TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL
MAINTENANCE MANUAL INCLUDING
REPAIR PARTS AND SPECIAL
TOOL LISTS

RADAR SURVEILLANCE SETS
AN/APS-94B AND AN/APS-94C
AND
TEST FACILITIES KIT

MK-652/APS-94

This copy is a reprint which includes current pages from Changes 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

MAY 1970

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

Be careful when working on the 115-volt ac line or on circuits carrying dc power supply voltages

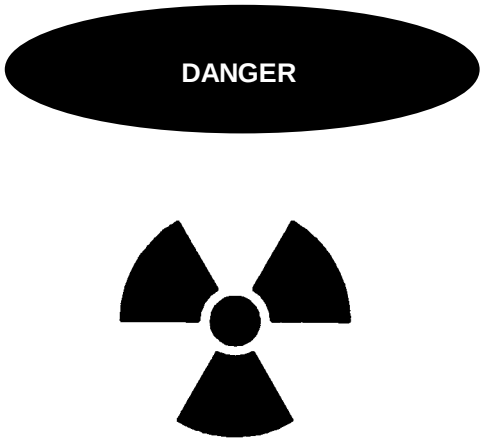
DON'T TAKE CHANCES!
EXTREMELY DANGEROUS VOLTAGES
EXIST IN THE FOLLOWING UNITS:

Receiver-Transmitter, Radar RT-530 (*) /APS-94 ..... 4,000 volts
Indicator, Radar Target IP-516 (*) /APS-94 ..... 10,000 volts
Monitor, Video Signal IP-517 (*)/'APS-94 ..... 2,000 volts

BE SAFE

Turn all power supplies *off* before making any connections or disconnections

DON'T TAKE CHANCES!



STD-RW-1

Tube types 1B63A (TR tube), 6542, and 5787WA used in this radar system contain radioactive material (para 1-5). These tubes are potentially hazardous when broken; see qualified medical personnel and the Safety Director if you are exposed to or cut by broken tubes. Use extreme care in handling these tubes and follow safe procedures in their storage and disposal.

Never place radioactive tubes in your pocket.

Use extreme care not to break radioactive tubes while handling them.

Never remove radioactive tubes from cartons until ready to use them.

Follow the procedures for safe handling, storage, and disposal of radioactive materials as directed by TB 43-0116, AR 700-52, and AR 755-15.

DANGER
ELECTROMAGNETIC RADIATION

Do not stand in the direct path of the antenna when the set is radiating. Do not work on the waveguides while the set is radiating.

TECHNICAL MANUAL
No. 11-5895-284-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *8 May 1970*

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

RADAR SURVEILLANCE SETS AN/APS-94B AND AN/APS-94C,

AND TEST FACILITIES KIT MK-652/APS-94

* This manual supersedes TM 11-5895-284-12, 14 August 1961, including all changes, and section II, First Echelon Functional Parts List, section IV, Maintenance Allocation , section V, Maintenance Allocation Chart, and section VI, Allocation of Tools for Maintenance Functions of TM 11-5995-20-15P, 13 February 1964.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Radar Surveillance Sets AN/APS-94B and AN/APS-94C (radar sets) and covers operation and operator and organizational maintenance. It includes operation, cleaning, inspection of the equipment, and replacement of parts available to the operator and the organizational maintenance personnel. The maintenance allocation chart (MAC) is in appendix C and the basic issue items list is in appendix B.

b. Official nomenclature followed by (*) is used to indicate all models of the item of equipment included in this technical manual. Thus, Radar Surveillance Set AN/APS-94(*) represents Radar Surveillance Sets AN/APS-94B and AN/APS-94C. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP indicates Recorder-Processor-Viewers, Radar Mapping RO-166/UP, RO-166A/UP, RO-166B/UP, RO-166C/UP, and RO-166D/UP.

1-2. Indexes of Equipment Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are any modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP PUB 378 (Navy)/AFR 71-4 (Air Force)/and MCO P4030.29 (Marine Corps).

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army)/NAVSUP PUB 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

1-3.1. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, (Recommended Changes to Publications) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MASS, Fort Monmouth, NJ 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Basic Use. Radar Surveillance Sets AN/APS-94B and AN/APS-94C are side-looking airborne radar (SLAR) sets. The sets provide permanent aerial photoradar maps of terrestrial (ground) targets to ranges of 25, 50, or 90 kilometers (km) on either or both sides of the flightpath of the aircraft in which the set is installed. The aerial photoradar maps provide information on fixed and moving targets within the maximum range of 90 kilometers. The AN/APS-94(*) provides photographic maps which are recorded by Recorder, Radar Mapping RO-225A/APS-94A on 5-inch strip film (standard film only) or by Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP (TM 11-5820-680-12), which records maps on 9-inch film (standard film only).

b. Maps. Separate films are exposed simultaneously. One film records the fixed-target (ft)

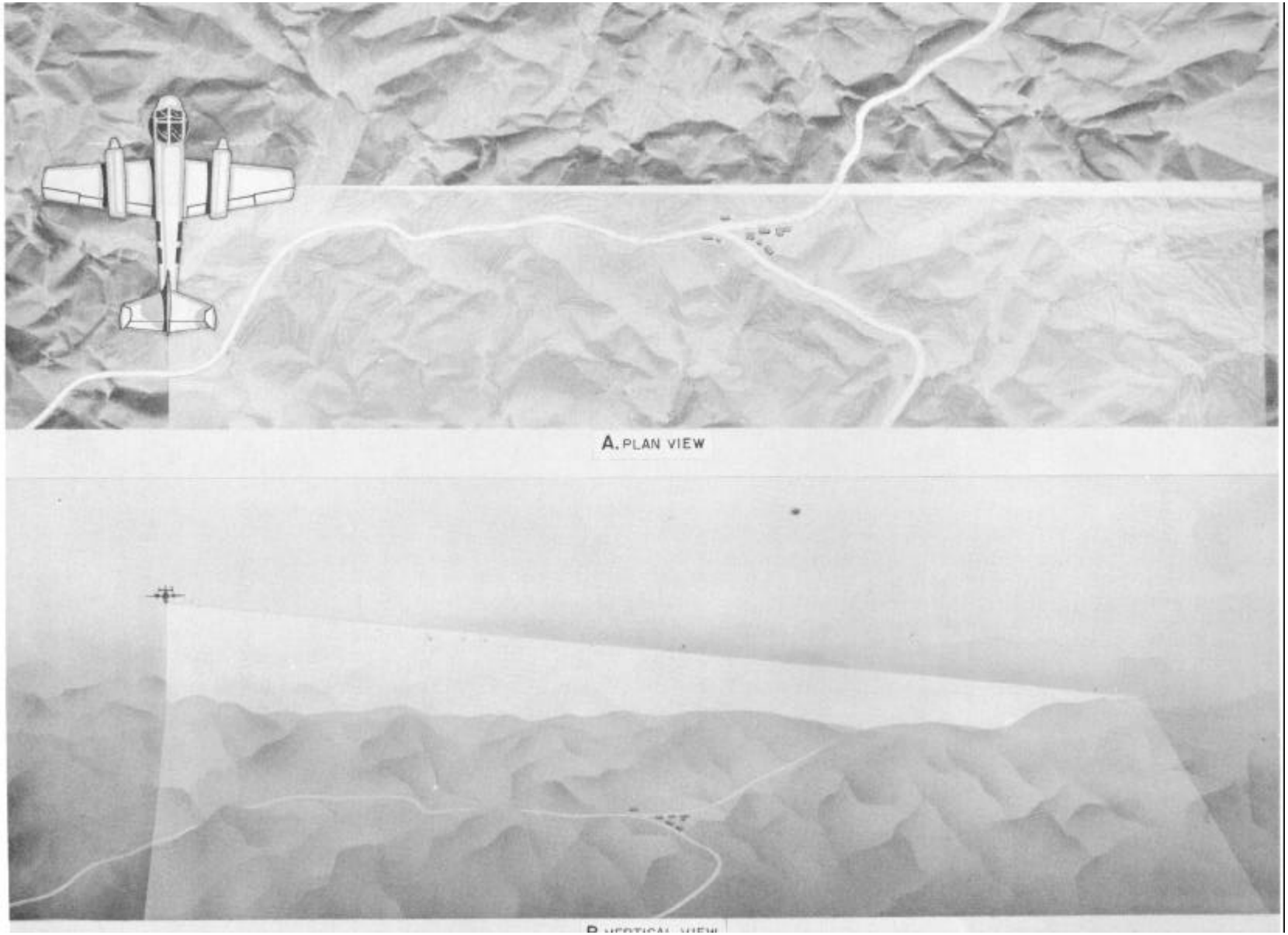


Figure 1-1. Radar Surveillance Set AN/AP94(*), typical use, scanning terrain to right of aircraft.

information (the reflected signals from all targets); the other film records the moving-target (mt) information (the reflected signals from moving targets only). Additional information recorded on both films included date, time, flight data, rangemarks, and aircraft present position data (ppd).

c. Map Analysis. A study of the ft film reveals permanent objects in the mapped area, such as roads, structures, and hills. A study of the mt film reveals the movement of objects such as vehicles and railroad trains. A comparison of two mt films with the corresponding ft films can establish the coordinate positions, the directions, and the approximate rates of these movements. Additional information that can be obtained from study of successive ft maps taken of the same area is a change of terrain characteristics, such as the flooding or clearing of fields, the leveling of a landing strip, or the erection of buildings or other structures. Figure 1-1 shows a typical aircraft scan of terrain by use of Radar Surveillance Set AN/APS-94(*). A plan view of the aircraft scan is shown in A, figure 1-1, and a vertical view of the aircraft scan is shown in B, figure 1-1.

d. Present Position Display Data. Aircraft present position display (ppd) data appear periodically on the radar maps produced by Radar Surveillance Sets AN/APS-94B and AN/APS-94C. The ppd data are in the form of numeric indications that show the mapping aircraft position in kilometers north or south and east or west of a reference point (para 1-27). The ppd data are particularly useful for orientation when the area mapped contains few readily identifiable landmarks.

1-5. Technical Characteristics

a. General.

Total power required .....3,750 watts
Power supplied to motor-generator .....3,180 watts
Azimuth resolution at 10 kilometers.....-91.5 meters separation (approximately 300 feet) each 10 km of range.
Range .....25, 50, or 90 kilometers
Rangemarks.....Every 20 kilometers
Range resolution .....80 meters (approximately 250 feet).
Antenna system .....Fixed linear array
Mapping velocity .....150 to 300 knots

b. Transmitting System.

Transmitter frequency .....9,245 megacycles ±5 (9,245 megahertz).
Wavelength.....3.245 centimeters
Output power:
Peak power, minimum ..65 kilowatts
Peak power, maximum .100 kilowatts
Maximum power-handling capability .....125 kilowatts
Average power .....40 watts
Pulse repetition rate .....50 pulses per second
Pulse width.....0.5 microsecond
Duty cycle 0.000375
Source of RF power .....Magnetron type 6543A

c. Receiving System.

Intermediate frequency .....60 megacycles (60 megahertz)
Noise figure.....9.5 decibels
Video bandwidth.....1.5 megacycles (1.5 megahertz).
Receiver sensitivity .....-95.5 decibels referred to 1 milliwatt.

d. Antenna System.

Antenna beamwidth (horizontal).....0.5
Antenna pattern (vertical)....Cosecant squared
Side lobes .....At least 20 db down
Back lobes .....At least 28 db down
Beam polarization .....Horizontal
Antenna gain.....35 db minimum
Input voltage standing wave ratio .....1.2:1 maximum

e. Indicating System.

Display method .....Intensity-modulated traces of two 5-inch cathode-ray tubes.
Video signal monitor.....A-display 3-inch cathode-ray tube.
Permanent record .....Photographic film; 5-inch strip film (25 ft cassette).

f. Trigger and Cancellation System.

Type.....Single-delay, phase-comparison.
Cancellation ratio .....38 db.

g. Radioactive Tubes.

Type	*Isotope*	*Activity level (microcuries)*
1B63A.....	Co 60....	0.15-1.0 depending on manufacturer
6542.....	Co 60....	0.0067
5787WA...	Co 60....	0.0067

1-5.1. Items Comprising an Operable Equipment

a. Radar Surveillance Sets AN/APS-94B and ANIAPS-94C.

FSN	Quantity AN/APS-94B	Quantity AN/APS-94C	Nomenclature	Fig. No.
5841-911-8001			Radar Surveillance Set AN/APS-94B	1-3
5841-952-8855			Radar Surveillance Set AN/APS-94C Consisting of:	1-3
5841-707-2313	1	1	Antenna Assembly AS-1048/APS-94	1-2
5841-772-5340	1	1	Case, Recorder Radar Mapping CY-2801/APS-94	1-2
5841-707-2312	1		Comparator, Signal CM-145/APS-94, CM-145A/APS-94	1-2
5841-999-9772	1	1	Comparator, Signal CM-145B/APS-94	1-2
5841-952-8887	1	1	Comparator, Signal CM-145C/APS-94	1-2
5841-681-9820	1	1	Control Radar Set C-2996/APS-94	1-2
5841-681-9894	1	1	Control Recorder C-2997/APS-94	1-2
5841-911-8000	1		Converter, Analog to Digital CV-2016/APS-94B	1-16
5841-911-8002	1	1	Indicator, Radar Target IP-516B/APS-94	1-7
5841-930-6326	1	1	Indicator, Radar Target IP-516C/APS-94	1-7
5841-681-9819	1		Interconnecting Box J-1098/APS-94, J-1098A/APS-94	1-2
5841-952-6132	1	1	Interconnecting Box J-1098B/APS-94	1-2
5841-952-6131	1	1	Interconnecting Box J-1098C/APS-94	1-2
5841-707-7662	1	1	Monitor, Video Signal IP-517/APS-94, IP-517A/APS-94	1-2
5841-682-3350	1	1	Power Supply PP-2404/APS-94, PP-2404A/APS-94	1-2
5841-707-2311	1	1	Receiver-Transmitter, Radar RT-530/APS-94, RT-530A/APS-94, RT-530B/APS-94.	1-2
5841-987-8836	1	1	Recorder, Radar Mapping RO-225A/APS-94A	1-2
5841-706-6554	1	1	Synchronizer, Electrical SN-257/APS-94, SN-257A/APS-94, SN-257B/APS-94.	1-2

b. Test Facilities Kit MK-652/APS-94.

FSN	Qty	Nomenclature, part No., and mfr code	Fig. No.
5995-820-2182		Test Facilities Kit MK-652/APS-94 Consisting of: **NOTE** **The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.**	1-18
5995-280-4273	1	Cable Assembly, Radio Frequency CG-530B/U (4 ft).	1-18
5995-823-2139	2	Cable Assembly, Radio Frequency CG-530B/U (5 ft).	1-18
5995-889-0890	1	Cable Assembly, Radio Frequency CG-530B/U (6 ft).	1-18
5995-889-0893	3	Cable Assembly, Radio Frequency CG-530B/U (8 ft).	1-18
5995-820-2572	2	Cable Assembly, Radio Frequency CG-530B/U (9 ft).	1-18
5995-820-2573	3	Cable Assembly, Radio Frequency CG-530B/U (10 ft).	1-18
6625-889-1464	1	Cable Assembly, Special Purpose, Electrical CX-9033/APS-94.	1-18
6625-889-1465	1	Cable Assembly, Special Purpose, Electrical CX-9034/APS-94.	1-18
6625-889-1466	1	Cable Assembly, Special Purpose, Electrical CX-9035/APS-94.	1-18
5995-820-0949	1	Cable Assembly, Special Purpose, Electrical CX-9036/APS-94.	1-18
6625-889-1468	1	Cable Assembly, Special Purpose, Electrical CX-9037/APS-94.	1-18
6625-889-1469	1	Cable Assembly, Special Purpose, Electrical CX-9038/APS-94.	1-18
6625-889-1470	1	Cable Assembly, Special Purpose, Electrical CX-9039/APS-94.	1-18
6625-889-1471	1	Cable Assembly, Special Purpose, Electrical CX-9040/APS-94.	1-18
6625-889-1472	1	Cable Assembly, Special Purpose, Electrical CX-9041/APS-94.	1-18
5995-820-1503	1	Cable Assembly, Special Purpose, Electrical CX-9042/APS-94.	1-18
5995-820-2180	1	Cable Assembly, Special Purpose, Electrical CX-9043/APS-94.	1-18
5995-820-2181	1	Cable Assembly, Special Purpose, Electrical CX-9044/APS-94.	1-18
5995-820-1501	1	Cable Assembly, Special Purpose, Electrical CX-9045/APS-94.	1-18
5995-820-1499	1	Cable Assembly, Special Purpose, Electrical CX-9046/APS-94.	1-18
5995-820-2570	1	Cable Assembly, Special Purpose, Electrical CX-9047/APS-94.	1-18
6625-889-1473	2	Cable Assembly, Special Purpose, Electrical CX-9048/APS-94.	1-18
5841-082-3495	2	Coupler, Directional CU-1212/APS-94.	1-18
6625-082-3494	2	Dummy Load, Electrical DA-342/APS-94.	1-18

FSN	Qty	Nomenclature, part No., and mfr code	Fig. No.
5841-860-2519	1	Holder, Module No. 1-Bench Test: 242-36572; 94990.	1-18
5841-860-9229	1	Holder, Module No. 2-Bench Test: 242-36577; 94990.	1-18
5841-860-9230	1	Holder, Module No. 3-Bench Test: 242-36578; 94990.	1-18
6625-889-1459	1	Wiring Harness CX-9049/APS-94: Used to connect modules of Synchronizer, Electrical SN-257 A/APS-94.	1-18

1-6. Dimensions of Major Components

Component	*Quantity*	*Dimensions (in.) Height*	*Depth*	*Width*	*Unit weight (lb)*
Receiver-Transmitter, Radar RT-530(*)/APS94[a]	1	15.25	19.00 dia	-------	95
Synchronizer, Electrical SN-257(*)/APS-94[b]	1	8.00	19.81	13.50	60
Comparator, Signal CM-145(*)/APS-94[c]	1	7.62	19.56	13.50	30
Indicator, Radar Target IP-516(*)/APS-94[d]	1	7.30	15.90	12.30	36
Recorder, Radar Mapping RO-225A/APS-94A	1	20.85	15.32	12.53	43
Antenna Assembly AS-1048/APS94	1	17.00	236.00	18.00	200
Control, Radar Set C-2996/APS-94	1	5.61	6.26	5.74	5
Control, Recorder C2997/APS-94	1	4.12	3.08	5.74	3
Monitor, Video Signal IP-517(*)/APS-94[e]	1	4.50	10.94	5.74	7
Interconnecting Box J-1098(*)/APS94[f]	1	14.00	13.25	3.00	10
Power Supply PP-2404(*)/APS-94[g]	1	8.00	19.81	13.50	65
Converter, Analog to Digital CV-2016/APS-94B (AN/APS-94B only).	1	5.50	15.50	8.18	12

[a] Represents RT-5,0/APS-94, RT-530A/APS-94, and RT-530B/APS-94.

[b] Represents SN-257/APS-94, SN-257A/APS-94, and SN-257B/APS-94.

[c] Represents CM-145/APS-94 and CM-145A/APS-94.

[d] Represents IP-516/APS-94, IP-516A/APS-94, and [P-516B/APS-94.

[e] Represents IP-517/APS-94 and IP-517A/APS-94.

[f] Represents J-1098/APS-94 and J-1098A/APS-94.

[g] Represents PP-2404/APS-94 and PP-2404A/APS-94.

1-7. Nomenclature and Common Names

A list of nomenclature and common name assignments for the equipment described in this manual is given below.

Nomenclature	*Common name*
Antenna Assembly AS-1048/APS-94	Antenna assembly.
Comparator, Signal CM-145(*)/APS94	Comparator.
Navigation Set, Radar AN/APN-129(V)1 or Doppler Navigation Set AN/ASN-64	Doppler navigation.
Indicator, Radar Target IP-516(*)/APS-94	Indicator
Interconnecting Box J-1098(*)/APS-94	Interconnection box.
Monitor, Video Signal IP-517(*)/APS-94	MONITOR
Power Supply PP-2404(*)/APS-94	Power supply.
Control, Radar Set C-2996/APS-94	RADAR control.
Radar Surveillance Set AN/APS94(*)	Radar set.
Receiver-Transmitter, Radar RT-530(*)/APS-94	Receiver-transmitter.
Recorder, Radar Mapping RO-225A/APS-94A	Recorder.
Control, Recorder C-2997/APS-94	RECORDER control.
Synchronizer, Electrical SN-257(*)/APS-94	Synchronizer.
Loader, Film Photographic MX-4668/APS-94A	Film loader.
Converter, Analog to Digital CV-2016/APS94B	Data converter.
Test Facilities Kit MK-652/APS-94	Test facilities kit.

1-8. Description of Equipment

a. Radar Surveillance Set ANIAPS-94(*). Radar Surveillance Set AN/APS-94(*) consists of a single operating assembly that includes all the components shown in figure 1-2. Figure 1-3 shows the radar set installed in the Army Model OV-1B Aircraft (Mohawk). Control of the radar set is provided by the RADAR control and the RECORDER control, which must be located within easy reach of the operator.

b. Major Components. Major components of the radar set are described in paragraphs 1-9 through 1-21. The descriptions apply to all component models unless otherwise indicated.

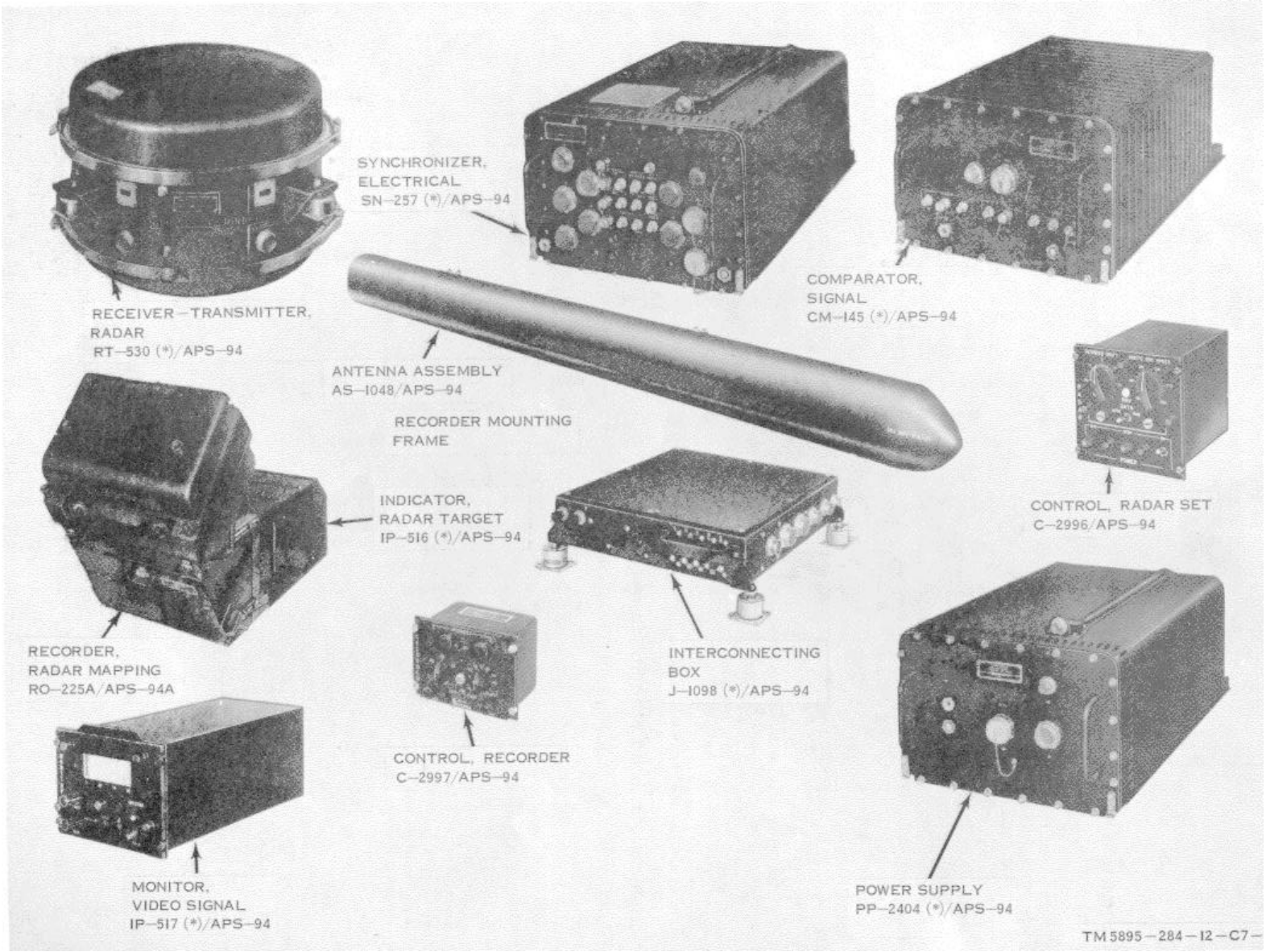
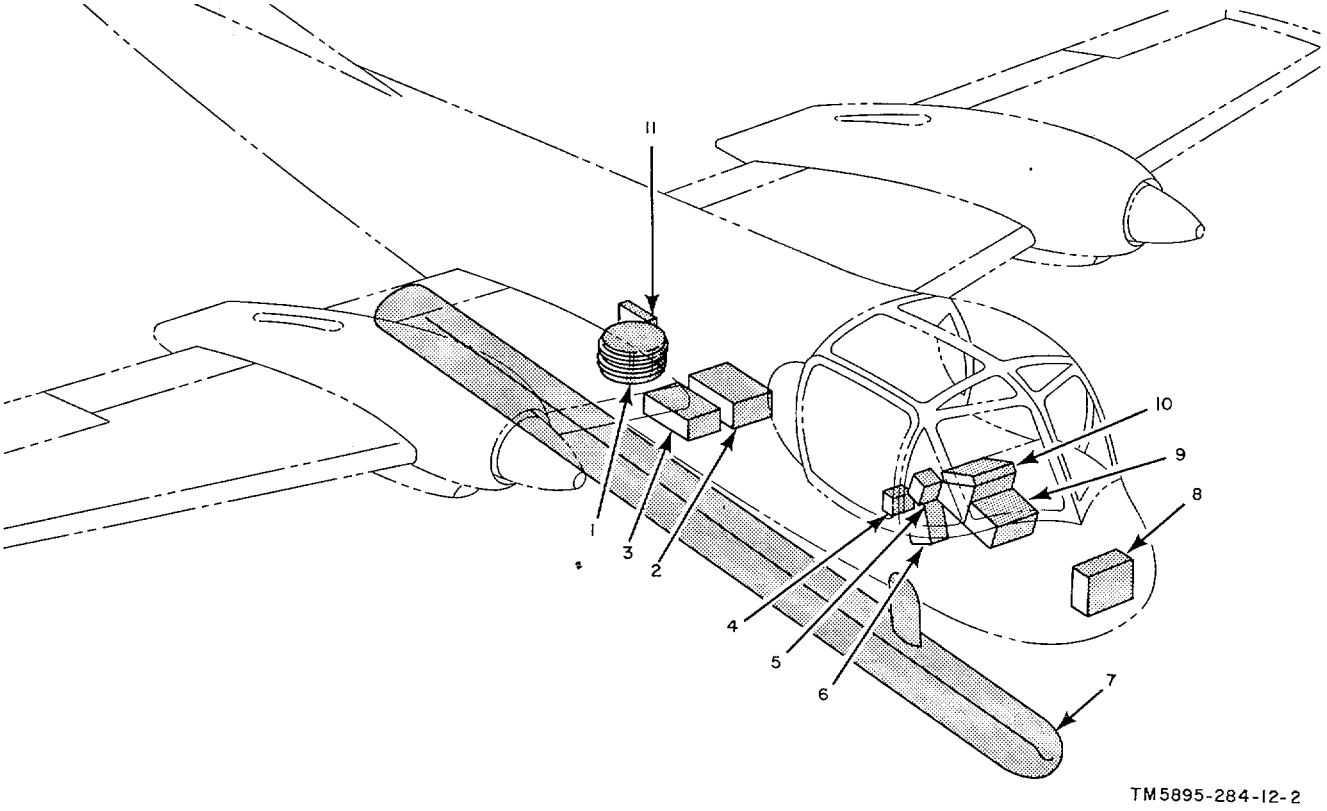


Figure 1-2. Radar Surveillance Set AN/APS-94(*), operating components, less running spares and Converter, Analog to Digital CV-2016/APS-94B.



1 Receiver-Transmitter, Radar RT-530(*)/APS-94
2 Comparator, Signal CM-145(*)/APS-94
3 Power Supply PP-2404(*)/APS-94
4 Control, Radar Set C-2996/APS-94
5 Control, Recorder C-2997/APS-94
6 Monitor, Video Signal IP-517(*)/APS94
7 Antenna Assembly AS-1048/APS-94
8 Synchronizer, Electrical SN-257(*)/APS-94
9 Indicator, Radar Target IP-516(*)/APS-94
10 Recorder, Radar Mapping RO-225A/APS-94A
11 Interconnecting Box J-1098(*)/APS-94

Figure 1-3. Radar Surveillance Set AN/APS-94(*), typical component locations.

1-9. Receiver-Transmitter, Radar RT-530(*)/APS-94

(Fig. 1-4.)

The receiver-transmitter is contained in a single cylindrical unit which is sealed by removable top and bottom covers. The top and bottom covers are held in place on the cylindrical unit by two retaining straps. The two retaining straps are tensioned by four adjustable locknuts. The cylindrical unit is supported by four shock mounts, two of which are at the rear and two on the front of the cylindrical unit. Two blower motors (not shown) are mounted inside the receiver-transmitter to draw air through the center external air intake ducts for internal cooling. The radar set right and left antenna waveguides mount on the RIGHT ANT and LEFT ANT waveguide ports on the receiver-transmitter front panel. Two electrical and two coaxial cable connectors are also mounted on the receiver-transmitter front panel. The two electrical connectors are J1 and J4 TEST; the two coaxial connectors are J2 TRIGGER and J3 FT VIDEO.

1-10. Synchronizer, Electrical SN-257(*)/APS-94

(Fig. 1-5.)

The case containing the synchronizer is of double-wall construction and incorporates two sets of heat-exchanger ducts between the walls. Air is drawn through the external air intake ducts by a blower mounted on the back of the case. A pair of pressure-relief valves on the front panel hold the internal pressure of the hermetically sealed synchronizer within 3 pounds per square inch (psi) of the external pressure. All power and signal cables enter the synchronizer through the electrical and coaxial connectors on the top and front

panel of the synchronizer. The only fuse (1-ampere) in the radar set is mounted on the synchronizer front panel. Two spare fuses are mounted in clips and are housed under the spare fuse cover mounted on the front panel. The spare fuse cover is retained to the front panel by two knurled screws. The synchronizer is installed in the aircraft on a shock-mounted base. The synchronizer slides into the mounting base, and guide pen receptacles

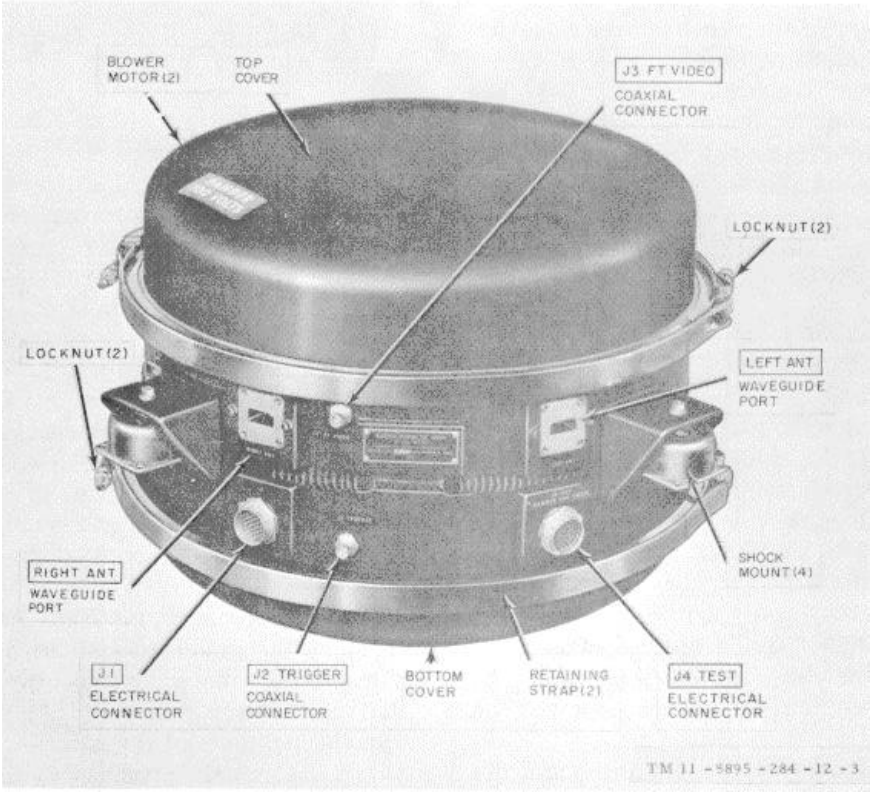


Figure 1-4. Receiver-transmitter, Radar RT-530 (*)/APS-94.

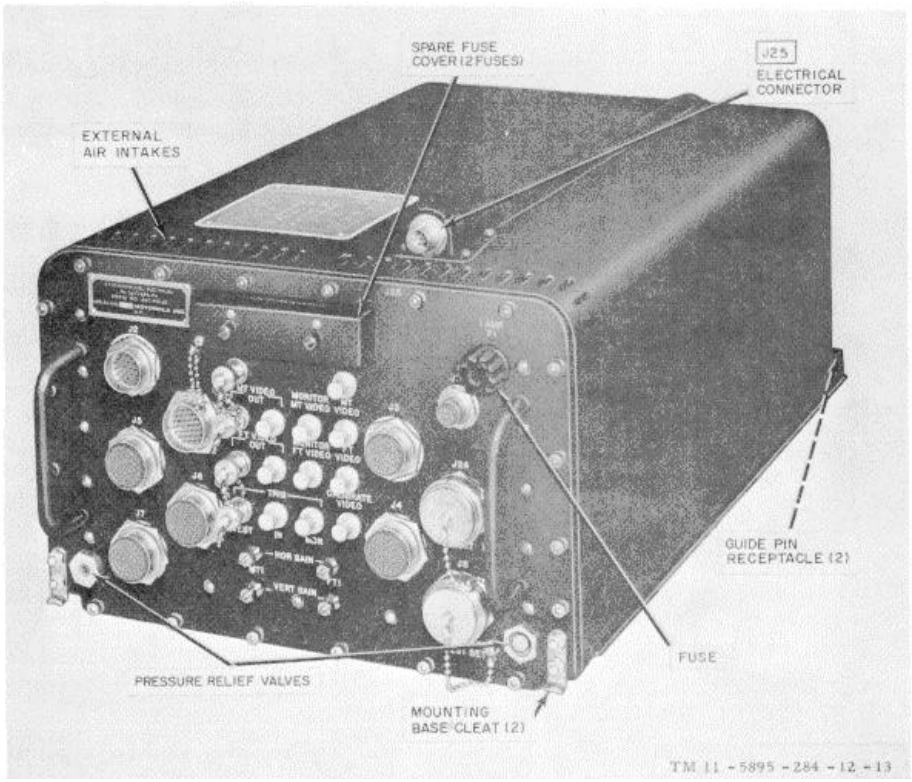


Figure 1-5. Synchronizer, Electrical SN-257(*) /APS-94.

at the rear of the synchronizer case (fig. 1-5) engage the mounting base guide pins. Cleats at the front of the synchronizer (fig. 1-5) are engaged by wingnut fasteners attached to the mounting base. Handles on the front panel aid in mounting and demounting the synchronizer.

1-11. Comparator, Signal CM-145(*)/APS-94 (fig. 1-6)

The comparator case is similar to the synchronizer case (para 1-10) except that there are no heat-exchanger ducts. An internal blower circulates air within the unit, and cooling is by radiation from the case. All cables enter the comparator through the front panel, which also mount pressure-relief valves that hold the internal pressure within 3 psi of the external pressure. The comparator, like the synchronizer, is installed on a shock-mounted base equipped with guide pins and wingnut fasteners. Guide pin receptacles engage the mounting base guide pins, and the mounting base wingnut fasteners engage the comparator mounting base cleats (fig. 1-6). Handles on the front panel aid in mounting and demounting the comparator.

1-12. Indicator, Radar Target IP-516(*)/APS-94 (fig. 1-7)

The indicator contains two 5-inch cathode-ray tubes (crt) and associated circuitry. The left crt displays fixed-target information and the right crt displays moving-target information. Crt clamp-retaining screws allow external loosening of clamps in the indicator, which hold the cathode-ray tubes stationary. Normally, the recorder (para 1-13) is mounted to the front of the indicator by means of the recorder mounting frame (fig. 1-2). In figure 1-7, the indicator is shown with the recorder removed. All coaxial and electrical connectors except electrical connectors J6 and J7 are at the back of the indicator. Electrical connectors J6 and J7 connect to the recorder. The indicator is installed in the aircraft on a shock-mounted base. The recorder mounting frame is attached to the front of the indicator and to the structural support directly above the indicator. Normally, when the indicator is removed from the aircraft, the upright members of the recorder mounting frame (fig. 1-2) remain attached to the indicator, and the shock mounts of the recorder mounting frame remain attached to the structural support above the indicator.

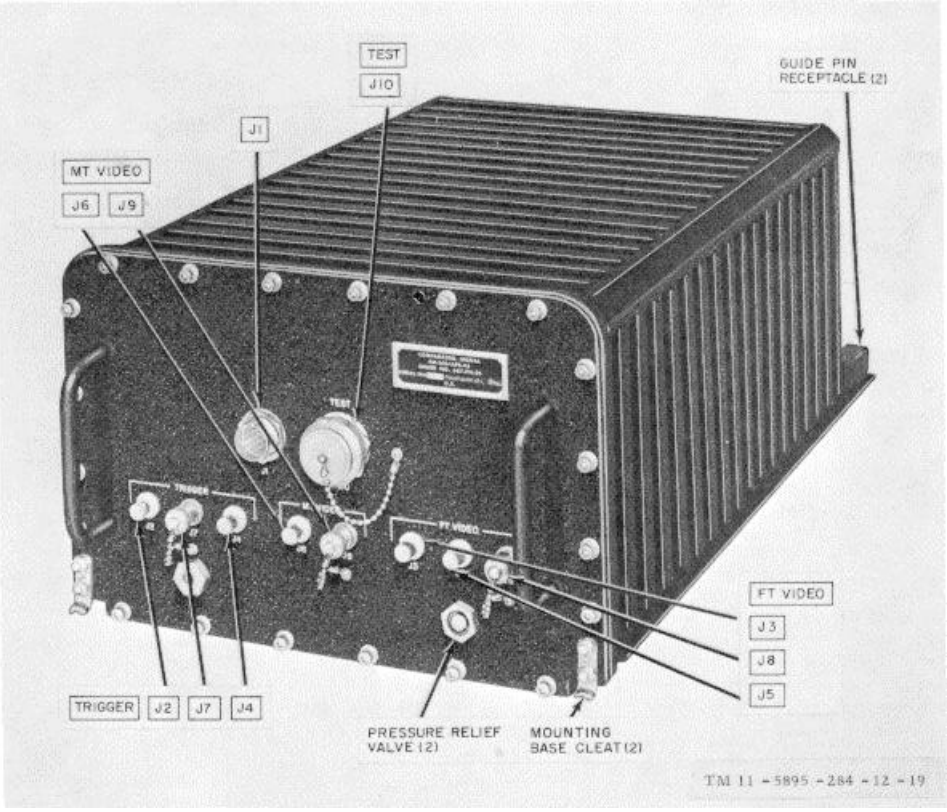


Figure 1-6. Comparator, Signal C.M-145(*)/APS-94,

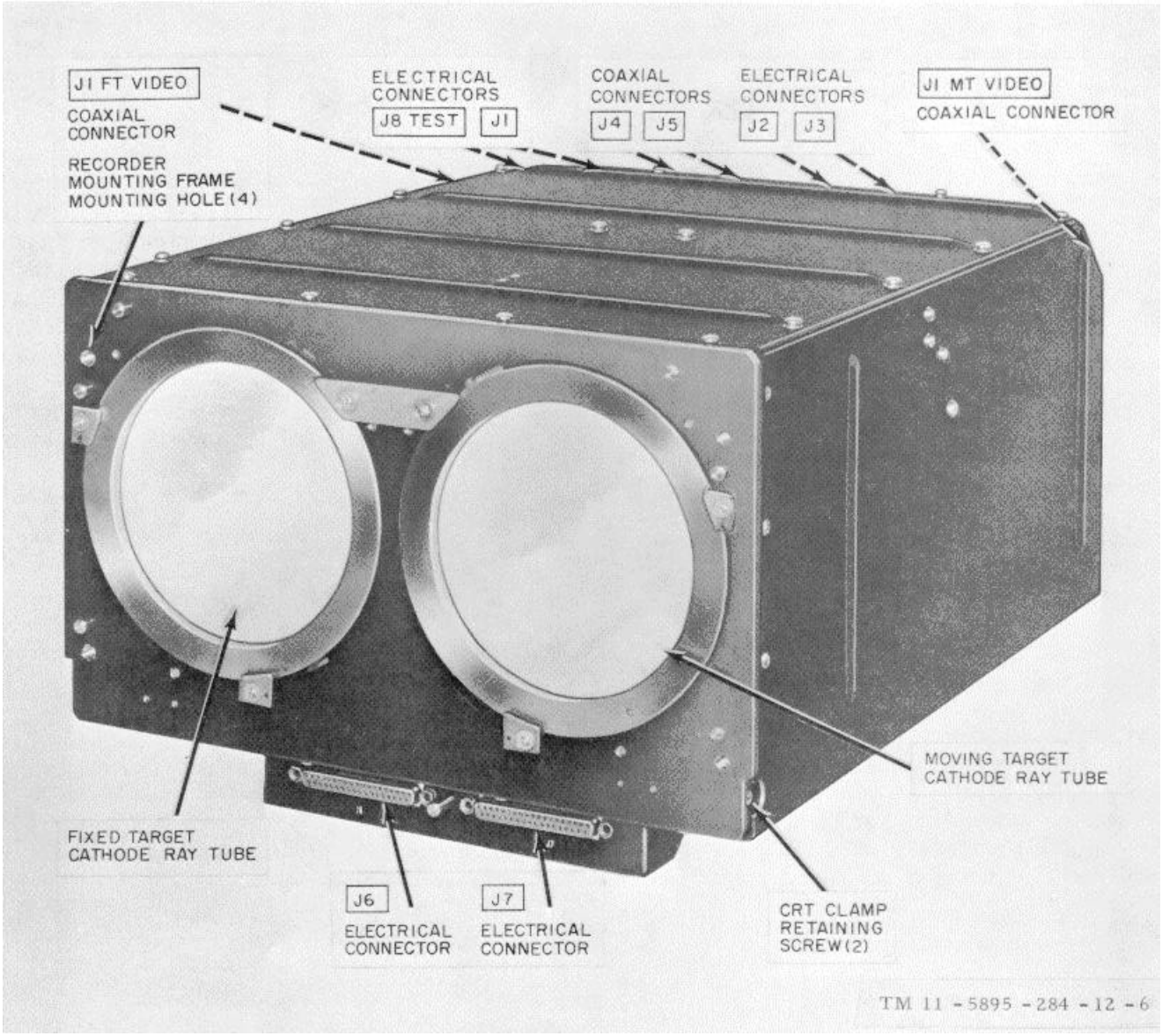


Figure 1-7. Indicator, Radar Target IP-516 (*)/APS-94.

1-13. Recorder, Radar Mapping RO-225A/APS-94A (fig. 1-8)

The RO-225A/APS-94A consists of a 5-inch film recorder housing, a 5-inch film data chamber, a 5-inch film driver, and a 5-inch strip-film magazine. Two male connectors, 10P1 and 10P2 (not shown), are at the rear of the recorder. These connectors mate with female connectors J6 and J7 of the indicator (fig. 1-7) when the recorder and the indicator are mounted on the recorder mounting frame.

a. The 5-inch film recorder housing contains a system of lenses and mirrors, the 5-inch film data chamber (which includes a data-insert slide), an electronic subassembly, a heater subassembly, and a test switch. The 5-inch film data chamber contains indicators for time, heading, groundspeed, drift, range, and range delay. A subassembly of the 5-inch film data chamber, the data-insert slide, provides the radar operator with the means for identifying the mission that is recorded on the film. The LAMP-TEST-CRT test switch

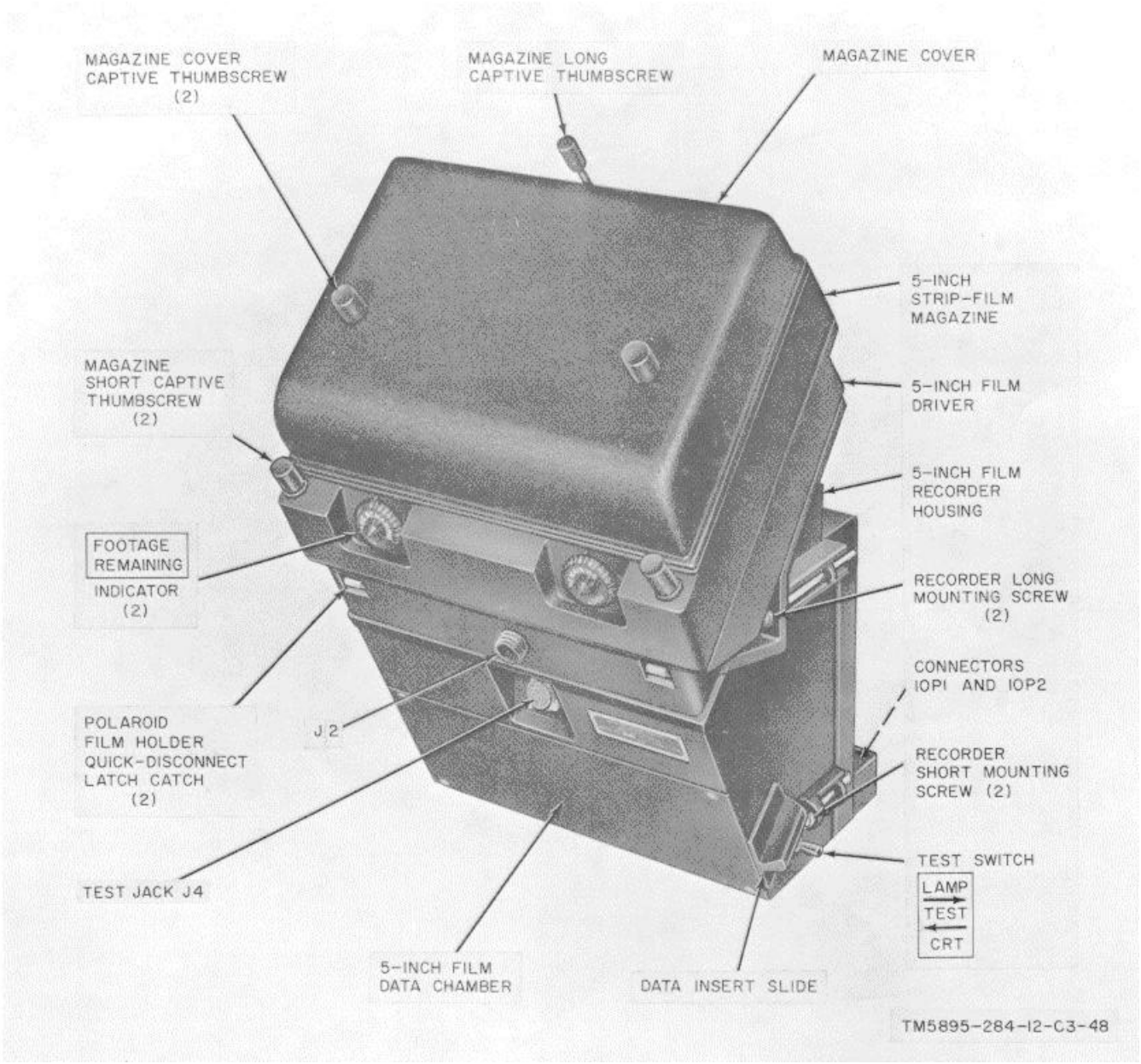


Figure 1-8. Recorder, Radar Mapping RO-225A/APS-94A

provides the radar operator with a visual check of data lamp illumination and cathode-ray tube (crt) trace presence. Two recorder long and two recorder short mounting screws (fig. 1-8) secure the recorder housing to the recorder mounting frame. The four screws are accessible from the outside of the recorder.

b. The 5-inch film driver contains the film drive mechanism and a lens and mirror assembly. Four mounting screws (not shown) attach the 5-inch film driver to the 5-inch film recorder housing. The 5-inch film driver and recorder housing are a matched set and are not interchangeable (with other serially numbered identical assemblies) without realignment by a higher maintenance category.

c. The 5-inch strip-film magazine (fig. 1-9) contains the film rapid advance mechanism, two storage cassettes, two takeup cassettes, two FOOTAGE REMAINING indicators, and a heater subassembly (not shown). The storage cassette contains the unexposed film, and the takeup cassette receives the film that is pulled from the storage cassette during the radar filming program. The FOOTAGE REMAINING indicators are

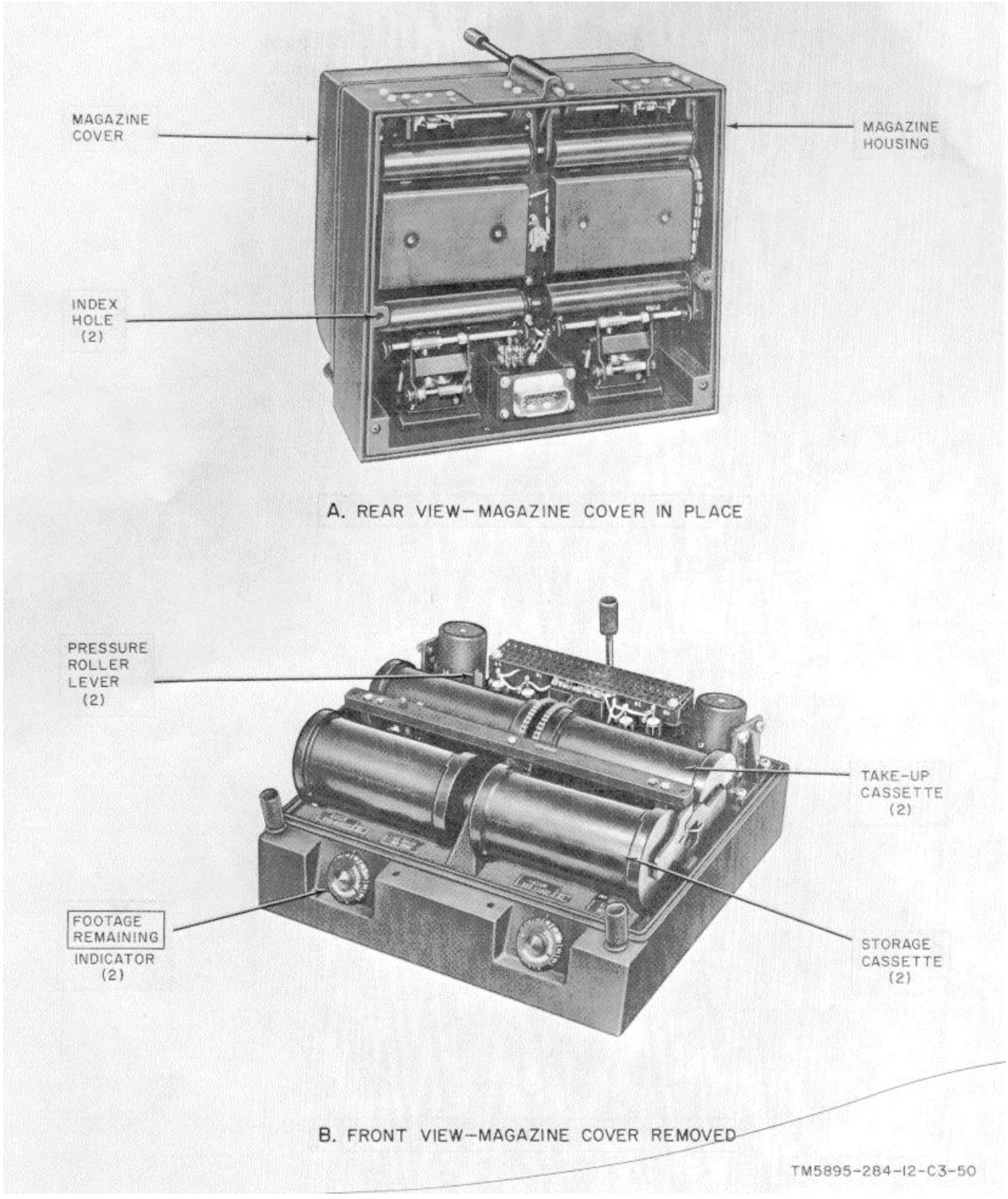


Figure 1-9. 5-inch strip-film magazine (p/o RO-225A/APS-94A).

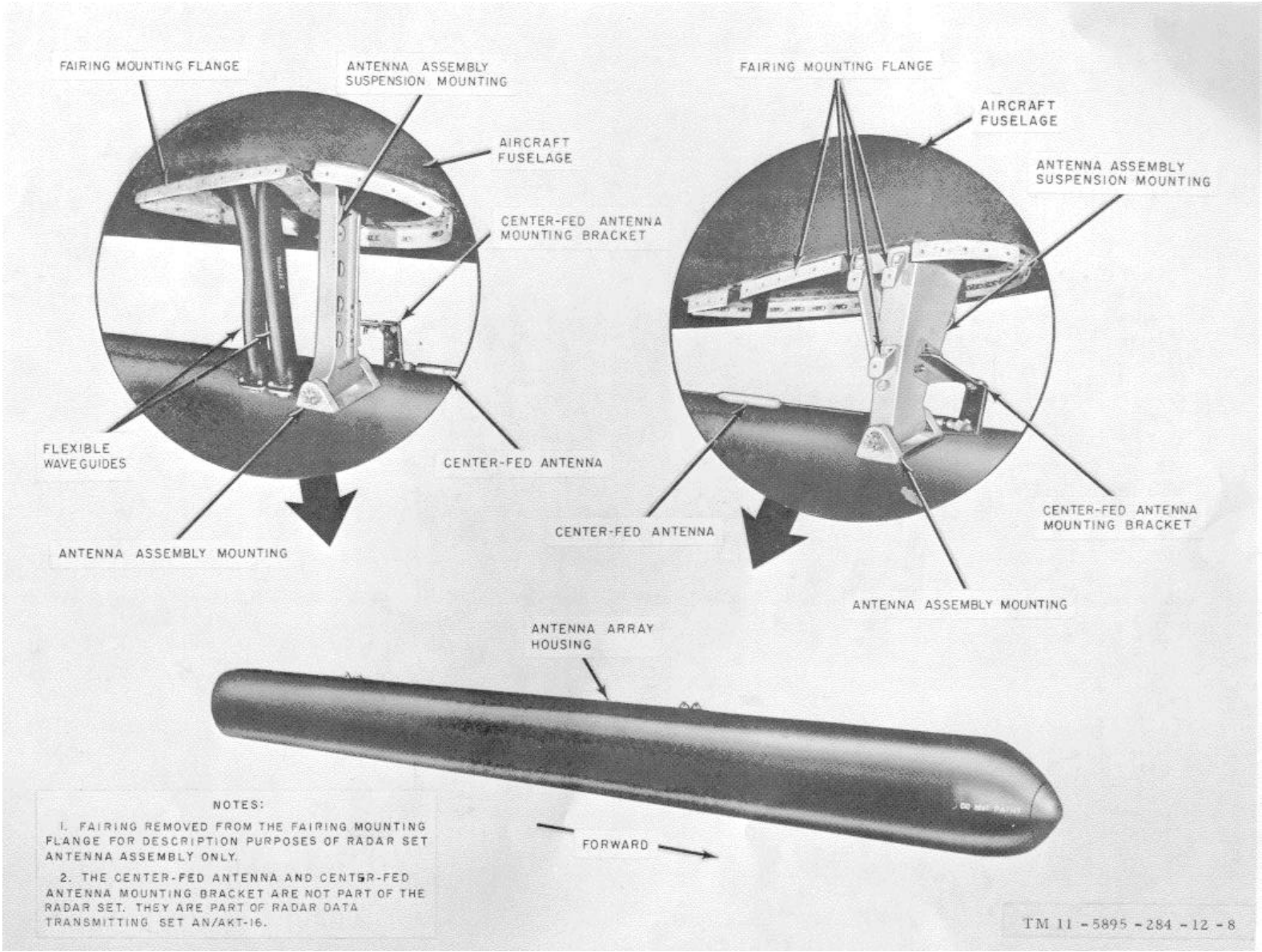


Figure 1-10. Antenna Assembly AS-1048/APS-94.

two dial-type counters (one each for the fixed-target and moving-target film) that display the number of feet of film remaining in the cassette. The heater subassembly incorporates a thermostatic switch to provide a controlled temperature for the 5-inch strip-film so that the light-sensitive film emulsion cannot change as a result of temperature changes. The 5-inch strip-film magazine is attached to the film driver by two short thumbscrews and on long captive thumbscrew (fig. 1-8).

1-14. Use of Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP
(fig. 4-1)

Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP is interchangeable with Recorder, Radar Mapping RO-225A/APS-94A (fig. 1-8). The RO-166(*)/UP eliminates the delay entailed in awaiting the return of the aircraft from its mission and the subsequent processing and viewing of the exposed film.

NOTE

Although the radar set provides drift-angle correction information up to a maximum of ±30° of aircraft drift angle (para 1-26d), the RO-166(*)/UP can apply only ±15° of correction. If the aircraft assumes a drift angle of more than ±15° while the RO-166(*)/UP is being used, map distortion results.

1-15. Antenna Assembly AS-1048/APS-94
(fig. 1-10)

The antenna assembly consists of two antenna arrays (not shown) mounted back to back within a protective antenna array housing. The entire assembly is suspended beneath the aircraft fuselage (fig. 1-3 and 1-t0). Antenna assembly mountings at the front and rear of the housing, provide the means for bolting the housing to the antenna assembly suspension mountings on the aircraft. Figure 1-10 shows the antenna assembly, and figure 1-3 shows its location in a typical installation. Each antenna array, which consists of a slotted waveguide feed and a reflector (not shown), radiates and receives narrow beams of radio frequency (rf) energy right and left at approximately right angles to the heading of the aircraft. The antenna array housing is transparent to radiated and received RF energy and provides protection and fairing for the antenna arrays. The transmitter waveguide ports (fig. 1-4) by two flexible waveguides (fig. 1-10) and two rigid waveguides (not shown).

1-16. Control, Radar Set C-2996/APS-94
(fig. 1-11)

The RADAR control front panel provides the operator with the controls that determine the operating condition of the radar set. Two electrical cable connectors (J1 and J2) are mounted at the rear of the RADAR control case. The RADAR control panel mounts five pilot lamps that illuminate panel markings and also mounts a panel lighting connector. In addition to operating controls, four indicating lamps (,para 2-3b) are also mounted on the RADAR control panel. Four Dzus fasteners secure the RADAR control to the RADAR control and MONITOR mounting frame, which is mounted in the aircraft within easy reach of the operator.

1-17. Control, Recorder C-2997/APS-94
(fig. 1-12)

The RECORDER control front panel provides the operator with the controls that determine the operating condition of the recorder (para 1-13). Electrical connector J1 is mounted at the rear of the RECORDER control case. Also, the front panel contains a panel lighting connector (J2) and is edge lighted. Three indicating lamps are also mounted on the RECORDER control panel. Four Dzus fasteners secure the RECORDER control to conventional aircraft equipment mounting rails within easy reach of the operator.

1-18. Monitor, Video Signal IP-517(*)/APS-94
(fig. 1-13)

The MONITOR consists of a range-calibrated, A-scan, 3-inch cathode-ray tube and associated controls and circuitry that present a display of ft or mt video, or a speed-synchronizing signal voltage pattern that assures the operator that the film drive motor is operating. The front panel mounts the operating controls and five pilot lamps that illuminate panel markings, including two panel lighting connectors. The panel also provides visual access to the crt face and provides hood mounting holes for mounting the MONITOR crt hood. Figure 1-13 shows the MONITOR without the rubber crt hood mounted in place on the front panel. All signals and voltages enter the MONITOR through an electrical connector (J1) and

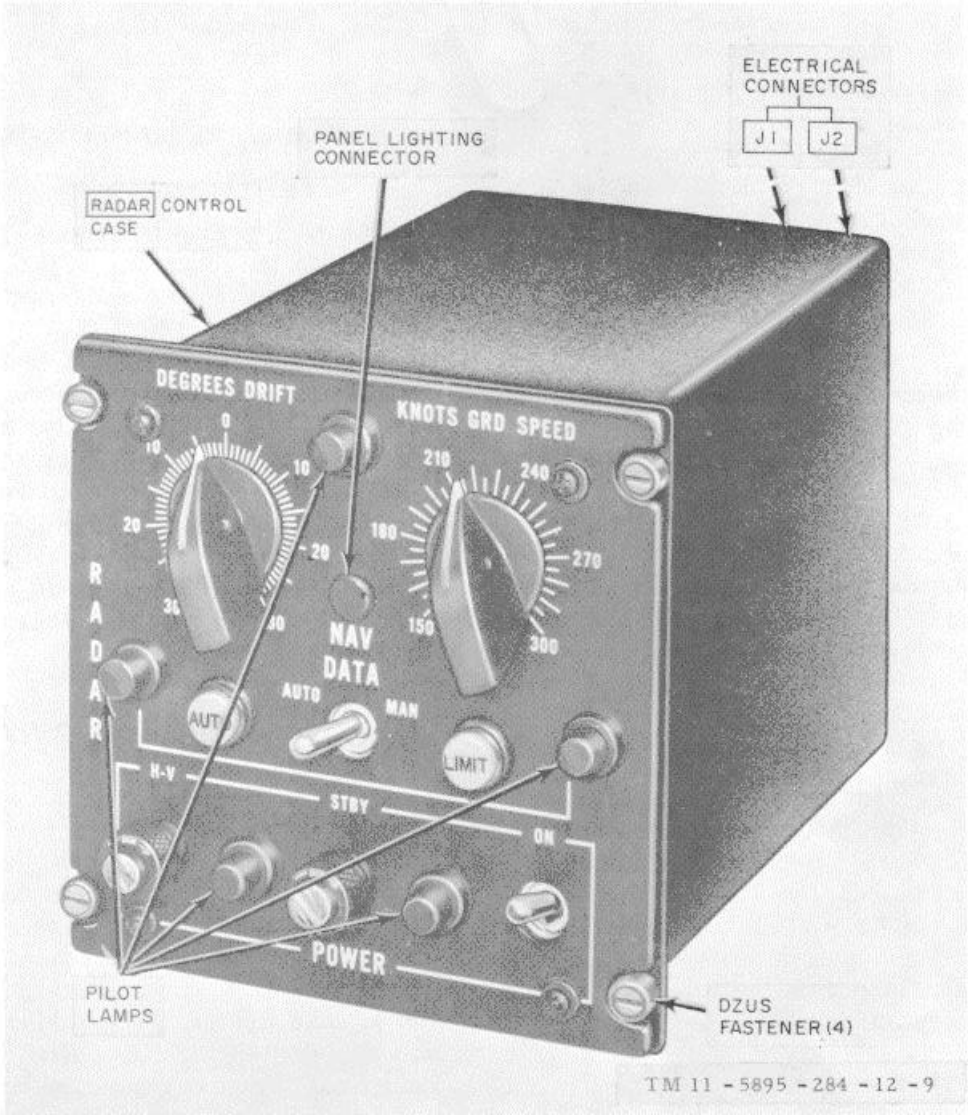


Figure 1-11. Control, Radar Set C-2996/APS-94.

three coaxial connectors (J2, J3, and J4), mounted at the rear of the MONITOR case. Four Dzus fasteners secure the MONITOR to the RADAR control and MONITOR mounting frame, which is mounted in the aircraft within easy reach of the operator.

1-19. Interconnecting Box J-1098(*)/APS-94
(fig. 1-14)

The interconnection box mounts six cable connectors on one end and five cable connectors on the opposite end. One side of the interconnection box mounts two press-to-operate switches (push switches) and five circuit breakers, which prevent damage to the other components from premature application of power or the consumption of excessive power caused by short circuits or part failure. The indicators associated with the two press-to-operate switches (push switches) can be mechanically dimmed. A cover, fastened to the interconnection box with eight cover fasteners, provides protection for and from the internal circuitry. An interlock switch is automatically actuated when the cover is removed. Figure 3-1 shows a top view of the interconnection box with the cover removed. Four shock mounts, on the flanges at the corners of the interconnection box (fig. 1-14), are used to mount the interconnection box in the aircraft.

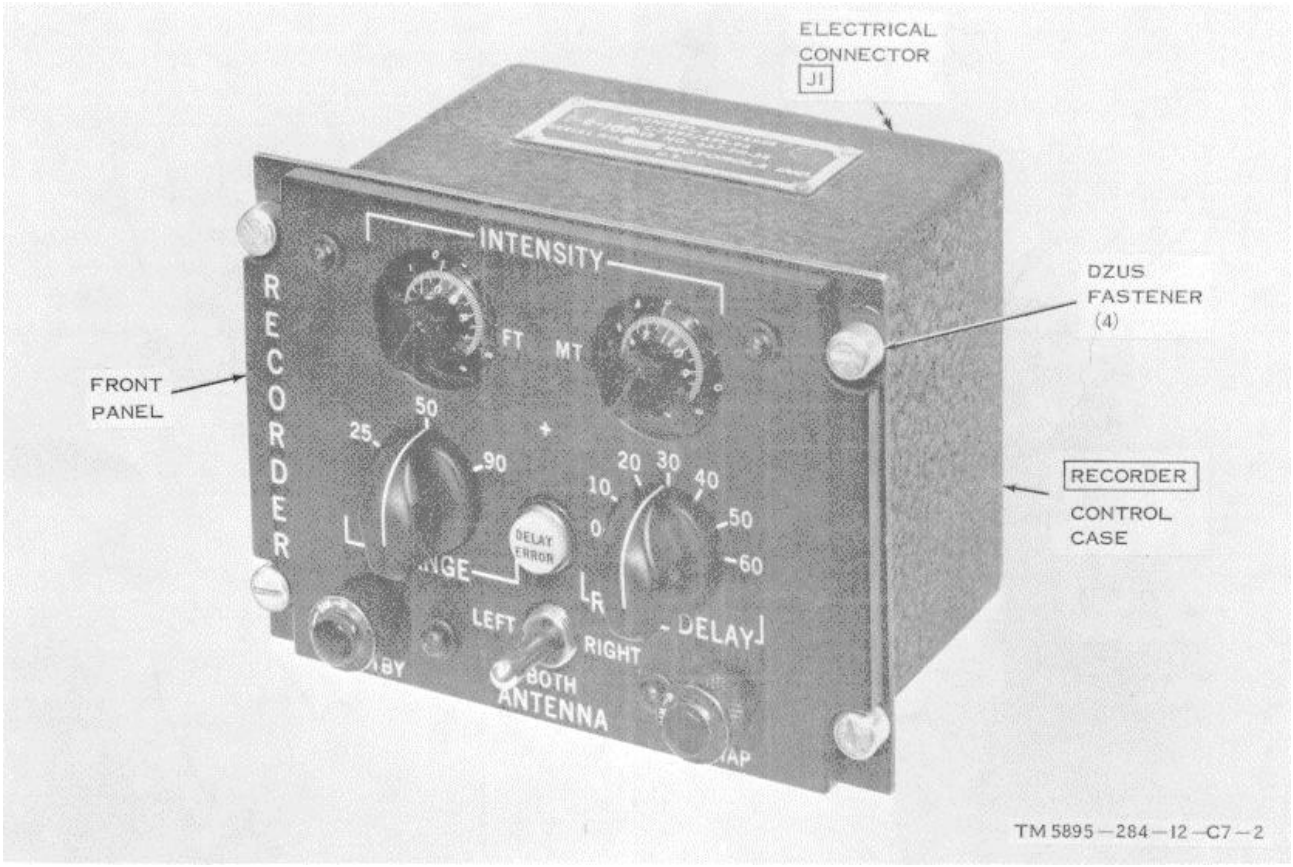


Figure 1-12. Control, Recorder C-2997/APS-94.

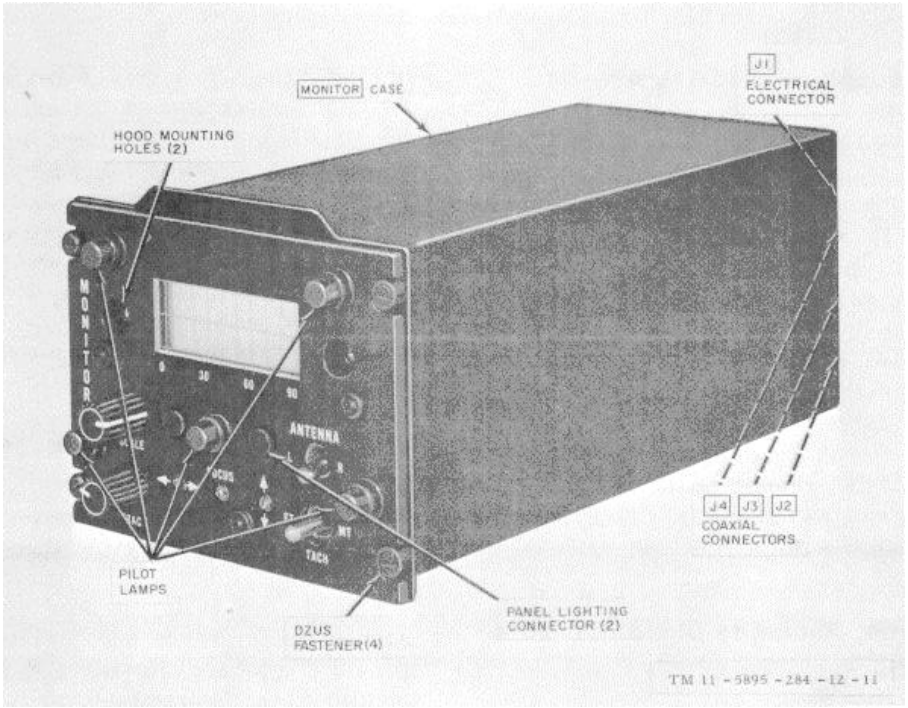


Figure 1-13. Monitor, Video Signal IP-517 (*)/APS-94.

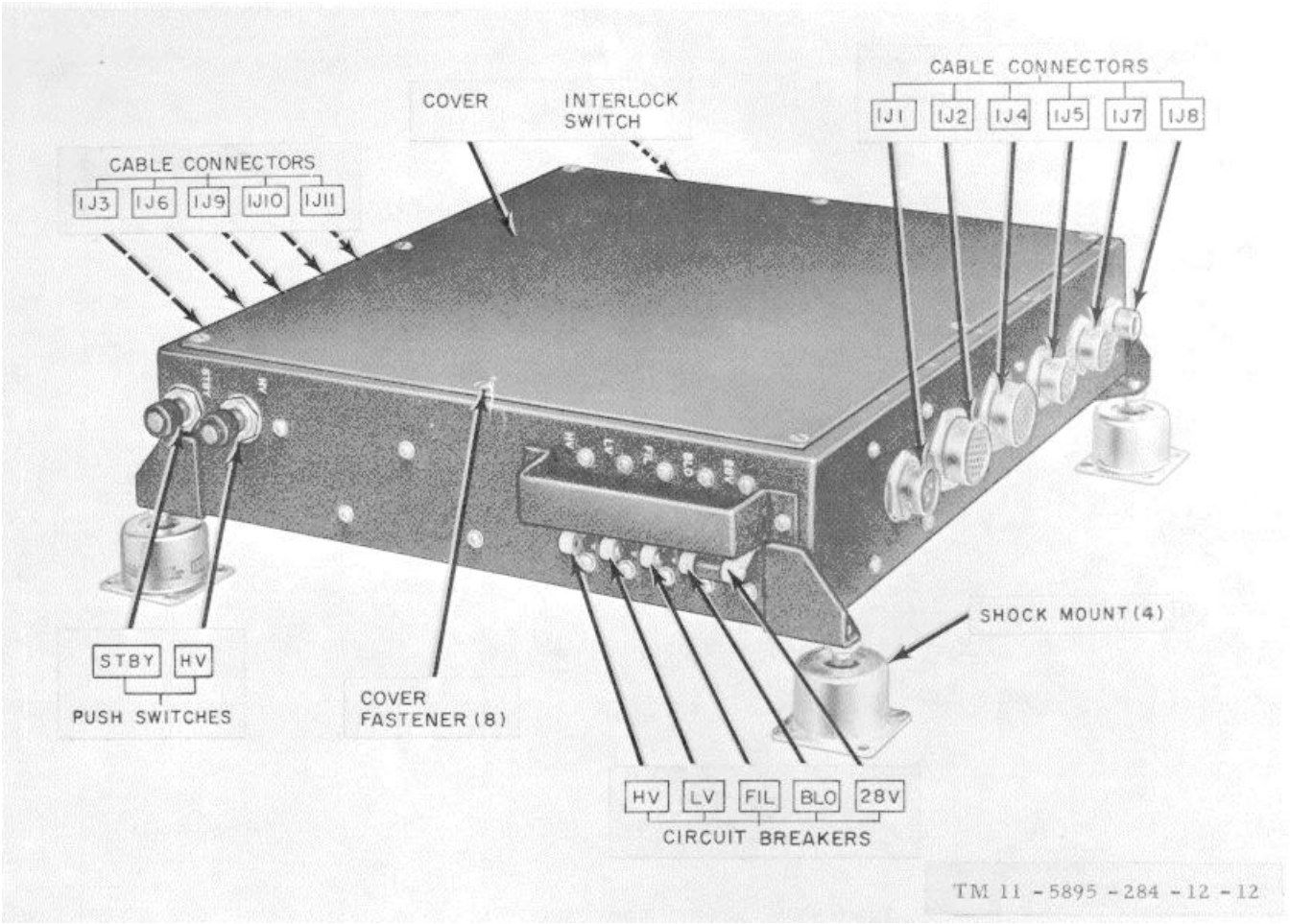


Figure 1-14. Interconnecting Box J-1098 (*) /APS-94.

1-20. Power Supply PP-2404(*)/APS-94
(fig. 1-15)

The power supply chassis is contained in a heat exchanger case similar to that of the synchronizer (para 1-10). The front panel mounts the cable connectors and two pressure-relief valves. The two pressure-relief valves hold the internal pressure of the power supply within 3 pounds of the external pressure. The power supply, like the synchronizer (para 1-10), is installed on a shock-mounted base equipped with guide pins and wingnut fasteners. Guide pin receptacles (fig. 1-15) engage the mounting base guide pins, and the mounting base wingnut fasteners engage the power supply mounting base cleats (fig. 1-15). Handles on the front panel facilitate mounting and demounting the power supply.

1-21. Converter, Analog to Digital CV-2016/APS-94B
(fig. 1-16)

The data converter component, which is used only with the AN/APS-94B and with five modified AN/APS-94A's (not re-nomenclatured but similar to AN/APS-94B), has a rectangular metal housing containing a hinged cover and a front panel. The hinged cover is secured when closed with two latches. The front panel contains four fuseholders, two cable connectors (receptacles), and a running-time indicator. The data converter housing is permanently fastened to a metal base plate that permits attachment to the data converter mounting (fig. 1-17).

1-22. Test Facilities Kit MK-652/APS-94
(fig. 1-18)

The test facilities kit duplicates the functions of the cables permanently installed in the aircraft, and provides additional items for bench testing the radar set. It is intended for use by direct support maintenance personnel. The items comprising Test Facilities Kit MK-652/APS-94 are identified in figure 1-18 and described in *a* through *u* below.

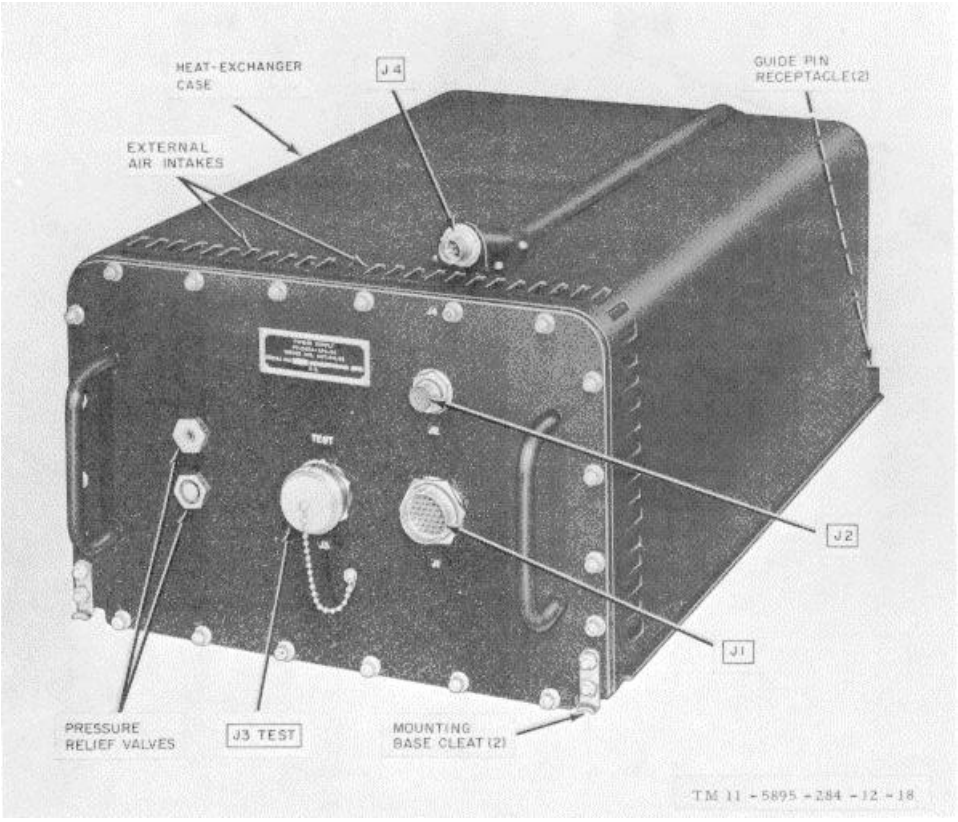


Figure 1-15. Power Supply PP-2404 (*) /APS-94.

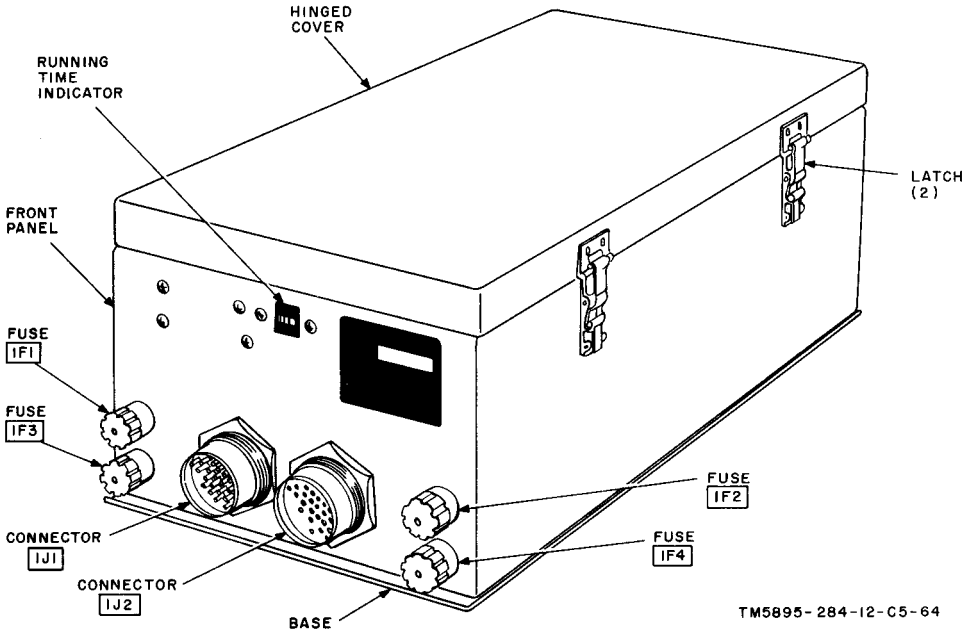


Figure 1-16. Converter, Analog to Digital CV-2016/APS-94B.

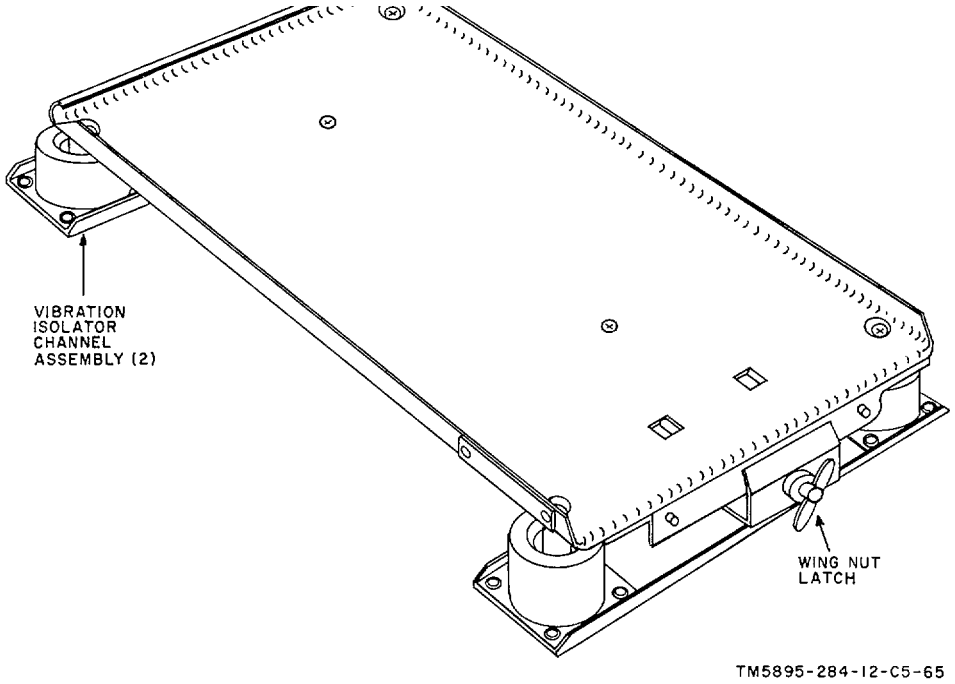


Figure 1-17. Data converter mounting.

a. Cable Assembly, Special Purpose, Electrical CX-9033/APS-94 (Cable W1). This cable is a 10-foot, 7-conductor cable with a connector type DM-9728-197S on one end and no connector on the other end. It connects the interconnection box to Monitor, Power ID-1142/APS-94.

b. Cable Assembly, Special Purpose, Electrical CX-9034/APS-94 (Cable W2). This cable is a 5foot, 37-conductor cable with connector types DM-9728-37P and DM-9728-375. It connects the interconnection box to the power supply.

c. Cable Assembly, Special Purpose, Electrical CX-9035/APS-94 (Cable W3). This cable is a 12-foot, 18-conductor cable with connector types DM-9728-19PW and DM-9728-19S. It connects the interconnection box with the RADAR control.

d. Cable Assembly, Special Purpose, Electrical CX-9036/APS-94 (Cable W3). This cable is an 8-foot, 36-conductor cable with connector types DM-9728-19PW and DM-9728-37SW. It connects the interconnection box to the receiver-transmitter.

e. Cable Assembly, Special Purpose, Electrical CX-9037/APS-94 (Cable W5). This cable is a 10-foot, 19-conductor cable with connector types DM-9728-19PW and DM-9728-19SW. This cable connects the interconnection box to the comparator.

f. Cable Assembly, Special Purpose, Electrical CX-9038/APS-94 (Cable W6). This cable is a 14-foot, 25-conductor cable with connector types DM-9728-27P and DM-9728-27S. It connects the interconnection box to the MONITOR.

g. Cable Assembly, Special Purpose, Electrical CX-9039/APS-94 (Cable W7). This cable is a 15-foot, 13-conductor cable with a connector type DM-9728-19PC on one end and no connector on the other end. It connects the interconnection box to Simulator, Doppler-Navigator SM-344/ APS-94.

h. Cable Assembly, Special Purpose, Electrical CX-9040/APS-94 (Cable W8). This cable is a 15-foot, 6-conductor cable with a connector type DM-9728-7S on one end and no connector on the other end. It connects the interconnection box to Simulator, Doppler-Navigator SM-344/APS-94.

i. Cable Assembly, Special Purpose, Electrical CX-9041/APS-94 (Cable W9). This cable is a 10-foot, 35-conductor cable with connector types DM-9728-37PX and DM-9728-37SX. It connects the interconnection box to the synchronizer.

j. Cable Assembly, Special Purpose, Electrical CX-9042/APS-94 (Cable W10). This cable is a 10-foot, 21-conductor cable with connector types DM-9728-27PY and DM-9728-27SY. It connects the interconnection box to the synchronizer.

k. Cable Assembly, Special Purpose, Electrical CX-9043/APS-94 (Cable W11). This cable is a 11-foot, 27-conductor cable with connector types DM-9728-27SW and DM-9728-27PW. It connects the RECORDER control to the synchronizer.

l. Cable Assembly, Special Purpose, Electrical CX-9044/APS-94 (Cable W12). This cable is a 9-foot, 33-conductor cable with connector types DM-9728-37SW and DM-9728-37PW. It connects the RADAR control to the synchronizer.

m. Cable Assembly, Special Purpose, Electrical CX-9045/APS-94 (Cable W13). This cable is a 4-foot, 37-conductor cable with connector types DM-9728-37PY and DM-9728-37SY. It connects the indicator to the synchronizer.

n. Cable Assembly, Special Purpose, Electrical CX.-9046/APS-94 (Cable W14). This cable is a 4-foot, 32-conductor cable with connector types DM-9728-37PB and DM-9728-37SB. It connects the indicator to the synchronizer.

o. Cable Assembly, Special Purpose, Electrical CX-9047/APS-94 (Cable TV15). This cable is a 3-foot, 30-conductor cable with connector types DM-9728-37PX and DM-9728-37SX. It connects the indicator to the synchronizer.

p. Cable Assembly, Special Purpose, Electrical CX-9048/APS-94. (Cable W28 and W29). This cable is a 12-inch, 7-conductor cable with connector types DM-9728-7P and DM-9728-7S. One connects the synchronizer to its external blower and the other connects the power supply to its external blower.

q. Wiring Harness CX-9049/APS-94. The wiring harness consists of a 13-inch, 37-conductor cable with a 37-pin connector on each end. A handle is attached to one connector to facilitate installation and removal of the wiring harness. The wiring harness furnishes an electrical connection between an extracted synchronizer module and the synchronizer.

r. Cable Assemblies, Radio Frequency CG-530B/U (Cables W16 through W27). Cables W16 through W27 are coaxial cables of varying lengths and constructed of Cable, Radio Frequency RG-62A/U, with a Connector, Plug UG-260B/U on each end.

s. Module Holders Nos. 1, 2, and 3. The three U-shaped module holders are for use in testing certain modules in the synchronizer.

t. Dummy Load, Electrical DA-342/APS-94. The DA-342/APS-94 is an RF dummy load and is a short piece of terminated wave-guide with a waveguide flange on one end for connection to the receiver-transmitter waveguide ports (fig. 1-4). Two RF dummy loads are supplied in the test facilities kit.

u. Coupler, Directional CU-12-2/APS-94. The CU-1212/APS-94 is a metallic directional coupler with two wave-guide flanges at opposite ends of the body and a type N RF connector protruding from the body. Two directional couplers are supplied in the test facilities kits.

1-23. Additional Equipment Required

The following material is not supplied with, or as part of Radar Surveillance Set AN/APS-94(*), but is needed for use with the radar set during operation and installation and must be requisitioned separately.

a. Aircraft Cables and Waveguides. All interconnecting cables and waveguides necessary for installation of the radar set are supplied by the airframe manufacturer as part of the aircraft.

b. Film Cassettes and Exposed Film. A 5-inch strip-film cassette with exposed film is necessary for testing the 5-inch strip-film magazine (para 2-8).

c. Film and Accessories. The following film types and accessories are required for operation:

(1) Developer, type D76 (Federal stock No. 6750-297-3409).

(2) Indicator stop bath, type SB-5.

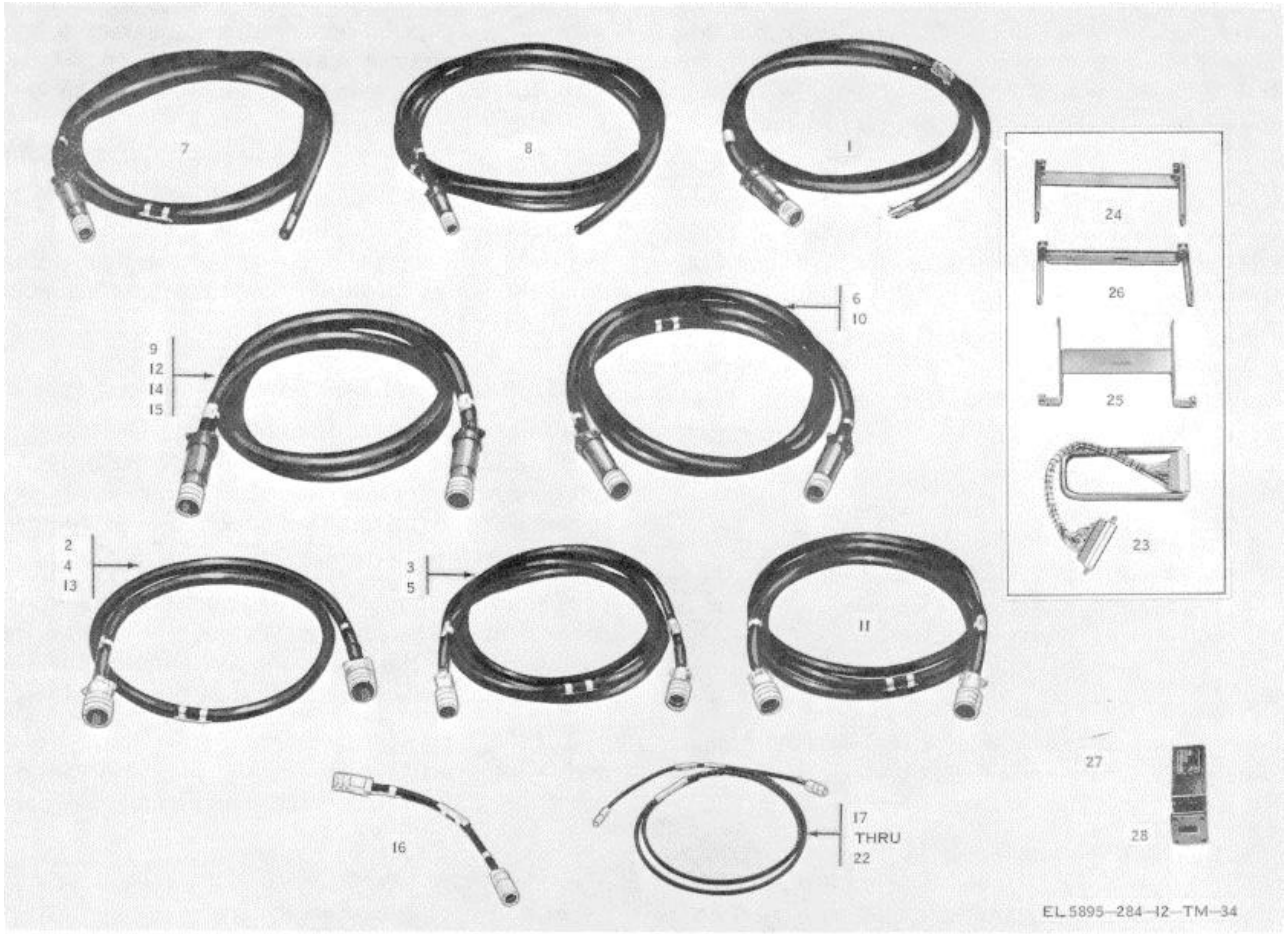
(3) Acid fixer, type F-5 (Federal stock No. 6750-252-4037).

(4) Eastman Kodak Panotomic-X, 5-inch strip film; 25-foot cassette (used with Recorder, Radar Mapping RO-225A/APS-94A).

(5) Eastman Kodak Panatomic-X, 5-inch strip film; 250-foot roll (bulk film, used with film loader only).

d. Motor-Generator PU-573/A. Power for the radar set is furnished by Motor-Generator PU-573/A which is supplied separately for installation in the aircraft.

e. Converter-Storer, Signal Data CV-2094/A. Converter-Storer, Signal Data CV-2094/A (d/a converter) is part of Transmitting Set, Radar Data AN/AKT-18. The d/a converter is required for use only with the AN/APS-94C. It converts aircraft ppd data from three-wire synchro signals to segment voltages for lighting various



KEY to fig. 1-18

1 Cable Assembly, Special Purpose, Electrical CX-9033/APS-94.
2 Cable Assembly, Special Purpose, Electrical CX-9034/APS-94.
3 Cable Assembly, Special Purpose, Electrical CX-9035/APS-94.
4 Cable Assembly, Special Purpose, Electrical CX-9036/APS-94.
5 Cable Assembly, Special Purpose, Electrical CX-9037/APS-94.
6 Cable Assembly, Special Purpose, Electrical CX-9038/APS-94.
7 Cable Assembly, Special Purpose, Electrical CX-9039/APS-94.
8 Cable Assembly, Special Purpose, Electrical CX-9040/APS-94.
9 Cable Assembly, Special Purpose, Electrical CX-9041/APS-94.
10 Cable Assembly, Special Purpose, Electrical CX-9042/APS-94.
11 Cable Assembly, Special Purpose, Electrical CX-9043/APS-94.
12 Cable Assembly, Special Purpose, Electrical CX-9044/APS-94.
13 Cable Assembly, Special Purpose, Electrical CX-9045/APS-94.
14 Cable Assembly, Special Purpose, Electrical CX-9046/APS-94.
15 Cable Assembly, Special Purpose, Electrical CX-9047/APS-94.
16 Cable Assembly, Special Purpose, Electrical CX-9048/APS-94 (2).
17 Cable Assembly, Radio Frequency CG-530B/U (4 ft).
18 Cable Assembly, Radio Frequency CG-530B/U (5 ft) (2).
19 Cable Assembly, Radio Frequency CG-530B/U (6 ft).
20 Cable Assembly, Radio Frequency CG-530B/U (8 ft) (3).
21 Cable Assembly, Radio Frequency CG-530B/U (9 ft) (2).
22 Cable Assembly, Radio Frequency CG-530B/U (10 ft) (3).
23 Wiring Harness CX-9049/APS-94.
24 Holder, Module No. 1--Bench Test.
25 Holder, Module No. 2-Bench Test.
26 Holder, Module No. 3--Bench Test.
27 Coupler, Directional CU-1212/APS-94 (2).
28 Dummy Load, Electrical DA-342/APS-94 (2).

Figure 1-18. Test Facilities Kit A1K-642/APS-94, less Case, Test Facilities Kit CY-4072/APS-94.

segments of the display unit in the RO-225A/APS-94A or RO-166(*)/'UP. These three-wire synchro signals are received by the d/a converter from Control, Indicator C-6586/AYA-3, part of Doppler Navigation Set AN/ASN-64 (f below).

f. Doppler Navigation Set AN/ASN-64. The AN/ASN-64 (Doppler navigator) is a navigation and flight instrumentation system that uses a continuous-wave (cw) Doppler radar to compute and display aircraft navigation data. It provides the ANT/APS-94B and AN/APS-94C with continuous aircraft groundspeed and drift-angle information which is used by the radar set to automatically correct target presentation errors introduced by aircraft drift angle and changes in groundspeed. The AN/ASN-64 also provides ppd data for application to the d/a converter of the AN/AKT-18 (e above), or to Converter, Analog to Digital CV-2016/APS-94B.

g. Loader, Film Photographic MX-4668/APS-94 (fig. 1-19). The film loader provides a rapid and convenient means of loading the storage cassettes used in Recorder, Radar Mapping RO225A/APS-94A. This equipment consists of a hand-operated mechanism housed in a lighttight cast-aluminum case. The case consists of a housing assembly and a cover assembly, which is equipped with a cassette cover, a handle, a film footage indicator, and a film crank. Two large hook and snap fasteners secure the cover assembly in the closed position. The cassette cover also is held in the closed position by two small hook and snap fasteners. The film loader is 7.9 inches high, 16.6 inches long, and 9.3 inches wide.

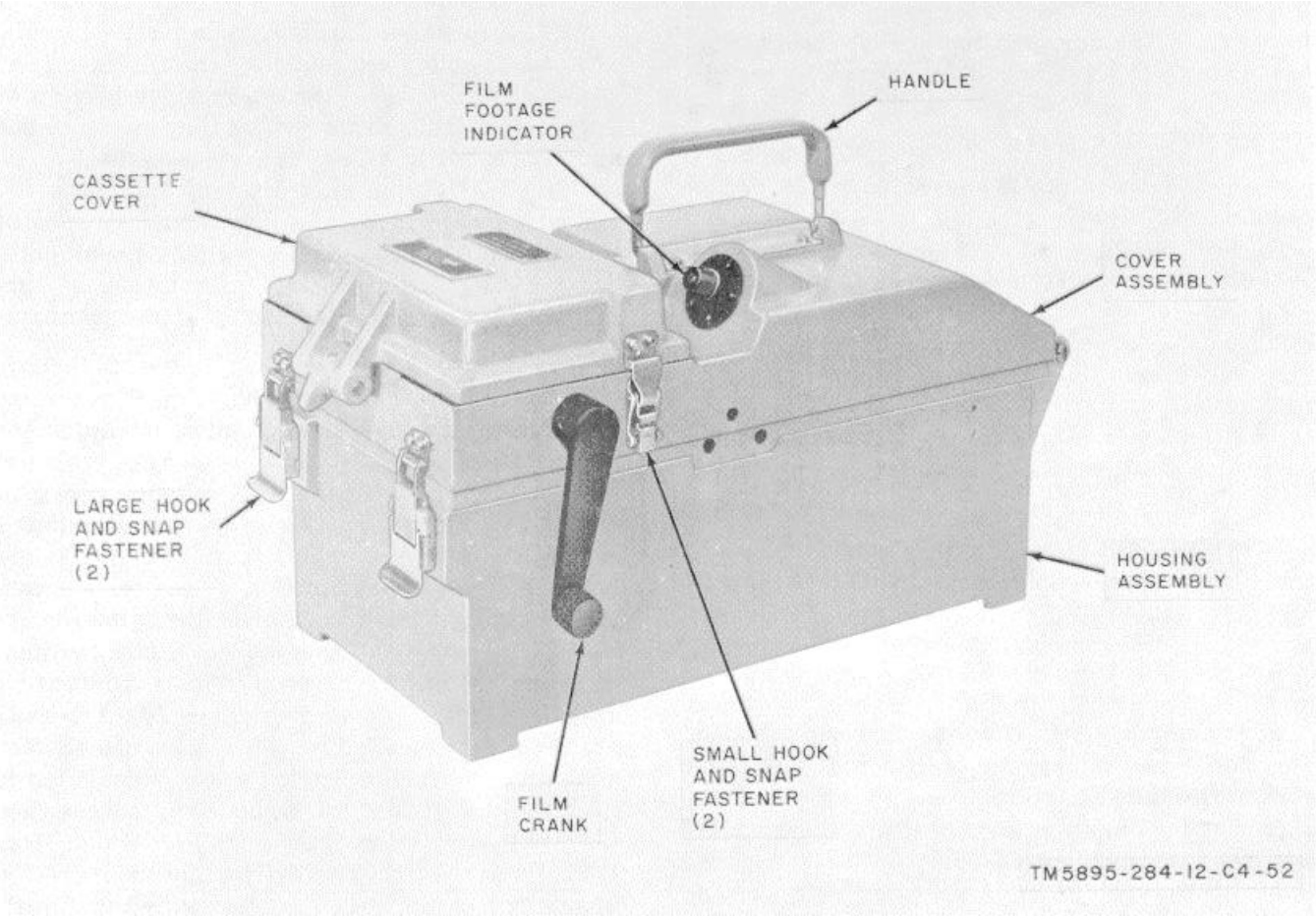


Figure 1-19. Loader, Film Photographic MX-4668/APS94.

Section III. BASIC PRINCEPLES

1-24. Equipment Function

a. General. Radar Surveillance Set AN/ APS-94(*) uses a nonscanning antenna whose axis of radiation is nearly perpendicular to the longitudinal axis of the aircraft. The antenna radiates narrow beams of pulsed rf energy to either or both sides of the flightpath of the aircraft in which it is installed (fig. 1-1). The pulsed energy can be radiated continuously either to left or right, or switched alternately to left and right at a rate that permits simultaneous mapping of terrain on both sides of the aircraft.

(1) The radiated energy moves outward at the speed of light and, when it strikes an object, some of the energy is reflected to the antenna. The reflecting object is called a target, and the reflected energy is called the target signal.

(2) Although the beam is only 0.5° wide, the velocity of the radiated energy is so great compared with the forward motion of the aircraft that many target signals are returned to the antenna from a given target as the beam pattern sweeps across the terrain.

(3) As the aircraft moves along its flightpath, target signals received from the scanned area are recorded on two photographic films. When the films are later developed, they yield two kinds of information: fixed-target information and moving-target information. Target signals from all targets in the scanned area are called ft information and are recorded on one of the films; target signals from moving objects are extracted from the ft signals and recorded as intensified spots on the other film.

(4) In addition to the target information in the maps, maps produced by the AN,/APS-94B and AN/APS-94C include ppd data. These data and the ppd system are described in paragraph 1-27.

b. Functional Block Diagram. Figure 1-20 is a functional block diagram of the radar set and shows the functional relationship of the main components. Phantom lines on the diagram indicate the component breakdown of the radar set. All synchronization within the radar set is accomplished either directly or indirectly by accurately spaced pulses (trigger pulses) generated by the trigger generator in the comparator. The sequence of operation starts at the comparator, which generates a series of trigger pulses. The number of trigger pulses generated each second determines the trigger pulse repetition rate (prr).

(1) Transmission. The trigger generator of the comparator triggers the transmitter portion of the receiver-transmitter; this causes it to transmit a 0.5-microsecond (µsec) RF pulse. The transmitted pulse passes through a duplexer (ferrite switch circulator), which directs the pulse to either the left or to the right antenna, or alternately to both. If the areas on both sides of the aircraft are to be mapped simultaneously, the energy is switched from one antenna to the other approximately 23 times per second with 16 pulses transmitted from each array during each period. If the area on only one side of the aircraft is to be mapped, the energy is fed continuously to the antenna on that side of the aircraft. Paragraph 1-25 describes the scanning method used by this radar set.

(2) Reception. Target signals received by the antenna assembly are routed by the duplexer (ferrite switch circulator) to the receiver portion of the receiver-transmitter, where they are amplified and converted to video. The video signal, which contains both ft and mt video information, is displayed unmodified by the ft cathode-ray tube of the indicator and in modified form by the mt cathode-ray tube after the ft information is suppressed by the cancellation unit of the comparator.

(3) Synchronization. The trigger generated by the comparator enters a timing circuit in the synchronizer that counts the triggers and switches antennas (through the antenna gate generator and duplexer (ferrite switch circulator) every 16 triggers when both antennas are being used. Another function of the trigger-controlled timing circuit is to drive the synchronizer sweep generator, and thereby to initiate the indicator crt (ft and mt) sweep signals. Drift-angle data from the Doppler navigator (para 1-26d) are fed automatically into the synchronizer sweep generator to synchronize the sweep signals fed to the indicator ft and mt cathode-ray tubes when the RADAR control NAV DATA switch (fig. 1-11) is at AUTO. The drift-angle data are fed manually into the sweep generator by the adjustment of the RADAR control DEGREES DRIFT knob when the NAV DATA switch is at MAN.

(4) Display and recorder. The crt traces, which originate at the centers of the tube screens, are directed

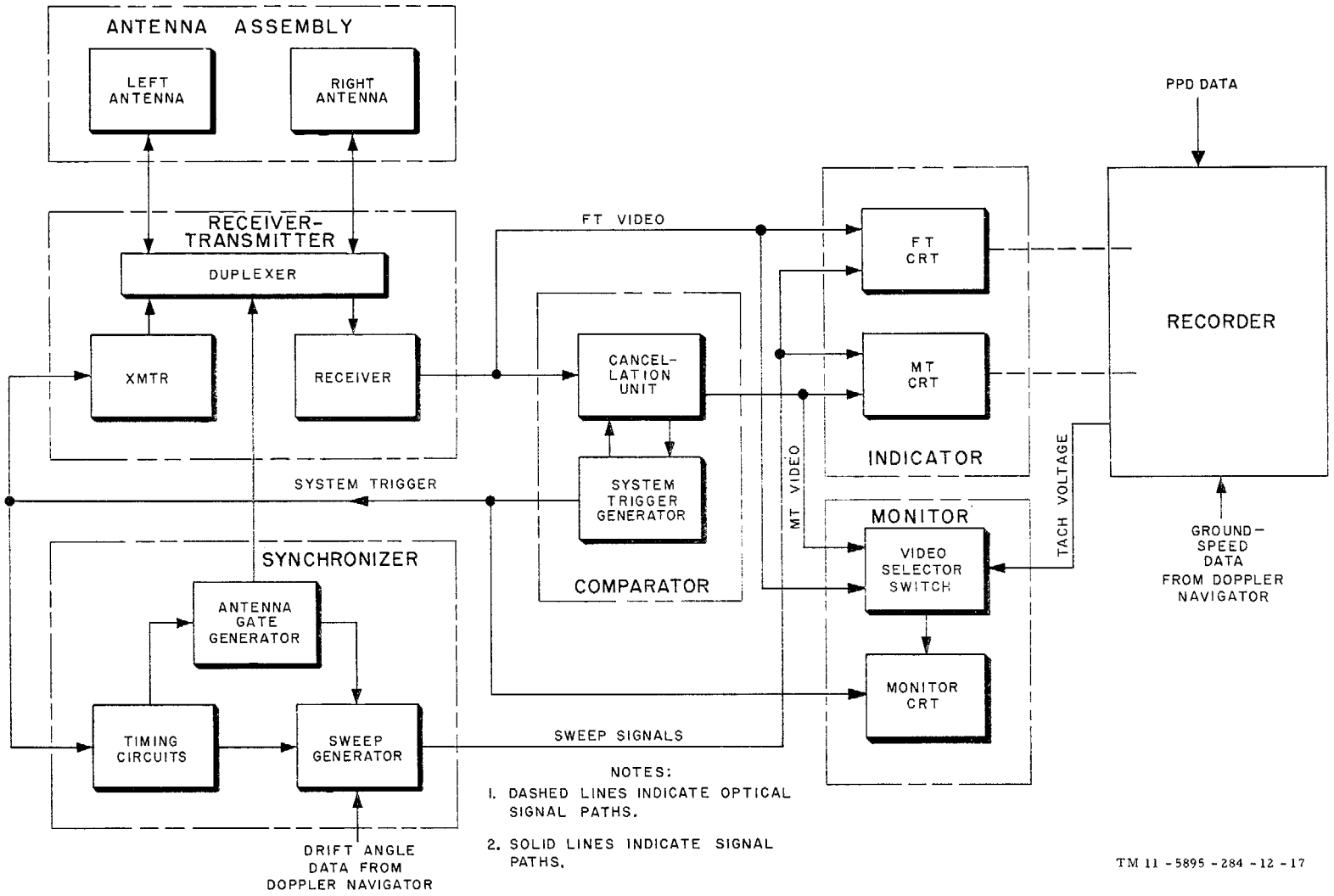


Figure 1-20. Radar set, functional block diagram.

left or right by the sweep signals from the sweep generator. The polarity of these signals is determined by the synchronizer antenna gate generator to correspond in direction to the antenna in use. Photographic films in the recorder are mechanically moved past the lens-produced images of the crt traces. The movement rates of the photographic films are proportional to the dial setting of the RADAR control KNOTS GRD SPEED control knob when the NAV DATA switch is at MAN. Groundspeed data from the Doppler navigator (para 1-26d) are fed automatically into the RECORDER, thereby synchronizing the mechanical movement of the photographic films in the recorder at a rate proportional to the groundspeed of the aircraft when the RADAR control NAV DATA switch is at AUTO (fig. 1-11).

(5) *Monitoring.* The MONITOR provides a means of monitoring the mt video signal output from the cancellation unit of the comparator, the ft video signal output from the receiver portion of the receiver-transmitter, or the speed-synchronizing input (groundspeed data from the Doppler navigator) to the film drive motor of the recorder. The video selector switch (FT-TACH-MT, fig. 2-3) on the monitor selects either the fixed-target video, the tachometer voltage (tachometer-voltage) to the film drive motor (a typical 400-cps signal indication is shown in figure 2-7), or the moving-target video, and feeds the selected signal to the 3-inch cathode-ray tube MONITOR crt for display monitoring.

c. Equipment Application. The photographically recorded map information gathered by the radar set can be used by a trained observer in the analysis of terrain, both familiar and unfamiliar, and in the location of moving targets. Target presentation is described in detail in paragraph 1-26.

1-25. Scanning

In general, scanning is the process of moving a beam of RF energy across an area. Ordinary search radars use an antenna that can be rotated either continuously through 360° in azimuth or back and forth through a specific sector and azimuth. Scanning, as performed by Radar Surveillance Set AN/APS-94(*), is accomplished by flying the aircraft in which the radar set is installed across the area to be surveyed (or to one side), while two antennas mounted back to back radiate identical fixed beams of energy at approximately right angles to the longitudinal centerline of the aircraft. As the aircraft moves along its flightpath, terrain to a maximum of 90 kilometers on each side of the aircraft is scanned by the beams. Scanning can be confined to either side or both sides of the aircraft, depending on the requirements of the mission.

1-26. Target Presentation

a. General. Target presentation consists of two permanent photoradar maps. The film from which the maps are printed are two strips of film 5 inches wide and may be up to 25 feet long. The actual display of target information in the indicator consists of intensity-modulated traces on the screens of a pair of cathode-ray tubes (fig. 1-7). On one of these traces is displayed all the target information gathered by the radar set, and on the other only the moving-target information. The traces on the cathode-ray tubes are swept right and left from the centers of the cathode-ray tube screens in synchronism with the transmitted radar pulses. The sweeps are initiated by each trigger pulse and are directed left or right by the same circuits that direct the transmitted pulses to the left or right side of the aircraft. In the recorder, which mounts on the front of the indicator (fig. 1-2), images of these traces are focused onto the photographic films by an optical system. To produce the maps, the films are moved past the focus point at a rate proportional to the groundspeed of the aircraft. This rate can be controlled either automatically or manually (d(2) below).

b. Moving-Target Detection Principles. The ability of any pulsed radar set to detect moving targets largely depends on the radial velocity of the target with respect to the radar set. Other factors influencing this ability are the amount of energy reflected from the moving target and the physical characteristics of fixed targets in the vicinity of the moving target.

(1) *Random target movement.* Random movement of minor, essentially fixed targets can sometimes partially obscure the movement of a major moving target. An example of this is a moving truck surrounded by bushes and trees. If the leaves and branches are being blown by the wind, the foliage might appear as moving targets, and thereby prevent the detection of the truck. Since the target signals returned by major targets are usually both stronger and more constant than those returned by minor targets, it is unlikely that a major moving target would ever be completely obscured by the random movement of minor targets.

(2) *Background clutter* . The mt display of an airborne radar set always contains some background clutter from fixed targets in addition to moving targets. This is caused by two factors: the imperfect cancellation of fixed-target signals by the radar set, and the illumination of an area by the radar beam rather than the illumination of a single target.

c. Radar Set Moving-Target Detection Principles. Mt signals are separated from ft signals by the comparator cancellation unit (fig. 1-20). Moving targets can be detected by the radar set only because the beam of energy transmitted by the set is not a ray, hitting only one point on the ground, but instead illuminates an area so that target signals from the area include reflections both from moving targets and from fixed targets nearby. Signals from various targets arrive at the antenna from different distances and, therefore, at slight displacements in time. This time displacement results in phase differences between the signals. Because of their phase differences, the amplitude of the total signal entering the antenna at that instant will not be the simple sum of the amplitudes of the signals present but will be their vectorial sum, a sum that takes into account their phase differences.

(1) In producing the vectorial sum, the amplitudes of the individual target signals sometimes add or partially add, and sometimes subtract or partially subtract. Target signals from a group of fixed targets present to the radar receiver a composite signal that is identical for every radar pulse. If, however, the group includes a target moving radially, the distance of the moving target from the antenna changes between radar pulses, which causes the time displacement of its contributing signal to change. The resulting change in phase difference between the moving target signal and those of the fixed targets causes the vectorial sum of the signals to change. This change in composite signal amplitude is the factor employed by the radar set to detect the moving target.

(2) In the comparator unit, the amplitude variations cause instantaneous changes in the frequency of an oscillator. The oscillator output in response to a target signal, is then compared to the delayed oscillator output that results from the previous signal. Phase differences between these two signals exist when moving-target signals are present which produce an output from the comparator cancellation unit that intensifies the electron beam in the mt cathode-ray tube. The increased intensities recorded on the film appear as black spots on the negative.

d. Drift-Angle and Groundspeed Corrections. Special circuits in the radar set compensate for map distortion introduced by aircraft drift angle and variations in groundspeed.

(1) *Drift-angle correction.* When an aircraft follows a prescribed ground course in a crosswind, it must alter its heading to maintain its course. The angular difference between the heading of the aircraft and its course, or flightpath, is called the drift angle. When the aircraft that carries the radar set is forced to assume a drift angle, the radar beams are rotated through an angle equal to the drift angle and are no longer radiated at approximate right angles to the flightpath. In the indicator (fig. 1-20), targets are presented to the recorder as intensity modulated horizontal crt traces. Unless the angular displacement of the radar beams is accompanied by a corresponding displacement of the traces, map distortion results. To prevent drift-angle distortion, circuits in the sweep generator correct the sweep signals applied to the indicator, which then rotate the crt traces about their origins at the centers of the screens. The amount of rotation of the traces is equal to the aircraft drift angle to a maximum of 30° in response to drift-angle information supplied either by the aircraft Doppler navigator (not part of the radar set), or manually by the operator. In B, figure 2-4, the data chamber DRIFT meter indicates an 8° drift angle to the left of the aircraft during the mapping run. This indication shows that a crosswind attempted to force the aircraft to the left of its flightpath, and the pilot changed the heading 8° to the right in compensation. The traces of the cathode-ray tubes were rotated 8° to the right to compensate for this drift angle. Rotation of the traces is accomplished electromechanically by circuits in the synchronizer, either automatically as a function of drift-angle information obtained from the aircraft Doppler navigator, or manually by the setting of the DEGREES DRIFT control on the RADAR control (fig. 1-11).

(2) *Groundspeed correction*. As described in a above, the photographic film on which the photoradar maps are recorded is moved at a rate proportional to the groundspeed of the aircraft. When the groundspeed changes, the speed of the film must change accordingly to preserve map linearity. Film speed can be controlled automatically as a function of groundspeed information obtained from the Doppler navigator (not part of the

radar set), or manually by the setting of the KNOTS GRD SPEED control knob on the RADAR control (fig. 1-11).

e. Flight Data. Certain flight data, necessary for proper identification and interpretation of the photoradar maps, are photographed in the recorder and appear on the photoradar maps. The data-chamber indicators that exhibit the flight data are discussed in paragraph 2-6 and illustrated in figure 2-4.

1-27. Present Position Display System

a. General. The function of the ppd system is to produce aircraft present position coordinate data on the photoradar map as the film is transported through the recorder. These data will appear periodically on the completed radar map as numeric indications that show the mapping aircraft position in kilometers north or south, and east or west of a reference point.

b. Numeric Printout (fig. 1-21). The ppd presentation appears as two numeric printouts, one above the other, shown typically in figure 1-22. They are photographically recorded on the edge of the same film that presents the radar map information (c below). The uppermost printout is a three-digit number indicating the aircraft position in kilometers north or south of a preselected starting point. The lower printout is a three-digit number indicating the aircraft position in kilometers

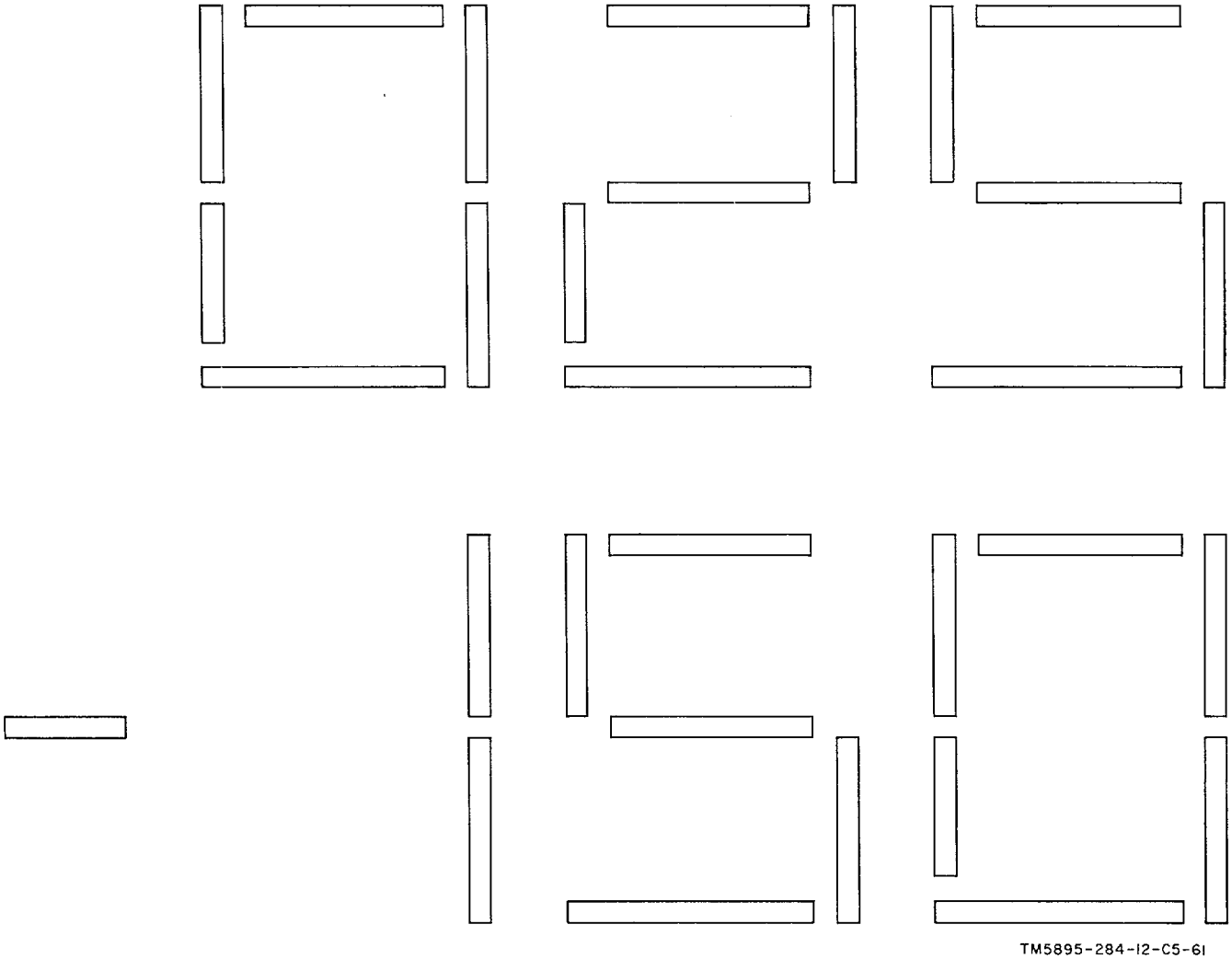


Figure 1-21. Present position display, typical numerical printout.

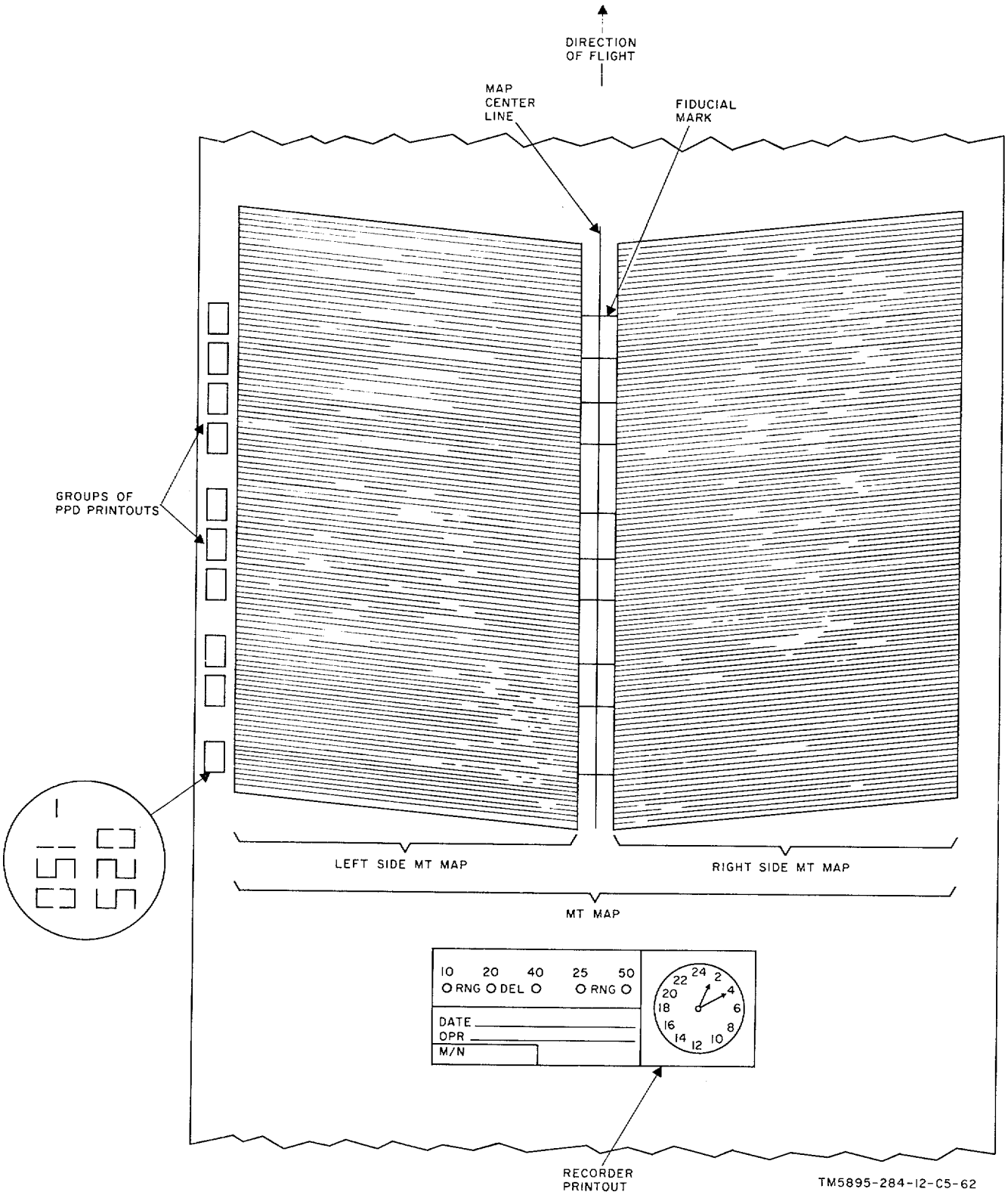


Figure 1-22. Present position display, typical RO-225A/APS-94A snap format.

east or west of the starting point. A minus sign preceding the upper printout indicates a position south of the starting point, while the absence of a minus sign indicates a position north of the starting point. A minus sign preceding the lower printout indicates west and the absence of a minus sign indicates east. The typical ppd printout shown in figure 1.-21 would have been printed on the film at a time when the aircraft was located 25 kilometers north and 150 kilometers west of the starting point. The ppd system is capable of displaying the aircraft present position from 0 to 999 kilometers north or south and 0 to 999 kilometers east or west of the starting point.

c. Fiducial Marks (fig. 1-22). Fiducial marks are reference marks that are recorded close to the centerline of the photoradar map. They extend outward a distance representing approximately 2 kilometers from the center of the map. The fiducial marks are recorded on the film at the same time the ppd printout is recorded. Thus, they show the aircraft position on the map centerline that corresponds to the numeric printout, which is located at the edge of the mt map only. Fiducial marks are recorded on both the ft map and the mt map.

d. Code Spacing (fig. 1-23). The fiducial marks and the ppd printouts are recorded in group sequences separated by slightly wider spacings. Ten printouts occur for every 3½ inches of film in the RO-225A,/APS-94A recorder and every 3 inches if the RO-166B/U recorder is used. These displays appear in a recurring sequence of 1, 2, 3, and 4 printouts per group (fig. 1-23). This code spacing corresponds to a similar code spacing of the fiducial marks, thus correlating the ppd with the fiducial mark recorded at the same time. Correlation of the ppd printouts with corresponding fiducial marks is illustrated in figure 1-22. The coding permits correlation of fiducial marks with corresponding ppd printouts despite the presence of drift-angle correction.

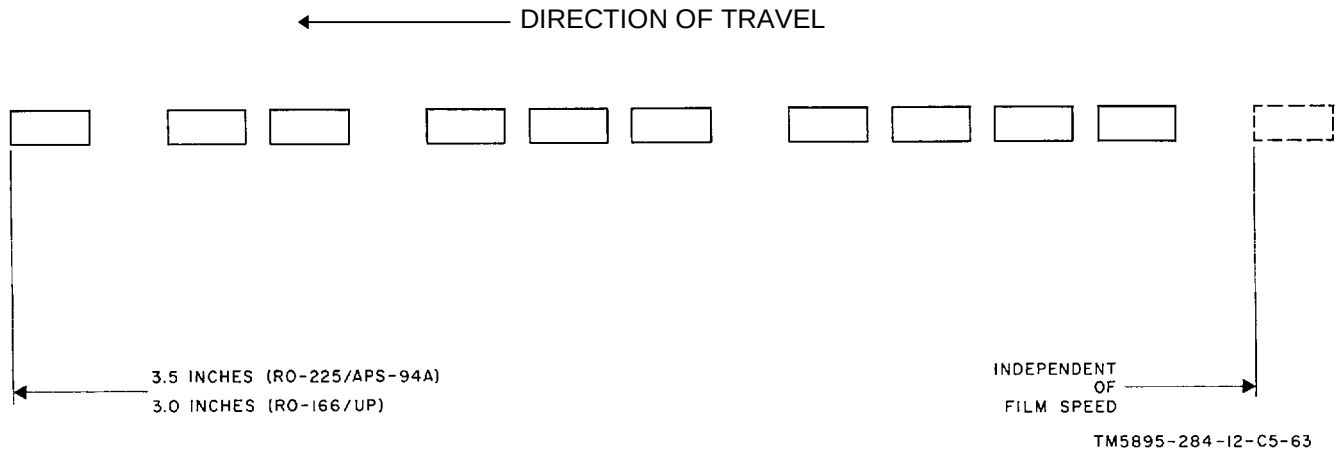


Figure 1-23. Present position display printout spacing on photoradar map.

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. OPERATOR CONTROLS AND INDICATORS

2-1. General

The radar set operating controls are on the front panels of three components: the RADAR control the RECORDER control, and the MONITOR. Al controls and indicators used by the operator are discussed in paragraphs 2-2 through 2-5. Operating controls for the film loader are discussed in paragraph 2-7.

NOTE

The circuit breakers on the interconnection box (fig. 1-14) are not operating controls and are normally left in the on position. The H-V and STBY push switches and indicators on the interconnection box are functionally identical with the H-V and STBY switches and indicators on the RADAR control and are used during maintenance of the radar set.

2-2. Improper Setting of Controls

When the RADAR control NAV DATA switch (fig. 2-1) is at AUTO, the DEGREES DRIFT and the KNOTS GRD SPEED control knobs take position automatically; this indicates the drift-angle and ground-speed information being fed to the radar set by the Doppler navigator. It is possible to turn and hold these knobs manually to the wrong setting. If this is done, false information is fed to the target-presentation circuits, and map distortion results.

2-3. RADAR Control, Controls and Indicators (fig. 2-1)

a. Controls. The following chart lists the controls of the RADAR control and indicates the function of each:

Control	*Function*
ON switch (2-position toggle)	At ON, connects primary power to the radar set. (There is no immediate indication that power is on. After 30 seconds, a trace appears on the monitor cathode-ray tube. After 3 minutes, the blue STBY lamp lights on the RADAR control.) In the off position, disconnects primary power to the radar set.
H-V switch (press-to-operate)	If the RADAR control blue STBY lamp is lighted, depressing the H-V switch places the radar set in the transmitting condition. (The RADAR control blue STBY lamp is extinguished, and the green H-V lamp lights.)
STBY switch (press-to-operate)	If the radar set is in the transmitting condition, depressing the STBY switch places the radar set in the ready (nontransmitting) condition. (The RADAR control green H-V lamp is extinguished, and the blue STBY lamp lights.) If overload relays disable the radar set, depressing the STBY switch resets the overload relays. (The RADAR control blue STBY lamp remains extinguished while the radar set is disable d and lights when the overload relays are reset.)
DEGREES DRIFT control knob (continu ously variable).	With the NAV DATA switch at AUTO, the control indicates the amount of drift-angle correction signal from the Doppler navigator. With the NAV DATA switch at MAN, the control is adjusted to provide drift-angle correction information to the indicator.
KNOTS GRD SPEED control knob (contin-uously variable).	With the NAV DATA switch at AUTO, the control indicates aircraft ground-speed from the Doppler navigator. With the NAV DATA switch at MAN, the control is adjusted to provide groundspeed information to the film-drive circuits.
NAV DATA switch (2-position toggle)	Selects AUTO or MAN control of the aircraft's groundspeed and drift-angle data.

Sw pos	*Action*
AUTO	Aircraft drift-angle and groundspeed target presentation corrections (para 1-27) are made automatically.
MAN	Aircraft drift-angle and groundspeed target presentation corrections are made manually by the DEGREES DRIFT and KNOTS GRD SPEED controls. (The green AUTO lamp lights when the NAV DATA switch is at AUTO and the Doppler navigator is working. The white LIMIT lamp lights when either the DEGREES DRIFT or KNOTS GRD SPEED control knob reaches its limit.)

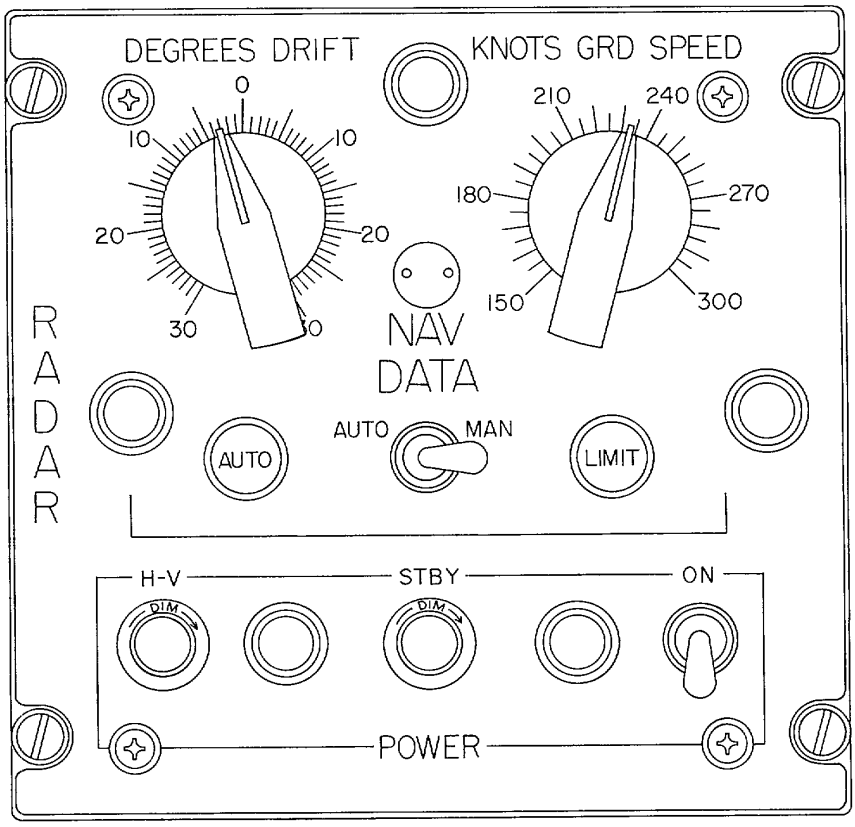


Figure 2-1. RADAR control, front panel.

b. Indicators. The following chart lists the RADAR control indicators (fig. 2-1) and indicates the function of each:

NOTE

Illumination of the H-V and STBY indicators can be decreased mechanically when the indicator is turned in the direction of the DIM arrow, which closes the shutters within the indicator.

Indicators	*Functions*
H-V lamp (part of H-V switch, green)	Lights when the radar set is in the transmitting condition.
STBY lamp (part of STBY switch, blue)	Lights 3 minutes after the ON switch is set to ON; this indicates that the radar set is ready to operate. Is extinguished when the radar set is placed in the transmitting condition or when the overload relays are tripped.
LIMIT lamp (white)	Lights when either the DEGREES DRIFT or the KNOTS GRD SPEED control is driven to its limit, either automatically or manually.
AUTO lamp (green)	Lights when the NAV DATA switch is at AUTO and the Doppler navigator is feeding groundspeed and drift-angle information to the radar set.

2-4. RECORDER Control and Recorder, Controls and Indicators

(fig. 2-2)

a. RECORDER Control, Controls. The following chart lists the controls of the RECORDER control and indicates the function of each:

Control	*Function*
STBY switch (press-to-operate)	Places the equipment in standby. If the green MAP lamp is not lighted, depressing the MAP switch places the film in the position to begin mapping. If the green MAP lamp is lighted, depressing the STBY switch stops mapping and places the equipment in standby. (Blue STBY lamp lights.)

a. RECORDER Control, Controls (cont.)

Control	*Function*
MAP switch (press-to-operate).	Starts mapping; green MAP lamp lights.
ANTENNA switch (3-position toggle)	Selects the flightpath terrain to be scanned by the antenna's radiated RF energy.

Sw pos	*Action*
LEFT	Radar set maps terrain to the left of the aircraft's flightpath.
RIGHT	Radar set maps terrain to the right of the aircraft's flightpath.
BOTH	Radar set maps terrain to both sides of the aircraft's flightpath.

RANGE DELAY switch (7-position rotary).	Determines the minimum range of the recorded map, calibrated in kilometers.
RANGE switch (3-position rotary)	Determines the range interval of the recorded map, calibrated in kilometers.
FT INTENSITY (10-turn control)	Provides adjustment of the intensity of the trace applied to the ft crt.
MT INTENSITY (10-turn control)	Provides adjustment of the intensity of the trace applied to the mt crt.

b. RECORDER Control, Indicators. The follow ing chart lists the RECORDER control indicators (fig. 2-2) and indicates the function of each.

NOTE
Illumination of the STBY and MAP indicators can be decreased mechanically when the indicator is turned in the direction of the DIM arrow, which closes the shutters within the indicator.

Indicators	*Function*
STBY lamp (part of STBY switch, blue)	Lights when the STBY switch is depressed.
MAP lamp (part of MAP switch, green)	Lights after the MPA switch has been pressed, data-chamber information has been recorded, and the film has advanced to the mapping position.
DELAY ERROR lamp (white)	Lights when the sum of the RANGE and RANGE DELAY control settings exceeds 90 kilometers.

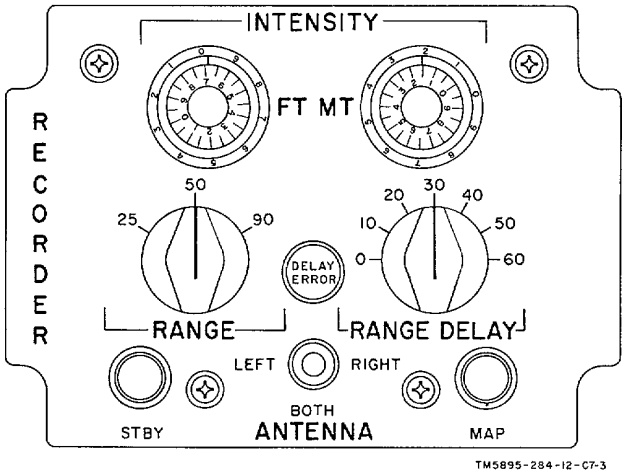


Figure 2-2. RECORDER control, front panel.

c. Recorder Controls (fig. 1-8). There are two controls on the RO-225A/APS-94A as follows:

(1) A three-position switch marked LAMPTEST-CRT, which is spring-returned to the center (off) position. When held at LAMP, the switch applies power to illuminate the data-chamber indicators (fig. 2-4). When held at CRT, the switch applies power to illuminate traces on the indicator cathode-ray tubes.

(2) A test switch (S3), mounted on top of the 5-inch film driver, is used during preflight checkout of the ppd system (para 2-9b).

(3) In addition to the switches mentioned above, there are two FOOTAGE REMAINING indicators (fig. 1-8), one each for the fixed-target and moving-target film rolls.

NOTE
Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP is interchangeable with Recorder, Radar Mapping RO-225A/APS-94A. Controls on the RO-166 (*)/UP are covered in chapter 4.

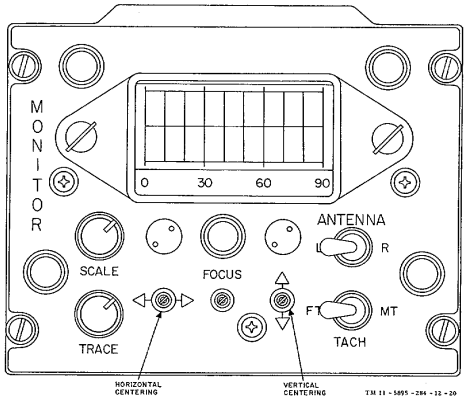


Figure 2-3. MONITOR, front panel.

2-5. MONITOR Controls

(fig. 2-3)

The following chart lists the MONITOR controls and indicates the function of each. This paragraph covers only the controls used during operation of the radar set. Controls not covered in the chart below are used during organizational maintenance of the radar set and are covered in paragraph 3-15.

Control	*Function*
SCALE control	Controls the illumination of the grid lines (graticule) located in front of the cathode-ray tube screen.
TRACE control	Controls the intensity of the cathode-ray tube trace.
ANTENNA switch	Determines whether the monitor cathode-ray tube displays target signals received by the left (L) or right (R) antenna array.
FT-TACH-MT switch	Determines whether moving targets (MT), fixed targets (FT), or film-drive motor information (TACH) is displayed by the MONITOR cathode-ray tube.

2-6. Data-Chamber Indicators

(fig. 2-4)

The following chart lists the data-chamber indicators and indicates the functions of each. The data-chamber indicators include the data-insert slide indicators (A and B, fig. 2-4, and fig. 2-18) and other indicators internal to the recorder.

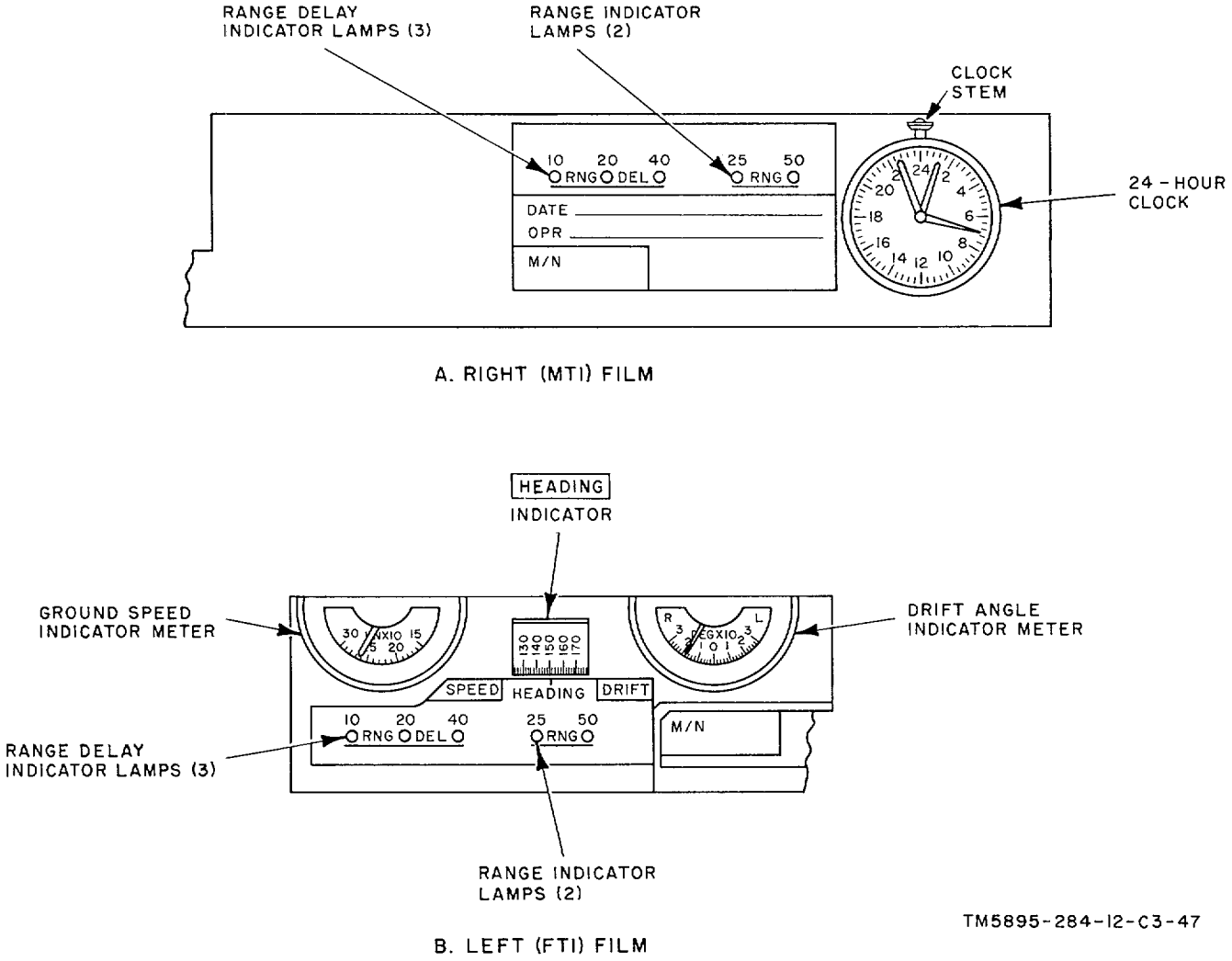


Figure 2-4. Data-chamber indicator (RO-225A/APS-94A).

2-6. Data-Chamber Indicators

(fig. 2-4) (cont.)

Indicator	*Function*
RNG DEL indicator lamps	The numerical sum of the illuminated RNG DEL indicators on either film (ft or mt) indicates the minimum range of the photoradar map in kilometers.
RNG indicator lamps	The illuminated RNG indicator (25 or 50) on either film (ft or mt) indicates the range of the photoradar map in kilometers. If neither of the RNG indicators is illuminated, the range of the photoradar is 90 kilometers.
SPEED indicator meter (groundspeed indi-cator meter).	Indicates the groundspeed of the aircraft in knots. The numerical indication is multiplied by 10.
DRIFT angle indicator meter	Indicates the aircraft drift angle in degrees. The numerical indication to the right (R) or left (L) of zero, is multiplied by 10.
HEADING indicator	Indicates the aircraft heading in degrees. The HEADING indicator is slaved to the aircraft gyrocompass system.
24-hour clock	Indicates the time at which the photoradar map is made.
M/'N space	Gives the aircraft mission number (written on the data-insert slide).
DATE space	Gives the date of the mission (written on the data-insert slide).
OPR space	Gives the operator's name (written on the data-insert slide).

2-7. Film Loader Control and Indicator

(fig. 2-5)

The film loader is equipped with one control and one indicator. Functions of the operating control and the indicator are listed in the chart below.

Control or indicator	*Function*
Film crank	Rotates the storage cassette film spool (fig. 2-14) during storage cassette film-loading procedures (para 2-13b).
Film footage indicator	Provides a visual indication of the amount of film transferred from the bulk film spool (fig. 2-13) to the storage cassette film spool (fig. 2-14).

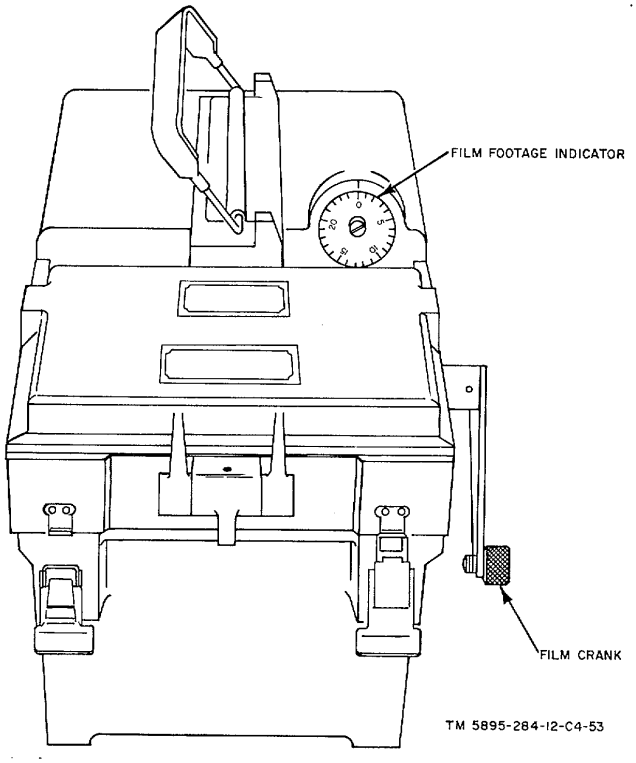


Figure 2-5. Film loader control and indicator.

Section II. PREFLIGHT CHECK

NOTE

Before performing the preflight check, be sure that higher category maintenance personnel have prepared the equipment for operation.

2-8. General

The preflight check of Radar Surveillance Set AN,/APS-94(*) consists of a rapidly performed visual and operating inspection to determine that the radar set is functioning properly. Have available a 5-inch strip-film magazine (fig. 1-9) loaded with a strip of exposed 5-inch film. Refer to paragraph 2-13 for instructions to load, and to paragraph 2-16 for instructions to unload the film magazines.

NOTE

If an abnormal indication is obtained during the preflight check, refer to the troubleshooting section (para 3-17, 3-18, and 3-19) for the proper corrective measures to be taken.

2-9. Preflight Check Procedures

WARNING

When performing the preflight check of the radar set, keep all personnel at least 10 feet away from any part of the AN/ APS-94(*) antenna assembly (in or below the horizontal plane). Exposure to intense radiofrequency radiation could cause adverse physiological effects.

NOTE

The ground preflight check can be performed with primary power supplied either by a ground-support equipment generator or by the aircraft generator.

a. Ground Check.

(1) Check to see that all components are firmly secured ill their shock mounts, mounting bases, or mounting frames. Mount the film magazine to be used according to the procedure given in paragraph 2-12. If the 5-inch strip-film magazine (RO-225A/APS-94A) is mounted, remove the magazine cover (fig. 1-8) by unscrewing the two knurled screws. This allows viewing of the exposed 5-inch strip film.

(2) If Recorder-Processor-Viewer, Radar Mapping RO-166(*)/'UP is used in place of the RO-225A/APS-94A, check the upper and lower front cover fasteners to be sure that the covers are firmly closed. Refer to TM 11-5820-680-12.

(3) Check to see that all cable connectors are firmly mated.

(4) Be sure that all circuit breakers on the interconnection box (fig. 1-14) are in the on (up) position.

(5) Set the aircraft circuit breakers that control application of power to the radar set to ON. (These circuit breakers are located below and to the right of the radar set operator's position in Army Model OV-1B (Mohawk) aircraft.)

(6) Set the RADAR control ON switch (fig. 2-1) to ON.

(7) Check to see that the panel markings on the RADAR control, the RECORDER control, and the MONITOR are illuminated. (On some aircraft, panel illumination may be controlled by the pilot of the aircraft. If panel markings do not appear, check the pilot's panel illumination control). Three minutes after setting the RADAR control ON switch (fig. 2-1) to ON, check to see that the RADAR control blue STBY lamp lights.

(8) See that the power supply and synchronizer blowers are operating; listen for the sound and hold a moistened finger near the exhaust ports of the components. (External blowers on the receiver-transmitter are temperature-controlled and do not operate until the temperature reaches 140 degrees F).

(9) Set the RECORDER control ANTENNA switch (fig. 2-2) to BOTH. Set the MONITOR ANTENNA switch (fig. 2-3) to R and the FT-TACH-MT switch to FT. After 30 seconds, a flickering trace should appear on the MONITOR crt (fig. 2-3).

NOTE

The RECORDER control and MONITOR ANTENNA switches must be in the same position, or the RECORDER control ANTENNA switch must be at BOTH for a trace to appear on the MONITOR crt. A slight flicker of the trace will be seen when the RECORDER control ANTENNA switch is at BOTH

position and the trace will be less brilliant than when the MONITOR and the RECORDER control ANTENNA switches are in either the left or right positions. If a trace does not appear after 1 minute, depress the RADAR control STBY switch (fig. 2-1). After 10 seconds, a trace should appear on the MONITOR crt (fig. 2-3).

(10) Adjust the MONITOR TRACE, SCALE, and FOCUS horizontal and vertical centering (para 2-11) controls for best viewing of the MONITOR crt trace and scale.

(11) Set the RECORDER control ANTENNA switch to RIGHT (fig. 2-2). The trace on the MONITOR crt should stop flickering and become steady.

(12) Set the RECORDER control ANTENNA switch (fig. 2-2) to LEFT. The trace should disappear on the MONITOR crt (fig. 2-3).

(13) Set the MONITOR ANTENNA switch (fig. 2-3) to LEFT. A steady trace on the MONITOR ct should be present.

(14) Set the RECORDER control ANTENNA switch (fig. 2-2) to BOTH. The trace on the MONITOR crt should flicker.

NOTE

The MONITOR FT-TACH-MT switch (fig. 2-3) must be either at FT or MT for the range pedestal presentation ((15) through (18) below) to appear on the MONITOR set.

(15) Set the RECORDER control RANGE DELAY switch (fig. 2-2) to the O-delay position, set the RADAR control NAV DATA switch to MAN and the DEGREES DRIFT control (fig. 2-1) to 0, and rotate the RECORDER control RANGE switch (fig. 2-2) through its three positions, stopping momentarily at each position to observe the presentation on the MONITOR crt (fig. 2-3). The trailing edge of the range pedestal should appear at positions on the MONITOR crt corresponding to the setting of the RANGE switch. (A, figure 2-6, shows the MONITOR crt presentation that would be obtained with the RANGE switch in the 50 position).

(16) Set the RECORDER control RANGE switch (fig. 2-2) to 25, set the RADAR control DEGREES DRIFT control (fig. 2-1) to 0, and rotate the RECORDER control RANGE DELAY switch (fig. 2-2) through its seven positions, stopping momentarily at each position to observe the presentation on the MONITOR crt (fig. 2-3). The leading edge of the range pedestal should appear at positions on the MONITOR crt corresponding to the setting of the RECORDER control RANGE DELAY switch (fig. 2-2). (B, figure 2-6, shows the MONITOR crt presentation that would be obtained with the RECORDER control RANGE switch in the 25 position and the RECORDER control RANGE DELAY switch in the 30 position.)

17) Set the RADAR control NAV DATA switch (fig. 2-1) to MAN. Set the RECORDER control RANGE switch (fig. 2-2) to 25 and the RECORDER control RANGE DELAY switch (fig. 2-2) to 60. Slowly rotate the RADAR control DEGREES DRIFT control (fig. 2-1) counterclockwise from 0 to 30. The presentation on the MONITOR crt (fig. 2-3) will increase in range as the 30 position of the DEGREES DRIFT control is approached. C, figure 2-6, shows the MONITOR crt presentation that would be obtained with the RECORDER control RANGE switch at 25 and the RANGE DELAY switch at 60 (fig. 2-2). The dotted line on the presentation shows the displacement in range that would take place as the RADAR control DEGREES DRIFT control (fig. 2-1) is rotated counterclockwise from 0 to 30.

(18) Repeat (17) above, but rotate the DEGREES DRIFT control clockwise. The presentation on the MONITOR crt will increase in range as the 30 position of the DEGREES DRIFT control is approached (C, fig. 2-6).

(19) Check to see that the RADAR control blue STBY lamp is on.

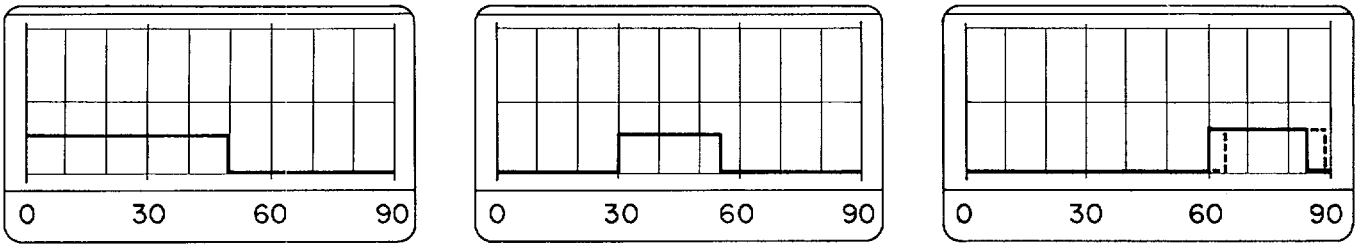
(20) Press the RADAR control H-V switch (fig. 2-1) and see that the green H-V lamp lights and the blue STBY lamp extinguishes. Press the STBY switch and check to see that the H-V lamp is extinguished and the STBY lamp is lighted. (If the H-V and STBY lamps do not light, see that the mechanical dimming shutters contained within the indicator are not fully closed.)

(21) Remove the 5-inch strip-film magazine from the 5-inch film driver.

NOTE

View the data chamber in (22), (23), (25), and (27) below, by observing the images of the data chamber on the FT and MT mirror assemblies (fig. 2-8).

(22) Hold the LAMP TEST-CRT TEST switch (fig. 1-8) in the LAMP TEST position, turn the



A. **RECORDER** CONTROL **RANGE** SWITCH IN **50** POSITION.

B. **RECORDER** CONTROL **RANGE** SWITCH IN **25** POSITION AND **RANGE DELAY** SWITCH IN 30 POSITION.

C. **RECORDER** CONTROL **RANGE** SWITCH IN **25** POSITION, **RANGE DELAY** SWITCH IN **60** POSITION, AND **RADAR** CONTROL **NAV DATA** SWITCH IN **MAN** POSITION.

Figure 2-6. MONITOR displays for different settings of RANGE and RANGE DELAY sketches.

RECORDER control RANGE switch (fig. 2-2) to 25, turn the RANGE DELAY switch on the RECORDER control through all seven positions, and check for data-chamber RNG DEL indication A and B, (fig. 2-4). The indication consists of the lighting of lamps marked 10, 20, and 40. The sum of the lighted-lamp markings should equal the RECORDER control RANGE DELAY switch scale indication (fig. 2-2).

(23) While holding the LAMP TEST-CRT TEST switch (fig. 1-8) in the LAMP TEST position, turn the RANGE switch on the RECORDER control (fig. 2-2) through all three positions, and check for data-chamber RNG indication (A and B, fig. 2-4). The indication consists of the lighting of the range indicator lamp marked 25 or 50. In the 90 position of the RECORDER control RANGE switch, there is a no data-chamber indication.

(24) Temporarily place both the RANGE and the RANGE DELAY controls on the RECORDER control (fig. 2-2) in the 50 position. Check to see that the DELAY ERROR lamp on the RECORDER control lights.

(25) Place the NAV DATA switch on the RADAR control (fig. 2-1) in the MAN position. While holding the recorder LAMP TEST-CRT TEST switch (fig. 1--8) in the LAMP TEST position, change the position of the RADAR control DEGREES DRIFT and KNOTS GRD SPEED controls (fig. 2-1), and see that the data-chamber SPEED and DRIFT indicators (B, fig. 2-4) move correspondingly.

(26) Turn either the RADAR control DEGREES DRIFT or the KNOTS GRD SPEED control to the extreme clockwise or counterclockwise scale limit, and see that the LIMIT lamp on the RADAR control lights (fig. 2-1).

(27) Hold the recorder LAMP TEST-CRT TEST switch (fig. 1-8) in the LAMP TEST position and check to see that the data-chamber HEADING indication (B, fig. 2-4) agrees with the indication on the aircraft compass.

(28) Hold the recorder LAMP TEST-CRT TEST switch in the CRT TEST position (fig. 1-8), and check for traces on the two indicator cathode-ray tubes.

NOTE

When the operator's eyes are accustomed to daylight, the traces may not be readily visible because most of the light output is ultraviolet.

(29) Replace the 5-inch strip-film magazine on the 5-inch film driver.

NOTE

If the RO-225A/APS-94A (5-inch strip film) is installed, perform the procedures given in (30) through (49) below. If Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP is used instead of the RO-225A/APS-94A, perform the procedures given in c below.

(30) Press the RECORDER control STBY switch (fig. 2-2). Check to see that the strip film advances for 2 seconds, stops, and then advances

for 12 seconds and stops. See that the RECORDER control blue STBY lamp lights (fig. 2-2).

(31) Press the RECORDER control MAP switch (fig. 2-2). Check to see that the strip film advances for 2 seconds, stops, and then advances for 2 seconds and slows down. Check to see that the RECORDER control green AMP lamp lights (fig. 2-2).

(32) Set the MONITOR FT-TACH-MT switch (fig. 2-3) to TACH and the RADAR control NAV DATA switch (fig. 2-1) to MAN. Observe the MONITOR cathode-ray tube display pattern to see that the film-drive motor is operating. The display pattern should consist of a constantly moving series of interwoven waves (fig. 2-7). The illustration shows that display pattern as it would appear if it were stationary. With the RECORDER control RANGE switch (fig. 2-2) at 25 and the RADAR control KNOTS GRD SPEED knob (fig. 2-1) at 300, the display pattern has the amplitude shown in figure 2-7. The amplitude of the display pattern decreases as the RECORDER control RANGE switch (fig. 2-2) is turned to 50 and then to 90.

(33) Press the RECORDER control STBY switch (fig. 2-2).

(34) Check to see that the strip film advances for 2 seconds, stops, and then advances for 12 seconds and stops. See that the RECORDER control green MAP lamp is extinguished and the RECORDER control blue STBY lamp lights (fig. 2-2).

NOTE

The MONITOR display pattern described in (32) above should not appear.

(35) Set RADAR control POWER switch to OFF (down) (fig. 2-1).

(36) Remove 5-inch strip-film magazine from 5-inch film driver and remove exposed film.

(37) Obtain Test Set, Radar AN/GPM-46A (test set) and connect it to the receiver-transmitter J4 TEST connector (TM 11-6625-561-12).

(38) Set the RADAR control POWER switch to ON (fig. 2-1).

(39) Rotate the test set ALL UNITS switch through all positions; the test set ALL UNITS meter should indicate between 40 and 60 for all positions of the ALL UNITS switch.

(40) When the STBY lamp on the interconnection box lights (fig. 1-14), depress the HV switch on the interconnection box.

(41) Set the test set RCVR XMTR ONLY switch to the RCVR XTAL positions; the RCVR XMTR ONLY meter should indicate between 32 and 58 in both positions.

(42) Set the test set RCVR XMTR ONLY switch to the RCVR XTAL positions; the RCVR XMTR ONLY meter should indicate between 32 and 58 in both position.

(43) Set the test set RCVR XMTR ONLY switch to the MAG CUR positions; the RCVR XMTR ONLY meter should indicate between 25 and 75.

(44) Set the RCVR XMTR ONLY switch to the MOD HV position; the RCVR XMTR ONLY meter should indicate between 22 and 40.

(45) Set the RCVR XMTR ONLY meter switch to the KEEP ALIVE position; the RCVR XMTR ONLY meter should indicate between 54 and 96.

(46) Set the RCVR XMTR ONLY meter switch to the MAFC position; the RCVR XMTR ONLY meter should indicate between 40 and 75.

(47) Depress the STBY switch (fig. 1-14) on the interconnection box.

(48) Set the RADAR control POWER switch to the off (down) position (fig. 2-1).

(49) Disconnect the test set from the receiver-transmitter.

b. Present Position Display Preflight Check

NOTE

Do not start the following procedure before completing the ground check (a

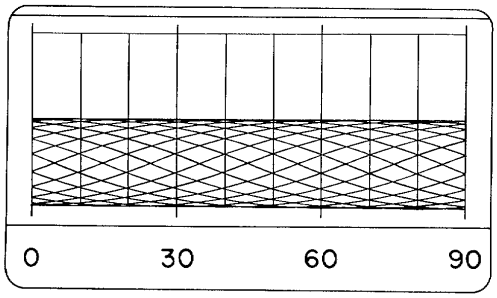


Figure 2-7. MONITOR display pattern, FT-TACH-MT switch in TACH position.

above). All Doppler navigator controls referenced are located on computer control indicator CMC-433-950 (AN/ APS-94B) or Control, Indicator C-6586/AYA-3 (AN/APS-94C).

(1) Remove the 5-inch strip-film magazine from the 5-inch film driver.

(2) Remove the display unit readout viewer from the storage well in the 5-ineh film driver (fig. 2-8) and place it in the viewing position over the ppd printout aperture at the right-hand side of the mt optical instrument window.

(3) Set the RADAR control NAV DATA switch to MAN.

(4) Turn the radar set on and set the RADAR control KNOTS GRD SPEED dial to 300.

(5) Set the RECORDER control RANGE switch to 25.

(6) Set the RECORDER control ANTENNA switch to LEFT.

(7) See that the aircraft compass system is on and operating.

(8) Set the Doppler navigator function selector switch to STBY.

(9) Rotate the Doppler navigator SET N-S switch clockwise or counterclockwise to slew the left-hand PRESENT POSITION-KM counter to indicate N888.0.

(10) Rotate the Doppler navigator SET E-W switch clockwise or counterclockwise to slew the right-hand PRESENT POSITION-KM counter to indicate E888.0.

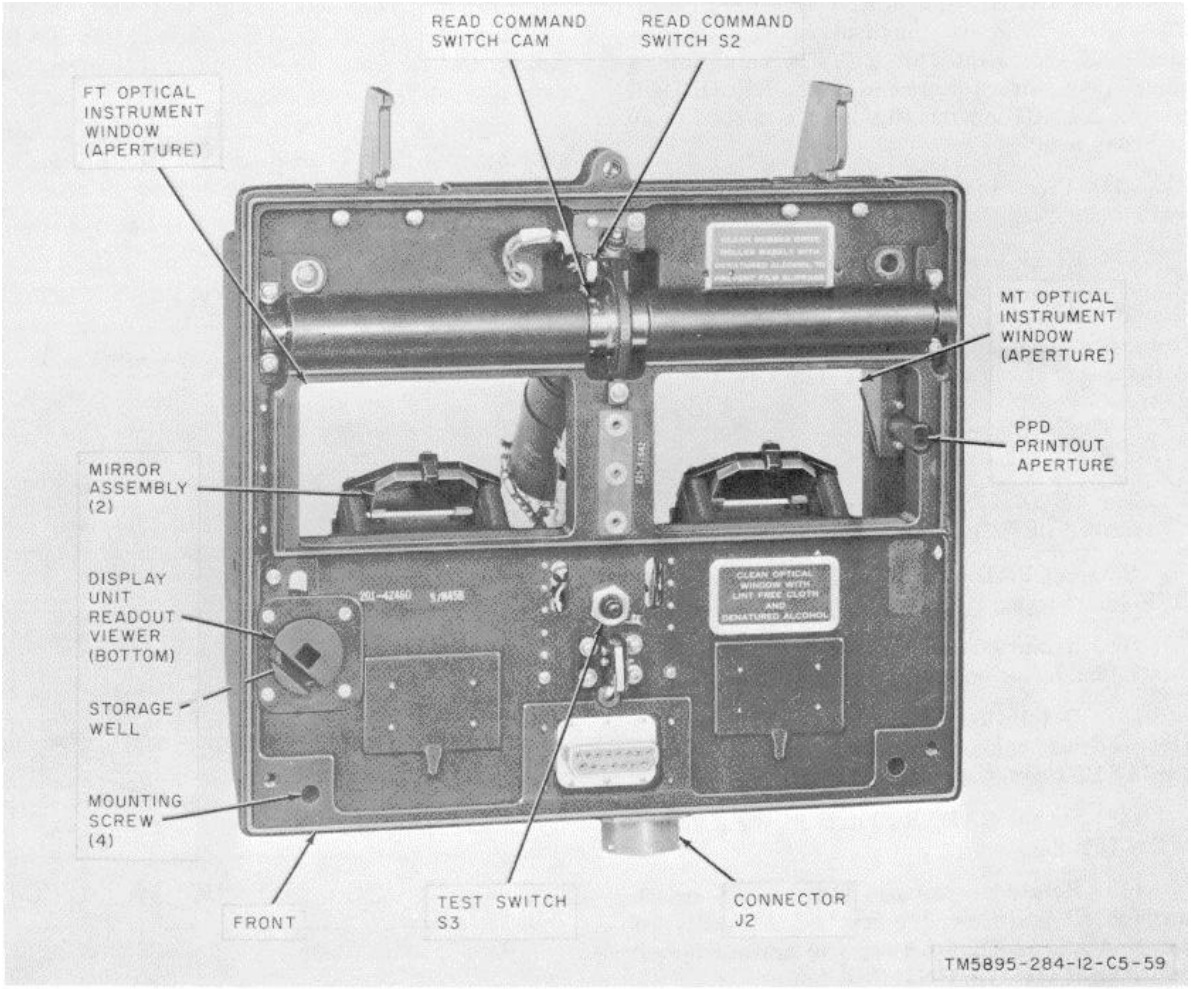


Figure 2-8. Five-inch film driver (RO-225A/APS-94A), top view.

(11) Depress test switch S3 (fig. 2-8) on the 5-inch film driver while observing the illuminated display readout through the viewer. The display should read 888 +10 for both upper and lower figures. They need not read the same.

(12) Rotate the Doppler navigator SET N-S and SET E-W switches to obtain PRESENT POSITION-KM counter displays of S888.0 and W888.0.

(13) Depress test switch S3 on the 5-inch film driver while observing the illuminated display readout through the viewer. The display should read -888 -10 for both upper and lower figures. Verify that both minus signs are illuminated.

(14) Rotate the Doppler navigator SET N-S and SET E-W switches to slew both PRESENT POSITION-KM counters to 000.0.

(15) Depress test switch S3 on the 5-inch film driver while observing the illuminated display readout through the viewer. The display should read 000 ±10 for both upper and lower figures.

(16) Remove the viewer and observe the mt trace through the mt optical instrument window. It may be necessary to use a dark cloth to see the trace in daylight. Visually examine the left end of the trace for a segment that brightens for approximately one-half second once every 35 seconds (approximately). This is the fiducial mark.

(17) Repeat (16) above while observing the ft trace.

(18) Replace the viewer in the storage well and secure with the four screws.

(19) Replace the 5-inch strip-film magazine on the 5-inch film driver.

c. Preflight Operating Instructions for Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP. Prepare the RO-166 (*)/UP for in-flight operation as follows:

(1) Remove the bottom and top covers as instructed in paragraph 4-6a and c, respectively.

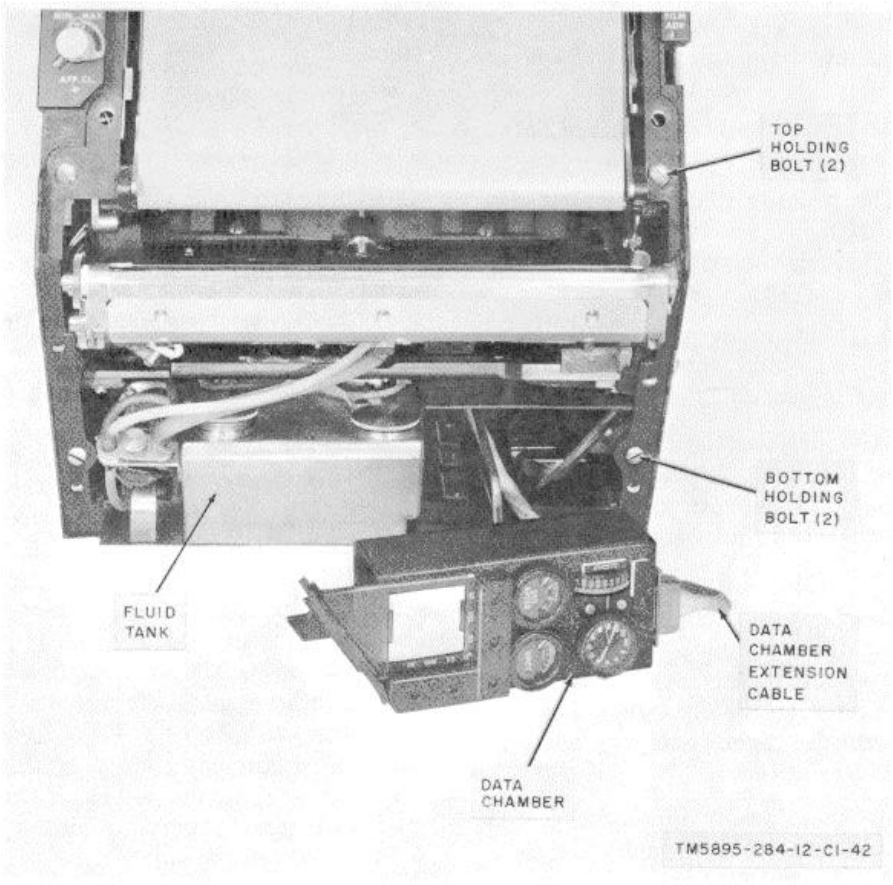


Figure 2-9. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP, internal view, bottom cover removed.

(2) Be sure that the fluid tank is in position (fig. 2-9); follow the instructions given in TM 11-5820-680-12 which covers the RO-166(*)/UP installation. Carefully prepare, mix, and filter fresh film processing solution (monobath) *daily* as prescribed in that manual.

(3) Follow the instructions given in TM 11-5820-680-12 in which the RO-166(*)/UP is installed for loading and installing the film cassette into the RO-166(*)/UP.

(4) Remove the data chamber and attach it to the data-chamber extension cable (fig. 2-9).

(5) Apply power to the radar set (para 2-11).

NOTE

Power normally is applied to the RO-166(l*)/UP through the radar set. Therefore, the RO-166(*)/UP ON-OFF switch (fig. 4-1) is normally left at ON, which enables the RO-166(*)/UP to come *on* when power is applied to the radar set.

(6) Wind and set the data-chamber 24-hour clock (fig. 4-3).

(7) Plug in the data chamber; use the data-chamber extension cable (fig. 2-9).

(8) Adjust the heading dial by turning the heading dial adjustment screw with a small screwdriver until it reads the same as the aircraft heading indicator (fig. 2-10).

(9) Set the RADAR control DEGREES DRIFT control to zero and the KNOTS GRD SPEED control to 225 (fig. 2-1).

(10) Check the drift-angle meter and the groundspeed meter (fig. 4-3) on the data chamber to make certain that they indicate the same as the settings made in (9) above on the RADAR control.

NOTE

If the drift-angle meter and/or the groundspeed meter on the data chamber is out of calibration, higher category adjustment will be required.

(11) Remove the data-chamber extension cable from the data chamber and replace the data chamber in the RO-166(*)/UP.

(12) Replace the bottom cover and secure it in place with the seven cover fasteners (fig. 4-1).

(13) Lower the top cover and secure it in place with the two knurled screws.

(14) Depress the FAST FILM ADVANCE and advance the film about 8 inches to take up any slack in the film transport system.

CAUTION

Before depressing the FAST FILM ADVANCE (fig. 4-1), hold the takeup knob (fig. 4-2) and exert enough pressure to slow the action. If this is not done, the film may advance too far or too rapidly, possibly destroying the meniscus. Refer to TM 11-5820-680-12 for a description of the meniscus.

NOTE

Observe the film for proper processing. If the film has not been wetted across the entire surface, adjust the APP.CL. control so that the film is evenly wetted.

(15) Set the RECORDER control RANGE switch to 50 and the ANTENNA switch to BOTH (fig. 2-2).

(16) Set the RADAR control KNOTS GRD SPEED to 300 and the DEGREES DRIFT control to zero (fig. 2-1).

(17) Check the brightness of the sweep trace on the film. The trace should be barely visible. If the trace is too bright or too dim, adjust the RECORDER control FT and MT INTENSITY controls. The ends of the trace should be clearly distinguishable.

(18) Check the vertical alignment of the trace. Depress the MANUAL DATA EXPOSE switch (fig. 4-1) to expose the data chamber to the film for reference and, at the same time, set the RECORDER control ANTENNA switch (fig. 2-2) to RIGHT; release the MANUAL DATA EXPOSE switch (fig. 4-1). Wait about 15 seconds and set the RECORDER control ANTENNA switch (fig. 2-2) back to BOTH. This will cause a presentation as shown in figure 2-11. When the vertical alignment is correct, the highest part of the blank sweep area will be even with the mark (vertical alignment check) appearing just above the heading dial (fig. 2-11). If the vertical alignment is incorrect, refer to higher category maintenance for adjustment.

(19) Check the horizontal alignment of the trace. An example of correct horizontal alignment is shown in figure 2-11. If the horizontal alignment is incorrect, refer to higher category maintenance for adjustment.

NOTE

The presentation in figure 2-11 is for a range setting of 50. The same presentation will result at a range setting of 25. At a range setting of 90, there will be some sweep overlap in the center and some sweep loss at the outer ends of the sweep.

(20) Remove the power by turning off the radar set (para 2-17).

d. Airborne Checks. The following check must be performed after the aircraft is airborne and the Doppler navigator is in operation.

(1) Check to see that drift-angle and groundspeed information is being fed to the radar set from the Doppler navigator, by setting the RADAR control NAV DATA switch to AUTO (fig. 2-1). The green AUTO lamp should light, and the DEGREES DRIFT and KNOTS GRD SPEED control knobs should indicate settings depending on the drift-angle and groundspeed information received. Turn the two controls slightly away from their settings. When released, they should return to their original settings.

(2) Press the RADAR control H-V switch (fig. 2-1) and check for actual operation of the radar set by observing targets on the A-scope presentation of the MONITOR cathode-ray tube (fig. 2-3). Set the RECORDER control ANTENNA SWITCH TO BOTH (fig. 2-2). Check for both fixed and moving-target signals as follows: with the MONITOR ANTENNA switch at L and R respectively, set the MONITOR FTTACH-MT switch (fig. 2-3) to FT and then to MT.

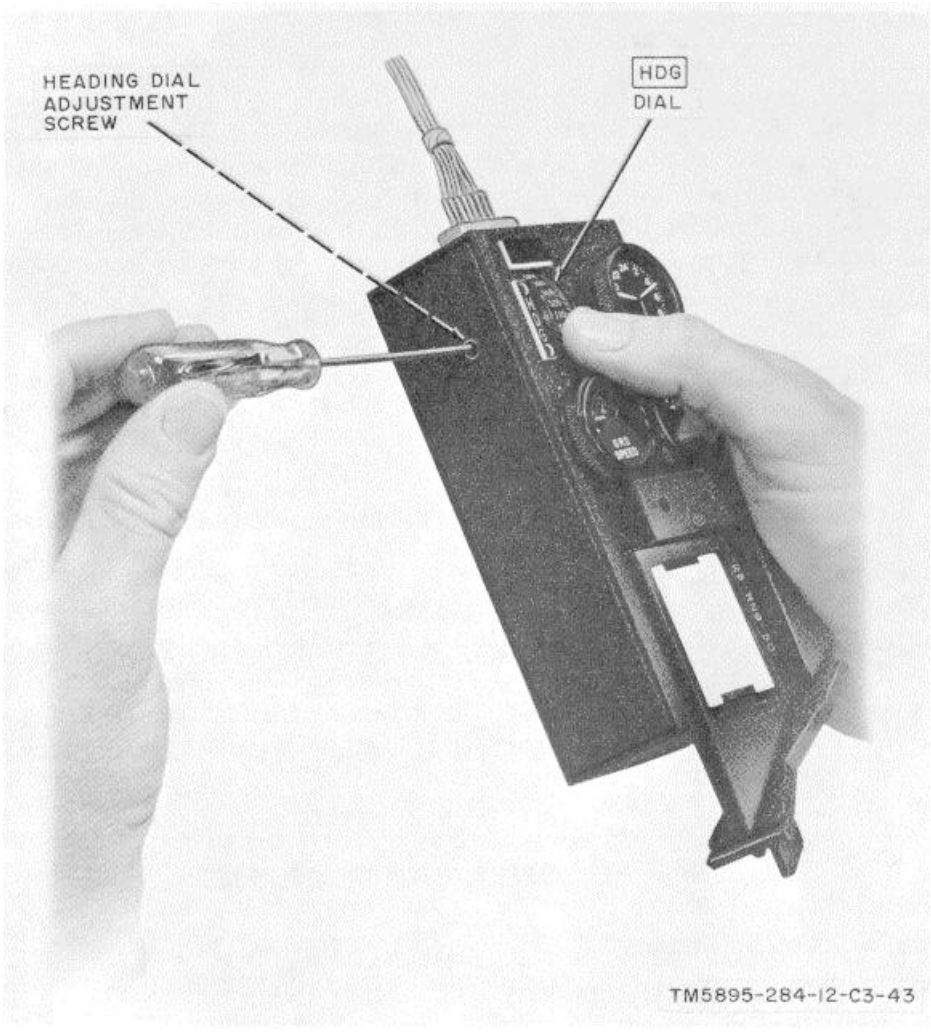


Figure 2-10. Recorder-Processor-Viewer, Radar Mapping, RO-166(*)/UP data chamber, HDG dial adjustment.

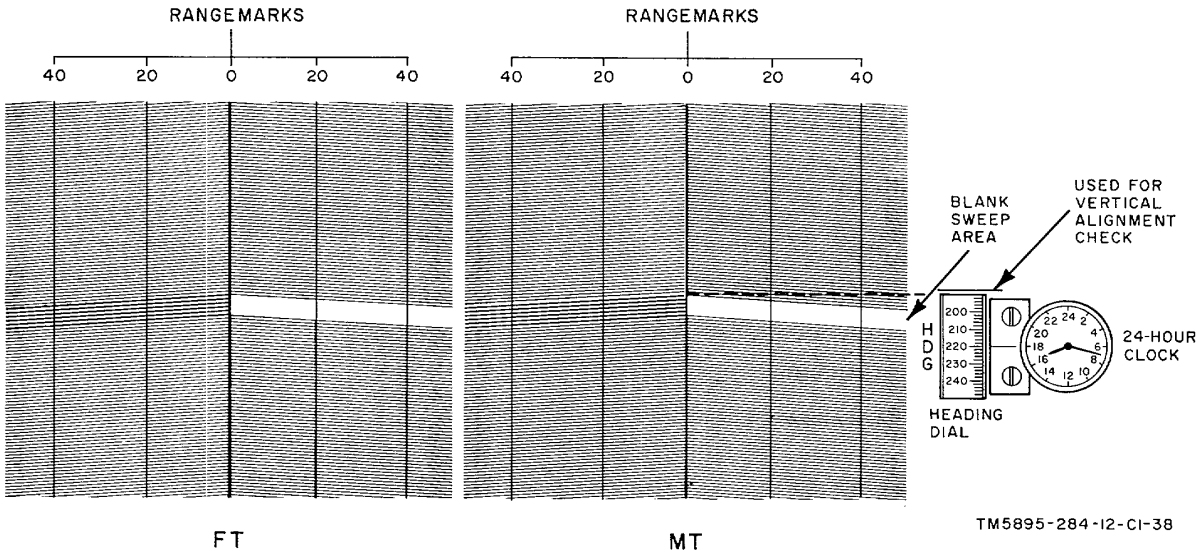


Figure 2-11. Simulated map showing correct vertical and horizontal alignment.

e. In-Flight Operating Instruction fore Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP. Refer to TM 11-5820-680-12 which covers the RO-166(*)/UP installation for in-flight operating instructions. Also follow the instructions listed in (I1) and (2) below.

(1) Perform the radar set starting procedure outlined in paragraph 2-11.

(2) Determine the automatic or manual selection of drift-angle and groundspeed correction data before arriving at the point at which mapping is to begin.

(a) If the aircraft drift-angle and groundspeed corrections are to be supplied automatically, set the RADAR control NAV DATA SWITCH (fig. 2-1) to AUTO.

(b) If the corrections are to be applied manually, set the RADAR control NAV DATA switch to MAN and set the DEGREES DRIFT and KNOTS GRD SPEED controls to indicate the drift-angle and groundspeed of the aircraft. Set the RECORDER control RANGE and RANGE DELAY controls and the ANTENNA switch (fig. 2-2) to the desired positions. Adjust the RECORDED control FT and MT INTENSITY controls for best map presentation.

f. Stopping.

(1) Press the RADAR control STBY switch (fig. 2-1). The blue STBY lamp will light, the green H-V lamp will extinguish.

(2) Set the RADAR control ON switch (fig. 2-1) in the off (down) position.

(3) Set at OFF all aircraft circuit breakers that control application of power to the radar set.

(4) If the RO-225A/APS-94A (fig. 1-8) is the recorder in use, unload the exposed 5-inch strip film (para 2-16) and reload with the unexposed film required for the mission (para 2-12).

Section III. OPERATING PROCEDURES

2-10. Preliminary Control Settings

When the radar set is turned off, the circuits that could cause damage to the equipment are automatically placed in the off condition. There are, therefore, no preliminary control settings to be made.

2-11. Starting Procedure

NOTE

If an abnormal result is obtained during the starting procedure described below, refer to the operational checklist (para

para 3-20) which describes the proper correction measures to be taken.

a. Set at ON all aircraft circuit breakers that control application of power to the radar set. (These circuit breakers are below and to the right of the radar operator's position in the Army Model OF-1B (Mohawk) Aircraft.)

b. Place the circuit breakers on the interconnection box in the on (up) position (fig. 1-14).

c. Set the RECORDER control ANTENNA switch (fig. 2-3) to LEFT or RIGHT; set the MONITOR ANTENNA switch (fig. 2-3) to the same selected position. After 30 seconds, a trace will appear on the MONITOR crt.

NOTE

The RECORDER control ANTENNA switch (fig. 2-2) and the MONITOR ANTENNA switch (fig. 2-3) must be in the same position, or the RECORDER control ANTENNA switch (fig. 2-2) must be in the BOTH position for a trace to appear on the MONITOR crt (fig. 2-3). If a trace does not appear after 1 minute, depress the RADAR control STBY switch (fig. 2-1). After 30 seconds, a trace should appear on the MONITOR crt (fig. 2-3).

d. Adjust the MONITOR TRACE and SCALE controls for best viewing of the crt trace and scale. After 3 minutes, the RADAR control blue STBY lamp (fig. 2-1) will light; this indicates that the radar set is ready to operate.

e. Press the RADAR control H-V switch (fig. 2-1). The green H-V lamp will light and the blue STBY lamp will extinguish; this indicates that the radar set is operating.

NOTE

If the green H-V lamp is extinguished during operation, either the receiver-transmitter or one of the power supply circuits is overloaded. If the overload is temporary, the radar set can be returned to operation. If the RADAR control blue STBY lamp is lighted, press the H-V switch. If the blue STBY lamp is not lighted, press the STBY switch. If the blue STBY lamp lights and remains lighted, press the H-V switch. If the blue STBY lamp is extinguished and the green H-V lamp lights and remains lighted, the radar set is returned to operation. If either of the lamps lights momentarily and then is extinguished, the overload is permanent, and the radar set must be serviced by higher category maintenance personnel. All Doppler navigator controls referenced are on computer control indicator CMC-433950 (AN/APS-94B) or Control, Indicator C-6586/AYA-3 (AN/APS-94C).

f. Set the Doppler navigator function selector switch to STBY.

g. Rotate the Doppler navigator SET N-S and SET E-W switches to slew both PRESENT POSITION-KM counters to 000.0.

h. If the mission is to be over land, set the Doppler navigator function selector switch to LAND. If the mission is to be over water, set the function selector switch to SEA.

2-12. Mounting Film Magazines

NOTE

The film magazine used on the mission normally is mounted during the preflight check (para 2-9). Loading and unloading film, however, may be repeated several times during a mission, depending on the number of mapping runs to be made. Some tactical situations may require changing film magazines during flight. The procedures for mounting the film magazines and loading and unloading the film are identical whether the operations are performed before, during, or after flight.

Figure 1-9 illustrates the 5-inch strip-film magazine before mounting on the 5-inch film driver which is installed on the 5-inch film recorder housing. When the 5-inch strip-film magazine is mounted, a lighttight seal is formed when a groove in the bottom of the 5-inch strip-film magazine mates with a ridge in the 5-inch film driver. To mount the 5-inch strip-film magazine, proceed as follows:

a. Orient the 5-inch strip-film magazine over the 5-inch film driver so that the flange at the rear of the 5-inch strip-film magazine sets on the alignment bracket of the 5-inch film driver. Pull the 5-inch strip-film magazine forward until it drops in place over the pins in the 5-inch driver (not shown).

b. Lower the 5-inch strip-film magazine onto the 5-inch film driver; be sure that the index pins on the 5-inch film driver enter the index pinholes on the 5-inch strip-film magazine.

c. Secure the 5-inch strip-film magazine on the 5-inch film driver by engaging and tightening the two short thumbscrews and one long captive thumbscrew (fig. 1-8).

2-13. Loading Storage Cassettes for 5-inch Strip-Film Magazine
(fig. 1-9)

a. Installing Bulk Film in Film Loader. A 250foot roll of Eastman Kodak Panatomic-X, 5-inch strip film is used as the bulk film supply for the film loader. To install a supply of bulk film in the film loader, follow the procedures given in (1) through (6) below.

CAUTION
The bulk film loading procedures must be performed in a darkroom to avoid exposing the film.

(1) Unfasten the two large hook and snap fasteners (fig. 2-12) on the front of the film holder housing assembly and open the cover assembly.

(2) Remove the bulk film spool shaft (fig. 2-12) and install it in the hole through the bulk film spool (fig. 2-13.)

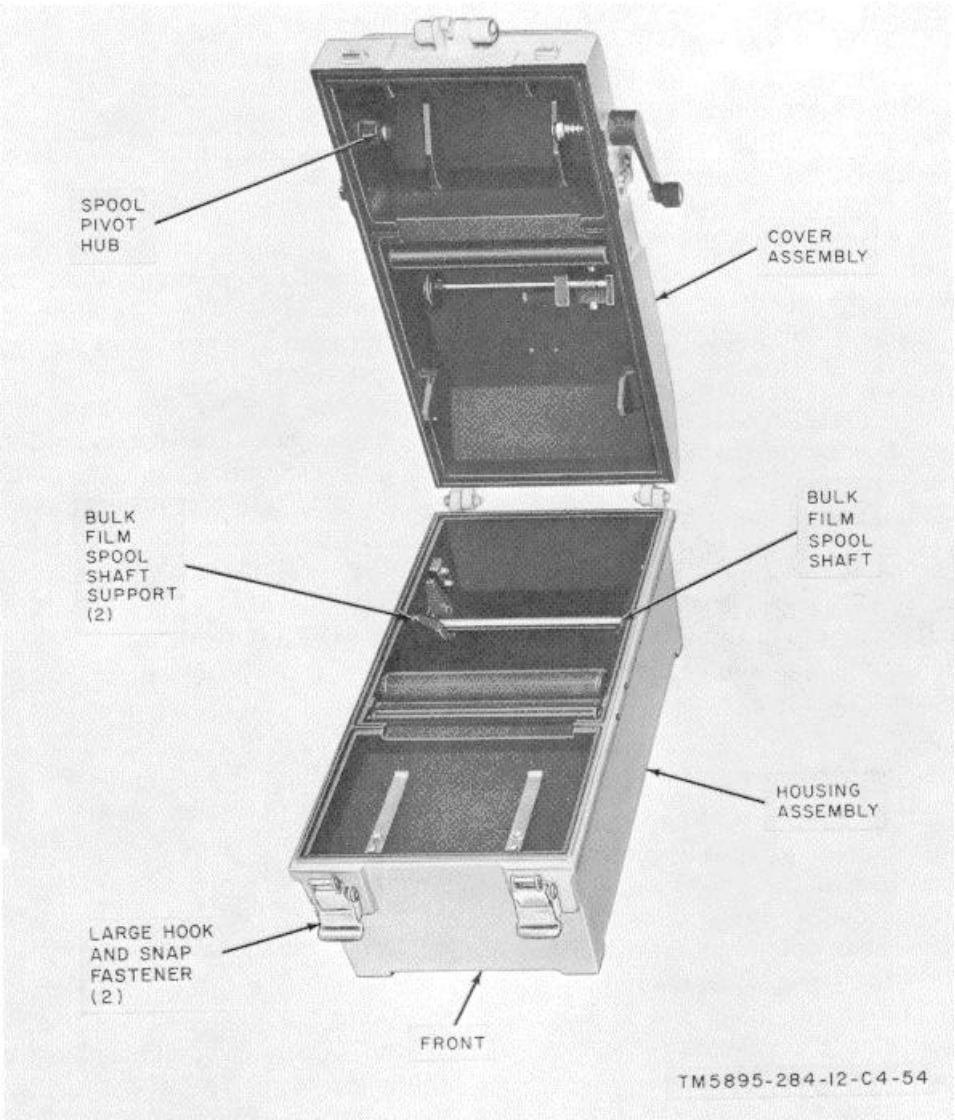


Figure 2-12. Loader, Film Photographic MX-4668/APS-94A, cover assembly open.

(3) Install the ends of the bulk film spool shaft in the two bulk film spool shaft supports (fig. 2-12).

(4) Grasp the film leader (fig. 2-13) and pull the film toward the front of the housing assembly (over the two rollers).

(5) Insert the film leader under the two film guide springs.

(6) Close the cover assembly (fig. 2-12) and secure it in the closed position by fastening the two large hook and snap fasteners on the front of the housing assembly.

NOTE

Upon completion of the bulk film loading procedures, the film loader can be moved to a lighted area. A darkroom is not required for storage cassette loading procedures.

b. Loading Storage Cassettes. To load the storage cassettes, follow the procedures given in (1) through (22), below.

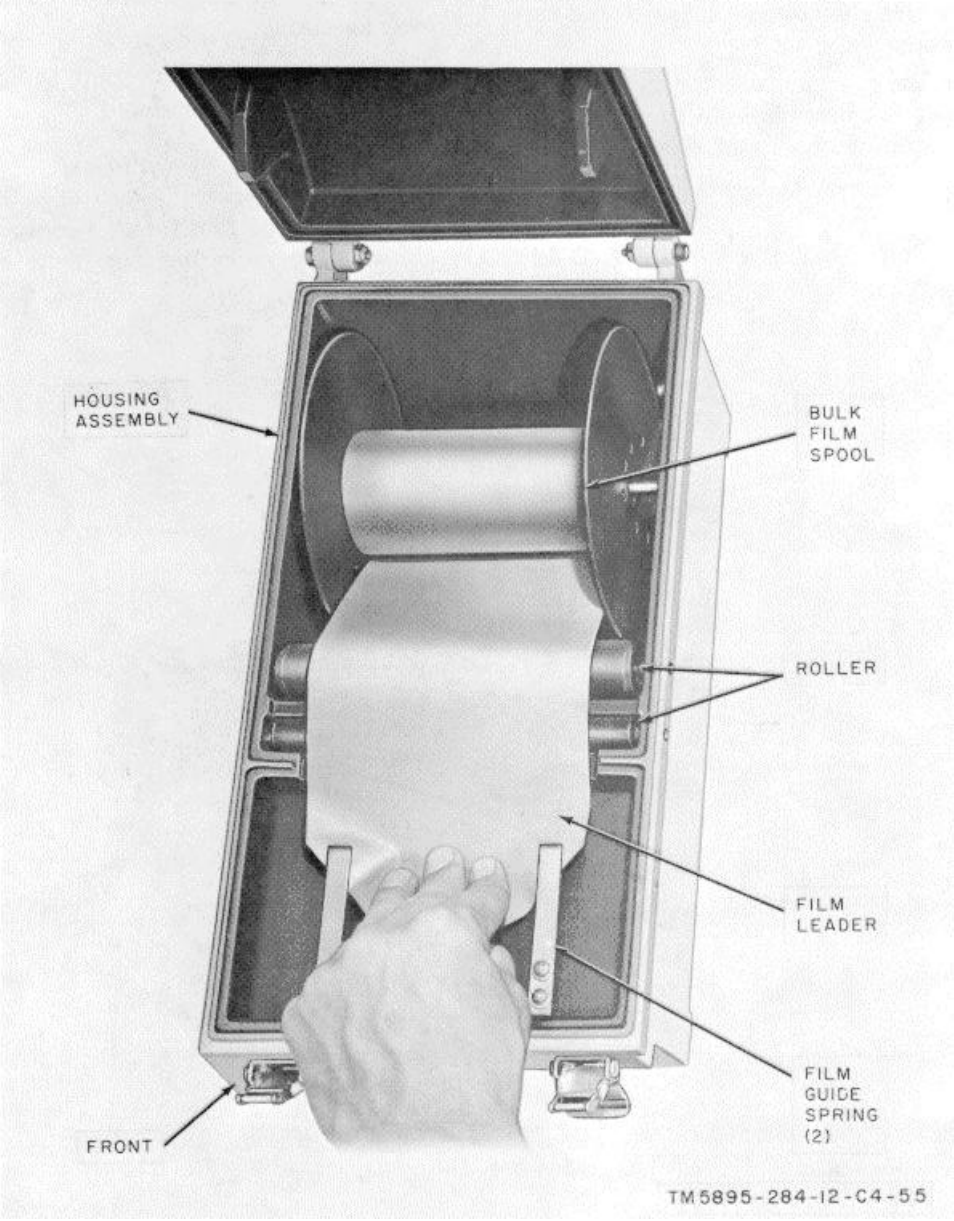


Figure 2-13. Installing bulk film in film loader.

(1) Unfasten the small hook and snap fastener (fig. 1-19) on each side of the cover assembly and open the cassette cover.

(2) Remove the storage cassette end cap (fig. 2-14) from the storage cassette case and remove the film spool.

(3) Remove the film leader from beneath the two film guide springs (fig. 2-13).

(4) Thread the film leader into the slot in the film spool (fig. 2-14).

(5) Slide the film spool into the storage cassette case and replace the storage cassette end cap removed in (2) above.

(6) Position the storage cassette as shown in figure 2-15 so that the pivot hole in the film spool (left side) rests against the spool pivot hub (underneath view, fig. 2-12) at the left side of the cover assembly.

(7) Pull out on the film crank (fig. 2-14) until the storage cassette can be lowered to a position in which the pivot hole in the cassette film spool (right side) is aligned with the spring-loaded spool retained.

(8) Release the film crank slowly until the spring-loaded spool retainer engages the pivot hole in the film spool.

(9) Turn the film crank clockwise to take up any film slack that may exist between the bulk film spool and the storage cassette.

(10) Close the cassette cover (fig. 1-19) and secure it in the closed position by fastening the small hook and snap fastener on each side of the cover assembly.

(11) Set the film footage indicator (fig. 2-5) to 0 by turning it clockwise.

CAUTION

Observe the film footage indicator closely when performing the next step. If it stops turning while the film

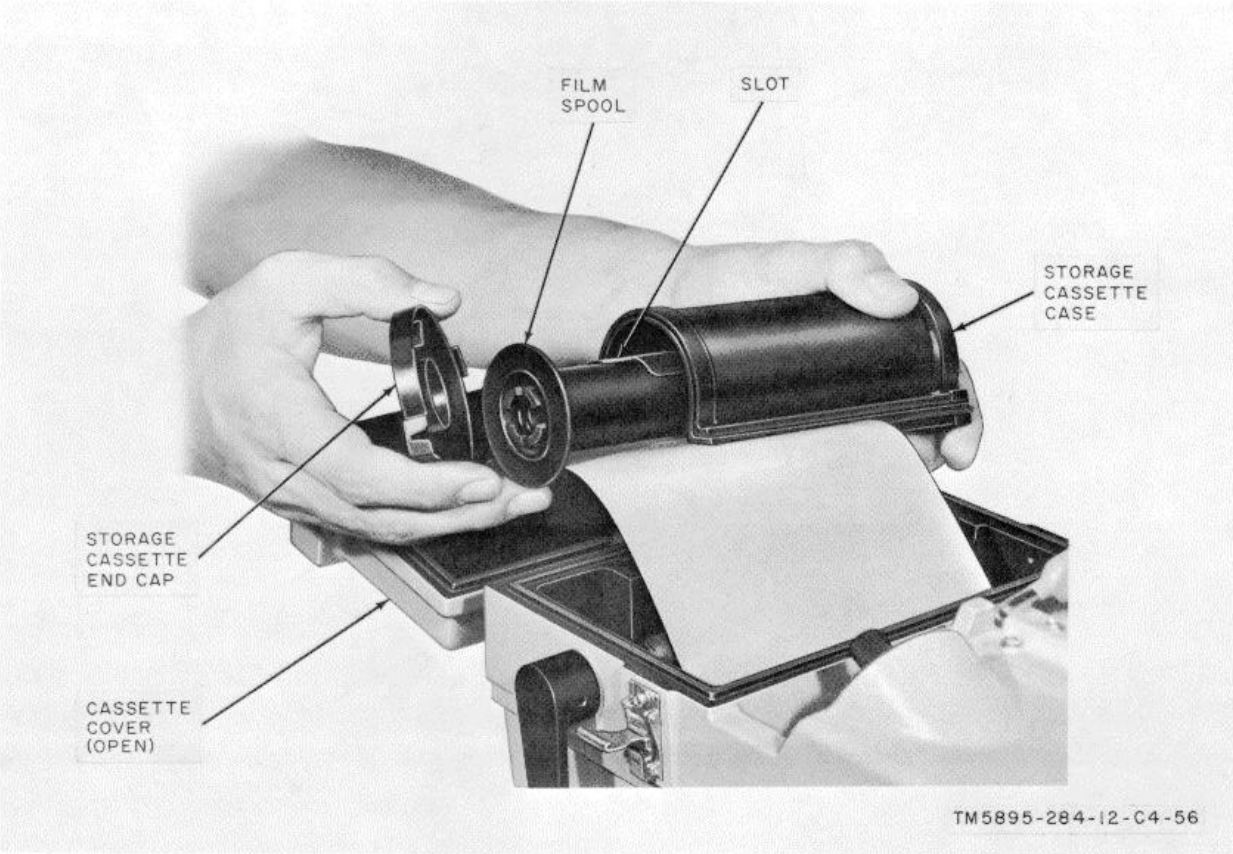


Figure 2-14. Threading storage cassette film spool.

crank is being operated, quit cranking immediately. Failure of the film footage indicator to turn when the film crank is being operated indicates that the bulk film spool is empty. Further operation of the film crank under this condition will run the end of the film into the storage cassette.

(12) Turn the film crank clockwise until the film footage indicator indicates the number of feet desired (maximum, 25 feet (0 position on the film footage indicator)).

(13) Unfasten the small hook and snap fastener (fig. 1-19) on each side of the cover assembly and open the cassette cover.

(14) Pull out on the film crank (fig. 2-15) to disengage the spring-loaded spool retainer from the pivot hole in the cassette film spool.

(15) Hold the storage cassette as shown in figure 2-16. Exert pressure toward the front of the film loader until there is no slack in the film.

(16) Use a knife or other sharp instrument to cut the film.

(17) Cut off the corners of the film leading edge to produce a film leader (fig. 2-13).

(18) Repeat the procedure given in (2) through (17) above until the required number of storage cassette are loaded.

(19) Repeat the procedure given in (17) above.

(20) Insert the film leader under the two film guide springs (fig. 2-13).

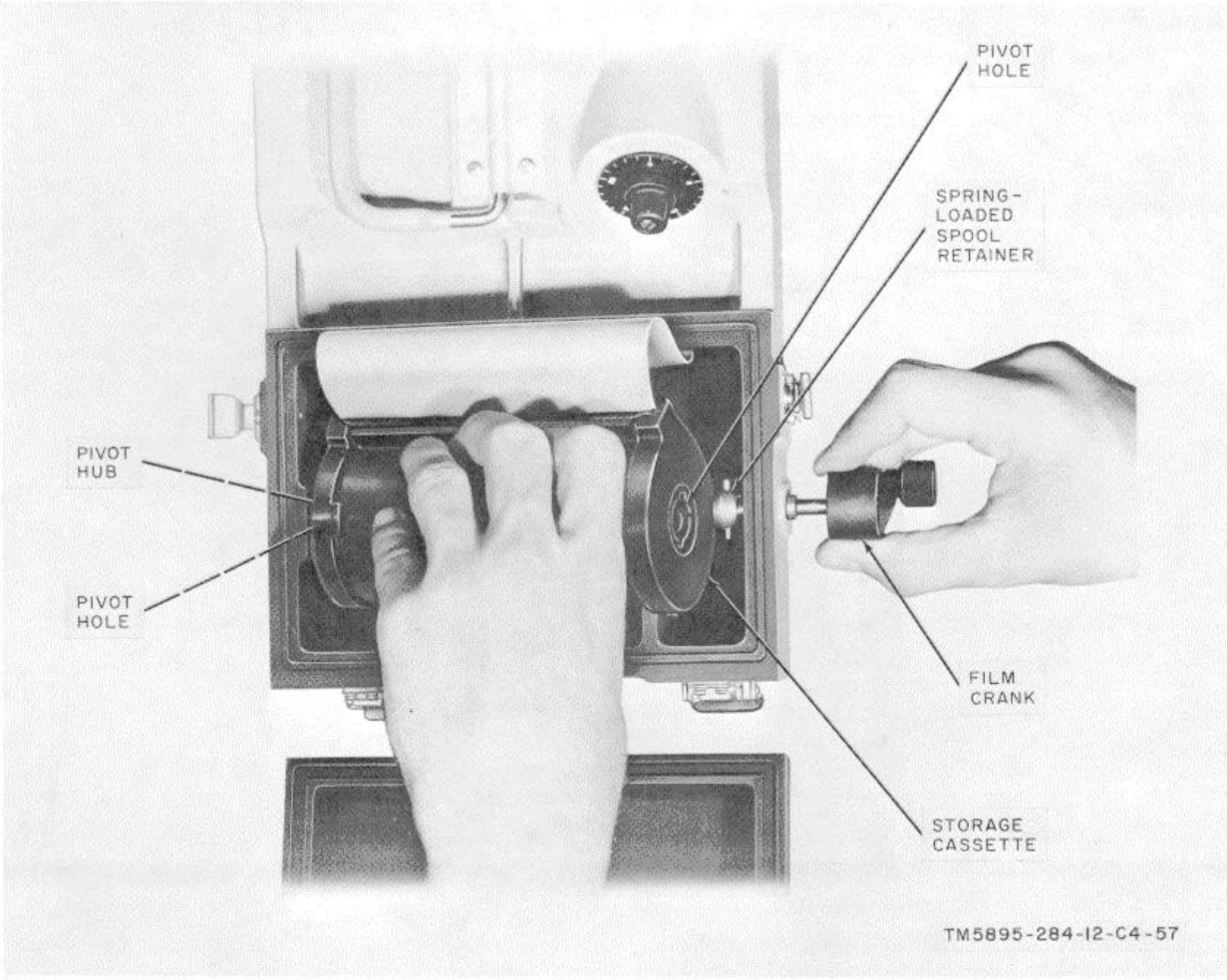


Figure 2-15. Installing storage cassette in film loader.

(21) Close the cassette cover (fig. 1-19) and secure it in the closed position by fastening the small hook and snap fastener on each side of the cover assembly.

(22) Store the film loader in a cool, dry place.

c. Strip-Film Magazine, 5-Inch. Obtain a fully loaded storage cassette, an empty takeup cassette, and a film spool; proceed as follows:

(1) Remove the 5-inch strip-film magazine from the 5-inch film driver by loosening the two short thumbscrews and one long magazine captive thumbscrew (fig. 1-8).

(2) Loosen the two cover captive thumbscrews (A, fig. 2-17(1)) and remove the magazine cover from the magazine housing.

(3) Hold a loaded (unexposed-film) storage cassette with a short film leader that extends away from you (B, fig. 2-17(1)), and with the film emulsion (dull side) down.

(4) Insert the loaded storage cassette between the lower right spring-loaded spool retainer and the spool pivot hub.

(5) Turn the 5-inch strip-film magazine over and pull the unexposed footage arm assembly to its extended position (C, fig. 2-17(1)).

(6) Pull out about 12 inches of film, and thread the film leader over the idler roller (D, fig. 2-17(1)).

(7) Thread the film over the pressure plate and around the pressure roller so that the film lays flat and smooth in its track on the underside of the film magazine (H, fig. 2-17(2)). Return the unexposed footage arm assembly to its contracted position (D, fig. 2-17(1)).

(8) Turn the film magazine over and insert the taped end of the film leader into the slot in the empty film spool (E, fig. 2-17(2)); wind 2 turns of film on the film spool, remove the end cap from the empty takeup cassette, and insert the film spool into the takeup cassette (F, fig. 2-17(2)).

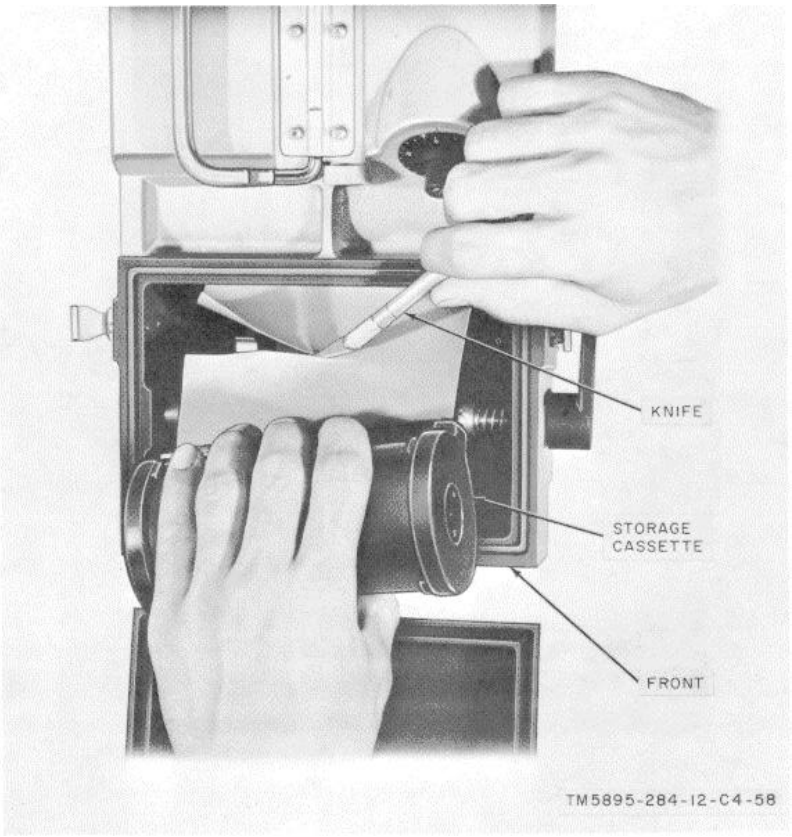


Figure 2-16. Removing loaded storage cassette.

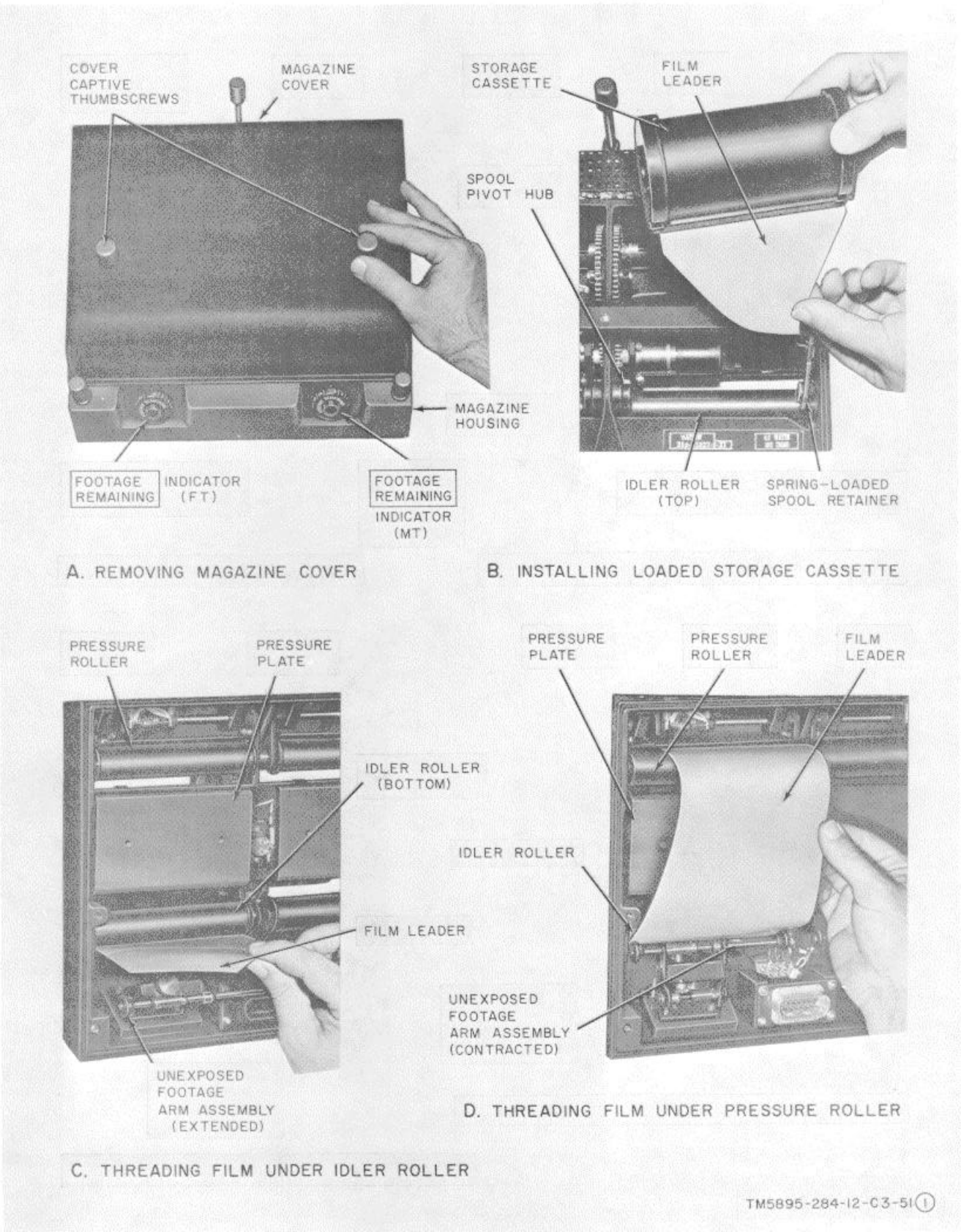


Figure 2-17(1). Loading 5-inch strip-film magazine (part 1 of 2).

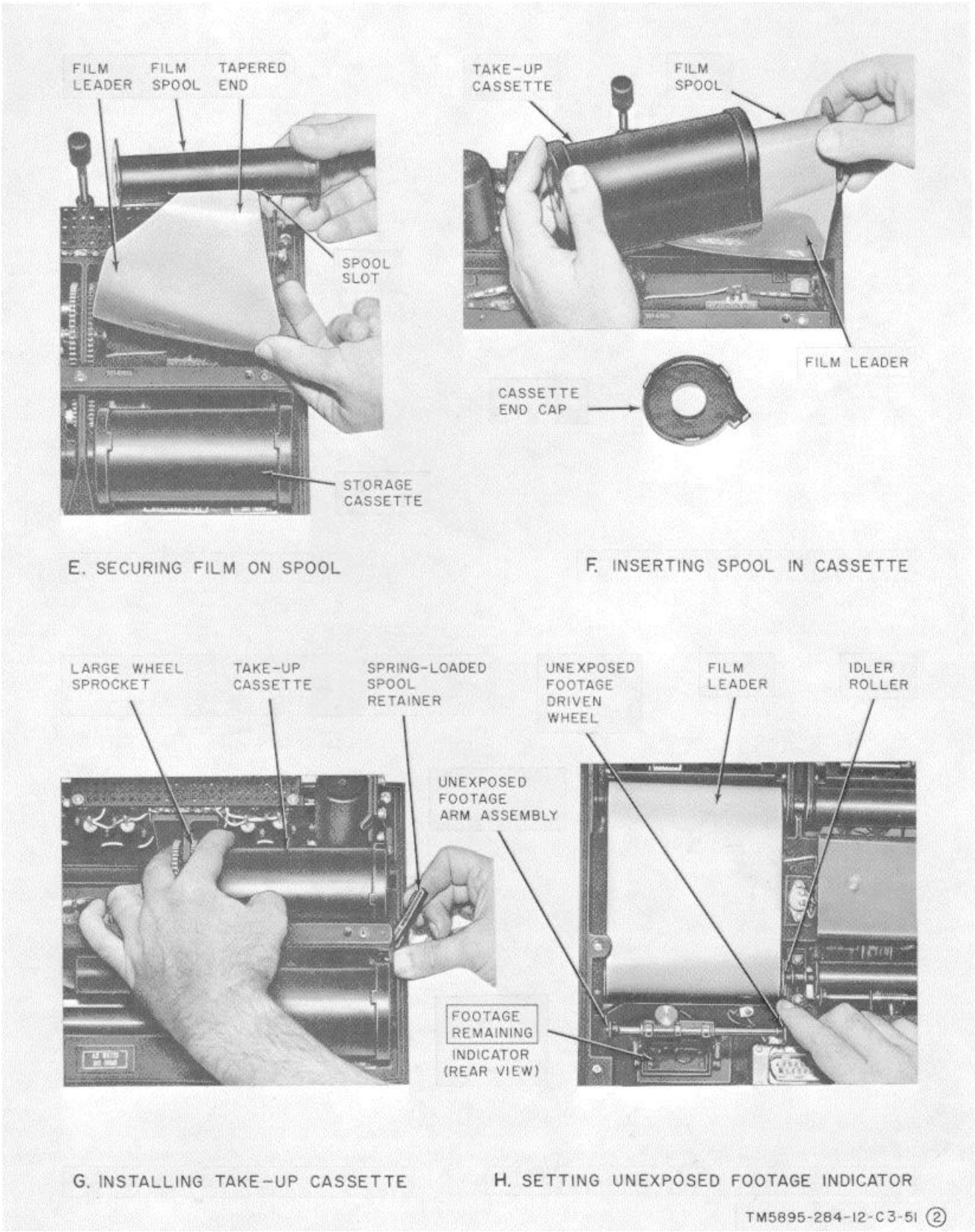


Figure 2-17(2). Loading 5-inch strip-film magazine (part 2 of 2).

(9) Install the cassette end cap on the takeup cassette, and insert the takeup cassette between the upper right spring-loaded spool retainer and the large wheel sprocket (G, fig. 2-17(2)).

(10) Turn the large wheel sprocket away from you to take up the film slack.

(11) Pull the unexposed footage arm assembly (H, fig. 2-17(2)) out to the full extent of its travel, and rotate the unexposed footage driven wheel until the FOOTAGE REMAINING indicator (A, fig. 2-17(1)) indicates the number of feet of unexposed film in the storage cassette (normally 25 feet).

(12) Repeat the procedures given in (3) through (11) above for the left side of the 5-inch strip-film magazine.

(13) Install the magazine cover on the magazine housing and tighten the two cover captive thumbscrews (A, fig. 2-17(1).

(14) Install the 5-inch strip ;film magazine on the 5-inch film driver and tighten the two short thumbscrews and one long magazine captive thumbscrew (fig. 1-8).

2-14. Data-Insert Slide
(fig. 2-18)

Before beginning a mapping run, remove the date-insert slide (fig. 1-8) from the data chamber of the recorder. Enter in pencil: the date (DATE), the operator's name (OPR), the mission number (M/N), and any other pertinent information useful in identifying and defining the mission. Before reinserting the slide, wind and set the clock by means of the clock stem (fig. 2-18).

2-15. Mapping

a. General. Load the film magazine to be used (para 2-13), and prepare the data-insert slide (para 2-14) before arriving at the point at which mapping is to begin. If aircraft drift-angle and groundspeed corrections are to be applied automatically, set the RADAR control NAV DATA switch (fig. 2-1) to AUTO. If the corrections are to be applied manually, set the RADAR control NAV DATA switch to MAN and the DEGREES DRIFT and KNOTS GRD SPEED controls to indicate the drift angle and groundspeed of the aircraft. Set the RECORDER control RANGE and RANGE DELAY controls and ANTENNA switch (fig. 2-2) to the desired positions.

CAUTION

During the mapping process, do not set the recorder LAMP-TEST-CRT switch (fig. 1-8) to LAMP, because the data-chamber lamp will destroy a portion of the recorded map.

b. Procedure, 5-Inch Strip-Film.

(1) Press the RECORDER control STBY switch (fig. 2-2). Check to see that the blue STBY lamp lights. (The blue STBY lamp lights 15 seconds after the STBY switch is depressed.)

NOTE

Initial loading of the 5-inch strip-film magazine is normally accomplished before the RADAR control ON switch (fig. 2-1) is set to ON. Placing the RADAR control ON switch to ON causes a leader takeup program to occur. If in-flight reloading or loading is required after the RADAR control ON switch is turned to ON, double-cycle the 5-inch strip-film program to accomplish initial leader takeup. To perform the double-cycle operation, press the RECORDER control MAP switch (fig. 2-2) after the blue STBY

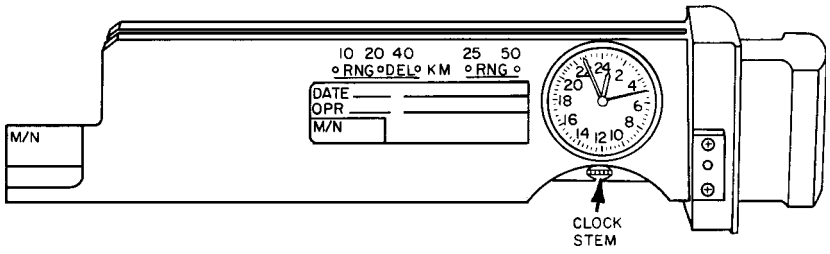


Figure 2-18. Data-insert slide.

lamp lights, and then press the STBY switch again after the green MAP lamp lights.

(2) When ready to map, press the RECORDER control MAP switch. The green MAP lamp will light and the blue STBY lamp will extinguish.

(3) Observe the FOOTAGE REMAINING indicator to see that the film-drive motor is operating. Observe the display on the MONITOR crt to see that the video signal is present. Figure 2-19 shows a typical video presentation. The range pedestal is obtained with the RECORDER control RANGE switch at 25, the RANGE DELAY switch at 50, and the RADAR control DEGREES DRIFT control at 0. The video display will vary, depending on the terrain being mapped and the type of mission being flown.

(4) To stop mapping, press the RECORDER control STBY switch. The blue STBY lamp will light and the green MAP lamp will extinguish.

NOTE

When using the 5-inch strip-film magazine, resume mapping by pressing the MAP switch. Each time mapping is resumed or stopped, data-chamber information, including the 24-hour clock, is recorded. Thus, initial and terminal mapping times are permanently recorded for each map run.

CAUTION

If it becomes necessary to remove the 5-inch strip-film magazine cover while the magazine is loaded, the segment of film that extends between the two film cassettes (H, fig. 2-17(2) will be exposed. After the cover is reinstalled, move this segment of exposed film into the takeup cassette by *double-cycling* the map program ((1) above). Also perform the double-cycling operation before unloading the 5-inch strip-film magazine (para 2-16). This extra film advance prevents loss of film map intelligence if a few inches of film is inadvertently pulled from the takeup cassette during the removal procedures.

2-16. Film Magazine Unloading

Portions of figure 2-17 illustrate the 5-inch strip film magazine unloading procedure described below.

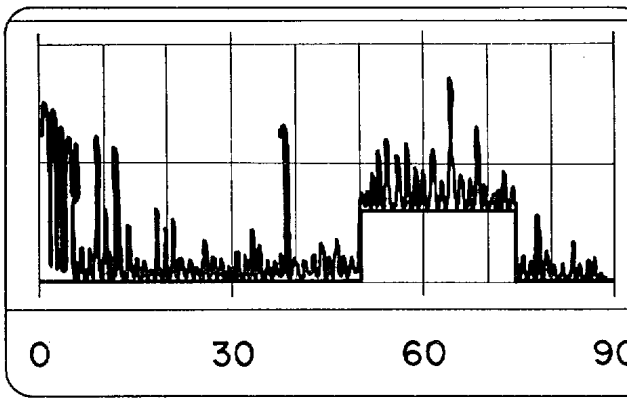


Figure 2-19. MONITOR display pattern, typical video signal.

CAUTION

Before performing the unloading procedures, perform the double-cycling operation (para 2-25b(1)) to prevent accidental fogging of data-chamber intelligence on the film.

a. Loosen the two cover captive thumbscrews (A, fig. 2-17(1) and remove the magazine cover from the 5-inch strip-film magazine.

CAUTION

Do not pull more than 6 inches of film from the takeup cassette during the procedure (b) below). If additional film is pulled out, fogging of film intelligence may result.

b. Carefully disengage the takeup cassette from between the upper right spring-loaded spool retainer and the large wheel sprocket (G, fig. 2-17(2); lift the cassette *only about 4 inches*, or until you are able to cut across the film with a sharp knife near the takeup cassette.

c. If the FOOTAGE REMAINING indicator (B, fig. 1-9) shows no, or little, film remaining in the storage cassette, proceed to d below. If the indicator shows considerable film footage remaining, proceed to e below.

d. Release the film pressure by pressing on the pressure roller lever (B, fig. 1-9); disengage the storage cassette from between the lower right spring-loaded spool retainer (B, fig. 2-17(1)) and the right pivot hub, and pull the storage cassette from the magazine.

Repeat the procedures given in b and d above for the left side of the 5-inch strip-film magazine; then proceed to f below.

e. Release the film pressure by pressing on the pressure roller lever and pull enough film (about 6 inches) from the storage cassette (B, fig. 2-17(1)) to start the film on the film spool of a new takeup cassette. Cut a wedge taper into the end of the unexposed film, and perform the procedures given in paragraph 2-13c(6) through (10). Repeat the procedures (b through e above) for the left side of the 5-inch strip-film magazine; then proceed to f below.

f. Install the magazine cover and tighten the two cover captive thumbscrews (fig. 1-8).

2-17. Stopping Procedure

a. Press the RADAR control STBY switch (fig. 2-1). The green H-V lamp will extinguish, the blue STBY lamp will light.

b. Set the Doppler navigator function selector switch on computer control indicator CMC-433-950 (AN/APS-94B) or Control, Indicator C-6586/AYA-3 (AN/APS-94C) to OFF.

c. Place the RADAR control ON switch in the off (down) position.

d. Place in the OFF position the aircraft circuit breakers that control the application of power to the radar set.

2-18. Film Processing

a. Use fresh developer, type D76 or equivalent, for each batch of film processed. Limit each batch to one 25-foot roll of 5-inch strip-film per gallon of developer.

b. Control the temperature of the developer to 68° F±°.

c. Control the developing time to 25 minutes for 5-inch strip film. For each additional 5 feet of film, add 1 minute to the developing time. Agitate intermittently.

CHAPTER 3
OPERATOR AND ORGANIZATIONAL MAINTENANCE

Section I. GENERAL

3-1. Scope of Maintenance

NOTE
The pilot will not perform preventive or corrective maintenance.

The maintenance duties assigned to the organizational maintenance repairman are listed below together with a reference to the paragraphs covering the specific maintenance function. The duties include instructions for performing preventive maintenance and corrective maintenance and do not require tools or test equipment other than those allocated at organizational maintenance (para 3-2).

a. Daily maintenance service and inspection (para 3-4).

b. Cleaning (para 3-6).

c. Intermediate maintenance service and inspection (para 3-7).

d. Periodic maintenance service and inspection (para 3-10).

e. Repairs and adjustments:

(1) Replacement of defective fuses (para 3-12).

(2) Replacement of pilot and indicating lamps (para 3-13).

(3) MONITOR sweep adjustments (para 3-15).

(4) Troubleshooting (para 3-17, 3-18, and 3-19).

(5) Removal and replacement (para 3-22).

(6) Data illumination and crt trace checks (RO-225/APS-94A) (para 3-21).

3-2. Tools, Materials, and Test Equipment Required

The tools, materials, and test equipment required for the preventive maintenance checks and services are as follows:

a. Tool Kit, Radio Repairman TK-115/G.

b. Multimeter AN/URM-105.

c. Holder, Polaroid Film MX-4733/GPM-52 (part of Test Set, Indicator AN/GPM-52).

d. Fine sandpaper, No. 000.

e. A clean, dry, lint-free cloth.

f. A soft bristle brush.

g. Trichloroethane.

Section II. MAINTENANCE PROCEDURES

3-3. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 3-4 through 3-11 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (para 3-5, 3-8, and 3-11) outline functions to be performed at specific intervals. These checks and services are designed to maintain Army equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist the organizational maintenance repairmen in maintaining combat serviceability, the charts indicate

what to check, how to check, and the normal conditions; the *References* column lists the illustrations, paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by the organizational maintenance repairman, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with TM 38-750.

3-4. Daily Maintenance Service and Inspection

Maintenance service and inspections of the AN/APS-94(*) are required daily when the equipment is installed in an aircraft. Paragraph 3-5 specifies the preventive maintenance checks and services that must be performed daily or under the special conditions listed below.

a. Following the last flight of each day or preceding the next day's flight.

b. When the equipment has been replaced after removal for any reason.

c. At least once each week if the equipment is maintained in a *standby* condition.

3-5. Daily Preventive Maintenance Checks and Services

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Antenna	Check antenna for dirt, corrosion, cracks, and proper mounting	Applicable aircraft technical manual.
2	Equipment components	Check all components to insure that the required components are installed and complete	Applicable aircraft technical manual.
3	Exterior surfaces	Clean the surfaces of all components	Para 3-6.
4	Intercabling and connectors	Check rf plumbing, interconnecting cables, and connectors for cracks and breaks. Replace cables that have cracks or broken connectors.	Applicable aircraft technical manual.
5	Knobs, dials, and switches	While making the operational check (item 6), check to see that the mechanical action of each knob, dial, and switch is smooth and free of binding.	Para 3-20 and fig. 2-1, 2-2, and 2-3.
6	Operation	Perform a complete operational check in accordance with the referenced paragraph.	Para 3-20.

3-6. Cleaning

NOTE

Perform the following procedures as referenced by the preventive maintenance checks and services charts.

Inspect all components of the radar set. The exterior surfaces should be free of dirt, grease, and fungus.

a. Remove moisture and loose dirt with a clean, soft cloth.

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation when used. Do not use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic dangerous gases.

b. Remove grease, fungus, and ground-in dirt from the exterior surfaces of the components with a cloth dampened (not wet) with trichloroethane. Wipe dry with a clean, dry, lint-free cloth.

c. Remove dirt from the exposed connectors of the components with a soft bristle brush, and remove moisture with a dry cloth.

CAUTION

Before cleaning the recorder, be sure that a film magazine is mounted. Cleaning of the recorder lens system will not be performed by the operator or organization maintenance personnel.

d. Clean the indicators on the target indicator and video signal monitor front panels; use a soft, clean cloth. If dirt is difficult to remove, dampen the cloth with water; if necessary use mild soap.

3-7. Intermediate Maintenance Service and Inspection

a. The intermediate inspection provides verification of satisfactory operation at intervals between the daily and periodic inspections. The interval at which the intermediate maintenance checks and services will be performed is every 25 flying hours. The intermediate maintenance checks

and services are performed with the intermediate maintenance inspection performed on the aircraft in which the equipment is installed. Adjustments of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have intermediate maintenance performed on it. Equipment in limited storage (requires service before operation) does not require intermediate inspection.

b. The intermediate preventive maintenance checks and services (para 3-8) will be performed in addition to the daily maintenance checks and services (para 3-5) at the specified interval:

3-8. Intermediate Preventive Maintenance Checks and Service

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Exterior	Remove all rust and corrosion from equipment components. Repaint all bare spots in accordance with the referenced paragraph.	Para 3-9.
2	Mountings	Check to see that mountings are clean, complete, and show no signs of weakness or deformity. Units are safety-wired and bonded in accordance with the referenced technical manual.	Applicable aircraft technical manual and TM 55-1500-323-25.

3-9. Repainting

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB 746-10.

3-10. Periodic Maintenance Service and Inspection

a. Periodic maintenance on Radar Surveillance Set AN/APS-94(*) will be scheduled in accordance with the requirements of TM 38-750. The radar set normally will be installed as part of an aircraft electronic configuration. The periodic maintenance inspection should be scheduled concurrently with the periodic maintenance service schedule of the aircraft in which the equipment is installed to reduce out-of-service time. Refer to the applicable aircraft technical manual for the hours between service periods. All deficiencies or shortcomings will be immediately reported to a higher maintenance category by use of the forms and procedures specified in TM 38-750. Equipment that has a deficiency that cannot be remedied by organizational maintenance personnel should be deadlined in accordance with TM 38-750. Perform all the services listed. Whenever a normal condition or result is not observed, take corrective action in accordance with the *References.*

b. The periodic preventive maintenance checks and services (para 3-11) will be performed in addition to the daily and intermediate checks and services at the specified interval.

3-11. Periodic Preventive Maintenance Checks and Services

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Publications	Check to see that all publications pertinent to the equipment are complete, usable, and on hand. Check to see that all applicable changes are on hand.	DA Pam 310-4.
2	Modification work orders	Check to see that all URGENT MWO's have been applied and that all NORMAL MWO's have been scheduled (DA Pam 310-7). MWO stencils on the equipment are legible.	DA Pam 310-7.

3-12. Replacement of Defective Fuses

CAUTION

When replacing a defective fuse, be sure that the new fuse has the correct rating. A fuse with the wrong rating may cause damage to the equipment.

a. Replace the fuse 8F1 on the synchronizer front panel as follows:

(1) Unscrew the fuseholder by turning it counterclockwise.

(2) Remove the defective fuse and replace it with a new one of the same rating (1 ampere, 3AG, slow-blow, 250 volts).

(3) Spare fuses are located inside the removable fuse cover at the top center of the synchronizer front panel. Reinsert the fuseholder into

the panel and secure it in place by turning it clockwise.

b. Replace fuses on the data converter (AN/APS-94B only) as follows:

(1) Unscrew the fuseholder by turning it counterclockwise.

(2) Remove the defective fuse and replace it with a new one of the same rating.

(3) Reinsert the fuseholder into the data converter and secure it in place by turning it clockwise.

3-13. Replacement of Pilot and Indicating Lamps

a. Pilot Lamps. Pilot lamps on the RADAR control (fig. 1-11) the RECORDER control (fig. 1-12) and the MONITOR front panels (fig. 1-13) can be replaced by the operator of the radar set. To replace a burned-out lamp, unscrew the metal cap by turning it counterclockwise. Remove the defective lamp, which is held in the metal cap by a rubber collar; insert a new lamp, and replace the metal cap by turning it clockwise.

b. Indicating Lamps. The operator of the radar set can replace the RADAR control H-V, STBY, AUTO, and LIMIT indicating lamps (fig. 1-11), the RECORDER control STBY, MAP, and DELAY ERROR indicating lamps (fig. 1-12); and the interconnection box HV and STBY indicating lamps (fig. 1-14). To replace the H-V, HV, MAP, and STBY indicating lamps, unscrew the switch button that contains the lamp by turning the button counterclockwise. Remove the defective lamp, insert a new one, and replace the switch button by turning it clockwise. To replace the AUTO, LIMIT, and DELAY ERROR in indicating lamps, unscrew the lens by turning it counterclockwise. Remove the defective lamp, insert a new one, and replace the lens by turning it clockwise.

3-14. Lubrication

No lubrication of Radar Surveillance Set AN/APS-94(*) is to be performed by operator or organizational maintenance personnel. Lubrication is performed by higher category maintenance personnel.

3-15. Monitor Sweep Adjustments

Three screwdriver controls on the MONITOR (fig. 2-3) require occasional adjustment. Adjustments of these controls normally are made during the preflight check procedures (para 2-9). The following chart gives the monitor cathode-ray tube indication for each control adjustment.

Control	*Actions and indication*
FOCUS	Adjust for sharpest trace presentation on crt.
Vertical centering	Adjust to position bottom of trace presentation to bottom of etched line on crt.
Horizontal centering	Adjust to position left end of trace presentation at zero.

3-16. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP, HDG Dial Adjustment

(fig. 2-9 and 2-10)

When a Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP (processor-viewer) is first installed in an aircraft, the HDG dial must be adjusted so that its indication will agree with the heading indicator of the aircraft. The adjustment must again be performed if the processor-viewer is installed in another aircraft. Adjust the HDG dial as follows:

a. Remove the processor-viewer bottom and top covers (para 4-7).

b. Remove the data chamber and attach it to the 3 data-chamber extension cable.

c. Plug the data-chamber extension cable into the processor-viewer.

d. Apply power to the radar set (para 2-11).

NOTE

Power normally is applied to the RO-166(*)/UP through the radar set. The RO-166(*)/UP ON-OFF switch (fig. 4-1) therefore, is normally left in the ON position, which allows the RO-166 (*)/UP to come on when power is applied to the radar set.

e. Observe the HDG dial indication. If the HDG dial indication does not agree with the aircraft heading indicator, proceed as follows:

(1) Hold the data chamber in the right hand, with the thumb on the HDG dial (fig. 2-10).

(2) Insert a small screwdriver through the hole in the data-chamber case, and engage the slot in the heading dial adjustment screw.

(3) Turn the heading dial adjustment screw slightly in a direction *opposite* to that in which it is

desired to move the HDG dial, and remove the screwdriver (there is no setscrew to be loosened); the HDG dial slips on its shaft.

(4) Remove the thumb from the HDG dial and compare the heading indication with that of the aircraft heading indicator.

(5) Repeat the procedures given in(1) through (4) above, until the HDG dial indication agrees with that of the aircraft heading indicator.

f. Turn off the radar set (para 2-17).

g. Unplug the data-chamber extension cable from the processor-viewer and from the data chamber.

h. Replace the data chamber in the processor-viewer.

i. Replace the bottom cover and secure it in place with the seven cover fasteners (fig. 4-1).

j. Lower the top cover and secure it in place with two knurled screws.

Section III. TROUBLESHOOTING

3-17. General

Operator and organizational troubleshooting of Radar Surveillance Set AN/APS-94(*) consists of visual inspection (para 3-18), sectionalization of trouble to a particular component by means of voltage and resistance measurements taken at the terminals of the interconnection box (para 3-19), the operational checklist (para 3-20), and removal and replacement of malfunctioning components (para 3-22).

3-18. Visual Inspection

When the radar set fails to perform properly, turn off the power and check for the conditions listed below before using more involved procedures.

a. Tripped circuit breakers on the interconnection box (fig. 1-14).

b. Poorly connected cables (fig. 5-1).

c. Open interlocks. (Check for proper seating of all chassis and covers.)

d. Burned-out fuse (fig. 1-5).

e. Obvious damage or abnormalities, especially of the antenna and waveguide assemblies.

f. Blistering or other signs of overheating of the radar set components.

3-19. Sectionalization of Trouble

Sectionalization of trouble consists of determining which of the radar set components is the cause of faulty operation. When trouble is sectionalized to a component, replace the defective component (para 3-22) with one known to be in good operating condition. If a malfunctioning component is not located by sectionalization of trouble, report to higher category maintenance personnel all symptoms observed and actions taken.

a. Power Supply Overload. A fault that causes repeated tripping of the power supply overload relays (para 2-11e) can sometimes be sectionalized by the following procedure. Make the voltage and resistance measurements indicated with Multimeter TS-297/U.

(1) Remove the cover of the interconnection box by loosening the eight cover fasteners (fig. 1-14).

(2) Close the interconnection box interlock switch (fig. 3-1) by pulling out the interlock switch actuating rod.

(3) Start the radar set (para 2-11).

WARNING

Be very careful when making interconnection box voltage measurements. Voltage up to 400 volts direct current (dc) and 115 volts alternating current (ac) are present at the terminals of the interconnection box.

(4) Measure the voltage between terminal 42 (1TB3) and ground in the interconnection box (fig. 3-2). A reading of +28 volts dc indicates that one of the power supply circuits is overloaded.

(5) Turn off all power to the radar set; use the stopping procedure outlined in paragraph 2-17.

(6) Refer to the interconnection box voltage and resistance diagram (fig. 3-2) and make resistance measurements from ground to terminals 21, 22, 24, 25, 27, 28, and 30. A low resistance measurement at any of these terminals indicates that the circuit containing the fault is supplied with power through that terminal.

(7) Leave the multimeter leads connected to ground and to the terminal which indicates low resistance,

and sectionalize the trouble to a component by disconnecting and reconnecting cables W3, W4, W5, W6, W9, and W10 (fig. 5-1) one by one until disconnecting a cable causes the resistance reading to rise significantly. The component to which this cable leads contains the fault. Remove and replace the faulty component (para 3-22) and forward it to higher category maintenance. Interconnection box cable connectors to which the cables connect are shown in figure 5-1. The indicator, the recorder, and the RECORDER control are not direct-connected to the interconnection box by cable. A fault that appears to be sectionalized to the synchronizer may be further isolated to one of these components by disconnecting and reconnecting cables W13, W14, and W15 between the synchronizer and the indicator, and cable W11 between the synchronizer and the recorder control (fig. 5-1).

NOTES

1. The troubleshooting data presented are based on figure 5-1, which is a typical radar set cabling diagram; the electrical routing and interconnections will be as shown, and the physical routing, length of cables, types of cables, and types of connectors will vary in accordance with the aircraft wiring.

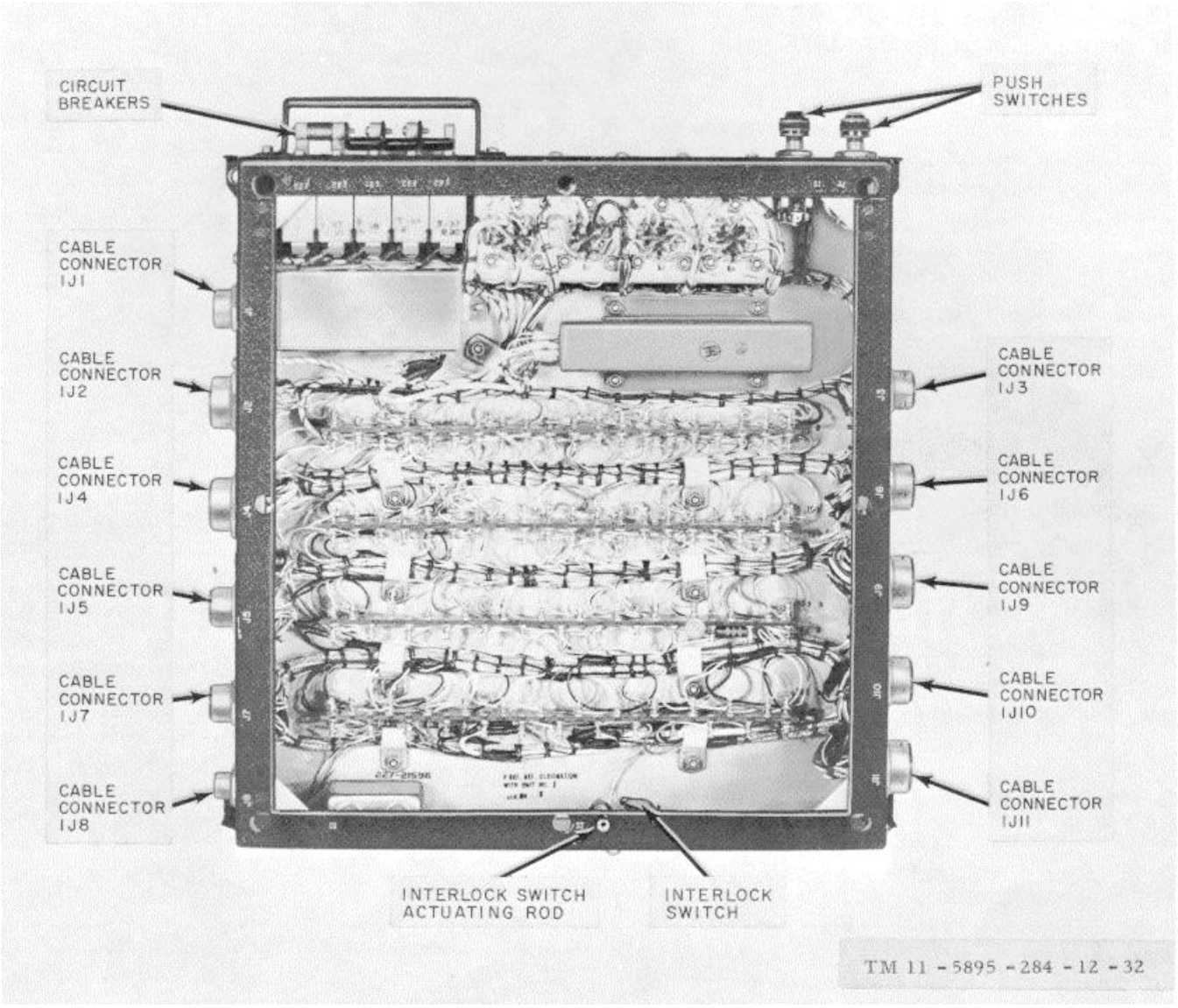


Figure 3-1. Interconnection box, cover removed.

NOTES:

1. ALL VOLTAGES AND RESISTANCES MEASURED TO CHASSIS GROUND WITH MULTIMETER TS-297/U.

2. VOLTAGE READINGS ABOVE LINE, RESISTANCE READINGS BELOW LINE. K DENOTES THOUSAND. MEG DENOTES MILLION. INF DENOTES INFINITY.

3. EQUIPMENT TURNED OFF FOR RESISTANCE MEASUREMENTS. FOR VOLTAGE MEASUREMENTS. PLACE THE RADAR SET IN THE TRANSMITTING CONDITION AND SET CONTROLS AS FOLLOWS:

CONTROL	SETTING
NAV DATA	AUTO
KNOTS GRD SPEED	150
DEGREES DRIFT	0
ANTENNA	LEFT
RANGE	50
RANGE DELAY	0

4. RESISTANCE READINGS AT TERMINALS 43 AND 45 MAY VARY AS MUCH AS 20 TO 30 PERCENT.

5. VOLTAGE READINGS AT TERMINAL 32 CAN BE EITHER +9 VDC OR +28 VDC, DEPENDING ON POSITION OF DIMMER CONTROL IN COCKPIT OF AIRCRAFT.

6. WITH **NAV DATA** SWITCH IN **MAN** POSITION, VOLTAGES AT TERMINALS 76 AND 77 CAN VARY BETWEEN O AND 25 VAC.

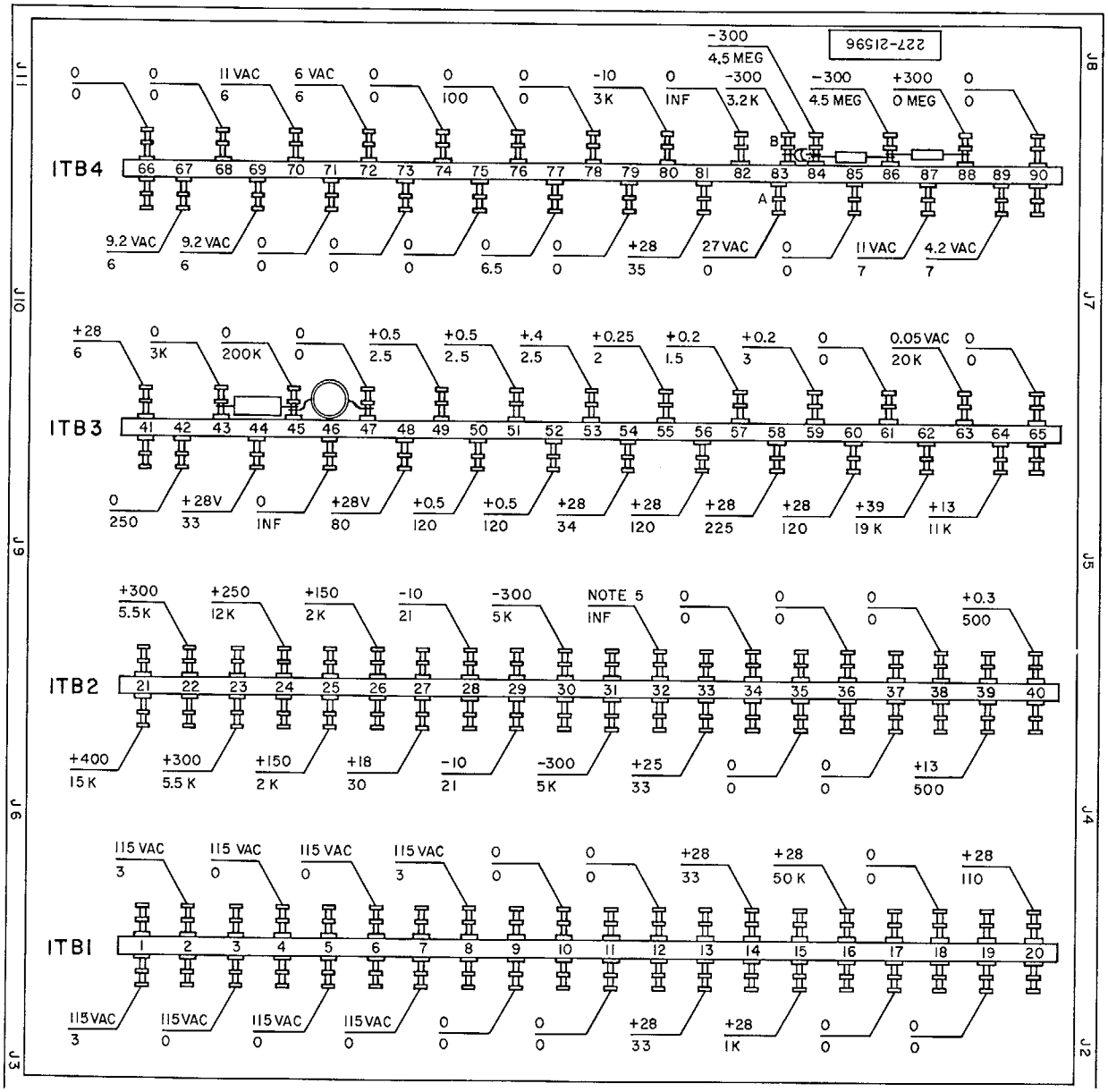


Figure 3-2. Interconnection box, voltage and resistance chart.

2. Cable connectors on the components of the radar set are designated by the letter J followed by a number. To prevent confusion, the radar set cabling diagram (fig. 5-1) precedes each cable connector designator with the number of the component on which it is installed, as shown in the following chart. *For example*, cable connector J4 on the interconnection box is designated 1J4.

Component	*Number*
Interconnection box	1
Power supply	2
RADAR control	3
Receiver-transmitter	4
Comparator	5
MONITOR	6
RECORDER control	7
Synchronizer	8
Indicator	9
Recorder	10
Antenna assembly	11
Data converter	12

b. Voltage and Resistance Measurements. Faults that cause improper operation of the radar set but do not trip the overload relays can sometimes be sectionalized by measuring resistances at other interconnection box terminals and employing the procedure given in a(7) above. Carefully read the notes on the interconnection box voltage and resistance chart (fig. 3-2) and exactly duplicate the conditions under which the normal readings were obtained.

c. Interlock Circuit Checklist. The radar set interlock circuit can be checked at the terminals of the interconnection box by following the steps of the interlock circuit checklist below. Interlock circuit trouble is sectionalized to the components given in the *Component* column when the continuity measurement between the terminals listed in the *Terminals* column indicates an open circuit. Follow the steps of the interlock circuit checklist in the numerical order shown in the *Items* column, With all power in the radar set turned off (para 2-17), set Multimeter TS-297/U to the Rxl range and check the continuity between the pairs of terminals listed in the *Terminals* column. If the continuity check indicates an open circuit, check the cable connectors, the cables, and the chassis listed in the *Check* column for completeness or proper seating, or for damage. If the radar set is not restored to operation after the performance of these checks, or if a damaged cable or cable connector is discovered, higher category maintenance is required. Interconnection box terminals are shown in figure 3-2 and cabling information is given in figure 5-1.

Items	*Terminals*	*Component*	*Check*
1	17 to 61	a. Synchronizer (fig. 1-5 and 1-7)	a. Seating of synchronizer and indicator chassis or covers.
		b. Indicator (fig. 1-7)	b. Interconnection box cable connector 1J9.
		c. RECORDER control (fig. 1-12)	c. Synchronizer cable connectors 8J1, 8J3, 8J4, 8J5, 8J23, and 8J25.
		d. RADAR control (fig. 1-11)	d. Indicator cable connector 9J1.
			e. RECORDER control cable connector 7J2.
			f. RADAR control cable connector 3J2.
			g. Cables W9, W11, W12, W13, and W29.
2	61 to 59	Doppler navigator (not part of radar set).	Interconnection box cable connector 1J7. (Interlock circuit does not enter Doppler navigator equipment. Circuit is completed by a jumper connected between two terminals of cable connector W7P1.)
3	59 to 57	Receiver-transmitter (fig. 1-4)	a. Interconnection box cable connector 1J4.
			b. Receiver-transmitter cable connector 4J1.
			c. Cable W4.
4	50 to 52	Receiver-transmitter	Seating of receiver-transmitter lower dome cover.
5	57 to 55	Power supply (fig. 1-15).	a. Seating of power supply chassis.
			b. Interconnection box cable connector 1J2.
			c. Power supply cable connectors 2J1, 2J2, and 2J4.
			d. Cables W2 and W28.
6	55 to 53	Comparator (fig. 1-6)	a. Seating of comparator chassis.
			b. Interconnection box cable connector 1J5.
			c. Comparator cable connector 5J.1.
			d. Cable W5.
7	53 to 51	MONITOR (fig. 1-13)	a. Seating of monitor scope chassis.
			b. Interconnection box cable connector 1J6.
			c. MONITOR cable connector 6J1.
			d. Cable W6.
8	49 to 51	Interconnection box (fig. 3-1)	Press the interconnection box interlock switch when making this measurement. If an open circuit is indicated, interconnection box interlock is defective and higher category maintenance is required.

3-20. Operational Checklist

a. General. The operational checklist helps organizational maintenance repairmen to locate trouble in the radar set, and indicates the corrective measures to repair the trouble. If the measures suggested do not restore normal equipment performance, troubleshooting is required by higher category maintenance personnel. Place a tag on the radar set to indicate the corrective measures that were taken and how the radar set performed up to the time of failure.

b. Operational Checklist Procedure. Follow the steps of the operational checklist in numerical order; perform the actions or check the conditions listed, and then check for the normal indications listed. If the indications are not normal, perform the corrective measures noted in the list. If the corrective measures do not repair the trouble, troubleshooting by higher category maintenance is necessary.

Step	*Action*	*Normal indication*	*Corrective measures*
1	Check all pullout chassis	Pullout chassis are tightly seated	Fasten the pullout chassis.
2	Check cables	Cable connectors are firmly mated	Firmly mate cable connectors.
3	Check interconnection box circuit breakers (fig. 1-14).	Circuit breakers are in on (up) position.	Place circuit breakers in on (up) position.
4	Place at ON aircraft circuit breakers that control application of power to radar set.	None.	None.
5	Place RADAR control ON switch (fig. 2-1) at ON.	a. Power supply and synchronizer external blowers operate and motor-generator starts. b. Panel markings on RADAR control (fig. 2-1) RECORDER control (fig. 2-2) and IMONITOR (fig. 2-3) are illuminated. c. After 30 seconds, a trace appears on MONITOR cathode-ray tube. d. After 3 minutes, blue STBY lamp on RADAR control lights.	a. Higher category maintenance required. b. Higher category maintenance required. c. Check STBY lamp. Press STBY switch. d. Determine that mechanical dimming shutters contained within STBY indicator are not fully closed. e. Higher category maintenance required.
6	Press H-V switch on RADAR control (fig. 2-1).	Green H-V lamp lights, and blue STBY lamp is extinguished.	a. Determine that mechanical dimming shutters contained within H-V indicator are not fully closed. b. Check H-V lamp. c. Higher category maintenance required.
7	With loaded (exposed) 5-inch strip-film magazine in place on recorder (fig. 1-8) press RECORDER control STBY switch (fig. 2-2).	Film advances rapidly for 2 seconds and stops, and then advances rapidly for 12 seconds and stops. RECORDER control STBY lamp lights.	a. Check fit of film magazine to recorder (para 2-12). b. Check fuse on synchronizer front panel (para 3-12). c. Check mechanical dimming shutters on STBY lamp. d. Check STBY lamp (para 3-13).
8	Press RECORDER control MAP switch (fig. 2-2).	Film advances rapidly for 2 seconds and stops, and then advances rapidly for 2 seconds and slows down. RECORDER control MAP lamp lights.	a. Check mechanical dimming shutters on MAP lamp. b. Check MAP lamp (para 3-13). c. Higher category maintenance required.
9	Press RECORDER control STBY switch (fig. 2-2).	Film advances rapidly for 2 seconds and stops, and then advances rapidly for 12 seconds and stops. RECORDER control STBY lamp lights.	Higher category maintenance required.
10	Set RECORDER control RANGE and RANGE DELAY switches to 50.	DELAY ERROR lamp lights	Check lamp.
11	Set RECORDER control RANGE DELAY switch to 40.	DELAY ERROR lamp is extinguished.	Higher category maintenance required.
12	Turn RADAR CONTROL DE-GREES DRIFT control to its counterclockwise limit (fig. 2-1).	LIMIT lamp lights	Check lamp.

b. Operational Checklist Procedure (cont.)

Step	*Action*	*Normal indication*	*Corrective measures*
13	Turn RADAR control DEGREES DRIFT control to its clockwise limit.	LIMIT lamp is extinguished, and then lights again.	Higher category maintenance required.
14	Repeat 12 and 13 above; use KNOTS GRD SPEED control.	Same as steps 12 and 13.....	Same as steps 12 and 13.
15	Press RADAR control STBY switch..... lamp on RADAR control lights.	H-V lamp is extinguished and STBY	Higher category maintenance required.
16	Perform the ppd preflight check described in paragraph 2-9b.	Doppler navigator PRESENT POSITION-KM counter indications and recorder illuminated display readouts are as specified in the preflight check.	Higher category maintenance required.
17	Place RADAR control ON switch in off (down) position.	All lamps are extinguished and blowers stop.	Higher category maintenance required.
18	Place at off position aircraft circuit breakers that control application of power to radar set.	None.	None.

3-21. Supplemental Information, Recorder, Radar Mapping RO-225A/APS-94A

If it is necessary to check data illumination and the indicator crt trace when the RO-225A/APS-94A is installed, perform the following procedures:

a. Install an unloaded Holder, Polaroid Film MX-4733/GPM-52 in place of the RO-225A/APS-94A 5-inch strip-film magazine (TM 11-6625-562-12).

b. Set the RADAR control (fig. 2-1) NAV DATA switch to MAN, the KNOTS GRD SPEED control to 300, and the DEGREES DRIFT control to 30 (right).

c. Set the RECORDER control (fig. 2-2) ANTENNA switch to BOTH, the RANGE control to 25, and the RANGE DELAY control to 60.

d. Install a Polaroid 4 by 5 film packet into the MX-4733/GPM-52; pull the envelope until it reaches its stop. (Refer to TM 11-6625-562-12).

e. Depress the actuating lever on the side of the MX-4733/GPM-52.

f. Press the RECORDER control STBY switch (fig. 2-2); when the blue STBY lamp lights, press the MAP switch, and check to see that the green MAP lamp lights and the blue STBY lamp extinguishes.

g. When the lever on the side of the MX-4733/GPM-52 returns to the horizontal position, press the RECORDER control STBY switch (fig. 2-2). Check to see that the green MAP lamp extinguishes and the blue STBY lamp lights.

h. Remove and process the Polaroid 4 by 5 film (TM 11-6625-562-12).

i. Examine the processed film for the following:

(1) RNG lamps 25 (A and B, fig. 2-4) are lighted.

(2) RNG DEL lamps 20 and 40 are lighted.

(3) The SPEED meter needle is aligned with 30 (B, fig. 2-4).

(4) The DRIFT meter needle is aligned with 30 R.

(5) The HEADING dial indication agrees with the indication on the aircraft magnetic compass.

(6) The 24-hour clock (A, fig. 2-4) is set correctly.

(7) Correct operation of the crt is indicated by light areas on the film where the crt trace is recorded.

j. Remove the MX-4733/GPM-52 from the RO-225A/APS-94A film driver and reinstall the 5-inch strip-film magazine.

3-22. Removal and Replacement of Components

Individual component locations are determined by the characteristics of the aircraft in which the radar set is installed, and may vary with aircraft type. Therefore, the following removal and replacement procedures apply to Army Model OV-1B Aircraft as a typical example (fig. 1-3).

NOTE

For removal procedures covering equipments that must be removed before the removal of certain components of the radar set, refer to the organizational maintenance manual covering the aircraft in which the equipments are installed.

a. Removal of Components. Remove the components by following directions given in the chart below. To disconnect multiple-conductor cables, pull out the outer collar of the cable connectors and withdraw the connector. To disconnect coaxial cables, turn the knurled collar of the cable connector 1/4 turn clockwise and withdraw the connector.

Component	*Removal procedure*
Receiver-transmitter (fig. 1-4)	Note. Two men are necessary to lift receiver-transmitter from aircraft. 1. Remove flexible waveguide sections from receiver-transmitter by disconnecting the quick-disconnect connectors and removing bracket that secures waveguides to airframe. 2. Disconnect cables. 3. Remove receiver-transmitter from aircraft by unscrewing six holddown screws that secure front and rear of receiver-transmitter mounting rails to airframe.
Comparator (fig. 1-6)	1. Remove receiver-transmitter as described in removal procedure for receiver-transmitter. 2. Disconnect cables from comparator. 3. Cut safety wires from two wingnut fasteners on front of mounting base. Loosen wingnut fasteners and remove comparator from aircraft.
Power supply (fig. 1-15)	1. Remove receiver-transmitter as described in removal procedures for receiver-transmitter. 2. Disconnect cables from power supply. 3. Cut safety wires from two wingnut fasteners on front of mounting base. Loosen wingnut fasteners and remove power supply from aircraft.
Synchronizer (fig. 1-5)	1. Open nose of aircraft. 2. Disconnect cables. 3. Cut safety wires from two wingnut fasteners on front of mounting base. Loosen wingnut fasteners and remove synchronizer from nose of aircraft.
Recorder (RO-225A/APS-94A) (fig. 1-8)	1. Withdraw data-insert slide from recorder housing. 2. Remove MONITOR cathode-ray tube hood from MONITOR by removing two knurled screws on its fldnge. 3. Support recorder; loosen two long and two short recorder mounting screws, and then remove RO-225A/APS-94A from aircraft.
Indicator (fig. 1-7)	1. Remove recorder as described in remover procedure for recorder. 2. Remove four holddown screws that secure horizontal member of recorder mounting frame to two vertical side rail members of recorder mounting frame, and four holddown screws that secure vertical side rail members to indicator mounting base. (The two vertical side rail members of recorder mounting frame remain attached to indicator.) 3. Disconnect cables.
RADAR control (fig. 1-11)	1. Loosen (turn counterclockwise) four Dzus fasteners that secure RADAR control to mounting frame; remove component from mounting frame. 2. Disconnect cables.
RECORDER control (fig. 1-12)	1. Loosen (turn counterclockwise) four Dzus fasteners that secure RECORDER control to mounting rails; remove component from mounting rails. 2. Disconnect cables.
MONITOR (fig. 1-13)	1. Loosen (turn counterclockwise) four Dzus fasteners that secure monitor to mounting frame; remove component from mounting frame. 2. Disconnect cables.
Interconnection box (fig. 1-14)	1. Remove two waveguides attached to receiver-transmitter (step 1 above, removal of receiver-transmitter); this provides room to remove interconnection box. 2. Disconnect cables. 3. Remove four screws that secure interconnection box to shock mounts. 4. Remove interconnection box from aircraft.
Data converter (fig. 1-16)	1. Disconnect cables from data converter. 2. Loosen wingnut latch on front of mounting base (fig. 1-17) and remove data converter from aircraft.

b. Replacement of Components. Replace the components by following the directions given in the chart below. To reconnect the multiple-conductor cables, position each cable connector keyway and push in on the connector. To reconnect coaxial cables, position the cable connector keyway and push in on the knurled collar while turning ¼ turn clockwise.

Component	*Removal procedure*
Receiver-transmitter (fig. 1-4)	*Note.* Two men are necessary to lift receiver-transmitter into aircraft. 1. Determine that shock mounts are in place on receiver-transmitter and that shock mounts are secured to aircraft manufacturer-supplied mounting rails. 2. Life receiver-transmitter into aircraft. When receiver-transmitter is in position, RIGHT ANT and LEFT ANT waveguide ports should face toward equipment access opening in aircraft fuselage. 3. Replace and tighten six mounting-rail holddown screws. 4. Connect cables (fig. 5-1). 5. Connect the two flexible waveguides to receiver-transmitter and to waveguides going to antenna assembly. 6. Replace bracket that holds waveguides to airfame.
Comparator (fig. 1-6)	1. Slide comparator into mounting base. Determine that mounting-base guide pins are fully engaged with guide pin receptacles at rear of comparator. 2. Tighten the two wingnut fasteners on mounting base onto compa rator mounted cleats. Replace safety wires on wingnut fasteners. 3. Connect cables (fig. 5-1). 4. Replace receiver-transmitter as described in replacement procedure for receiver-transmitter.
Power supply (fig. 1-15)	1. Slide power supply into mounting base. Determine that mounting-base guide pins are fully engaged with guide-pin receptacles at rear of power supply. 2. Tighten the two wingnut fasteners on mounting base onto power supply mounted cleats. Replace safety wires on wingnut fasteners. 3. Connect cables (fig. 5-1). 4. Replace receiver-transmitter as described in replacement procedure for receiver-transmitter.
Synchronizer (fig. 1-5)	1. Slide synchronizer into mounting base. Determine that mounting-base guide pins are fully engaged with guide-pin receptacles at rear of synchronizer. 2. Tighten the two wingnut fasteners on mounting base onto synchronizer mounted cleats. Replace safety wires on wingnut fasteners. 3. Connect cables (fig. 5-1). 4. Close nose of aircraft.
Recorder (RO-225A/APS-94A) (fig. 1-8)	1. Withdraw the data-insert slide if it is in position. 2. Support the recorder; carefully mate (engage) the two male connectors at rear of recorder with J6 and J7 on front of indicator (fig. 1-7). 3. Tighten two long and two short recorder mounting screws. 4. Replace MONITOR cathode-ray tube hood and tighten the two knurled screws. 5. Replace data-insert slide.
Indicator (fig. 1-7)	1. Connect cables (fig. 5-1). 2. Slide indicator into mounting base. Determine that mounting-base guide pins are fully engaged with guide-in receptacles at rear of indicator. 3. Attach top of each vertical side rail member of recorder mounting frame to horizontal member of recorder mounting frame; use two holddown screws. 4. Attach bottom of each vertical member of recorder mounting frame to indicator mounting base with two holddown screws. 5. Replace recorder as described in replacement procedure for recorder.
RADAR control (fig. 1-11)	1. Connect cables (fig. 5-1) through rear of mounting frame to RADAR control. 2. Position RADAR control in mounting frame and tighten (turn clockwise) four Dzus fasteners.
RECORDER control (fig. 1-12)	1. Connect cables (fig. 5-1). 2. Position RECORDER control on mounting rails and tighten (turn clockwise) four Dzus fasteners.
MONITOR (fig. 1-13)	1. Connect cables (fig. 5-1). 2. Position MONITOR in mounting frame and tighten (turn clockwise) four Dzus fasteners.

b. Replacement of Components (cont.)

Component	*Removal procedure*
Interconnecting box (fig. 1-14)	1. Place interconnection box in aircraft near its final location. 2. Attach interconnection box to the four chock mounts in aircraft with four holddown screws. 3. Connect cables (fig. 5-1). 4. Replace waveguides removed from receiver-transmitter (step 5, replacement of receiver-transmitter.)
Data converter (fig. 1-16)	1. Connect cables. 2. Slide data converter into mounting base (fig. 1-17). 3. Tighten the wingnut latch on mounting base.

CHAPTER 4
AUXILIARY EQUIPMENT

4-1. General

Three auxiliary equipments can be used to extend the use and capabilities of the radar set although these equipments are not part of nor essential to its operation. These auxiliary equipments are listed in a, b, and c below. The purpose and use of each equipment is described in paragraphs 4-2 through 4-9.

a. Navigation Set, Radar AN/APN-129(V)1 (Doppler Navigator) or AN/ASN-64.

b. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP.

c. Radar Data Transmitting Set AN/AKT-16 or AN/AKT-18.

4-2. Navigation Set, Radar AN/APN-129(V)1

a. Purpose of Navigation Set, Radar AN/APN-129(V)1. The Doppler navigator is an airborne groundspeed and drift-angle computer and display system. It uses continuous-wave Doppler radar to automatically and continuously provide the pilot with aircraft heading groundspeed in knots and drift angle in degrees, without the aid of ground stations, wind estimates, or true airspeed data.

b. Use of Navigation Set, Radar AN/APN-129(V)1. The Doppler navigator provides Radar Surveillance Set AN/APS-94(*) with continuous aircraft groundspeed and drift-angle information. The information is used by the radar set to automatically correct target presentation errors introduced by aircraft drift angle and changes in groundspeed (para 1-27d). For detailed information, refer to TM 11-5841-217-12.

4-3. Purpose of Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP (fig. 4-1)

Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP is a camera, processing station, and viewing station used with Radar Surveillance Set AN/APS-94(*) and Receiving Set, Radar Data AN/TKQ-1 or AN/TKQ-2. (When Receiving Set, Radar Data AN/TKQ-1 is used in conjunction with Transmitting Set, Radar Data AN/AKT-16 (para 4-9), it is the ground-based portion of a radar data transfer system. When Receiving Set, Radar Data AN/TKQ-2 is used in conjunction with Transmitting Set, Radar Data AN/AKT-18, it is the ground-based portion of a radar data transfer system.) The RO-166(*)/UP photographically records, develops, and displays map information within a few seconds after the information is obtained by the radar set.

4-4. Description of Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP (fig. 4-1 and 4-2)

The operating controls of the RO-166(*)/UP are on the right- and left-hand side of the upward sloping front control panel. The electrical and signal connectors are at the rear of the unit (P1 and P2, fig. 4-2). Further descriptive details are contained in the aircraft manual supplied with the radar set. Refer to paragraph 4-6 for instructions that depict the use of the three guide-pin holes and the two top and two bottom holddown screwholes (fig. 4-2) utilized in the 'installation of the RO-166(*)/UP onto the indicator of the radar set.

4-5. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP, Controls and Indicators

a. RO-166(:)/UP Controls.* (fig. 4-1 and 4-2). The following chart lists the RO-166(*)/UP controls and indicates the function of each. These controls are used during the operation of the RO-166(*)/UP. Any control not mentioned here is covered in the aircraft manual for the radar set.

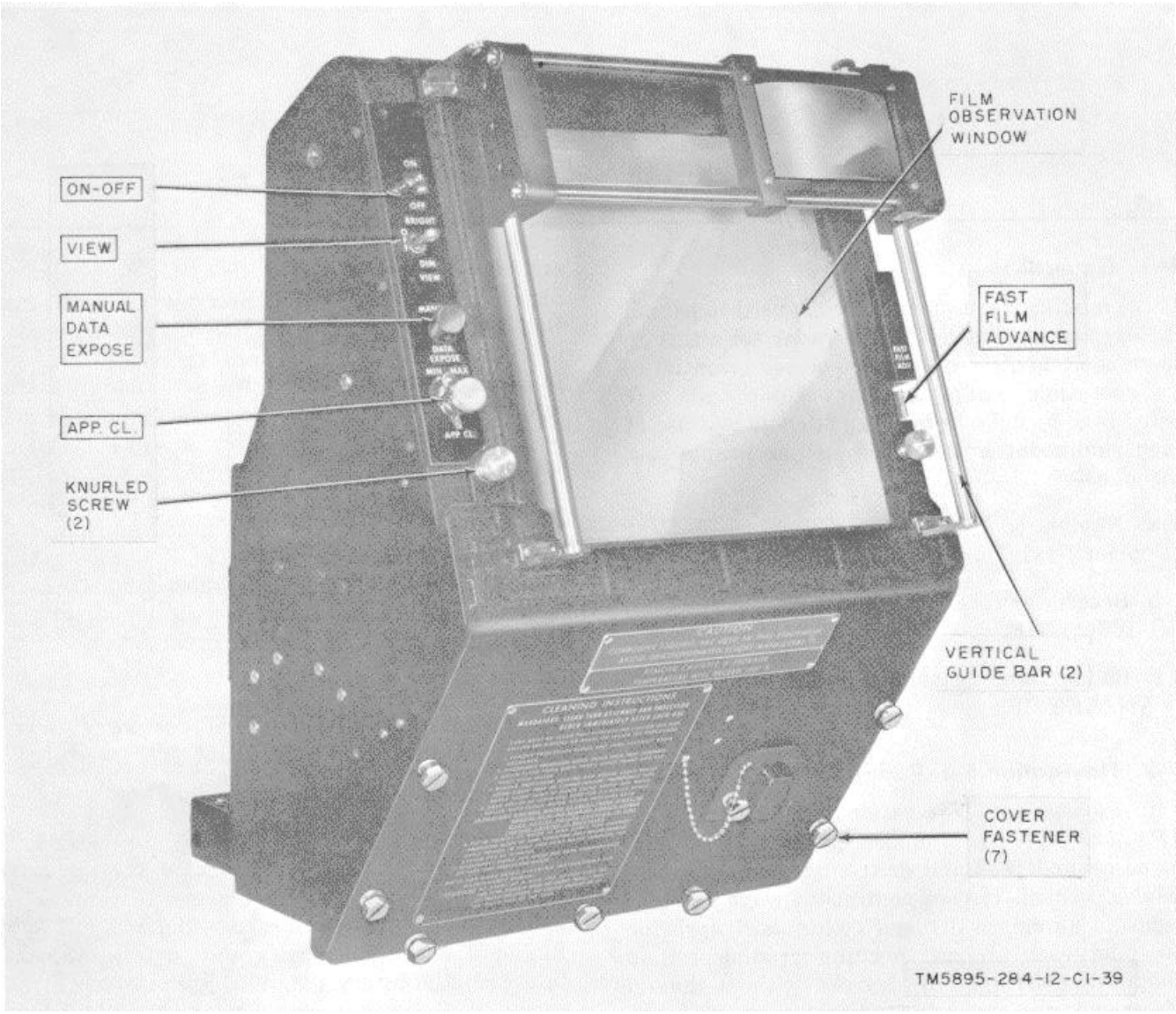


Figure 4-1. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP.

a. RO-166(*)/UP Controls (fig. 4-1 and 4-2) (cont).

Control	*Function*
ON-OFF switch (2-position toggle)	Switches motors and heaters on and off. The blower and illuminator assembly are not affected by this switch.
VIEW switch (3-position toggle)	Switches illuminator assembly lamps from OFF to BRIGHT or DIM.
MANUAL DATA EXPOSE switch (press-to-operate).	Illuminates face of data chamber and exposes the data chamber to the film.
FAST FILM ADV (press-to-operate)	Allows the film to be pulled through at a faster rate than normal.
Applicator clearance, APP. CL	Controls the clearance between the film and the processor roller.

b. Data-Chamber Indicators (fig. 4-3). The following chart lists the indicators of the data chamber (removable self-contained unit) and indicates the function of each.

b. Data-Chamber Indicator (fig. 4-3) (cont).

Indicators	*Functions*
Heading dial HDG	Indicates the heading of the aircraft in degrees. (The heading dial is slaved to the aircraft gyrocompass system.)
DRIFT angle meter (X 10)	Indicates the aircraft drift angle in degrees. The numerical indication to the right (R) or left (L) of zero is multiplied by 10.
Groundspeed meter GRD SPEED	Indicates the groundspeed of the aircraft in knots. The numerical indication is multiplied by 10.
24-hour clock	Indicates the time at which the photoradar map is made.
Range delay indicator lamps, DEL	The numerical sum of the illuminated DEL indicators indicates the minimum range delay of the photoradar map in kilometers.
Range indicator lamps RNG	The illuminated RNG indicator (25 or 50) on either film indicates the range of the photoradar map in kilometers. If neither of the RNG indicators is illuminated, the range of the photoradar is 90 kilometers.
Data card	Furnishes the operator a place to record the mission number, the date of the mission, and his name.

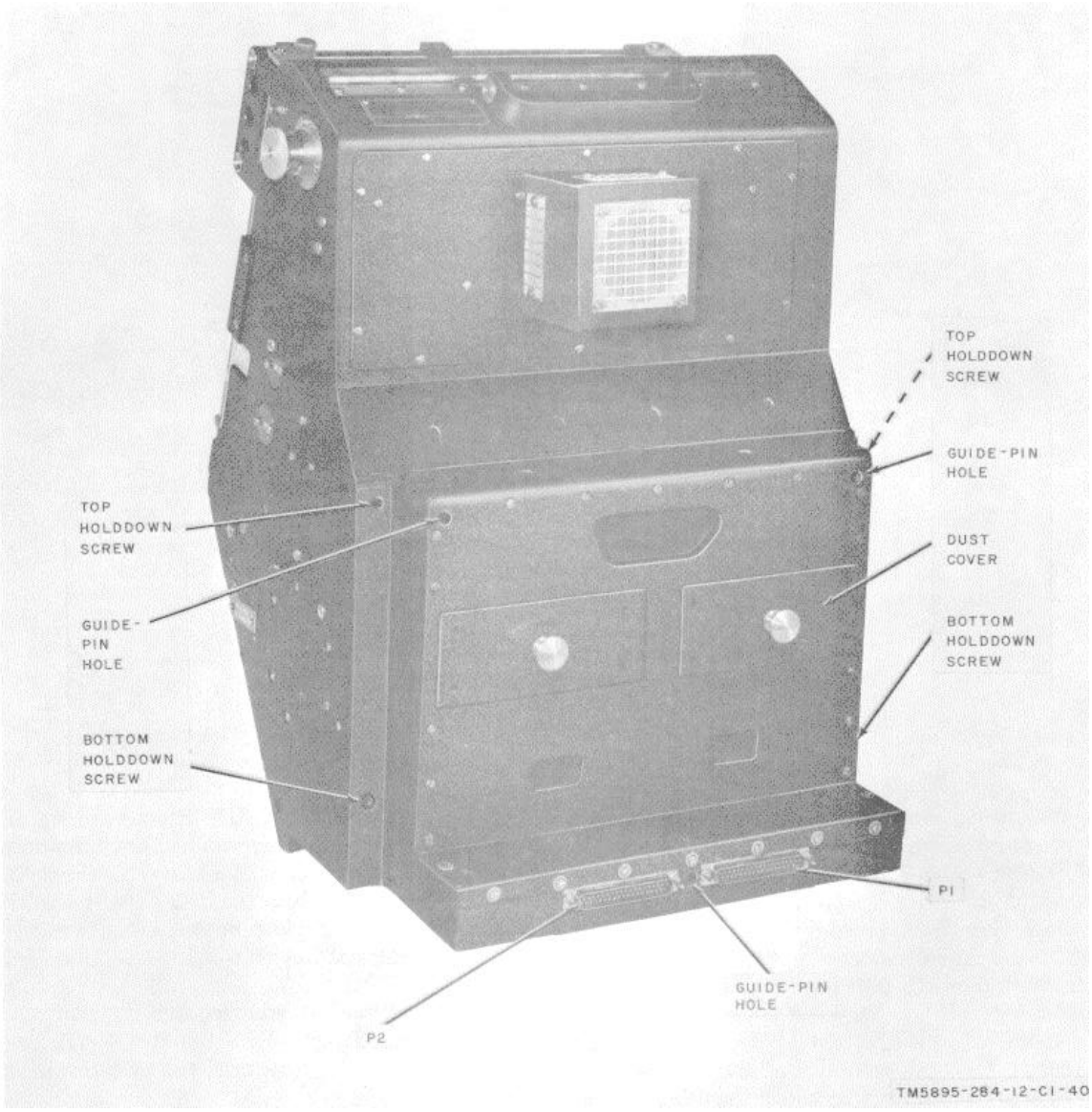


Figure 4-2. Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP, rear view, parts location.

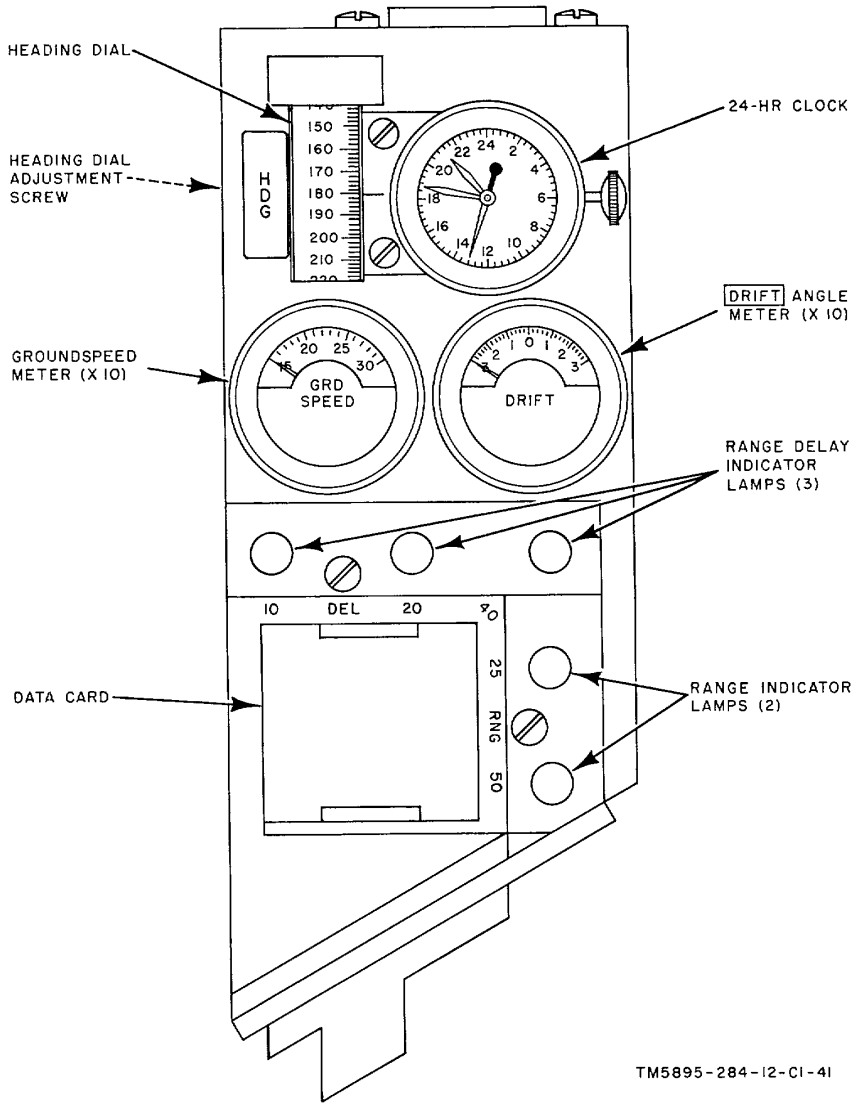


Figure 4-3. Data chamber (RO-166(*)/UP).

4-6. Mounting Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP
(fig. 4-1 and 4-2)

Remove the Recorder, Radar Mapping RO-225A/APS-94A; use the procedure outlined in paragraph 3-22. Mount Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP to the indicator as follows:

a. Remove the bottom cover from the RO-166(*)/UP by loosening the seven cover fasteners (fig. 4-1) and lifting the cover off. Remove the dust covers at the rear of the RO-166(*)/UP (fig. 4-2).

b. Set the RO-166(*)/UP in place on the indicator. Make sure that the connectors (J6 and J7) on the indicator (fig. 1-7) mate with the connectors (P1 and P2) on the RO-166(*)/UP (fig. 4-2). There are guide pins on the indicator and guide-pin holes at the rear of the RO-166(*)/UP.

c. Loosen the two knurled screws that secure the top cover of the RO-166(*)/UP (fig. 4-1). Lift the top cover to expose the two top holding bolts (fig. 2-9).

d. Tighten the two top holding bolts and the

two bottom holding bolts (fig. 2-9) to secure the RO-166(*)/UP in place on the indicator.

NOTE

Removal and replacement instructions for Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP are contained in the aircraft manual covering the radar set.

4-7. Description of Viewing Hood for Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP
(fig. 4-4 and 4-5)

When Recorder-Processor-Viewer, Radar Mapping RO-166(*)/UP (processor-viewer) is used with the radar set, bright surrounding light conditions or night flying conditions may require the use of the viewing hood. The hood is of the bellows type, and has spring-loaded mounting latches and mounting studs for attaching it to the processor-viewer. A bellows latch holds the bellows in place when it is not in use. A shutter can be closed by means of the shutter knob when it is desired to close the viewing aperture. In use, the operator unlatches the bellows latch and holds the rubber eyepiece to his eyes.

4-8. Mounting Processor-Viewer Viewing Hood

a. Insert the mounting studs (fig. 4-5) into the bottom ends of the vertical guide bars (fig. 4-1).

b. Lift, and hold extended, the spring-loaded mounting latches (fig. 4-4 and 4-5); press the top of the viewing hood against the processor-viewer, and then release the spring-loaded mounting latches. Figure 4-6 shows the viewing hood mounted and the bellows extended.

4-9. AN/AKT-16 and AN/AKT-18

a. Purpose of Radar Data Transmitting Set AN/AKT-16 and AN/AKT-18. The AN/AKT-16 or AN/AKT-18 transmits map information obtained by the radar set to Radar Data Receiving Set AN/TKQ-1 or AN/TKQ-2 which is located at a ground station anywhere within very high-frequency radio range of the aircraft.

b. Use of Radar Data Transmitting Set AN/ AKT-16 and AN/AKT-18. The AN/AKT-16 or AN/AKT-18 is installed in the aircraft that carries Radar Surveillance Set AN/APS-94(*). Map information obtained by the radar set, including

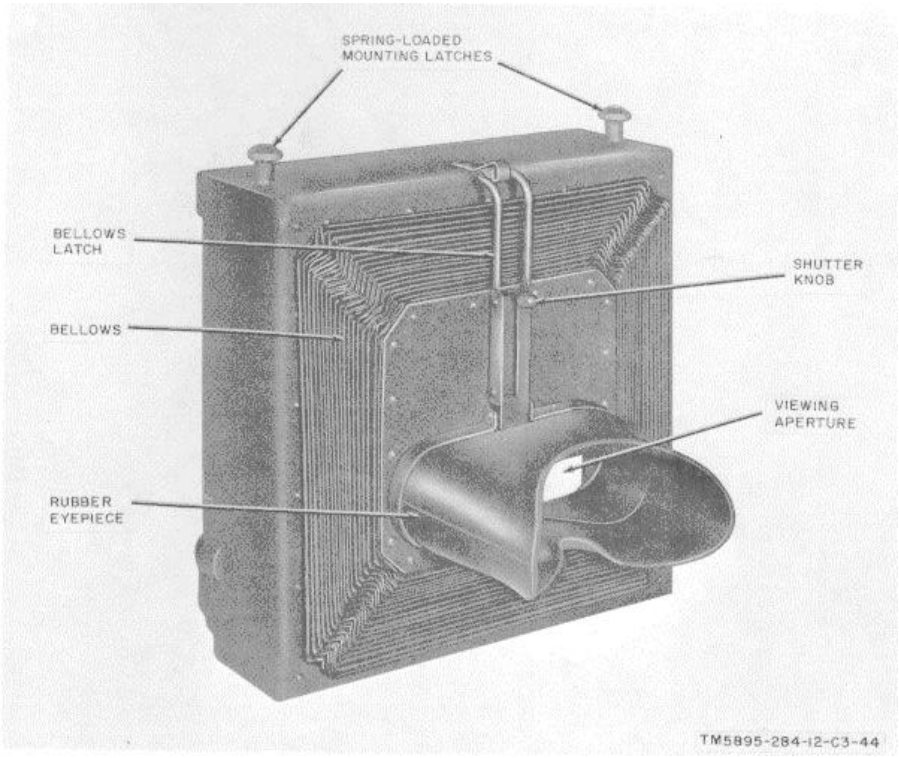


Figure 4-4. Processor-viewer, viewing hood, front view.

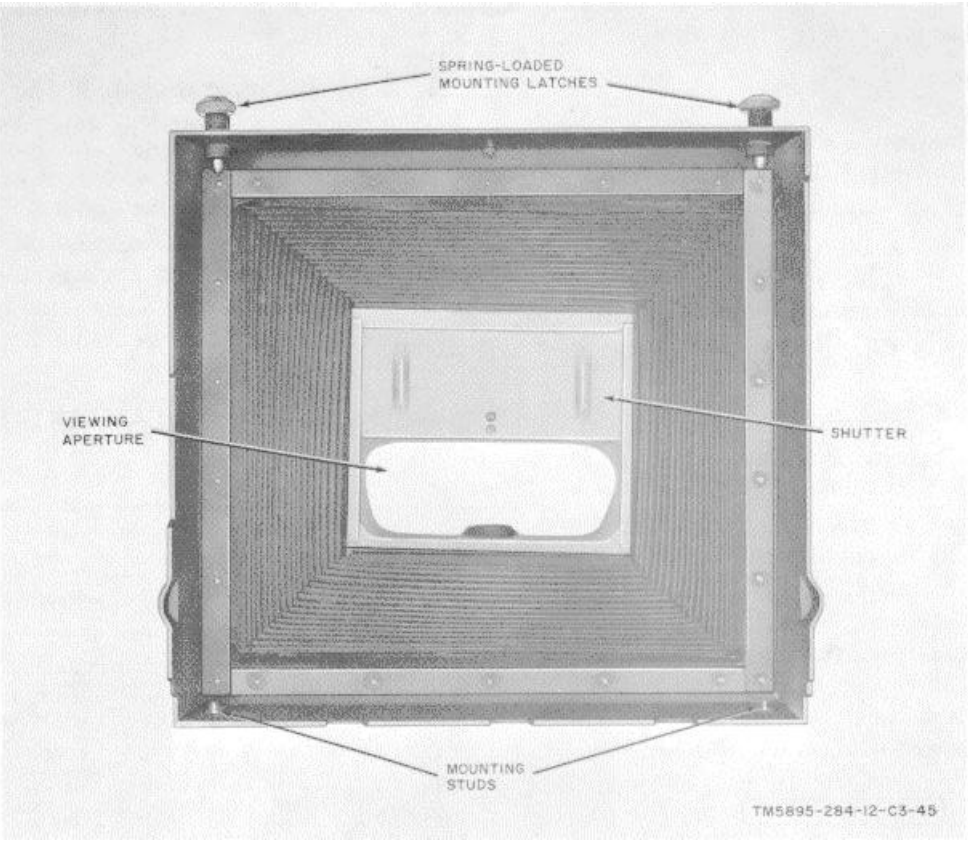


Figure 4-5. Processor-viewer, viewing hood, rear view.

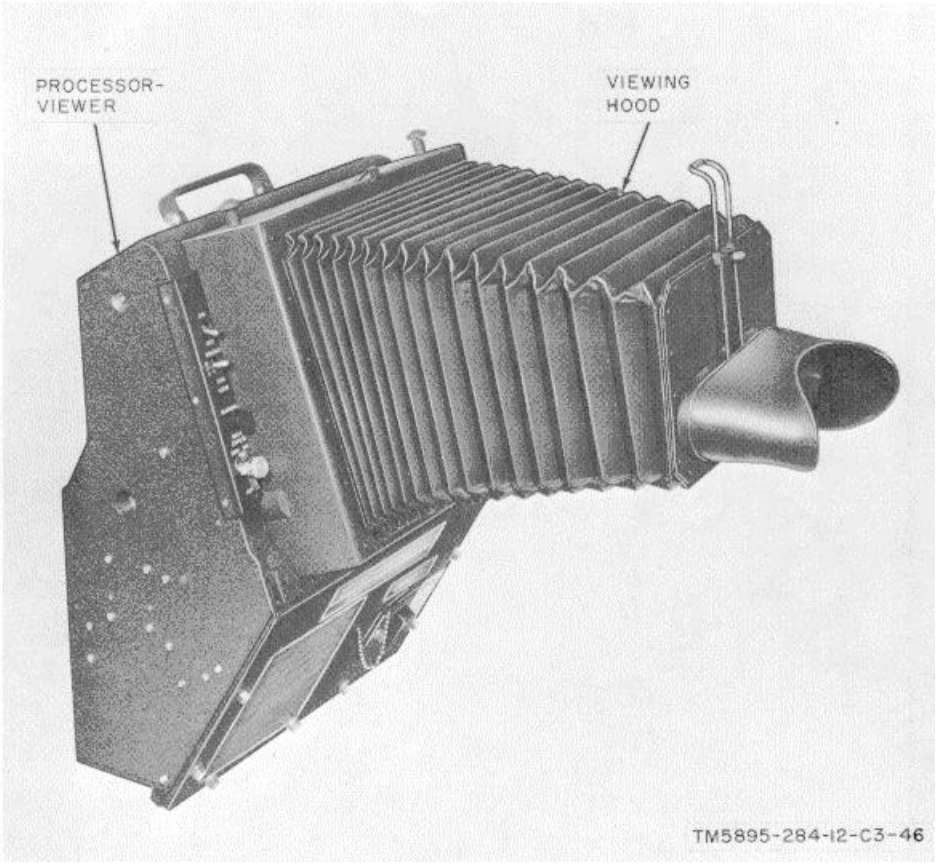


Figure 4-6. Processor-viewer, viewing hood, mounted and extended.

aircraft groundspeed and drift-angle information, is processed and transmitted to a ground station. The AN/AKT-16 or AN/AKT-18, operating in combination with ground-based Radar Data Receiving Set AN/TKQ-1 or AN/TXQ-2, provides an observer at a ground station with map information within a few seconds after it is obtained by the airborne radar set.

CHAPTER 5
DEMOLITION OF EQUIPMENT TO PREVENT ENEMY USE

5-1. Authority for Demolition

The demolition procedures given in paragraph 5-2 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

5-2. Destruction Plan

Field manuals direct that a destruction plan for equipment will be prepared. In this plan, personnel should be assigned specific tasks so that minimum time will be required should destruction become necessary. All personnel concerned should also be familiar with all aspects of the complete destruction plan. The plan must be complete and adequate/and easily carried out in the field and must provide for destruction as complete as the available time, equipment, and personnel will permit. Because the time required for complete destruction may not always be available, field manuals also direct that destruction priorities be established to insure that essential parts of equipments will be destroyed first. Priority in the following order is advised for Radar Surveillance Set AN/APS-94(*).

a. Highest priority should be given to the destruction of instruction literature and of operating units and spare parts that might disclose the operating frequency and cancellation circuitry of the system. In the radar set, these units are the antenna assembly, the waveguide, and other parts of the receiver-transmitter, and the cancellation circuits of the comparator.

b. The synchronizer, the indicator, and the recorder should be destroyed next, in that order.

c. The RADAR control and the RECORDER control are next in the order of destruction, followed by the power supply, the MONITOR, and the interconnection box, cables, mounting racks, and minor components.

5-3. Methods of Destruction

a. Destruction While Airborne. Methods of destroying the equipment while airborne will be supplied to the operator by the security officer of the using organization.

b. Destruction While Grounded. Any or all of the methods of destruction given below may be used when the equipment is on the ground. The time available will be the major determining factor for the methods to be used in most instances when destruction of equipment is undertaken. The tactical situation also will determine in what manner the destruction order will be carried out; however, in most cases it is preferable to demolish completely some portions of the equipment, rather than to partially destroy all of the equipment components.

(1) *Smash.* Use sledges, axes, hammers, crowbars, and any other heavy tools available to smash the interior units of the system.

(a) Use the heaviest tool on hand to smash the antenna housing, the antenna assembly, and the waveguides.

NOTE

Heavy tools will effectively damage the front panels of the RADAR control, RECORDER control, MONITOR, and indicator, but the remainder of the exposed surfaces of the equipment is constructed of aluminum plate heavy enough to make damage by smashing ineffective.

(b) Loosen the rim clamps that bind the covers of the receiver-transmitter to the housing, and remove the covers. With a heavy hammer or bar, smash the magnetron, the waveguide sections, and as many as possible of the other exposed parts of the receiver-transmitter.

(c) Remove the comparator chassis from its case, lay it on the ground, and use a heavy hammer or sledge to smash it. If time does not permit removal of the chassis, use firearms to shoot large enough holes in the case for the insertion of incendiary grenades.

(d) Use the same procedures as outlined in (c) above to smash the other components of the radar set. When smashing the recorder, first remove

the film magazine and smash the lenses and mirrors within the recorder, and then smash the film carriage, and drive mechanism on the magazine.

WARNING

When cathode-ray tubes (in the indicator and MONITOR) are smashed, they implode violently, throwing glass fragments in all directions. Stand to one side of the unit being smashed, protect the eyes, and smash the cathode-ray tubes first.

(2) *Cut.* Use axes, hand axes, machetes, etc., to cut the cabling, cording, and wiring. Use a heavy ax or machete to cut the interconnecting cables in a number of places. If time permits, slash the internal cabling and harnesses.

(3) *Burn.* Pour gasoline, kerosene, oil, or other flammable fluid on all instruction literature, on the cut cables, and into all components of the equipment. If the components are not mounted in an aircraft, insert incendiary grenades into each component. If they are mounted, use only the flammable fluid, and then burn the aircraft after all other equipment in the aircraft has been destroyed.

WARNING

Be very cautious in the use of explosives and incendiary devices. These items should not be used unless extreme urgency demands their use.

(4) *Explosives.* Explosives may be used to complete demolition or to effect maximum damage before burning, when time does not permit complete demolition by other means. Powder charges, fragmentation grenades, or incendiary grenades may be used in any of the applications given below. Incendiary grenades usually are most effective if destruction of small parts and wiring is desired.

(a) Smash a hole in the fiberglass antenna assembly housing and insert one or more incendiary grenades. Get away from the housing quickly after placing the grenades.

(b) Smash the MONITOR cathode-ray tube screen and insert either an incendiary grenade or a small explosive charge to destroy the interior of the unit.

(c) If time does not permit the removal of the cases of the remaining components for the insertion of incendiary or fragmentation grenades, these components may be destroyed by pistol, rifle, or automatic weapon fire. If this latter method must be used, be sure that the area is sufficiently cleared of personnel to minimize the danger of injury by ricochet.

(5) *Disposal.* Bury or scatter the destroyed parts or throw them into nearby waterways. This is particularly important if a number of parts have not been completely destroyed.

Figure 5-1. Radar set cabling diagram.

Located in Back of Manual

APPENDIX A
REFERENCES

The following is a list of applicable references available to the organizational maintenance personnel of Radar Surveillance Sets AN/APS-94B and AN/APS-94C.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8 and 9), Supply Bulletins and Lubrication Orders.
DA Pam 310-7	Index of Modification Work Orders.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 750-237	Identification and Handling of Radioactive Items in the Army Supply System.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
SC-5180-91-CL-R07	Tool Kit, Electronic Equipment TK-105/G
SM 11-4-5180-R09	Tool Kit, Radio Repair TK-115/G
SM 11-4-5180-S21	Tool Kit, Electronic Equipment TK-100/G
TM 9-213	Painting Instructions for Field Use.
TM 11-1249	Radar Test Set AN/UPM-33 (Spectrum Analyzer TS-148/UP).
TM 11-5057	Frequency Meter AN/USM-26
TM 11-5134-15	Organizational, DS, GS, and Depot Maintenance Manual: Signal Generators SG-299/U, SG-299A/U, SG-299B/U, and SG-299C/U.
TM 11-5820-680-12	Organizational Maintenance Manual Including Repair Parts List: Recorder-Processor-Viewers, Radar Mapping RO-166/UP, RO-166A/UP, RO-166B/UP, RO-166C/UP, and RO-166D/UP.
TM 11-5821-204-12	Operator's and Organizational Maintenance Manual: Radio Set AN/ ARC-44.
TM 11-5840-262-12	Organizational Maintenance Manual: Receiving Set, Radar Data AN/ TKQ-1.
TM 11-5840-274-14	Operator, Organizational, and Field Maintenance Manual: Fixture, Cathode-Ray Tube Measuring AN/USM-198.
TM 11-5840-275-14	Organizational, DS and GS Maintenance Manual: Monitor, Power ID-1142/APS-94 and Simulator, Doppler-Navigator SM-344/APS-94.
TM 11-5840-294-12	Organizational Maintenance Manual Including Repair Parts List: Receiving Set, Radar Data AN/TKQ-2.
TM 11-5841-217-12	Operator's and Organizational Maintenance Manual: Navigation Set, Radar AN/APN-129 (V) 1.
TM 11-5841-236-12	Organizational Maintenance Manual: Transmitting Set, Radar Data AN/ AKT-16 and Test Facilities Kit MK-990/AKT-16.
TM 11-5841-255-12	Organizational Maintenance Manual Including Repair Parts List: Transmitting Set, Radar Data AN/AKT-18 and Test Facilities Kit MK-856/AKT-18.
TM 11-5841-256-12	Organizational Maintenance Including Repair Parts and Special Tools List: Doppler Navigation Set AN/ASN-64.

TM 11-5950-205-15P	Operators, Organizational, Field, and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Transformer, Variable, Power CN--16/U, CN-16A/U, and CN-16B/U.
TM 11-5985-238-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Attenuator, Variable CN-802/U.
TM 11-5995-201-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Test Facilities Kit MK-652/APS-94.
TM 11-6625-200-12	Organizational Maintenance Manual: Multimeters ME-26A/U, ME-26B/ U, ME-26C/U, and ME-26D/U.
(C) TM 11-6625-272-12	Operator and Organizational Maintenance Manual: Test Set, Signal Comparator AN/GPM-42 (U).
TM 11-6625-274-12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U.
TM 11-6625-283-12	Operator and Organizational Maintenance Manual: Signal Generators TS-452B/U and TS-452C/U.
TM 11-6625-320-12	Operator and Organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic ME-30B/U, ME-30C/U, and ME-30E/U.
(C) TM 11-6625-347-12	Operator and Organizational Maintenance Manual: Test Sets, Indicator AN/GPM-41 and AN/GPM-52(U).
TM 11-6625-366-15	Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U.
TM 11-6625-368-10	Operators Manual: Pulse Generator Sets AN/UPM-15 and AN/ UPM-15A.
TM 11-6625-368-24	Organizational and Field Maintenance Manual: Pulse Generator Sets AN/ UPM-15 and AN/UPM-15A.
TM 11-6625-369-12P	Operator and Organizational Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Indicator, Standing Wave Ratio AN/USM-37A.
TM 11-6625-399-12	Operator and Organizational Maintenance Manual: Generator, Signal SG-298/U.
TM 11-6625-435-12	Operator and Organizational Maintenance Manual: Generator, Pulse SG-366/U.
TM 11-6625-455-10	Operators Manual: Power Supply PP-962/U.
TM 11-6625-458-12	Operator and Organizational Maintenance Manual: Test Set, Radar AN/ GPM-46.
TM 11-6625-493-15	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Comparator, Frequency CM-77A/USM.
TM 11-6625-498-12	Operator and Organizational Maintenance Manual: Test Set, Radio Frequency Power AN/USM-161.
TM 11-6625-535-15	Organizational, DS, GS, and Depot Maintenance Manual: Oscilloscope, AN/USM-140A.
TM 11-6625-537-15	Operator, Organizational, Field, and Depot Maintenance Manual: Voltmeter, Electronic ME-202/U.
TM 11-6625-561-12	Operator and Organizational Maintenance Manual: Test Set, Radar AN/ GPM-46A.
TM 11-6625-562-12	Operator and Organizational Maintenance Manual: Test Set, Indicator AN/GPM-52.

TM 11-6625-569-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tools List: Test Set, Signal Comparator AN/GPM42A.
TM 11-6625-604-15	Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Frequency Converter CV-394/USA-5.
TM 11-6625-615-12	Organizational Maintenance Manual: Oscillator, Pulse Delay SG-475/ APS-94.
TM 11-6625-665-15	Organizational, DS, GS, and Depot Maintenance Manual: Generator, Signal AN/USM-205.
TM 11-6625-683-15	Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Signal Generator AN/URM-127.
TM 11-6625-825-15	Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Test Set, Present Position Display AN/ASM 223.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 55-1500-323-25	Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Installation Practices for Aircraft Electric and Electronic Wiring.
TB 43-0116	Identification of radioactive items in the Army supply system.
AR 755-15	Disposal of Unwanted Radioactive Material.
AR 700-52	Licensing and Control of Sources of Ionizing Radiation.

APPENDIX B
BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

Section I. INTRODUCTION

B-1. Scope

This appendix lists only basic issue items required by the crew/operator for operation and maintenance of Test Facilities Kit MK-652/APS-94.

B-2. General

This Basic Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List-Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

b. Items Troops Installed or Authorized List-Section III. Not applicable.

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Illustration. Not applicable.

b. Federal Stock Number. This column indicates the Federal stock number assigned to the item which will be used for requisitioning purposes.

c. Part Number. This column indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

e. Description. This column indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). This column indicates the standard or basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished with Equipment. This column indicates the quantity of the basic issue item furnished with the equipment.

Section II. BASIC ISSUE ITEMS LIST

(1) ILLUSTRATION (A) FIG. NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) FEDERAL STOCK NUMBER	(3) PART NUMBER	(4) FSCM	(5) DESCRIPTION USABLE ON CODE	(6) UNIT OF MEAS	(7) QTY FURN WITH EQUIP
		6625-957-4015			CASE, TEST FACILITIES KIT CY-4072/APS-94	EA	1

APPENDIX C
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for AN/APS-94B and AN/APS-94C. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. INSPECT. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. TEST. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. SERVICE. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. ADJUST. To rectify to the extent necessary to bring into proper operating range.

e. ALIGN. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. CALIBRATE. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. INSTALL. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. REPLACE. To replace unserviceable items with serviceable like items.

i. REPAIR. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. OVERHAUL. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. REBUILD. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. SYMBOLS. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

C-3. Explanation of Format

a. Column 1, group number. Column I lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next hi-.-her assembly.

b. Column 2, functional group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3, maintenance functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	*Maintenance Category*
C	Operator/Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Column 4, tools and test equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory.

C-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The column in Table I, Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the Maintenance Allocation Chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART FOR RADAR SURVEILLANCE SETS AN/APS-94B and AN/APS-94C

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	+ COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADAR SURVEILLANCE SETS A4/APS-94B and AN/APS-94C	C												Visual
			O	O	O								21, 37, 39 43, 46	Troubleshoot, preflight checks
						O		O					21, 37, 39 43, 46 46	Preventative Maintenance "Black Boxes" components
			F						O				46 6, 7, 13, 14 20, 22, 23, 25, 26, 33, 34, 36, 37, 39, 43, 44, 47, 51 thru 54	"Black Boxes" components
						F							13, 14, 20, 22, 23, 25, 26, 33, 34, 37, 39, 47, 51 thru 54	
										F			31, 47,	
			H										1, 3, thru 14, 16 thru 20, 22, 23, 25 thru 30, 32 thru 34, 37 thru 41, 43 thru 45, 47 thru 54	Shop facilities
							H						1, 3 thru 14, 16 thru 20, 22, 23, 25, 26 thru 30, 32, 33, 34, 37 thru 41, 43, 45, 47 thru 54	Shop facilities

MAINTENANCE ALLOCATION CHART															
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont) RADAR SURVEILLANCE SETS AN/APS-94B and AN/APS-94C (cont)										H		1, 3 thru 14, 16 thru 20, 22, 23, 25 thru 32, 33, 34, 36 thru 41, 43, 44, 45 47 thru 54	Shop facilities
			D										1 thru 20 22 thru 30, 32 thru 34, 37 thru 45, 47 thru 54	Depot facilities
												D	1 thru 20, 2P thru 35, 37 thru 41, 47 thru 54	Depot facilities
11	ANTENNA ASSEMBLY AS-1048/APS-94	O												Visual
				O									46	Preventive Maintenance
								O					46	
									O				46	
			H										1, 3, 4, 5, 9, 19, 22, 23, 28, 29, 45, 47	Shop facilities
					H								1, 3, 4, 5, 9, 19, 45, 47	Shop facilities
						H							1, 3, 4, 5, 9, 19, 45, 47	Shop facilities
										H			45, 47	
											H		45, 47	Shop facilities
												D	1, 3, 4, 5, 9, 19, 22, 23, 28, 29, 45, 147	Depot facilities

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
	RADOME	O												Visual
				O									46	Preventive Maintenance
								O					46	
									O				46	
5	COMPARATOR, SIGNAL CM-145/APS-94 or	O												Visual
	CM-145A/APS-94 or CM-145B/APS-94 or			O									46	Preventive Maintenance
	CM-145C/APS-94							O					46	
									O				46	
			F										13, 14, 22, 23, 25, 26, 34, 36, 43, 44, 47, 54	
					F								13, 14, 25, 26, 34, 43, 47	
						F							13, 34, 25, 26, 34, 43, 47, 54	
							F						13, 14, 25, 26, 34	
										F			31, 47	
			H										7, 14, 22, 23, 25, 26, 30, 32, 34, 47, 54	Shop facilities
											H		6, 7, 13, 14, 22, 23, 25, 26, 31, 34, 36, 43, 44, 45, 47 thru 50, 54	Shop facilities
			D										7, 14, 22, 23, 25, 26, 30, 32, 34, 45, 47, 54	Depot facilities

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont) COMPARATOR, SIGNAL CM-145/APS-94 or CM-145A/APS-94 or CM-145B/APS-941 or CM-145C/APS-94 (cont)											D	6, 7, 13, 14, 22, 23, 25, 26, 31, 34, 43, 44, 45, 47 thru 50, 54	Depot facilities
5A3	AMPLIFIER, INTERMEDIATE FRNQUENCY	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 47	Shop facilities
												H	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 40, 44, 45, 47	Depot facilities

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
5A1	AMPLIFIER, TRIGGER PULSE	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
			F										47	Preventive Maintenance
				F									13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 47	Shop facilities
											H		3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 41, 44, 45 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
5A2	AMPLIFIER, VIDEO	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
5A2	AMPLIFIER, VIDEO (cont)			F									47	Preventive Maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 47	Shop facilities
											H		3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 4-1, 44, 45, 47	Depot facilities
5A4	MODULATOR, COMPARATOR	F												Visual
			F										3, 14, 22, 23, 25, 26, 34, 36, 43, 44, 47	
				F									47	Preventive Maintenance
													13, 14, 25, 26, 34, 43, 47	

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPENENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
5A4	MODULATOR, COMPARATOR (cont)					F							13, 14, 25, 26, 34, 43, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 43, 47	Shop facilities
											H		6, 7, 13, 14, 22, 23, 25, 26, 31, 34, 36, 43, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 43, 45, 47	Depot facilities
												D	6, 7, 13, 14, 22, 23, 25, 26, 31, 34, 35, 43, 44, 47	Depot facilities
3	CONTROL, RADAR SET C-2996/APS-94	O												Visual
			O										21, 37, 39, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										22, 23, 25, 26, 34, 47	
					F								22, 23, 47	
										F			31, 47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
3	CONTROL, RADAR SET C-2996/APS-94 (cont)										H		22, 23, 31, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	22, 23, 31, 35, 37, 39, 44, 45, 47	Depot facilities
7	CONTROL, RECORDER C-2997/APS-9	O												Visual
			O	O				O	O				21, 37, 39, 46 46 46	Troubleshoot Preventive, Maintenance
			F		F					F			22, 23, 25, 26, 34, 47 22, 23, 47 31, 47	
		H											22, 23, 25, 26, 34, 45, 47	Shop facilities
												H	22, 23, 31, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	29, 23, 31, 35, 37, 39, 44, 45, 47	Depot facilities
12	CONVERTER, ANALOG TO DIGITAL CV-2016/AiS-94B	O												Visual
			O	O			O	O					21, 37, 39, 46 46 46 46	Troubleshoot Preventive Maintenance

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
12	AN/APS-943 and AN/APS-94C (cont) CONVERTER, ANALOG TO DIGITAL CV-2016/AS-94B (cont)		F										22, 23, 25	
													26, 34, 47, 51	
					F								22, 23, 47	
										F			31, 47	
			H										22, 23, 25 26, 34, 45 47, 51	Shop, facilities
										H			29, 23, 31, 45, 47, 51	Shop facilities
			D										7, 22, 23 25, 26, 34 45, 47, 51	Depot facilities
												D	22, 23, 31, 35, 37, 39, 44, 45, 47, 51	Depot facilities
9	INDICATOR, RADAR TARGET IP-516B/APS-94 or IP-516C/APS-94	O												Visual
			O										21, 37, 39, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										22, 23, 25, 26, 34,, 47	
					F								22, 23, 47	
										F			31, 47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		22, 23, 31, 45, 47	
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	22, 23, 31, 35, 37, 39, 44, 45, 47	Depot facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94 C (cont)													
9A2	AMPLIFIER, VIDEO NO. 1, 201-21749	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F	F							13, 14, 25	
								F					26, 34, 47	
									F				47	
										F			31, 47	
			H										13, 14, 22	
													23, 25, 26	
													24, 45, 47	
											H		3, 7, 13, 14, 23, 35, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47,	Shop facilities
			D										7, 13, 41, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 23, 25, 26, 31, 34, 35, 39, 40, 41,	
9A3	AMPLIFER, VIDEO, NO. 2, 201-21750	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F										Preventive Maintenance
					F								13, 14, 25, 26, 34, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
9A3	AN/APS-94B and AN/APS-94C (cont) AMPLIFIER, VIEO NO.2, 201-21750C (cont)					F							13, 14, 25,	
													26, 34, 47	
								F					47	
									F				47	
										F			33, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
			H										3, 7, 13, 14, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 31, 45, 47	Depot facilities
												D	3, 7, 13, 14, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
9A4	GENERATOR, PULSE SWEEP 201-21751	F												Visual
			F										13, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
						F							13, 25, 26, 34, 47	
							F						13, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
9A4	AN/APS-94B and AN/APS-94C (cont) GENERATOR PULSE SWEEP 201-21751 (cont)		H										7, 12, 13, 16, 17, 22, 23, 25, 26, 30, 34, 45, 47	Shop facilities
							H						7, 12, 13, 16, 17, 22, 23, 25, 26, 30, 34, 45, 47	Shop facilities
											H		7, 12, 13, 16, 17, 22, 23, 25, 26, 30, 31, 34, 36, 44, 45, 47	Shop facilities
			D										7, 12, 13, 16, 17, 22, 23, 25, 26, 30, 34, 45, 47	Depot facilities
												D	7, 12, 13, 16, 17, 22, 23, 25, 26, 30, 31, 34, 35, 44, 45, 47	Depot facilities
9A1	POWER SUPPLY, HIGH VOLTAGE 201-21751	F												Visual
			F										22, 23, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								22, 23, 34, 47	
								F					47	
									F				47	
										F			31, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
9A1	AN/APS-94B and AN/APS-94C (cont) POWER SUPPLY, HIGH VOLTAGE 201-21751 (cont)		H										22, 23, 34, 45, 47, 49, 50	Shop facilities
											H		22, 23, 31, 34, 36, 44, 45, 47, 49, 50	Shop facilities
			D										22, 23, 34, 45, 47, 49, 50	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47, 49, 50	Depot facilities
9A6	INDICATOR, RADAR SUBASSEMBLY "A", "B"	F												Visual
			F										22, 23, 25, 34, 47	
				F									47	Preventive Maintenance
						F							47	
								F					47	
									F				47	
										F			47	
			H										22, 23, 25, 34, 47	Shop facilities
											H		22, 23, 25, 34, 45, 47	Shop facilities
			D										22, 23, 25, 34, 45, 47	Depot facilities
												D	22, 23, 25, 34, 45, 47	Depot facilities
1	INTERCONNECTION BOX J-1098/APS-94 or J-1098A/APS-94 or J-1098B/APS-94 or J-1098C/APS-94	O												Visual
			O										21, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS -94C(cont)													
1	INTERCONNECTION BOX J-1098/APS-94 or J-3.098A/APS-94 or J-l098B/APS-94 or J-1O98C/APS-94 (cont)		F							F			22, 23, 47	
													22, 23, 47	
			H										22, 23, 45, 47, 49, 50	Shop facilities
											H		22, 23, 45, 47	Shop facilities
			D										22, 23, 45, 47, 49, 50	Depot facilities
												D	22, 23, 45, 47	Depot facilities
6	MONITOR, VIDEO SIGNAL IP-517/APS-94	O												Visual
	or IP-517A/APS-94		O										21, 37, 39, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										13, 14, 22, 23, 25, 26, 34, 47	
							F						13, 14, 22, 23, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
							F						13, 14, 25, 26, 34, 47	
										F			31, 47	
		H											7, 13, 14, 22, 23, 25, 26, 30, 32, 34, 45, 47	Shop facilities
											H		13, 34, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
6	MONITOR, VIDEO SIGNAL IP-517/APS-94 or IP-517A/APS-94 (cont)		D										7, 13, 14, 22, 23, 25, 26, 30, 32, 34, 45, 47	Depot facilities
												D	13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
6A1	POWER SUPPLY, HIGP VOTTAGE 201-21734	F												Visual
			F										22, 23, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								22, 23, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										22, 23, 34, 45, 47, 49, 50	Shop facilities
											H		22, 23, 31, 34, 36, 44, 45, 47, 49, 50	Shop facilities
			D										22, 23, 34, 45, 47, 49, 50	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47, 49, 50	Depot facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AR/APS-94C (cont)													
6A2	MONITOR, SUBASSEMBLY	F												Visual
6A3			F										22, 23, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								22, 23, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										22, 23, 34, 45, 47	Shop facilities
											H		22, 23, 31, 34, 36, 44, 45, 47	Shop facilities
			D										22, 23, 34, 45, 47	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47	Depot facilities
2	POWER SUPPLY PP-2404/APS-94 or PP-2404A/APS-94 or	O												Visual
	PP-2404B/APS-94		O										21, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										22, 23, 34, 44, 47	
					F								22, 23, 34, 47	
										F		.	31, 47	
			H										22, 23, 34, 45, 47, 49, 50	Shop facilities
											H		22, 23, 33., 34, 36, 44, 45, 47, 49, 50	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-90C (cont)													
2	POWER SUPPLY PP-2404/APS-94 or PP-2404A/APS-94 or PP-2404B/APS-94 (cont)		D										22, 23, 34, 45, 47, 49, 50	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47, 49, 50	Depot facilities
2A1,	POWER SUPPLY, SUBASSEMBLY (PLAIN), "A", "B"	F												Visual
2A2,			F										22, 23, 34, 44, 47	
2A3,														
2A4,				F									47	Preventive Maintenance
2A5.					F								22, 23, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										22, 23, 34, 45, 47, 49, 50	Shop facilities
											H		22, 23, 31, 34, 36, 44, 45, 47, 49, 50	Shop facilities
			D										22, 23, 34, 45, 47, 49, 50	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47, 49, 50	Depot facilities
10	RECORDER, RADAR MAPPING RO-225/APS-94A or RO-P25A/APS-94A	O												Visual
			O										21, 37, 46	Troubleshoot
				O									46	Preventive Maintenance
					O								46	
								O					46	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
10	AN/APS-94B and AN/APS-94C (cont) RECORDER, RADAR MAPPING RO-225/APS-94A or R0-225A/APS-94A (cont)								O				46	
			F										22, 23, 25, 26, 34, 47, 53	
										F			31, 47	
			H										22, 23, 2., 26, 34, 37, 40, 41, 45, 47, 53	Shop facilities
											H		22, 23, 31, 34, 36, 40, 41, 44, 45, 47, 53	Shop facilities
			D										2, 22, 23, 25, 26, 34, 37, 40, 41, 45, 47, 53	Depot facilities
						D							2, 37, 45, 47, 53	Depot facilities
							D						2, 37, 45, 47, 53	
												D	2, 22, 23, 31, 34, 35, 40, 41, 44 45, 47, 53	Depot facilities
	CASE, RECORDER, RADAR MAPPING CV-2801/APS-94	O												Visual
			O										46	Preventive Maintenance
								O					46	
										F			47	
											H		45, 47	Shop facilities
												D	45, 47	Depot facilities
	MAGAZINE, FILM 203-42467	F												Visual
				F									47	Preventive Maintenance
								F					47	
									F				47	
										F			47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
	MAGAZINE, FILM 201-421167 (cont)									H		47	Shop facilities	
												D	45, 47	Depot facilities
	DRIVER, FILM 201-42460	F												Visual
			F										22, 23, 34, 47	
				F									47	Preventive Maintenance
					F								47	
								F					47	
									F				47	
										F			47	
				H									22, 23, 34, 45, 47	Shop facilities
											H		22, 23, 34, 45, 47	Shop facilities
				D									22, 23, 34, 45, 47	Depot facilities
												D	22, 23, 34, 45, 47	Depot facilities
4	RECEIVER-TRANSMITTER, RADAR RT-530/APS-94 or	O												Visual
	RT-530A/APS-941 or RT-530B/APS-94		O										21, 37, 39, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										13, 14, 22, 23, 25, 26, 34, 47, 52	
					F								13, 14, 29, 23, 25, 26, 34, 47	
						F							33, 14, 22, 23, 25, 26, 34, 47, 52	
							F						13, 14, 22, 23, 25, 26, 34, 47'	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
4	AN/ANS-94B and AIN/AS-94C (cont) RECEIVER-TRANSMITTER, RADAR RT-530/APS-94 or RT-530A/APS-94 or RT-530B/APS-94 (cont)									F			31, 47	
			H										3, 4, 7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 27, 34, 38, 40, 41, 44, 45, 47 thru 52	Shop facilities
											H		3, 4, 5, 7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 27, 31, 34, 36, 38, 40, 41, 44, 45, 47 thru 50	Shop facilities
				D									3, 4, 7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 27, 34, 38, 40, 41, 44, 45, 47 thru 52	Depot facilities
												D	3, 4, 5, 7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 27, 30 thru 35, 37 thru 45, 47 thru 52	Depot facilities
4A4	AMPLIFIER, INTERMEDIATE FREQUENCY 201-21726	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
4A4	AMPLIFIER, INTERMEDIATE FREQUENCY 201-21726 (cont)				F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 40, 44, 45, 47	Depot facilities
4A5	AMPLIFIER, POWER SUPPLY 201-21727	F												Visual
			F										22, 23, 34, 35, 44, 47	
				F									47	Preventive Maintenance
					F								22, 23, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
4A5	AMPLIFIER, POWER SUPPLY 201-21727 (cont)										H		22, 23, 31, 34, 36, 44, 45, 47, 49, 50	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	22, 23, 31, 34, 35, 44, 45, 47, 49, 50	Depot facilities
4A1	AMPLIFIER, TRIGGER PULSE 201-21723	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS, -94B, and AN/APS-94C (cont)													
4A1	AMPLIFIER, TRIGGER PULSE 201-21723 (cont)		D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
4A3	SWITCH, ELECTRONIC 203-20725	F												Visual
			F										22, 23, 25, 26, 34, 47	
				F									47	Preventive Maintenance
					F								47	
								F					47	
									F				47	
										F			47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		22, 23, 25, 26, 34, 36, 44, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	22, 23, 25, 26, 34, 35, 44, 45, 47	Depot facilities
4A2	AMPLIFIER, ELECTRONIC CONTROL 201-21724	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-914C (cont)													
4A2	AMPLIFIER, .ELECTRONIC CONTROL 201-21724 (cont)				F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										7, 13; 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
8	SYNCHRONIZER, ELECTRICAL SN-257/APS-94 or SN-257A/APS-94 or SN-257B/APS-94	O												Visual
			O										21, 39, 46	Troubleshoot
				O									46	Preventive Maintenance
								O					46	
									O				46	
			F										13, 14, 22, 23, 25, 26, 34, 45, 47	
					F								13, 14, 22, 23, 25, 26, 34, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
8	AN/APS-94B AND AN/APS-94C (cont) SYNCHRONIZER, ELECTRICAL SN-257/APS-94 or SN-257A/APS-94 or SN-257B/APSS-94 (cont)					F							13, 14, 29, 23, 25, 26, 34, 47	
							F						13, 14, 22, 23, 25, 26, 34, 47	
										F			31, 47	
			H										7, 9, 19, 13, 14, 16, 18, 29, 23, 25, 26, 30, 32, 34, 39, 41, 44, 45, 47, 49, 50	Shop facilities
											H		7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 30, 31, 32, 34, 36, 41, 44, 45, 47, 49, 50	Shop facilities
			D										7, 9, 12, 13, 14, 16, 18, 22, 23, 25, 26, 30, 32, 34, 39, 41, 44, 45, 47, 49, 50	Depot facilities
												D	7, 12, 13, 14, 16, 18, 22, 23, 25, 26, 30, 31, 32, 34, 35, 39, 40, 41, 44, 45, 47, 49, 50	Depot facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A9	SERVO, ELECTRICAL	F												Visual
			F										22, 23, 47	
				F									47	Preventive Maintenance
					F								22, 23, 47	
						F							22, 23, 47	
								F					47	
									F				47	
										F			22, 23, 47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		22, 23, 31, 34, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	22, 23, 31, 34, 45, 47	Depot facilities
8A1	DIVIDER, FREQUENCY 201-21737	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								13, 14, 22, 23, 25, 26, 34, 44, 47	
						F							13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
								F					47	
									F				47	
										F			13, 14, 22, 23, 25, 26, 34, 36, 44, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A1	DIVIDER, FREQUENCY 201-21737 (cont)		H										13, 14, 22, 23, 25, 26 34, 45, 47	Shop facilities
											H		7, 13, 14, 22, 23, 25, 26, 30, 34, 36, 44, 45, 47	Shop facilities
			D										13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	3, 7, 13, 14, 22, 23, 25, 26, 30, 34, 35, 44, 45, 47	Depot facilities
8A2	GENERATOR, MARKER ASSEMBLY	F	F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	Visual
				F	F		F	F	F				47 47 13, 14, 22, 23, 25, 25, 34, 44, 47 47 47 13, 14, 22, 23, 25, 26, 34, 36, 44, 47	Preventive Maintenance
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop Facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A2	GENERATOR, MARKER ASSEMBLY (cont)										H		7 13, 14, 22, 23, 25, 26, 30, 34, 36, 44, 45, 47	Shop facilities
			D										7, 13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
											D		7, 13, 14, 22, 23, 25, 26, 30, 34,	
8A3	GENERATOR, REFERENCE SIGNAL 2C1-21739	F												Visual
			F										13, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								13, 22, 23, 25, 26, 34, 47	
						F							13, 22, 23, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 92, 23, 25, 26, 34, 45, 47	Shop facilities
							H						7, 12, 33, 16, 17, 22, 23, 25, 26, 30, 34, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B, and AN/APS-94C (cont)													
8A3	GENERATOR, REFERENCE SIGNAL 201-21739 (cont)										H		7, 12, 13, 16, 17, 18, 22, 23, 25, 26, 33, 31, 34, 36, 44 45, 47	Shop facilities
			D										13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	7, 12, 13, 36, 17, 18, 22, 23, 25, 26, 30, 31, 34, 35, 44, 45, 47	Depot facilities
8A4	GENERATOR, SWEEP 201-21740	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive Maintenance
					F								13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
								F					47	
									F				47	
										F			13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
			H										13, 34, 22, 23, 25, 26, 34, 45, 47	Shop facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A4	GENERATOR, SWEEP 201-21740 (cont)						H						7, 13, 14, 22, 23, 25, 26, 31, 34, 36, 44, 45, 47	Shop facilities
			D										13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	7, 13, 14, 22, 23, 25, 26, 31, 34, 35, 44, 45, 47	Depot facilities
8A5	AMPLIFIER, DIRECT CURRENT NO. 1, 201-21741.	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 45, 47, 47	
				F										Preventive maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
								F	F				47	
										F			31, 47	
			H										22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		7, 13, 14, 18 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A5	AMPLIFIER, DIRECT CURRENT NO. 1, 201-21741 (cont)											D	7, 13, 14, 18 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities
8A6	AMPLIFIER, DIRECT CURRENT NO. 2, 201-21742	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
				H									22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		7, 13, 14, 18. 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	7, 13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A7	AMPLIFIER, ELECTRONIC CONTROL NO. 1, 201-21743	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	
					F								47	Preventive maintenance
						F							13, 14, 25, 26, 34, 47	
								F					13, 14, 25, 26, 34, 47	
									F				47	
										F			47	
													31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 40, 41, 44, 45, 47	Shop facilities
			D									1	13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 40, 41, 44, 45, 47	
8A8	AMPLIFIER, ELECTRONIC CONTROL NO. 2, 201-21744	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive maintenance

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/APS-94B and AN/APS-94C (cont)													
8A8	AMPLIFIER, ELECTRONIC CONTROL NO. 2, 201-21744 (cont)				F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	
								F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		13, 14, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										13, 14, 22, 23, 25, 26, 34, 45, 47	Depot facilities
												D	13, 14, 18, 22, 23, 25, 26, 31, 34, 35, 40, 41, 44, 45, 47	Depot facilities
8A10	AMPLIFIER, SWEEP 201-21746	F												Visual
			F										13, 14, 22, 23, 25, 26, 34, 36, 44, 47	
				F									47	Preventive maintenance
					F								13, 14, 25, 26, 34, 47	
						F							13, 14, 25, 26, 34, 47	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
8A10	AN/APS-94B and AN/APS-94C (cont) AMPLIFIER, SWEEP 201-21746 (cont)							F					47	
									F				47	
										F			31, 47	
			H										13, 14, 22, 23, 25, 26, 34, 45, 47	Shop facilities
											H		3, 7, 13, 14, 16, 18, 22, 23, 25, 26, 31, 34, 36, 40, 41, 44, 45, 47	Shop facilities
			D										13, 14, 22, 23, 25, 26, 34, 45, 147	Depot facilities
												D	3, 7, 13, 14, 16, 18, 22, 23, 25, 26, 31, 34, 35, 39, 40, 41, 44, 45, 47	Depot facilities

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR RADAR SURVEILLANCE SETS AN/APS-94B and AN/AP-94C

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
		AN/APS-94B and AN/APS-94C (cont)		
1	H, D	ADAPTER, COAXIAL TO WAVEGUIDE UG-1053/U	5985-082-3519	
2	D	ALIGNMENT FIXTURE, RECORDER AN/APM-214	6625-013-6934	
3	H, D	ATTENUATOR, FIXED CN-801/U	5985-557-7860	
4	H, D	ATTENUATOR, VARIABLE CN-713/U	5985-889-0012	
5	H, D	ATTENUATOR, VARIABLE CN-802/U	5985-857-1289	
6	F, H, D	COMPARATOR, FREQUENCY CM-77/USM	6625-788-3780	
7	F, H, D	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207 (NOTE: USE FREQUENCY METER AN/USM-26 UNTIL THE AN/USM-207 BECOMES AVAILABLE)	6625-911-6368	
8	H, D	DIODE, SEMI-CONDUCTOR DEVICE MX-3671/U	4935-583-1526	
9	H, D	DIRECTIONAL COUPLER CU-988/U	6625-899-2417	
10	H, D	ECHO BOX TS-488/UP	6625-372-2368	
11	H, D	FIXTURE, CATHODE RAY TUBE MEASURING AN/USM-198	6625-073-8908	
12	H, D	GENERATOR, PULSE SG-366/G	6625-682-9496	
13	F, H, D	GENERATOR, SIGNAL AN/USM-44	6625-669-4031	
14	F, H, D	GENERATOR, SIGNAL AN/URM-127 (NOTE: USE AUDIO TS-382/U UNTIL OSCILLATOR AN/URM-127 BECOMES AVAILABLE)	6625-783-5965	
15	D	GENERATOR, SIGNAL AN/USM-205	6625-788-9672	
16	H, D	GENERATOR, SIGNAL SG-299/U	6625-808-5584	
17	H, D	GENERATOR, SIGNAL SG-321/U (NOTE: USE GENERATOR SIGNAL SG-298/U UNTIL SIGNAL GENERATOR SG-321/U BECOMES AVAILABLE)	6625-674-7097	
18	H, D	HOLDER, SEMI-CONDUCTOR DEVICE MX-2569/U	5985-752-5311	
19	H, D	INDICATOR, STANDING WAVE AN/USM-37A	6625-814-8357	
20	F, H, D	MONITOR, POWER ID-1142/APS-94	5840-987-9175	

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
		AN/APS-94B and AN/APS-94C (cont)		
21	O	MULTIMETER AN/URM-105	6625-581-2036	
22	F, H, D	MULTIMETER ME-26B/U	6625-646-9409	
23	F, H, D	MULTIMETER TS-352/U	6625-553-0142	
24	D	OSCILLATOR, PULSE DELAY SG-475/APS-94	5840-788-6808	
25	F, H, D	OSCILLOSCOPE AN/USM-140A	6625-987-6603	
26	F, H, D	OSCILLOSCOPE SUBASSEMBLY, HIGH GAIN VERTICAL CHANNEL, WIDE BAND PREAMPLIFIER AM-3568/USM	6625-087-3442	
27	H, D	POWER SUPPLY, KLYSTRON PP-962/U	6625-756-1500	
28	H, D	PROBE, WAVEGUIDE MX-3667/U	6625-656-2454	
29	H, D	PROD, TEST MX-2517/U	6625-511-5383	
30	H, D	PULSE GENERATOR SET AN/UPM-15	6625-643-5969	
31	F, H, D	REPAIR KIT, PRINTED, WIRING BOARD MK-772/U	5999-757-7042	
32	H, D	SIGNAL GENERATOR TS-452A/U	6625-828-6410	
33	F, H, D	SIMULATOR, DOPPLER-NAVIGATOR SM-344/APS-94	5840-987-9176	
34	F, H, D	TEST FACILITIES KIT MK-652/APS-94	5995-820-2182	
35	D	TEST SET, ELECTRON TUBE TV-2/U	6625-699-0263	
36	F, H	TEST SET, ELECTRON TUBE TV-7D/U	6625-820-0064	
37	O, F, H, D	TEST SET, INDICATOR AN/GPM-52	6625-987-9453	
38	H, D	TEST SET, RADIO FREQUENCY POWER AN/USM-161	6625-892-5541	
39	O, F, H, D	TEST SET, RADAR AN/GPM-46A	6625-855-8938	
40	H, D	TEST SET, RADAR AN/UPM-33A	6625-526-0364	
41	H, D	TEST SET, RADAR TS-147D/UP	6625-256-1377	

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
		AN/APS-94B and AN/APS-94C (cont)		
42	D	TEST SET, RADAR SURVEILLANCE SET AN/USM-187	6625-073-8082	
43	O, F, H, D	TEST SET, SIGNAL COMPARATOR AN/GPM-42	6625-682-4815	
44	F, H, D	TEST SET, TRANSISTOR TS-1836/U (NOTE: USE TEST SET, TRANSISTOR TS-1836/U UNTIL TEST SET, TRANSISTOR AN/USM-171 BECOMES AVAILABLE)	6625-893-2628	
45	H, D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
46	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-064-5178	
47	F, H, D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
48	H, D	TRANSFORMER, VARIABLE POWER CN-16/U	5950-235-2086	
49	H, D	VOLTMETER, ELECTRONIC ME-202R/TU	6625-709-0288	
50	H, D	VOLTMETER, ELECTRONIC ME-30A/U	6625-643-1670	
51	P, H, D	ATTENUATOR, VARIABLE CN-970/U	5985-993-1377	
52	F, H, D	DUMMY LOAD, ELECTRICAL TS-90A/AP	6625-701-9087	
53	F, H, D	STOP WATCH, CHRONOMETER	6645-250-4680	
54	P, H, D	TEST SET, OSCILLATOR AN/PRM-10	6625-339-2046	

SECTION III. MAINTENANCE ALLOCATIONS CHART FOR TEST FACILITIES KIT MK-652/APS-94

MAINTENANCE ALLOCATION CHART														
		MAINTENANCE FUNCTIONS												
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
	TEST FACILITIES KIT MK-652/AP-94	C	O H D	O					O	H	H	D	3 3 1 1 3 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9033/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9034/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CABLE ASSY, RLY, SPECIAL PURPOSE, ELECTRICAL CX-9035/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9036/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9037/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9038/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9039/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9040/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9041/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9042/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9043/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9044/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9045/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9046/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9047/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9048/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	CASE, TEST FACILITIES KIT CY-4072/APS-94	C		O					C	H	H	D	3 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RF, CABLE ASSEMBLY, CG-530B/U	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	WIRING HARNESS CX-9049/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	
	COUPLER, DIRECTIONAL CU-1212/APS-94	C	O H D	O					C	H	H	D	3 3 1 1 2 2 2	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	DUMMY LOAD, ELECTRICAL DA-342/APS-94	C	H D	O					C	H	H	D	3 2 2 2 2 2	

TABLE 2. TOOLS AND TEST EQUIPMENT REQUIREMENTS FOR TEST FACILITIES KIT , K-652/APS-94

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
1	H, D	MULTIMETER ME-26/U	6625-646-9409	
2	H, D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
3	O	TOOLS AND TEST EQUIPMENT AVAILABLE TO THE REPAIRMAN BECAUSE OF HIS ASSIGNED MISSION.		

APPENDIX D
ORGANIZATIONAL REPAIR PARTS

Section I. INTRODUCTION

1. Scope
This appendix contains a list of repair parts required for the performance or organizational maintenance for Radar Surveillance Sets AN/ APS-94B and AN/APS-94C.

NOTE

No special tools, test, and support equipment are required.

2. General
This repair parts list is divided into the following sections.

a. Prescribed Load Allowance (PLA)-Section II. The PLA is a consolidated listing of repair parts allocated for initial stockage at organizational maintenance level. This is a mandatory minimum stockage allowance.

b. Repair Parts for Organizational Maintenance - Section III. Repair parts authorized for organizational maintenance is included in this section.

c. Federal Stock Number Cross-Reference Index-Section IV. This is a cross-reference index of Federal stock numbers to illustrations by figure and item number.

d. Figure and Item Number Cross Reference to Index-number Index--Section V. This is a cross reference index of figure number and item number (or reference designation) to index number.

3. Explanation of Columns
a. Source, Maintenance, and Recoverability Codes (SMR) Column. The first column on the left of the basic issue items list contains the source, maintenance, and recoverability (SMR) code indicators, where applicable, for individual parts and an index number. The index number is related to automatic data processing in supply functions, but may also be used as a locator for the line item, when reference designations are not in alpha-numerical sequence. The SMR codes used in this list are:

(1) *Source code.* The source code indicator is the letter appearing on the left in the SMR column. It indicated the source from which the item is obtained in accordance with the following:

Code	*Explanation*
P	-Applies to repair parts that are stock in or supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.
X1	-Applies to repair parts which are not procured or stocked, the requirement for which will be supplied by the use of the next higher assembly or component.
G	-Applies to major assemblies that are procured with PEMA funds for initial issue only to be used as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DST and GSU level or returned to depot supply level.

(2) *Maintenance code*. The maintenance code indicator is the letter appearing in the center of the SMR column. It indicates the lowest category of maintenance authorized to install the listed item. The codes are:

Code	*Explanation*
C	Operator and Crew
O	Organizational maintenance

(3) *Recoverability code*. The third, or right hand letter in the SMR column indicates whether the item should be returned for recovering or salvage. Items not coded are expendable. Recoverability codes are:

NOTE

When no code is indicated in the recoverability column, the part will be considered expendable.

Code	*Explanation*
R	-Applies to repair parts and assemblies which are economically repairable at DSU and GSU activities and normally are furnished by supply on an exchange basis.

b. Federal Stock Number. The Federal stock number for the item is indicated in this column.

c. Description. This column indicates the Federal item name and additional description of the item required. A part number of other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses. When an item is repeated several times in the list, only the first appearance carries a description. For subsequent appearances of the item, the description column will read "Same as" followed by the index number of the first appearance; for example, RESISTOR, FIXED COMPOSITION: SAME AS A298. The numbers 1, 2, 3, 4, etc. at the far right of the description column under the heading "Usable On Code" indicate that the part is used only on the models so identified (para 4).

d. Unit of Issue. The unit used as a basic of issue, e.g., ea, pr, ft, yd, etc. is indicated in this column.

e. Quantity Incorporated in Unit. The quantity of repair parts in an assembly is given in this column.

f. Maintenance Allowances

(1) The allowance columns are divided into subcolumns. Indicated in each subcolumn opposite the first appearance of each item is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have no entry in the allowance columns but will have a reference in the description column to the first appearance of the item. Items authorized for use as required but not for initial stockage are identified with an asterisk (*) in the allowance column.

(2) The quantitative allowances for organizational level of maintenance represents one initial prescribed load for a 15-day period for the number of prescribed loads authorized by the quantity of repair parts reflected in the appropriate density column to obtain the total quantity of repair parts authorized.

(3) Subsequent changes to organizational allowances will be limited to as follows: No change in the range of items is authorized. If additional items are considered necessary, recommendation should be forwarded to Commanding General, US Army Electronics Command, ATTN: AMSEL-ME-NMP-RS, Fort Monmouth, N.J. 07703, for exception or revision to the allowance list. Revisions to the range of items authorized will be made by the USAECOM National Maintenance Point based upon engineering experience, demand data, or TAERS information.

g. Illustrations.

(1) *Figure number, column 7a*. The number of the illustration in which the item is shown is indicated in this column.

(2) *Item or symbol number, column 7b*. The reference designation (callout number) used to reference the item in the illustration appears in this column.

4. Special Information

The numbers in the description block under the "Usable On Code" heading indicate the model in which a part is used. In the event that there is only a "1" appearing throughout the assembly, there is a single model, only, of the assembly. These codes apply, only, to the major assemblies which are broken out and not to the end item.

5. How to Locate Repair Part

a. To find a repair part in the list when the reference designation is known, in the figure and item number cross-reference index to index numbers (Section V) locate the figure and item number; note the index number; then locate the item in the list by the index number.

b. To find a repair part in the list when the Federal stock number (FSN) is known, locate the FSN in the FSN index. Note the index number; then, find the index number in the parts list.

6. Federal Supply Codes

This paragraph lists the Federal supply code and the associated manufacturer's name.

Code	*Explanation*
71400	Bussman Mfg, Division of McGraw-Edison Co
80058	Joint Electronic Type Designation System
80063	Army Electronics Command
81349	Military Specifications
87034	Marco-Oak Industries, A Division of Oak Electronics Corp.
94990	Motorola Inc, Western Center
95263	Leecraft Mfg Co Inc, 21-16 44th Rd, Long Island City, NY 11101
96906	Military Standards

SECTION II PRESCRIBED LOAD ALLOWANCE

(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION	USABLE ON CODE	(3) 15-DAY ORGANIZATIONAL MAINTENANCE ALLOWANCE (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100
58419118001	A001 A RADAR SURVEILLANCE SET AN/APS-94B (80058)	1				
58419528855	A002 A RADAR SURVEILLANCE SET AN/APS-94C (80058)	1				
	A004 B BOX, INTERCONNECTING J-1094,A, B, C/APS-94 SMD341170 (80058)	1234				
52401557836	A056 C LAMP, INCANDESCENT MS25237-327 (96906)	1234	*	*	2	2
	G598 B RECORDER, RADAR MAPPING RO-225A/APS-94A SMD45658i (80058)	1				
62400602941	F348 E LAMP, INCANDESCENT MS24367-683 (96906)	1	*	*	2	2
62400602941	H372 E LM4P, INCANDESCENT SAME AS H348	1	*	*	2	2
62401558707	H406 D LAMP, INCANDESCENT MS15571-6 (96906)	1	*	*	*	3

SECTION III REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW IN 1-5	(a) 6-20	(b) 21-50	(c) 51-100	(7) ILLUSTRATION (d) FIG. NO.	(a) (b) ITEM NO. OR REFERENCE DESIGNATION
G C R A001	58419118001	A RADAR SURVEILLANCE SET AN/APS-94B ANAPS94B (80058)	1	EA	1						
G C R A002	58419528855	A RADAR SURVEILLANCE SET AN/APS-94C ANAPS94C (80058)	1	EA	1						
G C R A003		B BOX, INTERCONNECTING J-1098ABC/APS-94 J1098ABCAPS94	1234	EA	1						UNIT 1
P O A052	62108500074	C LENS, INDICATOR LIGHT, GREEN 30050M3GRN (87034) SMB459564-1	23	EA	1	*	*	*	*		1E3
P O A053	62108539714	C LENS, INDICATOR LIGHT 240-33458 (94990)	1 4	EA	1	*	*	*	*		1E3
P O A054	62108500072	C LENS, INDICATOR LIGHT, BLUE 3005M10BLU (87034) SMB459564-2	1 4	EA	1	*	*	*	*		1E4
P O A055	62108538773	C LENS, INDICATOR LIGHT, AMBER 240-33458-3AMB (94990)	1 4	EA	1	*	*	*	*		1E4
P O A056	62401557836	C LAMP, INCANDESCENT MS25237-327 (96906)	1234	EA	2	*	*	2	2		1DS1
P O A057	62401557836	C LAMP, INCANDESCENT SAME AS A056	1234		REF						1DS1
G C R A618	58416819820	B CONTROL, RADAR SET C-2996/APS-94 C2996APS-94 (80058)	1	EA	1						UNIT 3
P O A632	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		5	*	*	*	*		3MP3DS5
P O A633	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		REF						3MP3DS6
P O A634	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		REF						3NP3DS7
P O A635	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		REF						3MP3DS8
P O A636	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		REF						3MP3DS9
P O A642	53558603164	C KNOB SMD459660-3 (80063)	1	EA	2	*	*	*	*		3MP6
P O A643	53558603164	C KNOB SAME AS A642	1		REF						3MP23
P O A692	62401557836	C LAMP, INCANDESCENT SAME AS AO56	1		4	*	*	*	*		3DS1
P O A693	62401557836	C LAMP, INCANDESCENT SAME AS A056	1		REF						3DS2
P O A694	62401557836	C LAMP, INCANDESCENT SAME AS A056	1		REF						3DS3
P O A695	62401557836	C LAMP, INCANDESCENT SAME AS A056	1		REF						3DS4
G C R C808		B MONITOR, VIDEO SIGNAL IP-517A/APS-94 1P517AAPS94 (80063) SMD460263	1	EA	1						UNIT 6
P O C915	62401557836	D LAMP, INCANDESCENT SAME AS A056	12		5	*	*	*	*		6A1MP4DS1
P O C916	62401557836	D LANMP, INCANDESCENT SAME AS A056	12		REF						6A1MP4DS2
P O C917	62401557836	D LAMPP, INCANDESCENT SAME AS A056	12		REF						6AMP4DS3

SECTION III REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF DESCRIPTION	(5) QTY INC NMEAS UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW IN 1-5	(a) 6-20	(b) 21-50	(c) 51-100	(7) ILLUSTRATION (d) FIG. NO.	(a) (b) ITEM NO. OR REFERENCE DESIGNATION
P O C918	62401557836	D LAMP, INCANDESCENT SAME AS A056	12		REF						6A1MP4DS4
P O C919	62491557836	D LAMP, IDCANDESCETT SAME AS A056	12		REF						6A14P4DS5
P O D061	53558603165	C KNOB SC460285 (80063)	12	EA	2	*	*	*	*		6MP15
P O D062	53558603165	C KNOB SAME AS D061	12		REF						6MP21
G C R D095		B CONTROL, RECORDER C-2997/APS-94 C2997APS94 (80063) SMD459895	11	EA	1						UNIT 7
P O D102	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		3	*	*	*	*		7A1DS4
P O D103	62401557836	D LAMP, INCANDESCENT SAME AS A056	1		REF						7A1DS5
P O D104	62401557836	D LAMP, INCANDESCENT SAME AS A056			REF						7A1DS6
P O D129	59908434459	C KNOB SMD459660-4 (80063)	1	EA	2	*	*	*	*		7MP6
P O D130	59908434459	C KNOB SAME AS D129	1		REF						7MP9
P O D135	62401557836	C LAMP, INCANDESCENT SAME AS A056	1		3	*	*	*	*		7DS1
P O D136	62401557836	C LAMP, INCANDESCET SAME AS A056	1		REF						7DS2
P O D137	62401557836	C LAMP, INCANDESCENT SAME AS A056	1		REF						7DS3
G C R D146		B SYNCRONIZER, ELECTRICAL SN-257B/APS-94 SN257BAPS94 (80063) SMD459906	123	EA	1						UNIT 8
P O D809	59202849220	D PUSE CARTRIDGE F02B250V1A (81349)	123	EA	3	*	*	*	*		8A21F1
P O 810	59202849220	D FUSE CARTRIDGE SAME AS D809	123		REF						8A21F1
P O D811	59202849220	D FUSE CARTRIDGE SAME AS D809	123		REF						8A21F1
G C R G598	58419878836	B RECCODER, RADAR MAPPING R0225/AS-94BC R0225APS94BC (80058) SMD456581	1	EA	1						UNIT 10
P O	67609949704	D SPOOL, PHOTO SMC458819 (80063)	1	EA	4	*	*	*	*		10A1MP67
P O B112	6760994704	D SPOOL, PHOTO SAME AS H111	1		REF						10AlMP111
P O R113	6760994704	D SPOOL, PHOTO SAME AS H111	1		REF						10A1MP112
P O R114	6760994704	D SPOOL, PHOTO SAME AS H111	1		REF						10A1MP113
P O H118	67609587047	E SPOOL, FILM, PSOTOGRAPHIC CYCLOACTBLKOP (95263) SMD458821	1	EA	1	*	*	*	*		10A1MP71
P O H120		D THUMBSCREW SMC460543GR1 (80063)	1	EA	2						10A1H33
X1 0 R121		D THUMBSCREW SMC460543GR7	1	EA	1						10A1H34
X1 0 H122		D THUMBSCREW SMC460543GR6	1	EA	2						10A1H35
P O R135	53559949711	D SCALE, PHOTO FILIAMENT SMD459091 (95263)	1	EA	2	*	*	*	*		10A1MP77

SECTION III REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW IN 1-5	(a) 6-20	(b) 21-50	(c) 51-100	(7) ILLUSTRATION (d) FIG. NO.	(a) (b) ITEM NO. OR REFERENCE DESIGNATION
P O H136	53559949711	D SCALE, PHOTO FILIAMENT SAME AS H135	1		REF						10A1MP116
P O H147	58419949697	D ROLLER S9D458917 (80063)	1	EA	2	*	*	*	*		10A1MP82
P O H148	58419949697	D ROLLER SAME AS H147	1		REF						10A1MP123
P O H348	52400602941	3 LAMP, INCANDESCENT MS24367-683 (96906)	1	EA	5	*	*	2	2		10A3DS7
P O H349	62400602941	E LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS8
P O H350	62400602941	R LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS9
P 0 H351	62400602941	E LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS10
P O H352	62400602941	S LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS11
P O H372	62400602941	B LAMP, INCANDESCENT SAME AS H348	1		5	*	*	2	2		10A3DS12
P O F373	62400602941	E LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS13
P O H374	62400602941	E LAMP, INCANDESCENT SAME AS H348	1								10A3DS14
P O H375	62400602941	E LAMP, INCANDESCENT SAME. AS H348	1		REF						10A3DS15
P O H376	62400602941	E LAMP, INCANDESCENT SAME AS H348	1		REF						10A3DS16
P O H406	62401558707	D LAMP, INCANDESCENT MS15571-6 (96906)	1	EA	6	*	*	*	3		10A3DS1
P O H407	62401558707	D LAMP, INCANDESCENT SAME AS H406	1		REF						10A3DS2
P O H408	62401558707	D LAMP, INCANDESCENT SAME AS H406	1		REF						10A3DS3
P O H409	62401558707	D LAMP, INCANDESCENT SAME AS H406	1		REP						10A3DS4
P O H410	62401558707	D L.AMP, INCANDESCENT SAME AS H406	1		REF						10A3DS5
P O H411	62401558707	D LAM'P, INCANDESCENT SAME AS H406	1		REF						10A3DS6
G C R J099		R CONVERTER, ANALOG DIGITAL CV2016/APS-94 CV2016APS94B ( )	1	EA	1						UNIT 12
P O H396	59202804465	C FUSE, CASTRI/RF AGC1AMP (71400)	1	EA	4	*	*	*	*		12F1
P O H397	59202804465	C FUISE, CARTRIDGE SAME AS M396	1		REF						12F2
P O H398	59202804465	C FUSE, CARTRIDGE SAME AS M396	1		REF						12F3
P O H399	59202804465	C FUSE, CARTRIDGE SAME AS M396	1		REF						12P4

SECTION IV INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO INDEX NUMBER

FEDERAL STOCK NUMBER	INDEX NO.
53558603164	A642
53558603164	A643
53558603164	DO61
53558603164	DO62
53559949711	H135
53559949711	H136
58419118001	A001
58419528855	A002
58419878836	G598
58419949697	H147
58419949697	H148
59202804465	M396
59202804465	M397
59202804465	M398
59202804465	M399
59202849220	D809
59202849220	D810
59202849220	D811
59908434459	D129
59908434459	D130
62108500072	A054
62108500074	A052
62108538773	A055
62108539714	A053
62400602941	H348
62400602941	H349
62400602941	H350
62400602941	H351
62400602941	H352
62400602941	H372
62400602941	H373
62400602941	H374
62400602941	H375
62400602941	H376
62401557836	A056
62401557836	A057
62401557836	A632
62401557836	A633
62401557836	A634
62401557836	A635
62401557836	A636
62401557836	A692
62401557836	A693
62401557836	A694
62401557836	A695
62401557836	C915
62401557836	C916
62401557836	C917
62401557836	C918
62401557836	C919
62401557836	D102
62401557836	D103
62401557836	D104
62401557836	D135
62401557836	D136
62401557836	D137
62401557836	H406
62401557836	H407
62401557836	H408
62401557836	H409
62401557836	H410
62401557836	H411
67609587407	H118
67609949704	H111
67609949704	H112
67609949704	H113
67609949704	H114

SECTION V INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO INDEX NUMBER

FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.
1DS1	A056				
1DS2	A057				
7A1DS4	D102				
7A1DS5	D103				
7A1DS6	D104				
7DS1	D135				
7DS2	D136				
7DS3	D137				
6A1MP4DS1	C915				
6A1MP4DS2	C916				
6A1MP4DS3	C917				
6A1MP4DS4	C918				
6A1MP4DS5	C919				
3DS1	A692				
3DS2	A693				
3DS3	A694				
3DS4	A695				
3M1P23	A643				
3MP3DS5	A632				
3MP3DS6	A633				
3MP3DS7	A634				
3MP3DS8	A635				
3MP3DS9	A636				
3MP6	A642				

GLOSSARY

Section I. ABBREVIATIONS

ft	fixed target
fti	fixed-target indicator
mt	moving target
mti	moving-target indicator
ppd	present position display
Hz	Hertz (cycles per second)

Section II. DEFINITIONS OF UNUSUAL TERMS

A-scope display. The presentation of radar target signals along the horizontal trace of a cathode-ray tube.
Azimuth. Angular direction along a horizontal plane.
Azimuth resolution. The ability of the radar set to present separately, targets that are at approximately the same distance from the aircraft. Azimuth resolution increases as range increases.
Cosecant squared antenna. An antenna whose purpose is to provide an airborne radar system with the ability to lay down a uniform electric field along a line on the earth's surface.
Drift angle. The angular difference between the heading of the aircraft and its course of flight path.
Duplexer. A switching device that alternately passes a signal to two antennas. (A duplexer permits the connection of the transmitter and receiver to a common antenna.)
Fairing. A member or structure whose primary function is to produce a smooth outline to reduce drag or head resistance in an aircraft.
Groundspeed. The actual ground distance covered by an aircraft per unit time.
Hermetically sealed. Airtight.
Implode. Violent inward collapse (frequently with the showering of particles).
Intensity-modulated crt traces. Crt traces that have target areas formed at heavily bombarded spots of the crt face.
Map linearity. When all equal areas of a map represent equal land areas.
Module. In the AN/APS-94, a group of circuit elements contained in an integral subassembly that can be removed intact.
Phase difference. The difference between two signals displaced in time and amplitude.
Present position display. A visual display indicating the present position of the aircraft at any instant during flight.
Radial velocity. Circular movement per unit time.
Range resolution. The ability of the radar set to present separately, targets which are at approximately the same bearing from the aircraft.
Surveillance. An examination of a territory to gain information.
System triggers. Accurately spaced pulses of short duration that provide an accurate timing reference to the circuits of the radar system.
Terrestrial targets. Ground targets.
Ultraviolet light. Light rays with a wavelength above the visible spectrum.
Vectorial sum. The total amplitude of positive and negative magnitudes with the same or different angular directions.

INDEX

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

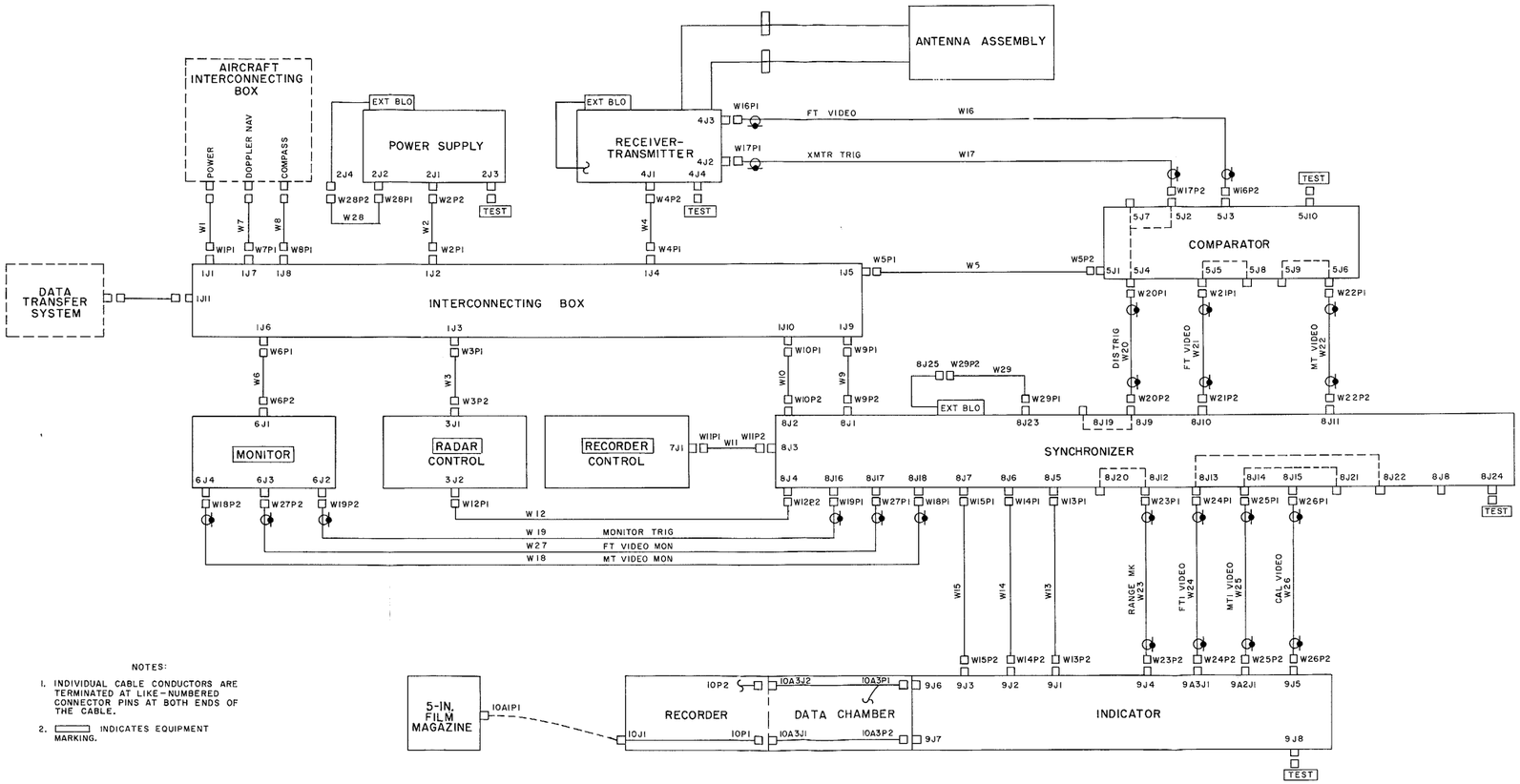
Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-36, organizational maintenance requirements for the OV-1A, OV-1B and OV-1C aircraft.

* US GOVERNMENT PRINTING OFFICE 1975- 588-497/305



NOTES:

1. INDIVIDUAL CABLE CONDUCTORS ARE TERMINATED AT LIKE-NUMBERED CONNECTOR PINS AT BOTH ENDS OF THE CABLE.
2. ▭ INDICATES EQUIPMENT MARKING.

Figure 5-1. Radar set cabling diagram.

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.