

**R44 (14V) Astro Hydraulic Flight Control Upgrade Kit Instructions**

*Converts manual flight controls to hydraulic flight controls. Kit includes D500-1 Hydraulic Pump Assembly. Requires compliance with R44 SL-37C.*

**NOTE**

Visit [www.robinsonheli.com](http://www.robinsonheli.com) to verify kit instructions are current revision. Review instructions before installation; contact RHC Technical Support with questions. Verify kit contents match list; contact RHC Customer Service if parts are missing or damaged.

**NOTE**

Rivets included in kit contents are provided as a courtesy and at lengths most commonly used on production helicopters. Proper rivet length is determined by installer during installation.

ITEM	PART NUMBER	KIT CONTENTS	QTY
1	KI-189Instr.	Kit Instructions .....	1
2	A101-4	Rod End .....	4
3	A115-1	Spacer .....	1
4	A214-3	Washer .....	2
5	A785-28	Hose .....	1
6	A918-20	Cord Assembly – Collective .....	1
7	B163-2	Rod End .....	1
8	B263-2	Socket .....	1
9	B277-16	Clamp – Worm Gear .....	1
10	B297-2	Circuit Breaker (2-amp) .....	1
11	B330-13	Palnut .....	9
12	B330-16	Palnut .....	10
13	B330-19	Palnut .....	3
(Kit contents continue on next page)			

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
14	C022-3A	Servo Sub-Assembly – Aft ..... Includes: [1] B163-2 Rod End, Hydraulic [1] B330-16 Palnut [2] B330-19 Palnut [1] B330-21 Palnut [1] C343-8 Tube – Hydraulic [1] D200-1 Clevis – Hydraulic Actuator [1] D200-3 Washer – Hydraulic [1] D212-1 Servo – Hydraulic [1] D452-3 Nut – Tube (3/16-inch diameter tube) [1] D452-4 Nut – Tube (1/4-inch diameter tube) [1] D454-3 Retainer – O-ring (3/16-inch diameter tube) [1] D454-4 Retainer – O-ring (1/4-inch diameter tube) [1] AN316-5R Nut [1] AN316-6R Nut [1] AN804D3 Tee [1] AN804D4 Tee [1] MS28775-011 Packing [1] MS28778-4 Packing	1
15	C022-3B	Servo Sub-Assembly – Forward ..... Includes: [1] B330-6 Palnut [3] B330-19 Palnut [1] B330-21 Palnut [2] D200-1 Clevis – Hydraulic Actuator [2] D200-2 Scissor [2] D200-3 Washer – Hydraulic [1] D201-6 Support Assembly – Hydraulic Servos [1] D205-14 Hose Assembly – Hydraulic [1] D205-16 Hose Assembly – Hydraulic [1] D210-08 Nut [2] D212-1 Servo – Hydraulic [1] D452-3 Nut – Tube (3/16-inch diameter tube) [1] D452-4 Nut – Tube (1/4-inch diameter tube) [1] D454-3 Retainer – O-ring (3/16-inch diameter tube) [1] D454-4 Retainer – O-ring (1/4-inch diameter tube) [2] AN316-6R Nut [1] A880-903 Union [1] A880-904 Union [1] AN834D3 Tee [1] AN834D4 Tee [1] MS27039C0806 Screw [2] MS28775-011 Packing [2] MS28778-4 Packing [2] NAS1149FN832P Washer [4] NAS1149F0432P Washer [4] NAS6604H16 Bolt	1

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
16	C022-3C	Reservoir Sub-Assembly ..... Includes: [1] D205-11 Hose Assembly – Hydraulic [1] D205-12 Hose Assembly – Hydraulic [1] D205-15 Hose Assembly – Hydraulic [1] D205-16 Hose Assembly – Hydraulic [1] D211-1 (14V) Reservoir Assembly – Hydraulic [1] A880-903 Union [2] A880-904 Union [1] A880-906 Union [1] MS28775-011 Packing [2] MS28778-4 Packing [1] MS28778-6 Packing	1
17	C069-5	Cyclic Control Assembly – R44 I (O-540) .....	1
18	C115-1	Spacer – Rod End .....	1
19	C121-28	Push/Pull Tube .....	2
20	C121-30	Push/Pull Tube .....	1
21	C121-31	Push/Pull Tube Assembly .....	3
22	C130-14	Spacer .....	1
23	C130-15	Spacer .....	4
24	C141-1	Washer .....	1
25	C175-4	Cyclic Pivot Assembly .....	1
26	C210-7	Doubler (cabin assembly) .....	1
27	C334-2	Support Assembly – Hydraulic .....	1
28	C339-10	Jackshaft Weldment – Main Rotor Controls .....	1
29	C345-5	Strut Weldment – Jackshaft (with hydraulics) .....	1
30	C386-2	Cover – Cabin Bulkhead (mid) .....	1
31	C386-3	Cover – Cabin Bulkhead (upper) .....	1
32	C435-6	Restraint Assembly – Cabin Bulkhead .....	1
33	C559-6	Brace – Hydraulic Support .....	1
34	C560-1A	Support Sub-Assembly (LH) ..... Includes: [1] C435-1 Brace [1] C559-1 Angle [1] D687-1 Angle	1
35	C560-1B	Support Sub-Assembly (RH) ..... Includes: [1] A442-1 Clip [1] C435-2 Brace [1] C559-2 Angle [1] D687-2 Angle [1] D687-3 Angle	1

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
36	C560-1C	Cover Sub-Assembly ..... Includes: [1] C386-1 Cover [1] C559-5 Angle [2] MS21069L08K Nutplate	1
37	C723-1	Bulkhead Assembly – Lower .....	1
38	D173-1	Rod End .....	3
39	D202-1	Channel .....	1
40	D202-3	Shim – Hydraulic Servo Installation .....	4
41	D202-4	Bracket Assembly – Hydraulic Servo Installation .....	1
42	D203-1	LH Support Assembly – Hydraulic Servo Installation .....	1
43	D204-8	Support Assembly – Aft Hydraulic Servo (RH) .....	1
44	D205-3	Hose Assembly .....	1
45	D205-7	Hose Assembly .....	1
46	D207-1	Weldment – Hydraulic .....	1
47	D208-1	Weldment – Hydraulic .....	1
48	D210-4	Nut .....	13
49	D210-5	Nut .....	5
50	D500-1A	Pump Sub-Assembly – Hydraulic .....	1
		Includes: [1] B330-21 Palnut [1] B330-25 Palnut [1] D452-4 Nut – Tube (1/4-inch diameter tube) [1] D452-6 Nut – Tube (3/8-inch diameter tube) [1] D454-4 Retainer – O-ring (1/4-inch diameter tube) [1] D454-6 Retainer – O-ring (3/8-inch diameter tube) [1] D500-1 Pump Assembly – Hydraulic (R44) [1] AN834-6D Tee [1] AN834D4 Tee [1] AN929-4 Cap [1] AN929-6 Cap [1] MS28778-4 Packing [1] MS28778-6 Packing	
51	D819-10	Decal – “HYD” .....	1
52	D918-1	Cord Assembly (longitudinal) .....	1
53	D918-2	Cord Assembly (lateral) .....	1

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
54	KI-189A	Harness (Hyd Solenoid) Assembly ..... Includes: [1] KI-189B Heat Shrink, marked "KI-189"(see description below) [1] B260-3 Terminal – Ring [2] B263-4 Socket [1] B263-13 Housing [1] D275-103 Diode [1] KI-189-629 (B274-22) Wire, 14 feet (marked "-629") [1] KI-189-630 (B274-22) Wire, 35 inches (marked "-630")	1
55	KI-189B	B158-6 Heat Shrink – 3/8-inch diameter, 1.50 inches long (marked "KI-189") ..	1
56	KI-189C	Harness (Hyd Power) Assembly ..... Includes: [1] B260-2 Terminal – Ring [1] B263-2 Socket [1] B263-13 Housing [1] KI-189-628 (B274-22) Wire, 38 inches (marked "-628")	1
57	AN316-5R	Nut .....	5
58	AN316-6R	Nut .....	3
59	MS3367-4-0+	Ty-Rap (Note: "+" in contents part number indicates 10-qty pack) .....	1
60	MS3367-4-9+	Ty-Rap (Note: "+" in contents part number indicates 20-qty pack) .....	1
61	MS3367-5-0+	Ty-Rap (Note: "+" in contents part number indicates 10-qty pack) .....	1
62	MS3367-5-9+	Ty-Rap (Note: "+" in contents part number indicates 20-qty pack) .....	1
63	MS3367-7-9+	Ty-Rap (Note: "+" in contents part number indicates 10-qty pack) .....	1
64	MS20426AD3-3.5+	Rivet (Note: "+" in contents part number indicates 50-qty pack) .....	1
65	MS20426AD4-3.5+	Rivet (Note: "+" in contents part number indicates 50-qty pack) .....	1
66	MS20470AD3-3+	Rivet (Note: "+" in contents part number indicates 50-qty pack) .....	1
67	MS20470AD4-3.5+	Rivet (Note: "+" in contents part number indicates 20-qty pack) .....	1
68	MS21042L08	Nut .....	26
69	MS21069L08	Nutplate .....	2
70	MS21071L08	Nutplate .....	1
71	MS21086L08	Nutplate .....	4
72	MS21919WDG5	Clamp .....	1
73	MS21919WDG7	Clamp .....	1
74	MS21919WDG8	Clamp .....	1
75	MS27039C0805	Screw .....	15
76	MS27039C0807	Screw .....	15
77	MS27039C0808	Screw .....	4
78	NAS557-3A	Grommet .....	2
79	NAS620-416L+	Washer (Note: "+" in contents part number indicates 10-qty pack) .....	1
80	NAS1097AD3-4.5+	Rivet (Note: "+" in contents part number indicates 50-qty pack) .....	1
81	NAS1149FN832P+	Washer (Note: "+" in contents part number indicates 20-qty pack) .....	2

ITEM	PART NUMBER	KIT CONTENTS	QTY
82	NAS1149F0432P+	Washer (Note: "+" in contents part number indicates 20-qty pack) . . . . .	1
83	NAS1149F0463P+	Washer (Note: "+" in contents part number indicates 20-qty pack) . . . . .	1
84	NAS1149F0532P+	Washer (Note: "+" in contents part number indicates 20-qty pack) . . . . .	1
85	NAS1149F0632P+	Washer (Note: "+" in contents part number indicates 20-qty pack) . . . . .	1
86	NAS1352-4-8P	Screw – Socket Cap . . . . .	4
87	NAS6604-2	Bolt . . . . .	4
88	NAS6604-8	Bolt . . . . .	4
89	NAS6604-21	Bolt . . . . .	1
90	NAS6604-23	Bolt . . . . .	1
91	NAS6604-24	Bolt . . . . .	2
92	NAS6604-25	Bolt . . . . .	1
93	NAS6605-8	Bolt . . . . .	1
94	NAS6605-9	Bolt . . . . .	3
95	NAS6605-33	Bolt . . . . .	1
96	2633	Hole Plug . . . . .	1
97	2813	Bushing . . . . .	1

**Consumables**

Refer to R44 Maintenance Manual (MM) § 1.400.

- A257-15 Hydraulic fluid
- A701-3 Tape (1/2-inch wide polyethylene)
- B270-1 Sealant
- B270-21 Protectant
- Primer (touch-up only, for newly installed rivets; apply at installers' discretion)

**Special Tools**

- MT146-3 Blocks (C017-4) or MT146-4 Blocks (C017-6) – swashplate rigging
- MT384-1 (115-volt, 60 Hz), or MT384-2 (220V, 50 Hz) Hydraulic Test Pump Assembly
- MT544-2 Trim Spring Retainer and MT544-3 Collective Spring Retainer
- MT559-1 Blocks – main rotor rigging
- Clecos (sheet metal fastener) size #30 (copper) and #40 (silver)
- Drilling, deburring, and countersinking tools
- 90-degree drill motor
- Wire stripping and crimping tools
- Manual rivet installation tool, squeeze type
- 3X Pneumatic rivet gun & assorted bucking bars
- 1/8-inch rivet back markers or hole finder
- Rivet cutter

**Kit Instructions**

1. Refer to MM Figure 2-4. Remove item numbers 3A thru 3E, 4C thru 4H, 5 (left & right), 7B, and 9.
2. Refer to Illustrated Parts Catalog (IPC) Figures 25-7 and 25-9. Remove LH & RH aft harness & buckle (seat belt) assemblies.
3. Refer to IPC Figure 25-23. Remove C003-2 (bulkhead), C003-3 (aft RH headliner), and C003-4 (aft RH headliner) insulation.

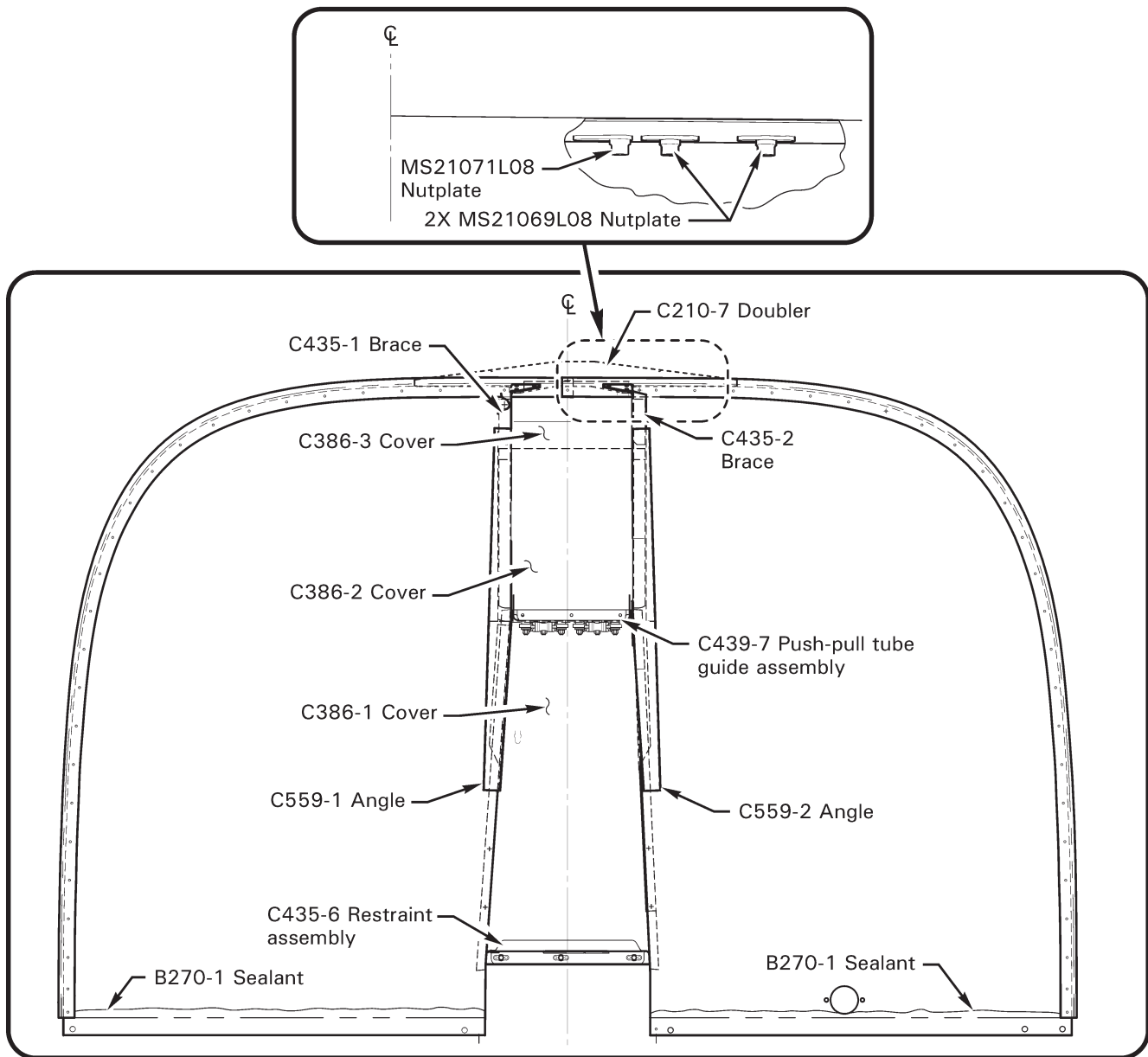
**CAUTION**

To minimize risk of electrical discharge: When disconnecting battery, disconnect negative (ground) cable from the battery first, then disconnect positive cable. When connecting battery, connect positive cable first, then connect negative (ground) cable.

4. Turn battery switch off. Disconnect battery per MM § 37-10A.
5. Remove:
  - a. main rotor blades per MM § 9.111 and main rotor hub per MM § 9.121.
  - b. swashplate assembly per MM § 8.411.
  - c. main fuel tank per MM § 12.111.
  - d. aux tank per MM § 12.121.
  - e. jackshaft and (strut) weldments per MM § 8.311 & 8.321 (ref. IPC Figures 67-53, 65-57, and 67-59).
  - f. main rotor gearbox per MM § 7.110.
  - g. C121-5 & C121-7 push-pull tubes per MM § 8.160 (ref. IPC Figures 67-35 and 67-51), and C121-15 push-pull tube (ref. IPC Figure 67-89, and MM Figure 8-2).
  - h. C038 collective spring per MM § 8.221, and C427-3, -5, or -7 support assembly (ref. IPC Figure 67-25).
  - i. C334-1 support assembly (with C317 bellcrank), disconnecting C343-1, and C121-9 & -19 push-pull tubes (ref. IPC Figure 67-41), and discarding C918-15 elastic cord.
  - j. C069 cyclic assembly & C175 cyclic pivot assembly per MM § 8.111, elastic cords per MM § 8.131, lateral & longitudinal cyclic trim assemblies per MM § 8.141.
  - k. C723-1 bulkhead assembly (ref. IPC Figure 53-15). Remove and retain C723-2 (upper) bulkhead assembly and C723-6 cover; discard remaining bulkhead and installation hardware.

**Kit Instructions (continued)**

- 6. Refer to Figure 1. Carefully drill out attaching rivets and remove:
  - a. B439-2 & C439-7 push-pull tube guide assemblies (ref. MM Figure 8-4E & IPC Figure 67-51).
  - b. C210-7 doubler (center, aft roof; see Figure 1) and (2) MS21069L08 & (1) MS21071L08 nutplates (forward-side of bulkhead inside cabin, roof RH side; see Figure 1 detail).
  - c. C560 bulkhead center parts: C386-1, -2, & -3 covers, C559-1 & -2 angles, C435-1 & -2 brace, and C435-6 restraint assembly (see Figure 1).



**FIGURE 1 Parts to remove from C560 bulkhead assembly  
(view looking forward)**



**Kit Instructions (continued)**

7. Refer to Figure 1. Using plastic scraper, remove fillet of B270-1 sealant on aft side of C560 bulkhead assembly, where bulkhead meets stainless-steel horizontal firewall. Visually inspect aluminum panels to include panels' bottom edges (visible from engine compartment); if corrosion is found, contact RHC Technical Support before proceeding. Using B270-1 sealant, seal junction of horizontal firewall and aft side of C560 bulkhead assembly.
8. Refer to Figure 2 and associated detail views.
  - a. Position C560-1C cover sub-assembly on bulkhead forward side and secure with clecos. Install specified rivets thru cover and C259-1 & C259-2 panels.
  - b. Position new C435-6 restraint at base of C560-1C cover sub-assembly and temporarily secure restraint to cover with (3) MS27039C0805 screws. Using existing upper two holes in C351-1 & -2 braces as guides for #40 drill, progressively drill & cleco four lateral holes thru C560-1C cover & C435-6 restraint. Remove screws, clecos, & restraint, and deburr holes. Install restraint and secure with specified rivets.
  - c. Position C386-2 and C386-3 covers on bulkhead forward side with:
    - lower flange of C386-2 cover inside & aft of C560-1C cover, and
    - lower flange of C386-3 cover inside & aft of C386-2 cover.Secure covers with clecos from aft side. Using existing holes in C259 panels as guide for #30 drill, progressively remove cleco, drill [enlarge] hole in C386-2 and/or C386-3 cover, then install next larger-size cleco from forward side.
  - d. Position C560-1A LH support on bulkhead aft side and secure with clecos on forward side.
  - e. Position C210-7 doubler under aft roof and secure to roof & LH support with clecos. Using existing holes in roof as guide for #30 drill, progressively drill & cleco remaining holes in doubler.
  - f. Using holes in C560-1A LH support as guide for #40 drill, progressively drill & cleco six lateral holes thru C560-1C cover sub-assembly.
  - g. Using holes in C560-1A LH support as guide for #40 drill, progressively drill & cleco six longitudinal holes thru C259-1 panel.
  - h. Using upper-outboard hole in LH support as guide for #30 drill, drill thru flange and C259-1 panel.
  - i. Remove C210-7 doubler & LH support and deburr holes as required. Countersink aft side of LH support's upper-outboard hole for MS20426AD4 rivet head. Install LH support and C210-7 doubler using specified rivets in all holes.
9. Remove D201-6 support assembly from C022-3B forward servo support sub-assembly by removing and retaining (4) NAS6604H16 bolts and (4) NAS1149F0432P washers.

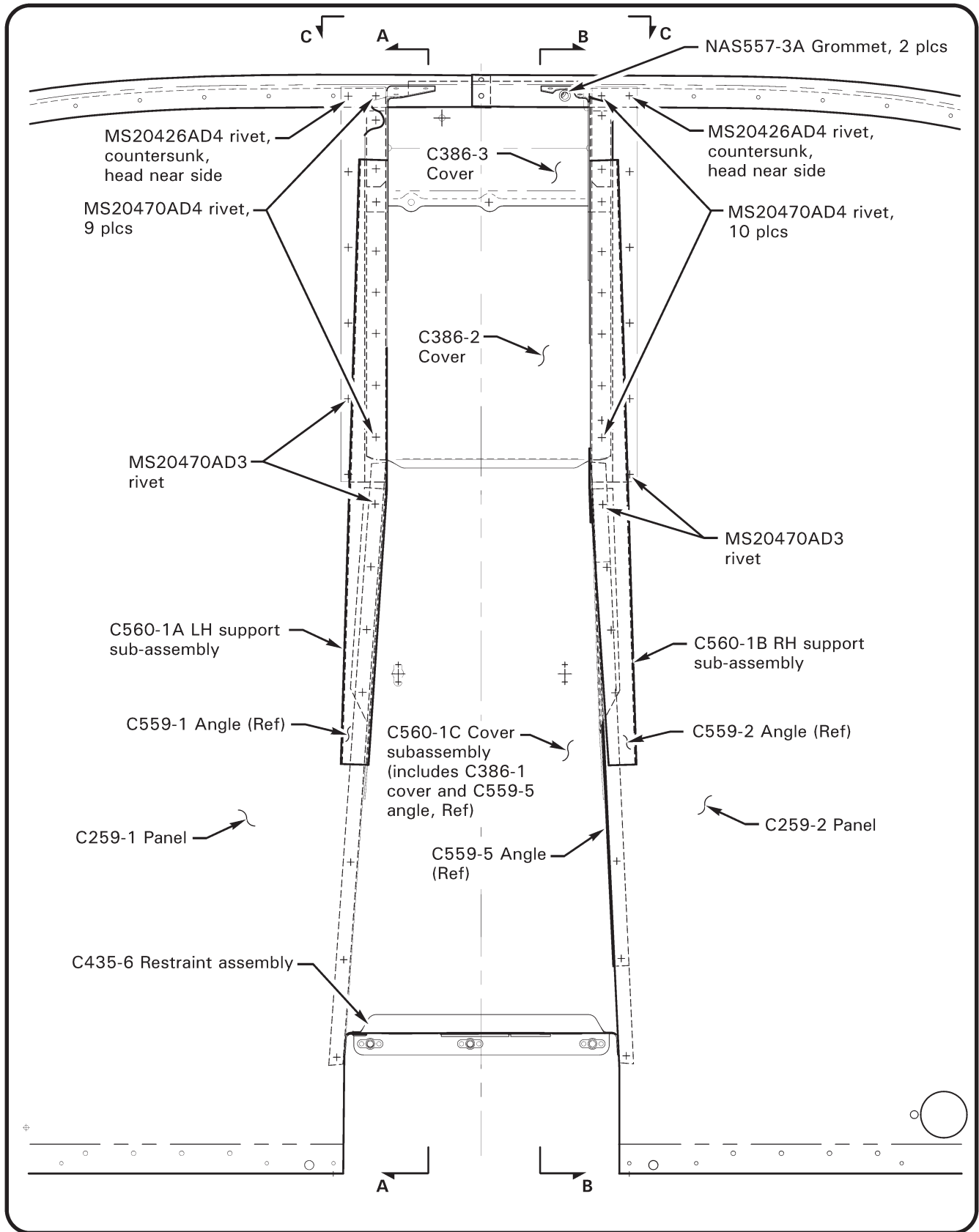
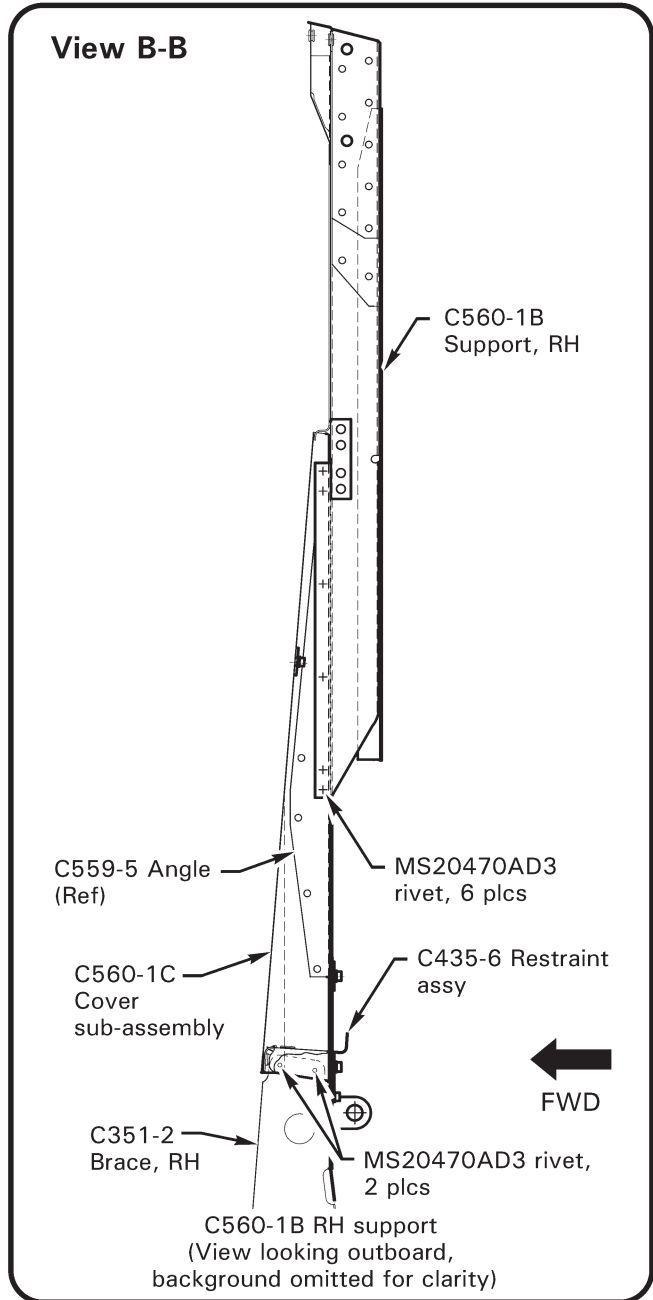
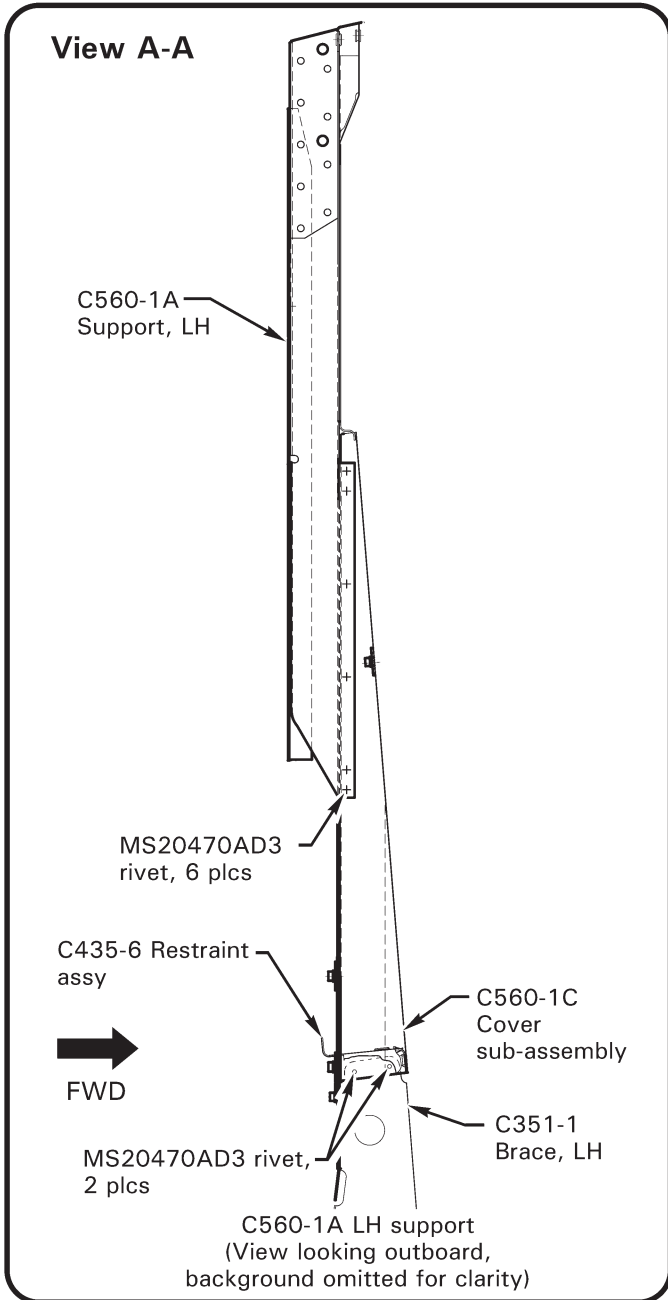
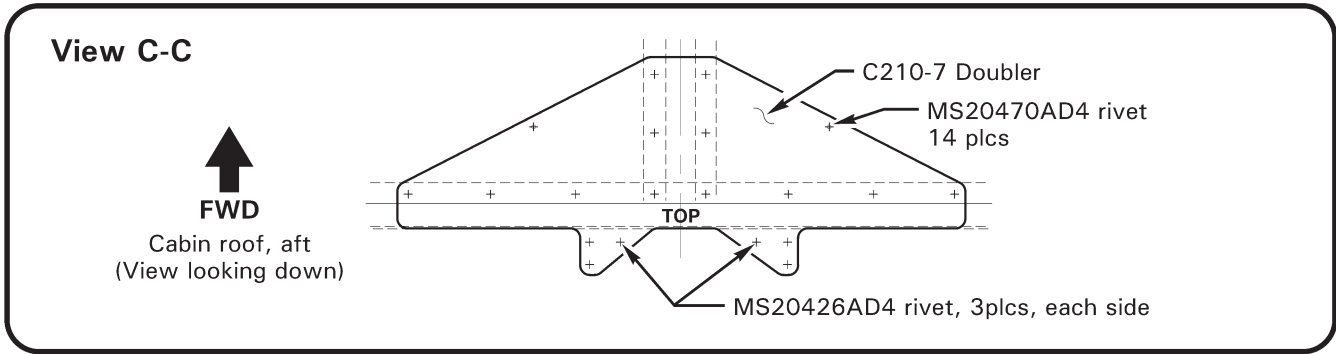


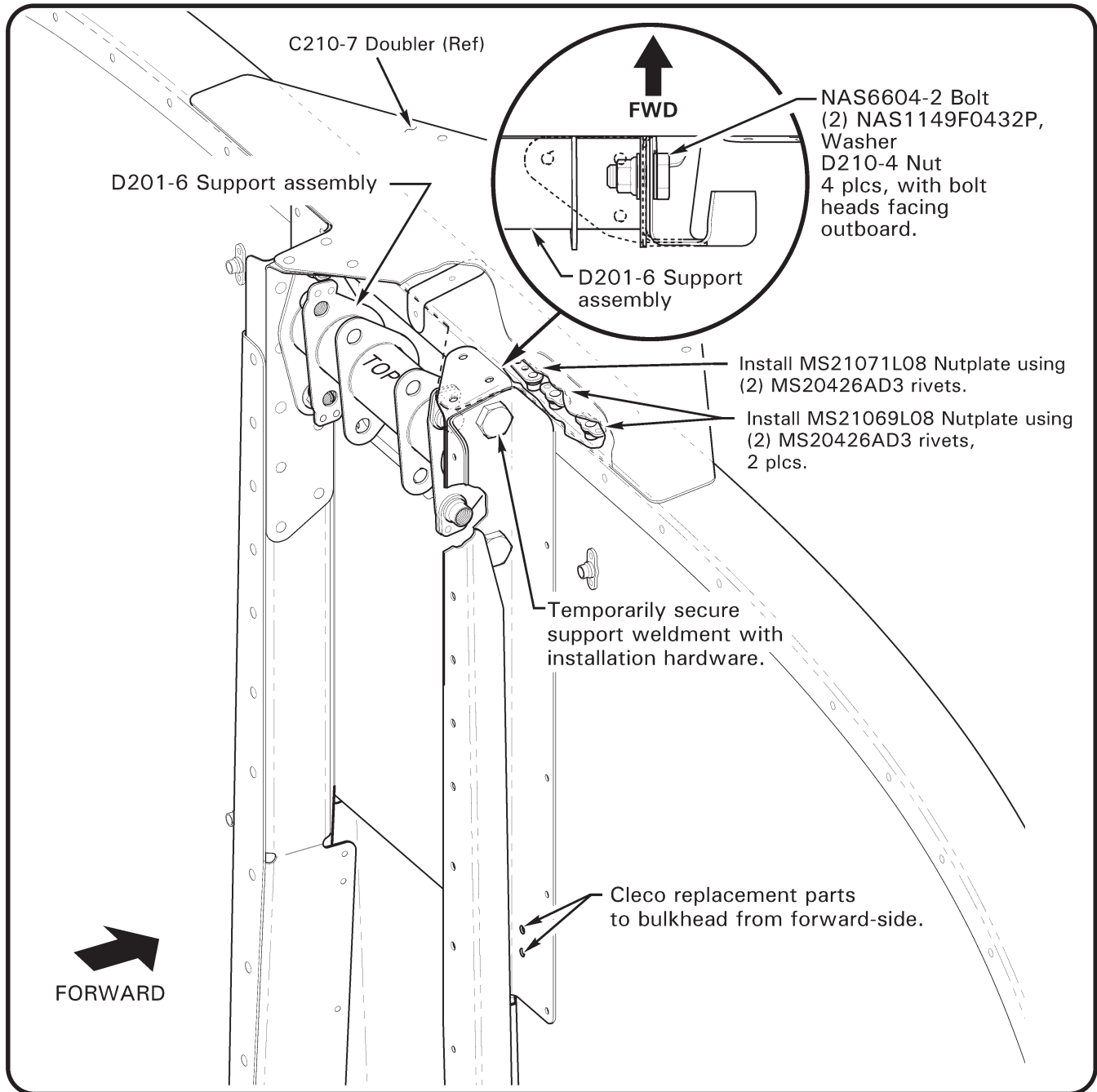
FIGURE 2 C560 Bulkhead with installation rivets shown  
(view looking forward)



**FIGURE 2 Detail views: Installation rivet locations**  
(views as noted)

**Kit Instructions (continued)**

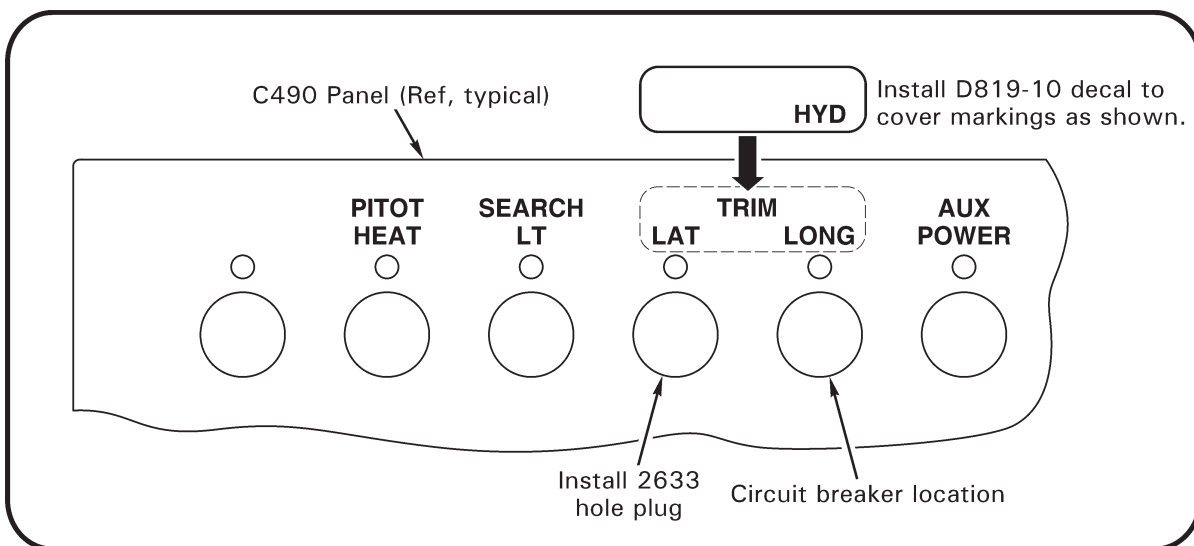
- 10. Refer to Figure 3. Temporarily install & secure D201-6 support assembly to C560-1A LH support using (2) NAS6604-2 bolts, (2) D210-4 nuts, and (4) NAS1149F0432P washers (one under head, one under nut).



**FIGURE 3 C560 Bulkhead (detail) with D201-6 weldment**  
(positioning RH side detail parts using weldment)

**Kit Instructions (continued)**

11. Refer to Figures 2 & 3.
  - a. Position C560-1B RH support on bulkhead aft side and secure with clecos. Temporarily secure D201-6 support assembly to RH support using (2) NAS6604-2 bolts, (2) D210-4 nuts, & (4) NAS1149F0432P washers (one under head, one under nut).
  - b. Using holes in C386-2 & C386-3 covers as guide for #30 drill, progressively drill & cleco nine holes thru C259-2 panel and RH support (see Figure 3).
  - c. Using existing holes atop C259-2 panel edge as guide for #30 drill, drill & cleco two holes thru panel and RH support. If there is only one existing hole, then add a second hole atop RH support to mirror LH support's upper-most longitudinal holes.
  - d. Using holes in RH support as guide for #40 drill, progressively drill & cleco five holes thru RH support and C259-2 panel.
  - e. Remove both upper NAS6604-2 bolts securing D201-6 support assembly. Pivot support assembly aft & down. Using holes in RH support top flange as guide for #30 drill, drill & cleco three holes thru RH support and C210-7 doubler.
  - f. Remove D201-6 support assembly and retain hardware.
  - g. Remove RH support and deburr holes as required. Countersink aft side of upper-outboard hole for MS20426AD4 rivet head.
  - h. Install RH support using specified rivets. Install (1) MS21071L08 & (2) MS21069L08 nutplates from cabin side, using specified rivets thru C210-7 doubler (see Figure 3).
  - i. On aft sides of C259-1 & -2 panels, seal junctions of panels and newly installed bulkhead parts with B270-1 sealant. Seal junction of C210-7 doubler along roof aft edge with B270-1 sealant.
  - j. Install D201-6 support assembly using (4) NAS6604-2 bolts, (4) D210-4 nuts, & (8) NAS1149F0432P washers (one under head, one under nut). Standard torque per MM § 1.320 and torque stripe per MM Figure 2-1.



**FIGURE 4 Hydraulic circuit breaker alternate location**  
(if circuit breaker panel is not labeled for hydraulics)

**Kit Instructions (continued)**

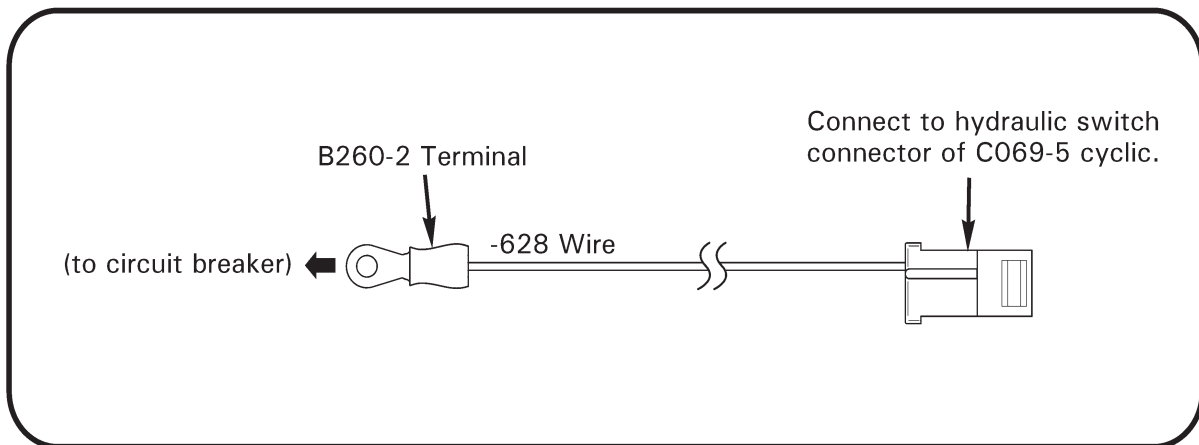
- 12. Refer to Figure 4. Open circuit breaker panel. Remove (trim system) circuit breakers labeled “LONG” and “LAT”. Install B297-2 (2-amp) circuit breaker in newly vacated hole marked “LONG”.

**NOTE**  
Parenthetic dash numbers, such as (-2690), indicate number marked on wiring.

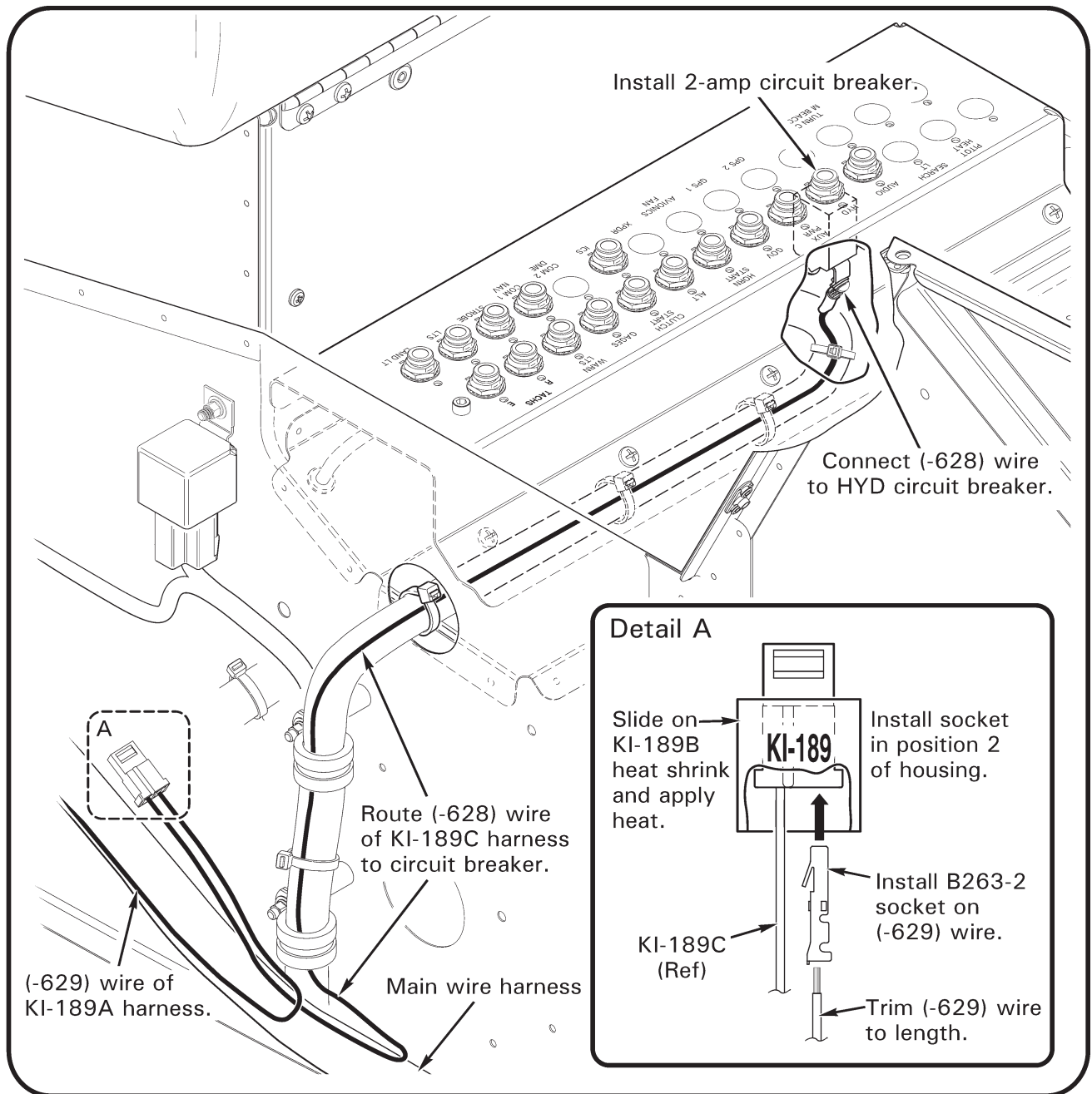
- 13. Refer to Figures 5, 6, & 7. Route KI-189C harness assembly’s (-628) wire terminal thru keel panel and connect to newly-installed circuit breaker. Secure circuit breaker panel and install D819-10 decal and 2633 hole plug. Temporarily secure KI-189C harness assembly to main harness.
- 14. Refer to IPC Figure 67-41. Install C334-2 support and connect C121-9, C121-19, & C343-1 push-pull tubes per MM § 8.524, ensuring A697-6 tab (on C121-9 & -19 push-pull tubes) are positioned aft. Install new A918-20 cord assembly (clamped end forward), to A697-6 tab (of C121-19 push-pull tube), and A697-3 anchor (top aft hole).

**WARNING**  
**Assembly of flight controls is critical and requires inspection by a qualified person. If a second person is not available, the installer must take a 5-minute break prior to inspecting flight control connections he has assembled.**

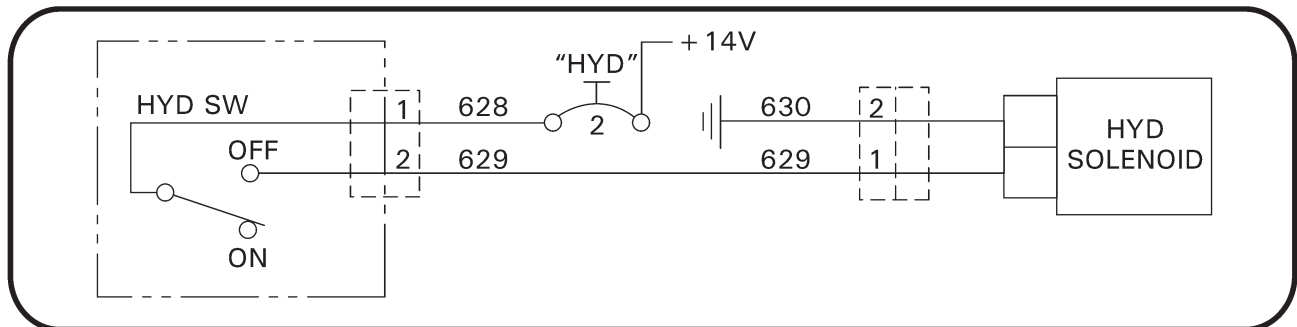
- 15. Refer to IPC Figure 67-27. Install C069-5 cyclic control assembly & C175-4 cyclic pivot assembly per MM § 8.112.
- 16. Refer to IPC Figure 67-9. Install D918-1 (longitudinal) & D918-2 (lateral) cord assemblies.
- 17. Install C121-28 and C121-30 push-pull tubes.
- 18. Install C006-8 (or equivalent, as required per SB-37B) main rotor gearbox per MM § 7.120.



**FIGURE 5 KI-189C Harness assembly**



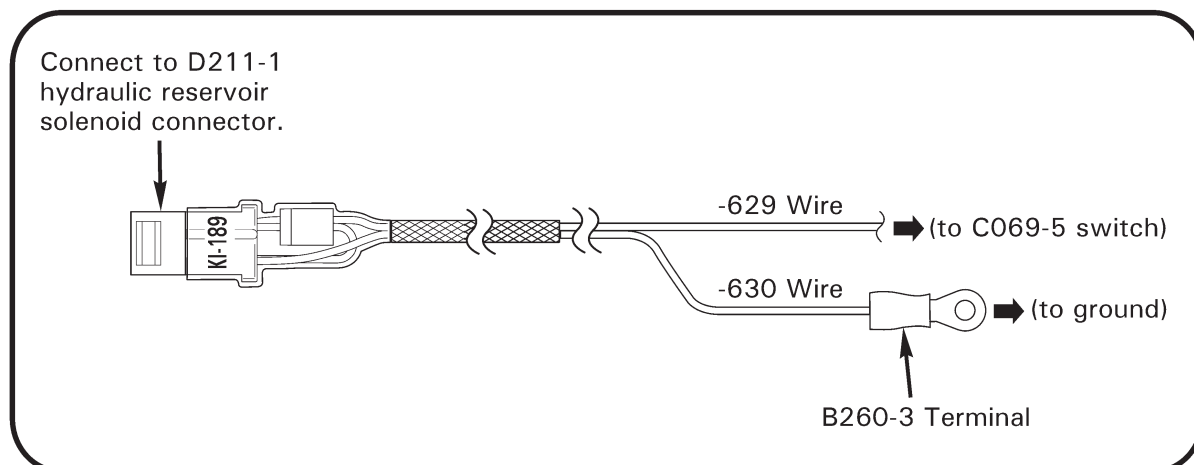
**FIGURE 6 Installation of KI-189C harness assembly**  
(completing hydraulic switch power connection)



**FIGURE 7 Hydraulic switch schematic**

**Kit Instructions (continued)**

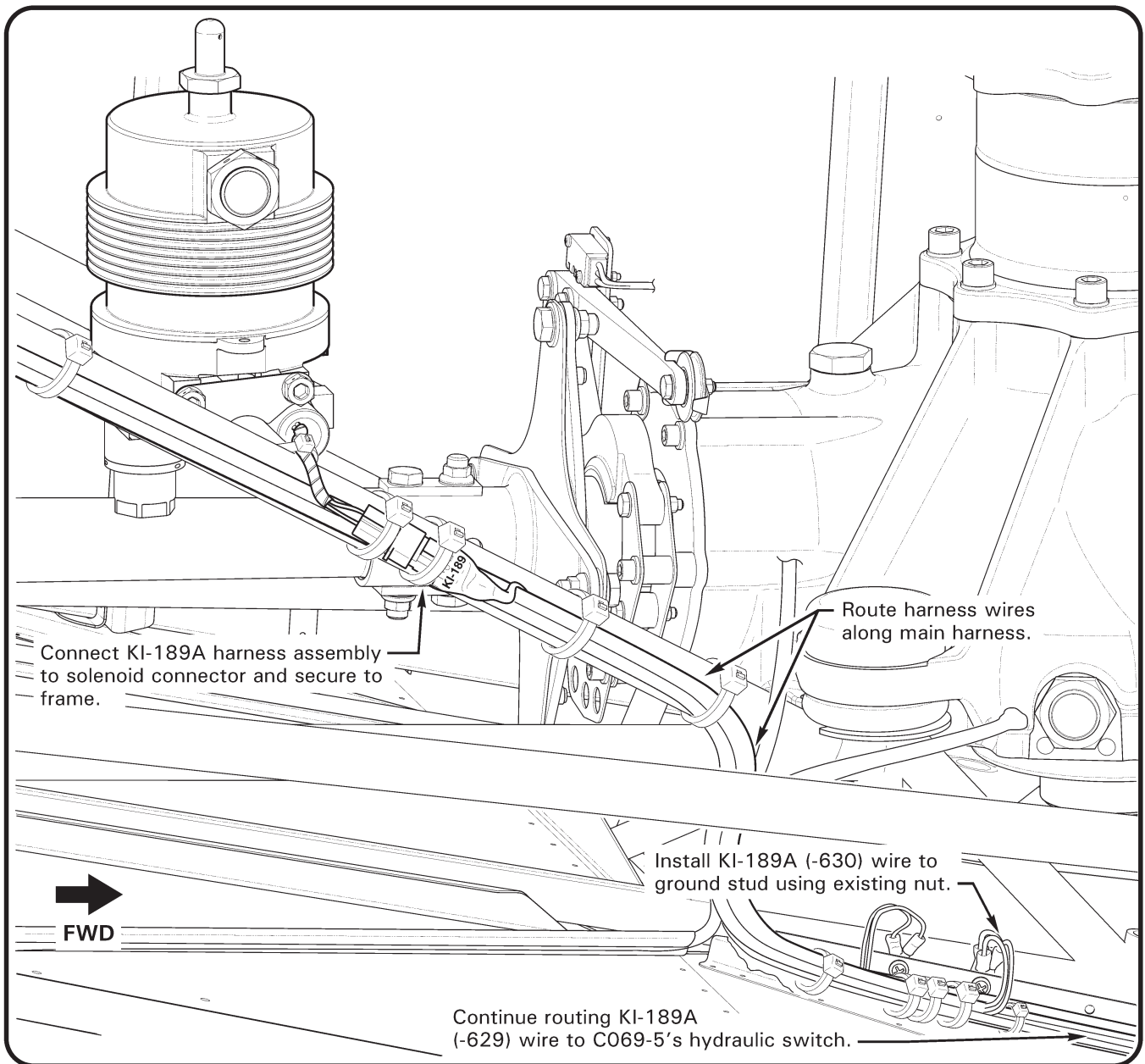
19. Refer to Figure 2 and IPC Figure 67-57. Using holes in forward flange of C559-6 brace as guides, drill one 0.169 inch diameter hole in C559-1 & C559-2 angles; deburr holes. Secure C559-6 brace to C559-1 & -2 angles using (2) MS27039C0806 screws, (2) NAS1149FN832P washers, and (2) MS21042L08 nuts. Additional NAS1149FN832P washers may be added between C559-1 & -2 angles and C559-6 brace as necessary to minimize preload; replace MS27039C0806 screws as required for thread engagement.
20. Install 2813 bushing in lower flange of C559-6 brace. Route pitot line up thru small hole in C435-6 restraint and bushing.
21. Refer to IPC Figure 29-17. Install D500-1A pump sub-assembly per MM § 8.740.
22. Install C017-6 (or equivalant, as required per SB-37B) swashplate per MM § 8.412.
23. Refer to IPC Figures 67-53 & 67-57. Install D207-1 forward weldment, D208-1 aft weldment, C345-5 weldment, D203-1 LH support, and C339-10 jackshaft. Adjust all six rod ends attached to D207-1 & D207-8 weldments to protrude  $0.93 \pm 0.03$  inch from weldment threaded end to rod end ball centerline.
24. Install D204-8 support, and adjust rod end to protrude 1.10 inches from threaded end to rod end ball centerline.
25. Install (previously removed) forward (pair of) D212-1 servos to D201-6 weldment using retained hardware. Standard torque per MM § 1.320 and safety wire per NASM33540 (two bolts per servo) using .032 inch CRES safety wire.
26. Refer to IPC Figure 29-3 and MM § 8.760. Install C022-3A (aft D212-1) servo sub-assembly.
27. Refer to IPC Figure 29-7 and MM § 8.720. Install C022-3C reservoir sub-assembly.
28. Refer to IPC Figure 53-15. Install C723-1 bulkhead. Install C723-2 (upper) bulkhead assembly and C723-6 cover.

**FIGURE 8 KI-189A Harness Assembly**



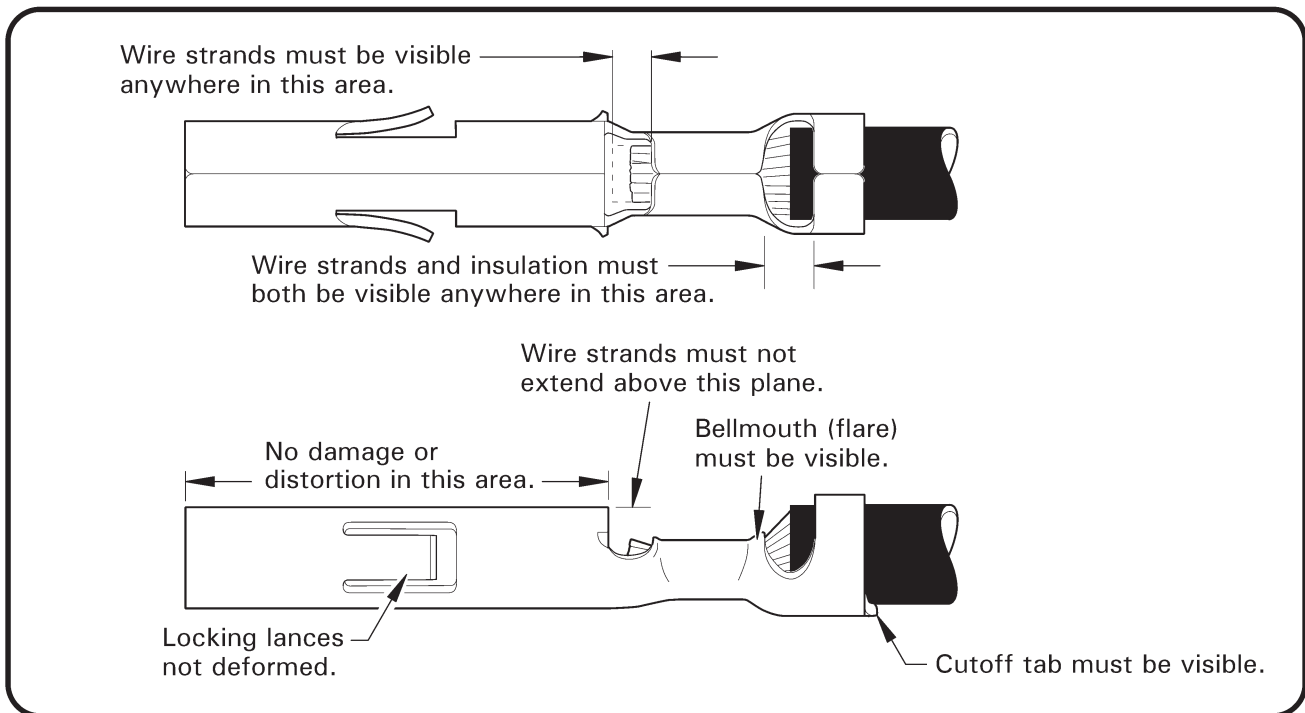
**Kit Instructions (continued)**

- 29. Refer to IPC Figures 29-7 and 71-49. Install A785-6, -16, -17 & -28 cooling hoses.
- 30. Refer to Figures 7, 8, & 9. Connect KI-189A harness assembly to D211-1 hydraulic reservoir solenoid. Secure connector to frame with ty-raps. Install ring terminal of (-630) wire to existing ground fastener. Route (-629) wire forward along C059 main wire harness to connector of KI-189C harness assembly, securing wire to main harness with appropriately-sized ty-raps.



**FIGURE 9 Installation of KI-189A Harness assembly**

**Kit Instructions (continued)**



**FIGURE 10 Crimp Inspection**  
(installed socket shown)

31. Refer to Figures 6 & 7. Position cyclic stick fully aft. Cut (-629) wire to allow connection to strip trimmed end and crimp B263-2 socket on wire. Perform crimp inspection per Figure 10. Verify security of socket. Install (-629) wire socket in position 2 housing of KI-189C harness assembly and verify socket security. Slide KI-189B heat shrink over connector so “KI-189” is visible and apply heat. Connect to mating connector of C069-5 cyclic assembly. Secure wiring to main harness using appropriately-sized ty-raps.
32. Install aft harness & buckle (seat belt) assemblies per MM § 15.100.
33. Install main rotor hub per MM § 9.122 and C005-12 main rotor blade & spindle assemblies per MM § 9.112.
34. Install main fuel tank and aux fuel tank per MM § 12.100, or install KI-196 R44-series Bladder Fuel Tank Installation Kit.
35. Refer to IPC Figure 53-15. Install C347-6 panel between main & aux fuel tanks and secure with MS27039C0907 screws. With flanges pointing down and narrow-side forward, position & clamp D202-1 channel under fuel tanks’ inboard flanges with aft edges of channel & panel approximately aligned. Using existing holes in C347-6 panel as guides for 0.169-inch diameter drill, progressively drill & cleco four vertical holes thru corners of D202-1 channel.

**Kit Instructions (continued)**

36. Refer to IPC Figure 29-3. Attach D202-4 bracket to aft servo supports. Using existing holes in D202-4 bracket assembly as guides for 0.169-inch diameter drill, progressively drill & cleco four vertical holes thru C347-6 panel and D202-1 channel. To minimize panel deformation, determine required D202-3 shims between panel & channel. Remove channel and deburr holes. Install (4) MS21086L08 nutplates, one at each corner of channel, using MS20426AD3-3.5 rivets.
37. Attach required D202-3 shims to D202-1 channel using (2) NAS1097AD3-4.5 rivets, cutting rivet to length as required, and countersinking existing rivet holes in top D202-3 shim.
38. Service & function check hydraulic system per MM § 1.190.
39. Rig flight controls per MM § 10.100. Hydraulic system must be pressurized when checking angles.
40. Perform pitot system leak check per MM § 13-10A and static system leak check per MM § 13-10B.
41. Connect battery per MM § 37-10B. Push in all circuit breakers.
42. Refer to IPC Figure 25-23. Install applicable insulation to aft LH & RH cabin headliner & bulkhead.
43. Perform weight and balance procedure per MM § 1.230. Revise helicopter's Weight and Balance Record in R44 Pilot's Operating Handbook (POH) Section 6 to reflect this (C022 Hydraulic System) installation.
44. Perform 100-hour inspection per MM § 2.400.
45. Perform ground check per MM § 2.205 and run up per MM § 2.210.
46. Perform track and balance per MM § 10.200.
47. Make appropriate maintenance record entries.