TM 11-5895-223-15

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, FIELD, AND DEPOT MAINTENANCE MANUAL

OPERATIONS CENTER, COMMUNICATIONS AN/MSC-31

This copy is a reprint which includes current pages from Changes 6 and 7.

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 MARCH 1961

WARNING

HIGH VOLTAGE

is used in
this equipment.

DEATH ON CONTACT

may result if safety precautions
are not observed.

EXTREMELY

DANGEROUS POTENTIALS

EXIST IN THE FOLLOWING UNITS:

Power and signal entrance box	115 volts ac
Power distribution panel	115 volts ac
Intercommunication Station LS-147(*)/FI	270 volts dc

WARNING

VENTILATION IS ESSENTIAL

To prevent asphyxiation, Operations Center, Communications
AN/MSC-31 must be ventilated at all times when occupied.

TM 11-5895-223-15
*C 6

CHANGE
No. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *13 September 1974*

Organizational, Direct Support, General Support, and Depot Maintenance Manual Including Repair Parts List

OPERATIONS CENTRAL, COMMUNICATION AN/MSC-31

TM 11-5895-223-15, 28 March 1961, is changed as follows:

Page 2. Add the following note below the title of chapter 1.

NOTE

Shelters, Electrical Equipment S-183A/MSC-31, S-183B/MSC-31, S-183C/MSC-31, and S-183D/MSC-31 are similiar to Shelter, Electrical Equipment S-183/MSC-31. Information in this manual applies to all shelter facilities unless other wise specified.

Add paragraph 1.1 after paragraph 1.

1.1 Indexes of Publications

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

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

Delete paragraph 2 and substitute:

2. Forms and Records

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

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 378/AFR 71-4/MCO P4030.29, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33/AFM 75-18/MCO P4610.19A, and DSAR 4500.15.

Add paragraph 2.1 after paragraph 2.

2.1 Reporting of Errors

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

*This change supersedes C 3, 7 October 1963, and C 5, 30 August 1967.

Page 3. Delete paragraph 5 and substitute:

5. Items Comprising an Operable Equipment

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Usable on code*	*Fig No.*
5895-021-2089		Operations Center, Communications AN/MSC-31 Consisting of:		
		NOTE The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identifed in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.		
	1	Shelter, Electrical Equipment S-183/MSC-31, S-183A/MSC-31, S-183B/MSC-31, S-183C/MSC-31, S-183D/MSC-31 (S-141/G shelter modified)		
		Consisting of:		
		NOTE In the usable on code column, number 1 refers to the S-183/MSC-31, number 2 refers to the S-183A/MSC-31, number 3 refers to the S-183B/MSC-31, number 4 refers to the S-183C/MSC-31, and number 5 refers to the S-183D/MSC-31.		
7520-753-4807	1	Basket, Waste Paper: 36; 80063	1, 2, 3, 4	
7520-292-9493	1	Basket, Waste Paper: RR-B-181, type II, style B; 81349	5	
6135-120-1020	8	Battery, Dry BA-30	1, 2, 3, 4, 5	
		NOTE Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization in accordance with SB 11-6.		
4210-383-7127	1	Bracket: PRB-2-1/2, 33525	1, 2, 3, 4, 5	13
4210-268-9729	1	Bracket: RB-1, 33525	1, 2, 3, 4, 5	14
6645-633-3597	1	Bracket: SM-C-200852, 80063	4	13
7920-178-8315	1	Brush, Dusting, Bench: SC-C-539469, 80063	1, 2, 3, 4, 5	14
5410-752-2435	1	Cable Assembly and Reel: SM-D-352732, 80063	1, 2, 3, 4, 5	3
5995-823-2620	1	Cable Assembly, Special Purpose: SM-C-382135, 80063	1, 2, 3, 4, 5	
5995-889-0803	1	Cable Assembly, Telephone CX-4760A/U	1, 2, 3, 4, 5	2
5995-889-0923	1	Cable Assembly, Telephone SM-C-353715; 80063	1, 2, 3, 4, 5	
5995-752-2548	1	Cable Assembly, Power, Electrical CX-7705/U	1, 2, 3, 4, 5	2
4940-752-2474	1	Cable Assembly, Power Electrical: SM-D-350987; 80063	1, 2, 3, 4, 5	2
5995-752-2566	5	Cable Assembly, Telephone: SM-D-383873-GR III; 80063	1, 2, 3, 4, 5	2
7105-269-8463	1	Chair, Folding: AA-C-291, type 1, class 1 81349	1, 2, 3, 4, 5	12
7110-273-8798	3	Chair Rotary: AA-C-293A, type 2, class 2, style B, 81349	1, 2, 3, 4, 5	
7110-792-6337	1	Chair, Shop: SM-D-351799, 80063	1, 2, 3, 4, 5	11
6645-303-4950	1	Clock Aircraft Mechinical: MIL-C-7939A, type AT-11, AN/5743-2, 81349	1, 2, 3, 5	13
6645-526-4395	1	Clock Aircraft Mechanical: SM-B-472589-5 80063	4	13
7210-753-3043	1	Cushion, Chair: SM-C-350214, 80063	1, 2, 3, 4, 5	
5120-408-1481	1	Extractor, Electron Tube: TP-11-16; 73917	1, 2, 3, 4, 5	14
5120-293-2692	1	Extractor, Electron Tube: TP-13-16; 73917	1, 2, 3, 4, 5	14
4140-729-6001	2	Fan, Ventilating, Propeller: KS-802L; 82877	1, 2, 3, 4	15
5120-776-9917	2	Grip, Cable, Jaw: EQA-6-8P; 95344	1, 2, 3, 4, 5	13
5120-776-9918	2	Grip, Cable, Jaw: EQA-26S; 95344	1, 2, 3, 4, 5	12
4520-224-7909	2	Heater, Space, Electrical: AAT-15A; 72143	1, 2, 3, 4, 5	17
5830-752-5357	1	Intercommunication Station LS-147C/FI:	1, 2, 3, 4, 5	18
2540-892-6243	1	Ladder, Vehicle, Boarding MX-3391/G:	1, 2, 3, 4, 5	15
6230-729-9614	1	Lantern, Electric: SC-D-539491; 80063	1, 2, 3, 4, 5	14
5410-752-2525	2	Lead, Electrical: SM-B-352166; 80063	1, 2, 3, 4, 5	2
6230-239-3518	1	Light, Extension: SC-C-539496; 80063		2
5965-752-6011	1	Maintenance Kit, Electronic Equipment	1, 2, 3, 4, 5	

FSN	Qty	Nomenclature, part No., and mfr code	Usable on code	Fig. No.
7510-240-1526	1	Pencil, Grease: Black	1, 2, 3, 4, 5	
7510-436-5210	1	Pencil, Grease: Blue	1, 2, 3, 4, 5	
7510-324-2086	1	Pencil, Grease: Green	1, 2, 3, 4, 5	
7510-174-3205	1	Pencil, Grease: Red	1, 2, 3, 4, 5	
7510-264-4612	1	Pencil, Grease: Yellow	1, 2, 3, 4, 5	
5120-293-0255	1	Pin Straightener, Electron Tube: 8655; 72653	1, 2, 3, 4, 5	14
7520-162-6178	1	Sharpener, Pencil: SC-C-539503; 80063	1, 2, 3, 4, 5	14
5410-805-5533	1	Sling, Multiple Leg: SC-C-26123; 80063	1, 2, 3, 4, 5	15
5410-792-6336	6	Strap Assembly, Tie Down: p/n-705; 81902	1, 2, 3, 4, 5	15
7430-164-1421	1	Typewriter: 88; 93783	1, 2, 3, 4	12
5805-257-3602	1	Switchboard Telephone Manual SB-22/PT		11
5805-543-0012	4	Telephone Set TA-312/PT		11

Add paragraph 5.1 after paragraph 5.

5.1. Expendable Consumable Supplies and Materials

Expendable Consumable Supplies and Materials are listed in table 1-1.

Table 1-1. Expendable Consumable Supplies and Material

The supplies and material listed in this table are required for operation of this equipment and are authorized to be requisitioned by SB 700-50. The FSN for the applicable unit of issue required can be found in appropriate supply catalogs. The FSCM is used as an element in item identification to designate manufacturer or distributor or Government agency, etc., and is identified in SB 708-42.

Item	Description	Ref No. and FSCM	FSC
1	Pencil, Grease: Black		7510
2	Pencil, Grease: Blue		7510
3	Pencil, Grease: Green		7510
4	Pencil, Grease: Red		7510
5	Pencil, Grease: Yellow		7510

Page 27, paragraph 15. Delete subparagraph *b* and substitute:

b. Securing AN/MSC-31 on Truck (fig 23).

(1) Install the tiedown ring assembly (A, fig. 23) (part of the sling assembly) above the center support on the cargo bed side rail of the truck.

(2) Use the hook at the end farthest from the turnbuckle and hook each of the sling assemblies to a tiedown eye of the shelter.

(3) Secure the sling hooks to the tiedown ring (B, fig. 23).

(4) Follow the procedures given in (1) through (3) above to secure the other side of the shelter.

(5) Tighten all turnbuckles evenly by hand; then turn each turnbuckle an additional one-half turn with a bar or rod inserted in the turnbuckle slot.

CAUTION

Do not overtighten the turnbuckles.

(6) Raise and secure the truck tailgate.

Page 29. Delete figure 23 and substitute the new figure 23.

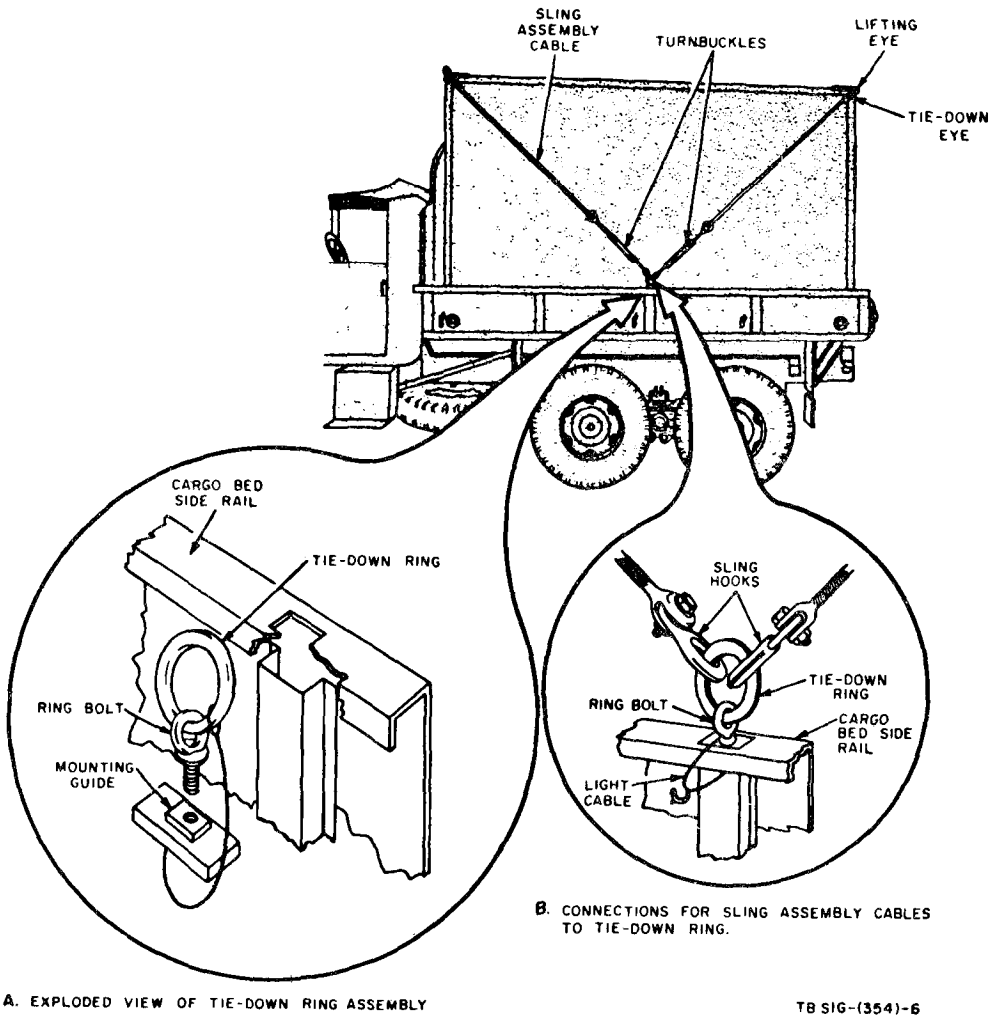

Figure 23. Tiedown ring assembly and sling assembly connection diagram, exploded view.

Page 38. Change the title of "Section I" to "OPERATOR'S AND ORGANIZATIONAL PREVENTIVE MAINTENANCE."

(Delete paragraph 27 substitute:

27. Scope of Maintenance and Procedures

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

General.

(1) The operators preventive maintenance consists of first echelon preventive maintenance and replacement of parts (para 33-39). The operator's preventive maintenance is performed daily and under the conditions specified below. Specific procedures are provided in paragraph 29.

(a) When the AN/MSC-31 is initially installed.

(b) Before preparing the AN/MSC-31 for storage or shipment.

(c) At least once each week if the AN/MSC-31 is not in continuous use.

(2) Organizational maintenance consists of second echelon preventive maintenance, troubleshooting (para 32 and 40-49), and replacement of authorized repair parts (app II). Second echelon preventive maintenance is performed on a monthly and quarterly basis; specific procedures are provided in paragraphs 30 and 31.

(3) The preventive maintenance checks and services provided in paragraphs 29, 30, and 31 outline inspections to be made at the indicated intervals. They are designed to help

maintain Army Electronic equipment in serviceable condition. They indicate what items are to be checked and how they should be checked. Also included are procedures for authorized repairs and references to text, illustrations, and other manuals that contain supplementary information.

(4) Defects that cannot be corrected must be reported to higher echelon maintenance personnel. Records and reports of repair and preventive maintenance must be made in accordance with procedures given in TM 38-750.

b. Cleaning.

WARNING

Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.

(1) Use a dry, clean, lint-free cloth or brush to remove dust and dirt. If necessary, moisten the cloth or brush with Cleaning Compound (Federal Stock No. 7930-395-9542) to remove grease, oil, and dirt and dust. After cleaning, wipe dry with a cloth.

WARNING

Compressed air is dangerous and can cause serious bodily harm. It can also cause mechanical damage to the equipment. Do not use compressed air to dry parts where cleaning compound has been used.

(2) Dry, compressed air, not to exceed 60 pounds per square inch, may be used to remove dirt and dust from inaccessible places.

c. Touchup Painting. Clean rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of the proper paint on bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-213.

Delete paragraph 29 and substitute:

29. Daily Preventive Maintenance Checks and Services Chart

Sequence No.	*Item*	*Procedure*	*References*
		EXTERIOR	
1	Shelter skin	Check to see that there are no skin punctures, tears, or open seams that would permit moisture to enter shelter wall.	None
2	Grounding system	*a.* Check to see that grounding system is properly installed.	*a.* Para 16.
		b. Tighten loose ground lead connections	*b.* None.
3	Sling assembly	Check sling assembly for slack and tighten if necessary.	Para 15 *b.*
4	Power and signal entrance box, and binding post signal entrance box.	*a.* Remove dirt, grease, and moisture from around binding posts and receptacles.	*a.* Para 27 *b* and fig. 8 and 9.
		b. Put dust covers and receptacle covers on all unused cable receptacles.	*b.* Para 19 *a* (4).
5	Power and signal cable assemblies.	*a.* Remove grease, oil, and dirt from cable insulation and connectors.	*a.* Para 27 *b.*
		b. Tighten all locking rings so that cable is securely attached to its receptacle.	*b.* Para 19.
		c. Adjust cable grips to relieve strain of cable weight.	*c.* Fig. 2.
		d. Put connector covers and dust caps on unused cables.	*d.* Para 19.
		INTERIOR	
6	Signal and power cables, wires, and patching cords.	*a.* Tighten loose connections of all plugs and connectors to their receptacles and jacks.	*a.* None.
		b. Check to see that insulation is not cut. Remove all kinks and strain.	*b.* None.
7	Lighting system	Replace defective lamps and starters (use spares).	Para 34 and fig. 4.
8	Walls, ceiling, and floor	Check for holes, open seams, or signs of leaks or water seepage.	None.

Sequence No.	*Item*	*Procedure*	*References*
9	Wastebaskets	Empty and clean wastebaskets	Para 27 *b*.
10	Cabinet drawers	Remove refuse and articles not assigned to cabinet drawers.	Para 7 and 8.
11	Batteries and hand lantern.	Replace batteries or lamp if flashlight or hand lantern fails to light.	Para 33 and fig. 26.
12	Clock	Wind and set to correct time, if necessary	Fig. 13.
13	Power distribution panel ..	Check to see that voltmeter indicates approximately 115 volts ac, and ammeter indication is normal. Replace neon lamps that fail to light.	Figs 4 and 10.
14	Equipment operation	*a*. Check to see that all equipment performs satisfactorily.	*a*. Para 23 through 26 and note below.
		b. Report operational failure of any equipment or circuit.	*b*. TM 38-750.
		c. Replace defective items for which authorized spare parts are provided.	*c*. Para 33 through 38 and app III (for shelter), and app I (for other equipments manuals).

NOTE. In addition to the preventive maintenance checks and services for the items listed in the chart above, perform the preventive maintenance required for those components of the AN/MSC-31 which are covered in separate technical manuals (app I).

Page 39. Delete paragraphs 30 and 31 and substitute:

30. Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	*Item*	*Procedure*	*References*
		EXTERIOR	
1	Shelter skin and hardware	Use touchup painting where paint is blistered, pitted, or flaking, and on bare metal spots (such as steps, power and signal entrance and binding post signal entrance box covers, skids, etc).	TB 750-240.
2	Grounding system	Clean ground lug connections	Para 27 *b*.
3	Sling assembly	Clean and paint bare metal parts	Para 27 *b* and *c*.
4	Movable parts and door..	*a*. Clean and paint bare metal parts	*a*. Para 27 *b* and *c*.
		b. Tighten loose screws and bolts	*b*. None.
		c. Lubricate	*c*. TB 750-240.
		d. Clean air vent filter	*d*. Fig. 14.
		e. Apply gasket cement on loose gaskets	*e*. None.
5	Power and signal entrance, and binding post signal entrance boxes.	*a*. Remove corrosion from binding posts	*a*. Figs. 8 and 9.
		b. Repair insulation cuts and abrasions with electrical insulation tape.	*b*. None.
		c. Inspect layout of cables and relocate if necessary to prevent damage by or hazard to vehicles and pedestrians.	*c*. None.
		INTERIOR	
6	Signal and power cables, cords, wires, and patching cords.	*a*. Tighten screws and clamps securing wires to terminals.	*a*. None.
		b. Repair insulation cuts and abrasions with electrical insulation tape.	*b*. None.
		c. Cover disconnected bare wire with electrical insulation tape.	*c*. None.
		d. Polish metal plugs on patching cords, telephone cords, etc.	*d*. None.

Sequence No.	Item	Procedure	References
7	Signal, power, and lighting system ducts.	Tighten loose screws, bolts, and clips. Repair or replace defective switches, switchplates, outlets, receptacles, and jacks.	Para 45.
8	Lighting systems	*a.* Tighten screws and nuts securing lighting fixtures, lights, and parts on power distribuiton panel.	*a.* None.
		b. Replace defective or missing parts in lighting system and power distribution panels.	*b.* Para 46.
9	Walls, ceiling, and floor .	*a.* Clean and paint bare metal spots	*a.* Para 27 *b* and *c.*
		b. Check for skin punctures and cracked seams	*b.* None.
10	Cabinets	Repair or replace broken doors and latches	None.
11	Equipment mountings..	*a.* Tighten all loose bolts, nuts, screws, and clamps securing equipment, racks, frames, shelves, brakes, clamps, and mounting hardware. Replace missing bolts, nuts, etc.	*a.* None.
		b. Check to see that equipment mounting racks, frames, shelves, braces, and clamps are not bent, broken, or out of shape to endanger equipment or personnel.	*b.* None.
12	Meter, controls, and patch panels.	Repair or replace defective parts	Para 42.
13	Batteries and hand lantern	Remove dirt and corrosion from battery compartment and replace batteries that show signs of swelling, leaking, or corrosion.	Para 33 and fig. 26.
14	Exhaust blowers	*a.* Lubricate motor with oil (PL-Special or OE-10).	*a.* None.
		b. Clean motor and fanhousing	*b.* Para 27 *b.*
		c. Repair or replace defective parts	*c.* Para 44.
15	Blackout curtain	*a.* Tighten screws securing track fixture to ceiling.	*a.* None.
		b. Repair or replace if torn, ripped, or frayed ..	*b.* None.
16	Electric heater	*a.* Clean inside and outside of case	*a.* Para 27 *b.*
		b. Repair or replace defective parts	*b.* Para 43.
17	Clock	Replace if correct time cannot be maintained ...	None
18	Equipment performance ..	*a.* Check out the operation of all equipment ...	*a.* Para 32 and note below.
		b. Replace or repair any defective or inoperable part.	*b.* None.

NOTE. In addition to the preventive maintenance checks and services for the items listed in the chart above, perform the preventive maintenance required for those components of the AN/MSC-31 which are covered in separate technical manuals (app I).

31. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
		GENERAL	
1	End item equipment	*a.* Check equipment for completeness and requisition missing components, running spares, and defective parts.	*a.* App III.
		b. Check to see that all components, except those in use, are mounted and stowed in assigned places.	*b.* Figs. 6 through 16.
		c. Requisition all technical manuals not on hand or in usable condition, including current changes.	*c.* DA Pam 310-4 and para 1.1.
2	Modification work orders (MWO's).	Check to see that all applicable MWO's have been applied and MWO number is stamped as required. Modify or request modification as applicable.	DA Pam 310-4.
		EXTERIOR	
3	Shelter skin and hardware	Check for skin punctures, tears, or open seams that would permit moisutre to enter shelter wall. Repair or replace defective hardware.	TB 750-240.
4	Grounding system	Replace ground rod if ground lead lug cannot be securely tightened. Replace ground lead if it is cut, corroded, or broken.	Para 16.

Sequence No.	Item	Procedure	References
5	Shelter door	Check to see that rubber gaskets are not missing or loose and they provide watertight seal. See that hinges and door handles are not broken.	None.
6	Power and signal entrance, and binding post signal entrance boxes.	*a.* Use a brush and carefully remove sand, moisture, and dirt from contacts of 26-pair cable receptacles.	*a.* None.
		b. Tighten locknuts, screws, and bolts securing receptacles and binding posts, and replace defective parts.	*b.* None.
7	Power and signal cable assemblies.	Replace assemblies with defective wiring, insulation, or connectors.	None
		INTERIOR	
8	Signal and power cables, cords, wires, and patching cords.	*a.* Dress all cabling, wires, and cords neatly; use cable and cord clamps provided in shelter or electrical insulation tape or twine.	*a.* None.
		b. Repair or replace defective cables, cords, wires, and patching cords.	*b.* None.
9	Walls, ceiling, and floor ..	Paint blistered, pitted, or flaking areas and bare metal spots.	Para 27*c*.
10	Fire extinguisher	*a.* Refill if weight of contents is less than required or if seal is broken.	*a.* Fig. 14.
		b. Replace if valve assembly is damaged	*b.* None.
11	First aid kit	Replace if case is broken or damaged. Replace parts that have been used. (See parts list inside cover).	Fig. 14.
12	Chair and chair cushion ..	*a.* Repair or replace chair if parts are bent or broken, or if it is unsafe for use.	*a.* Fig. 7.
		b. Repair or replace cushion that is torn, cut, or has split seams or exposed padding.	*b.* None.
13	Ax and sledgehammer ...	Replace if handle is broken, split, or does not fit head tightly.	Fig. 14.
14	Ladder	*a.* Paint blistered, pitted, or flaking areas, and bare metal spots.	*a.* Para 27*c* and fig. 15
		b. Repair or replace if steps, frame, or parts are bent or broken, or if it is unsafe for use.	*b.* None.

NOTE. In addition to the preventive maintenance checks and services for the items listed in the chart above, perform the preventive maintenance required for those components of the AN/MSC-31 which are covered in separate technical manuals (app I).

Page 49, paragraph 49b, lines 4 and 5. Delete "Patch Kit, Shelter, Electrical Equipment" and substitute "Repair Kit, Electrical Equipment Shelter MK-680/G."

Page 57. Delete appendix and substitute:

APPENDIX I

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders
DA Pam 310-7	US Army Equipment Index of Modification Work Orders.
TB 750-240	Maintenance and Repair Procedures for: S-141/G, S-144/G, S-250/G, S-280/G, and S-318/G Type Shelters.
TM 11-5805-201-12	Operator and Organizational Maintenance Manual, Including Repair Parts and Special Tool Lists: Telephone Set TA—312/PT (TO 31W1—2PT-291).
TM 11-5805-262-12	Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT

TM 11-5805-262-20P	Organizational Maintenance Repair Parts and Special Tools Lists: Telephone Switchboard SB-22A/PT (FSN 5805-715-6171).
TM 11-5805-262-35	DS, GS, and Depot Maintenance Manual: Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT
TM 11-5830-262-35P	DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Telephone Switchboards, SB-22A/PT (FSN 5805-715-6171).
TM 11-5830-221-12	Operator's and Organizational Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI. LS-147C/FI, and LS-147D/FI
TM 11-5830-221-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools): Intercommunications Station LS-147C/FI FSN 5830-752-5357.
TM 11-5830-221-35	Field and Depot Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI and LS-147D/FI
TM 11-5895-224-15	Operator's Organizational, DS, GS, and Depot Maintenance Manual, Including Repair Parts List: Operations Central AN/MSC-32.
TM 11-5935-205-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists: Connectors, Receptacle, Electrical U-187/G and U-187A/G
TM 11-5965-224-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Handsets H-60/PT and H-165/U
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6625-203-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools): Multimeter AN/URM-105 (Including Multimeter ME-771U) FSN 6625-581-2036.
TM 11-6625-203-35	Field and Depot Maintenance Manual: Multimeter AN/URM-105 Including Multimeter ME-77/U
TM 11-6625-274-12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U and TV-7D/U
TM 11-6625-274-25P	Organizational, DS, GS, and Depot Maintenance Repair Parts and Special Tool Lists: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U
TM 11-6625-274-35	DS, GS, and Depot Maintenance Manual, Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U
TM 38-750	The Army Maintenance Management System (TAMMS).

Page 60, appendix II. Delete and substitute:

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Operations Center, Communications AN/MSC-31. It authorizes categories of maintenance for specific main-

tenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations

2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Group numbers correspond to the reference designation prefix assigned in accordance with ASA Y32.16, Electrical and Electronics Reference Designations. They indicate the relation of listed items to the next higher assembly.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follow:

Code	*Maintenance category*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in section III.

e. Remarks. Self-explanatory.

3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and test equipment requirements chart are as follows:

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

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

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

d. Federal Stock Number. This column lists the Federal stock number.

e. Tool Number. Not used.

Section II. MAINTENANCE ALLOCATION CHART

MAINTENANCE ALLOCATION CHART														
		Maintenance functions												
Group number	Component assembly nomenclature	Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild	Tools and equipment	Remarks
A	COMMUNICATIONS, OPERATIONS CENTER AN/MSC-31	C		C										Preventive maintenance
			C											Operational test of assemblage
			O										1, 3	Signal lighting and power circuits
			H										1, 2, 3, 6	All tests
										O			3	Except shelter parts and 26 pair cable connector
										F			3, 5, 6	
										H			3, 4, 5, 6	
											H		3, 4, 5, 6	
												D	3, 4, 5, 6	Shelter only

Group number	Component assembly nomenclature	Maintenance functions											Tools and equipment	Remarks
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
A1	SHELTER, ELECTRICAL EQUIPMENT S-183/MSC-31, S-183A, B, C, D/MSC-31		O										1, 3	Signal, lighting and power circuits
			H										1, 2, 3, 6	All tests
										F			3, 5, 6	
										H			3, 4, 5, 6	
												D	3, 4, 5, 6	
A1a	CONNECTOR U-185/G									H			3	
A1b	EXTINGUISHER, FIRE								O					Corps of engineers
A1c	INTERCOMMUNICATION STATION LS-147C/FI								#				6	See TM 11-5830-221-12
A1d	TELEPHONE SET TA-312/PT								#				6	See TM 11-5805-201-12
A2	SWITCHBOARD, TELEPHONE MANUAL, SB-22/PT, SB-22A/PT								#				6	See TM 11-5805-262-12

#Indicates that maintenance guidance will be found in documents referenced or service indicated in remarks column.

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS

Tools and equipment	Maintenance category	Nomenclature	Federal stock number	Tool number
		AN/MSC-31 (continued)		
1	O, F, H, D	MULTIMETER TS-352( )/U (TO BE REPLACED BY AN/USM-223)	6625-242-5023	
2	H, D	OHMMETER ZM-21A/U	6625-246-5880	
3	O, F, H, D	TOOL EQUIPMENT TE-123	5180-408-1881	
4	H, D	TOOL KIT, ELECTRONIC EQUIPMENT SHELTER TK-144/G	5180-987-4369	
5	F, H, D	TOOL KIT, GENERAL MECHANICS	5180-754-0641	
6	O, F, H, D	TOOLS-TEST EQUIPMENT ASSOCIATED WITH COMPONENTS OF END ITEM NOTE: DEPOT MAY USE ANY OTHER EQUIPMENT REQUIRED TO OVERHAUL OR REBUILD THIS EQUIPMENT		

Page 66, appendix III. Delete and substitute:

APPENDIX III

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

Section I. INTRODUCTION

1. Scope

This appendix lists basic issue items and items troop installed or authorized required by the crew/operator for installation, operation, and maintenance of Operations Center Communications AN/MSC-31.

2. General.

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

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

b. Items Troop Installed or Authorized List—Section III. A list, in alphabetical sequence of items which, at the discretion of the unit commander, may accompany the end item, but are not subject to be turned in with the end item.

3. Explanation of Column

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.* Not applicable.

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

c. 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.

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

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

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

g. Quantity Furnished with Equipment (Basic Issue Items Only). Indicates the quantity of the basic issue item furnished with the equipment.

h. Quantity Authorized (Items Troop Installed or Aurthorized Only). Indicates the quantity of the item authorized to be used with the equipment.

4. Special Information

Usable on codes are included in the description column. Uncoded items are applicable to all models. Identification of the usable on codes are as follows:

Code	*Used on*
1	S-183/MSC-31
2	S-183A/MSC-31
3	S-183B/MSC-31
4	S-183C/MSC-31
5	S-183D/MSC-31

Section II. BASIC ISSUE ITEMS LIST

(1) Illustration (A) Fig. No.	(1) Illustration (B) Item No.	(2) Federal stock number	(3) Description Part number & FSCM	(3) Description Usable on code	(4) Qty furn with equip
14		4210-727-8111	276 (02461) AXE, PICK HEAD	1, 2, 3, 4	1
		5110-293-2339	SC-C-539541 (80063) AXE	5	1
13		4210-383-7128	MIL-E-46B (81349) EXTINGUISHER, FIRE: 2 1/2 LB		1
14		4210-270-4512	SC-D-539482 (80063) EXTINGUISHER, FIRE: 5 LB		1
14		6545-822-3166	SM-C-319935 (80063) FIRST AID KIT	1	1
		6545-922-1200	FIRST AID KIT	2, 3, 4	1
14		6545-663-9032	GG-K-392, TYPE (81349) FIRST AID KIT II, SIZE 1	5	1
14		5120-288-6563	AW-30 (79796) HANDLE, HAMMER		1
14		5120-251-4489	GGG-H-86, TYPE (81349) HAMMER, HAND X1, CLASS 2, STYLE A		1
14		5975-224-5260	ROD, GROUND MX-148/G		2

Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

(1) Federal stock number	(2) Description Part number and FSCM	(2) Description Usable on code	(3) U/M	(4) Qty auth
5120-752-6975	2143-6 (08600) SCREWDRIVER		EA	1

Page 69, appendix IV. Delete and substitute:

APPENDIX IV

ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT REPAIR PARTS

Section I. INTRODUCTION

1. General

This appendix contains a list of repair parts required for the performance of organizational maintenance and a list covering the corresponding requirements for direct support, general support, and depot maintenance for Operations Center, Communications AN/MSC-31.

NOTE

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

2. Explanation of Sections

This repair parts list is divided into four principal parts as follows:

a. Prescribed Load Allowance List (PLA)—Section II. Not applicable.

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

c. Repair Parts, DS, GS, and Depot Maintenance—Section IV. This chart lists repair parts authorized for maintenance performance at direct support, general support, and depot.

d. Federal Stock Number Index—Section V. This is a cross-reference index of Federal stock numbers to illustrations by figure and item number.

3. Explanation of Columns

An explanation of the columns in sections II, III, and IV is given below.

a. Source, Maintenance, and Recoverability Codes, Column 1, Sections III and IV.

(1) *Source code, column 1a.* The selection status and source for the listed item is noted here. Source code and its explanation is as follows:

P . . . Applies to repair parts that are stocked in or supplied from the GSA/DSG, or Army supply system, and authorized for use at indicated maintenance categories.

(2) *Maintenance code, column 1b.* The lowest category of maintenance authorized to install the listed item is noted here.

O . . . Organizational maintenance
F . . . Direct support maintenance
H . . . General support maintenance

(3) *Recoverability code, column 1c.* The information in this column indicates whether unserviceable items should be returned for recovery or salvage. Recoverability code and its explanation is as follows:

NOTE

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

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

b. Federal Stock Number, Column 1, Section II; Column 2, Sections III and IV. The Federal stock number for the item is indicated in this column.

c. Description, Column 2, Section II; Column 3, Sections III and IV. The model designator, Federal item name, a five-digit manufacturer's code, and a part number are included in this column. The designator (*) indicates the different models of the components of the equipment.

d. Unit of Issue, Column 4, Sections III and IV. The unit used as a basis of issue (e.g., ea, pr, ft, yd, etc.) is noted in this column.

e. Quantity Incorporated in Unit Pack, Column 4, Section II; Column 5, Sections III and IV. Not used.

f. Quantity Incorporated in Unit, Column 6, Sections III and IV. The quantity of repair parts in an assembly is given in this column.

g. Maintenance Allowance, Column 3, Section II; Column 7, Sections III and IV.

(1) The allowance columns are divided into subcolumns. The total quantity of items authorized for the number of equipments supported is indicated in each subcolumn. Items authorized for use as required but not for initial stockage are indentified with an asterisk in the allowance column.

(2) The quantitative allowances for organizational maintenance represent one intial 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 prescribed loads authorized by the quantity of repair parts reflected in the appropriate density column to obtain the total quantity of repair parts authorized.

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

(4) The quantitative allowances for DS/GS categories of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

h. One-Year Allowances per 100 Equipments/Contingency Planning Purposes, Column 8, Section IV. The total quantity required for distribution and contigency planning purposes is indicated in this column. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for 1 year.

i. Illustration, Column 8, Section III; Col-10, Section IV.

(1) *Figure number, column 8a.* The number of the illustration in which the item is shown is indicated in this column.

(2) *Item or symbol number, column 8b.* The callout number used to reference the item in the illustration is indicated in this column.

j. Depot Maintenance Allowance Per 100 Equipments, Column 9, Section IV. This column indicates the total quantity of each item authorized depot maintenance for 100 equipments.

4. Location of Repair Parts

a. When the Federal stock number is unknown, follow the procedures given in (1) through (4) below.

(1) Locate the appropriate appendix of the repair parts list.

(2) If the item or symbol number is available, locate the item by scrutiny of columns 8*b* and/or 10*b* of the repair parts list.

(3) If the item, symbol, and figure number are not known, check the description column (col 3) in the repair parts list to locate the part.

(4) Locate the applicable illustration in this manual and note the figure number and item number. Use the repair parts listing and locate the figure number and item number as noted on the illustration.

b. When the Federal stock number is known, use the repair part listing to find the repair part and the figure and item numbers noted in the Federal stock number index.

5. Federal Supply Codes

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

Code number	*Manufacturer's name*
00656	Aerovox Corp.
02461	American Logging Tool Co.
04089	Amplex Corp.
08600	Bridgeport Hardware Mfg. Corp.
08621	Swivelier Co., Inc.
16758	Delco Radio Div of General Motors Corp.
24455	General Electric Co., Lamp Division of Consumer Products
32572	Justrite Mfg. Co.
33525	Kidde Walter and Co., Inc.
60399	Torrington Mfg. Co.
71183	Bryant Electric Co.
72143	Friden, Inc., Electromode Division
72619	Dialight Corp.
72653	G. C. Electronics Co.
73917	Kellums Co.
74545	Hubbell Harvey, Inc.
77166	Pass and Seymour, Inc.
79796	Woodings Verona Tool Works
80063	Army Electronics Command, Procurement and Production Directorate
81349	Military Specifications
81902	Craig Systems, Inc.
82877	Rotron Mfg Co., Inc.
85838	Erie Art Metal Co., Inc.
90211	Square D Co.
90686	Smith-Corona Marchant, Inc.
91929	Louis Mfg Co.
93783	Allan Engineering, Inc.
93993	Midwest Electric Products, Inc.
95344	Economy Cable Grip Co.

Delete section II, prescribed load allowance list in its entirety.

(1) (A) Source CD	(B) Maint. CD	(C) Rec. code	REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE (2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issure	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 15 day org. maint. alw. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(8) Illustrations (A) Figure number	(B) Item or symbol number
		R	5895-021-2089							COMMUNICATIONS OPERATIONS CENTER AN/MSC-31 (This item is nonexpendable) SHELTER, ELECTRICAL EQUIPMENT S-183/MSC-31, S-183A, B, C, D/MSC-31 NOTE Model column 1 refers to S-183/MSC-31; Column 2 refers to S-183A/MSC-31; column 3 refers to S-183B/MSC-31; Column 4 refers to S-183C/MSC-31; Column 5 refers to S-183D/MSC-31.									
P	O		6625-892-5315	*	*	*	*	*		AMMETER: 81349; MR36-W050SPECR	ea		1	*	*	*	*	37	M2
P	O		4210-727-8111	*	*	*	*			AXE, PICKHEAD: 02461; 276	ea		1	*	*	*	*	14	
P	O		5110-293-2339					*		AXE: 80063; SC-C-539541	ea		1	*	*	*	*	14	
P	O		6250-804-3449	*	*	*	*	*		BALLAST LAMP: 24455; 89G457D	ea		8	*	*	2	2	32	
P	O		4210-383-7127	*	*	*	*	*		BRACKET: f/2-1/2 lb fire extinguisher; 33525; PRB-2-1/2	ea		1	*	*	*	*	13	
P	O		4210-268-9729	*	*	*	*	*		BRACKET: f/5 lb fire extinguisher; 80063; SC-C-539468	ea		1	*	*	*	*	14	
P	O		7920-178-8315	*	*	*	*	*		BRUSH, DUSTING, BENCH: 80063; SC-C-539469	ea		1	*	*	*	*	14	
P	O	R	5995-889-1500	*	*	*	*	*		CABLE ASSEMBLY, POWER ELECTRICAL CX-7453/U: 100 ft lg power cable assy	ea		1	*	*	*	*	3	
P	O	R	4940-752-2474		*	*	*	*		CABLE ASSEMBLY, POWER ELECTRICAL: 15 ft lg with waterproof box on one end; 80063; SM-D-350987	ea		1	*	*	*	*	2	
P	O		5995-752-2566	*	*	*	*	*		CABLE ASSEMBLY, TELEPHONE: 4 ft lg o/a, black; 80063; SM-D-383873-GrIII	ea		5	*	*	2	2	2	

(1) (A) Source CD	(B) Maint. CD	(C) Rec. code	(2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issue	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 15 day org. maint. alw. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(8) Illustrations (A) Figure number	(B) Item or symbol number
										AN/MSC-31 (continued)									
P	O		6145-985-7704	*	*	*	*	*		CABLE, POWER, ELECTRICAL: 81349; CO-02MGF (2/16) 0338	ft		5	*	*	*	*		
P	O		6145-283-9475	*	*	*	*	*		CABLE, POWER, ELECTRICAL: 81349; CO-03HGF (3/14) 0560	ft		15	*	*	*	*		
P	O		6145-752-2473	*	*	*	*	*		CABLE, POWER, ELECTRICAL: 80063; SC-A-46608	ft		115	*	*	*	*		
P	O		6145-823-2259	*	*	*	*	*		CABLE, TELEPHONE WM-11A/U: f/8 ft handset-headset extension cable	ft		8	*	*	*	*		
P	O		5940-254-2244	*	*	*	*	*		CAP, ELECTRICAL: f/U-106/U; 80063; SC-C-76202-1	ea		52	*	2	2	3	9	
P	O		5910-713-8313	*	*	*	*	*		CAPACITOR, FIXED, PAPER DIELECTRIC: f/fan; 00656; P150F83	ea		2	*	*	*	2		
P	O		5910-553-6096	*	*	*	*	*		CAPACITOR, FIXED, PAPER DIELECTRIC: f/fluorescent; 80063; SC-C-33033-4	ea		8	*	*	2	2	32	
P	O		5925-682-1061	*	*	*	*	*		CIRCUIT BREAKER: 90211; QO-115	ea		3	*	*	2	2	CB1, CB2, CB5	
P	O		5925-523-5764	*	*	*	*	*		CIRCUIT BREAKER: 90211; QO-120	ea		3	*	*	2	2	CB3, CB4, CB6	
P	O		5925-682-1071	*	*	*	*	*		CIRCUIT BREAKER: 90211; QO-250	ea		1	*	*	*	*	CB7	
P	O	R	6645-303-4950	*	*	*		*		CLOCK, AIRCRAFT MECHANICAL: 81349; MIL-C-7939A, type AT-11, AN/5743-2	ea		1	*	*	*	*	13	
P	O	R	6645-526-4395				*			CLOCK, AIRCRAFT MECHANICAL: 80063; SM-B-472589-5	ea		1	*	*	*	*	13	
P	O	R	5935-283-2950	*	*	*	*	*		CONNECTOR, PLUG, ELECTRICAL U-77/U: f/8 ft handset-headset extension cable	ea		1	*	*	*	*		
P	O		5935-283-2884	*	*	*	*	*		CONNECTOR, PLUG, ELECTRICAL U-78U: f/8 ft handset-headset extension cable	ea		1	*	*	*	*		
P	H	R	5935-045-9830							CONNECTOR, PLUG, ELECTRICAL U-185B/G: f/15 ft signal stub									
P	O		5935-064-5731	*	*	*	*	*		CONNECTOR, PLUG, ELECTRICAL U-237/G: f/power cable	ea		3	*	*	2	2		

(1) Source (A)	Maint. (B)	Rec. code (C)	(2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issue	(5) Qty inc in unpk	(6) Qty inc in unit	(7) 15 day org. maint. alw. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(8) Illustrations (A) Figure number	(B) Item or symbol number
										AN/MSC-31 (continued)									
P	O		5935-192-1294	*	*	*	*	*		CONNECTOR, PLUG, ELECTRICAL: f/SB-22/PT cable; 81349; MS3108B-28-12P	ea		1	*	*	*	*		
P	O		5935-646-5908	*	*	*	*	*		CONNECTOR, PLUG, ELECTRICAL: 74545; 9754	ea		4	*	*	2	2		
P	F	R	5935-045-9832							CONNECTOR, RECEPTACLE, ELECTRICAL U-187A/G									
P	O		5935-064-5732	*	*	*	*	*		CONNECTOR, RECEPTACLE, ELECTRICAL U-238/G	ea		2	*	*	*	2	8	
P	O		5935-665-5708	*	*	*	*	*		CONNECTOR, RECEPTACLE, ELECTRICAL: f/SB-22/PT: 81349; MS3102A-28-12S	ea		1	*	*	*	*	11	
P	O		5935-549-3562	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 9200	ea		8	*	*	2	2	37	J3, J5, J6, J7, J10, J11, J13
P	O		5935-258-4663					*		CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 5262	ea		8	*	*	2	2	37	J3, J5, J6, J7, J10, J11, J13
P	O		5935-259-3313	*	*	*	*	*		CONNECTOR RECEPTACLE, ELECTRICAL: 74545; 7210B	ea		2	*	*	*	2	37	J4, J14
P	O		5935-359-6025	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 9210	ea		3	*	*	2	2	37	J8, J9, J12
P	O		5935-874-3424					*		CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 5261	ea		3	*	*	2	2	37	J8, J9, J12
P	O		5410-792-6339	*	*	*	*	*		CURTAIN BLACKOUT: right hand; 80063; SM-C-352521	ea		1	*	*	*	*		
P	O		5410-792-6341	*	*	*	*	*		CURTAIN BLACKOUT: left hand; 80063; SM-C-352521	ea		1	*	*	*	*		
P	O		5120-408-1481	*	*	*	*	*		EXTRACTOR, ELECTRON TUBE: f/7 pin miniature; 73917; TP-11-16	ea		1	*	*	*	*	14	
P	O		5120-293-2692	*	*	*	*	*		EXTRACTOR, ELECTRON TUBE: f/9 pin miniature; 73917; TP-13-16	ea		1	*	*	*	*	14	
P	O		6250-793-2029	*	*	*	*			FIXTURE, LIGHTING: 04089; MH-N11W30	ea		1	*	*	*	*	16	
P	O		6210-752-2543					*		FIXTURE, LIGHTING: 08621; 20447	ea		1	*	*	*	*	16	
P	O		5120-776-9917	*	*	*	*	*		GRIP CABLE JAW: 95344; EQA-6-8P	ea		13	*	*	2	2	2	

(1) (A) Source CD	(B) Maint. CD	(C) Rec. code	REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE (2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issure	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 15 day org. maint. alw. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(8) Illustrations (A) Figure number	(B) Item or symbol number
										AN/MSC-31 (continued)									
P	O		5120-776-9918	*	*	*	*	*		GRIP CABLE JAW: 95344; EQA-26S	ea		12	*	*	2	2	2	
P	O		5120-251-4489	*	*	*	*	*		HAMMER, HAND: 81349; GGG-H-86, type XI, class 2, style A	ea		1	*	*	*	*	14	
P	O		4140-765-7748		*	*				IMPELLER, FAN: F/blower; 60399; OU720-5	ea		2	*	*	*	*		
P	O		4140-792-8395	*			*			IMPELLER, FAN: F/blower; 82877; 23396-002	ea		2	*	*	*	*		
P	O		5935-283-1269	*	*	*	*	*		JACK, TELEPHONE: 80063; SC-D-19393	ea		7	*	*	*	2	36	J1 thru J7
P	O		2540-892-6243	*	*	*	*	*		LADDER, VEHICLE, BOARDING MX-3391/G	ea		1	*	*	*	2	15	
P	O		6240-538-8447	*	*	*	*	*		LAMP, FLUORESCENT: 24455; F20T12/CW	ea		8	*	2	3	5	37	DS8 thru DS15
P	O		6240-299-5876	*	*	*	*	*		LAMP, GLOW NE-34	ea		1	*	*	*	2	37	DS7
P	O		6240-179-1814	*	*	*	*	*		LAMP, GLOW NE-45	ea		6	*	*	2	2	37	DS1 thru DS6
P	O		6240-155-7786	*	*	*	*	*		LAMP, INCANDESCENT: F/lantern; 24455; PR-2	ea		1	*	*	2	2		
P	O		6240-143-3070	*	*	*	*	*		LAMP, INCANDESCENT: 24455; 50A/RS	ea		2	*	*	2	2	37	DS16
P	O		6250-109-1091	*	*	*	*	*		LAMPHOLDER: 77166; P823J	ea		1	*	*	*	*	37	XDS7
P	O		6250-299-6093	*	*	*	*	*		LAMPHOLDER: 24455; 78x491	ea		8	*	*	*	2	37	XDS8 thru XDS15
P	O		6250-174-4684	*	*	*	*	*		LAMPHOLDER: Incl starter socket; 24445; 73x736	ea		8	*	*	*	2	37	XDS8 thru XDS15
P	O		6250-752-1233	*	*	*	*	*		LAMPHOLDER: 72619; 4-74-6	ea		6	*	*	*	2	37	XDS1 thru XDS6
P	O		6230-729-9614	*	*	*	*	*		LANTERN, ELECTRIC: 32572; 2106-7	ea		1	*	*	*	2	14	
P	O		5410-752-2525	*	*	*	*	*		LEAD, ELECTRICAL: 80063; SM-B-352166	ea		2	*	*	*	*	2	
P	O		6230-239-3518	*	*	*	*	*		LIGHT, EXTENSION: 80063; SC-C-539496	ea		1	*	*	*	2	2	
P	F		5965-752-6011							MAINTENANCE KIT, ELECTRONIC EQUIPMENT: F/maintenance of conn slug elec U-77/U									

(1) (A) Source CD	(B) Maint. CD	(C) Rec. code	REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE (2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issure	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 15 day org. maint. alw. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(8) Illustrations (A) Figure number	(B) Item or symbol number
										AN/MSC-31 (continued)									
P	H		5410-973-2936							MAINTENANCE KIT, ELECTRONIC EQUIPMENT MK-679/G: to repair punctures to shelter skin; (Note: To be requisitioned for immediate use only, order direct from depot stock)	ea								
P	O		6105-792-8384	*			*			MOTOR, ALTERNATING CURRENT: F/fan; 82877; 23396-01	ea		2	*	*	*	2		
P	O		6105-561-6321		*	*				MOTOR, ALTERNATING CURRENT) F/fan; 16758; A8265M1	ea		2	*	*	*	2		
P	O		6105-999-4814					*		MOTOR, ALTERNATING CURRENT: F/fan; 24455; KH37KG712X; (Note: For clockwise rotation reverse field windings per diagram on inside of terminal box cover.)	ea		2	*	*	*	2		
P	O		5940-223-5293	*	*	*	*	*		POST, BINDING U-106/U	ea		52	*	2	2	3	9	
P	O		8130-656-1090	*	*	*	*	*		REEL, CABLE RC-435/U	ea		1	*	*	*	*	3	
P	O		5410-783-6250	*	*	*	*	*		REPAIR KIT, ELECTRICAL EQUIPMENT SHELTER MK-680/G: To repair punctures to shelter skin; (Note: Item to be requisitioned for immediate use only; order direct from depot stock.)	ea								
P	F		5410-771-3354							REPAIR KIT, ELECTRONIC EQUIPMENT SHELTER MK-681/G: To repair punctures to shelter skin; (Note: To be requisitioned for immediate use only, order direct from depot stock.)									
P	O		5975-224-5260	*	*	*	*	*		ROD, GROUND MX-148/G	ea		2	*	*	2	2	14	
P	O		6210-754-8134	*	*	*	*	*		SHIELD, LIGHT: 80063; SM-C-349983	ea		8	*	*	2	2		
P	O		6250-299-2884	*	*	*	*	*		STARTER, FLUORESCENT: 71183; FS-2	ea		8	*	2	2	3	4	

(1)			REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE									(4)	(5)	(6)	(7) 15 day org. maint. alw.				(8) Illustrations	
(A) Source CD	(B) Maint. CD	(C) Rec. code	(2) Federal stock number	Model 1	2	3	4	5	6	(3) Description		Unit of issure	Qty inc in un pk	Qty inc in unit	(A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100	(A) Figure number	(B) Item or symbol number
										AN/MSC-31 (continued)										
P	O		5410-792-6336	*	*	*	*	*		STRAP, ASSEMBLY TIEDOWN: 81902; p/n 705		ea		6	*	*	2	2	15	
P	O		5930-752-3082	*	*	*	*	*		SWITCH, SENSITIVE: 91929 BZ-2RQ-181-P4		ea		1	*	*	*	2	37	S1
P	O		5930-348-5150	*	*	*	*			SWITCH, TOGGLE: F/blowers; 24455; F3036		ea		2	*	*	*	2	37	S5, S6
P	O		5930-079-6364					*		SWITCH, TOGGLE: F/blowers; 24455; 5051-1		ea		2	*	*	*	2	37	S5, S6
P	O		5930-636-4014	*	*	*	*	*		SWITCH, TOGGLE: 24455; 5521-1		ea		3	*	*	2	2	37	S2, S3, S4
P	O		5410-792-6335	*	*	*				TIE DOWN PLATE ASSEMBLY: Mtd in shelter floor; 80063; SM-B-542412		ea		13	*	*	2	2		
P	O		5410-792-6335				*	*				ea		8	*	*	*	2		
P	O		5950-705-9105	*	*	*	*	*		TRANSFORMER, CURRENT: 93993; 3CT-35B		ea		1	*	*	*	*	37	T1
P	O		6625-883-4272	*	*	*	*	*		VOLTMETER: 81349; MR36-W150ACVVR		ea		1	*	*	*	*	37	M1

(1)			REPAIR PARTS FOR DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE									(4)	(5)	(6)	(7) 30 Day maint. alw.						(8)	(9)	(10) Illustrations	
				Model											DS			GS					(A)	(B)
(A) Source CD	(B) Maint. CD	(C) Rec. Code	(2) Federal stock number	1	2	3	4	5	6	IND CD	(3) Description	Unit of issue	Qty inc in un pk	Qty inc in unit	(A) 1-20	(B) 21-50	(C) 51-100	(A) 1-20	(B) 21-50	(C) 51-100	1 yr. alw. per 100 equip cntgcy pl.	Depot maint. alw. per 100 equip.	Figure number	Item or symbol number
		R	5895-021-2089								COMMUNICATIONS OPERATION CENTER AN/MSC-31 (This item is nonexpendable)	ea												
											SHELTER, ELECTRICAL EQUIPMENT S-183/MSC-31, S-183A, B, C, D/MSC-31													
											NOTE													
											Model column 1 refers to S-183/MSC-31; Column 2 refers to S-183A/MSC-31; Column 3 refers to S-183B/MSC-31; Column 4 refers to S-183C/MSC-31; Column 5 refers to S-183D/MSC-31													
P	O		6625-892-5315	*	*	*	*	*			AMMETER: 81349; MR36-W050SPECR	ea		1	*	*	*	*	*	*	5	5	37	M2
P	O		4210-727-8111	*	*	*	*				AXE, PICKHEAD: 02461; 276	ea		1	*	*	*	*	*	*	5	5	14	
P	O		5110-293-2339					*			AXE: 80063; SC-C-539541	ea		1	*	*	*	*	*	*	5	5	14	
P	O		6250-804-3449	*	*	*	*	*			BALLAST LAMP: 24455; 89G457D	ea		8	2	2	2	2	2	2	27	16	32	
P	O		4210-383-7127	*	*	*	*	*			BRACKET: F/2-1/2 lb fire extinguisher; 33525; PRB-2-1/2	ea		1	*	*	*	*	*	*	4	5	13	
P	O		4210-268-9729	*	*	*	*	*			BRACKET: F/5 lb fire extinguisher; 80063; SC-C-539468	ea		1	*	*	*	*	*	*	4	5	14	
P	O		7920-178-8315	*	*	*	*	*			BRUSH, DUSTING, BENCH: 80063; SC-C-539469	ea		1	*	*	*	*	*	*	4	3	14	
P	O	R	5995-889-1500	*	*	*	*	*			CABLE ASSEMBLY, POWER ELECTRICAL CX-7453/U: 100 ft lg power cable assy	ea		1	*	*	*	*	*	*	4	5	3	
P	O	R	4940-752-2474	*	*	*	*	*			CABLE ASSEMBLY, POWER ELECTRICAL: 15 ft lg with waterproof box on one end; 80063; SM-D-350987	ea		1	*	*	*	*	*	*	4	5	2	

(1)			REPAIR PARTS FOR DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE										(4)	(5)	(6)	(7) 30 Day maint. alw.						(8)	(9)	(10) Illustrations	
(A) Source CD	(B) Maint. CD	(C) Rec. Code	(2) Federal stock number	Model 1	2	3	4	5	6	IND CD	(3) Description		Unit of issue	Qty inc in un pk	Qty inc in unit	DS (A) 1-20	DS (B) 21-50	DS (C) 51-100	GS (A) 1-20	GS (B) 21-50	GS (C) 51-100	1 yr. alw. per 100 equip cmlgcy pl.	Depot maint. alw. per 100 equip.	(A) Figure number	(B) Item or symbol number
											AN/MSC-31 (continued)														
P	O		5995-752-2566	*	*	*	*	*			CABLE ASSEMBLY, TELEPHONE: 4 ft lg o/a, black; 80063; SM-D-383873-GrIII		ea		5	2	2	2	2	2	2	27	30	2	
P	O		6145-985-7704	*	*	*	*	*			CABLE, POWER, ELECTRICAL: 81349; CO-02MGF (2/16) 0338		ft		5	*	*	*	*	*	*	27	50		
P	O		6145-283-9475	*	*	*	*	*			CABLE, POWER, ELECTRICAL: 81349; CO-03HGF (3/14) 0560		ft		15	*	*	*	*	*	*	53	150		
P	O		6145-752-2473	*	*	*	*	*			CABLE, POWER, ELECTRICAL: 80063; SC-A-46608		ft		115	*	*	*	*	*	*	158	1150		
P	O		6145-823-2259	*	*	*	*	*			CABLE, TELEPHONE WM-11A/U: F/8 ft handset-headset extension cable		ft		8	*	*	*	*	*	*	40	80		
P	O		5940-254-2244	*	*	*	*	*			CAP, ELECTRICAL: F/U-106/U; 80063; SC-C-76202-1		ea		52	2	3	6	2	2	2	59	260	9	
P	O		5910-713-8313	*	*	*	*	*			CAPACITOR, FIXED, PAPER DIELECTRIC: F/fan; 00656; P150F83		ea		2	*	2	2	*	2	2	13	12		
P	O		5910-553-6096	*	*	*	*	*			CAPACITOR, FIXED, PAPER DIELECTRIC: F/fluorescent; 80063; SC-C-33033-4		ea		8	2	2	3	2	2	2	40	48	32	
P	O		5925-682-1061	*	*	*	*	*			CIRCUIT BREAKER: 90211; QO-115		ea		3	2	2	2	*	2	2	18	18		CB1, CB2, CB5
P	O		5925-523-5764	*	*	*	*	*			CIRCUIT BREAKER: 90211; QO-120		ea		3	2	2	2	*	2	2	18	18		CB3, CB4, CB6
P	O		5925-682-1071	*	*	*	*	*			CIRCUIT BREAKER: 90211; QO-250		ea		1	*	*	2	*	*	*	8	6		CB7
P	O	R	6645-303-4950	*	*	*					CLOCK, AIRCRAFT MECHANICAL: 81349; MIL-C-7939A, type AT-11, AN/5743-2		ea		1	*	*	*	*	*	*	4	5	13	
P	O	R	6645-526-4395				*				CLOCK, AIRCRAFT MECHANICAL: 80063; SM-B-472589-5		ea		1	*	*	*	*	*	*	4	5	13	
P	O	R	5935-283-2950	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL U-77/U: F/8 ft handset-headset extension cable		ea		1	*	*	2	*	*	*	8	5		

(1) (A) Source CD	(B) Maint. CD	(C) Rec. Code	(2) Federal stock number	Model 1	2	3	4	5	6	IND CD	(3) Description	(4) Unit of issue	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 30 Day maint. alw. DS (A) 1-20	DS (B) 21-50	DS (C) 51-100	GS (A) 1-20	GS (B) 21-50	GS (C) 51-100	(8) 1 yr. alw. per 100 equip cntgcy pl.	(9) Depot maint. alw. per 100 equip.	(10) Illustrations (A) Figure number	(B) Item or symbol number
											REPAIR PARTS FOR DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE													
											AN/MSC-31 (continued)													
P	O		5935-283-2884	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL U-78/U: F/8 ft handset-headset extension cable	ea		1	*	*	2	*	*	*	8	5		
P	H	R	5935-045-9830	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL U-185B/G. F/15 ft signal stub	ea		1				*	*	*	8	5		
P	O		5935-064-5731	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL U-237/G: F/power cables	ea		3	2	2	2	*	2	2	18	15		
P	O		5935-192-1294	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL: F/SB-22/PT cable; 81349: MS3108B-28-12P	ea		1	*	*	2	*	*	*	8	5		
P	O		5935-646-5908	*	*	*	*	*			CONNECTOR, PLUG, ELECTRICAL: 74545; 9754	ea		4	2	2	2	2	2	2	19	20		
P	F	R	5935-045-9832	*	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL U-187A/G	ea		1	*	*	2	*	*	*	8	5	8	
P	O		5935-064-5732	*	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL U-238/G	ea		2	*	2	2	*	2	2	13	10	8	
P	O		5935-665-5708	*	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL: F/SB-22/PT; 81349: MS3102A-28-12S	ea		1	*	*	2	*	*	*	8	5	11	
P	O		5935-549-3562	*	*	*	*				CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 9200	ea		8	2	2	3	2	2	2	40	40	37	J3, J5, J6, J7, J10, J11, J13
P	O		5935-258-4663					*			CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 5262	ea		8	2	2	3	2	2	2	40	40	37	J3, J5, J6, J7, J10, J11, J13
P	O		5935-259-3313	*	*	*	*	*			CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 7210B	ea		2	*	2	2	*	2	2	13	10	37	J4, J14
P	O		5935-359-6025	*	*	*	*				CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 9210	ea		3	2	2	2	*	2	2	18	15	37	J8, J9, J12
P	O		5935-874-3424					*			CONNECTOR, RECEPTACLE, ELECTRICAL: 74545; 5261	ea		3	2	2	2	*	2	2	18	15	37	J8, J9, J12
P	O		5410-792-6339	*	*	*	*	*			CURTAIN BLACKOUT: Right hand; 80063; SM-C-352521	ea		1	*	*	2	*	*	*	8	3		

(1)			REPAIR PARTS FOR DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE									(4)	(5)	(6)	(7) 30 Day maint alw						(8)	(9)	(10) Illustrations	
(A) Source (D)	(B) Maint (D)	(C) Rec Code	(2) Federal stock number	Model 1	2	3	4	5	6	IND (D)	(3) Description	Unit of issue	Qty inc in un pk	Qty inc in unit	DS (A) 1-20	DS (B) 21-50	DS (C) 51-100	GS (A) 1-20	GS (B) 21-50	GS (C) 51-100	1 yr alw per 100 equip cntgcy pl	Depot maint alw per 100 equip	(A) Figure number	(B) Item or symbol number
											AN/MSC-31 (continued)														
P	O		5410-792-6341	*	*	*	*	*			CURTAIN BLACKOUT: Left hand; 80063; SM-C-352521	ea		1	*	*	2	*	*	*	8	3		
P	O		5120-408-1481	*	*	*	*	*			EXTRACTOR, ELECTRON TUBE: F/7 pin miniature; 73917; TP-11-16	ea		1	*	*	*	*	*	*	4	5	14	
P	O		5120-293-2692	*	*	*	*	*			EXTRACTOR, ELECTRON TUBE: F/9 pin miniature; 73917; TP-13-16	ea		1	*	*	*	*	*	*	4	5	14	
P	O		6250-793-2029	*	*	*	*				FIXTURE, LIGHTING: 04089; MH-N11W30	ea		1	*	*	*	*	*	*	5	2	16	
P	O		6210-752-2543					*			FIXTURE, LIGHTING: 08621; 20447	ea		1	*	*	*	*	*	*	5	2	16	
P	O		5120-776-9917	*	*	*	*	*			GRIP CABLE JAW: 95344; EQA-6-8P	ea		13	2	2	3	2	2	2	40	130	2	
P	O		5120-776-9918	*	*	*	*	*			GRIP, CABLE JAW: 95344; EQA-26S	ea		12	2	2	3	2	2	2	40	120	2	
P	O		5120-251-4489	*	*	*	*	*			HAMMER, HAND: 81349; GGG-H-86, type XI, class 2, style A	ea		1	*	*	*	*	*	*	5	5	14	
P	O		4140-765-7748		*	*					IMPELLER, FAN: F/blower; 60399; OU720-5	ea		2	*	*	*	*	*	*	5	6		
P	O		4140-792-8395	*			*				IMPELLER, FAN: F/blower; 82877; 23396-02	ea		2	*	*	*	*	*	*	5	6		
P	O		5935-283-1269	*	*	*	*	*			JACK, TELEPHONE: 80063; SC-D-19393	ea		7	*	2	2	*	2	2	15	35	36	J1 thru J7
P	O		2540-892-6243	*	*	*	*	*			LADDER, VEHICLE, BOARDING MX-3391/G	ea		1	*	2	2	*	2	2	12	5	15	
P	O		6240-538-8447	*	*	*	*	*			LAMP, FLUORESCENT: 24455; F20T12/CW	ea		8	2	4	8	2	2	2	65	400	37	DS8 thru DS15
P	O		6240-299-5876	*	*	*	*	*			LAMP, GLOW NE-34	ea		1	*	2	2	*	2	2	12	50	37	DS7
P	O		6240-179-1814	*	*	*	*	*			LAMP, GLOW NE-45	ea		6	2	2	4	2	2	2	46	300	37	DS1 thru DS6
P	O		6240-155-7786	*	*	*	*	*			LAMP, INCANDESCENT: F/lantern 24455; PR-2	ea		1	2	2	2	2	2	2	19	50		
P	O		6240-143-3070	*	*	*	*	*			LAMP, INCANDESCENT: 24455; 50A/RS	ea		2	2	2	3	2	2	2	33	100	37	DS16
P	O		6250-109-1091	*	*	*	*	*			LAMPHOLDER: 77166; P823J	ea		1	*	*	*	*	*	*	4	5	37	XDS7

(A) Source CD	(B) Maint. CD	(C) Rec. Code	(2) Federal stock number	Model 1	2	3	4	5	6	IND CD	(3) Description	(4) Unit of issue	(5) Qty inc in un pk	(6) Qty inc in unit	(7) 30 Day maint. alw. DS (A) 1-20	DS (B) 21-50	DS (C) 51-100	GS (A) 1-20	GS (B) 21-50	GS (C) 51-100	(8) 1 yr. alw per 100 equip currcy pl.	(9) Depot maint. alw. per 100 equip.	(10) Illustrations (A) Figure number	(B) Item or symbol number
											AN/MSC-31 (continued)														
P	O		6250-299-6093	*	*	*	*	*			LAMPHOLDER: 24455; 78 x 491	ea		8	2	2	2	*	2	2	16	40	37	XDS8 thru XDS15
P	O		6250-174-4684	*	*	*	*	*			LAMPHOLDER: Incl starter socket; 24455; 73 x 736	ea		8	2	2	2	*	2	2	16	40	37	XDS8 thru XDS15
P	O		6250-752-1233	*	*	*	*	*			LAMPHOLDER: 72619; 4-74-6	ea		6	*	2	2	*	2	2	13	30	37	XDS1 thru XDS6
P	O		6230-729-9614	*	*	*	*	*			LANTERN, ELECTRIC: 32572; 2106-7	ea		1	*	2	2	*	2	2	12	10	14	
P	O		5410-752-2525		*	*	*	*	*		LEAD, ELECTRICAL: 80063; SM-B-352166	ea		2	*	*	2	*	*	2	10	20	2	
P	O		6230-239-3518	*	*	*	*	*			LIGHT, EXTENSION: 80063; SC-C-539496	ea		1	*	2	2	*	2	2	12	10	2	
P	F		5965-752-6011	*	*	*	*	*			MAINTENANCE KIT, ELECTRONIC EQUIPMENT: F/maintenance of conn slug elec U-77/U	ea		1	*	*	2	*	*	*	8	10		
P	H		5410-973-2936	*	*	*	*	*			MAINTENANCE KIT, ELECTRONIC EQUIPMENT MK-679/G: To repair punctures to shelter skin; (Note: To be requisitioned for immediate use only, order direct from depot stock.)	ea												
P	O		6105-792-8384	*			*				MOTOR, ALTERNATING CURRENT: F/fan; 82877; 23396-01	ea		2	*	2	2	*	2	2	13	6		
P	O		6105-561-6321		*	*					MOTOR, ALTERNATING CURRENT: F/fan; 16758; A8265M1	ea		2	*	2	2	*	2	2	13	6		
P	O		6105-999-4814					*			MOTOR, ALTERNATING CURRENT: F/fan; 24455; KH37KG712x; (Note) For clockwise rotation reverse field windings for diagram on inside of terminal box cover.)	ea		2	*	2	2	*	2	2	13	6		
P	O		5940-223-5293	*	*	*	*	*			POST, BINDING U-106/U	ea		52	2	3	6	2	2	2	59	260	9	

(1)			REPAIR PARTS FOR DIRECT SUPPORT GENERAL SUPPORT AND DEPOT MAINTENANCE									(4)	(5)	(6)	(7) 30 Day maint alw						(8)	(9)	(10) Illustrations	
(A) Source CD	(B) Maint CD	(C) Rec Code	(2) Federal stock number	Model 1	2	3	4	5	6	IND CD	(3) Description	Unit of issue	Qty inc in un pk	Qty inc in unit	DS (A) 1-20	DS (B) 21-50	DS (C) 51-100	GS (A) 1-20	GS (B) 21-50	GS (C) 51-100	1 yr alw per 100 equip cntgcy pl	Depot maint alw per 100 equip	(A) Figure number	(B) Item or symbol number
											AN/MSC-31 (continued)														
P	O		8130-656-1090	*	*	*	*	*			REEL, CABLE RC-435/U	ea		1	*	*	*	*	*	*	5	2	3	
P	O		5410-783-6250								REPAIR KIT, ELECTRICAL EQUIPMENT SHELTER MK-680/G: To repair punctures to shelter skin; (Note: Item to be requisitioned for immediate use only; order direct from depot stock.)	ea												
P	F		5410-771-3354	*	*	*	*	*			REPAIR KIT, ELECTRONIC EQUIPMENT SHELTER MK-681/G: To repair punctures to shelter skin; (Note: To be requisitioned for immediate use only; order direct from depot stock.)	ea												
P	O		5975-224-5260	*	*	*	*	*			ROD, GROUND MX-148/G	ea		2	2	2	2	2	2	2	19	30	14	
P	O		6210-754-8134	*	*	*	*	*			SHIELD, LIGHT: 80063; SM-C-349983	ea		8	2	2	2	2	2	2	27	40		
P	O		6250-299-2884	*	*	*	*	*			STARTER, FLUORESCENT: 71183; FS-2	ea		8	2	3	5	2	2	2	52	80	4	
P	O		5410-792-6336	*	*	*	*	*			STRAP, ASSEMBLY TIEDOWN: 81902; p/n 705	ea		6	2	2	2	2	2	2	19	60	15	
P	O		5930-752-3082	*	*	*	*	*			SWITCH, SENSITIVE: 91929; BZ-2RQ-181-P4	ea		1	*	2	2	*	2	2	12	5	37	S1
P	O		5930-348-5150	*	*	*	*				SWITCH, TOGGLE: F/blowers; 24455; F3036	ea		2	*	2	2	*	2	2	13	6	37	S5, S6
P	O		5930-079-6364					*			SWITCH, TOGGLE: F/blowers; 24455; 5051-1	ea		2	*	2	2	*	2	2	13	6	37	S5, S6
P	O		5930-636-4014	*	*	*	*	*			SWITCH, TOGGLE: 24455; 5521-1	ea		3	2	2	2	*	2	2	18	9	37	S2, S3, S4
P	O		5410-792-6335	*	*	*					TIE DOWN PLATE ASSEMBLY: Mtd in shelter floor; 80063; SM-B-542412	ea		13	2	2	2	2	2	2	27	65		
P	O		5410-792-6335				*	*				ea		8	2	2	2	*	2	2	16	40		
P	O		5950-705-9105	*	*	*	*	*			TRANSFORMER, CURRENT: 93993; 3CT-35B	ea		1	*	*	2	*	*	*	8	3	37	T1
P	O		6625-883-4272	*	*	*	*	*			VOLTMETER: 81349; MR36-W150ACVVR	ea		1	*	*	2	*	*	*	8	3	37	M1

Section V. FEDERAL STOCK NUMBER INDEX

INDEX--FEDERAL STOCK NUMBER CROSS REFERENCE TO FIGURE AND ITEM NUMBER OR REFERENCE SYMBOL

Stock No.	Figure No.	Item No. ref. symbol
5930-079-6364	37	S5, S6
5930-348-5150	37	S5, S6
5930-636-4014	37	S2, S3, S4
5930-752-3082	37	S1
5935-258-4663	37	J3, J5, J6, J7, J10, J11, J13
5935-259-3313	37	J4, J14
5935-283-1269	36	J1 thru J7
5935-359-6025	37	J8, J9, J12
5935-549-3562	37	J3, J5, J6, J7, J10, J11, J13
5935-874-3424	37	J8, J9, J12
5950-705-9105	37	T1
6240-143-3070	37	DS16
6240-179-1814	37	DS1 thru DS6
6240-299-5876	37	DS7
6240-538-8447	37	DS8 thru DS15
6250-109-1091	37	XDS7
6250-174-4684	37	XDS8 thru XDS15
6250-299-6093	37	XDS8 thru XDS15
6250-752-1233	37	XDS1 thru XDS6
6625-883-4272	37	M1
6625-892-5315	37	M2

By Order of the Secretary of the Army:

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

Official:
VERNE L. BOWERS
Major General, United States Army,
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SAAD (30)
TOAD (14)
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(1 copy each)
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6-617
7
11-35
11-85
11-86
11-97
11-98
11-116
11-117
11-122
11-127
11-247
11-347
11-377
11-500 (AA-AC)
17
31-105
31-106
37

NG: None
USAR: None

For explanation of abbreviations used, see AR 310-50.

TM 11-5895-223-15
*C7

Change No. 7

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 9 January 1984

ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST OPERATIONS CENTRAL, COMMUNICATION AN/MSC-31 (NSN 5895-00-167-7931)

TM 11-5895-223-15, 28 March 1961, is changed as FOLLOWS:

Cover. The title of the cover is changed as shown above.

Page 2. Delete paragraphs 1.1, 2 and 2.1 and substitute:

1.1. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

2. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/ DLAK 4140.55/NAVMATINST 4355.73 A/AFR 400-54/MCO 4430.3F.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/ AFR 75-18/MCO P4610.19D/DLAR 4500.15.

2.1. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army (communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP. Fort Monmouth, New Jersey 07703. In either case, a reply will be furnished direct to you.

Add paragraphs 2.2, 2.3 and 2.4 after paragraph 2.1.

2.2. Reporting Equipment Improvment Recommendations (EIR)

If your Communications Operations Center needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN : DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

2.3. Administrative Storage

Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in chapter 6 and TM 740-90-1.

2.4. Destruction of Army Electronics Materiel

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

Page 38. Change the title of "Section I" to "OPERATOR/CREW AND ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES"

Delete paragraph 27 and substitute:

27. General

NOTE

Refer to TM 750-244-2 for proper procedures for destruction of this equipment to prevent enemy use.

*This change supersedes TM 11-5895-223 ESC, 20 May 71.

a. Operator/crew preventive maintenance is the systematic care, servicing and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that your communications operation center is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS) described in paragraph 29.

(1) BEFORE OPERATION, perform your B PMCS to be sure that your equipment is ready to go.

(2) When an item of equipment is reinstalled after removal, for any reason, perform the necessary B PMCS to be usre the item meets the readiness reporting criteria.

(3) Use the ITEM NO. column in the PMCS table to get the number to be used in the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

b. Organizational preventive maintenance procedures are designed to help maintain equipment in serviceable condition. They include items to be checked and how to check them. These checks and services, described in paragraph 30, outline inspections that are to be made at specific monthly (M) and quarterly (Q) intervals.

c. Routine checks like CLEANING, PRESERVATION, DUSTING, WASHING, CHECKING FOR FRAYED CABLES, STOWING ITEMS NOT IN USE, COVERING UNUSED RECEPTACLES, CHECKING FOR LOOSE NUTS AND BOLTS AND CHECKING FOR COMPLETENESS are not listed as PMCS checks. They are things that you should do any time you see they must be done. If you find a routine check like one of those listed in your PMCS, it is because other operators reported problems with this item.

NOTE

When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

WARNINGS

Never operate the generator or shelter until it has been properly grounded. Electrical defects in the load lines or equipment can cause death by electrocution when contact is made with an ungrounded system.

Do not handle the power cable while power is applied to the equipment. Shut down before handling.

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Goggles must be worn at all times while cleaning with compressed air. Compressed air shall not be used for cleaning purposes except where reduced to less than 29 pounds per square inch gage (psig) and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when trichlorotrifluoroethane has been used.

NOTES

The PROCEDURES column in your PMCS charts instruct how to perform the required checks and services. Carefully follow these instructions and, if tools are needed or the chart so instructs, get organizational maintenance to do the necessary work.

If your equipment must be in operation all the time, check those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

d. Deficiencies that cannot be corrected must be reported to higher category maintenance personnel. Records and reports of preventive maintenance must be made in accordance with procedures given in TM 38-750.

Delete paragraph 29 and substitute:

29. Operator/Crew Preventive Maintenance Checks and Services Chart

B-Before

Item No.	Interval B	Item to be Inspected	Procedures — Check for and have repaired or adjusted as necessary	Equipment is not Ready/Available If:
1	*	Mission Essential Equipment	Check for completeness and satisfactory condition of the equipment. Report missing items.	Available equipment is insufficient to support the combat mission.
2	*	Grounding System	Check to see that grounding system is properly installed.	Unable to ground properly.
3	*	Telephone Switchboard SB-22(*)/PT	Perform operational check as described in TM 11-5805-262-12.	Switchboard inoperative or four or more line packs inoperative.
4	*	Telephone Set TA-312/PT (four)	Perform operational checks as described in TM 11-5805-201-12.	Telephone set fail to provide intelligible communications.
5	l	Intercommunication Station LS-147 ( )/FI.	Perform operating checks on LS-147 ( )/FI.	See subsystem TM for readiness criteria.

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The check does not need to be done again until redeployment.

Page 39. Delete paragraph 30 and substitute:

30. Organizational Preventive Maintenance Check and Services Chart

M – Monthly Q -- Quarterly

Item No.	Interval M	Interval Q	Item to be Inspected	Procedures
1	Ž	l	Grounding System	Check ground lug connections.
2	•		Exhaust Blowers	Lubricate with motor oil (PL Special or OE-10) and clean motor and fan housing.
3	•		Fire Extinguisher	Refill if seal is broken.

Page 55. The title of CHAPTER 6 is changed from "SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE"' to "SHIPMENT AND LIMITED STORAGE".

Page 56. Section II is rescinded.

Page 57. Delete appendix I and substitute:

DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
TM 11-5805-201-12	Operator's and organizational Maintenance Manual: Telephone Set, TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-262-12	Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual, SB-22/PT (NSN 5805-00-257-3602) and SB-22A/PT (5805-00-715-6171) and Adapter, Tone Signaling, TA-977/PT (5805-00-040-9653).
TM 11-5805-262-20P	Organizational Maintenance Repair Park and Special Tools List for Switchboard, Telephone, Manual, SB-22/PT (NSN 5805-00-257-3602) and SB-22A/PT (5805-00-715-6171).
TM 11-5805-262-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Switchboards, Telephone, Manual SB-22/PT (NSN 5805-00-257-3602) and SB-22A/PT (5805-00-715-6171).
TM 11-5805-262-35	Direct Support, General Support and Depot Maintenance Manual: Switchboards, Telephone, Manual SB-22/PT (NSN 5805-00-257-3602) and SB-22A/PT (5805-00-715-6171).
TM 11-5830-221-12	Operator's and Organizational Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI (NSN 5830-00-752-5357).
TM 11-5830-221-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Telecommunications Station LS-147C/FI (NSN 5830-00-752-5357).
TM 11-5830-221-35	Field and Depot Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI and LS-147D/FI.
TM 11-5895-224-15	Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools Lists) for Operations Central, AN/MSC-32 (NSN 5895-00-021-2090).
TM 11-5935-205-14P	Operator's, Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Connectors, Receptacle, Electrical, U-187/G and U-187A/G (FSN 5935-682-0381).
TM 11-5965-224-14P	Operator's, Organizational, Direct Support "and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Handsets, H-60/PT (FSN 5965-669-9145) and H-165/U (5965-543-1837).
TM 11-6625-203-12	Operator's and Organizational Maintenance Manual: Multimeter, AN/URM-105 and AN/URM-105C (Including Depot Maintenance Repair 77C/U).
TM 11-6625-203-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools): Multimeter AN/URM-105 (Including Multimeter, ME-77/U) (FSN 6625-581 -2036).
TM 11-6625-203-35	Direct Support, General Support and Depot Maintenance Manual: Multimeters AN/URM-105 (NSN 6625-00-581-2036) and AN/URM-105C (6625-00-999-6282) Including Multimeters, ME-77/U (6625-00-284-0854) and ME-77C/U (6625-00-999-6625).
TM 11-6625-274-12	Operator's and Organizational Maintenance Manual for Test Sets, Electron Tube TV-7/U, TV-7A/U and TV-7B/U (NSN 6625-00-376-4939) and TV-7D/U (6625-00-820-0064).

TM 11-6625-274-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parta and Special Took) for Test Sets, Electron Tube, TV-7A/U (NSN 6625-00-376-4939), TV-7B/U (6625-00-376-4939) and TV-7D/U (6625-00-820-0064).
TM 11-6625-274-35	DS, GS, and Depot Maintenance Manual, Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U.
TM 38-750	The Army Maintenance Mariagement System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronic Command).

By Order of the Secretary of the Army

JOHN A. WICKHAM JR.
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-51A1, Operator Maintenance requirements for AN/MSC-31, 31A.

TECHNICAL MANUAL

No. 11-5895-223-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *28 March 1961*

OPERATIONS CENTER, COMMUNICATIONS AN/MSC-31

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual describes Operations Center, Communications AN/MSC-31 (para 6) and covers its installation, operation, theory, and maintenance. It also includes instructions for installing components not provided as part of Shelter, Electrical Equipment S-183/MSC-31 (fig. 5). Except for the shelter and its components, major components of the AN/MSC-31 are covered in detail in their respective technical manuals (appx I).

b. Official nomenclature followed by (*) is used to indicate all models of the equipment covered in this manual. Thus, Switchboard, Telephone, Manual SB-22(*)/PT represents Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT; and Intercommunication Station LS-147(*)/FI represents Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI.

2. Forms and Records

a. Unsatisfactory Equipment Report. Fill out and forward DA Form 468 (Unsatisfactory Equipment Report) or DD Form 787-1 (Electronic Equipment Report) to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-MLM, Fort Monmouth, N. J., as prescribed in AR 700-38 (for DA Form 468) and in AR 700-39 (for DD Form 787-l).

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58.

c. Preventive Maintenance Forms. Prepare preventive maintenance forms for the major components of Operations Center, Communications AN/MSC-31, as specified in their respective technical manuals (appx I),

d. Parts List Form. Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8, or 9) direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-MLM, Fort Monmouth, N. J., with comments on parts listings in appendixes II and III.

e. Comments on Manual. Forward all other comments concerning this publication direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2d, Fort Monmouth, N. J.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

Operations Center, Communications AN/MSC-31 (para 5) is an air- or vehicular-transportable field communications operations office. The AN/MSC-31 (fig. 5) contains telephone switchboard, intereommunication, and local telephone circuits (fig. 1), and drafting and display board facilities required by the signal operations officer to plan, engineer, and control an area-type communications system. The AN/MSC-31 is normally used with Operations Central AN/MSC-32 (TM 11-5895 - 224-15) at corps and army signal centers.

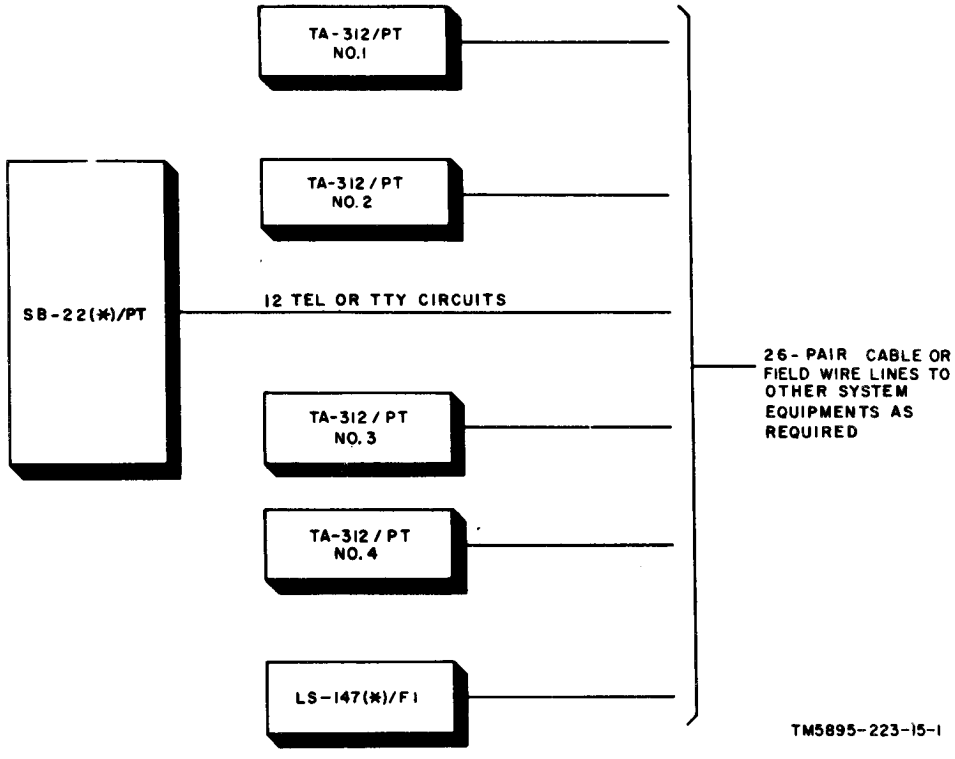


Figure 1. Operations Center, Communications AN/MSC-31, signal circuits block diagram.

4. Technical Characteristics

Voltage requirements. . . . 115 V, 60 CPS, single-phase, 3-wire.

Power consumption (maximum):
- Lights . . . .210 watts.
- Exhaust blowers. . . . . 300 watts.
- Electric heaters. . ...3.000 watts.
- Intercommunication Station LS-147(*)/FI . . . .32 watts.
- Total . . . .3.542 watts.

Communications facilities:
- Local telephone circuit . . . . . TA-312/PT.
- Intercommunication circuit . . . . . LS-147(*)/FI.
- Switchboard circuit . . SB-22(*)/PT.

Weight:
- AN/MSC-31 . . . .2.639 lb.
- S-183/MSC-31. . . . ...1.200 lb.

Outside dimensions of S-183/MSC-31:
- Length . . . .138 in.
- Width . . . .80 in.
- Height . . . .77-l/2 in.

5. Components of Operations Center, Communications AN/MSC-31

a. Major Components.

Quantity (ea)	Item	Figure No.
1	Shelter, Electrical Equipment S-183/MSC-31	5
1	Switchboard, Telephone, Manual, SB-22(*)/PT	11
4	Telephone Set TA-312/PT	11

b. Shelter Components.

Quantity (ea)	Item	Figure No.
1	Ax	14
1	Blackout curtain assembly	14
1	Cable Assembly, Telephone CX-4760/U (15 ft) (cabinet No. 6)	2
1	Cable stub (SB 22/PT), 3-ft	20
1	Clock, 8-day	13

Quantity (ea)	Item	Figure No.
2	Desk tray	13
1	Drafting stool	11
1	Drain plug wrench	14
1	Droplight (25-ft) (cabinet No. 2)	2
2	Electric heater	12
2	Exhaust blower	13
1	Fire extinguisher, 2-1/2-lb	13
1	Fire extinguisher, 5-lb	14
1	First aid kit	14
10	Grease pencil	11
2	Ground rod	14
2	Ground strap (cabinet No. 1)	2
1	Hand brush	14
1	Handset-headset extension cord, 8-ft (cabinet No. 1)	
1	Intercommunication Station LS-147(*)/FI	11
1	Ladder assembly	15
1	Hand lantern	14
1	Line cord, 15-ft, with duplex receptacle (cabinet No. 6)	2
1	Pencil sharpener	14
1	Power cable assembly (100 ft) with reel	3
12	Power cable grip (cabinet No. 2).	2
1	Power cable stub (15-ft) (cabinet No. 6)	2
13	Signal cable grip (cabinet No. 2)	2
1	Sledge hammer	14
1	Sledge handle, spare	14
1	Sling assembly	15
3	Swivel chair	12
5	Telephone cord, 4-ft	2
6	Tiedown strap (cabinet No. 3)	2
1	Tool roll kit (cabinet No. 3), including: 1 bag with 10 pockets 1 adjustable wrench, 8-in. 1 Allen wrench set 1 Knife TL-29 1 lineman's pliers 1 long-nosed pliers 1 screwdriver, 2-in. 1 screwdriver, 4-in. 1 screwdriver, 6-in. 1 socket wrench set 1 vise grip pliers, 7-in.	2
1	Tube pin straightener	14
1	Tube puller, 7-pin	14
1	Tube puller, 9-pin	14
1	Typewriter, portable	12
1	Wastebasket	11
1 set	Technical manuals for major components (*a* above), stored in manual holder	
1 set	Running spares, consisting of: 2 fluorescent lamps, 20-W (24-in.) 6 fluorescent lamp starters, FS-2 3 glowlamps, NE-45 2 incandescent lamps, 50-W 1 neon lamp, NE-34	4

6. Description (fig. 5)

The components of Operations Center, Communications AN/MSC-31 (para 5) are housed in Shelter, Electrical Equipment S-183/MSC-31 (fig. 5). External connections to the shelter are made at either the binding post signal entrance box or the power and signal entrance box. Alternating current (ac) power for the shelter must be obtained from a nearby shelter or other local source (para 17). Figures 6 and 7 are interior views of the AN/MSC-31; the locations of interior components are shown in figures 11 through 16. The major components of the AN/MSC-31 are described in paragraph 7 and the shelter components in paragraph 8.

7. Description of Maior Components of AN/MSC-31

a. Shelter, Electrical Equipment S-183/MSC-31 (fig. 5). The shelter is the component of the AN/MSC-31 in which all other components (para 5) are installed. All equipment racks and mountings, ac power receptacles, and signal wiring required for mounting and operating the AN/MSC-31 components are installed in the shelter. Storage areas and installed mounting fixtures are provided for running spares and accessory items. The shelter can be transported by helicopter or truck and is fully insulated, watertight, and airtight. Two lighttight exhaust blower vents, equipped with hinged covers and rain shields (not shown), are on the outside front wall. A two-section door at the rear permits entrance to the shelter. The upper section of the door is used while the AN/MSC-31 is truck mounted and the tailgate is up.

(1) *Lighting.* Eight fluorescent lights and one drafting light are provided for shelter lighting (fig. 16).

(2) Power and wiring. Watertight receptacles in the power and signal entrance box ((3) below) are provided for connecting the shelter to an ac power source. The ac power is routed through circuit breaker switches in the power distribution

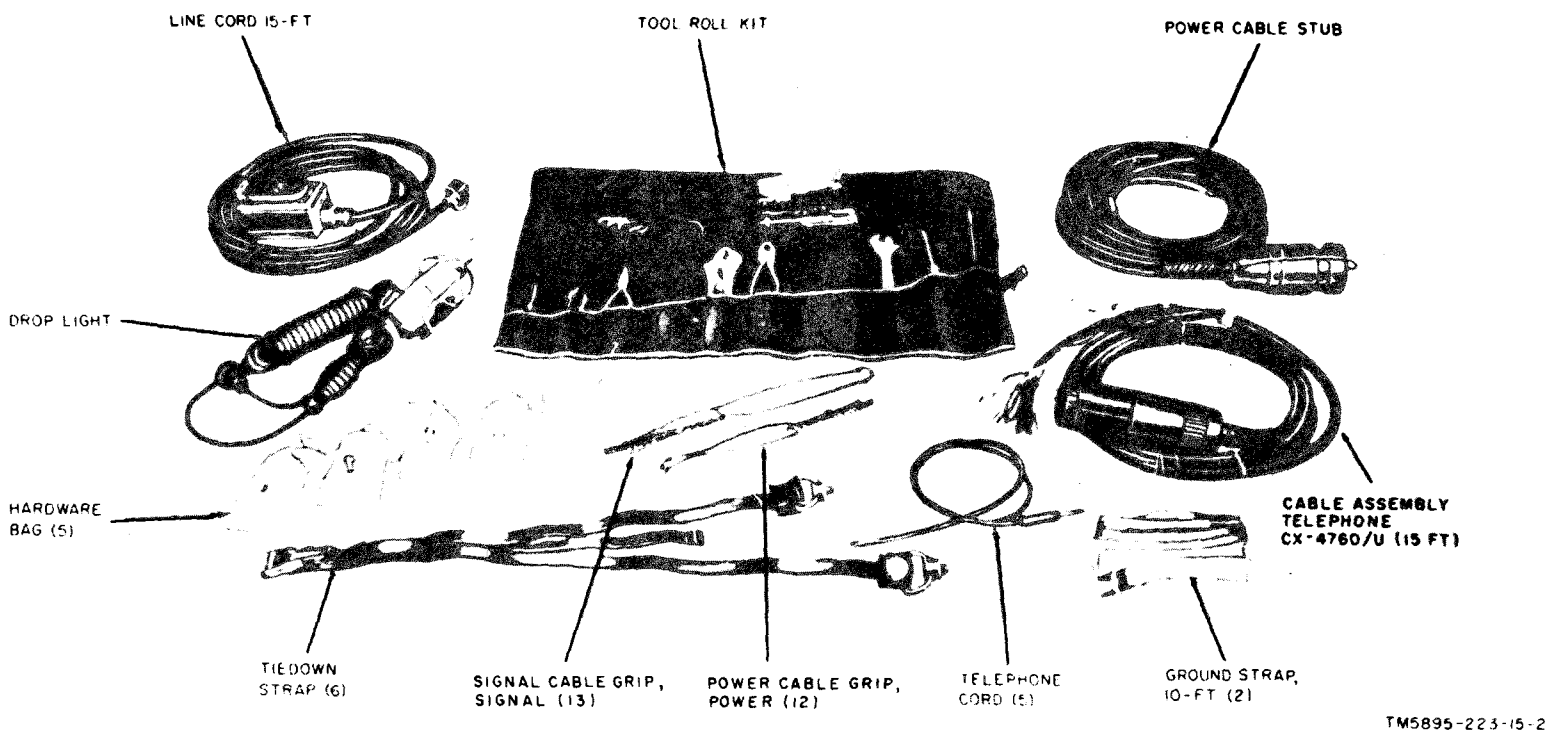


Figure 2. Shelter, Electrical Equipment, S-183/MSC-31, tools and accessories.

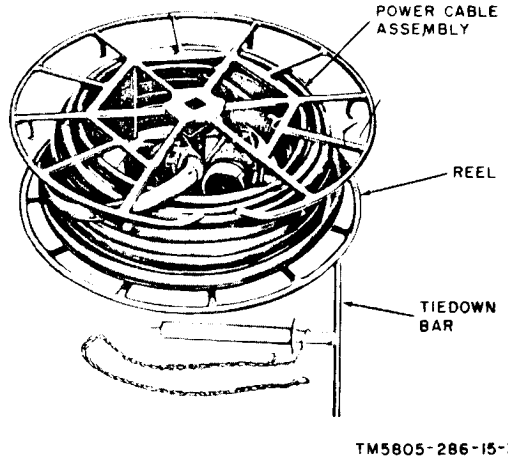


Figure 3. Shelter, Electrical Equipment, S-183/MSC-31, power cable assembly and reel.

panel ((5) below) to the equipment p owe r duct receptacles (fig. 11 through 14, and 16). Signal connections are made at the 26-pair cable receptacle and to the PHONE and INTERCOM binding posts in the power and signal entrance box or to the binding posts in the binding post signal entrance box ((4) below).

(3) *Power and signal entrance box.* (fig. 8). The power and signal entrance box is mounted in the exterior rear wall of the shelter (fig. 5). The power and signal entrance box contains receptacles and binding posts for connecting ac power (para 17) and signal (para 19 and 20) circuits to the shelter. It also contains a duplex convenience ac receptacle (115V AC) equipped with a spring-loaded, watertight cover. The power and signal entrance box cover is equipped with folding side panels (not shown) for weather protection and is secured with captive-screw fasteners.

(4) *Binding post signal entrance box* (fig. 9). The binding post signal entrance box on the exterior rear wall (fig. 5) contains 21 pairs of binding posts; 12 pairs of binding posts are wired to the SB-22(*)/PT receptacle (fig. 11), and the remaining 9 pairs are spares. The binding post signal entrance box cover is equipped with folding side panels for weather protection and is secured with captive-screw fasteners.

(5) *Power distribution panel.* (fig. 10). The power distribution panel is located on the rear, wall of the shelter (fig. 14). A glowlamp, associated with each power distribution c i r c u i t breaker switch, lights when the switch is at ON.

(6) *Signal entrance panel.* The signal entrance panel is located on the rear wall of the shelter (fig. 14). The panel is equipped with a removable cover that provides access to the rear of the binding posts mounted in the binding post signal entrance box (fig. 9).

b. Switchboard, Telephone, Manual SB-22(*)/PT. The SB-22(*)/PT (TM 11-5805-262-12) is shelf mounted in a mounting rack above the curbside tabletop (fig. 11). It is a local battery switchboard with facilities for switching a maximum of 12 telephone and voice frequency (vf) teletypewriter circuits.

c. Telephone Set TA-312/PT. One TA-312/PT (TM- 11-2155) is mounted (less carrying case) on top of the SB-22(*)/PT mounting rack (fig, 11). Three TA-312/PT's are located in a storage cabinet; when required for use, they should be placed on the roadside tabletop (fig. 12) adjacent to the PHONE jacks. The TA-312/PT's are used for local telephone communication.

8. Description of Shelter Components

a. Electric Heaters (fig. 17). The electric heaters are secured in their mounting bases on the floor of the shelter (fig. 12). Each heater contains a 1.5-kilowatt heating element and a fan for air circulation. The fan operates when the heater is turned on, but it may also be operated independently. Horizontal louvers on the front of each heater are adjustable to deflect the air stream. The operating controls are located

on top of each heater; the power cord extends through a hole in the right side of the back cover plate.

b. Intercommunication Station LS-147(*)/FI (fig. 18). The 147(*)/FI iS mounted on the curbside wall (fig. 11). It provides two-way, nonprivate communication in a system that consists of other LS-147(*)/FI's or equivalent equipments.

c. Exhaust Blowers. Two exhaust blowers mounted on the front wall (fig. 7 and 13) are equipped with removable covers which muffle the sound when the blowers are operating. Exhaust vents to the outside of the shelter are provided (para 7a).

d. Clock. An 8-day, luminous-dial, 24-hour clock is mounted on the front wall (fig. 13). A knob on the left-hand side is used for winding and setting the clock.

e. Cords and Cables.

(1) *Power cable assembly and reel* (fig. 3). The power cable assembly is wound on a reel and secured by a tiedown bar to the floor of the shelter (fig. 15). It is a 100-foot, three-conductor cable wit h a watertight power connector on each end.

(2) *Power cable stub* (fig. 2). The power cable stub is stored in cabinet 6 (fig. 12). It is a 15-foot, three-conductor cable with a watertight power receptacle on one end, and red, white, and black prepared leads on the other end.

(3) *Cable Assembly, Telepone CX-4760/U* (fig. 2). The CX-4760/U (26-pair cable stub) is stored in cabinet 6 (fig. 12). It Is 15 feet long and is equipped with a 26-pair cable connector on one end and prepared leads on the other end. ,

(4) *SB-22(*)/PT cable stub* (fig. 20). The SB-22(*)/PT cable stub is 3 feet long and is equipped with a 26-pin connector on one end and prepared leads on the other.

(5) *Telephone cords* (fig. 2). Three telephone cords are stored in a storage cabinet two are installed for use with the LS-147(*)FI and bracket-mounted TA-312/PT. They are flexible, two-conductor cords; each has a telephone plug one one end and prepared leads at the other.

(6) *Handset-headset extension cord.* The handset-headset extension

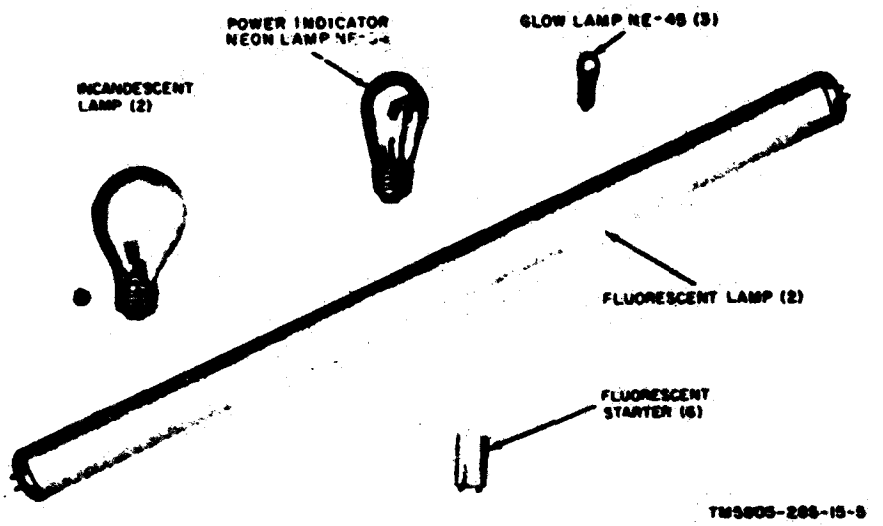


Figure 4. Shelter, Electrical Equipment, S-183/MSC-31, running spares.

cord is stored in cabinet No. 1. It is used to connect a handset-headset to the SB-22(*)/PT to allow the operator greater freedom of movement within the shelter. The handset-headset extension cord is 8 feet long and has connectors on each end.

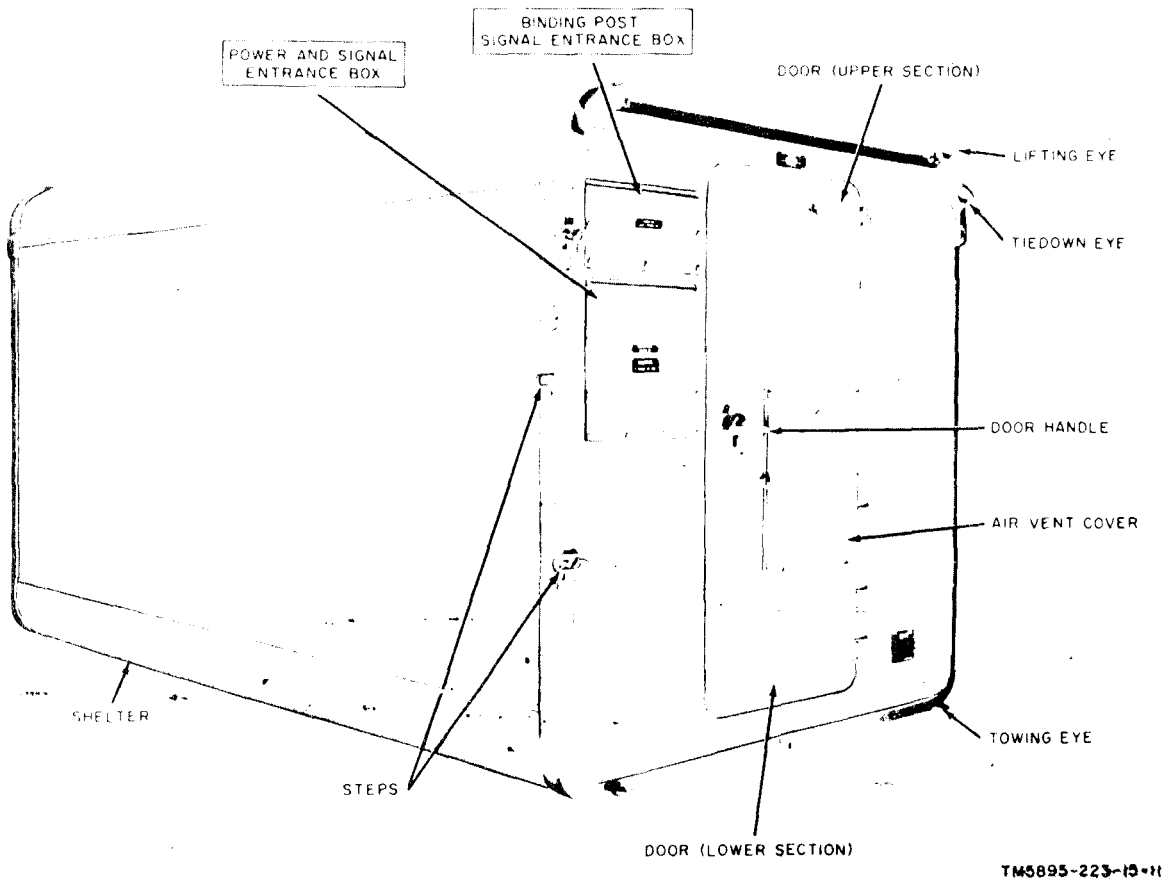


Figure 5. Operations Center, Communications AN/MSC-31..

Figure 6. Operations Center, Communications AN/MSC-31, interior rear view.

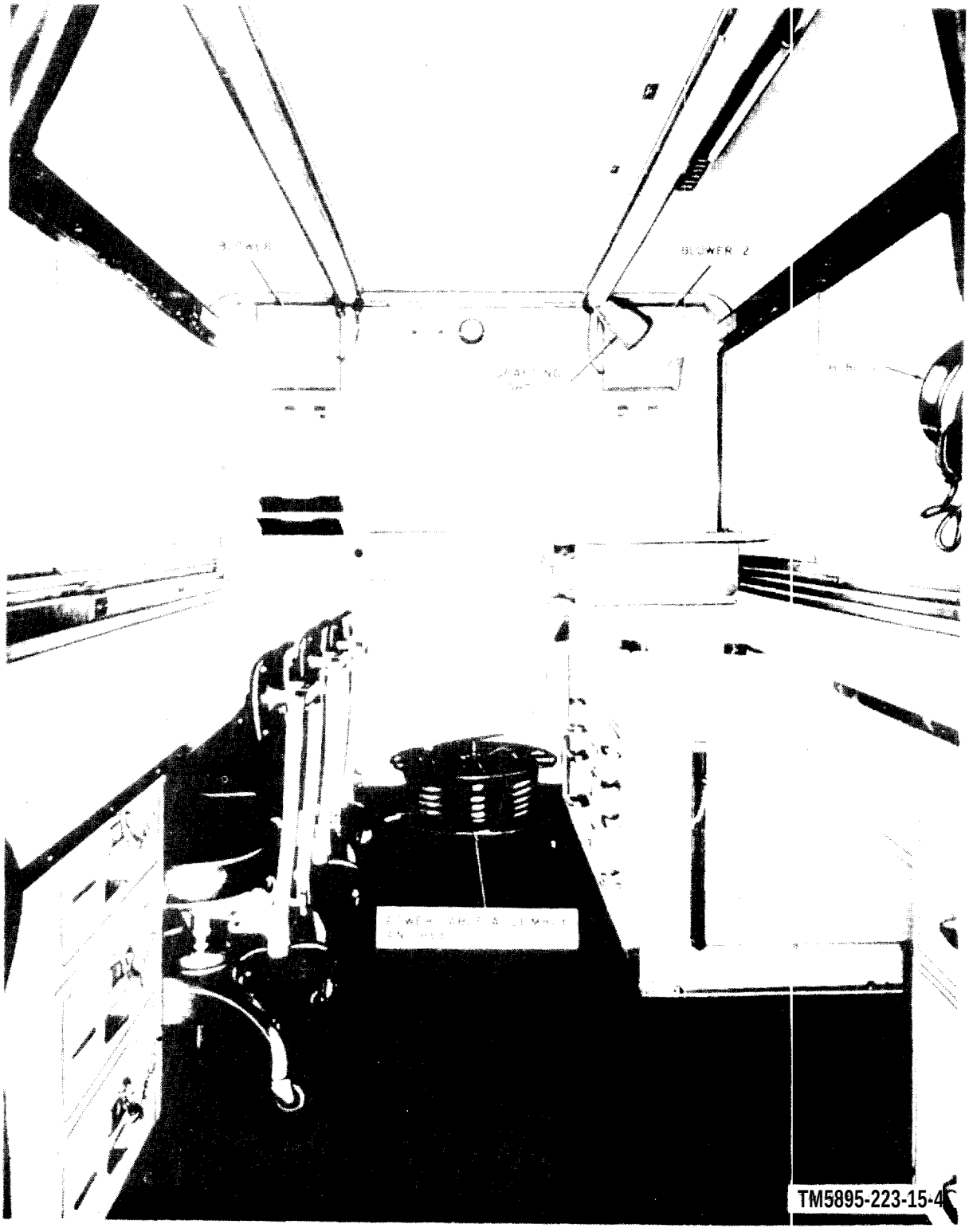


Figure 7. Operation Center, Communications AN/MSC-31, interior from: view.

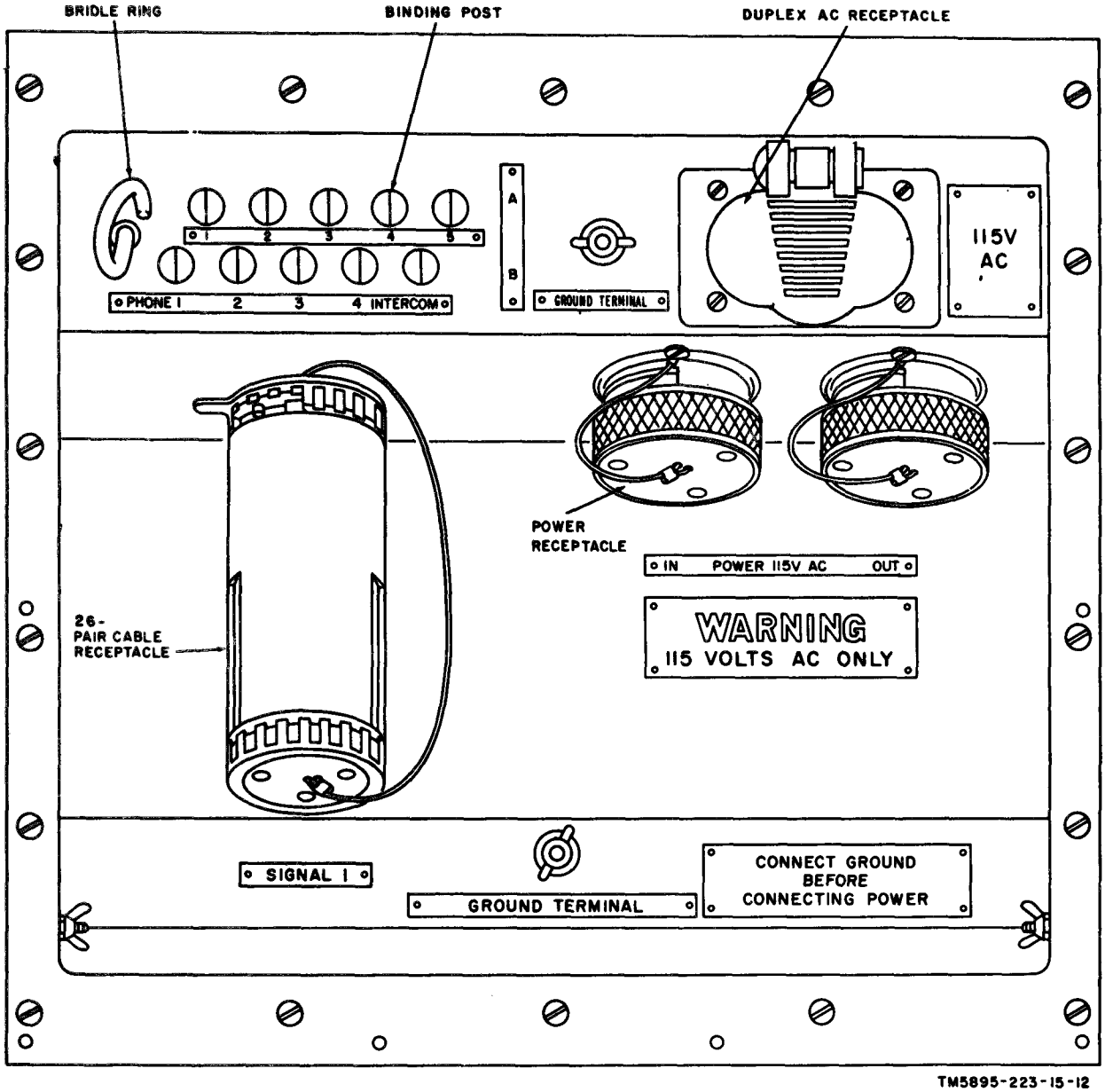


Figure 8. Power and signal entrance box.

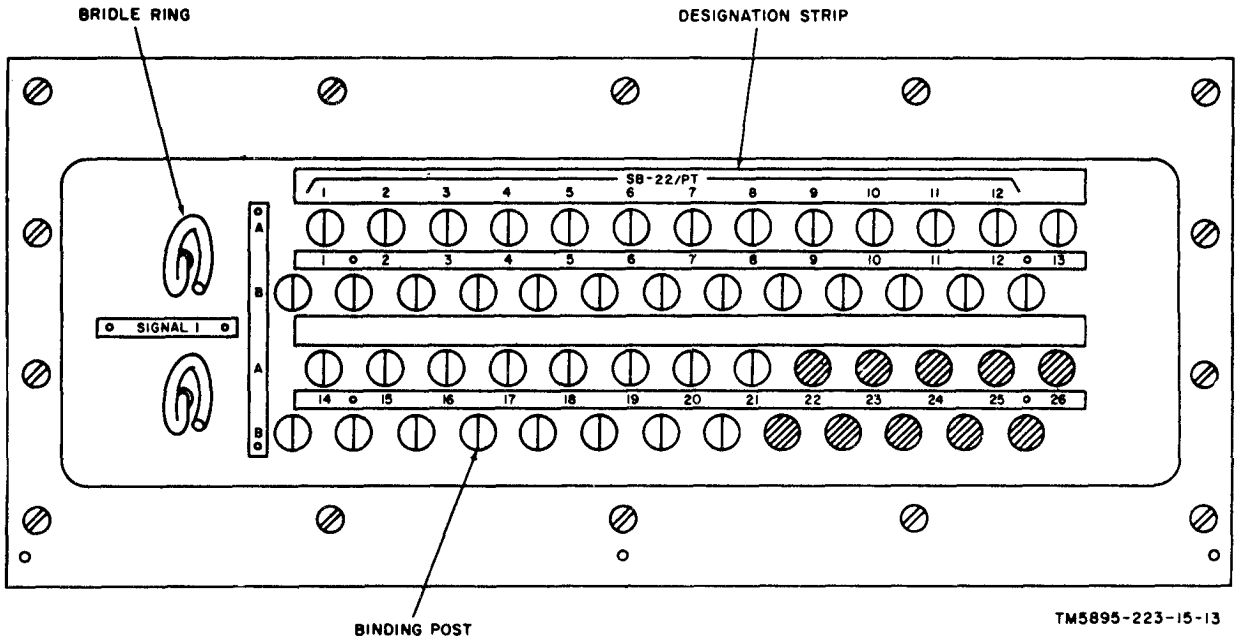


Figure 9. Binding post signal entrance box.

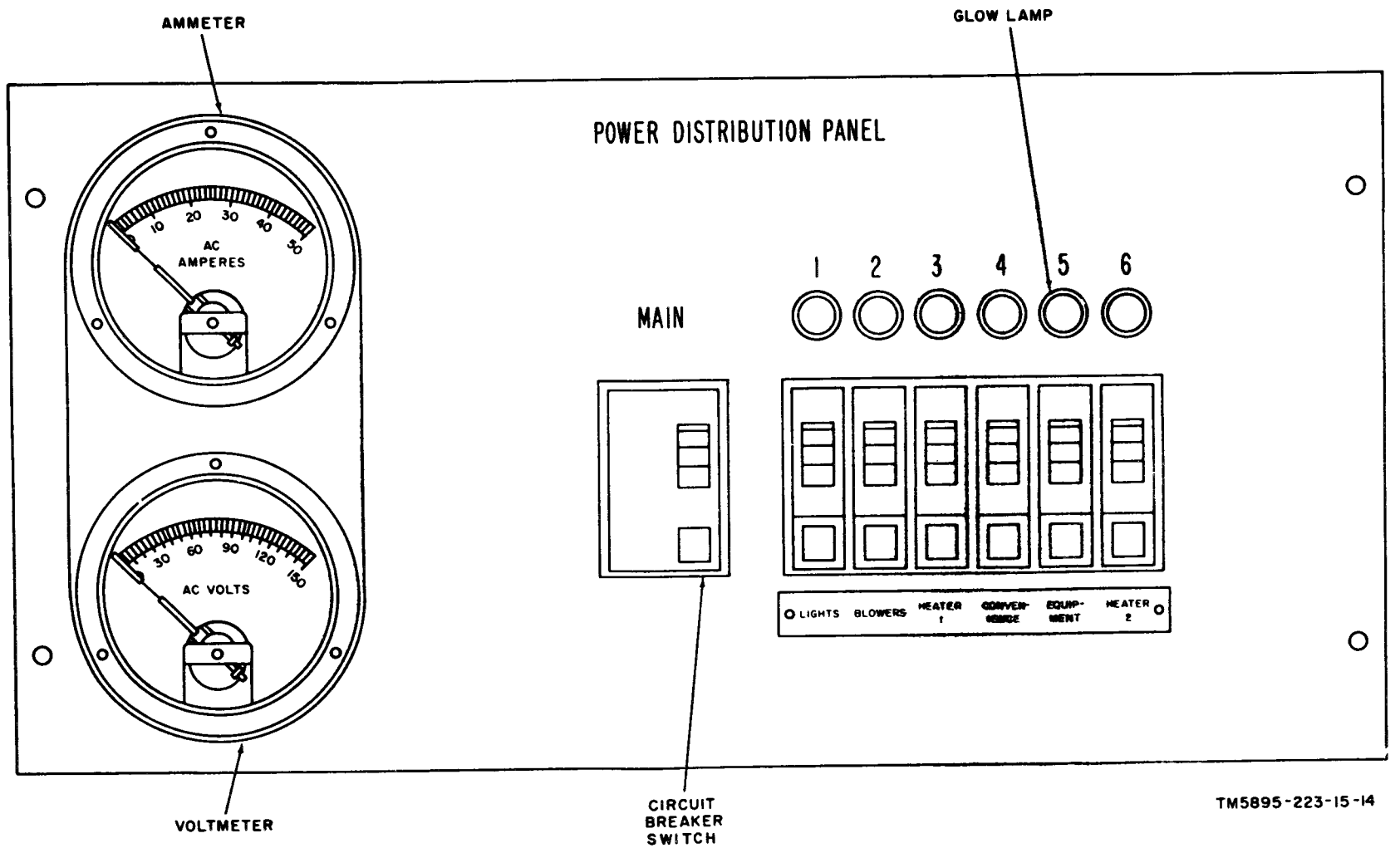


Figure 10. Power distribution panel.

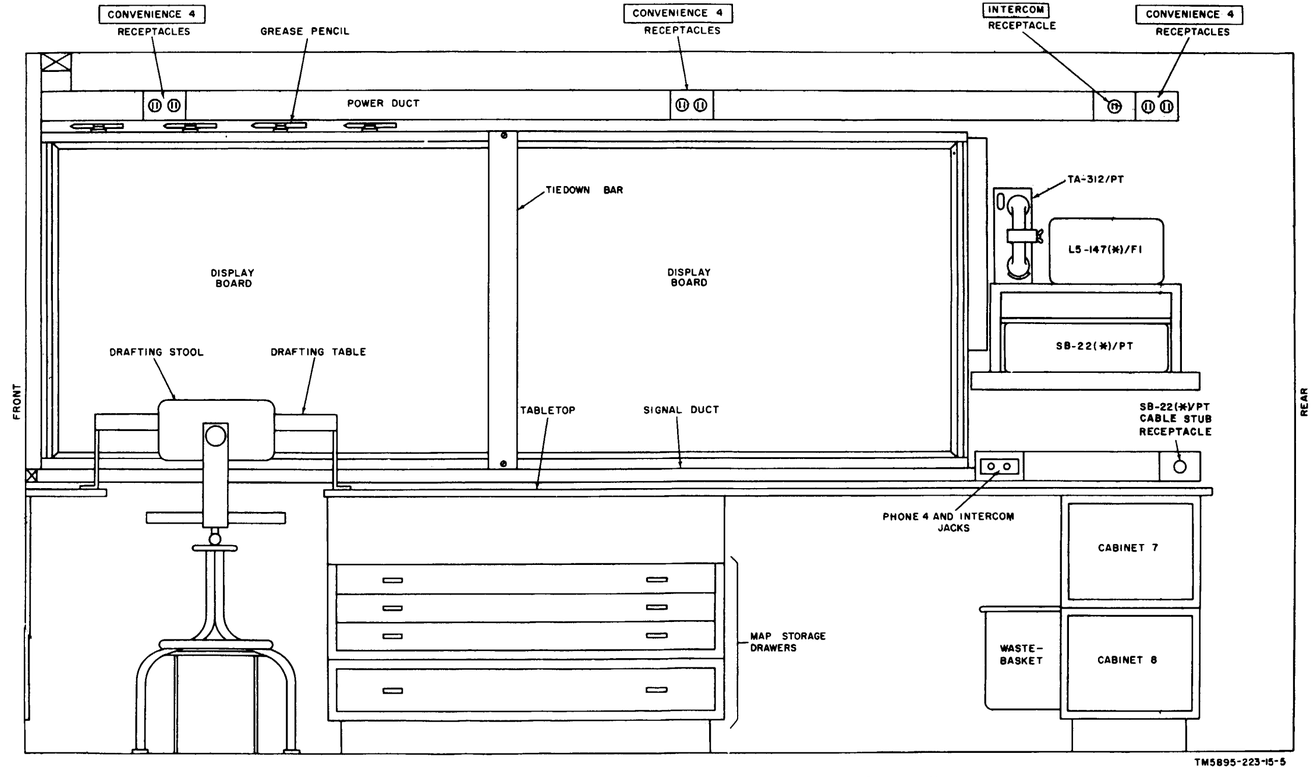


Figure 11. Operations Center, communications AN/MSC-31, curbside wall, elevation diagram.

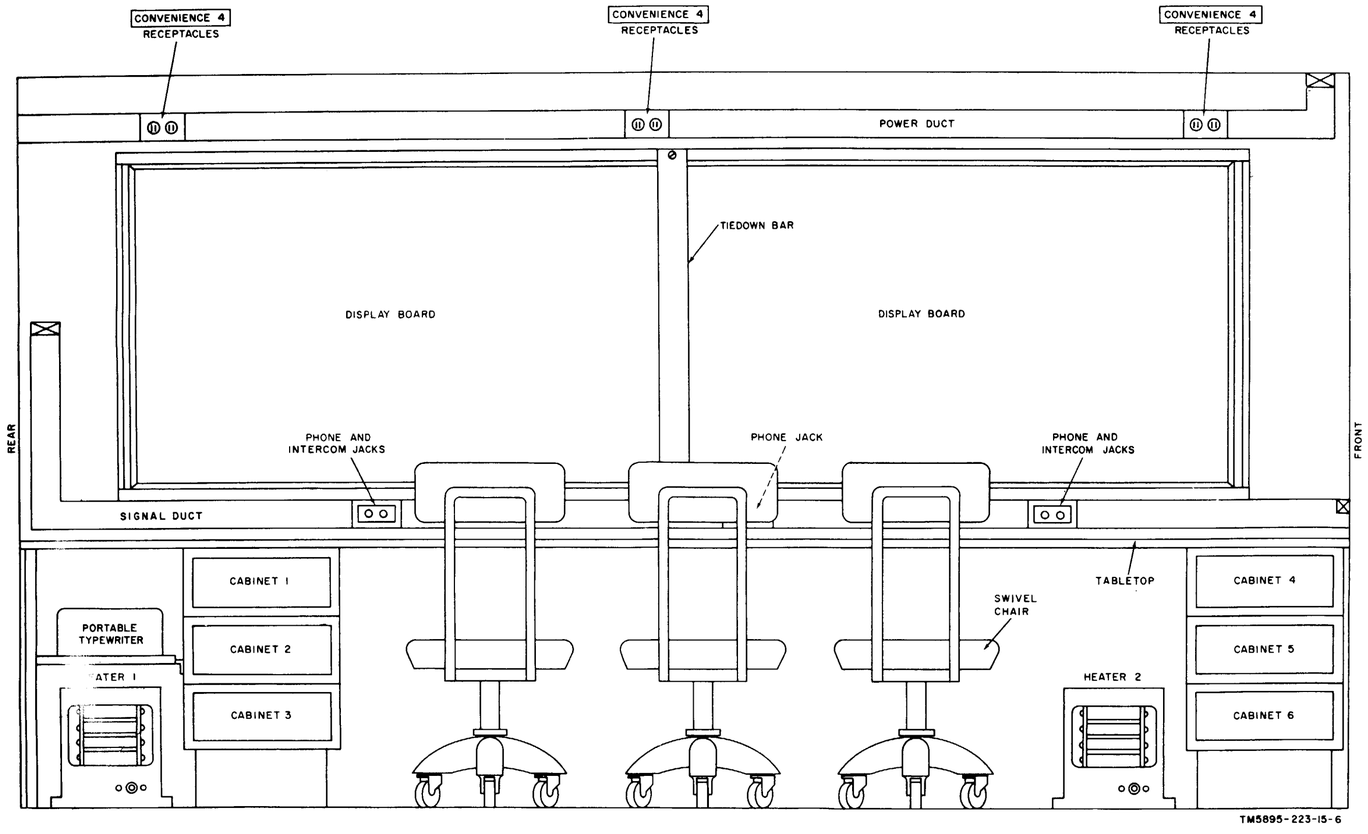


Figure 12. Operations Center, Communications AN/MSC–31, roadside wall, elevation diagram.

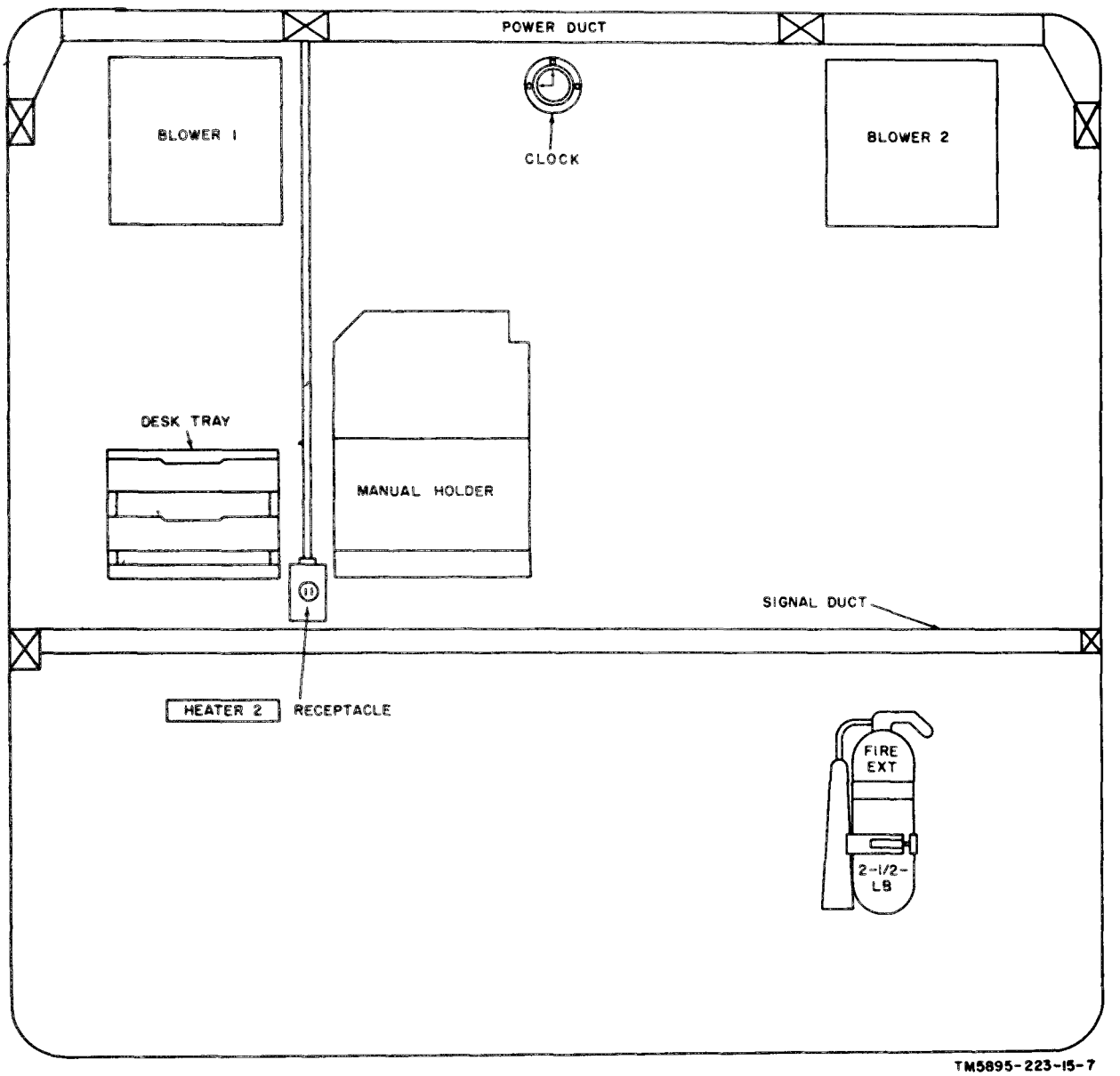


Figure 13. Operations Center, Communications AN/MSC–31, front wall, elevation diagram.

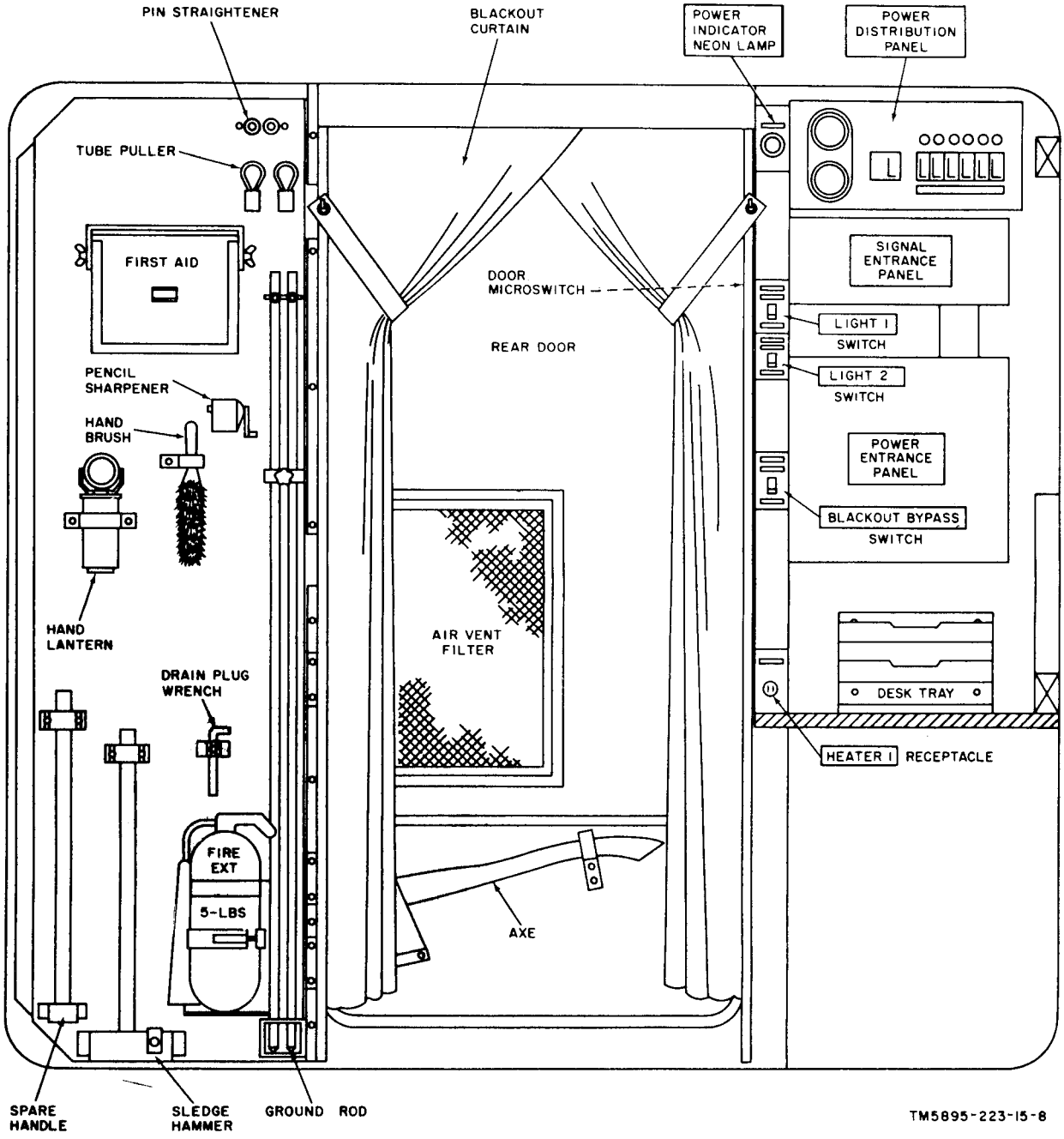


Figure 14. Operations Center, Communications AN/MSC-31, rear wall, elevation diagram.

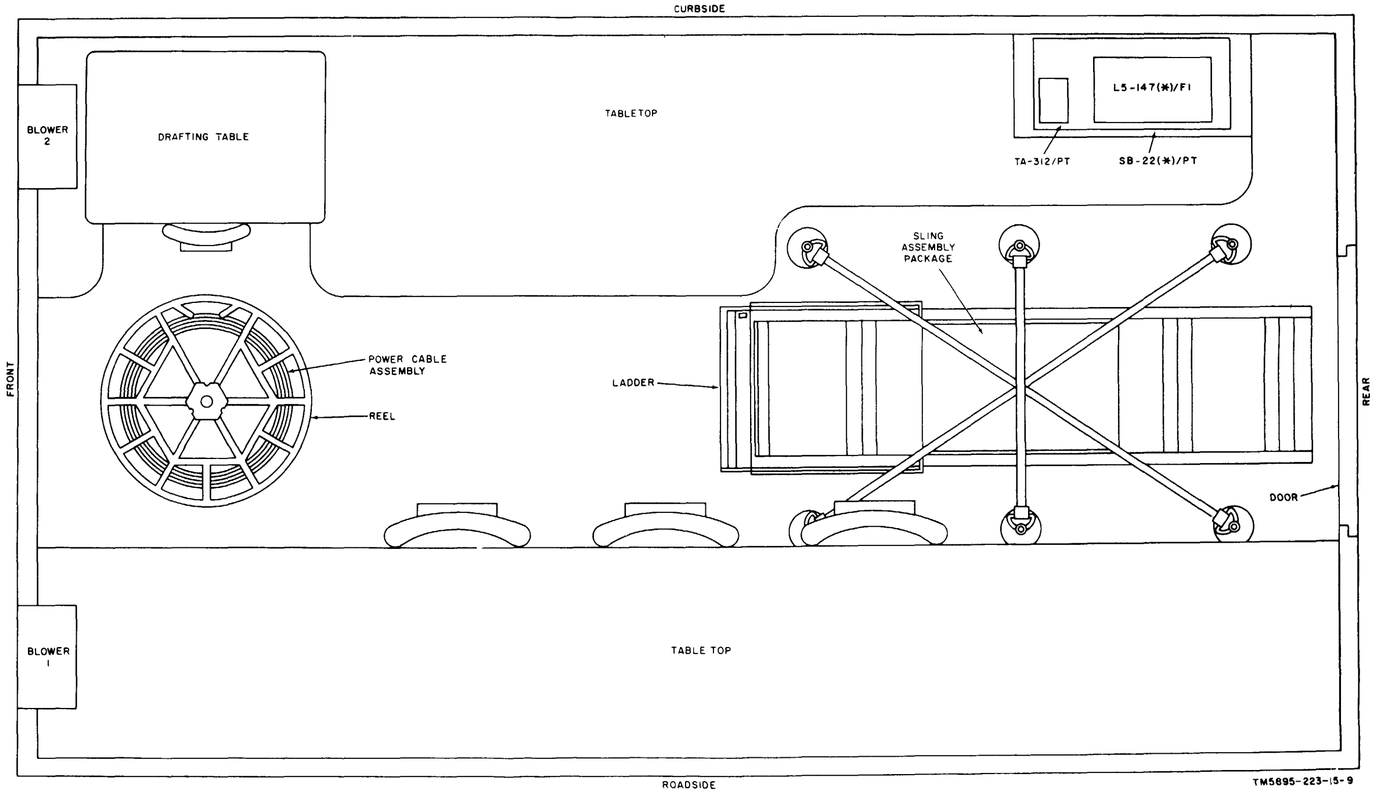


Figure 15. Operations Center, Communications AN/MSC-31, floor plan.

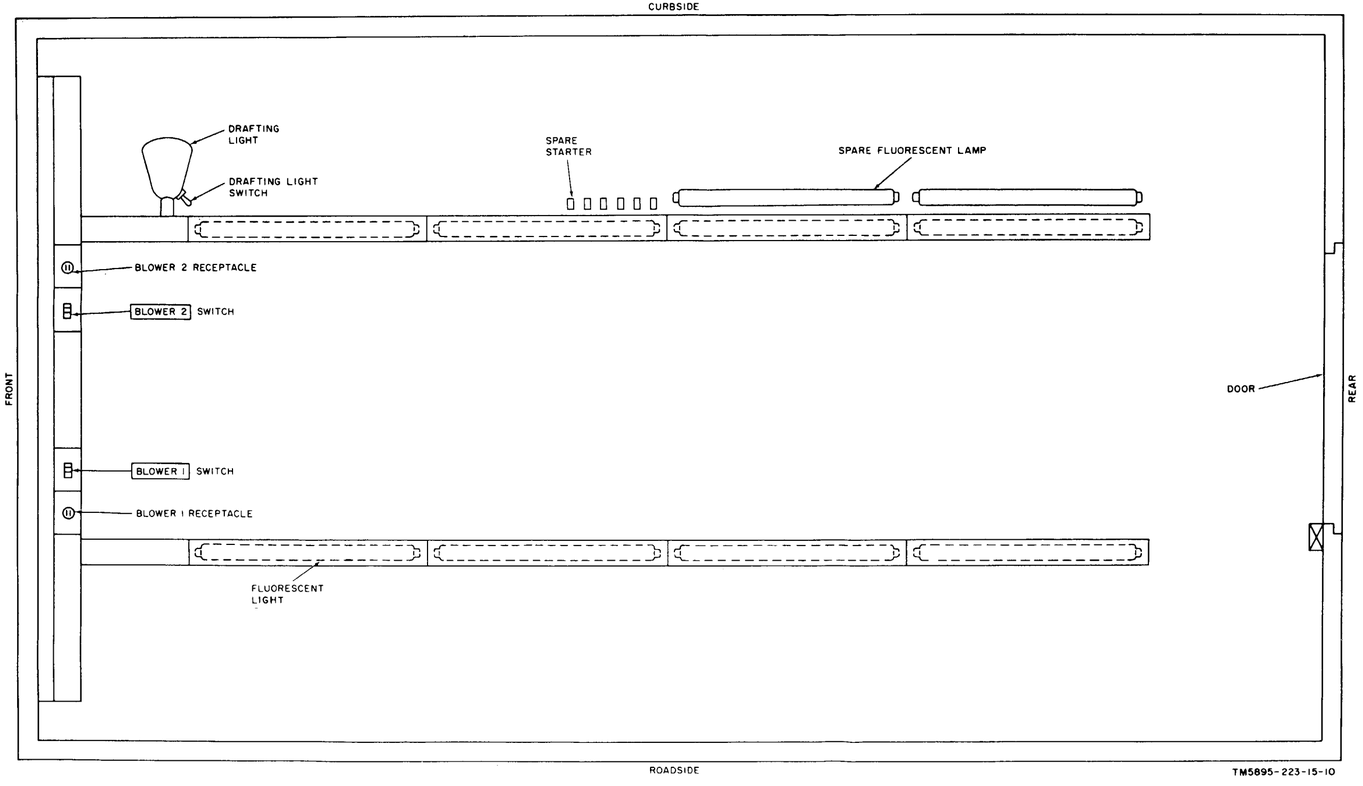


Figure 16. Operations Center, Communications AN/MSC-31, ceiling plan.

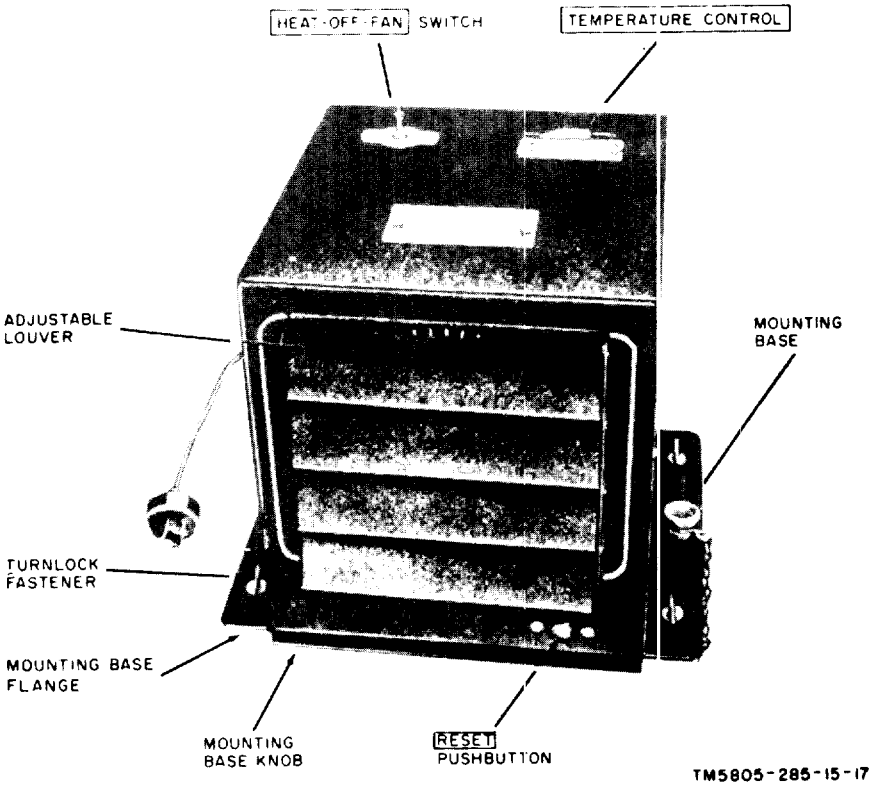


Figure 17. Electric heater.

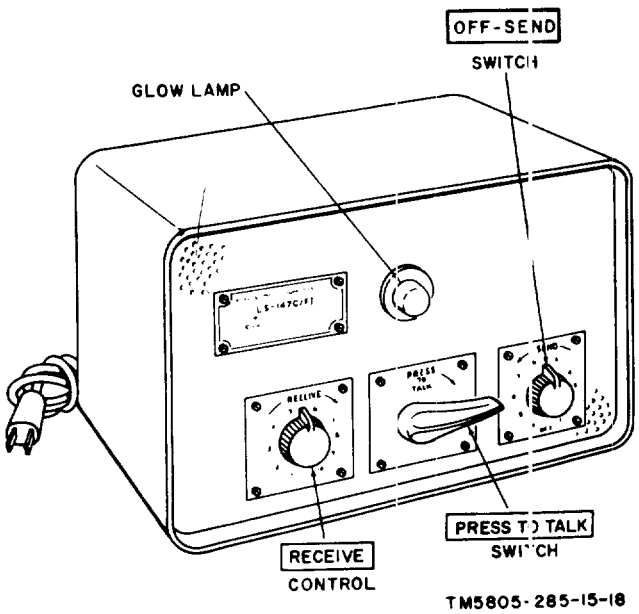


Figure 18. Intercommunication Station LS-14(*)/FI.

CHAPTER 2
INSTALLATION AND PREOPERATIONAL PROCEDURES

Section I. INSTALLATION, CONNECTION, AND TESTING OF INSTALLED EQUIPMENT

9. General

a. When an AN/MSC-31 is received, uncrate and check it (para 10), and then perform the tests in paragraph 13. When an S-183/MSC-31 (para 7a and 8) is received, perform the procedures in (1) through (4) below.

(1) Uncrate and check the equipment (para 10) .
(2) Install the SB-22(*)/PT (para 11).
(3) Install the TA-312/PT (para 12).
(4) Test the equipment after installation (para 13) .

b. The signal duct contains all the wiring required to connect the SB-22(*)/PT , the TA-312/PT, and the LS-147(*)/FI to the external lines. All wiring is appropriately marked and prepared for connection. The signal schematic wiring diagram (fig. 36) supplements the information given in the connection procedures. The power duct contains power receptacles appropriately marked for each piece of equipment that requires ac power.

c. The tool roll kit (fig. 2) is required for installation and connection of components.

Note. Ground (para 16) and connect the power (para 17) to the shelter before using the lights or the convenience receptacles.

10. Uncrating and Checking

a. Uncrating the Shelter (fig. 19).

(1.) Remove the panels of the crate by removing the bolts. First remove the front and rear panels; then remove the top and side panels.
(2) Remove the lag screws that secure the base of the crate to the shelter.
(3) Remove the sling assembly from its package on the floor of the shelter (fig. 15).
(4) Use a device capable of lifting 3,000 pounds to remove the shelter from the base of the crate. Attach the sling assembly to the lifting eyes on the top corners of the shelter (para 15) and raise the shelter off the base of the crate.
(5) Remove the base of the crate and lower the shelter.

b. Checking Shelter Contents. Check the contents of the shelter against the packing list. If the packing list is not available, use the table of components (para 5) to check the equipment that probably was packed.

11. Installation and Connection of SB-22(*)/PT

a. Remove the front cover of the SB-22(*)/PT (TM 11-5805-262-12).

b. Remove the headset-handset from the front cover and store the cover.

c. Open the rear cover of the SB-22(*)/PT.

d. Install four Batteries BA-30 in the battery case and ground the SB-22(*)/PT.

Note. Connect the SB-22(*)/PT ground lead to the ground terminal adjacent to the INTERCOM receptacle (fig. 1 1).

e. Connect the prepared leads from the SB-22(*)/PT cable stub to the SB-22(*)/PT binding posts according to the chart below.

Wire pair No.	Wire colors	SB-22(*)/PT binding post pair No.
1	Wht-blu, Wht-orn-blu	1
2	Wht-brn-blu, Wht-gy-blu	2
3	Wht-grn, Wht-orn-grn	3
4	Wht-grn-blk, Wht-yel-grn	4
5	Wht-brn-grn, Wht-gy-grn	5
6	Wht-blu-blk, Wht-yel-blu	6
7	Wht-brn, Wht-grn	7
8	Wht-blk, Wht-orn	8
9	Wht-brn-gy, Wht-brn-vio	9
10	Wht-yel, Wht-blu-grn	10
11	Wht-red, Wht-gy	11
12	Wht-blk-red, Wht-orn-red	12

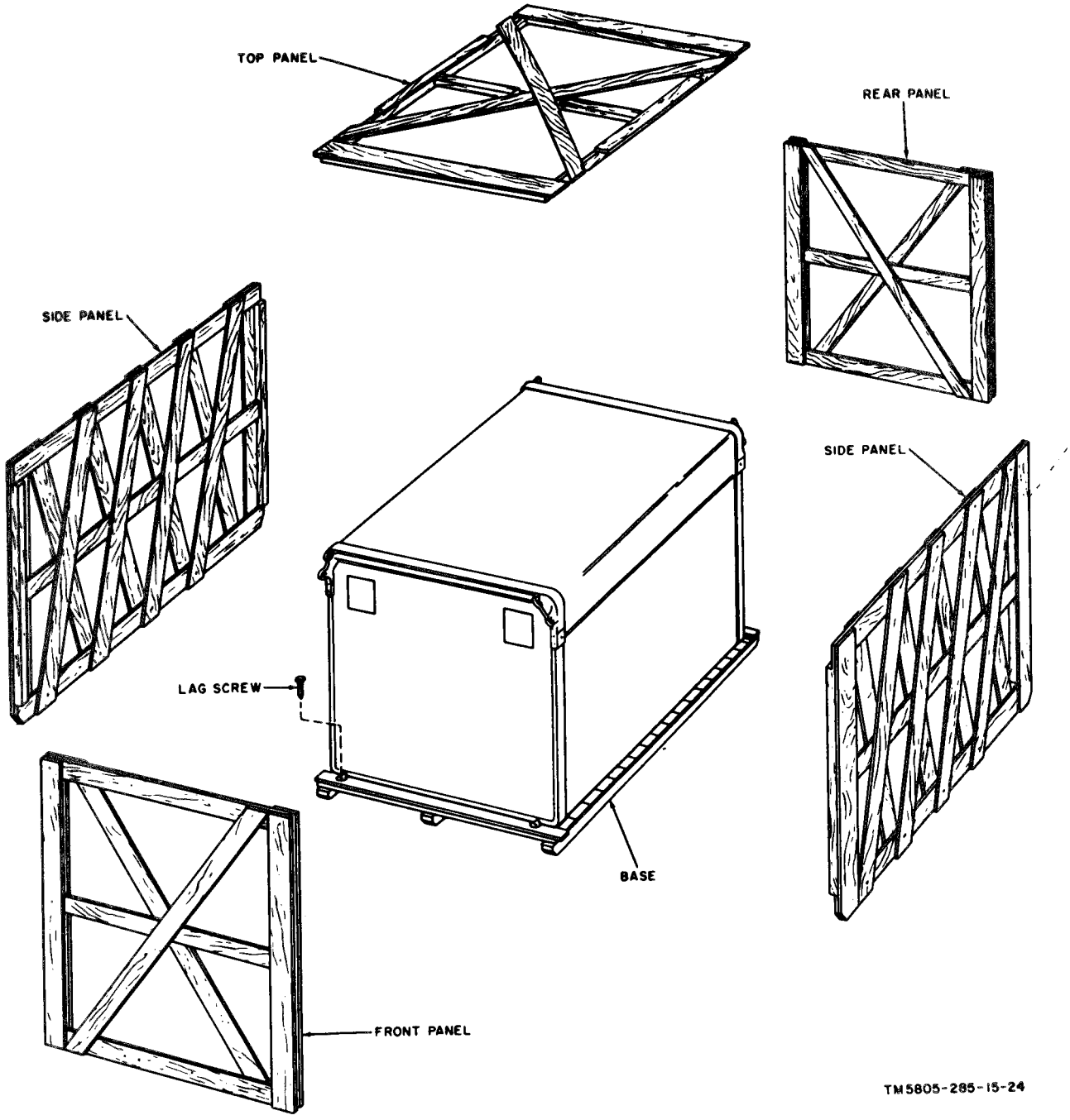


Figure 19. Typical crating diagram.

f. Remove the wingnuts that secure the SB-22(*)/PT retaining bar (fig. 20), and raise the retaining bar.

g. Place the SB-22(*)/PT in the mounting rack; replace the retaining bar and secure it in place with the wingnuts (f above).

h. Connect the SB-22(*)/PT cable stub connector plug into its receptacle in the signal duct (fig. 11).

i. Connect the handset-headset to the SB-22(*)/PT (TM 11-5805-262-12) and place it on the headset hangar (fig. 20).

Note. The handset-headset extension cord (para 8e(6)) can be connected between the handset-headset and the SB-22(*)/PT to allow the operator greater freedom of movement within the shelter.

12. Installation and Connection of TA-312/PT

Note. When TA-312/PT's are used at the roadside tabletop locations (fig. 12), they are not installed in mounting brackets but are connected as in *b* below.

a. Installation in Mounting Bracket.

(1) Loosen the wingnut on the side of the mounting bracket (fig. 21).

(2) Rotate the clamping arm to obtain access to the flathead screw on the side of the mounting. Tighten the wingnut.

(3) Use a screwdriver to remove the flathead screw that secures the holding plate (inside the mounting bracket).

(4) Remove the TA-312/PT from its carrying case; store the case.

(5) Insert the holding plate into the buzzer recess in the side of the TA-312/PT.

(6) Place the TA-312/PT in the mounting bracket and replace the flathead screw.

b. Connection.

(1) Connect the prepared leads of the telephone cord to the LINE binding posts on the TA-312/PT.

(2) Connect the telephone plug into the appropriate PHONE (1 through 4) jack in the signal duct (fig. 11 and 12).

Note. Install two Batteries BA-3O in the battery compartment and operate the LB-CB-CBS switch to LB.

13. Testing of Equipment After Installation

a. Preliminary Procedure.

(1) Ground the shelter (para 16) and make power connections (para 17) before using the lights and convenience receptacles. For test purposes, any satisfactory ground may be used in place of the ground rods indicated.

(2) Energize the ac circuits (para 23).

Note. Refer to paregraph 22 for information covering the S-183/MSC-31 controls and instruments.

(3) Connect the CX-4760/U (para 19) to the 26-pair cable receptacle in the power and signal entrance box (fig. 8).

b. Test Procedure.

(1) Remove the TA-312/PT's from the storage cabinet and connect them (para *12b)* at PHONE 1, 2, and 3 positions (fig. 12).

(2) Make 26-pair cable stub lead connections to test four SB-22(*)/PT line circuits at a time and operate the TA-312/PT's (TM 11-2155) and the SB-22(*)/PT (TM 11-5805-262-12) to perform the ringing and talking tests indicated in the chart below.

Connect from 26-pair cable stub pair No.	To PHONE binding post bar	Ring and talk between	
		SB-22(*)/PT line circuit No.	TA-312/PT PHONE position No.
1 (Wht-blu, wht-orn-blu)	1	1	1
2 (Wht-brn-blu, wht-gy-blu)	2	2	2
3 (Wht-grn, wht-orn-grn)	3	3	3
4 (Wht-grn-blk, wht-yel-grn)	4	4	4
5 (Wht-brn-grn, wht-gy-grn)	1	5	1
6 (Wht-blu-blk, wht-yel-blu)	2	6	2
7 (Wht-brn, wht-grn)	3	7	3
8 (Wht-blk, wht-orn)	4	8	4
9 (Wht-brn-gy, wht-brn-vio)	1	9	1
10 (Wht-yel, wht-blu-grn)	2	10	2
11 (Wht-red, wht-gy)	3	11	3
12 (Wht-blk-red, wht-orn-red)	4	12	4

(3) Disconnect the 26-pair cable stub (para 19).
(4) Disconnect and store the TA-312/PT's located at PHONE positions 1, 2, and 3 (fig. 12), as required.

Note. Remove the batteries from each TA-312/PT being stored.

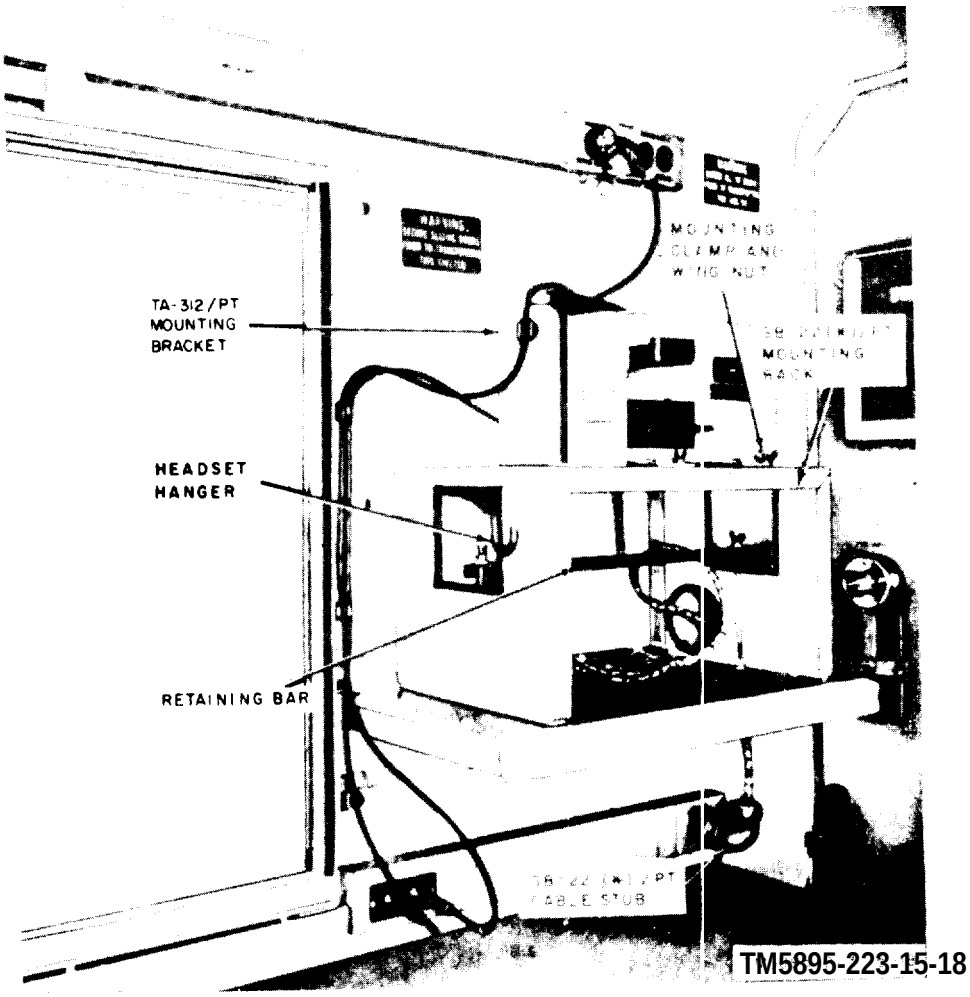


Figure 20. Equipment mounting facilities.

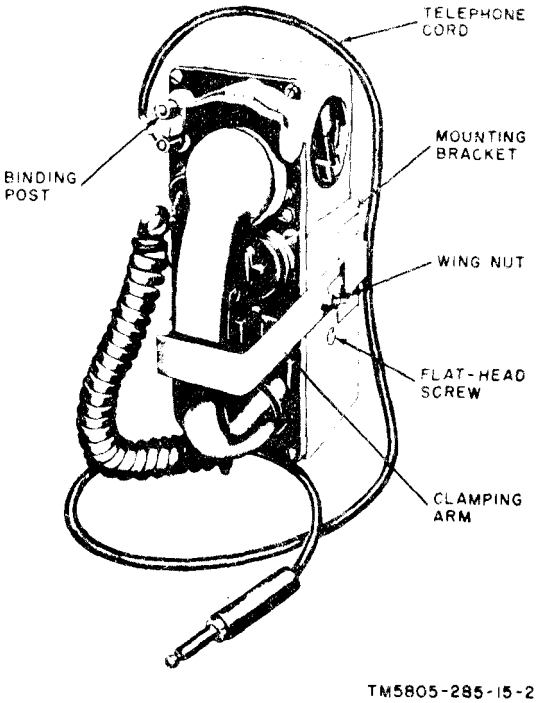


Figure 21. Telephone Set TA–312/PT, installed for transit.

Section II. PREOPERATIONAL PROCEDURES

14. Siting

a. General. The location of Operations Center, Communications AN/MSC-31 in relation to other components of an area-type communications system depends on the tactical situation and local terrain cons ideations.

b. Ground Installation. When the AN/MSC-31 is to be installed on the ground, locate it on firm, level, dry ground with good drainage. Place the AN/MSC-31 on concrete blocks or wooden beams, if possible, and position it to facilitate connections to the entrance boxes.

c. Truck installation. When the shelter is installed on a truck (para 15), remove the ladder assembly from the shelter (fig. 15) and secure it to the truck tailgate.

d. Power Unit Location. An ac source of power is required for the AN/MSC-31 (para 17); however, this does not include a generator set as a component. If a generator set is available to supply ac power, locate the generator approximately 75 feet from the AN/MSC-31 to minimize generator noise interference.

15. Installation of AN/MSC-31

Note. Four men are needed to install the shelter on the ground or on a truck. A device capable of lifting 3,000 pounds is also required.

a. Lifting and Loading AN/MSC-31 (fig. 22). If the AN/MSC-31 is to be transported by helicopter, follow only the procedures in (1) through (4) below and observe the airlift warning notice mounted on the outside of the shelter. If the shelter is to be installed on a truck, follow the procedures in (1) through (10) below.

(1) Use the sling center hooks (fig. 22) to connect the sling assembly to the shelter lifting eyes.

(2) Place the sling assembly on top

of the shelter.

(3) Connect the four sling hooks to the lifting ring.

(4) Place the lifting ring over the hook on the lifting device.

Warning: **To avoid injury to personnel and damage to equipment, only the personnel engaged in the actual loading operation should be permitted near the truck, the lifting device, and the shelter. To eliminate confusion, all instructions must come from the loading crew supervisor.**

(5) Tie a 1/2-inch rope (at least 15 feet long) to each rear towing eye.

(6) Check to see that all tools and equipment are removed from the truck body. Lower the truck tailgate .

(7) Slowly lift the shelter from the ground to a position high enough to clear the body of the truck.

(8) Back the truck into position under the shelter.

Warning: **All personnel must remain clear of the truck while the shelter is being lowered into position.**

Position a man at each of the ropes ((5) above) to guide the shelter into position, and slowly lower it onto the truck body.

Note. The entrance door of the shelter must be at the rear of the truck, and the front of the shelter must be against the front of the truck body.

(10) Remove the lifting ring from the lifting hook and disassemble the lifting ring and sling hooks. Remove the sling center hooks from the shelter lifting eyes and the ropes from the shelter towing eyes.

b. Securing AN/MSC-31 on Truck (fig. 23). Secure the shelter on a truck as follows :

(1) Use the sling hooks farthest from the turnbukles and hook each of the four sling hooks to a tiedown eye on the shelter.

(2) Use the sling assembly cable attached to the tiedown eye at the Mt.-front of the shelter, and place the sling hook nearest the turnbuckle under the side rail and behind the second cargo rack support from the rear of the truck.

(3) Use the sling assembly cable that is attached to the tiedown eye at the left-rear of the shelter, and place the sling hook nearest the turnbuckle under the side rail and in front of the second cargo rack support from the front of the truck.

(4) Follow the procedues given in (2) and (3) above to secure the right side of the shelter.

(5) After the sling assembly has been attached to the side rails of the truck, tighten the turnbuckles.

Caution: **Do not overtighten the turnbuckles. To prevent the shelter from twisting in the truck body, equally tighten all the turnbuckles at the same time.**

(6) Raise and secure the truck tailgate.

c. Unloading AN/MSC-31. To unload the AN/MSC-31 from a truck, reverse the procedures described in a and b above.

16. Grounding

The AN/MSC-31 must be properly grounded before input power is connected. Select a grounding site that will not interfere with the entrance door, the field wires, or the power cable. Ground the AN/MSC-31 as follows:

a. Loosen the captive screws and lift the cover of the power and signal entrance box (fig. 5).

b. Use the cover support to secure the cover in the open position.

c. Remove the ground rod and the sledge hammer (fig. 14) from their mountings.

d. Select a grounding site within 10 feet of the power and signal entrance box and dig a small hole, about 6 incles deep, at the site.

e. Remove any paint or grease from the ground rod.

f. Drive the ground rod into the hole until the top of the ground rod is approximately 3 inches above ground level.

g. Saturate the ground around the rod with water.

h. Remove a 10-foot ground strap from storage cabinet No. 1.

i. Connect one end of the ground strap to the ground rod. Connect the other end of the ground strap to the bottom GROUND TERMINAL in the power and signal entrance box (fig. 8).

j. Replace the sledge hammer in its mounting (fig. 14).

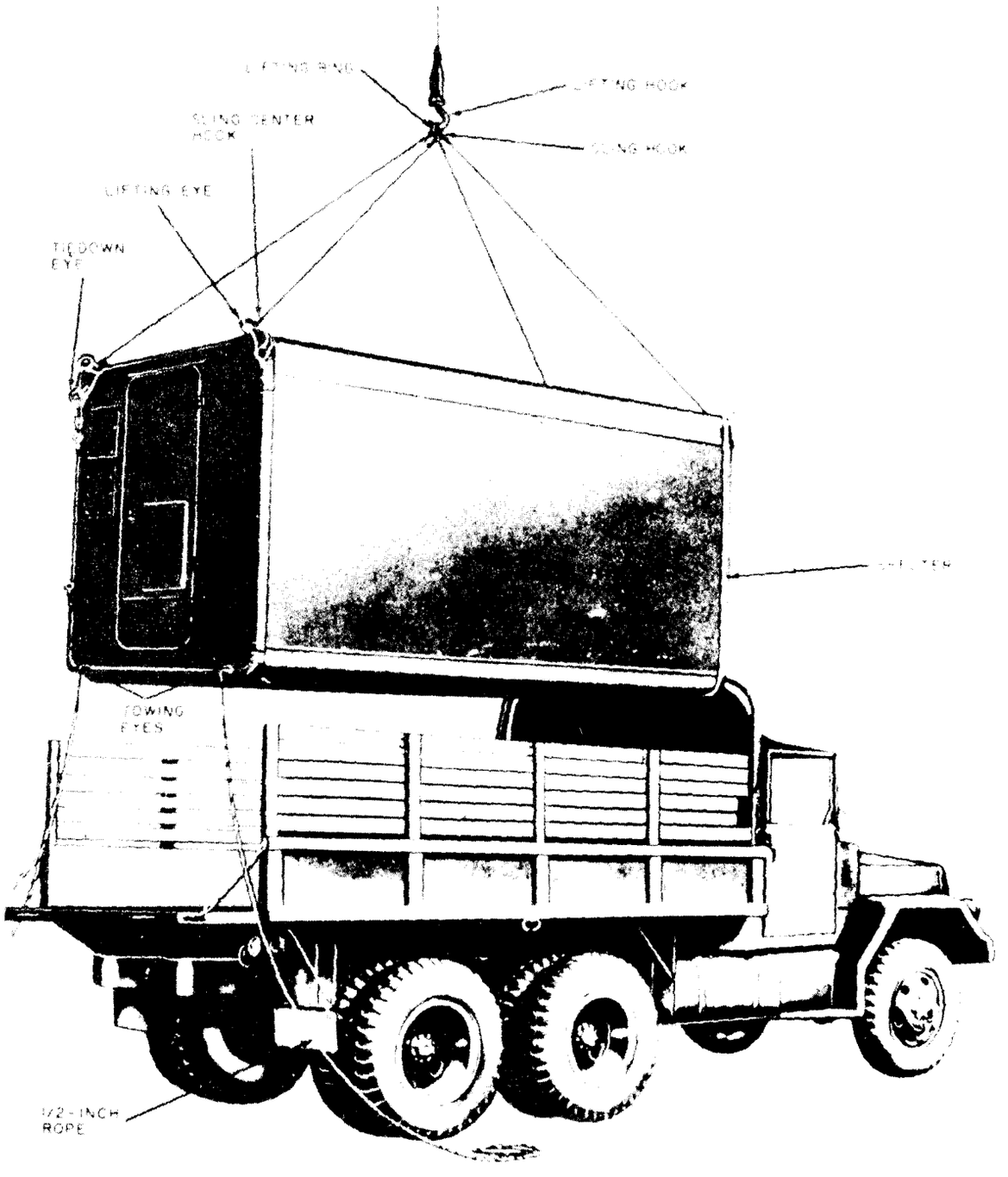


Figure 22. Loading AN/MSC–31 on truck.

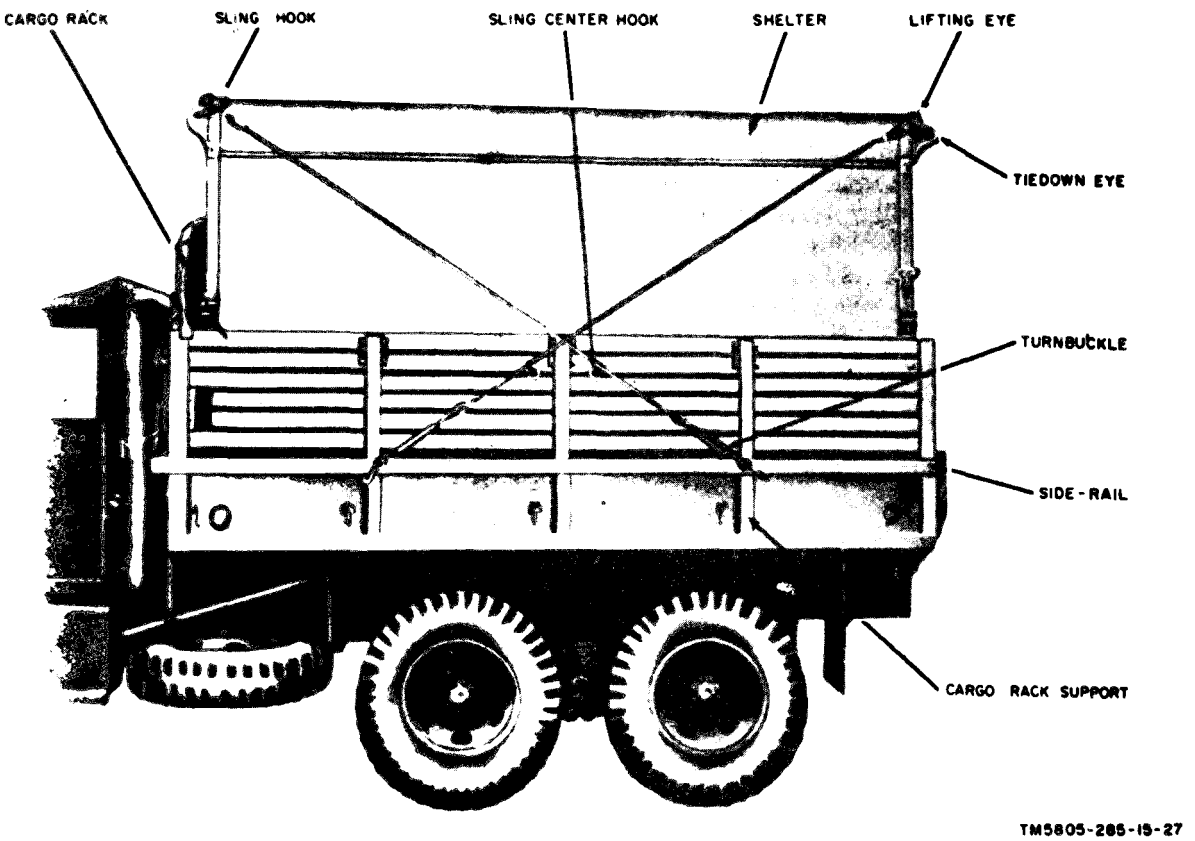


Figure 23. Securing AN/MSC-31 on truck.

17. Power Connections

Caution: **Ground the shelter (para 16) before connecting power to the AN/MSC-31.**

Ac power for the AN/MSC-31 may be obtained from a nearby shelter, or from a central or a commercial power source.

a. Preliminay Procedure.

Operate all circuit breaker and equipment switches to OFF.

Remove and store the tiedown bar (fig. 3) and remove the power cable assembly and reel from the shelter.

Unwind the power cable assembly from its reel and remove the connector covers. Store the cable reel.

b. Obtaining Power from Adjacent Shelter. The total power consumption of the AN/MSC-31 is 3,542 watts. Be sure that the power source output rating for the adjacent shelter is not exceeded when the AN/MSC-31 is connected.

(1) Operate the MAIN circuit breaker switch on the power distribution panel (fig. 10) to OFF.

(2) Remove the cover from the IN POWER 115V AC receptacle in the power and signal entrance box (fig. 8) and connect one end of the power cable.

(3) Remove the cove r of the OUT POWER 115V AC receptacle in the power and signal entrance box of the adjacent shelter and connect the other end of the power cable.

c. Using Commercial Power.

(1) Turn off or disconnect the commercial power before making any connection.

(2) Remove the power cable stub (fig. 2) from storage cabinet No. 6. If the power source is a 50- to 60-cycle per second (cps), 120-240 - volt, single-phase, three-wire dis - tribution system, connect the red and white leads of the power cable stub to tie neutral bus bar and the black lead to one of the 120-volt bus bars of the commercial source.

(3) If the power source is a 50- to 60-cps, 120-208-volt, 3-phase, four-wire distribution system, connect the red and white leads of the pov cable stub to the neutral bus b and the black lead to the phase-1, phase-2, or phase-3 bus bar.

(4) Remove the cover from the power cable stub connector. Connect the power cable stub to one end of the AN/MSC-31 power cable.

(5) Remove the cover fro m the IN POWER 115V AC receptacle in the power and signal entrance box (fig. 8) and connect the other end of tie power cable.

Section III. SIGNAL CONNECTIONS

18. Circuit Planning

Signal circuits may be terminated at the AN/MSC-31 by the use of a 26-pair cable and field wire connections.

a. Switchboards Circuits. Line terminations for the SB-22(*)/PT may be completed by connecting a 26-pair cable at the power and signal entrance box (fig. 8) or by connecting field wire at the binding post signal entrance box (fig. 9).

b. Intershelter Communication Circuits. Line terminations for the local telephone (TA-312/PT) and intercommunication (LS-147(*)/FI) circuits may be made to the PHONE (1 through 4) and INTERCOM binding posts, respectively, and to pairs 22 through 25 and pair 26, respectively, of the 26-pair cable receptacle in the power and signal entrance box.

19. Connection Procedure for 26-Pair Cables (fig. 24 and 25)

To couple connectors on 26-pair cables Cable Assemblies, Telephone CX-4566/U (250 ft) and CX-4760/U (15 ft), use the procedure in a below. The CX-4566/U must be supplied by the shelter at which the AN/MSC-31 signal circuits terminate. To couple the connectors to the receptacles in the power and signal entrance box (fig. 8), use the procedures in b below.

a. Coupling 26-Pair Connector.

Caution: **Handle the 26-pair connectors carefully during the coupling and uncoupling procedures. Do not force or twist the connectors during installation. Never drop or place an uncovered 26-pair connector on the ground.**

(1) *Cover removal.*

(a) With each hand, grasp the knurled collar on each end of the connector and turn the collars until the open position is reached (A fig. 24).

(b) Disengage the cam on top of the cover from the slot on the connector collar. Lift and remove the cover (B, fig. 24).

(2) *Coupling procedure.*

(a) Position the two 26-pair connectors so that the cams drop into the slots of the knurled collars and the male contacts are aligned with the female contacts (C, fig. 24).

(b) Carefully press the two connectors together (D, fig. 24).

(c) Lock the two connectors by turning the knurled collars until the closed position is reached (E, fig. 24).

(d) Lock the two connector covers together.

(3) *Uncoupling procedure,*

(a) Unlock the 26-pair connectors by turning the knurled collars until the open position is reached (A, fig. 24).

(b) Carefully pull the connector apart.

(4) Cover replacement.

(a) Unlock the two connector covers.

(b) Position the cover ontop of the 26-pair connector.

(c) Engage the cam on the top of the cover in the slot on the connector collar (A, fig. 24).

(d) Lock the cover to the connector by turning the collars until the closed position is reached.

b. Coupling 26-Pair Connector to 26-Pair Receptacle. The cover removal and replacement procedures for a 26-pair receptacle (A through D, fig. 25) are thes ame as those described for the 26-pair connector (a(1) above). Connect and disconnect a 26-pair connector at the 26-pair receptacle as follows:

Note. The cable end of the connectors is used as a reference for clockwise or counterclockwise rotation.

(1) *Connecting procedure.*

(a) Remove the covers and lock them together.

(b) Position the 26-pair connector on the receptacle so that the cams drop into the slots of the knurled collars, and the male contacts are aligned with the female contacts (E and F, fig. 25).

(c) Carefully press the connector into the receptacle (G, fig. 25).

(d) Turn the lever on the receptacle knurled collar counterclockwise until the collar *just* engages the cam.

(e) Turn the knurled collar on the connector clockwise u n t i 1 the sleeve *just* engages the cam.

(f) Simultaneously turn the receptacle collar lever and the connector collar until the closed position is reached (G, fig. 25).

(2) *Disconnecting procedure.*

(a) Simultaneously turn the receptacle collar lever and the connector collar until the open position is reached.

(b) Carefully pull the comectors apart.

(c) Replace the covers (a(4) above).

20. Field Wire Connections

Connect the field wire pairs to the SIGNAL 1 binding posts in the binding post signal entr ante box (fig. 9) and to the PHONE and INTERCOM binding posts in the power and signal entrance box (fig. 8).

a. Loosen the captive screws and lift the covers of the entrance boxes (fig. 5).

b. Use the cover support to secure each cover in the open position.

c. Press down on the binding posts (fig. 8 and 9) to open the wire slots. Place the field wire pairs in the appropriate slots and release the binding posts.

d. Distribute and retain the wires in the bridle rings associated with each row of binding post pairs.

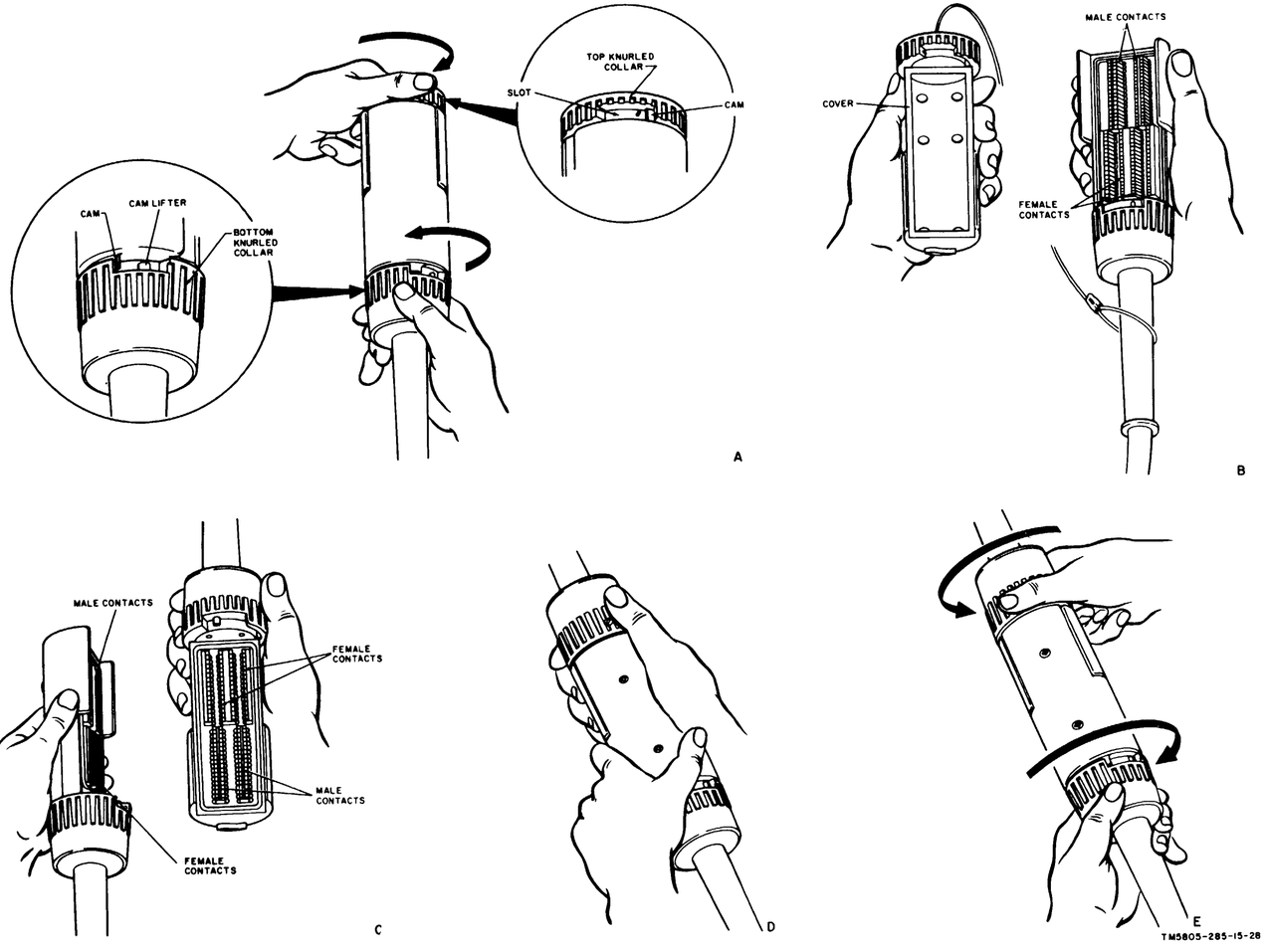


Figure 24. Coupling 26-pair connectors.

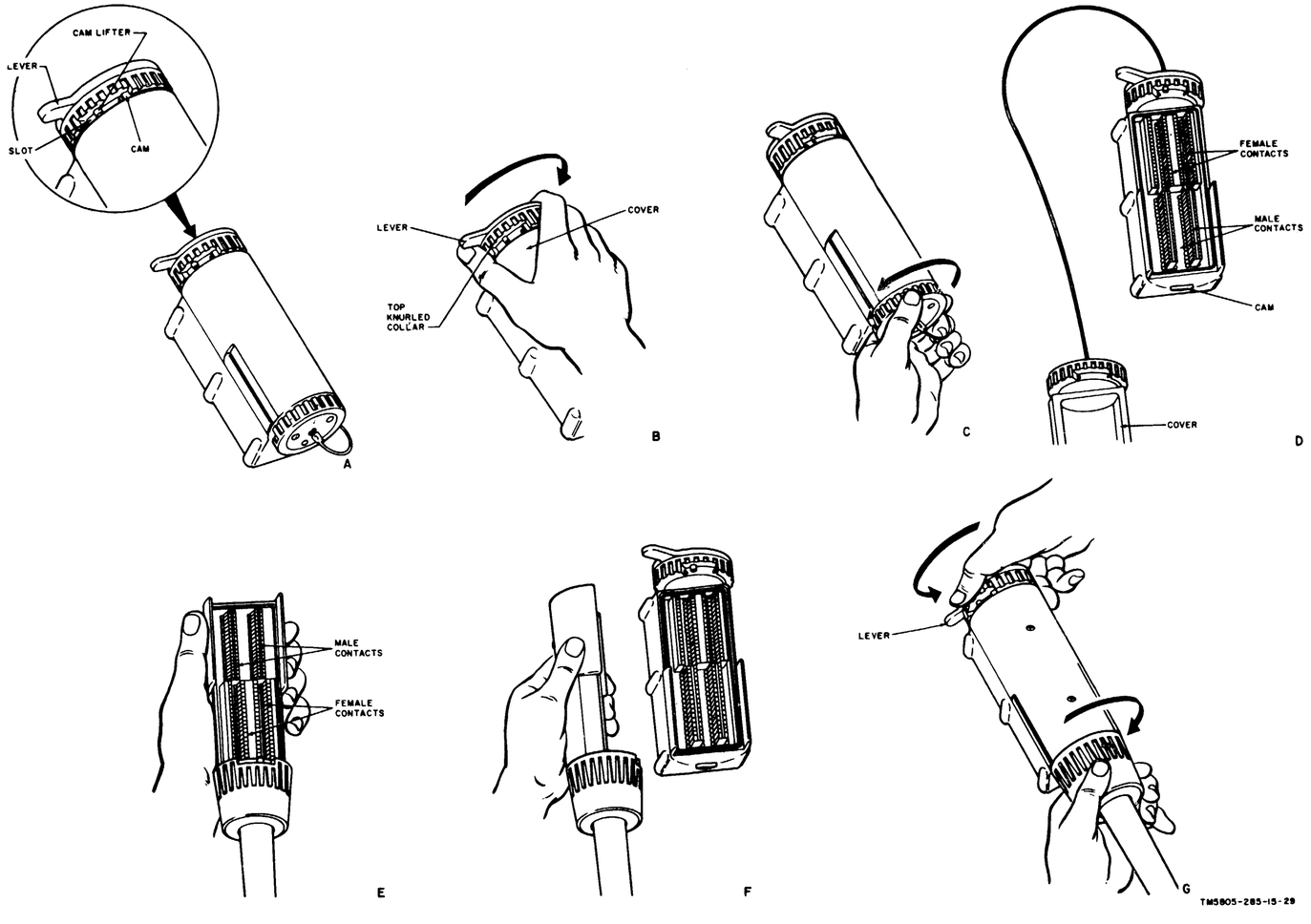


Figure 25. Connecting 26-pair connector to the 26-pair receptacle.

CHAPTER 3
OPERATING INSTRUCTIONS

21. General

This chapter contains operating procedures for S-183/MSC-31 shelter components. Operating procedures for the major components are contained in the applicable technical manuals (appx I).

22. Controls and Instruments

The following are the descriptions and functions of the controls and instruments of the shelter components. For information concerning the controls and instruments of the major components, refer to the applicable technical manuals (appx I).

a. Power Distribution Panel (fig. 10).

Control, indicator, or instrument	Description and function	
MAIN circuit breaker switch	Two internally ganged 60-ampere circuit breaker switches. Provides overload protection for 115-volt, ac input source and ON-OFF control of ac power to individual circuit breaker switches.	
Individual circuit breaker switches:	Provide ON-OFF control and overload protection for individual circuits as follows:	
	Rating (amperes)	*Circuit*
1 LIGHTS	15	Fluorescent lights.
2 BLOWERS	15	Exhaust blowers No. 1 and No. 2 receptacles.
3 HEATER 1	20	Electric heater power receptacle HEATER 1 (fig. 14).
4 CONVENIENCE	15	Convenience receptacles.
5 EQUIPMENT	15	INTERCOM receptacle (fig. 11) for LS-147(*)/FI.
6 HEATER 2	20	Electric heater power receptacle HEATER 2 (fig. 13).
Voltmeter	Ac voltmeter with 0- to 150-volt scale. Indicates ac input voltage from external power source.	
Ammeter	Ac ammeter with 0- to 150-ampere scale. Indicates total current drain from external power source by AN/MSC-31 components in use.	
Glowlamp (6)	Neon lamp. Glows when associated circuit breaker switch is on.	

b. Lighting (fig. 14 and 16).

Control or indicator	Description and function
BLACKOUT BYPASS switch (fig. 14)	Two-position ON-OFF switch. Controls lighting in the AN/MSC-31 for blackout operation as follows: *Sw pos* — *Permits* ON — Fluorescent lights to be controlled by the individual light switches. OFF — Fluorescent lights to be controlled by door microswitch.
POWER INDICATOR NEON LAM P	Neon lamp. Lights when ac power is connected to the AN/MSC-31.
Door microswitch	Microswitch. Extinguishes fluorescent lights when shelter door is opened. (BLACKOUT BYPASS switch in OFF position.)
LIGHT 1 switch	Two-position ON-OFF switch. Controls two fluorescent lights in each row (fig. 16).
LIGHT 2 switch	Two-position ON-OFF switch. Controls two fluorescent lights in each row.
Drafting lightswitch (fig. 16)	Two-position ON-OFF switch. Controls drafting light above drafting table.

c. Blowers.

Control	Description and function
BLOWER 1 switch (fig. 16)	Two-position ON-OFF switch. Controls operation of BLOWER 1.
B LOWER 2 switch	Two-position ON-OFF switch. Controls operation of BLOWER 2.

d. Electric Heater (fig. 17).

Control	Description and function
HEAT-OFF-FAN switch	Three-position toggle switch. *Sw pos* — *Function* HEAT — Applies ac power to heater element and fan motor. OFF — Disconnects ac power from heater element and fan motor. FAN — Applies ac power to fan only.
TEMPERATURE CONTROL	Thermostat control. Regulates the temperature provided by the heating element.
RESET pushbutton	Pushbutton which resets the protective circuit breaker within heater.

e. LS-147(*)/FI (fig. 18).

Control or indicator	Description and function
OFF-SEND control	Ganged on-off potentiometer. Turns ac power on and off and controls volume of output signal. Switch must be on to originate a call.
PRESS TO TALK switch	Two-position nonlocking switch. Switch must be pressed to originate a call.
RECEIVE control	Potentiometer. Controls speech volume from loudspeaker.
Glowlamp	Neon lamp. One-half of lamp glows when internal dc power supply is operating.

23. Energizing Ac Circuits

Warning: **To prevent asphyxiation, the shelter must be ventilated at all times when occupied.**

Prepare the AN/MSC-31 for full operation as follows:

a. Connect the AN/MSC-31 to the available power source (para 17); the POWER INDICATOR NEON LAMP (fig. 14) will light .

b. Operate the MAIN circuit breaker switch on the power distribution panel (fig. 10) to ON.

c. Operate t h e BLACKOUT BYPASS switch (fig. 14) to ON. When blackout conditions are required, operate the switch to OFF.

d. Operate circuit breaker switch No. 1 (LIGHTS) to ON.

e. operate the LIGHT 1 and LIGHT 2 switches (fig. 14) to ON. Operate the drafting light switch (fig. 16) to ON as required.

f. Check to see that the voltmeter (fig. 10) indicates 115 volts at+ 10.

g. Check to see that the "ammeter indicates nearly O ampere.

h. operate circuit breaker switches No. 2 through 6 to ON.

24. Operating Procedures

Note. Refer to the applicable technical manuals (appx I) for operating procedures of the major components. Refer to paragraph 22 for descriptions and functions of controls and instruments of shelter components.

Warning: **To prevent asphyxiation, the shelter must be ventilated at all times when occupied.**

a. Electric Heater (fig. 17). Insert the power cord connector plug into the appropriate HEATER receptacle (fig. 13 and 14) and operate. the HEAT-OFF-FAN switch to the desired position.

Note. If the HEAT-OFF-FAN switch is operated to HEAT, set the TEMPERATURE CONTROL to the desired setting.

b. Exhaust Blowers. Connect the power cord connector plug into the appropriate blower receptacle (fig, 16) and operate the BLOWER switch to ON.

Caution: **Open the air vent cover (fig. 5) and the exhaust blower vent cover on the front of the shelter before operating the blowers.**

c. lntercommunication S t a t i o n LS-147(*)FI (fig, 18).

(1) Insert the power cord connector plug into the INTERCOM power duct receptacle (fig. 11) and connect the ground lead to the ground terminal provided adjacent to the receptacle.

(2) Insert the signal cord plug into the INTERCOM signal duct jack below the SB-22(*)/PT (fig. 11).

(3) Operate the OFF-SEND switch to 5 (approximately midposition). The glowlamp will light,

(4) Operate the PRESS TO TALK switch and speak into the speaker-microphone on the front panel; release the PRESS TO TALK switch to receive.

Note. The OFF-SEND switch does no have to be operated to receive a call.

(5) Operate the RECEIVE control to regulate the volume of an incoming call.

Note. The LS-147(*)/FI may be moved to an operating position on the roadside tabletop (fig. 12) by removing it from its mounting position (para 37), Insert the power cord connector plug and the signal cord into the appropriate CONVENIENCE 4 receptacle and INTERCOM jack, respectively; connect the power cord ground lead.

25. Operation Under Adverse Climatic Conditions

Operations C e n t e r, Communications AN/MSC-31 can be operated in extremely cold or hot climates. The shelter offers complete protection from the elements for personnel and equipment; however, when the entrance boxes are exposed to adverse conditions, the following precautions are necessary:

a. Cold Climates. Extreme cold causes the cables and wires to become hard,

brittle, and difficult to handle, Be careful when handling the cables and when connecting them to the AN/MSC-31 so that kinks and unnecessary loops will not result in permanent damage. Make sure that the binding posts and cable receptacles on the outside of the AN/MSC-31 are free of frost, snow, and ice by replacing the covers on the receptacles and closing the covers on the entrance boxes when they are not in use. Lower the folding side panels when the entrance box covers are open. Replace the connector cover as soon as the connector is disconnected from the equipment; never drag or place an open connector in the snow.

b. Hot Climates. In hot, dry climates, the connectors, receptacles, and binding post are subject to damage from dirt and dust. Lower the folding side panels when the entrance box covers are open. Close the covers on the entrance boxes when they are not in use and replace the covers on the cable connectors. Never drag or place an open connector on the ground.

c. Warm, Damp CIimates. In warm, damp climates, the equipment is subject to damage from moisture and fungi. Wipe all moisture and fungi from the exterior of the equipment with a lint-free cloth.

26. Stopping Procedures

Note.. To turn off the power in an emergency, operate the MAIN circuit breaker switch to OFF.

a. Major Components. Stopping procedures are not required for the SB-22(*)/PT or the TA-312/PT. Refer to paragraph 52 for procedures to be performed for storage or transit of the AN/MSC-31.

b. S-183/MSC-31 Components.

(1) *Electric heaters.* Operate the TEMPERATURE CONTROL to its lowest setting and the HEAT-OFF-FAN switch to OFF.

(2) *Intercommunication Stat ion LS-147(*)/FI.* Operate the OFF-SEND switch to OFF.

Note. After the other S-183/MSC-31 components ((1) and (2) above) have been turned off, allow the exhaust blowers to remain in operation for at least 10 minutes to evacuate all smoke and fumes before completing the stopping procedures and closing the shelter door.

(3) *Blowers.* Operate the BLOWER 1 and BLOWER 2 switches to OFF.

c. Circuit Breaker and Light Switches. Operate all circuit breaker and light switches to OFF.

CHAPTER 4
MAINTENANCE INSTRUCTIONS

Section 1. OPERATOR'S MAINTENANCE

27. General Maintenance

Clean and inspect all components of the AN/MSC-31 regularly. Detailed maintenance procedures pertaining to the major components are covered in the appropriate technical manuals (appx I).

a. Use a clean, dry, lint-free cloth or brush for dusting.

b. For cleaning, if necessary, moisten the cloth or brush with Cleaning Compound (FSN 7930-395-9542); after cleaning, wipe dry with a cloth. Do not use cleaning compound on electrical contacts.

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

c. Dry, compressed air, not exceeding 60 pounds per square inch, may be used to remove dust from inaccessible places.

Warning: **Compressed air is dangerous and can cause serious damage to eyes, ears, nose, and other parts of the body. It also can cause mechanical damage to the equipment. Do not use compressed air to dry parts where cleaning compound has been applied.**

28. Tools and Materials Required

a. Tools and Test Equipment. The tools and test equipment required for maintenance of the major components are listed in the applicable technical manuals (appx I). The tool roll kit (fig. 2) is required for maintenance of the S-183/MSC-31.

Note. A list of running spares required for operator's maintenance of the S-183/MSC-31 is contained in appendix III.

b. Materials.

Item	Federal stock No.
Abrasive, sheet: sandpaper #0000; 9 x 12 in. sheets.	627500-0000[a]
Cloth, textile: cheesecloth; lint-free; 36 in.	408-2701[b]
Orangestick	5120-408-4036
Tape TL-83	5970-184-2003
Cleaning compound	7930-395-9542
Abrasive, sheet: crocus 9 x 11 in.	(Ord)[d]
Grease, Graphite, Aircraft MIL-G-7187 (GGA)	9150-223-4001[c]
Lubricating Oil, Internal Combustion Engine MIL-L-2104A (OE-10)	9150-265-9425[c]
Polish, metal: paste	6G1516[a]
Lubricating Oil, General Purpose, Preservative MIL-L-644A (PL special)	9150-273-2389[c]

[a]Signal Corps stock number.
[b]Interim Federal stock number.
[c]Quartermaster Corps stock number.
[d]Ordnance Corps items.

29. Daily Preventive Maintenance

a. Check for completeness and general condition of the equipment and spare parts.

b. Remove dirt, dust, grease, and moisture from the exposed parts.

c. Remove rust, corrosion, fungi, dirt, and moisture from the binding posts, cable connectors, and receptacles.

d. Inspect the field wire connections at the binding posts for good contact.

e. Inspect the ground rods and ground strap connections for good contact.

f. Inspect all exposed cables for kinks, strains, moisture, fungi, loose terminals, and for frayed, cut, or damaged insulation.

g. Tighten loose mounting hardware.

30. Weekly Preventive Maintenance

a. Clean and tighten the components, racks, mountings, installations, cables, and connectors.

b. Inspect the components,. racks, mountings, installations, and exposed metal surfaces for rust, corrosion, and moisture.

c. Inspect the cables and wires for cuts, breaks, fraying, deteriorations, kinks, and strain.

d. Inspect for looseness of accessible items, such as component switches, circuit breaker switches, signal and ac cable assemblies, and glowlamps.

e. Clean the air fi1ter, nameplates, meters, and clock.

f. Inspect meters and clock for damaged glass and cases.

g. Wind the clock (fig. 13).

h. Inspect the shelter for support, installation, rust, corrosion, and moisture.

i. Check the entrance boxes, exhaust blower vents, and air filter intake for cracks, leaks, damaged gaskets, dirt, and grease.

j. Check for normal operation.

31. Monthly Preventive Maintenance and Lubrication

a. Lubricate locks and l a t c h es. Use Grease, Graphite, Aircraft MIL-G-7187 (GGA) .

b. Lubricate the hinges on the shelter door and on the entrance boxes, exhaust blower vent, and air vent covers. Use oil (PL special or OE-10).

c. Lubricate all metal-to-metal moving parts.

Caution: **More frequent lubrication may be required for items listed above in excessively hot, humid, or dusty areas. Do not overlubricate.**

d. Remove the shelter air filter and soak it in cleaning compound, benzine, or naphtha. Shake loose dirt from the air filter, air-dry it, and replace it in its mounting.

e. Check the fire extinguishers (fig. 13 and 14) for a broken wire seal on the trigger mechanism. If the extinguisher has been used, or if there are any signs of leakage, request that it be recharged by appropriate personnel.

32. Equipment Performance Checklist

The equipment performance checklist is used to systematically check the AN/MSC-31. Only first echelon maintenance corrective measures are given in the Corrective measures column. If the corrective measures given do not correct the fault, request higher echelon maintenance. When using the checklist, start at the beginning and follow each step consecutively. If the trouble is suspected in a particular area, start checking at that point and continue the steps sequentially. Refer to the power schematic-wiring diagram (fig. 37) when checking the S-183/MSC-31 ac circuits. When a fault or trouble is located in a major component item, refer to the applicable technical manual (appx I). First echelon repair procedures are given in paragraphs 33 through 39.

Item No.		Item	Action or condition	Normal indication	Corrective measures
PREPARATORY		Ac circuits	All equipment and power duct switches at OFF; energize ac circuits in the sequence given in paragraph 23.	As each circuit breaker switch is operated to ON, associated glowlamp lights.	*a.* Reset circuit breaker switch. *b.* Check ac power source. Check power cable assembly and replace if defective. *c.* Perform appropriate repair procedure (para 33 through 39).

Item No.		Item	Action or condition	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE		Shelter components.....	Operate as outlined in paragraph 24.	Component functions; glowlamp associated with LS-147 (*)/FI lights. As components are operated, current indication on power distribution panel ammeter increases (approximately 3 amperes for each blower and 10 amperes for each electric heater).	*a.* Replace fuses or lamp (para 34) and press RESET pushbutton (para 22*d* on electric heaters, as required. *b.* Perform appropriate repair procedure (para 33 through 39).
		Major components.....	Operate major components as outlined in appropriate technical manuals (appx I).	Communication is possible on all signal circuits connected to the AN/MSC-31.	*a.* Check suspected major component for proper connections (para 11 and 12). *b.* Check signal connections to AN/MSC-31 (para 19 and 20). *c.* Perform operator's maintenanc e as outlined in appropriate technical manual (appx I).
STOP		Major components....	Do not require stopping procedures.		
		Shelter components...	Perform stopping procedure as outlined in paragraph 26.		

33. Replacement of Hand Lantern Batteries and Bulb

(fig. 26)

The hand lantern requires four Batteries BA-30 which are not supplied with the lantern. A spare bulb is stored inside the reflector case.

a. Replacing Batteries.

(1) Pull the battery case latch forward and raise the battery case cover.

(2) Insert four batteries in the case with the center brass caps up.

(3) Snap the battery case cover shut.

h. Replacing Bulb.

(1) Press the button on the bottom of the reflector case and lift out the reflector.

(2) Unscrew the brass cap at the rear of the bulb and remove the bulb and spring.

(3) Remove the spare bulb from inside the reflector case. Insert the bulb and spring in the reflector and tighten the brass cap.

(4) Replace the reflector in the reflector case and snap it securely in position.

34. Removal and Replacement of Lamps and Fluorescent Lamp Starters

a. Fluorescent Lamp.

(1) Pull gently to remove the light shield from the fourescent light fixture.

(2) Rotate the lamp in its sockets one-quarter turn and remove it from the fixture.

(3) Remove the spare lamp from its storage brackets (fig. 16).

(4) Align the lamp with the slots in the fixture sockets.

(5) Press in and rotate the lamp one-quarter turn to seat the pins firmly.

(6) Replace the light shield on the fluorescent light fixture.

b. Fluorescent Lamp Starter.

(1) Remove the light shield and lamp (a(1) and (2) above) to expose the starter.

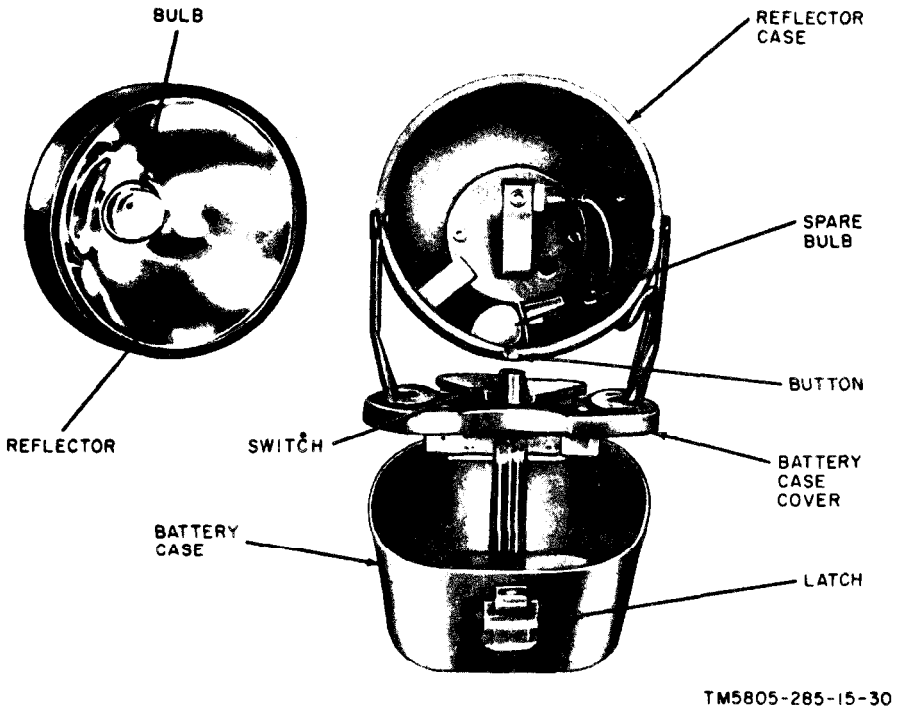


Figure 26. Hand lantern, partially disassembled.

(2) Press in and twist the starter one-quarter turn counterclockwise and withdraw it.
(3) Remove the spare starter from its storage bracket (fig. 16). Insert the new starter, press in, and turn it clockwise until it seats.
(4) Replace the lamp and light shield (a(4) through (6) above).

c. Neon and Incandescent Lamps. To remove a defective neon or incandescent lamp, unscrew it from its socket.

35. Removal and Replacement of Electric Heater

(fig. 17)

a. Removal.
(1) Operate the HEATER-OFF-FAN switch to OFF.
(2) Remove the power cord connector plug from the HEATER receptacle (fig. 12 and 14).
(3) Loosen the four turnlock fasteners that secure the heater to the mounting base.
(4) Remove the mounting base knob.
(5) Slide the. heater to the right until it clears the flange on the mounting base and lift out the heater.

b. Replacement.
(1) Slide the heater onto the mounting base so that it engages the flanges.
(2) Tighten the four turnlock fasteners.
(3) Replace and tighten the mounting base knob.

36. Removal and Replacement of Exhaust Blower Cover

a. Operate the BLOWER switch to OFF (fig. 16).

b. Remove the power cord connector plug from its receptacle.

c. Remove the 10 screws that secure the cover to the front wall and lift off the cover.

d. Replace the cover by following the procedures in a through c above in the reversed order.

37. Removal and Replacement of Intercommunication Station LS-147(*)/FI

a. Remove the power cord connector plug from the INTERCOM power duct receptacle (fig. 11).

b. Release the mounting clamps (fig. 20) by loosening the captive wingnuts.

c. Disconnect the signal cord from the binding posts on the rear of the LS-147(*)/FI.

d. Remove the LS-147(*)/FI from its mounting position.

e. Replace the LS-147(*)/FI by following the procedures in *a* through *d* above in the reversed order.

38. Removal and Replacement of SB-22(*)/PT

a. Remove the wingnuts that secure the SB-22(*)/PT retaining bar (fig. 20) and raise the retaining bar.

b. Slide the SB-22(*)/PT forward and remove it from the rack mounting.

c. Remove the batteries from the SB-22(*)/PT (TM 11-5805-262-12).

d. Disconnect the wires from the binding posts on the rear of the SB-22(*)/PT.

e. Replace the SB-22(*)/PT by the following appropriate procedures in paragraph 11.

39. Removal and Replacement of TA-312/PT (fig. 21)

a. Remove the telephone leads from the TA-312/PT binding posts.

b. Remove the flathead screw on the side of the mounting bracket.

c. Lift the TA-312/PT out of the mounting bracket and remove the holding plate from the buzzer recess on the side of the TA-312/PT.

d. Remove the batteries from the TA-312/PT (TM 11-2155).

e. Replace the TA-312/PT by following the appropriate procedures in paragraph 12.

Section II. ORGANIZATIONAL, FIELD, AND DEPOT MAINTENANCE

Note. The maintenance allocation ohart (appx II) indicates the maintenance functions and tools authorized for each maintenance echelon.

40. Troubleshooting Information

a. Procedures for localizing troubles within the AN/MSC-31 are given in the equipment performance checklist (para 32).

b. Procedures for troubleshooting components, parts, and wiring of the S-183/MSC-31 are given in paragraph 41.

c. Procedures for troubleshooting the major components of the AN/MSC-31 are given in the applicable technical manuals (appx I). Refer to paragraphs 38 and 39 for removal and replacement of major components.

41. Troubleshooting and Repair Procedures

Warning: **Be extremely careful when performing the troubleshooting procedures; dangerous voltages are present in the equipment.**

Isolate defective components, parts, or wiring of the S-183/MSC-31 by making appropriate voltage, resistance, or continuity tests with Multimeter AN/URM-105. Refer to figure 37 when isolating trouble in the power circuits and to figure 36 for signal circuits. Repair or replace components, parts, or wiring. Use the chart below for references to repair procedures.

Part or component	Reference	
	Para	Fig. No.
Ammeter	42*d*	10 and 27
Circuit breaker switches No. 1 through 6.	42*b*	10 and 27
Current transformer	42*c*	10 and 27
Door microswitch	45*b*	
Drafting light	47	16
Electric heater	43	28 and 29
Exhaust blower	44	30 and 31
Fluorescent light fixture	46	32
Intercommunication Station LS-147(*)/FI.	38	
MAIN circuit breaker switch	42*b*	9 and 31
Power duct switches	45*a*	37
Shelter repairs	49	
26-pair cable receptacle	48	33 and 34
Voltmeter	42*d*	10 and 27

42. Power Distribution Panel Repairs (fig. 27)

a. Preliminary Procedures. Operate the MAIN circuit breaker switch to OFF (fig. 10) and disconnect the ac power cable at the power and signal entrance box (fig. 8). Remove the four screws that secure the power distribution panel cover and remove the cover.

b. Removal and Replacement of Circuit Breaker Switch.

(1) Grasp the defective circuit breaker switch and pull it straight out from the panel.

(2) Tag and disconnect the wires connected to the circuit breaker switch.

(3) Connect the wires ((2) above) to the replacement circuit breaker switch and press it back into the panel.

c. Removal and Replacement of Current Transfomer.

(1) Remove the four screws that hold the meter panel to the power distribution panel.

(2) Tag and disconnect the current transformer leads from the ammeter.

(3) Remove the two bolts that secure the current transformer inside the panel and remove the current transformer.

Note. Count the number of turns of heavy black wire around the current transfomer before performing the procedure in (4) below.

(4) Disconnect the black wire wound around the current transformer from the MAIN circuit breaker switch and carefully unwind the wire from the current transformer.

(5) Wind the black wire around the replacement transformer.

Caution: **Be sure that the number of turns is the same as on the original transformer. Reconnect the black wire to the MAIN circuit breaker switch (fig. 37).**

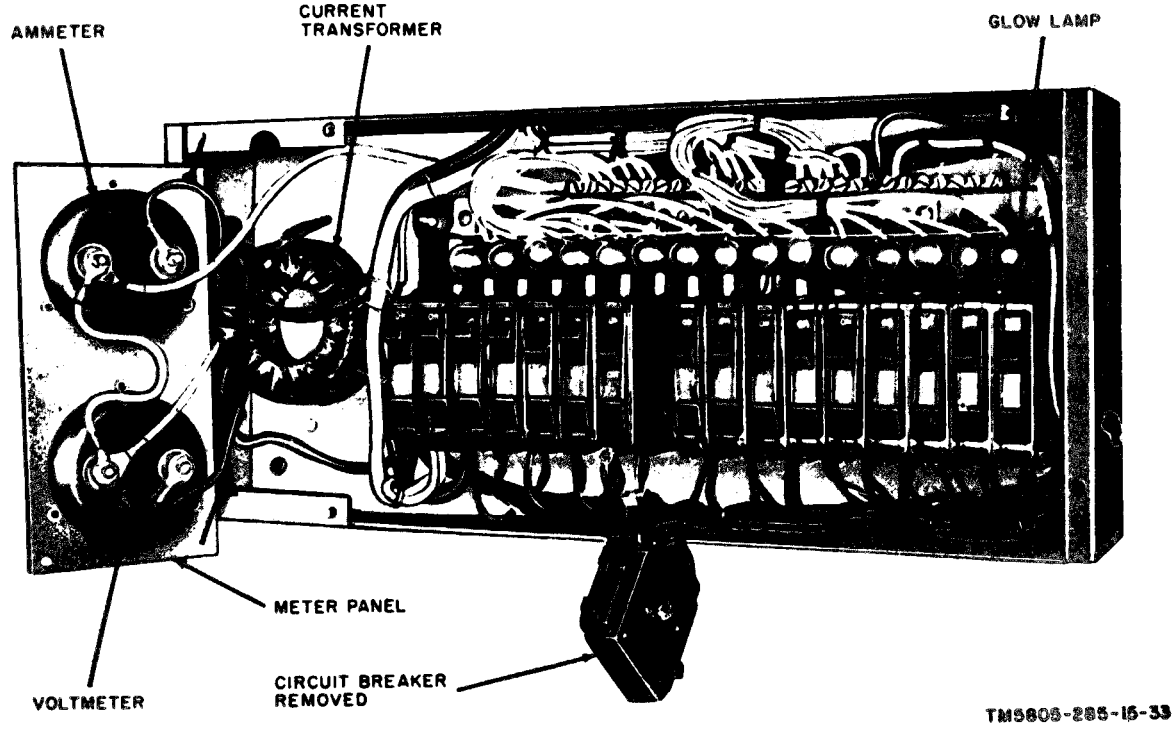


Figure 27. Typical power distribution panel, meter panel and circuit breaker switch removed.

(6) Position the replacement transformer inside the panel and replace and tighten the bolts.
(7) Connect the transformer leads to the ammeter.
(8) Replace the meter panel and tighten the screws.

d. Removal and Replacement of Meter.
(1) Remove the bolts that hold the meter to the meter panel and lift out the meter,
(2) Tag and disconnect the leads from the meter terminals.
(3) Connect the leads to the replacement meter.
(4) Position the meter in the panel and tighten the bolts.

43. Electric Heater Repairs
(fig. 28 and 29)

a. Preliminary Procedures. Before performing the repair procedures in *b* through *g* below, remove the heater from its mounting base (para 35) and remove the backplate and bottom plate as follows:
(1) Remove the four screws that secure the bottom plate to the heater.
(2) Remove the two screws that secure the backplate to the bottom plate, and remove the bottom plate.
(3) Loosen the power cord clamp on the backplate.
(4) Remove the four screws that secure the backplate to the heater and remove the backplate.

b. Removal and Replacement of Power Cord.
(1) Loosen the screws that secure the power cord leads to terminal board TBI (fig. 29).
(2) Pull the power cord out of the clamp in the backplate.
(3) Insert a new power cord through the clamp in the backplate.
(4) Connect the leads to terminal board TB1.

c. Removal and Replacement of Temperature Control Unit.
(1) Loosen the screws that connect the two wires to the temperature control unit.
(2) Remove the two screws that secure the unit to the cabinet and remove the unit.
(3) Insert the TEMPERATURE CONTROL switch on the replacement unit through the slot in the cabinet. Replace and tighten the screws.
(4) Connect the two wires to the temperature control unit.

d. Removal and Replacement of HEAT-OFF- FAN Switch.
(1) Tag and unsolder the three wires and strap connected to the switch.
(2) Remove the ringnut that secures the switch through the top of the cabinet and remove the switch.
(3) Solder the strap and the three wires to the replacement switch.
(4) Position the switch and tighten the ringnut.

e. Removal and Replacement of Reset Circuit Breaker.
(1) Loosen the screws that connect the two insulated wires to the circuit breaker. Loosen the bolt that secures the bare copper wire to the heating element.
(2) Remove the mounting screws that fasten the circuit breaker to the cabinet and remove the circuit breaker.
(3) Connect the two insulated wires ((1) above) to the replacement circuit breaker. Connect the bare copper wire to the heating element.

Caution: **Do not alter the shape or length of the bare copper wire.**

(4) Position the circuit breaker and replace and tighten the mounting screws.

f. Removal and Replacement of Motor and Impeller.
(1) Remove the four screws that secure the motor bracket to the cabinet and lift out the motor and bracket.
(2) Tag and disconnect the motor leads at the HEAT-OFF-FAN switch and at the taped splice in the heating element cable.
(3) Remove the three screws that secure the motor to the bracket.

(4) Unscrew the metal fastener that secures the impeller to the motor shaft and remove the impeller.
(5) Position and secure a replacement motor in the bracket. Slide the impeller onto the motor shaft and tighten the fastener.
(6) Replace the motor bracket in the cabinet and connect the motor leads ((2) above).

g. Removal and Replacement of Heating Element.

(1) Remove the four screws that secure the motor bracket to the cabinet. Remove the motor bracket.
(2) Loosen the bolt that secures the bare copper wire from the circuit breaker to the heating element and remove the wire.

Caution: **Be extremely careful when removing this lead. Do not alter the length or shape of the bare copper wire.**

(3) Tag and remove the wire connections from the plug-in terminals on the heating element.
(4) Remove the screws that secure the heating element to the cabinet. Be careful not to bend the louvers on the front of the cabinet during the removal procedure.
(5) Position the replacement element and replace and tighten the screws.
(6) Connect the wires to the plug-in terminals of the heating element.
(7) Replace the bare wire connected from the circuit breaker ((2) above).
(8) Position the motor bracket in the cabinet and replace and tighten the screws.

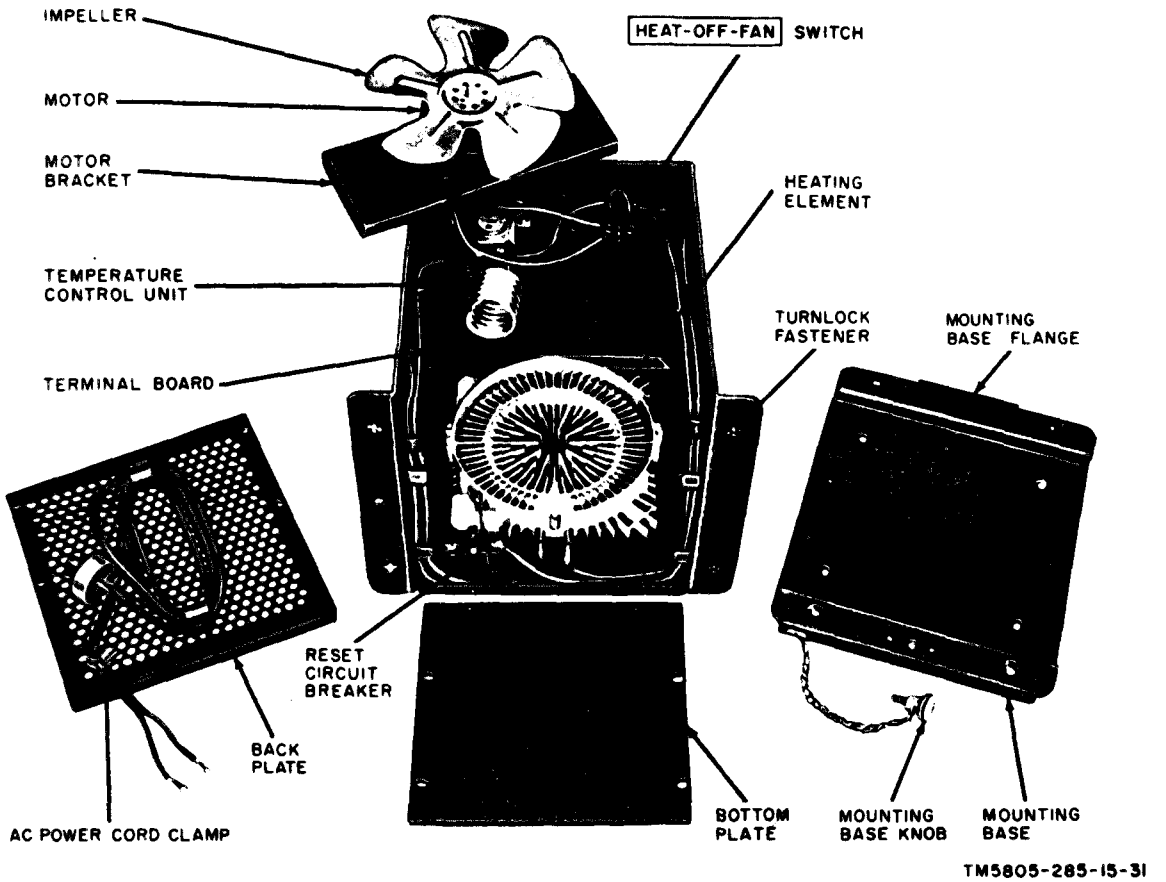


Figure 28. Electric heater, partially disassembled, rear view.

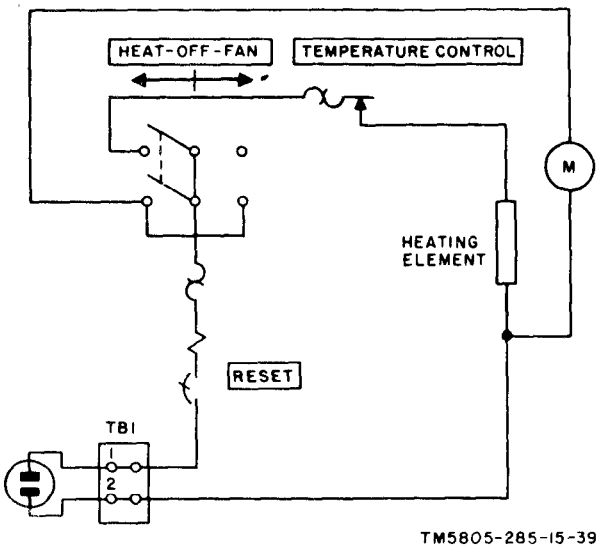


Figure 29. Electric heater, schematic diagram.

44. Exhaust Blower Repairs
(fig. 30 and 31)

a. Preliminary Procedures. Before performing the repair procedures in *b* through *d* below, remove the exhaust blower cover (para 36) and remove the power cord connector plug from its receptacle.

b. Removal and Replacement of Capacitor.

(1) Loosen the capacitor clamp screw.
(2) Remove the power cord clamp from the motor bracket.
(3) Slide the capacitor out of the clamp.
(4) Tag and disconnect the motor leads and the power cord from the capacitor terminals.
(5) Connect the motor leads and the power cord to the replacement capacitor (fig. 31).
(6) Slide the capacitor into the clamp and tighten the screw.
(7) Replace the power cord clamp.

c. Removal and Replacement of Power cord.

(1) Remove the capacitor fro m the clamp (b(2) through (4) above).
(2) Tag and disconnect the power cord leads from the capacitor and motor leads.
(3) Connect the new power cord to the capacitor and motor leads (fig. 31).
(4) Slide the capacitor into the clamp and tighten the screw.
(5) Replace the power cord clamp.

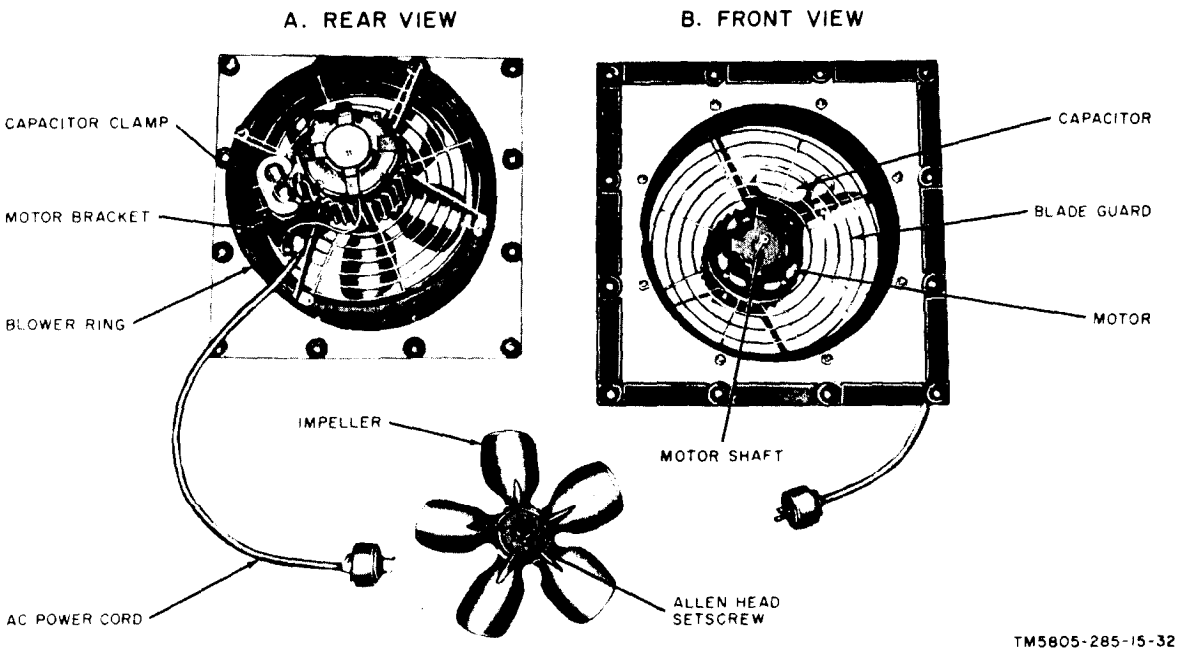


Figure 30. Exhaust blower, front and rear view.

d. Removal and Replacement of Motor and Impeller.

(1) Remove the two screws from the bottom edge of the plate that holds the exhaust blower to the front wall.
(2) Lift the exhaust blower away from the wall.
(3) Remove the four bolts that secure the blade guard and motor brackets to the blower ring.
(4) Tag and disconnect the motor leads from the capacitor and power cord.
(5) Remove the power cord clamp.
(6) Remove the four screws that secure the motor mounting bracket to the motor.
(7) Loosen the two Allen-head set screws that secure the impeller to the motor shaft and remove the impeller.
(8) Slide the impeller (setscrews toward the motor) onto the shaft of the new motor and tighten the setscrews.
(9) Secure the motor bracket to the new motor.
(10) Connect the motor leads to the capacitor and power cord (fig. 31).
(11) Replace the power cord clamp.
(12) Position the motor bracket and blade guard on the blower ring.
(13) Replace and tighten the bolts that secure the motor bracket and blade guard to the blower.
(14) Replace the exhaust blower by reversing the procedures given in (1) and (2) above.
(15) Replace the exhaust blower cover (para 36).

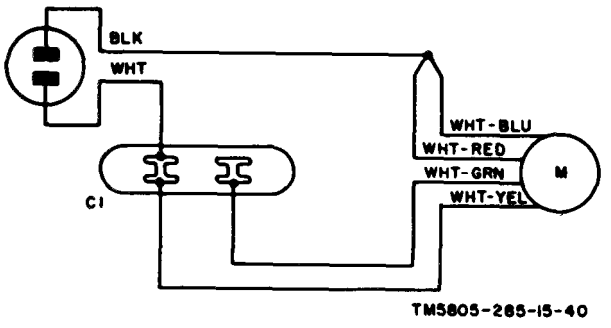


Figure 31. Exhaust blower, schematic-wiring diagram.

45. Removal and Replacement of Switches

a. Power Duct Switches.

(1) Operate the associated circuit breaker switch to OFF (fig. 10).
(2) Remove the screws from the brackets at each end of the switch. Remove the two brackets and "the switchplate.
(3) Remove the s witch mounting screws and the switch.
(4) Tag and remove the wires from the switch and connect them to thereplacement switch (fig. 37).
(5) Replace the switch by the procedures given in (1) through (4) above.

b. Door Microswitch.

(1) Disconnect ac power from the AN/MSC-31 .
(2) Carefully pry off the power duct cover between the POWER INDICATOR NEON LAMP and LIGHT 1 switch (fig. 14) .
(3) Tag and remove the wires from the NO and C terminals of the switch (fig. 37).
(4) Unscrew the ringnut from the door side of the switch, and remove the switch.
(5) Replace the switch by reversing the procedures given in (1) through (4) above.

46. Removal and Replacement of Fluorescent Light Fixture Components

Note. The fluorescent light fixtures are fabricated as part of the power duct. The radiofrequency filters are sealed units; they are not repairable and are replaced as a complete unit.

a. Operate the associated LIGHT switch to OFF; remove the light shield and the fluorescent lamp (para 34 *a).*

b. Carefully pry off the associated power duct cover.

c. Tag and disconnect the wires from the defective component (fig. 32) and remove the defective component from the power duct.

d. Secure the replacement component in the power duct.

e. Connect the wires to the replacement component.

f. Replace the cover on the power duct.
g. Replace the fluorescent lamp and light shield (para 34 *a)*.

47. Removal and Replacement of Drafting Light

(fig. 16)

Warning: **Operate the LIGHTS circuit breaker switch to OFF and use the hand lantern or droplight during replacement or repair of the drafting light.**

a. Operate the drafting light switch (fig. 16) to OFF.
b. Remove the incandescent lamp from the drafting light.
c. Remove the screws that secure the lamp socket in the drafting light assembly; tag and disconnect the socket wiring.
d. Tag and disconnect the wiring to the drafting light switch, and remove the switch.
e. Remove the screws that secure the drafting light assembly to the power duct.
f. Replace the drafting light by reversing the procedures given in *a* through e above.

(4) At the power and signal entrance panel, remove the 26-pair cable receptacle cover.
(5) Lift the receptacle insert (fig. 34) from the front of the 26-pair cable receptacle housing.
(6) Tag and unsolder the wires from the receptacle insert.

b. Replacement.

(1) Connect the cable wires to the replacement receptacle insert (fig. 35).

Caution: **Be extremely careful when connecting and soldering wires. Excessive heat or pressure will damage the insert.**

(2) Carefully place the insert in the 26-pair cable receptacle housing (fig. 34).

Caution: **Be careful not to damage the wires when replacing screws or when taking up slack in the 26-pair cable.**

(3) Replace the insert clip and tighten the mounting screws *(a* (2) above).

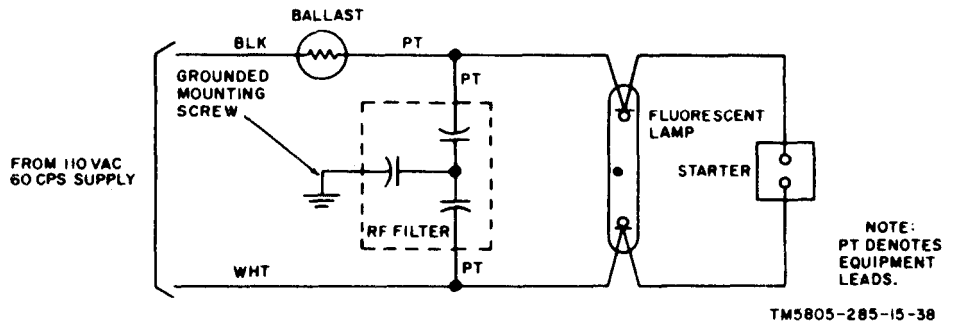


Figure 32. Fluorescent light fixture, schematic-wiring diagram.

48. Removal and Replacement of 26-Pair Cable Receptacle

a. Removal.

Remove the screws that fasten the cover to the power and signal entrance panel (fig. 14) and remove the cover.
(2) Remove the mounting screws that secure the insert clips (fig. 33 and 34).
(3) Unfasten the cable clip nearest the 26-pair cable receptacle mounting.
(4) Fasten the cable clip (a(3) above),
(5) Replace the power and signal entrance panel cover and the 26-pair cable receptacle cover.

49. Shelter Maintenance

a. The maintenance or repair of the S-183/MSC-3l racks, frames, brackets, and assorted hardware is accomplished by removing and replacing screws or bolts. When any exterior component of the shelter is replaced, be sure that the gasket is

adequately sealed to the shelter to prevent leakage. The responsibilities for shelter maintenance are listed in the maintenance allocation chart (appx II).

b. The exterior skin of the shelter is susceptible to puncturing or gouging during the loading and transportation procedures. Use Patch Kit, Shelter, Electrical Equipment (Federal stock No. 5410-783-6250) to repair the roof or sides of the shelter as described in the instructions provided with the patch kit and given below.

(1) Use emery cloth, sandpaper, a knife, or scraper and remove all paint or foreign matter within a 3-inch radius around the hole to be patched. Do not touch the cleaned area with hands or dirty rags.

(2) If the insulation has been gouged out, fill the hole with clean noncombustible material, if possible. *Do not use the glass cloth for this purpose.*

(3) Cut cut a piece of glass cloth that will extend 2 inches beyond the edges of the hole to be repaired.

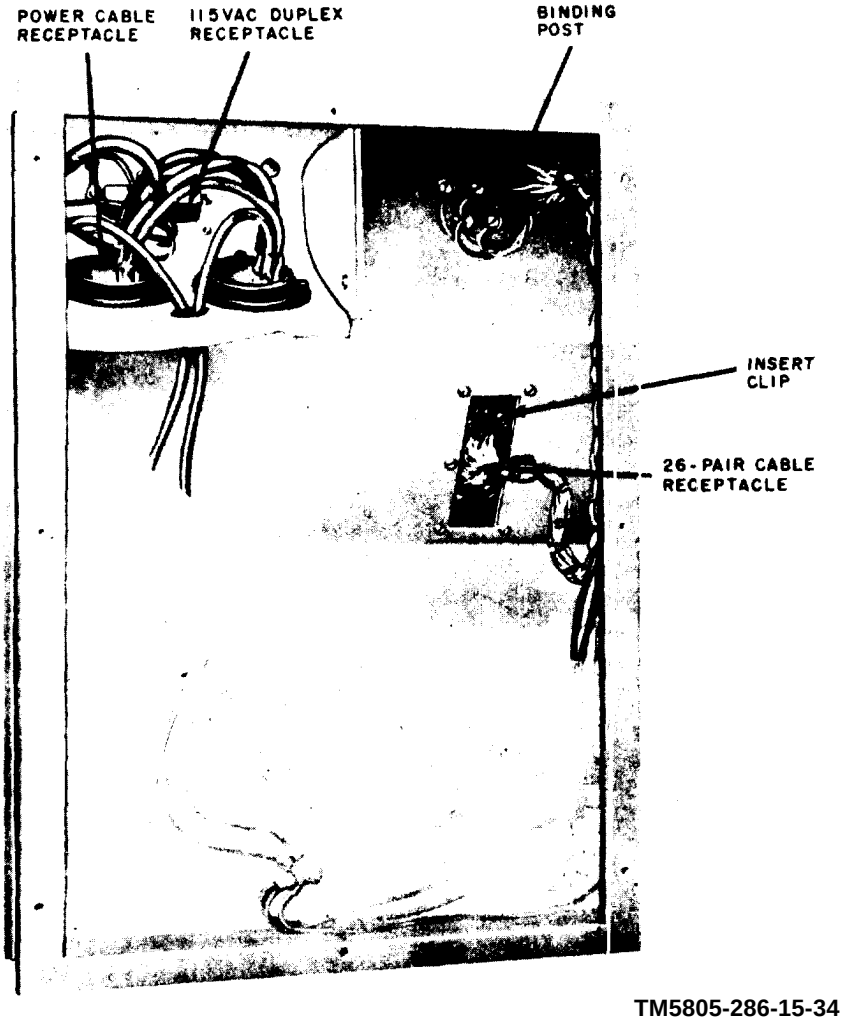


Figure 33. Power and signal entrance box, rear view.

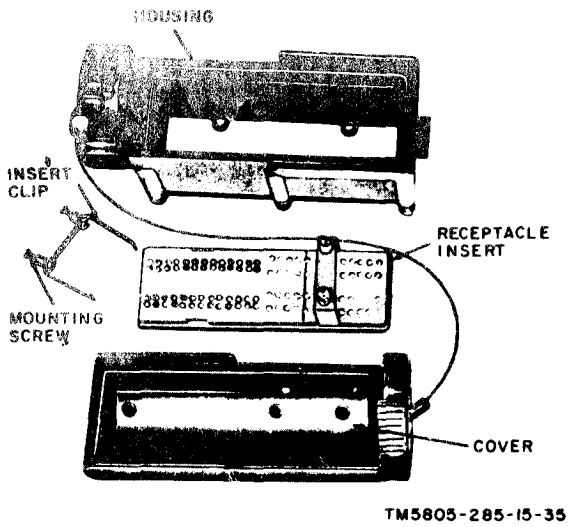


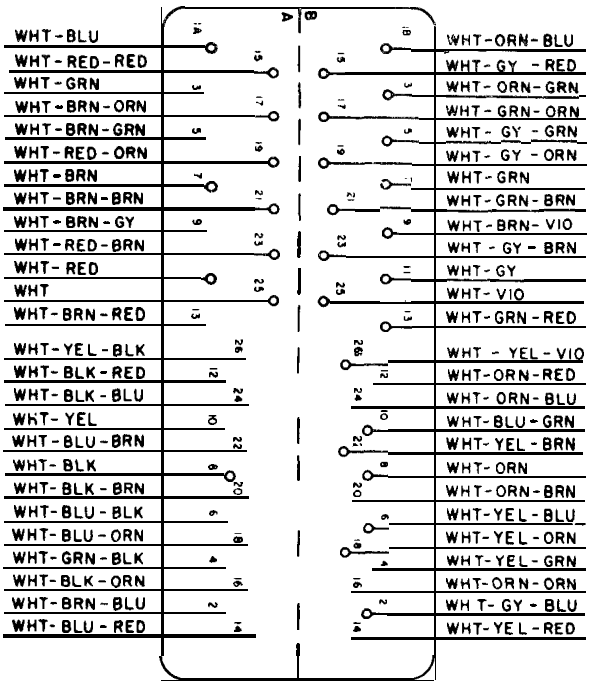
Figure 34. Cable receptacle, 26-pair, partially disassembled.

Warning: **Resin No. 797 and curing agent No. 237 are harmful to the skin. Wash thoroughly with water any area of the body that may have come in contact with the liquid resin or curing agent.**

(4). Pour 3 ounces of resin No. 797 for each square foot of surface area to be covered into the mixing cup provided. S h a k e the can thoroughly before pouring out the resin. Temperature and climate will determine the quantity of curing agent and cold weather promoter to be added to the resin. Use the eye dropper and prepare the mixture as follows:

(a) For temperatures above 55° F, fill the eye dropper to the redline with curing agent No. 237. Add the curing agent to the resin and mix thoroughly.

(b) For temperatures between 20° and 55° F, fill the eye dropper to the redline with curing agent No. 237. Fill the eye dropper to the halfway mark with cold weather promoter No. 347. Add the cold weather promoter to the combined curing agent and resin and mix thoroughly.



NOTES:

1. CONNECTOR AS SEEN FROM WIRING SIDE.
2. WIRES CONNECTED TO TERMINALS 1A AND 1B, 2A AND 2B ETC., ARE PAIRED WIRES.
3. BLUE AND RED SPARE WIRES (NOT SHOWN) ARE TURNED BACK AND SEWN INTO FORM.

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Figure 35. Cable receptacle insert, 26-pair, wiring diagram.

(c) For temperatures below 20° F, fill the eye dropper to the redline with curing agent No. 237; add the curing agent to the resin and mix thoroughly. Fill the eye dropper to the redline with cold weather promoter No. 347. Add the cold weather promoter to the combined curing agent and resin and mix thoroughly.

(5) Use the spatula (or the brush in hard-to-reach areas or when the temperature is above 55° F) and spread a liberal coating of the prepared mixture over the surface to be patched. Place the glass cloth ((3) above) over the coating and press it lightly with the applicator. Spread a second liberal coating of the mixture over the glass cloth; work from the center of the patch towards the edges.

(6) Examine the patch to see that the edges are flat and firmly embedded in the mixture. Be sure that the patch is completely covered by the mixture. Prepare and apply an additional mixture, if necessary.

Note. To accelerate curing during cold weather, heat the patch with worm, dry air or radiant heat. *Do not use an open flame.*

(7) Depending on the temperature and drying conditions, the patched surface may be sanded and painted within 4 to 24 hours after application of the patch. After the mixture in the cup and on the spatula has hardened, flex the cup and the spatula to crack the mixture. Clean the cup and spatula and store them for future use. Discard the used brush; recap and store the containers.

Caution: **Shelf-life is severely limited by heat; recap the containers tightly and store them in a coo1 dry place.**

CHAPTER 5
THEORY

50. Signal Circuits
(fig. 36)

a. SB-22(*)/PT Circuits. The external circuits for the SB-22(*)/PT connect to the SIGNAL 1 26-pair cable receptacle in the power and signal entrance box (fig. 8) and to SIGNAL 1 binding post pairs in the binding post signal entrance box (fig. 9). The 21 binding post pairs (EIA and B through E21A and B) in the binding post signal entrance box are connected in parallel with pins 1 (A and B) through 21 (A and B) of the 26-pair cable receptacle. Inside the shelter, the SB-22(*)/PT circuits connect through signal duct wiring to the SB-22(*)/PT receptacle J2, and through the SB-22(*)/PT cable stub to the SB-22(*)/PT (para 11).

b. TA-312/PT Circuits. The external circuits for the TA-312/PT's connect to the PHONE 1 through 4 binding posts or to pairs 22 through 25 of the 26-pair cable receptacle in the power and signal entrance box (fig. 8). Inside the shelter, the TA-312/PT circuits connect through signal duct wiring to the PHONE 1 through 4 jacks (J1, J3, J4, and J7) in the signal duct (fig. 11 and 12).

c. LS-147(*)/FI Circuit. The external circuit for the LS-147(*)/FI connects to the INTERCOM binding posts or to pair 26 of the 26-pair cable receptacle in the power and signal entrance box (fig. 8). Inside the shelter, the LS-147(*)/FI circuit connects through signal duct wiring to the parallel-connected INTERCOM jacks (J2, J5, and J6) in the signal duct (fig. 11 and 12).

51. Ac Power Circuits
(fig. 37)

Note. The function of each switch and indicator in the S-183/MSC-3l is covered in paragraph 22.

a. Ac Power Distribution.

(1) Ac power is applied to the AN/MSC-31 through IN POWER 115V AC receptacle J1 in the power and signal entrance box (para 17). Parallel-connected OUT POWER 115V AC receptacle J2 is provided so that another area assemblage may be connected to the AN/MSC-31 power source.

(2) Ac power from receptacle J1 is applied through the power duct wiring to MAIN circuit breaker switch CB 7 on the power distribution panel. Circuit breaker switches CB 1 through CB6 (parallel-connected) are connected in series with CB7. Wiring to the equipment and convenience receptacles is distributed through the power duct from circuit breaker switches CB 1 through CB6. Lamn DS7 is connected across the input lines to CB 7, and lights when power is applied to the AN/MSC-31. Lamps DS1 through DS6 are connected across the circuits controlled by CB1 through CB6, respectively, and light individually as each circuit breaker switch is operated to ON.

b. Grounding. The AN/MSC-31 is grounded (para 16) to reduce electrical shock hazards. Ground terminals for the AN/MSC-31 components are provided inside the S-183/MSC-31.

c. Voltmeter, Ammeter, and Frequency Meter.

(1) Voltmeter Ml is connected across the ac input circuit after MAIN circuit breaker switch CB7. It indicates the voltage applied from the power source to the AN/MSC-31.

(2) Ammeter M2 is connected to the ac input circuit through current transformer T1, It indicates the total current being draw by the operating components of the AN/MSC-31.

Figure 36. Operations Center, Communications AN/MSC-31, signal schematic-wiring diagram.

NOTES:

1. ▭ INDICATES EQUIPMENT MARKING
2. ONLY FEMALE ⟩— CONTACTS OF 26-PAIR RECEPTACLE ARE SHOWN. EACH FEMALE CONTACT IS CONNECTED IN PARALLEL WITH A MALE CONTACT
3. THE WIRE COLOR CODE FOR B AND C IS THE SAME AS SHOWN FOR A.
4. 26-PAIR RECEPTACLE VIEWED FROM PIN AND SOCKET SIDE:

5. 13-PAIR RECEPTACLE VIEWED FROM SOCKET SIDE:

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NOTES:

1. ALL WIRES ARE NO. 14 AWG UNLESS OTHERWISE SPECIFIED.
2. [ ] INDICATES EQUIPMENT MARKING.
3. RESISTOR (∿∿) ASSOCIATED WITH DS1 THRU DS8 IS PART OF EACH LAMP.
4. REFER TO FLUORESCENT LIGHT FIXTURE, SCHEMATIC-WIRING DIAGRAM.
5. THE DRAFTING LIGHT SWITCH IS PART OF THE LAMP ASSEMBLY DS16.

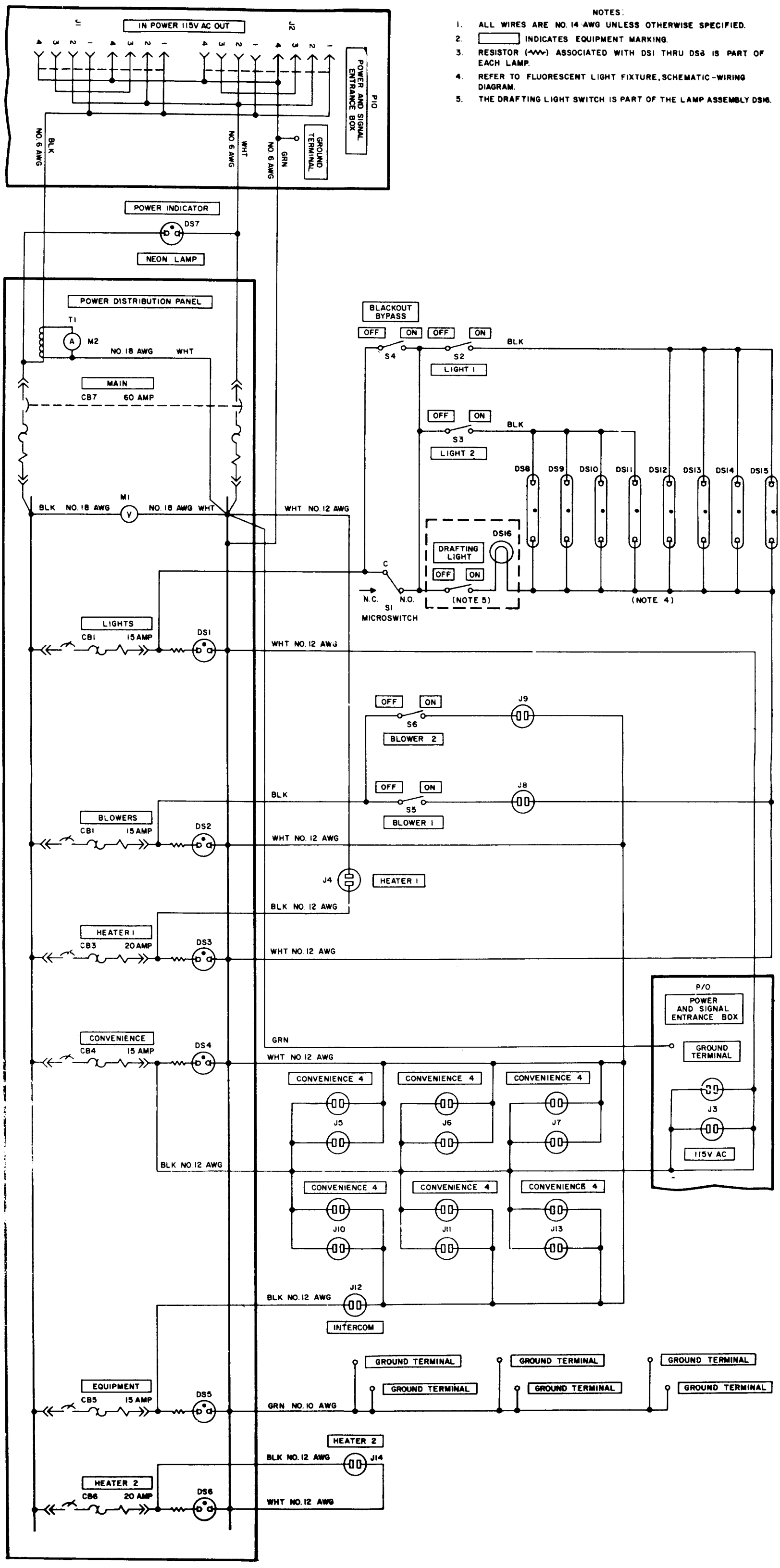

Figure 37. Operations Center, Communications AN/MSC-31, power schematic-wiring diagram.

CHAPTER 6
SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section 1. SHIPMENT AND LIMITED STORAGE

52. Disassembly of Equipment

Perform the following procedures when the AN/MSC-31 is moved to a different location or placed in storage.

a. Operate all ac power switches and circuit breaker switches to their OFF positions except the LIGHT 1 and LIGHT 2 switches, circuit breaker switch 1 LIGHTS, and the MAIN circuit breaker switch.

b. Remove the batteries from the TA-312/PT, the SB-22(*)/PT, and the hand lantern for prolonged storage or long-distance shipment.

c. Secure all components in their cases, mountings, or holders.

d. Place. all miscellaneous item in the storage drawers and cabinets, and secure the drawers and cabinets for transit.

e. Disconnect the field tires from the PHONE and INTERCOM binding posts in the power and signal entrance box (fig. 8) and from the SIGNAL 1 binding posts in the binding post signal entrance box (fig. 9).

f. Disconnect the. 26-pair cable at the power and signal entrance box and replace the covers on the receptacles and connectors .

Note. The CX-4566\U is stored in its original shelter (para 19).

g. Operate the LIGHT 1 and LIGHT 2 switches, circuit breaker switch 1 LIGHTS, and the MAIN circuit breaker switch to OFF.

h. If power was obtained from an adjacent shelter, disconnect the AN/MSC-31 power cable from the OUT POWR 115V AC receptacle at the adjacent shelter. Replace the receptacle and connector cover.

i. If power was obtained from a commercial source, proceed as follows:

(1) Turn off or disconnect the power.

(2) Disconnect the power cable connector from the power cable stub connector. Replace both connector covers.

(3) Disconnect the power cable stub from the commercial source and store it in storage cabinet No. 6.

j. Disconnect the power cable from the IN POWER 115V AC receptacle in the power and signal entrance box and replace the covers on the receptacle and connector.

k. Disconnect the ground strap from the GROUND TERMINAL in the power and signal entrance box. Close and secure the cover on the power and signal entrance box.

1. Store the ground strap in storage cabinet No. 1.

m. Close and secure the covers on the exhaust blower vents and on the air filter.

n. Remove the ground rod and store it in the shelter (fig. 14).

o. Wind the power cable on the cable reel and secure the reel to the floor of the shelter (fig. 15).

p. Recheck the area for any loose items. Be sure that all items are properly stored in the shelter.

q. Clean t h e shelter thoroughly and check to see that the drain plug is firmly in place.

r. Close and lock the shelter door.

53. Transportation

The AN/MSC-31 can be transported by truck or by helicopter. Refer to paragraph 15 for lifting, loading, and unloading instructions.

Caution: **When transporting the AN/MSC-31 by air, the outside vent covers of the shelter must be opened to equalize the pressure inside and outside the shelter.**

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

54. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 55 will be used to prevent further use of the equipment.

55. Methods of Destruction

Use any or all of the following methods to destroy the equipment.

a. Smash. Smash the controls. tubes, coils, relays, switches, capacitors, transformers, and meters; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

b. Cut. Cut all cables a n d cords and slash the wiring on the components; use axes, handaxes, or machetes.

c. Burn. Burn cords and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

d. Bend. Bend panels and cabinets.

***Warning:* Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.**

e. Explode. If explosives are necessary, use firearms, grenades, or TNT.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

APPENDIX I
REFERENCES

AR 320-5	Dictionary of United States Army Terms
AR 320-50	Authorized Abbreviations and Brevity Codes
AR 700-38	Unsatisfactory Equipment Report (Reports Control Symbol CSGLD-247(R2))
DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides and Phono Recordings
DA Pam 310-4	Military Publications: Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders
DA Pam 310-21	Military Publications: Index of Supply Manuals; Signal Corps
FM 21-5	Military Training
FM 21-6	Techniques of Military Instruction
FM 21-30	Military Symbols
SB 11-100-156	Serviceability Standards for Telephone Set TA-312/PT
TM 11-2155	Telephone Set TA-312/PT
TM 11-5805-201-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Telephone Set TA-312/PT
TM 11-5805-201-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Telephone Set TA-312/PT
TM 11-5805-257-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Generators, Ringing, Hand G-42/PT and G-42A/PT
TM 11-5805-257-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Generator, Ringing, Hand G-42/PT and G-42A/PT
TM 11-5805-262-1OP	Operator's Maintenance Repair Parts and Special Tools List for Switchboard, Telephone, Manual SB-22/PT
TM 11-5805-262-12	Operator's and Organizational Maintenance Manual, Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT
TM 11-5805-262-20P	Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Switchboard, Telephone, Manual SB-22/PT
TM 11-5805-262-35	Field and Depot Maintenance Manual, Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT

TM 11-5805-262-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Switchboard, Telephone, Manual SB-22/PT
TM 11-5830-221-12	Operator's and Organizational Maintenance Manual: Intercommunication Station LS-147B/FI
TM 11-5830-221-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools Lists: Intercommunication Station LS-147A/FI and LS-147B/FI
TM 11-5830-221-35	Field and Depot Maintenance Manual: Intercommunication Station LS-147B/FI
TM 11-5830-221-35P	Field and Depot Maintenance Repair Parts and Special Tools List: Intercommunication Station LS-147A/FI and LS-147B/FI
TM 11-5935-204-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Connector, Plug, Electrical U-185A/G
TM 11-5935-205-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Connector, Receptacle, Electrical U-187/G
TM 11-5965-207-12P	Operator's Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Handset-Headsets H-81/U and H-81A/U
TM 11-5965-207-35P	.Field and Depot Maintenance Repair Parts and Special Tools List for Handset-Headsets H-81/U and H-81A/U
TM 11-5895-224-15	Operator's , Organizational, Field, and Depot Maintenance Manual, Operations Central AN/MSC-32
TM 11-5965-224-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Handsets H-60/PT and H-165/U
TM 11-5965-233-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Headset-Microphones H-91/U and H-91A/U
TM 11-6625-203-12	Operation and Organizational Maintenance: Multimeter AN/URM-105, including Multimeter ME-77/U
TM 11-6625-203-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List for Multimeter AN/URM-105
TM 11-6625-203-35	Field and Depot Maintenance: Multimeter AN/URM-105 including Multimeter ME-77/U

TM 11-6625-203-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Multimeter AN/URM-105
TM 11-6625-274-1OP	Operator's Maintenance Repair Parts and Special Tools List for Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U
TM 11-6625-274-12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U
TM 11-6625-274-20P	Organizational Maintenance Repair Parts and Special Tools List for Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U
TM 11-6625-274-35P	Field and Depot Maintenance Repair Parts and Special Tools List for Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions and repair operations to be performed by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the part. Components and parts Comprising a major end item are listed alphabetically. Assemblies and subassemblies are in alphabetical sequence with their components listed alphabetically immediately below the assembly listing.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelon capable of performing the operations.

(a) Service. To clean, to preserve, and to replenish fuel and lubricants.

(b) Adjust. To regulate periodically to prevent malfunction.

(c) Inspect. To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) Replace. To substitute serviceable assemblies, subassemblies and parts for unserviceable components .

(f) Rebuild. To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(g) Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function inc1udes but is not limited to, inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, and straightening.

(3) *1st, 2d, 3d, 4th, 5th echelon.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in the section allocation of tools for maintenance functions are as follows :

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* A dagger (†) symbol indicates the echelons allocated the facility.

(3) *Tool Code.* This column lists the tool code assigned.

(4) *Remarks.* Entries in this column are used to clarify data in the other columns .

2. Maintenance by Using Organizations

When this equipment is used by signal service organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

3. Mounting Hardware

The basic entries of this maintenance allocation chart do not include mounting hardware such as screws, nuts, bolts, washers, brackets, clamps, etc.

Section II. MAINTENANCE ALLOCATION CHART

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
COMMUNICATIONS OPERATIONS CENTER AN/MSC-31								
	service	X						Interior
			X					Exterior
	adjust							no adjustment
	inspect		X				2,3	Interior and exterior
	test		X				1	Continuity
	rebuild					X	2,3	
SHELTER, ELECTRICAL EQUIPMENT S-183/MSC-31	rebuild					X	2,3	
BRACKETS AND BRACKET ASSEMBLIES	replace				X			Fabricate
BULLETIN BOARDS	replace				X			Fabricate
CABLE ASSEMBLIES	replace		X				2	
CABLE	replace		X				2,3	
CONNECTORS	replace		X				2,3	See MAC for U-185/G
CLOCK	replace		X				2	
CONDUIT ASSEMBLIES								
BALLAST , LAMP	replace		X				2	
CAPACITORS	replace		X				2	
CONNECTORS, RECEPTACLE, ELECTRICAL	replace		X				2	
FILTERS, RADIO INTERFERENCE	replace		X				2	
JACKS, TELEPHONE	replace		X				2	
LAMPHOLDERS	replace		X				2	
LAMPS	replace	X						
SHIELDS, ELECTRIC LIGHT	replace		X					
STARTERS, LAMP, FLUORESCENT	replace	X						
SWITCHES	replace		X				2	
CORD ASSEMBLIES	replace		X					
CURTAINS, BLACKOUT	replace		X				2	
DRAWING BOARD	replace					X		Fabricate
FANS, VENTILATING								
CABLE, ELECTRICAL	replace		X					
CAPACITORS	replace		X				2	
CLAMP, CAPACITOR	replace				X			Fabricate
CONNECTORS, PLUG, ELECTRICAL	replace		X				2	
GASKETS	replace			X				Fabricate
IMPELLER, FAN	replace		X				2	
MOTOR, A.C.	replace		X				2	
HEATERS, SPACE, ELECTRICAL								

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
AN/MSC-31 (continued)								
CABLE, ELECTRICAL	replace		X				2	
CONNECTORS	replace		X				2	
GRIDS, HEATING ELEMENT	replace		X				2	
IMPELLER, FAN	replace		X				2	
MOTOR, ALTERNATING CURRENT	replace		X				2	
SWITCHES	replace		X				2	
LANTERN, ELECTRIC								
BATTERIES, BA-30	replace	X						
LAMP, INCANDESCENT	replace	X						
LIGHT, EXTENSION								
LAMP, INCANDESCENT	replace	X						
PANEL, POWER DISTRIBUTION	rebuild					X		
CIRCUIT BREAKERS	replace		X				2	
LAMPS, GLOW	replace	X						
LAMPHOLDERS	replace		X				2	
METERS	replace		X				2	
TRANSFORMERS	replace		X				2	
PANEL, SIGNAL AND POWER ENTRANCE								
CONNECTORS	replace		X					See MAC for U-187/G
GASKETS	replace				X			Fabricate
POSTS, BINDING	replace		X				2	
TERMINAL STUD	replace			X				Fabricate
SHELF ASSEMBLIES	replace				X			Fabricate
SHELTER	rebuild					X		

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
AN/MSC-31 (continued)								
DOOR ASSEMBLIES								
FILTERS, AIR CONDITIONING	replace		X					
FRAME, AIR FILTER	replace				X			Fabricate
GASKETS	replace			X			2	
GUARD, AIR FILTER	replace				X			Fabricate
HANDLES, DOOR	replace		X				2	
HINGE ASSEMBLIES	replace		X				2	
LATCHES, DOOR	replace		X				2	
LOUVER ASSEMBLIES	replace			X				
PANELS, DUTCH DOOR	replace				X		2	
EYEBOLT	replace		X				2	
LIFTS, TIE EYE	replace			X			2	
MOLDINGS	replace				X		2	
PLUG, DRAIN	replace		X				2	
SKIDS	replace				X		2	
STEPS, FOLDING	replace		X				2	
TABLE TOP ASSEMBLIES	replace				X			Fabricate
TACK BOARDS	replace				X			Fabricate
TIE DOWN ASSEMBLIES	replace				X			Fabricate
TYPEWRITER, PORTABLE	repair							Repairs to be made by Army Quartermaster Corps

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/MSC-31							
MULTIMETER AN/URM-105		†	†	†	†	1	If not available use TS-297/U or TS-352/U
TOOL KIT, GENERAL MECHANIC		†	†	†	†	2	
SOLDERING IRON TL-117		†	†	†	†	3	

APPENDIX III
BASIC ISSUE ITEMS LIST

Section 1. INTRODUCTION

1. General

This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as *part of* the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

a. Source, Maintenance, and Recoverability Code. Not used.

b. Federal Stock Number. This column lists the n-digit Federal stock number. In the absense of a Federal stock number, an interim number, for example †† L8Ra41C-12 in the description column, indicates that a Federal stock number is being processed for assignment. The L number may be used in emergencies to identify items.

c. Designation by Model. Not used.

d. Description. Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

e. Unit of Issue. The unit of issue is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

f. Expendability. Expendable items are indicated by the letter X; nonexpendable items are indicated by NX.

g. Quality Authorized. Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spares and Accessory Items," the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

h. Illustrations. Not used.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO	(9) ILLUSTRATIONS ITEM NO
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
			COMMUNICATIONS OPERATIONS CONTROL AN/MSC-31					
			COMMUNICATIONS OPERATIONS CONTROL AN/MSC-31	ea	NX			
	Ord thru AGC		TECHNICAL MANUAL TM-5895-223-15	ea	X	2		
			SHELTER, ELECTRICAL EQUIPMENT S-183/MSC-31: †† L9Wa94-203	ea	NX	1		
	4210-727-8111		AXE, PICK HEAD: 2-3/4 lbs; 8-3/4 in lg head; 24 in lg handle; American Logging Tool Co part No. 276	ea	X	1		
			BASKET, WASTEPAPER: Erie Art Metal part No. 36 †† L9Wa94-2	ea	X	1		
	7920-285-9816		BRUSH, DUSTING, BENCH: Osborn Mfg part No. 378	ea	X	1		
			CABLE AND REEL ASSEMBLY: 22-1/2 in dia x 7-1/2 in w; incl 1 ea Reel, Cable RC-435/U and 1 ea 100 ft pwr cable; St Carl part No. 666148-414 †† L9Wa94-251	ea	X	1		
			CABLE ASSEMBLY, POWER, ELECTRICAL: 15 ft lg; 1 Hubbell type 9756 conn first end, 1 St Carl conduit outlet part No. 666147-672 other end; St Carl part No. 666146-126 †† L9Wa94-262	ea	X	1		
			CHAIR, ROTARY, MODIFIED: aluminum; 37-1/4 in h o/a x 15-5/8 in w x 14-1/8 in d; St Carl part No. 666147-877 †† L9Wa94-251-A	ea	X	3		
			CHAIR, SHOP, MODIFIED: steel; 42 in h x 17-1/4 in w x 17-1/4 in d; St Carl part No. 666147-195 †† L9Wa94-252	ea	X	1		
	6645-800-7094		CLOCK, AIRCRAFT, MECHANICAL: 3 in face; Wakman Watch Co part No. 118-12-24-W	ea	NX	1		
	7210-753-3043		CUSHION, CHAIR: 16-1/2 in lg x 13-1/2 in w x 1 in thk; St Carl part No. 666144-901	ea	X	1		
	4210-383-7128		EXTINGUISHER, FIRE: Carbon Dioxide; Walter Kidde Model No. 2-1/2 T2	ea	NX	1		
	4210-270-4512		EXTINGUISHER, FIRE: Carbon Dioxide; Walter Kidde Model 5T-2	ea	NX	1		
	5120-408-1481		EXTRACTOR, ELECTRON TUBE: basket type; for 7 pin miniature; Kellems Model No. TP-11-16	ea	X	1		
	5120-293-2692		EXTRACTOR, ELECTRON TUBE: basket type; for 9 pin miniature; Kellems model No. TP-13-16	ea	X	1		
	6645-752-7902		FAN, VENTILATING, PROPELLER: for exhaust; Rotron Mfg Co type No. KS302L	ea	NX	2		
	4130-765-2361		FILTER: P/o shelter; 19-3/4 in w x 15-3/4 in h x 1-7/8 in thk; Craig part No. 15119P1	ea	X	1		
			FIRST AID KIT: SigC dwg No. SM-C-349935 †† L9Wa94-90	ea	X	1		
			GRIP, CABLE, JAW: bronze; Ecomony model No. EQA-6-8P †† L9Wa94-93	ea	X	13		
			GRIP, CABLE, JAW: bronze; Economy model No. EQA-265 †† L9Wa94-94	ea	X	12		

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO	(9) ILLUSTRATIONS ITEM NO
			AN/MSC-31 (continued)					
			HAMMER, HAND: blacksmith double-face type; 8 lb; Woodings-Verona Tool Works part No. 15 †† L9Wa94-228	ea	X	1		
			HANDLE, HAMMER: hickory; 30 in lg; Woodings-Verona Tool Works part No. AW-30 †† L9Wa94-229	ea	X	1		
	4520-224-7909		HEATER, SPACE, ELECTRIC: 115 vac; 12-1/2 in lg x 10-3/4 in h x 10-1/8 in w; Electromode part No. AAT-15A	ea	NX	2		
	5830-732-5355		INTERCOM, STATION LS-147D/FI	ea	NX	1		
			LADDER, VEHICLE, BOARDING: aluminum; 64-3/8 in h x 18-1/2 in w x 6-1/2 in d; St Carl part No. 666149-684; †† L9Wa94-267	ea	X	1		
			LANTERN, ELECTRIC: mtd on wall; Justrite part No. 2106-7 †† L9Wa94-166	ea	X	1		
			LEAD, ELECTRICAL: used for grounding; 1-1/2 in w x 122 in lg o/a; St Carl part No. 666147-692 †† L9Wa94-261	ea	X	2		
			LIGHT, EXTENSION: molded rubber handle w/25 ft cord; incl 50 w bulb; GE type No. 107-S; †† L9Wa94-239	ea	X	1		
	5120-392-8355		PIN STRAIGHTENER, ELECTRON TUBE: Tenite body; 2 steel inserts; 2-7/8 in lg x 1-1/8 in w x 1-5/16 in h; General Cement Mfg model No. 8655	ea	X	1		
	8130-636-1090		REEL, CABLE RC-435/U: SigC dwg No. SC-DL-67296	ea	X	1		
	5975-660-3662		ROD, GROUND: steel; 5 ft lg x 5/8 in dia; Hubbard part No. 2665	ea	X	2		
			SHARPENER, PENCIL: Boston type L †† L9Wa94-108	ea	X	1		
	6210-754-8134		SHIELD, LIGHT: for fluorescent; styrene; St Carl part No. 666147-309	ea	X	8		
	5410-803-5533		SLING, MULTIPLE LEG: for shelter lifting and tiedown; Craig part No. 14804G1	ea	X	1		

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO	(9) ILLUSTRATIONS ITEM NO
			AN/MSC-31 (continued)					
			STRAP ASSEMBLY, TIE DOWN: nylon webbing and steel; 72-5/8 in lg x 2-7/8 in w; Craig part No. P/N-705 †† L9Wa94-245	ea	X	12		
	5805-237-3602		SWITCHBOARD, TELEPHONE MANUAL SB-22/PT: (less cover, installed)	ea	X	1		
	5805-543-0012		TELEPHONE SET TA-312/PT: (less case installed)	ea	NX	1		
	5805-543-0012		TELEPHONE SET TA-312/PT: (stowed)	ea	NX	3		
	7430-164-1421		TYPEWRITER: Remington Rand model No. 88	ea	NX	1		
	5120-224-2510		KEY, SOCKET, HEADSCREW: for drain plug; 6-3/4 in lg o/a; Standard Pressed Steel model Umbrako 5/8	ea	X	1		
			RUNNING SPARES AND ACCESSORY ITEMS					
			COMMUNICATIONS OPERATIONS CONTROL AN/MSC-31					
	6240-538-8447		LAMP, FLUORESCENT: 20 w; 24 in lg; Sylvania part No. F20T12/SW	ea	X	2		
	6240-299-5876		LAMP, GLOW: MIL type NE-34	ea	X	1		
	6240-179-1814		LAMP, GLOW: MIL type NE-45	ea	X	2		
*	6240-155-7786		LAMP, INCANDESCENT: for lantern; 2.4 v; GE part No. PR-2; (Mtd behind reflector)	ea	X	1		
	6230-299-2884		STARTER, FLUORESCENT LAMP: Bryant Elec part No. FS-2	ea	X	6		

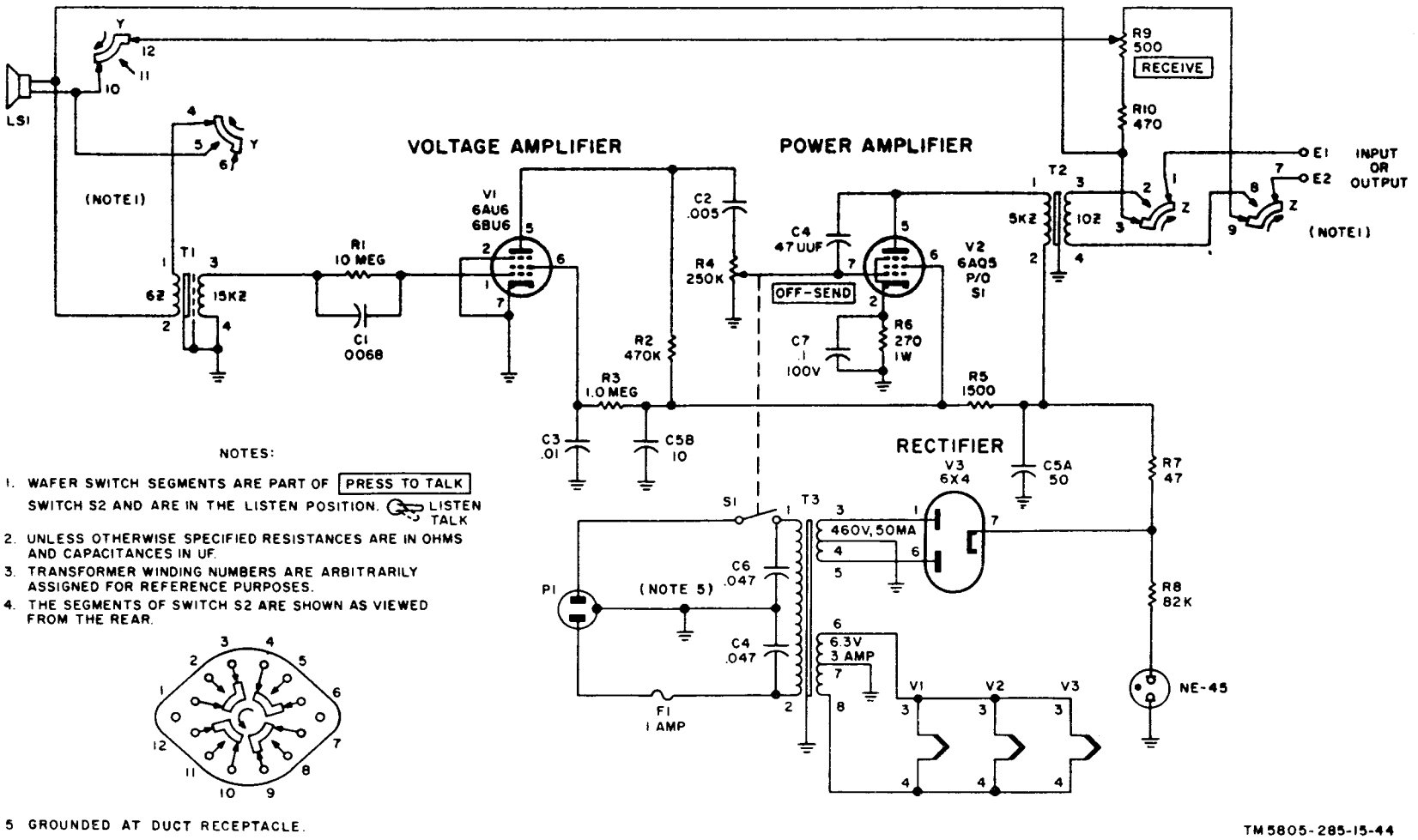

Figure 38. Intercommunication Station LS–147C/FI, schematic diagram.

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NG: State AG (3); Units Same as Active Army except allowance is one copy to each unit.
USAR: None.
For explanation of abbreviations used, see AR 320–50.

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