24 November 1964 TEST SET, RADAR BEACON AN/APM-183

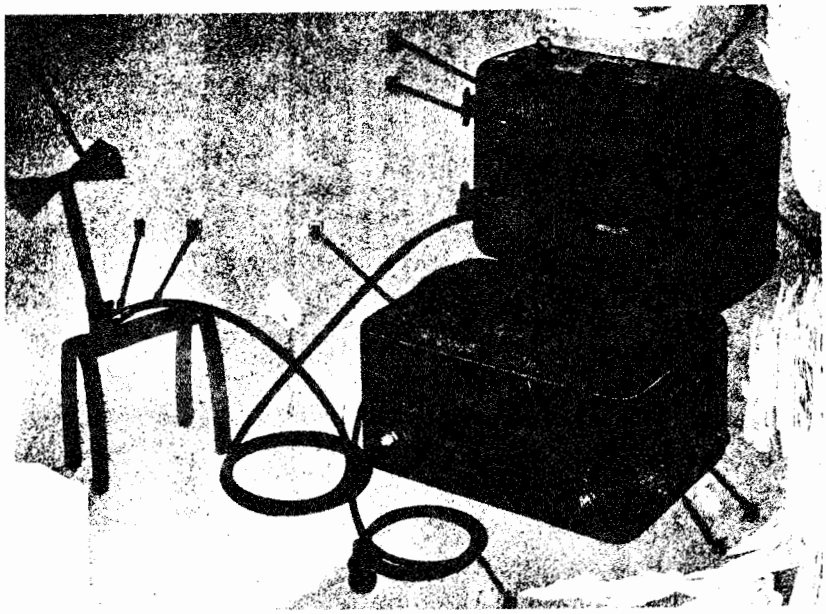
Cog Service: USN FSN: Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Motorola Inc., Western Military Electronics Center, (94990).

181



TEST SET, RADAR BEACON AN/APM-183

FUNCTIONAL DESCRIPTION:

Test Set, Radar Beacon AN/APM-183 is used to perform pre-flight testing of Radar Beacon AN/APM-132 installed in an aircraft. The following tests are performed by the line tester to determine beacon flight worthiness: (a) Measure beacon reply frequency; (b) Measure beacon reply for minimum acceptable level; (c) Determine that beacon delay is within specified limits; (d) Determine that beacon reply rate corresponds to the interrogation rate within specified limits; (e) Determine beacon response to properly coded interrogation.

No field changes in effect at time of preparation (16 November 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

ELECTRICAL CHARACTERISTICS
- VOLTAGE INPUT: 107.5 to 119.5 v ac, 400 cps ± 20 cps.
- POWER INPUT: 50 v amp.
- CODER-MODULATION RADAR
  - PULSE REPETITION FREQUENCY: 5000 ± 500 pps.
  - MODULATION PULSE CHARACTERISTICS
    - PULSE WIDTH: 0.5 ± 0.1 usec.
    - PULSE USE TIME: 0.1 usec max.
    - PULSE FALL TIME: 0.2 usec max.
  - DOUBLE PULSE CODING
    - NO. 1 CODE: 1.9 ± 0.05 usec.
    - NO. 2 CODE: 2.8 ± 0.05 usec.
    - NO. 3 CODE: 3.7 ± 0.05 usec.
    - NO. 4 CODE: 4.6 ± 0.05 usec.
    - NO. 5 CODE: 5.5 ± 0.05 usec.
- TRANSMITTER SUBASSEMBLY
  - KLYSTRON POWER OUTPUT: 20 mw peak min.
  - TRANSMITTER POWER OUTPUT: - 4 dbm peak (adj).
  - PULSE WIDTH: 0.5 ± 0.1 usec.
  - PULSE RISE TIME: 0.1 usec max.
  - PULSE FALL TIME: 0.2 usec max.
- RECEIVER SUBASSEMBLY
  - AMPLIFIER VOLTAGE GAIN: 40 db min.
  - SENSITIVITY: - 30 dbm.
- POWER SUPPLY SUBASSEMBLIES NO. 1 AND 2

ELECTRICAL GENERATOR
- + 150 v dc, 80 ma.
- - 150 v dc, 20 ma.
- - 300 v dc, 60 ma.
- - 470 v dc, 1 ma.
- 6.3 v ac, 5.0 amps (referenced to ground).
- 6.3 v ac, 2.0 amps (referenced to - 300 v dc).
- 6.3 v ac, 0.5 amps (floating).

ANTENNA
- TWO WAY GAIN: (RCVR AND XMTR) 10 db min.
- WAVE LENGTH: 3 cm.

CABLES
- CABLE: W1.
- FIELD TESTER POWER CABLE

POWER REQUIREMENTS: 115 v ac, 400 cps, single ph.

182

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Radar Beacon AN/APM-183 includes:		17 x 18.5 x 23.0	67.5
1	Receiver-Transmitter Radar RT-669/APM-183			
1	Cable Assembly RF W1 AN/APM-183			
1	Antenna AS-1318/APM-183			
1	Case, Test Set, Combination CY-3785/APM-183			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30APM183-1: Handbook for Operation and Service Instructions with Illustrated Parts Breakdown Test Set, Radar Beacon AN/APM-183.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 5784WA (1) 5787WA (2) 6021 (7) 6111 (1) VA203B/6975

CRYSTALS: Not required.

SEMI-CONDUCTORS: (8) 1N540 (2) 1N547 (2) 1N757A (6) 1N914 (2) 1N3000B (1) 1N3024B (1) 1N3033 (1) 1N3037B (1) 1N23WE (26) 48-14088A25 (1) 2N1131

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Motorola Inc., Western Military Electronics Center Pt No. 01-23611A01	Scottsdale, Arizona	NOw 61-0539f	

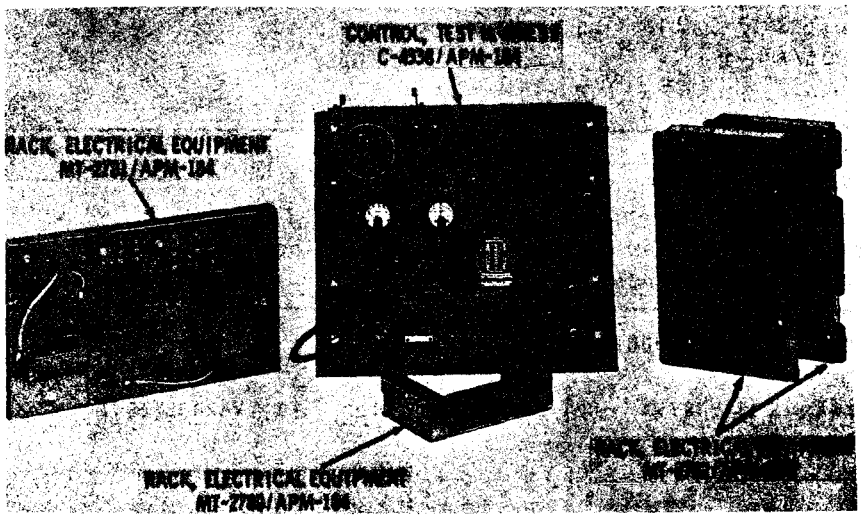
23 November 1964 TEST HARNESS RADAR BEACON AN/APM-184

Cog Service: USN FSN: Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Motorola Inc., Western Military Electronics Center, (94990).



TEST HARNESS RADAR BEACON AN/APM-184

FUNCTIONAL DESCRIPTION:

Test Harness Radar Beacon AN/APM-184 when used in combination with preferred or commercial test equipments, provides capability for shop bench repair, overhaul, and test of Beacon Radar AN/APN-132. Tests are not limited to system tests of the beacon but extend to the beacon subassemblies. Capabilities of the AN/APM-184 are as follows: (a) Measurement of beacon peak power output and frequency of reply signal; (b) Measurement of pulse characteristics of beacon reply signal; (c) Measurement of beacon receiver sensitivity, center frequency, and bandwidth; (d) Measurement of beacon over-interrogation operation and system delay; (e) Measurement of beacon spurious triggering and crystal current; (f) Measurement of cw gain, center frequency, and bandwidth of beacon IF amplifier; (g) Measurement of trigger sensitivity, coding accept-reject characteristics, over-interrogation control, and output pulse characteristics of beacon decoder; (h) Measurement of trigger sensitivity and output pulse characteristics of beacon modulator; (i) Measurement of voltage, ripple, and regulation of beacon power supplies; (j) Testing of beacon control panel function; (k) Supplying

appropriate signals and power, in conjunction with beacon under test, for performance of above tests and measurements.

No field changes in effect at time of preparation (16 November 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

NORMAL OPERATING CONDITIONS
- ROOM TEMPERATURE: 30° ± 10° C.
- ALTITUDE: Normal ground.
- HUMIDITY (AT RDOM AMBIENT): 90% (max).
- INPUT POWER
  - VOLTAGE: 115 ± 1.0 v ac 400 ± cps.
  - VOLT AMPERES: 230 (includes pwr for APM-184 and APN-132 only).

BENCH TEST PARAMETERS
- RECEIVER FREQUENCY: 0.03%.
- RECEIVER SENSITIVITY: ± 2.5 db.
- SPURIOUS TRIGGERING: ± 1 count.
- DECODING CAPABILITY: ± 0.03 usec.
- OVER-INTERROGATION OPERATION: ± 1 count.
- TRANSMITTER FREQUENCY: 0.03%.
- TRANSMITTER POWER: ± 1 db.
- REPLY PULSE CHARACTERISTICS: ± 0.02 usec.
- BANDWIDTH: ± 1 mc.
- CRYSTAL CURRENT: ± 0.03 ma.
- BEACON DELAY: ± 0.02 usec.

BEACON TESTS

	PARAMETERS
RECEIVER TEST FREQUENCY:	8500 to 9600 mc.
TEST SIGNAL CHARACTERISTICS:	Pulsed cw (single pulse or pulse parts of variable spacing).

PULSE CHARACTERISTICS
- RISE TIME: 0.1 usec (max).
- FALL TIME: 0.2 usec (max).
- WIDTH: 0.5 ± 0.1 usec.

PULSE PAIR SPACING
- VARIABLE: 1.4 to 6.2 usec.
- ADJUSTABLE: 1.4 to 20 usec.
- ACCURACY OF ADJUSTMENT: ± 0.5%.

REPETITION FREQUENCY
- SINGLE PULSE: 0 to 10,000 pps.
- DOUBLE PULSE (1.4 TO 6.2 USEC): 0 to 10,000 pulse pairs/sec.
- DOUBLE PULSE (20 USEC): 0 to 5,000 pulse pairs/sec.

POWER RANGE
- ADJUSTABLE: 0 to - 70 dbm.

4.11 AN/APM-184: 2

BEACON REPLY FREQUENCY: 9300 to 9400 mc.
REPLY PULSE CHARACTERISTICS
RISE TIME: 0.1 usec (max).
FALL TIME: 0.2 usec (max).
WIDTH: 0.5 ± 0.1 usec.
BEACON SUBASSEMBLY TESTS
I F AMPLIFIER
TEST SIGNAL: CW.
FREQUENCY: 50 to 70 mc.
MODULATION: 1000 cps.
LEVEL (VARIABLE): 0 to - 70 dbm.

PARAMETER	ACCURACY
Over-all cw gain	± 2 db
Bandwidth	± 0.3 mc
Center Frequency	± 0.3 mc

DECODER
TEST SIGNAL: Single or double pulse.
AMPLITUDE (VARIABLE): 0.2 to 5 v.
REPETITION RATE (VARIABLE): 1 to 60 kc.

PARAMETER	ACCURACY
ACCEPT-REJECT CHARACTERISTICS:	± 0.03 usec
TRIGGER SENSITIVITY:	± 5%
OVER-INTERROGATION OPERATION:	± 1 count
OUTPUT PULSE CHARACTERISTICS:	± 0.02 usec

MODULATOR
INTERROGATION PULSE: 0.3 ± 0.1 usec.
RISE TIME: 0.1 usec (max).
AMPLITUDE: 15 to 35 v.
REPETITION: 1 to 30 kc.

PARAMETER	ACCURACY
TRIGGER SENSITIVITY:	± 5%
OUTPUT PULSE CHARACTERISTICS:	± 0.02 usec

POWER SUPPLY

PARAMETER	ACCURACY
VOLTAGE;	± 3% (full meter scale)
RIPPLE:	± 3%
REGULATION:	± 3%

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Harness, Radar Beacon AN/APM-184 includes:			
1	Control, Test Harness C-4338/APM-184		13.2 x 21 x 23	79
1	Rack, Electrical Equipment MT-2781/APM-184		3.3 x 12 x 19.3	8
1	Rack, Electrical Equipment MT-2780/APM-184		2.6 x 6.1 x 10.1	4

AN/APM-184 TEST HARNESS RADAR BEACON

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Rack, Electrical Equipment MT-2782/APM-184		2.5 x 10.5 x 17.3	4
1	Cable Assembly W1 of AN/APM-184		36 ± 1	3/4
1	Cable Assembly W2 of AN/APM-184		36 ± 1	7/8
1	Cable Assembly W3 of AN/APM-184		36 ± 1	7/8
1	Cable Assembly W4 of AN/APM-184		36 ± 1	0.8
1	Cable Assembly W5 of AN/APM-184		36 ± 1	0.8
1	Cable Assembly W6 of AN/APM-184		36 ± 1	0.8
1	Cable Assembly W7 of AN/APM-184		36 ± 1	0.8
1	Cable Assembly W8 of AN/APM-184		2-1/2 ± 1/8	3 oz
1	Pulse Generator 2140A		15-1/4 x 20-5/8 x 30-1/2	135

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30APM184-1: Handbook for Operation and Service Instructions with Illustrated Parts Breakdown Test Harness, Radar Beacon AN/APM-184.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) 1N23D (4) 1N538

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

4.11 AN/APM-184: 4

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Motorola Inc., Western Military Electronics Center Pt No. 01-23612 A01	Scottsdale, Arizona	NOw 61-0539f	

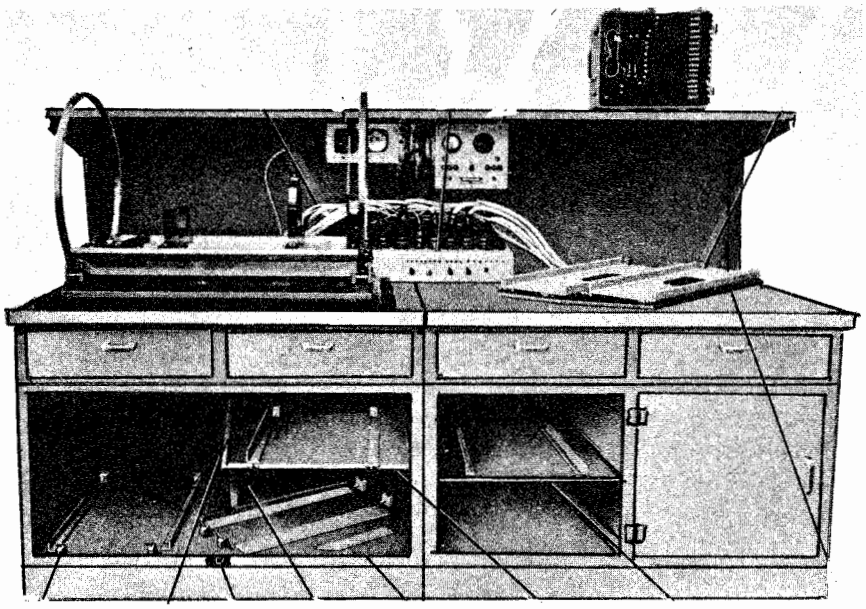
13 December 1965 TEST SET, SONAR AN/AQM-9

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: The Bendix Corp., Pacific Div., (77068).



TEST SET, SONAR AN/AQM-9

FUNCTIONAL DESCRIPTION:

Test Set, Sonar AN/AQM-9 provides interconnecting cabling for Sonar Detecting-Ranging Set AN/AQS-10 components during bench testing. The test set simulates actual operating conditions of the sonar set and allows a component under test to function within the sonar set system.

No field changes in effect at time of preparation (7 October 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Sonar Target Signal Simulator SM-215/AQS-10; (1) Transducer Simulator SM-216/AQS-10; (1) Variable Phase Shift Generator SG-397/AQS-10; (1) Sonar Transmitter T-739/AQS-10; (1) Electronic Frequency Converter CV-1041/AQS-10; (1) Intermediate Frequency Amplifier AM-2266/AQS-10; (1) Power Supply PP-2388/AQS-10; (1) Azimuth and Range Indicator IP-511/A[illegible]

(1) Detecting-Ranging Set Control C-2955/AQS-10; (1) Height Meter ME-172/AQS-10; (1) Bearing and Range Indicator ID-786/AQS-10.

TECHNICAL CHARACTERISTICS:

POWER PANEL: Primary power for the test set and sonar set is monitored and controlled by the power panel.

DISTRIBUTION BOX: Interconnection between the test set and the components of the sonar set is provided by the distribution box and the cables.

TEST PANEL: Provides mounting space for Height Meter ME-172/AQS-10 and Remote Bearing and Range Indicator ID-786/AQS-10.

ROTARY TEST FIXTURES: It is used to permit access to all parts of an electronic component under test. The fixture allows the component to be rotated horizontally or rolled vertically.

MOUNTING SPACER AND ADAPTER: Supplied to mount the detecting-ranging set control and the azimuth and range indicator to the maintenance bench.

MAINTENANCE BENCH MODIFICATION KIT: The two standard benches which make up the maintenance bench must be modified before installing components of the sonar set. This modification kit is provided for this purpose.

PRESSURE TEST ADAPTER: It is inserted into the pressure port of the sonar transducer, and connected to an air, hydraulic, or water pressure source. Pressure applied to sonar transducer through the pressure adapter is used to determine the accuracy of the depth meter indication.

IF HOLDING BRACKET: It is used to hold the sonar set IF unit open.

TRANSMITTER SUPPORT BRACKET: It is used to hold up the final amplifier section of the sonar set transmitter by connecting it between the final amplifier swing up chassis and the transmitter main chassis.

POWER SUPPLY BAFFLE PLATE: It is used to induce correct air flow over the regulator boards when the power supply is operated with the dust cover removed.

EXTENSION BOARD ASSEMBLY: Includes 18 extension boards for use with various plug-in modules of the sonar set components, a special purpose electrical cable, and one pattern for alignment of the Cathode Ray Tube display.

POWER REQUIREMENTS: 115 v, 400 cps, 3 ph.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Sonar AN/AQM-9 includes:			
1	Power Control Panel SB-1612/AQM-9		11 x 11 x 11	18
1	Control Monitor Distribution Box J-2044/AQM-9		6 x 9 x 29	50
1	Monitor Test Panel SB-1611/AQM-9		6 x 9 x 10	20
1	Rotary Test Fixture MT-2742/AQM-9		24 x 26 x 41	250

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Mounting Spacer		2 x 19 x 34	35
1	Adapter		2 x 18 x 34	15
1	Maintenance Bench Modification Kit		3 x 30 x 50	115
1	Electronic Equipment Maintenance Kit MK-667/AQM-9		11 x 12 x 16	35
1	Pressure Test Adapter			
1	IF Holding Bracket			
1	Transmitter Support Bracket			
1	Power Supply Baffle Plate			
49	Electrical Special Purpose Cable			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30AQM9-1: Handbook Operation and Service Instructions with Illustrated Parts Breakdown Sonar Test Set AN/AQM-9.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: Not required.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: MIL-H-15362

DESIGN COG: USN, BuWeps

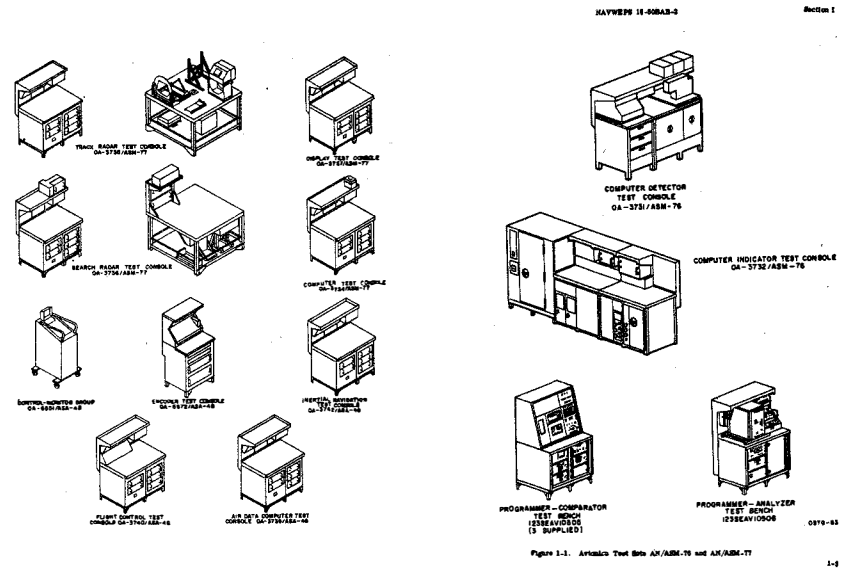
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Bendix Corp., Pacific Div.	North Hollywood, Calif.	NOa(s) 60-0131 NOw 61-1024	

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Grumman Aircraft Engineering Corporation, (26512).



TEST SET, AVIONICS AN/ASM-76

FUNCTIONAL DESCRIPTION:

Test Set, Avionics AN/ASM-76 is used for semi-automatic and manual maintenance of aircraft replaceable assemblies (ARA's) removed from E-2A aircraft avionics systems.

No field changes in effect at time of preparation (25 March 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

Ballistics Computer Set AN/ASQ-61A; Control Indicator C-4822/ASQ-61; Cruise Navigation Control Indicator C-4823/ASQ-61; Data Control Converter C-4821/ASQ-61; Computer Signal Comparator Generator CM-279/ASQ-61; Ballistics Control Indicator C-4824/ASQ-61A; Power Supply Assy PP-3967/ASQ-61A; Ballistics Computer Converter CP-739/ASQ-61; Data Storage Magnetic Drum MU-474/ASQ-61; (Dev-2BP2 Drum Program); Data Storage Magnetic Drum MU-474/ASQ-61 (Dev-2BP3

192

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Grumman Aircraft Engineering Corporation	Bethpage, New York	NOa(s) 57-628c	

E93

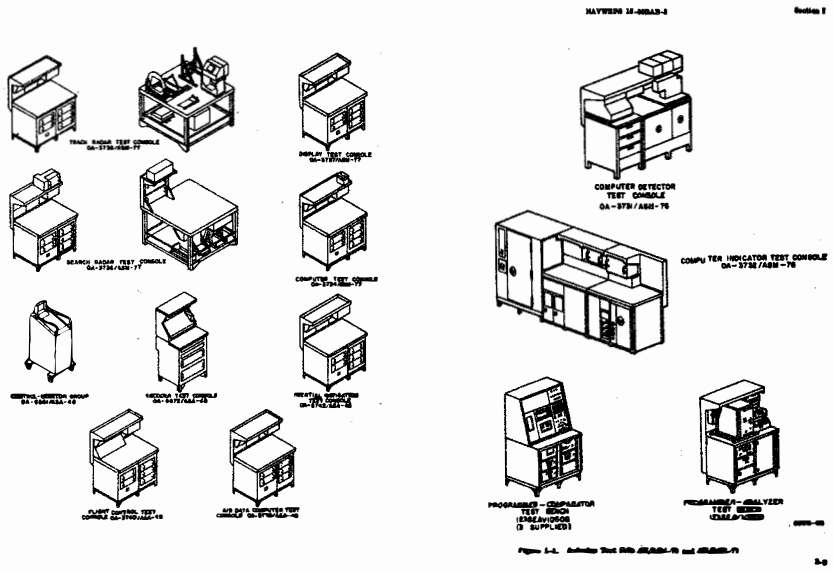
26 April 1965 TEST SET, AVIONICS AN/ASM-77

Cog Service: USN **FSN:** **Functional Class:**

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Grumman Aircraft Engineering Corporation, (26512).



TEST SET, AVIONICS AN/ASM-77

FUNCTIONAL DESCRIPTION:

Test Set, Avionics AN/ASM-77 is used for semi-automatic and manual maintenance of ARA's removed from A-6A aircraft avionics systems.

No field changes in effect at time of preparation (25 March 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

Ballistics Computer Set AN/ASQ-61A; Control Indicator C-4822/ASQ-61; Cruise Navigation Control Indicator C-4823/ASQ-61; Data Control Converter C-4821/ASQ-61; Computer Signal Comparator Generator CM-279/ASQ-61; Ballistics Control Indicator C-4824/ASQ-61A; Power Supply Assy PP-3967/ASQ-61A; Ballistics Computer Converter CP-739/ASQ-61; Data Storage Magnetic Drum MU-474/ASQ-61; (Dev-2BP2 Drum Program); Data Storage Magnetic Drum MU-474/ASQ-61 (Dev-2BP3

Drum Program); Data Storage Magnetic Drum MU-474/ASQ-61 (Dev-2BP5 Drum Program); Electrical Accelerometer MX-4886/ASQ-61.

Radar Set AN/APQ-92; Radar Transmitter T-806/APQ-92; Power Supply PP-2881/APQ-92; Antenna Receiver AS-1156/APQ-92 (Servo Section); Electronic Control Amplifier AM-2912/APQ-92; Radar Modulator MD-402/APQ-92; Video Processor MX-3393/APQ-92; Electrical Synchronizer SN-297/APQ-92; Antenna Receiver AS-1156/APQ-92; (Receiver Section); Azimuth-Range Indicator IP-691/A; Azimuth Elevation Range Indicator IP-690/A; Radar Set Control C-4544/APQ; Terrain Clearance Video Conditioner MX-4948/AVA-1.

Inertial Navigation System AN/ASN-31 and AN/ASN-36; Power Supply PP-2740/ASN; Signal Data Converter CV-1014/ASN-31; Electronic Control Amplifier AM-2750/ASN.

Inertial Navigation System AN/ASN-31 and AN/ASN-36 (Cont'd); Navigational Computer CP-751/ASN; Control Indicator C-3393/ASN-31; Gyroscope Assy Control C-3392/ASN-31; Signal Data Converter CV-1156/ASN-36; Gyroscope Assy Control C-3670/ASN-36.

Air Data Computer A/A24G-13; Air Data Computer CP-729/A; Automatic Flight Control System AN/ASW-15; Air Navigation Computer CP-566/ASW-15; Automatic Flight Control System AN/ASW-16; Air Navigation Computer CP-567/ASW-16.

Radar Set AN/APQ-88; Power Supply PP-2518/APQ-88; Amplifier Assy AM-2476/APQ-88; Antenna Pedestal AB-633/APQ-88; Antenna Control C-3154/APQ-88; Power Supply Amplifier AM-2452/APQ-88; Radar, Transmitter T-762/APQ-88; Intermediate Freq Amplifier AM-2451/APQ-88; Distribution Box J-1135/APQ-88; Antenna AS-1070/APQ-88; Data Processor Unit CP-593/APQ-88; Pilot's Control Box No. 128SCAV10881.

Vertical Display Indicator AN/AVA-1; Analog Display Indicator IP-722/AVA-2; Analog Display Indicator IP-722/AVA-1; Radar Data Converter CV-1607/AVA-1.

195

Computer-Indicator Group AN/ASA-27; Computer Drawer No. 524102; Computer-Indicator Group AN/ASA-27; Computer Drawer No. 524103; Computer Drawer No. 524104; Computer Drawer No. 524105; Computer Drawer No. 524106; Computer Drawer No. 524107.

Upper Read and Write Amplifier Card Assy No. 561109, Memory Drum Assy No. 514108, and Lower Read and Write Amplifier Card Assy No. 561110.

Display Circuit Card Assy No. 524201; Nixie Control Card Assy No. 524202; Indicator Base Assy No. 524203; Digital Display Indicator ID-857/ASA-27; Control Indicator (NAV) C-3489/ASA-27; Computer Control C-3488/ASA-27 and Navigation Coding Unit MX-3308/ASA-27; Navigational Digital-to-Analog Converter CV-1485/ASA-27.

Computer-Indicator Group Control C-3322/ASA-27; Power Supply PP-2829/ASA-27; Power Supply PP-2830/ASA-27; Power Supply PP-2831/ASA-27.

Computer Detector CP-413/ASA-27; Radar Detector Assy No. 224E601G1; Timing and IFF Detector Assy No. 224E602G1; IFF Associator and Height Counter Assy No. 224E603G1; Height Coordinate Computer Assy No. 224E604G1; Range Azimuth Associator Assy No. 224E605G1; Transformer Assy No. 224E297G1; Regulator Assy No. 224E292G1; IFF Decoder Assy No. 7518199P2.

Computer Detector CP-413/ASA-27 (Cont'd); Altitude and Azimuth Mechanical Servo Assy No. 708D558G2 and Altitude and Azimuth Electrical Servo Assy No. 224E390G1; Drum Power Amplifier Assy No. 708D681G1; Switch Control Chassis Assy No. 882C996G1; Rotary Switch Assy No. 134A2383P1.

TECHNICAL CHARACTERISTICS:

OPERATING LIMITATIONS

EQUIPMENT OPERATING

CONTINUOUS: 0° to 55° C (32° to 131° F) ambient.

INTERMITTENT (20 MINUTES): + 70° C (160° F) ambient.

EQUIPMENT NON-OPERATING: − 62° to + 85° C (− 79° to + 185° F).

ALTITUDE: Sea Level (30.0 in. hg) to 10,000 ft (20.6 in. hg).
HUMIDITY: 100%.
POWER REQUIREMENTS: 115 to 200 v ac, 400 cyc, 3 ph; 28 v dc.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Avionics AN/ASM-76			
	includes:			
1	Computer Detector Test Console OA-3731/ASM-76			
1	Computer Indicator Test Console OA-3732/ASM-76			
2	Air Data Computer Test Console OA-3739/ASA-48			
10	Flight Control Test Console OA-3740/ASA-48			
4	Inertial Navigation Test Console OA-3742/ASA-48			
7	Encoder Test Console OA-6672/ASA-48			
1	Programmer-Comparator Test Bench No. 123SEAV10505			
1	Programmer-Analyzer Test Bench No. 123SEAV10506			
1	Control-Monitor Group OA-6551/ASA-48			
1	Electronic Cable System No. 128SEAV10070			

196

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-50BAB-2: Handbook Operation and Service Instructions Avionics Test Sets AN/ASM-76 and AN/ASM-77 Shop System Manual.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (4) 1N253 (73) 1N277 (8) 1N43B (12) 1N645 (6) 1N746A (1) 1N1124A (1) 1N2970B (28) 2N560 (12) 2N652A (B) 2N665 (1) 2N1310

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

Drum Program); Data Storage Magnetic Drum MU-474/ASQ-61 (Dev-2BP5 Drum Program); Electrical Accelerometer MX-4886/ASQ-61.

Radar Set AN/APQ-92; Radar Transmitter T-806/APQ-92; Power Supply PP-2881/APQ-92; Antenna Receiver AS-1156/APQ-92 (Servo Section); Electronic Control Amplifier AM-2912/APQ-92; Radar Modulator MD-402/APQ-92; Video Processor MX-3393/APQ-92; Electrical Synchronizer SN-297/APQ-92; Antenna Receiver AS-1156/APQ-92; (Receiver Section); Azimuth-Range Indicator IP-691/A; Azimuth Elevation Range Indicator IP-690/A; Radar Set Control C-4544/APQ; Terrain Clearance Video Conditioner MX-4948/AVA-1.

Inertial Navigation System AN/ASN-31 and AN/ASN-36; Power Supply PP-2740/ASN; Signal Data Converter CV-1014/ASN-31; Electronic Control Amplifier AM-2750/ASN.

Inertial Navigation System AN/ASN-31 and AN/ASN-36 (Cont'd); Navigational Computer CP-751/ASN; Control Indicator C-3393/ASN-31; Gyroscope Assy Control C-3392/ASN-31; Signal Data Converter CV-1156/ASN-36; Gyroscope Assy Control C-3670/ASN-36.

Air Data Computer A/A24G-13; Air Data Computer CP-729/A; Automatic Flight Control System AN/ASW-15; Air Navigation Computer CP-566/ASW-15; Automatic Flight Control System AN/ASW-16; Air Navigation Computer CP-567/ASW-16.

Radar Set AN/APQ-88; Power Supply PP-2518/APQ-88; Amplifier Assy AM-2476/APQ-88; Antenna Pedestal AB-633/APQ-88; Antenna Control C-3154/APQ-88; Power Supply Amplifier AM-2452/APQ-88; Radar, Transmitter T-762/APQ-88; Intermediate Freq Amplifier AM-2451/APQ-88; Distribution Box J-1135/APQ-88; Antenna AS-1070/APQ-88; Data Processor Unit CP-593/APQ-88; Pilot's Control Box No. 128SCAV10881.

Vertical Display Indicator AN/AVA-1; Analog Display Indicator IP-722/AVA-2; Analog Display Indicator IP-722/AVA-1; Radar Data Converter CV-1607/AVA-1.

Computer-Indicator Group AN/ASA-27; Computer Drawer No. 524102; Computer-Indicator Group AN/ASA-27; Computer Drawer No. 524103; Computer Drawer No. 524104; Computer Drawer No. 524105; Computer Drawer No. 524106; Computer Drawer No. 524107.

Upper Read and Write Amplifier Card Assy No. 561109, Memory Drum Assy No. 514108, and Lower Read and Write Amplifier Card Assy No. 561110.

Display Circuit Card Assy No. 524201; Nixie Control Card Assy No. 524202; Indicator Base Assy No. 524203; Digital Display Indicator ID-857/ASA-27; Control Indicator (NAV) C-3489/ASA-27; Computer Control C-3488/ASA-27, and Navigation Coding Unit MX-3308/ASA-27; Navigational Digital-to-Analog Converter CV-1485/ASA-27.

Computer-Indicator Group Control C-3322/ASA-27; Power Supply PP-2829/ASA-27; Power Supply PP-2830/ASA-27; Power Supply PP-2831/ASA-27.

Computer Detector CP-413/ASA-27; Radar Detector Assy No. 224E601G1; Timing and IFF Detector Assy No. 224E602G1; IFF Associator and Height Counter Assy No. 224E603G1; Height Coordinate Computer Assy No. 224E604G1; Range Azimuth Associator Assy No. 224E605G1; Transformer Assy No. 224E297G1; Regulator Assy No. 224E292G1; IFF Decoder Assy No. 7518199P2.

Computer Detector CP-413/ASA-27 (Cont'd); Altitude and Azimuth Mechanical Servo Assy No. 708D558G2 and Altitude and Azimuth Electrical Servo Assy No. 224E390G1; Drum Power Amplifier Assy No. 708D681G1; Switch Control Chassis Assy No. 882C996G1; Rotary Switch Assy No. 134A2383P1.

TECHNICAL CHARACTERISTICS:

OPERATING LIMITATIONS

EQUIPMENT OPERATING

CONTINUOUS: 0° to 55° C (32° to 131° F) ambient.

INTERMITTENT (20 MINUTES): + 70° C (160° F) ambient.

EQUIPMENT NON-OPERATING: - 62° to + 85° C (- 79° to + 185° F).

ALTITUDE: Sea Level (30.0 in. hg) to 10,000 ft (20.6 in. hg).
HUMIDITY: 100%.
POWER REQUIREMENTS: 115 to 200 v ac, 400 cyc, 3 ph; 28 v dc.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Avionics AN/ASM-77 includes:			
1	Computer Test Console OA-3734/ASM-77			
8	Track Radar Test Console OA-3735/ASM-77			
5	Search Radar Test Console OA-3736/ASM-77			
6	Display Test Console OA-3737/ASM-77			
2	Air Data Computer Test Console OA-3739/ASA-48			
10	Flight Control Test Console OA-3740/ASA-48			
4	Inertial Navigation Test Console OA-3742/ASA-48			
7	Encoder Test Console OA-6672/ASA-48			
1	Programmer-Comparator Test Bench No. 123SEAV10505			
1	Programmer-Analyzer Test Bench No. 123SEAV10506			
1	Control-Monitor Group OA-6551/ASA-48			
1	Electronic Cable System No. 128SEAV10050-7			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-50BAB-2: Handbook Operation and Service Instructions Avionics Test Sets AN/ASM-76 and AN/ASM-77 Shop System Manual.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (4) 1N253 (73) 1N277 (8) 1N438 (12) 1N645 (6) 1N746A (1) 1N1124A (1) 1N2970B (28) 2N560 (12) 2N652A (8) 2N665 (1) 2N1310

TEST SET, AVIONICS AN/ASM-77

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

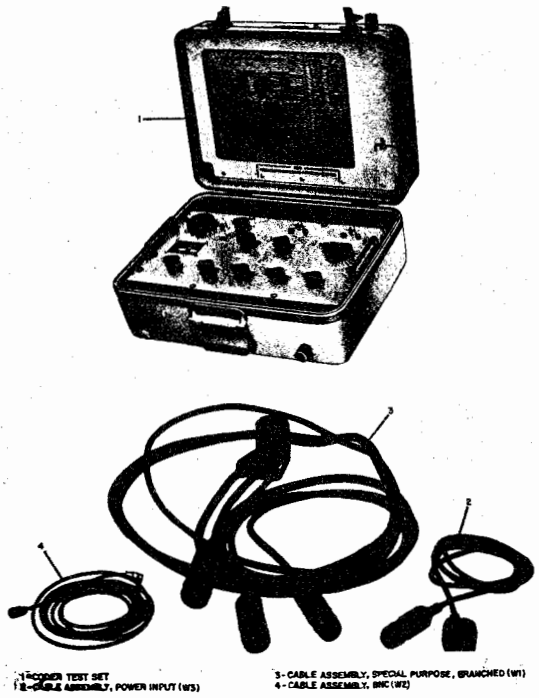
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Grumman Aircraft Engineering Corporation	Bethpage, New York	NOa(s) 59-0259c	

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Gyrodyne Company of America, Inc., (10618).



TEST SET, CODER AN/SRM-8

FUNCTIONAL DESCRIPTION:

Test Set Coder AN/SRM-8 is used in conjunction with other test equipment to perform the following functions: (a) Bench checkout of Audio Frequency Coder KY-342/SRW-4C; (b) Bench checkout of command Signals Decoder KY-476/ARW-78; (c) Trouble shooting of defective coder component subassemblies; (d) Trouble shooting of defective decoder component subassemblies; (e) Bench checkout and trouble shooting of Coder Subassembly Test Set AN/SRM-11; (f) Bench checkout and trouble shooting of Decoder Subassembly Test Set AN/SRM-12.

No field changes in effect at time of preparation (9 April 1965).

RELATION TO OTHER EQUIPMENT: None.

23 April 1965 TEST SET, CODER SUBASSEMBLY AN/SRM-11

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Gyrodyne Company of America, (10618).

TEST SET, CODER SUBASSEMBLY AN/SRM-11

FUNCTIONAL DESCRIPTION:

Test Set, Coder Subassembly AN/SRM-11 is used in conjunction with other interconnected test equipment to perform or assist in performing the following functions: (a) Trouble shooting defective subassembly boards of Audio Frequency Coder KY-342/SRW-4C; (b) Trouble shooting defective subassembly boards within the test set; (c) Checking the Decoder Subassembly Test Set AN/SRM-12; (d) Substituting for the coder component in test procedures requiring the use of a known operable coder.

No field changes in effect at time of preparation (18 April 1965).

RELATION TO OTHER EQUIPMENT: None.

TEST SET, CODER SUBASSEMBLY AN/SRM-11

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-140; (1) Frequency Meter AN/USM-26A; (1) Vacuum Tube Voltmeter ME-30A/U; (1) Electronic Multimeter AN/USM-116; (1) Audio Oscillator TS-382F/U; (1) Transistor Test Set T/S-1100/U; (1) Insulation Test Set AN/PSM-2; (1) Variable dc Power Supply 0-50 v dc, 0-1.5 amp; (1) AC Voltage Source (5-20 v ac).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 ± v ac, 50 - 420 cps, 30 W nom.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Coder Subassembly AN/SRM-11		*11-1/2 x 15-3/4 x 20 **11 x 16-1/2 x 22	45

*Fiberglass Case dimensions.
**Metal Case dimensions and weight.

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30SRM11-1: Handbook of Operation, Service and Overhaul Instructions with Illustrated Parts Breakdown for Coder Subassembly Test Set AN/SRM-11.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (4) 1N538 (94) 1N659 (9) 2N335 (1) 2N343 (5) 2N404 (72) 2N652A (1) 48-25807A01

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Gyrodyne Co. of America	St. James, N. Y.	NOw(A) 63-0251-ci	

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-140; (1) Wide Band Vertical Amplifier Model HP-162F; (1) Frequency Meter AN/USM-26 (Counter); (1) Vacuum-Tube Voltmeter (VTVM) ME-30A/U; (1) Multimeter AN/PSM-4B; (1) DC Power Supply (Variable) 0 to 50 v dc, 0 to 1.5 amp (TBA) Power Designs Inc. Model 5015A; (1) Electronic Multimeter AN/USM-116 ac Voltage Source 5 to 20 v ac (TBA).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v ac, 60 cps, single ph.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Coder AN/SRM-8		**11-7/64 x 16-13/32 x 22-7/64	42
	includes:			
	* Fiberglass Case Dimensions and Weight		*11-45/64 x 15-45/64 x 19-29/32	37
	** Metal Case Dimensions and Weight			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30SRW4-12: Handbook of Maintenance Instructions, Rotary Wing Components of Target Control System AN/SRW-4 (Series).

NAVWEPS 01-150DHB2-5: Maintenance Instructions Manual, Radio Receiving Set AN/ARW-78.

NAVWEPS 16-30SRM-11-1: Handbook of Operation, Service and Overhaul Instructions with Illustrated Parts Breakdown, Coder Subassembly Test Set AN/SRM-11.

NAVWEPS 16-30SRM-12-1: Handbook of Operation, Service and Overhaul Instructions with Illustrated Parts Breakdown Decoder Subassembly Test Set AN/SRM-12.

203

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) 1N746A (64) 1N483B (1) 2N526

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuWeps

SPEC &/OR DWG:

TEST SET, CODER AN/SRM-8

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Gyrodyne Co. of America, Inc. Part No. 01-23024B02	St. James, N. Y.	NOw(A) 63-0251-ci	

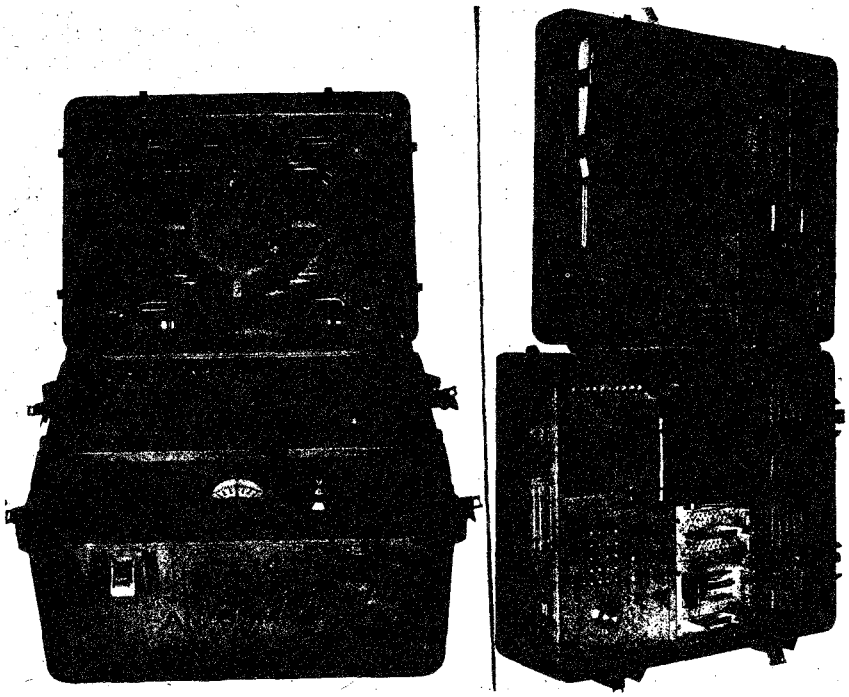
21 October 1964 TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/SSM-4

Cog Service: USN **FSN:** 2E6625-013-7029 **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Co., (95104).



TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/SSM-4

FUNCTIONAL DESCRIPTION:

Test Set, Electronic Circuit Plug-in Unit AN/SSM-4 is a special-purpose test equipment for dynamically testing the electronic circuit plug-in units used in Telegraph Terminal Group AN/SCA-1(XN-1), Data Terminal Set AN/SSQ-29 and Communication Central AN/SRC-16. The AN/SSM-4 equipment provides power, test signals, and programed switching to simulate operational conditions of the plug-in units under test. The results are observed on external test equipment (not supplied).

No field changes in effect at time of preparation (20 October 1964).

RELATION TO OTHER EQUIPMENT:

The AN/SSM-4 is similar to the Module Test Set 73A1-SW. Three of the electronic circuit plug-in units used in the AN/SSM-4 equipment are identical to and interchangeable with plug-in units of the prime equipment listed in functional description. Three plug-in units are: CZ7 Three-Input NAND; DAB Eight Count; DB2 Inverter.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-105A; (1) Frequency Counter CAQI-523CR; (1) AC VTVM AN/USM-143; (1) DC VTVM CAQI-412A; (1) Multimeter AN/PSM-4( ); (1) Signal Generator CAQI-200T; (1) Technical Manual for Data Terminal Set AN/SSQ-29 NAVSHIPS 94718(A); (1) Technical Manual for Communication Central AN/SRC-16 NAVSHIPS 94717(A); (1) Technical Manual for Telegraph Terminal Set AN/SSC-1(XN-1) NAVSHIPS 94362; (1) Technical Manual for Module Test Set 73A1-SW NAVSHIPS 94538; and (1) Handbook of Electronics Circuits NAVSHIPS 900,000.102.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS
- VOLTAGE: 115 v ac ± 10%, single ph.
- FREQUENCY: 50 to 400 cps.
- POWER: 260 W.

INSTALLATION: Portable or mounted on a standard 19 in. rack.
DUTY CYCLE: Continuous.
AMBIENT TEMPERATURE
- OPERATING: 0 to 50° C (32 to 122° F).
- NONOPERATING: − 62 to 75° C (− 74 to 167° F).

RELATIVE HUMIDITY: To 95% at 50°.
SHOCK AND VIBRATION: 40 G for 11 msec.
ALTITUDE: 15,000 ft above sea level.
TS-1923/SSM-4 TEST SET
- OPERATION: Test parameters programed by key punched cards.
- TYPE OF SIGNALS: Variable 2 cps to 100 kc.
  - INTERNAL: Fixed sine wave by binary logic.
  - EXTERNAL: Variable sine wave.
- PROTECTIVE DEVICES: Thermal switch and over voltage circuit.
- COOLING: Convection.

PP-3774/SSM-4 POWER SUPPLY
- OUTPUTS: 11 regulated dc outputs at − 10%, nominal, and + 10% voltage.
- PROTECTIVE DEVICES: Thermal switch and short-circuit protection ac line fuses.
- COOLING: Forced air.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Electronic Circuit Plug-in Unit AN/SSM-4 includes:	2F6625-013-7029		

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Electronics Circuit Plug-in Unit TS-1923/SSM-4		13-3/8 x 21-1/4 x 23-1/4	65
1	Power Supply PP-3774/SSM-4		13-1/8 x 16 x 21-1/4	75
1	Cable Assy Power Electrical CX-8875/SSM-4		82 lg	
1	Cable Assy Special Purpose Electrical CX-8876/SSM-4		84 lg	
5	Cable Assy Special Purpose Electrical CX-8877/SSM-4		48 lg	
2	Cable Assy Special Purpose Electrical CX-8878/SSM-4		24 lg	
1	Cable Assy Special Purpose Electrical CX-8879/SSM-4		48 lg	
3	Adapter Connector			
2	Test Probe			
1	Card Kit Module Test Programing MK-714/SSM-4			
2	Technical Manual NAVSHIPS 95692(A)			
1	Maintenance Standards Book NAVSHIPS 95692.42			
1	Performance Standards Sheet NAVSHIPS 95692.32			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 95692(A): Technical Manual for Electronic Circuit Plug-in Unit Test Set AN/SSM-4.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (99) 1N276 (4) 1N277M (2) 1N645M (5) 1N746A (2) 1N751A (18) 1N816W (3) 1N957B (7) 1N959B (4) 1N963B (2) 1N965B (1) 1N967B (2) 1N968B (22) 1N1615 (45) 1N3730 (27) 2N388 (37) 2N404 (20) 2N404A (2) 2N428 (5) 2N297A (29) 2N526 (12) 2N1542A (9) 2N1545A (1) 2N1132 (10) 2N1871A (17) 2N22B2

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

AN/SSM-4 TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT

PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Co.	Dallas, Texas	NObsr-89085	

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	23	170

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Centronix Inc.	Philadelphia, Pa.	N383(17-383)61157A	$339.00

209

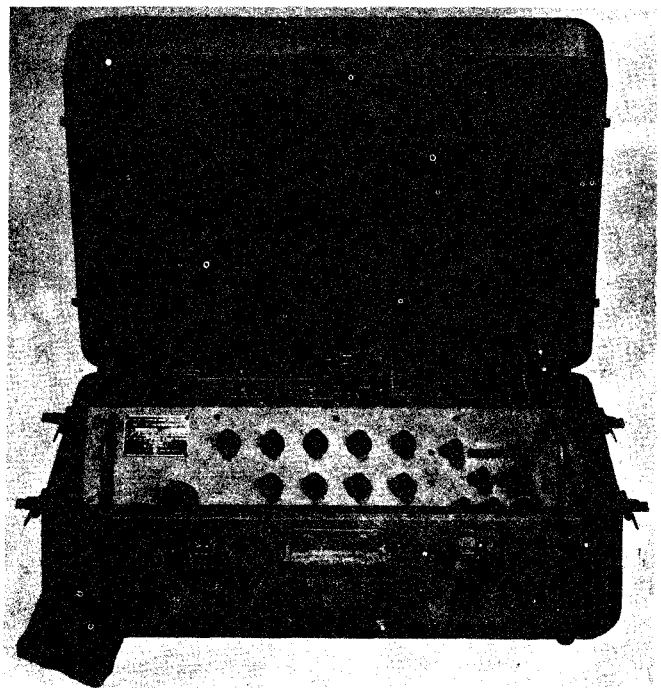
27 May 1965 TEST SET, ELECTRONIC CIRCUIT PLUG-IN-UNIT AN/USM-146(XN-1)

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Company, (13499).



TEST SET, ELECTRONIC CIRCUIT PLUG-IN-UNIT AN/USM-146(XN-1)

FUNCTIONAL DESCRIPTION:

Test Set, Electronic Circuit Plug-In-Unit AN/USM-146(XN-1) contains circuitry to generate various test signals and supply power to the individual AN/ARC-80 modules under test. Some modules from the AN/ARC-80 system are incorporated in the test set along with special modules and circuitry designed specifically for the test set.

No field changes in effect at time of preparation (30 March 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Test Bench, Data Communication System AN/USM-145(XN-1); (1) RF Oscillator AN/ARC-80; (1) Oscilloscope AN/USM-105A; (1) Frequency Counter AN/USM-26A; (1) Audio Oscillator TS-382;

6 November 1964

Cog Service: USN **FSN:** RH6625-840-7574

FREQUENCY COMPARATOR SET AN/USM-144

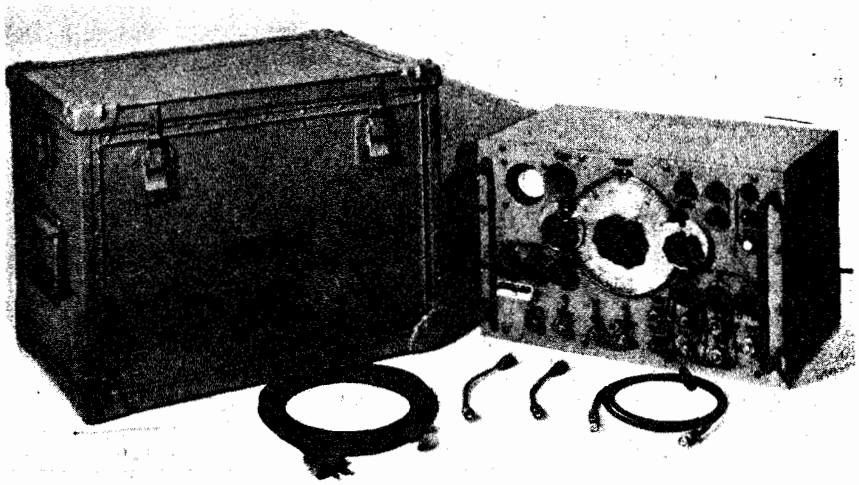
Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Centronix Inc.

211



FREQUENCY COMPRARATOR SET AN/USM-144

FUNCTIONAL DESCRIPTION:

Frequency Comparator Set AN/USM-144 equipment consists of a stable 100 to 220 mc oscillator which is used to generate harmonics. These harmonics are compared with unknown frequencies between 10 and 12400 mc. An amplifier and oscilloscope are provided to detect the resultant zero beat frequency generated. Normally the equipment is used with a counter or other accurate frequency measuring device capable of indicated frequency between 100 and 220 mc. The accurately calibrated frequency dial provided may be used directly, if extreme accuracy is not required. Provision is also made for use of an external oscilloscope when additional gain is required.

No field changes in effect at time of preparation (27 October 1964).

AN/USM-144 FREQUENCY COMPARATOR SET

RELATION TO OTHER EQUIPMENT:

This equipment is similar to the AN/USM-73 however differs in size and internal constructions.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 10 to 12,400 mc.
OSCILLATOR OUTPUT (100-220 MC): Sinewave 1.5 v into 50 ohms.
FREQUENCY ACCURACY (100-220 MC): + 1%.
FREQUENCY STABILITY: ± 0.002%/minute.
UNKNOWN FREQUENCY INPUT: Varies from - 50 to 0 dbm w/freq.
OSCILLOSCOPE SENSITIVITY: 5 mv for 1 in. deflection.
OSCILLOSCOPE FREQUENCY RESPONSE: 100 cps to 200 kc.
VIDEO AMPLIFIER GAIN: 50 db adj.
VIDEO AMPLIFIER BANDWIDTH: 100 cps to 2 mc.
VIDEO AMPLIFIER OUTPUT: 1 v rms into 1000 ohms undistorted.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Frequency Comparator Set AN/USM-144 includes:	RH6625-840-7574		
1	Comparator Frequency		16-1/2 x 12 x 10-1/2	36
1	Case, Freq Comparator		20-1/32 x 14-5/8 x 13-27/32	27
1	Cable Assy, Power Electrical		96	
2	RF Cable Assy		6	
1	Cord		48	

REFERENCE DATA AND LITERATURE:

NAVAER 16-30USM-144-1: Handbook of Overhaul and Service Instruction with Illustrated Parts Breakdown For Frequency Comparator Set AN/USM-144.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (3) 6C4WA (1) 6U8A (1) 12AT7WA (1) 5751 (1) 2BP1 (2) 6AU6WA (1) 5651WA (1) 6080WA (1) 5R4WGA (2) S3Y30PL

CRYSTALS: Not required.

SEMI-CONDUCTORS: (3) 1N21B (1) 1N21CR (4) 1N538 (1) 1N1804A

(1) Vacuum Tube Voltmeter Hewlett-Packard 410B; (1) Vacuum Tube Voltmeter Hewlett-Packard 400 H; (1) Vacuum Tube Voltmeter Fluke 801; (1) Voltohmmeter Triplett 630NA; (1) Distortion-Analyzer Collins 476D-1; (1) RF Voltmeter Boonton 91C.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v, 400 cyc, 3 ph.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electronic Circuit Plug-In-Unit AN/USM-146(XN-1) includes:		7-21/32 x 10-27/32 x 23-3/4	39
1	Transit Case		1-13/16 x 20 x 26	
1	Power Cable W-1			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30USM146-1: Handbook Operation and Service Instructions with Illustrated Parts Breakdown Test Set, Electronic Circuit Plug-In-Unit AN/USM-146(XN-1).

213

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (3) 5670 (1) 5687WA (2) 5749/6BA6W (1) 5814-A

CRYSTALS: (1) CR18AU1-1-1350 000KC (1) CR18AU1-75-1750 000KC

SEMI-CONDUCTORS: (4) 1N198 (1) 2N333 (1) 1N270 (4) 2N375 (4) 1N457 (2) 2N404
(1) 1N538 (2) 2N489 (12) 1N649 (1) 2N491 (1) 1N718 (1) 2N498
(1) 1N936B (2) 2N526 (2) 1N2167 (6) 2N697 (1) 1N3024B (13) 2N1285
(6) 1N3082 (1) 2N1595

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Company	Cedar Rapids, Iowa	NOas 59-0199	

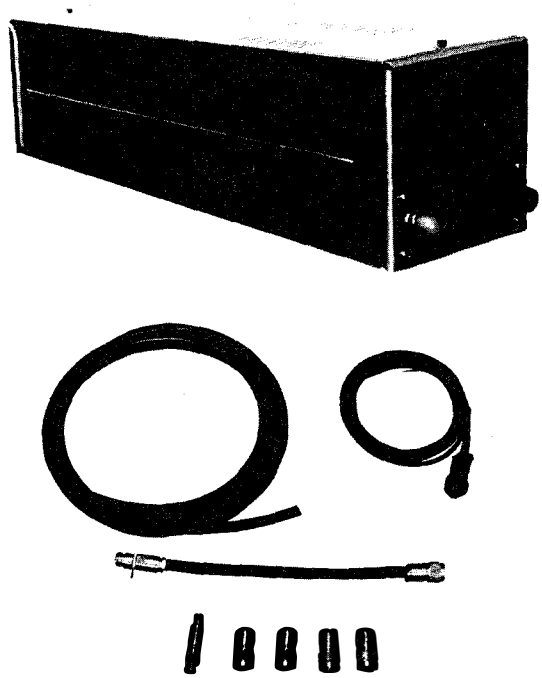
2 August 1965 TUNNEL DIODE AMPLIFIER COL-593-7066-00

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: **Used by**

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Co.. Texas Div., (95104).



TUNNEL DIODE AMPLIFIER COL-593-7066-00

FUNCTIONAL DESCRIPTION:

Tunnel Diode Amplifier COL-593-7066-00 is used in conjunction with Interconnecting Modification Kit COL-593-7067-00 to connect the amplifier to Radio Set AN/GRN-9B.

The Tunnel Diode Amplifier is a low-noise, high-gain, UHF preamplifier for use with Radio Receiver R-865/GRN-9B, a part of Radio Sets AN/GRN-9B and AN/SRN-6, TACAN equipment. The entire unit, including power supply, is contained in one case suitable for mounting to the TACAN equipment cabinet. The tunnel diode amplifier has no operating controls.

No field changes in effect at time of preparation (13 June 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Radio Receiver R-865/GRN-9B.

TUNNEL DIODE AMPLIFIER COL-593-7066-00

TECHNICAL CHARACTERISTICS:

OPERATING RANGE: 1025 to 1150 mc.
GAIN: 13 to 23 db.
AMPLIFIER NOISE FIGURE: 4.5 to 5.5 db.
SYSTEM NOISE FIGURE: 6.5 db.
POWER REQUIREMENTS: 115 v, 60 cps, 1 ph. 20 ma, 22 va.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Tunnel Diode Amplifier COL-593-7066-00 includes:		5-3/32 x 5-13/64 x 18-13/32	
1	Interconnecting Modification Kit COL-593-7067-00 consisting of:			
1	Coaxial Cable RG-9B/U		Bulk	
1	Power Cable (101)			
1	RF Cable (102)			
1	Attenuator (15-db)			
1	Coaxial Connector, Type C			
1	Coaxial Connector, Type N			
1	Wire (NO. 22 AWG orange)			
1	Set Mounting Hardware			
1	Lacing Tape			

215

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94061: Technical Manual for Tunnel Diode Amplifier Collins Part Number 593 7066 00 and Interconnecting Modification Kit Collins Part Number 593 7067 00 (UNOFFICIAL).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (3) 1N91 (1) 1N270 (1) 1N747 (2) 1N753 (2) 2N167 (1) 2N456 (1) CHS-D4115B

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, Commercial

TUNNEL DIODE AMPLIFIER COL-593-7066-00

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Co., Texas Div.	Dallas, Tex.	NObsr 81448	

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Westinghouse Electric Corp.	Baltimore, Md.	N383(S)-2178A	

217

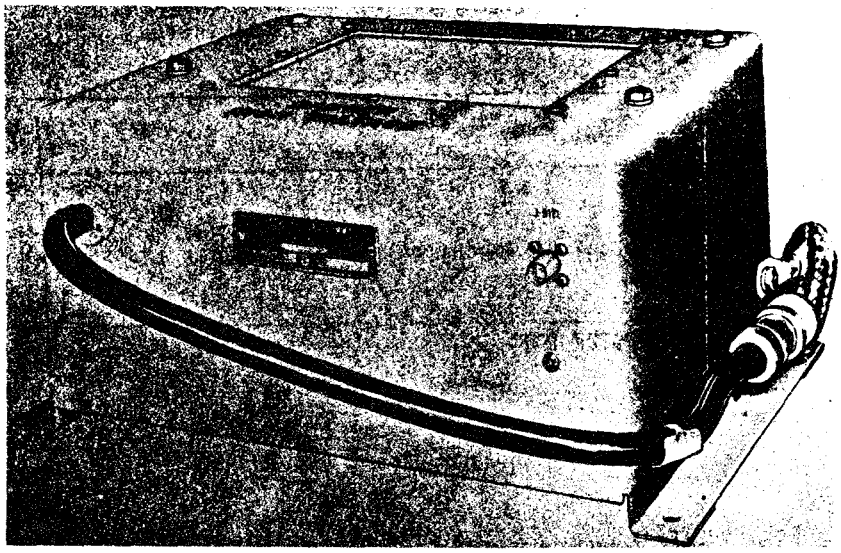
6 November 1964 DUMMY, LOAD, ELECTRICAL DA-68/U

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Westinghouse Electric Corp., (89661).



DUMMY, LOAD, ELECTRICAL DA-68/U

FUNCTIONAL DESCRIPTION:

Dummy, Load, Electrical DA-68/U is an RF instrument used as a resistive termination (antenna load simulator) for radar modulators such as Radar Modulator MD-103/APQ-35 associated with Radar Set AN/APQ-35. Modulator pulse shape may be observed by connecting an oscilloscope to the appropriate jack on the dummy load.

No field changes in effect at time of preparation (30 October 1964).

RELATION TO OTHER EQUIPMENT:

6 November 1964 DUMMY, LOAD, ELECTRICAL DA-67/U

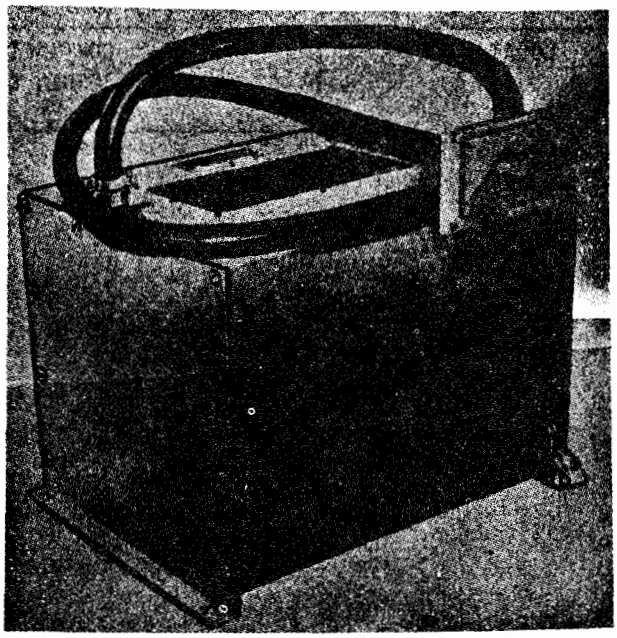
Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Westinghouse Electric Corp., (89681).

219



DUMMY, LOAD, ELECTRICAL DA-67/U

FUNCTIONAL DESCRIPTION:

Dummy, Load, Electrical DA-67/U is a portable, general purpose device used for testing radar modulators such as those employed in Radar Sets AN/APQ-41 and AN/APQ-50. The unit, a resistor net work, replaces the 4J50 magnetron normally connected to the secondary winding of the modulator output pulse transformer. The pulse developed across the dummy load is approx that which would be applied to the magnetron when the radar set is in operation. A voltage divider included in the dummy load attenuates the pulse for display on an oscilloscope.

The dummy load is normally supplied as a part of Electrical Test Bench AN/APM-65. Oscilloscope AN/USM-24 (or equivalent) is employed to read the output.

No field changes in effect at time of preparation (2 November 1964)

DA-67/U DUMMY, LOAD, ELECTRICAL

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

PEAK POWER OUTPUT: 300 kw.
PULSE INPUT VOLTAGE: 22 kv.
AVERAGE POWER INPUT: 300 W.
INPUT IMPEDANCE: 800 ohms.
OUTPUT VOLTAGE: 86 v.
ATTENUATION FACTOR: 254.
ACCURACY: ± 10%.

220

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Dummy Load, Electrical DA-67/U		14-1/8 x 15-7/8 x 16-3/16	
	includes:			
2	Cable Assy			

REFERENCE DATA AND LITERATURE:

AVWEPS 16-35DA67-501. Service Instruction Manual with Parts List for Dummy Load, Electrical DA-67/U.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: Not required.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	4.7	13

DA-68/U DUMMY, LOAD, ELECTRICAL

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: X-band.
INPUT RESISTANCE: 50 ohms.
MAXIMUM VOLTAGE RATING: 5 kv.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Dummy, Load, Electrical DA-68/U		12 x 12-1/4 x 14	10.5

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30/APM-65-501: Handbook of Operation and Maintenance Instructions for Electrical Test Bench Set AN/APM-65A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: Not required.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Westinghouse Electric Corp.	Baltimore, Md.	N383(S)-1800A NOa(S)-12145	

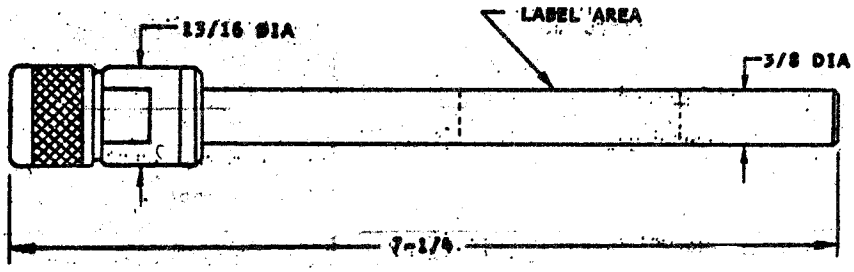
12 October 1964 | DUMMY LOAD, ELECTRICAL DA-366/U

Cog Service: USN | FSN: 2F6625-078-4324 | Functional Class:

USA | USN | USAF

TYPE CLASS: | Used by

MANUFACTURER'S NAME/CODE NUMBER: Omega Laboratories Incorporated, (15305).



DUMMY LOAD, ELECTRICAL DA-366/U

FUNCTIONAL DESCRIPTION:

Dummy Load, Electrical DA-366/U is to be connected to instruments having a UG-23D/U connector. The inner contacts of the mating connectors must be properly aligned before tightening knurled ferrule.

The DA-366/U is fabricated out of brass and utilizes a UG-21D/U type N connector. The terminating element is fabricated from cast omegalite load material which exhibits high absorbtion together with low VSWR reflection. All inner surfaces are silver plated and the instrument is painted grey.

No field changes in effect at time of preparation (2 October 1964).

RELATION TO OTHER EQUIPMENT:

DA-366/U DUMMY LOAD, ELECTRICAL

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2.0 to 12.4 gc.
CONNECTOR: UG-21D/U.
MAX VSWR: 1.05 (terminating element only).
POWER CAPACITY: 10 W avg; 10 kw peak.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Dummy Load Electrical DA-366/U	2F6625-078-4324	13/16 x 7-1/4	0.281

REFERENCE DATA AND LITERATURE:

NAVSHIPS 95773: Technical Manual for Dummy Load Electrical DA-366/U.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: Not required.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:
DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Omega Laboratories Inc.	Rowley, Mass.		$26.00

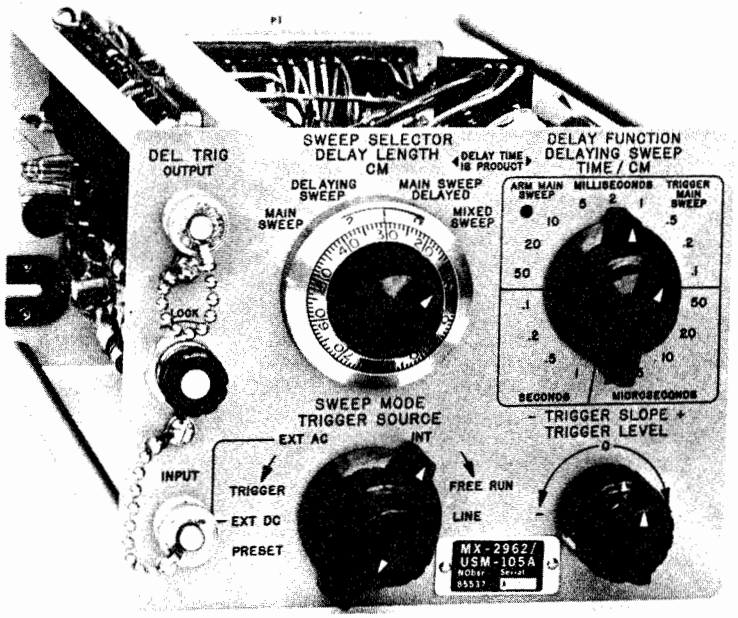
3 August 1965
Cog Service: USN FSN:

OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962/USM
Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Hewlett-Packard Co., (28480).



OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962/USM

224

FUNCTIONAL DESCRIPTION:

Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962/USM is an auxiliary unit for plug-in installation in the front-panel receptacle of Oscilloscopes AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A and AN/USM-141.

The primary purpose is to delay the start of the oscilloscope sweep for a time interval after the application of a triggering pulse. This period is continuously variable from 1 microsecond to 10 seconds. Delay is obtained from a calibrated sweep, termed the delaying sweep, which is generated by the MX-2962/USM. Delay length is measured in terms of centimeters along the delaying sweep, and the delay time is the product of the delay length and the delaying sweep time per centimeter. In addition to the primary sweep delay function the MX-2962/USM also permits an undelayed display at a sweep speed from 1 microsecond to 1 second per centimeter, and permits selection of a portion of that display to be expanded to the full 10 centimeters. The portion of the undelayed display that will be expanded is brightened. A second form of sweep expansion is made possible whereby an undelayed sweep

is obtained, whose speed is selected on the MX-2962/USM, and at a point on the display the sweep is increased to a higher rate selected by the oscilloscope sweep time switch. This permits the display of a proceeding pulse train on a slow sweep, with an expanded display of the last pulse in the same sweep. The point at which the expanded sweep starts is continuously adjustable anywhere on the display.

No field changes in effect at time of preparation (17 June 1965).

RELATION TO OTHER EQUIPMENT:

The MX-2962/USM and MX-2962/USM-105A are directly interchangeable, they are the same in appearance, performance specifications, and operation. The two models differ in that certain non-military parts in the MX-2962/USM-105A are changed to military approved parts in the MX-2962/USM.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A or AN/USM-141.

TECHNICAL CHARACTERISTICS:

DELAY TIME

RANGE: 1 usec to 10 sec.

ACCURACY: ± 1%, 2 usec/cm to 0.1 sec/cm sweep ranges; ± 3%, 0.2, 0.5, 1.0 sec/cm sweep ranges.

JITTER: ± 0.005% of total delay, or 0.01 usec, which ever is greater.

DELAYING SWEEP

RANGE: 2 usec/cm to 1 sec/cm in 18 calibrated ranges in 1, 2, 5, 10 sequence.

LINEARITY: ± 2%, 20 usec/cm to 1 sec/cm ranges; ± 5%, 2, 5, and 10 usec/cm ranges.

DELAYED LENGTH: 0 to 10 cm. When delaying sweep functions in place of main sweep, setting in cm controls occurance of main sweep. When delayed main sweep is used, setting acts as multiplier on Delaying Sweep setting to determine total delay time.

DELAY FUNCTIONS: Trigger main sweep; Arm main sweep.

TRIGGERING: Internal, power line or vertical input signal (2 mm or more vertical deflection. External, 1/2 v peak-to-peak or more.)

TRIGGERING POINT: ± going voltage. Trigger levels of external sync signal adjustable − 20 + 30 v.

SWEEP SELECTOR

(A) Main Sweep.

(B) Delaying Sweep; Brightened segment for trace indicates time relationship between delaying sweep display and main sweep display.

(C) Main Sweep Delayed.

(D) Mixed Sweep.

DELAYED TRIGGER OUTPUT: + 20 v approx.

POWER REQUIREMENTS: Supplied by the oscilloscope.

OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962/USM

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962/USM Includes:		4-5/8 x 6 x 12-5/8	4-1/2
1	Operating and Servicing Manual NAVSHIPS 94309			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94309: Operating and Service Manual MX-2962/USM-105A and MX-2962/USM Time Delay Generators (Hewlett-Packard Co. Model H02-166D).

TUBE, CRYSTAL, AND/OR SEMI-CONDUCTOR DATA:

TUBES: (9) 7308 (1) 6AU6WB

CRYSTALS: Not required:

SEMI-CONDUCTORS: (1) USN2N2084 (1) USN1N754AM (4) JAN1N277M (2) USN1N3064

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.0	7

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-O-22237(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hewlett-Packard Co.	Palo Alto, Calif.	N600(24)60140	

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Hewlett Packard Co., (28480).

OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY
MX-2962/USM-105A

FUNCTIONAL DESCRIPTION:

Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962/USM-105A is an auxiliary unit for plug-in installation in the front-panel receptacle of the Oscilloscopes AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A and AN/USM-141.

The primary purpose is to delay the start of the oscilloscope sweep for a time interval after the application of a triggering pulse. This period is continuously variable from 1 microsecond to 10 seconds. Delay is obtained from a calibrated sweep, termed the delaying sweep, which is generated by the MX-2962/USM-105A. Delay length is measured in terms of centimeters along the delaying sweep, and the delay time is the product of the delay length and the delaying sweep time per centimeter.

In addition to the primary sweep delay function the MX-2962/USM-105A also permits an undelayed display at a sweep speed from 1 microsecond to 1 second per centimeter, and permits

selection of a portion of that display to be expanded to the full 10 centimeters. The portion of the undelayed display that will be expanded is brightened. A second form of sweep expansion is made possible whereby an undelayed sweep is obtained, whose speed is selected on the MX-2962/USM-105A, and at a point on the display the sweep speed is increased to a higher rate selected by the oscilloscope sweep time switch. This permits the display of a proceding pulse train on a slow sweep, with an expanded display of the last pulse in the same sweep. The point at which the expanded sweep starts is continuously adjustable anywhere on the display.

No field changes in effect at time of preparation (17 June 1965).

RELATION TO OTHER EQUIPMENT:

The MX-2962/USM-105A and MX-2962/USM are directly interchangeable, they are the same in appearance, performance specifications, and operation. The two models differ in that certain non-military parts in the MX-2962/USM-105A are changed to military approved parts in the MX-2962/USM.

228

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A or AN/USM-141.

TECHNICAL CHARACTERISTICS:

DELAY TIME

RANGE: 1 usec to 10 sec.

ACCURACY: ± 1%, 2 usec/cm to 0.1 sec/cm sweep ranges; ± 3%, 0.2, 0.5, 1.0 sec/cm sweep ranges.

JITTER: ± 0.005% of total delay, or 0.01 usec, which ever is greater.

DELAYING SWEEP

RANGE: 2 usec/cm to 1 sec/cm in 18 calibrated ranges in 1, 2, 5, 10 sequence.

LINEARITY: ± 2%, 20 usec/cm to 1 sec/cm ranges; ± 5%, 2, 5 and 10 usec/cm ranges.

DELAYED LENGTH: 0 to 10 cm. When delaying sweep functions in place of main sweep, setting in cm controls occurance of main sweep. When delayed main sweep is used, setting acts as multiplier on Delaying Sweep setting to determine total delay time.

DELAY FUNCTIONS: Trigger main sweep; Arm main sweep.

TRIGGERING: Internal, power line or vertical input signal (2 mm or more vertical deflection. External, 1/2 v peak-to-peak or more.).

TRIGGERING POINT: ± going voltage. Trigger level of external sync signal adjustable - 20 to + 30 v.

SWEEP SELECTOR

(A) Main Sweep.

(B) Delaying Sweep; Brightened segment for trace indicates time relationship between delaying sweep display and main sweep display.

(C) Main Sweep Delayed.

(D) Mixed Sweep

DELAYED TRIGGER OUTPUT: + 20 v approx.

POWER REQUIREMENTS: Supplied by the oscilloscope.

OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962/USM-105A

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962/USM-105A includes:	2F6625-907-8350	4-5/8 x 6 x 12-5/8	4-1/2
1	Operating and Servicing Manual NAVSHIPS 94309			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94309: Operating and Service Manual MX-2962/USM-105A and MX-2962/USM Time Delay Generators (Hewlett-Packard Co. Model H02-166D).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (9) 6922 (1) 6AU6

CRYSTALS: None required.

SEMI-CONDUCTORS: (1) 2N2084 (1) 1N754A (4) 1N277 (2) 1N3064

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.0	7

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-O-22237(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hewlett Packard Co.	Palo Alto, Calif.	NObsr 85537	

3 August 1965

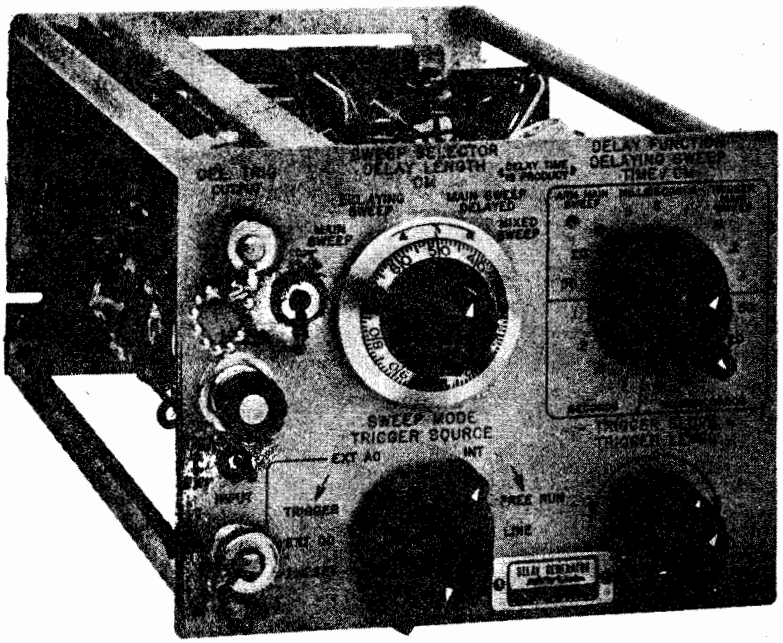
OSCILLOSCOPE SUBASSEMBLY, HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962A/USM

Cog Service: USN **FSN:** **Functional Class:**

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Radio Corp. of America RCA Service Co., (77609).



OSCILLOSCOPE SUBASSEMBLY HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962A/USM

FUNCTIONAL DESCRIPTION:

Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962A/USM is an auxiliary unit for plug-in installation in the front-panel receptacle of Oscilloscope AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A, and AN/USM-141.

The primary purpose is to delay the start of the oscilloscope sweep for a time interval after the application of a triggering pulse. This period is continuously variable from 1 microsecond to 10 seconds. Delay is obtained from a calibrated sweep, termed the delaying sweep, which is generated by the MX-2962A/USM. Delay length is measured in terms of centimeters along the delaying sweep, and the delay time is the product of the delay length and the delaying sweep time per centimeter. In addition to the primary sweep delay function the MX-2962A/USM also permits an undelayed display at a sweep speed from 1 microsecond to 1 second per centimeter, and permits selection of a portion of that display to be expanded to the full 10 centimeters. The portion of the undelayed display that will be expanded is brightened. A second form of sweep expansion is made possible whereby an undelayed sweep is obtained, whose speed is selected on the MX-2962A/USM, and at a point on the display the sweep is increased to a higher rate selected by the oscilloscope sweep time switch. This permits

the display of a proceeding pulse train on a slow sweep, with an expanded display of the last pulse in the same sweep. The point at which the expanded sweep starts is continuously adjustable anywhere on the display.

The MX-2962A/USM also permits the use of external intensity modulation and will facilitate the calibration and maintenance of the Mark III Attack Console and other systems that require external intensity modulation independent of sweep delay.

Data on this sheet reflects the following field changes: FC#1 for MX-2962/USM.

RELATION TO OTHER EQUIPMENT:

The MX-2962A/USM is the same as the MX-2962/USM but it included FC#1 for the MX-2962/USM.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-105A, AN/USM-139, AN/USM-140, AN/USM-140A or AN/USM-141.

TECHNICAL CHARACTERISTICS:

DELAY TIME
- RANGE: 1 usec to 10 sec.
- ACCURACY: ± 1%, 2 usec/cm to 0.1 sec/cm sweep ranges; ± 3%, 0.2, 0.5, 1.0 sec/cm sweep ranges.
- JITTER: ± 0.005% of total delay, or 0.01 usec, which ever is greater.

DELAYING SWEEP
- RANGE: 2 usec/cm to 1 sec/cm in 18 calibrated ranges in 1, 2, 5, 10 sequence.
- LINEARITY: ± 2%, 20 usec/cm to 1 sec/cm ranges; ± 5%, 2, 5, and 10 usec/cm ranges.

DELAYED LENGTH: 0 to 10 cm. When delaying sweep functions in place of main sweep, setting in cm controls occurance of main sweep. When delayed main sweep is used, setting acts as multiplier on Delaying Sweep setting to determine total delay time.

DELAY FUNCTIONS: Trigger main sweep; Arm main sweep.

TRIGGERING: Internal, power line or vertical input signal (2 mm or more vertical deflection. External, 1/2 v peak-to-peak or more).

TRIGGERING POINT: ± going voltage. Trigger levels of external sync signal adjustable − 20 to + 30 v.

SWEEP SELECTOR
- (A) Main Sweep.
- (B) Delaying Sweep; Brightened segment for trace indicates time relationship between delaying sweep display and main sweep display.
- (C) Main Sweep Delayed.
- (D) Mixed Sweep.

DELAYED TRIGGER OUTPUT: + 20 v approx.

POWER REQUIREMENTS: Supplied by the oscilloscope.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Oscilloscope Subassembly, Horizontal Channel, Variable Time Delay, MX-2962A/USM		4-5/8 x 6 x 12-5/8	4-1/2

OSCILLOSCOPE SUBASSEMBLY HORIZONTAL CHANNEL, VARIABLE TIME DELAY MX-2962A/USM

REFERENCE DATA AND LITERATURE:

NAVSHIPS 9439: Operating and Service Manual MX-2962/USM-105A and MX-2962/USM Time Delay Generator (Hewlett-Packard Co. Model H02-166D).
NAVSHIPS 981648: Field Change Bulletin 1 MX-2962/USM Addition of External Intensity Modulation.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (9) 7308 (1) 6AU6WB

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) USN2N2084 (1) USN1N754AM (4) JAN1N277M (2) USN1N3064

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.0	7

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Radio Corp of America RCA Service Co.	Cherry Hill N. J.	NObsr 89021	

11 August 1965

OSCILLOSCOPE SUB-ASSEMBLY, VERTICAL CHANNEL, DUAL TRACE PREAMPLIFIER MX-2995/USM-117

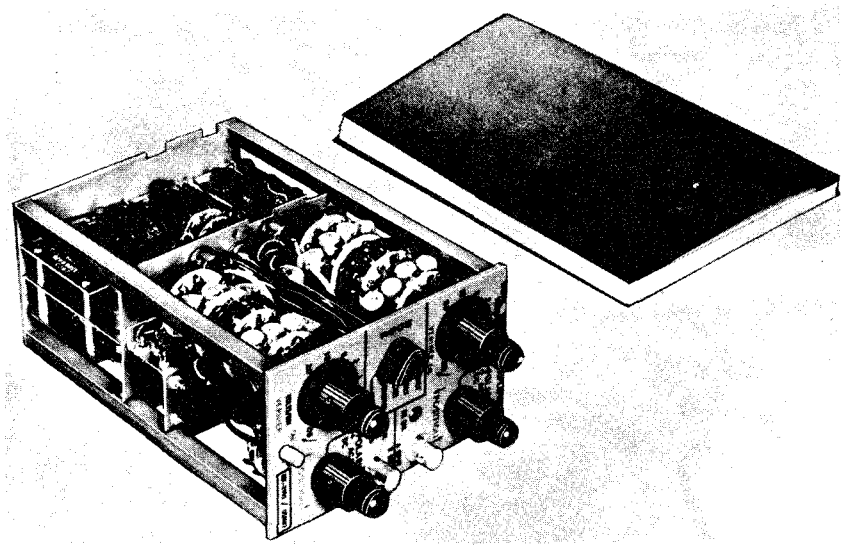
Cog Service: USN FSN: 2F6625-955-0664 Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Electronic Tube and Instrument Div. of General Atronics Corp., (20183).

233



OSCILLOSCOPE SUB-ASSEMBLY. VERTICAL CHANNEL,
DUAL TRACE PREAMPLIFIER MX-2995/USM-117

FUNCTIONAL DESCRIPTION:

Oscilloscope Subassembly, Vertical Channel, Dual Trace Preamplifier MX-2995/USM-117 is designed to operate as a plug-in preamplifier with Indicator Unit OS-106/USM-117 of Oscilloscope AN/USM-117.

It employs two identical vertical channel preamplifiers, each having 50 millivolts per division sensitivity with a five megacycle bandpass. This vertical plug-in may be operated as a single or dual trace preamplifier. Dual trace operation permits viewing of two independent signal sources as a dual display on the screen of Oscilloscope AN/USM-117. This method of operation affords an accurate means of making an amplitude comparison measurement of two signals. It also provides for accurate phase measurement or time displacement measurement between two signals.

Output signals from the vertical plug-in is fed to the post amplifier of Oscilloscope AN/USM-117 as a composite of the two applied input signals when it is operated to offer a dual trace presentation. Output signals resulting in single trace presentation is simply an amplified waveform of either input signals. Both modes of dual trace operation result from sharing or sampling of the two input signals.

No field changes in effect at time of preparation (17 June 1965).

OSCILLOSCOPE SUB-ASSEMBLY, VERTICAL CHANNEL, DUAL TRACE PREAMPLIFIER MX-2995/USM-117

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-117.

TECHNICAL CHARACTERISTICS:

A AND B CHANNEL AMPLIFIER CHARACTERISTICS

BANDWIDTH: DC to 5 mc within 3 db, direct coupled; 2 cps to 5 mc within 3 db, capacity coupled.

RISE TIME: 0.07 usec or less when measured between the 10 and 90% amplitude points.

SENSITIVITY: Selection of 9 calibrated steps in a 1, 2, 5 or 10 sequence from 0.05 v per div., to 20 v per div., accurate to within 5%. The VERNIER VOLTS/DIV control provides continuous adjustment between ranges and extends the 20 VOLT/DIV range to apprcx 50 v per div.

INPUT IMPEDANCE: 1 megohm shunted by 47 uuf max.

INPUT ISOLATION: 50 db min between the two channels.

FUNCTIONAL CHARACTERISTICS

OPERATING MODES: 5 operating modes are provided; (1) A ONLY, (2) B ONLY, (3) ALTERNATE, (4) CHOPPED, and (5) ADDED.

CHOPPED MODE FREQUENCY: 100 kc approx.

CHOPPED MODE BLANKING: Z axis blanking eliminates switching transients ("halo" effect) in CHOPPED mode.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Oscilloscope Subassembly, Vertical Channel, Dual Trace Preamplifier MX-2995/USM-117	2F6625-955-0664	3-1/8 x 4-13/16 x 9	3

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94344(A): Technical Manual for Oscilloscope AN/USM-117.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (8) 2N705 (2) 2N706 (2) 2N964 (4) 2N2222 (2) 2N1142 (2) 1N643
(1) 1N964B (8) 1N914 (4) 1N270 (1) 1N755A

OSCILLOSCOPE SUB-ASSEMBLY, VERTICAL CHANNEL, DUAL TRACE PREAMPLIFIER MX-2995/USM-117

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: SHIPS 0-3284

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Electronic Tube and Instrument Div. of General Atronics Corp.	Philadelphia, Pa.	NObsr 87573 NObsr 81021	

285

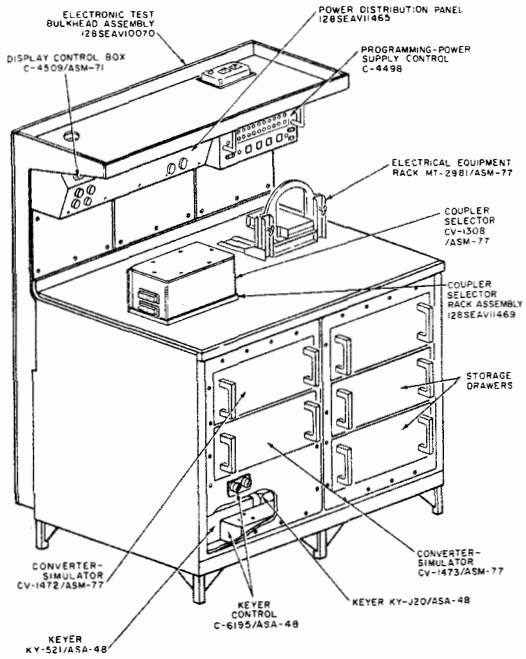
26 April 1965 TEST CONSOLE DISPLAY OA-3737/ASM-77

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Grumman Aircraft Engineering Corporation, (26512).



TEST CONSOLE DISPLAY OA-3737/ASM-77

FUNCTIONAL DESCRIPTION:

Test Console Display OA-3737/ASM-77 is used for semi-automatic and manual testing of Analog Display Indicator IP-722/AVA-1 (VDI) an aircraft replaceable assembly (ARA) of Vertical Display Indicator AN/AVA-1.

No field changes in effect at time of preparation (24 March 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS

INPUT: 115 v ac, 400 cyc, 3 ph (system uses 4 wire, wye connected arrangement, w/neutral grounded. Max pwr requirement is 1200 va). 28 v dc (max pwr requirements 150 W).

TEST CONSOLE DISPLAY OA-3737/ASM-77

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Console Display OA-3737/ASM-77 includes:			
1	Electronic Test Bulkhead Assembly 128SEAV10070		36 x 48 x 62-1/2	400
1	Converter Simulator CV-1472/ASM-77		8-3/16 x 19 x 23-1/2	100
1	Converter Simulator CV-1473/ASM-77		8-3/16 x 19 x 23-1/2	100
1	Coupler Selector CV-1308/ASM-77		6 x 7-1/4 x 14-1/4	10
1	Coupler Selector Rack Assembly SEAV-11469		9 x 9 x 15-9/16	5
1	Power Distribution Panel 128SEAV11465		2-11/16 x 14-1/8 x 29-3/16	2
1	Display Control Box C-4509/ASM		2-1/2 x 3-1/4 x 6	1
1	Keyer KY-521/ASA-48		7 x 9-7/8 x 18-1/2	34
1	Keyer KY-520/ASA-48		7 x 9-7/8 x 18-1/2	34
1	Keyer Control C-6195/ASA-48		3-3/4 x 8 x 13-1/2	13
1	Electrical Equipment Rack MT-2981/ASM-77		11-7/8 x 12-5/16 x 18-3/4	5
3	Storage Drawer 128SEAV10086-5 Low Voltage Power Supply		8-3/16 x 19 x 23-1/2	
1	Roll Servo Extender No. 4635-9			
1	Deflection Circuit Extender No. 4638-9			
1	Cathode Ray Tube Extender No. 4639-9			
1	Test Overlay No. 4397-9			
1	Diode Board Assembly			
1	Waveform Converter Selector Connection Cable No. 128SEAV10068-1			
1	VDI Connection Cable No. 128SEAV11456-1			
1	Test Adapter No. 128SEAV11487-1			
1	Test Adapter No. 128SEAV11488-1			
1	Module Extender No. 13135-1			
1	Grid Overlay No. 2476-9			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-50BAB-2-8: Handbook Operation and Service Instructions Display Test Console OA-3737/ASM-77.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (5) 2N329A (29) 1N457 (19) 2N333 (5) 1N645 (2) 2N335 (1) 1N746
(1) 2N388 (4) 1N746A (69) 2N404 (1) 1N751A (6) 2N526 (6) 1N754A
(18) 2N697 (4) 1N823 (63) 2N706 (6) 1N914 (3) 2N1132 (66) 1N916
(4) 2N1302 (5) 1N938B (7) 2N1613 (4) 1N3016B (14) 2N2368
(892) UT-234 (73) 1N277 (28) UT-262

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Grumman Aircraft Engineering Corporation	Bethpage, N. Y.	NOa(s) 59-0259c	

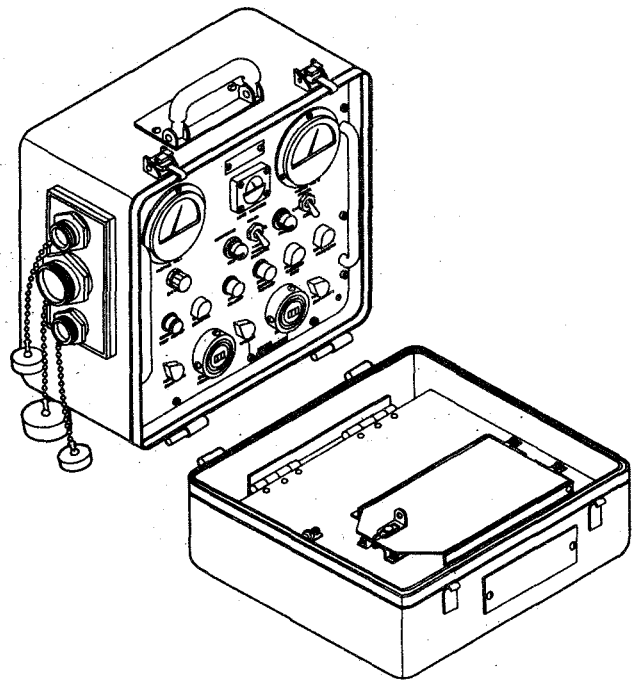
23 October 1964 TEST SET COMPUTER TS-1393A/

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Magnavox Co., (37695).



TEST SET COMPUTER TS-1393A/APQ-83

FUNCTIONAL DESCRIPTION:

Test Set Computer TS-1393A/APQ-83 is a test equipment used with Air Data Teste to provide electrical inputs and simulated load characteristics to the Missile Re puter CP-473/APQ-83 or Missile Release Computer CP-473A/APQ-83. The Test Set Compu vides a means for checking the operation of the Missile Release Computer. It is a of isolating faults to one of the resistor or magnetic-amplifier modules, in the or CP-473A/APQ-83 during servicing operations on the test bench.

No field changes in effect at time of preparation (14 October 1964).

RELATION TO OTHER EQUIPMENT:

Test Set Computer TS-1393A/APQ-83 is one way interchangeable with TS-1393/APQ-

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Air Data Tester VPT-10F.

TECHNICAL CHARACTERISTICS:

DC SUPPLY
- VOLTAGE: 28 v dc.
- VOLTAGE LIMITS: 25 to 31 v dc.
- CURRENT: 0.6 amp max.

AC SUPPLY
- VOLTAGE: 115 v ac.
- FREQUENCY: 400 cps.
- VOLTAGE LIMITS: 105 to 127 v ac.
- FREQUENCY LIMITS: 380 to 420 cps.
- POWER: 300 va max.

STANDARD CONDITIONS
- TEMPERATURE: Room ambient 30° C ± 10° C (86° F ± 18° F).
- ALTITUDE: Normal ground.
- VIBRATION: None.
- HUMIDITY: Room ambient up to 90% relative humidity.

MAJOR COMPONENTS

TY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Computer TS-1393A/APQ-83 includes:		10-5/8 x 13-3/16 x 13-1/4	35
3	Wiring Harness			
1	Operation and Calibration Instructions #187826			

EFERENCE DATA AND LITERATURE:

AVWEPS 16-35TS1393-1: Handbook and Service Instructions with Illustrated Parts Breakdown for Test Set, Computer TS-1393A/APQ-83.

IBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

IBES: Not required.

YSTALS: Not required.

MI-CONDUCTORS: (4) 1N547 (2) 617941-3 (1) 615003-323 (3) 617941-4 (1) 615011-3 (2) 615011-5

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Magnavox Co.	Fort Wayne, Indiana	NOw61-0189r	

241

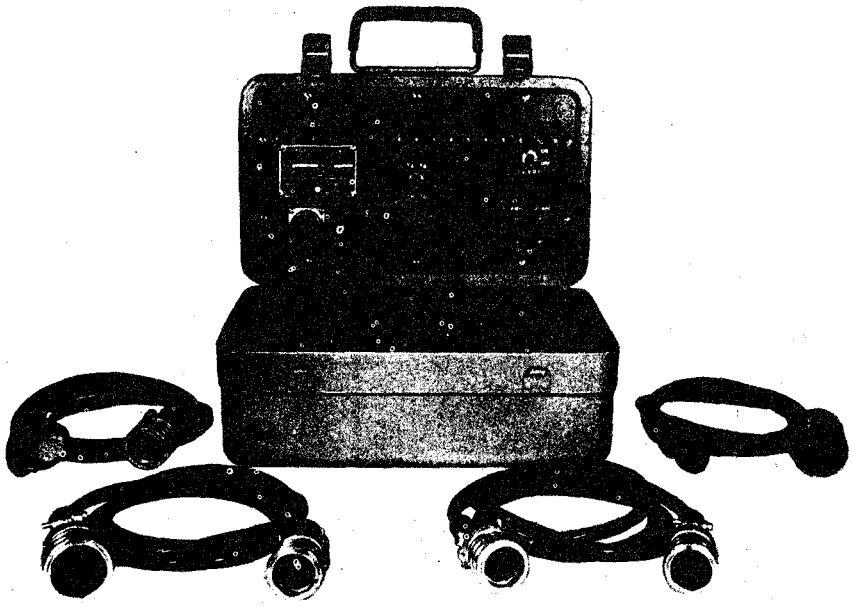
29 October 1964 | TEST SET, CONVERTER READER TS-1468/ASB-7

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Norden Div. of United Aircraft Corp., (95542).



TEST SET, CONVERTER READER TS-1468/ASB-7

FUNCTIONAL DESCRIPTION

Test Set, Converter Reader TS-1468/ASB-7 is a portable instrument designed for operational testing of converters in the following units: (a) Converter, Analog-Digital CV-699/ASB-7; (b) Computer, Airspeed and Altitude CP-416/ASB-7; (c) Control Indicator C-2554/ASB-7 using Test Set, Computer AN/ASM-45; (d) Individual Converters of Bomb Directing Set AN/ASB-7.

No field changes in effect at time of preparation (15 October 1964).

RELATION TO OTHER EQUIPMENT:

TS-1468/ASB-7 TEST SET, CONVERTER READER

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Computer Airspeed and Altitude CP-416/ASB-7 and Instruction Manual NAVWEPS 11-70FEA-500-1 and -2; (1) Control Indicator C-2554/ASB-7 using Test Set, Converter AN/ASM-45 and Instruction Manual NAVWEPS 11-70FEB-5; (1) Converter Analog-Digital CV-699/ASB-7 and Instruction Manual NAVWEPS 11-70FEH-3.

TECHNICAL CHARACTERISTICS:

OPERATING VOLTAGE: 27.5 ± 0.5 v dc.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Converter Reader TS-1468/AS8-7		8 x 9-1/2 x 13-1/2	15.5

REFERENCE DATA AND LITERATURE:

NAVWEPS 11-70FE8-6: Handbook of Operation and Service Instructions with Illustrated Parts Breakdown for Test Set Converter Reader TS-1468/ASB-7.
NAVWEPS 11-70FEA-501-1: Functional Description and Maintenance Instructions, Computer Subsystem of Bomb Directing Set AN/ASB-7.
NAVWEPS 11-70FEA-501-2: Diagrams Computer Subsystem of Bomb Directing Set AN/ASB-7.
NAVWEPS 11-70FEA-502: Illustrated Parts Breakdown. Computer Subsystem of Bomb Directing Set AN/ASB-7.
NAVWEPS 11-70FEA-3: Program Handbook Computer Subsystem of Bomb Directing Set AN/ASB-7.
NAVWEPS 11-70FEB-501: Operation and Service Instructions, Component Test Set TS-1016/ASB-7.
NAVWEPS 11-70FEB-502: Operation and Service Instructions with Illustrated Parts Breakdown, Sychronizer, Electrical SN-328/ASB-7.
NAVWEPS 11-70FEB-503: Operation and Service Instructions with Illustrated Parts Breakdown. Test Set, Computer, Bombing Data TS-1769/ASB-7.
NAVWEPS 11-70FEB-5: Operation and Service Instructions with Illustrated Parts Breakdown, Test Set, Computer AN/ASM-45.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (34) 1N497 (2) 1N538 (50) 2N404A (17) 2N597

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Norden Div. of United Aircraft Corp.	Norwalk, Conn.	N163-8382	

26 October 1964 TESTER, CONVERTER TS-1538/USQ-20(V)

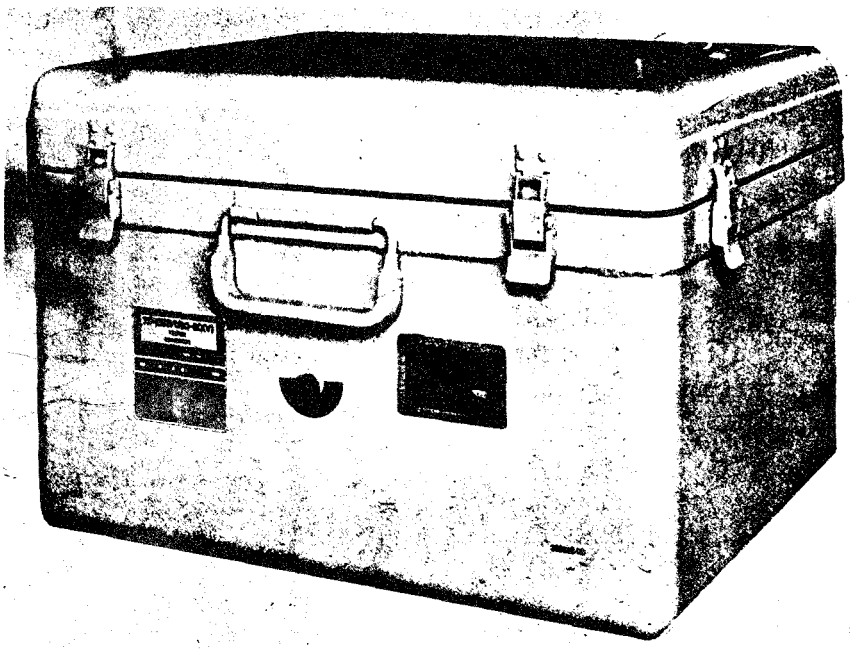
Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Remington Rand Univac Div. of Sperry Rand Corp. (90536).

245



TESTER, CONVERTER TS-1538/USQ-20(V)

FUNCTIONAL DESCRIPTION:

Tester, Converter TS-1538/USQ-20(V) provides the operator a means of varying the ac input power to an equipment undergoing a marginal power operating test. A self-contained ac voltmeter allows monitoring the three phase, line-to line ac voltage. A marginal operating environment can thus be simulated for the purpose of observing equipment operation under adverse power conditions. As a result, premature detection of circuit, or component, failure is possible.

No field changes in effect at time of preparation (14 October 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Digital Data Converter CV-1123/USQ-20(V) and Technical Manual NavShips 94093; (1) Digital Data Introducer MX-3195(V)/USQ-20(V) and Technical Manual NavShips 94097; (1) Signal Data Recorder-Reproducer RD-243/USQ-20(V) and Technical Manual NavShips 94091; (1) Teletypewriter Set, Modified w/Adapter AN/UGC-6 and Technical Manual NavShips 94104; (1) Digital to Analog Converter Group AN/SYA-3 and Instruction Manual NavWeps OP-3160; (1) Digital Data Converter CV-760/SS and Technical Manual NavShips 94099; (1) Data Line Terminal MX-3502/USQ-20(V) and Technical Manual NavShips 94092; (1) Introducer Tester TS-1539/USQ-20(V) and Technical Manual NavShips 94098(A).

TECHNICAL CHARACTERISTICS:

INPUT POWER: 115 v ± 10%, 3 ph, 400 cps ±5%.
POWER SUPPLY CHARACTERISTICS
  LOW TRANSFORMER TAP
    INPUT: 115 v ± 10%, 3 ph, 400 cps ± 5%.
    OUTPUT: Variable, 0 to 115 v ± 10%, 3 amp ea section max.
  HIGH TRANSFORMER TAP
    INPUT: 115 v ± 10%, 3 ph, 400 cps ± 5%.
    OUTPUT: Variable, 0 to 130 v ± 10%, 3 amp ea section max.
COOLING CHARACTERISTICS: Connection cooling.
TEMPERATURE ALARM: None.
INDICATORS
  AC VOLTMETER
    SCALE: Nonlinear.
    VOLTAGE RANGE: 0 to 150 v.
    FREQUENCY: 400 cps.
CONTROLS
  COARSE: Variable impedance 0 to 50 ohms ± 10%.
  FINE: Variable impedance 0 to 6 ohms ± 10%.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Tester, Converter TS-1538/USQ-20(V) includes:		13-3/8 x 16-3/4 x 20-3/8	25
1	Technical Manual NAVSHIPS 94095(A)			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94095(A): Technical Manual for Converter Tester TS-1538/USQ-20(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

4.11 TS-1538/USQ-20(V): 2

CRYSTALS: Not required.

SEMI-CONDUCTORS: Not required.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2.65	25

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Remington Rand Univac Div., of Sperry Rand Corp.	St. Paul, Minn.	NObsr-72769	

247

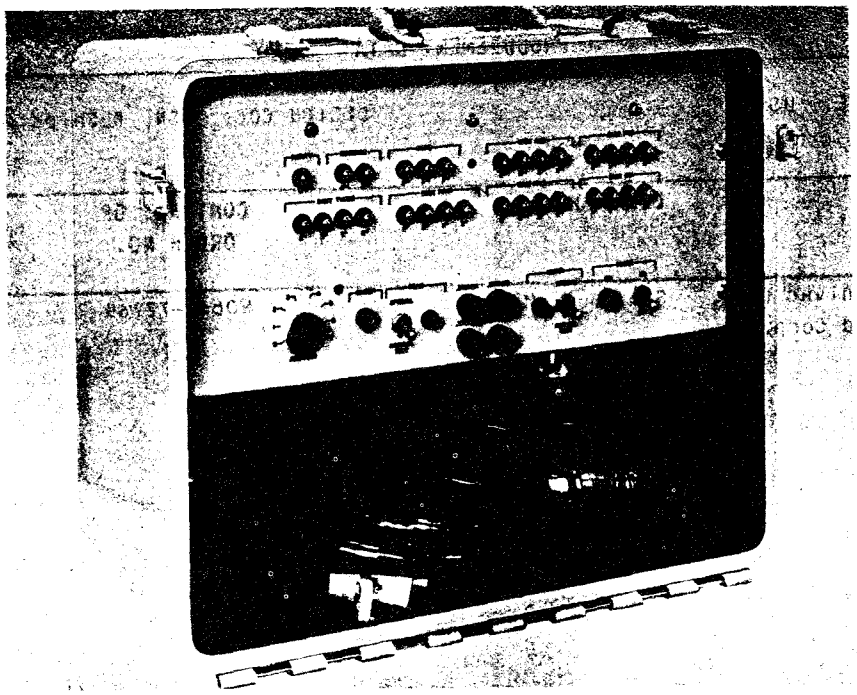
26 October 1964 | TESTER, INTRODUCER TS-1539/USQ-20(V)

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Remington Rand Univac Div. of Sperry Rand Corp., (90536).



TESTER, INTRODUCER TS-1539/USQ-20(V)

FUNCTIONAL DESCRIPTION:

Tester, Introducer TS-1539/USQ-20(V) provides the command signals and data monitoring facilities necessary for testing a keyset. During testing, the keyset is removed from normal operation and connected to the keyset tester. By using the test procedures the various functional areas of the keyset can be tested. Through correct interpretation of the keyset tester data display circuit or component defects can be isolated to one of the functional areas within the keyset.

No field changes in effect at time of preparation (15 October 1964).

RELATION TO OTHER EQUIPMENT:

TS-1539/USQ-20(V) TESTER, INTRODUCER

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Converter Tester TS-1538/USQ-20(V) and Technical Manual NavShips 94095(A); (1) Digital Data Introducer MX-3195(V)/USQ-20(V) and Technical Manual NavShips 94097.

TECHNICAL CHARACTERISTICS:

INPUT POWER: 115 v ± 10%, 3 ph, 400 cps ± 5%, 22 W.
POWER SUPPLY CHARACTERISTICS
  INPUT: 115 v ± 10%, 3 ph, 400 cps ± 5%.
  OUTPUT: + 15 v dc (+ 14.2 to + 15.8) max ripple 0.2 v; - 15 v dc (-14.2 to - 15.8) max ripple 0.2 v.
SIGNAL LEVELS
  SINGLE-PULSE ERROR SIGNAL
    DURATION: 70 ± 30 usec.
    LOGIC ZERO ("0"): - 15 v dc (± 1 v).
    LOGIC ONE ("1"): - 0.3 v dc (± 0.3 v).
SIGNAL CIRCUIT OUTPUT IMPEDANCE
  READ
    DURATION: No limit.
    LOGIC ZERO ("0"): Open circuit.
    LOGIC ONE ("1"): 0.5 ohm max.
  ERROR (S2 SET TO SPECIAL)
    DURATION: No limit.
    LOGIC ZERO ("0"): Open circuit.
    LOGIC ONE ("1"): - 0.3 v dc (± 0.3 v).
DATA TRANSMISSION: 30 bits parallel transmission.
COOLING
  CHARACTERISTICS: Convection cooling.
  TEMPERATURE: None.

249

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Tester, Introducer TS-1539/USQ-20(V) includes:		13-3/8 x 16-3/4 x 20-3/8	40
1	Technical Manual NAVSHIPS 94098(A)			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94098(A): Technical Manual for Introducer Tester TS-1539/USQ-20(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (5) 2N1731 (31) 1N3669 (5) 1N202

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2.65	40

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Remington Rand Univac Div., of Sperry Rand Corp.	St. Paul, Minn.	NObsr-72769	

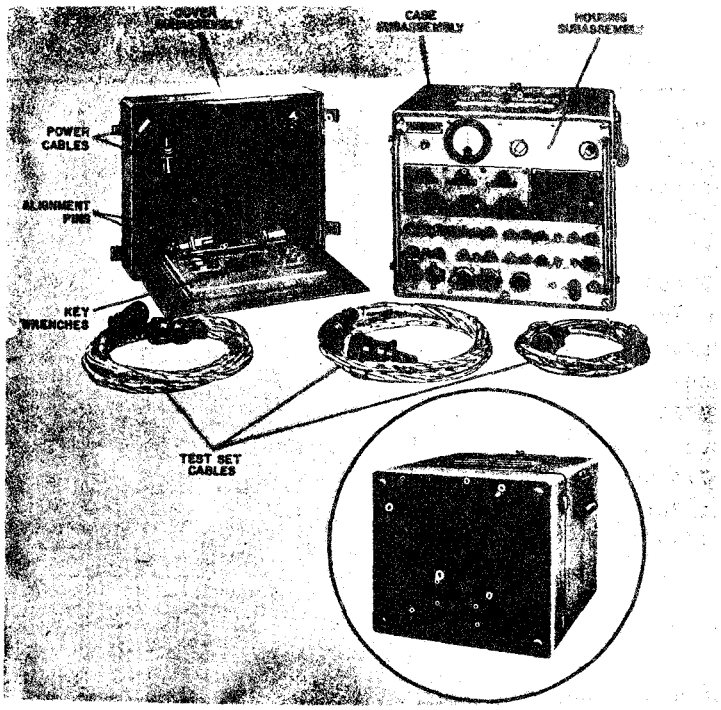
USQ

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: United Aircraft Corporation Norden Division, (61858).



TEST SET, PERISCOPE TS-1968/ASB

FUNCTIONAL DESCRIPTION:

Test Set, Periscope TS-1968/ASB is a portable testing device designed and constructed to facilitate testing and alignment of both Periscope SU-1/ASB-7 and Periscope MX-1295/ASB-1A. It is equipped to provide shipboard or land-based maintenance operations.

No field changes in effect at time of preparation (17 November 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Volt-Ohm Milliameter, Model 260, Series III, Simpson Electric Co.; (1) Oscilloscope Model 545A, Tektronix, Inc.; (1) Voltmeter Model 341, Weston Instruments Div. of Daystrom,

TS-1968/ASB TEST SET, PERISCOPE

Part No. 341-1902J02; (1) Periscope Test Set TS-935/ASB-1; (1) Synchro Alignment Test Set TS-714/U.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 ± 11 v ac, 400 ± cps single ph 5 amp 28 ± 2 v dc, 5 amp.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Periscope TS-1968/ASB Includes:		15-17/32 x 19 x 19-29/32	80
1	Housing Subassembly No. 58A122H2406			
1	Case Subassembly No. 58A122D2458			
1	Cover Subassembly No. 58A122D2457			
1	Power Cable Subassembly W101, No. 776600-1			
1	Power Cable Subassembly W102, No. 776600-3			
1	Periscope Test Set 2A, No. 58A122C2453			
1	Periscope Test Set 37, No. 58A122C2454			
1	Periscope Test Set 39, No. 58A122C2455			
1	Alignment Pin (Pitch and Roll) No. 1015991			
1	Alignment Pin (Azimuth) No. 1015998			
1	Alignment Pin (Sighting Head) No. 1016091			
1	Hexagon Key Wrench No. 58A5A294-5			
1	Hexagon Key Wrench No. 58A5A294-6			

REFERENCE DATA AND LITERATURE:

NAVWEPS 11-70FEB7: Handbook Operation and Service Instructions with Illustrated Parts Breakdown Periscope Test Set TS-1968/ASB.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 5Y3WGT(JAN) (1) 5Y6WGT(JAN) (2) 6X4W(JAN) (1) OB2(JAN) (3) 5670(JAN) (1) 5654(JAN) (2) 6005(JAN) (3) JAN-1A

CRYSTALS: Not required.

SEMI-CONDUCTORS: (8) 1N38A (3) 1N55B (1) 1N648

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
United Aircraft Corp. Norden Division	Norwalk, Conn.	N163-10103	

253