



SCHWEIZER SERVICE INFORMATION NOTICE

NOTICE NO. N-111.3*

DATE: 24 Jan 1986

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* Supersedes Service Information

Notice No. N-111.2

Dated 22 July 1977

SUBJECT: CONVERSION OF 12V TO 24V ELECTRICAL SYSTEM -
MODIFICATION KIT NO. M10068-1
AND
INSTALLATION OF 24V, 100-AMPERE CAPACITY
ALTERNATOR - KIT NO. 269A4929-1

MODELS AFFECTED: Model 269C Helicopter Serial No. 0004 and subsequent

TIME OF COMPLIANCE: At Owner's and Operator's Discretion

PREFACE: This Service Information Notice furnishes instructions for installing a 100-ampere capacity alternator on 269C helicopters specified above. The installation is accomplished if installation of optional electrical equipment increases the electrical load and requires an alternator with increased ampere capacity.

PART I of the notice provides a procedure for converting an existing 12-volt (12V) electrical system to a 24-volt (24V) electrical system (required on 269C helicopter Serial No. 0004 thru 0119 equipped with a 12V electrical system), to permit installation of the 24V, 100-ampere (100A) alternator.

PART II of the notice contains a procedure for replacing an existing 70A alternator with a 24V, 100A alternator, associated electrical components and wiring changes required on 269C helicopters specified above that are equipped with 24V electrical system.

(■) Denotes portion of text added or revised.

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References

- 269 Series - Basic HMI, Issued 1 April 1973; Revision No. 4,
15 December 1976
- 269 Series - HMI Appendix A, Issued 1 April 1973
- 269 Series - HMI Appendix B, Issued 1 July 1973; Revision No. 5,
1 August 1976
- 269 Series - HMI Supplement C, Issued 1 March 1973; Revision No. 2,
1 October 1974

NOTE

If 24V, 100A alternator is to be installed on a 269C with an existing 12V electrical system, perform both Part I and Part II procedures of this notice. For a 269C with an existing 24V electrical system, omit performance of Part I and accomplish only Part II. Before accomplishing either Part I or Part II procedures, it is recommended that existing maintenance information in HMI's be reviewed as follows: General information on 12V alternator, 12V battery and electrical system contained in Section 16, Basic HMI. Specific difference information for 24V alternator, 24V battery, load charts, wiring diagrams, and 12V and 24V electrical systems furnished in Section 16, HMI Supplement C. Information on Alternate (Relocated) 12V Battery Installation 269A4902, and 12V to 24V Electrical System Modification M10068-1 contained in Option Group 10, HMI Appendix A.

PART I - PARTS LIST

12V TO 24V ELECTRICAL SYSTEM - MODIFICATION KIT M10068-1

(Applicable only to 269C helicopter Serial No. 0004 thru 0119
equipped with 12-volt electrical system)

<u>Nomenclature</u>	<u>24V System Part No.</u>	<u>Replaces 12V System Part No.</u>	<u>Qty</u>	<u>Manufacturer</u>
24V Battery Installation (See note)	269A4124	269A4122	1	Hughes
± Alternator	79036 (AW-8403-LS Prestolite)	78413 (ALX-8403-LS Prestolite)	1	Lycoming
Voltage Regulator	*LW-10179 (VSF-7403 Prestolite)	LW-10185 (VSF-7203 Prestolite)	1	Lycoming
Overvoltage Relay	78060 (X-17620 Prestolite)	78059 (X-17621 Prestolite)	1	Lycoming
Starter	76214 (MHB-4003 Prestolite)	269A4649	1	Lycoming
Starter Relay	76776 (SAW-4412-1 Prestolite)	269A4837	1	Lycoming
Starting Vibrator	269A4623-11	269A4623-9	2	Hughes
Linear Clutch Actuator	DL1020M82C	ADL1020M48	1	Nash Controls
Actuator Motor, Longitudinal Cyclic Trim	269A7322	269A7321	1	Hughes
Actuator Motor, Lateral Cyclic Trim	269A7322	269A7321	1	Hughes
Auxiliary Fuel Pump	269A8311-5	269A8304-9	1	Hughes
** Transistor	40051	2N555 (Motorola)	4	RCA
Lamp (Gearbox Press. and Temp)	62	66	1	Brite-Eye
Lamp (Clutch Warning Light)	62	66	1	Brite-Eye
Lamp (Panel and Low Fuel Warning)	327	330	11	GE
Resistor, Cigar Lighter	3-1/2-TE-57-F-S-1	-	2	Ohmite
Battery Relay	MS24166D1	-	1	Commercial
Landing Light Relay	MS24166D1	269A4640	1	Commercial
Lamp, Landing Light	4553	4522	1	GE
Beacon (Anticollision) Light, Aft	269A4322-1	269A4322-5	1	Hughes
Beacon (Anticollision) Light, Forward	269A4322-3	269A4322-7	1	Hughes
Lamp, Left Position Light	ASA7512-24	ASA7512-12	1	Commercial
Lamp, Right Position Light	ASA7512-24	ASA7512-12	1	Commercial
Lamp, Tail Light	1683	1777 (GE)	1	Grimes
Rheostat, Panel Lights	269A4246-3	0106 (Ohmite)	1	Hughes
Resistor Board Assembly	269A4321-9	-	1	Hughes
Insulator Board	269A4321-5	-	1	Hughes
*** Capacitor	TE1401	-	1	Commercial
±± Lamp (269A4333-() Searchlight)	4580	4522	2	GE
±± Relay (269A4333-() Searchlight)	MS24166D1	269A4837	1	Commercial
±± Lamp, Up/Down Indicator (269A4333-() Searchlight)	327	330	1	GE
±± Heater (269A4866 (Southwind) Combustion Heater)	269A4783-5	269A4783	1	Hughes
±± Blower Motor (Exhaust Manifold Heater)	269A4213-3	269A4213	1	Hughes
±± Power Supply (269A4852 King Radio)	269A4591-3	269A4591	1	Hughes

PART I - PARTS LIST (CONTINUED)

<u>Nomenclature</u>	<u>24V System Part No.</u>	<u>Replaces 12V System Part No.</u>	<u>Qty</u>	<u>Manufacturer</u>
Weld (Battery Support) Assembly	M10068-3	-	1	Hughes
Battery Relay Mounting Bracket	269A4927-7	-	1	Hughes
Nipple	269A4682-1S	-	2	Hughes
Nipple	269A4682-2S	-	2	Hughes
Screw	NAS603-8	-	8	Commercial
Washer	AN960PD10	-	8	Commercial
Washer	AN960PD10L	-	4	Commercial
Nut	MS21042-3	-	6	Commercial
Nut	MS21083N3	-	4	Commercial
Screw	NAS1096-3-19	-	2	Commercial
Washer	AN960-10L	-	4	Commercial
Rivet	AD44ABS	-	3	United Shoe Machinery
Wire	AN4; HMS2-1041 or MIL-W-5086, Type III or MIL-W-7133 Hi-temp	-	55 in.	Commercial
***Wire	AN6	-	24 in.	Commercial
Wire	AN20; M5086/2-20, MIL-W-5068	-	225 in.	Commercial
Terminal	31882	-	4	AMP, Inc. (or equiv.)
Terminal	31889	-	2	AMP, Inc. (or equiv.)
Terminal	322009	-	2	AMP, Inc. (or equiv.)
Terminal	322011	-	1	AMP, Inc. (or equiv.)
Terminal	7-322010	-	1	AMP, Inc.
Clamp	914-250-D	-	1	Marmon

± 24V, 70A alternator (79036 Lycoming - ALU-8403-LS Prestolite) is not required, if 24V, 100A alternator assembly (LW-13030 Lycoming) is to be installed. (24V, 100A alternator is part of 100A Capacity Alternator Installation 269A4929-1. Refer to Part II of this notice).

±± Required when listed optional equipment is installed - not furnished with M10068 kit.

* Lycoming 77347 (VSF7402 Prestolite) voltage regulator may be used as alternate.

** Part of 269A4836 trim motor reversing circuit.

*** Capacitor and AN6 wire not furnished in kit. (Capacitor is required if not installed. AN6 wire is required, if external power receptacle is installed.)

NOTE: For components required, refer to separate parts list for the 24V Battery Installation 269A4124 in Part I of this notice.

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PART I - PARTS LIST
24V (GILL) BATTERY INSTALLATION 269A4124

<u>Nomenclature</u>	<u>24V System Part No.</u>	<u>Replaces 12V System Part No.</u>	<u>Qty</u>	<u>Manufacturer</u>
Battery Box Assembly	269A4124-3	269A4122-3	1	Hughes
Battery Box	269A4298-3	-	1	Hughes
Doubler	269A4298-5	269A4122-5	1	Hughes
Spout	269A4298-7	269A4122-7	1	Hughes
Stud	269A4298-9	269A4120-11 Clamp	2	Hughes
Channel	269A4298-11	269A4120-11 Clamp	1	Hughes
Tube	269A4298-13	3603-12(269A4298-13)	1	Hughes
Washer	AN960-6	AN960-6	2	Commercial
Washer	AN960-10	AN960-10L	2	Commercial
Nut	MS21042-3	22K1-02	4	Commercial
Nut	MS21042-06	MS20365-632	2	Commercial
Screw	NAS601-8	AN515-6R8	2	Commercial
Battery	269A4125 (Gill Electric)	269A4617(269A4577)	1	Hughes
Nylon clamp, self-clinching	SST-1 "Sta-Strap"	-	1	Panduit Corp.

PART I - MATERIALS

Sealing Compound	PR-1221-B-2	Products Research and Chemical Corp. 2919 Empire Ave., Burbank, CA 91504
Ethylene Chloride (Ethylene Dichloride- EDC)	MIL-E-10662	Commercial

PART I - TOOLS AND EQUIPMENT

Welding Equipment - MIL-W-8611	Drill Bit - No. 8 (0.1990 in.)
Rivet Gun	Drill Bit - No. 23 (0.1540 in.)
Drill Motor, Portable	Drill Bit - No. 30 (0.1285 in.)
Drill Bit - Letter E-1/4 (0.2500)	

PART I. MODIFICATION KIT NO. M10068 - PROCEDURE

(Conversion of 12V to 24V Electrical System)

NOTE

Conversion of 12V to 24V electrical system by performance of Part I includes removal of 12V Battery Installation 269A4122 from aft right corner of center frame section and adding new 24V Battery Installation 269A4124 at aft left corner of center frame section.

a. Modify helicopter with new 269A4124 24V Battery Installation as follows:

1. Check and make sure that all electrical power is OFF; with special attention to MAG switch.
2. Remove instrument console fairings, lower forward fairing and side fairings if installed. (Section 2, Basic HMI.)
3. Disconnect and remove existing battery cables and 12V battery from helicopter (Section 16, Basic HMI).
4. Disconnect and remove existing starter relay and wiring from center frame section below fuel tank and aft cross beam of landing gear.

5. Remove existing battery box, with attached spout and tube, from center frame section.
6. Position and Heliarc weld M10068-3 welded battery box support assembly to aft left corner of center frame section, at location shown in Figure 1.

NOTE

All welding is to comply with requirements of FAA AC 43.13-1A. If helicopter is equipped with Alternate Battery Location Kit 269A4902 (optional equipment - HMI Appendix A), a clamp-on 269A4902-3 battery box support assembly is installed at aft left corner of frame section. In such case, clamp-on battery box support must be removed before installation of new M10068-3 battery box support.

7. Install and bond 269A4298-7 drain spout, then 269A4298-5 doubler, to interior base of new 269A4298-3 battery box with ethylene dichloride (Figure 1).
8. Place battery box on battery box support at mounting location shown. Drill two 0.146-0.152 inch diameter holes through doubler and battery box to match holes in 269A4926 lateral support brackets of battery box support.
9. Secure battery box to support brackets with hardware as shown; cover and seal screwheads to doubler at base of battery box with PR-1221B-2 sealing compound.
10. Bond upper end of 269A4298-13 drain tube to drain spout with ethylene dichloride; secure lower end of drain tube to outboard tube of frame section with SST-1 self-clinching nylon strap.
11. Install 269A4927-7 battery relay mounting bracket to lower vertical brackets of battery box support with hardware as shown.

NOTES:

1. WELD IN ACCORDANCE WITH FAA AC 43.13-1A AND MIL-W-8611.
2. PART OF BATTERY SUPPORT WELD ASSEMBLY.
3. ITEM 23, TABLE 2-3, BASIC HMI.
4. OPTIONAL EQUIPMENT (HMI APPENDIX A).
5. ITEM 2, TABLE 2-3, BASIC HMI.

BATTERY SUPPORT WELD ASSEMBLY M10068-3
 WELD FORWARD AND AFT ENDS OF BATTERY SUPPORT WELD ASSEMBLY TO CENTER FRAME SECTION AT LOCATION SHOWN. AFTER WELDING PAINT WELDED AREAS (SECTION 2, BASIC HMI) (NOTE 1)

DOUBLER 269A4298-5 BOND TO INTERIOR BASE OF BATTERY BOX AT LOCATION SHOWN WITH ETHYLENE DICHLORIDE (NOTE 3)

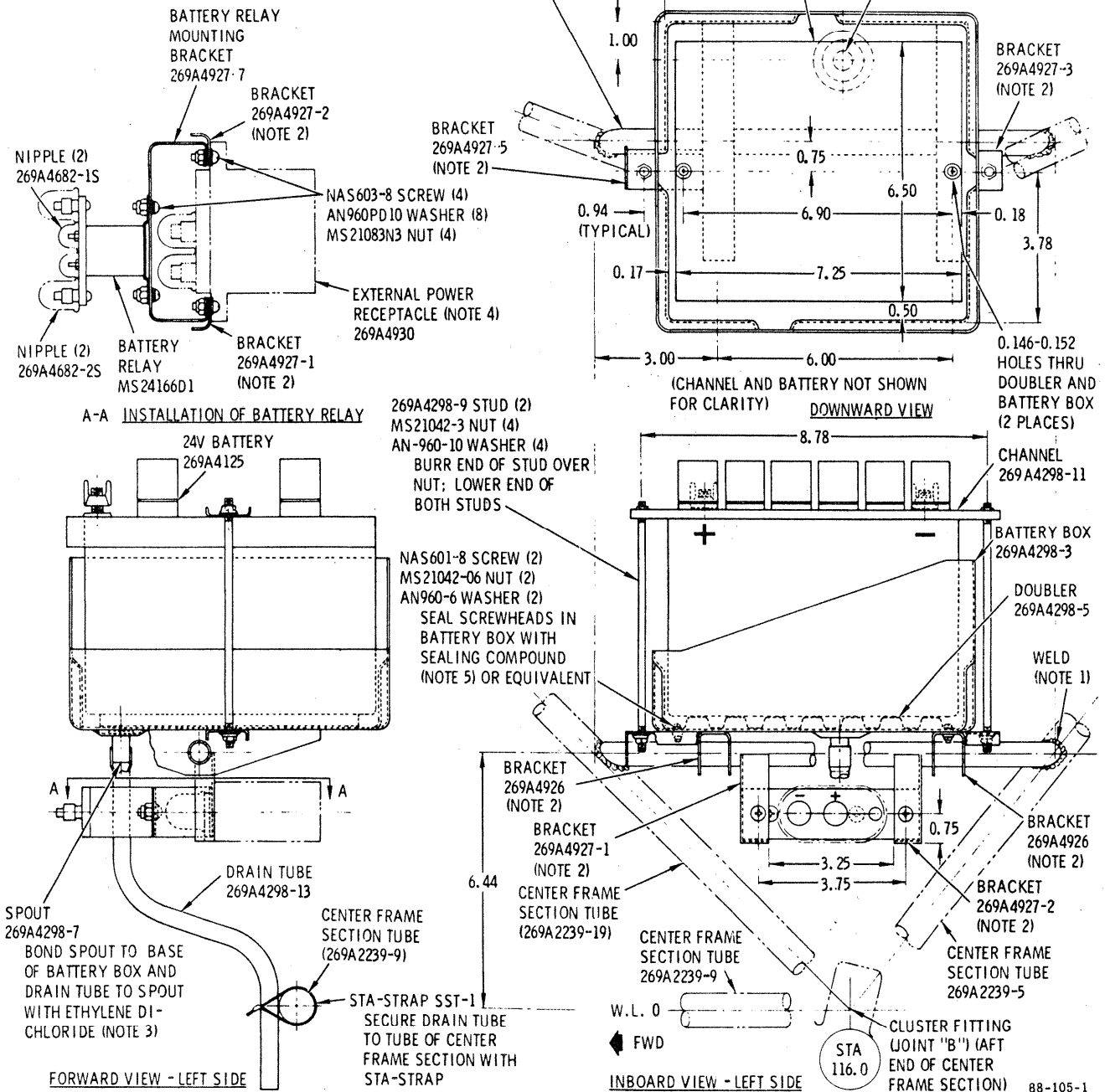
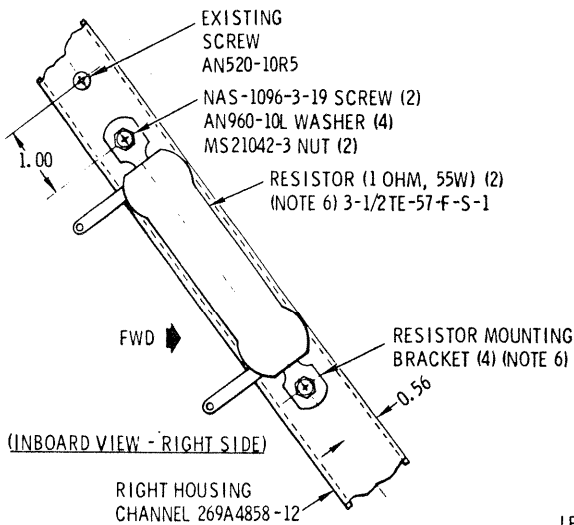


Figure 1. Modification of 12V to 24V Electrical System (Sheet 1 of 2)



NOTES: (CONT)

6. BOTH RESISTORS MOUNTED WITH SAME HARDWARE. RESISTOR MOUNTING BRACKETS FURNISHED WITH RESISTORS.
7. REPLACES ORIGINAL RIVET MS20470AD3.
8. ALL ITEMS SHOWN ON BOARD ARE PART OF TB4.
9. SECOND FORE-AND-AFT BEAM INBOARD FROM DOOR FRAME ASSEMBLY
10. FIRST FORE-AND-AFT BEAM INBOARD FROM DOORFRAME ASSEMBLY.
11. APPLIES FOR BEAM LISTED IN NOTE 9 AND LANDING LIGHT RELAY.
12. APPLIES FOR BEAM LISTED IN NOTE 10 AND SEARCHLIGHT (NOTE 4) RELAY.
13. ELECTRICAL BOND POINT-AFT HOLE ONLY. (FOR ELECTRICAL BOND CONNECTION INFORMATION, REFER TO SECTION 16, BASIC HMI.)
14. ORIGINAL RELAY AND ATTACHING HARDWARE REPLACED BY ITEMS SHOWN.
15. ABBREVIATIONS: STA - STATION; W.L. - WATERLINE.

MOUNTING OF CIGAR LIGHTER RESISTORS (INSIDE INSTRUMENT CONSOLE)

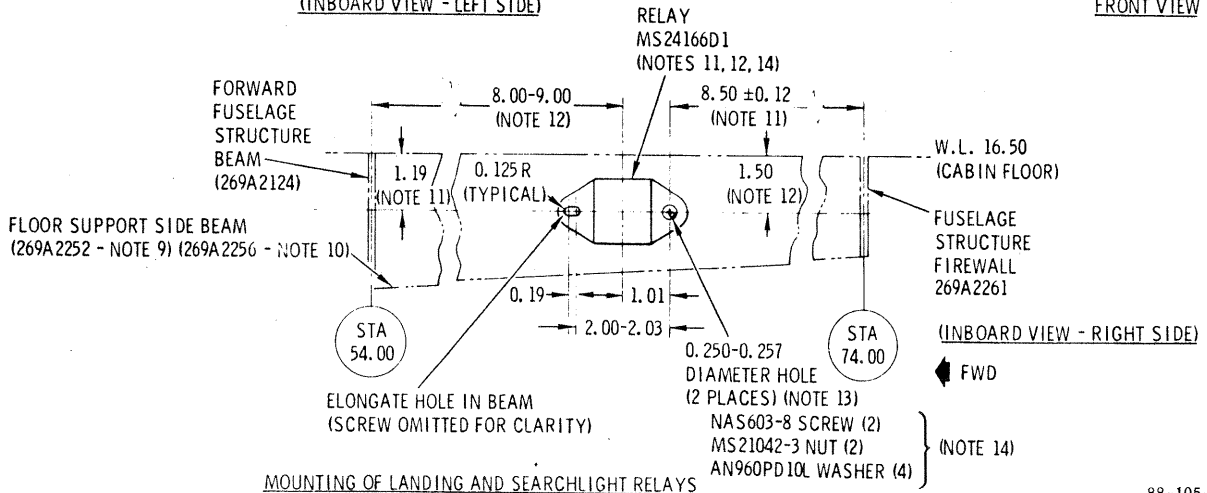
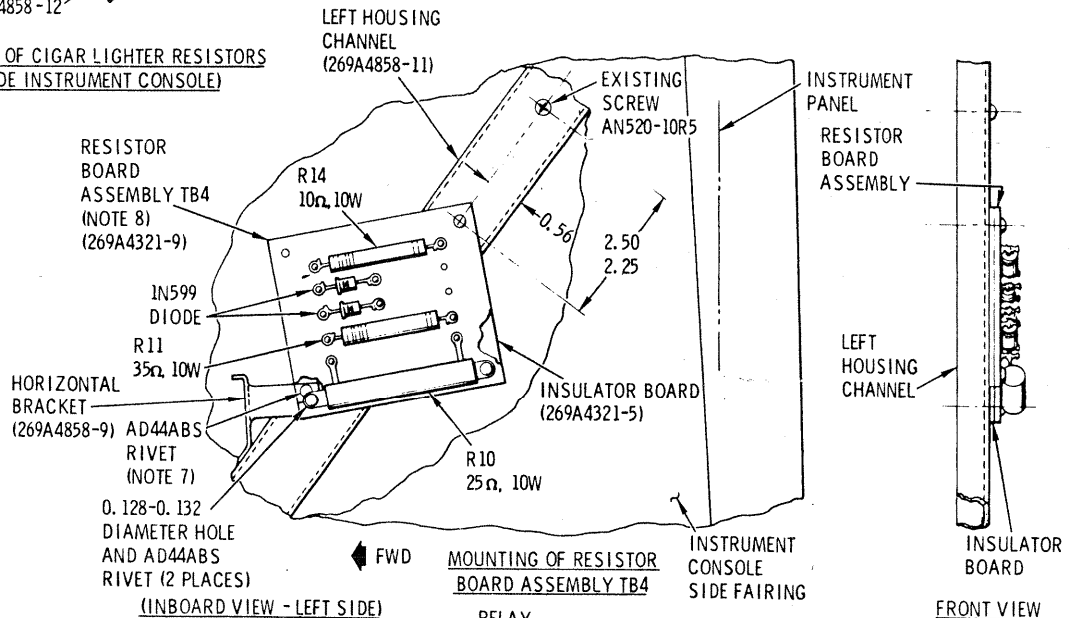


Figure 1. Modification of 12V to 24V Electrical System (Sheet 2 of 2)

NOTE

If helicopter is equipped with external power receptacle (optional equipment - HMI Appendix A), it should be removed from existing location at aft right corner of center frame section and reinstalled with battery relay on lower vertical brackets as shown.

12. Install 269A4125 24V battery in battery box; secure in place with 269A4298-11 battery holddown channel and studs, washers and nuts. Burr or peen lower ends of studs over nuts.

NOTE

When making electrical wiring changes, install wires and make structural electrical bonds (grounds) according to Section 16, Basic HMI, and as shown in Figure 2. Route wires, trim to length, secure, install nipples and wire end terminals and make connections when installing wiring, as necessary.

b. Install new 24V starter and battery relays, battery cables, rewire battery (BAT) and alternator (ALT) switches, and install associated wiring as follows:

1. Install new 76776 starter relay at location of original starter relay; route starter relay wiring across aft crossbeam of landing gear to battery relay. Secure wiring to aft crossbeam.
2. Connect upper end of battery negative (ground) cable to negative battery terminal, and lower end to belt drive support strut and lug of cluster fitting (at joint "B" of frame section below battery box) with existing hardware. Structural electrical bond is required between ground cable terminal, strut and lug.

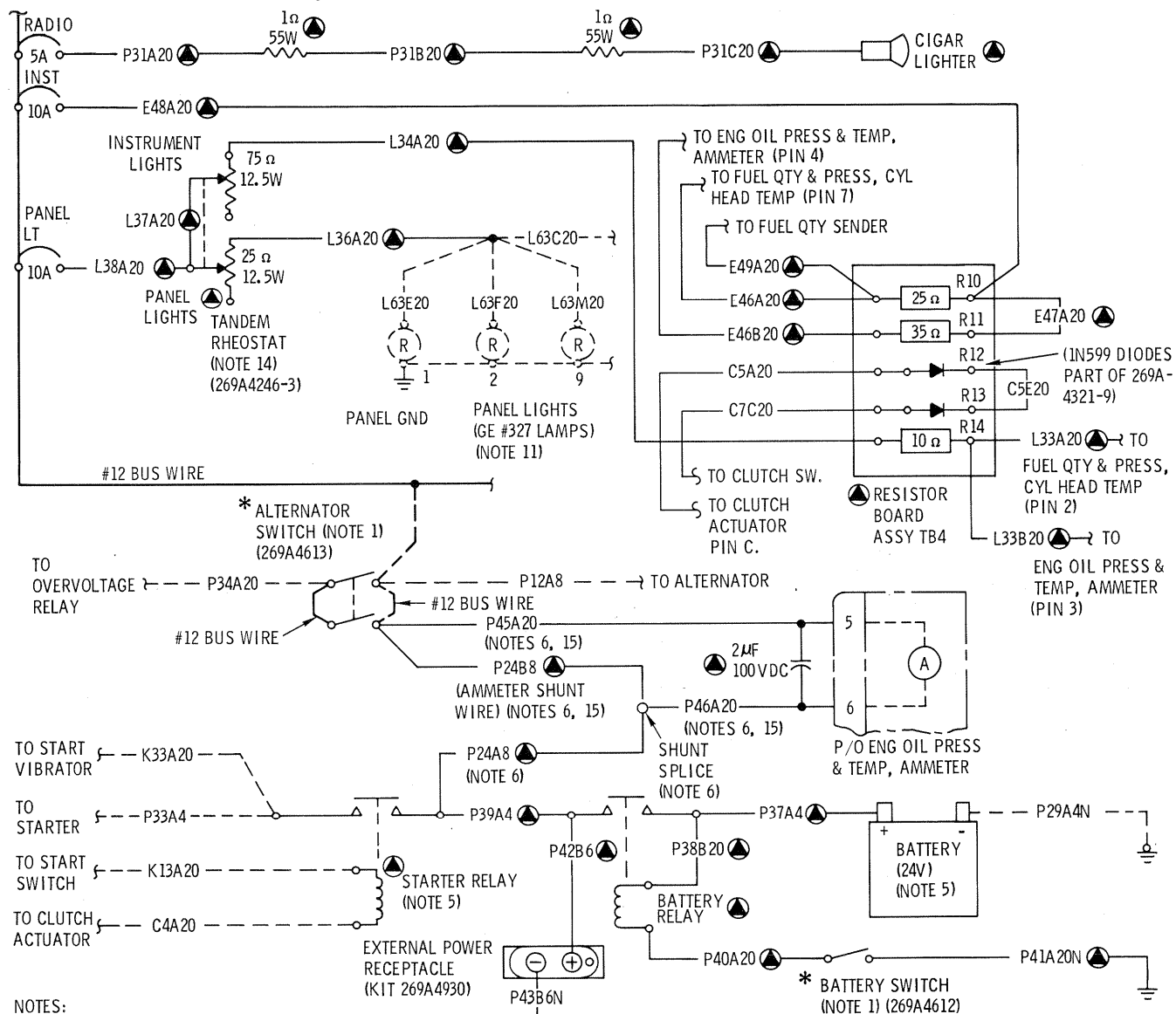


Figure 2. Modification of 12V to 24V Electrical System - Wiring Diagram (Sheet 1 of 2)

10. WIRE LENGTH AS REQUIRED, UNLESS SPECIFIED OTHERWISE.
11. REPLACE GE NO. 330 LAMPS (11 PLACES). ALSO NO. 66 LAMPS REPLACED BY NO. 62 LAMPS - 2 PLACES (GEARBOX OIL PRESSURE/TEMPERATURE AND CLUTCH WARNING LIGHTS).
12. 28V ---14V INSIDE KING RADIO TRANSCEIVER (NOTE 4) TO BE SWITCHED TO 28V POSITION.
13. REFER TO MODIFICATION PARTS LIST FOR LIST OF OPTIONAL ITEMS (NOT SUPPLIED) THAT MUST BE REPLACED, IF INSTALLED.
14. REPLACES ORIGINAL PANEL LIGHT BRIGHTNESS CONTROL ON INSTRUMENT PANEL.
15. WIRE USED ONLY IF 24V, 100A ALTERNATOR IS NOT TO BE INSTALLED. (SEE NOTE 6.) WIRE LENGTH IS CONTROLLED. WIRE NO. P24B8 IS 61 IN. LONG, P45A20 IS 21 IN. AND P46A20 IS 78 IN. LONG. WIRE NO. P24A8 REPLACES ORIGINAL WIRE P24A12, P24B8 REPLACES P24B12, P45A20 REPLACES P35A20 AND P46A20 REPLACES P36A20. (REFER TO TEXT.)
16. ABBREVIATIONS:
 ASSY - ASSEMBLY PRESS - PRESSURE
 ENG - ENGINE QTY - QUANTITY
 GRD - GROUND TEMP - TEMPERATURE

WIRE TABLE						
NO.	SIZE (AWG NO.)	LENGTH (IN.) (NOTE 10)	END TERMINALS			
			QTY	PART NO.	QTY	PART NO.
P24A8	8					
P24B8	8	61				
P24B6	6					
P24B6N	6					
P31C20	20					
P31B20	20					
P31A20	20		1	31882		
L38A20	20					
L37A20	20					
L36A20	20					
L34A20	20					
L33B20	20				1	60215-4
L33A20	20				1	60215-4
E49A20	20		1	31889		
E48A20	20		1	31888		
E47A20	20					
E46B20	20				1	60215-4
E46A20	20				1	60215-4
P37A4	4		1	322009	1	7-322010
P38B20	20		1	31882	1	31889
P39A4	4		1	322009	1	322011
P40A20	20		1	31882	1	31882
P41A20N	20		1	31882	1	31889
P45A20	20	21				
P46A20	20	78				
C5E20	20					

Figure 2. Modification of 12V to 24V Electrical System -
Wiring Diagram (Sheet 2 of 2)

3. Connect one end terminal of battery positive cable to battery relay terminal. Do not connect upper end terminal of positive cable to positive battery terminal at this time.
4. Disconnect, remove and reinstall BAT and ALT switches at reversed locations on instrument panel, so that double pole switch is at ALT switch location and single pole switch is at BAT switch location. Rewire both switches (Figure 2).

c. Install new 269A4321-9 resistor board assembly TB4 inside instrument console for instrument clusters as follows.

NOTE

Resistors decrease the 24V supply voltage to approximately 12V, for existing indicators and lamps inside clusters.

1. Using 269A4321-5 insulator (terminal) board as template, mark location for and drill two 0.128-0.132 inch diameter holes in 269A4858-11 left housing channel of instrument console as shown in Figure 1. Insulator board should be positioned to locate forward lower mounting hole at existing lower MS20470AD3 rivet securing console horizontal bracket to housing channel. When drilling holes, this rivet should be drilled out.
 2. Install resistor board TB4 and insulator board to housing channel, with insulator board between resistor board TB4 and housing channel, using three AD44ABS pop rivets. Install rivets with zinc chromate primer, with one rivet at previously drilled-out rivet location.
- d. Install new cigar lighter resistors in instrument console (Figure 2):
1. Mark location for and drill 0.198-0.204 inch diameter hole through right housing channel of instrument console for upper attachment screw.
 2. Locate and drill second resistor mounting hole through channel with resistor and mounting brackets in mounting position as a guide.

3. Install two 3-1/2 TE-57-FS-1 (55 ohm, 10W) resistors, one parallel to and beside the other (stack mounted), on housing channel with mounting brackets.

e. Replace all existing 12V instrument panel lamps with 24V lamps for following items:

NOTE

Lamps inside instrument clusters are not replaced.

- | | |
|--------------------------------|-------------------------------------|
| 1. Compass | 5. Manifold Pressure Indicator |
| 2. Airspeed Indicator | 6. Clock or Rate of Climb Indicator |
| 3. Altimeter | 7. Fuel Low Warning Light |
| 4. Engine and Rotor Tachometer | |

f. At instrument panel face, replace existing No. 62 Brite-Eye lamps with No. 66 Brite-Eye lamps in following indicator lights:

- | | |
|------------------------------------|---|
| 1. Clutch Disengaged Warning Light | 2. Gearbox Pressure and Temperature Indicator Light |
|------------------------------------|---|

g. Replace existing panel light rheostat on instrument panel with 269A4246-3 tandem rheostat.

h. If not present, install TE1401 capacitor (2UF, 100 VDC); connect capacitor across ammeter terminals on aft side of 269A4112-() instrument cluster.

i. Replace electrical system 12V components with 24V components (Basic HMI) as follows:

- | | |
|---------------------------|--|
| 1. Voltage Regulator | 6. Actuator Motor, Longitudinal Cyclic Trim |
| 2. Overvoltage Relay | 7. Actuator Motor, Lateral Cyclic Trim |
| 3. Starter | 8. Transistor (4 - for Cyclic Trim Motor Reversing Unit) |
| 4. Starting Vibrator (2) | |
| 5. Linear Clutch Actuator | 9. Auxiliary (External) Fuel Pump |

j. Replace existing 12V landing light relay with MS24166D1 relay.

k. For night lighting system, replace existing 12V lamps with 24V lamps (HMI Appendix A) in following lights:

- | | |
|---|------------------|
| 1. Forward and Aft Anticollision Lights (Beacons) | 3. Tail Light |
| 2. Left and Right Position Lights | 4. Landing Light |

1. Replace 12V electrical components with 24V components, for any installed optional equipment (HMI Appendix A) as follows:

<u>Optional Equipment</u>		<u>Replace</u>	
Incandescent Searchlight Kit 269A4333-3, -21 or -27	No. 4522 lamps	with	No. 4580 lamps
	269A4831 Searchlight with Relay	with	MS24166D1 Searchlight Relay
	No. 330 (UP-DOWN Indicator) Lamp	with	No. 327
Combustion (Southwind) Cabin Heater Kit 269A4866-1	269A4783 Heater	with	269A4783-5 Heater
Exhaust Manifold Cabin Heater Kit 269A4869	269A4213 Blower Motor	with	269A4213-3 Blower Motor
King KY-90() or KY-95() Vhf Radio Installation 269A4852-3 or -5	269A4591 (King KS-501) Power Supply Modulator	with	269A4591-3 (King KS-502) Power Supply Modulator

NOTE

For King Radio Installation, set 14V-28V power switch inside transceiver to 28V position.

m. Install remaining electrical items and wiring, including 24V, 70A alternator as follows:

NOTE

Ammeter shunt wires shown on Figure 2 and 24V, 70A alternator are not to be installed if 24V, 100A Alternator Installation Kit 269A4929-1 is to be

incorporated according to Part II of this notice. In that event, ammeter wiring of following step 1, and step 2 are not to be accomplished since different ammeter shunt wiring is incorporated at installation of 24V, 100A alternator.

1. Rewire indicated electrical items with new wires, including new ammeter shunt wires, as shown in Figure 2.
 2. Remove existing 12V, 70A alternator assembly (78413 Lycoming - ALX-8403-LS Prestolite) and replace with 24V, 70A alternator assembly (79036 Lycoming - ALU-8403-LS Prestolite).
- n. Check complete converted 24V electrical system for discrepancies.

NOTE

Battery connection and operational check specified in following step o is accomplished only if 24V, 70A⁻ alternator is installed. Otherwise, operational check is performed only after installation of 24V, 100A alternator (Part II).

o. Connect upper end terminal of battery positive cable to battery positive terminal and perform complete operational check of 24V helicopter electrical system, including operation of night lighting system and all electrical components of any installed optional equipment (radio, combustion or exhaust manifold heater, searchlight, etc.) (HMI Appendix A).

p. Reinstall all items, components and fairings removed for access, unless 24V, 100A alternator is to be installed.

q. Record modification of 12V to 24V electrical system M10068-1 in Component Record of helicopter Log Book.

PART I - WEIGHT AND BALANCE DATA

*ADD: 6.5 pounds at 119.7 inch-arm

*Applies in all cases and includes installation of 24V, 70A alternator. If 24V, 100A alternator is to be installed, difference weight is calculated at completion of Part II of this Notice.

PART II - PARTS LIST

(100-AMPERE ALTERNATOR INSTALLATION KIT, PN 269A4929-1)

<u>Nomenclature</u>	<u>Part Number</u>	<u>Qty</u>	<u>Mfr</u>
Vent Cover	269A4938-1	1	Hughes
Hose	269A4929-3	1	Hughes
Adapter Assembly	269A4929-5	1	Hughes
Bushing	HS13SP437-378-750	1	Hughes
Link	LW-14459	1	Lycoming
Bracket, Aft	LW-14142	1	Lycoming
Bracket, Forward	LW-14141	1	Lycoming
Alternator Assembly	LW-13030	1	Lycoming
Washer	STD-1727	1	Lycoming
Bolt	STD-1838	4	Lycoming
Bolt	STD-1858	2	Lycoming
Washer	STD-35	1	Lycoming
Washer	STD-632	1	Lycoming
Pin	STD-761	1	Lycoming
Lockplate	73383	2	Lycoming
Belt	8441	1	Gates Rubber Co.
Exhaust Flange	CC10-1	1	U. S. Energy Corp.
Caplug	1SC	1	Protective Closure
Terminal	324043	1	Amp. Inc.
Terminal	324050	5	Amp. Inc.
Terminal	324177	1	Amp. Inc.
Terminal	324052	1	Amp. Inc.
Terminal	32544	1	Amp. Inc.
Terminal	32545	1	Amp. Inc.
Terminal	35107	2	Amp, Inc.
Bolt	AN7-12	1	Commercial
Nut	AN310-7	1	Commercial
Clamp	AN737TW66	2	Commercial
Washer	AN960PD6L	2	Commercial
Washer	AN960PD10L	2	Commercial
Cover	MS18029-3S-2	1	Commercial
Rivet	MS20470AD3	12	Commercial
Nut	MS21042-06	2	Commercial
Nut	MS21042-3	1	Commercial
Clamp	MS21919DG32	1	Commercial
Wire MIL-W-5086, Type II	MS25190-A-4	A/R	Commercial
Wire MIL-W-5086, Type II	MS25190-A-8	A/R	Commercial
Wire MIL-W-5086, Type II	MS25190-A-10	A/R	Commercial
Wire MIL-W-5086, Type II	MS25190-A-12	A/R	Commercial
Link	MS25226-6-2	1	Commercial
Insulating Strip	MS25227-5A	2	Commercial
Terminal Board Assembly	MS27212-3-2	1	Commercial
Bracket	MS9597-010	1	Commercial
Screw	NAS603-8	2	Commercial
Strip	NAS1063F-1-2	1	Commercial
Screw	NAS1096-1-7	2	Commercial
Bolt	NAS1306-21	1	Commercial
Lacing, Tying (Koroseal)		A/R	B. F. Goodrich
*Bus Bar	269A4060-5	1	Hughes
*Bus Bar	269A4060-3	1	Hughes

*Order in addition to basic kit.

PART II - MATERIALS

Waterproof Cement - Royal "Grip" - Royal Products
Primer, Zinc Chromate - MIL-P-8585 - Commercial

PART II - TOOLS AND EQUIPMENT

Rivet Gun Drill Bit - No. 41 (0.0960 in.)
Portable Drill Drill Bit - No. 24 (0.1520 in.)

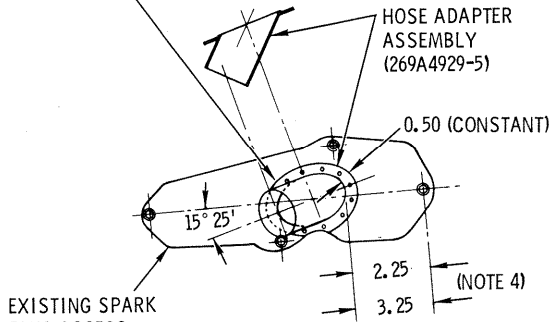
PART II - PROCEDURE

(Installation of 24V, 100A Alternator)

- a. Check and make sure that all electrical power is OFF, with special attention to MAG switch.
- b. If installed, remove instrument panel fairings, lower forward fairing and lower side fairings. (Sections 17 and 3, Basic HMI).
- c. Remove spark plug access cover from left side of engine cooling shroud (left side of helicopter looking forward). (See Figure 3.)
- d. Remove upper exhaust manifold from No. 1 and 2 cylinders.
- e. On a helicopter with a previously existing 24V electrical system, remove 24V, 70A alternator assembly (79036 - Lycoming - ALU-8403-LS Prestolite); including belt tension adjustment link, V-belt and all attaching hardware. Also remove alternator mounting bracket and tapered spacer from engine boss. (See Section 17, Basic HMI.)
- f. Remove 269A8517 alternator air duct (hose) assembly from left aft panel (left side of helicopter looking forward) of engine cooling shroud.
- g. Install new alternator air hose to engine cooling shroud, and exhaust flange at cylinder No. 1 as follows.

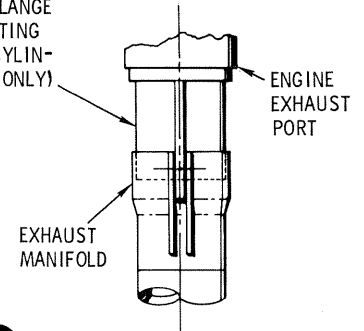
0.095-0.100 DIAMETER HOLE (12 PLACES)
THRU ADAPTER FLANGE AND COVER, EQUALLY
SPACED AROUND FLANGE

SECURE ADAPTER FLANGE TO
COVER WITH RIVET (MS20470AD3)
(12 PLACES)



A INSTALLATION OF HOSE ADAPTER ASSEMBLY
ON SPARK PLUG ACCESS COVER

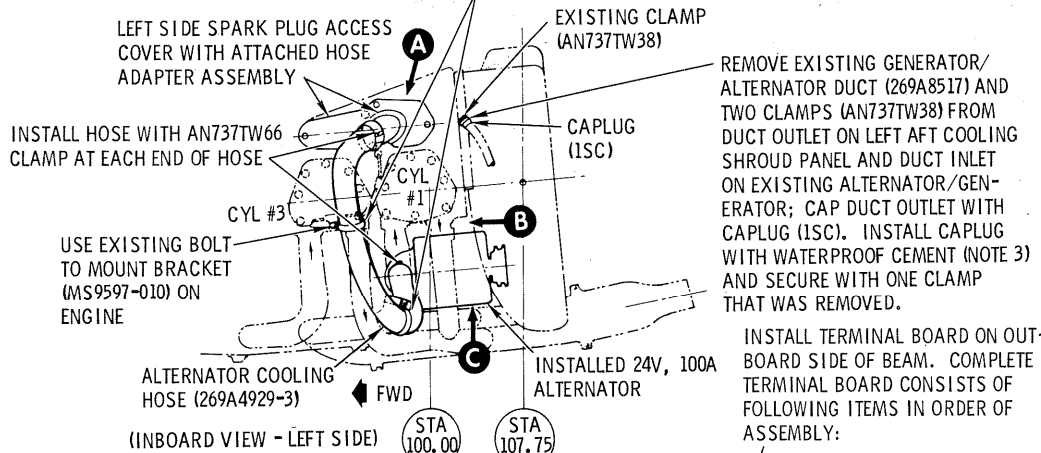
INSTALL EXHAUST FLANGE
(CC10-1) WITH EXISTING
HARDWARE (NO. 1 CYLIN-
DER EXHAUST PORT ONLY)



B INSTALLATION OF EXHAUST FLANGE

SECURE HOSE AT 3 LOCATIONS BETWEEN
HOSE ENDS. USE ONE WASHER UNDER
EACH SCREWHEAD AND NUT:

- MS21919DG32 CLAMP (3)
- NAS603-8 SCREW (2)
- MS21042-3 NUT (2)
- AN960PD10L WASHER (4)



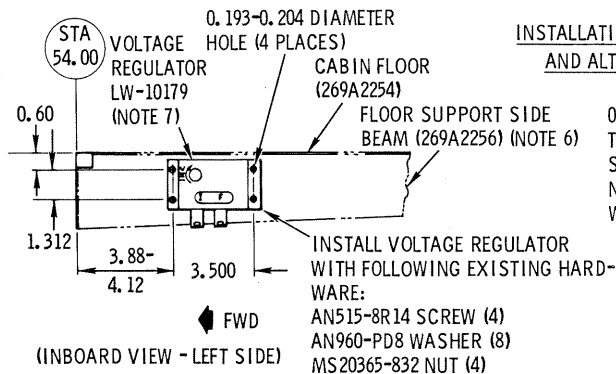
(INBOARD VIEW - LEFT SIDE)

REMOVE EXISTING GENERATOR/
ALTERNATOR DUCT (269A8517) AND
TWO CLAMPS (AN737TW38) FROM
DUCT OUTLET ON LEFT AFT COOLING
SHROUD PANEL AND DUCT INLET
ON EXISTING ALTERNATOR/GEN-
ERATOR; CAP DUCT OUTLET WITH
CAPLUG (1SC). INSTALL CAPLUG
WITH WATERPROOF CEMENT (NOTE 3)
AND SECURE WITH ONE CLAMP
THAT WAS REMOVED.

INSTALL TERMINAL BOARD ON OUT-
BOARD SIDE OF BEAM. COMPLETE
TERMINAL BOARD CONSISTS OF
FOLLOWING ITEMS IN ORDER OF
ASSEMBLY:

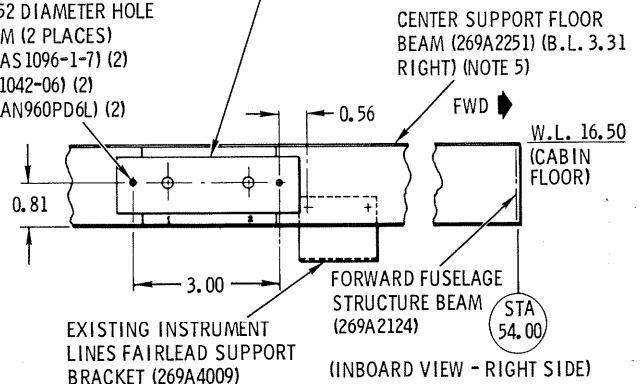
1. MS27212-3-2 TERMINAL BOARD
2. MS25227-5A INSULATING STRIP (2)
3. MS25226-6-2 LINK
4. MS19029-3S-2 COVER
5. NAS1063F-1-2 STRIP

INSTALLATION OF COVER WITH ADAPTER
AND ALTERNATOR COOLING HOSE



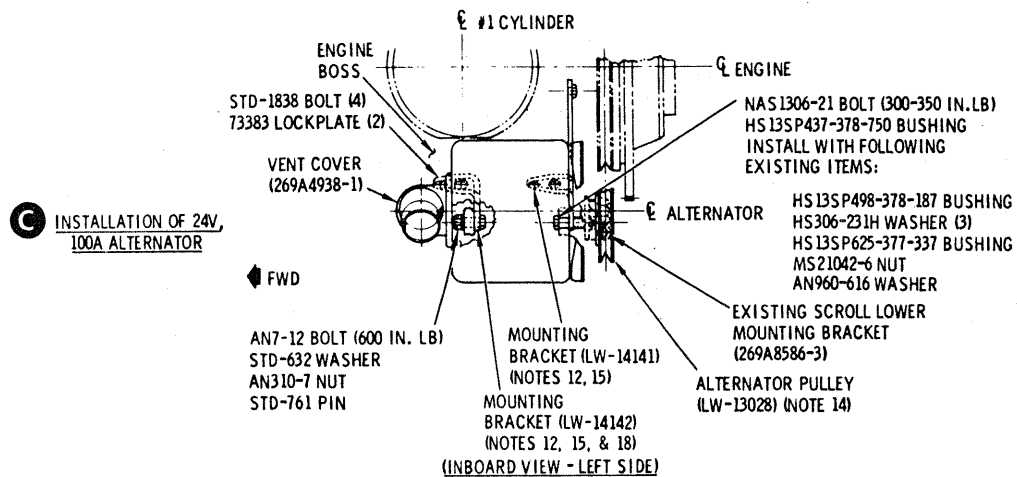
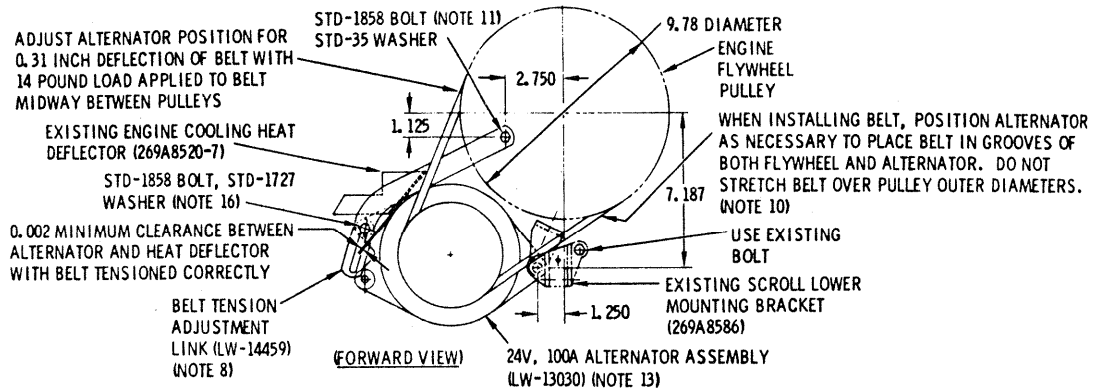
MOUNTING OF VOLTAGE REGULATOR

0.146-0.152 DIAMETER HOLE
THRU BEAM (2 PLACES)
SCREW (NAS1096-1-7) (2)
NUT (MS21042-06) (2)
WASHER (AN960PD6L) (2)



INSTALLATION OF TERMINAL BOARD TB-6

Figure 3. Installation of 24V, 100A Alternator Assembly (Sheet 1 of 2)



NOTES:

1. ALL DIMENSIONS IN INCHES.
2. LEFT AND RIGHT SIDES REFER TO LEFT AND RIGHT SIDES OF HELICOPTER.
3. ITEM 30, TABLE 2-5, BASIC HMI.
4. DIMENSIONS FOR LEFT SIDE SPARK PLUG COVER AS FOLLOWS:
3.25 FOR 269A8593-5; 2.25 FOR 269A8593.
5. FIRST OUTBOARD BEAM FROM HELICOPTER FORE-AND-AFT CENTERLINE, AT UNDERSIDE OF CABIN SEAT AND FLOOR STRUCTURE.
6. FIRST INBOARD BEAM FROM DOOR FRAME ASSEMBLY ON LEFT SIDE OF HELICOPTER AT UNDERSIDE OF CABIN SEAT AND FLOOR STRUCTURE.
7. PRESTOLITE NO. VSF7403. VOLTAGE REGULATOR 77347 (PRESTOLITE VSF 7402) MAY BE USED AS ALTERNATE.
8. REPLACES EXISTING ADJUSTMENT LINK.
9. REPLACES EXISTING BELT. ALTERNATE BELTS ARE GATES NO. 8307, 8440 AND DAYCO NO. 60.
10. BELT LENGTH (40.88 INCHES) TOLERANCE IS ± 0.12 INCH. SELECT SHORTEST BELT NECESSARY TO POSITION ALTERNATOR AS CLOSE AS POSSIBLE TO ENGINE, WITH CORRECT BELT TENSION AND ALTERNATOR TO HEAT DEFLECTOR CLEARANCE.
11. ALTERNATE BOLT -STD-1817; TORQUE BOLT 204 IN. LBS.
12. ALTERNATE MOUNTING BRACKETS: FORWARD - 74324-YC; AFT - 74324-YB.
13. REPLACES 24V, 70A ALTERNATOR 79036.
14. PART OF ALTERNATOR ASSEMBLY, WHICH INCLUDES 24V, 100A ALTERNATOR LW-10966 AND ALTERNATOR PULLEY LW-13028 WITH 2.5:1 FLYWHEEL PULLEY TO ALTERNATOR PULLEY RATIO.
15. REPLACES EXISTING GENERATOR ALTERNATOR MOUNTING BRACKET AND TAPERED SPACER.
16. ALTERNATES: BOLT - STD-1858; WASHER - STD-35.
17. ABBREVIATIONS: STA - STATION; W.L. - WATERLINE.
18. BRACKET WITH TWO SLOTTED HOLES TO BE IN THIS LOCATION.

Figure 3. Installation of 24V, 100A Alternator Assembly (Sheet 2 of 2)

1. Cap duct tube outlet on shroud left aft panel with 1SC caplug; using waterproof "Grip" cement to bond caplug to outlet. Secure caplug with one previously removed AN737TW38 clamp.
2. Using 269A4929-5 air duct adapter assembly as template, cut elliptical hole in removed spark plug access cover to match air duct adapter as shown in Figure 3. Drill holes and rivet adapter to cover; using No. 41 drill and install rivets with zinc chromate primer.
3. Install new 269A4929-3 alternator air hose to air duct adapter on plug access cover with hardware, clamps and Koroseal lacing as shown.
4. Install modified spark plug access cover on left side of engine cooling shroud.
5. Relocate cylinder head temperature probe from No. 2 to No. 3 cylinder.
6. Install new CC10-1 exhaust flange at No. 1 cylinder exhaust port with existing hardware. Reinstall upper manifold (Section 3, Basic HMI).

h. Install 24V, 100A alternator assembly (LW-13030 Lycoming) as follows (see Figure 3):

CAUTION

To prevent damage to alternator mounting lugs, mount brackets (finger tight) to alternator before any attempt is made to assemble alternator to crankcase.

NOTE

Check that mounting face of alternator mounting lugs lays flat against face of mounting bracket (part may be procured from Lycoming).

1. Install LW-14141 forward (aft on helicopter, next to pulley) mounting bracket and LW-14142 aft mounting bracket (with slotted holes) on alternator lugs, using hardware as shown. Tighten bolts no more than finger tight.

NOTE

New NAS1306-21 bolt and HS13SP437-378-750 bushing are required, in addition to original attach hardware (except belt), at aft (on helicopter) mounting bracket and lower scroll mounting bracket as shown.

2. Assemble alternator and mounting brackets to crankcase; tighten STD1838 bolts to 204 inch-pounds torque. (avoid pre-loading mounting brackets when torquing STD1838 bolts). Bend tangs on 73383 lockplates with a flat on bolt head.
3. Install LW-14459 adjusting link and rotate alternator toward engine; install belt and secure alternator to adjusting link with proper tension on drive belt. Torque bolt to 204 inch-pounds.
4. Torque AN7-12 pivot bolt to 600 inch-pounds; torque NAS1306-21 pivot bolt to 300 to 350 inch-pounds.
5. Lockwire all drilled hex head bolts.
6. Check alignment of forward and aft alternator mounting brackets, drive belt, and belt adjusting link.
7. For any helicopter on which a 12V electrical system is simultaneously being converted to a 24V system, make sure that Modification M10068-1 is accomplished according to Part I of this notice.
8. If not already installed, install 269A4938-1 vent cover on end of 24V, 100A alternator.
9. Connect lower end of new alternator air hose to inlet duct on alternator and secure hose at locations shown.
 - i. Install and connect electrical wiring for new 24V, 100A alternator assembly installation as shown in wiring diagram and wire list (Figure 4) and as follows:
 1. Use No. 24 drill bit to drill mounting holes for terminal board TB6 through cabin floor support beam at locations shown; coat holes with zinc chromate primer.
 2. Assemble and install TB6 on outboard side of floor support beam in accordance with Figure 3, sheet 1.

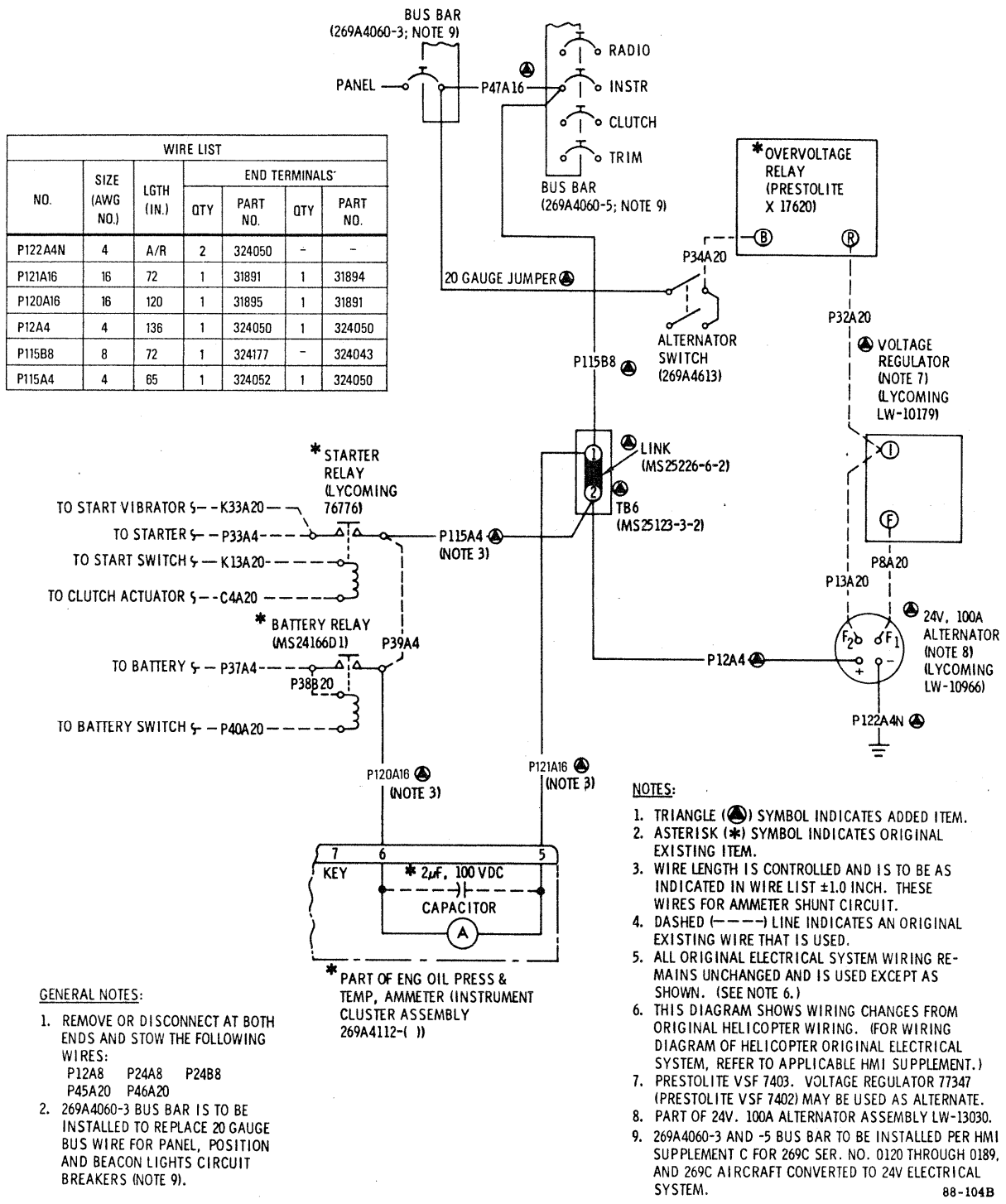


Figure 4. Installation of 24V, 100A Alternator Assembly - Wiring Diagram

CAUTION

Electrical malfunctions will occur if terminal board is not assembled in order shown.

- 3. Replace and rewire ammeter shunt and other wires as shown. Route wire No. P12A4 separate from existing wire bundle, down left side of center section frame.

CAUTION

Ammeter shunt wires in an existing 24V electrical system, or in a 12V electrical system that is simultaneously being converted for 24V operations according to Part I, are replaced. Size, length and wire type of new shunt wires must be as shown for correct ammeter operation and indications.

- 4. For information on original ammeter shunt wiring and other wiring interconnections of 12V or 24V electrical system, refer to applicable wiring diagram for 12V or 24V electrical system in HMI Supplement C.
- j. Check complete installation of 100A alternator assembly for discrepancies.
- k. Connect upper end terminal of battery positive cable to battery positive terminal and perform operational check of 24V electrical system, including operation of 100A alternator, night lighting system and all electrical components of any installed optional equipment (radio, combustion or exhaust manifold heater, searchlight, etc) (HMI Appendix A).
- l. Reinstall all items, components and fairings removed for access (Basic HMI, HMI Supplement C and HMI Appendix A).
- m. Record installation of 100A alternator installation 269A4929-1 in Component Record of Helicopter Log Book.

PART II - WEIGHT AND BALANCE DATA

*Weight parts removed from helicopter. Subtract weight obtained from 24.8 pounds, then add resultant weight at 98.5 inch-arm.

24.8 pounds at 98.5 inch-arm

Subtract: * _____ pounds at 98.5 inch-arm

ADD: _____ pounds at 98.5 inch-arm