TM 55-4920-231-14

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DS, AND GS
MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LISTS

TESTER, PITOT AND STATIC SYSTEMS

PART NUMBER REIC 340000

(NSN 4920-475-7161)

HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, D. C.

JULY 1969

WARNING

PRECAUTIONARY DATA

Personnel performing instructions involving operations, procedures, and practices which are included or implied in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury, death, or an aborted mission.

CONNECTIONS.

Secure all connections to prevent leakage or loosening due to vibration. Remove sleeve from pitot tube and secure all connections to prevent leakage or loosening due to vibration.

CHANGE
No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 January 1992

Operator's, Organizational, DS, and GS Maintenance Manual
Including Repair Parts and Special Tools Lists

TESTER, PITOT AND STATIC SYSTEMS
PART NUMBER REIC 340000
(NSN 4920-00-475-7161)

TM 55-4920-231-14,15 July 1969, is changed as follows:

Page 9, Figure 7 is superseded as follows.

Page 12, delete paragraphs 27 and 28 and add the following note:

NOTE

Fuel pressure indicator and manifold pressure indicator gages are no longer required in testing aircraft components. Remove indicators, cap off airlines, stow electrical connectors and install cover plates over existing holes.

Page 19, delete paragraphs 39d. and 39e.

Page 20, delete paragraph 39f.

Page 24, delete paragraph 43.

Page 25, delete pargraph 44 and figures 16 and 17.

Page 38, delete paragraphs 68 and 69.

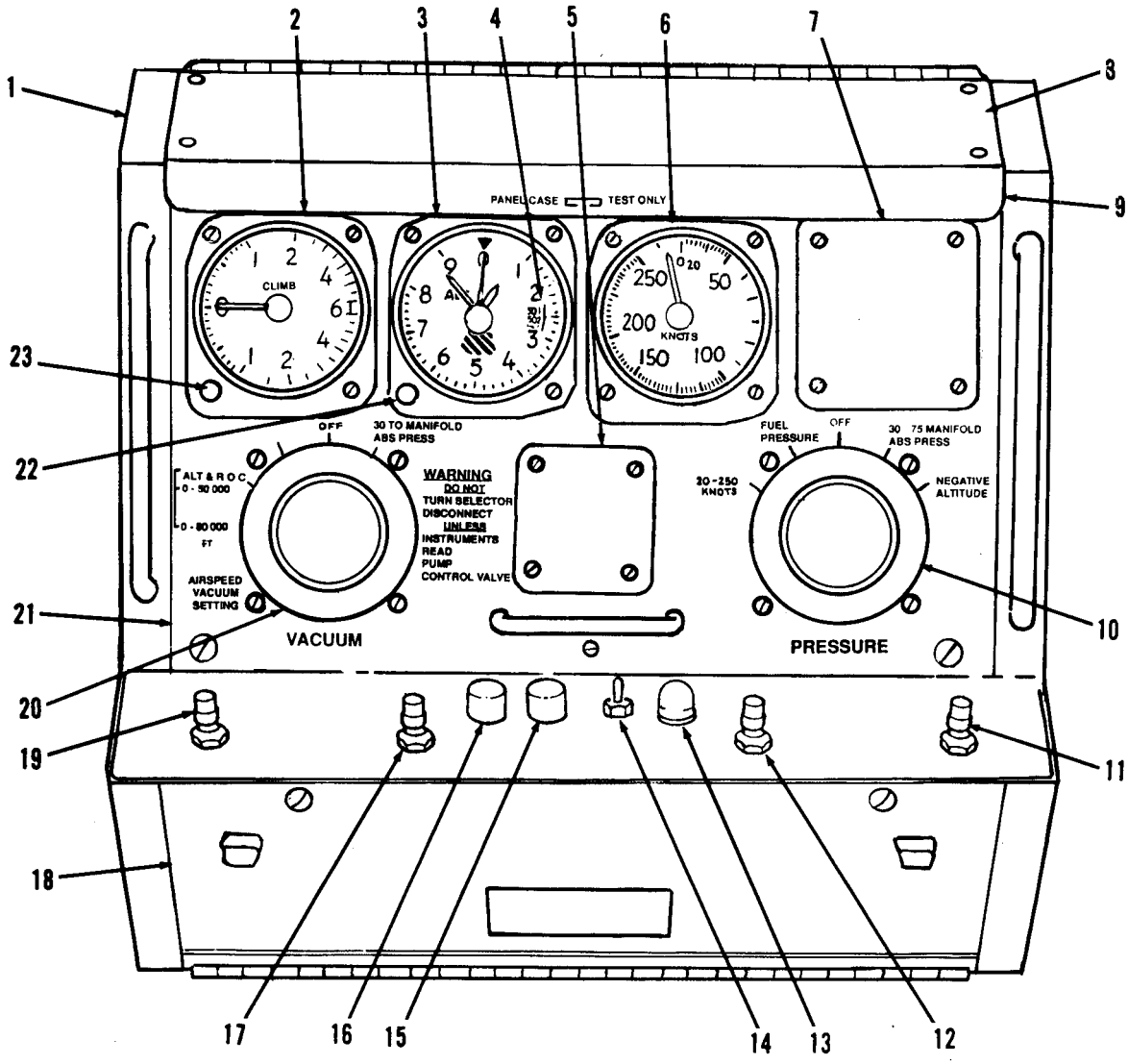
By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
01298

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31-E, block no. 2086, -10 & CL, AVUM and AVIM maintenance requirements for TM 55-4920-231-14.



1. TESTER UNIT (LESS COVER)
2. RATE OF CLIMB INDICATOR
3. ALTIMETER
4. BAROMETRIC SCALE
5. DELETED
6. AIR SPEED INDICATOR
7. DELETED
8. CALIBRATION CARD
9. UPPER ACCESS PANEL
10. PRESSURE SELECTOR KNOB
11. PRESSURE DECREASE KNOB
12. PRESSURE INCREASE KNOB
13. INDICATOR LIGHT
14. POWER SWITCH
15. SPARE CARTRIDGE FUSE
16. CARTRIDGE FUSE
17. VACUUM INCREASE KNOB
18. LOWER FRONT ACCESS PANEL
19. VACUUM DECREASE KNOB
20. VACUUM SELECTOR KNOB
21. FRONT PANEL ASSEMBLY
22. CORRECTION KNOB
23. ZERO ADJUSTMENT

Figure 7. Controls and Instruments

d. Open tie upper access panel (9, figure 7) and check the valves for operation and defects.

e. Release the fasteners to open the rear access panel and inspect for defects, evidence of leakage, and the operation of the reservoir selector valve.

f. Perform the inspections specified in the before operation services of tie operator's daily service (paragraph 54).

8. SERVICING NEW EQUIPMENT.

Perform the following services before operating the tester :

a. Lubricate in accordance with instructions contained in paragraphs 51 and 52.

b. Perform the before operation services listed in the operator's daily service (paragraph 54).

9. INSPECTION OF USED EQUIPMENT.

Inspect a used tester in the same manner as a new one (paragraph 7) with special emphasis on inspection for worn parts. Correct deficiencies noted or report them to the proper authority.

10. SERVICING USED EQUIPMENT.

A used tester is serviced in the same manner as new equipment (paragraph 8). However, special emphasis should be placed on the before operation services and lubrication details for a tester which has previously been in use.

Section II. CONTROLS AND INSTRUMENTS

11. GENERAL

This section describes, locates, illustrates, and furnishes the operator with sufficient information pertaining to the various controls and instruments provided for the proper operatian of the equipment.

12. POWER SWITCH.

The double pole, double throw, toggle-type power switch (14, figure 7) has an OFF position which opens the circuit and shuts off the electrical power supply to the tester. The ON position (away from operator) is in the opposite direction of the OFF position (toward the operator) and closes the circuit to provide electrical current to the tester when the power source is connected.

13. INDICATOR LIGHT.

The indicator light (13, figure 7) illuminates when the power circuit in the tester is operating.

14. CARTRIDGE FUSE.

The 28 vdc, 3 amp cartridge fuse (16, figure 7) provides protection against an excessive flow of current which would damage the electrical system.

15. SPARE CARTRIDGE FUSE.

The spare cartridge fuse (15, figure 7) is provided to replace the cartridge fuse (16) when it has blown.

16. VACUUM SELECTOR KNOB.

The VACUUM selector knob (20, figure 7) has five positions, and operates a valve which functions as a single control manifold and provides various vacuum-pressure systems required to test and/or calibrate certain types of aircraft instruments.

17. PRESSURE SELECTOR KNOB.

The PRESSURE selector knob (10, figure 7) has five positions and operates a valve which functions as a single control manifold and provides various vacuum, pressure, and vacuum pressure systems required to test and/or calibrate certain types of aircraft instruments.

18. PRESSURE DECREASE KNOB.

Counterclockwise rotation of pressure DECREASE knob (19, figure 7) from closed position opens a needle valve allowing system pressure to bleed off.

19. PRESSURE INCREASE KNOB.

Counterclockwise rotation of pressure INCREASE knob (12, figure 7) from closed position opens a needle valve allowing pressure in system to increase.

20. VACUUM DECREASE KNOB.

Counterclockwise rotation of vacumn DECREASE knob (19, figure 7) from closed position opens a needle valve which permits system vacuum to bleed off.

21. VACUUM INCREASE KNOB.

Counterclockwise rotation of vacuum INCREASE knob (17, figure 7) opens a needle valve and provides increased vacuum in system.

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CHANGE
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 26 April 1990

Operator's, Organizational, DS, and GS Maintenance Manual
Including Repair Parts and Special Tools Lists

TESTER, PITOT AND STATIC SYSTEMS
PART NUMBER REIC 340000
(NSN 4920-00-475-7161)

TM 55-4920-231-14, 15 July 1969, is changed as follows:

Page 1. Change para 2, 7th line down, ATTN: AMSAV-R-M, P.O. Box 209, St. Louis, Missouri 63166 to read. ATTN: AMSAV-MMD, 4300 Goodfellow Blvd, St. Louis, Missouri 63120-1798. A reply will be furnished directly to you.

Page 1. Change para 3, 2nd line, TM 38-750 to read, DA PAM 738-751.

Page 15. Add CAUTION under Section III. OPERATION UNDER USUAL CONDITIONS.

CAUTION

Do not operate the tester unless all access panels are in place. Injury could result from the shattering of the glass reservoir or other malfunction of the tester.

Page 59. Change TM 38-750 to read DA PAM 738-751 Functional Users Manual for the Army Maintenance Management System - Aviation (TAMMS-A).

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

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To be distributed in accordance with DA Form 12-31, -10 & CL, AVUM and AVIM Maintenance requirements for All Fixed and Rotary Wing Aircraft.

*U.S. Government Printing Office:1990-754-030/25542

PIN: 009587-003

CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *29 December 1975*

Operator's, Organizational, DS, and GS Maintenance Manual
Including Repair Parts and Special Tools Lists

TESTER, PITOT AND STATIC SYSTEMS
PART NUMBER REIC 340000
(NSN 4920-00-475-7161)

TM 55-4920-231-14, 15 July 1969, is changed as follows:

Cover and page i. Title is changed as shown above.

Page 4. Figure 3 is superseded as follows.

Page 7, Table 1. Under Nomenclature column "Pitot tube sleeve assembly (round)" is changed to read "Pitot head adaptor" and "Pitot tube sleeve assembly (oblong)" is changed to read "Flush static port adaptor".

Page 7, Table 1. Under Part No. column "260103" is changed to read "SK-ED-0018" and "260104" is changed to read "SK-ED-0017".

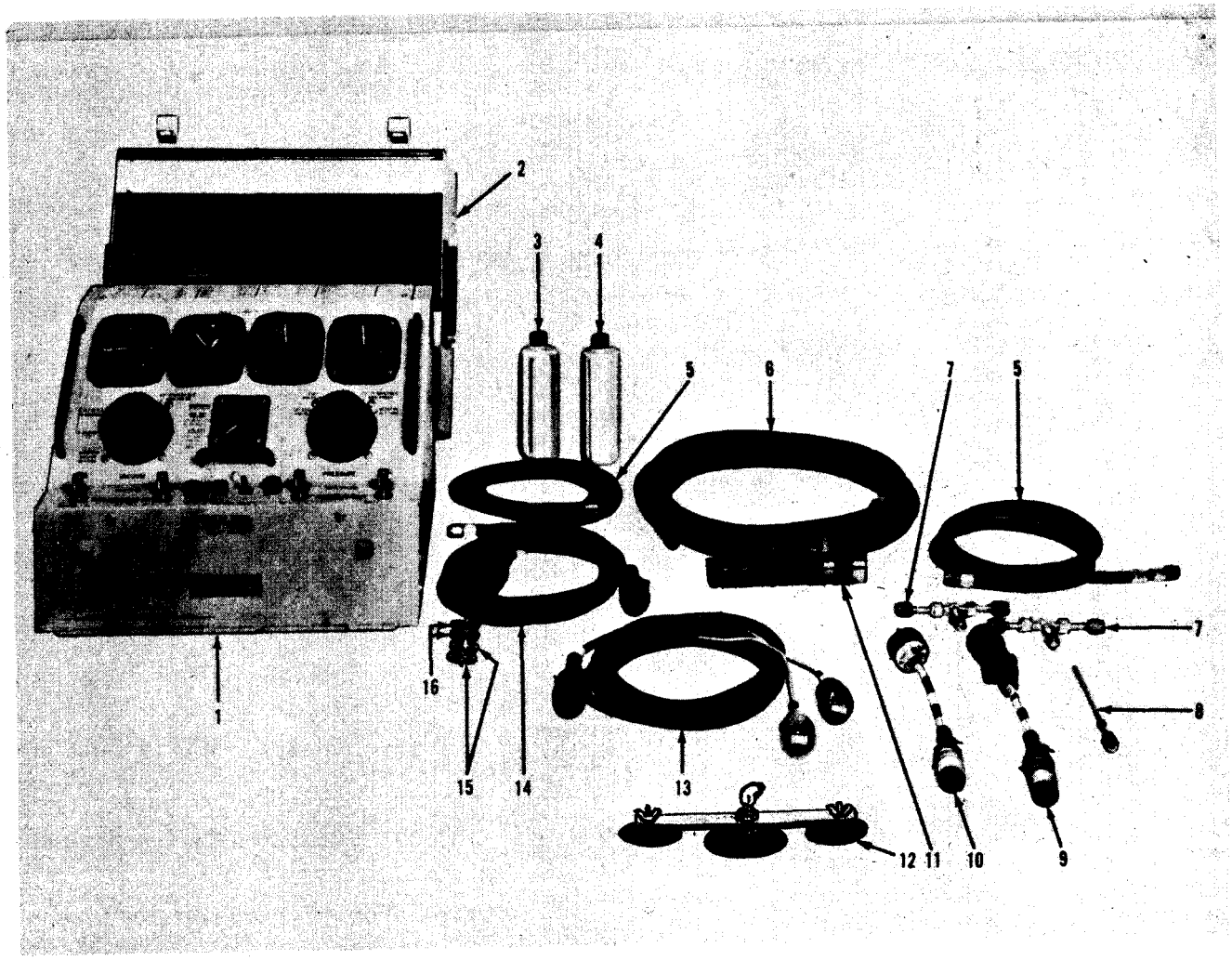
Page 17, paragraph 38*b*. In lines 3, 4 and 7, "sleeve" is changed to read "adaptor".

Page 17. Paragraph 38*b*, WARNING. In line 1, "sleeve" is changed to read "adaptor".

Page 50, Section VII. Under Part No. column "260103" is changed to read "SK-ED-0018" and "260104" is changed to read "SK-ED-0017".

Page 50, Section VII. Under FMC column, lines 11 and 12, "95750" is changed to read "81996".

Page 63. Appendix C is superseded as follows:



1	ASSEMBLY TESTER UNIT
2	COVER COMPARTMENT
3	CONTAINER (W/HIGH TEMPERATURE OIL)
4	CONTAINER (W/LOW TEMPERATURE OIL)
5	HOSE ASSEMBLY (6 FT.)
6	HOSE ASSEMBLY (25 FT.)
7	EXTERNAL CASE LEAK VALVE
8	OIL HOSE TUBE
9	POWER CABLE (THREE PHASE, 400 CPS)
10	POWER CABLE (SINGLE PHASE, 60 CPS)
11	PITOT HEAD ADAPTOR
12	FLUSH STATIC PORT ADAPTOR
13	POWER CABLE (DC)
14	POWER CABLE (AC)
15	REDUCER, EXTERNAL THREAD, FLARED TUBE
16	UNION, FLARED TUBE

AV 001463

Figure 3. Pitot and Static Systems Tester with Accessories.

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LIST
(Current as of 4 August 1975)

Section I. INTRODUCTION

C-1. Scope.

This appendix lists repair parts required for performance of organizational, direct support, and maintenance of Tester Pitot and Static System, P/N REIC340000.

C-2. General.

This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of repair parts authorized for use in the performance of maintenance. Parts list are composed of functional groups in ascending numerical sequence, with the parts in each group listed in figure and item number sequence..

b. Section III. Special Tools List. (Not Applicable)

c. Section IV. National Stock Number and Part Number Index. A list, in ascending numerical sequence, of all National stock numbers appearing in the listings, followed by a list, in alphanumeric sequence, of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. Explanation of Columns.

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

a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number.* The number used to identify each item called out in the illustration.

b. Source, Maintenance and Recoverability Codes (SMR).

(1) *Source Code.* Source codes are assigned to support items to indicate the manner of acquiring support items for maintenance, repair or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code format as follows:

Code		*Definition*
PA	---	Item procured and stocked for anticipated or known usage.
PB	---	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply systems.
XA	---	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	---	Item is not procured or stocked. If not available through salvage, requisition.
XD	---	A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded XA, XD, and aircraft support items as restricted by AR 700-42.

(2) *Maintenance Code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

Code		*Application/Explanation*
O	---	Support item is removed, replaced, used at the organizational level.
F	---	Support item is removed, replaced, used at the direct support level.

(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain one of the following maintenance codes:

Code	*Application/Explanation*
D	The lowest maintenance level capable of complete repair of the support item is the depot level.
Z	Nonreparable. No repair is authorized.

(3) *Recoverability Code.* Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the Uniform SMR Code format as follows:

Code	*Definition*
Z	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
F	Reparable item. When uneconomically reparable, condemn and dispose at the direct support level.

c. National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

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

NOTE

When a stock numbered item is requisitioned, the repair part received may have a different part number than the part being replaced.

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

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

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

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

C-4. Special Information.

Action change codes indicated in the left-hand margin of the listing page denote the following:

N - Indicates an added item
C - Indicates a change in data
R - Indicates a change in NSN only

C-5. How to Locate Repair Parts.

a. When National Stock Number or Part Number is Unknown:

(1) *First.* Find the illustration covering the assembly to which the repair part belongs.

(2) *Second.* Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

(3) *Third.* Using the Repair Parts Listing, find the figure and item number noted on the illustration.

b. When National Stock Number or Part Number is Known.

(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent National stock number or part number. This index is in ascending NSN sequence followed by a list of part numbers in ascending alphanumeric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

C-6. Abbreviations. (Not Applicable)

	(1) ILLUSTRATION (a) FIG NO.	(1) ILLUSTRATION (b) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION / USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
				4920-00-475-7161	REIC340000	95750	TESTER,PITOT AND STATIC SYSTEM.....		1
							SECTION II REPAIR PARTS LIST ACCESSORIES		
C	3	3	XBFZZ		340101-1	95750	CONTAINER,OIL.....	EA	1
N	3	4	XBFZZ		340101-2	95750	CONTAINER,OIL.....	EA	1
N	3	7	XBFZZ		340213	95750	VALVE ASSEMBLY.....	EA	2
N	3	11	XDFZZ		SKED0018	81996	ADAPTER ASSEMBLY.....	EA	1
N	3	12	XDFZZ		SKED0017	81996	ADAPTER,STATIC PORT.....	EA	1
C	3	13	XBFZZ		340004A	95750	CABLE ASSEMBLE,POWER: DC.....	EA	1
C	3	14	XBFZZ		340003A	95750	CABLE ASSEMBLY,POWER: AC.....	EA	1
	3	15	PBFZZ	4730-00-812-5036	MS24399D3	96906	REDUCER,TUBE.....	EA	2
	3	16	PBFZZ	4730-00-834-9560	MS24932D4	96906	NIPPLE,TUBE.....	EA	2
							FRONT PANEL		
C	21	5	PAFZZ	6610-00-179-5254	A35AAU8AAF	81996	ALTIMETER,PRESSURE.....	EA	1
C	21	6	PAFZZ	6610-00-133-7749	MS28021-4	96906	INDICATOR,INDICATED AIR SPEED.....	EA	1
	21	8	PAOZZ	6620-00-515-5800	MS2807IT5	96906	GAGE,ABSOLUTE PRESSURE.....	EA	1
	21	9	PBFZZ	6620-00-557-0403	MS28061-1	96906	GAGE,PRESSURE,DIAL INDICATING.....	EA	1
	21	17	PBOZZ	4730-00-240-5905	AN816-4D	88044	ADAPTER,STRAIGHT,PIPE TO TUBE.....	EA	1
							CASE ASSEMBLY		
N	22	9	PBFZZ	5930-00-655-1508	MS25100-23	96906	SWITCH ASSEMBLY.....	EA	1
N	22	11	PBOZZ	5920-00-553-5734	MDL3	71400	FUSE,CARTRIDGE.....	EA	1
N	22	18	PBFZZ	4820-00-085-1900	340211	95750	VALVE,PLUG.....	EA	1
N	22	25	PBOZZ	6240-00-266-9940	MS25231-1829	96906	LAMP,INCANDESCENT.....	EA	1
							CHASSIS ASSEMBLY		
N	25	4	PBFZZ	4920-00-018-3398	340018	95750	WIRING HARNESS,BRANCHED.....	EA	1
	25	13	PBFZZ	4730-00-186-9961	MS20822-4D	96906	ELBOW,PIPE TO TUBE.....	EA	4
	25	14	PAFZZ	4730-00-186-9951	MS20823-4D	96906	ELBOW,PIPE TO TUBE.....	EA	7
C	25	15	PBFZZ	4730-00-186-7797	AN911-1	88044	NIPPLE,TUBE.....	EA	4
C	25	19	XBFZZ		AN917-1	88044	TEE,PIPE.....	EA	1
	25	20	PBFZZ	4730-00-722-1207	MS24402D4	96906	TEE,TUBE.....	EA	5
N	25	24	XBFZZ		340214-1	95750	VALVE,RELIEF.....	EA	1
C	25	26	XBFZZ		340214-2	95750	VALVE,RELIEF.....	EA	1
C	25	28	XBFZZ		340216-1	95750	VALVE,RELIEF.....	EA	1
	25	29	XBFZZ		340216-2	95750	VALVE,RELIEF.....	EA	1
	25	49	PBFDF	4310-00-945-0197	P345C	64560	PUMP ASSEMBLY: SEE FIG. 28 FOR BREAKDOWN.....	EA	1

	(1) ILLUSTRATION (a) FIG NO.	(1) ILLUSTRATION (b) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION / USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
							MOTOR AND PUMP ASSEMBLY		
	28		PBFDF	4310-00-945-0197	P345C	64560	PUMP ASSEMBLY	EA	1
	28	3	PBFZZ	5305-00-331-9473	34018A	75511	.SCREW ASSEMBLY,BRUSH HOLDER	EA	2
	28	4	PBFZZ	5330-00-596-9462	0-2251	75511	.GASKET	EA	2
	28	13	XBFZZ		7458	75511	.NUT,SPECIAL	EA	2
	28	14	PBFZZ	5310-00-028-4163	0-2252	75511	.WASHER,FLAT	EA	2
c	28	16	PBFZZ	3110-00-293-8267	77038XR1BV	43334	.BEARING,BALL,ANNULAR	EA	1
	28	18	PBFZZ	5330-00-530-0713	10-4374	75511	.PACKING,PREFORMED	EA	1
c	28	19	XBFZZ		0-5454	75511	SHIM	EA	1
	28	20	PBFZZ	5360-00-200-3828	0-5851	75511	SPRING,HELICAL,COMPRESSION	EA	2
	28	22	PBFZZ	5305-00-263-9164	AN565D6L3	88044	.SETSCREW	EA	2
	28	26	PBFZZ	5365-00-484-5059	2276	75511	.SPACER,RING	EA	1
c	28	27	XBFZZ		2277	75511	.SHIM	EA	V
	28	28	PAFZZ	3110-00-293-8644	77036XR1E	43334	.BEARING,BALL,ANNULAR	EA	1
	28	30	PBFZZ	5360-00-597-2604	100703	64560	.SPRING,HELICAL,COMPRESSION	EA	1
c	28	31	PBFZZ	5310-00-264-1389	AN961-8T	88044	.WASHER,FLAT	EA	1
	28	32	PBFZZ	1660-00-167-1421	100650A	64560	.GAGE,SEAL	EA	1
	28	38	PBFZZ	5365-00-282-2378	100702B	64560	.RING,RETAINING	EA	1
c	28	39	XAFZZ		100551	64560	.BLADE,FLUID PUMP	EA	1
	28		PBFZZ	5330-00-328-3365	100640B	64560	.SEAL,PLAIN ENCASED	EA	1
	28		PBFZZ	5970-00-553-3829	03822	75511	.INSULATOR,BUSHING	EA	2

SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
1660-00-167-1421	28	32	5310-00-028-4163	28	14
3110-00-293-8267	28	16	5310-00-331-5197	28	13
3110-00-393-8644	28	28	5330-00-328-3365	28	
4310-00-945-0197	25	49	5330-00-530-0713	28	18
4310-00-945-0197	28		5330-00-597-9462	28	4
4730-00-186-7797	25	15	5360-00-200-3228	28	20
4730-00-186-9951	25	14	5360-00-597-2604	28	30
4730-00-186-9961	25	13	5365-00-282-3378	28	38
4730-00-240-5905	21	17	5365-00-484-5059	28	26
4730-00-722-1207	25	20	5920-00-553-5734	28	11
4730-00-812-5036	3	15	5930-00-655-1508	22	9
4730-00-834-9560	3	16	5970-00-553-3829	28	
4820-00-085-1900	22	18	6240-00-266-9940	22	25
4920-00-018-3398	25	4	6610-00-133-7749	21	6
4920-00-475-7161	1		6610-00-179-5254	21	5
5305-00-263-9164	28	12	6620-00-515-5800	21	8
5305-00-331-9473	28	3	6620-00-557-0403	21	9

PART NUMBER	FSCM	FIG NUMBER	ITEM NUMBER	PART NUMBER	FSCM	FIG NUMBER	ITEM NUMBER
AN565D6L3	88044	28	22	0-5851	75511	28	20
AN816-4D	88044	21	17	03822	75511	28	
AN911-1	88044	25	15	10-4374	75511	28	18
AN917-1	88044	25	19	100551	64560	28	39
AN961-8T	88044	28	31	100640B	64560	28	
A35AAU8AAF	81996	21	5	100650A	64560	28	32
MDL3	71400	22	11	100702B	64560	28	38
MS20822-4D	96906	25	13	100703	64560	28	30
MS20823-4D	96906	25	14	2276	75511	28	26
MS24399D3	96906	3	15	2277	75511	28	27
MS24402D4	96906	25	20	240214-2	95750	25	26
MS24932D4	96906	3	16	340003A	95750	3	14
MS25231-1829	96906	22	25	340004A	95750	3	13
MS28021-4	96906	21	6	340018	95750	25	4
MS28061-1	96906	21	9	340101-1	95750	3	3
MS28077T5	96906	21	8	340101-2	95750	3	4
MS28100-23	96906	22	9	34018A	75511	28	3
P345C	64560	25	49	340211	95750	22	18
P345C	64560	28		340213	95750	3	7
REIC340000	95750	1		340214-1	95750	25	24
SKED0017	81996	3	12	34016-1	95750	25	28
SKED0018	81996	3	11	340216-2	95750	25	29
0-2251	75511	28	4	7458	75511	28	13
0-2252	75511	28	14	77036XRIE	43334	28	28
0-5454	75511	28	19	77038XRIBV	43334	28	16

By Order of the Secretary of the Army:

FRED C. WEYAND
General, United States Army
Chief of Staff

Official:
PAUL T. SMITH
Major General, United States Army
The Adjutant General

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To be distributed in accordance with DA Form 12-31 (qty rqr block no. 322) Organizational Maintenance requirements for all Fixed and Rotor Wing Aircraft.

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CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *2 February 1972*

Operator's, Organizational, DS, and GS Maintenance Manual
Including Repair Parts and Special Tools Lists

TESTER, PITOT AND STATIC SYSTEMS
PART NUMBER REIC 340000
(FSN 4920-475-7161)

TM 55-4920-231-14, 15 July 1969, is changed as follows:

Pages 56 and 57. Paragraphs 117 through 119 are deleted in their entirety. The following sentence is added after "Section V. Demolition of Material to Prevent Enemy Use": (Refer to TM 750-244-1-4 for demolition instructions).

By Order of the Secretary of the Army:

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

Official:
VERNE L. BOWERS,
Major General, United States Army,
The Adjutant General.

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TECHNICAL MANUAL
No. 55-4920-231-14

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DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *15 July 1969*

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*This manual supersedes TM 55-4920-231-15, dated 22 October 1962 including all changes.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. SCOPE

These instructions are published for the use of operating and maintenance personnel to whom the pitot and static systems tester is assigned. They contain information on the operation, lubrication, detailed preventive maintenance services, and maintenance of the equipment and its accessories. These instructions also include packing, preservation, storing, and shipping procedures. Also included is the applicable repair parts and special tools lists. Appendix A contains a list of applicable references and appendix B contains the maintenance allocation chart.

2. REPORTING OF IMPROVEMENTS.

Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded directly to Commanding General, U. S. Army Aviation Systems Command, ATTN: AMSAV–R–M, P.O. Box 209, St. Louis, Missouri 63166.

3. EQUIPMENT RECORDS.

The Army equipment record system and procedures established in TM 38–750 apply to this equipment. The applicable forms as required by TM 38–750 shall be used.

Section II. DESCRIPTION AND DATA

4. DESCRIPTION.

a. General. The pitot and static systems tester (figure 1) is a portable self-contained pressure and vacuum system whose primary function is the testing of aircraft instruments such as altimeters, rate-of climb indicator, air-speed indicators, and manifold and fuel pressure gages. The test accurately simulates engine or atmospheric pressures and vacuums such as are met in the normal operation of an aircraft. Simulation of these pressures and vacuums is accomplished by a small, high-speed pump capable of producing pressures up to 50 pounds per square inch and a vacmun equivalent to an altitude of 80,000 feet.

b. Identification. The identification plate and instructions are identified and located as follows:

(1) Identification plate (A, figure 2), center of lower front access panel (18, figure 7) of tester.

(2) Operation warning (B, figure 2), between vacuum selector knob (20, figure 7) and fuel pressure gage (5) on front panel (21).

(3) Operation caution (D, figure 2), on the tester case between vacuum DECREASE knob (19, figure 7) and vacuum INCREASE knob (17).

(4) Operation caution (E, figure 2), on the tester case between pressure INCREASE knob (12, figure 7) and pnessure DECREASE knob (11).

(5) Operation instruction (F, figure 2), on the tester case between the vacuum INCREASE KNOB (17, figure 7) and the pressure INCREASE knob (12).

(6) Conversion chart (G, figure 2), underside of upper access panel (9, figure 7) of tester.

(7) Selector valve lever instructions (C, figure 2) on the oil reservoir (16, figure 4) and is visible when the rear access panel (11) is opened.

(8) Calibration card (H, figure 2) on the upper access panel (9, figure 7) of tester (1).

c. Deviations in Models. This manual covers the pitot and static systems tester, REIC model

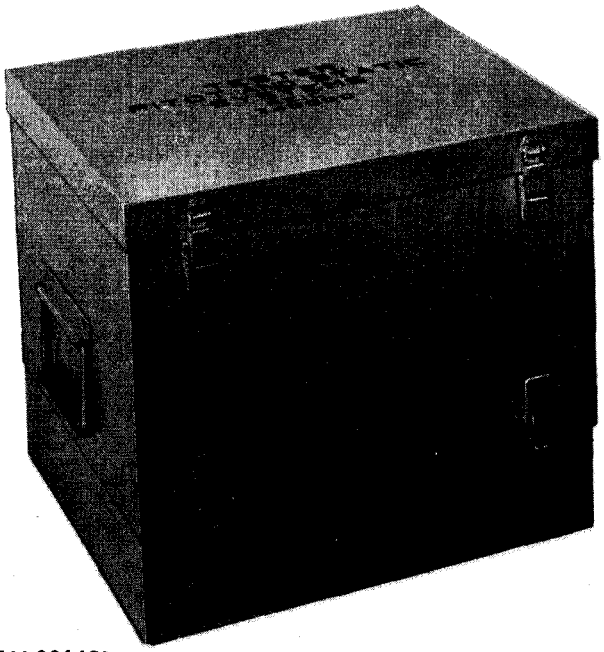


Figure 1. Pitot and Static Systems Tester.

340000, serial number 26, manufactured by Republic Electronics Industries Corporation of Farmingdale, N. Y.

5. TABULATED DATA.

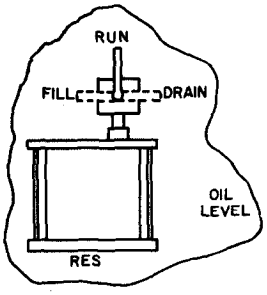
a. General.

Manufacturer:	Republic Electron Industries Corporation, Farmingdale, N. Y.
Model:	340000
Federal stock number:	4920-475-7161
Overall dimensions:	
Height	14 1/2 in.
Width	17 3/8 in.
Depth	14 9/32 in.
Net weight:	53 lb.
Shipping volume:	3.7 cu. ft.

b. Classifications and Ratings.

Power requirements:	28 vdc at 2.2 amp 115 vac single phase, 50-500 cps 115 vac three phase, 50-500 cps at 0.75A (rms).
Cycles:	50-500 cps, single or three phase line.
Operating temperatures:	
Normal	0ºF to 160°F (-18°C to 71ºC)
Low	-41°F to 32°F (-41°C to O°C)
Oil:	
All temperatures	MIL-H-5606A
Amount required	4 fluid oz.

A



C

DO NOT FORCE VALVES, OPEN VACUUM CONTROLS FOR PRESSURE TESTS

E

OPERATE UNIT IN LEVEL POSITION ONLY

F

WARNING

DO NOT

A) TURN SELECTOR
B) DISC. HOSES

UNLESS

A) INST READ ZERO
B) POWER OFF
C) CONT VALVES OPEN

B

DO NOT FORCE VALVES, OPEN PRESSURE CONTROLS FOR VACUUM TESTS

D

CONVERSION CHART
KNOTS TO MILES PER HR

KNOTS	M.P.H.	KNOTS	M.P.H.
20	23.0	140	161.1
40	46.0	160	184.1
60	69.0	180	207.1
80	92.0	200	230.1
100	115.0	220	253.1
120	138.0	240	276.1

G

RATE OF CLIMB INDICATOR

CALIBRATION IS AT RATES OF CLIMB AT ALTITUDE INTERVALS SHOWN

TEST RATE IN FEET PER MINUTE	RATE OF CLIMB		RATE OF DIVE	
	STOP WATCH ELAPSED TIME	INDICATED RATE	STOP WATCH ELAPSED TIME	INDICATED RATE
500 FT				
1000 FT				
2000 FT				
3000 FT				
4000 FT				
5000 FT				
6000 FT				

INSTR NO DATE

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ALTIMETER

STANDARD ALTITUDE IN FEET	INDICATOR READING IN FEET	STANDARD ALTITUDE IN FEET	INDICATOR READING IN FEET
0		20000	
500		22000	
1000		25000	
2000		30000	
4000		35000	
6000		40000	
8000		45000	
10000		50000	
12000		60000	
14000		70000	
16000		80000	
18000			

INSTR NO DATE

AIR SPEED INDICATOR

STANDARD AIR SPEED IN KNOTS	INDICATOR READING IN KNOTS	STANDARD AIR SPEED IN KNOTS	INDICATOR READING IN KNOTS
20		140	
40		160	
60		180	
80		200	
100		220	
120		240	

INSTR NO DATE

H

MANIFOLD PRESSURE GAGE

STANDARD PRESSURE IN OF HG	GAGE READING IN OF HG	STANDARD PRESSURE IN OF HG	GAGE READING IN OF HG
30.0		55.0	
25.0		60.0	
20.0		65.0	
15.0		70.0	
10.0		75.0	
20.0		70.0	
30.0		60.0	
35.0		50.0	
40.0		40.0	
45.0		30.0	
50.0			

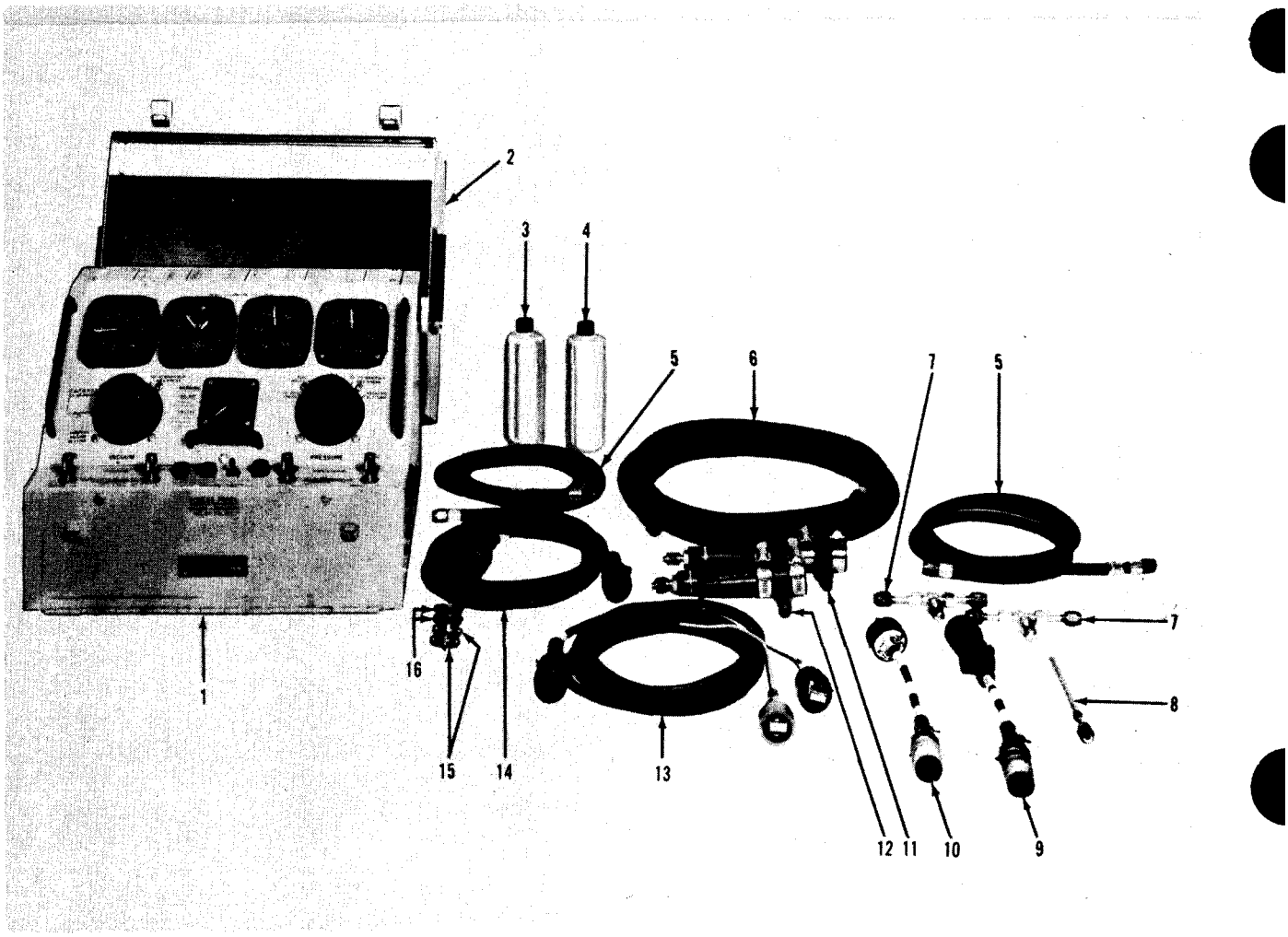
INSTR NO DATE

FUEL PRESSURE GAGE

STANDARD PRESSURE PSI	PRESSURE GAGE READING	STANDARD PRESSURE PSI	PRESSURE GAGE READING
0.0		20.0	
2.0		25.0	
4.0			
6.0			
8.0			
10.0			
12.0			
15.0			

INSTR NO DATE

Figure 2. Identification Plate and Instructions.



1	ASSEMBLY TESTER UNIT	9	POWER CABLE (THREE PHASE, 400 CPS)
2	COVER COMPARTMENT	10	POWER CABLE (SINGLE PHASE, 60 CPS)
3	CONTAINER (W/HIGH TEMPERATURE OIL)	11	PITOT ~~SLEEVE (ROUND)~~ head adapter
4	CONTAINER (W/LOW TEMPERATURE OIL)	12	~~PITOT SLEEVE (OBLONG)~~ flush static port adapter?
5	HOSE ASSEMBLY (6 FT.)	13	POWER CABLE (DC)
6	HOSE ASSEMBLY (25 FT.)	14	POWER CABLE (AC)
7	EXTERNAL CASE LEAK VALVE	15	REDUCER, EXTERNAL THREAD, FLARED TUBE
8	OIL HOSE TUBE	16	UNION, FLARED TUBE

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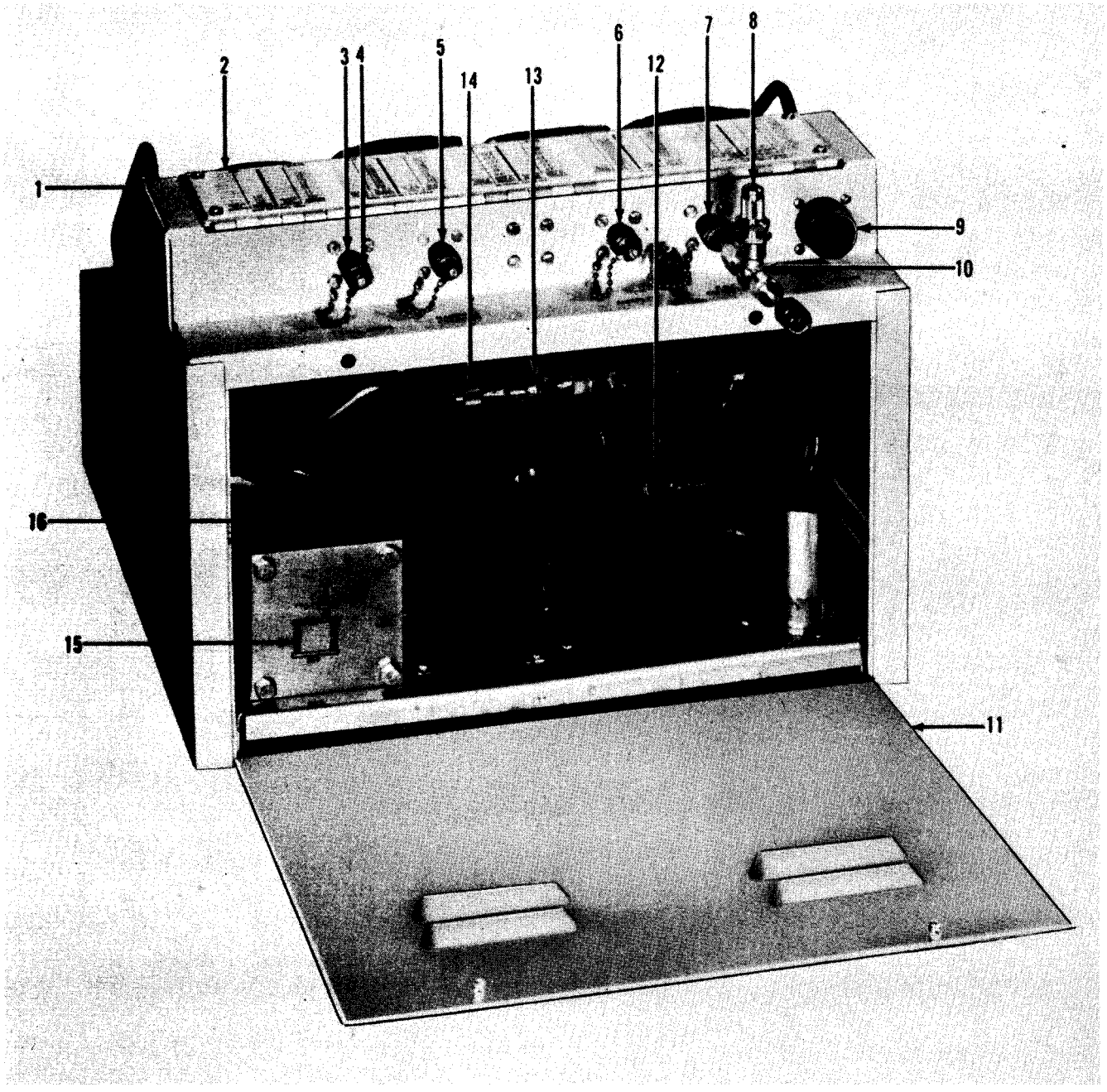
(See C 2 Ref. page 7 Table I)

Figure 3. Pitot and Static Systems Tester with Accessories.



1. TESTER UNIT
2. CALIBRATION CARD
3. FUEL PRESS. FITTING
4. CAP
5. MANIFOLD PRESSURE FITTING
6. AIRSPEED FITTING
7. R.O.C.-ALTIMETER FITTING
8. EXTERNAL CASE LEAK VALVE KNOB
9. POWER RECEPTACLE CONNECTOR
10. EXTERNAL CASE LEAK VALVE
11. REAR ACCESS PANEL
12. OIL HOSE
13. SAFETY VALVE
14. SAFETY VALVE KNOB
15. SELECTOR VALVE INSTRUCTIONS
16. OIL RESERVOIR

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Figure 4. Rear View of Tester, Access Panel Open.

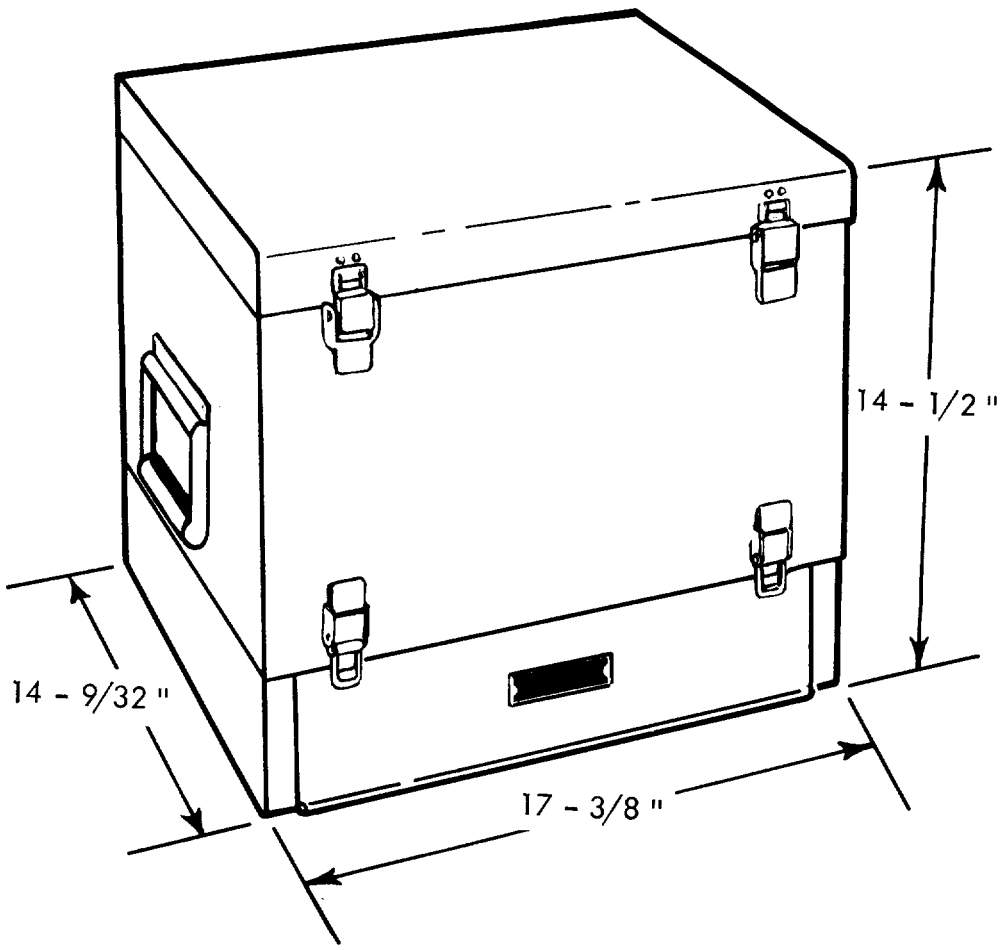


Figure 5. Overall Dimensions of Tester.

CHAPTER 2

ORERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. UNLOADING AND UNCRATING.

CAUTION

Handle the tester with care as the delicate instruments it incorporates can easily be damaged by shock.

a. Unloading. Handle the crated tester with care and place in an upright position as indicated cm the crate,

b. Uncrating. To remove the tester from its storage and shipping container, proceed as follows:

(1) Cut the steel bands (A, figure 6) and remove the top and front of the wooden crate (B).

(2) Slide the inner carton out of the crate (B) and remove the vapor barrier from the carton (C).

(3) Open the carton (D) and remove the desiccants and sheet of cardboard before removing the tester from the carton.

(4) Save packaging material when future use is anticipated.

7. INSPECTION OF NEW EQUIPMENT.

Make a thorough, visual inspection of the tester for defects and missing parts (a through *f* below), repairing if possible. If necessary, authorized personnel should fill out DD Form 6 to report damage, loss, or improper shipment of equipment.

a. Unlatch and open the cover on the cover compartment (2, figure 3); remove the accessories and check for defective or missing parts (table 1).

Table 1. Accessories

Quantity	Nomenclature	Part No.	Figure Index	Use
1	Adapter assembly (W102)	340002A	10	115 vac single phase, 60 cps
1	Adapter assembly (W101)	340001A	9	115 vac three phase, 400 cps
1	Cable assembly (W103)	340003	14	Single or three phase ac
1	Cable assembly (W104)	340004	13	Dc operation
1	Hose assembly, 1/4 in (25 ft)	AN 6270-4-300	6	Instrument test connection
1	Hose assembly, 1/4 in (6 ft)	AN 6270-4-72	5	Instrument test connection
2	Union, 1/4 in to 1/4 in	AN 815-4D	16	Hose connections
2	Reducer union, 1/4 in to 3/16 in	AN 919-2D	15	Hose connections
1	~~Pitot tube sleeve assembly (round)~~ pitot adapter	260103	11	Pitot system tests
1	~~Pitot tube sleeve assembly (oblong)~~ Elimin static port adapter	260104	12	Pitot system tests
2	External case leak valve	340213	7	Aircraft system case leak test
1	Oil hose tube		8	Fill or drain reservoir
1	Container (w/high temperature oil)	340101-1	3	Normal operating range 0°F to 160°F (-18°C to 71°C.)
1	Container (w/low temperature oil)	340101-2	4	Low operating range -40°F to +32°F (-40°C to 0°C)

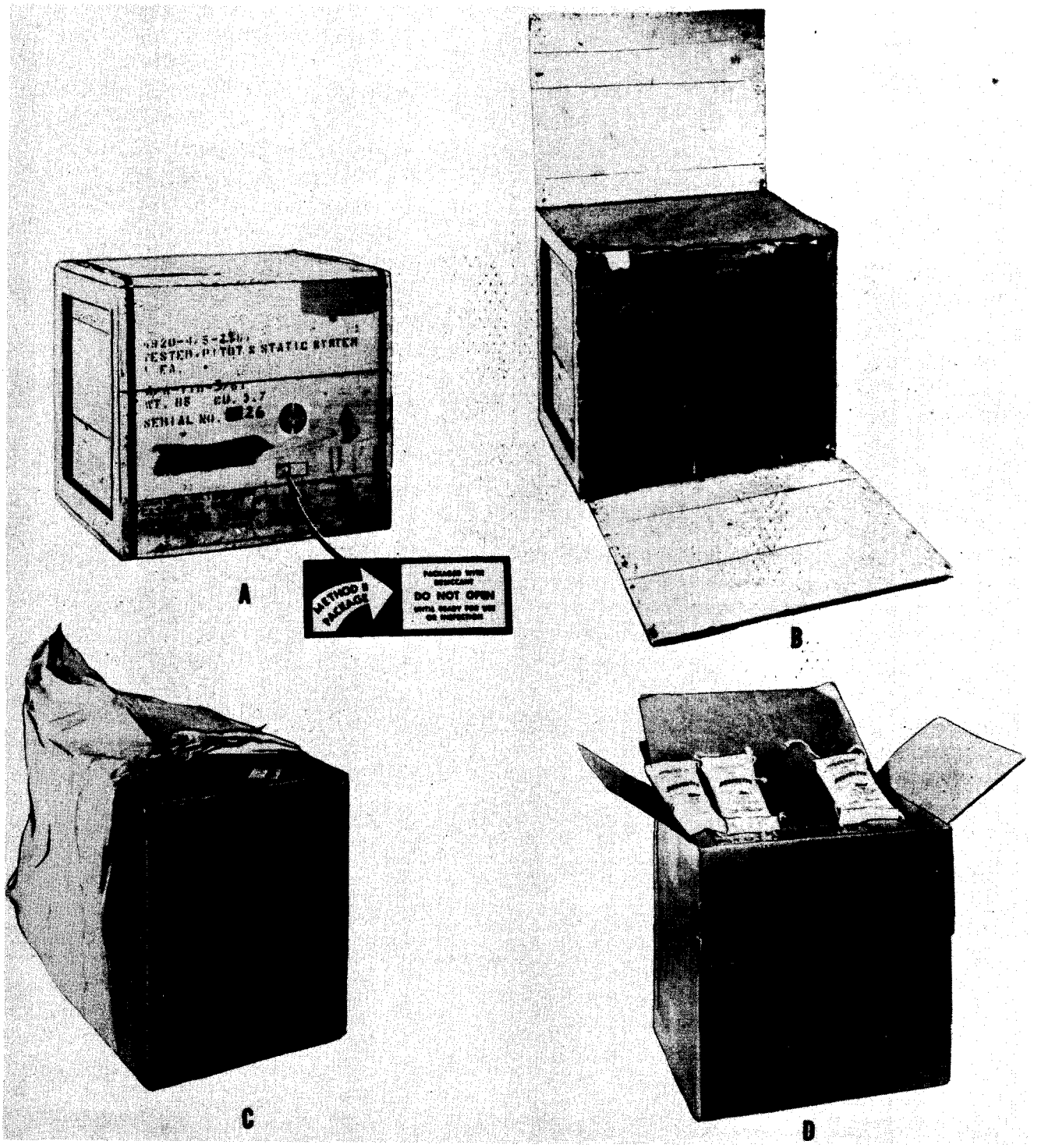
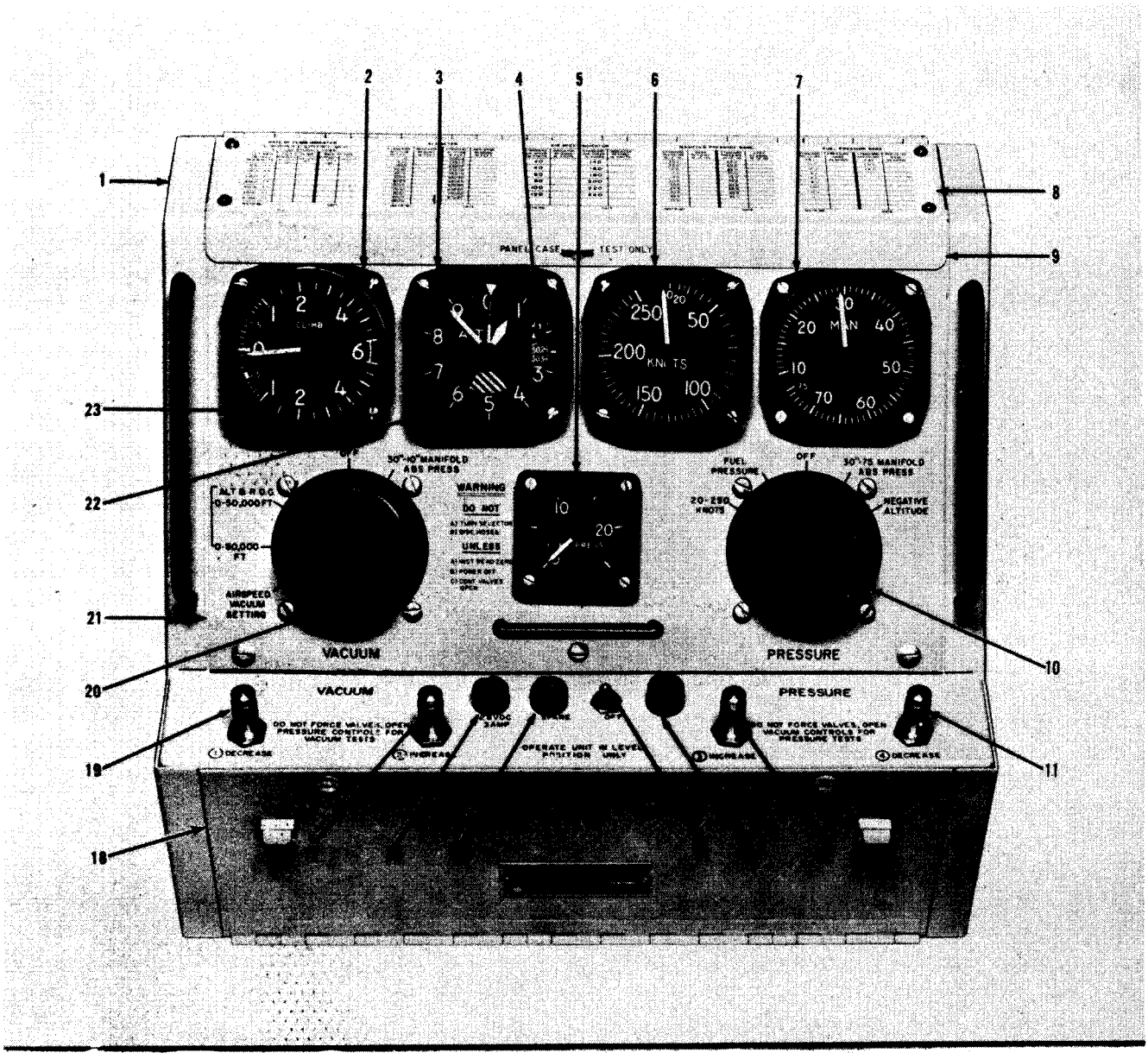


Figure 6. Uncrating Sequence.

b. Unlatch and remove the cover compartment (2) from the tester to inspect the controls and instruments for proper operation and defects.

c. Release the fasteners and open the lower front access panel (18, figure 7) to inspect for defects, damaged leads, broken connections, and evidence of leakage.



1. TESTER UNIT (LESS COVER)
2. RATE OF CLIMB INDICATOR
3. ALTIMETER
4. BAROMETRIC SCALE
5. FUEL PRESSURE GAGE
6. AIR SPEED INDICATOR
7. MANIFOLD PRESSURE GAGE
8. CALIBRATION CARD
9. UPPER ACCESS PANEL
10. PRESSURE SELECTOR KNOB
11. PRESSURE DECREASE KNOB
12. PRESSURE INCREASE KNOB
13. INDICATOR LIGHT
14. POWER SWITCH
15. SPARE CARTRIDGE FUSE
16. CARTRIDGE FUSE
17. VACUUM INCREASE KNOB
18. LOWER FRONT ACCESS PANEL
19. VACUUM DECREASE KNOB
20. VACUUM SELECTOR KNOB
21. FRONT PANEL ASSEMBLY
22. CORRECTION KNOB
23. ZERO ADJUSTMENT

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Figure 7. Controls and Instruments.

d. Open the upper access panel (9, figure 7) and check the valves for operation and defects.

e. Release the fasteners to open the rear access panel and inspect for defects, evidence of leakage, and the operation of the reservoir selector valve.

f. Perform the inspections specified in the before operation services of the operator's daily service (paragraph 54).

8. SERVICING NEW EQUIPMENT.

Perform the following services before operating the tester:

a. Lubricate in accordance with instructions contained in paragraphs 51 and 52.

b. Perform the before operation services listed in the operator's daily service (paragraph 54).

9. INSPECTION OF USED EQUIPMENT.

Inspect a used tester in the same manner as a new one (paragraph 7) with special emphasis on inspection for worn parts. Correct deficiencies noted or report them to the proper authority.

10. SERVICING USED EQUIPMENT.

A used tester is serviced in the same manner as new equipment (paragraph 8). However, special emphasis should be placed on the before operation services and lubrication details for a tester which has previously been in use.

Section II. CONTROLS AND INSTRUMENTS

11. GENERAL.

This section describes, locates, illustrates, and furnishes the operator with sufficient information pertaining to the various controls and instruments provided for the proper operation of the equipment.

12. POWER SWITCH.

The double pole, double throw, toggle-type power switch (14, figure 7) has an OFF position which opens the circuit and shuts off the electrical power supply to the tester. The ON position (away from operator) is in the opposite direction of the OFF position (toward the operator) and closes the circuit to provide electrical current to the tester when the power source is connected.

13. INDICATOR LIGHT.

The indicator light (13, figure 7) illuminates when the power circuit in the tester is operating.

14. CARTRIDGE FUSE.

The 28 vdc, 3 amp cartridge fuse (16, figure 7) provides protection against an excessive flow of current which would damage the electrical system.

15. SPARE CARTRIDGE FUSE.

The spare cartridge fuse (,15, figure 7) is provided to replace the cartridge fuse (16) when it has blown.

16. VACUUM SELECTOR KNOB.

The VACUUM selector knob (20, figure 7) has five positions, and operates a valve which functions as a single control manifold and provides various vacuum-pressure systems required to kit and/or calibrate certain types of aircraft instruments.

17. PRESSURE SELECTOR KNOB.

The PRESSURE selector knob (10, figure 7) has five. positions and operates a valve which functions as a single control manifold and provides various vacuum, pressure, and vacuum-pressure systems required to test and/or calibrate certain types of aircraft instruments.

18. PRESSURE DECREASE KNOB.

Counterclockwise rotation of pressure DECREASE knob (19, figure 7) from closed position opens a needle valve allowing system pressure to bleed off.

19. PRESSURE INCREASE KNOB.

Counterclockwise rotation of pressure INCREASE knob (12, figure 7) from closed position opens a needle valve allowing pressure in system to increase.

20. VACUUM DECREASE KNOB.

Counterclockwise rotation of vacuum DECREASE knob (19, figure 7) from closed position opens a needle valve which permits system vacuum to bleed off.

21. VACUUM INCREASE KNOB.

Counterclockwise rotation of vacuum INCREASE knob (17, figure 7) opens a needle valve and provides increased vacuum in system.

22. CASE LEAK VALVE LEVERS.

The case leak valve levers (3, 4, 5, 7, and 8, figure 8) operate valves which provide for testing aircraft instruments and checking the master instruments on tester for case leaks and/or calibration.

a. Case leak valve lever (3, figure 8) has three positions:

(1) Normal (NOR) provides for static tests of altimeter and rate-of -climb indicator from aircraft.

(2) Altimeter (ALT) provides for case leak test and/or calibration of altimeter (3, figure 7) on tester.

(3) Rate-of-climb (ROC) provides for case leak test and/or calibration of rate-of-climb indicator (2) on tester.

b. Case leak valve lever (4, figure 8) has two positions:

(1) Normal (NOR) provides for static test of airspeed indicator from aircraft.

(2) Case leak (CL) provides for case leak test and/or calibration of airspeed indicator (6, figure 7) on tester.

c. Case leak valve lever (5, figure 8) has three positions:

(1) Normal (NOR) provides for static test of airspeed indicator from aircraft.

(2) Case leak (CL) provides for case leak test and/or calibration of airspeed indicator (6, figure 7) on tester.

(3) Vent (V) provides for venting vacuum from tester.

d. Case leak valve lever (7, figure 8) has two positions:

(1) Normal (NOR) provides for static test of manifold pressure gage from aircraft.

(2) Case leak (CL) provides for case leak test and/or calibration of manifold pressure gage (7, figure 7) on tester.

e. Case leak valve lever (8, figure 8) has two positions:

(1) Normal (NOR) provides for static test of fuel pressure gage from aircraft.

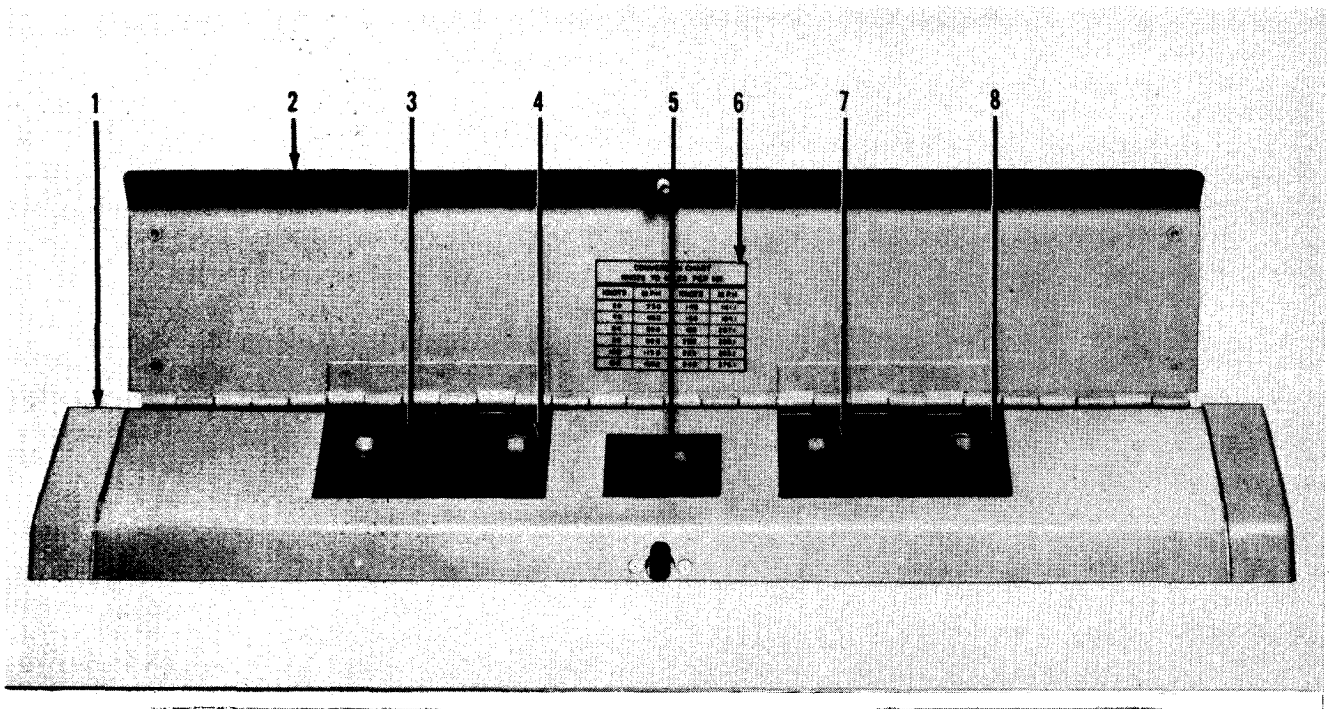


Figure 8. Upper Access Panel, Open Showing Case Leak Valves.

(2) Case leak (CL) provides for case leak test and/or calibration of fuel pressure gage (5, figure 7) on tester.

23. RATE-OF-CLIMB INDICATOR.

The rate of-climb indicator (2, figure 7) records the rate-of-climb or descent in feet per minute (fpm), according to the increase or decrease of the vacuum produced by the tester, and is used to test the accuracy of aircraft rate-of-climb indicators. It is graduated from 0 to 6000 fpm for climb on the upper half of the dial and for descent on the lower half of the dial.

24. ALTIMETER.

The tester produces vacuum which simulates altitude conditions and is recorded on the altimeter (3, figure 7) in feet. It has a range from 1,000 feet below to 80,000 feet above mean sea level. A barometric scale (4) which is operated by the correction knob (22) is an integral part of the altimeter which is used to test the accuracy of aircraft altimeters.

25. CORRECTION KNOB.

The correction knob (22, figure 7) provides for correcting the barometric scale (4) on the altimeter (3) to the ambient barometric pressure.

26. AIRSPEED INDICATOR.

The airspeed indicator (6, figure 7) measures the differential between pitot and static pressures created by the tester in a range between 20 and 250 knots and is used to test the accuracy of airspeed indicators.

27. MANIFOLD PRESSURE GAGE.

The manifold pressure gage (7, figure 7) measures the absolute pressure in inches of mercury over a range from 10 in. to 75 in. with 30 in. Hg representing mean sea level. When used at sea level, a reading below 30 in. Hg represents vacuum and a reading above 30 in. Hg represents pressure in the tester. The instrument in the tester is used to test the accuracy of aircraft manifold pressure gages.

28. FUEL PRESSURE GAGE.

The fuel pressure gage (5, figure 7) measures the pressure produced by the tester in a range from 0 to 25 pounds per square inch (psi) and is used to check the accuracy of aircraft fuel pressure gages.

29. SELECTOR VALVE LEVER.

The selector valve lever (5, figure 9) operates the selector valve (4) which is in the line between the oil reservoir (3) and the pump (2). The lever has three positions as indicated on selector valve instructions (15, figure 4) for use as follows:

a. FILL, used when filling reservoir with oil.
b. RUN, used when testing instruments.
c. DRAIN, used when removing oil from reservoir.

30. SAFETY VALVE KNOB.

The safety valve knob (14, figure 4) turned to its fullest extent clockwise, closes, and counterclockwise, opens the safety valve (13). It prevents excessive vacuum from damaging the airspeed indicator.

31. EXTERNAL CASE LEAK VALVE KNOB.

The external case leak valve knob (8, figure 4) turned to its fullest extent clockwise, closes, and counterclockwise, opens the external case leak valve (10) which provides for case leak testing of aircraft instruments.

32. ELECTRICAL SYSTEM.

The relation of the instruments and controls in the electrical system to each other is illustrated in figure 10.

33. VACUUM AND PRESSURE SYSTEM.

The interrelation of the instruments and controls in the vacuum and pressure system is illustrated in figure 11.

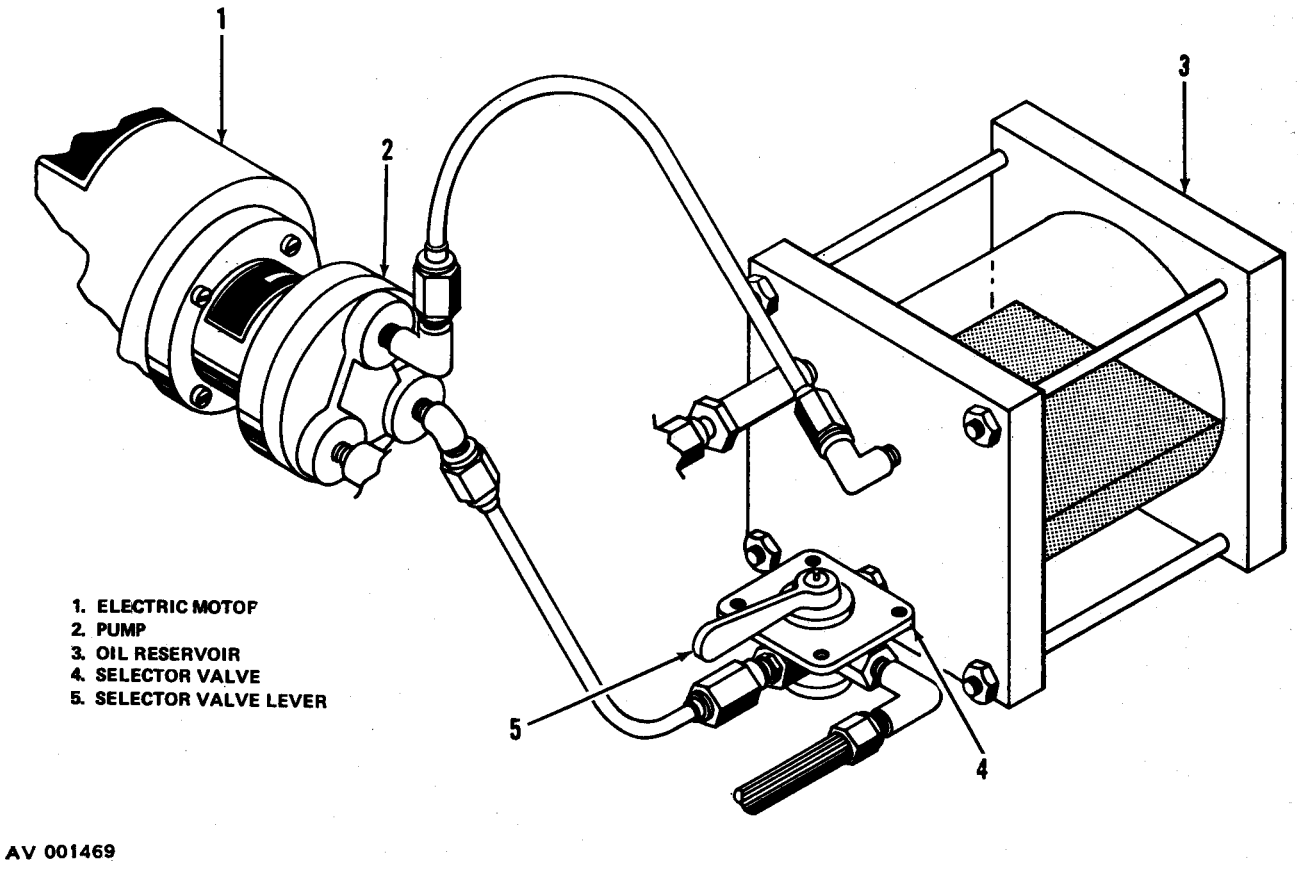
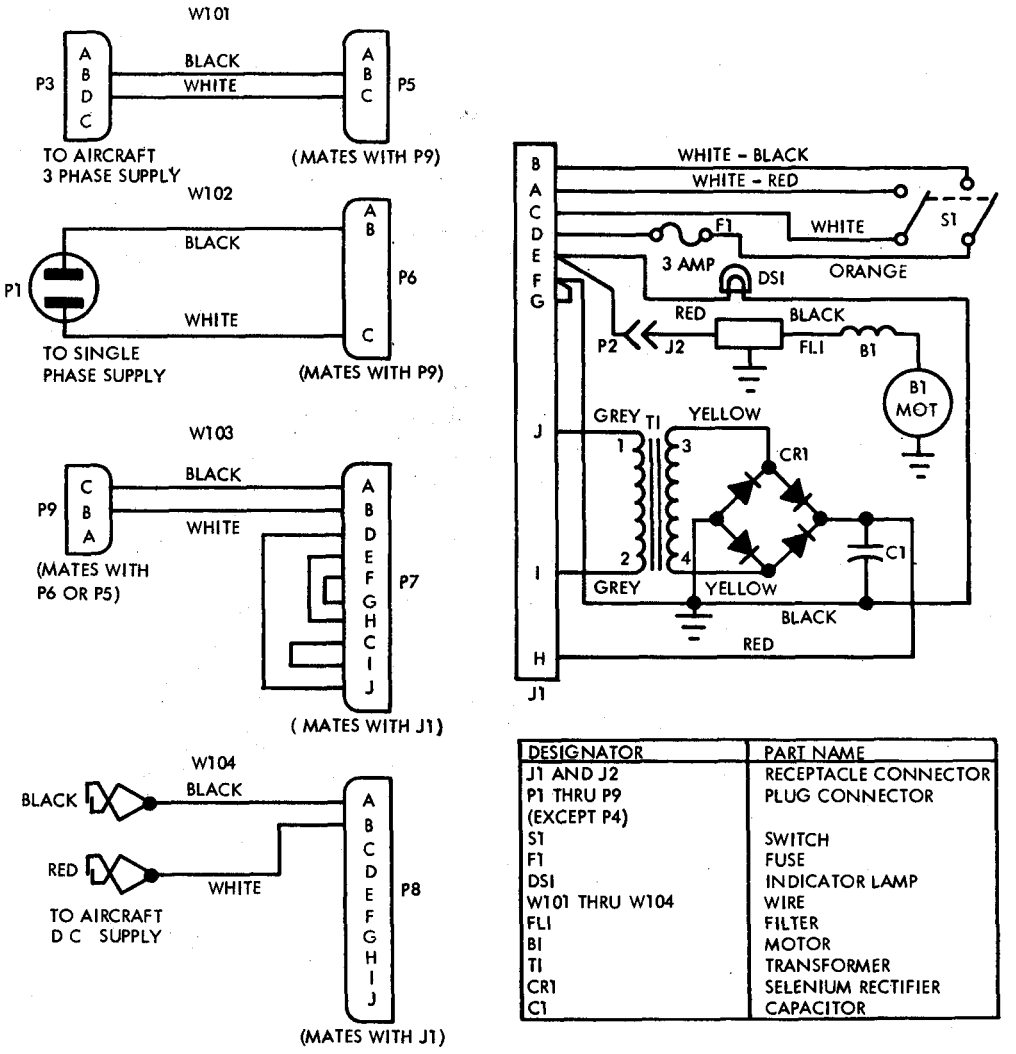


Figure 9. Pump Lubrication System.



DESIGNATOR	PART NAME
J1 AND J2	RECEPTACLE CONNECTOR
P1 THRU P9 (EXCEPT P4)	PLUG CONNECTOR
S1	SWITCH
F1	FUSE
DS1	INDICATOR LAMP
W101 THRU W104	WIRE
FL1	FILTER
B1	MOTOR
T1	TRANSFORMER
CR1	SELENIUM RECTIFIER
C1	CAPACITOR

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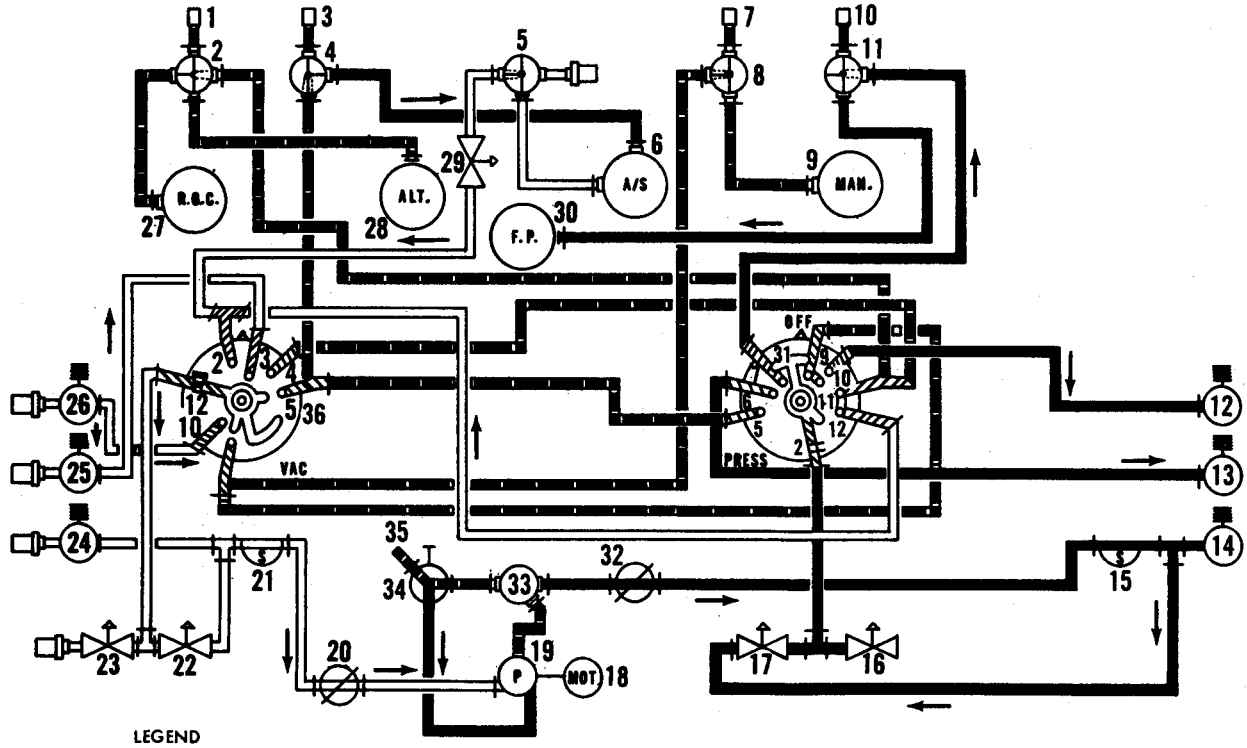
Figure 10. Electrical Schematic Diagram.



1. RATE OF CLIMB-ALTIMETER CASE LEAK VALVE CAP
2. CASE LEAK VALVE
3. AIR SPEED CASE LEAK VALVE CAP
4. CASE LEAK VALVE
5. CASE LEAK VALVE
6. AIR SPEED INDICATOR
7. MANIFOLD PRESSURE CASE LEAK VALVE CAP
8. CASE LEAK, VALVE
9. MANIFOLD PRESSURE INDICATOR
10. FUEL PRESSURE CASE LEAK VALVE CAP
11. CASE LEAK VALVE
12. MANIFOLD PRESSURE RELIEF VALVE
13. AIR SFEED PRESSURE RELIEF VALVE
14. FUEL PRESSURE RELIEF VALVE
15. PRESSURE FILTER SUMP
16. PRESSURE DECREASE VALVE
17. PRESSURE INCREASE VALVE
18. ELECTRIC MOTOR
19. PUMP
20. VACUUM CHECK VALVE
21. VACUUM FILTER SUMP
22. VACUUM INCREASE VALVE
23. VACUUM DECREASE VALVE
24 ALTIMETER VACUUM RELIEF VALVE
25. ALTIMETER VACUUM RELIEF VALVE
26. MANIFOLD VACUUM RELIEF VALVE
27. RATE OF CLIMB INDICATOR
28. ALTIMETER
29. SAFETY VALVE
30. FUEL PRESSURE GAGE
31. PRESSURE SELECTOR VALVE
22. PRESSURE CHECK VALVE
32. OIL RESERVOIR
34. SELECTOR VALVE
35. OIL HOSE
36. VACUUM SELECTOR VALVE

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Figure 11. Vacuum and Pressure System.

Section III. OPERATION UNDER USUAL CONDITIONS

34. GENERAL.

Instructions in this section are published for the use of personnel responsible for the operation of this equipment. It is essential that the operator know how to perform every operation of which the equipment is capable. The accessories and their uses are listed in table 1.

35. POWER SOURCE CONNECTIONS.

The electrical system is designed to operate with three different power sources and tie con-

nections are made with the power switch (14, figure 7) in the OFF position as follows:

a. 28 vdc Power Source.

(1) Remove power cable (14, figure 3) from cover compartment (2).

(2) Connect plug connector P8 on W104 (figure 10) to POWER receptacle connector J1 (9, figure 4).

(3) Attach the red clamp on W104 (figure 10) to the positive lead and the black clamp to the negative lead of the power supply.

b. 115 vac Three Phase Power Source.

(1) Remove power cables (9 and 14, figure 3) from cover compartment (2).

(2) Mate plug connector P5 on W101 (figure 10) with plug connector P9 on W103 and connect plug connector P7 to POWER receptacle connector J1 (9, figure 4).

(3) Connect plug connector P3 on W101 (figure 10) to aircraft three phase power supply.

c. 115 vac Single Phase Power Source.

(1) Remove power cables (10 and 14, figure 3) from cover compartment (2).

(2) Mate plug connector P6 on W102 (figure 10) with plug connector P9 on W103 and attach plug connector P7 to POWER receptacle connector J1 (9, figure 4).

(3) Insert plug connector P1 on W102 (figure 10) in single phase power supply.

36. STARTING THE TESTER.

Prepare the tester for use in testing aircraft instruments as follows:

CAUTION

Do not operate tester with the reservoir dry for more than 10 seconds as it will damage the motor pump assembly. Operation of the tester with excessive oil in the vacuum or pressure sumps will damage the instruments and valves. Do not change position of pressure or vacuum selector knobs when pump motor is running, as serious damage to instruments on tester can result.

a. Perform the before operation services listed in the operator's daily services (paragraph 54).

CAUTION

When pressure or vacuum selector knob is in a test position, the other selector knob must be in the OFF position to prevent damage to instruments.

b. Place PRESSURE and VACUUM selector knobs (10 and 20, figure 7) in desired positions.

CAUTION

Do not force knobs when fully opening or closing as it will damage needle valves.

c. Turn knobs (11, 12, 17, and 19, figure 7) to provide desired opening and closing of valves.

d. Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in desired positions and turn safety valve knob (14, figure 4) to provide desired opening or closing of safety valve (13).

e. Provide a zero reading on rate-of-climb indicator (2, figure 7) with the zero adjustment (23).

f. Place power switch (14) in OFF position and make power source connections (paragraph 35) to provide electrical power for tester.

CAUTION

Do not change position of pressure or vacuum selector knobs when pump motor is running, as serious damage to instruments on tester can result.

g. Place power switch (14), in ON position and observe indicator light (13) for illumination.

h. Provide lubrication as instructed in paragraph 51.

i. Place tester in a level position to perform tests.

37. STOPPING THE TESTER.

Shut the tester down in the following manner:

CAUTION

Do not disconnect hose assemblies from tester or change position of vacuum or pressure selector knobs before all instruments return to their normal readings, as the instruments involved can be damaged.

a. Place power switch (14, figure 7) in the OFF position.

b. Rotate knobs (11, 12, 17, and 19) counterclockwise to open valves and allow all pressure and/or vacuum to vent from tester.

c. Disconnect power cable from POWER receptacle (9, figure 4) and place in cover compartment (2, figure 3).

d. Perform the after operation services listed in the operator's daily service (paragraph 54).

38. TEST HOSE CONNECTIONS.

Aircraft instruments can be tested in either of the following ways:

a. *Individual Instrument Test.* The instrument can be tested after removal from aircraft

or in the aircraft by disconnecting the line to the instrument and accomplishing the following:

(1) Remove cap (4, figure 4) and install external case leak valve (10) on fitting indicated for instrument being tested (figure 4). All other caps must be on fittings.

(2) Connect hose assembly (5 or 6, figure 3) to external case leak valve (10, figure 4) and to fitting on instrument being tested.

(3) When the tests have been completed, disconnect the test hose from the instrument.

WARNING

Secure all connections to prevent leakage or loosening due to vibration.

(4) Install all lines and secure all connections which were removed for the tests.

(5) Remove test hose and external case leak valve (10, figure 4) from tester and install cap (4) on fitting.

(6) Stow all accessories neatly and compactly in cover compartment (2, figure 3).

b. Pitot System Instrument Test. **The instruments in the aircraft system can be tested in two ways. First, by installing the appropriate sleeve (11 or 12, figure 3) on pitot tube with the sleeve static fitting (marked S) aligned with the static hole in the tube and removing the caps from the static fitting and the sleeve pressure fitting (marked P) on the sleeve; second, by disconnecting the pitot static lines on the aircraft. For either of the two ways, make the test hose connections as follows:**

(1) Remove cap (4, figure 4) from R.O.C. —ALTIMETER fitting (7) and install external case leak valve (10).

(2) Connect hose assembly (5 or 6, figure 3) to valve and to pitot static connection.

(3) Remove cap (4, figure 4) from AIRSPEED fitting (6) and install external case leak valve (10).

(4) Connect hose assembly (5 or 6, figure 3) to valve and to pitot pressure connection. The unions (15 and 16) are provided to make the necessary connections.

(5) When tests have been completed, disconnect all test hoses and remove all test equipment from aircraft.

WARNING

Remove sleeve from pitot tube and secure all connections to prevent leakage or loosening due to vibration.

(6) Install all lines and secure all connections which were removed for the tests.

(7) Remove test hoses and external case leak valves (10, figure 4) from tester and install caps (4) on fittings.

(8) Stow all accessories neatly and compactly in cover compartment (2, figure 3).

39. MASTER INSTRUMENT TESTS.

Perform the following relief and leak tests on master instruments before testing aircraft instruments to ensure the accuracy of the readings and to normalize the slight amount of hysteresis in the diaphragms of the test instruments. This will provide for observing any excessive friction developing in the instruments and will tend to reduce the friction on subsequent test runs. Install cap (4, figure 4) on fitting (3, 5, 6, and, 7) and tighten.

CAUTION

The airspeed indicator must be isolated from the vacuum source to prevent damage to instrument.

a. 0 to 50,000 ft. Altimeter Tests.

(1) Place VACUUM selector knob (20, figure 7) in ALT & R.O.C. 0–50,000 FT position and turn knobs (17 and 19) to close valves.

(2) Place PRESSURE selector knob (10) in OFF position and turn knobs (11 and 12) to open valves.

CAUTION

The case leak valve must be in CL position and the safety valve closed to isolate the airspeed indicator from the vacuum source to prevent damage to the instrument.

(3) Place case leak valve lever (4, figure 8) in CL positions and turn knob (14, figure 4) to close safety valve (13).

(4) Place case leak valve levers (3, 5, 7, and 8, figure 8) in NOR position.

(5) Wart the tester (paragraph 36).

CAUTION

Do not exceed a rate of change in altitude of +3,000 fpm while testing altimeters as damage to the altimeter may result. Do not exceed +6,000 fpm during these tests as it will damage the rate-of-climb indicator.

(6) Slowly turn vacuum INCREASE knob (17, figure 7) to open valve and provide a reading of 5,000 fpm on rate-of-climb indicator (2).

(7) Allow altimeter (3), to reach release point, observe reading and compare with sp ante listed in table 2.

(8) Slowly turn vacuum INCREASE knob (17) to close valve and provide a reading of 40,000 ft on altimeter (3), stabilizing the reading by adjusting the vacuum DECREASE knob (19).

(9) Turn case leak valve lever (3, figure 8) to ALT position and observe altimeter (3, figure 7) while timing for leakage. (Refer to table 3.)

(10) Slowly turn case leak valve lever (3. figure 8) to NOR position and turn vacuum INCREASE knob (17, figure 7) to close valve.

(11) Turn vacuum DECREASE knob (19, figure 7) to provide a reading of 3,000 fpm on the rate-of-climb indicator (2) and allow the instruments to return to their normal readings.

(12) Stop the tester (paragraph 37).

Table 2. Safety Relief Points

Instrument	Relief Point	Tolerance
Altimeter (0 to 50,000 ft)	50,000 ft	+5,000 ft -0,000 ft
Altimeter (0 to 80,000 ft)	80,000 ft	+8,000 ft -0,000 ft
Airspeed Indicator	250 knots	+20 knots -O knots
Manifold Pressure Gage	75 in. Hg	+1 in. Hg -1 in. Hg
Fuel Pressure Gage	25 psig	+1 psig -O psig

Table 3. Instrument Case Leak Tests

Instrument	Check Point Reading	Maximum Allowable Leakage Rate
Altimeter (negative altitude)	-1000 ft	50 fpm
Altimeter (0 to 50,000 ft).	40,000 ft	250 fpm
Altimeter (0 to 80,000 ft)	70,000 ft	400 fpm
Airspeed Indicator	200 knots	6 kn/min
Manifold Pressure Gage:		
Vacuum	11 in. Hg	1/4 in. Hg/min
Pressure	65 in. Hg	1 in. Hg/min
Fuel Pressure Gage	20 psig	1 psig/min

b. 0 to 80,000 *FT. Altimeter Tests.*

(1) Place VACUUM selector knob (20, figure 7) in ALT & R.O.C. 0-80,000 FT position and turn knobs (17 and 19) to close valves.

(2) Place PRESSURE selector knob (10) in OFF position and turn knob (11 and 12) to close valves.

CAUTION

The airspeed indicator must be isolated from the vacuum source to prevent damage to the instrument.

(3) Place case leak valve lever (4, figure 8) in CL position and turn knob (14, figure 4) to close safety valve (13).

(4) Place case leak valve levers (3, 5, 7, and 8, figure 8) in NOR position.

(5) Start the tester (paragraph 36).

CAUTION

Do not exceed a rate of change in altitude of +3,000 fpm while testing altimeters as damage to the altimeters may result. Do not exceed +6,000 fpm during these tests as it will damage the rate-of-climb indicator.

(6) Slowly turn vacuum INCREASE knob (17, figure 7) to open valve and provide a reading of 3,000 fpm on rate-of-climb indicator (2).

(7) Allow altimeter to reach relief point and observe reading (table 2).

(8) Slowly turn vacuum INCREASE knob (17, figure 7) to close valve and provide a reading of 80,000 ft on altimeter (3). Stabilize the reading by adjusting the vacuum DECREASE knob (19).

(9) Turn case leak valve lever (3, figure 8) to ALT position and observe altimeter (3, figure 7) while timing for leakage. (Refer to table 3.)

(10) Slowly turn case leak valve lever (3, figure 8) to NOR position and turn vacuum INCREASE knob (17, figure 7) to close valve.

(11) Turn vacuum DECREASE knob (19) to provide a reading of 3,000 fpm on rate-of-climb indicator (2) and allow the instruments to return to their normal readings.

(12) Stop the tester (paragraph 37).

c. *Negative Altitude Altimeter Tests.*

(1) Place PRESSURE selector knob (10, figure 7) in NEGATIVE ALTITUDE position and turn knobs (11 and 12) to close valves.

(2) Place VACUUM selector knob (20) in OFF position and turn knobs (17 and 19) to open valves.

(3) Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in NOR position.

(4) Start the tester (paragraph 36).

CAUTION

Do not exceed a rate of change in altitude of +3,000 fpm while testing altimeter as damage to the altimeter may result Do not exceed +6,000 fpm during this test as it will damage the rate-of-climb indicator. Do not allow altimeter reading to go below -1,000 ft. as it will damage the instrument.

(5) Slowly turn pressure INCREASE knob (12, figure 7) to open valve and provide a reading of –l,000 ft. on altimeter (3). Stabilize reading by adjusting pressure DECREASE knob (11).

(6) Turn case leak valve lever (3, figure 8) to ALT position and observe altimeter (3, figure 7) while timing for leakage. (Refer to table 3.)

(7) Slowly turn case leak valve lever (3, figure 8) to NOR position and turn pressure INCREASE knob (12, figure 7) to close valve.

(8) Turn pressure DECREASE knob (.11) to provide a reading of 5000 fpm on rate-of-climb indicator (2) and allow instruments to return to normal readings.

(9) Stop the tester (paragraph 37).

d. *Manifold Pressure Gage Pressure Tests.*

(1) Place VACUUM selector knob (20, figure 7) in OFF position and turn knobs (17 and 19) to open valves.

(2) Place PRESSURE selector knob (10) in 30"-75" MANIFOLD ABS PRESS position and turn knobs (11 and 12) to close valves.

(3) Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in NOR position.

(4) Start the tester (paragraph 36).

(5) Slowly turn pressure INCREASE knob (12, figure 7) to open valve, allowing pressure to reach relief point (table 2) and observing reading on manifold pressure gage (7).

(6) Turn pressure DECREASE knob (11) to provide a stabilized reading of 65 in. Hg on manifold pressure gage (7).

(7) Turn case leak valve lever (7, figure 8) to CL position and observe manifold pressure gage (7, figure 7) while timing for leakage (table 3).

(8) Slowly turn case leak valve lever (7, figure 8) to NOR position and turn pressure INCREASE knob (12, figure 7) to close valve.

(9) Turn pressure DECREASE knob (11) to open valve and allow reading on manifold pressure gage (7) to return to normal.

(10) Stop the tester (paragraph 37).

e. Manifold Pressure Gage Vacuum Tests.

(1) Place VACUUM selector knob (20, figure 7) in 30"–10" MANIFOLD ABS PRESS position and turn knobs (17 and 19) to close valves.

(2) Place PRESSURE selector knob (10) in OFF position and turn knobs (11 and 12) to open valves.

(3) Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in NOR position.

(4) Start the tester (paragraph 36).

(5) Turn vacuum INCREASE knob (17, figure 7) to open valve, allowing vacuum to reach relief point (table 2) and observing reading on manifold pressure gage (7).

(6) Turn vacuum DECREASE knob (19) to provide a stabilized reading of 11 in. on manifold pressure gage (7).

(6) Turn vacuum DECREASE knob (19) to provide a stabilized reading of 11 in. on manifold pressure gage (7).

(7) Turn case leak valve lever (7, figure 8) to CL position and observe manifold pressure gage (7, figure 7) while timing for leakage (table 3).

(8) Slowly turn case leak valve lever (7, figure 8) to NOR position and turn vacuum INCREASE knob (17, figure 7) to close valve.

(9) Turn vacuum DECREASE knob (19) to open valve and allow reading on manifold pressure gage (7) to return to normal.

(l0) Stop the tester (paragraph 37).

f. Fuel Pressure Gage Tests

(1) Place VACUUM selector knob (20, figure 7) in OFF position and turn knobs (17 and 19) to open valves.

(2) Place PRESSURE selector knob (10) in FUEL PRESSURE position and turn knobs (11 and 12) to close valves.

(3) Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in NOR position.

(4) Start the tester (see paragraph 36).

(5) Turn pressure INCREASE knob (12, figure 7) to open valve, allowing pressure to reach relief point and observing fuel pressure gage (5) reading. (Refer to table 3.)

(6) Turn pressure DECREASE knob (11) to provide a stabilized reading of 20 psig on fuel pressure gage (5).

(7) Turn case leak valve lever (8, figure 8) to CL position and observe fuel pressure gage (5, figure 7) while timing for leakage. (Refer to table 3.)

(8) Slowly turn case leak valve lever (8, figure 8) to NOR position and turn pressure INCREASE knob (12, figure 7) to close valve.

(9) Turn pressure DECREASE knob (11) to open valve and allow reading on fuel pressure gage (5) to return to normal.

(10) Stop the tester (paragraph 37).

g. Airspeed Indicator Pressure Tests.

(1) Place VACUUM selector knob (20, figure 7) in OFF position and turn knobs (17 and 19) to open valves.

(2) Turn PRESSURE selector knob (10) to 20-250 KNOTS position and knobs (11 and 12) to close valves.

(3) Place case leak valve levers (3, 4, 5, 7, and 8, figure 8) in NOR position.

(4) Start the tester (paragraph 36).

(5) Turn pressure INCREASE knob (12, figure 7) to open valve, allowing pressure to reach relief point and observing airspeed indicator (6) reading. (Refer to table 2.)

(6) Turn pressure DECREASE knob (11) to provide a stabilized reading of 200 knots on airspeed indicator (6).

(7) Turn case leak valve lever (4, figure 8) to CL position and observe airspeed indicator reading while timing for leakage. (Refer to table 3.)

(8) Slowly turn case leak valve lever (4, figure 8) to NOR position and turn pressure INCREASE knob (12, figure 7) to close valve.

(9) Turn pressure DECREASE knob (11) to open valve and allow reading on airspeed indicator (6) to return to normal.

(10) Stop the tester (paragraph 27).

h. Airspeed Indicator Vacuum Test.

(1) Place VACUUM selector knob (20, figure 7) in AIRSPEED VACUUM SETTING and turn knobs (17 and 19) to close valves.

(2) Place PRESSURE selector knob (10) in OFF position and turn knobs (1.1 and 12) to open valves.

(3) Place case leak valves levers (3 and 4, figure 8) in NOR position.

(4) Open rear access panel (11, figure 4) and turn knob (14) to open safety valve (13). Start the tester (paragraph 36).

(5) Turn vacuum INCREASE knob (17, figure 7) to open valve and adjust vacuum DECREASE knob (19) to provide a stabilized reading of 200 knots on airspeed indicator (6).

(6) Turn knob (14, figure 4) to close safety valve (13) and observe airspeed indicator (6, figure 7) reading while timing for leakage. (Refer to table 3.)

(7) Turn knob (14, figure 4) slowly to open safety valve (13) when the leakage test has been completed and close rear access panel (11).

(8) Turn vacuum INCREASE knob (17, figure 7) to close valve and turn vacuum DECREASE knob (19) to open valve, allowing reading on airspeed indicator (6) to return to normal.

(9) Stop the tester (paragraph 37).

40. RATE-OF-CLIMB INDICATOR TESTS

CAUTION

Do not allow the altimeter reading to go below -1000 ft or the rate-of-climb indicator to exceed 6000 fpm as it will damage the instruments.

a. Rate-of-climb Teat.

(1) Place VACUUM selector knob (20, figure 7) in ALT & R.O.C. 0-50,000 FT position and turn knobs (17 and 19) to close valves.

(2) Provide a zero reading on rate-of-climb indicator being tested, with zero adjustment.

(3) Place PRESSURE selector knob (10) in OFF position and turn knobs (11 and 12) to open valves.

(4) Place case leak valve lever (3, figure 8) in NOR position, case leak valve lever (4) in CL position, and turn knob (14, figure 4) to close safety valve (13).

CAUTION

The case leak valve levers must be in these positions and the safety valve closed, to isolate the airspeed indicator from the vacuum source to prevent damage to the instrument.

(5) Make test hose connections (paragraph 38).

(6) Start the tester (paragraph 36).

CAUTION

Do not exceed +6000 fpm on rate-of-climb indicator during tests as it will damage the instrument.

(7) Turn vacuum INCREASE knob (17, figure 7) to open valve and stabilize the required readings (figure 12) by adjusting vacuum DECREASE knob (19, figure 7).

(8) Calibrate the instrument by observing the readings and timing the interval (figure 12) to record the rate-of-climb readings on calibration card (8, figure 7).

b. Rate-of-dive Test.

(1) Turn vacuum INCREASE knob (17, figure 7) to close valve and adjust vacuum DECREASE knob (19) to provide the required readings (figure 12).

(2) Calibrate the instrument by observing the readings and timing the interval (figure 12) to record the rate-of-dive readings on calibration card (8, figure 7).

(3) When tests have been completed, stop the tester (paragraph 37).

RATE OF CLIMB INDICATOR

CALIBRATION IS AT RATES OF CLIMB AT ALTITUDE INTERVALS SHOWN

TEST RATE IN FEET PER MINUTE	RATE OF CLIMB		RATE OF DIVE	
	STOP WATCH ELAPSED TIME	INDICATED RATE	STOP WATCH ELAPSED TIME	INDICATED RATE
500 FT.				
1000 FT.				
2000 FT.				
3000 FT.				
4000 FT.				
5000 FT.				
6000 FT.				

INSTR. NO. DATE

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Figure 12. Rate-of-climb Indicator Test Readings.

41. ALTIMETER TESTS.

CAUTION

Do nut allow the altimeter reading to go below -1000 f t or the rate-of-climb indicator to exceed 6000 fpm as it will damage the instruments.

a. 0 to 50,000 FT. Test.

(1) Perform the master instrument tests (paragraph 39a).

(2) Turn correction knob (22, figure 7) to provide a 29.92 reading on barometric scale (4) on altimeter (3) and altimeter being bested.

(3) Place PRESSURE selector knob (10) in OFF position and turn knobs (11 and 12) to open valves.

(4) Turn VACUUM selector knob (20) to ALT & R.O.C. 0-50,000 FT position and turn knobs (17 and 19) to close valves.

CAUTION

The case leak valve levers must be in these positions, and the safety valve closed, to isolate the airspeed indicator from the vacuum source and prevent damage to the instrument.

(5) Place case leak valve lever (3, figure 8) in NOR position, case leak valve lever (4) in CL position, and turn knob (14, figure 4) to close safety valve (13).

(6) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

CAUTION

Do not exceed +3000 fpm while testing altimeters, nor +6000 fpm while testing rate-of-climb indicators. Exceeding these limits will damage the instruments.

NOTE

Tap altimeter lightly to remove friction before recording readings at all calibration points.

(7) Turn vacuum INCREASE knob (17, figure 7) to provide required readings (figure 13) on altimeter (3, figure 7).

(8) Stabilize the required readings on altimeter (3, figure 7) by adjusting vacuum DECREASE knob (19).

(9) Observe reading on instrument being tested at each check point and record on calibration card (8).

(10) Perform the case leak test on the instrument being tested by turning knob (8, figure 4) to fully close external case leak valve (10) at 40,000 ft. reading on altimeter (3, figure 7). Observe and time the reading on the altimeter being tested for excessive leakage. (Refer. to table 3.)

(11) When case leak test has been completed, turn knob (8, figure 4) slowly to open external case leak valve (10).

(12) Turn vacuum INCREASE knob (17, figure 7) to close valve and slowly turn vacuum DECREASE knob (19) to allow instrument readings to return to normal when the tests have been completed.

(13) Stop the tester (paragraph 37).

b. 0 to 80,000 FT. Test.

(1) Perform the master instrument tests (paragraph 39 b).

(2) Set altimeter being tested and altimeter (3, figure 7) barometric scale (4) at 29.92 with connection knob (22).

(3) Place PRESSURE selector knob (10) in OFF position and turn knobs (11 and 12) to open valves.

(4) Turn VACUUM selector knob (20) to ALT & R.O.C. 0-80,000 FT position and turn knobs (17 and 19) to close valves,

ALTIMETER

STANDARD ALTITuDE IN FEET	INDICATOR READING IN FEET	STANDARD ALTITUDE IN FEET	INDICATOR READING IN FEET
0		20000	
500		22000	
1000		25000	
2000		30000	
4000		35000	
6000		40000	
8000		45000	
10000		50000	
12000		60000	
14000		70000	
16000		80000	
18000			

INSTR. NO. DATE

AV 001473

Figure 13. Altimeter Test Readings.

CAUTION

The case leak valve lever must be in NOR position and the safety valve closed to isolate the airspeed indicator from the vacuum source and prevent damage to the instrument.

(5) Place case leak valve lever (3, figure 8) in NOR position, case leak valve lever (4) in CL position, and turn knob (14, figure 4) to close safety valve (13).

(6) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

CAUTION

***Do* not exceed ±3000 fpm while testing altimeters, nor ±6000 fpm while testing rate-of-climb indicators. Exceeding these limits will damage the instruments.**

NOTE

Tap altimeter lightly to remove friction before recording readings at all calibration points.

(7) Turn vacuum INCREASE knob (17, figure 7) to provide required readings (figure 13) and stabilize readings on altimeter (3, figure 7) by adjusting vacuum DECREASE knob (19).

(8) Observe reading on instrument being tested at each check point and record on calibration card (8, figure 7).

(9) Perform the case leak test on the instrument being tested by turning knob (8, figure 4) to fully close external case leak valve (10) at 80,000 ft. reading on altimeter (3, figure 7). Observe reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

(10) When case leak test has been completed, turn knob (8, figure 4) slowly to open external case leak valve (10),

(11) Turn vacuum INCREASE knob (17, figure 7) to close valve and slowly turn vacuum DECREASE knob (19) to allow instrument readings to return to normal when the tests have been completed.

(12) Stop the tester (paragraph 37).

c. *Negative Altitude.*

(1) Perform the master instrument tests (paragraph 39c).

(2) Set altimeter being tested and altimeter (3, figure 7) barometric scale (4) at 29.92 with correction knob (22).

(3) Place VACUUM selector knob (20) in OFF position and burn knobs (17 and 19) to open valves.

(4) Turn PRESSURE selector knob (10) to NEGATIVE ALTITUDE position and turn knobs (11 and 12) to close valves.

(5) Place case leak valve levers (3 and 4, figure 8) in NOR position.

(6) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

CAUTION

Do not allow altimeter reading to go below -1000 feet or the rate-of-climb indicator to exceed 6000 fpm since exceeding these limits will damage the instruments.

(7) Turn pressure INCREASE knob (12, figure 7) to provide required readings (figure 13) on altimeter (3, figure 7) and stabilize readings by adjusting pressure DECREASE knob (11).

(8) Observe readings on instrument being tested at each check point and record on calibration card (8, figure 7).

(9) Perform case leak test by turning knob (8, figure 4) to fully close external case leak valve (10) at -1000 ft. reading on altimeter (3, figure 7). Observe, reading on instrument being tested and time for excessive leakage (table 3).

(10) When case leak test has been completed, turn knob (8, figure 4) slowly to open external case leak valve (10).

(11) Turn pressure INCREASE knob (12, figure 7) to close valve and slowly turn pressure DECREASE knob (11) to open valve and allow instrument readings to return to normal when the tests have been completed.

(12) Stop the tester (paragraph 37).

42. AIRSPEED INDICATOR TESTS.

a. Pressure Test.

(1) Perform master instrument test (paragraph 39g).

(2) Place VACUUM selector knob (20, figure 7) in OFF position and turn knob (17 and 19) to open valves.

(3) Turn PRESSURE selector knob (10) to 20-250 KNOTS position and knobs (11 and 12) to close valves.

(4) Place case leak valve levers (3, and 4 figure 8) in NOR position.

(5) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

(6) Turn pressure INCREASE knob (12, figure 7) to provide required readings (figure 14) on airspeed indicator (6, figure 7) and adjust pressure DECREASE knob (11) to stabilize the readings.

(7) Observe reading on instrument being tested at each check point and record reading on calibration card (8, figure 7). Refer to figure 15 for converting knots to miles per hour.

(8) Perform case leak test by turning knob (8, figure 4) to close external case leak valve (10) at 200 knot reading on airspeed indicator. Observe reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

(9) When case leak test has been completed, turn knob (8) to open external case leak valve (10).

(10) Turn pressure INCREASE knob (12, figure 7) to close valve and slowly turn pressure DECREASE knob (11) to open valve allowing instrument readings to return to normal when tests have been completed.

(11) Stop the tester (paragraph 37).

b. Vacuum Test.

(1) Perform master instrument test (paragraph 39h).

(2) Place PRESSURE selector knob (10, figure 7) in OFF position and turn knobs (11 and 12) to open valves.

(3) Turn VACUUM selector knob (20) to AIRSPEED VACUUM SETTING and turn knobs (17 and 19) to close valves.

(4) Place case leak valve levers (3, and 4, figure 8) in NOR position,

(5) Open rear access panel (11, figure 4) and turn knob (14) to open safety valve (13).

AIR SPEED INDICATOR

STANDARD AIR SPEED IN KNOTS	INDICATOR READING IN KNOTS	STANDARD AIR SPEED IN KNOTS	INDICATOR READING IN KNOTS
20		140	
40		160	
60		180	
80		200	
100		220	
120		240	

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Figure 14. Airspeed Indicator Test Readings.

CONVERSION CHART KNOTS TO MILES PER HR			
KNOTS	M.P.H.	KNOTS	M.P.H.
20	23.0	140	161.1
40	46.0	160	184.1
60	69.0	180	207.1
80	92.0	200	230.1
100	115.0	220	253.1
120	138.0	240	276.1

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Figure 15. Airspeed Conversion Chart.

(6) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

(7) Turn vacuum INCREASE knob (17, figure 7) to open valve and adjust vacuum DECREASE knob (19) to provide stabilized readings (figure 14) on airspeed indicator (6, figure 7).

(8) Observe reading on instrument being tested at each check point and record reading on calibration card (8). Refer to figure 15, for converting knots to miles per hour.

(9) Perform case leak test by turning knob (8, figure 4) to close external case leak valve (10) at 200 knot reading on airspeed indicator. (Observe reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

(10) When case leak test has been completed, turn knob to open external case leak valve (10).

(11) Turn vacuum INCREASE knob (17, figure 7) to close valve and vacuum DECREASE knob (19) to open valve and allow readings to return to normal when the tests have been completed.

(12) Stop the tester (paragraph 37).

43. MANIFOLD PRESSURE GAGE TESTS.

a. Vacuum Tests.

(1) Perform the master instrument test (paragraph 39e).

(2) Plane PRESSURE selector knob (10, figure 7) in OFF position and turn knobs (11 and 12) to open valves.

(3) Turn VACUUM selector knob (20) to 30"-10" MANIFOLD ABS PRESS position and turn knobs (17 and 19) to close valves.

(4) Place case leak valve lever (7, figure 8) in NOR position.

(5) Make test hose connections (paragraph 38) and start the tester (paragraph 36).

(6) Turn vacuum INCREASE knob (17, figure 7) to open valve and adjust vacuum DECREASE knob (19) to provide the required stabilized readings (figure 16) on manifold pressure gage (7, figure 7).

(7) Observe reading on instrument being tested at each cheek point and record reading on calibration card (8, figure 7).

(8) Perform the case leak test by turning knob (8, figure 4) to fully dose external leak valve (10) at 11 in. Hg reading on manifold pressure gauge (7, figure 7). Observe reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

(9) When case leak test is completed, knob (8, figure 4) to fully open external leak valve (10).

(10) Turn vacuum INCREASE knob (17, figure 7) to close valve and vacuum DECREASE' knob (19) to open valve, allowing readings to return to normal when the tests have been completed.

(11) Stop the tester (paragraph 37).

b. Pressure Test.

(1) Perform master instrument test (paragraph 39d).

(2) Place VACUUM selector knob (20, figure 7) in OFF position and turn knobs (17 and 19) to open valves.

(3) Turn PRESSURE selector knob (10) to 30"-75" MANIFOLD ABS PRESSURE position and turn knobs (11 and 12) to close valves.

(4) Place case leak valve lever (7, figure 8) in NOR position.

(5) Make test hose connections (paragraph 38) and start the tester (paragraph 86).

(6) Turn pressure INCREASE knob (12, figure 7) and adjust pressure DECREASE knob (11) to provide the required stabilized readings (figure 16) on manifold pressure gage (7, figure 7).

(7) Calibrate the instrument being tested by observing the readings at each check point and recording on calibration card (8).

(8) Perform the case leak test by turning knob (8, figure 4) to fully close external case leak valve (10) at 65 in. Hg reading. Observe

reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

(9) When case leak test is completed, turn knob (8, figure 4) to fully open external case leak valve (10).

(10) Turn pressure INCREASE knob (12, figure 7) to close valve and pressure DECREASE knob (11) to open valve, allowing readings to return to normal when tests have been completed.

(11) Stop the tester (paragraph 37).

44. FUEL PRESSURE GAGE TESTS.

a. Perform the master instrument test (paragraph 39f).

b. Place VACUUM selector knob (20, figure 7) in OFF position and turn knobs (17 and 19) to close valves.

c. Turn PRESSURE selector knob (10) in FULL PRESSURE position and turn knob (11 and 19) to close valves.

d. Make test hose connected (paragraph 38) and start the tester (paragraph 36).

e. Turn pressure INCREASE knob (12, figure 7) to open valve and adjust pressure DECREASE knob (11) to provide the required stabilized readings (figure 17) on fuel pressure gage (5, figure 7).

f. Observe reading on instrument being tested at eaeh check point and record reading on calibration card (8, figure 7).

g. Perform the case leak test by turning knob (8, figure 4) to fully close external case leak valve (10) at 20 psig reading on fuel pressure gage (5, figure 7). Observe reading on instrument being tested and time for excessive leakage. (Refer to table 3.)

h. When leak test is completed, turn knob (8, figure 4) to fully open external case leak valve (10).

i. Turn pressure INCREASE KNOB (12, figure 7) to close valve and turn pressure DECREASE knob (11) to open valve, allowing readings to return to normal when tests have been completed.

j. Stop the tester (paragraph 37).

45. MOVEMENT OF EQUIPMENT.

CAUTION

Do not permit oil to enter the lines as it will damage the control and instruments.

a. The tester can be carried from one work area to another when the accessories are neatly and compactly stowed in the cover compartment (2, figure 3), which is installed on the tester, and all access panels latched. Keep the tester in an upright position at all times when there is oil in the reservoir.

b. Instructions relevant to shipment within the continental United Statas and overseas are contained in chapter 6.

MANIFOLD PRESSURE GAGE

STANDARD PRESSURE IN. OF HG.	GAGE READING IN. OF HG.	STANDARD PRESSURE IN. OF HG.	GAGE READING IN. OF HG.
30.0		55.0	
25.0		60.0	
20.0		65.0	
15.0		70.0	
10.0		75.0	
20.0		70.0	
30.0		60.0	
35.0		50.0	
40.0		40.0	
45.0		30.0	
50.0			

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Figure 16. Manifold Pressure Gage Test Readings.

FUEL PRESSURE GAGE

STANDARD PRESSURE P.S.I.	PRESSURE GAGE READING	STANDARD PRESSURE P.S.I.	PRESSURE GAGE READING
0.0		20.0	
2.0		25.0	
4.0			
6.0			
8.0			
10.0			
12.0			
15.0			

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Figure 17. Fuel Pressure Gage Test Readings.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

46. GENERAL.

This section contains special operating instructions which are necessary for the proper functioning of the tester under unusual conditions.

47. EXTREMES OF HEAT AND COLD.

The tester is designed to operate in temperatures from 40°F. to 160°F (40°C. to 71°C.). When operating in normal or extreme high temperatures to 160°F, use the high temperature oil in the reservoir for lubricating the pump. For extreme low temperature operating range (from +32°F. to -40°F), use the low temperature oil and operate the pump for at least 5 minutes with both selector valve knobs (10 and 20, figure 7) in the OFF position and the knobs (11, 12, 17, and 19) turned to open valves before starting tests.

48. OTHER UNUSUAL CONDITIONS.

CAUTION

Contamination in the pneumatic or lubricating systems will damage the instruments controls and the pump.

a. When operating the tester in extreme conditions of snow, ice, rain, mud, dust, salt air, or similar conditions, do everything possible to prevent foreign material from entering the pneumatic or lubricating systems.

b. After operation in extreme conditions, thoroughly clean and dry the tester and accessories.

CHAPTER 3

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SPECIAL ORGANIZATIONAL MAINTENANCE AND REPAIR PARTS

49. SPECIAL TOOLS.

There are no special tools required for organizational maintenance of the tester.

50. REPAIR PARTS.

The repair parts required for organizational maintenance of the tester are listed in the Repair Parts and Special Tools Lists, Appendix C.

Section II. LUBRICATION

51. GENERAL.

This section contains a lubrication chart (figure 18) and lubrication instructions which are supplemental to, but not specifically covered in, the lubrication chart. Refer to DA PAM 310-4 for current lubrication order.

52. DETAILED LUBRICATION INSTRUCTIONS.

CAUTION

Do not allow dirt, dust, water, or other foreign materials to mix with the lubricant at any time as they will damage the pump.

a. Care of Lubricants. Keep the oil in the containers provided with the tester and stow in the cover compartment.

b. Filling Oil Reservoir.

(1) Place PRESSURE and VACUUM selector knobs (10 and 20, figure 7) in OFF position.

(2) Turn knobs (11, 12, 17, and 19) to open valves.

(3) Open rear access panel (11, figure 4) and turn selector valve lever (5, figure 9) to FILL position as shown on selector valve instructions (15, figure 4).

(4) Remove cap (4) from oil hose (12) and install oil hose. tube (8, figure 3).

(5) Remove cap from the required oil container (3 or 4, figure 3) and insert oil hose tube (8) into container.

(6) Start tester (paragraph 36) and run pump until oil level is at index mark on reservoir (16, figure 4); then remove oil hose tube (8, figure 3) from oil container and hold in a vertical position to allow oil to be drawn out of hose (12, figure 4).

(7) Turn selector valve lever (5, figure 9) to RUN position as shown on selector valve instructions (15, figure 4) and stop tester (paragraph 37).

(8) Remove oil hose tube (8, figure 3) from oil hose (12, figure 4) and install cap (4).

(9) Place oil hose (12) between reservoir (16) and side panel of tester.

(10) Close rear access panel (11).

c. *Draining Oil Reservoir.*

(1) Turn PRESSURE selector knob (10, figure 7) to FUEL PRESSURE position and knobs (11 and 12) to close valves.

(2) Place VACUUM selector knob (20) in OFF position and turn knobs (17 and 19) to open valves.

(3), Open rear access panel (11, figure 4) and turn selector valve lever to RUN position as shown on selector valve instructions (15).

(4) Remove cap (4) from oil hose (12) and install oil hose tube (8, figure 3).

LO 55-4920-231-14

TESTER, PITOT AND STATIC SYSTEMS
(REPUBLIC ELECTRONIC IND. CORP.)
(MODEL 340000)

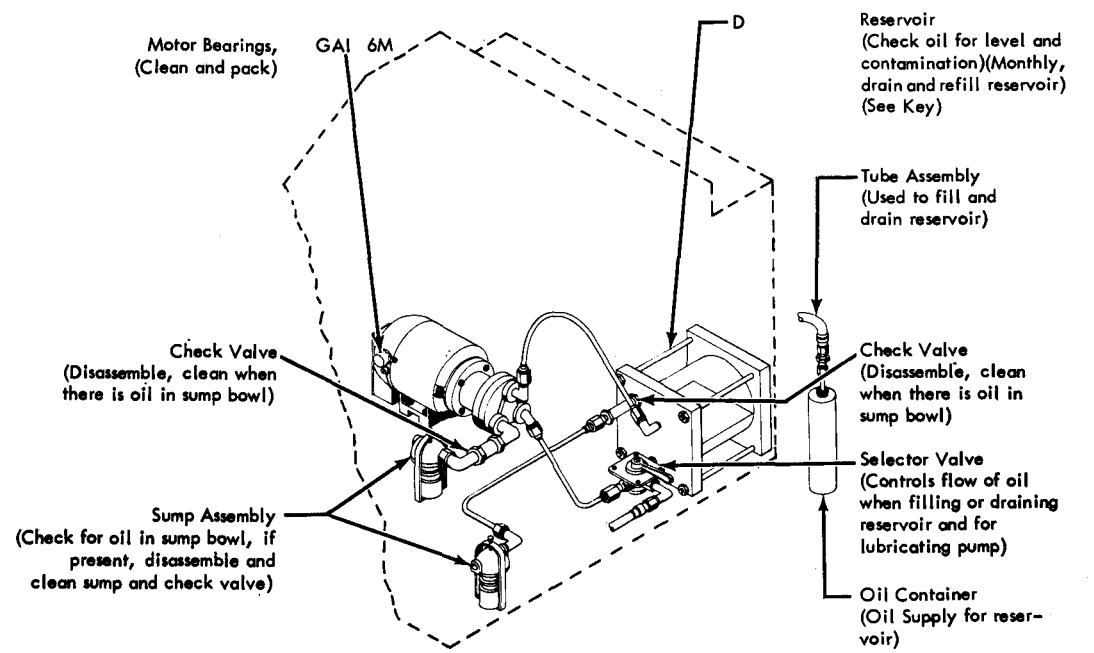
REFERENCE : TM 55-4920-231-14

Intervals given are maximums for normal 10 - hour day or 60 - hour week operation. For abnormal conditions or activities, intervals should be shortened to compensate.

Relubricate after washing.

Clean parts with SOLVENT, dry cleaning or OIL, fuel diesel. Dry before lubricating.

LUBRICANT • INTERVAL **INTERVAL • LUBRICANT**



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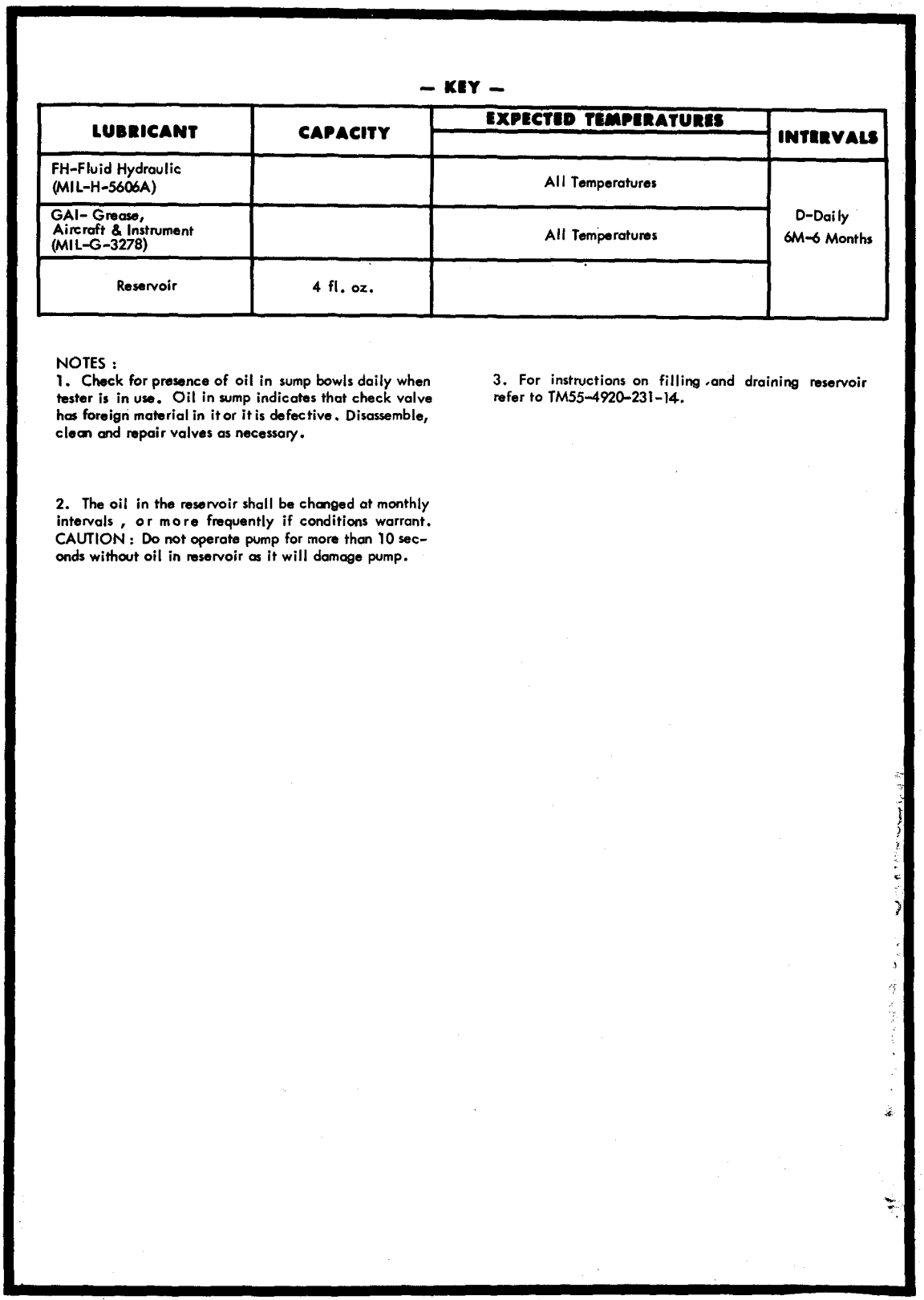
(1) front

Figure 18. Lubrication Chart.



— KEY —

LUBRICANT	CAPACITY	EXPECTED TEMPERATURES	INTERVALS
FH-Fluid Hydraulic (MIL-H-5606A)		All Temperatures	D-Daily 6M-6 Months
GAI- Grease, Aircraft & Instrument (MIL-G-3278)		All Temperatures	
Reservoir	4 fl. oz.		

NOTES :
1. Check for presence of oil in sump bowls daily when tester is in use. Oil in sump indicates that check valve has foreign material in it or it is defective. Disassemble, clean and repair valves as necessary.

2. The oil in the reservoir shall be changed at monthly intervals , or more frequently if conditions warrant. CAUTION : Do not operate pump for more than 10 seconds without oil in reservoir as it will damage pump.

3. For instructions on filling and draining reservoir refer to TM55-4920-231-14.

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(2) back

Figure 18--Continued.

(5) Place oil hose tube in a suitable container and start the tester (paragraph 36).

(6) Turn pressure INCREASE knob (12, figure 7) to open valve and provide a reading of 20 psi on fuel pressure gage (5).

(7) Place power switch (14) in OFF position and turn selector valve lever (5, figure 9) to DRAIN position as shown on selector valve instructions (15, figure 4) and allow oil to drain into container.

(8) If oil reservoir (16) does not drain completely, repeat procedure and discard oil.

(9) Remove oil hose tube (8, figure 3) from oil hose (12, figure 4) and install cap (4).

(10) Place oil hose between reservoir (16) and side panel of tester.

(11) Turn selector valve lever to RUN position as shown on selector valve instructions (15) and close rear access panel (11).

d. Cleaning Sumps.

(1) Remove damp, bowl, gasket, and filter from filter sump body (paragraph 74a).

(2) Clean sump bowl and filter (figure 18) with cleaning solvent Federal Specification P-D-680 or equivalent, and dry with clean, lint-free cloth or dry, compressed air.

(3) Install filter, place gasket and bowl in position on filter sump body and secure with the clamp (paragraph 74c).

(4) Clean the other sump in same manner.

e. Cleaning Check Valves.

(1) Remove and disassemble the check valve (figure 18) as instructed in paragraph 75.

(2) Clean the parts of the check valve with cleaning solvent Federal Specification P-D-680 or equivalent, and dry with a clean, lint-free cloth or dry, compressed air.

(3) Replace all O-rings.

(4) Reassemble and install the check valve as instructed in paragraph 75.

(5) Clean the other check valve in the same manner.

Section III. PREVENTIVE MAINTENANCE SERVICES

53. GENERAL.

This section contains a tabulation of the daily, before operation, during operation, and after operation preventive maintenance services that will be performed by the operator of the tester. To ensure that the equipment is ready for operation at all times it must be inspected systematically so that defects may be discovered and corrected before they can result in serious damage or failure. Defects discovered during operation of unit will be noted for future correction to be made as soon as operation has ceased, or operation will be stopped if defect will cause damage to equipment, should operation be continued. After operation, services will be performed at intervals based on normal operation of equipment reducing interval to compensate for abnormal conditions. Defects or unsatisfactory operation beyond the scope of the operator to correct must be reported at the earliest opportunity.

54. OPERATOR'S DAILY SERVICE.

The specific daily services to be performed by the operator are listed in table 4. The interval at which the services are to be performed is indicated by an X in the appropriate column. Correct all deficiencies noticed or report them to the proper authority.

Table 4. Operators Daily Service

Before Operation	During Operation	After Operation	Procedure
X			Visual Inspection. Make a visual inspection of teeter and its accessories. Check for loose, damaged, or miming parts.
X			Electrical. Inspect all wiring and cable assemblies for damage, deterioration, and loose connections, and all components for evidence of overheating. Check power switch for mechanical operation.
X			Leaks. Check for defective hoses, loose connection, and look for evidence of oil leakage.
X			Lubrication. Provide the proper amount of clean oil specified for operation in temperature range indicated on lubrication chart.

Table 4. Operator's Daily Services (Cont)

Before Operation	During Operation	After Operation	Producdure
X	X	X	Oil sumps. Check vacuum and pressure sumps for pressure of oil. Clean sump and filter when there is oil present
	X		Valves. Check all valves for proper operation. They must turn freely but not be too loose.
X			Work area. Place testar on a firm and level stand in a clean, well-lighted area at a height at which the instruments are easily visible and the controls readily accessible.
X			Power source. Provide a power source compatible with the requircmens of the tester and make certain all connections are secure.
X			publications. Provide a serviceable copy of this manual, TM 50-4920-231-14, and the current lubrication order for the equipment.
X			Accessories. Check table 1 to see that all accessories are with equipment or accounted for.
	X		Case leak test. Perform master instrument case leak test to determine if there is leakage in tester instrument.
	X		Unusual operation. Check for unusual noises, excessive vibration, evidence of overheating, and lack of pressure or vacuum. Stop teeter immediately when an unusus condition exists and do not resume operation until it is determined that no further damage will result, or the defect is repaired.
		X	Stopping. Remove all foreign material and clean tester and accessories thoroughly. Account for all accessories and stow them neatly and compactly in cover compartment.

Section IV. TROUBLESHOOTING

55. GENERAL.

This section provides information useful in diagnosing and correcting unsatisfactiry operation or failure of the tester, or any of its components Each trouble symptom stated is followed by a list of probable cause of the trouble. The possible remedy recommended is described opposite the probable cause.

56. TROUBLESHOOTING.

A tabulation of symptoms of probable troubles and remedies which are likely to be encountered before, during, or after operation, and repair of the equipment are contained in table 5.

Table 5. Troubleshooting

Item No.	Trouble	Probable cause	Possible remedy
	Indicator light does not illuminate and motor does not run when power switch is in ON position.	No power source.	Provide a power source (paragraph 35),
		Loose connection on power cable.	Tighten connection.
		Defective power cable (check continuity, figure 10).	Repair or replace cable (paragraph 86).
		AC OPERATION ONLY	
		Defective lead or connection between connector and capacitor (check continuity, figure 10).	Repair or replace wiring harness (paragraph 85).
		Defective lead or connection between capacitor and rectifier. (Check for continuity and shorts, figure 10.)	Repair or replace wiring harness (paragraph 85).
		Open rectifier or shorted capacitor and motor.	Replace rectifier (paragraph 80).
		(Check voltage on yellow coded lugs of rectifier. If voltage	Replace capacitor.

Table 5. Troubleshooting (Cont)

Item No.	Trouble	Probable cause	Possible remedy
		is present with no dc voltage across the red and black coded lugs, either the rectifier is open or capacitor or motor is shorted. Disconnect red lead from the rectifier and recheck voltage across red and black coded lugs of rectifier. If dc voltage is now present, capacitor or motor is shorted) ,(See figure 10.)	
		Open lead between transformer and rectifier. (Check voltage between lugs 3 and 4 on transformer and across yellow coded lugs of rectifier. If voltages are not identical there is an open lead between them.) (See figure 10.)	Repair or replace wiring harness (paragraph 85).
		Open transformer primary winding or input leads. (Disconnect plug mating with J1 and check resistance between pins 1 and 2 at T1. Resistance check on J1 between pins I and J.) (See figure 10.) (Approx. 2.8 ohms.)	Repair or replace wiring harness (paragraph 85). Replace transformer.
		Open transformer, secondary winding. (Check voltage across terminals 3 and 4 of Tl, 25V (rms).)	Replace transformer.
		IF zero voltage, disconnect a lead from terminal 3 or 4 and recheck voltage; if still zero transformer is defective. (See figure 10.)	Replace transformer.
2	Indicator light does not illuminate but the motor runs when power switch is ON.	Indicator lamp burned out.	Replace lamp (paragraph 84).
		Open lead to indicator lamp. (Check continuity.) (See figure 10.)	Repair or replace wiring harness (paragraph 85).
3	Fuse blows when power switch is placed in ON position.	Shorted lead in power cable. (Check for continuity and shorts.) (see figure 10.)	Repair or replace cable (paragraph 86).
		Shorted leads to motor or pilot light. (Check continuity and for shorts.) (See figure 10.)	Repair or replace wiring harness (paragraph 85).
		Short in suppression filter. (Check continuity and for shorts) (See figure 10.)	Replace filter (paragraph 60).
		Short in electric motor (Check continuity and for shorts). (See figure 10.)	Replace motor (paragraph 81). Repair motor.
		Shorted lead to switch or fuse. (Check continuity and for shorts.) (See figure 10.)	Repair or replace wiring harness (paragraph 85).
		AC OPERATION ONLY Shorted leads to transformer or shorted transformer primary windings. (Check for continuity and for shorts.) (See figure 10.)	Repair or replace wiring harness (paragraph 85). Replace transformer.

Table 5. Troubleshooting (Cont)

Item No.	Trouble	Probable cause	Possible remedy
		Shorted transformer or rectifier. (Check continuity and for shorts.) (See figure 10.)	Replace transformer. Replace rectifier (paragraph 80).
4	Indicator light illuminates but motor does not run.	Plug connector not secure.	Tighten plug connector (paragraph 81).
		Open lead to motor. (Check for continuity.) (See figure 10.)	Repair or replace wiring harness (paragraph 85).
		Open lead in motor. (Check for continuity.)	Replace motor (paragraph 81). Repair motor,
		Worn motor brushes.	Replace brushes (paragraph 81).
		Defective motor.	Replace motor (paragraph 81). Repair motor.
		Armature defective.	Repair or replace armature.
		Open circuit in motor armature or field winding. (Check resistance between motor input and ground-approx. 1.7 ohms)	Replace motor (paragraph 81). Repair motor.
5	Motor runs slowly.	Worn brushes.	Replace brushes (paragraph 81).
		Poor brush contact.	Seat brushers (paragraph 81).
		Insufficient or incorrect oil in reservoir.	Replace oil (paragraph 51).
		Commutator worn or dirty.	Repair armature.
		Defective motor bearings.	Replace bearings.
6	Pump is operating but insufficient vacuum or pressure is produced.	Lack of proper oil in reservoir.	Fill reservoir with proper oil (paragraph 51).
		Check valve stuck.	Clean check valve (paragraph 75).
		Filter clogged.	Clean or replace filter (paragraph 74).
		Line plugged.	Clean lines (paragraph 63).
		Loose connection.	Tighten connection (paragraph 68).
		Defective tubing.	Replace tube (paragraph 63).
		Defective instrument.	Replace instrument (paragraphs 65-69) .
		Improperly adjusted relief valve.	Adjust relief valve (paragraph 62).
		Caps on connectors loose.	Tighten caps to prevent leakage.
		Defective pump.	Replace pump.
		Defective selector valve.	Replace valve (paragraph 64).

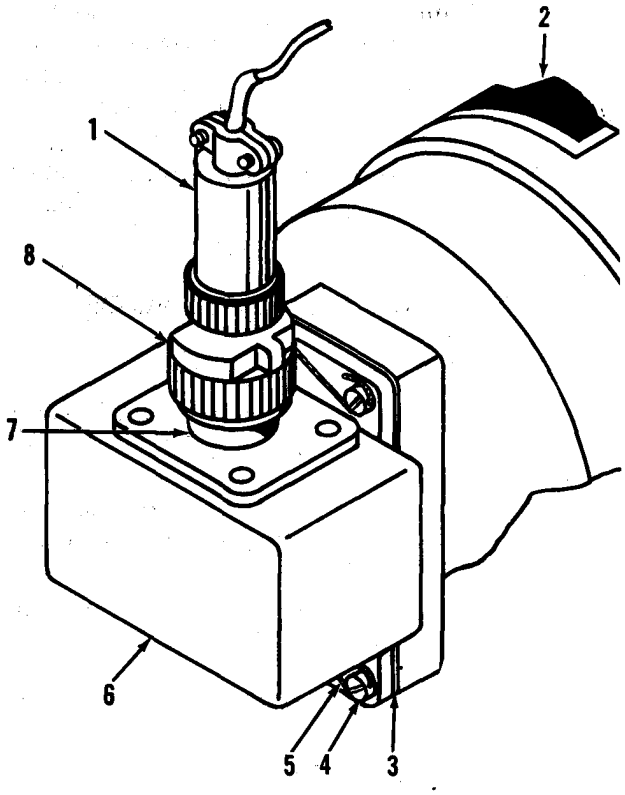
Section V. RADIO INTERFERENCE SUPPRESSION

57. GENERAL.

Radio interference suppression is the elimination, or reduction to a minimum, of electrical disturbances produced by operation of the equipment. These electrical disturbances are composed partly of electrical waves in the radio frequency range. They must be suppressed as they will interfere with the proper operation of friendly radio and radar equipment, and can be detected by an enemy with electronic devices to give an accurate location of the equipment. When the equipment is satisfactorily suppressed, there is no radiated or conducted interference in the frequency range of 0.15 through 1000.0 megacycles at a distance of 5 feet from the tester.

58. INTERFERENCE SUPPRESSION COMPONENT.

There is a filter (6, figure 19) mounted on the electric motor (2) and it provides a low resistance path to ground stray currents created by the arc of the motor brushes.



1. PLUG CONNECTOR
2. ELECTRIC MOTOR
3. GASKET
4. SCREW, MACHINE, DRILLED FILLISTER HEAD
5. LOCKWIRE (.020)
6. FILTER
7. RECEPTACLE CONNECTOR
8. FILTER AND RECEPTACLE ASSY.

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Figure 19. Radio Interference Suppression.

59. TESTING RADIO INTERFERENCE SUPPRESSION.

a. Place a radio receiver that is in good operating condition in a position not more than 5 feet from the tester. A wide band receiver with a frequency range of 0.15 in 1000.0 megacycles is preferred.

b. Start the tester and tune the receiver in to three widely separated frequencies at maximum volume. Use frequencies that are free of signals with strong carriers so that the receiver will be in its most sensitive operating condition.

c. When the tester is operating, listen to the receiver for interference which ceases when the tester is stopped and which indicates that the suppression is defective.

60. REPLACEMENT OF SUPPRESSION COMPONENT.

a. Removal.

(1) Disconnect plug (1, figure 19) from receptacle (7).

(2) Cut lockwire (5) and remove from Screws (4).

(3) Remove screws (4) securing filter (6) to electric motor (2) and remove filter and gasket (3) from motor.

b. Installation.

(1) Place gasket *(3)* and filter (6) in position on motor (2) and secure with screws (4).

(2) Secure the top two screws (4) together and the bottom two screws (4) together with the lockwire (5).

(3) Install the plug (1) on the receptacle (7).

Section VI. PNEUMATIC SYSTEM

61. GENERAL.

The pump (19, figure 11) serves the dual function of developing pressure as well as vacuum for operation of the tester. In the pressure section a mixer of air and oil is pumped into the reservoir (33) where the oil and air are separated. The separated oil drops to the bottom of the reservoir where it is fed to the pump for lubrication purposes, the air being forced out at the top of the reservoir under pressure, The pressurized air, after going through the check valve (32) whose function it is to prevent oil from entering instrument lines during operation, enters an oil sump (15) and passes through a filter which is an integral part of tire sump. Air from the sump flows through two pressure control valves (16 and 17). The pressure INCREASE valve (17) controls the amount of air permitted in the system and the pressure DECREASE valve (16) opens the line to the ambient air, allowing system pressure to bleed off. The available pressure level, as fixed by the control valves is sent to the pressure relief valve (14) and PRESSURE selector valve (31). Setting the PRESSURE selector valve at the desired test position completes the circuit to the instrument under test and simultaneously connects the instrument under test and the master instrument to one of the pressure relief valves (12 or 13). The pressure relief valve (14) is in the line at

all times and protects the instruments from pressure overload. When the pump is producing vacuum, evacuated air from the vacuum section passes through the check valve (20) and the sump (21) which prevents oil from entering the instrument lines. The vacuum INCREASE valve (22) controls the amount of vacuum in the system and the vacuum DECREASE valve (23) opens the line to the ambient air allowing the system vacuum to bleed off. Setting the VACUUM selector valve (36) at the desired test position completes the circuit to the instrument under test and the master instrument to one of the three relief valves (24, 25, or 26) which protect the instruments from vacuum overloads. The case leak valves (2, 4, 5, 8, and 11) provide isolation for the master instruments on the test set to permit case leak tests and/or calibration of the master instruments without removing them from the tester.

62. RELIEF VALVE ADJUSTMENT.

When one of the relief valves (3, 6, 7, 8, 9, or 10, figure 20) does not provide relief at a point within the tolerances listed in table 2 in performing the master instrument tests (paragraph 39) , proceed as follows:

a. Open the lower access panel (2, figure 20) and determine the appropriate valve to be adjusted as indicated in figure 20 and on the chassis of the tester.

b. Loosen the locknut (5) and turn the adjusting screw (4) to provide a reading on the instrument, within the tolerances listed in table 2.

c. Tighten the locknut (5) and close the lower access panel (2).

63. HOSE AND TUBE ASSEMBLIES.

CAUTION

Do not blow compressed air into hoses or tubes when they are attached to instruments as it will damage the instruments. Do not allow antiseize and sealing compound to enter the lines as it can cause leakage and damage the instruments.

When it is necessary to disconnect the ends of more than one hose or tube assembly at a time, identify and tags the assembly and the fitting for proper installation (figure 11). The parts on the selector valves (31 and 36) are numbered for identification of the hose and tube assemblies. Replace defective hose assemblies with AN 6270 hose. Fabricate replacement tube assemblies identically to the one being replaced. Blow clean and dry, compressed air through the hose and tube assemblies when they are removed. Apply antiseize and sealing thread compound, Military Specification MIL-T–5542 or equivalent to the third and fourth male threads of all fittings before installing hose or tube assemblies as identified. Refer to figure 11 for proper installation. Tighten all connections to prevent leakage.

64. PRESSURE AND VACUUM SELECTOR VALVES.

a. Removal.

(1) Disconnect all hose and tube assemblies (10 and 11 figure 21) from fittings (15, 16, and 17) as instructed in paragraph 63.

(2) Remove four screws (12) and lockwashers (13) securing PRESSURE selector valve (14) to front panel (23).

(3) Remove selector valve from front panel and remove all fittings (15, 16, and 17) from valve.

(4) Remove VACUUM selector valve (18) in a similar manner.

b. Cleaning and Inspection.

(1) Clean all parts with cleaning solvent, Federal Specification P-D-680 or equivalent, and dry thoroughly.

(2) Inspect all parts for cracks, breaks, excessive wear, binding, and damaged threads.

(3) Report all defective parts to higher authority.

c. Installation.

(1) Install fittings (15, 16, and 17, figure 21) on PRESSURE selector valve (14).

(2) Place PRESSURE selector valve (14) in position on f rent panel (23) and secure with four lockwashers (13) and screws (12).

(3) Connect all hose and tube assemblies (10 and 11) to the fittings (15, 16, and 17) as instructed in paragraph 63,

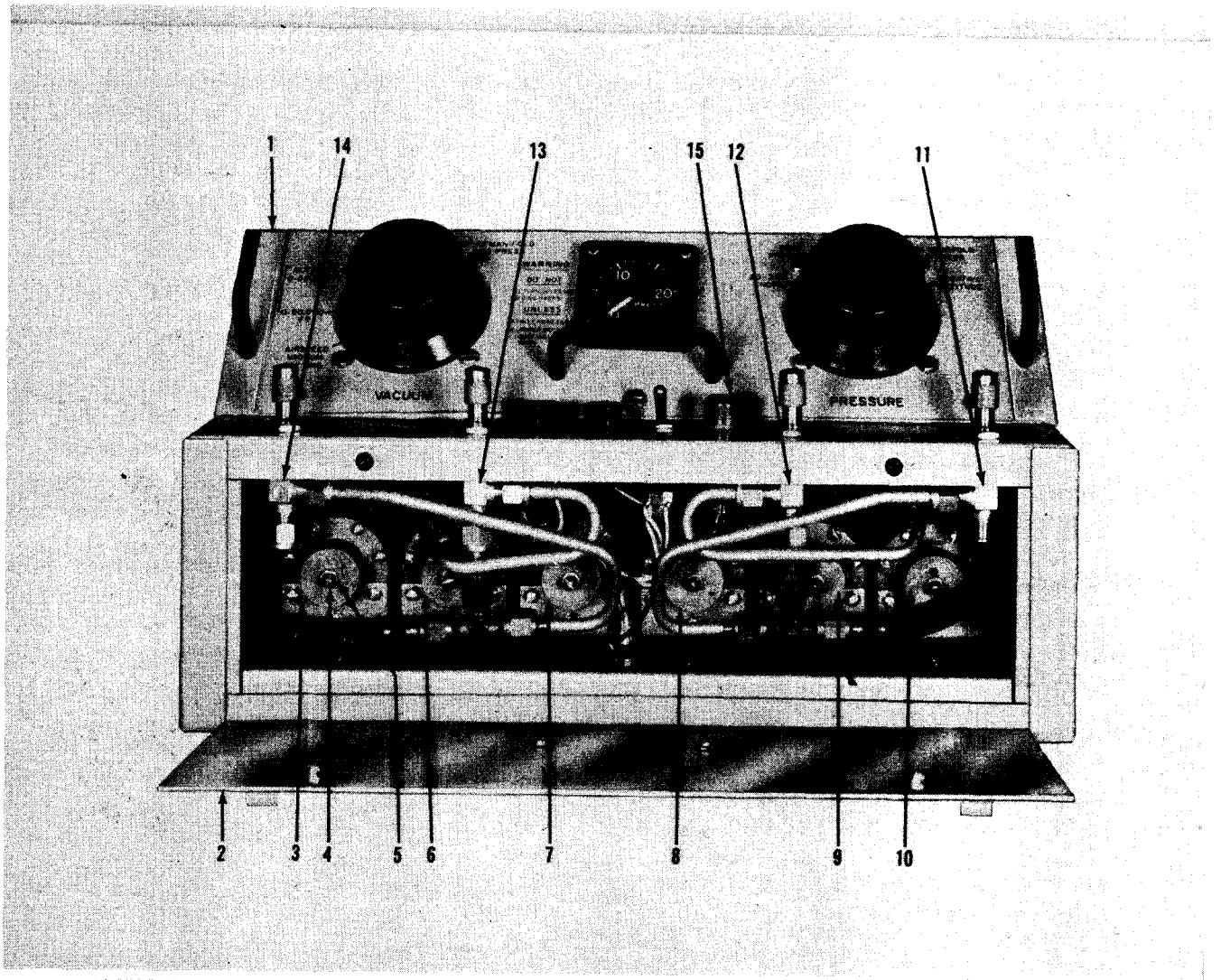
(4) Install VACUUM selector valve (18) in a similar manner.

65. RATE-OF-CLIMB INDICATOR.

a. Removal.

(1) Disconnect hose assembly from fitting on rate-of-climb indicator (4, figure 21) as instructed in paragraph 63.

(2) Remove the four nuts (1), lockwashers (2), and screws (3) securing rate-of-climb indicator (4) to front panel (23). Remove rate-of-climb indicator.



1. TESTER
2. LOWER ACCESS PANEL
3. RELIEF VALVE (50,000 FT.)
4. ADJUSTING SCREW
5. LOCKNUT
6. RELIEF VALVE (80,000 FT)
7. RELIEF VALVE (10 IN HG)
8. RELIEF VALVE (75 IN HG)
9. RELIEF VALVE (250 KNOTS)
10. RELIEF VALVE (25 PSIG)
11. PRESSURE CONTROL VALVE
12. PRESSURE CONTROL VALVE
13. VACUUM CONTROL VALVE
14. VACUUM CONTROL VALVE
15. INDICATOR LIGHT ASSEMBLY

AV 001481

Figure 20. Relief Valve Adjustment.

(3) Remove 45° elbow (15, figure 21) from rate-of-climb indicator.

b. Installation.

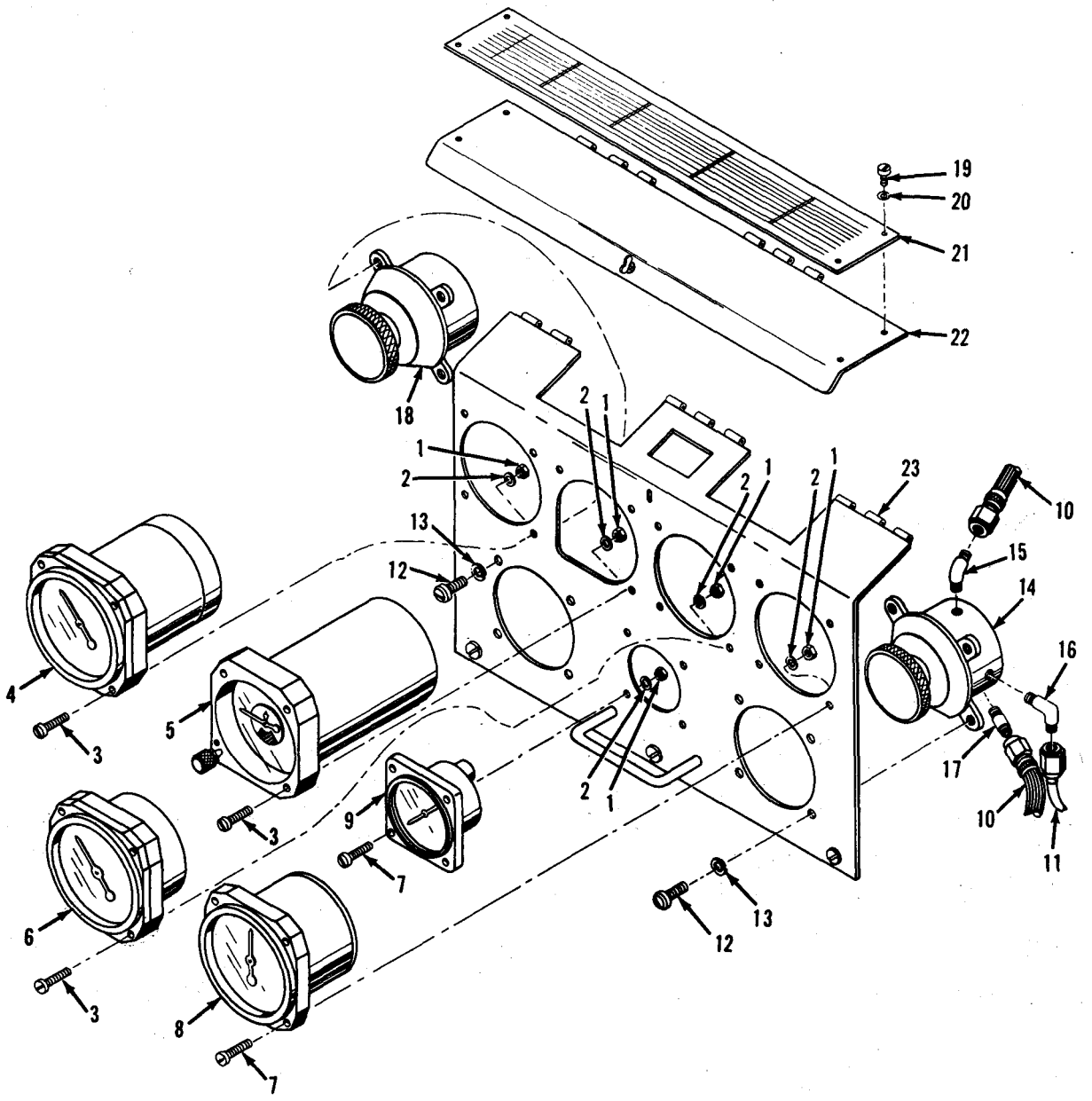
(1) Install 45° elbow on rate-of-climb indicator (4).

(2) Place indicator in position on front panel (23) and secure with the four screws (3), lockwashers (2), and nuts (1).

(3) Connect hose assembly to fitting on rate-of-climb indicator (4) as instructed in paragraph 63.

66. ALTIMETER.

a. Removal. Remove the altimeter (5, figure 21) in a manner similar to the way the rate-of-climb indicator (4) is removed (paragraph 65a).



1. NUT, PLAIN HEXAGON 8–32
2. WASHER, LOCK, SPLIT 1/8 IN.
3. SCREW, MACHINE, PAN HEAD, SLOTTED 8–32 X 7/8
4. RATE OF CLIMB INDICATOR
5. ALTIMETER
6. AIR SPEED INDICATOR
7. SCREW, MACHINE, PAN HEAD, SLOTTED 8–32 X 3/4
8. MANIFOLD PRESSURE GAGE
9. FUEL PRESSURE GAGE
10. HOSE ASSEMBLY
11. TUBE ASSEMBLY
12. SCREW, MACHINE, PAN HEAD SLOTTED 10–32 X 3/8
13. WASHER, LOCK, SPLIT 3/16 IN.
14. PRESSURE SELECTOR VALVE
15. ELBOW, FLARED TUBE AND PIPE THREAD, 45°
16. ELBOW, FLARED TUBE AND PIPE THREAD 90°
17. NIPPLE, FLARED TUBE AND PIPE THREAD
18. VACUUM SELECTOR VALVE
19. SCREW, MACHINE 3/32–40 X 1/8
20. WASHER, LOCK, SPLIT 5/32 IN.
21. CALIBRATION CHART
22. UPPER ACCESS PANEL
23. FRONT PANEL

AV 001482

Figure 21. Front Panel-Exploded View.

b. Installation. Install the altimeter (5) in a manner similar to the way the rate-of-climb indicator (4) is installed (paragraph 65b).

67. AIRSPEED INDICATOR.

a. Removal. Remove the airspeed indicator (6, figure 21) in a manner similar to the way the rate-of-climb indicator (4) is removed (paragraph 65a).

b. Installation. Install the airspeed indicator (6) in a manner similar to the way the rate-of-climb indicator (4) is installed (paragraph 65 b).

68. MANIFOLD PRESSURE GAGE.

a. Removal. Remove the manifold pressure gage (8, figure 21) in a manner similar to the way the rate-of -climb indicator (4) is removed (paragraph 65a).

b. Installation. Install the manifold pressure gage (8) in a manner similar to the way the rate-of-climb indicator (4). is installed (paragraph 65b).

69. FUEL PRESSURE GAGE.

a. Removal. Remove the fuel pressure (9, figure 21) in a manner similar to the way the rate-of-climb indicator (4) is removed (paragraph 65a).

b. Installation. Install the fuel pressure (9) in a manner similar to the way the rate-of-climb indicator (4) is installed (paragraph 65 b).

70. CALIBRATION CHART.

a. Removal.

(1) Remove the four screws (19, figure 21) and lockwashers (20).

(2) Break the cement and remove calibration chart (21) from upper access panel (22).

b. Installation.

(1) Apply an approved cement to back of calibration chart (21) and place in position on upper access panel (22).

(2) Install the four lockwashers (20) and screws (19) securing calibration chart (21) to upper access panel (22).

71. PRESSURE AND VACUUM CONTROL VALVES.

The external case leak valves (7, figure 3) safety valves (13, figure 4), and the control valves (11, 12, 13, and 14, figure 20) are needle valves and constructed in a similar manner. Replace as follows:

a. Removal.

(1) Remove the hose and tube assemblies that are connected to the valves (paragraph 63).

(2) Remove tube tee (2, figure 22) and tube union (22) from tube assemblies (3).

(3) Remove mounting nuts (6) securing needle valves (7) to tester case (29). Remove valves.

b. Disassembly.

(1) The external ease leak valves (7, figure 3) and the needle valves (7, figure 22) are disassembled in the same manner,

(2) Disassemble in sequence of the index numbers in figure 23.

c. Cleaning and Inspection.

(1) Clean the parts, except O-rings, with cleaning solvent, Federal Specification P-D-680 and dry thoroughly.

(2) Inspect the parts for cracks, breaks, excessive wear, distortion, deterioration, and damaged threads.

(3) Report defective parts to higher authority.

d. Reassembly.

(1) The external case leak valves (7, figure 3) and the needle valves (7, figure 22) are reassembled in the same manner.

(2) Reassemble in the reverse sequence of index numbers shown in figure 23.

e. Installation.

(1) Place needle valve (7, figure 22) in position, on test case (29) and secure with mounting nut (6).

(2) Install tube tee (2) and tube union (22) on the tube assemblies (3).

(3) Install the tube and hose assemblies (paragraph 63).

72. CASE LEAK VALVES.

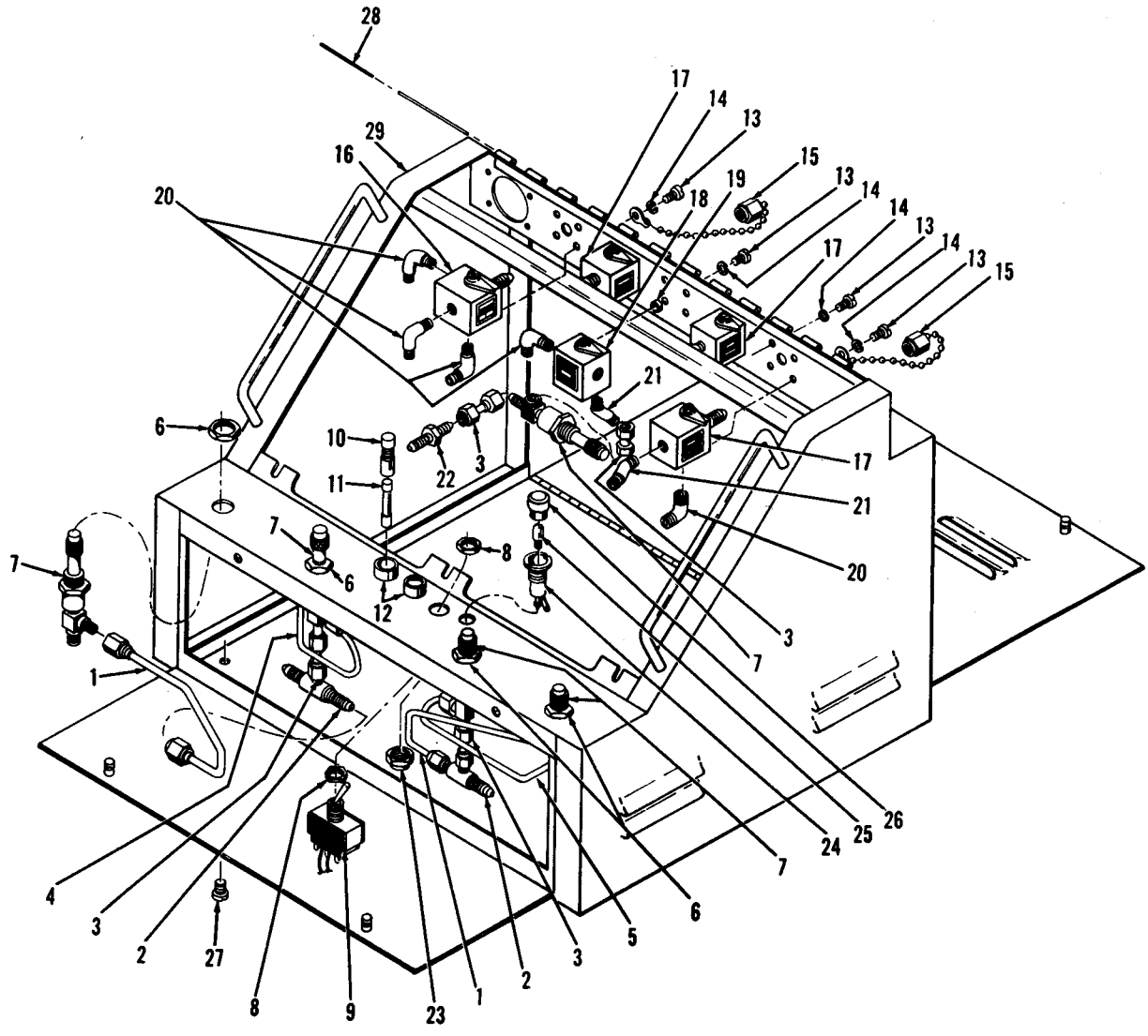
a. Removal. Each of the case leak wolves (16, 17, and 18, figure 22) is removed in a similar manner as follows:

(1) Disconnect hose assemblies from elbows (20 and 21) on valve, as instructed in paragraph 63.

(2) Remove screws (13) and lock washers (14) securing valve to tester case (29).

(3) Remove cap and chain assembly (15) and spacers (19) and remove valves from case valve.

(4) Remove elbows (20 and 21) from valve.



1. TUBE ASSEMBLY
2. TEE, FLARED TUBE
3. TUBE ASSEMBLY
4 TUBE ASSEMBLY
5. TUBE ASSEMBLY
6. MOUNTING NUT
7. NEEDLE VALVE
8. MOUNTING NUT
9. POWER SWITCH
10. FUSE CAP
11. FUSE
12. FUSEHOLDER
13. SCREW,MACHINE, PAN HEA SLOTTED 8-32 x 5/16
14. WASHER,LOCK
15. CAP AND CHAIN ASSEMBLY
16. CASE LEAK-VALVE
17. CASE LEAK VALVE
18. CASE LEAK VALVE
19. SPACER
20. ELBOW. FLARED TUBE AND PIPE THREAD,90°
21. ELBOW, FLARED TUBE AND PIPE THREAD,45°
22. UNION, FLARED TUBE
23. MOUNTING NUT
24. LIGHT BASE
25. LAMP
26. LIGHT CAP
27. SCREW, MACHINE, PAN HEAD, SLOTTED 10-32 x 1/2
28. HINGE PIN
29. TESTER CASE

AV 001483

Figure 22. Tester Case-Exploded View.

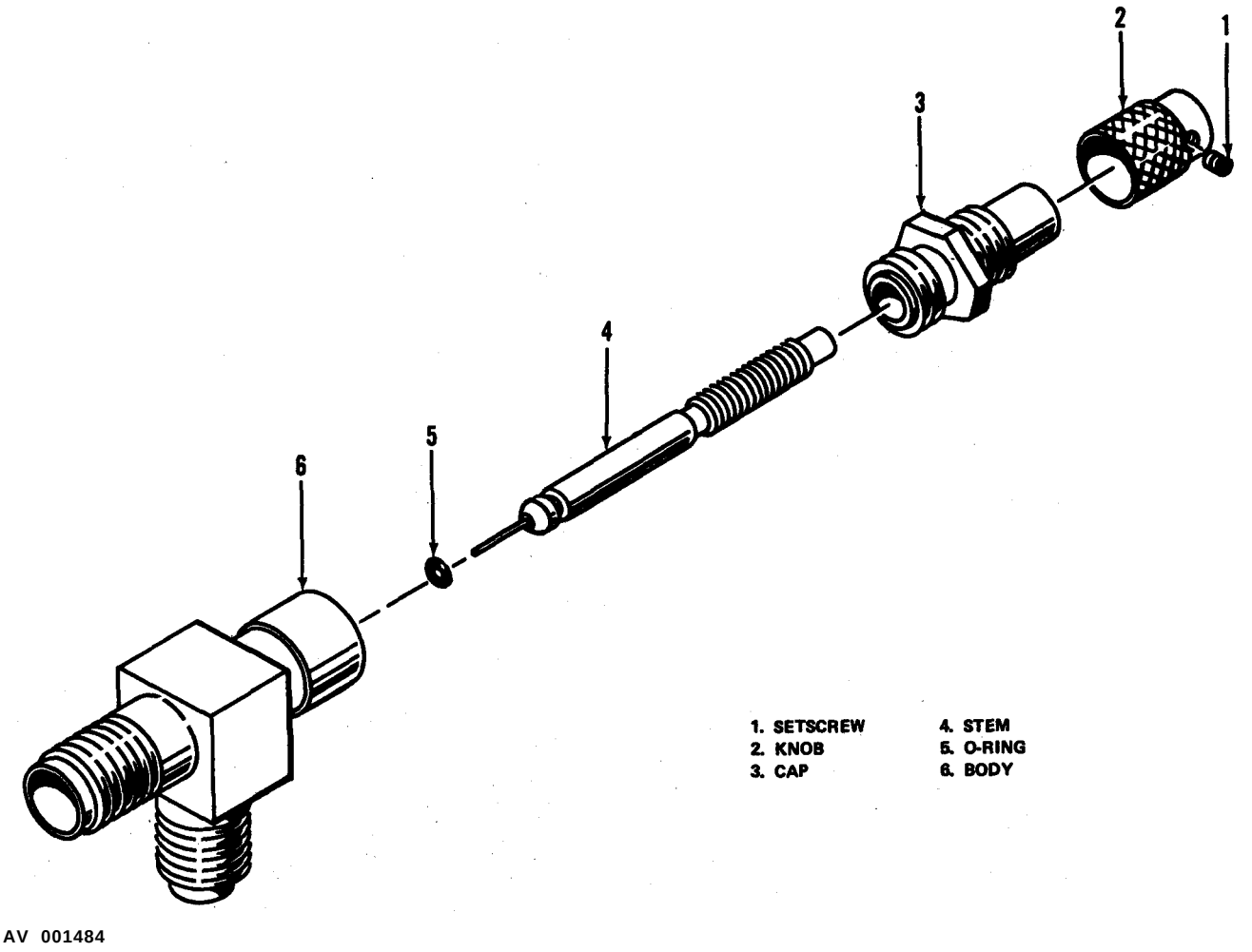


Figure 23. Needle Valve-Exploded View.

b. Cleaning and Inspection.

(1) Clean all parts with cleaning solvent Federal Specification P-D-680 or equivalent, and dry with a clean, lint-free cloth or clean, dry, compressed air.

(2) Inspect all parts for cracks, breaks, excessive wear, binding, and damaged threads.

(3) Report all defective parts to higher authority.

c. Installation. Each of the case leak valves (16, 17, and 18, figure 22) is installed in a similar manner as follows:

(1) Install elbows (20 and 21) on valve.

(2) Place valve and cap and chain assembly (15) and spacers (19) in position on case (29) and secure with lockwashers (14) and screws (13).

(3) Connect hose assemblies to elbows (20 and 21) on valve as instructed in paragraph 63.

73. CHASSIS ASSEMBLY.

a. *Removal.* It is necessary to remove the chassis assembly (figure 24) from the tester case (29, figure 22) in the following manner in order to replace components that are on the chassis.

(1) Disconnect all hose and tube assemblies (paragraph 63) which are connected to components that are mounted on the chassis.

(2) Unsolder electrical leads that are connected to fuseholder (12, figure 22) and light base (24). Identify leads to facilitate installation.

(3) Remove mounting nut. (8) securing power switch (9) to case (29) and remove switch.

(4) Remove six screws (27) securing chassis assembly to tester case (29).

(5) Remove nuts (1, figure 25) lockwashers (2), and screws (3) securing wiring harness (4) to tester case.

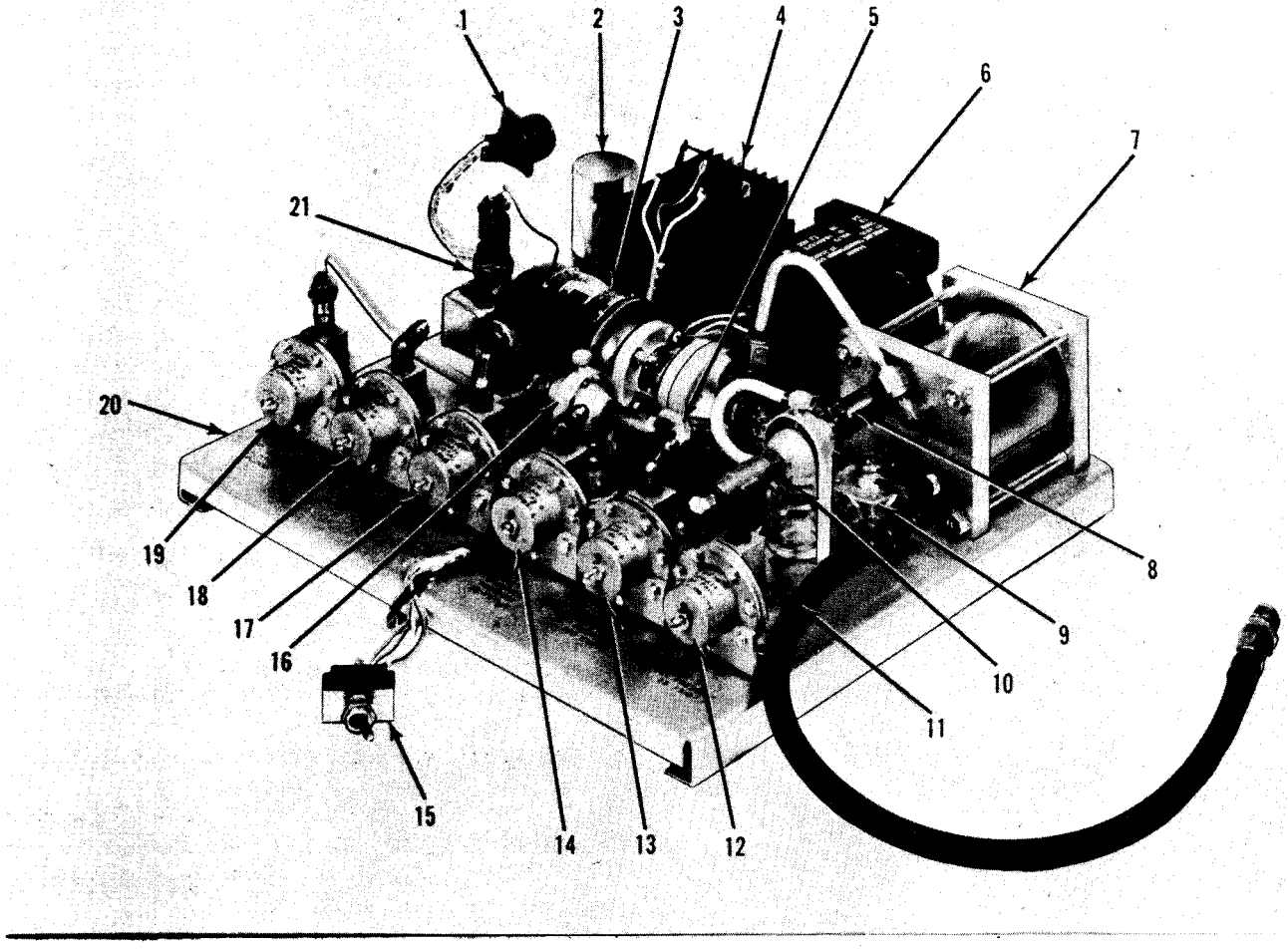
(6) Remove chassis assembly (figure 24) from tester case.

b. Cleaning, Inspection, and Repair.

(1) Clean the chassis assembly with a Clean cloth dampened with cleaning solvent, Federal Specification P–D-680 or equivalent, and dry thoroughly.

(2) Inspect components for cracks, breaks, evidence of leakage or overheating, and damaged threads.

(3) Repair or replace defective parts.



1. CONNECTOR, RECEPTACLE
2. ELECTROLYTIC FILTER CAPACITOR
3. MOTOR ASSEMBLY
4. SELENIUM RECTIFIER
5. VACUUM CHECK VALVE
6. TRANSFORMER
7. OIL RESERVOIR
8. PRESSURE CHECK VALVE
9. SELECTOR VALVE
10. PRESSURE FILTER SUMP
11. OIL HOSE
12. RELIEF VALVE
13. RELIEF VALVE
14. RELIEF VALVE
15. POWER SWITCH
16. VACUUM FILTER SUMP
17. RELIEF VALVE
18. RELIEF VALVE
19. RELIEF VALVE
20. CHASSIS
21. CONNECTOR, PLUG

Figure 24. Chassis Assembly.

c. Installation.

(1) Place assembled chassis (figure 24) in position in tester case (29, figure 22) and secure with the six screws (27).

(2) Solder leads on fuseholder (12) and light base (24) as previously identified (figure 10).

(3) Place power switch (9) in position on tester case (29) and secure with mounting nut (8).

(4) Connect all hose assemblies (paragraph 63) to the components that are mounted on the chassis.

(5) Position wiring harness (4, figure 25) on tester case and secure with screws (3), lockwashers (2), and nuts (1).

74. PRESSURE AND VACUUM FILTER SUMPS.

Remove and disassemble the pressure and vacuum filter sumps (10, and 16, figure 24) for cleaning and repair, as follows:

a. Removal and Disassembly.

(1) Remove tube asesmblies (5 and 6, figure 25).

(2) Remove clamp (7), bowl (8), gasket (9), and filter (10) from filter sump bodies (11).

(3) Remove sump bodies (11) and remove elbows (13 and 14) and pipe nipples (15) from filter sump bodies.

b. Cleaning, Inspection, and Repair.

(1) Clean parts except the gaskets, with cleaning solvent, Federal Specification P-D–680 or equivalent, and dry with a clean, lint-free cloth or clean, dry, compressed air.

(2) Inspect parts for cracks, breaks, deterioration, and damaged threads,

(S) Repair or replace defective parts.

c. Reassembly and Installation.

(1) Install pipe nipples (15, figure 25) and elbows (13 and 14) on sump filter bodies (11) and install bodies,

(2) Install filter (10), place gasket (9) and bowl (8) in position on filter sump body (11), and secure with clamp (7),

(3) Install tube assemblies (5 and 6).

75. PRESSURE AND VACUUM CHECK VALVES.

Remove the pressure and vacuum check valves (8 and 5, figure 24) for cleaning (paragraph 52e) and repair as follows:

a. Removal.

(1) Remove the vacuum filter sump (16, figure 24) as instructed in paragraph 74a.

(2) Remove tube assembly (5, figure 25) and check valves (16 and 17).

(3) Remove elbow (18) and vacuum check valve (17).

b. Disassembly.

(1) The check valves (16 and 17, figure 25) are disassembled in similar manner.

NOTE

The pressure check valve has a retainer for O-ring (4, figure 26) and does not have O-ring (2).

(2) Disassemble in sequence of index numbers are shown in figure 26.

c. Cleaning and inspection.

(1) Clean the parts, except the O-rings, with cleaning solvent, Federal Specification P-D-680 or equivalent, and dry thoroughly with a clean, lint-free cloth or clean, dry, compressed air.

(2) Inspect parts for cracks, breaks, damage, deterioration, and damaged threads.

(3) Replace the valve if any parts are defective.

(4) Replace O-rings if damaged.

d. Reassembly.

(1) The check valves (16 and 17, figure 25) are reassembled in a similar manner.

(2) Reassemble valves in the reverse sequence of the index numbers as shown in figure 26.

e. Installation.

(1) Install vacuum check valve (17, figure 25) on pump and install elbow (18) on check valve (17).

(2) Install pressure check valve (16) on reservoir (36) and tube assembly (5) on check valve and elbow (13).

(3) Install vacuum filter sump (16, figure 24) as instructed in paragraph 74c.

76. RELIEF VALVES.

The relief valves (12, 13, 14, 17, 18, and 19, figure 24) are all replaced in a similar manner, as follows.

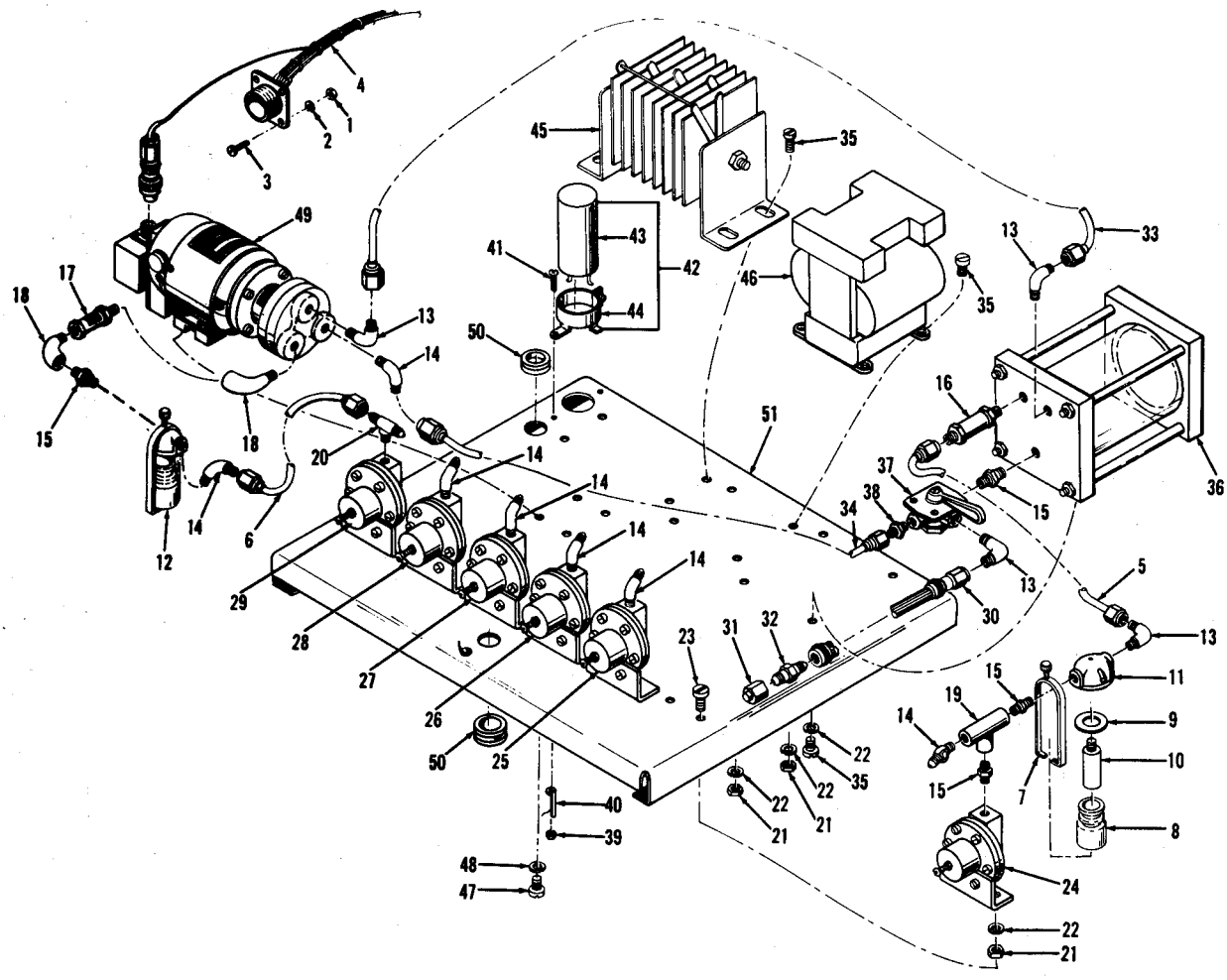
a. Removal.

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a).

(2) Remove pressure filter sump (10, figure 24) as instructed in paragraph 74.

(3) Remove tube assembly (6, figure 25) pipe tees (19 and 20), elbows (14) and pipe nipple (15) from relief valves.

(4) Remove nuts (21), lockwashers (22) and screws (23) securing relief valve (24) to chassis (51) and remove valve.



1. NUT, PLAIN, HEXAGON 4–40
2. WASHER, LOCK, SPLIT 3/32 IN.
3. SCREW, MACHINE, 4–40 X 5/16
4. WIRING HARNESS
5. TUBE ASSEMBLY
6. TUBE ASSEMBLY
7. CLAMP
8. BOWL
9. GASKET
10. FILTER
11. FILTER SUMP BODY
12. FILTER SUMP
13. ELBOW, FLARED TUBE AND PIPE THREAD, 90°
14. ELBOW, FLARED TUBE AND PIPE THREAD, 45°
15. NIPPLE, PIPE THREAD
16. PRESSURE CHECK VALVE
17. VACUUM CHECK VALVE
18. ELBOW, INTERNAL PIPE THREAD, 90°
19. TEE, INTERNAL PIPE THREAD
20. TEE FLARED TUBE
21. NUT, PLAIN HEXAGON 10–32
22. WASHER, LOCK 3/16 IN.
23. SCREW, MACHINE 10–32 X 1/2
24. RELIEF VALVE
25. RELIEF VALVE
26. RELIEF VALVE
27. RELIEF VALVE
28. RELIEF VALVE
29. RELIEF VALVE
30. HOSE ASSEMBLY
31. CAP
32. UNION, FLARED TUBE
33. TUBE ASSEMBLY
34. TUBE ASSEMBLY
35. SCREW, MACHINE 10–32 X 3/8
36. OIL RESERVOIR
37. SELECTOR VALVE
38. NIPPLE, FLARED TUBE AND PIPE THREAD
39. NUT, PLAIN HEXAGON 4–40
40. GROUND TERMINAL
41. SCREW, MACHINE 4–40 X 1/2
42. CAPACITOR AND BRACKET ASSEMBLY
43. CAPACITOR
44. BRACKET
45. RECTIFIER
46. TRANSFORMER
47. SCREW, MACHINE 1/4–20 X 3/8
48. WASHER, LOCK, SPLIT 1/4 IN.
49. MOTOR AND PUMP ASSEMBLY
50. GROMMET
51. CHASSIS

AV 001486

Figure 25. Chassis Assembly—Exploded View.

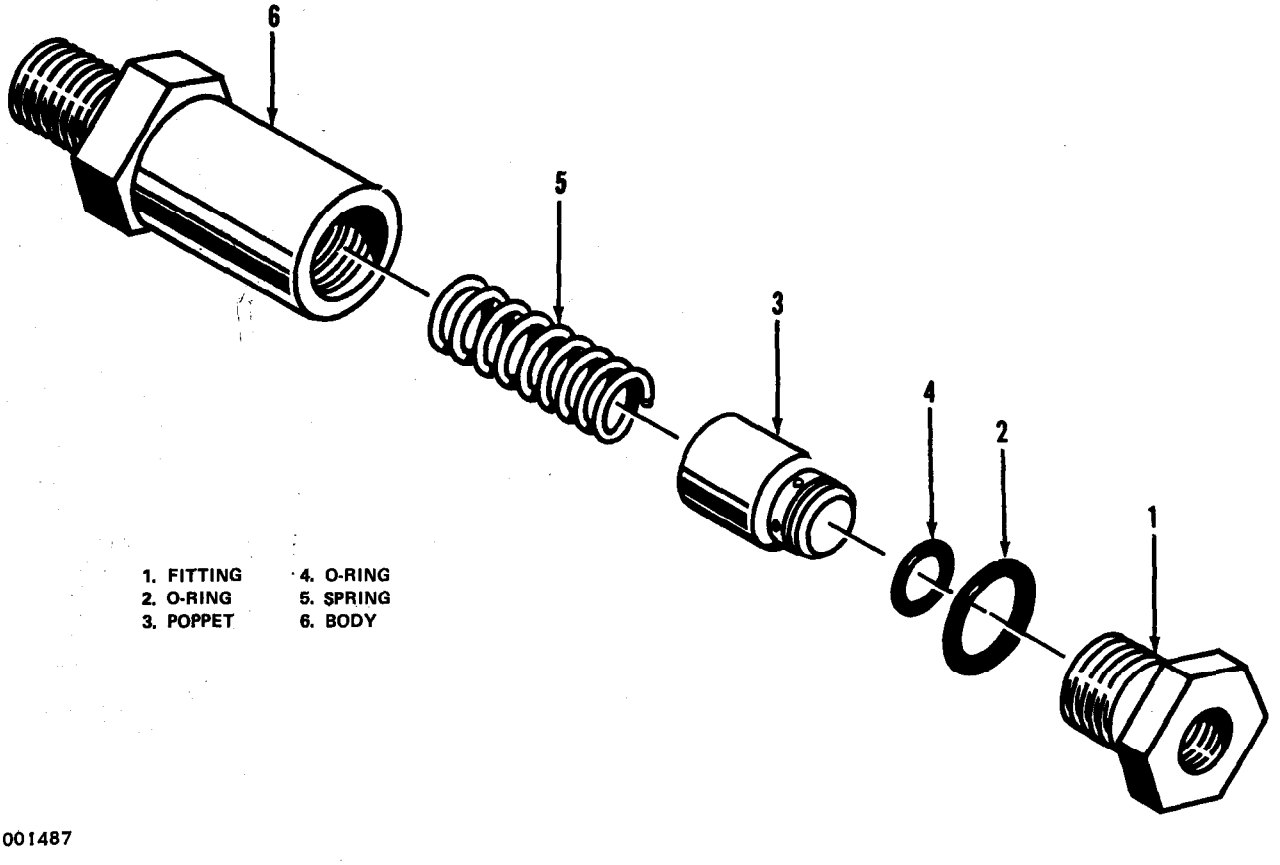


Figure 26. Check Valve—Exploded View.

(5) Remove relief valves (25, 26, 27, 28, and 29) in the same manner as above.

b. Cleaning and Inspection.

(1) Clean the parts with a clean, lint-free cloth dampened with cleaning solvent, Federal Specification P-D-680 or equivalent, and dry thoroughly.

(2) Inspect parts for breaks, cracks, loose screws, and damaged threads.

(3) Replace defective valve and report defective parts to higher authority.

c. *Installation.*

(1) Place relief valve (24, figure 25) in position on chassis (51) and secure with screws (23), lockwashers (22), and nuts (21).

(2) Install relief valves (25, 26, 27, 28, and 29) in the same manner as above.

(3) Install tube assembly (6, figure 25), pipe tees (19 and 20), elbows (14), and pipe nipple (15) on the relief valves.

(4) Install pressure filter sump (10, figure 24) as instructed in paragraph 74c.

(5) Install chassis assembly in tester case (paragraph 73c).

77. OIL RESERVOIR.

Remove the oil reservoir (7, figure 24) from the chassis (20) to replace and disassemble far cleaning and repair as follows:

a. Removal.

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a).

(2) Remove hose assembly (30, figure 25) from elbow (13) and remove cap (31) and tube nipple (32) from hose assembly.

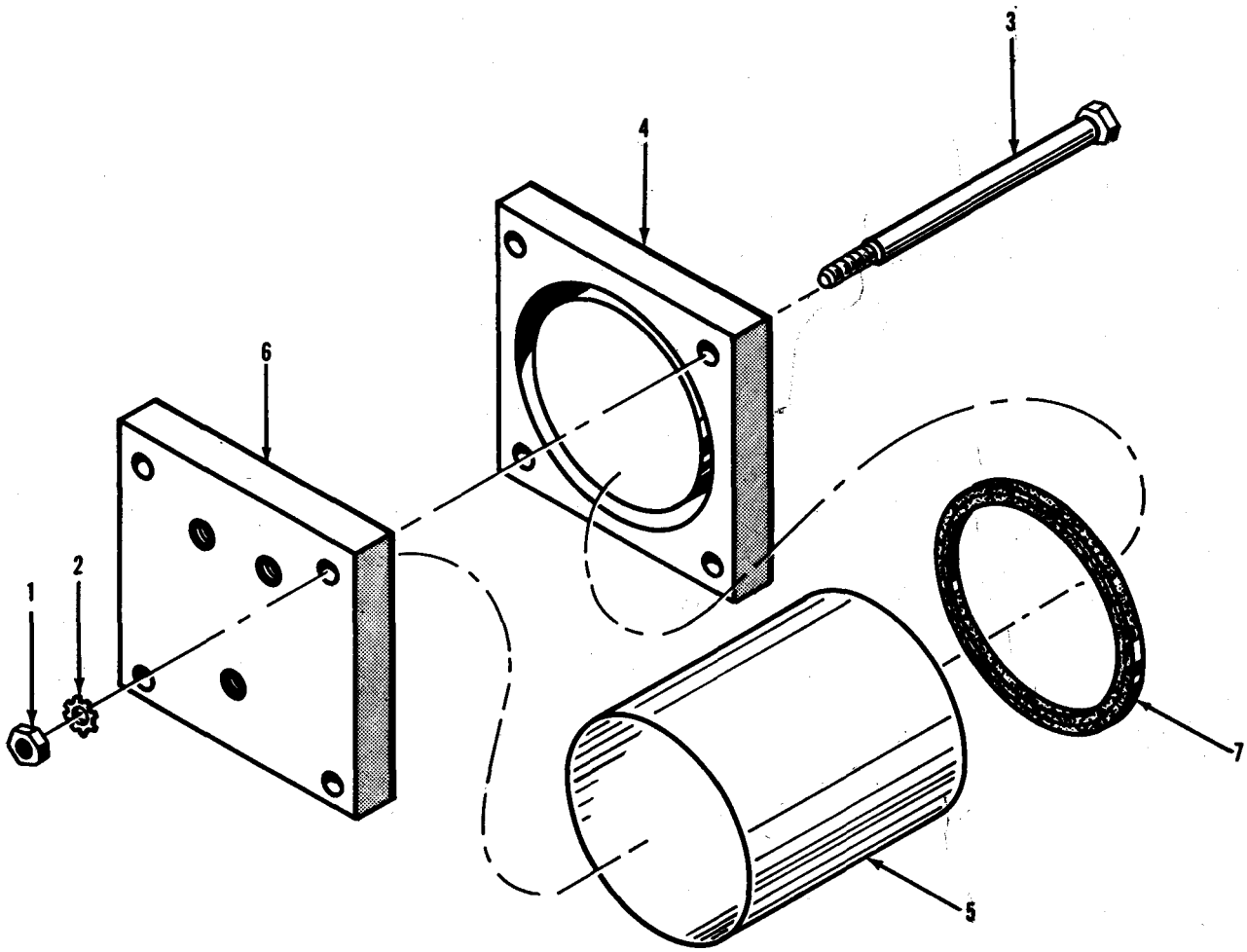
(3) Remove tube assemblies (5, 33, and 34).

(4) Remove pressure check valve (16) and elbow (13) from oil reservoir (36).

(5) Remove screws (35) and lockwashers (22) securing oil reservoir (36) to chassis (51). Remove oil reservoir.

(6) Remove pipe nipple (15) and selector valve (37) from oil reservoir (36).

b. Disassembly. The old reservior (36, figure 25) is disassembled in the sequence of the index numbers in figure 27.



1. HEXAGON NUT, 1/4–20
2. LOCKWASHER, EXTERNAL TOOTH–1/4 IN.
3. CAPSCREW, 1/4–20 X 4
4. REAR PLATE
5. CYLINDER
6. FRONT PLATE
7. GASKET

AV 001488

Figure 27. Oil Reservoir-Exploded View.

c. Cleaning and Inspection.

(1) Clean the parts, except the gaskets, with cleaning solvent, Federal Specification P–D-680 or equivalent, and dry thoroughly.

(2) Inspect the parts for cracks, breaks, deterioration, and damaged threads.

(3) Report defective parts to higher authority.

d. Reassembly. The oil reservior (36, figure 25) is reassembled in the reverse sequence of the index numbers in figure 27.

e. Installation.

(1) Install pipe nipple (15, figure 25) and selector valve (37) on oil reservoir (36).

(2) Place oil reservoir (36) in position on chassis (51) and secure with lockwashers (22) and screws (35).

(3) Install elbow (13) and pressure check valve (16) on oil reservoir (36).

(4) Install tube assemblies (5, 33, and 34).

(5) Install chassis assembly (figure 24) in tester case (paragraph 73c).

78. SELECTOR VALVE.

The selector valve (9, figure 24) is removed and replaced as follows:

a. Removal.

(1) Remove oil reservoir (7, figure 24) from chassis (20) as instructed in paragraph 77a.

(2) Remove pipe nipple (15, figure 25) from oil reservoir (36) and selector valve (37).

b. Installation.

(1) Install pipe nipple (15, figure 25) on selector valve (37) and-oil reservior (36).

(2) Install oil reservoir (7, figure 24) on chassis (20) as instructed in paragraph 77e.

Section VII. ELECTRICAL SYSTEM

79. GENERAL.

The electrical system is designed to operate on 28 vdc current at 2.2 amps, 115 vac single phase current at 50 to 500 cps, and 115 vac three phase 50 to 500 cps current at 0.75 amps for a power source. The major components of the system are a stepdowm transformer (6, figure 24), selenium rectifier (4), electrolytic capacitor (2), and an electric motor and pump assembly (3). The electrical system is energized through a multipin connector (1) and power switch (15). The interal connections of the power cables and tester automatically provide for operation with the power sources specified. This prevents connection of the tester to the wrong power source. See figure 10 for the electrical schematic diagram,

80. RECTIFIER.

The selenium rectifier (4, figure 24) is replaced as follows:

a. Removal

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a).

(2) Unsolder wiring harness leads (4, figure 25) from terminals on rectifier (45).

(3) Remove nuts (21), lockwashers (22), and screws (35) securing rectifier (45) to chassis (51). Remove rectifier.

b. Installation.

(1) Place rectifier (45, figure 25) in position on chassis (51) and secure with screws (35), lockwashers (22), and nuts (21).

(2) Solder wiring harness (4) leads to terminals on rectifier (45) as identified, or refer to figure 10 for identity.

(3) Install chassis assembly (figure 24) in tester case (paragraph 73c).

81. MOTOR AND PUMP ASSEMBLY.

Remove motor and pump assembly (3, figure 24) from chassis (20) for inspection or replacement as follows:

a. Removal.

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a) and disconnect plug connector (21).

(2) Remove vacuum check valve (17, figure 25), as instructed in paragraph 75a.

(3) Remove tube assemblies (33 and 34).

(4) Remove screws (47) and lockwashers (48) securing motor and pump assembly (49) to chassis (51). Remove motor and pump assembly.

b. Disassembly. Disassemble the motor and pump assembly in the sequence of the index numbers shown in figure 28 only to the extent required to perform the following procedures.

c. Cleaning and Inspection.

(1) Remove dry accumulations of dirt with low-pressure compressed air (not over 15 pounds per square inch), a vacuum cleaner, or by wiping with a clean, dry sloth.

(2) Remove excess oil or grease with a cloth moistened with an approved solvent. If insulation or insulated parts are coated with oil or grease, solvent may be sprayed on the parts or they may be dipped directly into the solvent and then wiped dry.

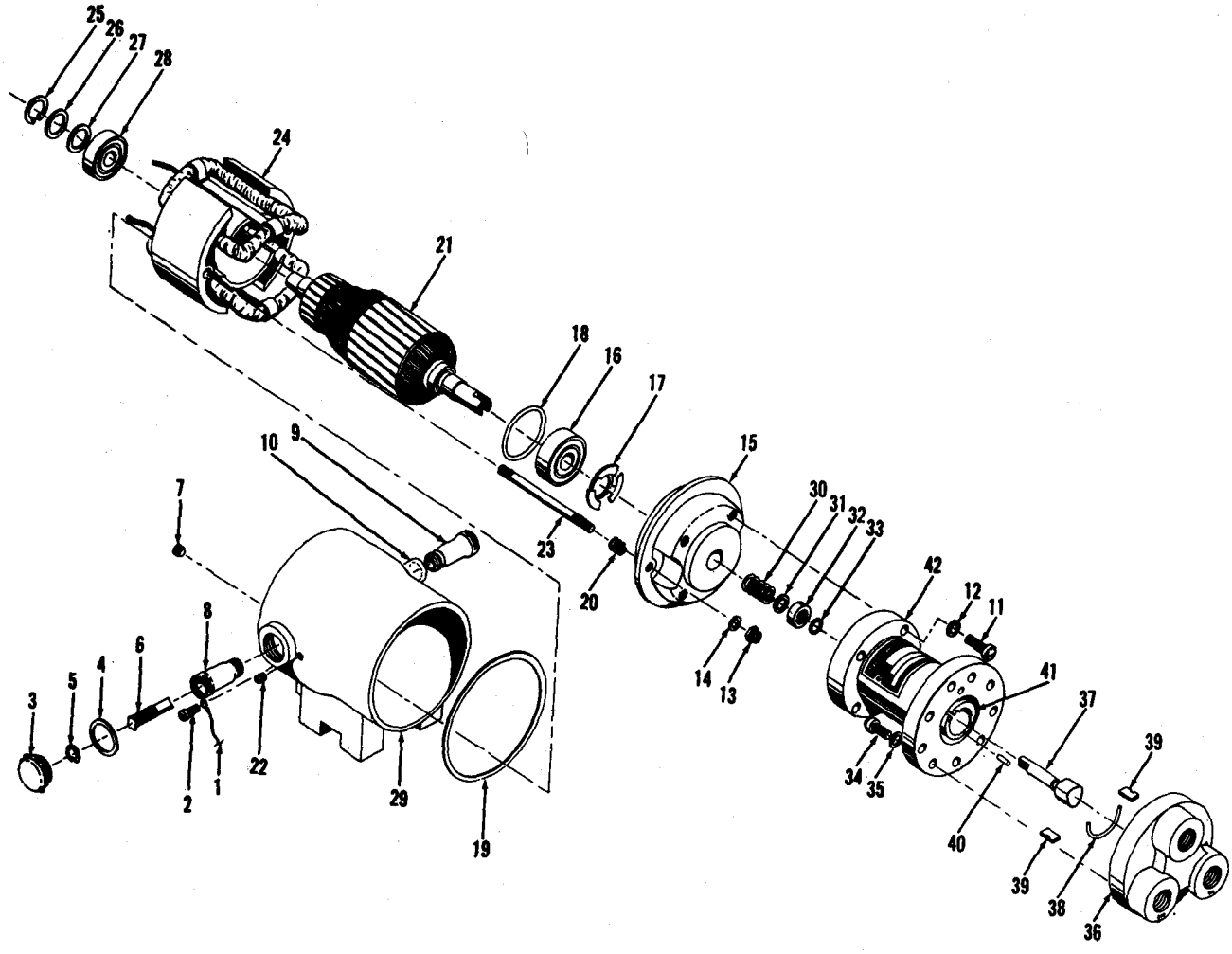
(3) After cleaning, check brushes for condition, length, and spring tension. Replace brushes if they are less than 7/16 of an inch long (see *f* below). Minimum usable brush length is 5/16 of an inch.

(4) Check all wiring, connections, and terminals for general condition and good contact.

(5) Inspect commutator for pitting, scoring, roughness, corrosion, or burning. Check for high mica. Replace the motor if the commutator is burned, badly pitted, or grooved. Report condition of high mica or other defects to higher authority.

(6) Inspect all wiring for evidence of overheating, Replace motor if insulation on leads or windings is burned, cracked, or brittle.

(7) Inspect bearings (16 and 28, figure 28) for wear and smoothness of operation. Report defective bearings to higher authority.



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1. SAFETY WIRE (0.032)
2. SCREW, MACHINE NO. 6–32 x 1/4 IN.
3. BRUSH HOLDER SCREW ASSY
4. WASHER
5. SNAP RING
6. BRUSH AND SPRING ASSY
7. SETSCREW
8. BRUSH HOLDER (GROUNDED)
9. BRUSH HOLDER (INSULATED)
10. BRUSH HOLDER TUBE
11. SCREW, FILLISTER HEAD NO. 10–24 X 5/8 IN.
12. WASHER, LOCK, INTERNAL TOOTH 3/16 IN.
13. NUT, NO. 8–32
14. WASHER, COPPER
15. END BRACKET
16. BALL BEARING
17. LOAD SPRING
18. SEAL RING
19. GASKET, COPPER
20. SPRING
21. ARMATURE ASSY
22. SETSCREW
23. STUD
24. FIELD ASSEMBLY
25. SNAP RING
26. WASHER
27. WASHER
28. BALL BEARING
29. COMMUTATOR BRACKET
30. SEAL SPRING
31. SEAL WASHER
32. SEAL CAGE
33. O-RING
34. SCREW, FILLISTER HEAD, NO. 8–32 X 1/2 IN.
35. WASHER, LOCK, INTERNAL TOOTH, NO. 8
36. COVER ASSEMBLY
37. ROTOR
38. BLADE RETAINING SPRING
39. BLADE
40. STOP PIN
41. INSERT
42. PUMP BODY

Figure 28. Motor and Pump Assembly—Exploded View.

d. Reassembly. Reassemble motor and using figure 28 as a guide.

NOTE

When installing washer (4, figure 28), place concave face toward motor. Refer to *f* and g, below regarding details of brush assemblies.

e. Installation.

(1) Place motor and pump assembly (49, figure 25) in position on chassis (51) and secure with lockwashers (48) and screws (47).

(2) Install tube assemblies (33 and 34) and the vacuum check valve (17) as instructed in paragraph 75d.

(3) Install chassis assembly (figure 24) in tester case (paragraph 73c) and connect plug connector (21).

f. Adjustment of Brushes. Tension on the brushes is controlled automatically by the brush springs. To adjust brush holder settings, proceed as follows:

(1) Loosen setscrews (7 and 22, figure 28).

(2) Remove safetywire (1), screw (2), brush holder screw assembly (3), washer (4), snap-ring ('5), and brush and spring assembly (6) from the brush holder.

(3) Position brush holder so that end of brush will be parallel to the commutator bar (brush holders should line up with each other when properly set).

(4) When brush holder (8) is properly aligned, tighten setscrew (7).

(5) Replace brush and spring assembly (6), snap-ring (5), washer (4), and brush holder screw assembly (3). Install screw (2) securely.

(6) Secure safety wire (1) to hold brush holder setting.

NOTE

Cement setscrews (7) and (22) to secure them at reassembly.

g. Replacement of Brushes. Brushes are replaced as follows:

(1) Loosen safetywire (1, figure 28), screw (2), and setscrew (7) that locks brush holder screw assembly (3) in place.

(2) Remove brush holder screw assembly (3), washer (4), snap-ring (5), and brush and spring assembly (6).

(3) Insert new brush and spring assembly (6) in brush holder (8), and replace snap-ring (5), washer (4), and brush holder screw assembly (3).

(4) Tighten the brush holder screw assembly (3) and setscrew (7).

NOTE

Coat exposed internal threads of commutator bracket into which setscrew (7) is installed with chemical film, Military Specification MIL C-5541.

82. POWER SWITCH.

Replace the power switch (14, figure 7) in the fallowing manner:

a. Removal.

(1) Remove mounting nut (8, figure 22) securing power switch (9) to tester case (29). Remove power switch.

(2) Unsolder and remove leads from power switch.

b. Installation.

(1) Solder leads on power switch (9, figure 22). Refer to figure 10 for wire color code.

(2) Insert power switch into hole in tester case (29), with the white/black and white/red leads to the front of case, and secure with mounting nut (8).

83. FUSE.

Replace the cartridge fuse (16, figure 7) with the spare cartridge fuse (15) as follows:

a. Remove caps (10, figure 22) from fuseholders (12) and remove fuses (11) from caps. Discard blown fuse.

b. Insert spare fuse (11) in cap (10) and install in fuseholder (12).

c. Install cap (10) on spare fuseholder (12) and replace the spare fuse as soon as possible,

84. INDICATOR LIGHT.

Disassemble indicator light (13, figure 7) to replace lamp, or remove to replace as follows:

a. Disassembly.

(1) Remove cap (26, figure 22) from light base (24) .

(2) Press lamp (25) and turn counterclockwise to remove.

b. Removal.

(1) Unsolder leads and remove from light base (24).

(2) Remove mounting nut (23), securing light base to tester case (29). Remove light base.

c. Installation.

(1) Insert light base (24, figure 22) in tester case (29) and secure with mounting nut (23).

(2) Solder leads on light base. Refer to figure 10 for wire color code.

d. Reassembly.

(1) Insert lamp (25, figure 22) in light base (24) and turn clockwise to secure.

(2) Install cap (26) on light base.

85. WIRING HARNESS.

Repair the wiring harness by relpacing a defective lead or replace harness as follows:

a. Removal.

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a) and disconnect plug connector (21).

(2) Unsolder wiring harness leads on transformer (6), rectifier (4), and power switch (15).

(3) Remove nut (39, figure 25) and screw (41), securing ground leads to chassis (51).

(4) Remove wiring harness (4) and grommets (50) from chassis (51).

b. Installation.

(1) Install grommets (50, figure 25) and insert wiring harness (4) in chassis (51).

(2) Insert screw (41), install ground leads and secure with nut (39).

(3) Solder wiring harness leads on transformer (6, figure 24) rectifier (4), and power switch (15). Refer to figure 10 for color codes.

(4) Attach plug connector (21, figure 24) and install chassis assembly in tester case (paragraph 73).

86. POWER CABLES.

The power cables (9, 10, 13, and 14, figure 3) are inspected and repaired or replaced as follows:

a. Inspection.

(1) Inspect the cable assemblies for cracks, breaks, cuts, distortion, and damaged threads.

(2) Test the cable assemblies for continuity (figure 10).

(3) Perform a high potential test on each cable assembly, Refer to Military Specification MIL-C-5015.

b. Repair or Replacement.

(1) When replacing wire or connectors, use identical parts.

(2) Replace a defective cable assembly that cannot be repaired.

Section VIII. NUMERICAL PARTS LISTING

FIG. AND INDEX NO	PART NO.	FMC
19–4	AN500A4–4	88044
28–7	AN565A428H4	88044
28–22	AN565D6L3	88044
21–10	AN6270–8–12	88044
25–30	AN6270–8–20	88044
3–6	AN6270–8–300	88044
3–5	AN6270–8–72	88044
21–17	AN816–4D	88044
25–15	AN911–1D	88044
25–18	AN916–1D	88044
25–19	AN917–1D	88044
28–31	AN961–8	88044
25–42	CE31C351G	83125
19–6	FA2966B	81831
25–17	FM1040	04391
25–12	F477X2T3	79960
22–11	MDL	71400
25–13	MS20822–4D	96906
25–14	MS20823–4D	96906
3–16	MS24392D4	96906
3–15	MS24399D3	96906
25–20	MS24402D4	96906
22–9	MS25100–23	96906
21–6	MS28021–1	96906
21–5	MS28044L1A	96906
21–4	MS28049–1	96906
21–9	MS28061–1	96906
21–8	MS28077–5	96906
28–33	MS29513–8	96906
19–7	MS3102R10S2P	96906
27–3	MS35303–22	96906
27–2	MS35335–15	96906
27–1	MS51967–2	96906
28–34	P–115	64560
28–11	P–115A	64560
28–40	P–121	64560
28–37	P–217	64560
28–42	P–250	64560
28–41	P–253	64560
28–1	P–2534	75511
19–5	P–2536	75511
28–36	P–255	64560
25–49	P345C	64560
25–46	ST2625	97102
25–45	U2B1H5G	77638
28–4	0–2251	75511
28–14	0–2252	75511
19–3	0–5452	75511
28–19	0–5454	75511
28–10	0–5623	75511
28–20	0–5851	75511
19–8	0–6214	75511
28–15	0–6836	75511
26–4	010	04391
26–2	014	04391
28–18	10–4374	75511
28–29	10–6756	75511
28–23	10–7877	75511
28–39	100551	64560
28–32	100650A	64560
28–38	100702B	64560
28–30	100703	64560

FIG. AND INDEX NO.	PART NO.	FMC
20–15	103ARL	81590
26–6	104001	04391
26–1	104002	04391
Text	104003	04391
26–5	104004	04391
28–21	14846A	75511
28–24	14846F	75511
22–25	1829	24455
28–26	2276	75511
28–27	2277 See C.C.2.	75511
3–11	~~260103~~ SK-ED-18	1996 ~~95750~~
3–12	~~260104~~ SK-ED-17	1996 ~~95750~~
28–12	3005–5	64560
28–35	3005–8	64560
28–8	33202A	75511
28–9	33203A	75511
3–9	340001A	95750
3–10	340002S	95750
3–14	340003A	95750
3–13	340004A	95750
25–4	340018	95750
3–3	340101–1	95750
3–4	340101–2	95750
3–1	340102	95750
Text	34018A	75511
7–1	340200	95750
7–21	340203	95750
21–14	340207	95750
21–18	340208	95750
22–16	340209	95750
22–17	340210	95750
22–18	340211	95750

FIG. AND INDEX NO.	PART NO.	FMC
21–21	340212	95750
3–7	340213	95750
25–24	340214–1	95750
25–26	340214–2	95750
25–25	340214–3	95750
22–1	340215–1	95750
22–3	340215–2	95750
Text	340215–3	95750
Text	340215–4	95750
Text	340215–5	95750
25–6	340215–6	95750
25–33	340215–7	95750
25–28	340216–1	95750
25–29	340216–2	95750
25–27	340216–3	95750
22–7	340223	95750
25–36	340302A	95750
27–6	340303	95750
27–4	340304	95750
27–5	340305	95750
27–7	340307	95750
22–12	341001	95750
28–17	3503	75511
28–6	35191A	75511
28–25	5000–75MF	89462
28–5	5001–31ZO	89462
25–6	504A–1	96948
28–2	60–7835	95750
25–37	710–13–1–8D	86768
28–13	7458	75511
28–28	77036XRIE	43334
28–16	77038XRIE	43334

CHAPTER 4

DS AND GS

MAINTENANCE INSTRUCTIONS

Section I. SPECIAL DS AND GS REPAIR PARTS

87. SPECIAL TOOLS.

No special tools are required for DS and GS maintenance of the tester.

NOTE

Lubrication of the tester is described in paragraph 51, 52, and 100c.

88. REPAIR PARTS.

The repair parts required for DS and GS maintenance of the tester are listed in section VII of Repair Parts and Special Tools Listing, Appendix C.

Section II. TROUBLESHOOTING

89. GENERAL.

This section provides DS and GS maintenance personnel with information useful in diagnosing and correcting failures of the tester.

90. TROUBLESHOOTING.

A tabulation of symptoms of probable troubles and remedies which are likely to be encountered before, during, or after operation and repair of the equipment are contained in table 6.

Table 6. Troubleshooting

Item No.	Trouble	Probable cause	Possible remedy
1	Indicator light does not illuminate and motor does not run when power switch is in ON position.	Open rectifier or shorted capacitor and motor. (Check voltage on yellow coded lugs of rectifier.) If voltage is present with no dc voltage acrosss the red and black coded lugs, either the the rectifier is open or capacitor or motor is shorted. Disconnect red lead from the rectifier and recheck voltage across red and black coded lugs of rectifier. If dc voltage is now present, capacitor or motor is shorted. (See figure 10.)	Replace rectifier (paragraph 80). Replace capacitor (paragraph 98). Replace motor (paragraph 81). Repair motor (paragraph 100).
		Open transformer primary winding cm input leads. (Disconnect plug mating with J1 and check resistance between pins 1 and 2 at T1. Resistance check on J1 between pins I and J; see figure 10.) (Approx. 2.8 ohms.)	Replace transformer (paragraph 99).
		Open transformer, secondary winding. Check voltage across terminals 3 and 4 of T1, 25V(rms).	Replace transformer (paragraph 99).

Table 6. Troubleshooting (Cont).

Item No.	Trouble	Probable Cause	Possible Remedy
		If zero voltage, disconnect a lead from terminal 3 or 4 and recheck volage; if still zero, transformer is defective. (See figure 10.)	Replace transformer (paragraph 99).
2	Fuse blows when power switch is placed in ON position.	Short in electric motor. (Check continuity and for shorts; see figure 10.)	Repair or replace motor (paragraphs 81 and 100).
		AC OPERATION ONLY	
		Shorted transformer primary windings. (Check for continuity and for shorts, see figure 10.)	Replace transformer (paragraph 99).
3	Indicator light illuminates but motor does not run.	Shorted transformer. (Check continuity and far shorts; see figure 10.)	Replace transformer (paragraph 99).
		Open lead in motor. (Check for continuity.)	Repair or replace motor (paragraphs 81 and 100).
		Defective motor.	Repair or replace motor (paragraphs 81 and 100).
		Armature defective.	Repair or replace armature (paragraph 100) .
		Open circuit in motor armature or field winding. (Check resistance between motor input and ground-should be approximately 1.7 ohms.)	Repair or replace motor (paragraphs 81 and 100).
4	Motor runs slowly.	Commutator worn or dirty.	Repair commutator (paragraph 100).
		Defective motor bearings.	Replace bearings (paragraph 100).

Section III. TESTER UNIT

91. TESTER CALIBRATION.

Calibration of the individual instruments as described in paragraph 96 accomplishes the calibration of the tester.

92. TESTING OF TESTER.

Testing the instruments and components individually accomplishes the testing of the unit (paragraphs 39 through 44).

93. TESTER REPLACEMENT.

If the unit becomes damaged beyond repair, or if a nonremediable malfunction develops, replace the unit.

94. TESTER REPAIR.

Repair of the individual instruments and components as outlined throughout this manual accomplishes repair of the unit.

Section IV. PNEUMATIC SYSTEM

95. VALVES.

Inspection, testing, cleaning, and replacement of valves is accomplished as stated in paragraphs 39, 52e, 61 through 64, 71, 72, 75, 76, and 78. Under conditions specified in appendix B, paragraph 31c, replacement of valves may be accomplished by the organizational maintenance level. Repair of valves consists primarily of replacement of individual defective parts as indicated during disassembly and inspection procedures outlined in the paragraphs stated above.

96. INSTRUMENTS.

a. Calibration. Calibrate each instrument of the tester by comparing its reading against a standard instrument, gage, or other applicable apparatus, Calibration of the master instruments (those of tester) may be performed, without

their removal from the tester, in a manner similar to that used in testing a remote instrument. Refer to the applicable technical manual for the particular instrument for range of accuracy in calibrating.

b. Repair. Accomplish repair of instruments in accordance with the applicable technical manuals for the part numbers as listed below.

INSTRUMENT	PART NO.
Rate-of-climb Indicator	MS 28049
Altimeter	MS 28044-1
Airspeed Indicator	MS 28021-1
Manifold Pressure Gage	AN 5770-5 (MS 28077-5)
Fuel Pressure Gage	MS 28061-1

97. OIL RESERVOIR.

Remove, disassemble, clean, and inspect the reservoir assembly as outlined in paragraph 77. Repair of the reservoir consists primarily of the replacement of defective parts as a consequence of inspection and observance of function. Reassemble and install the reservoir as outlined in paragraph 77.

Section V. ELECTRICAL SYSTEM

98. CAPACITOR REPLACEMENT.

Remove electrolytic filter capacitor (2, figure 24) from chassis (20) for replacement as follows:

a. Removal.

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a).

(2) Unsolder wiring harness (4, figure 25) leads from terminals on capacitor (43).

(3) Remove nuts (39), terminal (40), and screws (41) securing bracket (44) and ground leads to chassis (51).

(4) Remove capacitor and bracket assembly (42).

b. Installation.

(1) Place capacitor and bracket assembly (42, figure 25) in position on chassis (51), insert screws (41), install ground leads and terminal (40), and secure with nuts (39).

(2) Solder leads to terminals on capacitor (43) as identified, or refer to figure 10.

(3) Install chassis assembly (figure 24) in tester case (paragraph 73c).

99. TRANSFORMER.

The stepdown transformer (6, figure 24) is inspected, replaced, and tested as follows:

a. Inspection.

(1) Inspect transformer for signs of excessive heat such as melted solder or wax, burned insulation, and odor of burned materials.

(2) Check terminal to see that connections are tight.

(3) Check leads for shorted or bare wires.

b. Removal. If it is necessary to replace the transformer, proceed as follows:

(1) Remove chassis assembly (figure 24) from tester case (paragraph 73a).

(2) Unsolder wiring harness (4, figure 25) leads from terminals on transformer (46).

(3) Remove nuts (21), lockwashers (22), and screws (35), securing transformer (46) to chassis (51), and remove transformer.

c. Installation.

(1) Place transformer (46, figure 25) in position on chassis (51) and secure with screws (35), lockwashers (22), and nuts (21).

(2) Solder wiring harness (4) leads to terminals on transformer (46) as indicated in figure 10.

(3) Install chassis assembly (figure 24) in tester case (paragraph 73c).

d. Test.

(1) Insert a Variac or an equivalent variable transformer in the primary circuit of the transformer and set the input at 115 volts.

(2) Provide a test setup having a load sufficient to cause a 2.2 ampere flow of current in the secondary circuit.

(3) Check the voltage across the secondary output. It should be approximately 26 volts.

100. MOTOR AND PUMP ASSEMBLY.

Remove, clean, and inspect motor and pump assembly as directed in paragraph 81 and, using figure 28 as a guide, disassemble as required to perform the procedures which follow:

a. Inspection. At disassembly, inspect motor and pump assembly as follows:

(1) Check resistance between motor input leads and ground. Reading should be approximately 1.7 ohms.

(2) Check field windings for continuity, grounds, and shorts.

(3) Examine bearings for excessive wear and other defects.

(4) Inspect commutator for signs of high mica at commutator segments.

b. Repair. Replace any defective motor or pump parts, such as a grounded or shorted field winding assembly, worn bearings, defective armature or pump shaft. Repair a commutator which has high mica by undercutting as follows:

(1) Using an approved method, carefully undercut the mica between the commutator segments to a depth, of 0.005 to 0.010 x 3/64 of an inch. Be sure the full width of the mica is removed and that a thin sliver of mica is not left against one side of the slot.

(2) Remove all burrs and rough edges from slots by beveling gently to a 45° chamfer.

(3) Polish with a very fine grade of sandpaper and finish with felt or canvas.

c. Lubrication. Prior to reassembly of motor and pump, lubricate motor shaft bearings using bearing grease Military Specification MIL-G-23827 as instructed on the current lubrication order.

d. Test. Prior to installing the motor and pump assembly in the chassis, it can be tested as follows:

(1) Arrange the unit in a test setup comprised of a reservoir, pressure gage, relief valve (55 psig), vacuum tank, vacuum gage, and necessary piping.

(2) Apply 28 vdc power to the motor. In repeated tests the pressure gage should rise consistently to approximately 50 psig. Stop the motor at this point.

(3) Check the vacuum gage; it should read approximately -29.5 in Hg.

e. Reassembly and Installation. For reassembly and installation procedures, refer to paragraph 81.

Section VI. FRONT PANEL ASSEMBLY OVERHAUL

101. GENERAL.

The GS maintenance personnel are authorized to overhaul the instruments and tester as specified in the Maintenance Allocation Chart (Appendix B). The equipment must be restored to a completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of Inspect and Repair Only as Necessary (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

102. INSTRUMENT OVERHAUL.

The removal and installation of the instruments is to be accomplished in accordance with the applicable technical manuals for the part numbers as listed below:

INSTRUMENT	PART NO.
Rate-of-climb Indicator	MS 28049
Altimeter	MS 28044-1
Airspeed Indicator	MS 28021-1
Manifold Pressure Gage	AN 5770-5 (MS 28077-5)
Fuel Pressure Gage	MS 28061-1

103. TESTER OVERHAUL.

Overhaul the instruments as instructed in paragraph 102. Overhaul the remainder of the tester components in accordance with instructions in chapter 3.

CHAPTER 5

SHIPMENT, STORAGE, AND DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

Section I. GENERAL

104. SCOPE.

This chapter covers methods and instructions for preparation of material, for shipment within and outside the continental United States, and for limited storage, and the maintenance of equipment in storage. Also covered are methods of destroying the equipment when in danger of imminent capture, in order to prevent enemy use.

105. SAFETY PRECAUTIONS.

Handle the tester with care at all times and place in upright position as indicated on the crate.

CAUTION

Handle the tester with care as the delicate instruments can easily be damaged by shock.

Section II. STORAGE

106. INDEFINITE STORAGE.

a. Inspection. Prior to storage, inspect the tester and accessories as instructed in paragraph 7.

b. Preventive Maintenance Services. Perform the before operation services listed in table 4 to ensure that the equipment is in proper working condition.

c. Type of Container. Use the original shipping cartons and packaging materials. Refer to paragraph 6 and package unit in reverse of the order shown in figure 6.

d. Packaging. When the original shipping cartons are not available, refer to Military Specification MIL-P-116 for packaging, Military Specification MIL-B-131; for use of vapor barrier material, and Military Specification MIL-D-3464 for use of desiccants. Refer to Military Standard MIL-STD-129 for marking of package.

107. LIMITED STORAGE.

a. Limited storage is defined periods up to 6 months.

b. Prior to storage, inspect the tester and accessories as instructed in paragraph7.

c. Perform the before operation services listed in table 4 to ensure that the equipment is in proper working condition.

d. Use the original carton or other suitable container to provide some protection during limited storage.

e. Store the package in a dry and sheltered location.

108. INSPECTION AND MAINTENANCE OF EQUIPMENT WHILE IN LIMITED STORAGE.

a. Interval of inspection and maintenance of the tester while in storage will be 30 days after initial storage and at the end of each 30-day period thereafter.

b. Remove any accumilation of dirt before inspecting the tester.

c. Inspect for damage, deterioration, corrosion, leakage, and pilferage. Rectify or report as necessary.

Section III. SHIPMENT WITHIN CONTINENTAL UNITED STATES

109. GENERAL.

This section provides instructions pertaining to packaging and handling of the tester for shipment within the continental United States.

110. SAFETY PRECAUTIONS.

Handle the crated tester with care and place in upright position as indicated on the crate.

CAUTION

Handle the tester with care as the delicate instruments can easily be damaged by shock.

111. PACKAGING.

Refer to Military Specification MIL-P-116 for the type of containers to be used and the method of packaging. Remove the oil from the reservoir before packaging (paragraph 52). Marking for shipment and storage must be in accordance with MIL-STD-129 and MIL-STD-130.

112. SHIPMENT.

Domestic shipment will normally be handled by such carriers as aircraft freight car, or truck as follows:

a. The package must be handled with care and placed in an upright position as indicated on the crate.

b. Precautions must be taken to secure the package in a manner to prevent shifting.

Section IV. SHIPMENT OUTSIDE CONTINENTAL UNITED STATES

113. GENERAL.

This section contains instructions pertaining to packaging and handling of the tester for shipment outside the continental United States.

114. SAFETY PRECAUTIONS.

Handle the crated tester with care and place in an upright position as indicated on the crate.

CAUTION

Handle the tester with care as the delicate instruments can easily be damaged by shock.

115. PACKAGING.

Refer to Military Specification MIL-P-116 for the type of containers to be used and the method of packaging. Remove the oil from the reservoir before packaging (paragraph 52). Marking for shipment and storage must be in accordance with MIL-STD-129 and MIL-STD-130.

116. SHIPMENT.

Oversea shipment will normally be handled by such carriers as aircraft and ocean surface vessels as follows:

a. The package must be handled with care at all time and placed in an upright position as indicated on the crate.

b. Precautions must be taken to secure the package in a manner to prevent shifting.

c. On shipboard, protective covers, such as canvas or other suitable waterproof material, will be provided for protection against salt water spray.

Section V. DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

117. GENERAL.

When capture or abandonment of the tester to an enemy is imminent, the responsible unit commander must make the decision either to destroy the equipment or to render it inoperative. Based on this decision, orders shall be issued which cover the desired extent of destruction. Whatever method of demolition is employed, it is essential to destroy the same vital parts of all the testers and all corresponding repair parks.

118. DEMOLITION TO RENDER THE TESTER INOPERATIVE.

a. Demolition by Mechanical Means. Use sledge hammers, crowbars, picks, axes, or any other heavy tools which may be available to destroy the fcdlowing:

(1) Instruments.

(2) Control knobs.

(3) Accessories.

b. Demolition by Misuse. Perform the following steps to render the tester inoperative;

(1) Break the glass on the oil reservoir and run the test until failure occurs.

(2) Run the tester and turn the selector knobs quickly from one position to another.

119. OTHER DEMOLITION METHODS.

a. Scattering and Concealment. Remove the accessories from the cover compartment and scatter them through dense foliage, bury them in dirt and sand or throw them in lake, stream, or other body of water.

b. Burning. Pack rags, clothing, or canvas under and around the unit and inside the unit at the front and rear. Saturate this packing with gasoline, oil, or diesel fuel and ignite.

WARNING

Do not allow an open flame within 50 feet when using gasoline, remove the container from the area and ignite from a distance.

c. Submersion. Totally submerge the unit in a body of water to provide water damage and concealment. A body of salt water will do greater damage to metal parts than submersion in a body of fresh water.

APPENDIX A

REFERENCES

1. PUBLICATION INDEXES.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 33-750	Army Equipment Record Procedures.
FM 5-25	Explosives and Demolitions.
AR 750-5	Organizations, Policies, and Responsibilities for Maintenance Operations.

2. MILITARY SPECIFICATIONS.

MIL-B-131	Barrier Material, Water, Vaporproofed, Flexible.
MIL-C-5015	Connectors, Electric, AN Type.
MIL-C-5541	Chemical Film.
MIL-D-3464	Desiccants, Activated, Bagged, Packaging Use and Statis Dehumidification.
MIL-G-23827	Bearing Grease.
MIL-STD-129 & 130	Marking for Shipment and Storage.
MIL-P-116	Containers for Method of Packaging.

APPENDIX B

MAINTENANCE ALLOCATION CHART

1. PURPOSE.

The purpose of the Maintenance Allocation Chart is to provide all activities with maintenance functions to be performed at each level of maintenance.

2. DEFINITIONS.

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, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Column 3, Maintenance Functions. Maintenance functions will be limited to and defined as foillows:

(1) *Inspect.* To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

(2) *Test.* To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

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

(4) *Adjust.* To rectify to the extent necessary to bring into proper operating range.

(5) *Align.* To adjust specified variable elements of an item to bring to optimum performance.

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

(7) *Install.* To set up for use in an operational environment such as an emplacement, site, or vehicle.

(8) *Replace.* To replace unserviceable items with serviceable assemblies, subassemblies, or parts.

(9) *Repair.* To restore an item to serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, and strenthening.

(10) *Overhaul.* To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards prepared and published for the specific item to be overhauled.

(11) *Rebuild.* To restore an item to a standard as nearly as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements items using original manufacturing tolerances and speciflications, and subsequent reassembly of the item.

(12) *Symbols.* The symbol O, F, or H, placed in the appropriate column indicates the level responsible for performing that particular maintenance function. The symbol "%%" which applies to organizational maintenance indicates the particular maintenance function may be performed provided it is specifically authorized by the direct support maintenance officer. Use of the symbol will apply only to replacement of major assemblies and time-consuming operations which are within the capabilities of organization, but over which control by the commodity commands is considered essential. In no case will the direct support maintenance officer require the accomplishment of a "%%" maintenance function by an organization or unit, and in no case will a "%%" function authorize stockage of parts at organizational level.

d. Column 4, Tools and Equipment. This columm will be used to specify, by code, those tools and test equipment required to perform the designated function.

e. Column 5, Remarks. Self-explanatory.

3. GENERAL.

a. A maintenance function assigned to a maintenance level, which for any reason is beyond its capability, becomes the responsibility of the next higher maintenance level.

b. The authority to perform a maintenance function does not constitute authority to requisition or otherwise secure necessary repair parts as specified in current supply directives.

4. DEVIATIONS.

a. Normally, there will be no deviations from the assigned maintenance level. In cases of operational necessity, a maintenance function assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be authorized to the lower maintenance level by the maintenance officer of the level to which the function is assigned.

b. The furnishing of special tools, equipment, and the like, required by the lower maintenance level to perform this function, will be the responsibility of the level to which the function is assigned.

5. ADDITIONAL INFORMATION.

a. Changes in the Maintenance Allocation Chart will be baaed on continuing evaluation and analysis by responsible personnel and on Maintenance Request Forms DA 2407 received from field activities.

b. All maintenance prescribed herein will be performed in accordance with applicable publications.

c. In any instance of conflict with current tool and equipment lists or current supply manuals, this Maintenance Allocation Chart will be the final authority. Each such instance should be promptly reported by Maintenance Request Form DA 2407.

MAINTENANCE ALLOCATION CHART FOR TESTER, PITOT AND STATIC SYSTEM

(1)	(2)	(3) Maintenance function											(4)	(5)
Group No.	Functional group	Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild	Tools and equipment	Remarks
00	Tester, Pitot and Static System	O	F	O	O	--	H	--	F	F	H	--		
01	Front Panel Assembly	O	--	--	--	--	H	--	O	H	H	--		
	Instruments													
02	Chassis Assembly Pneumatic	O	F	O	--	--	--	F	F	--	--			
	System Electrical System	O	F	--	--	--	--	--	F	H	--	--		
	Motor and Pump Assembly	O	H	O	--	--	--	--	F	H	--	--		
03	Accessories	O	--	O	--	--	--	--	F	O	--	--		

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LISTS

(Current as of 27 August 1968)

Section I. INTRODUCTION

1. SCOPE.

This listing includes the repair parts required for the performance of organizational, direct and general support maintenance of the pitot and static systems tester (FSN 4920-475-7161).

2. GENERAL.

This Basic Issue Items, Repair Parts and Special Tools Listing is divided into the following sections:

a. Basic Issue Items—Section II. (Not applicable.)

b. Maintenance and Operating Supplies—Section III. (Not applicable.)

c. Prescribed Load Allowance—(PLA) Section IV. (Not applicable.)

d. Repair Parts (ORG)—Section V. A list of repair parts authorized for the performance of maintenance at the organizational level in alphabetical sequence within each functional group.

e. Special Tools, Test and Support Equipment (ORG)—Section VI. (Not applicable.)

f. Repair Parts (DS/GS)—Section VII. A list of repair pants authorized for the performance of maintenance at the direct and general support level in alphabetical sequence within each functional group.

g. Special Tools, Test and Support Equipment (DS/GS)—Section VIII. (Not applicable.)

h. Index—Section IX. This section is divided into the following parts:

(1) *Federal Stock Number Index—Part 1.* A list of Federal stock numbers in ascending numerical sequence appearing in all listings cross-referenced to figure and item number.

(2) *Reference Number Index—Part 2.* A list of reference numbers in alpha-numerical sequence appearing in all listings cross-referenced to manufacturer's code and figure and item number.

3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns in the tabular lists in Sections V and VII.

a. Source, Maintenance, and Recoverability Codes (SMR).

(1) *Source Code.* Indicates the selection status for the listed item, The source code used is:

Code	Explanation	Code	Explanation
P	Applies to repair parts which are stocked in or supplied from General Services Administration/Defense Supply Agency or Army		Supply System and are authorized for use at indicated maintenance categories.

(2) Maintenance Cods. Indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes used are:

Code	Explanation	Code	Explanation
O	Organizational Maintenance	F	Direct Support Maintenance

(3) *Recoverability Code.* Indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable, The recoverability code used is:

Code	Explanation	Code	Explanation
R	Applies to repair parts and assemblies which are economically reparable at DS/GS activities and normally are furnished by supply on an exchange basis.		

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning.

c. Description. Indicates the Federal item name and any additional description of the item required. Multiple application of an item is also listed within this column, quantities appearing before each application. The manufacturer's reference number or identification number followed by the applicable five-digit Federal Supply code for manufacturer's in parenthesis, are indicated in the subcolumm.

d. Unit of Issue. A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based; e.g.: EA, HD, PR, etc.

e. Quantity Incorporated in Unit. Indicates the quantity of the item used in the functional group. The symbol V is used in this column to indicate that the quantity of an item is variable.

f. Fifteen-Day Organizational Maintenance Allowances.

(1) The allowance column is divided into four subcolumns. Indicated in each subcolumn opposite the first appearance of each item is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have an entry of REF in the allowance column. Items authorized for use as required, but not for initial stockage, are identified with an asterisk (*) in the allowance column.

(2) The quantative allowances for organizational level of maintenance represents one initial prescribed load for a 15-day period for the number of equipments supported. Units and organizations authorized additional prescribed loads will multiply the number of presicribed loads authorizd by the quantity of repair parts reflected in the appropriate density column to obtain the total quantity of repair parts authorized.

(3) Organizational units providing maintenance for more than 100 of these equipments shall determine the total quantity of pants required by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying the decimal factor by the parts quantity authorized in the 51-100 alllowance column. Example: authorized allowance for 51-100 equipments is 12; far 140 equipments multiply 12 by 1.40 or 16.80 rounded off to 17 parts required.

(4) Subsequent changes to allowances will 'be limited as follows: No change in the range of items are considered necessary, recommendation should be forwarded to U. S. Army Aviation Systems Command for exception or revision to the allowance list, Revisions to the range of items authorized will be made by the U, S. Army Aviation Systems Command based upon engineering experience, demand data or TAERS information.

g. Thirty-Day DS/GS Maintenance Allowances.

(1) The allowance columm is divided into three subcolumns. Indicated in each subcolumn, opposite the first appearance of eaeh item is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item willl have an entry of REF in the allowance columns. Items authorized for use, as required but not far initial stockage, are identified with an asterick (*) in the allowance column.

(2) The quantitative allowances for DS/GS level of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

(3) Determination of the total quantity of parts required for maintenance of more than, 100 of these equipments can be accomplished by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying

the decimal factor by the parts quantity authorized in the 51-100 allowance column. Example: authorized allowance for 150 equipments multiply 40 by 1.50 or 60 parts required.

h. One-year Allowances per 100 Equipments/Contingency Planning Purposes. When applicable, this column indicates opposite the first appearance of each item the total quantity required for distribution and contingency planning purposes. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for one year.

i. Depot Maintenance per 100 Equipments. (Not applicable.)

j. Illustration.

(1) *Figure* ***number.*** Indicates the figure number of the illustration in which the item is shown.

(2) ***Item number.*** Indicates the call-out number used to reference the item in the illustration.

4. ABBREVIATIONS.

Abbreviation	Explanation	Abbreviation	Explanation
ac	Alternating current	ft	Foot (feet)
assy	Assembly (ies)	HD	Hundrd
dc	Direct current	temp	Temperature
EA	Each		

5. FEDERAL SUPPLY CODES FOR MANUFACTURERS.

Code	Manufacturer
43334	New Departure Division of General Motors Corp., Sandusky, Ohio
64560	Weldon Tool Co., Cleveland, Ohio
75511	Lamb Electric Co., Division of Ametek Inc., Kent, Ohio
88044	Aeronautical Standards Group, Departments of Navy and Air Force.
95750	Republic Electronic Industries Corp., Huntington, New York
96906	Military Standards Promulgated by Standardization Division, Directorate of Logistic Services, DSA

(1) (a) Source code	(1) (b) Maint. code	(1) (c) Rec. code	(2) Federal stock number	Reference number and mfg code	(3) Description	(4) Unit of issue	(5) Qty inc in unit	(6) 15-day org maint alw. (a) 1–5	(b) 6–20	(c) 21–50	(d) 51–100	(7) Illustration (a) Fig. No.	(b) Item No.
P	F		4920–475–7161	REIC34000 (95750)	TESTER, Pitot and static systems	EA						1	
					SECTION V REPAIR PARTS (ORG) GROUP 01 FRONT PANEL								
P	O		4730–240–5905	AN816–4D (88044)	ADAPTER, Straight, pipe to tube pressure selector valve to hose assy	EA	1	*	*	*	*	21	17
P	O	R	6610–752–8689	MS28044L1A (96906)	ALTIMETER, Pressure	EA	1	*	*	*	*	21	5
P	O		6620–515–5800	MS28077–5 (96906)	GAGE, Absolute pressure, dial indicating, manifold pressure	EA	1	*	*	*	*	21	8
P	O		6620–557–0403	MS28061–1 (96906)	GAGE, Fuel pressure	EA	1	*	*	*	*	21	9
P	O		6610–726–0247	MS28021–1 (96906)	INDICATOR, Indicated airspeed	EA	1	*	*	*	*	21	6
P	O	R	6610–558–0480	MS28049–1 (96906)	INDICATOR, Vertical velocity	EA	1	*	*	*	*	21	4

(1) Source maint. and recov code (a) Source code	(b) Maint. level	(c) Rec. code	(2) Federal stock number	Reference number and mfg code	(3) Description	(4) Unit of issue	(5) Qty inc in unit	(6) 30-day DS/GS maint alw. (a) 1–20	(b) 21–50	(c) 51–100	(7) 1-yr alw per 100 equip engay	(8) Depot maint alw per 100 equip	(9) Illustration (a) Fig No.	(b) Item
P	F		4920–475–7161	REIC340000 (95750)	TESTER, Pitot and statit systems	EA						1		
					SECTION VII REPAIR PARTS (DS/GS) GROUP 01 FRONT PANEL									
P	O		4730–240–5905	AN816–4D (88044)	ADAPTER, Straight, pipe to tube, pressure selector valve to hose assy	EA	1	*	*	*			21	17
P	O	R	6610–752–8689	MS28044L1A (96906)	ALTIMETER, Pressure	EA	1	*	*	*			21	5
P	O		6620–515–5800	MS28077–5 (96906)	GAGE, Absolute pressure, dial indicating, manifold pressure	EA	1	*	*	*			21	5
P	O		6620–557–0403	MS28061–1 (96906)	GAGE, Fuel pressure	EA	1	*	*	*			21	9
P	O		6610–726–0247	MS28021–1 (96906)	INDICATOR, Indicated airspeed	EA	1	*	*	*			21	6
P	O	R	6610–558–0480	MS28049–1 (96906)	INDICATOR, Vertical velocity	EA	1	*	*	*			21	4
					GROUP 02 CHASSIS ASSEMBLY									
P	F		3110–293–8644	77036XRIE (43334)	BEARING, Ball, annular, armature shaft, commutator end	EA	1	*	*	*			28	28
P	F		3110–293–8267	77038XRIE (43334)	BEARING, Ball, annular, armature shaft, end bracket end	EA	1	*	*	*			28	16

(1) Source maint. and recov code			(2)	(3)			(4)	(5)	(6) 30-day DS/GS maint alw.			(7)	(8)	(9) Illustration	
(a) Source code	(b) Maint. level	(c) Rec. code	Federal stock number	Reference number and mfg code		Description	Unit of issue	Qty inc in unit	(a) 1–20	(b) 21–50	(c) 51–100	1-yr alw per 100 equip engay	Depot maint alw per 100 equip	(a) Fig No.	(b) Item
P	F		4730–186–9961	MS20822–4D	(96906)	ELBOW, Pipe to tube 1 EA pressure check valve to pressure oil filter sump tube 2 EA pump to oil reservoir tube 1 EA selector valve to hose assy	EA	4	*	*	*			25	13
P	F		4730–186–9951	MS20823–4D	(96906)	ELBOW, Pipe to tube 1 EA pressure sump filter tee 1 EA pump to selector valve tube 4 EA relief valves 1 EA vacuum sump filter	EA	7	*	*	*			25	14
P	F		5935–850–0241	MS3102R10S2P	(96906)	CONNECTOR, Receptacle, electrical, radio interference filter	EA	1	*	*	*			19	7
P	F		5330–596–9462	0–2251	(75511)	GASKET, Brush holder screw assy	EA	2	*	*	*			28	4
P	F		6105–321–1335	0–5452	(75511)	GASKET, Radio filter to motor	EA	1	*	*	*			19	3
P	F		5970–553–3829	0–3822	(75511)	INSULATOR, Bushing, motor	EA	1	*	*	*			28	
P	F		4730–186–7797	AN911–1D	(88044)	NIPPLE, Pipe 1 EA oil reservoir to selector valve 1 EA pressure filter sump to relief valve tee 1 EA relief valve tee to relief valve 1 EA vacuum filter sump to relief valve	EA	4	*	*	*			25	15
P	F		5310–761–6882	MS51967–2	(96906)	NUT, Plain, hexagon, oil reservoir bolt	HD	4	*	*	*			27	1
P	F		5310–331–5197	7458	(75511)	NUT, Special, motor end bracket mtg stud	EA	2	*	*	*			28	13
P	F		1660–530–0713	10–4374	(75511)	PACKING, Preformed, armature shaft, bracket end	EA	1	*	*	*			28	18
P	F		4310–945–0197	P345C	(64560)	PUMP ASSEMBLY	EA	1	*	*	*			25	49
P	F		1660–167–1417	100551	(64560)	BLADE, Fluid pump	EA	2	*	*	*			28	39
P	F		1660–167–1421	100650A	(64560)	CAGE, Seal	EA	1	*	*	*			28	32
P	F		5340–282–2378	100702B	(64560)	RING, Retaining, blade	EA	1	*	*	*			28	38
P	F		5305–253–5607	AN535–0–3	(88044)	SCREW, Drive	EA	2	*	*	*			28	
P	F		5330–328–3365	100640B	(64560)	SEAL, Plain encased	EA	1	*	*	*			28	
P	F		2915–597–2604	100703	(64560)	SPRING, Helical, compression	EA	1	*	*	*			28	30
P	F		5310–264–1389	AN961–8	(88044)	WASHER, Flat	HD	1	*	*	*			28	31

(1) Source maint. and recov code (a) Sppc source	(b) Maint. level	(c) Rec. code	(2) Federal stock number	Reference number and mfg code	(3) Description	(4) Unit of issue	(5) Qty inc in unit	(6) 30-day DS/GS maint alw. (a) 1–20	(b) 21–50	(c) 51–100	(7) 1-yr alw per 100 equip engsy	(8) Depot maint alw per 100 equip	(9) Illustration (a) Fig No.	(b) Item
P	F		5305–331–9473	34018A (75511)	SCREW ASSEMBLY, Brush holder	EA	2	*	*	*			28	3
P	F		5305–685–2290	AN500A4–4 (88044)	SCREW, Machine, radio interference mtg screw	EA	4	*	*	*			19	4
P	F		5305–263–9164	AN565D6L3 (88044)	SETSCREW, commutator bracket	EA	2	*	*	*			28	22
P	F		6105–209–5664	2277 (75511)	SHIM, armature commutator end	EA	V	*	*	*			28	27
P	F		6105–641–2712	0–5454 (75511)	SHIM, commutator bracket	EA	1	*	*	*			28	19
P	F		5340–484–5059	2276 (75511)	SPACER, Ring, armature commutator end	EA	1	*	*	*			28	26
P	F		6105–200–3828	0–5851 (75511)	SPRING, Helical, compression, motor end bracket mtg stud	EA	2	*	*	*			28	20
P	F		5307–484–5045	10–7877 (75511)	STUD, Plain, motor end bracket mtg	EA	2	*	*	*			28	23
P	F		4730–278–3989	AN917–1D (88044)	TEE, Pipe, pressure filter sump to relief valve	EA	1	*	*	*			25	19
P	F		4730–722–1207	MS24402D4 (96906)	TEE, Tube, relief valve	EA	2	*	*	*			25	20
P	F		4810–019–8014	340223 (95750)	VALVE, Needle	EA	5	*	*	*			22	7
					1 EA pressure decrease valve									
					1 EA pressure increase valve									
					1 EA safety valve									
					1 EA vacuum decrease valve									
					1 EA vacuum increase valve									
P	F		4820–019–8015	340216–2 (95750)	VALVE, Relief, 50,000 ft	EA	1	*	*	*			25	29
P	F		4820–019–8016	34016–1 (95750)	VALVE, Relief, 80,000 ft	EA	1	*	*	*			25	28
P	F		4820–019–8013	340214–2 (95750)	VALVE, Relief	EA	1	*	*	*			25	26
P	F		4820–019–8018	340214–3 (95750)	VALVE, Relief, 250 knots	EA	1	*	*	*			25	25
P	F		5310–028–4163	0–2252 (75511)	WASHER, Flat, motor end bracket mtg stud	EA	2	*	*	*			28	14
					GROUP 03 ACCESSORIES									
P	F		6685–306–5126	260104 (95750)	ADAPTER, Hose, pitot system tests, oblong sleeve	EA	1	*	*	*			3	12
P	F		6145–022–9902	340003A (95750)	CABLE ASSEMBLY, Power, ac	EA	1	*	*	*			3	14
P	F		6145–022–9903	340004 (95750)	CABLE ASSEMBLY, Power, dc	EA	1	*	*	*			3	13
P	F		4920–018–3399	340101–1 (95750)	CONTAINER, Oil, high temp	EA	1	*	*	*			3	3
P	F		4730–834–9560	MS24392D4 (96906)	NIPPLE, Tube, instrument hose connection	EA	2	*	*	*			3	16
P	F		4730–812–5036	MS24399D3 (96906)	REDUCER, Tube, instrument hose connection	EA	2	*	*	*			3	15

SECTION IX

FEDERAL STOCK NUMBER AND REFERENCE NUMBER INDEXES

Part I. FEDERAL STOCK NUMBER INDEX

Stock number	Figure number	Item No.
1660–167–1417	28	39
1660–167–1421	28	32
1660–530–0713	28	18
2915–597–2604	28	30
3110–293–8267	28	16
3110–293–8644	28	28
4310–945–0197	25	49
4730–186–7797	25	15
4730–186–9951	25	14
4730–186–9961	25	13
4730–240–5905	21	17
4730–278–3989	25	19
4730–722–1207	25	20
4730–812–5036	3	15
4730–834–9560	3	16
4810–019–8014	22	7
4820–019–8013	25	26
4820–019–8015	25	29
4820–019–8016	25	28
4820–019–8018	25	25
4920–018–3399	3	3
4920–475–7161	1	
5305–253–5607	28	
5305–263–9164	28	22
5305–331–9473	28	3
305–685–2290	19	4
5307–484–5045	28	23
5310–028–4163	28	14
5310–264–1389	28	31
5310–331–5197	28	13
531	27	1
5330–328–3365	28	
5330–596–9462	28	4
5340–282–2378	28	38
5340–484–5059	28	26
5935–850–0241	19	7
5970–553–3829	28	
6105–200–3828	28	20
6105–209–5664	28	27
6105–321–1335	19	3
6105–641–2721	28	19
6145–022–9902	3	14
6145–022–9903	3	13
6610–558–0480	21	4
6610–726–0247	21	6
6610–752–8689	21	5
6620–515–5800	21	8
6620–557–0403	21	9
6685–306–5126	3	12

Part II. REFERENCE NUMBER INDEX

Reference number	Mfg. code	Fig. No.	Item No.
AN500A4–4	88044	19	4
AN535–0–3	88044	28	
AN565D6L3	88044	28	22
AN816–4D	88044	21	17
AN911–1D	88044	25	15
AN917–1D	88044	25	19
AN961–8	88044	28	31
MS20822–4D	96906	21	6
MS20823–4D	96906	25	14
MS24392D4	96906	3	16
MS24399D3	96906	3	15
MS24402D4	96906	25	20
MS28021–1	96906	21	6
MS28044L1A	96906	21	5
MS28049–1	96906	21	4
MS28061–1	96906	21	9
MS28077–5	96906	21	8
MS310R10S2P	96906	19	7
MS51967–2	96906	27	1
P345C	64560	1	
REIC340000	95750	25	49
2251	75511	28	4
Text	75511	28	14
Text	75511	28	
Text	75511		
0–5454	75511	28	19
0–5851	75511	28	20
10–4374	75511	28	18
10–7877	75511	28	23
100551	64560	28	39
100640B	64560	28	
100650A	64560	28	32
100702B	64560	28	38
100703	64560	28	30
2276	75511	28	26
2277	75511	28	27
260104	95750	3	12
340003A	95750	3	14
340004A	95750	3	13
340101–1	95750	3	3
34018A	75511	28	3
340214–2	95750	25	26
340214–3	95750	25	25
340216–1	95750	25	28
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34223	95750	22	7
7458	75511	28	13
77036XR1E	43334	28	28
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By Order of the Secretary of the Army:

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The Adjutant General.

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