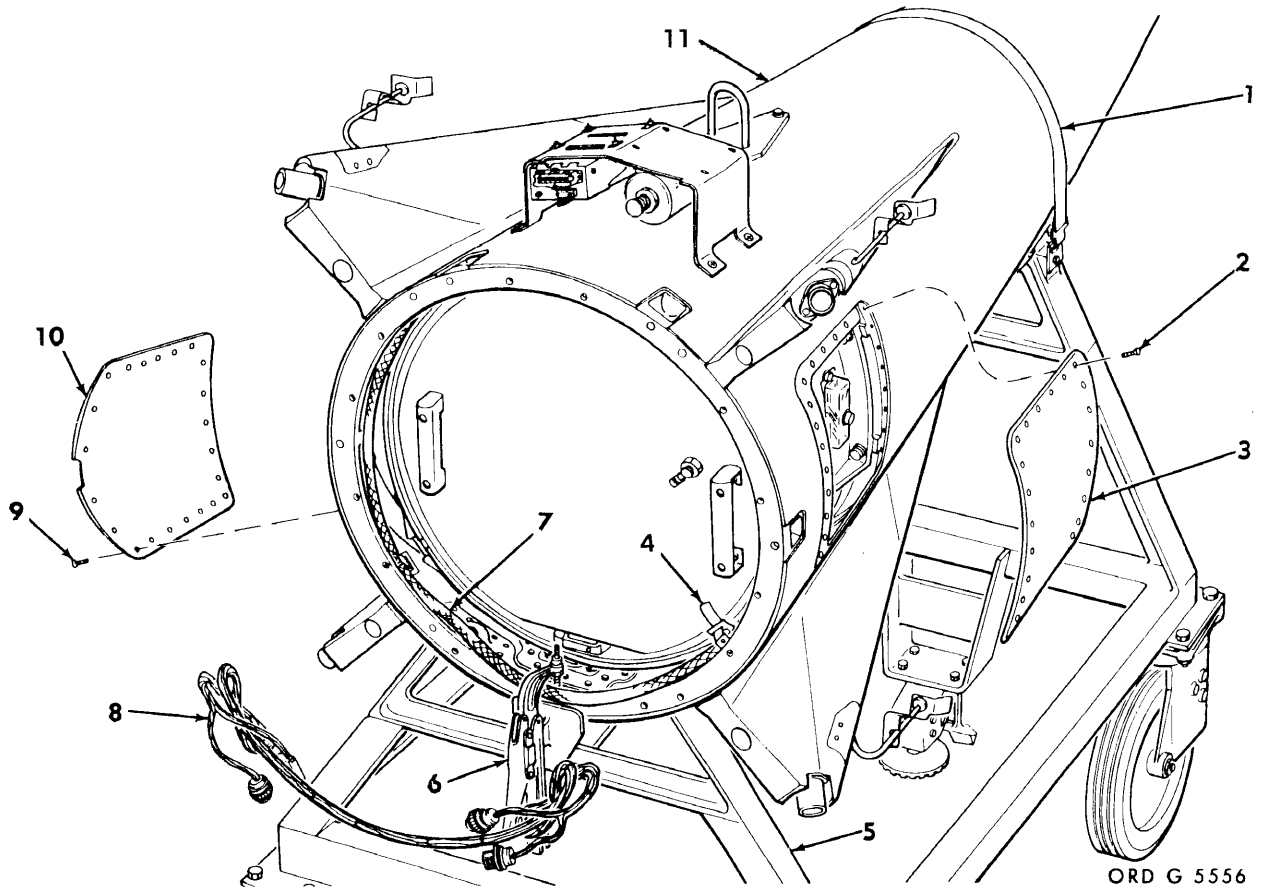

1—GUIDANCE TEST AND ADJUST ACCESS DOOR assembly
2—No. 10-32 X 15/32 fl-hd screw (12)
3—INERTIA SWITCH AND ADJUST ACCESS DOOR assembly
4—Forward body section
5—Holddown strap
6—No. 10-32 X 15/32 fl-hd screw (26)
7—J1 + XMTR ACCESS DOOR assembly
8—Hose and cable assembly
9—Hand clamp
10—Forward body section truck
11—Fail-safe wiring harness
12—Storage strap
13—No. 10-32 X 15/32 fl-hd screw (26)

*Figure 3-26. Removal and installation of the forward body section access door (missiles 10206 through 11935).*

*aj.* Connect connector P177B (8) to connector J177(7), and check that the entire width of the orange band on the connector is visible after the connection is made.

*ak.* Perform the operations listed below to connect the wiring harnesses.

(1) Connect connector P513 (16, fig. 3-30) to connector J513 (17). The




1—Holddown strap
2—No. 10-32 X 23/32 fl-hd screw (24)
3—J1 + XMTR ACCESS DOOR
4—Storage loop clamp (2)
5—Forward body section truck
6—Hand clamp
7—Hose and cable assembly
8—Fail-safe wiring harness
9—No. 10-32 X 23/32 fl-hd screw (23)
10—GUIDANCE TEST AND ADJUST ACCESS DOOR
11—Forward body section

*Figure 3-27. Removal and installation of the forward body section access doors—(missiles 13001 and subsequent).*

entire width of the orange band on the connector is visible after the connection is made.

(2) Check that connector P177B (18) is connected to connector J177 (20). The entire width of the orange band on the connector is visible after the connection is made.

(3) Remove the protective cover (14) from connector J1 (15).

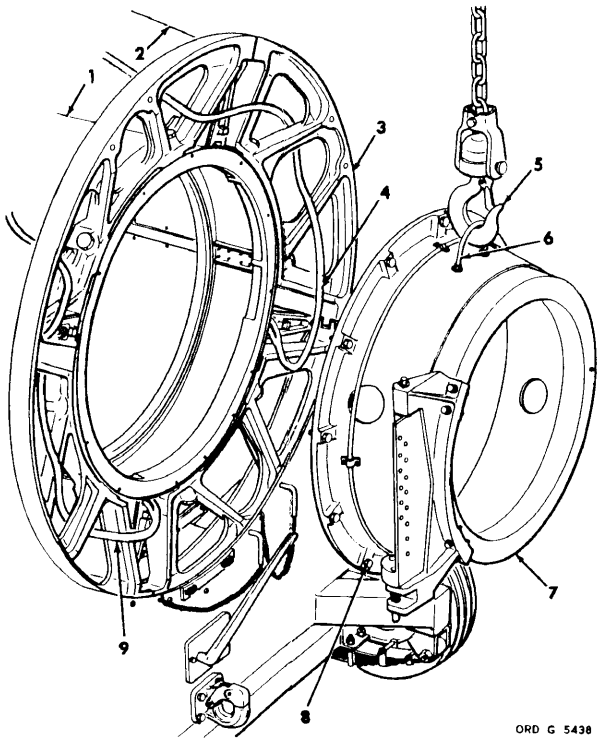
***Caution:*** **Do not install the shoulder bolt (2, fig. 7-13) of connector P1 until the connector is properly positioned for attachment.**

(4) Insert the shoulder bolt through connector P1. Install the gasket and secure the connector to connector J1.

(5) Connect connector P503 (2, fig. 3-30) to connector J503 (3).

(6) Connect connector P502 (8) to connector J1 (9), and secure it by putting the latch (2, fig. 7-6) over the stud (4).

(7) Connect connector P511 (5, fig. 3-30) to JUMPER connector J2 (6), and secure the sequential timer (7) in an appropriate place in the forward body section.




1 — Rear body section
2 — Rear main fin (4)
3 — Handling ring segment (4)
4 — Warhead wiring harness
5 — Falling hook
6 — Hoisting bolt
7 — Testing fixture
8 — Captive bolt
9 — Transponder control group wiring harness

*Figure 3-28. Removal and installation of the testing fixture.*

*al.* Weave the warhead wiring harness (4, fig. 3–28) through the struts of the handling ring segment (3), until all the slack is taken up. Make certain that no part of the wiring harness extends beyond the outer edges of the handling ring segment. Tie the loose end of the wiring harness to one of the struts of the handling ring segment.

*am.* Swing the forward section (8, fig. 3–29) to the left until the hinge lock pin (12) snaps into the locked position.

***Caution:*** **Lift and support the forward body section while installing and tightening the hexagon-head bolt in *an* below.**

*an.* Secure the left side of the forward body section to the testing fixture (5) with a hexagon-head bolt (11) and flat washer (10).

*ao.* Remove the self-locking pins (view A, fig. 9–1), and rotate the rear body section to the normal flight position. Replace the self-locking pins.

## 3–14. Installation of the Forward Body Section for the Missile Electrical Checkout (Missiles 13001 and Subsequent)

*a.* Ascertain that the preformed packing (13, fig. 12–2) is properly seated and firmly cemented on the antenna horn (25).

*a.1.* Install the receiving antenna horns in the forward fin assemblies in accordance with paragraph 12–7*b*.

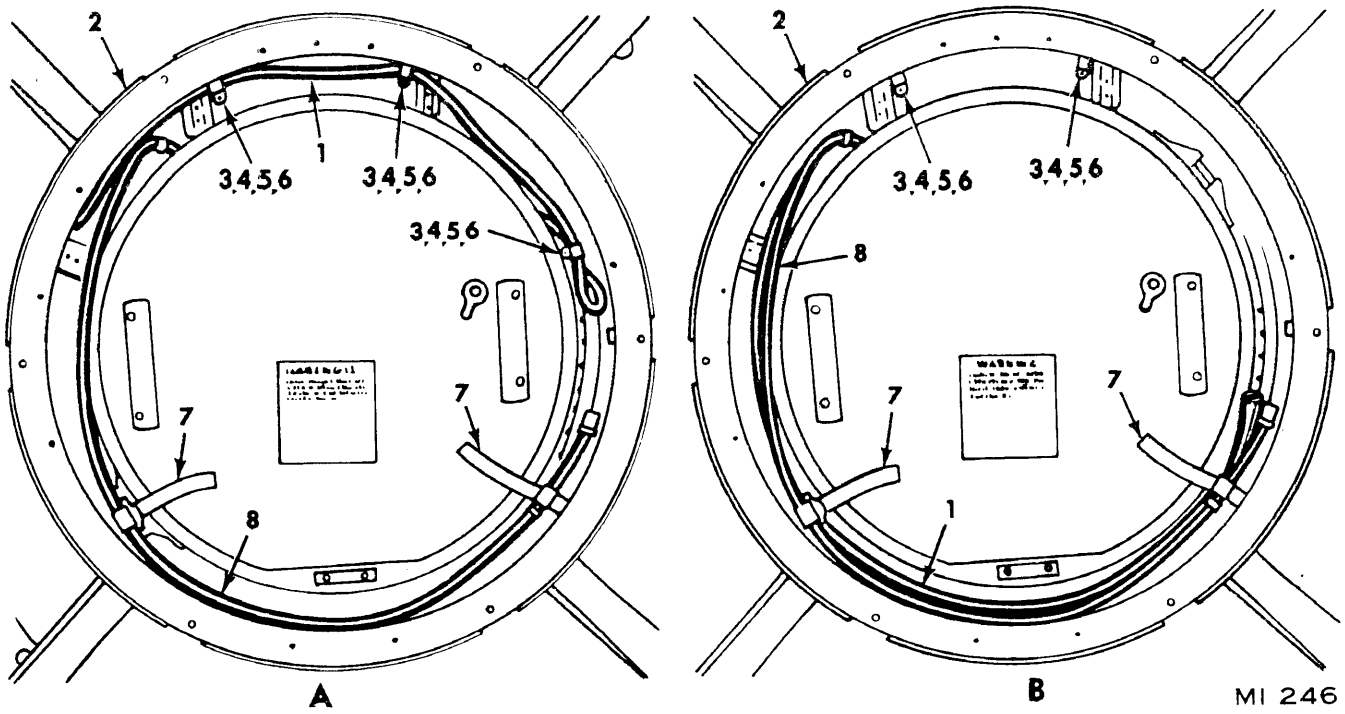
*b.* Remove the flathead screws (2, fig. 3–27) that secure the J1 + XMTR ACCESS DOOR to the right side of the forward body section; remove the access door.

*b.1.* Release the cable section of the hose and cable assembly (A1, fig. 3–28.1) from the top of the forward body section (A2) by removing the flathead screws (A3), flat washers (A4), loop clamps (A5), and hexagon nuts (A6).

*b.2.* Loosen the storage loop clamps (A7) on the lower edge of the forward body section (A2).

*b.3.* Route the cable section (B1) along the forward body section (B2) beside the hose section of the hose and cable assembly (B8), and secure it with the storage loop clamps (B7).

*b.4.* Install the flat head screws (B3), flat washers (B4), loop clamps (B5), and hexagon nuts (B6) removed in *b.1* above, in the top of the forward body section.




1 — Cable section of the hose and cable assy
2 — Forward body section
3 — No. 8-32 x ½ fl-hd screw (3)
4 — 0.174-in-id fl washer (3)
5 — Loop clamp (3)
6 — No. 8-32 hex. nut (3)
7 — Storage loop clamp (2)
8 — Hose section of the hose and cable assy

*Figure 3-28.1 Relocation of the cable section of the hose and cable assembly (missiles 13001 and subsequent).*

*Caution:* Avoid damage to the harnesses.

*c.* Remove the wiring harnesses (4 and 9, fig. 3-28) from the rear body section (1). Insert each harness through the openings in the handling ring segments (3), and place the harnesses on top of the rear main fins (2).

*d.* Secure the missile motor head heater (fig. 4-31) inside the rear body section.

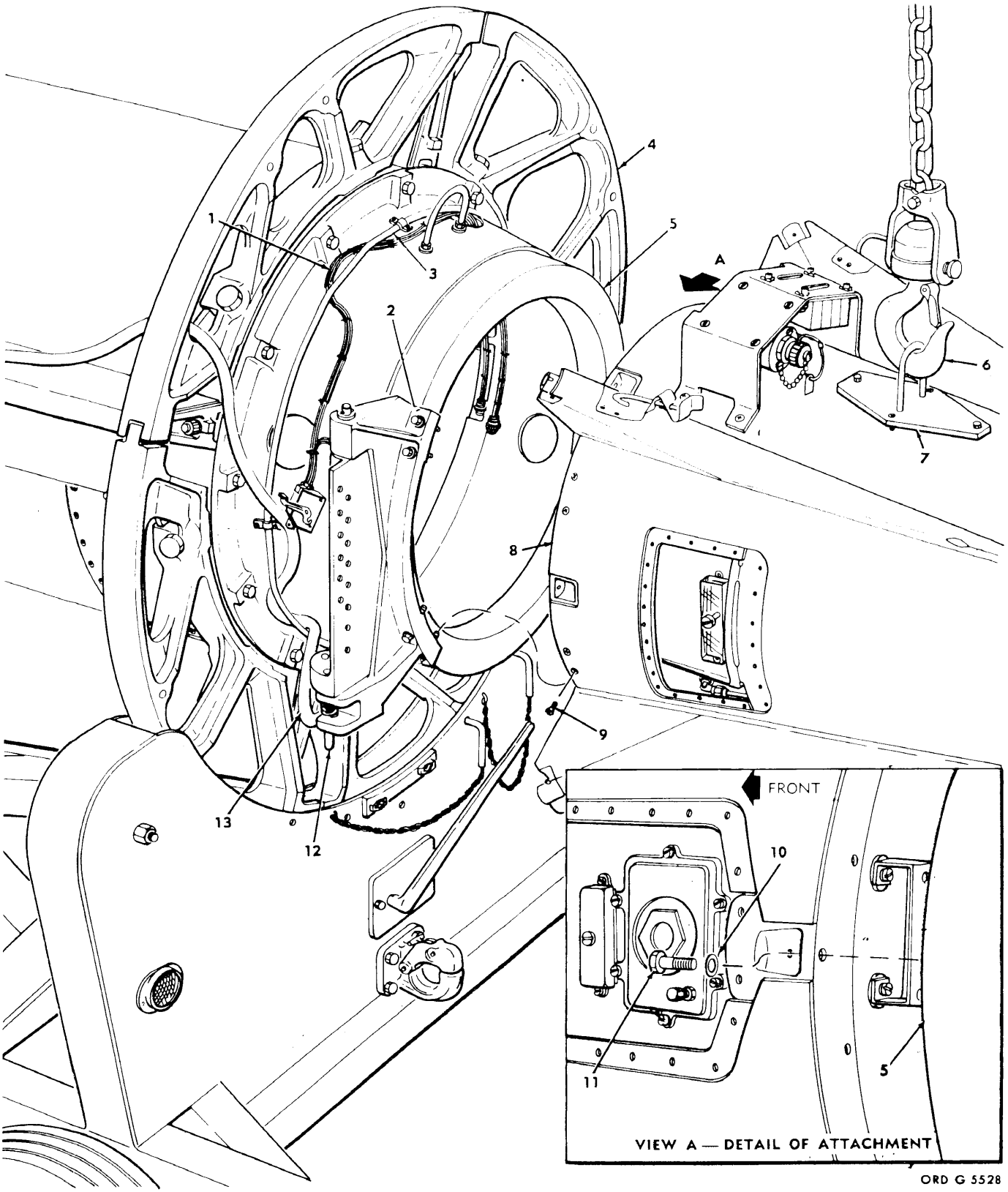
*e.* Attach the falling hook (5, fig. 3-28) of the hoisting device to the hoisting bolt (6) of the testing fixture (7), and slowly raise the fixture.

*f.* (Deleted).

*g.* Remove the two self-locking pins (view A, fig. 9-1) on the rear cradle of the missile body truck.

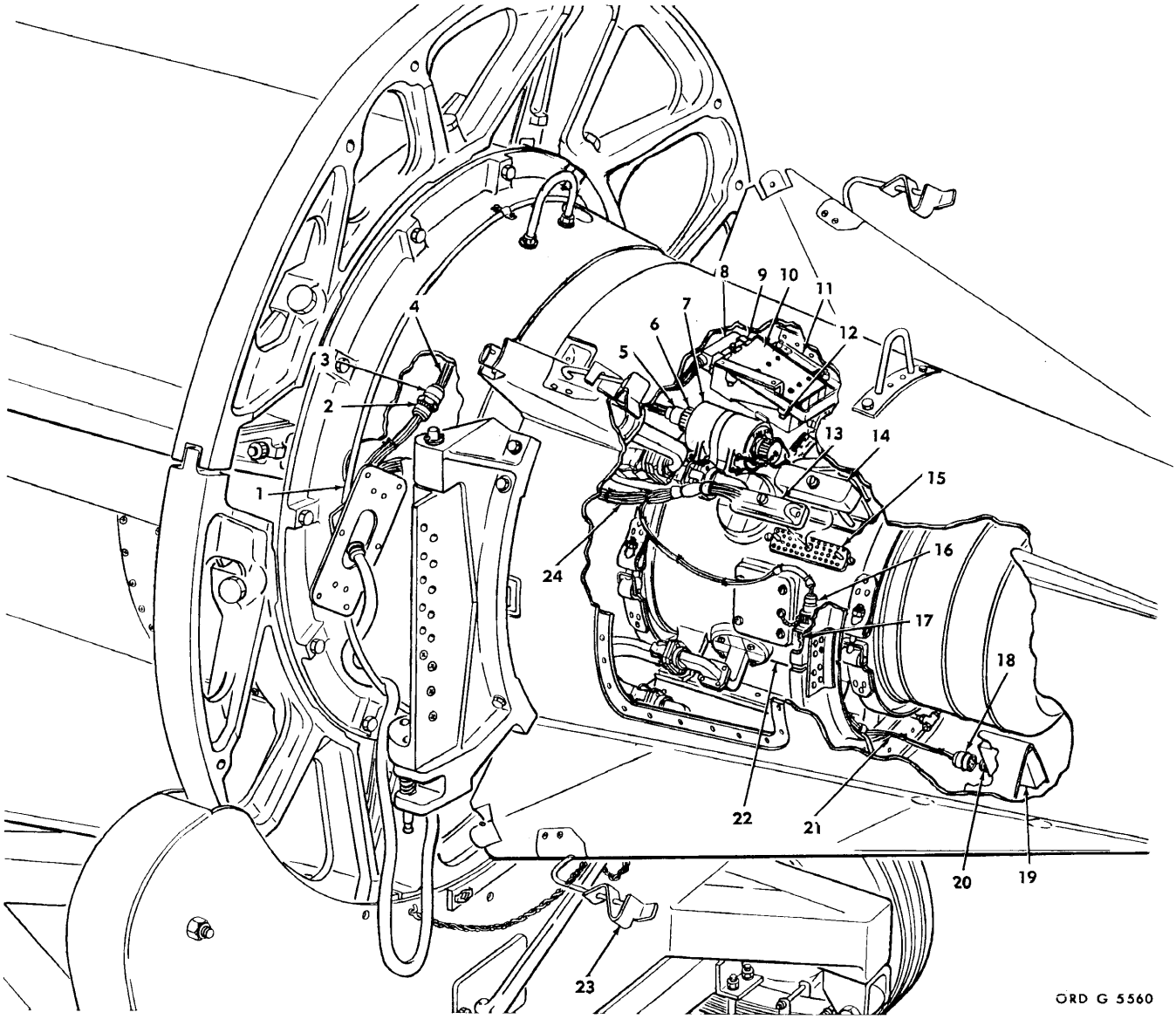
*Note.* Step *h* below is a convenient method of positioning the rear body section 24 degrees clockwise from flight position.

*h.* Rotate the rear body section 24 degrees clockwise so that the nine holes in the rear body section aline with the captive bolts (8, fig. 3-28) on the testing fixture.




1 — Fail-safe wiring harness
2 — Captive bolt (4)
3 — Shock cord
4 — Handling ring segment

*Figure 3-29. Removal and installation of the forward body section from the testing fixture.*




1—Shock cord
2—Connector P503
3—Connector J503
4—Fail-safe wiring harness
5—Connector P511
6—JUMPER connector J2
7—Sequential timer
8—Connector P502
9—Connector J1
10—Fail-safe control
11—Fail-safe control bracket
12—Captive screw (4)
13—Connector P1
14—Protective cover
15—Connector J1
16—Connector P513
17—Connector J513
18—Connector P177B
19—Safety-and-arming switch S30
20—Connector J177
21—Safety-and-arming switch wiring harness
22—Transponder control group
23—Closure
24—Transponder control group wiring harness

*Figure 3-30. Wiring harness connection for missile electrical checkout (missile 10306 through 11935).*

(9) Connect connector P511 to sequential timer JUMPER connector J2 (3).

*s.* Weave the warhead wiring harness (4, fig. 3-28) through the struts of the handling

5 — Testing fixture
6 — Falling hook
7 — Forward body section hoist
8 — Forward body section
9 — 1/4-28 x 27/32 fl-hd screw (4)
10 — 0.328-in-id fl washer
11 — 5/13-24 x 27/32 hex-hd bolt
12 — Hinge lock pin
13 — Transponder control group wiring harness

*Figure 3-29* — Continued.

*i.* Lock the rear body section in position on the missile body truck.

*i.1.* Position the testing fixture at the forward end of the rear body section.

*j.* Secure the testing fixture with the captive bolts, and torque the bolts to the value given in table 15-9.

*k.* Remove the falling hook from the testing fixture.

*l.* Remove the screws (9, fig. 3-29) from the testing fixture mounting holes on the forward body section and install them in the storage holes in the testing fixture.

**CAUTION: Insure that the hoisting device is secure.**

*m.* Position the hoisting device, and attach the falling hook (6) to the forward body section hoist (7).

*n.* Release the hand clamp (6, fig. 3-27) and the holddown strap (1) that secure the forward body section to the truck.

*o.* Lift the forward body section from the truck, and position it to the testing fixture; secure the right side of the fixture to the forward body section with the captive bolts (2, fig. 3-29). Torque the bolts to the value given in table 15-9.

*p.* Remove the falling hook from the forward body section hoist.

**CAUTION: Check the placement of the wiring harnesses before opening or closing the forward body section hinged to the testing fixture, to make certain they will not be damaged.**

**WARNING: Insure that the self-locking pins (view A, fig. 9-1) are inserted through the handling ring segment prior to performing q below.**

*q.* Swing the forward body section to the right until the hinge lock pin (12, fig. 3-29) snaps into the locked position.

*r.* Perform the operations listed in steps (1) through (9) below to connect the transponder-control group wiring harness (13, fig. 3-31).

**CAUTION: When performing steps (1) through (9) below, care must be taken not to damage the transponder control group wiring harness.**

(1) Remove the protective wrapping from the transponder control group wiring harness if it was not removed during inspection.

(2) Insert the transponder control group wiring harness through the hole in the testing fixture (12) near main fin 2 (8).

(3) Insert transponder control group wiring harness connector P1 (19) between the right side of the transponder control group (15) and the forward body section, and move connector P1 forward to the access opening.

(4) Remove the protective cover assembly (17) from transponder control group connector J1 (16).

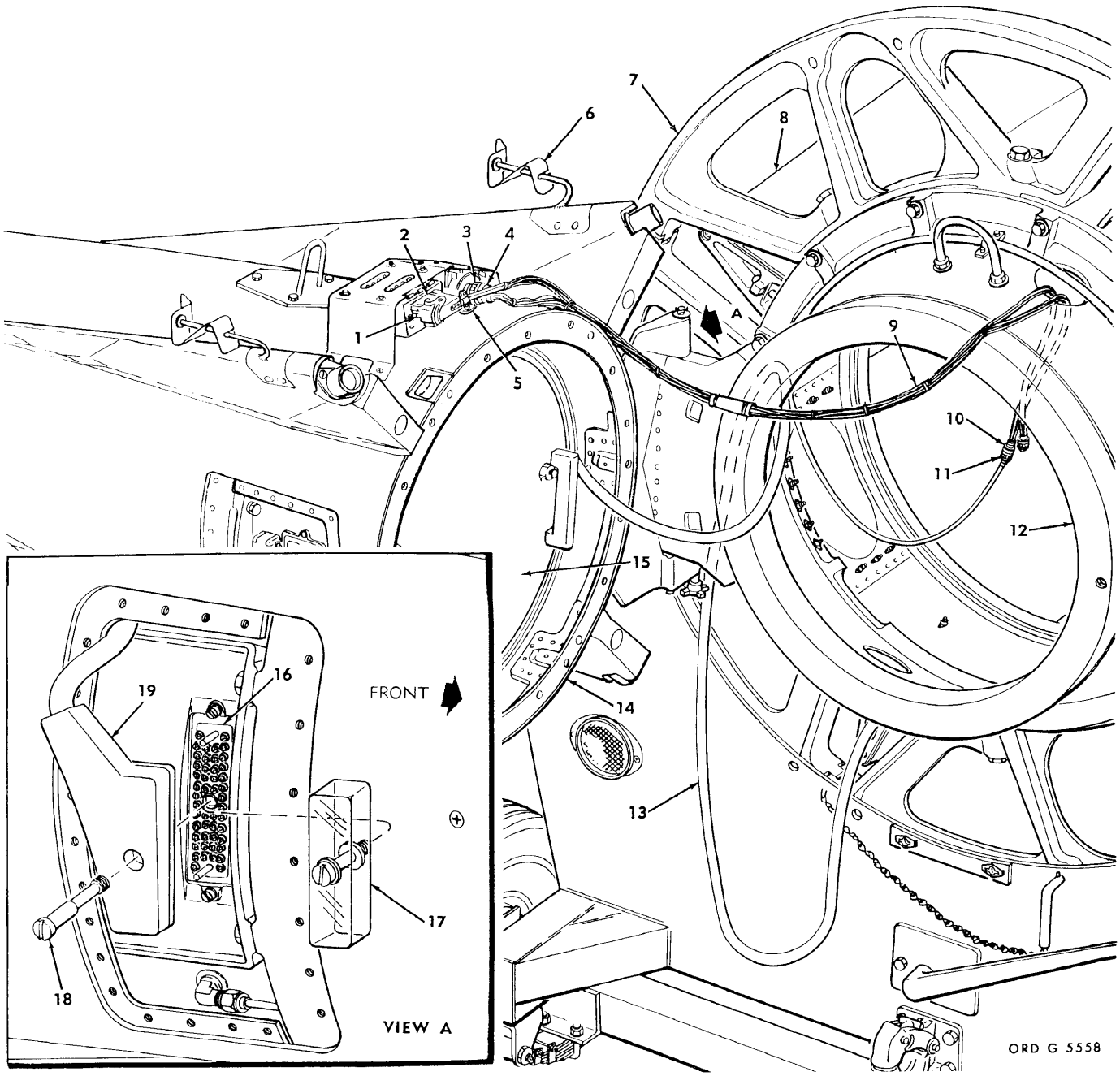
**CAUTION: Do not install the shoulder bolt (18) until connector P1 is properly positioned for attachment to transponder control group connector J1.**

(5) Insert the shoulder bolt through connector P1; install the gasket; and secure the connector to connector J1.

(6) Connect transponder control group wiring harness connector P503 (11) to fail-safe wiring harness connector J503 (10).

(7) Insert fail-safe wiring harness connectors P502 (2) and P511 (4) through the top hole in the testing fixture.

(8) Connect connector P502 to fail-safe control connector J1 (1). Secure the connection with the latch.




1—Fail-safe control connector J1
2—Fail-safe wiring harness connector P502
3—JUMPER connector J2
4—Fail-safe wiring harness connector P511
5—Sequential timer
6—Closure (4)
7—Handling ring segment
8—Main fin 2
9—Fail-safe wiring harness
10—Fail-safe wiring harness connector J503
11—Transponder control group wiring harness connector P503
12—Testing fixture
13—Transponder control group wiring harness
14—Forward body section
15—Transponder control group
16—Transponder control group connector J1
17—Protective cover assembly
18—1/4-28 x 13/16 shoulder bolt
19—Transponder control group wiring harness connector P1

*Figure 3-31. Wiring harness connections for missile electrical checkout (missiles 13001 and subsequent).*

ring segment (7, fig. 3-31) until all slack is taken up. Make certain that no part of the wiring harness extends beyond the outer edges of the handling ring segment. Secure the loose end of the wiring harness to one of the struts of the handling ring segment.

**CAUTION: When performing *t* below, do not allow slack of the fail-safe wiring harness (9, fig. 3-31) to be pinched between the forward body section and the testing fixture.**

*t.* Swing the forward body section (14) to the left until the hinge lock pin snaps into the locked position.

CAUTION: Lift and support the forward body section while installing and tightening the hexagon-head bolt in *u* below.

*u.* Secure the left side of the forward body section to the testing fixture with the hexagon-head bolt and flatwasher.

*v.* Remove the self-locking pins (view A, fig. 9-1), and rotate the rear body section to the normal flight position. Replace the self-locking pins.

*Table 3-2. Missile Body External Markings*

| *Markings* | *Missile body reference station* | *Between the fins number* |
|---|---|---|
| U.S. ARMY SERIAL NO. | 150.000 | 2 and 3 |
| | | 1 and 4 |
| BODY GM MIM-14A[1] or 14B[4] | 63.750 | 2 and 3 |
| | | 1 and 4 |
| APS EXHAUST | 259.337 | 2 and 3 |
| Caution: | | |
| DISCONNECT WAVEGUIDE & RAM PRESSURE TUBES BEFORE REMOVING FIN | 87.500 | 2 and 3 |
| | | 1 and 4 |
| IGNITOR | 156.125 | 2 and 3 |
| GROUND POWER RECEPTACLE | 255.000 | 3 and 4 |
| GUIDANCE TEST AND ADJUST ACCESS DOOR | 76.500 | 1 and 4 |
| Caution: | | |
| DONOT USE IMPACT SCREWDRIVER FOR REMOVING THIS DOOR | | |
| J1 + XMTR ACCESS DOOR | 76.500 | 2 and 3 |
| Caution: | | |
| DO NOT USE IMPACT SCREWDRIVER FOR REMOVING THIS DOOR | | |
| [1]INERTIA SWITCH AND ADJUST ACCESS DOOR | 68.500 | 1 and 4 |
| Caution: | | |
| DO NOT USE IMPACT SCREWDRIVER FOR REMOVING THIS DOOR | | |
| APS SERVICE DOOR[5] or HPU SERVICE DOOR[5] | 277.431 | 2 and 3 |
| ARMING MECHANISM INDICATES LOCKED POSITION | 94.250 | 3 and 4 |
| Caution: | 175.250 | 1 and 4 |
| REMOVE DOOR BEFORE INSTALLING OR REMOVING MOTOR | 212.250 | 2 and 3 |
| [2]USE BA472 BATTERY | 285.875 | 1 and 4 |
| MISSILE LOT NO. XXXX | 150.000 | 1 and 4 |
| [3]AFT BODY LOT NO. XXXX | 150.000 | 1 and 4 |
| LOT NO. XXX | 87.500 | 1 and 4 |
| 4-in. color code square | 216.000 | 1 and 4 |
| | | 1 and 2 |
| | | 2 and 3 |
| | | 3 and 4 |

[1] On missiles 10206 through 11935.
[2] On missiles 13684 and subsequent.
[3] On missiles 10206 through 11935 and 13001 through 15975.
[4] On missiles 13001 and subsequent.
[5] Use the appropriate marking.

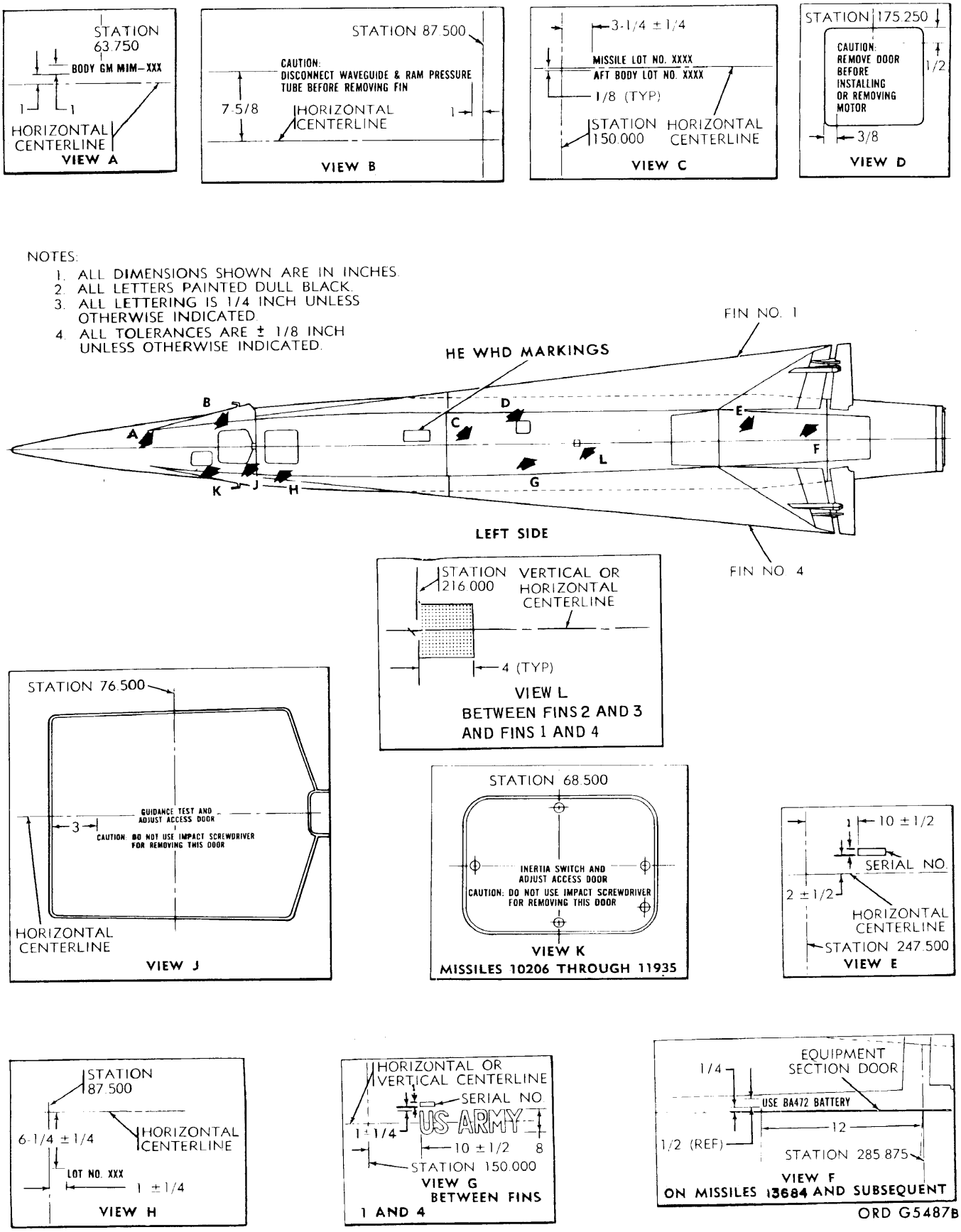



*Figure 3-32. Missile body—external markings.*

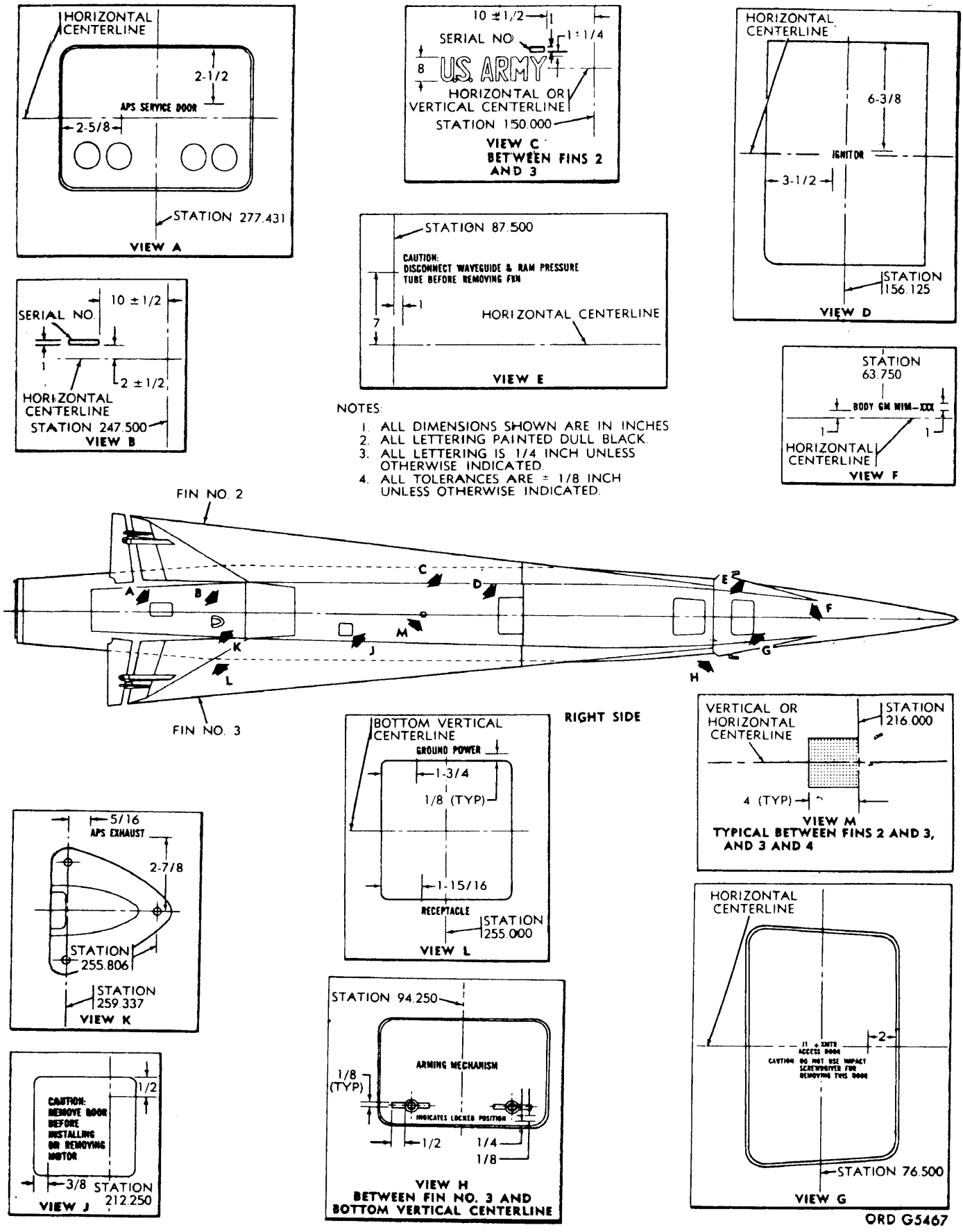



*Figure 3-33. Missile body — external markings.*