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E716

TO 1F-4C-35

TECHNICAL MANUAL

**NON-MUNITIONS ACCESSORIES
INSTALLATION, CHECKOUT, AND
REMOVAL PROCEDURES**

**USAF SERIES F-4C, F-4D, F-4E AND
RF-4C AIRCRAFT**

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INTRODUCTION

The purpose of this technical manual is to provide safe and reliable procedures for installing tanks, tow targets, ECM/chaff pods, camera pods, data link pods, pave knife pods and baggage pods on F-4C/D/E and RF-4C AIRCRAFT and target designator set on F-4D AFTER TO 1F-4D-566 and F-4E AFTER TO 1F-4E-588.

Operational checks must be performed on installed accessories/systems at least every 30 days if aircraft was not reconfigured or more frequently if directed by the local commander. Operational checks must be performed when the aircraft is reconfigured, when the system has malfunctioned, or when trouble is suspected. When performing stray voltage checks on aircraft circuits connect a 100-ohm 25-watt resistor between the positive and negative test leads of the meter. When performing voltage checks on aircraft circuits operating at less than 60 volts, leads with a 100-ohm 25-watt resistor connected may be used in lieu of standard leads.

The following definitions apply to the warnings, cautions and notes that appear in this manual.

WARNING

Operating procedures, practices, etc., which may result in personnel injury or loss of life if not correctly followed.

CAUTION

Operating procedures, practices, etc., which if not strictly observed may result in damage to equipment.

NOTE

Operating procedures, conditions, etc, which are essential to high-light.

When procedures outlined in this manual conflict with other directives, procedures in this manual will take precedence, except for the dash 1 flight manual. Compliance with procedures in this manual is mandatory.

F-4C/D/E aircraft modified in accordance with T O 1F-4C-522 have the capability to carry the RMU-8/A Tow Reel System. The DCU-94/A panel is replaced with RMU-8/A Tow Reel Control Panel.

F-4D AIRCRAFT BLOCK 30 66-7505 AND UP, ALSO BLOCK 28 65-722 THRU 65-727, modified by T O 1F-4D-559 are the only aircraft with data link pod capabilities.

F-4D aircraft modified by TO 1F-4D-566 and F-4E aircraft modified by TO 1F-4E-588 are the only aircraft with the capability of utilizing Target Designator Set, AN/AVQ-23A.

Recommendations proposing changes to this technical manual shall be submitted on AFTO Form 22 in accordance with TO 00-5-1 to the major command for approval and forwarded to 00/ALC (MMEDTM), Hill AFB, Utah 84406.

The following list indicates the section, title and related checklists applicable to each accessory contained in this manual:

MANUAL SECTION	SECTION TITLE	APPLICABLE CHECKLIST
I	SUPPLEMENTARY INFORMATION	T O 1F-4C-35CL-1 (Not Used)
II	EXTERNAL FUEL TANKS, C/L AND OUTBOARD WING STATIONS	T O 1F-4C-35CL-2
III	LAUNCHER TOW SYSTEM REEL, RMU-8/A	T O 1F-4C-35CL-3
IV	TOW SYSTEM, (DART), A/A-37U-15	T O 1F-4C-35CL-4

MANUAL SECTION

SECTION TITLE

APPLICABLE CHECKLIST

V	ECM PODS, AN/ALQ-71, AN/ALQ-72, AN/ALQ-87, AN/ALQ-101(V), AN/ALQ-101(V)-6, -8, -9, AN/ALQ-119(V), -4, -5, -6, -7, -8, -9, -10, -11, -12, -14, AND CHAFF DISPENSER, AN/ALE-38	TO 1F-4C-35CL-5
VI	CAMERA MODULE, KB-18A	TO 1F-4C-35CL-6
VII	DATA LINK POD, AN/AWG-16	TO 1F-4C-35CL-7
VIII	DELETED	
IX	CARGO CARRIERS	TO 1F-4C-35CL-9
X	TARGET DESIGNATOR SET, ELECTRO-OPTICAL, AN/AVQ-23	TO 1F-4C-35CL-10

PART 3

ACCESSORY DESCRIPTION

1-35. GENERAL.

1-36. The following paragraphs contain general and descriptive information for the non-munition accessories that can be installed on F-4C/D/E AND RF-4C AIRCRAFT. Physical characteristics such as weight, length, height or diameter are provided for each accessory.

1-37. ELECTRONIC COUNTERMEASURES (ECM) PODS.

1-38. Electronic countermeasures pods are designed to enable fighter aircraft to penetrate enemy radar controlled air defense systems and perform their mission of strike, reconnaissance, or air intercept. The enemy air defense system consists of AAA, SAM, and fighter aircraft. Electronic jamming provided by pods denies the enemy control systems and data necessary for them to function. Specific threat jamming capabilities are determined by pre-mission pod selection, ground crew adjustments, selectable modes of operation, and pod configuration. The pods are attached to a bomb rack or adapter by suspension lugs spaced 14 or 30 inches apart, depending on which pod is utilized.

1-39. DIFFERENCE BETWEEN PODS. See figure 1-4.

a. AN/ALQ-71 Pod. These pods are designed to deny information to certain radar controlling air defense weapons. The system contains a self contained power source. Aircraft have been equipped to supply internal aircraft power to the pods.

b. Deleted.

c. AN/ALQ-72 Pod. These pods are designed to deny range information to airborne I - band radars. The pod is furnished power by a self contained ram air turbine (RAT). Aircraft have been equipped to supply 28Vdc power to the pod for controlling and monitoring.

The pod contains one receiver and one transmitter. Operation may be manual or automatic, depending upon the position of the pod mode switch; ACTIVE or NORMAL. The pod will jam continuously in the ACTIVE mode. When the pod is in NORMAL, the receiver can detect and analyze a threat signal and tunes the transmitter to a specific frequency.

d. AN/ALQ-87 Pod. The AN/ALQ-87 ECM pod is designed to operate against specific band radars. The pod is furnished power by a self contained RAT. Aircraft have been equipped to supply 28Vdc power to the pod for controlling and monitoring.

The pod contains multiple combinations for manual or automatic operation. Four modes of operation are available against various counters. The selection for mode of operation is performed by the ground crew before flight.

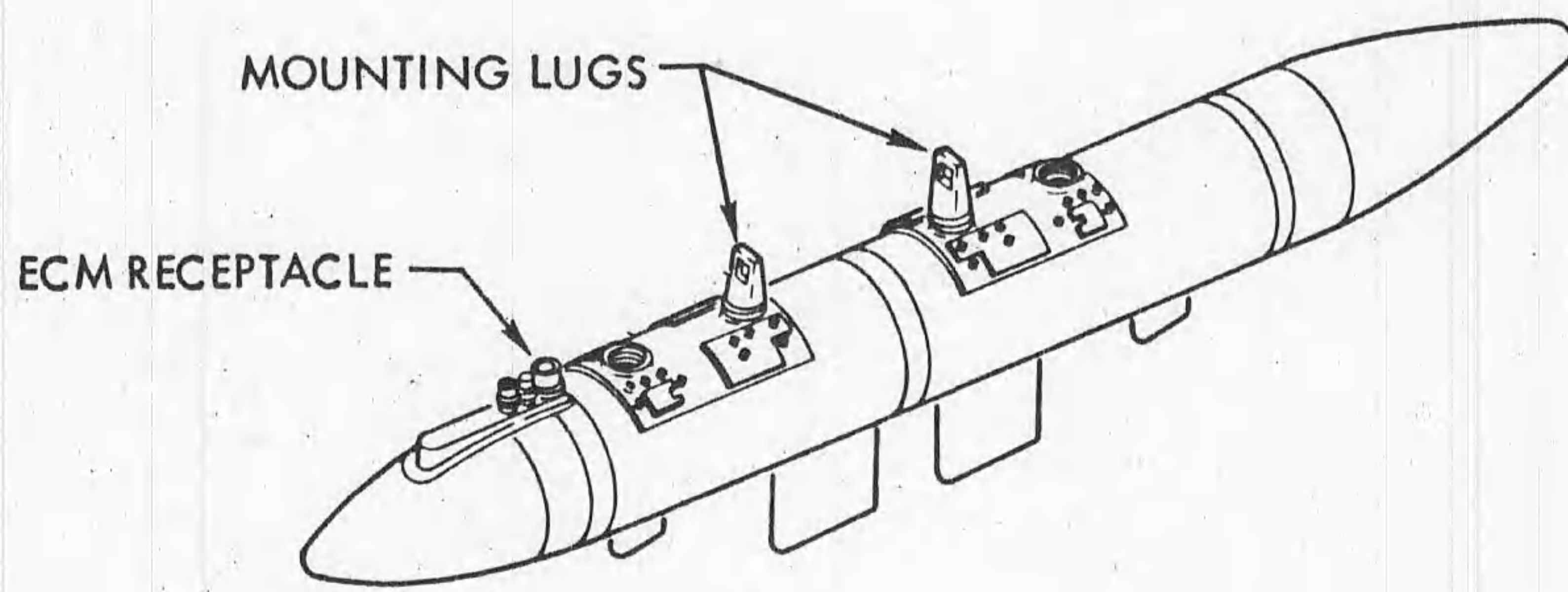
e. AN/ALQ-101(V), AN/ALQ-101(V)-6 Pod. The AN/ALQ-101(V), AN/ALQ-101(V)-6 ECM pod is designed to counter air defense weapons radar operating in certain bands. The pod also has the capability to cause premature functioning of some air defense weapons. The pod is furnished power by a self contained RAT. Aircraft have been equipped to supply 28Vdc to the pod for controlling and monitoring.

The pod is operated by the aircrew in either automatic or manual mode. There are four frequency bands to counter air defense weapon fuzes and radar.

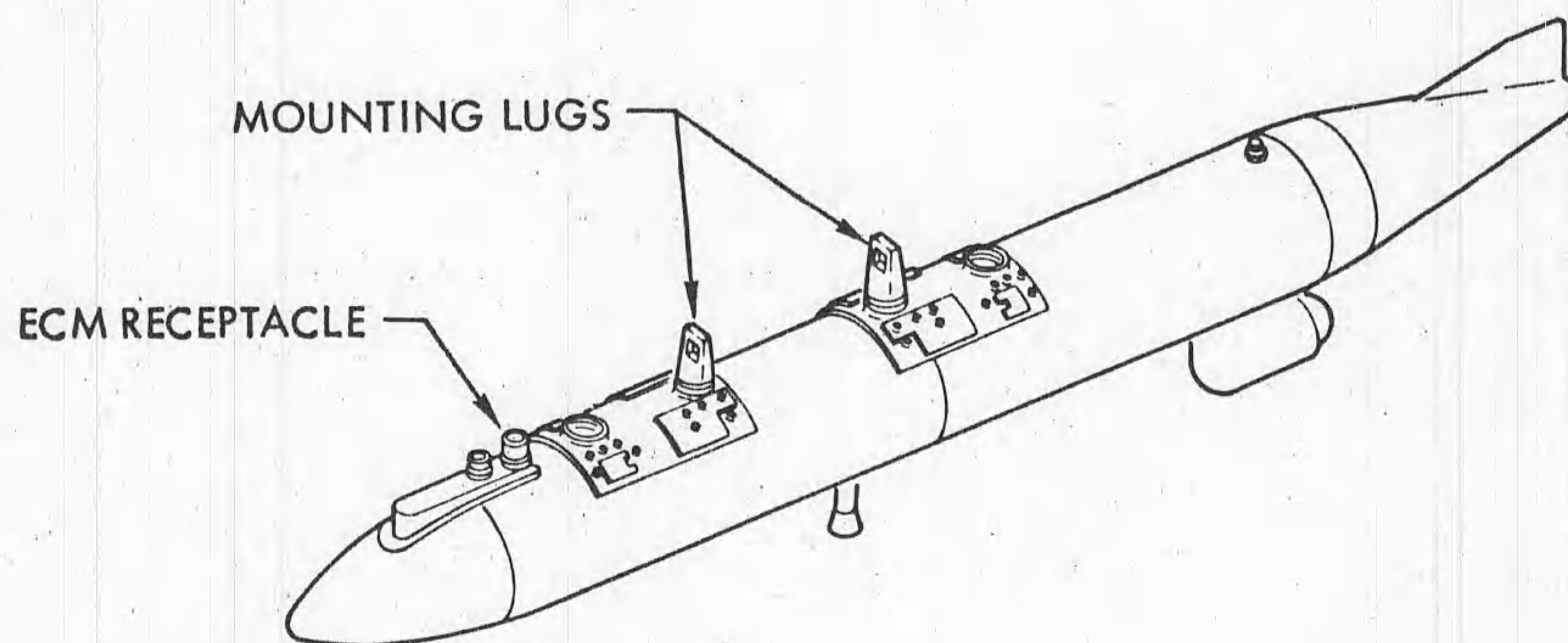
f. AN/ALQ-101(V)-8 Pod. The AN/ALQ-101(V)-8 pod is an electronic countermeasures pod designed to be carried externally on aircraft. Each AN/ALQ-101(V)-8 pod (long configured), can be adapted into two configurations for specific tactical mission requirements.

g. AN/ALQ-101(V)-9 Pod. The AN/ALQ-101(V)-9 pod is an electronic countermeasures pod designed to be carried externally on aircraft. Each AN/ALQ-101(V)-9 pod (long configured) can be adapted into three configurations for specific tactical mission requirements.

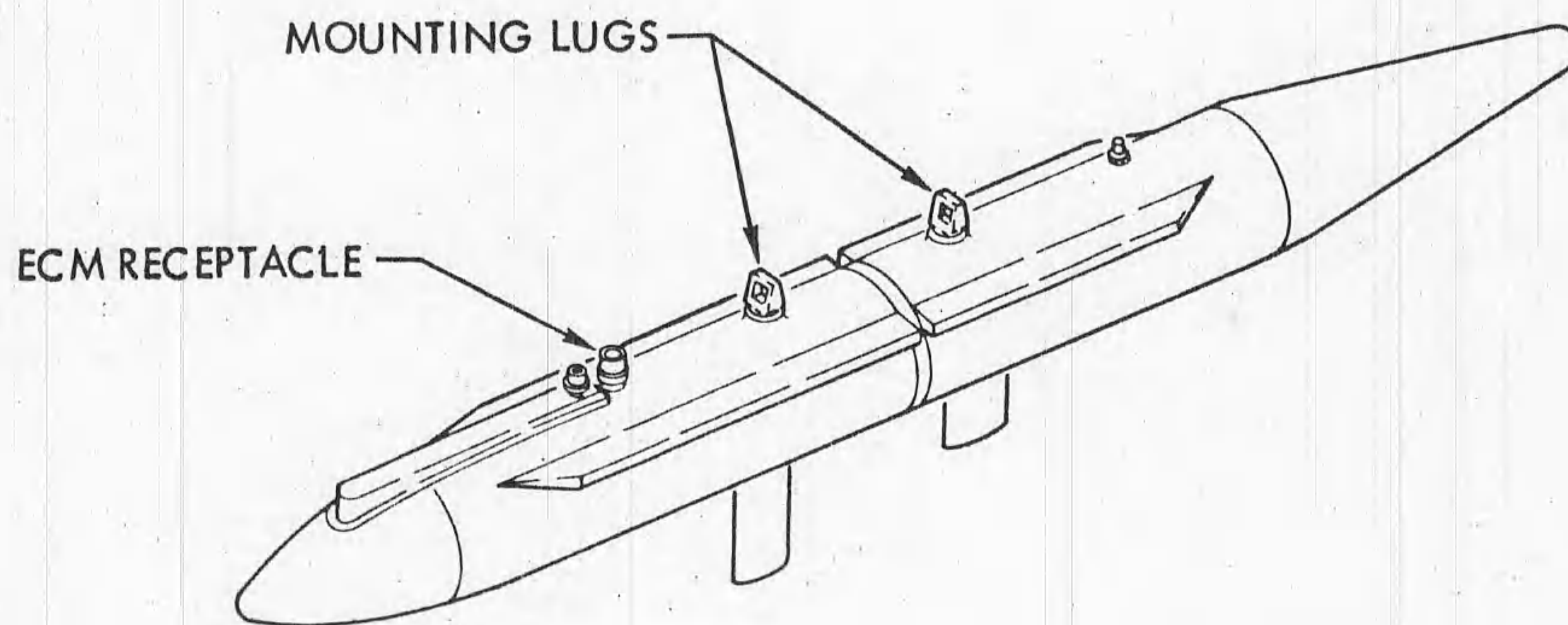
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AN/ALQ-71



AN/ALQ-72



AN/ALQ-87

Figure 1-4. ECM Pods (Sheet 1 of 2)

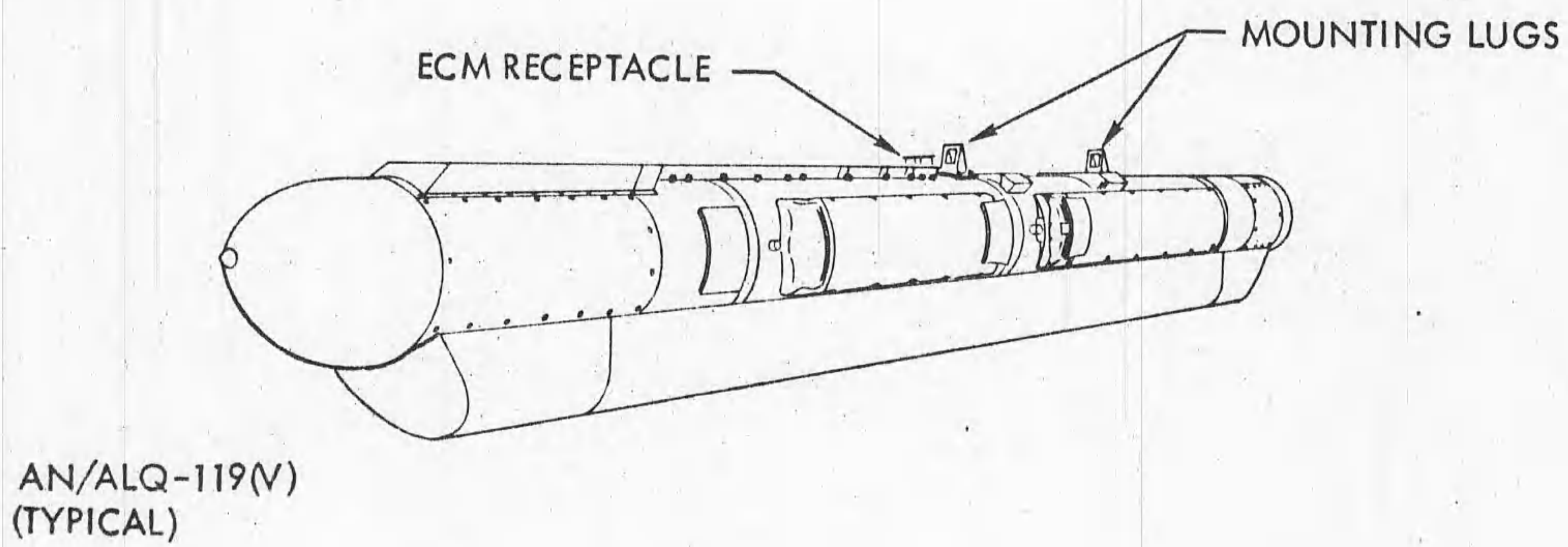
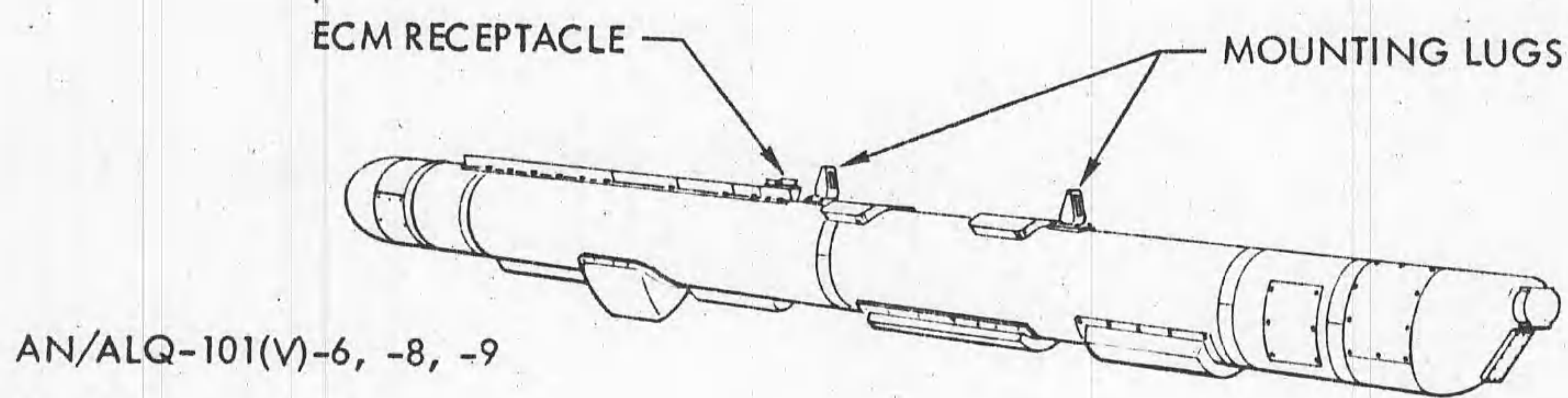
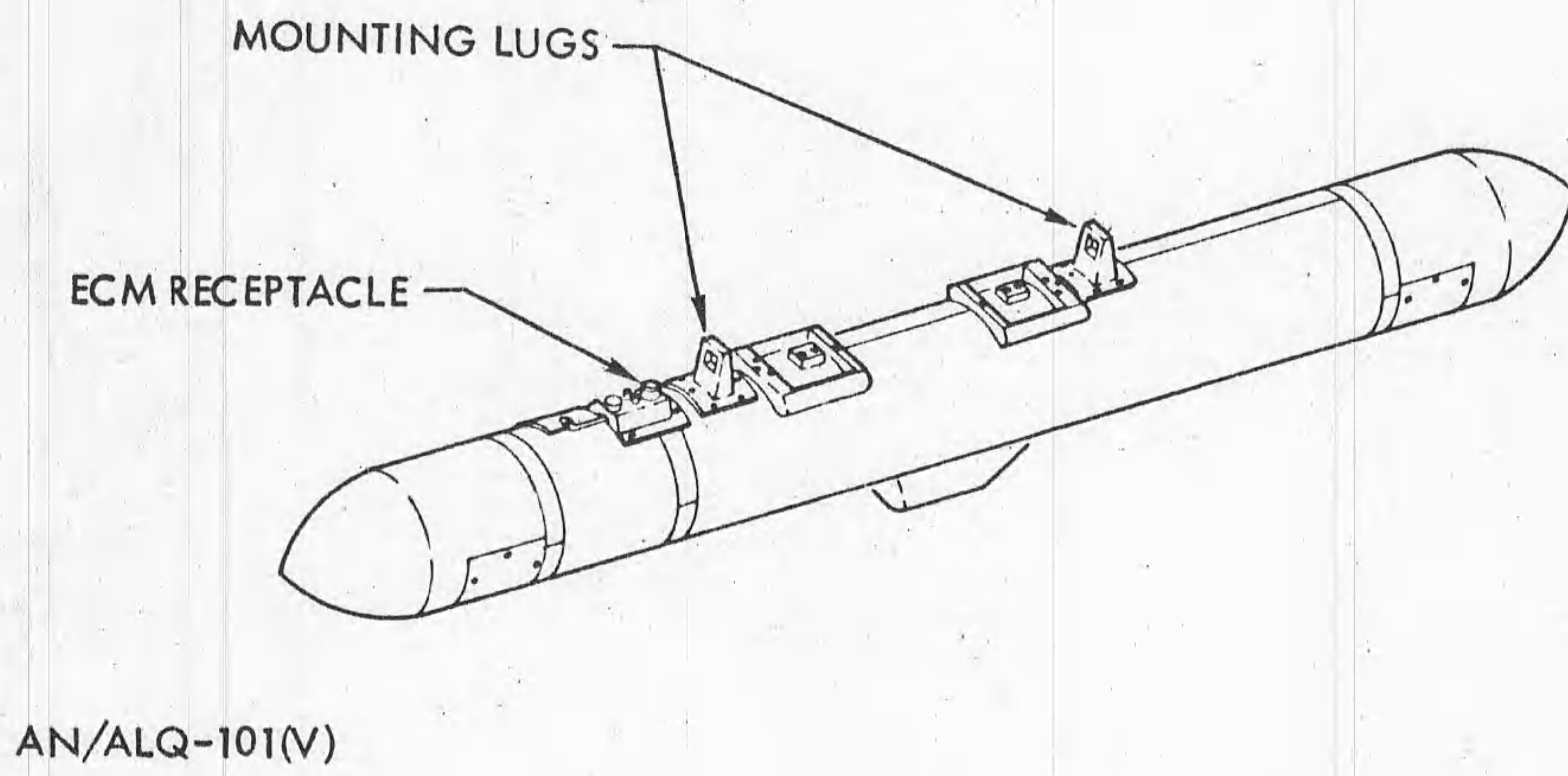


Figure 1-4. ECM Pods (Sheet 2 of 2)

1-40. PHYSICAL CHARACTERISTICS (APPROXIMATE).

	Weight	Length	Diameter
AN/ALQ-71	200 pounds	91.37 in.	10 in.
AN/ALQ-72	200 pounds	99 in.	10 in.
AN/ALQ-87	300 pounds	107 in.	10.5 in.
AN/ALQ-101(V)	240 pounds	100 in.	10 in.
AN/ALQ-101(V)-6	393 pounds	156 in.	10 in.
AN/ALQ-101(V)-8	540 pounds	151 in.	10 in.
AN/ALQ-101(V)-9	320 pounds	112 in.	10 in.
AN/ALQ-119(V)-4, -7, -10, -12	565 pounds	154 in.	10 in.
AN/ALQ-119(V)-5, -8	307 pounds	104 in.	10 in.
AN/ALQ-119(V)-6, -9, -11, -14	392 pounds	114 in.	10 in.

1-41. GUIDED WEAPON MONITOR CONTROL SET AN/AWG-16.

1-42. The data pod (Guided Weapon Monitor - Control Set) (see figure 1-5) provides a two-way data link between the launch aircraft and the (WALLEYE) weapon after the weapon is launched from the aircraft. The data pod consists of a transmitter, electronic package, receiver, and an antenna system capable of transmitting (command) or receiving (video) signals. Special test equipment, such as the AN/DSM-94 and AN/AWM-59 test sets (see figure 1-1) and related ground support equipment, such as handling equipment and containers, will be used in conjunction with the data pod. The pod is attached to the bomb rack by suspension lugs spaced 14 inches apart.

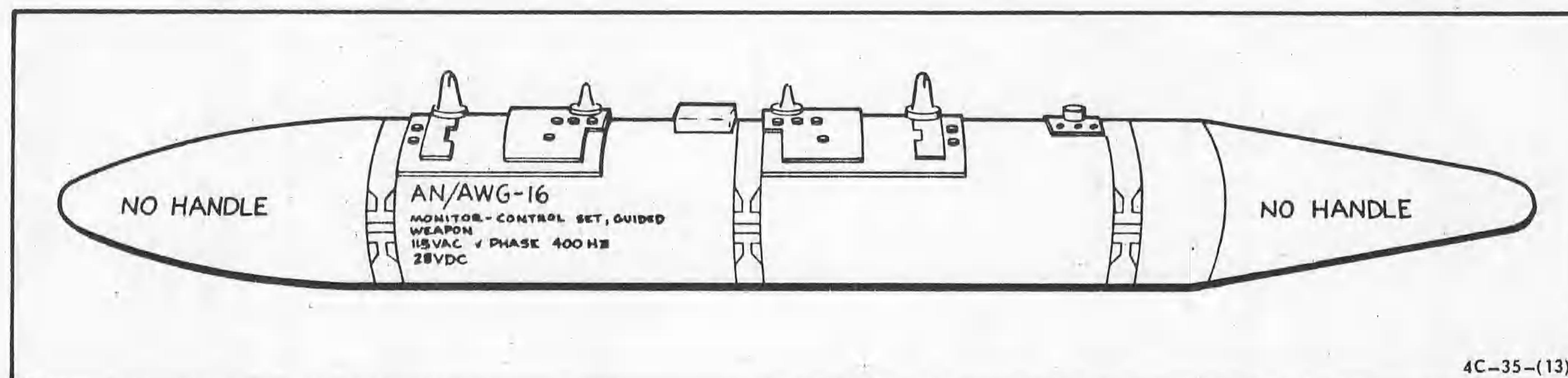


Figure 1-5. AN/AWG-16 Guided Weapon Monitor Control Set

1-43. PHYSICAL CHARACTERISTICS (APPROXIMATE).

- a. Weight: 168 pounds (Loaded)
- b. Length: 91.87 inches
- c. Diameter: 10 inches

1-44. TOW TARGET SYSTEM.

1-45. RMU-8/A TOW SYSTEM. See figure 1-6. The tow system is a semi-automatic tow reel and target launching mechanism for use in target towing from high performance aircraft. The tow system consists of a ram air turbine powered reel launcher, control panels, tow line and a target weighing 20 to 240 pounds. The reel launcher is installed on the centerline station of the aircraft.

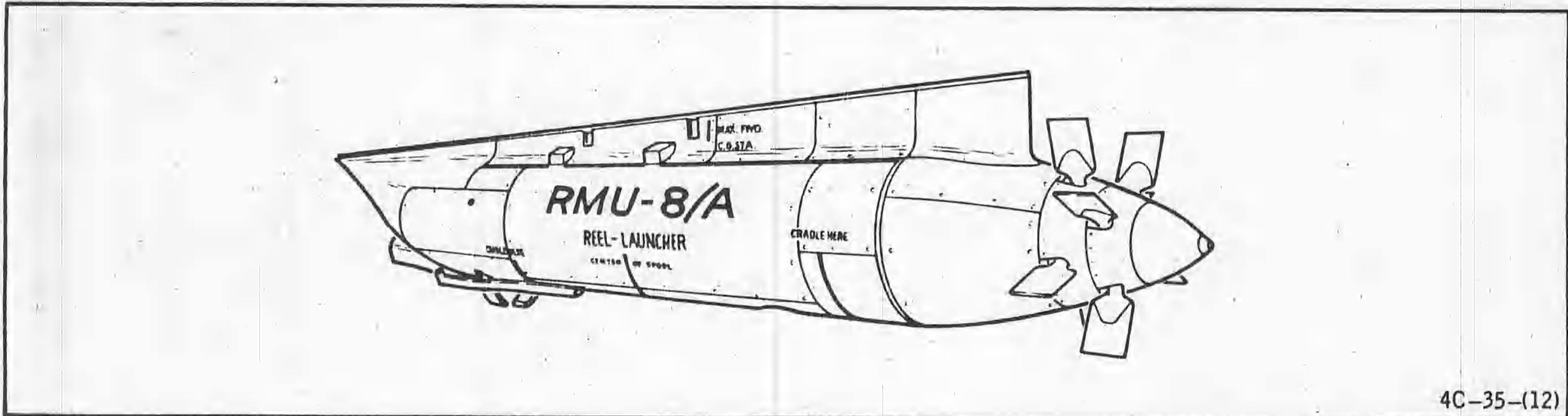


Figure 1-6. RMU-8/A Tow System

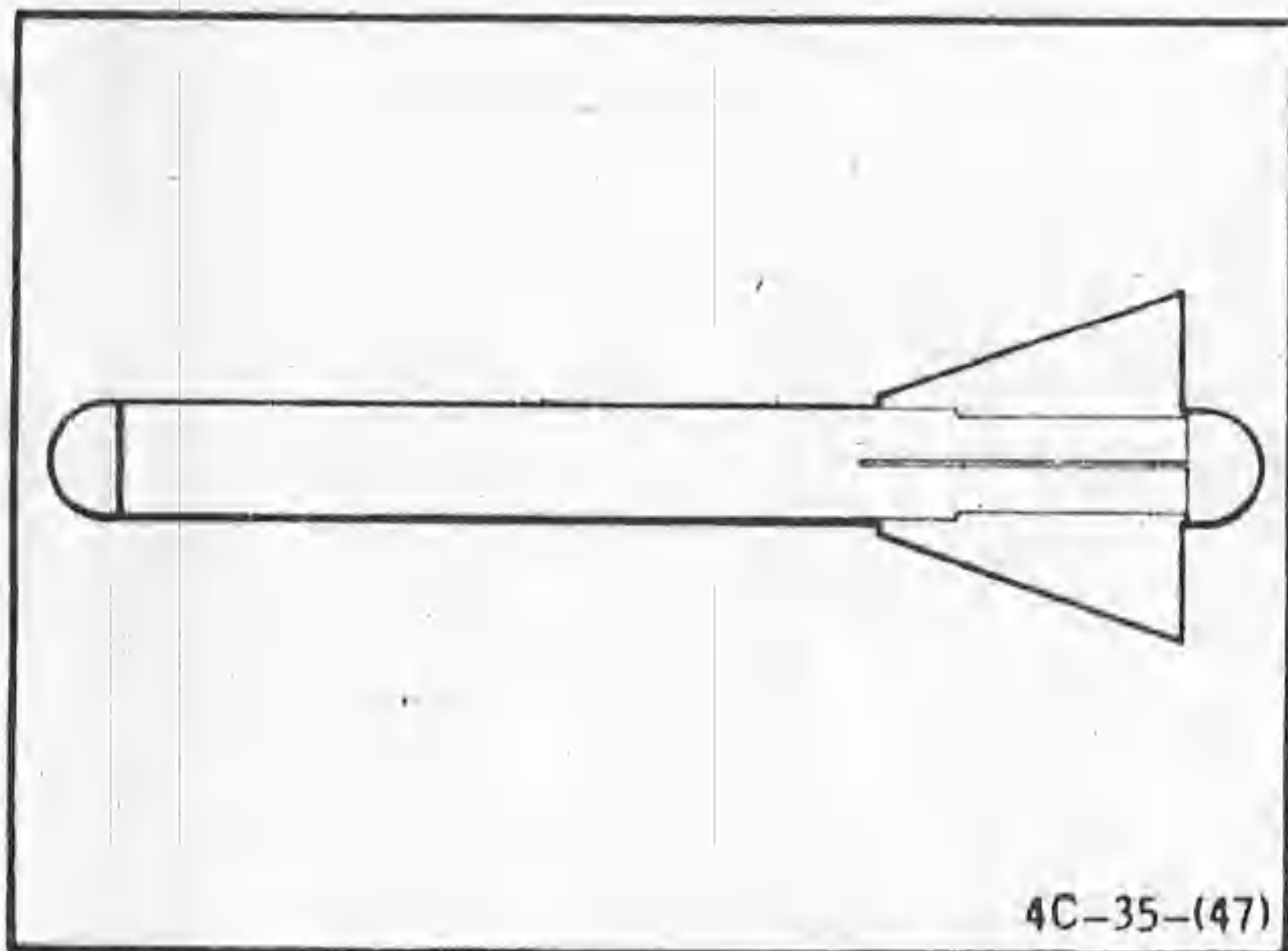


Figure 1-7. TDU-22A/B Tow Target

1-46. TDU-22A/B TOW TARGET. See figure 1-7. The TDU-22A/B tow target is towed from the RMU-8/A reel launcher. The target is capable of carrying four flares. Flare ignition is accomplished by a transmission from the UHF radio in the aircraft.

1-47. PHYSICAL CHARACTERISTICS (APPROXIMATE).

	RMU-8/A	TDU-22A/B
a. Weight:	1800 lbs	43 lbs with flares 38 lbs w/o flares
b. Length:	160 in.	76.8 in.
c. Diameter:	20 in.	7 in.

1-48. A/A 37U-15 TOW SYSTEM. See figure 1-8. The tow system consists of a tow reel pod, a tow reel, a boom and launcher for installing the TDU-10/B or modified K11 targets, and facilities for incorporating a parachute recovery system for the target. The system is installed on the left outboard MAU-12B/A pylon.

1-49. TDU-10/B TOW TARGET. See figure 1-9. The TDU-10/B target consists of four fins or wings mounted together to form a dart like shape. A bridle cable loop and 25 to 30 feet of nylon rope form a leader assembly between the tow cable and the target. The bridle loop is attached to the target and the nylon rope attaches to reel cable and bridle loop.

1-50. PHYSICAL CHARACTERISTICS (APPROXIMATE).

	Target Pod	Target
a. Weight:	482 lbs	195 lbs
b. Length:	13.4 ft.	16 ft.
c. Diameter:	18 in.	

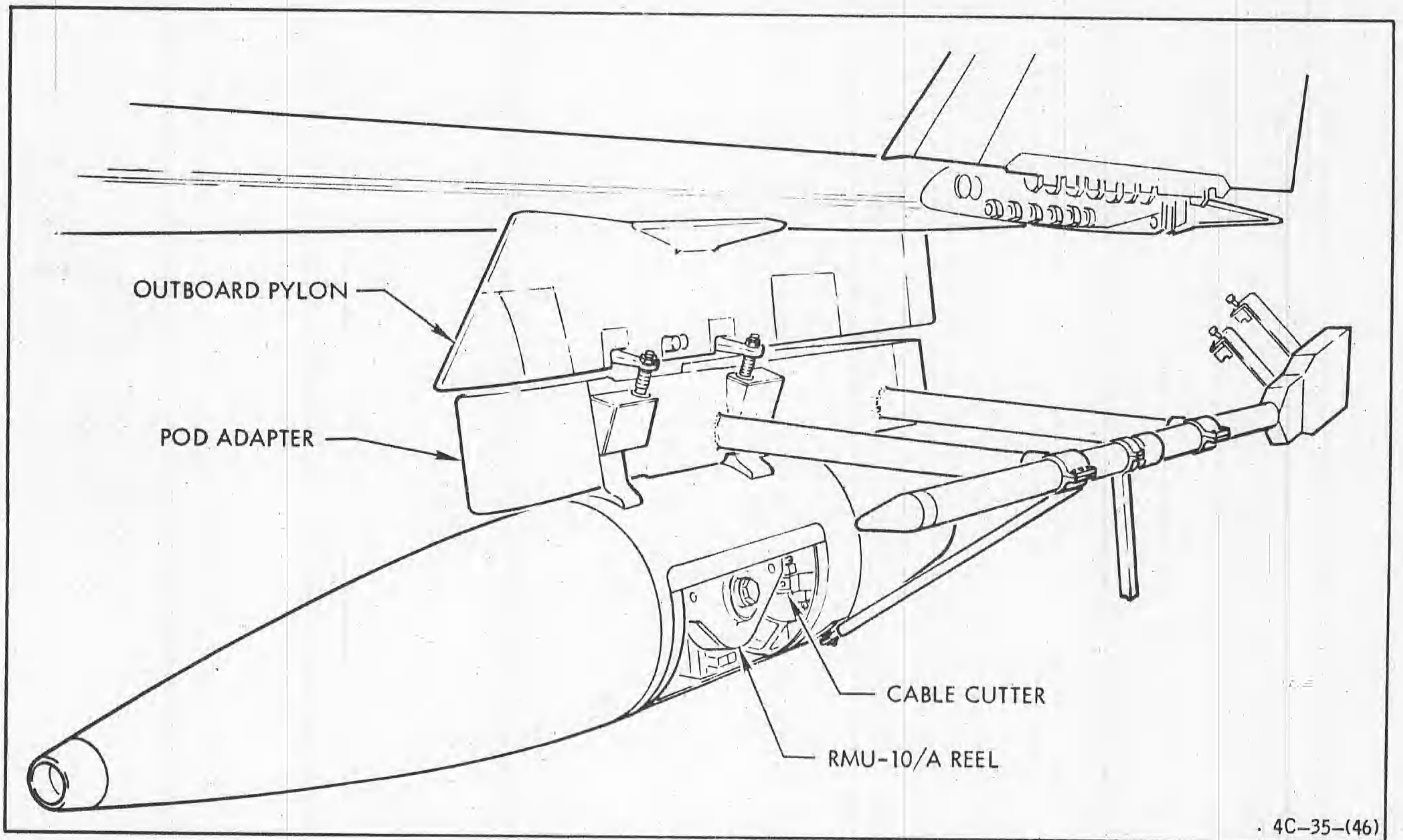


Figure 1-8. AA/37U-15 Tow Target System

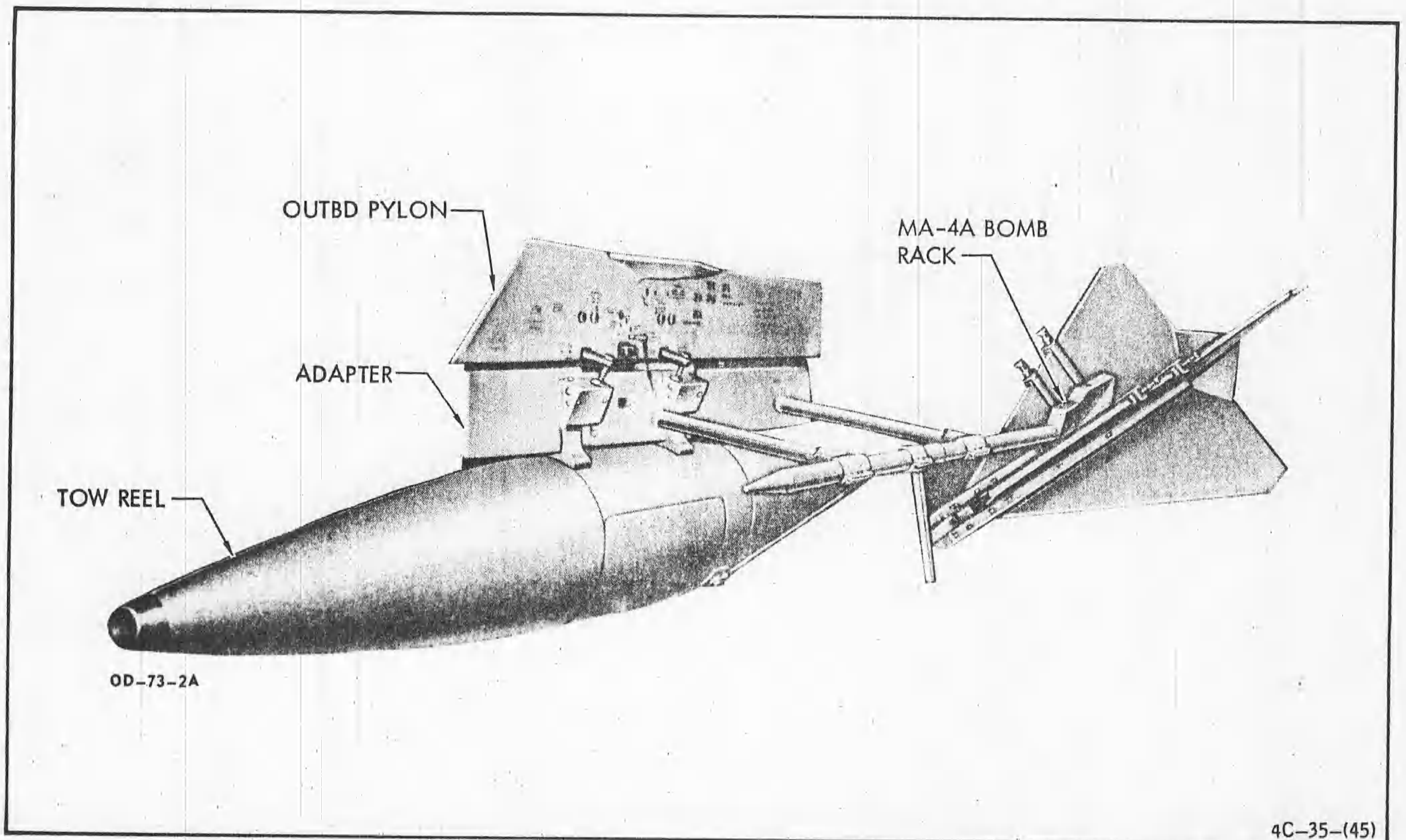
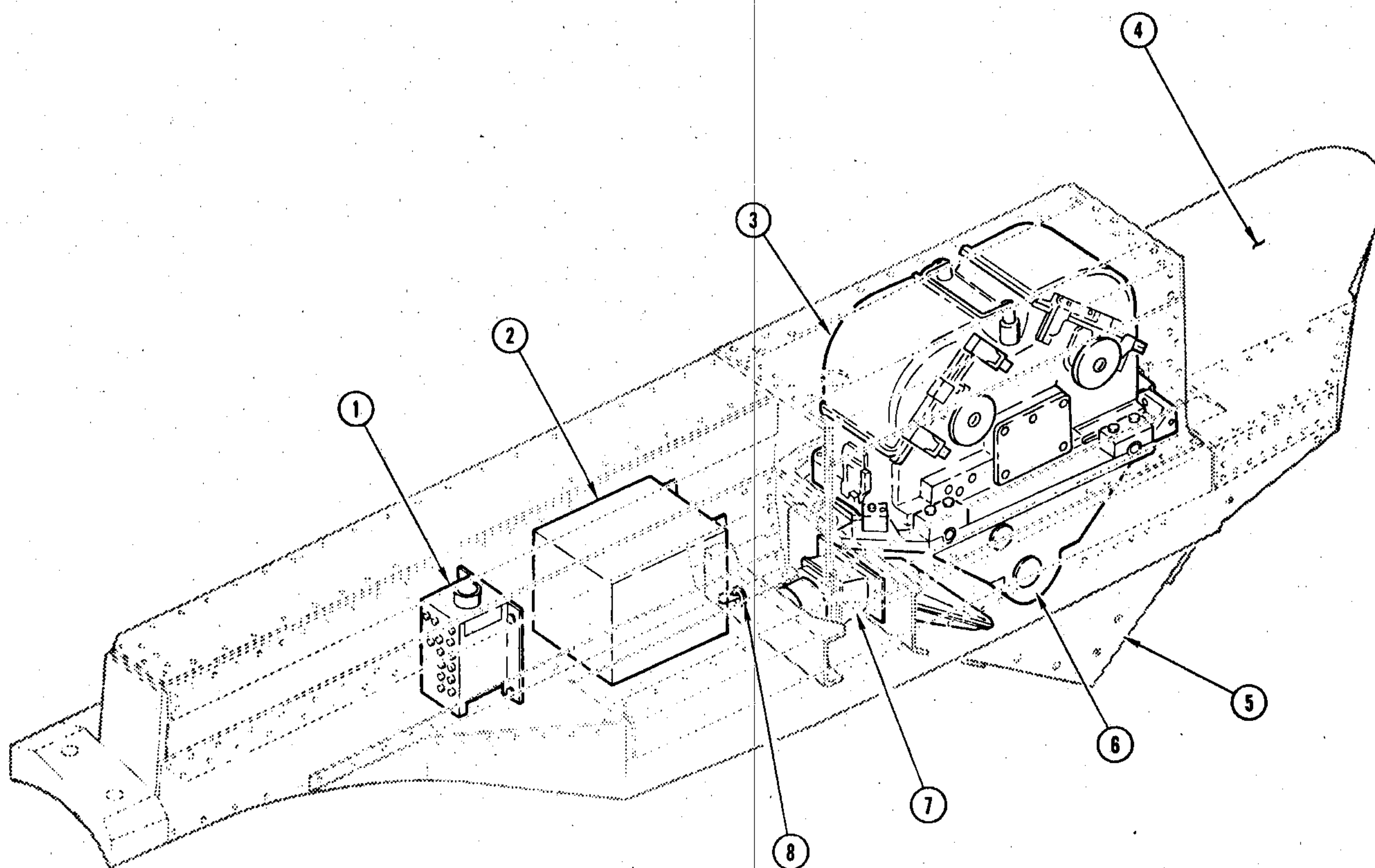


Figure 1-9. TDU-10/B Tow Target



- 1. CAMERA RELAY PANEL
- 2. CAMERA CONTROL BOX
- 3. CAMERA MAGAZINE
- 4. CAMERA POD
- 5. CAMERA DOOR AND WINDOW
- 6. CAMERA BODY
- 7. DEFOG ASSEMBLY
- 8. HEATER TEST ASSEMBLY

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Figure 1-10. KB-18A Camera Module

1-51. KB-18A CAMERA MODULE. See figure 1-10.

1-52. The KB-18A camera module contains a panoramic camera, and provides continuous film documentation of the strike area throughout an air to ground armament delivery. The module can be installed in either the right or left missile well.

1-53. EXTERNAL FUEL TANKS. CENTERLINE AND OUTBOARD WING STATIONS.

1-54. CENTERLINE FUEL TANK. See figure 1-11. The centerline fuel tank is a single compartment tank with a capacity of 600 gallons suspended by two lugs in the 30 in. hooks of the Aero 27A/BRU5/A bomb rack. The tank has an extended fairing that encloses the electrical connector, air and fuel line, and lugs and extend rearward to the location of two stabilizing fins.

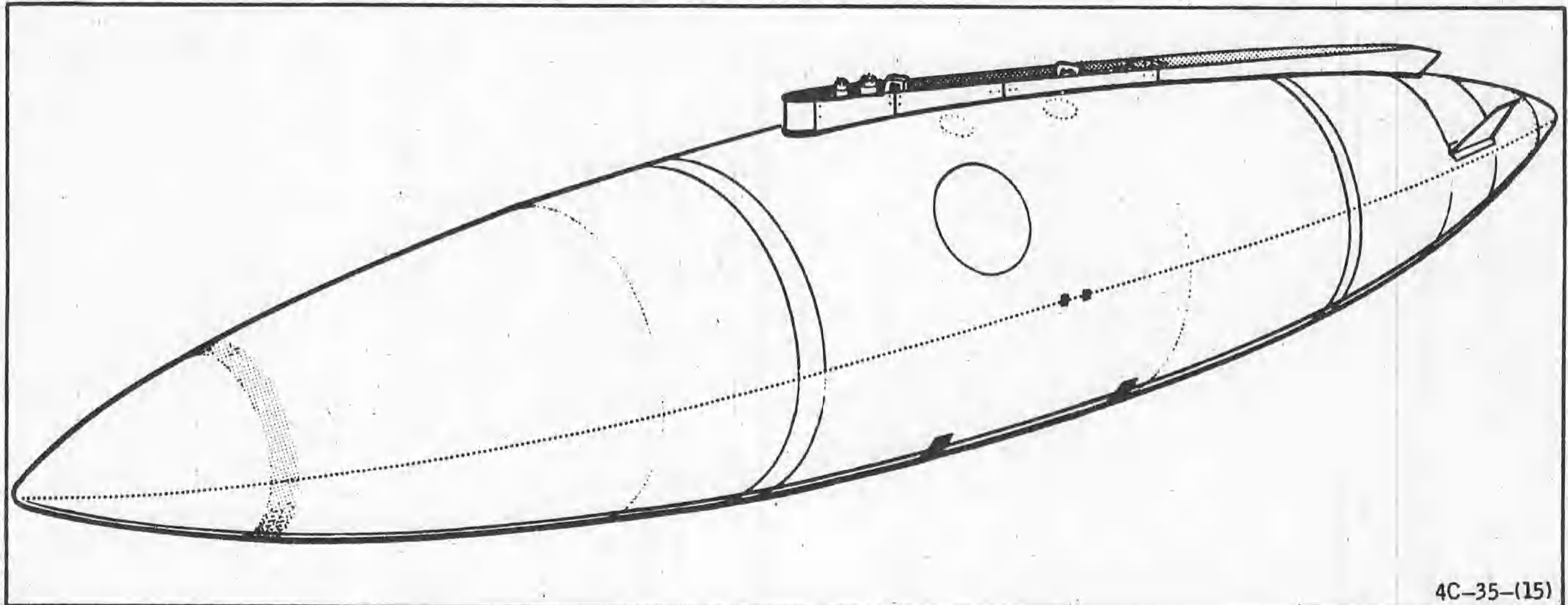


Figure 1-11. Centerline Fuel Tank

1-55. SARGENT FLETCHER WING TANK AND PYLON. See figure 1-12. The 370 gallon tank and pylon assembly mount on the outboard wing stations. The electrical connector is held upward into the aircraft connector by spring tension and is connected as the tank is positioned into place. Provisions are provided to jettison the tank and pylon assembly by use of an ejector assembly actuated by two impulse cartridges.

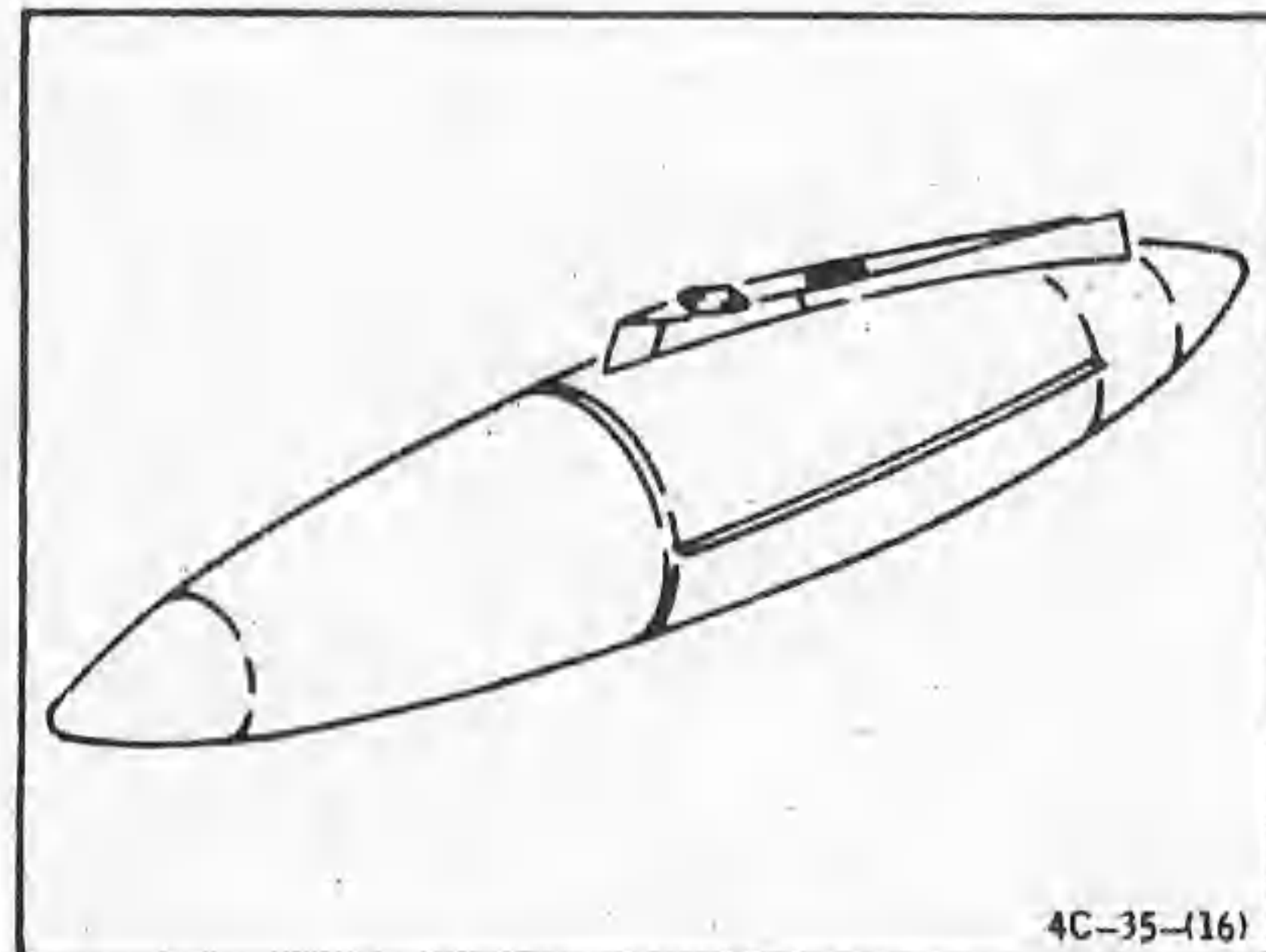


Figure 1-12. Sargent Fletcher Tank

1-56. PHYSICAL CHARACTERISTICS (APPROXIMATE).

	Centerline Tank	Outboard Wing Tank
a. Weight:	290 pounds	290 pounds
b. Length:	260 inches	240 inches
c. Diameter:	34.5 inches	25.500 inches with pylon 48.217 inches

1-57. CARGO CARRIER.

1-58. The cargo carrier provides a capability for carrying miscellaneous items incidental to ferry flights for which space is not available in the cockpit area.

1-59. PHYSICAL CHARACTERISTICS (APPROXIMATE).

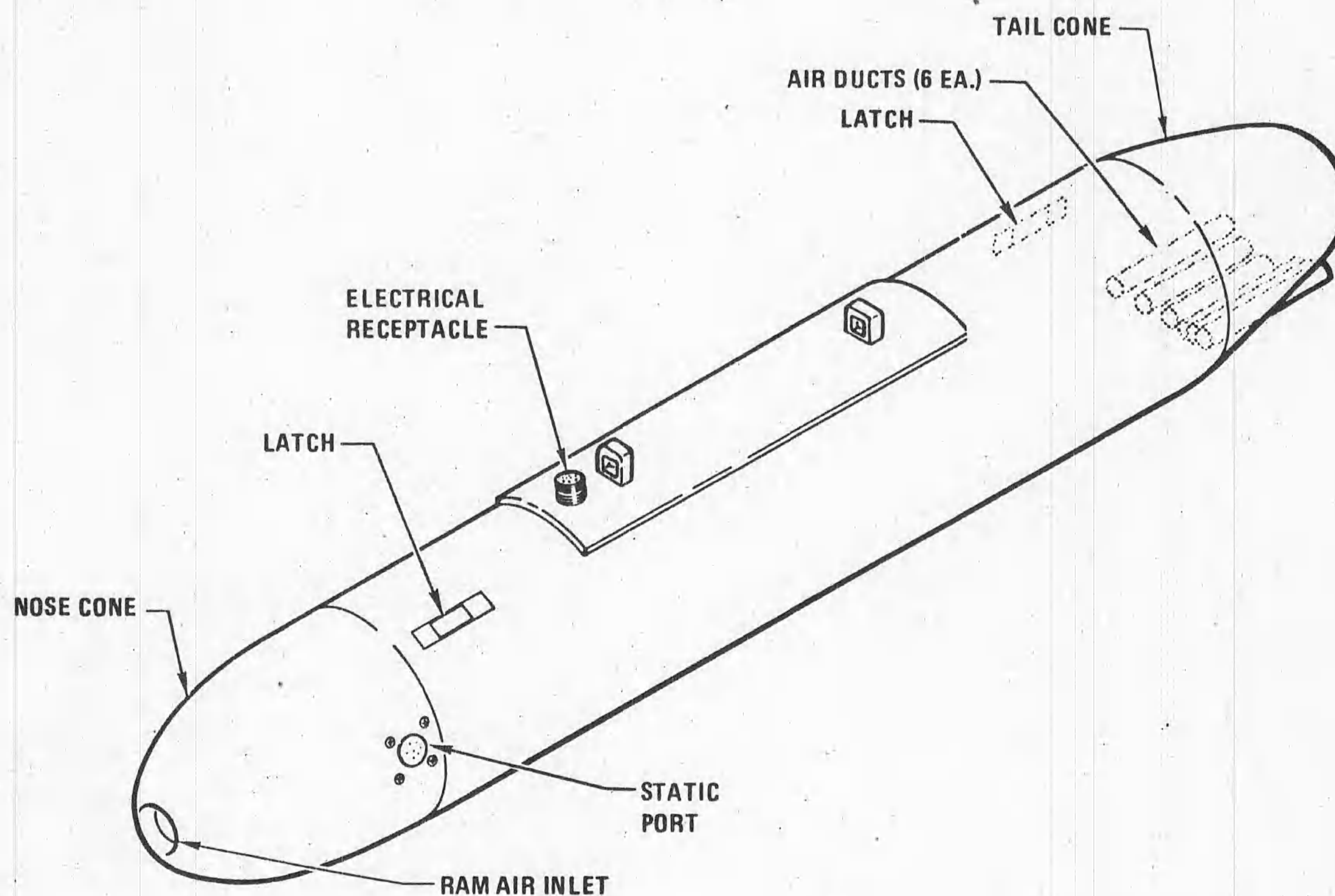
- a. Weight: 87 lbs.
- b. Length: 130 in.
- c. Diameter: 19 in.

1-60 thru 1-62. Deleted.

Figure 1-13. Deleted

1-62A. AN/ALE-38 CHAFF DISPENSER.

1-62B. The chaff dispenser (see figure 1-13A) is designed to dispense large quantities of chaff through individual tubes by a forced ram air intake in the nose section. The dispenser contains six separate chaff cartridges which are driven by a single electric motor.



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Figure 1-13A. AN/ALE-38 Chaff Dispenser

1-62C. PHYSICAL CHARACTERISTICS (APPROXIMATE).

- a. Weight (loaded): 535 lbs maximum
- b. Weight (empty): 205 lbs
- c. Length: 132.6 in.
- d. Diameter: 19.5 in.

1-62D. AN/AVQ-23 TARGET DESIGNATOR SET, ELECTRO-OPTICAL.

1-62E. The target designator set (see figure 1-13B) is an airborne low drag pod suspended on F-4D and F-4E aircraft in the left forward Sparrow missile well on a standard ECM adapter. Major components of the pods include an optical subsystem, stabilization and beam pointing subsystem, television subsystem and a laser subsystem. The AN/AVQ-23A target designator set is part of the AN/ASQ-153 electro-optical target designator system. Other units of the system include a target designator set control installed in the aft cockpit and a range indicator and azimuth-elevation indicator installed in the forward cockpit.

1-62F. PHYSICAL CHARACTERISTICS (APPROXIMATE).

- a. Weight: 440 pounds
- b. Length: 144 inches
- c. Diameter: 10 inches

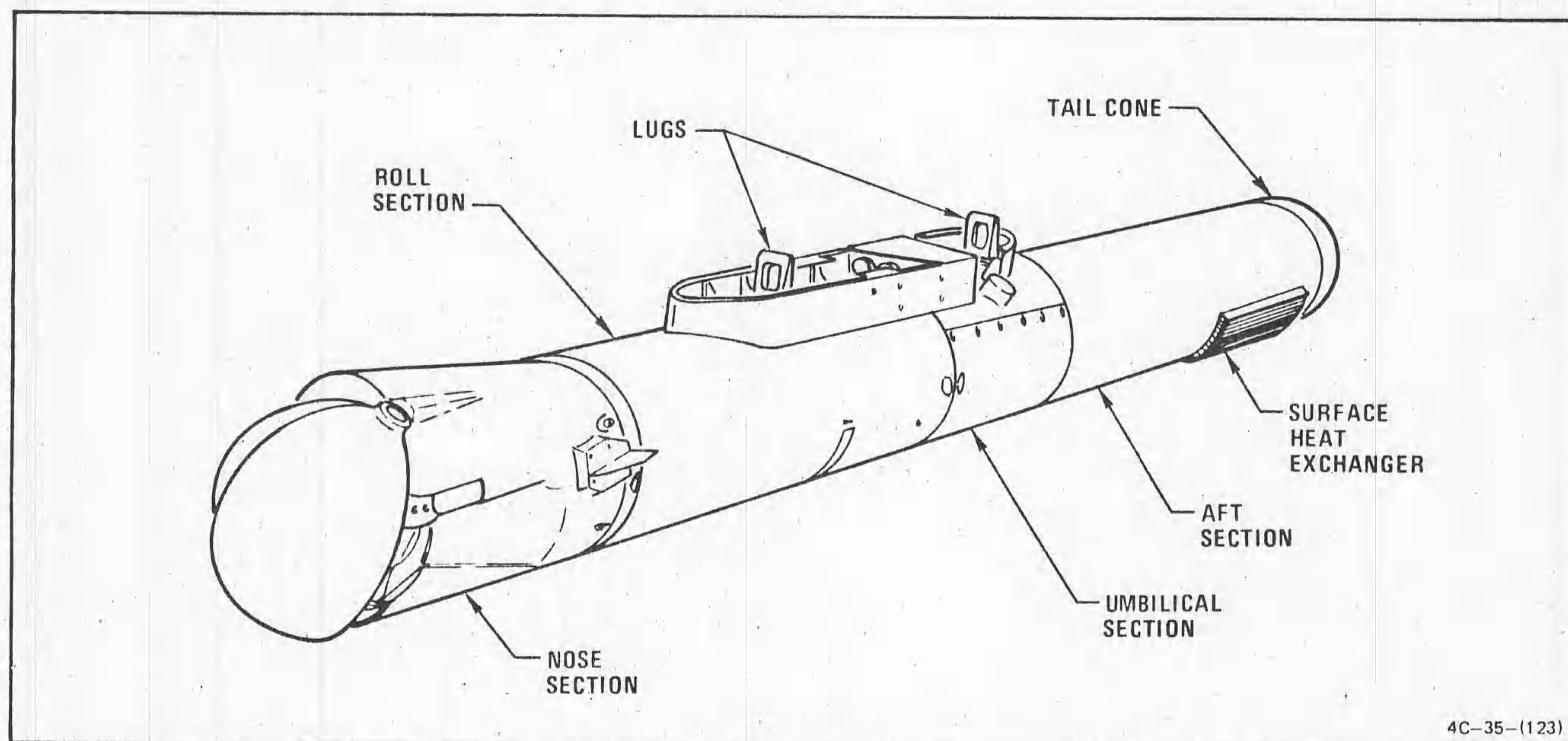


Figure 1-13B. AN/AVQ-23 Target Designator Set, Electro-Optical

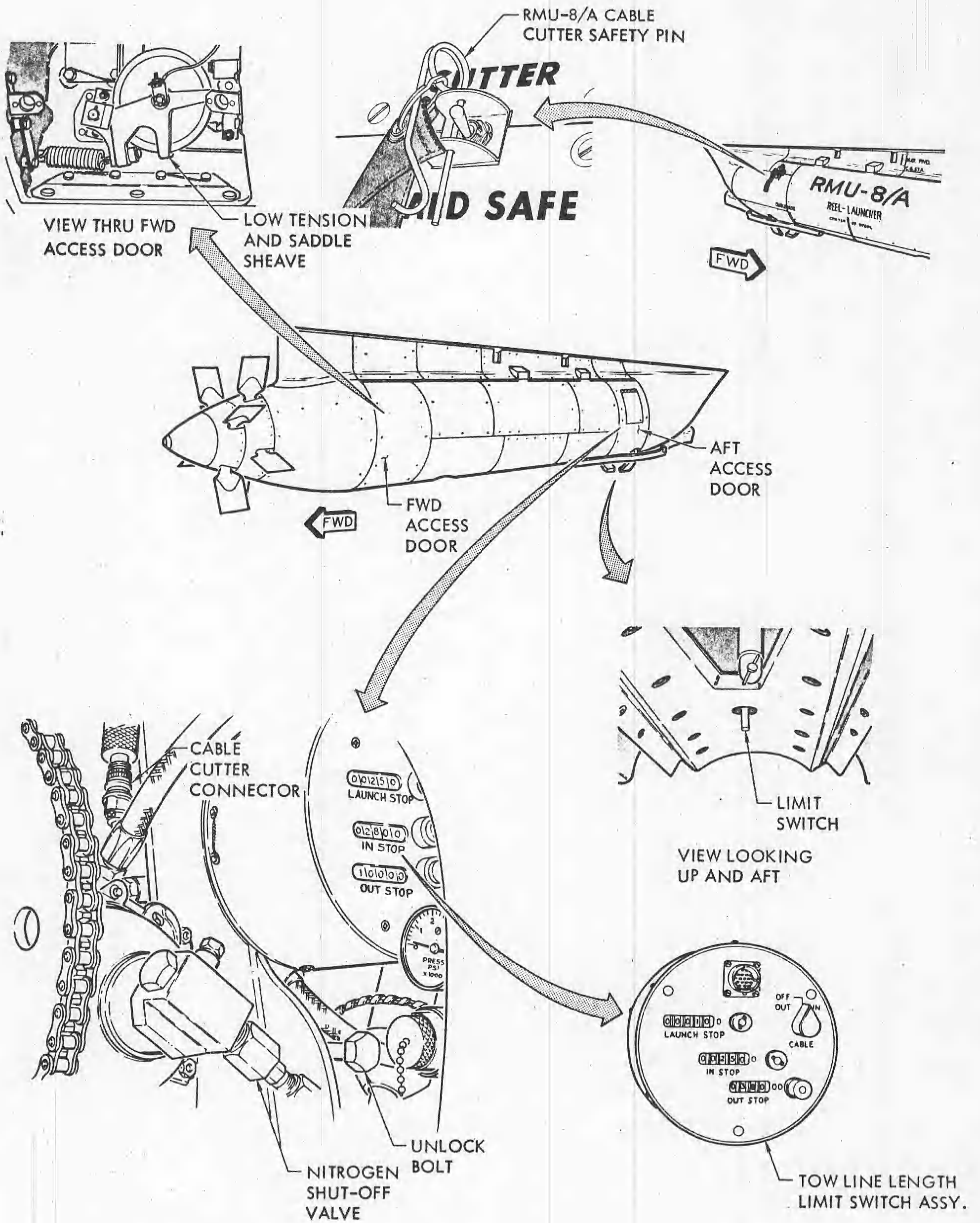
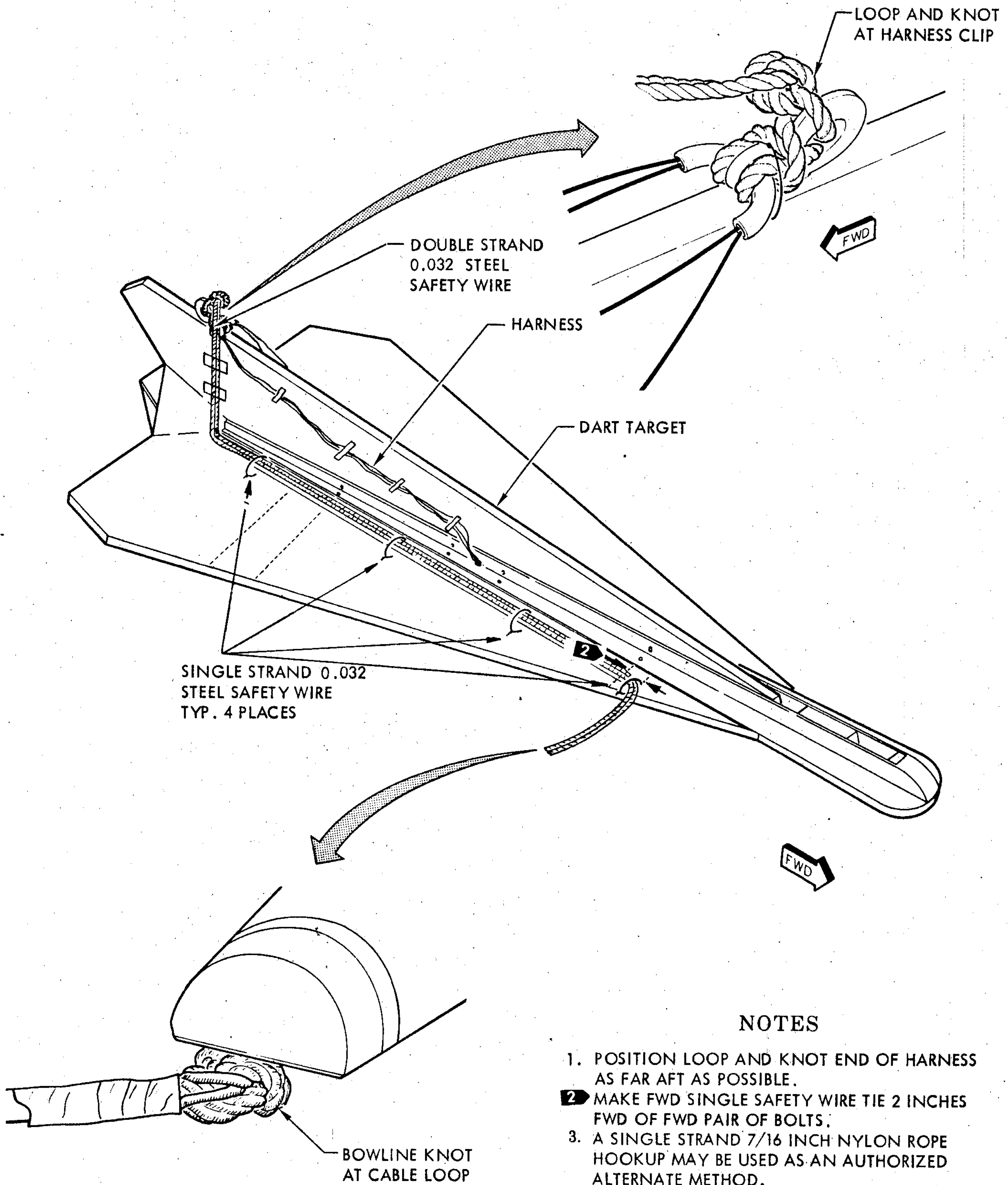


Figure 3-5. RMU-8/A Reel Launcher Components

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NOTES

1. POSITION LOOP AND KNOT END OF HARNESS AS FAR AFT AS POSSIBLE.
- 2** MAKE FWD SINGLE SAFETY WIRE TIE 2 INCHES FWD OF FWD PAIR OF BOLTS.
3. A SINGLE STRAND 7/16 INCH NYLON ROPE HOOKUP MAY BE USED AS AN AUTHORIZED ALTERNATE METHOD.

4C-35-(105)B

Figure 4-4. A/A37U-15 Tow Target Rigging