TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL

TEST SET, STABILIZATION SYSTEM, FLIGHT LINE TS-1893/ASM (NSN 6615-00-133-7836)

This copy is a reprint which includes current pages from Changes 1 through 4. The title was changed by C 4 to read as shown above.

HEADQUARTERS , DEPARTMENT OF THE ARMY

FEBRUARY 1966

CAUTION

THIS EQUIPMENT IS TRANSISTORIZED

Observe all precautions to prevent transistor damage. Make resistance measurements in the equipment only as specified.

TECHNICAL MANUAL
No. 11-6625-645-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC *24 February 1966*

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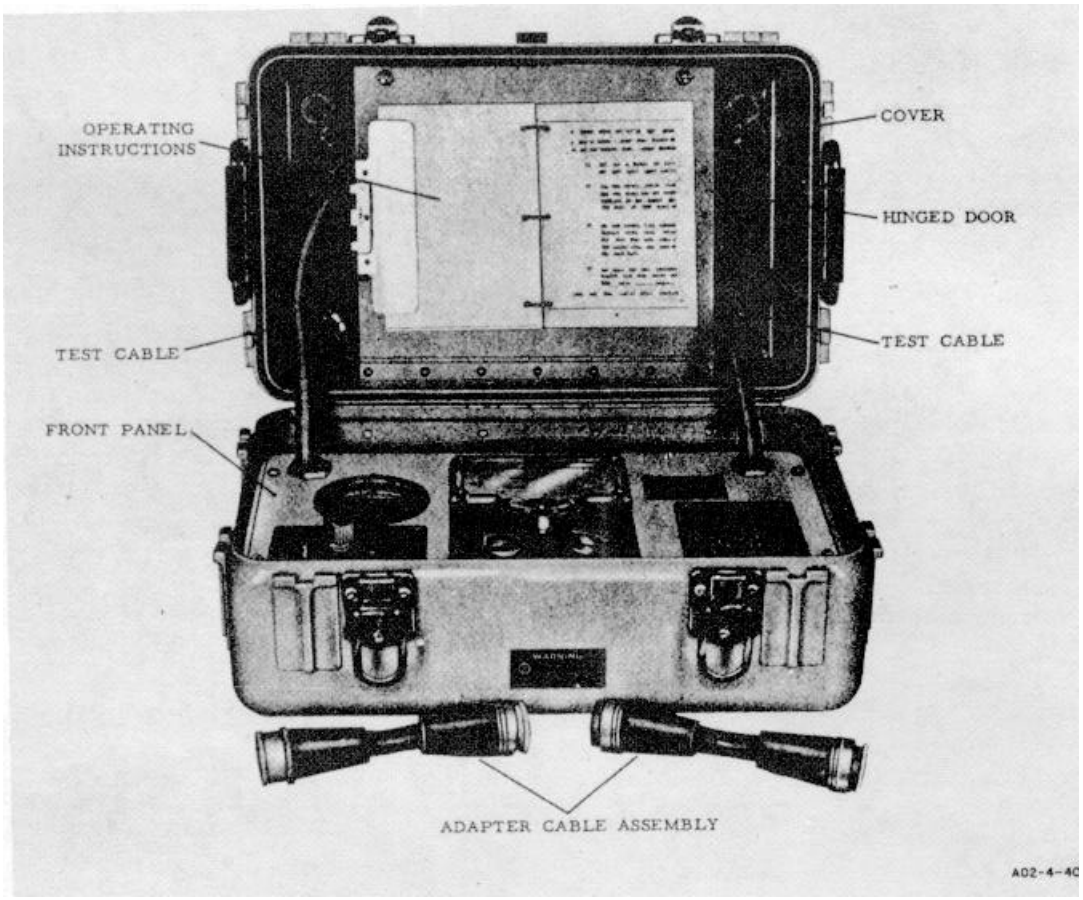


Figure 1-1. ASE-Speed Trim-SAS Line Test Set

SECTION I
INTRODUCTION AND DESCRIPTION

1-1. General

1-2. Scope

This manual describes Test Set, Stabilization System, Flight Line TS-1893/ASM (fig. 1-1) and provides instruction for operation, maintenance, and functioning of the equipment. Appendixes include the maintenance allocation chart and illustrated parts breakdown.

a. All references to ASE-Speed Trim-SAS Line Test Set in this manual, apply to Test Set, Stabilization System Flight Line TS-1893/ASM.

b. Other technical manuals pertaining to this equipment include (TM 11-6625-645-24P and TM 11-6625-816-15 (Authenticated NAVSHIPS 92051) which covers the ME-418/U (part of the TS-1893/ ASM).

c. Information for the ASE testing feature is not applicable to CH-47 helicopters. Refer to NAVAIR 17-15C-93 for ASE testing procedures.

1-2.1. Indexes of 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 modification work orders (MWO's) pertaining to the equipment.

1-2.2. 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 (Packaging Improvement Report) as prescribed in AR 70058/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 5538/NAVSUPINST 4610.33A/AFR 75-18/ MCO P4610.19B and DSAR 4500.15.

1-2.3. Reporting of Errors.

You can help improve this manual by calling attention to errors and by recommending improvements and stating your reasons for the recommendations. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSELMA-Q, Fort Monmouth, NJ 07703 A reply will be furnished direct to you.

1-2.4. Destruction of Army Electronics Materiel.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-2.5. Administrative Storage.

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740-90-1.

1-2.6. Reporting Equipment Improvement Recommendations (EIR).

EIR's will be prepared using DA Form 2407 (Maintenance Request). Instructions for preparing EIR's are provided in TM 38-750, the Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

1-3. Purpose of Equipment

The TS-1893/ASM (test set) provides line testing facilities for the Automatic Speed Trim System and Stability Augmentation System (SAS) in CH-47 helicopters. The test set also provides line testing facilities for the Automatic Stabilization Equipment (ASE) in other helicopters. This information is not included in this manual.

1-4.

The test set is series-connected between the amplifier or circuit box for the automatic flight control system under test and its cable connector.

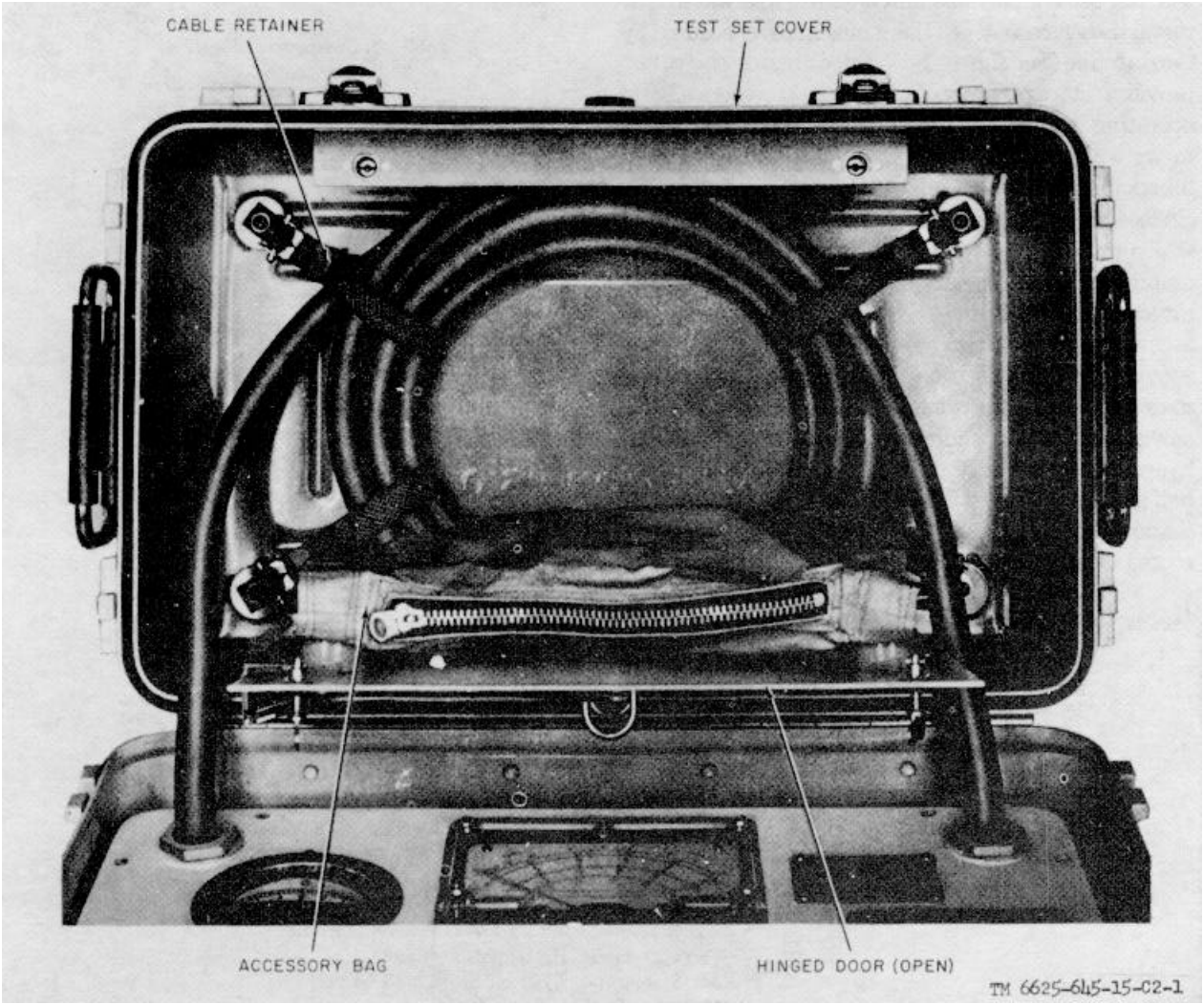


Figure 1-2. Cable stowage and accessories bag.

1-5. Physical Characteristics

The test set is a portable unit enclosed in a watertight metal transit case which has a hinged cover secured by two latches (See figure 1-1). A door inside the cover provides storage space for cables, accessories, and operating instructions (See figure 1-2 and table 1-1). A meter which indicates SAS channel output voltages, a function switch which adapts the test set circuits for SAS, ASE, or speed trim system tests, 41 test jacks which provide accesses to all the receptacle pins of the amplifier or circuit box for the system under test, and a multimeter ME48B/U for making circuit measurements are incorporated into the front panel. A half-gain switch is also installed on the front panel. When line maintenance is performed with external hydraulic power, this switch eliminates the need for a second hydraulic test stand during tests which required half-gain operation of the SAS. Two 9-foot cables for connecting the test set to the helicopter systems are routed through grommets to the rear of the panel. The test set is approximately 18 inches long, 10 inches high, and 11 inches wide. It weighs 31 pounds.

Table 1-1. Components Supplied

Quantity	*Name*	*Nomenclature type, or part No.*
1	Multimeter	ME-4B (Part of A) PSM-4B)
1	Adapter Cable Assembly	A02VS309-6
1	Adapter Cable Assembly	A02VS309-7
1	Red Test Lead	CX-2353/PSM-4A
1	Black Test Lead	CX-2354/PSM-4A
1	High Voltage Test Lead	CX-2355/PSM-4A
2	Alligator Clip	Commercial
1	Telephone Plug	Commercial
1	Operating Instructions (Test Set)	SSE-500-2

1-5.1. Items Comprising an Operable Equipment

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Usable on code*	*Fig. No.*
		NOTES **1. 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.** **2. Letter A in the Usable on code column refers to items comprising an operable TS-1 893/ASM, 114E5986-3; letter B refers to items comprising an operable TS-1893/ASM; 114E5986-5.**		
6625-868-8359		Test Set, Stabilization System Flight Line TS-1893/ASM: 114E5986-3; 77272		
		OR		
6615-133-7836		Test Set, Stabilization System Flight Line TS-1893/ASM: 114E5986-5; 77272		
6625-999-3693	1	Bag Assembly, Storage: A02V310-2; 77272	A, B	1-2
6625-908-7406	1	Cable Assembly, Special Purpose: 7" lg, 10-359137-1; 77820; A02VS309-6, 77272	A, B	1-1
6625-908-7407	1	Cable Assembly, Special Purpose: 7" lg; 10-359138-1;77820; A02VS309-7, 77272	A, B	1-1
6625-585-9795	1	Multimeter AN/PSM-4B:	A, B	4-1
	1	Operating Instructions: SSE500-2, Undated	A	1-1
7610-145-0179	1	Operating Instructions: SSE500-2, Dated 1 April 1969	B	1-1

1-6. Electrical Characteristics

The basic circuits of the test set do not require any operating voltages other than those supplied by the amplifier or circuit box of the system under test. The integral multimeter of the test set operates on internal 1.5- and 22.5-volt batteries.

1-7. Differences in Test Sets

Only one model of the test set is in use and all test sets are electrically identical. Certain minor differences in external marking, nameplates, and function switch marking exist between production runs, however.
Depending upon the production run, the first SAS position of the function switch is marked either R-P or ROLL-P (roll-pitch), and the second SAS position of the function switch is marked either P-R or P-ROLL (pitch-roll). The first letter or word of the marking identifies the SAS channel on H-46 or 107 helicopters. The last letter or word of the marking identifies the SAS channel on CH-47 helicopters.

1-8. Additional Equipment Required

Electronic Multimeter ME-D/U, or equivalent, is required for the measurement of certain low-level signal voltages.

1-9. Theory of Operation

1-10. Main Connector Test Points
(fig. 1-3)

Main connector test pointjacks J1 through J41 provide a means for measuring voltages and resistances at the

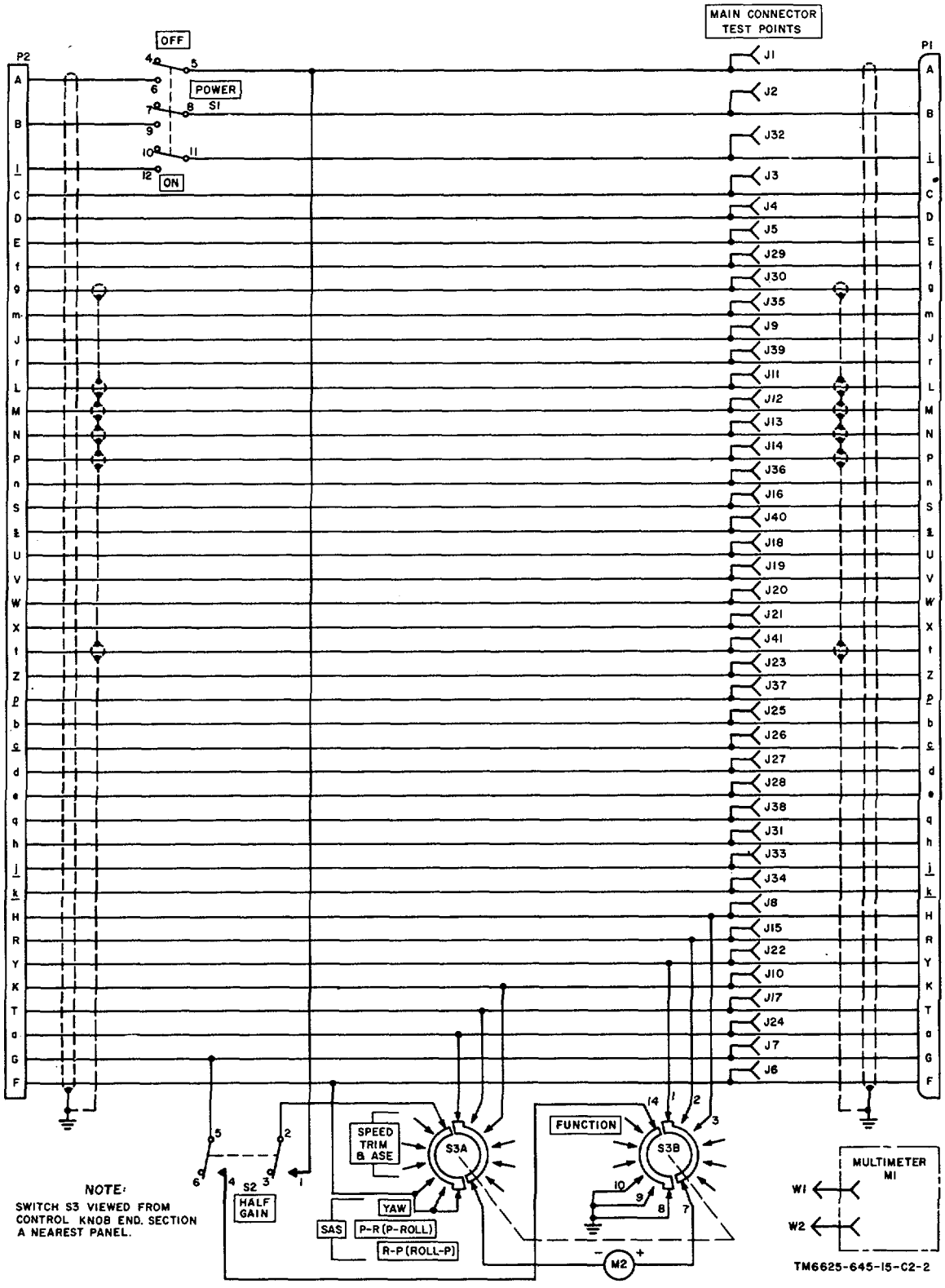


Figure 1-3. Test Set, Stabilization System, Flight Line TS-1893/ASM, schematic diagram.

receptacle of an ASE circuit box, a speed trim amplifier, or a SAS amplifier while the circuit box or amplifier is connected in an operating system. With the exception of the power wiring through POWER switch S1 and certain additional wiring to other switches, all wires are connected from the pins of cable connector P1 through the corresponding test point jacks to the pins of cable connector P2. The capital and small letters on the test point jacks correspond to those on the pins of connectors P1 and P2.

1-11. POWER AND HALF-GAIN CIRCUITS.
(See figure 1-3.) POWER switch S1 is series connected between pins A, B, and i of connector P2 and the like pins of connector PI and test point jacks A, B, and i With switch S1 at ON, the circuit box or amplifier for the system under test is connected to the helicopter power supply.

1-12. When HALF GAIN switch S2 is operated, the 28-volt dc power circuit is completed through one pole of switch S2 and any of the three SAS positions of FUNCTION switch wafer S3A to one side of the winding of the gain-control relay in the SAS amplifier. The second pole of switch S2 completes a return from the control side of the gain-control relay through FUNCTION switch wafer S3B to test set ground.

1-13. FUNCTION SWITCH CIRCUITS. (See figure 1-3.) Operation of FUNCTION switch S3 to SAS YAW, P-R(P-ROLL) or A-P(ROLL-P) connects meter M2 in parallel with the torque motor (solenoid) windings of the selected extensible link. Meter M2 indicates channel output when the T.-R test switch on the SAS amplifier is operated and the selector switch on the SAS amplifier and FUNCTION switch S3 on the test set are turned to the channel under test. The SPEED TRIM & A.S.E. position of switch S3 disconnects meter M2 and HALF GAIN switch S2 from the test-circuit.

1-14. MULTIMETER. The theory of operation for multimeter ME-48B/U is covered in Instruction Book for Multimeter, AN/PSM-4A and AN/PSM-4B, TM 11-6625-816-15 (Authenticated NAVSHIPS 92051).

SECTION II

SPECIAL SERVICE TOOLS

2-1. SPECIAL SERVICE TOOLS.

2-2. Electronic Multimeter, ME-6D/U, or equivalent, is required for the measurement of certain low-level signal voltages.

Note: Voltmeter, Meter ME-30A/U or Voltmeters, Electronic ME-30B/U, ME-30C/U, or ME-30E/U may be used in place of the ME-6D/U.

SECTION III

PREPARATION FOR USE, STORAGE,

OR SHIPMENT

3-1. UNPACKING AND INSPECTING THE EQUIPMENT. The test set is packed in a standard container suitable for domestic shipment. After unpacking, open the test set and inspect it for physical damage that may have occurred during shipment. Check the contents of the test set against the equipment list in table 1-1 and the packing list.

3-2. PREPARATION FOR USE. To prepare the test set for use, install batteries in the multimeter as follows:

a. Remove the 12 screws that secure the top panel and carefully lift the panel from the case.

b. Place the panel face down on material that will not damage the components or panel.

c. Remove the four screws and the battery compartment cover from the rear of the multimeter. (See figure 3-1.)

d. Install a battery BA-30 in the compartment marked BA-30, install a battery BA-261/ U in the compartment marked BA-261/U. Install each battery with its positive terminal toward the center of the case.

e. Replace the battery compartment cover and the four attaching screws.

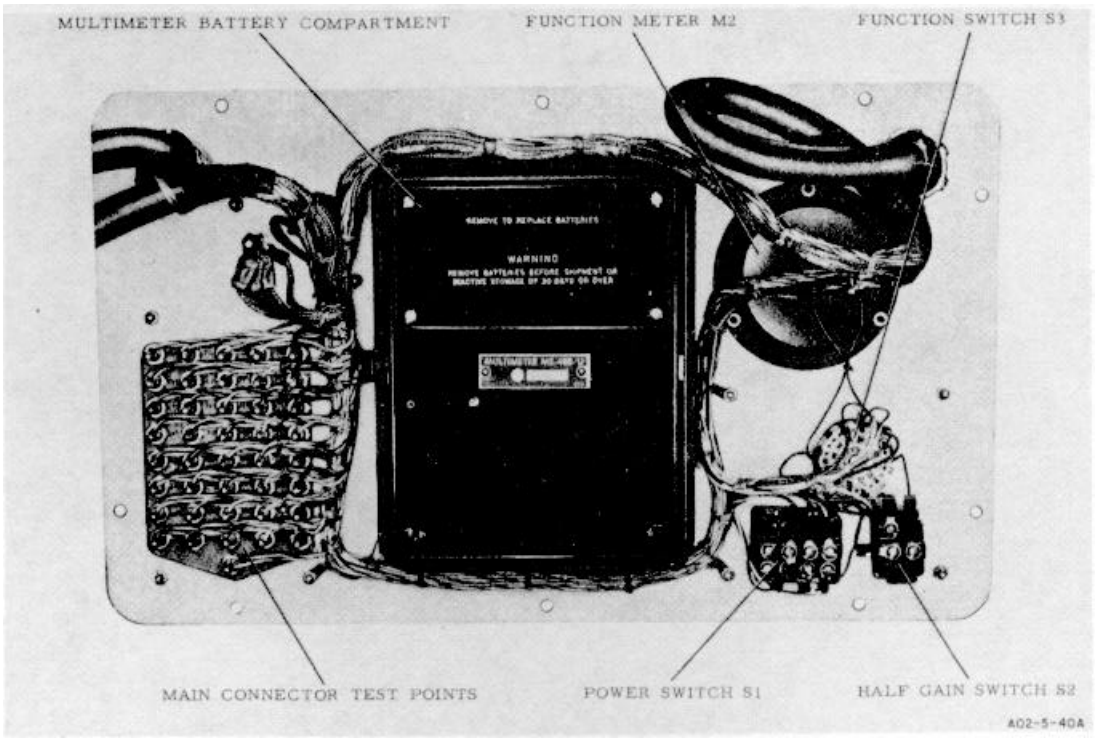


Figure 3-1. Rear View of Panel and Multimeter

f. Carefully place the panel in the case and install the 12 attaching screws.

3-3. STORAGE. The test set requires no special preparation for storage other than the removal of the multimeter batteries if storage is to exceed 30 days. Remove the batteries from the multimeter in the manner directed in paragraph 3-4.

3-4. PREPARATION FOR SHIPMENT. To prepare the test set for shipment, proceed as follows:

a. Remove the 12 screws that secure the top panel and lift the panel from the case.

b. Place the panel face down on material that will not damage the components or the panel.

c. Remove the four screws and the battery compartment cover from the multimeter.

d. Remove both batteries from the multimeter.

e. Replace the battery compartment cover and the four attaching screws.

f. Check that all connections are tight and that all components are securely mounted.

g. Carefully place the panel in the case and install the 12 attaching screws.

h. Check that the two adapter cables, the three test leads, the two alligator clips, and the telephone plug are properly stowed in the canvas bag behind the hinged panel.

i. Check that the two interconnecting cables, the multimeter handbook, and the operating instructions are properly stowed in the cover.

j. Close the cover of the test set and secure the latches.

k. Pack the test set in a standard shipping container. Use shock resistant material to fill voids between the container and the test set.

SECTION IV

OPERATION INSTRUCTIONS

4-1. GENERAL.

4-2. SCOPE. This section provides instructions for operation of the test set with each of the automatic flight control systems.

4-3. CONTROLS, INDICATORS, AND RECEPTACLES. The front panel controls, indicators, and receptacles used during operation of the test set are listed in table 4-1. The front panel of the test set is shown in figure 4-1. Reference designations relate these components to the schematic diagram in figure 1-3. The numbers in parentheses key the components to figure 4-1.

4-4. OPERATING PRECAUTIONS. The only operating precaution is to ensure that helicopter electrical power is off and that the test set POWER switch is OFF while connecting or disconnecting the test set to the system under test.

4-5. OPERATING PROCEDURES.

4-6. PREPARATION FOR TESTS. Prepare the test set for use as follows:

a. Check that helicopter power and test set POWER switch S1 is OFF.

b. If batteries are not installed, proceed as directed in paragraph 3-2.

c. Release the turnlock fasteners and open the hinged door in the cover.

d. Loosen the four straps and uncoil the cables from the cover.

e. Remove the meter test leads from the canvas bag on the rear of the hinged door.

4-7. ASE TESTING PROCEDURE.
Not applicable to CH-47 helicopters. For H-46 helicopters refer to NAVAIR 17-15C-93.

4-8. SPEED TRIM SYSTEM TESTING PROCEDURE. Test a speed trim system installation as follows:

a. Prepare the test set as directed in paragraphs 4-4 and 4-6.

b. Disconnect the cable connector from the speed trim amplifier.

c. Connect P2 (left-hand test set cable plug) to the receptacle on the speed trim amplifier; connect P1 (right-hand test set cable plug) to the helicopter cable connector for the speed trim amplifier.

d. Check that the SPEED TRIM switch on the helicopter pedestal is at AUTO.

e. Turn FUNCTION switch S3 to SPEED TRIM & ASE.

f. Operate POWER switch S1 to ON.

g. Refer to the voltages in table 4-II.

NOTE

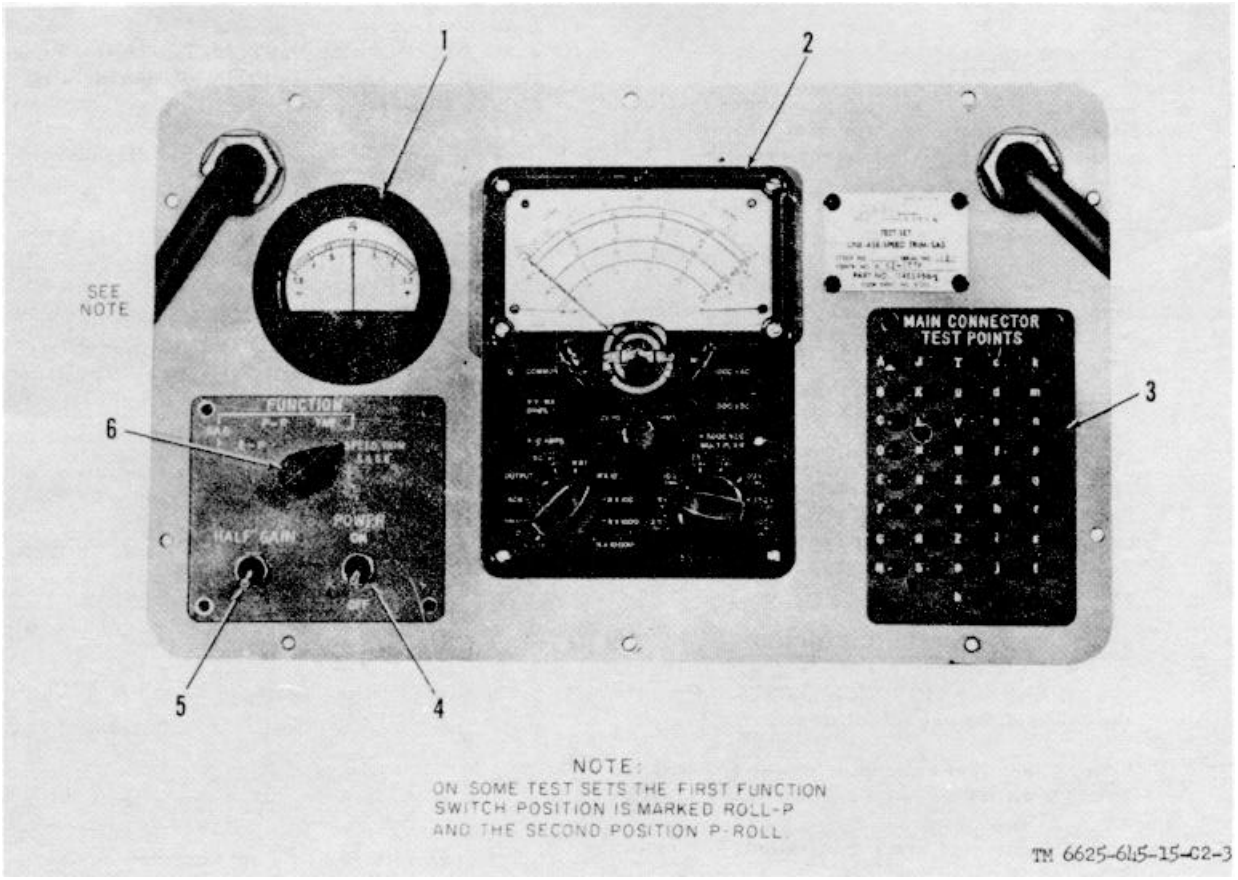
Signal voltages are not included in the table. Obtain these voltages from TM 11-1520-209-20.

h. Adjust the multimeter to the polarity and level of the voltage to be measured and connect the multimeter test leads to the MAIN CONNECTOR TEST POINTS.

NOTE

Unless otherwise specified, all voltages are measured to ground (test point C). Yaw (sideslip) input voltages are measured with Electronic Multimeter ME6D/U (vtvm) or ME-30(*)/U.

i. Disconnect the test set as directed in paragraph 4-10.



1. Function meter
2. Multimeter
3. Main connector test points
4. Power switch
5. Half gain switch
6. Function switch

Figure 4-1. Test Set, Stabilization System, Flight Line TS-1893/ASM, controls and indicators.

Table 4-1. Panel Components and Functions

Component	Function
POWER switch S1(4)	At ON, it connects operating voltages to the amplifier or circuit box of the system under test.
HALF GAIN switch S2(5)	At HALF GAIN, it supplies operating voltage and a ground return for the SAS amplifier gain-control relay.
FUNCTION switch S3(6)	Connects FUNCTION meter M2 in parallel with the torque motor (solenoid) windings of the selected SAS extensible link for SAS tests and disconnects FUNCTION meter M1 and switch S2 for speed trim and ASE tests. SAS amplifier channels are connected as follows: R-P or ROLL-P--connects the output of the CH-47 ~~SAS roll channel to meter M2 for CH-46A, UH-46A, and 107 helicopters, or it connects the output of the~~ SAS pitch channel to meter M2. ~~for CH-47A helicopters.~~ P-R or P-ROLL--connects the output of the CH-47 ~~SAS pitch channel to meter M2 for CH-46A, UH-46A, and 107 helicopters, or it connects the output of the~~ SAS roll channel to meter M2. ~~for CH-47A helicopters.~~ YAW--Connects the output of the SAS yaw channel to meter M2.
FUNCTION Switch S3(6) (Continued)	SPEED TRIM & ASE--disconnects FUNCTION meter M2 and half-gain switch S2 from the test circuit.
FUNCTION meter M2(1)	Zero-center voltmeter calibrated 1.5-0-1.5; indicates the output of the pitch, roll, or yaw channel of the SAS amplifier.
Multimeter M1(2)	Permits voltage and resistance measurements at main connector test points.
MAIN CONNECTOR TEST POINTS J1 through J41(3)	Forty-one jacks (40 red; 1 black) with markings corresponding to the connector pins of the amplifier or circuit box of the system under test.

4-9. SAS TESTING PROCEDURE. Test the SAS as follows:

a. Prepare the test set as directed in paragraphs 4-4 and 4-6.

b. Disconnect the cable connector from the SAS amplifier.

c. Connect P2 (left-hand test set cable plug) to the receptacle on the SAS amplifier; connect P1 (right-hand test set cable plug) to the helicopter cable connector for the SAS amplifier.

d. Check that the SAS switch on the overhead panel of the helicopter is at the on position for the system being checked. Check that the EMER SAS REL switch on the console is at ENGAGE.

e. Turn FUNCTION switch S3 to the channel to be tested.

f. Turn the selector switch on the SAS amplifier to the corresponding channel.

g. Operate POWER switch S1 to ON.

h. Operate the L-R switch on the SAS amplifier to L and to R and check for a maximum of 0.5 volt on FUNCTION meter M2..

i. Operate HALF GAIN switch S2, operate the L-R switch on the SAS amplifier to L and to R, and check that the indicated voltage is one half that obtained in step h.

j. Refer to the voltages in Table 4-III.

NOTE

Signal voltages are not included in the tables. Obtain these voltages from the TM 11-1520-209-20. Unless otherwise specified, all voltages are measured to ground (test point C). Yaw output and excitation voltages are measured with Electronic Multimeter ME-6D/U or ME-30(*)/U.

k. Adjust the multimeter to the polarity and level of the voltage to be measured and connect the multimeter test leads to the MAIN CONNECTOR TEST POINTS as required.

l. Stop and disconnect the test set as directed in paragraph 4-10.

4-10. STOPPING PROCEDURE. Stop and disconnect the test set as follows:

a. Turn off helicopter electrical power.

b. Operate POWER switch S1 to OFF.

c. Disconnect the test cables and stow them behind the hinged door.

d. Stow the multimeter test leads and the adapter cables in the canvas bag. Secure the door with the turnlock fasteners.

e. Secure the instruction pages under the retainer; close and secure the lid of the test set.

Table 4-II. Speed Trim Amplifier Connector Voltages

Test Point	Function	Channel	Voltage
B	Ac power input	All	115 vac
C	Ground		0
D	Trim wheel common	Stick trim	0
E	Trim wheel position voltage		
F	Trim wheel excitation		
G	Extend power		
H	Retract power		
J	Ground		0
K	Feedback resistor common		0
L	Feedback resistor excitation		
M	Actuator position (feedback)		
N	Yaw (side slip) input signal in CH-47 with amplifiers 114E2186-16, -19, -23, and -26 Not used in CH-47 with amplifier 114E2186-30	(Measure to P) Side slip	
P	Yaw (sideslip) input signal in CH-47 with amplifiers 114E2186-16, -19, -23, and -26 Pitch signal input in CH-47 with amplifier 114E2186-30	(Measure to N) Sideslip (Measure to R) Speed trim	
R	Output to yaw indicator in CH-47 with amplifiers 114E2186-16, -19, -23, and -26 Pitch signal input in CH-47 with amplifier 114E2186-30	(Measure to S) Sideslip (Measure to P) Speed trim	
S	Output to yaw indicator in CH-47 with amplifiers 114E2186-16, -19, -23, and -26 Not used in CH-47 with amplifier 114E2186-30	(Measure to R) Sideslip	
T	Output to forward trim indicator	Fwd cyclic	
U	Output to aft trim indicator	Aft cyclic	
V	Not used in CH-47 with amplifiers 114E2186-16, -19, -23, and -26 Mode control in CH-47 with amplifier 114E2186-30	Speed trim	0 or 28 vdc
W	Not used in CH-47 with amplifier 114E2186-16, -19, -23, and -26 Mode control in CH-47 with amplifier 114E2186-30		0 or 28 vdc
X	Airspeed preamplifier output	All except stick trim	
Z	Not used in CH-47 with amplifiers 114E2186-16, -19, -23, and -26.		
a	Pitch signal input in CH-47 with amplifier 114E2186-30 Extend power	Speed trim	
b	Retract power		
c	Ground		0
d	Feedback resistor common	Speed trim	0
e	Feedback resistor excitation		
f	Actuator position (feedback) voltage		
g	Retract power		
h	Extend power		
i	Ground		0
j	Feedback resistor common	Aft	0
k	Feedback resistor excitation		
m	Actuator position (feedback) voltage		

Test Point	Function	Channel	Voltage
n	Retract power		
p	Extend power		
q	Ground		0
r	Feedback resistor common	Fwd cyclic	0
s	Feedback resistor excitation		
t	Actuator position (feedback) voltage		

Table 4-III. SAS Amplifier Connector Voltages

Test Point	Function	Channel	Voltage
A	Power input		28 vdc
B	Power output in CH-47 with amplifiers 114E3030-40, -42, -43, and -47 (not used)		26 vac
	Pitch gain control in CH-47 with amplifier 114E3030-49		0 or 0.5 vdc [d]
C	Ground		0
D	Gain control interlock to other SAS amplifier	All	28 vdc
E	SAS caution light		
F	Gain control interlock from other SAS amplifier		28 vdc
G	Gain control relay ground		
H	Output voltage		
J	Output voltage		
K	Output voltage		
L	Secondary cancellation voltage	Yaw	
M	Primary excitation voltage	(Measure to P)	2.5 vac
N	Primary cancellation voltage		
P	Primary excitation voltage	(Measure to M)	2.5 vac
R	Output voltage		
S	Output voltage		
T	Output voltage		
U	Secondary cancellation voltage	Roll	
V	Primary excitation voltage	(Measure to X)	2.5 vac
W	Primary cancellation voltage		
X	Primary excitation voltage	(Measure to V)	2.5 vac
Y	Output voltage		
Z	Output voltage		
a	Output voltage		
b	Secondary cancellation voltage		
c	Primary excitation voltage	(Measure to e) Pitch	2.5 vac
d	Primary cancellation voltage		
e	Primary excitation voltage	(Measure to c)	2.5 vac
f	Excitation voltage or roll signal input [a]		
g	Sideslip signal [b]		
h	Cancellation voltage or roll signal input [c]		
i	Power	All	115 vac
j	Excitation voltage of roll signal input [a]		

See footnotes at end of table.

Test Point	Function	Channel	Voltage
k	Secondary excitation voltage	(Measure to q) All Channels	2.5 vac
m	Gyromotor winding RG2	Roll	26 vac
n	Gyromotor winding RG2		
p	Power	All	26 vac
q	Secondary excitation voltage	(Measure to k)	2.5 vac
r	Gyromotor winding RG1		
s	Gyromotor winding RG1	Pitch	26 vac
t	Sideslip signal [b]		

[a] Excitation voltage for pedal position variable resistor in CH-47 with amplifiers 114E3030-40 and -42. Not used in CH-47 with amplifiers 114E3030-43 and -47. Roll signal input in CH-47 with amplifiers 114E3030-49.

[b] Sideslip signal in CH-47 with amplifiers 114E3030-40, -42, 43, and -47. Not used in CH-47 with amplifiers 114E3030-49.

[c] Cancellation voltage from pedal position variable resistor in CH-47 with amplifiers 114E3030-40 and -42. Not used in CH-47 with amplifiers 114E3030-43 and -47. Roll signal input in CH-47 with amplifiers 114E3030-49.

[d] Pitch gain control is approximately 0.5 vdc when helicopter is on the ground, 0 vdc when helicopter is in the air.

(Next printed page is 27)

SECTION V

PERIODIC INSPECTION, MAINTENANCE, AND LUBRICATION

5-1. Scope of Maintenance. The maintenance duties assigned to the operator of the equipment are listed below together with a reference to the paragraphs covering the specific maintenance functions.

5-1.1.. Daily preventive maintenance checks and services are covered in paragraph 5-2.4.

5-1.2. Weekly preventive maintenance checks and services are covered in paragraph 5-2.5.

5-1.3. Quarterly preventive maintenance checks and services are covered in paragraph 5-2.6.

5-1.4. Cleaning procedures are covered in paragraph 5-2.7.

5-1.5. Touchup painting information is covered in paragraph 5-2.11.

5-2. 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.

5-2.1. Systematic Care. The procedures given in paragraphs 5-2.4 through 5-2.10 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

5-2.2. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (par 5-2.4, 5-2.5 and 5-2.6) outline the functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat-serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check, and what the normal conditions are; the References column lists the illustrations, paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by performing the corrective actions listed, higher echelon maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

5-2.3. Preventive Maintenance Checks and Services Periods. Preventive maintenance checks and services of the equipment are required daily, weekly, monthly, and quarterly.

5-2.3.1. Paragraph 5-2.4 specifies the checks and services that must be accomplished daily (or at least once each week if the equipment is maintained in a standby condition).

5-2.3.2. Paragraphs 5-2.5 and 5-2.6 specify additional checks and services that must be performed on a weekly and quarterly basis, respectively.

5-2.4 Daily Preventive Maintenance Checks and Services Chart.

Sequence No.	Items to be inspected	Procedure	References
1	Completeness.....	Check the completeness of the equipment.	Section X, figure 1-1
2	Exterior surfaces.....	Clean the exterior surfaces, including the front panel of the test set and meter glass. Check meter glass for cracks.	Paragraph 5-2.7
3	Cable assemblies.....	Check the cable assemblies for tightness of mounting to front panel and tightness of connectors.	Figure 1-2
4	Cable assembly adapters.....	Check the adapters to insure that they are free from dirt and moisture.	Paragraph 5-2.7. figure 1-1
5	Test leads.....	Check the meter test leads for general condition of the probes.	None
6	Controls and indicators.....	While making operational checks (7 below), observe that the mechanical action of each knob and switch is smooth and free from internal and external binding, and that there is no excessive looseness. Check meters for sticking and bent pointers.	
7	Operation.....	During normal operation of the equipment, check meters for proper zero adjustments and meter balance.	Paragraph 5-4 and NAVSHIPS 92051.

5-2.5. Weekly Preventive Maintenance Checks and Services Chart.

Sequence No.	Items to be Inspected	Procedure	References
1	Exterior surfaces.....	Inspect exposed metal surfaces for rust and corrosion. Touchup paint as required.	Paragraph 5-2.11
2	Cable assemblies.....	Inspect cables and test leads for cracked, chafed, or frayed insulation. Inspect connectors for damage or defects; replace or repair as necessary.	
3	Canvas items.....	Inspect canvas carrying bag for deterioration and fungus growth. Inspect for tears, repair as indicated in TM 10-269, replace deteriorated items, and wash fungus covered items with mild soap and water and dry completely.	TM 10-269
4	Batteries.....	Check ME-48B/U battery compartment for corrosion and leaky batteries. Clean compartment and replace batteries as necessary.	TM 11-6625-816-15
5	MAIN CONNECTOR TEST POINTS jacks.....	Inspect jacks for snug fit and good contact.	None

5-2.6. Quarterly Preventive Maintenance Checks and Services Chart.

Sequence No.	Items to be Inspected	Procedure	Reference
1	Completeness.....	See that all publications are complete, serviceable and current.	DA Pam 310-4.
2	Operation.....	Every other quarter (semiannual) schedule the ME-488/U for calibration.	TM 11-6625-816-15
3	Modifications.....	Check DA Pan 310-7 to deter- existance of applicable MWO's. Check the equipment to determine if MWO's have been performed. All URGENT MWO's must be applied immediately, NORMAL MWO's must be scheduled.	TM 38-750, DA Pam 310-7

5-2.7. CLEANING. Inspect the exterior of the equipment. The exterior surfaces should be free of dust, dirt, grease, and fungus. Remove dust and loose dirt with a clean soft cloth.

Warning: Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation; do not use near a flame.

5-2.8. Remove grease, fungus, and ground-in dirt from the equipment using a cloth dampened with (not wet) Cleaning Compound (Federal stock No. 7930-395-9542).

5-2.9. Remove dust and dirt from plugs and Jacks with a soft brush.

Caution: Do not press on the meter face (glass) when cleaning; the meter may become damaged.

5-2.10. Clean the front panel, meters, and control knobs and switches; use a soft clean cloth. If necessary, dampen the cloth with water; mild soap may be used for more effective cleaning.

5-2.11. TOUCHUP PAINTING. 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 TM 9-213.

5-3. LUBRICATION. No lubrication is required.

5-4. ADJUSTMENTS. Meters M1 and M2 should indicate zero when not connected in a circuit. Each meter has a zero-adjustment screw on the front. Using a small screwdriver, turn the zero-adjustment screw until the meter pointer indicates zero.

SECTION VI

TROUBLESHOOTING PROCEDURES

6-1. TROUBLESHOOTING PROCEDURES. If it is determined that the multimeter is faulty, refer to Instruction Book for Multimeter AN/PSM-4A and AN/PSM-4B, NAVSHIPS 92051, for troubleshooting and repair procedures. To troubleshoot the test set, connect the two adapter cables to the test set cables and check continuity of the test set circuit using the schematic diagram, figure 1-3 and the wiring diagram, figure 6-1 as an aid.

NOTE

Schematic diagrams of the two adapter cables are not provided. The wiring is direct from each pin of the receptacle to the corresponding pin of the plug.

6-2. COMPONENT REPLACEMENT. (Refer to figure 9-1.)

NOTE

With the exception of the multimeter, no special procedures are required to replace components of the test set.

6-3. To replace the multimeter, proceed as follows:

a. Removal.

(1) Remove the 12 screws that secure the test set panel, lift the panel from the case, and place it face up on a material that will not damage components.

(2) Remove the six attaching screws from the multimeter front panel. Retain the screws.

NOTE

The six screws are longer than those used in a standard Multimeter ME48B/U.

(3) With protective material on the test set panel, remove the multimeter front panel and place it face down on the test set panel.

(4) Identify and disconnect the multimeter battery wires from the terminals on the battery compartment.

(5) Remove the multimeter front panel and case from the test set, reconnect the battery wires, and reassemble the multimeter front panel to its case using six attaching screws. Use four screws AN500-8-12 and two screws AN500-8-6 or use the screws from the replacement multimeter.

(6) If a replacement multimeter is to be installed, transfer its handle to the multimeter which was removed.

b. Installation.

(1) Remove the six screws from the multimeter panel, remove the panel, and identify and disconnect the battery compartment wires.

(2) With protective. material on the test set front panel, position the multimeter case behind the test set front panel and position the multimeter panel face down on the test set panel.

(3) Reconnect the battery compartment wires to their respective terminals, position the multimeter panel on the test set front panel, and install the six attaching screws.

NOTES

1. WIRE ROUTING AND IDENTIFICATION INFORMATION IS INTERPRETED AS FOLLOWS:
   - A. THE NUMBER ADJACENT TO THE BASE LINE IDENTIFIES THE STATION TO WHICH THE WIRE RUNS.
   - B. THE NUMBER PRECEEDING THE DASH INICATES THE WIRE COLOR:

0 -	BLACK	5 -	GREEN
1 -	BROWN	6 -	BLUE
2 -	RED	7 -	VIOLET
3 -	ORANGE	8 -	GRAY
4 -	YELLOW	9 -	WHITE

   - C. THE NUMBER OR LETTER WHICH FOLLOWS THE DASH IDENTIFIES THE TERMINAL AT THE DESTINATION.
2. ALL WIRING IS NUMBER 22 PLASTIC-COVERED STRANDED COPPER.
3. (S) PRECEEDING THE WIRE COLOR CODE INDICATES SHIELDED WIRE.

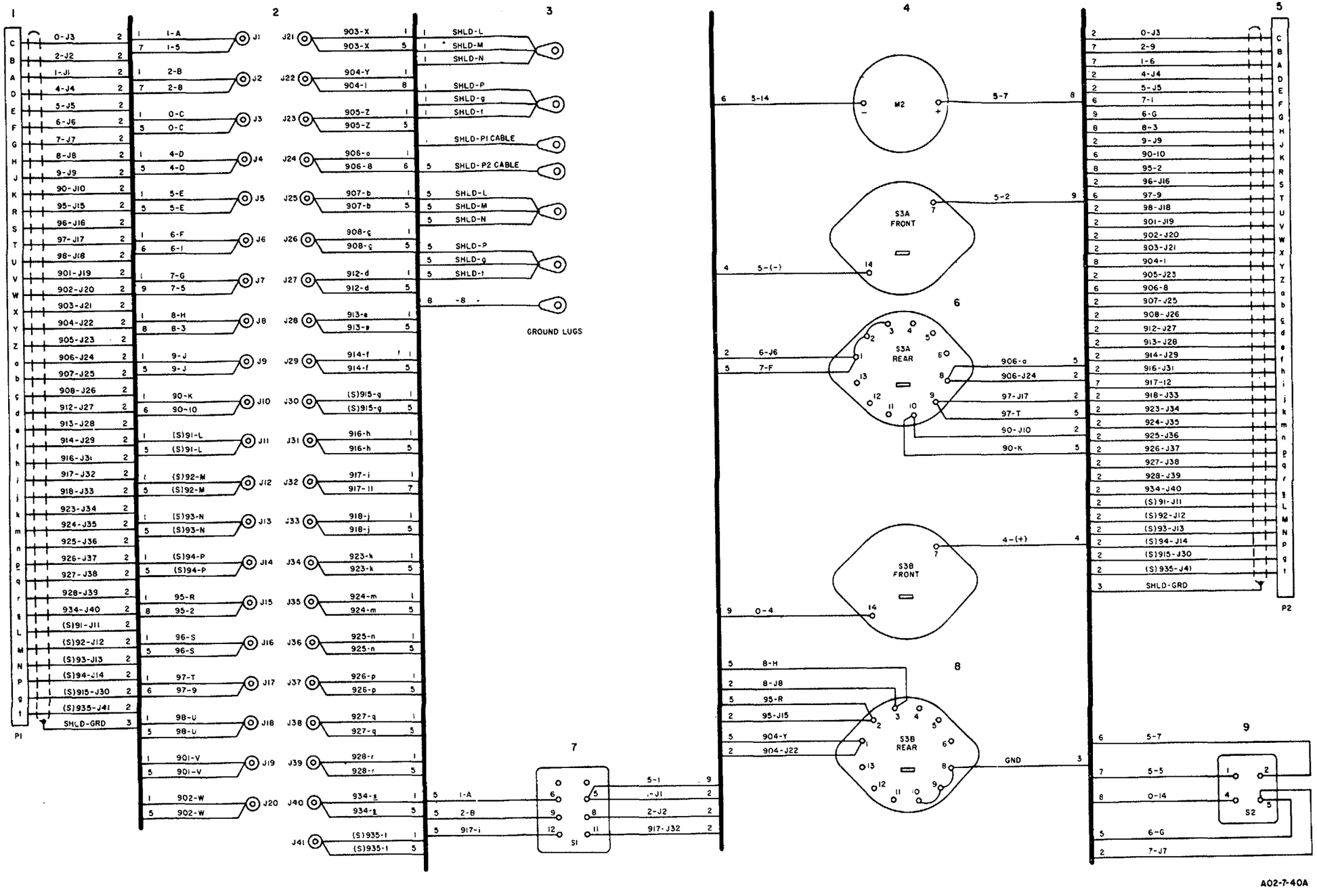


Figure 6-1. ASE-Speed Trim-SAS Line Test Set Wiring Diagram.

SECTION VII

DEPOT INSPECTION STANDARDS

7-1. APPLICABILITY OF DEPOT INSPECTION STANDARDS. The tests outlined in this section are designed to measure the capability of a repaired equipment. Equipment that is to be returned to stock should meet the standards given in these tests.

7-1.1. APPLICABLE REFERENCES.

7-1.2. REPAIR STANDARDS. Applicable procedures of the depots performing these tests and the general standards for repaired electronic equipment given in TB SIG 355-1, TB SIG 355-2, and TB SIG 355-3 form a part of the requirements for testing this equipment.

7-1.3. TECHNICAL PUBLICATIONS. The technical publications, in addition to this manual, applicable to the TS-1893/ASM to be tested is limited to TM 11-6625-816-15.

7-1.4. MODIFICATION WORK ORDERS. Perform all modification work orders applicable to the TS-1893/ASM before making the tests specified. DA Pam 310-7 lists all available MWO's.

7-1.5. TEST FACILITIES REQUIRED. The only facility required to perform the following tests is a 1.5-volt dc ± 1% power source for calibration of the ME-48B/U TM 11-6625-816-15. Do not attempt the following tests before the ME-48B/U has been calibrated.

7-1.6. CALIBRATION PROCEDURES. To calibrate the multimeter refer to Instruction Book for Multimeter AN/PSM-4A and AN/PSM-4B, TM 116625-816-15 Verify calibration of meter M2 as directed in paragraph 7-2.c(2).

7-2. TEST PROCEDURES. If the test set multimeter is properly calibrated and functioning normally, it can be used to perform the test set test procedures. Proceed as follows:

a. Continuity Check.

(1) Connect one of the adapter cables to each of the test set cables.

(2) Place POWER switch S1 ON and FUNCTION switch S3 at SPEED TRIM & A.S.E.

(3) Check for continuity between all 41 pins of both adapter cables and the corresponding MAIN CONNECTOR TEST POINTS jacks.

(4) Place the POWER switch OFF and check for infinite resistance between pins A, B, and i of the two adapter cables. Place the POWER switch ON.

(5) Press and hold the HALF GAIN switch. Check for continuity between test jacks A and F with the FUNCTION switch at R-P(ROLL-P), P-R (P-ROLL) and YAW. Check for infinite resistance between test jacks A and F with the HALF GAIN switch released or with the FUNCTION switch at SPEED TRIM & A.S.E.

(6) Repeat step (5) above for test jacks C and G.

b. Short Circuit Test.

(1) Prepare the test as directed in steps a.(1) and (2).

(2) Check that the resistance between test jack A and all other test jacks exceeds 1 megohm.

(3) In sequence, repeat the test on the remaining 40 test jacks.

c. Metering Circuit Test.

(1) Turn the FUNCTION switch to R-P (ROLL- P).

(2) Apply 1.5-volt dc ±1% between test jacks a (negative) and Y. Check that test set meter M2 indicates +1.5 volts ±0.3.

(3) Reverse the voltage connections and check that the meter indicates -1.5 volts ±0.3.

(4) Turn the FUNCTION switch to P-R (P-ROLL) and repeat steps (2) and (3) above between test jacks T(negative) and R.

(5) Turn the FUNCTION switch to YAW and repeat steps (2) and (3) above between test jacks K (negative) and H.

d. Disconnect and stow the adapter cables and close the test set.

APPENDIX I

REFERENCES

Following is a list of references applicable and available to the operator and repairman of the TS-1893/ASM.

DA Pam 3104	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TB SIG 355-1	Depot Inspection Standard for Repaired Signal Equipment.
TB SIG 355-2	Depot Inspection Standard for Refinishing Repaired Signal Equipment.
TB SIG 355-3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment.
TM 9-213	Painting Instructions for Field Use.
TM 10-269	General Repair for Canvas and Webbing.
TM 11-1520-209-20	Organizational Maintenance Manual, Electronic Equipment Configurations, Army Model CH-47A, CH-47B and CH-47C Helicopters.
TM 11-6625320-12	organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic ME-30B/U, ME-30C/U, and ME-30E/U.
TM 11-6625-816-15 (Authenticated NAVSHIPS 92051)	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Multimeters AN/PSM-4A and AN/PSM-4B.
TM 38-750	The Army Maintenance Management System (TAMMS)
TM 55-1520-209-20	Organizational Maintenance Manual: Army Model CH-47A Helicopter.
TM 55-1520-227-20	Organizational Maintenance Manual: Army Models CH-47B and CH-47C Helicopters.

(Next printed page is 43)

APPENDIX III
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A3-1. General.

This appendix provides a summary of the maintenance operations for TS-1893/ASM. 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.

A3-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons 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.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system. This function does not include the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. That maintenance effort (service/ action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

A3-3. Column Entries.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated

category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support
D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

A3-4. Tool and Test Equipment Requirements (Sec III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

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

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

A3-5. Remarks (Sec IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II. MAINTENANCE ALLOCATION CHART
FOR
TEST SET, STABILIZATION SYSTEM, FLIGHT LINE TS-1893/ASM

(1)	(2)	(3)	(4)					(5)	(6)
GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY C	O	F	H	D	TOOLS AND EQUIPMENT	REMARKS
00	TEST SET, STABILIZATION SYSTEM, FLIGHT LINE TS-1893/ASM (Vertol P/N 114E5986-3) (See TM 11-6625-645-15, -24P)(Operating Instructions 55E500-2 1 Apr 69)(77272)	Inspect		0.2					
		Service		0.2				4	
		Replace		0.3				1, 4	
		Repair				2.0		2, 3	
01	Multimeter ME-48B/U P/0 AN/PSM-4B See MAC in TM 11-6625-816-15)(77272)	Inspect		0.2					
		Service		0.2				4	
		Replace		0.3				1, 4	
02	Adapter Cable Assembly 10-359137-1 (77820)	Inspect		0.2					
		Replace		0.2				1, 4	
03	Adapter Cable Assembly 10-359138-1(77820)	Inspect		0.2					
		Replace		0.2				1, 4	
04	Red Test Lead CX-2353/PSM-4A (77272)	Inspect		0.2					
		Replace		0.2				1, 4	
		Repair				1.0		2, 3	
05	Black Test Lead CX-2354/PSM-4A (77272)	Inspect		0.2					
		Replace		0.2				1, 4	
		Repair				1.0		2, 3	
06	High Voltage Test Lead CX-2355/PSM-4A (77272)	Inspect		0.2					
		Replace		0.2				1, 4	
		Repair				1.0		2, 3	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TEST SET, STABILIZATION SYSTEM, FLIGHT LINE TS-1893/ASM

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	O, H, D	MULTIMETER AN/USM-223	6625-00-999-7465	
2	H, D	TEST SET TS-682/GSM-1	6625-00-669-0747	
3	H, D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	518-00-605-0079	
4	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	

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1 OCT 74 6013

APPENDIX IV

ILLUSTRATED PARTS BREAKDOWN

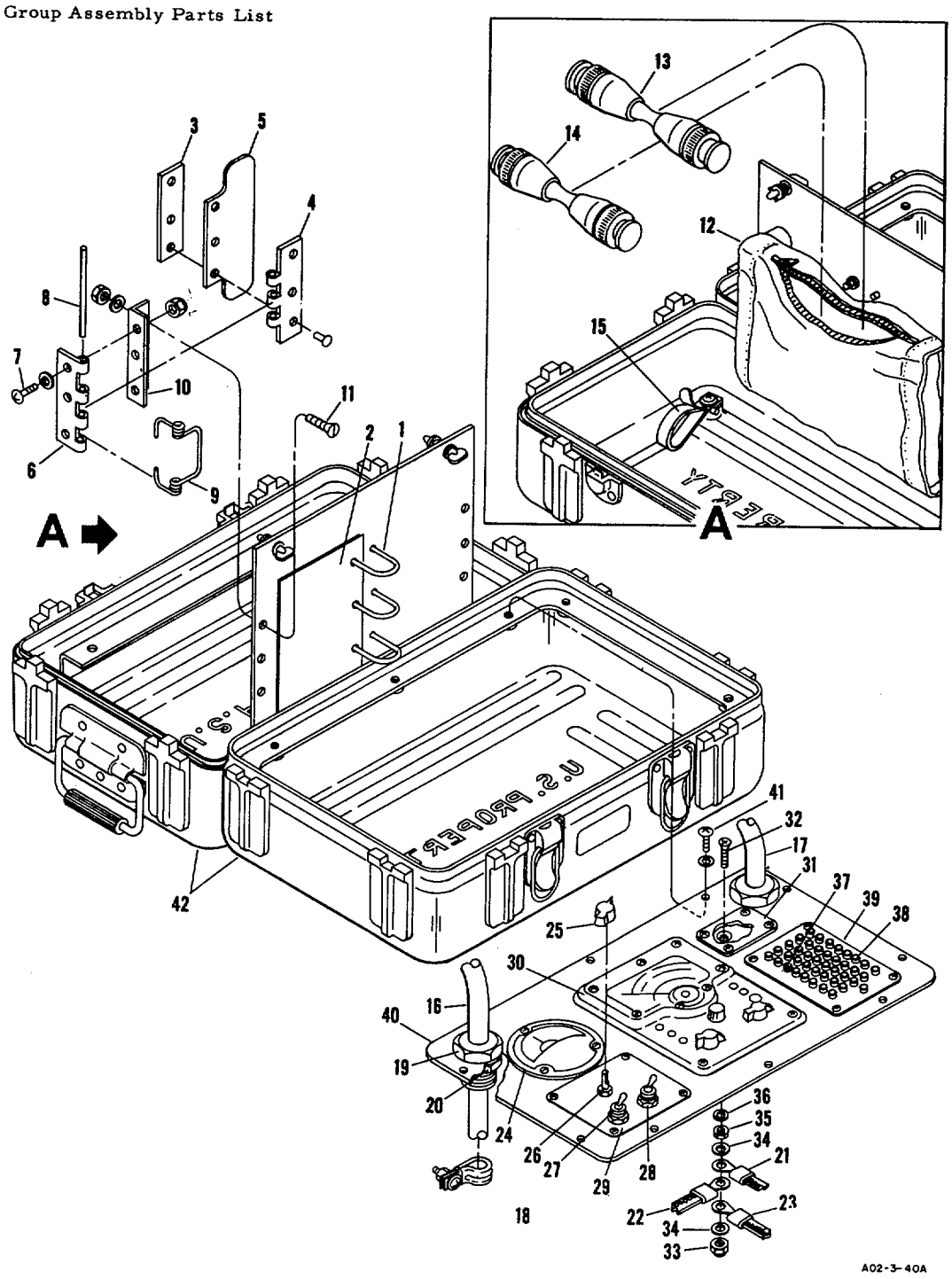

FIGURE 9-1. SAS, ASE, AND S/T LINE TEST SET, EXPLODED VIEW 47

Group Assembly Parts List

ITEM NUMBER	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	QTY PER ASSY	USABLE ON CODE
9-1		TEST SET, ASE, SPEED TRIM, AND.....	1	
		SAS LINE		
- 1		. CLIP ASSY	3	
		ATTACHING PARTS		
		. NUT	1	
		----X----		
- 2		. MANUAL, TECHNICAL, OPERATING	1	
		INSTRUCTIONS(77272)		
		. RETAINER ASSY	1	
		. . RIVET.....	3	
- 3		. . PLATE.....	1	
- 4		. . HINGE, HALF	1	
- 5		. . RETAINER	1	
- 6		. HINGE, HALF	1	
		ATTACHING PARTS		
- 7		. SCREW	3	
		. NUT	3	
		. WASHER.....	3	
		----X----		
- 8		. PIN, HINGE	1	
- 9		. SPRING.....	10	
- 10		. ANGLE, HINGE	1	
		ATTACHING PARTS		
- 11		. SCREW	3	
		. NUT	3	
		. WASHER	3	
		----X----		
- 12		. BAG ASSY	1	
		ATTACHING PARTS		
		. SCREW	4	
		. WASHER.....	4	
		. WASHER, LOCK	4	
		----X----		
- 13		. CABLE ASSY	1	
- 14		. CABLE ASSY	1	
- 15		. CLAMP, HARNESS(78553)	4	
		ATTACHING PARTS		
		. SCREW	1	
		. WASHER.....		
		. WASHER, LOCK	1	
		----X----		
- 16		. CABLE ASSY.....	1	
- 17		. CABLE ASSY.....	1	
- 18		. CLAMP	2	
- 19		. NIPPLE(59730)	2	
- 20		. LOCKNUT(59730)	2	
		. HARNESS ASSY, WIRE	1	
- 21		. . TERMINAL, LUG(09769)	1	
- 22		. . TERMINAL, LUG(09769)	4	
- 23		. . TERMINAL, LUG(09769)	2	
		. TY-RAP(597301.....	6	
- 24		. METER.....	1	
		. SETSCREW	2	
- 25		. KNOB	1	
- 26		. SWITCH, ROTARY.....	1	
- 27		. SWITCH, DOUBLE-POLE.....	1	

Group Assembly Parts List

ITEM NUMBER	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	QTY PER ASSY	USABLE ON CODE
9-1 28		. SWITCH, FOUR-POLE	1	
29		. PLATE, INSTRUCTION	1	
		ATTACHING PARTS		
		. SCREW	4	
		. NUT	4	
		. WASHER	4	
		----X----		
- 30		. METER (55026)	1	
		ATTACHING PARTS		
		. SCREW	2	
		. SCREW	4	
		----X----		
		. PLATE, IDENTIFICATION	1	
- 31		. ATTACHING PARTS		
		. SCREW	4	
		. NUT	4	
		. WASHER	4	
		----X----		
- 32		. SCREW	2	
- 33		. NUT	2	
- 34		. WASHER	4	
- 35		. NUT	2	
- 36		. WASHER, LOCK	2	
- 37		. JACK, BLACK TEST	1	
- 38		. JACK, RED TEST	40	
- 39		. PLATE, INSTRUCTION	1	
		ATTACHING PARTS		
		. SCREW	4	
		. NUT	4	
		. WASHER	4	
		----X----		
- 40		. PANEL	1	
		ATTACHING PARTS		
- 41		. SCREW	12	
		. WASHER	12	
		----X----		
- 42		. CASE ASSY(94637) (VERTQL SPEC CONT DWG A02VS305-1)	1	

GLOSSARY

The following abbreviations are used in this manual.

ASE	Automatic Stabilization System
ASSY	Assembly
ATS	Actuator stop
CONT	Control
DWG	Drawing
SAS	Stability Augmentation System
SPEC	Specification

By Order of the Secretary of the Army

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

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